



ROHDE & SCHWARZ

SERVICE DOCUMENTS

Fixed Frequencies

819.6060.02

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5 Service Manual "Fixed Frequencies"

5.1 Function Description

(See circuit diagrams 819.6060 S and 819.0010 S, sheet 1)

The "fixed frequencies" subassembly generates the reference frequency for all SMGU/SMHU sub-assemblies. The subassembly consists of an oven-controlled, highly-stable 10-MHz crystal oscillator, which generates the reference frequency for the instrument. The 40 and 130-MHz crystal oscillators are each synchronized to this frequency by means of a PLL. The 130-MHz and the 520-MHz frequencies (4 x 130 MHz) are used in the output section as the LO for the mixing range. The 300-MHz signal for the summing loops is generated by doubling the 130-MHz signal mixing it with the 40-MHz crystal signal for CW or the 40-MHz FM oscillator for FM.

5.1.1 10-MHz OCXO

The module G10 contains a 10-MHz oven-controlled crystal oscillator. This gives a good temperature stability and good long-term characteristics.

The power supplies to the oven and the oscillator circuit are separate, the oven being permanently supplied by the +12 V standby voltage. This means that the oven does not have to heat up when the instrument is switched on (duration approx. 5 min.). The bridge voltage of the thermostat can be tapped at G10.4 for monitoring purposes and can be polled by the diagnostics function (test point SF 133) via the voltage follower N30-A. The processor also controls the "Oven cold" display using this voltage. The supply voltage for the crystal oscillator is generated by the voltage stabilizer V10. This is derived via V11 if an external reference is used.

There is a 10-MHz signal at terminal G10.1.

The frequency is adjusted using an externally-accessible trimmer.

5.1.2 40-MHz Crystal Oscillator with Buffer Stages and Control

5.1.2.1 40-MHz Crystal Oscillator

The 40-MHz crystal oscillator uses a common-base transistor circuit (V305). This gives the highest possible crystal and the lowest possible oscillator phase noise. The amplitude of the oscillations is stabilized by the biased Schottky diode V306. The four tuning diodes V300 to 303 in a push-pull circuit are used to tune the crystal frequency. The supply voltage to the crystal oscillator is also filtered via the emitter follower V310. A buffer stage in the common-base circuit (V315) decouples the oscillator from the following stages and increases the output power to 13 dBm.

5.1.2.2 40-MHz Amplifier

The output signal of the oscillator buffer stage is applied via a power divider (L320) to four amplifiers based on a FET in gate configuration. Diagnostics detectors (SF 138 to 140) are present on the three output stages (V330, 340, 350) for level monitoring. The fourth stage with V360 controls an ACMOS gate (D401) which generates the level for the following frequency divider.

5.1.2.3 40-MHz Amplifier PLL with Reference Switchover

A PLL locks the 40-MHz crystal oscillator onto the output frequency of the OCXO or - with the setting "Ref. ext." to the applied reference frequency. The 40-MHz signal is divided down to 5 MHz in divider D400 and compared in phase detector D50 with the frequency of the OCXO divided by two (D20, 21-A).

The output signal of D50 tracks the oscillator frequency via the differential amplifier N50-A with the following PI controller. The output voltage of the PI controller is monitored by the alarm detector N90-C/D (Err 40) and can also be interrogated by a diagnostics test point (SF 134).

The bandwidth of the PLL can be changed using plug-in jumper X55 and thus matched to the requirements in the "Ref. ext." mode:

- X55A-B 1 Level bandwidth 100 Hz, e.g. use of a very low-noise external reference to improve the SMGU/SMHU spectrum; inherent noise of PLL approx -130 dBc/Hz at FAF = 30 Hz, referred to 10 MHz.
- X55A-B 2 Level bandwidth 10 Hz, standard setting, optimum adaptation to internal OCXO
- X55A-B 3 Level bandwidth 1 Hz, for suppression of hum sidebands and noise from the external reference outside the control bandwidth

After passing through a lowpass filter, the output signal of the OCXO in the "Ref. int." mode is available as a reference frequency at X91 and can be switched between 5 and 10 MHz using D20, 21-A (SF 13, 14). The input signal at X91 in the "Ref. ext." mode is amplified by V43 to HCMOS levels and applied to the phase detector D50 via the frequency divider D21-B with a selector for 5 or 10 MHz.

5.1.3 130-MHz Crystal Oscillator with PLL

5.1.3.1 130-MHz Crystal Oscillator

The circuit of the 130-MHz crystal oscillator corresponds to that of the 40-MHz oscillator (5.1.2.1) except that the tuning circuit only has one varicap diode and the co-compensation of the crystal is adjustable with L111.

A buffer stage with compensated feedback which amplifies the output power to 17 dBm feeds a power divider containing L130. The following stages are connected to the decoupled outputs of the divider.

5.1.3.2 130-MHz Oscillator PLL

The 130-MHz crystal oscillator is synchronized by a PLL to the 40-MHz crystal oscillator, and this in turn is locked to the 10-MHz OCXO or the external reference. Optimum phase noise for the 130-MHz signal is achieved by the cascaded control and corresponding adaptation of the bandwidths.

The signal from the 40-MHz crystal oscillator divided by four in D400, 401 is differentiated by the LC network L410, C410. The pulse stage V410 triggered by the positive edge generates a 3-ns needle pulse which the following sampling mixer uses to sample the 130-MHz signal.

The output signal tracks the 130-MHz oscillator via voltage follower N430-B and control amplifier N430-A. The output voltage of the PI controller is again monitored via an alarm comparator N40-A/B and can also be interrogated by the diagnostics function (SF 135).

A two-stage isolating amplifier (V440, 445) with common gate FETs circuit decouples the sampling mixer from the 130-MHz crystal oscillator.

5.1.4 130/520-MHz LO Signal

The 130/520-MHz signal, which is used in the output section as the LO signal for the two mixer ranges, is generated directly or by quadrupling the 130-MHz crystal oscillator.

In the direct case, the signal is applied via two diode switches (V195, 234) - with an intermediate attenuator for matching the level - to the output amplifier N240 which boosts the power to 5 dBm. The output power can be monitored using a diagnostics detector (SF 136).

The output frequency of 520 MHz is generated by a quadrupler consisting of a balancing transformer (L191, 192) with a full-wave rectifier (V200, 201). The filter L203 and the coupled bandpass filter L221, 222 suppress the resulting subharmonics ($1/2f$, $3/2f$), and the intermediate amplifier N204 compensates the loss in level in the multiplier.

The operational amplifiers N250-A/B control the diode switches of the 130 and 520-MHz branches.

5.1.5 Processing the 300-MHz Reference Signal

The 300-MHz signal is generated by mixing 260 MHz and 40 MHz, where the 260 MHz signal is obtained by doubling the frequency of the 130-MHz crystal oscillator. A two-stage IF amplifier with filter provides an output power of 5 dBm.

5.1.5.1 130/260-MHz Doubler with LO Amplifier

The frequency doubler also consists of a balance-to-unbalance transformer (L142, 143) with a full-wave rectifier. The following bandpass filter (L145, 146) suppresses the resulting subharmonics. The power amplifier with V146 controls the high-level mixer D150 with a Low power of 17 dBm.

5.1.5.2 300-MHz Amplifier with Filter

The IF amplifier has two stages with a bandpass filter between the stages and a bandpass at the output. These filters suppress the spurious signals generated during mixing.

The first stage has a common gate circuit FET (V160) which terminates the IF port of mixer D150 in 50Ω .

Input matching is adjusted by setting the drain current.

There is a coupled bandpass filter between the first and second stage which has a common-base transistor circuit (V170). This gives good decoupling between the two bandpass filters.

A diagnostics detector at the output (SF 137) is for monitoring the output power.

5.1.5.3 40-MHz Amplifier with FM/CW Selector

The FM/CW selector has two T-networks (V370-372, V375-377) for high crosstalk attenuation between the two filters.

The following amplifier is adjustable so that variations in gain in the 300-MHz IF amplifier can be eliminated.

A lowpass with a subsequent highpass/lowpass branching filter improves the harmonic ratio and terminates the RF port.

5.2 Checks and Adjustments

5.2.1 Checking the Alarm

Connect two power supply units (0 to 25 V) to X50 B-C and X43 B-C (C = ground). Set both voltages to +10 V, the display "Err 40, 41" must not light up. Then set the voltage at X50 to +0.5 V and +20.5 V, the display "Err 40" must light up in each case. Repeat the same test at X43 (Err 41).

5.2.2 Testing the 10-MHz OCO

Disconnect the SMGU/SMHU from the AC power supply for at least 15 minutes (AC power switch on rear panel) so that the crystal oven cools down. Switch on the AC supply and measure the bridge voltage using the diagnostics function.

- ▶ Diagnostics voltage (SF 133): +3.6 to +4.5 V

The display "OVEN COLD" should come on. This display should go off after a warm-up time of 2 to 5 minutes.

- ▶ Diagnostics voltage (SF 133): +5.5 to +6.5 V

Connect oscilloscope to P1 using 10:1 probe, setting on instrument: REF.EXT.

- ▶ Signal at P1: +5 V

Switch SMGU/SMHU to "REF.INT".

- ▶ Signal at P1: 10 MHz, HCMOS levels.

Connect spectrum analyzer to X91.

Setting on SMGU/SMHU:

REF.INT., SF 14 (reference frequency 10 MHz).

- ▶ Signal at X91: 10 MHz, +5 to +9 dBm, k2 k3 < 20 dBc.

Setting on SMGU/SMHU:

SF 13 (reference frequency 5 MHz).

- ▶ Signal at X91: 5 MHz, +5 to +9 dBm.

5.2.3 Testing and Trimming the 40-MHz Crystal Oscillator with PLL

5.2.3.1 Adjusting the Crystal Oscillator

Connect power supply unit (0 to 20 V) to jumper X50 B-C (C = ground), set voltage to 10 V. Connect voltmeter to P7 and spectrum analyzer to jumper X32 using the adapter cable from the service kit. Adjust L305 for minimum display on voltmeter.

- * Voltage at P7: +10.7 to +11.2 V.

Adjust L312 for max. level at X32.

Vary the voltage on the power supply unit from 1 to 20 V and observe the signal on the spectrum analyzer (span 0 to 100 MHz). The oscillation must be continuous over the tuning range and there must be no sidebands or noise peaks.

- * Signal at X32: 40 MHz, -11.5 to -8.5 dBm.

