



ROHDE & SCHWARZ

SERVICEUNTERLAGEN SME

Baugruppe Referenz/Stepsynthese

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7. Prüfen und Instandsetzen der Baugruppe

7.1 Funktionsbeschreibung

Die Baugruppe Referenz/Stepsynthese besteht aus den beiden Funktionsblöcken *Referenzfrequenzen* und *Stepsynthese*.

Die Funktionseinheit *Referenzfrequenzen* erzeugt die notwendigen Bezugs- und Referenzfrequenzen für die übrigen Synthese- und Modulationsbaugruppen im Gerät.

Die Funktionseinheit *Stepsynthese* liefert ein Ausgangssignal im Frequenzbereich von 103..117MHz, dessen Oberwellen die Grob- auflösung der Synthese liefern.

7.1.1 Referenzfrequenzen

Das Herzstück der Signalerzeugung ist ein rauscharmer 100MHz-Quarz-Oszillator, der über eine schmalbandige PLL wahlweise an einen internen oder externen Frequenzstandard angebunden wird. Durch Teilen, direktes Auskoppeln und Vervielfachen werden Frequenzen von 10, 50, 100 und 600MHz erzeugt.

7.1.1.1 100MHz-Erzeugung

Das 100MHz-Signal wird in einem konventionellen Quarzoszillator (V5) mit Serienresonanzkreis erzeugt. Eine zweite Stufe V35 verstärkt das ausgekoppelte Signal auf ca. 17dBm.

Über vier Gatestufen als Isolationsverstärker (V60, V70, V80, V90) wird das 100MHz-Signal auf der Baugruppe verteilt.

7.1.1.2 REFERENZ-PLL

In der Referenz-PLL werden die 100MHz über Teiler bis auf 1MHz - der *Vergleichsfrequenz* am Phasendetektor (D525) - heruntergeteilt.

Dabei werden 50MHz für das Referenzsignal REF50 an X72 und 10MHz für die Ausgabe des Frequenzstandards EXTREF an X73 abgezweigt.

Das *Referenzsignal* für den Phasendetektor D525 wird über den Multiplexer D520 aus IREF (TCXO), EREF (externe Quelle) und OREF (ROSC) über die Steuerbits R0 und R1 ausgewählt.

Der nachfolgende programmierbare Referenzteiler D510 teilt die möglichen Eingangsfrequenzen 1..16MHz auf 1MHz herab.

Die Ausgangsimpulse des digitalen Phasendetektors gelangen auf einen PI-Regler (N530 mit Beschaltung), der den 100MHz-Quarz-VCO steuert. Die Regelbandbreite der Referenz-PLL beträgt ca. 10Hz.

7.1.1.3 Frequenzstandards und ABSTIMMUNG TCXO/ROSC

Das Ausgangssignal des TCXO gelangt als TTL-Signal IREF auf den Multiplexer D520. Die Spannungsversorgung für den TCXO wird vom Gatter D535-D über das Steuerbit R1 automatisch abgeschaltet, wenn der TCXO nicht als Frequenzstandard ausgewählt ist.

Über den D/A-Wandler D555 (Auflösung: 12Bit) und den nachgeschalteten OPs N565 und N562 wird die Frequenz des TCXO feinabgestimmt. N562 addiert eine zusätzliche externe Tunespaltung (Eingang EXTTUNE). OP N550 erzeugt für die Option ROSC eine genaue und temperaturstabile Abstimmspannung 0..12V am Ausgang OPTTUNE.

Das 10MHz-Signal vom ROSC und externe Frequenzstandards gelangen über die Eingänge X74 (OPTREF) und X73 (EXTREF) als TTL-Signale OREF und EREF auf Multiplexer D520.

Der Anschluß EXTREF (Buchse X73) hat somit bidirektionale Funktion. Wenn das Relais K1 geschlossen ist, gibt er 10MHz als Frequenzstandard aus. Bei geöffnetem K1, ist EXTREF Eingang für einen externen Frequenzstandard (1..16MHz).

7.1.1.4 600MHz-Erzeugung

Durch eine Kettenschaltung von zwei zu Verdreifacher und Verdoppler abgewandelten Differenzverstärkern werden aus 100MHz 600MHz erzeugt.

Hinter beiden Vervielfacherstufen folgen jeweils steile Bandpässe zur Selektierung des Nutzsignals.

Ein induktiver Leistungsteiler (L271) verteilt das 600MHz-Signal auf die Basisstufe V280 zur Stepsynthese und die Emitterstufe V285 zum Ausgang REF600.

Über das Steuerbit SR600 (OP N290) kann das Ausgangssignal REF600 von dem Pinschalter V290/V295 um ca. -40dB abgesenkt werden.

7.1.2 Stepsynthese

In der Step-PLL wird ein VCO 103..117MHz mit 100MHz auf 3..17MHz abgemischt und auf das Ausgangssignal eines programmierbaren Teilers 3..17MHz synchronisiert.

7.1.2.1 600MHz-Teiler DIVREF

Der programmierbare ECL-Teiler DIVREF (D310) teilt das 600MHz-Eingangssignal durch Teilerfaktoren von 17..100 mit Bruchteilern von minimal 1/8.

Das resultierende Ausgangssignal 6..34MHz wird mit dem folgenden D-Flip-Flop (D320) auf 3..17MHz heruntergeteilt. Über einen Tiefpaß gelangt es als *Referenzsignal* SDIV für die Step-PLL auf den Phasendetektor N470.

7.1.2.2 Mischer und Trennverstärker

Die *Vergleichsfrequenz ZFVCO* am Phasendetektor N470 wird durch Abmischen der VCO-Frequenz mit 100MHz erzeugt.

Ein Teil des VCO-Ausgangssignals wird über die RF-Stufe (N430, N440) auf den RF-Eingang des Mixers N380 geführt.

Der LO-Eingang von N380 wird von der Emitterstufe V380 mit 100MHz und einem Pegel von ca. 16dBm angesteuert.

Am IF-Ausgang von N380 entsteht u.a. das Differenzband 3..17MHz, welches über die ZF-Stufe N350 als *Vergleichsfrequenz ZFVCO* auf den Phasendetektor N470 gelangt. Die Ein- und Ausgangstiefpässe an N350 sorgen für die notwendige Unterdrückung der 100MHz-LO-Frequenz und höherer Mischprodukte.

7.1.2.3 REGLER STEP-PLL und RAMPENSTEUERUNG

Das Loop-Filter hinter N470 besteht aus einem konventionellen PI-Regler (N465 mit Beschaltung) und steilflankigen Tiefpässen an Ein- und Ausgang. Die Regelbandbreite der Schleife beträgt 350kHz. Die minimale Ausgangsspannung VSVCO wird durch V475/V473 auf ca. 0.5V begrenzt.

Große Frequenzsprünge außerhalb des Fangbereichs werden durch den analogen Frequenzdetektor mit nachfolgender Rampensteuerung realisiert. Parallel zum Phasendetektor werden Referenz- (SDIV) und Vergleichsfrequenz (ZFVCO) analog gemessen und von OP N460

verglichen. Bei Überschreiten einer Differenz von ca. 300kHz wird über Komparator N468-A/B und Analogschalter D460-A/B in Abhängigkeit vom Vorzeichen der Differenz ein konstanter Strom auf die Integrationskapazität C473 eingeprägt. Die dadurch erzeugte Spannungsrampe am Ausgang von N465 führt den Step-VCO bis in den Fangbereich der PLL, und wird dort wieder abgeschaltet. Der Einschwingvorgang muß nach maximal 100µs abgeschlossen sein.

7.1.2.4 STEP-VCO 103..117MHz

Der Step-VCO (V408) ist ein konventioneller FET-Oszillator in Drainschaltung. V420 verstärkt das Signal auf einen definierten Pegel und führt es über einen resistiven Leistungsteiler zur RF-Stufe in die PLL und zur Ausgangsstufe V435 für die Step-Frequenz.

7.1.3 DATENÜBERTRAGUNG und DIAGNOSE

Die Ansteuerung der Baugruppe erfolgt über die serielle Schnittstelle SERBUS (D610). Über Strobe 1 werden die Diagnosemultiplexer adressiert, die Betriebsart der Referenz-PLL und die Tunespannung für TCXO/ROSC eingestellt. Über Strobe 2 erfolgen die zeitkritischen Einstellungen für den Teilerfaktor der Step-PLL und die Steuerung des Ausgangs REF600.

Über die Diagnose können alle Ausgangssignale der Baugruppe sowie einige interne Signale zur Funktionsprüfung und Fehlersuche abgerufen werden.

Die Regelspannungen der beiden VCOs - VQ100 und VSVC0 - werden von Fensterkomparatoren (N680-A..D) mit nachfolgender Hystereseschaltung (D680-A..D) überwacht. Beim Ausrasten der Schleifen wird über IR0 und IR1 ein Interrupt ausgelöst.

7.2 Meßgeräte und Hilfsmittel

- Spektrumanalysator ...1.2GHz (z.B. FSA).
- 50Ω-Kabel mit Meßadapter für Bergsteckerpaare.
- Meßsender 1..16MHz, Frequenzgenauigkeit $<10^{-6}$ (z.B. SMG).
- Oszilloskop mit 100MHz Bandbreite (z.B. BOL).
- Digitales Speicher-Oszilloskop für Punkt 7.4.10.2 (z.B. BOS).
- Multimeter (DC-Spannungsgenauigkeit $\pm 4\text{mV}$ bei 4V Eingangsspannung = $\pm 0.1\%$, z.B. UDL44).
- Prüfspannungsquelle 0..20V (z.B. NGT20).
- Servicekit (1039.3520).

7.3 Fehlersuche

Die folgenden Fehlerbeschreibungen sind nur als grobe Übersicht zu verstehen.

Zur Fehlerlokalisierung ist grundsätzlich eine Signalverfolgung aufgrund des Stromlaufs vorzunehmen. Dazu sind die Arbeitspunkte der Transistoren und die HF-Pegel an den jeweiligen Prüfpunkten vermerkt. Die HF-Prüfpunkte sind gleichspannungsfrei (Ausnahme: TTL-Pegel) und mit einem 475Ω-Widerstand auf Bergsteckerpaare mit Masseanschluß geführt.

7.3.1 Referenzfrequenzen

Referenz-PLL rastet nicht	Referenz-PLL nach 7.4.3.1 überprüfen. Eingangssignale am Phasendetektor D525 über TPOINT 203 und 204 überprüfen. Eingang OPTREF nach 7.4.3.3 überprüfen. 100MHz-Quarz-VCO nach 7.4.2 prüfen.
Keine Ausgabe von 10MHz-Frequenzstandard	Prüfe Ausgang EXTREF nach 7.4.3.2
Feinabstimmung von TCXO/ROSC nicht möglich	Funktionsfähigkeit der Referenz-PLL nach 7.4.3.1 sicherstellen. Tuning nach 7.4.4 prüfen.
Kein Signal an REF50	Funktion des 100MHz-Quarz-VCOs über TPOINT 209 sicherstellen. Ausgang REF50 (TPOINT 207) nach 7.4.12 prüfen.
Kein Signal an REF100	Ausgang REF100 (TPOINT 209) nach Punkt 7.4.12 prüfen. 100MHz-Quarz-VCO nach 7.4.2 prüfen.
Kein Signal an REF600	Funktion des 100MHz-Quarz-VCOs über TPOINT 209 sicherstellen. 300MHz-Zwischenfrequenz über TPOINT 206 prüfen und evtl. Abgleich nach 7.4.5.1 wiederholen. Ausgang REF600 (TPOINT 210) nach Punkt 7.4.5.3 prüfen und evtl. Abgleich nach 7.4.5.2 und 7.4.5.3 wiederholen.
Ausgangssignale mit starkem Phasenjitter	Alle Ausgangssignale der Baugruppe haben einen starken Phasenjitter im NF-Bereich: 100MHz-Quarz B20 auswechseln.

7.3.2 Stepsynthese

Step-PLL rastet nicht

LO-Signal am Phasendetektor N470 über TPOINT 213 prüfen.
Pegel des 600MHz-Eingangstakt für Teiler D310 nach 7.4.5.3 prüfen.

RF-Signal am Phasendetektor N470 über TPOINT 214 prüfen.
Pegel am LO-Eingang von N380 nach 7.4.6 prüfen.
Step-VCO nach 7.4.7.2 prüfen. RF- und ZF-Pegel nach 7.4.8 prüfen.

Weitere Fehlersuche unter *Nebenwellenburst auf Step-Frequenz.*

Nebenwellenburst auf Step-Frequenz

Die Step-Frequenz läßt sich zwar prinzipiell einstellen, hat jedoch ein breites Störspektrum.

Rampensteuerung nach 7.4.9 prüfen.

Falls bis hier kein Fehler gefunden wurde, kommt der Komparator N468, der Analogschalter D460, der Phasendetektor N470 oder der OP N465 in Betracht.

Feinabgleich nach 7.4.10.1 wiederholen.

Einschwingprobleme der Step-Frequenz

Einrastvorgang der Step-PLL benötigt mehr als 100us.

Einschwingverhalten der Step-PLL nach 7.4.10.3 prüfen.
Rampensteuerung nach 7.4.10.1 neu abgleichen.

7.4 Prüfen und Abgleich

Zum kompletten Abgleich der Baugruppe sind die einzelnen Prüf- und Abgleichpunkte unter 7.4 in der genannten Reihenfolge durchzuführen. Ansonsten wird auf Prüf- und Abgleichpunkte bei der Fehlersuche 7.3 hingewiesen.

Zu den einzelnen Punkten ist jeweils vermerkt, welche Baugruppendeckel montiert werden müssen.

Die RF-Frequenzeinstellungen sind grundsätzlich im CW-Betrieb (MODULATION OFF) durchzuführen.

7.4.1 Datenübertragung und Stromaufnahme

- Einstellungen A: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 202
UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 2000
- Einstellungen B: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 213
UTILITIES/REF OSC/SOURCE EXT
/EXT FREQUENCY 7 MHz

► Logische Zustände nach folgender Tabelle prüfen:

Subadresse 0			Subadresse 1		
SME-Einstellung	D620 (Byte 0) 4 5 6 7 14	D630 (Byte 1) 4 5 6 7 14 12 11	SME-Einst. FREQ	D330 (Byte 0) 4 5 6 7 14 13 12 11	D340 (Byte 1) 4 5 11
A	L H L H L	L H H L H L L	912 MHz	H H H L L L H H	L L H
B	H L H L H	H L L H L H H	877 MHz	L L L H H H L L	H L H
			88 MHz	L L L L L L L L	L H L

Die High-Pegel an D620 (Subadresse 0/Byte 0: Adressierung der Diagnosepunkte) liegen nicht statisch an.

Byte 3 und 4 von Subadresse 0 (Tunesspannung TCXO/ROSC) sind hardwaremäßig nicht erreichbar und werden deshalb bei Einstellung A über den angezeigten Diagnosewert geprüft:

► TPOINT 202 = -6...-4V

Prüfen der Stromaufnahme:

- Durch Auslöten der Eingangsdrosseln L100..L104 und Einschleifen eines Amperemeters kann die Stromaufnahme der Baugruppe gemessen werden (Für die Sollwerte siehe Kapitel 7.7).

7.4.2 100MHz-QUARZ-VCO

- Prüfspannungsquelle mit 7V Abstimmspannung an X541/X542 (X542=Masse) anschließen.
- Voltmeter an P10 anschließen.
- Spektrumanalysator (Span 0..500MHz, Ref.-Level 0dBm) an P40/P41 (P41=Masse) anschließen.
- Mit L5 Spannung an P10 auf Minimum abgleichen.
- Mit L20 die Spannung an P10 für die beiden Endpunkte der Abstimmspannung 1V und 13V jeweils auf den gleichen Wert bringen, so daß die Spannungsänderung an P10 über den Abstimmbereich 1..13V minimal wird.
- Absolute Spannung an P10 über 1..13V Abstimmspg. = 10.2 .. 11.2V
Spannungsänderung an P10 über 1..13V Abstimmspg. < 0.2V
- Abstimmspannung zwischen -1V und +1V variieren:
Die 100MHz-Schwingung darf nicht abbrechen!

- Abstimmspannung auf 7V einstellen
- ▶ Mit L35 das 100MHz-Signal an P40 auf -3dBm+/-0.3dBm abgleichen.
- ▶ Prüfe Pegel an X71 (REF100) auf 4..6dBm.
- *Nach Entfernen der Prüfspannungsquelle Brücke auf X540-X541 stecken.*

7.4.3 REFERENZ-PLL für 100MHz-OUARZ-VCO

7.4.3.1 Funktionsfähigkeit der REFERENZ-PLL

- Einstellungen: UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 2000
- ▶ Prüfe TPOINT 201 = 2..12V
- Meßsender mit 10MHz/-13dBm an REF (Rückwand) anschließen.
- Einstellungen: UTILITIES/REF OSC/SOURCE EXT
/EXT FREQUENCY 10 MHz
- Frequenz des Meßsenders nach Tabelle verstellen und Regelspannung über TPOINT 201 prüfen:

Frequenz in MHz	Sollwert TPOINT 201	Fehlermeldung SME
10.000000	5..10V	-
10.000100 9.999900	<12V >2V	- -
10.000400 9.999600	>12.5V <-12.5V	Reference Frequency 100MHz VCXO unlocked Reference Frequency 100MHz VCXO unlocked

7.4.3.2 Ausgang EXTREF

- Spektrumanalysator (Span 0..100MHz, Ref.-Level 10dBm) an REF (Rückwand) anschließen.
- Einstellungen: UTILITIES/REF OSC/SOURCE INT
- ▶ Pegel des 10MHz-Frequenzstandard = 6..10dBm
Harmonische < -15dBc

7.4.3.3 Eingang OPTREF

Diese Prüfanweisung ist nur möglich, wenn die Option ROSC Ofenquarz (SM-B1) im Gerät vorhanden ist.

- Einstellungen: UTILITIES/REF OSC/SOURCE INT
ADJUSTMENT STATE OFF
- ▶ Prüfe TPOINT 201 = 2..12V

7.4.4 ABSTIMMUNG TCXO/ROSC

7.4.4.1 Referenzabgleich für D/A-Wandler

- Hochgenaues Voltmeter an Ausgang OPTTUNE (Motherboardverbindung: X70 A10) anschließen. Dabei ist auf eine gute Masseverbindung zwischen Voltmeter und Baugruppe zu achten.
- Einstellungen: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 202
UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 1333

- ▶ Mit R588 $U_{OPTTUNE}$ auf $4.000V \pm 4mV$ abgleichen.
- ▶ Prüfe Spannungen nach Tabelle:

Meßpunkt	Art des Signals	Sollwert für FREQUENCY ADJUSTMENT 1333	Sollwert für FREQUENCY ADJUSTMENT 2666
TPOINT 202	Ausgangsspannung DAC	$-3.33V \pm 0.3V$	$-6.66V \pm 0.6V$
X70 A10	Tunespannung für ROSC	$4V \pm 0.004V$	$8V \pm 0.010V$
P580	Tunespannung für TCXO	$1.6V \pm 0.1V$	$3.3V \pm 0.2V$

7.4.4.2 Externe Tunespannung

- Prüfspannungsquelle an Eingang TUNE (Rückwand) anschließen.
- Voltmeter an P580 anschließen.
- Einstellungen: UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 2000
- Spannungen von $-10V$, $0V$ und $+10V$ einstellen:
- ▶ Prüfe Spannung an P580 nach Tabelle:

Meßpunkt	Art des Signals	externe Spannung TUNE	Sollwert
P580	Tunespannung für TCXO	$-10V$ $0V$ $+10V$	$2.18..2.30V$ $2.40..2.50V$ $2.60..2.72V$

7.4.5 600MHz-Referenzsignal REF600

Der Deckel der Lötseite muß montiert sein. Beachte 7.5!

7.4.5.1 Abgleich Bandpaß 300MHz

- Einstellungen: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 206

▶ Pegel an TPOINT 206 (ZF300) über

- (1.) L230 (Messingkern),
- (2.) L231 (Ferritkern),
- (3.) L234 (Ferritkern),
- (4.) L235 (Messingkern) auf Maximum abgleichen.

Dabei reicht ein Abgleich je Trimmer in obiger Reihenfolge aus.

Die Kerne dürfen nicht aus den Spulen herausgedreht werden und verloren gehen (Vorsicht beim Linksdrehen!).

- ▶ Pegel TPOINT 206 = 0.1V .. 0.4V

7.4.5.2 Abgleich Bandpaß 600MHz

- Spektrumanalysator (Span 0..1GHz, Ref.-Level 10dBm) an Ausgangsbuchse REF600 anschließen.

- Einstellungen: FREQ 90 MHz
UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 210

▶ Pegel an TPOINT 210 (REF600) über

- (1.) L265 (Messingkern),
- (2.) L266 (Messingkern),
- (3.) L267 (Messingkern),
- (4.) L268 (Messingkern) auf Maximum abgleichen.

Dabei reicht ein Abgleich je Trimmer in obiger Reihenfolge aus.

Die Kerne dürfen nicht aus den Spulen herausgedreht werden und verloren gehen (Vorsicht beim Linksdrehen!).

7.4.5.3 Abgleich Pegel REF600

- Einstellungen und Meßgeräte wie unter 7.4.5.2.
- ▶ Mit R254 Pegel auf 11dBm+/-0.2dB abgleichen.
(Baugruppen-Hauptänderungsindex 1..3)
- ▶ Mit R254 Pegel auf 14dBm+/-0.2dB abgleichen. (Äi. ab 4)

► Prüfe Pegel nach Tabelle:

Meßpunkt	Art des Signals	Sollwert	Bemerkung
X77 REF600	600MHz-Referenzfrequenz 600MHz abgeschaltet	11dBm±0.2dB 14dBm±0.2dB <-25dBm	Äi. 1..3 Äi. ab 4 Einstellung: FREQ < 93.75MHz Einstellung: FREQ >= 93.75MHz
TPOINT 210	600MHz über Diagnose	0.2V..0.6V	Einstellung: FREQ < 93.75MHz
P255	600MHz-Takt für Step-Teiler	>-21dBm >-24dBm	Äi. 1..4 Äi. ab 5 mit 50Ω-Kabel messen.

7.4.6 LO-STUFE

- Spektrumanalysator (Span 90..110MHz, Ref.-Level 0dBm) an P390/P391 (P391=Masse, Kammer K) anschließen.

► Pegel an P390 = -10..-6dBm

7.4.7 STEP-VCO

7.4.7.1 Grobabgleich des Abstimmbereichs

- Spektrumanalysator (Span 90..130MHz, Ref.-Level 10dBm) an Ausgangsbuchse X75 FSTEP anschließen.
- Prüfspannungsquelle an X406/X407 (X407=Masse) anschließen.
- Abstimmspannung auf 18V einstellen.
- Mit L406 Step-Frequenz auf 116..118MHz abgleichen.
- Abstimmspannung auf 2V einstellen.
- Mit C400 Step-Frequenz auf 102..103.5MHz abgleichen.
- Abgleich von L406 und C400 wiederholen bis die genannten Frequenzen eingehalten werden.

7.4.7.2 Abgleich Pegel FSTEP

- VCO-Frequenz auf 110MHz einstellen.
- Mit R412 Pegel auf 6dBm±/-0.4dBm abgleichen.
- Frequenz von 103 bis 117MHz durchfahren:
Zulässiger Pegelbereich an X75 FSTEP: 5.2dBm .. 6.8dBm
Pegeländerung: < 0.8dB
Harmonische: < -20dBc

7.4.8 RF- und ZF-STUFE

- Weiterhin Prüfspannungsquelle an X406. Step-VCO-Frequenz auf 110MHz einstellen.
 - Spektrumanalysator (Span 100..120MHz, Ref.-Level 0dBm) an P460/P461 anschließen.
- ▶ Mit R441 Pegel auf -26dBm+/-0.2dBm abgleichen.
- ▶ Prüfe Pegelbedingungen im genannten Frequenzbereich:

Meßpunkt	Art des Signals	Sollwert	Abstimmspannung an X406
P460	RF-Signal 110MHz RF-Signal 103..117MHz	-26dBm±0.2dBm -27..-24.5dBm, Variation <1.2dBm	ca. 10V ca. 2..18V
P360 (TPOINT 214)	ZF-Signal 3..17MHz	-23dBm..-19dBm, Variation <2dBm	ca. 2..18V

7.4.9 Inbetriebnahme der RAMPENSTEUERUNG

- Weiterhin Prüfspannungsquelle an X406. Spannung auf 16V einstellen.
 - Voltmeter an P466/465 (P465=Masse) anschließen.
 - Brücke über X461-X462 stecken.
- ▶ Mit R469 Spannung an P466 auf 0V+/-5mV abgleichen.
- ▶ Spannung an X406 von 2..18V durchfahren:
Spannung an P466 (TPOINT 208) = -25mV..25mV
- *Danach Brücke über X460-X461 und über X405-X406 stecken.*

7.4.10 Geschlossene STEP-PLL

Der Deckel der Lötseite muß montiert sein. Beachte 7.5!

7.4.10.1 Feinabgleich der RAMPENSTEUERUNG

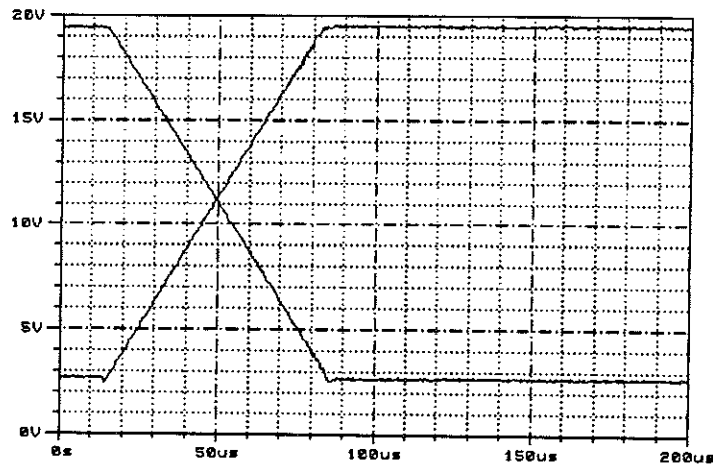
- Voltmeter an P466/465 (P465=Masse) anschließen.
 - Einstellungen: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 208
FREQ 820 MHz (FSTEP 115MHz)
- ▶ Mit R469 Spannung an P466 auf 0V+/-4mV abgleichen.
- Einstellungen: FREQ 943 MHz (FSTEP 103.06MHz)
FREQ 895 MHz (FSTEP 110.00MHz)
FREQ 836 MHz (FSTEP 117.27MHz)
- ▶ Für alle drei Einstellungen muß gelten:
Spannung an P466 (TPOINT 208) = -10mV .. 10mV

7.4.10.2 Einschwingverhalten der STEP-PLL

• Digitales Speicher-Oszilloskop an X406/X407 (X407=Masse) anschließen.

• Einstellungen SWEEP/FREQ/START FREQ 836MHz (FSTEP 117.27MHz)
 /STOP FREQ 943MHz (FSTEP 103.06MHz)
 /STEP LIN 107MHz
 /DWELL 20ms
 /SPACING LIN
 /MODE AUTO

► Es sollte sich qualitativ folgendes Oszillogramm ergeben:



x-Achse: Zeit

y-Achse: Abstimmspannung Step-VCO

Im Oszillogramm ist der Spannungsverlauf beider Frequenzsprünge (103->117MHz, 117->103MHz) gleichzeitig dargestellt. Durch den fehlenden Baugruppendeckel liegt das Niveau der Abstimmspannung gegenüber dem abgeglichenen Zustand mit Deckel (103MHz/2V, 117MHz/18V) etwas höher.

► Nach dem Abschalten der Rampe müssen alle Einschwingvorgänge spätestens nach 100us - vom Rampenbeginn an gerechnet - abgeklungen sein.

7.4.10.3 Feinabgleich des VCO-Abstimmbereichs

Beide Baugruppendeckel müssen montiert sein. Beachte 7.5!

- Einstellungen: UTILITIES/DIAG/TPOINT/STATE ON
 /TEST POINT 212
- Einstellung: FREQ 834 MHz (FSTEP 117.02MHz)
- Mit L406 U(TPOINT 212) auf 18V±0.2V einstellen.
- Einstellung: FREQ 1149 MHz (FSTEP 103.05MHz)
- Mit C400 U(TPOINT 212) auf 2V±0.2V einstellen.
- Abgleich von L406 und C400 wiederholen bis die genannten Bedingungen erfüllt sind.

7.4.11 Mischernebenwellen auf FSTEP

Beide Baugruppendeckel müssen montiert sein. Beachte 7.5!

- Spektrumanalysator an Ausgang FSTEP (X75) anschließen.
- Referenz Ausgang des Analysators an REF anschließen.
- Einstellungen: UTILITIES/REF OSC/SOURCE EXT
/EXT FREQUENCY 10 MHz
- Die folgenden RF-Frequenzen einstellen und den Nebenwellenabstand bei den angegebenen Trägerabständen messen.

Einstellungen	Step-Teiler	Stepfrequenz (Trägerfrequenz)	Trägerabstand der Mischernebenw.	Absolute Frequenz der rechtsseitigen Mischernw.
FREQ 916 MHz	23.875	112.5654 MHz	523.56 kHz	113.0890 MHz
FREQ 928.8 MHz	21.125	114.2012 MHz	591.72 kHz	114.7929 MHz
FREQ 930.4 MHz	20.875	114.3713 MHz	598.80 kHz	114.9701 MHz
FREQ 833 MHz	17.875	116.7832 MHz	699.30 kHz	117.4825 MHz

- Nebenwellenabstand bei den genannten Trägerfrequenzen und Frequenzabständen: < -99dBc.

Um den Nebenwellenabstand im Bereich von -100dBc messen zu können, muß der Analysator auf den Trägerpegel kalibriert, dann um 10dB übersteuert und um den Frequenzabstand der Nebenwelle verstellt werden. Als SPAN bietet sich 10kHz an. Das Rauschniveau muß deutlich unter 100dBc liegen (Evtl. im AVERAGE-Modus messen).

7.4.12 Signalqualität REF600, REF100, REF50

Beide Baugruppendeckel müssen montiert sein. Beachte 7.5!

- Prüfe Harmonische und Störlinien nach Tabelle:

Meßpunkt	Spektrale Daten	Sollwert	Bemerkung
X77 REF600	1. Harmonische bei 1.2GHz 100MHz-Störlinien Störung durch Teilerspektrum Trägerabstand 3.0457MHz	<-40dBc <-85dBc <-85dBc	Meßbereich: 0..1GHz Einstellung: FREQ 77.5MHz (FSTEP 103.0457MHz) Meßbereich: 595..605MHz
X71 REF100	Signalpegel 100MHz Harmonische Nebenwellenabstand	4..6dBm <-25dBc <-85dBc	insbesondere in 1, 10 und 50MHz- Abstand zum Träger
X72 REF50	Signalpegel 50MHz Harmonische Nebenwellenabstand	9..11.5dBm <-25dBc <-85dBc	insbesondere in 1 und 10MHz- Abstand zum Träger

7.4.13 Diagnosepunkte

Die unterstrichenen Werte in der Tabelle werden mit dem Meßwert von Diagnosepunkt 200 automatisch korrigiert.

TPOINT	Beschreibung	Sollwert	Bemerkung
200	10kOhm Referenzwiderstand	-20mV...20mV	zur Offsetkompensation
201	Regelspannung 100MHz-Quarz-VCO	2...12V	
202	Ausgang D/A-Wandler für Tune-Spannung	<u>-10.1...0.01V</u>	Wert = ADJUSTMENT * (-2.5mV) U(OPTTUNE) = Wert * (-1.2) U(P580) = Wert * (-0.5)
203	1MHz-Referenzsignal für Referenz-PLL	1.8...5.2V	
204	1MHz-Vergleichsfrequenz für Referenz-PLL	2.0...3.0V	
205	Ein-/Ausgang Frequenzstandard (EXTREF)	0.8...3.5	
206	300MHz-Zwischenfrequenz im Versechsfacher	0.1...0.4V	
207	50MHz-Ausgang REF50	0.3...1.3V	Abschluß mit 50Ω.
208	Ausgangsspannung Frequenzdetektor	<u>-40mV...40mV</u>	Step-PLL eingerastet
209	100MHz-Ausgang REF100	0.18...0.60V	Abschluß mit 50Ω.
210	600MHz-Ausgang REF600	0.2...0.6V -20...20mV	RF-Frequenz < 93.75MHz Abschluß mit 50Ω. RF-Frequenz >= 93.75MHz
211	24V-Versorgungsspannung	22.5...25.5V	
212	Regelspannung Step-VCO	1...20V	
213	Ausgangssignal Step-Teiler	0.4...2.5V	
214	Abgemischtes VCO-Signal 3..17MHz	<u>0.10..0.25V</u>	
215	Ausgang Stepfrequenz FSTEP 103..117MHz	0.2...0.6V	Abschluß mit 50Ω.

7.5 Zerlegung und Zusammenbau

Nach Öffnen des Gerätes, Lösen der Baugruppenverriegelung und der HF-Verbindungen, kann die Baugruppe aus ihrem Steckplatz gezogen werden. Beim Entfernen der Schirmdeckel muß zuerst der lötlseitige abgeschraubt bzw. gelöst werden. Beim Zusammenbau der Schirmdeckel muß zuerst der bauteilseitige festgeschraubt werden. Wird diese Reihenfolge nicht eingehalten, verziehen sich die Gewindebolzen auf der Baugruppe und beschädigen so die Gewinde der bauteilseitigen Schrauben.

7.6 Digitale Schnittstelle

Baugruppenadresse: 20

Subadresse 0 (Strobe 1): statische Daten

Byte	Bit	Latch/Pin	Name	Funktion
3	7..4 3..0	- D555	- TV11..TV8	- Tunespannung für TCXO/ROSC (MSB)
2	7..0	D555	TV7..TV0	Tunespannung für TCXO/ROSC (LSB)
1	7 6 5 4 3 2 1 0	D630 11 12 13 14 7 6 5 4	R1 R0 - ENR0 NR3 NR2 NR1 NR0	Auswahl 0 1 1 Frequenzstandard: 0 TCXO 0 ROSC 1 EXTREF - Buchse EXTREF 0 = Eingang (1..16MHz) 1 = Ausgang (10MHz) Teiler für Frequenzstandard im Zweierkomplement (1..16) (MSB) -"- ... -"- ... -"- (LSB)
0	7 6 5 4 3 2 1 0	D620 11 12 13 14 7 6 5 4	- - - END1 END0 DA2 DA1 DA0	- - - Auswahl 0 1 Diagnosemultiplexer: 1 MUX 1 (D650) 0 MUX 2 (D660) Adressierung des Diagnosepunktes (MSB) -"- ... -"- (LSB)

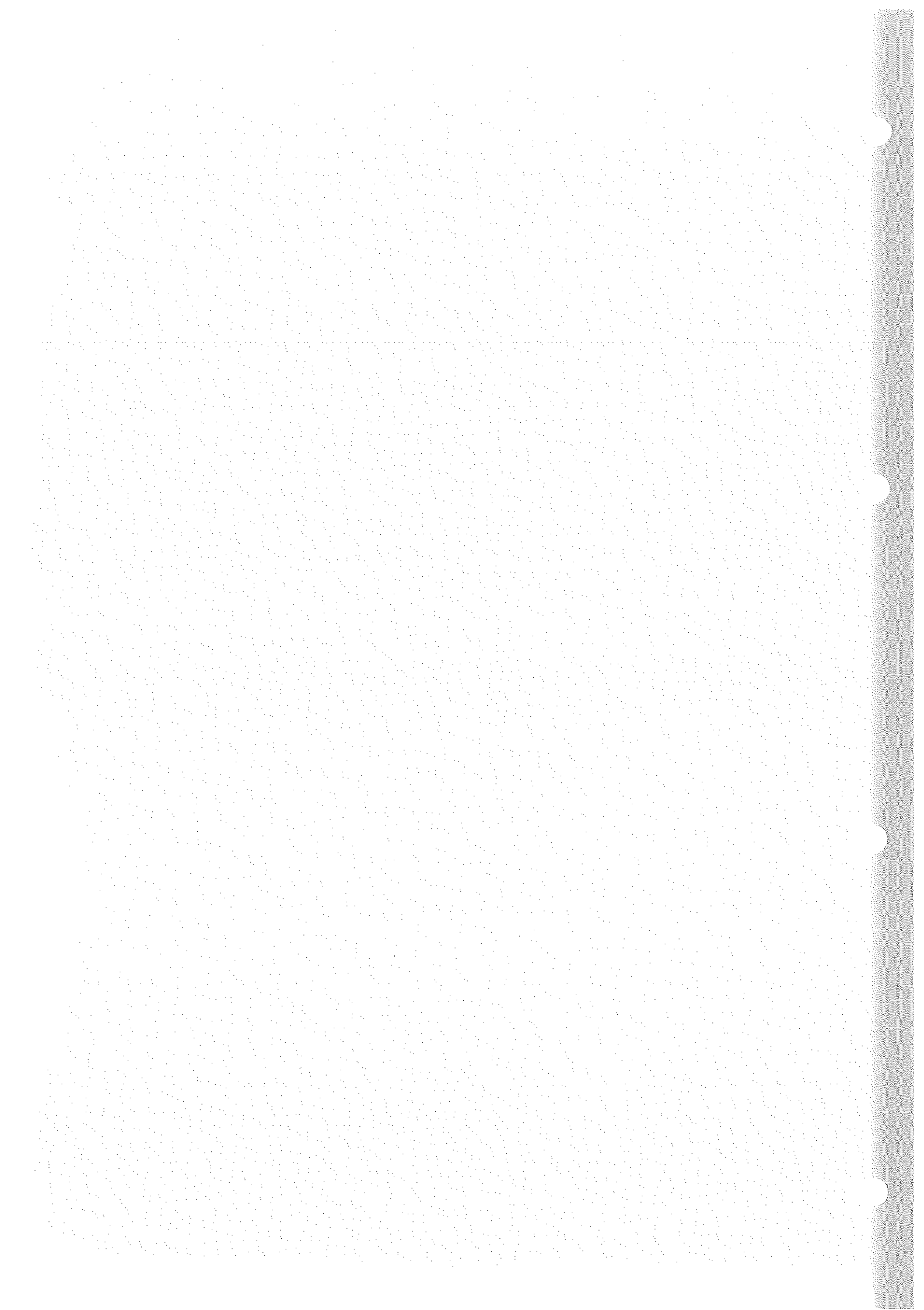
Subadresse 1 (Strobe 2): dynamische Daten

Byte	Bit	Latch/Pin	Name	Funktion
1	7 6 5 4 3 2 1 0	D340 11 12 13 14 7 6 5 4	SR600 - - - SP6 SP5 SP4 SP3	Steuerbit für REF600: 0 = REF600 ein 1 = REF600 aus - - - - Hauptteiler DIVREF (D310) Bitwert im Teilerfaktor: 28 -"- 27 -"- 26 -"- 25
0	7 6 5 4 3 2 1 0	D330 11 12 13 14 7 6 5 4	SP2 SP1 SP0 SA1 SA0 SF2 SF1 SF0	-"- 24 -"- 23 -"- 22 Hilfsteiler DIVREF (D310) 21 -"- 20 Bruchteiler DIVREF (D310) 2-1 -"- 2-2 -"- 2-3

7.7

Externe Schnittstellen

Pin	Name	Ein/Ausgang	Herkunft/Ziel	Wertebereich	Signalbeschreibung
X70.A1	EXTTUNE	Eingang	Rückwand TUNE	-10..10V	externe Tunespannung für TCXO (Steilheit typ. 0.1ppm/V)
X70.A10	OPTTUNE	Ausgang	A71,ROSC X22.16	0..12V	Tunespannung für ROSC
X70.A12	SERBUS-CLK	Eingang	A3,CPU X31.40	HCMOS-Pegel	Serbus-Clock
X70.A14 X70.A15	SERBUS-DAT	bidir.	A3,CPU X31.39	HCMOS-Pegel	Serbus-Daten
X70.A16	SERBUS-SYNC	Eingang	A3,CPU X31.37	HCMOS-Pegel	Serbus-Synchronisation
X70.A17	SERBUS-INT	Ausgang	A3,CPU X31.38	HCMOS-Pegel	Serbus-Interrupt
X70.A18	RES-P	Eingang	A3,CPU X31.28	HCMOS-Pegel	Serbus-Reset
X70.A19	DIAG-5V	Ausgang	A3,CPU X31.44	-5V...5V	Diagnose
X70.A22	VA24-P	Eingang	A2,POWS1	23.0...25.0V 4...20mA	Versorgungsspannung analog
X70.A24	VA15-P	Eingang	A2,POWS1	14.85V...15.75V 370...450mA	Versorgungsspannung analog
X70.A26	VA7.5-P	Eingang	A2,POWS1	7.45V...7.95V 600...750mA	Versorgungsspannung analog
X70.A28	VD5-P	Eingang	A2,POWS1	5.15V...5.25V 3...14mA	Versorgungsspannung digital
X70.A30	VA15-N	Eingang	A2,POWS1	-15.75V...-14.85V 120...250mA	Versorgungsspannung analog
X71	REF100	Ausgang	A6,FMOD X65	5±1dBm	Referenz 100MHz
X72	REF50	Ausgang	A8,DSYN X81	9±1dBm	Systemreferenz 50MHz (wird durchgeschleift)
X73	EXTREF	bidir.	Rückwand REF	7±1dBm 0.1..2V _{eff} (-13..13dBm)	Ausgang: Frequenzstandard 10MHz Eingang: ext. Fstd. 1..16MHz (Eingangsimpedanz 2000hm)
X74	OPTREF	Eingang	A71,ROSC X711	0..13dBm	Frequenzstandard ROSC 10MHz
X75	FSTEP	Ausgang	A9,SUM X97	6±1dBm	Stepfrequenz 103..117MHz
X77	REF600	Ausgang	A10,OPU1 X105	10±1dBm 13±1.2dBm	(Äi. 1..3) Referenz 600MHz (Äi. ab 4)





ROHDE & SCHWARZ

SERVICE INSTRUCTIONS SME

Reference/Step-Synthesis

1035.6501.02



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Part list
Coordinates list
Circuit diagram
Layout diagram

7. Checking and Repair of the Module

7.1 Functional Description

The Reference/Step-Synthesis Module consists of the two function units *Reference Frequencies* and *Step Synthesis*.

The function unit *Reference Frequencies* generates the required reference frequencies for the remaining synthesis and modulation boards in the instrument.

The function unit *Step Synthesis* supplies an output signal in the frequency range from 103 to 117MHz, the harmonics of which supply the coarse resolution of the synthesis.

7.1.1 Reference Frequencies

A low-noise 100-MHz crystal oscillator, which is connected to an internal or external frequency standard via a narrow-band PLL, is the nucleus of signal generation. Frequencies of 10, 50, 100 and 600MHz are generated by dividing, direct decoupling and multiplication.

7.1.1.1 Generation of 100MHz

The 100-MHz signal is generated in a conventional crystal oscillator (V5) with series resonant circuit. A second stage V35 amplifies the decoupled signal to approx. 17dBm.

The 100-MHz signal is distributed on the module via four gate stages as buffer amplifiers (V60, V70, V80, V90).

7.1.1.2 REFERENCE-PLL

The 100 MHz are divided by dividers down to 1MHz - the *reference frequency* at the phase detector (D525).

50 MHz are provided for the reference signal REF50 at X72 and 10 MHz for the output of the frequency standard EXTREF at X73.

The *reference signal* for the phase detector D525 is selected via the multiplexer D520 from IREF (TCXO), EREF (external source) and OREF (ROSC) via the control bits R0 and R1.

The subsequent programmable reference divider D510 divides the input frequencies which may vary between 1 and 16MHz to 1MHz.

The output pulses of the digital phase detector pass to a PI controller (N530 with circuitry), which controls the 100-MHz crystal VCO. The control bandwidth of the reference PLL is approx. 10Hz.

7.1.1.3 Frequency Standards and TUNING TCXO/ROSC

The output signal of the TCXO is supplied as TTL signal IREF to the multiplexer D520. The voltage supply to the TCXO is automatically switched off by the gate D535-D via the control bit R1, when the TCXO is not selected as frequency standard.

The frequency of the TCXO is fine-tuned via the D/A converter D555 (resolution: 12 bits) and the subsequent OPs N565 and N562. N562 adds an additional external tuning voltage (input EXTTUNE). OP N550 generates an exact and temperature-stable tuning voltage of 0 to 12 V at the output OPTTUNE for the option ROSC.

The 10-MHz signals of ROOSC and external frequency standards pass via the inputs (OPTREF) and X73 (EXTREF) to the multiplexer D520 as TTL signals OREF and EREF.

Thus, the connector EXTREF (socket X73) adopts a bidirectional function. When the relay K1 is closed, it supplies a 10-MHz signal as frequency standard. When K1 is open, EXTREF functions as input for an external frequency standard (1 to 16 MHz).

7.1.1.4 Generation of 600MHz

600 MHz are generated from 100 MHz by means of connecting two differential amplifiers which work as triple amplifier and doubler in series.

Both multiplying stages are followed by steep bandpasses for selection of the wanted signal.

An inductive power divider (L271) distributes the 600-MHz signal onto the base stage V280 to the step synthesis and the emitter stage V285 to the output REF600.

The output signal REF600 can be decreased by approx. -40dB by means of the pin switch V290/V295 via the control bit SR600 (OP N290).

7.1.2 Step Synthesis

In the Step PLL, a VCO 103 to 117 MHz is down-converted with 100 MHz to 3 to 17 MHz and synchronized to the output signal (3 to 17 MHz) of a programmable divider.

7.1.2.1 600-MHz Divider DIVREF

The programmable ECL divider DIVREF (D310) divides the 600-MHz input signal by division factors of 17 to 100 with fractional dividers of min. 1/8.

The resulting output signal of 6 to 34 MHz is divided down to 3 to 17 MHz using the subsequent D flip-flop (D320). It is passed as *reference signal* SDIV for the Step-PLL via a lowpass to the phase detector N470.

7.1.2.2 Mixer and Buffer Amplifier

The *relational frequency* ZFVCO at the phase detector N470 is generated by down-converting the VCO frequency by 100 MHz. Part of the VCO output signal is routed via the RF stage (N430, N440) to the RF input of the mixer N380.

The LO input of N380 is controlled by the emitter stage V380 by 100 MHz and a level of approx. 16 dBm.

The differential band of 3 to 17 MHz at the IF output of N380 is passed as *relational frequency* ZFVCO via the IF stage N350 to the phase detector N470. The input and output lowpasses at N350 provide for the required suppression of the 100 MHz LO frequency and higher mixture products.

7.1.2.3 STEP-PLL CONTROLLER and RAMP CONTROL

The loop filter following N470 consists of a conventional PI controller (N465 with circuitry) and steep-edge lowpasses at the input and output. The control bandwidth of the loop is 350 kHz. The minimum output voltage VSVCO is limited by V475/V473 to approx. 0.5V.

Sudden frequency changes outside the lock-in range are realized using the analog frequency detector with subsequent ramp control. Analog measurement of the reference frequency (SDIV) and the relational frequency (ZFVCO) is carried out parallel with the phase detector and compared by the OpAmp N460. When a difference of approx. 300 kHz is exceeded, a constant current depending on the sign of the difference is impressed on the integration capacity C473 via the comparator N468-A/B and the analog switch D460-A/B. The voltage ramp thus generated at the output of N465 passes the step VCO to the lock-in range of the PLL and is there switched off again. Settling must have been terminated after max. 100 μ s.

7.1.2.4 STEP-VCO 103 to 117 MHz

The step VCO (V408) is a usual FET oscillator designed as drain circuit. V420 amplifies the signal to a specified level and routes it via a resistive power divider to the RF stage in the PLL and to the output stage V435 for the step frequency.

7.1.3 DATA TRANSMISSION and DIAGNOSTICS

The module is controlled via the serial interface SERBUS (D610). The diagnostic multiplexers are addressed via strobe 1, which also sets the operating mode of the reference PLL and the tuning voltage for TCXO/ROSC. The time-critical settings for the divider factor of the step PLL and control of the output REF600 are effected via strobe 2.

All output signals of the module as well as various internal signals for functional check and troubleshooting can be called via the diagnostics function.

The control voltages of the two VCOs - VQ100 and VSVCO - are monitored by window comparators (N680-A..D) with subsequent hysteresis loop (D680-A..D). An interrupt is triggered via IR0 and IR1 as soon as the loops lock out.

7.2 Measuring Equipment and Accessories

- Spectrum analyzer up to 1.2GHz (e.g., FSA).
- 50- Ω cable with test adaptor for RF test points
- Signal generator 1 to 16MHz, frequency accuracy $<10^{-6}$ (e.g., SMG).
- Oscilloscope with 100-MHz bandwidth (e.g., BOL).
- Digital storage oscilloscope for 7.4.10.2 (e.g., BOS).
- Multimeter (DC voltage accuracy ± 4 mV with 4V input voltage = $\pm 0.1\%$, e.g., UDL44).
- Test voltage source 0 to 20V (e.g., NGT20).
- Service kit (1039.3520).

7.3 Troubleshooting

The subsequent error descriptions give only a rough survey.

Localization of errors generally requires signal tracing by means of the circuit diagram. Therefore, the operating points of the transistors and the RF levels have been noted down at the respective test points. The RF test points are DC voltage-free (except for TTL levels) and routed to connectors with ground connection via a 475- Ω resistor..

7.3.1 Reference Frequencies

Reference PLL does not lock in	Check reference PLL acc. to 7.4.3.1 Check input signals at the phase detector D525 via TPOINTS 203 and 204. Check the input OPTREF acc. to 7.4.3.3. Check 100-MHz crystal VCO acc. to 7.4.2.
No output of 10-MHz frequency standard	Check output EXTREF acc. to 7.4.3.2
Fine-tuning of TCXO/ROSC not possible	Make sure that the reference PLL works correctly acc. to 7.4.3.1. Check tuning acc. to 7.4.4.
No signal at REF50	Make sure via TPOINT 209 that the 100-MHz crystal VCO works correctly. Check output REF50 (TPOINT 207) acc. to 7.4.12.
No signal at REF100	Check output REF100 (TPOINT 209) acc. to 7.4.12. Check 100-MHz crystal VCO acc. to 7.4.2.
No signal at REF600	Make sure via TPOINT 209 that the 100-MHz crystal VCO works correctly. Check 300-MHz IF via TPOINT 206 and repeat adjustment acc. to 7.4.5.1, if required. Check output REF600 (TPOINT 210) acc. to 7.4.5.3 repeat adjustment acc. to 7.4.5.2 and 7.4.5.3, if required.
Output signals with extreme phase jitter	All output signals of the module have an extreme phase jitter in the AF range: replace 100-MHz crystal B20.

7.3.2 Step Synthesis

Step PLL does not lock in

Check LO signal at the phase detector N470 via TPOINT 213. Check level of the 600-MHz input clock for divider D310 acc. to 7.4.5.3.

Check RF signal at the phase detector N470 via TPOINT 214. Check level at the LO input of N380 acc. to 7.4.6. Check step VCO acc. to 7.4.7.2. Check RF level and IF level acc. to 7.4.8.

Continue troubleshooting as described under *Noise burst on step frequency*.

Noise burst on step frequency

The step frequency can be set, however, reveals a broad noise spectrum.

Check ramp control acc. to 7.4.9.

If no error was found with the above mentioned checks, the comparator N468, the analog switch D460, the phase detector N470 or the OP N465 may be faulty.

Repeat fine adjustment acc. to 7.4.10.1.

Settling problems with the step frequency

Lock-in procedure of the step PLL requires more than 100 μ s.

Check settling phase of the step PLL acc. to 7.4.10.3.

Readjust ramp control acc. to 7.4.10.1.

7.4 Checking and Adjustment

The individual test and adjustment procedures mentioned in this Section have to be carried out in the given order for complete adjustment of the module. Test and adjustment points are also mentioned with troubleshooting, Section 7.3.

The board covers which have to be mounted are noted down for each individual point.

RF frequency setting generally have to be carried out in CW mode (MODULATION OFF).

7.4.1 Data Transmission and Power Consumption

- Settings A: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 202
UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 2000
- Settings B: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 213
UTILITIES/REF OSC/SOURCE EXT
/EXT FREQUENCY 7 MHz

▶ Check logic states using the table below:

Setting on the SME	Subaddress 0		SME setting FREQ	Subaddress 1	
	D620 (Byte 0) 4 5 6 7 14	D630 (Byte 1) 4 5 6 7 14 12 11		D330 (Byte 0) 4 5 6 7 14 13 12 11	D340 (Byte 1) 4 5 11
A	L H L H L	L H H L H L L	912 MHz	H H H L L L H H	L L H
B	H L H L H	H L L H L H H	877 MHz	L L L H H H L L	H L H
			88 MHz	L L L L L L L L	L H L

The high levels at D620 (Subaddress 0/Byte 0: Addressing of the diagnostic points) are not applied statically.

