



**ROHDE & SCHWARZ**

Manual

# SIGNAL GENERATOR SMS

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302.4012.26

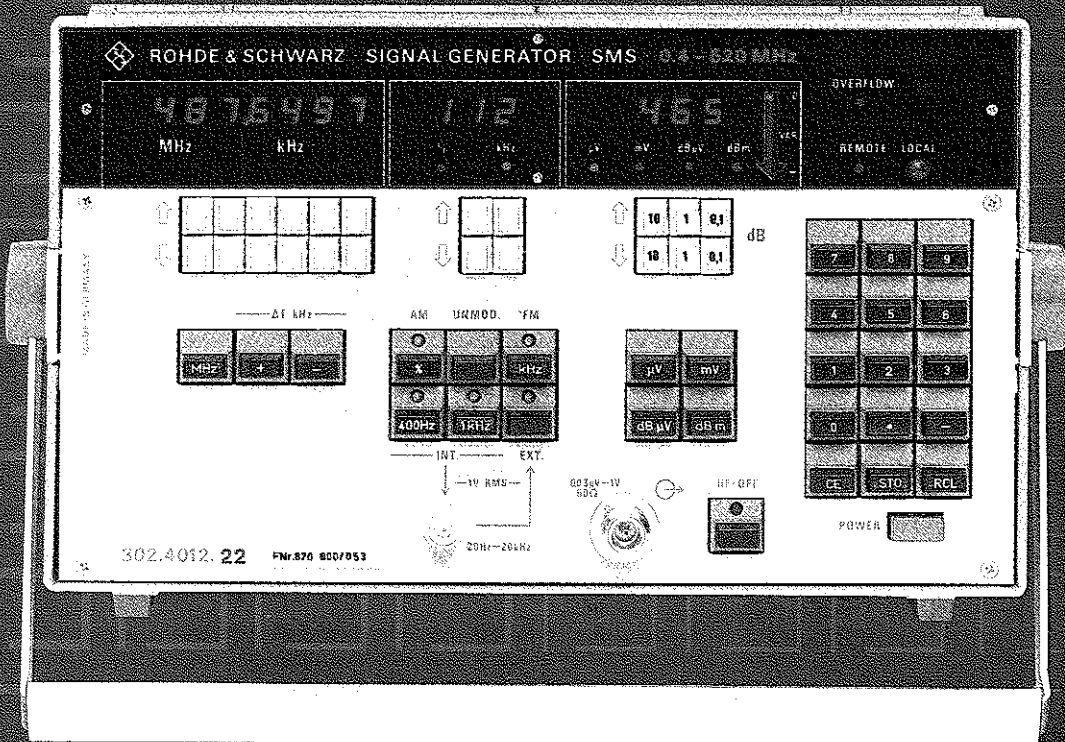
Übersetzung von nach R

Zusammengestellt nach R

Printed in West Germany

# SIGNAL GENERATOR SMS

0.1/0.4 to 520 (1040) MHz



IEC 625 Bus



Summary

- General-purpose AM-FM synthesizer for 0.4 to 520 MHz (0.1 to 1040 MHz); low noise and excellent AM, FM and  $\phi$ M 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( $\mu$ V),  $\mu$ V 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).

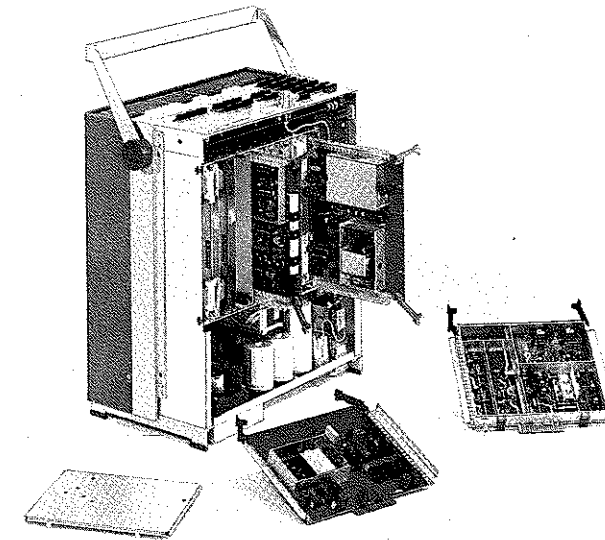
The crystal-controlled frequency is read out on the display with a resolution of 100 Hz. The Reference Oscillator Option SMS-B1 (aging  $< 1 \times 10^{-6}$ /year) further enhances the accuracy. A reference frequency input is provided on the rear panel of the signal generator (photograph lower right-hand side). The  $\Delta f$  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 ( $\phi$ M)
- 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.



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

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

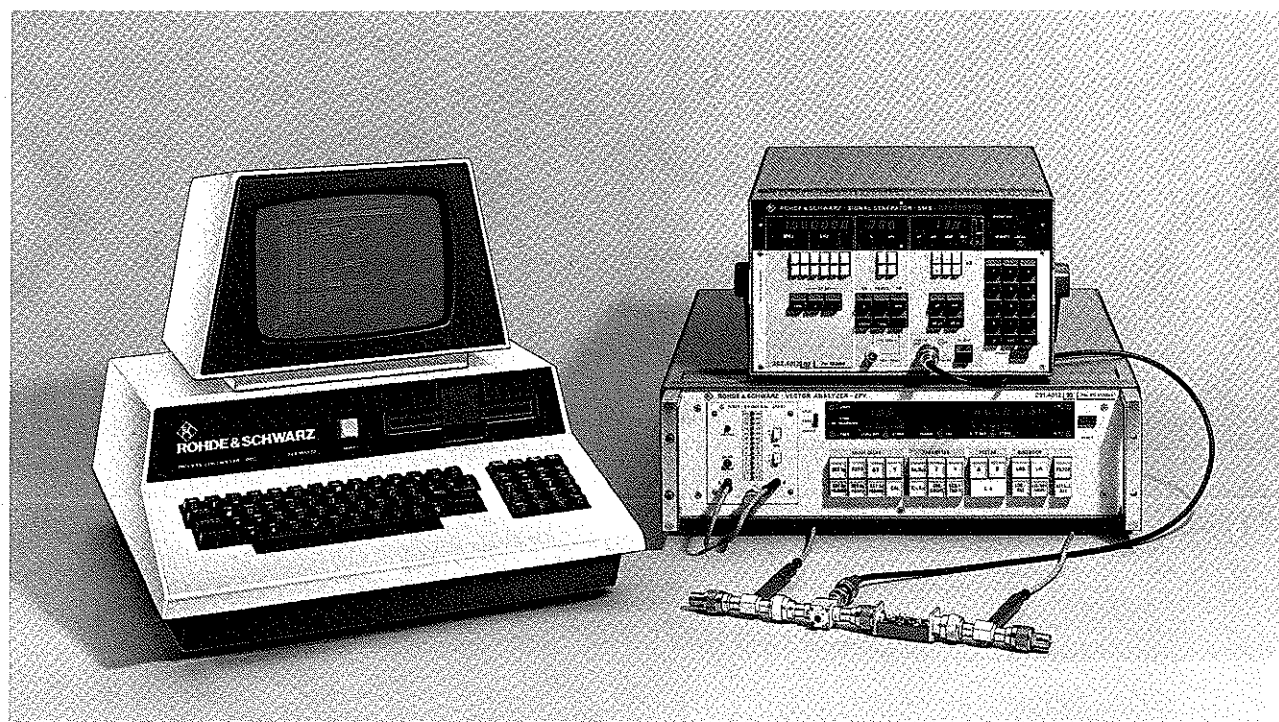
Several options are available for the SMS to satisfy differing or special customer requirements at minimum cost. The SMS can on request be supplied with these options built in, or they can be retrofitted.

Temperature-controlled Reference Oscillator SMS-B1 improves the frequency stability of the signal generator. The temperature drift of  $< \pm 1 \times 10^{-6}/^{\circ}\text{C}$  is reduced to  $< \pm 1 \times 10^{-7}$  over the entire temperature range. Crystal aging is less than  $5 \times 10^{-8}$ /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 ( $1/2f, 3/2f, \dots$ ) 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.

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  $\mu$ V, mV, dB( $\mu$ V) and dBm via keyboards. Its minimum output voltage of 0.03  $\mu$ V 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  $\mu$ V (e.g. paging receivers) will not respond at a distance of 10 cm from the front panel.

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.



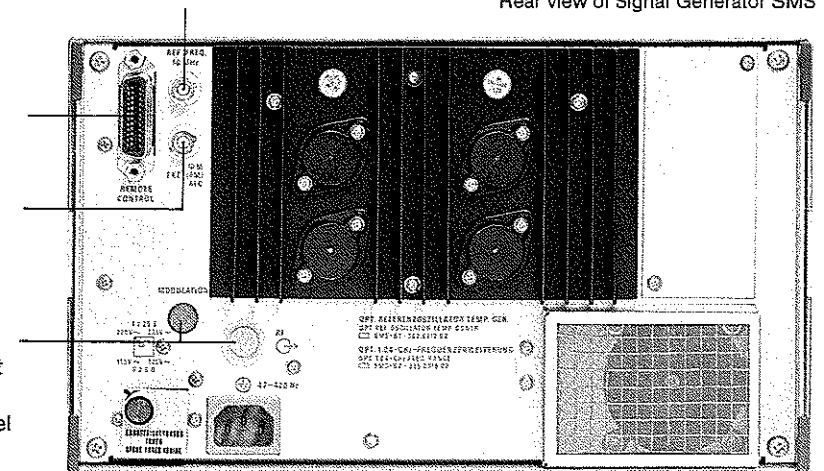
Internal 10-MHz reference frequency output (TTL level) or external reference frequency input (> 0.5 V, sinewave or squarewave)

IEC-bus connector

2nd modulation input for  $\phi$ M (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

Rear view of Signal Generator SMS



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  $\mu\text{V}$ ,  
mV, dB( $\mu\text{V}$ ) or dBm;  
correct indication also  
with fine adjustment

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

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

Frequency in MHz;  
entry via keyboard

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

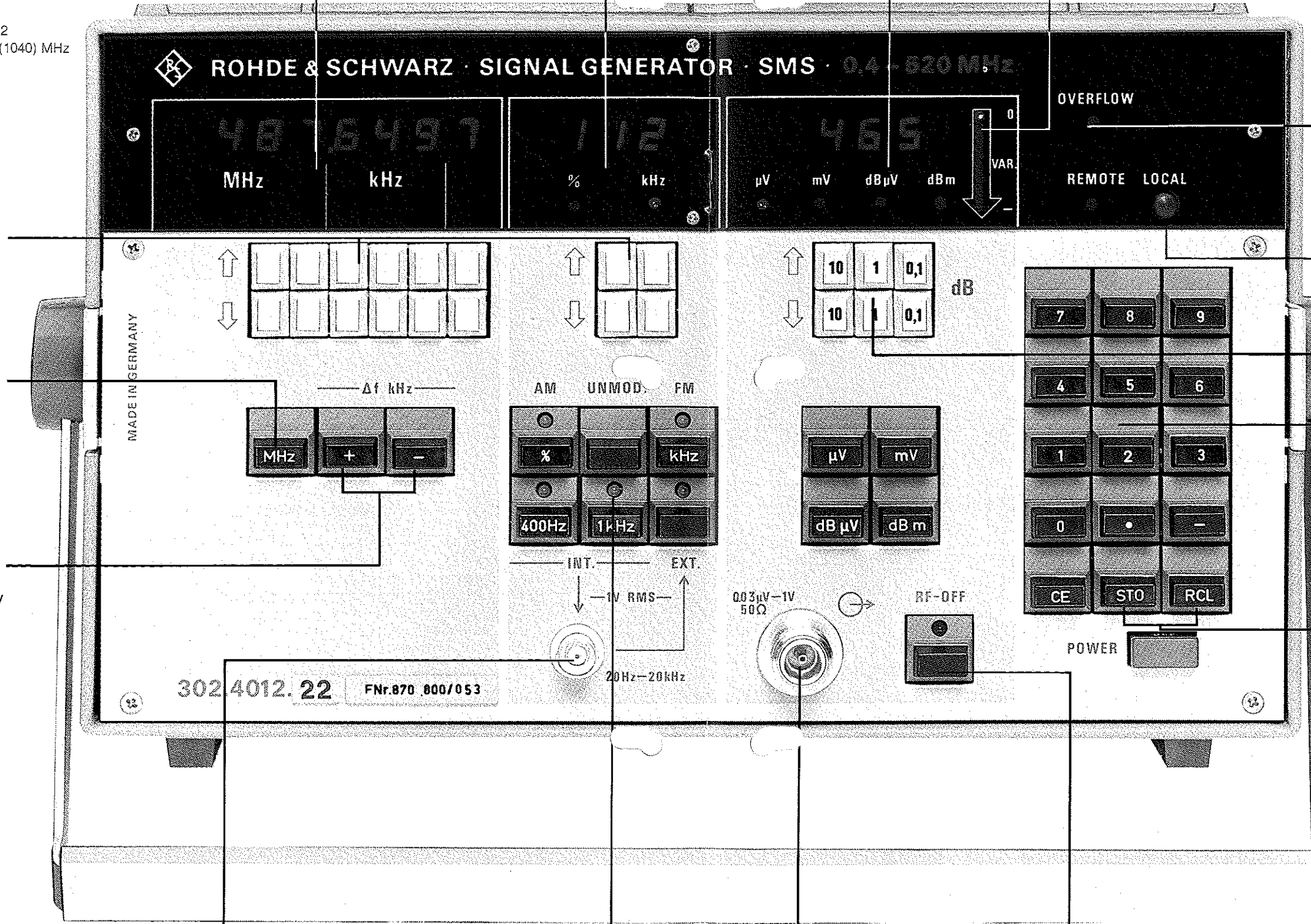
Signal for non-valid entry

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

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

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  $\mu\text{V}$  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

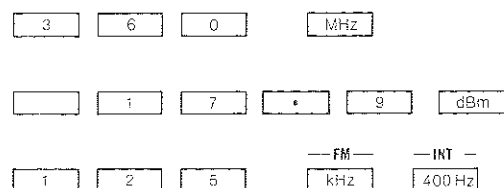
SIGNAL GENERATOR SMS



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.

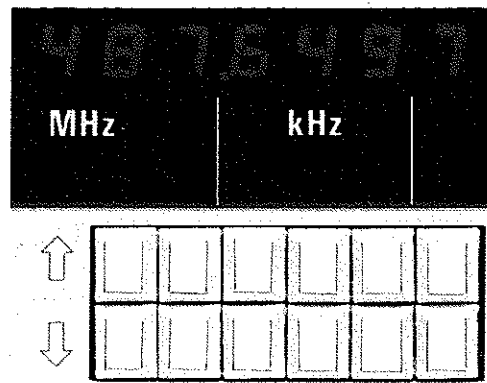
**Example:** For entry of a frequency of 360 MHz, a level of -17.9 dBm, and frequency modulation with 125 kHz frequency deviation and 400 Hz internal modulation frequency simply press the following keys:



**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 key-stroke 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.

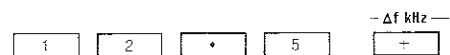


Keys associated with the various digits permit stepwise or continuous variation of numerical values entered (e.g. frequency as here displayed).

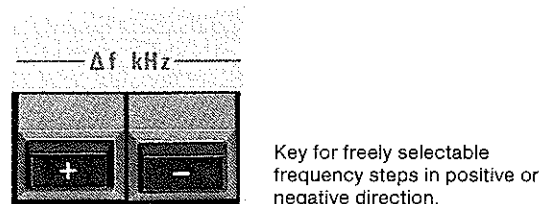
**Indication of illegal entries.** Entries that exceed the given setting range are not considered by the SMS. The last value entered is still indicated. The OVERFLOW LED flashes in the case of a non-valid entry.

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

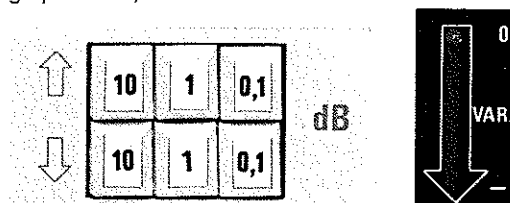
**Example:** For entry of a frequency step of +12.5 kHz press the following keys on the large, main keyboard:



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.



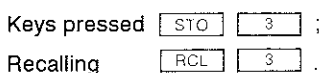
**Continuous fine level adjustment.** The keys ↑ and ↓ (0.1 dB) permit continuous electronic adjustment of the level in 0.1-dB steps over a range of 10 dB (indispensable for squelch measurements), the corrected value being read out on the level display. The state of the electronic level variation can 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:



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 FDR 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

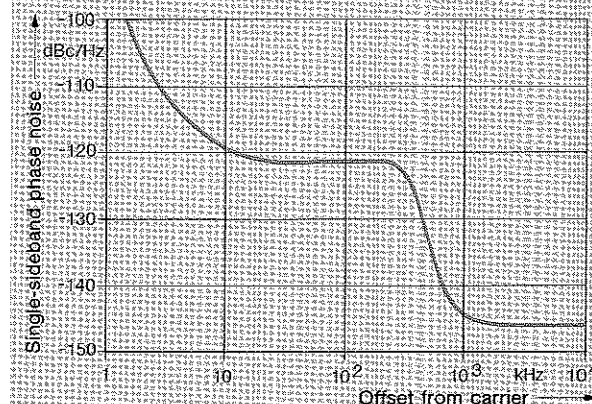
Function	Header	Data	Delimiter
Frequency in MHz	A	Maximum of 8 digits with or without decimal point	(comma)
Modulation	B	Maximum of 3 digits with or without decimal point	.
AM, m in %	H	None	.
FM, deviation in kHz	C	None	.
UNMOD.	i	None	.
INT. 400 Hz	J	None	.
INT. 1 kHz	K	None	.
EXT.			
Level in dBm	S	A maximum of 3 1/2 digits with or without decimal point, with negative sign or without	.
in dB(μV)	R	A maximum of 3 1/2 digits with or without decimal point	.
in μV	P		.
in mV	Q		.
Switchover to continuous fine adjustment	X		.
RF OFF	Y	0	.
RF ON	Y	1	.
Pause 15 ms	@	None	.

Specifications

Frequency	Model 22	Model 24	Options
Frequency range	0.4 to 520/1040 MHz	0.1 to 520/1040 MHz	Option SMS-B2 see Specifications
Frequency readout	8-digit LED display in MHz	8-digit LED display in MHz	Options
Resolution	100 Hz	100 Hz	
Frequency error with reference oscillator	Standard: <math>\leq \pm 1 \times 10^{-6}</math>/month	Standard: <math>\leq \pm 1 \times 10^{-6}</math>/month	Option SMS-B1 <math>\leq \pm 1 \times 10^{-7}</math>/month
Aging	<math>\leq \pm 1 \times 10^{-6}</math>/month	<math>\leq \pm 1 \times 10^{-6}</math>/month	<math>\leq \pm 1 \times 10^{-7}</math>/month
Temperature effect	<math>\leq \pm 1 \times 10^{-6}</math>/°C	<math>\leq \pm 1 \times 10^{-6}</math>/°C	<math>\leq \pm 1 \times 10^{-7}</math>/°C
Warm-up period	15 min	15 min	(5 to 45 °C)
Output/input for internal/external reference frequency	10 MHz (single connector)	10 MHz (single connector)	
Output	TTL level	TTL level	
Input	> 0.5 V (sinewave) or TTL level	> 0.5 V (sinewave) or TTL level	

Spectral purity

Harmonics	down $\geq 30$ dBc <sup>1)</sup>
Non-harmonic spurious responses	down $\geq 60$ dBc <sup>1)</sup> ( $\geq 5$ kHz from carrier)
Spurious deviation, rms	0.3 to 8 kHz: $\leq 4$ Hz (weighted in accordance with CCITT)
	0.03 to 20 kHz: $\leq 16$ Hz
Spurious AM, rms	0.03 to 20 kHz: down $\geq 70$ dBc <sup>1)</sup>
Single-sideband phase noise (see also diagram below)	typ. down 120 dBc <sup>1)</sup> (test bandwidth 1 Hz, 20 kHz from carrier)
Single-sideband broadband noise	typ. down 145 dBc <sup>1)</sup> (test bandwidth 1 Hz, 1 MHz from carrier)



Typical single-sideband phase noise of Signal Generator SMS (f<sub>carrier</sub> = 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	3 1/2-digit LED display in μV, mV, dB(μV)
Resolution	0.1 dB
Fine adjustment	0 to -10 dB with 0.1 dB resolution, without interrupting RF output
Error of level readout	$\leq \pm 1$ dB (frequency response <sup>2)</sup> )
Frequency response of output level	flat $\pm 0.5$ dB (8 to 520 MHz)
Level reduction with RF OFF	flat $\pm 1$ dB ( $\leq 8$ MHz)
> 80 dB	
Output	N(f) connector
Characteristic impedance	50 Ω
VSWR	$\leq 1.2$ (level $\leq -3$ dBm <sup>2)</sup> )
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

<sup>1)</sup> dBc = relative level referred to carrier amplitude  
<sup>2)</sup> With fine level adjustment = 0 dB

# SPECIFICATIONS

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## Modulation

<b>Amplitude modulation</b>	
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% <sup>1)</sup>
	< 8 MHz: ≤ 7% of reading ± 1% <sup>1)</sup>
<b>Envelope distortion</b>	
(f <sub>mod</sub> = 0.4/1 kHz)	
m = 80%	≤ 1.5%
m = 90%	≤ 3%
Input voltage requirement	1 V into 600 Ω (V <sub>rms</sub> )
Spurious FM	
(peak value at 30% AM)	< 0.1 rad
<b>Frequency modulation</b>	
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
<b>FM distortion</b>	
(f <sub>mod</sub> = 0.4/1 kHz)	
deviation 75 kHz)	≤ 1%
Input voltage requirement	1 V into 600 Ω (V <sub>rms</sub> )
Spurious AM (20 kHz deviation, FM INT)	< 0.1%
Output voltage with internal AM and FM	1 V into 600 Ω (V <sub>rms</sub> )
<b>Additional modulation input</b> at the rear of the SMS for phase modulation (pM), 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
pM (V <sub>rms</sub> )	1 V for 5 rad
FM (V <sub>rms</sub> )	1 V for 100 kHz deviation

## Options

<b>1.04-GHz Frequency Range Extension Option SMS-B2</b>	
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 <sup>1)</sup> down (subharmonics 1/2 f, 3/2 f, ...)
Non-harmonic responses	
> 200 kHz from carrier	down > 60 dBc <sup>1)</sup>
> 5 kHz from carrier	down > 55 dBc <sup>1)</sup>
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 <sup>1)</sup> (test bandwidth 1 Hz)
1 MHz from carrier	down typ. 140 dBc <sup>1)</sup> (test bandwidth 1 Hz)
Error of output level	± 1 dB + frequency response <sup>2)</sup>
Frequency response of level	flat ± 1 dB
Error of modulation depth indication with AM (m < 90%)	≤ 7% ± 1% <sup>1)</sup> of reading
Envelope distortion	
(f <sub>mod</sub> = 0.4/1 kHz, m = 80%)	≤ 5%
Other specifications same as for basic unit.	
<b>1-GHz Frequency Range Extension Option SMS-B2</b>	
Frequency range	0.1/0.4 to 1000 MHz
All other specifications same as for 1.04-GHz Frequency Range Extension Option SMS-B2.	
<b>Reference Oscillator</b>	
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

<b>Model 22</b>	0.4 to 520 MHz
<b>Model 24</b>	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	≤ 1 <sub>carrier</sub> 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

<b>Order designation</b>	► 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	
<b>Options</b>	
Reference Oscillator SMS-B1	302 8918 02
1.04-GHz Frequency Range Extension SMS-B2	335 0016 02
1-GHz Frequency Range Extension SMS-B2	335 0016 04
<b>Recommended extras</b>	
13" Adapter SMS-Z1	302 8860 00

<sup>1)</sup> dBc = relative level referred to carrier amplitude  
<sup>2)</sup> With fine level adjustment = 0 dB



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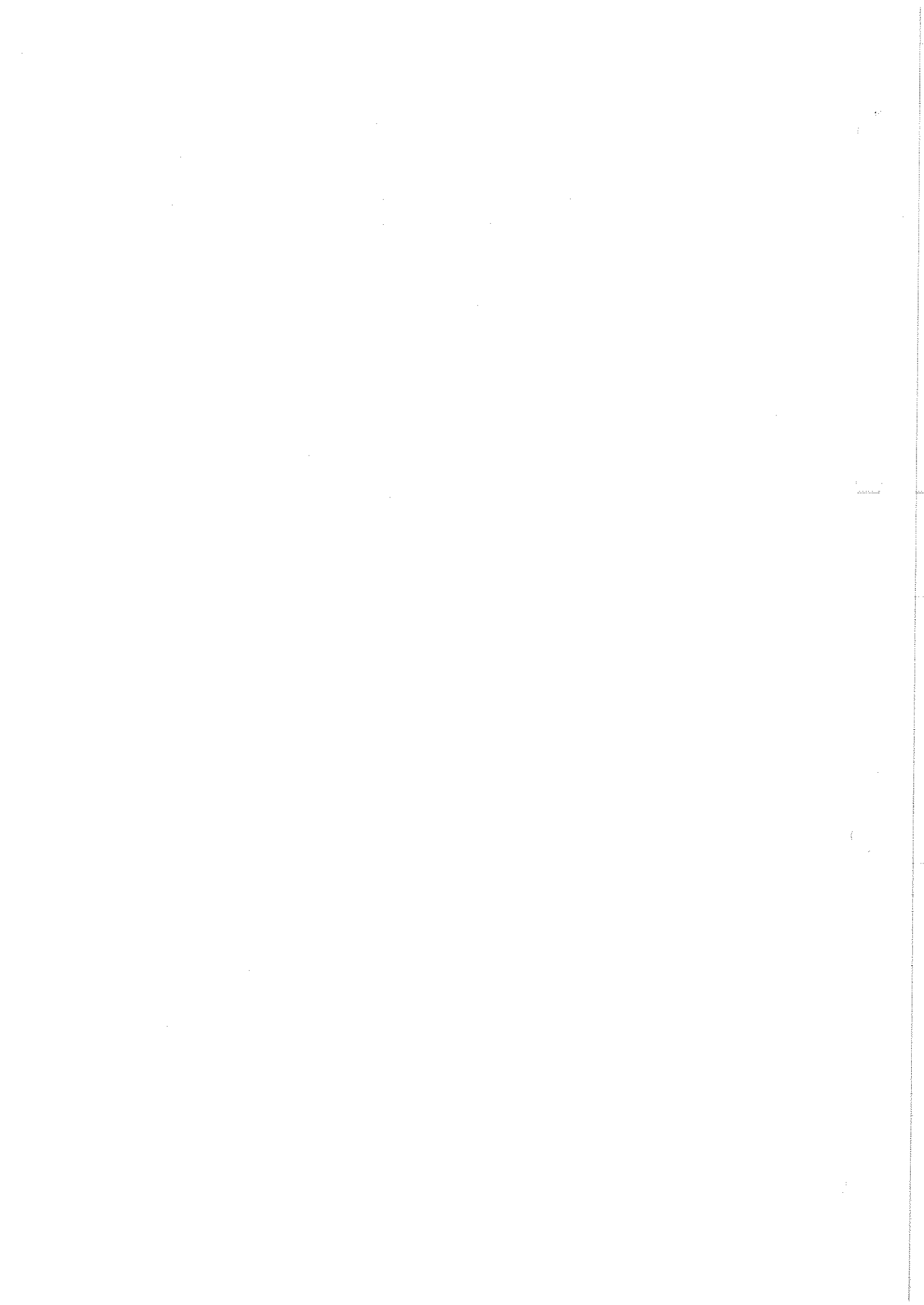
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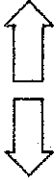
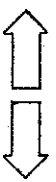

Model 26 of the SMS has modulation characteristics which make it suitable for stereo transmissions. Compared to model 22 the following data are new or have been changed.

Frequency range	0.1 to 520 MHz
Distortion with stereo modulation (10.7; 87 to 108 MHz) at $f_{\text{mod}}$ 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
<u>1</u>	MHz	Key for entry of frequency after frequency has been entered from keyboard <u>15</u> .
<u>2</u>	MHz          kHz	8-digit display for indication of selected carrier frequency.
<u>3</u>		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.
<u>4</u>	$\%$ kHz	2 LEDs for indication of the unit of the modulation readout.
<u>5</u>		3-digit display for readout of the modulation-depth or frequency-deviation.
<u>6</u>		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.
<u>7</u>	$\mu$ V    mV    dB $\mu$ V    dBm	4 LEDs for indication of the unit of the output-level readout.
<u>8</u>		4-digit display for readout of the output level.
<u>9</u>	 0 VAR. -	Row of LEDs for indication of fine level adjustment over a range of 0 to -10 dB.



Ref. No.	Labelling	Function
<u>10</u>	 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 dB $\mu$ V 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.
<u>11</u>	OVERFLOW	LED for signalling illegal entry.
<u>12</u>	REMOTE	LED for indication of remote-control operation with IEC-bus programming (if this option is fitted).
<u>13</u>	LOCAL	Key for switching from IEC-bus programmed operation.
<u>14</u>	$\mu$ V        mV dB $\mu$ V      dBm	4 keys for entry of level. They define the desired unit of the level entered (keyboard <u>15</u> ).
<u>15</u>		Data-entry keyboard for carrier frequency (in conjunction with key <u>1</u> ), modulation depth (in conjunction with key <u>26</u> ) frequency deviation (in conjunction with key <u>21</u> ), RF level (in conjunction with keys <u>14</u> ) and channel stepping (in conjunction with pair of keys <u>27</u> ).
<u>16</u>	STO    RCL	Pair of keys for storing (STO) and recalling (RCL) 3 complete instrument settings. Subsequently enter address 1 to 3.
<u>17</u>	POWER (OFF)	Power switch.
<u>18</u>	CE	Key for erasing the numerical values entered (e.g. in the case of illegal entry) and for switching off overflow indication.
<u>19</u>	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
<u>34</u>	<p style="text-align: center;">T 1.25 N</p> <p style="text-align: center;">220 V~                      235 V~</p> <div style="text-align: center;">  </div> <p style="text-align: center;">115 V~                      125 V~</p> <p style="text-align: center;">T 2.50</p>	Fuse holder and voltage selector.
<u>35</u>		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  $\frac{3}{4}$  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  $\Delta$  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<sup>†</sup>, 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.

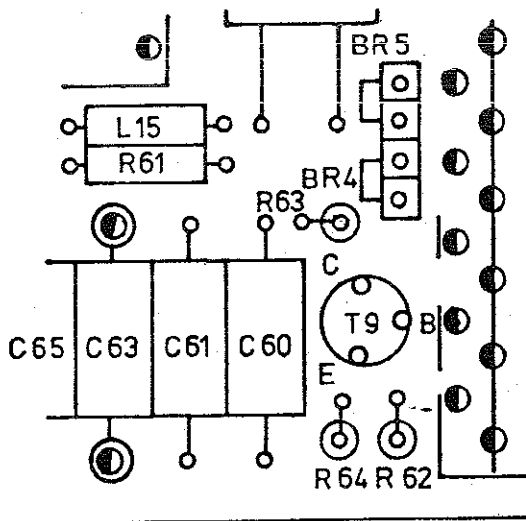


Fig. 1a) Position of link for reference frequency output.

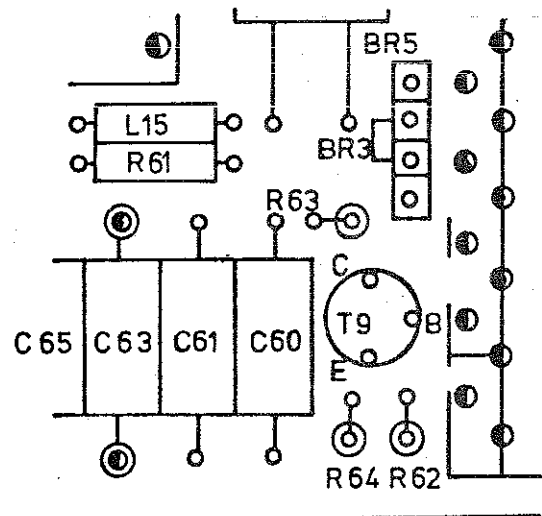


Fig. 1b) Position of link for reference frequency input.

<sup>†</sup>) (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  $1 V_{\text{rms}}$ . 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:  $113 \text{ k}\Omega \pm 1\% 0.35 \text{ W}$  (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  $1 V_{\text{rms}}$ . 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 setting 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, PM 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.

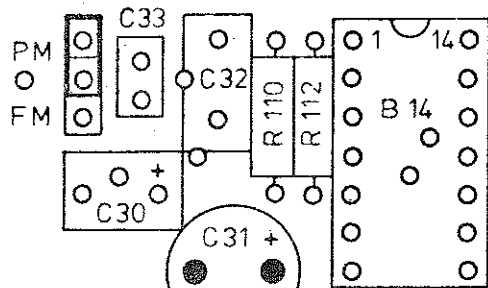


Fig. 2a) Position of link for phase modulation via the MODULATION input on the rear panel.

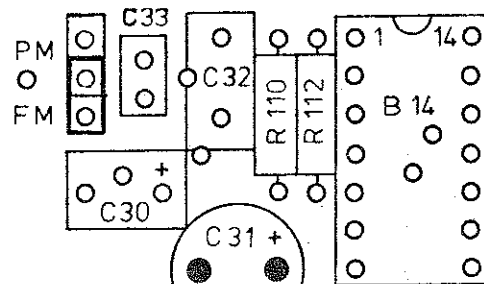


Fig. 2b) Position of link for FM via the MODULATION input on the rear panel.

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  $\mu$ V, mV, dB $\mu$ V or dBm. At the same time, the unit of the numerical value entered is defined. In the case of negative dBm or dB $\mu$ V 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  $\mu$ V,            -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  $\mu$ V to 1000 mV
- 30 dB $\mu$ V to +120 dB $\mu$ V

In the AM mode, the following ranges apply:

-137 dBm to +7 dBm

0.03  $\mu$ V to 500 mV

-30 dB $\mu$ V to +114 dB $\mu$ V.

#### 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 dB $\mu$ V 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  $\mu$ V 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  $\mu$ V or from  $\mu$ V to mV if the output level is taken below 0.1 mV or above 1000  $\mu$ V.

### 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  $\Omega$ .

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

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

Hence, 1  $\mu$ V output voltage corresponds exactly to 0 dB $\mu$ V. Voltages above 1  $\mu$ V yield positive values and voltages below 1  $\mu$ V negative values in dB $\mu$ V.

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:

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

or from the voltage:

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

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):

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

### 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 dB $\mu$ V 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 output 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.



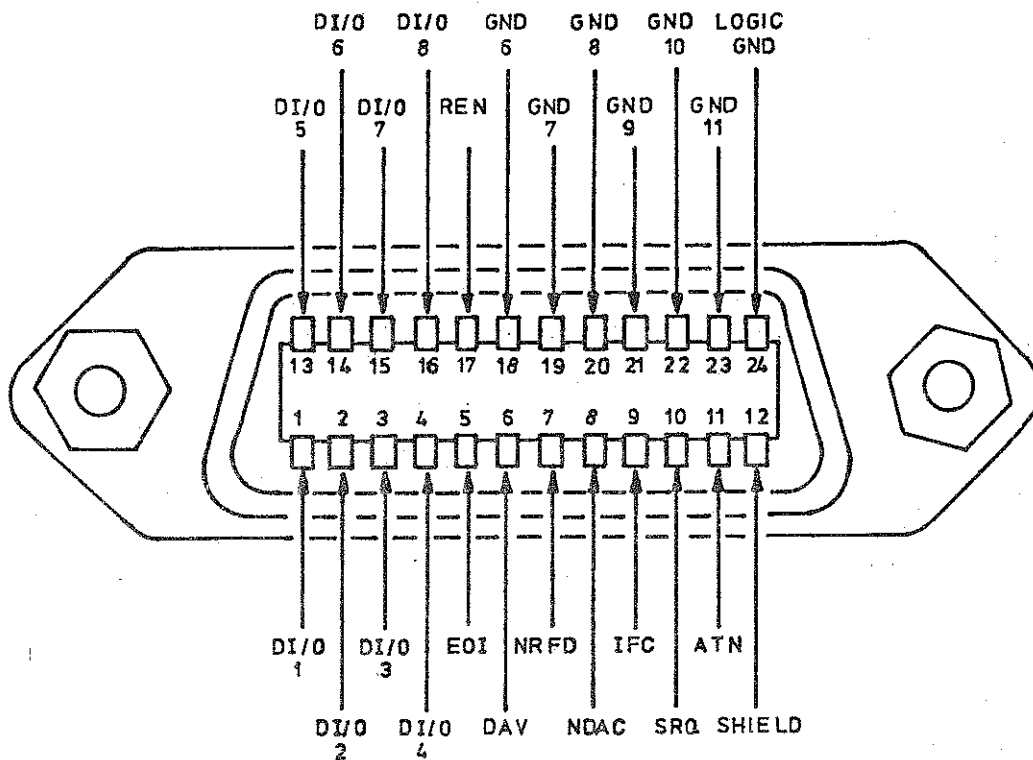


Fig. 3 Contact occupancy of REMOTE CONTROL socket

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.

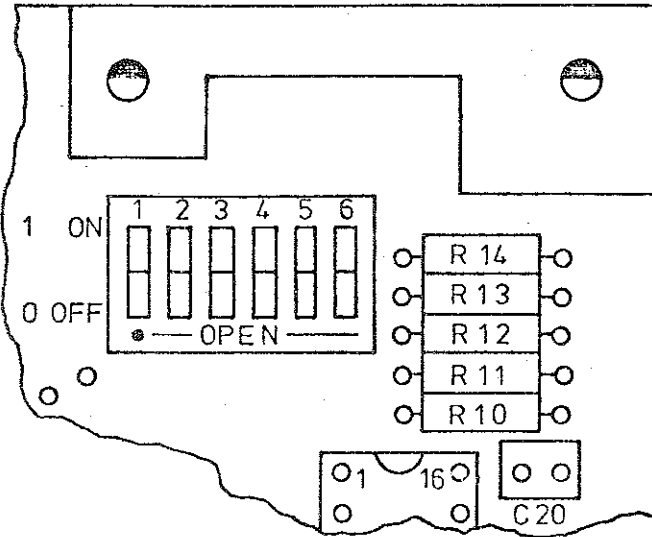


Fig. 4 Arrangement of coding switch

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
<u>Frequency</u> in MHz	A	max. 8 decimal places with or without decimal point	, (comma)
<u>Modulation</u>			
AM m in %	B	max. 3 decimal places with or without decimal point	,
FM Δf in kHz	H		,
UNMOD	C	none	,
INT 400 Hz	I	none	,
INT 1 kHz	J	none	,
EXT	K	none	,
<u>Level</u>			
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 without decimal point	,
in mV	Q		,
Switchover for continuous fine variation	X	none	,
RF OFF	Y	0	,
RF ON	Y	1	,
Pause 15 ms	@	none	,

The channel stepping ( $\Delta f$ ) 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 <sup>†</sup>	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;" PRINT@28:"S-24.8,"	F=123.5 wrt728,"A",F;" wrt728,"S-24.8,"	LET F=123.5 OUTPUT728;"A";F;" OUTPUT728;"S-24.8,"	LET F=123.5 PRINT #1,"A";STR\$(F);" PRINT #1,"S-24.8,"	F=123.5 IECOUT28,"A"+STR\$(F);" IECOUT28,"S-24.8,"
Level -24, 8 dBm	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,"
Level -23, 7 dBm with continuous fine variation	PRINT@28:"H2.8,J,"	wrt728,"H2.8,J,"	OUTPUT728;"H2.8,J,"	PRINT #1,"H2.8,J,"	IECOUT28,"H2.8,J,"
FN 2, 8 kHz dev. with 1 kHz INT.	PRINT@28:"Y0,"	wrt728,"Y0,"	OUTPUT728;"Y0,"	PRINT #1,"Y0,"	IECOUT28,"Y0,"

<sup>†</sup>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 dB $\mu$ V)



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 PFC
Go to Local	WBYTE @60,1:	lcl728	LOCAL728 oder LOCAL7	No such capability	IECLAD28 IECGTL IECUNL
Local lockout	WBYTE @60,17: oder WBYTE @17:	llc7 (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	IECHEN 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 $\Omega$ 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 $\Omega$	DPVP 214.8017.52	3.2.2.5
4	Test receiver  Frequency controller	Range 25 to 520 MHz Inherent noise < -10 dB/ $\mu$ V	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 <sub>out</sub> = 600 $\Omega$ 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 recti- fier	part of FAM	3.2.2.19
13	Precision exten- sion cable	Z = 50 $\Omega$	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 $\geq$ 2 W Z = 50 $\Omega$	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:

$1 \times 10^{-6}/\text{month} + 1 \times 10^{-6}/^{\circ}\text{C}$  (standard reference oscillator)

$1 \times 10^{-6}/\text{year} + 1 \times 10^{-7}$  (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  $\leq 1.8$  dB (0.4 to 8 MHz)  
 $\leq 0.8$  dB (8 to 520 MHz).

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

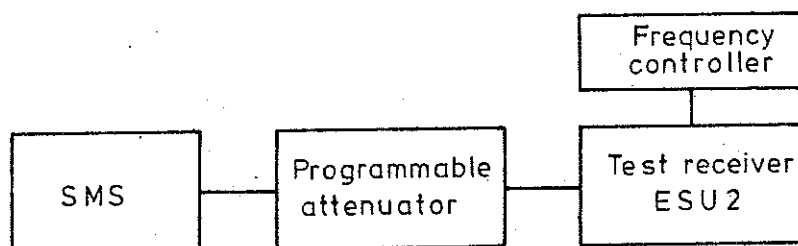
Test: Reduce level to 1.1 dBm by means of 0.1-dB key and check the level steps on the power meter. The permissible deviation is  $\pm 0.5$  dB at 1.1 dBm.

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	$\left\{ \begin{array}{l} 380 + f_{\text{SMS}} \\ 380 \\ 251 \end{array} \right.$
129	
Range 110 to 129.9999	$\left\{ \begin{array}{l} 380 - 2 f_{\text{SMS}} \\ 380 - 3 f_{\text{SMS}} \end{array} \right.$
Range 75 to 129.999	
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<sup>+)</sup> , 1000<sup>+)</sup>  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:  $\leq \pm 5\%$ .

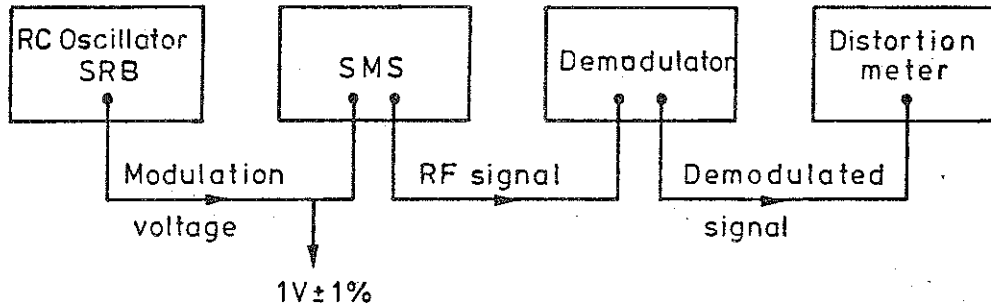
---

<sup>+)</sup>  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	75 kHz	$\leq 1\%$
	1 kHz external	75 kHz	$\leq 1\%$

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	$\leq 1.5\%$
b) 350 MHz	1 kHz internal/ external	$\leq 1.5\%$

Table 10

### 3.2.2.14 Checking the Phase Modulation

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

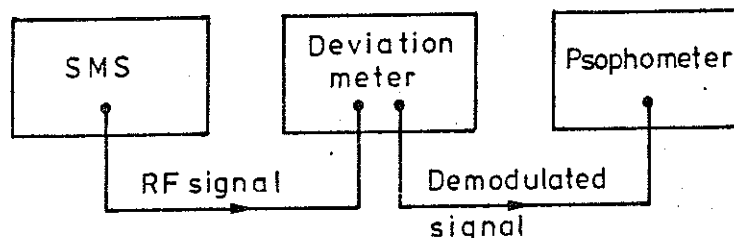
Test setup: See illustration in section 3.2.2.11.

Test: Apply AC voltage of 1.00 V  $\pm 1\%$  (50 Hz to 3 kHz) to the modulation socket on the rear panel. This must produce a phase modulation of 5 rad ( $\pm 5\%$ ). 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:  $\leq 4$  Hz.

### 3.2.2.16 Checking the External ALC

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

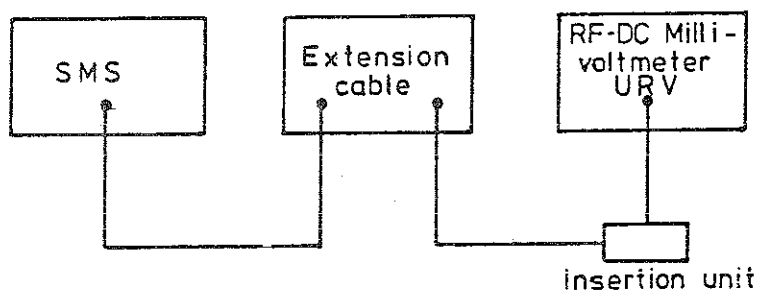
Test setup: Connect power meter to the RF output of the SMS.

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 ( $\Delta f = 7.5$  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.

2.2.2.20 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	-		+500	Hz/K
	a) Temperature effect					Hz
	b) Aging		-		+500	Hz/mon
	Option SMS B-1					Hz/mon
3	Spurious deviation with CCITT weighting filter	3.2.2.15	-			
	129 MHz					Hz
	520 MHz					Hz
4	with Option SMS B-2		-		8	Hz
	Suppression of non-harmonic spurious signals					
	at					
	with Option SMS B-2					
		3.2.2.6	60			dB
	108 MHz					dB
	119 MHz					dB
	129 MHz					dB
	530 MHz					dB
1040 MHz	dB					



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

Ref.No.	Characteristic	Measurement acc. to section	Min.	Actual	Max.	Unit
10	AM error 1 MHz m = 40% m = 90% 350 MHz m = 40% m = 90%	3.2.2.12	36.8 82.8 38 85.5		43.2 97.2 42 94.5	% % % %
11	Envelope distortion 0.4 MHz, m = 80% at 1 kHz 350 MHz, m = 80% at 1 kHz Option SMS B-2: 1040 MHz, m = 80% at 1 kHz	3.2.2.13	- - -		1.5 1.5 5	% % %
12	Error of modulation attenuator 460 MHz deviation = 9 kHz 16 kHz 16.5 kHz 17 kHz 18 kHz 20 kHz 24 kHz 32 kHz 64 kHz	3.2.2.9	8.82 15.68 16.17 16.66 17.64 19.60 23.52 31.36 62.72		9.18 16.32 16.83 17.34 18.36 20.4 24.48 32.64 65.28	kHz kHz kHz kHz kHz kHz kHz kHz 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		105	kHz
			95		105	kHz
			95		105	kHz
			95		105	kHz
			95		105	kHz
			95		105	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 $\Delta P = 6$ 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 270 MHz 510 MHz	3.2.2.17	- -		1.2 1.2	
18	Checking the interface function	3.2.2.18	-		-	(V)
19	Response threshold of overload protection DC RF		- -		5 1	V 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

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

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.

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

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  $f_H \pm (20 \text{ to } 60) \text{ MHz}$  ( $f_H =$  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.

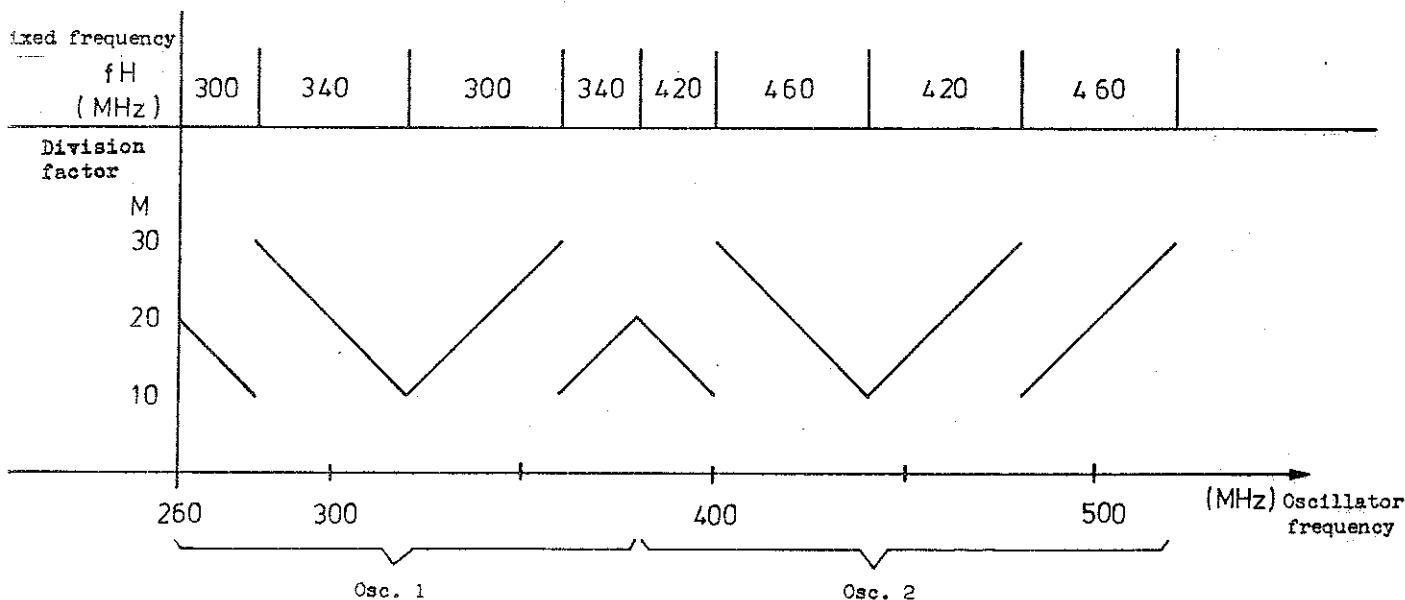


Fig. 5 Relation between the four fixed frequencies, the division factor M and the frequency of the main oscillators.

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

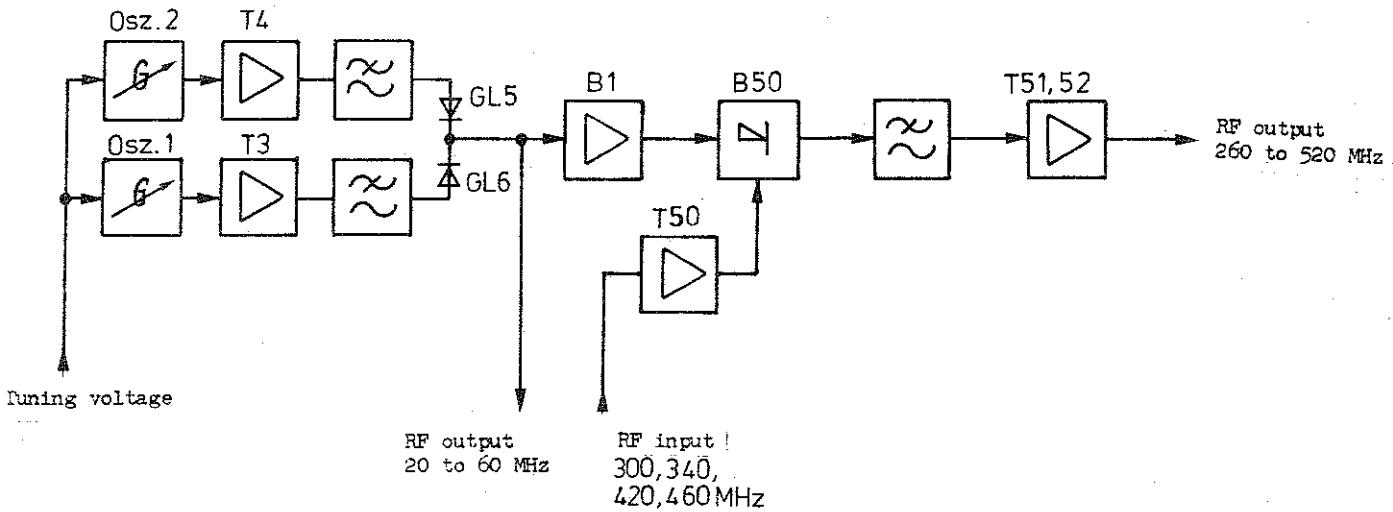


Fig. 6 Block diagram of the oscillator Y3.

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

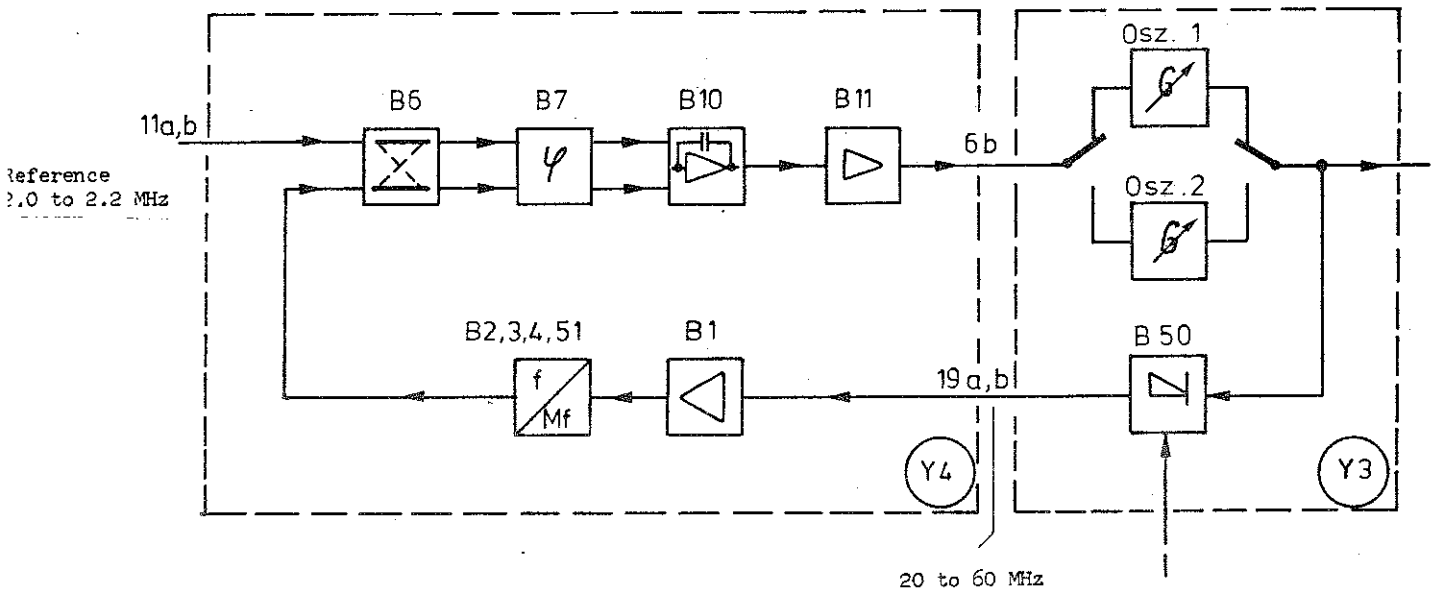


Fig. 7 Block diagram of the phase control loop.

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.

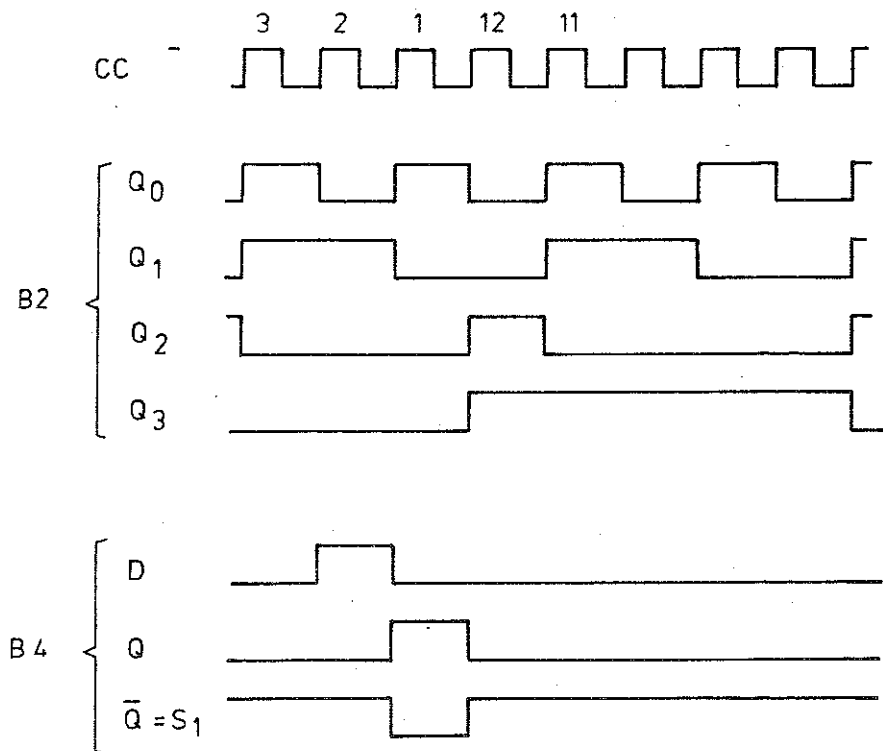


Fig. 8 Pulse train of the counter outputs  $Q_0$  to  $Q_3$ .

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  $\pm 6$  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

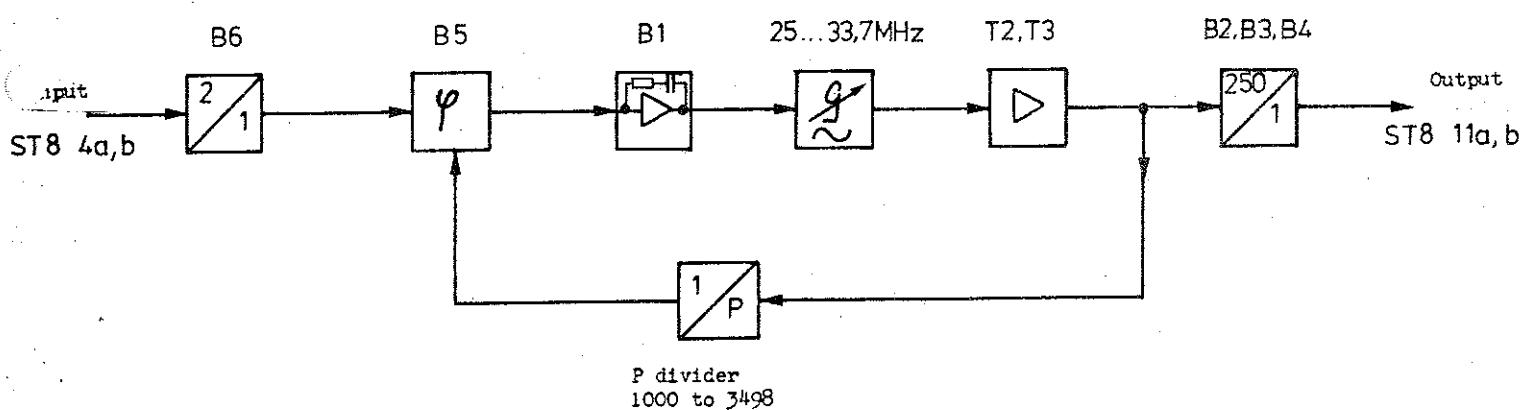


Fig. 9 Block diagram of the interpolation oscillator.

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.

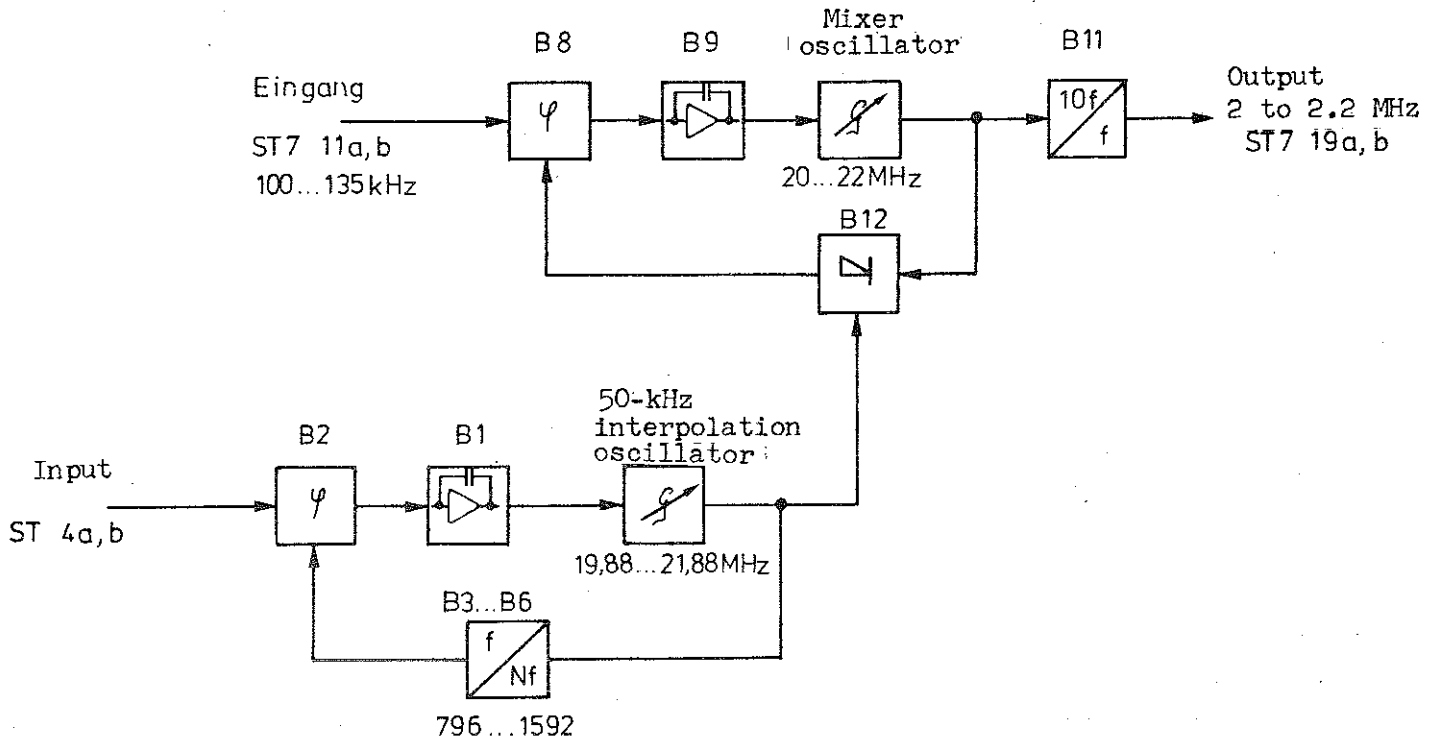


Fig. 10 Block diagram of the 50-kHz interpolation oscillator Y7.

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 flipflop 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 B5I (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  $\pi$ -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  $\Omega$  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 PM (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  $0^\circ$  or  $180^\circ$  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  $\mu P$  8049.

The signals I, J, K, M, L, N at the port outputs P10 to P15 of the  $\mu$ P 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, (%)	$\geq$ 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  $\mu$ P 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 <sup>+</sup> )	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 G11 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  $\mu$ A 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  $\text{dvd}$ .

The output  $O_{\text{loc}}$  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  $O_{\text{loc}}$  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.

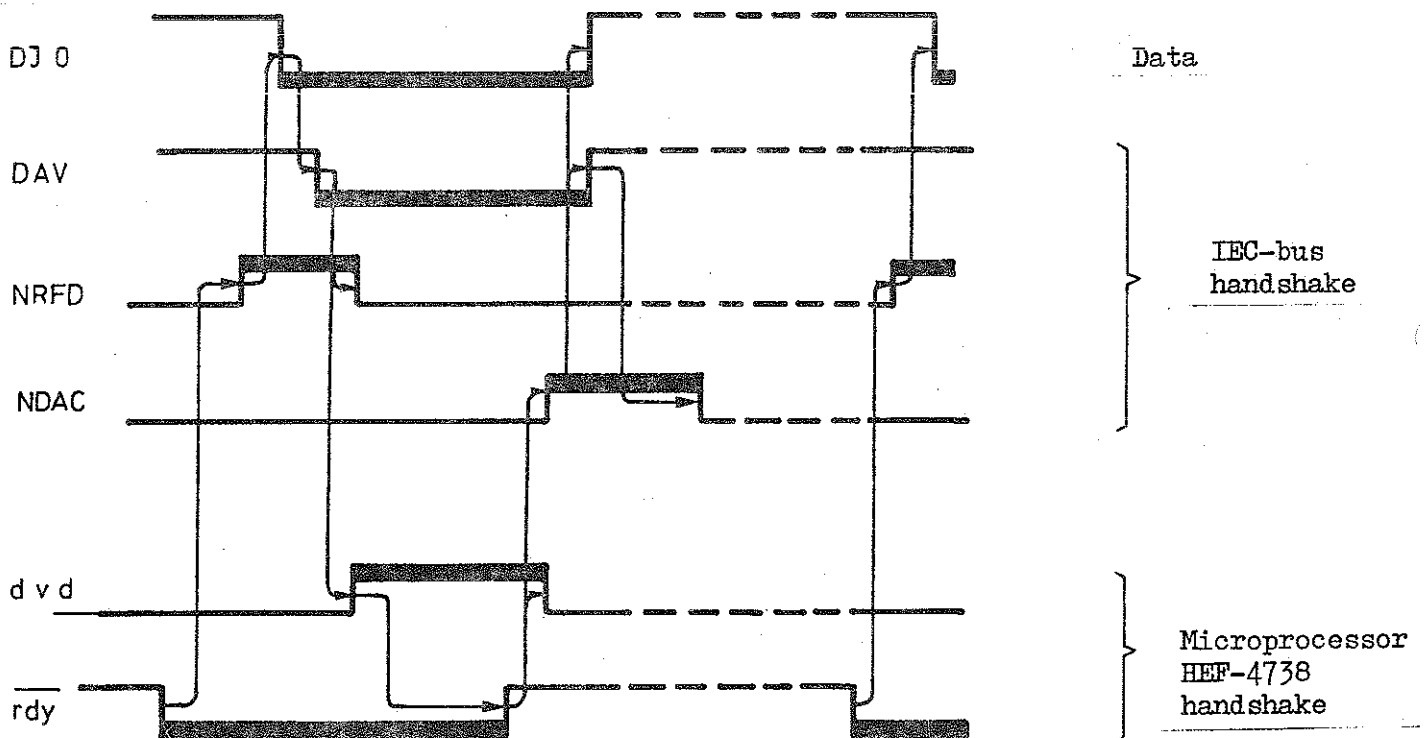


Fig. 11 Time sequence of the handshake.

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 doas (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.

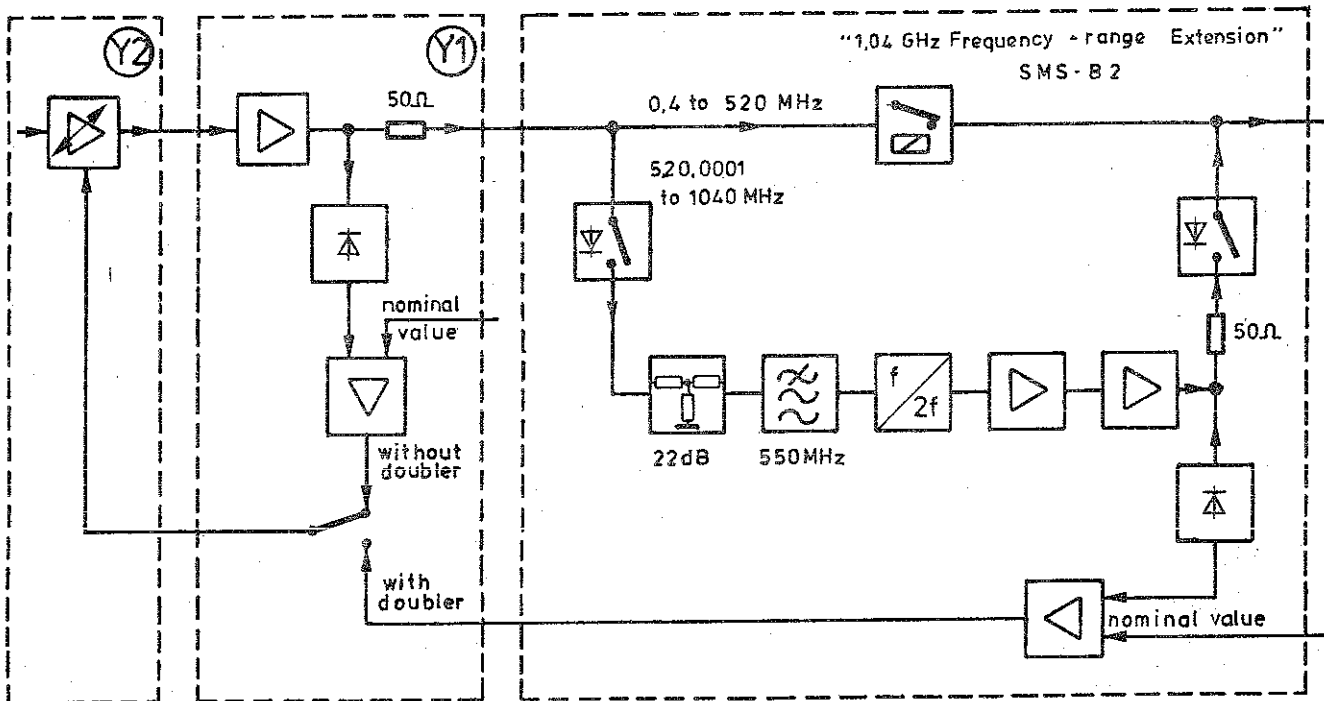


Fig. 12 Block diagram of 1.04-GHz Frequency-range Extension SMS-B2

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 $\Omega$ , 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 $\Omega$	DPVP 214.8017.52	5.2.7 5.3.19
4	Test receiver  Frequency controller	Range 25 to 520 MHz Inherent noise < -10 dB/ $\mu$ V	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 <sub>out</sub> = 600 $\Omega$ 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 $\approx$ 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 $\Omega$	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 $\approx$ 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 $\Omega$	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 $R_i > 10 \text{ M}\Omega$ 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

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).

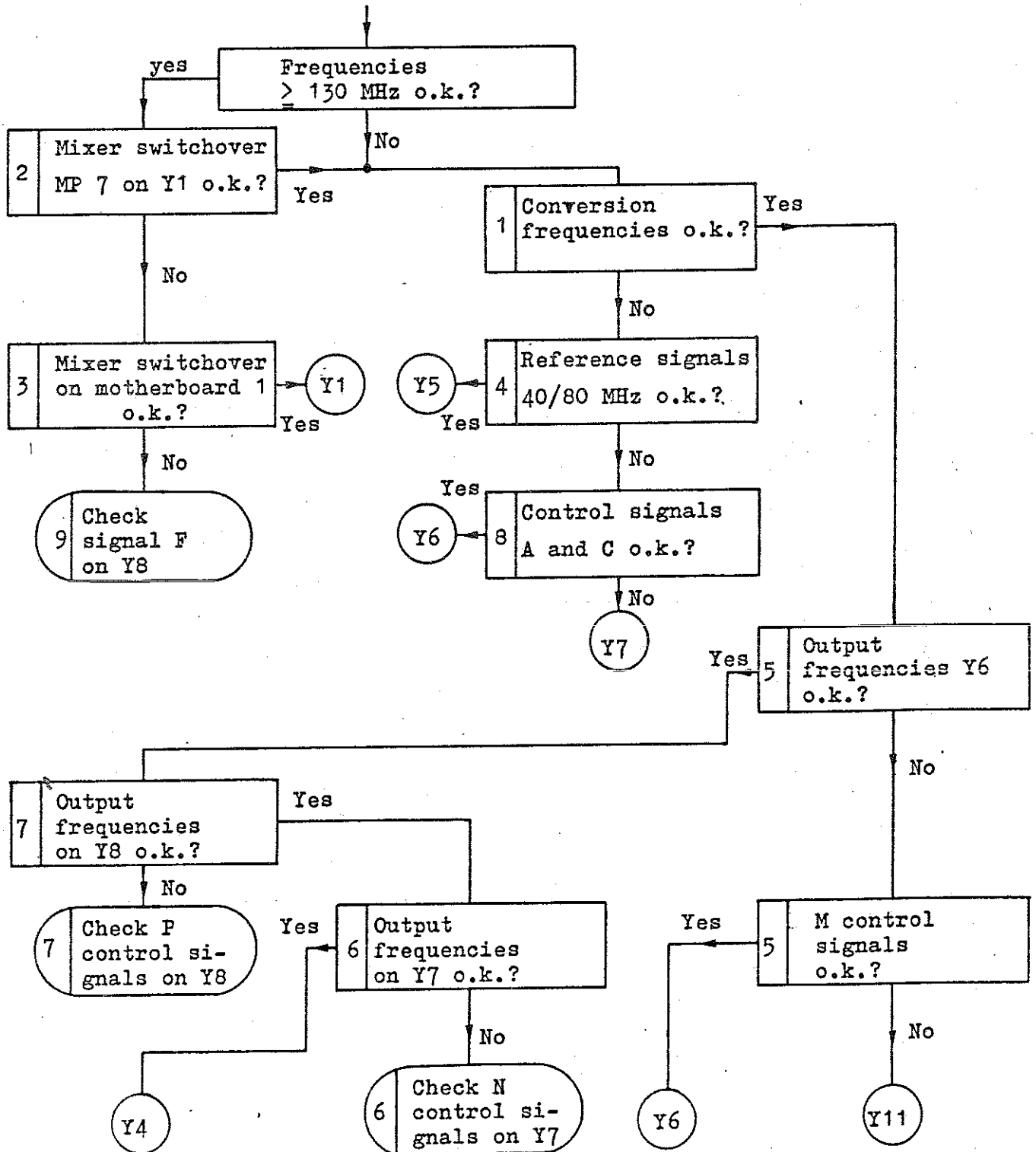
!!! Replace circuit boards only with the SMS switched off !!!

List of circuit boards

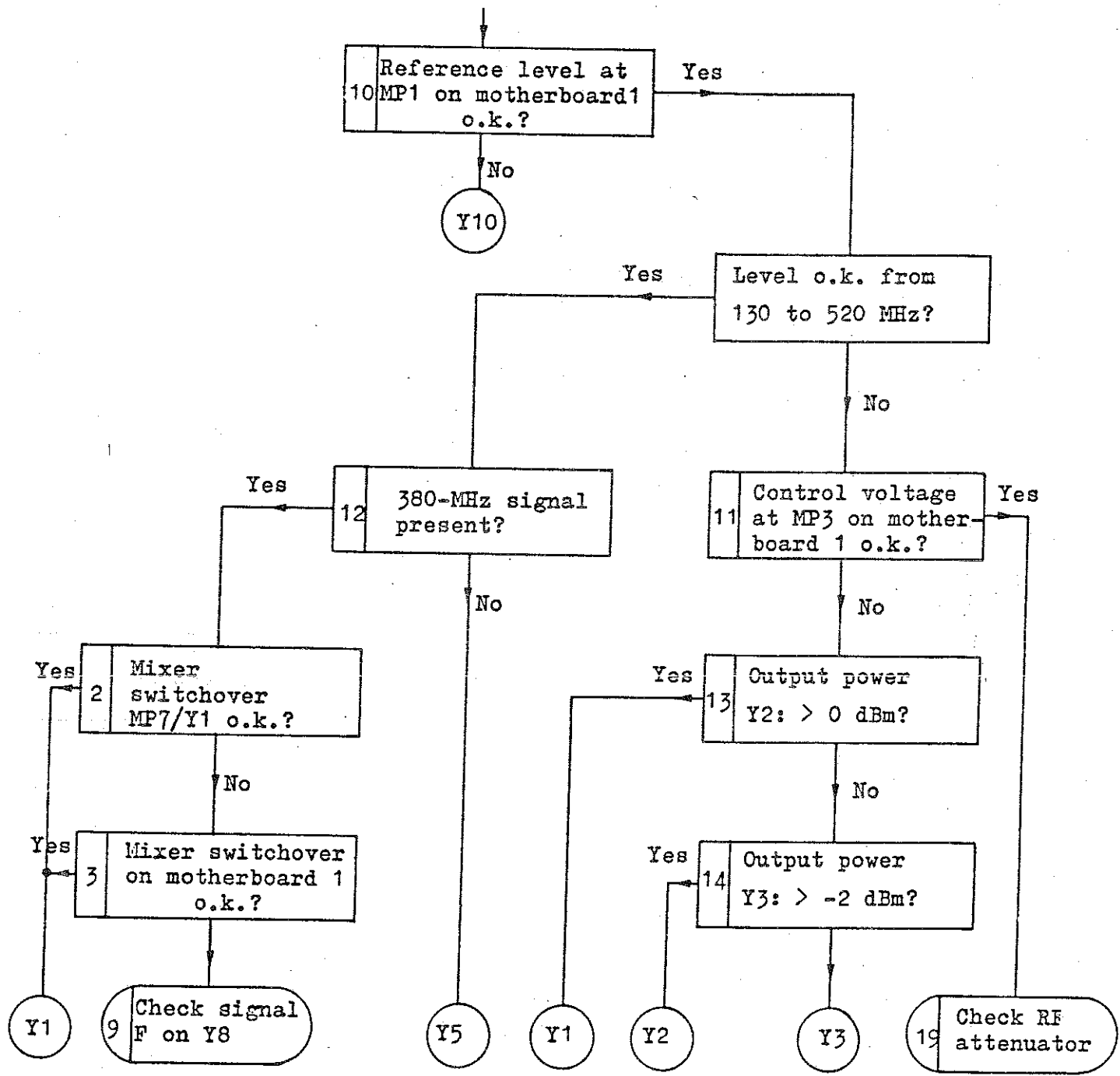
No.	Designation	Id. No.	Colour coding
Y1	Output stage	302.5219	White - white
Y2	Divider	.5419	Green - green
Y3	Oscillator	.5619	Black - black
Y4	Phase control	.5819	Blue - blue
Y5	Converter	.6015	Yellow - yellow
Y6	Reference	.6215	Yellow - red
Y7	50-kHz interpolation oscillator	.6415	Yellow - blue
Y8	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

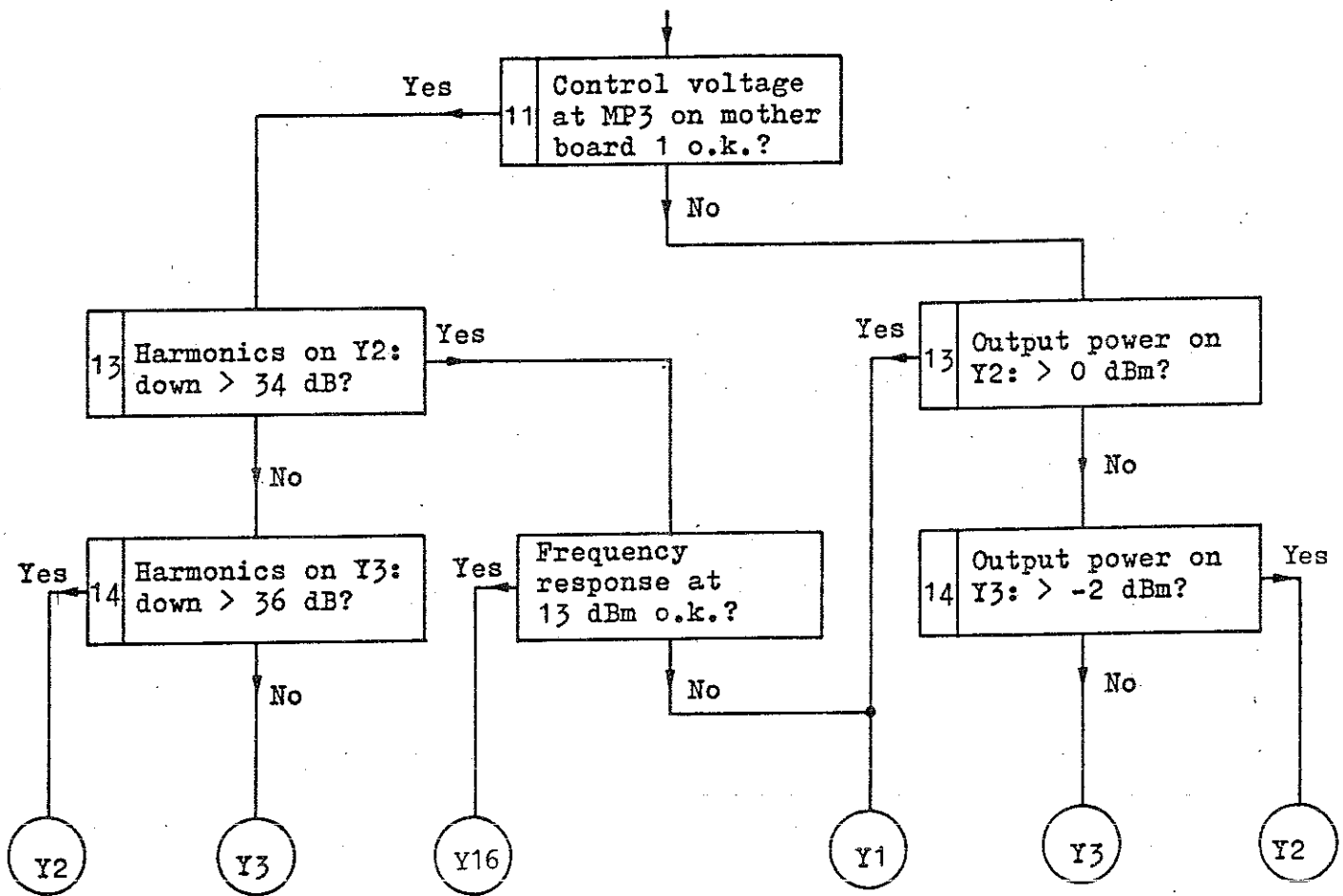
5.2.1 Incorrect Output Frequency



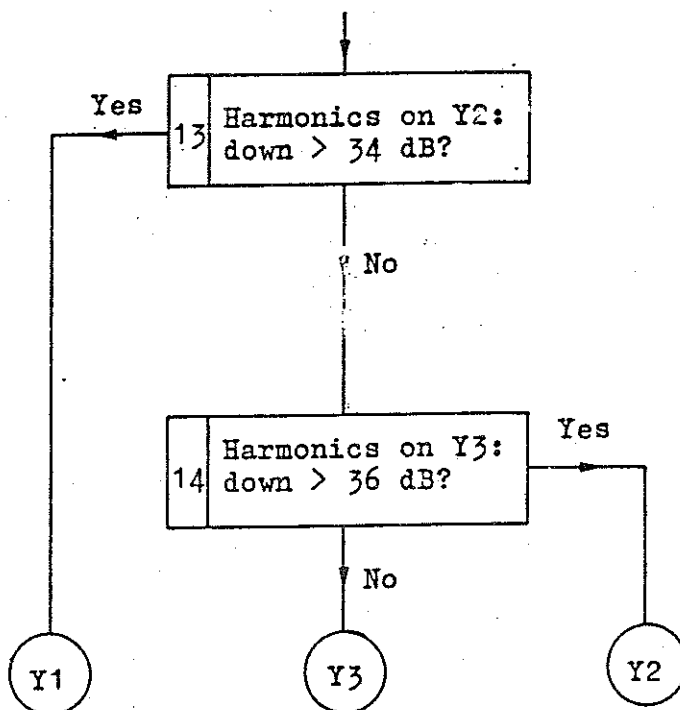
5.2.2 Incorrect Output Level



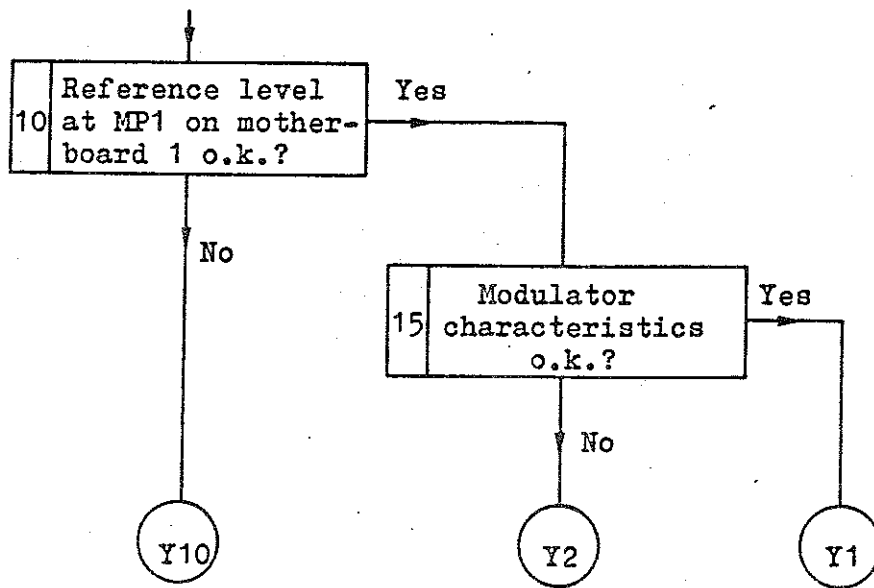
5.2.3 RF Frequency Response not to Specification



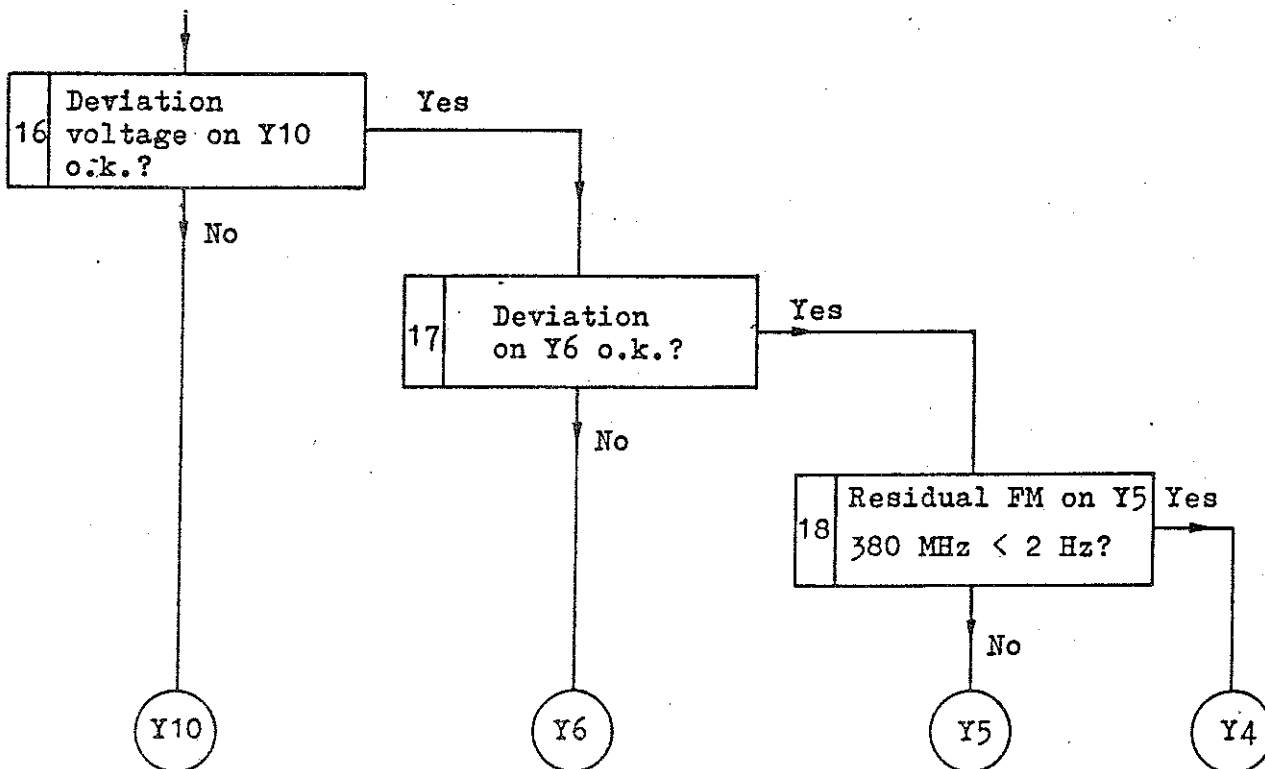
5.2.4 Harmonics not Within Specification



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 ( $Z_{in} > 100 \text{ k}\Omega$ ) 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)		M control signals BU6 contact				
	Y8 (MP7)	Y7 (MP8)	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	33.333	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 ( $Z_{in} > 100 \text{ k}\Omega$ ) 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 P7	15	14	13	17	18 P6	19	20	21	22 P5	23	1
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 ( $Z_{in} > 100 \text{ k}\Omega$ ) 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 P7	15	14	13	17	18 P6	19	20	21	22	23	1	P5
340.0048	102.4	H	L	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	L	H
340.0050	102.5	H	L	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	L
340.0056	102.8	H	L	L	L	L	L	L	L	H	L	L	L	L
340.0064	103.2	H	L	L	L	L	L	L	H	L	L	L	L	L
340.0080	104	H	L	L	L	L	L	H	L	L	L	L	L	L
340.0112	105.6	H	L	L	L	L	H	L	L	L	L	L	L	L
340.0176	108.8	H	L	L	L	H	L	L	L	L	L	L	L	L
340.0304	115.2	H	L	L	H	L	L	L	L	L	L	L	L	L
320.0024	102.4	L	H	L	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	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 Control signal Contact	Range identification		Oscillator switchover	Divider
	A	B	C	D
	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 2	Mixer 3	Doubler 4	AM slow 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

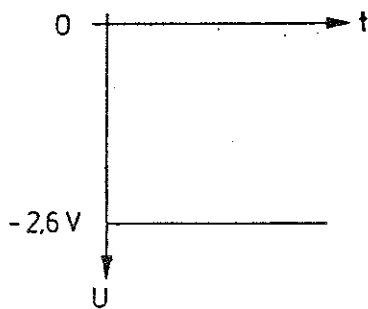
Table 22

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.