5.2.3.2 Testing the Output Amplifiers

Connect spectrum analyzer to X72, 82, 92 in succession. Adjust voltage on power supply unit to 10 V.

- * Signal at X72, 82, 92: 40 MHz, +3 to +7 dBm.

Then check the diagnostics detector.

- * Diagnostics voltage (SF 138, 139, 140): +0.3 to +1.2 V.

5.2.3.3 Testing the PLL

Disconnect power supply unit from X50, use jumper X50 to connect A-B and jumper X55 A-B to 2.

Instrument setting: REF.INT., SF 14 (reference frequency 10 MHz).

Checking the control voltage of the 40-MHz oscillator.

* Diagnostics voltage (SF 134): +7 to +13 V.

Connect signal generator set to 5 MHz, 0 dBm for REF. INT./EXT. The frequency accuracy of the generator must be better than 10-6.

Instrument setting: SF 13 (reference frequency 5 MHz).

* Diagnostics voltage (SF 134): +7 to +13 V.

Instrument setting: SF 14 (reference frequency 10 MHz).

Adjust signal generator frequency to 9.999850 MHz and then to 10.000150 MHz.

* Diagnostics voltage (SF 134): +2 to +18 V.

5.2.4 Testing and Adjustment of 130-MHz Crystal Oscillator

5.2.4.1 Adjusting the Crystal Oscillator

Connect power supply unit (0 to 20 V) to X43 B-C (C = ground). Adjust voltage to 10 V. Connect spectrum analyzer to X41 using adapter cable and connect voltmeter to P6. Adjust voltage on voltmeter to minimum using L117, then vary the tuning voltage from 1 to 20 V and adjust L111 so as to keep the voltage as constant as possible at P6.

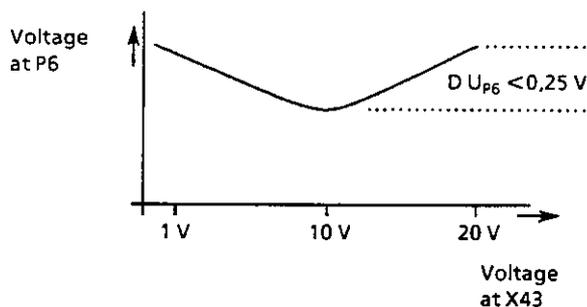


Fig. 5-1 Voltage at P6

* Voltage at P6: +9.9 to +10.7 V.

Adjust L125 for maximum signal at X41. Then vary the tuning voltage from 1 to 20 V and observe the signal on the spectrum analyzer (span 0 to 500 MHz). The oscillator must oscillate properly over the whole tuning range and there must be no noise peaks or sidebands.

* Signal at X41: 130 MHz, -8 to -5 dBm.

5.2.4.2 Testing of PLL

Connect oscilloscope to P10. Vary the power supply voltage from 1 to 20 V, a sinewave signal must be displayed on the oscilloscope.

* Signal at P10: 0 to 5 kHz, 1.0 to 1.5 Vpp.

Connect jumper X43 to A-B, connect signal generator with 10 MHz ($\Delta f < 10^{-6}$), 0 dBm to REF.INT./EXT. Setting on SMGU/SMHU: REF.EXT., SF 14 (reference frequency 10 MHz).

Check the control voltage for the 130-MHz oscillator.

* Diagnostics voltage (SF 135): +7 to +13 V.

Set the signal generator frequency to 9.999850 MHz and then to 10.000150 MHz.

* Diagnostics voltage (SF 135): +2 to +18 V.

Disconnect signal generator from X91, switch over to REF.INT.

5.2.5 Checking and Adjusting the 130/520-MHz LO Signal

The lower screening cover must be screwed down. Connect spectrum analyzer to X93, setting: REF. INT., SF 22 RF = 10 MHz (normal mixer range).

* Signal at X93: 130 MHz, +3 to +7 dBm.

Testing diagnostics detector.

* Diagnostics voltage (SF 136): +0.3 to +0.7 V.

Setting: SF 21 (mixer range with large span). Adjust L203 for maximum level at 520 MHz. Then alternately set L221 and L222 for maximum.

* Signal at X93: 520 MHz, +3 to +7 dBm, spurious sidebands at 260 and 780 MHz ≤ -60 dBc.

Setting: SF 22, RF = 1 GHz. No output signal must be displayed on the spectrum analyzer.

5.2.6 Checking and Adjusting the 300-MHz Reference Signal

5.2.6.1 Testing and Adjusting the 130/260-MHz Doubler and LO Amplifier

Connect spectrum analyzer to X15 using adapter cable. Adjust for maximum level at 260 MHz using L145, 146 alternately.

* Signal at X15: 260 MHz, -8 to -4 dBm.

5.2.6.2 Testing and Adjusting the 300-MHz Amplifier

The bottom screening cover must be screwed down when you adjust the bandpass filter. Connect network analyzer to X94, see Fig. 5-2 for settings. Adjust the bandpass filter L172, 180 by measuring the reflection coefficient at X94, see Fig. 5-2 for values. Then connect the network analyzer to X16 B-C (channel A) and X94 (channel B) using the adapter cable, see Fig. 5-3 for settings. Adjust the input reflection coefficient S11 at X16 B-C to -16 to -20 dB at 100 MHz using R160, see Fig. 5-3 for measured values.

The bandpass filter L162, 163 is adjusted by measuring the forward transmission coefficient S21 from X16 B-C to X94. See Fig. 5-4 for measured values. The settings of L172, 180 should not be changed in the process.

Disconnect network analyzer and insert jumper X16 to A-B. Connect spectrum analyzer to X94. Setting on instrument: REF. INT., FM OFF.

Adjust the level at X94 to +5 to +6 dBm using R390. Check the diagnostics detector.

* Diagnostics voltage (SF 137): +0.3 to 0.7 V.

The top and bottom screening covers must be screwed down for the following measurements. Check the spurious signals at the following frequencies:

f / MHz	P / dBm
220	≤ -74
260	≤ -74
310	≤ -104
320	≤ -100
340	≤ -104

5.2.6.3 Checking of FM/CW Selection

Spectrum analyzer remains connected to X94. Connect signal generator with 41 MHz, 5 dBm to X83.

Setting on instrument: REF. INT., FM OFF.

Level at X94 at 301 MHz ≤ -85 dBm.

Setting on instrument: REF. INT., FM. EXT. AC.

Level at X94 at 301 MHz: +4 to +6 dBm,

Level at X94 at 300 MHz: ≤ -85 dBm.

