ROHDE&SCHWARZ

Manual

SIGNAL GENERATOR SMS

302.4012.22
302.4012.24
302.4012.26

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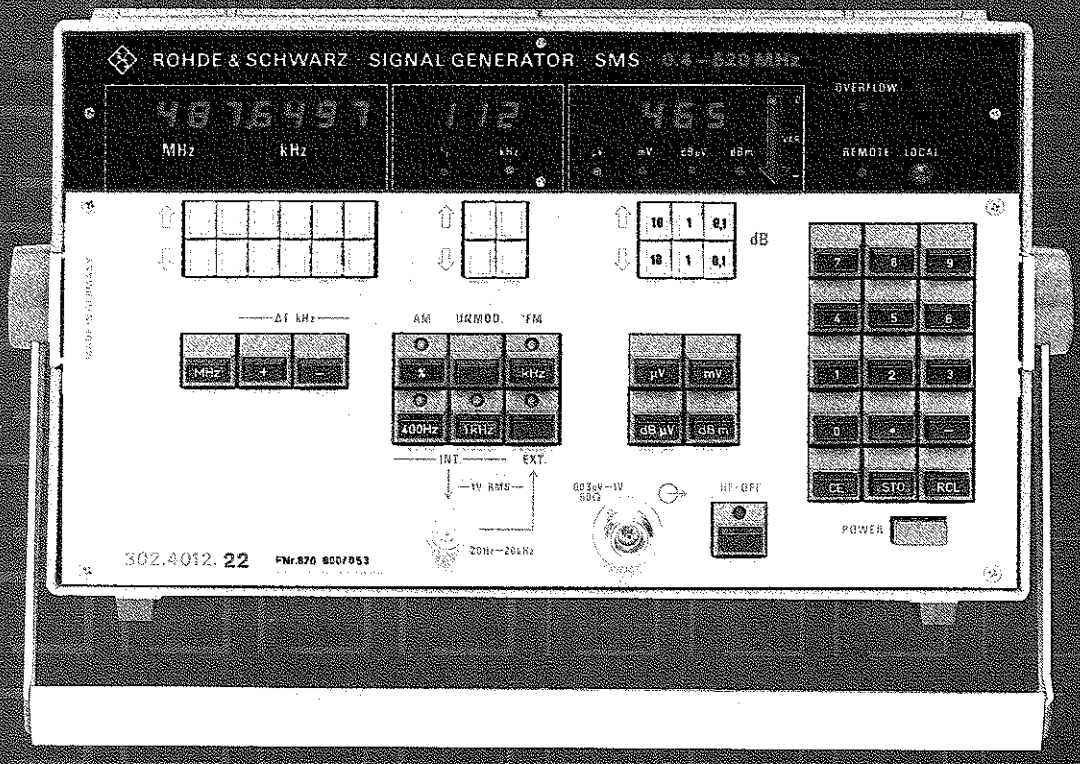
ROHDE&SCHWARZ

SMS

SIGNAL GENERATOR SMS

0.1/0.4 to 520 (1040) MHz



IEC625Bus

Data sheet
302401
E-2

Summary

- General-purpose AM-FM synthesizer for 0.4 to 520 MHz (0.1 to 1040 MHz); low noise and excellent AM, FM and φM modulation characteristics.
- Compact, low-priced signal generator for use in development, production and servicing; can be tailored to customer requirements by adding options.
- Keyboard entry and LED display of frequency, modulation and level make it easy to operate.
- Numerical value and unit can be input in ordinary notation; all the values can be varied in single steps or quasi-continuously with selectable step size.
- Wide output voltage range, exact level setting in dBm, dB(μV), μV or mV.
- Overvoltage protection and IEC-bus programmability (setting time 40 ms) are standard features.

Stable output signal of high accuracy

Frequency. The wide frequency range from 400 kHz (100 kHz with Model 24) to 520 MHz covers all the sound broadcasting ranges from medium wave to shortwave to VHF, as well as the frequencies of the main radiotelephony bands and radio services up to the UHF region. The range can be extended to 1040 MHz by means of the Frequency Range Extension Option SMS-B2 (see page 3).

The crystal-controlled frequency is read out on the display with a resolution of 100 Hz. The Reference Oscillator Option SMS-B1 (aging $< 1 \times 10^{-6}$/year) further enhances the accuracy. A reference frequency input is provided on the rear panel of the signal generator (photograph lower right-hand side). The Δf keys permit easy channel stepping with any desired step size (see also page 6). The output signal features low spurious deviation, only 3 Hz (CCITT) or 15 Hz (30 Hz to 20 kHz). The S/N ratio 20 kHz from the carrier is typically 120 dB at a test bandwidth of 1 Hz, and 145 dB at 1 MHz from the carrier.

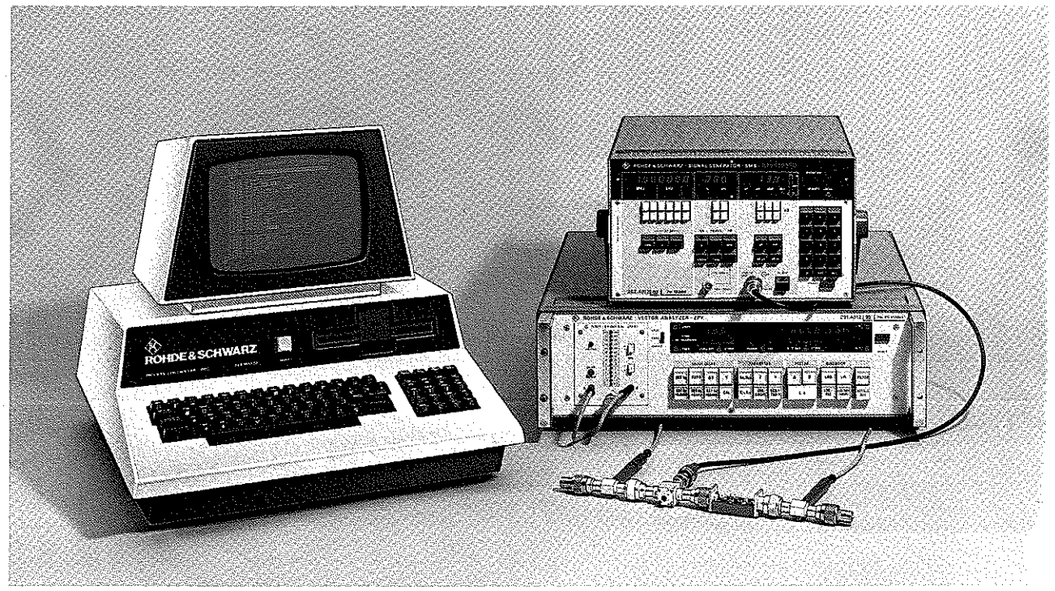
Modulation. The SMS is suitable for all types of modulation: AM up to m = 95% and FM up to deviation = 125 kHz are possible with the aid of the internal modulation generator (400 or 1000 Hz) or an external signal. Modulation frequency and modulation depth or frequency deviation can be entered via a keyboard and are read out on a 3-digit display with 0.05/0.5% and 50 Hz/500 Hz/1 kHz resolution.

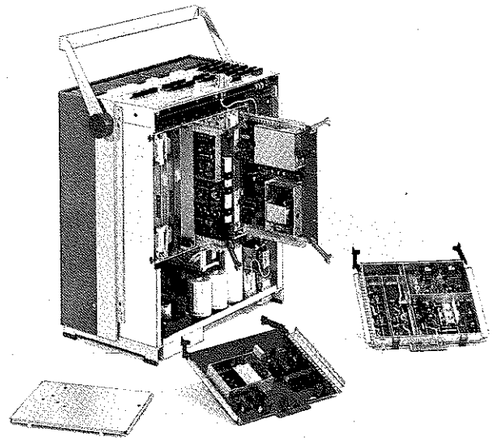
The maximum frequency deviation of 125 kHz is available over the entire frequency range. The high resolution of the frequency deviation of 50 Hz is helpful when testing transceivers. In addition to AM and FM, the SMS offers the following types of modulation:

- AM + FM together
- phase modulation (φM)
- frequency-shift keying for data transmission (FSK)
- external level control (ALC).

Modulation settings are preserved in the UNMOD position and can be called up again at the push of a button.

The Signal Generator SMS being used together with the Vector Analyzer ZPV and the Process Controller PPC in a computer-controlled test assembly for s-parameter measurement.





Easy-to-service design of the Signal Generator SMS: plug-in circuit boards used throughout make for ready access.

The output level is adjustable from +13 to −137 dBm with a resolution of 0.1 dB, the error being typically 0.8 dB. Entry is in μV, mV, dB(μV) and dBm via keyboards. Its minimum output voltage of 0.03 μV makes the SMS also suitable for measurements on future, extremely sensitive receivers. Continuous level variation over 10 dB in 0.1-dB steps is indispensable for squelch measurements. The output level can be switched off by means of the RF-OFF button so calibration of measuring instruments is very convenient. RF leakage of the SMS is minimal, i.e. even receivers with a sensitivity of 0.2 μV (e.g. paging receivers) will not respond at a distance of 10 cm from the front panel.

Low cost — high versatility

The Signal Generator SMS offers cost-effective RF measurements in production and servicing of sound broadcasting receivers as well as for commercial receivers, such as used in aviation communications and radiotelephony, in telemetry and navigation. Thanks to its compact design the SMS is easily portable and can be installed in test vans. The IEC-bus programmability of the SMS (see page 7) with a setting time of only 40 ms makes it ideal for use in automatic test systems. Plug-in circuit boards and the designed-in signature analysis compatibility facilitate and speed up servicing (see photograph at left).

Options

Several options are available for the SMS to satisfy differing or special customer requirements at minimum cost. The SMS can on request be supplied with these options built in, or they can be retrofitted.

Temperature-controlled Reference Oscillator SMS-B1 improves the frequency stability of the signal generator. The temperature drift of $< \pm 1 \times 10^{-6}$/°C is reduced to $< \pm 1 \times 10^{-7}$ over the entire temperature range. Crystal aging is less than 5×10^{-8}/month.

1.04-GHz Frequency Range Extension SMS-B2 doubles the SMS frequency range (to 1.04 GHz) while the full output level setting range is maintained. The harmonics and subharmonics ($^1/_2$f, $^3/_2$f...) are typically 20 dB down. For applications up to 1000 MHz, Option SMS-B2 with the same characteristics but a different ordering number is available; see Specifications on page 8.

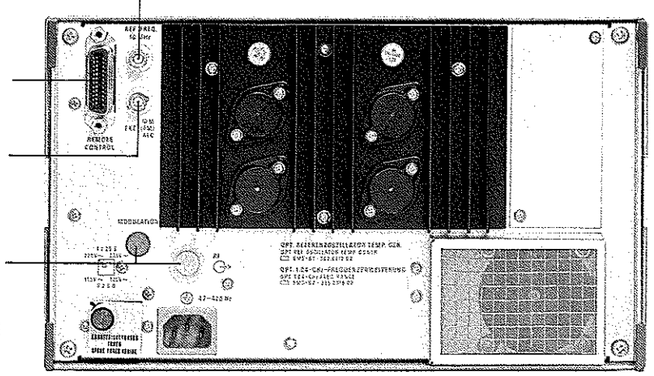
Internal 10-MHz reference frequency output (TTL level) or external reference frequency input (> 0.5 V, sinewave or squarewave)

Rear view of Signal Generator SMS

IEC-bus connector

2nd modulation input for φM (can be switched over to FM) or AM (DC-coupled)

Openings for relocation of the RF output and ext. modulation input or int. modulation output from the front panel to the rear panel

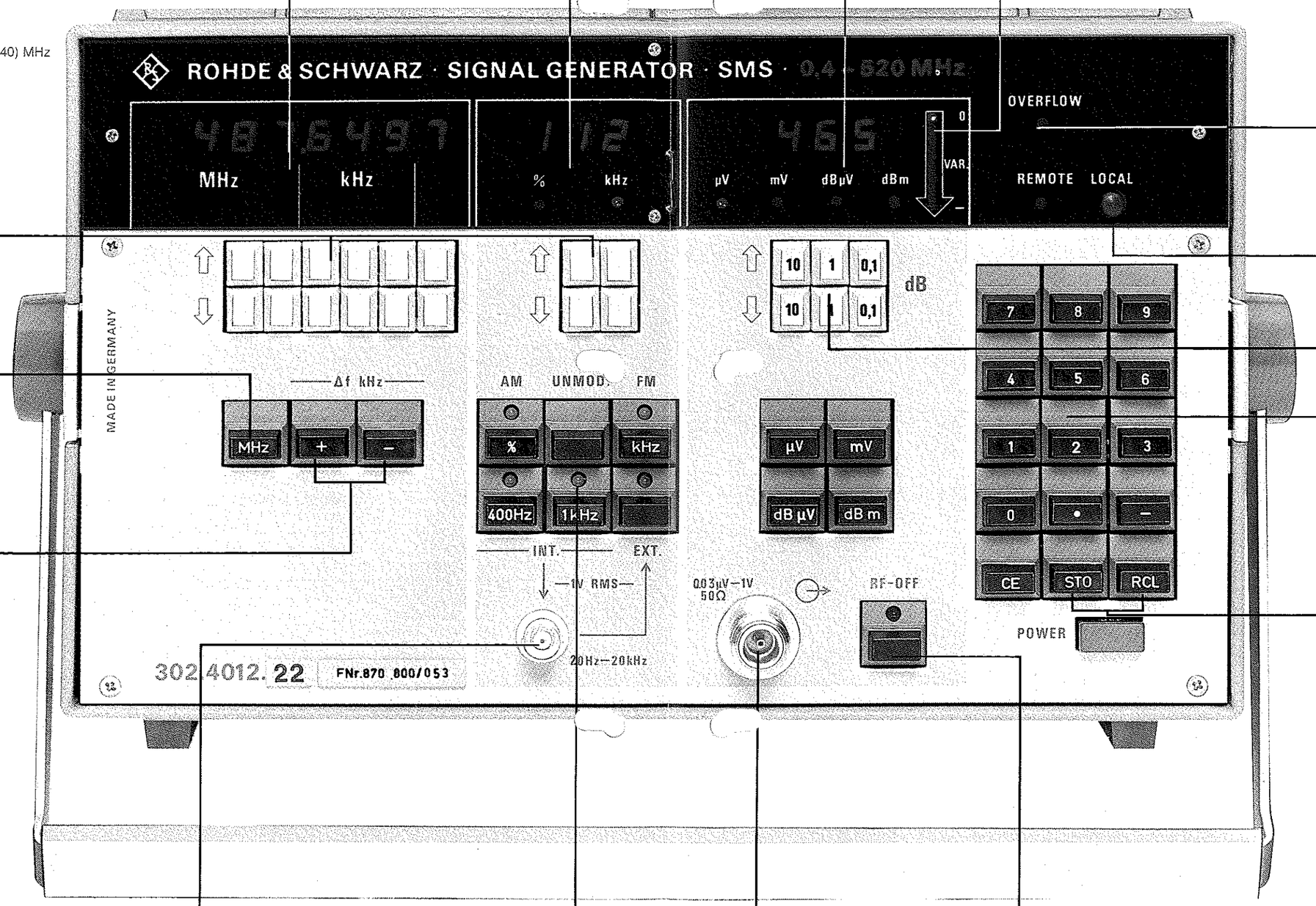


Frequency range 0.1/0.4 to 520 MHz,
8-digit frequency readout,
resolution 100 Hz;
Frequency Range
Extension Option SMS-B2
range extension to 1000 (1040) MHz

Readout of modulation in %
or deviation in kHz;
entry via keyboard

Level indication in µV,
mV, dB(µV) or dBm;
correct indication also
with fine adjustment

Indication of
fine level adjustment
over a range
of 0 to –10 dB



Signal for non-valid entry

Keyboards for stepwise
or continuous variation
of settings by keys
associated with the
individual digits;
automatic carry over

Switchover from IEC-bus
control to
manual operation

Variation of RF output
level in steps
of 0.1, 1 or 10 dB;
no interruption of RF output
with 0.1-dB steps

Frequency in MHz;
entry via keyboard

Keyboard for entry of
frequency, channel step size,
modulation depth,
frequency deviation or
RF level without
range selection;
the keys can also be
operated by pressing
from above

Channel steps
of any size;
frequency entry
via keyboard,
repetition by pressing key

Function keys for storing
three complete settings,
which can be called up
any number of times

Input for external modulation
(AM or FM);
output for internal modulation
signal

Selection of type of modulation
AM (up to 95%)
FM (up to 125 kHz deviation)
INT.: 400 Hz or 1000 Hz
EXT.: 20 Hz to 20 kHz;
entry via keyboard

RF output 0.03 µV to 1 V
(–137 to +13 dBm)
overall error < 1.5 dB;
negligible leakage.
Built-in overvoltage protection
protects the output against
excessive external RF or
DC voltage (max. 30 W)

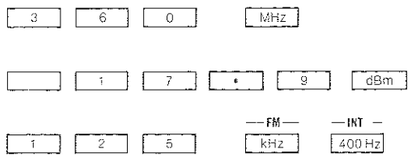
Key for switching off
the RF signal without
changing any settings

SIGNAL GENERATOR SMS

Easy to operate

Simple keyboard entry. The function keys and the associated displays for frequency, modulation and level are arranged in three sections on the front panel for user-oriented operation. The parameters are entered in ordinary notation, first the numerical value and next the unit. A fourth, general keyboard is provided for the entry of the numerical value.

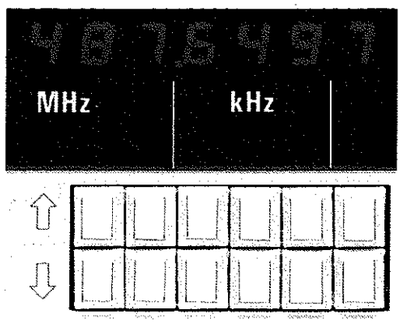
Example: For entry of a frequency of 360 MHz, a level of −17.9 dBm, and frequency modulation with 125 kHz frequency deviation and 400 Hz internal modulation frequency simply press the following keys:



Modulation setting storage. One AM and one FM setting at a time are stored in the signal generator. Thus only one key needs to be pressed to switch over between AM and FM or unmodulated and modulated operation.

Example: The frequency modulation setting is switched off by means of the key UNMOD. and switched back on again by means of the key — FM — kHz.

Easy variation of all settings. Frequency, level and modulation can be varied by means of the keys ⇧ and ⇩ which are associated with the various digits of the displays. The selected digit is varied in unit steps with automatic carry to the next digit either by one step per keystroke or (if the key is held down) continuously. Rapid coarse tuning in 10-MHz steps as well as fine tuning in 100-Hz steps is possible.

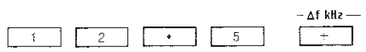


Keys associated with the various digits permit stepwise or continuous variation of numerical values entered (e.g. frequency as here displayed).

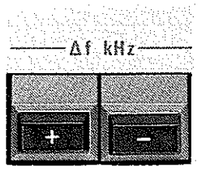
Indication of illegal entries. Entries that exceed the given setting range are not considered by the SMS. The last value entered is still indicated. The OVERFLOW LED flashes in the case of a non-valid entry.

Frequency variation with channel stepping. The Δf kHz keys (see photograph below) permit channel stepping with any desired channel step size.

Example: For entry of a frequency step of +12.5 kHz press the following keys on the large, main keyboard:

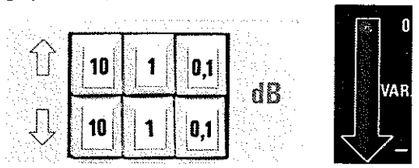


For each additional step in the positive or negative direction all there is to do is to press the + or − Δf kHz key. The selected step size is preserved until it is overwritten by a new entry.



Key for freely selectable frequency steps in positive or negative direction.

Continuous fine level adjustment. The keys ⇧ and ⇩ (0.1 dB) permit continuous electronic adjustment of the level in 0.1-dB steps over a range of 10 dB (indispensable for squelch measurements), the corrected value being read out on the level display. The state of the electronic level variation can be seen from an LED array (see photograph below).



The 0.1-dB keys are used for continuous electronic fine level adjustment. The state of the electronic level variation can be seen at a glance from the LED array.

Storage of complete device settings. The SMS can store three complete device settings (each setting including frequency, modulation and level).

Example: Storage of device setting at memory location 3:

Keys pressed STO 3 ;

Recalling RCL 3 .

IEC-bus programming

The Signal Generator SMS can also be put to use in computer-controlled test assemblies via the IEC-bus interface. Its extremely short setting time of only 40 ms makes it capable of high-speed computer-controlled frequency response measurements — even with high resolution. The control instructions are in accordance with IEC standard 625-1. Each instruction consists of a header, the numerical value and a comma as the delimiter. The numerical value is entered in unformatted form with or without sign and with or without decimal point (see table below).

Examples:

Device setting	Programming instructions
Frequency: 122.19 MHz	A122.19,
Level: −23 dBm	S-23,
Modulation: AM, 30 %	B30,

It is also possible to write several control instructions in one program line:

A122.19, S-23, B30,.

Programming example for Process Controller PPC from Rohde & Schwarz for level, modulation and frequency setting on the Signal Generator SMS (address 28).

```
100 IECOUT28,"S-3.7,"  ———————————— Level setting
110 IECOUT28,"H2.8,J,"  ———————————— Modulation setting
120 FOR F=100 TO 111.5 STEP .5  ———————— Frequency loop
130 IECOUT28,"A"+STR$(F)+","  ———————— Frequency setting
140 NEXT F
150 END
```

An LED (REMOTE) lights when the SMS is in the remote control state (REMS). Then all the operating controls, with the exception of the LOCAL key, are disabled. By pressing the **LOCAL** key the SMS can again be manually operated.

Table of setting instructions

Function	Header	Data	Delimiter
Frequency in MHz	A	Maximum of 8 digits with or without decimal point	, (comma)
Modulation			
AM, m in %	B	Maximum of 3 digits with	,
FM, deviation in kHz	H	or without decimal point	,
UNMOD.	C	None	,
INT. 400 Hz	I	None	,
INT. 1 kHz	J	None	,
EXT.	K	None	,
Level			
in dBm	S	A maximum of 3½ digits	,
in dB(μV)	R	with or without decimal point, with negative sign or without	,
in μV	P	A maximum of 3½ digits with	,
in mV	Q	or without decimal point	,
Switchover to continuous fine adjustment	X		,
RF OFF	Y	0	,
RF ON	Y	1	,
Pause 15 ms	@	None	,

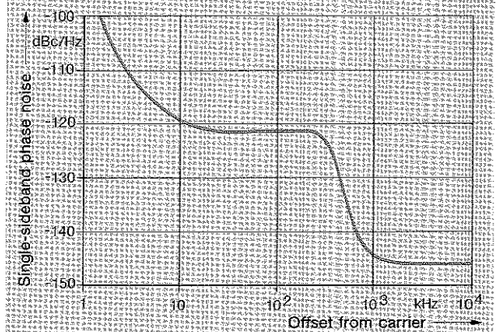
Specifications

Frequency

Frequency range, Model 22	0.4 to 520/1040 MHz	Option SMS-B2 see Specifications "Options"
Model 24	0.1 to 520/1040 MHz	
Frequency readout	8-digit LED display in MHz	
Resolution	100 Hz	
Frequency error with reference oscillator		
	Standard	Option SMS-B1
Aging	$< \pm 1 \times 10^{-8}$/month	$< \pm 5 \times 10^{-9}$/month
Temperature effect	$< \pm 1 \times 10^{-8}$/°C	$< \pm 1 \times 10^{-8}$/°C (5 to 45 °C)
Warm-up period		15 min
Output/input for internal/external reference frequency, 10 MHz (single connector)		
Output	TTL level	
Input	> 0.5 V (sinewave) or TTL level	

Spectral purity

Harmonics	down ≥ 30 dBc[1])
Non-harmonic spurious responses	down ≥ 60 dBc[1]) (≥ 5 kHz from carrier)
Spurious deviation, rms	
0.3 to 3 kHz	≤ 4 Hz (weighted in accordance with CCITT)
0.03 to 20 kHz	≤ 16 Hz
Spurious AM, rms	
0.03 to 20 kHz	down ≥ 70 dBc[1])
Single-sideband phase noise (see also diagram below)	typ. down 120 dBc[1]) (test bandwidth 1 Hz, 20 kHz from carrier)
Single-sideband broadband noise	typ. down 145 dBc[1]) (test bandwidth 1 Hz, 1 MHz from carrier)



Typical single-sideband phase noise of Signal Generator SMS ($f_{carrier}$ = 360 MHz)

Level

Output level with CW and FM	−137 to +13 dBm (0.03 μV to 1 V) into 50 Ω
with AM	−137 to −7 dBm (0.03 μV to 0.5 V) into 50 Ω
Readout	3½-digit LED display in μV, mV, dB(μV), dBm
Resolution	0.1 dB
Fine adjustment	0 to −10 dB with 0.1 dB resolution; without interrupting RF output
Error of level readout	≤ ±1 dB + frequency response[2])
Frequency response of output level	flat: ±0.5 dB (8 to 520 MHz); flat: ±1 dB (< 8 MHz)
Level reduction with RF OFF	> 80 dB
Output	N(f) connector
Characteristic impedance	50 Ω
VSWR	≤ 1.2 (level ≤ −3 dBm[2])
Overvoltage protection	protects the RF output of the SMS from externally applied RF (1 to 1000 MHz) or DC voltage
Max. input power	30 W
Max. input DC voltage	35 V

1) dBc = relative level referred to carrier amplitude.
2) With fine level adjustment = 0 dB.

SPECIFICATIONS

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Modulation

Amplitude modulation

Frequency range AM EXT	20 Hz to 20 kHz (8 to 520 MHz) 20 Hz to 5 kHz (0.4 to 8 MHz)
AM INT	400 Hz and 1 kHz, ±3 %
Modulation depth m	0 to 95 %
Readout	3-digit LED display
Resolution, m = 0 to 9.95 %	0.05 %
m = 10 to 95 %	0.5 %
Readout error (m < 90 %, 20 Hz to 20 kHz)	8 to 520 MHz: ≦ 4 % of reading + 1 %[1]) < 8 MHz: ≦ 7 % of reading + 1 %[1])
Envelope distortion (f_{mod} = 0.4/1 kHz)	
m = 80 %	≦ 1.5 %
m = 90 %	≦ 3 %
Input voltage requirement	1 V into 600 Ω (V_{rms})
Spurious φM (peak value at 30 % AM)	< 0.1 rad

Frequency modulation

Frequency range FM EXT	20 Hz to 20 kHz (response down 3 dB typ. < 5 Hz/ > 30 kHz)
FM INT	400 Hz and 1 kHz, ±3 %
Frequency deviation	0 to 125 kHz
Readout	3-digit LED display
Resolution, 0 to 9.95 kHz	50 Hz
10 to 99.5 kHz	500 Hz
100 to 125 kHz	1 kHz
Error (20 Hz to 20 kHz)	≦ 5 % of reading
FM distortion (f_{mod} 0.4/1 kHz, deviation 75 kHz)	≦ 1 %
Input voltage requirement	1 V into 600 Ω (V_{rms})
Spurious AM (20 kHz deviation, FM INT.)	< 0.1 %
Output voltage with internal AM and FM	1 V into 600 Ω (V_{rms})

Additional modulation input at the rear of the SMS for phase modulation (φM), 20 Hz to 8 kHz, FM, 20 Hz to 20 kHz (connection can be internally changed) or ALC (AM), DC to 20 kHz.

Required input voltage into 600 Ω:	
ALC (AM), DC-coupled	0 to +2.83 V for 0 to −40 dB
φM (V_{rms})	1 V for 5 rad
FM (V_{rms})	1 V for 100 kHz deviation

Options

1.04-GHz Frequency Range Extension Option SMS-B2

Frequency range	0.1/0.4 to 1040 MHz
Performance specifications of the SMS fitted with Option SMS-B2 over the frequency range 520 to 1040 MHz:	
Resolution of the frequency indication	200 Hz
Harmonics and sub-harmonics	typ. 20 dBc[1]) down (subharmonics ½f, ⅔f ...)
Non-harmonic responses	
> 200 kHz from carrier	down > 60 dBc[1])
> 5 kHz from carrier	down > 55 dBc[1])
Spurious deviation, rms	
0.3 to 3 kHz	≦ 8 Hz (weighted in accordance with CCITT)
0.03 to 20 kHz	≦ 32 Hz
Single-sideband phase noise	
20 kHz from carrier	down typ. 115 dBc[1]) (test bandwidth 1 Hz)
1 MHz from carrier	down typ. 140 dBc[1]) (test bandwidth 1 Hz)
Error of output level	≦ ± 1 dB + frequency response[2])
Frequency response of level	flat ±1 dB
Error of modulation-depth indication with AM (m < 90 %)	≦ 7 % + (1 %[2]) of reading
Envelope distortion (f_{mod} = 0.4/1 kHz, m = 80 %)	≦ 5 %

Other specifications same as for basic unit.

1-GHz Frequency Range Extension Option SMS-B2

Frequency range	0.1/0.4 to 1000 MHz

All other specifications same as for 1.04-GHz Frequency Range Extension Option SMS-B2.

Reference Oscillator Option SMS-B1	see under "Frequency" specifications

IEC-bus control

Interface in accordance with IEEE 488 and IEC 625-1 for control of all operating modes and for data transfer in listener operation

Interface functions	AH 1 Acceptor handshake L 2 Listener RL 1 Remote/Local DC 1 Device clear
Setting time	40 ms for all functions (typ. frequency error after 40 ms: < 100 Hz)

Models available

Model 22	0.4 to 520 MHz
Model 24	0.1 to 520 MHz
Specifications differing from Model 22:	
Frequency range AM EXT	20 Hz to 2 kHz (0.1 to 8 MHz)
FM deviation	≦ $f_{carrier}$, 100 kHz (125 kHz, max.)

General data

RF leakage	conforms to VDE 0871 and MIL STD 461 A in accordance with method CE 03 and RE 02 concerning radio interference and interference on the connecting cables. The SMS also complies with the requirements of VDE 0875 (limit values of radio interference grade K)
Shock and vibration resistance	shock-proof in accordance with DIN 40046, Part 7 (30 g, 11 ms); vibration-tested in accordance with DIN 40046, Part 8 (11 to 55 Hz, 2 g); corresponds to IEC Publications 68-2-27 and 68-2-6
Rated temperature range	+5 to +45 °C
Shelf temperature range	−40 to +70 °C
AC supply	115/125/220/235 V ± 10 %, 47 to 420 Hz (55 VA)
Overall dimensions (W × H × D); weight	347 mm × 198 mm × 370 mm; 14.6 kg

Ordering information

Order designation	► Signal Generator SMS (0.4 to 520 MHz) 302.4012.22 ► Signal Generator SMS (0.1 to 520 MHz) 302.4012.24
Accessories supplied	
Power cord, manual	
Options	
Reference Oscillator SMS-B1	302.8918.02
1.04-GHz Frequency Range Extension SMS-B2	335.0016.02
1.0-GHz Frequency Range Extension SMS-B2	335.0016.04
Recommended extras	
19" Adapter SMS-Z1	302.8860.00

[1]) dBc = relative level referred to carrier amplitude
[2]) With fine level adjustment = 0 dB

Table of Contents

Figures in the Text

Figures in the Appendix

Parts lists

Drawings and diagrams

Model 26 of the SMS has modulation characteristics which make it suitable for stereo transmissions. Compared to model 22 the follwoing data are new or have been changed.

Frequency range	0.1 to 520 MHz
Distortion with stereo modulation (10.7; 87 to 108 MHz) at f_{mod} 50 Hz to 10 kHz and 40 kHz deviation	< 0.4%; typ. 0.2%
Stereo crosstalk (10.7; 87 to 108 MHz) 50 Hz; 1 kHz; 10 kHz	typ. 40; 45; 45 dB
S/N ratio (RMS, wideband weighting filter 31.5 Hz to 16 kHz) referred to 40 kHz deviation	typ. 65 dB

2. Preparation for Use and Operating Instructions

2.1 Legend for Front- and Rear-panel Views

Ref. No.	Labelling	Function
1	MHz	Key for entry of frequency after frequency has been entered from keyboard 15.
2	MHz kHz	8-digit display for indication of selected carrier frequency.
3	⇧ ⇩	Two rows of six keys each for carrier frequency variation. Each pair of keys is associated with the digit immediately above it. If a key is pressed once, the corresponding digit is increased or decreased one step. If the keys are kept depressed, the frequency is varied continuously. With the upper keys, the digits are increased and with the lower ones decreased.
4	% kHz	2 LEDs for indication of the unit of the modulation readout.
5		3-digit display for readout of the modulation-depth or frequency-deviation.
6	⇧ ⇩	Two rows of two keys each for modulation variation. Each pair of keys is associated with the digit immediately above it. If a key is pressed once, the corresponding digit is increased or decreased one step. If the keys are kept depressed, the modulation is varied continuously. With the upper keys, the digits are increased and with the lower ones decreased.
7	µV mV dBµV dBm	4 LEDs for indication of the unit of the output-level readout.
8		4-digit display for readout of the output level.
9	⇩ 0 VAR. -	Row of LEDs for indication of fine level adjustment over a range of 0 to -10 dB.

Ref. No.	Labelling	Function
10	⇧ 10 1 0.1 ⇩ 10 1 0.1 dB	Two rows of 3 keys each for output-level variation. The keys permit output-level variation in steps of 10, 1 and 0.1 dB. With the upper keys, the level is increased and with the lower ones decreased. In mode of indication dBµV or dBm, each pair of keys is associated with the digit above it. If a key is pressed once, the corresponding digit is increased or decreased one step. If the keys are kept depressed, the output level is varied continuously.
11	OVERFLOW	LED for signalling illegal entry.
12	REMOTE	LED for indication of remote-control operation with IEC-bus programming (if this option is fitted).
13	LOCAL	Key for switching from IEC-bus programmed operation.
14	µV mV dBµV dBm	4 keys for entry of level. They define the desired unit of the level entered (keyboard 15).
15		Data-entry keyboard for carrier frequency (in conjunction with key 1), modulation depth (in conjunction with key 26) frequency deviation (in conjunction with key 21), RF level (in conjunction with keys 14) and channel stepping (in conjunction with pair of keys 27).
16	STO RCL	Pair of keys for storing (STO) and recalling (RCL) 3 complete instrument settings. Subsequently enter address 1 to 3.
17	POWER (OFF)	Power switch.
18	CE	Key for erasing the numerical values entered (e.g. in the case of illegal entry) and for switching off overflow indication.
19	RF OFF	Key for switching off the RF level. In off-condition, the red LED lights. It also lights if the overload protection (option) responds on account of an excessive external signal at the RF output.

Ref. No.	Labelling	Function
20	0.1 µV - 1 V 50 Ω ⊖→	RF output N female connector.
21	FM kHz	Key for entry of frequency deviation after the numerical value has been entered from keyboard 15.
22	EXT.	Key for switching over to external modulation. Entry from keyboard.
23	50 Hz - 20 kHz	Modulation socket Internal modulation output. External modulation input.
24	400 Hz 1 kHz INT	Keys for switching over to internal modulation with 400-Hz or 1-kHz sinewave signal.
25	UNMOD.	Key for switching off selected type of modulation.
26	AM %	Key for entry of modulation depth after the numerical value has been entered from the keyboard 15.
27	Δf kHz + -	Pair of keys for entry of frequency steps after the numerical value has been entered from the keyboard 15. Whenever a key is pressed, the frequency step entered is repeated. The - key decreases and the + key increases the frequency by one step.
28	REMOTE CONTROL	Connector for IEC-bus programming (option).
29	REF. FREQ. 10 MHz	Socket for output of internal crystal reference frequency. Can be internally changed to allow the input of an external reference frequency.
30	φM EXT. (FM) ALC	Socket for external modulation input, AM (DC to 20 kHz) or φM (FM) depending on the type of modulation selected by means of the keys 20 and 26.
31		Air filter.
32		Opening, provided for relocation of the RF output to the rear panel.
33		AC supply receptacle.

Ref. No.	Labelling	Function
34	T 1.25 N 220 V~ 235 V~  115 V~ 125 V~ T 2.50	Fuse holder and voltage selector.
35		Opening provided for relocation of the modulation input from the front panel to the rear panel.

2.2 Preparation for Use

The Signal Generator SMS is suitable for operation from AC supply voltages of 115 V, 125 V, 220 V and 235 V. It is factory-adjusted for an operating voltage of 220 V.

To adapt the instrument to other AC supply voltages, unscrew the fuse from the voltage selector 34 (Fig. 14), remove the cover plate and replace it such that the fuse can be inserted at the point which is marked with the desired voltage. The instrument is now ready for operation from the new AC supply voltage. The fuses for all the AC supply voltages listed above are contained in the voltage selector.

For 220 V and 235 V, fuse T 1.25 B (1.25 A) is inserted and for 115 V and 125 V, fuse T 2.5 D (2.5 A).

The Signal Generator SMS has the width of 3/4 of a 19" set. It is also suitable for mounting in 19" racks. For this purpose, rack adapters are available (see recommended extras). After removal of the screws on both sides, lift off the two covers and take off the side strips and the carrying handle. The threaded holes for mounting the rack adapters are provided on the set. The necessary openings for relocating the inputs and outputs from the front panel to the rear panel are also already provided on the rear panel. When rerouting the RF cable, make sure that the bending radius is not less than 10 mm and avoid sharp bends altogether. The cable must not be shortened.

2.3 Operating Instructions

Manual setting and operation of the set is accomplished exclusively via keys. The data-entry keys and digital displays form four neatly arranged groups.

The first group, on the far left, comprises all keys and the display for entry and readout of the carrier frequency. The second group, to the right of the first, comprises the keys for modulation entry, the display for the modulation and the external input. Next is the group for entry and display of the RF level with the RF output. The fourth group, on the far right, constitutes a common data-entry keyboard for all three parameters. It also comprises the LEDs for REMOTE, LOCAL and OVERFLOW indication as well as the power switch. Irrespective of whether carrier frequency, modulation or RF level is to be entered always enter first the numerical value from keyboard 15 (Fig. 13). Subsequently, the desired unit is selected by pressing one of the keys in the other three groups controlling the functions of the set.

Illegal entries are rejected. If, for example, a frequency outside of the frequency range of the set is entered, the LED OVERFLOW 11 starts to flash. The same is true for the modulation and the level.

The flashing LED OVERFLOW 11 signals that the last entry has been rejected. If then another legal value or instruction is entered, the LED goes off. It also goes off if the key CE 18 is pressed.

If a wrong numerical value has been entered, the complete entry can be cleared by means of the key CE 18. Now the correct value can be entered.

2.3.1 Switch-on State

When switching on the set by means of the power switch 16 (Fig. 12), the set assumes a defined initial state. The frequency and modulation readouts are 0. The level display reads +1000. No frequency setting occurs and the output attenuator is set to maximum attenuation.

2.3.2 Frequency Setting

2.3.2.1 Entry

The frequency is entered by entering the desired numerical value of the frequency in MHz from the keyboard 15 (Fig. 13). Then press the key MHz 1 to define that the numerical value entered is a frequency. The frequency is now immediately set. Zeroes at the end of the numerical value entered need not be

keyed in after the decimal point. Entries, such as 423.2 MHz or 423 MHz are possible.

On first-time actuation of the power switch, the output level must be entered. Otherwise, no output level is present.

2.3.2.2 Frequency Variation

The frequency entered from keyboard 15 (Fig. 13) can be varied either in decade steps or in freely selectable channel steps. Each digit of the frequency display with the exception of the hundreds place is associated with a key pair 3. By pressing a key, the corresponding digit is increased or decreased one step. When the key is kept depressed, these steps are repeated continuously, slowly at first and automatically speeding up after three steps.

Any desired channel step can be set by entering the respective numerical value in kHz from keyboard 15 and subsequently pressing one of the two keys Δf kHz 27. The selected channel step is stored. By pressing key + or - 27, the frequency can be increased or decreased by the stored value as often as desired. All entries from 0.1 kHz up to the maximum step over the entire frequency range are permissible. The entry must, however, be in kHz.

If the variation by decade or channel stepping exceeds the limits of the frequency range, the LED OVERFLOW 11 starts to flash, signalling that the last instruction cannot be executed. At 515 MHz, for example, a step of +10 MHz is not possible, but the LED goes off if the frequency is varied by only +1 MHz or the key CE 18 is pressed.

2.3.2.3 Frequency Setting with Option SMS-B2 1.04-GHz Frequency-range Extension

If the Signal Generator SMS is fitted with the option for extending the frequency range to 1040 MHz, proceed in the same way as above for frequency entry and variation. The range limit at which the LED OVERFLOW 11 (Fig. 13) starts to flash is automatically extended to 1040 MHz. The resolution of the readout is 200 Hz in the frequency range from 520 to 1040 MHz. The frequency to be set is rounded off to the next 200-Hz value with decade variation, frequency entry from the keyboard or variation by channel steps.

2.3.2.4 Reference Frequency

The Signal Generator SMS contains its own 10-MHz crystal reference oscillator from which the output frequency is derived by a synthesizer circuit. This reference frequency is available at the BNC socket REF. FREQ. 29 on the rear panel of the set with TTL level for external control purposes. The SMS may be switched over internally for operation from an external reference frequency of 10 MHz, for example, from another instrument or a central standard frequency. In this case, this same BNC socket 29 is used as input.

A sinewave signal of 10 MHz with 0.5-V amplitude is sufficient. TTL level can, however, also be applied.

When the set is supplied from the factory, the BNC socket 29 is connected as output. To use it as reference input, **disconnect links BR1**[+)], BR4 and BR5 on the reference circuit board 302.6215 and connect link BR3 (see Fig. 1). To do this, remove the screws on both sides and take off the lower cover. Subsequently open the cover of the large shielding can. The location of the circuit board 302.6215 is marked on the cover. After pulling out the circuit board, the contact pins to be re-connected at the lower righthand corner become accessible.

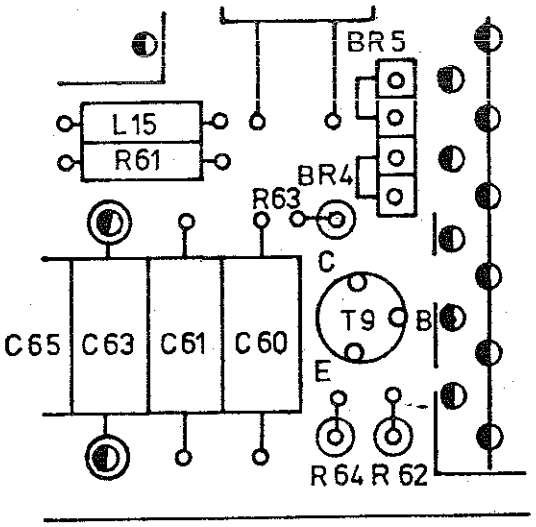


Fig. 1a) Position of link for reference frequency output.

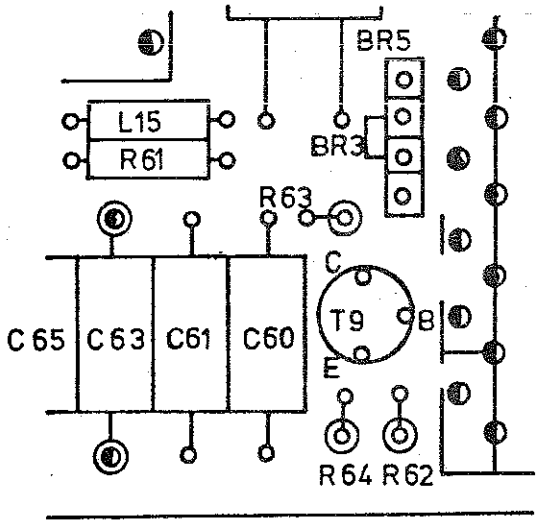


Fig. 1b) Position of link for reference frequency input.

+) (when option B1 is built in, BR1 is invisible and cannot be connected).

2.3.3 Setting the Modulation

2.3.3.1 Entry

The available RF carrier can be amplitude- or frequency modulated from the front panel.

For setting the modulation, the desired numerical value of modulation depth or frequency deviation is entered in % or kHz, respectively, from the keyboard 15 (Fig. 13). Then pressing the key AM % 26 or FM kHz 21 defines this numerical value as a modulation parameter. As a result, the modulation is immediately set. Zeroes at the end of the numerical value to be entered need not be keyed in after the decimal point. Entries such as 55% or 2 kHz are possible. The readout is always in three digits. The possible resolution of the modulation setting and readout is, therefore, dependent on the value entered.

With AM it is:

for m =	0 to 9.95%	0.05%
m =	10 to 99%	0.5%

With FM:

for deviation =	0 to 9.95 kHz	0.05 kHz
	10 to 99.5 kHz	0.5 kHz
	100 to 125 kHz	1 kHz

If more finely graduated values are entered, the readout is rounded off to the next suitable value.

The modulation is switched off by pressing the key UNMOD. 25. The entered value is stored. If now the key FM kHz 21 is pressed, the same modulation setting is obtained as before.

2.3.3.2 Variation of Modulation

The modulation entered from the keyboard 15 (Fig. 13) can be varied by pairs of keys associated with each digit of the readout with the exception of the first one. By pressing a key, the corresponding digit of the modulation readout is increased or decreased by one. When keeping the key depressed, the variation is continuous as for the carrier frequency.

When advancing from 9.99 to 10.0, the decimal point is automatically shifted. The variation keys remain associated with the same digits, i.e. the size of

the variation steps is at the same time switched over. If data entry or variation reaches the setting range limits, the lamp OVERFLOW 11 begins to flash.

2.3.3.3 Modulation Sources

When selecting a modulation mode, INT. 1 kHz modulation is automatically switched on. The RF carrier is modulated with 1 kHz by means of the internal modulation generator. The modulation signal is at the same time available at the BNC socket 23. The output voltage is 1 V_{rms}. The pushbutton INT. 400 Hz 24 permits the internal modulation generator to be switched over to 400 Hz.

If the frequency required for INT modulation differs from the standard nominal frequency of 400 Hz, it can be changed by replacing a resistor on the circuit board modulation control 302.7011. To do so, remove the upper cover after loosening the screws at both sides. The circuit board can then be withdrawn from the cassette. The resistor R6 to be replaced is mounted on soldering pins. The following resistor is required for 300 Hz: 113 kΩ ±1% 0.35 W (Order No. RL 082.2248). After it has been replaced, make fine adjustment of the modulation frequency by means of the potentiometer R2 (see 5.3.11).

For external modulation pushbutton EXT. 22 must be pressed and a signal in the modulation frequency range from 50 Hz to 20 kHz applied to BNC socket 23. In the case of sinewave signals, the input voltage must be 1 V_{rms}. Departures from this voltage bring about corresponding changes in the modulation selected.

The second modulation input on the rear panel permits simultaneous use of two different types of modulation. The function of this input is controlled by the settin on the front panel of the set. If FM has been selected by means of the front-panel keys, AM is possible at the same time via the input on the rear panel, which is then DC coupled. Thus it can also be used for external level control and as ALC input.

The input voltage requirement is between 0 and 2.83 V. 0 V corresponds to the full carrier level. At +1.41 V, the level is attenuated by 6 dB. Maximum attenuation of the RF signal is obtained at +2.83 V. An rms voltage of 1 V superimposed on a DC voltage of 1.41 V is required for 100% AM.

If AM has been selected by means of the front-panel keys, φM or FM is possible at the same time via the input on the rear panel. The set is factory-adjusted for phase modulation via the modulation input on the rear panel.

It can be readily changed over to FM by reconnecting a link. To do this, dismount the circuit board modulation control 302.7011 (as described above) and reconnect the link located approximately in the centre of the circuit board as shown below.

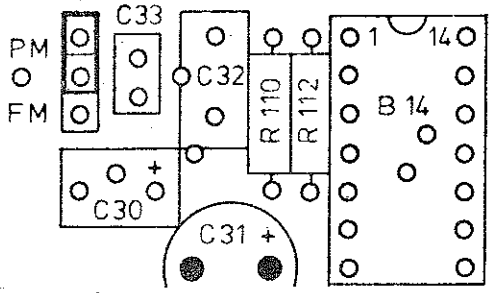


Fig. 2a) Position of link for phase modulation via the MODULATION input on the rear panel.

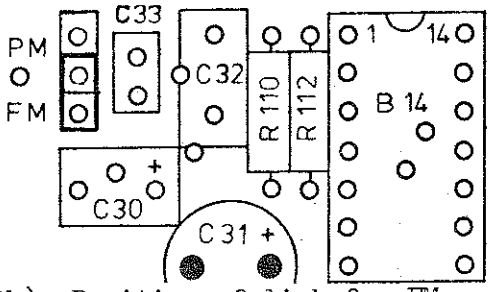


Fig. 2b) Position of link for FM via the MODULATION input on the rear panel.

The rms input voltage requirement is 1 V for a phase deviation of 5 rad or 100 kHz frequency deviation.

Modulation via the socket on the rear panel is also switched off by pressing the key UNMOD. 25 on the front panel.

2.3.4 Setting the Output Level

2.3.4.1 Entry

For setting the output level, enter the desired numerical value from the keyboard 15 (Fig. 13). The numerical value entered is defined as level by pressing one of the four keys 14 µV, mV, dBµV or dBm. At the same time, the unit of the numerical value entered is defined. In the case of negative dBm or dBµV enter a - sign ahead of the numerical value. It is not necessary to fill in the zeroes at the end of the numerical value following the decimal point.

Entries such as

80 µV, -3 dBm or 0.7 mV

are permissible. The unit chosen is indicated by an LED which lights up.

The permissible ranges for level entry in the UNMOD or FM modes are as follows:

-137 dBm to +13 dBm
0.03 µV to 1000 mV
-30 dBµV to +120 dBµV

In the AM mode, the following ranges apply:

-137 dBm to +7 dBm
0.03 µV to 500 mV
-30 dBµV to +114 dBµV.

2.3.4.2 Variation of the Output Level

The output level entered from the keyboard 15 (Fig. 13) can be varied by means of pairs of keys in 10-dB, 1-dB and 0.1-dB steps. By pressing a key, the level is raised or lowered accordingly. If the key is kept depressed, the variation is continuous, slowly at first and speeding up automatically after three steps.

If variation reaches the limits of the setting range, the lamp OVERFLOW 11 starts to flash.

The pair of keys with the engraving 0.1 dB permits continuous fine level adjustment without interruption of the RF level. If a level entered from the keyboard 15 is reduced by means of the lower 0.1-dB key 10, this variation is accomplished by electronic control. The entire setting range is -10 dB. The approximate value of the actual attenuation is indicated by the row of LEDs 9. The level read out by the display 8 is, however, always correct and is also changed during fine adjustment of the level. The indication by means of the row of LEDs is merely for information about the setting range and need not be taken into consideration as a correction. The level can be freely increased or decreased within this setting range from 0 to -10 dB. If the limits of the setting range are exceeded, the RF attenuator is switched over which interrupts the RF level for a short time. The indication of the row of LEDs is reset. Variation by -10 dB is again possible without interrupting the RF level.

If the unit dBm or dBµV has been selected for the level entered, the level is varied by one digit in the place of the digital readout corresponding to the variation key 10 depressed. When selecting µV or mV, the 0.1-dB, 1-dB or 10-dB level steps are set after automatic conversion into the corresponding voltage steps and the new voltage is immediately read out. The unit of the readout is automatically switched from mV to µV or from µV to mV if the output level is taken below 0.1 mV or above 1000 µV.

2.3.4.3 Units of the Level Readout

All output level entries and readouts of the set are based on the voltage or power into a resistive termination of 50 Ω.

The actual output voltage is always indicated. The EMF is twice the value. The unit dBµV as a logarithmic measure refers to the output voltage above 1 µV. It can be calculated from the output voltage as follows:

$$V_{(dB\mu V)} = 20 \lg \frac{V_{out}(\mu V)}{1\ \mu V}$$

Hence, 1 µV output voltage corresponds exactly to 0 dBµV. Voltages above 1 µV yield positive values and voltages below 1 µV negative values in dBµV.

The unit dBm defines the output power which would flow into a resistive termination as a logarithmic measure above 1 mW.

It is calculated from the power according to the following expression:

$$P_{(dBm)} = 10 \lg \frac{P\ (mW)}{1\ mW}$$

or from the voltage:

$$P_{(dBm)} = 10 \lg \frac{V_{out}^{2}\ (V)\ 20}{1\ mW}$$

In the case of a mismatch of the connected test item or load, the delivered power is reduced by reflection. Thus the output is given by the following equation as a function of the VSWR (s):

$$P_{(load)} = P_{(reading)} \cdot \frac{4\ s}{(1 + s)^2}\ .$$

2.3.4.4 Level with AM

With amplitude modulation, the maximum available output level is reduced by 6 dB. When entering the level or varying the output level, the LED OVERFLOW 11 (Fig. 13) starts to flash when 500 mV or 7 dBm or 114 dBµV are exceeded. Level setting above this limit is not possible. If a higher level is set in unmodulated operation and then amplitude modulation switched on, the LED OVERFLOW 11 starts to flash and AM is rejected.

For level settings below this limit, the level reduction is irrelevant. Entry and readout of the level with AM are for the carrier mean value.

2.3.4.5 Level Switch-off

The RF level can be switched off with the key RF OFF 19 (Fig. 13) without affecting any of the settings and readouts of frequency, modulation or level. When the RF level is switched off, the red LED lights. By pressing again key 19, the RF level is switched back on.

2.3.5 Storing Instrument Settings

The two keys STO (= store) and RCL (= recall) 16 (Fig. 13) can be used for storing three complete settings of the signal generator and for recalling the settings whenever required with a simple keyboard entry.

STO 1, STO 2 or STO 3 causes the carrier frequency, channel step size, modulation type, deviation or modulation depth and output level to be stored. The corresponding command RCL 1, RCL 2 or RCL 3 is used to restore this combination of settings as often as required. When the equipment power switch is switched off, the stored information is erased.

2.3.6 Overload Protection

The overload protection cuts off the ouput whenever an excessive level is applied to the output. This condition is signalled by the lighting of the red LED in the RF OFF key. When the signal responsible for the response of the cut-out circuit is removed, the output signal is automatically switched on again.

The response of the overload protection in remote-control operation causes the command SRW (SERVICE REQUEST) to be issued to the controller.

It should be taken into consideration in programming that the Signal Generator SMS only functions as a listener and therefore cannot reply to serial or parallel polls.

2.3.7 IEC-bus

The Signal Generator SMS can be remote controlled. The setting instructions are then transmitted via an interface which complies with the standards IEC 625-1 (formerly IEC 66.22), IEEE 488 1975 and DIN IEC 66.22. Data transfer takes place over a byte-serial bus system.

Connection is made at the rear of the instrument using REMOTE CONTROL socket 28 (Fig. 14). Fig. 3 shows the contact occupancy.

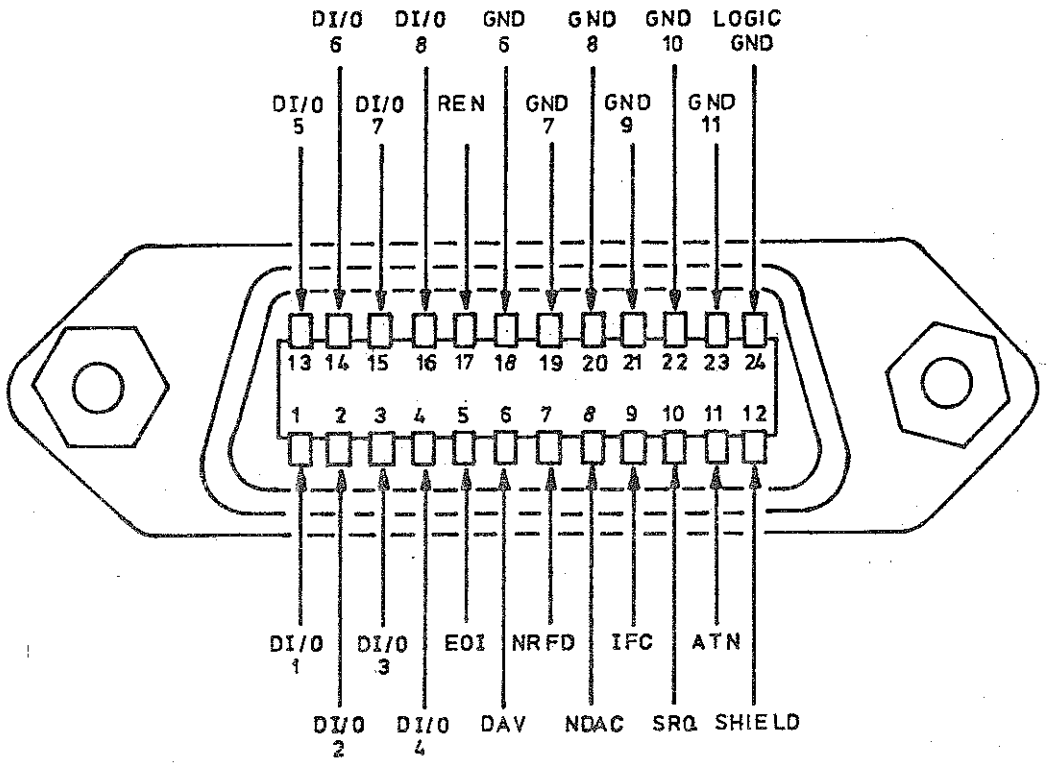


Fig. 3 Contact occupancy of REMOTE CONTROL socket

The American national standard 488-1975 specifies a different socket than the international IEC standard. The SMS is fitted with the most frequently used socket, viz. the one referred to in the 488-1975 standard. Connection to equipment fitted with a 25-pole socket according to the IEC standard is readily possible with the aid of an adapter. Control functions and data transfer are identical.

The standard interface features three groups of bus lines:

1. Data bus - 8 lines identified as DI/O 1 to DI/O 8.
   Data transfer is bit-parallel and byte-serial, the characters being transferred in the ISO 7-bit or ASCII code.
   DI/O 1 is the least significant bit and DI/O 8 the most significant.

2. Control bus of 5 lines

This is used for the transfer of control functions.

ATN (attenuation) is active low during the transfer of an address to the connected equipment.

REN (remote enable) is used for switching the instruments to the remote-control mode.

SRQ (service request). By activating this line, a connected instrument can request the intervention of the controller.

IFC (interface clear) is activated to bring connected instruments into a defined initial condition.

EOI (end or identify). This signal can be used to identify the end of a polls data transmission and is also used for following a service request. The SMS does not process this signal.

3. Handshake bus of 3 lines

This is used for controlling the data transfer sequence.

NRFD (not ready for data). Active low on this line indicates to the controller that one of the connected instruments is not ready for data transfer.

DVD (data valid) is activated by the controller shortly after a new data byte has been applied to the data bus.

NDAC (not data accepted) is kept active low by the connected unit until it has read in the data present on the data bus.

In the IEC-bus system, the Signal Generator SMS functions only as a listener, meaning that it is capable of accepting and executing data and commands from the controller. It cannot provide output of measured values nor reply to polls.

2.3.7.1 Setting the Address

Before the signal generator is connected to the IEC bus, a suitable address must be set within the unit.

The coding switch is mounted on the microprocessor board 302.7111. To set the address, the upper cover must be taken off after removing the side screws. The microprocessor board is fitted at the far right of the rack and can be simply pulled out. Figure 4 shows the arrangement of the coding switch.

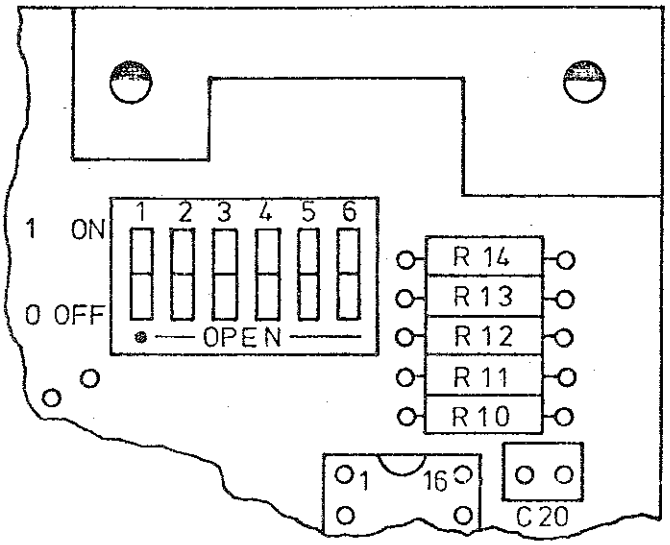


Fig. 4 Arrangement of coding switch

Table 1 shows the settings required for the various possible addresses. The SMS leaves the factory with the decimal address 28.

Table 1

ASCII Character		Binary	Decimal Equivalent
Listen Address	Talk Address	Address Switches A5 A4 A3 A2 A1	
(SPACE)	@	0 0 0 0 0	0
!	A	0 0 0 0 1	1
"	B	0 0 0 1 0	2
#	C	0 0 0 1 1	3
$	D	0 0 1 0 0	4
%	E	0 0 1 0 1	5
&	F	0 0 1 1 0	6
'	G	0 0 1 1 1	7
(	H	0 1 0 0 0	8
)	I	0 1 0 0 1	9
*	J	0 1 0 1 0	10
+	K	0 1 0 1 1	11
,comma	L	0 1 1 0 0	12
-	M	0 1 1 0 1	13
.	N	0 1 1 1 0	14
/	O	0 1 1 1 1	15
0	P	1 0 0 0 0	16
1	Q	1 0 0 0 1	17
2	R	1 0 0 1 0	18
3	S	1 0 0 1 1	19
4	T	1 0 1 0 0	20
5	U	1 0 1 0 1	21
6	V	1 0 1 1 0	22
7	W	1 0 1 1 1	23
8	X	1 1 0 0 0	24
9	Y	1 1 0 0 1	25
:	Z	1 1 0 1 0	26
;		1 1 0 1 1	27
<		1 1 1 0 0	28
=		1 1 1 0 1	29
>		1 1 1 1 0	30

When data are being entered, the limits of the setting ranges of the instrument must be respected. When range limits are exceeded, the OVERFLOW LED 11 starts to flash. If values are entered with a greater resolution than the instrument is capable of setting the values will be rounded to the nearest acceptable figure.

2.3.7.2 Data-transfer Format

In accordance with the IEC Draft Standard data transfer to the SMS uses the format shown in table 2.

Each setting instruction consists of at least an initial character (header) and a final character (delimiter). When setting data are being transferred, the value is contained between these two limiting characters. All characters are transmitted in ISO 7-bit (ASCII) code.

Table 2

Function	Header	Data	Delimiter
Frequency in MHz	A	max. 8 decimal places with or without decimal point	, (comma)
Modulation			
AM m in %	B	max. 3 decimal places with	,
FM Δf in kHz	H	or without decimal point	,
UNMOD	C	none	,
INT 400 Hz	I	none	,
INT 1 kHz	J	none	,
EXT	K	none	,
Level			
in dBm	S	max. 3 1/2 digits with or without decimal point,	,
in dBµV	R	with or without negative sign	,
in µV	P	max. 3 1/2 digits with or	,
in mV	Q	without decimal point	,
Switchover for continuous fine variation	X	none	, ,
RF OFF	Y	0	,
RF ON	Y	1	,
Pause 15 ms	@	none	,

The channel stepping (Δf) and store/recall (STO/RCL) key functions cannot be remote controlled. These settings are obtained by a new command with other setting values.

2.4 Examples

The form of the commands differs according to the calculator make. Table 3 lists examples of commands for setting certain parameters using the most popular desk-top calculators. The decimal address of the SMS is 28.

Table 3

	Tektronix +) 4051,4052	hp 9825	hp 9835/9845	Commodore PET 2001/3001	R&S PPC
Ready	---	---	---	Open 1,28	---
Frequency 123.5 MHz	PRINT@28:"A123.5,"	wrt728,"A123.5,"	OUTPUT728;"A123.5,"	PRINT #1,"A123.5,"	IECOUT28,"A123.5,"
Frequency as variable	LET F=123.5 PRINT@28:"A";F;","	F=123.5 wrt728,"A",F,","	LET F=123.5 OUTPUT728;"A";F;","	LET F=123.5 PRINT #1,"A";STR$(F);","	F=123.5 IECOUT28,"A"+STR$(F)+","
Level -24,8 dBm	PRINT@28:"S-24.8,"	wrt728,"S-24.8,"	OUTPUT728;"S-24.8,"	PRINT #1,"S-24.8,"	IECOUT28,"S-24.8,"
Level -23,7 dBm with continuous fine variation	PRINT@28:"X,S-23.7,"	wrt728,"X,S-23.7,"	OUTPUT728;"X,S-23.7,"	PRINT #1,"X,S-23.7,"	IECOUT28,"X,S-23.7,"
FM 2,8 kHz dev. with 1 kHz INT.	PRINT@28:"H2.8,J,"	wrt728,"H2.8,J,"	OUTPUT728;"H2.8,J,"	PRINT #1,"H2.8,J,"	IECOUT28,"H2.8,J,"
RF OFF	PRINT@28:"YO,"	wrt728,"YO,"	OUTPUT728;"YO,"	PRINT #1,"YO,"	IECOUT28,"YO,"

+When operating the SMS together with the Desk-top Calculator 4051 of Tektronix, the bus line REN (contact 17) must be connected to chassis (contact 18). This can be done by means of a shorting plug.

Special setting commands

Level variation:

The SMS permits the output level to be electronically varied over a range of -10 dB without interrupting it by switching over. To make use of this function in remote-control operation, the following commands are required:

First the output level which is to be varied must be set in the usual manner.

E.g.: ..... "P 24.5,"

A preceding "X" in the next command triggers the electronic variation.

E.g.: ..... "X, P 24.2,"

Every new command for continuous level variation should be preceded by an X. If the output is not preceded by an X, the level is again normally set with the aid of the attenuator.

The variation range of -10 dB must never be exceeded from the first setting without X. Otherwise switchover will occur.

Level programming with the SMS model .04
(rackmount model without attenuator)

In the UNMOD. and FM modes, output levels of +3 to +13 dBm can be set.

In the AM mode, output levels of -3 to +7 dBm can be set.

The maximum level of the selected mode must be reprogrammed every time the UNMOD. or FM mode is changed over to the AM mode or vice versa. The subsequent level setting commands must be preceded by an X.

Examples with the Tektronix Desktop Calculator 4051:

Changing over from the UNMOD. mode to the AM mode:

PRINT 28: "S7,B55,X,S-2," (AM 55%, level -2 dBm)

Other setting commands in the AM mode:

PRINT 28: "B70,X,S-3," (AM 70%, level -3 dBm)
PRINT 28: "X,S7," (same AM, level +7 dBm)

Changing over from the AM mode to the FM mode:

PRINT @ 28: "H100,S13,X,Q500," (FM 100 kHz, level 500 mV)

Other setting commands in the FM mode:

PRINT @ 28: "H12.5,X,Q100," (FM 12.5 kHz, level 1000 mV)
PRINT @ 28: "X,R115," (same FM, level 115 dBµV)

When switching on the SMS, it is set to the UNMOD. mode. First program again the corresponding maximum level:

PRINT 28: "S13,X,S5," (UNMOD., level 5 dBm)

Other setting commands in the UNMOD. mode:

PRINT @28: "X,S3," (UNMOD., level 3 dBm)
PRINT @28: "X,Q700," (UNMOD., level 700 mV)

Changing over from the AM mode to the UNMOD. mode:

PRINT @ 28: "C,S13,X,S12," (UNMOD., level -12 dBm)

Pause:

The time required by the SMS for setting the programmed parameters is approximately 40 ms. There is the danger of one of the units used in an automatic test system already proceeding to the measurement before the SMS has been completely set. To avoid this, an additional pause of 15 ms can be called up in the SMS using this command. Thus bus traffic is halted for the time it usually takes the SMS to set.

E.g.: ..... "A 100, ,".

This pause can be called up several times in a row.

REMOTE/LOCAL

When a controller is connected to the SMS, it is automatically set to REMOTE (for remote control). This state is maintained even after termination of the commands. The LED 12 (Fig. 12) lights and all operating controls on the front panel are disabled. To change over to manual setting, first stop the program run of the controller. Then press the key LOCAL 13 for local operation of the SMS.

Changeover to LOCAL operation can also be accomplished through the controller. To this end, the instruction GTL (GO TO LOCAL) is issued. For resetting to REMOTE operation, the instruction REMOTE must be issued. It is automatically issued with the next instrument setting instruction.

Changeover to LOCAL operation by pressing key 13 can be inhibited by issuing, preferably at the beginning of the program run, the non-recurrent instruction LLO (LOCAL LOCKOUT) via the IEC bus.

RESET

Pressing the power key causes a defined basic setting of the instrument (see 2.3.1). This basic setting can also be obtained through the controller by means of the instruction RESET.

Table 4 lists examples of the above instructions. 28 is the decimal address of the SMS. It corresponds to the full decimal equivalent of 60.

Table 4

	Tektronix 4051/4052	hp 9825	hp 9835/9845	Commodore PET 2001/3001	R&S PPC
Go to Local	WBYTE @60,1:	lcl728	LOCAL728 oder LOCAL7	No such capability	IECLAD28 IECGTL IECUNL
Local lockout	WBYTE @60,17: oder WBYTE @17:	llo7 (für alle Geräte)	LOCAL LOCKOUT7 (für alle Geräte)	No such capability	IECLLO
Remote	WBYTE @60:	rem728 oder rem7	REMOTE728 oder REMOTE7	Only in connection with an instruction	IECREN or by system item-reset
Selected device clear	WBYTE @60,4:	clr728	RESET728	No such capability	IECLAD28 IECSDC IECUNL

3. Maintenance

3.1 Mechanical Maintenance

The SMS does not require any maintenance.

3.2 Electrical Maintenance

Tolerances in this section (if not stated otherwise):
Voltages: ±5%
Frequencies: see data sheet

3.2.1 Measuring Instruments Required

Ref.No.	Instrument	Performance ratings	R&S type	See section
1	RF counter	Range 0.4 to 520 MHz Resolution 10 Hz	part of FAM	3.2.2.2
2	Power meter	Range 0.4 to 520 MHz 3 to 20 mW Z = 50 Ω Error < 0.1 dB	NRS 100.2433.92	3.2.2.3 3.2.2.4 3.2.2.16
3	Standard attenuator	Range 0.4 to 520 MHz 0 to 120 dB, Z = 50 Ω	DPVP 214.8017.52	3.2.2.5
4	Test receiver Frequency controller	Range 25 to 520 MHz Inherent noise < -10 dB/µV	ESU 2 100.1143.02 EZK 255.0010...	3.2.2.5
5	RF wave analyzer	Range 0.4 to 1100 MHz Dynamic range > 70 dB		3.2.2.6 3.2.2.7
6	AF generator	Range 50 Hz to 20 kHz Output voltage > 1 V Z_{out} = 600 Ω Distortion < 0.2%	SRB 100.4094...	3.2.2.9 3.2.2.10 3.2.2.11 3.2.2.12 3.2.2.13 3.2.2.14

Ref.No.	Instrument	Performance ratings	R&S type	See section
7	Demodulator	RF range 0.4 to 520 MHz AF range 50 Hz to 20 kHz AM: 0 to 90% FM: 0 to 125 kHz deviation Distortion < 0.2%	FAM 334.2015...	3.2.2.9 3.2.2.10 3.2.2.11 3.2.2.12 3.2.2.14
8	Distortion meter	Range 50 Hz to 20 kHz Measurement range 0.1 to 10%	part of FAM	3.2.2.11 3.2.2.13
9	AF counter	Range 0.1 to 2 kHz Resolution 1 Hz	part of FAM	3.2.2.8
10	DC power supply	V > 5 V I > 100 mA	NGM 117.7110... or NGR 100.5084...	3.2.2.16 3.2.2.19
11	Deviation meter	Range 0.4 to 520 MHz Inherent spurious deviation < 1.5 Hz (CCITT)	FAM 334.2015...	3.2.2.15
12	Psophometer	Min. input voltage 0.1 V with CCITT weighting filter and rms-responsive rectifier	part of FAM	3.2.2.19
13	Precision extension cable	Z = 50 Ω	SWOB-Z 100.3598.50	3.2.2.17
14	RF millivoltmeter with insertion unit	Range 1 to 520 MHz Sensitivity 100 mV	URV 216.3612...	3.2.2.7
15	Controller	Interface according to IEEE 488 and IEC 625.1	Process Controller PPC 343.3510...	3.2.2.18
16	Power signal generator	Frequency range 25 to 1000 MHz Power ≥ 2 W Z = 50 Ω	SMLU 200.1009...	3.2.2.19

Table 5

3.2.2 Performance Check

3.2.2.1 Checking the Functioning of Display and Keyboard

Check the switch-on state: After switching on the following must be displayed:

Frequency	Modulation	Level
00000000	000	+1000

None of the signal lamps should light.

To check the keyboard, make entries according to section 2.3 and observe display.

3.2.2.2 Checking the Frequency Setting and Accuracy

Settings on the SMS: UNMOD, level approximately 100 mV.

Test setup: Connect the frequency meter to the RF output of the SMS.

Test: Set the following frequencies on the SMS and check with the frequency counter:

110	320.0024	445.75
150	340.0048	445.775
280	340.0049	445.8
281	340.0050	445.85
285	340.0052	445.95
293	340.0056	446.55
297.9901	340.0064	447.35
309	340.0080	448.95
318.0001	340.0112	452.165
318.0152	340.0176	458.6
	340.0304	445.725
	399.8727	

Permissible relative frequency error:

1×10^{-6}/month + 1×10^{-6}/°C (standard reference oscillator)

1×10^{-6}/year + 1×10^{-7} (optional reference oscillator) in the range 0 to 50°.

After warmup, the relative frequency error must be the same at all frequencies.

3.2.2.3 Checking the Error and Frequency Response of the Output Level

Settings on the SMS: a) UNMOD, level 13 dBm

b) AM, m = 0, level 5.1 dBm.

Test setup: Connect power meter to RF output of the SMS.

Test: Measure output level between 0.4 and 520 MHz. The permissible frequency response (difference between maximum and minimum level)
is $\leqq$ 1.8 dB (0.4 to 8 MHz)
$\leqq$ 0.8 dB (8 to 520 MHz).

The permissible error of the output level (departure from level setting)
is $\leqq \pm$1.8 dB (0.4 to 8 MHz)
$\leqq \pm$1.3 dB (8 to 520 MHz).

3.2.2.4 Checking the Fine Level Adjustment

Settings on the SMS: UNMOD, level 11.1 dBm, frequency 130 MHz.

Test setup: Connect the power meter to the RF output of the SMS.

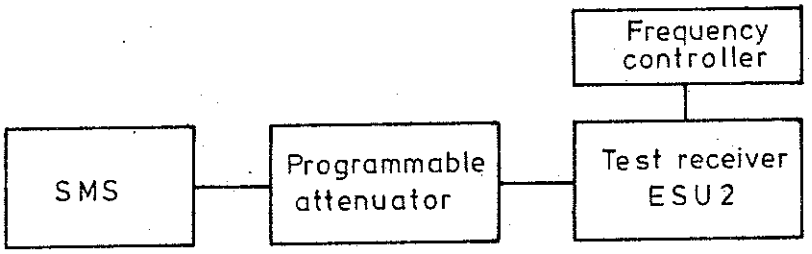
Test: Reduce level to 1.1 dBm by means of 0.1-dB key and check the level steps on the power meter. The permissible deviation is $\pm$0.5 dB at 1.1 dBm.

If the level has dropped below 1.1 dBm by accident during fine adjustment, re-enter level of 11.1 dBm and subsequently reduce by means of the 0.1-dB key.

3.2.2.5 Checking the RF Attenuator Error

Settings on the SMS: UNMOD., level 13 dBm, frequency 131 MHz.

Test setup:



Test: Set the attenuator to 112 dB.
Set test receiver to a frequency of 131 MHz and linear average-value indication and select a -10 dB level and 15-kHz bandwidth.
Then check the level at the following settings:

Level SMS (dBm)	Attenuation DPVP (dB)
13	112
11	110
9	108
5	104
3	102
-7	92
-27	72
-67	32
-87	12

Table 6

The permissible level error referred to 13 dBm level setting on the SMS is $\leq \pm 0.2$ dB.

3.2.2.6 Checking the Suppression of Non-harmonic Spurious Signals

Settings on the SMS: UNMOD., level 3 dB, frequency 0.4 to 520 MHz.

Test setup: Connect the RF wave analyzer to the RF output of the SMS.

Test: The suppression of non-harmonic spurious signals in the range 0.4 to 520 MHz is preferably checked at the following frequencies:

Frequency setting on the SMS	Frequency of non-harmonic spurious signals
Range 0.4 to 129.9999 MHz	$\begin{cases} 380 + f_{SMS} \\ 380 \end{cases}$
129	251
Range 110 to 129.9999	$380 - 2\ f_{SMS}$
Range 75 to 129.999	$\lvert 380 - 3\ f_{SMS} \rvert$
319	40, 340
320	80, 300
439	80, 460
440	40, 420

Table 7

Minimum permissible suppression of non-harmonic spurious waves: $\geq$ 60 dB.

3.2.2.7 Checking the Suppression of Harmonics

Settings on the SMS: UNMOD., level 3 dBm, frequency 0.4 to 520 MHz.

Test setup: Connect the RF wave analyzer to the RF output of the SMS.

Test: Minimum permissible suppression of harmonics in the range 0.4 to 520 MHz: $\geq$ 30 dB.

3.2.2.8 Checking the Internal Modulation Frequencies

Settings on the SMS: AM INT a) 400 Hz
b) 1000 Hz.

Test setup: Connect the AF counter to the modulation socket on the front panel.

Test: The permissible frequency error is $\pm$3%. The output voltage should be between 0.95 V and 1.05 V.

3.2.2.9 Checking the Modulation Attenuator

Settings on the SMS: FM EXT., deviation 100 kHz, level 3 dBm, frequency 460 MHz.

Test setup: See illustration in section 3.2.2.11.
Modulation signal 1 kHz. Vary voltage until deviation of 100 kHz is measured.

Test: Set the following deviations and check by means of modulation meter:
9, 16, 16.5, 17, 18, 20, 24, 32, 64 kHz.
Permissible error: $\pm$2%.
NOTE: Select small enough AF bandwidth (e.g. 3 kHz) on the demodulator to ensure that no additional error due to noise is obtained when measuring small deviations.

3.2.2.10 Checking the FM Error

Settings on the SMS: FM, deviation 100 kHz, level 3 dBm,
150, 250, 460, 500, 920+), 1000+) MHz

Test setup: See illustration in section 3.2.2.11.
Modulation voltage 1 V $\pm$1%.

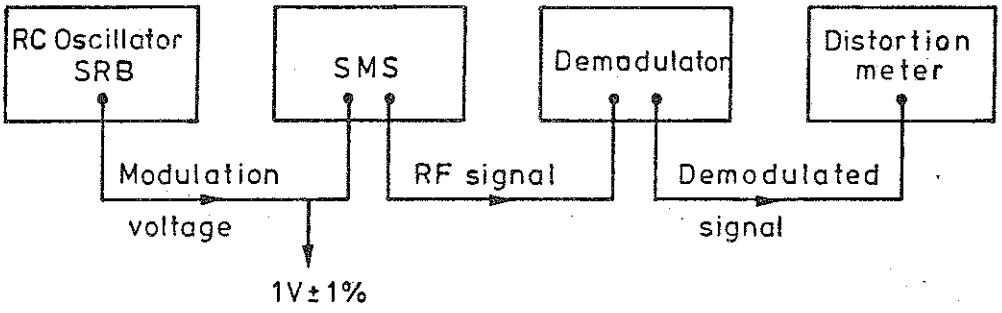
Test: Permissible error of the frequency deviation at modulation frequencies of 400 Hz and 1000 Hz internal and 1 and 20 kHz external: $\leq \pm$5%.

+) If fitted with Option SMS B-2.

3.2.2.11 Checking the FM Distortion

Settings on the SMS: FM, level 3 dBm.

Test setup:



Test: Check the modulation distortion at the following settings:

Frequency of the SMS (MHz)	Modulation frequency	Deviation	Permissible distortion
150; 520	400/1000 Hz internal 1 kHz external	75 kHz 75 kHz	≦ 1% ≦ 1%

Table 8

3.2.2.12 Checking the AM Error

Settings on the SMS: AM 1 to 90%, level 5.1 dBm
a) 0.4 MHz, 5 MHz
b) 350 MHz

Test setup: See illustration in section 3.2.2.11.

Test: Check error of the modulation depth at the following frequencies:

Frequency of the SMS	Modulation frequency
a) 0.4/5 MHz	0.4/1 kHz internal 1 /5 kHz external
b) 350 MHz	0.4/1 kHz internal 1 /20 kHz external

Permissible errors: a) < ±8%
b) < ±5%

Table 9

3.2.2.13 Checking the Envelope Distortion

Settings on the SMS: AM 80%, level 5.1 dBm

a) 0.4/5 MHz

b) 350 MHz

Test setup: See illustration in section 3.2.2.11.

Test: Measure the envelope distortion at the following frequencies:

	Frequency of the SMS	Modulation frequency	Permissible distortion
a)	0.4/5 MHz	1 kHz internal/ external	$\leqq$1.5%
b)	350 MHz	1 kHz internal/ external	$\leqq$1.5%

Table 10

3.2.2.14 Checking the Phase Modulation

Settings on the SMS: AM external 0%, level 3 dBm, frequency 130 MHz.

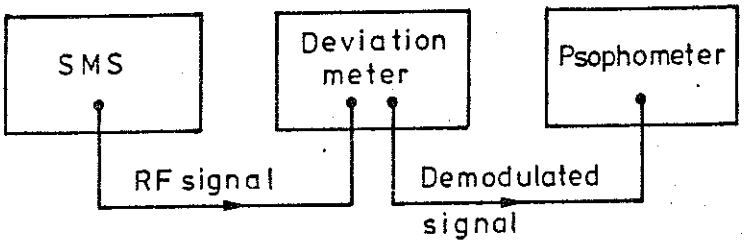
Test setup: See illustration in section 3.2.2.11.

Test: Apply AC voltage of 1.00 V ±1% (50 Hz to 3 kHz) to the modulation socket on the rear panel. This must produce a phase modulation of 5 rad (±5%). This corresponds to a deviation of 5 kHz at a modulation frequency of 1.00 kHz.

3.2.2.15 Checking the Spurious Deviation

Settings on the SMS: UNMOD., level 3 dBm, frequencies 129 MHz, 520 MHz.

Test setup:



Test: Measure spurious deviation by means of CCITT weighting filter (0,3 to 3 kHz) and rms-responsive rectifier. (The inherent spurious deviation of the deviation meter used must be < 1.5 Hz)
Permissible spurious deviation: $\leqq$ 4 Hz.

3.2.2.16 Checking the External ALC

Settings on the SMS: FM EXT., 0 kHz deviation, level 13 dBm, frequency 130 MHz.

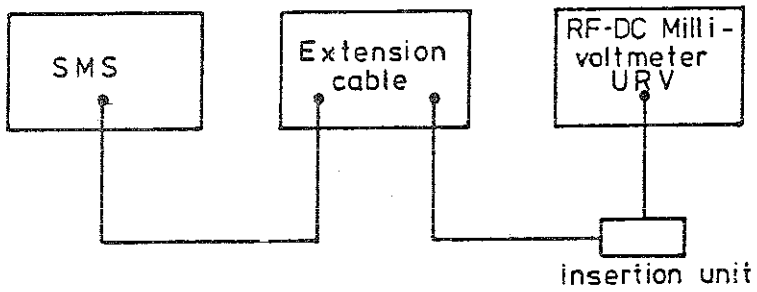
Test setup: Connect power meter to the RF output of the SMS.

Test: Apply DC voltage to give a reduction of the RF level of 6 dB. The applied DC voltage should be +1.41 V (±5%).

3.2.2.17 Checking the VSWR

Settings on the SMS: AM 0%, level -3 dBm
Frequency 100 to 520 MHz

Test setup:



Test: Vary the test frequency until a voltage maximum is measured. Subsequently vary the frequency (Δf = 7.5 MHz at a cable length of 10 m) until the adjacent voltage minimum is measured.

$$VSWR = \frac{V_{max}}{V_{min}}.$$

3.2.2.18 Checking the Interface Functions

Operate the SMS via a controller, such as Desktop Calculator PPC. Program all setting commands given in section 2.3.7 and check the correct execution of the commands by the SMS on the front panel displays.

3.2.2.19 Checking the Response Threshold of the Overload Protection

Settings on the SMS: UNMOD., level -27 dBm, frequency 130 MHz.

Test setup 1: Feed a DC voltage of 0 to 6 V to the RF output of the SMS (any polarity).

Test: Increase DC voltage starting from 0 V. At > 1 V, the overload protection should respond. If so, the LED of the RF OFF key 19 lights.

Test setup 2: Apply frequency between 25 and 1000 MHz to the RF output from a power signal generator such as the SMLU, RF power 0 to 2 W.

At a power level +25 $\leq$P $\leq$+30 dBm the overload protection should respond. When this happens, the LED of the RF OFF Key 19 lights.

3.2.2.20 Performance Test Report

R&S
Signal Generator SMS
Id. No. 302.4012.02
Serial No. .....

Date .....

Name .....

Ref.No.	Characteristic		Measurement acc. to section	Min.	Actual	Max.	Unit
1	Functional check of display and keyboard		3.2.2.1	-		-	
2	Frequency error at 500 MHz		3.2.2.2				
	a) Temperature effect	Standard		-		±500	Hz/°K
		Option SMS B-1		-		±50	Hz
	b) Aging	Standard		-		±500	Hz/mon
		Option SMS B-1		-		±25	Hz/mon
3	Spurious deviation with CCITT weighting filter		3.2.2.15				
		129 MHz		-		4	Hz
		520 MHz		-		4	Hz
	with Option SMS B-2	1040 MHz		-		8	Hz
4	Suppression of non-harmonic spurious signals		3.2.2.6				
	at	108 MHz		60		-	dB
		119 MHz		60		-	dB
		129 MHz		60		-	dB
	with Option SMS B-2	530 MHz		20		-	dB
		1040 MHz		20		-	dB

Ref.No.	Characteristic	Measurement acc. to section	Min.	Actual	Max.	Unit
5	Suppression of harmonics	3.2.2.7				
	0.4 to 520 MHz		30		-	dB
	with Option SMS B-2 520 to 1040 MHz		30		-	dB
6	Error of output level	3.2.2.3				
	0.4 to 8 MHz		-1.8		+1.8	dB
	8 to 520 MHz		-1.3		+1.3	dB
	with Option SMS B-2 520 to 1040 MHz		-1.8		+1.8	dB
7	Error of output level with fine level adjustment by means of 0.1-dB keys	3.2.2.4	-0.5		+0.5	dB
8	Frequency response	3.2.2.3				
	0.4 to 8 MHz		-		1.8	dB
	8 to 520 MHz		-		0.8	dB
9	Internal modulation frequencies	3.2.2.8				
	400 Hz		388		412	Hz
	1000 Hz		970		1030	Hz
	Output voltage		0.95		1.05	V

Ref.No.	Characteristic	Measurement acc. to section	Min.	Actual	Max.	Unit
10	AM error	3.2.2.12				
	1 MHz m = 40%		36.8		43.2	%
	1 MHz m = 90%		82.8		97.2	%
	350 MHz m = 40%		38		42	%
	350 MHz m = 90%		85,5		94,5	%
11	Envelope distortion	3.2.2.13				
	0.4 MHz, m = 80% at 1 kHz		-		1.5	%
	350 MHz, m = 80% at 1 kHz		-		1.5	%
	Option SMS B-2:					
	1040 MHz, m = 80% at 1 kHz		-		5	%
12	Error of modulation attenuator	3.2.2.9				
	460 MHz deviation = 9 kHz		8.82		9.18	kHz
	16 kHz		15.68		16.32	kHz
	16.5 kHz		16.17		16.83	kHz
	17 kHz		16.66		17.34	kHz
	18 kHz		17.64		18.36	kHz
	20 kHz		19.60		20.4	kHz
	24 kHz		23.52		24.48	kHz
	32 kHz		31.36		32.64	kHz
	64 kHz		62.72		65.28	kHz

Ref.No.	Characteristic	Measurement acc. to section	Min.	Actual	Max.	Unit
13	FM error 100 kHz deviation 150 MHz 250 MHz 460 MHz 500 MHz with Option SMS B-2 920 MHz 1000 MHz	3.2.2.10	 95 95 95 95 95 95		 105 105 105 105 105 105	 kHz kHz kHz kHz kHz kHz
14	FM distortion 150 MHz f_{mod} = 1 kHz 520 MHz deviation = 75 kHz	3.2.2.11	 - -		 1 1	 % %
15	Phase modulation 520 MHz f_{mod} = 1 kHz	3.2.2.14	4.75		5.25	rad
16	ALC sensitivity for ΔP = 6 dB 130 MHz	3.2.2.16	1.34		1.48	V

Ref. No.	Characteristic	Measurement acc. to section	Min.	Actual	Max.	Unit
17	VSWR	3.2.2.17				
	270 MHz		-		1.2	
	510 MHz		-		1.2	
18	Checking the interface function	3.2.2.18	-		-	(V)
19	Response threshold of overload protection					
	DC		-		5	V
	RF		-		1	W

4. Circuit Description

4.1 Overall Function

The output frequency of the Signal Generator SMS is derived by frequency synthesis from a 10-MHz reference frequency of crystal stability. The central frequency-processing unit is the phase-locked loop of the two main oscillators 260 to 380 MHz and 380 to 520 MHz (PC boards Y3 and Y4). A reference frequency obtained by frequency addition in the functional group "mixer oscillator" (Y7) from the signals of the two interpolation oscillators (Y7, Y8) is fed to the phase detector of the functional group "master oscillators". One of the four fixed frequencies 300, 340, 420 or 460 MHz is fed to the mixer in the feedback path of the phase-locked loop of the main oscillators (Y3). The fixed frequencies are obtained by mixing the signals of the two auxiliary oscillators, 80 MHz (or 40 MHz) (Y6) and 380 MHz (Y5).

The frequency of the signal in the feedback path of the phase-locked loops of the main oscillators at the phase detector input is given by

$$f = \left|(f_H - f_{osc})\right| \frac{1}{M}$$

where f_H is one of the four fixed frequencies and M is the division factor of the frequency divider. At synchronization, the frequencies of the two signals at the phase detector inputs are equal, i.e.

$$f_{ref} = \left|(f_H - f_{osc})\right| \frac{1}{M} .$$

Accordingly,

$$f_{osc} = f_H \pm M \; f_{ref},$$

where f_{ref} is the frequency derived from the interpolation oscillators. The oscillator frequency f_{osc} is always so adjusted by the phase-locked loop that this relation is fulfilled.

By addition of the two interpolation frequencies in the functional group "mixer oscillator" (Y7) the signal f_{ref} with a frequency from 2.0 to 2.2 MHz is obtained at the output of the board Y7. This signal can be varied by varying the P divider in 100-Hz/M steps and the N divider in 50-kHz/M or 25-kHz/M steps.

The 50-kHz/M step size applies if $M > 19$ and the 25-kHz/M step size if $M \leq 19$. These step sizes are obtained by the 2:1 frequency divider connected in cascade with the M divider on Y6 being switched into circuit only for division factors $M \leq 19$. The dependency of the step sizes on the division factor M is due to a frequency divider with the same division factor M as in the phase-locked loop of the main oscillators being connected ahead of the interpolation oscillators on the board Y6. This ensures constant 100-Hz and 50-kHz step sizes of the main oscillators independent of the division factor M.

Variation of the P and the N dividers of the interpolation oscillators permits the frequency of the main oscillators to be varied in 100-Hz steps over a range of 2 MHz.

The frequency division factor M is adjustable between 10 and 30. By each variation of M by one step the frequency of the main oscillator is varied by a constant step size of 2 MHz over a range of 40 MHz.

The main oscillators are tunable in the frequency ranges $f_H \pm$(20 to 60) MHz (f_H = one of the four fixed frequencies 300, 340, 420, 460 MHz) by setting the P, N and M frequency dividers accordingly.