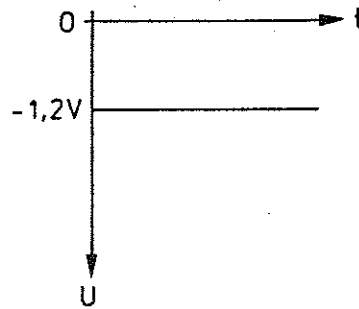
+ ) Only if fitted with the Frequency Range Extension Option.

### 5.2.7.10 Control Quantity for Gain Control

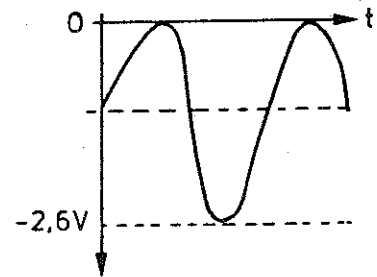
Connect the oscilloscope to MP1 on motherboard 1 and check the voltage levels:



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	1	23	22
		P4				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							
		P6				P7			
		20	19	18	17	13	14	15	16
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  $\overline{L}$  , STOP edge  $\overline{F}$  , CLOCK edge  $\overline{L}$  .

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  $\perp$  .
- 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 $\pm$ 0.05 V	R2	5 V
+15 V $\pm$ 0.05 V	R25	15 V
+20 V $\pm$ 0.05 V	R36	20 V
+28 V $\pm$ 0.1 V	R47	28 V

Table 26

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

Permissible deviation:  $\pm 0.5$  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 <sub>rms</sub> )
+5.1 V	$\pm 0.01$ V	< 0.4
-15 V	$\pm 0.05$ V	< 1.5
+15 V	$\pm 0.1$ V	< 1
+20 V	$\pm 0.1$ V	< 0.6
+28 V	$\pm 0.1$ 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  $\Omega$  and 500  $\Omega$ . 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  $4 \text{ V} \pm 0.1 \text{ V}$ .
- The frequency at input ST7.11a,b is 100 kHz.

Enter frequency of 318.0152 MHz. The voltage at MP1 must be  $< +25 \text{ V}$ . The frequency at input ST7.11a,b is 134.8 kHz. If the voltage at MP1 is  $> +25 \text{ V}$ , 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  $5 \pm 0.1 \text{ V}$ .
- Enter frequency of 318.0001 MHz.  
The voltage at MP1 should be  $< +25 \text{ V}$ .

#### 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  $5 \pm 0.1 \text{ V}$ .

- Enter frequency of 318.0001 MHz.
- The voltage at MP2 should be  $+21 \text{ V} < V < +25 \text{ V}$ .

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 <sup>+0.2</sup> -0.15	9 <sub>-0.5</sub>
360	340	1.6 <sup>+0.2</sup> -0.1	9 <sub>-0.5</sub>
390	420	1.9 <sup>+0.2</sup> -0.1	9.5 <sub>-0.5</sub>
420	460	2.1 <sup>+0.3</sup> -0.2	10 <sup>+1</sup> -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	} -18 to -22 dBm
360	
390	
420	

### 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  $0 \pm 0.2$  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<sub>pp</sub>) at test pin of link connected to R92.

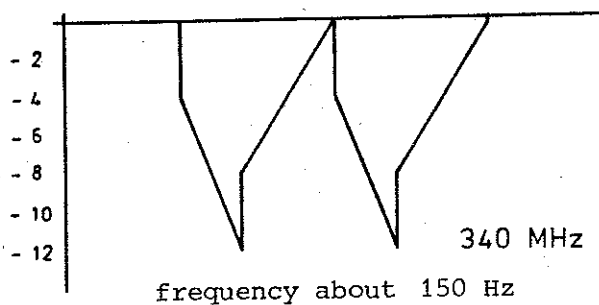
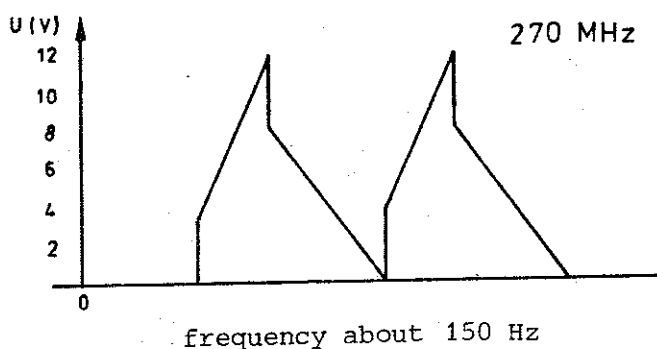
Enter frequencies and check voltages at MP6 according to Table 38.

Frequencies on the SMS	V (V <sub>pp</sub> )
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.



- 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	0.18	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  $\pm 3$  Hz by means of resistor R1.
- e) Setting on the SMS: AM INT. 400 Hz.  
Adjust the frequency to 400 Hz  $\pm 2$  Hz by means of R2.
- f) Connect the oscilloscope to MP2.  
Vary R12 until the lower of the two voltages is 80 mV<sub>pp</sub> 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 -  $2 f_{\text{SMS}}$  and  
380 MHz -  $3 f_{\text{SMS}}$  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  $\pm 0.3$  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  $1.0 V_{\text{rms}}$  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 SMIU, with an RF power output between 0 and 2 W.

Adjustment: Vary the potentiometer R7 until the overload protection responds with a power input  $P = 0.5 \text{ W}$ . 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 ER1 and ER2 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 motherboard 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.



**ROHDE & SCHWARZ**

MÜNCHEN

Bilder  
Figures

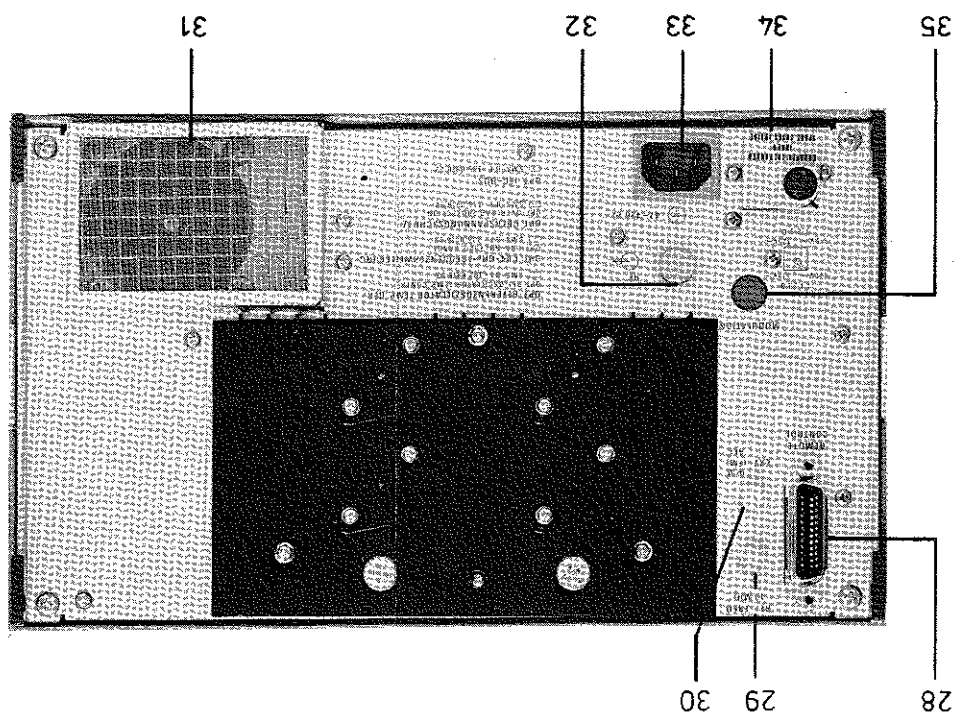


Bild 14 Rückansicht  
Fig. 14 Rear panel

13  
14

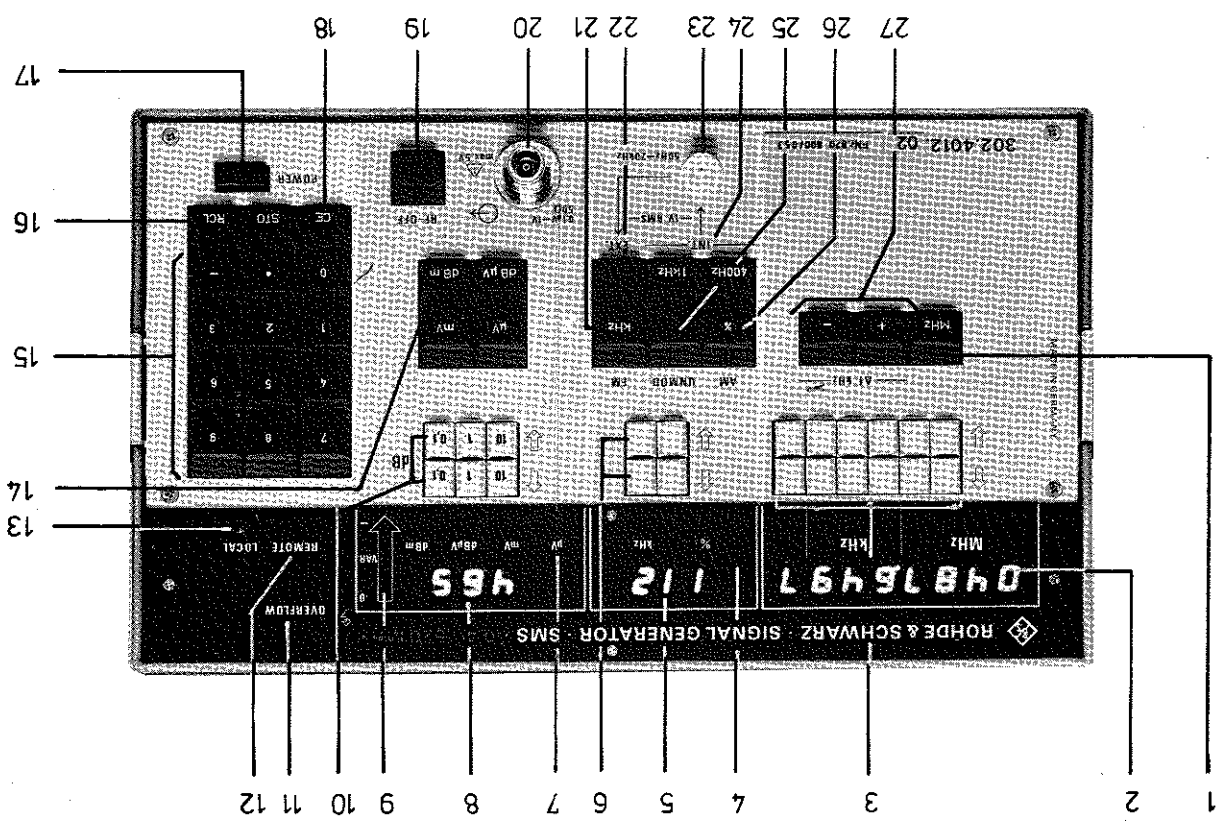


Bild 13 Frontansicht  
Fig. 13 Front panel

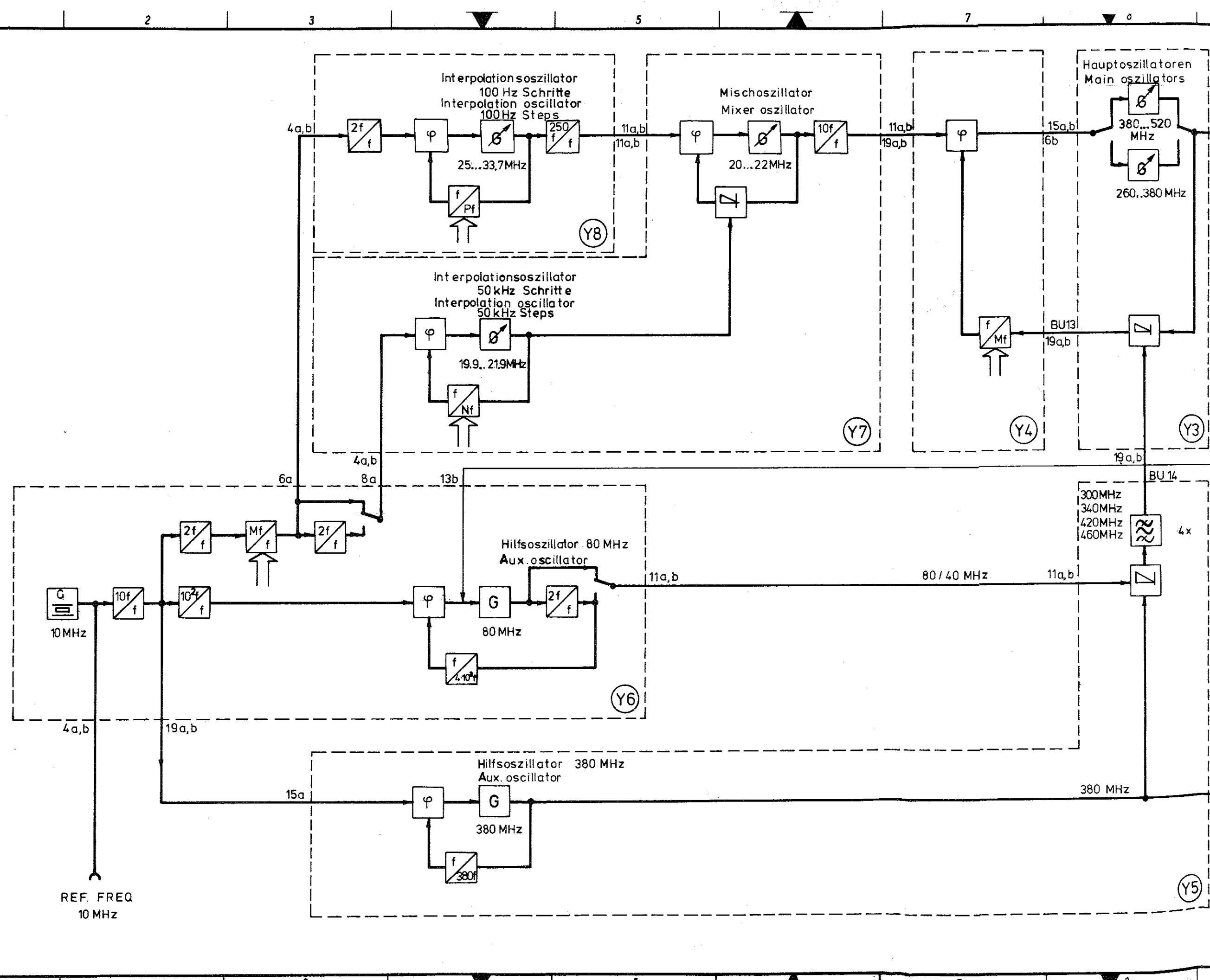
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ROHDE & SCHWARZ MÜNCHEN

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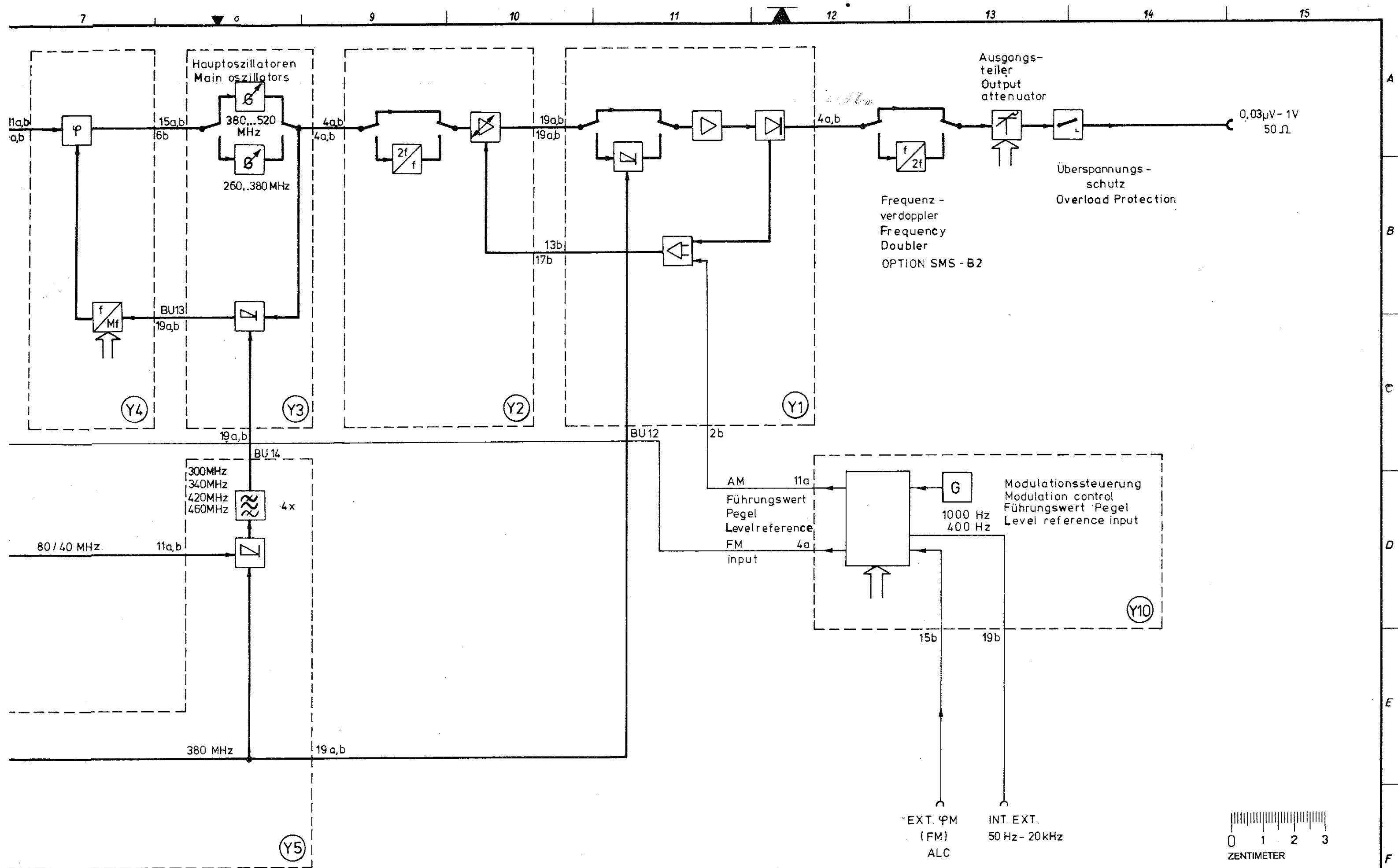
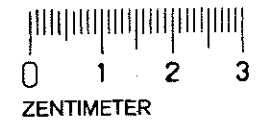


Bild 15 Blockschaltbild  
Fig. 15 Block diagram

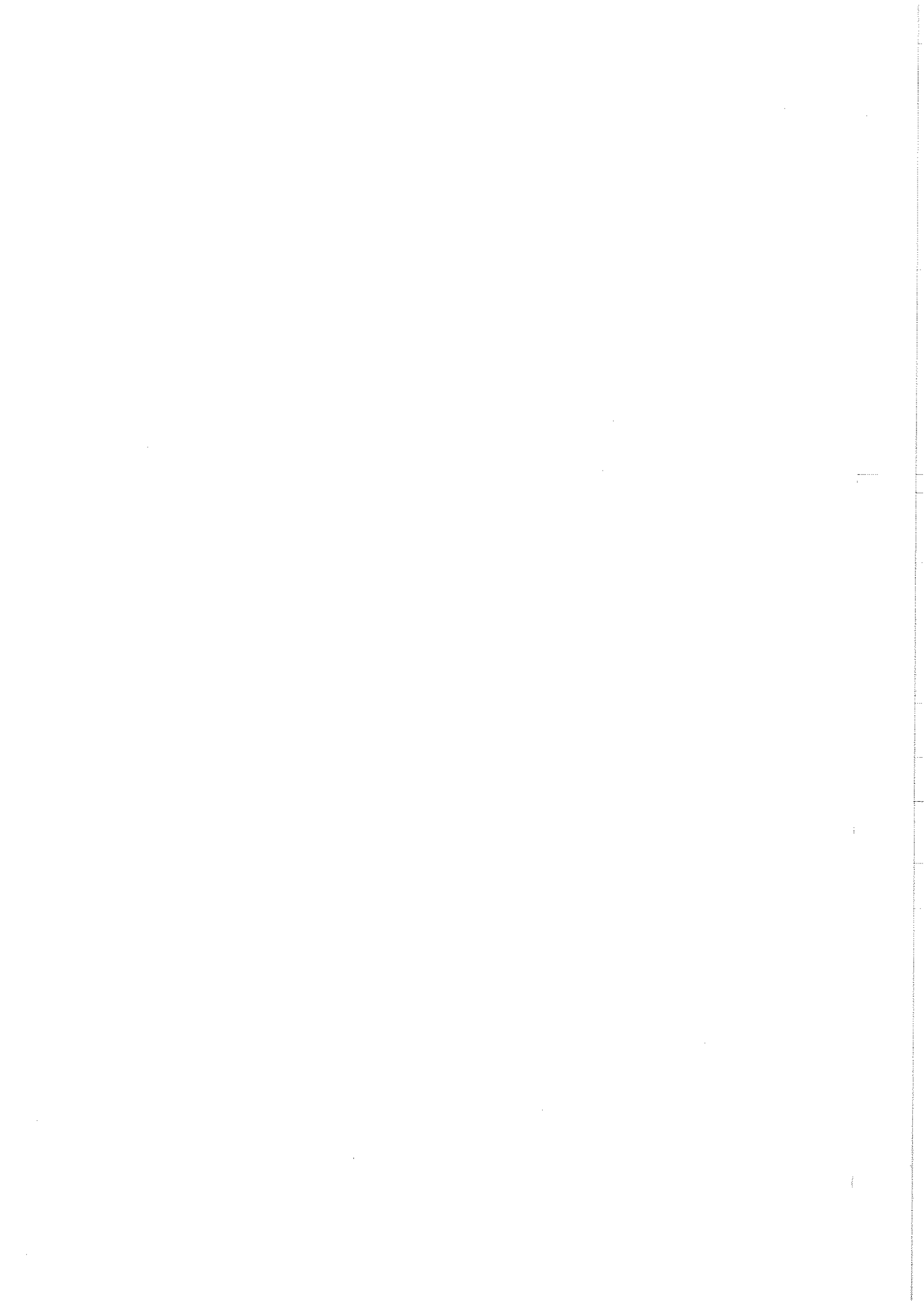




**ROHDE & SCHWARZ**

MÜNCHEN

Schalteillisten  
numerisch geordnet  
Parts lists  
in numerical order





**S M S Ersatzteile (Ergänzung)**

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



Kennzeichen	AZ Datum 22 02 82	Schalttaelliste für SMS SIGNAL GENERATOR	Sachnummer	Blatt Nr. 1
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
A		ZUGEHÖRIGER STROMLAUF		
B1		BO UAT41MIG OP-AMP- TEXAS UAT41MIG	302-5160	
BU1		FP DIREKT 40-POLIG	302-5119	
BU8		FP DIREKT 40-POLIG	302-5119	
BU9		FP DIR-BUCHSENLEISTE 64P-	302-5160	
BU10		FP DIREKT 40-POLIG	302-5160	
BU11		FP DIREKT 40-POLIG	302-5160	
BU20		FR JC-FASSUNG 76 POLIG	302-5160	
BU24		EURO-DIP BU16 OZ IM MAGAZIN	302-4606	
BU26		BUCHSENLEISTE	302-4593	
BU30		BUCHSENLEISTE	302-4587	
BU31		FJ EINBAUBUCHSE SYST-BNC SUHNER 24N-50-3-X FUER SR3	302-4570	
BU33		FJ EINBAUBUCHSE SYST-BNC SPINNER BN292700	302-8630	
BU35		FJ EINBAUBUCHSE SYST-BNC SPINNER BN942403	302-7392	
		SPINNER BN719000	302-7392	
C1		CC 1,5NF-20+80XR1000TRAP	302-6815	
C2		STETTNER TEFK7,1500/2080E9000	302-6815	
C3		CC 1,5NF-20+80XR1000TRAP	302-6815	
C4		STETTNER TEFK7,1500/2080E9000	302-6815	
C5		CC 1,5NF-20+80XR1000TRAP	302-6815	
C6		STETTNER TEFK7,1500/2080E9000	302-6815	
C7		CC 1,5NF-20+80XR1000TRAP	302-6815	
C8		STETTNER TEFK7,1500/2080E9000	302-6815	
C9		CC 1,5NF-20+80XR1000TRAP	302-6815	
C10		STETTNER TEFK7,1500/2080E9000	302-6815	
C11		CC 1,5NF-20+80XR1000TRAP	302-6815	
C12		STETTNER TEFK7,1500/2080E9000	302-6815	
C13		CC 1,5NF-20+80XR1000TRAP	302-6815	
C14		STETTNER TEFK7,1500/2080E9000	302-6815	
C15		CC 1,5NF-20+80XR1000TRAP	302-6815	
C16		STETTNER TEFK7,1500/2080E9000	302-6815	
C17		CC 1,5NF-20+80XR1000TRAP	302-6815	
C18		STETTNER TEFK7,1500/2080E9000	302-6815	
C19		CC 1,5NF-20+80XR1000TRAP	302-6815	
C20		STETTNER TEFK7,1500/2080E9000	302-6815	

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Kennzeichen	AZ Datum 22 02 82	Schalttaelliste für SMS SIGNAL GENERATOR	Sachnummer	Blatt Nr. 2
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
C21		STETTNER TEFK7,1500/2080E9000	302-6815	
C22		CC 1,5NF-20+80XR1000TRAP	302-6815	
C23		STETTNER TEFK7,1500/2080E9000	302-6815	
C24		CC 1,5NF-20+80XR1000TRAP	302-6815	
C31		STETTNER TEFK7,1500/2080E9000	302-6815	
C32		CC 1NF+80-20XR4000 TRAP	302-6815	
C33		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C34		CC 1NF+80-20XR4000 TRAP	302-6815	
C35		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C36		CC 1NF+80-20XR4000 TRAP	302-6815	
C37		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C38		CC 1NF+80-20XR4000 TRAP	302-6815	
C39		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C40		CC 1NF+80-20XR4000 TRAP	302-6815	
C41		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C42		CC 1NF+80-20XR4000 TRAP	302-6815	
C43		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C44		CC 1NF+80-20XR4000 TRAP	302-6815	
C45		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C46		CC 1NF+80-20XR4000 TRAP	302-6815	
C47		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C48		CC 1NF+80-20XR4000 TRAP	302-6815	
C49		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C50		CC 1NF+80-20XR4000 TRAP	302-6815	
C51		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C52		CC 1NF+80-20XR4000 TRAP	302-6815	
C53		DRALORIC TRE7LOE1000/2080XR40	302-6815	
C54		CC 1NF+80-20XR4000 TRAP	302-6815	

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Kennzeichen	AZ, Datum	Schnittliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN		Sachnummer		
Benennung / Beschreibung		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 BC591X NPN 45V 200MA SIEMENS BC591X	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 ED TEILER HIERZU 302-5419 S ED OZILLATOR HIERZU 302-5619 S ED PHASENREGELUNG HIERZU 302-5819 S ED UMSETZER HIERZU 302-6015 S ED REFERENZ HIERZU 302-6215 S ED INTERPOLATIONSOS-50KHZ HIERZU 302-6415 S ED INTERPOL.-OSZ.- 100 HZ ED MODULATIONSSTEUERUNG HIERZU 302-7011 S 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 TASTATUR/ANZEIGE-EINHEIT HIERZU 302-7911 S FUER VAR 02,12,15,16,22, 24,25,32,33 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 BAUGR.- EICHLLEITUNG F-SMS	302-5219		
Y2		302-5419		
Y3		302-5619		
Y4		302-5819		
Y5		302-6015		
Y6		302-6215		
Y7		302-6415		
Y8		302-6615		
Y10		302-7011-22		
Y11		302-7111.22		
Y14		302-7911		
Y15		302-7411		
Y16		302-7311		

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Kennzeichen	AZ, Datum	Schnittliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN		Sachnummer		
Benennung / Beschreibung		enthalten in		
		HIERZU 302.7311 S FUER VAR 02,03,12,15,16, 22,24,25,32,33		-- ENDE --

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Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
B1	BM	5082-9200	MIXER-1GHZ	302-5231	
B2	HEVLETT-P-	5082-9200		80 475-0830	
B3	BO MCI558G	DUAL-OP-AMP		BO 302-5248	
B4	MOTOROLA	MC1558G		BL 290-3906	
B5	BO TL044MJ	4XOP-AMPL.		BO 302-5883	
B6	TEXAS	YL044MJ		BO 275-0822	
BUT2	BL CD40668E	4ANALOGSWITC		FJ 063-5145	
	RCA	CD40668E			
	BO LF256H	BIFET-OP-AMP.			
	NSC	LF256H			
	BO UA741MJG	OP-AMP.			
	TEXAS	UA741MJG			
	FJ EINBAUBUCHSE	SYST. SMB			
	RADIALL	115 556			
C1	CC 330PF++	-2X6X9N750		CC 087-6964	
C2	DRALORIC	EDPU6X9/330/2XN750		CC 417-8603	
C3	CC 4,7PF++	0,5PF7NPO TRAP		CC 083-6624	
C4	-STETTNER	TEFK7,4,7PF/0,5PF,NP		CC 083-6699	
C6	CC 2,7PF++	0,5PF P100TRAP		CC 417-8603	
C7	SIEMENS	838280-A5020-0702		CC 083-6624	
C8	CC 12PF++	10X N470 TRAP		CC 087-6270	
C9	STETTNER	TEFK7/1210XN470		CC 087-6270	
C10	CC 4,7PF++	0,25PF7NPO TRAP		CC 087-6329	
C11	STETTNER	TEFK7,4,7PF/0,5PF,NP		CC 087-6335	
C14	CC 2,7PF++	0,5PF P100TRAP		CC 087-6470	
C15	SIEMENS	838280-A5020-0702		CE 022-8185	
C16	DRALORIC	EDPU4X5/6,8/0,25PF100		CE 022-8185	
C17	DRALORIC	EDPU6X9/18/2XN750		CC 086-7480	
C18	CC 2,7PF++	0,25PF4X5P100		CE 022-8185	
C19	DRALORIC	EDPU6X9/27/2XN750		CC 087-7102	
C20	CE 1,0UF++	20X35V 5X 4X 7		CE 022-8185	
C21	ERO-TANTAL	TA-ELKOETRI-1/35		CC 087-7102	
C23	DRALORIC	EDPU6X9/4700/10R2000		CC 087-6270	
C24	CC 6,8PF++	0,25PF4X5P100		CC 087-6335	
C25	DRALORIC	EDPU4X5/6,8/0,25PF100		CC 087-6506	

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Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
C27	DRALORIC	EDPU5X6/47,72X/NP0		CC 087-6506	
C28	CC 47PF++	-2X5X6NP0		CC 087-6335	
C29	DRALORIC	EDPU6X9/22/2XN750		CC 087-6270	
C30	CC 6,8PF++	0,25PF4X5P100		CC 087-6964	
C31	DRALORIC	EDPU4X5/6,8/0,25PF100		CC 082-1712	
C32	CC 330PF++	-2X6X9N750		CC 082-1712	
C33	DRALORIC	EDPU6X9/330/2XN750		CC 022-0255	
C34	CC 1,5NF-	20X80X810000TRAP		CC 022-0255	
C35	STETTNER	TEFK7,1500/2080E9000		CC 022-0255	
C36	STETTNER	TEFK7,1500/2080E9000		CC 022-0255	
C37	SIEMENS	837292-B5821-2002		CC 087-6964	
C40	CC 820PF++	50-20XHDK4000TR		CC 087-6241	
C41	SIEMENS	837292-B5821-2002		CC 060-1149	
C42	SIEMENS	837292-B5821-2002		CE 022-8156	
C43	DRALORIC	EDPU6X9/330/2XN750		CC 082-1712	
C44	DRALORIC	EDPU6X9/330/2XN750		CC 022-8104	
C46	CC 3,9PF++	0,25PF4X5P100		CC 083-6718	
C47	DRALORIC	EDPU3X4/5,9/0,25PF100		CC 082-1712	
C48	CC 100NF++	10X100V K1200VI		CE 022-8156	
C50	AEROVOX	CR068X104KL		CE 022-7572	
C51	CC 100NF++	20X35V 5X 4X 7		CC 087-7102	
C53	ERO-TANTAL	TA-ELKOETRI-2,2/20		CC 060-1149	
C54	STETTNER	TEFK7/3810XN750		CE 022-8156	
C55	CC 1,5NF-	20X80X810000TRAP		CC 082-1712	
C56	STETTNER	TEFK7,1500/2080E9000		CC 085-6747	
C57	CC 100NF++	20X35V 5X 4X 7		CC 082-1712	
C58	ERO-TANTAL	TA-ELKOETRI-0,1/35		CE 022-8156	
C59	STETTNER	TEFK7,1500/2080E9000		CE 022-8104	

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Kennzeichen	AZ Datum	Schalttafel für	Sechsziffer	Blatt Nr.	
					13
C60	13	0282	302-5219	SA	3
ROHDE & SCHWARZ MÜNCHEN					
Kennzeichen: ED AUSGANGSSTUFE Benennung / Beschreibung: ED AUSGANGSSTUFE					
C60	CE 22UF -10*100X40V 9X13	SIEMENS 84136-B7226-Z	CC 022-7572		
C61	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C62	CC 100NF+-10X100V K1200V1	AERVOX CKR06BX104KL	CC 060-1149		
C64	CT 3 PF N333	SIEMENS SSTR1K0042,5/5PFND33	CT 066-8045		
C65	CC 8,2PF+-0,25PF5X6P100	DRALORIC EDP06X9/4700/10R2000	CC 087-6287		
C66	CC 39PF+-10X N1500 TRAP	SIEMENS IEFK7/39/10XN1500	CC 083-6753		
C67	CC 20PF+-2X6X7N750	DRALORIC EDP06X9/4700/10R2000	CC 087-6958		
C69	CC 120PF+-2X6X9N90	DRALORIC EDP06X9/4700/10R2000	CC 087-6558		
C70	CC 39PF+-2X4X5N90	DRALORIC EDP06X9/4700/10R2000	CC 087-6493		
C71	CC 100NF+-10X100V K1200V1	AERVOX CKR06BX104KL	CC 060-1149		
C72	CC 3,9PF+-0,25PF3X4N90	DRALORIC EDP06X9/4700/10R2000	CC 087-6370		
C74	CC 820PF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7025		
C75	CC 220PF+-2X6X7N750	DRALORIC EDP06X9/4700/10R2000	CC 087-6941		
C76	CC 120PF+-2X6X9N90	DRALORIC EDP06X9/4700/10R2000	CC 087-6558		
C78	CC 1,5NF-20+80X81000TRAP	SIEMENS 84136-B7226-Z	CC 082-1712		
C80	CE 22UF -10*100X40V 9X13	SIEMENS 84136-B7226-Z	CE 022-7572		
C81	CE 22UF -10*100X40V 9X13	SIEMENS 84136-B7226-Z	CE 022-7572		
C82	CE 22UF -10*100X40V 9X13	SIEMENS 84136-B7226-Z	CE 022-7572		
C90	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C91	CT 5PF N075 F.6EDR-SCH.	SIEMENS SSTR1K0043/8PFN075	CT 066-8039		
C92	CC 8,2PF+-0,25PF5X6P100	DRALORIC EDP06X9/4700/10R2000	CC 087-6287		
C93	CC 3,9PF+-0,25PF4X5P100	DRALORIC EDP06X9/4700/10R2000	CC 087-6241		
C94	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C95	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C97	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C98	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C99	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C100	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C102	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		

Bitte Urzeuge an unser Eigentum, Verweilung  
 überträgt Verwertung, Mängelhaftung an  
 und schadenhaftungspflichtig

Kennzeichen	AZ Datum	Schalttafel für	Sechsziffer	Blatt Nr.	
					13
C103	13	0282 <td>302-5219 <td>SA</td> <td>4</td> </td>	302-5219 <td>SA</td> <td>4</td>	SA	4
ROHDE & SCHWARZ MÜNCHEN					
Kennzeichen: ED AUSGANGSSTUFE Benennung / Beschreibung: ED AUSGANGSSTUFE					
C103	DRALORIC EDP06X9/4700/10R2000	SIEMENS 84136-B7226-Z	CC 087-7048		
C104	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C105	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C106	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C107	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C108	DRALORIC EDP06X9/4700/10R2000	SIEMENS 84136-B7226-Z	CC 087-7048		
C109	CC 220PF+-2X6X7N750	DRALORIC EDP06X9/4700/10R2000	CC 087-6941		
C110	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C112	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C113	DRALORIC EDP06X9/4700/10R2000	SIEMENS 84136-B7226-Z	CC 087-7048		
C114	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C115	CC 3,3NF+-10X6X7R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7083		
C116	CC 1,5NF+-10X4X5R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7048		
C117	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C118	CC 33PF+-2X4X5N90	DRALORIC EDP06X9/4700/10R2000	CC 087-6687		
C120	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	CC 087-7102		
C121	CC 4,7NF+-10X6X9R2000	DRALORIC EDP06X9/4700/10R2000	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	VALVO 5082-2900	AE 012-8018		

Bitte Urzeuge an unser Eigentum, Verweilung  
 überträgt Verwertung, Mängelhaftung an  
 und schadenhaftungspflichtig

Kennzeichen	AZ	Datum	Schalttafel für	AUSGANGSSTUFE	Sachnummer	Blatt Nr.
	13	0282	ED		302-5219	SA
Benennung / Beschreibung				enthalten in		
GL13			HEWLETT-P. 5082-2900	AE 012-0523		
GL14			AE BA182 BER-SCH-D10P-VHF	AD 012-0700		
GL15			AD 1N4448 SI 75V 150MA	AD 012-0700		
GL16			AE BA182 BER-SCH-D10P-VHF	AE 012-0523		
GL17			AD 1N4448 SI 75V 150MA	AD 012-0700		
GL18			AE 5082-2900 SCHOTTKY-DI-	AE 012-8018		
GL19			HEWLETT-P. 5082-2900	AE 012-2490		
K1			AE BZX557C8V2 0,5W Z-DI		302-5254	
L6			VALVO BZX557C8V2			
L7			KABEL		302-5348	
L8			LD 22-0UH10X3,300HM,114	LD 067-3024		
L9			DELEVAN DROSSEL 1025-52	LD 067-3147		
L10			LD 220 UH10X21,00HM,052A	LD 067-3147		
L11			DELEVAN DROSSEL 1025-76	LD 067-3147		
L12			LD 220 UH10X21,00HM,052A	LD 067-2886		
L13			DELEVAN DROSSEL 1025-76	LD 067-2886		
L14			LD 220 UH10X21,00HM,052A	LD 067-2886		
L15			DELEVAN DROSSEL 1025-24	LD 067-2886		
L16			LD 1,50UH10X0,220HM,560A	067-3182		
L17			DELEVAN DROSSEL 1025-24	LD 067-3101		
L18			LD 470 UH10X42,00HM,036A	067-3182		
L19			DELEVAN DROSSEL 1025-84	LD 067-3101		
L20			LD 100 UH10X8,00HM,084A	067-3182		
L21			DELEVAN DROSSEL 1025-68	LD 067-3101		
L22			LD 470 UH10X42,00HM,036A	LD 067-2886		
L23			DELEVAN DROSSEL 1025-84	LD 067-2886		
L24			LD 100 UH10X8,00HM,084A	LD 067-2886		
L25			DELEVAN DROSSEL 1025-68	LD 067-2886		
L26			LD 1,50UH10X0,220HM,560A	LD 067-2886		
L27			DELEVAN DROSSEL 1025-24	LD 067-2886		
L28			LD 1,50UH10X0,220HM,560A	LD 067-2886		
L29			DELEVAN DROSSEL 1025-24	LD 067-2886		
L30			LD 1,50UH10X0,220HM,560A	LD 067-2886		
L31			DELEVAN DROSSEL 1025-24	LD 067-2886		
L32			LD 1,50UH10X0,220HM,560A	LD 067-2886		
L33			DELEVAN DROSSEL 1025-24			

Diese Untereinheit ist ein Eigentum, Verfertigung und schadenstzpflichtig. In der Verfertigung, Montage an andere zu liefern.

PF 005 0098 0079

Kennzeichen	AZ	Datum	Schalttafel für	AUSGANGSSTUFE	Sachnummer	Blatt Nr.
	13	0282	ED		302-5219	SA
Benennung / Beschreibung				enthalten in		
L34			LD 1,50UH10X0,220HM,560A	LD 067-2886		
L35			DELEVAN DROSSEL 1025-24	LD 067-2911		
L36			LD 2,70UH10X0,550HM,355A	LD 067-2886		
L37			DELEVAN DROSSEL 1025-30	LD 067-2928		
R1			LD 1,50UH10X0,220HM,560A	RL 082-9636		
R2			LD 3,30UH10X0,850HM,285A	RL 082-9636		
R3			DELEVAN DROSSEL 1025-32	RL 082-9994		
R4			RL 0,25W 68,1 OHM+-1%TK50	RF 069-2019		
R5			DRALORIC SMA0207/1690HM-FD	RF 069-1006		
R6			RF 0,25W 10 OHM +-5%	RF 069-1006		
R7			DRALORIC LCA0207/+-5X20	RF 069-2719		
R8			RF 0,25W 10 OHM +-5%	RF 069-1829		
R9			DRALORIC LCA0207/+-5X10	RF 069-3915		
R10			RF 0,25W 10 OHM +-5%	RF 069-2219		
R11			DRALORIC LCA0207/+-5X10	RF 069-1006		
R12			RF 0,25W 10 OHM +-5%	RF 069-4711		
R13			DRALORIC LCA0207/+-5X10	RF 069-1529		
R14			RF 0,25W 10 OHM +-5%	RF 028-0157		
R15			DRALORIC LCA0207/+-5X10	RF 028-0157		
R16			RF 0,25W 10 OHM +-5%	RF 069-2725		
R17			DRALORIC LCA0207/+-5X10	RF 069-2225		
R18			RF 0,25W 10 OHM +-5%	RF 069-8217		
R19			DRALORIC LCA0207/+-5X10	RF 069-1029		
R20			RF 0,25W 10 OHM +-5%	RF 069-2725		
R21			DRALORIC LCA0207/+-5X10	RF 069-4311		
R22			RF 0,25W 10 OHM +-5%	RF 069-4328		
R23			DRALORIC LCA0207/+-5X10	RF 069-8217		
R24			RF 0,25W 10 OHM +-5%			
R25			DRALORIC LCA0207/+-5X10			
R26			RF 0,25W 10 OHM +-5%			

Diese Untereinheit ist ein Eigentum, Verfertigung und schadenstzpflichtig. In der Verfertigung, Montage an andere zu liefern.

PF 005 0098 0079



Kennzeichen	AZ Datum	Schalttafelserie für	Sachnummer	Blatt Nr.
<b>ROHDE &amp; SCHWARZ</b> MÜNCHEN				
AZ Datum 13 0282				
Schalttafelserie für ED AUSGANGSSTUFE				
Sachnummer 302-5219 SA				
Blatt Nr. 7				
enthalten in				
R27	RF 0,25W1,2KOHM +-5X	DRALORIC LCA0207/+-5X1,2K	RF 069-1229	
R30	RF 0,25W 18 OHM +-5X	DRALORIC LCA0207/+-5X18	RF 069-1806	
R31	RF 0,25W 22 OHM +-5X	DRALORIC LCA0207/+-5X22	RF 069-2202	
R32	RF 0,25W 39 OHM +-5X	DRALORIC LCA0207/+-5X39	RF 069-3909	
R34	RF 0,25W150 OHM +-5X	DRALORIC LCA0207/+-5X150	RF 069-1512	
R35	RF 0,25W330 OHM +-5X	DRALORIC LCA0207/+-5X330	RF 069-3315	
R36	RS 0,5W200 OHM+-20X10X10X	BOURNS 3386X-1-201	RS 247-7949	
R37	RF 0,25W1,2KOHM +-5X	DRALORIC LCA0207/+-5X1,2K	RF 069-1229	
R38	RF 0,5 W 56 OHM+-5X	RESISTA SK4/56OHM5X	RF 007-1225	
R40	RF 0,25W 39 OHM +-5X	DRALORIC LCA0207/+-5X39	RF 069-3909	
R41	RF 0,25W 33 OHM +-5X	DRALORIC LCA0207/+-5X33	RF 069-3309	
R42	RF 0,25W 22 OHM +-5X	DRALORIC LCA0207/+-5X22	RF 069-2202	
R45	RF 0,25W 22 OHM +-5X	DRALORIC LCA0207/+-5X22	RF 069-2202	
R46	RF 0,25W 39 OHM +-5X	DRALORIC LCA0207/+-5X39	RF 069-3909	
R47	RF 0,25W 33 OHM +-5X	DRALORIC LCA0207/+-5X33	RF 069-3309	
R49	RF 0,25W180 OHM +-5X	DRALORIC LCA0207/+-5X180	RF 069-1812	
R50	RF 0,25W100 OHM +-5X	DRALORIC LCA0207/+-5X100	RF 069-1012	
R51	RS 0,5W200 OHM+-20X10X10X	BOURNS 3386X-1-201	RS 247-7949	
R52	RF 0,25W1,2KOHM +-5X	DRALORIC LCA0207/+-5X1,2K	RF 069-1229	
R53	RF 0,25W 3,9 OHM +-5X	DRALORIC LCA0207/+-5X3,9	RF 074-0010	
R55	RF 0,25W 47 OHM +-5X	DRALORIC LCA0207/+-5X47	RF 069-4705	
R56	RF 0,25W 39 OHM +-5X	DRALORIC LCA0207/+-5X39	RF 069-3909	
R57	RF 0,25W 18 OHM +-5X	DRALORIC LCA0207/+-5X18	RF 069-1806	
R60	RL 0,13W 47 OHM2X UNGEW.	RESISTA MK1 47OHM 2X UNGEW.	RL 092-5910	
R61	RL 0,13W 470 OHM2X UNGEW.	RESISTA MK1 470OHM 2X UNGEW.	RL 092-6030	
R62	RF 0,25W680KOHM +-5X	DRALORIC LCA0207/+-5X680K	RF 069-6843	
R64	RF 0,25W6,8KOHM +-5X	DRALORIC LCA0207/+-5X6,8K	RF 069-6820	
R65	RF 0,25W 4,7MOHM+-5X	DRALORIC LCA0207/+-5X4,7M	RF 069-4757	
R66	RF 0,25W 4,7MOHM+-5X	DRALORIC LCA0207/+-5X4,7M	RF 069-4757	

Dieses Urtelegat ist unter Eigentum, Veräußerung und schiedensatzpflichtig  
This certificate is under ownership, alienation and arbitration jurisdiction

Kennzeichen	AZ Datum	Schalttafelserie für	Sachnummer	Blatt Nr.
<b>ROHDE &amp; SCHWARZ</b> MÜNCHEN				
AZ Datum 13 0282				
Schalttafelserie für ED AUSGANGSSTUFE				
Sachnummer 302-5219 SA				
Blatt Nr. 8				
enthalten in				
R67	DRALORIC LCA0207/+-5X4,7M	DRALORIC LCA0207/+-5X4,7M	RF 069-4757	
R68	RF 0,25W 4,7MOHM+-5X	DRALORIC LCA0207/+-5X4,7M	RF 069-4757	
R69	RF 0,25W6,8KOHM +-5X	DRALORIC LCA0207/+-5X4,7M	RF 069-6820	
R70	RL 0,13W 25,5KOHM+-1XTK50	DRALORIC LCA0207/+-5X6,8K	RL 083-1580	
R71	DRALORIC SMA0207/25,5K-F-C	DRALORIC SMA0207/25,5K-F-C	RL 092-5927	
R72	RESISTA MK1 56OHM 2X UNGEW.	RESISTA MK1 56OHM 2X UNGEW.	RF 069-6814	
R73	RL 0,13W 220 OHM2X UNGEW.	DRALORIC LCA0207/+-5X680	RL 092-5991	
R75	RESISTA MK1 220OHM 2X UNGEW.	RESISTA MK1 220OHM 2X UNGEW.	RF 069-3021	
R76	DRALORIC LCA0207/+-5X3,0K	DRALORIC LCA0207/+-5X3,0K	RF 069-1529	
R77	DRALORIC LCA0207/+-5X1,5K	DRALORIC LCA0207/+-5X1,5K	RL 083-0084	
R78	RL 0,25W 5,23KOHM+-1XTK50	DRALORIC SMA0207/221OHM-F-D	RL 083-1122	
R79	RL 0,25W 5,23KOHM+-1XTK50	DRALORIC SMA0207/5,23K-F-D	RL 083-1122	
R80	RL 0,25W 162 OHM+-1XTK50	DRALORIC SMA0207/5,23K-F-D	RL 082-9971	
R81	RL 0,25W 15,0KOHM+-1XTK50	DRALORIC SMA0207/162OHM-F-D	RL 083-1400	
R82	RF 0,25W6,8KOHM +-5X	DRALORIC SMA0207/15K-F-D	RF 069-6820	
R83	DRALORIC LCA0207/+-5X6,8K	DRALORIC LCA0207/+-5X6,8K	RF 069-3921	
R85	RF 0,25W3,9KOHM +-5X	DRALORIC LCA0207/+-5X3,9K	RF 069-2231	
R86	RF 0,25W 22KOHM +-5X	DRALORIC LCA0207/+-5X22K	RF 069-2231	
R87	RF 0,25W 22KOHM +-5X	DRALORIC LCA0207/+-5X22K	RF 069-2231	
R88	RF 0,25W1,8KOHM +-5X	DRALORIC LCA0207/+-5X22K	RF 069-1829	
R89	RF 0,25W 56KOHM +-5X	DRALORIC LCA0207/+-5X1,8K	RF 069-5630	
R90	RF 0,25W 47 OHM +-5X	DRALORIC LCA0207/+-5X50K	RF 069-4705	
R91	RF 0,25W 1 MOHM +-5X	DRALORIC LCA0207/+-5X47	RF 069-1058	
R92	RF 0,25W2,2KOHM +-5X	DRALORIC LCA0207/+-5X1,0M	RF 069-2225	
R93	RF 0,25W430 OHM +-5X	DRALORIC LCA0207/+-5X2,2K	RF 069-4311	
R96	RF 0,25W4,7KOHM +-5X	DRALORIC LCA0207/+-5X430	RF 069-4728	
R97	RF 0,25W3,9KOHM +-5X	DRALORIC LCA0207/+-5X4,7K	RF 069-3921	
R98	RF 0,25W680KOHM +-5X	DRALORIC LCA0207/+-5X3,9K	RF 069-6843	
		DRALORIC LCA0207/+-5X680K		

Dieses Urtelegat ist unter Eigentum, Veräußerung und schiedensatzpflichtig  
This certificate is under ownership, alienation and arbitration jurisdiction

Kennzeichen	Az Datum	Schalttailliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
R99		RF 0,25W430 OHM +-5%	RF 069-4311	
R100		DRALORIC LCA0207/+-5X430		
R101		RF 0,25W680KOHM +-5%	RF 069-6843	
R102		DRALORIC LCA0207/+-5X680K		
R105		RS 0,5W100KOHM+-20X10X10X	RS 087-7683	
R106		BOURNS 3386X-1-104		
R107		RF 0,25W 12KOHM +-5%	RF 069-1235	
R108		DRALORIC LCA0207/+-5X12K		
R109		RL 0,13W 33 OHM2X UNGEM.	RL 092-5891	
ST1		RESISTA MK1 330HM 2X UNGEM.	RL 092-5879	
T1		RESISTA MK1 220HM 2X UNGEM.	RL 082-9820	
T2		RESISTA MK1 113 OHM+-1X1K50	RF 069-8217	
T3		DRALORIC SWA0207/1130HM-F-D	RL 092-4520	
T4		RF 0,25W820 OHM +-5%		
T5		DRALORIC LCA0207/+-5X820		
T6		RL 0,13W 267 OHM+-1X1K50		
T7		RESISTA MK1 267 1X 1K50		
T8		ENTHALTEN IN		
T9		302-5219		
T10		AK BFR15A SI-NPN HF-TRANS	AK 451-4320	
		SIEMENS BFR15A		
		AK BFT12 SINPN 25V2GHZ	AK 249-8236	
		SIEMENS BFT12		
		AK BFR94 SI NPN 25V 0,2A	AK 117-8398	
		VALVO BFR94		
		AK BFR94 SI NPN 25V 0,2A	AK 117-8398	
		VALVO BFR94		
		AK BCY791X PNP 65V200MIA	AK 010-3777	
		SIEMENS BCY791X		
		AK BCY591X NPN 45V 200MA	AK 010-5163	
		SIEMENS BCY591X		
		AK BCY591X NPN 45V 200MA	AK 010-5163	
		SIEMENS BCY591X		
		AK BCY791X PNP 45V200MIA	AK 010-3777	
		SIEMENS BCY791X		
		AK BFR15A SI-NPN HF-TRANS	AK 451-4320	
		SIEMENS BFR15A		

Diese Unterlage ist unser Eigentum. Vervielfältigung, Verbreitung, Weitergabe, Kopieren, Entzug ist strafbar und rechtswidrig.

RF 083.0030.0078

Kennzeichen	Az Datum	Schalttailliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
B1		BL SP8607AC 2:1TEILER UHF	BL 302-5490	
B2		PLESSEY SP8607ACM		
B3		BM 0M321 ANTENNEN-VERST-VALVO 0M321	BM 476-1082	
B6		BO MC15588 DUAL-OP-AMP MOTOROLA MCT15588	BO 475-0830	
C1		BM 0M323 ANTENNEN-VERST-VALVO 0M323	BM 302-5483	
C2		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C3		DRALORIC EDP06X9/4700/10R2000		
C4		CC 1,5NF-20+80XR10000TRAP	CC 082-1712	
C5		STETTNER TEFK7,1500/2080E9000		
C6		CC 1,5NF-20+80XR10000TRAP	CC 082-1712	
C7		STETTNER TEFK7,1500/2080E9000		
C8		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C9		DRALORIC EDP06X9/4700/10R2000		
C10		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C11		DRALORIC EDP06X9/4700/10R2000		
C12		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C13		DRALORIC EDP06X9/4700/10R2000		
C14		CC 1NF+-10X63V K2000	CC 022-0784	
C15		DRALORIC EDP06X5/63V1000/10X		
C16		CC 1NF+-10X63V K2000	CC 022-0784	
C17		DRALORIC EDP06X5/63V1000/10X		
C18		CC 10RF-20+50X7XR6000	CC 087-7525	
C19		THOMSON COX767/10000/PF-20+5		
C20		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C21		DRALORIC EDP06X9/4700/10R2000		
C22		CC 6,8PF+-1PF NPO TRAP	CC 083-6660	
C23		STETTNER TEFK7/6,8/1NP0400Y		
C24		CC 10PF+-10X N150 TRAP	CC 083-6682	
C25		DRALORIC TEFK7/10/10XN150		
C26		CC 18PF+-10X N750 TRAP	CC 083-6718	
C27		STETTNER TEFK7/1810XN750		
C28		CC 12PF+-10X N470 TRAP	CC 083-6699	
C29		STETTNER TEFK7/1210XN47C		
C30		CC 8,2PF+-1PF N150 TRAP	CC 083-6676	
C31		DRALORIC TEFK7/8,2/1N150		
C32		CC 22PF+-10X N750 TRAP	CC 083-6724	
C33		STETTNER TEFK7/2210XN750		
C34		CC 8,2PF+-1PF N150 TRAP	CC 083-6676	
C35		DRALORIC TEFK7/8,2/1N150		
C36		CC 22PF+-10X N750 TRAP	CC 083-6724	
C37		STETTNER TEFK7/1810XN750		
C38		CC 18PF+-10X N750 TRAP	CC 083-6718	
C39		STETTNER TEFK7/1810XN750		
C40		CC 12PF+-10X N470 TRAP	CC 083-6699	
C41		STETTNER TEFK7/1210XN47C		
C42		CC 6,8PF+-1PF NPO TRAP	CC 083-6660	
C43		DRALORIC EDP06X9/4700/10R2000		
C44		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C45		DRALORIC EDP06X5/63V1000/10X		
C46		CC 1NF+-10X63V K2000	CC 022-0784	
C47		DRALORIC EDP06X9/4700/10R2000		
C48		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C49		DRALORIC EDP06X9/4700/10R2000		
C50		CC 1,5NF-20+80XR10000TRAP	CC 082-1712	
C51		STETTNER TEFK7,1500/2080E9000		
C52		CC 1,5NF-20+80XR10000TRAP	CC 082-1712	
C53		STETTNER TEFK7,1500/2080E9000		
C54		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C55		DRALORIC EDP06X9/4700/10R2000		
C56		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C57		DRALORIC EDP06X9/4700/10R2000		
C58		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C59		DRALORIC EDP06X9/4700/10R2000		
C60		CC 1NF+-10X63V K2000	CC 022-0784	
C61		DRALORIC EDP06X5/63V1000/10X		
C62		CC 1NF+-10X63V K2000	CC 022-0784	
C63		DRALORIC EDP06X5/63V1000/10X		
C64		CC 10RF-20+50X7XR6000	CC 087-7525	
C65		THOMSON COX767/10000/PF-20+5		
C66		CC 4,7NF+-10X6X9R2000	CC 087-7102	
C67		DRALORIC EDP06X9/4700/10R2000		
C68		CC 6,8PF+-1PF NPO TRAP	CC 083-6660	
C69		STETTNER TEFK7/6,8/1NP0400Y		
C70		CC 10PF+-10X N150 TRAP	CC 083-6682	
C71		DRALORIC TEFK7/10/10XN150		
C72		CC 18PF+-10X N750 TRAP	CC 083-6718	
C73		STETTNER TEFK7/1810XN750		
C74		CC 12PF+-10X N470 TRAP	CC 083-6699	
C75		STETTNER TEFK7/1210XN47C		
C76		CC 8,2PF+-1PF N150 TRAP	CC 083-6676	
C77		DRALORIC TEFK7/8,2/1N150		
C78		CC 22PF+-10X N750 TRAP	CC 083-6724	
C79		STETTNER TEFK7/2210XN750		
C80		CC 8,2PF+-1PF N150 TRAP	CC 083-6676	
C81		DRALORIC TEFK7/8,2/1N150		
C82		CC 22PF+-10X N750 TRAP	CC 083-6724	
C83		STETTNER TEFK7/2210XN750		
C84		CC 18PF+-10X N750 TRAP	CC 083-6718	
C85		STETTNER TEFK7/1810XN750		
C86		CC 12PF+-10X N470 TRAP	CC 083-6699	
C87		STETTNER TEFK7/1210XN47C		
C88		CC 6,8PF+-1PF NPO TRAP	CC 083-6660	

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RF 083.0030.0078

Kennzeichen	AZ	Datum	Schalttafel für	Sechsziffer	Blatt Nr.	
						13
ROHDE & SCHWARZ MÜNCHEN						
Kennzeichen	Benennung / Beschreibung			Sechsziffer	enthalten in	
C32	STETTNER	TEFK7/6,8/1NP0400V		CC 083.6682		
	CC 10PF+-10X N150 TRAP					
C40	DRALORIC	TEFK7/10/10XN150		CC 087-7102		
	CC 4,7NF+-10X6X9R2000					
C41	DRALORIC	EDPU6X9/4700/10R2000		CC 417-8603		
	CC 4,7PF+-0,5PF7NP0 TRAP					
C42	STETTNER	TEFK7,4,7PF/0,5PF NP		CC 083-6624		
	SIEMENS	B38280-A5020-D702				
C43	CC 4,7PF+-0,5PF7NP0 TRAP			CC 417-8603		
C44	STETTNER	TEFK7,4,7PF/0,5PF NP		CC 083-6699		
	CC 12PF+-10X N470 TRAP					
C45	STETTNER	TEFK7/1210XN470		CC 083-6699		
	CC 12PF+-10X N470 TRAP					
C46	STETTNER	TEFK7/1210XN470		CC 083-6682		
	CC 10PF+-10X N150 TRAP					
C47	DRALORIC	TEFK7/10/10XN150		CC 417-8603		
	CC 4,7PF+-0,5PF7NP0 TRAP					
C48	STETTNER	TEFK7,4,7PF/0,5PF NP		CC 083-6699		
	CC 12PF+-10X N470 TRAP					
C49	STETTNER	TEFK7/1210XN470		CC 417-8603		
	CC 4,7PF+-0,5PF7NP0 TRAP					
C50	STETTNER	TEFK7,4,7PF/0,5PF NP		CC 083-6624		
	SIEMENS	B38280-A5020-D702				
C54	CC 330PF+-2X6X9N750			CC 087-6964		
C55	DRALORIC	EDPU6X9/330/2XN750		CC 087-7102		
	DRALORIC	EDPU6X9/4700/10R2100		CC 087-7102		
C56	CC 4,7NF+-10X6X9R2000			CC 087-7102		
C57	DRALORIC	EDPU6X9/4700/10R2100		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C58	THOMSON	COX767/10000/PF-20+5		CC 086-7496		
	DRALORIC	YRE7LOE180/10R700				
C59	CC 180PF+-10X R700 TRAP			CC 086-7496		
C60	DRALORIC	YRE7LOE180/10R700		CC 083-6776		
	CC 470PF-20+50X8R2000TRAP					
C61	CC 1,5NF-20+80X810000TRAP			CC 082-1712		
C62	STETTNER	TEFK7,1500/2080E9000		CC 086-7496		
	CC 180PF+-10X R700 TRAP					
C63	DRALORIC	YRE7LOE180/10R700		CC 086-7496		
	CC 180PF+-10X R700 TRAP					
C64	DRALORIC	YRE7LOE180/10R700		CC 082-1712		
	CC 1,5NF-20+80X810000TRAP					
C65	CC 330PF+-2X6X9N750			CC 087-6964		
C68	DRALORIC	EDPU6X9/330/2XN750		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C69	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C70	THOMSON	COX767/10000/PF-20+5		CC 087-6893		
	CC 82PF+-2X6X5N750					
C71	DRALORIC	EDPU6X5/82/2XN750		CC 087-6893		
	CC 82PF+-2X6X5N750					
C72	DRALORIC	EDPU6X5/82/2XN750		CC 087-7525		
	CC 10NF-20+50X7X8R6000					

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Kennzeichen	AZ	Datum	Schalttafel für	Sechsziffer	Blatt Nr.	
						13
ROHDE & SCHWARZ MÜNCHEN						
Kennzeichen	Benennung / Beschreibung			Sechsziffer	enthalten in	
C73	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C74	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C75	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C80	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C81	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C83	THOMSON	COX767/10000/PF-20+5		CC 082-1712		
	CC 1,5NF-20+80X810000TRAP					
C84	STETTNER	TEFK7,1500/2080E9000		CC 082-1712		
	CC 1,5NF-20+80X810000TRAP					
C85	STETTNER	TEFK7,1500/2080E9000		CC 082-1712		
	CC 1,5NF-20+80X810000TRAP					
C90	STETTNER	TEFK7,1500/2080E9000		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C91	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C92	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C93	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C94	THOMSON	COX767/10000/PF-20+5		CC 087-7525		
	CC 10NF-20+50X7X8R6000					
C95	THOMSON	COX767/10000/PF-20+5		CE 022-8185		
	CC 1,0UF+-20X35V 5X 4X 7					
	ERO-TANTAL TA-ELKOE1R1-1/35					
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		

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					302.5419	SA	
ROHDE & SCHWARZ MÜNCHEN					302.5419 SA		4
Benennung / Beschreibung		ED TEILER		enthalten in			
BIS	SIEMENS	BA379					
GL65	AE BA379	PIN-DIODE		AE 244.7031			
GL70	SIEMENS	BA379		AD 012.0700			
GL80	AD 1N4448	SI 75V 150MA		AD 012.0700			
	VALVO	1N4448					
	VALVO	1N4448					
L60	LD 0,47UH10X0,35OHM0,660A			LD 067.2828			
L61	DELEVAN	DROSSEL 1025-12		LD 067.2886			
L62	LD 1,50UH10X0,22OHM0,560A			LD 067.3001			
	DELEVAN	DROSSEL 1025-24					
	LD 15,0UH10X2,80OHM0,157A						
	DELEVAN	DROSSEL 1025-48					
R1	RF 0,25W820 OHM +-5%			RF 069.8217			
R2	DRALORIC	LCA0207/+-5X2,7K		RF 069.2725			
R3	DRALORIC	LCA0207/+-5X2,7K		RF 069.1029			
R4	RF 0,25W 1KOHM +-5%			RF 069.4328			
R5	DRALORIC	LCA0207/+-5X1,0K		RF 069.4311			
R10	RF 0,25W4,3KOHM +-5%			RF 069.9113			
R11	DRALORIC	LCA0207/+-5X4,3K		RF 074.0056			
R12	RF 0,25W 5,6 OHM +-5%			RF 069.4705			
R13	DRALORIC	LCA0207/+-5X5,6		RF 069.1041			
R14	RF 0,25W 47 OHM +-5%			RF 069.2725			
R15	DRALORIC	LCA0207/+-5X47		RF 069.3621			
R16	RF 0,25W 100KOHM +-5%			RF 069.3621			
R17	DRALORIC	LCA0207/+-5X100K		RL 092.5991			
R20	RESISTA	HK1 220OHM 2% UNGEN.		RF 069.2725			
R21	DRALORIC	LCA0207/+-5X2,7K		RF 069.2725			
R40	RF 0,25W2,7KOHM +-5%			RF 069.2725			
R41	DRALORIC	LCA0207/+-5X2,7K		RF 069.2725			
R45	RF 0,25W2,7KOHM +-5%			RF 069.2725			
R56	DRALORIC	LCA0207/+-5X2,7K		RF 069.6820			
R57	RF 0,25W6,8KOHM +-5%			RF 069.1235			
R58	DRALORIC	LCA0207/+-5X12K		RF 069.1535			

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Kennzeichen	AZ Datum	Schalttafeliste für	AZ Datum	Schalttafeliste für	Sachnummer		Blatt Nr.
					302.5419	SA	
ROHDE & SCHWARZ MÜNCHEN					302.5419 SA		5
Benennung / Beschreibung		ED TEILER		enthalten in			
R59	DRALORIC	LCA0207/+-5X15K		RF 069.1535			
	RF 0,25W 15KOHM +-5%						
R60	DRALORIC	LCA0207/+-5X15K		RF 069.1612			
	RF 0,25W160 OHM +-5%						
R61	DRALORIC	LCA0207/+-5X160		RF 069.2025			
	RF 0,25W 2KOHM +-5%						
R62	DRALORIC	LCA0207/+-5X2,0K		RF 069.1535			
	RF 0,25W 15KOHM +-5%						
R63	DRALORIC	LCA0207/+-5X15K		RF 069.1535			
	RF 0,25W 15KOHM +-5%						
R64	DRALORIC	LCA0207/+-5X15K		RF 069.6820			
	RF 0,25W6,8KOHM +-5%						
R65	DRALORIC	LCA0207/+-5X6,8K		RF 069.1235			
	RF 0,25W 12KOHM +-5%						
R70	DRALORIC	LCA0207/+-5X12K		RF 069.5624			
	RF 0,25W5,6KOHM +-5%						
R71	DRALORIC	LCA0207/+-5X5,6K		RF 069.4728			
	RF 0,25W4,7KOHM +-5%						
R72	DRALORIC	LCA0207/+-5X4,7K		RL 083.1380			
	RF 0,25W 14,3KOHM+-1X1K50						
R73	DRALORIC	SMA0207/14,3K-F-9		RL 082.2577			
	RF 0,25W 13,3KOHM+-1X1K50						
R74	DRALORIC	SMA 0207/13,3K-F-9		RL 083.0355			
	RF 0,25W 432 OHM+-1X1K50						
R75	DRALORIC	SMA0207/432OHM-F-9		RL 083.0355			
	RF 0,25W 432 OHM+-1X1K50						
R76	DRALORIC	SMA0207/432OHM-F-9		RF 069.1535			
	RF 0,25W 15KOHM +-5%						
R80	DRALORIC	LCA0207/+-5X15K		RF 069.5624			
	RF 0,25W5,6KOHM +-5%						
R81	DRALORIC	LCA0207/+-5X5,6K		RF 069.2725			
	RF 0,25W2,7KOHM +-5%						
R82	DRALORIC	LCA0207/+-5X2,7K		RF 069.4728			
	RF 0,25W4,7KOHM +-5%						
R83	DRALORIC	LCA0207/+-5X4,7K		RF 069.2725			
	RF 0,25W2,7KOHM +-5%						
R84	DRALORIC	LCA0207/+-5X2,7K		RF 069.5624			
	RF 0,25W5,6KOHM +-5%						
R85	DRALORIC	LCA0207/+-5X5,6K		RF 069.2725			
	RF 0,25W2,7KOHM +-5%						
R86	DRALORIC	LCA0207/+-5X2,7K		RF 069.8217			
	RF 0,25W820 OHM +-5%						
ST2	DRALORIC	LCA0207/+-5X820					
	ENTHALTEN IN						
	302.5419						
T70	AK BCY791X	PNP 45V200MA		AK 010.3777			
	SIEMENS	BCY791X					
T71	AK BCY591X	PNP 45V 200MA		AK 010.5163			
	SIEMENS	BCY591X					
T72	AK BCY591X	PNP 45V 200MA		AK 010.5163			
	SIEMENS	BCY591X					

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Kennzeichen	AZ	Datum	Schnittliste für	Sechsnnummer		Blatt Nr.
				11 1180	Z 302-5619 SA 1	
ROHDE & SCHWARZ MÜNCHEN				OSZILLATOR		enthalten in
Benennung / Beschreibung				Sechsnnummer		enthalten in
B1	BM 0M321	ANTENNEN-VERST.-VALVO	EDPU5X6/2200/10XR200	BM 476-1082	302-5619	
B50	BM TFM-2	MIXER 1-1000MHZ	EDPU5X6/2200/10XR200	BM 302-6080	302-5619	
BUI3	MIKI-CCTS	TFM-2	EDPU5X6/2200/10XR200	FJ 063-5145	302-5619	
	FJ EINBAUBUCHSE	SYST. SMB	EDPU5X6/2200/10XR200			
	RADIALL	115 556	EDPU5X6/2200/10XR200			
C1	CC 2,2NF+-	10X5X6R2000	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C2	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C3	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C4	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C5	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6206	302-5619	
C6	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6241	302-5619	
C8	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6206	302-5619	
C9	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 082-3309	302-5619	
C10	ERIE	8013/27145R-472-K	EDPU5X6/2200/10XR200	CC 082-3309	302-5619	
C11	ERIE	8013/27145R-472-K	EDPU5X6/2200/10XR200	CC 087-6906	302-5619	
C13	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C14	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C15	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C16	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C17	STETTNER	TEFK7, 1500/2080E9000	EDPU5X6/2200/10XR200	CC 082-1712	302-5619	
C18	STETTNER	TEFK7, 1500/2080E9000	EDPU5X6/2200/10XR200	CC 082-1712	302-5619	
C19	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C20	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C21	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6493	302-5619	
C22	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6506	302-5619	
C23	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6393	302-5619	
C24	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6406	302-5619	
C25	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6364	302-5619	
C26	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6393	302-5619	
C27	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6429	302-5619	

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Kennzeichen	AZ	Datum	Schnittliste für	Sechsnnummer		Blatt Nr.
				11 1180	Z 302-5619 SA 2	
ROHDE & SCHWARZ MÜNCHEN				OSZILLATOR		enthalten in
Benennung / Beschreibung				Sechsnnummer		enthalten in
C28	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6406	302-5619	
C29	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6364	302-5619	
C30	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6435	302-5619	
C31	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6429	302-5619	
C32	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6406	302-5619	
C33	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6364	302-5619	
C34	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6435	302-5619	
C35	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6393	302-5619	
C36	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6406	302-5619	
C37	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6364	302-5619	
C38	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6393	302-5619	
C39	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C44	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C45	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7525	302-5619	
C50	THOMSON	COX767/10000/PF-20+5	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C51	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C52	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7060	302-5619	
C53	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6435	302-5619	
C54	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6512	302-5619	
C55	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6387	302-5619	
C59	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6341	302-5619	
C60	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6541	302-5619	
C61	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6541	302-5619	
C62	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6387	302-5619	
C63	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-6512	302-5619	
C64	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7525	302-5619	
C65	THOMSON	COX767/10000/PF-20+5	EDPU5X6/2200/10XR200	CC 087-7525	302-5619	
C66	DRALORIC	EDPU5X6/2200/10XR200	EDPU5X6/2200/10XR200	CC 087-7102	302-5619	

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Kennzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.	
						11
C67	CC	10NF-20+50Z7X86000	THOMSON	COX767/10000/PF-20+5	CC 087-7525	302-5619
C68	CC	100PF+-2X6X7N150	DRALORIC	EDP6X7/100/2XN150	CC 087-6712	302-5619
C69	CC	10NF-20+50Z7X86000	THOMSON	COX767/10000/PF-20+5	CC 087-7525	302-5619
C70	CC	4,7NF+-10Z6X9R2000	DRALORIC	EDP6X9/4700/10R2000	CC 087-7102	302-5619
C71	CE	22UF -10+100X40V 9X13	SIEMENS	84336-87226-Z	CC 022-7572	302-5619
C72	CC	10NF-20+50Z7X86000	THOMSON	COX767/10000/PF-20+5	CC 087-7525	302-5619
C73	CC	2,2NF+-10Z5X6R2000	DRALORIC	EDP5X6/2200/10XR200	CC 087-7060	302-5619
C75	CC	1,5NF+-10Z4X5R2000	DRALORIC	EDP4X5/1500/10XR200	CC 087-7048	302-5619
C76	CC	56PF+-2Z5X6NPO	DRALORIC	EDP5X6/56/2ZNPO	CC 087-6512	302-5619
C77	CC	56PF+-2Z5X6NPO	DRALORIC	EDP5X6/56/2ZNPO	CC 087-6512	302-5619
C78	CC	1,5NF-20+80XR10000TRAP	STETTNER	TEFK7,1500/2080E9000	CC 082-1712	302-5619
C79	CC	1,5NF+-10Z4X5R2000	DRALORIC	EDP4X5/1500/10XR200	CC 087-7048	302-5619
C80	CC	1,5NF+-10Z4X5R2000	DRALORIC	EDP4X5/1500/10XR200	CC 087-7048	302-5619
C81	CC	1,5NF+-10Z4X5R2000	DRALORIC	EDP4X5/1500/10XR200	CC 087-7048	302-5619
C82	CC	1,5NF+-10Z4X5R2000	DRALORIC	EDP4X5/1500/10XR200	CC 087-7048	302-5619
C83	CC	2,2NF+-10Z5X6R2000	DRALORIC	EDP5X6/2200/10XR200	CC 087-7060	302-5619
C84	CC	2,7NF+-10Z5X6R2000	DRALORIC	EDP5X6/2700/10XR200	CC 087-7077	302-5619
C85	CC	100PF+-2Z6X7N150	DRALORIC	EDP6X7/100/2XN150	CC 087-6712	302-5619
C86	CE	22UF -10+100X40V 9X13	SIEMENS	84136-87226-Z	CE 022-7572	302-5619
C87	CC	4,7NF+-10Z6X9R2000	DRALORIC	EDP6X9/4700/10R2000	CC 087-7102	302-5619
C88	CC	100UF-10+100X25V 13X13	ROEDERST	ELK0EK100/25	CC 208-4007	302-5619
C90	CC	8,2PF+-0,25PF3X4NPO	VALVO	DIODEIN4448	CC 087-6412	302-5619
C91	CC	8,2PF+-0,25PF3X4NPO	VALVO	DIODEIN4448	CC 087-6412	302-5619
C92	CC	12PF+-2Z3X4NPO	DRALORIC	EDP3X4/12/2Z/NPO	CC 087-6435	302-5619
GL1	AE	BB14A 28V 2/12PF KAP.	ITT	DIODEBB141A	AE 012-6138	302-5619
GL2	AE	BB14A 28V 2/12PF KAP.	ITT	DIODEBB141A	AE 012-6138	302-5619
GL3	AD	1N4448 SI 75V 150MIA	VALVO	DIODEIN4448	AD 012-0700	302-5619
GL4	AD	1N4448 SI 75V 150MIA	VALVO	DIODEIN4448	AD 012-0700	302-5619
GL5	AE	BA244 BER-SCH-DI0B-UHF	ITT	DIODEBA244	AE 439-6310	302-5619

Diese Vorlage ist unter Eigentum, Verleihung und Pfandrecht zu verwenden.

Kennzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.	
						11
GL6	AE	BA244 BER-SCH-DI0B-UHF	ITT	DIODEBA244	AE 439-6310	302-5619
L1	LD	2,2 UH 10Z 268 MIA	DELEVAN		LD 092-3199	302-5619
L2	LD	2,2 UH 10Z 268 MIA	DELEVAN		LD 092-3199	302-5619
L3	DROSSEL			302-5360	302-5619	
L4	DROSSEL			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 10Z 80 MIA	DELEVAN	DROSSEL0819-64	LD 092-3353	302-5619
L10	LD	47,0UH 10Z 80 MIA	DELEVAN	DROSSEL0819-64	LD 092-3353	302-5619
L11	LD	680 UH 10Z 27 MIA	DELEVAN		LD 092-3499	302-5619
L12	LD	680 UH 10Z 27 MIA	DELEVAN		LD 092-3499	302-5619
L15	LF	ROHRK-R03,6XR01,2XL3,3	SIEMENS	862110-A3011-X017	LF 026-9286	302-5619
L48	SPIULE			302-5631	302-5619	
L49	SPIULE			302-5631	302-5619	
L50	LD	47,0UH10Z4,500RHO,165A	DELEVAN	DROSSEL1025-60	LD 067-3060	302-5619
L51	LD	680 UH10Z60,00RHO,042A	DELEVAN	DROSSEL1025-83	LD 067-3201	302-5619
L52	LD	15,0UH10Z2,700RHO,210A	DELEVAN	DROSSEL1025-48	LD 067-3001	302-5619
L53	LD	15,0UH10Z2,700RHO,210A	DELEVAN	DROSSEL1025-48	LD 067-3001	302-5619
L54	LD	15,0UH10Z2,700RHO,210A	DELEVAN	DROSSEL1025-48	LD 067-3001	302-5619
L55	LD	15,0UH10Z2,700RHO,210A	DELEVAN	DROSSEL1025-48	LD 067-3001	302-5619
L56	LD	15,0UH10Z2,700RHO,210A	DELEVAN	DROSSEL1025-48	LD 067-2763	302-5619
L57	LD	0,15UH10Z0,100HM1,100A	DELEVAN	DROSSEL1025-00	LD 067-2770	302-5619
L58	LD	0,15UH10Z0,100HM1,100A	DELEVAN	DROSSEL1025-02	LD 067-2763	302-5619
L59	LD	1,50UH10Z0,220HM0,745A	DELEVAN	DROSSEL1025-24	LD 067-2886	302-5619
L60	LD	0,10UH10Z0,080HM1,100A	DELEVAN	DROSSEL1025-94	LD 067-2740	302-5619
L61	LD	1,50UH10Z0,220HM0,745A	DELEVAN	DROSSEL1025-24	LD 067-2886	302-5619
L62	LD	1,50UH10Z0,220HM0,745A	DELEVAN	DROSSEL1025-24	LD 067-2886	302-5619
L63	LD	1,50UH10Z0,220HM0,745A	DELEVAN	DROSSEL1025-24	LD 067-2886	302-5619
L64	LD	1,50UH10Z0,220HM0,745A	DELEVAN	DROSSEL1025-24	LD 067-2886	302-5619
R1	RS	0,5W2KOHM+-20X10X10X5			RS 247-7961	302-5619

Kenszeichen	Az	Datum	Schalttaelliste für	Sachnummer		Blatt Nr.
				Z	SA	
<b>ROHDE &amp; SCHWARZ</b> MÜNCHEN	11	1180	OSZILLATOR	Z	302-5619	5
Kennzeichnung	Benennung / Beschreibung			Sachnummer	enthalten in	
R2			3386X-1-202	RS 247-7961	302-5619	
R3			RS 0,5W2KOHM+-20X10X10X5	RF 069-1029	302-5619	
R4			BURNS 3386X-1-202	RF 069-1029	302-5619	
R5			DRALORIC LCA0207/+-5X1,0K	RF 069-1529	302-5619	
R6			RF 0,25W 1KOHM +-5X	RF 069-1829	302-5619	
R7			DRALORIC LCA0207/+-5X1,0K	RF 069-2219	302-5619	
R8			RF 0,25W1,5KOHM +-5X	RF 069-4728	302-5619	
R9			DRALORIC LCA0207/+-5X1,5K	RF 069-4728	302-5619	
R10			RF 0,25W1,8KOHM +-5X	RF 069-1812	302-5619	
R11			DRALORIC LCA0207/+-5X2,0	RF 069-2725	302-5619	
R12			RF 0,25W2,7KOHM +-5X	RF 069-2219	302-5619	
R13			DRALORIC LCA0207/+-5X2,7K	RF 069-2725	302-5619	
R14			RF 0,25W3,0 OHM +-5X	RF 069-3915	302-5619	
R15			DRALORIC LCA0207/+-5X3,0	RF 069-3915	302-5619	
R16			RF 0,25W3,0 OHM +-5X	030-0538	302-5619	
R17			RESISTA WFS22/14,01/1/0,05	RF 069-3315	302-5619	
R18			DRALORIC LCA0207/+-5X3,0	030-0538	302-5619	
R19			RF 0,25W 14,01 OHM+-1X	RF 069-3315	302-5619	
R20			DRALORIC LCA0207/+-5X3,0	RF 069-1029	302-5619	
R21			RF 0,25W 1KOHM +-5X	RF 069-5624	302-5619	
R22			RESISTA WFS22/14,01/1/0,05	RF 069-1029	302-5619	
R23			DRALORIC LCA0207/+-5X3,0	RF 069-5624	302-5619	
R24			RF 0,25W 1KOHM +-5X	RF 069-4728	302-5619	
R25			DRALORIC LCA0207/+-5X3,0	RF 069-3321	302-5619	
R26			RF 0,25W 1,5KOHM +-5X	RF 069-4728	302-5619	
R27			DRALORIC LCA0207/+-5X4,7K	RF 069-3321	302-5619	
R28			RF 0,25W3,3KOHM +-5X	RF 069-4728	302-5619	
R29			DRALORIC LCA0207/+-5X4,7K	RF 069-4728	302-5619	

Dieses Urtelegte ist unter Eigentum, Verwehrgung und schiedenspruchlich

Kenszeichen	Az	Datum	Schalttaelliste für	Sachnummer		Blatt Nr.
				Z	SA	
<b>ROHDE &amp; SCHWARZ</b> MÜNCHEN	11	1180	OSZILLATOR	Z	302-5619	6
Kennzeichnung	Benennung / Beschreibung			Sachnummer	enthalten in	
R30			RF 0,25W4,7KOHM +-5X	RF 069-4728	302-5619	
R31			DRALORIC LCA0207/+-5X4,7K	RF 069-1041	302-5619	
R32			RF 0,25W10KOHM +-5X	RF 069-1041	302-5619	
R33			DRALORIC LCA0207/+-5X10K	RF 069-4728	302-5619	
R34			RF 0,25W4,7KOHM +-5X	RF 069-5624	302-5619	
R35			DRALORIC LCA0207/+-5X4,7K	RF 069-4705	302-5619	
R41			RF 0,25W15 OHM +-5X	RF 069-1512	302-5619	
R43			DRALORIC LCA0207/+-5X15	RF 069-5624	302-5619	
R45			RF 0,25W5,6KOHM +-5X	RF 069-1012	302-5619	
R46			DRALORIC LCA0207/+-5X10	RF 069-1012	302-5619	
R50			RF 0,25W4,7KOHM +-5X	RF 069-4728	302-5619	
R51			DRALORIC LCA0207/+-5X4,7K	RF 069-2725	302-5619	
R52			RF 0,25W2,7KOHM +-5X	RF 069-4711	302-5619	
R53			DRALORIC LCA0207/+-5X2,7K	RF 069-3915	302-5619	
R54			RF 0,25W3,0 OHM +-5X	030-0538	302-5619	
R55			DRALORIC LCA0207/+-5X3,0	RF 069-3315	302-5619	
R56			RESISTA WFS22/14,01/1/0,05	RL 082-9294	302-5619	
R57			DRALORIC LCA0207/+-5X3,0	RL 082-9294	302-5619	
R58			RF 0,25W2,7 OHM+-1XTK50	RL 082-9294	302-5619	
R62			DRALORIC SMA0207/28,70HM-F-D	RF 069-2719	302-5619	
R63			RF 0,25W 15 OHM +-5X	RF 069-1829	302-5619	
R64			DRALORIC LCA0207/+-5X1,8K	RF 069-2219	302-5619	
R65			RF 0,25W220 OHM +-5X	RF 069-3915	302-5619	
R66			DRALORIC LCA0207/+-5X3,0	RF 069-1506	302-5619	
R67			RF 0,25W 15 OHM +-5X	RF 069-1506	302-5619	
R68			DRALORIC LCA0207/+-5X15	RF 069-2719	302-5619	
R69			RF 0,25W 15 OHM +-5X	RF 069-1829	302-5619	
R70			DRALORIC LCA0207/+-5X1,8K	RF 069-2219	302-5619	
R71			RF 0,25W220 OHM +-5X	RF 069-3915	302-5619	

Dieses Urtelegte ist unter Eigentum, Verwehrgung und schiedenspruchlich

Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer		Blatt Nr.
				11 1180	2 302-5619 SA	
ROHDE & SCHWARZ MÜNCHEN				OSZILLATOR		
Benennung / Beschreibung				Sachnummer		enthalten in
R72	DRALORIC	LCA0207/+5X390	RF 0,25W 15 OHM +-5%	RF 069-1506	302-5619	
R73	DRALORIC	LCA0207/+5X15	RF 0,25W 15 OHM +-5%	RF 069-1506	302-5619	
R75	DRALORIC	LCA0207/+5X15	RF 0,25W 180 OHM +-5%	RF 069-1812	302-5619	
R76	DRALORIC	LCA0207/+5X180	RF 0,25W 180 OHM +-5%	RF 069-1812	302-5619	
R77	RESISTA	MK1 100HM 2% UNGEW.	RL 0,13W 10 OHM 2% UNGEW.	RL 092-5833	302-5619	
R78	DRALORIC	LCA0207/+5X5,6	RF 0,25W 5,6 OHM +-5%	RF 074-0056	302-5619	
S73	DRALORIC	LCA0207/+5X560	RF 0,25W 560 OHM +-5%	RF 069-5618	302-5619	
T1	ENTHALTEN IN					
T1	AM	BF247A N-KANAL-FET 25W	AM 247-6536	AM 247-6536	302-5619	
T2	TEXAS	TRANSISTBF247A	AM 247-6536	AM 247-6536	302-5619	
T3	TEXAS	TRANSISTBF247A	AK 451-4320	AK 451-4320	302-5619	
T4	SIEMENS	BFR 15 A	AK 451-4320	AK 451-4320	302-5619	
T5	SIEMENS	SI-NPN HF-TRANS	AK 010-3777	AK 010-3777	302-5619	
T6	SIEMENS	BFR 15 A	AK 010-5163	AK 010-5163	302-5619	
T7	SIEMENS	SI-TRANSISTORBCY79IX	AK 010-3777	AK 010-3777	302-5619	
T8	SIEMENS	SI-TRANSISTORBCY79IX	AK 010-5163	AK 010-5163	302-5619	
T9	SIEMENS	SI-TRANSISTORBCY59IX	AK 010-5163	AK 010-5163	302-5619	
T10	SIEMENS	SI-TRANSISTORBCY59IX	AK 451-4320	AK 451-4320	302-5619	
T11	SIEMENS	BFR 15 A	AK 451-4320	AK 451-4320	302-5619	
T12	SIEMENS	SI-NPN HF-TRANS	AK 451-4320	AK 451-4320	302-5619	
T13	SIEMENS	BFR 15 A	AK 451-4320	AK 451-4320	302-5619	
T14	SIEMENS	SI-NPN HF-TRANS	AK 451-4320	AK 451-4320	302-5619	
T15	SIEMENS	BFR 15 A				

Diese Unterlagen sind unter Eigentum Vertriebsgesellschaft und sind Eigentum der Vertriebsgesellschaft.

Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer		Blatt Nr.
				15 0282	302-5819 SA	
ROHDE & SCHWARZ MÜNCHEN				ED PHASENREGELUNG		
Benennung / Beschreibung				Sachnummer		enthalten in
B1	BL	MC10115L	4XLINE-RECEIV	BL 302-5831		
B2	BL	MC10136L	BIN.V/R-COUNT	BL 302-5848		
B3	BL	MC10136L	BIN.V/R-COUNT	BL 302-5848		
B4	BL	MC10136L	27D-MS-FLIPFL	BL 475-1166		
B5	BL	MC10109L	2/4INP-OR/NOR	BL 302-5854		
B6	BL	MC10117L	2/2INP-OR/AND	BL 302-5860		
B7	BL	MC12040L	PLL-PHASE-DET	BL 302-5877		
B10	BO	LF256H	BIFET-OP-AMP.	BO 302-5883		
B11	BO	SE5534AFE	OP-AMP.	BO 301-3335		
B12	BO	TL044MJ	4XOP-AMPL.	BO 302-5248		
B13	BO	TL044MJ	4XOP-AMPL.	BO 302-5248		
B14	BO	TL044MJ	4XOP-AMPL.	BO 302-5248		
B15	BO	TL044MJ	4XOP-AMPL.	BO 302-5248		
B16	BL	CD4069UBE	HEX-INVERTER	BL 086-9999		
B17	BL	CD4081BF	4/2INP-ANDG.	BL 531-0259		
B18	BL	SCL4028BE	BCD/DEC-DEC.	BL 086-7150		
B19	BL	CD4066BE	4/ANALOGSWITC	BL 290-3906		
B20	BL	CD4066BE	4/ANALOGSWITC	BL 290-3906		
C1	CC	1,5NF+-10%	X5R2000	CC 087-7048		
C2	CC	1,5NF+-10%	X5R2000	CC 087-7048		
C3	CC	1,5NF+-10%	X5R2000	CC 087-7048		
C4	CC	1,5NF+-10%	X5R2000	CC 087-7048		
C5	CC	10NF-20+	50X7X8R6000	CC 087-7525		
C6	CC	47PF+-2%	X6NPO	CC 087-6506		
C7	CC	47PF+-2%	X6NPO	CC 087-6506		
C8	CC	10NF-20+	50X7X8R6000	CC 087-7525		
C9	CC	10NF-20+	50X7X8R6000	CC 087-7525		
C10	CC	10NF-20+	50X7X8R6000	CC 087-7525		



Kennzeichen	Az	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
<b>ROHDE &amp; SCHWARZ</b> MÜNCHEN					
Az 15 Datum 0282 ED PHASENREGELUNG Sachnummer 302.5819 SA 2					
Benennung / Beschreibung					
C11	THOMSON	COX767/10000/PF-20+5	CC 087-7525	enthalten in:	
C12	THOMSON	COX767/10000/PF-20+5	CC 087-7048		
C13	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C14	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C15	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C16	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C17	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C18	EROTANTAL	TA-ELKOE TR2-10/15	CE 022-8085		
C19	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C20	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C21	DRALORIC	EDPU5X6/56/2XNPO	CC 087-6512		
C22	DRALORIC	EDPU5X6/56/2XNPO	CC 087-6512		
C23	DRALORIC	EDPU5X6/56/2XNPO	CC 087-7525		
C24	THOMSON	COX767/10000/PF-20+5	CE 022-8085		
C25	EROTANTAL	TA-ELKOE TR2-10/15	CE 022-8185		
C26	EROTANTAL	TA-ELKOE TR1-1/35	CE 022-8185		
C27	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C28	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C29	DRALORIC	EDPU4X5/100/2XN750	CC 087-6906		
C30	DRALORIC	EDPU4X5/100/2XN750	CC 087-6906		
C31	DRALORIC	EDPU4X5/100/2XN750	CC 087-6464		
C35	EROTANTAL	TA-ELKOE TR1-1/35	CE 022-8185		
C36	EROTANTAL	TA-ELKOE TR1-1/35	CE 022-8185		
C37	EROTANTAL	TA-ELKOE TR1-1/35	CE 022-8185		
C38	EROTANTAL	TA-ELKOE TR1-1/35	CE 022-8185		
C40	THOMSON	COX767/10000/PF-20+5	CC 006-5056		
C41	ROEDERST	MKT1822-422/0	CC 087-7525		
C42	THOMSON	COX767/10000/PF-20+5	CC 087-7525		

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Kennzeichen	Az	Datum	Schaltteilliste für	Sachnummer	Blatt Nr.
<b>ROHDE &amp; SCHWARZ</b> MÜNCHEN					
Az 15 Datum 0282 ED PHASENREGELUNG Sachnummer 302.5819 SA 3					
Benennung / Beschreibung					
C43	CK	220NF+-20X100V QUADER	CK 006-5056	enthalten in:	
C45	ROEDERST	MKT1822-422/0	CC 087-7525		
C46	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C47	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C48	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C49	ROEDERST	MKT1822-433/0	CK 006-5062		
C50	CK	1,5UF+-10X 63V QUADER	CK 087-0972		
C51	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C52	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C53	ROEDERST	MKT1822-433/0	CK 006-5062		
C54	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C55	DRALORIC	EDPU4X5150010XR2000	CC 087-6906		
C56	DRALORIC	EDPU4X5/100/2XN750	CC 087-6906		
C57	DRALORIC	EDPU4X5/100/2XN750	CC 087-7048		
C58	DRALORIC	EDPU4X5/100/2XN750	CC 087-7048		
C59	DRALORIC	EDPU4X5/100/2XN750	CC 087-7019		
C60	DRALORIC	EDPU4X568010XR2000	CC 087-7019		
C61	DRALORIC	EDPU4X568010XR2000	CC 087-7019		
C62	DRALORIC	EDPU5X6/56/2XNPO	CC 087-6512		
C63	DRALORIC	EDPU5X6/56/2XNPO	CC 087-6512		
C64	THOMSON	COX767/10000/PF-20+5	CC 087-7525		
C65	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C66	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
C67	DRALORIC	EDPU4X5150010XR2000	CC 087-7048		
GL1	AE	5082-2800 SCHOTTKY-DI-HEWLETT-P.	AE 012-9066		
GL2	AE	5082-2800 SCHOTTKY-DI-HEWLETT-P.	AE 012-9066		
GL3	AD	1N4448 SI 75V 150MIA VALVO	AD 012-0700		
GL4	AD	1N4448 SI 75V 150MIA VALVO	AD 012-0700		
GL5	AD	1N4448 SI 75V 150MIA VALVO	AD 012-0700		

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Kennzeichen	AZ Datum	Schalttafeliste für	Sachnummer	Blatt Nr.	
					ROHDE & SCHWARZ MÜNCHEN
Benennung / Beschreibung		Sachnummer			enthalten in
6L6	VALVO 1N4448	AD 012-0700	AD 012-0700		
6L7	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L8	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L9	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L10	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L11	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L12	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L13	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L14	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L15	AD 1N4448 SI 75V 150MIA VALVO 1N4448	AD 012-0700	AD 012-0700		
6L16	AE 02X55/C12 0,5W Z-DI VALVO 62X55/C12	AE 012-2532	AE 012-2532		
L1	LD 1,20UH10X0,180HM0,620A DELEVAN 6ROSSSEL1025-22	LD 067-2870	LD 067-2870		
L2	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L3	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L4	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L6	LD 0,10UH10X0,080HM1,400A DELEVAN 6ROSSSEL1025-94	LD 067-2740	LD 067-2740		
L7	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L8	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L9	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L10	LD 1,50UH10X0,220HM0,560A DELEVAN 6ROSSSEL1025-24	LD 067-2886	LD 067-2886		
L11	LD 0,10UH10X0,080HM1,400A DELEVAN 6ROSSSEL1025-94	LD 067-2740	LD 067-2740		
L12	LD 0,10UH10X0,080HM1,400A DELEVAN 6ROSSSEL1025-94	LD 067-2740	LD 067-2740		
L15	LD 3,90UH10X1,000HM0,263A DELEVAN 6ROSSSEL1025-34	LD 067-2934	LD 067-2934		
L16	LD 3,90UH10X1,000HM0,263A DELEVAN 6ROSSSEL1025-34	LD 067-2934	LD 067-2934		
L17	LD 3,90UH10X1,000HM0,263A DELEVAN 6ROSSSEL1025-34	LD 067-2934	LD 067-2934		
L18	LD 2,20UH10X0,400HM0,415A DELEVAN 6ROSSSEL1025-28	LD 067-2905	LD 067-2905		
L19	LD 2,20UH10X0,400HM0,415A DELEVAN 6ROSSSEL1025-28	LD 067-2905	LD 067-2905		
L20	LD 2,20UH10X0,400HM0,415A DELEVAN 6ROSSSEL1025-28	LD 067-2905	LD 067-2905		

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Kennzeichen	AZ Datum	Schalttafeliste für	Sachnummer	Blatt Nr.	
					ROHDE & SCHWARZ MÜNCHEN
Benennung / Beschreibung		Sachnummer			enthalten in
L21	DELEVAN 6ROSSSEL1025-28 LD 0,10UH10X0,080HM1,400A	LD 067-2740	LD 067-2740		
L25	DELEVAN 6ROSSSEL1025-94 LD 1,50UH10X0,220HM0,560A	LD 067-2886	LD 067-2886		
L26	DELEVAN 6ROSSSEL1025-24 LD 1,50UH10X0,220HM0,560A	LD 067-2886	LD 067-2886		
L27	DELEVAN 6ROSSSEL1025-24 LD 1,50UH10X0,220HM0,560A	LD 067-2886	LD 067-2886		
R1	RL 0,25W 51,1 OHM+-12TK50 DRALORIC SMA0207/51,10HM-F-D	RL 082-9536	RL 082-9536		
R2	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R3	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R4	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069-1029	RF 069-1029		
R5	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069-1029	RF 069-1029		
R6	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069-1029	RF 069-1029		
R7	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069-1029	RF 069-1029		
R8	RF 0,25W 1KOHM +-5% DRALORIC LCA0207/+-5%1,0K	RF 069-1029	RF 069-1029		
R10	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069-1529	RF 069-1529		
R11	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069-1529	RF 069-1529		
R12	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069-1529	RF 069-1529		
R13	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069-1529	RF 069-1529		
R14	RF 0,25W1,5KOHM +-5% DRALORIC LCA0207/+-5%1,5K	RF 069-1529	RF 069-1529		
R15	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069-2225	RF 069-2225		
R16	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069-2225	RF 069-2225		
R17	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069-2225	RF 069-2225		
R18	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069-2225	RF 069-2225		
R19	RF 0,25W2,2KOHM +-5% DRALORIC LCA0207/+-5%2,2K	RF 069-2225	RF 069-2225		
R23	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R24	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R25	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R26	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R27	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		
R28	RF 0,25W680 OHM +-5% DRALORIC LCA0207/+-5%680	RF 069-6814	RF 069-6814		

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Kennzeichen	AZ	Datum	Schalttaelliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
R29	DRALORIC	LCA0207/+	-5X680	RF 069-6814	
R30	RF 0,25W680	OHM +-5X		RF 069-6814	
R31	DRALORIC	LCA0207/+	-5X680	RF 069-6814	
R32	RF 0,25W680	OHM +-5X		RF 069-6814	
R33	DRALORIC	LCA0207/+	-5X680	RF 069-6814	
R34	RF 0,25W680	OHM +-5X		RF 069-6814	
R35	DRALORIC	LCA0207/+	-5X680	RF 069-6814	
R36	RF 0,25W680	OHM +-5X		RF 069-6814	
R37	DRALORIC	LCA0207/+	-5X680	RF 069-6814	
R38	RF 0,25W680	OHM +-5X		RF 069-6814	
R39	DRALORIC	LCA0207/+	-5X680	RF 069-6814	
R40	RF 0,25W680	OHM +-5X		RF 069-6814	
R41	DRALORIC	LCA0207/+	-5X180	RF 069-1812	
R42	RF 0,25W180	OHM +-5X		RF 069-1812	
R43	DRALORIC	LCA0207/+	-5X180	RF 069-2719	
R44	RF 0,25W270	OHM +-5X		RF 069-2719	
R45	DRALORIC	LCA0207/+	-5X270	RF 069-8217	
R46	RF 0,25W270	OHM +-5X		RF 069-8217	
R47	DRALORIC	LCA0207/+	-5X270	RF 069-8217	
R48	RF 0,25W270	OHM +-5X		RF 069-8217	
R49	DRALORIC	LCA0207/+	-5X820	RF 069-8217	
R50	RF 0,25W820	OHM +-5X		RF 069-8217	
R51	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R52	RF 0,25W180	OHM +-5X		RF 069-1835	
R53	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R54	RF 0,25W180	OHM +-5X		RF 069-1835	
R55	DRALORIC	LCA0207/+	-5X270	RF 069-3315	
R56	RF 0,25W270	OHM +-5X		RF 069-3315	
R57	DRALORIC	LCA0207/+	-5X270	RF 069-3315	
R58	RF 0,25W270	OHM +-5X		RF 069-3315	
R59	DRALORIC	LCA0207/+	-5X330	RF 069-3338	
R60	RF 0,25W330	OHM +-5X		RF 069-3338	
R61	DRALORIC	LCA0207/+	-5X330	RF 069-1812	
R62	RF 0,25W330	OHM +-5X		RF 069-1812	
R63	DRALORIC	LCA0207/+	-5X180	RF 069-2719	
R64	RF 0,25W180	OHM +-5X		RF 069-2719	
R65	DRALORIC	LCA0207/+	-5X270	RF 069-8217	
R66	RF 0,25W270	OHM +-5X		RF 069-8217	
R67	DRALORIC	LCA0207/+	-5X270	RF 069-8217	
R68	RF 0,25W270	OHM +-5X		RF 069-8217	
R69	DRALORIC	LCA0207/+	-5X820	RF 069-8217	
R70	RF 0,25W820	OHM +-5X		RF 069-8217	
R71	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R72	RF 0,25W180	OHM +-5X		RF 069-1835	
R73	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R74	RF 0,25W180	OHM +-5X		RF 069-1835	
R75	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R76	RF 0,25W180	OHM +-5X		RF 069-1835	
R77	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R78	RF 0,25W180	OHM +-5X		RF 069-1835	
R79	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R80	RF 0,25W180	OHM +-5X		RF 069-1835	
R81	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R82	RF 0,25W180	OHM +-5X		RF 069-1835	
R83	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R84	RF 0,25W180	OHM +-5X		RF 069-1835	
R85	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R86	RF 0,25W180	OHM +-5X		RF 069-1835	
R87	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R88	RF 0,25W180	OHM +-5X		RF 069-1835	
R89	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R90	RF 0,25W180	OHM +-5X		RF 069-1835	
R91	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R92	RF 0,25W180	OHM +-5X		RF 069-1835	
R93	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R94	RF 0,25W180	OHM +-5X		RF 069-1835	
R95	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R96	RF 0,25W180	OHM +-5X		RF 069-1835	
R97	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R98	RF 0,25W180	OHM +-5X		RF 069-1835	
R99	DRALORIC	LCA0207/+	-5X180	RF 069-1835	
R100	RF 0,25W180	OHM +-5X		RF 069-1835	

Kennzeichen	AZ	Datum	Schalttaelliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
R61	RF 0,25W220	OHM +-5X		RF 069-2219	
R62	DRALORIC	LCA0207/+	-5X220	RF 069-5618	
R63	RF 0,25W560	OHM +-5X		RF 069-5618	
R64	DRALORIC	LCA0207/+	-5X560	RF 069-5618	
R65	RF 0,25W560	OHM +-5X		RF 069-5618	
R66	DRALORIC	LCA0207/+	-5X560	RF 069-5618	
R67	RF 0,25W560	OHM +-5X		RF 069-5618	
R68	DRALORIC	LCA0207/+	-5X560	RF 069-5618	
R69	RF 0,25W560	OHM +-5X		RF 069-5618	
R70	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R71	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R72	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R73	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R74	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R75	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R76	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R77	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R78	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R79	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R80	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R81	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R82	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R83	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R84	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R85	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R86	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R87	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R88	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R89	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R90	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R91	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R92	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R93	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R94	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R95	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R96	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R97	RF 0,25W2,2K	OHM +-5X		RF 069-2225	
R98	DRALORIC	LCA0207/+	-5X2,2K	RF 069-2225	
R99	RF 0,25W2,2K	OHM +-5X		RF 069-2225	

Diese Vorlage ist unter Eigentum Verleihung und schadenstypischer Vorlage Verleihung an andere zu stellen

Kurzzeichen	AZ Datum	Schalttailliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung			enthalten in	
R100	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
R101	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R102	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R103	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R109	DRALORIC	LCA0207/+-5X1,0M	RL 083-1545	
	RF 0,25W 2,1KOHM+-1X1K50			
R110	DRALORIC	SMA/207/22,1K-F-C	RL 083-9146	
	RF 0,25W 1 KOHM+-0,1X1K25			
R111	DRALORIC	SMA0207/1K-B-E	RL 083-0926	
	RF 0,25W 2,74KOHM+-1X1K50			
R112	DRALORIC	SMA0207/2,74K-F-D	RL 083-1097	
	RF 0,25W 4,75KOHM+-1X1K50			
R113	DRALORIC	SMA0207/4,75K-F-D	RL 083-1197	
	RF 0,25W 7,50KOHM+-1X1K50			
R114	DRALORIC	SMA0207/7,5K-F-D	RL 082-2277	
	RF 0,25W 1,82KOHM+-1X1K50			
R115	DRALORIC	SMA0207/1,82K-F-C	RL 083-1039	
	RF 0,25W 3,92KOHM+-1X1K50			
R116	DRALORIC	SMA0207/1,82K-F-C	RL 083-1039	
	RF 0,25W 3,92KOHM+-1X1K50			
R117	DRALORIC	SMA0207/1,82K-F-C	RL 083-1197	
	RF 0,25W 7,50KOHM+-1X1K50			
R118	DRALORIC	SMA0207/7,5K-F-D	RS 247-7961	
	RF 0,5W2KOHM+-20X10X10X5			
R119	BOURNS	3386X-1-202	RS 247-7961	
	RF 0,5W2KOHM+-20X10X10X5			
R120	BOURNS	3386X-1-202	RS 247-7978	
	RF 0,5W5KOHM+-20X10X10X5			
R121	BOURNS	3386X-1-502	RS 247-7526	
	RF 0,5W10KOHM+-20X10X10X5			
R122	BOURNS	3386X1-103	RS 247-5917	
	RF 0,5W1KOHM+-20X10X10X5			
R123	BOURNS	3386X-1-102	RS 247-7961	
	RF 0,5W2KOHM+-20X10X10X5			
R124	BOURNS	3386X-1-202	RS 247-7978	
	RF 0,5W5KOHM+-20X10X10X5			
R125	BOURNS	3386X-1-502	RS 247-7526	
	RF 0,5W10KOHM+-20X10X10X5			
R126	BOURNS	3386X1-103	RF 069-1041	
	RF 0,25W100KOHM +-5%			
R127	DRALORIC	LCA0207/+-5X100K	RF 069-1041	
	RF 0,25W100KOHM +-5%			
R128	DRALORIC	LCA0207/+-5X100K	RF 069-1041	
	RF 0,25W100KOHM +-5%			
R129	DRALORIC	LCA0207/+-5X100K	RF 069-1041	
	RF 0,25W100KOHM +-5%			
R130	DRALORIC	LCA0207/+-5X100K	RF 069-1041	
	RF 0,25W100KOHM +-5%			
R131	DRALORIC	LCA0207/+-5X100K	RF 069-1041	
	RF 0,25W100KOHM +-5%			
R132	DRALORIC	LCA0207/+-5X220K	RF 069-2248	
	RF 0,25W220KOHM +-5%			
R133	DRALORIC	LCA0207/+-5X220K	RF 069-2248	
	RF 0,25W220KOHM +-5%			

Das Unternehmen ist unter Eigentum, Vertriebsrecht, Nutzungsrecht, Veräußerung, Pfandrecht, Hypothek, Leasing, Miete, Kauf, Verkauf, Erbschaft, Schenkung, etc. geschützt.

Kurzzeichen	AZ Datum	Schalttailliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung			enthalten in	
R134	DRALORIC	LCA0207/+-5X220K	RF 069-2248	
	RF 0,25W220KOHM +-5%			
R135	DRALORIC	LCA0207/+-5X220K	RF 069-2248	
	RF 0,25W220KOHM +-5%			
R136	DRALORIC	LCA0207/+-5X220K	RF 069-2248	
	RF 0,25W220KOHM +-5%			
R140	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R141	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R142	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R143	DRALORIC	LCA0207/+-5X1,0M	RL 083-0461	
	RF 0,25W 562 OHM+-1X1K50			
R144	DRALORIC	SMA0207/562OHM-F-D	RL 083-0732	
	RF 0,25W 1,50KOHM+-1X1K50			
R145	DRALORIC	SMA0207/1,50K-F-D	RL 083-0990	
	RF 0,25W 3,32KOHM+-1X1K50			
R146	DRALORIC	SMA0207/3,32K-F-D	RL 082-2477	
	RF 0,25W 2,21KOHM+-1X1K50			
R147	DRALORIC	SMA 0207/2,21K-F-C	RF 069-5647	
	RF 0,25W560KOHM +-5%			
R150	DRALORIC	LCA0207/+-5X560K	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R151	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R152	DRALORIC	LCA0207/+-5X1,0M	RF 069-1058	
	RF 0,25W 1 MOHM +-5%			
R153	DRALORIC	LCA0207/+-5X1,0M	RF 069-2725	
	RF 0,25W2,7KOHM +-5%			
R154	DRALORIC	LCA0207/+-5X2,7K	RF 069-1529	
	RF 0,25W1,5KOHM +-5%			
ST4	ENTHALTEN IN 302_5819			
T1	AK	2N2369A SI NPN 40V0,2A	AK 010-4680	
T2	AK	BCY591X NPN 45V 200MA	AK 010-5163	
T3	SIEMENS	BCY591X	AK 082-3996	
	AK	BF272A SI PNP 35V15MIA		
T4	SGS	BF272A	AK 082-3996	
	AK	BF272A SI PNP 35V15MIA		
T5	SGS	BF272A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		
T6	SILICONIX	J111A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		
T7	SILICONIX	J111A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		
T8	SILICONIX	J111A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		
T9	SILICONIX	J111A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		
T10	SILICONIX	J111A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		
T11	SILICONIX	J111A	AM 214-7685	
	AM	J111A N-KANAL-FET 35V		

Kennzeichen	Az Datum	Schalttafeliste (für)	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
T12		SILICONIX J111A AM J111A N-KANAL-FET 35V SILICONIX J111A	AM 214-7685	- ENDE -

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Kennzeichen	Az Datum	Schalttafeliste (für)	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
B1		BL SP8630A 10=1TEILER UHF	BL 302-6044	
B2		PLESSEY SP8630ADG	BL 468-5930	
B3		BL SM54S112J 2/JK-FLIPFL. TEXAS SM54S112J	BL 302-6038	
B4		TEXAS SM54LS193J 4BIT-COUNT- BL SM54LS193J/R&S-LV	BL 302-6050	
B5		BL SM54S74J 2/D-FLIPFLOP TEXAS SM54S74J	BL 475-1266	
B6		BL MC4344L PHASE LOCK LP. MOTOROLA MC4344L	BO 302-5883	
B10		BO LF256H BIFET-OP-AMP. NSC LF256H	BM 476-1082	
B11		BM OM321 ANTENNEN-VERST. VALVO OM321	BM 302-6080	
B12		BM TFM-2 MIXER 1-1000MHZ MCL TFM-2	BO 275-0816	
BUT4		BO MC1558JG DUAL-OP-AMP. NSC LM1558J	FJ 063-5145	
		FJ EINBAUBUCHSE SYST.- SMB RADIAL 115 556		
C1		CE 22 UF+-20X16V 7X 5X11	CE 022-8091	
C2		ERO-TANTAL TA-ELKO ETR3-22/15	CC 022-0784	
C3		CC 1NF+-10X63V K2000	CC 450-6864	
C4		DRALORIC EDPU4X5/63V1000/10X	CC 006-0019	
C5		CC 1,5PF+-0,25PFNPA/1BRD5	CE 022-8091	
C6		STETTNER SDPL5; 1,5PF/0,25NPO	CC 022-0784	
C7		CC 0,5PF+-0,25PF5P100	CC 022-0455	
C8		DRALORIC P100/180,5/0,25SDPN5	CC 006-0219	
C9		DRALORIC P100/180,5/0,25SDPN5	CT 025-7367	
C10		CE 22 UF+-20X16V 7X 5X11	CC 022-0310	
C11		ERO-TANTAL TA-ELKO ETR3-22/15	CC 087-7525	
C12		CC 1NF+-10X63V K2000	CC 087-7525	
C13		DRALORIC EDPU4X5/63V1000/10X	CC 087-7525	
C14		CC 4PF 5X5N150	CC 087-7525	
C15		CC 5PF+-0,25PFN150/18 RD5	CC 022-0784	
C16		DRALORIC N150/185/0,25SDPN	CC 082-1712	
C17		CT 9,2PF TAUCHTR-ARB 7X12	CC 087-6664	
C18		TEKELEC LUFTTRAT5200	CC 022-0784	
		CC 2 PF 12,5X5N033	CC 087-6664	
		DRALORIC N033/182/0,25SP5	CC 022-0784	
		CC 10NF+-20+50X7X8R6000	CC 087-6664	
		THOMSON COX767/10000/PF-20+5	CC 022-0784	
		CC 10NF+-20+50X7X8R6000	CC 087-6664	
		THOMSON COX767/10000/PF-20+5	CC 022-0784	
		THOMSON COX767/10000/PF-20+5	CC 087-6664	
		THOMSON COX767/10000/PF-20+5	CC 022-0784	
		THOMSON COX767/10000/PF-20+5	CC 087-6664	
		THOMSON COX767/10000/PF-20+5	CC 022-0784	
		DRALORIC EDPU4X5/63V1000/10X	CC 087-6664	
		CC 1,5NF+-20+80X2R10000TRAP	CC 022-0784	
		STETTNER TEFK7,1500/2080E9000	CC 087-6664	
		CC 39PF+-2,4X5N150	CC 022-0784	
		DRALORIC EDPU4X5/39/2XN150	CC 087-6664	
		CC 1NF+-10X63V K2000	CC 022-0784	
		DRALORIC EDPU4X5/63V1000/10X	CC 087-6664	

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Kennzeichen	AZ Datum	Schaltteilliste für	AZ Datum	Benennung / Beschreibung	Sachnummer	Sachnummer	Blatt Nr.
C19		CC 1,8NF+-10X4XSR2000		CC 087-7054			2
C20		DRALORIC EDPU4X5/1800/10R2000		CC 022-0784			
C21		DRALORIC EDPU4X5/63V1000/10X		CC 022-0784			
C22		DRALORIC EDPU4X5/63V1000/10X		CC 087-7054			
C23		DRALORIC EDPU4X5/1800/10R2000		CC 087-6406			
C24		DRALORIC EDPU3X4/6,8/0,25NP0		CC 087-6370			
C25		DRALORIC EDPU3X4/6,8/0,25NP0		CC 022-0784			
C26		DRALORIC EDPU3X4/3,9/0,1K/NP0		CC 087-7525			
C27		DRALORIC EDPU4X5/63V1000/10X		CC 022-0784			
C28		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C29		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C30		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C31		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C32		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C33		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C34		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C35		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C36		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C37		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C38		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C39		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C40		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C41		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C42		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C43		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C44		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C45		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C46		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C47		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C48		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C49		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C50		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C51		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C52		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C53		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C54		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C55		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C56		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C57		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C58		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C59		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			
C60		DRALORIC EDPU4X5/63V1000/10X		CC 087-7525			

Kennzeichen	AZ Datum	Schaltteilliste für	AZ Datum	Benennung / Beschreibung	Sachnummer	Sachnummer	Blatt Nr.
C61		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			3
C62		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			
C63		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C64		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C65		DRALORIC EDPU6X9/4700/10R2000		CC 092-7813			
C66		DRALORIC EDPU6X9/4700/10R2000		CC 092-7813			
C67		DRALORIC EDPU6X9/4700/10R2000		CC 082-1712			
C68		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			
C69		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			
C70		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			
C71		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			
C72		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C73		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C74		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C75		DRALORIC EDPU6X9/4700/10R2000		CC 082-1712			
C76		DRALORIC EDPU6X9/4700/10R2000		CC 087-7102			
C80		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C81		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C82		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C83		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C84		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C85		DRALORIC EDPU6X9/4700/10R2000		CC 087-7002			
C86		DRALORIC EDPU6X9/4700/10R2000		CC 087-7002			
C87		DRALORIC EDPU6X9/4700/10R2000		CC 087-7002			
C88		DRALORIC EDPU6X9/4700/10R2000		CC 087-7002			
C90		DRALORIC EDPU6X9/4700/10R2000		CC 022-8210			
C91		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C92		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			
C93		DRALORIC EDPU6X9/4700/10R2000		CC 087-7525			

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CM

Kennzeichen	AZ Datum	Schalttailliste für ED UMSETZER	Sachnummer	Blatt Nr.
C94		CC 10NF-20+50X7X8R6000 THOMSON COX767/10000/PF-2D+5	CC 087-7525	
C96		CE 470UF-10+100Z 6V 13X17 SIEMENS 841316-A2477-Z	CE 022-7537	
C97		CC 10NF-20+50X7X8R6000 THOMSON COX767/10000/PF-2D+5	CC 087-7525	
C98		CE 470UF-10+100Z 6V 13X17 SIEMENS 841316-A2477-Z	CE 022-7537	
C99		CC 10NF-20+50X7X8R6000 THOMSON COX767/10000/PF-2D+5	CC 087-7525	
GL1		AE BB505B SELEKT-C-DIODE SIEMENS 86505B-KATEGORIE4	568-1107	
GL4		AE 5082-2800 SCHOITKY-DI- HEWLETT-P. 5082-2800	AE 012-9066	
GL5		AE 5082-2800 SCHOITKY-DI- HEWLETT-P. 5082-2800	AE 012-9066	
GL6		AE 5082-2800 SCHOITKY-DI- HEWLETT-P. 5082-2800	AE 012-9066	
GL7		AE 5082-2800 SCHOITKY-DI- HEWLETT-P. 5082-2800	AE 012-9066	
GL8		AE 5082-2800 SCHOITKY-DI- HEWLETT-P. 5082-2800	AE 012-2526	
GL10		AE BZX55/C11 0,5W Z-DI VALVO BZX55/C11	AE 012-0523	
GL11		AE BA182 BER-SCH-DIOD-VHF VALVO BA182	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 1,00UH10X1,00OHMO,390A DELEVAN 1025-20	LD 067-2863	
L8		LD 47,0UH10X4,50OHMO,110A DELEVAN DROSSEL1025-60	LD 067-3060	
L9		LD 680 UH10X60,00OHMO,030A DELEVAN DROSSEL1025-88	LD 067-3201	
L10		LD 22,0UH10X3,30OHMO,114A DELEVAN DROSSEL1025-52	LD 067-3024	
L11		SPULE	302-5348	

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Kennzeichen	AZ Datum	Schalttailliste für ED UMSETZER	Sachnummer	Blatt Nr.
L12		LD 2,20UH10X0,40OHMO,415A DELEVAN DROSSEL1025-28	LD 067-2905	
L15		LD 1,20UH10X0,18OHMO,620A DELEVAN DROSSEL1025-22	LD 067-2870	
L16		LD 1,20UH10X0,18OHMO,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+-5X4,7K	RF 069-4728	
R3		RL 0,25W 2,61KOHM+-1%TK50 DRALORIC SMA02072,61K-F-D	RL 083-0903	
R6		RF 0,25W3,3KOHM +-5% DRALORIC SMA0207+-5X3,3K	RF 069-3321	
R7		RF 0,25W1,5KOHM +-5% DRALORIC LCA0207+-5X1,5K	RF 069-1529	
R8		RL 0,25W 243 OHM+-1%TK50 DRALORIC SMA0207243OHM-F-D	RL 083-0126	
R9		RF 0,25W470 OHM +-5% DRALORIC LCA0207+-5X470	RF 069-4711	
R10		RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 22OHM 2% UNGEW.	RL 092-5879	
R11		RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 22OHM 2% UNGEW.	RL 092-5879	
R12		RL 0,13W 332 OHM+-1%TK50 RESISTA MK1 332OHM 1% TK50	RL 092-1380	
R13		RL 0,25W11,30 OHM+-1%TK50 DRALORIC SMA0207/11,30HM-F-D	RL 082-8900	
R14		RL 0,25W11,30 OHM+-1%TK50 DRALORIC SMA0207/11,30HM-F-D	RL 082-8900	
R15		RL 0,25W 51,1 OHM+-1%TK50 DRALORIC SMA0207/51,10HM-F-D	RL 082-9536	
R16		RF 0,25W180 OHM +-5% DRALORIC LCA0207+-5X180	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+-5X820	RF 069-8217	
R20		RF 0,25W270 OHM +-5% DRALORIC LCA0207+-5X270	RF 069-2719	
R21		RL 0,13W 22 OHM2% UNGEW. RESISTA MK1 22OHM 2% UNGEW.	RL 092-5879	
R22		RL 0,13W 16,2 OHM+-1%TK50 RESISTA MK1 16,2 OHM+-1%TK50	RL 092-0031	
R23		RL 0,13W 16,2 OHM+-1%TK50 RESISTA MK1 16,2 OHM+-1%TK50	RL 092-0031	
R24		RESISTA MK1 33,2 OHM+-1% TK50	RL 092-1244	

Diese Umirage ist unser Eigentum. Vervielfältigung und schadenstanzprüfung ist ohne Erlaubnis nicht gestattet.

CU

CU

Kurzzeichen	AZ Datum	Schalttafel für ED UMSETZER	Sachnummer		Blatt Nr.
			19 0282	ED UMSETZER	
R25	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R26	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R27	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R28	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R29	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R30	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R31	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R32	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R33	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R34	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R35	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R36	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R37	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R38	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R39	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R40	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R41	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R42	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R43	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R44	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R45	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R46	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R47	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R48	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R49	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R50	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R51	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R52	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R53	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R54	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R55	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7

Diese Unterlagen sind unser Eigentum. Vervielfältigung und Verbreitung ist ohne unsere schriftliche Genehmigung untersagt.

PF 008.0028.0078

Kurzzeichen	AZ Datum	Schalttafel für ED UMSETZER	Sachnummer		Blatt Nr.
			19 0282	ED UMSETZER	
R56	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R57	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R58	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R59	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R60	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R61	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R62	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R63	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R64	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R65	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R66	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R67	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R68	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R69	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R70	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R71	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R72	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R73	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R80	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R81	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R82	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R83	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R84	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R85	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R86	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R87	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R88	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R89	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7
R90	19 0282	ED UMSETZER	19 0282	ED UMSETZER	7

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PF 008.0028.0078

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Kennzeichen	Az Datum	Schalttafel für	Sachnummer	Blatt Nr.
Benennung / Beschreibung				
ST5		DRALORIC LCA0207/-5X1		
		ENTHALTEN IN		
		302.6015		
T1		AM U310 N-KAN.FET 25V0,5V	AM 454.6217	
T2		SILICONIX U310		
T3		AK BFR15A SI-NPN HF-TRANS	AK 451.4320	
T4		SIEMENS BFR15A		
T5		AK BFR15A SI-NPN HF-TRANS	AK 451.4320	
		SIEMENS BFR15A		
T6		AK BFR272A SI PNP 35V15MIA	AK 082.3996	
		SGS BFR272A		
T7		AK 2N2369A SI NPN 40V0,2A	AK 010.4680	
		VALVO 2N2369A		
T8		AK BCY791X PNP 45V200MIA	AK 010.3777	
		SIEMENS BCY791X		
T9		AK BCY591X NPN 45V 200MA	AK 010.5163	
		SIEMENS BCY591X		
T10		AK BCY791X PNP 45V200MIA	AK 010.3777	
		SIEMENS BCY791X		
T11		AK BCY591X NPN 45V 200MA	AK 010.5163	
		SIEMENS BCY591X		

Diese Liste ist unter Experten-Vorbehalt und schadenstypischer und schadenstypischer

Kennzeichen	Az Datum	Schalttafel für	Sachnummer	Blatt Nr.
Benennung / Beschreibung				
B1		BL SN54LS86J 4/2INP.EXORG	BL 302.6238	
		TEXAS SN54LS86J		
B2		BO UA741MJG OP-AMP.	BO 275.0822	
		TEXAS UA741MJG		
B3		BL SN54S00J 4/2INP.NAND	BL 468.5899	
		TEXAS SN54S00J		
B4		BL SN54S00J 4/2INP.NAND	BL 468.5899	
		TEXAS SN54S00J		
B5		BL SN54S1T2J 2/JK-FLIPFLOP.	BL 468.5930	
		TEXAS SN54S1T2J		
B6		BL SN54LS290J DEZ.ZAEHLER	BL 530.5805	
		TEXAS SN54LS290J		
B7		BL SN54LS74J 2XD-FLIPFLOP	BL 275.0697	
		TEXAS SN54LS74J		
B8		BL MC14518BCP 2XBCD-COUNT	BL 086.7296	
		RCA D4518BE		
B10		BL MC14518BCP 2XBCD-COUNT	BL 086.7296	
		RCA D4518BE		
B11		BL SN54LS290J DEZ.ZAEHLER	BL 530.5805	
		TEXAS SN54LS290J		
B12		BL MC14046BCP MICROP. PLL	BL 303.8986	
		MOTOROLA MC14046BCP		
B13		BO LF256H BIFET-OP. AMP.	BO 302.5883	
		NSC LF256H		
B14		BL HEF4027B 2/JK-FLIPFLOP	BL 302.6444	
		VALVO HEF4027BP		
B15		BL HEF4029B UP/DOWN-COUNT	BL 302.6438	
		VALVO HEF4029BP		
B16		BL HEF4027B 2/JK-FLIPFLOP	BL 302.6444	
		VALVO HEF4027BP		
B17		BL HEF4027B 2/JK-FLIPFLOP	BL 302.6444	
		VALVO HEF4027BP		
B18		BL CD4011BE 4/2INP.NANDG.	BL 252.7337	
		RCA CD4011BE		
C1		CC 4.7NF+-10X6X9R2000	CC 087.7102	
		DRALORIC EDP06X9/4700/10R2000		
C2		CC 4.7NF+-10X6X9R2000	CC 087.7102	
		DRALORIC EDP06X9/4700/10R2000		
C3		CC 27PF+-2X4X5N150	CC 087.6641	
		DRALORIC EDP04X5/272XN150		
C4		CC 10PF+-0,5PF5N150	CC 006.0234	
		DRALORIC N150/1B10/0,5SDPN5		
C5		CC 2PF+-0,5PF5N150	CC 006.0183	
		DRALORIC N150/1B2/0,5SDPN		
C6		CC 1,5PF+-0,23PFNPA/1BRD5	CC 450.6864	
		STETNER SDBL5.1,5PF/0,25NPO		
C7		CE 15 UF+-20X20V 7X 5X11	CE 022.8127	
		ERO-TANTAL TA-FLK0E1R3-15/20		
C8		CE 15 UF+-20X35V12X 7X11	CE 087.9405	
		CC 33PF+-2X4X5NPO	CC 087.6487	
		DRALORIC EDP04X5/33/2X/NPO		
C10		CC 100PF+-2X6X9NPO	CC 087.6541	
		DRALORIC EDP06X9/100/2XNPO		
C11		CC 1NF+-10X63V K2000	CC 022.0784	
		DRALORIC EDP04X5/63V1000/10X		

Diese Liste ist unter Experten-Vorbehalt und schadenstypischer und schadenstypischer

Kurzzeichen	Az	Datum	Schalttafel für ED REFERENZ	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
C12	CE	100NF+-20X35V 5X 4X 7	CE 022-8156		
C13	ERO-TANTAL	TA-ELKOETRI-0,1/35	CE 023-5980		
C14	CE	10 UF+-20X25V 7X 5X11	CE 022-7566		
C15	SIEMENS	B41316-A4227-2	CE 208-4007		
C16	ROEDERST	ELKOEK100/25	CE 208-4007		
C17	CE	100UF-10+100X25V 13X13	CE 022-0784		
C18	DRALORIC	EDPU4X5/63V1000/10X	CE 087-6512		
C19	DRALORIC	EDPU5X6/56/2XNPO	CE 087-6512		
C20	DRALORIC	EDPU5X6/56/2XNPO	CE 087-6512		
C21	DRALORIC	EDPU5X6/56/2XNPO	CE 022-0784		
C22	DRALORIC	EDPU4X5/63V1000/10X	CE 087-6541		
C23	DRALORIC	EDPU6X9/100/2XNPO	CE 087-6558		
C24	DRALORIC	EDPU6X9/120/2XNPO	CE 087-6541		
C25	DRALORIC	EDPU6X9/100/2XNPO	CE 022-0784		
C26	CE	100UF-10+100X25V 13X13	CE 208-4007		
C27	ROEDERST	ELKOEK100/25	CE 087-7525		
B15	THOMSON	COX767/10000/PF-20+5	CE 087-7525		
C44	THOMSON	COX767/10000/PF-20+5	CE 087-7525		
C45	THOMSON	COX767/10000/PF-20+5	CE 022-8227		
C47	CE	22 UF+-20X35V12X 7X11	CE 022-8091		
C48	ERO-TANTAL	TA-ELKO ETR4/22/35	CE 022-0784		
C50	DRALORIC	EDPU4X5/63V1000/10X	CE 087-6970		
C51	DRALORIC	EDPU4X5/63V1000/10X	CE 022-0784		
C52	DRALORIC	EDPU4X5/63V1000/10X	CE 087-6970		
C53	DRALORIC	EDPU4X5/63V1000/10X	CE 022-0784		
C54	DRALORIC	EDPU4X5/63V1000/10X	CE 022-0784		
C55	DRALORIC	EDPU4X5/63V1000/10X	CE 208-4007		
C56	ROEDERST	ELKOEK100/25	CE 022-7566		
C57	SIEMENS	B41316-A4227-2			

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Kurzzeichen	Az	Datum	Schalttafel für ED REFERENZ	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
C58	CE	220UF-10+100X16V 13X17	CE 022-7566		
C59	SIEMENS	B41316-A4227-2	CE 022-0784		
C60	DRALORIC	EDPU4X5/63V1000/10X	CE 060-4719		
C61	SIEMENS	B 31063-A 5221-H 000	CE 137-0940		
C62	SIEMENS	B31861-J1680-G000	CT 025-7050		
C63	TRIMMERT	10S-TRIK021-10/40N75	CK 087-4584		
C64	TRIMMERT	B31861-J1390-J	CK 006-5033		
C65	ROEDERST	MKT7822-410/0	CK 060-4719		
C70	SIEMENS	B 31063-A 5221-H 000	CC 087-6970		
GL1	DRALORIC	EDPU3X4/7330/10XR2000	249-4718		
GL1	SIEMENS	BB105B C-DIODE SELEKT.	568-1107		
GL2	SIEMENS	BB505B-KATEGORIE4	249-4718		
GL2	SIEMENS	BB105B C-DIODE SELEKT.	568-1107		
GL3	SIEMENS	BB505B-KATEGORIE4	AD 012-0700		
GL5	VALVO	IN4448 SI 75V 150MVA	AE 012-0523		
GL6	VALVO	IN4448	AE 032-0523		
GL7	VALVO	BA182	AE 012-2532		
GL8	VALVO	BA182	AE 012-2484		
K1	KABEL		302-6315		
L1	LD 470	UH10X42,00HMO,036A	067-3182		
L2	DELEVAN	DROSSEL1025-84	302-6309		
L3	SPULE		LD 067-2934		
L4	DELEVAN	DROSSEL1025-34	LD 067-2934		
L5	DELEVAN	DROSSEL1025-34	LD 067-2757		
L6	DELEVAN	DROSSEL1025-96	LD 067-2786		
L7	DELEVAN	DROSSEL1025-04	LD 067-2786		
L8	DELEVAN	DROSSEL1025-04	LD 067-2757		

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Kennzeichen	AZ Datum	Schteilliste für ED REFERENZ	Sachnummer	Sachnummer	Blatt Nr.
L10	32	0282	LD 0,27UH10X0,16OHM0,975A	LD 067-2792	4
L11			DELEVAN DROSSSEL1025-06	LD 067-2828	
L12			LD 0,47UH10X0,35OHM0,660A	LD 067-2828	
L13			LD 0,47UH10X0,35OHM0,660A	LD 067-2792	
L15			LD 0,27UH10X0,16OHM0,975A	LD 067-3047	
L16			LD 33,0UH10X3,40OHM0,130A	LD 026-3265	
Q1			ER 10,000HZ CL30 HC-18/U QUAKE QUARZQD61000H10	055-6746	
R1			RL 0,125W36,5KOHM+-1%TK50	RL 086-3678	
R3			DALE MF1/10 36,5K 1%TK50	RL 086-3426	
R4			DALE MF1/10 16,5K 1%TK50	RF 069-2725	
R5			RF 0,25W2,7KOHM +-5%	RF 069-1041	
R6			DRALORIC LCA0207+-5X2,7K	RF 069-1529	
R7			RF 0,25W100KOHM +-5%	RS 087-7660	
R8			DRALORIC LCA0207+-5X100K	RL 083-0855	
R9			RF 0,25W1,5KOHM +-5%	RS 247-5917	
R10			DRALORIC LCA0207+-5X1,5K	RL 083-0803	
R11			RF 0,25W20KOHM+-20%10X10X5	RL 082-2560	
R12			BOURNS 3386X-1-203	RS 087-7660	
R13			RF 0,25W100KOHM +-5%	RF 069-1041	
R14			DRALORIC LCA0207+-5X100K	RL 099-3242	
R15			RF 0,13W 15,8KOHM+-1%TK50	RF 069-1029	
R16			RF 0,25W 1KOHM +-5%	RF 069-1035	
R17			DRALORIC LCA0207+-5X1,0K	RF 069-2725	
R18			DRALORIC LCA0207+-5X10K	RF 069-5618	
R19			RF 0,25W2,7KOHM +-5%	RF 069-1812	
R20			DRALORIC LCA0207+-5X560	RF 069-1829	
R22			RF 0,25W1,8KOHM +-5%	RF 069-2719	
R23			DRALORIC LCA0207+-5X270	RF 069-2225	
			RF 0,25W2,2KOHM +-5%		
			DRALORIC LCA0207+-5X2,2K		

Preisänderungen in unsern Katalogen, Veranschaulichung und Änderungen sind ohne weiteres möglich und werden entsprechend

Kennzeichen	AZ Datum	Schteilliste für ED REFERENZ	Sachnummer	Sachnummer	Blatt Nr.
R24	32	0282	RF 0,25W 56KOHM +-5%	RF 069-5630	5
R25			DRALORIC LCA0207+-5X56K	RF 069-1041	
R26			RF 0,25W100KOHM +-5%	RF 069-1029	
R27			DRALORIC LCA0207+-5X1,0K	RF 069-2231	
R28			RF 0,25W 22KOHM +-5%	RF 069-5124	
R29			DRALORIC LCA0207+-5X22K	RF 069-1035	
R30			RF 0,25W5,1KOHM +-5%	RF 069-1041	
R31			DRALORIC LCA0207+-5X10K	RF 069-1212	
R32			RF 0,25W100KOHM +-5%	RF 069-6808	
R33			DRALORIC LCA0207+-5X120	RF 069-1512	
R34			RF 0,25W 68 OHM +-5%	RF 069-6808	
R35			DRALORIC LCA0207+-5X68	RF 069-3321	
R36			RF 0,25W3,3KOHM +-5%	RF 069-3321	
R37			DRALORIC LCA0207+-5X3,3K	RF 069-1858	
R38			RF 0,25W1,8KOHM +-5%	RF 069-1535	
R40			DRALORIC LCA0207+-5X1,8M	RF 069-2219	
R41			RF 0,25W 15KOHM +-5%	RF 069-2725	
R42			DRALORIC LCA0207+-5X2,7K	RF 069-1029	
R43			RF 0,25W 1KOHM +-5%	RF 069-2219	
R44			DRALORIC LCA0207+-5X1,0K	RF 069-2219	
R45			RF 0,25W2,7KOHM +-5%	RF 069-2725	
R46			DRALORIC LCA0207+-5X2,7K	RF 069-1029	
R47			RF 0,25W 1KOHM +-5%	RF 069-2219	
R48			DRALORIC LCA0207+-5X220	RF 069-2219	
R49			RF 0,25W2,7KOHM +-5%	RF 069-2725	
R50			DRALORIC LCA0207+-5X2,7K	RF 069-1029	
R51			RF 0,25W 1KOHM +-5%	RF 069-2719	
R52			DRALORIC LCA0207+-5X270	RL 067-4720	
R53			DALE MF1/10 6,19K 1%TK50	RF 069-3921	
			RF 0,25W3,9KOHM +-5%		

Preisänderungen in unsern Katalogen, Veranschaulichung und Änderungen sind ohne weiteres möglich und werden entsprechend

Kennzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.
<b>ROHDE &amp; SCHWARZ</b> <b>WÜRSCHEN</b>					
Benennung / Beschreibung					
R54			DRALORIC LCA0207/+ -5X3,9K	RF 069-2219	
			RF 0,25W220 OHM +-5%		
R60			DRALORIC LCA0207/+ -5X220	RF 069-2219	
			RF 0,25W220 OHM +-5%		
R61			DRALORIC LCA0207/+ -5X220	RF 069-1041	
			RF 0,25W100KOHM +-5%		
R62			DRALORIC LCA0207/+ -5X100K	RF 069-3315	
			RF 0,25W330 OHM +-5%		
R63			DRALORIC LCA0207/+ -5X330	RF 069-2202	
			RF 0,25W 22 OHM +-5%		
R64			DRALORIC LCA0207/+ -5X22	RF 069-5101	
			RF 0,25W 51 OHM +-5%		
R65			DRALORIC LCA0207/+ -5X51	RF 069-2219	
			RF 0,25W220 OHM +-5%		
R70			DRALORIC LCA0207/+ -5X220	RF 069-1012	
			RF 0,25W100 OHM +-5%		
R71			DRALORIC LCA0207/+ -5X100	RF 069-4705	
			RF 0,25W 47 OHM +-5%		
R72			DRALORIC LCA0207/+ -5X47	RF 069-3909	
			RF 0,25W 39 OHM +-5%		
ST6			DRALORIC LCA0207/+ -5X39		
ENTHALTEN IN 302-6215					
T1			AM 2N4416 N-KANAL-FET 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			AM J111A N-KANAL-FET 35V	AM 214-7685	
			SILICONIX J111A		
T5			AK 2N2369A SI NPN 40V0,2A	AK 010-4680	
			VALVO 2N2369A		
T6			AK 2N2369A SI NPN 40V0,2A	AK 010-4680	
			VALVO 2N2369A		
T7			AK 2N2369A SI NPN 40V0,2A	AK 010-4680	
			VALVO 2N2369A		
T8			AK 2N2369A SI NPN 40V0,2A	AK 010-4680	
			VALVO 2N2369A		
T9			AK 2N2369A SI NPN 40V0,2A	AK 010-4680	
			VALVO 2N2369A		
T10			AK 2N2369A SI NPN 40V0,2A	AK 010-4680	
			VALVO 2N2369A		

Diese Unterlage ist unser Eigentum. Vervielfältigung, Verbreitung, Weitergabe und Nachdruck sind ohne schriftliche Genehmigung untersagt.

- ENDE -

Kennzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.
<b>ROHDE &amp; SCHWARZ</b> <b>WÜRSCHEN</b>					
Benennung / Beschreibung					
B1			BO UA709JG OP-AMPLIFIER TEXAS SN52709JG	BO 246-1760	
B2			BL MC14046BCP MICROP. PLL MOTOROLA MC14046BCP	BL 303-8986	
B3			BL SN54LS74J 2X0-FLIPFLOP TEXAS SN54LS74J	BL 275-0697	
B4			BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R8S-LV	BL 302-6038	
B5			BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R8S-LV	BL 302-6038	
B6			BL SN54LS193J 4BIT-COUNT. TEXAS SN54LS193J/R8S-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			RC 08243 4X4BIT-1/0-EXP. INTEL 08243	RC 092-8155	
B14			BL SN54LS04J 6/INVERTER TEXAS SN54LS04J	BL 468-5976	
C1			CC 4,7NF+-10%X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087-7102	
C2			CC 22PF+-2%3XAN750 DRALORIC EDPU3X4/22/2XN750	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 2X NPO/1B 3R0HR DRALORIC NPO/25/2RR3X12LC	CC 022-1945	
C6			CC 27PF 2X N220/1A 3 R0HR DRALORIC N220/1A27/2R0D3X10LC	CC 022-2764	
C7			CC 4,7NF+-10%X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087-7102	
C8			DRALORIC EDPU6X9/4700/10R2000	CC 087-7102	
C9			CC 15PF+-2%3XNPO DRALORIC EDPU3X4/15/2X/NPO	CC 087-6441	
C10			CC 1,5NF+-10%4X5R2000 DRALORIC EDPU4X5150010X2000	CC 087-7048	
C11			CC 4,7NF+-10%X9R2000 DRALORIC EDPU6X9/4700/10R2000	CC 087-7102	
C12			DRALORIC EDPU3X4/22/2XN750	CC 087-6829	
C13			CK 680NF+-20%63V QUADER ROEDERST MKC1862-468/06	CK 087-0950	
C14			CC 25PF 2X NPO/1B 3R0HR	CC 022-1945	

Kennzeichen	AZ	Datum	Schalttafeliste für Benennung / Beschreibung	Sachnummer	Sachnummer	Blatt Nr.
C15	DRALORIC	NPO/25/28R3X12LC	CC 022-2764			
C16	DRALORIC	M220/IA 3 ROMH	CC 087-7102			
C17	DRALORIC	M220/IA27/2RD3X10LC	CC 087-7102			
C18	DRALORIC	EDPU4X9/4700/10R2000	CC 087-6441			
C19	DRALORIC	EDPU4X5/100/2XN750	CC 087-7048			
C20	DRALORIC	EDPU4X5/1500/10R2000	CC 087-7525			
C21	THOMSON	COX767/10000/PF-20+5	CC 022-8091			
C22	THOMSON	COX767/10000/PF-22/15	CC 022-0784			
C23	THOMSON	COX767/10000/PF-10X	CC 087-7054			
C24	THOMSON	COX767/10000/PF-10X	CC 022-0784			
C25	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C26	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C27	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C28	THOMSON	COX767/10000/PF-20+5	CC 022-7589			
C29	THOMSON	COX767/10000/PF-20+5	CC 208-4007			
C30	THOMSON	COX767/10000/PF-20+5	CC 022-7543			
C32	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C33	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C34	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C35	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C36	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C37	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C38	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C39	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C40	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C41	THOMSON	COX767/10000/PF-20+5	CC 022-7589			
C42	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C43	THOMSON	COX767/10000/PF-20+5	CC 022-8091			

Diese Unterlagen sind unser Eigentum. Vervielfältigung, Verbreitung, Weitergabe oder sonstiger Gebrauch ist ausdrücklich untersagt.

Kennzeichen	AZ	Datum	Schalttafeliste für Benennung / Beschreibung	Sachnummer	Sachnummer	Blatt Nr.
C44	DRALORIC	NPO/25/28R3X12LC	CC 006-5156			
C45	DRALORIC	M220/IA 3 ROMH	CC 006-5033			
C46	DRALORIC	M220/IA27/2RD3X10LC	CC 022-7589			
C47	DRALORIC	EDPU4X9/4700/10R2000	CC 022-7543			
C48	DRALORIC	EDPU4X5/100/2XN750	CC 087-6906			
C50	DRALORIC	EDPU4X5/1500/10R2000	CC 087-9328			
C51	THOMSON	COX767/10000/PF-20+5	CC 022-8185			
C52	THOMSON	COX767/10000/PF-20+5	CC 087-7102			
C53	THOMSON	COX767/10000/PF-20+5	CC 087-7102			
C54	THOMSON	COX767/10000/PF-20+5	CC 022-8185			
C55	THOMSON	COX767/10000/PF-20+5	CC 087-4178			
C56	THOMSON	COX767/10000/PF-20+5	CC 087-6993			
C57	THOMSON	COX767/10000/PF-20+5	CC 087-7060			
C58	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C59	THOMSON	COX767/10000/PF-20+5	CC 087-7525			
C60	DRALORIC	EDPU6X7/220/2XN750	CC 087-6941			
C61	DRALORIC	EDPU6X9/4700/10R2000	CC 087-6912			
GL1	VALVO	SI 75V 150MIA	AD 012-0700			
GL2	VALVO	SI 75V 150MIA	AD 012-0700			
GL3	SIEMENS	3FACH-C-DIODE AM	AE 252-5711			
GL5	VALVO	SI 75V 150MIA	AD 012-0700			
GL6	VALVO	SI 75V 150MIA	AD 012-0700			
GL7	VALVO	SI 75V 150MIA	AD 012-0700			
GL8	VALVO	SI 75V 150MIA	AD 012-0700			
GL9	VALVO	SI 75V 150MIA	AD 012-0700			
GL10	VALVO	SI 75V 150MIA	AD 012-0700			
GL11	SIEMENS	3FACH-C-DIODE AM	AE 252-5711			
GL12	VALVO	SI 75V 150MIA	AD 012-0700			
GL13	VALVO	SI 75V 150MIA	AD 012-0700			

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Kennzeichen	Az. Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
6L14	AD 1N4448	SI 75V 150MIA	AD 012-0700	
	VALVO	1N4448	AD 012-0700	
6L15	AD 1N4448	SI 75V 150MIA		
	VALVO	1N4448		
L1	Ld 47,00H10X4	500HM0,110A	Ld 067-3060	
L2	DELEVAN	DROSSEL1025-60	Ld 067-3060	
L3	Ld 47,00H10X4	500HM0,110A	Ld 067-3060	
L4	DELEVAN	DROSSEL1025-60	Ld 037-8005	
L5	Ld 1000UH10X72	00HM0,028A	Ld 026-4184	
L6	DELEVAN	DROSSEL1025-92	Ld 026-4184	
L7	DELEVAN	DROSSEL1025-44	302-6644	
L8	SPULE		302-6644	
L9	Ld 1000UH10X72	00HM0,028A	Ld 037-8005	
L10	DELEVAN	DROSSEL1025-92	Ld 067-3060	
L11	Ld 47,00H10X4	500HM0,110A	Ld 067-3060	
L12	DELEVAN	DROSSEL1025-60	Ld 026-4178	
L13	Ld 6,80UH10X2	000HM0,185A	Ld 067-3053	
L14	DELEVAN	DROSSEL1025-40	Ld 067-3060	
R1	Ld 39,00UH10X3	600HM0,125A	RF 069-5624	
R2	DELEVAN	DROSSEL1025-58	RF 069-5624	
R3	Ld 47,00H10X4	500HM0,110A	RF 069-5624	
R4	DELEVAN	DROSSEL1025-60	RF 069-4711	
R5	Ld 0,25W5,6KOHM	+5X	RF 069-1829	
R6	DRALORIC	LCA0207/+5X1,8K	RF 069-1035	
R7	DRALORIC	LCA0207/+5X1,8K	RF 069-5618	
R8	DRALORIC	LCA0207/+5X2,7K	RF 069-1035	
R9	DRALORIC	LCA0207/+5X2,7K	RF 069-1035	
R10	DRALORIC	LCA0207/+5X2,7K	RF 069-1035	
R11	DRALORIC	LCA0207/+5X2,7K	RF 069-1035	
R12	DRALORIC	LCA0207/+5X1,8K	RF 069-1529	
R13	DRALORIC	LCA0207/+5X1,8K	RF 069-3921	
R14	DRALORIC	LCA0207/+5X3,9K	RF 069-1529	

Diese Umlegungen sind unter Eigentum, Verantwortung und ausschließlicher Haftung der Rohde & Schwarz AG München zu betrachten.

Kennzeichen	Az. Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN				
Benennung / Beschreibung				
R15	DRALORIC	LCA0207/+5X1,5K	RF 069-2219	
	RF 0,25W220 OHM	+5X	RF 069-2219	
R16	DRALORIC	LCA0207/+5X2,20	RL 082-2283	
	RL 0,25W 6,19KOHM	+1X1K50	RF 069-2719	
R17	DRALORIC	SMA0207/6,19K-F-C	RF 069-1029	
R18	DRALORIC	LCA0207/+5X2,70	RF 069-1829	
	RF 0,25W 1KOHM	+5X	RF 069-5624	
R19	DRALORIC	LCA0207/+5X1,0K	RF 069-5624	
	RF 0,25W1,8KOHM	+5X	RF 069-4728	
R20	DRALORIC	LCA0207/+5X1,8K	RF 069-1829	
	RF 0,25W5,6KOHM	+5X	RF 069-8200	
R21	DRALORIC	LCA0207/+5X5,6K	RF 069-1041	
	RF 0,25W5,6KOHM	+5X	RF 069-1029	
R22	DRALORIC	LCA0207/+5X5,6K	RL 083-1297	
	RF 0,25W4,7KOHM	+5X	RL 083-1151	
R23	DRALORIC	LCA0207/+5X4,7K	RL 082-6089	
	RF 0,25W1,8KOHM	+5X	RF 069-2731	
R24	DRALORIC	LCA0207/+5X1,8K	RF 069-2731	
	RF 0,25W 82 OHM	+5X	RF 069-1829	
R25	DRALORIC	LCA0207/+5X2,7K	RF 069-1529	
	RF 0,25W1,8KOHM	+5X	RF 069-3921	
R26	DRALORIC	LCA0207/+5X1,0K	RF 069-2725	
	RF 0,25W 1KOHM	+5X	RF 069-2219	
R27	DRALORIC	LCA0207/+5X1,0K	RL 082-2283	
	RL 0,25W 10,0KOHM	+1X1K50	RF 069-2719	
R28	DRALORIC	SMA0207/10K-F-D	RF 069-1029	
	RL 0,25W 6,36KOHM	+1X1K50	RF 069-1029	
R29	DRALORIC	SMA0207/6,36K-F-D	RF 069-1529	
	RL 0,25W 6,04KOHM	+1X1K50	RF 069-3921	
R30	DRALORIC	SMA 0207/6,04OHM-F-C	RF 069-2731	
	RF 0,25W 27KOHM	+5X	RF 069-2725	
R31	DRALORIC	LCA0207/+5X2,7K	RF 069-2731	
	RF 0,25W 27KOHM	+5X	RF 069-1829	
R32	DRALORIC	LCA0207/+5X2,7K	RF 069-1529	
	RF 0,25W1,8KOHM	+5X	RF 069-3921	
R33	DRALORIC	LCA0207/+5X1,8K	RF 069-2725	
	RF 0,25W1,5KOHM	+5X	RF 069-2219	
R34	DRALORIC	LCA0207/+5X1,5K	RF 069-2219	
	RF 0,25W3,9KOHM	+5X	RL 082-2283	
R35	DRALORIC	LCA0207/+5X3,9K	RF 069-2719	
	RF 0,25W2,7KOHM	+5X	RF 069-1029	
R36	DRALORIC	LCA0207/+5X2,7K	RF 069-1229	
	RF 0,25W220 OHM	+5X	RF 069-1229	
R37	DRALORIC	LCA0207/+5X2,20	RF 069-3321	
	RL 0,25W 6,19KOHM	+1X1K50	RF 069-5618	
R38	DRALORIC	SMA0207/6,19K-F-C		
	RF 0,25W270 OHM	+5X		
R39	DRALORIC	LCA0207/+5X2,70		
	RF 0,25W 1KOHM	+5X		
R40	DRALORIC	LCA0207/+5X1,0K		
	RF 0,25W1,2KOHM	+5X		
R41	DRALORIC	LCA0207/+5X1,2K		
	RF 0,25W3,3KOHM	+5X		
R42	DRALORIC	LCA0207/+5X3,3K		
	RF 0,25W5,6 OHM	+5X		
	DRALORIC	LCA0207/+5X5,60		

Diese Umlegungen sind unter Eigentum, Verantwortung und ausschließlicher Haftung der Rohde & Schwarz AG München zu betrachten.

Kanzelzeichen	AZ Datum	Schaltteilleiste für ED INTERPOLATIONSOS-50KHZ	Sachnummer	Blatt Nr.	
					Berechnung / Beschreibung
R43	19 0282	RF 0,25W 47 OHM +-5X DRALORIC LCA0207/+-5X47	RF 069-4705	302-6415 SA	enthalten in
R44		RF 0,25W100KOHM +-5X DRALORIC LCA0207/+-5X100K	RF 069-1041		
R45		RF 0,25W100KOHM +-5X DRALORIC LCA0207/+-5X100K	RF 069-1041		
R46		RF 0,25W100 OHM +-5X DRALORIC LCA0207/+-5X100	RF 069-1012		
R47		RF 0,25W150 OHM +-5X DRALORIC LCA0207/+-5X150	RF 069-1512		
R48		RF 0,25W560 OHM +-5X DRALORIC LCA0207/+-5X560	RF 069-5618		
R49		RF 0,25W560 OHM +-5X DRALORIC LCA0207/+-5X560	RF 069-5618		
R50		RF 0,25W6,8KOHM +-5X DRALORIC LCA0207/+-5X6,8K	RF 069-6820		
R51		RF 0,25W2,7KOHM +-5X DRALORIC LCA0207/+-5X2,7K	RF 069-2725		
R52		RF 0,25W5,6KOHM +-5X DRALORIC LCA0207/+-5X5,6K	RF 069-5624		
R53		RF 0,25W 47KOHM +-5X DRALORIC LCA0207/+-5X47K	RF 069-4734		
R54		RF 0,25W 47 OHM +-5X DRALORIC LCA0207/+-5X47	RF 069-4705		
R55		RF 0,25W100KOHM +-5X DRALORIC LCA0207/+-5X100K	RF 069-1041		
R56		RF 0,25W100 OHM +-5X DRALORIC LCA0207/+-5X100	RF 069-1012		
R57		RF 0,25W4,7KOHM +-5X DRALORIC LCA0207/+-5X4,7K	RF 069-4728		
R58		RF 0,25W 47 OHM +-5X DRALORIC LCA0207/+-5X47	RF 069-4705		
R59		RF 0,25W1,8MOHM +-5X DRALORIC LCA0207/+-5X1,8M	RF 069-1858		
ST7		ENTHALTEN IN 302-6415			
T1		AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010-4680		
B1S		AK 2N2369A SI NPN 40V0,2A VALVO 2N2369A	AK 010-4680		
T5		AM 2N4416A AUSGESUCHT FET INTERFIL 2N4416/RR8-LV	249-4653		
T6		AM 2N4416A AUSGESUCHT FET INTERFIL 2N4416/RR8-LV	249-4653		
T7		AM 2N4416A AUSGESUCHT FET INTERFIL 2N4416/RR8-LV	249-4653		
T8		AK BCY591X NPN 45V 200MA SIEMENS BCY591X	AK 010-5163		
					- ENDE -

Das Unternehmen ist unser Eigentum. Verfertigung und Montage unter Aufsicht der Fertigung und Schweißabteilung.

Kanzelzeichen	AZ Datum	Schaltteilleiste für ED INTERPOL.-OSZ.- 100 HZ	Sachnummer	Blatt Nr.	
					Berechnung / Beschreibung
B1	16 0282	BO UA741MJG OP-AMP- TEXAS UA741MJG	BO 275-0822	302-6615 SA	enthalten in
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/R8S-LV	BL 302-6038		
B8		BL SN54LS193J 4BIT-COUNT- TEXAS SN54LS193J/R8S-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		9C D8243 4X4BIT-1/0-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 KCT1849-322/1	CK 006-4672		
C4		CC 27PF 2X N220/1A 3 R0HR DRALORIC N220/1A272R03X10LC	CC 022-2764		
C5		CC 2PF+-0,25PF P100/103R. CC 22 UF+-20X16V 7X 5X11	CC 006-1009		
C6		ERO-TANTAL TA-ELKO ETRJ-22/15	CC 022-8091		
C7		CC 1NF+-10X63V K2000	CC 022-0784		
C10		DRALORIC EDP4X5/63V1000/10X CC 4,7NF+-10X26X9R2000	CC 087-7102		
C11		DRALORIC EDP4X9/4700/10R2000 CC 4,7NF+-10X26X9R2000	CC 087-7102		
C12		DRALORIC EDP4X9/4700/10R2000 CC 15PF+-2X3X4NPO	CC 087-6441		
C15		DRALORIC EDP3X4/15/2X/NPO CC 1,5NF+-10X4X5R2000	CC 087-7048		
C16		DRALORIC EDP4X5/1500/10X2000 CC 120PF+-2X5X6N750	CC 087-6912		
C20		SIEMENS B41316-B7476-Z CE 47UF -10+100X40V 11X13	CC 022-7589		
C21		SIEMENS B41316-B7476-Z CE 47UF -10+100X40V 11X13	CC 022-7589		
C22		SIEMENS B41316-B7476-Z CE 47UF -10+100X40V 11X13	CC 022-7589		
C23		SIEMENS B41316-B7476-Z CE 47UF -10+100X40V 11X13	CC 022-7589		
C25		SIEMENS B41316-B7476-Z CC 10NF+-20+50X7X8R6000	CC 087-7525		
C26		THOMSON COX767/1000/PF-20+5 CC 10NF-20+50X7X8R6000	CC 087-7525		

Das Unternehmen ist unser Eigentum. Verfertigung und Montage unter Aufsicht der Fertigung und Schweißabteilung.

ROHDE & SCHWARZ MÜNCHEN		AZ	Datum	Schalttafeliste für	100 HZ	Sachnummer	Blatt Nr.
		16	0282	ED INTERPOL.-OSZ.-	100 HZ	302.6615	SA 2
Kennzeichen	Benennung / Beschreibung	Sachnummer		enthalten in			
C27	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C28	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C29	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C30	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C31	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C32	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C33	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C34	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C35	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C36	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C37	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C38	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C39	THOMSON COX767/10000/PF-20+5	CC	087-7525				
C40	THOMSON COX767/10000/PF-20+5	CC	087-7525				
GL1	AD 1N4448 SI 75V 150MIA	AD	012-0700				
GL2	VALVO 1N4448	AD	012-0700				
GL3	VALVO 1N4448	AD	012-0700				
GL4	AE 8B113 3FACH-C-010DE AM	AE	252-5711				
GL5	SIEMENS RB113	AE	252-5711				
L1	AD 1N4448 SI 75V 150MIA	AD	012-0700				
L2	VALVO 1N4448	AD	012-0700				
L3	LD 47-0UHT10X4,500HMO,110A	LD	067-3060				
L4	DELEVAN DROSSEL1025-60	LD	067-2886				
R1	SPULE	LD	067-3001				
R2	LD 1,50UHT10X0,220HMO,560A	LD	067-2886				
R3	DELEVAN DROSSEL 1025-24	LD	067-3001				
R4	LD 15,0UHT10X2,800HMO,157A	LD	067-3001				
R5	DELEVAN DROSSEL1025-48	LD	067-3001				
R6	RF 0,25W5,6KOHM +-5%	RF	069-5624				
	DRALORIC LCA0207/+-5X1,8K	RF	069-5624				
	RF 0,25W5,6KOHM +-5%	RF	069-5624				
	DRALORIC LCA0207/+-5X1,8K	RF	069-5624				
	RF 0,25W470 OHM +-5%	RF	069-6711				
	DRALORIC LCA0207/+-5X1,8K	RF	069-6711				
	RF 0,25W8,2KOHM +-5%	RF	069-8223				
	DRALORIC LCA0207/+-5X1,8K	RF	069-8223				
	RF 0,25W560 OHM +-5%	RF	069-5618				
	DRALORIC LCA0207/+-5X1,8K	RF	069-5618				
	RF 0,25W3,3KOHM +-5%	RF	069-3321				
	DRALORIC LCA0207/+-5X1,8K	RF	069-3321				

Diese Unterlagen sind unter Eigentum, Verweilung, und schiedsgerichtlicher und schiedsgerichtlicher Verfügung, Kündung an andere ist strikt untersagt.

PF 006.0020.0070

ROHDE & SCHWARZ MÜNCHEN		AZ	Datum	Schalttafeliste für	100 HZ	Sachnummer	Blatt Nr.
		16	0282	ED INTERPOL.-OSZ.-	100 HZ	302.6615	SA 3
Kennzeichen	Benennung / Beschreibung	Sachnummer		enthalten in			
R7	RF 0,25W100KOHM +-5%	RF	069-1041				
	DRALORIC LCA0207/+-5X100K	RF	069-1041				
R8	RF 0,25W100KOHM +-5%	RF	069-1041				
	DRALORIC LCA0207/+-5X100K	RF	069-1041				
R9	RF 0,25W 1KOHM +-5%	RF	069-1029				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1029				
R10	RF 0,25W 27KOHM +-5%	RF	069-2731				
	DRALORIC LCA0207/+-5X2,7K	RF	069-2731				
R11	RF 0,25W 27KOHM +-5%	RF	069-2731				
	DRALORIC LCA0207/+-5X2,7K	RF	069-2731				
R12	RF 0,25W2,7KOHM +-5%	RF	069-2725				
	DRALORIC LCA0207/+-5X2,7K	RF	069-2725				
R13	RF 0,25W1,5KOHM +-5%	RF	069-1529				
	DRALORIC LCA0207/+-5X1,5K	RF	069-1529				
R15	RF 0,25W3,9KOHM +-5%	RF	069-3921				
	DRALORIC LCA0207/+-5X3,9K	RF	069-3921				
R16	RL 0,25W 6,19KOHM+-12TK50	RL	082-2283				
	DRALORIC SMA0207/6,19K-F-C	RL	082-2283				
R17	RF 0,25W270 OHM +-5%	RF	069-2719				
	DRALORIC LCA0207/+-5X270	RF	069-2719				
R20	RF 0,25W2,2KOHM +-5%	RF	069-2225				
	DRALORIC LCA0207/+-5X2,2K	RF	069-2225				
R21	RF 0,25W 1KOHM +-5%	RF	069-1029				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1029				
R22	RF 0,25W220 OHM +-5%	RF	069-2219				
	DRALORIC LCA0207/+-5X220	RF	069-2219				
R25	RF 0,25W1,8KOHM +-5%	RF	069-1829				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1829				
R26	RF 0,25W1,8KOHM +-5%	RF	069-1829				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1829				
R27	RF 0,25W1,8KOHM +-5%	RF	069-1829				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1829				
R28	RF 0,25W1,8KOHM +-5%	RF	069-1829				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1829				
R29	RF 0,25W820 OHM +-5%	RF	069-8217				
	DRALORIC LCA0207/+-5X820	RF	069-8217				
R30	RF 0,25W1,8KOHM +-5%	RF	069-1829				
	DRALORIC LCA0207/+-5X1,8K	RF	069-1829				
ST8	ENTHALTEN IN 302.6615						
T1	AM 2N4416 N-KAN.-JFET 30V	AM	010-8591				
	TEXAS 2N4416	AM	010-8591				
T2	AK 2N2369A SI NPN 40V0,2A	AK	010-4680				
	VALVO 2N2369A	AK	010-4680				
T3	AK 2N2369A SI NPN 40V0,2A	AK	010-4680				
	VALVO 2N2369A	AK	010-4680				
T4	AK 2N2369A SI NPN 40V0,2A	AK	010-4680				
	VALVO 2N2369A	AK	010-4680				

Diese Unterlagen sind unter Eigentum, Verweilung, und schiedsgerichtlicher und schiedsgerichtlicher Verfügung, Kündung an andere ist strikt untersagt.