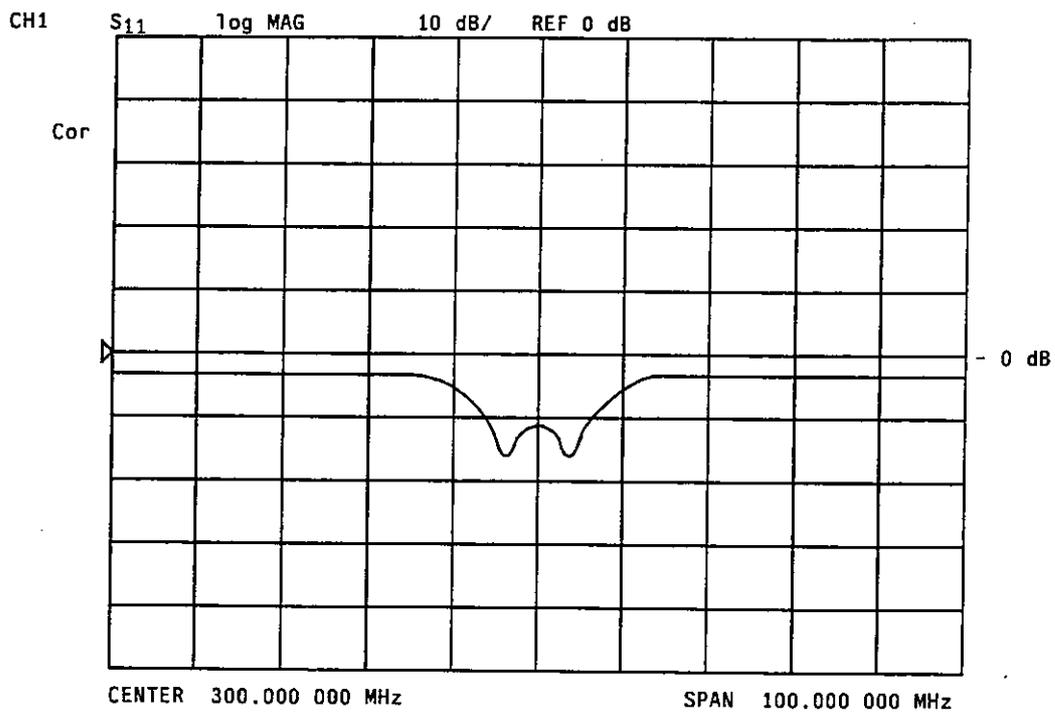


Fig. 5-2 S11 at X94, adjustment of L172, 180

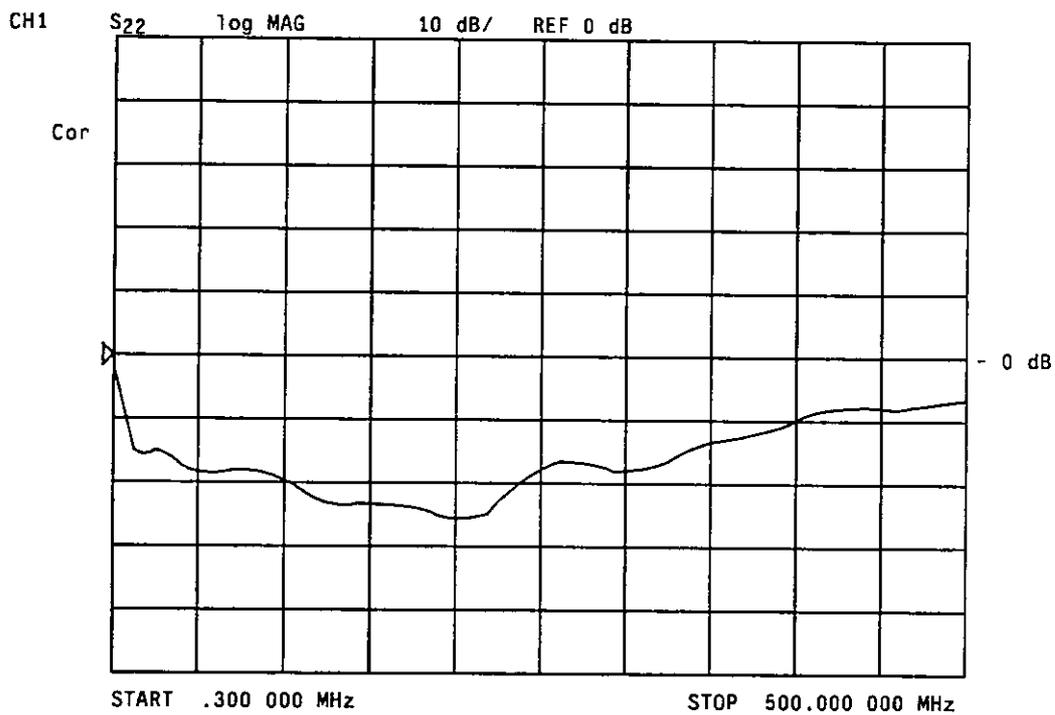


Fig. 5-3 S11 at jumper X16 B-C, adjustment of R160

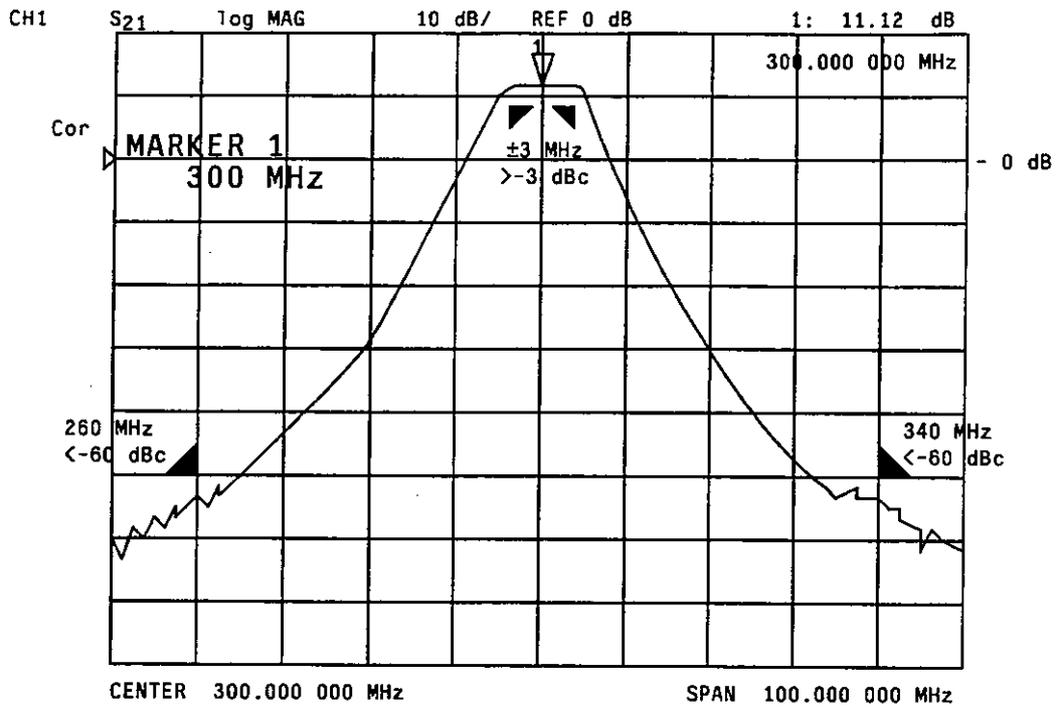


Fig. 5-4 S21 from X16 B-C to X94, adjustment of L162, 163
 Gain 9 to 13 dB
 Measured attenuation referred to gain at 300 MHz

5.3 Troubleshooting

With only one of the error messages "Err 40, 41", the cause of the fault is in the PLL of the 40 or 130-MHz crystal oscillator in the 10-MHz reference frequency. If the error messages "Err 42" (FRN synthesis) and "Err 43" (step synthesis/FM) both occur, the 40-MHz crystal oscillator or the buffer stage has failed. In a similar manner, the fault is in the 130-MHz crystal oscillator or the buffer stage if the error messages "Err 46" (summing loop) and "Err 48" (output stage with mixer range switched over) occur simultaneously.

5.3.1 Failure of PLLs (Err 40, 41)

- With REF.EXT on, check the frequency (5/10 MHz \pm 5 ppm) and level (0.1 to 2 V) of the external reference frequency.
- Use the diagnostics function to check which PLL has failed
(40 MHz: Err 40, SF 134;
130 MHz: Err 41, SF 135).
- If both PLLs have failed, the cause is in the reference frequency (P1, P3 with internal reference, P5, P3 with external reference) or in the 40-MHz divider 1:4/8 (test points P8, P2, P9).
- If only the PLL of the 40-MHz crystal oscillator has failed, check the 40-MHz divider 1:4/8 D400, 401 at test point P8, the phase detector D50 at test points P2, P3 and the PI controller N50 at the plug-in jumpers X50, X55 and test point P4.
- If the PLL of the 130-MHz crystal oscillator has failed, check the test point P9, the IF voltage at P10 (apply external tuning voltage to X43 B-C), the PI controller N430 at jumper X43 and test point P11 and the 130-MHz isolating amplifier at X41 and X40.

5.3.2 Failure of the 40-MHz Signals at X72, 82, 92 (Err 40, 41)

- Use the diagnostics function (SF 138 to 140) to check which output signal has failed.
- If there are no signals at all and if the PLL has failed, the cause is in the 40-MHz crystal oscillator with V305, 310, 315 (test points P7 and X32).

5.3.3 Failure of 130/520-MHz Signal at X93 and 300-MHz Signal at X94 (Err 40, 41, 46, 48)

- Use the diagnostics function to check which output signal has failed (SF 136, 137).
- If both output signals are missing, the cause is in the 130-MHz crystal oscillator with V111, 125 (test points P6 and X14).
- If the 130/520-MHz signal is missing, check the drive signal for the 130/520-MHz selector containing N250 and the amplifiers N204, 240 (N204 only when the 520-MHz signal fails).
- If the 300-MHz signal is missing, check whether it is missing when FM and CW are selected. If it is only missing in one of these modes, check the 40-MHz FM signal at X83, the FM/CW selector and drive (N250). If it is missing in both modes, check the n 260-MHz amplifier (V146, test points X14, X15), the 40-MHz amplifier (V380, test point X3) and the 300-MHz amplifier (V160, 170).

5.3.4 Signals at Test Points and DC Operating Points

10-MHz OCXO

G10.3:	+ 11.5 to 12.5 V with REF.INT. and 0 to + 0.5 with REF.EXT.
N30.1:	+ 5.5 to + 6.5 V with oven heated-up, + 4 V with cold oven.
P1:	10-MHz HCMOS levels with REF.INT., + 5 V with REF.EXT.

40-MHz crystal oscillator

V305 emitter:	+ 3.8 V
V310 emitter:	+ 13.8 V
V315 emitter:	+ 1.6 V
P7:	+ 10.7 to + 11.2 V with oscillator working, + 11.5 V with oscillator not working

40-MHz amplifier

X32:	40 MHz, -9 to -11 dBm into 50 Ω
V330, 340, 350, 360 source:	+ 1.0 to + 2.5 V

40-MHz PLL and reference selector

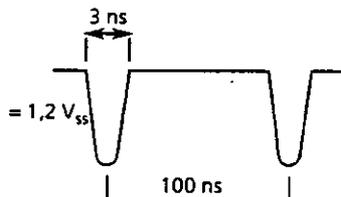
D401.8: 40 MHz, 3 to 4 V_{pp}
P8: 40 MHz, HCMOS levels
P9: 10 MHz, HCMOS levels
P2, 3: 5 MHz, HCMOS levels
N50.1: = 0 V
P5: + 1 to + 3 V DC without input signal at X91, 5/10 MHz, HCMOS levels with input signal
N90.4: + 1 V
N90.7: + 20 V

130-MHz crystal oscillator

V111 emitter: + 3.5 V
V125 emitter: + 2.4 V
P6: + 9.9 to + 10.7 V with oscillator working, + 10.9 V with oscillator not working
X40: 130 MHz, -9 to -6 dBm into 50 Ω

130-MHz PLL

X40: 130 MHz, -12 to -8 dBm into 50 Ω
X41:



Measurement using oscilloscope with 50 Ω- input impedance and bandwidth ≥ 250 MHz

P10: = 0 V with synchronous PLL, 0.5 to 0.7 V_{pp} with asynchronous PLL
P9: 10 MHz, HCMOS levels

130/520-MHz LO Signal

N250.1: + + 13 V/-14 V with 130 MHz on/off
N250.7: + 13 V/-14 V with 520 MHz on/off
N204.3: + 5.5 V DC
N240.3: + 5.5 V DC

260-MHz LO amplifier

V146 collector: + 6,5 V
X15: 260 MHz, -8 to -5 dBm into 50 Ω

300-MHz amplifier

V160 source: 0 to + 1,5 V
V161 emitter: + 3.4 V

FM/CW selector with 40-MHz amplifier

N250.8: -14/ + 13 V with FM/CW
N250.14: + 13 V/-14 V with FM/CW
V380 collector: + 9.7 V
X38: 40 MHz, -18 to -15 dBm into 50 Ω

5.4 Interfaces

Signal		D	T	Range	Connection Point	Remarks
Name	Designation					
+ 24 V	Power supply + 24 V	I	P	23,4 ... 24,5 V 10 ... 30 mA	X9A24	Power supply
+ 15 V	Power supply + 15 V	I	P	14,8 ... 15,3 V 350 ... 450 mA	X9A26	
+ 5 V	Power supply + 5 V	I	P	4,9 ... 5,1 V 40 ... 70 mA	X9A28	
-15 V	Power supply -15 V	I	P	-15,2 ... -14,8 V 30 ... 50 mA	X9A30	
+ 12 STB	Power supply + 12 V Standby	I	P	+ 11 ... + 13 V 20 ... 150 mA	X9A32	
GND	Ground	B	P		X9A10 X9A12 X9A14 X9A16 X9A23 X9A25 X9A27 X9A29 X9A31	
BA0	Subassembly address	I	D	HC-MOS	X9A21	Subassembly addressing
BA1	Subassembly address	I	D	HC-MOS	X9A20	
BA2	Subassembly address	I	D	HC-MOS	X9A19	
G0	Strobe 0	I	D	HC-MOS	X9A22	
TF.CLK	CLOCK	I	D	HC-MOS	X9A11	Data transmission
TR.DAT	Data	I	D		X9A13	
TST	Diagnostics	O	O	-5 ... + 5 V	X9A17	Selftest
ALA	Alarm	O	L	Open collector	X9A18	
REF	5 / 10-MHz reference	B	O	Output level + 5 ... + 9 dBm	X91	RF interface 50 Ω
INOUT	Input/Output	O	O	Input level -6 ... + 19 dBm		RF interface 50 Ω
FMREF	40-MHz reference for step synthesis/FM	O	O	Output level + 3 ... + 7 dBm	X82	RF interface 50 Ω
FRMREF	40-MHz reference for FRN synthesis	O	O	Output level + 3 ... + 7 dBm	X72	RF interface 50 Ω
BBREF	40-MHz reference for option WBM	O	O	Output level + 3 ... + 7 dBm	X92	RF interface 50 Ω
MIXLO	LO signal 130 / 520 MHz for OPM	O	O	Output level + 3 ... + 7 dBm	X93	RF interface 50 Ω
REF300	300-MHz reference for SUM	O	O	Output level + 3 ... + 7 dBm	X94	RF interface 50 Ω
FMOUT	40 MHz	I	O	Input level + 4 ... + 6 dBm	X83	RF interface 50 Ω