Bytes 3 and 4 of subaddress 0 (tuning voltage TCXO/ROSC) are not accessible via the hardware and are therefore checked with setting A via the diagnostic value indicated:

▶ TPOINT 202 = -6...-4V

Checking the power consumption:

- The power consumption of the module can be measured by means of soldering out the input inductors L100 to L104 and connecting an ammeter (rated values can be looked up in Section 7.7).

7.4.2 100-MHz CRYSTAL VCO

- Connect test voltage source with a tuning voltage of 7V to X541/X542 (X542=ground).
 - Connect voltmeter to P10.
 - Connect spectrum analyzer (span 0 to 500 MHz, ref. level 0dBm) to P40/P41 (P41=ground).
- ▶ Adjust voltage at P10 to minimum using L5.
- ▶ Set the voltage at P10 to the same value for both limits of the tuning voltages 1V and 13V such that the change of voltage at P10 becomes minimal across the tuning voltage range 1 to 13V.
- ▶ Absolute voltage at P10
 across 1 to 13V tuning range = 10.2 to 11.2V
 Voltage change at P10
 across 1 to 13V tuning range < 0.2V

- ▶ Vary the tuning voltage between -1V and +1V:
The 100-MHz oscillation must not stop!
- Set tuning voltage to 7V
- ▶ Adjust the 100-MHz signal at P40 to -3dBm+/-0.3dBm.
- ▶ Check, if level at X71 (REF100) is 4 to 6dBm.
- Plug jumper onto X540-X541 after removing the test-voltage source.

7.4.3 REFERENCE-PLL for 100-MHz CRYSTAL VCO

7.4.3.1 Correct Function of the REFERENCE-PLL

- Settings: UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 2000
- ▶ Check TPOINT 201 = 2 to 12V
- Connect signal generator with 10MHz/-13dBm to REF (rear panel).
- Settings: UTILITIES/REF OSC/SOURCE EXT
/EXT FREQUENCY 10 MHz
- Vary the frequency of the signal generator according to the table below and check the control voltage via TPOINT 201:

Frequency in MHz	Rated value TPOINT 201	Error message on SNE
10.000000	5 to 10V	-
10.000100 9.999900	<12V >2V	- -
10.000400 9.999600	>12.5V <-12.5V	Reference Frequency 100MHz VCX0 unlocked Reference Frequency 100MHz VCX0 unlocked

7.4.3.2 Output EXTREF

- Connect a spectrum analyzer (span 0 to 100 MHz, ref. level 10dBm) to REF (rear panel).
- Settings: UTILITIES/REF OSC/SOURCE INT
- ▶ Level of the 10-MHz frequency standard = 6..10dBm
Harmonics < -15dBc

7.4.3.3 Input OPTREF

This test instruction can only be executed, if the oven-controlled reference oscillator ROSC (option SM-B1) is fitted to the instrument.

- Settings: UTILITIES/REF OSC/SOURCE INT
ADJUSTMENT STATE OFF

▶ Check TPOINT 201 = 2 to 12V

7.4.4 TUNING of TCXO/ROSC

7.4.4.1 Reference Adjustment for D/A Converter

- Connect a highly precise voltmeter to the output OPTTUNE. (motherboard connection: X70 A10). Make sure that there is good ground connection between the voltmeter and the module.

- Settings: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 202
UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 1333

- ▶ Adjust $V_{OPTTUNE}$ to 4.000V+/-4mV.
- ▶ Check voltages according to the table below:

Test point	Function of the signal	Rated value for FREQUENCY ADJUSTMENT 1333	Rated value for FREQUENCY ADJUSTMENT 2666
TPOINT 202	Output voltage DAC	-3.33V±0.3V	-6.66V±0.6V
X70 A10	Tuning voltage for ROSC	4V±0.004V	8V±0.010V
P580	Tuning voltage for TCXO	1.6V±0.1V	3.3V±0.2V

7.4.4.2 External Tuning Voltage

- Connect test-voltage source to the input TUNE (rear panel).
- Connect voltmeter to P580.

- Settings: UTILITIES/REF OSC/SOURCE INT
/ADJUSTMENT STATE ON
/FREQUENCY ADJUSTMENT 2000

- Set voltages of -10V, 0V and +10V:
- ▶ Check voltage at P580 acc. to the table below:

Test point	Function of the signal	External TUNE voltage	Rated value
P580	Tuning voltage for TCXO	-10V	2.18 to 2.30V
		0V	2.40 to 2.50V
		+10V	2.60 to 2.72V

7.4.5 600-MHz Reference Signal REF600

The cover on the solder side must be fitted. Refer to 7.5!

7.4.5.1 Adjustment of 300-MHz Bandpass

- Settings: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 206

- ▶ Adjust level at TPOINT 206 (ZF300) to maximum via
 - (1.) L230 (brass core),
 - (2.) L231 (ferrite core),
 - (3.) L234 (ferrite core),
 - (4.) L235 (brass core).

One adjustment per trimmer carried out in the above order is sufficient.

The cores must not be winded out of the coils and get lost (caution with turning counterclockwise!)

- ▶ Level at TPOINT 206 = 0.1V to 0.4V

7.4.5.2 Adjustment of 600-MHz Bandpass

- Connect spectrum analyzer (span 0 to 1GHz, ref. level 10dBm) at output socket REF600.

- Settings: FREQ 90 MHz
 UTILITIES/DIAG/TPOINT/STATE ON
 /TEST POINT 210

- ▶ Adjust level at TPOINT 210 (REF600) to maximum via
 - (1.) L265 (brass core),
 - (2.) L266 (brass core),
 - (3.) L267 (brass core),
 - (4.) L268 (brass core).

One adjustment per trimmer carried out in the above order is sufficient.

The cores must not be winded out of the coils and get lost (caution with turning counterclockwise!)

7.4.5.3 Adjustment of Level REF600

- Settings and test instruments as under 7.4.5.2.
- ▶ Adjust level to 11dBm \pm 0.2dBm using R254.
(Module Revision 1 to 3)
- ▶ Adjust level to 14dBm \pm 0.2dBm using R254. (Rev. from 4 up)
- ▶ Check level according to the table below:

Test point	Function of the signal	Rated value	Remark
X77 REF600	600-MHz reference frequency 600 MHz switched off	11dBm \pm 0.2dB 14dBm \pm 0.2dB <-25dBm	Rev. 1 to 3 Rev. from 4 up Setting: FREQ < 93.75MHz Setting: FREQ \geq 93.75MHz
TPOINT 210	600 MHz via diagnostics	0.2V to 0.6V	Setting: FREQ < 93.75MHz
P255	600-MHz clock for step divider	>-21dBm >-24dBm	Rev. 1 to 4 Rev. from 5 up Measure using a 50- Ω cable

7.4.6 LO-STAGE

- Connect a spectrum analyzer (span 90 to 110MHz, ref.level 0dBm) to P390/P391 (P391=ground, submodule K).
- ▶ Level at P390 = -10 to -6dBm

7.4.7 STEP VCO

7.4.7.1 Coarse Adjustment of the Tuning Range

- Connect a spectrum analyzer (span 90 to 130MHz, ref. level 10dBm) to the output socket X75 FSTEP.
- Connect test-voltage source to X406/X407 (X407=ground).
- Set tuning voltage to 18V.
- ▶ Adjust step frequency to 116 to 118MHz using L406.
- Set tuning voltage to 2V.
- ▶ Adjust step frequency to 102 to 103.5MHz using C400.
- ▶ Repeat adjustment using L406 and C400 until the frequencies mentioned above are adhered to.

7.4.7.2 Adjustment of FSTEP Level

- Set VCO frequency to 110MHz.
- ▶ Adjust level to 6dBm \pm 0.4dBm using R412.
- ▶ Sweep the frequency from 103 to 117MHz:
Permitted level range at X75 FSTEP: 5.2dBm to 6.8dBm
Level deviation: < 0.8dB
Harmonics: < -20dBc

7.4.8 RF and IF STAGES

- Test-voltage source remains at X406. Set frequency of the step VCO to 110MHz.
 - Connect a spectrum analyzer (span 100 to 120MHz, ref. level 0dBm) to P460/P461.
- ▶ Adjust level to -26dBm \pm 0.2dBm using R441.
- ▶ Check level conditions in the above mentioned frequency range:

Test point	Function of the Signal	Rated value	Tuning voltage at X40
P460	RF signal 110MHz RF signal 103 to 117MHz	-26dBm \pm 0.2dBm -27 to -24.5dBm, Variation <1.2dBm	approx. 10V approx. 2 to 18V
P360 (TPOINT 214)	IF signal 3 to 17MHz	-23dBm to -19dBm, Variation <2dBm	approx. 2 to 18V

7.4.9 Putting the RAMP CONTROL into Operation

- Test voltage source remains at X406. Set voltage to 16V.
 - Connect voltmeter to P466/465 (P465=ground).
 - Plug jumper onto X461-X462.
- ▶ Adjust voltage at P466 to 0V \pm 5mV using R469.
- ▶ Sweep voltage at X406 from 2 to 18V:
Voltage at P466 (TPOINT 208) = -25mV to 25mV
- *Subsequently, plug jumper onto X460-X461 and X405-X406.*

7.4.10 Locked STEP PLL

The cover on the solder side must be fitted. Refer to 7.5!

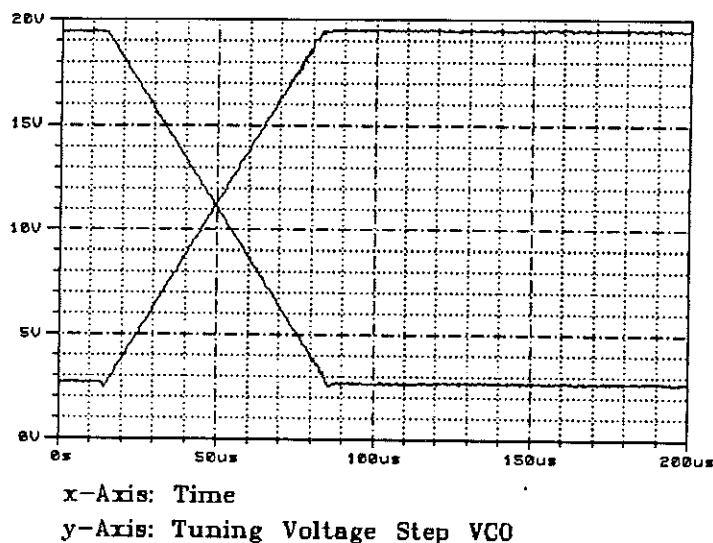
7.4.10.1 Fine Adjustment of the RAMP CONTROL

- Connect voltmeter to P466/465 (P465=ground).
 - Settings: UTILITIES/DIAG/TPOINT/STATE ON
/TEST POINT 208
FREQ 820 MHz (FSTEP 115MHz)
- ▶ Adjust voltage at P466 to 0V \pm 4mV using R469.
- Settings: FREQ 943 MHz (FSTEP 103.06MHz)
FREQ 895 MHz (FSTEP 110.00MHz)
FREQ 836 MHz (FSTEP 117.27MHz)
- ▶ The following applies for all three settings:
Voltage at P466 (TPOINT 208) = -10mV to 10mV

7.4.10.2 Transient behaviour of the STEP PLL

- Connect digital storage oscilloscope to X406/X407 (X407=ground).
- Settings: SWEEP/FREQ/START FREQ 836MHz (FSTEP 117.27MHz)
 /STOP FREQ 943MHz (FSTEP 103.06MHz)
 /STEP LIN 107MHz
 /DWELL 20ms
 /SPACING LIN
 /MODE AUTO

▶ The quality of the oscillogram should be as follows:



The voltage characteristic of both frequency changes (103 to 117MHz, 117 to 103MHz) is simultaneously shown in the oscillogram. Since the board cover is not fitted, the level of the tuning voltage is slightly higher than the level in the adjusted state with cover fitted (103MHz/2V, 117MHz/18V).

- ▶ Subsequent to switching off the ramp, all settling procedures must have been finished after max. 100µs from start of the ramp.

7.4.10.3 Fine Adjustment of the VCO Tuning Range

Both board covers must be fitted. Refer to 7.5!

- Settings: UTILITIES/DIAG/TPOINT/STATE ON
 /TEST POINT 212
- Setting: FREQ 834 MHz (FSTEP 117.02MHz)
- ▶ Set V(TPOINT 212) to 18V±0.2V using L406.
- Setting: FREQ 1149 MHz (FSTEP 103.05MHz)
- ▶ Set V(TPOINT 212) to 2V±0.2V using C400.
- ▶ Repeat adjustment using L406 and C400 until the voltages required are obtained.

7.4.11 Spurious Signals of Mixer on FSTEP

Both board covers must be fitted. Refer to 7.5!

- Connect a spectrum analyzer to output FSTEP (X75).
- Connect reference output of the analyzer to REF.
- Settings: UTILITIES/REF OSC/SOURCE EXT
/EXT FREQUENCY 10 MHz
- Set the following RF frequencies and measure the suppression of spurious signals at the given carrier offsets.

Settings	Step divider	Step frequency (Carrier frequency)	Carrier offset of mixer spuriae	Absolute frequency of the right mixer spuriae
FREQ 916 MHz	23.875	112.5654 MHz	523.56 kHz	113.0890 MHz
FREQ 928.8 MHz	21.125	114.2012 MHz	591.72 kHz	114.7929 MHz
FREQ 930.4 MHz	20.875	114.3713 MHz	598.80 kHz	114.9701 MHz
FREQ 833 MHz	17.875	116.7832 MHz	699.30 kHz	117.4825 MHz

► Suppression of spurious signals with the above mentioned carrier frequencies and frequency offsets: < -99dBc.

The suppression of spurious signals in the range of -100dBc can be measured by calibrating the analyzer to the carrier level, then overloading it by 10 dB and varying it by the frequency offset of the spurious signal. The span should be 10kHz. The noise level must be far below 100dBc (measure in AVERAGE mode, if required).

7.4.12 Signal Quality REF600, REF100, REF50

Both board covers must be fitted. Refer to 7.5!

► Check harmonics and secondary lines according to the table below:

Test point	Spectral Data	Rated value	Remark
X77 REF600	1st harmonic with 1.2GHz 100-MHz secondary lines Interference by divider spectrum Carrier offset 3.0457MHz	<-40dBc <-85dBc <-85dBc	Measuring range: 0 to 1GHz Setting: FREQ 77.5MHz (FSTEP 103.0457MHz) Measuring range: 595 to 605MHz
X71 REF100	Signal level 100MHz Harmonics Suppression of spurious signals	4 to 6dBm <-25dBc <-85dBc	particularly with 1, 10 and 50MHz offset
X72 REF50	Signal level 50MHz Harmonics Suppression of spurious signals	9..11.5dBm <-25dBc <-85dBc	particularly with 1 and 10 MHz offset

7.4.13 Diagnostic Points

The underlined values listed in the table are corrected automatically by means of the measured value of the diagnostic point 200.

TPOINT	Description	Rated value	Remark
200	10-kOhm reference impedance	-20mV to 20mV	for offset compensation
201	Control voltage of 100-MHz crystal VCO	2 to 12V	
202	Output of D/A converter for tuning-voltage	<u>-10.1 to 0.01V</u>	Value = ADJUSTMENT * (-2.5mV) V(OPTTUNE) = value * (-1.2) U(P580) = value * (-0.5)
203	1-MHz reference signal for reference PLL	1.8 to 5.2V	
204	1-MHz relational signal for reference PLL	2.0 to 3.0V	
205	Input/output of Frequency standard (EXTREF)	0.8 to 3.5	
206	300-MHz intermediate freq. in the multiplier	0.1 to 0.4V	
207	50-MHz output REF50	0.3 to 1.3V	Terminate by 50Ω.
208	Output voltage of frequency detector	<u>-40mV to 40mV</u>	Step PLL locked in
209	100-MHz output REF100	0.18 to 0.60V	Terminate by 50Ω.
210	600-MHz output REF600	0.2 to 0.6V -20mV to 20mV	RF frequency < 93.75MHz Terminate by 50Ω. RF frequency >= 93.75MHz
211	24V-supply voltage	22.5 to 25.5V	
212	Control voltage of step VCO	1 to 20V	
213	Output signal step divider	0.4 to 2.5V	
214	Down-converted VCO signal 3 to 17MHz	<u>0.10 to 0.25V</u>	
215	Output step frequency FSTEP 103 to 117MHz	0.2 to 0.6V	Terminate by 50Ω.

7.5 Removal and Assembly

Subsequent to opening the instrument, unlocking the boards and disconnecting the RF connections, the board can be taken out of its slot. Make sure, when removing the screening cover that the cover on the solder side is unscrewed/removed first. With assembly, the screening cover on the component side is the first to be fixed by screws. If this order is not adhered to, the threaded bolts on the board shrink and thus damage the threads of the screws on the component side.

7.6 Digital Interface

Board address: 20

Subaddress 0 (Strobe 1): static data

Byte	Bit	Latch/Pin	Name	Function
3	7 to 4	-	-	-
	3 to 0	D555	TV11 to TV8	Tuning voltage for TCXO/ROSC (MSB)
2	7 to 0	D555	TV7 to TV0	Tuning voltage for TCXO/ROSC (LSB)
1	7	D630 11	R1	Selection of
	6	12	R0	frequency standard: 0 TCXO 1 ROSC 1 EXTREF
	5	13	-	-
	4	14	ENR0	Socket EXTREF 0 = input (1 to 16MHz) 1 = output (10MHz)
	3	7	NR3	Divider for frequency standard (MSB)
	2	6	NR2	in two's complement (1 to 16) ...
	1	5	NR1
	0	4	NR0	... (LSB)
0	7	D620 11	-	-
	6	12	-	-
	5	13	-	-
	4	14	END1	Selection 0 1
	3	7	END0	Diagnostic multiplexer: 1 MUX 1 (D650) 0 MUX 2 (D660)
	2	6	DA2	Addressing of the diagnostic point (MSB)
	1	5	DA1
	0	4	DA0	... (LSB)

Subaddress 1 (Strobe 2): dynamic data

Byte	Bit	Latch/Pin	Name	Function
1	7	D340 11	SR600	Control bit for REF600: 0 = REF600 on 1 = REF600 off
	6	12	-	-
	5	13	-	-
	4	14	-	-
	3	7	SP6	Main divider DIVREF (D310) Bit value in divider factor: 2 ⁸
	2	6	SP5	... 2 ⁷
	1	5	SP4	... 2 ⁶
	0	4	SP3	... 2 ⁵
0	7	D330 11	SP2	... 2 ⁴
	6	12	SP1	... 2 ³
	5	13	SP0	... 2 ²
	4	14	SA1	Auxiliary divider DIVREF (D310) 2 ¹
	3	7	SA0	... 2 ⁰
	2	6	SF2	Fractional divider DIVREF (D310) 2-1
	1	5	SF1	... 2-2
	0	4	SF0	... 2-3

7.7


External Interfaces

Pin	Name	Input/Output	Origin/Destination	Specified range	Signal description
X70.A1	EXTTUNE	Input	Rear panel TUNE	-10 to 10V	external tuning voltage for TCXO (steepness typ. 0.1ppm/V)
X70.A10	OPTTUNE	Output	A71,ROSC X22.16	0..12V	Tuning voltage for ROSC
X70.A12	SERBUS-CLK	Input	A3,CPU X31.40	HCMOS level	Serbus clock
X70.A14 X70.A15	SERBUS-DAT	bidir.	A3,CPU X31.39	HCMOS level	Serbus data
X70.A16	SERBUS-SYNC	Input	A3,CPU X31.37	HCMOS level	Serbus synchronization
X70.A17	SERBUS-INT	Output	A3,CPU X31.38	HCMOS level	Serbus interrupt
X70.A18	RES-P	Input	A3,CPU X31.28	HCMOS level	Serbus reset
X70.A19	DIAG-5V	Output	A3,CPU X31.44	-5V to 5V	Diagnostics
X70.A22	VA24-P	Input	A2,POWS1	23.0 to 25.0V 4 to 20mA	Supply voltage, analog
X70.A24	VA15-P	Input	A2,POWS1	14.85V to 15.75V 370 to 450mA	Supply voltage, analog
X70.A26	VA7.5-P	Input	A2,POWS1	7.45V to 7.95V 600 to 750mA	Supply voltage, analog
X70.A28	VD5-P	Input	A2,POWS1	5.15V to 5.25V 3 to 14mA	Supply voltage, digital
X70.A30	VA15-N	Input	A2,POWS1	-15.75V to -14.85V 120 to 250mA	Supply voltage, analog
X71	REF100	Output	A6,FMOD X65	5±1dBm	100-MHz reference
X72	REF50	Output	A8,DSYN X81	9±1dBm	50-MHz system reference (connected through)
X73	EXTREF	bidir.	Rear panel REF	7±1dBm 0.1 to 2V _{rms} (-13 to 13dBm)	Output: Frequency standard 10MHz Input: ext. Fstd. 1 to 16MHz (Input impedance 200 Ohms)
X74	OPTREF	Input	A71,ROSC X711	0 to 13dBm	Frequency standard ROSC 10MHz
X75	FSTEP	Output	A9,SUM X97	6±1dBm	Step frequency 103 to 117MHz
X77	REF600	Output	A10,OPU1 X105	10±1dBm 13±1.2dBm	(Rev. 1 to 3) 600-MHz reference (Rev. from 4 up)

Schaltteillisten
numerisch geordnet
Part lists
in numerical order
Listes des pièces détachées
par numéros de référence

Für diese Unterlage behalten
wir uns alle Rechte vor.

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
B20	EQ 100,000MHZ5.0 LFO8 QUARTZ CRYSTAL UNIT	1036.4225.00	KVG	EQ0803.0680 SELEKT.	
C1	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C3	CE 10UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7427.00	PHILIPS_CO	2222 116 11109	
C4	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C7	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6COG 150F 50PT	
C8	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C10	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C15	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C20	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6COG 220F 50PT	
C21	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C22	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C23	CC 390PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8880.00	PHILIPS_CO	2238 863 18391	
C30	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C32	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C33	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C38	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C42	CC 12PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8744.00	MURATA	GRM42-6COG 120 F50PT	
C51	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C52	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C54	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C55	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
C56	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C65	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C67	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C68	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
C69	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C70	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C71	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C72	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C75	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C77	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C78	CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6COG 390F 50PT	
C79	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C82	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C85	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C87	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C88	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
C92	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	

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	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	1+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C98 ..100 C101	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C103 ..105 C106	CC 470NF+-10%50V X7R 1812 CERAMIC CHIP CAPACITOR	CC 0007.7498.00	AVX	1812 5C 474KA TOOF	
C107	CE 220UF+-20%35V RM5 ELECTROLYTIC CAPACITOR	CE 0008.7904.00	PANASONIC	ECA 1 VFG 221 B	
C108	CE 100UF+-20%63V RM5 ELECTROLYTIC CAPACITOR	CE 0008.7879.00	PANASONIC	ECA 1 JFG 101 B	
C158	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C200	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C204	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C206	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C207	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C211	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C212	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C218	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR	CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C219	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C221	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C222	CC 8,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8242.00	MURATA	GRM42-6COG 8R2 C5OPT	
C223	CC 12PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8744.00	MURATA	GRM42-6COG 120 F50PT	
C229	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	
C230	CC 4,7PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8213.00	MURATA	GRM42-6COG 4R7C 50PT	
C231	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C232	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C233	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C234	CC 56PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8809.00	MURATA	GRM42-6COG 560F 50PT	
C235	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C236	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C240	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C241	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C250	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C251	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6COG 3R3 C5OPT	
C252	CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6COG 390F 50PT	
C253 ..256 C257	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C258	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C260	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C261	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C262	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C263	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C264	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C264	CC 1,5PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8159.00	MURATA	GRM42-6COG 1R5 C5OPT	

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	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	2+	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C265	CC 2,7PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8188.00	MURATA	GRM42-6COG 2R7 C5OPT	
C266	CC 3,9PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8207.00	MURATA	GRM42-6COG 3R9 C5OPT	
C267	CC 33PF+-1/50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	
C268	CC 5,6PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8220.00	MURATA	GRM42-6COG 5R6 C5OPT	
C269	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C270	CC 3,9PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8207.00	MURATA	GRM42-6COG 3R9 C5OPT	
C271	CC 1,8PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8165.00	MURATA	GRM42-6COG 1R8 C5OPT	
C272	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
..274	CERAMIC CHIP CAPACITOR				
C276	CC 6,8PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8236.00	MURATA	GRM42-6COG 6R8 C5OPT	
C277	CC 100PF+-1/50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C278	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C279	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C280	CC 2,7PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8188.00	MURATA	GRM42-6COG 2R7 C5OPT	
C281	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6COG 3R3 C5OPT	
C282	CE 1UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7391.00	PHILIPS_CO	2222 116 11108	
C283	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C284	CC 1,5PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8159.00	MURATA	GRM42-6COG 1R5 C5OPT	
C285	CC 4,7PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8213.00	MURATA	GRM42-6COG 4R7C 50PT	
C286	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C287	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C288	CC 100PF+-1/50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C289	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C290	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C291	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C292	CC 27PF+-1/50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C293	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C294	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C295	CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8667.00	PHILIPS_CO	2238 863 15108	
C296	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
..298	CERAMIC CHIP CAPACITOR				
C299	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C311	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C312	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C313	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C315	CC 150PF+-1/50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C319	CC 100PF+-1/50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C320	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C321	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C322	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C323	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

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Datum

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Schaltteilliste für

EE REFERENZ STEPSYNTHESE

Sachnummer

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C324	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C325	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C326	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F 50PT	
C327	CE 22UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7533.00	PHILIPS_CO	2222 116 11229	
C328	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
.331 C350	CC 56PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8809.00	MURATA	GRM42-6COG 560F 50PT	
C351	CC 8,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8242.00	MURATA	GRM42-6COG 8R2 C5OPT	
C352	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
C353	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
C354	CC 3,3NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8909.00	PHILIPS_CO	2238 581 16621	
C355	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C356	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C357	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6COG 150F 50PT	
C358	CC 8,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8242.00	MURATA	GRM42-6COG 8R2 C5OPT	
C359	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C360	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C361	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C362	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C363	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C366	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6COG 150F 50PT	
C367	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C368	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C380	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C381	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
.383 C384	CE 2,2UF +-10% 25V 6032 TANTALUM SMD-CAPACITOR	CE 0007.7223.00	KEMET	T491 C225 K 025 AS	
C385	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6COG 220F 50PT	
C386	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C387	CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6COG 470F 50PT	
C388	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	
C400	CT 9PF 250V LUFTTR.KONZ. AIR TRIMMER	CT 0564.6885.00	TEKELEC	AT 5276	
C401	CC 10PF+-2% 500V PELL CERAMIC CAPACITOR	CC 0580.9510.00	TEKELEC	501 CHB 100G WL	
C402	CC 4,7PF+-0,1PF500V PELL CAPACITOR	CC 0580.9540.00	TEKELEC	501 CHB 4R7B WL	
C404	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C406	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6COG 220F 50PT	
C408	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C410	CE 4,7UF+-10% 10V 3528 TANTALUM SMD-CAPACITOR	CE 0007.7275.00	KEMET	T491 B 475 K 010 AS	
C411	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C413	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F 50PT	
C414	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	

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	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	4+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C417	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C418	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C420	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C421	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C423	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C424	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C431	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C432	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C434	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C435	CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6COG 390F 50PT	
C436	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C437	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C439	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C440	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C441	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C443	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C445	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C447	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C448	CC 3,9PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8207.00	MURATA	GRM42-6COG 3R9 C50PT	
C449	CC 12PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8744.00	MURATA	GRM42-6COG 120 F50PT	
C450	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C453	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C454	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C455	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C457	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C458	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C459	CC 6,8PF+-0,1PF500V PELL CERAMIC CAPACITOR	CC 0007.8565.00	TEKELEC	501 CHB 6R8 BWL	
C460	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C461	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C462	CC 1,8NF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7423.00	PHILIPS_CO	2222 863 18182	
C463	CC 6,8PF+-0,1PF500V PELL CERAMIC CAPACITOR	CC 0007.8565.00	TEKELEC	501 CHB 6R8 BWL	
C464	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C465	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C467	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C468	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C469	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C470	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C471	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C472	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C473	CK 68NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2923.00	ROEDERSTEI	MKT 1826-368-06-4	
C474	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8444.00	PHILIPS_CO	2222 581 16618	
C475	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C476	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C477	CC 2,2NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8444.00	PHILIPS_CO	2222 581 16618	
C478	CE 10UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7427.00	PHILIPS_CO	2222 116 11109	
C479	CE 10UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7427.00	PHILIPS_CO	2222 116 11109	
C480	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C481	CC 220PF+-1%50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C482	CC 22PF+-1%50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6COG 220F 50PT	
C483	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C485	CC 4,7PF+-0,25 50VNPD1206 CERAMIC CHIP CAPACITOR	CC 0007.8213.00	MURATA	GRM42-6COG 4R7C 50PT	
C486	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C487	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C488	CC 270PF+-1%50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8867.00	PHILIPS_CO	2222 863 18271	
C489	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C491	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C492	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C500	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C501	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C510	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C511	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C513	CC 39PF+-1%50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6COG 390F 50PT	
C514	CC 15PF+-1% 50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6COG 150F 50PT	
C515	CC 1NF+-1% 50V NPD 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C516	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C517	CC 1NF+-1% 50V NPD 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C519	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C524	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C525	CC 180PF+-1%50V NPD 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C526	CC 10PF+-0,25 50VNPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C530	CC 680PF+-1% 50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	PHILIPS_CO	2222 863 18681	
C531	CC 1NF+-1% 50V NPD 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C532	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C535	CC 680PF+-1% 50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	PHILIPS_CO	2222 863 18681	
C536	CC 1NF+-1% 50V NPD 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C537	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C538	CE 1UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7391.00	PHILIPS_CO	2222 116 11108	
C539	CE 1UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7391.00	PHILIPS_CO	2222 116 11108	
C540	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

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C541	CE 2,2UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7404.00	PHILIPS_CO	2222 116 11228	
C542	CK 2,2UF+-5% 50V RD7,2H13 CAPACITOR	CK 0350.5944.00	ROE	MKT1826-522/054	
C543	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C544	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
.548					
C552	CE 1UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7391.00	PHILIPS_CO	2222 116 11108	
C555	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
.557					
C558	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6COG 150F 50PT	
C560	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C561	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C562	CK 2,2UF+-5% 50V RD7,2H13 CAPACITOR	CK 0350.5944.00	ROE	MKT1826-522/054	
C563	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C564	CE 2,2UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7404.00	PHILIPS_CO	2222 116 11228	
C565	CE 10UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7427.00	PHILIPS_CO	2222 116 11109	
C566	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C567	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C570	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C574	CC 680PF+-1% 50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	PHILIPS_CO	2222 863 18681	
C575	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C576	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C577	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C578	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C579	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C580	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C582	CE 1UF +-10% 25V EIA3528 TANTALUM SMD-CAPACITOR	CE 0007.7217.00	KEMET	T 491 B105 K025 AS	
C595	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C609	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C610	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C620	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C621	CE 22UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7533.00	PHILIPS_CO	2222 116 11229	
C650	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C660	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C680	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C685	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C688	CE 22UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7533.00	PHILIPS_CO	2222 116 11229	
C690	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C691	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C695	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C697	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C698	CC 470PF+-1%50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	

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C900	CE 22UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7533.00	PHILIPS_CO	2222 116 11229	
C901	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
D31	BG SH100E3008 DIVREF ASIC IC GATEARRAY	1039.1240.00	SIEMENS	SH100E3008	
D95	BL 74AC74SC 2XD-FLIPFL DUAL D-TYPE FLIPF	BL 0820.3602.00	NSC	74AC74(SC)	
D320	BL 74ACT74SC 2XRSFLIPFLOP IC DUAL D-FLIPFLOP	BL 0008.0680.00	TOSHIBA	(TC74)ACT74(FN)	
D330	BL PC74HC4094T 8ST.BUSREG BUS REGISTER	BL 0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D340	BL PC74HC4094T 8ST.BUSREG BUS REGISTER	BL 0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D430	BL 74AC00SC 4X2IN NAND QUAD NAND GATTER	BL 0820.3477.00	NSC	74AC00(SC)	
D445	BL 74AC00SC 4X2IN NAND QUAD NAND GATTER	BL 0820.3477.00	NSC	74AC00(SC)	
D460	BS DG441DY 4XANALOGSCH IC QUAD ANALOG SWITCH	1036.4454.00	SILICONIX	DG441DY	
D500	BL 74AC161SC 4B.BIN CNT 4BIT SYNC.PRES.BIN COUNT.	BL 0820.3519.00	NSC	74AC161(SC)	
D505	BL 74AC00SC 4X2IN NAND QUAD NAND GATTER	BL 0820.3477.00	NSC	74AC00(SC)	
D510	BL PC74HC161T 4B.BIN.CNT BINARY COUNTER	BL 0804.0983.00	PHILIPS_SE	(PC)74HC161(D/T)	
D515	BL PC74HC390T 2XDEC.CNT DUAL DECADE COUNTER	BL 0007.5043.00	PHILIPS_SE	(PC)74HC390(D/T)	
D520	BL PC74HC153T 2X4IN.MUX DUAL MULTIPLEXER	BL 0007.5008.00	PHILIPS_SE	(PC)74HC153(D/T)	
D525	BL PC74HC74T 2XD-FF DUAL D-TYPE FLIPFLOP	BL 0007.3505.00	PHILIPS_SE	(PC)74HC74D(T)	
D535	BL PC74HC00T 4X2IN.NAND QUAD 2INPUT NAND GATE	BL 0007.3463.00	PHILIPS_SE	(PC)74HC00D(T)	
D550	BL PC74HC00T 4X2IN.NAND QUAD 2INPUT NAND GATE	BL 0007.3463.00	PHILIPS_SE	(PC)74HC00D(T)	
D555	BJ DAC8143 1X12B-DAC 12B SERIAL D/A-CONVERTER	1012.9510.00	PMI	DAC8143FS	
D600	BL PC74HCT125T 4XBUFF. 3S QUAD LINE DRIVER	BL 0007.5395.00	PHILIPS_SE	(PC)74HCT125(D/T)	
D610	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	0008.6143.00	THESYS	TH3032.1C	
D620	BL PC74HC4094T 8ST.BUSREG BUS REGISTER	BL 0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D630	BL PC74HC4094T 8ST.BUSREG BUS REGISTER	BL 0804.0977.00	PHILIPS_SE	(PC)74HC4094(D/T)	
D640	BL PC74HC14T 6XINV.SCHM HEXINV.SCHMITT-TRIGGER	BL 0007.4018.00	PHILIPS_SE	(PC)74HC14(D/T)	
D650	BL PC74HC4051T 8CH.AN.MUX 8CHANNEL ANAL.MULTIPLEXER	BL 0007.3592.00	PHILIPS_SE	(PC)74HC4051(D/T)	
D660	BL PC74HC4051T 8CH.AN.MUX 8CHANNEL ANAL.MULTIPLEXER	BL 0007.3592.00	PHILIPS_SE	(PC)74HC4051(D/T)	
D680	BL PC74HC132T 4XSCHMITT T QUAD 2-INP NAND SCHMITT	BL 0520.7811.00	PHILIPS_SE	(PC)74HC132(D/T)	
K1	SR 5V 500 OHM 1X1 SIL RELAY 5V SIL	1012.9604.00	HAMLIN	HE3621A0500	
L1	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L2	LD 4,7UH 10% 0,15A 1210 SMD-INDUCTOR	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K)100	
L3	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L5	LD 112NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9542.00	COMPONEX	E 558 CN-10 0024	
L15	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L20	LD 287NH 8,5W CM18P FE-K COIL+CORE	0613.6289.00	TOKO	E521HN080023	
L30	LD 0,82UH10%,850HMO,420A CHOKE	LD 0067.2857.00	DALE	IM2	
L33	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L35	LD 170NH 5,5W CM15P FE-K COIL+CORE	0801.4859.00	TOKO	E521 HN-050023	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
L50	LD 2, 70UH10%, 550HMO, 355A CHOKE	LD 0067.2911.00	DALE	IM2		
L55	LD 0, 15UH10%, 100HM1, 230A CHOKE	LD 0067.2763.00	DALE	IM2		
L65	LD 0, 15UH10%, 100HM1, 230A CHOKE	LD 0067.2763.00	DALE	IM2		
L73	LD 2, 70UH10%, 550HMO, 355A CHOKE	LD 0067.2911.00	DALE	IM2		
L75	LD 0, 15UH10%, 100HM1, 230A CHOKE	LD 0067.2763.00	DALE	IM2		
L85	LD 0, 15UH10%, 100HM1, 230A CHOKE	LD 0067.2763.00	DALE	IM2		
L96	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100		
L97	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100		
L98	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100		
L100	LD 3, 3UH BEI 1, 63AO, 160HM CHOKE	LD 0026.4061.00	DALE	IM 6		
L101	LD 15UH 10% 1R2 0, 46A CHOKE	LD 0026.4149.00	DALE	IM 6		
L102	LD 4, 70UH10%1, 200HMO, 239A CHOKE	LD 0067.2940.00	DALE	IM2		
L103	LD 4, 7UH BEI 1, 35AO, 240HM CHOKE	LD 0026.4084.00	DALE	IM 6		
L104	LD 4, 70UH10%1, 200HMO, 239A CHOKE	LD 0067.2940.00	DALE	IM2		
L107	LD 1, 20UH10%, 180HMO, 620A CHOKE	LD 0067.2870.00	DALE	IM2		
L108	LD 4, 70UH10%1, 200HMO, 239A CHOKE	LD 0067.2940.00	DALE	IM2		
L109	LD 4, 7UH BEI 1, 35AO, 240HM CHOKE	LD 0026.4084.00	DALE	IM 6		
L110	LD 4, 70UH10%1, 200HMO, 239A CHOKE	LD 0067.2940.00	DALE	IM2		
L206	LD 38 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9442.00	COMPONEX	E 558 AN-10 0041		
L209	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100		
L210	LD 10UH BEI 0, 81A 0, 660HM CHOKE	LD 0026.4126.00	DALE	IM 6		
L211	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100		
L215	LD 2, 20UH10%, 400HMO, 415A CHOKE	LD 0067.2905.00	DALE	IM2		
L216	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2		
L230	LD 29 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9420.00	COMPONEX	E 558 AN-10 0040		
L231	LD 32 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9436.00	COMPONEX	E 558 CN-10 0020		
L234	LD 32 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9436.00	COMPONEX	E 558 CN-10 0020		
L235	LD 29 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9420.00	COMPONEX	E 558 AN-10 0040		
L251	LD 91 NH SMD Q5, 1H5 0-K SMD-VHF-COIL	0008.9520.00	COMPONEX	E 558 HN-10 0100		
L253	LD 0, 56UH10%, 500HMO, 550A CHOKE	LD 0067.2834.00	DALE	IM2		
L256	LD 0, 56UH10%, 500HMO, 550A CHOKE	LD 0067.2834.00	DALE	IM2		
L260	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2		
L261	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100		
L262	LD 220NH 10% 0, 28A 1210 SMD-INDUCTOR	LD 0520.7911.00	SIEMENS	B82422-A3221-J(K)100		
L265	LD 29 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9420.00	COMPONEX	E 558 AN-10 0040		
L271	LU HF-UEBERTR. 50-1700MHZ RF TRANSFORMER	1036.4590.00	COMPONEX	616DB-1017		
L275	LD 32 NH SMD-ABGL. Q5, 1H5 SMD-VHF-COIL	0008.9436.00	COMPONEX	E 558 CN-10 0020		
L277	LD 56 NH SMD Q5, 1H5 0-K SMD-VHF-COIL	0008.9471.00	COMPONEX	E 558 GN-10 0028		
L278	LD 0, 27UH10%, 160HMO, 975A CHOKE	LD 0067.2792.00	DALE	IM2		
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L280	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L281	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L282	LD 32 NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9436.00	COMPONEX	E 558 CN-10 0020	
L285	LD 38 NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9442.00	COMPONEX	E 558 AN-10 0041	
L286	LD 56 NH SMD Q5,1H5 0-K SMD-VHF-COIL	0008.9471.00	COMPONEX	E 558 GN-10 0028	
L288	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L290	LD 32 NH SMD-ABGL.Q5,1H5 SMD-VHF-COIL	0008.9436.00	COMPONEX	E 558 CN-10 0020	
L291	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L292	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L320	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L322	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L324	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L325	LD 0,82UH10%,850HMO,420A CHOKE	LD 0067.2857.00	DALE	IM2	
L326	LD 1,50UH10%,220HMO,560A CHOKE	LD 0067.2886.00	DALE	IM2	
L330	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L350	LD 10UH 10% 0,18A 1210 SMD-INDUCTOR	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L351	LD 10UH 10% 0,18A 1210 SMD-INDUCTOR	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L352	LD 0,33UH10%,220HMO,830A CHOKE	LD 0067.2805.00	DALE	IM2	
L353	LD 0,27UH10%,160HMO,975A CHOKE	LD 0067.2792.00	DALE	IM2	
L359	LD 47UH 10% 0,08A 1210 SMD-INDUCTOR	LD 0008.1693.00	SIEMENS	B82422-A1473-J(K)100	
L360	LD 0,39UH10%,300HMO,710A CHOKE	LD 0067.2811.00	DALE	IM2	
L361	LD 0,33UH10%,220HMO,830A CHOKE	LD 0067.2805.00	DALE	IM2	
L380	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L381	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L382	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L383	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L384	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L387	LD 0,12UH10%,090HM1,300A CHOKE	LD 0067.2757.00	DALE	IM2	
L388	LD 0,12UH10%,090HM1,300A CHOKE	LD 0067.2757.00	DALE	IM2	
L390	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L391	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L392	LD 2,20UH10%,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	
L393	LD 2,20UH10%,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	
L394	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L395	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100	
L402	LD 3,30UH10%,850HMO,285A CHOKE	LD 0067.2928.00	DALE	IM2	
L405	LD 3,30UH10%,850HMO,285A CHOKE	LD 0067.2928.00	DALE	IM2	
L406	LD 180NH 4,5W CM14P FE-K CHOKE	0303.9024.00	TOKO	301-SS-0400	
L408	LD 3,30UH10%,850HMO,285A CHOKE	LD 0067.2928.00	DALE	IM2	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L410	LD 1, 20UH10%, 180HMO, 620A CHOKE	LD 0067.2870.00	DALE	IM2	
L415	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L418	LD 0, 39UH10%, 300HMO, 710A CHOKE	LD 0067.2811.00	DALE	IM2	
L420	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L421	LD 90 NH SMD-ABGL.Q5, 1H5 SMD-VHF-COIL	0008.9513.00	COMPONEX	E 558 CN-10 0023	
L435	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L436	LD 0, 22UH10%, 140HM1, 045A CHOKE	LD 0067.2786.00	DALE	IM2	
L437	LD 0, 39UH10%, 300HMO, 710A CHOKE	LD 0067.2811.00	DALE	IM2	
L438	LD 0, 56UH10%, 500HMO, 550A CHOKE	LD 0067.2834.00	DALE	IM2	
L439	LD 0, 33UH10%, 220HMO, 830A CHOKE	LD 0067.2805.00	DALE	IM2	
L442	LD 38 NH SMD-ABGL.Q5, 1H5 SMD-VHF-COIL	0008.9442.00	COMPONEX	E 558 AN-10 0041	
L448	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L450	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L463	LD 680 UH10%60, 00HMO, 030A CHOKE	LD 0067.3201.00	DALE	IM-2	
L464	LD 680 UH10%60, 00HMO, 030A CHOKE	LD 0067.3201.00	DALE	IM-2	
L466	LD 4, 7UH 10% 0, 15A 1210 SMD-INDUCTOR	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K) 100	
L467	LD 680 UH10%60, 00HMO, 030A CHOKE	LD 0067.3201.00	DALE	IM-2	
L468	LD 680 UH10%60, 00HMO, 030A CHOKE	LD 0067.3201.00	DALE	IM-2	
L470	LD 47, 0UH10%4, 500HMO, 110A CHOKE	LD 0067.3060.00	DALE	IM2	
L475	LD 4, 70UH10%1, 200HMO, 239A CHOKE	LD 0067.2940.00	DALE	IM2	
L476	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L480	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L500	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K) 100	
L510	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L511	LD 0, 39UH10%, 300HMO, 710A CHOKE	LD 0067.2811.00	DALE	IM2	
L513	LD 0, 33UH10%, 220HMO, 830A CHOKE	LD 0067.2805.00	DALE	IM2	
L519	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K) 100	
L525	LD 1, 80UH10%, 300HMO, 480A CHOKE	LD 0067.2892.00	DALE	IM2	
L526	LD 1, 50UH10%, 220HMO, 560A CHOKE	LD 0067.2886.00	DALE	IM2	
L550	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L551	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K) 100	
L552	LD 4, 7UH 10% 0, 15A 1210 SMD-INDUCTOR	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K) 100	
L553	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K) 100	
L558	LD 4, 7UH 10% 0, 15A 1210 SMD-INDUCTOR	LD 0008.1687.00	SIEMENS	B82422-A1472-J(K) 100	
L565	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L575	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L576	LD 1UH 10% 0, 38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K) 100	
L580	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	
L620	LD 2, 2UH 10% 0, 27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K) 100	

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Kennz. Comp. No.	Banennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
L621	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2		
L630	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100		
L650	LD 2,2UH 10% 0,27A 1210 SMD-INDUCTOR	LD 0520.7870.00	SIEMENS	B82422-A1222-J(K)100		
N100	BO LM2941T LOWDROP +VREGL VOLTAGE REGULATOR	4024.5989.00	NSC	LM2941T		
N290	BO NE5534D OPAMP OPERATIONAL AMPLIFIER	0815.7555.00	SIGNETICS	NE5534(D)		
N350	BM MSA1105 05-1.3G MMIC IC MICROWAVE MONOLITH AMP	1051.4051.00	AVANTEK	MSA-1105-TR1		
N380	BM SRA1H MIXER 0.5GHZ MIXER	BM 0252.5234.00	MINI-CIRCU	SRA-1H		
N430	BM MSA1105 05-1.3G MMIC IC MICROWAVE MONOLITH AMP	1051.4051.00	AVANTEK	MSA-1105-TR1		
N440	BM MSA1105 05-1.3G MMIC IC MICROWAVE MONOLITH AMP	1051.4051.00	AVANTEK	MSA-1105-TR1		
N460	BO LT1124CS8 2X OPAMP IC OPAMP	1036.4483.00	LINEAR_TEC	(LT)1124(CS8)		
N465	BO AD829JR 1XLOLN OPAMP IC OPAMP	1036.4254.00	ANALOG_DEV	AD829JR		
N468	BO LP365M 4X COMP IC COMPARATOR	1036.4248.10	NSC	LP365M		
N470	BM RMS-1 MIXER 500M MIXER MODULE	0846.4393.00	MINI-CIRCU	RMS-1		
N530	BO NE5534D OPAMP OPERATIONAL AMPLIFIER	0815.7555.00	SIGNETICS	NE5534(D)		
N550	BO OP97FS LP PREC OPAMP OPAMP	1036.4390.00	PMI	OP97F(S)		
N562	BO OP97FS LP PREC OPAMP OPAMP	1036.4390.00	PMI	OP97F(S)		
N565	BO OP97FS LP PREC OPAMP OPAMP	1036.4390.00	PMI	OP97F(S)		
N570	EO 10MHZ-QU.OSZ VTCXO 5V OSCILLATOR VTCXO	1039.3113.00	MILLIREN	453-0102		
N585	BO REF01CS 10V 20MA VREF VOLTAGE REFERENCE	1002.5129.00	PMI	REF01C(S)		
N680	BO LP365M 4X COMP IC COMPARATOR	1036.4248.10	NSC	LP365M		
P10	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P40	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P41	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P200	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P201	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P220	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P221	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P250	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P251	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P255	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P256	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P265	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P266	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P325	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P326	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P360	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P361	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P390	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
P391	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P450	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P451	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P460	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P461	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P465	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P466	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P520	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P525	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P575	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P576	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
P580	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5		
R1	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	PHILIPS_CO	RC02		
R2	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R4	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02		
R6	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R7	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25		
R8	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02		
R10	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02		
R11	RG 3,92KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5808.00	ROEDERSTEI	D25		
R15	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R16	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25		
R17	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25		
R21	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R22	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R30	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25		
R31	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02		
R35	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R36	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R38	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25		
R40	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	ROEDERSTEI	D25		
R42	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R47	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25		
..49						
R50	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02		
R53	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25		
R56	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02		
R57	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R58	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25		
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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R59	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R65	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R67	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R68	RG 10,0 KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R69	RG 10,0 KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R71	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R72	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R73	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R75	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R77	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R80	RG 10,0 KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R81	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R82	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R83	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R85	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R87	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R89	RG 4,75 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R91	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R92	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R93	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R94	RG 4,75 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R96	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R97	RG 6,81 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R98	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25	
R99	RG 4,75 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R100	RG 5,11 KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0729.00	ROEDERSTEI	D25	
R101	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R105	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25	
R200	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R201	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R202	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R204	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R206	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25	
..208					
R209	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R210	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R212	RL 0,60W 392 OHM+-1%TK50 RESISTOR	RL 0082.2183.00	RESISTA	MK2	
R213	RL 0,60W 392 OHM+-1%TK50 RESISTOR	RL 0082.2183.00	RESISTA	MK2	
R217	RG 3,92 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5808.00	ROEDERSTEI	D25	
R223	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R240	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02		
R241	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02		
R249	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25		
R250	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R251	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02		
R252	RG 301 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5643.00	ROEDERSTEI	D25		
R253	RG 301 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5643.00	ROEDERSTEI	D25		
R254	RS 0,25W500 OHM+-20% SMD POTENTIOMETER	RS 0007.9603.00	BI_TECHNOL	23 B R... TR		
R255	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02		
R256	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25		
R257	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25		
R258	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02		
R259	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02		
R260	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25		
R261	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02		
R262	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02		
R263	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R264	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02		
R265	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25		
R266	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25		
R267	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25		
R269	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25		
R270	RG 200 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5608.00	PHILIPS_CO	RC02		
R271	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02		
R272	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R273	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25		
R274	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25		
R275	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25		
R276	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25		
R277	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25		
R278	RG 4,75OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8420.00	PHILIPS	RC 02		
R279	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25		
R280	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02		
R281	RG 8,25OHM+-1%TK100 1206 CHIP-RESISTOR	RG 0007.8488.00	PHILIPS	RC 02		
R282	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R283	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R284	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R285	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25		
R286	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7259.00	ROEDERSTEI	D25		
MENP1	502 3PU-D	Äi	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr. Page
	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	15+

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Kennz. Comp. No.	Banennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R287	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R288	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R289	RG 5,62KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0735.00	ROEDERSTEI	D25	
R290	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R291	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R292	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R293	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R294	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R295	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R296	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R297	RG 39,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5937.00	ROEDERSTEI	D25	
R298	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R299	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R309	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R310	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R311	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R312	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R313	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R314	RG 511 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9051.00	PHILIPS_CO	RC02	
R315	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R316	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
..318	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R319	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R320	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R321	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R322	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R323	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R324	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R325	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R326	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R327	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R328	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
..331	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R333	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R334	RG 3,01KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5772.00	ROEDERSTEI	D25	
R335	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R336	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R337	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R338	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R339	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R341	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
..343	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	