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Kennzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung		Sachnummer			
enthalten in		enthalten in			
B1	B0 CA1458G	DUAL-OP-AMPL- LM1458J	B0 083-5570		
B2	B0 CA3240AE	BIMOS DUAL OP CA3240AE	B0 302-7040		
B3	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B4	B0 CA3240E	BIMOS DUAL OP- CA3240E	302-7034		
B5	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B6	B0 CA3240E	BIMOS DUAL OP- CA3240E	302-7034		
B7	B0 CA3240E	BIMOS DUAL OP- CA3240E	302-7034		
B8	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B9	B0 CA3240AE	BIMOS DUAL OP CA3240AE	B0 302-7040		
B10	B0 CA3240AE	BIMOS DUAL OP CA3240AE	B0 302-7040		
B11	B0 CA3240AE	BIMOS DUAL OP CA3240AE	B0 302-7040		
B12	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B13	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B14	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B15	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
B16	B0 CA3240E	BIMOS DUAL OP- CA3240E	302-7034		
B17	B0 TL044CJ	4XOP-AMPL- TL044CJ	B0 250-2009		
B18	BL CD4011BE	4/2INP-NANDG- CD4011BE	BL 252-7337		
B19	BL CD4069UBE	HEX-INVERTER CD4069UBE	BL 086-9999		
B20	BL CD4011BE	4/2INP-NANDG- CD4011BE	BL 252-7337		
B21	B0 TL044CJ	4XOP-AMPL- TL044CJ	B0 250-2009		
B22	B0 TL044CJ	4XOP-AMPL- TL044CJ	B0 250-2009		
B23	B0 TL044CJ	4XOP-AMPL- TL044CJ	B0 250-2009		
B24	B0 TL044CJ	4XOP-AMPL- TL044CJ	B0 250-2009		
B25	BC P8243	4X4BIT-1/0-EXP- P8243	BC 334-3270		
B26	B0 TL044CJ	4XOP-AMPL- TL044CJ	B0 250-2009		
B27	BL CD4069UBE	HEX-INVERTER CD4069UBE	BL 086-9999		
B40	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		

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Kennzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung		Sachnummer			
enthalten in		enthalten in			
B80	BL CD4066BE	4/ANALOGSWITC CD4066BE	BL 290-3906		
C1	CG 3,3NF	+12TKF16X16X6RMS 48-20/F/3300PF/1/2500	C6 068-3357		
C2	CG 3,3NF	+12TKF16X16X6RMS 48-20/F/3300PF/1/2500	CG 068-3357		
C3	CE 100NF	+20X35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022-8156		
C4	CE 100NF	+20X35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,1/35	CE 022-8156		
C5	CE 220NF	+20X35V 5X 4X 7 ERO-TANTAL TA-ELKOETR1-0,22/35	CE 022-8162		
C6	CE 2,2UF	+10+100X40V 9X13B ROEDERST ELKO EKO 2/40	CE 086-4380		
C7	CE 10 UF	+20X16V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-10/15	CE 022-8085		
C10	CE 4,7UF	+20X20V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-4,7/20	CE 022-8110		
C11	CE 10 UF	+20X25V 7X 5X11 ERO-TANTAL ETR3-10/25	CE 023-5980		
C12	CE 22UF	+10+100X40V 9X13 SIEMENS B4136-87226-Z	CE 022-7572		
C20	CE 4,7UF	+20X20V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-4,7/20	CE 022-8110		
C21	CE 22UF	+10+100X40V 9X13 SIEMENS B4136-87226-Z	CE 022-7572		
C30	CE 4,7UF	+20X20V 7X 4X 8 ERO-TANTAL TA-ELKOETR2-4,7/20	CE 022-8110		
C31	CE 22UF	+10+100X40V 9X13 SIEMENS B4136-87226-Z	CE 022-7572		
C32	CG 500PF	+12TK09X9X6RMS DRALORIC EDPU6X9/150/2X150	CG 068-2844		
C33	CC 150PF	+22X6X9N150 SIEMENS B4136-87226-Z	CC 087-6735		
C40	CE 22UF	+10+100X40V 9X13 SIEMENS B4136-87226-Z	CE 022-7572		
C41	CC 10NF	+20+50X7X8R 6000 THOMSON COX767/10000/PF-20+5	CC 687-7525		
C42	CE 22UF	+10+100X40V 9X13 SIEMENS B4136-87226-Z	CE 022-7572		
C43	CE 22UF	+10+100X40V 9X13 SIEMENS B4136-87226-Z	CE 022-7572		
GL1	AD 1N4448	SI 75V 150MIA VALVO 1N4448	AD 012-0700		
BIS	AD 1N4448	SI 75V 150MIA VALVO 1N4448	AD 012-0700		
GL6	VALVO	BZX55/C7V5 0,5W Z-D1 VALVO BZX55/C7V5	AE 012-2484		
GL7	VALVO	BZX55/C7V5			
R1	RS 0,5W	20KOHM+20X10X10X5 BOURNS 3386X-1-203	RS 087-7660		
R2	RS 0,5W	100KOHM+20X10X10X BOURNS 3386X-1-104	RS 087-7683		
R3	RL 0,25W	43,2KOHM+12TK50 DRALORIC SMA0207/43,2K-T-C	RL 083-1774		

Diese Unterlagen sind unser Eigentum. Verleiherung, unzulässige Vervielfältigung und Verbreitung ist strafbar.

Kennzeichen	Kz	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
R4	FUER VAR 22,52 WIDERST. RL 083-1674 FUER VAR 58 RL 0,25W 47,5KOHM+-1XTK50 DRALORIC SMA/207/47,5K-F-C RL 0,25W 48,7KOHM+-1XTK50 DRALORIC SMA/207/48,7K-F-C FUER VAR 22,52 WIDERST. RL 083-1780 FUER VAR 58 RL 0,25W 71,5KOHM+-0,1X125 DRALORIC SMA/207/71,5K-B-E TRIMMERT RF 0,25W 33KOHM +-5% DRALORIC LCA0207/+-5X33K RF 0,25W 33KOHM +-5% DRALORIC LCA0207/+-5X33K RF 0,25W 3,3KOHM +-5% DRALORIC LCA0207/+-5X3,3K RL 0,25W 121KOHM+-1XTK50 DRALORIC SMA/207/121K-F-C RF 0,25W 51KOHM +-5% DRALORIC LCA0207/+-5X51K RS 0,5W 20KOHM+-20X10X10X5 BOURNS 3386X-1-203 RF 0,25W 12KOHM +-5% DRALORIC LCA0207/+-5X12K FUER VAR 22,52 WIDERST. RL 082-2577 FUER VAR 58 RS 0,5W 500 OHM+-20X10X10X BOURNS 3386X-1-501 RF 0,25W 2,2KOHM +-5% DRALORIC LCA0207/+-5X2,2K FUER VAR 22,52 WIDERST. RL 083-0661 FUER VAR 58 RF 0,25W 180KOHM +-5% DRALORIC LCA0207/+-5X180K RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5X1,0M RF 0,25W 10KOHM +-5% DRALORIC LCA0207/+-5X10K RF 0,25W 15KOHM +-5% DRALORIC LCA0207/+-5X15K RF 0,25W 47KOHM +-5% DRALORIC LCA0207/+-5X47K RF 0,25W 50KOHM +-5% DRALORIC LCA0207/+-5X50K RL 0,25W 634 OHM+-1XTK50 DRALORIC SMA/207/634OHM-F-D RL 0,25W 1KOHM+-1XTK50 DRALORIC SMA/207/1K-F-C RL 0,25W 10,0KOHM+-1XTK50 DRALORIC SMA/207/10K-F-D RL 0,25W 10,0KOHM+-1XTK50 DRALORIC SMA/207/10K-F-D	RL 083-1800 RL 083-1816	RL 084-4702 RF 069-3338 RF 069-3338 RF 069-3331 RL 083-2070 RF 069-5130 RS 087-7660 RF 069-1235 RS 247-7955 RF 069-2225 RF 069-1841 RF 069-1058 RF 069-1035 RF 069-1535 RF 069-4734 RF 069-5630 RL 083-0484 RL 082-2160 RL 083-1297 RL 083-1297	enthalten in	3

Diese Unterlagen sind Eigentum, Verfallsdatum  
und schadenstanzpflichtig.  
Unbefugte Vervielfältigung, Verbreitung  
oder Weitergabe ist strafbar.

Kennzeichen	Kz	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
R37	RL 0,25W 11,3KOHM+-1XTK50 DRALORIC SMA/207/11,3K-F-C RL 0,25W 20,5KOHM+-1XTK50 DRALORIC SMA/207/20,5K-F-C RL 0,25W 196 KGHM+-1XTK50 DRALORIC SMA/207/196K-F-C RL 0,25W 10,7KOHM+-1XTK50 DRALORIC SMA/207/10,7K-F-D RL 0,2 W 19,1KOHM+-1XTK50 DRALORIC SMA/207/19,1K-F-C FUER VAR 22 RL 0,25W 1,74KOHM+-1XTK50 DRALORIC SMA/207/1,74K-F-D RL 0,25W 20,0KOHM+-1XTK50 DRALORIC SMA/207/20,0K-F-C RL 0,25W 12,7KOHM+-1XTK50 DRALORIC SMA/207/12,7K-F-C RL 0,2 W 19,1KOHM+-1XTK50 DRALORIC SMA/207/19,1K-F-C RL 0,25W 97,6KOHM+-1XTK50 DRALORIC SMA/207/97,6K-F-C RL 0,25W 48,7KOHM+-1XTK50 DRALORIC SMA/207/48,7K-F-C RL 0,25W 24,3KOHM+-1XTK50 DRALORIC SMA/207/24,3K-F-C RL 0,25W 12,1KOHM+-1XTK50 DRALORIC SMA/207/12,1K-F-D RL 0,25W 127KOHM+-1XTK50 DRALORIC SMA/207/127K-F-C RL 0,25W 63,4KOHM+-0,1X125 DRALORIC SMA/207/63,4K-B-E RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5X1,0M RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5X1,0M RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5X1,0M RL 0,25W 976 OHM+-1XTK50 DRALORIC SMA/207/976OHM-F-D RL 0,25W 4,70KOHM+-0,1X125 DRALORIC SMA/207/4,70K-B-E RL 0,25W 20,3KOHM+-0,1X125 DRALORIC SMA/207/20,3K-B-E RL 0,25W 4,70KOHM+-0,1X125 DRALORIC SMA/207/4,70K-B-E RL 0,25W 4,64KOHM+-1XTK50 DRALORIC SMA/207/4,64K-F-C RF 0,25W 1 MOHM +-5% DRALORIC LCA0207/+-5X1,0M RF 0,25W 6,8KOHM +-5% DRALORIC LCA0207/+-5X6,8K RL 0,25W 90,9KOHM+-1XTK50 DRALORIC SMA/207/90,9OHM-F-C RL 0,25W 10,0KOHM+-1XTK50 DRALORIC SMA/207/10K-F-D RL 0,25W 10,0KOHM+-1XTK50	RL 082-2202 RL 082-2325 RL 083-2229 RL 083-1316 RL 083-1500 RL 083-0784 RL 083-1522 RL 082-2448 RL 083-1500 RL 083-2006 RL 083-1816 RL 083-1574 RL 083-1351 RL 083-2087 RL 084-4602 RL 084-4025 RF 069-1058 RF 069-1058 RF 069-1058 RL 083-0603 RL 084-2439 RL 084-3658 RL 084-2439 RL 082-1687 RF 069-1058 RF 069-6820 RL 083-1980 RL 083-1297 RL 083-1297	enthalten in	4	

Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
R67	DRALORIC	SMA0207/10K-F-D	RF 069-1035		
R70	DRALORIC	LCA0207/+5X10K	RL 082-6643		
R71	DRALORIC	SMA0207/1,78K-F-D	RS 087-7648		
R72	BOURNS	3386X-1-500	RL 083-0478		
R73	DRALORIC	SMA0207/6190HM-F-D	RL 083-1297		
R74	DRALORIC	SMA0207/10K-F-D	RL 083-1297		
R75	DRALORIC	SMA0207/10K-F-D	RL 082-2354		
R76	DRALORIC	SMA/207/2,55K-F-C	RS 247-7978		
R77	BOURNS	3386X-1-502	RL 083-0826		
R78	DRALORIC	SMA0207/2,00K-F-D	RL 083-1080		
R79	DRALORIC	SMA0207/4,53K-F-D	RS 247-7978		
R80	BOURNS	3386X-1-502	RL 082-2177		
R81	DRALORIC	SMA0207/9,09K-F-C	RL 083-0255		
R82	DRALORIC	SMA0207/3320HM-F-D	RL 082-2583		
R83	DRALORIC	SMA 0207/27,4K-F-C	RL 083-0890		
R84	DRALORIC	SMA0207/2,49K-F-D	RL 082-2583		
R85	DRALORIC	SMA 0207/27,4K-F-C	RF 069-1035		
R86	DRALORIC	LCA0207/+5X10K	RL 083-0490		
R87	DRALORIC	SMA0207/8810HM-F-D	RL 082-2583		
R88	DRALORIC	SMA 0207/27,4K-F-C	RL 084-2516		
R89	RF 0,25W	17KOHM+-0,1X125	RF 069-1035		
R90	DRALORIC	LCA0207/+5X10K	RL 082-2360		
R91	DRALORIC	SMA0207/7500HM-F-C	RL 083-1400		
R92	DRALORIC	SMA0207/15K-F-D	RL 084-3235		
R93	RL 0,25W	12,5KOHM+-0,1X125	RL 084-3906		
R94	RF 0,25W	10KOHM+-5X	RF 069-1035		
R95	DRALORIC	LCA0207/+5X10K	RL 084-3412		
R96	RL 0,25W	15,2KOHM+-0,1X125	RL 084-3270		
R97	DRALORIC	SMA0207/72,9K-B-E	RL 083-1016		
R98	DRALORIC	SMA0207/3,48K-F-D	RF 069-6728		
	DRALORIC	LCA0207/+5X4,7K			

Diese Vorlage ist unser Eigentum. Verstoß gegen die Nutzungsbedingungen führt zu rechtlichen Konsequenzen.

Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
ROHDE & SCHWARZ MÜNCHEN					
Benennung / Beschreibung					
R99	RF 0,25W	47 OHM +-5X	RF 069-6705		
R100	DRALORIC	LCA0207/+5X47	RL 082-2583		
R110	DRALORIC	SMA 0207/27,4K-F-C	RL 067-6714		
R111	DALE	MF1/10 5,62K 1X1K50	RL 083-1522		
R112	DRALORIC	SMA/207/20K-F-C	RL 067-4714		
R113	DALE	MF1/10 5,62K 1X1K50	RF 069-1812		
R114	DRALORIC	LCA0207/+5X180	RL 083-1545		
R115	DRALORIC	SMA/207/22,1K-F-C	RL 083-1545		
R116	DRALORIC	SMA/207/22,1K-F-C	RL 083-1316		
R117	TRIMMERT		RL 083-1297		
R118	DRALORIC	SMA0207/10K-F-D	RL 083-1297		
R119	DRALORIC	SMA0207/10K-F-D	RF 069-1035		
R120	DRALORIC	LCA0207/+5X10K	RF 069-1212		
R139	DRALORIC	LCA0207/+5X120	RL 082-7862		
R140	DRALORIC	SMA0207/1M-F-D	RF 069-1058		
B15	DRALORIC	LCA0207/+5X1,0M			
R155	RF 0,25W	1 MOHM +-5X	RF 069-1058		
R156	DRALORIC	LCA0207/+5X1,0M	RF 069-3321		
R157	DRALORIC	LCA0207/+5X3,3K	RF 069-5124		
R158	DRALORIC	LCA0207/+5X5,1K	RF 069-1058		
R159	DRALORIC	LCA0207/+5X1,0M	RF 069-1058		
R160	DRALORIC	LCA0207/+5X1,0M	RF 069-1058		
ST10	ENTHALTEN IN 302-7011				
T1	AK BCY791X	PMP 45V200MIA	AK 010-3777		
T2	SIEMENS	BCY791X	AM 214-7685		
T3	SILICONIX	J111A	AM 214-7685		
T4	SILICONIX	J111A	AM 214-7685		

Diese Vorlage ist unser Eigentum. Verstoß gegen die Nutzungsbedingungen führt zu rechtlichen Konsequenzen.

Kurzzeichen	AZ Datum	Schalttafel für	AZ Datum	Schalttafel für	Sachnummer	Blatt Nr.
Kurzzeichen		Benennung / Beschreibung		Sachnummer		enthalten in
B1	P 8049	PROGR 1/1	302-7234			
B2	P 8355	PROGR 1/1	302-7257			
B5	BL SM54LS244J	8XBUS-DRIV-TEXAS	BL 262-3634			
B6	BL SN74LS74AN	2/B-FLIPFL-TEXAS	BL 266-7934			
B7	BL SN74LS32N	4/2INP-OR TEXAS	BL 266-4687			
B8	BL SN74LS132N	4XSCHMITT-TEXAS	BL 267-0291			
B9	BL CD4093BE	4XSCHMITT-TR. RCA	BL 516-3338			
B10	BL CD4001BE	4/2INP-NORG-RCA	BL 086-6960			
B11	BL CD4014BE	8BIT-SHIFTRG RCA	BL 086-7038			
B12	BL CD4014BE	8BIT-SHIFTRG RCA	BL 086-7038			
B13	BL SN54LS244J	8XBUS-DRIV-TEXAS	BL 262-3634			
B14	BL SN74LS04N	6/INVERTER TEXAS	BL 266-2010			
B15	BL SN74LS04N	6/INVERTER TEXAS	BL 266-2010			
B16	BL SN7405N	0/70 HEXINV TEXAS	BL 009-3460			
B17	BJ HEF4738VP	IEC-BUS-INT. VALVO	BJ 302-7157			
B18	BO NE555V	TIMER SIGNETICS	BO 418-1383			
BU27	FR JC-FASSUNG	16 POLIG EURO-DIP	FR 249-6091			
BU28	FR JC-FASSUNG	24POLIG EURO-DIP	FR 087-5480			
C1	CC 680PF	+10X4X5R2000 DRALORIC	CC 087-7019			
C2	CC 22PF	+2X4X5NPO DRALORIC	CC 087-6464			
C3	CC 22PF	+2X4X5NPO DRALORIC	CC 087-6464			
C4	CE 2,2UF	+20X35V 7X 5X11 ERO-TANTAL TA-ELKOETR2,2,2/35	CE 022-8191			
C5	CE 1,0UF	+20X35V 5X 2X 6 TEKELEC	CE 087-6070			
C6	CE 220NF	+20X35V 3X 2X 4	CE 087-6041			
C7	CC 1,5NF	+10X4X5R2000 DRALORIC	CC 087-7048			
C8	CC 100PF	+2X63V10NPO THOMSON	CC 468-3744			
C10	CC 10UF	-10+100X63V 9X13	CE 022-7650			

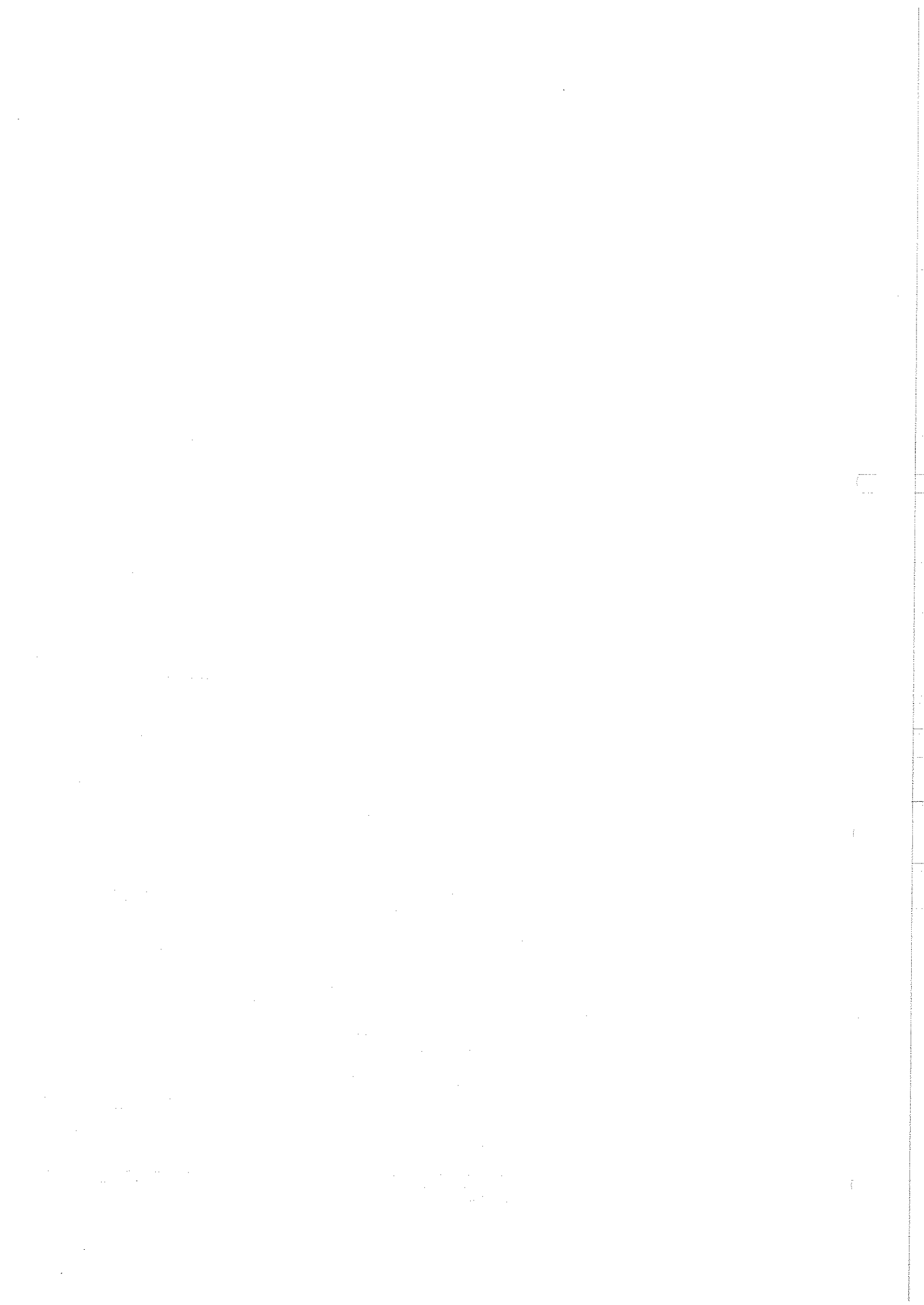
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Kurzzeichen	AZ Datum	Schalttafel für	AZ Datum	Schalttafel für	Sachnummer	Blatt Nr.
Kurzzeichen		Benennung / Beschreibung		Sachnummer		enthalten in
C11	ROEDERST	ELKOEK10/63	CC 087-7525			
BIS	CC 10NF	+20X50X7X8R6000 THOMSON	CC 087-7525			
C20	CC 10NF	+20X50X7X8R6000 THOMSON	CC 087-7525			
GL1	AD 1N4448	SI 75V 150MIA VALVO	AD 012-0700			
GL2	AD 1N4448	SI 75V 150MIA VALVO	AD 012-0700			
Q1	EQ 6,000	MHZ CL30PF HC43U	302-7186			
R1	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R2	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R3	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R4	RF 0,25W	1KOHM +-5% DRALORIC	RF 069-1029			
R5	RF 0,25W	68KOHM +-5% DRALORIC	RF 069-6837			
R6	RL 0,25W	332 OHM +-0,1%TK25 DRALORIC	RL 083-8227			
R7	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R8	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R9	RF 0,25W	56KOHM +-5% DRALORIC	RF 069-5630			
R10	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R11	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R12	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R13	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R14	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R15	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R16	RF 0,25W	330KOHM +-5% DRALORIC	RF 069-3344			
R17	RF 0,25W	100KOHM +-5% DRALORIC	RF 069-1041			
R18	RF 0,25W	5,6KOHM +-5% DRALORIC	RF 069-5624			
R19	RF 0,25W	5,6KOHM +-5% DRALORIC	RF 069-5624			
R2C	RF 0,25W	3,3KOHM +-5% DRALORIC	RF 069-3321			
R21	RF 0,25W	3,3KOHM +-5% DRALORIC	RF 069-3321			
R22	RF 0,25W	6,8KOHM +-5% DRALORIC	RF 069-6820			

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Kennzeichen	AZ	Datum	Schalttafeliste für	Sachnummer	Blatt Nr.
MÜNCHEN					
ROHDE & SCHWARZ					
MÜNCHEN					
Benennung / Beschreibung					
enthalten in					
R23	DRALORIC	LCA0207/+-5X6,8K	RF 0,25W6,8KOHM +-5%	RF 069-6820	
R24	DRALORIC	LCA0207/+-5X6,8K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R25	DRALORIC	LCA0207/+-5X5,6K	RN 7X6,8KOHM+-2XSIL 8 H9	290-8672	
R26	DRALORIC	LCA0207/+-5X5,6K	RN 7X6,8KOHM+-2XSIL 8 H9	290-8672	
R27	DRALORIC	LCA0207/+-5X5,6K	RN 7X3,3KOHM+-2XSIL 8 H9	290-8666	
R28	DRALORIC	LCA0207/+-5X5,6K	RN 7X3,3KOHM+-2XSIL 8 H9	290-8666	
R29	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R30	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W 22KOHM +-5%	RF 069-2231	
R31	DRALORIC	LCA0207/+-5X22K	RF 0,25W120 OHM +-5%	RF 069-1212	
R32	DRALORIC	LCA0207/+-5X120	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R33	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R34	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R35	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W 33 OHM +-5%	RF 069-3309	
B15	DRALORIC	LCA0207/+-5X33			
R38	DRALORIC	LCA0207/+-5X33	RF 0,25W 33 OHM +-5%	RF 069-3309	
R39	DRALORIC	LCA0207/+-5X33	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R40	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R41	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
R42	DRALORIC	LCA0207/+-5X5,6K	RF 0,25W5,6KOHM +-5%	RF 069-5624	
S1	SK CODIERSCH MIT HAUBE		SK 240-0126		
ST11	ENTHALTEN IN	435166-4 MIT 435238-3			
ST28	STECKEREINHEIT		335-0939		
T1	AK BCY791X PNP 45V200MA		AK 010-3777		
	SIEMENS	BCY791X			
					- ENDE -

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**RUDOLPH & SCHWARZ**  
MÜNCHEN

Kennzeichen	AZ Datum	Schnittstelle für	Sachnummer	Blatt Nr.
Benennung / Beschreibung		enthalten in		
A		ZUGEHÖRIGER STROMLAUF 302.7311 S		302.7311
B1		BJ SN75361AP 2XTTL/MOS-TR NSC DS75361N	BJ 294.8490	294.8477
B5		BJ SN75361AP 2XTTL/MOS-TR NSC DS75361N	BJ 294.8490	294.8477
B6		BL SR74LS32N 4/2IMP-OR TEXAS IC-SN74LS32M Z	BL 266.4687	294.8477
BU1		BUCHSE	294.8154	294.8025
BU2		BUCHSE	294.8154	294.8025
BU10		FR JC-FASSUNG 16 POLIG EURO-DIP BU160Z	FR 249.6091	294.8477
C1		CE 100UF-10+100X25V 13X13 ROEDERST ELKOEK100/25	CE. 208.6007	294.8477
B1S				
C9		CE 100UF-10+100X25V 13X13 ROEDERST ELKOEK100/25	CE. 208.6007	294.8477
C10		CE 47UF -10+100X16V 9X13 ROEDERST ELKO EK47/16	CE 022.7543	294.8477
C11		CE 1UF -10+100X63V 9X13 ROEDERST ELKO EK 1/63	CE 022.7620	294.8477
R1		BD DAEMPfungSGLIED 408/50	912.5230	294.8025
R2		BD DAEMPfungSGLIED 408/50	912.5269	294.8025
R3		BD DAEMPfungSGLIED 1008/50	912.5246	294.8025
R4		BD DAEMPfungSGLIED 2008/50	912.5252	294.8025
R5		BD DAEMPfungSGLIED 408/50	912.5269	294.8025
R6		BD DAEMPfungSGLIED 408/50	912.5230	294.8025
R7		BD DAEMPfungSGLIED 208/50	912.5223	294.8025
R8		BD DAEMPfungSGLIED 208/50	912.5252	294.8025
R9		BD DAEMPfungSGLIED 108/50	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 --

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 und Verbreitung, insbesondere auszugsweise,  
 ist ohne schriftliche Genehmigung.

Kennzeichen	Az	Datum	Schaltteilleiste für	Sachnummer	Blatt Nr.
B1	BO	UA723DM	SPGS-REGLER	BO 283-9425	302-7711
B2	BO	CA741G	OP-AMPLIFIER	BO 083-5563	302-7711
B3	BO	UA7915XC	SP-REGL.-15V	BO 302-7734	
B4	BO	UA723DM	SPGS-REGLER	BO 283-9425	302-7711
B5	BO	CA741G	OP-AMPLIFIER	BO 083-5563	302-7711
B6	BO	UA723DM	SPGS-REGLER	BO 283-9425	302-7711
B7	BO	CA741G	OP-AMPLIFIER	BO 083-5563	302-7711
B8	BO	UA723DM	SPGS-REGLER	BO 283-9425	302-7711
B02			BUCHSENLEISTE	302-7463	
B032	FJ	Einbaubuchse	SYST.-BNC	FJ 017-6607	
			SPINNER	BN292700	
C1	CE	22000UF-10	50X16V35X80	CE 291-6209	302-7711
C2	CC	2,2NF+10X	5X6R2000	CC 087-7060	302-7711
C3	CE	470NF+20X	35V 5X 4X 7	CE 022-8179	302-7711
C4	CK	1,0UF+10X	63V RUND.	CK 024-6867	
C5	CE	2,2UF+20X	35V 7X 5X11	CE 290-2145	302-7711
C6	CE	2,2UF+20X	35V 7X 5X11	CE 022-8191	302-7711
C7	CE	2,2UF+20X	35V 5X 4X 7	CE 022-8185	302-7711
C8	CE	10000UF10+50X	40V35X 80	CE 250-3134	302-7711
C9	CE	470NF+20X	35V 5X 4X 7	CE 022-8179	302-7711
C10	CE	470NF+20X	35V 5X 4X 7	CE 022-8179	302-7711
C11	CE	470UF-10	100X25V 15X25	CE 087-0608	302-7711
C12	CE	4700UF-10	50X40V35X 55	CE 290-2145	302-7711
C13	CE	470NF+20X	35V 5X 4X 7	CE 022-8179	302-7711
C14	CE	470NF+20X	35V 5X 4X 7	CE 022-8179	302-7711
C16	CC	1NF+10X	63V K2000	CC 086-4316	302-7711
C17	DRALORIC	EDP4K57	63V100C/10X	CC 022-0784	302-7711
C18	CE	470NF+20X	35V 5X 4X 7	CE 022-8179	302-7711
C20	CC	10NF-20+50X	7X8R6000	CC 087-7525	302-7711

Kennzeichen	Az	Datum	Schaltteilleiste für	Sachnummer	Blatt Nr.
C21	CC	10NF-20+50X	7X8R6000	CC 087-7525	302-7711
C22	CC	10NF-20+50X	7X8R6000	CC 087-7525	302-7711
C23	CC	10NF-20+50X	7X8R6000	CC 087-7525	302-7711
C24	CC	10NF-20+50X	7X8R6000	CC 087-7525	302-7711
C30	CE	47UF	-10+100X63V 13X17	CE 022-7672	302-7711
6L1	AG	BYX427	300S1300V10A	013-0856	
6L2	AG	BYX427	300S1300V10A	013-0856	
6L3	AD	1N4448	SI 75V 150MIA	AD 012-0700	302-7711
6L4	AE	BZX55/C	3V3 0,5W Z-DI	AE 012-2390	302-7711
6L5	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L6	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L7	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L8	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L9	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L10	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L11	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L12	AG	BY251	SI 3A 200V	AG 250-3128	302-7711
6L13	AD	1N4448	SI 75V 150MIA	AD 012-0700	302-7711
6L14	AD	1N4448	SI 75V 150MIA	AD 012-0700	302-7711
6L15	AE	BZX55/C	24 0,5W Z-DI	AE 012-2603	302-7711
6L16	AG	R60C800S	10,8A60V	AG 013-2042	302-7711
6L17	AE	BZX55/C	18 0,5W Z-DI	AE 012-2578	302-7711
6L18	AE	BZX55/C	18 0,5W Z-DI	AE 012-2578	302-7711
6L19	AD	1N4448	SI 75V 150MIA	AD 012-0700	302-7711
6L21	AE	BZX55/C	18 0,5W Z-DI	AE 012-2578	302-7711
6L22	AE	BZX55/C	18 0,5W Z-DI	AE 012-2578	302-7711
R01	EV	2,6W	17L/SEC 16V DC	291-6244	
	BUERLER		RK5-ZCHNG-291-6244		

Diese Unterlagen sind im Eigentum der Vertriebsfirma. Weitergabe und Vervielfältigung ist ohne schriftliche Genehmigung der Vertriebsfirma.

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PF 005 0004.0879

PF 005 0004.0879



Kennzeichen	AZ	Datum	Schalttafel für	Sechsziffer	Blatt Nr.
R1	RL 0,125W825 OHM +-1XTK50	RF 0,25W 1KOHM +-5X	RF 0,25W 1KOHM +-5X	RF 0,25W 1KOHM +-5X	RF 0,25W 1KOHM +-5X
R2	DALE MF1/10 825 OHM1X TK50	RS 0,5W500 OHM +-20X10X10X	RS 247-7955	RS 247-7955	RS 247-7955
R3	BOURNS 3386X-1-501	RL 0,125W2,21KOHM +-1XTK50	RL 067-4614	RL 067-4614	RL 067-4614
R4	DALE MF1/10 2,21K 1XTK50	RF 0,25W750 OHM +-5X	RF 069-7510	RF 069-7510	RF 069-7510
R5	DRALORIC LCA0207 +-5X750	RF 1,0 W 82 OHM +-5X	RF 007-2444	RF 007-2444	RF 007-2444
R6	DRALORIC LCA 0922 820OHM +-5X	RF 0,25W 10KOHM +-5X	RF 069-1035	RF 069-1035	RF 069-1035
R7	DRALORIC LCA0207 +-5X10K	RF 0,25W1,2MOHM +-5X	RF 069-1258	RF 069-1258	RF 069-1258
R8	DRALORIC LCA0207 +-5X1,2M	RF 0,25W 1KOHM +-5X	RF 069-1029	RF 069-1029	RF 069-1029
R9	DRALORIC LCA0207 +-5X1,0K	RL 0,25W 866 OHM +-1XTK50,0K	RL 082-2290	RL 082-2290	RL 082-2290
R10	DRALORIC SMA0207/866OHM-F-C	RF 0,25W 15KOHM +-5X	RF 069-1535	RF 069-1535	RF 069-1535
R11	DRALORIC LCA0207 +-5X15K	RD 1,2468M10HM +-3X	RD 451-4920	RD 451-4920	RD 451-4920
R12	SAGE 1000S0,0,068OHM/3X	RF 0,25W 2,2 OHM +-5X	RF 073-8730	RF 073-8730	RF 073-8730
R13	DRALORIC LCA0207 +-5X2,2	RF 1,0 W 39 OHM +-5X	RF 007-2409	RF 007-2409	RF 007-2409
R14	DRALORIC LCA 0922 390HM +-5X	RF 0,25W 1,3KOHM +-5X	RF 073-9095	RF 073-9095	RF 073-9095
R16	RESISTA SK471,3K5X	RF 0,25W2,7KOHM +-5X	RF 069-2725	RF 069-2725	RF 069-2725
R17	DRALORIC LCA0207 +-5X2,7K	RF 0,25W 10KOHM +-5X	RF 069-1035	RF 069-1035	RF 069-1035
R18	DRALORIC LCA0207 +-5X10K	RF 0,25W100 OHM +-5X	RF 069-1012	RF 069-1012	RF 069-1012
R19	DRALORIC LCA0207 +-5X100	RF 0,25W1,2MOHM +-5X	RF 069-1258	RF 069-1258	RF 069-1258
R20	DRALORIC LCA0207 +-5X1,2M	RF 0,25W820 OHM +-5X	RF 069-8217	RF 069-8217	RF 069-8217
R21	DRALORIC LCA0207 +-5X820	RF 0,25W430 OHM +-5X	RF 069-4311	RF 069-4311	RF 069-4311
R22	DRALORIC LCA0207 +-5X430	RF 0,25W 27KOHM +-5X	RF 069-2731	RF 069-2731	RF 069-2731
R23	DRALORIC LCA0207 +-5X27K	RD 1,24 W 0,15 OHM +-3X	RD 087-5222	RD 087-5222	RD 087-5222
R24	SAGE 1000S0,150HM+3X	RL 0,125W8,25KOHM +-1XTK50	RL 067-4750	RL 067-4750	RL 067-4750
R25	DALE MF1/10 8,25K 1XTK50	BOURNS 3386X-1-202	RS 247-7961	RS 247-7961	RS 247-7961
R26	DRALORIC LCA0207 +-5X820	RF 0,25W7,50KOHM +-1XTK50	RF 067-4743	RF 067-4743	RF 067-4743
R27	DALE MF1/10 7,50K 1XTK50	RD 1,24 W 0,15 OHM +-3X	RD 087-5222	RD 087-5222	RD 087-5222
R28	SAGE 1000S0,150HM+3X	RF 0,25W3,3KOHM +-5X	RF 069-3321	RF 069-3321	RF 069-3321
R29	DRALORIC LCA0207 +-5X3,3K	RF 0,25W 10KOHM +-5X	RF 069-1035	RF 069-1035	RF 069-1035
R30	DRALORIC LCA0207 +-5X10K	RF 0,25W1,2MOHM +-5X	RF 069-1258	RF 069-1258	RF 069-1258

Diese Urtrage ist unser Eigentum. Vervielfältigung und Abschneuerung ist ausdrücklich untersagt.

Kennzeichen	AZ	Datum	Schalttafel für	Sechsziffer	Blatt Nr.
R31	DRALORIC LCA0207 +-5X1,2M	RF 0,25W 1KOHM +-5X	RF 069-1029	RF 069-1029	RF 069-1029
R32	DRALORIC LCA0207 +-5X1,0K	RF 0,25W390 OHM +-5X	RF 069-3915	RF 069-3915	RF 069-3915
R33	DRALORIC LCA0207 +-5X390	RF 0,25W 39KOHM +-3X	RF 069-3938	RF 069-3938	RF 069-3938
R34	DRALORIC LCA0207 +-5X39K	RD 1,24 W 0,15 OHM +-3X	RD 087-5222	RD 087-5222	RD 087-5222
R35	SAGE 1000S0,150HM+3X	RL 0,125W1,0KOHM +-1XTK50	RL 086-3378	RL 086-3378	RL 086-3378
R36	DALE MF1/10 1,0K 1XTK50	RS 0,5W2KOHM +-20X10X10X5	RS 247-7961	RS 247-7961	RS 247-7961
R37	BOURNS 3386X-1-202	RL 0,125W7,50KOHM +-1XTK50	RL 067-4743	RL 067-4743	RL 067-4743
R39	DALE MF1/10 7,50K 1XTK50	RF 0,25W820 OHM +-5X	RF 069-8217	RF 069-8217	RF 069-8217
R40	DRALORIC LCA0207 +-5X820	RF 0,25W390 OHM +-5X	RF 069-3915	RF 069-3915	RF 069-3915
R41	DRALORIC LCA0207 +-5X390	RF 0,25W3,3KOHM +-5X	RF 069-3321	RF 069-3321	RF 069-3321
R42	DRALORIC LCA0207 +-5X3,3K	RF 0,25W680 OHM +-5X	RF 069-6814	RF 069-6814	RF 069-6814
R43	DRALORIC LCA0207 +-5X680	RF 0,25W1,3KOHM +-5X	RF 069-1529	RF 069-1529	RF 069-1529
R44	DRALORIC LCA0207 +-5X1,5K	RL 0,25W 11,8KOHM +-1XTK50	RL 083-1345	RL 083-1345	RL 083-1345
R45	DRALORIC SMA0207/11,8K-F-D	RF 0,25W 82 OHM +-5X	RF 069-8200	RF 069-8200	RF 069-8200
R46	DALE MF1/10 25,5K 1XTK50	RL 0,125W25,5KOHM +-1XTK50	RL 086-3561	RL 086-3561	RL 086-3561
R47	RS 0,5W2KOHM +-20X10X10X5	BOURNS 3386X-1-202	RS 247-7961	RS 247-7961	RS 247-7961
R48	DALE MF1/10 8,25K 1XTK50	RF 0,25W8,25KOHM +-1XTK50	RF 067-4750	RF 067-4750	RF 067-4750
ST1	FR SPANNUNGSMAEHLER GRAU	FR 017-5069	FR 017-5069	FR 017-5069	FR 017-5069
ST2	SB SCHALT NETZ 2A 0-KNOPF	SB 020-5495	SB 020-5495	SB 020-5495	SB 020-5495
ST1	FN GERAEETEST-M-NETZFILTER	FN 252-5757	FN 252-5757	FN 252-5757	FN 252-5757
T1	CORCOM 3 EF 1	AL 2N3055 SI NPN 100V 15A	AL 010-1174	AL 010-1174	AL 010-1174
T2	RCA 2N3055H	RCA 2N3055H	AL C10-1174	AL C10-1174	AL C10-1174
T3	RCA 2N3055H	AL 2N3055 SI NPN 100V 15A	AL 010-1174	AL 010-1174	AL 010-1174
T4	RCA 2N3055H	AK BSYS6 SINPN 120V500MIA	AK 010-5511	AK 010-5511	AK 010-5511
T5	INTERMETAL BSYS6	AK BSYS6 SINPN 120V500MIA	AK 010-5511	AK 010-5511	AK 010-5511
TR1	LT RINGTR-123VA	POLYTRONIK R&S-ZCHNG-302-7811	302-7811	302-7811	302-7811

Diese Urtrage ist unser Eigentum. Vervielfältigung und Abschneuerung ist ausdrücklich untersagt.

ROHDE & SCHWARZ  
MÜNCHEN

Blatt Nr. 4

Sachnummer 302.7411 SA

enthalten in

Benennung / Beschreibung

NETZTEIL

15 0282

ROHDE & SCHWARZ MÜNCHEN

Blatt Nr. 4

Sachnummer 302.7411 SA

enthalten in

Benennung / Beschreibung

NETZTEIL

15 0282

ROHDE & SCHWARZ MÜNCHEN

Firmenname	Nr. Datum	Schreibweise für	Sachnummer		Blatt Nr.
			YASTATUR/ANZEIGE-EINHEIT Z	SA	
ROHDE & SCHULTZ Firmenname	11 10380	YASTATUR/ANZEIGE-EINHEIT	302.7911	SA	1
Kernzeichnung: Beschreibung			enthalten in		
B1	BP 5082-7610	7SEGM.ANZ.RT HEWLETT HP 5082-7610	BP 293.6241	302.7911	
B1S					
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 SIGMETICS IC-NE555V	BO 418.1383	302.7911	
B20	BL CD40138E	2/D-FLIPELOP RCA ICCD40138E	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	2/4 INP-NORG. RCA CD4002BE	BL 086.6977	302.7911	
B24	BL CD4011BE	4/2 INP-NANDG. RCA CD4011BE	BL 252.7337	302.7911	
B25	BL SN74LS09N	4/2 INP-AND TEXAS SN74LS09N	BL 290.8614	302.7911	
B26	BL CD4071BE	4/2 INP-OR-GAT RCA CD4071BE	BL 299.6866	302.7911	
B27	BL CD4081BE	4/2 INP-ANDG. RCA CD4081BE	BL 299.6872	302.7911	
B28	BJ SN75492AN	LED-TREIBER TEXAS IC-SN75492N	BJ 257.4720	302.7911	
B29	BL CD4071BE	4/2 INP-OR-GAT RCA CD4071BE	BL 299.6866	302.7911	
B30	BL CD4073BE	3/3 INP-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	KEY8/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 TEXAS SN74LS145N	BL 291.4335	302.7911	

Firmenname	Nr. Datum	Schreibweise für	Sachnummer		Blatt Nr.
			YASTATUR/ANZEIGE-EINHEIT Z	SA	
ROHDE & SCHULTZ Firmenname	11 10380	YASTATUR/ANZEIGE-EINHEIT	302.7911	SA	2
Kernzeichnung: Beschreibung			enthalten in		
TEXAS	SN74LS145M				
C1	CE 1,0UF+-20%50V	4X 8TA ER0-TANTAL TA-ELKOETS-A-1/50IS.	CE 006.3001	302.7911	
C2	CE 1,0UF+-20%35V	5X 4X 7 ER0-TANTAL TA-ELKOETR1-1/35	CE 022.8185	302.7911	
C5	CE 10 UF+-20%20V	5X13TA ITT TA-ELKOTAA10/20I/20X	CE 006.3182	302.7911	
C6	CE 10 UF+-20%20V	5X13TA ITT TA-ELKOTAA10/20I/20X	CE 006.3182	302.7911	
C7	CK 470NF+-20% 63V	RUNDB. CC 10NF-20+50X7X8R6000	CK 024.6644	302.7911	
C10	CC 10NF-20+50X7X8R6000	THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7911	
BIS					
C14	CC 10NF-20+50X7X8R6000	THOMSON COX767/10000/PF-20+5	CC 087.7525	302.7911	
C20	CC 1,2MF+-10%4X5R2000	DRALORIC EDP4X51200/10XR2000	CC 087.7031	302.7911	
BIS					
C23	CC 1,2NF+-10%4X5R2000	DRALORIC EDP4X51200/10XR2000	CC 087.7031	302.7911	
GL1	AF TIL270	LED-ZEILE 10XRT TEXAS YIL 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 73V 150MVA VALVO DI08E1N4448	AD 012.0700	302.7911	
R1	RF 0,25W270	OHM +-5% DRALORIC LCA0207/+5X270	RF 069.2719	302.7911	
BIS					
R16	RF 0,25W270	OHM +-5% DRALORIC LCA0207/+5X270	RF 069.2719	302.7911	
R17	RF 0,25W 27	OHM +-5% DRALORIC LCA0207/+5X27	RF 069.2702	302.7911	
R18	RF 0,25W 27	OHM +-5% DRALORIC LCA0207/+5X27	RF 069.2702	302.7911	
R19	RF 0,25W 27	OHM +-5% DRALORIC LCA0207/+5X27	RF 069.2702	302.7911	
R20	RF 0,25W 50KOHM	+5% DRALORIC LCA0207/+5X50K	RF 069.5630	302.7911	
R25	RF 0,25W 12KOHM	+5% DRALORIC LCA0207/+5X12K	RF 069.1235	302.7911	

Kennzeichen	AZ Datum	Schaltelliste für	Panennung / Beschriftung	Sachnummer		Blatt Nr.
				Sachnummer	enthalten in	
<b>FAVDE SCHWARZ</b> <b>FUNKER</b>						
<b>11 0380 TASTATUR/ANZEIGE-EINHEIT Z 302.7911 SA 3</b>						
R26		DRALORIC	LCA0207/+-5X12K	RL 082.2583	302.7911	
		RL 0,25W 27,4KOHM+-12TK50				
R27		DRALORIC	SMA 0207/27,4K-F-C	RL 083.2858	302.7911	
		RL 0,2KW 909 KOHM+-12TK50				
R30		DRALORIC	SMA0207/909K-F-C	RF 069.1012	302.7911	
		RF 0,25W100 OHM +-5X				
B15		DRALORIC	LCA0207/+-5X100			
R45		RF 0,25W100 OHM +-5X		RF 069.1012	302.7911	
R46		DRALORIC	LCA0207/+-5X100	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R47		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R50		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R51		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R52		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R53		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R54		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R55		DRALORIC	LCA0207/+-5X33	RF 069.3309	302.7911	
		RF 0,25W 33 OHM +-5X				
R60		DRALORIC	LCA0207/+-5X33	RF 069.2219	302.7911	
		RF 0,25W220 OHM +-5X				
B15		DRALORIC	LCA0207/+-5X220			
R68		RF 0,25W220 OHM +-5X		RF 069.2219	302.7911	
R69		DRALORIC	LCA0207/+-5X220	RF 069.3338	302.7911	
		RF 0,25W 33KOHM +-5X				
R75		DRALORIC	LCA0207/+-5X33K	RF 069.3938	302.7911	
		RF 0,25W 39KOHM +-5X				
R76		DRALORIC	LCA0207/+-5X39K	RF 069.1535	302.7911	
		RF 0,25W 15KOHM +-5X				
R77		DRALORIC	LCA0207/+-5X15K	RF 069.1535	302.7911	
		RF 0,25W 15KOHM +-5X				
R78		DRALORIC	LCA0207/+-5X15K	RF 069.1535	302.7911	
		RF 0,25W 15KOHM +-5X				
R80		DRALORIC	LCA0207/+-5X15K	RF 069.1041	302.7911	
		RF 0,25W100KOHM +-5X				
B15		DRALORIC	LCA0207/+-5X100K			
R87		RF 0,25W100KOHM +-5X		RF 069.1041	302.7911	
R90		DRALORIC	LCA0207/+-5X100K	RL 084.2068	302.7911	
		RL 0,25W3,01KOHM+-0,12T25				
B15		DRALORIC	SMA0207/3,01K-B-E			
R92		RF 0,25W3,01KOHM+-0,12T25		RF 069.1041	302.7911	
		DRALORIC	SMA0207/3,01K-B-E	RL 084.2068	302.7911	
S1		SB TASTER	GRAU/H MHZ 1UM	302.8060	302.7911	
S2		SCHADOW	302.8060N-R&S-ZCHNG.			
		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	AZ Datum	Schaltelliste für	Panennung / Beschriftung	Sachnummer		Blatt Nr.
				Sachnummer	enthalten in	
<b>FAVDE SCHWARZ</b> <b>FUNKER</b>						
<b>11 0380 TASTATUR/ANZEIGE-EINHEIT Z 302.7911 SA 4</b>						
S4		SCHADOW	302.8018N-R&S-ZCHNG.	SB 292.0340	302.7911	
		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 V 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 1UM 24V	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.			

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Kennzeichen	Az	Datum	Schalttafel für	Sachnummer		Blatt Nr.
				Sachnummer	enthalt. in	
11 0380	11 0380		YASTATUR/ANZEIGE-EINHEIT Z	302.7911	SA	6
Y18	AK BCY591X	MPN 45V 200MA		AK 010.5163		302.7911
Y19	SIEMENS	TRANSIST-BCY591X		AK 010.5163		302.7911
	AK BCY591X	MPN 45V 200MA				- ENDE -
	SIEMENS	TRANSIST-BCY591X				

Kennzeichen	Az	Datum	Schalttafel für	Sachnummer		Blatt Nr.
				Sachnummer	enthalt. in	
11 0380	11 0380		YASTATUR/ANZEIGE-EINHEIT Z	302.7911	SA	5
S43	SB TASTER	GRAU/H1 1UM 24V		302.8147		302.7911
S44	SCHADOW	302.8147N.R&S.ZCHNG.		302.8153		302.7911
S45	SB TASTER	GRAU/H2 1UM 24V		302.8160		302.7911
S46	SCHADOW	302.8153N.R&S.ZCHNG.		302.8176		302.7911
S47	SB TASTER	GRAU/H3 1UM 24V		302.8182		302.7911
S48	SCHADOW	302.8160N.R&S.ZCHNG.		302.8199		302.7911
S49	SB TASTER	GRAU/H4 1UM 24V		302.8201		302.7911
S50	SCHADOW	302.8176N.R&S.ZCHNG.		302.8218		302.7911
S51	SB TASTER	GRAU/H5 1UM 24V		302.8224		302.7911
S52	SCHADOW	302.8182N.R&S.ZCHNG.		334.6540		302.7911
ST20	SEL	R&S.ZCHNG.334.6540		302.7963		302.7911
ST27	STECKEREINHEIT	Z		302.7970		302.7911
Y1	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y2	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y3	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y4	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y5	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y6	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y7	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y8	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y9	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y10	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y11	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y12	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y13	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y14	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y15	AK 2N2907A	SI PNP 60V		AK 010.3583		302.7911
Y16	TEXAS	TRANSIST-2N2907A		AK 010.3583		302.7911
Y17	AK BCY591X	NPN 45V 200MA		AK 010.5163		302.7911
	SIEMENS	TRANSIST-BCY591X				

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97 005 0020 3479

97 005 0020 3479

Kennzeichen	AZ Datum	Schalttailliste für	Sachnummer		Blatt Nr.
			SMS-B1 REF.-OSZ.-TEMP.-GER.	enthalten in	
C5C	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CC 022.0610	3C2.8918.C1 SA	1
C51	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CK 004.5033	3C2.8918.C1 SA	1
C52	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CE 022.7572	3C2.8918.C1 SA	1
C53	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CT 025.7380	3C2.8918.C1 SA	1
C54	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CC 022.2329	3C2.8918.C1 SA	1
C55	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CC 006.1521	3C2.8918.C1 SA	1
C56	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CC 006.1296	3C2.8918.C1 SA	1
C57	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CK 006.5033	3C2.8918.C1 SA	1
C58	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	LD 026.3388	3C2.8918.C1 SA	1
C59	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	CC 012.0581	3C2.8918.C1 SA	1
6L1C	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	LD 026.3388	3C2.8918.C1 SA	1
L2C	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	LD 026.3388	3C2.8918.C1 SA	1
Q1	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	EQ 10.000HZZ3.C150HC-27/U	3C2.8918.C1 SA	1
R5C	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RL 0.25W 8.25KOHM+-1TK50	3C2.8918.C1 SA	1
R5D	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC SHAD207/8,25K-F-D	3C2.8918.C1 SA	1
R5E	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RL 0.125W90OHM+-1TK50	3C2.8918.C1 SA	1
R5F	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DALE MF1/1C 509 OHM1X1M50	3C2.8918.C1 SA	1
R5G	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	TRIMMERT	3C2.8918.C1 SA	1
R5H	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W3,3KOHM +-5%	3C2.8918.C1 SA	1
R5I	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X13,3K	3C2.8918.C1 SA	1
R5J	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W560 OHM +-5%	3C2.8918.C1 SA	1
R5K	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X560	3C2.8918.C1 SA	1
R5L	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W3,3KOHM +-5%	3C2.8918.C1 SA	1
R5M	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X13,3K	3C2.8918.C1 SA	1
R5N	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W1,8KOHM +-5%	3C2.8918.C1 SA	1
R5O	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X1,8K	3C2.8918.C1 SA	1
R5P	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RL 0.25W 8.25KOHM+-1TK50	3C2.8918.C1 SA	1
R5Q	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC SHAD207/8,25K-F-D	3C2.8918.C1 SA	1
R5R	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.5 W 4,7 OHM+-5%	3C2.8918.C1 SA	1
R5S	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RESISTA SK4/4,7OHMSX	3C2.8918.C1 SA	1
R5T	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	FUER VAR 02,32	3C2.8918.C1 SA	1
R5U	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	WIDERSTAND RF007.1125	3C2.8918.C1 SA	1
R5V	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	FUER VAR 04	3C2.8918.C1 SA	1
R5W	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AW HEISSEL10KOHM+-2C20,18W	3C2.8918.C1 SA	1
R5X	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	SIEMENS HEISSEL17B10K4,0	3C2.8918.C1 SA	1
R5Y	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W 22KOHM +-5%	3C2.8918.C1 SA	1
R5Z	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X22K	3C2.8918.C1 SA	1
R60	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W390 OHM +-5%	3C2.8918.C1 SA	1
R61	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X390	3C2.8918.C1 SA	1

Kennzeichen	AZ Datum	Schalttailliste für	Sachnummer		Blatt Nr.
			SMS-B1 REF.-OSZ.-TEMP.-GER.	enthalten in	
R65	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W470 OHM +-5%	302.8918.01 SA	2
R66	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X470	302.8918.01 SA	2
T10	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	RF 0.25W330 OHM +-5%	302.8918.01 SA	2
T11	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	DRALORIC LCAC207/+-5X330	302.8918.01 SA	2
T12	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AK BCY791X PNP 45V200MIA	302.8918.01 SA	2
T13	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	SIEMENS BCY791X	302.8918.01 SA	2
T14	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AK BCY791X PNP 45V200MIA	302.8918.01 SA	2
T15	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	SIEMENS BCY791X	302.8918.01 SA	2
T16	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AK BCY591X NPN 45V 200MA	302.8918.01 SA	2
T17	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	SIEMENS BCY591X	302.8918.01 SA	2
T18	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AK BF115 SINPN 50V 30MIA	302.8918.01 SA	2
T19	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	VALVO BF115	302.8918.01 SA	2
T20	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AL BD233 SI NPN 4CV 2A	302.8918.01 SA	2
T21	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	VALVO BD233	302.8918.01 SA	2
T22	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	AK BF115 SINPN 50V 30MIA	302.8918.01 SA	2
T23	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	VALVO BF115	302.8918.01 SA	2
T24	05 0282	SMS-B1 REF.-OSZ.-TEMP.-GER.	UEBERTRAGER	302.8918.01 SA	2

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Kennzeichen	AZ Datum	Schaltteilliste für Benennung / Beschreibung	Sachnummer	Sachnummer	Blatt Nr.
B6		BD ENDSTUFE 1GHZ	Z	912.4604	335-0016-01
D1		LD 38 DB BEI 10GHZ 1750PF ERIE 1214-001		LD 037-8011	335-0145
BIS					
D8		LD 38 DB BEI 10GHZ 1750PF ERIE 1214-001		LD 037-8011	335-0145
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	335-0368	335-0016-01
K22		KABEL/CABLE 22	Z	335-0380	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 --

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und Verbreitung ist ohne unsere schriftliche  
Genehmigung untersagt.

Kennzeichen	AZ Datum	Schaltteilliste für Benennung / Beschreibung	Sachnummer	Sachnummer	Blatt Nr.
B1		BD 20DB-VERSTÄRKER	Z	910.4620	335-0316
C1		CC 10 PF+-0,25PF8NPO DRALORIC SE8,10/0,25 NPO		CC 022-4680	335-0316
C2		CC 4,5PF+-0,25PF8P100 DRALORIC SE8,4,5/0,25 P100		CC 022-4515	335-0316
C3		CC 11PF 2% NPO7IB 8CHIP DRALORIC NPO711/2 SEZ 8		CC 022-4567	335-0316
C4		CC 8,7 PF+-0,25PF5NPO DRALORIC SEFK5/8,7/0,25 NPO		CC 022-4650	335-0316
C5		CC 12PF 2% NPO7IB 8CHIP DRALORIC NPO 12/2 SEZ 8		CC 022-4580	335-0316
C11		CC 150PF+-10X50V2NPOCHIP CC 150PF+-10X50V2NPOCHIP		CC 082-7379	335-0316
C12		CC 150PF+-10X50V2NPOCHIP CC 150PF+-10X50V2NPOCHIP		CC 082-7379	335-0316
C13		CC 150PF+-10X50V2NPOCHIP CC 150PF+-10X50V2NPOCHIP		CC 082-7379	335-0316
C14		CC 150PF+-10X50V2NPOCHIP CC 150PF+-10X50V2NPOCHIP		CC 082-7379	335-0316
C15		ERIE 8013-271-45R-102K CC 4,7PF+-0,5PF5NPO CHIP		CC 082-3221	335-0316
C16		STETTNER SEFK5-4,7/0,5NPO400V		CC 083-6147	335-0316
GL1		AE 5082-2804 DIODENPAAR HEWLETT DIODE5082-2804		AE 012-8724	335-0316
GL2		AE 5082-2804 DIODENPAAR HEWLETT DIODE5082-2804		AE 012-8724	335-0316
L1		ENTHALTEN IN			335-0316
L2		ENTHALTEN IN			335-0316
L3		ENTHALTEN IN			335-0316
L4		LD 820 UH10X70,00HMD,045A DELEVAN DROSSEL1025-90		LD 067-3218	335-0316
L5		SPULE L5	Z	335-0439	335-0316
R1		RF 0,05W 31,14 OHM +-1% RESISTA WFS22/31,14/1/0,05		030-0709	335-0316
R2		RF 0,05W 23,8 OHM +-1% RESISTA 22/23,8/1/0,05		030-0650	335-0316
R3		RF 0,05W 31,14 OHM +-1% RESISTA WFS22/31,14/1/0,05		030-0709	335-0316
R4		RL 0,25W 8,25KOHM+-1%TK50 DRALORIC SMA0207/8,25K-F-D		RL 083-1239	335-0316
R5		RL 0,25W 8,25KOHM+-1%TK50 DRALORIC SMA0207/8,25K-F-D		RL 083-1239	335-0316
R6		RS 0,5W20KOHM+-20%10X10X5 BOURNS 3366X-1-20J		RS 087-7660	335-0316
R7		RS 0,5W10KOHM+-20%10X10X5 BOURNS 3386X1-103		RS 247-7526	335-0316
ST1		FJ EINBAUWINKELST. SMC RADIAL R 112 669		FJ 249-9684	335-0316
TR1		UEBERTRAGER	Z	335-0539	335-0316
					-- ENDE --

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Kurzzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.	
						11
ROHDE & SCHWARZ MÜNCHEN						
Kennzeichen	Benennung / Beschreibung					
6L13	VALVO	DIODE 1N4448				
	AD 1N4448	SI 75V 150MIA		AD 012.0700	335-0368	
	VALVO	DIODE 1N4448				
6L14	AD 1N4448	SI 75V 150MIA		AD 012.0700	335-0368	
	VALVO	DIODE 1N4448				
L2	LD 1,50UH10Z0,220HM0,745A			LD 067.2886	335-0368	
L3	DELEVAN DROSSEL 1025-24			LD 067.2863	335-0368	
L4	LD 1,00UH10Z1,100HM0,310A			LD 067.2863	335-0368	
L5	DELEVAN 1025-20			LD 037.8005	335-0368	
	LD 1,00UH10Z1,100HM0,310A					
	LD 1000UH10Z72,00HM0,038A					
	DELEVAN DROSSEL 1025-92					
R1	RF 0,05W 42,16 OHM +-1%			030.0780	335-0368	
R2	RESISTA WFS22/42,16/1/0,05			RF 069.1035	335-0368	
	RF 0,25W 10KOHM +-5%					
R3	DRALORIC LCA0207+-5X10K			RF 069.5601	335-0368	
	RF 0,25W 56 OHM +-5%					
R4	DRALORIC LCA0207+-5X56			030.1205	335-0368	
	RF 0,05 W 434,0 OHM +-1%					
R5	RESISTA WFS22/434,0/1/0,05			RL 083.1774	335-0368	
	RL 0,25W 4,2KOHM +-1%TK50					
R6	DRALORIC SMA0207/43,2K-F-C			RF 069.3944	335-0368	
	RF 0,25W390KOHM +-5%					
R7	DRALORIC LCA0207+-5X390K			RF 069.1058	335-0368	
	RF 0,25W 1 MOHM +-5%					
R8	DRALORIC LCA0207+-5X1,0M			RF 069.1229	335-0368	
	RF 0,25W1,2KOHM +-5%					
R9	DRALORIC LCA0207+-5X1,2K			RF 069.4705	335-0368	
	RF 0,25W 47 OHM +-5%					
R12	DRALORIC LCA0207+-5X47			RF 069.3921	335-0368	
	RF 0,25W3,9KOHM +-5%					
R14	DRALORIC LCA0207+-5X3,9K			RS 087.7590	335-0368	
	RS 0,5W200KOHM+-20X10X10X					
R15	BOURNS 33R6F-1-204			RF 069.3944	335-0368	
	RF 0,25W390KOHM +-5%					
R16	DRALORIC LCA0207+-5X390K			RF 069.5618	335-0368	
	RF 0,25W560 OHM +-5%					
R20	DRALORIC LCA0207+-5X560			RL 083.0410	335-0368	
	RL 0,25W 499 OHM +-1%TK50					
R21	DRALORIC SMA0207/499OHM-F-0			RL 083.0884	335-0368	
	RL 0,25W 2,43KOHM+-1%TK50					
R22	DRALORIC SMA0207/2,43K-F-0			RL 082.2354	335-0368	
	RL 0,25W 2,55KOHM+-1%TK50					
R23	DRALORIC SMA207/2,55K-F-C			RS 247.7926	335-0368	
	RS 0,5W500KOHM+-20X10X10X					
R24	BOURNS 33R6F-1-504			RF 069.2748	335-0368	
	RF 0,25W270KOHM +-5%					
R25	DRALORIC LCA0207+-5X270K			RF 069.2725	335-0368	
	RF 0,25W42,7KOHM +-5%					
R26	DRALORIC LCA0207+-5X2,7K			RF 069.1035	335-0368	
	RF 0,25W 10KOHM +-5%					
R27	DRALORIC LCA0207+-5X10K			RF 069.4734	335-0368	
	RF 0,25W 47KOHM +-5%					
	DRALORIC LCA0207+-5X47K					

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Kurzzeichen	AZ	Datum	Schalttafel für	Sachnummer	Blatt Nr.	
						11
ROHDE & SCHWARZ MÜNCHEN						
Kennzeichen	Benennung / Beschreibung					
B1	B0 MA741MJG OP-AMP.			B0 275.0822	335-0368	
B2	TEXAS UA 741MJG			B0 302.5883	335-0368	
	B0 LF256H BIFET-OP-AMP.					
	NSC LF 256 H					
B3	B0 LF256H BIFET-OP-AMP.			B0 302.5883	335-0368	
B4	NSC LF 256 H			913.4408	335-0368	
B5	SD HF-SCHALTER		Z	913.4408	335-0368	
	DB HF-SCHALTER		Z			
C1	CC 33PF+-10X100V2NPO CHIP			CC 082.7340	335-0368	
	ERIE 8000-271-100-C06-330					
C2	CE 1,5UF+-20X25V 5X 4X 7			CE 087.9334	335-0368	
C3	CE 1,5UF+-20X25V 5X 4X 7			CE 087.9334	335-0368	
C4	CC 330PF+-2X6X9N750			CC 087.6964	335-0368	
	DRALORIC EDP06X9/330/2XN750					
C5	CE 1,5UF+-20X25V 5X 4X 7			CE 087.9334	335-0368	
C6	CE 1,5UF+-20X25V 5X 4X 7			CE 087.9334	335-0368	
C7	CC 33PF+-2X4X5NPO			CC 087.6487	335-0368	
	DRALORIC EDP04X5/33/2XNPO					
C8	CC 1,5NF+-10X45R2000			CC 087.7048	335-0368	
	DRALORIC EDR04X5150010XR2000					
C9	CC 1,5NF+-10X45R2000			CC 087.7048	335-0368	
	DRALORIC EDP04X5150010XR2000					
C10	CC 150PF+-2X6X9N150			CC 087.6735	335-0368	
	DRALORIC EDP06X9/150/2XN150					
C11	CC 10NF-20+50X7X8R6000			CC 087.7525	335-0368	
	THOMSON COX767/10000/PF-20+5					
C12	CC 10NF-20+50X7X8R6000			CC 087.7525	335-0368	
	THOMSON COX767/10000/PF-20+5					
C13	CC 2,7NF+- 5X100V NPO VIE			CC 060.0942	335-0368	
	ERIE 8133-100-C06-2,7NF-J					
C15	CC 10NF+-10X 50V3K1200 CH			CC 082.3344	335-0368	
	ERIE 8013-271-N5R-103-K					
C16	CC 10NF+-10X 50V3K1200 CH			CC 082.3344	335-0368	
	ERIE 8013-271-N5R-103-K					
C20	CT 3 PF N333 F-GEDEB.SCH			CT 066.8045	335-0368	
	STETTNER 5STRIK0042,5/5PFN033					
C21	CC 1,8PF+-0,5PF100V3,3NPO			CC 092.7236	335-0368	
GL1	AD 1N4448 SI 75V 150MIA			AD 012.0700	335-0368	
GL2	VALVO DIODE 1N4448			AD 012.0700	335-0368	
	AD 1N4448 SI 75V 150MIA					
GL5	VALVO DIODE 1N4448			AE 012.8018	335-0368	
	AE 5082-2900 SCHOTTKY-DI.					
GL6	HEWLETT 5082-2900			AF 012.8018	335-0368	
	AE 5082-2900 SCHOTTKY-DI.					
GL7	HEWLETT 5082-2900			AE 012.2490	335-0368	
	AF 6ZX55/C8V2 0,5W Z-DI					
GL8	THOMSON BZX55/C8V2			AD 012.0700	335-0368	
	AD 1N4448 SI 75V 150MIA					
GL9	VALVO DIODE 1N4448			AD 012.0700	335-0368	
	AD 1N4448 SI 75V 150MIA					
GL10	VALVO DIODE 1N4448			AD 012.0700	335-0368	
	AD 1N4448 SI 75V 150MIA					
GL12	VALVO DIODE 1N4448			AD 012.0700	335-0368	
	AD 1N4448 SI 75V 150MIA					

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Kennzeichen	AZ Datum	Schalteliste für Benennung / Beschreibung	Sachnummer		Blatt Nr.
			Z	SA	
RS1	11 0481	RELAYS	335-0368	335-0368	3
ST2		FJ EINGAUWINKELST. SMC PADIAL R 112 669	FJ 249-9684	335-0368	
BIS ST4		FJ EINGAUWINKELST. 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 45V200MA SIEMENS SI-TRANSISTORBCY79IX	AK 010-3777	335-0368	
					- ENDE -

Kennzeichen	AZ Datum	Schalteliste für Benennung / Beschreibung	Sachnummer		Blatt Nr.
			Z	SA	
B1	09 1181	B0 CA3240E BIMOS QUAL OP. RCA CA3240E	302-7034	335-0716-01	1
B2		B0 NE555V TIMER SIGNETICS NE555V	B0 418-1383	335-0716-01	
B3		B0 MESSKOPF SMFP	913-6700	335-0716-01	
C1		CE 2-2UF8-20X35V 7X 5X11	CE 022-8191	335-0716-01	
C2		ERO-TANTAL TA-ELKOETR2,2,2/35 CE 1-20UF8-20X35V 5X 4X 7	CE 022-8185	335-0716-01	
C3		ERO-TANTAL TA-ELKOETR1-1/35 CC 100NF+-10% 50V5K1200LR AEROVOX CKR058X10AKLEVELR	CC 092-0777	335-0716-01	
GL1		AD 1N4448 SI 75V 150MVA VALVO 1N4448	AD 012-0700	335-0716-01	
GL2		AD 1N4448 SI 75V 150RIA VALVO 1N4448	AD 012-0700	335-0716-01	
GL3		AE BZX57C4V7 0,5W Z-01 VALVO BZX57C4V7	AE 012-2432	335-0716-01	
GL4		AD 1N4448 SI 75V 150RIA VALVO 1N4448	AD 012-0700	335-0716-01	
GL5		AD 1N4448 SI 75V 150MVA VALVO 1N4448	AD 012-0700	335-0716-01	
GL6		AD 1N4448 SI 75V 150RIA 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 5,1KOHM+-1%TK50 DRALORIC SMA0207/5,1K-F-C	RL 082-2348	335-0716-01	
R6		RF 0,25W100KOHM +-5X DRALORIC LCA0207/+5X100K	RF 069-1041	335-0716-01	
R7		RS 0,25W2KOHM+-20%10X10X5 BOURNS 3386X-1-202	RS 247-7961	335-0716-01	
R8		RF 0,25W 1 MOHM +-5X DRALORIC LCA0207/+5X1,0M	RF 069-1058	335-0716-01	
R9		RF 0,25W100KOHM +-5X DRALORIC LCA0207/+5X100K	RF 069-1041	335-0716-01	
R10		RF 0,25W2,7KOHM +-5X DRALORIC LCA0207/+5X2,7K	RF 069-2725	335-0716-01	
R11		RF 0,25W2,7KOHM +-5X DRALORIC LCA0207/+5X2,7K	RF 069-2725	335-0716-01	
R12		RF 0,25W 10KOHM +-5X DRALORIC LCA0207/+5X10K	RF 069-1035	335-0716-01	
R13		RF 0,25W330KOHM +-5X DRALORIC LCA0207/+5X330K	RF 069-3344	335-0716-01	
T1		AK BCY59IX NPN 45V 200MA SIEMENS BCY59IX	AK 010-5163	335-0716-01	
					- ENDE -

Die Fertigung ist unter Eigentum, Verantwortung  
 und ausschließlicher Haftung der  
 Rohde & Schwarz AG





**ROHDE & SCHWARZ**

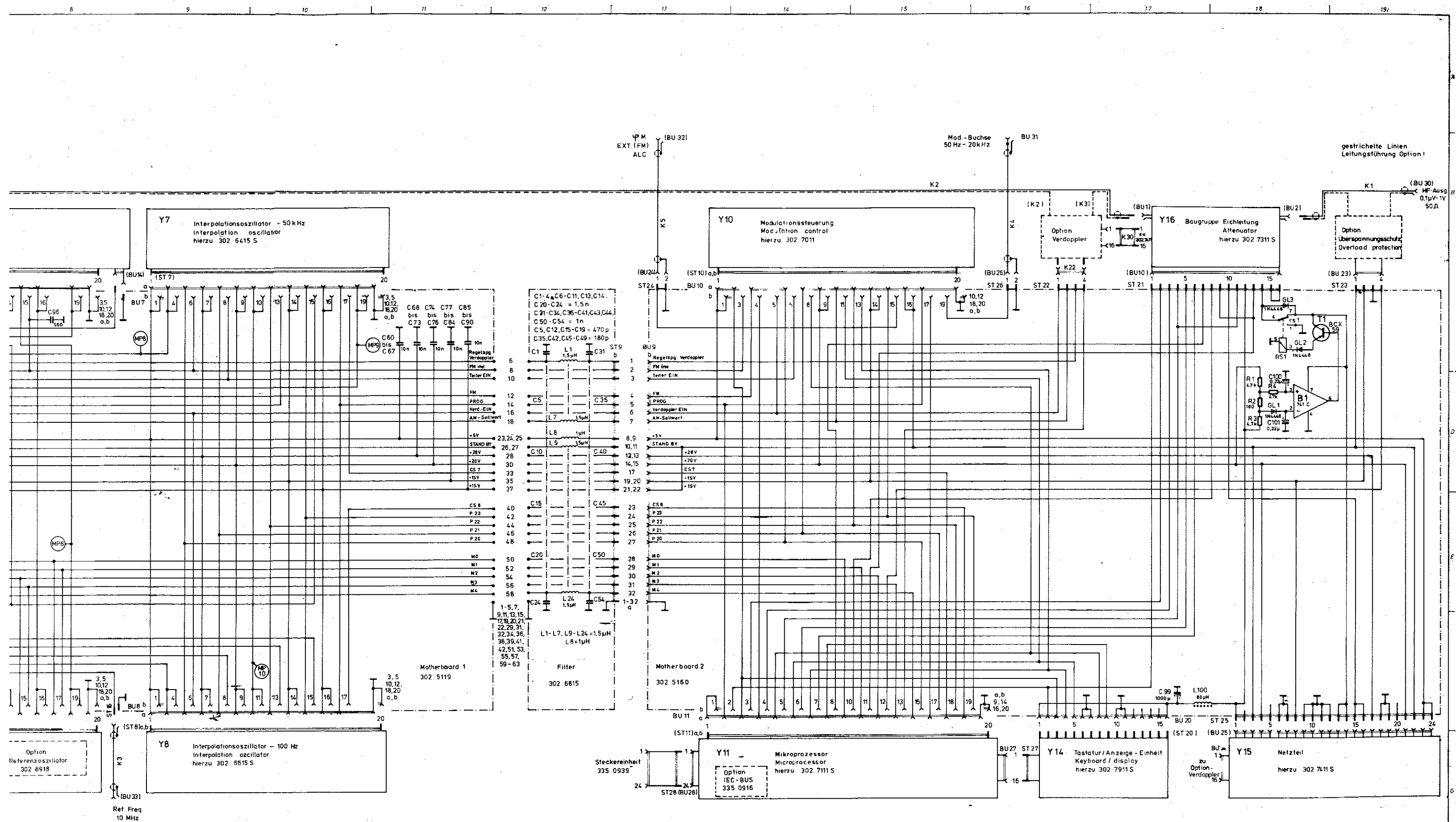
MÜNCHEN

Stromläufe

Bestückungspläne

Circuit diagrams

Components plans

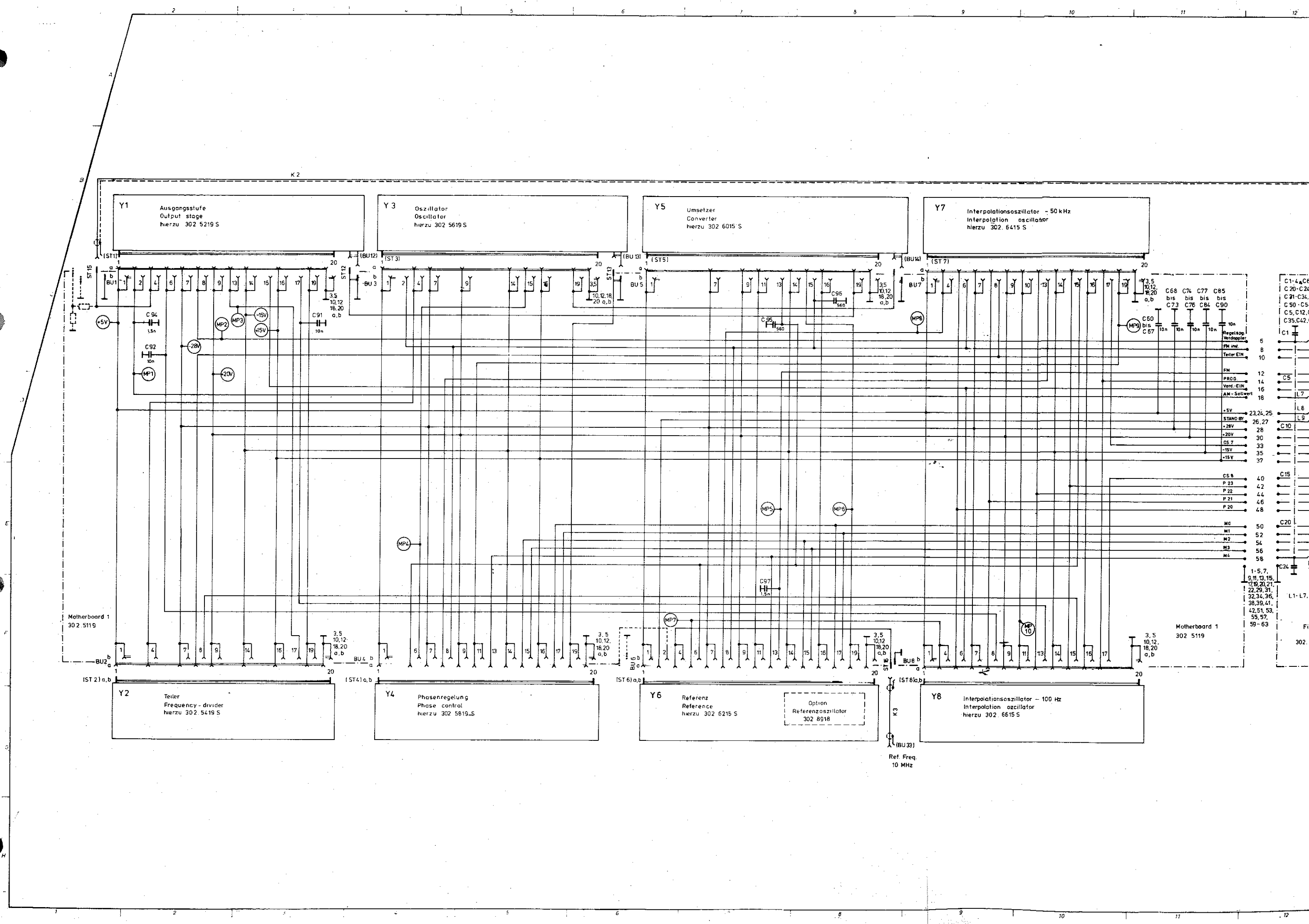


gestrichelte Linien  
Leitungsführung Option!

- 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		302.4012 S	
302.4012 V		SMS Signalgenerator	
IGME	Datum	Name	Ans. Nr./Mf. Nr.
gezeichnet	28.2.79	Gr	E
geprüft	02.79	Gn	
normiert		C: 25166	07.79
		D: 25166	01.80



**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

**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 oscillator  
hierzu 302 6615 S

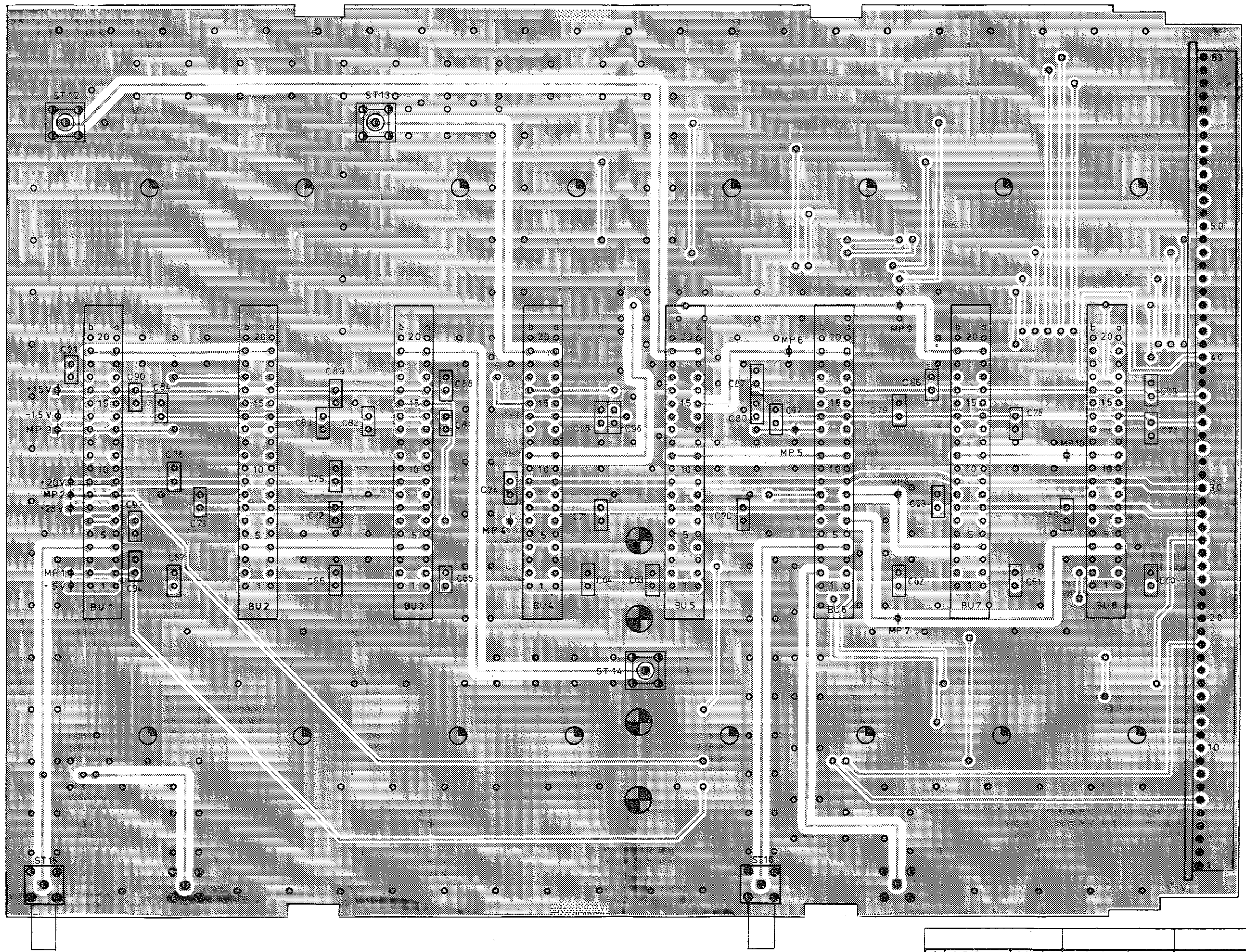
- C1-4, C6-C11, C20-C24 = 1,5
- C21-C24, C36-C38 = 1,5
- C50-C54 = 1n
- C5, C12, C15-C19, C35, C42, C45-C49 = 10n
- C1 = 1,5µH
- L1 = 1,5µH
- L8 = 1µH
- L9 = 1,5µH
- L1-L7, L9-L12 = 1µH
- L8 = 1µH
- Filter 302 6815

- Regelosz. 8
- Verdoppler 10
- FM zw. 12
- FM 14
- Verd.-Eik. 16
- AM-Sollwert 18
- +5V 23,24,25
- STAND BY 26,27
- +28V 28
- +20V 30
- CS 7 33
- 15V 35
- +15V 37
- CS 8 40
- P 23 42
- P 22 44
- P 21 46
- P 20 48
- M0 50
- M1 52
- M2 54
- M3 56
- M4 58
- C24 = 1,5µH

Ref. Freq.  
10 MHz



Für diese Zeichnung behalten wir uns alle Rechte vor.