Direction

I Input
O Output
B Bidirectional
M Measurement

Type

A Analog
H Digital high
L Digital low
P Power

5.5 Positions of Plug-in Jumpers

X55 A-B to 2
 X50 to A-B
 X43 to A-B
 X16 to A-B

5.6 Required Equipment

Power supply unit
 + 4.9 to + 5.1 V, 0.2 A
 + 14.9 to + 15.1 V, 0.5 A
 + 23.8 to + 24.2 V, 50 mA
 -14.4 to -15.1 V, 0.1 A
 2 x 0 to 25 V, 10 mA
 (e.g. NGT35)

Spectrum analyzer (1 GHz)
 (e.g. FSA)

RF generator 10 MHz, 40 MHz
 (e.g. SMG)

Network analyzer (to 500 MHz)

Oscilloscope
 (e.g. BOL)

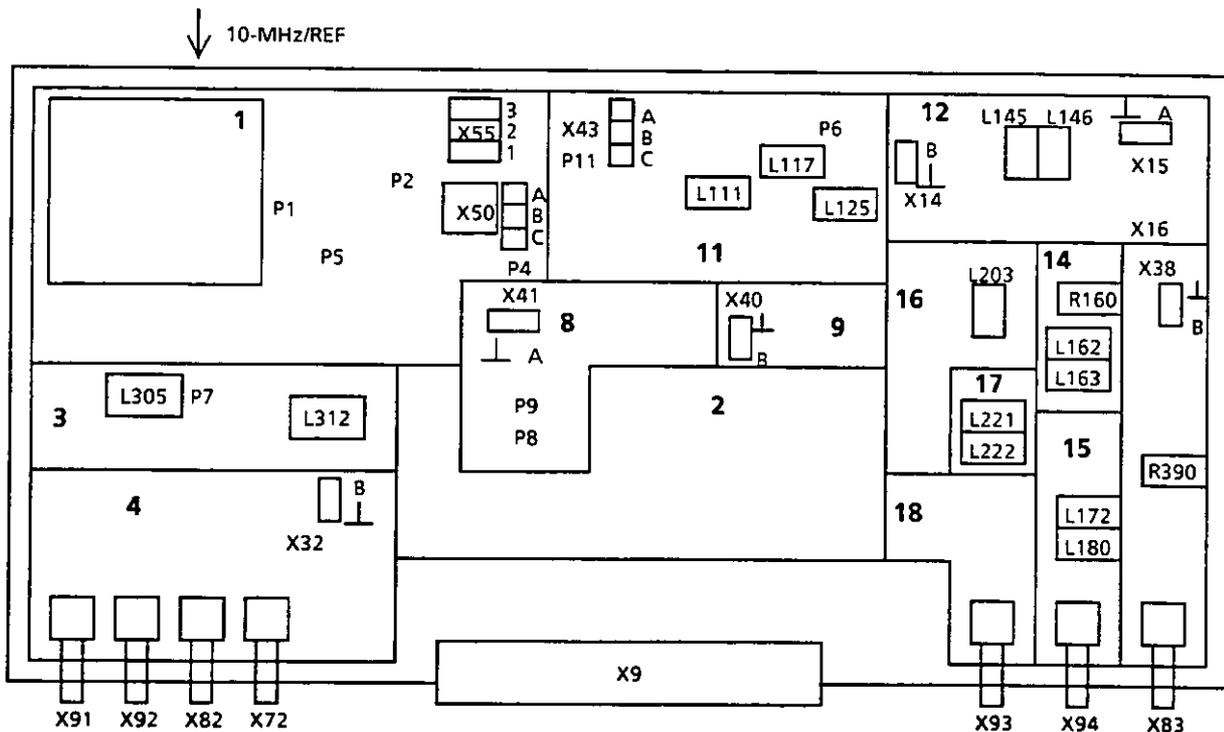
RF adapter cable

Test adapter

2 x voltmeter (1 x $Z_{in} = 1 \text{ M}\Omega$; 1 x $Z_{in} \geq 10 \text{ M}\Omega$)
 (e.g. URE)

Controller
 (e.g. PUC)

Layout diagram





ROHDE & SCHWARZ

Schalteillisten

Stromläufe

Bestückungspläne

Part lists

Circuit diagrams

Components plans

Listes des pièces détachées

Schémas de Circuit

Plans des composants

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
	XX VARIANTENERKLAERUNG IDENTIFICATION OF MODELS VAR 02 = GRUNDAUSFUEHRUNG VAR 02 = BASIC VERSION				
C10	CE 1UF +-10% 25V EIA3528 TANTALUM SMD-CAPACITOR	CE 0007.7217.00	KEMET	T 491 B105 K025 AS	
C11	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C12	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C13	CE 10UF+-20%25V SAL ELECTR.CAPACITOR	CE 0007.3934.00	VALVO	2222 128 36109	
C15	CE 47UF+-20%6,3V SAL ELECTR.CAPACITOR	CE 0007.3957.00	VALVO	2222 128 33479	
C20	CC 330PF+-2%6X9N750 CERAMIC CAPACITOR	CC 0087.6964.00	PHILIPS_CO	2222 678 58331	
C21	CC 560PF+-10%3X4R2000 CAPACITOR	CC 0087.7002.00	PHILIPS_CO	2222 632 51561	
C22	CC 330PF+-2%6X9N750 CERAMIC CAPACITOR	CC 0087.6964.00	PHILIPS_CO	2222 678 58331	
C23	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C25	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C26	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C30	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C31	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C32	CE 47UF+-20%6,3V SAL ELECTR.CAPACITOR	CE 0007.3957.00	VALVO	2222 128 33479	
C33	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C35	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C40	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C42	CC 220PF+-2%6X7N750 CAPACITOR	CC 0087.6941.00	PHILIPS_CO	2222 678 58221	
C43	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C45	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C46	CE 4,7UF+-10% 10V 3528 TANTALUM SMD-CAPACITOR	CE 0007.7275.00	KEMET	T491 B 475 K 010 AS	
C48	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C49	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C50	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C51	CK 68NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2923.00	ROEDERSTEI	MKT 1826-368-06-4	
C52	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C53	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C54	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERD	MKT 1826-510/054-R	
C55	CK 100NF+-5%63VRD2,5H7MKT CAPACITOR	CK 0099.2930.00	ROEDERSTEI	MKT 1826-410-06-4W	
C56	CK 100NF+-5%63VRD2,5H7MKT CAPACITOR	CK 0099.2930.00	ROEDERSTEI	MKT 1826-410-06-4W	
C60	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C69	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	0911.0705.00	SPECTRUM	SCI-9920-101HT	
C70	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	0911.0705.00	SPECTRUM	SCI-9920-101HT	
C71	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	0911.0705.00	SPECTRUM	SCI-9920-101HT	
C75	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C80	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	

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		39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	1+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C81	CE 47UF+-20%6,3V SAL ELECTR.CAPACITOR	CE 0007.3957.00	VALVO	2222 128 33479	
C82	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C83	CE 100UF+-20%35V RM5 ELECTROLYTIC CAPACITOR	0008.7510.00	PHILIPS_CO	2222 116 90042	
C84	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C85	CE 10UF+-20%25V SAL ELECTR.CAPACITOR	CE 0007.3934.00	VALVO	2222 128 36109	
C86	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C87	CE 2,2UF+-20%40V SAL ELECTR.CAPACITOR	CE 0007.3911.00	VALVO	2222 128 37228	
C88	CE 47UF+-20%6,3V SAL ELECTR.CAPACITOR	CE 0007.3957.00	VALVO	2222 128 33479	
C105	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C110	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C111	CK 10NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2869.00	ROEDERSTEI	MKT 1826-310-014W	
C112	CC 12PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8744.00	MURATA	GRM42-6COG 120 F50PT	
C115	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C117	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C118	CC 180PF+-5% 300V PELL CAPACITOR	CC 0556.8701.00	TEKELEC	301 CHB 181 JW(V)L	
C119	CC 150PF+-5% 300V PELL CAPACITOR	CC 0556.8718.00	TEKELEC	301 CHB 151 JWL	
C120	CC 18PF+-2% 500V PELL CAPACITOR	CC 0552.1660.00	TEKELEC	501 CHB 180 GWL	
C121	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C122	CE 47UF+-20%63V RM5 ELECTROLYTIC CAPACITOR	0008.7440.00	PHILIPS_CO	2222 116 90112	
C123	CC 330PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8873.00	PHILIPS_CO	2238 863 18331	
C124	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C125	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C126	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C128	CC 12PF+-2%3X4NPO CAPACITOR	CC 0087.6435.00	VALVO	2222 678	
C129	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C140	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6429.00	PHILIPS_CO	2222 678 10109	
C141	CC 15PF+-2%3X4NPO CAPACITOR	CC 0087.6441.00	PHILIPS_CO	2222 678	
C142	CC 15PF+-2%3X4NPO CAPACITOR	CC 0087.6441.00	PHILIPS_CO	2222 678	
C143	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C144	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6429.00	PHILIPS_CO	2222 678 10109	
C145	CC 6,8PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6406.00	PHILIPS_CO	2222 678	
C146	CC 2,2PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6341.00	PHILIPS_CO	2222 678	
C147	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C148	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C149	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C150	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C153	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6COG 3R3 C50PT	
C161	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C162	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	