MENP 1 502 3PU-D		Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt-Nr. Page
		42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	16+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
R350	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25		
R351	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25		
R352	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25		
R355	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25		
R357	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02		
R360	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R362	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02		
R363	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02		
R380	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25		
R381	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25		
R382	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02		
R383	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25		
R384	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7259.00	ROEDERSTEI	D25		
R385	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02		
R388	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R400	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206		
R401	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02		
R405	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25		
R406	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25		
R407	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25		
R411	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R412	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25		
R414	RS 0,25W200 OHM+-20% SMD POTENTIOMETER	RS 0007.9590.00	BOURNS	3314G--1-		
R415	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25		
R416	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R417	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02		
R418	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25		
R419	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25		
R422	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25		
R424	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25		
R425	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02		
R426	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02		
R427	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R428	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25		
R429	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	ROEDERSTEI	D25		
R430	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	ROEDERSTEI	D25		
R431	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25		
R432	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02		
R433	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25		
MENP 1	502 3PU-D	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr Page
	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	17+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R434	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R435	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R436	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R437	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R438	RG 51,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8810.00	ROEDERSTEI	D25	
R439	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R440	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R441	RS 0,25W200 OHM+-20% SMD POTENTIOMETER	RS 0007.9590.00	BOURNS	3314G--1-	
R442	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R443	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R444	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R445	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R446	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R447	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R448	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R449	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R450	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R451	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R452	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R453	RG 56,2KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1883.00	ROEDERSTEI	D25	
R454	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R455	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R456	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R457	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R458	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R459	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R460	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R461	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R462	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R463	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R464	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R465	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R466	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R467	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R468	RG 301 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5643.00	ROEDERSTEI	D25	
R469	RS 0,25W 50 OHM+-20% SMD POTENTIOMETER	RS 0007.9578.00	BOURNS	3314G--1-	
R470	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R471	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R472	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R473	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R474	RG 7,5KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0764.00	ROEDERSTEI	D25	
R475	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R476	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R477	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R478	RG 332 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6033.00	ROEDERSTEI	D25	
R479	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R480	RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0770.00	ROEDERSTEI	D25	
R481	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R482	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R483	RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0770.00	ROEDERSTEI	D25	
R484	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R485	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	ROEDERSTEI	D25	
R486 . . 488	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R489	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R490	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R491	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R492	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R493	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R494	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R495	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R496	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R497	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R498 . . 507	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R509 . . 512	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R513	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R514	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R515	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R516	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R517	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7259.00	ROEDERSTEI	D25	
R518	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R519	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R520 . . 523	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R524	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R525	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R526	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R527	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R528	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R529	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	

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R530	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R531	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R533	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R535	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R536	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R540	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25		
R541	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R542	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25		
R543	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R544	RG 1,0MOHM+-1%TK100 1206 CHIP RESISTOR	RG 0815.7532.00	PHILIPS_CO	RC O2		
R545	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R546	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2		
R547	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R548	RG 3,01KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5772.00	ROEDERSTEI	D25		
R550	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R551	RG 10,0KOH+-0,1%TK25 1206 SMD-RESISTOR	0009.7666.00	PHILIPS_CO	MPC 01		
R552	RG 12,0KOH+-0,1%TK25 1206 SMD-RESISTOR	0009.7620.00	PHILIPS_CO	MPC 01		
R553	RG 100 OHM+-0,1%TK25 1206 SMD-RESISTOR	0009.8033.00	PHILIPS_CO	MPC 01		
R554	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RCO2		
R555	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R556	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R558	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R560						
R561	RG 20,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5866.00	ROEDERSTEI	D25		
R562	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R563	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R564	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25		
R565	RG 162 OHM+-1%TK100 1206 CHIP RESISTOR TRIMMWERT	RG 0006.8932.00	ROEDERSTEI	D25		
R566	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2		
R567	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R568	RG 3,01KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5772.00	ROEDERSTEI	D25		
R569	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2		
R570	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R571	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R573	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R574	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R575	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25		
R576	RG 100 OHM+-0,1%TK25 1206 SMD-RESISTOR	0009.8033.00	PHILIPS_CO	MPC 01		
R577	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2		
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	ROHM & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	20+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R578	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R579	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R580	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R581	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R582	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R583	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R584	RG 39,2KOH+-0,1%TK25 1206 SMD-RESISTOR	0009.8027.00	PHILIPS_CO	MPC 01	
R587	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R588	RS 0,25W 5KOHM +-20% SMD POTENTIOMETER	RS 0007.9632.00	BI_TECHNOL	23 B R... TR	
R589	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R590	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
R591	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R592	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R593	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R597	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R598	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R599	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R600 ..602	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R603	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R604	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R605	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R607	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R608	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R610	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R611	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R612 ..614	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R615	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R616	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R619	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R620	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R629	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R630 ..633	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R634	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R635	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R636	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R638 ..640	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R641	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R642	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R643 ..645	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	

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	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	21+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R649	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R650	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R652	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R653	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R659	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	ROEDERSTEI	D25	
R660	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R661	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R662	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R680	RG 39,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5937.00	ROEDERSTEI	D25	
R681	RG 11,0KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0806.00	ROEDERSTEI	D25	
R682	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R685	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R687	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R688	RG 121,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1960.00	ROEDERSTEI	D25	
R690	RG 221 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6004.00	ROEDERSTEI	D25	
R691	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	PHILIPS_CO	RC02	
R692	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R693	RG 68,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1902.00	ROEDERSTEI	D25	
R694	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R697	RG 3,3MOHM+-5%TK200 1206 CHIP RESISTOR	0007.9990.00	ROEDERSTEI	D 25	
R698	RG 1,0MOHM+-1%TK100 1206 CHIP RESISTOR	RG 0815.7532.00	PHILIPS_CO	RC 02	
V5	AK BFR93A N 12V 35MA TRANSISTOR	AK 0007.7030.00	VALVO	BFR93A	
V10	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V14	AE BB909B 25/ 3PF CDI TUNING DIODE	AE 0092.9600.00	PHILIPS	BB909B	
V35	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V60	AM SST310 N-D 25V JFET JFET	1036.4577.00	SILICONIX	SST310	
V69	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V70	AM SST310 N-D 25V JFET JFET	1036.4577.00	SILICONIX	SST310	
V80	AM SST310 N-D 25V JFET JFET	1036.4577.00	SILICONIX	SST310	
V90	AM SST310 N-D 25V JFET JFET	1036.4577.00	SILICONIX	SST310	
V95	AK BSV52 N 12V 100MA TRANSISTOR	AK 0007.3434.00	PHILIPS	BSV52	
V105	AL BD439 N 60V 4A0 TRANSISTOR	AL 0010.1645.00	SGS-THOMSO	BD439	
V205	AK BFG97 NPN 15V 100MA TRANSISTOR BFG97	0008.1741.00	PHILIPS	BFG97	
V206	AK BFG97 NPN 15V 100MA TRANSISTOR BFG97	0008.1741.00	PHILIPS	BFG97	
V240	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V255	AK BFG97 NPN 15V 100MA TRANSISTOR BFG97	0008.1741.00	PHILIPS	BFG97	
V260	AK BFG97 NPN 15V 100MA TRANSISTOR BFG97	0008.1741.00	PHILIPS	BFG97	
V262	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	

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V263	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V265	AK BSR13 N 30V 800MA TRANSISTOR	AK 0007.2209.00	VALVO	BSR 13	
V279	AE 1N4696 9V1 0.3W ZDI ZENER DIODE	AE 0303.9160.00	SEMITRONIC	1N4696	
V280	AK BFG97 NPN 15V 100MA TRANSISTOR BFG97	0008.1741.00	PHILIPS	BFG97	
V285	AK BFG97 NPN 15V 100MA TRANSISTOR BFG97	0008.1741.00	PHILIPS	BFG97	
V290	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V295	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V299	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V320	AK BSR12 P 15V 100MA TRANSISTOR	AK 0007.2067.00	PHILIPS_SE	BSR12	
V321	AK BSR12 P 15V 100MA TRANSISTOR	AK 0007.2067.00	PHILIPS_SE	BSR12	
V322	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V323	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V325	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V361	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V380	AK BFR93A N 12V 35MA TRANSISTOR	AK 0007.7030.00	VALVO	BFR93A	
V383	AE 1N4691 6V2 0.3W ZDI ZENER DIODE	AE 0568.1220.00	AMERICAN_P	1N4691	
V400	AE BBY40 30/05PF CDI TUNING DIODE	AE 0007.2109.00	VALVO	BBY40	
V401	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V402	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V403	AE BBY40 30/05PF CDI TUNING DIODE	AE 0007.2109.00	VALVO	BBY40	
V404	AE BBY40 30/05PF CDI TUNING DIODE	AE 0007.2109.00	VALVO	BBY40	
V405	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V406	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V407	AE BBY40 30/05PF CDI TUNING DIODE	AE 0007.2109.00	VALVO	BBY40	
V408	AM SST310 N-D 25V JFET JFET	1036.4577.00	SILICONIX	SST310	
V418	AE BZV55/C5V1 0.5W ZDI ZENER DIODE	AE 0006.9839.00	PHILIPS_SE	BZV55B5V1 (GEG)	
V420	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V422	AE BZV55/C5V1 0.5W ZDI ZENER DIODE	AE 0006.9839.00	PHILIPS_SE	BZV55B5V1 (GEG)	
V424	AE BZV55/C5V1 0.5W ZDI ZENER DIODE	AE 0006.9839.00	PHILIPS_SE	BZV55B5V1 (GEG)	
V425	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V426	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V435	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V437	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V460	AE BZV55/C5V1 0.5W ZDI ZENER DIODE	AE 0006.9839.00	PHILIPS_SE	BZV55B5V1 (GEG)	
V466	AE HSMS2813 2XSCHOTTKY DIODE	AE 0824.3542.00	HEWLETT_PA	HSMS2813 L31	
V473	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V475	AK BSR13 N 30V 800MA TRANSISTOR	AK 0007.2209.00	VALVO	BSR 13	
V514	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V518	AK BSV52 N 12V 100MA TRANSISTOR	AK 0007.3434.00	PHILIPS	BSV52	


095.0026-0693

MENP1	502 3PU-D	ÄI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr. Page
		42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	23+

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V530	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V531	AE BZV55/C4V7 0.5W ZDI ZENER DIODE	AE 0006.9822.00	PHILIPS	BZV55B4V7	
V535	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V536	AE BZV55/C4V7 0.5W ZDI ZENER DIODE	AE 0006.9822.00	PHILIPS	BZV55B4V7	
V540	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V555	AE BZV55/10V 0,5W ZDI ZENER DIODE	AE 0006.9880.00	PHILIPS_SE	BZV55C10	
V566	AD BAS32 75V UDI DIODE	AD 0006.7288.00	PHILIPS	BAS32 (L)	
V570	AE BZV55/C5V6 0.5W ZDI ZENER DIODE	AE 0006.9845.00	PHILIPS	BZV55B5V6	
V571	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V575	AE BZV55/C3V9 0,5W ZDI ZENER DIODE	AE 0006.9816.00	PHILIPS_SE	BZV55B3V9	
V582	AK BSV52 N 12V 100MA TRANSISTOR	AK 0007.3434.00	PHILIPS	BSV52	
V583	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V584	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V585	AK BSV52 N 12V 100MA TRANSISTOR	AK 0007.3434.00	PHILIPS	BSV52	
V586	AK BSV52 N 12V 100MA TRANSISTOR	AK 0007.3434.00	PHILIPS	BSV52	
V587	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V590	AK BSV52 N 12V 100MA TRANSISTOR	AK 0007.3434.00	PHILIPS	BSV52	
V660	AE BZV55/C5V6 0.5W ZDI ZENER DIODE	AE 0006.9845.00	PHILIPS	BZV55B5V6	
V697	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V698	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
X70	FP STECKERLEISTE 32POL.	0418.9755.00			
X71	FJ EINBAUSTECKER F.GS SMB	FJ 0602.8804.00	IMS	81.1524.201	
..75	ANGLE CONNECTOR				
X77	FJ EINBAUSTECKER F.GS SMB	FJ 0602.8804.00	IMS	81.1524.201	
	ANGLE CONNECTOR				
X330	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X331	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X405	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
..407					
X460	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
..462					
X540	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
..542					
Z1	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z95	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z100	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
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Z210	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z280	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z382	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z384	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z390	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
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Z550	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z560	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	


wir uns alla Rechte vor.

095.0026-0593

MENP1	502 3PU-D	Alt	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr. Page
	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	24+

Für diese Unterlage behalten wir uns alle Rechte vor.

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
Z600 . .604	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z605	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R2OT332T1	
Z650	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	

MENP1	502 3PU-D	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr. Page
	ROHDE & SCHWARZ	42	04.02.98	EE REFERENZ STEPSYNTHESE	1035.6501.01 SA	25-

095.0026-0893



XY-Liste

XY List

Erklärung der Spaltenbezeichnungen:

- Part:** Bauelement-Kennzeichen.
- Side:** Leiterplatten-Seite, auf der sich das Bauelement befindet.
- X/Y:** Koordinaten (Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt.
- SQR, PG:** Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement.

Explanation of column designations:

- Part:** Identification of instrument part.
- Side:** Side of the PC board on which instrument part is positioned.
- X/Y:** Coordinates (millimeter) of the component on the PC board in reference to zero point.
- SQR, PG:** Square and page of the diagram for the respective instrument part.

Service-Relevante Bauteile / Service-Relevant Components																	
Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg
B20	B	29	126	3D	2	N100	B	91	63	4B	2	P575	B	88	97	12F	6
C400	B	182	58	7D	5	N380	B	164	99	11E	4	P576	B	88	95	12F	6
D31A	B	231	43	4D	4	N570	B	73	114	10E	6	P580	B	82	141	10E	6
D610	B	130	52	5F	7	P10	B	25	107	2E	2	R254	B	284	114	6C	3
K1-A	B	57	23	8C	6	P40	B	23	77	5D	2	R414	B	184	39	8C	5
K1-B				8C	6	P41	B	25	77	5D	2	R441	B	154	61	10E	5
L5	B	37	107	2E	2	P200	B	199	133	2E	3	R469	B	262	95	2D	5
L20	B	38	120	4D	2	P201	B	199	135	2E	3	R588	B	98	138	6E	6
L35	B	22	87	5E	2	P220	B	226	139	3E	3	X70A	B	189	12	7D	6
L206	B	214	133	3E	3	P221	B	226	142	3E	3	X70B	B	189	12	2C	2
L230	B	240	132	4D	3	P250	B	281	142	5E	3	X71	B	17	15	9C	2
L231	B	250	119	4E	3	P251	B	284	142	5E	3	X72	B	29	15	12E	2
L234	B	253	125	4D	3	P255	B	272	47	11E	3	X73	B	42	15	7C	6
L235	B	258	138	5D	3	P256	B	272	50	11E	3	X74	B	55	15	7B	6
L251	B	280	136	5D	3	P265	B	273	111	7E	3	X75	B	245	15	12C	5
L265	B	291	98	8E	3	P266	B	273	114	7E	3	X77	B	271	15	12C	3
L266	B	275	91	8F	3	P360	B	222	107	10D	4	X330	B	247	62	5E	4
L267	B	280	88	8E	3	P361	B	225	107	10D	4	X331	B	250	62	5E	4
L268	B	291	85	8E	3	P390	B	151	111	11E	4	X405	B	193	73	8E	5
L275	B	281	63	9E	3	P391	B	149	111	11E	4	X406	B	196	73	8E	5
L277	B	281	43	11E	3	P450	B	172	36	7A	5	X407	B	198	73	8E	5
L282	B	278	45	11E	3	P451	B	172	38	7A	5	X460	B	231	78	1B	5
L285	B	298	52	8C	3	P460	B	163	90	11E	5	X461	B	231	81	1B	5
L286	B	290	28	8C	3	P461	B	163	88	12E	5	X462	B	231	83	1B	5
L290	B	290	18	9C	3	P465	B	249	88	4E	5	X540	B	57	134	6C	6
L406	B	203	60	7D	5	P466	B	246	88	4E	5	X541	B	54	134	6C	6
L421	B	181	33	8B	5	P520	B	67	67	3C	6	X542	B	51	134	6C	6
L442	B	215	19	9C	5	P525	B	67	74	4C	6						

ROHDE & SCHWARZ	ÄI	Datum Date	XY-Liste für XY-list for	Sach-Nummer Stock-Nr	Blatt Page
		05 01.03.94	EE REFERENZ_STEPSYNTHESE REFERENZ_STEPSYNTHESE	1035.6501.01 XY	1+



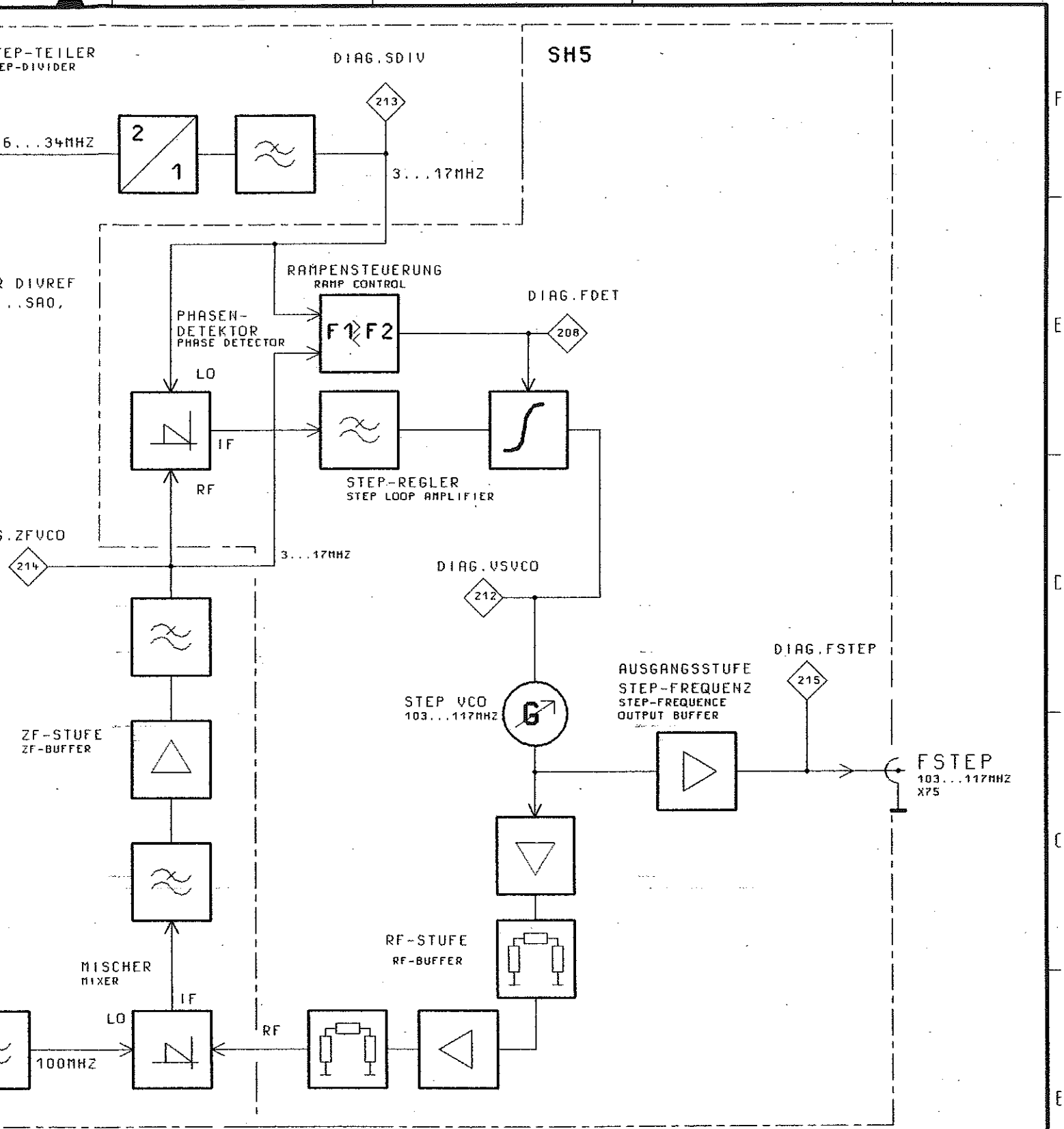
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Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg
V660	B	121	133	4A	7	Z102	B	105	27	2B	2	Z550	B	161	22	7D	6
V697	B	122	123	11D	7	Z103	B	90	27	2B	2	Z560	B	156	29	11D	6
V698	B	132	102	11C	7	Z104	B	100	27	2A	2	Z600	B	141	27	3F	7
X408	B	194	72	8E	5	Z210	B	202	108	2B	3	Z601	B	126	27	3E	7
X463	B	232	77	2B	5	Z280	B	265	56	9B	3	Z602	B	136	27	3E	7
X543	B	53	133	6C	6	Z382	B	140	119	7F	4	Z603	B	131	27	3D	7
Z1	B	44	81	2E	2	Z384	B	140	109	7E	4	Z604	B	116	27	3D	7
Z95	B	49	33	10E	2	Z390	B	140	99	7E	4	Z605	B	121	27	3E	7
Z100	B	110	27	2C	2	Z391	B	143	86	7E	4	Z650	B	151	22	8B	7
Z101	B	95	27	2B	2	Z392	B	143	76	7E	4						

ROHDE & SCHWARZ	ÄI	Datum Date	XY-Liste für XY-list for	Sach-Nummer Stock-Nr	Blatt Page
		05 01.03.94	EE REFERENZ_STEPSYNTHESE REFERENZ_STEPSYNTHESE	1035.6501.01 XY	8-

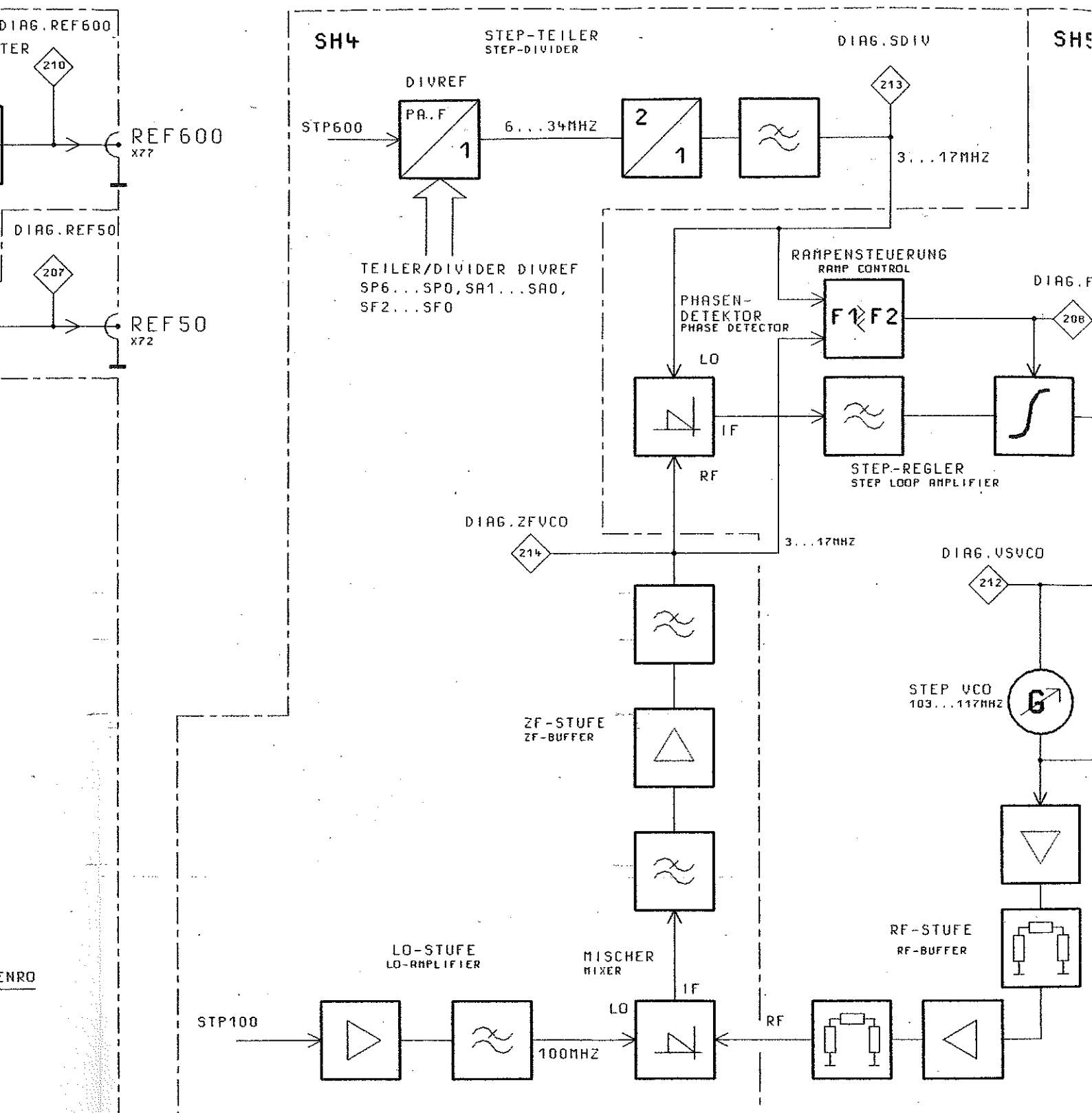


Stromläufe
Bestückungspläne
Circuit diagrams
Components plans
Schémas de circuit
Plans des composants



STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

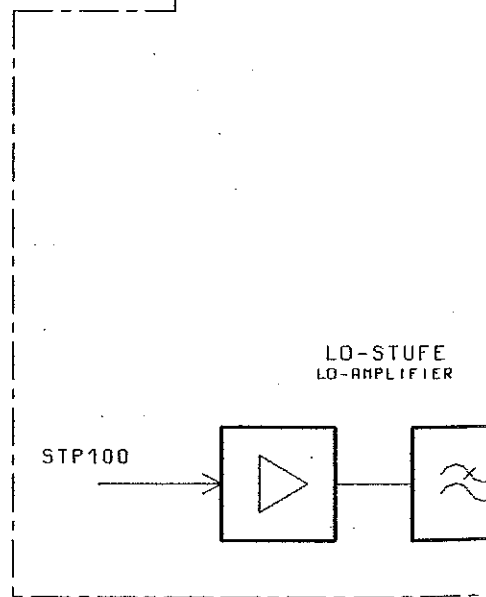
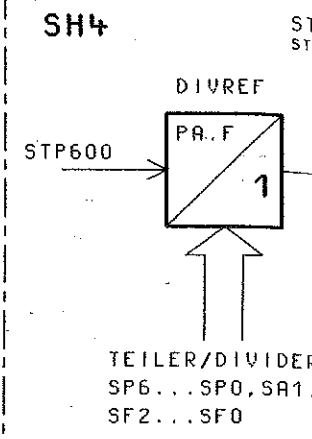
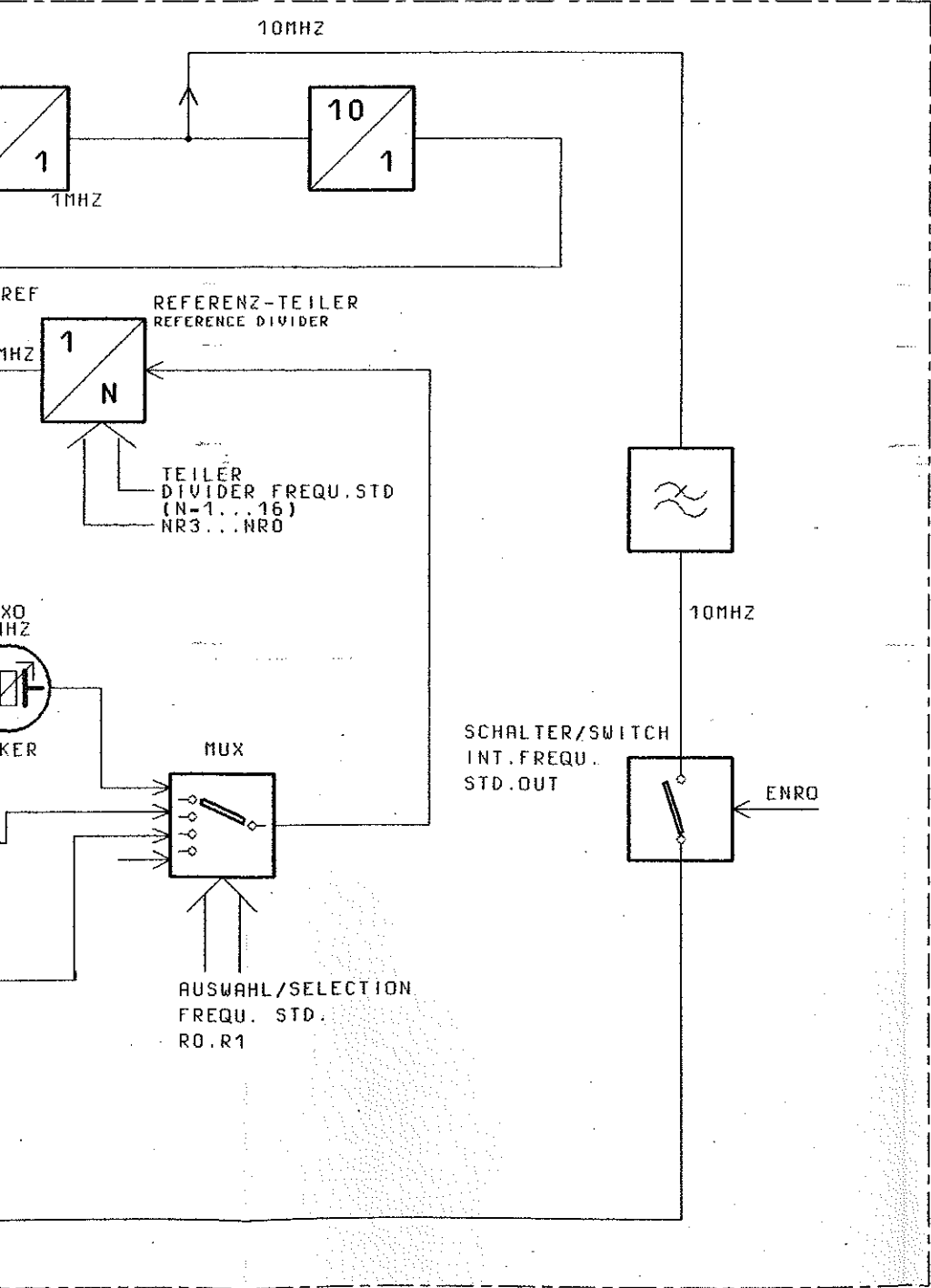
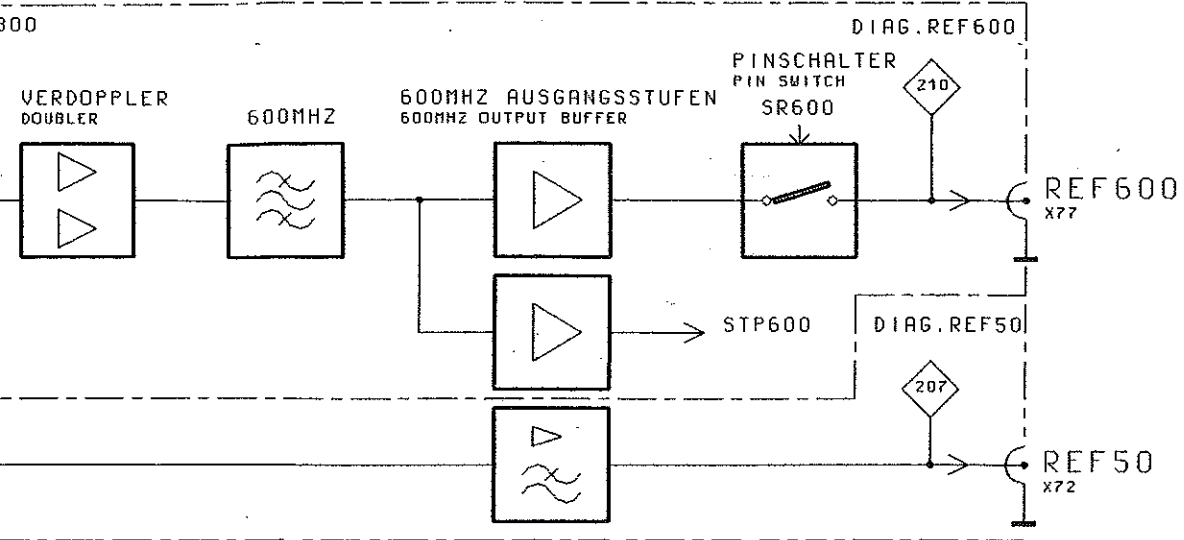
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				BEARB.		HM	
				GEPR.			
				NORM			
				PLOTT	28.02.96		ZEICHN.-NR. 1035.6501.01S
06/01	48730 84	01.03.94	BU	ROHDE&SCHWARZ			BLATT-NR. 1+
BEND. IND.	RENDERUNGS-MITTEILUNG	DATUM	NARE			u. BL.	
				ZU GERÄT	SMP	REG. I. U. 1035.5005	ERSTE Z. 1035.5005



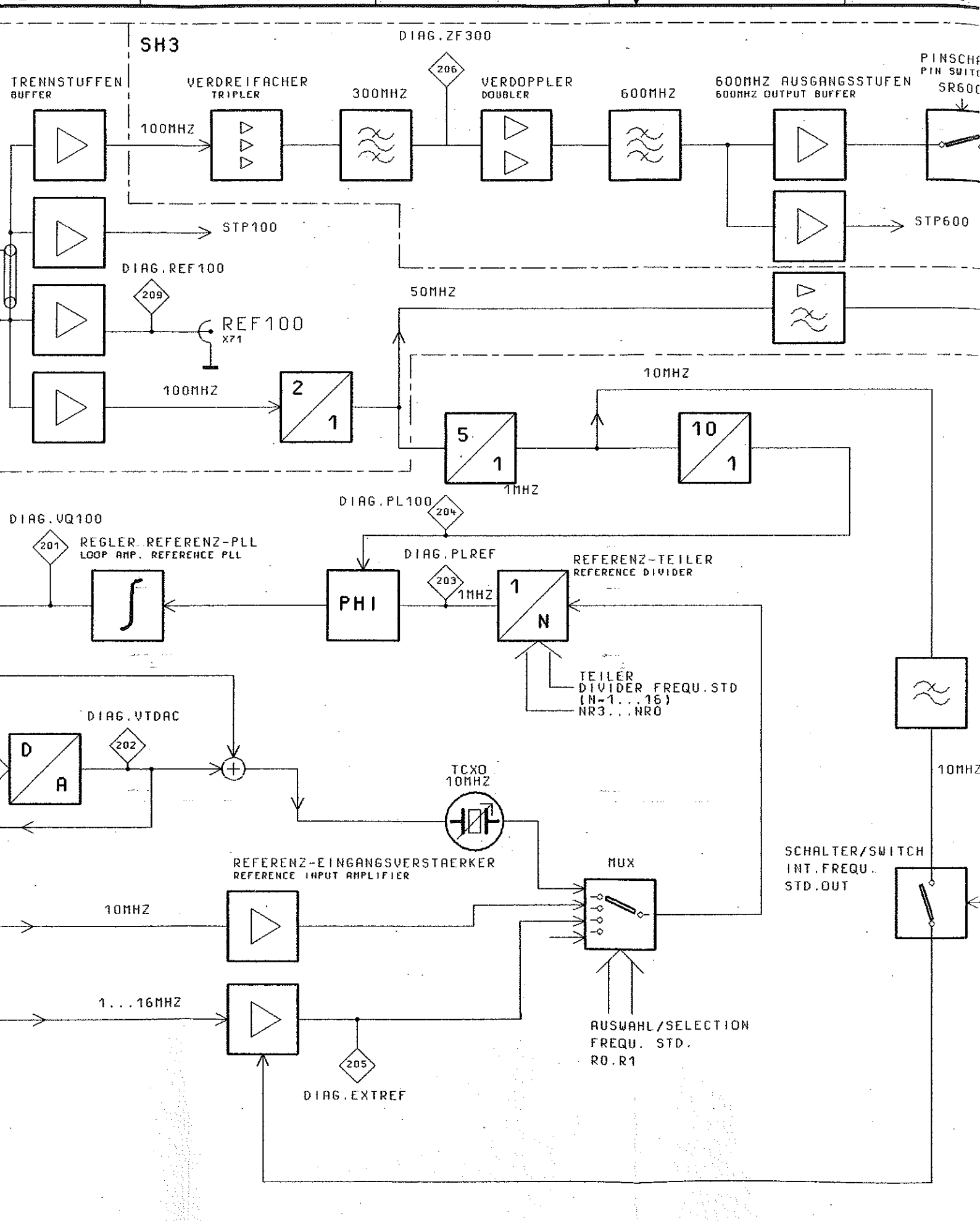
STROMLAUF GILT FUER VAR. 02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

ACHTUNG: EGB!
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.
ATTENTION ESD!
ELECTROSTATIC SENSITIVE DEVICES
REQUIRE A SPECIAL HANDLING

07/	49155	16.11.95	HM	16PK	TAG	NARE
				BEARB.		HM
				GEPP.		
				NDRR		
				PLOTT	28.02.96	
06/01	48730 84	01.03.94	BU	ROHDE & SCHWARZ ZU GERÄT SMP		
BEND. IND.	ENDERUNGS- MITTEILUNG	DATUM	NARE			



ACHTUNG: EGB!
 ELEKTROSTATISCH GEFÄHRDETE
 BAUELEMENTE ERFORDERN EINE
 BESONDERE HANDhabUNG.
 ATTENTION ESD!
 ELECTROSTATIC SENSITIVE DEVICES
 REQUIRE A SPECIAL HANDLING



FÜR DIESE UNTERLAGE
BEHALTEN WIR UNS ALLE RECHTE VOR

ZEICHN.-NR.

SH2

SH3

DIAG. ZF300

SH6

EXTTUNE
X70 R1

OPPTUNE
X70R 10

OPTREF
X74

EXTREF
X73

1...16MHZ IN
10MHZ OUT

TRENNSTUFEN
BUFFER

VERDREIFACHER
TRIPLER

300MHZ

VERDOPPLER
DOUBLER

600MHZ

VCXO
100MHZ

DIAG. REF100

REF100
X71

100MHZ

50MHZ

DIAG. VQ100

REGLER. REFERENZ-PLL
LOOP AMP. REFERENCE PLL

DIAG. PL100

DIAG. PLREF

REFERENZ-1
REFERENCE DIV

DIAG. VTDAC

TUNESPANNUNG
TUNING VOLTAGE
TV11...TV0

TCXO
10MHZ

REFERENZ-EINGANGSVERSTÄRKER
REFERENCE INPUT AMPLIFIER

MUX

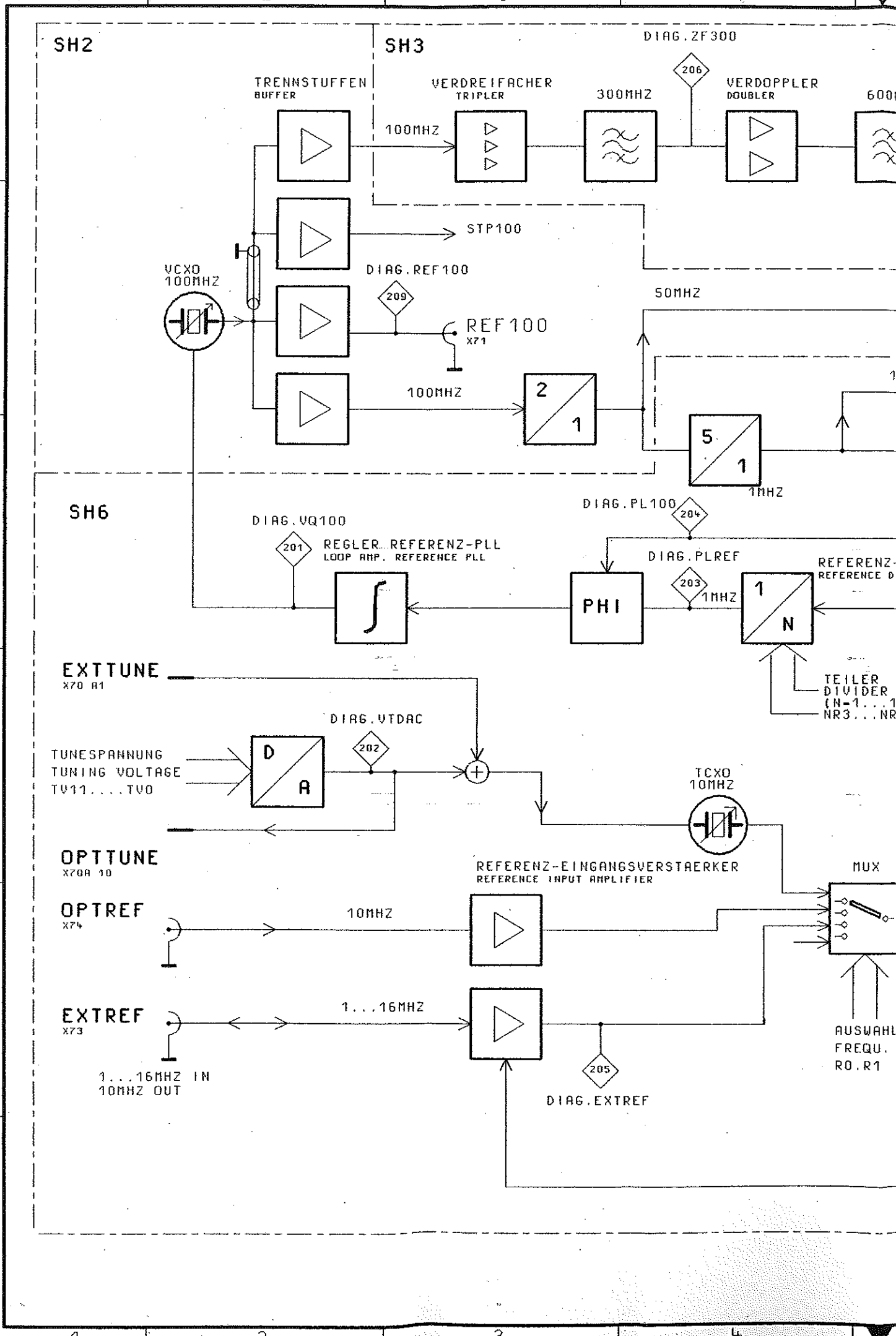
AUSWAHL
FREQU. S
RO. R1

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2

3

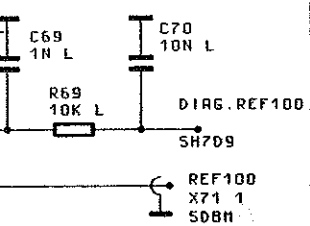
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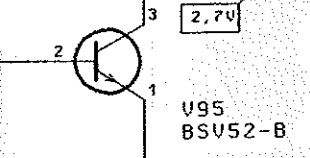
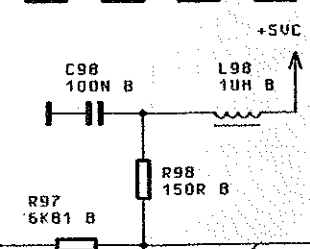
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Puffer

REF100
X71 1
50BH

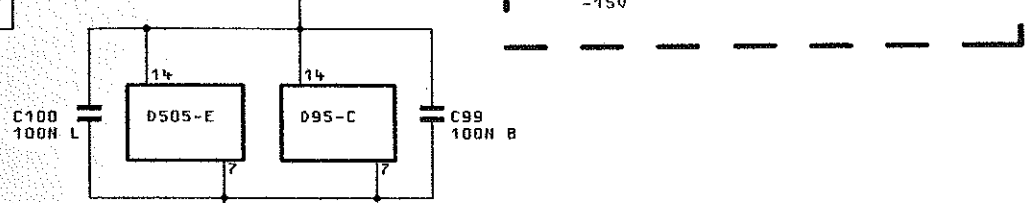
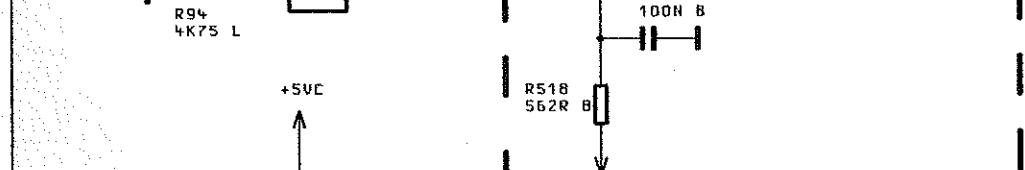
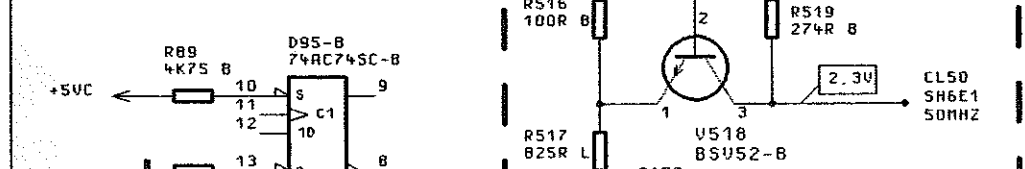
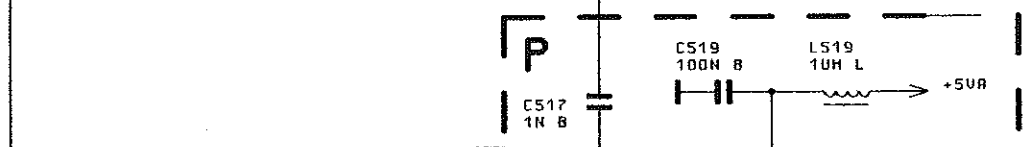
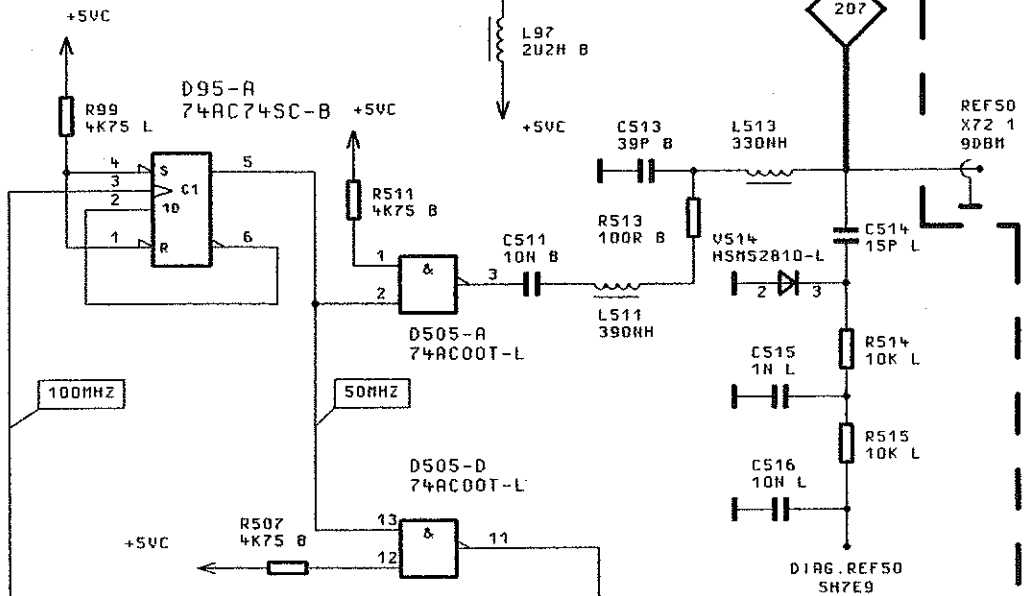
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X71 1
50BH




PEGEL AUSGANG REF100
OUTPUT LEVEL REF100



E 50MHZ AUSGANG 50MHZ OUTPUT

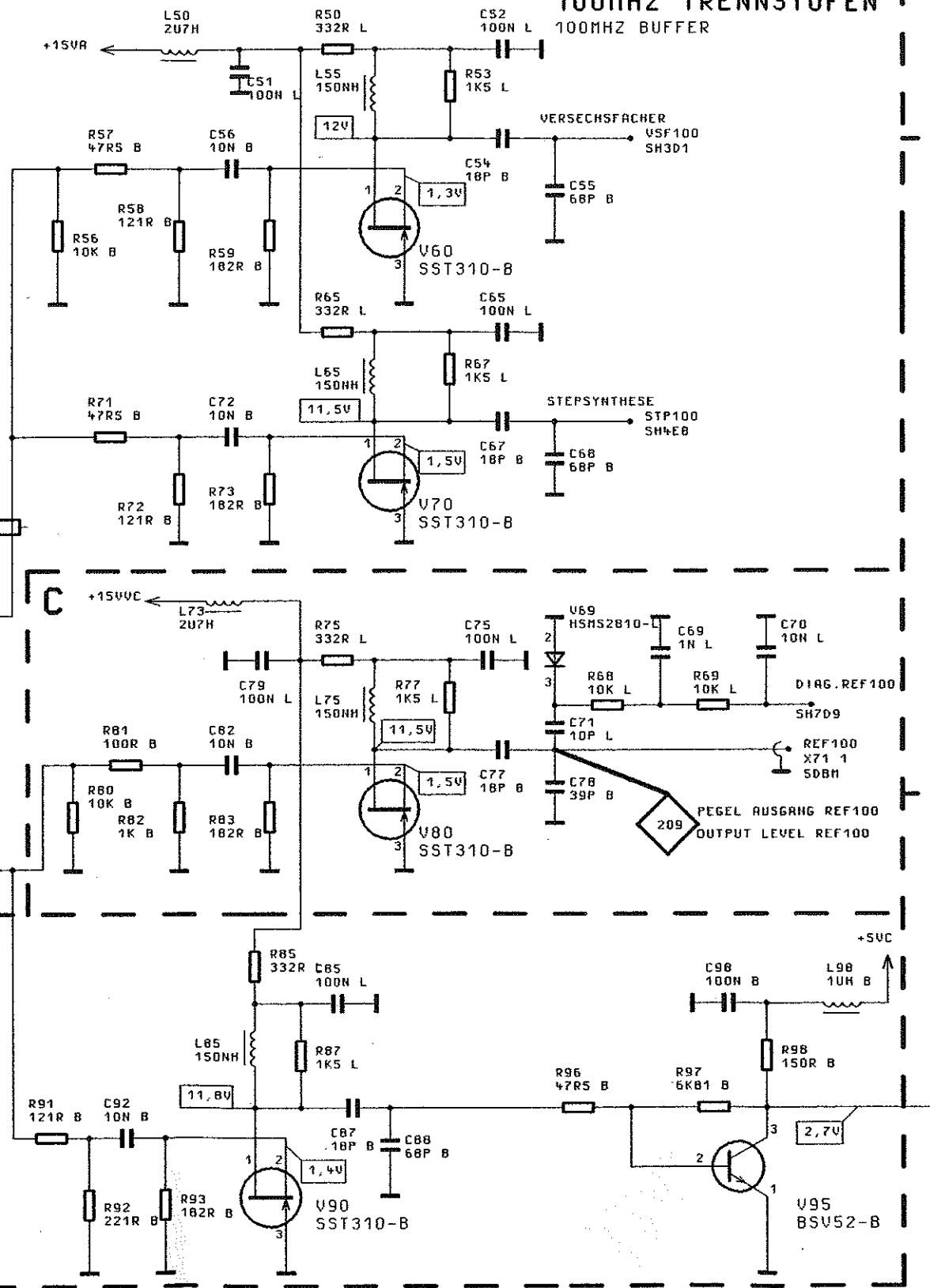


STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

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				GEPR.			
				NORM			
				PLOTT	28.02.96		
06/01	48730 84	01.03.94	BU	 ROHDE & SCHWARZ		ZEICHN.-NR. 1035.6501.015	
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NAME			REG. I. V.	1035.5005
				ZU GERÄT SMP		BLATT-NR. 2+	
						v. BL.	