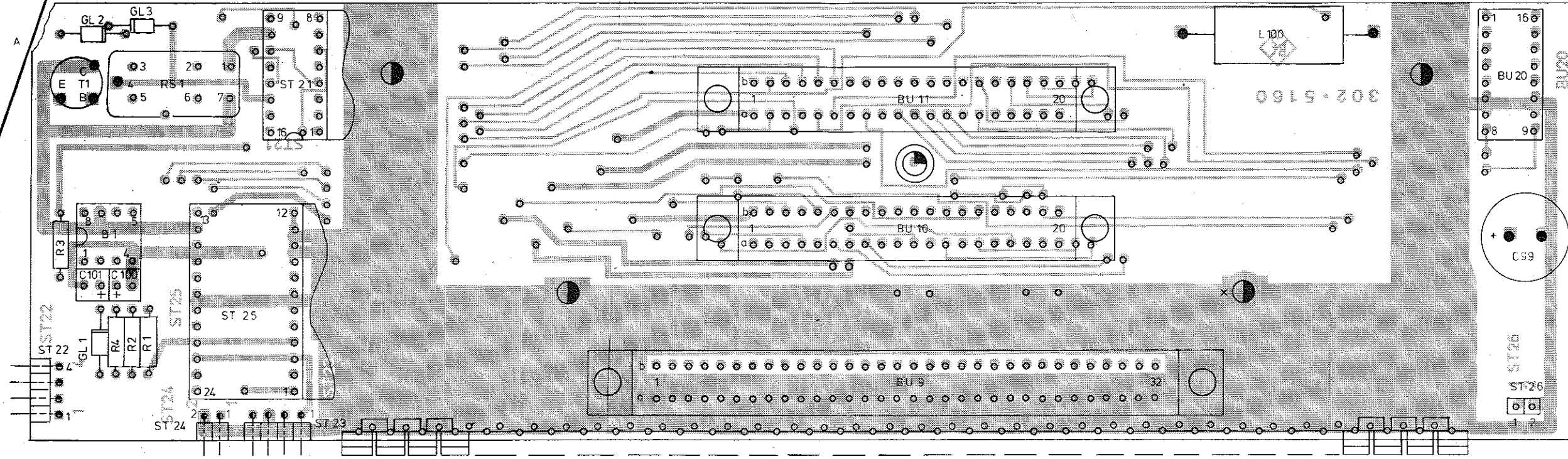
Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

A	24.545	10.78	Gn	Maße ohne Toleranzangabe	Maßstab
B	24.791	04.79	Gn		Halbzeug, Werkstoff
				IGME Tag Name	Benennung
				Bearb. 4.9.78 Nk	Motherboard 1
				Gepr.	
				Norm	
					Zechn.-Nr
					302.5119
And. Zust.	Anderungs-Mitteilung	Tag	Name	zu Gerät	Blatt-Nr
					2
					v Bl.
				reg. i. V. 302.4012 V	erste Z. 302.4012

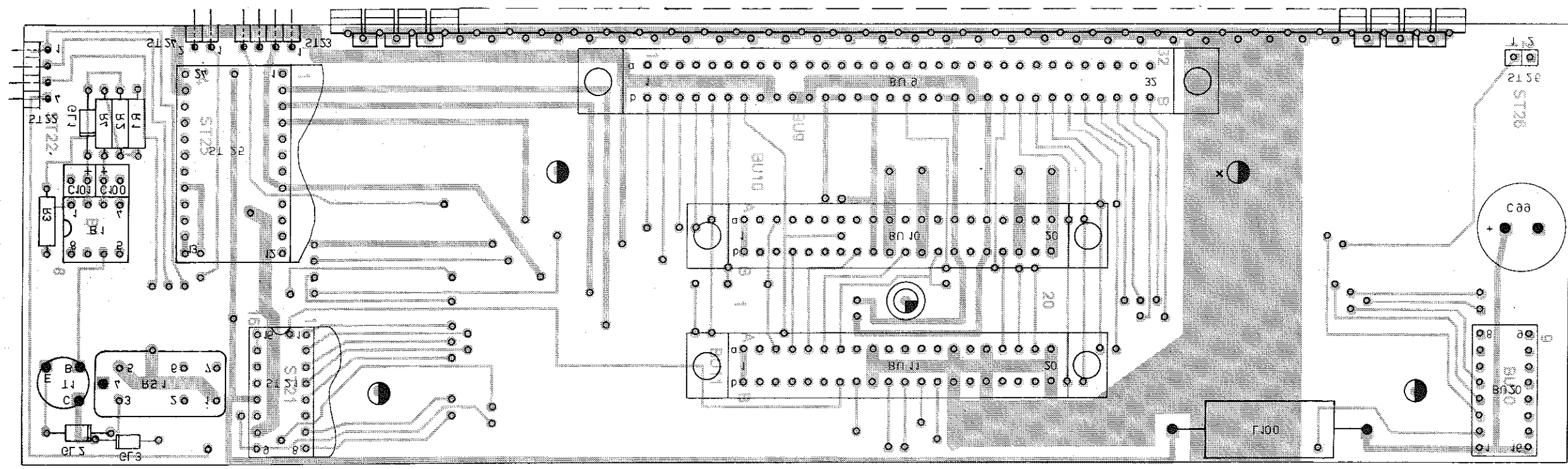




Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

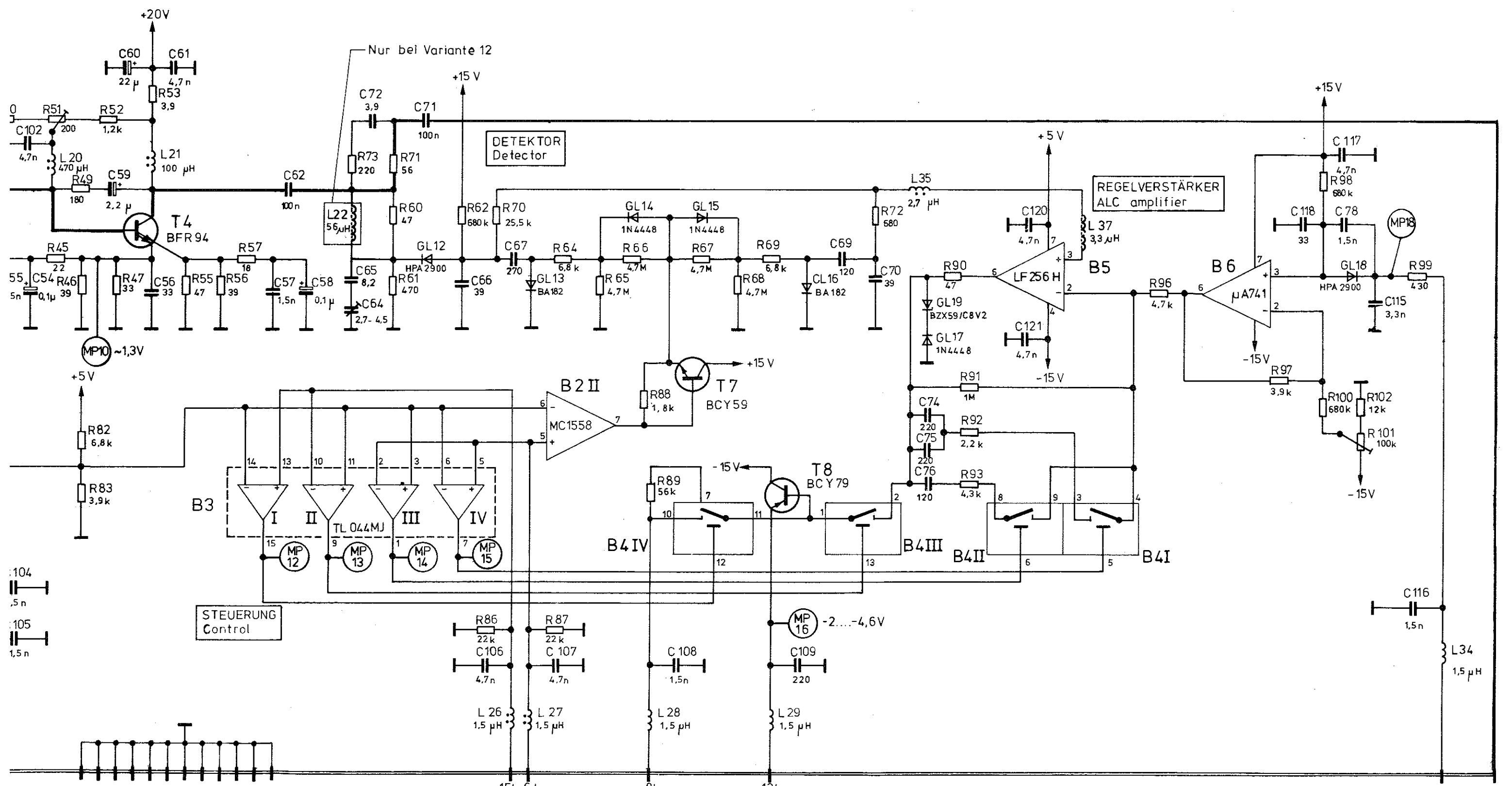


Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



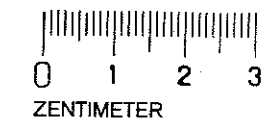
A	24545	10.78	Gn	Menge ohne Taschensatzangabe	MeiBstab			
B	25166	07.79	Gn					
C	25166	10.79	Gn					
D	25863	01.80	Gn					
E		05.80	Sy	1GM	Tag	Name	Benennung	
F	26489	10.80	Sy	Recht	25.7.78	Nk		
				Gepr.				
				Norm.			Motherboard 2	Z
						Zeichn. Nr.	302.5160	Blatt Nr. 2
And. Zust.	Änderungs Menge	Tag	Name	SMS		302.4012 V		



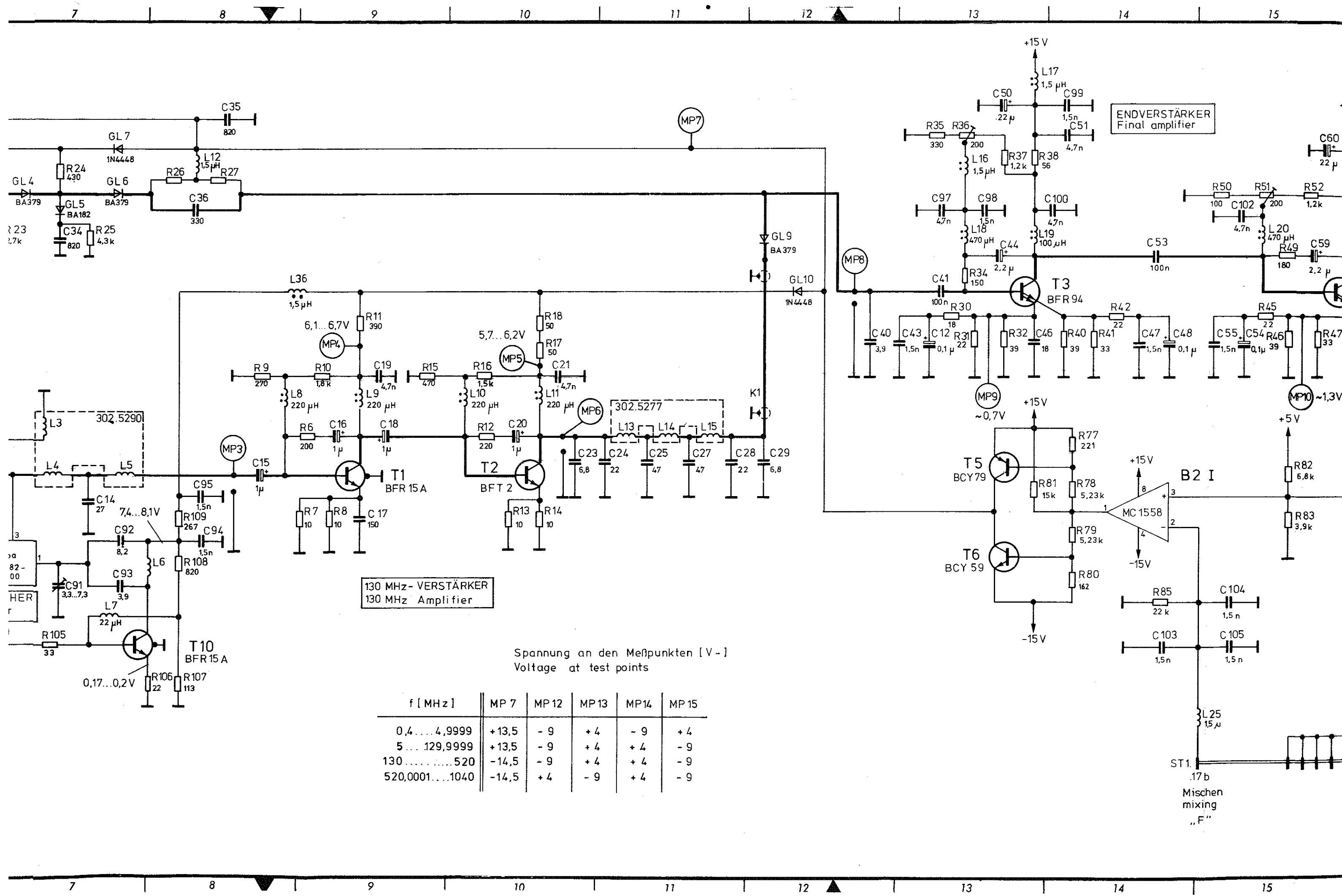


15b 5 b      .8b      .13b      .2b      4a,b

Verdoppeln AM-langs.      Regelspg.      Regelspg.      Sollwert      HF -  
 Doubling AM slow      (Verdoppeln)      Control voltage      Set value      Ausg.  
 „G”      „H”      Control voltage      RF  
 (doubling)      output



Z	Ausgangsstufe Output section		Zeichn. Nr. 302.5219 S	
	302.4012 V	302.4012		



130 MHz- VERSTÄRKER  
130 MHz Amplifier

ENDVERSTÄRKER  
Final amplifier

Spannung an den Meßpunkten [V-]  
Voltage at test points

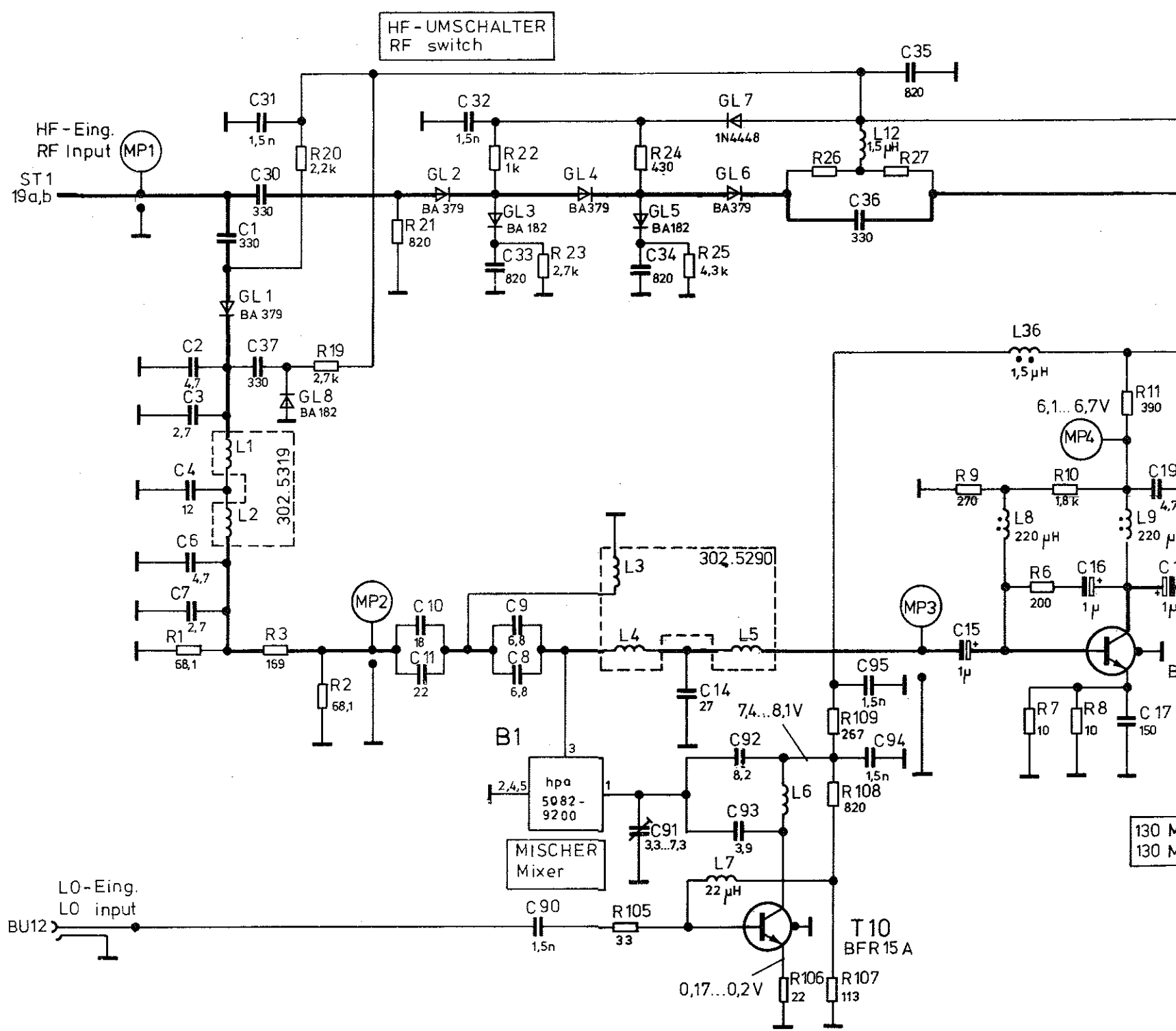
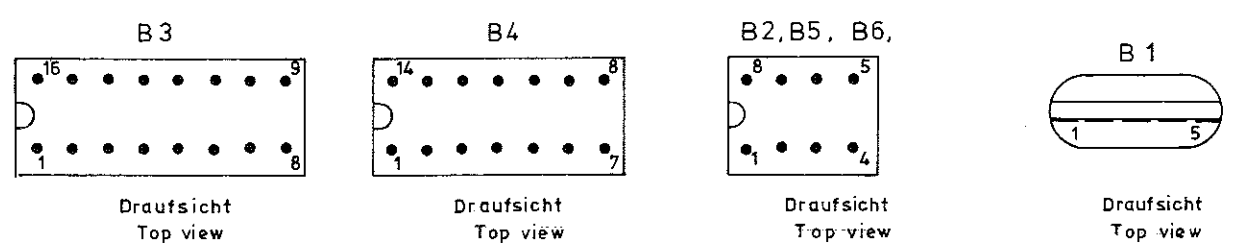
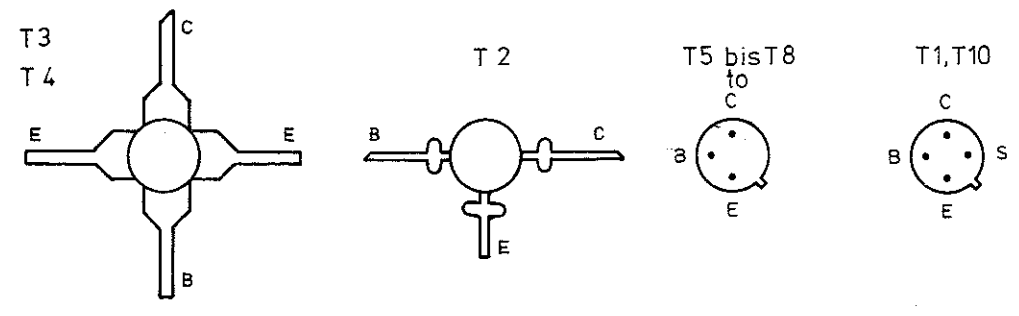
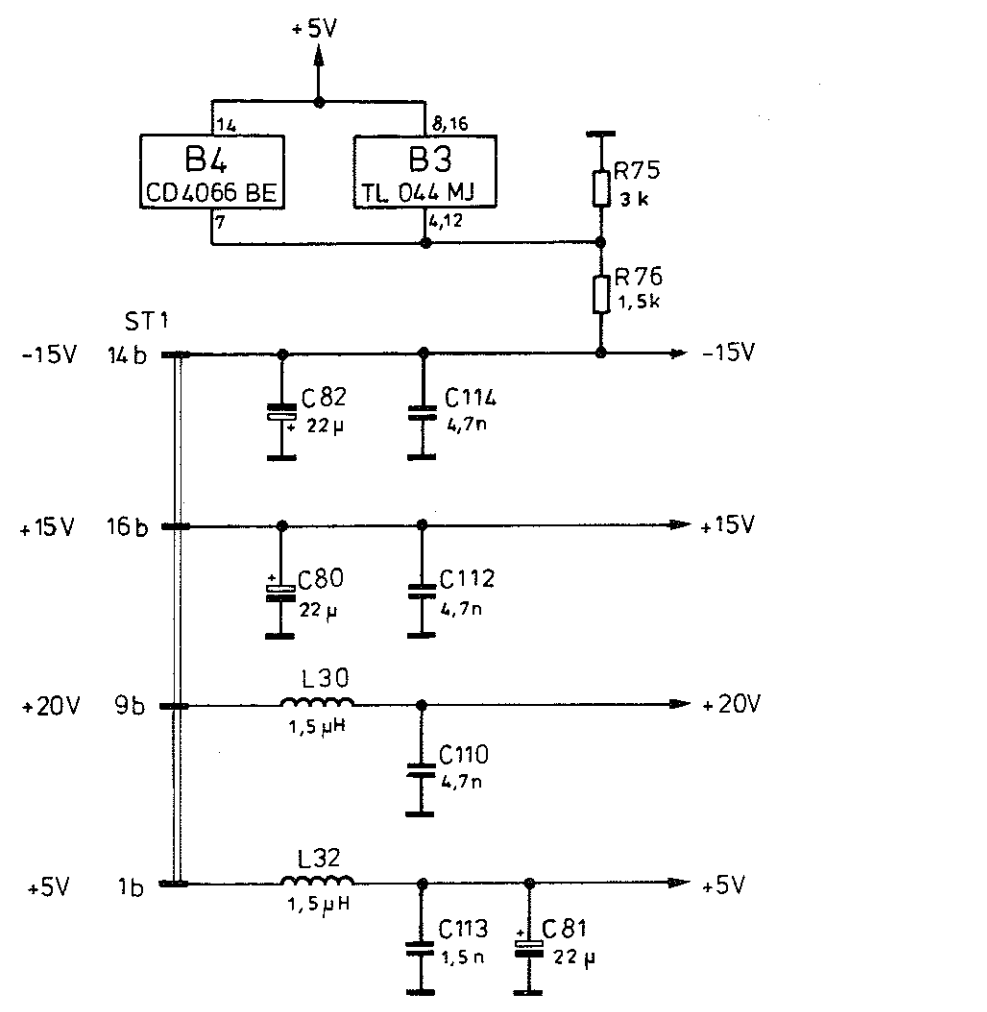
f [MHz]	MP 7	MP 12	MP 13	MP 14	MP 15
0,4 ... 4,9999	+13,5	- 9	+ 4	- 9	+ 4
5 ... 129,9999	+13,5	- 9	+ 4	+ 4	- 9
130 ... 520	-14,5	- 9	+ 4	+ 4	- 9
520,0001 ... 1040	-14,5	+ 4	- 9	+ 4	- 9

ST1  
.17b  
Mischen  
mixing  
"F"

1 GME	gezeichnet	06.78	06.78	02.79	Mü
	bearbeitet			04.79	Gn
	geprüft			03.80	Sy
	normgepr.			12.80	Sy
				07.82	Gn

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

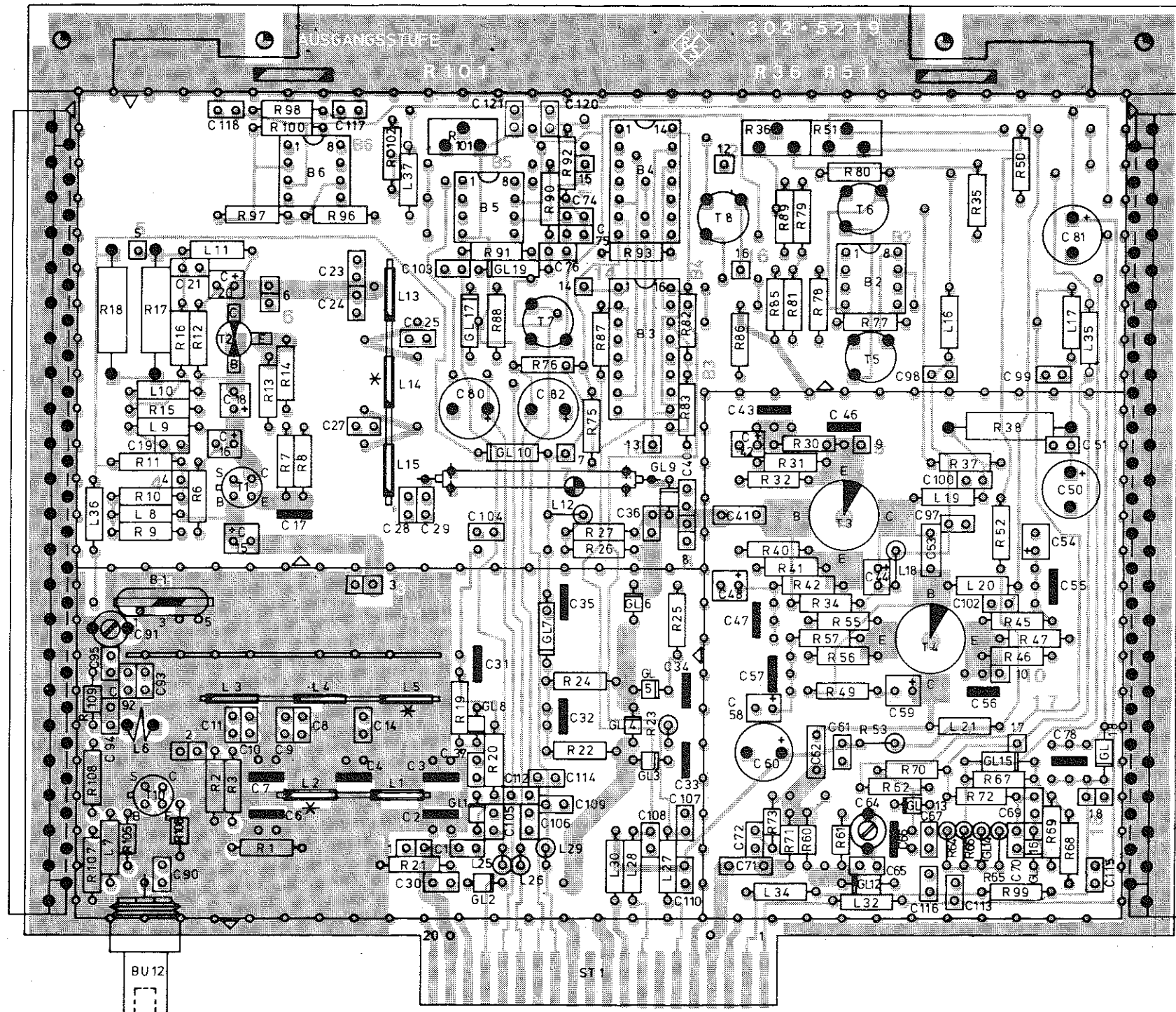
ROHDE & SCHWARZ · MÜNCHEN



130 MHz  
130 MHz

13  
52

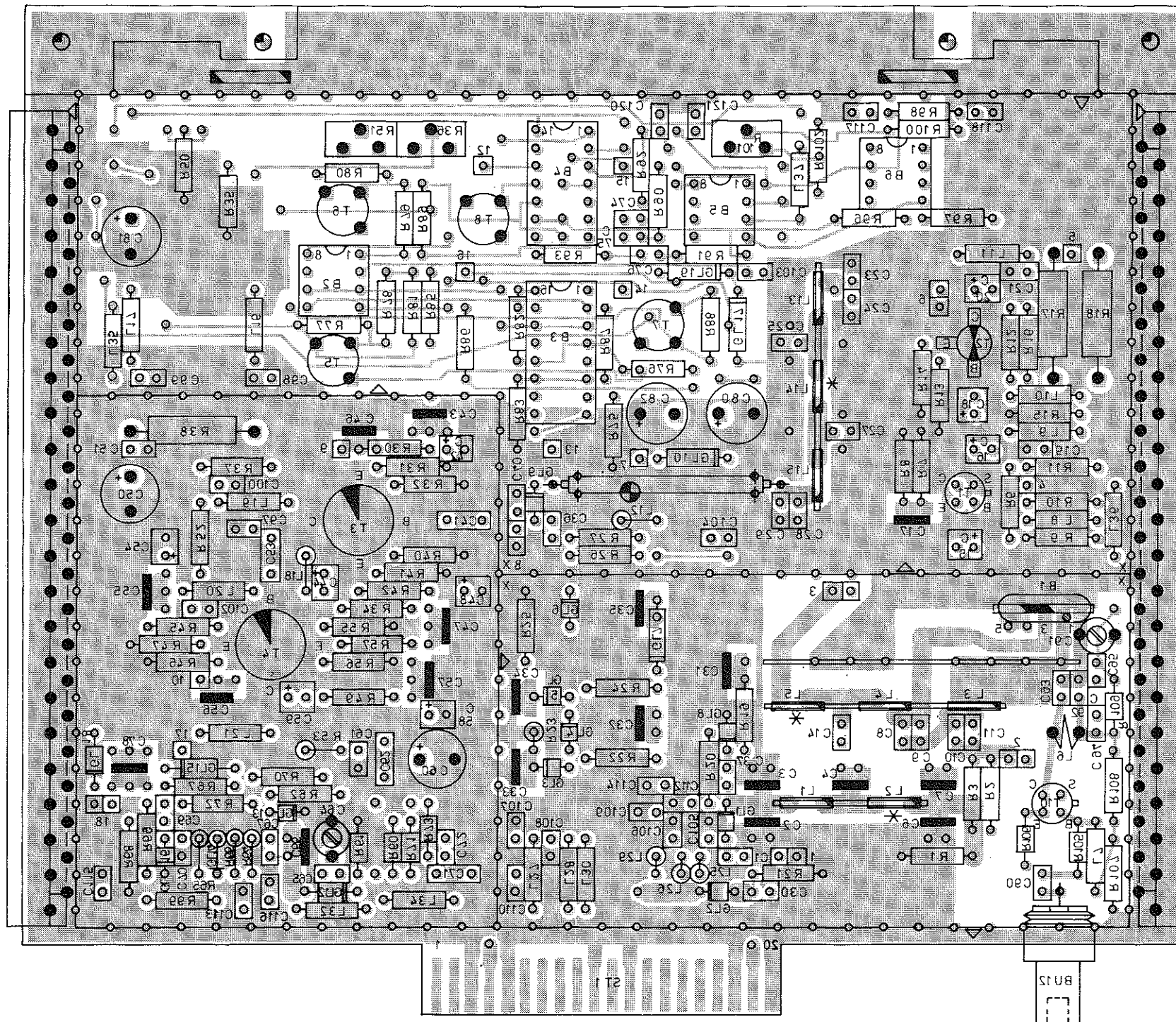
Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



0 1 2 3  
ZENTIMETER

A 24.545		10.78	Mü	Maße ohne Toleranzangabe	Maßstab 2:1 Halbzeug Werkstoff
B 24.791		04.79	Gn		
C 25.932		03.80	Sy		
D 26.489		11.80	Sy		
IGM		Tag	Name	Benennung	
Bearb.		12.10.78	Nk	Ausgangsstufe	
Gepr.				Output stage	
Norm				Z	
ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr.		302.5219	
Zu Gepr. SMS		rev. V		302.6012 V   Seite 2 302.6012	

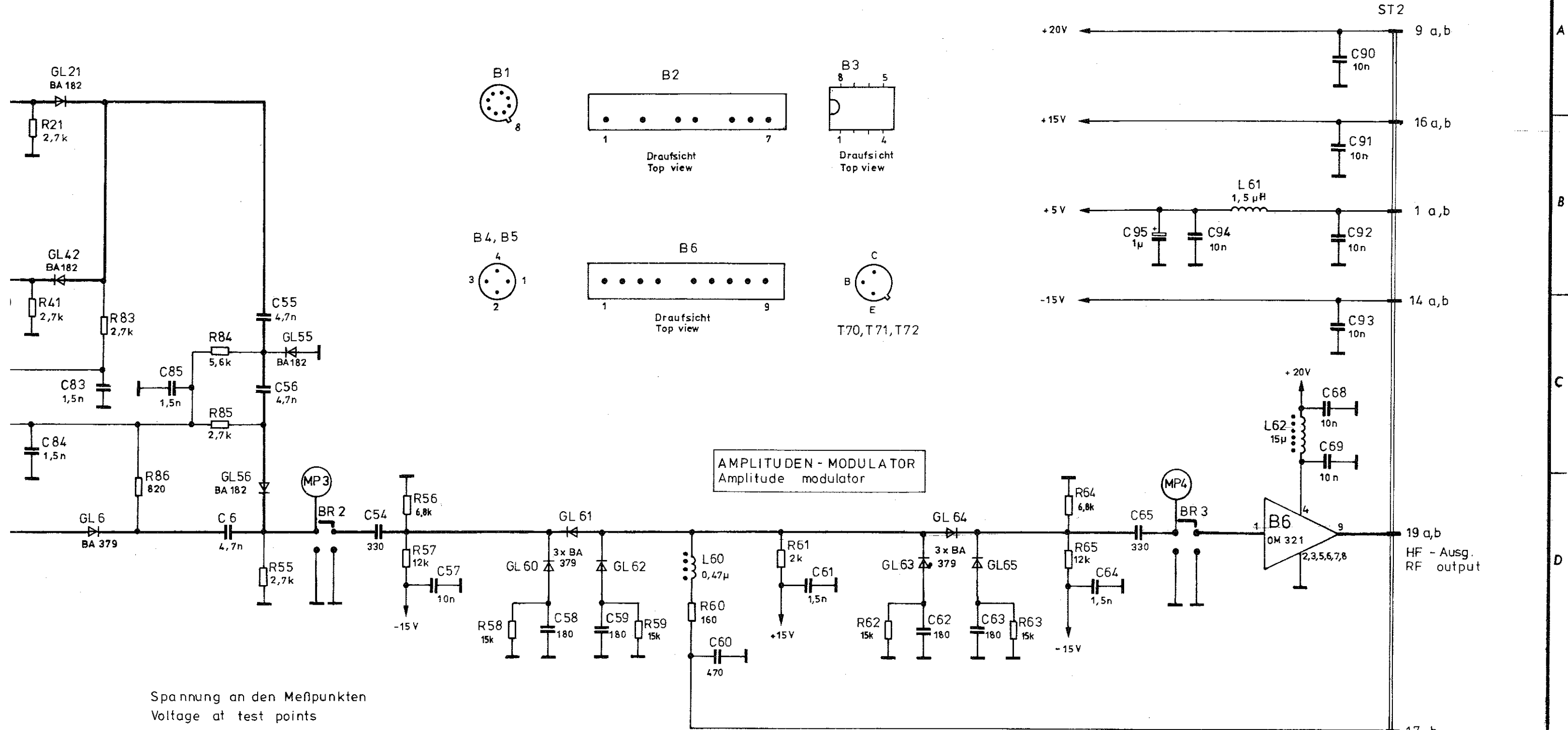
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



0 1 2 3  
ZENTIMETER

A 24545		10.78	MU	Mafie ohne Toleranzangabe	Mafistab	2 : 1
B 24791		04.79	Gn		-Hilfszeug Werkstoff	
C 25932		03.80	Sy			
D 26489		11.80	Sy			
			1GM	Tag	Name	Benennung
			Bearb.	12.10.78	Nk	Ausgangsstufe Output stage
			Gepr.			Z
			Norm			
			ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr.	302.5219
			zu Gerät SMS		Blatt-Nr.	3
And Zust	Anderungs- Mitteilung	Tag	Name	Reg.-V. 302.4012 V		erste Z. 302.4012

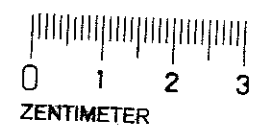




**AMPLITUDEN - MODULATOR**  
Amplitude modulator

Spannung an den Meßpunkten  
Voltage at test points

Frequenz [MHz] Frequency	„D“	„E“	MP 5	MP 6	MP 7
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	



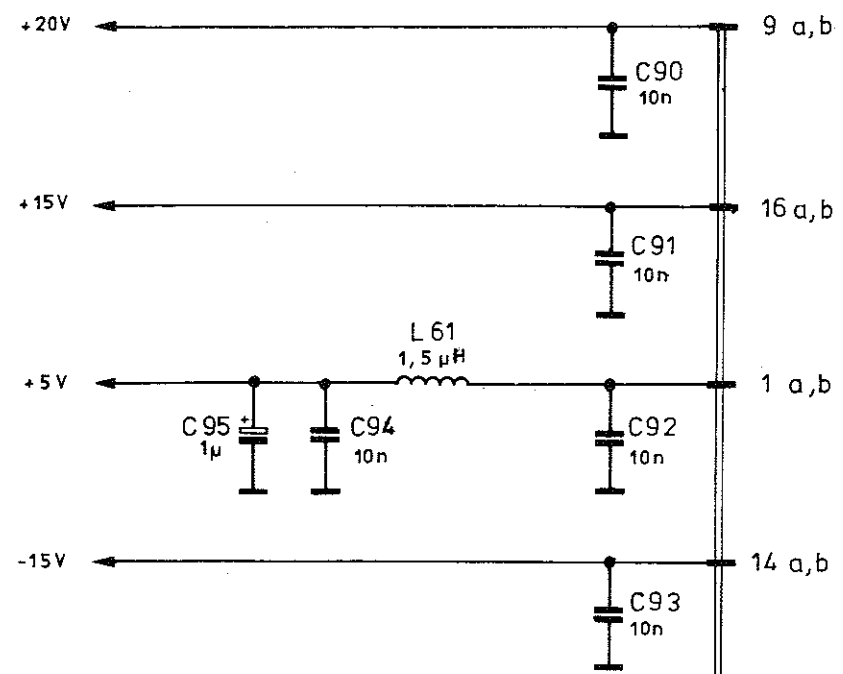
**ROHDE & SCHWARZ**  
MÜNCHEN

1GME	Datum	Name	Änd. zust.	Änd.-Mitgl. 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.						

Halbzeug, Werkstoff		Untolerierte Maße	Zeichn. Nr. <b>302.5419 S</b>	
		Maßstab	302.4012 V	302.4012
		Ereals f. Zeichn.		
Teiler Divider				Z

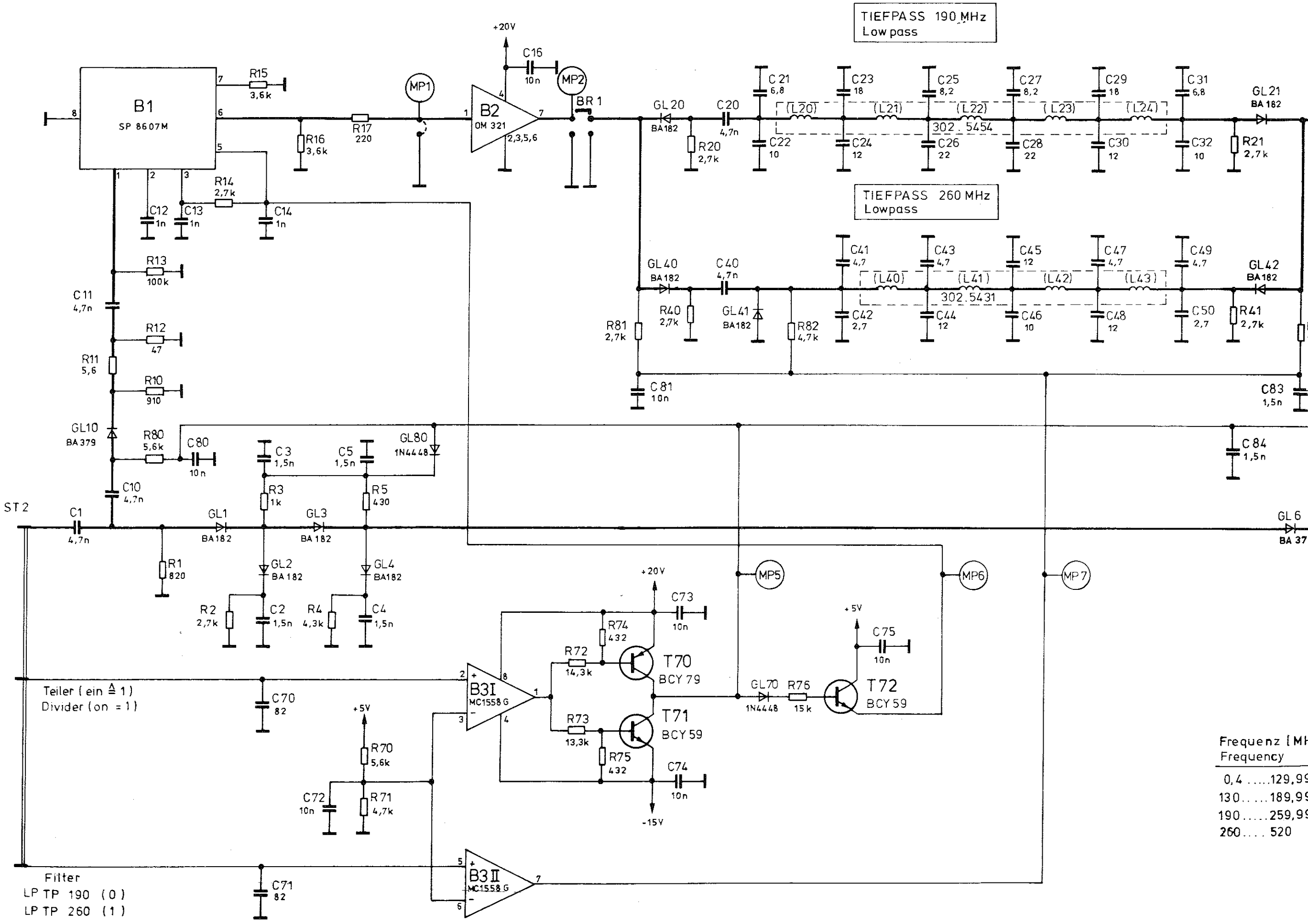
17 b  
Eing.-Regelspannung  
Input -  
control voltage

19 a,b  
HF - Ausg.  
RF output



Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenstiftend.

ISO-Projektion,  
Methode E  
Vermaßstab: Passiv  
Nr.  
Arbeitspausen Nr.



Frequenz [MHz]	Frequency
0,4 ... 129,99	
130 ... 189,99	
190 ... 259,99	
260 ... 520	

Filter  
LP TP 190 (0)  
LP TP 260 (1)

4 a, b  
HF-Eing.  
RF input

„D“ 8 a  
Teiler (ein  $\Delta$  1)  
Divider (on = 1)

„E“ 8 b

TIEFPASS 190 MHz  
Low pass

TIEFPASS 260 MHz  
Low pass

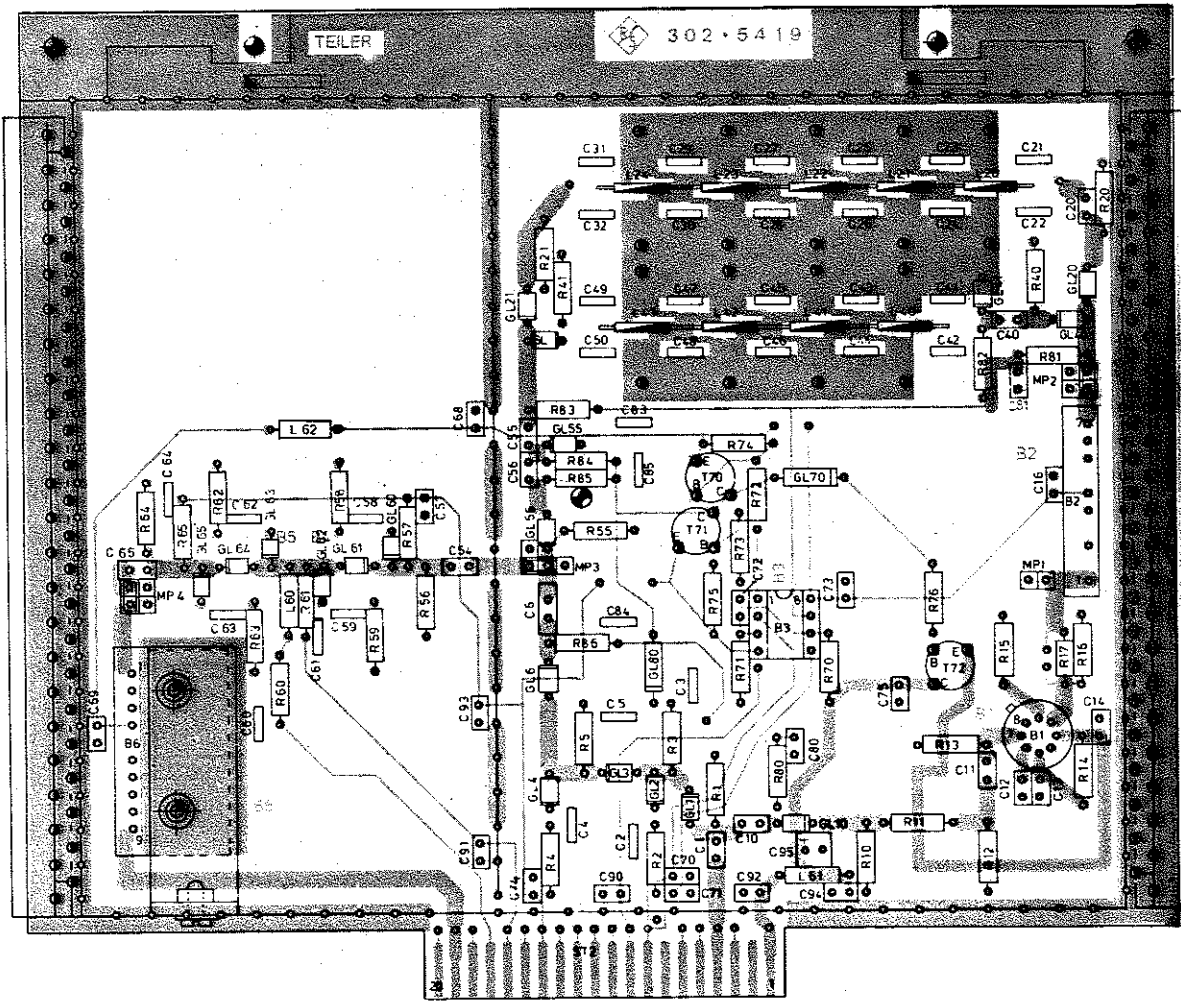
+20V

+20V

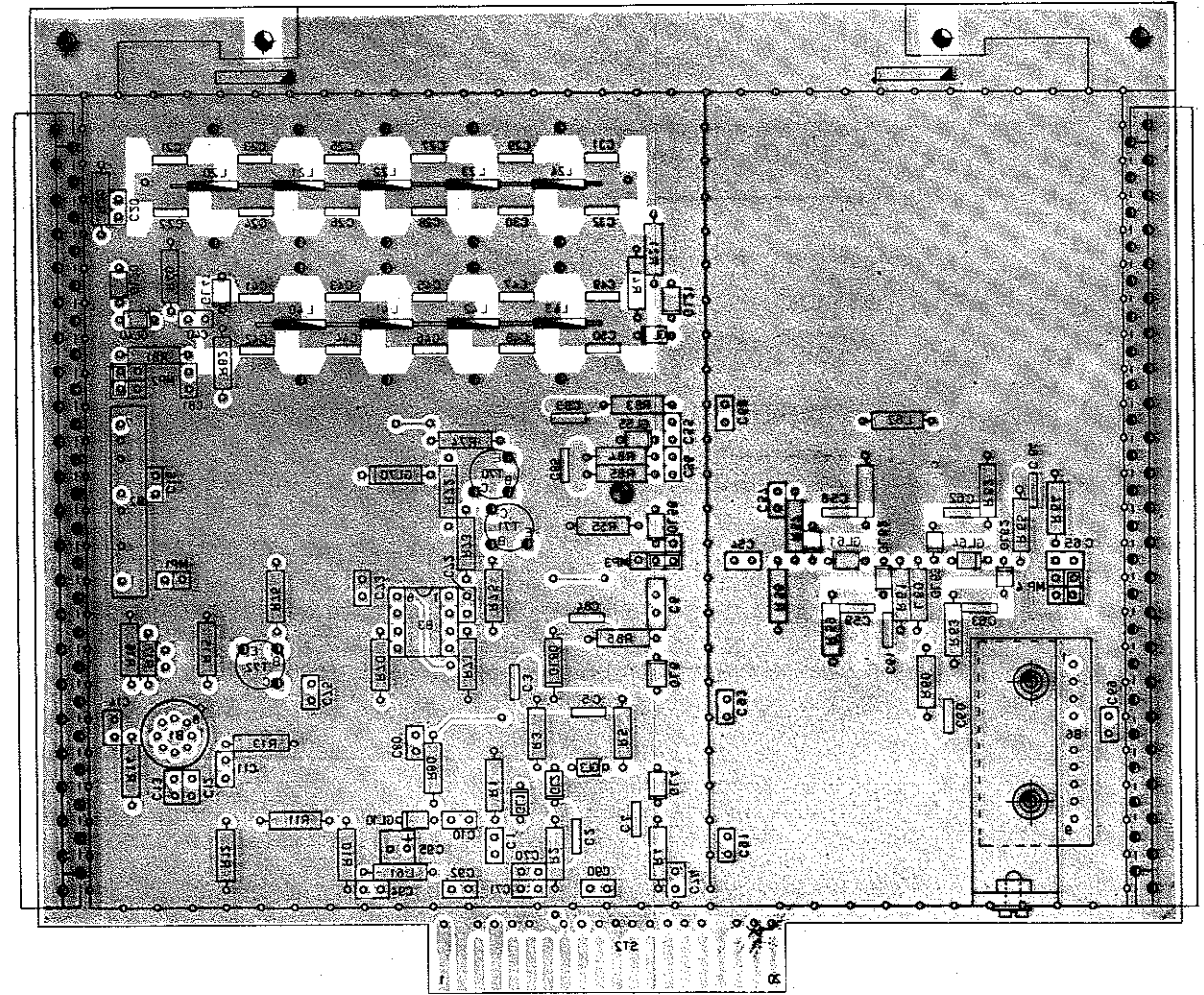
+5V

-15V

Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



A	119.7	mm	Material 2 1	Datum	SMS
B	24.545	mm	Bezeichnung	Teiler / Attenuator	Z
C	24.791	mm	Zeichnungsart	Blatt	Blatt Nr. 2
D	4.69	mm	Projekt		302.5419
ROHDE & SCHWARZ MÜNCHEN			ISME 19 5 1 Wm		



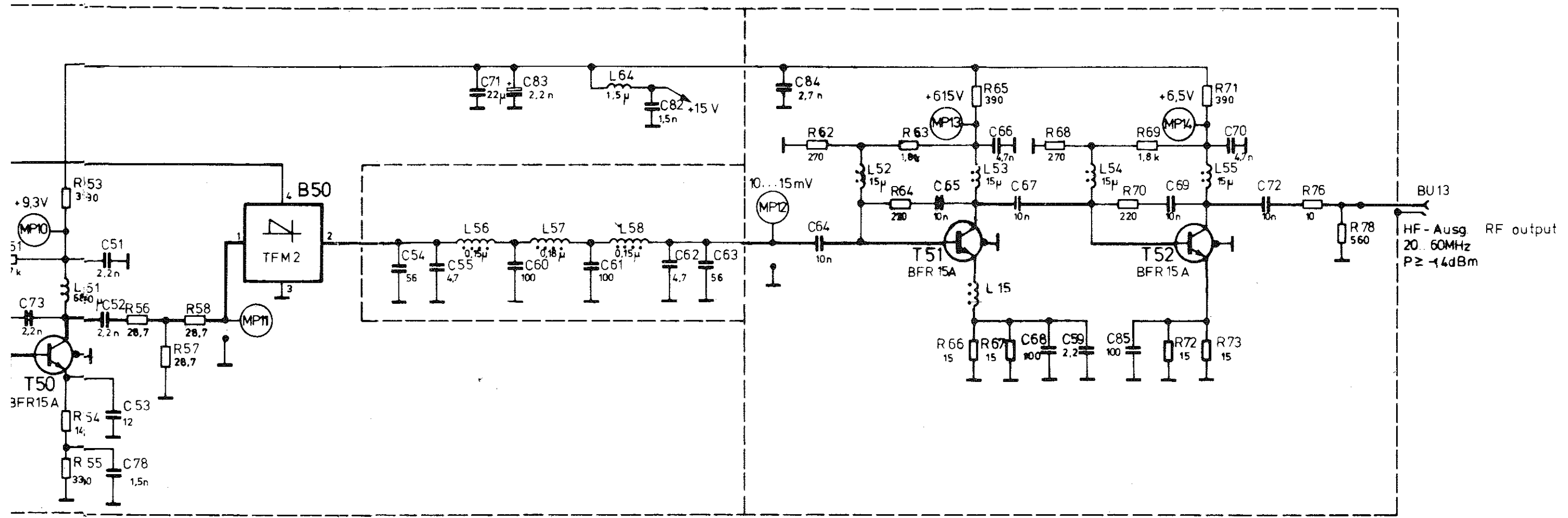
IKGE	Datum	Name	Änd. zust.	Änd. Menge	Datum	Name	Änd. zust.	Änd. Menge	Datum	Name	Änd. zust.	Änd. Menge
02.82		Gn										

Für diese Zeichnung behalten wir uns die Rechte vor  
**ROHDE & SCHWARZ**

Prüfdaten zu **Teiler** Zeichn.-Nr. **302. 5419** Blatt-Nr. **3**

SMS reg. i. V. 302. 4012 erste Z. 302. 4012 v. BU

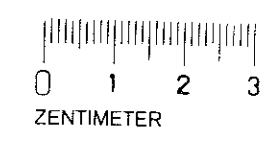
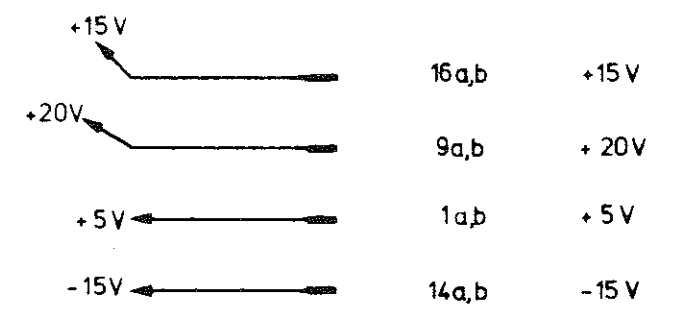
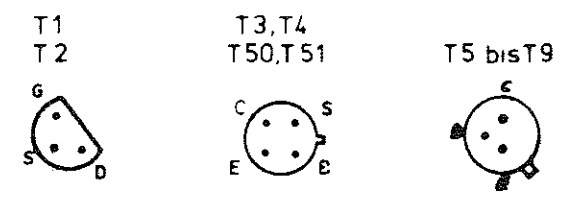
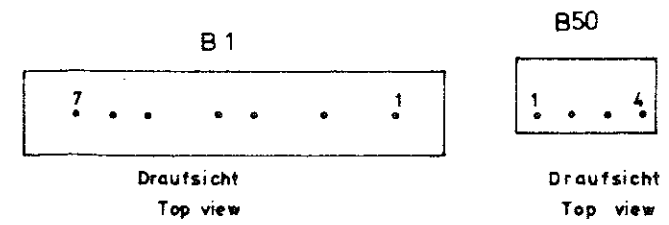
Meßblock	Einspeisung - Ansteuerung	Meßpunkt	Sollwert	Toleranz	Bemerkung
1 Stromaufn.	260 MHz an 4 ab 200 mV 520 MHz an 260 MHz an 380 MHz an 260 MHz an 390 MHz an 520 MHz an	19 ab 19 ab 19 ab 19 ab 19 ab 19 ab 19 ab	16,5 mA 5 mA 24 mA 159 mA	10 % 10 % 10 % 10 %	+ 5 V Strot + 15 V Strot - 15 V Strot + 28 V Strot
2 Frequenzgang	8 a D E 0 0 0 0 1 1 1 1 1 1		510 mV 320 mV 1010 mV 710 mV 1090 mV 720 mV 660 mV	20 % 20 % 20 % 20 % 20 % 20 % 20 %	
3 Regelspannung	480 MHz 1000 mV - 3 V an 17 b - 4 V an 17 b	19 ab 19 ab	490 mV 197 mmV	20 % 20 %	
4 Oberwellen	260 MHz 520 MHz 260 MHz 400 MHz	19 ab 19 ab 19 ab 19 ab	> 60 dB > 60 dB > 60 dB > 60 dB		



ing RF input  
40.  
60 MHz  
 $P \leq 46\text{dBm}$

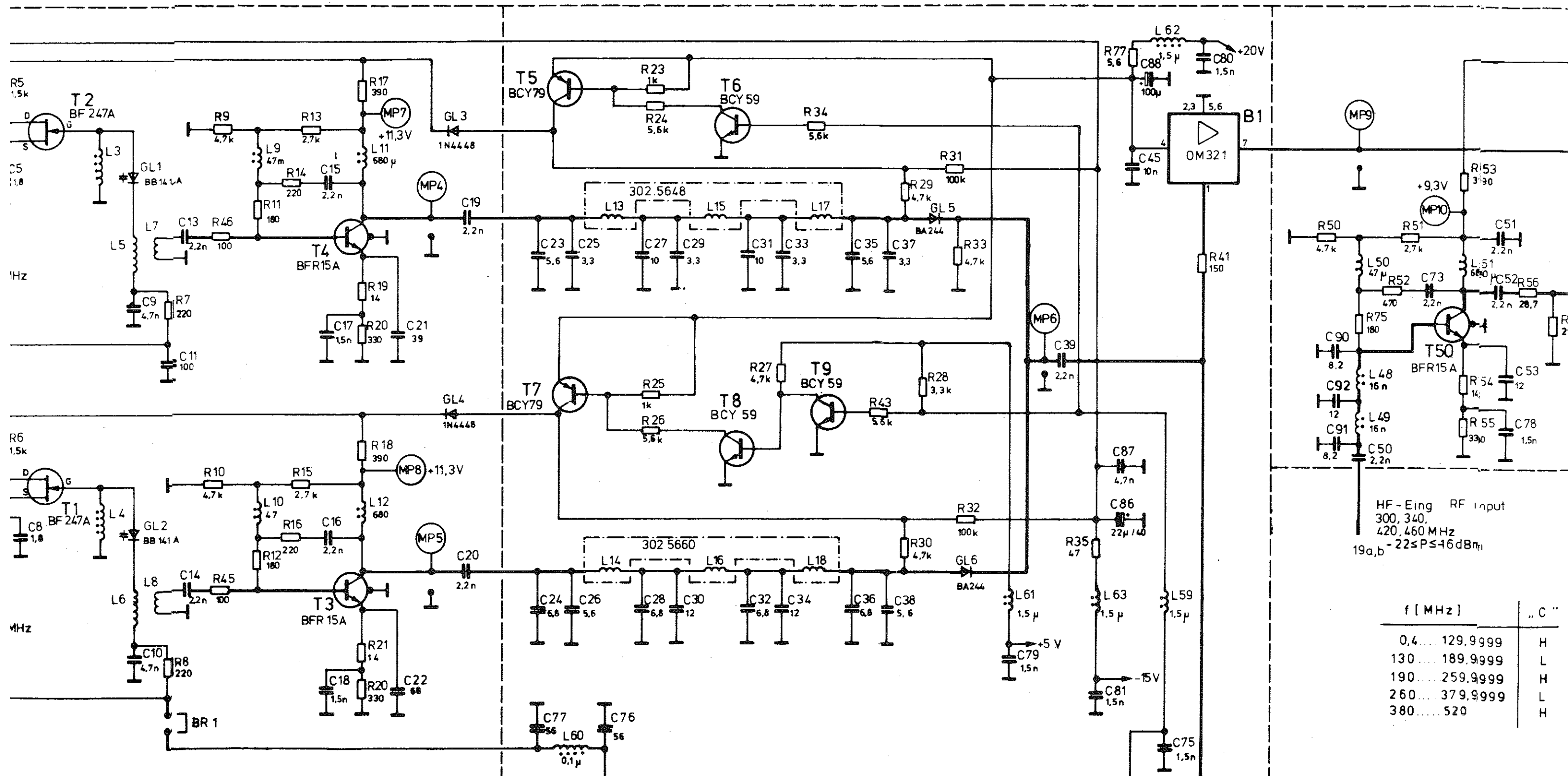
[ MHz ]	„ C ”
4... 129.9999	H
1... 189.9999	L
1... 259.9999	H
1... 379.9999	L
1... 520	H

3a,b  
5a,b  
10a,b  
12a,b  
18a,b  
20a,b



Struktur zu **Oszillator**  
**Oscillator**

Z **Zeichn. Nr. 302.5619 S**  
302.4012 V



HF-Eing RF Input  
 300, 340,  
 420, 460 MHz  
 19a,b -22 ≤ P ≤ -16 dBm

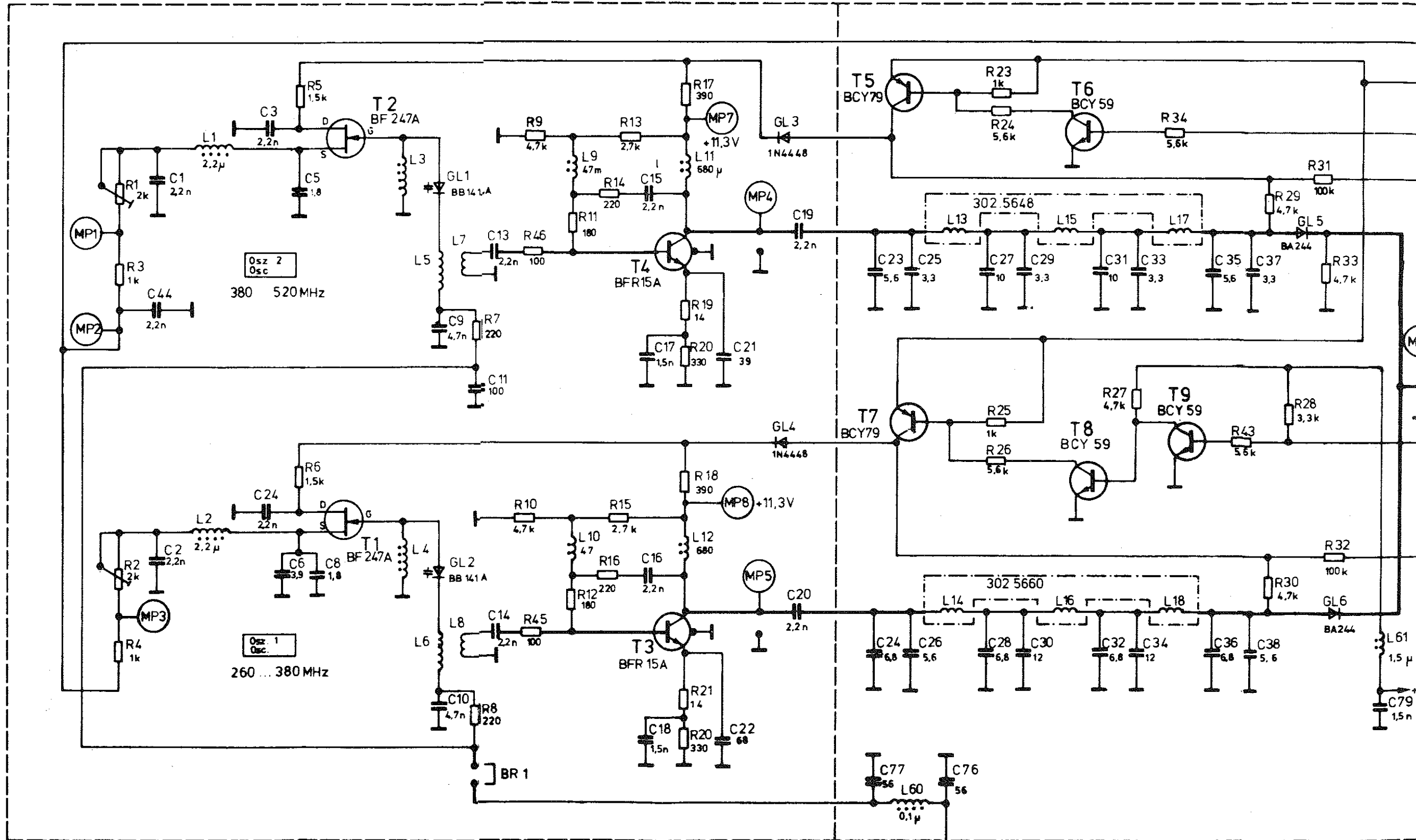
f [MHz]	„C“
0,4... 129,9999	H
130... 189,9999	L
190... 259,9999	H
260... 379,9999	L
380... 520	H

15a,b Abstimm-  
 spannung  
 Tuning  
 voltage

Osz.  
 Umschaltung 2b  
 Oscillator  
 switchover

4a,b HF-Ausg. RF output  
 260...520MHz  
 -2 ≤ P ≤ 4dBm

302 5619



Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Vervielfältigung, Mitteilung an andere ist strafbar und schadenbringend.

ROHDE & SCHWARZ · MÜNCHEN

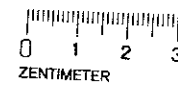
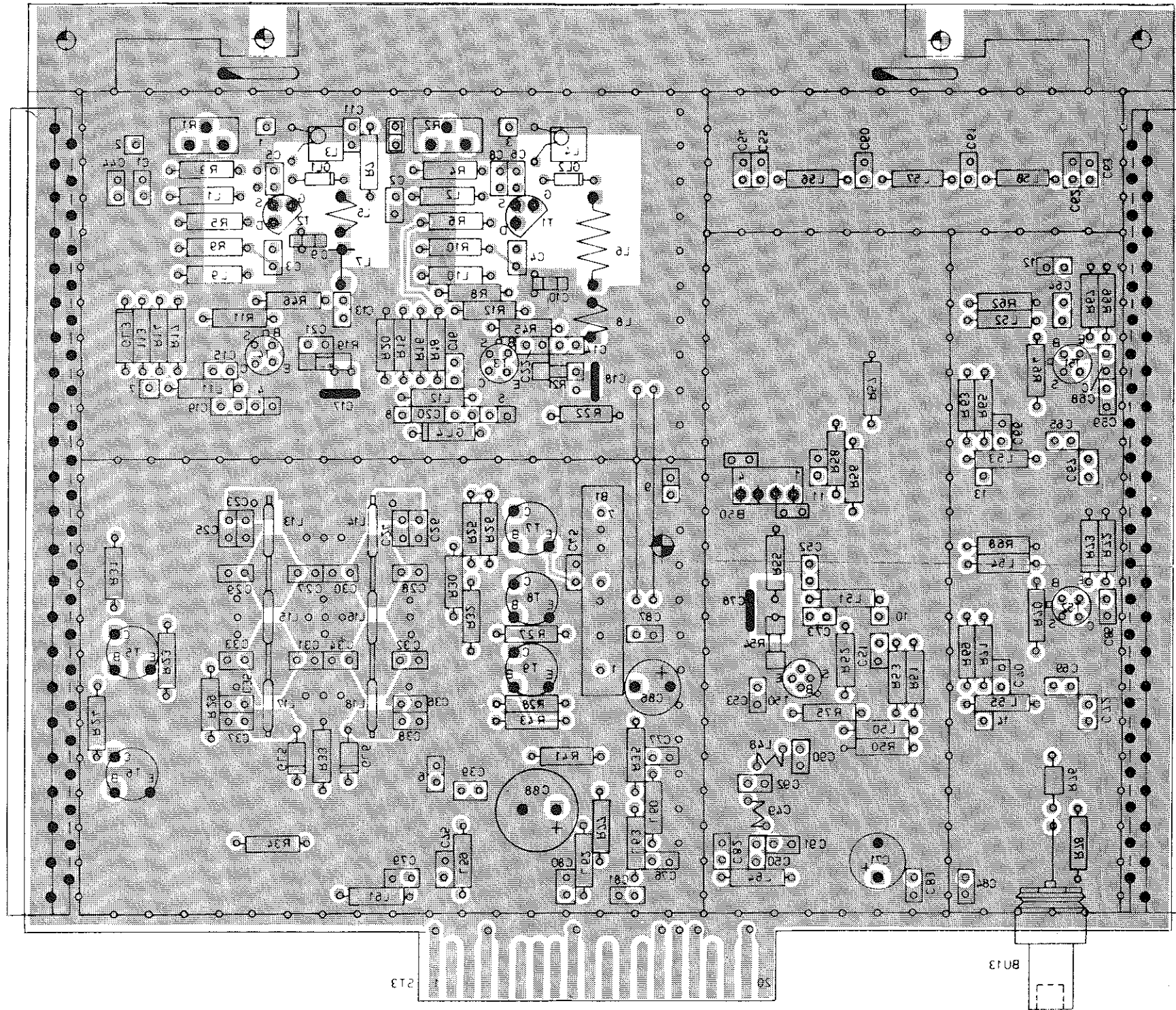
Norme	Datum	Mod. Nr.	Name
Mu	02.79	A 24 668	Sd
Gn	05.79	B 24 791	
Gn	10.79	C 25 166	
Sy	03.80	D 25 932	
Sy	11.80	E 26 489	

Mod. Nr.	Datum	Name	Mod. Nr.

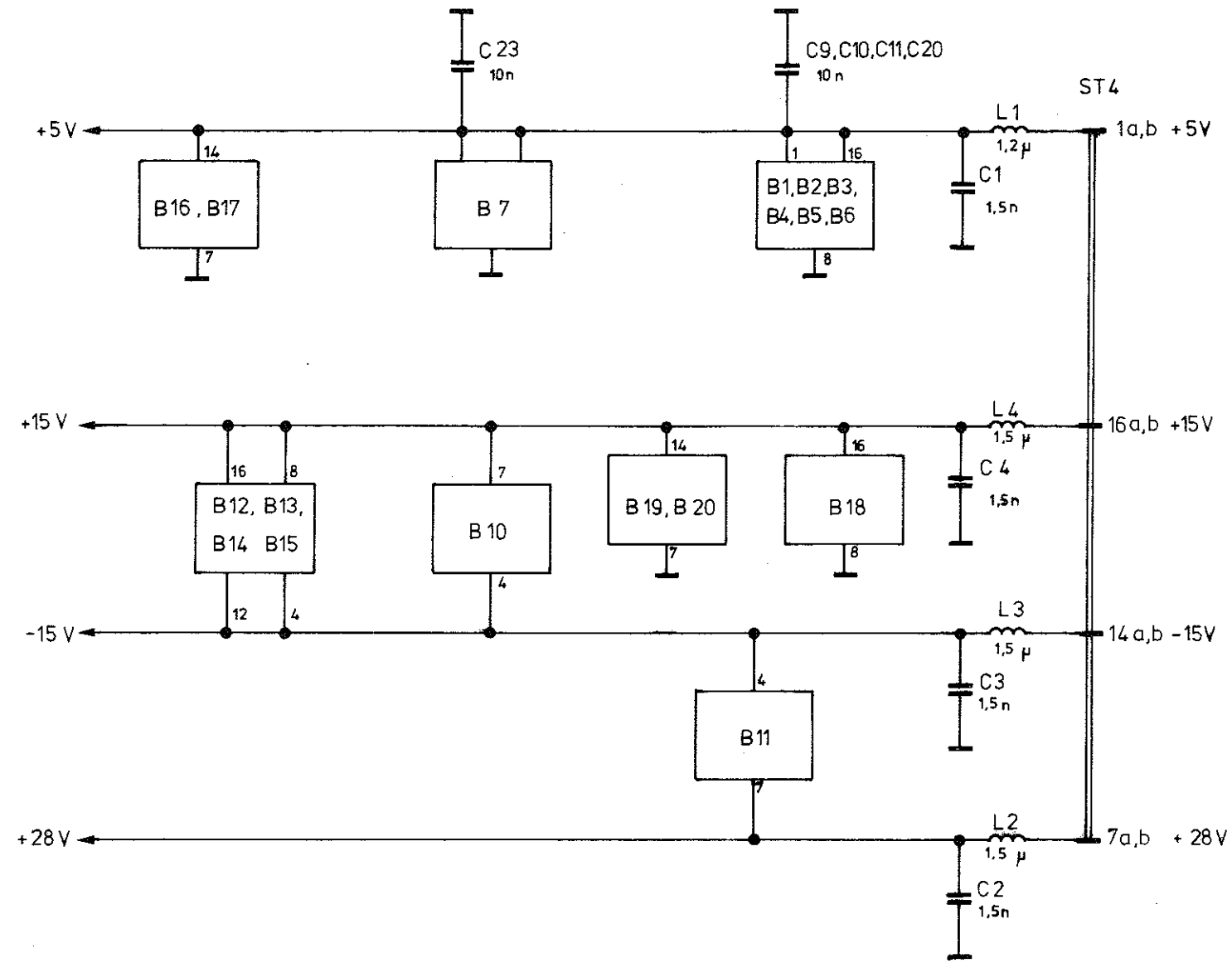




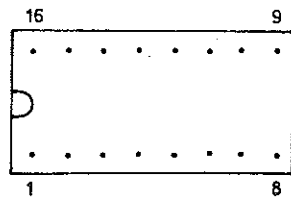
Ansicht und Leitungsführung Lotseite  
View of tracks on solder side



B 24 791		04.79	Gn	Maße ohne Toleranzangabe	Maßstab	Zeichn.-Nr. 302.5619	Blatt-Nr. 3
C 25 166		10.79	Gn				
D 25 932		03.80	Sy	Hilfsmittel	Benennung Oszillator Oscillator	Z	H
E 26 489		1.81	Sy				
F 28027		11.81	Hg	RFMG Tag	Name	302.4012V	
				Repr. 107.78	Wm.	302.4012	
				Appr.			
				Name			
				ROHDE & SCHWARZ MÜNCHEN			
				SMS			

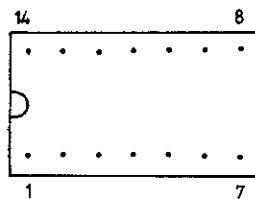


B1, B2, B3, B4, B5, B6, B12, B13, B14, B15, B18



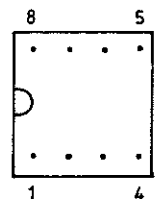
Draufsicht top view

B7, B16, B17, B19, B20



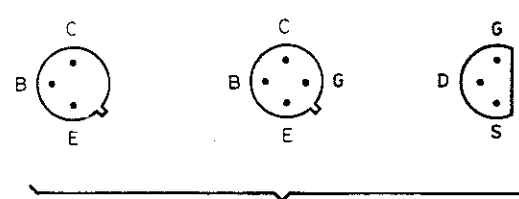
Draufsicht top view

B10, B11

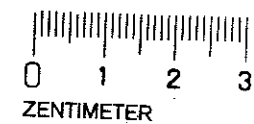


Draufsicht top view

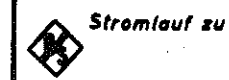
T1, T2      T3, T4      T5...T12



Ansicht von unten bottom view



ZENTIMETER



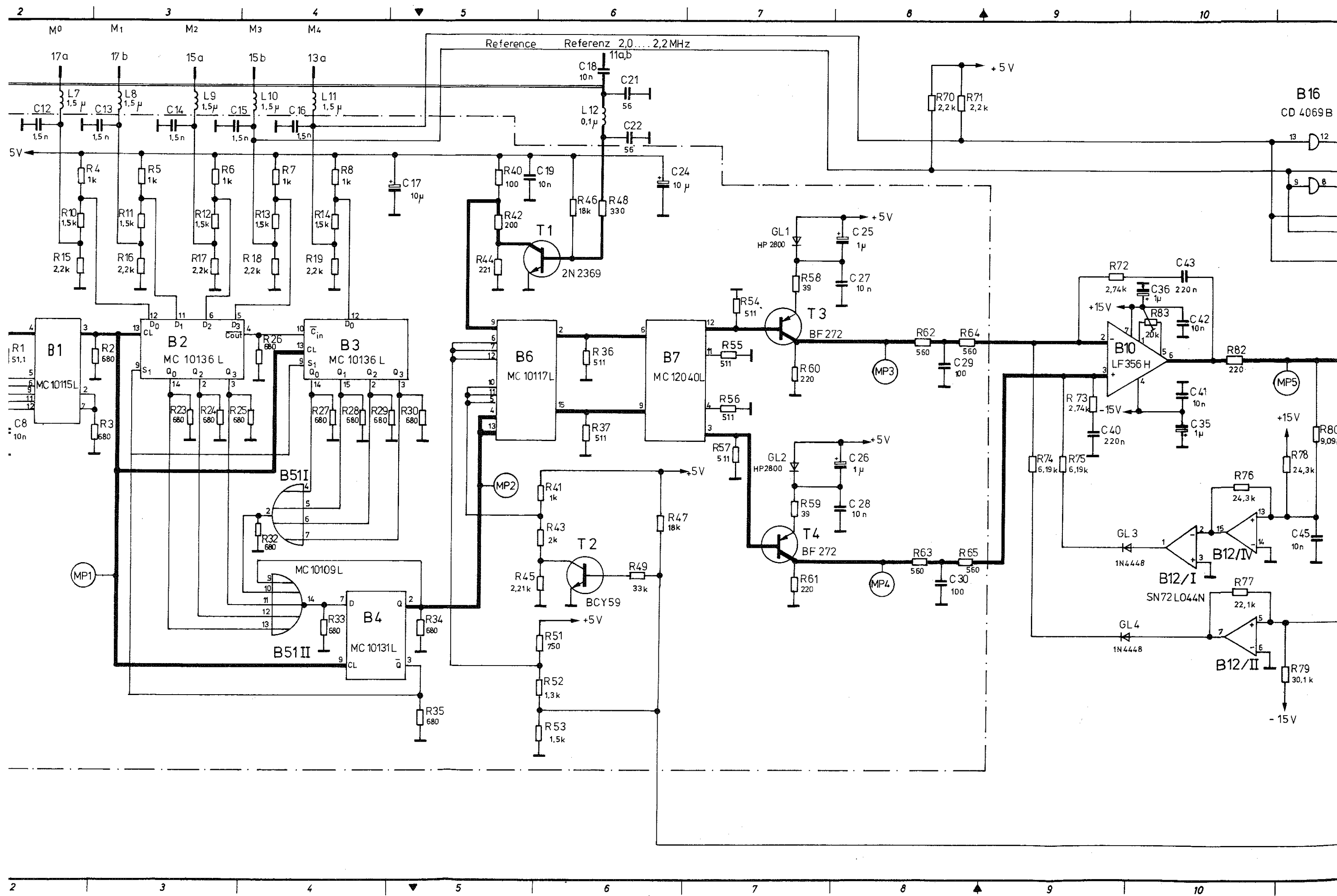
PHASENREGELUNG  
Phase control

Zeichn. Nr. 302.5819 S

302.4012V      302.4012





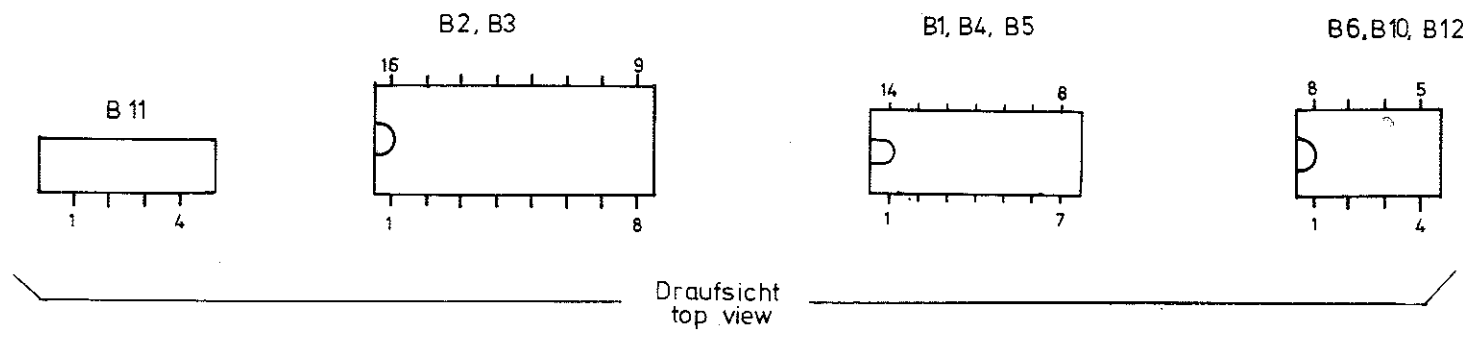
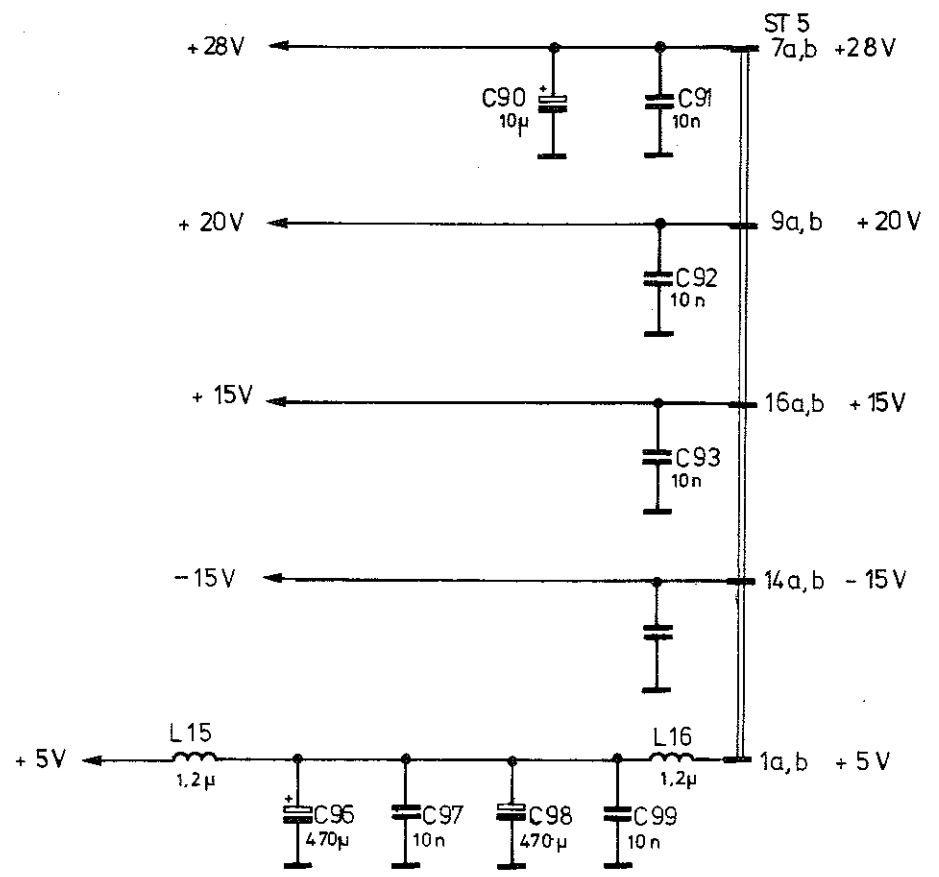
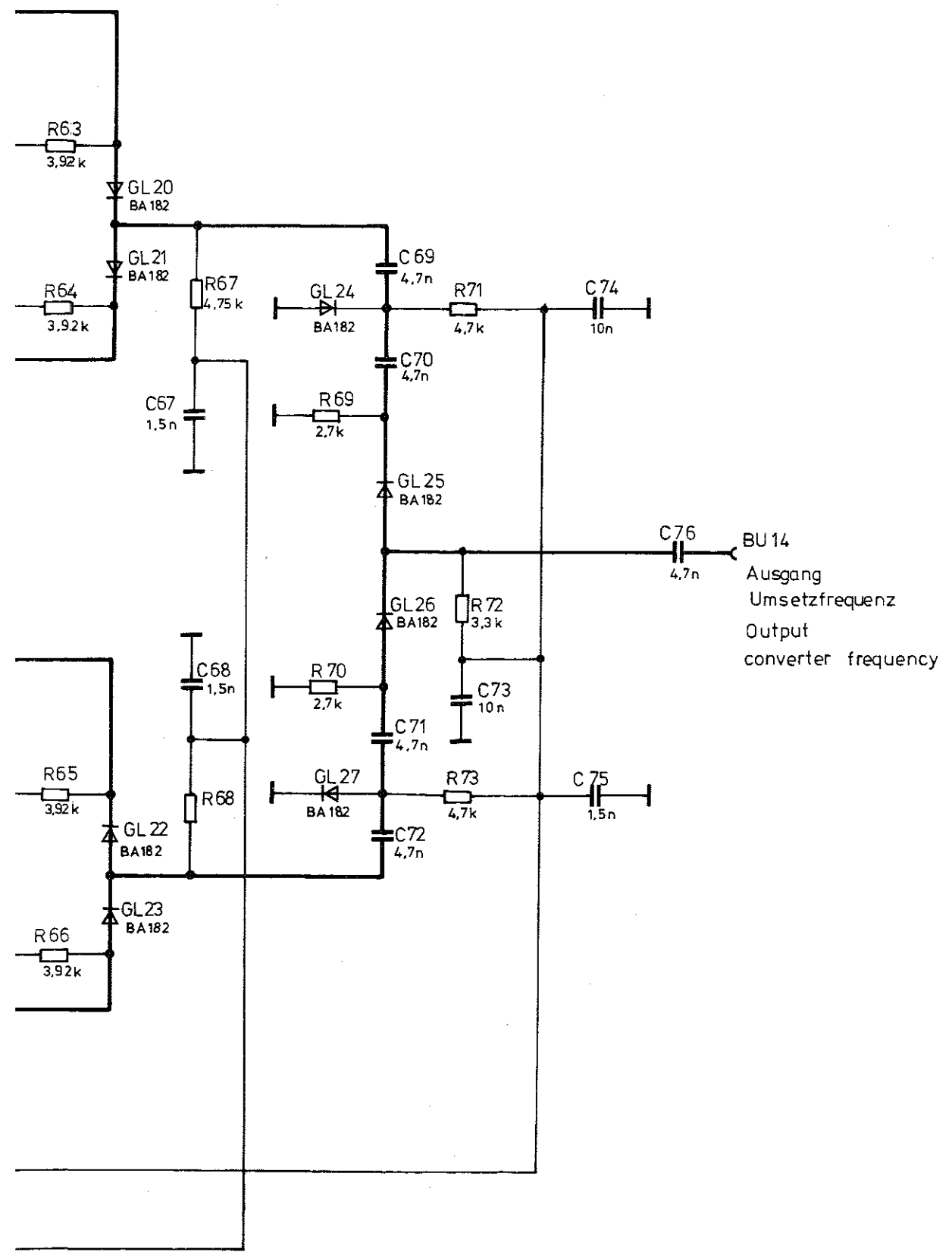