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			39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	2+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C163	CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6COG 470F 50PT	
C164	CC 3,9PF/0,25PF63V3X5N150 CAPACITOR	CC 0099.5545.00	ROEDERSTEI	ROP 744 J4	
C165	CC 8,2PF+-0,25PF3X4N150 CAPACITOR	CC 0087.6587.00	VALVO	2222 678 33828	
C170	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C171	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C172	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C173	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C174	CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6COG 470F 50PT	
C175	CC 10PF+-0,25PF3X4N150 CAPACITOR	CC 0087.6593.00	PHILIPS_CO	2222 678 34109	
C176	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6COG 3R3 C50PT	
C180	CC 12PF+-2%3X4N150 CAPACITOR	CC 0087.6606.00	PHILIPS_CO	2222 678 34129	
C181	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C182	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C183	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C184	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C185	CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8667.00	PHILIPS_CO	2238 863 15108	
C186	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C190	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C191	CC 18PF+-2%3X4NPO CAPACITOR	CC 0087.6458.00	PHILIPS_CO	2222 678	
C192	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C194	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C195	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C200	CC 15PF+-2%3X4NPO CAPACITOR	CC 0087.6441.00	PHILIPS_CO	2222 678	
C201	CC 15PF+-2%3X4NPO CAPACITOR	CC 0087.6441.00	PHILIPS_CO	2222 678	
C202	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C203	CC 2,7PF+-0,25PF3X4NPD CERAMIC CAPACITOR	CC 0087.6358.00	PHILIPS_CO	2222 678	
C204	CC 1PF+-0,25PF3X4P100 CAPACITOR	CC 0087.6170.00	PHILIPS_CO	2222 678	
C206	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C207	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C212	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C220	CC 3,9PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6370.00	PHILIPS_CO	2222 678	
C222	CC 1PF+-0,25PF3X4P100 CAPACITOR	CC 0087.6170.00	PHILIPS_CO	2222 678	
C231	CC 2,7PF+-0,25PF3X4NPO CERAMIC CAPACITOR	CC 0087.6358.00	PHILIPS_CO	2222 678	
C232	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C233	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C239	CC 1,8PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8165.00	MURATA	GRM42-6COG 1R8 C50PT	
C240	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C241	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C242	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	

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		39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	3+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C243	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C244	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C245	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C246	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C300	CK 47NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2917.00	ERO	MKR 1826-347-06-4	
C301	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C302	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C303	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C304	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C305	CC 620PF+-5% 100V PELL CAPACITOR	0556.8724.00	ATC	ATC100B 621 JW100R	
C307	CC 470PF+-5% 200V PELL CERAMIC CAPACITOR	CC 0469.5905.00	TEKELEC	201 CHB 471 JWL	
C309	CC 56PF+-5% 500V PELL CAPACITOR	CC 0556.8660.00	TEKELEC	501 CHB 560 J(W/V)LE	
C310	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C311	CE 47UF+-20%63V RMS5 ELECTROLYTIC CAPACITOR	0008.7440.00	PHILIPS_CO	2222 116 90112	
C312	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C313	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C314	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C315	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C316	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C319	CC 33PF+-2%4X5NPO CAPACITOR	CC 0087.6487.00	PHILIPS_CO	2222 678	
C320	CC 150PF+-2%5X6N750 CAPACITOR	CC 0087.6929.00	PHILIPS_CO	2222 678 58151	
C322	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C330	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C331	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C333	CC 18PF+-2%3X4NPO CAPACITOR	CC 0087.6458.00	PHILIPS_CO	2222 678	
C334	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C336	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C340	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C341	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C342	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C343	CC 18PF+-2%3X4NPO CAPACITOR	CC 0087.6458.00	PHILIPS_CO	2222 678	
C344	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C345	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C346	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C350	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C351	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C352	CC 18PF+-2%3X4NPO CAPACITOR	CC 0087.6458.00	PHILIPS_CO	2222 678	
C353	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C356	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	

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	39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	4+	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C360	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C361	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C362	CC 12PF+-2%3X4NPO CAPACITOR	CC 0087.6435.00	VALVO	2222 678	
C370	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C371	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C372	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C374	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C375	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C376	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C379	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C380	CC 1NF+-1% 50V NPO 1206 SMD CERAMIC CAPACITOR	CC 0007.7398.00	PHILIPS_CO	2222 863 *8102	
C381	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C382	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C383	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C384	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C385	CC 68PF+-2%6X7NPO CAPACITOR	CC 0087.6529.00	PHILIPS_CO	2222 678	
C386	CC 120PF+-2%6X9NPO CAPACITOR	CC 0087.6558.00	PHILIPS_CO	2222 678 10121	
C387	CC 82PF+-2%6X7NPO CAPACITOR	CC 0087.6535.00	PHILIPS_CO	2222 678 10 829	
C388	CC 8,2PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8242.00	MURATA	GRM42-6COG 8R2 C50PT	
C389	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	
C390	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C391	CE 220UF+-20%16V RM5 ELECTROLYTIC CAPACITOR	0008.7562.00	FROLYT	EKS00CC322D	
C392	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C393	CC 3,3PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8194.00	MURATA	GRM42-6COG 3R3 C50PT	
C400	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C401	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C410	CC 10PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6429.00	PHILIPS_CO	2222 678 10109	
C411	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C412	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C413	CE 100UF+-20%35V RM5 ELECTROLYTIC CAPACITOR	0008.7510.00	PHILIPS_CO	2222 116 90042	
C414	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C415	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C420	CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6COG 470F 50PT	
C430	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C431	CK 10NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2869.00	ROEDERSTEI	MKT 1826-310-014W	
C432	CK 100NF+-5%63VRD2,5H7MKT CAPACITOR	CK 0099.2930.00	ROEDERSTEI	MKT 1826-410-06-4W	
C433	CK 100NF+-5%63VRD2,5H7MKT CAPACITOR	CK 0099.2930.00	ROEDERSTEI	MKT 1826-410-06-4W	
C435	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C436	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C440	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C441	CC 4,7PF+-0,25PF3X4NPO CAPACITOR	CC 0087.6387.00	PHILIPS_CO	2222 678	
C442	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C443	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C444	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C445	CC 8,2PF+-0,25PF3X4N150 CAPACITOR	CC 0087.6587.00	VALVO	2222 678 33828	
C446	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
D20	BL 74AC00SC 4X2IN NAND QUAD NAND GATTER	BL 0820.3477.00	NSC	74AC00(SC)	
D21	BL PC74HCT74T 2XD-FLIPFL DUAL D-TYPE FLIP FLOP	BL 0007.6262.00	PHILIPS_SE	(PC)74HCT74D(T)	
D40	BL PC74HC00T 4X2IN.NAND QUAD 2INPUT NAND GATE	BL 0007.3463.00	PHILIPS_SE	(PC)74HC00D(T)	
D41	BL PC74HC00T 4X2IN.NAND QUAD 2INPUT NAND GATE	BL 0007.3463.00	PHILIPS_SE	(PC)74HC00D(T)	
D50	BL PC74HCT112T 2XJK-FF CL DUAL JK-FF	BL 0007.6327.00	PHILIPS	(PC)74HCT112(T)	
D70	BL PC74HC4094P 8ST.SH.REG 8ST.SHIFT A.STORE REGIST.	0099.9711.00	PHILIPS_SE	(PC)74HC4094N(P)	
D71	BL MM74HC4051N 8CH.AN.MUX 8CH.ANALOG MUX/DEMUX	0099.9670.00	PHILIPS	(PC)74HC4051N(P)	
D72	BL PC74HC4094P 8ST.SH.REG 8ST.SHIFT A.STORE REGIST.	0099.9711.00	PHILIPS_SE	(PC)74HC4094N(P)	
D100	BL PC74HC238P 3T08 L.DEC DECODER/DEMULTIPLEXER	0620.0847.00	PHILIPS	(PC)74HC238N(P)	
D101	BL MM74HC11N 3X3IN.ANDG TRIPLE 3-INPUT AND GATE	0099.9486.00	PHILIPS_SE	(PC)74HC11N(P)	
D150	BM SRA1WH MIXER 0.7GHZ MIXER	BM 0252.5363.00	MINI-CIRCU	SRA-1WH	
D400	BL 74AC161SC 4B.BIN CNT 4BIT SYNC.PRES.BIN COUNT.	BL 0820.3519.00	NSC	74AC161(SC)	
D401	BL 74AC02SC 4X2IN NORG QUAD NOR GATE	BL 0820.3490.00	NSC	74AC02(SC)	
G10	ED 10MHZ-QU.OSZ.DCXO 12V 10MHZ CRYSTAL OSCILLATOR	0835.0091.00	QUARZKERAM	2100T-S153 (H)	
G110	EQ QUARZ 130MHZ SELECT	0820.3625.00			
G300	EQ QUARZ 40MHZ SELECT QUARTZ 40MHZ SELECT	0820.3631.00			
K35	SR 5V 1XU DIL M.DIODE+SCH RELAY	SR 0282.5003.00	HAMLIN	HE721C0530	
L10	LD 3,30UH10%,85DHMO,285A CHOKE	LD 0067.2928.00	DALE	IM2	
L20	LD 1,20UH10%,180HMO,620A CHOKE	LD 0067.2870.00	DALE	IM2	
L21	LD 1,20UH10%,180HMO,620A CHOKE	LD 0067.2870.00	DALE	IM2	
L32	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L80	LD 2,20UH10%,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	
L81	LD 2,20UH10%,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	
L82	LD 1,20UH10%,180HMO,620A CHOKE	LD 0067.2870.00	DALE	IM2	
L83	LD 5,6UH BEI 1,15A0,330HM CHOKE	LD 0026.4090.00	DELEVAN	1840-24	
L84	LD 2,20UH10%,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	
L110	LD 0,15UH10%,100HM1,230A CHOKE	LD 0067.2763.00	DALE	IM2	
L113	LF ROHRK.U17 VI TUBULAR CORE	LF 0026.9286.00	VOGT	231 16 110 10	
L117	LD 85NH 3,5W CM30P FE-K COI-CORE	0801.4865.00	TOKO	E521 HN-030023	
L123	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L124	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L125	LD 85NH 3,5W CM30P FE-K COI-CORE	0801.4865.00	TOKO	E521 HN-030023	
L126	LD 1,20UH10%, 180HMO, 620A CHOKE	LD 0067.2870.00	DALE	IM2	
L130	LU UEBERTRAGER TRANSFORMER	0451.1937.00			
L140	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L141	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L142	LU UEBERTRAGER 1 TRANSFORMER	0819.7072.00			0819.7066.00
L144	LD 0,18UH10%, 120HM1, 120A CHOKE	LD 0067.2770.00	DALE	IM2	
L145	LD 36NH 2,5W CM70P ALU-K COIL	0820.3548.00	TOKO	E521-AN-020013	
L146	LD 36NH 2,5W CM70P ALU-K COIL	0820.3548.00	TOKO	E521-AN-020013	
L148	LD 1,00UH10%1,000HMO, 390A CHOKE	LD 0067.2863.00	DALE	IM2	
L150	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L160	LD 1,00UH10%1,000HMO, 390A CHOKE	LD 0067.2863.00	DALE	IM2	
L161	LD 1,00UH10%1,000HMO, 390A CHOKE	LD 0067.2863.00	DALE	IM2	
L162	LD 36NH 2,5W CM70P ALU-K COIL	0820.3548.00	TOKO	E521-AN-020013	
L163	LD 36NH 2,5W CM70P ALU-K COIL	0820.3548.00	TOKO	E521-AN-020013	
L165	LD 0,22UH10%, 140HM1, 045A CHOKE	LD 0067.2786.00	DALE	IM2	
L170	LD 1,00UH10%1,000HMO, 390A CHOKE	LD 0067.2863.00	DALE	IM2	
L171	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L172	LD 24NH 1,5W CM105P ALU-K MOLDED COIL+ALU-CORE	0840.2753.00	TOKO	E 521 AN 010013	
L180	LD 24NH 1,5W CM105P ALU-K MOLDED COIL+ALU-CORE	0840.2753.00	TOKO	E 521 AN 010013	
L181	LD 0,15UH10%, 100HM1, 230A CHOKE	LD 0067.2763.00	DALE	IM2	
L190	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L191	LU UEBERTRAGER 2 TRANSFORMER	0819.7089.00			0819.7066.00
L194	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L200	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L201	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L202	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L203	LD 24NH 1,5W CM105P ALU-K MOLDED COIL+ALU-CORE	0840.2753.00	TOKO	E 521 AN 010013	
L206	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L220	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L221	LD 24NH 1,5W CM105P ALU-K MOLDED COIL+ALU-CORE	0840.2753.00	TOKO	E 521 AN 010013	
L222	LD 24NH 1,5W CM105P ALU-K MOLDED COIL+ALU-CORE	0840.2753.00	TOKO	E 521 AN 010013	
L230	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L233	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L240	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L241	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L300	LD 1,20UH10%, 180HMO, 620A CHOKE	LD 0067.2870.00	DALE	IM2	
L301	LD 8,20UH10%2,700HMO, 160A CHOKE	LD 0067.2970.00	DALE	IM2	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L305	LD 287NH 8,5W CM18P FE-K COIL+CORE	0613.6289.00	TOKO	E521HN080023	F
L306	LF ROHRK.U17 VI TUBULAR CORE	LF 0026.9286.00	VOGT	231 16 110 10	
L310	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L311	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L311	LD 220NH 6,5W CM24P FE-K CHOKE	1004.3700.00	TOKO	E 521-HN060023	
L312	LD 500NH 11,5W CM10P FE-K CHOKE	0300.8856.00	TOKO	E521 HN-110023	
L320	LU UEBERTRAGER TRANSFORMER	0451.1937.00			
L330	LD 0,82UH10%,850HMO,420A CHOKE	LD 0067.2857.00	DALE	IM2	
L340	LD 0,82UH10%,850HMO,420A CHOKE	LD 0067.2857.00	DALE	IM2	
L341	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L350	LD 0,82UH10%,850HMO,420A CHOKE	LD 0067.2857.00	DALE	IM2	
L360	LD 1,20UH10%,180HMO,620A CHOKE	LD 0067.2870.00	DALE	IM2	
L380	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L381	LD 0,27UH10%,160HMO,975A CHOKE	LD 0067.2792.00	DALE	IM2	
L382	LD 0,33UH10%,220HMO,830A CHOKE	LD 0067.2805.00	DALE	IM2	
L383	LD 100NH 10% 0,080HM 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L390	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L410	LD 0,047 UH 10% CHOKE	0249.5995.00	DELEVAN	1026-08	
L411	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L412	LU UEBERTRAGER 3 TRANSFORMER	0819.7095.00			
L440	LD 0,15UH10%,100HM1,230A CHOKE	LD 0067.2763.00	DALE	IM2	
L441	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L443	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L445	LD 0,15UH10%,100HM1,230A CHOKE	LD 0067.2763.00	DALE	IM2	
N30	BO TLO72ACD 2XFET OPAMP OPERATIONAL AMPLIFIER	0803.1057.00	TEXAS	TL 072 ACDR	
N50	BO TLO72ACP 2XFET OPAMP OPERATIONAL AMPLIFIER	0340.6054.00	TEXAS	TL 072 ACP	
N90	BO LM339N 4X COMPAR COMPARATOR	BO 0342.2062.00	NSC	LM339N	
N204	BM MSA0335-21 MMIC BROADBAND AMPLIFIER	0670.7116.00	HEWLETT_PA	MSA-0335	
N240	BM MSA0335-21 MMIC BROADBAND AMPLIFIER	0670.7116.00	HEWLETT_PA	MSA-0335	
N250	BO LM124J 4XLP OPAMP OPERATIONAL AMPLIFIER	0300.6353.00	NSC	LM124J	
N430	BO TLO72ACP 2XFET OPAMP OPERATIONAL AMPLIFIER	0340.6054.00	TEXAS	TL 072 ACP	
P1 ..11	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
R10	RG 11,0KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0806.00	ROEDERSTEI	D25	
R11	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	ROEDERSTEI	D25	
R12	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R13	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CD	RC02	
R14	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CD	RC02	