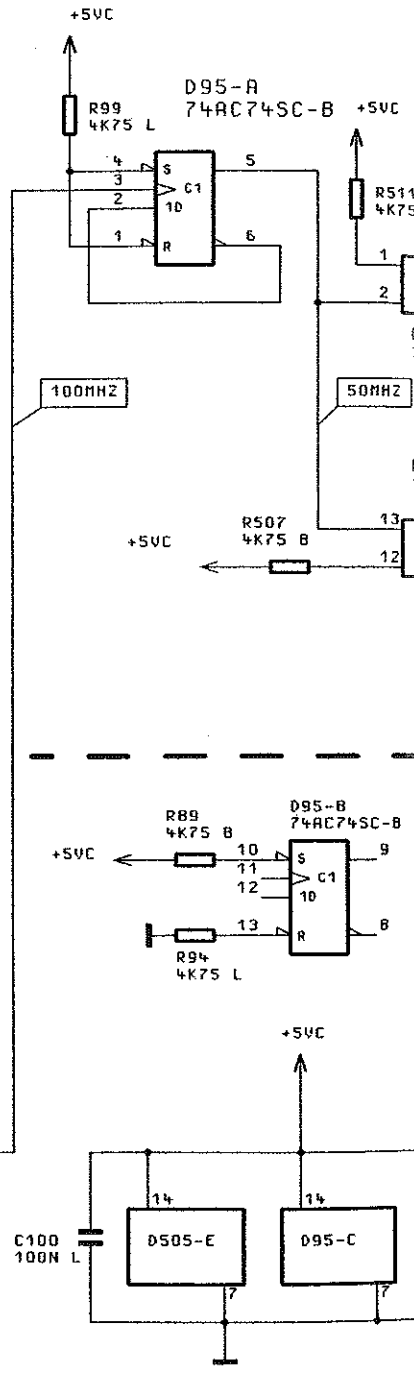
100MHZ TRENNSTUFEN

100MHZ BUFFER



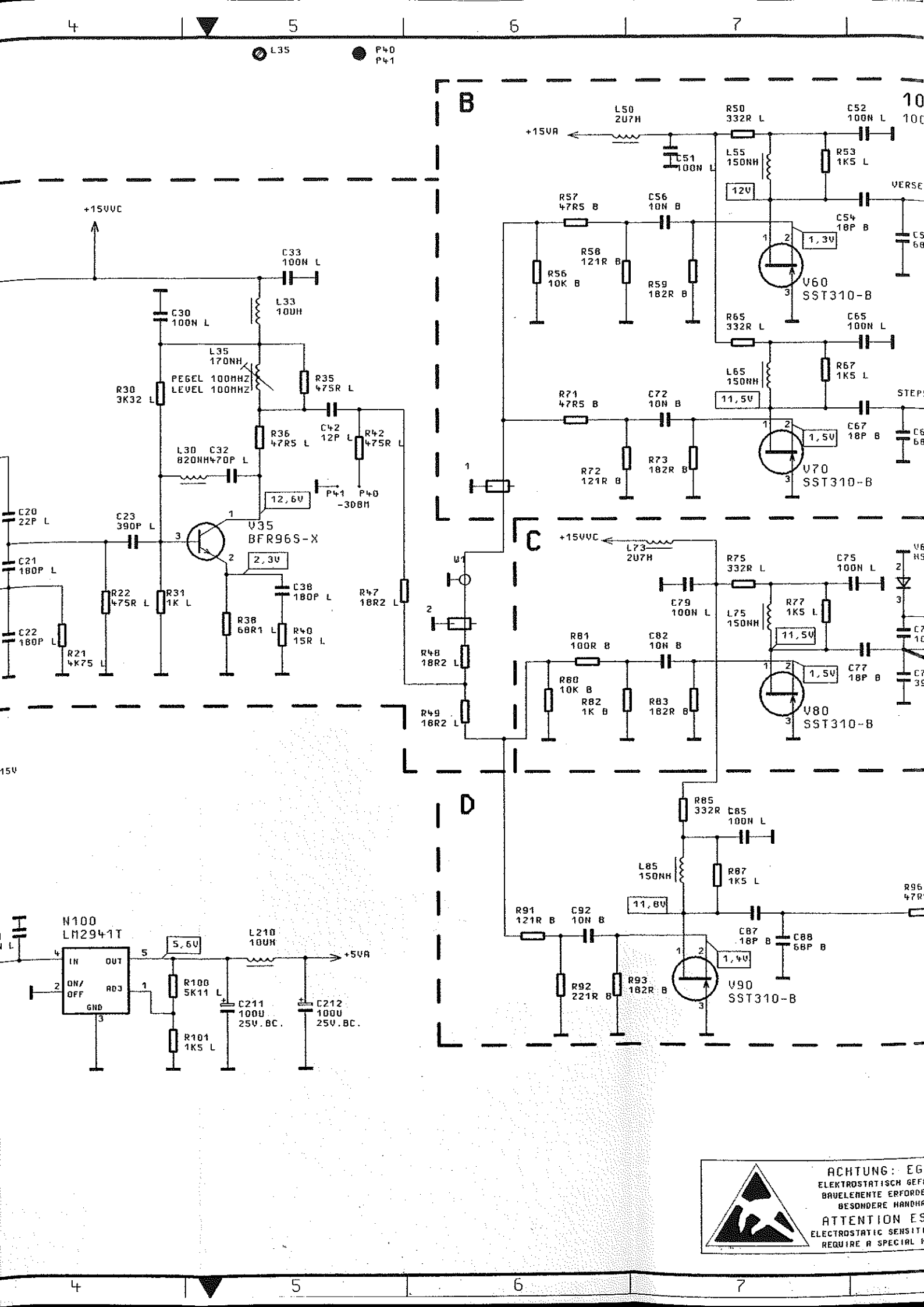
E 50MHZ AUSGANG


50MHZ OUTPUT

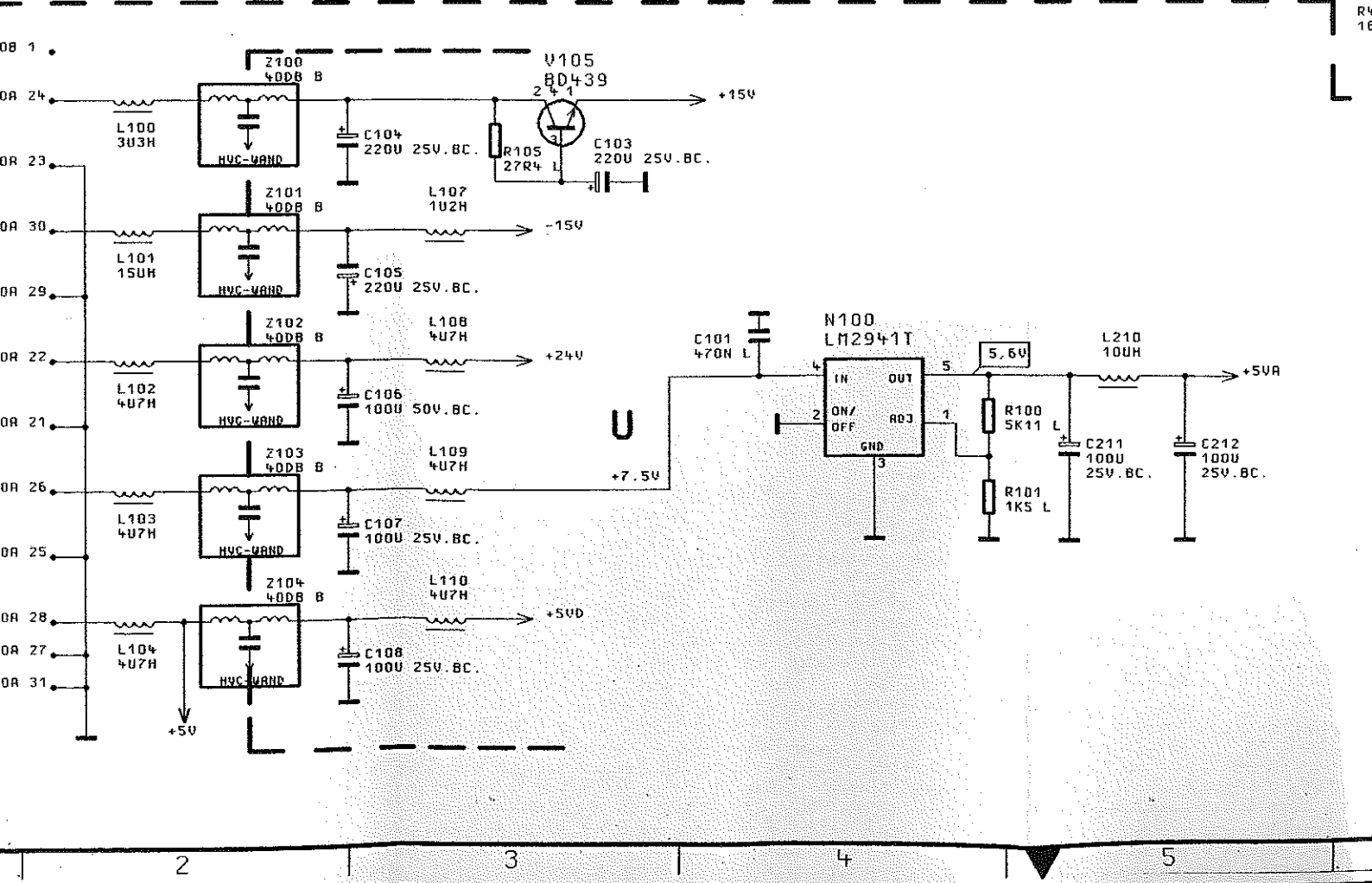
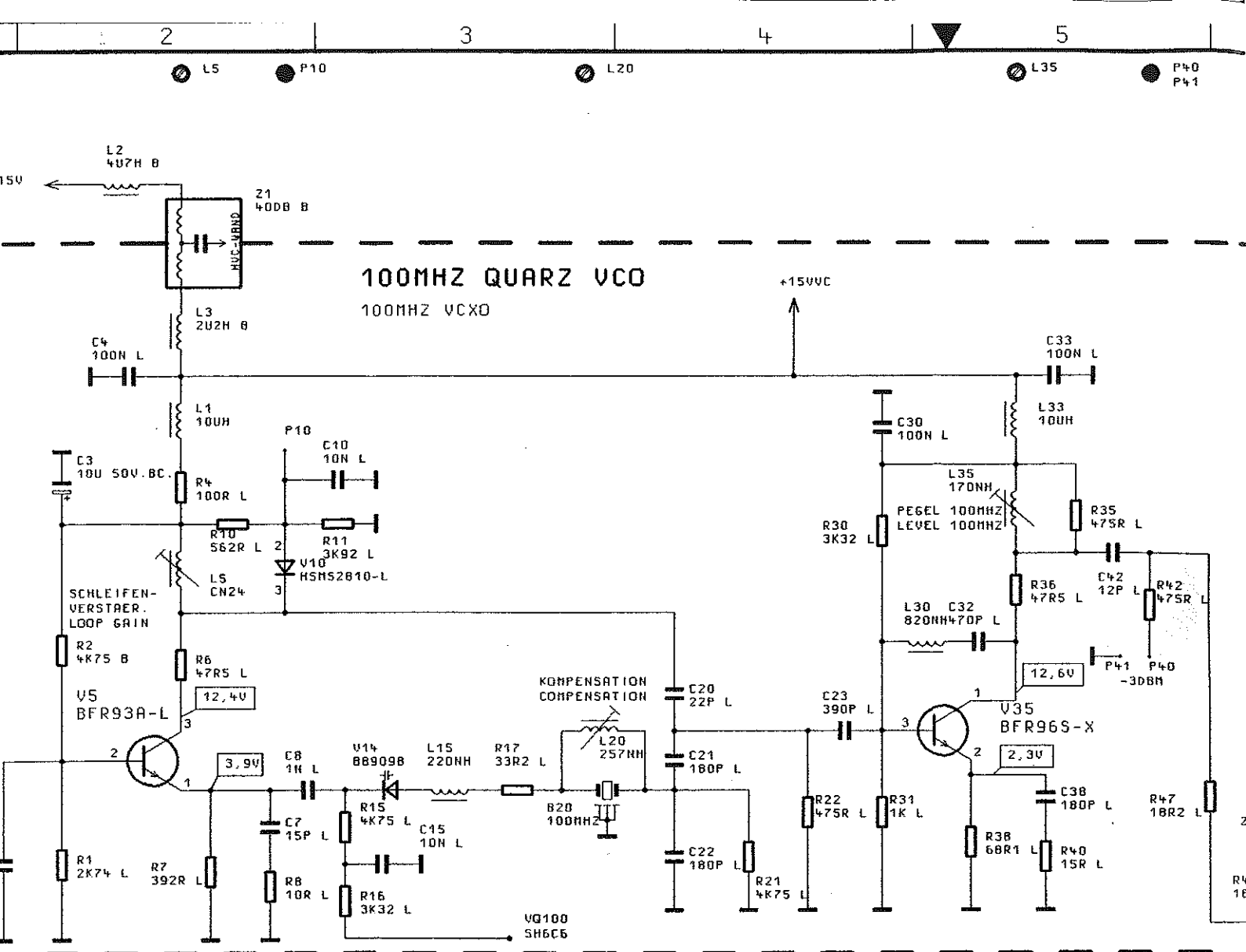


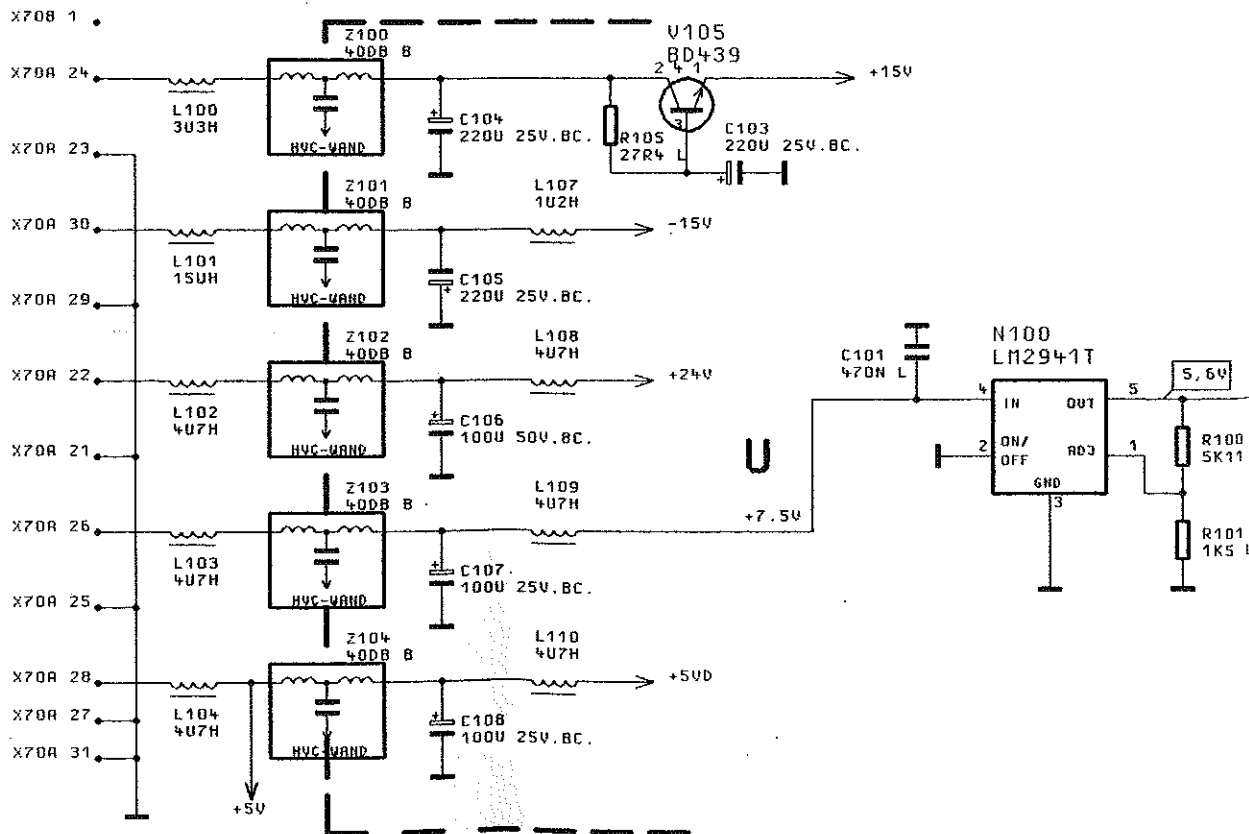
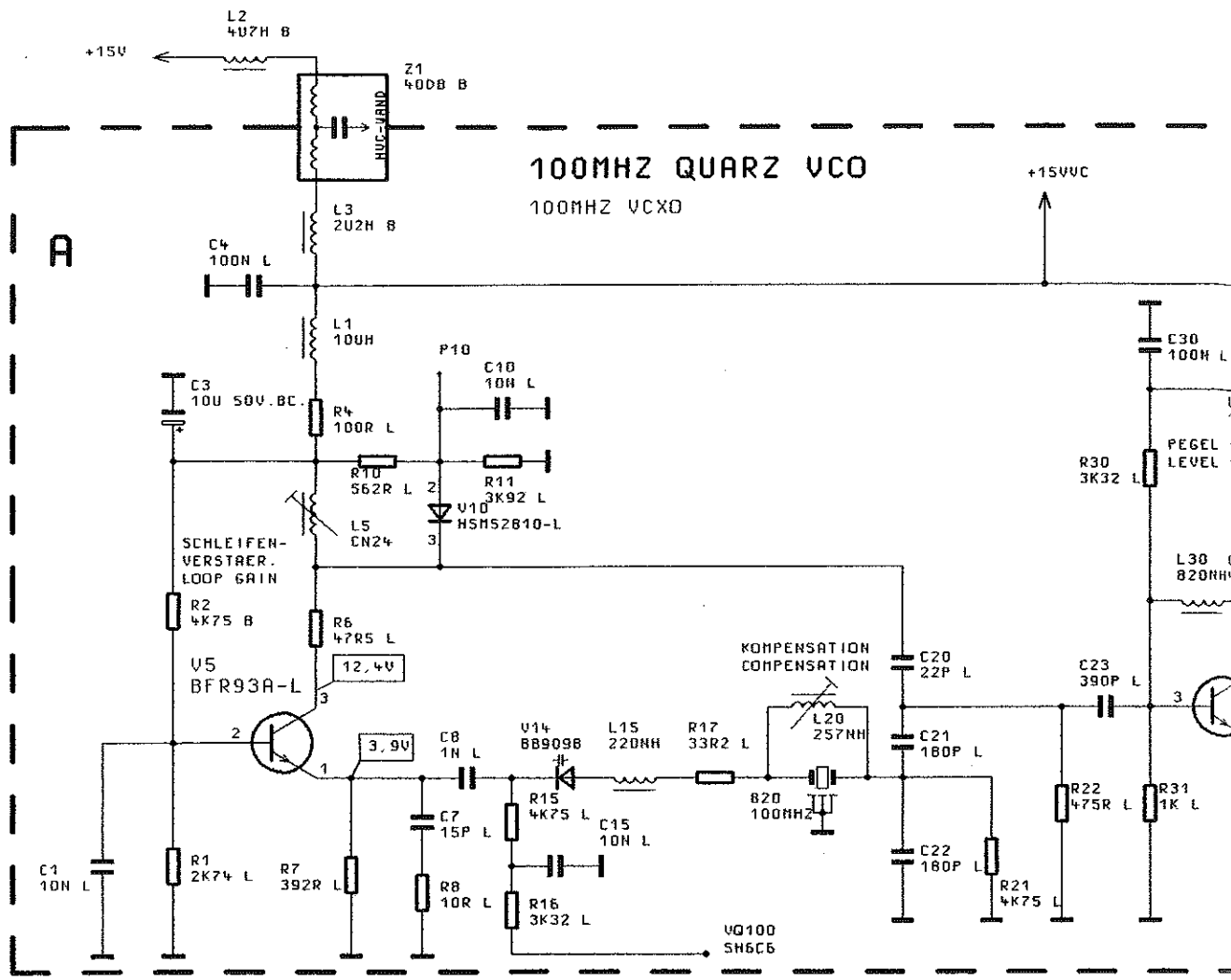
ACHTUNG: EGB!
 ELEKTROSTATISCH GEFÄHRLICHTE
 BAUELEMENTE ERFORDERN EINE
 BESONDERE HANDHABUNG.
ATTENTION ESD!
 ELECTROSTATIC SENSITIVE DEVICES
 REQUIRE A SPECIAL HANDLING

07/	49155	16.11.95	HM	16PK	TRG
				BEARB.	
				GEPR.	
				NORM	
				PLOTT	28.02.96
06/01	48730 84	01.03.94	BU		
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NARNE	 ROHDE & SCHMIDT ZU GERÄT SMP	



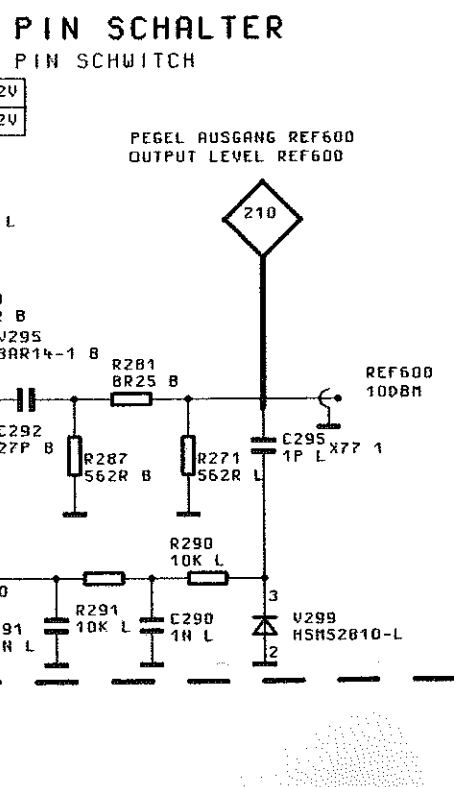
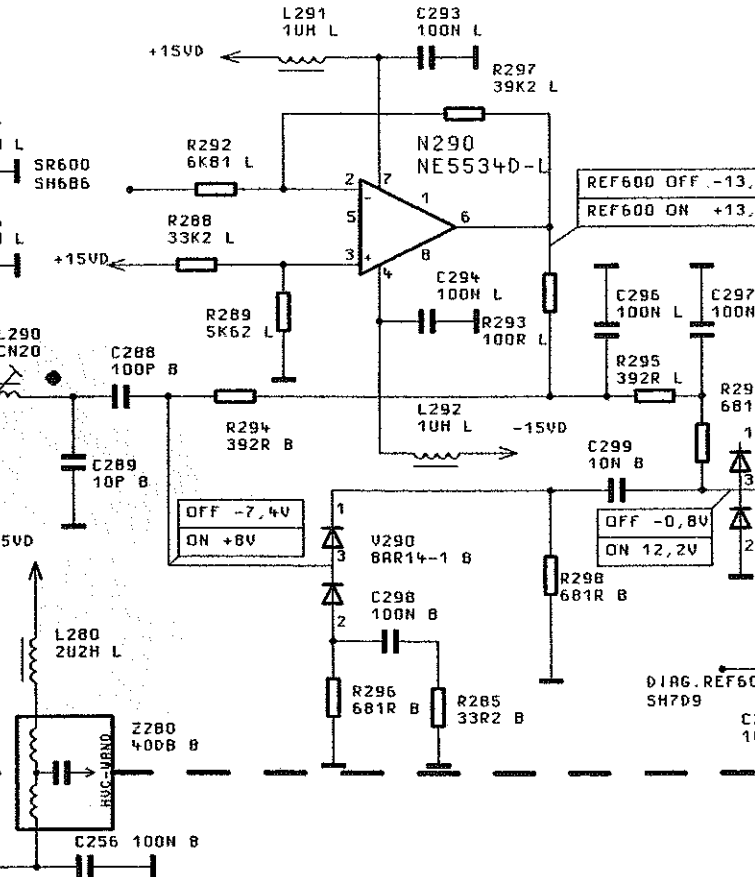
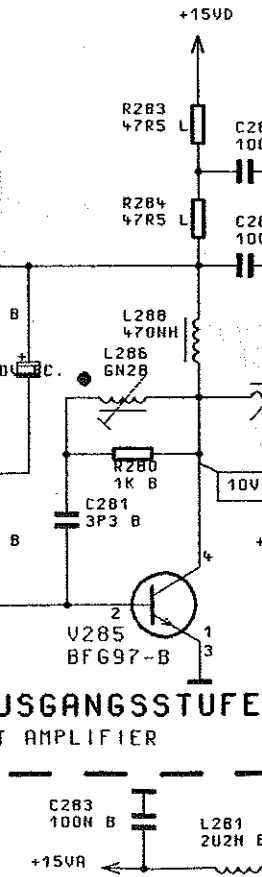
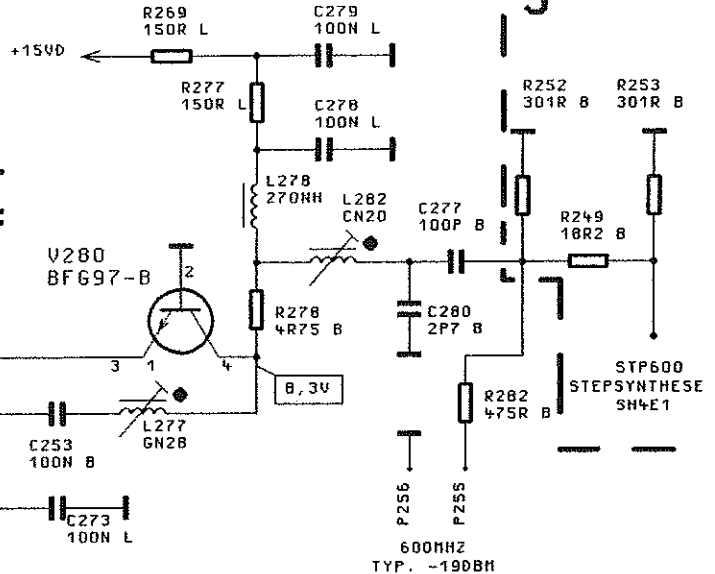
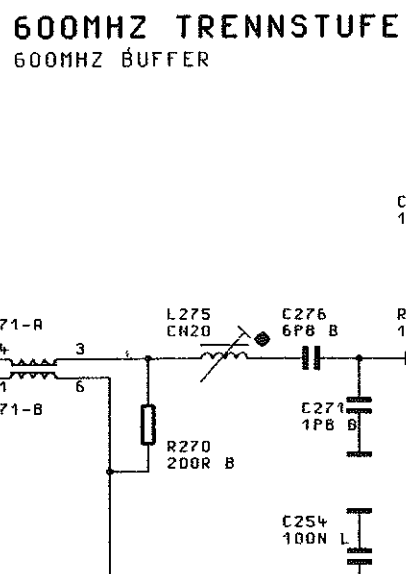
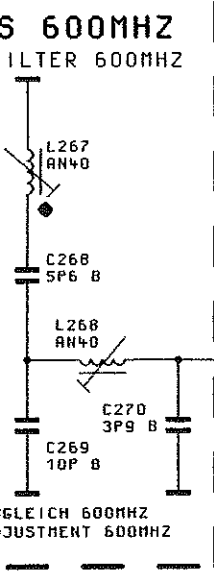

ACHTUNG: EG
 ELEKTROSTATISCH GEFÄHRDUNG
 BAUELEMENTE ERFORDERN
 BESONDERE HANDHABUNG
ATTENTION: ES
 ELECTROSTATIC SENSITIVE
 COMPONENTS REQUIRE A SPECIAL HANDLING





FUER DIESE UNTERLAGE
BEHALTEN MIR UNS ALLE RECHTE VOR

ZEICHN. - N...



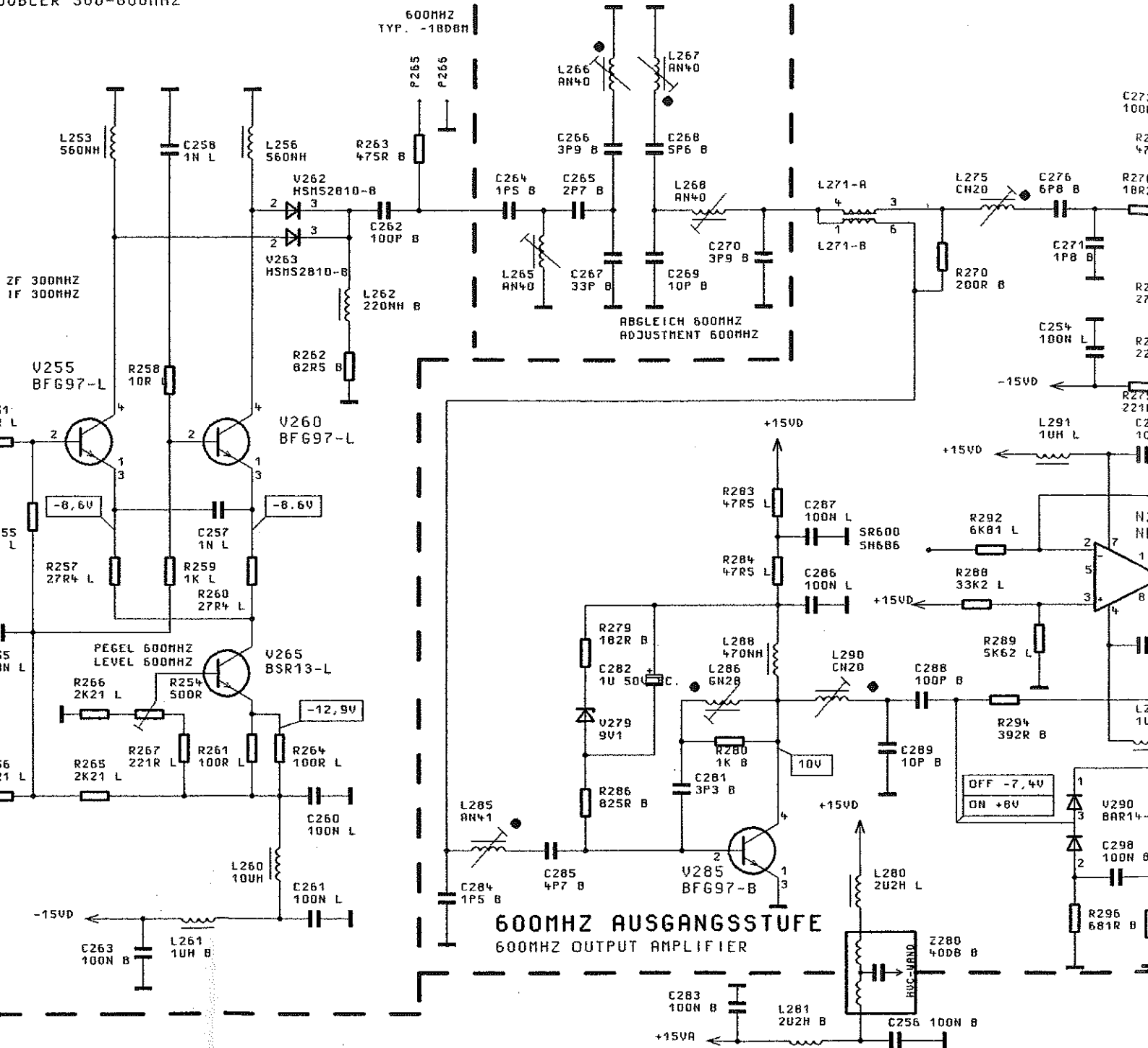
STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

07/	49155	16.11.95	HM	1GPK	TRG	NAME	BENENNUNG
				BEARB.		HM	REFERENZ STEPSYNTHESE REFERENZ STEPSYNTHESE
				GEPR.			
				NORN			
				PLOTT	28.02.96		
06/01	48730 84	01.03.94	BU	ROHDE & SCHWARZ			ZEICHN.-NR.
REND. IND.	RENDERUNGS-NITTEILUNG	DATUM	NAME				1035.6501.015
				ZU GERÄT	SMP	REG. I. V.	1035.5005
						ERSTE Z.	1035.5005

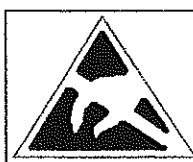
ERDOPPLER 300-600MHZ
DOUBLER 300-600MHZ

BANDPASS 600MHZ
BAND PASS FILTER 600MHZ

600MHZ TRENNSTUFE
600MHZ BUFFER



STROMLAUF GILT FUER
CIRCUIT DIAGRAM IS VALID FOR



ACHTUNG: EGB!
 ELEKTROSTATISCH GEFÄHRDETE
 BAUELEMENTE ERFORDERN EINE
 BESONDERE HANDHABUNG.
ATTENTION ESD!
 ELECTROSTATIC SENSITIVE DEVICES
 REQUIRE A SPECIAL HANDLING

07/	49155	16.11.95	HM	16PK	TR6
				BEARB.	
				GEPR.	
				NDRN	
				PLOTT	28.02.96
06/01	48730 84	01.03.94	BU		
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NAMEN	 ZU GERÄT SM	

G

VERDOPPLER 300-600MHZ

DOUBLER 300-600MHZ

600MHZ
TYP. -18DBM

F

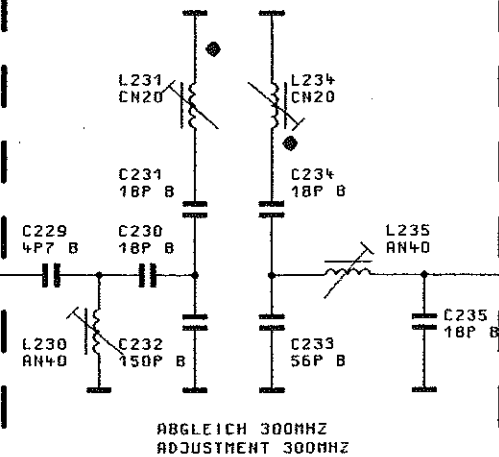
BANDPASS 300MHZ

BAND PASS FILTER 300MHZ

DBM

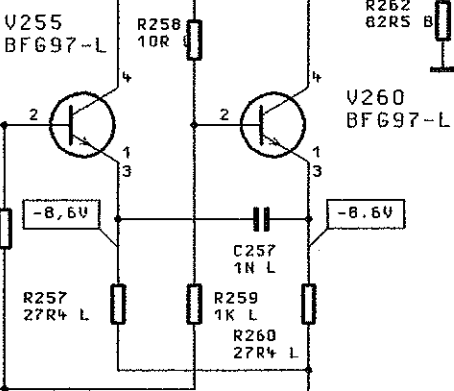
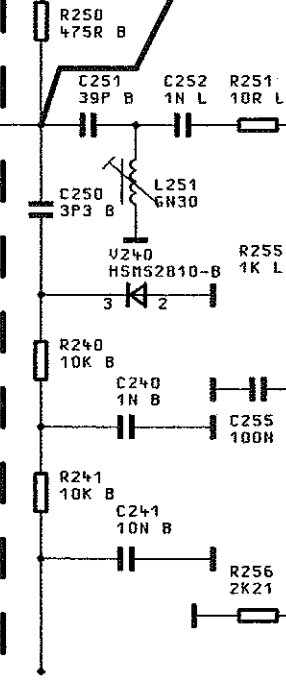
R223
475R B

B

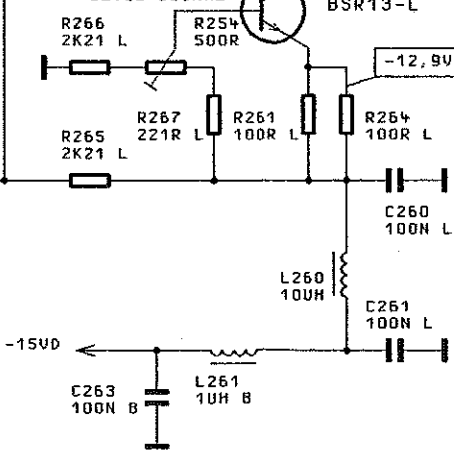


300MHZ
TYP. -17DBM

PEGEL 2F 300MHZ
LEVEL 1F 300MHZ



PEGEL 600MHZ
LEVEL 600MHZ



DIAG. ZF300
SH7E9

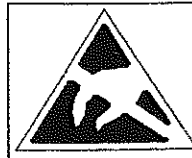
-15VD

-15VD

L285
AN41

C284
1P5 B

600
600



ACHTUNG:
ELEKTROSTATISCHE
AUFLADUNG KANN
BESONDERE
ATTENTION:
ELECTROSTATIC DISCHARGE
REQUIRE A SPECIAL
PRECAUTION

P200
P201

L206

P220
P221

L230

L231

L234

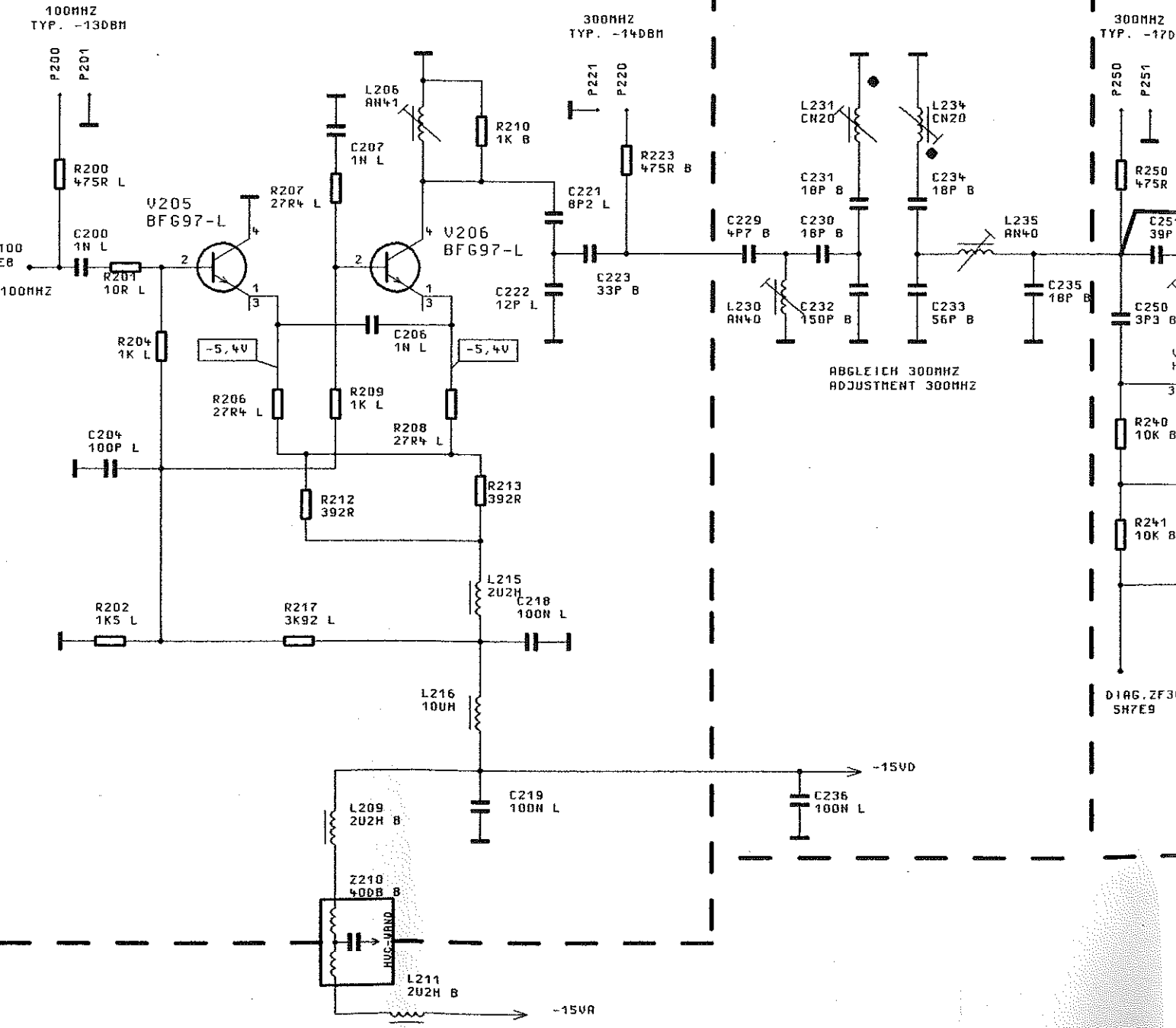
L235

P250
P251

G

VERDREIFACHER TRIPLER 100-300MHZ

BANDPASS 300MHZ BAND PASS FILTER 300MHZ



DIAG. ZF30
SH7E9

1

2

3

4

P200
P201

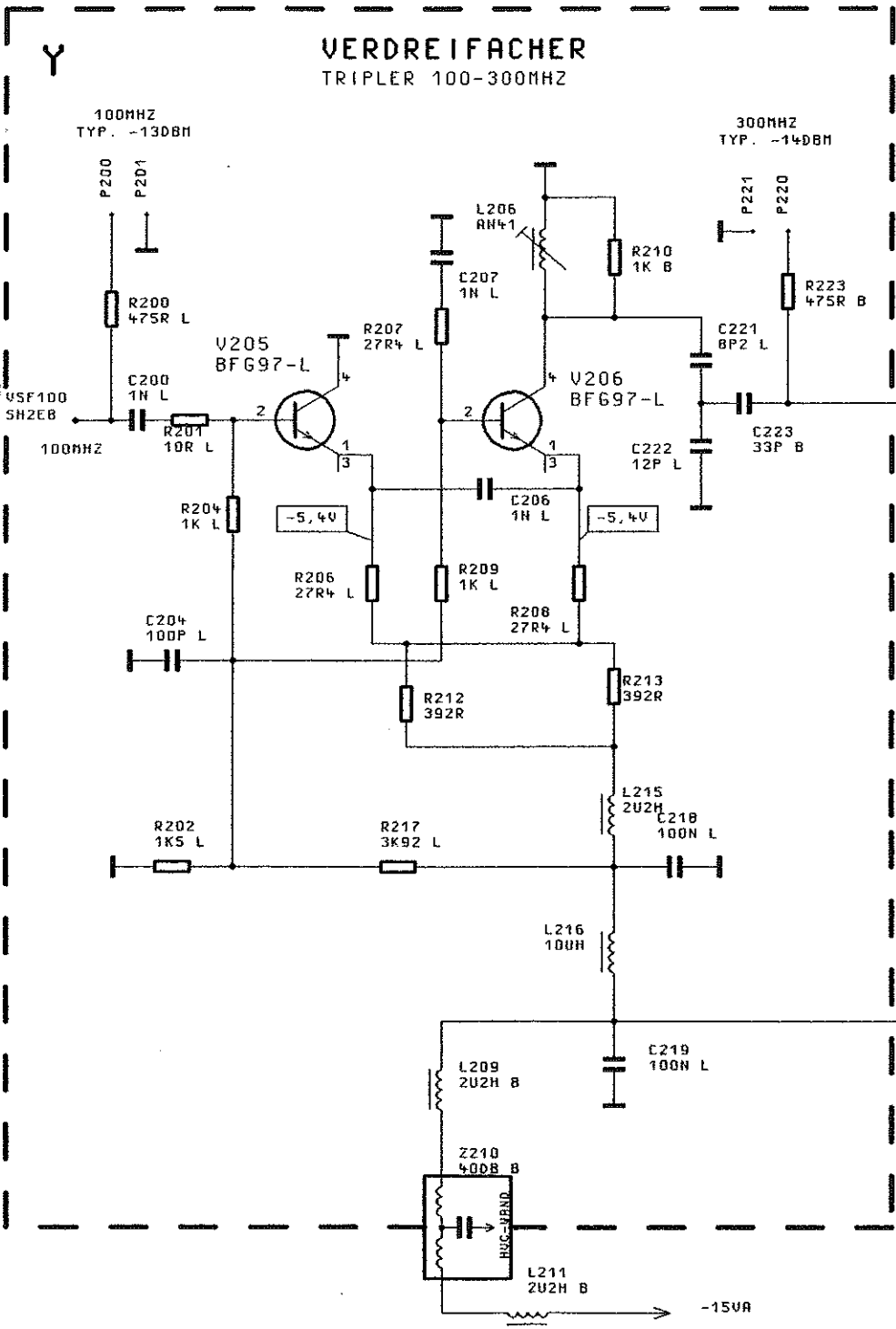
L206

P220
P221

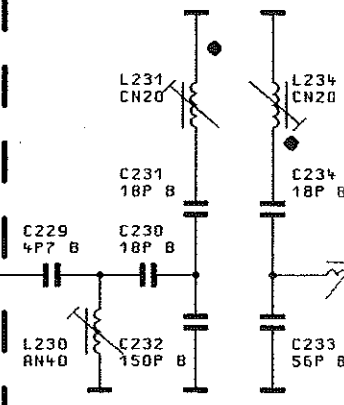
L230 L231 L234

FUER DIESE UNTERLAGE
BEHALTEN WIR UNS ALLE RECHTE VOR

ZEICHN. NR.



F BANDPASS BAND PASS FILTER

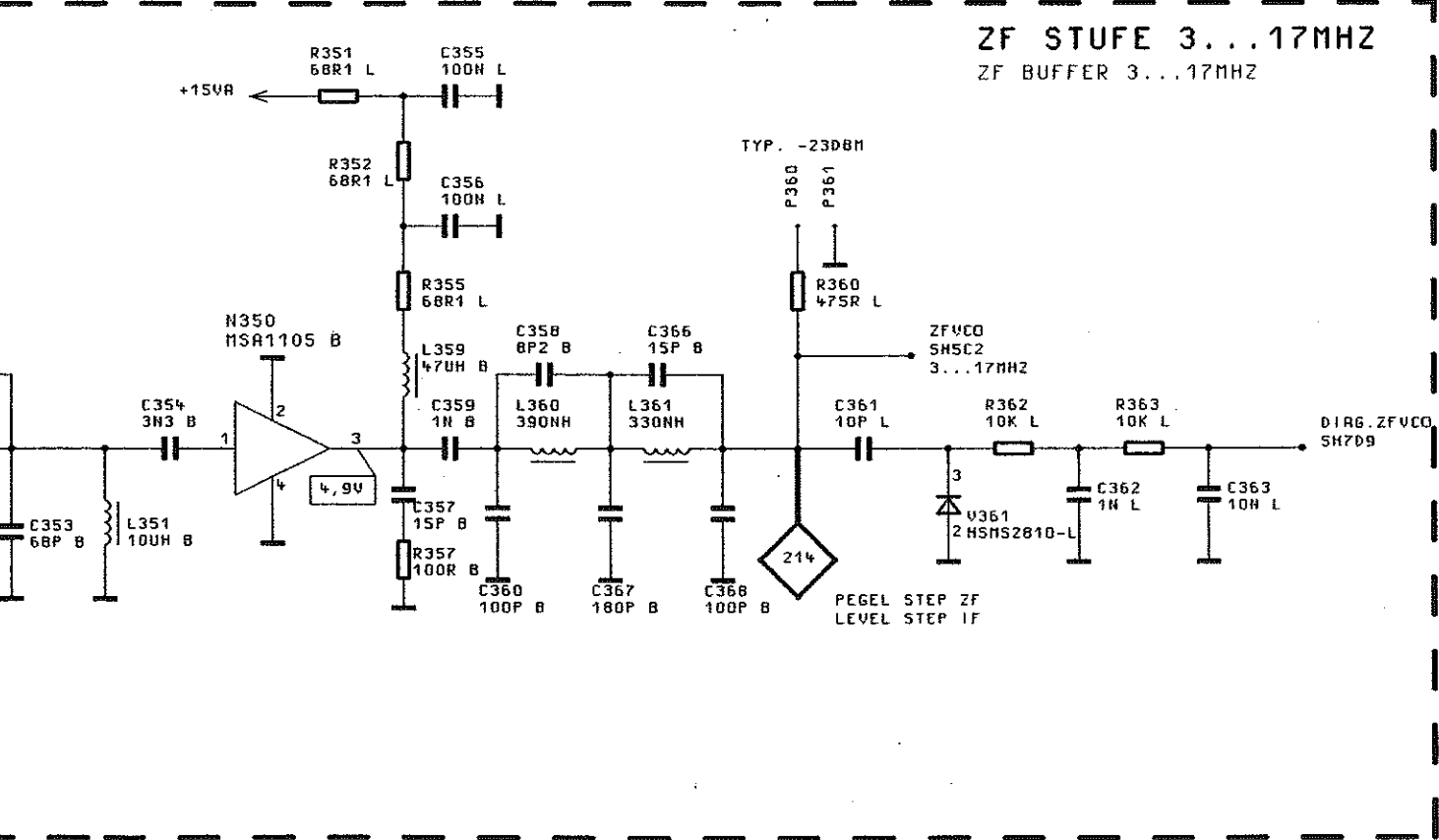
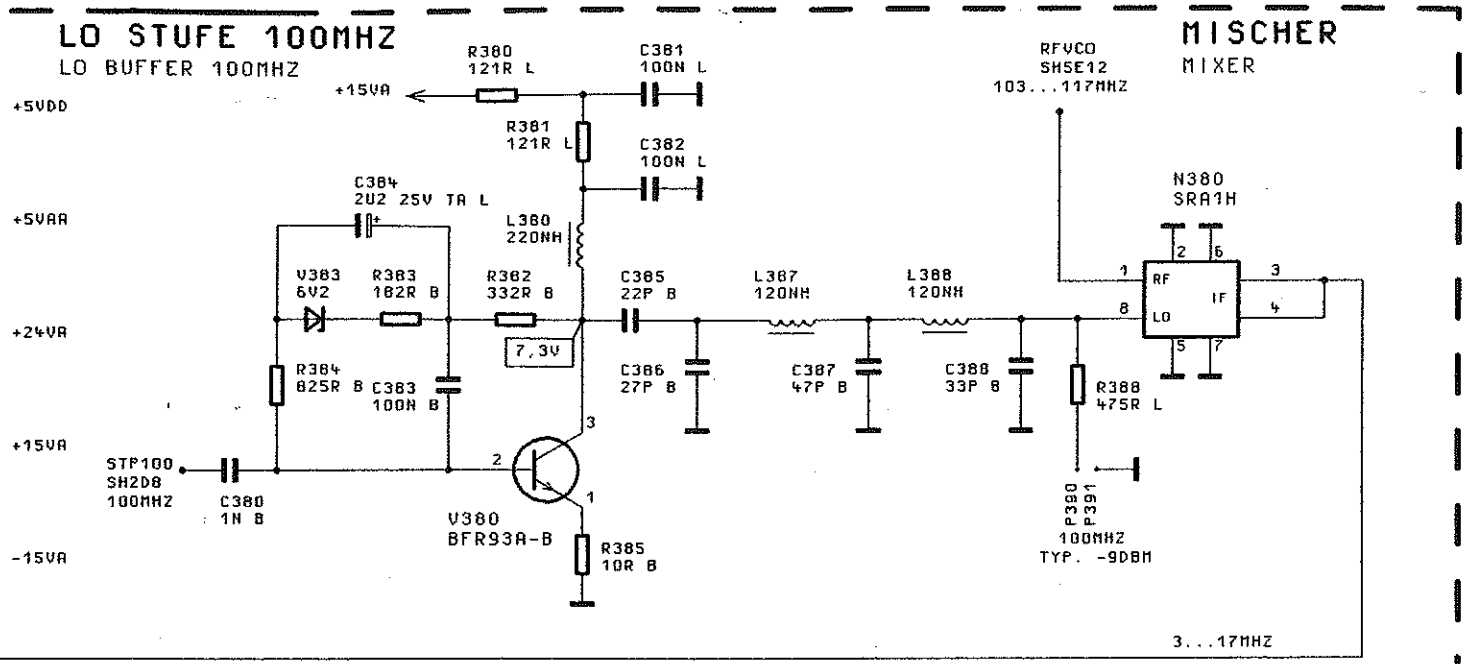