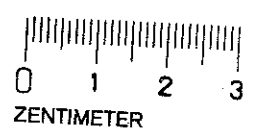




Frequenz SMS frequency SMS	Umsetz - frequenz Converter frequency	MP 7	MP 8
330 MHz	300 MHz	+15 V	-15 V
360 MHz	340 MHz	-15 V	-15 V
390 MHz	420 MHz	+15 V	+15 V
420 MHz	460 MHz	-15 V	+15 V



Draufsicht top view



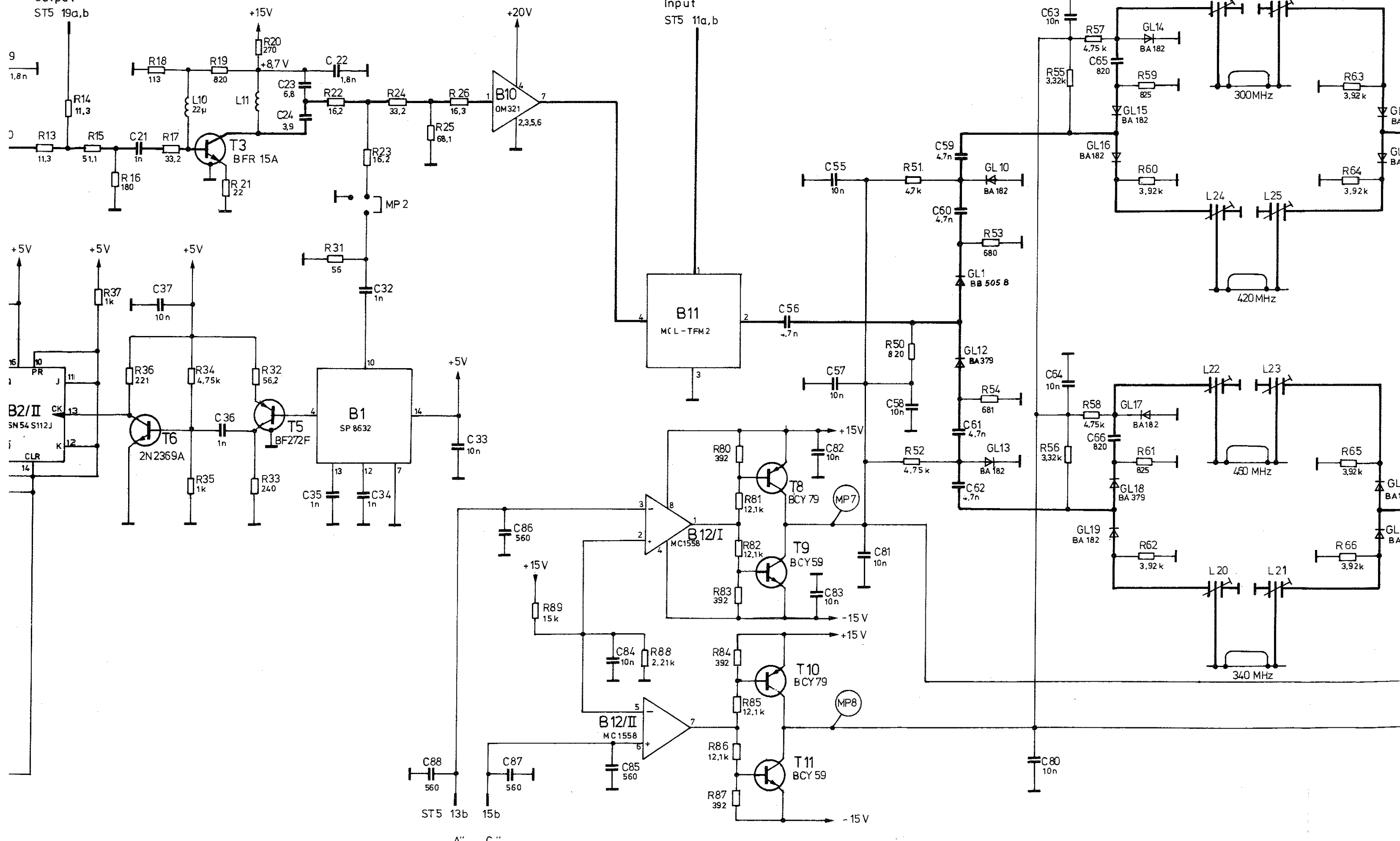
Stromlauf zu **Umsetzer**  
Frequency converter

Zeichn. Nr. 302.6015 S

302.4012 V 302.4012

Ausgang 360 MHz  
Output  
ST5 19a,b

Eingang 40/80 MHz  
Input  
ST5 11a,b



+5V

+15V

+20V

+5V

+5V

+5V

+15V

-15V

+15V

-15V

ST5 13b 15b

„A“ „C“

7

8

9

10

11

12

13

14

15

7

8

9

10

12

13

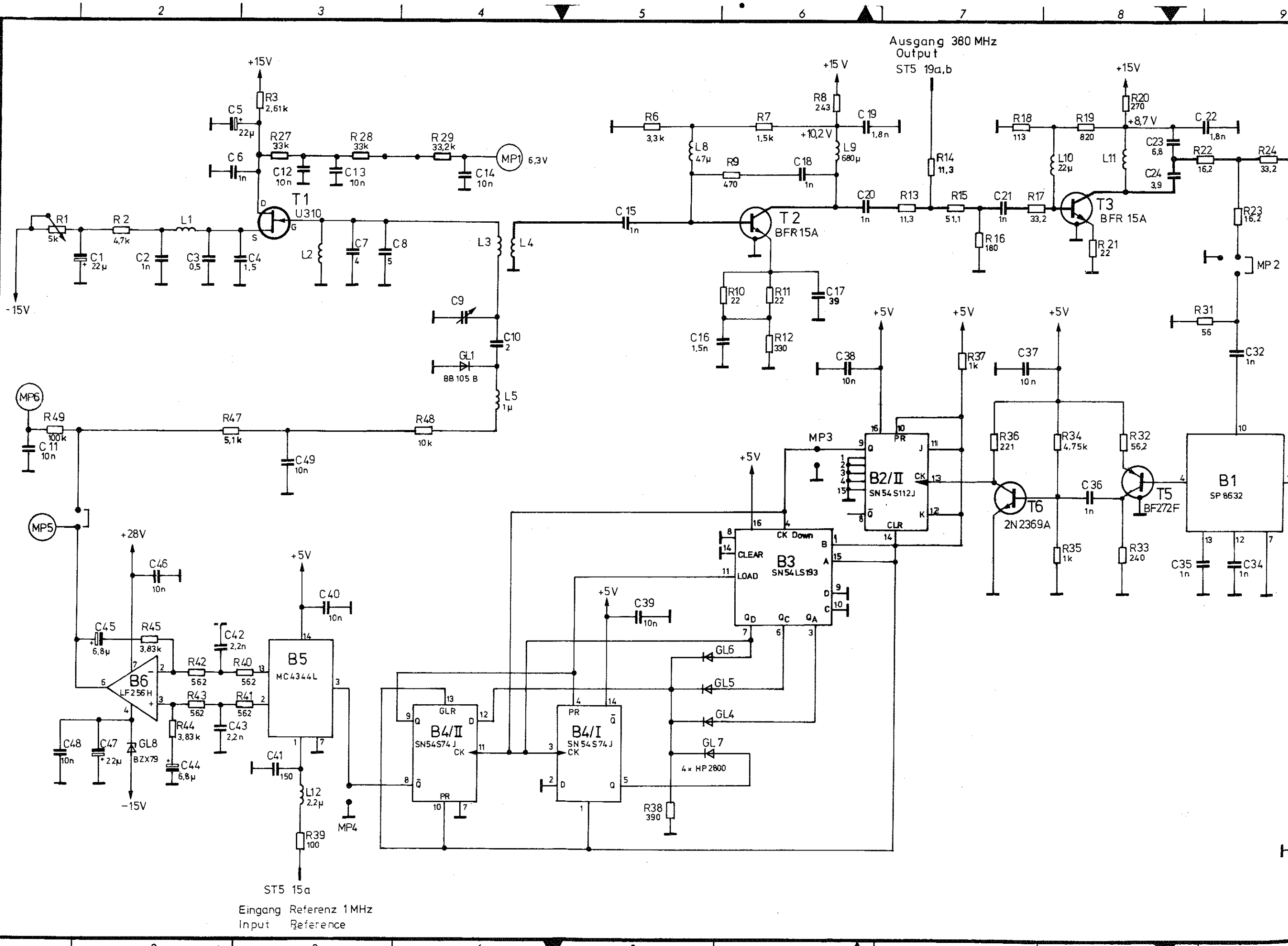
14

15

IGME	gezeichnet	1.79	Name	Ci	And. zust.	A	24.668	Datum	02.79	Mü	HS
	bearbeitet					B	24.791		05.79	Gn	
	geprüft					C	25.166		10.79	Gn	
	normiert					D	27.829		09.81	Gn	
						E	28.027		11.81	HS	

Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbeantragte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

**ROHDE & SCHWARZ · MÜNCHEN**

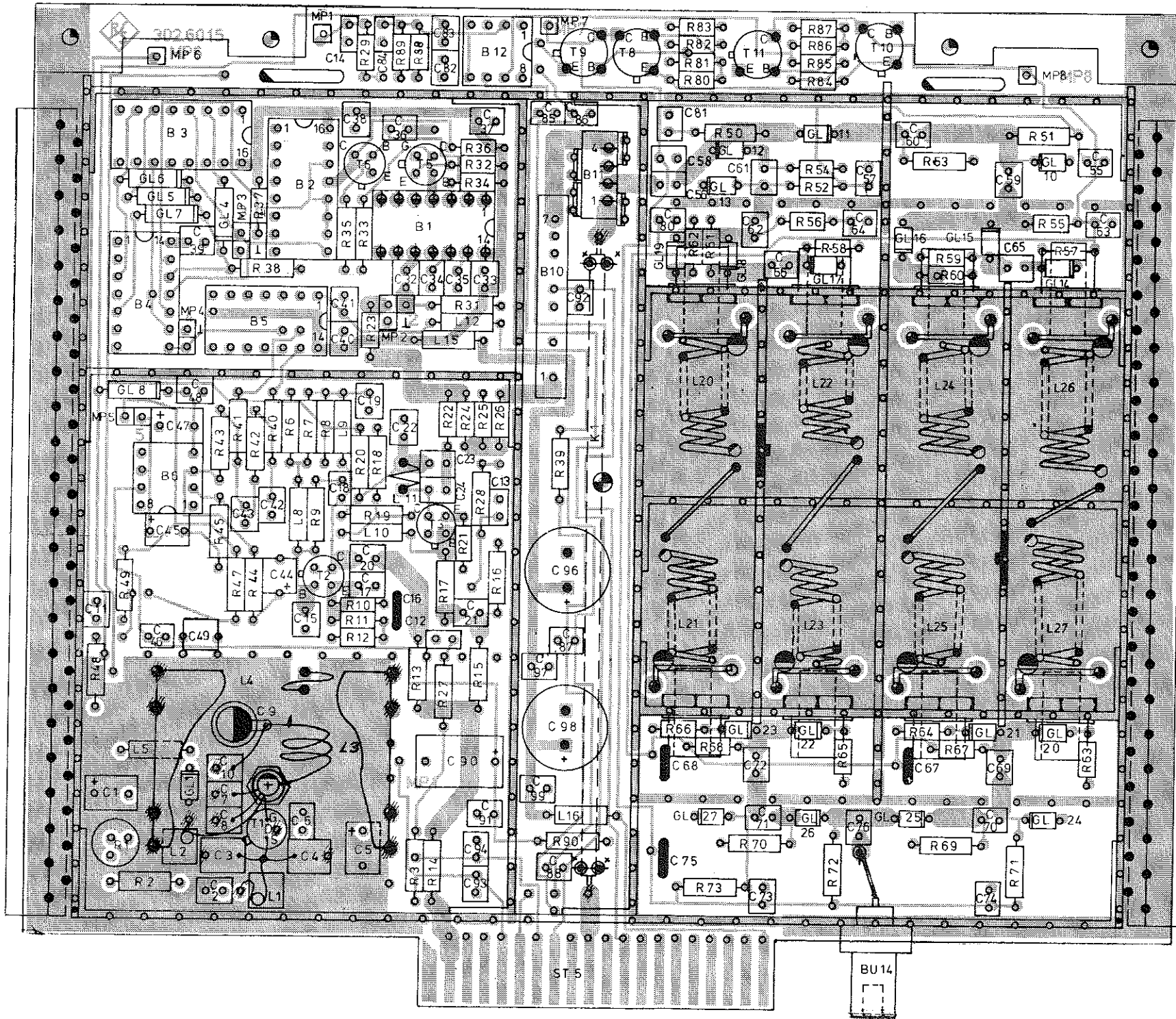


ST5 15a  
Eingang Referenz 1MHz  
Input Reference

Ausgang 360 MHz  
Output  
ST5 19a,b



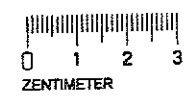
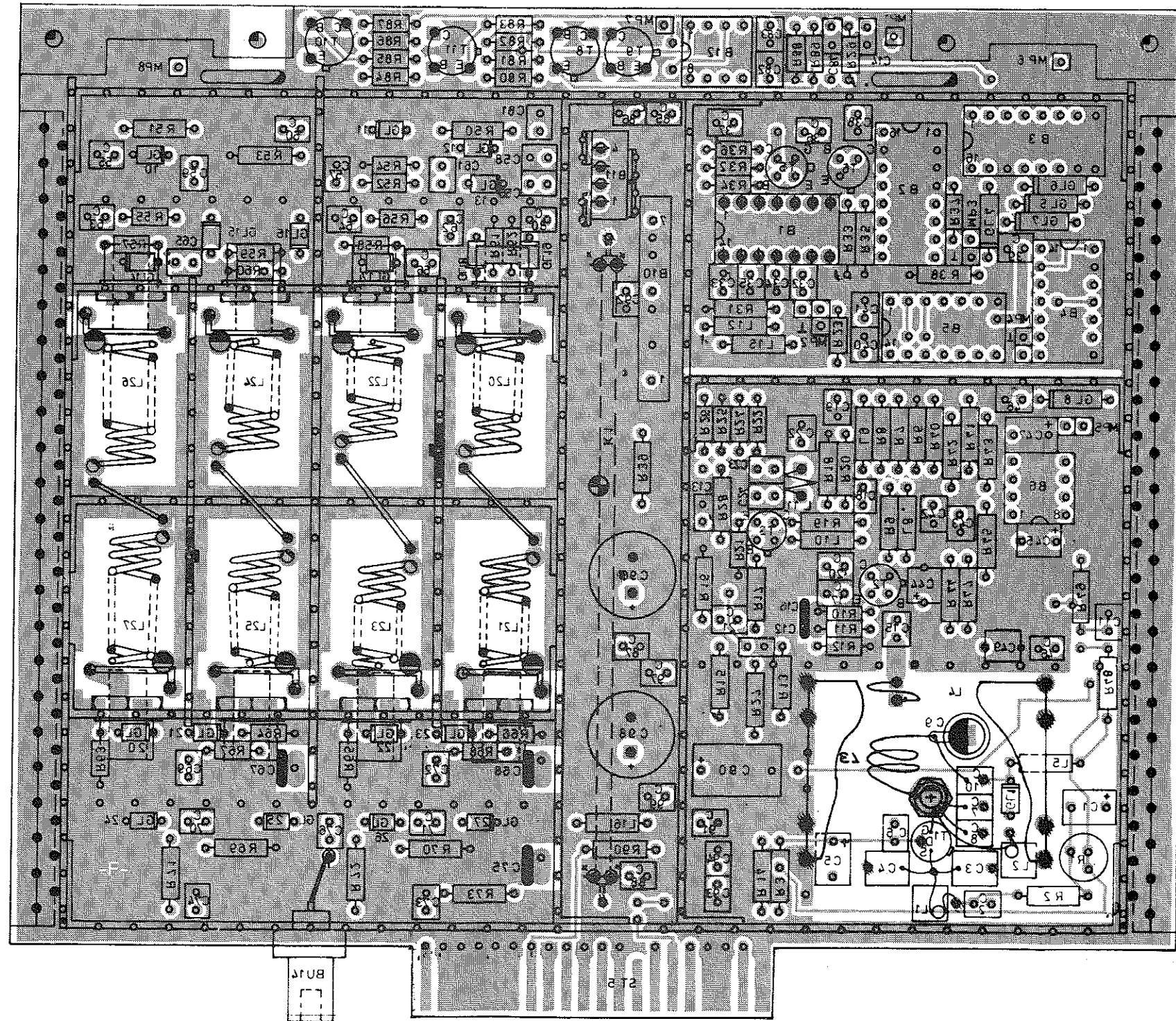
Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



Art. Nr.	Art. Meng.	Datum	Verf.	Halbzeug, Werkstoff	Maßstab	Unit-Maße	Zu Ger.
F	27829	09.81	Gn		Benennung	Umsetzer / Converter	Z
G	28 027	02.82	GN				
				registr. in Verz.	erste Z.	Zeichn. Nr.	
				302.4012 V	302.4012	302.6015	
ROHDE & SCHWARZ MÜNCHEN				Stelle	gegr. Datum	bearb. Datum	geprüft Datum
				1GME	21.7.78 . Nk		



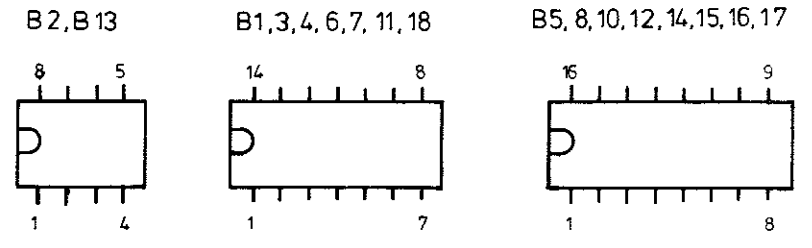
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



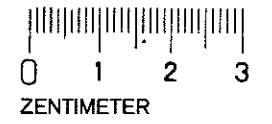
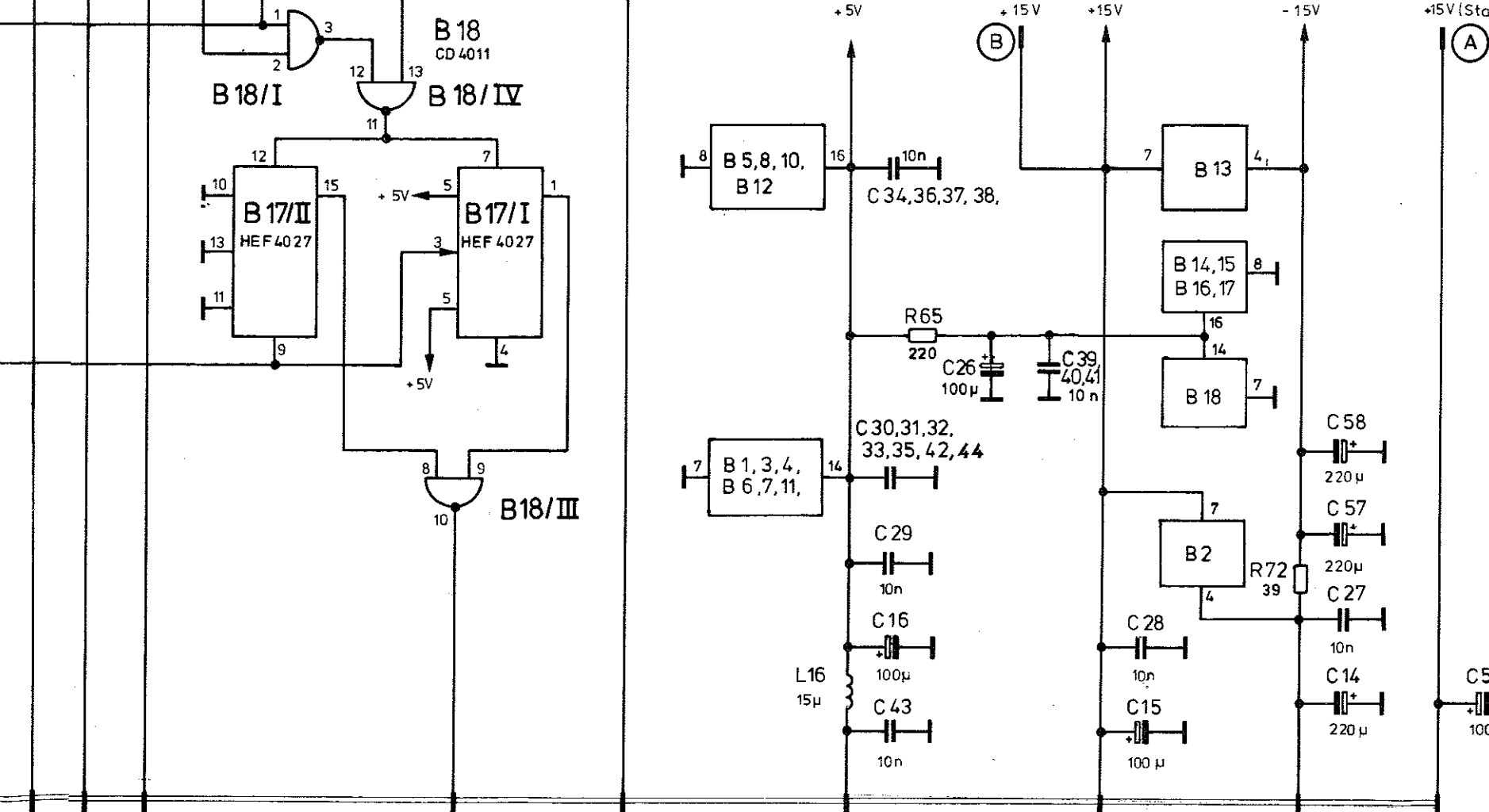
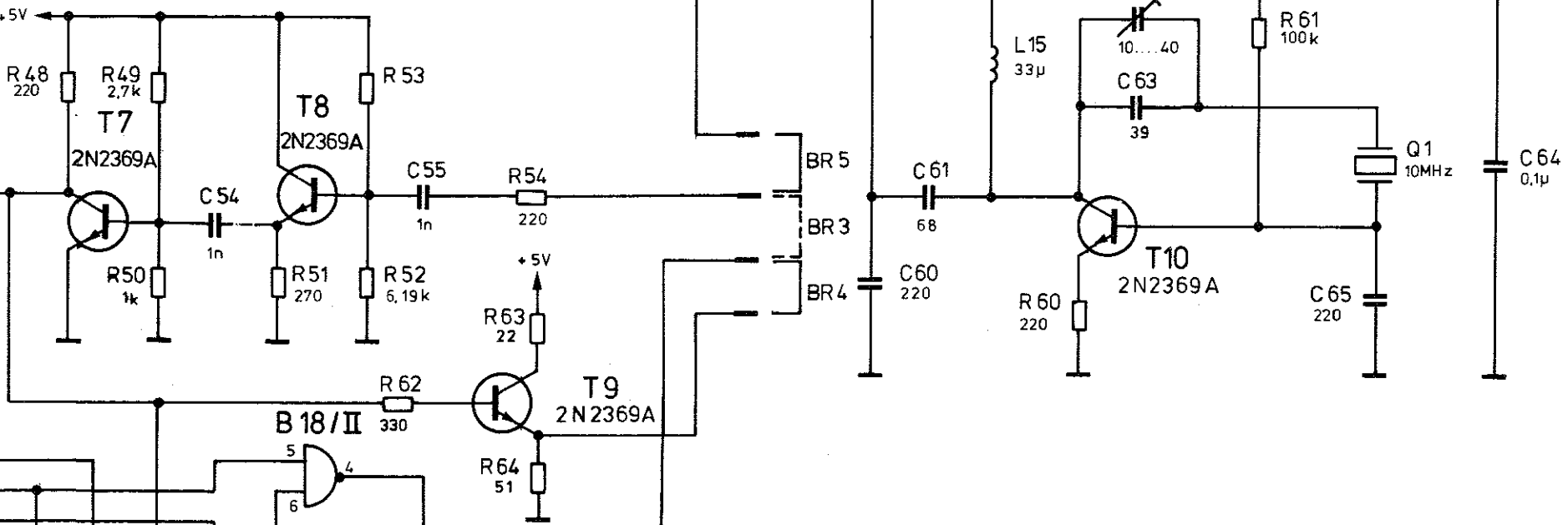
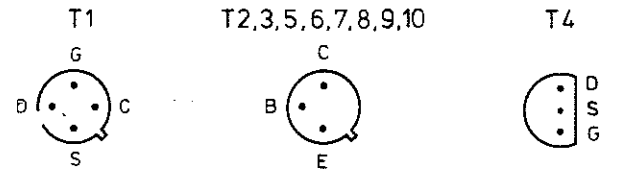
Ans. Zust.	Ans.-Mtg.	Datum	Name	Halbzeug, Werkstoff	Maßstab	Untel. Maße	Zu Ger.
F	27829	09.81	GN				
G	28 027	02.82	GN				
				registr. in Verz.	Benennung <b>Umsetzer / Converter</b> Z		
				302.4012 V	Zeichnung besteht aus Blatt Blatt-Nr 3		
					erste Z	Zeichn. Nr. <b>302.6015</b>	
					302.4012	bearb. Datum	
					gepr. Datum	Druck-Nr. laut Kur.-Ordnung	
				<b>ROHDE &amp; SCHWARZ</b>	Stelle	gez. Datum	
				MÜNCHEN	1GME	21.7.78	NK

50-Projektor  
Methode E  
D  
4770 044

10 MHz - Oszillator  
10-MHz oscillator



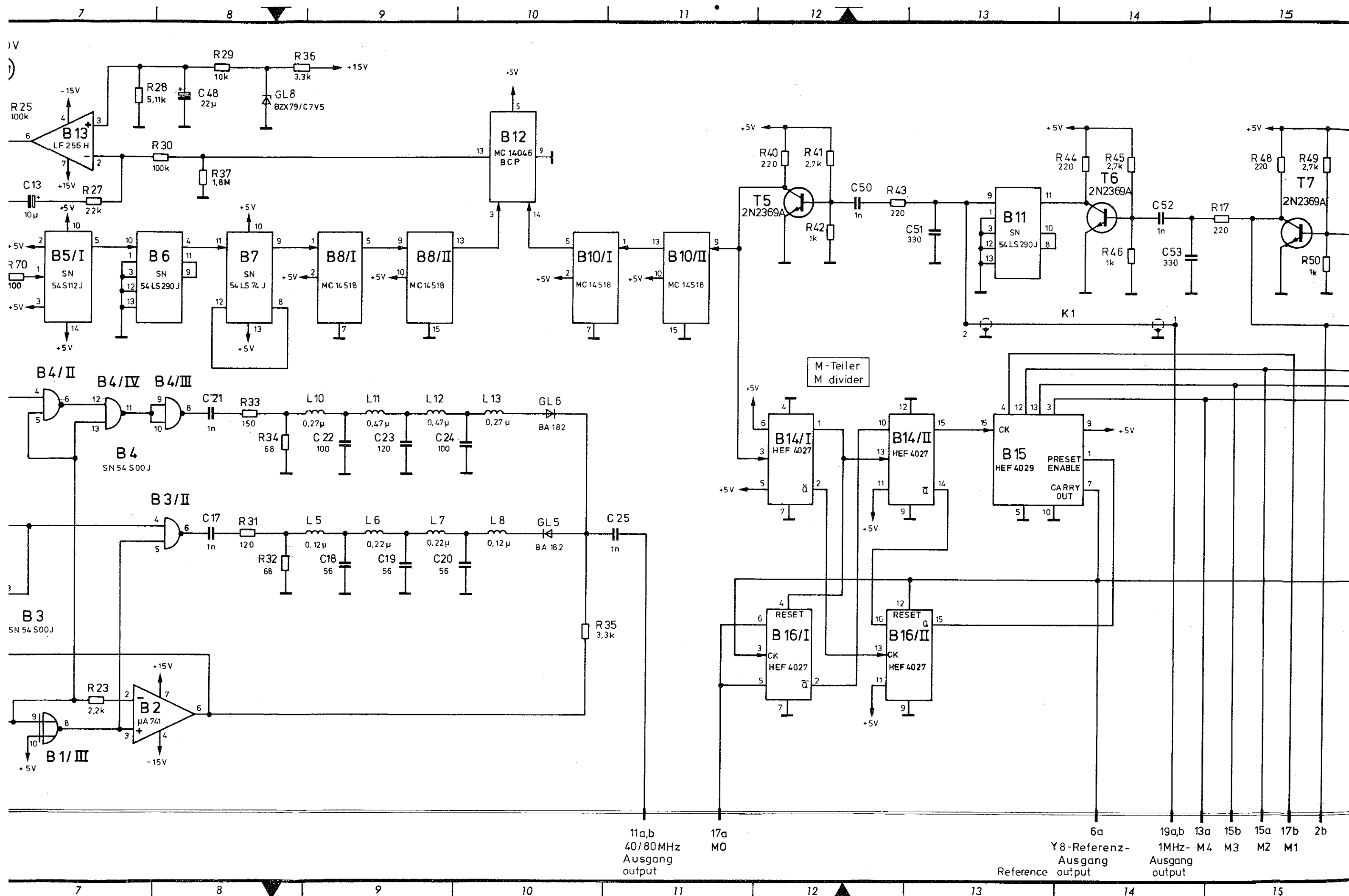
Draufsicht  
Top view



15a 17b 2b 8a 4a,b 1a,b 16a,b 14a,b 2a  
M2 M1 Y7-Referenz - Ausgang Reference output 10 MHz +5V +15V -15V Stand by

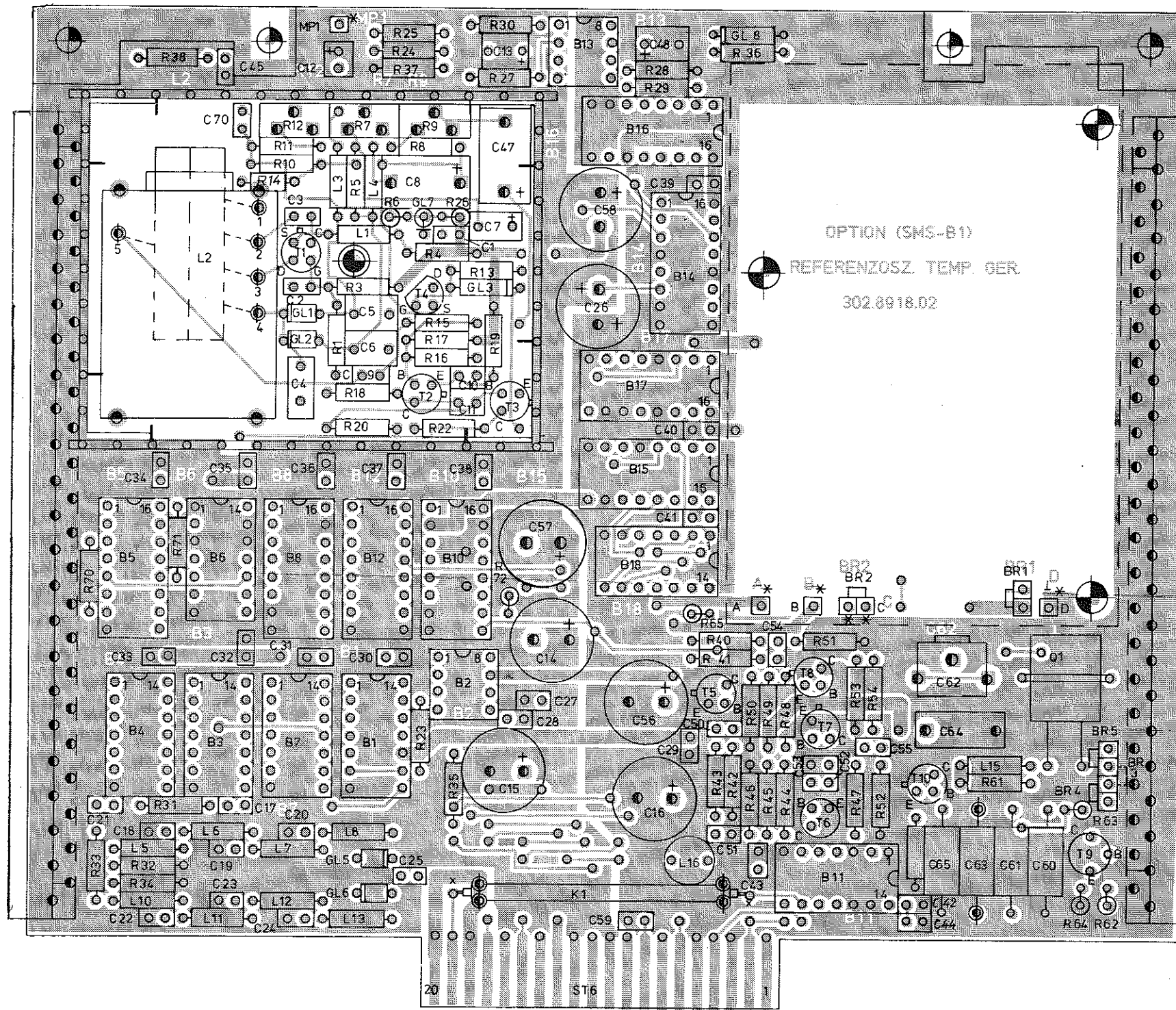
Stromlauf zu REFERENCE

Zeichn. Nr. 302.6215 S	
302.4012 V	302.4012





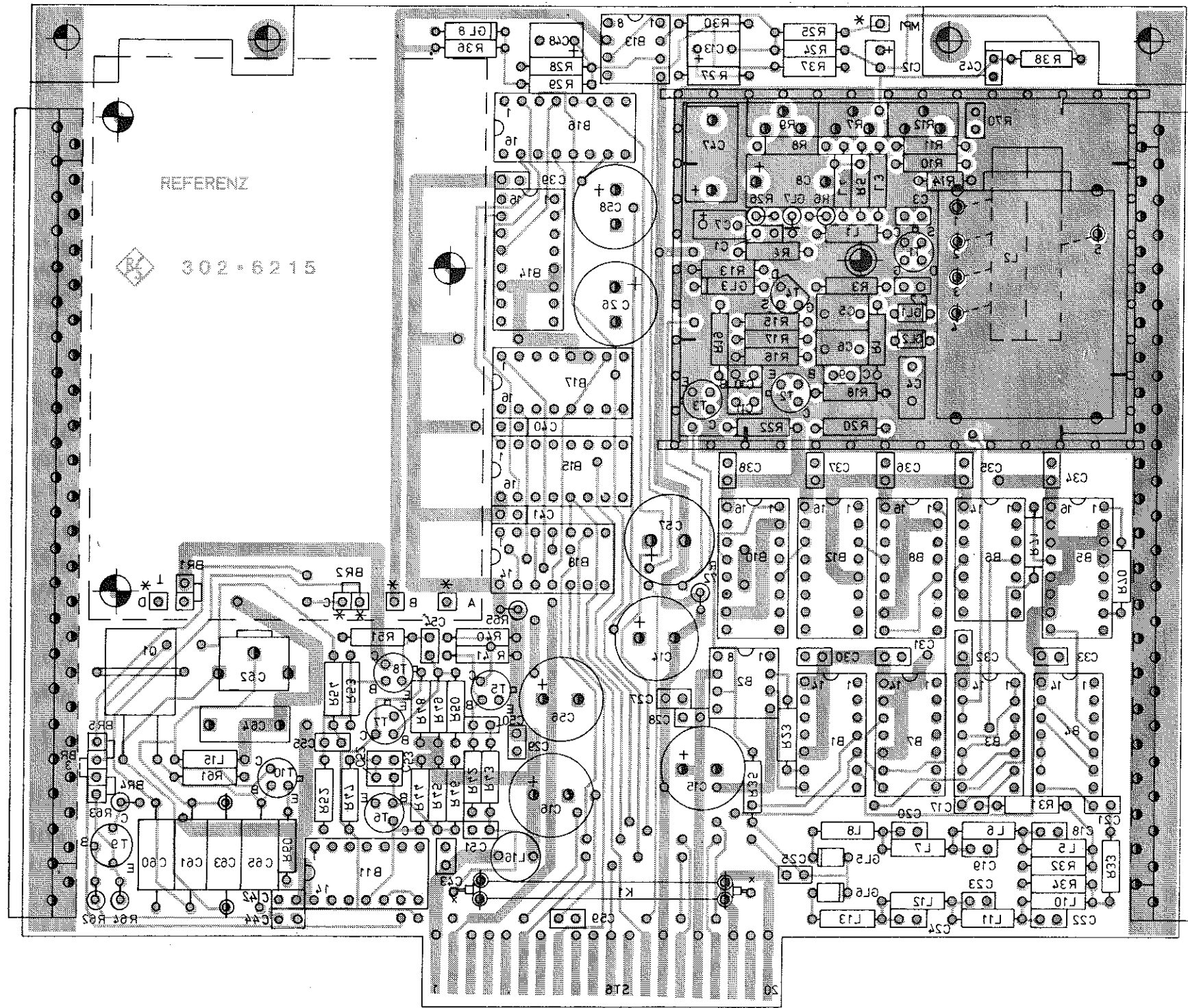




Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

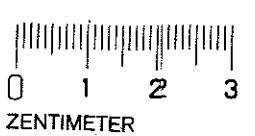
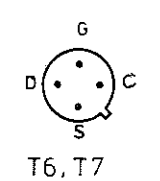
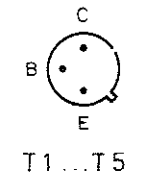
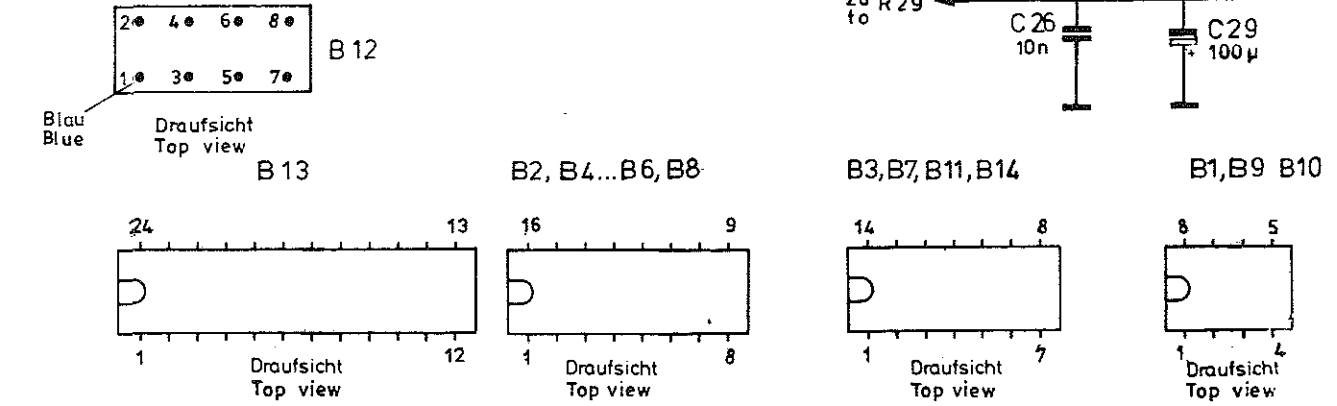
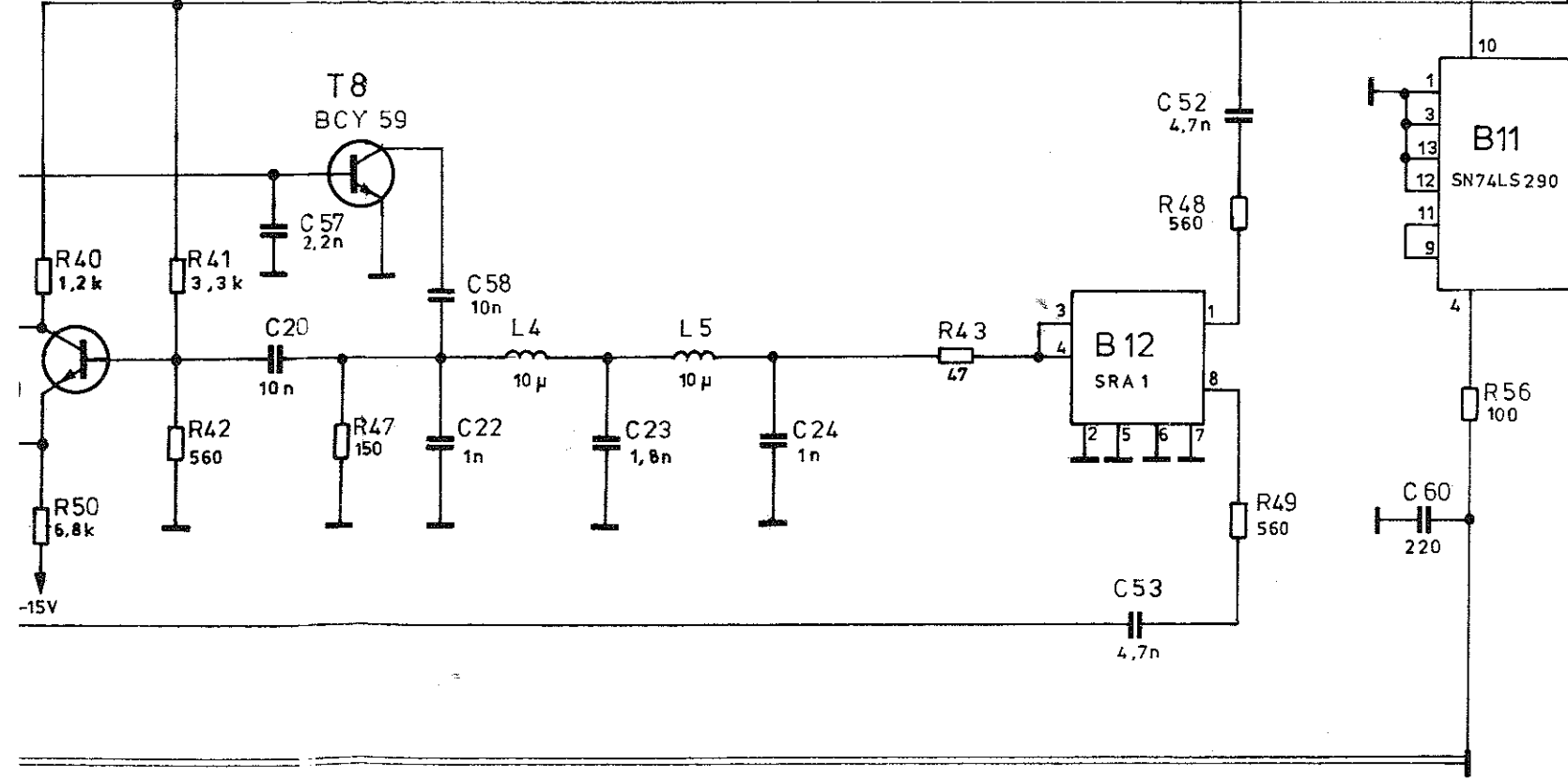
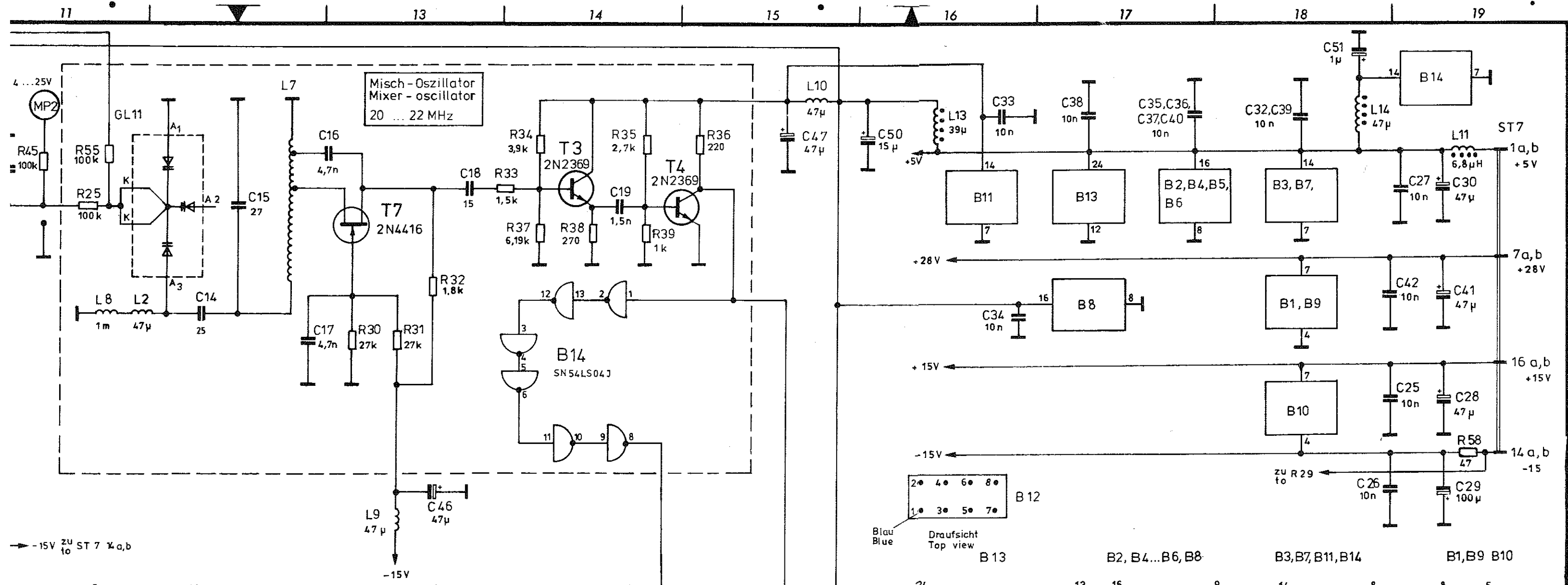


Version Nr.				Zust.	
A	25 166	06.79	Gn	Mafte ohne Toleranzangabe	Mafstab
B	25 166	10.79	Gn		Halbzeug Werkstatt
C	25 932	03.80	Sy		
E	28027	11.81	Hs		
			IGME	Tag	Name
			Bearb	16.11.78	Wm.
			Gepr		
			Norm		
			ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr.
			zu Gerät SMS		302.6215
And. Zust.	Anderungs-Mitteilung	Tag	Name	reg. - V	Blatt-Nr.
				302.4012 V	2
				erste Z	v. BI
				302.4012	



Ansicht und Leitungsführung Lötseite  
View of tracks on solder side

A	25 166	06.79	Gn			Maßstab 2 : 1	
B	25 166	10.79	Gn				
C	25 932	03.80	Sy				
E	28027	11.81	Hs				
				NAME	16.11.78	Wm.	Referenz
				ROHDE & SCHWARZ		302.6215	
				SMS		302.4012V	
						302.4012	



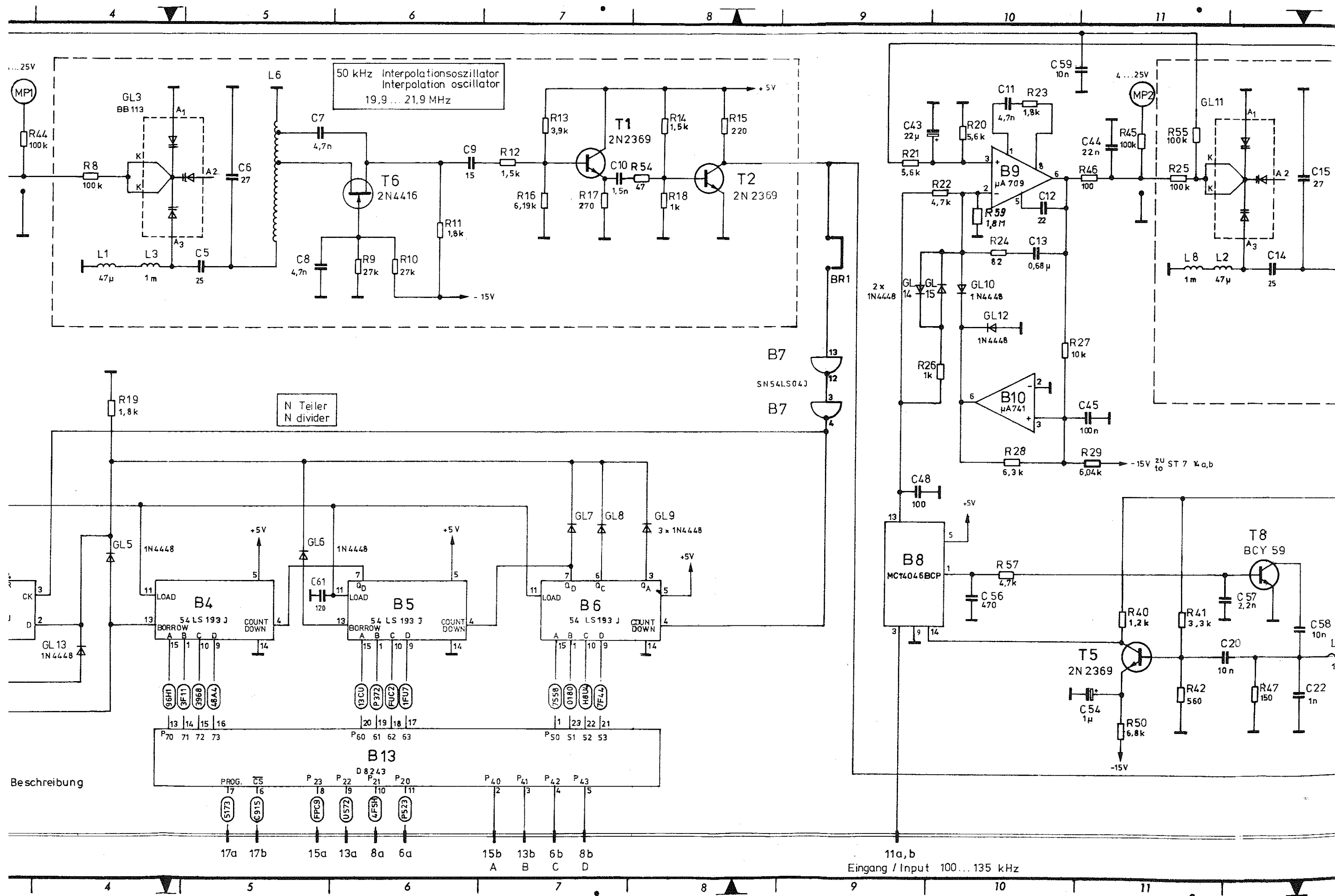
Frequenz [ MHz ]	260	280	320	360	380	400	440	480
Frequency	279,9	319,9	359,9	379,9	399,9	439,9	479,9	520
A	L	H	L	H	L	H	L	H
B	L	L	H	H	L	L	H	H

Frequenz [ MHz ]	0,4	130	190	260	380	520,0001	780
Frequency	129,9999	189,9999	259,9999	379,9999	520	789,9999	1040
C (Oszillator) Oscillator	H	L	H	L	H	L	H
D (Teiler) Divider	L	H	H	L	L	L	L

19 a,b  
Ausgang / Output 2... 2.2 MHz

Stromlauf zu Interpolationsoszillator -50kHz  
Interpolation oscillator -50kHz

Zeichn. Nr. **302.6415 S**  
302.4012V 302.4012



50 kHz Interpolationsoszillator  
Interpolation oscillator  
19,9 ... 21,9 MHz

N Teiler  
N divider

B8  
MC14046BCP

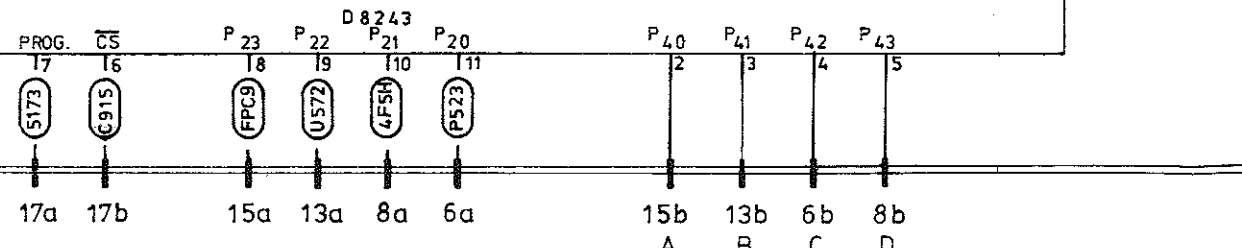
B9  
μA 709

B10  
μA 741

T8  
BCY 59

Beschreibung

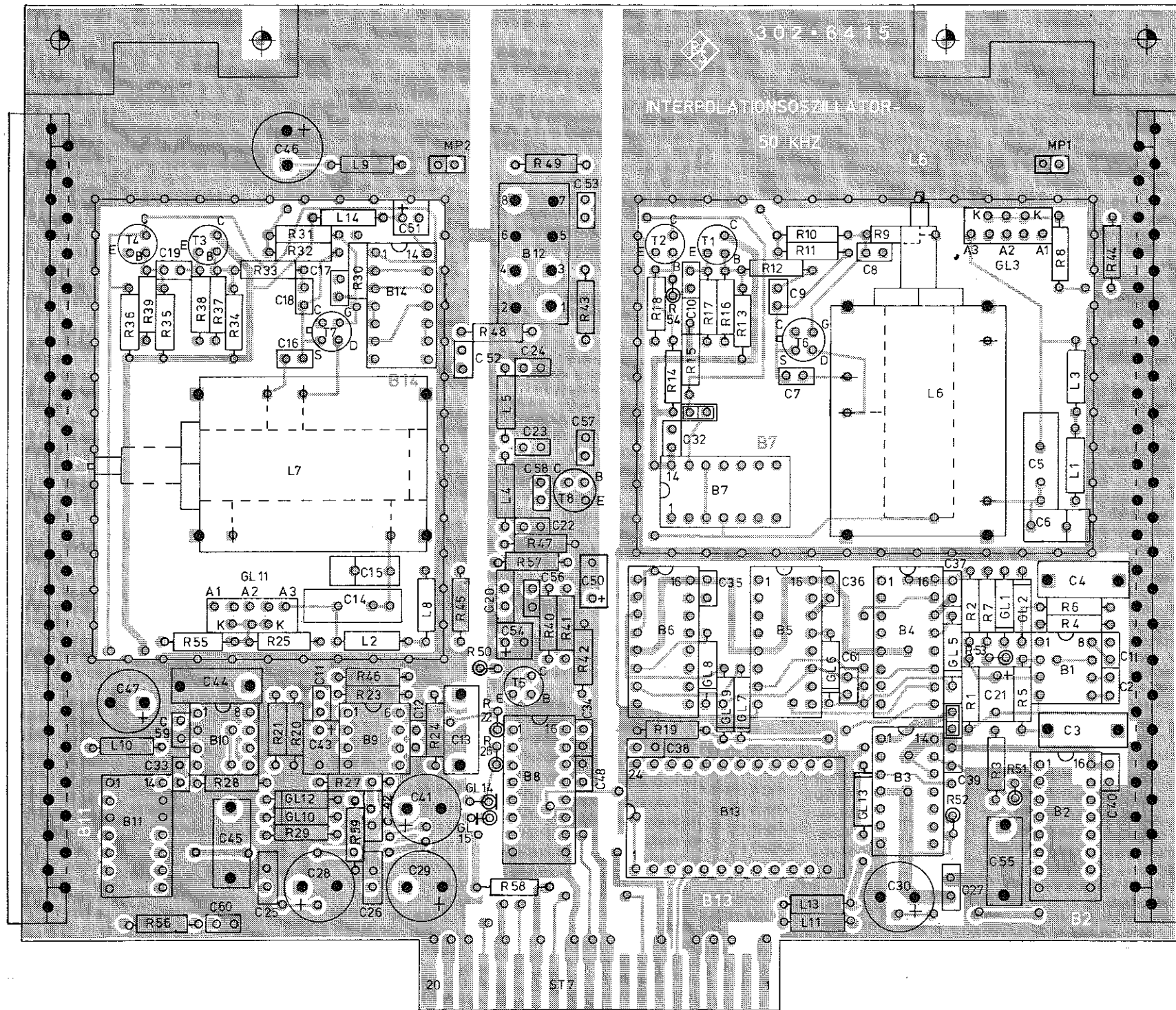
11a, b  
Eingang / Input 100 ... 135 kHz





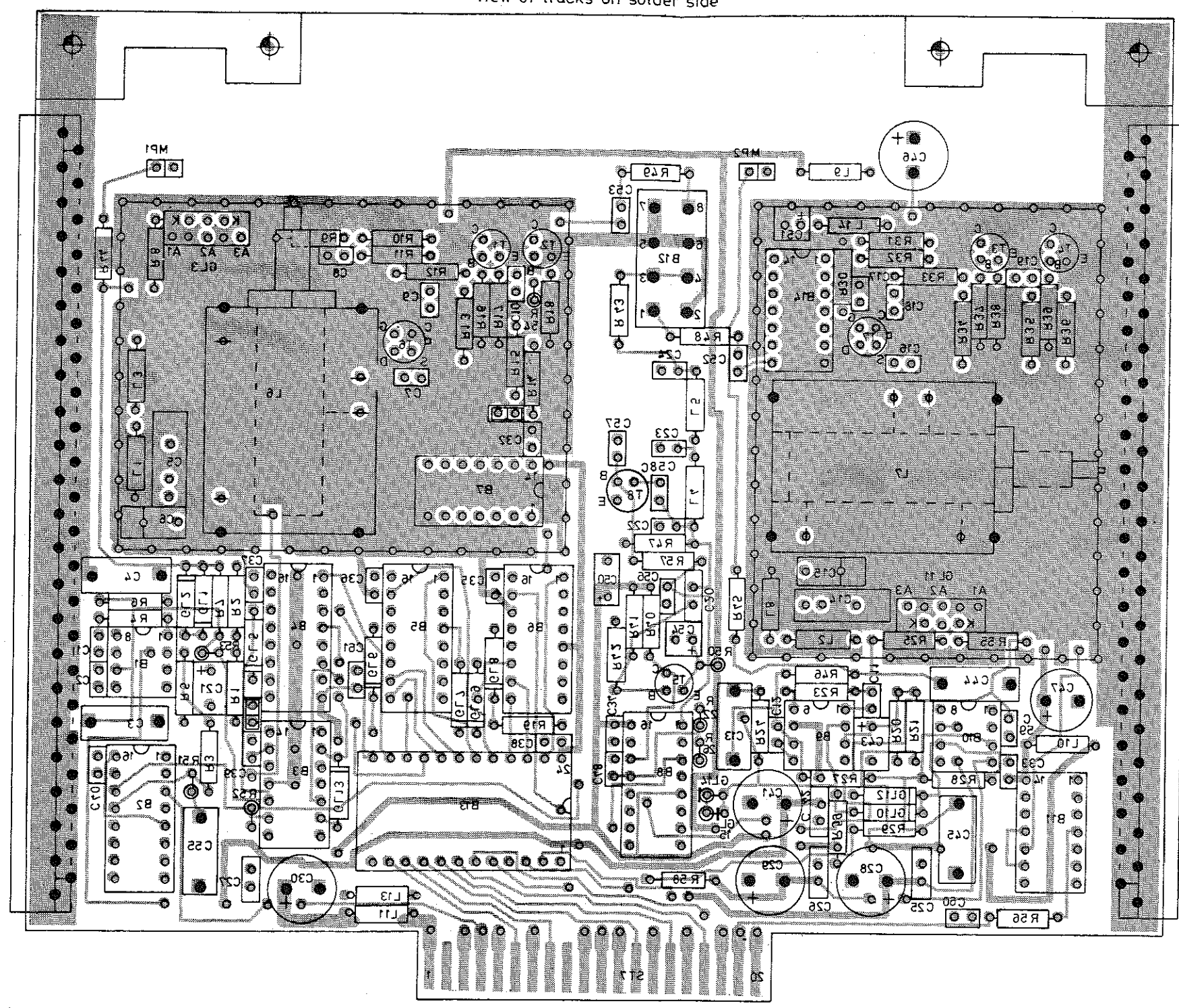


Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

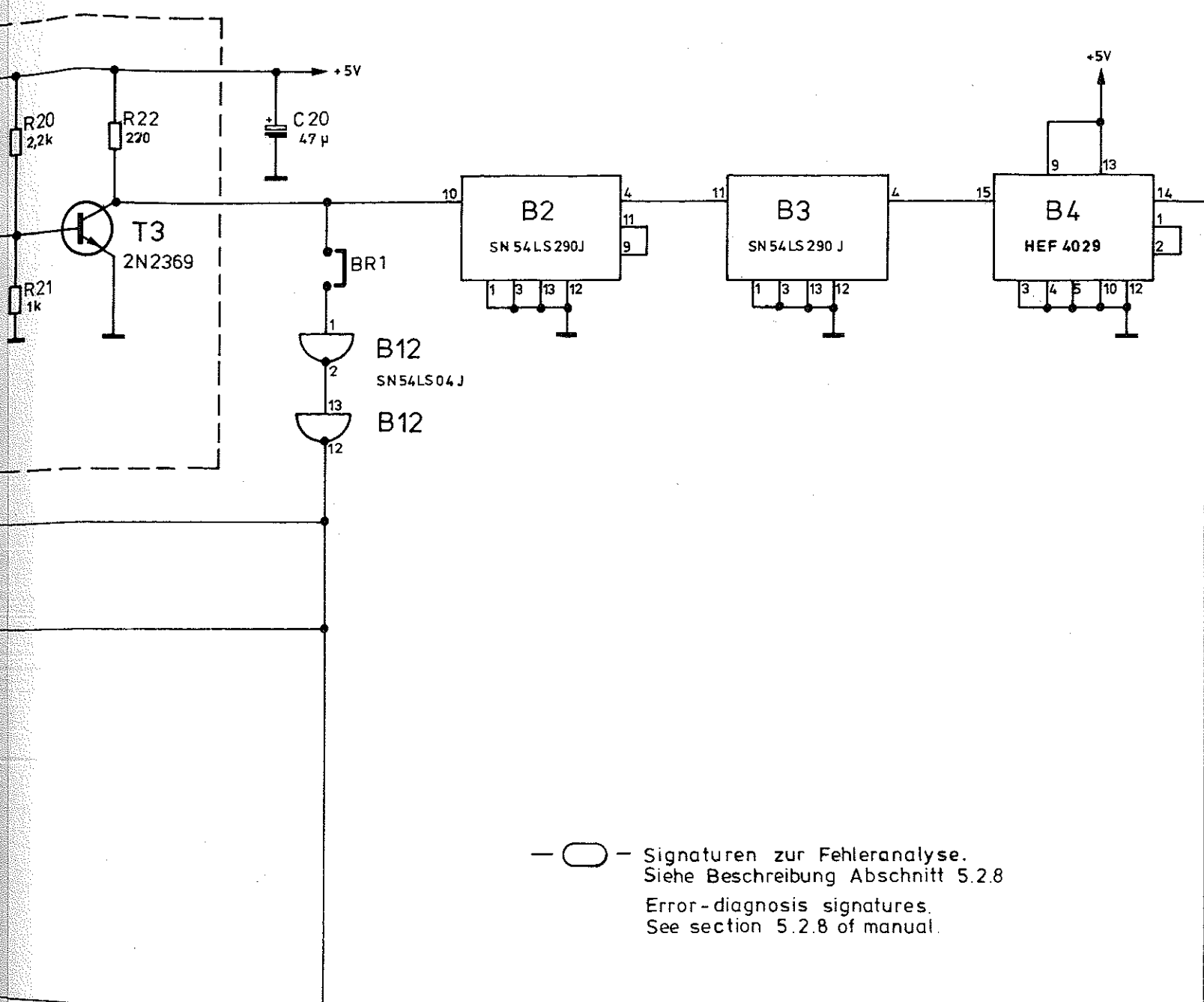


A		24545	10.78	MÜ	Maße ohne Toleranzangabe	Maßstab:
B		25166	07.79	Gn		
C		25166	10.79	Gn	Halbzeug Werkstoff	Benennung
D		25863	01.80	Gn		
E		28027	11.81	Hs	IGME Tag Name	Interpolationsoszillator- 50 kHz Interpolation oscillator 50 kHz
F						
And. Zus.		Anderungs-Maßstab			Bearb. 22.8.78 Wm	Zeichn.-Nr. 302.6415
					Norm.	
					ROHDE & SCHWARZ MÜNCHEN	v. 3 Bl.
					SMS	302.4012V
						302.4012

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side

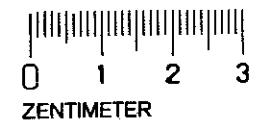
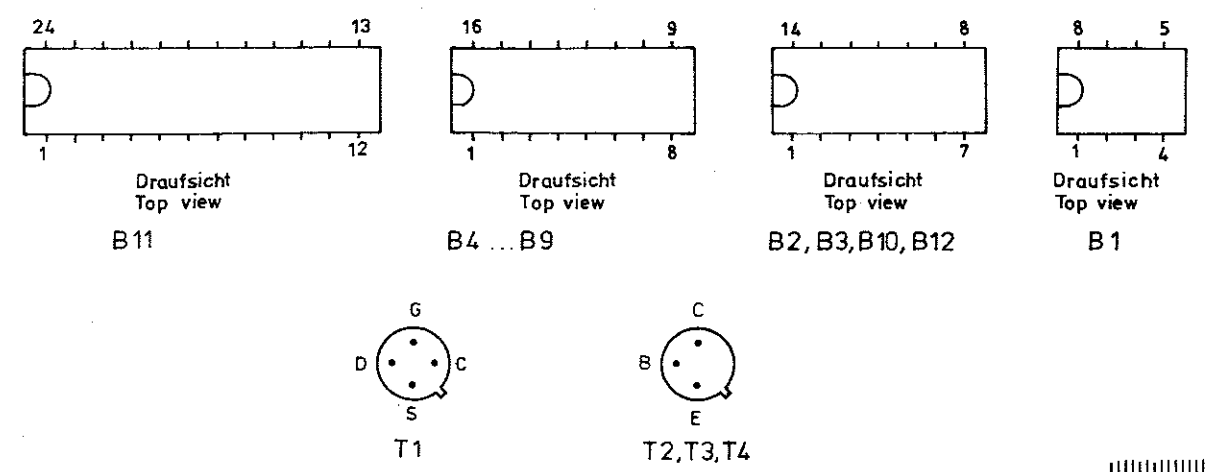
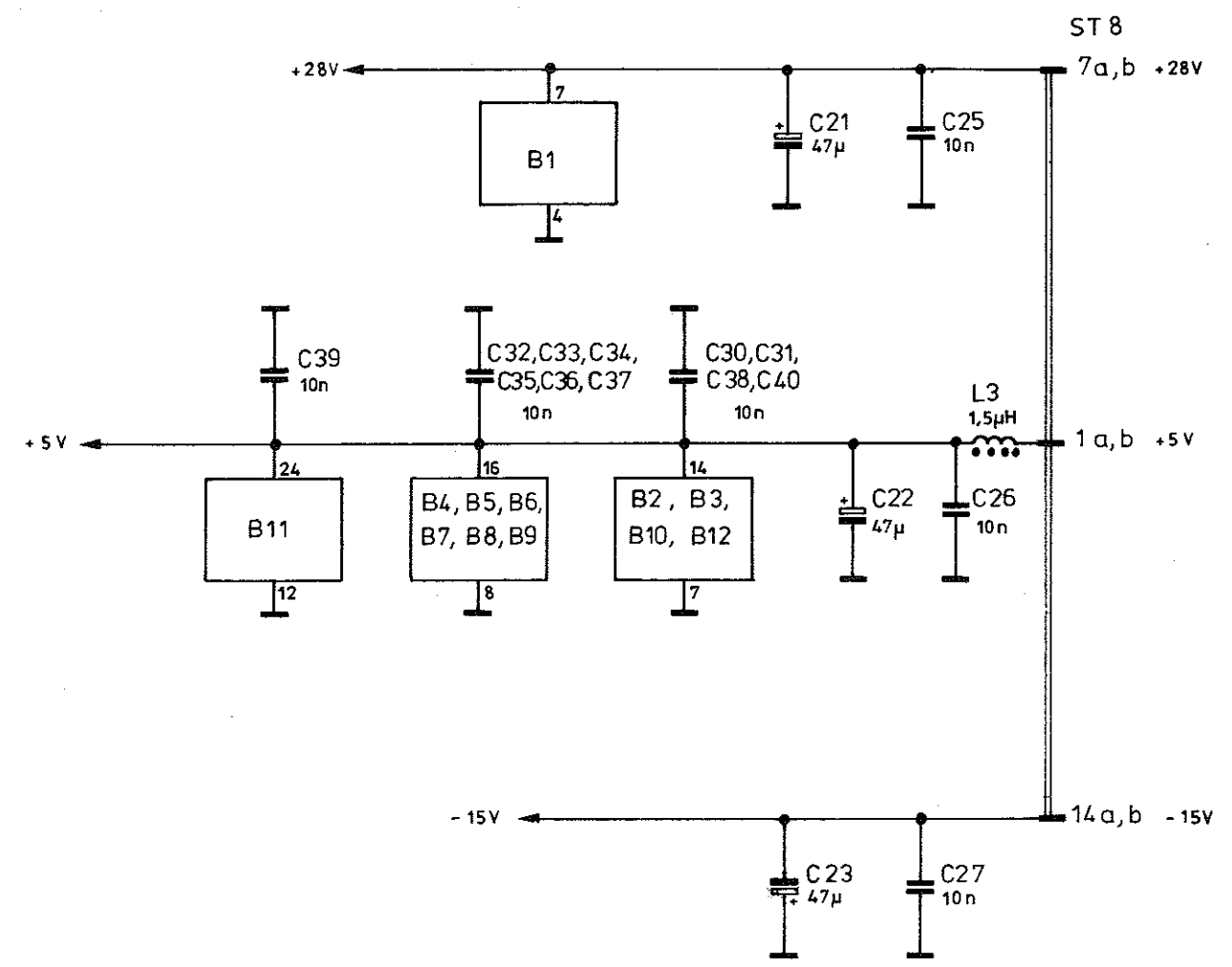


Version Nr.		VG-Sachnr.	
A	24545	10.78	MU
B	25166	07.79	Gn
C	25166	10.79	Gn
D	25863	01.80	Gn
F	28027	11.81	Hs
Maße ohne Toleranzangabe		Maßstab	
Halbzeug, Werkstoff		Benennung	
1GME Tag Name		Interpolationsoszillator-50 kHz	
Bearb. 22.8.78 Wm.		Interpolation oscillator 50 kHz	
Gepr.		Z	
Norm.		Blatt-Nr. 3	
ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr. 302.6415	
zu Gerät SMS		reg. v. 302.4012V erste Z. 302.4012	
And. Zust.	Anderungs-Meßung	Tag	Name



— ○ — 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



11a,b  
 Ausgang 100 ... 135 kHz  
 Output

	Stromlauf zu	Interpolationsoszillator-100 Hz	Zeichn. Nr. 302.6615 S
		Interpolation oscillator-100 Hz	302.4012V 302.4012

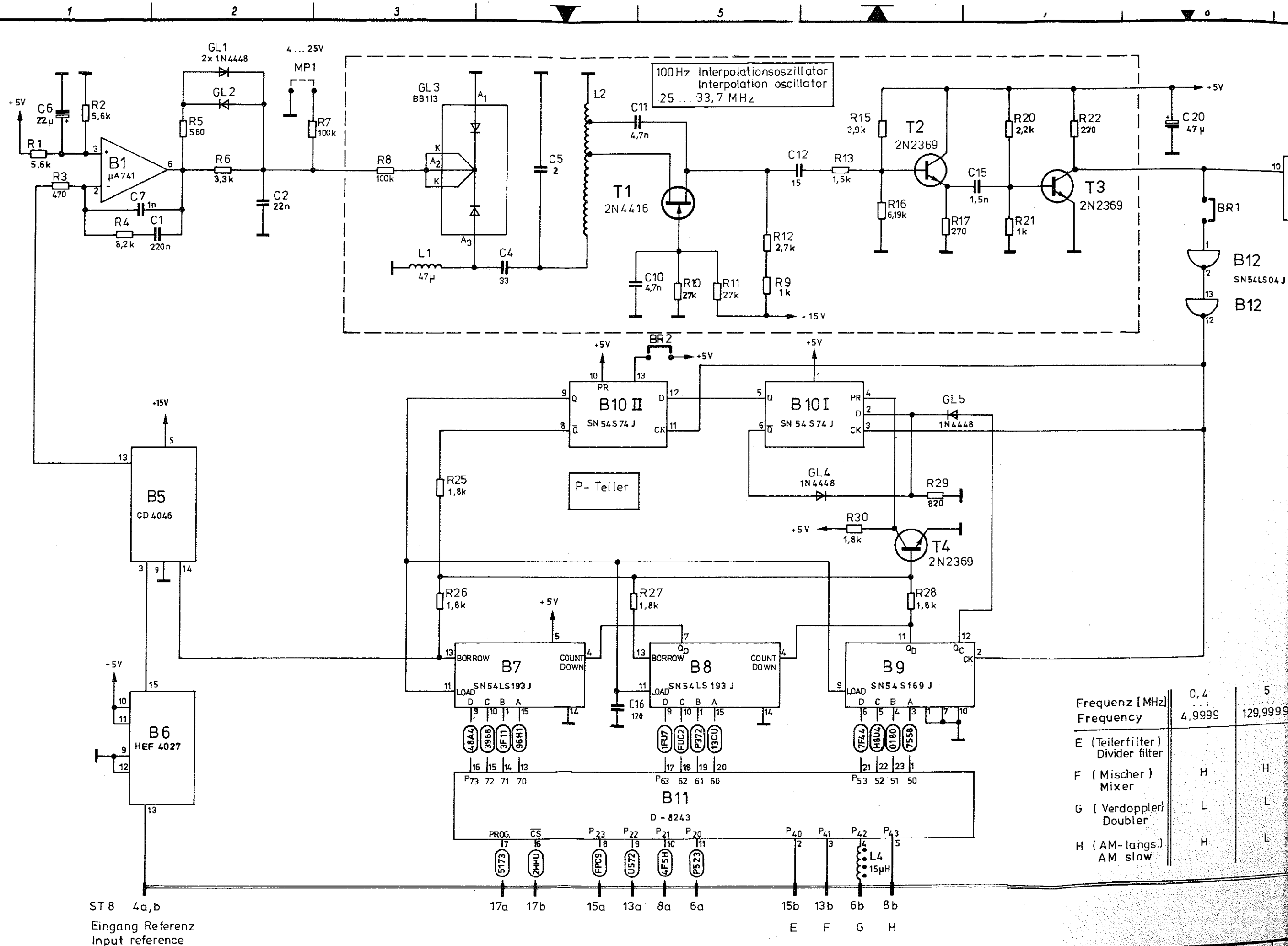


Name	
Datum	
And. Mitgl. Nr.	
And. zust.	
Name	
Datum	
And. Mitgl. Nr.	
And. zust.	

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

ROHDE & SCHWARZ MÜNCHEN

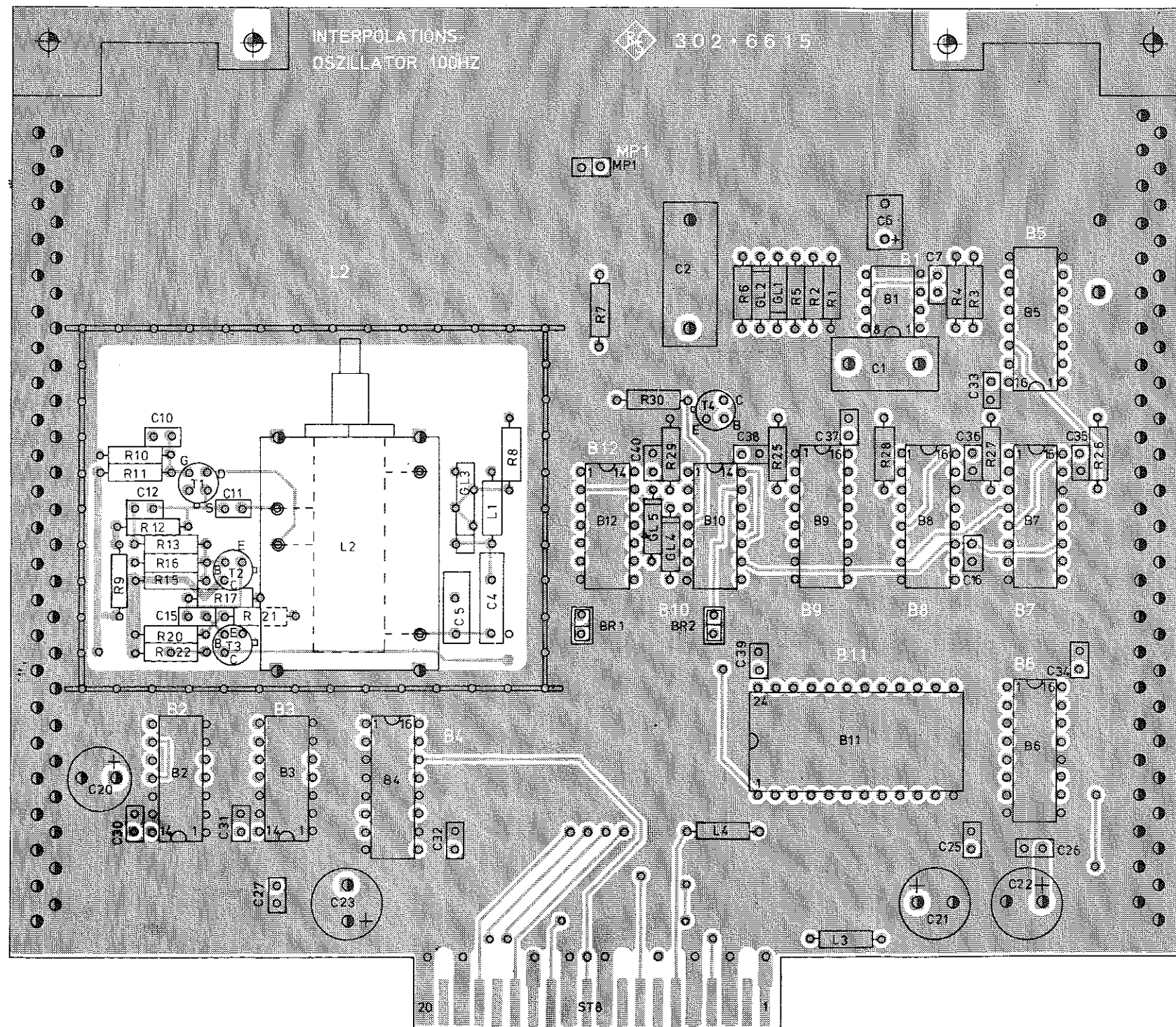
Name	Mü	Gn	Gn	Sy	Gn
Datum	02.79	05.79	01.80	12.80	02.82
And. Mitgl. Nr.	24668	24791	25863	26489	28027
And. zust.	A	B	C	D	E
Name	Hg	Gn			
Datum	4.9.78	09.78			
gezeichnet					
bearbeitet					
geprüft					
normiert					



Frequenz [MHz]	0,4	5
Frequency	4,9999	129,9999
E (Teilerfilter) Divider filter		
F (Mischer) Mixer	H	H
G (Verdoppler) Doublers	L	L
H (AM-langs.) AM slow	H	L

ST 8 4a,b  
Eingang Referenz  
Input reference

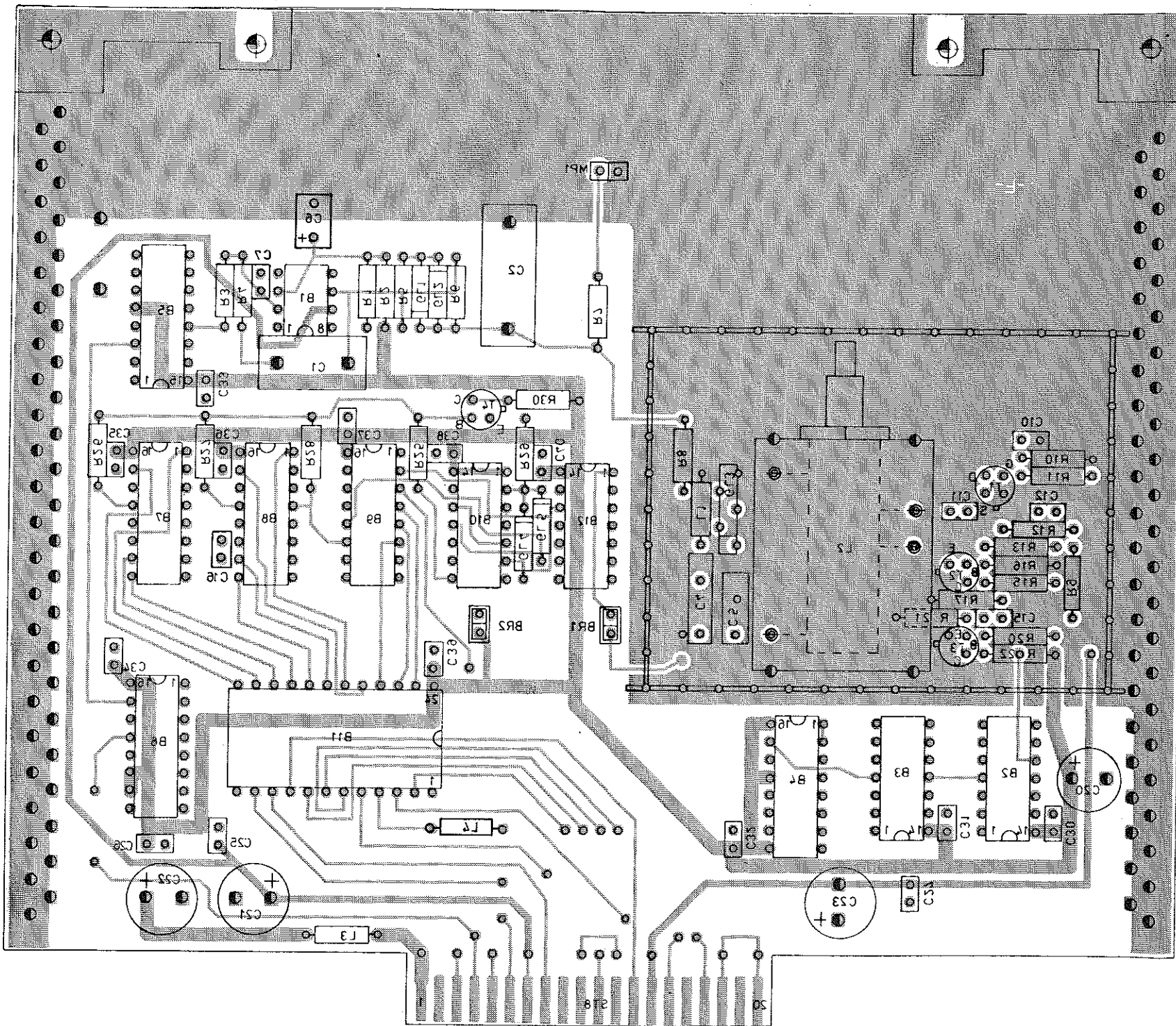
Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



Version Nr.				WÜ-Sachnr.	
A	24545	10.78	Gn	Maße ohne Toleranzangabe	Maßstab
B	24791	02.79	Gn		Halbzeug, Werkstoff
C	25863	01.80	Gn	IGME	Benennung
D	25489	12.80	Sy		
E	28027	02.82	Gn	4.9.78	Wm.
And. Zust.		Anderungs-Mitteilung		Tag	
Name		zu Gerät		S M S	
ROHDE & SCHWARZ MÜNCHEN		302.6615		Blatt-Nr. 2	
reg. v. 4.02.4012 V		erste Z. 402.4012		v. Bl.	