Fig. 5 shows the relation between the four fixed frequencies, the division factor M and the frequency of the main oscillators.

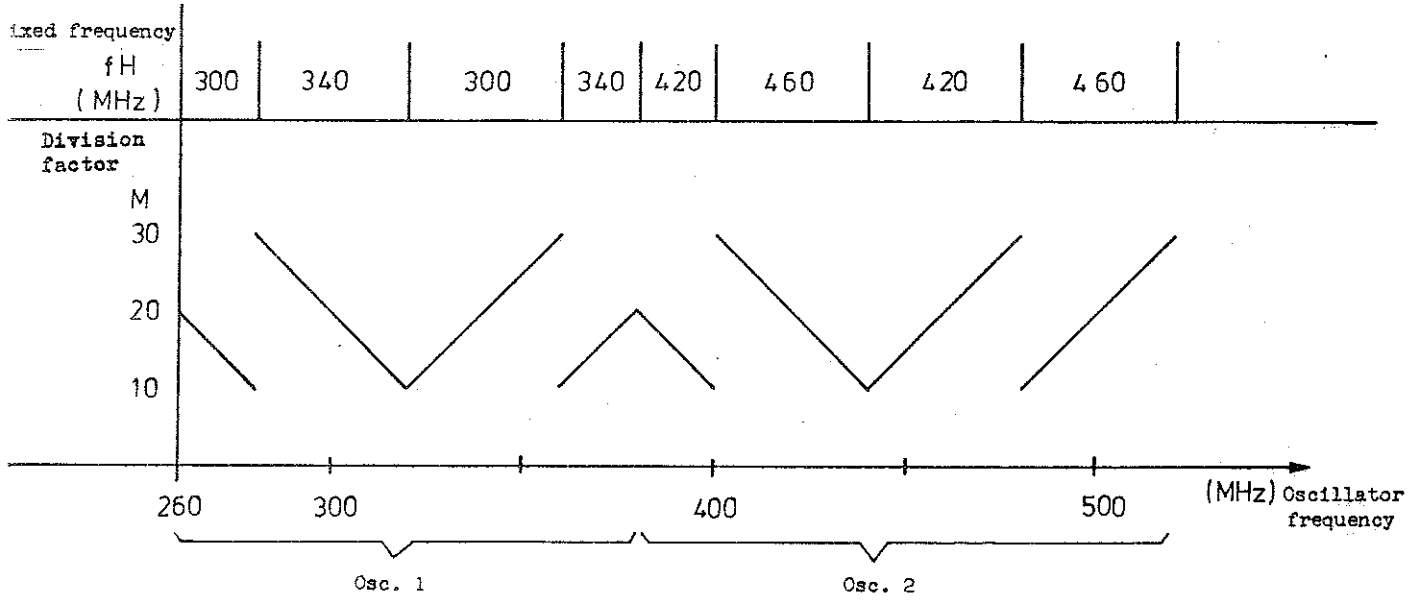


Fig. 5 Relation between the four fixed frequencies, the division factor M and the frequency of the main oscillators.

From 260 to 520 MHz the output frequency of the SMS is the frequency of the main oscillators. The range 130 to 260 MHz is produced on the board 2 by halving the frequency. The output frequencies from 0.4 to 130 MHz are obtained by mixing with the 380-MHz signal on board Y1.

The functional group "fixed 80-MHz oscillator" (Y6) represents a phase-synchronized frequency modulator. With this type of modulator the limit frequency of the phase-locked loop is far below the lowest modulation frequency. Thus synchronization is maintained even when the oscillator signal is modulated. The reference value for the modulation is produced on the board Y10 "modulation control". The modulation of the fixed 80-MHz oscillator is superimposed on the phase-locked loop of the main oscillators by means of the mixer.

Level control and amplitude modulation are combined in one control loop on the boards Y1 and Y2, the modulation signal being superimposed on the reference value of the level control. The reference value of the level control and the AM modulation signal are produced on the board Y10 "modulation control".

The output attenuator can be mechanically set in steps of 2 dB up to a maximum attenuation of 138 dB. The 0.1-dB steps are electronically set via the level control. Level control permits a total reduction of the RF level by 10 dB in steps of 0.1-dB steps, starting from a maximum level of +13 dBm.

All settings of the SMS are controlled by the microprocessor on board Y11. These settings include e.g. the setting of the M, N and P frequency dividers, the setting of the modulation and level dividers on board Y10 for producing the reference values for modulation and level control, setting of the output attenuator and switchover of the main oscillators 260 to 380 MHz and 380 to 520 MHz.

The microprocessor constantly interrogates the keyboard and the IEC bus. From the data entered it calculates the necessary settings and executes them. Furthermore the microprocessor controls the readouts.

4.2 Oscillator Y3

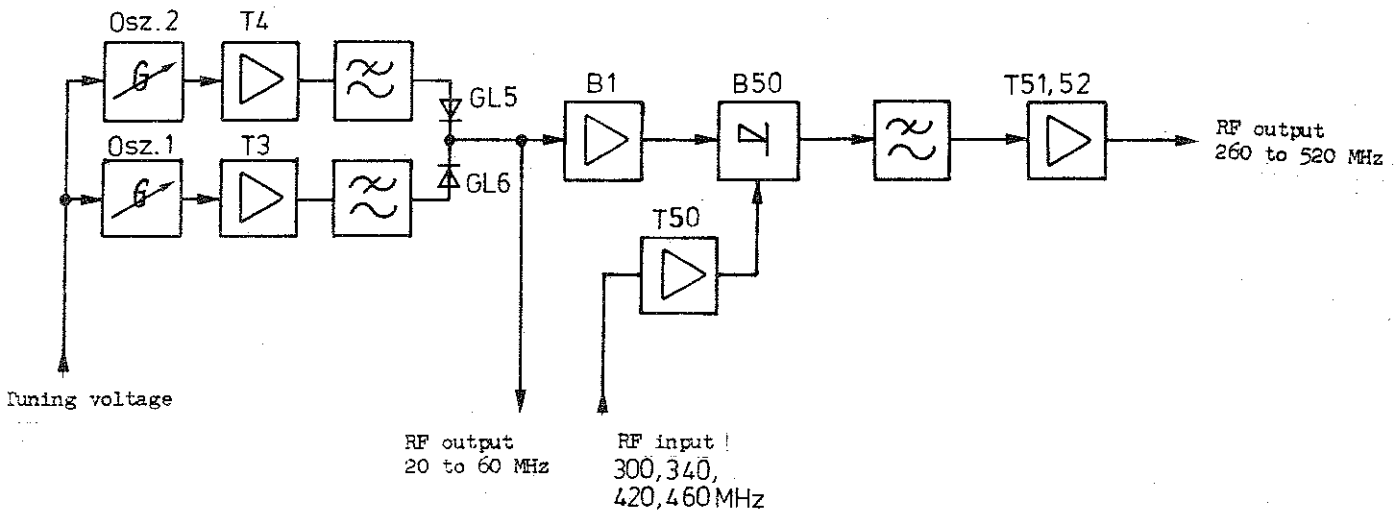


Fig. 6 Block diagram of the oscillator Y3.

The oscillator unit Y3 contains two varicap-tuned RF oscillators. One of the two is always switched on and the other one switched off. The frequency range of oscillator 1 is 260 to 380 MHz and that of oscillator 2 380 to 520 MHz. The two oscillator outputs are taken to the common output "RF output 260 to 520 MHz" via switching diodes.

The signal derived from the oscillator signal by conversion and available at the output "RF output 20 to 60 MHz" is taken to a phase detector for phase control of the oscillators. The phase detector and the associated phase control circuit are mounted on the phase control board. The functioning of the phase control is described in section 4.3.

Both oscillators use a FET as active device. They are of the negative impedance type. A varicap-tuned (GL1, GL2) inductance (L5, L6) is connected in parallel with the gate terminal. The oscillator performance is controlled by the drain current. The optimum operating point is set by means of the potentiometers R1, R2. The oscillator is inductively coupled out via the coils L7, L8.

The level is boosted by 6 dB in the following amplifier stages (T3, T4), which are also used for decoupling. The subsequent lowpass filters enhance the suppression of harmonics of the oscillator signal to 40 dB.

The oscillators and amplifier stages are switched on and off via the transistors T5, T7, which connect the oscillators to the +20-V operating voltage. The transistors T5, T7, in turn, are switched by means of a TTL signal at the oscillator switchover input 2b. If the input 2b is at low level the oscillator 1 is switched on, T7 and the switching diode GL6 are conducting and T5 and the switching diode GL5 are cut off. If the input 2b is at high level the oscillator 2 is switched on, T5 and the switching diode GL5 are conducting and T7 and GL6 are cut off.

The tuning voltage for both oscillators is applied via a common line.

The signal level at output 4a, b "RF output 260 to 520 MHz" is between -2 dBm and +4 dBm. The suppression of harmonics is approximately 40 dB.

The integrated broadband amplifier B1 is high-impedance coupled to the "RF output 260 to 520 MHz". The amplifier output signal boosted to 4 dBm is available at the LO input of the mixer B50. One of the fixed frequencies (300, 340, 420 or 460 MHz) is present at the RF input of the mixer. The signal level at the "RF input 300, 340, 420, 460 MHz" is about -20 dBm. It is boosted by 6 dB in the amplifier stage T50.

Utilizing both conversion sidebands a signal between 20 and 60 MHz is obtained at the mixer output. The following lowpass filter with a cutoff frequency of 70 MHz removes unwanted mixture products. The level of the signal at the RF output 20 to 60 MHz is about 0 dBm.

4.3 Phase Control Loop Y4

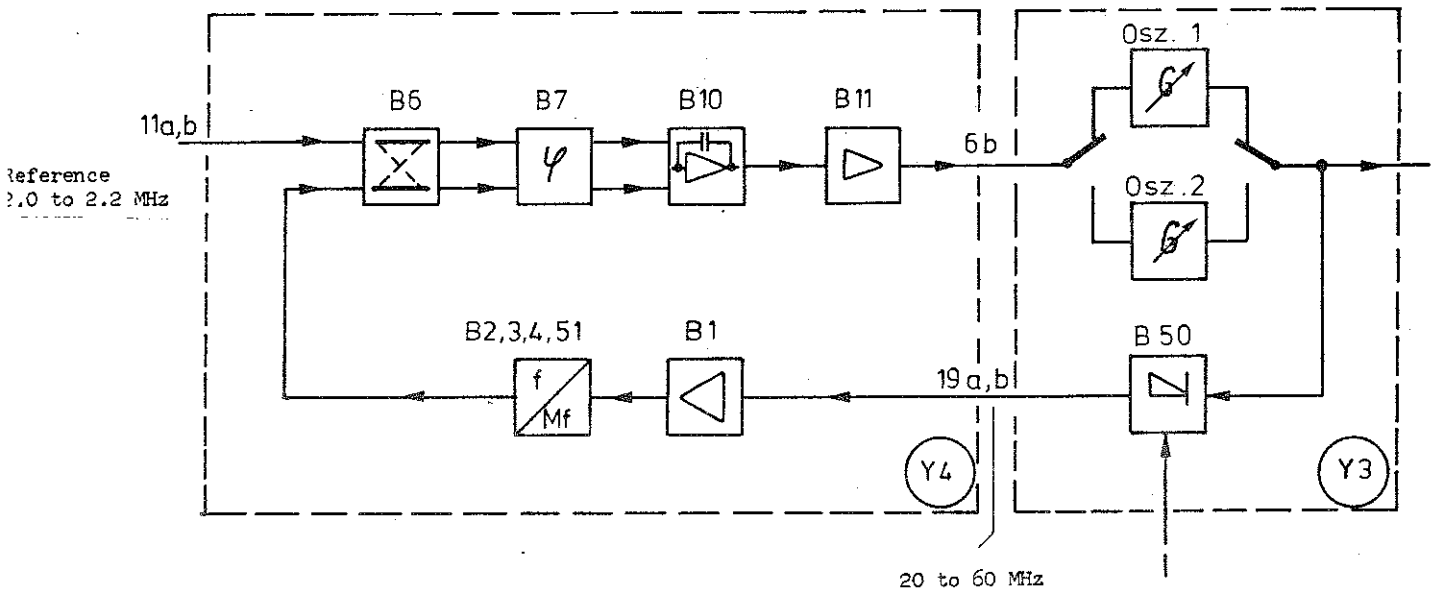


Fig. 7 Block diagram of the phase control loop.

The phase control board together with the oscillator board forms a phase-locked loop holding oscillators 1 and 2 in phase synchronization with the reference frequency derived from the two interpolation oscillators.

The oscillator signal is converted down to 20 to 60 MHz in the mixer B1 in the feedback branch of the control loop. Frequency division by the factor M is accomplished in the M divider which is also connected in the feedback path. M is adjustable to between 10 and 30. At synchronization both input signals at the phase detector B7 are of equal frequency. The pulse-shaped output signals of the phase detector are applied to the integrator B10 where the control voltage is produced. The tuning voltage for the two master oscillators is obtained from the control voltage and a fixed DC voltage in the summing amplifier B11.

For the frequency ranges 260 to 320 MHz and 380 to 440 MHz the frequency available at the output of the M divider is $(f_H - f_{osc}):M$ and for the frequency ranges 320 to 380 MHz and 440 to 520 MHz it is $(f_{osc} - f_H):M$.

Hence when changing the oscillator frequency, in one case the change in frequency at the divider output is in the same direction and in the other case in the opposite direction. In order to obtain the correct direction for the lock-in of the control loop in both cases the inputs of the phase detector B7 are reversed by the gate module B6.

When the control inputs 10, 12 of B6 are at low/high levels the input 9 is connected through to the output 15 and input 4 to output 2. When the control inputs 10, 12 are at high/low levels the input 9 is connected through to the output 2 and the input 4 to the output 15.

The M divider consists of the two programmable counter modules B2 and B3, the gate module B51 for decoding the counter outputs and of the latch flipflop B4. The counters operate as down counters, i.e. they count from the preset figure M corresponding to the bit pattern present at the data inputs D_0 to D_3 down to zero. The division factor is present at the data inputs in binary code, the least significant bits (LSB) being allocated to B2 and the most significant bit (MSB), which is 2^4, to B3. Every positive edge of the clock signal decrements the counter. When the counter B2 has reached the count 0000 the carryover output C OUT goes low for one clock period. The carry is carried over to the following counter B3 via the input C IN, the counter B3 being decremented by 1 with each carryover. The condition for counter presetting is decoded from the bit pattern present at the counter outputs Q_0 to Q_3 of B2 and B3 two clock pulses prior to reaching the count 0000. The pulse trains thus obtained are shown in Fig. 8, where the divider is preset for the division factor 12.

The control inputs S1 are at high level during the count phase. If the count 2 is reached the D input of the flipflop B4 goes high. With the next clock pulse the flipflop also goes high and, as a result, the control inputs S1 and the D input go low. The following clock pulse sets the counter and supplies a low signal to the flipflop so that the control inputs S1 again go high and the count cycle is restarted.

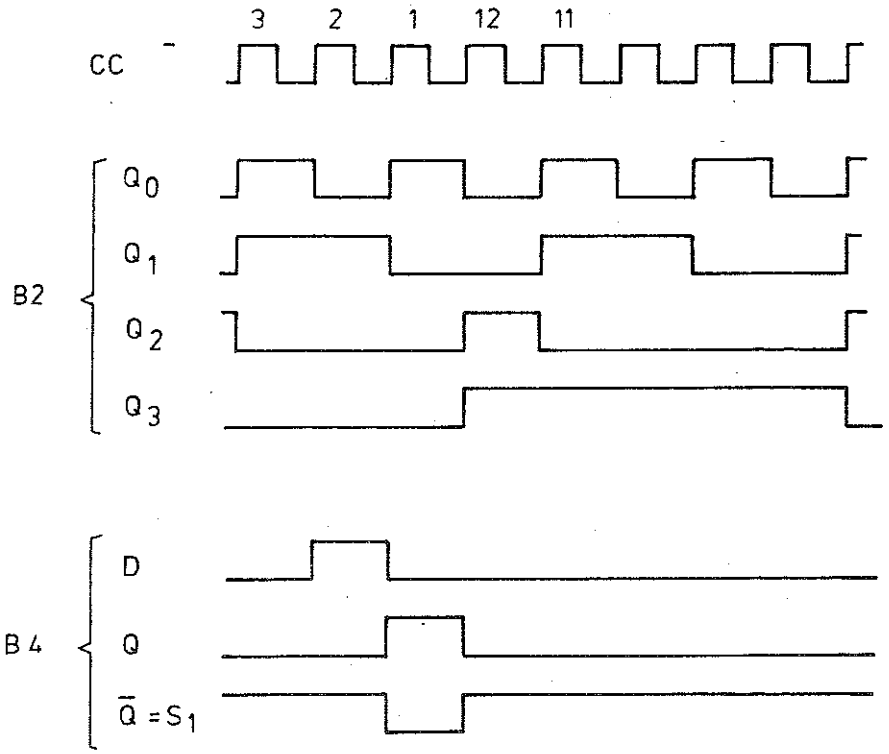


Fig. 8 Pulse train of the counter outputs Q_0 to Q_3.

Line amplifier B1 connected ahead of the frequency divider amplifies and converts the 20-to-60-MHz input signal to ECL level.

The digital phase detector B7 is an edge-triggered flipflop. Triggering is accomplished by the positive edges of the signals at the inputs 6 and 9. The outputs 3 and 12 supply pulses the duty cycle of which depends on the phase or frequency difference of the two input signals. If the frequency of the two input signals differs the integrator voltage across C43 is corrected by means of the output pulses of the phase detector until the frequencies of the two input signals at the phase detector input are equal. When the frequencies are equal the integrator is only pulsed so as to ensure a constant integrator voltage.

The Schmitt trigger circuits B12I/II prevent the control from running to the operating limits of the integrator B10 during the lock-in process.

The dynamic range of B10 is ±6 V. The switch-on thresholds of the Schmitt trigger circuits C12I/II are -12 V and +12 V. The switch-off thresholds of both Schmitt trigger circuits are 0 V. As soon as the output voltage of B10 reaches +12 V or -12 V, the Schmitt trigger B13/II or B12/I causes the diode GL4 or GL3 to conduct. The current through these diodes recharges the integrator to 0 V.

The resistive dividers R109/R111 to R113 and R109/R114 to R117 permit four fixed voltages per oscillator to be set. B19 and B20 each contain four FET switches. The switching information for the FET switches is obtained in the decoder B18 from the control signals A, B, C. The oscillator tuning voltage is produced by adding the fixed voltage and the control voltage of the integrator B10 in B11.

In order to keep the gain of the control loop constant, the control voltage gain is changed over. By switching over the resistors R143, 144, 145 - depending on the setting of the M divider - the gain variation of the frequency divider in the feedback path of the control loop is compensated for. By switching over the resistors R94 to R98 - depending on the control signals A, B, C - the variation of the tuning sensitivity of the oscillators is compensated for.

4.4 100-Hz Interpolation Oscillator Y8

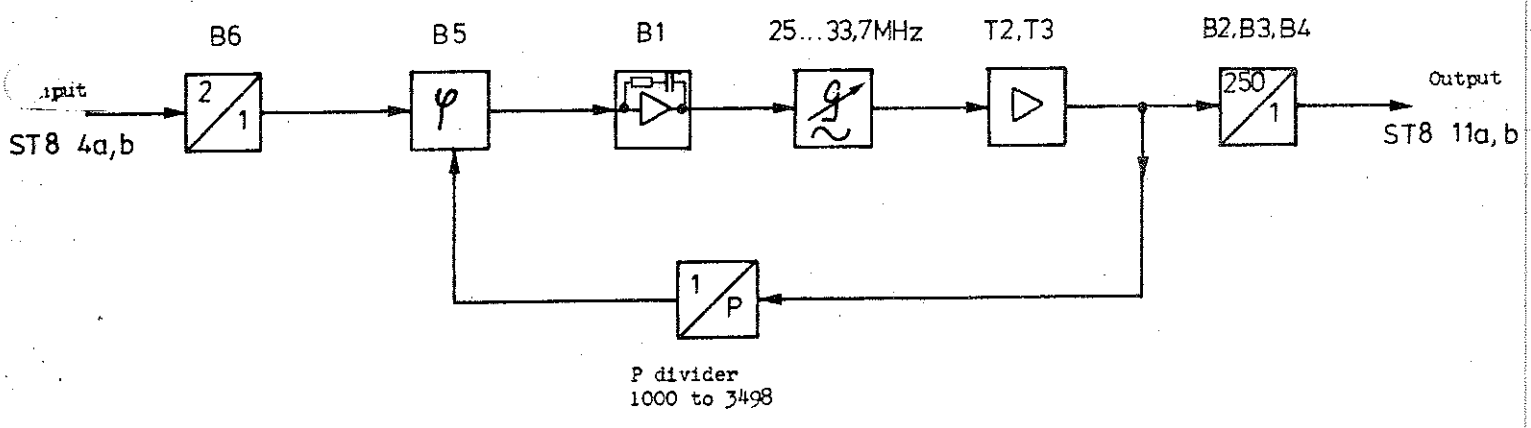


Fig. 9 Block diagram of the interpolation oscillator.

The 100-Hz interpolation oscillator unit comprises a phase-locked loop with the programmable frequency divider P in its feedback path. The frequency at the output can be varied between 100 and 135 kHz with a frequency step size of 1 kHz/M by variation of the division factor P. M equals the division factor of the frequency divider of the phase control loop Y4. The digital phase detector B5 is a slope-triggered flipflop with three-state output. Triggering is accomplished by the positive slopes of the signals at the signal input 14 and at the reference input 3. Output 13 supplies pulses with a voltage level (low or high) and duty cycle dependent on the phase and frequency difference between the input signals. If the frequencies of the two input signals differ the integrator voltage across C1 is corrected by means of the output pulses of the phase detector until both signals at the phase detector have the same frequency. As soon as this is the case C1 is only charged to the extent necessary to keep the integrator voltage constant. The oscillator is tunable through the range from 25 MHz to 33.7 MHz with the aid of the triple varicap GL3.

The P divider consists of three programmable counter modules B7, B8, B9 and the latch flipflop B10. B7, B8 and B9 are connected in cascade, operating as an asynchronous down counter. The division factor is present in binary code at the 12 data inputs, the LSB being present at B9 and the MSB at B7. The borrow outputs of the counters B7 and B8 supply a negative pulse with a pulse duration corresponding to the input pulse at the count down inputs as soon as the counters have reached the count 0000.

The borrow outputs of B7, B8 and the counter output Q_D of B9 are combined via an OR circuit. In this way the condition for presetting the counters is decoded. As soon as the borrow outputs of B7, and the Q_D output of B9 go low the flipflop B10 is cleared via the preset input. At the count 3 the counter output Q of B9 goes low. With the next clock pulse the low signal is transferred to the flipflop B10I.

At the count 1 the Q and $\bar{Q}$ outputs of B10/II go low and high, respectively. A low signal is supplied to the load inputs of the counter modules, resetting the counters. The high signal present at the Q output of B10/II, B10/I is reset via the preset input. After the load inputs have gone high again the new count cycle starts.

The data inputs of the counter modules are set by the I/O expander B11. The setting data are read in at the input port P2, transferred to the output ports P4 to P7 and stored. The control signals E, F, G and H, the functions of which are listed in the Tables 11 and 12, are present at the output port P4.

Control signal	HIGH	LOW	
E	Lowpass filter 260 MHz	Lowpass filter 190 MHz	Y2
F	Mixer on	Mixer off	Y1
G	Doubler on	Doubler off	
H	AM slow Y10		

Table 11

	0.4 to 5 MHz	5 to 130 MHz	130 to 190 MHz	190 to 260 MHz	260 to 520 MHz	520 to 1040 MHz
E	L	L	L	H	L	L
F	H	H	L	L	L	L
G	L	L	L	L	L	H
H	H	L	L	L	L	L

Table 12

4.5 50-kHz Interpolation Oscillator Y7

The output signal of the 100-Hz interpolation oscillator board Y8 is applied to the input ST7.11a, b. The frequency 500/M (kHz) for $M > 19$ or 250/M (kHz) for $M \leq 19$ is applied to the input ST7.4a, b, M being the division factor of the frequency divider of Y4. The programmable divider N is connected in the feedback path of the phase-locked loop of the 50-kHz interpolation oscillator. The division factor N permits the frequency of the 50-kHz interpolation oscillator to be varied in steps of 500/M (kHz) or 250/M (kHz).

The frequencies of the 100-Hz interpolation oscillator (Y8) and of the 50-kHz interpolation oscillator (Y7) are added in the phase-locked loop of the mixer oscillator. The sum frequency equals the frequency of the mixer oscillator.

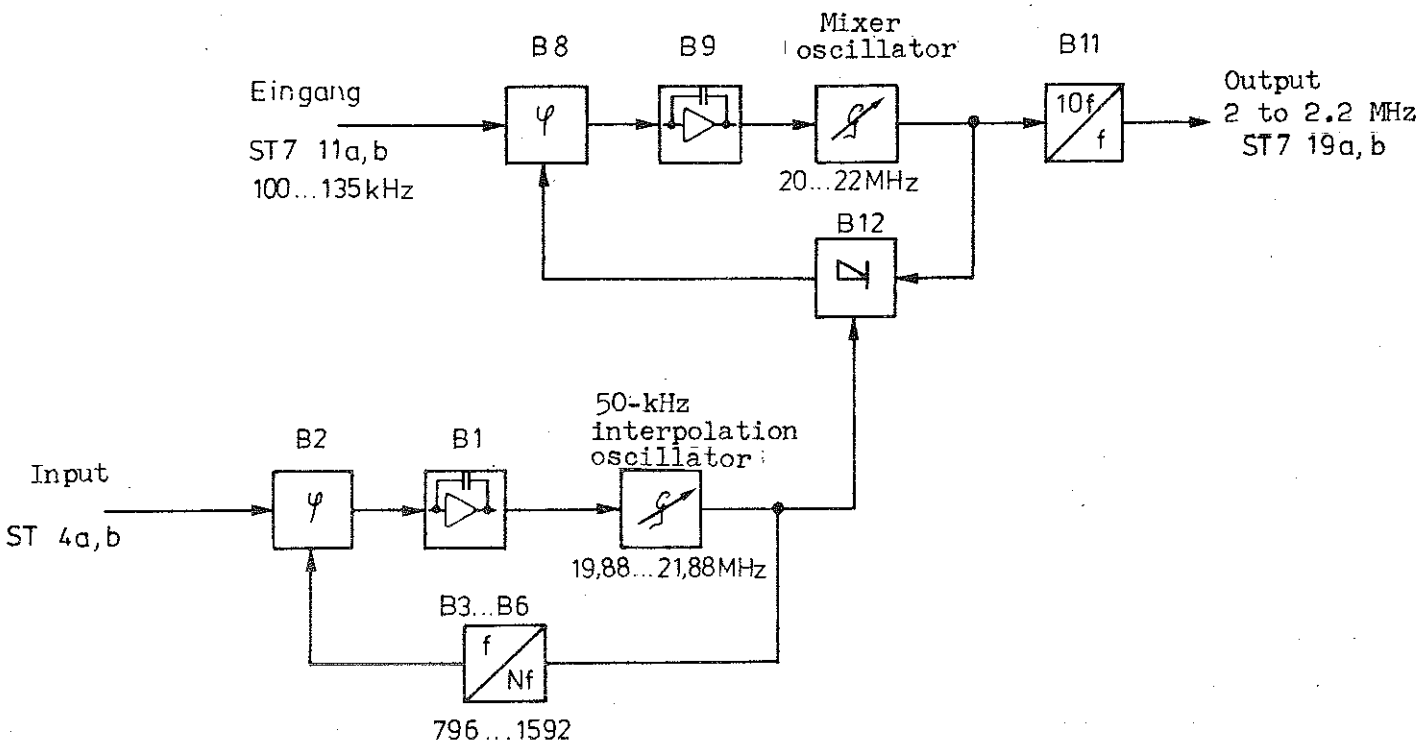


Fig. 10 Block diagram of the 50-kHz interpolation oscillator Y7.

The digital phase detectors B2 and B8 are edge-triggered flipflops with three-stage outputs. Triggering is accomplished by means of the positive edges of the signals at the signal input 14 and at the reference input 3. Output 13 supplies pulses with a voltage level (low or high) and duty cycle dependent on the phase or frequency difference of the input signals. If the frequencies of the two input signals differ the integrator voltage at C1 or C11 is corrected by means of the output pulses of the phase detector until the two signals at the phase detector have the same frequency. As soon as this is the case the integrator capacitors are recharged only to the extent necessary to keep the integrator voltage constant. The integrator voltages serve as oscillator tuning voltages.

The Schmitt trigger circuit B10 prevents the control from running to the lower operating limit of the integrator B9 during the lock-in process. As soon as the tuning voltage drops below the response threshold of the Schmitt trigger circuit (4 V) the integrator is recharged to the maximum tuning voltage (25 V) via the diode GL10.

The divider N consists of three programmable counters B4, B5 and B6 connected in cascade and the latch flipflop B3. The counters operate as down counters. The division factor is present in binary code at the 12 data inputs, the LSB being present at B6 and the MSB at B4. At the count 0000 the borrow outputs of B4 and B5 supply a negative pulse which has the same pulse width as the input pulses at the count down inputs.

The borrow outputs of B4, B5 and the counter outputs Q_A, Q_C and Q_D of B6 are combined via an OR circuit. In this way the condition for presetting the counters is decoded.

At the count 0 of B4 and B5 and at count 2 of B6 the D input of the flip-flop B3 goes low. With the next positive clock edge the low signal is transferred to the flipflop. While a low signal is present at the load inputs the counters are reset. With the next positive clock edge the high signal of the Q output fed back to the D input is transferred to the flipflop. The next positive clock edge starts the countdown from the new counter state.

The data inputs of the counters are set by the I/O expander B13. The setting data are read in at the input port P2, transferred to the outputs ports P4, P7 and stored.

The control signals A, B, C, D (A, B: range identification, C: oscillator switching, D: divider switching) are present at the output port P4.

A	B	C	Frequency range (MHz)	Oscillator Y3
L	L	L	260 to 280	260 to 380 MHz
H	L	L	280 to 320	260 to 380 MHz
L	H	L	320 to 360	260 to 380 MHz
H	H	L	360 to 380	260 to 380 MHz
L	L	H	380 to 400	380 to 520 MHz
H	L	H	400 to 440	380 to 520 MHz
L	H	H	440 to 480	380 to 520 MHz
H	H	H	480 to 520	380 to 520 MHz

	0.4 to 130 MHz	130 to 260 MHz	260 to 1040 MHz
D	L	H	L
Divider on		Y2	

4.6 Converter Y5

(See circuit diagram 302.6015 S)

A 380-MHz signal (ST5.19ab) and a conversion frequency 300, 340, 420 or 460 MHz (BU14) are produced on the converter board Y5. The 380-MHz signal is used on the circuit board Y1 as beat signal for conversion of the range 380.4 to 510 MHz to the output frequency range 0.4 to 130 MHz. From the conversion frequency the IF for the phase control is obtained on the PC board Y4 by mixing it with the signal of the main oscillator.

The 380-MHz signal is produced by an oscillator, the output signal of which is reduced to 1 MHz by 380:1 frequency division and which is synchronized with the 1-MHz reference frequency available at ST5.15a by means of a phase comparison circuit. The four conversion frequencies are obtained by mixing the 380-MHz signal with the reference frequency of 40 or 80 MHz applied to ST5.11a,b using the upper or the lower sideband.

The 380-MHz oscillator is based on the FET T1. The elements of the tuned circuit are L3-C3-C4-C7 to C10 and the tuning diode GL1. The oscillator voltage is inductively coupled out by means of L3 and boosted by about 10 dB in a two-stage amplifier (T2 to T3). A resistive branching network (R13 to R16) is connected between the first and the second amplifier stages, via which the 380-MHz signal is coupled out (ST5.19a,b). Likewise a branching network (R23 to R31) is connected to the output of the second amplifier stage, via which the signal passes to a 10:1 ECL divider (B1). The 38-MHz output signal of this divider is converted to TTL level in a level converter (T5-T6). Subsequently, the frequency is again divided, first in a 2:1 divider (B2/II) and then in a programmable divider circuit (B3 to B4) with fixed division ratio 19:1. The output signal of the divider - after division from 380 MHz to 1 MHz - is taken to a phase discriminator (B5), at whose reference input the 1-MHz signal from ST5.15a is present. The pulses delivered by this phase discriminator following phase comparison are integrated into a DC voltage by means of a differential integrator (B6) which, after removal of the reference frequency by means of a lowpass filter (R46-R47-C49), is supplied to the varicap GL1 as tuning voltage. Tuning voltage control ensures that the two 1-MHz signals at the phase discriminator are always in phase. The operating point of the tuning voltage can be adjusted by means of the trimmer C9.

The conversion frequency is obtained by coupling out the 380-MHz signal at the second output of the branching network R22 to R26, boosting it in an integrated RF amplifier (B10) to about 5 dBm and applying it to the mixer B11 as mixer signal, where it is mixed with the 40- or 80-MHz reference signal present at ST5.11a,b. As a result the frequencies 340 MHz and 420 MHz or 300 MHz and 460 MHz are obtained. Since the conversion frequency must be of high spectral purity (suppression of non-harmonic spurious signals > 70 dB) it is always necessary to suppress one of the sideband frequencies developing during mixing. This is accomplished by means of four two-circuit bandpass filters tuned to 300 MHz (L26-L27), 340 MHz (L20-L21), 420 MHz (L24-L25) and 460 MHz (L22 to L23). Switching diodes (GL10 to GL27) connected to the inputs and outputs of the filters always switch one filter on while the remaining three remain cut off. The switching states are controlled by the signals present at ST5.13b and 15b with the aid of the switching stage comprising B12 and T8 to T11.

4.7 Reference Board Y6

(See circuit diagram 302.6215 S)

The reference signals for the interpolation oscillators of the circuit boards Y7 and Y8 and for the fixed 80-MHz and 380-MHz oscillators of the circuit boards Y5 and Y6 required for frequency synthesis are produced on the reference board Y6.

All signals are derived from the frequency of a 10-MHz oscillator. The 1-MHz signal is obtained by 10:1 frequency division. The 80-MHz signal is produced by an oscillator whose frequency is divided down from 80 MHz to 10 kHz and synchronized with the crystal frequency which is also divided down to 10 kHz. Changeover to 40 MHz is accomplished by 2:1 frequency division. The reference signals for the circuit boards Y7 and Y8 are obtained by frequency division of the 1-MHz signal by means of a divider programmable to between 10:1 and 30:1.

The 10-MHz crystal oscillator comprises the transistor T10 and the crystal Q1 as selective feedback element between collector and emitter. C62 permits the oscillator frequency to be slightly varied. The frequency is coupled out via a capacitive divider (C60-C61). By inserting BR1 to

BR5 accordingly a temperature-compensated crystal oscillator (option) can be connected and the internal reference brought out or an external reference frequency fed to contact 4ab.

The crystal oscillator is followed by a buffer amplifier (T6 to T8) and a 10:1 divider (B11). The 1-MHz signal of this divider is brought out at ST6.19ab and at the same time applied to a 100:1 divider (B10/I and II) via a decoupler (T5). The 10-kHz output signal of the 100:1 divider is the reference frequency for the phase discriminator (B12) of the phase-locked loop of the 80-MHz oscillator.

The 80-MHz oscillator includes the FET T1 and the tuning elements GL1-GL2 (varicaps). The tuning voltage of the phase-locked loop is applied to GL1 which synchronizes the oscillator with 80 MHz. Frequency modulation is accomplished via GL2. The oscillator voltage is coupled out via C9 and boosted to TTL level via the amplifier T2, T3. The signal then passes through a frequency divider chain (B5I 2:1, B5II 2:1, B6 10:1, B7 2:1, B8 100:1) and after division from 80 MHz to 10 kHz is applied to the phase discriminator B3 for comparison. The tuning criterion (MP1) obtained by integration (integrator B13) of the pulses produced in the discriminator is such that comparison signal and reference signal at the phase discriminator are in the same phase.

Either 40 MHz or 80 MHz are required as reference at the output ST1/11ab depending on the frequency of the output signal of the set. The reference signal is either derived from the transistor T3 (80 MHz) or from the first frequency divider stage B51 (40 MHz). Switchover is effected by means of the gates B3/II and B4/IV and the switching diodes GL5 and GL6. In a lowpass filter for 40 MHz (L10 to L13-C22 to C24) and a lowpass filter for 80 MHz (L5 to L8-C18 to C20) the TTL signals are converted into sinewave signals.

The frequency modulation is produced in the 80 MHz oscillator by means of the reactance diode GL2. To prevent the modulation from being eliminated by the phase control the phase-locked loop has been slowed down by means of an RC section (R24-C12). The modulation voltage passes from ST6.13b via a switchable resistive divider to the reactance diode GL2. The frequency deviation of the oscillator is doubled by this

divider if the reference frequency is 40 MHz as this passes through a 2:1 divider which also halves the frequency deviation. The deviation sensitivity is set by means of R9 (for 80 MHz) and by means of R12 (for 40 MHz). For setting the operating point of the oscillator R7 is used.

The deviation switch and the 40/80-MHz switch are controlled by logic combination of the switching signals at ST6.66 and .68 with the gates B1 and the amplifier B2.

The reference signal for the circuit board Y8 (ST6.66) is obtained by frequency division of the 1-MHz signal by means of a 2:1 divider (B14/I) and the M divider connected in cascade. This divider consists of the ICs B14 to B16. The input signal is derived from the collector of T5. The division ratio is adjustable to between 10 and 30 via the inputs ST6.13a, .15ab, .17ab with a binary signal. The output frequency thus obtained lies between 16.66 and 50 kHz.

From the reference signal for the circuit board Y8 the reference signal for the circuit board Y7 is produced (ST6.8a). It remains unchanged if the M divider setting > 19. If the M divider setting lies between 10 and 19, 2:1 frequency division will take place. For this purpose a 2:1 frequency divider is provided (B17), which is switched on or off depending on the binary triggering by a logic circuit (B18).

4.8 Divider Y2

(See circuit diagram 302.5419 S)

The divider board Y2 is connected into the RF signal path between the main oscillator (Y3) and the output stage (Y1). It comprises an RF switch, a 2:1 frequency divider and the amplitude modulator.

For output frequencies from 260 to 520 MHz the signal of the main oscillator passes directly via the RF switch to the amplitude modulator and on to the output stage Y1. For output frequencies 130 to 260 MHz the main oscillator also operates in the range 260 to 520 MHz, but its output signal is in this case taken to the modulator via the 2:1 frequency divider and then on to the output stage Y1.

Either the switching diodes GL1-GL3-GL6-GL55 (without divider) or the switching diodes GL10-GL2-GL4-GL56 (with divider) of the RF switch conduct, the other group is cut off. The RF switch is controlled via B3/I and the switching stage T70-T71. The divider B1 is controlled together with the RF switch. Its supply voltage is only switched on by means of T72 if the frequency is divided.

The input signal of the divider is applied via GL10 and R11. The attenuator pad R10 to R12 match-terminates the main oscillator since input 1 of the divider exhibits a high impedance. R13 influences the response threshold and consequently the input sensitivity (to a minor degree). The divided-down output signal (contact 6 B1) is boosted by about 15 dB by means of an integrated RF amplifier (B2). Since this signal is almost rectangular an efficient suppression of harmonics is effected by means of the two cascaded lowpass filters. The upper lowpass filter as shown in the circuit diagram is effective in the range 130 to 190 MHz and the lower one in the range from 190 to 260 MHz. The lowpass filters are switched on and off by means of the switching diodes GL20-GL21 and GL40 to GL42, respectively. The switching diodes are driven from B3/III.

The RF signal passes then to the amplitude modulator, which constitutes the control element for level control and amplitude modulation. The two integrated circuits B4 and B5 each contain three PIN diodes in π-connection. The necessary attenuation is set by the control voltage which is produced in the output stage and passes via ST2.17b to the divider. The inherent attenuation of the modulator is about 8 dB. Prior to reaching the output stage Y1 via ST2.19ab the RF signal is boosted by about 15 dB in the broadband amplifier B6.

4.9 Output Stage Y1

(See circuit diagram 302.5219 S)

On the output stage board the RF signal arriving from the divider Y2 is boosted to the maximum level of 13 dBm available at the output of the set.

The signal passes via an RF switch directly to the final amplifier in the frequency range 130 to 520 MHz. The output frequency range 0.4 to 130 MHz is obtained by mixing the range 380.4 to 510 MHz with a signal of 380 MHz.

The RF detector for level measurement is provided at the output of the final amplifier. The rectified voltage is compared with a reference quantity in the control amplifier and the voltage obtained is the control voltage required for control of the amplitude modulator.

The RF switch consists of the switching diodes GL2 to GL6 for the direct path and GL1-GL8-GL9 for signal flow via the mixer.

The input signal is applied to the mixer (B1) via a lowpass filter (C2 to C7-L1-L2) and an attenuator pad (R1 to R3) connected in series. The balanced mixer is of printed circuit design. The frequency separation of the input signal and the output signal present at the same contact (3) is accomplished by means of a filter (C8 to C14-L3-L5). The mixer signal (380 MHz) is applied via BU12 and is boosted to about 14 dBm in a tuned amplifier. The trimmer C91 permits maximum suppression of non-harmonic spurious signals in the conversion range to be adjusted. The output signal of the mixer is taken to a two-stage amplifier (T1-T2) where it is boosted to about 0 dBm. The following lowpass filter with a cutoff frequency of 140 MHz is used for suppression of the mixer signal and of the non-harmonic spurious signals whose frequencies are above 140 MHz.

The RF switch and the 130-MHz amplifier are controlled from the switching stage B2/I-T5-T6. The amplifier is only connected to the operating voltage during the mixing process.

Subsequently, the RF signal passes to the two-stage final amplifier where it is again boosted by about 17 dB. On account of the required harmonic suppression (> 30 dB) the power dissipation is so high in both stages that additional cooling must be provided. This is mainly obtained through the upper PC board cover. For this reason, the stage must not be operated without the cover over a longer period of time. R36 and R51 permit the collector currents to be adjusted such as to ensure satisfactory harmonic suppression.

The detector diode GL12 connected ahead of the resistor R71, which acts as signal generator output impedance, is used for measuring the output level. The resulting rectified voltage is applied to the positive input of the control amplifier B5. By comparison with the control quantity applied to the negative input via R96 a control voltage is obtained (ST1.13b) which so adjusts the attenuation in the amplitude modulator that the rectified voltage and the control quantity are equal, i.e. the level ahead of the network R71-R73-C72 acting as output impedance is thus kept constant. The signal generator thus functions as a source with 50 Ω internal impedance.

Moreover, the detector circuit compensates for the frequency response caused by the RF attenuator and the connecting cables between the output of the final amplifier and the output of the set. L22-R60-R61 are effective between 0.4 and 20 MHz and R73-C72 between 20 and 150 MHz. The compensation in the range 200 to 500 MHz is adjustable by means of C64.

The value of the charging capacitor C66 permits the rectified voltage to follow an amplitude modulation up to about 25 kHz. At carrier frequencies below 5 MHz the capacitance of the charging capacitor is increased by connecting C67 in parallel with the switching diode GL13. In this range AM is, therefore, only possible up to 5 kHz. A switchable RC section for suppression of the carrier (R70-R72-C69-C70) is connected between the detector and the control amplifier. It prevents the residual carrier still existing after peak rectification from being fed back to the modulator which would give rise to distortions of the RF signal.

The control amplifier is fed back through a switchable RC section (R92-R93-C74-C76) which determines the loop gain and ensures a stable control effect.

Charging capacitor, carrier suppression and loop gain are together switched over and controlled via the line "AM slow" (ST1.6b). The control voltage passes from the output of the control amplifier B5 via T8 and ST1.13b to the modulator on the circuit board Y2.

The control quantity for the level control is fed in at ST1.2b via the amplifier B6. The diode GL18 compensates for the temperature effect of the detector diode. Potentiometer R101 permits adjustment of an offset which linearizes the slightly bent characteristic curve of the detector diode at low RF levels.

4.10 Modulation Control Y10

(See circuit diagram 302.7011 S)

4.10.1 Signal Flow

The signals for frequency modulation via the reactance diode (ST10.4b) and the control quantity for the level control (ST10.11a) are produced on the modulation control board Y10.

The modulation signal is either produced in the internal modulation generator or is externally applied to the modulation input 1 (ST10.19b) and passes to the input switch (B3/I and II) of the modulation attenuator where it is so attenuated by means of an attenuator with binary stepping as to obtain the desired modulation depth or frequency deviation. The output signal of the modulation attenuator is available at the same time at the level attenuator and deviation switch whose input switches are driven according to the type of modulation (B80/IV for AM and B14/II for FM).

External level control (ALC) or dual modulation is possible through the modulation input 3 (ST10.15b) which is connected to the modulation socket on the rear panel. The two outputs of the ALC amplifier drive the level attenuator and the deviation switch. In FM operation the switch B80/III is switched on connecting the ALC amplifier to the level attenuator. The RF level can be varied by about 40 dB by means of the DC voltage of between 0 and 2.8 V applied to the rear-panel modulation socket. In AM operation switch B14/III is in the on position and the ALC amplifier connected to the deviation switch. In this mode of operation φM (phase modulation) or FM is possible via the modulation socket on the rear panel in addition to AM depending on the position of BR1 at the input of the deviation switch.

4.10.2 Circuit Description of the Individual Subassemblies

The modulation generator is a Wien-Robinson-bridge oscillator (C1-C2-R1 to R6). The oscillator frequency is switched over between 400 and 1000 Hz by means of the switching transistors T2-T3, which are driven from T1. Frequency adjustment is accomplished by means of R1 (1000 Hz) and R2 (400 Hz). Gain control takes place in the feedback path of the oscillator amplifier B1/I by means of a FET (T4) which acts as a variable resistor

whose resistance depends on the DC control voltage present at the gate. The DC control voltage is produced in a control amplifier (B1/II) by rectification (GL3-GL4) of the oscillator signal. The control voltage is adjusted such that the rectified oscillator signal is equal to the control quantity present at the positive input of the level amplifier. The temperature effect of the rectifier diode GL3 is compensated for by means of the diode GL2. The oscillator level is adjustable by means of R15. To minimize the distortions of the oscillator signal the FET T4 is fed back via C3 and R21. Moreover, the oscillator balance is set with R11 so that safe oscillation is just ensured.

The modulation attenuator contains an electronic switch (B3/I-B3/II) at its input which permits switching between internal and external modulation sources. With internal modulation the modulation signal is also available at the socket 31 on the front panel via the switch B3/III and the amplifier B4/II. The binary-stepping attenuator consists of two parallel branches which are brought together in a summing amplifier (B7/II). In the one branch the modulation values 0.5, 1, 2, 4 and 8% and kHz deviation, respectively, can be set and in the other branch the values 16, 32 and 64. The summing amplifier is followed by a level attenuator (B8/I to II-B7/II) with switch-selected division ratios of 1:1 and 10:1. If the modulation values are < 10 the division ratio 10:1 is selected and the 10-fold modulation value is set on the binary-stepping attenuator. This permits setting of modulation values from 0 to 9.95 in steps of 0.05.

The level attenuator produces the control quantity for the RF level control and the amplitude modulation. The DC voltage corresponding to the RF level is applied to the positive input of the amplifier B9/I. Level switching between CW and AM is accomplished by means of the switches B80/I and B80/II. The AC voltage corresponding to the modulation is applied to the negative input of B9/I via the switch B80/IV. ALC is possible via the switch B80/III. As a result a DC voltage develops at the output of the amplifier B9/I on which an AC voltage is superimposed in AM operation. This signal passes through a network of seven binary-stepping attenuator pads. Electronic switching permits settings between 0 dB and 0.1, 0.2, 0.4, 0.8, 1.6, 3.2 or 6.4 dB. By appropriate combination the RF output level can be attenuated by between 0 and 12.7 dB in steps of 0.1 dB. The actual transfer constant of each attenuator pad

is 0.5%/dB less than its nominal value. This partly compensates the slight bend of the detector diode characteristic curve occurring at low levels. The RF output level is set by means of R76 (in CW operation) and R71 (in FM operation). For setting the modulation depth R79 is used.

The deviation switch also contains an electronic switch at the input (B14/I and B14/II) which permits selection of the internal or external modulation source. When the set is driven via the modulation socket on the rear panel, PM or FM can be selected by connecting the link BR1 (plug-in type) accordingly. For PM , the value of the coupling capacitor is reduced to give a modulation frequency response rising by 6 dB/octave up to 20 kHz.

In certain frequency ranges the frequency-modulated RF signal passes through a 2:1 frequency divider and in other ranges (if fitted with the Option Frequency Range Extension) through a doubler. In this way, the frequency deviation is either halved or doubled. To avoid, however, that the deviation of the output signal of the set is affected by these internal operational states the gain is switched over correspondingly in the deviation switch. The gain of the stage B16/I is unity when the signal frequency is halved, 0.25 when it is doubled, and is otherwise 0.5. Furthermore, the RF signal passes through a mixer, the upper or the lower sideband being utilized depending on the frequency range. To make sure that the instantaneous frequency rises with the rising modulation voltage the phase of the modulation voltage is shifted by 0° or 180° depending on the sideband. This takes place in the amplifier B16/II which operates in the non-inverting mode (B15/I closed) or in the inverting mode (B15/III and B15/IV closed).

The control signals supplied by the microprocessor are combined by means of a logic circuit so that the electronic switches are switched on or off depending on the selected operating modes. In CW operation, the switches at the input of the modulation attenuator (B3/I and B3/II) and of the level attenuator (B80/III and B80/IV) and at the output of the deviation switch (B15/II and B15/III) are open to provide for the maximum possible crosstalk attenuation between any modulation signal present and the AM and FM output.

The switches of the attenuator pads of the level and modulation attenuators are driven from a port expander (B25). The control signals from the microprocessor are successively applied to the inputs of this device and distributed to its outputs 1 to 5 and 13 to 23 where they are stored until new data arrives from the microprocessor.

4.11 Microprocessor Y11

(See circuit diagram 302.7111 S)

The circuit board Y11 comprises the microprocessor and the IEC-bus Interface. The microprocessor consists of modules of the MCS-48 family. B1 is a single chip microprocessor 8049 with 2K ROM program storage. B2 (8355) is a 2K ROM with two 8 bit I/O ports. More modules of the MCS-48 family are on other boards. One I/O expander 8243 is on each of the boards Y7, Y8 and Y10. The keyboard/display interface 8279 is on the keyboard/display unit.

The clock frequency for the 8049 is generated by an internal oscillator. The crystal Q1 is used as reference. Addressing of and data transfer to/from the ROM B2, the keyboard/display interface 8279 and the IEC bus is effected via the 8-bit bus DB0 to DB7.

To address the 2K program storage locations in B2 the bits 8 to 11 of the address are output by means of the port outputs P20 to P24.

The data transfer to/from the keyboard/display interface 8279 is controlled by the control lines $\overline{WR}$, $\overline{RD}$, $\overline{CS}$, CD (BU27, 9, 10, 11, 12). Access to the program stores in B2 and the data output at the ports of B2 are controlled by the control lines $\overline{RD}$, $\overline{WR}$, ALE, $\overline{PSEN}$ (8049).

For data output at the expander ports 8243 of the boards 8, 7, 10, addresses and data are output via the four port outputs P20 to P23 of the microprocessor 8049. The data transfer to/from the I/O expanders 8243 is controlled by the signals $\overline{CS}$ 8243 8, 7, 10 (ST11 19a, 18a, 17a) and by the PROG output of the µP 8049.

The signals I, J, K, M, L, N at the port outputs P10 to P15 of the µP 8049 have the following meaning:

		High	Low
I	AM	On	Off
J	FM	On	Off
K	Modulation	Internal	External
L	Modulation	1000 Hz	400 Hz
M	Deviation, mod. depth	< 10 kHz, (%)	≥ 10 kHz, (%)
N		RF off	RF on

Table 14

The binary coded setting of the M divider is output at the port PA of B2. At port PB the BCD-coded setting of the attenuator is output.

By an INTERRUPT command the µP 8049 is instructed to read-in data via the bus. The INTERRUPT command is issued from the keyboard/display interface 8279 on the board Y14 when data is entered from the keyboard, the data being called up from the FIFO RAM of the 8279. With remote control via the IEC bus the INTERRUPT command is issued by the IEC-bus interface B17 on the microprocessor board. The two INTERRUPT commands are combined at the input INT of the 8049 by the NAND gates B10 and B9/III-IV.

4.12 Keyboard/Display Unit Y14

(See circuit diagram 302.7911 S)

The module 8279 (B35) acts as interface between the microprocessor and the display or keyboard. The display information is written into the display RAM of the 8279. The content of the RAM is periodically output to the multiplexed displays under the automatic control of the 8279.

SL0 to SL3 are the four binary coded control outputs which periodically switch over the display digits. In synchronism with the control outputs SL0 to SL4 the data for the display digits are output via the data outputs A0 to A3 and B0 to B3.

By decoding the four control outputs SL0 to SL3 by means of B36 a periodic pulse - the scanning pulse for scanning the keys - is obtained. At the push of a key the scanning pulse is connected through to one of the return lines RL0 to 7. The information on which of the eight return lines the key has made contact is stored in the 8279 as well as the information about the state of the SL outputs. The two pieces of information make up the position code of the key. At the push of a key the microprocessor is instructed by an INTERRUPT command to call up the position code of the key stored in the 8279.

For each push of a key the 8279 issues only one INTERRUPT command. On continuous depression of the variation keys a periodic control pulse is produced by the counter modules B21, 22, which periodically interrupts the through-connection of the outputs B36 to the return line inputs RL0 to RL7 and simulates repeated operation of the key concerned.

The positive control pulse at output 1 of the gate B23/I is produced whenever the counter modules B21-22 have reached their final count. Prior to pushing one of the step keys C1 is charged. B20, B21, B22 are preset via the SET, PRESET and RESET inputs as follows. The outputs Q and $\bar{Q}$ of B20/I and B20/II are at high and low levels, respectively. B21 is preset to the information at the data inputs, hence to 8. B22 is reset to 0. B22 operates as a fixed 10:1 divider. The control output B23/1 is at low level.

Upon pushing one of the variation keys the negative scanning pulse with a pulse repetition rate of 5 ms is connected through to C1 and the count input CK UP of B22. C1 is discharged. The SET, PRESET and RESET inputs change their logic levels. The two counters connected in cascade are preset to 80. After 80 scanning pulses, corresponding to a time of 400 ms, the counters have reached their final count. The flipflop B20/I is flipped over by the positive slope of the borrow pulses of B21. This pulse is produced whenever the counters have reached their final count. The second borrow pulse flips the Q and $\bar{Q}$ outputs of the flipflop B20/II over to low and high, respectively. The counter B21 is, therefore, no longer preset to 8 but to 2 after the third borrow pulse. The count cycle lasts then only 20 scanning pulses corresponding to a time of 100 ms; i.e., the circuit is designed such that the first four steps occur at intervals of 400 ms while all further steps occur at intervals of 100 ms with continuous variation.

4.13 Attenuator Y16

(See circuit diagram 302.7311 S)

The attenuator is connected between the output stage and the output of the set. It permits the signal of the output stage to be attenuated by 138 dB in steps of 2 dB. Smaller level steps - as small as 0.1 dB - can be electronically achieved using the AM circuit.

The attenuator comprises nine attenuator pads of 1 dB, 2 dB, 2 x 4 dB, 10 dB, 2 x 20 dB and 2 x 40 dB (R1 to R9) as well as ten through-line sections. The attenuator pads and through-line sections are of thin-film design. They are mounted on a total of 19 ceramic chips which in turn are soldered onto a base plate. Nine contact groups each with three switching contacts protrude between them through the base plate permitting switchover from attenuation to through-connection and vice versa.

Each of these nine contact groups is operated by an actuator driven by a magnetic coil and kept in its final position by means of a permanent magnet. Force transmission between actuator and contact is ensured by means of springs, making for a uniform contact force of 20 gf. All contact surfaces are gold-plated.

The magnetic coils for attenuation switchover are driven from power gates (B1 to B5) which are partly so linked via OR gates (B6) or via the dashed lines on the motherboard 2 that BCD control is possible. The 1-dB attenuator pad is used for switching off the output of the SMS (after pressing the key RF-OFF or upon response of the Overload Protection Option). For this purpose, the last contact is omitted in the 1-dB attenuator pad. In this way, the signal path is interrupted when switching on this attenuator pad.

A survey of the control is given in table 15.

Attenuation	Attenuator pads switched on	Control lines, free plug ST21 at high level
RF OFF	R9+)	1
2	R7	2
4	R6	3
8	R1, R6	4, 11
10	R3	5
20	R4	6
40	R5	7
80	R2, R5	8, 15, 16
100	R2, R5, R8	8, 9, 13, 15, 16

+) Interruption due to missing contact.

Table 15

The +15-V power supply of the attenuator is effected via a control circuit which is provided on the motherboard 2 and has the following functions:

The power supply of the attenuator is switched on via the relay RL1 only about 45 ms after switching on the SMS. During this time the reset process takes place in the microprocessor. The computer outputs controlling the attenuator have not yet assumed a defined state. This switching delay prevents undefined switching states at the attenuator.

About 50 ms after switching off the SMS, the +15-V terminal of the attenuator is connected to chassis. This causes all attenuator pads to assume the "attenuation" switching state independent of their previous switching states. The 1-dB attenuator pad cuts off the RF output of the SMS from the output stage which protects the SMS when it is switched off against RF power inadvertently applied to the output.

The relay control is accomplished by means of a comparator (B1), the inputs of which are connected to the operating voltages of +5 V and +20 V via delay lines.

When switching the SMS on C101 is quickly charged via GL1 while C100 is slowly charged via R4. Thus the voltage at the inverting input is for about 45 ms

higher than that at the non-inverting, the comparator output remains at "low" and the relay unexcited.

In a stationary state, the voltage at the non-inverting position is higher. The relay is excited.

When switching the SMS off, the voltage at the non-inverting input decreases at about the same pace as the operating voltages while the voltage at C101 decreases much more slowly. As soon as the operation voltages have dropped by about 200 mV - this will be the case about 50 ms after switching off - the voltage at the non-inverting comparator is less than that at the inverting input. The relay is switched off.

4.14 Power Supply Y5

(See circuit diagram 302.7411 S)

The power supply produces the five regulated DC voltages of +5 V, +15 V, -15 V, +20 V and +28 V.

The -15-V voltage is produced in an integrated fixed-voltage regulator (B3). The circuits for the four other voltages are each made up of an integrated precision voltage regulator (B1-B4-B6-B8) and one or two (+5 V) power transistors (T1 to T5) as control elements for current gain. The integrated voltage regulator (type µA 723) contains an internal reference source which produces about 7.15 V at contact 6, a control amplifier (the non-inverting input at 5 and the inverting input at 4, output at 10) and a current-limiting circuit which is controlled via contact 2.

All regulated voltages are protected against sustained shortcircuit. For this purpose, the -15-V fixed voltage regulator contains a constant-current-limiting circuit and a protective circuit against thermal overloading. The circuits of the other four voltages contain a current-limiting circuit which reduces the output current to a small fraction of the maximum value (foldback current limiting).

As an example, regulation and current limiting of the +15-V regulator is here described. The internal reference voltage is applied to the non-inverting input of the control amplifier of B4 via R16. Part of the output voltage is present at the inverting input of the control amplifier via the adjustable resistive divider R24 to R26. By the control process the output voltage is so adjusted that the part of the voltage tapped off the resistive divider - independent of the input voltage and the load - is equal to the reference voltage.

Current limiting is controlled by a comparator (B5) the two inputs of which are connected in the diagonal arm of a bridge circuit. The two bridge arms consist of R21-R22-R27 and the load resistance. Within the range of the permissible output current load, the load exhibits such a high impedance that the voltage at the inverting comparator input is higher than at the non-inverting input. The output of the comparator has a negative potential. Current limiting does not respond. In the case of an overload the impedance of the load becomes too low, which causes the voltage at the inverting comparator input to be higher than the voltage at the non-inverting input. As a result, the comparator initiates current limiting.

The unregulated input voltage is produced in a full-wave rectifier (GL6-GL8-C8). It feeds only the series transistor T2 through which the load current flows. The voltage regulator B4, which requires a higher minimum input/output voltage difference than T2 but only very little current, is supplied with the input voltage of the +20-V regulator. Thus the power dissipation occurring in the series transistor can be minimized. In the same way, the 5-V regulator B1 is supplied with the input voltage of the 15-V regulator and the 20-V regulator B6 with the input voltage of the 28-V regulator.

To prevent hum pickup the earth terminals of the four resistive dividers for setting the output voltages and of the integrated voltage regulators are connected to the PC board cassette via a separate line (BU2509.10) of the 24-pole flat cable. If the power supply is operated in open circuit, i.e. with the cable not plugged in, connection to earth is made via R12.

The voltage is set by means of the potentiometers R2 (+5 V), R25 (+15 V), R36 (+20 V) and R47 (+28 V).

4.15 Overload Protection

The overload protection circuit protects the RF attenuator Y16 and the output stage Y1 against RF or DC voltages inadvertently applied to the RF output. To this end, the voltage present at the RF output is measured. If a threshold value is exceeded a contact at the output of the RF attenuator opens and interrupts the connection to the attenuator pads and to the RF output of the set.

The RF voltage is coupled out in the thin-film circuit B3 by means of a capacitive divider and after rectification by means of a diode is taken from contact 2 via R2 to the comparator B1/II. An externally applied DC voltage is brought out at contact 1/B3. Negative voltages pass via GL1 directly to the comparator. Positive voltages are inverted in B1/I. The response level is set by means of R7. The switching signal for switching off the RF output passes from the comparator output via R11, GL5 and contact 4 to the RF attenuator. This signal is at high level if the overload protection responds. The integrated circuit B2 provides delayed resetting.

4.16 IEC Bus

The IEC bus provides the SMS with the following interface functions in accordance with DIN IEC-625:

AH1	Acceptor Handshake
L2	Listener
RL1	Remote/Local
DC1	Device Clear

The IEC-bus interface module B17 HEF 4738 handles the IEC-bus functions directly by means of hardware while the handshake between HEF 4738 and the microprocessor is executed by means of a program via the lines $\overline{\text{rdy}}$ and dvd.

The output O_{loc} of the HEF 4738 is at high level if the interface is in the local state and at low level if the interface is in the remote state. The through-connection of the keyboard interrupt commands via the gate B10 is inhibited if the output O_{loc} is in the remote state disabling the operating controls on the front panel.

The output O_{dvd} of the HEF 4738 is connected through to the interrupt input of the microprocessor via the gates B9, 10. The handshake between HEF 4738 and the microprocessor for transfer of the data present at the IEC-bus data lines DI01 to DI08 to the microprocessor is controlled by the two lines $\overline{rdy}$ and dvd.

If the $\overline{rdy}$ line is at low level, the microprocessor signals that it is ready to accept a data byte. If the dvd line is at high level the HEF 4738 signals that a valid data byte is present at the IEC-bus data lines.

If the $\overline{rdy}$ line is at high level the microprocessor has accepted the data byte but is not yet ready to accept a new byte since the execution of the program for processing the old byte has still not been completed. The buffer B13 is connected through by the microprocessor if a data byte is to be read into the microprocessor from the IEC bus. The time sequence of the handshake is shown in Fig. 11.

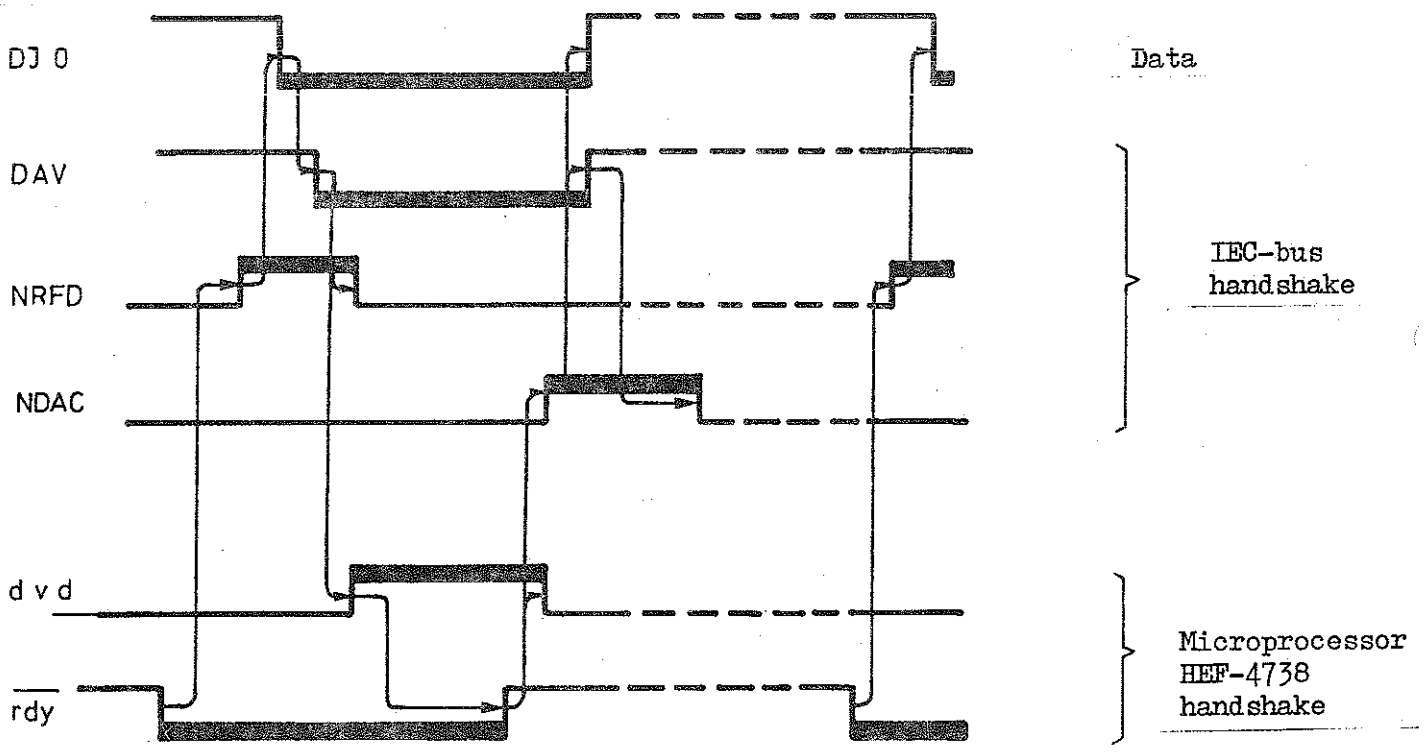


Fig. 11 Time sequence of the handshake.

The information of the listener addresses A1 to A5 and the standard IEC signals t_{on}, l_{on}, rsv, rtl, is read into the input J_{SR} of the HEF 3748 by means of the two shift registers B11 and B12. The shift registers read the data in parallel when O_{red} is at high level and read them out serially when O_{red} is at low level.

The signal rtl (return to local) goes high when the local key is pressed. The signal rsv (request for service) goes high when the overload protection responds. The SRQ line on the IEC bus is activated. The IEC-bus interface does not, however, have a polling function.

The output O_{clr} of the HEF 4738 is at high level if the interface is in the dcas (device clear active state). The monostable B18 produces a reset pulse which restarts the microprocessor from the beginning of the program.

4.17 Reference Oscillator SMS-B1

The SMS-B1 is a plug-in unit. It is electrically connected to the reference board Y1 via four plug-in contacts A, B, C, D. If retrofitting the SMS-B1 remove the links BR1 and BR2 on the reference board Y6.

The crystal oscillator of the SMS-B1 consists of the crystal Q1, the oscillator transistor T16 and the resonant circuit TR1, C56, C57 and C58. C57 provides for temperature compensation of the transformer TR1 in the resonant circuit. C53 permits exact frequency setting. The transistor T13 acts as impedance transformer.

To keep the oscillator transistor and the crystal at a constant temperature they are housed in an oven. The thermistor R60 is used as a temperature sensor and the transistor T15 as a heating element. The nominal temperature is determined by the factory-adjusted value of R52. The differential amplifier T10, T11 in conjunction with T12 forms the control amplifier. Current limiting of the heating transistor is accomplished via R58, GL10 and T12.

4.18 1.04-GHz Frequency-range Extension SMS-B2

Use of the 1.04-GHz Frequency-range Extension Option SMS-B2 in conjunction with the SMS extends the frequency range to 1040 MHz. The SMS-B2 contains a doubler which produces the range 520 to 1040 MHz by doubling the frequency range 260 to 520 MHz.

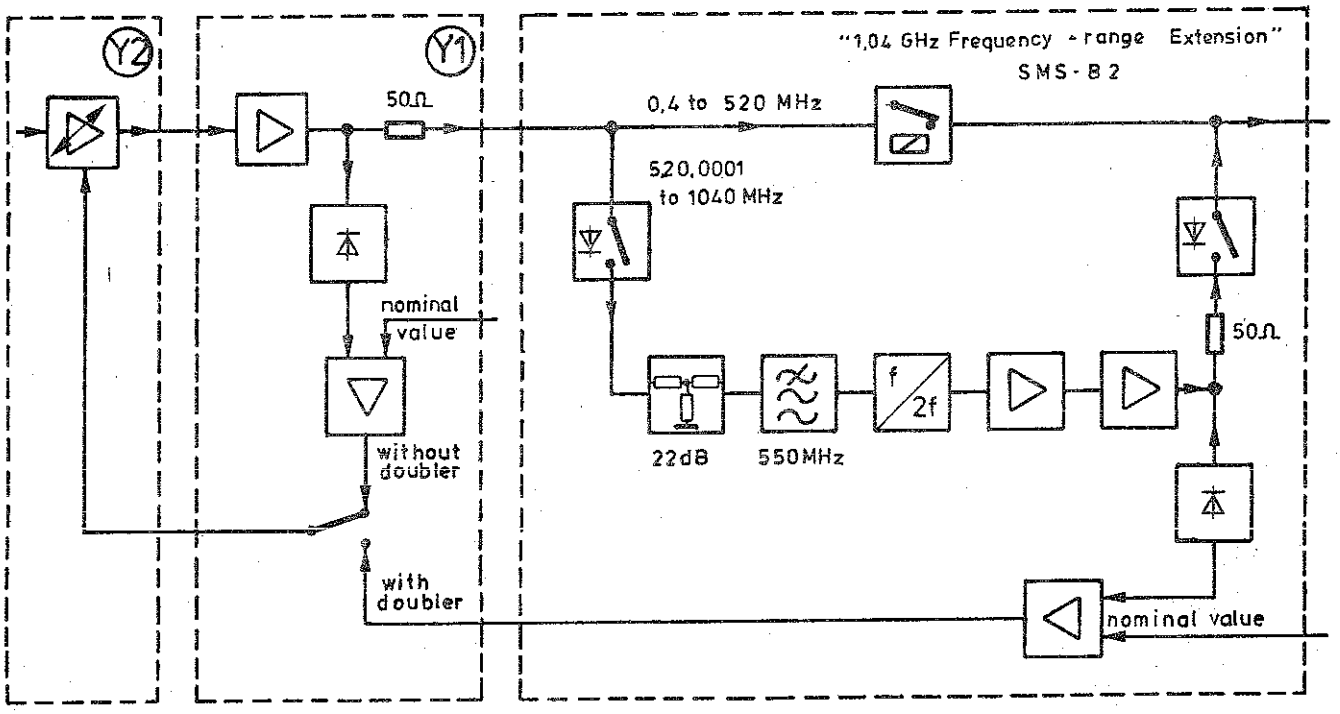


Fig. 12 Block diagram of 1.04-GHz Frequency-range Extension SMS-B2

The overall function is shown in the block diagram (Fig. 14). The signal derived from the output stage Y1 of the basic unit passes from the input of the SMS-B2 either via the RF relay directly to the output (range up to 520 MHz) or via a diode switch to the doubler. This PC board contains an attenuator pad at the input for level adjustment. It is followed by the input filter which matches the impedance to the input resistance of the frequency doubler (approximately 25 Ω).

The microprocessor switches the RF signal path over via pin BU1.1 as a function of the frequency entered. This is accomplished by means of the relay RS1 and the diode switches B4 and B5, which are driven by the final stage T1-T2 and the switching amplifier B1. At frequencies above 520 MHz the switching signal at BU1.1 is at high level.

The frequency doubler proper consists of the four diodes GL11I/II and GLI/II which operate as a full-wave rectifier. The two diode arms are driven in push-pull from the transformer TR1 made up of coaxial lines. For increased doubler efficiency the diodes are supplied with a quiescent DC voltage via the resistors R11 to R15 which can be distributed by means of R13 so that a high suppression of non-harmonic spurious frequencies is obtained.

The level attenuation introduced by impedance matching and the doubler is compensated by the following three-stage amplifier (T15, T25, T35) and the thin-film output amplifier. The doubled signal passes from the output amplifier via the detector and the diode switch at the output end to the RF output. The detector forms part of the level control circuit. The rectified voltage obtained with the aid of the RF rectifier diode GL5 is applied to the non-inverting input of the control amplifier B2 where it is compared with the reference value supplied by the PC board Y10 and applied to the inverting input of the control amplifier via B3. The resulting control voltage adjusts the attenuation of the amplitude modulator on the PC board Y1 and consequently the RF level present at the input of the doubler such that the rectified voltage and the reference value are equal. Hence, this control circuit is designed such that a frequency- and load-independent EMF is obtained through the resistor R1 which acts as output impedance.

The RF output level is adjusted to the same value as produced by the reference value in the basic unit by means of the potentiometer R14.

The line from ST22.4 on the motherboard connects to the microprocessor on the circuit board Y11 where its logic state is interrogated for frequency entries > 520 MHz. It is high if the SMS-B2 is fitted. The computer will then accept frequency entries up to 1040 MHz. If SMS-B2 is not fitted the line level is low and only frequency entries up to 520 MHz are accepted.

4.19 Mechanical Construction

The mechanical frame of the set is a metal cassette into which the circuit boards Y1 to Y11 are plugged. On the front of this cassette the front panel with circuit board Y14 is screwed in place, at the rear the rear panel and two panels on the sides.

The left section of the cassette is subdivided into nine compartments in which the RF circuit boards Y1 to Y8 are accommodated. It is covered up by two RF-leakage-proof covers. The circuit boards are electrically interlinked via the RF motherboard 1. They are connected to the other parts of the set via the RF filter board Y9.

In the right section of the cassette the circuit boards Y10 (modulation control) and Y11 (microprocessor) are contained. The electrical connection to the filter board and to the cables is established via the AF motherboard 2.

The rear panel carries the circuit board Y15 (regulator), the power transformer and the blower. The Frequency Range Extension Option SMS-B2 can be inserted above the blower. The RF attenuator (Y16) is screwed onto the rear wall of the cassette.

For ventilation of the set a low-voltage AC blower is used which is operated from a voltage transformer of its own. The air is sucked in through the filter on the rear panel and is let out through the perforation in the upper panelling.

Most of the circuit boards in the RF-leakage-proof section of the cassette are screened off completely to prevent crosstalk between the individual subassemblies on a circuit board. These screens can be opened after loosening the upper retaining screws by pressing the two spring covers together and pushing back the retaining clip.

5. Repair Instructions

Tolerances in this section (if not stated otherwise)

Voltages: ±5%

Frequencies: see data sheet

5.1 Measuring Instruments Required

Ref. No.	Measuring instrument required	Performance specifications	R&S instrument recommended	See section
1	RF counter	Range 0.4 to 520 MHz Resolution 10 Hz	part of FAM	5.2.7 5.3.16
2	Power meter	Range 0.4 to 520 MHz 3 to 20 mW Z = 50 Ω, error < 0.1 dB	NRS 100.2433.92	5.2.7 5.3.12 5.3.14 5.3.17 5.3.18
3	Precision attenuator	Range 0.4 to 520 MHz 0 to 120 dB, Z = 50 Ω	DPVP 214.8017.52	5.2.7 5.3.19
4	Test receiver Frequency controller	Range 25 to 520 MHz Inherent noise < -10 dB/µV	ESU 2 100.1143.02 EZK 255.0010...	5.2.7 5.3.19
5	RF spectrum analyzer	Range 0.4 to 1100 MHz Dynamic range > 70 dB	-	5.2.7 5.3.13
6	AF generator	Range 50 Hz to 20 kHz Output voltage > 1 V Z_{out} = 600 Ω Distortion < 0.2%	SRB 100.4094...	5.3.14 5.3.15

Ref. No.	Measuring instrument required	Performance specifications	R&S instrument recommended	See section
7	Test demodulator	RF range 0.4 to 520 MHz AF range 50 Hz to 20 kHz AM 9 to 90% FM 0 to 250 kHz deviation Distortion < 0.2%	FAM 334.2015...	5.2.7 5.3.14 5.3.15
8	Distortion meter	Range 50 Hz to 20 kHz Measurement range 0.1 to 10%	part of FAM	5.2.7 5.3.14 5.3.15
9	AF counter	Range 0.1 to 1000 kHz Resolution 0.1 Hz	part of FAM	5.2.7 5.3.11
10	DC power supply	V > 5 V I > 100 mA	NGM 117.7110... or NGR 100.5084...	5.2.7 5.3.17
11	Deviation meter	Range 0.4 to 520 MHz Inherent spurious deviation < 1.5 Hz (CCITT)	FAM 334.2015...	5.2.7 5.3.20
12	Psophometer	Min. input voltage ≈ 0.1 V with CCITT weighting filter and rms-responding rectifier	part of FAM	5.3.1 5.3.20
13	Precision extension cable	Z = 50 Ω	SWOB-Z 100.3598.50	5.3.21

Ref. No.	Measuring instrument required	Performance specifications	R&S instrument recommended	See section
14	RF millivoltmeter	Range 1 to 520 MHz Sensitivity ≈ 100 mV	URV 216.3612...	5.3.21
15	RF sweep signal generator with display	Frequency range 30 to 500 MHz Sweep width 2 to 100 MHz Dynamic range > 30 dB EMF 1 V Z = 50 Ω	Polyskop IV SWOB 289.0013...	5.3.5
16	Oscilloscope	Bandwidth 100 MHz		5.2.7 5.3.11
17	Digital tester	Indication of high and low TTL level states	-	5.2.7
18	Service RF adapter for SMS (2)		302.8376	5.2.7
19	DC voltmeter	Measurement range 0.1 to 50 V R_i > 10 MΩ Error < 0.2%	-	5.2.7 5.3.1 5.3.10 5.3.12 5.3.15
20	AF voltmeter	Measurement range 0.1 to 10 V 50 Hz to 20 kHz Error < 0.5%	-	5.3.10 5.3.14
21	Signature analyzer			5.2.8

Table 16

5.2 Trouble Shooting

The following flow charts are intended to help determining the faulty circuit board. The figures given in the left-hand section of the boxes refer to the performance checks described in section 5.2.7, e.g. in chart 5.2.1 the "2" in the top left-hand box relating to "mixer switchover" means that this stage is covered in section 5.2.7.2. In addition the numbers of the circuit boards are given on which the error is traced with the aid of the relevant circuit diagram and the levels and switching states specified thereon. Prior to trouble shooting make sure that all operating voltages are o.k. (see section 5.3.1).

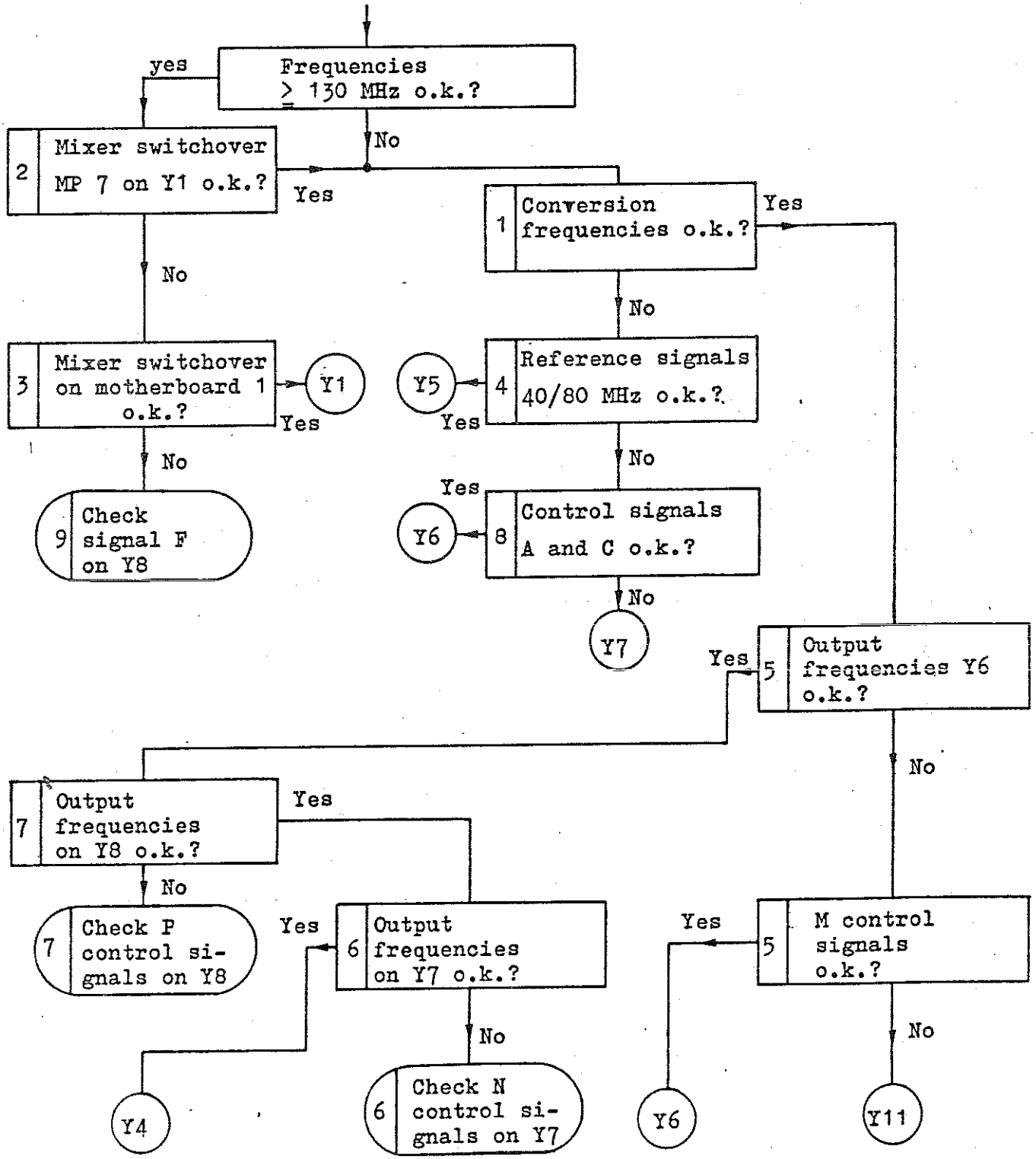
!!! Replace circuit boards only with the SMS switched off !!!

List of circuit boards

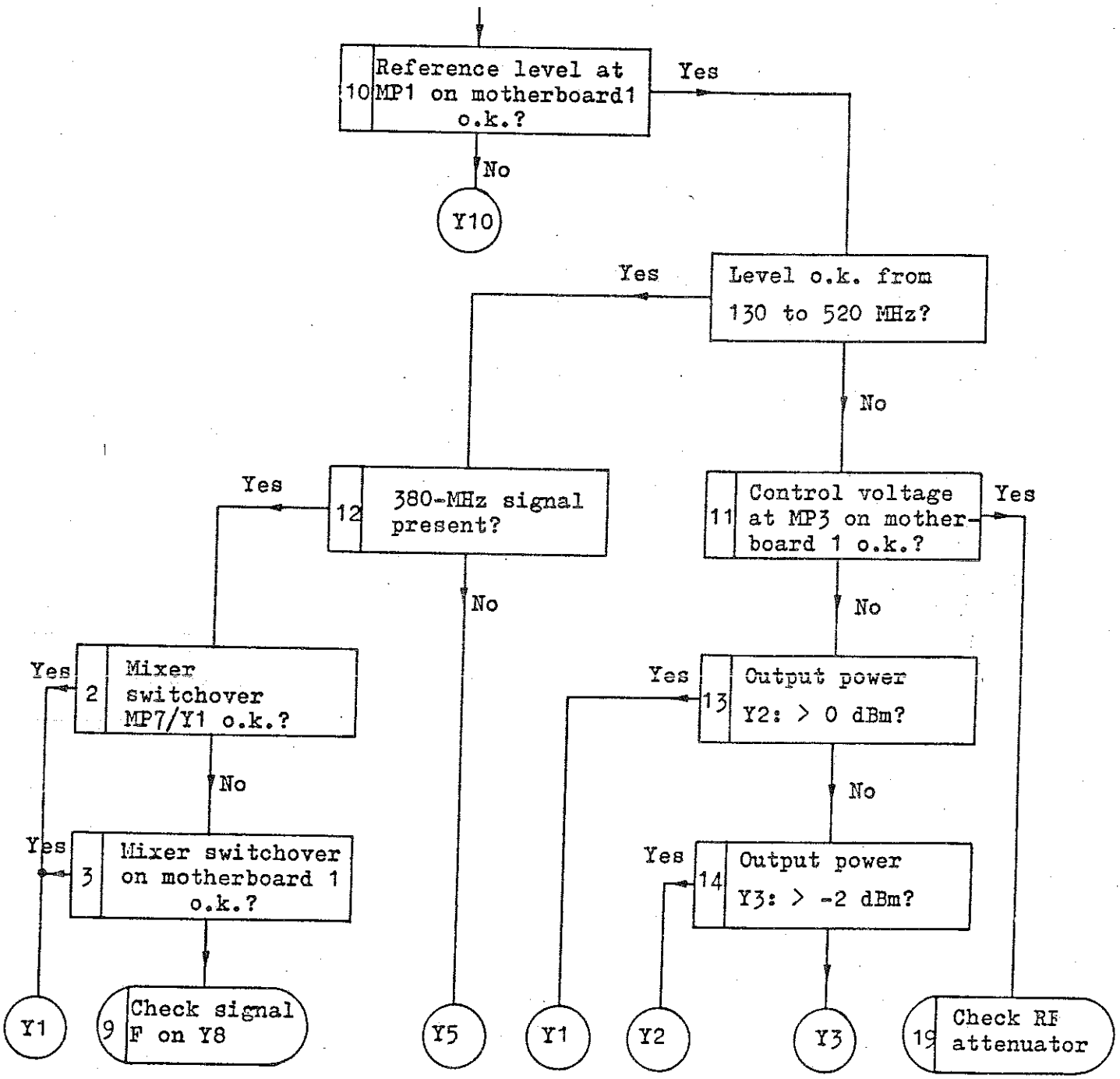
No.	Designation	Id. No.	Colour coding
Y1	Output stage	302.5219	White - white
Y2	Divider	.5419	Green - green
Y3	Oscillator	.5619	Black - black
Y4	Phase control	.5819	Blue - blue
Y5	Converter	.6015	Yellow - yellow
Y6	Reference	.6215	Yellow - red
Y7	50-kHz interpolation oscillator	.6415	Yellow - blue
Y8	100-Hz interpolation oscillator	.6615	Red - red
Y9	Filter	.6815	-
Y10	Modulation control	.7011	Red - blue
Y11	Microprocessor	.7111	Blue - white
Y12	Motherboard 1	.5119	-
Y13	Motherboard 2	.5160	-
Y14	Keyboard/display	.7911	-
Y15	Regulator	.7711	-
Y16	Attenuator	.7311	-
	Adapter	.8676	-

Table 17

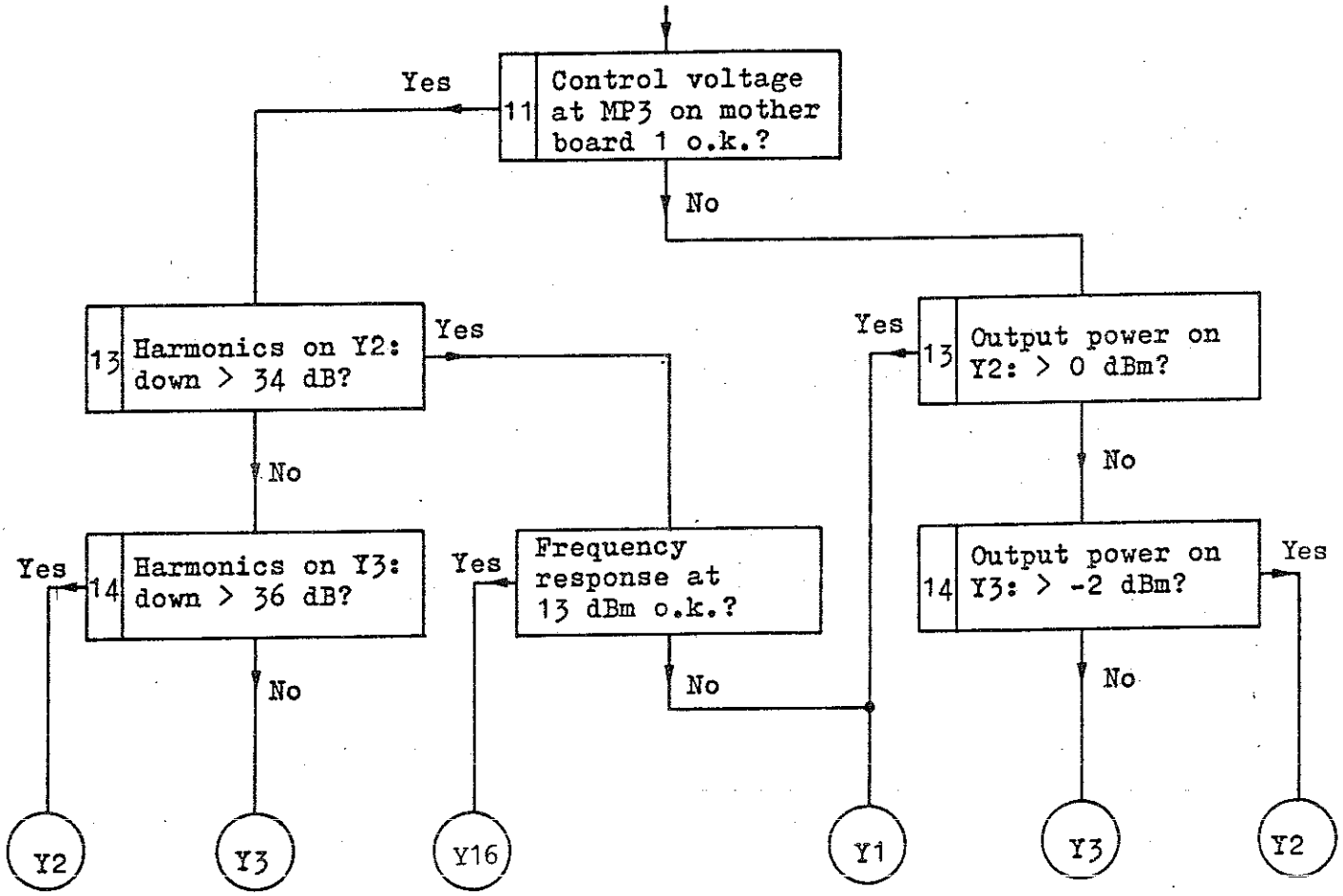
5.2.1 Incorrect Output Frequency



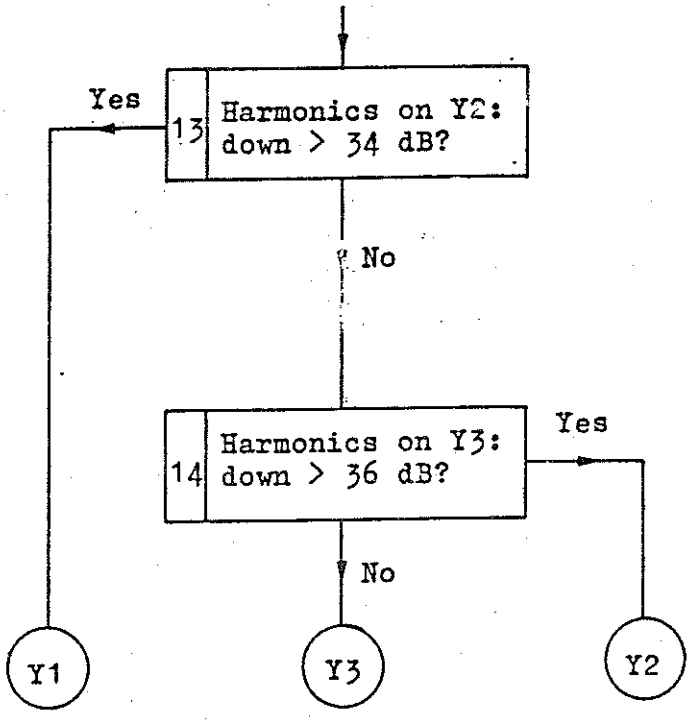
5.2.2 Incorrect Output Level



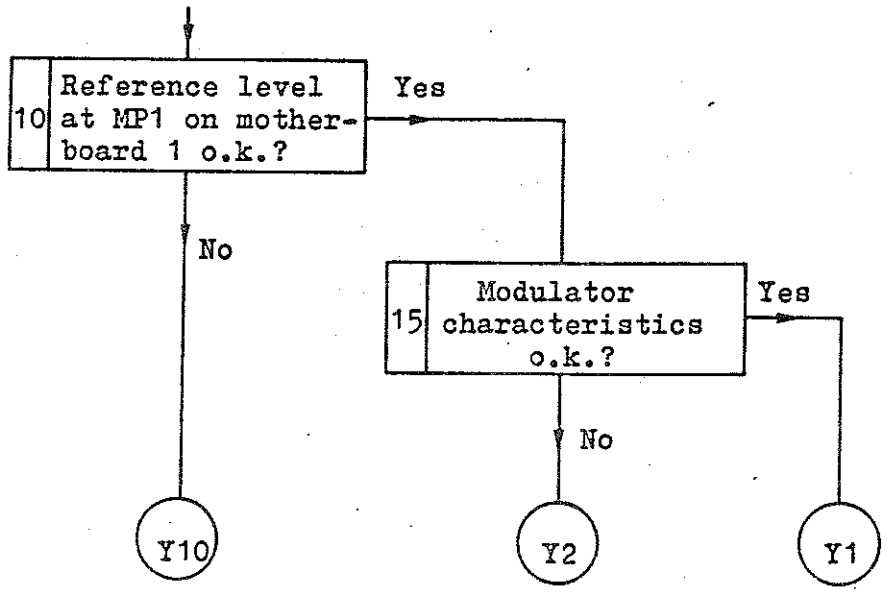
5.2.3 RF Frequency Response not to Specification



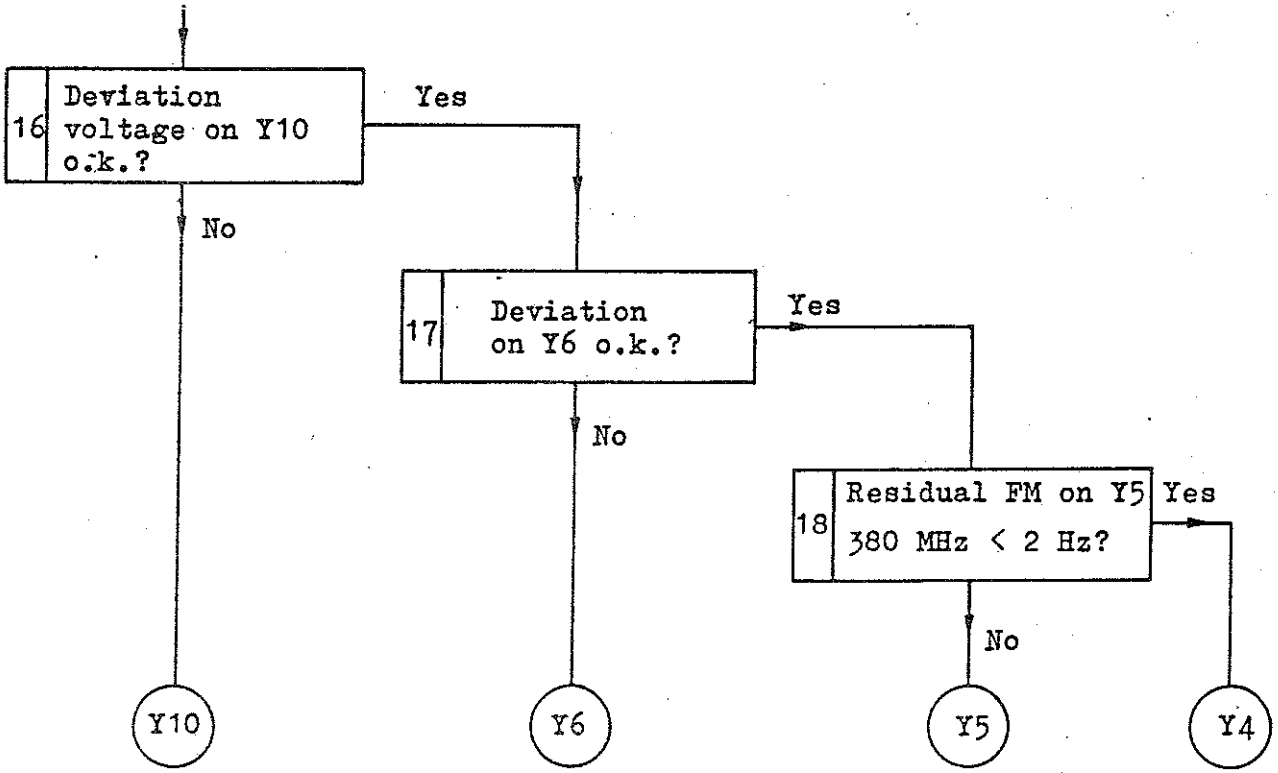
5.2.4 Harmonics not Within Specification



5.2.5 Excessive AM Error or Envelope Distortion



5.2.6 Excessive FM Error or FM Distortion



5.2.7 Performance Checks

For certain checks use of a special service adapter is required in order to measure the RF output level and the frequencies of the subassemblies. This service adapter can be obtained from your nearest R&S distributor.