1

2

3

4

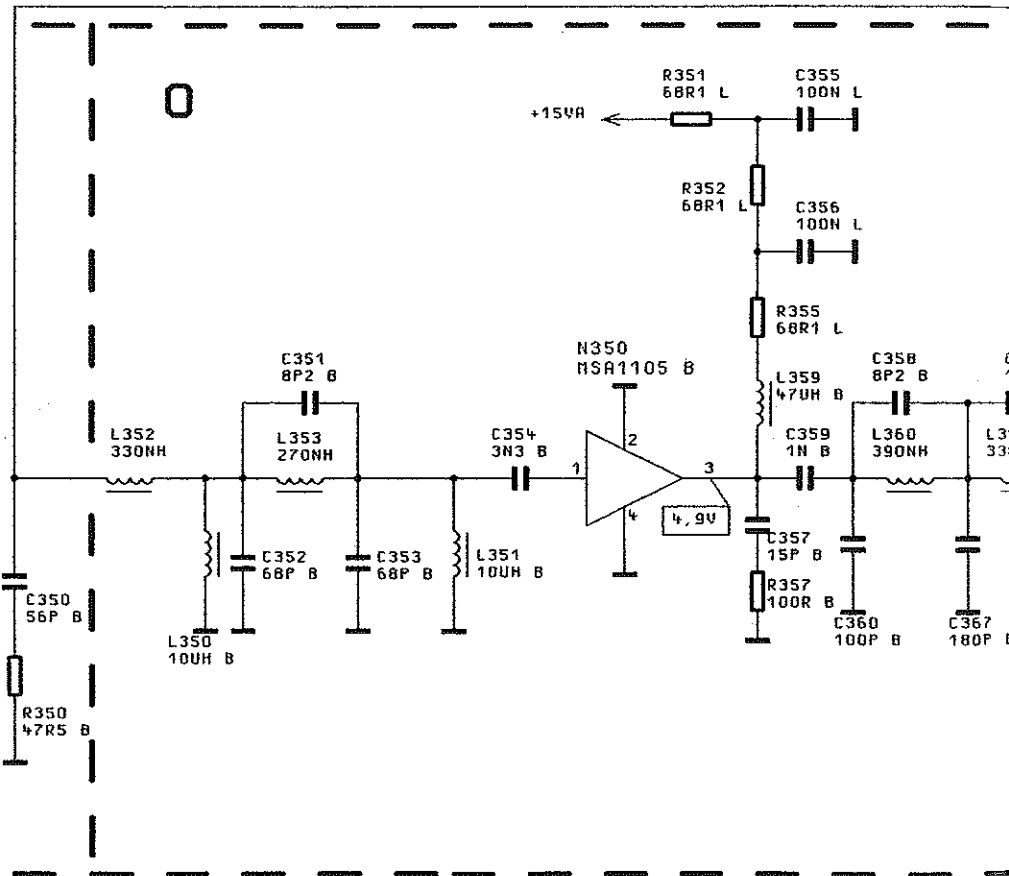
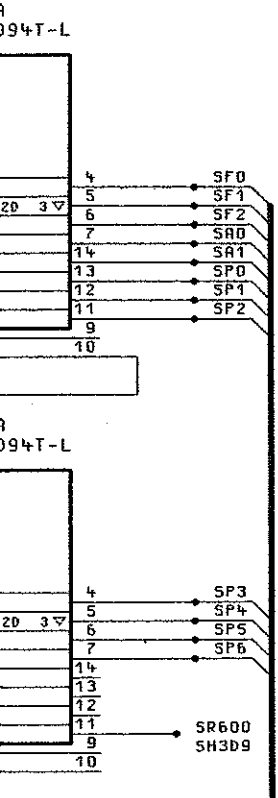
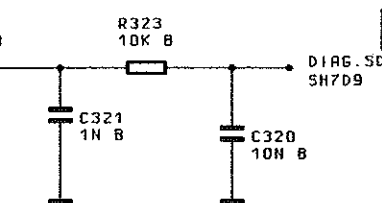
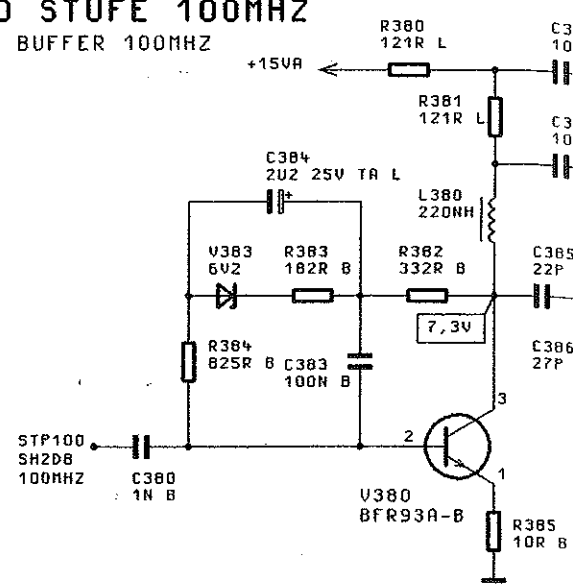
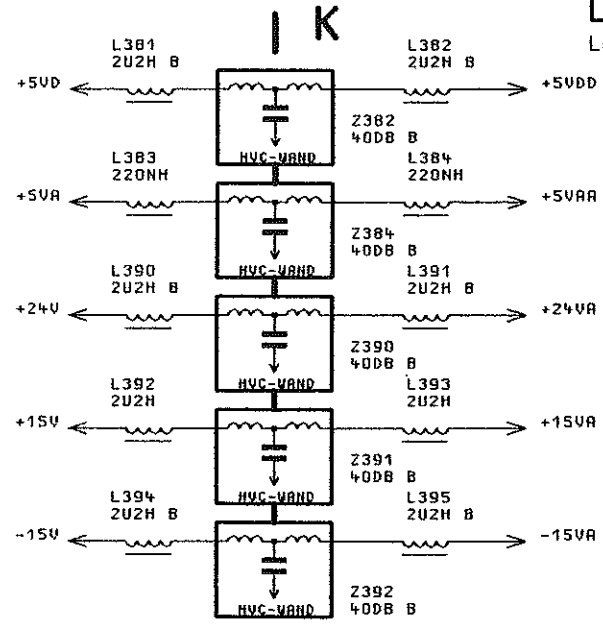
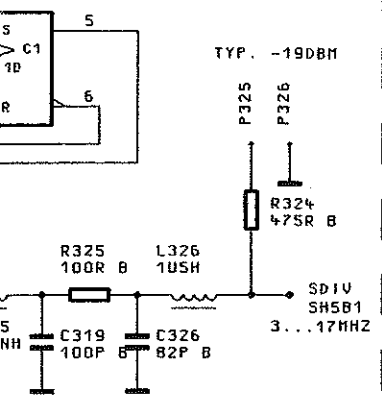


STROMLAUF GILT FUER VAR.02
CIRCUIT DIAGRAM IS VALID FOR MOD.02

07/	49155	16.11.95	HM	16PK	TAG	NAME	BENENNUNG
				BEARB.		HM	REFERENZ STEPSYNTHESE REFERENZ STEPSYNTHESE
				GEPR.			
				NDRN			
				PLOTT	28.02.96		
06/01	48730 84	01.03.94	BU			ZEICHN.-NR.	BLATT-NR.
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NAME	ROHDE&SCHWARZ		1035.6501.015	4+
			ZU GERÄT	SMP	REG.I.V.	1035.5005	ERSTE Z.
						1035.5005	

LO STUFE 100MHZ
LO BUFFER 100MHZ

320-A
FACT74M-B

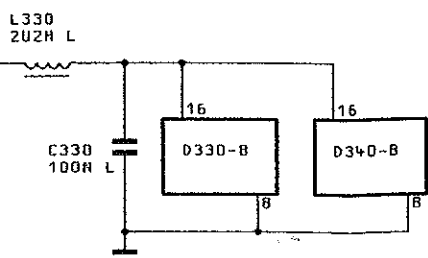
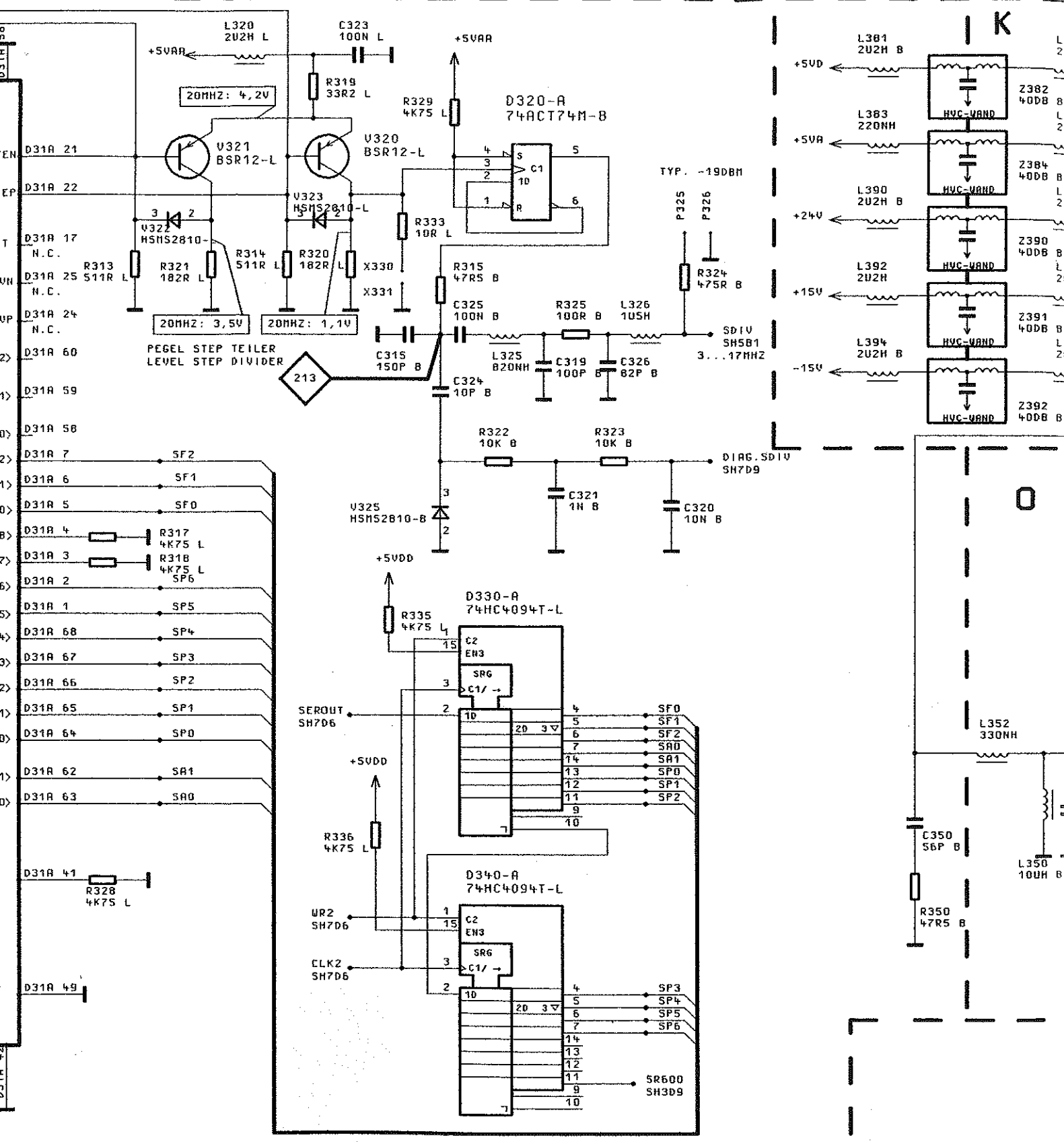


STROMLAUF GILT FÜR
CIRCUIT DIAGRAM IS VALID FOR

ACHTUNG: EGB!
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.
ATTENTION ESD!
ELECTROSTATIC SENSITIVE DEVICES
REQUIRE A SPECIAL HANDLING

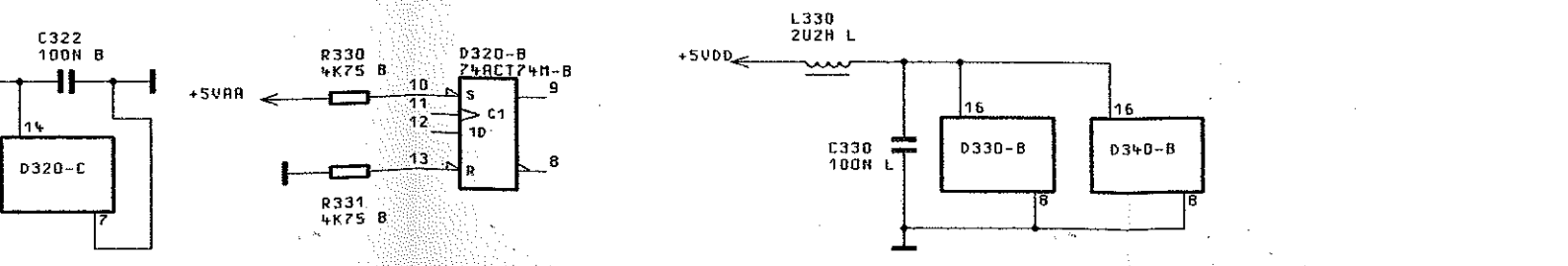
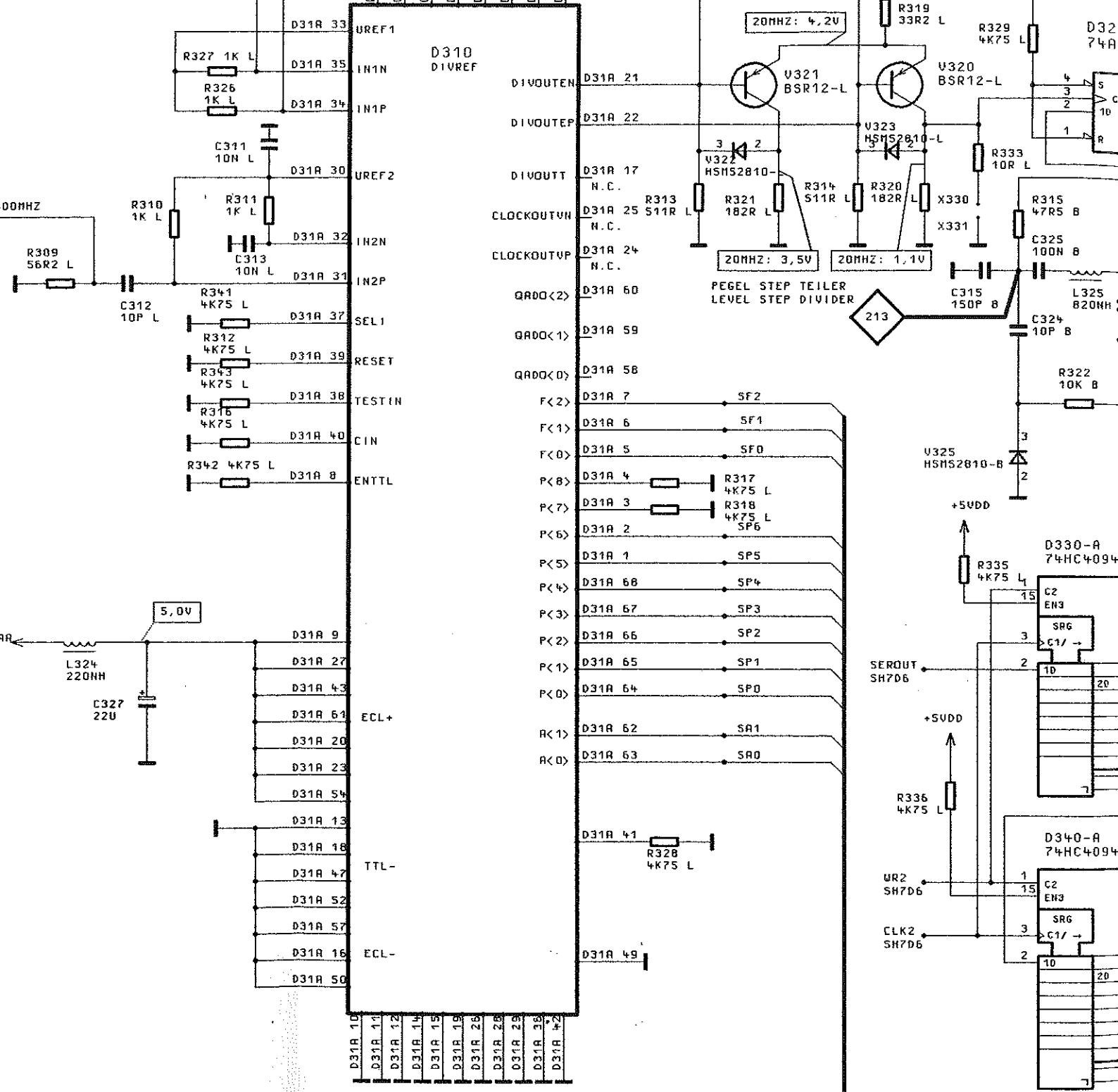
07/	49155	16.11.95	HM	1GPK	TA
				BEARB.	
				GEPR.	
				NORM	
				PLOTT	28.02
06/01	48730 84	01.03.94	BU		
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NAMEN	ROHDE & SCHWARTZ ZU GERÄT	

P325
P326

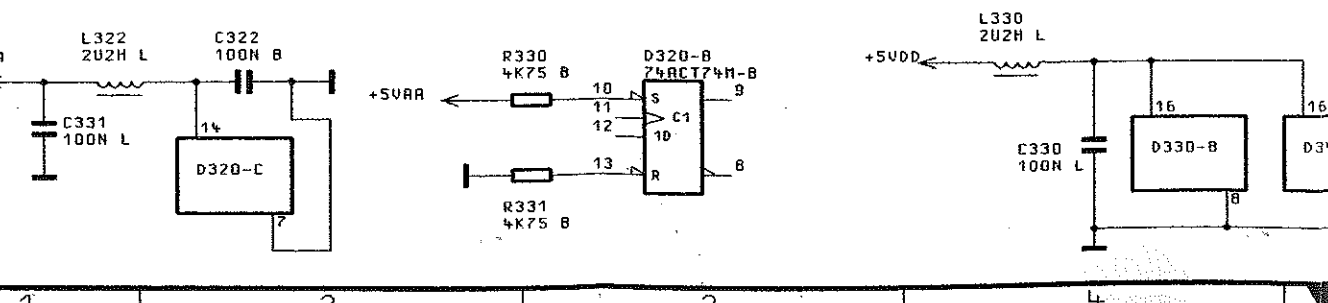
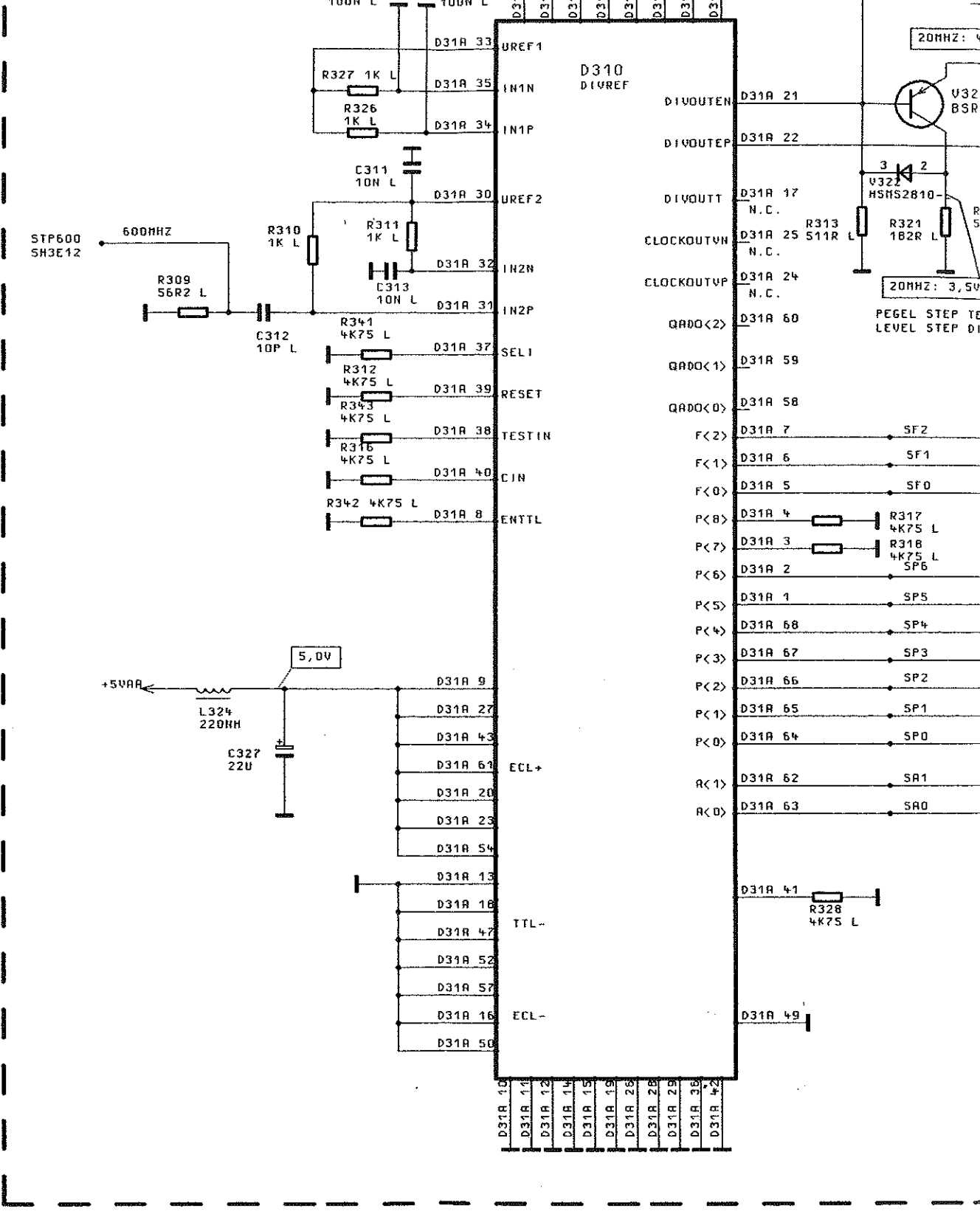


ACHTUNG: EIGENGEFÄHRDUNG!
 ELEKTROSTATISCH GEFÄHRDUNG
 BEWUSSENHEIT ERFORDERLICH
 BESONDERE HANDHABUNG
ATTENTION: ELECTROSTATIC SENSITIVE!
 REQUIRE A SPECIAL HANDLING

TEILER
VIDER



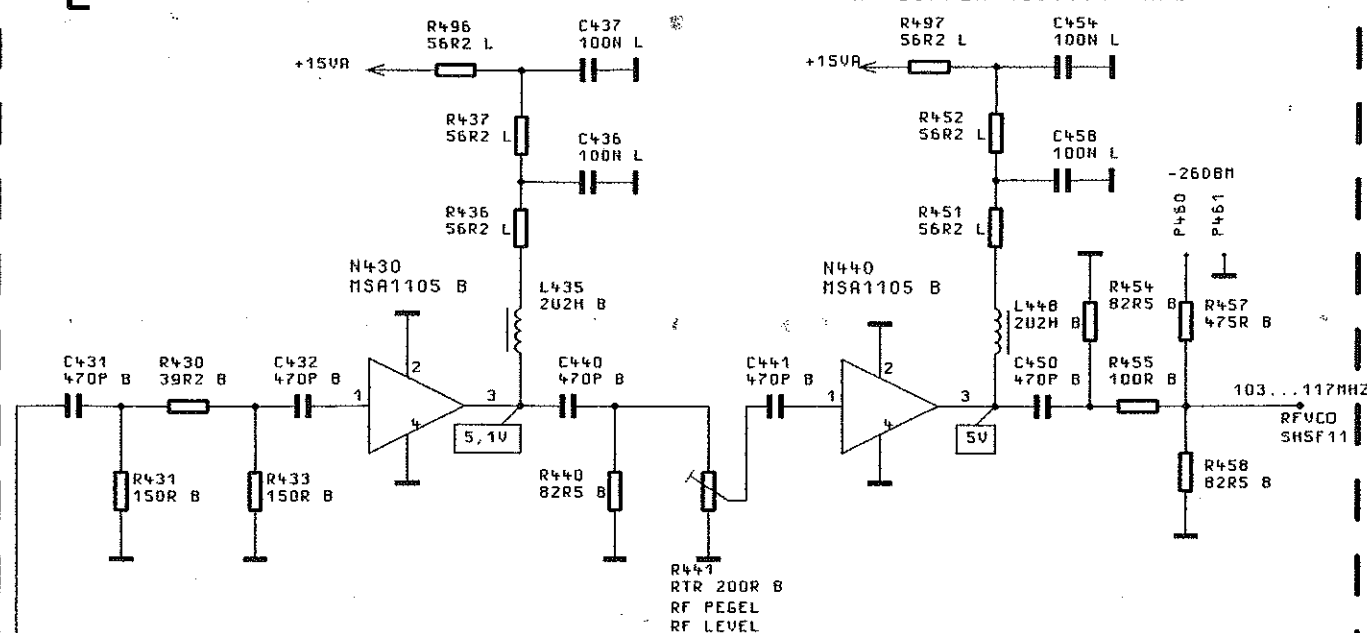
STEP TEILER STEP DIVIDER



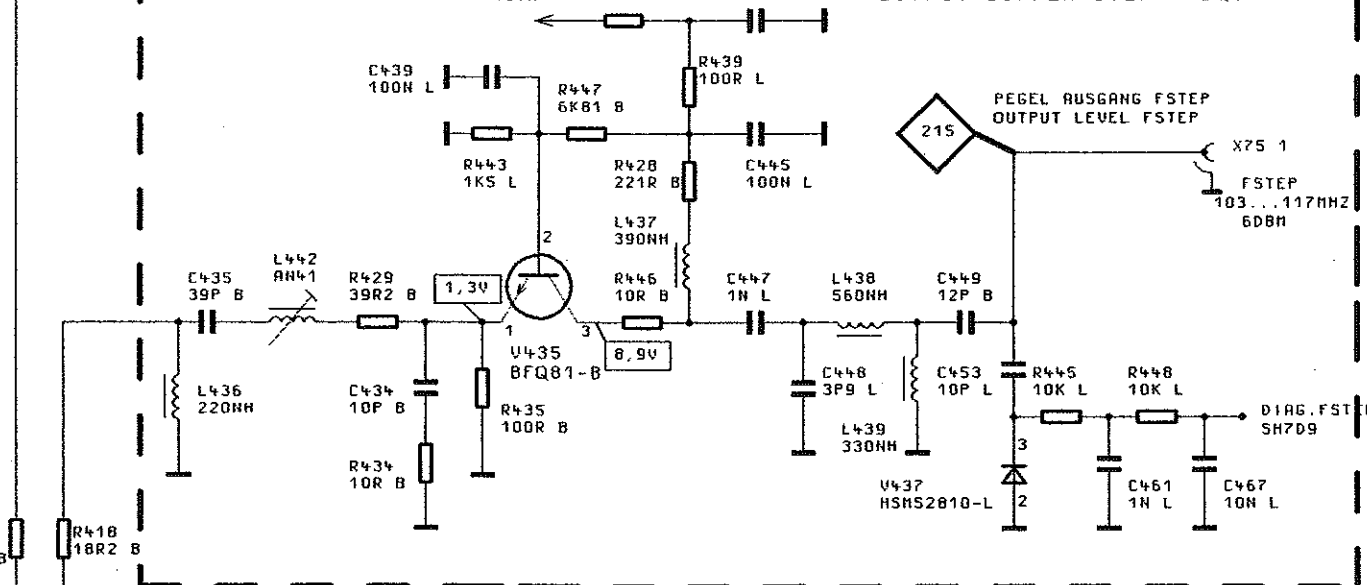
FUER DIESE UNTERLAGE
BEHALTEN WIR UNS ALLE RECHTE VOR

ZEICHN.-NR.

RF STUFE 103...117MHZ
RF BUFFER 103...117MHZ



AUSGANGSSTUFE STEP-F.
OUTPUT BUFFER STEP-FREQU.



ACHTUNG: EGB!
 ELEKTROSTATISCH GEFÄHRDETE
 BAUELEMENTE ERFORDERN EINE
 BESONDERE HANDHABUNG.
ATTENTION ESD!
 ELECTROSTATIC SENSITIVE DEVICES
 REQUIRE A SPECIAL HANDLING

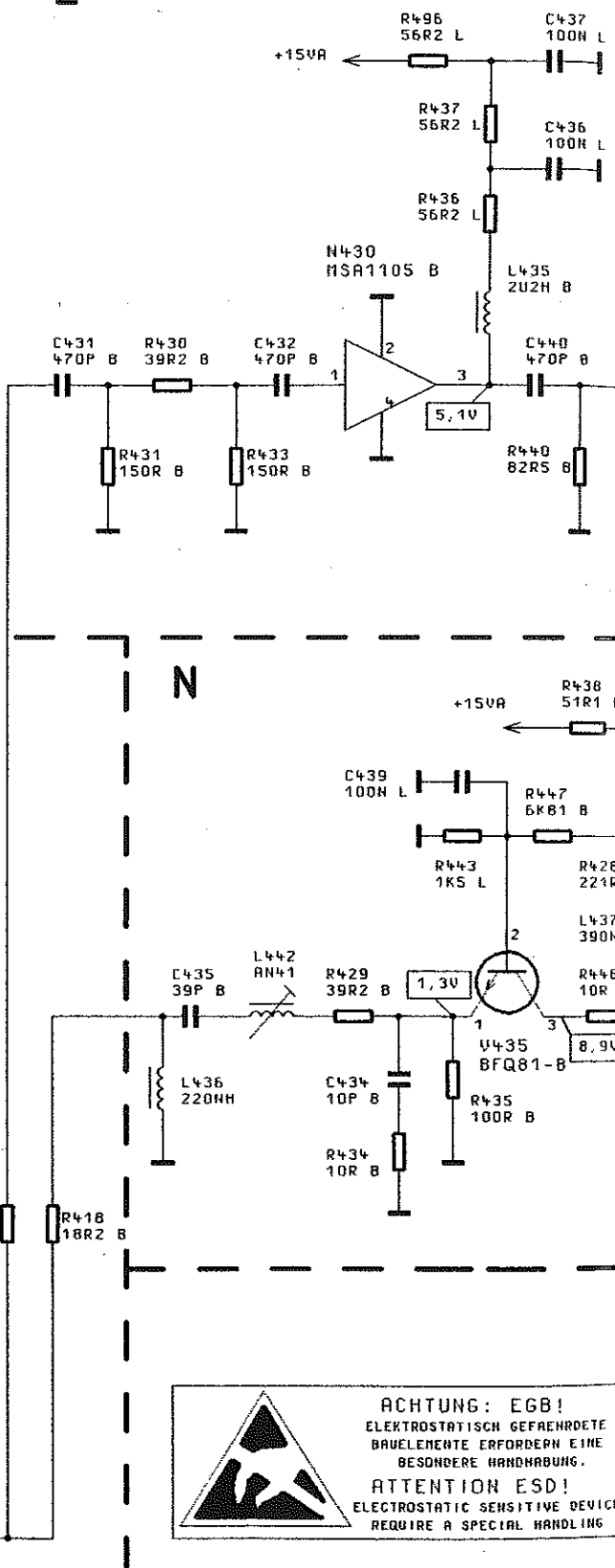
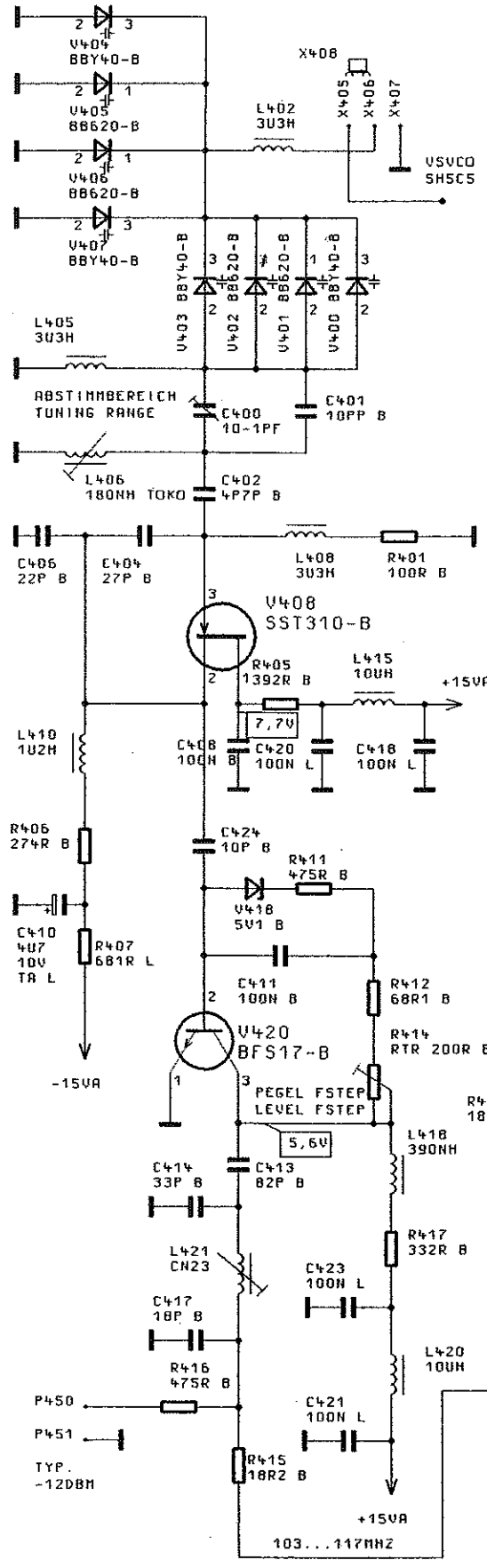
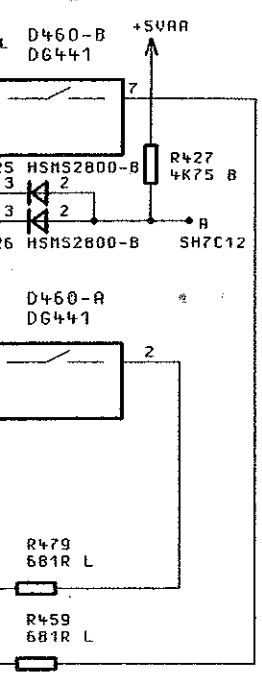
CIRCUIT DIAGRAM IS VALID FOR MOD.02
 STROMLAUF GILT FUER VAR.02

07/04	23.07.96	HM	16PK	TAG	NAME	BENENNUNG
			BEARB.		HM	REFERENZ STEPSYNTHESE REFERENZ STEPSYNTHESE
			GEPP.			
			NORN			
			PLOTT	24.07.96		
07/02	48730 84	15.11.96	HM	ROHDE & SCHWARZ		ZEICHN.-NR. 1035.6501.015
REND. IND.	RENDPUNGS-NITTEILUNG	DATUM	NAME	ZU GERÄT	SMP	REG. I. V.
						1035.5005
						ERSTE Z.
						1035.5005
						BLATT-NR. 5+
						v. BL.

- P450
- L406
- L421
- L442
- P451
- C400
- R414

STEP VCO 103...117MHZ

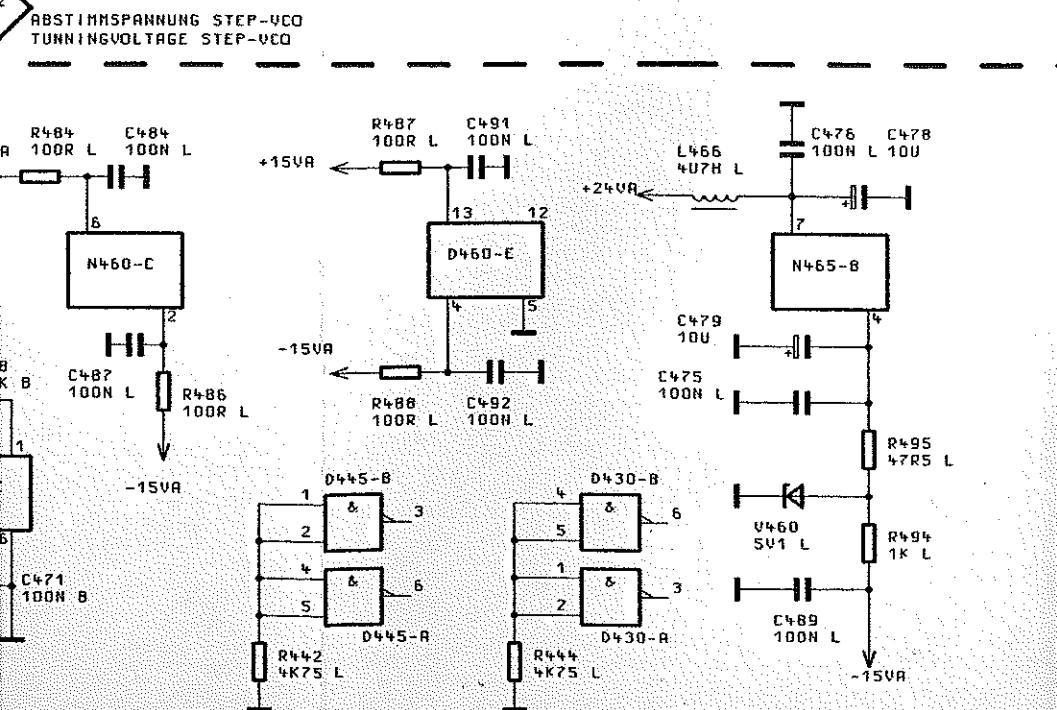
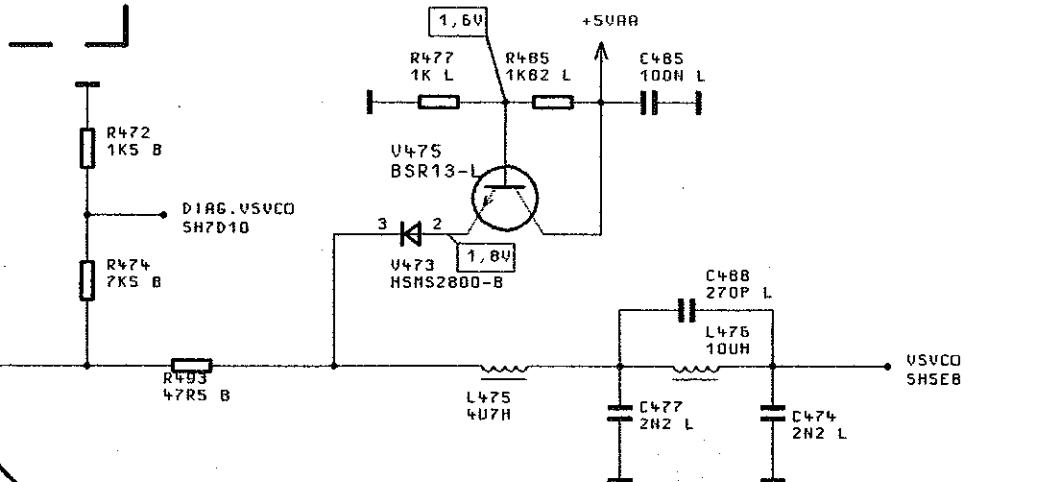
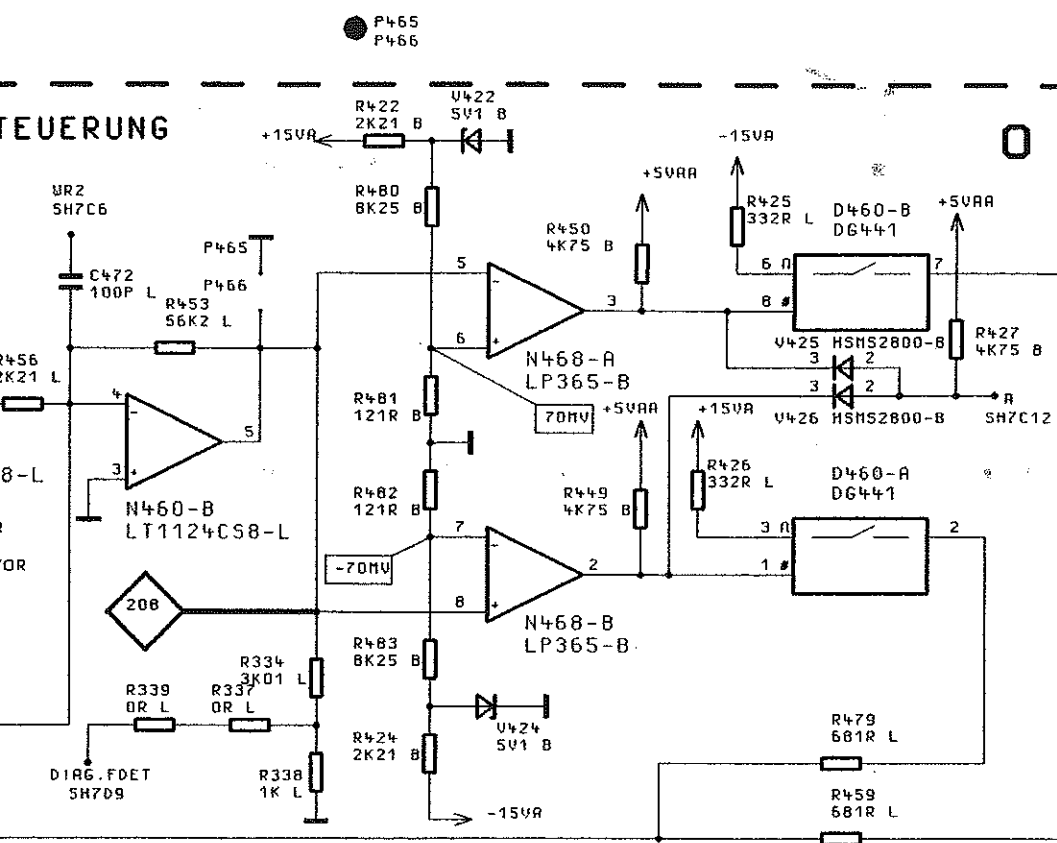
STEP VCO 103...117MHZ



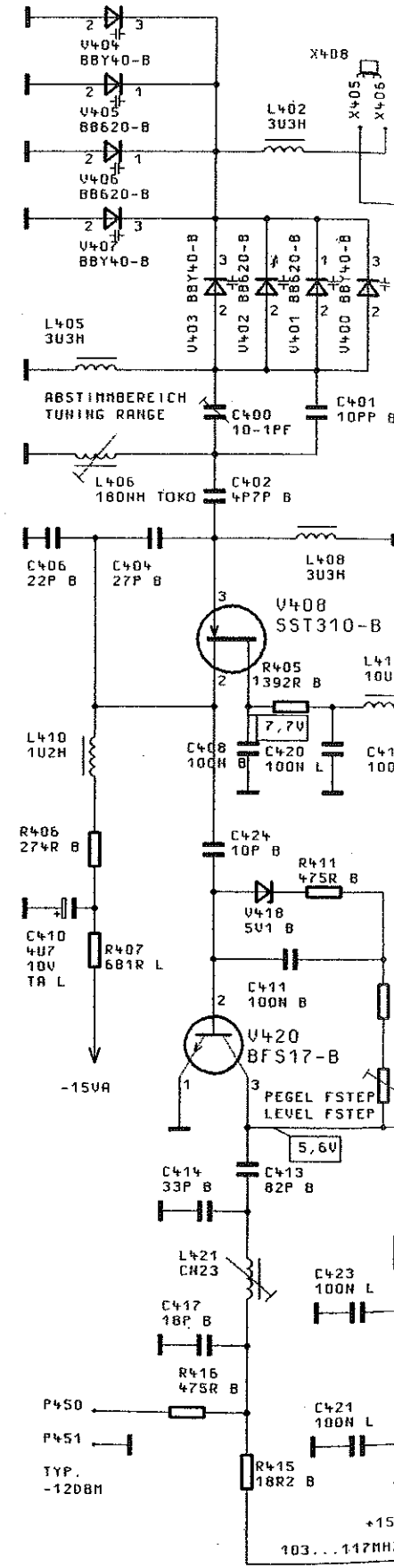
ACHTUNG: EGB!
 ELEKTROSTATISCH GEFÄHRDETE
 BAUELEMENTE ERFORDEERN EINE
 BESONDERE HANDHABUNG.
ATTENTION ESD!
 ELECTROSTATIC SENSITIVE DEVICES
 REQUIRE A SPECIAL HANDLING

07/04		23.07.96	HM	1GPK	TAG
				BEARB.	
				GEPP.	
				NORM	
				PLOTT	24.07.96
07/02	48730 84	15.11.96	HM		
REND. IND.	RENDPUNGS- MITTEILUNG	DATUM	NAMEN	ROHDE&SCHÜ	
				ZU GERÄT	SMP

TEUERUNG

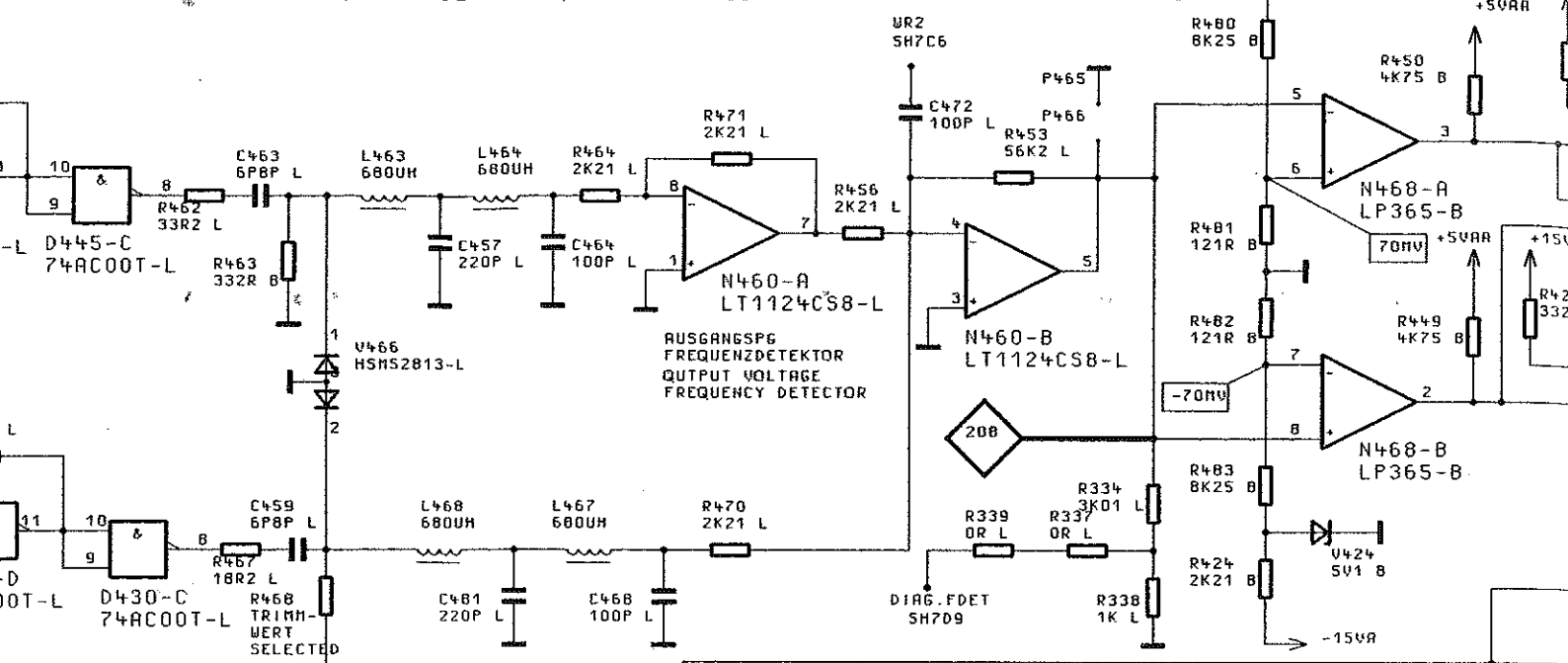


STEP VCO 103...117M
STEP VCO 103...117MHZ



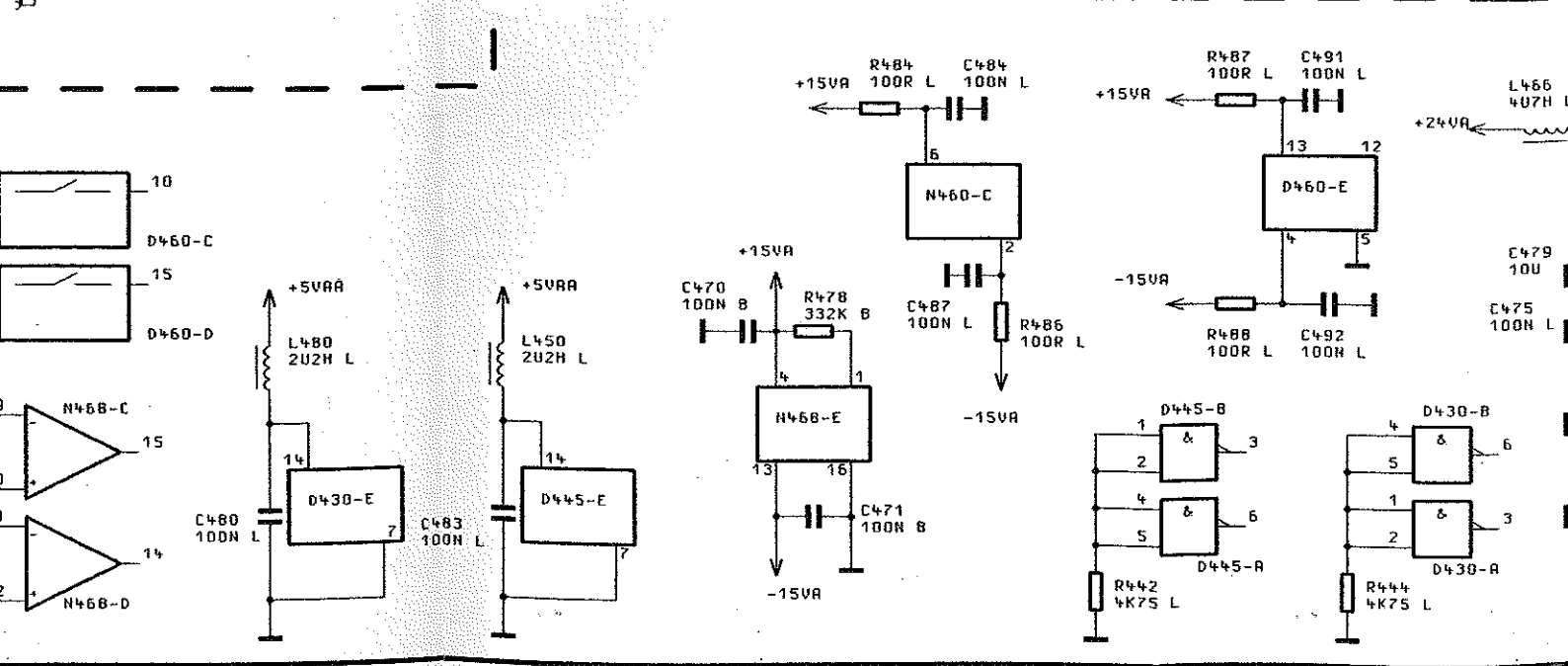
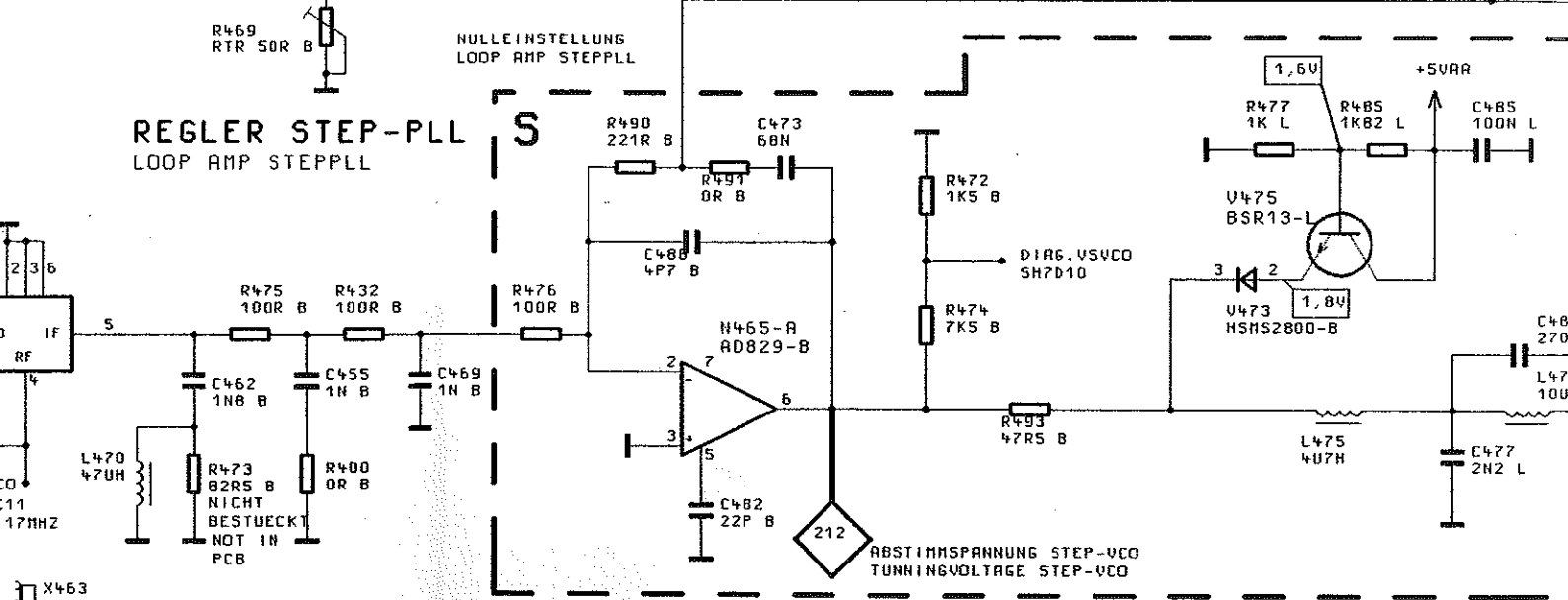
FREQUENZDETEKTOR/RAMPENSTEUERUNG