Für diese Zeichnung verantwortlich  
unsere Referenz...

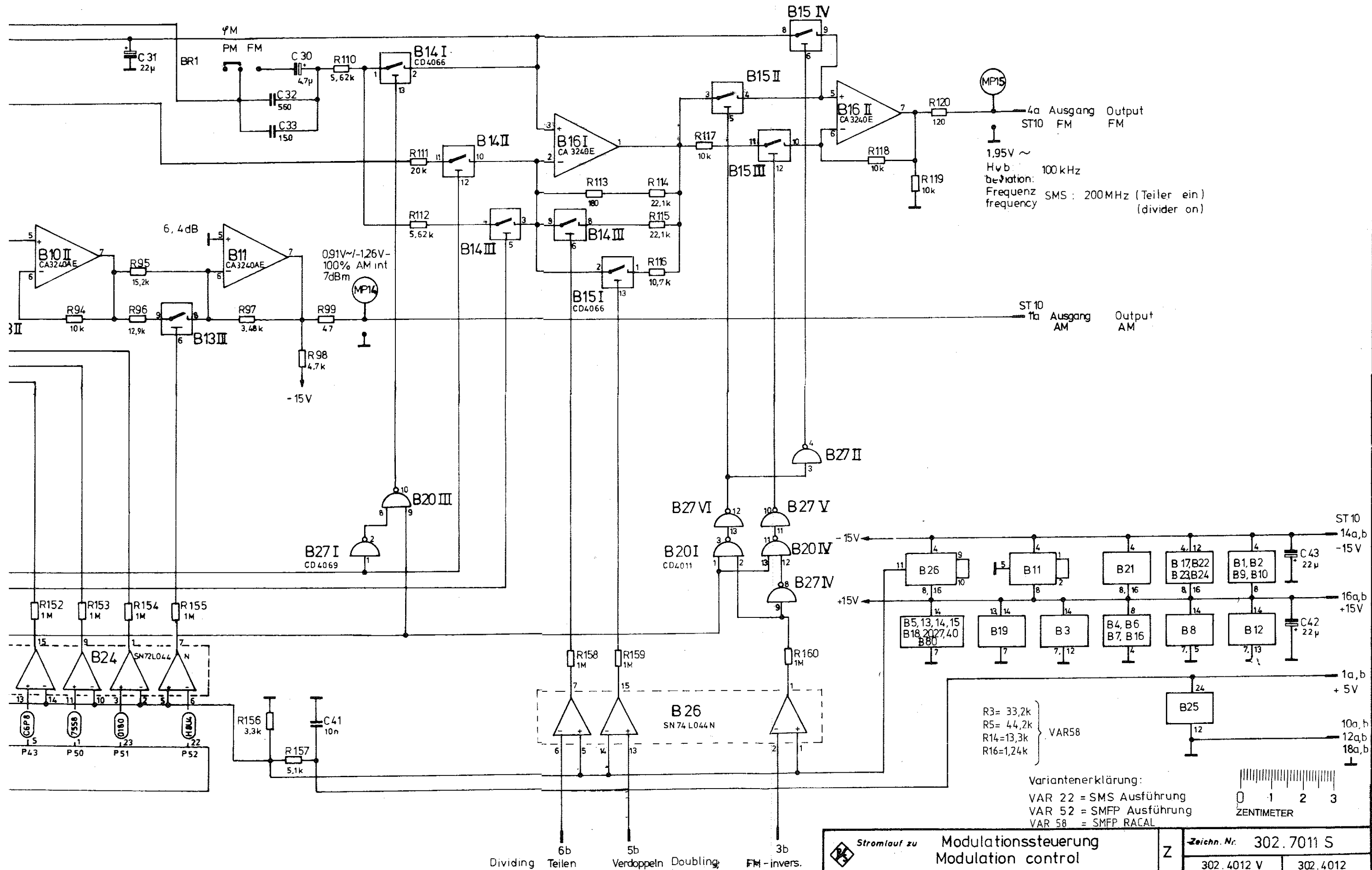
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



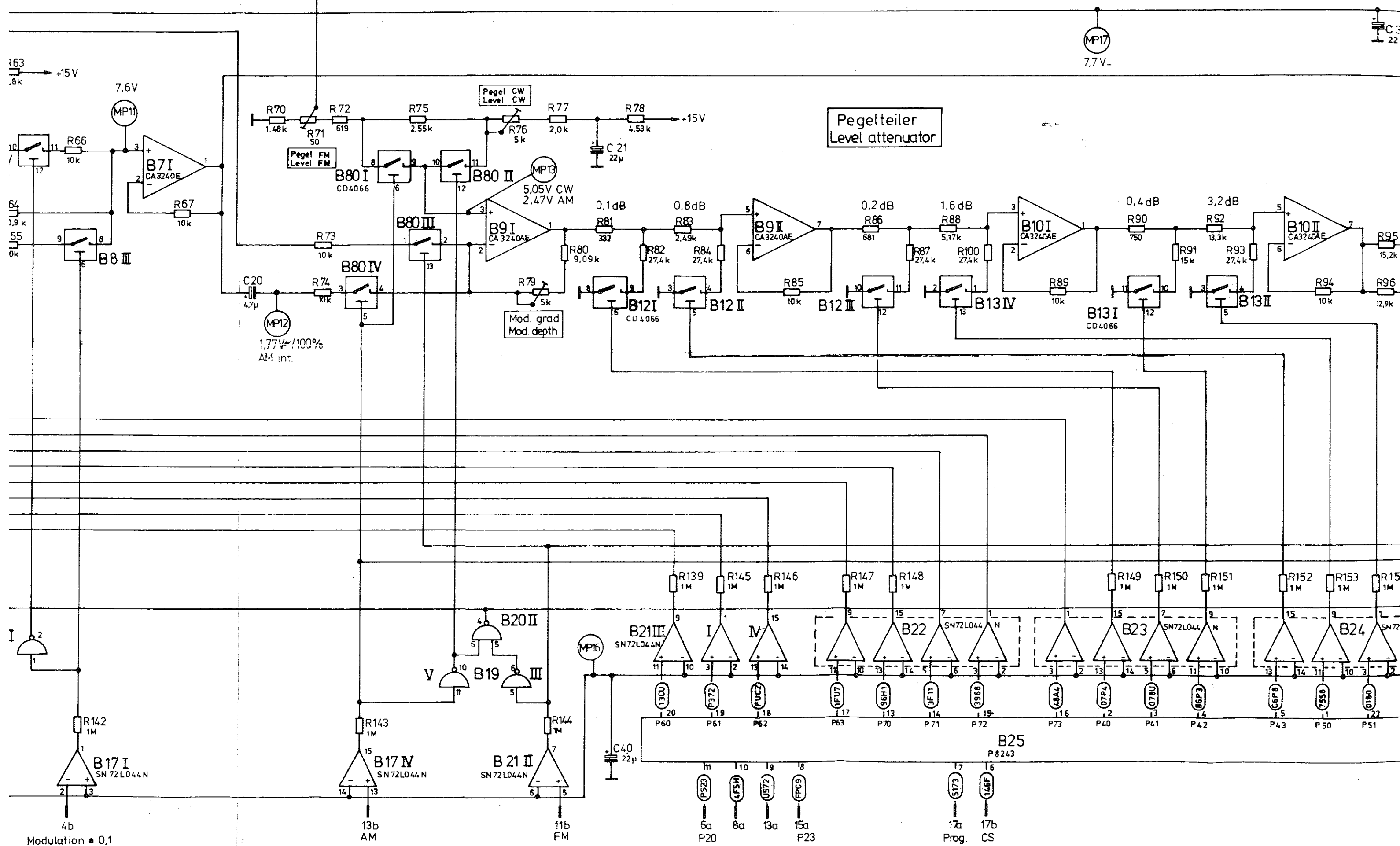
0 1 2 3  
ZENTIMETER

A		24545	10.78	Gn	Maße ohne Toleranzangabe	Maßstab
B		24791	02.79	Gn		
C		25863	01.80	Gn		
D		26489	12.80	Sy		
E		28027	02.82	Gn		
IGME		Tag	Name	Benennung		
Bearb.		4.9.78	Wm	Interpolationsoszillator - 100 Hz Z		
Gepr.				Interpolation oszillator 100 Hz		
Norm				Zeichn.-Nr		
ROHDE & SCHWARZ MÜNCHEN		302.6615		Blatt-Nr 3		
SMS		reg. v. 402.4012V		erste Z. 402.4012		

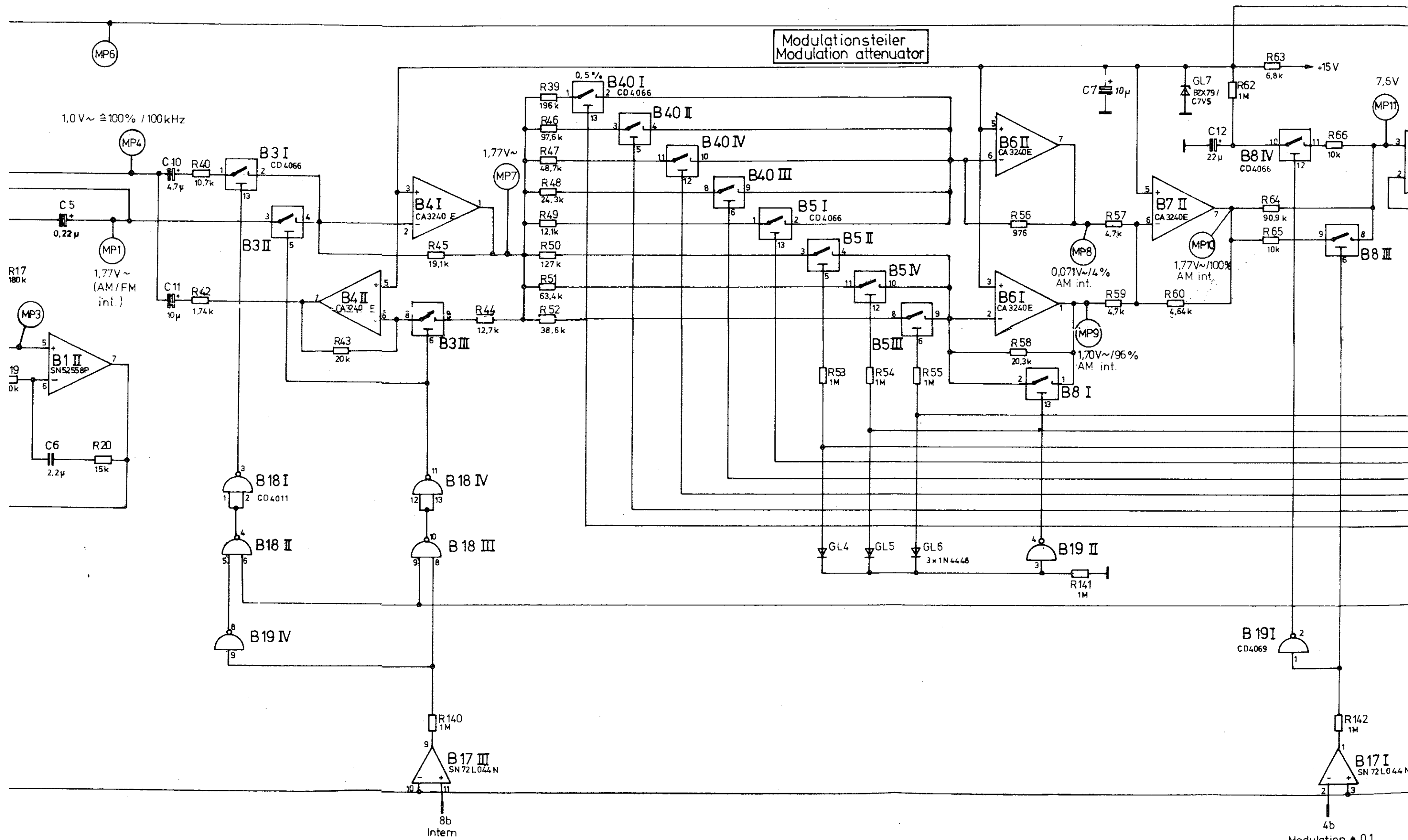




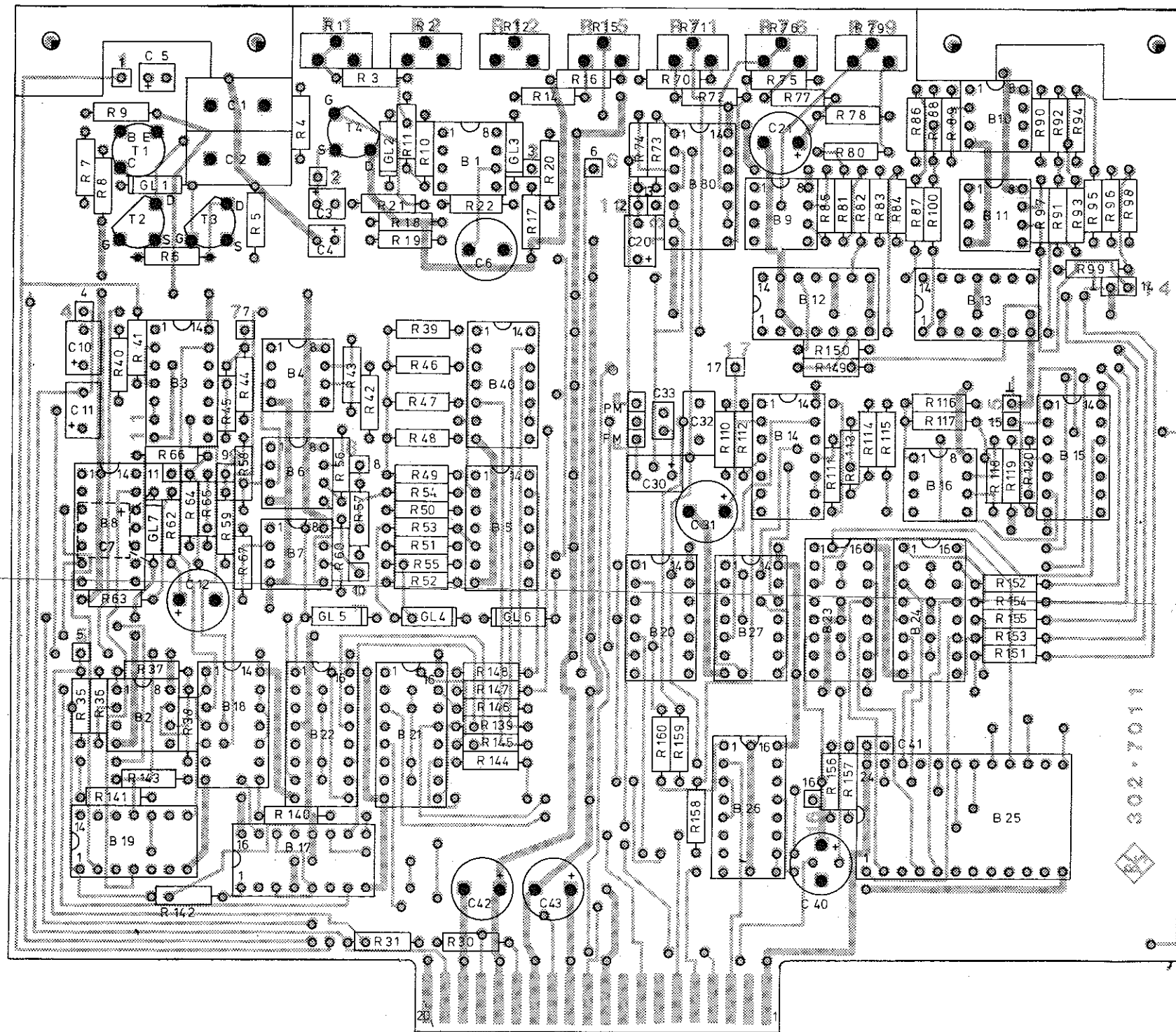




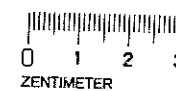
Modulationsteiler  
Modulation attenuator



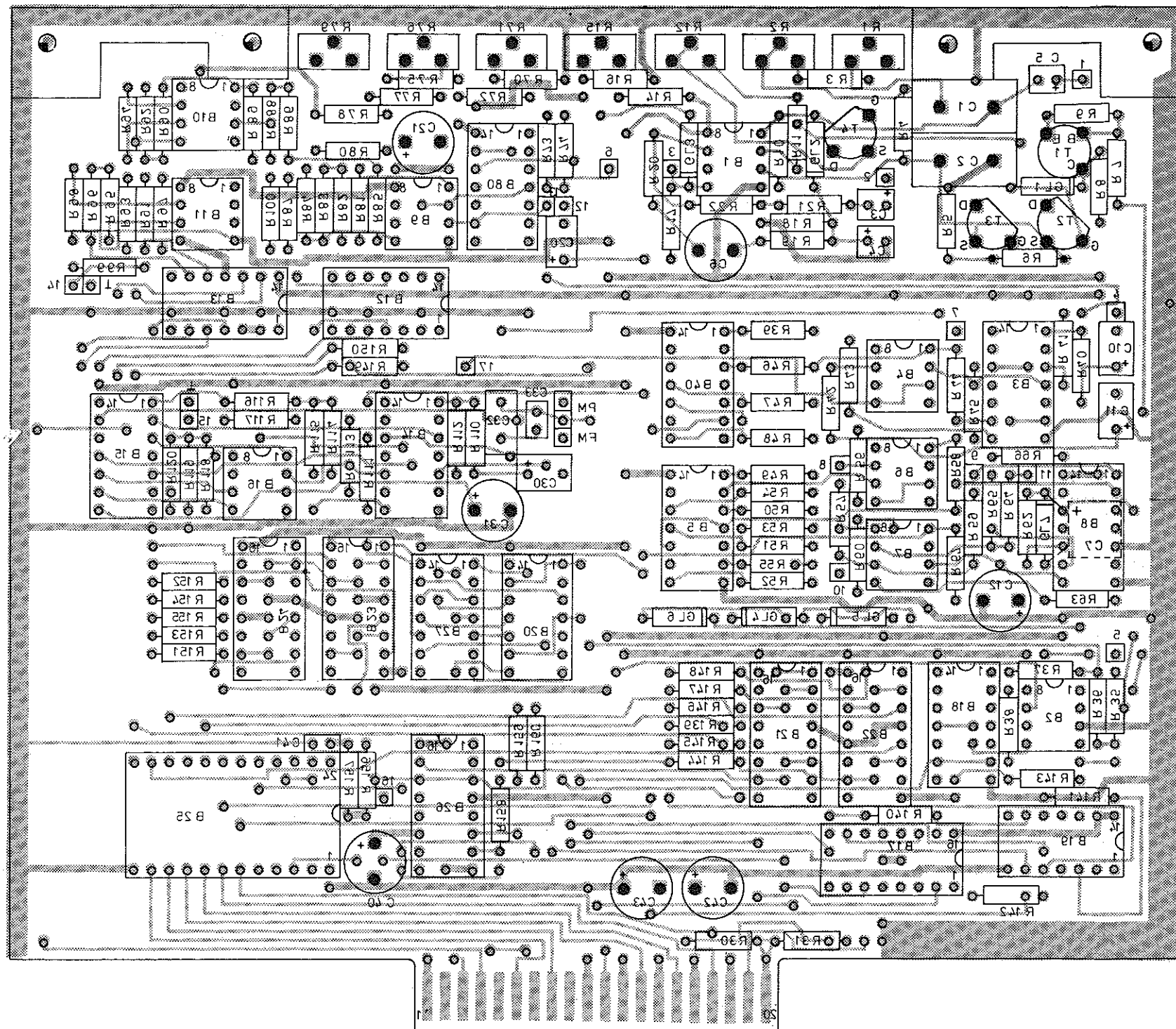




Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



A 24.791		04.79	Gn	Maße ohne Toleranzangabe	Maßstab
B 25.166		10.79	Gn		
C 28.027		02.82	Gn		
				1GM Tag Name	Benennung
				Bearb 26.9.78 Nk	Modulationsteuerung Modulation control
				Gepr.	Z
				Norm.	
				ROHDE & SCHWARZ MÜNCHEN	Zeichn.-Nr. 302.7011
				zu Gerät SMS	Blatt-Nr. 2 Bl.
And. Zust.	Anderungs-Mitteilung	Tag	Name	reg. i. V. 302.4012 V	erste Z. 302.4012



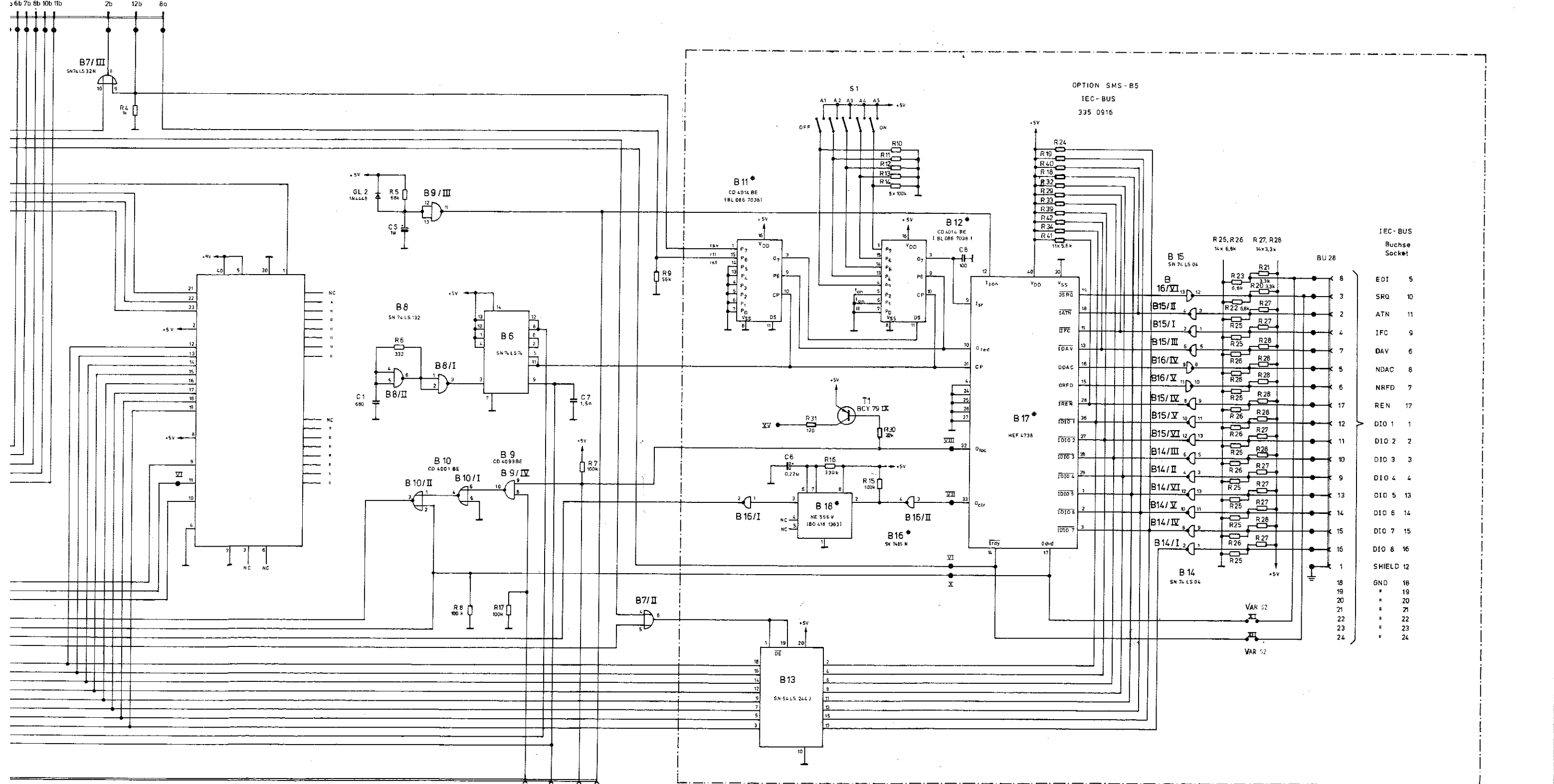
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



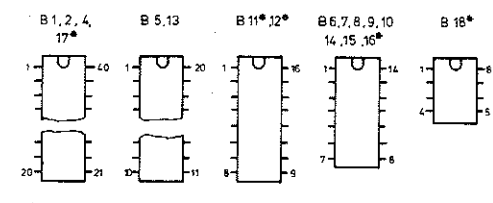
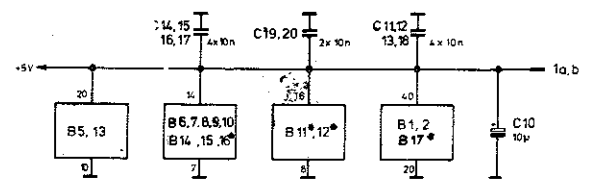
Version-Nr.		VG-Sachnr.	
A	24 791	04.79	Gn
B	25 166	10.79	Gn
C	28 027	02.82	Gn
Maße ohne Toleranzangabe		Maßstab	
1GM Tag Name		Halbzeug, Werkstoff	
Bearb. 26.9.78 Nk		Benennung	
Gepr.		Modulationsteuerung	
Norm		Modulation control	
ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr.	
zu/Gerät SMS		302.7011	
reg. v. V 302.4012 V		erste Z 302.4012	
Blatt-Nr.		v 3 Bl.	

-LEITUNG  
 -Attenuator  
 1 10 20 40 80 100 dB  
 > 6b 7b 8b 10b 11b

ÜBERSpannungs- rti  
 SCHUTZ  
 Overload protection



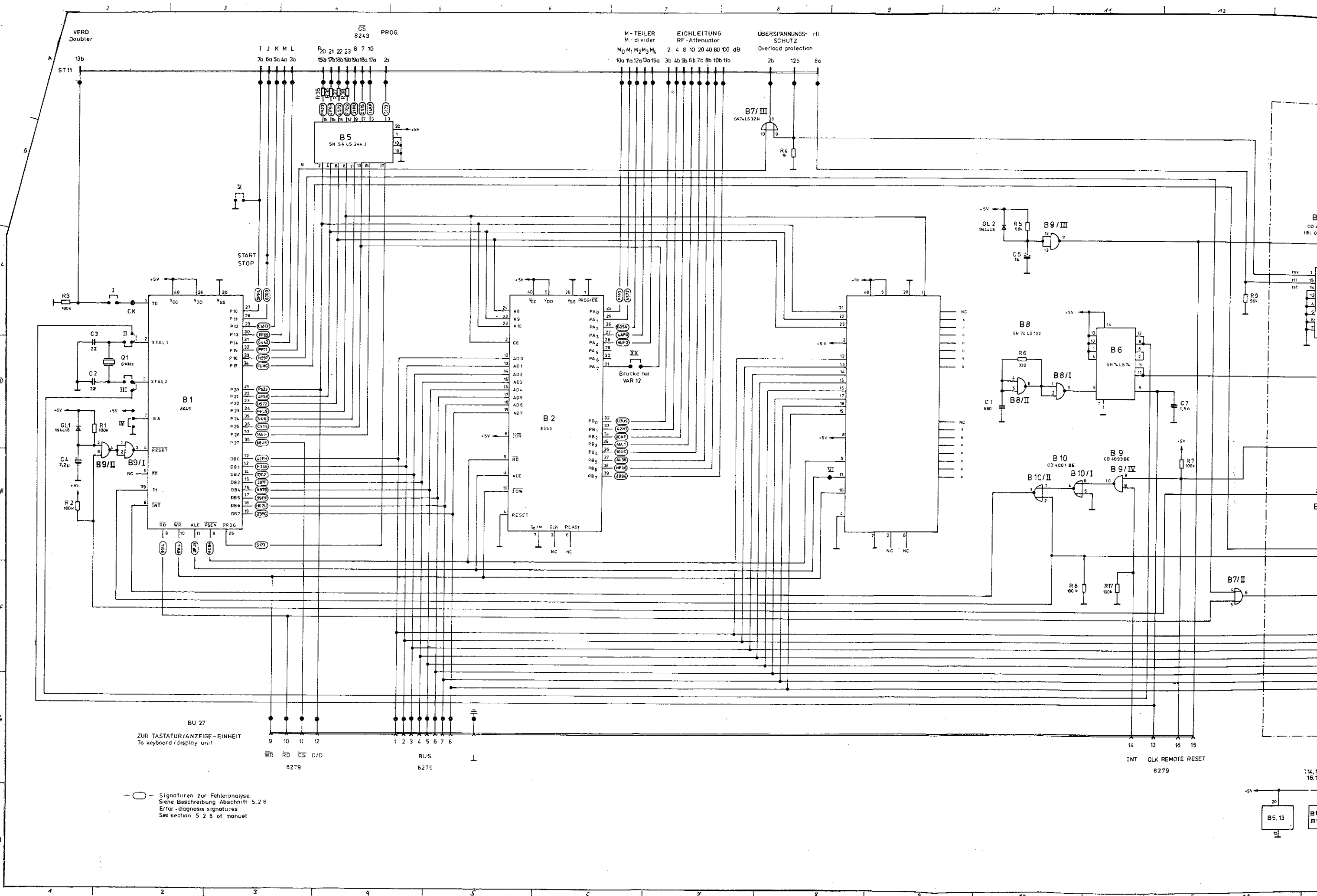
INT CLK REMOTE RESET 8279



Variantenklärung:  
 VAR 22 mit JEC-BUS, SMS-B4  
 VAR 52 ohne JEC-BUS  
 \* entfällt bei VAR 52

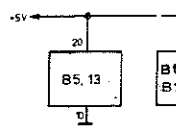


ROHDE & SCHWARZ MÜNCHEN		Maßstab 1:1		Lithographie Maß		Zeichn. Nr. 302.7111 S	
302.4012V		302.4012		302.4012		302.4012	
Gr	Gr	Gr	Gr	Gr	Gr	Gr	Gr
15.1.79	E	25.9.82	04.80	Sy			
	F	26.4.89	11.80	Sy			
	G	28.02	02.82	Gn			
Mikroprozessor				Microprocessor			



BU 27  
ZUR TASTATUR/ANZEIGE-EINHEIT  
To keyboard / display unit

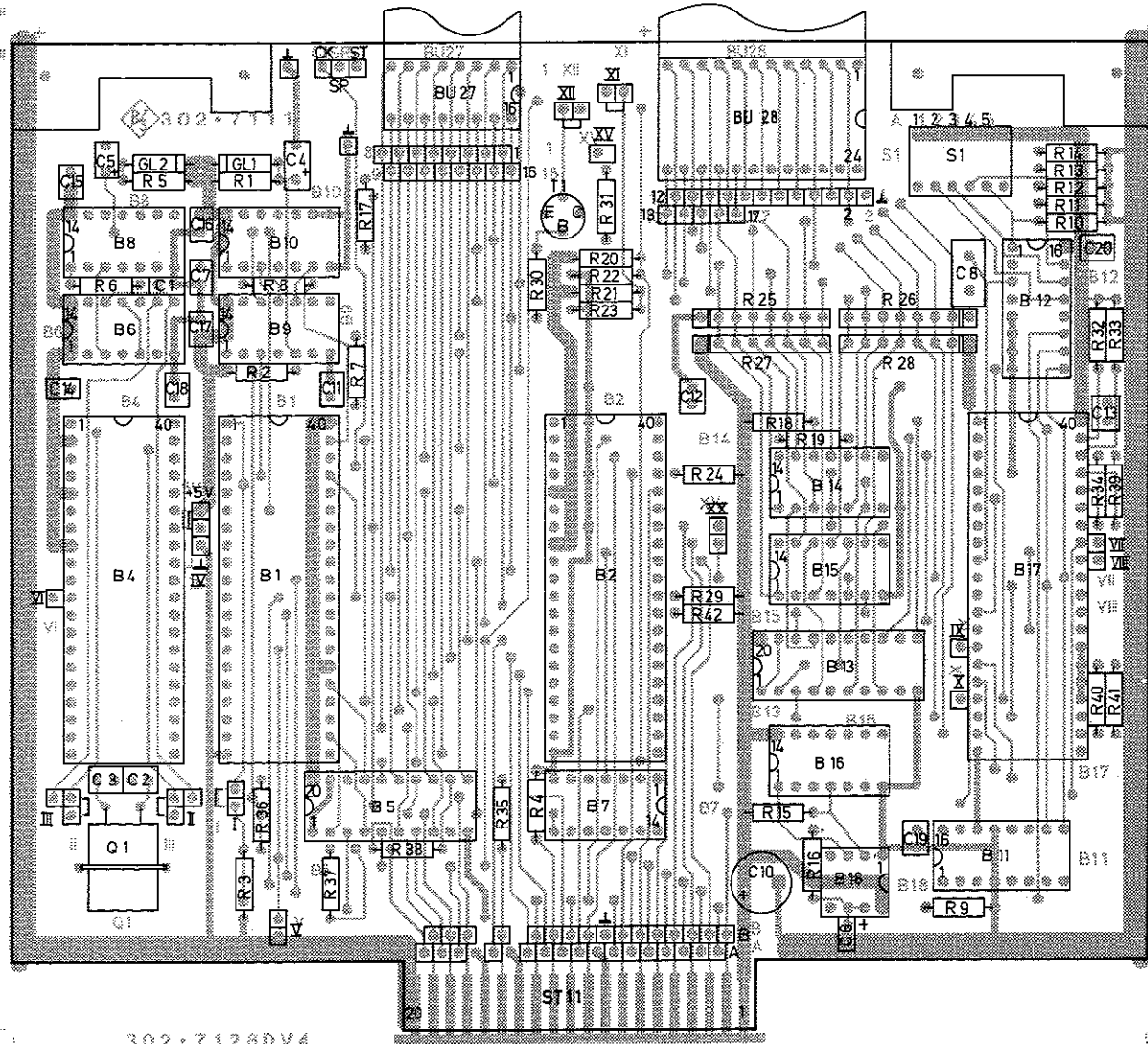
—○— Signaturen zur Fehleranalyse.  
Siehe Beschreibung Abschnitt 5.2.8  
Error - diagnostic signatures  
See section 5.2.8 of manual





A

Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



302-7126DV4

B

C

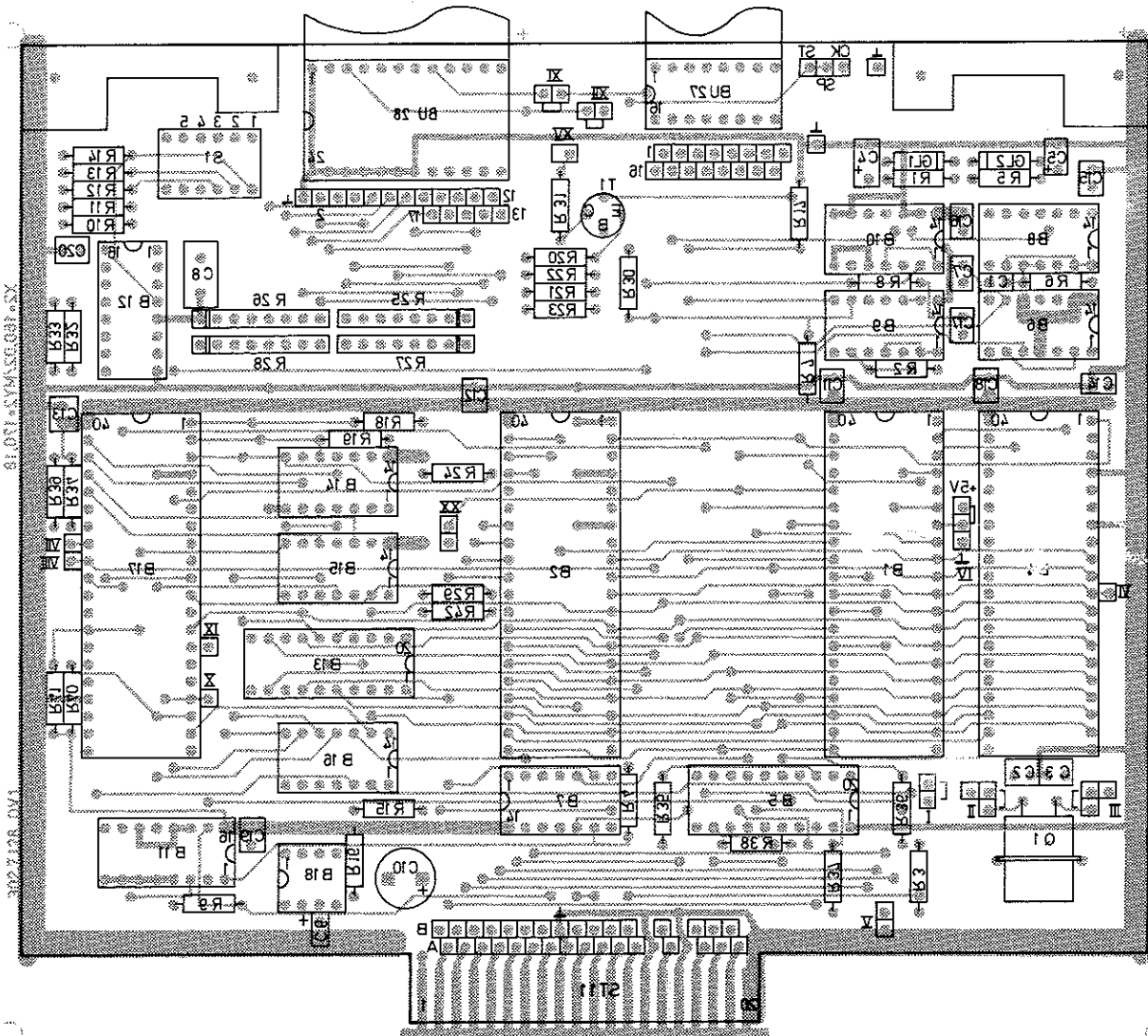
D

E

F

A

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



B

C

D

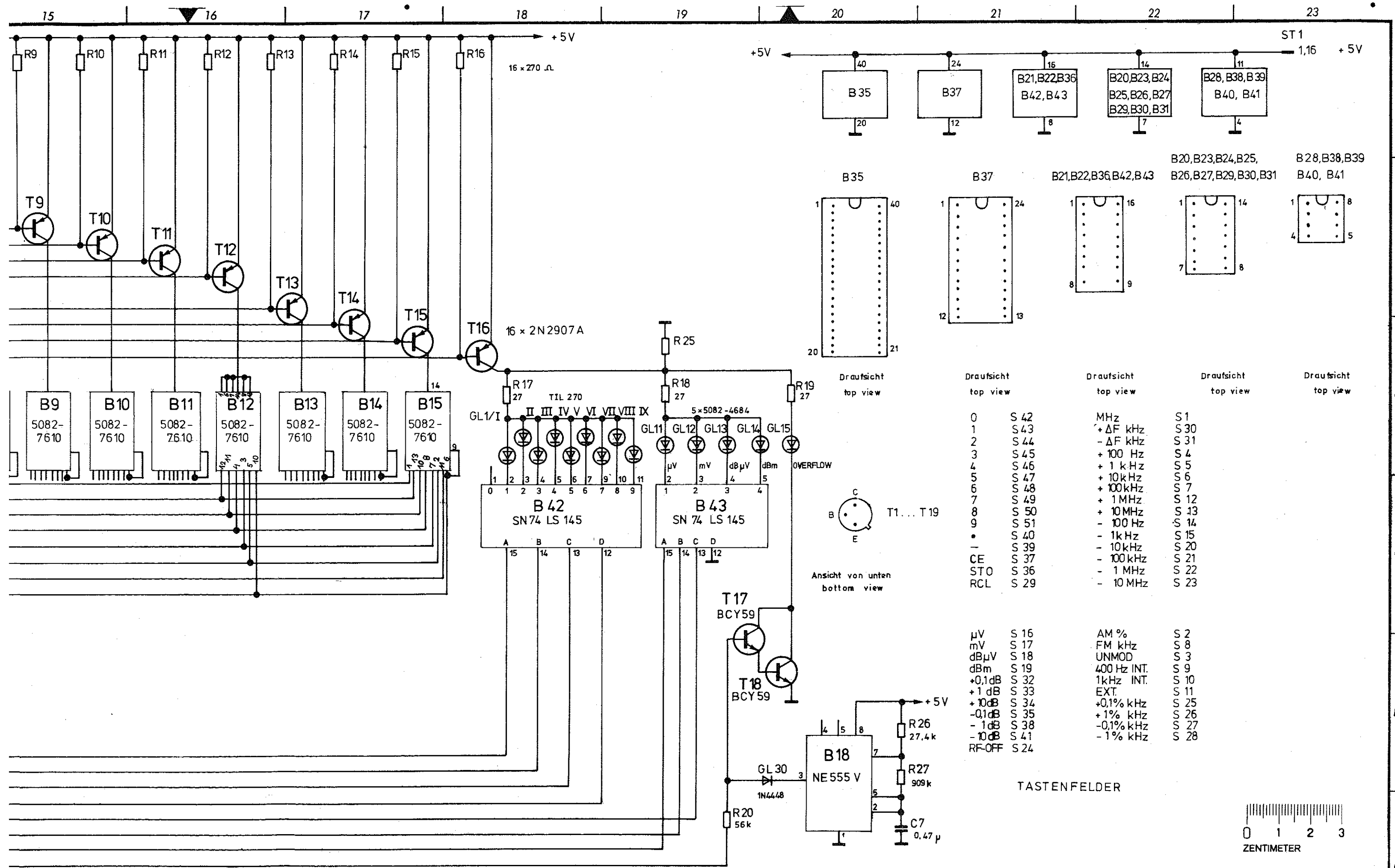
E

F

Für diese Zeichnung behalten wir uns alle Rechte vor.

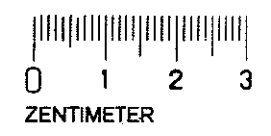
Versorg.-Nr.		VG-Sachnr.	
F	26489	10.80	Sy
G	28 027	02.82	Gn
Masse ohne Toleranzangabe		Maßstab 1:1	
		Halbzeug, Werkstoff	
1GME Tag Name		Benennung	
Bearb. 17.10.80 SY		Mikroprozessor	
Gepr.			
Norm			
ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr.	
		302.7111	
zu Gerät: SMS		reg. i. V. 302.4012 V	
erste Z. 302.4012		Blatt-Nr. 2	
v. Bl.			

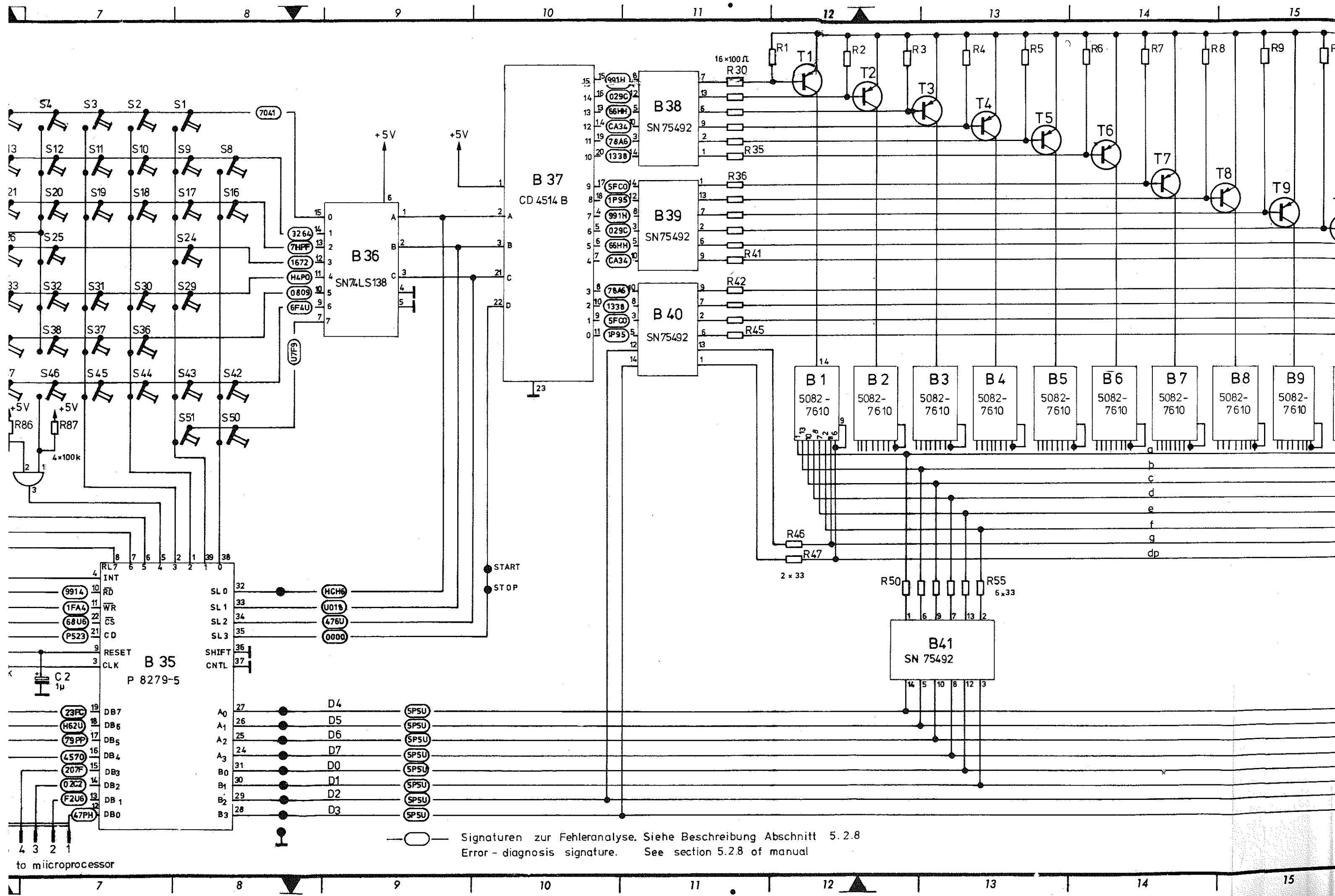




0	S 42	MHz	S 1
1	S 43	+ ΔF kHz	S 30
2	S 44	- ΔF kHz	S 31
3	S 45	+ 100 Hz	S 4
4	S 46	+ 1 kHz	S 5
5	S 47	+ 10 kHz	S 6
6	S 48	+ 100 kHz	S 7
7	S 49	+ 1 MHz	S 12
8	S 50	+ 10 MHz	S 13
9	S 51	- 100 Hz	S 14
.	S 40	- 1 kHz	S 15
-	S 39	- 10 kHz	S 20
CE	S 37	- 100 kHz	S 21
STO	S 36	- 1 MHz	S 22
RCL	S 29	- 10 MHz	S 23

μV	S 16	AM %	S 2
mV	S 17	FM kHz	S 8
dBμV	S 18	UNMOD	S 3
dBm	S 19	400 Hz INT.	S 9
+0,1dB	S 32	1kHz INT.	S 10
+1 dB	S 33	EXT.	S 11
+10dB	S 34	+0,1% kHz	S 25
-0,1dB	S 35	+1% kHz	S 26
-1dB	S 38	-0,1% kHz	S 27
-10dB	S 41	-1% kHz	S 28
RF-OFF	S 24		





—○— Signatures zur Fehleranalyse. Siehe Beschreibung Abschnitt 5.2.8  
 Error - diagnosis signature. See section 5.2.8 of manual

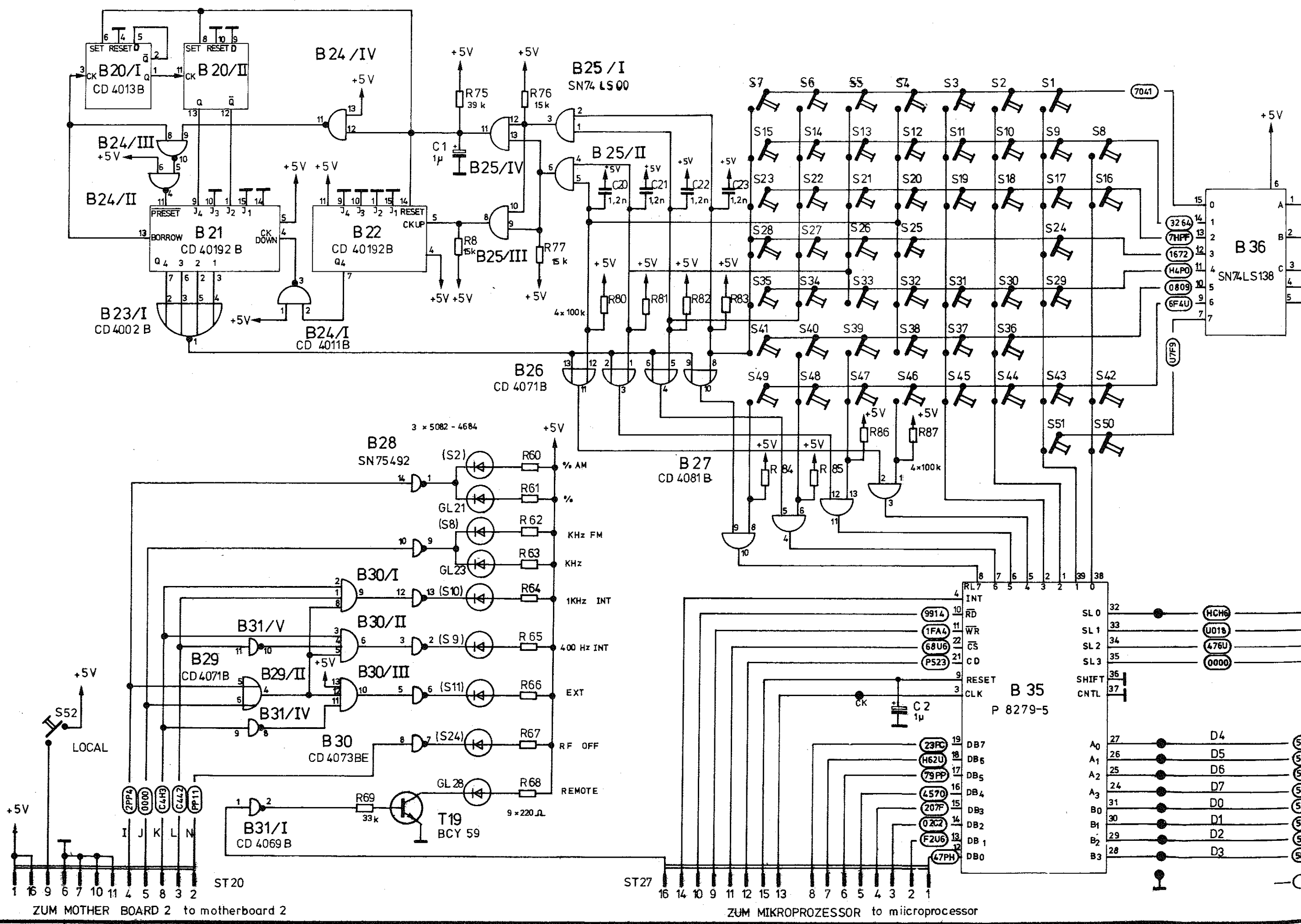
to microprocessor

Name	
Datum	
And. Mittig. Nr.	
And. zuzf.	
Name	SY
Datum	11.80
And. Mittig. Nr.	
F	26.89

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

**ROHDE & SCHWARZ · MÜNCHEN**

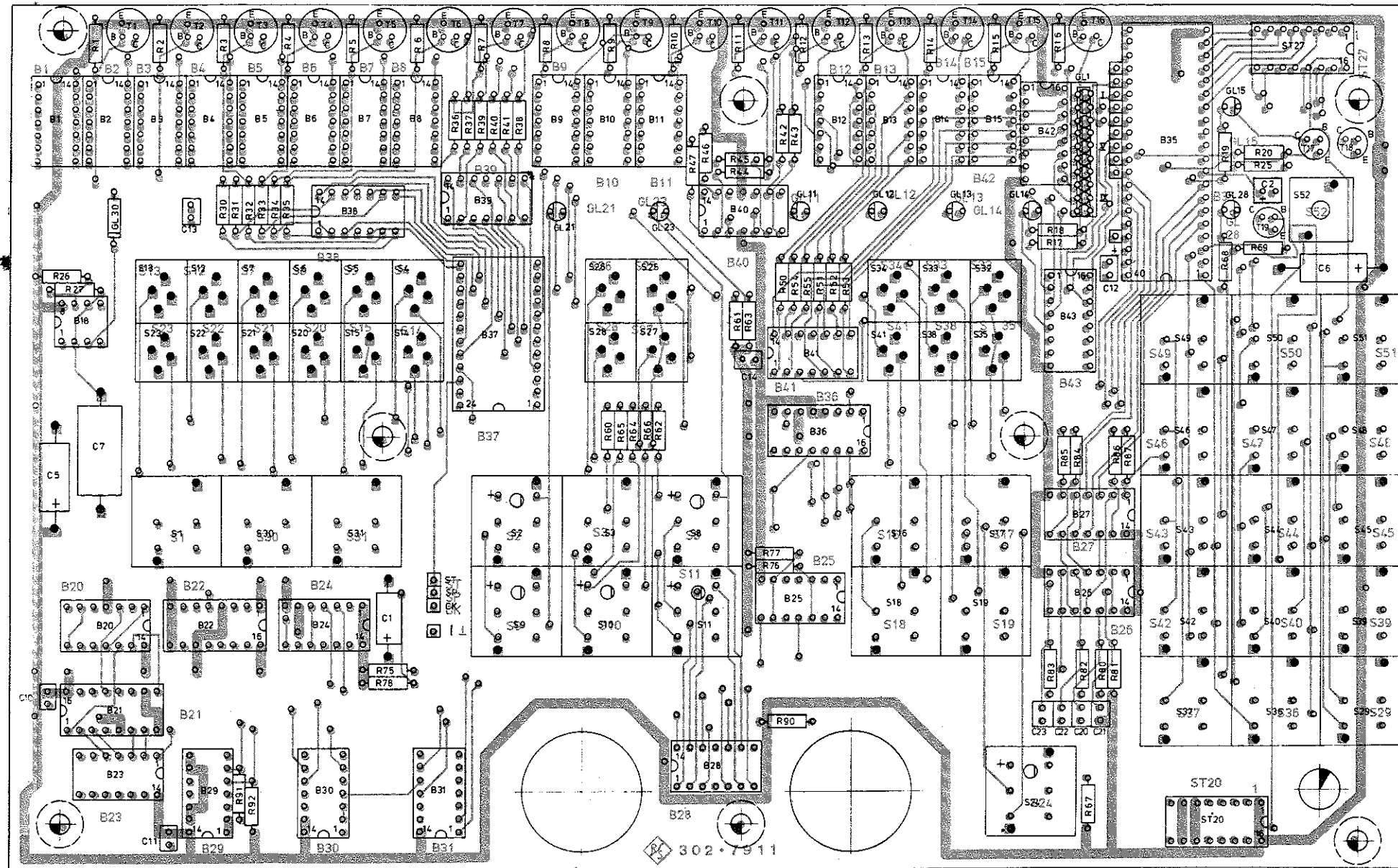
Name		Datum	
And. Mittig. Nr.			
And. zuzf.			
A	24.668	02.79	MÜ
B	24.791	05.79	Gn
C	25.166	10.79	Gn
D	25.580	11.79	Gn
E	25.932	04.80	SY
1 GME	101.79		
gezeichnet			
bearbeitet			
geprüft			
abgegeben			



ZUM MOTHER BOARD 2 to motherboard 2

ZUM MIKROPROZESSOR to microprocessor

Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

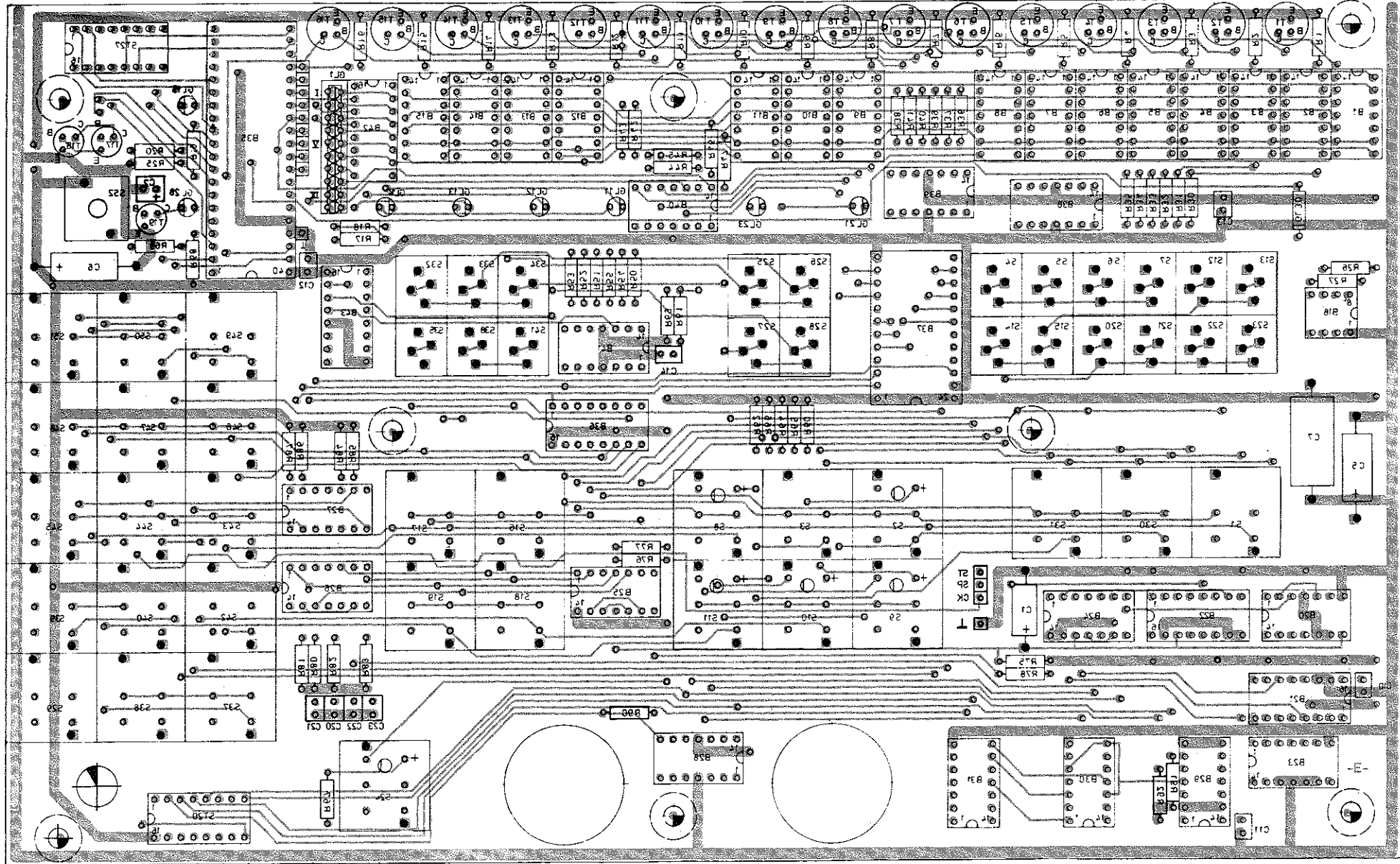


302.7911

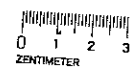


A	24.545	10.78	Md	Maße ohne	Material	2.1
B	24.791	04.79	Gn	Maßstab	Herstellung	
C	25.580	11.79	Gn			
E	28.027	02.82	Gn			
				NAME	ig	Name
				Abst	5.9.78	Wm.
				Ung		
				Num		
				Benennung		Z
				Tastatur - Anzeige - Einheit		
				Keyboard / display		
				Zeichn.-Nr.		
				302.7911		
				Blatt		2
				Zusatz		
				RÖNDE & SCHWARZ		
				302.2012V		
				302.4012		

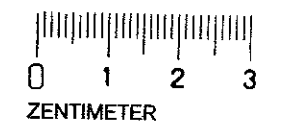
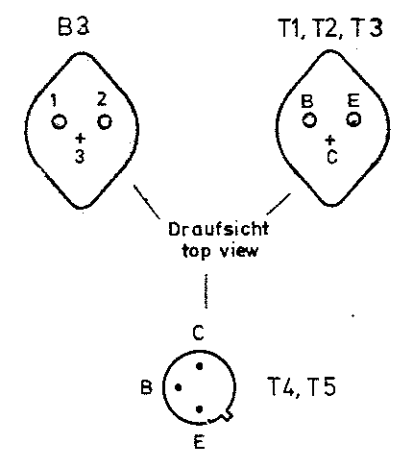
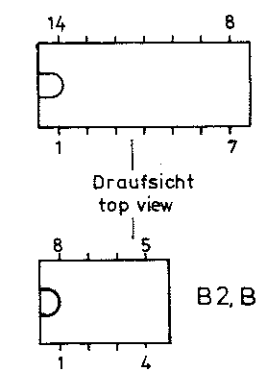
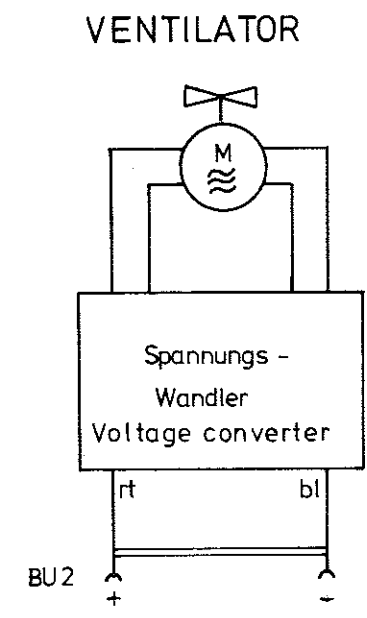
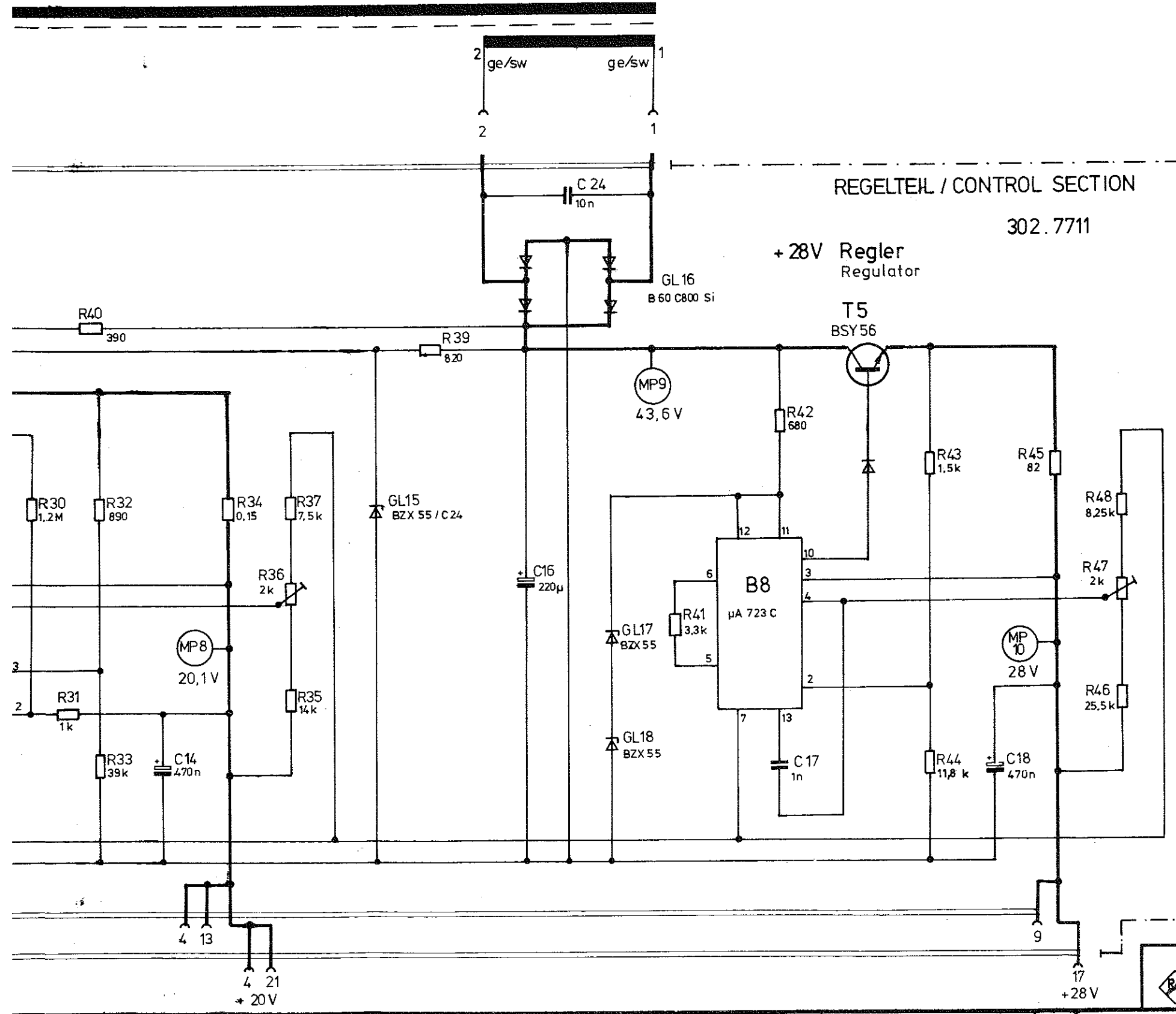
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



Für diese Zeichnung werden an die ... Rechte ...



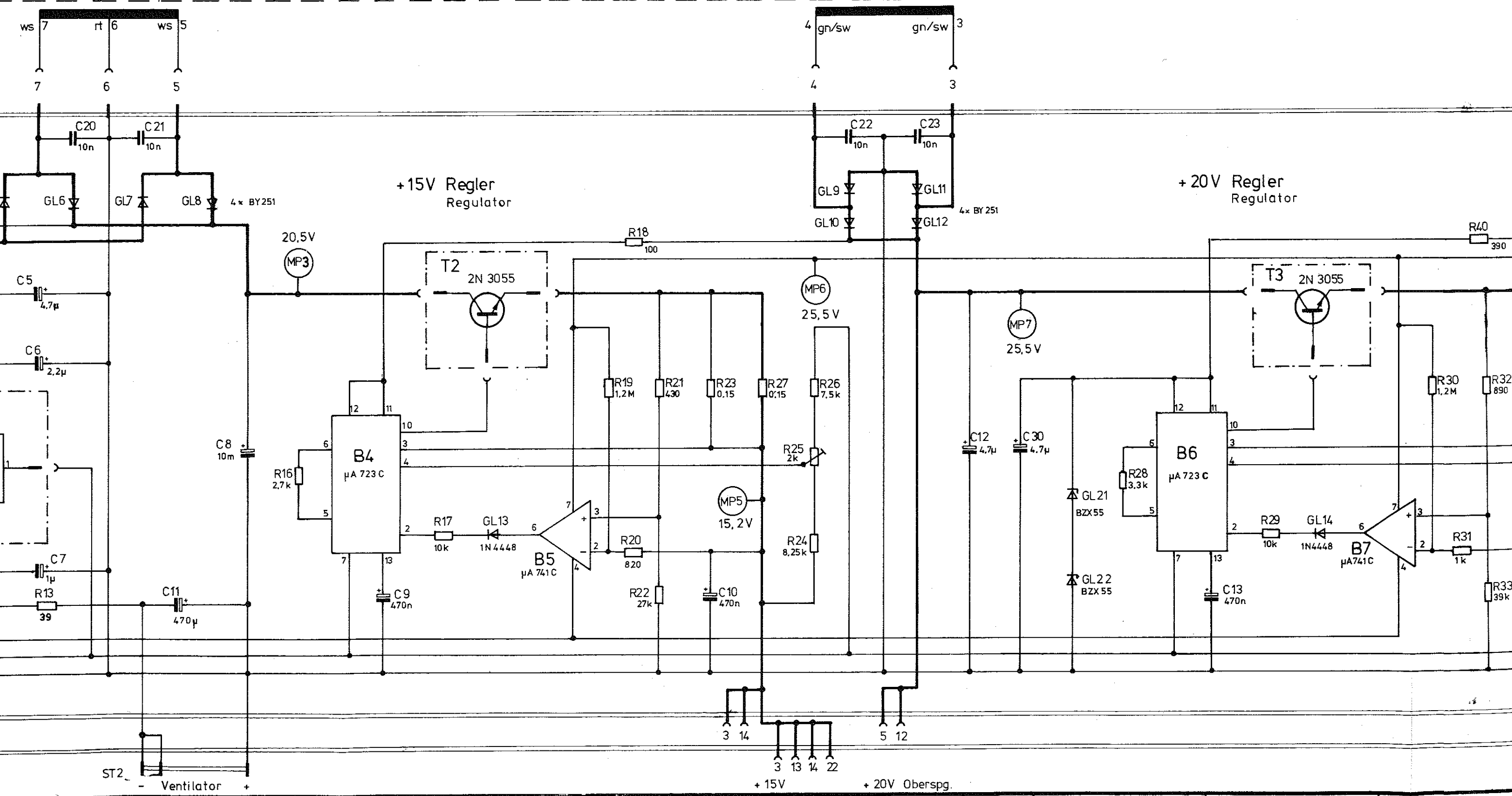
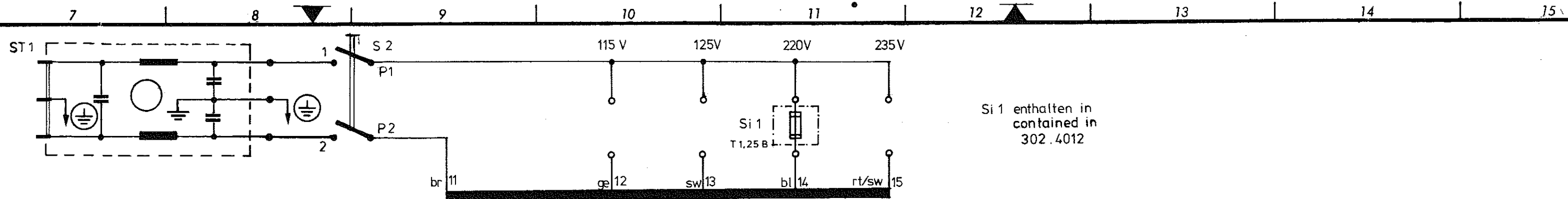
A	24.525	10.78	M0	Maße ohne Toleranzangabe	Maßstab	
B	24.791	04.79	Gn		Halbzeug, Werkstoff	
C	25.580	11.79	Gn			
E	28.027	07.82	Ga			
				NAME   Tag   Name	Benennung	
				Bearb.   3.9.78   Wm.	Tastatur-Anzeige-Einheit	
				Zeichn.-Nr.	Z	
				Keybord / display		
				ROHDE & SCHWARZ		
				302.7911		
				reg. V 302.4012 V erste Z 302.4012		



Stromlauf zu **NETZTEIL**  
POWER SUPPLY

Zeichn. Nr. 302.7411 S

302.4012 V	302.4012
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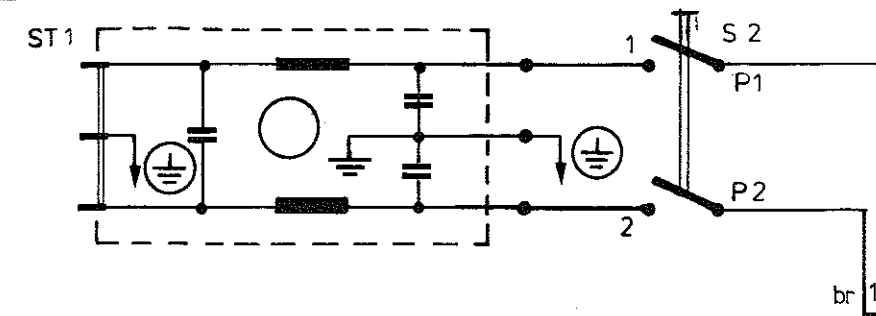
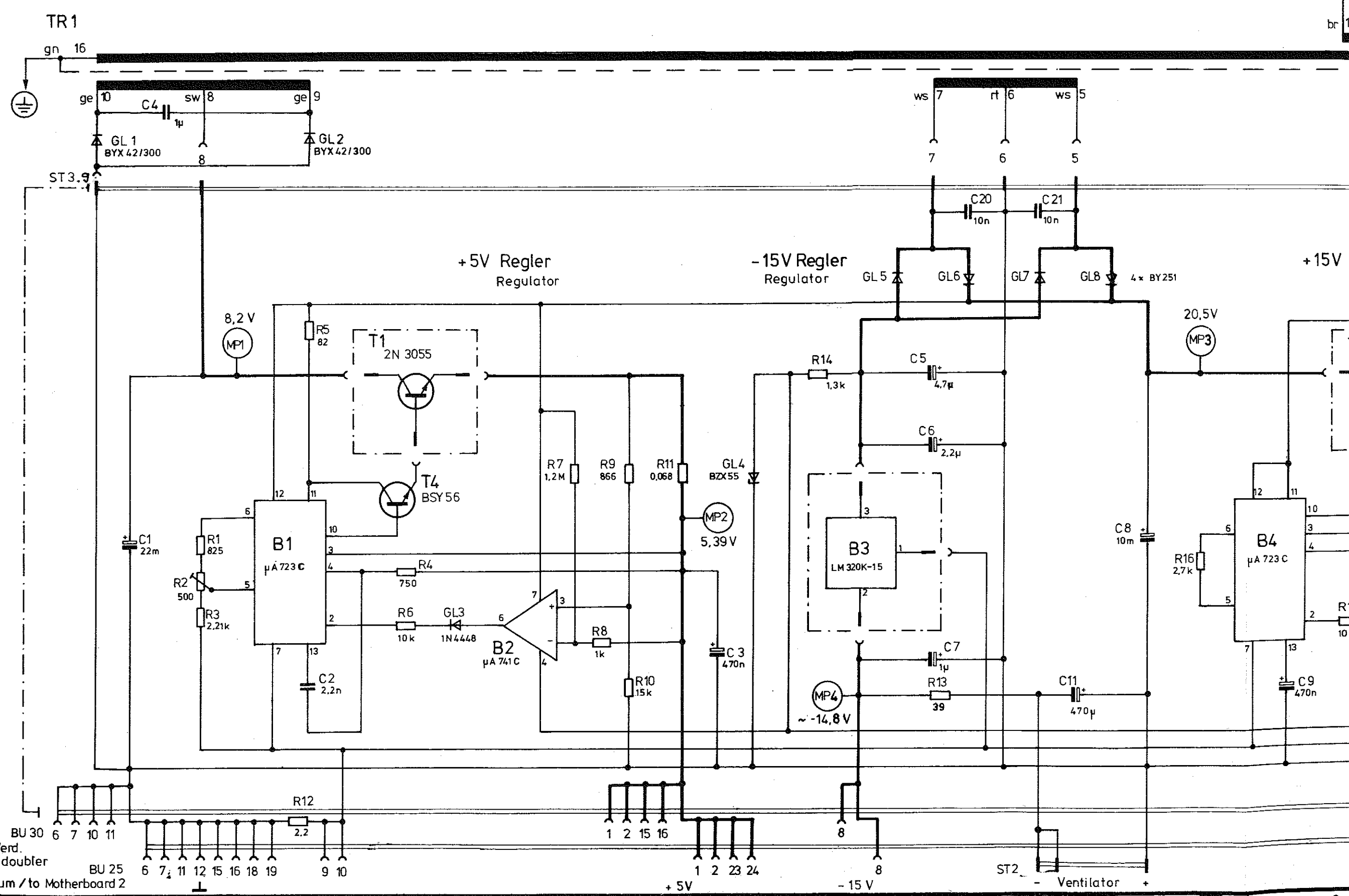
Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Mitteilung an andere ist strafbar und schadenersatzpflichtig.