It is also possible to make some of these measurements up to 100 MHz without the use of this service adapter by high-impedance coupling of the frequency counter or using an oscilloscope.

5.2.7.1 Conversion Frequency

Pull out circuit board Y3. Connect frequency counter either via the oscilloscope probe to BU3/St.19ab of motherboard 1 or insert service adapter in compartment for circuit board Y3 and connect the frequency counter to the RF connector 19. Select frequencies on the SMS and check conversion frequencies according to the following table:

Frequency on the SMS	270	300	330	360	390	420	450	480	MHz
Conversion frequency	300	340	300	340	420	460	420	460	MHz

The level of the conversion frequencies is approximately 25 mV. If the counter sensitivity is inadequate use an RF preamplifier, such as OM423 Valvo.

5.2.7.2 Mixer Switchover - Circuit Board Y1

Take off cover from circuit board Y1 and plug the latter onto the adapter. Check voltage at checkpoint MP7:

Frequency on the SMS	120	130 MHz
Voltage at MP7	+14.5	-14.5 V

5.2.7.3 Mixer Switchover - Motherboard 1

Check voltage at BU1, contact 17b:

Frequency on the SMS	120	130 MHz
Nominal voltage BU1. 17b	H	L

5.2.7.4 Reference Signals 40/80 MHz - Circuit Board Y6

Pull out circuit board Y5. Connect the frequency counter either via the oscilloscope probe to BU5/St.11ab of motherboard 1 or insert service adapter in compartment for circuit board Y5 and connect frequency counter to RF connector 11. Select frequencies on the SMS and check reference frequencies according to the following table:

Frequency on the SMS	270	300	330	360	390	420	450	480	MHz
Reference frequency	80	40	80	40	40	80	40	80	MHz

5.2.7.5 M Control Signals and M Divider - Circuit Board Y6

For this check use frequency counter with high-impedance input (Z_{in} > 100 kΩ) which is suitable for processing TTL signals. First connect frequency counter using a high-impedance probe (e.g. oscilloscope probe) to MP7 and then to MP8 on motherboard 1. Select frequencies on the SMS and check output frequencies according to Table 18. If the output frequencies are faulty check the M control signals at BU6 of motherboard 1 by means of a TTL digital tester acc. to Table 18:

Frequency on the SMS (MHz)	Output frequency (kHz) Y8 (MP7)	Y7 (MP8)	M control signals BU6 contact 13a	15b	15a	17b	17a
280	16.6	16.6	H	H	H	H	L
281	17.2414	17.2414	H	H	H	L	H
285	18.5185	18.5185	H	H	L	H	H
293	21.7391	21.7391	H	L	H	H	H
309	33.3333	16.6667	L	H	H	H	H

Table 18

5.2.7.6 N Divider and N Control Signals

For this check use frequency counter with high-impedance input (Z_{in} > 100 kΩ) which is suitable for processing TTL signals. Connect via oscilloscope probe to MP9 on motherboard 1.

Select frequencies on the SMS and check output frequencies according to Table 19. If the output frequencies are faulty plug the circuit board Y7 onto the adapter and check the N control signals at the integrated circuit B13 by means of a TTL digital tester according to Table 19:

Frequency on the SMS (MHz)	Output frequency (MHz)	N control signals B13 contact 16 15 14 13 17 18 19 20 21 22 23 1 (P7 / P6 / P5)
445.75	2.145833	L H L L L L L L L L L L
445.775	2.147917	L H L L L L L L L L L H
445.8	2.15	L H L L L L L L L L H L
445.85	2.154167	L H L L L L L L L H L L
445.95	2.1625	L H L L L L L L H L L L
446.15	2.011538	L H L L L L L H L L L L
446.55	2.042308	L H L L L L H L L L L L
447.35	2.103846	L H L L L H L L L L L L
448.95	2.067857	L H L L H L L L L L L L
452.165	2.010313	L H L H L L L L L L L L
458.6	2.031579	L H H L L L L L L L L L
445.725	2.143750	L L H H H H H H H H H H

Table 19

5.2.7.7 P Divider and P Control Signals

For this check connect a frequency counter with a high-impedance input (Z_{in} > 100 kΩ) which is suitable for processing TTL signals via the oscilloscope probe to MP10 on motherboard 1.

Select frequencies on the SMS and check output frequencies according to Table 20. If the output frequencies are faulty plug the circuit board Y8 onto the adapter and check the P control signals at the integrated circuit B11 by means of a TTL digital tester according to Table 20:

Frequency on the SMS (MHz)	Output frequency (kHz)	P control signals B11 contact 16 15 14 13 17 18 19 20 21 22 23 1 (P7 / P6 / P5)
340.0048	102.4	H L L L L L L L L L L L
340.0049	102.45	H L L L L L L L L L L H
340.0050	102.5	H L L L L L L L L L H L
340.0052	102.6	H L L L L L L L L H L L
340.0056	102.8	H L L L L L L L H L L L
340.0064	103.2	H L L L L L L H L L L L
340.0080	104	H L L L L L H L L L L L
340.0112	105.6	H L L L L H L L L L L L
340.0176	108.8	H L L L H L L L L L L L
340.0304	115.2	H L L H L L L L L L L L
320.0024	102.4	L H L L L L L L L L L L
399.8727	102.3	L L H H H H H H H H H H

Table 20

5.2.7.8 Control Signals A to D - Circuit Board Y7

Select frequencies on the SMS and check the control signals at BU7 on motherboard 1 by means of a TTL digital tester according to Table 21:

Function	Range identification		Oscillator switchover	Divider
Control signal	A	B	C	D
Contact	15b	13b	6b	8b
Frequency on the SMS (MHz)				
240 MHz				H
270 MHz	L	L	L	L
300 MHz	H	L	L	
330 MHz	L	H	L	
360 MHz	H	H	L	
390 MHz	L	L	H	
420 MHz	H	L	H	
450 MHz	L	H	H	
480 MHz	H	H	H	
Circuit boards controlled	Y4 Y5 Y6	Y4	Y3 Y4 Y5 Y6 Y10	Y2 Y10

Table 21

If the control signals are faulty successively pull out the circuit boards controlled to check whether the trouble source is one of these circuit boards or circuit board Y7.

5.2.7.9 Control Signals E to H - Circuit Board Y8

Select frequencies on the SMS and check the control signals at BU8 on motherboard 1 by means of a TTL digital tester according to Table 22:

Function	Filter	Mixer	Doubler	AM slow
	2	3	4	5
Control signal	E	F	G	H
Contact	15b	13b	6b	8b
Frequency on the SMS (MHz)				
1		H	L	H
81		H	L	L
161	L	L	L	L
241	H	L	L	L
321		L	L	L
521 +)		L	H	L
Circuit boards controlled	Y2	Y1	Y1 Y10 Range Extension Option	Y1

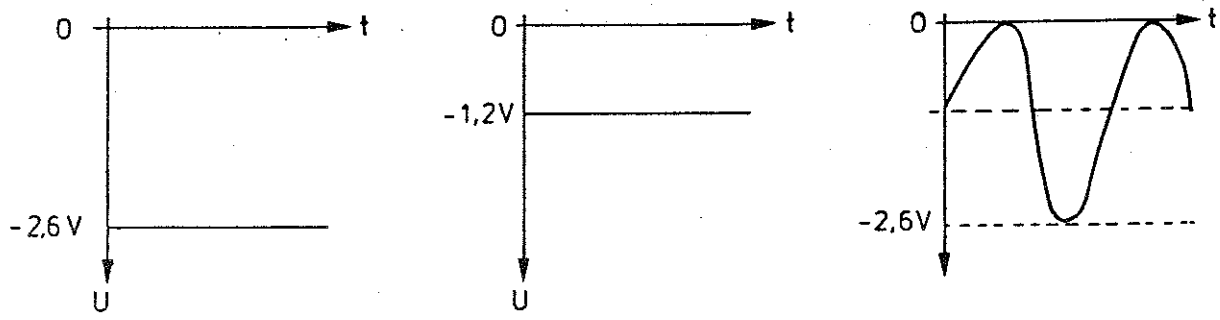
Table 22

If the control signals are faulty successively pull out the circuit boards controlled and check whether the trouble source is one of these circuit boards or circuit board Y8.

+) Only if fitted with the Frequency Range Extension Option.

5.2.7.10 Control Quantity for Gain Control

Connect the oscilloscope to MP1 on motherboard 1 and check the voltage levels:



UNMOD. 13 dBm AM, m=0.7 dBm AM, m=100%, 7 dBm

If the AM is distorted also check the distortion (nominal value < 0.3%) of the control quantity at MP1.

Setting on the SMS: UNMOD., level 13 dBm, frequency 130 MHz.

Set levels according to Table 23 by means of 0.1-dB key. Check the voltages at MP1 of the motherboard 1. If the voltages are faulty plug the circuit board Y10 onto the adapter and check the control signals at B25 by means of a TTL digital tester:

Level on the SMS (dBm)	Level control value Voltage at MP1 (V)	Level attenuator control signal B25 contact 2 3 4 5 P4	1 23 22 P5
13.0	-2.6	L L L L	L L L
12.9	-2.57	H L L L	L L L
12.8	-2.54	L H L L	L L L
12.6	-2.48	L L H L	L L L
12.2	-2.36	L L L H	L L L
11.4	-2.14	L L L L	H L L
9.8	-1.77	L L L L	L H L
6.6	-1.20	L L L L	L L H

Table 23

5.2.7.11 Control Voltage

Connect the oscilloscope to MP3 on motherboard 1.

Setting on the SMS: UNMOD., level 3 dBm,
frequency 0.4 to 520 MHz.

The control voltage should be between -2 V and -4.6 V over the entire frequency range and should be free from oscillation.

5.2.7.12 380-MHz Signal

Insert RF adapter in compartment for circuit board 1. Connect the power meter to the RF connector A. The nominal level is between 0.5 and 2 dBm.

5.2.7.13 Output Power and Harmonic Suppression - Circuit Board Y2

Insert RF adapter in compartment for circuit board 1. Connect power meter or RF spectrum analyzer to the RF connector 19. Apply DC voltage of -2 V to MP3 on motherboard 1. Check the level and the harmonic suppression in the frequency range 130 to 520 MHz:

Nominal level: -4 to +2 dBm
Nominal harmonic suppression: > 34 dB.

5.2.7.14 Output Power and Harmonic Suppression - Circuit Board Y3

Insert RF adapter in compartment for circuit board Y2. Connect power meter or RF spectrum analyzer to the RF connector 4. Check the level and the harmonic suppression in the frequency range 260 to 520 MHz.

Nominal level: -2 to +4 dBm
Nominal harmonic suppression: > 36 dB.

5.2.7.15 Modulator Characteristic - Circuit Board Y2

Determine modulator attenuation by measuring the modulator input level (5.2.7.14) and the output level (5.2.7.13) at the frequencies 260 to 520 MHz and with a DC voltage of 0 V, -2 V and -4 V applied to MP3 on motherboard 1.

Nominal transmission factor (dB)

DC voltage		0 V	-2 V	-4 V	
Frequency	260 MHz	+6.6	+2.4	-10.3	±2 dB
	520 MHz	+5.7	+1.5	-11.5	

Table 24

Setting on the SMS: FM INT. 1 kHz, level 3 dBm, frequency 250 MHz.

Set deviations according to Table 25. Check the modulation voltages at MP5 of the motherboard 1. If the voltages are faulty, plug the circuit board Y10 onto the adapter and check the control signals at B25 by means of a TTL digital tester.

Deviation on the SMS (kHz)	Modulation voltage V_{pp} MP5 (V)	Modulation attenuator control signals at B25 contact	
		20 19 18 17 P6	13 14 15 16 P7
0.5	0.025	H L L L	L L L L
1	0.05	L H L L	L L L L
2	0.10	L L H L	L L L L
4	0.20	L L L H	L L L L
8	0.40	L L L L	H L L L
16	0.80	L L L L	L H L L
32	1.60	L L L L	L L H L
64	3.20	L L L L	L L L H

Table 25

5.2.7.16 Deviation Voltage

Connect the oscilloscope to MP5 on motherboard 1.

Setting on the SMS: FM INT. 1 kHz, deviation 125 kHz,
level 3 dBm, frequency 250/260 MHz.

The voltage at MP5 should be 6.2 V_{pp} at 250 MHz and 3.1 V_{pp} at 260 MHz. If the FM is distorted also measure distortion (nominal value < 0.3%) of deviation voltage at MP5.

5.2.7.17 Frequency Deviation - Circuit Board Y6

Insert RF adapter in compartment for circuit board Y5. Connect deviation meter to RF connector 11.

Setting on the SMS: FM INT. 1 kHz, deviation 125 kHz,
level 3 dBm, frequency 135/145 MHz.

The output frequencies of the circuit board Y6 are 40/80 MHz. The deviation should be 250 kHz at both settings.

5.2.7.18 Spurious FM of 380-MHz Signal

Insert RF adapter in compartment for circuit board Y5. Connect deviation meter to RF connector A.

Setting on the SMS: UNMOD., level 3 dBm, frequency 260 MHz
Nominal spurious deviation: < 2 Hz with CCITT weighting filter.

In the FM INT. 1 kHz, deviation 3 kHz mode the spurious deviation must not rise.

5.2.7.19 RF Attenuator

Performance check as described in section 3.2.2.5.

5.2.8 Signature Analysis

Measuring instrument: Signature Analyzer 5004 A from hp.

5.2.8.1 Checking the Microprocessor Y11

Setting on the 5004 A:
START edge ¯|_ , STOP edge _|¯ , CLOCK edge ¯|_ .

Make the following preparations on the circuit board Y11:

- Disconnect the shorting plug from link I and connect to link V.
- Shift the shorting plugs II and III by 90° and engage.
- Plug the START, STOP, CLOCK and GND lines of the 5004 A onto the four adjacent test pins ST, SP, CK and ⊥ .
- Switch on power switch 17 (Fig. 13) of the SMS.

During the self-testing program - to distinguish it from the operating program - all digits on the displays show the figure 8 with the exception of the first digit on the output level display. Moreover, the lamp OVERFLOW 11 blinks.

The self-testing program can only be stopped by switching off the power switch.

All signatures that can be measured on the circuit board Y11 are entered in the circuit diagram, e.g. the signature 1FA4 at the output $\overline{WR}$ of B1. The signature at the output port P10 of B1 can be measured if the shorting plug of the link V is removed whilst the self-testing program is running. When checking the signatures all ICs are left on the Y11 and all circuit boards remain inserted. If a faulty signature is discovered proceed stepwise for locating the error. First remove all peripheral modules and then insert them one after the other:

- Pull out B2, B5, B13 from the Y11.
- Pull out Y4, Y6, Y7, Y8, Y10.
- Interrupt cable connections to the keyboard/display and to the attenuator.
- Check the signatures at the port, bus and control line outputs of B1.

Successively replace B2, B5, B13 and check respective signatures. After mounting B2 also check the signatures at the port outputs of B2.

Successively insert the circuit boards and connect the keyboard/display Y14 and the attenuator. Check the respective signatures. The signatures are identical irrespective of which circuit boards are inserted.

5.2.8.2 Checking the 50-kHz Interpolation Oscillator Y7, the 100-Hz Interpolation Oscillator Y8 and the Modulation Control Y10

Setting on the 5004 A: same as under section 5.2.8.1.
Make same preparations on the circuit board Y11 as under section 5.2.8.1.
Connect START, STOP, CLOCK and GND lines on Y11 as under section 5.2.8.1.

The measurable signatures are entered in the circuit diagrams: input and output ports and CS and PROG. inputs of the input/output expanders 8243.

5.2.8.3 Checking the Keyboard/Display Y14

Make same preparations on the circuit board Y11 as under 5.2.8.1.

The measurable signatures are entered in the circuit diagram.

a) Signatures at B35 DB0 to DB7, $\overline{RD}$, $\overline{WR}$, $\overline{CS}$, C/D and at the control lines I, J, K, L, N.

Setting on the 5004 A: same as under section 5.2.8.1.
Connect START, STOP, CLOCK, GND lines on Y11 as under section 5.2.8.1.
The signature of the control line I can be measured if the shorting link V on Y11 is interrupted.

b) All other signatures:

Setting on the 5004 A: same as under section 5.2.8.1.
Connect the START, STOP and CLOCK lines of the 5004 A to the adjacent test pins ST, SP and CK on Y14.
Connect the GND line of the 5004 A to the test pin on Y11.

c) Signatures at the outputs 8 to 15 of B37:

Merely the setting on the 5004 A is different from b):

START edge ⌊⌈ , STOP edge ⌉⌊ , CLOCK edge ⌉⌊ .

5.3 Checking and Adjusting the Basic Unit

5.3.1 Setting the Operating Voltages (Y15)

Under operational load proceed as follows:

a) Measure the voltages at the particular checkpoints on the motherboard 1 and set according to Table 26:

Voltage	Potentiometer on Y11	Checkpoint
+5.15 V ±0.05 V	R2	5 V
+15 V ±0.05 V	R25	15 V
+20 V ±0.05 V	R36	20 V
+28 V ±0.1 V	R47	28 V

Table 26

Check voltage -15 V: checkpoint "-15 V"

Permissible deviation: ±0.5 V

b) Check levelling and noise voltage at all operating voltages and an AC supply voltage of 198 to 242 V. The permissible deviations are given in Table 27:

Voltage	Deviation	Noise voltage (mV_{rms})
+5.1 V	±0.01 V	< 0.4
-15 V	±0.05 V	< 1.5
+15 V	±0.1 V	< 1
+20 V	±0.1 V	< 0.6
+28 V	±0.1 V	< 1.5

Table 27

Measure the noise voltage by means of an oscilloscope with differential inputs or by means of a millivoltmeter with floating inputs, such as the UPGR. The correct noise voltage values are only obtained if all phase control loops are locked.

c) For first-time operation of the regulator, preset the voltages in open-circuit operation (pull plug ST.25) or across a dummy load. The required current flow into the dummy load is given in Table 28:

Voltage (V)	Current (A)
-15 V	0.6
+5.15 V	3.25
+15 V	1.1
+20 V	0.7
+28 V	0.027

Table 28

5.3.2 Microprocessor Y11

For a complete check of Y11 perform steps a) and b) of the test procedures or step c).

a) Checking by entering frequency, modulation, level.
The display must be conform to the entry.

b) Checking of control signals for the M dividers at port A of B2 on Y11 according to Table 29:

Control signal Pin B2	M0 24	M1 25	M2 26	M3 27	M4 28
Frequency on the SMS (MHz)					
280	L	H	H	H	H
281	H	L	H	H	H
285	H	H	L	H	H
293	H	H	H	L	H
309	H	H	H	H	L

Table 29

Checking of control signals for the attenuator at port B of B2 on Y11 according to Table 30:

(UNMOD.) Control signal Pin B2	2 32	4 33	8 34	10 35	20 36	40 37	80 38	100 dB 39
Level on the SMS (dBm)								
10 dBm	H	L	L	L	L	L	L	L
8 dBm	L	H	L	L	L	L	L	L
4 dBm	L	L	H	L	L	L	L	L
2 dBm	L	L	L	H	L	L	L	L
-8 dBm	L	L	L	L	H	L	L	L
-28 dBm	L	L	L	L	L	H	L	L
-68 dBm	L	L	L	L	L	L	H	L
-88 dBm	L	L	L	L	L	L	L	H

Table 30

Checking of control signals I, J, K, M, L, N at port 1 of B1 on Y11 according to Table 31:

Control signal Pin B1	I 27	J 28	K 29	M 30	L 31	N 32
Setting on the SMS						
50% AM EXT.	H	L	L	L	X	L
50 kHz FM EXT.	L	H	L	L	X	L
50 kHz FM INT. 400 Hz	L	H	H	L	L	L
5 kHz FM INT. 400 Hz	L	H	H	H	L	L
50 kHz FM INT. 1 kHz	L	H	H	L	H	L
UNMOD. RF OFF	L	L	X	H	X	H

Table 31

For the following measurement Y7 must be inserted.
Checking of control signals A, B, C, D at BU7 of motherboard 1 according to Table 32:

Control signal Contact	A 15b	B 13b	C 6b	D 8b
Frequency on the SMS (MHz)				
300 MHz	H	L	L	L
340 MHz	L	H	L	L
390 MHz	L	L	H	L
135 MHz	L	L	L	H

Table 32

c) Checking by signature analysis (see section 5.2.8).

5.3.3 Keyboard/Display Y14

For a functional check of Y14 proceed acc. to step a). Test procedure step b) permits error location. The microprocessor board Y11 must be inserted.

a) Check Y14 by test entries. The test entries must cover all keys and indications. Exception: LOCAL key and REMOTE indication. Check continued switching of the variation keys if kept permanently depressed.

b) Check by signature analysis (see section 5.2.8).

5.3.4 Reference Y6

a) 10-MHz crystal oscillator
- BR1, BR2, BR4, BR5 linked.
- Measure frequency at output REF. FREQ. 10 MHz 29 on the rear panel.
- Adjust 10 MHz ±30 Hz by means of C62.

With the SMS fully equipped repeat frequency adjustment with enhanced accuracy:

- Measure frequency at RF output 20.
- Enter frequency of 520.000 MHz.
- Adjust 520.0000 MHz ±250 Hz by means of C62.

b) Optional 10-MHz reference oscillator (SMS-B1)
- Connect high-impedance DC voltmeter to checkpoint MP1. Set minimum DC voltage by means of TR1.

Setting the zero-coefficient temperature of the crystal:

- Connect a frequency meter with a resolution of $> 10^{-8}$ to the socket REF. FREQ. 10 MHz 29 (Fig. 13).
- Insert an ammeter into the +15-V voltage supply line (the oven draws approximately 280 mA when cold). After 5 to 10 minutes, the current remains constant.
- Change the resistor R52 in steps according to the E24 progression between 100 Ω and 500 Ω. Allow for about 5 minutes after each change of resistor and read off frequency.
- Solder in resistor which gives the lowest frequency.

Frequency adjustment:

- Measure frequency at output REF.FREQ. 10 MHz 29 on the rear panel.
- Adjust 10 MHz ±2 Hz by means of C53 (on reference oscillator SMS-B1).

With the SMS fully equipped repeat frequency adjustment with enhanced accuracy:

- Measure frequency at RF output 20.
- Enter frequency of 520.000 MHz.
- Adjust 520.000 MHz ±5 Hz by means of C53 (on reference oscillator SMS-B1).

c) 80-MHz oscillator

In addition to board Y6, the boards Y7 and Y11 must be inserted.

- Enter frequency of 340 MHz.
- Measure frequency at input ST5.11a,b (nominal value 80 MHz).
- By turning coil core of L2 find minimum tuning voltage at MP1. Then advance the coil core further clockwise until the tuning voltage is -8 V.

d) Harmonic distortion

In addition to board Y6, the boards Y10 and Y11 must be inserted.

- Enter frequency of 150 MHz.
- Enter 75 kHz FM INT. 1 kHz.
- Measure harmonic distortion at input ST5.11a,b.
- Adjust minimum harmonic distortion by means of R7. Nominal harmonic distortion < 1%. Repeat adjustment under b).

e) Frequency deviation

In addition to board Y6, the boards Y10 and Y11 must be inserted.

- Enter frequency of 340 MHz.
- Enter 75 kHz FM INT. 1 kHz.
- Measure frequency deviation at input ST5.11a,b.
- Adjust 75 kHz deviation by means of R9.

Checking of control signals M0 to M4 (setting data for M divider) and A, C according to Table 33.

Control signal ST6 contact	M0 17a	M1 17b	M2 15a	M3 15b	M4 13a
Frequency on the SMS (MHz)					
280	L	H	H	H	H
281	H	L	H	H	H
285	H	H	L	H	H
293	H	H	H	L	H
309	H	H	H	H	L
Control signal ST6 contact	A 6b	C 8b			
Frequency on the SMS (MHz)					
390	L	H			
300	H	L			

Table 33

5.3.5 100-Hz Interpolation Oscillator Y8

In addition to board Y8, the boards Y6 and Y11 must be inserted.

Coil adjustment:

- Enter frequency of 280.0000 MHz.
- By turning the core of L2 find minimum tuning voltage at MP1. Then turn the core further clockwise until the tuning voltage is 4 V ±0.1 V.
- The frequency at input ST7.11a,b is 100 kHz.

Enter frequency of 318.0152 MHz. The voltage at MP1 must be < +25 V. The frequency at input ST7.11a,b is 134.8 kHz. If the voltage at MP1 is > +25 V, there is a fault which must be investigated.
Check the output ports P5, P6, P7 of the expander port B11 according to Table 20 in section 5.2.7.7.

Check the control signals E, F, G, H of port P4 according to Table 22 in section 5.2.7.9.

Check the input port P2 and the output ports P5 to P7 as well as the inputs CS and PROG. of B11 by signature analysis (see section 5.2.8).

5.3.6 50-kHz Interpolation Oscillator Y7

a) 50-kHz interpolation oscillator

In addition to Y7, the boards Y6 and Y11 must be inserted.
Adjustment of coil L6:

- Enter frequency of 297.9901 MHz.
- By turning the core of L6 find minimum tuning voltage at MP1. Then turn the core further clockwise until the tuning voltage is 5 ±0.1 V.
- Enter frequency of 318.0001 MHz. The voltage at MP1 should be < +25 V.

b) Mixer oscillator

In addition to Y7, the boards Y6, Y8, Y11 must be inserted.
Adjustment of coil L7:

- Enter frequency of 280.0000 MHz.
- By turning the core of L7 find minimum tuning voltage at MP2. Then turn the core further clockwise until the tuning voltage is 5 ±0.1 V.

- Enter frequency of 318.0001 MHz.
- The voltage at MP2 should be +21 V < V < +25 V.

If the voltage is not within this range correct by readjusting the core.

Check the output ports P5, P6, P7 of the expander port B13 according to Table 19 in section 5.2.7.6.

Check the control signals A, B, C, D of the output port P4 according to Table 21 in section 5.2.7.8.

Check the input port P2 and the output ports P5 to P7 as well as the inputs CS and PROG. of B13 by signature analysis (see section 5.2.8).

5.3.7 Converter Y5

The circuit boards Y6, Y7, Y8 and Y11 must be inserted.

5.3.7.1 Oscillator

Insert RF adapter in the compartment for the circuit board Y1. Connect RF adapter and power meter to the RF connector A.

a) Adjust R1 such that the DC voltage at MP1 is about 6.3 V. Connect spectrum analyzer and correct R1, if necessary, to obtain maximum amplitude and spectral purity.

b) Adjust trimmer C9 so as to activate the phase control (output frequency 380 MHz). The tuning voltage at MP6 should be 16 V.

c) By bending the coupling coil L4 set the output level to 2 to 4 dBm. Subsequently, check the tuning voltage and readjust by means of trimmer C9, if necessary.

The setting data given are valid with U-link connected on the oscillator and the circuit board screening closed.

5.3.7.2 Bandpass Filter

a) Check the bandpass filter switching.
Select frequencies on the SMS and check the switching voltages at MP7 and MP8 according to Table 34:

Frequency on the SMS (MHz)	Voltage (V) MP7	MP8
330	+14.5	-14.5
360	-14.5	-14.5
390	+14.5	+14.5
420	-14.5	+14.5

Table 34

b) Insert the RF adapter in the compartment for the circuit board Y6. Connect sweep generator (SWOB IV) output to RF connector 11. Remove the mixer B11 from the circuit board Y5 and connect the socket contacts 1 and 2 with a wire link (0.4 mm dia.).

Insert the second RF adapter in the compartment for the circuit board Y4. Connect the input of the sweep generator display to RF connector 19.

c) Tune the bandpass filter (with circuit board screening closed) to resonant frequency according to Table 35:

Sweep range	Frequency setting on the SMS	Resonant frequency	Tuning elements
260 to 340	330	300	L26/L27
300 to 380	360	340	L20/L21
380 to 460	390	420	L24/L25
420 to 500	420	460	L22/L23

Table 35

d) Adjustment of bandwidth and coupling:

To adjust the bandwidth bend the coupling links between the two coils of a filter. For coupling adjustment bend the two coupling pins at the ends of the filter coils so as to obtain the attenuation between input and output given in Table 34 (RF adapters inserted in the compartments for the circuit boards Y6 and Y3). The attenuation can be directly read off the display screen of the Polyskop SWOB IV if a level reference line is superimposed prior to the adjustment. Since bandwidth and coupling adjustment are mutually interdependent, repeat the adjustment several times. Sweep width is 4 MHz.

Frequency setting on the SMS MHz	Resonant frequency MHz	Bandwidth MHz	Attenuation dB
330	300	$1.5\ ^{+0.2}_{-0.15}$	9 ± 0.5
360	340	$1.6\ ^{+0.2}_{-0.1}$	9 ± 0.5
390	420	$1.9\ ^{+0.2}_{-0.1}$	9.5 ± 0.5
420	460	$2.1\ ^{+0.3}_{-0.2}$	$10\ ^{+1}_{-0.5}$

Table 36

The above values hold true if the circuit board screening is closed.

5.3.7.3 Checking the Output Signals

Insert circuit boards Y5 to Y8 as well as Y11 with screening closed.

a) Insert the RF adapter in the compartment for the circuit board Y1. Connect the deviation meter (frequency 380 MHz) to RF connector A.

The spurious deviation of the 380-MHz signal should be
< 1.9 Hz (according to CCITT, rms weighting)
< 8 Hz (50 to 15 kHz, quasi-peak weighting).

b) Insert the RF adapter in the compartment for the circuit board Y3. Connect the power meter to RF connector 19. Select frequencies on the SMS and check the level according to the table below.

Frequency on the SMS	Level
330 360 390 420	-18 to -22 dBm

5.3.8 Oscillator Y3

a) Setting of operating point and coil adjustment:

In addition to circuit board Y3, the circuit boards Y7 and Y11 must be inserted.

- Interrupt link BRI in the tuning voltage line and apply +18.5 V to the oscillator end.
- Enter 300 MHz (oscillator switchover C = low ST3, 2b).
- Adjust DC voltage between MP2 and MP3 to 8.5 to 8.6 V by means of potentiometer R2.
- Measure frequency at the RF input ST2.4a,b or at RF output 20 (Fig. 12) if the SMS is fully equipped.
- Adjust 380 ±1 MHz by correcting the spacing of the windings of L6.
- Enter 400 MHz (oscillator switchover C = high ST3, 2b).
- Adjust DC voltage between MP1 and MP2 to 8.5 to 8.6 V by means of potentiometer R1.
- Adjust 520 ±1 MHz by correcting the spacing of the windings of L5.
- Reestablish link connection (BRI) in the tuning voltage line.

For the following checks the circuit boards Y4, Y5, Y6, Y7, Y8, Y11 must be inserted in addition to Y3.

b) Level adjustment:

Measure level at the RF input ST2.4a,b.

Vary frequency by means of keys 3.

The RF level should be between -2 dBm and +4 dBm over the frequency range 260 to 520 MHz.

The RF level can be adjusted by correcting the spacing of the coils L6, L8 and L5, L7. This is accomplished by bending L8 and L7, respectively.

c) Enter 260 MHz and 380 MHz and check tuning voltage. The tuning voltage should be > +2.4 V.

d) Check the buildup and spectral purity of the RF signal at the RF input ST2.4a,b in the frequency range 260 to 520 MHz by means of a spectrum analyzer. Check harmonic distortion (suppression > 36 dB). Adjust R1/R2, if necessary.

e) Measure level at the RF input 20 to 60 MHz (ST4.19a,b). Vary frequency by means of keys 3 over the frequency range 260 to 520 MHz. The signal level should be > -14 dBm.

5.3.9 Phase Control Y4

In addition to Y4 the circuit boards Y3, Y5, Y6, Y7, Y8, Y11 must be inserted.

a) Adjustment of fixed tuning voltages:
Enter the following eight frequencies and adjust voltage at MP5 to 0 ±0.2 V by means of the respective potentiometers. For example, enter 270 MHz, vary potentiometer R118 until the voltage at MP5 is 0 V, etc.

Frequency on the SMS	Potentiometer
270 MHz	R 118
300 MHz	R 119
340 MHz	R 120
370 MHz	R 121
390 MHz	R 122
420 MHz	R 123
460 MHz	R 124
500 MHz	R 125

Table 37

b) Adjustment of spurious FM of reference signal:
Enter frequency of 260 MHz. Connect a spectrum analyzer to the RF input ST2.4a,b or, if all circuit boards are inserted, to the RF output 20.

Adjust suppression of the modulation lines 2 MHz and 4 MHz to $\geq$ 75 dB below the signal by means of potentiometer R83. If no modulation lines are discernible, set R83 to mid-position.

c) Gain switching:

Interrupt the link BR1. Feed in signal (10 kHz, 1 V_{pp}) at test pin of link connected to R92.

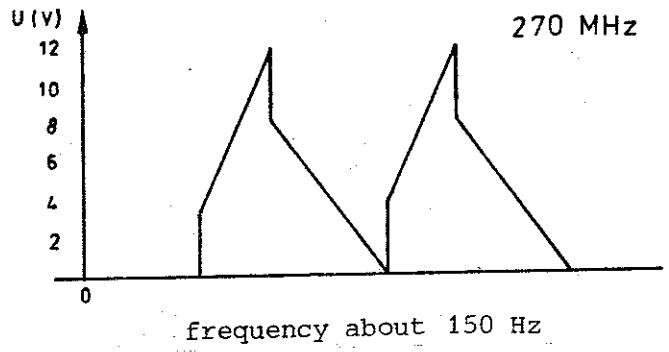
Enter frequencies and check voltages at MP6 according to Table 38.

Frequencies on the SMS	V (V_{pp})
279 MHz	0.14
319	0.14
321	0.20
361	0.27
399	0.13
439	0.13
441	0.16
481	0.22
500	0.42
520	0.62

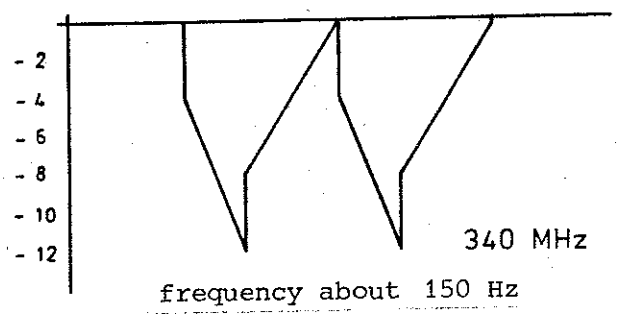
Table 38

d) Lock-in aid:

- Pull out circuit board Y3.
- Enter frequencies 270 MHz and 340 MHz.
- Measure signal at MP5 according to diagrams below.



frequency about 150 Hz



frequency about 150 Hz

e) Enter frequencies and check logic levels at contacts ST4 according to Tables 39 and 40.

Control signal ST4 contact	A 6a	B 8a	C 8b
Frequency on the SMS			
270 MHz	L	L	L
300 MHz	H	L	L
340 MHz	L	H	L
390 MHz	L	L	H

Table 39

Control signal ST4 contact	M0 17a	M1 17b	M2 15a	M3 15b	M4 13a
Frequency on the SMS					
280 MHz	L	H	H	H	H
281 MHz	H	L	H	H	H
285 MHz	H	H	L	H	H
293 MHz	H	H	H	L	H
309 MHz	H	H	H	H	L

Table 40

5.3.10 Checking the Modulation Control Y10

The circuit board Y11 must be inserted.

a) Setting on the SMS: FM EXT. deviation 100 kHz, frequency 250 MHz.
Connect an AF voltmeter to MP15/Y10.
Apply a voltage of approximately 0.57 V/1 kHz to the modulation socket on the front panel so that the AF voltmeter reads 1.00 V.

b) Adjust deviation and check voltage on the AF voltmeter according to the following table:

Deviation (kHz)	9	16	16.5	17	18	20	24	32	64	
Voltage (V)	0.09	0.16	0.165	0.17	018	0.20	0.24	0.33	0.64	±1%

c) Setting on the SMS: FM EXT. deviation 100 kHz, frequency 260/520 MHz.
The AC voltage at MP15 should be 0.50 V.

d) Setting on the SMS: UNMOD. level 13 dBm, frequency 130 MHz.
Adjust voltage at MP14 to 2.50 V by means of R76.

e) Reduce the level by means of 0.1-dB key and check voltage at MP14 according to the following table:

Level (dBm)	12.9	12.8	12.6	12.2	11.4	9.8	6.6	
Voltage (V)	2.47	2.44	2.38	2.27	2.06	1.70	1.15	±1%

5.3.11 Adjusting the Modulation Generator Y10

a) Setting on the SMS: AM INT. 1 kHz.

b) Connect the frequency counter to the modulation socket 23 (Fig. 13).
Check generator oscillation at MP1 by means of oscilloscope.

c) Vary resistor R12 until the generator oscillates.

d) Adjust frequency to 1000 Hz ±3 Hz by means of resistor R1.

e) Setting on the SMS: AM INT. 400 Hz.
Adjust the frequency to 400 Hz ±2 Hz by means of R2.

f) Connect the oscilloscope to MP2.
Vary R12 until the lower of the two voltages is 80 mV_{pp} when switching between 400 and 1000 Hz.

5.3.12 Adjusting the RF Level - Y10 and Y2

The circuit boards Y2 to Y8, Y10 and Y11 must be inserted.

a) Setting the operating points of the transistors T3 and T4 on the circuit board Y1:
Plug the circuit board Y1 onto the adapter.
Adjust the voltage at MP9 to 0.7 V by means of R36 and the voltage at MP10 to 1.3 V by means of R51. (Switch on SMS only for a short time since there is no heat dissipation for T3 and T4 when the cover

is open.) After adjustment replace screening cover, screw shut and insert circuit board again into the cassette without the adapter.

b) Setting on the SMS: UNMOD. level 13 dBm, frequency 130 MHz.
Set the level to 13.00 dBm by means of R76/Y10.

c) Setting on the SMS: FM EXT. level 13 dBm, frequency 130 MHz.
Set the level to 13.00 dBm by means of R71/Y10.

d) Adjust frequency to 520 MHz.
Set the level to 13.05 dBm by means of C64/Y1.

e) Checking the control voltage:
Setting on the SMS: UNMOD. level 3 dBm.
Connect the oscilloscope to MP3 on the motherboard 1. The control voltage should be between -2 V and -4.6 V in the frequency range 0.4 to 520 MHz. If the control voltage falls below -2 V check the output power on the circuit board Y3 (section 5.2.7.14) and the modulation characteristic on the circuit board Y2 (section 5.2.7.15).

5.3.13 Adjusting the Suppression of Harmonics and Non-harmonic Spurious Signals

All circuit boards must be inserted.

a) Connect the RF spectrum analyzer to the RF output of the SMS.

b) Setting on the SMS: UNMOD., level 3 dBm.
Adjust maximum harmonic suppression in the frequency range 250 to 270 MHz by means of R51/Y1. Check harmonic suppression over the entire frequency range from 0.4 to 520 MHz. The typical value is > 36 dB.

c) Adjust maximum suppression of non-harmonic spurious signals
380 MHz - 2 f_{SMS} and
380 MHz - 3 f_{SMS} in the frequency range 100 to 129 MHz by means of C91/Y1.
Check suppression of non-harmonic spurious signals over the entire frequency range from 0.4 to 520 MHz.

Typical values:	0.4 to 105 MHz	> 70 dB
	110 to 129 MHz	> 65 dB
	130 to 520 MHz	> 75 dB.

To adjust C91 unscrew the left-hand guide and push down until a hole is visible in the cassette through which C91 is accessible.

5.3.14 Adjusting the Amplitude Modulation

All circuit boards must be inserted.

a) Setting on the SMS: AM EXT., m = 85%, level 7 dBm, frequency 130 MHz. Apply external modulation voltage of 1.00 V/1 kHz to the modulation socket 23 (Fig. 12). Connect test demodulator to RF output of the SMS (test setup see section 3.2.2.11).

b) Set m = 85% by means of R79/Y10.

c) Set level on SMS to 5.1 dBm and reduce to -4.9 dBm by means of 0.1-dB key.
Set m = 85% by means of R101/Y1.

d) Repeat steps a) to c).

e) Setting on the SMS: AM INT. 1000 Hz, m = 85%, level 7 dBm, 130 MHz. Set m = 85% by means of R15/Y10.

f) Set SMS to AM INT. 400 Hz. Check modulation depth (85%). In the case of a deviation between 1000 Hz INT. and 400 Hz INT. correct by means of R15/Y10.

g) Setting on the SMS: UNMOD., level 13 dBm, frequency 130 MHz. Connect power meter to the RF output of the SMS and check the level. Correct by means of R76/Y10, if necessary.

h) Setting on the SMS: AM EXT., m = 0, level 5.1 dBm, frequency 130 MHz. Reduce level to -4.9 dBm by means of the 0.1-dB key. Check the level. Permissible deviation ±0.3 dB. If the level accidentally drops below -4.9 dBm readjust level to 5.1 dBm and reduce again to -4.9 dBm.

In the case of greater deviations, adjust R102/Y1 and repeat steps a), b) and g).

i) Setting on the SMS: AM INT. 400 and 1000 Hz.
Connect the AF voltmeter to the modulation socket 23 and measure the modulation voltage.
Nominal value: 0.95 to 1.05 V.

j) Check AM error and envelope distortion according to sections 3.2.2.12 and 3.2.2.13, respectively.

5.3.15 Adjusting the Frequency Modulation

a) Setting on the SMS: FM EXT., deviation 75 kHz, level 3 dBm, frequency 390 MHz. Test setup according to section 3.2.2.11. Set modulation voltage (1 kHz) so as to obtain 75 kHz deviation.

b) Adjust R7/Y6 for minimum distortion.
Correct tuning voltage of circuit board Y6 according to section 5.3.4 b).

c) Setting on the SMS: FM EXT., deviation 100 kHz, level 3 dBm, frequency 500 MHz.
Apply external modulation voltage of 1.00 V/1 kHz.
Adjust R9/Y6 for 100 kHz deviation.

d) Set the frequency of the SMS to 460 MHz.
Adjust R12/Y6 for 100 kHz deviation.

e) Check the FM error and FM distortion according to sections 3.2.2.10 and 3.2.2.11.

5.3.16 Adjusting the Doubler of the 1.04-GHz Frequency-range Extension Option SMS-B2

a) Setting on the SMS: UNMOD., level 7 dBm, frequency 750 MHz.
Set RF level to 7 dBm by means of the potentiometer R14 on the circuit board 335.0368 (switch). Measure level at RF output of the signal generator using a power meter. The frequency response of the output level between 520 and 1040 MHz should be flat within ±1 dB. For frequencies > 900 MHz, the frequency response can be adjusted by means of trimmer C20 on 335.0368. The level voltage at checkpoint MP3 of the motherboard 1 should be between -2 V and -4.8 V and must not have any oscillations.

b) Setting on the SMS: a.) UNMOD., level 13 dBm
b.) AM INT. 1 kHz, level 7 dBm, m = 0%.

For the frequencies 520.0001 to 1040 MHz adjust the suppression of non-harmonic spurious signals to > 20 dB by means of potentiometer R13 on the circuit board 335.0316 (doubler).

c) Setting on the SMS: AM EXT. 60%, level 7 dBm.

Feed modulation signal of 1.0 V_{rms} to modulation socket. Adjust potentiometer R23 on the circuit board 335.0368 (switch) such that the modulation depth for the modulation frequency range 20 Hz to 20 kHz fluctuates less than ±5%.

5.3.17 Adjusting the Response Threshold of the Overload Protection

Settings on the SMS: UNMOD., level -27 dBm, frequency 130 MHz.

Test setup 1: Feed a frequency between 25 and 1000 MHz to the RF output from a power signal generator, such as the SMLU, with an RF power output between 0 and 2 W.

Adjustment: Vary the potentiometer R7 until the overload protection responds with a power input P = 0.5 W. R7 is on board 335.0716 overload protection, which is connected at the output of the RF attenuator.

Test setup 2: Apply a DC voltage of 0 to 6 V to the RF output of the SMS (any polarity).

Test: Increase the DC voltage starting from 0 V. At > 1 V, the overload protection should respond. If so, the LED of the RF OFF key 19 lights.

5.3.18 Checking the Frequency Setting

Make check as described in section 3.2.2.2.

5.3.19 Checking the Modulation Input on the Rear Panel

Make check as described in sections 3.2.2.16 (ALC) and 3.2.2.14 (phase modulation), respectively.

5.3.20 Checking the RF Response

The frequency response is preset under section 5.3.4. After level and modulation adjustments check the frequency response (section 3.2.2.3) and correct, if necessary, by means of C64/Y1.

5.3.21 Checking the RF Attenuator Error

Make check as described in section 3.2.2.5.

5.3.22 Checking the Spurious Deviation

Make check as described in section 3.2.2.15.

5.3.23 Checking the VSWR

Make check as described in section 3.2.2.17.

5.4 Retrofitting of Options

Prior to mounting an option pull out power plug. Exchange circuit boards only with the SMS switched off.

5.4.1 Mounting the Reference Oscillator Option SMS-B1

Remove lower cabinet panelling and open lower cover of cassette. Pull out the reference circuit board Y6 (302.6215; yellow/red colour coding). Unplug the two links BR1 and BR2 on the circuit board. Insert the SMS-B1 and screw in place by means of the three screws supplied with it. Replace circuit board Y6 in the cassette and close cassette and cabinet again.

5.4.2 Mounting the 1.04-GHz Frequency-range Extension Option SMS-B2

Space for accommodation of this option is reserved in the lower left-hand corner of the signal generator.

Preparations:

- Remove upper and lower cabinet panelling.
- Remove left side strip.
- Remove cover plate on the rear wall above the air filter.
- Remove RF cable K2 between ST15 of the cassette and the attenuator.

Mounting the option:

Insert the option in the lower left-hand corner of the signal generator with the RF connectors pointing upwards and loosely fix to the side wall with 4 screws M2,5x8. Screw the heat sink to the rear wall with 2 screws M2,5x8 and to the option with 2 screws M2,5x6. Then tighten down the four screws on the side wall.

Running of the cables supplied with the option:

- Run the RF cable K2 between ST15 of the cassette and ST2 of the option.
- Run the RF cable K3 between ST3 of the option and RF terminal of the attenuator.
- Connect the narrow flat cable K22 to ST6 of the option and ST22 of the mother-board 2 (for location of connector and pin numbers see Components Location Plan 302.5160, Bl. 2).
- Connect the broad flat cable K30 to BU7 of the option (same direction as K22) and BU30 of the power supply (for location of socket and laying of the cable see Components Location Plan 302.7711).

The subsequent incorporation of the option causes a reduction of the RF output level by approx. 0.8 dB.

It is therefore necessary to make an adjustment on the "Modulation Control" board (302.7011, Y10).

a) Level correction
   Set SMS to UNMOD., and 3 dBm
   Adjust the output power to 3 dBm using potentiometer R76/Y10.
   Average-out frequency response variations between 400 kHz and 520 MHz.

b) Modulation-depth correction
   Set SMS to 130 MHz, 80% AM INT. 1 kHz, 3 dBm
   Adjust the modulation depth of the RF output signal to 80% using potentiometer R79/Y10.
   Average-out frequency response variations between 400 kHz and 520 MHz.

- Shift the cover plate on the front panel such that the extended frequency range, i.e. "0.4 - 1040 MHz" appears in the window.
- Cover up signal generator again.

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Bilder
Figures

R 29500 Bl. 1

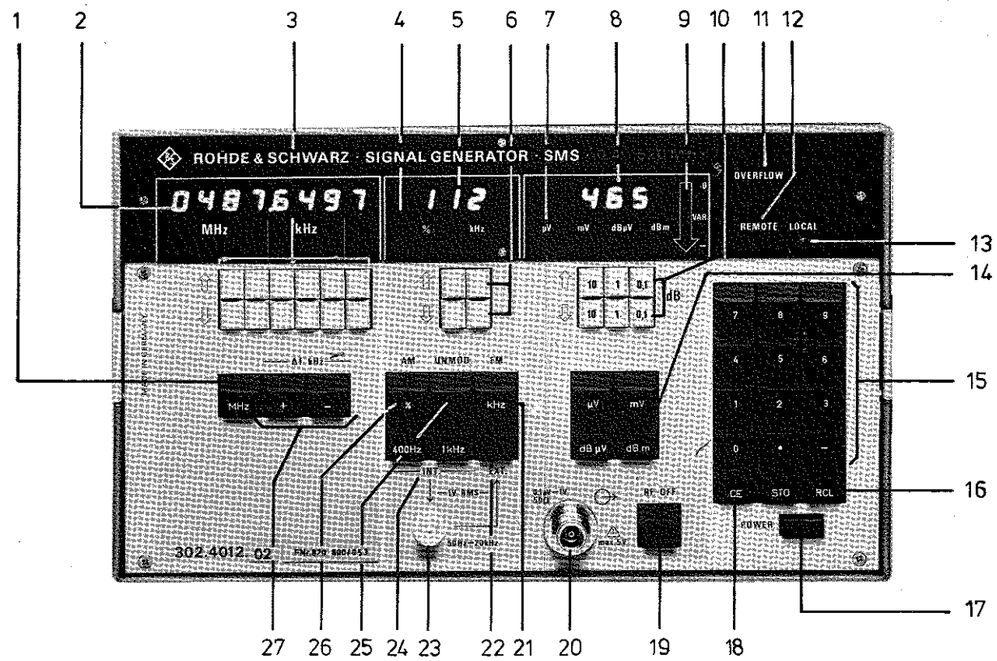

Bild 13 Frontansicht
Fig. 13 Front panel

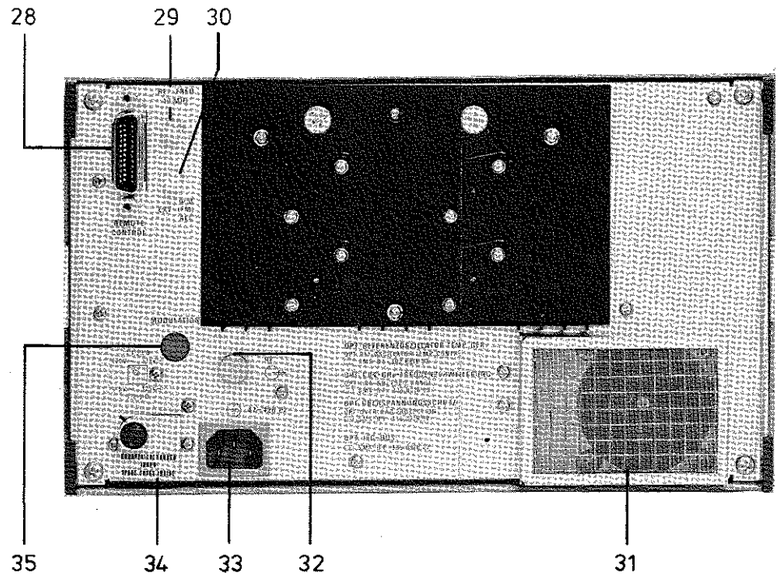

Bild 14 Rückansicht
Fig. 14 Rear panel

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Name | Datum | And. Mittlg. Nr. | And.-zust.

Zeichn.-Nr. 302.8447-103

	Name	Datum
gezeichnet	Gr	9.4.79
bearbeitet		04.79
geprüft		
normgepr.		

PF 095.4115

Interpolationsoszillator 100 Hz Schritte
Interpolation oscillator 100 Hz Steps
25...33,7MHz
Mischoszillator
Mixer oszillator
20...22MHz
Hauptoszillatoren
Main oszillators
380...520 MHz
260..380 MHz
Interpolationsoszillator 50 kHz Schritte
Interpolation oscillator 50 kHz Steps
19.9,..21.9MHz
Hilfsoszillator 80 MHz
Aux. oscillator
80 MHz
80 / 40 MHz
Hilfsoszillator 380 MHz
Aux. oscillator
380 MHz
300MHz
340MHz
420MHz
460MHz
4x
10 MHz
REF. FREQ
10 MHz
Y8
Y7
Y4
Y3
Y6
Y5
4a,b
11a,b
19a,b
15a,b
6b
BU13
BU14
6a
8a
13b
15a
19

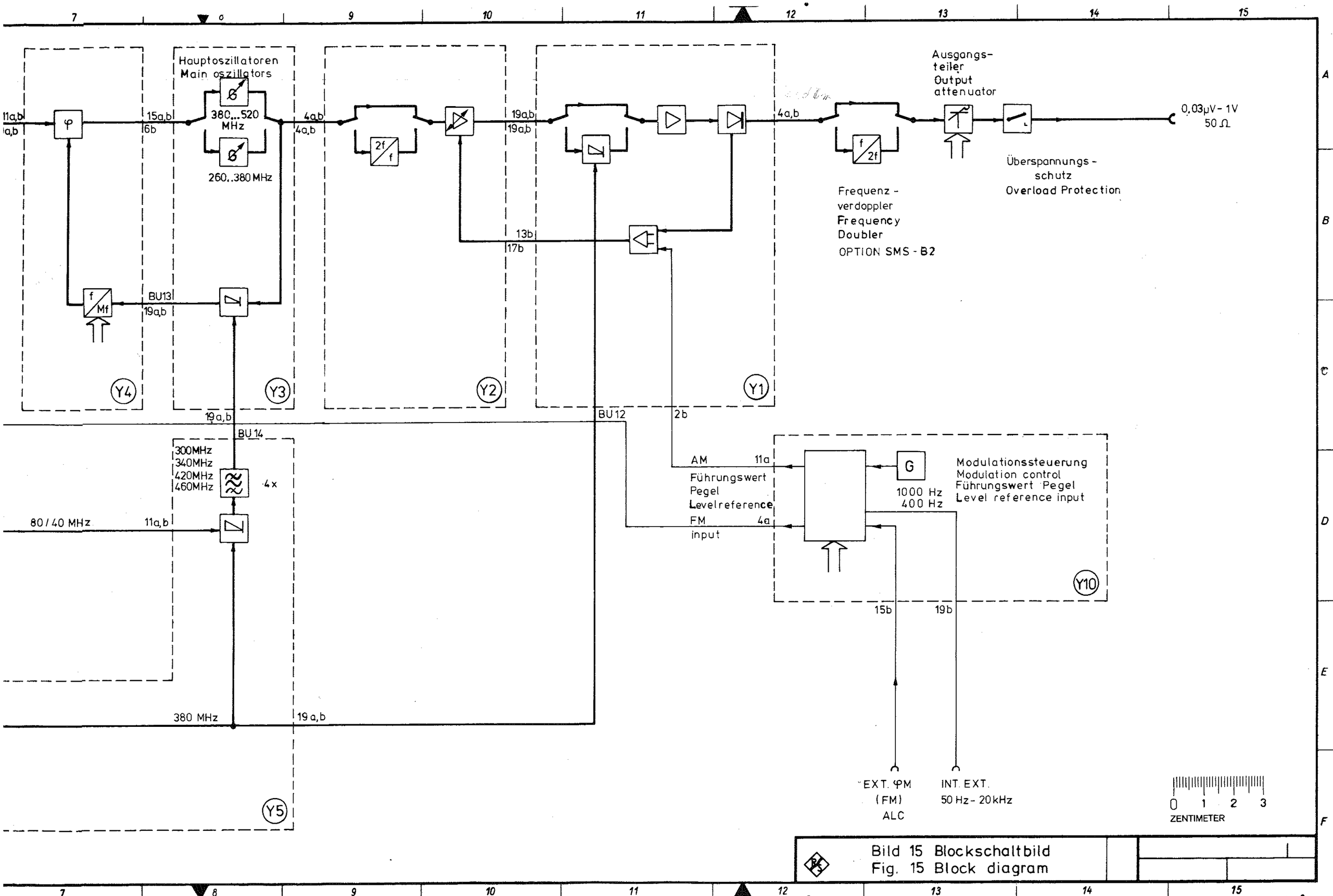

Bild 15 Blockschaltbild
Fig. 15 Block diagram

PGH 11.337

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Schaltteillisten numerisch geordnet
Parts lists in numerical order

R 29500 Bl. 3

S M S Ertsatzteile (Ergänzung)

IEC-Bus Schraube M 2,5 (SMS, SMFP)	336.7272.00
Luftfilter SMS	302.7534.00

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
A	ZUGEHOERIGER STROMLAUF 302.4012 S		
B1	BO UA741MJG OP-AMP. TEXAS UA741MJG	BO 275.0822	302.5160
BU1 BIS BU8	FP DIREKT 40-POLIG	FP 087.0672	302.5119
BU8	FP DIREKT 40-POLIG	FP 087.0672	302.5119
BU9	FP DIR.BUCHSENLEISTE 64P.	FP C87.0695	302.5160
BU10	FP DIREKT 40-POLIG	FP 087.0672	302.5160
BU11	FP DIREKT 40-POLIG	FP 087.0672	302.5160
BU20	FR JC-FASSUNG 16 POLIG EURO-DIP BU16 OZ IM MAGAZIN	FR 249.6091	302.5160
BU24	BUCHSENLEISTE	302.4606	302.4593
BU26	BUCHSENLEISTE	302.4587	302.4570
BU30	FJ EINBAUBUCHSE SYST.N SUHNER 24N-50-3-X FUER SR3	FJ 290.8695	302.8618
BU31	FJ EINBAUBUCHSE SYST.BNC SPINNER BN292700	FJ 017.6607	
BU33	FJ EINBAUBUCHSE SYST.BNC SPINNER BN942403	FJ 017.6636	302.8630
BU35	FJ EINBAUBUCHSE SYST.BNC SPINNER BN719000	FJ 017.6659	302.7392
C1	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C2	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C3	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C4	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC C82.1712	302.6815
C5	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C6	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C7	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C8	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/208CE9000	CC 082.1712	302.6815
C9	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C10	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C11	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C12	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C13	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C14	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C15	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C16	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C17	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C18	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C19	CC 470PF-20+50%R2000TRAP.	CC 083.6776	302.6815
C20	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	302.6815

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	STETTNER TEFK7,1500/2080E9000		
C21	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C22	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C23	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C24	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.6815
C31	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C32	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C33	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C34	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C35	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C36	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C37	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C38	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C39	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C40	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C41	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C42	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C43	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C44	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C45	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C46	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C47	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C48	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C49	CC 180PF+-10% R700 TRAP DRALORIC TRE7L0E180/10R700	CC 086.7496	302.6815
C50	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C51	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C52	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C53	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815
C54	CC 1NF+80-20%R4000 TRAP DRALORIC TRE7L0E1000/2080%R40	CC 086.7515	302.6815

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C60	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5119
BIS			
C92	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5119
C94	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5119
C95	CC 560PF+-10%3X4R2000 DRALORIC EDPU3X4/560/10%R2000	CC 087.7002	302.5119
C96	CC 560PF+-10%3X4R2000 DRALORIC EDPU3X4/560/10%R2000	CC 087.7002	302.5119
C97	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5119
C99	CE 1000UF10+100%16V 15X30 ROEDERST ELKO EK 1000/16	CE 087.0437	302.5160
C100	CE 220NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,22/35	CE 022.8162	302.5160
C101	CE 220NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,22/35	CE 022.8162	302.5160
GL1	AF HLMP-3502 LED GRUEN5X9 HEWLETT-P. HLMP 3502	AF 235.4862	
GL1	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.5160
GL2	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.5160
GL3	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.5160
K1	HF-KABEL	302.8618	
K2	HF-KABEL	302.8624	
K3	HF-KABEL	302.8630	
K4	KABEL	302.4570	
K5	KABEL	302.4593	
K10	HF-KABEL	302.4312	
K12	HF-KABEL	302.7392	
L1	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L2	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L3	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L4	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L5	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L6	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L7	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L8	LD 1UH BEI 3 A 0,017 OHM SIEMENS B82111-A-C1	LD 026.4510	302.6815
L9	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L10	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
L11	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L12	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L13	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L14	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L15	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L16	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L17	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L18	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L19	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L20	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L21	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L22	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L23	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L24	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	302.6815
L100	LD 100UH+-20% 1A 0,650HM SIEMENS B82111-E-C25	LD 155.9446	302.5160
R1	RL 0,125W2370HM+-1%TK50 DALE MF1/10 237 OHM1%TK50	RL 086.2065	302.7357
R1	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5160
R1	RF 0,25W120 OHM +-5% DRALORIC LCA0207/+-5%120	RF 069.1212	
R2	RF 0,25W180 OHM +-5% DRALORIC LCA0207/+-5%180	RF 069.1812	302.5160
R2	RL 0,125W61,90HM+-1%TK50 DALE MF1/10 61,90HM1%TK50	RL 067.4243	302.7357
R3	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5160
R4	RF 0,25W 47KOHM +-5% DRALORIC LCA0207/+-5%47K	RF 069.4734	302.5160
RS1	SN 12V 1XU RH MONOSTABIL SDS RS-12V	SN 063.7083	302.5160
SI1	SS SCHMELZ T1,25B 41571 WICKMANN T1,25BDIN41571TROP. FUER 220 V SCHMEL. T2,5D DIN 41571 SS 020.7575	SS 020.7475	
ST9	ENTHALTEN IN 302.681500		302.6815
ST12	FJ EINBAUSTECKER SYST.SMB RADIALL	FJ 063.5168	302.5119

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
ST13	FJ EINBAUSTECKER SYST.SMB RADIALL	FJ 063.5168	302.5119
ST14	FJ EINBAUSTECKER SYST.SMB RADIALL	FJ 063.5168	302.5119
ST15	FJ EINBAUWINKELST. SMC RADIALL R 112 669	FJ 249.9684	302.5119
ST16	FJ EINBAUWINKELST. SMC RADIALL R 112 669	FJ 249.9684	302.5119
ST17	FJ EINBAUWINKELST. SMC RADIALL R 112 669	FJ 249.9684	302.7357
ST21	STECKEREINHEIT	302.5190	302.5160
ST25	STECKEREINHEIT	302.5183	302.5160
T1	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	302.5160
Y1	ED AUSGANGSSTUFE FUER VAR 02,03,04,15,16, 22,32,33 HIERZU 302.5219 S AUSGANGSSTUFE 302.6550 HIERZU 302.6550 S FUER VAR 12,24,25	302.5219	
Y2	ED TEILER HIERZU 302.5419 S	302.5419	
Y3	ED OSZILLATOR HIERZU 302.5619 S	302.5619	
Y4	ED PHASENREGELUNG HIERZU 302.5819 S	302.5819	
Y5	ED UMSETZER HIERZU 302.6015 S	302.6015	
Y6	ED REFERENZ HIERZU 302.6215 S	302.6215	
Y7	ED INTERPOLATIONSOS.50KHZ HIERZU 302.6415 S	302.6415	
Y8	ED INTERPOL.-OSZ.- 100 HZ	302.6615	
Y10	ED MODULATIONSSTEUERUNG HIERZU 302.7011 S	302.7011.22	
Y11	MIKROPROZESSOR HIERZU 302.7111 S FUER VAR 15,16,22,24,33 MIKROPROZESSOR 302.7111.52 HIERZU 302.7111 S FUER VAR 02,03,04,12,25,32	302.7111.22	
Y14	TASTATUR/ANZEIGE-EINHEIT HIERZU 302.7911 S FUER VAR 02,12,15,16,22, 24,25,32,33	302.7911	
Y15	NETZTEIL HIERZU 302.7411 S FUER VAR 02,12,15,16,22, 24,25 NETZTEIL 302.7428 FUER VAR 03,04 NETZTEIL 302.7434 FUER VAR 32,33	302.7411	
Y16	BAUGR. EICHLEITUNG F.SMS	302.7311	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	HIERZU 302.7311 S FUER VAR 02,03,12,15,16, 22,24,25,32,33		- ENDE -

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
13	0282	ED AUSGANGSSTUFE	302.5219 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BM 5082-9200 MIXER-1GHZ HEWLETT-P. 5082-9200	302.5231	
B2	BO MC1558G DUAL-OP-AMP MOTOROLA MC1558G	BO 475.0830	
B3	BO TL044MJ 4XOP-AMPL. TEXAS TL044MJ	BO 302.5248	
B4	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B5	BO LF256H BIFET-OP.AMP. NSC LF256H	BO 302.5883	
B6	BO UA741MJG OP-AMP. TEXAS UA741MJG	BO 275.0822	
BU12	FJ EINBAUBUCHSE SYST. SMB RADIALL 115 556	FJ 063.5145	
C1	CC 330PF+-2%6X9N750 DRALORIC EDPU6X9/330/2%N750	CC 087.6964	
C2	CC 4,7PF+-0,5PF7NP0 TRAP STETTNER TEFK7,4,7PF/0,5PF,NP	CC 417.8603	
C3	CC 2,7PF+-0,5PF P100TRAP SIEMENS B38280-A5020-D702	CC 083.6624	
C4	CC 12PF+-10% N470 TRAP STETTNER TEFK7/1210%N470	CC 083.6699	
C6	CC 4,7PF+-0,5PF7NP0 TRAP STETTNER TEFK7,4,7PF/0,5PF,NP	CC 417.8603	
C7	CC 2,7PF+-0,5PF P100TRAP SIEMENS B38280-A5020-D702	CC 083.6624	
C8	CC 6,8PF+-0,25PF4X5P100 DRALORIC EDPU4X5/6,8/0,25P100	CC 087.6270	
C9	CC 6,8PF+-0,25PF4X5P100 DRALORIC EDPU4X5/6,8/0,25P100	CC 087.6270	
C10	CC 18PF+-2%6X9P100 DRALORIC EDPU6X9/18/2%P100	CC 087.6329	
C11	CC 22PF+-2%6X9P100 DRALORIC EDPU6X9/22/2%P100	CC 087.6335	
C14	CC 27PF+-2%4X5NP0 DRALORIC EDPU4X5/27/2%/NP0	CC 087.6470	
C15	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	
C16	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	
C17	CC 150PF+-10% R700 TRAP DRALORIC TRE7L0E,150/10%R700	CC 086.7480	
C18	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	
C19	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C20	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	
C21	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C23	CC 6,8PF+-0,25PF4X5P100 DRALORIC EDPU4X5/6,8/0,25P100	CC 087.6270	
C24	CC 22PF+-2%6X9P100 DRALORIC EDPU6X9/22/2%P100	CC 087.6335	
C25	CC 47PF+-2%5X6NP0	CC 087.6506	

PF 095.0026.0679

Diese Unterlage ist unser Eigentum. Vervielfältigung, unbefugte Verwendung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
13	0282	ED AUSGANGSSTUFE	302.5219 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC EDPU5X6/47/2%/NP0		
C27	CC 47PF+-2%5X6NP0 DRALORIC EDPU5X6/47/2%/NP0	CC 087.6506	
C28	CC 22PF+-2%6X9P100 DRALORIC EDPU6X9/22/2%P100	CC 087.6335	
C29	CC 6,8PF+-0,25PF4X5P100 DRALORIC EDPU4X5/6,8/0,25P100	CC 087.6270	
C30	CC 330PF+-2%6X9N750 DRALORIC EDPU6X9/330/2%N750	CC 087.6964	
C31	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C32	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C33	CC 820PF+ 50-20%HDK4000TR SIEMENS B37292-B5821-Z002	CC 022.0255	
C34	CC 820PF+ 50-20%HDK4000TR SIEMENS B37292-B5821-Z002	CC 022.0255	
C35	CC 820PF+ 50-20%HDK4000TR SIEMENS B37292-B5821-Z002	CC 022.0255	
C36	CC 330PF+-2%6X9N750 DRALORIC EDPU6X9/330/2%N750	CC 087.6964	
C37	CC 330PF+-2%6X9N750 DRALORIC EDPU6X9/330/2%N750	CC 087.6964	
C40	CC 3,9PF+-0,25PF4X5P100 DRALORIC EDPU3X4/3,9/0,25P100	CC 087.6241	
C41	CC 100NF+-10%100V K1200VI AEROVOX CKR06BX104KL	CC 060.1149	
C42	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C43	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C44	CE 2,2UF+-20%20V 5X 4X 7 ERO-TANTAL TA-ELKOETR-2,2/20	CE 022.8104	
C46	CC 18PF+-10% N750 TRAP STETTNER TEFK7/1810%N750	CC 083.6718	
C47	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C48	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C50	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C51	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C53	CC 100NF+-10%100V K1200VI AEROVOX CKR06BX104KL	CC 060.1149	
C54	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C55	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C56	CC 33PF+-10% N1500 TRAP STETTNER TEFK7/33/10%N1500	CC 083.6747	
C57	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C58	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C59	CE 2,2UF+-20%20V 5X 4X 7 ERO-TANTAL TA-ELKOETR-2,2/20	CE 022.8104	

PF 095.0026.0679

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	13	0282	ED AUSGANGSSTUFE	302.5219 SA	3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C60	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C61	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C62	CC 100NF+-10%100V K1200VI AEROVOX CKR06BX104KL	CC 060.1149	
C64	CT 3 PF N333 F.GEDR.SCH STETTNER 5STRIK0042,5/5PFN033	CT 066.8045	
C65	CC 8,2PF+-0,25PF5X6P100 DRALORIC EDPU5X6/8,2/0,25P100	CC 087.6287	
C66	CC 39PF+-10% N1500 TRAP STETTNER TEFK/7/39/10%N1500	CC 083.6753	
C67	CC 270PF+-2%6X9N750 DRALORIC EDPU6X9/270/2%N750	CC 087.6958	
C69	CC 120PF+-2%6X9NP0 DRALORIC EDPU6X9/120/2%NP0	CC 087.6558	
C70	CC 39PF+-2%4X5NP0 DRALORIC EDPU4X5/39/2%/NP0	CC 087.6493	
C71	CC 100NF+-10%100V K1200VI AEROVOX CKR06BX104KL	CC 060.1149	
C72	CC 3,9PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/3,9/0,IK/NP0	CC 087.6370	
C74	CC 820PF+-10%4X5R2000 DRALORIC EDPU4X582010%R2000	CC 087.7025	
C75	CC 220PF+-2%6X7N750 DRALORIC EDPU6X7/220/2%N750	CC 087.6941	
C76	CC 120PF+-2%6X9NP0 DRALORIC EDPU6X9/120/2%NP0	CC 087.6558	
C78	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C80	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C81	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C82	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C90	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C91	CT 5PF N075 F.GEDR.SCH. STETTNER 5STRIK0043/8PFN075	CT 066.8039	
C92	CC 8,2PF+-0,25PF5X6P100 DRALORIC EDPU5X6/8,2/0,25P100	CC 087.6287	
C93	CC 3,9PF+-0,25PF4X5P100 DRALORIC EDPU3X4/3,9/0,25P100	CC 087.6241	
C94	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C95	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C97	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C98	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C99	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C100	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C102	CC 4,7NF+-10%6X9R2000	CC 087.7102	

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	13	0282	ED AUSGANGSSTUFE	302.5219 SA	4

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC EDPU6X9/4700/10R2000		
C103	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C104	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C105	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C106	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C107	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C108	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C109	CC 220PF+-2%6X7N750 DRALORIC EDPU6X7/220/2%N750	CC 087.6941	
C110	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C112	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C113	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C114	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C115	CC 3,3NF+-10%6X7R2000 DRALORIC EDPU6X7/3300/10R2000	CC 087.7083	
C116	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C117	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C118	CC 33PF+-2%4X5NP0 DRALORIC EDPU4X5/33/2%/NP0	CC 087.6487	
C120	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C121	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
GL1	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL2	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL3	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL4	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL5	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL6	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL7	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL8	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL9	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL10	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL12	AE 5082-2900 SCHOTTKY-DI.	AE 012.8018	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	HEWLETT-P. 5082-2900		
GL13	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL14	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL15	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL16	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL17	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL18	AE 5082-2900 SCHOTTKY-DI. HEWLETT-P. 5082-2900	AE 012.8018	
GL19	AE BZX55/C8V2 0,5W Z-DI VALVO BZX55/C8V2	AE 012.2490	
K1	KABEL	302.5254	
L6	SPULE	302.5348	
L7	LD 22,0UH10%3,300HMO,114A DELEVAN DROSSEL1025-52	LD 067.3024	
L8	LD 220 UH10%21,00HMO,052A DELEVAN DROSSEL1025-76	LD 067.3147	
L9	LD 220 UH10%21,00HMO,052A DELEVAN DROSSEL1025-76	LD 067.3147	
L10	LD 220 UH10%21,00HMO,052A DELEVAN DROSSEL1025-76	LD 067.3147	
L11	LD 220 UH10%21,00HMO,052A DELEVAN DROSSEL1025-76	LD 067.3147	
L12	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L16	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L17	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L18	LD 470 UH10%42,00HMO,036A DELEVAN DROSSEL1025-84	067.3182	
L19	LD 100 UH10%8,000HMO,084A DELEVAN DROSSEL1025-68	LD 067.3101	
L20	LD 470 UH10%42,00HMO,036A DELEVAN DROSSEL1025-84	067.3182	
L21	LD 100 UH10%8,000HMO,084A DELEVAN DROSSEL1025-68	LD 067.3101	
L25	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L26	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L27	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L28	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L29	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L30	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L32	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
L34	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L35	LD 2,70UH10%0,550HMO,355A DELEVAN DROSSEL1025-30	LD 067.2911	
L36	LD 1,50UH10%0,220HMO,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L37	LD 3,30UH10%0,850HMO,285A DELEVAN DROSSEL1025-32	LD 067.2928	
R1	RL 0,25W 68,1 OHM+-1%TK50 DRALORIC SMA0207/68,1OHM-F-D	RL 082.9636	
R2	RL 0,25W 68,1 OHM+-1%TK50 DRALORIC SMA0207/68,1OHM-F-D	RL 082.9636	
R3	RL 0,25W 169 OHM+-1%TK50 DRALORIC SMA0207/169OHM-FD	RL 082.9994	
R6	RF 0,25W200 OHM +-5% DRALORIC LCA0207/+-5%200	RF 069.2019	
R7	RF 0,25W 10 OHM +-5% DRALORIC LCA0207/+-5%10	RF 069.1006	
R8	RF 0,25W 10 OHM +-5% DRALORIC LCA0207/+-5%10	RF 069.1006	
R9	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	
R10	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R11	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	
R12	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R13	RF 0,25W 10 OHM +-5% DRALORIC LCA0207/+-5%10	RF 069.1006	
R14	RF 0,25W 10 OHM +-5% DRALORIC LCA0207/+-5%10	RF 069.1006	
R15	RF 0,25W470 OHM +-5% DRALORIC LCA0207/+-5%470	RF 069.4711	
R16	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	
R17	RF 0,5 W 50 OHM+-5% RESISTA SK4/500HM5%	RF 028.0157	
R18	RF 0,5 W 50 OHM+-5% RESISTA SK4/500HM5%	RF 028.0157	
R19	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R20	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069.2225	
R21	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	
R22	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R23	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R24	RF 0,25W430 OHM +-5% DRALORIC LCA0207/+-5%430	RF 069.4311	
R25	RF 0,25W4,3KOHM +-5% DRALORIC LCA0207/+-5%4,3K	RF 069.4328	
R26	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
13	0282	ED AUSGANGSSTUFE	302.5219 SA	7

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R27	RF 0,25W1,2KOHM +-5%	RF 069.1229	
	DRALORIC LCA0207/+-5%1,2K		
R30	RF 0,25W 18 OHM +-5%	RF 069.1806	
	DRALORIC LCA0207/+-5%18		
R31	RF 0,25W 22 OHM +-5%	RF 069.2202	
	DRALORIC LCA0207/+-5%22		
R32	RF 0,25W 39 OHM +-5%	RF 069.3909	
	DRALORIC LCA0207/+-5%39		
R34	RF 0,25W150 OHM +-5%	RF 069.1512	
	DRALORIC LCA0207/+-5%150		
R35	RF 0,25W330 OHM +-5%	RF 069.3315	
	DRALORIC LCA0207/+-5%330		
R36	RS 0,5W200 OHM+-20%10X10X	RS 247.7949	
	BOURNS 3386X-1-201		
R37	RF 0,25W1,2KOHM +-5%	RF 069.1229	
	DRALORIC LCA0207/+-5%1,2K		
R38	RF 0,5 W 56 OHM+-5%	RF 007.1225	
	RESISTA SK4/560HM5%		
R40	RF 0,25W 39 OHM +-5%	RF 069.3909	
	DRALORIC LCA0207/+-5%39		
R41	RF 0,25W 33 OHM +-5%	RF 069.3309	
	DRALORIC LCA0207/+-5%33		
R42	RF 0,25W 22 OHM +-5%	RF 069.2202	
	DRALORIC LCA0207/+-5%22		
R45	RF 0,25W 22 OHM +-5%	RF 069.2202	
	DRALORIC LCA0207/+-5%22		
R46	RF 0,25W 39 OHM +-5%	RF 069.3909	
	DRALORIC LCA0207/+-5%39		
R47	RF 0,25W 33 OHM +-5%	RF 069.3309	
	DRALORIC LCA0207/+-5%33		
R49	RF 0,25W180 OHM +-5%	RF 069.1812	
	DRALORIC LCA0207/+-5%180		
R50	RF 0,25W100 OHM +-5%	RF 069.1012	
	DRALORIC LCA0207/+-5%100		
R51	RS 0,5W200 OHM+-20%10X10X	RS 247.7949	
	BOURNS 3386X-1-201		
R52	RF 0,25W1,2KOHM +-5%	RF 069.1229	
	DRALORIC LCA0207/+-5%1,2K		
R53	RF 0,25W 3,9 OHM +-5%	RF 074.0010	
	DRALORIC LCA0207/+-5%3,9		
R55	RF 0,25W 47 OHM +-5%	RF 069.4705	
	DRALORIC LCA0207/+-5%47		
R56	RF 0,25W 39 OHM +-5%	RF 069.3909	
	DRALORIC LCA0207/+-5%39		
R57	RF 0,25W 18 OHM +-5%	RF 069.1806	
	DRALORIC LCA0207/+-5%18		
R60	RL 0,13W 47 OHM2% UNGEW.	RL 092.5910	
	RESISTA MK1 470HM 2% UNGEW.		
R61	RL 0,13W 470 OHM2% UNGEW.	RL 092.6030	
	RESISTA MK1 4700HM 2% UNGEW.		
R62	RF 0,25W680KOHM +-5%	RF 069.6843	
	DRALORIC LCA0207/+-5%680K		
R64	RF 0,25W6,8KOHM +-5%	RF 069.6820	
	DRALORIC LCA0207/+-5%6,8K		
R65	RF 0,25W 4,7MOHM+-5%	RF 069.4757	
	DRALORIC LCA0207/+-5%4,7M		
R66	RF 0,25W 4,7MOHM+-5%	RF 069.4757	

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
13	0282	ED AUSGANGSSTUFE	302.5219 SA	8

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%4,7M		
R67	RF 0,25W 4,7MOHM+-5%	RF 069.4757	
	DRALORIC LCA0207/+-5%4,7M		
R68	RF 0,25W 4,7MOHM+-5%	RF 069.4757	
	DRALORIC LCA0207/+-5%4,7M		
R69	RF 0,25W6,8KOHM +-5%	RF 069.6820	
	DRALORIC LCA0207/+-5%6,8K		
R70	RL 0,25W25,5KOHM+-1%TK50	RL 083.1580	
	DRALORIC SMA0207/25,5K-F-D		
R71	RL 0,13W 56 OHM2% UNGEW.	RL 092.5927	
	RESISTA MK1 560HM 2% UNGEW.		
R72	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R73	RL 0,13W 220 OHM2% UNGEW.	RL 092.5991	
	RESISTA MK1 2200HM 2% UNGEW.		
R75	RF 0,25W 3KOHM +-5%	RF 069.3021	
	DRALORIC LCA0207/+-5%3,0K		
R76	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R77	RL 0,25W 221 OHM+-1%TK50	RL 083.0084	
	DRALORIC SMA0207/2210HM-F-D		
R78	RL 0,25W 5,23KOHM+-1%TK50	RL 083.1122	
	DRALORIC SMA0207/5,23K-F-D		
R79	RL 0,25W 5,23KOHM+-1%TK50	RL 083.1122	
	DRALORIC SMA0207/5,23K-F-D		
R80	RL 0,25W 162 OHM+-1%TK50	RL 082.9971	
	DRALORIC SMA0207/1620HM-F-D		
R81	RL 0,25W 15,0KOHM+-1%TK50	RL 083.1400	
	DRALORIC SMA0207/15K-F-D		
R82	RF 0,25W6,8KOHM +-5%	RF 069.6820	
	DRALORIC LCA0207/+-5%6,8K		
R83	RF 0,25W3,9KOHM +-5%	RF 069.3921	
	DRALORIC LCA0207/+-5%3,9K		
R85	RF 0,25W 22KOHM +-5%	RF 069.2231	
	DRALORIC LCA0207/+-5%22K		
R86	RF 0,25W 22KOHM +-5%	RF 069.2231	
	DRALORIC LCA0207/+-5%22K		
R87	RF 0,25W 22KOHM +-5%	RF 069.2231	
	DRALORIC LCA0207/+-5%22K		
R88	RF 0,25W1,8KOHM +-5%	RF 069.1829	
	DRALORIC LCA0207/+-5%1,8K		
R89	RF 0,25W 56KOHM +-5%	RF 069.5630	
	DRALORIC LCA0207/+-5%56K		
R90	RF 0,25W 47 OHM +-5%	RF 069.4705	
	DRALORIC LCA0207/+-5%47		
R91	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R92	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R93	RF 0,25W430 OHM +-5%	RF 069.4311	
	DRALORIC LCA0207/+-5%430		
R96	RF 0,25W4,7KOHM +-5%	RF 069.4728	
	DRALORIC LCA0207/+-5%4,7K		
R97	RF 0,25W3,9KOHM +-5%	RF 069.3921	
	DRALORIC LCA0207/+-5%3,9K		
R98	RF 0,25W680KOHM +-5%	RF 069.6843	
	DRALORIC LCA0207/+-5%680K		

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	13	0282	ED AUSGANGSSTUFE	302.5219 SA	9

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R99	RF 0,25W430 OHM +-5% DRALORIC LCA0207/+-5%430	RF 069.4311	
R100	RF 0,25W680KOHM +-5% DRALORIC LCA0207/+-5%680K	RF 069.6843	
R101	RS 0,5W100KOHM+-20%10X10X BOURNS 3386X-1-104	RS 087.7683	
R102	RF 0,25W 12KOHM +-5% DRALORIC LCA0207/+-5%12K	RF 069.1235	
R105	RL 0,13W 33 OHM2% UNGEW. RESISTA MK1 330HM 2% UNGEW.	RL 092.5891	
R106	RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 220HM 2% UNGEW.	RL 092.5879	
R107	RL 0,25W 113 OHM+-1%TK50 DRALORIC SMA0207/1130HM-F-D	RL 082.9820	
R108	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	
R109	RL 0,13W 267 OHM+-1%TK50 RESISTA MK1 267 1% TK50	RL 092.4520	
ST1	ENTHALTEN IN 302.5219		
T1	AK BFR15A SI-NPN HF-TRANS SIEMENS BFR15A	AK 451.4320	
T2	AK BFT12 SINPN 25V2GHZ SIEMENS BFT12	AK 249.8236	
T3	AK BFR94 SI NPN 25V 0,2A VALVO BFR94	AK 117.8398	
T4	AK BFR94 SI NPN 25V 0,2A VALVO BFR94	AK 117.8398	
T5	AK BCY79IX PNP 45V200MIA SIEMENS BCY79IX	AK 010.3777	
T6	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
T7	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
T8	AK BCY79IX PNP 45V200MIA SIEMENS BCY79IX	AK 010.3777	
T10	AK BFR15A SI-NPN HF-TRANS SIEMENS BFR15A	AK 451.4320	
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	13	0282	ED TEILER	302.5419 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BL SP8607AC 2:1TEILER UHF PLESSEY SP8607ACM	BL 302.5490	
B2	BM OM321 ANTENNEN-VERST. VALVO OM321	BM 476.1082	
B3	BO MC1558G DUAL-OP-AMP MOTOROLA MC1558G	BO 475.0830	
B6	BM OM323 ANTENNEN-VERST. VALVO OM323	BM 302.5483	
C1	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C2	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C3	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C4	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C5	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C6	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C10	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C11	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C12	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C13	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C14	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C16	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C20	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C21	CC 6,8PF+-1PF NP0 TRAP STETTNER TEFK7/6,8/1NP0400V	CC 083.6660	
C22	CC 10PF+-10% N150 TRAP DRALORIC TEFK7/10/10%N150	CC 083.6682	
C23	CC 18PF+-10% N750 TRAP STETTNER TEFK7/1810%N750	CC 083.6718	
C24	CC 12PF+-10% N470 TRAP STETTNER TEFK7/1210%N470	CC 083.6699	
C25	CC 8,2PF+-1PF N150 TRAP DRALORIC TEFK7/8,2/1N150	CC 083.6676	
C26	CC 22PF+-10% N750 TRAP STETTNER TEFK7/2210%N750	CC 083.6724	
C27	CC 8,2PF+-1PF N150 TRAP DRALORIC TEFK7/8,2/1N150	CC 083.6676	
C28	CC 22PF+-10% N750 TRAP STETTNER TEFK7/2210%N750	CC 083.6724	
C29	CC 18PF+-10% N750 TRAP STETTNER TEFK7/1810%N750	CC 083.6718	
C30	CC 12PF+-10% N470 TRAP STETTNER TEFK7/1210%N470	CC 083.6699	
C31	CC 6,8PF+-1PF NP0 TRAP	CC 083.6660	