FREQUENCY DETECTOR/RAMP CONTROL



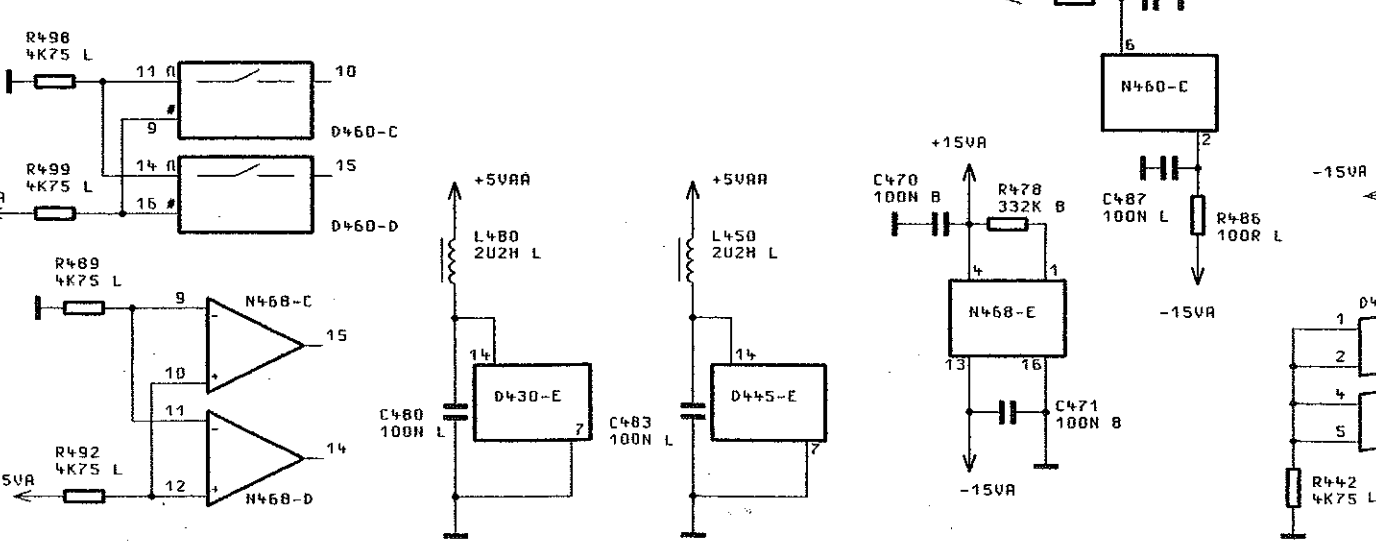
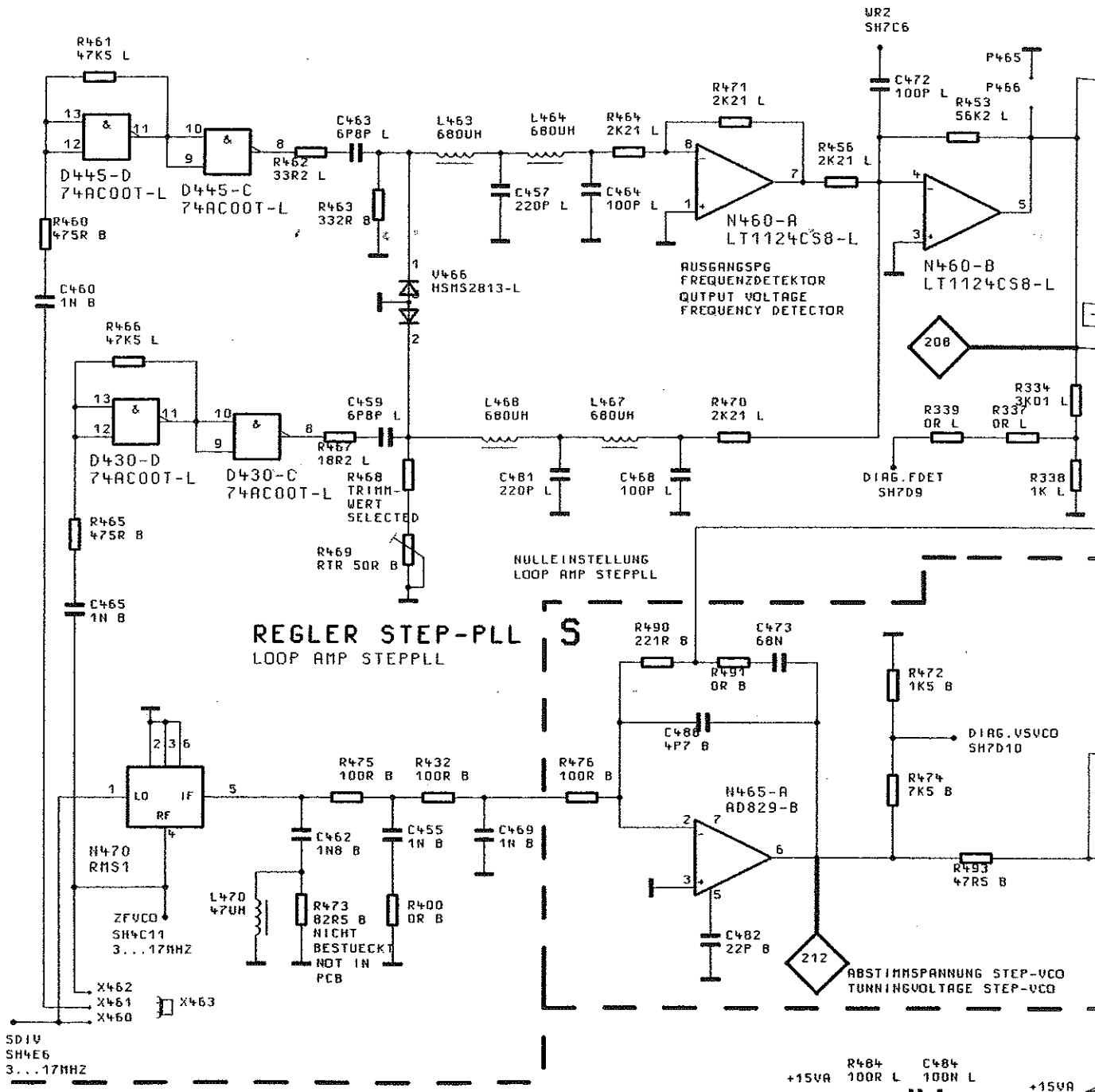
REGLER STEP-PLL

LOOP AMP STEPPLL



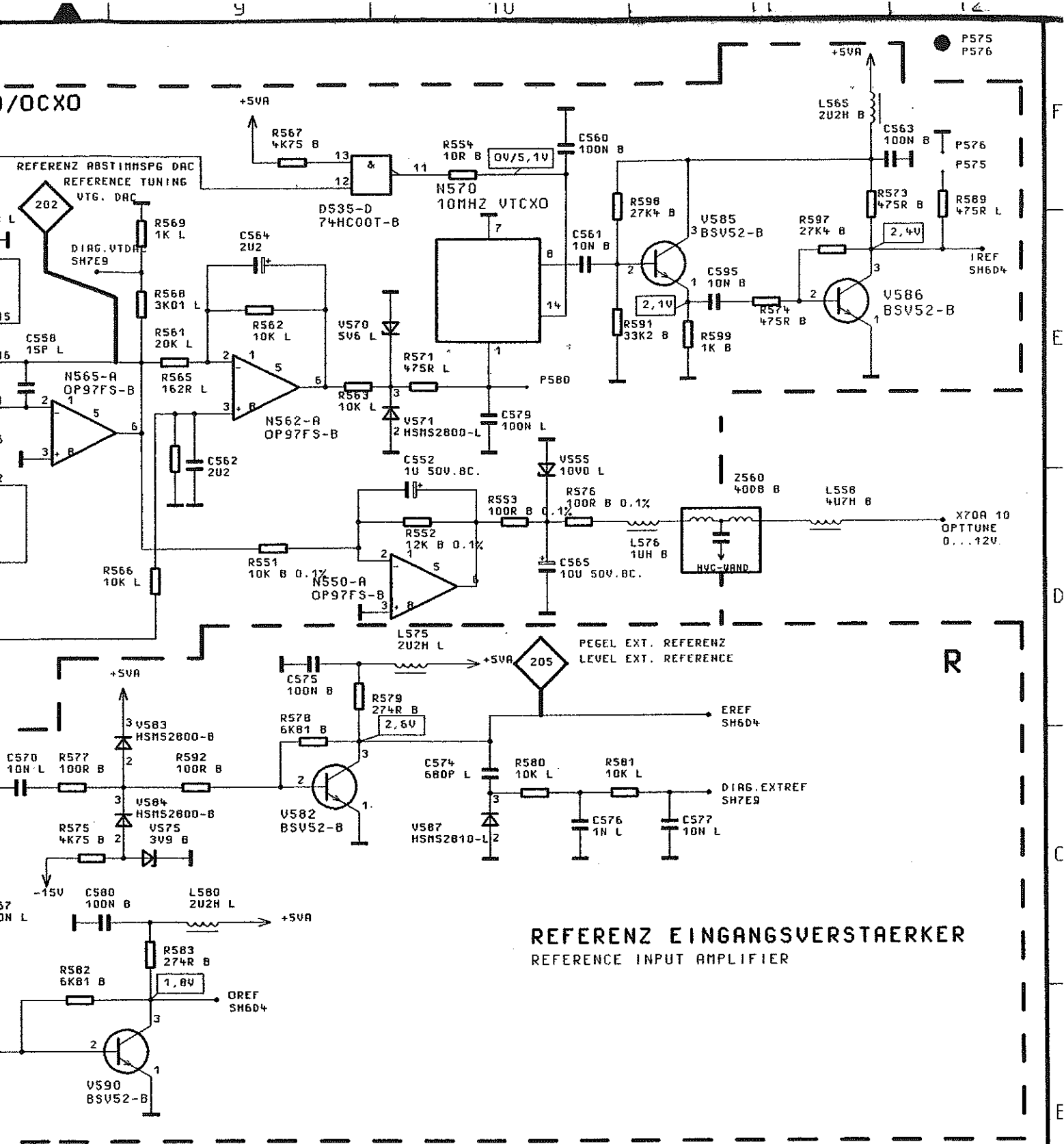
FREQUENZDETEKTOR/RAMPENSTEUERUNG

FREQUENCY DETECTOR/RAMP CONTROL



FÜR DIESE UNTERLAGE BEHALTEN WIR UNS ALLE RECHTE VOR

ZEICHN.-NR.

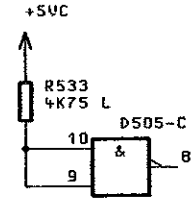
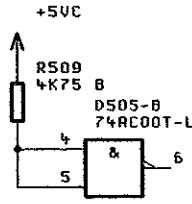
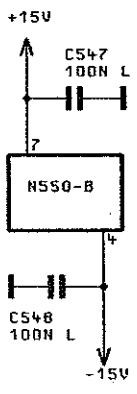
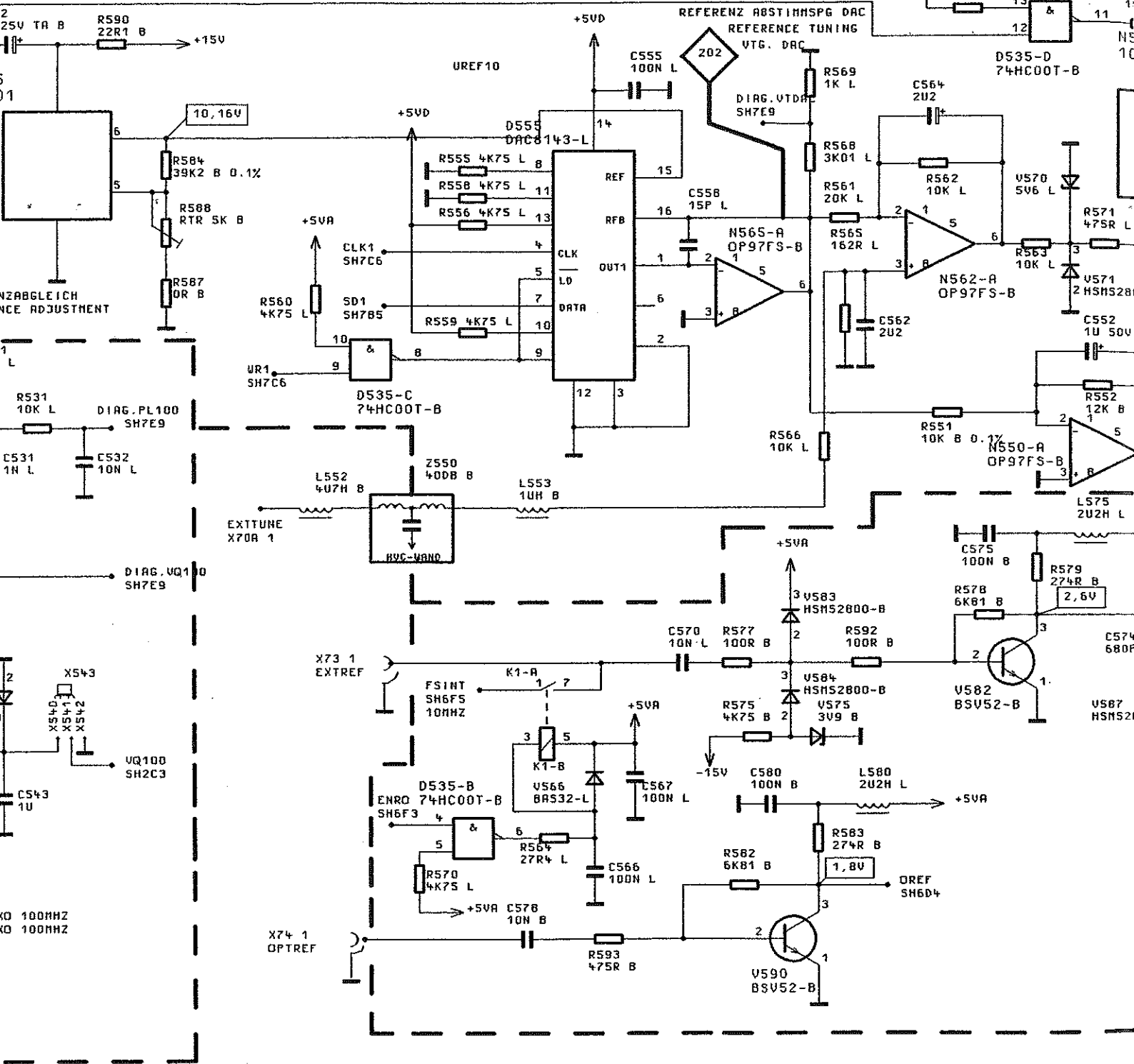


STROMLAUF GILT FUER VAR.02
 CIRCUIT DIAGRAM IS VALID FOR MOD.02

07/02	49155	16.11.95	HM	1GPK	TAG	NAME	BENENNUNG
				BEARB.		HM	REFERENZ STEPSYNTHESE REFERENZ STEPSYNTHESE
				GEPR.			
				NORM			
				PLDTT	18.03.96		
06/01	48730 84	01.03.94	BU			ZEICHN.-NR.	BLATT-NR.
REND. IND.	RENDERUNGS- ABTEILUNG	DATUM	NAME			1035.6501.015	6+
				ZU GERÄT	SMP	REG.1.V.	ERSTE Z.
						1035.5005	1035.5005

R588

ABSTIMMUNG TCXO/OCXO TUNING TCXO/OCXO



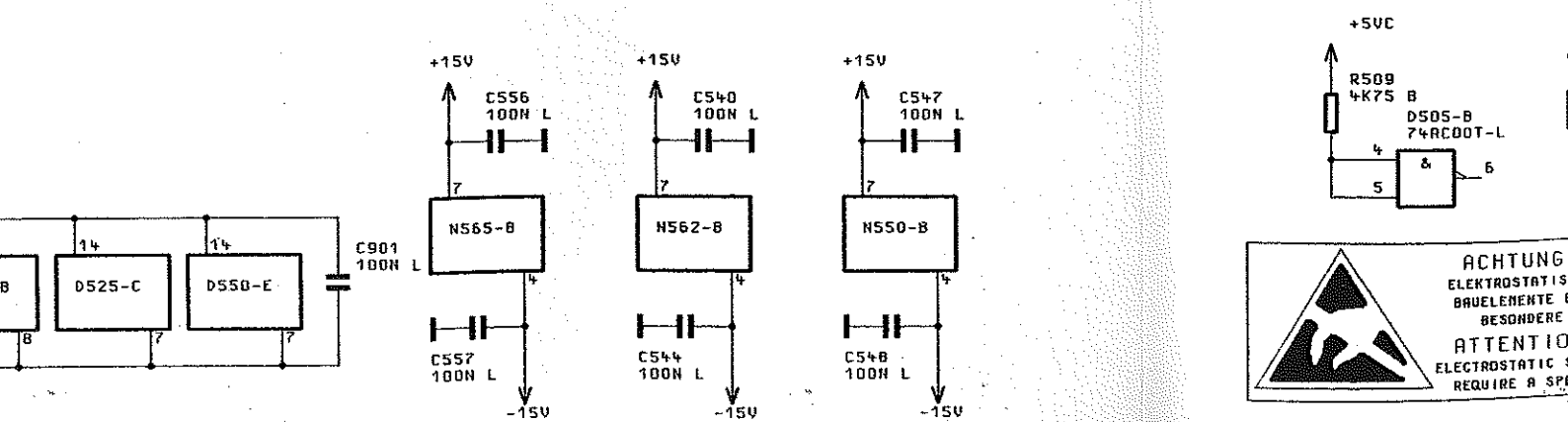
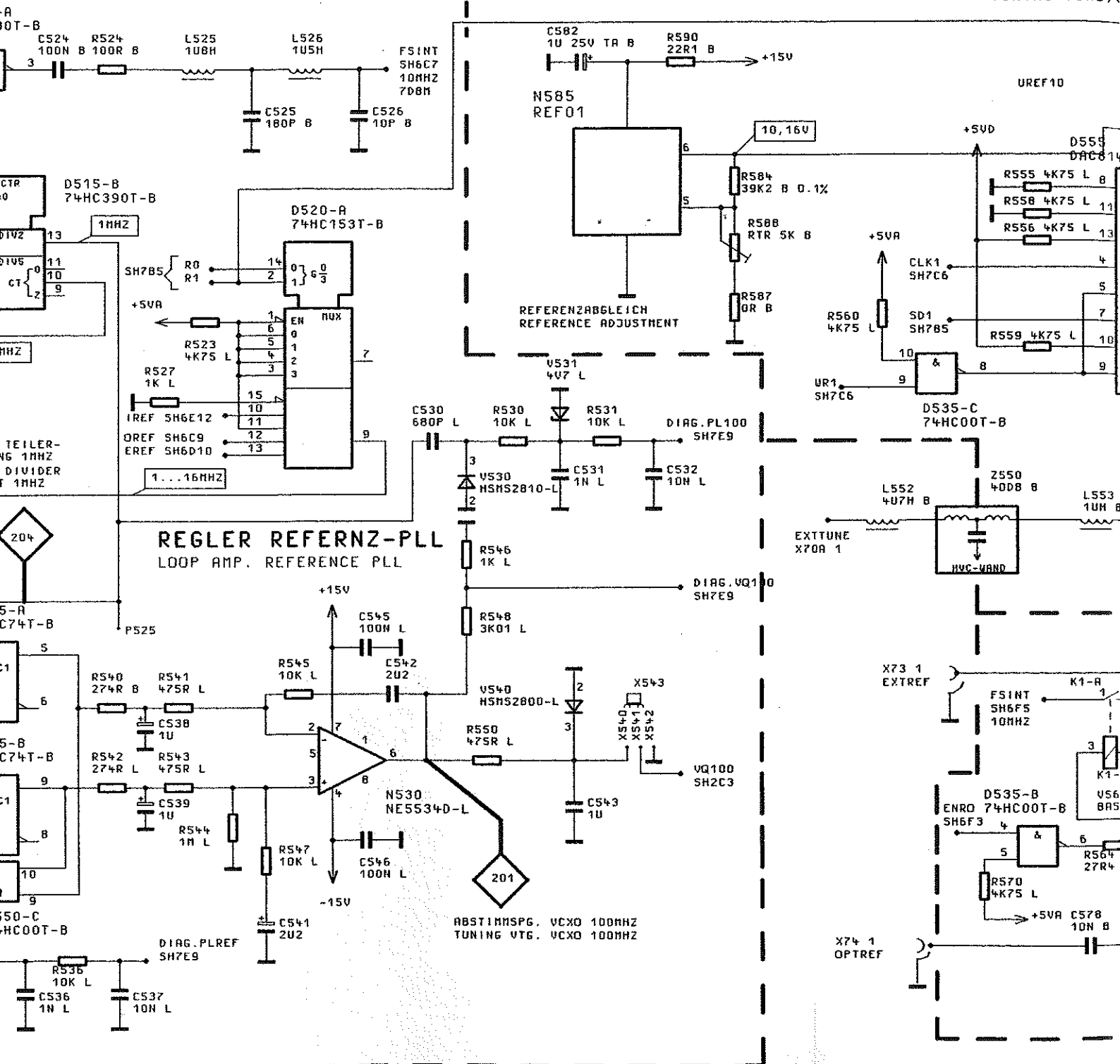
STROMLAUF GILT F
CIRCUIT DIAGRAM IS VALID



ACHTUNG: EGB!
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.
ATTENTION ESD!
ELECTROSTATIC SENSITIVE DEVICES
REQUIRE A SPECIAL HANDLING

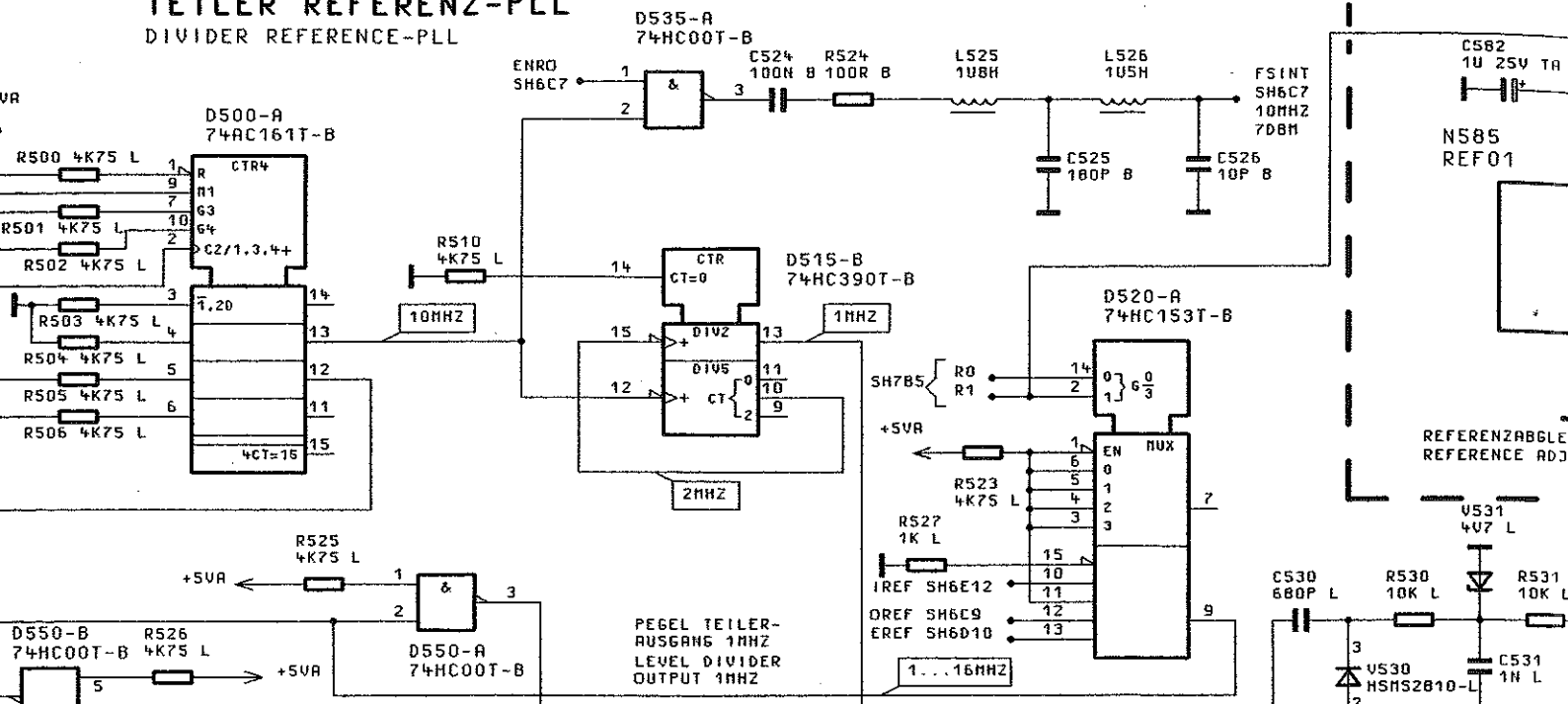
07/02	49155	16.11.95	HM	1GPK
				BEARB.
				GEPR.
				NORM
				PLOTT 18
06/01	48730 84	01.03.94	BU	
REND. IND.	RENDERUNGS- MITTEILUNG	DATUM	NAMEN	ROHDE ZU GERÄT

ABSTIMMUNG
TUNING TCXO/

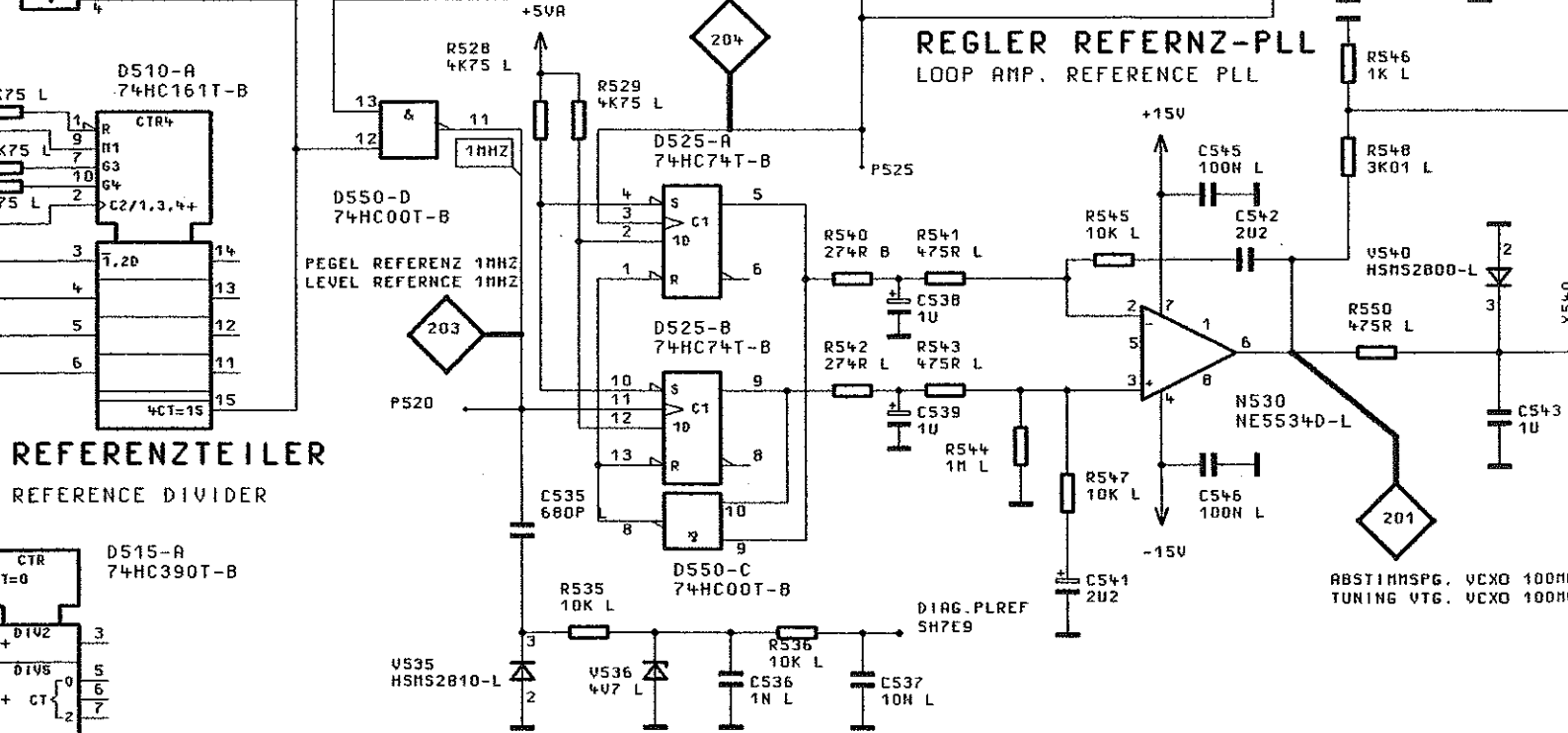


P520

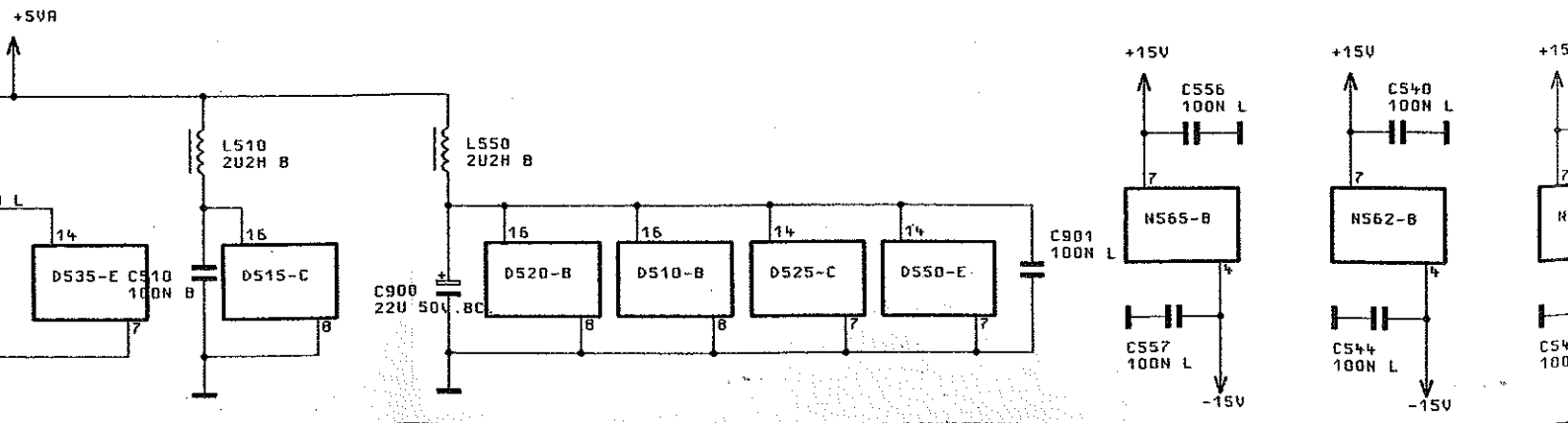
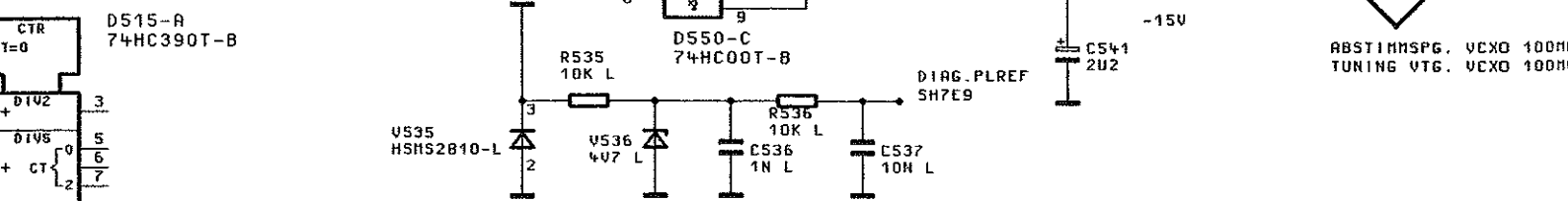
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REGLER REFERENZ-PLL LOOP AMP. REFERENCE PLL

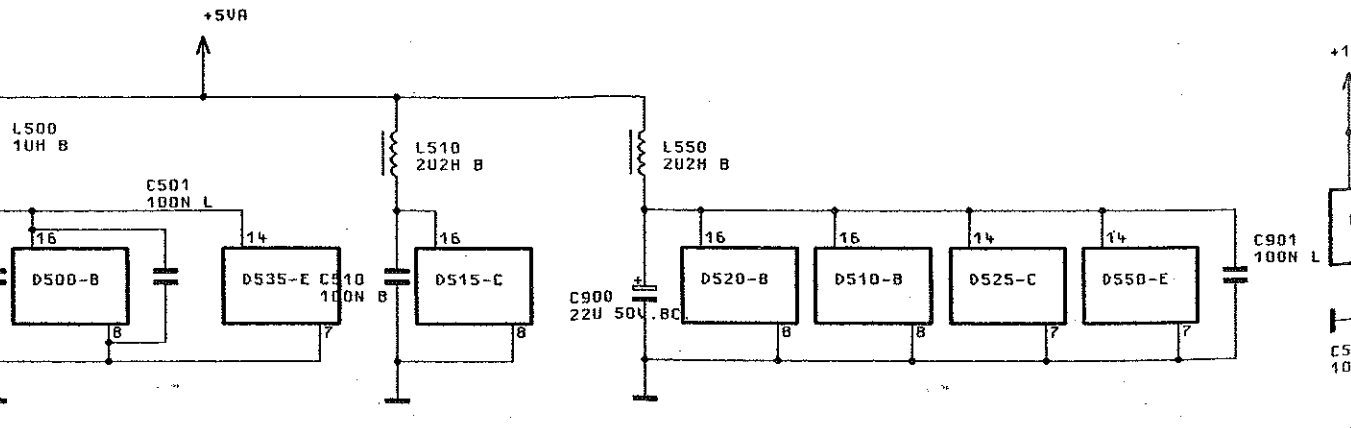
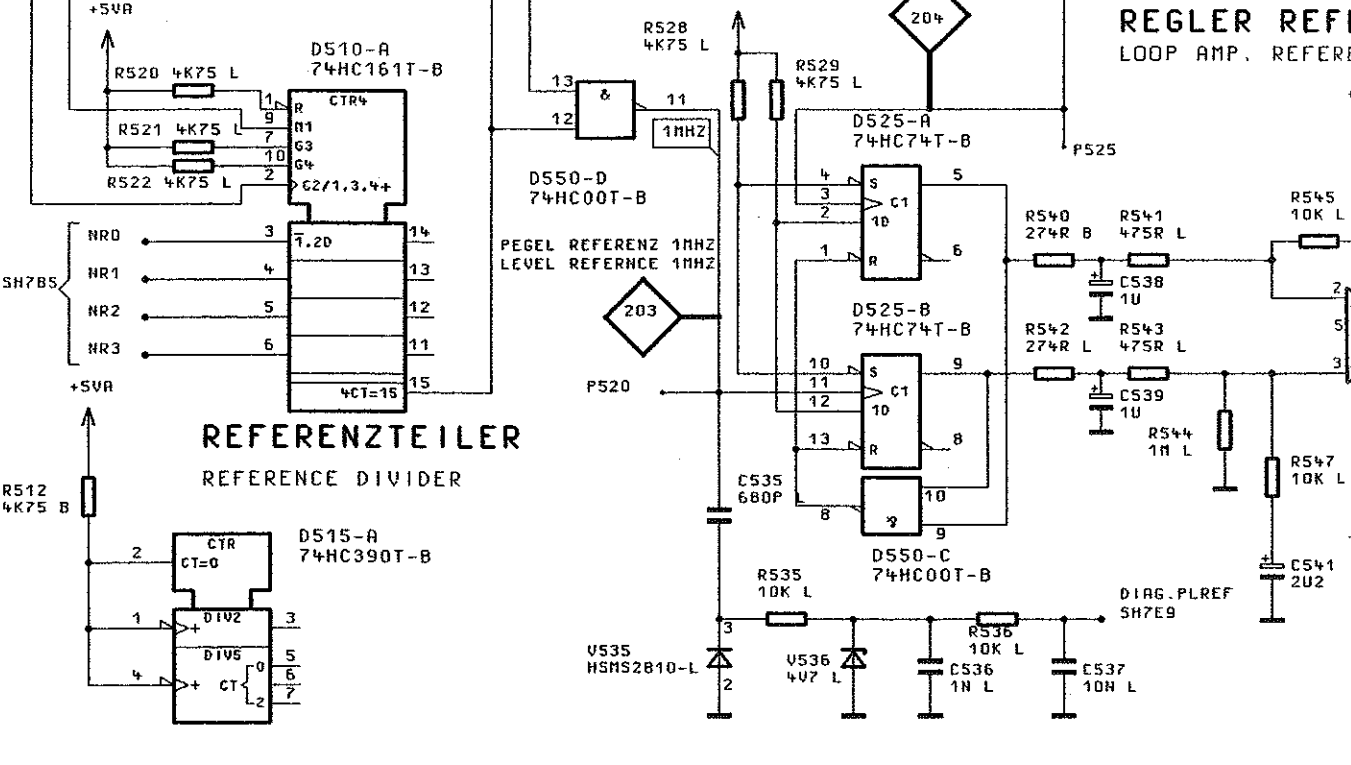
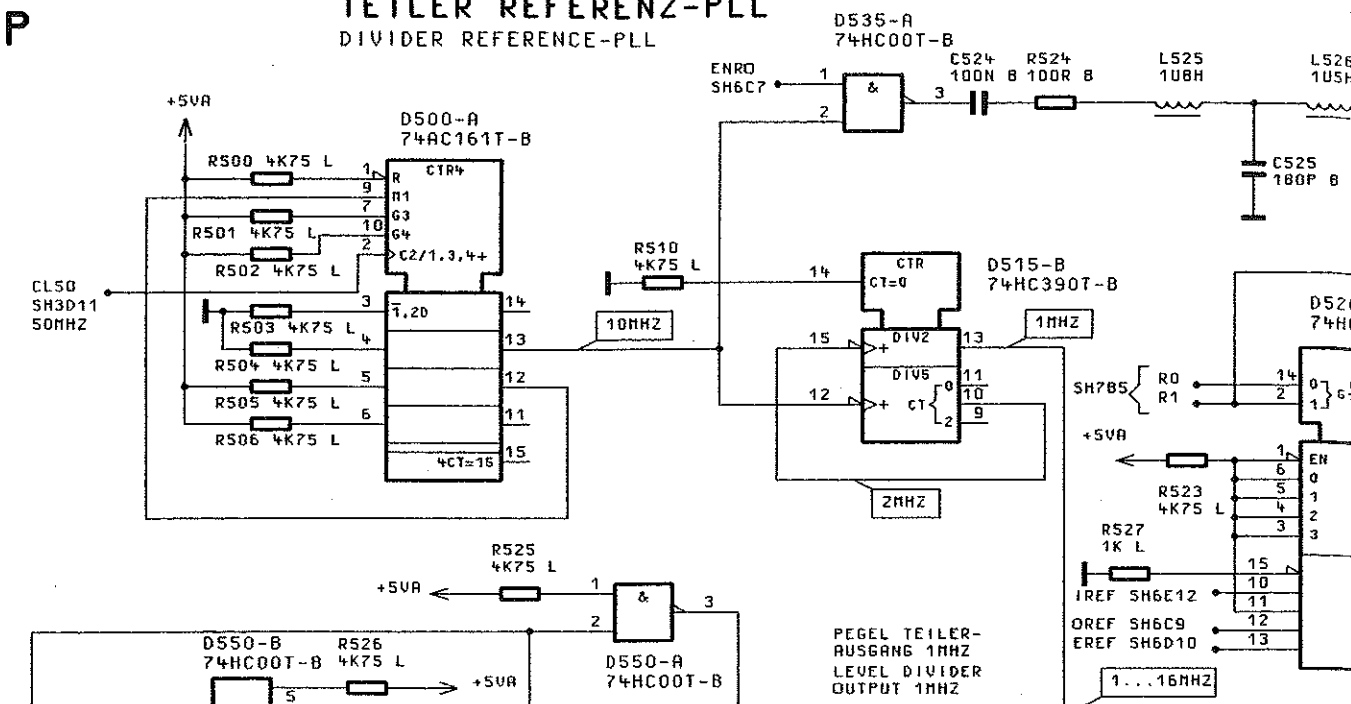


REFERENZTEILER REFERENCE DIVIDER



P

TEILER REFERENZ-PLL DIVIDER REFERENCE-PLL



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ZEICHN. -NR.

ATTENUATION ÜBERTRAGUNG
DATA TRANSFER

R643-R645 NICHT BESTUECKT
PCB

SEROUT
SH4C5

CLK2
WR2 } SH4B5

CLK1
WR1 } SH6E7

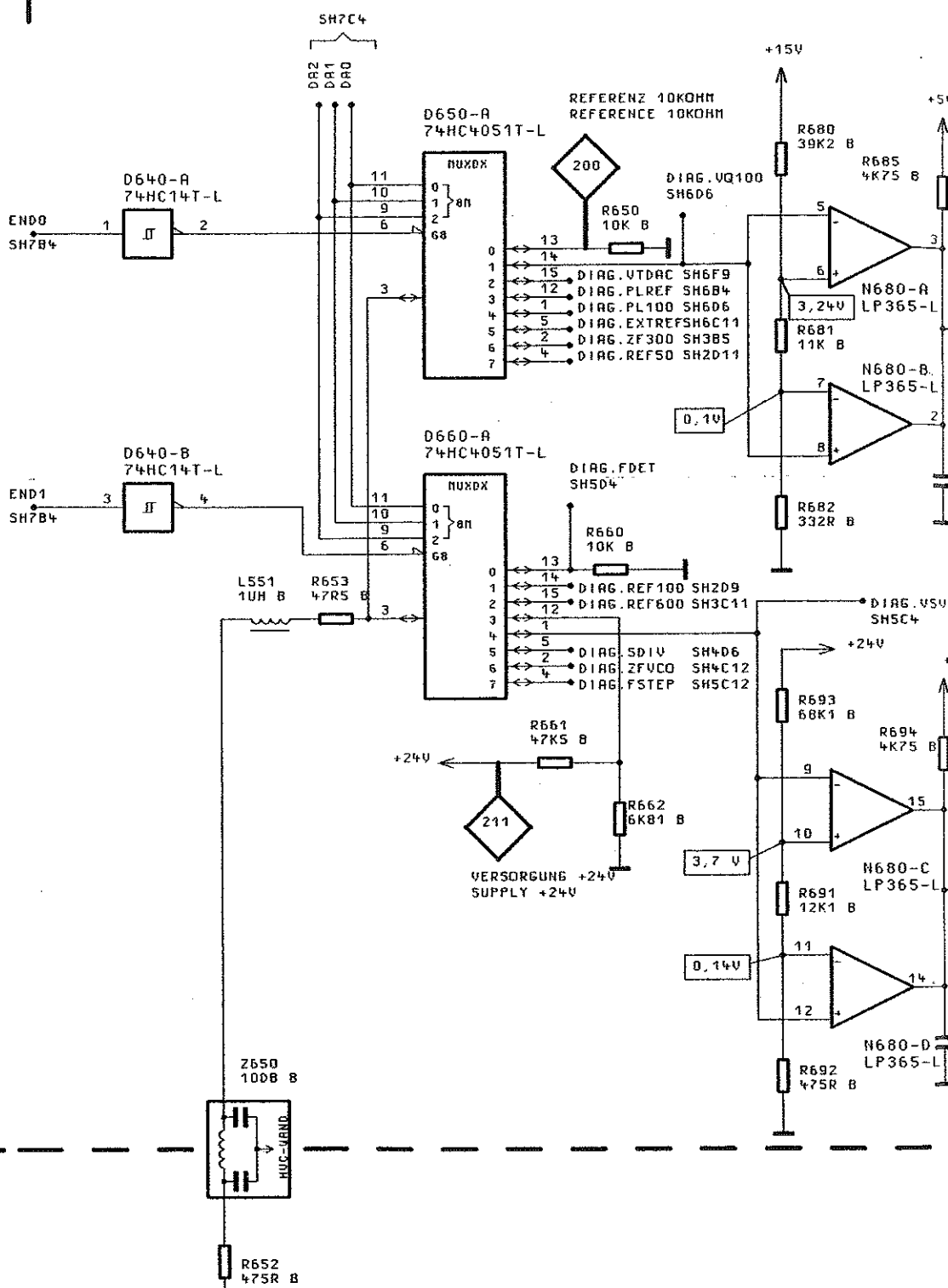
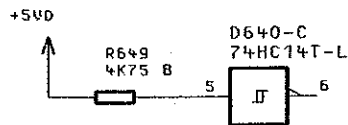
SH6C1

SH6F4


SH6E4

SH6E7


R690
100N L



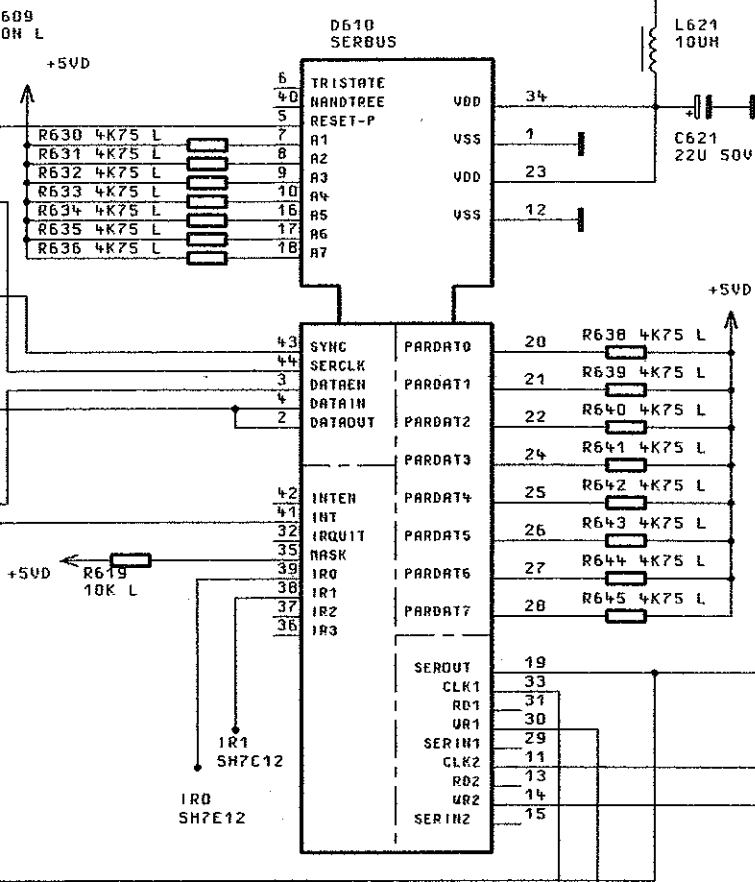
STROMLAUF GILT FUER VAR.
CIRCUIT DIAGRAM IS VALID FOR MOD.02



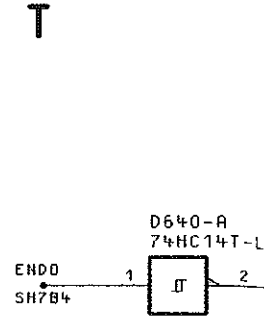
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07/	49155	06.06.95	HM	16PK	TAG	NAM
				BEARB.		HM
				GEPR.		
				NDRN		
				PLOTT	08.06.95	
06/01	48730 84	01.03.94	BU	 ROHDE & SCHWABE ZU GERÄT SMP		
REND. IND.	ÄNDERUNGS- MITTEILUNG.	DATUM	NAM			

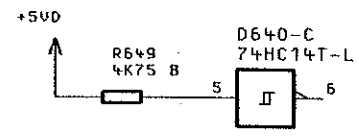
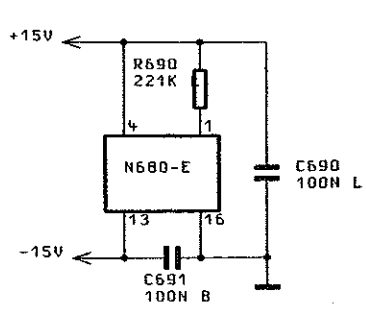
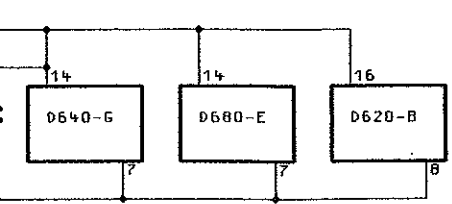
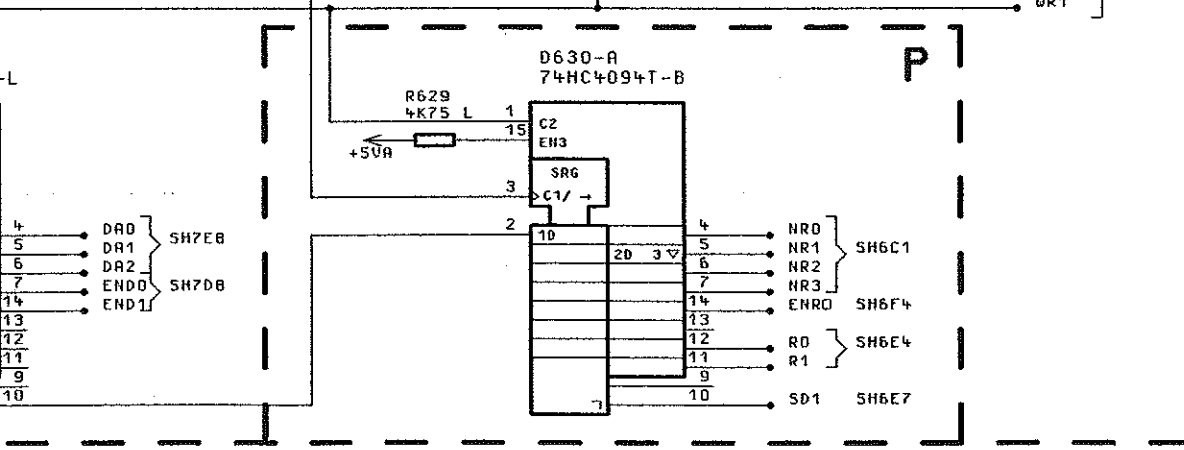
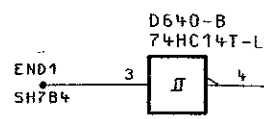
R630-R633, R635, R636
NICHT BESTUECKT/NOT IN PCB