0819.7066.00

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R15	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R16	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R17	RG 22,1KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5872.00	ROEDERSTEI	D25	
R18	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R20	RG 15,0KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5843.00	ROEDERSTEI	D25	
R22	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R23	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R25	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R30	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R31	RG 182 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5989.00	ROEDERSTEI	D25	
R32	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R35	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R40	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
R41	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
R45	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R46	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R47	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R48	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R49	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R50	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R51	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R52	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R53	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R54	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R55	RL 0,60W 221 KOHM+-1%TK50 RESISTOR	RL 0083.2270.00	RESISTA	MK2	
R56	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R57	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R58	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R59	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	PHILIPS_CO	RC02	
R60	RL 0,60W 365 KOHM+-1%TK50 RESISTOR	RL 0083.2487.00	RESISTA	MK2	
R61	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R62	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R63	RL 0,60W 4,75KOHM+-1%TK50 RESISTOR	RL 0083.1097.00	RESISTA	MK2	
R64	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R65	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R66	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R67	RL 0,60W2,21MOHM+-1%TK50 METALFILMRESISTOR	RL 0099.8173.00	RESISTA	MK2	
R68	RG 12,1KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0841.00	PHILIPS_CO	RC02	
R69	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	

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Kannz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R70	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R71	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R72	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R73	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R74	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R75	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R76	RL 0,60W 3,32KOHM+-1%TK50 RESISTOR	RL 0083.0990.00	RESISTA	MK2	
R77	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R90	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R91	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R92	RL 0,60W 18,2KOHM+-1%TK50 RESISTOR	RL 0083.1480.00	RESISTA	MK2	
R93	RL 0,60W 3,92KOHM+-1%TK50 RESISTOR	RL 0083.1039.00	DRALORIC	SMA 0207	
R100	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R104	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R105	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
R106	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R109	RL 0,60W 39,2 OHM+-1%TK50 RESISTOR	RL 0082.9420.00	RESISTA	MK2	
R110	RL 0,60W 39,2 OHM+-1%TK50 RESISTOR	RL 0082.9420.00	RESISTA	MK2	
R111	RL 0,60W 39,2 OHM+-1%TK50 RESISTOR	RL 0082.9420.00	RESISTA	MK2	
R112	RL 0,60W 1,82KOHM+-1%TK50 RESISTOR	RL 0082.2277.00	RESISTA	MK2	
R113	RL 0,60W 392 OHM+-1%TK50 RESISTOR	RL 0082.2183.00	RESISTA	MK2	
R114	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R115	RL 0,60W4,64KOHM+-1%TK50 RESISTOR	RL 0082.1687.00	RESISTA	MK2	
R116	RL 0,60W 2,37KOHM+-1%TK50 RESISTOR	RL 0083.0878.00	RESISTA	MK2	
R117	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R118	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R119	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R120	RL 0,60W 432 OHM+-1%TK50 DEPOS.-CARBON RESISTOR	RL 0083.0355.00	RESISTA	MK2	
R121	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
R122	RL 0,60W 4,75KOHM+-1%TK50 RESISTOR	RL 0083.1097.00	RESISTA	MK2	
R123	RL 0,60W 2,21KOHM+-1%TK50 RESISTOR	RL 0082.2477.00	RESISTA	MK2	
R124	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R125	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	ROEDERSTEI	D25	
R126	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R127	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R128	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R129	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R130	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R140	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
R141	RL 0,60W 82,5 OHM+-1%TK50 RESISTOR	RL 0082.9707.00	RESISTA	MK2	
R145	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25	
R146	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R147	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R148	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R150	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R152	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R155	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R156	RG 27,4 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5508.00	ROEDERSTEI	D25	
R157	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R160	RS 0,5W100 OHM+-20%KURVE1 DEPOS.-CARBON POTENTIOMET	RS 0069.8081.00	BOURNS	3329 H-1	
R161	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R162	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R163	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25	
R164	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R170	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R171	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	ROEDERSTEI	D25	
R172	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R173	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R174	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R180	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R181	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R183	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R184	RG 100,0KOH+-1%TK100 1206 CHIP RESISTOR	RG 0007.1948.00	ROEDERSTEI	D25	
R185	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R186	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
R190	RG 150 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5589.00	ROEDERSTEI	D25	
R191	RL 0,60W 10,0 OHM+-1%TK50 RESISTOR	RL 0082.8852.00	RESISTA	MK2	
R192	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R193	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R194	RL 0,60W 1,21KOHM+-1%TK50 RESISTOR	RL 0083.0655.00	RESISTA	MK2	
R195	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R196	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R197	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R200	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R207	RL 0,60W 274 OHM+-1%TK50 RESISTOR	RL 0083.0178.00	RESISTA	MK2	
R210	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	ROEDERSTEI	D25	
R211	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R230	RL 0,60W 1,21KOHM+-1%TK50 RESISTOR	RL 0083.0655.00	RESISTA	MK2	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R231	RL 0,60W 1,21KOHM+-1%TK50 RESISTOR	RL 0083.0655.00	RESISTA	MK2	
R235	RL 0,60W 1,21KOHM+-1%TK50 RESISTOR	RL 0083.0655.00	RESISTA	MK2	
R240	RL 0,60W 274 OHM+-1%TK50 RESISTOR	RL 0083.0178.00	RESISTA	MK2	
R241	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R242	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R244	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R245	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	ROEDERSTEI	D25	
R250	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	
R251	RL 0,60W 2,21KOHM+-1%TK50 RESISTOR	RL 0082.2477.00	RESISTA	MK2	
R300	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R301	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R302	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R303	RG 332 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5650.00	PHILIPS_CO	RC02	
R304	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R305	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R306	RL 0,60W4,64KOHM+-1%TK50 RESISTOR	RL 0082.1687.00	RESISTA	MK2	
R307	RG 2,43KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5750.00	ROEDERSTEI	D25	
R308	RL 0,60W 10,0KOHM+-1%TK50 RESISTOR	RL 0083.1297.00	RESISTA	MK2	
R310	RL 0,60W 432 OHM+-1%TK50 DEPOS.-CARBON RESISTOR	RL 0083.0355.00	RESISTA	MK2	
R311	RL 0,60W 2,21KOHM+-1%TK50 RESISTOR	RL 0082.2477.00	RESISTA	MK2	
R312	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R313	RG 75,0 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8855.00	ROEDERSTEI	D25	
R314	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R315	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R316	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R317	RL 0,60W 4,75KOHM+-1%TK50 RESISTOR	RL 0083.1097.00	RESISTA	MK2	
R318	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R319	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25	
R320	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R321	RG 33,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5520.00	ROEDERSTEI	D25	
R322	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R323	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R330	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R331	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R332	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	ROEDERSTEI	D25	
R333	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R340	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R341	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R342	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	ROEDERSTEI	D25	