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Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	STETTNER TEFK7/6,8/1NP0400V		
C32	CC 10PF+-10% N150 TRAP	CC 083.6682	
	DRALORIC TEFK7/10/10%N150		
C40	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C41	CC 4,7PF+-0,5PF7NP0 TRAP	CC 417.8603	
	STETTNER TEFK7,4,7PF/0,5PF,NP		
C42	CC 2,7PF+-0,5PF P100TRAP	CC 083.6624	
	SIEMENS B38280-A5020-D702		
C43	CC 4,7PF+-0,5PF7NP0 TRAP	CC 417.8603	
	STETTNER TEFK7,4,7PF/0,5PF,NP		
C44	CC 12PF+-10% N470 TRAP	CC 083.6699	
	STETTNER TEFK7/1210%N470		
C45	CC 12PF+-10% N470 TRAP	CC 083.6699	
	STETTNER TEFK7/1210%N470		
C46	CC 10PF+-10% N150 TRAP	CC 083.6682	
	DRALORIC TEFK7/10/10%N150		
C47	CC 4,7PF+-0,5PF7NP0 TRAP	CC 417.8603	
	STETTNER TEFK7,4,7PF/0,5PF,NP		
C48	CC 12PF+-10% N470 TRAP	CC 083.6699	
	STETTNER TEFK7/1210%N470		
C49	CC 4,7PF+-0,5PF7NP0 TRAP	CC 417.8603	
	STETTNER TEFK7,4,7PF/0,5PF,NP		
C50	CC 2,7PF+-0,5PF P100TRAP	CC 083.6624	
	SIEMENS B38280-A5020-D702		
C54	CC 330PF+-2%6X9N750	CC 087.6964	
	DRALORIC EDPU6X9/330/2%N750		
C55	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C56	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C57	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C58	CC 180PF+-10% R700 TRAP	CC 086.7496	
	DRALORIC TRE7L0E180/10R700		
C59	CC 180PF+-10% R700 TRAP	CC 086.7496	
	DRALORIC TRE7L0E180/10R700		
C60	CC 470PF-20+50%R2000TRAP.	CC 083.6776	
C61	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C62	CC 180PF+-10% R700 TRAP	CC 086.7496	
	DRALORIC TRE7L0E180/10R700		
C63	CC 180PF+-10% R700 TRAP	CC 086.7496	
	DRALORIC TRE7L0E180/10R700		
C64	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C65	CC 330PF+-2%6X9N750	CC 087.6964	
	DRALORIC EDPU6X9/330/2%N750		
C68	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C69	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C70	CC 82PF+-2%4X5N750	CC 087.6893	
	DRALORIC EDPU4X5/82/2%N750		
C71	CC 82PF+-2%4X5N750	CC 087.6893	
	DRALORIC EDPU4X5/82/2%N750		
C72	CC 10NF-20+50%7X8R6000	CC 087.7525	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	THOMSON COX767/10000/PF-20+5		
C73	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C74	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C75	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C80	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C81	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C83	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C84	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C85	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C90	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C91	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C92	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C93	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C94	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C95	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
GL1	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL2	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL3	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL4	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL6	AE BA379 PIN-DIODE	AE 244.7031	
	SIEMENS BA379		
GL10	AE BA379 PIN-DIODE	AE 244.7031	
	SIEMENS BA379		
GL20	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL21	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL40	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL41	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL42	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL55	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL56	AE BA182 BER.SCH.DIOD.VHF	AE 012.0523	
	VALVO BA182		
GL60	AE BA379 PIN-DIODE	AE 244.7031	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	SIEMENS BA379		
BIS GL65	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL70	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL80	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
L60	LD 0,47UH10%0,350HM0,660A DELEVAN DROSSEL1025-12	LD 067.2828	
L61	LD 1,50UH10%0,220HM0,560A DELEVAN DROSSEL 1025-24	LD 067.2886	
L62	LD 15,0UH10%2,800HM0,157A DELEVAN DROSSEL1025-48	LD 067.3001	
R1	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	
R2	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R3	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R4	RF 0,25W4,3KOHM +-5% DRALORIC LCA0207/+-5%4,3K	RF 069.4328	
R5	RF 0,25W430 OHM +-5% DRALORIC LCA0207/+-5%430	RF 069.4311	
R10	RF 0,25W910 OHM +-5% DRALORIC LCA0207/+-5%910	RF 069.9113	
R11	RF 0,25W 5,6 OHM +-5% DRALORIC LCA0207/+-5%5,6	RF 074.0056	
R12	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	
R13	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R14	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R15	RF 0,25W3,6KOHM +-5% DRALORIC LCA0207/+-5%3,6K	RF 069.3621	
R16	RF 0,25W3,6KOHM +-5% DRALORIC LCA0207/+-5%3,6K	RF 069.3621	
R17	RL 0,13W 220 OHM2% UNGEW. RESISTA MK1 220OHM 2% UNGEW.	RL 092.5991	
R20	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R21	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R40	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R41	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R55	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R56	RF 0,25W6,8KOHM +-5% DRALORIC LCA0207/+-5%6,8K	RF 069.6820	
R57	RF 0,25W 12KOHM +-5% DRALORIC LCA0207/+-5%12K	RF 069.1235	
R58	RF 0,25W 15KOHM +-5%	RF 069.1535	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R59	DRALORIC LCA0207/+-5%15K RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5%15K	RF 069.1535	
R60	RF 0,25W160 OHM +-5% DRALORIC LCA0207/+-5%160	RF 069.1612	
R61	RF 0,25W 2KOHM +-5% DRALORIC LCA0207/+-5%2,0K	RF 069.2025	
R62	RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5%15K	RF 069.1535	
R63	RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5%15K	RF 069.1535	
R64	RF 0,25W6,8KOHM +-5% DRALORIC LCA0207/+-5%6,8K	RF 069.6820	
R65	RF 0,25W 12KOHM +-5% DRALORIC LCA0207/+-5%12K	RF 069.1235	
R70	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R71	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R72	RL 0,25W 14,3KOHM+-1%TK50 DRALORIC SMA0207/14,3K-F-0	RL 083.1380	
R73	RL 0,25W 13,3KOHM+-1%TK50 DRALORIC SMA 0207/13,3K-F-0	RL 082.2577	
R74	RL 0,25W 432 OHM+-1%TK50 DRALORIC SMA0207/432OHM-F-0	RL 083.0355	
R75	RL 0,25W 432 OHM+-1%TK50 DRALORIC SMA0207/432OHM-F-0	RL 083.0355	
R76	RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5%15K	RF 069.1535	
R80	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R81	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF C69.2725	
R82	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R83	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R84	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R85	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R86	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	
ST2	ENTHALTEN IN 302.5419		
T70	AK BCY79IX PNP 45V200MIA SIEMENS BCY79IX	AK 010.3777	
T71	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
T72	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für		Sachnummer		Blatt Nr.
	11	1180	OSZILLATOR	Z	302.5619	SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BM OM321 ANTENNEN-VERST. VALVO ANTENNENVERSTOM321	BM 476.1082	302.5619
B50	BM TFM-2 MIXER 1-1000MHZ MINI-CCTS TFM-2	BM 302.6080	302.5619
BU13	FJ EINBAUBUCHSE SYST. SMB RADIALL 115 556	FJ 063.5145	302.5619
C1	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C2	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C3	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C4	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C5	CC 1,8PF+-0,25PF3X4P100 DRALORIC EDPU3X4/1,8/0,25P100	CC 087.6206	302.5619
C6	CC 3,9PF+-0,25PF4X5P100 DRALORIC EDPU3X4/3,9/0,25P100	CC 087.6241	302.5619
C8	CC 1,8PF+-0,25PF3X4P100 DRALORIC EDPU3X4/1,8/0,25P100	CC 087.6206	302.5619
C9	CC 4,7NF+-10%100V3K1200 C ERIE 8013/271W5R-472-K	CC 082.3309	302.5619
C10	CC 4,7NF+-10%100V3K1200 C ERIE 8013/271W5R-472-K	CC 082.3309	302.5619
C11	CC 100PF+-2%4X5N750 DRALORIC EDPU4X5/100/2%N750	CC 087.6906	302.5619
C13	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C14	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C15	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C16	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C17	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.5619
C18	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.5619
C19	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C20	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C21	CC 39PF+-2%4X5NP0 DRALORIC EDPU4X5/39/2%/NP0	CC 087.6493	302.5619
C22	CC 47PF+-2%5X6NP0 DRALORIC EDPU5X6/47/2%/NP0	CC 087.6506	302.5619
C23	CC 5,6PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/5,6/0,25NP0	CC 087.6393	302.5619
C24	CC 6,8PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/6,8/0,25NP0	CC 087.6406	302.5619
C25	CC 3,3PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/3,3/0,IKNP0	CC 087.6364	302.5619
C26	CC 5,6PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/5,6/0,25NP0	CC 087.6393	302.5619
C27	CC 10PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/10/0,25NP0	CC 087.6429	302.5619

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für		Sachnummer		Blatt Nr.
	11	1180	OSZILLATOR	Z	302.5619	SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C28	CC 6,8PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/6,8/0,25NP0	CC 087.6406	302.5619
C29	CC 3,3PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/3,3/0,IKNP0	CC 087.6364	302.5619
C30	CC 12PF+-2%3X4NP0 DRALORIC EDPU3X4/12/2%/NP0	CC 087.6435	302.5619
C31	CC 10PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/10/0,25NP0	CC 087.6429	302.5619
C32	CC 6,8PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/6,8/0,25NP0	CC 087.6406	302.5619
C33	CC 3,3PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/3,3/0,IKNP0	CC 087.6364	302.5619
C34	CC 12PF+-2%3X4NP0 DRALORIC EDPU3X4/12/2%/NP0	CC 087.6435	302.5619
C35	CC 5,6PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/5,6/0,25NP0	CC 087.6393	302.5619
C36	CC 6,8PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/6,8/0,25NP0	CC 087.6406	302.5619
C37	CC 3,3PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/3,3/0,IKNP0	CC 087.6364	302.5619
C38	CC 5,6PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/5,6/0,25NP0	CC 087.6393	302.5619
C39	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C44	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C45	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5619
C50	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C51	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C52	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C53	CC 12PF+-2%3X4NP0 DRALORIC EDPU3X4/12/2%/NP0	CC 087.6435	302.5619
C54	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	302.5619
C55	CC 4,7PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/4,7/0,25/NP0	CC 087.6387	302.5619
C59	CC 2,2PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/2,2/0,25NP0	CC 087.6341	302.5619
C60	CC 100PF+-2%6X9NP0 DRALORIC EDPU6X9/100/2%NP0	CC 087.6541	302.5619
C61	CC 100PF+-2%6X9NP0 DRALORIC EDPU6X9/100/2%NP0	CC 087.6541	302.5619
C62	CC 4,7PF+-0,25PF3X4NP0 DRALORIC EDPU3X4/4,7/0,25/NP0	CC 087.6387	302.5619
C63	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	302.5619
C64	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5619
C65	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5619
C66	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	302.5619

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Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C67	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5619
C68	CC 100PF+-2%6X7N150 DRALORIC EDPU6X7/100/2%N150	CC 087.6712	302.5619
C69	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5619
C70	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	302.5619
C71	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	302.5619
C72	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.5619
C73	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C75	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5619
C76	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	302.5619
C77	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	302.5619
C78	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	302.5619
C79	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5619
C80	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5619
C81	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5619
C82	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	302.5619
C83	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.5619
C84	CC 2,7NF+-10%5X6R2000 DRALORIC EDPU5X6/2700/10R2000	CC 087.7077	302.5619
C85	CC 100PF+-2%6X7N150 DRALORIC EDPU6X7/100/2%N150	CC 087.6712	302.5619
C86	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	302.5619
C87	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	302.5619
C88	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	302.5619
C90	CC 8,2PF+-0,25PF3X4NP0	CC 087.6412	302.5619
C91	CC 8,2PF+-0,25PF3X4NP0	CC 087.6412	302.5619
C92	CC 12PF+-2%3X4NP0 DRALORIC EDPU3X4/12/2%/NP0	CC 087.6435	302.5619
GL1	AE BB141A 28V 2/12PF KAP. ITT DIODEBB141A	AE 012.6138	302.5619
GL2	AE BB141A 28V 2/12PF KAP. ITT DIODEBB141A	AE 012.6138	302.5619
GL3	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	302.5619
GL4	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	302.5619
GL5	AE BA244 BER.SCH.DIOD.UHF ITT DIODEBA244	AE 439.6310	302.5619

Diese Unterlage ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
GL6	AE BA244 BER.SCH.DIOD.UHF ITT DIODEBA244	AE 439.6310	302.5619
L1	LD 2,2 UH 10% 268 MIA DELEVAN	LD 092.3199	302.5619
L2	LD 2,2 UH 10% 268 MIA DELEVAN	LD 092.3199	302.5619
L3	DROSSEL Z	302.5360	302.5619
L4	DROSSEL Z	302.5360	302.5619
L5	DROSSEL	302.4912	302.5619
L6	DROSSEL	302.4929	302.5619
L7	DROSSEL	302.4935	302.5619
L8	DROSSEL	302.4941	302.5619
L9	LD 47,0UH 10% 80 MIA DELEVAN DROSSEL0819-64	LD 092.3353	302.5619
L10	LD 47,0UH 10% 80 MIA DELEVAN DROSSEL0819-64	LD 092.3353	302.5619
L11	LD 680 UH 10% 27 MIA DELEVAN	LD 092.3499	302.5619
L12	LD 680 UH 10% 27 MIA DELEVAN	LD 092.3499	302.5619
L15	LF ROHRK.RD3,6XRD1,2XL3,3 SIEMENS B62110-A3011-X017	LF 026.9286	302.5619
L48	SPULE Z	302.5631	302.5619
L49	SPULE Z	302.5631	302.5619
L50	LD 47,0UH10%4,500HM0,165A DELEVAN DROSSEL1025-60	LD 067.3060	302.5619
L51	LD 680 UH10%60,00HM0,042A DELEVAN DROSSEL1025-88	LD 067.3201	302.5619
L52	LD 15,0UH10%2,700HM0,210A DELEVAN DROSSEL1025-48	LD 067.3001	302.5619
L53	LD 15,0UH10%2,700HM0,210A DELEVAN DROSSEL1025-48	LD 067.3001	302.5619
L54	LD 15,0UH10%2,700HM0,210A DELEVAN DROSSEL1025-48	LD 067.3001	302.5619
L55	LD 15,0UH10%2,700HM0,210A DELEVAN DROSSEL1025-48	LD 067.3001	302.5619
L56	LD 0,15UH10%0,100HM1,100A DELEVAN DROSSEL1025-00	LD 067.2763	302.5619
L57	LD 0,18UH10%0,120HM1,010A DELEVAN DROSSEL1025-02	LD 067.2770	302.5619
L58	LD 0,15UH10%0,100HM1,100A DELEVAN DROSSEL1025-00	LD 067.2763	302.5619
L59	LD 1,50UH10%0,220HM0,745A DELEVAN DROSSEL 1025-24	LD 067.2886	302.5619
L60	LD 0,10UH10%0,080HM1,100A DELEVAN DROSSEL1025-94	LD 067.2740	302.5619
L61	LD 1,50UH10%0,220HM0,745A DELEVAN DROSSEL 1025-24	LD 067.2886	302.5619
L62	LD 1,50UH10%0,220HM0,745A DELEVAN DROSSEL 1025-24	LD 067.2886	302.5619
L63	LD 1,50UH10%0,220HM0,745A DELEVAN DROSSEL 1025-24	LD 067.2886	302.5619
L64	LD 1,50UH10%0,220HM0,745A DELEVAN DROSSEL 1025-24	LD 067.2886	302.5619
R1	RS 0,5W2KOHM+-20%10X10X5	RS 247.7961	302.5619

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	11	1180	OSZILLATOR Z	302.5619 SA	5

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	BOURNS 3386X-1-202		
R2	RS 0,5W2KOHM+-20%10X10X5	RS 247.7961	302.5619
	BOURNS 3386X-1-202		
R3	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	302.5619
R4	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	302.5619
R5	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	302.5619
R6	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	302.5619
R7	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	302.5619
R8	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	302.5619
R9	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619
R10	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619
R11	RF 0,25W180 OHM +-5% DRALORIC LCA0207/+-5%180	RF 069.1812	302.5619
R12	RF 0,25W180 OHM +-5% DRALORIC LCA0207/+-5%180	RF 069.1812	302.5619
R13	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	302.5619
R14	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	302.5619
R15	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	302.5619
R16	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	302.5619
R17	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	302.5619
R18	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	302.5619
R19	RF 0,05W 14,01 OHM+-1% RESISTA WFS22/14,01/1/0,05	030.0538	302.5619
R20	RF 0,25W330 OHM +-5% DRALORIC LCA0207/+-5%330	RF 069.3315	302.5619
R21	RF 0,05W 14,01 OHM+-1% RESISTA WFS22/14,01/1/0,05	030.0538	302.5619
R22	RF 0,25W330 OHM +-5% DRALORIC LCA0207/+-5%330	RF 069.3315	302.5619
R23	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	302.5619
R24	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	302.5619
R25	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	302.5619
R26	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	302.5619
R27	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619
R28	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	302.5619
R29	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	11	1180	OSZILLATOR Z	302.5619 SA	6

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R30	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619
R31	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	302.5619
R32	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	302.5619
R33	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619
R34	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	302.5619
R35	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	302.5619
R41	RF 0,25W150 OHM +-5% DRALORIC LCA0207/+-5%150	RF 069.1512	302.5619
R43	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	302.5619
R45	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	302.5619
R46	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	302.5619
R50	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	302.5619
R51	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	302.5619
R52	RF 0,25W470 OHM +-5% DRALORIC LCA0207/+-5%470	RF 069.4711	302.5619
R53	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	302.5619
R54	RF 0,05W 14,01 OHM+-1% RESISTA WFS22/14,01/1/0,05	030.0538	302.5619
R55	RF 0,25W330 OHM +-5% DRALORIC LCA0207/+-5%330	RF 069.3315	302.5619
R56	RL 0,25W28,70 OHM+-1%TK50 DRALORIC SMA0207/28,70HM-F-D	RL 082.9294	302.5619
R57	RL 0,25W28,70 OHM+-1%TK50 DRALORIC SMA0207/28,70HM-F-D	RL 082.9294	302.5619
R58	RL 0,25W28,70 OHM+-1%TK50 DRALORIC SMA0207/28,70HM-F-D	RL 082.9294	302.5619
R62	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	302.5619
R63	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	302.5619
R64	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	302.5619
R65	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	302.5619
R66	RF 0,25W 15 OHM +-5% DRALORIC LCA0207/+-5%15	RF 069.1506	302.5619
R67	RF 0,25W 15 OHM +-5% DRALORIC LCA0207/+-5%15	RF 069.1506	302.5619
R68	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	302.5619
R69	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	302.5619
R70	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220.	RF 069.2219	302.5619
R71	RF 0,25W390 OHM +-5%	RF 069.3915	302.5619

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
11	1180	OSZILLATOR Z	302.5619 SA	7

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%390		
R72	RF 0,25W 15 OHM +-5%	RF 069.1506	302.5619
	DRALORIC LCA0207/+-5%15		
R73	RF 0,25W 15 OHM +-5%	RF 069.1506	302.5619
	DRALORIC LCA0207/+-5%15		
R75	RF 0,25W180 OHM +-5%	RF 069.1812	302.5619
	DRALORIC LCA0207/+-5%180		
R76	RL 0,13W. 10 OHM2% UNGEW.	RL 092.5833	302.5619
	RESISTA MK1 100HM 2% UNGEW.		
R77	RF 0,25W 5,6 OHM +-5%	RF 074.0056	302.5619
	DRALORIC LCA0207/+-5%5,6		
R78	RF 0,25W560 OHM +-5%	RF 069.5618	302.5619
	DRALORIC LCA0207/+-5%560		
ST3	ENTHALTEN IN 302.5619		302.5619
T1	AM BF247A N-KANAL-FET 25V	AM 247.6536	302.5619
	TEXAS TRANSISTBF247A		
T2	AM BF247A N-KANAL-FET 25V	AM 247.6536	302.5619
	TEXAS TRANSISTBF247A		
T3	AK BFR15A SI-NPN HF-TRANS	AK 451.4320	302.5619
	SIEMENS BFR 15 A		
T4	AK BFR15A SI-NPN HF-TRANS	AK 451.4320	302.5619
	SIEMENS BFR 15 A		
T5	AK BCY79IX PNP 45V200MIA	AK 010.3777	302.5619
	SIEMENS SI-TRANSISTORBCY79IX		
T6	AK BCY59IX NPN 45V 200MA	AK 010.5163	302.5619
	SIEMENS TRANSIST.BCY59IX		
T7	AK BCY79IX PNP 45V200MIA	AK 010.3777	302.5619
	SIEMENS SI-TRANSISTORBCY79IX		
T8	AK BCY59IX NPN 45V 200MA	AK 010.5163	302.5619
	SIEMENS TRANSIST.BCY59IX		
T9	AK BCY59IX NPN 45V 200MA	AK 010.5163	302.5619
	SIEMENS TRANSIST.BCY59IX		
T50	AK BFR15A SI-NPN HF-TRANS	AK 451.4320	302.5619
	SIEMENS BFR 15 A		
T51	AK BFR15A SI-NPN HF-TRANS	AK 451.4320	302.5619
	SIEMENS BFR 15 A		
T52	AK BFR15A SI-NPN HF-TRANS	AK 451.4320	302.5619
	SIEMENS BFR 15 A		
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
15	0282	ED PHASENREGELUNG	302.5819 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BL MC10115L 4XLINE-RECEIV	BL 302.5831	
	MOTOROLA MC10115L		
B2	BL MC10136L BIN.V/R-COUNT	BL 302.5848	
	MOTOROLA MC10136L		
B3	BL MC10136L BIN.V/R-COUNT	BL 302.5848	
	MOTOROLA MC10136L		
B4	BL MC10131L 2/D-MS-FLIPFL	BL 475.1166	
	MOTOROLA MC10131L		
B5	BL MC10109L 2/4INP.OR/NOR	BL 302.5854	
	MOTOROLA MC10109L		
B6	BL MC10117L 2/2INP.OR/AND	BL 302.5860	
	MOTOROLA MC10117L		
B7	BL MC12040L PLL-PHASE-DET	BL 302.5877	
	MOTOROLA MC12040L		
B10	BO LF256H BIFET-OP.AMP.	BO 302.5883	
	NSC LF256H		
B11	BO SE5534AFE OP-AMP.	BO 301.3335	
	SIGNETICS SE5534AFE		
B12	BO TL044MJ 4XOP-AMPL.	BO 302.5248	
	TEXAS TL044MJ		
B13	BO TL044MJ 4XOP-AMPL.	BO 302.5248	
	TEXAS TL044MJ		
B14	BO TL044MJ 4XOP-AMPL.	BO 302.5248	
	TEXAS TL044MJ		
B15	BO TL044MJ 4XOP-AMPL.	BO 302.5248	
	TEXAS TL044MJ		
B16	BL CD4069UBE HEX-INVERTER	BL 086.9999	
	RCA CD4069UBE		
B17	BL CD4081BF 4/2INP.ANDG.	BL 531.0259	
	RCA CD4081BF		
B18	BL SCL4028BE BCD/DEC.DEC.	BL 086.7150	
	SSS SCL4028BE		
B19	BL CD4066BE 4/ANALOGSWITC	BL 290.3906	
	RCA CD4066BE		
B20	BL CD4066BE 4/ANALOGSWITC	BL 290.3906	
	RCA CD4066BE		
C1	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C2	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C3	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C4	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C5	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C6	CC 47PF+-2%5X6NP0	CC 087.6506	
	DRALORIC EDPU5X6/47/2%/NP0		
C7	CC 47PF+-2%5X6NP0	CC 087.6506	
	DRALORIC EDPU5X6/47/2%/NP0		
C8	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C9	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C10	CC 10NF-20+50%7X8R6000	CC 087.7525	

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	15	0282	ED PHASENREGELUNG	302.5819 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	THOMSON COX767/10000/PF-20+5		
C11	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C12	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C13	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C14	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C15	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C16	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C17	CE 10 UF+-20%16V 7X 4X 8	CE 022.8085	
	ERO-TANTAL TA-ELKOETR2-10/15		
C18	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C19	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C20	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C21	CC 56PF+-2%5X6NP0	CC 087.6512	
	DRALORIC EDPU5X6/56/2%NP0		
C22	CC 56PF+-2%5X6NP0	CC 087.6512	
	DRALORIC EDPU5X6/56/2%NP0		
C23	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C24	CE 10 UF+-20%16V 7X 4X 8	CE 022.8085	
	ERO-TANTAL TA-ELKOETR2-10/15		
C25	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C26	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C27	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C28	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C29	CC 100PF+-2%4X5N750	CC 087.6906	
	DRALORIC EDPU4X5/100/2%N750		
C30	CC 100PF+-2%4X5N750	CC 087.6906	
	DRALORIC EDPU4X5/100/2%N750		
C31	CC 22PF+-2%4X5NP0	CC 087.6464	
	DRALORIC EDPU4X5/22/2%/NP0		
C35	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C36	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C37	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C38	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C40	CK 220NF+-20%100V QUADER	CK 006.5056	
	ROEDERST MKT1822-422/0		
C41	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C42	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		

Diese Unterlage ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	15	0282	ED PHASENREGELUNG	302.5819 SA	3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C43	CK 220NF+-20%100V QUADER	CK 006.5056	
	ROEDERST MKT1822-422/0		
C45	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C46	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C47	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C48	CK 330NF+-20%100V QUADER	CK 006.5062	
	ROEDERST MKT1822-433/0		
C49	CK 1,5UF+-10% 63V QUADER	CK 087.0972	
C50	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C51	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C52	CK 330NF+-20%100V QUADER	CK 006.5062	
	ROEDERST MKT1822-433/0		
C53	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C54	CC 100PF+-2%4X5N750	CC 087.6906	
	DRALORIC EDPU4X5/100/2%N750		
C55	CC 100PF+-2%4X5N750	CC 087.6906	
	DRALORIC EDPU4X5/100/2%N750		
C56	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C57	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C58	CC 100PF+-2%4X5N750	CC 087.6906	
	DRALORIC EDPU4X5/100/2%N750		
C59	CC 680PF+-10%4X5R2000	CC 087.7019	
	DRALORIC EDPU4X568010%R2000		
C60	CC 680PF+-10%4X5R2000	CC 087.7019	
	DRALORIC EDPU4X568010%R2000		
C61	CC 680PF+-10%4X5R2000	CC 087.7019	
	DRALORIC EDPU4X568010%R2000		
C62	CC 56PF+-2%5X6NP0	CC 087.6512	
	DRALORIC EDPU5X6/56/2%NP0		
C63	CC 56PF+-2%5X6NP0	CC 087.6512	
	DRALORIC EDPU5X6/56/2%NP0		
C64	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C65	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C66	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C67	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
GL1	AE 5082-2800 SCHOTTKY-DI.	AE 012.9066	
	HEWLETT-P. 5082-2800		
GL2	AE 5082-2800 SCHOTTKY-DI.	AE 012.9066	
	HEWLETT-P. 5082-2800		
GL3	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL4	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL5	AD 1N4448 SI 75V 150MIA	AD 012.0700	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	VALVO 1N4448		
GL6	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL7	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL8	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL9	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL10	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL11	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL12	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL13	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL14	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL15	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL16	AE BZX55/C12 0,5W Z-DI	AE 012.2532	
	VALVO BZX55/C12		
L1	LD 1,20UH10%0,180HM0,620A	LD 067.2870	
	DELEVAN DROSSEL1025-22		
L2	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L3	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L4	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L6	LD 0,10UH10%0,080HM1,400A	LD 067.2740	
	DELEVAN DROSSEL1025-94		
L7	LD 1,50UH10%0,22CHM0,56CA	LD C67.2886	
	DELEVAN DROSSEL 1025-24		
L8	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L9	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L10	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L11	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L12	LD 0,10UH10%0,080HM1,400A	LD 067.2740	
	DELEVAN DROSSEL1025-94		
L15	LD 3,90UH10%1,000HM0,263A	LD 067.2934	
	DELEVAN DROSSEL1025-34		
L16	LD 3,90UH10%1,000HM0,263A	LD 067.2934	
	DELEVAN DROSSEL1025-34		
L17	LD 3,90UH10%1,000HM0,263A	LD 067.2934	
	DELEVAN DROSSEL1025-34		
L18	LD 2,20UH10%0,400HM0,415A	LD 067.2905	
	DELEVAN DROSSEL 1025-28		
L19	LD 2,20UH10%0,400HM0,415A	LD 067.2905	
	DELEVAN DROSSEL1025-28		
L20	LD 2,20UH10%0,400HM0,415A	LD 067.2905	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DELEVAN DROSSEL1025-28		
L21	LD 0,10UH10%0,080HM1,400A	LD 067.2740	
	DELEVAN DROSSEL1025-94		
L25	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L26	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L27	LD 1,50UH10%0,220HM0,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
R1	RL 0,25W 51,1 OHM+-1%TK50	RL 082.9536	
	DRALORIC SMA0207/51,1OHM-F-D		
R2	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R3	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R4	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R5	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R6	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R7	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R8	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R10	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R11	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R12	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R13	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R14	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R15	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R16	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R17	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R18	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R19	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R23	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R24	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R25	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R26	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R27	RF 0,25W680 OHM +-5%	RF C69.6814	
	DRALORIC LCA0207/+-5%680		
R28	RF 0,25W680 OHM +-5%	RF 069.6814	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%680		
R29	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R30	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R32	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R33	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R34	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R35	RF 0,25W680 OHM +-5%	RF 069.6814	
	DRALORIC LCA0207/+-5%680		
R36	RL 0,25W 511 OHM+-1%TK50	RL 083.0426	
	DRALORIC SMA0207/511OHM-F-D		
R37	RL 0,25W 511 OHM+-1%TK50	RL 083.0426	
	DRALORIC SMA0207/511OHM-F-D		
R40	RF 0,25W180 OHM +-5%	RF 069.1812	
	DRALORIC LCA0207/+-5%180		
R41	RF 0,25W180 OHM +-5%	RF 069.1812	
	DRALORIC LCA0207/+-5%180		
R42	RF 0,25W270 OHM +-5%	RF 069.2719	
	DRALORIC LCA0207/+-5%270		
R43	RF 0,25W270 OHM +-5%	RF 069.2719	
	DRALORIC LCA0207/+-5%270		
R44	RF 0,25W820 OHM +-5%	RF 069.8217	
	DRALORIC LCA0207/+-5%820		
R45	RF 0,25W820 OHM +-5%	RF 069.8217	
	DRALORIC LCA0207/+-5%820		
R46	RF 0,25W 18KOHM +-5%	RF 069.1835	
	DRALORIC LCA0207/+-5%18K		
R47	RF 0,25W 18KOHM +-5%	RF 069.1835	
	DRALORIC LCA0207/+-5%18K		
R48	RF 0,25W330 OHM +-5%	RF 069.3315	
	DRALORIC LCA0207/+-5%330		
R49	RF 0,25W 33KOHM +-5%	RF 069.3338	
	DRALORIC LCA0207/+-5%33K		
R51	RF 0,25W180 OHM +-5%	RF 069.1812	
	DRALORIC LCA0207/+-5%180		
R52	RF 0,25W270 OHM +-5%	RF 069.2719	
	DRALORIC LCA0207/+-5%270		
R53	RF 0,25W820 OHM +-5%	RF 069.8217	
	DRALORIC LCA0207/+-5%820		
R54	RL 0,25W 511 OHM+-1%TK50	RL 083.0426	
	DRALORIC SMA0207/511OHM-F-D		
R55	RL 0,25W 511 OHM+-1%TK50	RL 083.0426	
	DRALORIC SMA0207/511OHM-F-D		
R56	RL 0,25W 511 OHM+-1%TK50	RL 083.0426	
	DRALORIC SMA0207/511OHM-F-D		
R57	RL 0,25W 511 OHM+-1%TK50	RL 083.0426	
	DRALORIC SMA0207/511OHM-F-D		
R58	RF 0,25W 39 OHM +-5%	RF 069.3909	
	DRALORIC LCA0207/+-5%39		
R59	RF 0,25W 39 OHM +-5%	RF 069.3909	
	DRALORIC LCA0207/+-5%39		
R60	RF 0,25W220 OHM +-5%	RF 069.2219	
	DRALORIC LCA0207/+-5%220		

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R61	RF 0,25W220 OHM +-5%	RF 069.2219	
	DRALORIC LCA0207/+-5%220		
R62	RF 0,25W560 OHM +-5%	RF 069.5618	
	DRALORIC LCA0207/+-5%560		
R63	RF 0,25W560 OHM +-5%	RF 069.5618	
	DRALORIC LCA0207/+-5%560		
R64	RF 0,25W560 OHM +-5%	RF 069.5618	
	DRALORIC LCA0207/+-5%560		
R65	RF 0,25W560 OHM +-5%	RF 069.5618	
	DRALORIC LCA0207/+-5%560		
R70	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R71	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R72	RL 0,25W 2,74KOHM+-1%TK50	RL 083.0926	
	DRALORIC SMA0207/2,74K-F-D		
R73	RL 0,25W 2,74KOHM+-1%TK50	RL 083.0926	
	DRALORIC SMA0207/2,74K-F-D		
R74	RL 0,25W 6,19KOHM+-1%TK50	RL 082.2283	
	DRALORIC SMA0207/6,19K-F-C		
R75	RL 0,25W 6,19KOHM+-1%TK50	RL 082.2283	
	DRALORIC SMA0207/6,19K-F-C		
R76	RL 0,25W 24,3KOHM+-1%TK50	RL 083.1574	
	DRALORIC SMA/207/24,3K-F-C		
R77	RL 0,25W 22,1KOHM+-1%TK50	RL 083.1545	
	DRALORIC SMA/207/22,1K-F-C		
R78	RL 0,25W 24,3KOHM+-1%TK50	RL 083.1574	
	DRALORIC SMA/207/24,3K-F-C		
R79	RL 0,25W 30,1KOHM+-1%TK50	RL 083.1639	
	DRALORIC SMA0207730,1K-F-C		
R80	RL 0,25W 9,09KOHM+-1%TK50	RL 082.2177	
	DRALORIC SMA0207/9,09K-F-C		
R81	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/1DK-F-D		
R82	RF 0,25W220 OHM +-5%	RF 069.2219	
	DRALORIC LCA0207/+-5%220		
R83	RS 0,5W20KOHM+-20%10X10X5	RS 087.7660	
	BOURNS 3386X-1-203		
R90	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R91	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R92	RL 0,25W 3,65KOHM+-1%TK50	RL 082.2260	
	DRALORIC SMA0207/3,65K-F-C		
R93	RF 0,25W560KOHM +-5%	RF 069.5647	
	DRALORIC LCA0207/+-5%560K		
R94	RL 0,25W 24,3KOHM+-1%TK50	RL 083.1574	
	DRALORIC SMA/207/24,3K-F-C		
R95	RL 0,25W 6,19KOHM+-1%TK50	RL 082.2283	
	DRALORIC SMA0207/6,19K-F-C		
R96	RL 0,25W 3,01KOHM+-1%TK50	RL 083.0961	
	DRALORIC SMA0207/3,01K-F-D		
R97	RL 0,25W 5,11KOHM+-1%TK50	RL 082.2348	
	DRALORIC SMA0207/5,11K-F-C		
R98	RL 0,25W15,0KOHM+-0,1%T25	RL 084.3406	
	DRALORIC SMA0207/15,0K-B-E		
R99	RF 0,25W 1 MOHM +-5%	RF 069.1058	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R100	DRALORIC LCA0207/+-5%1,0M RF 0,25W 1 MOHM +-5%	RF 069.1058	
R101	DRALORIC LCA0207/+-5%1,0M RF 0,25W 1 MOHM +-5%	RF 069.1058	
R102	DRALORIC LCA0207/+-5%1,0M RF 0,25W 1 MOHM +-5%	RF 069.1058	
R103	DRALORIC LCA0207/+-5%1,0M RF 0,25W 1 MOHM +-5%	RF 069.1058	
R109	DRALORIC LCA0207/+-5%1,0M RL 0,25W 22,1KOHM+-1%TK50	RL 083.1545	
R110	DRALORIC SMA/207/22,1K-F-C RL 0,25W 1 KOHM+-0,1%TK25	RL 083.9146	
R111	DRALORIC SMA0207/1K-B-E RL 0,25W 2,74KOHM+-1%TK50	RL 083.0926	
R112	DRALORIC SMA0207/2,74K-F-D RL 0,25W 4,75KOHM+-1%TK50	RL 083.1097	
R113	DRALORIC SMA0207/4,75K-F-D RL 0,25W 7,50KOHM+-1%TK50	RL 083.1197	
R114	DRALORIC SMA0207/7,5K-F-D RL 0,25W 1,82KOHM+-1%TK50	RL 082.2277	
R115	DRALORIC SMA0207/1,82K-F-C RL 0,25W 3,92KOHM+-1%TK50	RL 083.1039	
R116	RL 0,25W 3,92KOHM+-1%TK50	RL 083.1039	
R117	RL 0,25W 7,50KOHM+-1%TK50 DRALORIC SMA0207/7,5K-F-D	RL 083.1197	
R118	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	
R119	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	
R120	RS 0,5W5KOHM+-20%10X10X5 BOURNS 3386X-1-502	RS 247.7978	
R121	RS 0,5W10KOHM+-20%10X10X5 BOURNS 3386X1-103	RS 247.7526	
R122	RS 0,5W1KOHM+-20%10X10X5 BOURNS 3386X-1-102	RS 247.5917	
R123	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	
R124	RS 0,5W5KOHM+-20%10X10X5 BOURNS 3386X-1-502	RS 247.7978	
R125	RS 0,5W10KOHM+-20%10X10X5 BOURNS 3386X1-103	RS 247.7526	
R126	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R127	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R128	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R129	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R130	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R131	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R132	RF 0,25W220KOHM +-5% DRALORIC LCA0207/+-5%220K	RF 069.2248	
R133	RF 0,25W220KOHM +-5% DRALORIC LCA0207/+-5%22CK	RF 069.2248	

PF 095.0026.0679

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R134	RF 0,25W220KOHM +-5% DRALORIC LCA0207/+-5%220K	RF 069.2248	
R135	RF 0,25W220KOHM +-5% DRALORIC LCA0207/+-5%220K	RF 069.2248	
R136	RF 0,25W220KOHM +-5% DRALORIC LCA0207/+-5%220K	RF 069.2248	
R140	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	
R141	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	
R142	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	
R143	RL 0,25W 562 OHM+-1%TK50 DRALORIC SMA0207/562OHM-F-D	RL 083.0461	
R144	RL 0,25W 1,50KOHM+-1%TK50 DRALORIC SMA0207/1,50K-F-D	RL 083.0732	
R145	RL 0,25W 3,32KOHM+-1%TK50 DRALORIC SMA0207/3,32K-F-D	RL 083.0990	
R146	RL 0,25W 2,21KOHM+-1%TK50 DRALORIC SMA 0207/2,21K-F-C	RL 082.2477	
R147	RF 0,25W560KOHM +-5% DRALORIC LCA0207/+-5%560K	RF 069.5647	
R150	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	
R151	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	
R152	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	
R153	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R154	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	
ST4	ENTHALTEN IN 302.5819		
T1	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T2	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
T3	AK BF272A SI PNP 35V15MIA SGS BF272A	AK 082.3996	
T4	AK BF272A SI PNP 35V15MIA SGS BF272A	AK 082.3996	
T5	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T6	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T7	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T8	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T9	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T10	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T11	AM J111A N-KANAL-FET 35V	AM 214.7685	

PF 095.0026.0679

ROHDE & SCHWARZ MÜNCHEN

Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
15	0282	ED PHASENREGELUNG	302.5819 SA	10

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
T12	SILICONIX J111A AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	- ENDE -

ROHDE & SCHWARZ MÜNCHEN

Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
19	0282	ED UMSETZER	302.6015 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BL SP8630A 10:1TEILER UHF PLESSEY SP8630ADG	BL 302.6044	
B2	BL SN54S112J 2/JK-FLIPFL. TEXAS SN54S112J	BL 468.5930	
B3	BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R&S-LV	BL 302.6038	
B4	BL SN54S74J 2/D-FLIPFLOP TEXAS SN54S74J	BL 302.6050	
B5	BL MC4344L PHASE LOCK LP. MOTOROLA MC4344L	BL 475.1266	
B6	BO LF256H BIFET-OP.AMP. NSC LF256H	BO 302.5883	
B10	BM OM321 ANTENNEN-VERST. VALVO OM321	BM 476.1082	
B11	BM TFM-2 MIXER 1-1000MHZ MCL TFM-2	BM 302.6080	
B12	BO MC1558JG DUAL-OP-AMP. NSC LM1558J	BO 275.0816	
BU14	FJ EINBAUBUCHSE SYST. SMB RADIALL 115 556	FJ 063.5145	
C1	CE 22 UF+-20%16V 7X 5X11 ERO-TANTAL TA-ELKO ETR3-22/15	CE 022.8091	
C2	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C3	CC 1,5PF+-0,25PFNPA/IBRD5 STETTNER SDPL5;1,5PF/0,25NPO	CC 450.6864	
C4	CC 0,5PF+-0,25PF5P100 DRALORIC P100/IB0,5/0,25SDPN5	CC 006.0019	
C5	CE 22 UF+-20%16V 7X 5X11 ERO-TANTAL TA-ELKO ETR3-22/15	CE 022.8091	
C6	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C7	CC 4PF 5%SN150	CC 022.0455	
C8	CC 5PF+-0,25PFN150/IB RD5 DRALORIC N150/IB5/0,25SDPN	CC 006.0219	
C9	CT 9,2PF TAUCHTR.RD 7X12 TEKELEC LUFTTRAT5200	CT 025.7367	
C10	CC 2 PF 12,5%SN033 DRALORIC N033/IB2/0,25SP5	CC 022.0310	
C11	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C12	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C13	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C14	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C15	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C16	CC 1,5NF-20+80%R10000TRAP STETTNER TEFK7,1500/2080E9000	CC 082.1712	
C17	CC 39PF+-2%4X5N150 DRALORIC EDPU4X5/39/2%N150	CC 087.6664	
C18	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C19	CC 1,8NF+-10%4X5R2000	CC 087.7054	
	DRALORIC EDPU4X5/1800/10R2000		
C20	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C21	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C22	CC 1,8NF+-10%4X5R2000	CC 087.7054	
	DRALORIC EDPU4X5/1800/10R2000		
C23	CC 6,8PF+-0,25PF3X4NP0	CC 087.6406	
	DRALORIC EDPU3X4/6,8/0,25NP0		
C24	CC 3,9PF+-0,25PF3X4NP0	CC 087.6370	
	DRALORIC EDPU3X4/3,9/0,1K/NP0		
C32	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C33	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C34	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C35	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C36	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C37	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C38	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C39	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C40	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C41	CC 150PF+-2%5X6N750	CC 087.6929	
	DRALORIC EDPU5X6/150/2%N750		
C42	CC 2,2NF+-10%5X6R2000	CC 087.7060	
	DRALORIC EDPU5X6/2200/10%R200		
C43	CC 2,2NF+-10%5X6R2000	CC 087.7060	
	DRALORIC EDPU5X6/2200/10%R200		
C44	CE 6,8UF+-20%35V 7X 5X11	CE 087.9392	
C45	CE 6,8UF+-20%35V 7X 5X11	CE 087.9392	
C46	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C47	CE 22 UF+-20%16V 7X 5X11	CE 022.8091	
	ERO-TANTAL TA-ELKO ETR3-22/1S		
C48	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C49	CC 10NF+-10%100V5K1200VIE	CC 068.4060	
	AEROVOX CKR05BX103KL		
C55	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C56	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C57	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C58	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C59	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C60	CC 4,7NF+-10%6X9R2000	CC 087.7102	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC EDPU6X9/4700/10R2000		
C61	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C62	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C63	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C64	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C65	CC 820PF+-10%63V4X5 K2000	CC 092.7813	
C66	CC 820PF+-10%63V4X5 K2000	CC 092.7813	
C67	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C68	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C69	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C70	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C71	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C72	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C73	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C74	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C75	CC 1,5NF-20+80%R10000TRAP	CC 082.1712	
	STETTNER TEFK7,1500/2080E9000		
C76	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C80	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C81	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C82	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C83	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C84	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C85	CC 560PF+-10%3X4R2000	CC 087.7002	
	DRALORIC EDPU3X4/560/10%R2000		
C86	CC 560PF+-10%3X4R2000	CC 087.7002	
	DRALORIC EDPU3X4/560/10%R2000		
C87	CC 560PF+-10%3X4R2000	CC 087.7002	
	DRALORIC EDPU3X4/560/10%R2000		
C88	CC 560PF+-10%3X4R2000	CC 087.7002	
	DRALORIC EDPU3X4/560/10%R2000		
C90	CE 10 UF+-20%35V12X 7X11	CE 022.8210	
	ERO-TANTAL TA-ELKOETR4-10/35		
C91	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C92	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C93	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C94	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C96	CE 470UF-10+100% 6V 13X17 SIEMENS B41316-A2477-Z	CE 022.7537	
C97	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C98	CE 470UF-10+100% 6V 13X17 SIEMENS B41316-A2477-Z	CE 022.7537	
C99	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
GL1	AE BB505B SELEKT.C-DIODE SIEMENS BB505B-KATEGORIE4	568.1107	
GL4	AE 5082-2800 SCHOTTKY-DI. HEWLETT-P. 5082-2800	AE 012.9066	
GL5	AE 5082-2800 SCHOTTKY-DI. HEWLETT-P. 5082-2800	AE 012.9066	
GL6	AE 5082-2800 SCHOTTKY-DI. HEWLETT-P. 5082-2800	AE 012.9066	
GL7	AE 5082-2800 SCHOTTKY-DI. HEWLETT-P. 5082-2800	AE 012.9066	
GL8	AE BZX55/C11 0,5W Z-DI VALVO BZX55/C11	AE 012.2526	
GL10	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL11	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL12	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL13	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
BIS GL17	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL18	AE BA379 PIN-DIODE SIEMENS BA379	AE 244.7031	
GL19	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
BIS GL27	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
K1	HF-KABEL	302.6096	
L1	DROSSEL	302.5360	
L2	DROSSEL	302.5360	
L3	SPULE	302.4958	
L4	SPULE	302.4964	
L5	LD 1,00UH10%1,000HM0,390A DELEVAN 1025-20	LD 067.2863	
L8	LD 47,0UH10%4,500HM0,110A DELEVAN DROSSEL1025-60	LD 067.3060	
L9	LD 680 UH10%60,00HM0,030A DELEVAN DROSSEL1025-88	LD 067.3201	
L10	LD 22,0UH10%3,300HM0,114A DELEVAN DROSSEL1025-52	LD 067.3024	
L11	SPULE	302.5348	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
L12	LD 2,20UH10%0,400HM0,415A DELEVAN DROSSEL1025-28	LD 067.2905	
L15	LD 1,20UH10%0,180HM0,620A DELEVAN DROSSEL1025-22	LD 067.2870	
L16	LD 1,20UH10%0,180HM0,620A DELEVAN DROSSEL1025-22	LD 067.2870	
L20	SPULE	302.6696	
L21	SPULE	302.6696	
L22	SPULE	302.6715	
L23	SPULE	302.6715	
L24	SPULE	302.6709	
L25	SPULE	302.6709	
L26	SPULE	302.6680	
L27	SPULE	302.6680	
R1	RS 0,5W 5KOHM+-20%KURVE1 BOURNS 3329H-1-502	RS 069.8052	
R2	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R3	RL 0,25W 2,61KOHM+-1%TK50 DRALORIC SMA0207/2,61K-F-D	RL 083.0903	
R6	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R7	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	
R8	RL 0,25W 243 OHM+-1%TK50 DRALORIC SMA0207/243OHM-F-D	RL 083.0126	
R9	RF 0,25W470 OHM +-5% DRALORIC LCA0207/+-5%470	RF 069.4711	
R10	RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 220HM 2% UNGEW.	RL 092.5879	
R11	RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 220HM 2% UNGEW.	RL 092.5879	
R12	RL 0,13W 332 OHM+-1%TK50 RESISTA MK1 3320HM 1% TK50	RL 092.1380	
R13	RL 0,25W11,30 OHM+-1%TK50 DRALORIC SMA0207/11,3OHM-F-D	RL 082.8900	
R14	RL 0,25W11,30 OHM+-1%TK50 DRALORIC SMA0207/11,3OHM-F-D	RL 082.8900	
R15	RL 0,25W 51,1 OHM+-1%TK50 DRALORIC SMA0207/51,1OHM-F-D	RL 082.9536	
R16	RF 0,25W180 OHM +-5% DRALORIC LCA0207/+-5%180	RF 069.1812	
R17	RL 0,25W 33,2 OHM+-1%TK50 DRALORIC SMA0207/33,2OHM-F-D	RL 082.9359	
R18	RL 0,25W 113 OHM+-1%TK50 DRALORIC SMA0207/113OHM-F-D	RL 082.9820	
R19	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	
R20	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	
R21	RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 220HM 2% UNGEW.	RL 092.5879	
R22	RL 0,13W 16,2 OHM+-1%TK50	RL 092.0031	
R23	RL 0,13W 16,2 OHM+-1%TK50	RL 092.0031	
R24	RL 0,13W 33,2 OHM+-1%TK50 RESISTA MK1 33,2OHM 1% TK50	RL 092.1244	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R25	RL 0,13W 68,1 OHM+-1%TK50 RESISTA MK1 68,1OHM 1% TK50	RL 092.1309	
R26	RL 0,13W 16,2 OHM+-1%TK50	RL 092.0031	
R27	RF 0,25W 33KOHM +-5% DRALORIC LCA0207/+-5%33K	RF 069.3338	
R28	RF 0,25W 33KOHM +-5% DRALORIC LCA0207/+-5%33K	RF 069.3338	
R29	RL 0,13W 33,2KOHM+-1%TK50 RESISTA MK1 33K2 1% TK50	RL 092.1621	
R31	RF 0,25W 56 OHM +-5% DRALORIC LCA0207/+-5%56	RF 069.5601	
R32	RL 0,13W 56,2 OHM+-1%TK50 RESISTA MK1 56,2OHM 1% TK50	RL 092.1280	
R33	RF 0,25W240 OHM +-5% DRALORIC LCA0207/+-5%24C	RF 069.2419	
R34	RL 0,13W 4,75KOHM+-1%TK50 RESISTA MK1 4K75 1% TK50	RL 092.1521	
R35	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R36	RL 0,13W 221 OHM+-1%TK50 RESISTA MK1 221OHM 1% TK50	RL 092.1367	
R37	RL 0,13W 1,00KOHM+-1%TK50 RESISTA MK1 1K00 1% TK50	RL 092.1444	
R38	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	
R39	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	
R40	RL 0,25W 562 OHM+-1%TK50 DRALORIC SMA0207/562OHM-F-D	RL 083.0461	
R41	RL 0,25W 562 OHM+-1%TK50 DRALORIC SMA0207/562OHM-F-D	RL 083.0461	
R42	RL 0,25W 562 OHM+-1%TK50 DRALORIC SMA0207/562OHM-F-D	RL 083.0461	
R43	RL 0,25W 562 OHM+-1%TK50 DRALORIC SMA0207/562OHM-F-D	RL 083.0461	
R44	RL 0,25W 3,83KOHM+-1%TK50 DRALORIC SMA0207/3,83K-F-D	RL 082.6614	
R45	RL 0,25W 3,83KOHM+-1%TK50 DRALORIC SMA0207/3,83K-F-D	RL 082.6614	
R47	RF 0,25W5,1KOHM +-5% DRALORIC LCA0207/+-5%5,1K	RF 069.5124	
R48	RL 0,25W 10,0KOHM+-1%TK50 DRALORIC SMA0207/10K-F-D	RL 083.1297	
R49	RL 0,25W 100KOHM+-1%TK50 DRALORIC SMA0207/100K-F-C	RL 082.1764	
R50	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	
R51	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R52	RL 0,13W 4,75KOHM+-1%TK50 RESISTA MK1 4K75 1% TK50	RL 092.1521	
R53	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069.6814	
R54	RL 0,13W 681 OHM+-1%TK50 RESISTA MK1 681OHM 1% TK50	RL 092.1421	
R55	RL 0,13W 3,32KOHM+-1%TK50 RESISTA MK1 3K32 1% TK50	RL 092.1509	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R56	RL 0,13W 3,32KOHM+-1%TK50 RESISTA MK1 3K32 1% TK50	RL 092.1509	
R57	RL 0,13W 4,75KOHM+-1%TK50 RESISTA MK1 4K75 1% TK50	RL 092.1521	
R58	RL 0,13W 4,75KOHM+-1%TK50 RESISTA MK1 4K75 1% TK50	RL 092.1521	
R59	RL 0,13W 825 OHM+-1%TK50 RESISTA MK1 825OHM 1% TK50	RL 092.1438	
R60	RL 0,13W 3,92KOHM+-1%TK50 RESISTA MK1 3K92 1% TK50	RL 092.1515	
R61	RL 0,13W 825 OHM+-1%TK50 RESISTA MK1 825OHM 1% TK50	RL 092.1438	
R62	RL 0,13W 3,92KOHM+-1%TK50 RESISTA MK1 3K92 1% TK50	RL 092.1515	
R63	RL 0,13W 3,92KOHM+-1%TK50 RESISTA MK1 3K92 1% TK50	RL 092.1515	
R64	RL 0,13W 3,92KOHM+-1%TK50 RESISTA MK1 3K92 1% TK50	RL 092.1515	
R65	RL 0,13W 3,92KOHM+-1%TK50 RESISTA MK1 3K92 1% TK50	RL 092.1515	
R66	RL 0,13W 3,92KOHM+-1%TK50 RESISTA MK1 3K92 1% TK50	RL 092.1515	
R67	RL 0,13W 4,75KOHM+-1%TK50 RESISTA MK1 4K75 1% TK50	RL 092.1521	
R68	RL 0,13W 4,75KOHM+-1%TK50 RESISTA MK1 4K75 1% TK50	RL 092.1521	
R69	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R70	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R71	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R72	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R73	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R80	RL 0,13W 392 OHM+-1%TK50 RESISTA MK1 392OHM 1% TK50	RL 092.1396	
R81	RL 0,13W 12,1KOHM+-1%TK50 RESISTA MK1 12K1 1% TK50	RL 092.1573	
R82	RL 0,13W 12,1KOHM+-1%TK50 RESISTA MK1 12K1 1% TK50	RL 092.1573	
R83	RL 0,13W 392 OHM+-1%TK50 RESISTA MK1 392OHM 1% TK50	RL 092.1396	
R84	RL 0,13W 392 OHM+-1%TK50 RESISTA MK1 392OHM 1% TK50	RL 092.1396	
R85	RL 0,13W 12,1KOHM+-1%TK50 RESISTA MK1 12K1 1% TK50	RL 092.1573	
R86	RL 0,13W 12,1KOHM+-1%TK50 RESISTA MK1 12K1 1% TK50	RL 092.1573	
R87	RL 0,13W 392 OHM+-1%TK50 RESISTA MK1 392OHM 1% TK50	RL 092.1396	
R88	RL 0,13W 2,21KOHM+-1%TK50 RESISTA MK1 2K21 1% TK50	RL 092.1480	
R89	RL 0,13W 15,0KOHM+-1%TK50 RESISTA MK1 15K 1% TK50	RL 092.1580	
R90	RF 0,25W 1 OHM +-5%	RF 073.9872	

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
19	0282	ED UMSETZER	302.6015 SA	8

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%1		
ST5	ENTHALTEN IN 302.6015		
T1	AM U310 N-KAN.FET 25V0,5W SILICONIX U310	AM 454.6217	
T2	AK BFR15A SI-NPN HF-TRANS SIEMENS BFR15A	AK 451.4320	
T3	AK BFR15A SI-NPN HF-TRANS SIEMENS BFR15A	AK 451.4320	
T5	AK BF272A SI PNP 35V15MIA SGS BF272A	AK 082.3996	
T6	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T8	AK BCY79IX PNP 45V200MIA SIEMENS BCY79IX	AK 010.3777	
T9	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
T10	AK BCY79IX PNP 45V200MIA SIEMENS BCY79IX	AK 010.3777	
T11	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
32	0282	ED REFERENZ	302.6215 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BL SN54LS86J 4/2INP.EXORG TEXAS SN54LS86J	BL 302.6238	
B2	BO UA741MJG OP-AMP. TEXAS UA741MJG	BO 275.0822	
B3	BL SN54S00J 4/2INP.NAND TEXAS SN54S00J	BL 468.5899	
B4	BL SN54S00J 4/2INP.NAND TEXAS SN54S00J	BL 468.5899	
B5	BL SN54S112J 2/JK-FLIPFL. TEXAS SN54S112J	BL 468.5930	
B6	BL SN54LS290J DEZ.ZAEHLER TEXAS SN54LS290J	BL 530.5805	
B7	BL SN54LS74J 2XD-FLIPFLOP TEXAS SN54LS74J	BL 275.0697	
B8	BL MC14518BCP 2XBCD-COUNT RCA D4518BE	BL 086.7296	
B10	BL MC14518BCP 2XBCD-COUNT RCA D4518BE	BL 086.7296	
B11	BL SN54LS290J DEZ.ZAEHLER TEXAS SN54LS290J	BL 530.5805	
B12	BL MC14046BCP MICROP. PLL MOTOROLA MC14046BCP	BL 303.8986	
B13	BO LF256H BIFET-OP.AMP. NSC LF256H	BO 302.5883	
B14	BL HEF4027B 2/JK-FLIPFLOP VALVO HEF4027BP	BL 302.6444	
B15	BL HEF4029B UP/DOWN-COUNT VALVO HEF4029BP	BL 302.6438	
B16	BL HEF4027B 2/JK-FLIPFLOP VALVO HEF4027BP	BL 302.6444	
B17	BL HEF4027B 2/JK-FLIPFLOP VALVO HEF4027BP	BL 302.6444	
B18	BL CD4011BE 4/2INP.NANDG. RCA CD4011BE	BL 252.7337	
C1	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C2	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C3	CC 27PF+-2%4X5N150 DRALORIC EDPU4X5/27/2%N150	CC 087.6641	
C4	CC 10PF+-0,5PF5N150 DRALORIC N150/IB10/0,5SDPN5	CC 006.0254	
C5	CC 2PF+-0,5PF5N150 DRALORIC N150/IB2/0,5SDPN	CC 006.0183	
C6	CC 1,5PF+-0,25PFNPA/IBRD5 STETTNER SDPL5;1,5PF/0,25NPO	CC 450.6864	
C7	CE 15 UF+-20%20V 7X 5X11 ERO-TANTAL TA-FLKOETR3-15/20	CE 022.8127	
C8	CE 15 UF+-20%35V12X 7X11	CE 087.9405	
C9	CC 33PF+-2%4X5NPO DRALORIC EDPU4X5/33/2%/NPO	CC 087.6487	
C10	CC 100PF+-2%6X9NPO DRALORIC EDPU6X9/100/2%NPO	CC 087.6541	
C11	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	

ROHDE & SCHWARZ MÜNCHEN | Äz 32 | Datum 0282 | Schaltteilliste für ED REFERENZ | Sachnummer 302.6215 SA | Blatt Nr. 2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C12	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C13	CE 10 UF+-20%25V 7X 5X11 ERO-TANTAL ETR3-10/25	CE 023.5980	
C14	CE 220UF-10+100%16V 13X17 SIEMENS B41316-A4227-Z	CE 022.7566	
C15	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	
C16	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	
C17	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C18	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	
C19	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	
C20	CC 56PF+-2%5X6NP0 DRALORIC EDPU5X6/56/2%NP0	CC 087.6512	
C21	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C22	CC 100PF+-2%6X9NP0 DRALORIC EDPU6X9/100/2%NP0	CC 087.6541	
C23	CC 120PF+-2%6X9NP0 DRALORIC EDPU6X9/120/2%NP0	CC 087.6558	
C24	CC 100PF+-2%6X9NP0 DRALORIC EDPU6X9/100/2%NP0	CC 087.6541	
C25	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C26	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	
C27	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
BIS C44	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C45	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
C47	CE 22 UF+-20%35V12X 7X11 ERO-TANTAL TA-ELKOETR4/22/35	CE 022.8227	
C48	CE 22 UF+-20%16V 7X 5X11 ERO-TANTAL TA-ELKO ETR3-22/15	CE 022.8091	
C50	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C51	CC 330PF+-10%3X4R2000 DRALORIC EDPU3X4/330/10%R2000	CC 087.6970	
C52	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C53	CC 330PF+-10%3X4R2000 DRALORIC EDPU3X4/330/10%R2000	CC 087.6970	
C54	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C55	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C56	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	
C57	CE 220UF-10+100%16V 13X17 SIEMENS B41316-A4227-Z	CE 022.7566	

PF 095.0026.0679

ROHDE & SCHWARZ MÜNCHEN | Äz 32 | Datum 0282 | Schaltteilliste für ED REFERENZ | Sachnummer 302.6215 SA | Blatt Nr. 3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C58	CE 220UF-10+100%16V 13X17 SIEMENS B41316-A4227-Z	CE 022.7566	
C59	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C60	CK 220PF+-2,5%63V 4,5RD SIEMENS B 31063-A 5221-H 000	CK 060.4719	
C61	CK 68PF+-2%160V5RDX12 KS SIEMENS B31861-J1680-G000	CK 137.0940	
C62	CT 30 PF N750 STEH.ABGL. STETTNER 10S-TRIK021-10/40N75 TRIMMWERT	CT 025.7050	
C63	CK 39PF+-5%160V 5,5RDX12 SIEMENS B31861-J1390-J TRIMMWERT	CK 087.4584	
C64	CK 100NF+-20%100V QUADER ROEDERST MKT1822-410/0	CK 006.5033	
C65	CK 220PF+-2,5%63V 4,5RD SIEMENS B 31063-A 5221-H 000	CK 060.4719	
C70	CC 330PF+-10%3X4R2000 DRALORIC EDPU3X4/330/10%R2000	CC 087.6970	
GL1	AE BB105B C-DIODE SELEKT. SIEMENS BB105B/R&S-LV	249.4718	
GL1	AE BB505B SELEKT.C-DIODE SIEMENS BB505B-KATEGORIE4	568.1107	
GL2	AE BB105B C-DIODE SELEKT. SIEMENS BB105B/R&S-LV	249.4718	
GL2	AE BB505B SELEKT.C-DIODE SIEMENS BB505B-KATEGORIE4	568.1107	
GL3	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL5	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL6	AE BA182 BER.SCH.DIOD.VHF VALVO BA182	AE 012.0523	
GL7	AE BZX55/C12 0,5W Z-DI VALVO BZX55/C12	AE 012.2532	
GL8	AE BZX55/C7V5 0,5W Z-DI VALVO BZX55/C7V5	AE 012.2484	
K1	KABEL	302.6315	
L1	LD 470 UH10%42,00HM0,036A DELEVAN DROSSEL1025-84	067.3182	
L2	SPULE	302.6309	
L3	LD 3,90UH10%1,000HM0,263A DELEVAN DROSSEL1025-34	LD 067.2934	
L4	LD 3,90UH10%1,000HM0,263A DELEVAN DROSSEL1025-34	LD 067.2934	
L5	LD 0,12UH10%0,090HM1,300A DELEVAN DROSSEL1025-96	LD 067.2757	
L6	LD 0,22UH10%0,140HM1,045A DELEVAN DROSSEL1025-04	LD 067.2786	
L7	LD 0,22UH10%0,140HM1,045A DELEVAN DROSSEL1025-04	LD 067.2786	
L8	LD 0,12UH10%0,090HM1,300A DELEVAN DROSSEL1025-96	LD 067.2757	

PF 095.0026.0679

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
L10	LD 0,27UH10%0,160HMO,975A DELEVAN DROSSEL1025-06	LD 067.2792	
L11	LD 0,47UH10%0,350HMO,660A DELEVAN DROSSEL1025-12	LD 067.2828	
L12	LD 0,47UH10%0,350HMO,660A DELEVAN DROSSEL1025-12	LD 067.2828	
L13	LD 0,27UH10%0,160HMO,975A DELEVAN DROSSEL1025-06	LD 067.2792	
L15	LD 33,0UH10%3,400HMO,130A DELEVAN DROSSEL 1025-56	LD 067.3047	
L16	LD 15UH BEI 0,57A 1,320HM JAHRE 74.11-15ROK	LD 026.3265	
Q1	EQ 10,000MHZ CL30 HC-18/U QUAKE QUARZQDD61000M10	055.6746	
R1	RL 0,125W36,5KOHM+-1%TK50 DALE MF1/10 36,5K 1%TK50	RL 086.3678	
R3	RL 0,125W16,5KOHM+-1%TK50 DALE MF1/10 16,5K 1%TK50	RL 086.3426	
R4	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R5	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R6	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	
R7	RS 0,5W20KOHM+-20%10X10X5 BOURNS 3386X-1-203	RS 087.7660	
R8	RL 0,25W 2,15KOHM+-1%TK50 DRALORIC SMA0207/2,15K-F-D	RL 083.0855	
R9	RS 0,5W1KOHM+-20%10X10X5 BOURNS 3386X-1-102	RS 247.5917	
R10	RL 0,25W 1,91KOHM+-1%TK50 DRALORIC SMA0207/1,91K-F-D	RL 083.0803	
R11	RL 0,25W 6,81KOHM+-1%TK50 DRALORIC SMA 0207/6,81K-F-C	RL 082.2560	
R12	RS 0,5W20KOHM+-20%10X10X5 BOURNS 3386X-1-203	RS 087.7660	
R13	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R14	RL 0,13W 15,8KOHM+-1%TK50	RL 099.3242	
R15	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R16	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	
R17	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R18	RF 0,25W560 OHM +-5% DRALORIC LCA0207/+-5%560	RF 069.5618	
R19	RF 0,25W180 OHM +-5% DRALORIC LCA0207/+-5%180	RF 069.1812	
R20	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R22	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	
R23	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069.2225	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R24	RF 0,25W 56KOHM +-5% DRALORIC LCA0207/+-5%56K	RF 069.5630	
R25	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R26	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R27	RF 0,25W 22KOHM +-5% DRALORIC LCA0207/+-5%22K	RF 069.2231	
R28	RF 0,25W5,1KOHM +-5% DRALORIC LCA0207/+-5%5,1K	RF 069.5124	
R29	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	
R30	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R31	RF 0,25W120 OHM +-5% DRALORIC LCA0207/+-5%120	RF 069.1212	
R32	RF 0,25W 68 OHM +-5% DRALORIC LCA0207/+-5%68	RF 069.6808	
R33	RF 0,25W150 OHM +-5% DRALORIC LCA0207/+-5%150	RF 069.1512	
R34	RF 0,25W 68 OHM +-5% DRALORIC LCA0207/+-5%68	RF 069.6808	
R35	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R36	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R37	RF 0,25W1,8MOHM +-5% DRALORIC LCA0207/+-5%1,8M	RF 069.1858	
R38	RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5%15K	RF 069.1535	
R40	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R41	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R42	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R43	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R44	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R45	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R46	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R47	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R48	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R49	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R50	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R51	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	
R52	RL 0,125W6,19KOHM+-1%TK50 DALE MF1/10 6,19K 1%TK50	RL 067.4720	
R53	RF 0,25W3,9KOHM +-5%	RF 069.3921	

ROHDE & SCHWARZ MÜNCHEN | Äz 32 | Datum 0282 | Schaltteilliste für ED REFERENZ | Sachnummer 302.6215 SA | Blatt 6

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%3,9K		
R54	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R60	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R61	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R62	RF 0,25W330 OHM +-5% DRALORIC LCA0207/+-5%330	RF 069.3315	
R63	RF 0,25W 22 OHM +-5% DRALORIC LCA0207/+-5%22	RF 069.2202	
R64	RF 0,25W 51 OHM +-5% DRALORIC LCA0207/+-5%51	RF 069.5101	
R65	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R70	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	
R71	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	
R72	RF 0,25W 39 OHM +-5% DRALORIC LCA0207/+-5%39	RF 069.3909	
ST6	ENTHALTEN IN 302.6215		
T1	AM 2N4416 N-KAN.JFET 30V TEXAS 2N4416	AM 010.8591	
T2	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T3	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T4	AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214.7685	
T5	AK 2N2369A SI NPN 40V0,2A VALVO. 2N2369A	AK 010.4680	
T6	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T7	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T8	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T9	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T10	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN | Äz 19 | Datum 0282 | Schaltteilliste für ED INTERPOLATIONSOS.50KHZ | Sachnummer 302.6415 SA | Blatt Nr. 1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BO UA709JG OP-AMPLIFIER TEXAS SN52709JG	BO 246.1760	
B2	BL MC14046BCP MICROP. PLL MOTOROLA MC14046BCP	BL 303.8986	
B3	BL SN54LS74J 2XD-FLIPFLOP TEXAS SN54LS74J	BL 275.0697	
B4	BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R&S-LV	BL 302.6038	
B5	BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R&S-LV	BL 302.6038	
B6	BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R&S-LV	BL 302.6038	
B7	BL SN54LS04J 6/INVERTER TEXAS SN54LS04J	BL 468.5976	
B8	BL MC14046BCP MICROP. PLL MOTOROLA MC14046BCP	BL 303.8986	
B9	BO UA709JG OP-AMPLIFIER TEXAS SN52709JG	BO 246.1760	
B10	BO UA741MJG OP-AMP. TEXAS UA741MJG	BO 275.0822	
B11	BL SN54LS290J DEZ.ZAEHLER TEXAS SN54LS290J	BL 530.5805	
B12	BM SRA-1 RINGMISCHER MCL SRA-1	BM 207.3465	
B13	BC D8243 4X4BIT-I/O-EXP. INTEL D8243	BC 092.8155	
B14	BL SN54LS04J 6/INVERTER TEXAS SN54LS04J	BL 468.5976	
C1	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C2	CC 22PF+-2%3X4N750 DRALORIC EDPU3X4/22/2%N750	CC 087.6829	
C3	CK 220NF+-20%100V QUADER ROEDERST MKC1862-422/0	CK 087.4049	
C4	CK 22NF+-20%400V6X11X13 ROEDERST MKC1862-322/4	CK 087.4432	
C5	CC 25PF 2% NPO/IB 3ROHR DRALORIC NPO/25/2RR3X12LC	CC 022.1945	
C6	CC 27PF 2% N220/IA 3 ROHR DRALORIC N220/IA27/2RD3X10LC	CC 022.2764	
C7	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C8	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C9	CC 15PF+-2%3X4NPO DRALORIC EDPU3X4/15/2%/NPO	CC 087.6441	
C10	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C11	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C12	CC 22PF+-2%3X4N750 DRALORIC EDPU3X4/22/2%N750	CC 087.6829	
C13	CK 680NF+-20%63V QUADER ROEDERST MKC1862-468/06	CK 087.0950	
C14	CC 25PF 2% NPO/IB 3ROHR	CC 022.1945	

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	19	0282	ED INTERPOLATIONSOS.50KHZ	302.6415 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC NPO/25/2RR3X12LC		
C15	CC 27PF 2% N220/1A 3 ROHR	CC 022.2764	
	DRALORIC N220/1A27/2R03X10LC		
C16	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C17	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C18	CC 15PF+-2%3X4NPO	CC 087.6441	
	DRALORIC EDPU3X4/15/2%/NPO		
C19	CC 1,5NF+-10%4X5R2000	CC 087.7048	
	DRALORIC EDPU4X5150010%R2000		
C20	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C21	CE 22 UF+-20%16V 7X 5X11	CE 022.8091	
	ERO-TANTAL TA-ELKO ETR3-22/15		
C22	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C23	CC 1,8NF+-10%4X5R2000	CC 087.7054	
	DRALORIC EDPU4X5/1800/10R2000		
C24	CC 1NF+-10%63V K2000	CC 022.0784	
	DRALORIC EDPU4X5/63V1000/10%		
C25	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C26	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C27	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C28	CE 47UF -10+100%40V 11X13	CE 022.7589	
	SIEMENS B41316-B7476-Z		
C29	CE 100uF-10+100%25V 13X13	CE 208.4007	
	ROEDERST ELKOEK100/25		
C30	CE 47UF -10+100%16V 9X13	CE 022.7543	
	ROEDERST ELKO EK47/16		
C32	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C33	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C34	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C35	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C36	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C37	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C38	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C39	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C40	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C41	CE 47UF -10+100%40V 11X13	CE 022.7589	
	SIEMENS B41316-B7476-Z		
C42	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C43	CE 22 UF+-20%16V 7X 5X11	CE 022.8091	
	ERO-TANTAL TA-ELKO ETR3-22/15		

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	19	0282	ED INTERPOLATIONSOS.50KHZ	302.6415 SA	3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C44	CK 22NF+-20%250V QUADER	CK 006.5156	
	VALVO MKT344/0,022/20/250		
C45	CK 100NF+-20%100V QUADER	CK 006.5033	
	ROEDERST MKT1822-410/0		
C46	CE 47UF -10+100%40V 11X13	CE 022.7589	
	SIEMENS B41316-B7476-Z		
C47	CE 47UF -10+100%16V 9X13	CE 022.7543	
	ROEDERST ELKO EK47/16		
C48	CC 100PF+-2%4X5N750	CC 087.6906	
	DRALORIC EDPU4X5/100/2%N750		
C50	CE 15 UF+-20%16V 7X 5X11	CE 087.9328	
C51	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C52	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C53	CC 4,7NF+-10%6X9R2000	CC 087.7102	
	DRALORIC EDPU6X9/4700/10R2000		
C54	CE 1,0UF+-20%35V 5X 4X 7	CE 022.8185	
	ERO-TANTAL TA-ELKOETR1-1/35		
C55	CK 47NF+-20%250V QUADER	CK 087.4178	
	ITT MKC42544-14747		
C56	CC 470PF+-10%3X4R2000	CC 087.6993	
	DRALORIC EDPU3X4/470/10%R2000		
C57	CC 2,2NF+-10%5X6R2000	CC 087.7060	
	DRALORIC EDPU5X6/2200/10%R200		
C58	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C59	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C60	CC 220PF+-2%6X7N750	CC 087.6941	
	DRALORIC EDPU6X7/220/2%N750		
C61	CC 120PF+-2%5X6N750	CC 087.6912	
GL1	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL2	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL3	AE BB113 3FACH-C-DIODE AM	AE 252.5711	
	SIEMENS BB113		
GL5	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL6	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL7	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL8	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL9	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL10	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL11	AE BB113 3FACH-C-DIODE AM	AE 252.5711	
	SIEMENS BB113		
GL12	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL13	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	19	0282	ED INTERPOLATIONSOS.50KHZ	302.6415 SA	4

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
GL14	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL15	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
L1	LD 47,0UH10%4,500HMO,110A DELEVAN DROSSEL1025-60	LD 067.3060	
L2	LD 47,0UH10%4,500HMO,110A DELEVAN DROSSEL1025-60	LD 067.3060	
L3	LD 1000UH10%72,00HMO,028A DELEVAN DROSSEL1025-92	LD 037.8005	
L4	LD 10,0UH10%3,300HMO,144A DELEVAN DROSSEL1025-44	LD 026.4184	
L5	LD 10,0UH10%3,300HMO,144A DELEVAN DROSSEL1025-44	LD 026.4184	
L6	SPULE	302.6644	
L7	SPULE	302.6644	
L8	LD 1000UH10%72,00HMO,028A DELEVAN DROSSEL1025-92	LD 037.8005	
L9	LD 47,0UH10%4,500HMO,110A DELEVAN DROSSEL1025-60	LD 067.3060	
L10	LD 47,0UH10%4,500HMO,110A DELEVAN DROSSEL1025-60	LD 067.3060	
L11	LD 6,80UH10%2,000HMO,185A DELEVAN DROSSEL1025-40	LD 026.4178	
L13	LD 39,0UH10%3,600HMO,125A DELEVAN DROSSEL1025-58	LD 067.3053	
L14	LD 47,0UH10%4,500HMO,110A DELEVAN DROSSEL1025-60	LD 067.3060	
R1	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R2	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R3	RF 0,25W470 OHM +-5% DRALORIC LCA0207/+-5%470	RF 069.4711	
R4	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R5	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	
R6	RF 0,25W560 OHM +-5% DRALORIC LCA0207/+-5%560	RF 069.5618	
R7	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	
R8	RL 0,25W 100KOHM+-1%TK50 DRALORIC SMA0207/100K-F-C	RL 082.1764	
R9	RF 0,25W 27KOHM +-5% DRALORIC LCA0207/+-5%27K	RF 069.2731	
R10	RF 0,25W 27KOHM +-5% DRALORIC LCA0207/+-5%27K	RF 069.2731	
R11	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R12	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	
R13	RF 0,25W3,9KOHM +-5% DRALORIC LCA0207/+-5%3,9K	RF 069.3921	
R14	RF 0,25W1,5KOHM +-5%	RF 069.1529	

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	19	0282	ED INTERPOLATIONSOS.50KHZ	302.6415 SA	5

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%1,5K		
R15	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R16	RL 0,25W 6,19KOHM+-1%TK50 DRALORIC SMA0207/6,19K-F-C	RL 082.2283	
R17	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	
R18	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R19	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R20	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R21	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R22	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R23	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R24	RF 0,25W 82 OHM +-5% DRALORIC LCA0207/+-5%82	RF 069.8200	
R25	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R26	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R27	RL 0,25W 10,0KOHM+-1%TK50 DRALORIC SMA0207/10K-F-D	RL 083.1297	
R28	RL 0,25W 6,34KOHM+-1%TK50 DRALORIC SMA0207/6,34K-F-D	RL 083.1151	
R29	RL 0,25W 6,04KOHM+-1%TK50 DRALORIC SMA 0207/6,040HM-F-C	RL 082.6089	
R30	RF 0,25W 27KOHM +-5% DRALORIC LCA0207/+-5%27K	RF 069.2731	
R31	RF 0,25W 27KOHM +-5% DRALORIC LCA0207/+-5%27K	RF 069.2731	
R32	RF 0,25W1,8KOHM +-5% DRALORIC LCA0207/+-5%1,8K	RF 069.1829	
R33	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	
R34	RF 0,25W3,9KOHM +-5% DRALORIC LCA0207/+-5%3,9K	RF 069.3921	
R35	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R36	RF 0,25W220 OHM +-5% DRALORIC LCA0207/+-5%220	RF 069.2219	
R37	RL 0,25W 6,19KOHM+-1%TK50 DRALORIC SMA0207/6,19K-F-C	RL 082.2283	
R38	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	
R39	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R40	RF 0,25W1,2KOHM +-5% DRALORIC LCA0207/+-5%1,2K	RF 069.1229	
R41	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R42	RF 0,25W560 OHM +-5% DRALORIC LCA0207/+-5%560	RF 069.5618	

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
19	0282	ED INTERPOLATIONSOS.50KHZ	302.6415 SA	6

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R43	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	
R44	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R45	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R46	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	
R47	RF 0,25W150 OHM +-5% DRALORIC LCA0207/+-5%150	RF 069.1512	
R48	RF 0,25W560 OHM +-5% DRALORIC LCA0207/+-5%560	RF 069.5618	
R49	RF 0,25W560 OHM +-5% DRALORIC LCA0207/+-5%560	RF 069.5618	
R50	RF 0,25W6,8KOHM +-5% DRALORIC LCA0207/+-5%6,8K	RF 069.6820	
R51	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	
R52	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R53	RF 0,25W 47KOHM +-5% DRALORIC LCA0207/+-5%47K	RF 069.4734	
R54	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	
R55	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R56	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	
R57	RF 0,25W4,7KOHM +-5% DRALORIC LCA0207/+-5%4,7K	RF 069.4728	
R58	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	
R59	RF 0,25W1,8MOHM +-5% DRALORIC LCA0207/+-5%1,8M	RF 069.1858	
ST7	ENTHALTEN IN 302.6415		
T1	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
BIS T5	AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010.4680	
T6	AM 2N4416A AUSGESUCHT FET INTERSIL 2N4416/R&S-LV	249.4653	
T7	AM 2N4416A AUSGESUCHT FET INTERSIL 2N4416/R&S-LV	249.4653	
T8	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	
			- ENDE -

PF 095.0026.0679

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
16	0282	ED INTERPOL.-OSZ.- 100 HZ	302.6615 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BO UA741MJG OP-AMP. TEXAS UA741MJG	BO 275.0822	
B2	BL SN54LS290J DEZ.ZAEHLER TEXAS SN54LS290J	BL 530.5805	
B3	BL SN54LS290J DEZ.ZAEHLER TEXAS SN54LS290J	BL 530.5805	
B4	BL HEF4029B UP/DOWN-COUNT VALVO HEF4029BP	BL 302.6438	
B5	BL MC14046BCP MICROP. PLL MOTOROLA MC14046BCP	BL 303.8986	
B6	BL HEF4027B 2/JK-FLIPFLOP VALVO HEF4027BP	BL 302.6444	
B7	BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R&S-LV	BL 302.6038	
B8	BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R&S-LV	BL 302.6038	
B9	BL SN54S169J 4BIT-COUNTER TEXAS SN54S169J	BL 302.6638	
B10	BL SN54S74J 2/D-FLIPFLOP TEXAS SN54S74J	BL 302.6050	
B11	BC D8243 4X4BIT-I/O-EXP. INTEL D8243	BC 092.8155	
B12	BL SN54LS04J 6/INVERTER TEXAS SN54LS04J	BL 468.5976	
C1	CK 220NF+-20X100V QUADER ROEDERST MKC1862-422/0	CK 087.4049	
C2	CK 22NF+-20X160V RM15KC ROEDERST KC1849-322/1	CK 006.4672	
C4	CC 27PF 2% N220/IA 3 ROHR DRALORIC N220/IA27/2RD3X10LC	CC 022.2764	
C5	CC 2PF+-0,25PF P100/IB3R.	CC 006.1009	
C6	CE 22 UF+-20X16V 7X 5X11 ERO-TANTAL TA-ELKO ETR3-22/15	CE 022.8091	
C7	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V1000/10%	CC 022.0784	
C10	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C11	CC 4,7NF+-10%6X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087.7102	
C12	CC 15PF+-2%3X4NPO DRALORIC EDPU3X4/15/2%/NPO	CC 087.6441	
C15	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C16	CC 120PF+-2%5X6N750	CC 087.6912	
C20	CE 47UF -10+100%40V 11X13 SIEMENS B41316-B7476-Z	CE 022.7589	
C21	CE 47UF -10+100%40V 11X13 SIEMENS B41316-B7476-Z	CE 022.7589	
C22	CE 47UF -10+100%40V 11X13 SIEMENS B41316-B7476-Z	CE 022.7589	
C23	CE 47UF -10+100%40V 11X13 SIEMENS B41316-B7476-Z	CE 022.7589	
C25	CC 10NF-20+50%7X8R6000 THOMSON C0X767/10000/PF-20+5	CC 087.7525	
C26	CC 10NF-20+50%7X8R6000	CC 087.7525	

PF 095.0026.0679

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	THOMSON COX767/10000/PF-20+5		
C27	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C30	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C31	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C32	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C33	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C34	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C35	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C36	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C37	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C38	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C39	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
C40	CC 10NF-20+50%7X8R6000	CC 087.7525	
	THOMSON COX767/10000/PF-20+5		
GL1	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL2	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL3	AE BB113 3FACH-C-DIODE AM	AE 252.5711	
	SIEMENS BB113		
GL4	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
GL5	AD 1N4448 SI 75V 150MIA	AD 012.0700	
	VALVO 1N4448		
L1	LD 47,0UH10%4,500HMO,110A	LD 067.3060	
	DELEVAN DROSSEL1025-60		
L2	SPULE	302.6644	
L3	LD 1,50UH10%0,220HMO,560A	LD 067.2886	
	DELEVAN DROSSEL 1025-24		
L4	LD 15,0UH10%2,800HMO,157A	LD 067.3001	
	DELEVAN DROSSEL1025-48		
R1	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R2	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R3	RF 0,25W470 OHM +-5%	RF 069.4711	
	DRALORIC LCA0207/+-5%470		
R4	RF 0,25W8,2KOHM +-5%	RF 069.8223	
	DRALORIC LCA0207/+-5%8,2K		
R5	RF 0,25W560 OHM +-5%	RF 069.5618	
	DRALORIC LCA0207/+-5%560		
R6	RF 0,25W3,3KOHM +-5%	RF 069.3321	
	DRALORIC LCA0207/+-5%3,3K		