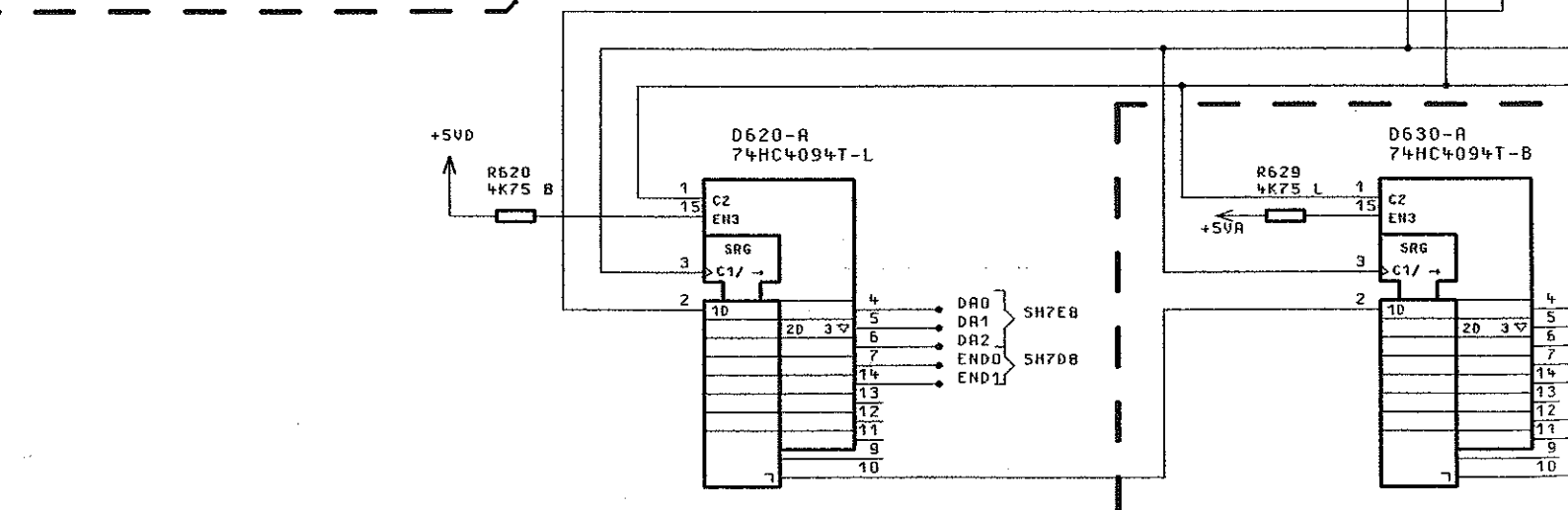
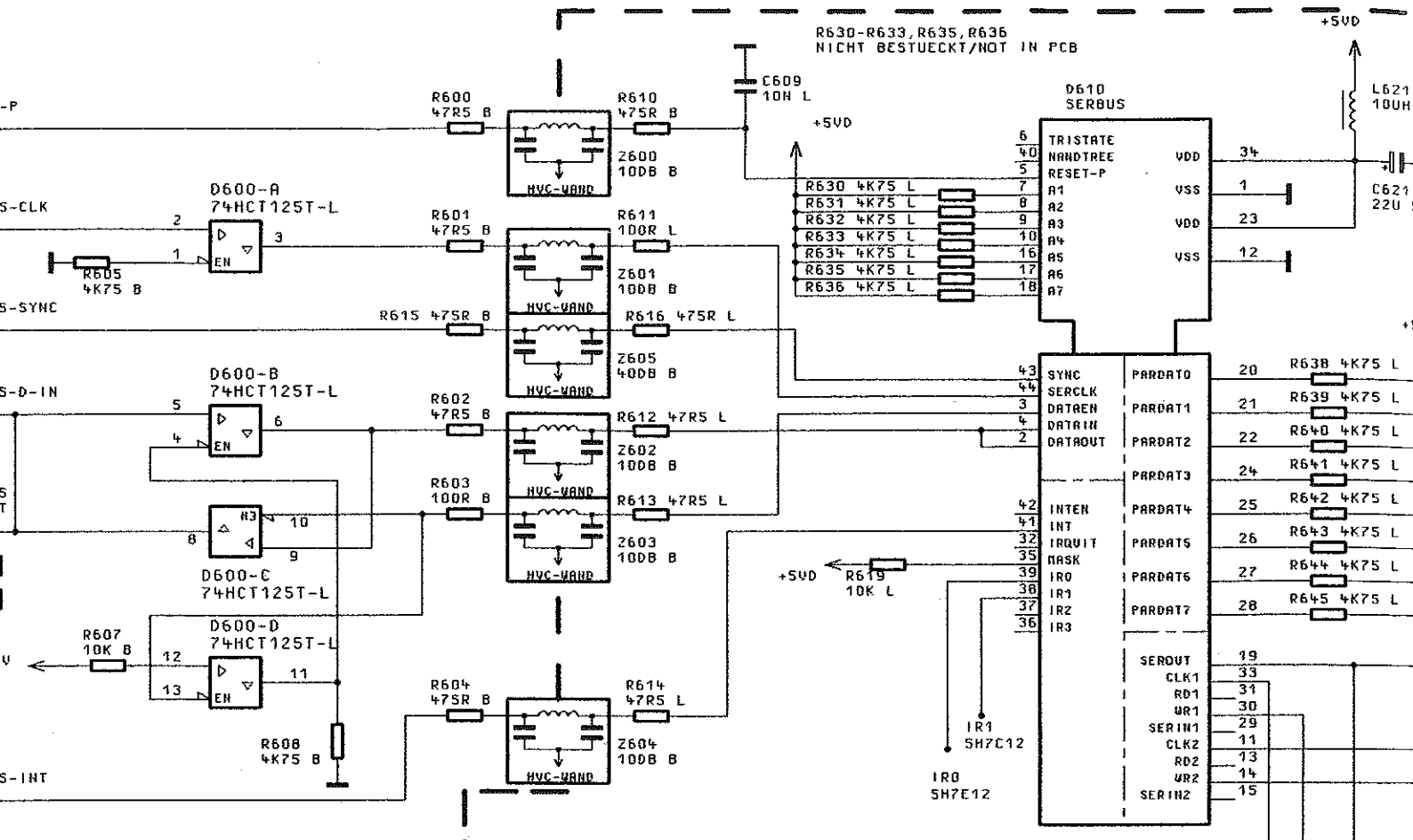
DATENUEBERTRAGUNG DATA TRANSFER



R641, R643-R645 NICHT BESTUECKT
/NOT IN PCB



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ZEICHN NR

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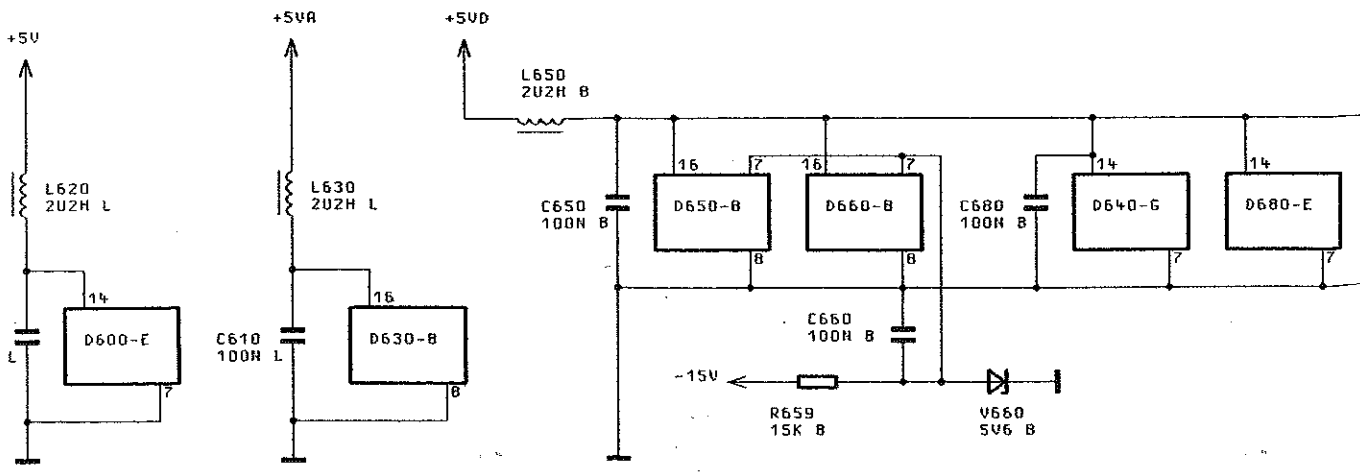
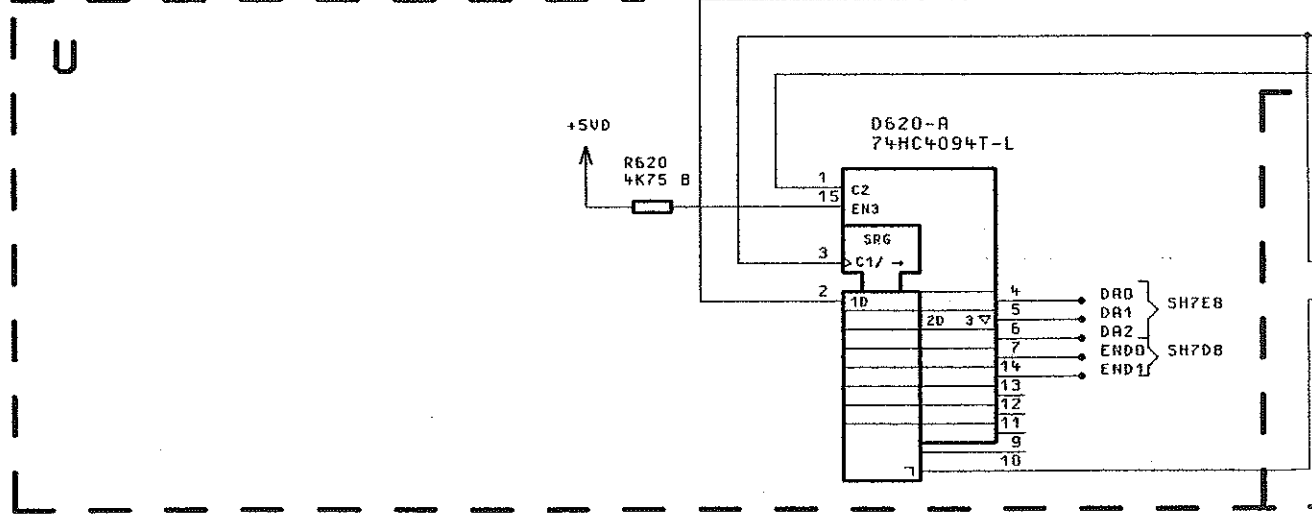
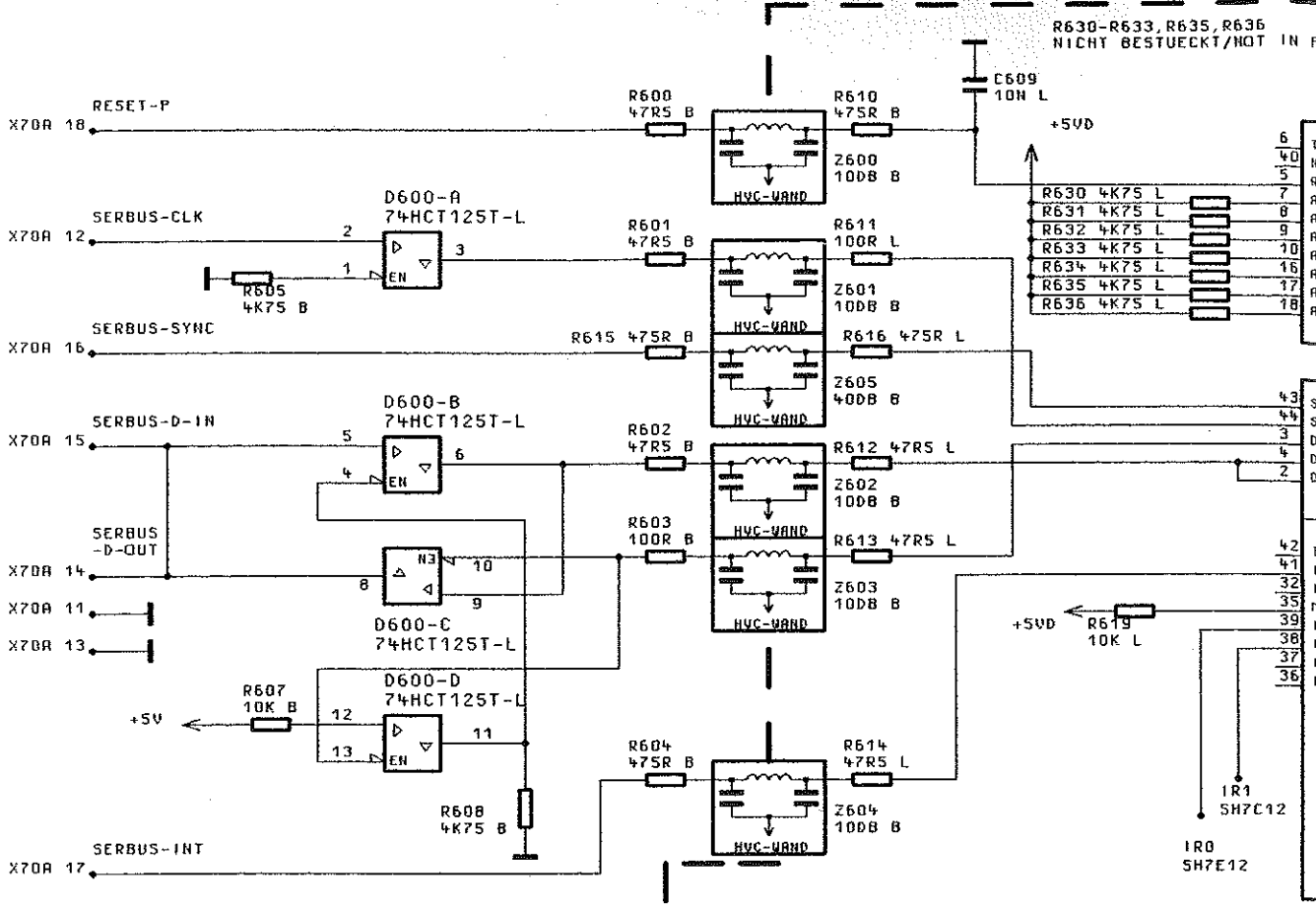
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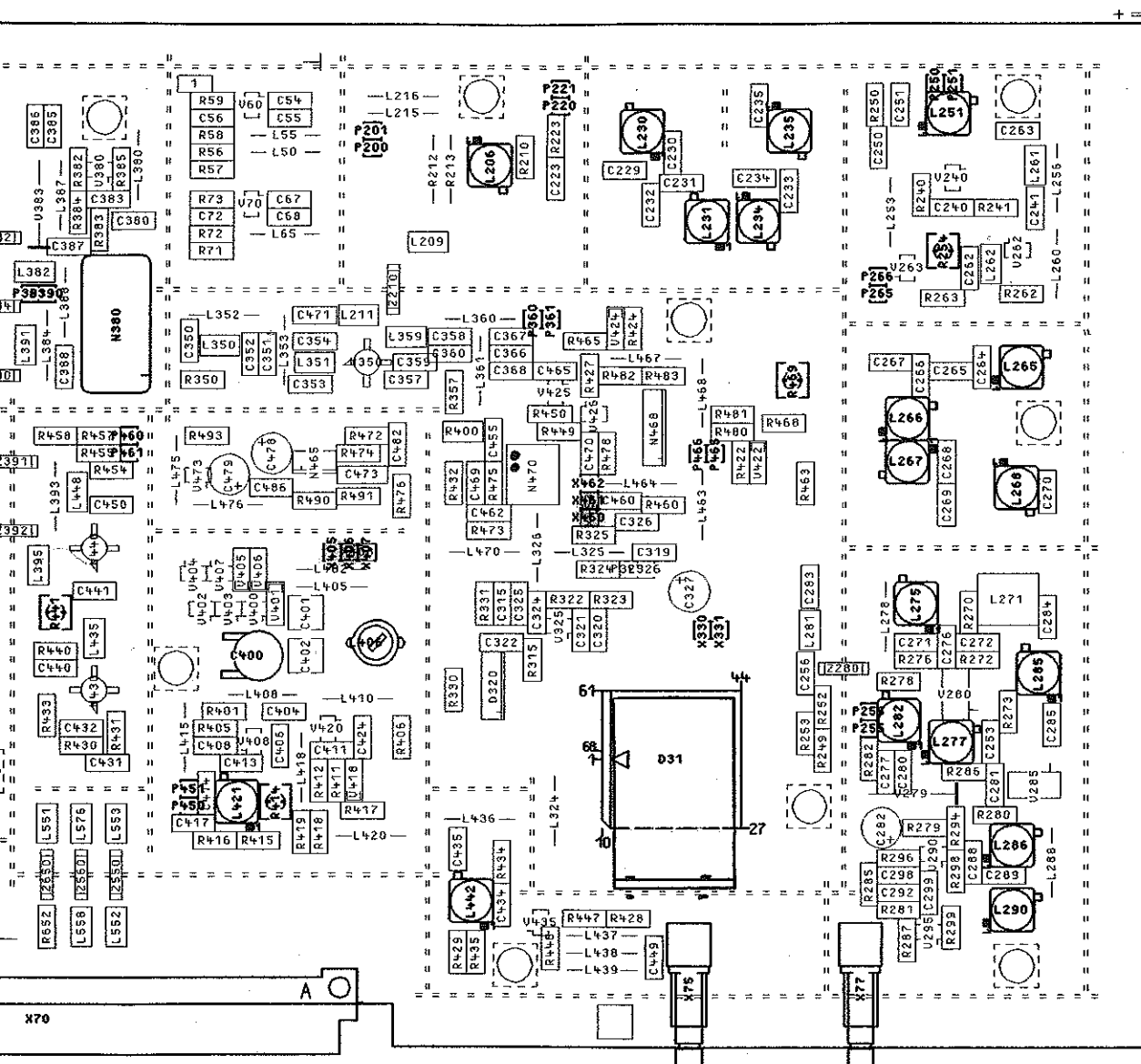
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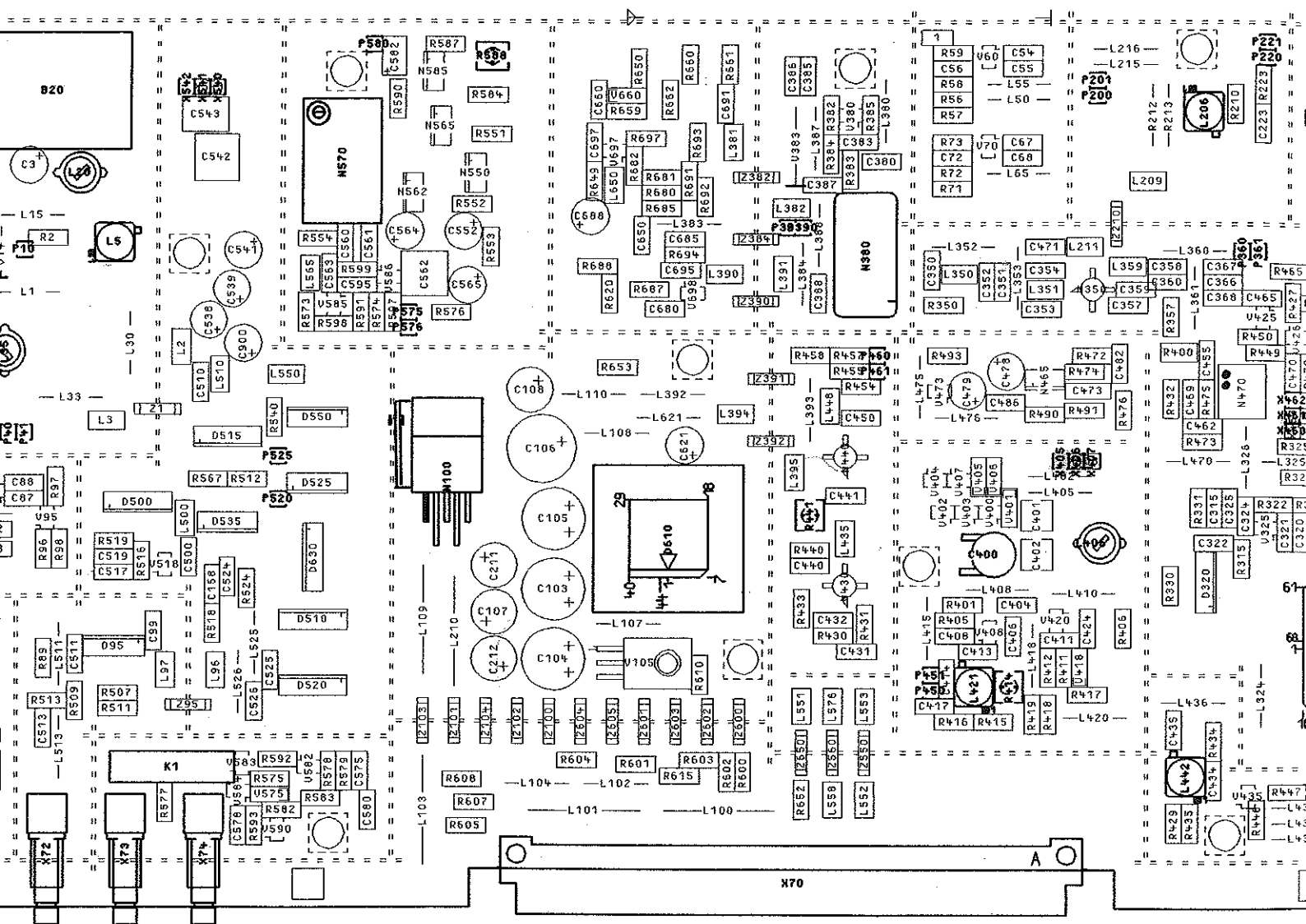


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150 200 250 300

RS/DZ	49155	01.03.94	BU	16PK	TRG	NABE	BENENNUNG	
				BEARR.		HM	REFERENZ STEPSYNTHESE	Z
				GEPR.			REFERENZ STEPSYNTHESE	
				NDRN				
				PLOT1	16.11.95			
DZ	48730	12.93	HM				ZEICHN.-NR.	BLATT-NR.
REND.	BENDERUNGS- MITTEILUNG	DATUM	NABE				1035.6501.01	EE
IND.				ZU GERÄT	SHP	REG. I. V.	1035.5005	COSTIC Z.
							1035.5005	



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05/02	4915
02/	48730
REND	RENDER
IND.	REITTE

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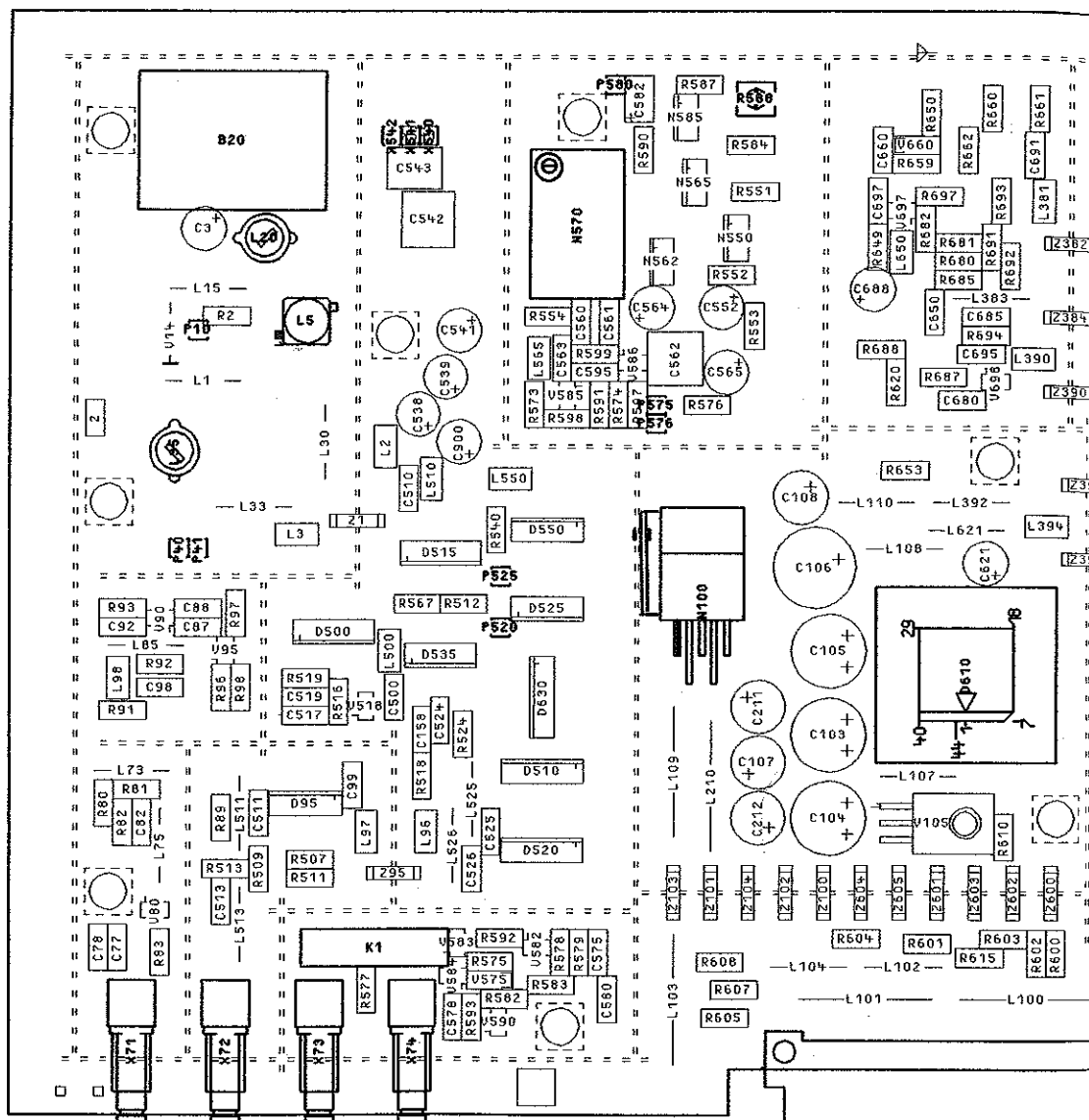
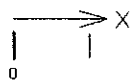
DARSTELLUNG SEITE B
 VIEW ON SIDE B

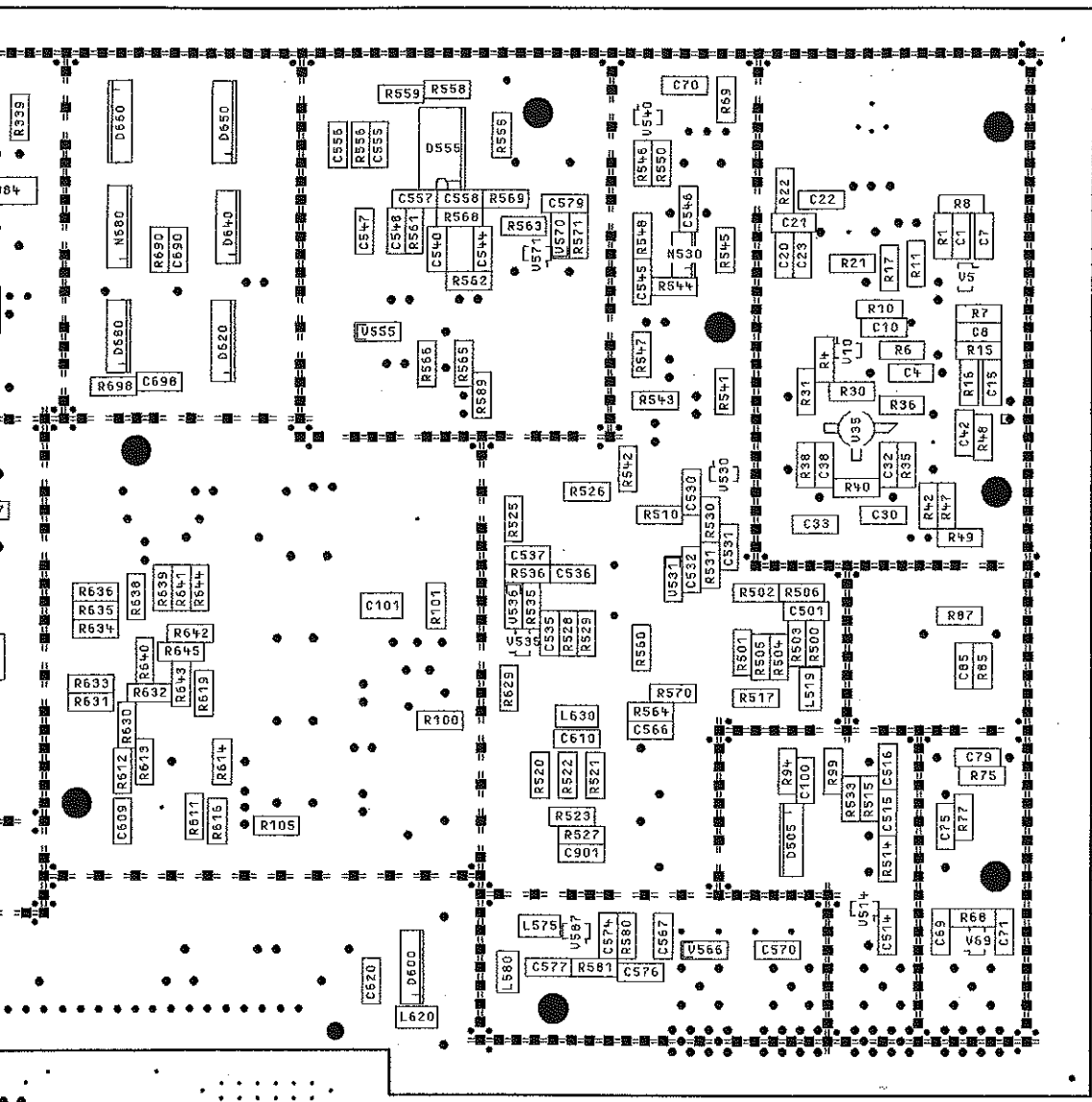


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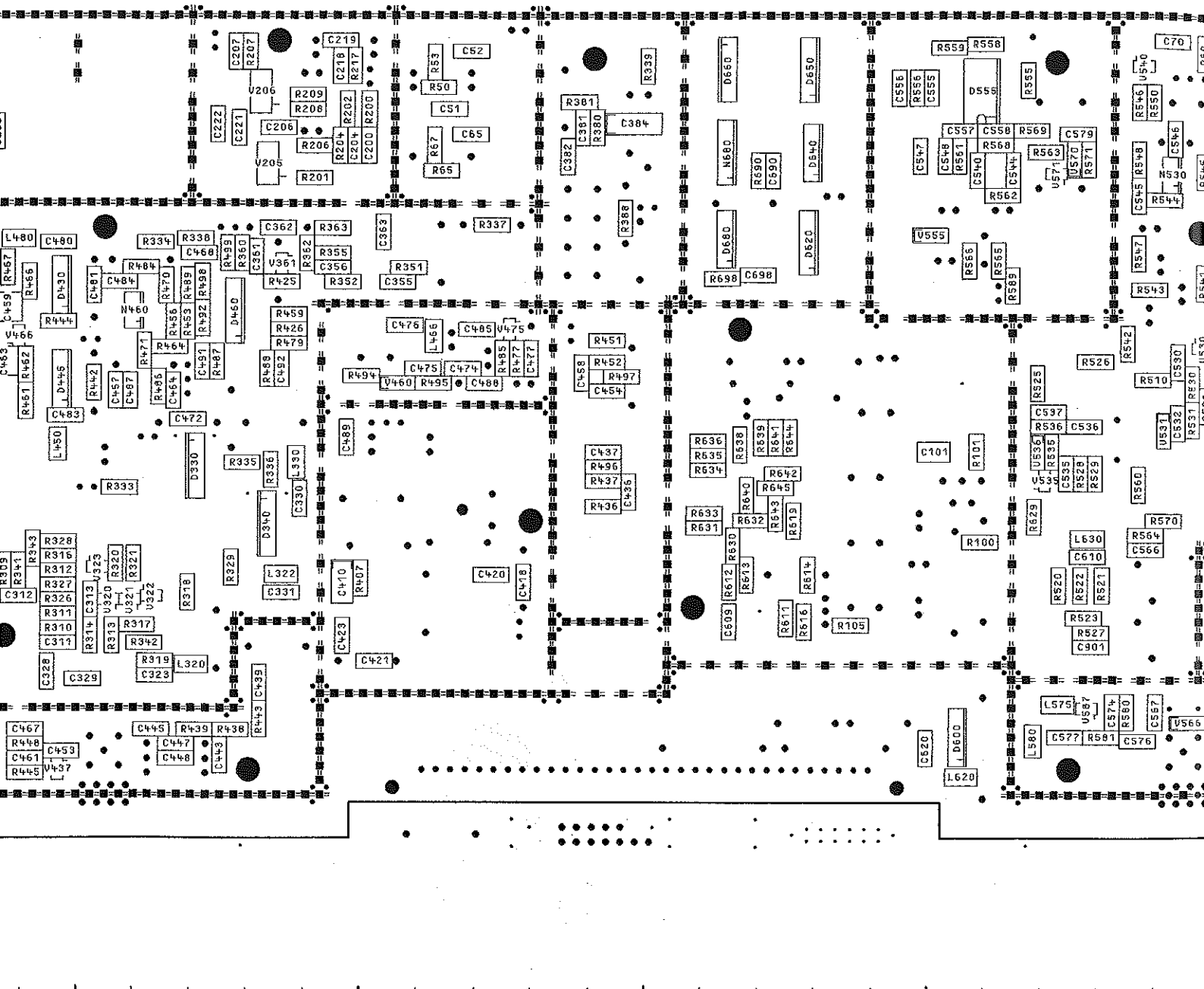
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05/01	48730 84	01.03.94	BU	1GPK	TRG	NAME	BENENNUNG	2
				BEARD.		BU	REFERENZ STEPSYNTHESE	
				BEPR.		BU		
				NORD				
				PLOTT	06.04.94			
02/	48730	12.93	HM			ZEICHN.-NR.		BLATT-NR.
REN.	RENDERUNGS-	DATUM	NAME			1035.6501.01		EE
IND.	MITTEILUNG			ROHDE & SCHWARZ				
				ZU GEHÖRT	SHP	REG.-L.V.	1035.5005	ERSTE Z.



250 200 150 100

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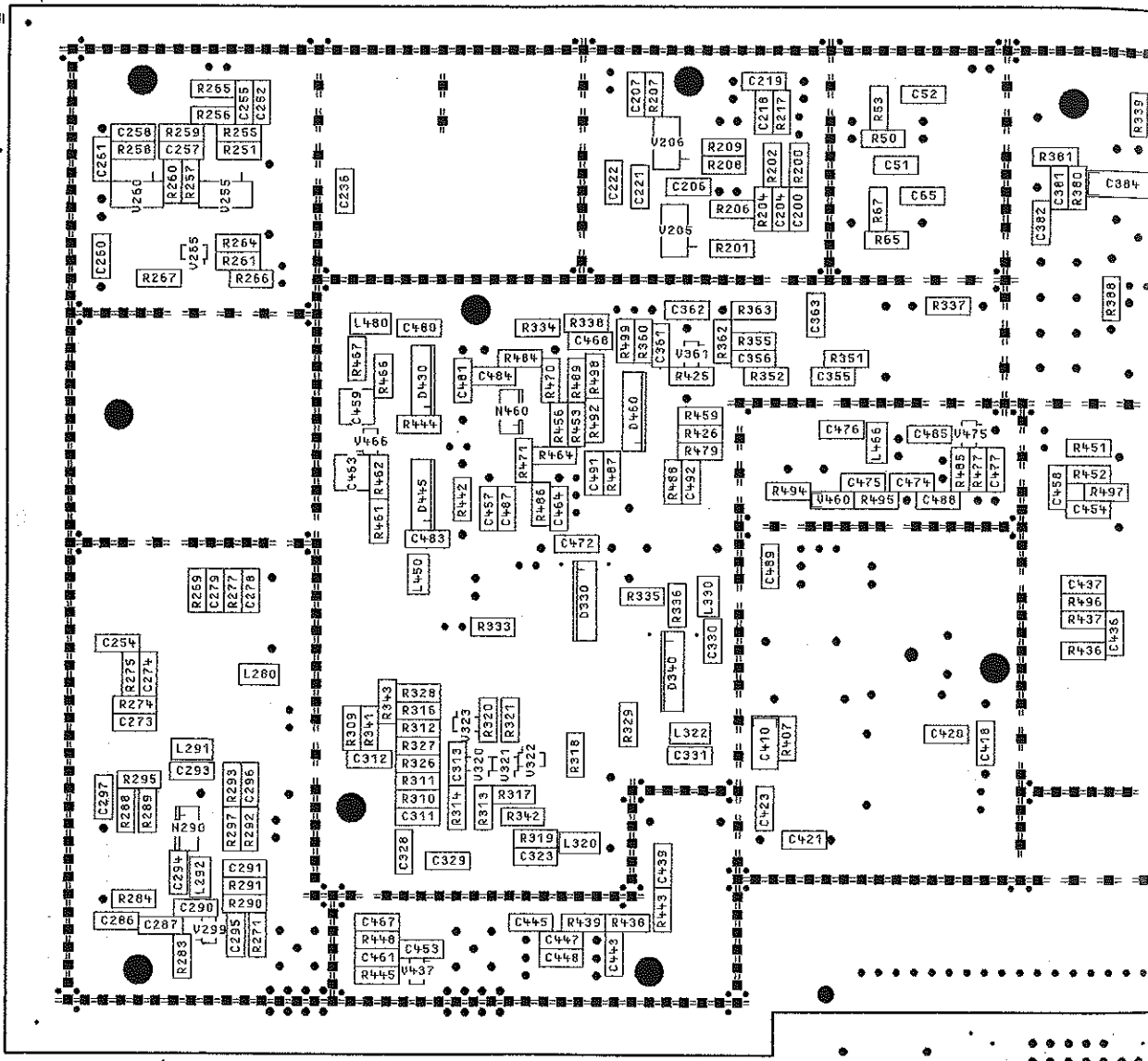
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DARSTELLUNG SEITE A
VIEW ON SIDE A



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TRIMMING AND COMPONENTS VALUES AND
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Schaltteilliste
Koordinatenliste
Stromlauf
Bestückungsplan

7. Prüfen und Instandsetzen der Baugruppe

7.1 Funktionsbeschreibung

Die Baugruppe DIGITALE SYNTHESE (kurz DSYN) generiert mit Hilfe des DDS-Bausteines DDS-GA (DDS-Gate-Array) auf rein digitale Weise ein Sinussignal im Frequenzbereich 14.1...15.6MHz (SMP: 10.3...15.6MHz) mit der Auflösung von $50\text{MHz}/2^{48}=0.178\mu\text{Hz}$. Die erzeugte Frequenz ist so genau wie die Taktfrequenz vom DDS-GA (50MHz). Das Taktsignal kommt von der Baugruppe REFSS an die Eingangsbuchse REF50 (X81). Das Ausgangssignal an der Ausgangsbuchse FDDS (X89) wird zur Baugruppe SUMMIERSCHLEIFE geleitet und dient dort als Referenzsignal einer Phasenregelschleife.

Auf der Baugruppe befindet sich auch eine Phasenregelschleife, die sogenannte PUFFERSCHLEIFE (kurz PS), über die das DDS-Signal wahlweise geführt werden kann, damit nichtharmonische Störsignale weggefiltert werden.

In die Baugruppe DSYN kann die Tochterbaugruppe Option DATENCODER (kurz DCOD) eingebaut werden, die ein digitales Modulationssignal (FM) an das DDS-Gate-Array über ein Parallelport liefert.

Über das MOTHERBOARD können der Option DCOD Daten- und Taktsignale und dem DDS-Gate-Array ein FSK-Signal und ein serielles Modulationssignal (SYNTHESE-FM) zugeführt werden.

Als Schnittstelle zur Rechnerbaugruppe sind auf DSYN zwei SERBUS-DECODER. SERBUS-D1 ist ausschließlich für DSYN zuständig und SERBUS-D2 ausschließlich für die Tochterbaugruppe Option DATENCODER.

7.1.1 DIREKTE DIGITALE SYNTHESE

Nach der Eingangsbuchse REF50 wird das sinusförmige 50MHz-Referenzsignal mit einer Sternschaltung in drei Pfade geführt, dem Pfad für den DDS-GA-Takt, dem Pfad für den DCOD-Takt und dem für den DA-Wandler (DAC).

Vom CLOCK-AMPLIFIER wird das Sinussignal in ein HCMOS-Signal für das DDS GA umgewandelt.

Die DELÄY-LINE verzögert das Taktsignal zum DAC derart, daß die Daten vom DDS-GA zum optimalen Zeitpunkt in den DAC eingelesen werden.

Vom ALIASING-FILTER wird das Sample-And-Hold-Signal vom DAC in ein nahezu sinusförmiges Signal umgewandelt.

Die parallelen Modulationsdaten von DCOD kommen über die Leitungen FMDAT(0)...FMDAT(13) zum DDS-GA und werden mit der steigenden Flanke vom LOADM-Signal eingelesen.

Die seriellen Modulationsdaten vom MOTHERBOARD kommen über die Leitung DATA zum DDS-GA und werden mit der fallenden Flanke vom DATACLK-Signal eingelesen. Ein serielles Datenwort ist 16 Bit lang. Das MSB, welches zuerst übertragen wird, wird durch ein HIGH-Signal auf der Leitung BURST markiert.

Die Leitungen BURST, DATA und DATACLK führen alle zu Gerätebuchsen.

Für die FSK-Modulation ohne Basisbandfilterung (harte Umtastung), wird das Datensignal ebenfalls über die Leitung DATA dem DDS-GA zugeführt. Vom FSK-INVERTER kann dieses Signal invertiert werden.

7.1.2 PUFFERSCHLEIFE

Wird die PUFFERSCHLEIFE (kurz PS), mit PS_ON=1 eingeschaltet, so ist der PIN-Dioden-Schalter V600 und V603 geschlossen.

Zwischen OSCILLATOR, dem VCO und dem PHASE-DETECTOR befindet sich kein frequenzumsetzendes Modul, sodaß die Ausgangsfrequenz (VCO-Frequenz) mit der Eingangsfrequenz identisch ist.

Mit dem MOS-Schalter N700 kann die Schleifenbandbreite zwischen 1kHz und 100kHz umgeschaltet werden. Es gibt drei verschiedene Modi, diese Umschaltung zu Nutzen:

MODUS1: Wird vom Rechner BAND=1 gesetzt, so ist die Bandbreite fest auf 100kHz.

MODUS2: Wird vom Rechner BAND=0 und AUTO=1 gesetzt, so ist die Bandbreite fest auf 1kHz.

MODUS3: Wird vom Rechner BAND=0 und AUTO=0 gesetzt, so ist die Bandbreite auf 1kHz, wird jedoch bei jedem Frequenzwechsel vom MONOFLOP für 250us auf 100kHz geschaltet, damit die Einschwingzeit geringer wird.

Der MODUS3 wird bei CW-Betrieb verwendet, wenn der Frequenzsprung größer als 3kHz ist. Bei Frequenzsprüngen unter 3kHz, wird auf MODUS2 geschaltet, da die Schleife im Fangbereich bleibt. Mit der schmalbandigen Regelschleife werden bei CW-Betrieb nichtharmonische Störsignale weggefiltert.

Der MODUS1 wird dazu verwendet, nichtharmonische Störsignale wie z.B. Aliasingprodukte unter 100kHz neben dem Träger, bei digitaler FM-Modulation wegzufiltern.

Wenn die PUFFERSCHLEIFE eingeschaltet ist (PS_ON=1), jedoch nicht synchronisiert (VCO-Abstimmspannung an X37 oder Diagnosespannung 305 am unteren oder oberen Anschlag; <0V oder >21.5V), so löst der INTERRUPT-DETECTOR beim SERBUS-D1 Interrupt aus und es erscheint am Gerätedisplay eine Fehlermeldung.

7.2 Meßgeräte und Hilfsmittel

- Servicekit 1039.3520
- Zweikanaloszilloskop (0...250 MHz)
- Spektrumanalysator (1...100 MHz)
- Rechteckgenerator (100Hz...1MHz) (z.B. ADS)
- Prüfmustergenerator (z.B. ADS)
- Frequenzzähler (10...20MHz) (im FSA enthalten)
- Modulationsanalysator (z.B. FMB)

7.3 Fehlersuche

Fehlerhafte Datenübertragung (siehe 7.4.2).	Prüfe SERBUS-D1 (D110), SERBUS-BUFFER (D50) und die Schieberegister D150 und D155.
Taktsignal an P32/P33 außer Toleranz (siehe 7.4.4).	Prüfe den CLOCK-AMPLIFIER (V220, Diagnosepunkt 303).
Taktsignal und Datensignal zum DAC (D300) an P4/P14 und P5/P15 außer Toleranz (siehe 7.4.5).	Prüfe die DELAY-LINE und den Taktverstärker V210 (Die Setup- und die Hold-Zeit kann mit R215 bzw. R212 durch Verändern der DELAY-LINE-Laufzeit korrigiert werden.)
Ausgangssignal bei CW-Betrieb außer Toleranz (DIG. MOD OFF) (siehe 7.4.8).	Prüfe, ob die Spannung an P6 $-9.5 \pm 1V$ ist. Prüfe die Pindiode V603 und den OSCILLATOR.
Ausgangssignal bei abgeschalteter PS außer Toleranz (FSK-MOD. ON) (siehe 7.4.8).	Prüfe, ob die Spannung an P6 $11.6 \pm 1V$ ist. Prüfe das DDS-Gatearray D20, die Pindiode V601, den DAC (D300), das ALIASING-FILTER (L405) und den DDS-AMPLIFIER (N400).
Phasenregelschleife (Pufferschleife) synchronisiert nicht (siehe 7.4.7.1).	Prüfe, ob die Steckbrücke X36/X37 gesteckt ist. Prüfe OSCILLATOR (V512), Taktverstärker V610 und V612, CONTROL-AMPLIFIER (N700, N702, D700, V702, V704). Prüfe, ob die Spannung an P6 $-9.5V \pm 1V$ ist, und prüfe die Pindioden V603, V600 und V601. Prüfe ob die Spannung an P9/P8 $24V/0V \pm 1V$ oder $0V/24V \pm 1V$ ist.
Es erscheint die Fehlermeldung "Digital synthesis buffer VCO unlocked" (siehe 7.4.10).	Prüfe, ob die Phasenregelschleife synchronisiert (Spng. an P7 $1V \dots 21V$, Diagnosepunkt 305). Wenn nicht, siehe vorhergehenden Absatz. Prüfe den INTERRUPT-DETEKTOR (N120, V150).

7.4 Prüfen und Abgleich

Vorbemerkung:

Zum Servicebetrieb wird der obere Deckel abgeschraubt, anstelle der Baugruppe wird der Serviceadapter in den Steckplatz eingesetzt und anschließend die Baugruppe auf den Adapter gesteckt. Nachdem die HF-Verbindungen hergestellt worden sind, ist die Baugruppe wieder betriebsbereit.

7.4.1 Prüfung der Stromaufnahme

Die Stromaufnahme der Baugruppe kann geprüft werden, indem anstelle der Spulen L80, L82, L76, L78 und des Widerstandes R48 jeweils ein Amperemeter eingeschleift wird. Die Sollwerte zu den jeweiligen Versorgungsspannungen finden sich in Kap. 7.6.

7.4.2 Prüfen der Datenübertragung

- Den lötseitigen Deckel abschrauben und an D150 nach folgender Tabelle die Spannungen prüfen.

Einstellung	D150								
	Pin								
	4	5	6	7	14	13	12	11	
PRESET	0	0	0	0	x	0	0	1	
DIG.MOD-FSK-SOURCE-PRBS	x	x	x	x	x	0	1	1	
DIG.MOD-GFSK-SOURCE-PRBS	x	x	x	x	x	0	0	0	
DIG.MOD-FSK-SOURCE-PRBS -POLARITY-INV	x	x	x	x	x	1	1	1	

- Den lötseitigen Deckel wieder verschrauben.

7.4.3 Prüfung der Spannungsregler

- Die Baugruppe Option DM-CODER wenn vorhanden ausbauen, damit die Prüfpunkte P20 und P21 zugänglich sind.
- ▶ Die Spannung am Prüfpunkt P20 muß $+5V \pm 0.15V$ betragen.
- ▶ Die Spannung am Prüfpunkt P21 muß $-5V \pm 0.15V$ betragen.

7.4.4 Prüfen des Taktsignales zum DDS-GA D20

- Oszilloskop an P32/P33 (Signal/Masse) anschließen (50Ω).
- ▶ Es muß eine periodische Wechselspannung mit der Frequenz 50MHz, der Maximalspannung über 0.19V und der Minimalspannung unter 0.048V zu messen sein (Zwischen Signal und Prüfpunkt befindet sich ein $1k\Omega$ -Vorwiderstand).

7.4.5 Prüfen der digitalen Signale am DA-Wandler (DAC, D300)

- Einstellung: FREQUENCY 1350.8MHz

- Oszilloskop, Kanal1 an P4/P14 (Taktsignal) und Kanal2 an P5/P15 (Datensignal) anschließen und die Triggerschwelle für das Taktsignal auf -40mV einstellen (Triggerung bei negativer Flanke, Impedanz 50Ω).
- ▶ Das Datensignal sollte als Augenmuster erscheinen. Der HIGH-Pegel sollte zum Triggerzeitpunkt -40mV±7mV betragen.
- ▶ Der LOW-Pegel sollte zum Triggerzeitpunkt -83mV±7mV betragen.
- ▶ Die obere Spitzenspannung des Taktsignales sollte >-10mV sein und die untere Spitzenspannung <-110mV sein.
- ▶ Die SETUP-Zeit und die HOLD-Zeit des Datensignales bezüglich des Triggerzeitpunktes (Datenübernahme), sollte <5ns betragen.

7.4.6 OSCILLATOR-Abgleich

Auf Bauelementeseite ein Spezialdeckel verschrauben, der die Kammer A und F frei läßt, damit verschiedene Prüfpunkte zugänglich sind, und der zum Abgleich von L507 und L506 zwei Löcher hat. Dieser Deckel soll im weiteren mit OSCILLATOR-Deckel bezeichnet werden.

- Einstellung: **FREQUENCY 1000MHz**
- Steckbrücke X36/X37 ziehen und Gleichspannung an X37 einspeisen.
- Spektrumanalysator an X89 (FDDS) anschließen.
- ▶ Den Oszillator nach folgender Tabelle wechselweise abgleichen. Die anzustrebenden Frequenzwerte sind 10.3 bzw. 15.6 MHz. Falls diese Werte nicht erreicht werden können, so ist der angegebene Toleranzbereich einzuhalten, wobei hierbei an beiden Abgleichpunkten ein möglichst gleicher Frequenzfehler anzustreben ist.
Beim Abgleichpunkt OSZ3 kann wahlweise L506 oder L507 oder beide Spulen abgeglichen werden.

Spannung X37	Abgleichpunkt	Sollfrequenz an X89
18V	OSZ3(L506/L507)	15.6 ... 15.9 MHz
1.6V	OSZ4 (R433)	10 ... 10.3 MHz

- Die Steckbrücke X36/X37 wieder stecken.

7.4.7 Prüfung der PUFFERSCHLEIFE

7.4.7.1 Statisches Verhalten

- Der OSCILLATOR-Deckel muß verschraubt sein.
- Einstellung: FREQUENCY 1350.2/1351.4MHz
- ▶ Die Spannung an P7 muß 14.6/18.0+-1V sein.

7.4.7.2 Einschwingverhalten

- Die Baugruppe Option DATENCODER ausbauen, damit der Prüfpunkt P28 zugänglich ist.
- Der OSCILLATOR-Deckel muß verschraubt sein.
- An P35 (PD-Signal) ein Oszilloskop anschließen, das mit dem FRS-Signal an P28 getriggert wird (negative Flanke, Triggerschwelle 3V).
- Einstellung: FREQUENCY laut Tabelle
 (schmalbandige PS)
- ▶ Die Spannung an P35 muß bei einem Frequenzsprung von 1350.2 auf 1351.4MHz und umgekehrt 3ms nach der Triggerung den Wert von 0.1V unterschritten haben.
- Prüfung bei Ausrüstung mit DATENCODER.
- Einstellung: FREQUENCY laut Tabelle
 DIGITAL MOD - 4FSK - SOURCE EXT
 (breitbandige PS)
- ▶ Die Spannung an P35 muß bei einem Frequenzsprung von 1350.2 auf 1351.4MHz und umgekehrt 70us nach der Triggerung den Wert von 0.1V unterschritten haben.

7.4.7.3 Übertragungsverhalten

- Die Option DATENCODER muß eingebaut sein.
- Der OSCILLATOR-Deckel muß verschraubt sein.
- An X89 (FDDS) einen Modulationsanalysator (z.B. FMB) anschließen und einen Tiefpaß mit 23kHz einschalten.
- Einstellung: FREQUENCY 835MHz
 DIGITAL MOD - 4FSK - SOURCE DATA (breitb. PS)
 -FILL-LIST DATA "1000"

- ▶ Das FM-demodulierte Signal muß einen Spitzenhub von 4.6875kHz+-1% und eine Modulationsfrequenz von 1.5625kHz+-1% haben. Es dürfen keine Überschwinger zu sehen sein.

7.4.8 Prüfung des Ausgangssignales bei CW-Betrieb

- Der OSCILLATOR-Deckel muß verschraubt sein.
- An den Ausgang X89 (FDDS) einen Spektrumanalysator anschließen.
- Einstellung: **FREQUENCY** laut Tabelle
DIGITAL MOD - FSK - SOURCE EXT/OFF - DEVIATION 0Hz

- ▶ Nach folgender Tabelle verschiedene Frequenzen einstellen und am Ausgang die Frequenz für SOURCE EXT und SOURCE OFF prüfen.

FREQUENCY/MHz	1350.2	1351.4
Sollfrequ./MHz+-1kHz	14.351	15.551

- ▶ Der Pegel soll 2+-1.5dBm und der Oberwellenabstand <-40dBc betragen.