ROHDE & SCHWARZ · MÜNCHEN

Name	Datum	Änd. Nr.	Änd. zeit.	Name	Datum	Änd. Nr.	Änd. zeit.
Mü	02.79	A	24.668	C1	12.78		
Gn	05.79	B	24.791				
Sy	01.81	C	26.489				
Gn	02.82	D	28.027				

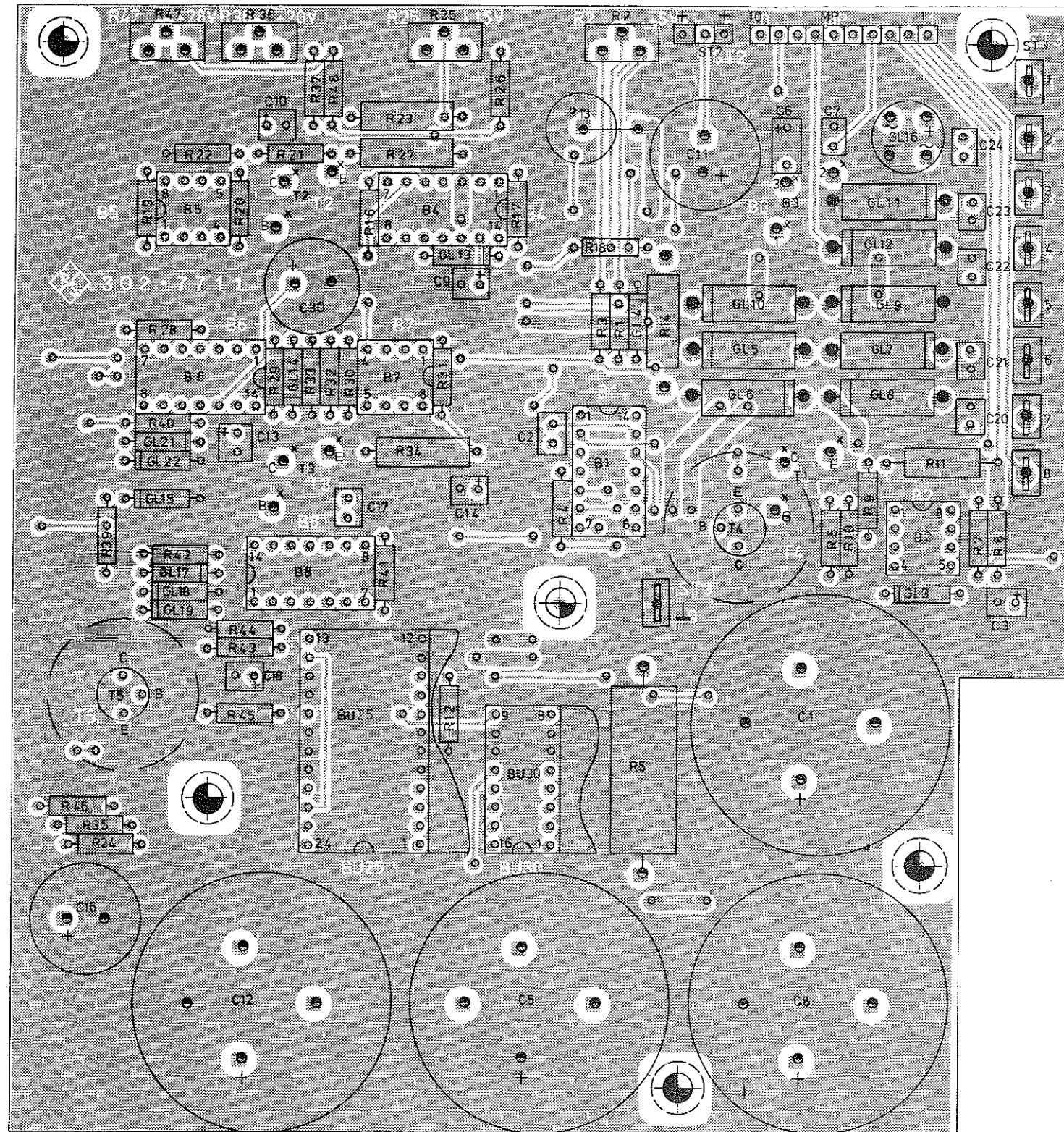
Zum Freq.-Verd.  
to frequency doubler

Zum / to Motherboard 2





Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



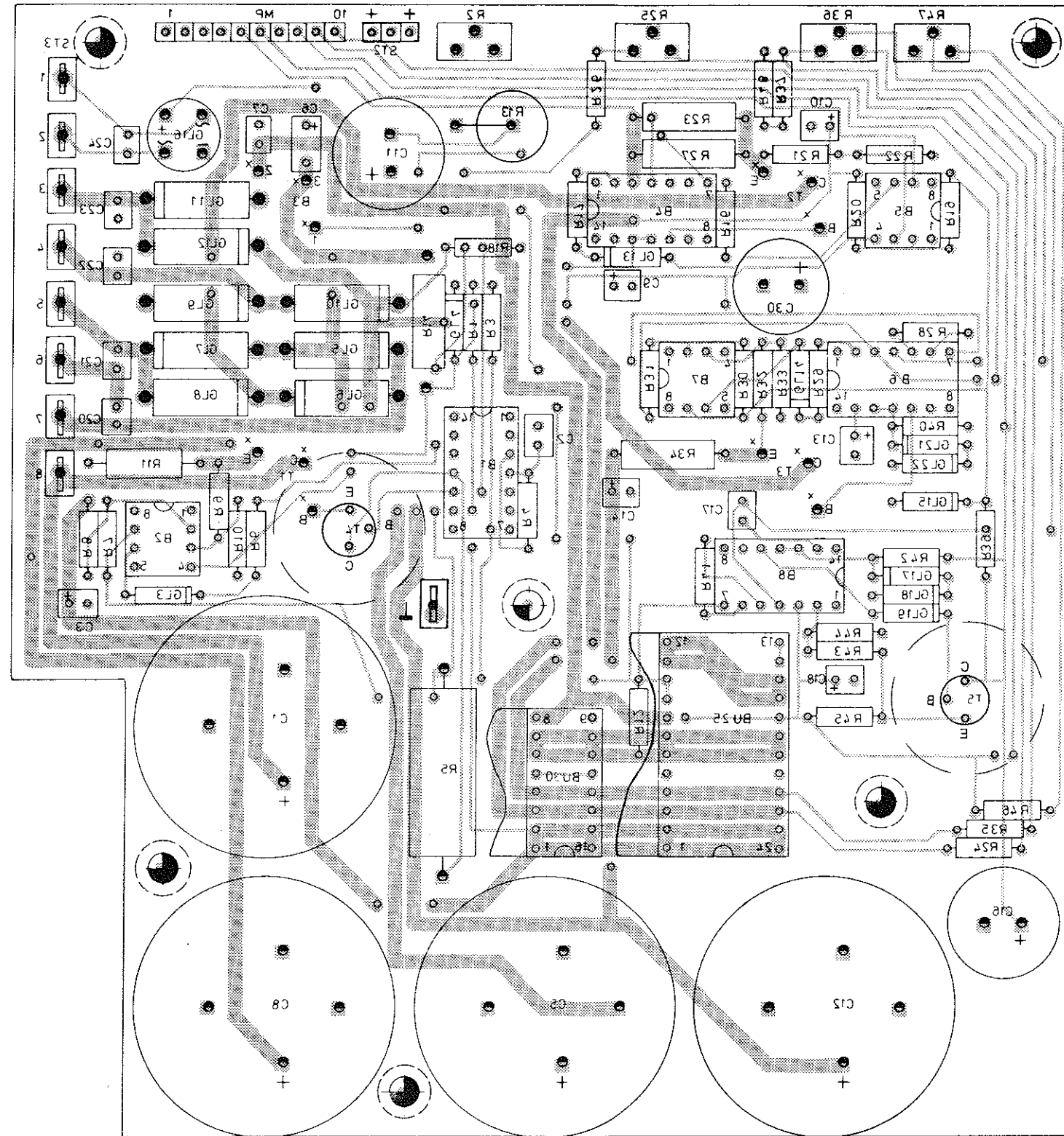
MP	V	Maßstab
1	8,2	
2	5,39	0,4
3	295	
4	-74,8	1,5
5	152	1,5
6	25,5	
7	29,5	
8	20,1	0,6
9	83,6	
10	280	1,7

Für diese Zeichnung sind erhalten wir  
uns alle Rechte vor



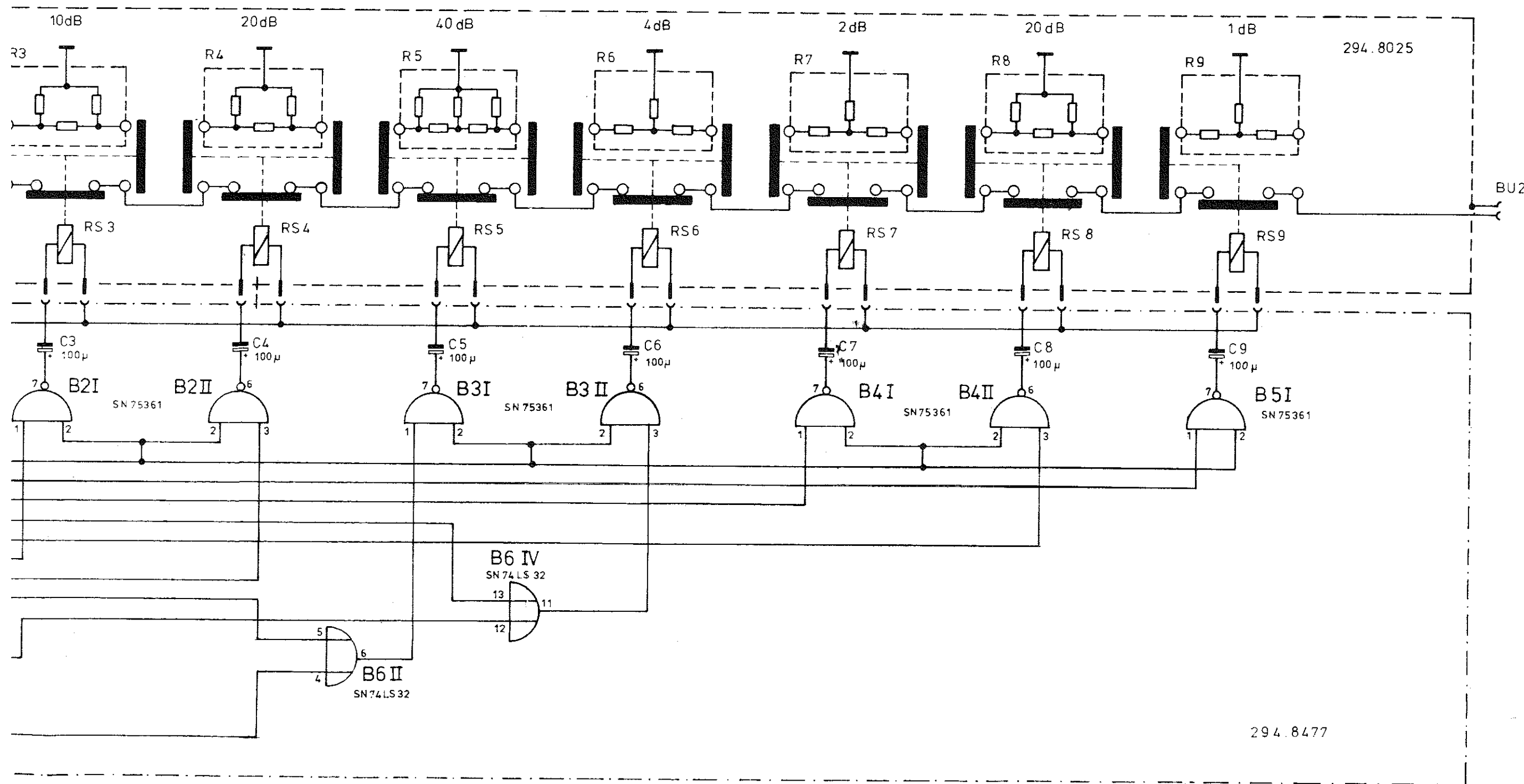
Verf. v. v		Vgl. Zeichn.	
A	24545	10.78	Mü
B	24791	04.79	Gh
Maße ohne Toleranzangabe		Maßstab	
10ME Tag Name		Benennung	
Bearb. 20.7.78 Wm.		Regelteil Regulator	
Gepr.			
Norm.			
zu Gerät SMS		Zeichn.-Nr. 302.7711	
reg. v. 302.4012V		erste Z. 302.4012	
And. Zust.	Anderungs-Mittelung	Tag	Name
zu Gerät SMS		Blatt-Nr. 2	
		v. Bl.	

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



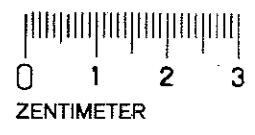
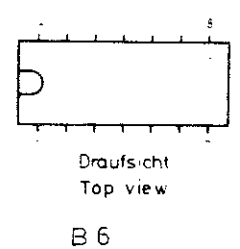
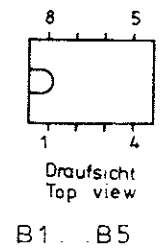
0 1 2 3  
ZENTIMETER

A	24545	10.78	MU	Maße ohne Toleranzangabe	Maßstab
B	24791	04.79	Re		
				IGME Tag Name	Benennung
				Beort: 20.78 Wm.	Regelteil
				Gepr:	Regulator
				Norm:	
				ROHDE & SCHWARZ MÜNCHEN	Zeichn.-Nr. 302.7711
And. Zust.	Anderungs-Mitteilung	Tag	Name	zu Gerät SMS	reg. v. 302.4012V erste Z. 302.4012
					Blatt Nr. 3



294.8025

294.8477



Stromlauf zu  
 Baugruppe Eichleitung für SMS  
 RF - Attenuator for

Zeichn. Nr. 302.7311 S  
 Z 302.4012 V

Name	
Datum	
And. Mittg. Nr.	
And. zust.	
Name	
Datum	
And. Mittg. Nr.	
And. zust.	

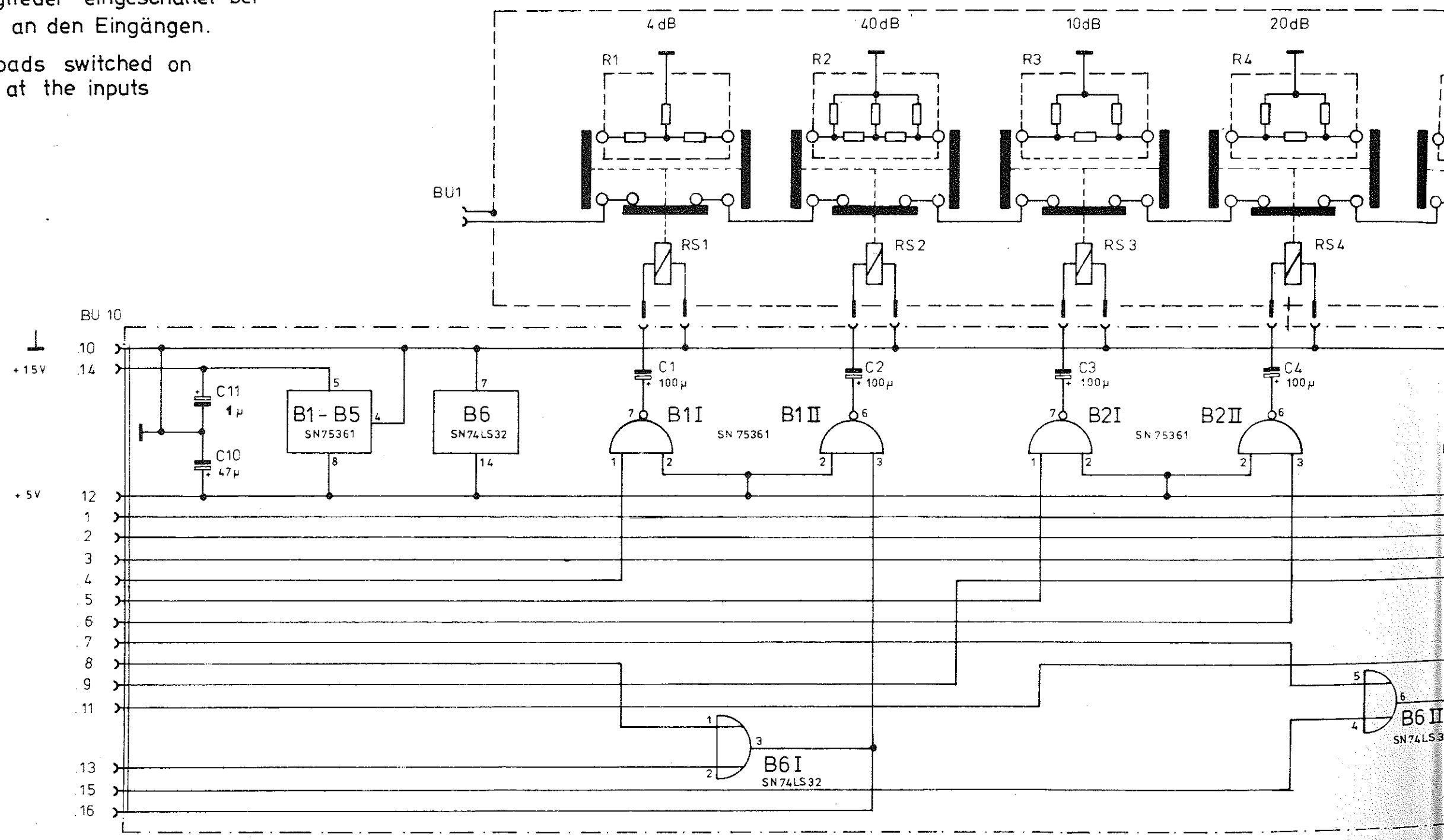
Dämpfungsglieder eingeschaltet bei High-Signal an den Eingängen.  
Attenuator pads switched on High-signal at the inputs

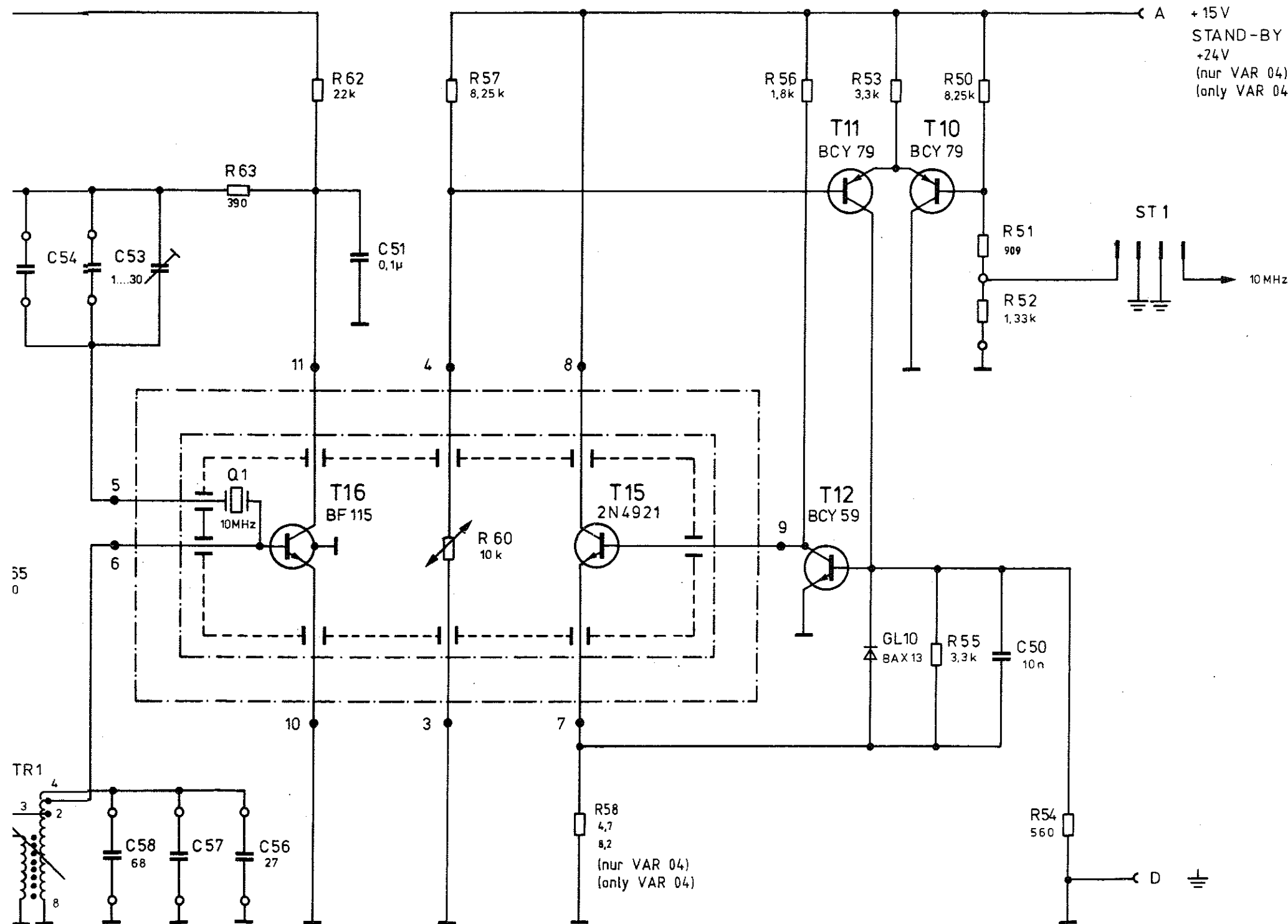
Diese Zeichnung ist unser Eigentum. Vervielfältigung, unbefugte Verwertung, Missbitung an andere ist strafbar und schadenersatzpflichtig.

ROHDE & SCHWARZ MÜNCHEN

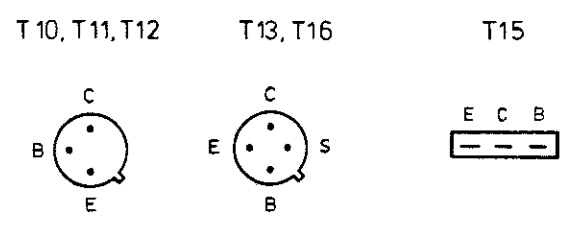
IGME				
gezeichnet	13.9.78	Hg	A 24668	02.79 Mü
bearbeitet	09.78	Gn	B 28027	02.82 Gn
geprüft				
normierter				

zu Gerät

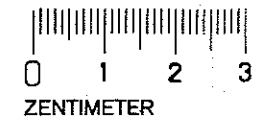




+15V  
 STAND-BY  
 +24V  
 (nur VAR 04)  
 (only VAR 04)



Stromlauf gilt für VAR 02,04,32  
 Circuit diagram is valid for VAR 02,04,32



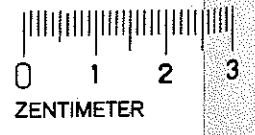
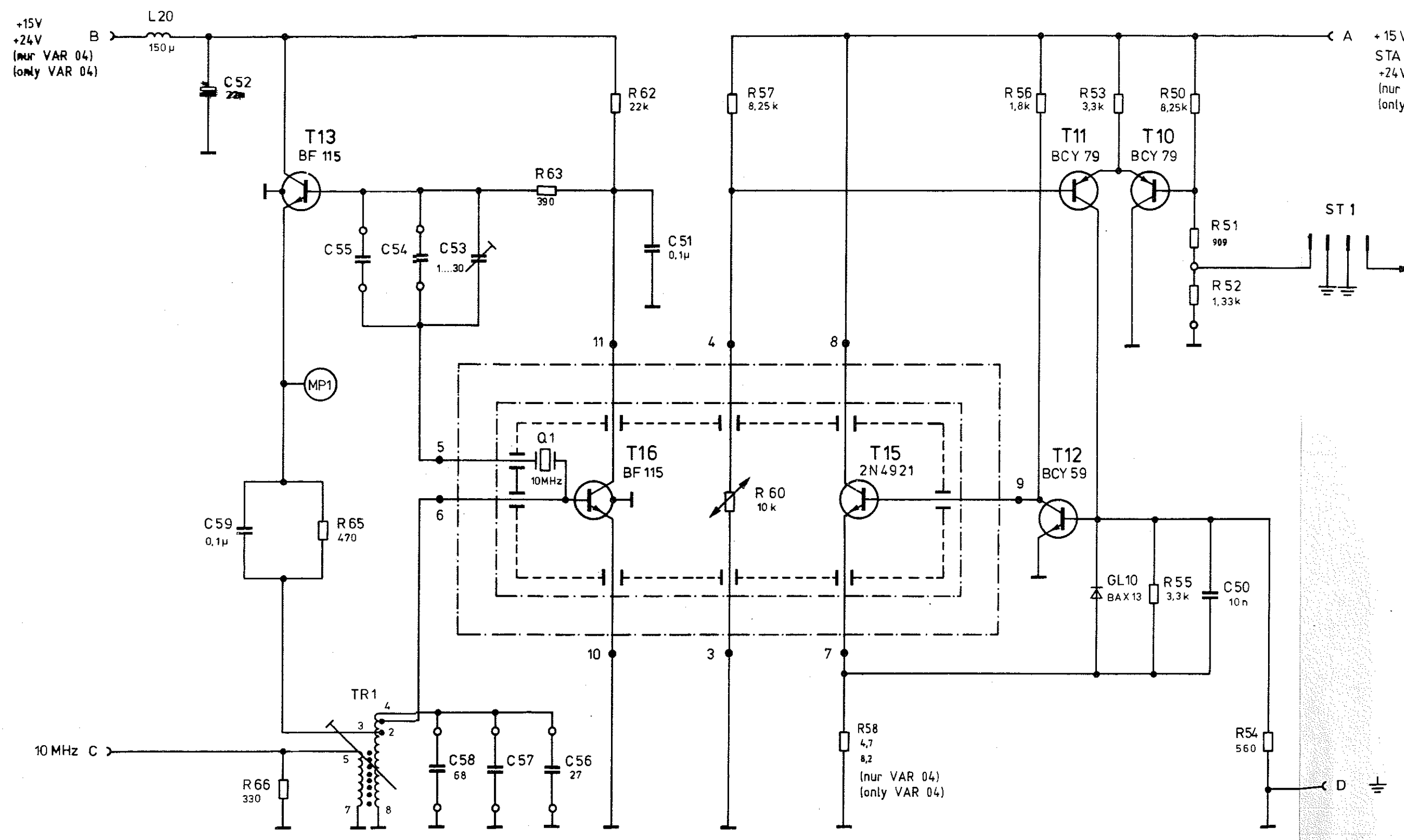
	<b>Stromlauf zu</b> Referenzoszillator Temp. Ger. Reference oscillator temperature-controlled		<b>Zeichn. Nr.</b> 302.8918 S
	<b>Z</b>	302.8918 V	302.8918

And. Nr.	
Name	
Datum	
And. Nr.	
Name	
Datum	
And. Nr.	
Name	
Datum	

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

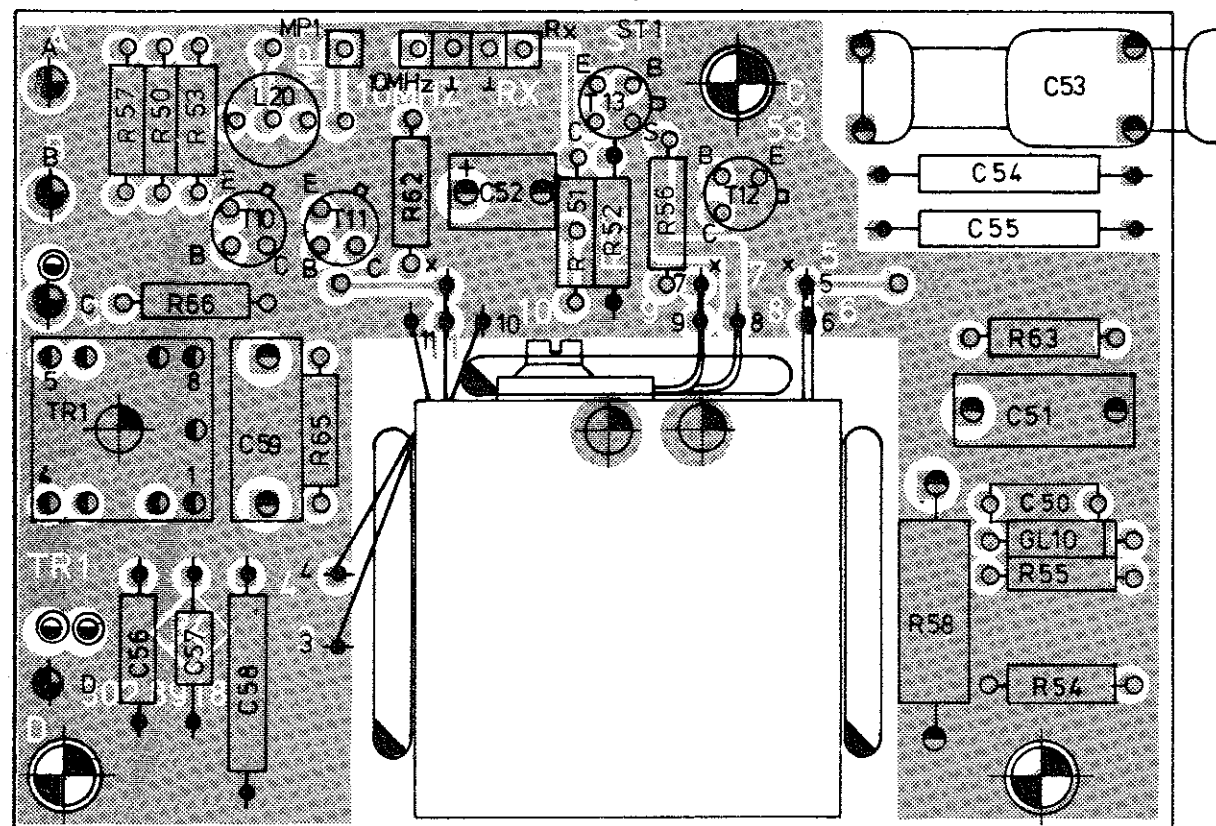
ROHDE & SCHWARZ · MÜNCHEN

1 GME			
gezeichnet	22.1.79	Gr	Mü
bearbeitet	01.7.79	Gn	Mü
geprüft			lb
normgepr.			
And. Nr.			
Name			
Datum			
And. Nr.			
Name			
Datum			

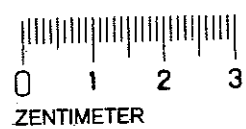
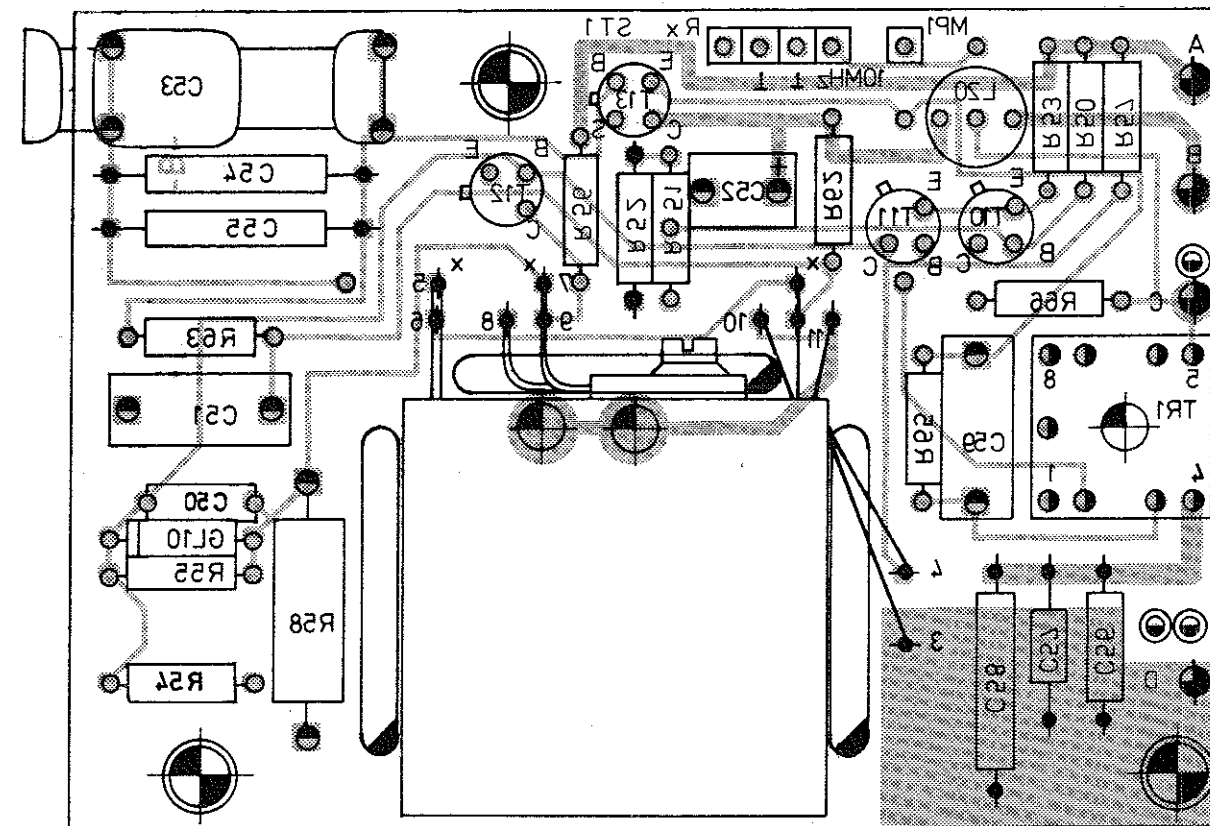




Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



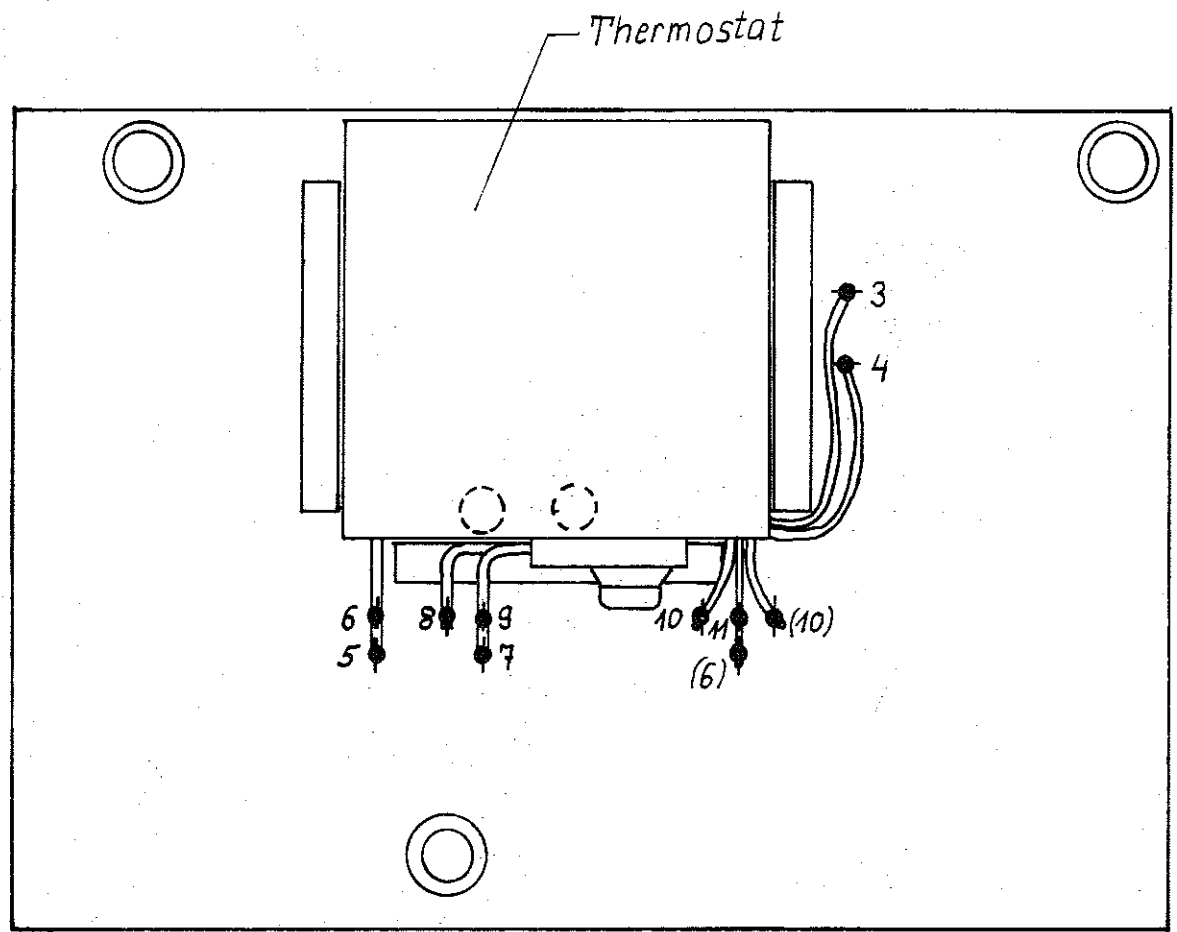
Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



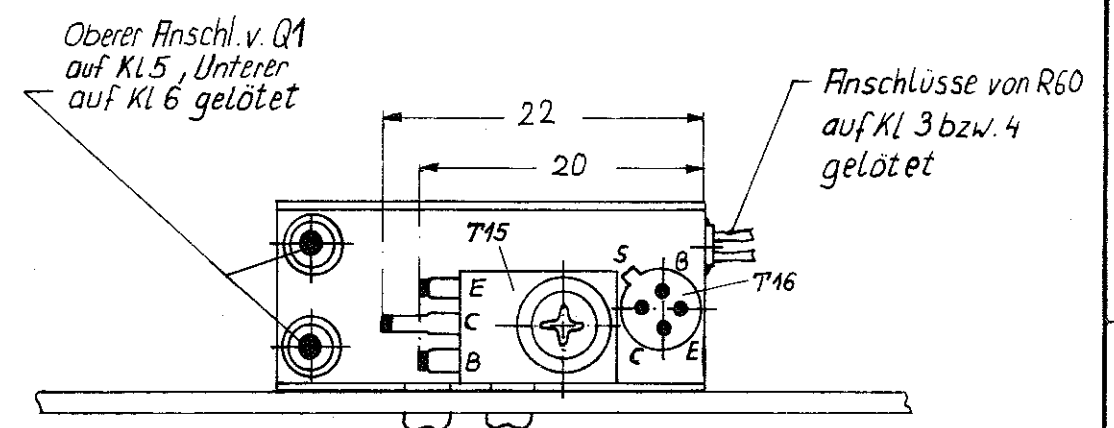
B 25 803		11.79	Gn	Maße ohne Toleranzangabe	Maßstab 2:1	Halbzeug, Werkstoff
D 28 603		02.82	Ib			
				IGME	Tag	Name
				Bearb	17.11.78	Wm
				Gepr		
				Norm		
				ROHDE & SCHWARZ MÜNCHEN		Benennung
				Zeichn.-Nr.		Referenzosz. Temp. ger.
				302.8918		Z
				Blatt-Nr.		2
				v. Bl.		
And. Zusl.	Anderungs-Mitteilung	Tag	Name	zu Gerät	reg. v.	302.8918V
				erste Z.	302.8918	

1 2 3 4 5 6 7 8

A  
B  
C  
D  
E  
F



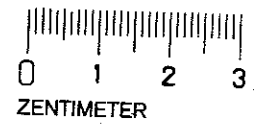
Ansicht von vorn (ohne Lötösen)



Anschlüsse von T15:  
 Emitter auf Kl 7  
 Kollektor auf Kl 8  
 Basis auf Kl 9

Anschlüsse von T16:  
 Basis auf Kl (6)  
 Emitter auf Kl (10)  
 Kollektor auf Kl (11)  
 Gehäuse (s) auf Kl 10

*Sämtliche Anschlüsse auf entsprechende Länge kürzen !*



Maße ohne Toleranzangabe		Maßstab	
		Halbzeug, Werkstoff	
Bearb.	Tag	Name	Benennung
Gepr.	12.78	MÜ/16ME	
Norm			
Zechn.-Nr.			Blatt-Nr.
302.8918			3
reg. V 302.8918 V			v. 3 Bl.
erste Z 302.8918			

1 2 3 4 5 6 7 8

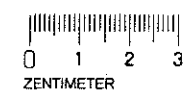
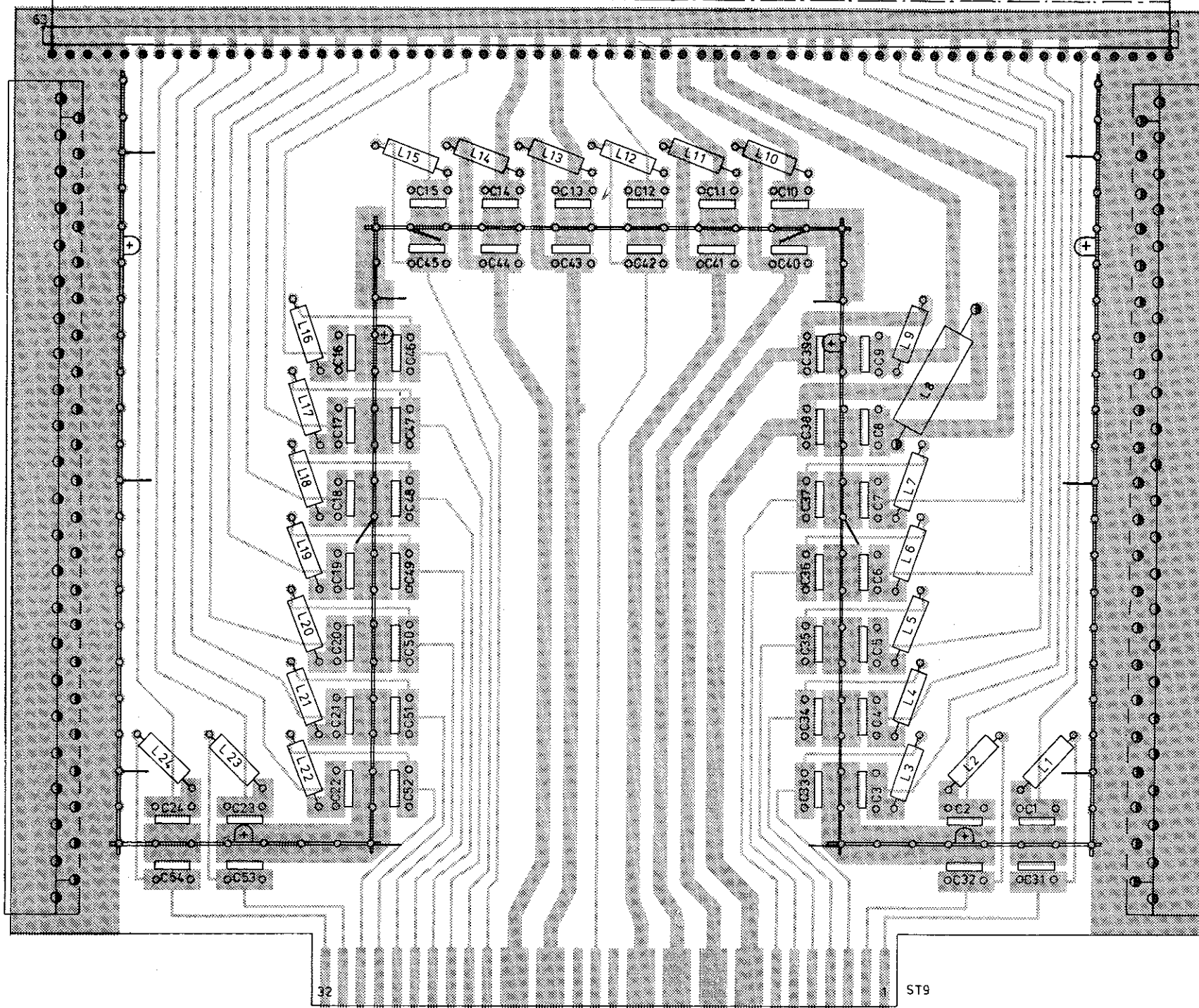






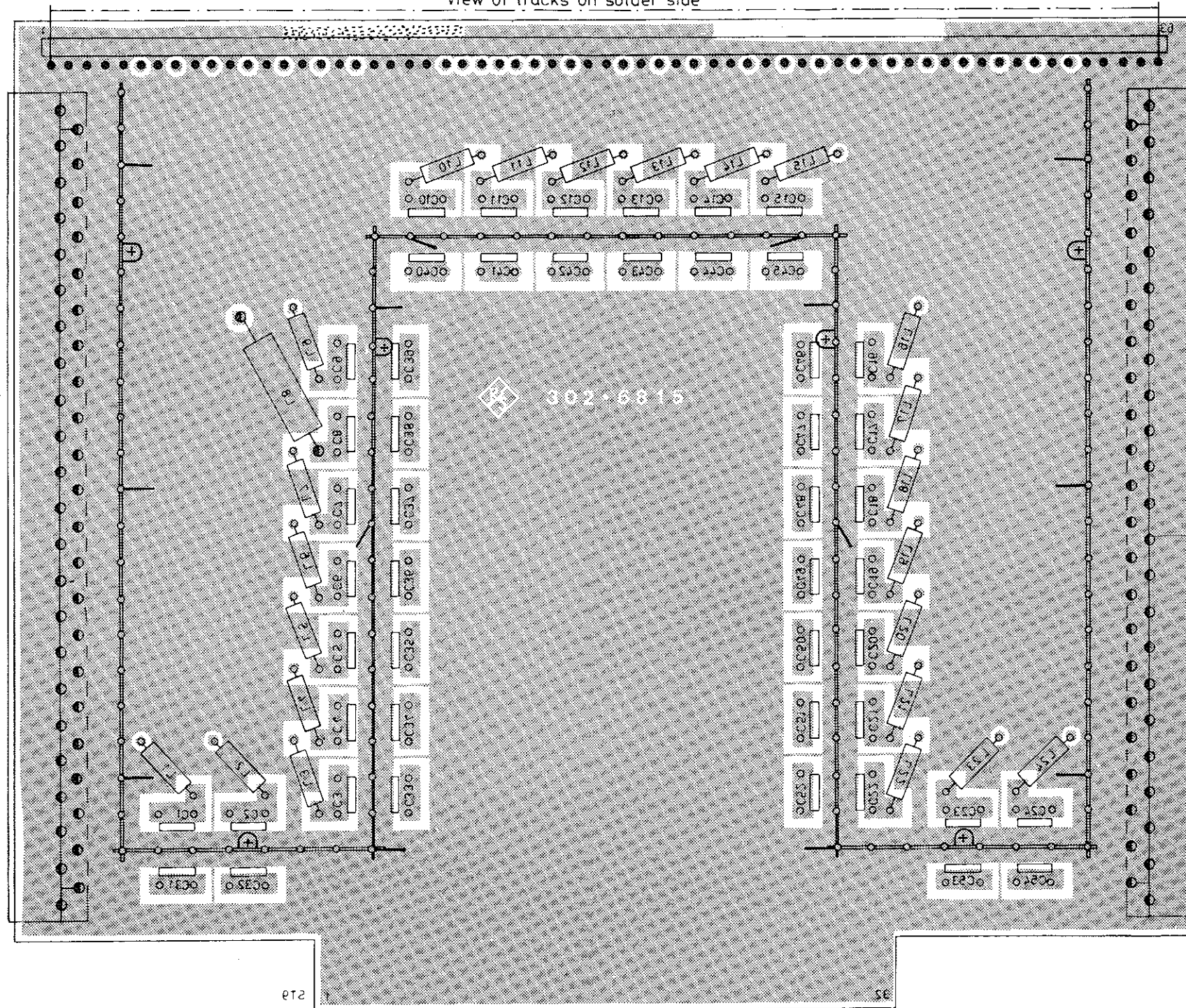


Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



Vers.-Nr.		v. Sachr.	
B	24545	10.78	Gn
Maße ohne Toleranzangabe		Maßstab	
Halbzeug, Werkstoff		Benennung	
IGME Tag Name		Filter	
Bearb. 11.7.78 Wm.		Z	
Gepr.		Zeichn.-Nr.	
Norm		302.6815	
Blatt-Nr.		2	
ROHDE & SCHWARZ MÜNCHEN		zu Gerät SMS	
reg. V. 302.4012V		erste Z. 302.4012	

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



B	24 545	10.78	Gn	Maße ohne Toleranzangabe	Mafstab			
C	24 791	04.79	Gn					
E	25 863	01.80	Gn					
				IGME	Tag	Name	Benennung	Z
				Bearb.	11.7.78	Wm.		
				Gepr.				
				Norm				
				ROHDE & SCHWARZ MÜNCHEN		Zeichn.-Nr.	302.6815	Blatt-Nr. 3
And. Zust.	Anderungs-Mitteilung	Tag	Name	Reg. v. 302.4012V		Erstz. 302.4012		

1 2 3 4 5 6 7 8

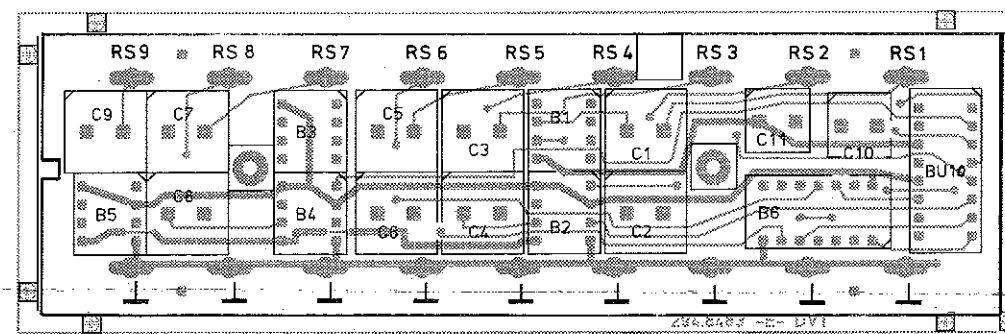
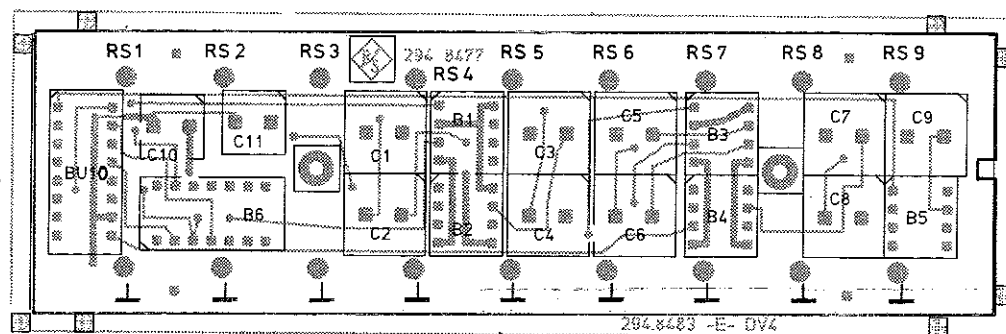
A

Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side

B

C

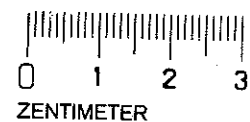


Für diese Zeichnung behalten wir  
uns alle Rechte vor.

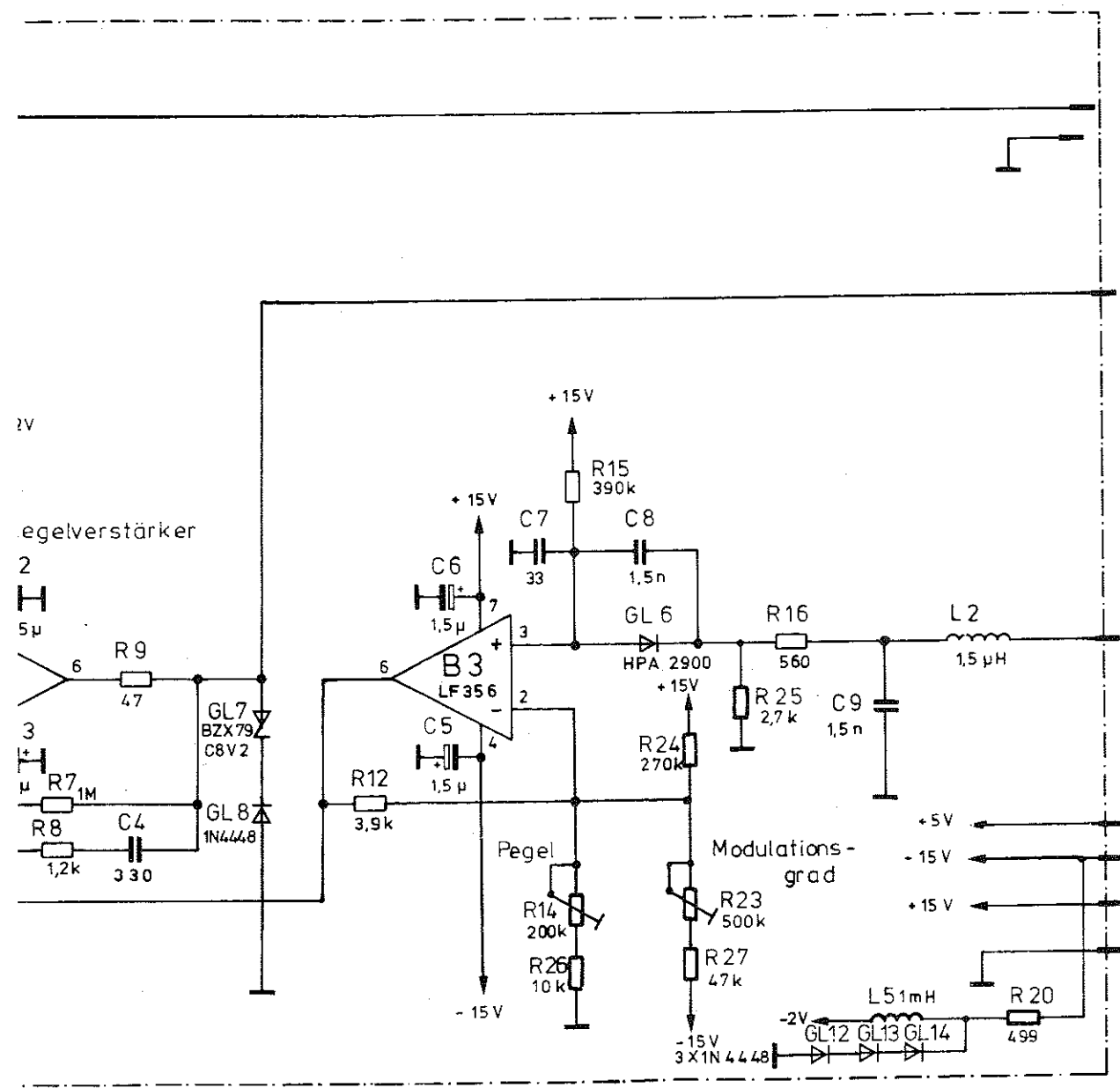
D

E

F



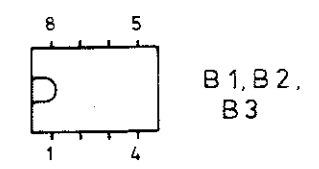
Versorg.-Nr.		VG-Sachnr.	
D	9.78 Nk	Maße ohne Toleranzangabe	Maßstab
E	25525 11.79 Pt.		
		1 GM Tag Name	Benennung <b>Ansteuerung 1 Control unit 1</b>
		Bearb. 12.9.78 Nk	
		Gepr.	
		Norm	
		Zeichn.-Nr. <b>294.8477</b>	
		Blatt-Nr. <b>2</b>	
And. Zust.	Änderungs-Mitteilung	Tag	Name
		zu Gerät.	
		reg. i. V. 294.8019 V erste Z. 294.8019	



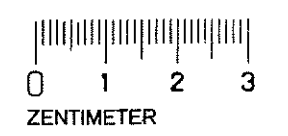
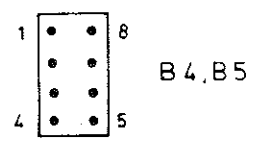
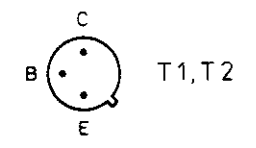
ST3  
HF-Ausgang  
RF output

ST5  
Regelspannung /Control voltage  
(Verdoppeln / double)

7  
Sollwert  
Rated valve



Draufsicht  
Top view



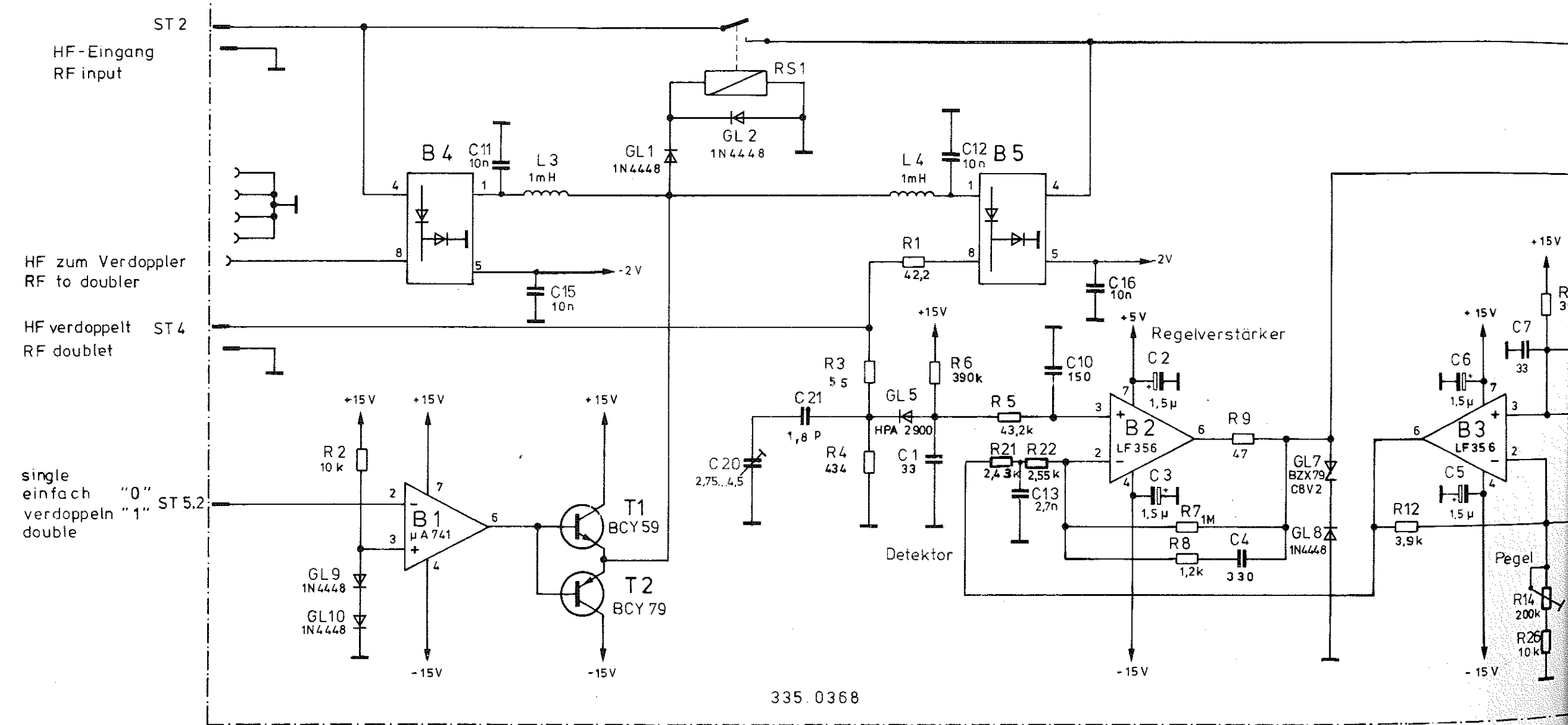
	Schalter / Switch		Zeichn. Nr. 335.0368 S	
	Z	335.0016V	335.0316	

And. Nr.	
And. zue.	
Name	
Datum	
And. Nr.	
And. zue.	

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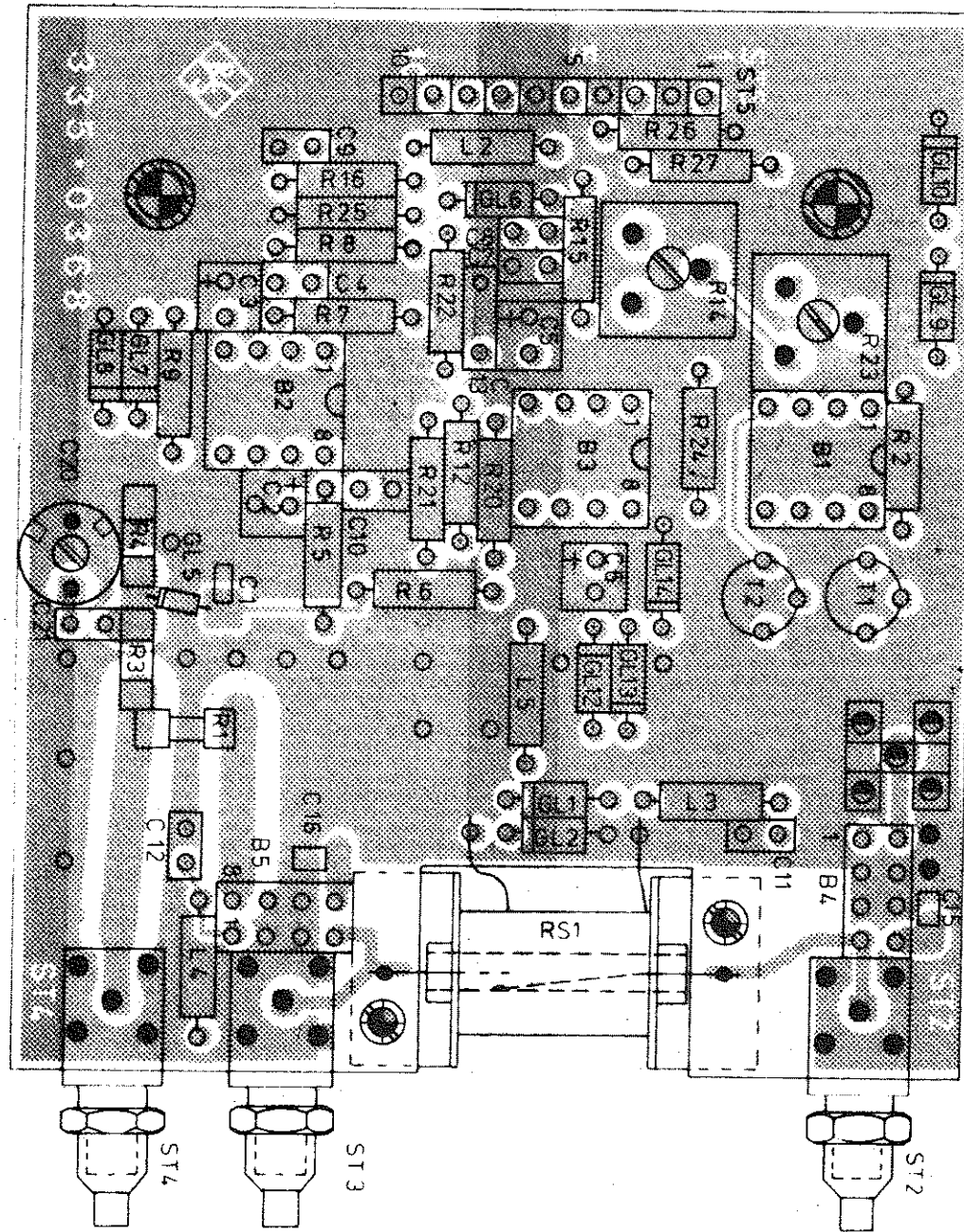
**ROHDE & SCHWARZ MÜNCHEN**

IGME						
gezeichnet	28.2.79	Gr	B	25581	12.79	GN
bearbeitet	02.79	Gn	C	25933	04.80	NL
geprüft			D	26909	04.81	Gr
normpage						

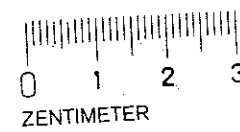
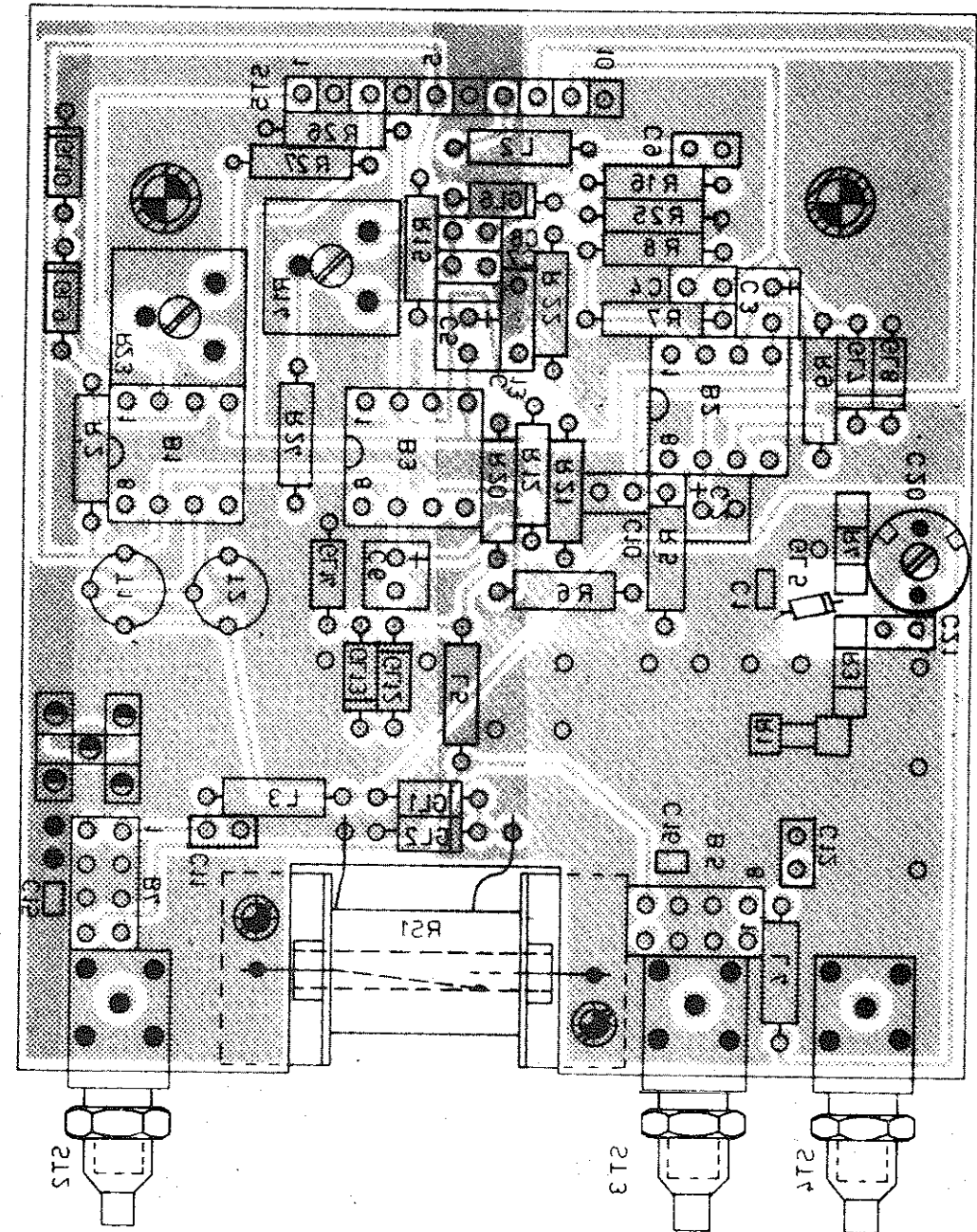




Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side



Ansicht und Leitungsführung Lotseite  
View of tracks on solder side



A		07.79	Gn				
B		11.79	Gn				
C	25581	12.79	Gn				
D	25933	04.80	Ni				
		IGME				Schalter Switch	Z
		10.5.79	GU				
				335.0368		2	
		SMS		335.0016V		335.0016	

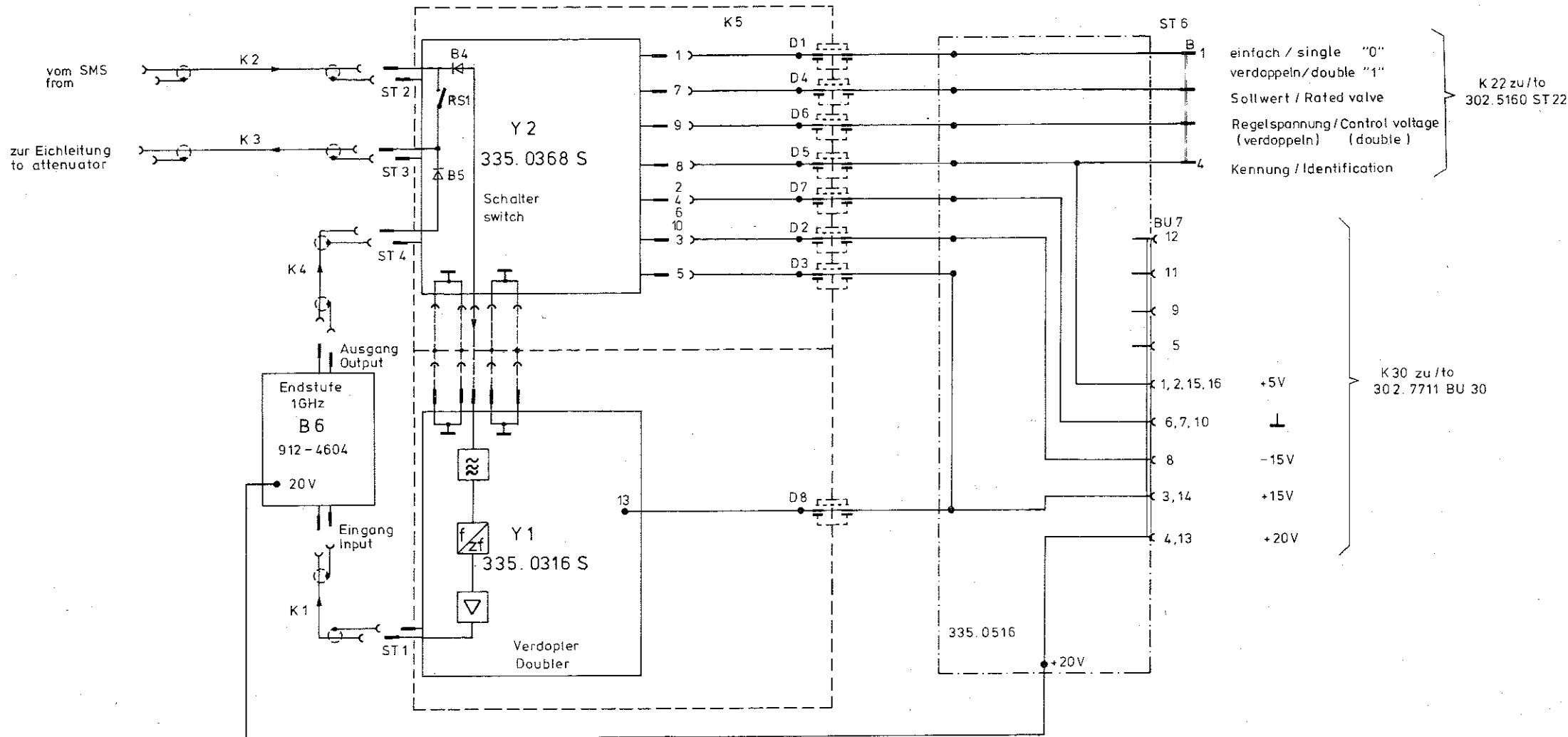


Name	
Datum	
Änd. Mdlg. Nr.	
Änd. Zuck.	
Name	
Datum	
Änd. Mdlg. Nr.	
Änd. Zuck.	

Für diese Zeichnung behalten wir uns alle Rechte vor.



Zeichn.-Nr.	335.0016
Name	GN
Datum	12.79
Änd. Mdlg. Nr.	25581
Änd. Zuck.	A
Name	Gr
Datum	18.5.79
gezeichnet	Gr
geprüft	Gr
normgepr.	



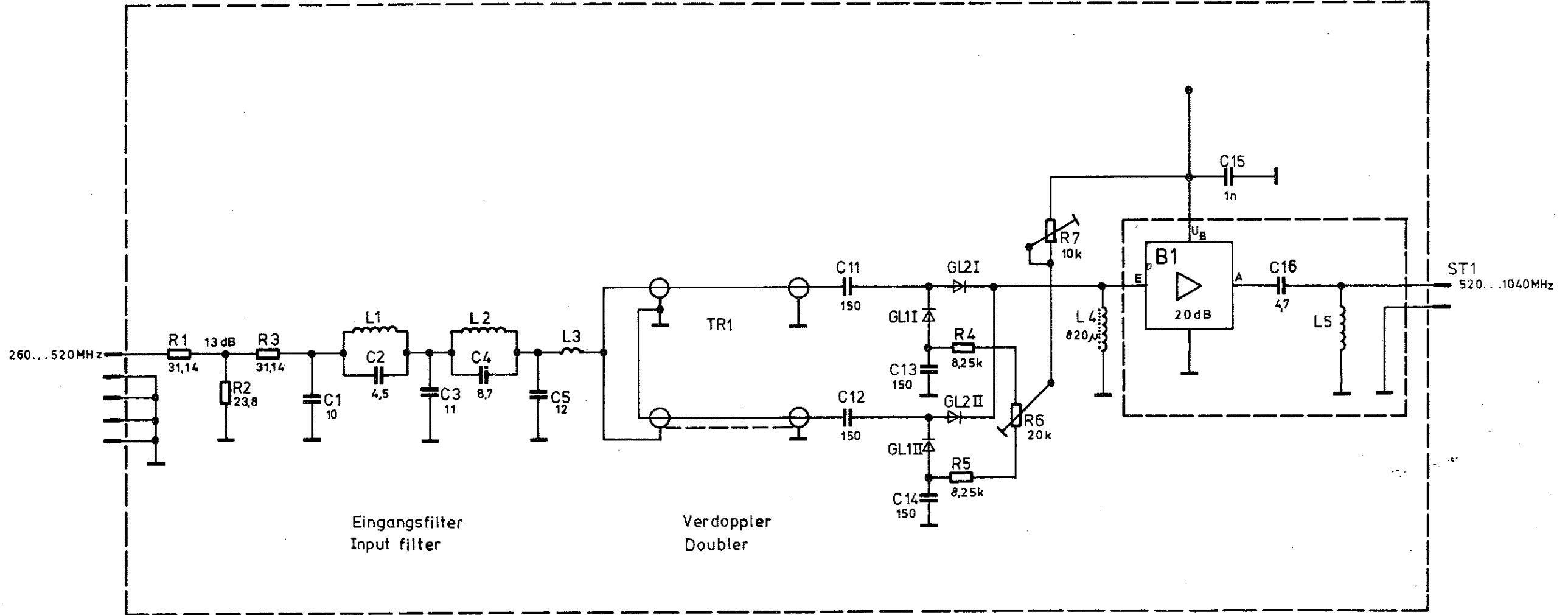
Stromlauf zu	<b>SMS - B2</b>	Zeichn.-Nr.	<b>335.0016 S</b>	Blatt-Nr.	
	reg. i.V. 335.0016	erste Z.		v.	Bl.

Name	
Datum	
And-Mitg-Nr	
And-Zust	
Name	
Datum	
And-Mitg-Nr	
And-Zust	

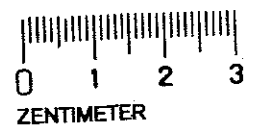
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unbeliebige Verwertung, Mitteilung an andere ist  
strafbar und schadenersatzpflichtig.

ROHDE & SCHWARZ MÜNCHEN

Name	SP
Datum	04.80
And-Mitg-Nr	25 933
And-Zust	B
Name	SP
Datum	03.80
gezeichnet	
bearbeitet	
geprüft	
normgepr	



GL1, GL2 5082-2804



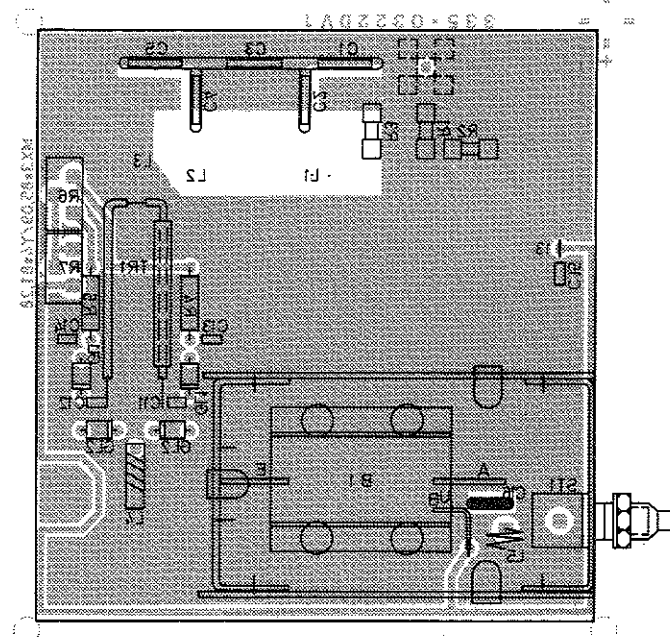
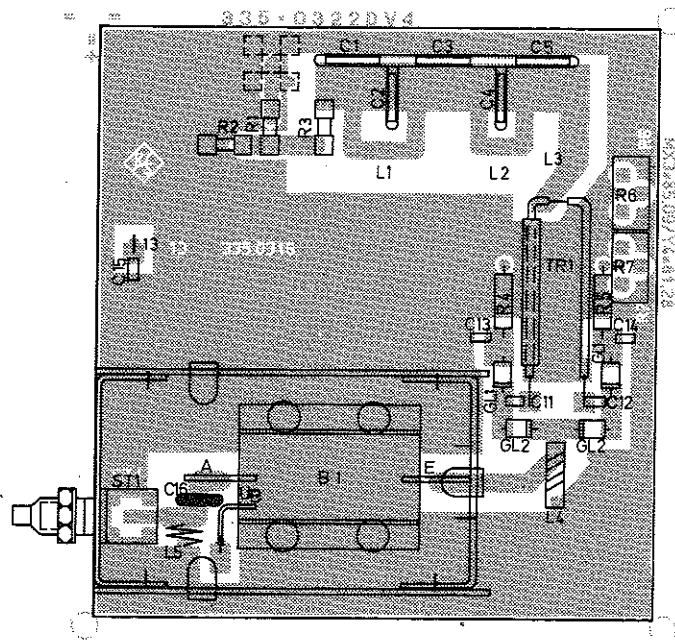
Stromlauf zu Verdoppler Doubler	Zeichn. Nr. 335.0316 S
	reg. IV. 335.0016 V

1 2 3 4 5 6 7 8

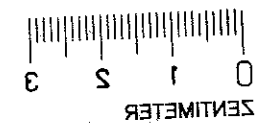
A  
B  
C  
D  
E  
F

Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



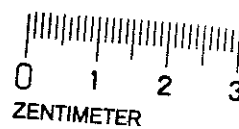
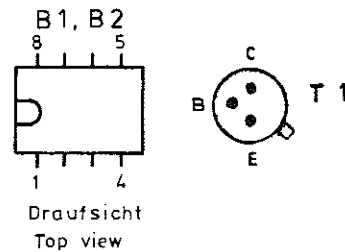
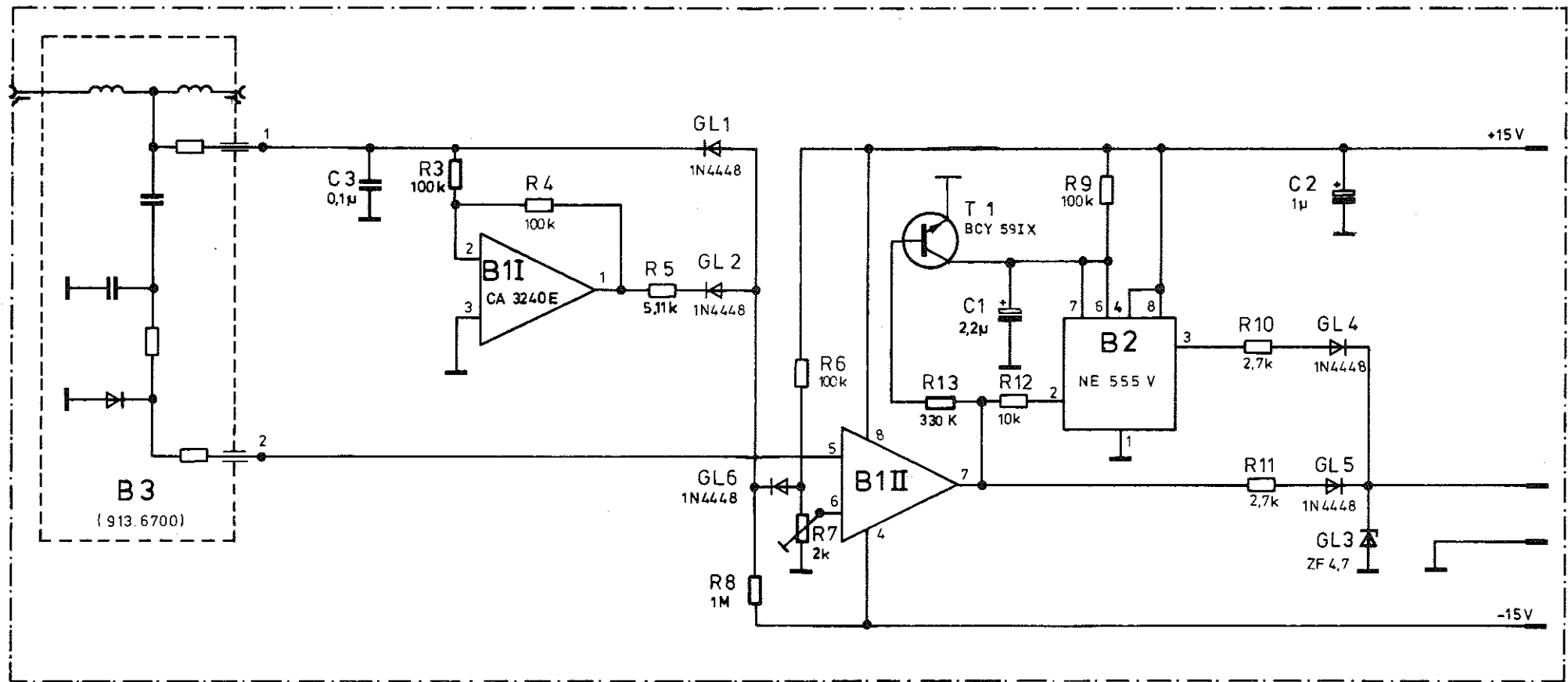
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Versorg.-Nr.		VG-Sachnr.		
D	26909	4.81	Gn	
Maße ohne Toleranzangabe		Maßstab		
		Halbzeug, Werkstoff		
IGM	Tag	Name	Benennung	
Bearb.	4.81	Gn		
Gepr.				
Norm				
ROHDE & SCHWARZ MÜNCHEN			Zeichn.-Nr.	
zu Gerät: SMS-B2				335.0316
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	Blatt-Nr.
				2
				v. Bl.
reg. i. V. 335.0016 V		erste Z. 335.0016		

1 2 3 4 5 6 7 8

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ISO-Projektion,  
Methode E

Vervielfält.-Pause  
Nr.

Arbeitspause Nr.

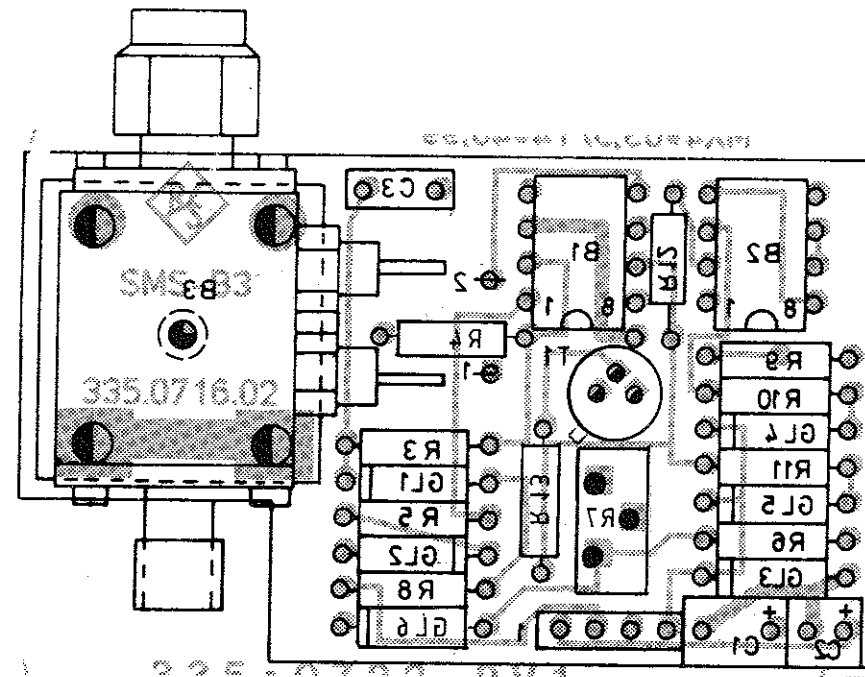
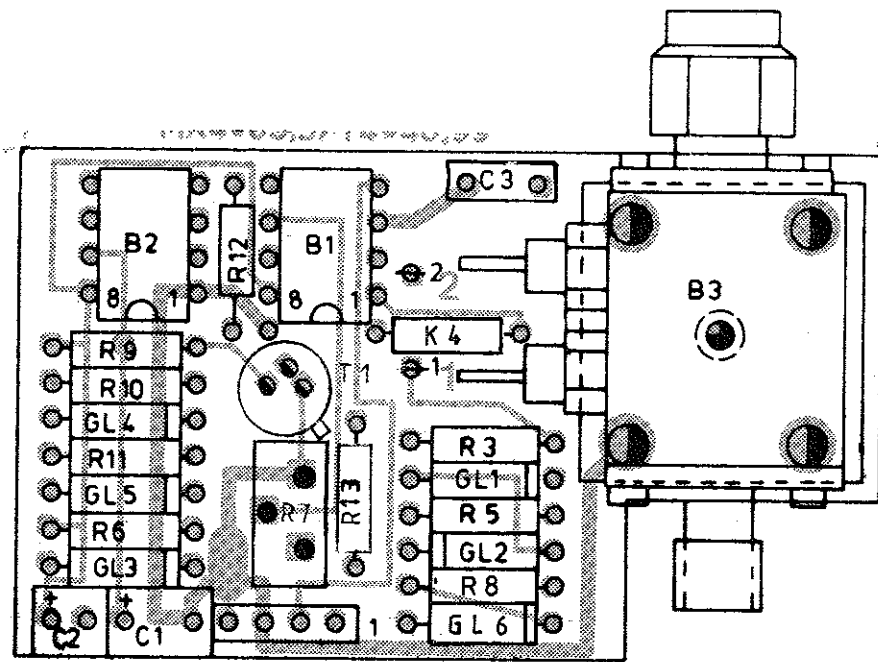
		Halbzeug, Werkstoff		Untolerierte Maße		Zeichn. Nr. 335.0716 S	
				Maßstab		335.0716V	
1GME	Datum	Name	Änd. zust.	Änd. Mittlg. Nr.	Datum	Name	Ersatz / Zeichn.
gezeichnet	25.1.79	Gr	A	25 779	12.79	Gn	
bearbeitet	01.79	Gn	B	28 257	12.81	SY	
geprüft							
normgepr.							
SMS-B3 Überspannungsschutz Overload protection							Z

1 2 3 4 5 6 7 8

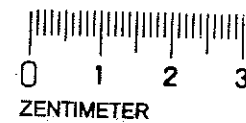
A  
B  
C  
D  
E  
F

Ansicht und Leitungsführung Bauteilseite  
View of tracks on component side

Ansicht und Leitungsführung Lötseite  
View of tracks on solder side



Für diese Zeichnung behalten wir  
uns alle Rechte vor



A		25 779	12.79	Gn	Maße ohne Toleranzangabe	Maßstab
B		27 137	2.81	Sy		
C		28 257	12.81	Sy		
				1GME	Tag	Name
				Bearb	5.12.78	Wm.
				Gepr		
				Norm		
				Benennung		SMS-B3 Überspannungsschutz Overload protection
				Z		
				Zeichn.-Nr		335.0716 01
				Blatt-Nr		
				zu Gerät		SMS-B3
				reg. V		
				erste Z		
And Zust	Änderungs- Mittellung		Tag	Name		

1 2 3 4 5 6 7 8