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R7	RF 0,25W100KOHM +-5%	RF 069.1041	
	DRALORIC LCA0207/+-5%100K		
R8	RF 0,25W100KOHM +-5%	RF 069.1041	
	DRALORIC LCA0207/+-5%100K		
R9	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R10	RF 0,25W 27KOHM +-5%	RF 069.2731	
	DRALORIC LCA0207/+-5%27K		
R11	RF 0,25W 27KOHM +-5%	RF 069.2731	
	DRALORIC LCA0207/+-5%27K		
R12	RF 0,25W2,7KOHM +-5%	RF 069.2725	
	DRALORIC LCA0207/+-5%2,7K		
R13	RF 0,25W1,5KOHM +-5%	RF 069.1529	
	DRALORIC LCA0207/+-5%1,5K		
R15	RF 0,25W3,9KOHM +-5%	RF 069.3921	
	DRALORIC LCA0207/+-5%3,9K		
R16	RL 0,25W 6,19KOHM+-1%TK50	RL 082.2283	
	DRALORIC SMA0207/6,19K-F-C		
R17	RF 0,25W270 OHM +-5%	RF 069.2719	
	DRALORIC LCA0207/+-5%270		
R20	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
R21	RF 0,25W 1KOHM +-5%	RF 069.1029	
	DRALORIC LCA0207/+-5%1,0K		
R22	RF 0,25W220 OHM +-5%	RF 069.2219	
	DRALORIC LCA0207/+-5%220		
R25	RF 0,25W1,8KOHM +-5%	RF 069.1829	
	DRALORIC LCA0207/+-5%1,8K		
R26	RF 0,25W1,8KOHM +-5%	RF 069.1829	
	DRALORIC LCA0207/+-5%1,8K		
R27	RF 0,25W1,8KOHM +-5%	RF 069.1829	
	DRALORIC LCA0207/+-5%1,8K		
R28	RF 0,25W1,8KOHM +-5%	RF 069.1829	
	DRALORIC LCA0207/+-5%1,8K		
R29	RF 0,25W820 OHM +-5%	RF 069.8217	
	DRALORIC LCA0207/+-5%820		
R30	RF 0,25W1,8KOHM +-5%	RF 069.1829	
	DRALORIC LCA0207/+-5%1,8K		
ST8	ENTHALTEN IN		
	302.6615		
T1	AM 2N4416 N-KAN.JFET 30V	AM 010.8591	
	TEXAS 2N4416		
T2	AK 2N2369A SI NPN 40V0,2A	AK 010.4680	
	VALVO 2N2369A		
T3	AK 2N2369A SI NPN 40V0,2A	AK 010.4680	
	VALVO 2N2369A		
T4	AK 2N2369A SI NPN 40V0,2A	AK 010.4680	
	VALVO 2N2369A		
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	23	0282	ED MODULATIONSTEUERUNG	302.7011.01$_{SA}$	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BO CA1458G DUAL-OP.AMPL. NSC LM1458J	BO 083.5570	
B2	BO CA3240AE BIMOS DUAL OP RCA CA3240AE	BO 302.7040	
B3	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B4	BO CA3240E BIMOS DUAL OP. RCA CA3240E	302.7034	
B5	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B6	BO CA3240E BIMOS DUAL OP. RCA CA3240E	302.7034	
B7	BO CA3240E BIMOS DUAL OP. RCA CA3240E	302.7034	
B8	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B9	BO CA3240AE BIMOS DUAL OP RCA CA3240AE	BO 302.7040	
B10	BO CA3240AE BIMOS DUAL OP RCA CA3240AE	BO 302.7040	
B11	BO CA3240AE BIMOS DUAL OP RCA CA3240AE	BO 302.7040	
B12	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B13	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B14	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B15	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
B16	BO CA3240E BIMOS DUAL OP. RCA CA3240E	302.7034	
B17	BO TL044CJ 4XOP-AMPL. TEXAS TL044CJ	BO 250.2009	
B18	BL CD4011BE 4/2INP.NANDG. RCA CD4011BE	BL 252.7337	
B19	BL CD4069UBE HEX-INVERTER RCA CD4069BE	BL 086.9999	
B20	BL CD4011BE 4/2INP.NANDG. RCA CD4011BE	BL 252.7337	
B21	BO TL044CJ 4XOP-AMPL. TEXAS TL044CJ	BO 250.2009	
B22	BO TL044CJ 4XOP-AMPL. TEXAS TL044CJ	BO 250.2009	
B23	BO TL044CJ 4XOP-AMPL. TEXAS TL044CJ	BO 250.2009	
B24	BO TL044CJ 4XOP-AMPL. TEXAS TL044CJ	BO 250.2009	
B25	BC P8243 4X4BIT-I/O-EXP. INTEL P8243	BC 334.3270	
B26	BO TL044CJ 4XOP-AMPL. TEXAS TL044CJ	BO 250.2009	
B27	BL CD4069UBE HEX-INVERTER RCA CD4069BE	BL 086.9999	
B40	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	23	0282	ED MODULATIONSTEUERUNG	302.7011.01$_{SA}$	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B80	BL CD4066BE 4/ANALOGSWITC RCA CD4066BE	BL 290.3906	
C1	CG 3,3NF+-1%TKF16X16X6RM5 JAHRE 48.20/F/3300PF/1/500	CG 068.3357	
C2	CG 3,3NF+-1%TKF16X16X6RM5 JAHRE 48.20/F/3300PF/1/500	CG 068.3357	
C3	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C4	CE 100NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022.8156	
C5	CE 220NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,22/35	CE 022.8162	
C6	CE 2,2UF-10+100%40V 9X13B ROEDERST ELKO EKU 2/40	CE 086.4380	
C7	CE 10 UF+-20%16V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-10/15	CE 022.8085	
C10	CE 4,7UF+-20%20V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-4,7/20	CE 022.8110	
C11	CE 10 UF+-20%25V 7X 5X11 ERO-TANTAL ETR3-10/25	CE 023.5980	
C12	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C20	CE 4,7UF+-20%20V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-4,7/20	CE 022.8110	
C21	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C30	CE 4,7UF+-20%20V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-4,7/20	CE 022.8110	
C31	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C32	CG 560PF+-1%TKD9X9X6RM5	CG 068.2844	
C33	CC 150PF+-2%6X9N150 DRALORIC EDPU6X9/150/2%N150	CC 087.6735	
C40	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C41	CC 10NF-20+50%7X8R6000 THOMSON C0X767/10000/PF-20+5	CC 087.7525	
C42	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
C43	CE 22UF -10+100%40V 9X13 SIEMENS B4136-B7226-Z	CE 022.7572	
GL1	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
BIS GL6	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL7	AE BZX55/C7V5 0,5W Z-DI VALVO BZX55/C7V5	AE 012.2484	
R1	RS 0,5W20KOHM+-20%10X10X5 BOURNS 3386X-1-203	RS 087.7660	
R2	RS 0,5W100KOHM+-20%10X10X BOURNS 3386X-1-104	RS 087.7683	
R3	RL 0,25W 43,2KOHM+-1%TK50 DRALORIC SMA0207/43,2K-F-C	RL 083.1774	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	FUER VAR 22,52		
	WIDERST. RL 083.1674		
	FUER VAR 58		
R4	RL 0,25W 47,5KOHM+-1%TK50	RL 083.1800	
	DRALORIC SMA/207/47,5K-F-C		
R5	RL 0,25W 48,7KOHM+-1%TK50	RL 083.1816	
	DRALORIC SMA/207/48,7K-F-C		
	FUER VAR 22,52		
	WIDERST. RL 083.1780		
	FUER VAR 58		
R6	RL 0,25W71,5KOHM+-0,1%T25	RL 084.4702	
	DRALORIC SMA0207/71,5K-B-E		
	TRIMMWERT		
R7	RF 0,25W 33KOHM +-5%	RF 069.3338	
	DRALORIC LCA0207/+-5%33K		
R8	RF 0,25W 33KOHM +-5%	RF 069.3338	
	DRALORIC LCA0207/+-5%33K		
R9	RF 0,25W3,3KOHM +-5%	RF 069.3321	
	DRALORIC LCA0207/+-5%3,3K		
R10	RL 0,25W 121KOHM+-1%TK50	RL 083.2070	
	DRALORIC SMA/207/121K-F-C		
R11	RF 0,25W 51KOHM +-5%	RF 069.5130	
	DRALORIC LCA0207/+-5%51K		
R12	RS 0,5W20KOHM+-20%10X10X10X5	RS 087.7660	
	BOURNS 3386X-1-203		
R14	RF 0,25W 12KOHM +-5%	RF 069.1235	
	DRALORIC LCA0207/+-5%12K		
	FUER VAR 22,52		
	WIDERST. RL 082.2577		
	FUER VAR 58		
R15	RS 0,5W500 OHM+-20%10X10X	RS 247.7955	
	BOURNS 3386X-1-501		
R16	RF 0,25W2,2KOHM +-5%	RF 069.2225	
	DRALORIC LCA0207/+-5%2,2K		
	FUER VAR 22,52		
	WIDERST. RL 083.0661		
	FUER VAR 58		
R17	RF 0,25W180KOHM +-5%	RF 069.1841	
	DRALORIC LCA0207/+-5%180K		
R18	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R19	RF 0,25W 10KOHM +-5%	RF 069.1035	
	DRALORIC LCA0207/+-5%10K		
R20	RF 0,25W 15KOHM +-5%	RF 069.1535	
	DRALORIC LCA0207/+-5%15K		
R21	RF 0,25W 47KOHM +-5%	RF 069.4734	
	DRALORIC LCA0207/+-5%47K		
R22	RF 0,25W 56KOHM +-5%	RF 069.5630	
	DRALORIC LCA0207/+-5%56K		
R30	RL 0,25W 634 OHM+-1%TK50	RL 083.0484	
	DRALORIC SMA0207/634OHM-F-D		
R31	RL 0,25W 1KOHM+-1%TK50	RL 082.2160	
	DRALORIC SMA0207/1K-F-C		
R35	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		
R36	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R37	RL 0,25W 11,3KOHM+-1%TK50	RL 082.2202	
	DRALORIC SMA0207/11,3K-F-C		
R38	RL 0,25W20,5KOHM+-1%TK50	RL 082.2325	
	DRALORIC SMA/207/20,5K-F-C		
R39	RL 0,25W 196 KOHM+-1%TK50	RL 083.2229	
	DRALORIC SMA/207/196K-F-C		
R40	RL 0,25W 10,7KOHM+-1%TK50	RL 083.1316	
	DRALORIC SMA0207/10,7K-F-D		
R41	RL 0,2 W 19,1KOHM+-1%TK50	RL 083.1500	
	DRALORIC SMA/207/19,1K-F-C		
	FUER VAR 22		
R42	RL 0,25W 1,74KOHM+-1%TK50	RL 083.0784	
	DRALORIC SMA0207/1,74K-F-D		
R43	RL 0,25W 20,0KOHM+-1%TK50	RL 083.1522	
	DRALORIC SMA/207/20K-F-C		
R44	RL 0,25W12,7KOHM+-1%TK50	RL 082.2448	
	DRALORIC SMA/207/12,7K-F-C		
R45	RL 0,2 W 19,1KOHM+-1%TK50	RL C83.1500	
	DRALORIC SMA/207/19,1K-F-C		
R46	RL 0,25W 97,6KOHM+-1%TK50	RL 083.2006	
	DRALORIC SMA0207/97,6K-F-C		
R47	RL 0,25W 48,7KOHM+-1%TK50	RL 083.1816	
	DRALORIC SMA/207/48,7K-F-C		
R48	RL 0,25W 24,3KOHM+-1%TK50	RL 083.1574	
	DRALORIC SMA/207/24,3K-F-C		
R49	RL 0,25W 12,1KOHM+-1%TK50	RL 083.1351	
	DRALORIC SMA0207/12,1K-F-D		
R50	RL 0,25W 127KOHM+-1%TK50	RL 083.2087	
	DRALORIC SMA0207/127K-F-C		
R51	RL 0,25W63,4KOHM+-0,1%T25	RL 084.4602	
R52	RL 0,25W31,6KOHM+-0,1%T25	RL 084.4025	
	DRALORIC SMA/207/31,6K-B-E		
R53	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R54	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R55	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R56	RL 0,25W 976 OHM+-1%TK50	RL 083.0603	
	DRALORIC SMA0207/976OHM-F-D		
R57	RL 0,25W4,70KOHM+-0,1%T25	RL 084.2439	
	DRALORIC SMA0207/4,70K-B-E		
R58	RL 0,25W20,3KOHM+-0,1%T25	RL 084.3658	
	DRALORIC SMA0207/20,3K-B-E		
R59	RL 0,25W4,70KOHM+-0,1%T25	RL 084.2439	
	DRALORIC SMA0207/4,70K-B-E		
R60	RL 0,25W4,64KOHM+-1%TK50	RL 082.1687	
	DRALORIC SMA0207/4,64K-F-C		
R62	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R63	RF 0,25W6,8KOHM +-5%	RF 069.6820	
	DRALORIC LCA0207/+-5%6,8K		
R64	RL 0,25W 90,9KOHM+-1%TK50	RL 083.1980	
	DRALORIC SMA0207/90,9OHM-F-C		
R65	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		
R66	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC SMA0207/10K-F-D		
R67	RF 0,25W 10KOHM +-5%	RF 069.1035	
	DRALORIC LCA0207/+-5%10K		
R70	RL 0,25W 1,78KOHM+-1%TK50	RL 082.6643	
	DRALORIC SMA0207/1,78K-F-D		
R71	RS 0,5W50 OHM+-20%10X10X5	RS 087.7648	
	BOURNS 3386X-1-500		
R72	RL 0.25W 619 OHM+-1%TK50	RL 083.0478	
	DRALORIC SMA0207/6190HM-F-D		
R73	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		
R74	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		
R75	RL 0,25W 2,55KOHM+-1%TK50	RL 082.2354	
	DRALORIC SMA/207/2,55K-F-C		
R76	RS 0,5W5KOHM+-20%10X10X5	RS 247.7978	
	BOURNS 3386X-1-502		
R77	RL 0,25W 2,00KOHM+-1%TK50	RL 083.0826	
	DRALORIC SMA0207/2,00K-F-D		
R78	RL 0,25W 4,53KOHM+-1%TK50	RL 083.1080	
	DRALORIC SMA0207/4,53K-F-D		
R79	RS 0,5W5KOHM+-20%10X10X5	RS 247.7978	
	BOURNS 3386X-1-502		
R80	RL 0,25W 9,09KOHM+-1%TK50	RL 082.2177	
	DRALORIC SMA0207/9,09K-F-C		
R81	RL 0,25W 332 OHM+-1%TK50	RL 083.0255	
	DRALORIC SMA0207/3320HM-F-D		
R82	RL 0,25W 27,4KOHM+-1%TK50	RL 082.2583	
	DRALORIC SMA 0207/27,4K-F-C		
R83	RL 0,25W 2,49KOHM+-1%TK50	RL 083.0890	
	DRALORIC SMA0207/2,49K-F-D		
R84	RL 0,25W 27,4KOHM+-1%TK50	RL 082.2583	
	DRALORIC SMA 0207/27,4K-F-C		
R85	RF 0,25W 10KOHM +-5%	RF 069.1035	
	DRALORIC LCA0207/+-5%10K		
R86	RL 0,25W 681 OHM+-1%TK50	RL 083.0490	
	DRALORIC SMA0207/6810HM-F-D		
R87	RL 0,25W 27,4KOHM+-1%TK50	RL 082.2583	
	DRALORIC SMA 0207/27,4K-F-C		
R88	RL 0,25W5,17KOHM+-0,1%T25	RL 084.2516	
R89	RF 0,25W 10KOHM +-5%	RF 069.1035	
	DRALORIC LCA0207/+-5%10K		
R90	RL 0,25W 750 OHM+-1%TK50	RL 082.2360	
	DRALORIC SMA0207/750HM-F-C		
R91	RL 0,25W 15,0KOHM+-1%TK50	RL 083.1400	
	DRALORIC SMA0207/15K-F-D		
R92	RL 0,25W12,3KOHM+-0,1%T25	RL 084.3235	
R93	RL 0,25W27,4KOHM+-0,1%T25	RL 084.3906	
R94	RF 0,25W 10KOHM +-5%	RF 069.1035	
	DRALORIC LCA0207/+-5%10K		
R95	RL 0,25W15,2KOHM+-0,1%T25	RL 084.3412	
R96	RL 0,25W12,9KOHM+-0,1%T25	RL 084.3270	
	DRALORIC SMA0207/12,9K-B-E		
R97	RL 0,25W 3,48KOHM+-1%TK50	RL 083.1016	
	DRALORIC SMA0207/3,48K-F-D		
R98	RF 0,25W4,7KOHM +-5%	RF 069.4728	
	DRALORIC LCA0207/+-5%4,7K		

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R99	RF 0,25W 47 OHM +-5%	RF 069.4705	
	DRALORIC LCA0207/+-5%47		
R100	RL 0,25W 27,4KOHM+-1%TK50	RL 082.2583	
	DRALORIC SMA 0207/27,4K-F-C		
R110	RL 0,125W5,62KOHM+-1%TK50	RL 067.4714	
	DALE MF1/10 5,62K 1%TK50		
R111	RL 0,25W 20,0KOHM+-1%TK50	RL 083.1522	
	DRALORIC SMA/207/20K-F-C		
R112	RL 0,125W5,62KOHM+-1%TK50	RL 067.4714	
	DALE MF1/10 5,62K 1%TK50		
R113	RF 0,25W180 OHM +-5%	RF 069.1812	
	DRALORIC LCA0207/+-5%180		
R114	RL 0,25W 22,1KOHM+-1%TK50	RL 083.1545	
	DRALORIC SMA/207/22,1K-F-C		
R115	RL 0,25W 22,1KOHM+-1%TK50	RL 083.1545	
	DRALORIC SMA/207/22,1K-F-C		
R116	RL 0,25W 10,7KOHM+-1%TK50	RL 083.1316	
	DRALORIC SMA0207/10,7K-F-D		
	TRIMMWERT		
R117	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		
R118	RL 0,25W 10,0KOHM+-1%TK50	RL 083.1297	
	DRALORIC SMA0207/10K-F-D		
R119	RF 0,25W 10KOHM +-5%	RF 069.1035	
	DRALORIC LCA0207/+-5%10K		
R120	RF 0,25W120 OHM +-5%	RF 069.1212	
	DRALORIC LCA0207/+-5%120		
R139	RL 0,25W 1MOHM+-1%TK50	RL 082.7862	
	DRALORIC SMA0207/1M-F-D		
R140	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
BIS			
R155	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R156	RF 0,25W3,3KOHM +-5%	RF 069.3321	
	DRALORIC LCA0207/+-5%3,3K		
R157	RF 0,25W5,1KOHM +-5%	RF 069.5124	
	DRALORIC LCA0207/+-5%5,1K		
R158	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R159	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
R160	RF 0,25W 1 MOHM +-5%	RF 069.1058	
	DRALORIC LCA0207/+-5%1,0M		
ST10	ENTHALTEN IN		
	302.7011		
T1	AK BCY79IX PNP 45V200MIA	AK 010.3777	
	SIEMENS BCY79IX		
T2	AM J111A N-KANAL-FET 35V	AM 214.7685	
	SILICONIX J111A		
T3	AM J111A N-KANAL-FET 35V	AM 214.7685	
	SILICONIX J111A		
T4	AM J111A N-KANAL-FET 35V	AM 214.7685	
	SILICONIX J111A		
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	22	0282	ED MIKROPROZESSOR	302.7111.01 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	P 8049 PROGR 1/1	302.7234	
B2	P 8355 PROGR 1/1	302.7257	
B5	BL SN54LS244J 8XBUS-DRIV. TEXAS SN54LS244J	BL 262.3634	
B6	BL SN74LS74AN 2/D-FLIPFL. TEXAS SN74LS74N	BL 266.7934	
B7	BL SN74LS32N 4/2INP.OR TEXAS SN74LS32N	BL 266.4687	
B8	BL SN74LS132N 4XSCHMITT. TEXAS SN74LS132132N	BL 267.0291	
B9	BL CD4093BE 4XSCHMITT-TR. RCA CD4093BE	BL 516.3338	
B10	BL CD4001BE 4/2INP.NORG. RCA CD4001BE	BL 086.6960	
B11	BL CD4014BE 8BIT-SHIFTREG RCA CD4014BE FUER VAR 22	BL 086.7038	
B12	BL CD4014BE 8BIT-SHIFTREG RCA CD4014BE FUER VAR 22	BL 086.7038	
B13	BL SN54LS244J 8XBUS-DRIV. TEXAS SN54LS244J	BL 262.3634	
B14	BL SN74LS04N 6/INVERTER TEXAS SN74LS04ON	BL 266.2010	
B15	BL SN74LS04N 6/INVERTER TEXAS SN74LS04ON	BL 266.2010	
B16	BL SN7405N O+7O HEXINV TEXAS SN7405N FUER VAR 22	BL 009.3460	
B17	BJ HEF4738VP IEC-BUS-INT. VALVO HEF4738VP FUER VAR 22	BJ 302.7157	
B18	BO NE555V TIMER SIGNETICS NE555V FUER VAR 22	BO 418.1383	
BU27	FR JC-FASSUNG 16 POLIG EURO-DIP BU16 OZ IM MAGAZIN	FR 249.6091	
BU28	FR JC-FASSUNG 24POLIG EURO-DIP BU24OZ IM MAGAZIN	FR 087.5480	
C1	CC 68OPF+-10%4X5R2000 DRALORIC EDPU4X568010%R2000	CC 087.7019	
C2	CC 22PF+-2%4X5NPO DRALORIC EDPU4X5/22/2%/NPO	CC 087.6464	
C3	CC 22PF+-2%4X5NPO DRALORIC EDPU4X5/22/2%/NPO	CC 087.6464	
C4	CE 2,2UF+-20%35V 7X 5X11 ERO-TANTAL TA-ELKOETR2,2,2/35	CE 022.8191	
C5	CE 1,0UF+-20%35V 5X 2X 6 TEKELEC TA-ELKOMT2R1,0/35/20	CE 087.6070	
C6	CE 220NF+-20%35V 3X 2X 4	CE 087.6041	
C7	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	
C8	CC 100PF+-2%63V10NPO THOMSON CLC810-100PF+2%63V	CC 468.3744	
C10	CE 10UF -10+100%63V 9X13	CE 022.7650	

Diese Unterlage ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig

ROHDE & SCHWARZ MÜNCHEN	Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	22	0282	ED MIKROPROZESSOR	302.7111.01 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	ROEDERST ELKOEK10/63		
C11	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
BIS C20	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	
GL1	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
GL2	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	
Q1	EQ 6,000 MHZ CL30PF HC43U	302.7186	
R1	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R2	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R3	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R4	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	
R5	RF 0,25W 68KOHM +-5% DRALORIC LCA0207/+-5%68K	RF 069.6837	
R6	RL 0,25W332 OHM+-0,1%TK25 DRALORIC SMA0207/3320HM-B-E	RL 083.8227	
R7	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R8	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R9	RF 0,25W 56KOHM +-5% DRALORIC LCA0207/+-5%56K	RF 069.5630	
R10	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R11	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R12	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R13	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R14	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R15	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R16	RF 0,25W330KOHM +-5% DRALORIC LCA0207/+-5%330K	RF 069.3344	
R17	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	
R18	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R19	RF 0,25W5,6KOHM +-5% DRALORIC LCA0207/+-5%5,6K	RF 069.5624	
R20	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R21	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	
R22	RF 0,25W6,8KOHM +-5%	RF 069.6820	

PF 095 0028 0679

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	22	0282	ED MIKROPROZESSOR	302.7111.01 SA	3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%6,8K		
R23	RF 0,25W6,8KOHM +-5%	RF 069.6820	
	DRALORIC LCA0207/+-5%6,8K		
R24	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R25	RN 7X6,8KOHM+-2%SIL 8 H9	290.8672	
R26	RN 7X6,8KOHM+-2%SIL 8 H9	290.8672	
R27	RN 7X3,3KOHM+-2%SIL 8 H9	290.8666	
R28	RN 7X3,3KOHM+-2%SIL 8 H9	290.8666	
R29	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R30	RF 0,25W 22KOHM +-5%	RF 069.2231	
	DRALORIC LCA0207/+-5%22K		
R31	RF 0,25W120 OHM +-5%	RF 069.1212	
	DRALORIC LCA0207/+-5%120		
R32	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R33	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R34	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R35	RF 0,25W 33 OHM +-5%	RF 069.3309	
	DRALORIC LCA0207/+-5%33		
BIS			
R38	RF 0,25W 33 OHM +-5%	RF 069.3309	
	DRALORIC LCA0207/+-5%33		
R39	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R40	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R41	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
R42	RF 0,25W5,6KOHM +-5%	RF 069.5624	
	DRALORIC LCA0207/+-5%5,6K		
S1	SK CODIERSCH MIT HAUBE	SK 240.0126	
	AMP 435166-4MIT 435238-3		
ST11	ENTHALTEN IN		
	302.7111		
ST28	STECKEREINHEIT	335.0939	
T1	AK BCY79IX PNP 45V200MIA	AK 010.3777	
	SIEMENS BCY79IX		
			- ENDE -

ROHDE & SCHWARZ
MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
07	1180	BAUGR. EICHLEITUNG F.SMS Z	302.7311 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
A	ZUGEHOERIGER STROMLAUF 302.7311 S		302.7311
B1	BJ SN75361AP 2XTTL/MOS-TR NSC DS75361N	BJ 294.8490	294.8477
BIS B5	BJ SN75361AP 2XTTL/MOS-TR NSC DS75361N	BJ 294.8490	294.8477
B6	BL SN74LS32N 4/2INP.OR TEXAS IC-SN74LS32N	BL 266.4687	294.8477
BU1	BUCHSE Z	294.8154	294.8025
BU2	BUCHSE Z	294.8154	294.8025
BU10	FR JC-FASSUNG 16 POLIG EURO-DIP BU16OZ	FR 249.6091	294.8477
C1	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	294.8477
BIS C9	CE 100UF-10+100%25V 13X13 ROEDERST ELKOEK100/25	CE 208.4007	294.8477
C10	CE 47UF -10+100%16V 9X13 ROEDERST ELKO EK47/16	CE 022.7543	294.8477
C11	CE 1UF -10+100%63V 9X13 ROEDERST ELKO EK 1/63	CE 022.7620	294.8477
R1	BD DAEMPFUNGSGLIED 40B/50	912.5230	294.8025
R2	BD DAEMPFUNGSGLIED40DB/50	912.5269	294.8025
R3	BD DAEMPFUNGSGLIED10DB/50	912.5246	294.8025
R4	BD DAEMPFUNGSGLIED20DB/50	912.5252	294.8025
R5	BD DAEMPFUNGSGLIED40DB/50	912.5269	294.8025
R6	BD DAEMPFUNGSGLIED 40B/50	912.5230	294.8025
R7	BD DAEMPFUNGSGLIED 2DB/50	912.5223	294.8025
R8	BD DAEMPFUNGSGLIED20DB/50	912.5252	294.8025
R9	BD DAEMPFUNGSGLIED 1DB/50	912.5217	294.8025
RS1	ELEKTROMAGNET Z	294.8425	294.8090
RS2	ELEKTROMAGNET Z	294.8425	294.8090
RS3	ELEKTROMAGNET Z	294.8425	294.8090
RS4	ELEKTROMAGNET Z	294.8425	294.8090
RS5	ELEKTROMAGNET Z	294.8425	294.8090
RS6	ELEKTROMAGNET Z	294.8425	294.8090
RS7	ELEKTROMAGNET Z	294.8425	294.8090
RS8	ELEKTROMAGNET Z	294.8425	294.8090
RS9	ELEKTROMAGNET Z	294.8425	294.8090
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	Az	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	15	0282	NETZTEIL	302.7411 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BO UA723DM SPGS.REGLER FAIRCHILD UA23DM	BO 283.9425	302.7711
B2	BO CA741G OP-AMPLIFIER TEXAS UA741CJG	BO 083.5563	302.7711
B3	BO UA7915KC SP.REGL.-15V FAIRCHILD UA 7915 KC	BO 302.7734	
B4	BO UA723DM SPGS.REGLER FAIRCHILD UA23DM	BO 283.9425	302.7711
B5	BO CA741G OP-AMPLIFIER TEXAS UA741CJG	BO 083.5563	302.7711
B6	BO UA723DM SPGS.REGLER FAIRCHILD UA23DM	BO 283.9425	302.7711
B7	BO CA741G OP-AMPLIFIER TEXAS UA741CJG	BO 083.5563	302.7711
B8	BO UA723DM SPGS.REGLER FAIRCHILD UA23DM	BO 283.9425	302.7711
BU2	BUCHSENLEISTE	302.7463	
BU32	FJ EINBAUBUCHSE SYST.BNC SPINNER BN292700	FJ 017.6607	
C1	CE 22000UF-10+50X16V35X80 SIEMENS B 41306-K 4229-T	CE 291.6209 2,90	302.7711
C2	CC 2,2NF+-10%5X6R2000 DRALORIC EDPU5X6/2200/10%R200	CC 087.7060	302.7711
C3	CE 470NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,47/35	CE 022.8179	302.7711
C4	CK 1,0UF+-10% 63V RUNDB. ROEDERST MKT1813-510/06	CK 024.6867	
C5	CE 4700UF-10+50%40V35X 55 SIEMENS B41306-B7478-T	CE 290.2145 11,50	302.7711
C6	CE 2,2UF+-20%35V 7X 5X11 ERO-TANTAL TA-ELKOETR2,2/35	CE 022.8191	302.7711
C7	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	302.7711
C8	CE 10000UF10+50%40V35X 80 ROEDERST ELKOEYV10000/40ISO	CE 250.3134 7,90	302.7711
C9	CE 470NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,47/35	CE 022.8179	302.7711
C10	CE 470NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,47/35	CE 022.8179	302.7711
C11	CE 470UF-10+100%25V 15X25 ROEDERST ELKO EK470/25	CE 087.0608 1,80	302.7711
C12	CE 4700UF-10+50%40V35X 55 SIEMENS B41306-B7478-T	CE 290.2145 11,50	302.7711
C13	CE 470NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,47/35	CE 022.8179	302.7711
C14	CE 470NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,47/35	CE 022.8179	302.7711
C16	CE 220UF-10+100%63V 15X30 SIEMENS ELKO B4136-A8227-Z	CE 086.4316 1,20	302.7711
C17	CC 1NF+-10%63V K2000 DRALORIC EDPU4X5/63V100C/10%	CC 022.0784	302.7711
C18	CE 470NF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,47/35	CE 022.8179	302.7711
C20	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7711

PF 095.0026.0879

ROHDE & SCHWARZ MÜNCHEN	Az	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	15	0282	NETZTEIL	302.7411 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C21	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7711
C22	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7711
C23	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7711
C24	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7711
C30	CE 47UF -10+100%63V 13X17 ROEDERST ELKOEK47/63	CE 022.7672 1,90	302.7711
GL1	AG BYX42/300SI300V10A VALVO BYX42/300	013.0856	
GL2	AG BYX42/300SI300V10A VALVO BYX42/300	013.0856	
GL3	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.7711
GL4	AE BZX55/C3V3 0,5W Z-DI ITT ZPD3,3	AE 012.2390	302.7711
GL5	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL6	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL7	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL8	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL9	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL10	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL11	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL12	AG BY251 SI 3A 200V INTERMETAL BY251	AG 250.3128	302.7711
GL13	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.7711
GL14	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.7711
GL15	AE BZX55/C24 0,5W Z-DI VALVO BZX55/C24	AE 012.2603	302.7711
GL16	AG B60C800SI0,8A60V AEG-TELEF. B60C800SI	AG 013.2042	302.7711
GL17	AE BZX55/C18 0,5W Z-DI VALVO BZX55/C18	AE 012.2578	302.7711
GL18	AE BZX55/C18 0,5W Z-DI VALVO BZX55/C18	AE 012.2578	302.7711
GL19	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	302.7711
GL21	AE BZX55/C18 0,5W Z-DI VALVO BZX55/C18	AE 012.2578	302.7711
GL22	AE BZX55/C18 0,5W Z-DI VALVO BZX55/C18	AE 012.2578	302.7711
M01	EV 2,6W 17L/SEC 16V DC BUEHLER R&S.ZCHNG.291.6244	291.6244	

PF 095.0026.0879

ROHDE & SCHWARZ MÜNCHEN | Äz 15 | Datum 0282 | Schaltteilliste für NETZTEIL | Sachnummer 302.7411 SA | Blatt Nr. 3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R1	RL 0,125W825OHM+-1%TK50 DALE MF1/10 825 OHM1%TK50	RL 067.4514	302.7711
R2	RS 0,5W500 OHM+-20%10X10X BOURNS 3386X-1-501	RS 247.7955	302.7711
R3	RL 0,125W2,21KOHM+-1%TK50 DALE MF1/10 2,21K 1%TK50	RL 067.4614	302.7711
R4	RF 0,25W750 OHM +-5% DRALORIC LCA0207/+-5%750	RF 069.7510	302.7711
R5	RF 1,0 W 82 OHM+-5% DRALORIC LCA 0922 820HM+-5%	RF 007.2444	302.7711
R6	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	302.7711
R7	RF 0,25W1,2MOHM +-5% DRALORIC LCA0207/+-5%1,2M	RF 069.1258	302.7711
R8	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	302.7711
R9	RL 0,25W 866 OHM+-1%TK50 DRALORIC SMA0207/866OHM-F-C	RL 082.2290	302.7711
R10	RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5%15K	RF 069.1535	302.7711
R11	RD 1,2W68MIOHM+-3% SAGE 1000S/0,068OHM/3%	RD 451.4920	302.7711
R12	RF 0,25W 2,2 OHM+-5% DRALORIC LCA0207/+-5%2,2	RF 073.8730	302.7711
R13	RF 1,0 W 39 OHM+-5% DRALORIC LCA 0922 39OHM+-5%	RF 007.2409	302.7711
R14	RF 0,5W 1,3KOHM+-5% RESISTA SK4/1,3K5%	RF 073.9095	302.7711
R16	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	302.7711
R17	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	302.7711
R18	RF 0,25W100 OHM +-5% DRALORIC LCA0207/+-5%100	RF 069.1012	302.7711
R19	RF 0,25W1,2MOHM +-5% DRALORIC LCA0207/+-5%1,2M	RF 069.1258	302.7711
R20	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	302.7711
R21	RF 0,25W430 OHM +-5% DRALORIC LCA0207/+-5%430	RF 069.4311	302.7711
R22	RF 0,25W 27KOHM +-5% DRALORIC LCA0207/+-5%27K	RF 069.2731	302.7711
R23	RD 1,2W 0,15 OHM+-3% SAGE 1000S0,150HM+3%	RD 087.5222	302.7711
R24	RL 0,125W8,25KOHM+-1%TK50 DALE MF1/10 8,25K 1%TK50	RL 067.4750	302.7711
R25	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	302.7711
R26	RL 0,125W7,50KOHM+-1%TK50 DALE MF1/10 7,50K 1%TK50	RL 067.4743	302.7711
R27	RD 1,2W 0,15 OHM+-3% SAGE 1000S0,150HM+3%	RD 087.5222	302.7711
R28	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	302.7711
R29	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	302.7711
R30	RF 0,25W1,2MOHM +-5%	RF 069.1258	302.7711

PF 095.0026.0679

ROHDE & SCHWARZ MÜNCHEN | Äz 15 | Datum 0282 | Schaltteilliste für NETZTEIL | Sachnummer 302.7411 SA | Blatt Nr. 4

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%1,2M		
R31	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069.1029	302.7711
R32	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	302.7711
R33	RF 0,25W 39KOHM +-5% DRALORIC LCA0207/+-5%39K	RF 069.3938	302.7711
R34	RD 1,2W 0,15 OHM+-3% SAGE 1000S0,150HM+3%	RD 087.5222	302.7711
R35	RL 0,125W14,0KOHM+-1%TK50 DALE MF1/10 14,0K 1%TK50	RL 086.3378	302.7711
R36	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	302.7711
R37	RL 0,125W7,50KOHM+-1%TK50 DALE MF1/10 7,50K 1%TK50	RL 067.4743	302.7711
R39	RF 0,25W820 OHM +-5% DRALORIC LCA0207/+-5%820	RF 069.8217	302.7711
R40	RF 0,25W390 OHM +-5% DRALORIC LCA0207/+-5%390	RF 069.3915	302.7711
R41	RF 0,25W3,3KOHM +-5% DRALORIC LCA0207/+-5%3,3K	RF 069.3321	302.7711
R42	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069.6814	302.7711
R43	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069.1529	302.7711
R44	RL 0,25W 11,8KOHM+-1%TK50 DRALORIC SMA0207/11,8K-F-D	RL 083.1345	302.7711
R45	RF 0,25W 82 OHM +-5% DRALORIC LCA0207/+-5%82	RF 069.8200	302.7711
R46	RL 0,125W25,5KOHM+-1%TK50 DALE MF1/10 25,5K 1%TK50	RL 086.3561	302.7711
R47	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	302.7711
R48	RL 0,125W8,25KOHM+-1%TK50 DALE MF1/10 8,25K 1%TK50	RL 067.4750	302.7711
S1	FR SPANNUNGSWAEHLER GRAU	FR 017.5069	
S2	SB SCHALT NETZ 2A 0.KNOPF	SB 020.5495	
ST1	FN GERAETEST.M.NETZFILTER CORCOM 3 EF 1	FN 252.5757	
T1	AL 2N3055 SI NPN 100V 15A RCA 2N3055H	AL 010.1174	
T2	AL 2N3055 SI NPN 100V 15A RCA 2N3055H	AL 010.1174	
T3	AL 2N3055 SI NPN 100V 15A RCA 2N3055H	AL 010.1174	
T4	AK BSY56 SINPN 120V500MIA INTERMETAL BSY56	AK 010.5511	302.7711
T5	AK BSY56 SINPN 120V500MIA INTERMETAL BSY56	AK 010.5511	302.7711
TR1	LT RINGTR.123VA POLYTRONIK R&S-ZCHNG.302.7811	302.7811	
			- ENDE -

PF 095.0026.0679

ROHDE & SCHWARZ MÜNCHEN | Äz. 11 | Datum 0380 | Schaltteilliste für TASTATUR/ANZEIGE-EINHEIT Z | Sachnummer 302.7911 SA | Blatt Nr. 1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BP 5082-7610 7SEGM.ANZ.RT HEWLETT HP 5082-7610	BP 293.6241	302.7911
BIS			
B11	BP 5082-7610 7SEGM.ANZ.RT HEWLETT HP 5082-7610	BP 293.6241	302.7911
B12	BP 5082-7616 +-ANZEIGE RT HEWLETT HP 5082-7616	BP 302.7934	302.7911
B13	BP 5082-7610 7SEGM.ANZ.RT HEWLETT HP 5082-7610	BP 293.6241	302.7911
B14	BP 5082-7610 7SEGM.ANZ.RT HEWLETT HP 5082-7610	BP 293.6241	302.7911
B15	BP 5082-7610 7SEGM.ANZ.RT HEWLETT HP 5082-7610	BP 293.6241	302.7911
B18	BO NE555V TIMER SIGNETICS IC-NE555V	BO 418.1383	302.7911
B20	BL CD4013BE 2/D-FLIPFLOP RCA ICCD4013AE	BL 086.7021	302.7911
B21	BL CD40192BF DEC.COUNTER RCA CD40192BF	BL 302.7940	302.7911
B22	BL CD40192BF DEC.COUNTER RCA CD40192BF	BL 302.7940	302.7911
B23	BL CD4002BE 2/4INP.NORG. RCA ICCD4002AE	BL 086.6977	302.7911
B24	BL CD4011BE 4/2INP.NANDG. RCA CD4011BE	BL 252.7337	302.7911
B25	BL SN74LS09N 4/2JNP.AND TEXAS SN74LS09N	BL 290.8614	302.7911
B26	BL CD4071BE 4/2INP.OR-GAT RCA CD4071BE	BL 299.6866	302.7911
B27	BL CD4081BE 4/2INP.ANDG. RCA CD4081BE	BL 299.6872	302.7911
B28	BJ SN75492AN LED-TREIBER TEXAS IC-SN75492N	BJ 257.4720	302.7911
B29	BL CD4071BE 4/2INP.OR-GAT RCA CD4071BE	BL 299.6866	302.7911
B30	BL CD4073BE 3/3INP.ANDG. RCA CD 4073BE	BL 280.9847	302.7911
B31	BL CD4069UBE HEX-INVERTER RCA CD4069UBE	BL 086.9999	302.7911
B35	BC P8279-5 KEYB/DISPL.I/O INTEL P 8279-5	BC 334.2496	302.7911
B36	BL SN74LS138N DEMUX 1:8 TEXAS SN74LS138N	BL 510.1379	302.7911
B37	BL CD4514BE BIN/DEZ.DECOD RCA CD4514BE	BL 299.6589	302.7911
B38	BJ SN75492AN LED-TREIBER TEXAS IC-SN75492N	BJ 257.4720	302.7911
B39	BJ SN75492AN LED-TREIBER TEXAS IC-SN75492N	BJ 257.4720	302.7911
B40	BJ SN75492AN LED-TREIBER TEXAS IC-SN75492N	BJ 257.4720	302.7911
B41	BJ SN75492AN LED-TREIBER TEXAS IC-SN75492N	BJ 257.4720	302.7911
B42	BL SN74LS145N BCD/DEZ.DEC TEXAS SN74LS145N	BL 291.4335	302.7911
B43	BL SN74LS145N BCD/DEZ.DEC	BL 291.4335	302.7911

PF 095 0028 0679

ROHDE & SCHWARZ MÜNCHEN | Äz. 11 | Datum 0380 | Schaltteilliste für TASTATUR/ANZEIGE-EINHEIT Z | Sachnummer 302.7911 SA | Blatt Nr. 2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	TEXAS SN74LS145N		
C1	CE 1,0UF+-20%50V 4X 8TA ERO-TANTAL TA-ELKOETS-A-1/50IS.	CE 006.3001	302.7911
C2	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	302.7911
C5	CE 10 UF+-20%20V 5X13TA ITT TA-ELKOTAA10/201/20%	CE 006.3182	302.7911
C6	CE 10 UF+-20%20V 5X13TA ITT TA-ELKOTAA10/201/20%	CE 006.3182	302.7911
C7	CK 470NF+-20% 63V RUNDB.	CK 024.6644	302.7911
C10	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7911
BIS			
C14	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7911
C20	CC 1,2NF+-10%4X5R2000 DRALORIC EDPU4X51200/10%R2000	CC 087.7031	302.7911
BIS			
C23	CC 1,2NF+-10%4X5R2000 DRALORIC EDPU4X51200/10%R2000	CC 087.7031	302.7911
GL1	AF TIL270 LED-ZEILE 10XRT TEXAS TIL 270	AF 302.7957	302.7911
GL11	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL12	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL13	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL14	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL15	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL21	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL23	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL28	AF 5082-4684 HI-EFF.LED HEWLETT LED5082-4684	AF 257.4736	302.7911
GL30	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	302.7911
R1	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	302.7911
BIS			
R16	RF 0,25W270 OHM +-5% DRALORIC LCA0207/+-5%270	RF 069.2719	302.7911
R17	RF 0,25W 27 OHM +-5% DRALORIC LCA0207/+-5%27	RF 069.2702	302.7911
R18	RF 0,25W 27 OHM +-5% DRALORIC LCA0207/+-5%27	RF 069.2702	302.7911
R19	RF 0,25W 27 OHM +-5% DRALORIC LCA0207/+-5%27	RF 069.2702	302.7911
R20	RF 0,25W 56KOHM +-5% DRALORIC LCA0207/+-5%56K	RF 069.5630	302.7911
R25	RF 0,25W 12KOHM +-5%	RF 069.1235	302.7911

PF 025 0028 0679

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	DRALORIC LCA0207/+-5%12K		
R26	RL 0,25W 27,4KOHM+-1%TK50	RL 082.2583	302.7911
	DRALORIC SMA 0207/27,4K-F-C		
R27	RL 0,2KW 909 KOHM+-1%TK50	RL 083.2858	302.7911
	DRALORIC SMA0207/909K-F-C		
R30	RF 0,25W100 OHM +-5%	RF 069.1012	302.7911
	DRALORIC LCA0207/+-5%100		
BIS			
R45	RF 0,25W100 OHM +-5%	RF 069.1012	302.7911
	DRALORIC LCA0207/+-5%100		
R46	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R47	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R50	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R51	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R52	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R53	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R54	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R55	RF 0,25W 33 OHM +-5%	RF 069.3309	302.7911
	DRALORIC LCA0207/+-5%33		
R60	RF 0,25W220 OHM +-5%	RF 069.2219	302.7911
	DRALORIC LCA0207/+-5%220		
BIS			
R68	RF 0,25W220 OHM +-5%	RF 069.2219	302.7911
	DRALORIC LCA0207/+-5%220		
R69	RF 0,25W 33KOHM +-5%	RF 069.3338	302.7911
	DRALORIC LCA0207/+-5%33K		
R75	RF 0,25W 39KOHM +-5%	RF 069.3938	302.7911
	DRALORIC LCA0207/+-5%39K		
R76	RF 0,25W 15KOHM +-5%	RF 069.1535	302.7911
	DRALORIC LCA0207/+-5%15K		
R77	RF 0,25W 15KOHM +-5%	RF 069.1535	302.7911
	DRALORIC LCA0207/+-5%15K		
R78	RF 0,25W 15KOHM +-5%	RF 069.1535	302.7911
	DRALORIC LCA0207/+-5%15K		
R80	RF 0,25W100KOHM +-5%	RF 069.1041	302.7911
	DRALORIC LCA0207/+-5%100K		
BIS			
R87	RF 0,25W100KOHM +-5%	RF 069.1041	302.7911
	DRALORIC LCA0207/+-5%100K		
R90	RL 0,25W3,01KOHM+-0,1%T25	RL 084.2068	302.7911
	DRALORIC SMA0207/3,01K-B-E		
BIS			
R92	RL 0,25W3,01KOHM+-0,1%T25	RL 084.2068	302.7911
	DRALORIC SMA0207/3,01K-B-E		
S1	SB TASTER GRAU/H MHZ 1UM	302.8060	302.7911
	SCHADOW 302.8060N.R&S.ZCHNG.		
S2	SB TASTER GRAU/H GRUEN	302.8253	302.7911
	SCHADOW 302.8253N.R&S.ZCHNG.		
S3	SB TASTER GRAU 1UM 24V	302.8018	302.7911

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	SCHADOW 302.8018N.R&S.ZCHNG.		
S4	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S5	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S6	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S7	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S8	SB TASTER GRAU/H KHZ GRN	302.8260	302.7911
	SCHADOW 302.8260N.R&S.ZCHNG.		
S9	SB TASTER GRAU/H400HZ	302.8276	302.7911
	SCHADOW 302.8276N.R&S.ZCHNG.		
S10	SB TASTER GRAU/H1KHZ	302.8282	302.7911
	SCHADOW 302.8282N.R&S.ZCHNG.		
S11	SB TASTER GRAU/H GRUEN	302.8247	302.7911
	SCHADOW 302.8247N.R&S.ZCHNG.		
S12	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S13	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S14	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S15	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S16	SB TASTER WEISS 1UM 24V	302.8024	302.7911
	SCHADOW 302.8024N.R&S.ZCHNG.		
S17	SB TASTER WEISS H MV GRAU	302.8030	302.7911
	SCHADOW 302.8030N.R&S.ZCHNG.		
S18	SB TASTER GRAU/WEISS 1UM	302.8047	302.7911
	SCHADOW 302.8047N.R&S.ZCHNG.		
S19	SB TASTER GRAU/H DBM 1UM	302.8053	302.7911
	SCHADOW 302.8053N.R&S.ZCHNG.		
S20	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S21	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S22	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S23	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S24	SB TASTER GRAU/H ROT 1UM	302.8230	302.7911
	SCHADOW 302.8230N.R&S.ZCHNG.		
S25	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S26	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S27	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S28	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S29	SB TASTER GRAU/H RCL 1UM	302.8118	302.7911
	SCHADOW 302.8118N.R&S.ZCHNG.		
S30	SB TASTER GRAU/H 1UM 24V	302.8076	302.7911
	SCHADOW 302.8076N.R&S.ZCHNG.		
S31	SB TASTER GRAU/H 1UM 24V	302.8082	302.7911
	SCHADOW 302.8082N.R&S.ZCHNG.		
S32	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S33	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S34	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S35	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S36	SB TASTER GRAU/H STO 1UM	302.8101	302.7911
	SCHADOW 302.8101N.R&S.ZCHNG.		
S37	SB TASTER GRAU/H GE 1UM	302.8099	302.7911
	SCHADOW 302.8099N.R&S.ZCHNG.		
S38	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S39	SB TASTER GRAU/H 1UM 24V	302.8082	302.7911
	SCHADOW 302.8082N.R&S.ZCHNG.		
S40	SB TASTER GRAU/H. 1UM24V	302.8124	302.7911
	SCHADOW 302.8124N.R&S.ZCHNG.		
S41	SB TASTER 1POL.DOPPELKONT	SB 292.0340	302.7911
S42	SB TASTER GRAU HO 1UM 24V	302.8130	302.7911
	SCHADOW 302.8130N.R&S.ZCHNG.		

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
S43	SB TASTER GRAU/H1 1UM 24V SCHADOW 302.8147N.R&S.ZCHNG.	302.8147	302.7911
S44	SB TASTER GRAU/H2 1UM 24V SCHADOW 302.8153N.R&S.ZCHNG.	302.8153	302.7911
S45	SB TASTER GRAU/H3 1UM 24V SCHADOW 302.8160N.R&S.ZCHNG.	302.8160	302.7911
S46	SB TASTER GRAU/H4 1UM 24V SCHADOW 302.8176N.R&S.ZCHNG.	302.8176	302.7911
S47	SB TASTER GRAU/H5 SCHADOW 302.8182N.R&S.ZCHNG.	302.8182	302.7911
S48	SB TASTER GRAU/H6 1UM 24V SCHADOW 302.8199N.R&S.ZCHNG.	302.8199	302.7911
S49	SB TASTER GRAU/H7 1UM 24V SCHADOW 302.8201N.R&S.ZCHNG.	302.8201	302.7911
S50	SB TASTER GRAU/H8 1UM 24V SCHADOW 302.8218N.R&S.ZCHNG.	302.8218	302.7911
S51	SB TASTER GRAU/H9 1UM 24V SCHADOW 302.8224N.R&S.ZCHNG.	302.8224	302.7911
S52	SB TASTER 1XA O.KN.GEDR.S SEL R&S.ZCHNG.334.6540	334.6540	302.7911
ST20	STECKEREINHEIT Z	302.7963	302.7911
ST27	STECKEREINHEIT Z	302.7970	302.7911
T1	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T2	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T3	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T4	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T5	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T6	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T7	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T8	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T9	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T10	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T11	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T12	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T13	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T14	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T15	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T16	AK 2N2907A SI PNP 60V TEXAS TRANSIST.2N2907A	AK 010.3583	302.7911
T17	AK BCY59IX NPN 45V 200MA SIEMENS TRANSIST.BCY59IX	AK 010.5163	302.7911

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
T18	AK BCY59IX NPN 45V 200MA SIEMENS TRANSIST.BCY59IX	AK 010.5163	302.7911
T19	AK BCY59IX NPN 45V 200MA SIEMENS TRANSIST.BCY59IX	AK 010.5163	302.7911

- ENDE -

ROHDE & SCHWARZ MÜNCHEN

Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
05	0282	SMS-81 REF.OSZ.TEMP.GER.	302.8918.01 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
C5C	CC 10NF+80-20%HDK6000	CC 022.0610	
	THOMSON DCX710/C,01UF/63V+		
C51	CK 100NF+-20%100V QUADER	CK 006.5033	
	ROEDERST MKT1822-410/0		
C52	CE 22UF -10+100%40V 9X13	CE 022.7572	
	SIEMENS B4136-B7226-Z		
C53	CT 29 PF TAUCHTR.RD 8X25	CT 025.7380	
	TEKELEC LUFTTR.AT5601		
C54	CC 18 PF+-2% NP0/IA3RCHR	CC 022.2329	
	DRALORIC NP0/IA18/2RD3X1CLC		
	TRIMMWERT		
C55	TRIMMWERT		
C56	CC 27PF 2% N750/IB 3ROHR	CC 006.1521	
	DRALORIC N750/27/2RR3X1CLC		
	TRIMMWERT		
C57	TRIMMWERT		
C58	CC 68PF+-2%NP0/IB 3 ROHR	CC 006.1296	
	DRALORIC NP0/68/2RR3X16LC		
	TRIMMWERT		
C59	CK 100NF+-20%100V QUADER	CK 006.5033	
	ROEDERST MKT1822-410/0		
GL1C	AD BAX13 SI 40V 75MIA	C12.0581	
	VALVO BAX13		
L2C	LD 150UH BEI 0,17A 6,2OHM	LD 026.3388	
	JAHRE 74.11-15COK		
Q1	EQ 10,000MHZ3.CL50HC-27/U	C58.5334	3C2.8947
R5C	RL 0,25W 8,25KOHM+-1%TK5C	RL C83.1239	
	DRALORIC SMA0207/8,25K-F-D		
R51	RL 0,125W909OHM+-1%TK5C	RL C67.452C	
	DALE MF1/1C 909 OHM1%TK50		
R52	TRIMMWERT		
R53	RF 0,25W3,3KOHM +-5%	RF C69.3321	
	DRALORIC LCAC2C7/+-5%3,3K		
R54	RF 0,25W560 OHM +-5%	RF C69.5618	
	DRALORIC LCA0207/+-5%560		
R55	RF 0,25W3,3KOHM +-5%	RF C69.3321	
	DRALORIC LCAC207/+-5%3,3K		
R56	RF 0,25W1,8KOHM +-5%	RF C69.1829	
	DRALORIC LCA0207/+-5%1,8K		
R57	RL 0,25W 8,25KOHM+-1%TK50	RL C83.1235	
	DRALORIC SMA0207/8,25K-F-D		
R58	RF 0,5 W 4,7 OHM+-5%	RF C07.109C	
	RESISTA SK4/4,7OHM5%		
	FUER VAR 02,32		
	WIDERSTAND RF007.1125		
	FUER VAR 04		
R6C	AW HEISSL10KOHM+-2C%0,18W	AW 008.0339	302.8947
	SIEMENS HEISSLK17B1CK4,0		
R62	RF 0,25W 22KOHM +-5%	RF C69.2231	
	DRALORIC LCA0207/+-5%22K		
R63	RF 0,25W390 OHM +-5%	RF C69.3915	
	DRALORIC LCA0207/+-5%390		

ROHDE & SCHWARZ MÜNCHEN

Äz	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
05	0282	SMS-81 REF.OSZ.TEMP.GER.	302.8918.01 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
R65	RF 0,25W470 OHM +-5%	RF 069.4711	
	DRALORIC LCAC207/+-5%470		
R66	RF 0,25W330 OHM +-5%	RF 069.3315	
	DRALORIC LCA0207/+-5%33C		
T1C	AK BCY79IX PNP 45V200MIA	AK 010.3777	
	SIEMENS BCY79IX		
T11	AK BCY79IX PNP 45V200MIA	AK 010.3777	
	SIEMENS BCY79IX		
T12	AK BCY59IX NPN 45V 200MA	AK C10.5163	
	SIEMENS BCY59IX		
T13	AK BF115 SINPN 50V 30MIA	010.4850	
	VALVO BF115		
T15	AL BD233 SI NPN 4CV 2A	AL C1C.0784	3C2.8947
	VALVO BD233		
T16	AK BF115 SINPN 5CV 3CMIA	C10.485C	302.8947
	VALVO BF115		
TR1	UEBERTRAGER	302.8924	
			- ENDE -

Diese Unterlage ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

PF 095.0026.0079

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	06	0481	SMS-B2 1.046HZ FREQUENZW.Z	335.0016.01 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B6	BD ENDSTUFE 1GHZ Z	912.4604	335.0016.01
D1	LD 38 DB BE1 10GHZ 1750PF	LD 037.8011	335.0145
	ERIE 1214-001		
BIS			
D8	LD 38 DB BE1 10GHZ 1750PF	LD 037.8011	335.0145
	ERIE 1214-001		
K1	HF-KABEL Z	335.0239	335.0016.01
K2	HF-KABEL/RF-CABLE Z	335.0251	335.0300
K3	HF-KABEL/RF-CABLE Z	335.0245	335.0300
K4	HF-KABEL Z	335.0222	335.0016.01
K5	KABEL 5 Z	335.0568	335.0016.01
K22	KABEL/CABLE 22 Z	335.0580	335.0300
K30	KABEL/CABLE 30 Z	335.0600	335.0300
Y1	VERDOPPLER Z	335.0316	335.0016.01
Y2	SCHALTER Z	335.0368	335.0016.01
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	07	0480	VERDOPPLER Z	335.0316 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BD 20DB-VERSTAERKER Z	910.4620	335.0316
C1	CC 10 PF+-0,25PF8NPO	CC 022.4680	335.0316
	DRALORIC SE8,10/0,25 NPO		
C2	CC 4,5PF+-0,25PF8P100	CC 022.4515	335.0316
	DRALORIC SE8,4,5/0,25 P100		
C3	CC 11PF 2% NPO/1B 8CHIP	CC 022.4567	335.0316
	DRALORIC NPO/11/2 SEZ 8		
C4	CC 8,7 PF+-0,25PF5NPO	CC 022.4650	335.0316
	DRALORIC SEFK5/8,7/0,25 NPO		
C5	CC 12PF 2% NPO/1B 8CHIP	CC 022.4580	335.0316
	DRALORIC NPO 12/2 SEZ 8		
C11	CC 150PF+-10%50V2NPOCHIP	CC 082.7379	335.0316
C12	CC 150PF+-10%50V2NPOCHIP	CC 082.7379	335.0316
C13	CC 150PF+-10%50V2NPOCHIP	CC 082.7379	335.0316
C14	CC 150PF+-10%50V2NPOCHIP	CC 082.7379	335.0316
C15	CC 1NF+-10%100V3K1200CHIP	CC 082.3221	335.0316
	ERIE 8013-271-W5R-102K		
C16	CC 4,7PF+-0,5PF5NPO CHIP	CC 083.6147	335.0316
	STETTNER SEFK5-4,7/0,5NP0400V		
GL1	AE 5082-2804 DIODENPAAR	AE 012.8724	335.0316
	HEWLETT DIODE5082-2804		
GL2	AE 5082-2804 DIODENPAAR	AE 012.8724	335.0316
	HEWLETT DIODE5082-2804		
L1	ENTHALTEN IN		335.0316
	335.0322		
L2	ENTHALTEN IN		335.0316
	335.0322		
L3	ENTHALTEN IN		335.0316
	335.0322		
L4	LD 820 UH10%70,00HMD,045A	LD 067.3218	335.0316
	DELEVAN DROSSEL1025-90		
L5	SPULE L5 Z	335.0439	335.0316
R1	RF 0,05W 31,14 OHM +-1%	030.0709	335.0316
	RESISTA WFS22/31,14/1/0,05		
R2	RF 0,05W 23,8 OHM +-1%	030.0650	335.0316
	RESISTA 22/23,8/1/0,05		
R3	RF 0,05W 31,14 OHM +-1%	030.0709	335.0316
	RESISTA WFS22/31,14/1/0,05		
R4	RL 0,25W 8,25KOHM+-1%TK50	RL 083.1239	335.0316
	DRALORIC SMA0207/8,25K-F-D		
R5	RL 0,25W 8,25KOHM+-1%TK50	RL 083.1239	335.0316
	DRALORIC SMA0207/8,25K-F-D		
R6	RS 0,5W20KOHM+-20%10X10X5	RS 087.7660	335.0316
	BOURNS 3386X-1-203		
R7	RS 0,5W10KOHM+-20%10X10X5	RS 247.7526	335.0316
	BOURNS 3386X1-103		
ST1	FJ EINBAUWINKELST. SMC	FJ 249.9684	335.0316
	RADIALL R 112 669		
TR1	UEBERTRAGER Z	335.0539	335.0316
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	11	0481	SCHALTER Z	335.0368 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	B0 MA741MJG OP-AMP. TEXAS UA 741MJG	B0 275.0822	335.0368
B2	B0 LF256H BIFET-OP.AMP. NSC LF 256 H	B0 302.5883	335.0368
B3	B0 LF256H BIFET-OP.AMP. NSC LF 256 H	B0 302.5883	335.0368
B4	BD HF-SCHALTER Z	913.4408	335.0368
B5	BD HF-SCHALTER Z	913.4408	335.0368
C1	CC 33PF+-10%100V2NPO CHIP ERIE 8000-271-100-C0G-330	CC 082.7340	335.0368
C2	CE 1,5UF+-20%25V 5X 4X 7	CE 087.9334	335.0368
C3	CE 1,5UF+-20%25V 5X 4X 7	CE 087.9334	335.0368
C4	CC 330PF+-2%6X9N750 DRALORIC EDPU6X9/330/2%N750	CC 087.6964	335.0368
C5	CE 1,5UF+-20%25V 5X 4X 7	CE 087.9334	335.0368
C6	CE 1,5UF+-20%25V 5X 4X 7	CE 087.9334	335.0368
C7	CC 33PF+-2%4X5NPO DRALORIC EDPU4X5/33/2%/NPO	CC 087.6487	335.0368
C8	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	335.0368
C9	CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010%R2000	CC 087.7048	335.0368
C10	CC 150PF+-2%6X9N150 DRALORIC EDPU6X9/150/2%N150	CC 087.6735	335.0368
C11	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	335.0368
C12	CC 10NF-20+50%7X8R6000 THOMSON COX767/10000/PF-20+5	CC 087.7525	335.0368
C13	CC 2,7NF+- 5%100V NPO VIE ERIE 8133-100-C0G-2,7NF-J	CC 060.0942	335.0368
C15	CC 10NF+-10% 50V3K1200 CH ERIE 8013-271-W5R-103-K	CC 082.3344	335.0368
C16	CC 10NF+-10% 50V3K1200 CH ERIE 8013-271-W5R-103-K	CC 082.3344	335.0368
C20	CT 3 PF N333 F.GEDR.SCH STETTNER 5STRIK0042,5/5PFN033	CT 066.8045	335.0368
C21	CC 1,8PF+-0,5PF100V3,3NPO	CC 092.7236	335.0368
GL1	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
GL2	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
GL5	AE 5082-2900 SCHOTTKY-DI. HEWLETT 5082-2900	AE 012.8018	335.0368
GL6	AE 5082-2900 SCHOTTKY-DI. HEWLETT 5082-2900	AE 012.8018	335.0368
GL7	AE BZX55/C8V2 0,5W Z-DI THOMSON BZX55/C8V2	AE 012.2490	335.0368
GL8	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
GL9	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
GL10	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
GL12	AD 1N4448 SI 75V 150MIA	AD 012.0700	335.0368

ROHDE & SCHWARZ MÜNCHEN	ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
	11	0481	SCHALTER Z	335.0368 SA	2

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
	VALVO DIODE1N4448		
GL13	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
GL14	AD 1N4448 SI 75V 150MIA VALVO DIODE1N4448	AD 012.0700	335.0368
L2	LD 1,50UH10%0,220HM0,745A DELEVAN DROSSEL 1025-24	LD 067.2886	335.0368
L3	LD 1,00UH10%1,100HM0,310A DELEVAN 1025-20	LD 067.2863	335.0368
L4	LD 1,00UH10%1,100HM0,310A DELEVAN 1025-20	LD 067.2863	335.0368
L5	LD 1000UH10%72,00HM0,038A DELEVAN DROSSEL1025-92	LD 037.8005	335.0368
R1	RF 0,05W 42,16 OHM+-1% RESISTA WFS22/42,16/1/0,05	030.0780	335.0368
R2	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	335.0368
R3	RF 0,25W 56 OHM +-5% DRALORIC LCA0207/+-5%56	RF 069.5601	335.0368
R4	RF 0,05 W 434,0 OHM +-1% RESISTA WFS22/434,0/1/0,05	030.1205	335.0368
R5	RL 0,25W 43,2KOHM+-1%TK50 DRALORIC SMA0207/43,2K-F-0	RL 083.1774	335.0368
R6	RF 0,25W390KOHM +-5% DRALORIC LCA0207/+-5%390K	RF 069.3944	335.0368
R7	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	335.0368
R8	RF 0,25W1,2KOHM +-5% DRALORIC LCA0207/+-5%1,2K	RF 069.1229	335.0368
R9	RF 0,25W 47 OHM +-5% DRALORIC LCA0207/+-5%47	RF 069.4705	335.0368
R12	RF 0,25W3,9KOHM +-5% DRALORIC LCA0207/+-5%3,9K	RF 069.3921	335.0368
R14	RS 0,5W200KOHM+-20%10X10X BOURNS 3386F-1-204	RS 087.7590	335.0368
R15	RF 0,25W390KOHM +-5% DRALORIC LCA0207/+-5%390K	RF 069.3944	335.0368
R16	RF 0,25W560 OHM +-5% DRALORIC LCA0207/+-5%560	RF 069.5618	335.0368
R20	RL 0,25W 499 OHM+-1%TK50 DRALORIC SMA0207/499OHM-F-0	RL 083.0410	335.0368
R21	RL 0,25W 2,43KOHM+-1%TK50 DRALORIC SMA0207/2,43K-F-0	RL 083.0884	335.0368
R22	RL 0,25W 2,55KOHM+-1%TK50 DRALORIC SMA/207/2,55K-F-0	RL 082.2354	335.0368
R23	RS 0,5W500KOHM+-20%10X10X BOURNS 3386F-1-504	RS 247.7926	335.0368
R24	RF 0,25W270KOHM +-5% DRALORIC LCA0207/+-5%270K	RF 069.2748	335.0368
R25	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	335.0368
R26	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	335.0368
R27	RF 0,25W 47KOHM +-5% DRALORIC LCA0207/+-5%47K	RF 069.4734	335.0368

ROHDE & SCHWARZ MÜNCHEN

ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
11	0481	SCHALTER Z	335.0368 SA	3

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
RS1	RELAIS Z	335.0360	335.0368
ST2	FJ EINBAUWINKELST. SMC RADIALL R 112 669	FJ 249.9684	335.0368
BIS ST4	FJ EINBAUWINKELST. SMC RADIALL R 112 669	FJ 249.9684	335.0368
ST5	FP INDIREKT.STECKERL.36P. BERG 75160-102-36 10 KONTAKTE	FP 242.3600	335.0368
T1	AK BCY59IX NPN 45V 200MA SIEMENS TRANSIST.BCY59IX	AK 010.5163	335.0368
T2	AK BCY79IX PNP 45V200MIA SIEMENS SI-TRANSISTORBCY79IX	AK 010.3777	335.0368
			- ENDE -

ROHDE & SCHWARZ MÜNCHEN

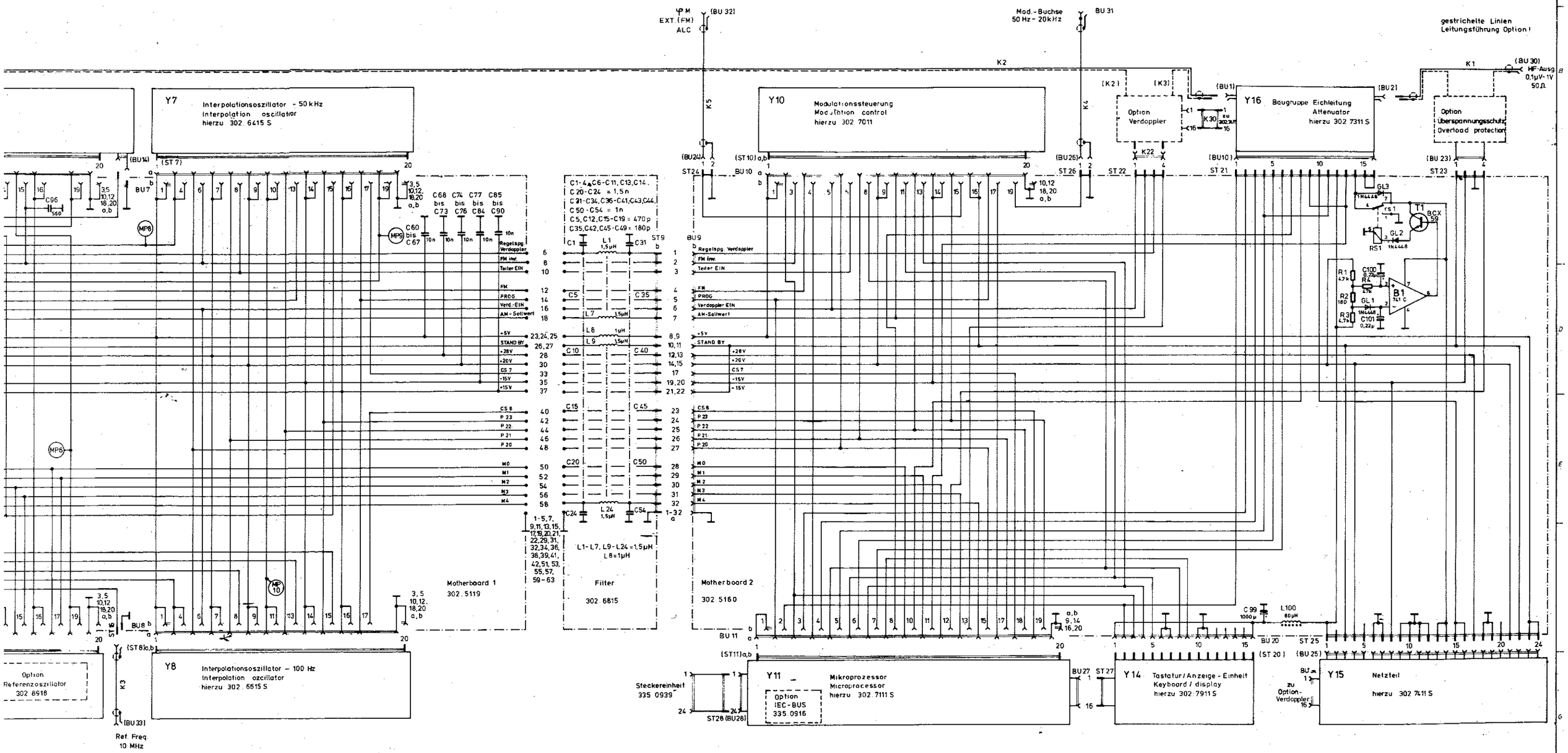
ÄZ	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
09	1181	ED SMS-B3 UEBERSP.SCH.	335.0716.01 SA	1

Kennzeichen	Benennung / Beschreibung	Sachnummer	enthalten in
B1	BO CA3240E BIMOS DUAL OP. RCA CA3240E	302.7034	335.0716.01
B2	BD NE555V TIMER SIGNETICS NE555V	BD 418.1383	335.0716.01
B3	BD MESSKOPF SMFP	913.6700	335.0716.01
C1	CE 2,2UF+-20%35V 7X 5X11 ERO-TANTAL TA-ELKOETR2,2/35	CE 022.8191	335.0716.01
C2	CE 1,0UF+-20%35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-1/35	CE 022.8185	335.0716.01
C3	CC 100NF+-10% 50V5K1200LR AEROVOX CKRO5BX104KLEVELR	CC 092.0777	335.0716.01
GL1	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	335.0716.01
GL2	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	335.0716.01
GL3	AE BZX55/C4V7 0,5W Z-DI VALVO BZX55/C4V7	AE 012.2432	335.0716.01
GL4	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	335.0716.01
GL5	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	335.0716.01
GL6	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012.0700	335.0716.01
R3	RL 0,25W 100KOHM+-1%TK50 DRALORIC SMA0207/100K-F-C	RL 082.1764	335.0716.01
R4	RL 0,25W 100KOHM+-1%TK50 DRALORIC SMA0207/100K-F-C	RL 082.1764	335.0716.01
R5	RL 0,25W 5,11KOHM+-1%TK50 DRALORIC SMA0207/5,11K-F-C	RL 082.2348	335.0716.01
R6	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	335.0716.01
R7	RS 0,5W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247.7961	335.0716.01
R8	RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5%1,0M	RF 069.1058	335.0716.01
R9	RF 0,25W100KOHM +-5% DRALORIC LCA0207/+-5%100K	RF 069.1041	335.0716.01
R10	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	335.0716.01
R11	RF 0,25W2,7KOHM +-5% DRALORIC LCA0207/+-5%2,7K	RF 069.2725	335.0716.01
R12	RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5%10K	RF 069.1035	335.0716.01
R13	RF 0,25W330KOHM +-5% DRALORIC LCA0207/+-5%330K	RF 069.3344	335.0716.01
T1	AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010.5163	335.0716.01
			- ENDE -

ROHDE&SCHWARZ
MÜNCHEN

Stromläufe
Bestückungspläne
Circuit diagrams
Components plans

R 29500 Bl. 4


Y7
Interpolationsoszillator - 50 kHz
Interpolation oscillator
hierzu 302.6415 S
Y10
Modulationssteuerung
Modulation control
hierzu 302 7011
Y16 Baugruppe Eichleitung
Attenuator
hierzu 302 7311 S
Option Verdoppler
Option Überspannungsschutz
Overload protection
gestrichelte Linien
Leitungsführung Option!
ΦM EXT. (FM) ALC
Mod.-Buchse 50 Hz - 20 kHz
HF-Ausg 0,1µV-1V 50Ω
Y8
Interpolationsoszillator – 100 Hz
Interpolation oscillator
hierzu 302.6515 S
Option Referenzoszillator 302.6918
Ref. Freq. 10 MHz
Motherboard 1
302.5119
Filter
302.6615
Motherboard 2
302.5160
C1-4, C6-C11, C13, C14, C20-C24 = 1,5n
C21-C34, C36-C41, C43, C44, C50-C54 = 1n
C5, C12, C15-C19 = 470p
C35, C42, C45-C49 = 180p
L1-L7, L9-L24 = 1,5µH
L8 = 1µH
Y11
Mikroprozessor
Microprocessor
hierzu 302.7111 S
Option IEC-BUS 335.0916
Steckereinheit 335.0939
Y14 Tastatur / Anzeige - Einheit
Keyboard / display
hierzu 302.7911 S
Y15 Netzteil
hierzu 302.7411 S
zu Option-Verdoppler
MP1: Sollwert AM
MP2: Regelspannung vom Verdoppler
MP3: Regelspannung der Ausgangsstufe
MP4: Abstimmspannung für Y3
MP5: Modulationsspannung für FM
MP6: 1MHz - Referenz
MP7: Referenzsignal für Y8
MP8: Referenzsignal für Y7
MP9: Referenzsignal für Y4
MP10: Referenz von Y8 nach Y7
ROHDE & SCHWARZ MÜNCHEN
Halbzeug, Werkstatt
Zeichn. Nr 302.4012 S
Maßst. 302.4012V
SMS Signalgenerator

Y1 Ausgangsstufe
Output stage
hierzu 302 5219 S

Y3 Oszillator
Oscillator
hierzu 302 5619 S

Y5 Umsetzer
Converter
hierzu 302 6015 S

Y7 Interpolationsoszillator – 50 kHz
Interpolation oscillator
hierzu 302. 6415 S

K2

(ST1) (BU12) (ST3) (BU13) (ST5) (BU14) (ST7)

ST15 ST12 ST13

BU1 BU3 BU5 BU7

+5V -28V -20V +15V -15V

MP1 MP2 MP3 MP4 MP5 MP6 MP7 MP8 MP9 MP10

C91 10n
C92 10n
C94 1,5n
C95 560
C96 560
C97 1,5n
C50 bis C57 10n
C68 bis C73 10n
C74 bis C76 10n
C77 bis C84 10n
C85 bis C90 10n

Regelspg. Verdoppler 6
FM inv. 8
Teiler EIN 10
FM 12
PROG 14
Verc.-EIN 16
AM-Sollwert 18
+5V 23,24,25
STAND BY 26,27
+28V 28
+20V 30
CS 7 33
-15V 35
+15V 37
CS 6 40
P 23 42
P 22 44
P 21 46
P 20 48
M0 50
M1 52
M2 54
M3 56
M4 58

1-5, 7, 9, 11, 13, 15, 17, 19, 20, 21, 22, 29, 31, 32, 34, 36, 38, 39, 41, 42, 51, 53, 55, 57, 59–63

C1-4, C6-C11, C20-C24 = 1,5n
C31-C34, C36-C41, C50-C54 = 1n
C5, C12, C15-C19, C35, C42, C45-C47

C1 L1 1,5µH
C5 L7 1,5µH
L8 1µH
L9 1,5µH
C10
C15
C20
C24 L24 1,5µH

L1-L7, L9-L23 = 1,5µH
L8 = 1µH

Filter
302. 6815

Motherboard 1
302 5119

Motherboard 1
302 5119

(ST2) a,b (ST4) a,b (ST6) a,b (ST8) a,b

BU2 BU4 BU6 BU8

ST16

Y2 Teiler
Frequency - divider
hierzu 302. 5419 S

Y4 Phasenregelung
Phase control
hierzu 302 5819 S

Y6 Referenz
Reference
hierzu 302 6215 S

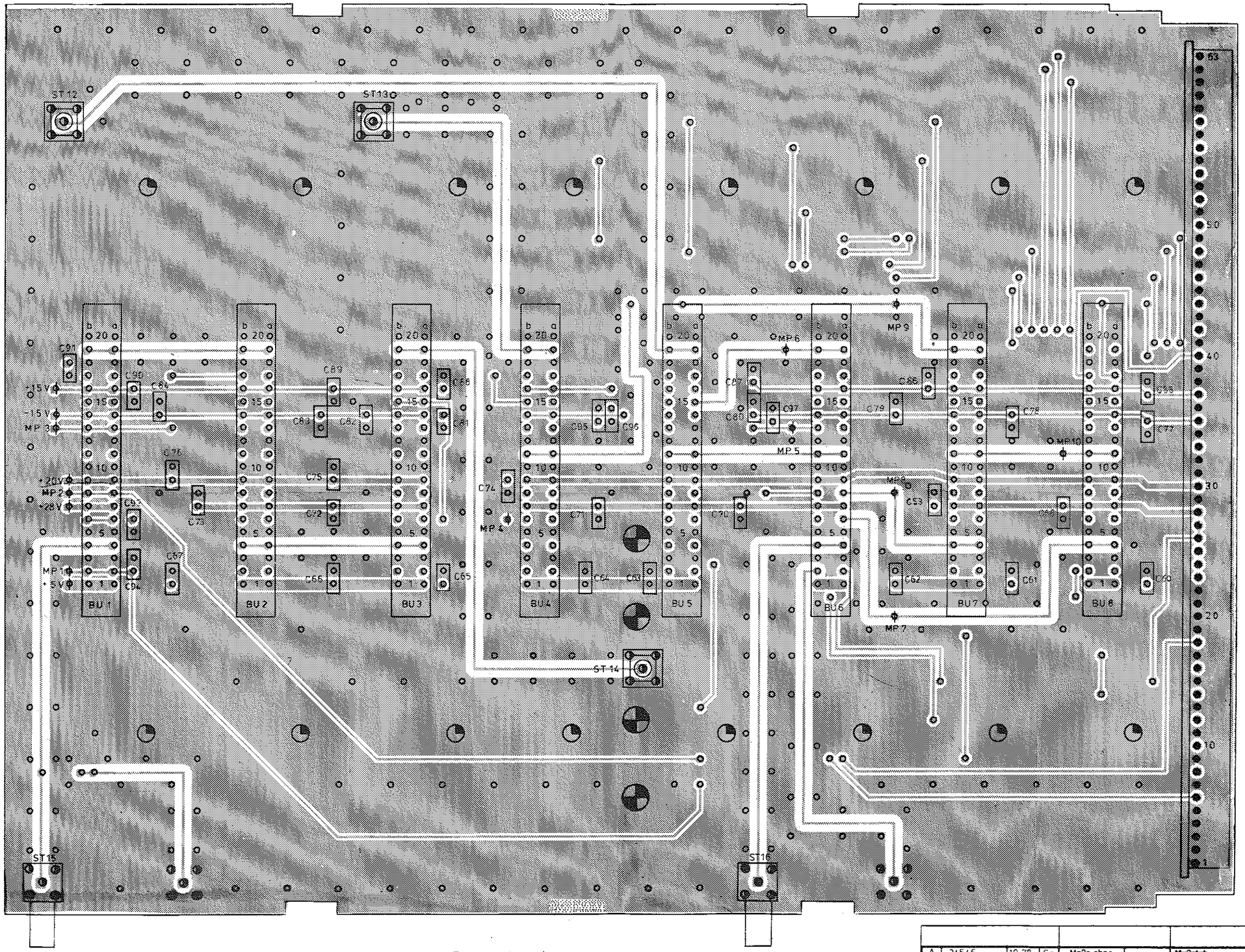
Option
Referenzoszillator
302 8918

Y8 Interpolationsoszillator – 100 Hz
Interpolation ozcillator
hierzu 302. 6615 S

K3

(BU33)

Ref. Freq.
10 MHz



Ansicht und Leitungsführung Bauteilseite
View of tracks on component side

And	Änderungs-Mitteilung	Tag	Name
A	24545	10.78	Gn
B	24791	04.79	Gn

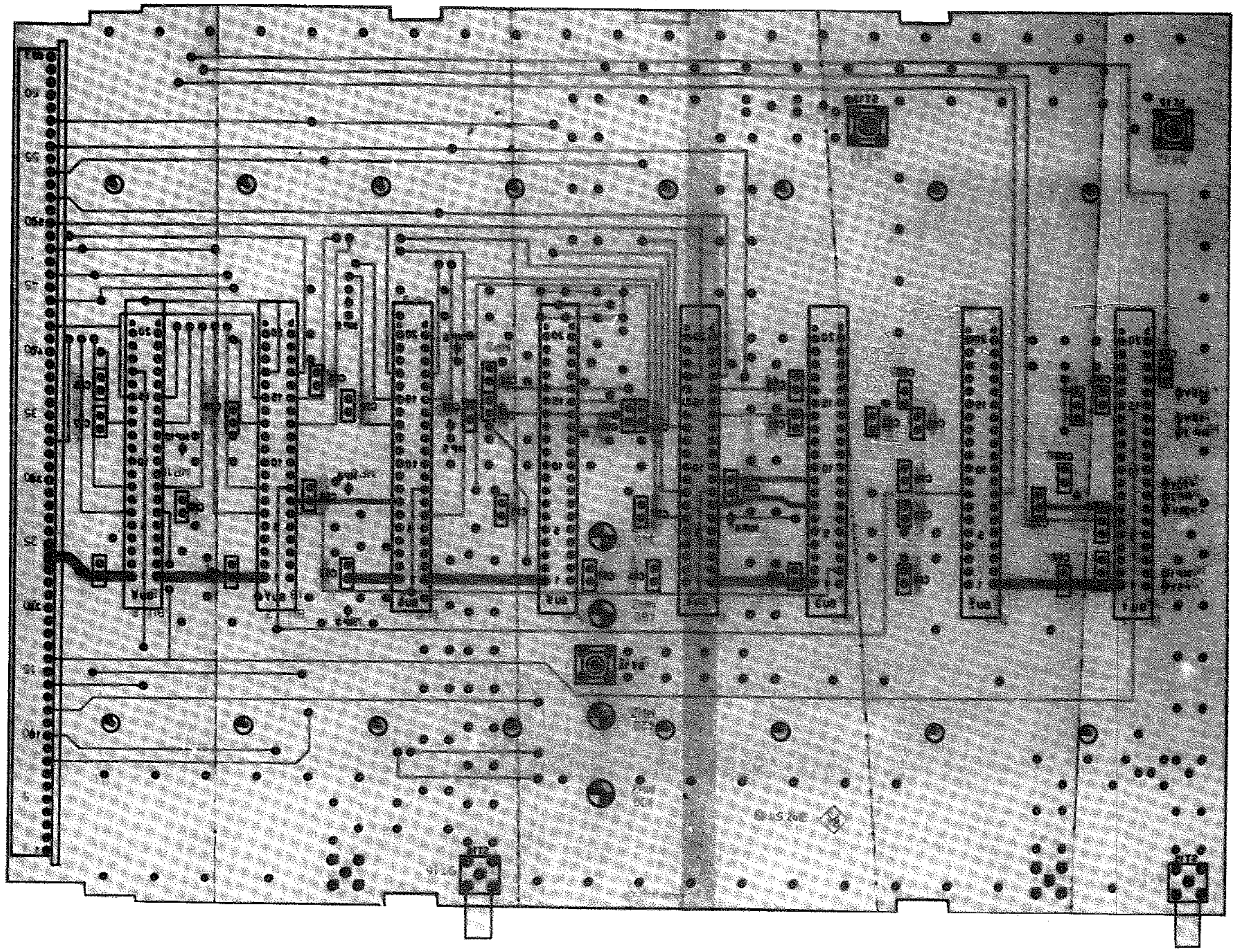
Maße ohne Toleranzangabe

	Tag	Name
IGME		
Bearb	4.9.78	Nk
Gepr		
Norm		

ROHDE&SCHWARZ
zu Gerät

Maßstab
Halbzeug, Werkstoff
Benennung: Motherboard 1 — Z
Zeichn.-Nr: 302.5119 — Blatt-Nr 2 — v BI
reg i V. 302.4012 V — erste Z. 302.4012

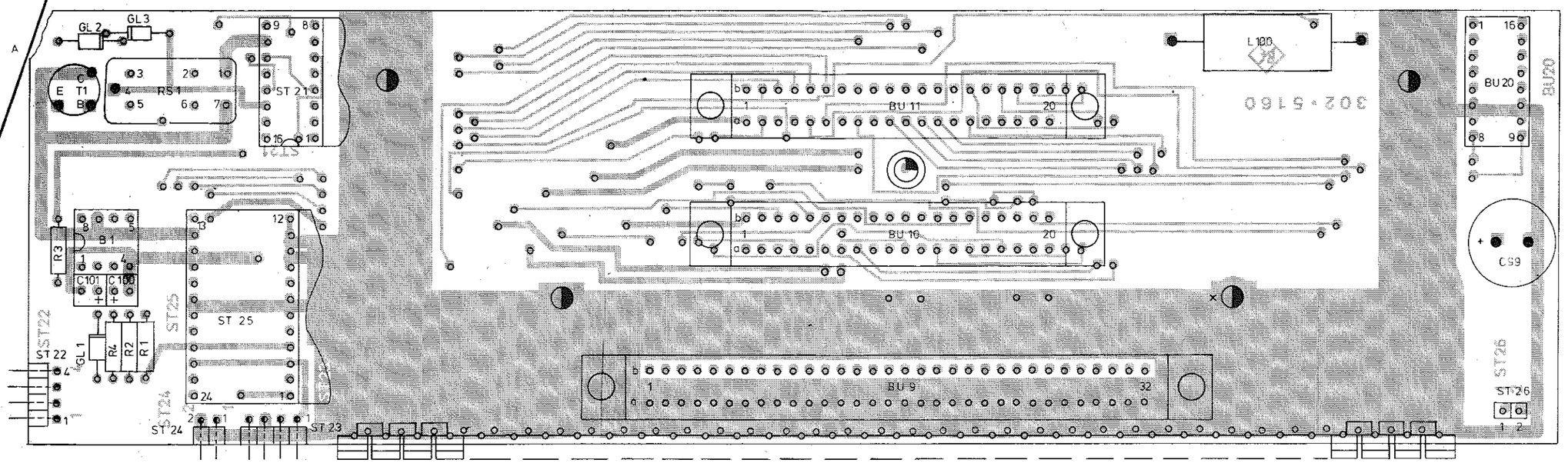
Ansicht und Leitungsführung Lötseite
View of tracks on solder side



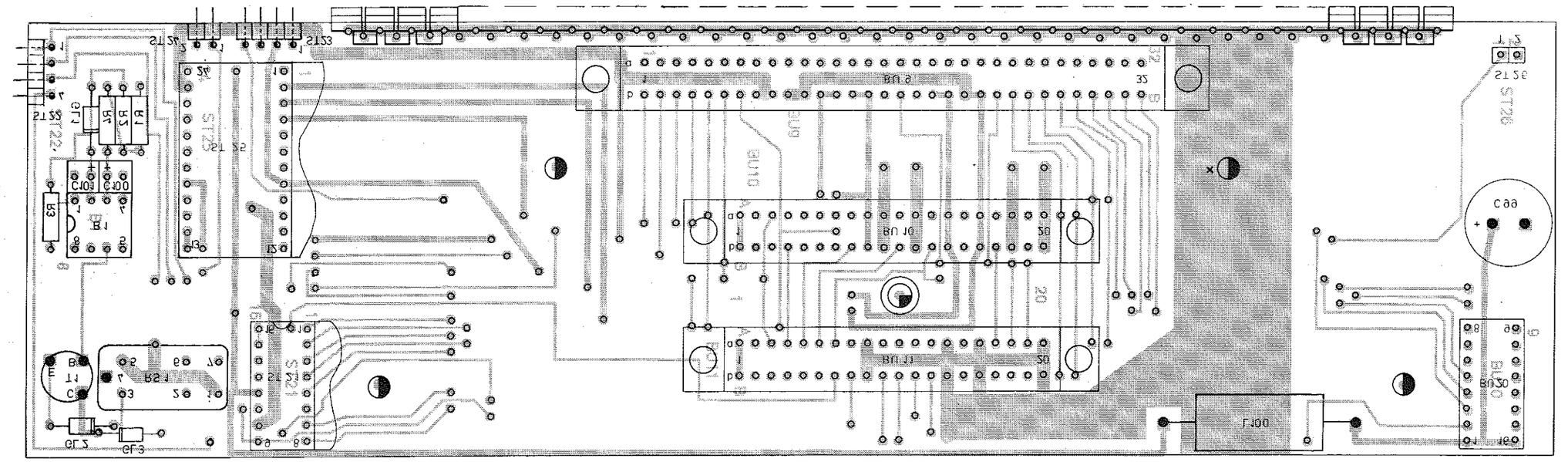
0 1 2 3
ZENTIMETER

A	24545	10 78	Gn	Maße ohne Toleranzangabe	Maßstab	
B	24781	05 79	Gn		Halbzeug, Werkstoff	
				1GME / Tag / Name	Benennung	
				Bearb / 4 9 78 / Nk	Motherboard 1	Z
				Gepr		
				Norm		
				ROHDE & SCHWARZ	Zeichn.-Nr. 302.5119	Blatt-Nr. 3
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	zu Gerät	reg. i. V. 302.4012 V	erste Z. 302.4012

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side

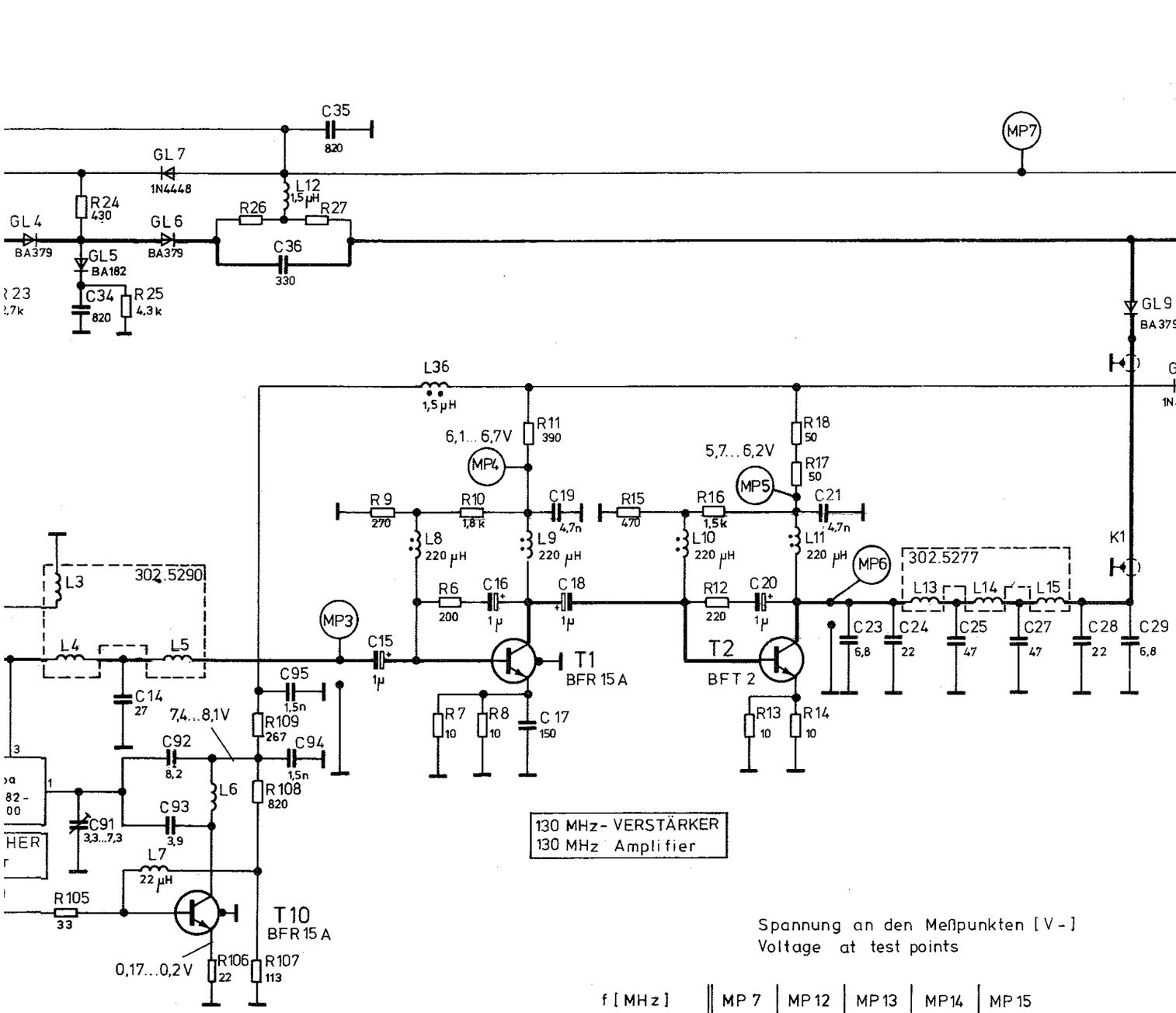


A	24545	10.78	Gn	Maße ohne Toleranzangabe		Maßstab	
B	25166	07.79	Gn			Halbzeug, Werkstoff	
C	25166	10.79	Gn				
D	25863	01.80	Gn				
E		05.80	Sy			Benennung	
F	26489	10.80	Sy	1GM	Tag / Name	Motherboard 2	Z
				Bearb.	25.7.78 / N.k		
				Gepr.			
				Norm.			
Änd. Zust.	Änderung / Meldung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr. 302.5160	Blatt-Nr. 2
				z. Bergt. SMS		ers.: 302.4012 V	erste.: 302.4012

0 1 2 3
ZENTIMETER

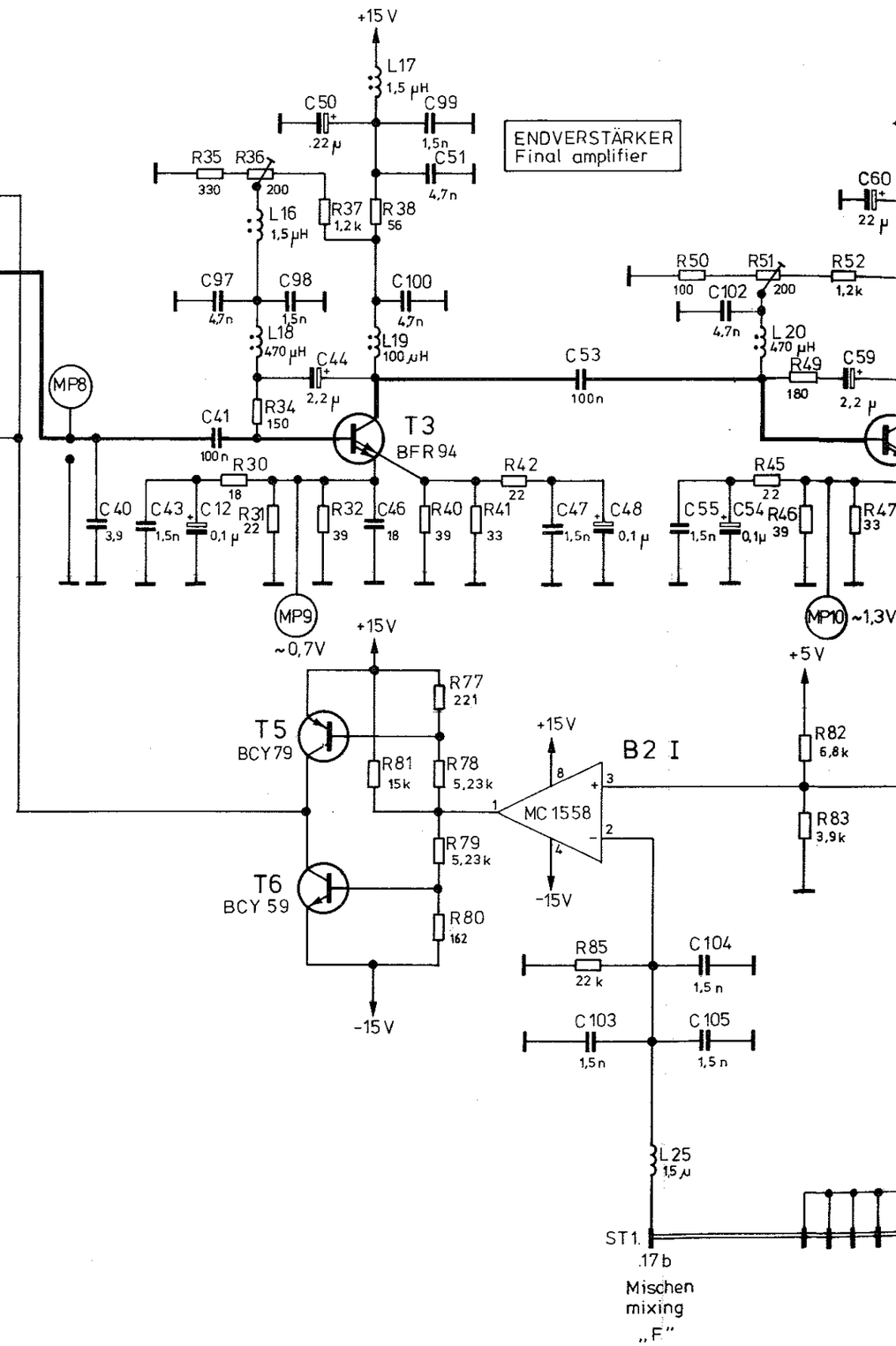
+20V
C60 22 µ
C61 4,7n
R53 3,9
R51 200
R52 1,2k
C102 4,7n
L20 470 µH
L21 100 µH
R49 180
C59 2,2 µ
C62 100n
T4 BFR94
R45 22
C54 0,1µ
R46 39
R47 33
C56 33
R55 47
R56 39
R57 18
C57 1,5n
C58 0,1 µ
MP10 ~1,3V
+5V
R82 6,8k
R83 3,9k
Nur bei Variante 12
L22 56 µH
C72 3,9
C71 100n
R73 220
R71 56
R60 47
C65 8,2
C64 2,7-4,5
R61 470
GL12 HPA2900
+15 V
DETEKTOR Detector
R62 680k
R70 25,5k
C66 39
C67 270
R64 6,8k
GL13 BA182
GL14 1N4448
GL15 1N4448
R66 4,7M
R67 4,7M
R65 4,7M
R68 4,7M
R69 6,8k
CL16 120
BA182
C69 120
R72 680
C70 39
L35 2,7 µH
+15 V
T7 BCY59
R88 1,8k
B2 II
MC1558
B3
I II III IV
TL 044MJ
MP12 MP13 MP14 MP15
B4 IV B4III B4II B4I
-15V
T8 BCY79
R89 56k
+5 V
REGELVERSTÄRKER ALC amplifier
C120 4,7n
L37 3,3 µH
B5
LF 256 H
R90 47
GL19 BZX59/C8V2
GL17 1N4448
C121 4,7n
-15 V
R91 1M
C74 220
C75 220
C76 120
R92 2,2 k
R93 4,3k
R96 4,7k
B6
µA741
C117 4,7n
R98 680k
C118 33
C78 1,5n
MP18
GL18 HPA2900
R99 430
C115 3,3n
+15 V
-15V
R97 3,9k
R100 680k
R102 12k
R101 100k
-15V
C116 1,5n
L34 1,5 µH
.2b
.4a,b
Sollwert Set value
HF - Ausg. RF output
C104 ,5 n
C105 1,5 n
STEUERUNG Control
R86 22k
R87 22k
C106 4,7n
C 107 4,7n
C 108 1,5n
C109 220
MP16 -2....-4,6V
L 26 1,5 µH
L 27 1,5 µH
L 28 1,5 µH
L 29 1,5 µH
.15b .6 b
.8b
.13b
Verdoppeln AM-langs. Doubling AM slow „G" „H"
Regelspg. (Verdoppeln) Control voltage (doubling)
Regelspg. Control voltage
0 1 2 3
ZENTIMETER