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R343	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R344	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
R350	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R351	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R352	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	ROEDERSTEI	D25	
R353	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R360	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R361	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R370	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R371	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R372	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R373	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R374	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R375	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	ROEDERSTEI	D25	
R376	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R377	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R378	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RCO2	
R379	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R380	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R381	RG 15,0 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5450.00	ROEDERSTEI	D25	
R382	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R383	RG 12,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8661.00	ROEDERSTEI	D25	
R384	RL 0,60W 274 OHM+-1%TK50 RESISTOR	RL 0083.0178.00	RESISTA	MK2	
R385	RL 0,60W 274 OHM+-1%TK50 RESISTOR	RL 0083.0178.00	RESISTA	MK2	
R386	RL 0,60W18,20 OHM+-1%TK50 RESISTOR	RL 0082.9107.00	RESISTA	MK2	
R387	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R388	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R389	RG 56,2 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8826.00	ROEDERSTEI	D25	
R390	RS 0,5W 200 OHM+-20%KURV1 DEPOS.-CARBON POTENTIOMET	RS 0069.8017.00	BI_TECHNOL	82 P	
R392	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R393	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R394	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R395	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R396	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R400	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R402	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RCO2	
R403	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R410	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R412	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	

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		39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	13+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R413	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R415	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R416	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R417	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R418	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R419	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R420	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R421	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R430	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RCO2	
R431	RL 0,60W 1,21KOHM+-1%TK50 RESISTOR	RL 0083.0655.00	RESISTA	MK2	
R432	RL 0,60W 15,0KOHM+-1%TK50 RESISTOR	RL 0083.1400.00	RESISTA	MK2	
R434	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RCO2	
R435	RL 0,60W 365 KOHM+-1%TK50 RESISTOR	RL 0083.2487.00	RESISTA	MK2	
R436	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R437	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R440	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R441	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R442	RG 182 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5595.00	ROEDERSTEI	D25	
R443	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2	
V5	AK BCX69-16 P 20V 1 A TRANSISTOR	AK 0007.5420.00	SIEMENS	BCX69-16	
V6	AD BAS32 75V UDI DIODE	AD 0006.7288.00	PHILIPS	BAS32 (L)	
V10	AK BCX68-16 N 20V 1 A TRANSISTOR	AK 0801.8383.00	SIEMENS	BCX 68-16 E-6327	
V11	AK BCX70H N 45V 200MA TRANSISTOR	AK 0007.3105.00	VALVO	BCX 70 H	
V12	AK BCX68-16 N 20V 1 A TRANSISTOR	AK 0801.8383.00	SIEMENS	BCX 68-16 E-6327	
V35	AK BC550B N 50V 100MA TRANSISTOR	AK 0007.2050.00	SIEMENS	BC550B	
V40	AD BAV99 70V DUO UDI DIODE	AD 0911.0092.00	VALVO	BAV99	
V43	AK 2N2369A N 15V 200MA TRANSISTOR	AK 0010.4680.00	VALVO	2N2369A ODER BSX20	
V52	AE BZX55/B10 0,5W ZDI ZENER DIODE	AE 0289.4302.00	VALVO	BZX79B10	
V71	AE BZX55/B5V1 0,5W ZDI ZENER DIODE	AE 0262.5837.00	TELEFUNKEN	BZX55B5V1	
V110	AE BB909B 25/ 3PF CDI TUNING DIODE	AE 0092.9600.00	PHILIPS	BB909B	
V111	AK BFY90 N 15V 25MA TRANSISTOR	AK 0010.4550.00	VALVO	BFY90	
V121	AE 5082-2810 SCHOTTKY DIODE	AE 0012.9389.00	HEWLETT_PA	5082-2810 GEGURTET	
V125	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V140	AE HSMS2820T31 SCHOTTKY DIODE	0820.3502.00	HEWLETT_PA	HSMS2820L31	
V141	AE HSMS2820T31 SCHOTTKY DIODE	0820.3502.00	HEWLETT_PA	HSMS2820L31	
V145	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V146	AK BFQ34T N 18V 150MA TRANSISTOR	0801.8283.00	PHILIPS	BFQ34T	
V160	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	

MENP5	502 3PUA	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt-Nr. Page
	39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	14+	

095 0028-0693

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V161	AK BFR91 N 15V 35MA TRANSISTOR	AK 0210.6049.00	VALVO	BFR91	
V180	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V190	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V195	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V200	AE HSMS2820T31 SCHOTTKY DIODE	0820.3502.00	HEWLETT_PA	HSMS2820L31	
V201	AE HSMS2820T31 SCHOTTKY DIODE	0820.3502.00	HEWLETT_PA	HSMS2820L31	
V230	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V232	AD BAS16 75V UDI DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V234	AE BAR14-1 2X 100V PIN PIN DIODE	0820.3283.00	SIEMENS	BAR14-1	
V235	AD BAS16 75V UDI DIODE	AD 0007.4924.00	VALVO	BAS16 (A6P)	
V240	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V300	AE BBY40 30/05PF CDI TUNING DIODE	AE 0007.2109.00	VALVO	BBY40	
V301	AE BB909B 25/ 3PF CDI TUNING DIODE	AE 0092.9600.00	PHILIPS	BB909B	
V302	AE BBY40 30/05PF CDI TUNING DIODE	AE 0007.2109.00	VALVO	BBY40	
V303	AE BB909B 25/ 3PF CDI TUNING DIODE	AE 0092.9600.00	PHILIPS	BB909B	
V305	AK BFR90 N 15V 25MA TRANSISTOR	AK 0010.4550.00	VALVO	BFR90	
V306	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V310	AK BC550B N 50V 100MA TRANSISTOR	AK 0007.2050.00	SIEMENS	BC550B	
V315	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V330	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	
V335	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V340	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	
V345	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V350	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	
V355	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V360	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	
V370	AE BAT18 BER.SCH.DI.VHF DIODE	0820.3260.00	VALVO	BAT18	
V371	AE BAT18 BER.SCH.DI.VHF DIODE	0820.3260.00	VALVO	BAT18	
V372	AE BAT18 BER.SCH.DI.VHF DIODE	0820.3260.00	VALVO	BAT18	
V375	AE BAT18 BER.SCH.DI.VHF DIODE	0820.3260.00	VALVO	BAT18	
V376	AE BAT18 BER.SCH.DI.VHF DIODE	0820.3260.00	VALVO	BAT18	
V377	AE BAT18 BER.SCH.DI.VHF DIODE	0820.3260.00	VALVO	BAT18	
V380	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V381	AE BZX55/B8V2 0.5W ZDI ZENER DIODE	AE 0012.2178.00	VALVO	BZX79B8V2	
V391	AK BC550B N 50V 100MA TRANSISTOR	AK 0007.2050.00	SIEMENS	BC550B	
V410	AK BFQ34T N 18V 150MA TRANSISTOR	0801.8283.00	PHILIPS	BFQ34T	
V411	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V420	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V423	AE HSMS2810 SCHOTTKY DIODE	0520.7340.00	HEWLETT_PA	HSMS2810	
V431	AE BZX55/B10 0.5W ZDI ZENER DIODE	AE 0289.4302.00	VALVO	BZX79B10	

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		39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	15+

095 0026-0693

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V440	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	
V445	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICDNIX	U310	
V450	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
V451	AE HSMS2800 SCHOTTKY DIODE	AE 0836.8421.00	HEWLETT_PA	HSMS-2800(#L31)	
X1	FP STECKERLEISTE 32POL. MULTIPPOINT CONNECTOR	FP 0514.4550.00	SIEMENS	V42254-B1200-B641	
X16	FP KURZSCHLUSSBUCHSE SHORTING PLUG	FP 0491.7042.00	IS	IPC-254-BL01	
X50	FP KURZSCHLUSSBUCHSE SHORTING PLUG	FP 0491.7042.00	IS	IPC-254-BL01	
X55	FP KURZSCHLUSSBUCHSE SHORTING PLUG	FP 0491.7042.00	IS	IPC-254-BL01	
X72	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X82	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X83	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X91	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
.94					
X430	FP KURZSCHLUSSBUCHSE SHORTING PLUG	FP 0491.7042.00	IS	IPC-254-BL01	
X14A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X14B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X15A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X15B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X16A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X16B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X16C	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X32A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X32B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X38A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X38B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X40A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X40B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X41A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X41B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X43A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X43B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X43C	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X50A	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X50B	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X50C	VL WIRE-WRAP PIN L=11,6 WIRE-WRAP PIN	0088.4542.00	DUPONT CON	75403-003	
X55A	FP STIFTLAISTE 36P.R2,54 PIN CONNECTOR	FP 0242.3600.00	BINDER	742-11-0179-00-36	
X55B	FP STIFTLAISTE 36P.R2,54 PIN CONNECTOR 3POLIG	FP 0242.3600.00	BINDER	742-11-0179-00-36	
Z10	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	