- ▶ Nach folgender Tabelle verschiedene Nebenwellen prüfen:

FREQU. in MHz	EXT / OFF	Träger-Frequenz in MHz	Offset-Frequenz in MHz	Nebenw.-Abstand in dBc
1350.69275	EXT	14.84375+-0.1	+1.5625	<-66
1350.69275	OFF	14.84375+-0.0001	+1.5625	<-80
1351.27869	EXT	15.4296875+-0.1	+1.5625	<-66
1351.27869	OFF	15.4296875+-0.0001	+1.5625	<-80
835.1	EXT	15.1+-0.1	+0.2	<-66
835.1	OFF	15.1+-0.0001	+0.2	<-80

7.4.9 Prüfung der Interrupt-Funktion

- Einstellung: **FREQUENCY 1000MHz**
- ▶ Steckbrücke X36/X37 ziehen. Es muß die Fehlermeldung "Digital synthesis buffer VCO unlocked" erscheinen.

7.4.10 Prüfung der Diagnose

- Einstellung: **FREQUENCY 1000MHz**
 UTILITIES - DIAG - TPOINT...

TPOINT	Meßpunkt	Faktor	Sollspannung
300	+15V-Versorgung	4	14...16V
301	DCOD, OSZ.-Abst.sp.	5	-100...100mV
302	DCOD, OSZ.-Pegel	1	-20...20mV
303	DDS-GA-Taktpegel	1	0.5...1.5V
304	Pegel am Ausg. FDDS	1	50...200mV
305	OSZ.-Abstimmsp.	5	12...20V
306	-15V-Versorgung	4	-14...16V
307	+7.5V-Versorgung	2	14...16V

7.4.11 Prüfung der CODAM-Leitung

- An X3.19/20 (SIG/GND) einen Signalgenerator (500hm) anschließen und 10MHz/10dBm einspeisen.
- An X80.9/11 (SIG/GND) einen Spektrumanalysator anschließen und CENTER 10MHz einstellen.
- ▶ Der zu messende Pegel bei 10MHz muß 4dBm+-2 dB betragen.

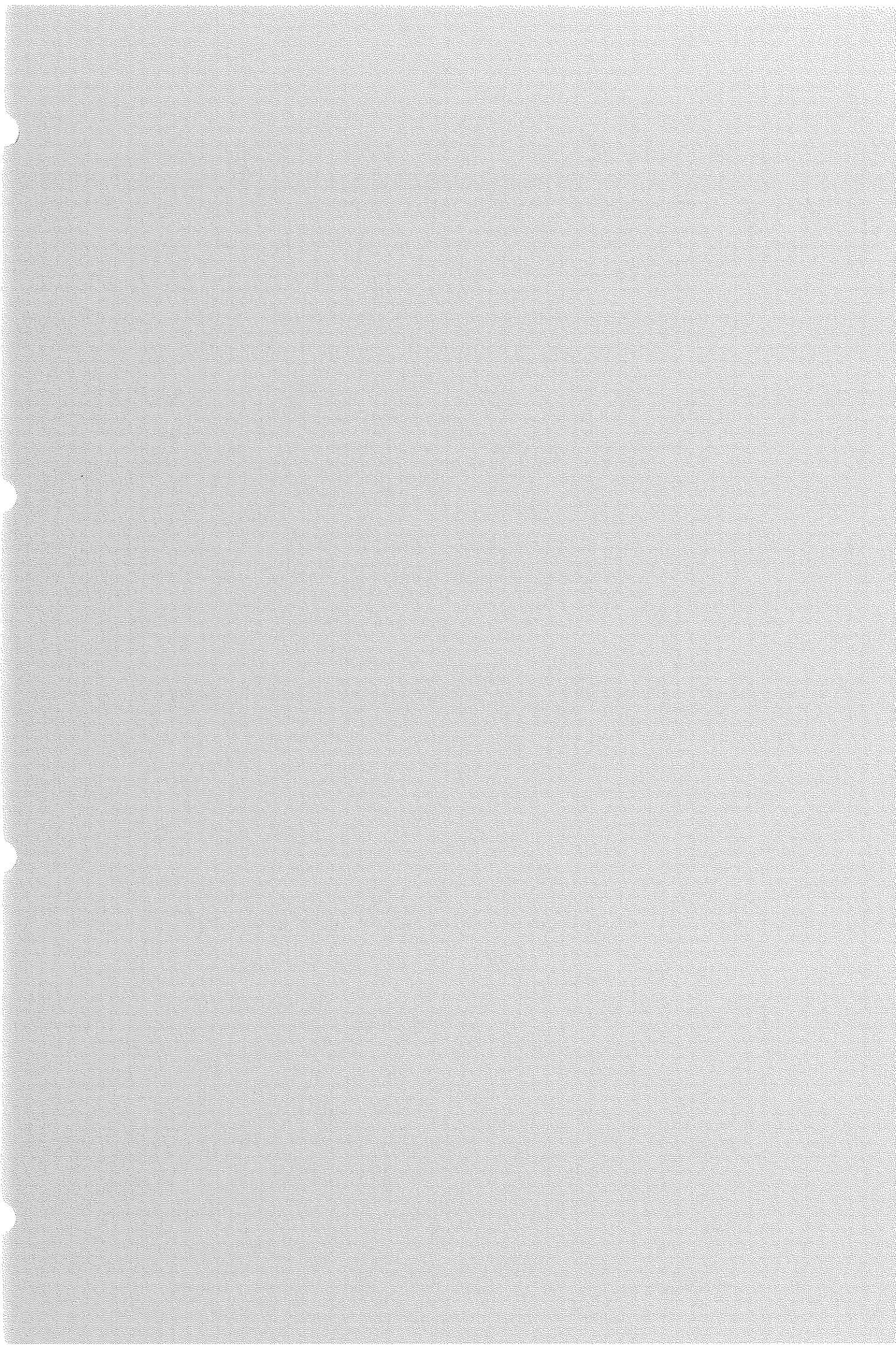
Nach dem Öffnen des Gerätes, entriegeln der Baugruppen und dem Lösen der HF-Verbindungen an X81 und X89 kann die Baugruppe aus ihrem Steckplatz genommen werden. Die Schirmdeckel der Baugruppe sind auf herkömmliche Art verschraubt.

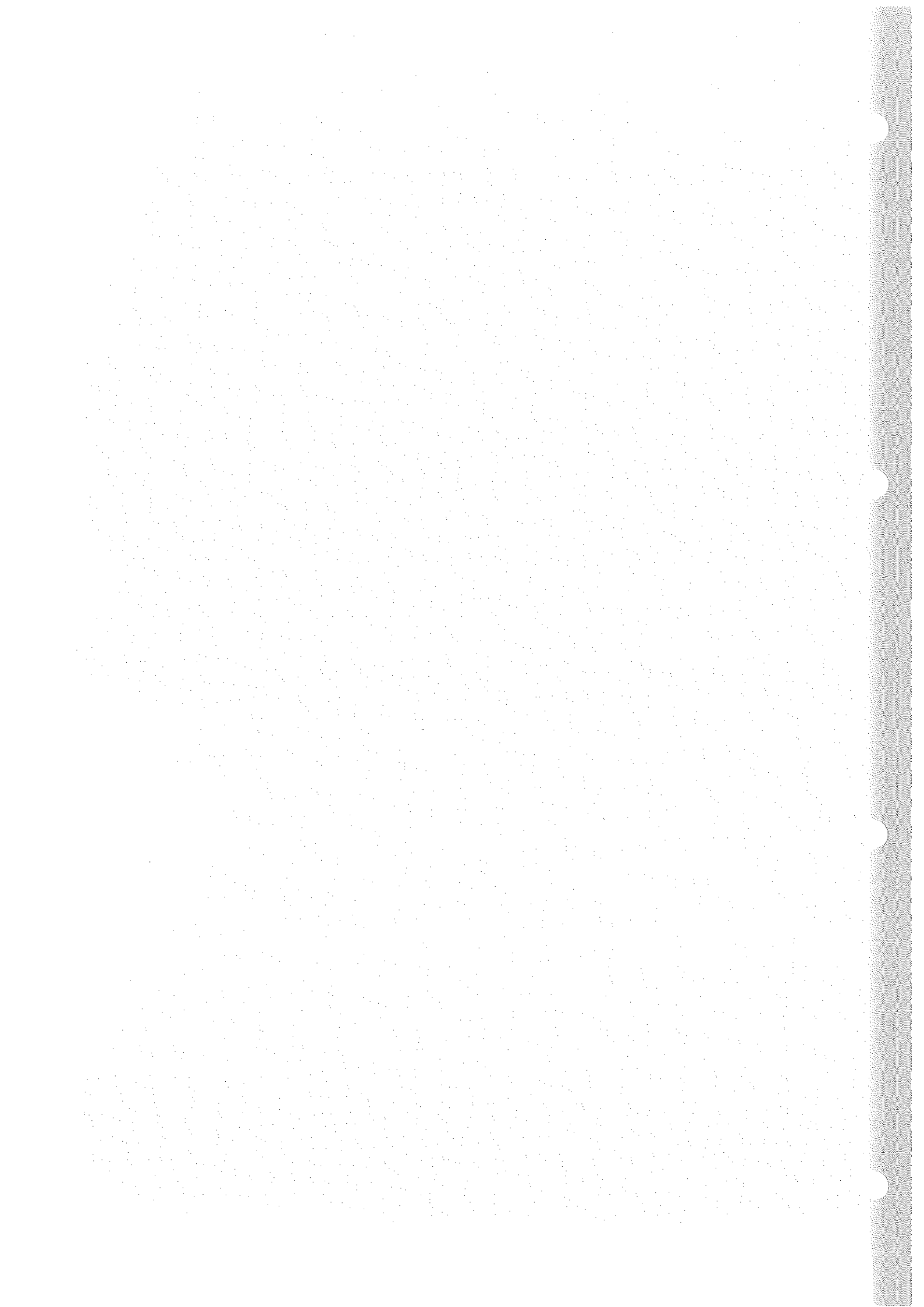
7.5 Zerlegung und Zusammenbau

Nach dem Öffnen des Gerätes, Entriegeln der Baugruppe und dem Lösen der HF-Verbindungen an X81 und X89 kann die Baugruppe aus ihrem Steckplatz genommen werden. Die Schirmdeckel der Baugruppe sind auf herkömmliche Art verschraubt.

7.6 Externe Schnittstellen

Pin	Name	Ein/Ausgang	Herkunft/Ziel	Wertebereich	Signalbeschreibung
X80.A12	SERBUS-CLK	Eingang	A3, FRO X50.40	HCMOS-Pegel	Serbus-Clock
X80.A14 X80.A15	SERBUS-DAT	bidir.	A3, FRO X50.39	HCMOS-Pegel	Serbus-Daten
X80.A17	SERBUS-INT	Ausgang	A3, FRO X50.38	HCMOS-Pegel	Serbus-Interrupt
X80.A18	RES-P	Eingang	A3, FRO X50.28	HCMOS-Pegel	Serbus-Reset
X80.A19	DIAG-5V	Ausgang	A3, FRO X50.44	-5V...5V	Diagnose
X80.A24	VA15-P	Eingang	A2, POWS1	14.80V...15.75V 44...66mA	Versorgungsspannung analog
X80.A26	VA7.5-P	Eingang	A2, POWS1	7.45V...7.95V 328...500mA	Versorgungsspannung analog
X80.A28	VD-5P	Eingang	A2, POWS1	5.10V...5.25V 0...10mA	Versorgungsspannung digital
X80.A30	VA15-N	Eingang	A2, POWS1	-15.75V...-14.85V 208...310mA	Versorgungsspannung analog
X80.A1	DATACLK	bidir.	A3, FRO	HCMOS-Pegel	Datentakt des DATENCODER
X80.A2	DATA	bidir	A3, FRO	HCMOS-Pegel	Datensignal des DATENCODER
X80.A3	BURST	bidir.	Rückwand	HCMOS-Pegel	BURST-Signal des DATENCODER
X80.A9	CODAM	Ausgang	A10, OPU1	-1V...+1V	AM-Signal vom DATENCODER
X80.A32	LSWI	Ausgang	A10, OPU1	HCMOS-Pegel	LEVEL-SWITCH-Signal zum OPU
X81	REF50	Eingang	A5, MGEN X99	9dBm+-2dB	HF-Eingang, Referenzsignal
X89	FDOS	Ausgang	A9, SUM, X51	2dBm+-2dB	HF-Ausgang, DDS-Signal







ROHDE & SCHWARZ

SERVICE INSTRUCTIONS

Digital Synthesis

1038.7344.01

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Coordinates list
Circuit diagram
Layout diagram

7. Checking and Repair of the Module

7.1 Functional Description

Using the DDS component DDS-GA (DDS gate array), the DIGITAL SYNTHESIS module (DSYN for short) digitally generates a sinewave signal in the frequency range 14.1 to 15.6 MHz (SMP: 10.3 to 15.6 MHz) with a resolution of $50 \text{ MHz}/2^{48}=0.178 \text{ uHz}$. The generated frequency is as accurate as the clock frequency of the DDS-GA (50 MHz). The clock signal is taken from the REFSS module to the input socket REF50 (X81). The output signal at the output socket FDDS (X89) is routed to the SUMMING LOOP module, where it serves as reference signal for a phase-locked loop.

The module also contains a phase-locked loop, the so-called buffer loop (PS for short (German: PufferSchleife)). The DDS signal can be routed via this loop for suppression of non-harmonic spurious signals.

The DATA CODER option (DCOD) can be fitted in the DSYN module. It provides a digital modulation signal (FM) to the DDS gate array via a parallel port.

Data and clock signals can be applied to the DCOD option and an FSK signal and a serial modulation signal (SYNTHESE-FM) to the DDS gate array via the motherboard.

DSYN contains two SERBUS DECODERS as interfaces to the controller module. SERBUS-D1 is exclusively used for DSYN and SERBUS-D2 for the DATA CODER option.

7.1.1 DIRECT DIGITAL SYNTHESIS

Following the input socket REF50, the sinewave 50-MHz reference signal is divided into three paths by means of a Y-connection: the path for the DDS-GA clock, the path for the DCOD clock and that for the D/A converter (DAC).

The CLOCK AMPLIFIER converts the sinewave signal into a HCMOS signal for the DDS_GA.

The DELAY LINE delays the clock signal for the DAC such that the data from the DDS-GA are read into the DAC at the optimal point in time.

The ALIASING FILTER converts the sample-and-hold signal from the DAC into an sinewave signal.

The parallel modulation data from DCOD are applied via the lines FMDAT(0)...FMDAT(13) to the DDS-GA and are read in with the rising edge of the LOADM signal.

The serial modulation data from the MOTHERBOARD are applied via the DATA line to the DDS-GA and read in with the falling edge of the DATACLK signal. A serial data word is 16 bits long. The MSB, which is transferred first, is marked by a HIGH signal on the BURST line.

The lines BURST, DATA and DATACLK all lead to instrument sockets.

For the FSK modulation without baseband filtering (hard frequency-shift keying), the data signal is also applied via the DATA line to the DDS-GA. This signal can be inverted by the FSK-INVERTER.

7.1.2 BUFFER LOOP

When the buffer loop (PS for short) is activated with PS_ON=1, the PIN diode switches V600 and V603 are closed.

There is no frequency-converting module between the OSCILLATOR (VCO) and the PHASE DETECTOR so that the output frequency (VCO frequency) and the input frequency are identical.

MOS switch N700 permits to switch the loop bandwidth between 1 kHz and 100 kHz. There are three modes of switching:

MODE 1: If BAND=1 is set by the controller, the bandwidth is set to 100 kHz.

MODE 2: If BAND=0 and AUTO=1 are set by the controller, the bandwidth is set to 1 kHz.

MODE 3: If BAND=0 and AUTO=0 are set by the controller, the bandwidth is set to 1 kHz, however, each time the frequency is changed, it is set to 100 kHz for 250 us by the MONOFLOP in order to reduce the settling time.

MODE 3 is used in CW mode if the frequency change is greater than 3 kHz. In the case of a frequency change below 3 kHz, MODE 2 is selected, since the loop remains in the lock-in range. The narrowband control loop is used to suppress non-harmonic spurious signals in CW mode.

MODE 1 is used to suppress non-harmonic spurious signals, e.g. aliasing products above 100 kHz off the carrier in the case of digital FM modulation.

If the buffer loop is activated (PS_ON=1) but does not synchronize (VCO tuning voltage at X37 or diagnostic voltage 305 at lower or upper stop; <0 V or >21.5 V), the INTERRUPT DETECTOR causes an interrupt at the SERBUS-D1, and an error message is indicated on the instrument display.

7.2 Measuring Instruments and Accessories

- Service kit 1039.3520
- Dual-channel oscilloscope (0 to 250 MHz)
- Spectrum analyzer (1 to 100 MHz)
- Squarewave generator (100 Hz to 1 MHz) (e.g. ADS)
- Test pattern generator (e.g. ADS)
- Frequency counter (10 to 20 MHz) (included in FSA)
- Modulation analyzer (e.g. FMB)

7.3 Troubleshooting

Faulty data transmission (see 7.4.2).	Check SERBUS-D1 (D110), SERBUS BUFFER (D50) and the shift registers D150 and D155.
Clock signal at P32/P33 out of tolerance (see 7.4.4).	Check CLOCK AMPLIFIER (V220, diagnostic point 303).
Clock signal and data signal to DAC (D300) at P4/P14 and P5/P15 out of tolerance (see 7.4.5).	Check the DELAY LINE and the clock amplifier V210 (The setup and hold time can be corrected using R215 or R212 by varying the DELAY LINE delay.)
Output signal out of tolerance in CW mode (DIG. MOD OFF) (see 7.4.8).	Check whether the voltage at P6 corresponds to -9.5 ± 1 V. Check pin diode V603 and the OSCILLATOR.
Output signal out of tolerance with PS deactivated (FSK-MOD. ON) (see 7.4.8).	Check whether the voltage at P6 corresponds to 11.6 ± 1 V. Check the DDS gate array D20, pin diode V601, the DAC (D300), the ALIASING FILTER (L405) and the DDS AMPLIFIER (N400).
Phase-locked loop (buffer loop) does not synchronize (see 7.4.7.1).	Check whether jumper X36/X37 is inserted. Check OSCILLATOR (V512), clock amplifier V610 and V612, CONTROL AMPLIFIER (N700, N702, D700, V702, V704). Check whether the voltage at P6 is $-9.5 \text{ V} \pm 1 \text{ V}$, check pin diodes V603, V600 and V601. Check whether the voltage at P9/P8 is $24 \text{ V} / 0 \text{ V} \pm 1 \text{ V}$ or $0 \text{ V} / 24 \text{ V} \pm 1 \text{ V}$.
The error message "Digital synthesis buffer VCO unlocked" is indicated (see 7.4.10).	Check whether is phase-locked loop synchronizes (voltage at P7 1 V to 21 V , diagnostic point 305). If not, see the above paragraph. Check the INTERRUPT DETECTOR (N120, V150).

7.4 Checking and Adjustment

Preliminary remark:

For service operation, unscrew the upper cover, insert the service adapter into the location instead of the module and plug the module onto the adapter. After the RF connections have been restored, the module is ready for use again.

7.4.1 Testing the Current Consumption

The current consumption of the module can be checked by replacing coils L80, L82, L76, L78 and resistor R48 by an ammeter each. The nominal values for the respective supply voltages are to be obtained from section 7.6.

7.4.2 Testing the Data Transmission

- Unscrew the cover on the solder side and check the voltages according to the following table.

Setting	D150							
	Pin							
	4	5	6	7	14	13	12	11
PRESET	0	0	0	0	x	0	0	1
DIG.MOD-FSK-SOURCE-PRBS	x	x	x	x	x	0	1	1
DIG.MOD-GFSK-SOURCE-PRBS	x	x	x	x	x	0	0	0
DIG.MOD-FSK-SOURCE-PRBS -POLARITY-INV	x	x	x	x	x	1	1	1

- Fasten the cover on the solder side again.

7.4.3 Testing the Voltage Regulators

- Remove the DM-CODER option, if fitted, so that test points P20 and P21 are accessible.
- ▶ The voltage at test point P20 must be +5 V ±0.15 V.
- ▶ The voltage at test point P21 must be -5 V ±0.15 V.

7.4.4 Testing the Clock Signal to the DDS-GA D20

- Connect oscilloscope to P32/P33 (signal/ground) (50 Ω).
- ▶ A periodic AC voltage with the frequency 50 MHz, the maximum voltage above 0.19 V and the minimum voltage below 0.048 V must be measured (There is a 1-kΩ series resistor between signal and test point).

7.4.5 Testing the Digital Signals at the D/A-Converter (DAC, D300)

- Setting: FREQUENCY 1350.8MHz

- Connect the oscilloscope with channel1 to P4/P14 (clock signal) and channel2 to P5/P15 (data signal) and set the trigger threshold for the clock signal to -40 mV (negative-edge triggering, impedance 50 Ω).
- ▶ The data signal should appear as an eye pattern. The HIGH level should be -40 mV \pm 7 mV at the trigger point.
- ▶ The LOW level should be -83 mV \pm 7 mV at the trigger point.
- ▶ The upper peak voltage of the clock signal should be $>$ -10 mV and the lower peak voltage $<$ -110 mV.
- ▶ The SETUP time and the HOLD time of the data signal referred to the trigger point (data acquisition) should be $<$ 5 ns.

7.4.6 Adjustment of OSCILLATOR

Fasten a special cover with screws on the component side so that chamber A and F and thus various test points remain freely accessible. For adjustment of L507 and L506, this cover features two holes. It will be referred to as OSCILLATOR cover in the following.

- Setting: FREQUENCY 1000MHz
- Remove jumper X36/X37 and apply DC voltage to X37.
- Connect spectrum analyzer to X89 (FDDS).
- ▶ Alternately adjust the oscillator according to the following table. The intended frequency values are 10.3 and 15.6 MHz. If these values cannot be obtained, the specified tolerance range is to be observed, and, if possible, the same frequency error should be obtained at both trimmers.
In the case of trimmer OSZ3, either L506 or L507 or both coils can be adjusted.

Voltage X37	Trimmer	Nom. frequency at X89
18 V	OSZ3(L506/L507)	15.6 ... 15.9 MHz
1.6 V	OSZ4 (R433)	10 ... 10.3 MHz

- Replace jumper X36/X37.

7.4.7 Testing the BUFFER LOOP

7.4.7.1 Static Response

- The OSCILLATOR cover must be fastened with screws.
- Setting: FREQUENCY 1350.2/1351.4 MHz
- ▶ The voltage at P7 must be 14.6/18.0 +-1 V.

7.4.7.2 Transient Response

- Remove the DATA CODER option so that test point P28 becomes accessible.
- The OSCILLATOR cover must be fastened with screws.
- Connect an oscilloscope to P35 (PD signal), which is triggered with the FRS signal at P28 (negative edge, trigger threshold 3 V).
- Setting: FREQUENCY acc. to table
 (narrowband PS)
- ▶ When the frequency changes from 1350.2 to 1351.4 MHz and vice versa, the voltage at P35 must be below 0.1 V 3 ms after triggering.
- Testing with a DATA CODER fitted.
- Setting: FREQUENCY acc. to table
 DIGITAL MOD - 4FSK - SOURCE EXT
 (broadband PS)
- ▶ When the frequency changes from 1350.2 to 1351.4 MHz and vice versa, the voltage must be below 0.1 V 70 us after triggering.

7.4.7.3 Transmission Response

- The DATA CODER option must be fitted.
- The OSCILLATOR cover must be fastened with screws.
- Connect a modulation analyzer to X89 (FDDS) (e.g. FMB) and cut in a 23-kHz lowpass.
- Setting: FREQUENCY 835MHz
 DIGITAL MOD - 4FSK - SOURCE DATA (broadb. PS)
 -FILL-LIST DATA "1000"
- ▶ The FM-demodulated signal must feature a peak deviation of 4.6875 kHz +-1% and a modulation frequency of 1.5625 kHz +-1%. There must not be any overshoots.

7.4.8 Testing the Output Signal in CW Mode

- The OSCILLATOR cover must be fastened with screws.

- Connect a spectrum analyzer to output X89 (FDDS).

- Setting: **FREQUENCY acc. to table**
 DIGITAL MOD - FSK - SOURCE EXT/OFF
 - DEVIATION 0Hz

▶ Set various frequencies according to the following table and check the frequency for SOURCE EXT and SOURCE OFF at the output.

FREQUENCY/MHz	1350.2	1351.4
Nom. freq./MHz±1kHz	14.351	15.551

▶ The level must be 2 ±1.5 dBm and the harmonics suppression <-40 dBc.

▶ Check nonharmonic spuria according to the following table:

FREQU. in MHz	EXT / OFF	Carrier frequency in MHz	Offset frequency in MHz	Nonharm. spuria in dBc
1350.69275	EXT	14.84375±0.1	±1.5625	<-66
1350.69275	OFF	14.84375±0.0001	±1.5625	<-80
1351.27869	EXT	15.4296875±0.1	±1.5625	<-66
1351.27869	OFF	15.4296875±0.0001	±1.5625	<-80
835.1	EXT	15.1±0.1	±0.2	<-66
835.1	OFF	15.1±0.0001	±0.2	<-80

7.4.9 Testing the Interrupt Function

- Setting: **FREQUENCY 1000MHz**
- ▶ Remove jumper X36/X37. The error message "Digital synthesis buffer VCO unlocked" must be displayed.

7.4.10 Testing the Diagnosis

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- Setting: **FREQUENCY 1000MHz**
 UTILITIES - DIAG - TPOINT...

TPOINT	Test point	Factor	Nom. voltage
300	+15V supply	4	14...16 V
301	DCOD, OSC.tun. volt.	5	-100...100 mV
302	DCOD, OSC. level	1	-20...20 mV
303	DDS-GA clock level	1	0.5...1.5 V
304	Level at outp. FDDS	1	50...200 mV
305	OSC. tuning voltage	5	12...20 V
306	-15-V supply	4	-14...16 V
307	+7.5-V supply	2	14...16 V

7.4.11 Testing the CODAM Line

- Connect a signal generator (50 Ω) to X3.19/20 (SIG/GND) and apply 10 MHz/10 dBm.
- Connect a spectrum analyzer to X80.9/11 (SIG/GND) and set CENTER 10 MHz.
- ▶ The level to be measured at 10 MHz must be 4 dBm \pm 2 dB.

The module can be removed from its location after opening the instrument, unlocking the modules and loosening the RF connections at X81 and X89. The screening covers of the module are conventionally fastened with screws.

7.5 Removal and Assembly

The module can be removed from its location after opening the instrument, unlocking the module and loosening the RF connections at X81 and X89. The screening covers of the module are conventionally fastened with screws.

7.6 Interface Description

Pin	Name	Inp./Output	Origin/Destination	Value range	Signal description
X80.A12	SERBUS-CLK	Input	A3, FRO X50.40	HCMOS level	Serbus clock
X80.A14 X80.A15	SERBUS-DAT	bidir.	A3, FRO X50.39	HCMOS level	Serbus data
X80.A17	SERBUS-INT	Output	A3, FRO X50.38	HCMOS level	Serbus interrupt
X80.A18	RES-P	Input	A3, FRO X50.28	HCMOS level	Serbus reset
X80.A19	DIAG-5V	Output	A3, FRO X50.44	-5V...5V	Diagnosis
X80.A24	VA15-P	Input	A2, POWS1	14.80V...15.75V 44...66mA	Supply voltage analog
X80.A26	VA7.5-P	Input	A2, POWS1	7.45V...7.95V 328...500mA	Supply voltage analog
X80.A28	VD-5P	Input	A2, POWS1	5.10V...5.25V 0...10mA	Supply voltage digital
X80.A30	VA15-N	Input	A2, POWS1	-15.75V...-14.85V 208...310mA	Supply voltage analog
X80.A1	DATACLK	bidir.	A3, FRO	HCMOS level	Data clock of DATA CODER
X80.A2	DATA	bidir.	A3, FRO	HCMOS level	Data signal of DATA CODER
X80.A3	BURST	bidir.	Rear panel	HCMOS level	BURST signal of DATA CODER
X80.A9	CODAM	Output	A10, OPU1	-1V...+1V	AM signal from DATA CODER
X80.A32	LSWI	Output	A10, OPU1	HCMOS level	LEVEL-SWITCH signal to OPU
X81	REF50	Input	A5, MGEN X99	9dBm+-2dB	RF input, reference signal
X89	FDDS	Output	A9, SUM, X51	2dBm+-2dB	RF output, DDS signal

**Schaltteillisten
numerisch geordnet
Part lists
in numerical order
Listes des pièces détachées
par numéros de référence**

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Kennz. Comp. No.	Benennung Designation			Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C50	CE 4,7UF+-10% 10V 3528 TANTALUM SMD-CAPACITOR			CE 0007.7275.00	KEMET	T491 B 475 K 010 AS	
C77	CE 47UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR			CE 0008.7479.00	PANASONIC	ECA-1HFG470I	
C79	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR			CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C81	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR			CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C83	CE 100UF+-20%25V RM2.5 ELECTROLYTIC CAPACITOR			CE 0008.7891.00	PANASONIC	ECA-1EFG101I	
C100	CE 100UF+-20%6,3V AL-CHIP SMD-ELECTROLYTIC CAPACIT.			CE 0008.1841.00	VALVO	TYP 222 139 63101	
C102	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR			CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C110	CE 100UF+-20%6,3V AL-CHIP SMD-ELECTROLYTIC CAPACIT.			CE 0008.1841.00	VALVO	TYP 222 139 63101	
C111	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C112	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C114	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C129	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C130	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C131	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C132	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C133	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C134	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C135	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C150	CE 10UF+-20%50V ALU-CHIP SMD-ELECTROLYTIC CAPACIT.			CE 0008.1812.00	VALVO	TYP 2222 139 61109	
C162	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C168	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C180	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C182	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C186	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C200	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR			CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C202	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C203	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C204	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C205	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C210	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C212	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C214	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR			CE 0007.7246.00	KEMET	T491D106K025AS	
C216	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C218	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C219	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR			CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C220	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C222	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C230	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C231	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR			CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

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ROHDE & SCHWARZ

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Schaltteilleiste für
Parts list for

EE DIGITALE SYNTHESE

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C232	CC 2,2PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8171.00	MURATA	GRM42-6COG 2R2 C5OPT	
C233	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C300	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C302	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C304	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C306	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C308	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C310	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C312	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C402	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C403	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C404	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C405	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C406	CC 180PF+-1%50V NPO 1206 CHIP CAPACITOR	CC 0099.8844.00	PHILIPS_CO	2238 863 18181	
C407	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
C408	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	PHILIPS_CO	2238 863 18331	
C409	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C410	CC 390PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8880.00	PHILIPS_CO	2238 863 18391	
C411	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C412	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C414	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C420	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C500	CC 270PF+-5% 200V PELL CAPACITOR TRIMMWERT/SELECTED"	CC 0556.8730.00	TEKELEC	201 CHB 271J WL	
C502	CC 56PF+-5% 500V PELL CAPACITOR	CC 0556.8660.00	TEKELEC	501 CHB 560 J(W/V)LE	
C505	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C506	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C508	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C510	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C512	CC 39PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8796.00	MURATA	GRM42-6COG 390F 50PT	
C514	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C516	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C518	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C519	CE 10UF +-10% 25V 7343 TANTALUM SMD-CAPACITOR	CE 0007.7246.00	KEMET	T491D106K025AS	
C600	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C602	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C604	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C620	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C621	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	

1GPK	502	3PU-D	AI	Datum Date	Schaltteilleiste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
				19	04.02.98	EE DIGITALE SYNTHESE	1038.7344.01 SA 2+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C622	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C623	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C624	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C625	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C626	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C627	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C628	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	PHILIPS_CO	2238 863 18331	
C629	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C630	CC 2,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8171.00	MURATA	GRM42-6COG 2R2 C5OPT	
C631	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C640	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C641	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C642	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C646	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C647	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C648	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C662	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C663	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C5OPT	
C700	CE 47UF+-20%50V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7479.00	PANASONIC	ECA-1HFG470I	
C701	CE 220UF+-20%10V RM2,5 ELECTROLYTIC CAPACITOR	CE 0008.7927.00	PANASONIC	ECA 1 AFG 221 I	
C702	CK 22NF +-1% 63V RM5 KP POLYPROPYLENE CAPACITOR	CK 0007.7675.00	ROEDERSTEI	KP1830-322 06 1 3 W	
C703	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C705	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C706	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C710	CC 68PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8815.00	MURATA	GRM42-6COG 680F 50PT	
D20	BG L5A8836 DDS GA ASIC IC GATE-ARRAY	1036.4325.00	LSI_LOGIC	R&S-SACHNR.	
D50	BL PC74HCT125T 4XBUFF. 3S QUAD LINE DRIVER	BL 0007.5395.00	PHILIPS_SE	(PC)74HCT125(D/T)	
D110	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	0008.6143.00	THESYS	TH3032.1C	
D112	BG TH3032.1C SERBUSD ASIC IC GATE ARRAY	0008.6143.00	THESYS	TH3032.1C	
D120	BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER	BL 0007.6340.00	PHILIPS	(PC)74HCT132(D/T)	
D125	BL PC74HCT132T 4X2IN SCHM NAND SCHMITT TRIGGER	BL 0007.6340.00	PHILIPS	(PC)74HCT132(D/T)	
D130	BL PC74HCT4051T 8CH.A.MUX ANALOG MULTIPLEXER	BL 0007.6827.00	PHILIPS	(PC)74HCT4051(T)	
D135	BL 74ACT86SC 4X 2IN-EXOR QUAD 2-INPUT EXOR GATE	BL 2005.4307.00	HARRIS	(CD74)ACT86(M)	
D150	BL PC74HCT4094T 8ST.SHREG SHIFT REGISTER	BL 0007.6885.00	PHILIPS	(PC)74HCT4094(D)	
D155	BL PC74HCT4094T 8ST.SHREG SHIFT REGISTER	BL 0007.6885.00	PHILIPS	(PC)74HCT4094(D)	
D175	BL PC74HC4538T 2X MULTIV DUAL MULTIVIBRATOR	BL 6014.4382.00	PHILIPS_SE	(PC)74HC4538(T)	
D300	BJ CX20201A-1 MPY 10B-DAC IC DIGITAL/ANALOG CONV	1039.1340.00	HARRIS	HI20201JCB	
D600	BL 74AC74SC 2XD-FLIPFL DUAL D-TYPE FLIPF	BL 0820.3602.00	NSC	74AC74(SC)	

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	ROHDE & SCHWARZ	19	04.02.98	EE DIGITALE SYNTHESE	1038.7344.01 SA	3+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
D700	BS SD5400CY 4X ANALOGSCH QUAD ANALOG SWITCH	0351.0000.00	SILICONIX	SD5400CY	
L76	LD 150UH BEI 0,17A 6,20HM CHOKE	LD 0026.4055.00	DALE	IM 6	
L78	LD 150UH BEI 0,17A 6,20HM CHOKE	LD 0026.4055.00	DALE	IM 6	
L80	LD 3,3UH BEI 1,63AO,160HM CHOKE	LD 0026.4061.00	DALE	IM 6	
L82	LD 15UH 10% 1R2 0,46A CHOKE	LD 0026.4149.00	DALE	IM 6	
L110	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L135	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L150	LD 100UH 10% 0,06A 1210 SMD-INDUCTOR	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	
L200	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L201	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L202	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L204	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L206	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L208	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L210	LD 4,70UH10%,1,200HMO,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L212	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L214	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L216	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L300	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L302	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L304	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L306	LD 1UH 10% 0,38A 1210 SMD-INDUCTOR	LD 6006.0130.00	SIEMENS	B82422-A1102-J(K)100	
L403	LD 0,39UH10%,300HMO,710A CHOKE	LD 0067.2811.00	DALE	IM2	
L405	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L406	LD 0,22UH10%,140HM1,045A CHOKE	LD 0067.2786.00	DALE	IM2	
L408	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L500	LD 56,0UH10%,5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L502	LD 56,0UH10%,5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L504	LD 22,0UH10%,3,300HMO,114A CHOKE	LD 0067.3024.00	DALE	IM2	
L506	LD 530NH 9,5W CM19P FE-K COIL	0817.0058.00	TOKO	E526 HN-100109	
L507	LD 530NH 9,5W CM19P FE-K COIL	0817.0058.00	TOKO	E526 HN-100109	
L508	LD 56,0UH10%,5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L514	LD 2,70UH10%,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L516	LD 1,50UH10%,220HMO,560A CHOKE	LD 0067.2886.00	DALE	IM2	
L600	LD 10UH 10% 0,18A 1210 SMD-INDUCTOR	LD 0007.9255.00	SIEMENS	B82422-A1103-J(K)100	
L602	LD 560NH 5% OR5 0,495A CHOKE	0300.9752.00	DALE	IM 2	
L603	LD 560NH 5% OR5 0,495A CHOKE	0300.9752.00	DALE	IM 2	
L700	LD 100UH 10% 0,06A 1210 SMD-INDUCTOR	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L701	LD 100UH 10% 0,06A 1210 SMD-INDUCTOR	LD 0007.9261.00	SIEMENS	B82422-A1104-J(K)100	
L705	LD 56,0UH10%5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
N100	BO LM2940CT LOWDROP+VREGL VOLTAGE REGULATOR	BO 0350.5809.00	NSC	LM2940CT-5.0	
N110	BO UA7905UC -5V1AO VREGL VOLTAGE REGULATOR	BO 0282.5449.00	NSC	LM7905 CT	
N120	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N130	BO LM2903D 2XLP COMPAR DUAL	0520.7734.00	SIGNETICS	LM2903(D)	
N400	BM MAR8 MMIC BROADBAND AMPLIFIER	0656.4720.00	MINI-CIRCU	MAR8	
N600	BO MC1458D 2X OPAMP OPERATION AMPLIFIER	0007.3763.00	SIGNETICS	MC1458(D)	
N700	BO NE5534D OPAMP OPERATIONAL AMPLIFIER	0815.7555.00	SIGNETICS	NE5534(D)	
N702	BO AD829JR 1XLOLN OPAMP IC OPAMP	1036.4254.00	ANALOG_DEV	AD829JR	
P1	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P2	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P3	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P4	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P5	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P6	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P7	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P8	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P9	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P10	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P11	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P12	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P13	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P14	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P15	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P16	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P17	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P18	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P20	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P21	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P22	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P23	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P24	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P27	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P28	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P29	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P30	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P32	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	

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P33	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
P34	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P35	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P39	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P40	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P41	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P42	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P43	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
P44	VL STECKLOETOESE 7,5X1,1 PLUG-IN SOLDERING LUG	VL 0078.2747.00	-	R&S-ZCHNG.078.2747	
R48	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R49	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R50	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R51	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R52	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
..61	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R64	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R65	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R66	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R67	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R68	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R69	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R70	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R71	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R72	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R73	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R74	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R75	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R93	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R94	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R96	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R101	RG 909 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7265.00	ROEDERSTEI	D25	
R102	RG 909 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7265.00	ROEDERSTEI	D25	
R103	RG 909 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7265.00	ROEDERSTEI	D25	
R104	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R106	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R108	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R110	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R112	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R114	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	

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Kennz. Comp. No.	Benennung Designation		Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R117	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R118	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R119	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R121	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R124	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R128	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R129	RG 47,5KOHM+-1%TK100	1206	RG 0007.5950.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R130	RG 2,7MOHM+-5%TK200	1206	0007.9984.00	ROEDERSTEI	D 25	
	CHIP RESISTOR					
R131	RG 27,4KOHM+-1%TK100	1206	RG 0007.5895.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R132	RG 27,4KOHM+-1%TK100	1206	RG 0007.5895.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R133	RG 27,4KOHM+-1%TK100	1206	RG 0007.5895.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R134	RG 27,4KOHM+-1%TK100	1206	RG 0007.5895.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R135	RG 27,4KOHM+-1%TK100	1206	RG 0007.5895.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R136	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R137	RG 47,5 OHM+-1%TK100	1206	RG 0007.5566.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R140	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R142	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R143	RG 47,5 OHM+-1%TK100	1206	RG 0007.5566.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R144	RG 47,5 OHM+-1%TK100	1206	RG 0007.5566.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R145	RG 47,5 OHM+-1%TK100	1206	RG 0007.5566.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R146	RG 47,5 OHM+-1%TK100	1206	RG 0007.5566.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R148	RG 47,5 OHM+-1%TK100	1206	RG 0007.5566.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R149	RG 10,0KOHM+-1%TK100	1206	RG 0007.0793.00	PHILIPS_CO	RC02	
	RG CHIP RESISTOR					
R150	RG 27,4KOHM+-1%TK100	1206	RG 0007.5895.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R151	RG 12,1KOHM+-1%TK100	1206	RG 0007.0841.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R152	RG 100,0KOH+-1%TK100	1206	RG 0007.1948.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R153	RG 130,0KOH+-1%TK100	1206	RG 0007.5966.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R154	RG 0-OHM WIDERSTAND-CHIP		RG 0007.5108.00	DRALORIC	CR 1206	
	RESISTOR CHIP 0-OHM					
R155	RG 100 OHM+-1%TK100	1206	RG 0006.8884.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R156	RG 100,0KOH+-1%TK100	1206	RG 0007.1948.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R157	RG 33,2KOHM+-1%TK100	1206	RG 0007.5914.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R158	RG 10,0KOHM+-1%TK100	1206	RG 0007.0793.00	PHILIPS_CO	RC02	
	RG CHIP RESISTOR					
R159	RG 90,9KOHM+-1%TK100	1206	RG 0007.1931.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R160	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R161	RG 1,0 KO +-1%TK100	1206	RG 0006.7271.00	PHILIPS_CO	RC02	
	CHIP RESISTOR					
R162	RG 33,2KOHM+-1%TK100	1206	RG 0007.5914.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R163	RG 100,0KOH+-1%TK100	1206	RG 0007.1948.00	ROEDERSTEI	D25	
	CHIP RESISTOR					
R164	RG 33,2KOHM+-1%TK100	1206	RG 0007.5914.00	ROEDERSTEI	D25	
	RESISTOR CHIP					
R165	RG 562 KOHM+-1%TK100	1206	RG 0007.6091.00	ROEDERSTEI	D25	
	RESISTOR CHIP					

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R166	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R167	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R168	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R169	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R170	RG 562 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.6091.00	ROEDERSTEI	D25	
R171	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R172	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R174	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R175	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R176	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R177	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R178	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R179	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R180	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R181	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R182	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R183	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R184	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R185	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R186	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R187	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R188	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R189	RG 2,7MOHM+-5%TK200 1206 CHIP RESISTOR	0007.9984.00	ROEDERSTEI	D 25	
R190	RG 2,7MOHM+-5%TK200 1206 CHIP RESISTOR	0007.9984.00	ROEDERSTEI	D 25	
R191	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R192	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R193	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R194	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R195	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R196	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R197	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R198	RG 33,2KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5914.00	ROEDERSTEI	D25	
R200	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R201	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R202	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R203	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R204	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R205	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R206	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R207	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R210	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R211	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R212	RG 22,1KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5872.00	ROEDERSTEI	D25	
R215	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	ROEDERSTEI	D25	
R216	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R218	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R220	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R222	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R224	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R226	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R228	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R240	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R241	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R242	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R243	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R244	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R245	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R246	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R247	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R248	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R249	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R250	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R252	RN 9X330 OHM+-2%SIL10 H5 RESISTOR NETWORK	0379.8306.00	BI_TECHNOL	L 10 1 S 331 M*	
R253	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R256	RN 9X330 OHM+-2%SIL10 H5 RESISTOR NETWORK	0379.8306.00	BI_TECHNOL	L 10 1 S 331 M*	
R257	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R260	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R261	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R262	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R263	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R264	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R265	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R266	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R267	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R268	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R269	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R270	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R271	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	

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R272	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R273	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R274	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R277	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R300	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R302	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R304	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	PHILIPS_CO	RC02	
R306	RG 2,74KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5766.00	PHILIPS_CO	RC02	
R310	RG 8,25KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0770.00	ROEDERSTEI	D25	
R312	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R314	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R400	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R401	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R402	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R403	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R404	RG 1,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9951.00	ROEDERSTEI	D25	
R405	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25	
R406	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R407	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R408	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R409	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R420	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R424	RG 27,4KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5895.00	ROEDERSTEI	D25	
R433	RS 0,5W50KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 0087.7677.00	SPECTROL	63X ... TO10	
R502	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R503	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R504	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R505	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R506	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R510	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R512	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R514	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R516	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R518	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R519	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R520	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R521	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R600	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R601	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	

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R602	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R603	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R604	RG 68,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.1902.00	ROEDERSTEI	D25	
R605	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R606	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R607	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R610	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R611	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R612	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R614	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R618	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R619	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R620	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R630	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R631	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R632	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R633	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R634	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R635	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R636	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R637	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R640	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R641	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R642	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R643	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R646	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R647	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R650	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25	
R652	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R653	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R702	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R704	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R705	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R706	RG 24,3KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5889.00	ROEDERSTEI	D25	
R707	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R708	RG 0-OHM WIDERSTAND-CHIP RESISTOR CHIP 0-OHM	RG 0007.5108.00	DRALORIC	CR 1206	
R709	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R710	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R712	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	

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R713	RG 10,OKOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RCO2	
R715	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R716	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R717	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
T200	LU HF-UEBERTR. 0,2-350MHZ WIDE-BAND TRANSFORMER	0276.3619.00	MINI-CIRCU T	4-1 W38	
V100	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V102	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V104	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V150	AM BSS123 N-E 100V MOSF FET	0815.7961.00	SIEMENS	BSS 123 E-6327	
V152	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V153	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V154	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V200	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V202	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V204	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V206	AE BB620 45/03PF CDI TUNING DIODE	0848.5251.00	SIEMENS	BB620	
V210	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V220	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V222	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V500	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V501	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V502	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V503	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V504	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V505	AE BB130PAAR 300/22PF CDI TUNING DIODE (PAIR)	0372.2231.00	PHILIPS	BB130/PAAR	
V507	AE BB212 2X500/22PF CDI TUNING DIODE	0373.6901.00	PHILIPS_SE	BB212	
V510	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V512	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V514	AK BFQ81 N 16V 30MA TRANSISTOR	0920.1717.00	SIEMENS	BFQ81	
V516	AK BCX71J P 45V 200MA TRANSISTOR	AK 0007.2096.00	VALVO	BCX71J GEGURTET	
V518	AK BCX71J P 45V 200MA TRANSISTOR	AK 0007.2096.00	VALVO	BCX71J GEGURTET	
V600	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V601	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V603	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V605	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V610	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V612	AK BFS17 N 30V 50MA TRANSISTOR	AK 0010.6460.00	VALVO	BFS17	
V614	AD BAS16 75V UDI DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	

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Kannz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V615	AD BAS16 75V UDI DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V702	AK BC850B N 45V 200MA TRANSISTOR	AK 0007.7969.00	VALVO	BC850B	
V704	AK BC860B P 45V 200MA TRANSISTOR	AK 0007.7975.00	MOTOROLA	BC860B	
V708	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
X1	FP STIFTLISTE 20P.2REIH. CONNECTOR 20P.	FP 0520.6521.00	BINDER	11-0209-00-20	
X2	FP STIFTLISTE 20P.2REIH. CONNECTOR 20P.	FP 0520.6521.00	BINDER	11-0209-00-20	
X3	FP STIFTLISTE 20P.2REIH. CONNECTOR 20P.	FP 0520.6521.00	BINDER	11-0209-00-20	
X36	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X37	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X38	VL EINPRESSTIFT L=6,8 PIN	VL 0010.7250.00	AMP	1-928776-5	
X80	FP STECKERLEISTE 32POL. CONNECTOR 32P.	FP 0008.5718.00	DEUT_ELCO	16 8457 064 002 027	
X81	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X89	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
Z52	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z54	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z56	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z58	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z60	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z64	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z66	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z68	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z70	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z72	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z74	LD SMD-T-FILTER 100PF SMD-FILTER	1039.1356.00	MURATA	NFM61ROOT101T1	
Z76	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z78	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z80	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	
Z82	LD SMD-T-FILTER 3,3NF SMD-FILTER	1039.1362.00	MURATA	NFM61R20T332T1	

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XY-Liste

XY List

Erklärung der Spaltenbezeichnungen:

- Part:** Bauelement-Kennzeichen.
- Side:** Leiterplatten-Seite, auf der sich das Bauelement befindet.
- X/Y:** Koordinaten (Millimeter) des Bauelementes auf der Leiterplatte bezogen auf den Nullpunkt.
- SQR, PG:** Planquadrat und Seite des Schaltbildes für das jeweilige Bauelement.

Explanation of column designations:

- Part:** Identification of instrument part.
- Side:** Side of the PC board on which instrument part is positioned.
- X/Y:** Coordinates (millimeter) of the component on the PC board in reference to zero point.
- SQR, PG:** Square and page of the diagram for the respective instrument part.

Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg	Part	Side	X	Y	Sqr	Pg
R505	B	269	48	11E	4	R643	B	238	12	3F	4	V502	B	222	68	8B	4
R506	B	272	44	11E	4	R646	B	217	18	4E	4	V503	B	224	55	7B	4
R510	B	244	55	11C	4	R647	B	215	14	5E	4	V504	B	227	68	8B	4
R512	B	250	51	11C	4	R650	B	212	24	4E	4	V505	B	229	55	7B	4
R514	B	255	54	10C	4	R652	A	261	30	6B	4	V507	B	236	74	8C	4
R516	B	255	59	10C	4	R653	A	269	28	6B	4	V510	B	257	65	10D	4
R518	B	261	63	11C	4	R702	A	177	64	6E	4	V512	B	252	65	10C	4
R519	A	257	42	11B	4	R704	A	179	67	6E	4	V514	B	257	63	10C	4
R520	B	258	48	10B	4	R705	A	186	67	6E	4	V516	B	258	52	10B	4
R521	B	247	45	9B	4	R706	A	179	64	6E	4	V518	B	250	47	10B	4
R600	A	247	34	2C	4	R707	A	186	64	6E	4	V600	B	289	35	3B	4
R601	A	247	27	2C	4	R708	A	187	69	7E	4	V601	B	294	35	3B	4
R602	A	252	42	2C	4	R709	A	179	54	5D	4	V603	B	283	32	4B	4
R603	A	252	33	2B	4	R710	A	203	73	8D	4	V605	A	276	14	5B	4
R604	A	255	22	3C	4	R712	A	196	75	7E	4	V610	B	237	16	3E	4
R605	A	266	22	3B	4	R713	A	190	77	8E	4	V612	B	237	34	3D	4
R606	A	281	25	3B	4	R715	A	197	56	7D	4	V614	B	216	22	4E	4
R607	B	278	24	3B	4	R716	A	194	60	6D	4	V615	B	216	28	4E	4
R610	B	286	37	3B	4	R717	A	199	56	6D	4	V702	A	196	64	7D	4
R611	B	293	33	3B	4	T200	B	235	92	4B	3	V704	A	200	64	7C	4
R612	B	286	30	4B	4	V100	A	154	51	4E	2	V708	B	179	56	6D	4
R614	A	274	17	5B	4	V102	A	159	51	4E	2	Z52	B	141	35	3F	2
R618	B	272	30	4C	4	V104	A	149	51	4E	2	Z54	B	136	35	3E	2
R619	B	268	33	4C	4	V150	A	103	122	9C	2	Z56	B	151	35	3E	2
R620	B	265	30	4C	4	V152	A	103	73	10E	2	Z58	B	156	35	3D	2
R630	B	250	33	2D	4	V153	A	105	75	10E	2	Z60	B	146	35	3D	2
R631	B	244	30	2D	4	V154	A	125	120	9E	2	Z64	B	110	35	3C	2
R632	B	237	30	3D	4	V200	B	185	88	2C	3	Z66	B	121	35	3C	2
R633	B	238	36	3E	4	V202	B	195	88	2C	3	Z68	B	126	35	3B	2
R634	A	225	34	3F	4	V204	B	205	88	2B	3	Z70	B	131	35	3B	2
R635	A	222	34	4F	4	V206	B	215	88	2B	3	Z72	B	116	35	3B	2
R636	B	220	31	4D	4	V210	B	228	96	3A	3	Z74	B	105	35	3A	2
R637	B	220	37	5D	4	V220	B	191	136	5D	3	Z76	B	177	35	3C	5
R640	B	250	16	2E	4	V222	A	189	134	6E	3	Z78	B	182	35	3B	5
R641	B	244	18	2E	4	V500	B	217	68	8B	4	Z80	B	96	23	3E	5
R642	B	237	18	3E	4	V501	B	218	55	7B	4	Z82	B	96	28	3D	5

ROHDE & SCHWARZ	-I	Datum Date	XY-Liste für XY-list for	Sach-Nummer Stock-Nr	Blatt Page
	04	22.11.94	EE DIGITALE SYNTHESE DIGITAL SYNTHESIS	1038.7344.01 XY	4-

Stromläufe
Bestückungspläne
Circuit diagrams
Components plans
Schémas de circuit
Plans des composants