Stromlauf zu
Ausgangsstufe
Output section
Z
Zeichn. Nr. 302.5219 S
302.4012 V
302.4012



Spannung an den Meßpunkten [V-]
Voltage at test points

f [MHz]	MP 7	MP 12	MP 13	MP 14	MP 15
0,4....4,9999	+13,5	- 9	+ 4	- 9	+ 4
5... 129,9999	+13,5	- 9	+ 4	+ 4	- 9
130.....520	-14,5	- 9	+ 4	+ 4	- 9
520,0001....1040	-14,5	+ 4	- 9	+ 4	- 9



ROHDE & SCHWARZ . MÜNCHEN

	Name	Datum	Änd.-Mitlg. Nr.	Änd.-zust.
gezeichnet	Sd	06.78		
bearbeitet				
geprüft				
normgepr.				
1 GME				

Änd.-zust.	Änd.-Mitlg. Nr.	Datum	Name
A	24 668	02.79	Mü
B	24 791	04.79	Gn
C	25 932	03 80	Sy
D	26 489	12.80	Sy
E	28 022	02.82	Gn

+5V

B4 CD4066 BE (14 / 7)

B3 TL 044 MJ (8,16 / 4,12)

R75 3 k

R76 1,5k

ST1

-15V 14b — C82 22µ — C114 4,7n — -15V

+15V 16b — C80 22µ — C112 4,7n — +15V

+20V 9b — L30 1,5µH — C110 4,7n — +20V

+5V 1b — L32 1,5µH — C113 1,5n — C81 22µ — +5V

HF-UMSCHALTER
RF switch

HF-Eing.
RF Input (MP1)

ST1 19a,b

C31 1,5n — R20 2,2k

C30 330 — C1 330

GL1 BA 379

C2 4,7 — C37 330 — R19 2,7k — GL8 BA 182

C3 2,7

L1 — 302.5319 — L2

C4 12

C6 4,7

C7 2,7

R1 68,1 — R3 169 — R2 68,1

MP2

C10 18 — C11 22

C9 6,8 — C8 6,8

C32 1,5n — R22 1k — R21 820

GL2 BA 379 — GL3 BA 182 — C33 820 — R23 2,7k

GL4 BA379 — GL5 BA182 — C34 820 — R24 430 — R25 4,3k

GL6 BA379 — GL7 1N4448

C35 820 — L12 1,5µH — R26 — R27 — C36 330

L3 — 302.5290 — L4 — L5

MP3

C15 1µ

C14 27

C95 1,5n — R109 267 — C94 1,5n

7,4...8,1V

C92 8,2 — L6 — R108 820

C93 3,9

B1 — hpa 5082-9200 — MISCHER Mixer

C91 3,3...7,3

L7 22µH

T10 BFR15A

0,17...0,2V — R106 22 — R107 113

LO-Eing.
LO input
BU12 — C90 1,5n — R105 33

L36 1,5µH — R11 390

6,1...6,7V (MP4)

R9 270 — R10 1,8k — C19 4,7n

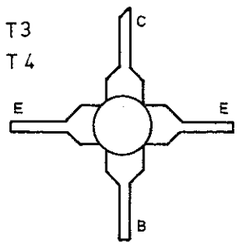
L8 220µH — L9 220µH

R6 200 — C16 1µ — C18 1µ

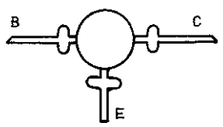
R7 10 — R8 10 — C17 150

130 MH
130 MH

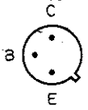
T3 T4



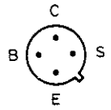
T2



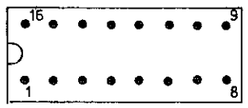
T5 bis T8 / to



T1, T10

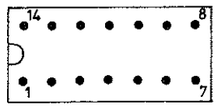


B3



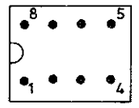
Draufsicht
Top view

B4



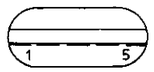
Draufsicht
Top view

B2, B5, B6,



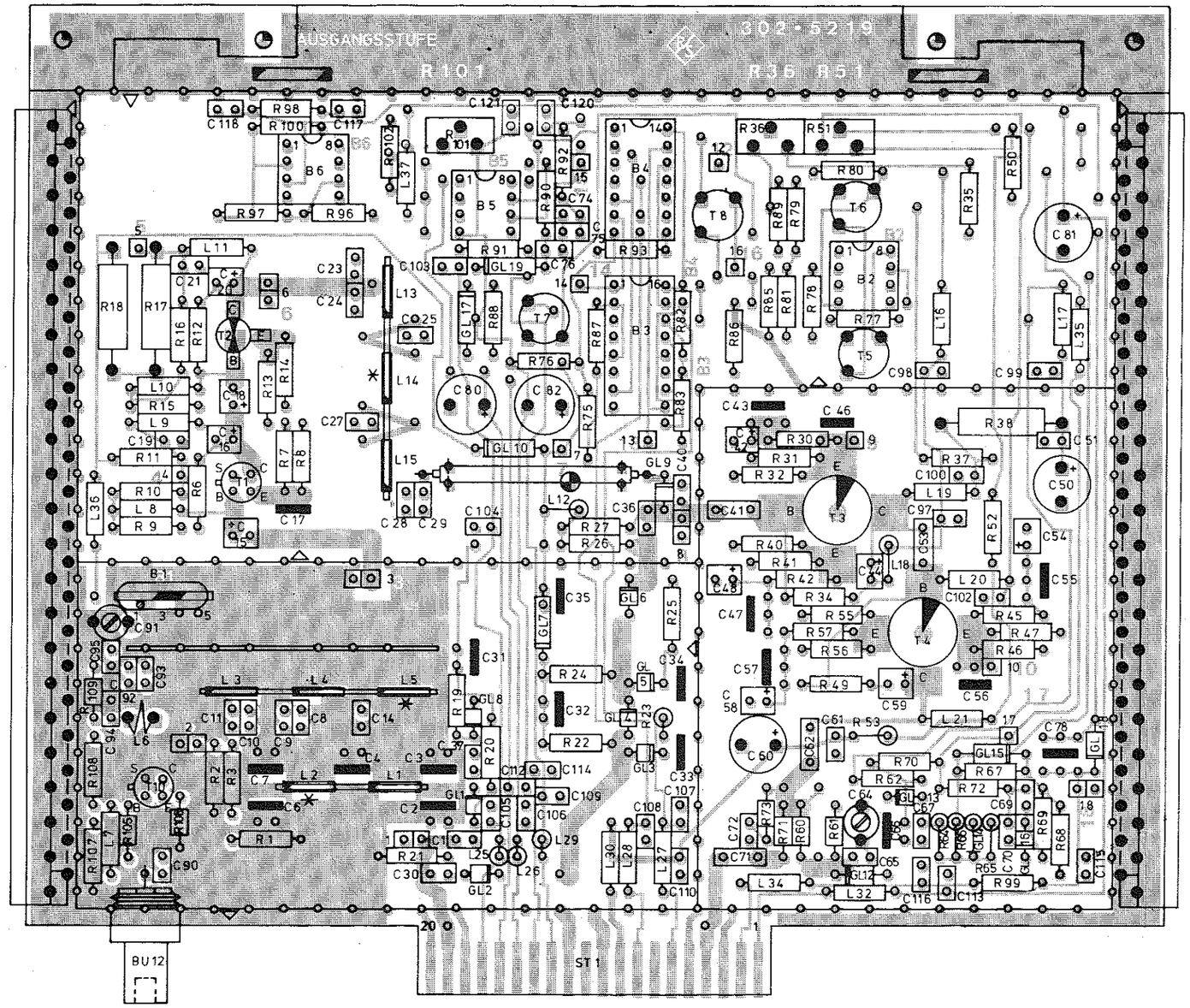
Draufsicht
Top view

B1



Draufsicht
Top view

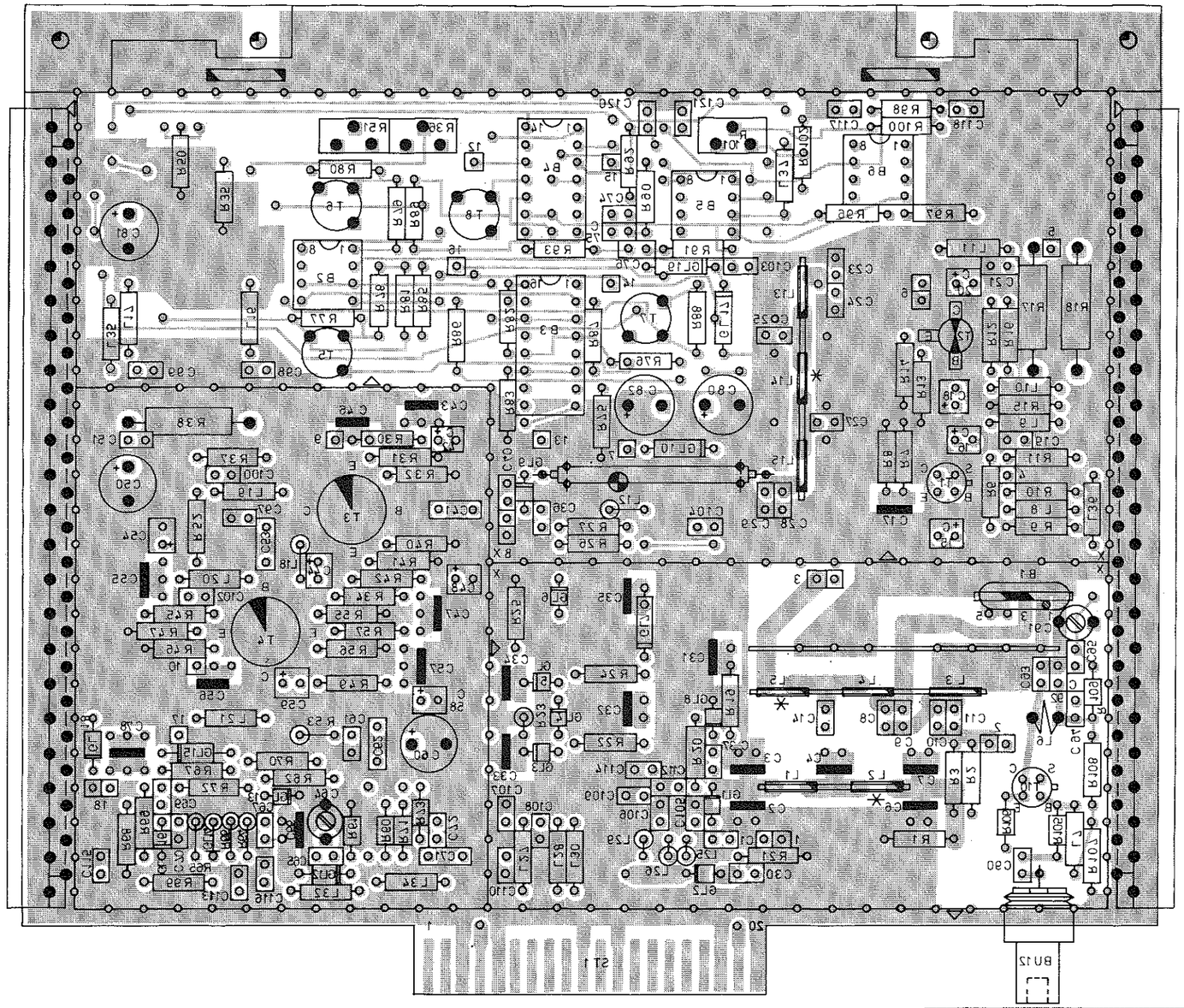
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



0 1 2 3
ZENTIMETER

A	24545	10.78	Mü	Maße ohne Toleranzangabe	Maßstab 2:1	
B	24791	04.79	Gn		Halbzeug Werkstoff	
C	25932	03.80	Sy			
D	26.489	11.80	Sy			
				TGM Tag Name	Benennung	
				Bearb 12.10.78 Nk	Ausgangsstufe	Z
				Gepr	Output stage	
				Norm		
				ROHDE & SCHWARZ MÜNCHEN	Zeichn.-Nr 302.5219	Blatt-Nr 2
Änd Zust	Änderungs-Mitteilung	Tag	Name	EU Gerät SMS	ers. f. V 302.4012 V	ersetzt z. 302.4012

Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

A	24545	10.78	Mü
B	24791	04.79	Gn
C	25932	03.80	Sy
D	26 489	11.80	Sy

Änd Zust | Änderungs-Mitteilung | Tag | Name

Maße ohne Toleranzangabe

Maßstab: 2 : 1

Halbzeug Werkstoff

1GM	Tag	Name
Bearb	12.10.78	Nk
Gepr		
Norm		

Benennung
Ausgangsstufe
Output stage

Z

ROHDE & SCHWARZ
MÜNCHEN

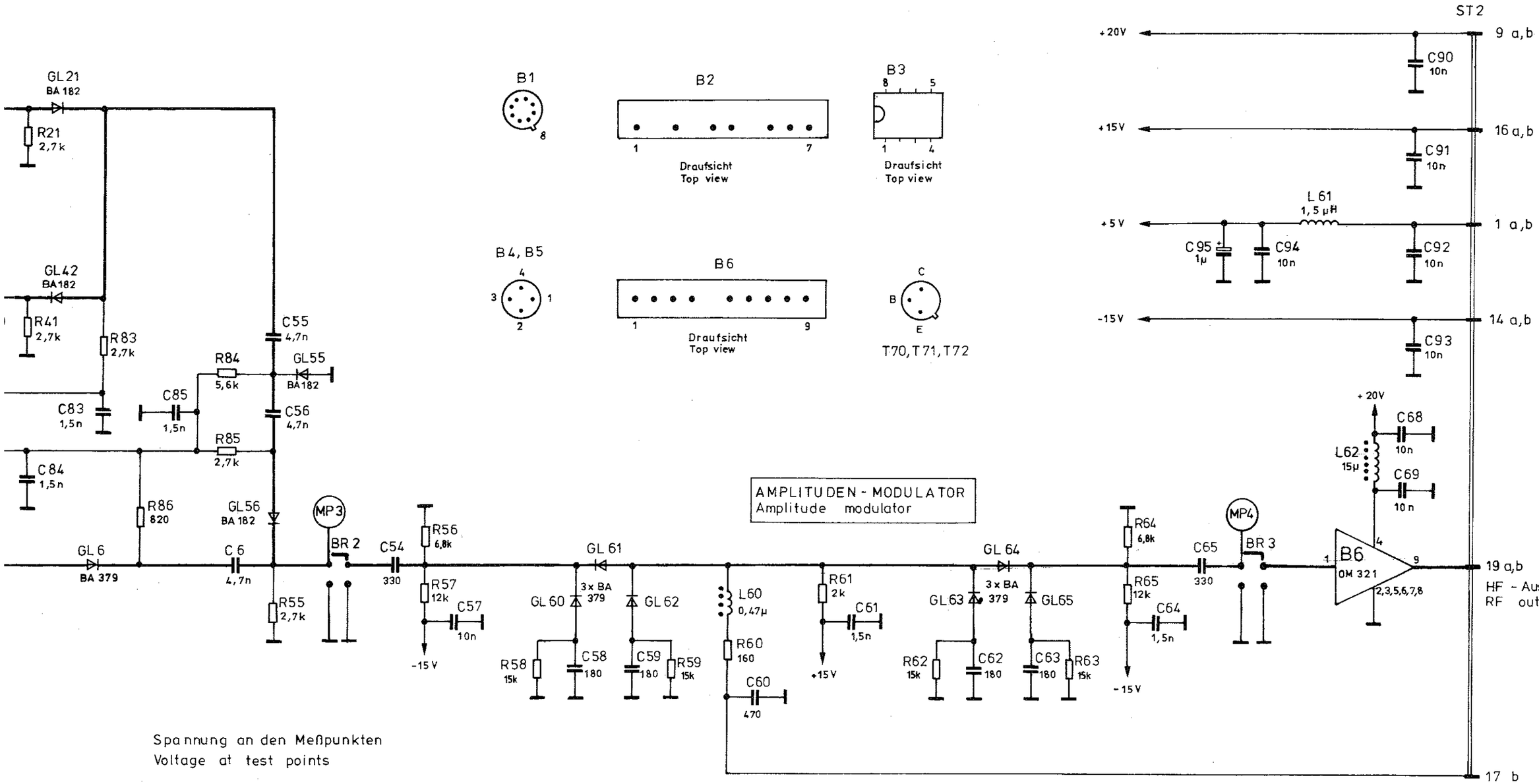
Zeichn.-Nr
302.5219

Blatt-Nr 3

zu Gerät SMS

reg. v 302.4012 V | ersetzt z 302.4012

1 2 3 4 5 6 7 8



Spannung an den Meßpunkten
Voltage at test points

Frequenz [MHz] Frequency	„D"	„E"	MP5	MP6	MP7
0,4 129,9999	L		+19,5	+4,8	
130.....189,9999	H	L	-14,5	0	-13,5
190.....259,9999	H	H	-14,5	0	+18,5
260.... 520	L		+19,5	+4,8	

ROHDE & SCHWARZ
MÜNCHEN

Halbzeug, Werkstoff

Untolerierte Maße

Maßstab

Zeichn. Nr.
302.5419 S

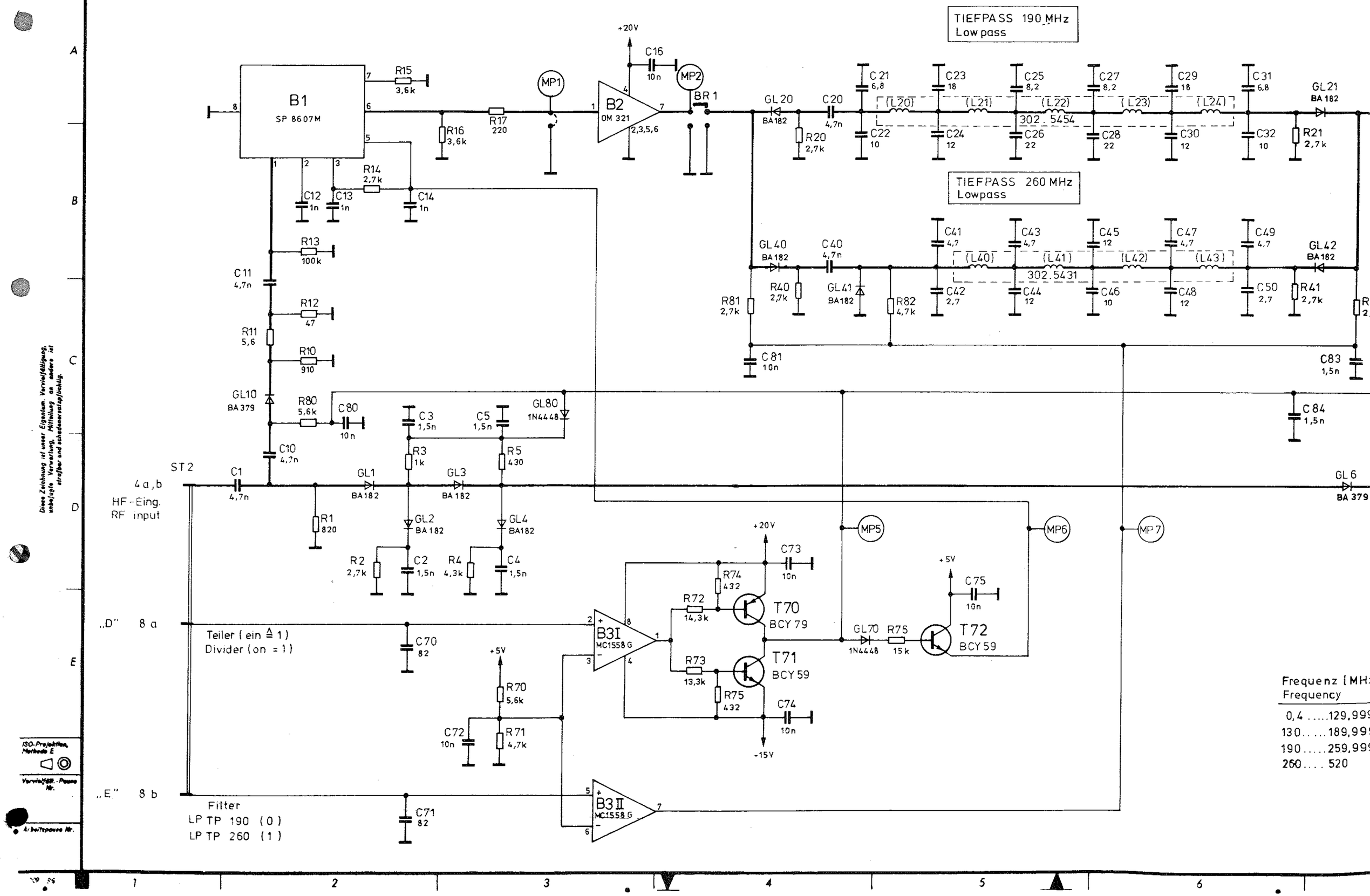
302.4012 V | 302.4012

Ersatz f. Zeichn.

1GME	Datum	Name	Änd. zust.	Änd.-Mittlg. Nr.	Datum	Name
gezeichnet	8.9.78	Hg	A	24 668	02.79	Mü
bearbeitet	09.78	Gn	B	26 489	11. 80	SY
geprüft			C	28 027	02.82	Gn
normgepr.						

Teiler
Divider

Z

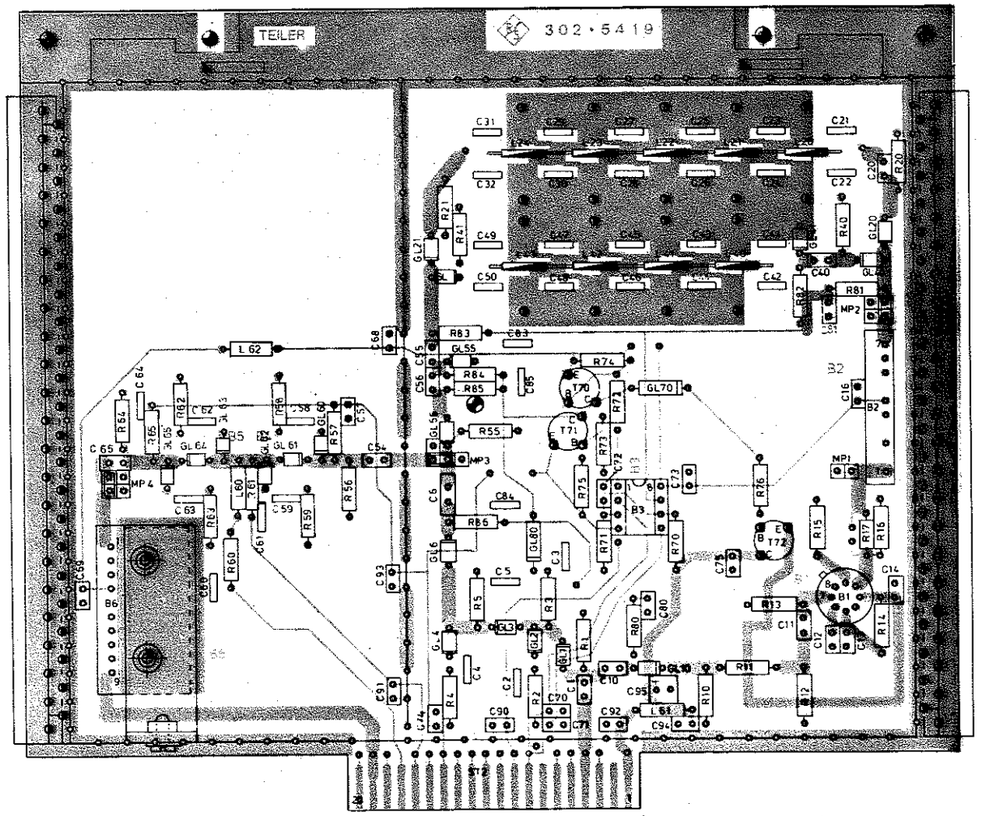


ISO-Projektion, Methode E

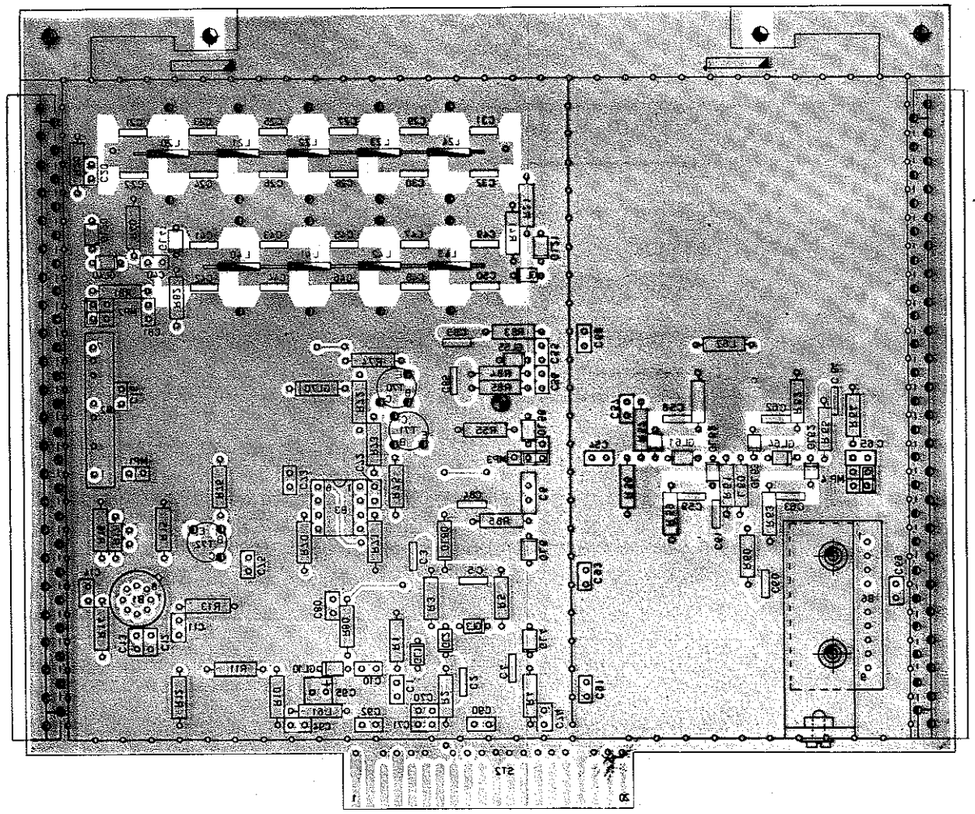
Vervielfält.-Pauso Nr.

Arbeitspause Nr.

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

				Maßstab 2 : 1	SMS
A	—	19.78	NK	Benennung Teiler / Attenuator	Z
B	24545	10.78	Gn		
C	24791	04.79	Gn	Blatt Nr. 2	
D	25689	12.86	Sy	Zeichn. Nr. 302.5419	

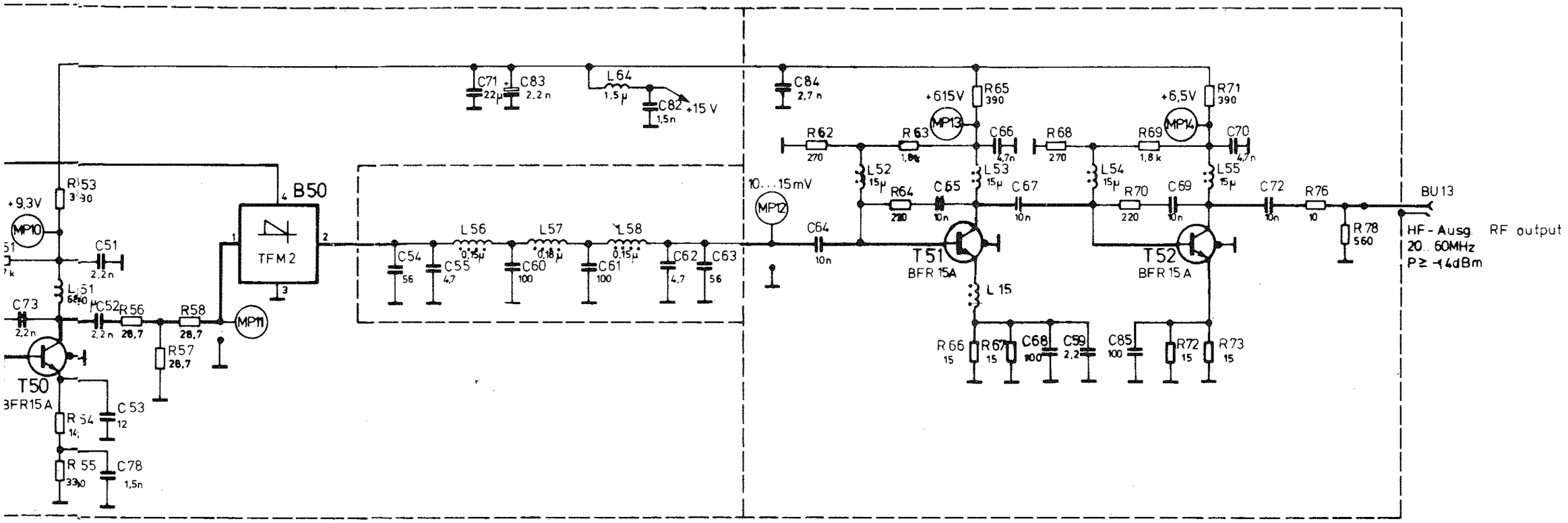
ROHDE & SCHWARZ
MÜNCHEN

1KGE	Da	Name	Änd zust	Änd Mitteilg Nr	Datum	Name
gezeichnet	02.82	Gn				
bearbeitet						
geprüft						

Änd zust	Änd Mitteilg Nr	Datum	Name	Änd zust	Änd Mitteilg Nr	Da

Prüfdaten zu Teiler	Zeichn.-Nr. 302. 5419	Blatt-Nr. 3
SMS | reg i.V 302. 4012 | erste Z. 302. 4012		v. Bl.

Meßblock	Einspeisung – Ansteuerung			Meßpunkt	Sollwert		Toleranz	Bemerkung
1 Stromaufn.					16,5	mA	10 %	+ 5 V Stror
					5	mA	10 %	+ 15 V Stror
					24	mA	10 %	– 15 V Stror
					159	mA	10 %	+ 28 V Stror
		8 a D	8 b E					
2 Frequenzgang	260 MHz an 4 ab 200 mV	0	0	19 ab	510	mV	20 %	
	520 MHz an	0	0	19 ab	320	mV	20 %	
	260 MHz an	1	0	19 ab	010	mV	20 %	
	380 MHz an	1	0	19 ab	710	mV	20 %	
	260 MHz an	1	1	19 ab	090	mV	20 %	
	390 MHz an	1	1	19 ab	720	mV	20 %	
	520 MHz an	1	1	19 ab	660	mV	20 %	
3 Regelspannung	480 MHz 1000 mV							
	– 3 V an 17 b			19 ab	490	mV	20 %	
	– 4 V an 17 b			19 ab	197	mmV	20 %	
4 Oberwellen	260 MHz 200 mV	0	0	19 ab	> 60	dB		
	520 MHz	0	0	19 ab	> 60	dB		
	260 MHz	1	0	19 ab	> 60	dB		
	400 MHz	1	1	19 ab	> 60	dB		



ing RF Input
40...
60 MHz
≤P≤-46dBm

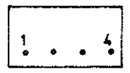
[MHz]	„C"
4.... 129,9999	H
)..... 189,9999	L
)..... 259,9999	H
)..... 379,9999	L
)..... 520	H

3a,b
5a,b
10a,b
12a,b
18a,b
20a,b

B 1

Draufsicht
Top view

B50



Draufsicht
Top view

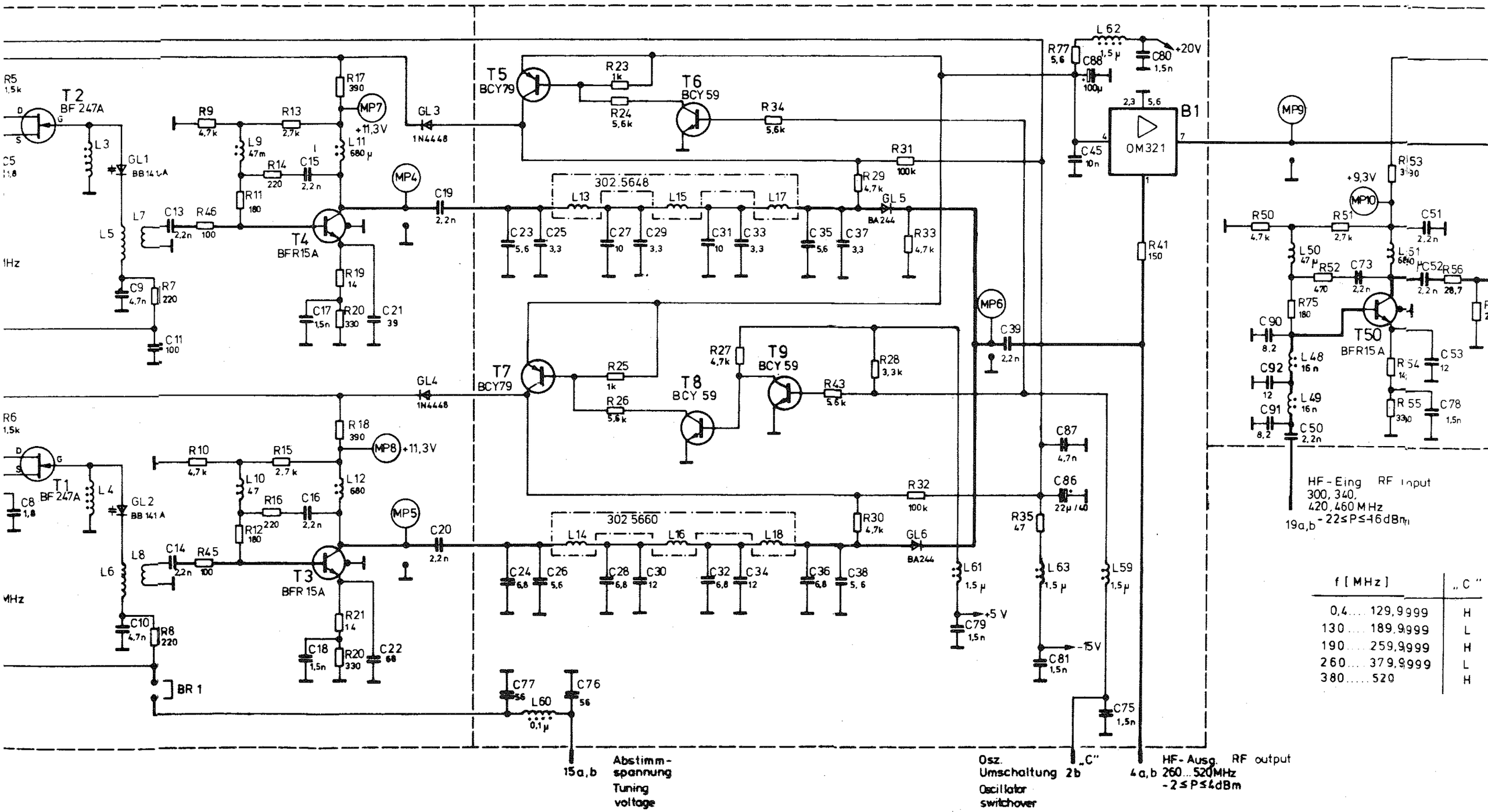
T1
T2

T3,T4
T50,T51

T5 bisT9

+15 V	16a,b	+15 V
+20V	9a,b	+ 20V
+5 V	1a,b	+ 5 V
-15V	14a,b	-15 V

Stromlauf zu
Oszillator
Oscillator
Z
Zeichn. Nr. 302.5619 S
302.4012 V



f [MHz]	„C"
0,4.... 129,9999	H
130.... 189,9999	L
190.... 259,9999	H
260.... 379,9999	L
380..... 520	H

302.5619

T2 BF 247A
T1 BF 247A
T4 BFR15A
T3 BFR 15A
T5 BCY79
T6 BCY59
T7 BCY79
T8 BCY 59
T9 BCY 59

GL1 BB 141 A
GL2 BB 141 A
GL3 1N4448
GL4 1N4448
GL5 BA 244
GL6 BA244

MP1 MP2 MP3 MP4 MP5 MP7 +11,3V MP8 +11,3V

Osz 2 Osc
380 520 MHz

Osz. 1 Osc.
260 ... 380 MHz

302.5648
302 5660

BR 1

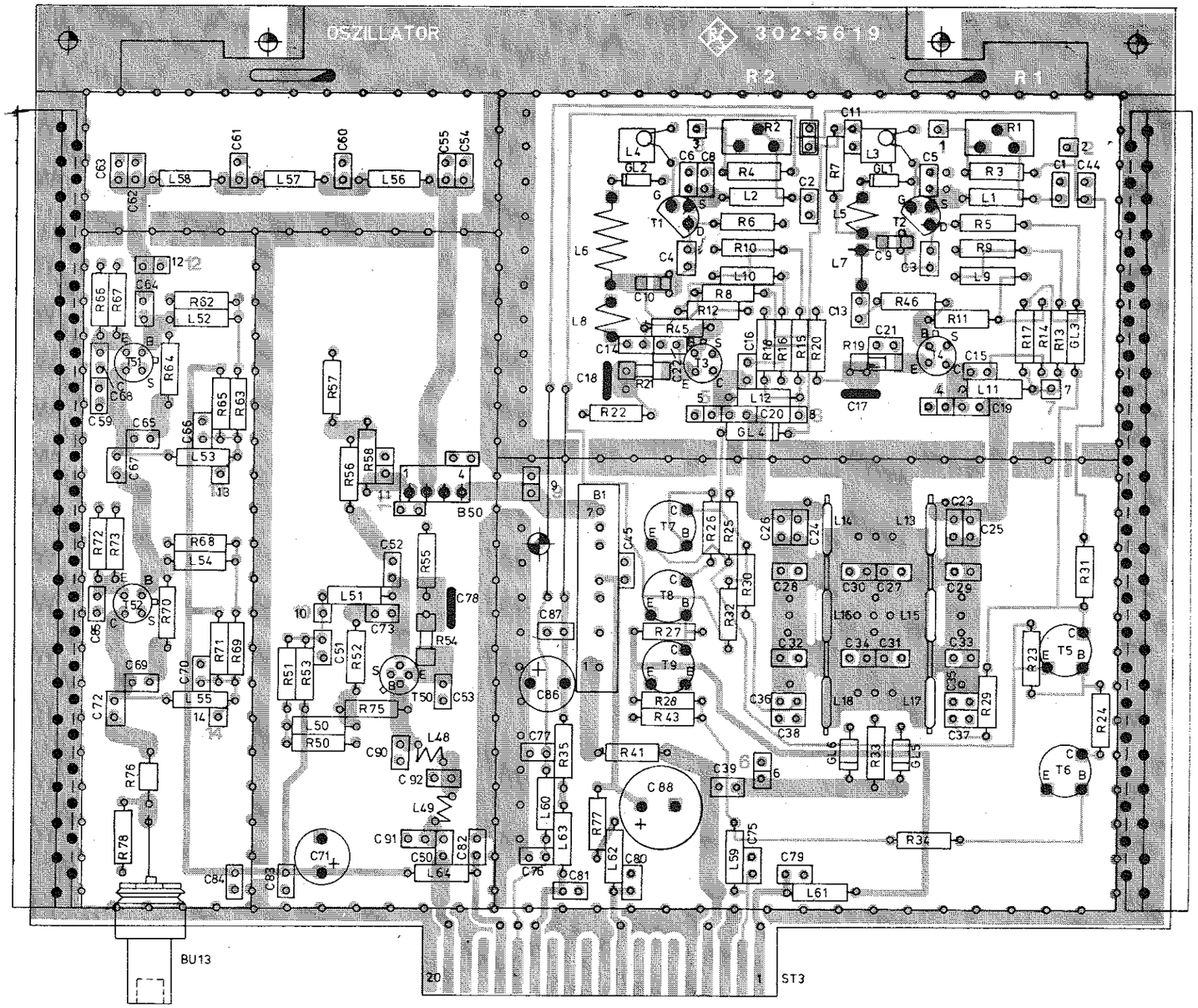
15a,b Abstimmspannung
Tuning voltage

ROHDE & SCHWARZ · MÜNCHEN

Änd.	Änd.-Mitteilg.-Nr.	Datum	Name
A	24 668	02.79	Mu
B	24 791	05.79	Gn
C	25 166	10.79	Gn
D	25932	03.80	Sy
E	26 489	11.80	Sy

	Datum	Name
gezeichnet	06.78	Sd
kontrolliert		
geprüft		
genehmigt		

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



0 1 2 3
ZENTIMETER

B	24791	04.79	Gn	
C	25166	10.79	Gn	
E	26489	1.81	SY	
F	28027	11.81	Hs	

Änd. Zust. | Änderungs-Mitteilung | Tag | Name

Maße ohne Toleranzangabe

	Tag	Name
IFMG		
Bearb.	10.7.78	Wm.
Gepr.		
Norm		

ROHDE & SCHWARZ MÜNCHEN

zu Gerät SMS

Maßstab: 2 : 1

Holzzeug Werkstoff

Benennung: Oszillator / Oscillator

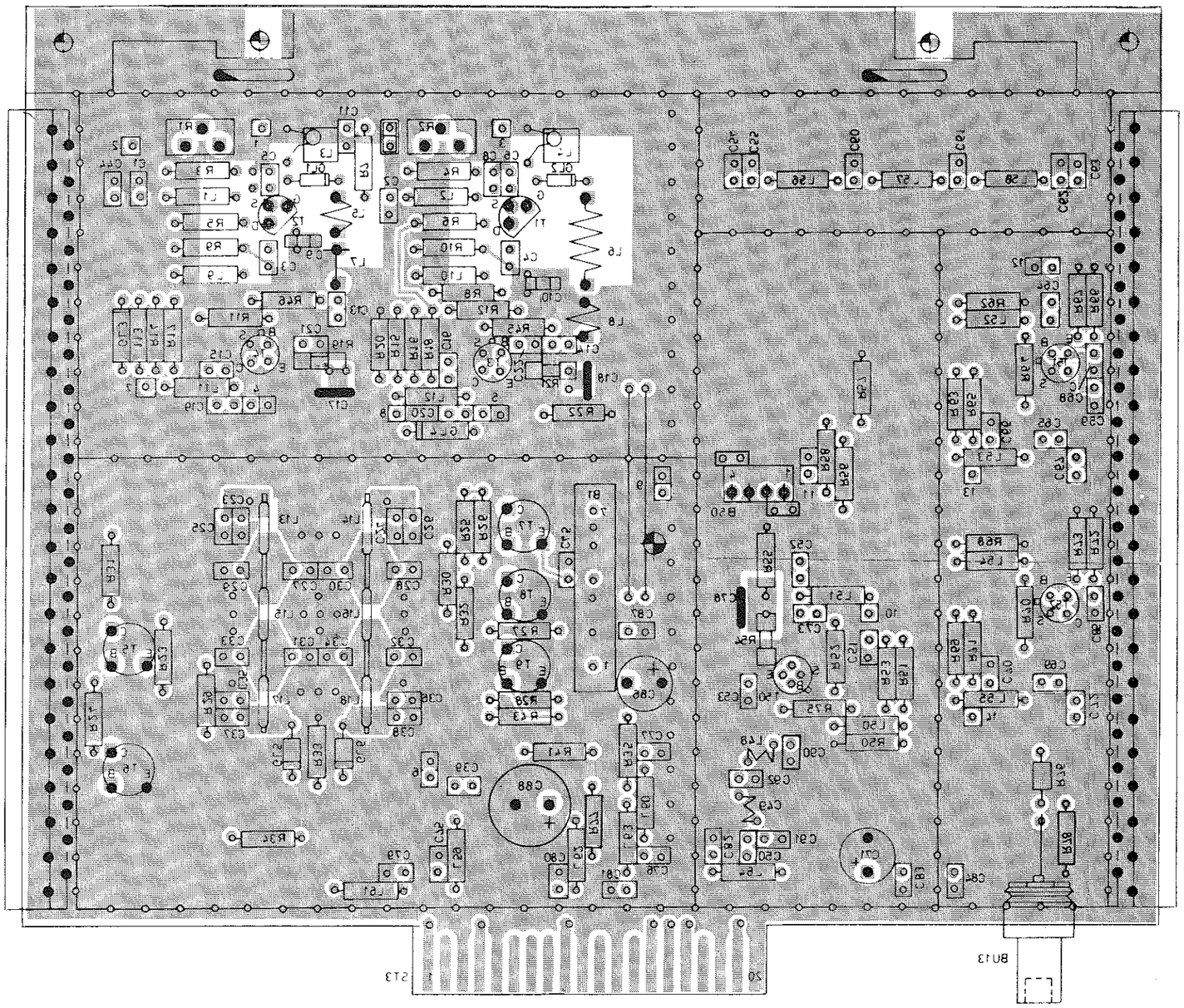
Z

Zeichn.-Nr. 302.5619

Blatt-Nr. 2

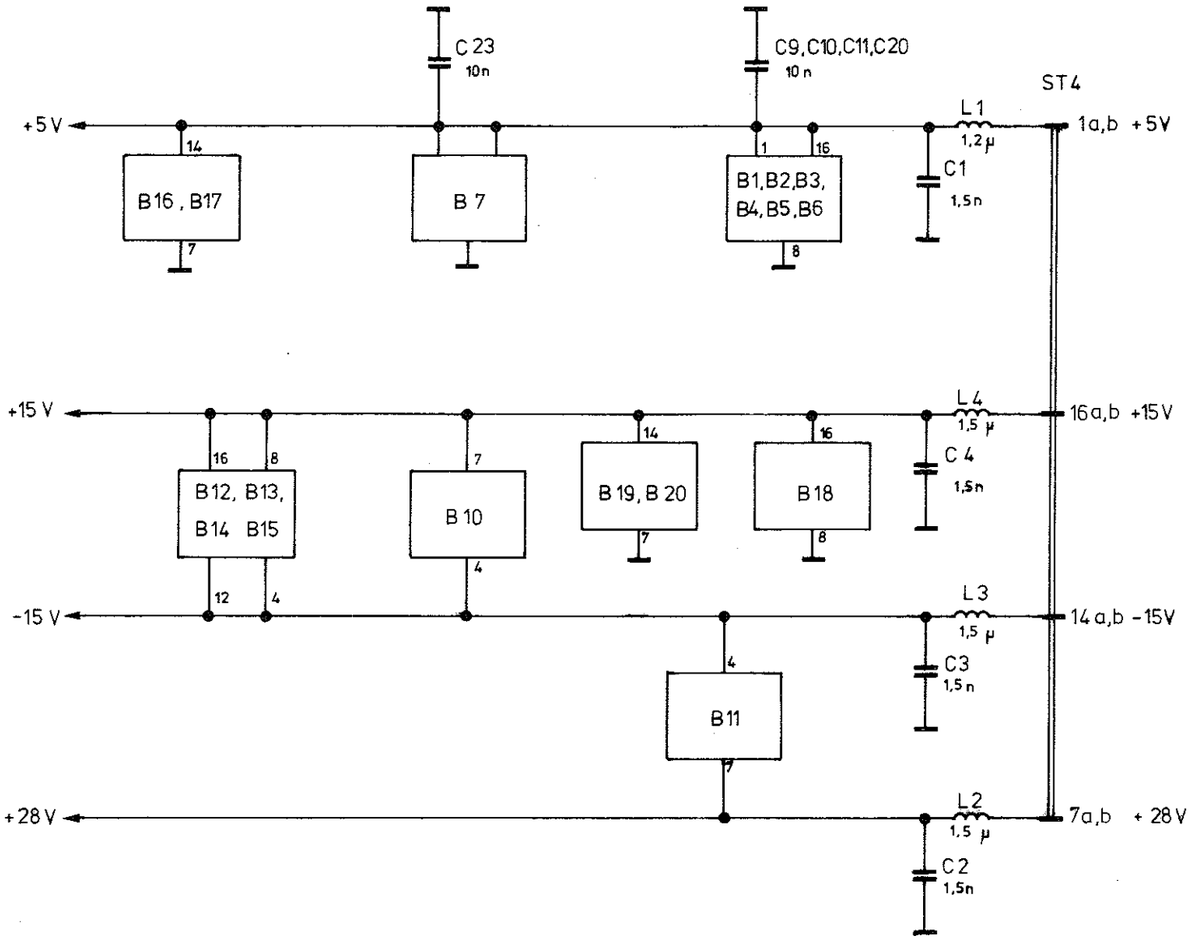
Ers. v. 302.4012V | erste Z. 302.4012

Ansicht und Leitungsführung Lotseite
View of tracks on solder side

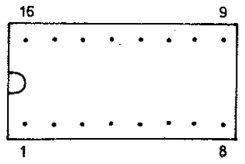


0 1 2 3
ZENTIMETER

B	24 791	04.79	Gn			Maßstab	
C	25 166	10.79	Gn			Holzzeug, Werkstoff	
D	25 932	03 80	Sy				
E	26485	1.81	SY	IFMG	Tag	Name	Benennung: Oszillator / Oscillator
F	28027	11.81	Hg	Gepr.	10.7.78	Wm.	Z
				Gepr.			
				Norm.			
				ROHDE & SCHWARZ MÜNCHEN			Zeichn.-Nr. 302.5619 Bl. 3 B
				SMS			302.4012V 302.4012

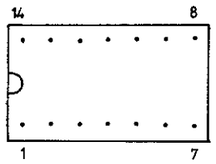


B1, B2, B3, B4, B5, B6, B 12, B13, B14, B15, B 18



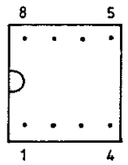
Draufsicht
top view

B 7, B16 , B17 , B19, B 20,



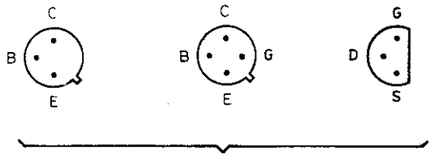
Draufsicht
top view

B10 , B11

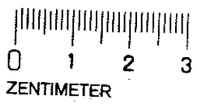


Draufsicht
top view

T1 , T 2 T3 , T4 T5...T12



Ansicht von unten
bottom view



0...26 V Tuning voltage 0 to 26V

Stromlauf zu

PHASENREGELUNG
Phase control

Zeichn. Nr. 302.5819 S

302.4012 V | 302.4012

B16
CD 4069B

B17
CD4081B

B15
SN72L044N

4 × 1N4448

+5V
R90 1,5 k
C47 10 n
R91 1,5k

GL 5 M 10 ... 15
GL6 M 16 ... 23
GL7 M 24 ... 30
GL 8
+15V
+28V
R109 22,1k

3 xE 111 A
T 10 R140 1M R143 562
T11 R141 1M R144 1,5k
T12 R142 1M R145 3,32 k
R147 560k
C 52 330 n
R146 2,21 k

C 31 22
C38 1µ
C51 10n
+28V

B11
NE 5534
AFE
C37 1µ
C50 10 n
GL16
BZX79
- 15V
C49 1,5 µ

C 53 1,5n
C54 100
L 15 3,9 µ
C 57 1,5 n
C58 100
L17 3,9 µ
C 59 680
L18 2,2 µ
C61 680
L 20 2,2 µ
L16 3,9 µ
C55 100
C56 1,5n
L 19 2,2 µ
C60 680

MP5
MP6
BR 1
R92 3,65 k
R93 560k
C 48 330 n
5 x E 111 A
I 1,2
R94 24,3 k
T5
R99 1M
I3
R95 6,19 k
T6
R100 1M
I4
R96 3,01 k
T7
R101 1M
II4
R97 5,11 k
T8
R102 1M
II3
R98 15k
T9
R103 1M

+15V
R78 24,3k
R80 9,09k
R81 10k
C45 10n
C46 10n
R79 30,1 k
- 15V

B20
CD4066BE
R110 1k
R111 2,74 k
R112 4,75 k
R113 7,5 k
R114 1,82 k
R115 2,43 k
R116 3,92 k
R117 7,5 k
R118 2k
R119 2k
R120 5k
R121 10k
122 1k
R123 2k
R124 5k
R125 10k
I1 I2 I3 I4 II1 II2 II3 II4

B19
CD4066BE

B13
SN72L044N

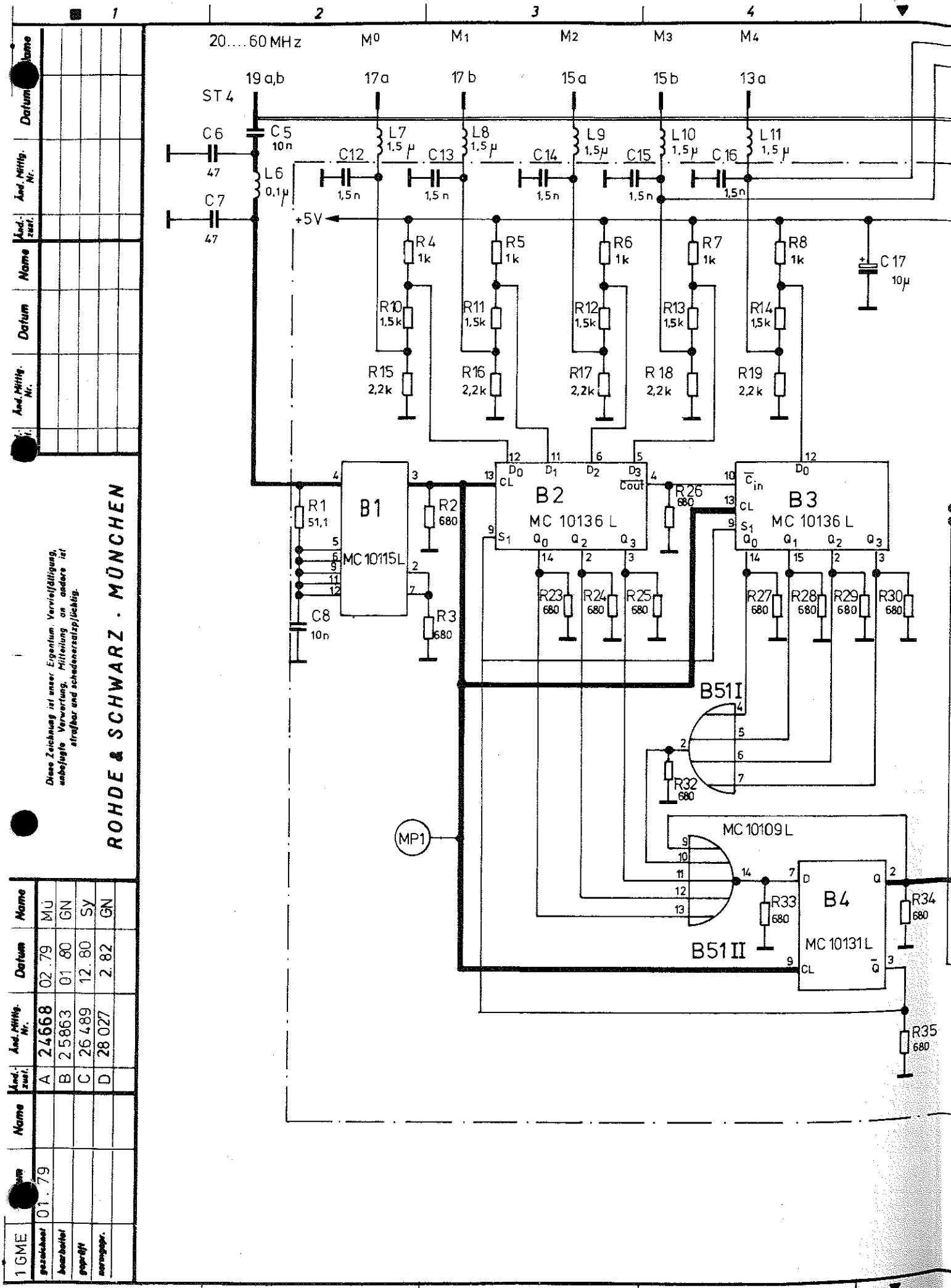
B18
CD4028B

B15/IV
SN72L044N
5 × 1N4448
GL13 GL12 GL11 GL10 GL9
+5V
R126 100k GL14
R132 220k R127 100k GL15
2 × 1N4448
R 128 100k R 129 100k
R133 220k R134 220k
R130 100k R 131 100k
R135 220 k R136 220k

B14
SN72L044N
R150 1M R151 1M R152 1M
+5V
R153 2,7 k
R154 1,5 k
C64 10n
C62 56
C63 56
C67 1,5n C66 1,5n C65 1,5n
L25 1,5 µ L26 1,5 µ L27 1,5 µ
L21 0,1 µ
8a 8b 6a
6b ST4
B C A

Abstimmspannung 0 ... 26 V Tuni

Reference
Referenz 2,0.... 2,2 MHz
M0
M1
M2
M3
M4
17a
17b
15a
15b
13a
11a,b
+5V
-15V
B1
MC 10115L
B2
MC 10136 L
B3
MC 10136 L
B4
MC 10131L
MC 10109 L
B51I
B51II
B6
MC 10117L
B7
MC 12040L
T1
2N 2369
T2
BCY59
T3
BF 272
T4
BF 272
GL1
HP 2800
GL2
HP2800
GL3
1N4448
GL4
1N4448
B10
LF 356 H
B12/I
B12/II
B12/III
B12/IV
SN72L044N
B16
CD 4069B
MP1
MP2
MP3
MP4
MP5
L7 1,5 µ
L8 1,5 µ
L9 1,5µ
L10 1,5 µ
L11 1,5 µ
L12 0,1µ
C12 1,5n
C13 1,5n
C14 1,5n
C15 1,5n
C16 1,5n
C17 10µ
C18 10n
C19 10n
C21 56
C22 56
C24 10 µ
C25 1µ
C26 1 µ
C27 10 n
C28 10 n
C29 100
C30 100
C35 1µ
C36 220 n 1µ
C40 220n
C41 10n
C42 10n
C43
C45 10n
R1 51,1
R2 680
R3 680
C8 10n
R4 1k
R5 1k
R6 1k
R7 1k
R8 1k
R10 1,5k
R11 1,5k
R12 1,5k
R13 1,5k
R14 1,5k
R15 2,2k
R16 2,2k
R17 2,2k
R18 2,2k
R19 2,2k
R23 680
R24 680
R25 680
R26 680
R27 680
R28 680
R29 680
R30 680
R32 680
R33 680
R34 680
R35 680
R36 511
R37 511
R40 100
R41 1k
R42 200
R43 2k
R44 221
R45 2,21k
R46 18k
R47 18k
R48 330
R49 33k
R51 750
R52 1,3k
R53 1,5k
R54 511
R55 511
R56 511
R57 511
R58 39
R59 39
R60 220
R61 220
R62 560
R63 560
R64 560
R65 560
R70 2,2k
R71 2,2k
R72 2,74k
R73 2,74k
R74 6,19k
R75 6,19k
R76 24,3k
R77 22,1k
R78 24,3k
R79 30,1 k
R82 220
R83 20k

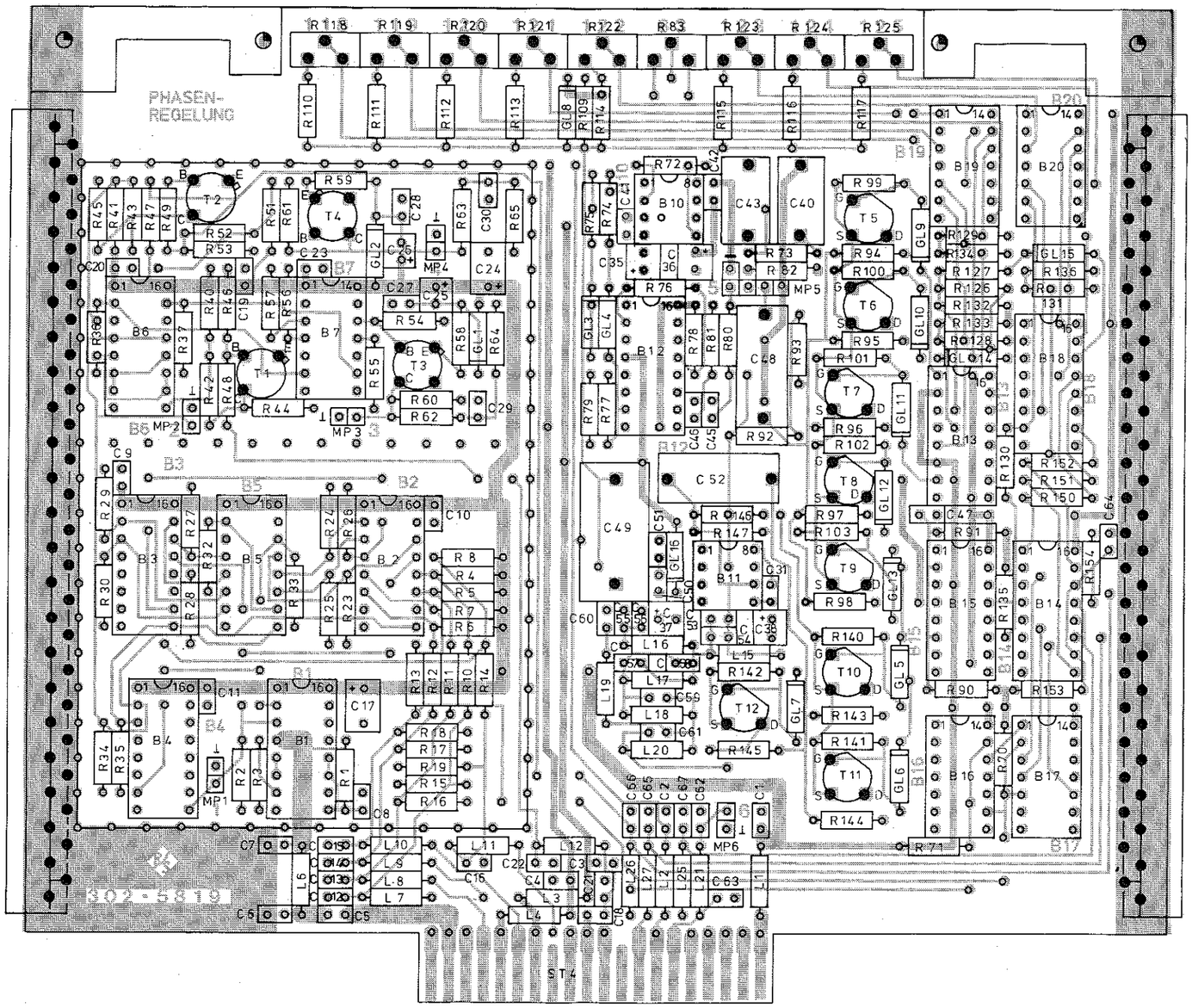


Änd.-zust.	Änd.-Mitteilg.-Nr.	Datum	Name
A	24668	02.79	MU
B	25863	01.80	GN
C	26489	12.80	SY
D	28027	2.82	GN

	Datum	Name
gezeichnet	01.79	
bearbeitet		
geprüft		
normgepr.		

1 GME

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



0 1 2 3
ZENTIMETER

A	24545	10.78	Mü			
B	24791	04.79	Gn			
C	25580	11.79	Gn			
D	25863	01.80	Gn			
E	26489	11.80	Sy			

Änd. Zust. | Änderungs-Mitteilung | Tag | Name

1GME | Tag | Name
Bearb. | 19.7.78 | Nk
Gepr.
Norm.

ROHDE & SCHWARZ MÜNCHEN

Zu Gerät SMS

Maßstab 2 : 1

Benennung
Phasenregelung
Phase control

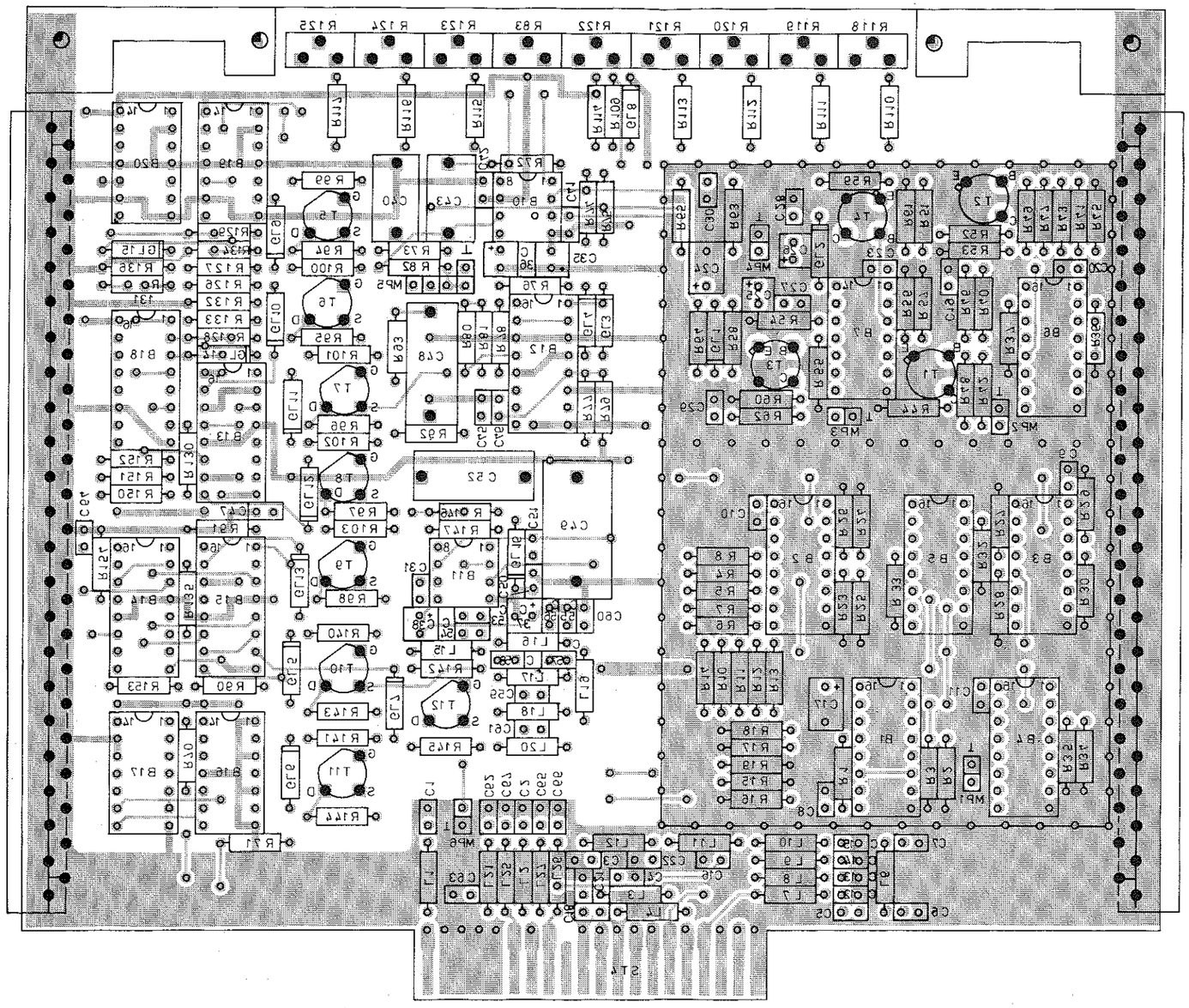
Z

Sachnr. 302.5819

Ausg.-Nr. 2

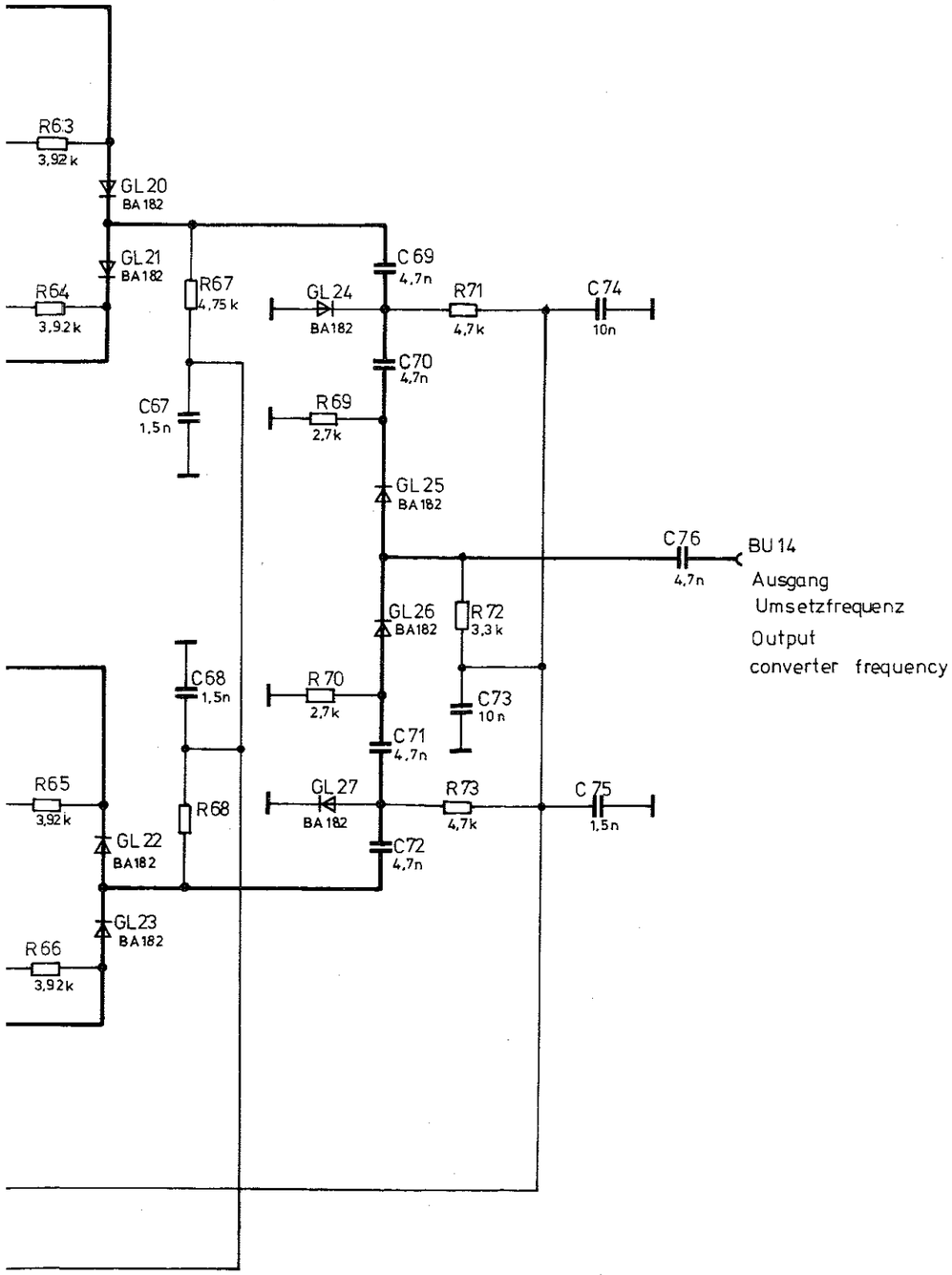
Ers. f. 302.4012 V | Ersetzt durch 302.4012

Ansicht und Leitungsführung Lötseite
View of tracks on solder side

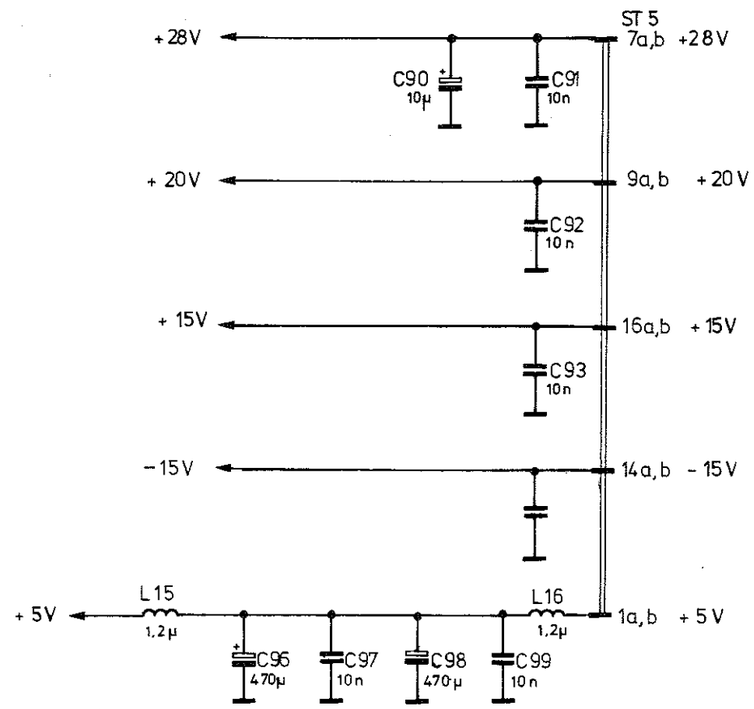


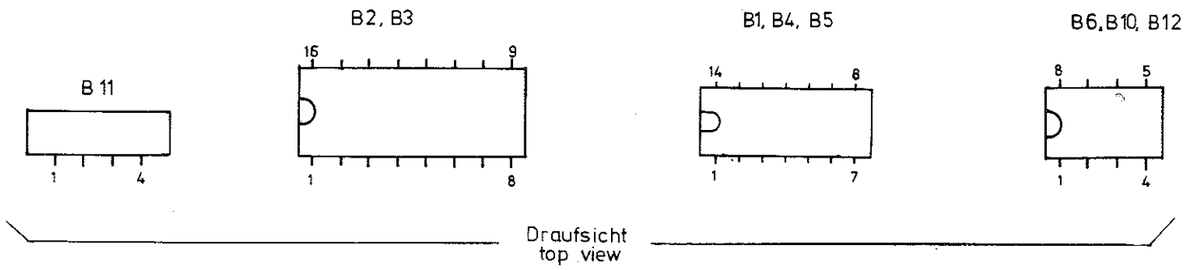
0 1 2 3
ZENTIMETER

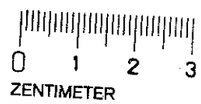
A	24545	10.78	Mü		Maßstab	2 : 1
B	24791	04.79	Gn			
D	25863	01. 80	Gn			
E	26489	11. 80	Sy			
				IGME	Name	Benennung: Phasenregelung / Phase control — Z
				Bearb.	19.7.78 Nk	
				Gepr.		
				Norm		
				ROHDE & SCHWARZ MÜNCHEN		Zeichnungs-Nr. 302.5819 — Blatt-Nr. 3 — Bl.
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	Z.-Gerät SMS		Teg. 302.4012 V — ersetzt durch 302.4012



Frequenz SMS frequency SMS	Umsetz - frequenz Converter frequency	MP 7	MP 8
330 MHz	300 MHz	+15 V	- 15 V
360 MHz	340 MHz	- 15 V	- 15 V
390 MHz	420 MHz	+15 V	+15 V
420 MHz	460 MHz	-15 V	+15 V







Stromlauf zu
Umsetzer
Frequency converter

Z

Zeichn. Nr. 302. 6015 S

302. 4012 V | 302. 4012

Ausgang 380 MHz
Output
ST5 19a,b

Eingang 40/80 MHz
Input
ST5 11a,b

+15V
+20V
+8,7 V
+5V
-15 V

R20 270
R18 113
R19 820
C22 1,8n
C23 6,8
C24 3,9
R22 16,2
R24 33,2
R26 16,3
R25 68,1
B10 OM321
R14 11,3
L10 22µ
L11
R13 11,3
R15 51,1
C21 1n
R17 33,2
T3 BFR 15A
R16 180
R21 22
R23 16,2
MP 2
R31 56
C32 1n
R37 1k
C37 10n
R36 221
R34 4,75k
R32 56,2
R35 1k
R33 240
C36 1n
T5 BF272F
T6 2N2369A
B1 SP 8632
C33 10n
C35 1n
C34 1n
B2/II SN 54 S112J
PR
CK
CLR
B11 MCL-TFM2
C56 4,7n
C55 10n
R51. 4,7k
C59 4,7n
GL 10 BA 182
C60 4,7n
R53 680
GL1 BB 505 B
R50 8 20
GL12 BA379
C57 10n
C58 10n
R54 681
C61 4,7n
R52 4,75 k
GL13 BA 182
C62 4,7n
C63 10n
R57 4,75 k
GL14 BA 182
C65 820
R55 3,32k
R59 825
GL15 BA 182
GL16 BA182
R60 3,92k
L26 L27
300MHz
R63 3,92 k
R64 3,92k
L24 L25
420MHz
C64 10n
R58 4,75k
GL17 BA182
C66 820
R56 3,32k
R61 825
GL18 BA 379
GL19 BA 182
R62 3,92 k
L22 L23
460 MHz
R65 3,92k
R66 3,92k
L20 L21
340 MHz
C80 10n
R80 392
T8 BCY 79
R81 12,1k
MP7
C82 10n
R82 12,1k
T9 BCY59
R83 392
C83 10n
C81 10n
B12/I MC1558
C86 560
R89 15k
C84 10n
R88 2,21k
R84 392
T10 BCY79
R85 12,1k
MP8
B12/II MC1558
C85 560
R86 12,1k
T11 BCY 59
R87 392
C88 560
C87 560
ST5 13b 15b
„A" „C"

Ausgang 380 MHz
Output
ST5 19a,b

+15V
R3 2,61k
C5 22µ
C6 1n
R27 33k
R28 33k
R29 33,2k
C12 10n
C13 10n
C14 10n
MP1 6,3V
T1 U310
D
G
S
R1 5k
R2 4,7k
L1
C1 22µ
C2 1n
C3 0,5
C4 1,5
L2
C7 4
C8 5
L3
L4
-15V
C9
C10 2
GL1 BB 105 B
L5 1µ
MP6
R49 100k
C11 10n
R47 5,1k
R48 10k
C49 10n
MP5
+28V
C46 10n
C45 6,8µ
R45 3,83k
B6 LF256H
R42 562
R40 562
R43 562
R41 562
C42 2,2n
C43 2,2n
R44 3,83k
C44 6,8µ
C48 10n
C47 22µ
GL8 BZX79
-15V
+5V
C40 10n
B5 MC4344L
C41 150
L12 2,2µ
R39 100
MP4
ST5 15a
Eingang Referenz 1MHz
Input Reference

+15 V
R8 243
C19 1,8n
R6 3,3k
R7 1,5k
+10,2 V
L8 47µ
L9 680µ
R9 470
C18 1n
C15 1n
T2 BFR 15A
C20 1n
R13 11,3
R14 11,3
R15 51,1
C21 1n
R17 33,2
R16 180
R10 22
R11 22
C17 39
C16 1,5n
R12 330
+5V
C38 10n
C39 10n
MP3
B2/II SN54S112J
PR
CK
CLR
B3 SN54LS193
CK Down
CLEAR
LOAD
B4/II SN54S74J
GLR
B4/I SN54S74J
GL6
GL5
GL4
GL7
4× HP2800
R38 390

+15V
R20 270
+8,7 V
C22 1,8n
R18 113
R19 820
L10 22µ
L11
C23 6,8
C24 3,9
T3 BFR 15A
R21 22
R22 16,2
R24 33,2
R23 16,2
MP2
R31 56
C32 1n
C37 10n
R37 1k
R36 221
R34 4,75k
R32 56,2
C36 1n
T6 2N2369A
T5 BF272F
R35 1k
R33 240
B1 SP 8632
C35 1n
C34 1n

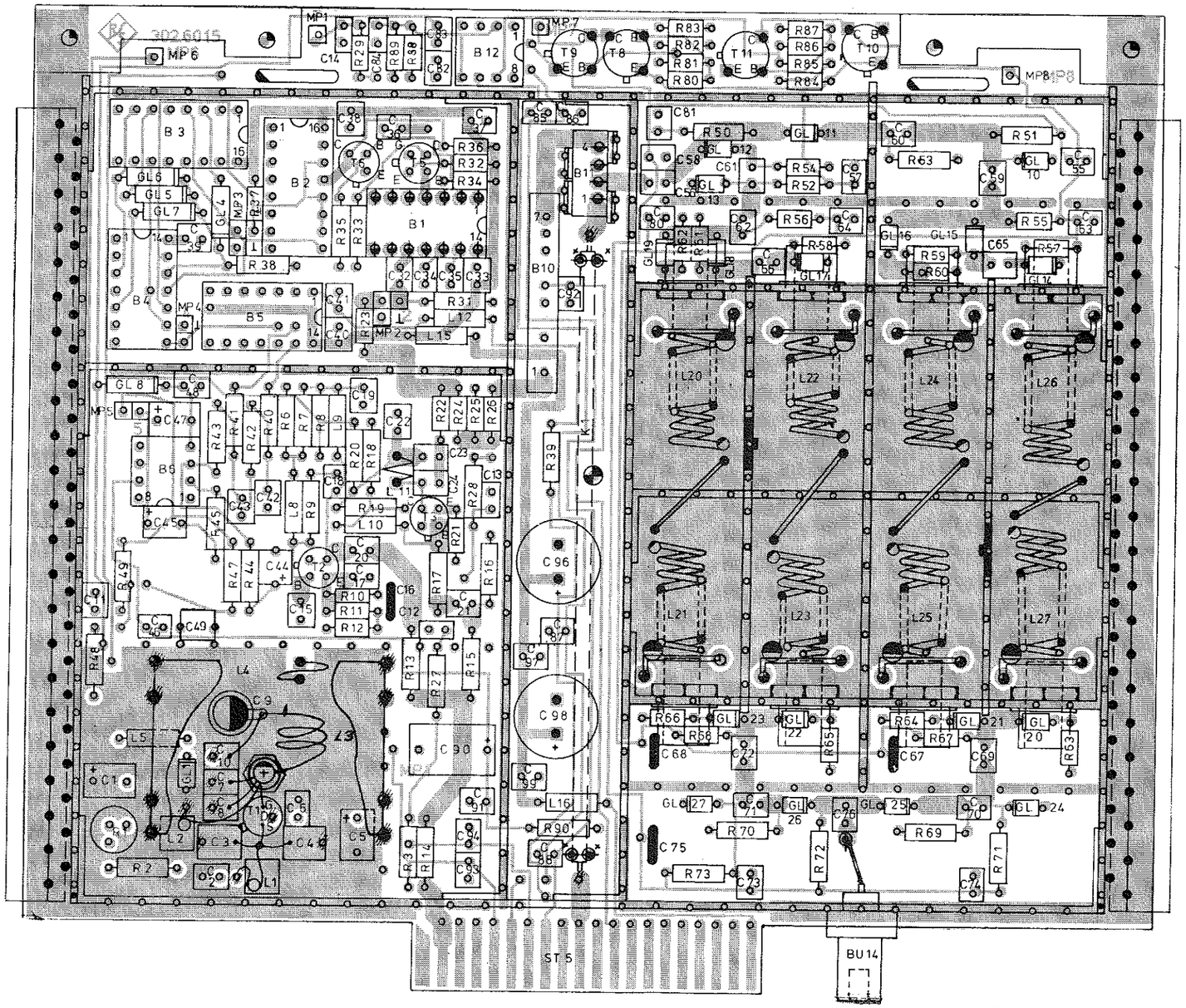
	Name	Datum
gezeichnet	Ci	1.79
bearbeitet		
geprüft		
normgepr.		

Änd.-zust.	Änd. Mittg Nr.	Datum	Name
A	24 668	02.79	Mü
B	24 791	05.79	Gn
C	25 166	10.79	Gn
D	27829	09.81	Gn
E	28027	11.81	Hs

ROHDE & SCHWARZ · MÜNCHEN

1GME

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Änd.-Index	Änd.-Mitteilung	Datum	Name
F	27829	09.81	Gn
G	28 027	02.82	GN

Halbzeug, Werkstoff

Maßstab

Allgem. Maße

zu Ger

Benennung **Umsetzer /Converter** Z

Zeichnung besteht aus Blatt

Blatt-Nr 2

registr. in Verz. 302.4012 V

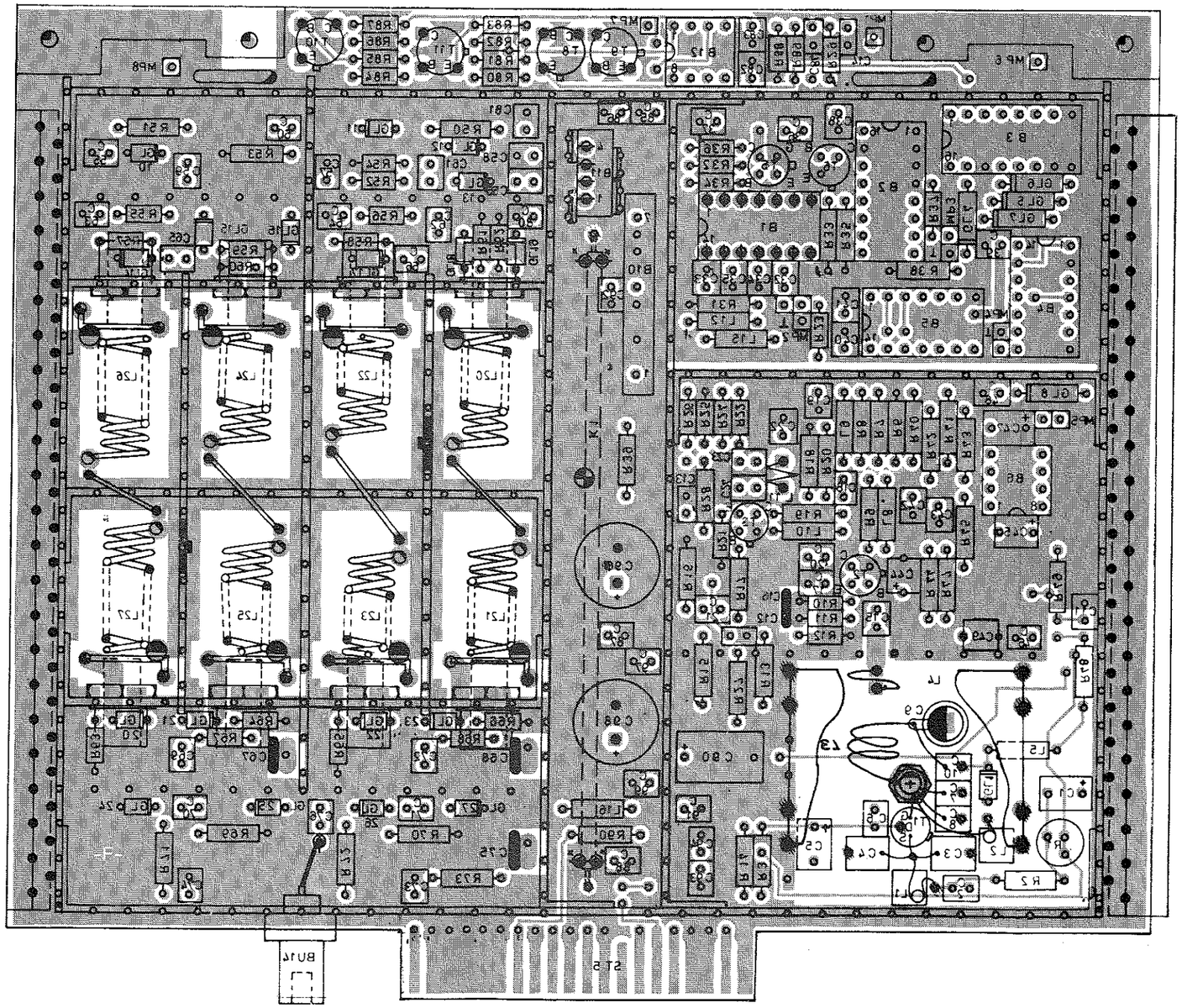
erste Z. 302.4012

Zeichn.-Nr **302.6015**

ROHDE & SCHWARZ MÜNCHEN

Stelle	gez. Datum	bearb. Datum	geprüft Datum	Ordn.-Nr (nur für K-Ordner)
1GME	21.7.78 Nk			

Ansicht und Leitungsführung Lötseite
View of tracks on solder side



ZENTIMETER
0 1 2 3

Änd zust	Änd -Mitg	Datum	Name
F	27829	09.81	Gn
G	26 027	02.82	GN

Halbzeug, Werkstoff

Maßstab | Untol Maße | zu Ger

Benennung: Umsetzer / Conerter | Z

Zeichnung besteht aus: Blatt | Blatt-Nr: 3

registr. in Verz: 302.4012 V

erste Z: 302.4012 | Zeichn. Nr: 302.6015

ROHDE & SCHWARZ MÜNCHEN

Stelle	gez. Datum	bearb. Datum	geprüft Datum	Dran.-Nr (nur für K-Ordner)
1GME	21.7.78 Nk			

ISO-Projektion Methode E

PF 295 0449

10 MHz - Oszillator
10-MHz oscillator

BR 2 BR 1 BR 5 BR 3 BR 4

+5V R48 220 R49 2,7k R50 1k R53 R51 270 R52 6,19k R54 220 R63 22 R62 330 R64 51

T7 2N2369A T8 2N2369A T9 2N2369A T10 2N2369A

C54 1n C55 1n C61 68 C60 220 C62 10....40 C63 39 L15 33µ R61 100k Q1 10MHz C64 0,1µ R60 220 C65 220

B18/II B18/I B18/III B18/IV B18 CD4011

B17/II HEF4027 B17/I HEF4027

B2,B13 B1,3,4,6,7,11,18 B5,8,10,12,14,15,16,17

Draufsicht
Top view

T1 T2,3,5,6,7,8,9,10 T4

+5V +15V +15V -15V +15V (Stand-by)

B 5,8,10, B 12 C 34,36,37, 38, 10n

B 13 B 14,15 B 16,17 B 18 B 1,3,4, B 6,7,11, B 2

C30,31,32, 33,35, 42,44 C29 10n C16 100µ C43 10n L16 15µ C28 10n C15 100µ

R65 220 C26 100µ C39,40,41 10 n

C58 220µ C57 220µ R72 39 C27 10n C14 220µ C56 100µ

0 1 2 3 ZENTIMETER

15a M2	17b M1	2b	8a Y7-Referenz - Ausgang Reference output	4a,b 10 MHz	1a,b +5V	16a,b +15V	14a,b -15V	2a Stand by

Stromlauf zu

REFERENZ
Reference

Zeichn. Nr. 302.6215 S

302.4012 V | 302.4012

R29 10k
R36 3,3k
+15V
R28 5,11k
C48 22µ
GL8 BZX79/C7V5
-15V
R25 100k
B13 LF 256 H
R30 100k
R37 1,8M
C13 10µ
R27 22k
+5V
B12 MC 14046 BCP
B5/I SN 54S112J
B6 SN 54LS290J
B7 SN 54LS74J
B8/I MC 14518
B8/II MC 14518
B10/I MC 14518
B10/II MC 14518
R70 100
T5 2N2369A
R40 220
R41 2,7k
R42 1k
C50 1n
R43 220
C51 330
B11 SN 54LS290J
T6 2N2369A
R44 220
R45 2,7k
R46 1k
C52 1n
C53 330
R17 220
T7 2N2369A
R48 220
R49 2,7k
R50 1k
K1
M-Teiler
M divider
B14/I HEF 4027
B14/II HEF 4027
B15 HEF 4029
CK
PRESET ENABLE
CARRY OUT
B16/I
B16/II
RESET
B4/II B4/IV B4/III
B4 SN 54S00J
C21 1n
R33 150
L10 0,27µ
L11 0,47µ
L12 0,47µ
L13 0,27µ
GL6 BA 182
R34 68
C22 100
C23 120
C24 100
B3/II
C17 1n
R31 120
L5 0,12µ
L6 0,22µ
L7 0,22µ
L8 0,12µ
GL5 BA 182
C25 1n
R32 68
C18 56
C19 56
C20 56
B3 SN 54S00J
R35 3,3k
R23 2,2k
B2 µA 741
B1/III
11a,b 40/80MHz Ausgang output
17a M0
6a Y8-Referenz-Ausgang Reference output
19a,b 1MHz-Ausgang output
13a M4
15b M3
15a M2
17b M1
2b

80 MHz - Oszillator
80-MHz oscillator

T1 2N4416A
T2 2N2369A
T3 2N2369A
T4 J 111A

L1 470µ
L2
L3 3,9µ
L4 3,9µ
L5 0,12µ
L6 0,22µ
L10 0,27µ
L11 0,47µ

GL1 BB 105B
GL2 BB 105B
GL3 1N4448
GL7 BZX 79/C12
GL8 BZX79/C7V5

B1 SN 54LS 86 J
B2 µA 741
B3 SN 54 S00 J
B4 SN 54 S00 J
B5/I SN 54S112 J
B5/II SN 54S112 J
B6 SN 54LS290 J
B7 SN 54LS 74 J
B8/I MC 14518

ST 6
13b FM-Spannung FM voltage
6b „A"
8b „C"

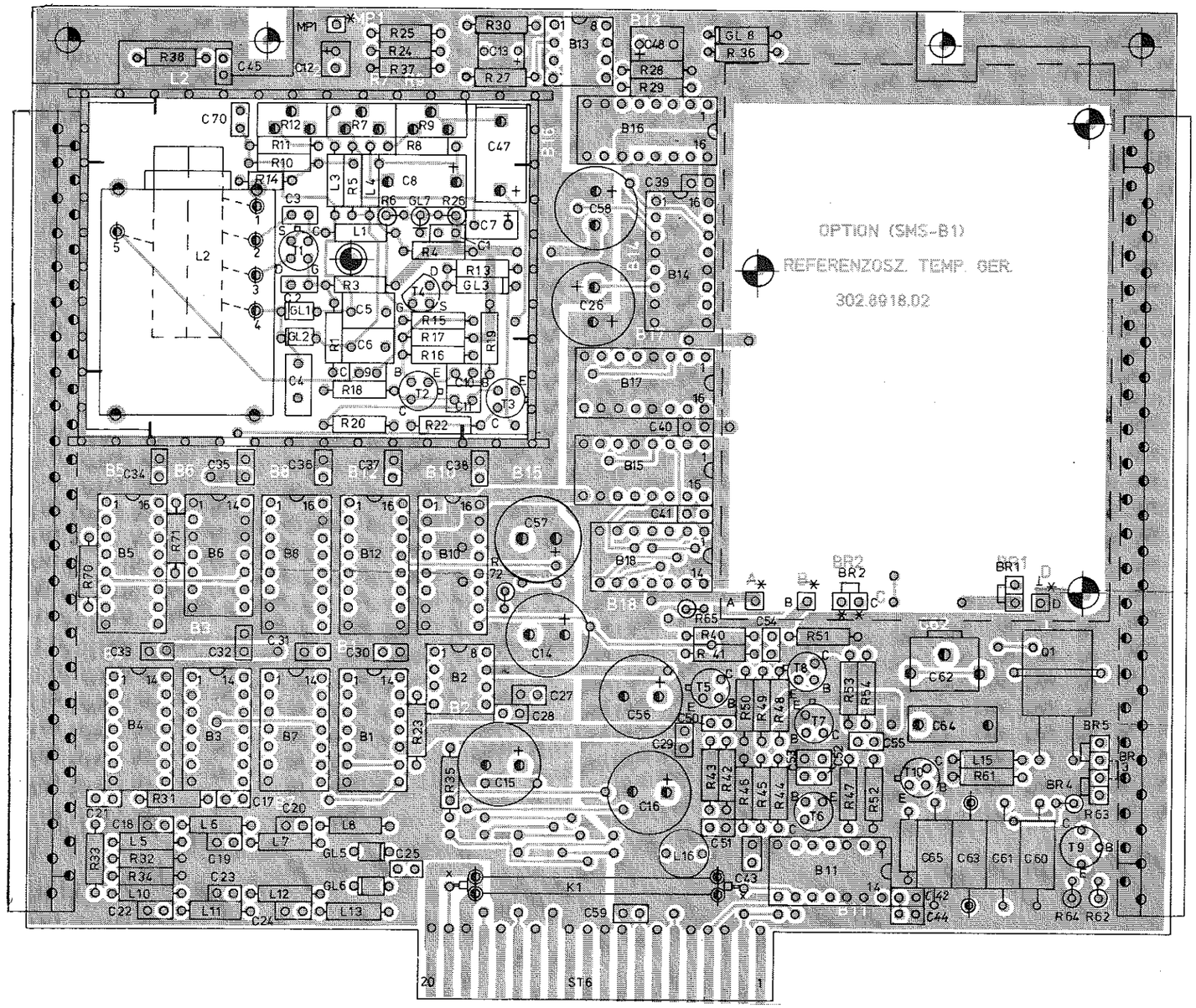
ROHDE & SCHWARZ · MÜNCHEN

	Name	Datum	Änd.-Mitteilg. Nr.	Änd.-zust.
gezeichnet	Gr	19.1.79		
bearbeitet				
geprüft				
normgepr				

Änd.-zust.	Änd.-Mitteilg. Nr.	Datum	Name
A	24 668	02.79	Mü
B	24 791	05.79	Gn
C	25 166	06.79	Gn
D	25932	04.80	Sy
E	26489	01.81	Sy

F 28027 11.81 Hs

1GME 4397



Ansicht und Leitungsführung Bauteilseite
View of tracks on component side

0 1 2 3
ZENTIMETER

Änderungs-Mitteilung	Tag	Name
A 25 166	06.79	Gn
B 25 166	10.79	Gn
C 25 932	03.80	Sy
E 28027	11.81	Hs

Maße ohne Toleranzangabe

Maßstab

Halbzeug Werkstoff

IGME	Tag	Name
Bearb	16.11.78	Wm.
Gepr		
Norm		

Benennung: Referenz

Z

ROHDE & SCHWARZ MÜNCHEN

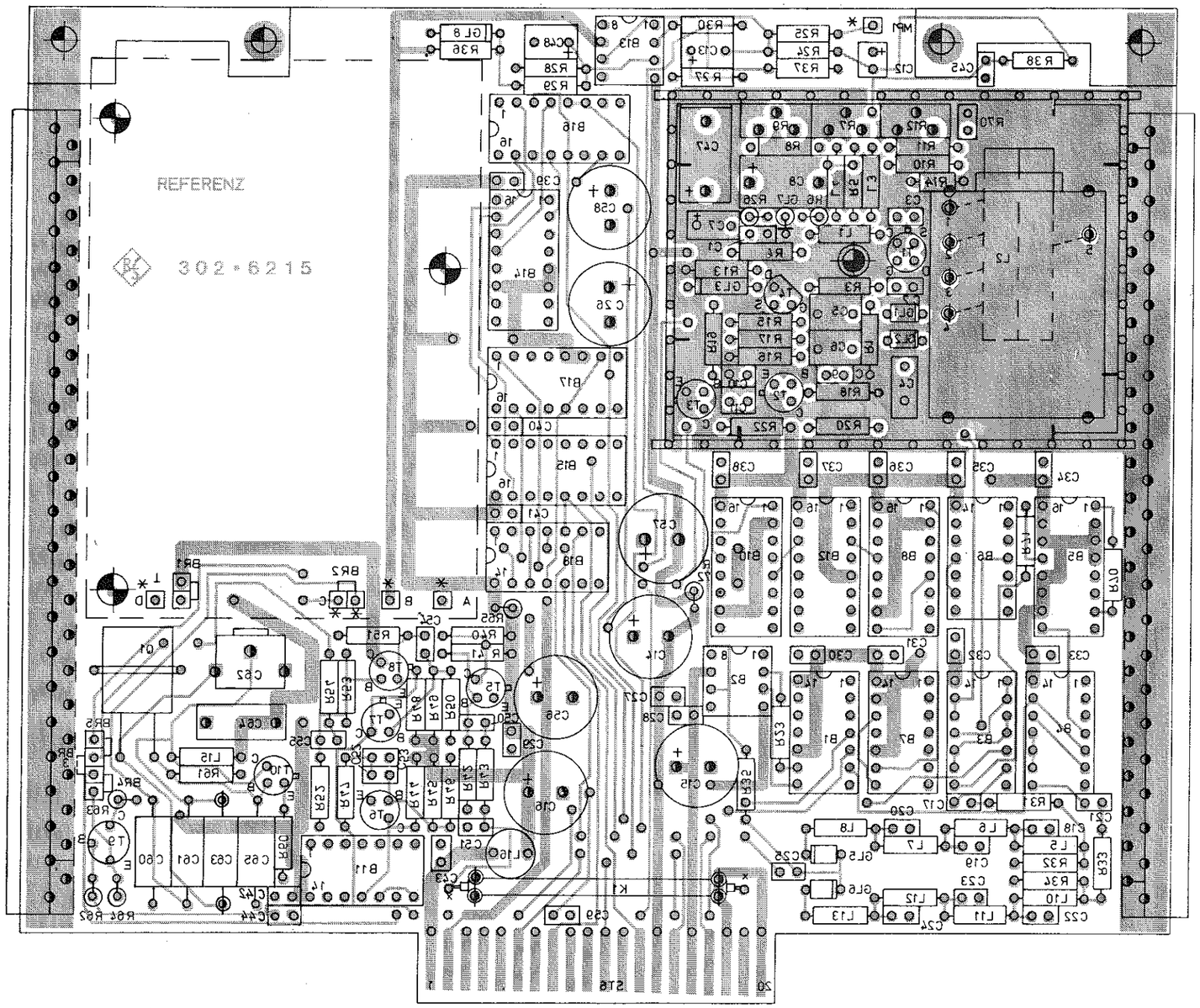
Zeichn.-Nr: 302.6215

Blatt-Nr: 2

zu Gerät: SMS

Ers. v: 302.4012 V

erste Z: 302.4012



Ansicht und Leitungsführung Lötseite
View of tracks on solder side

A	25 166	06.79	Gn		
B	25 166	10.79	Gn		
C	25 932	03.80	Sy		
E	28027	11.81	Hs		

Maßstab	2 : 1	
	Referenz	Z
ROHDE & SCHWARZ	302. 6215	Blatt-Nr. 3
SMS	302.4012V ersetzt 302.4012	

16ME 16.11.78 Wm.

Misch - Oszillator
Mixer - oscillator
20 ... 22 MHz

4 ...25V
MP2
R45 100k
R55 100k
R25 100k
GL11
A1
A2
A3
K
K
C15 27
L8 1m
L2 47µ
C14 25
L7
C16 4,7n
T7 2N4416
C17 4,7n
R30 27k
R31 27k
R32 1,8k
C18 15
R33 1,5k
R34 3,9k
T3 2N2369
R35 2,7k
T4 2N2369
R36 220
R37 6,19k
R38 270
C19 1,5n
R39 1k
L10 47µ
C47 47µ
C50 15 µ
L13 39µ
+5V
C33 10n
C38 10n
C35,C36, C37,C40 10n
C32,C39 10n
C51 1µ
L14 47µ
B14
L11 6,8µH
ST7
1a,b +5V
C27 10n
C30 47µ
B11
B13
B2,B4,B5, B6
B3, B7,
+28V
7a,b +28V
C42 10n
C41 47µ
B1, B9
C34 10n
B8
+15V
16 a,b +15V
C25 10n
C28 47µ
B10
-15V
R58 47
14 a,b -15
zu R29 to
C26 10n
C29 100µ
B14
SN54LS04J
L9 47µ
C46 47µ
-15V
→ -15V zu to ST 7 14a,b
B12
Blau Blue
Draufsicht Top view
B13
B2, B4...B6, B8
B3,B7,B11,B14
B1,B9 B10
Draufsicht Top view
T8
BCY 59
C57 2,2n
R40 1,2k
R41 3,3k
C58 10n
C20 10n
L4 10µ
L5 10µ
R43 47
B12
SRA1
R42 560
R47 150
C22 1n
C23 1,8n
C24 1n
R50 6,8k
-15V
C52 4,7n
R48 560
B11
SN74LS290
R56 100
R49 560
C60 220
C53 4,7n
19 a,b
Ausgang / Output 2... 2,2 MHz
T1 ...T5
T6, T7
ZENTIMETER

Frequenz [MHz] / Frequency	260 279,9̄	280 319,9̄	320 359,9̄	360 379,9̄	380 399,9̄	400 439,9̄	440 479,9̄	480 520
A	L	H	L	H	L	H	L	H
B	L	L	H	H	L	L	H	H

Frequenz [MHz] / Frequency	0,4 129,9999	130 189,9999	190 259,9999	260 379,9999	380 520	520,0001 789,9999	780 1040
C (Oszillator) Oscillator	H	L	H	L	H	L	H
D (Teiler) Divider	L	H	H	L	L	L	L

Stromlauf zu
Interpolationsoszillator -50kHz
Interpolation oscillator -50kHz
Z
Zeichn. Nr. 302.6415 S
302.4012V | 302.4012

50 kHz Interpolationsoszillator
Interpolation oscillator
19,9 ... 21,9 MHz

MP1 ....25V
R44 100k
GL3 BB 113
R8 100k
L6
C7 4,7n
T6 2N4416
C9 15
R12 1,5k
R13 3,9k
T1 2N2369
C10 1,5n
R54 47
R14 1,5k
R15 220
+5V
R16 6,19k
R17 270
R18 1k
T2 2N 2369
C6 27
C5 25
L1 47µ
L3 1m
C8 4,7n
R9 27k
R10 27k
R11 1,8k
- 15V
BR1

B7 SN54LS04J

R19 1,8k

N Teiler
N divider

GL5 1N4448
GL6 1N4448
GL7 GL8 GL9 3 x 1N4448
GL13 1N4448

B4 54 LS 193 J
B5 54 LS 193 J
B6 54 LS193 J
C61 120

B13 D8243

Beschreibung

17a 17b 15a 13a 8a 6a 15b A 13b B 6b C 8b D

MP2 4 ...25V
C59 10n
C11 4,7n
R23 1,8k
C43 22µ
R20 5,6k
R21 5,6k
B9 µA 709
C44 22n
R45 100k
R46 100
R25 100k
R55 100k
GL11
C15 27
R22 4,7k
R59 1,8M
C12 22
R24 82
C13 0,68µ
L8 1m
L2 47µ
C14 25
2 x 1N4448
GL 14
GL 15
GL10 1 N4448
GL12 1N4448
R27 10k
R26 1k
B10 µA741
C45 100n
R28 6,3 k
R29 6,04k
- 15V zu to ST 7 14 a,b

C48 100
B8 MC14046BCP
R57 4,7k
C56 470

T8 BCY 59
C57 2,2n
C58 10n
R40 1,2 k
R41 3,3 k
C20 10 n
T5 2N 2369
C54 1µ
R42 560
R47 150
C22 1n
R50 6,8k
-15V

11a,b
Eingang / Input 100 ... 135 kHz

ROHDE & SCHWARZ · MÜNCHEN

	Name	Datum	Änd.-Mitteilg.-Nr.	Änd.-zust.
Gezeichnet	Hg	12.9.78		
Bearbeitet	Gn	09.78		
Geprüft				
Normgep.				

Änd.-zust.	Änd.-Mitteilg.-Nr.	Datum	Name
A	24668	2.79	Mu
B	25166	07.79	Gn
C	25863	01.80	Gn
D	26489	01.81	Sy
E	28027	11.81	Hs

1GME

4396; 066; 35

50 kHz Interpolationsoszillator
Interpolation oscillator
19,9 ... 21,9 MHz

N Teiler
N divider

B1 µA709 · B2 MC 14046 BCP · B3 II SN 54 LS 74 · B3 I SN 54 LS74 J · B4 54 LS 193 J · B5 54 LS 193 J · B6 54 LS193 J · B7 SN54LS04J · B13 D 8243

T1 2N2369 · T2 2N 2369 · T6 2N4416

GL1 1N4448 · GL2 · GL3 BB 113 · GL5 1N4448 · GL6 1N4448 · GL7 GL8 GL9 3 × 1N4448 · GL13 1N4448

MP1 4...25V

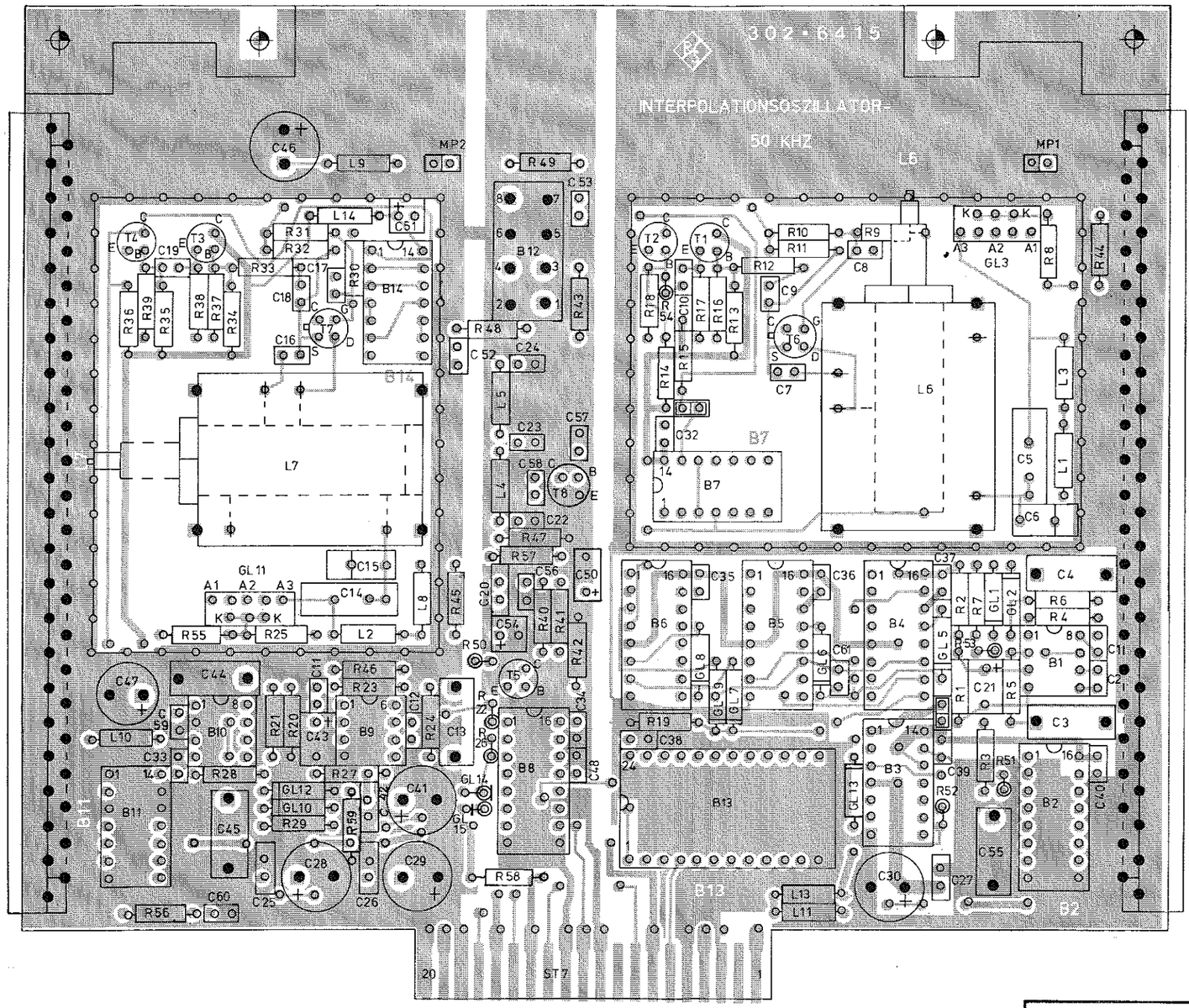
+5V · - 15V

— ⬭ — Signaturen zur Fehleranalyse. Siehe Beschreibung Abschnitt 5.2.8
Error-diagnosis signatures. See section 5.2.8 of manual.

ST7 4a, b
Eingang Referenz / Input reference

17a 17b 15a 13a 8a 6a 15b A 13b B 6b C 8b D

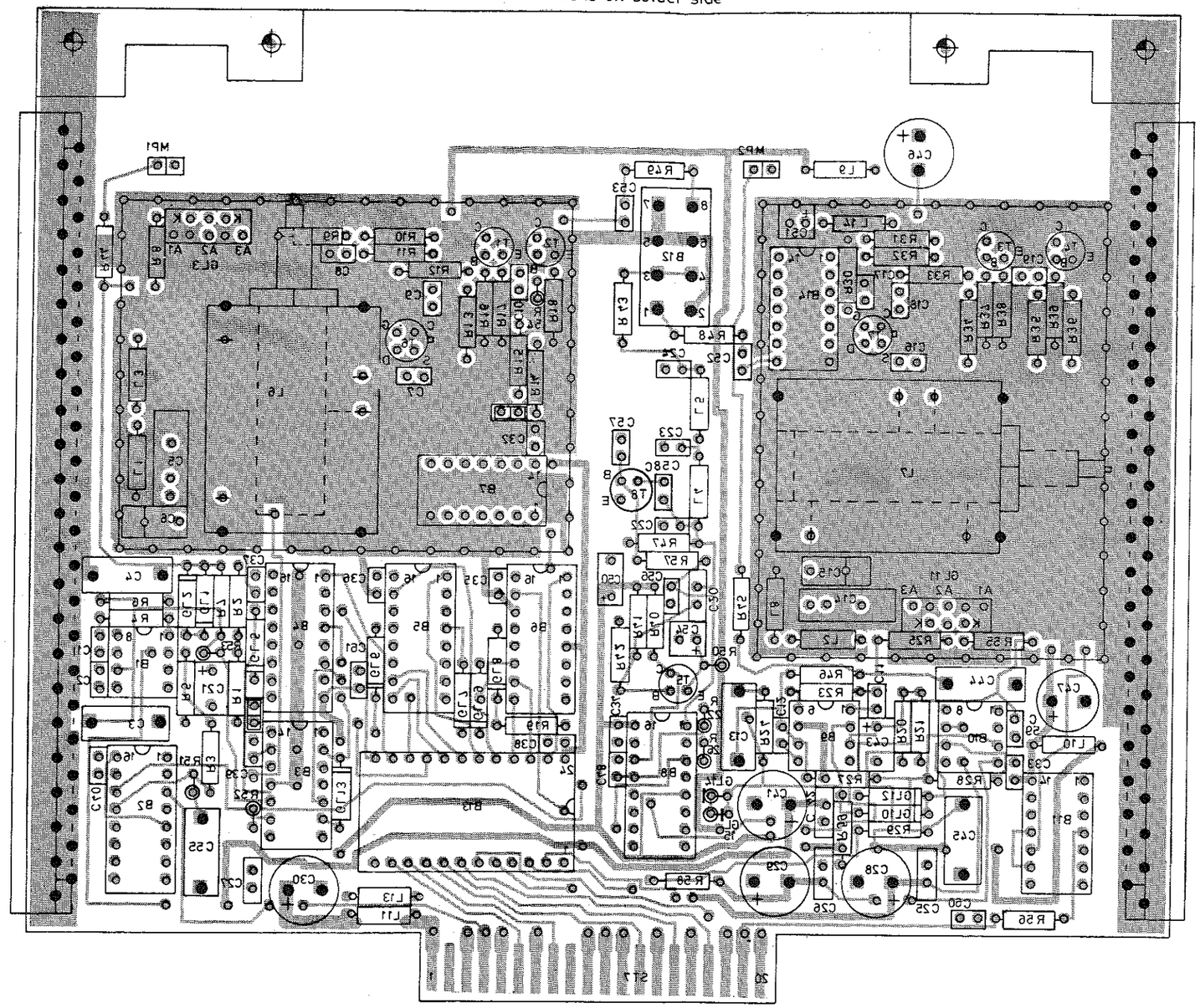
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



0 1 2 3
ZENTIMETER

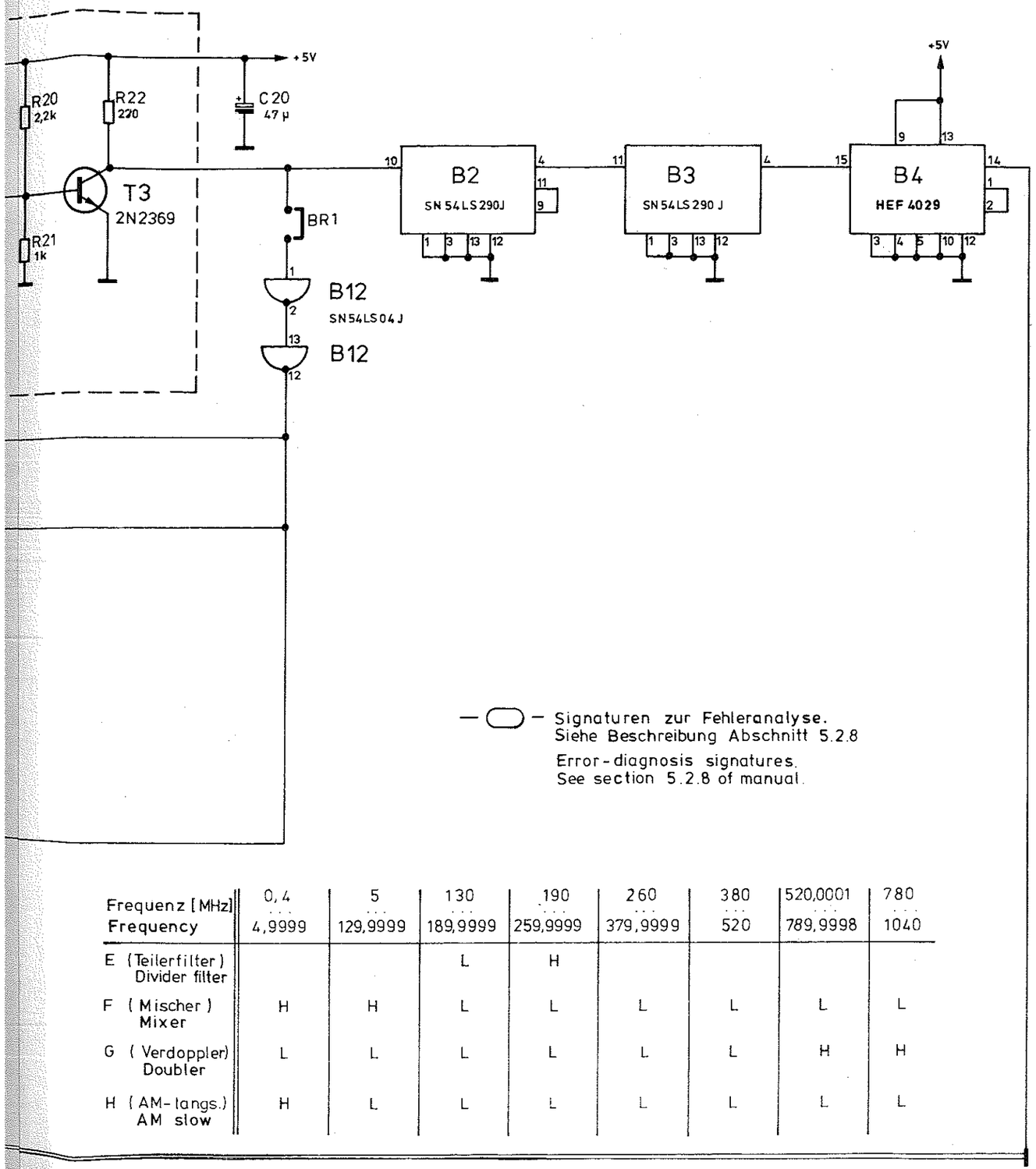
A	24545	10.78	MÜ	Maße ohne Toleranzangabe		Maßstab:	
B	25166	07.79	Gn			Halbzeug Werkstoff	
C	25166	10.79	Gn				
D	25863	01.80	Gn				
F	28027	11.81	Hs	IGME	Tag	Name	Benennung: Interpolationsoszillator-50 kHz / Interpolation oscillator 50 kHz — Z
				Bearb	22.8.78	Wm.	
				Gepr			
				Norm			
Änd Zust	Änderung Modifying			ROHDE & SCHWARZ MÜNCHEN			Zeichn-Nr 302.6415 — Blatt-Nr 2 x 3 Bl
				SMS			ersetzt 302.4012V — ersetzt 302.4012

Ansicht und Leitungsführung Lötseite
View of tracks on solder side



Verteilung Nr						VG-Sachnr	
A	24545	10.78	Mü	Maße ohne Toleranzangabe		Maßstab	
B	25166	07.79	Gn			Halbzeug, Werkstoff ·	
C	25166	10.79	Gn				
D	25863	01.80	Gn				
F	28027	11.81	Hs				
				1GME	Tag	Name	Benennung
				Bearb	22.8.78	Wm.	Interpolationsoszillator-50 kHz / Interpolation oscillator 50 kHz
				Gepr			Z
				Norm			
				ROHDE & SCHWARZ MÜNCHEN			Zeichn-Nr 302.6415
							Blatt-Nr 3
And Zust	Änderungs-Mitteilung	Tag	Name	zu Gerät SMS			reg. · V 302.4012V ersatz Z 302.4012

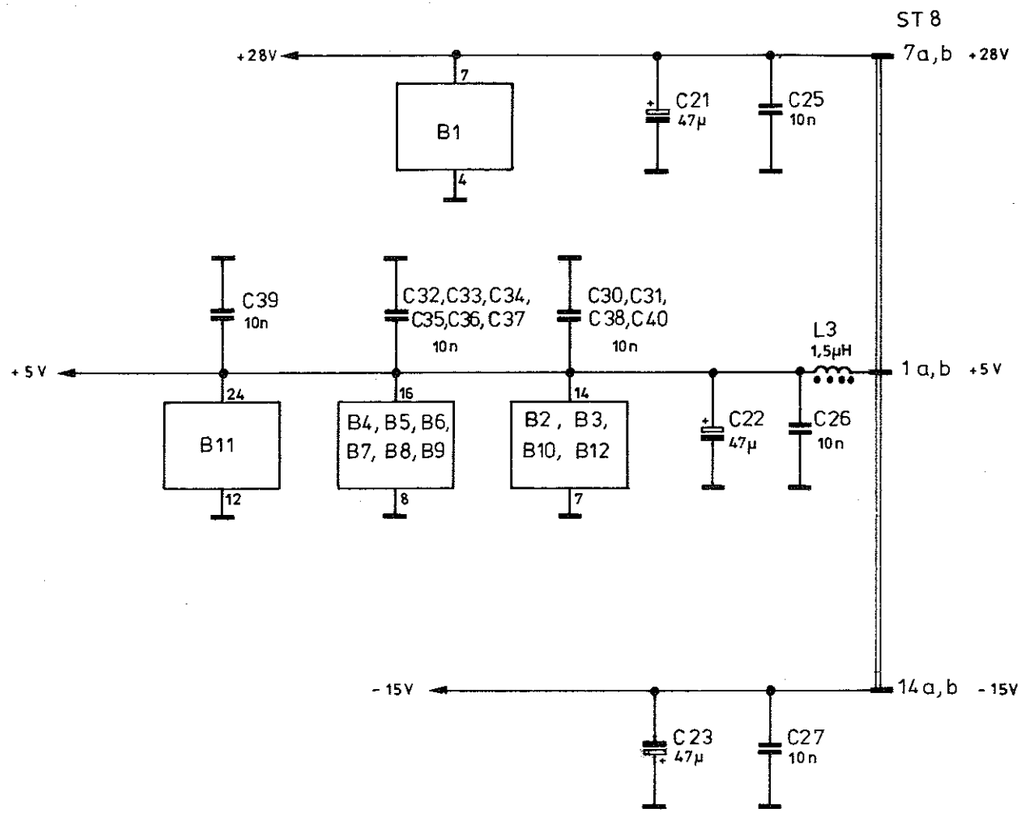
PF 095 2487

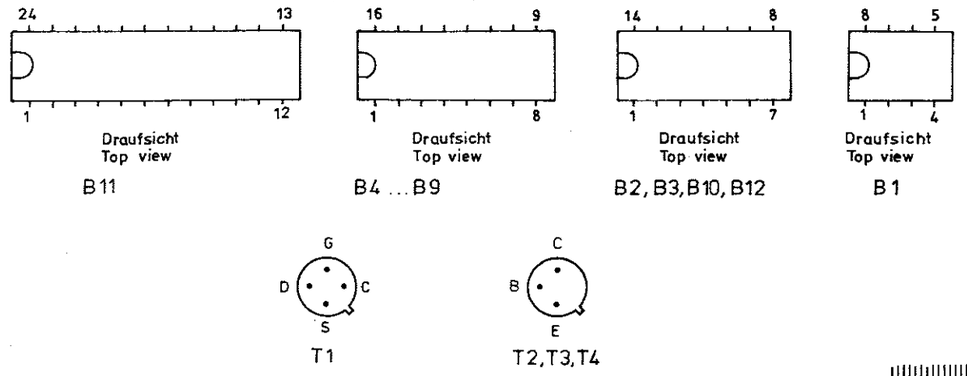


— ⬭ — Signaturen zur Fehleranalyse.
Siehe Beschreibung Abschnitt 5.2.8

Error-diagnosis signatures.
See section 5.2.8 of manual.

Frequenz [MHz] / Frequency	0,4 ... 4,9999	5 ... 129,9999	130 ... 189,9999	190 ... 259,9999	260 ... 379,9999	380 ... 520	520,0001 ... 789,9998	780 ... 1040
E (Teilerfilter) Divider filter			L	H				
F (Mischer) Mixer	H	H	L	L	L	L	L	L
G (Verdoppler) Doubler	L	L	L	L	L	L	H	H
H (AM-langs.) AM slow	H	L	L	L	L	L	L	L





0 1 2 3
ZENTIMETER

11a,b
Ausgang 100 ... 135 kHz
Output

Stromlauf zu

Interpolationsoszillator-100 Hz
Interpolation oscillator-100 Hz

Z

Zeichn. Nr. 302.6615 S

302.4012V | 302.4012

100 Hz Interpolationsoszillator
Interpolation oscillator
25 ... 33,7 MHz

+5V
C6 22µ
R2 5,6k
R1 5,6k
R3 470
B1 µA741
C7 1n
R4 8,2k
C1 220n
GL1 2x 1N4448
GL2
R5 560
R6 3,3k
C2 22n
4 ... 25V
MP1
R7 100k
R8 100k
GL3 BB113
L1 47µ
C4 33
C5 2
L2
C11 4,7n
T1 2N4416
C10 4,7n
R10 27k
R11 27k
R12 2,7k
R9 1k
-15V
C12 15
R13 1,5k
R15 3,9k
T2 2N2369
R16 6,19k
R17 270
C15 1,5n
R20 2,2k
R21 1k
R22 220
T3 2N2369
C20 47µ
BR1
B12 SN54LS04J
B12
BR2
B10 II SN54S74J
B10 I SN54S74J
GL5 1N4448
GL4 1N4448
R29 820
R30 1,8k
T4 2N2369
P- Teiler
R25 1,8k
R26 1,8k
R27 1,8k
R28 1,8k
B5 CD4046
B6 HEF 4027
B7 SN54LS193J
B8 SN54LS193J
B9 SN54S169J
C16 120
B11 D-8243
L4 15µH

ST 8 4a,b
Eingang Referenz
Input reference

17a 17b 15a 13a 8a 6a 15b 13b 6b 8b
E F G H

Frequenz [MHz] Frequency	0,4 ... 4,9999	5 ... 129,9999
E (Teilerfilter) Divider filter		
F (Mischer) Mixer	H	H
G (Verdoppler) Doubler	L	L
H (AM-langs.) AM slow	H	L

	Name	Datum	And. Mitt.-Nr.	And.-zust.
A	Mü	02.79	24668	
B	Gn	05.79	24791	
C	Gn	01.80	25863	
D	Sy	12.80	26489	
E	Gn	02.82	28 027	

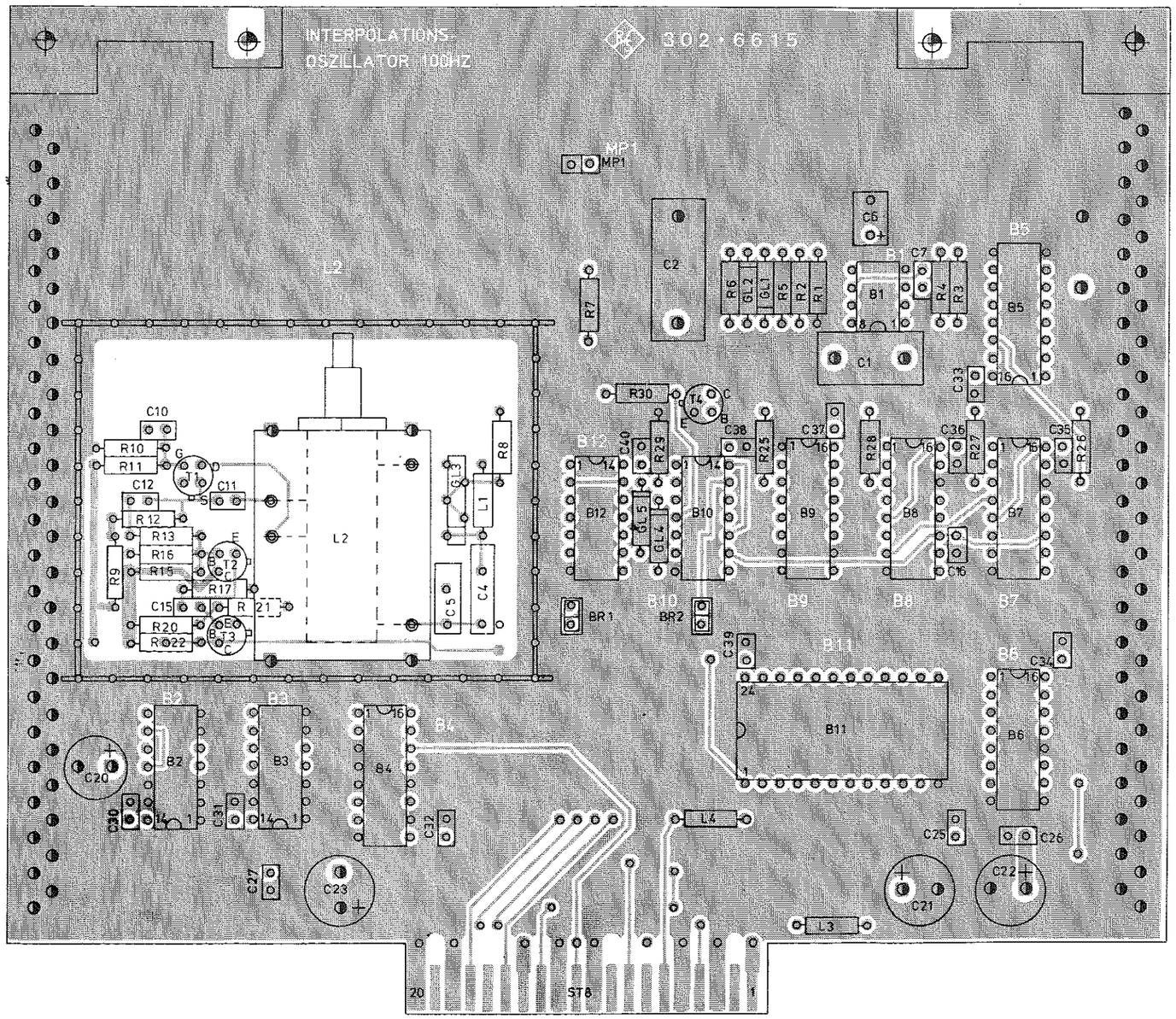
	Name	Datum
gezeichnet	Hg	4.9.78
bearbeitet	Gn	09.78
geprüft		
normgeprüft		

1 GME

ROHDE & SCHWARZ · MÜNCHEN

4385

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ausf	Änderungs-Mitteilung	Tag	Name
A	24545	10.78	Gn
B	24791	02.79	Gn
C	25863	01.80	Gn
D	26 489	12.80	Sy
E	28 027	02.82	Gn

ZENTIMETER 0 1 2 3

Maße ohne Toleranzangabe

VG-Sachnr

Maßstab

Halbzeug, Werkstoff

	Tag	Name
IGME		
Bearb	4.9.78	Wm.
Gepr		
Norm		

Benennung
Interpolationsoszillator - 100Hz
Interpolation oscillator 100 Hz

Z

ROHDE & SCHWARZ MÜNCHEN

Zeichn.-Nr
302.6615

Blatt-Nr
2

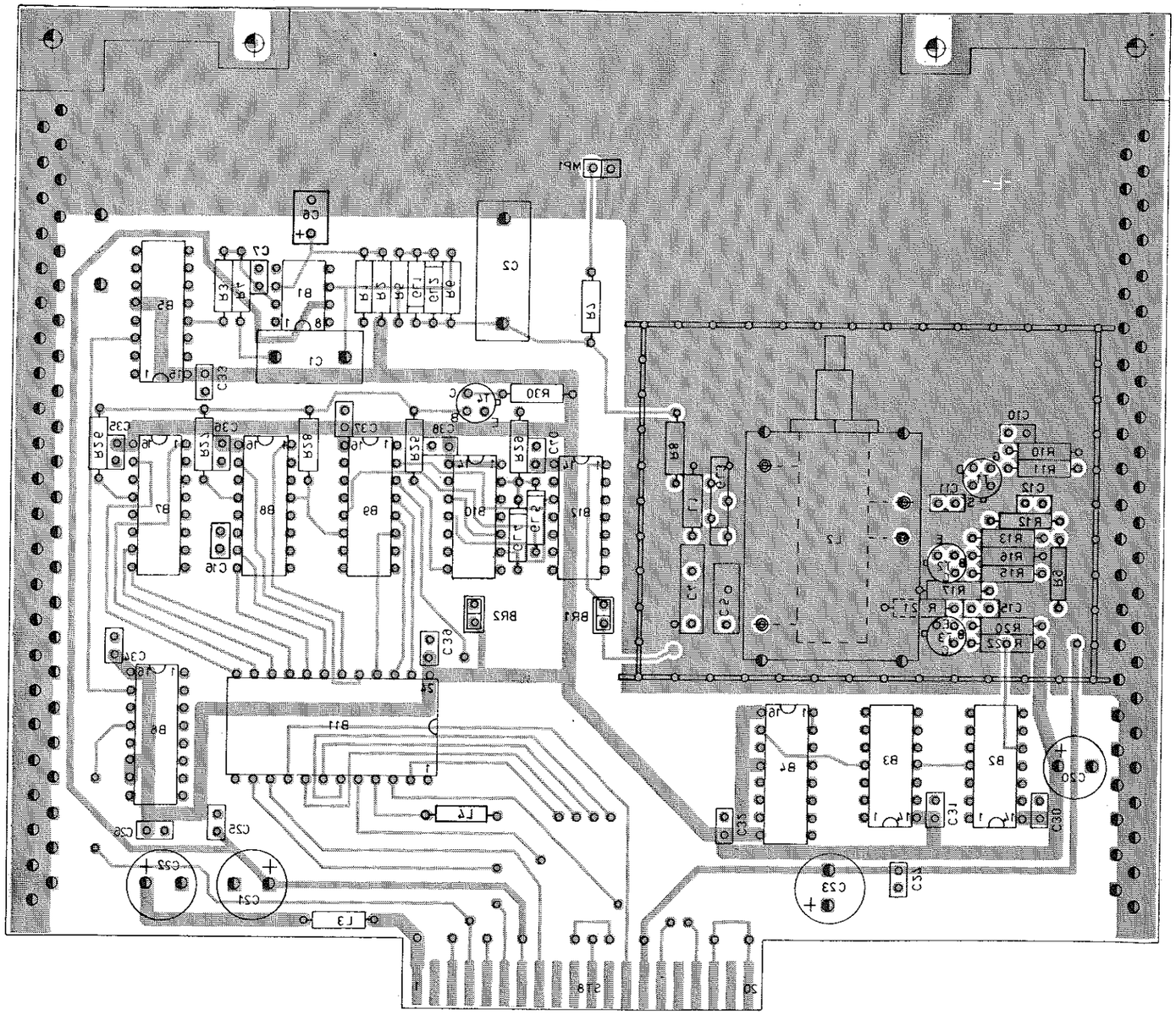
zu Gerät SMS

reg. v 402.4012 V

erste Z 402.4012

PF 095 2487

Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

A	24545	10.78	Gn	Maße ohne Toleranzangabe			
B	24791	02.79	Gn				
C	25863	01.80	Gn				
D	26489	12.80	Sy				
E	28027	02.82	Gn				

	Tag	Name
IGME		
Bearb	4.9.78	Wm.
Gepr		
Norm		

Maßstab

Halbzeug, Werkstoff

Benennung
Interpolationsoszillator - 100 Hz
Interpolation oszillator 100 Hz

Z

ROHDE & SCHWARZ MÜNCHEN

Zeichn.-Nr 302.6615

Blatt-Nr 3

zu Gerät SMS

reg. v 402.4012V erste Z 402.4012

Änd. Zust. | Änderungs Mitteilung | Tag | Name

φM
PM FM
BR1
C31 22µ
C30 4,7µ
C32 560
C33 150
R110 5,62k
B14 I CD4066
B14 II
B14 III
R111 20k
R112 5,62k
R113 180
R114 22,1k
R115 22,1k
R116 10,7k
B15 I CD4066
B15 II
B15 III
B15 IV
B16 I CA 3240E
B16 II CA3240E
R117 10k
R118 10k
R119 10k
R120 120
MP15
4a Ausgang Output
ST10 FM FM
1,95V ~
Hub deviation: 100kHz
Frequenz frequency SMS: 200MHz (Teiler ein) (divider on)

6,4dB
B10 II CA3240AE
B11 CA3240AE
R94 10k
R95 15,2k
R96 12,9k
R97 3,48k
R99 47
R98 4,7k
-15V
B13 III
0,91V~/-1,26V- 100% AM int 7dBm
MP14
ST10 11a Ausgang Output AM AM

B20 III
B27 I CD4069
B27 II
B27 V
B27 VI
B20 I CD4011
B20 IV
B27 IV

R152 1M
R153 1M
R154 1M
R155 1M
B24 SN72L044N
CGP0
7558
0180
H804
P43
P50
P51
P52
R156 3,3k
R157 5,1k
C41 10n
R158 1M
R159 1M
R160 1M
B26 SN74L044N

6b Dividing Teilen
5b Verdoppeln Doubling
3b FM-invers.

ST10
14a,b -15V
16a,b +15V
1a,b +5V
10a,b
12a,b
18a,b
B26
B11
B21
B17,B22 B23,B24
B1,B2 B9,B10
B5,13,14,15 B18,20,27,40 B80
B19
B3
B4,B6 B7,B16
B8
B12
B25
C43 22µ
C42 22µ

R3= 33,2k
R5= 44,2k
R14=13,3k
R16=1,24k
} VAR58

Variantenerklärung:
VAR 22 = SMS Ausführung
VAR 52 = SMFP Ausführung
VAR 58 = SMFP RACAL

0 1 2 3 ZENTIMETER

Stromlauf zu Modulationssteuerung Modulation control
Z
Zeichn. Nr. 302.7011 S
302.4012 V | 302.4012

Pegelteiler
Level attenuator

+15V

7,6V MP11

B7 I CA3240E

R66 10k

R67 10k

B8 III

R73 10k

C20 4,7µ

MP12 1,77V~/100% AM int.

B80 IV

R74 10k

R70 1,48k

R71 50 Pegel FM Level FM

R72 619

R75 2,55k

Pegel CW Level CW

R76 5k

R77 2,0k

R78 4,53k

+15V

C 21 22µ

B80 I CD4066

B80 II

B80 III

MP13 5,05V CW 2,47V AM

B9 I CA3240AE

R79 5k Mod. grad Mod. depth

R80 9,09k

0,1dB R81 332

0,8dB R83 2,49k

R82 27,4k

R84 27,4k

B12 I CD4066

B12 II

B9 II CA3240AE

R85 10k

0,2dB R86 681

B12 III

1,6dB R88 5,17k

R87 27,4k

R100 27,4k

B13 IV

B10 I CA3240AE

R89 10k

0,4dB R90 750

3,2dB R92 13,3k

R91 15k

R93 27,4k

B13 I CD4066

B13 II

B10 II CA3240AE

R94 10k

R95 15,2k

R96 12,9k

MP17 7,7V

C 3 22

R139 1M

R145 1M

R146 1M

R147 1M

R148 1M

R149 1M

R150 1M

R151 1M

R152 1M

R153 1M

B21 III SN72L044N

B22 SN72L044N

B23 SN72L044N

B24 SN72

(13CU) P60

(P372) P61

(FUCZ) P62

(1FU7) P63

(96H1) P70

(3F11) P71

(3968) P72

(48A4) P73

(07P4) P40

(078U) P41

(86P3) P42

(C6P8) P43

(7558) P50

(0180) P51

B25 P8243

(P523) 6a P20

(4F5H) 8a

(U572) 13a

(FPC9) 15a P23

(5173) 17a Prog.

(146F) 17b CS

MP16

C40 22µ

B20 II

B19 V III

B17 I SN72L044N

B17 IV SN72L044N

B21 II SN72L044N

R142 1M

R143 1M

R144 1M

4b Modulation * 0,1

13b AM

11b FM

Modulationsteiler
Modulation attenuator

MP6

1,0 V~ ≙ 100 % / 100 kHz

MP4

C10 4,7µ

R40 10,7k

B3 I CD4066

C5 0,22 µ

MP1

1,77 V~ (AM / FM int.)

B3 II

C11 10µ

R42 1,74k

B4 II CA3240 E

R43 20k

B3 III

R44 12,7k

MP7

1,77V~

B4 I CA3240 E

R45 19,1k

R39 196k

0,5 % B40 I CD4066

R46 97,6k

B40 II

R47 48,7k

B40 IV

R48 24,3k

B40 III

R49 12,1k

B5 I CD4066

R50 127k

B5 II

R51 63,4k

B5 IV

R52 38,6k

B5 III

R53 1M

R54 1M

R55 1M

B6 II CA3240E

B6 I CA3240E

R56 976

R57 4,7k

MP8

0,071V~/4 % AM int.

R58 20,3k

MP9

1,70V~/96 % AM int.

B8 I

C7 10µ

GL7 BZX79/C7V5

R62 1M

R63 6,8k

+15V

C12 22µ

B8 IV CD4066

R66 10k

7,6V

MP11

B7 II CA3240E

R64 90,9k

R65 10k

MP10

1,77V~/100 % AM int.

B8 III

R59 4,7k

R60 4,64k

MP3

B1 II SN52558P

R17 180k

19 0k

C6 2,2µ

R20 15k

B18 I CD4011

B18 II

B18 III

B18 IV

B19 II

R141 1M

GL4 GL5 GL6 3 × 1N4448

B19 IV

B19 I CD4069

R140 1M

B17 III SN72L044N

8b Intern

R142 1M

B17 I SN72L044N

4b Modulation * 0,1

NUR VAR 22
(zur Rückwand) Mod.-Eing. 3
(to rear panel) Mod. input 3

NUR VAR 22
(zur Frontplatte) Mod.- Eing. 1
(to front panel) Mod. input 1
VAR 22 — Mod.-Eing. 2
Mod. input 2

1) (zur Rückwand) Ausgang 1)
(to rear panel) output

ST10
15b
20a,b
19b
19a

R30 634
R31 1000
R35 10k
R36 10k
R37 11,3k
R38 20,5k

B2I CA3240AE
B2 II CA3240AE

MP5
MP6

ALC - Verstärker
ALC amplifier

1,0 V~ ≙ 100 % / 100 kHz

MP4
C10 4,7µ
R40 10,7k
B3 I CD4066
B3 II
C5 0,22µ
MP1
1,77 V~ (AM / FM int.)
C11 10µ
R42 1,74k
B4 II CA3240 E
R43 20k

B18 I CD4011
B18 II
B19 IV

Stellung der Betriebsartenschalter
Positions of mode switches

	IC Anschluß IC Pin	un-moduliert un-modulated	AM int.	AM ext. 1) Zweit-Modulation	FM int.	FM ext. 1) Zweit-Modulation
B3 I	13	L	L H 1) H		L H 1) H	
B3 II	5	L	H L 1) L		H L 1) L	
B3 III	6	L	H L 1) L		H L 1) L	
B80 I	6	L	H	H	L	L
B80 II	12	H	L	L	H	H
B80 III	13	L	L	L	H	H
B80 IV	5	L	H	H	L	L
B14 I	13	H	L	L	H	H
B14 II	12	L	L	L	H	H
B14 III	5	L	H	H	L	L
B15 I	5	L				
B15 II	12	L				
B15 III	6	H				

1) VAR 52

15V
R9 33k
T1 BCY79
R7 33k
R8 33k
R5 48,7k
R6 71,5k
C2 3,3n
C1 3,3n
1000 Hz
R1 10k
R3 432k
R2 100k
400Hz
R4 47,5k
T2 J 111A
GL1 1N4448
T3 J 111A
B1 I SN52558P
R10 121k
R11 51k
R12 20k
Schwingung Oscillation
R21 47k
MP2
C3 0,1µ
T4 J 111A
R22 56k
+15V
R14 12k
Pegel Level
R15 500
R16 2,2k
R17 180k
GL3 1N4448
MP3
GL2 1N4448
R18 1M
R19 10k
C4 0,1µ
B1 II SN52558P
C6 2,2µ
R20 15k

Modulationsgenerator
Modulation generator

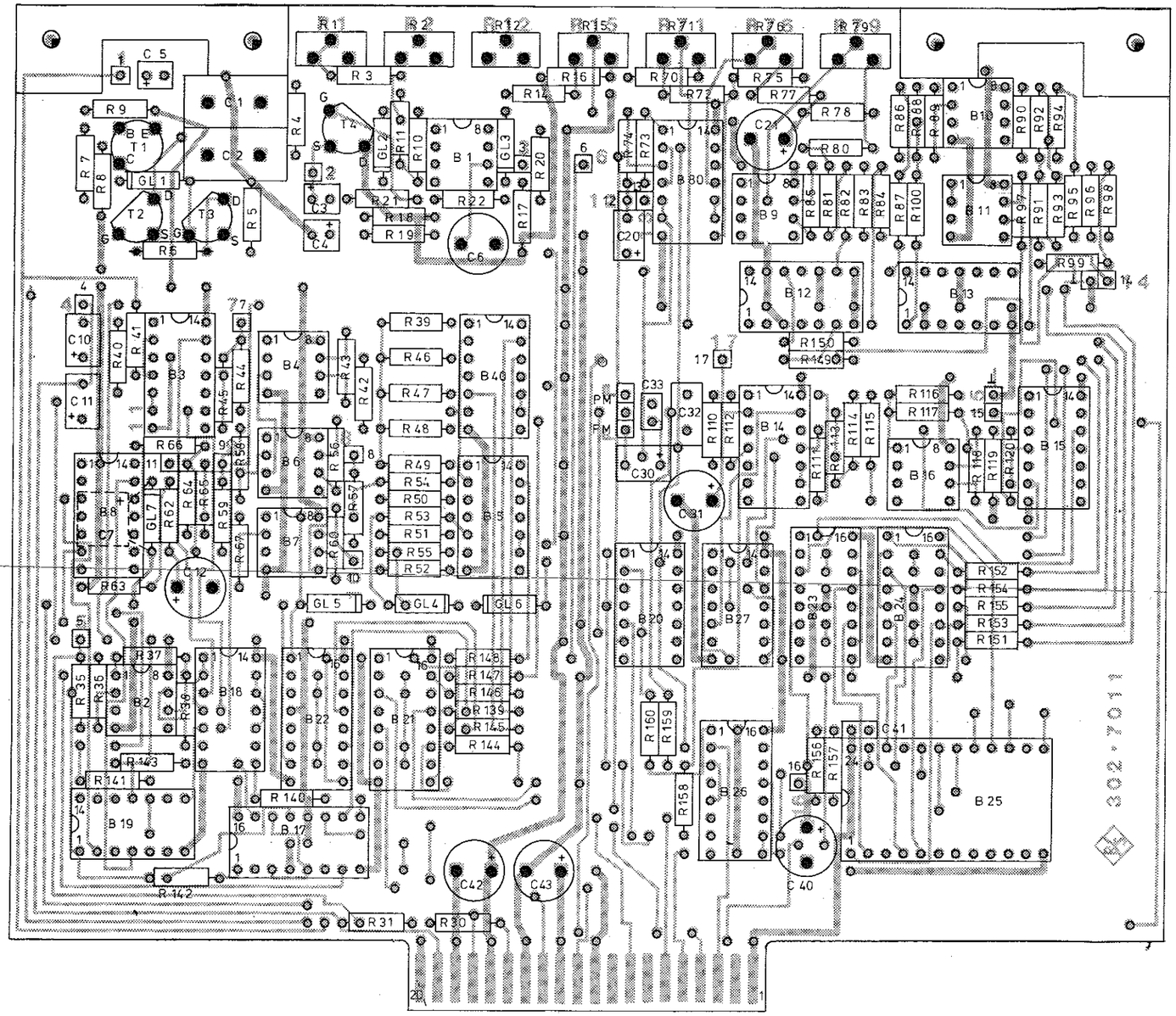
Signaturen zur Fehleranalyse. Siehe Beschreibung Abschnitt 5.
Error-diagnosis, signatures. See section 5 of manual

B17 II SN 72L044N
ST10 3a
1000 Hz

ROHDE & SCHWARZ · MÜNCHEN

	Name	Datum	Änd.-Mitteilg.-Nr.	Änd.-zust.
Gezeichnet	Hs	11.81	28027	F
Überarbeitet				
Geprüft				
Genehmigt				

	Name	Datum	Änd.-Mitteilg.-Nr.	Änd.-zust.
Gezeichnet	Mü	02.79	24678	A
Überarbeitet	Gn	05.79	27 791	B
Geprüft	Gn	10.79	25 166	C
Genehmigt	Sy	04.80	25932	D
IGME	Sy	12.80	26 489	E
	Ci	1.79		



Ansicht und Leitungsführung Bauteilseite
View of tracks on component side

0 1 2 3
ZENTIMETER

A	24.791	04.79	Gn	Maße ohne Toleranzangabe
B	25.166	10.79	Gn	
C	28.027	02.82	Gn	

	Tag	Name
IGM		
Bearb	26.9.78	Nk
Gepr		
Norm		

ROHDE & SCHWARZ MÜNCHEN

And Zust	Änderungs-Mitteilung	Tag	Name

Maßstab

Halbzeug, Werkstoff

Benennung
Modulationsteuerung
Modulation control

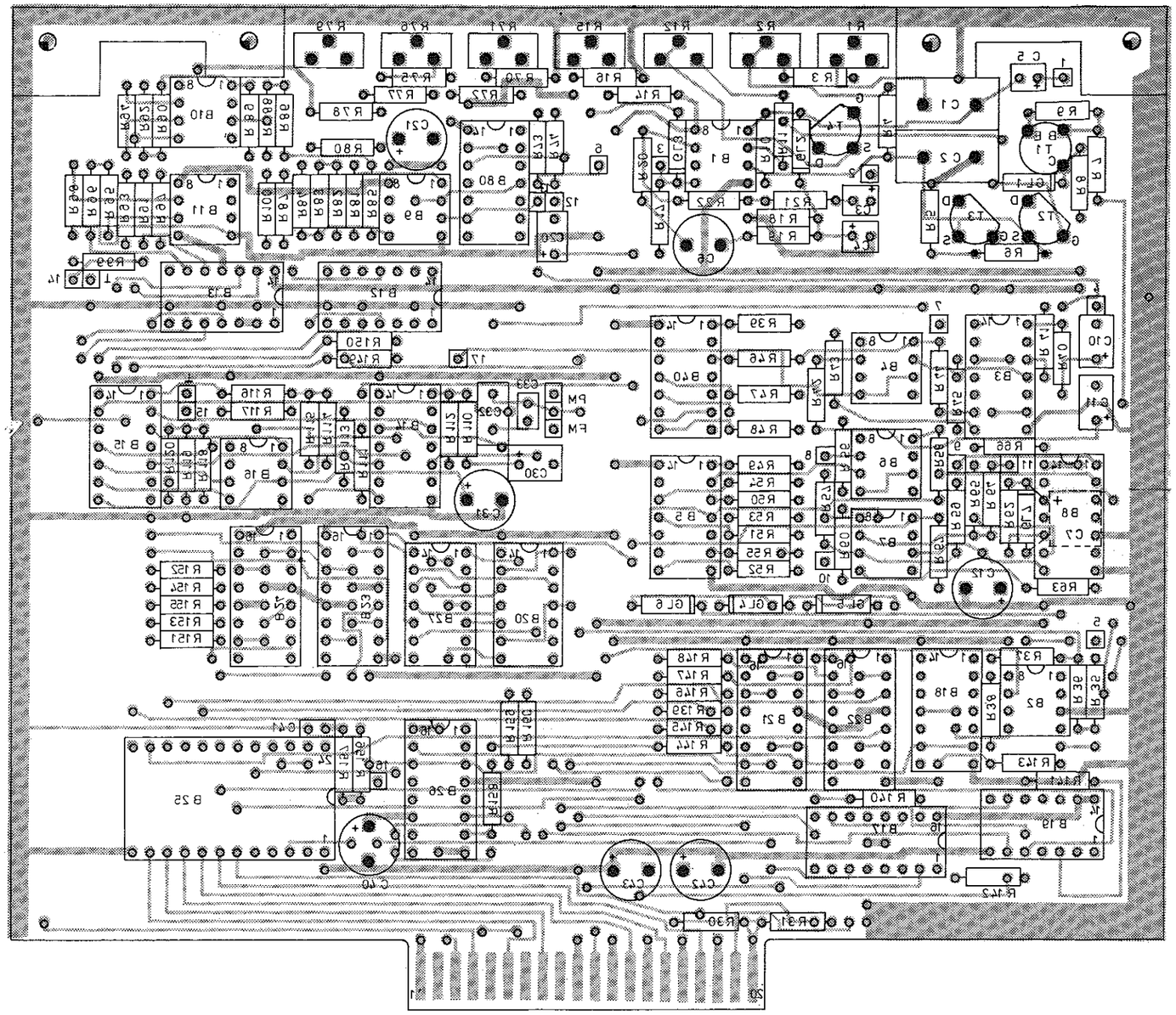
Z

Zeichn.-Nr 302.7011

Blatt-Nr v 2 Bl

zu Gerät SMS

reg. i. v 302.4012 V erste Z 302.4012



Ansicht und Leitungsführung Lötseite
View of tracks on solder side

0 1 2 3
ZENTIMETER

Änderungs-Index			
A	24 791	04.79	Gn
B	25 166	10.79	Gn
C	28 027	02.82	Gn

And Zust	Änderungs-Mitteilung	Tag	Name

Maße ohne Toleranzangabe

VG-Sachnr

Maßstab

Halbzeug, Werkstoff

	Tag	Name
IGM		
Bearb	26.9.78	Nk
Gepr		
Norm		

Benennung
Modulationsteuerung
Modulation control

Z

ROHDE & SCHWARZ
MÜNCHEN

Zeichn.-Nr
302.7011

Blatt-Nr

v 3 Bl

zu Gerät SMS

reg. v 302.4012 V

erste Z 302.4012

PF 095.2487

OPTION SMS-B5
IEC-BUS
335 0916

S1

B11* CD 4014 BE (BL 086 7038)

B12* CD 4014 BE (BL 086 7038)

B8 SN 74 LS 132

B6 SN 74 LS 74

B9 CD 4093 BE

B10 CD 4001 BE

B13 SN 54 LS 244

B18* NE 556 V (BO 618 1363)

B16* SN 7405 N

T1 BCY 79 IX

B17* HEF 4736

B15 SN 74 LS 04

B14 SN 74 LS 04

R25, R26 14x 6,8k

R27, R28 14x 3,3k

BU 28

VAR 52

IEC-BUS Buchse Socket	
EOI	5
SRQ	10
ATN	11
IFC	9
DAV	6
NDAC	8
NRFD	7
REN	17
DIO 1	1
DIO 2	2
DIO 3	3
DIO 4	4
DIO 5	13
DIO 6	14
DIO 7	15
DIO 8	16
SHIELD	12
GND	18
"	19
"	20
"	21
"	22
"	23
"	24

INT CLK REMOTE RESET
8279

Variantenerklärung:
VAR 22 mit IEC-BUS, SMS-B4
VAR 52 ohne IEC-BUS
* entfällt bei VAR 52

Draufsicht
Top view

ZENTIMETER

ROHDE & SCHWARZ MÜNCHEN	Halbzeug Werkstoff	Unterlieferte Maße	Zeichn.-Nr. 302.7111 S
		Maßstab	302.4012V 302.4012
			Ersatz f. Zeichn.

NAME	Datum	Name	Änd.-Kzf.	Änd.-Mitteilung Nr.	Datum	Name
gerechn.	15.1.79	Gr	E	25932	04.80	Sy
bearbeitet			F	26489	11.80	Sy
geprüft			G	28027	02.82	Gn
normgepr.						

MIKROPROZESSOR
Microprocessor

VERD.
Doubler

ST 11

$\overline{CS}$
8243
PROG.

M-TEILER
M-divider

EICHLEITUNG
RF-Attenuator

ÜBERSPANNUNGS- rtl
SCHUTZ
Overload protection

B5
SN 54 LS 244 J

B7/III
SN74LS 32N

B1
8049

B2
8355

B9/II
B9/I
B9/III
B8/I
B8/II
B10/II
B10/I
B9/IV
B7/II

B8
SN 74 LS 132

B6
SN 74 LS 74

B10
CD 4001 BE

B9
CD 4093 BE

START
STOP

Brücke nur
VAR 12

BU 27

ZUR TASTATUR/ANZEIGE-EINHEIT
To keyboard/display unit

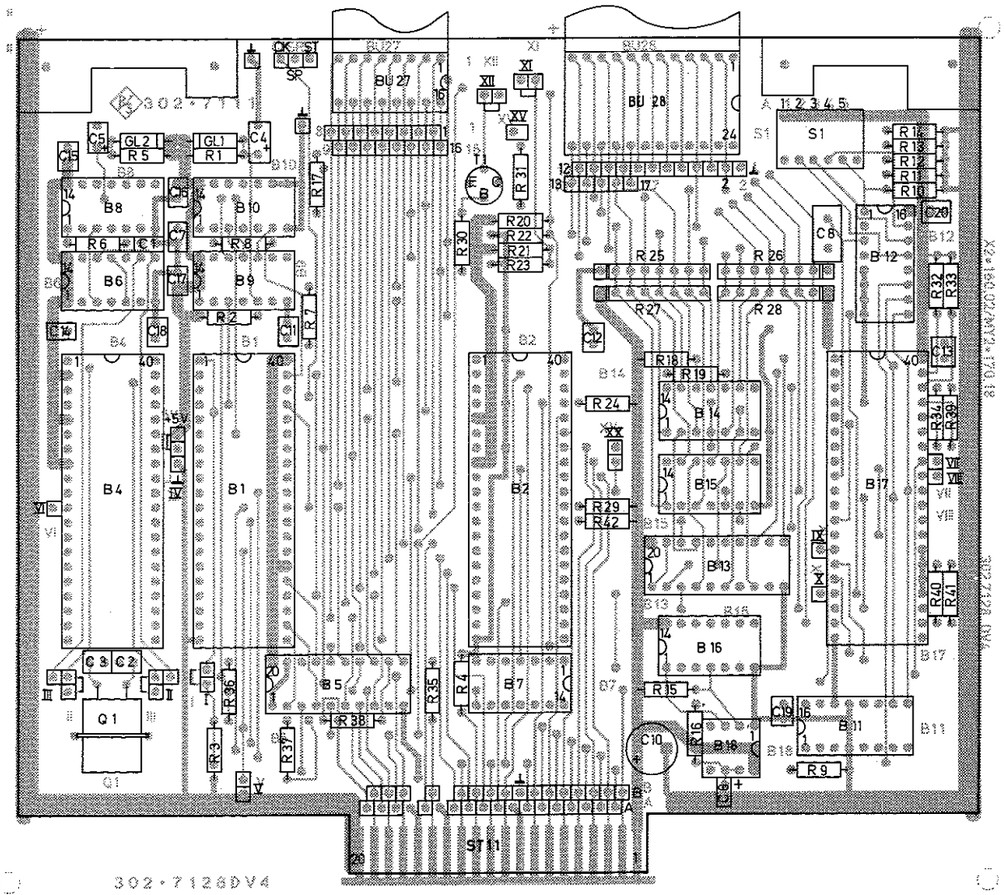
$\overline{WR}$ $\overline{RD}$ $\overline{CS}$ C/D
8279

BUS
8279

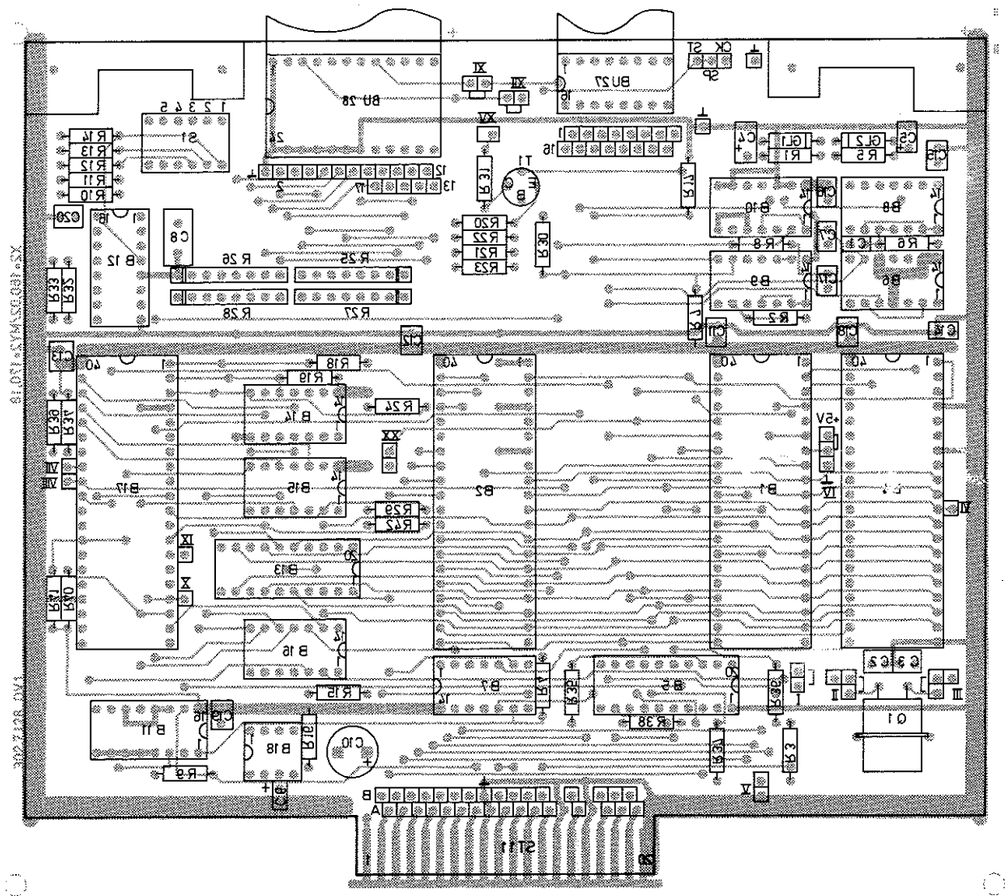
INT CLK REMOTE RESET
8279

Signaturen zur Fehleranalyse.
Siehe Beschreibung Abschnitt 5.2.8
Error-diagnosis signatures
See section 5.2.8 of manuel

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side

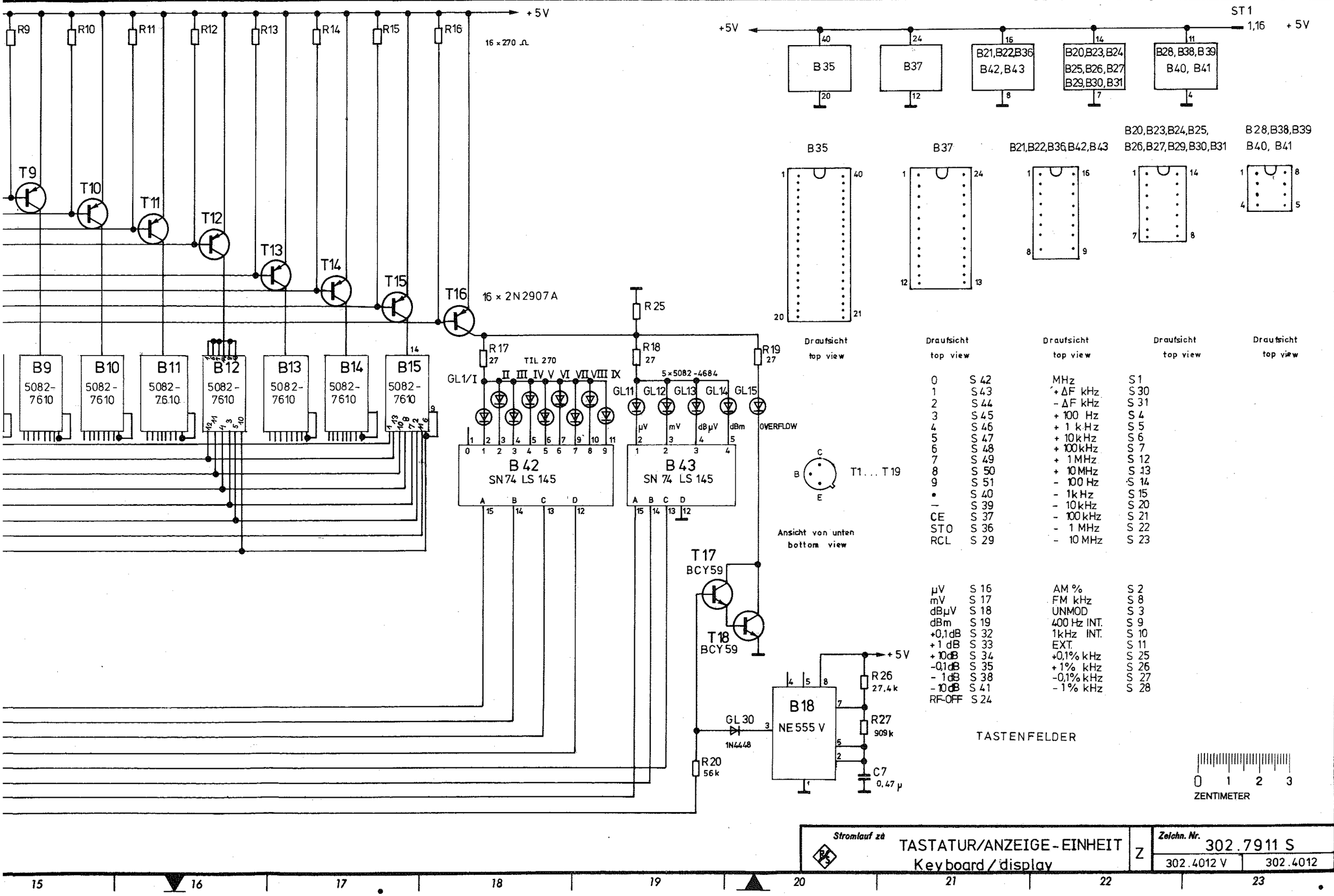


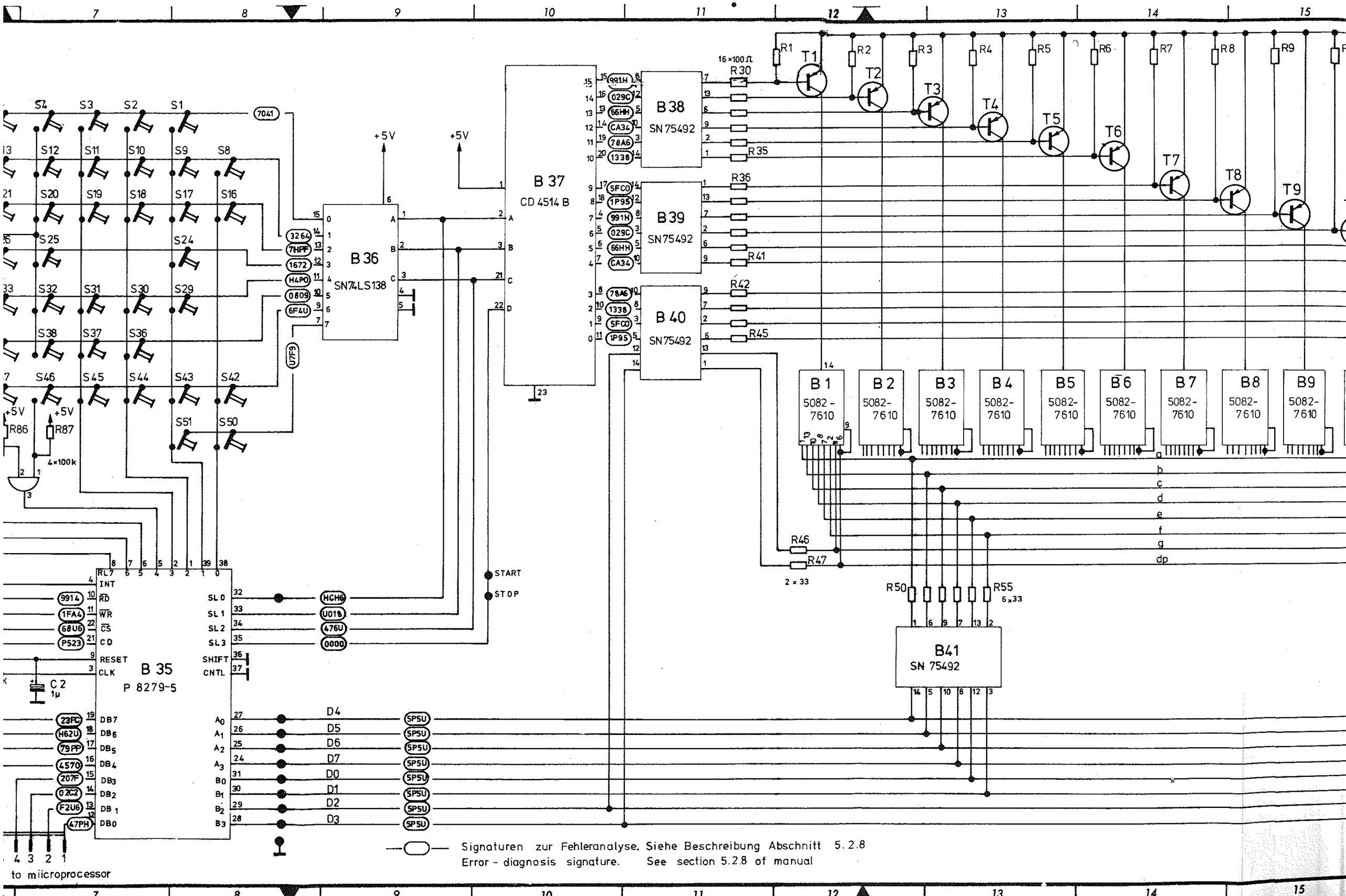
Ansicht und Leitungsführung Lötseite
View of tracks on solder side



Versorg.-Nr.						VG-Sachnr.
F	26489	10.80	Sy	Maße ohne Toleranzangabe		Maßstab 1 : 1
G	28 027	02.82	Gn			Halbzeug, Werkstoff
				IGME	Tag / Name	Benennung: Mikroprozessor — Z
				Bearb.	17.10.80 SY	
				Gepr.		
				Norm		
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr. 302.7111 — Blatt-Nr. 2 v. Bl.
				zu Gerät: SMS		reg. i. V. 302.4012 V — erste Z. 302.4012

095.2493-2 CDD


+5V
R9 R10 R11 R12 R13 R14 R15 R16
16 x 270 Ω
T9 T10 T11 T12 T13 T14 T15 T16
16 x 2N2907A
B9 5082-7610
B10 5082-7610
B11 5082-7610
B12 5082-7610
B13 5082-7610
B14 5082-7610
B15 5082-7610
R25
R17 27
R18 27
R19 27
TIL 270
GL1/I
II III IV V VI VII VIII IX
5x5082-4684
GL11 GL12 GL13 GL14 GL15
µV mV dBµV dBm OVERFLOW
B42 SN74 LS 145
B43 SN74 LS 145
T17 BCY59
T18 BCY59
GL 30 1N4448
R20 56k
B18 NE555 V
R26 27.4k
R27 909k
C7 0,47µ
ST1 1,16 +5V
B35
B37
B21,B22,B36 B42,B43
B20,B23,B24 B25,B26,B27 B29,B30,B31
B28,B38,B39 B40, B41
Draufsicht top view
T1 ... T19
Ansicht von unten bottom view
0 S 42
1 S 43
2 S 44
3 S 45
4 S 46
5 S 47
6 S 48
7 S 49
8 S 50
9 S 51
• S 40
— S 39
CE S 37
STO S 36
RCL S 29
MHz S 1
+ΔF kHz S 30
-ΔF kHz S 31
+ 100 Hz S 4
+ 1 kHz S 5
+ 10 kHz S 6
+ 100 kHz S 7
+ 1 MHz S 12
+ 10 MHz S 13
- 100 Hz S 14
- 1 kHz S 15
- 10 kHz S 20
- 100 kHz S 21
- 1 MHz S 22
- 10 MHz S 23
µV S 16
mV S 17
dBµV S 18
dBm S 19
+0,1dB S 32
+1 dB S 33
+10dB S 34
-0,1dB S 35
-1dB S 38
-10dB S 41
RF-OFF S 24
AM % S 2
FM kHz S 8
UNMOD S 3
400 Hz INT. S 9
1kHz INT. S 10
EXT. S 11
+0,1% kHz S 25
+1% kHz S 26
-0,1% kHz S 27
-1% kHz S 28
TASTENFELDER
0 1 2 3
ZENTIMETER
Stromlauf zu
TASTATUR/ANZEIGE-EINHEIT
Keyboard / display
Z
Zeichn. Nr. 302.7911 S
302.4012 V
302.4012


S4 S3 S2 S1
S12 S11 S10 S9 S8
S20 S19 S18 S17 S16
S25 S24
S32 S31 S30 S29
S38 S37 S36
S46 S45 S44 S43 S42
S51 S50
7041
3264
7HPF
1672
H4P0
0809
6F4U
U7F9
+5V
R86
R87
4×100k
B 36
SN74LS138
B 37
CD 4514 B
B 38
SN 75492
B 39
SN75492
B 40
SN75492
991H
029C
66HH
CA34
78A6
1338
5FC0
1P95
16×100Ω
R30
R35
R36
R41
R42
R45
R1 R2 R3 R4 R5 R6 R7 R8 R9
T1 T2 T3 T4 T5 T6 T7 T8 T9
B1 B2 B3 B4 B5 B6 B7 B8 B9
5082-7610
a b c d e f g dp
R46
R47
2×33
R50
R55
6×33
B41
SN 75492
B 35
P 8279-5
RL7 6 5 4 3 2 1 0
INT
RD
WR
CS
CD
RESET
CLK
SL 0
SL 1
SL 2
SL 3
SHIFT
CNTL
HCH6
U01B
476U
0000
START
STOP
C 2
1µ
23FC
H62U
79PP
4570
207F
0 2C2
F2U6
47PH
DB7
DB6
DB5
DB4
DB3
DB2
DB 1
DB0
A0 A1 A2 A3
B0 B1 B2 B3
D4 D5 D6 D7 D0 D1 D2 D3
5P5U
to miicroprocessor
Signaturen zur Fehleranalyse. Siehe Beschreibung Abschnitt 5.2.8
Error - diagnosis signature. See section 5.2.8 of manual

ROHDE & SCHWARZ · MÜNCHEN

Diese Zeichnung ist unser Eigentum. Vervielfältigung, sowie jede sonstige Verwertung, Mitteilung an andere ist ohne unsere ausdrückliche Genehmigung unzulässig und strafbar und schadenersatzpflichtig.

	Änd. Mitteilg. Nr.	Änd. zust.	Name	Datum
F	26 489		Sy	11.80

	Änd. Mitteilg. Nr.	Änd. zust.	Name	Datum
A	24 668		Mü	02.79
B	24 791		Gn	05.79
C	25 166		Gn	10.79
D	25 580		Gn	11.79
E	25 932		Sy	04.80

	Name	Datum
gezeichnet		01.79
bearbeitet		
geprüft		
freigegeben		

1 GME

B20/I CD 4013B
B20/II
B24/IV
B24/III
B24/II
B21 CD 40192 B
B22 CD 40192B
B23/I CD 4002 B
B24/I CD 4011B
B25/I SN74 LS00
B25/II
B25/III
B25/IV
B26 CD 4071B
B27 CD 4081 B
B28 SN75492
B29 CD4071B
B30 CD 4073BE
B30/I
B30/II
B30/III
B31/I CD 4069 B
B31/II
B31/III
B31/IV
B31/V
B35 P 8279-5
B36 SN74LS138

R75 39 k
R76 15k
R77 15 k
R8 15k
R80 R81 R82 R83 4x100k
R84 R85 R86 R87 4x100k
R60 R61 R62 R63 R64 R65 R66 R67 R68 R69 33k
9 x 220 Ω
C1 1µ
C2 1µ
C20 C21 C22 C23 1,2n

S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 S18 S19 S20 S21 S22 S23 S24 S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36 S37 S38 S39 S40 S41 S42 S43 S44 S45 S46 S47 S48 S49 S50 S51

S52 LOCAL

T19 BCY 59

GL21 GL23 GL28

% AM
%
KHz FM
KHz
1KHz INT
400 Hz INT
EXT
RF OFF
REMOTE

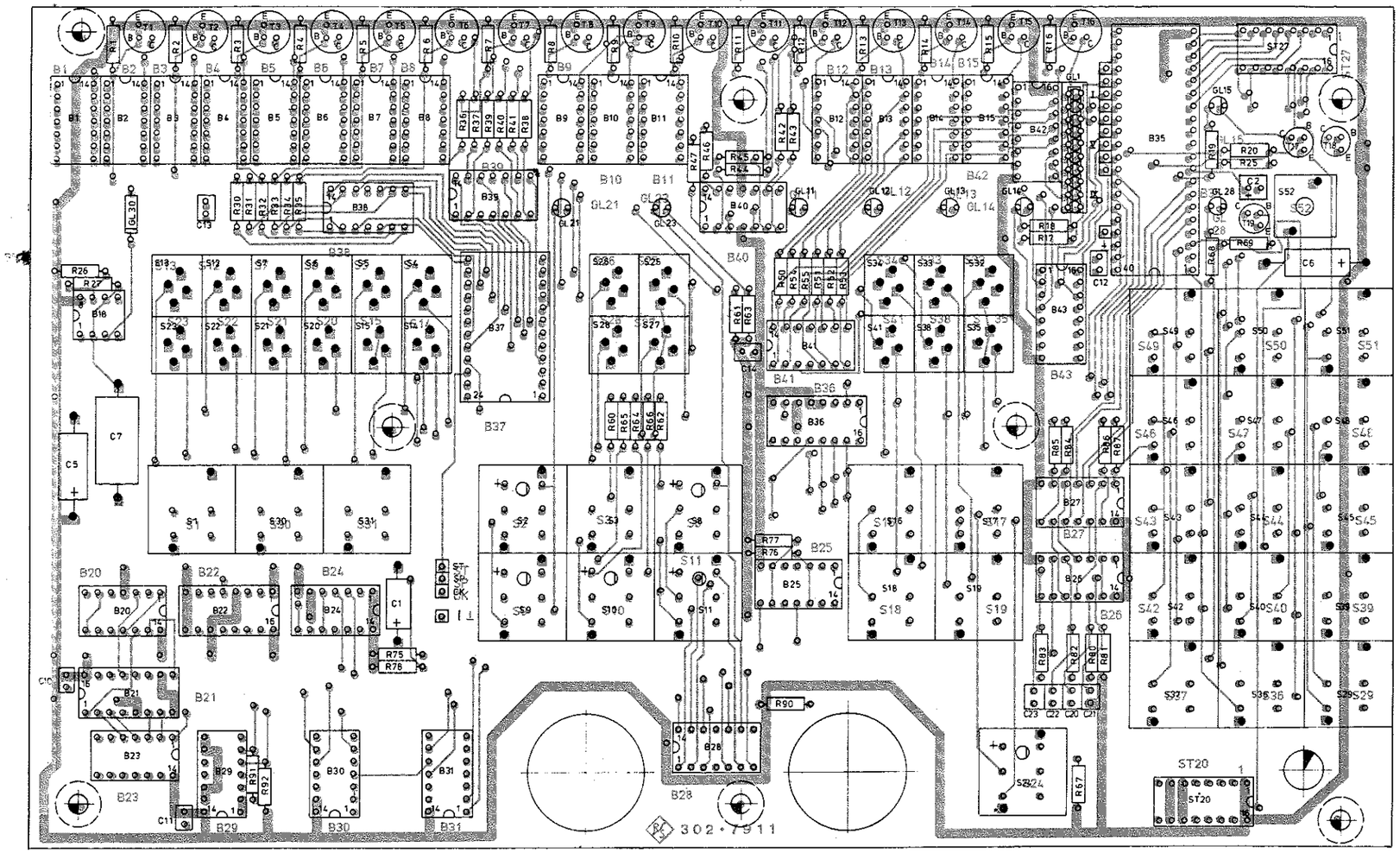
3 x 5082 - 4684

ST20 ZUM MOTHER BOARD 2 to motherboard 2

ST27 ZUM MIKROPROZESSOR to miicroprocessor

+5V

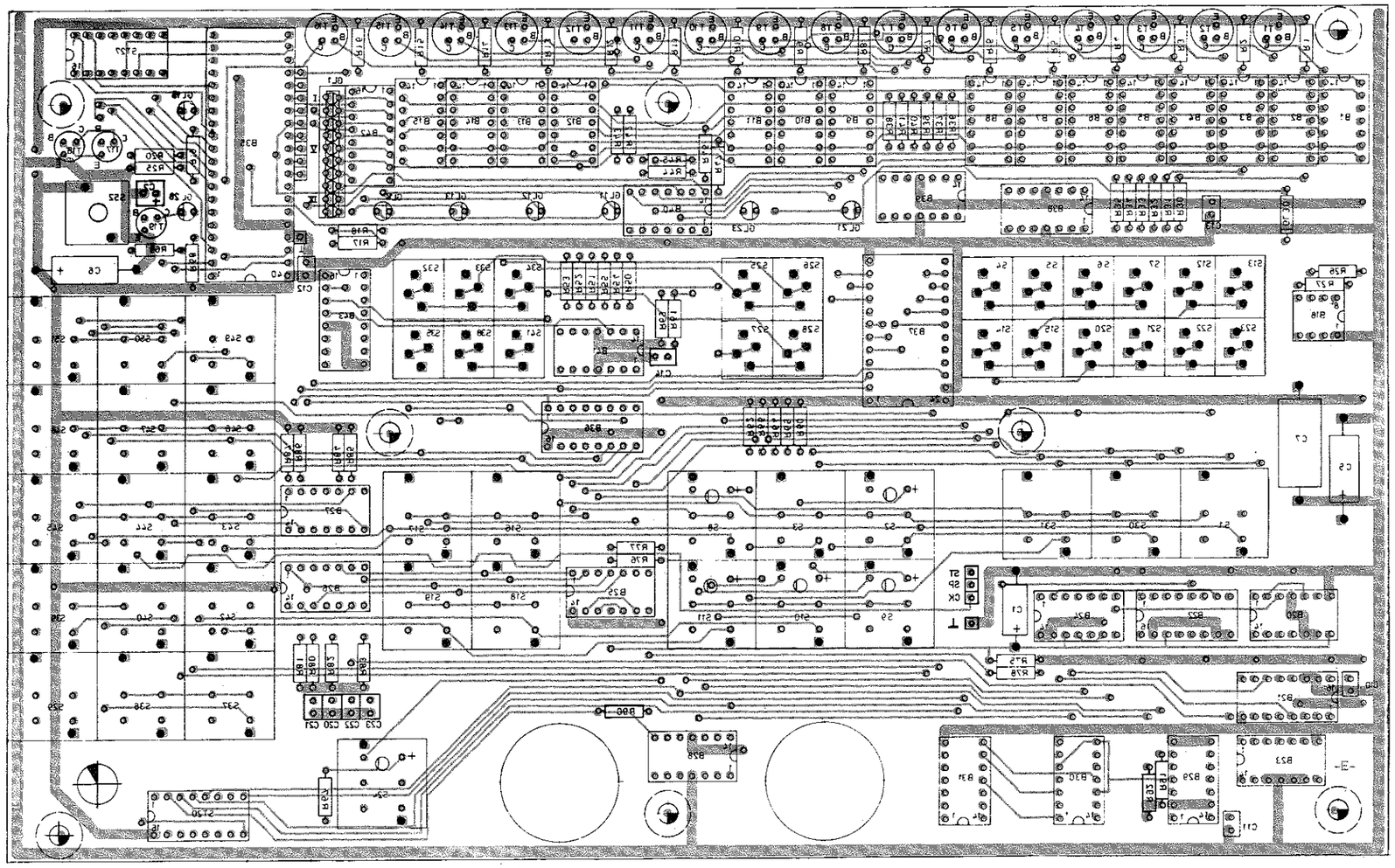
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



A	24.545	10.78	Mü	Maße ohne Toleranzangabe		Maßstab: 2 : 1
B	24.791	04.79	Gn			Werkzeug Werk Jnh.
C	25.580	11.79	Gn			
E	28 027	02.82	Gn			
				ÄME	Tag	Name
				gezeichnet	5.9.78	Wm.
				geprüft		
				Norm		
Änd. Zust.	Änderungs Meldung	Tag	Name	ROHDE & SCHWARZ		Benennung: Tastatur - Anzeige - Einheit / Keyboard /display
				Fa. Gerol SMS		Zeichn.-Nr.: 302.7911
						Ers. f. 302 4012V / Ers. d. 302 4012

ZENTIMETER 0 1 2 3

Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

A	24545	10.78	MÜ	Maße ohne Toleranzangabe		Maßstab	
B	24791	04.79	Gn			Halbzeug, Werkstoff	
C	25580	11.79	Gn				
E	28027	02.82	Gn				
				Name	Tag	Benennung	
				Bearb	5.9.78	Wm.	Tastatur- Anzeige- Einheit / Keyboard / display
				Gepr			Z
				Norm			
Änd Zust	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ		Zeichn.-Nr	302.7911
				zu Gerät SMS		reg.: V 302.4012 V	erste Z 302.4012

Blatt-Nr 3
v Bl

REGELTEIL / CONTROL SECTION

302.7711

+28V Regler
Regulator

T5
BSY56

GL16
B 60 C800 Si

C 24
10n

R40
390

R39
820

MP9
43,6 V

R42
680

R43
1,5k

R45
82

R48
8,25k

R47
2k

R46
25,5k

R30
1,2M

R32
890

R34
0,15

R37
7,5k

GL15
BZX 55 / C24

R36
2k

C16
220µ

B8
µA 723 C

GL17
BZX55

R41
3,3k

GL18
BZX55

C17
1n

R44
11,8 k

C18
470n

MP8
20,1 V

MP10
28 V

R31
1k

R33
39k

C14
470n

R35
14k

4 13

4 21
+20V

9

17
+28V

VENTILATOR

M

Spannungs -
Wandler
Voltage converter

rt bl

BU2 + -

B1, B4, B6, B8

Draufsicht
top view

B2, B5, B7

B3

T1, T2, T3

Draufsicht
top view

T4, T5

0 1 2 3
ZENTIMETER

Stromlauf zu

NETZTEIL
POWER SUPPLY

Zeichn. Nr. 302.7411 S

302.4012 V | 302.4012

ST1

S 2

P1

P2

115 V

125V

220V

235V

Si 1
T 1,25 B

Si 1 enthalten in
contained in
302.4012

br 11

ge 12

sw 13

bl 14

rt/sw 15

ws 7

rt 6

ws 5

4 gn/sw

gn/sw 3

C20
10n

C21
10n

C22
10n

C23
10n

GL6

GL7

GL8

4x BY251

GL9

GL10

GL11

GL12

4x BY 251

+15V Regler
Regulator

+20V Regler
Regulator

20,5V
MP3

R18
100

T2
2N 3055

MP6
25,5 V

MP7
25,5 V

T3
2N 3055

R40
390

C5
4,7µ

C6
2,2µ

C7
1µ

R13
39

C11
470µ

C8
10m

B4
µA 723 C

R16
2,7k

R17
10k

GL13
1N4448

B5
µA 741 C

C9
470n

R19
1,2M

R21
430

R23
0,15

R27
0,15

R26
7,5k

R25
2k

R20
820

R22
27k

C10
470n

MP5
15,2V

R24
8,25k

C12
4,7µ

C30
4,7µ

B6
µA 723 C

R28
3,3k

GL21
BZX55

GL22
BZX55

R29
10k

GL14
1N4448

B7
µA741C

C13
470n

R30
1,2M

R32
890

R31
1k

R33
39k

3 14

3 13 14 22

5 12

ST2
- Ventilator +

+ 15V

+ 20V Oberspg.

ROHDE & SCHWARZ · MÜNCHEN

	Name	Datum	Änd.-Mitteilg. Nr.	Änd.-zust.
gezeichnet	Mü	02.79	24668	A
bearbeitet	Gn	05.79	24791	B
geprüft	Sy	01.81	26489	C
normgepr.	GN	02.82	28027	D
	Ci	12.78		

1GME

4397

ST1 S 2 P1 P2 1 2

br 11

TR1

gn 16

ge 10 C4 1µ sw 8 ge 9

GL 1 BYX 42/300 GL 2 BYX 42/300

ST3.9

ws 7 rt 6 ws 5

C20 10n C21 10n

+5V Regler
Regulator

-15V Regler
Regulator

GL 5 GL6 GL7 GL8 4× BY251

+15V

8,2 V MP1 R5 82

T1 2N 3055

T4 BSY 56

R14 1,3k C5 4,7µ

20,5V MP3

C6 2,2µ

R7 1,2M R9 866 R11 0,068 GL4 BZX55

MP2 5,39 V

B3 LM 320K-15

C1 22m R1 825 R2 500 R3 2,21k

B1 µA 723 C

R4 750

R6 10k GL3 1N4448

B2 µA 741 C

R8 1k

C3 470n

C2 2,2n

R10 15k

C8 10m

B4 µA 723 C

R16 2,7k

C7 1µ

MP4 ~ -14,8 V

R13 39

C11 470µ

C9 470n

R12 2,2

BU 30 6 7 10 11

Zum Freq.-Verd.
to frequency doubler

BU 25 6 7 11 12 15 16 18 19 9 10

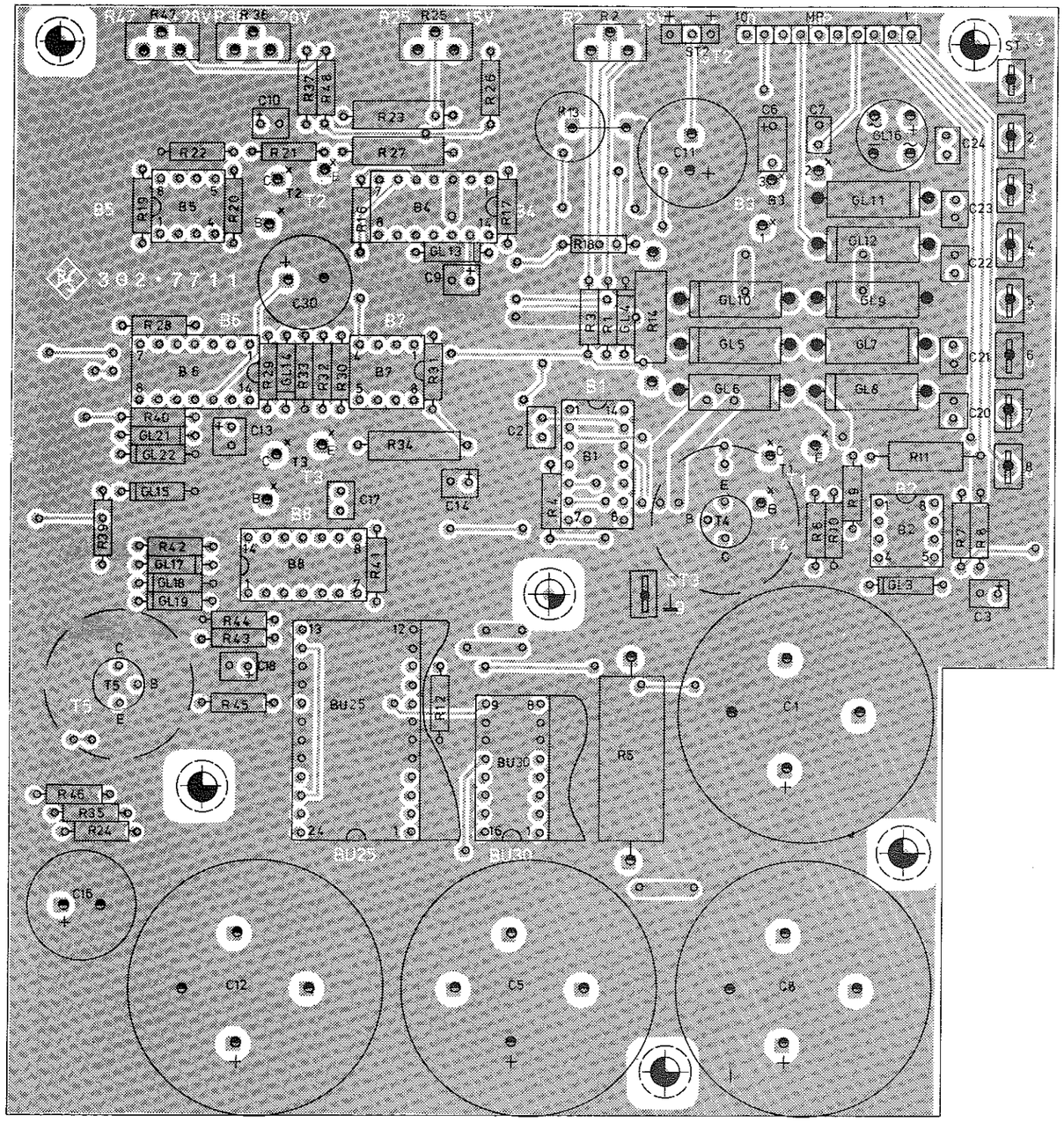
Zum / to Motherboard 2

1 2 15 16 1 2 23 24 + 5V

8 8 - 15 V

ST2 - Ventilator +

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



MP	V	Welligkeit
1	8,2	
2	5,39	9,4
3	24,5	
4	−14,8	1,5
5	15,2	1,5
6	25,5	
7	24,5	
8	24,1	0,6
9	13,6	
10	25 V	1,5

Änd. Zust.	Änderungs-Mitteilung	Tag	Name
A	24545	10.78	Mü
B	24791	04.79	Gn

Maße ohne Toleranzangabe

	Tag	Name
IGME		
Bearb	20.7.78	Wm.
Gepr		
Norm		

ROHDE & SCHWARZ MÜNCHEN

zu Gerät SMS

VDI-Sachnr.

Maßstab

Halbzeug, Werkstoff

Benennung
Regelteil
Regulator

Z

Zeichn.-Nr 302.7711

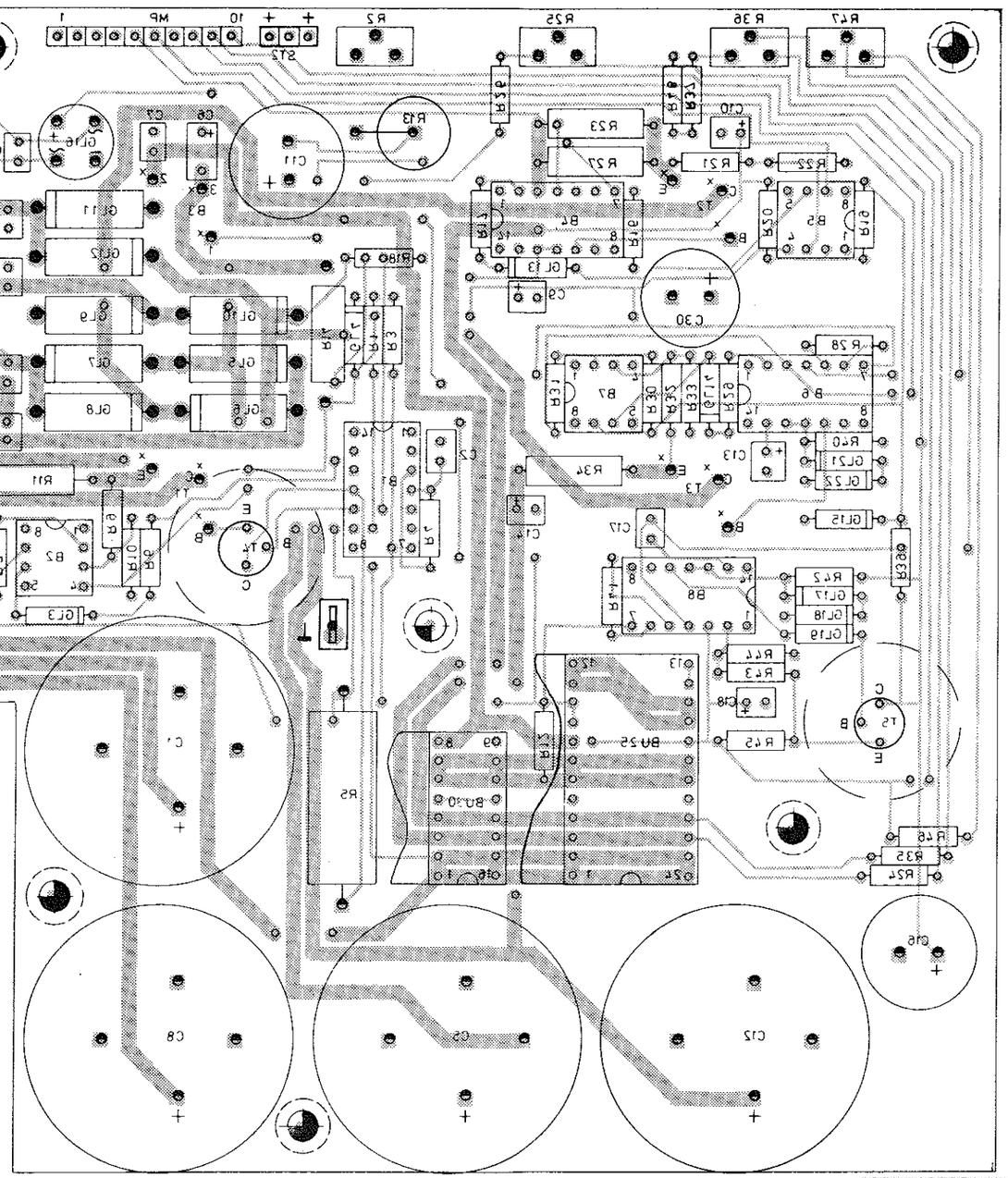
Blatt-Nr 2

v Bl

reg. v 302.4012V erste Z 302.4012

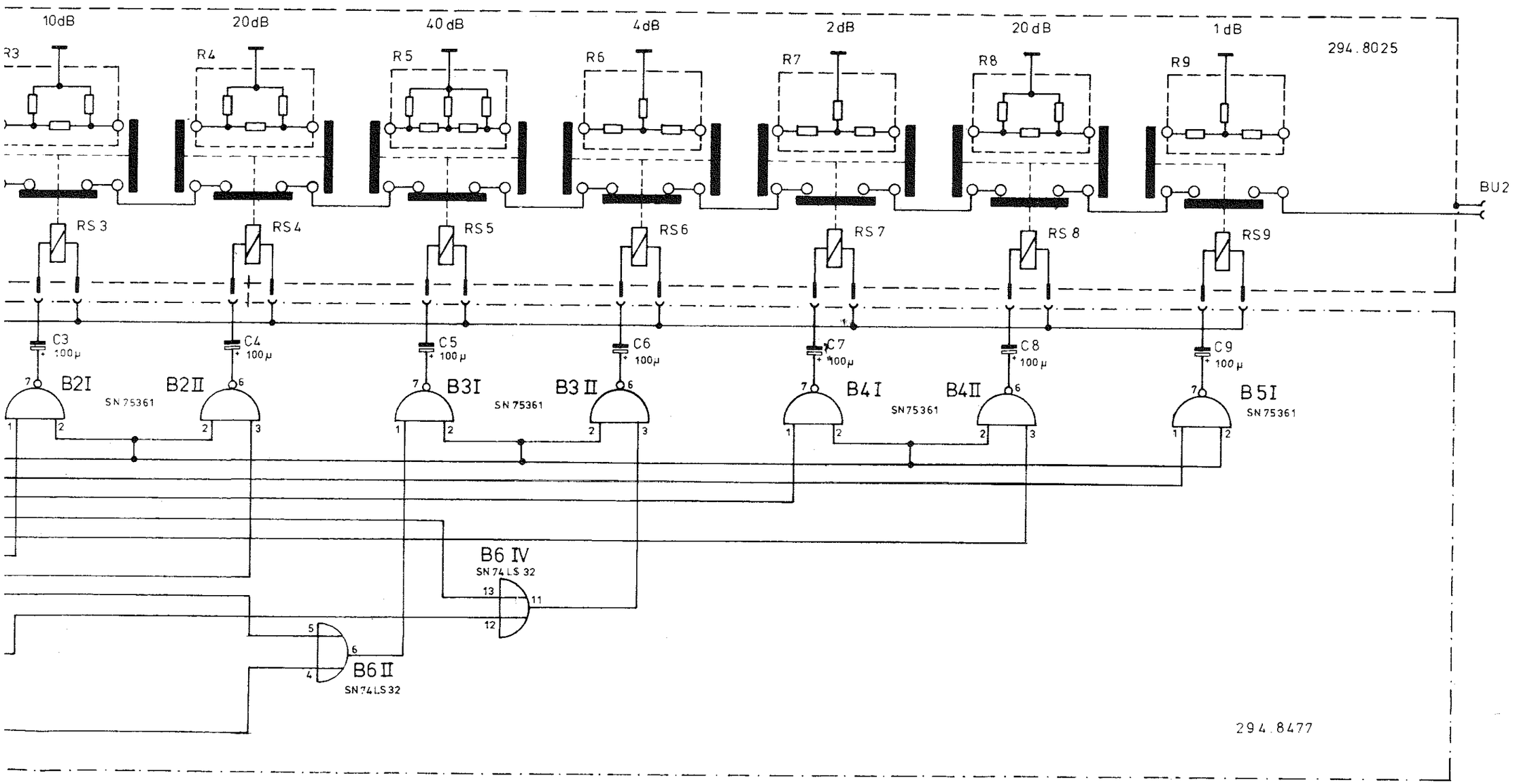
PF 095 2487

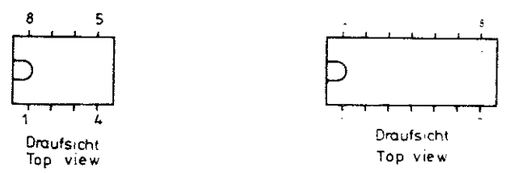
Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

A	24545	10.78	MÜ	Maße ohne Toleranzangabe		Maßstab	
B	24991	04.79	Re			Halbzeug Werkstoff	
				IGME	Tag	Name	Benennung: Regelteil / Regulator — Z
				Bearb	20.7.78	Wm.	
				Gepr			
				Norm			
				ROHDE & SCHWARZ MÜNCHEN			Zeichn.-Nr 302.7711 — Blatt Nr 3
And Zust	Änderungs-Mitteilung	Tag	Name	zu Gerät SMS			reg. v 302.4012V — erste Z 302.4012





Stromlauf zu
Baugruppe Eichleitung für SMS
RF - Attenuator for

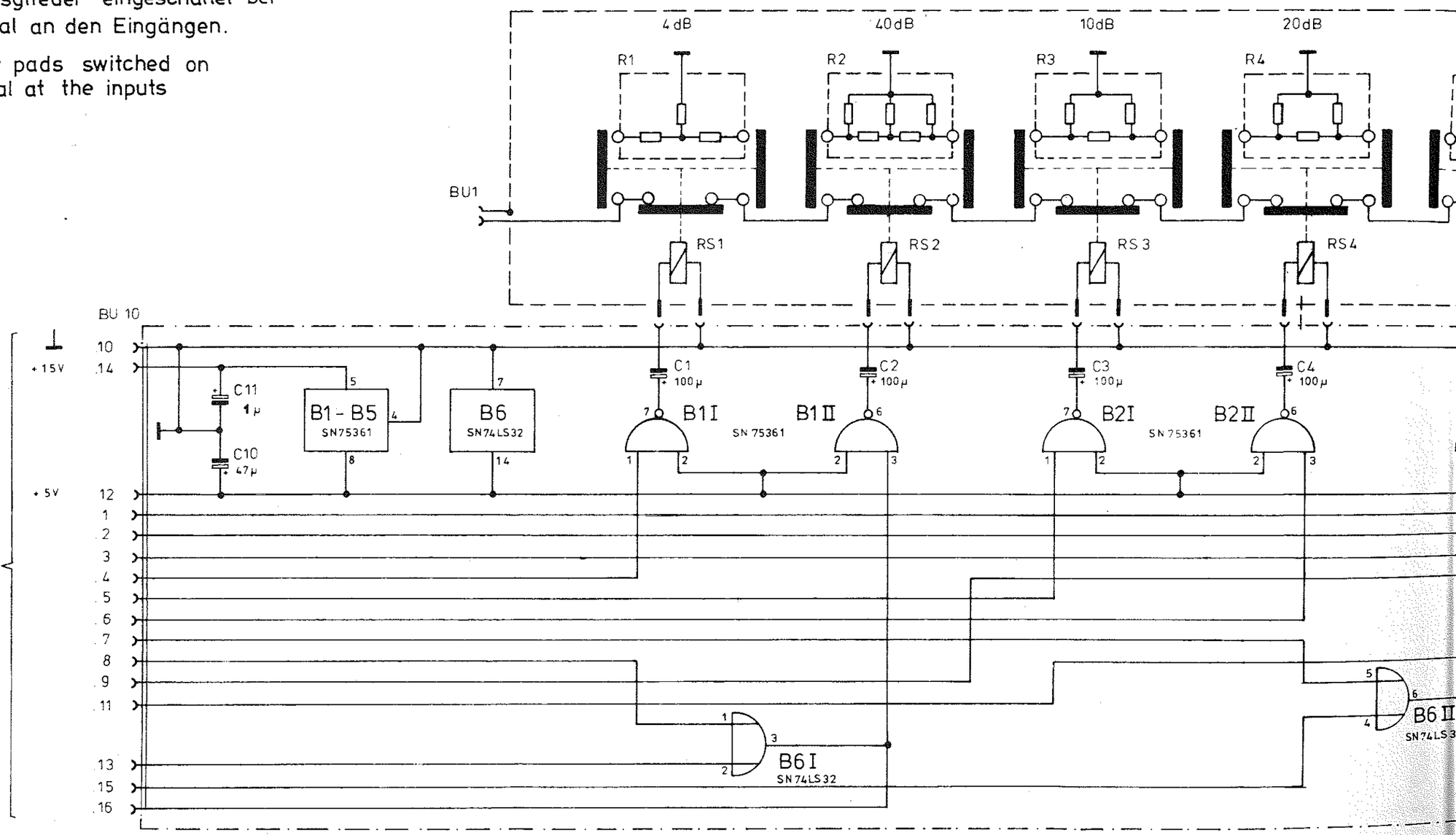
Z

Zeichn. Nr. 302.7311 S

302.4012 V

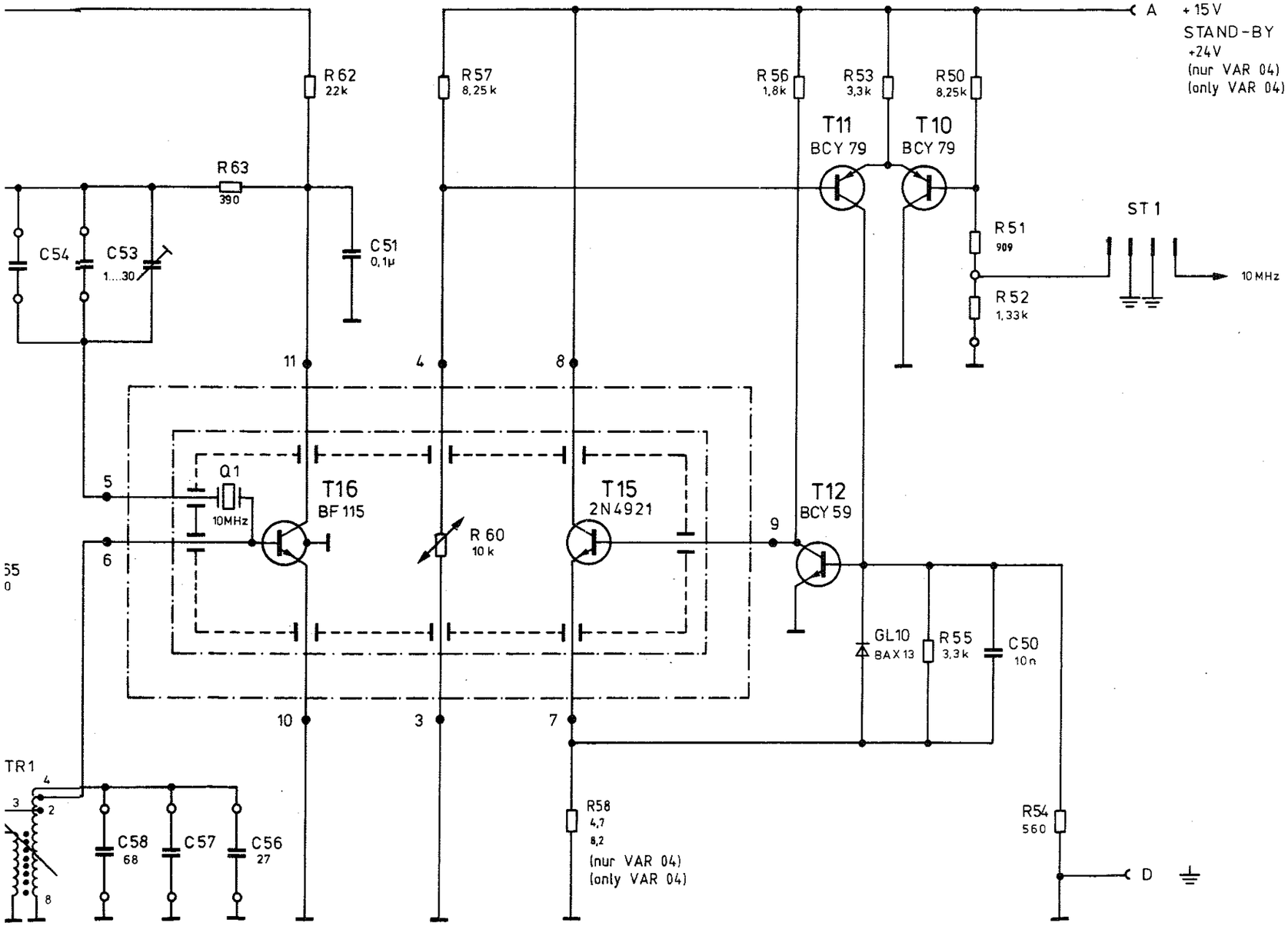
Dämpfungsglieder eingeschaltet bei
High-Signal an den Eingängen.

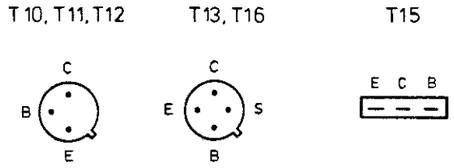
Attenuator pads switched on
High-signal at the inputs



	Name	Datum	And Mittlg Nr.	And zust
gezeichnet	Hg	13.9.78	24668	A
bearbeitet	Gn	09.78	28.027	B
geprüft				
normgeprüft				
1GME	Mü	02.79		
	Gn	02.82		

4395





Stromlauf gilt für VAR 02,04,32
Circuit diagramm is valid for VAR 02,04,32

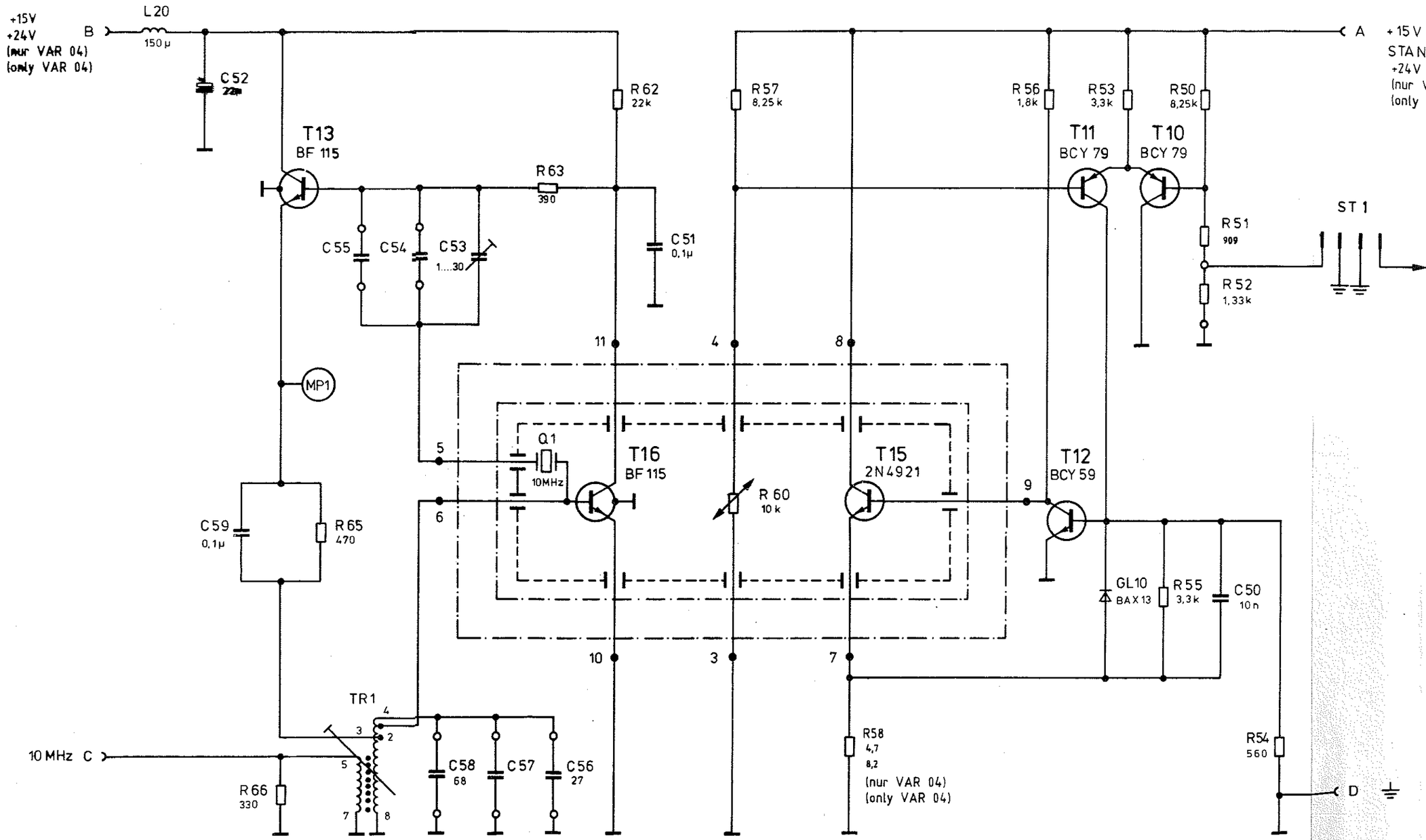
0 1 2 3
ZENTIMETER

Stromlauf zu
Referenzoszillator Temp. Ger.
Reference oscillator temperature-controlled

Z

Zeichn. Nr. 302.8918 S

302.8918 V | 302.8918



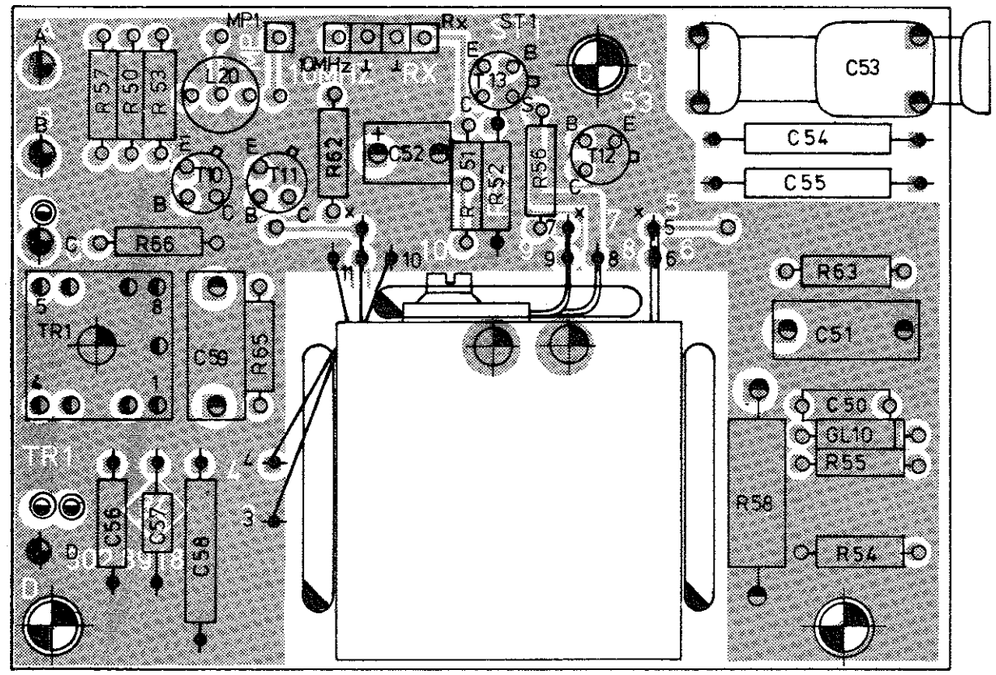
ROHDE & SCHWARZ · MÜNCHEN

	Name	Datum	Änd.-Mitteilg. Nr.	Änd.-zust.	Name	Datum	Änd.-Mitteilg. Nr.	Änd.-zust.
gezeichnet	Gr	22.1.79		A	Mü	02.79	—	
bearbeitet	Gn	01.79		B	Mü	05.79	—	
geprüft				C	lb	02.82	28414	
normgepr.								

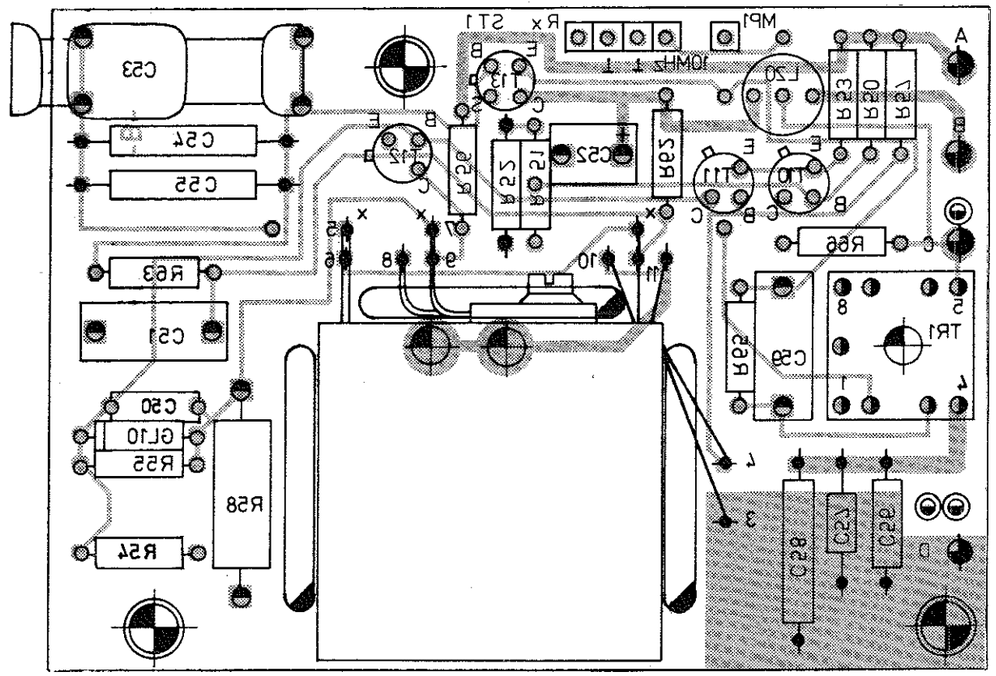
1 GME

4394.0688.05 S

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side

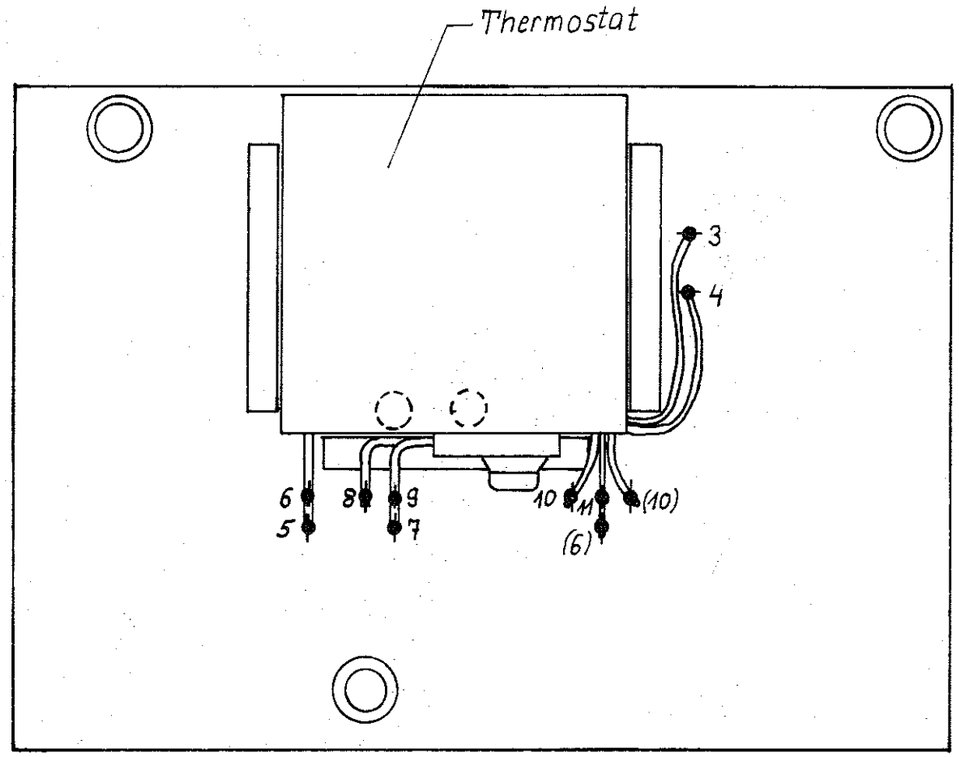


0 1 2 3
ZENTIMETER

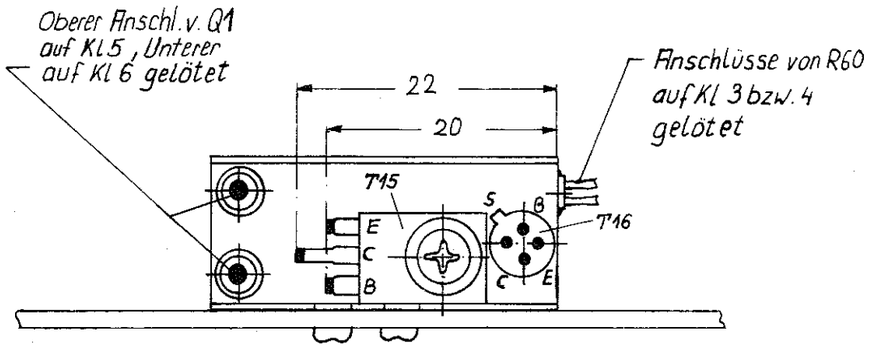
B	25 803	11.79	Gn	Maße ohne Toleranzangabe		Maßstab 2:1
D	28 603	02.82	Ib			Halbzeug, Werkstoff
				1GME	Tag	Name
				Bearb	17.11.78	Wm
				Gepr		
				Norm		
And Zust	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN		Benennung: Referenzosz. Temp. ger.
				zu Gerät		Zeichn.-Nr 302.8918
				reg. : V 302.8918 V	erste Z 302.8918	Blatt-Nr 2

Z

v Bl



Ansicht von vorn (ohne Lötösen)



Anschlüsse von T15:
Emitter auf Kl 7
Collektor auf Kl 8
Basis auf Kl 9

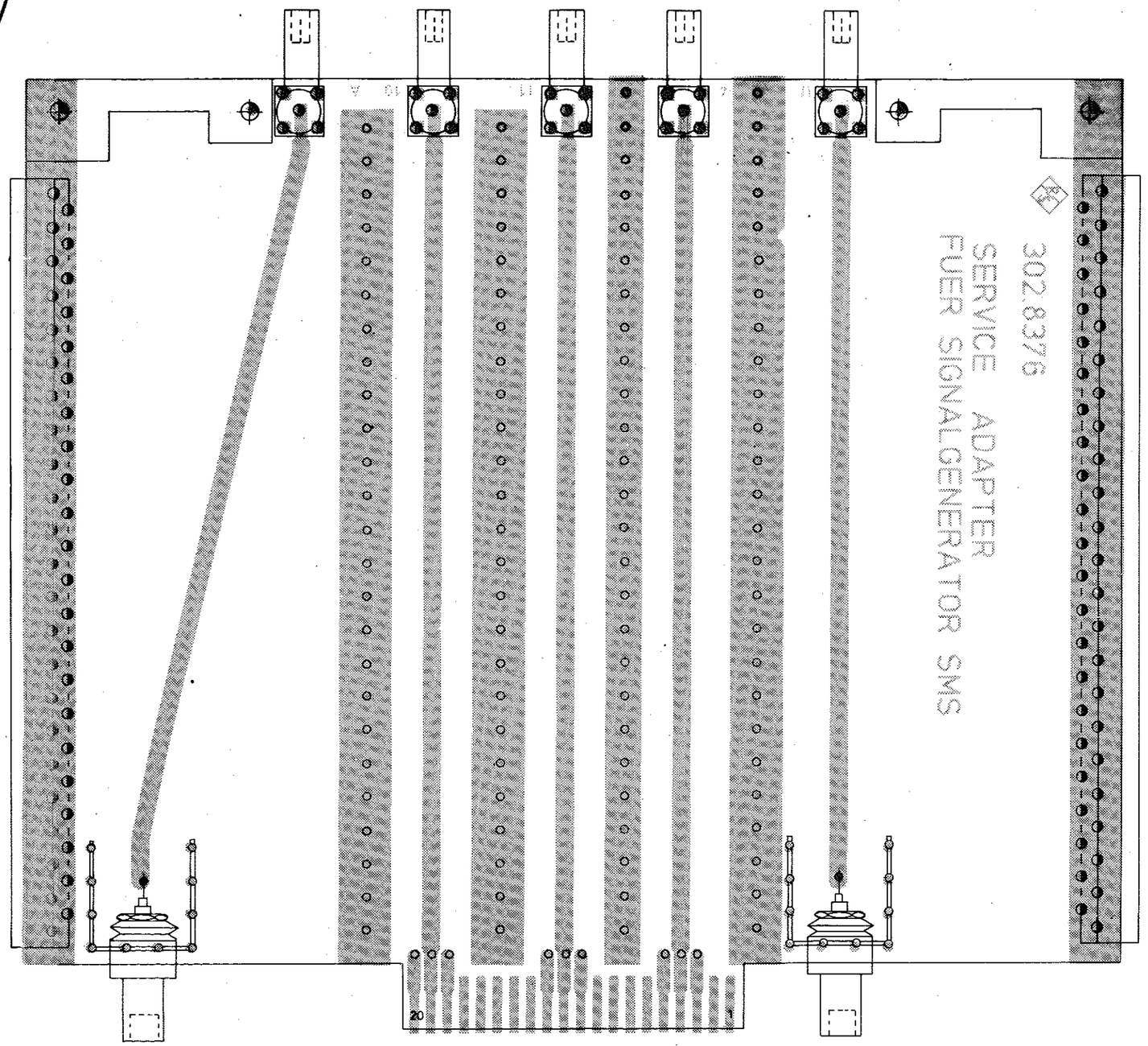
Anschlüsse von T16:
Basis auf Kl (6)
Emitter auf Kl (10)
Collektor auf Kl (11)
Gehäuse (s) auf Kl 10

Sämtliche Anschlüsse auf entsprechende Länge kürzen !

0 1 2 3
ZENTIMETER

				Maße ohne Toleranzangabe		Maßstab	
						Halbzeug, Werkstoff	
					Tag / Name	Benennung	
				Bearb	12.78 / MÜ 1GME	Referenzosz. Temp. ger.	
				Gepr			
				Norm			
And. Zust.	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ		Zeichn.-Nr. 302.8918	Blatt-Nr. 3 v. 3 Bl.
				zu Gerät		reg. i V 302.8918 V	erste Z 302.8918

095 2493 - 0378



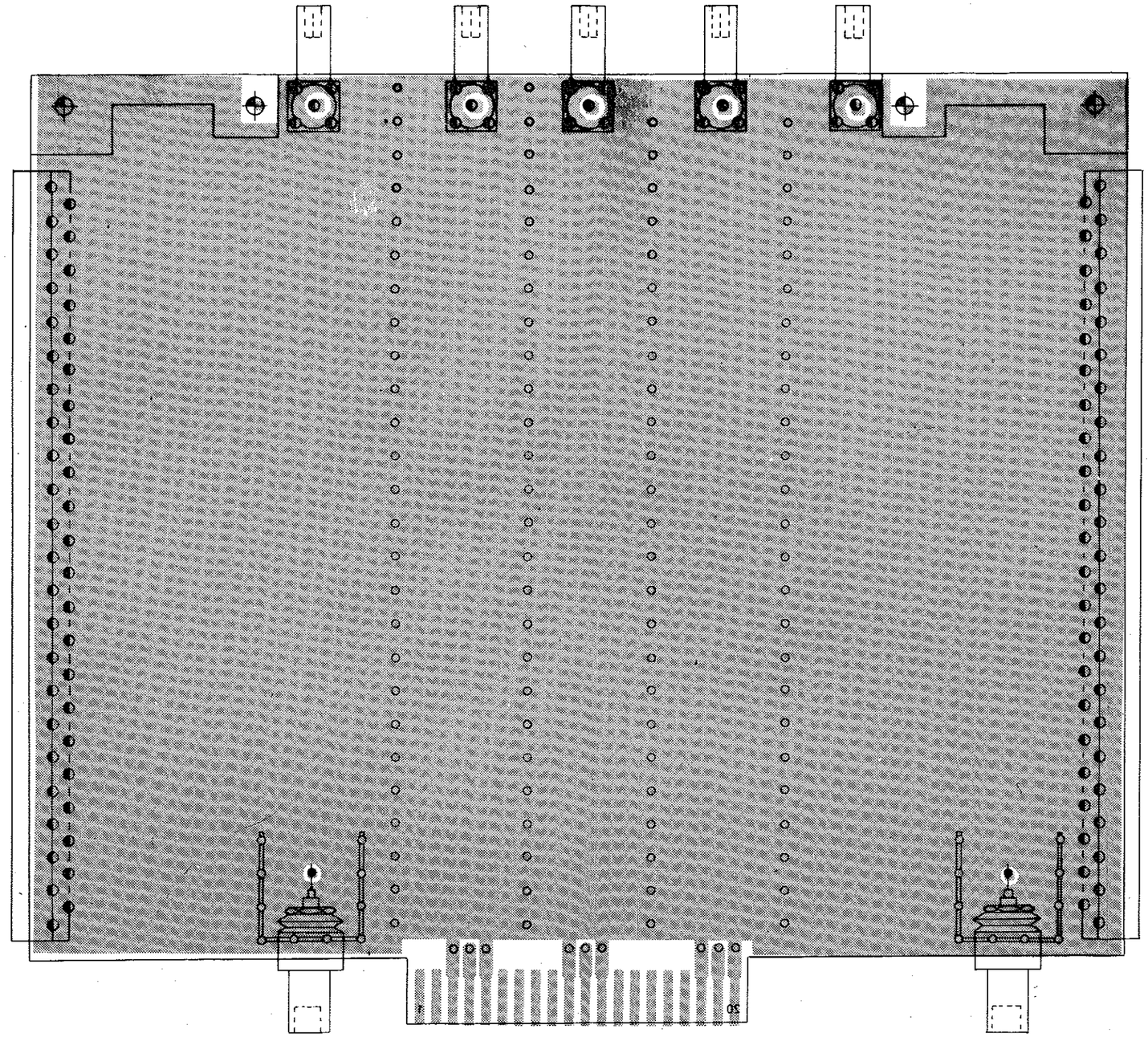
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side

0 1 2 3
ZENTIMETER

				Maße ohne Toleranzangabe		Maßstab
						Halbzeug Werkstoff
				TGME	Tag	Name
				Bearb	6.10.78	Wm.
				Gepr		
				Norm		
And Zust	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN		
				zu Gerät SMS		reg i V 302.40.12V erste Z

Benennung: Service-Adapter — Z

Zeichn.-Nr: 302.8376 — Blatt-Nr 2

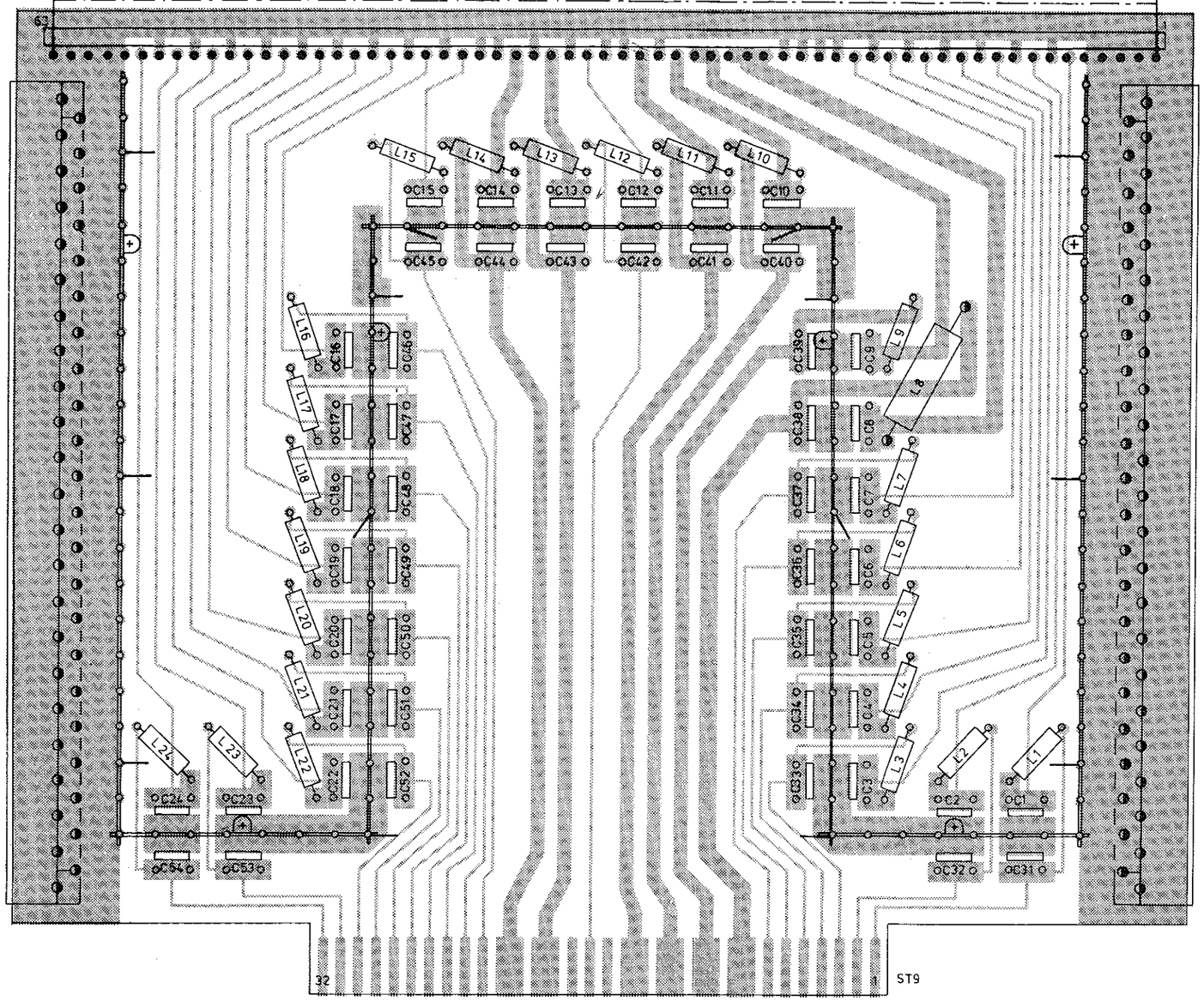


Ansicht und Leitungsführung Lotseite
View of tracks on solder side

0 1 2 3
ZENTIMETER

				Maße ohne Toleranzangabe	Maßstab:
					Halbzeug Werkstoff
				GME Tag Name	Benennung: Service-Adapter Z
				Bearb. 6.10.78 Wm.	
				Gepr.	
				Norm.	
				ROHDE & SCHWARZ MÜNCHEN	Zeichn.-Nr. 302.8376 Blatt-Nr. 3
Änd. Zust.	Änderungs Mitteilung	Tag	Name	Zu Gerät SMS	Ers.-f. 302.4012V erste Z.

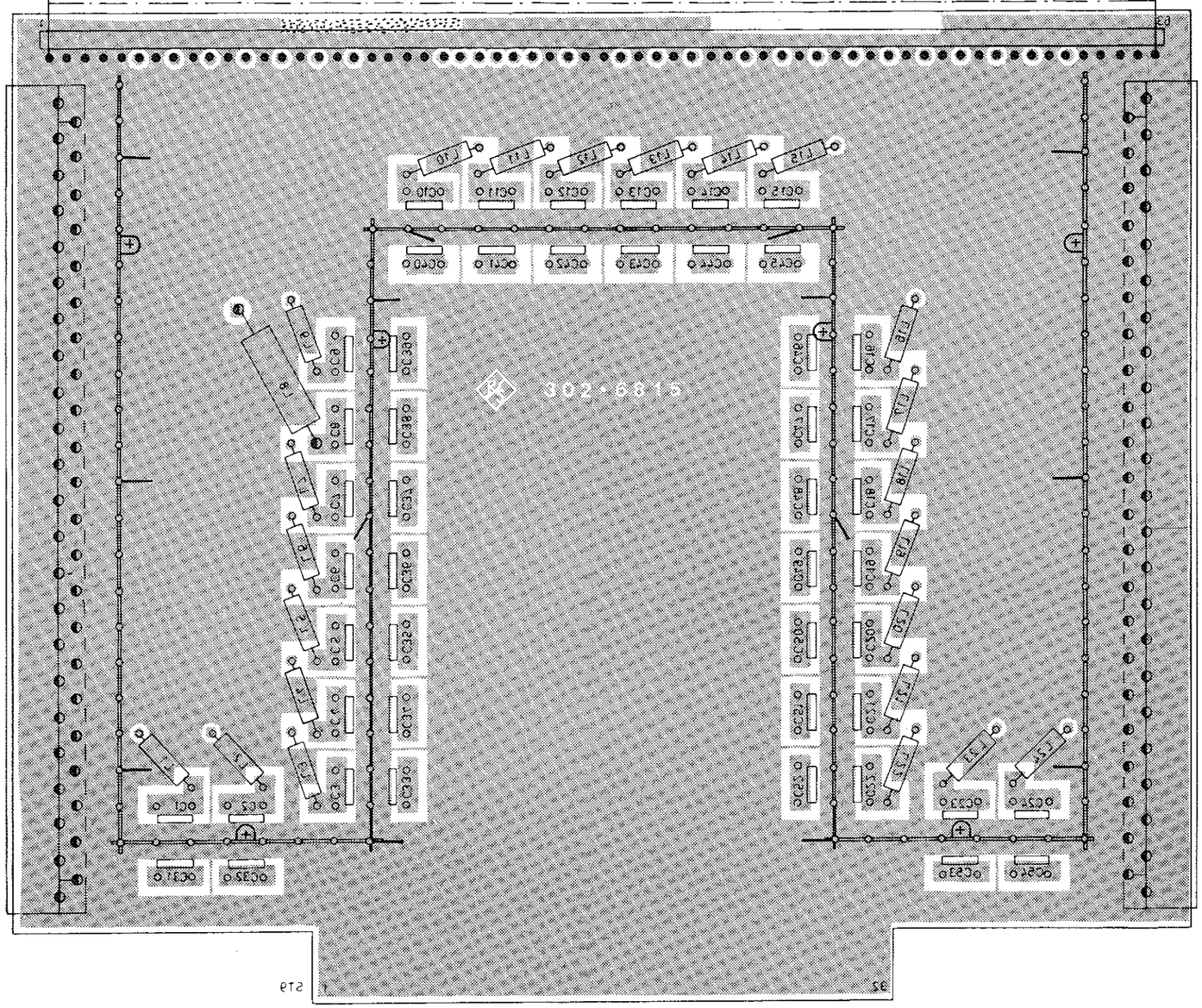
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



0 1 2 3
ZENTIMETER

Versorg.-Nr					VG-Sachnr	
B	24545	10.78	Gn	Maße ohne Toleranzangabe	Maßstab	
					Halbzeug, Werkstoff	
				IGME	Tag	Name
				Bearb	11.7.78	Wm.
				Gepr		
				Norm		
And	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN	Benennung: Filter	Z
				zu Gerät SMS	Zeichn.-Nr: 302.6815	Blatt-Nr 2
					reg. t. V 302.4012V	ersetzt Z 302.4012

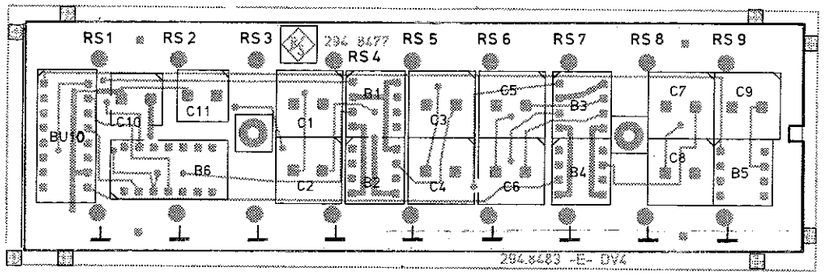
Ansicht und Leitungsführung Lötseite
View of tracks on solder side



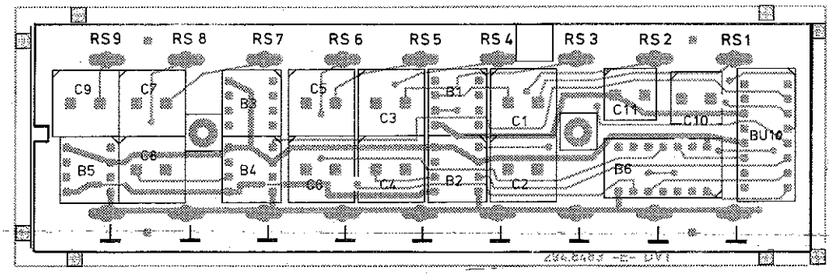
0 1 2 3
ZENTIMETER

B	24545	10.78	Gn	Maße ohne Toleranzangabe		Maßstab
C	24791	04.79	Gn			Halbzeug Werkstoff
E	25863	01.80	Gn	TGME	Tag / Name	Benennung: Filter
				Bearb	11.7.78 / Wm.	Z
				Gepr		
				Norm		
Änd Zust	Änderungs Mitteilung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr 302.6815 Blatt-Nr 3
				zu Gerät SMS		Ers. v 302.4012V Ers. z 302.4012

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

Versorg.-Nr.					VG-Sachnr.
D	———	9.78	Nk	Maße ohne Toleranzangabe	Maßstab
E	25525	11.79	Pt.		Halbzeug, Werkstoff

	Tag	Name
1 GM		
Bearb.	12.9.78	Nk
Gepr.		
Norm		

Benennung: Ansteuerung 1 / Control unit 1 — Z

ROHDE & SCHWARZ MÜNCHEN

Zeichn.-Nr. 294.8477 — Blatt-Nr. 2 v. Bl.

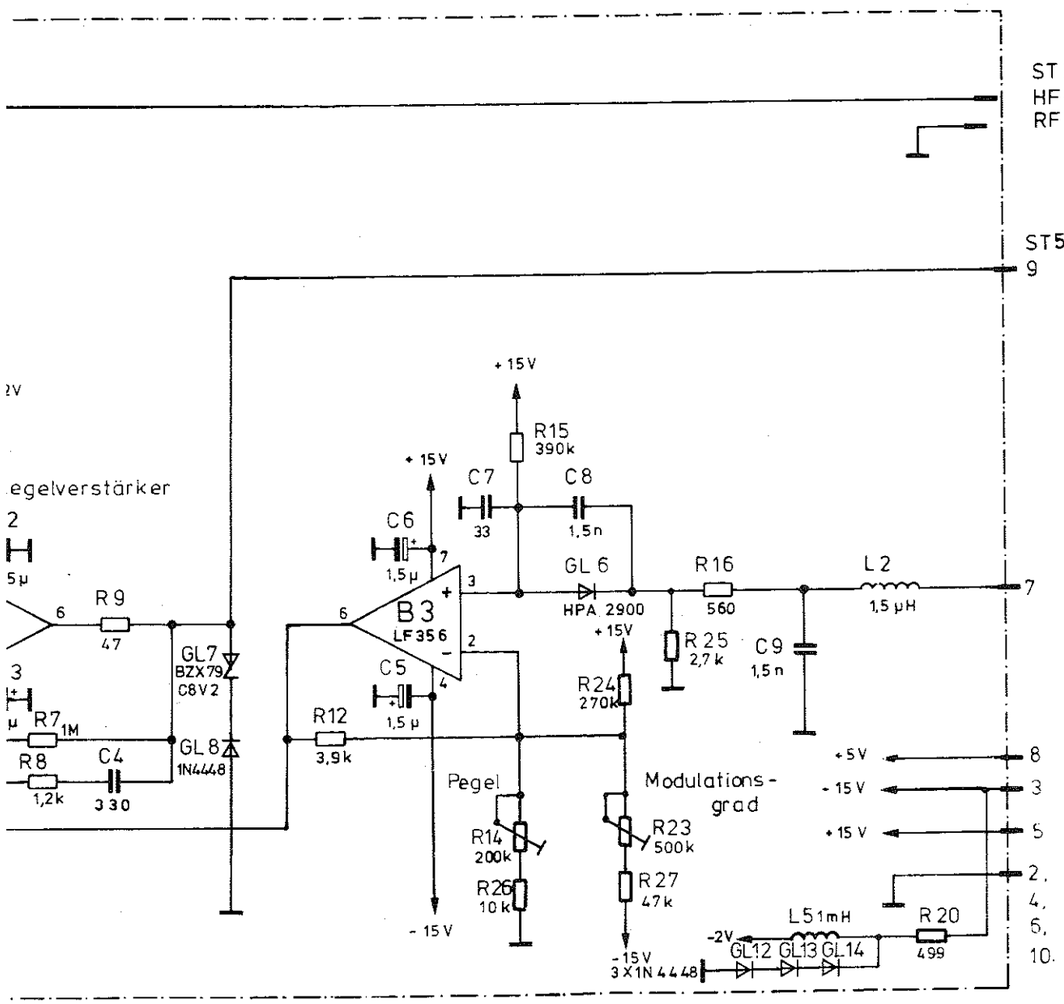
zu Gerät. — reg. i. V. 294.8019 V — erste Z. 294.8019

Änd. Zust.	Änderungs-Mitteilung	Tag	Name

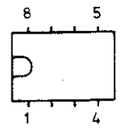
095.2493-2 COD

ST 3
HF-Ausgang
RF output

ST5
9 Regelspannung /Control voltage
(Verdopplen / double)

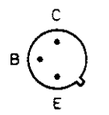


Sollwert
Rated valve

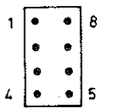


B1, B2,
B3

Draufsicht
Top view



T1, T2



B4, B5

0 1 2 3
ZENTIMETER

Stromlauf zu
Schalter / Switch

Z

Zeichn. Nr. 335.0368 S

335.0316 V | 335.0316

PGH 11.337

ST 2
HF-Eingang
RF input

HF zum Verdoppler
RF to doubler

HF verdoppelt ST 4
RF doublet

single
einfach "0"
verdoppeln "1" ST 5,2
double

RS1
GL 2 1N4448
GL 1 1N4448
B 4
C11 10n
L 3 1mH
C15 10n
-2 V
L 4 1mH
C12 10n
B 5
R1 42,2
C16 10n
2V
+15V
+5V
Regelverstärker
R3 5 5
R6 390k
C10 150
C2 1,5µ
C21 1,8 p
GL 5 HPA 2900
R5 43,2k
B2 LF 356
R9 47
C20 2,75...4,5
R4 434
C1 33
R21 2,43k
R22 2,55k
C3 1,5µ
C13 2,7n
R7 1M
GL7 BZX79 C8V2
GL8 1N4448
R8 1,2k
C4 330
Detektor
R2 10 k
B1 µA 741
T1 BCY 59
T2 BCY 79
GL9 1N4448
GL10 1N4448
-15V
C6 1,5µ
C7 33
B3 LF 356
C5 1,5µ
R12 3,9k
Pegel
R14 200k
R26 10k

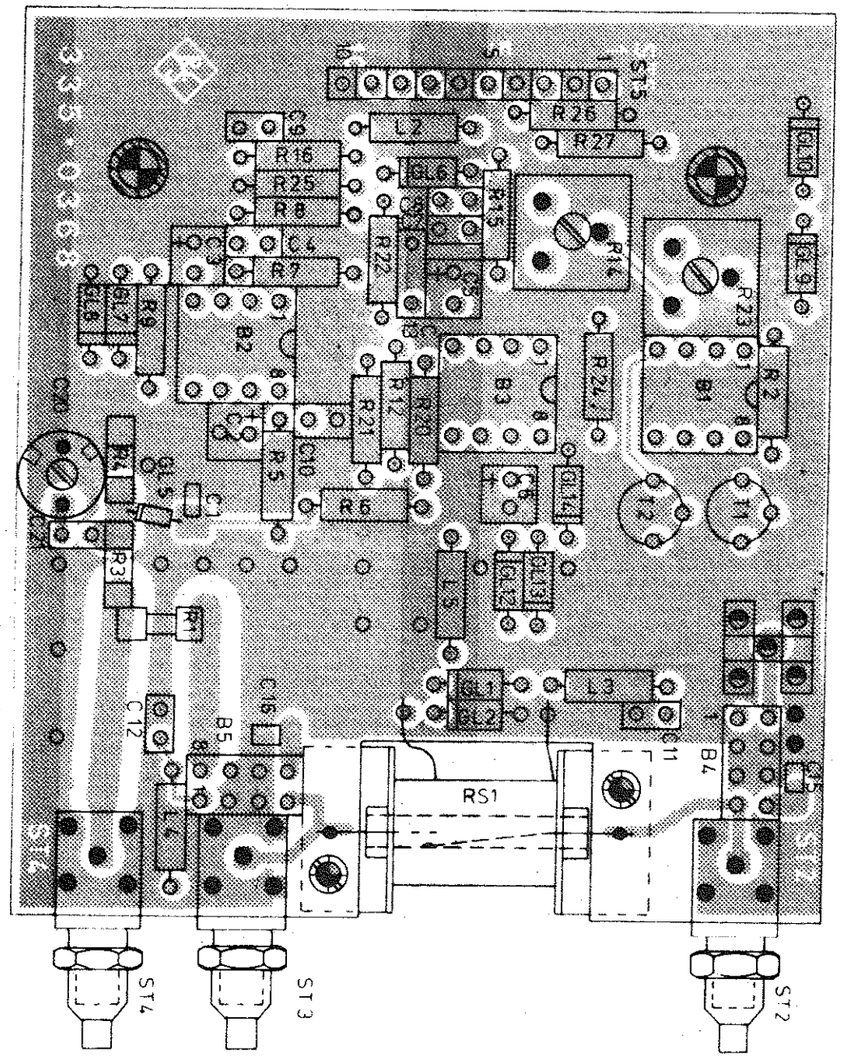
335.0368

	Name	Datum	And. Mitt.g. Nr.	And.-zust.
gezeichnet	Gr	28.2.79		
bearbeitet	Gn	02.79		
geprüft				
normgeprüft				
B	GN	12.79	25581	
C	NL	04.80	25933	
D	Gr	04-81	26909	

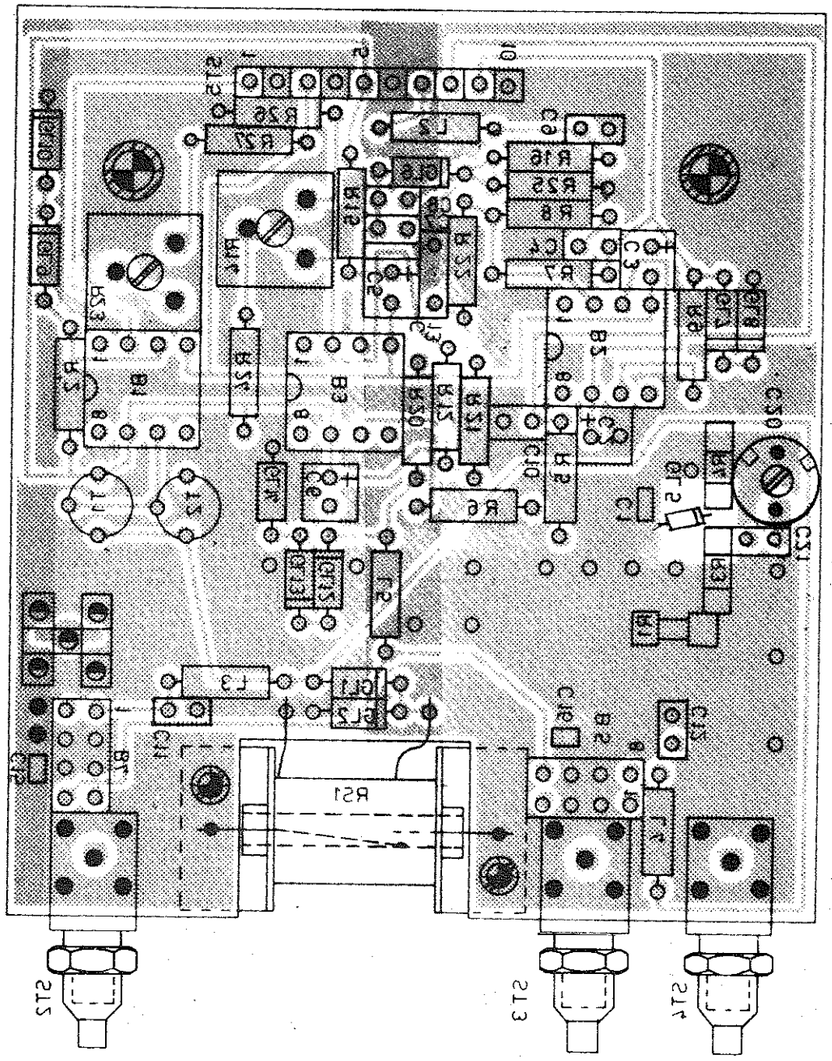
1GME

4395

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

A		07.79	Gn
B		11. 79	Gn
C	25581	12. 79	Gn
D	25933	04.80	Nl

IGME
10. 5. 79 GU

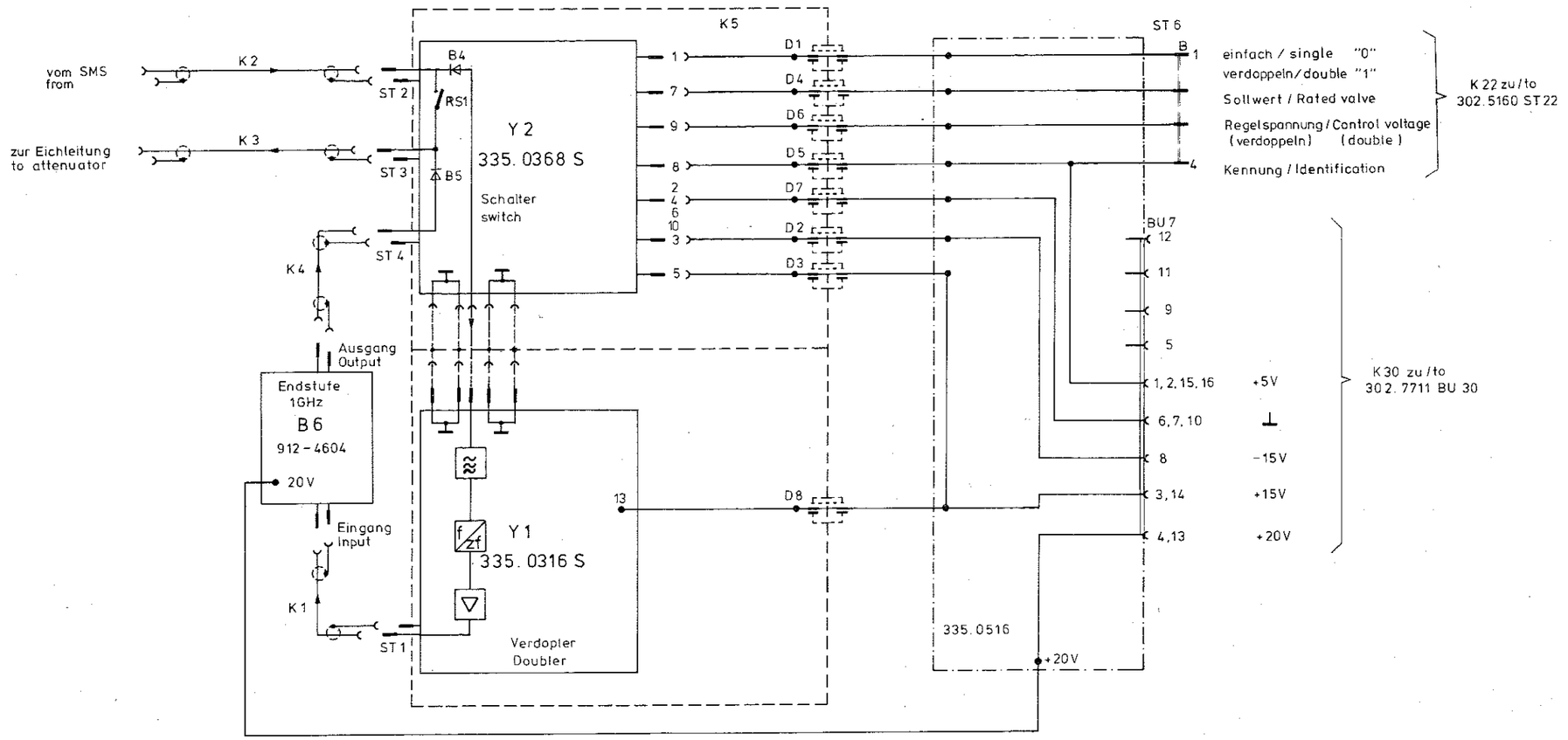
Schalter
Switch

Z

335.0368

2

SMS | 335.0016V | 335.0016



ROHDE & SCHWARZ

	Name	Datum	And Mitlg Nr	And zust	Name	Datum	And Mitlg Nr	And zust
gezeichnet	GN	12.79	25581	A	Gr	18.5.79		
bearbeitet					Gn	05.79		
geprüft								
normgpr								

Zeichn.-Nr. 335. 0016 1GME

ZENTIMETER 0 1 2 3

Stromlauf zu SMS - B2

reg. i.V. 335. 0016 erste Z. ———

Zeichn.-Nr. 335. 0016 S

Blatt-Nr. v. BL

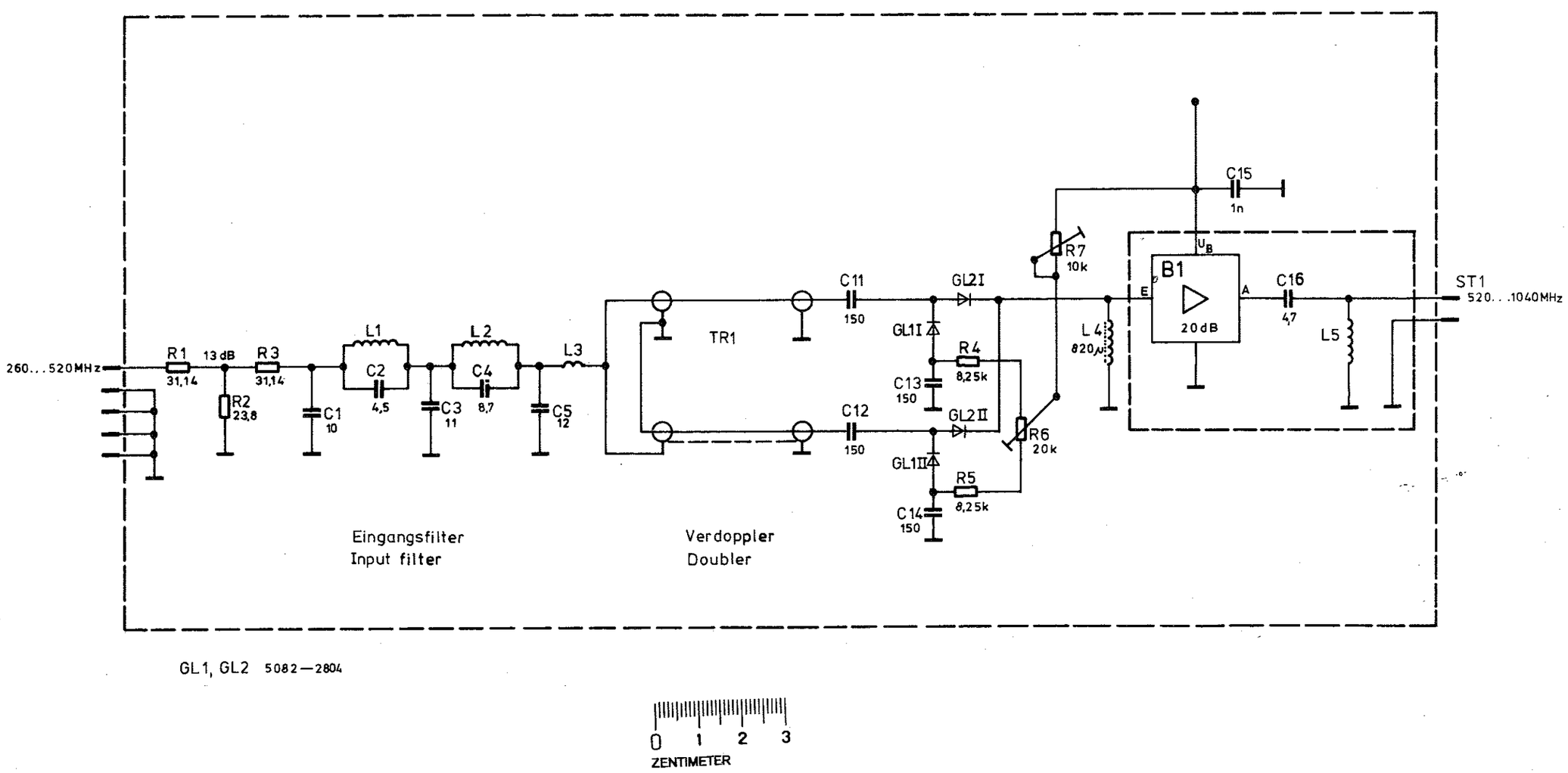
PF 095.4109-0378

ROHDE & SCHWARZ MÜNCHEN

	Name	Datum	Änd-Mitlg Nr	Änd-zust

	Name	Datum	Änd-Mitlg Nr	Änd-zust

	Name	Datum	Änd-Mitlg Nr	Änd-zust
gezeichnet	SP	03.80		
bearbeitet				
geprüft				
normgepr				
	SP	04.80	25933	B



GL1, GL2 5082—2804

Stromlauf zu

Verdoppler Doubler

Zeichn. Nr. 335.0316 S

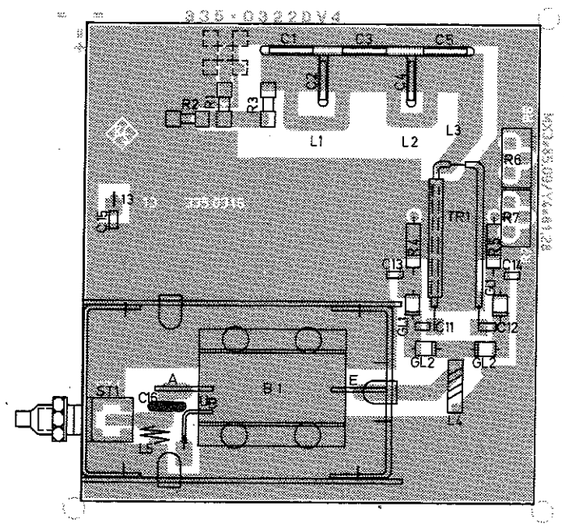
reg. i.V. 335.0016 V

erste Z 335.0016

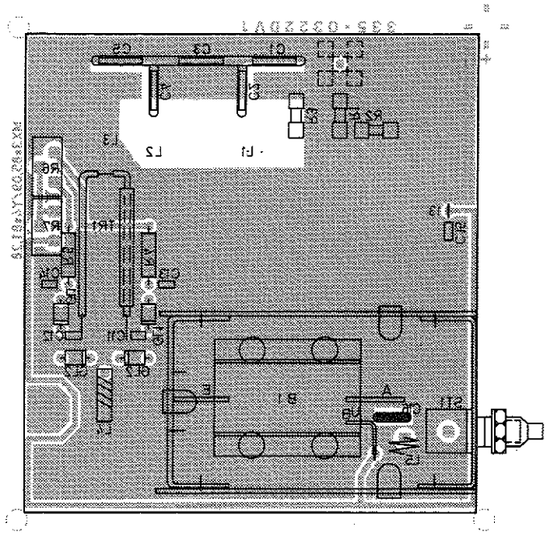
PF 095.4096

PGH 15.177

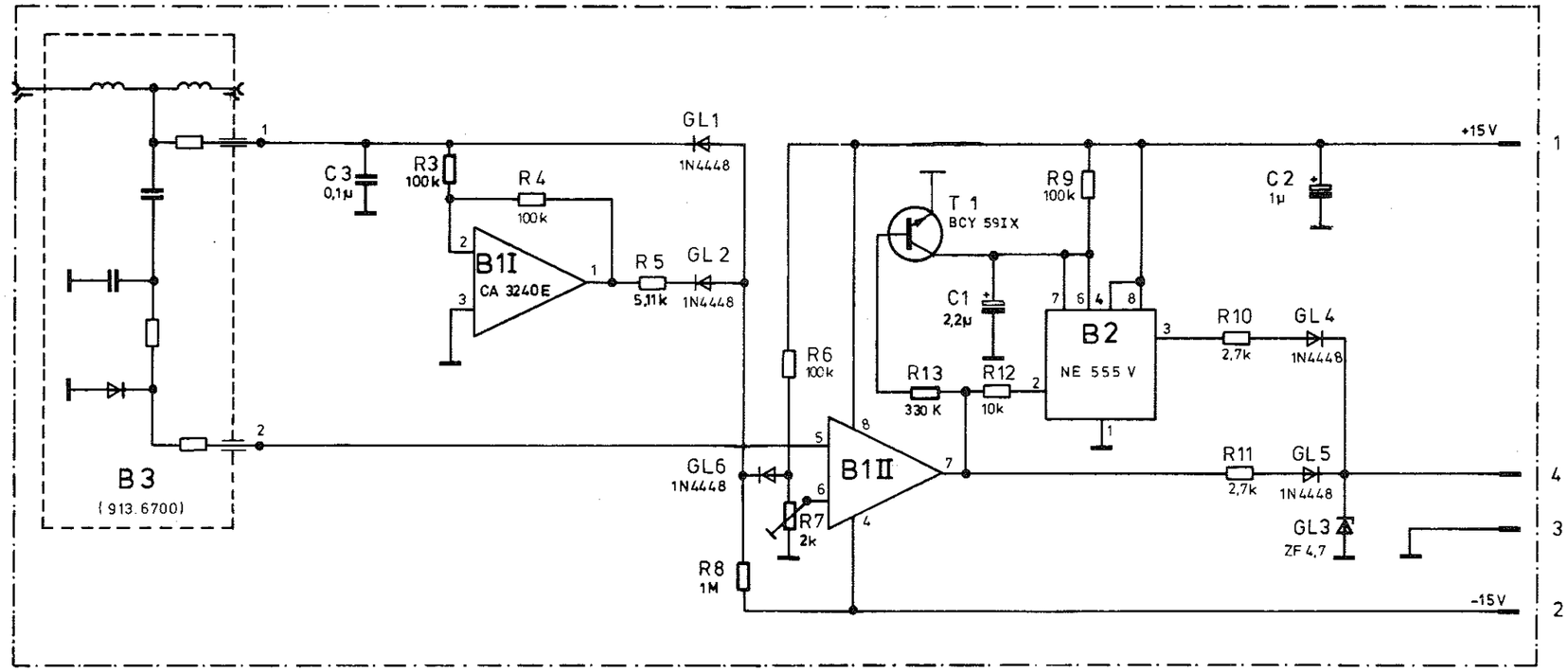
Ansicht und Leitungsführung Bauteilseite
View of tracks on component side

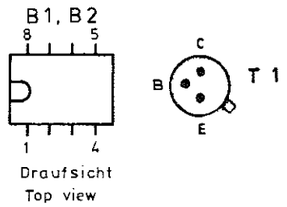


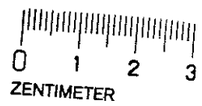
Ansicht und Leitungsführung Lötseite
View of tracks on solder side



Versorg.-Nr.						VG-Sachnr.	
D	26909	4.81	Gn	Maße ohne Toleranzangabe		Maßstab	
						Halbzeug, Werkstoff	
				1GM	Tag	Name	Benennung: Verdoppler Z
				Bearb.	4.81	Gn	
				Gepr.			
				Norm			
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr. 335.0316	Blatt-Nr. 2 v. Bl.
				zu Gerät: SMS-B2		reg. i. V. 335.0016 V	erste Z. 335.0016







ISO-Projektion, Methode E

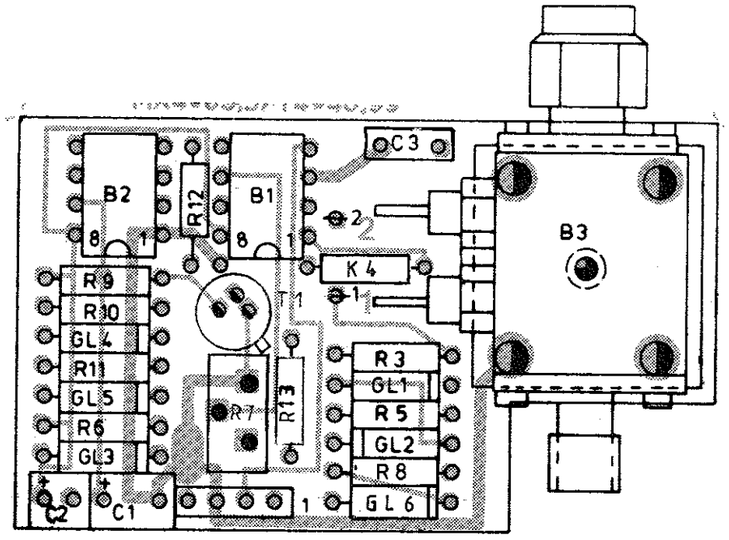
Vervielfält.-Pause Nr.

Arbeitspause Nr.

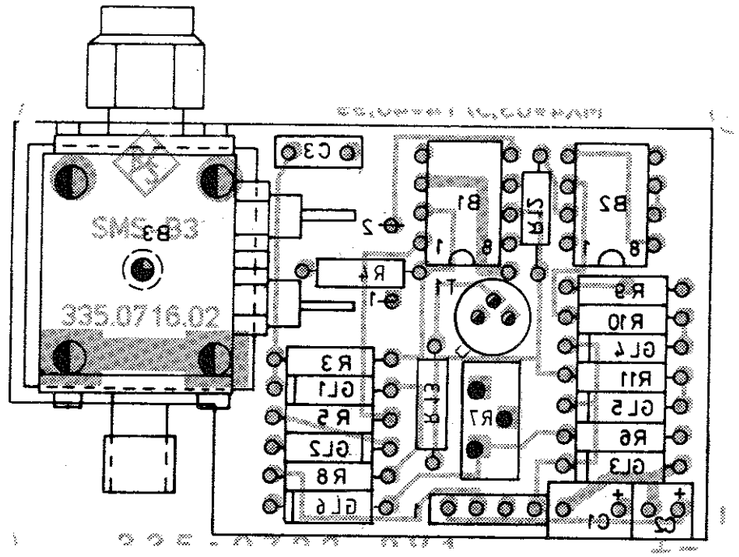
ROHDE & SCHWARZ MÜNCHEN			Halbzeug, Werkstoff				Untolerierte Maße	Zeichn. Nr. 335.0716 S
1GME	Datum	Name	Änd. zust.	Änd. Mittlg. Nr.	Datum	Name	Maßstab	335.0716V —
gezeichnet	25.1.79	Gr	A	25779	12.79	Gn		Ersetz f. Zeichn.
bearbeitet	01.79	Gn	B	28257	12.81	SY		SMS-B3 Überspannungsschutz Overload protection Z
geprüft								
normgepr.								

340;11.67

Ansicht und Leitungsführung Bauteilseite
View of tracks on component side



Ansicht und Leitungsführung Lötseite
View of tracks on solder side



0 1 2 3
ZENTIMETER

A	25 779	12. 79	Gn
B	27137	2. 81	Sy
C	28 257	12.81	S Y

Maße ohne Toleranzangabe

1GME	Tag	Name
Bearb	5.12.78	Wm.
Gepr		
Norm		

ROHDE & SCHWARZ
MÜNCHEN

zu Gerät SMS-B3

Maßstab

Halbzeug, Werkstoff

Benennung
SMS-B3
Überspannungsschutz
Overload protection

Z

Zeichn.-Nr 335.0716 01

Blatt-Nr 2

reg. : V 335.0716 V

erste Z

And. Zust. | Änderungs-Mitteilung | Tag | Name