MENP5	502 3PUA	AI	Datum Date	Schalttaelliste für Parts list for	Sachnummer Stock No.	Blatt-Nr. Page
	39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	16+	

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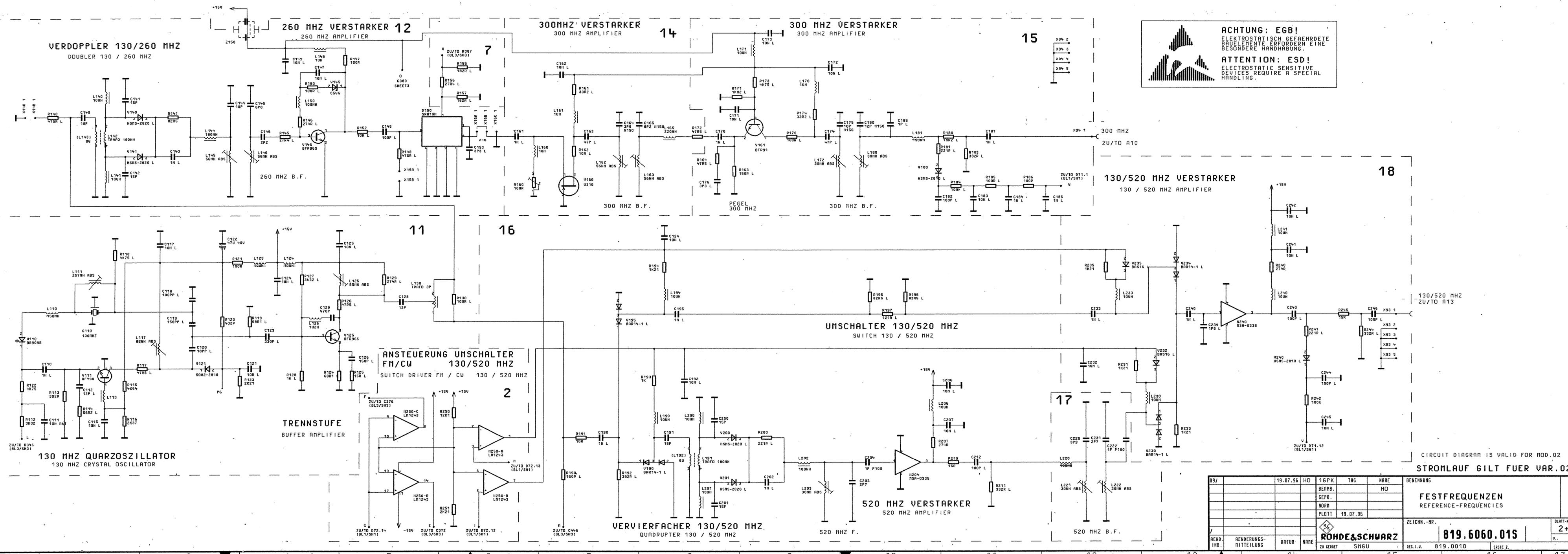
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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
Z71	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
Z80	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
Z82	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
Z84	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
Z86	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
Z90	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
Z150	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	

MENP5	502 3PUA	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No.	Blatt-Nr Page
		39	04.02.98	EE FESTFREQUENZEN REFERENCEF REQUENCIES	0819.6060.01 SA	17-

FUER DIESE UNTERLAGE
BEHALTEN SIE UNS ALLE RECHTE VOR

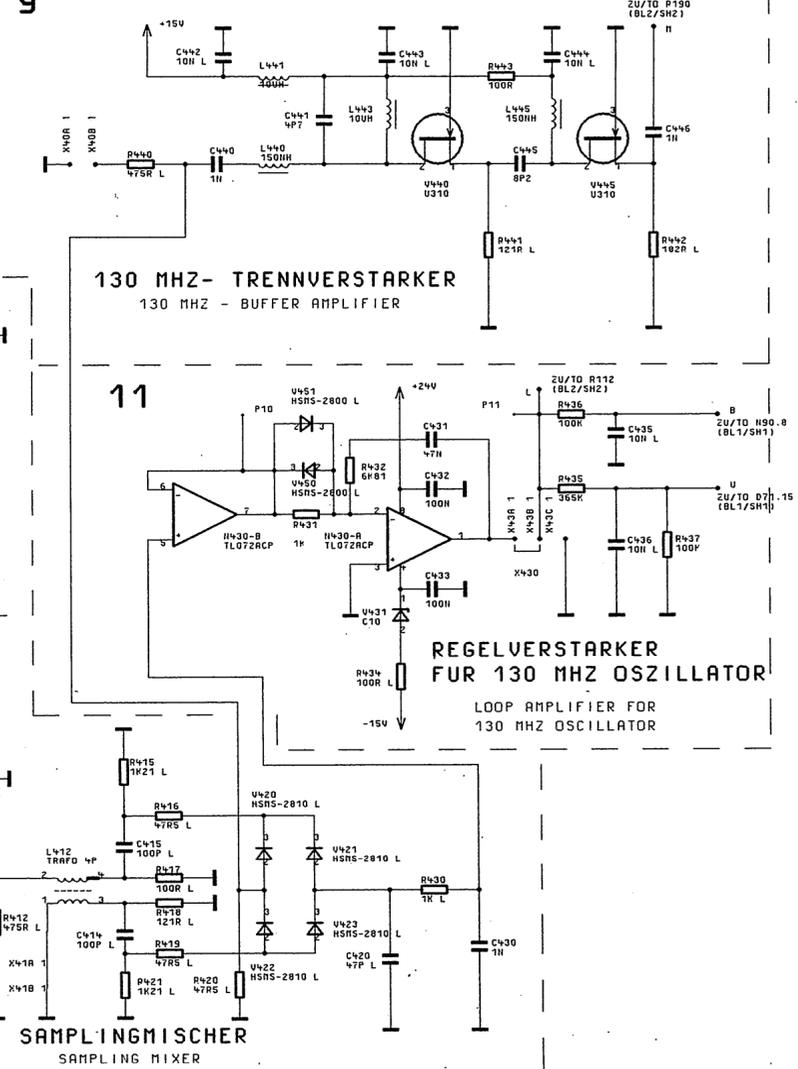
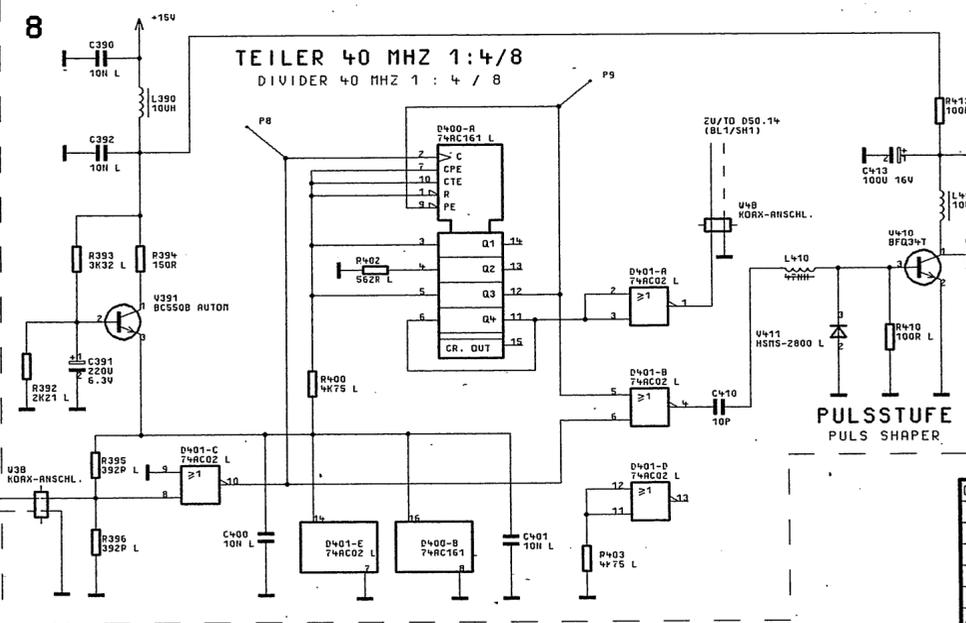
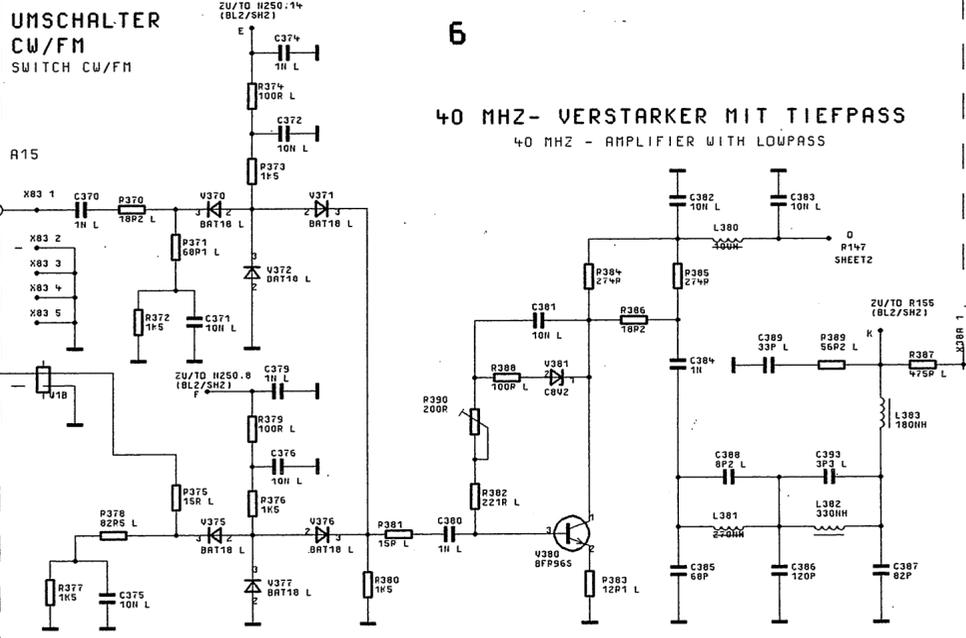
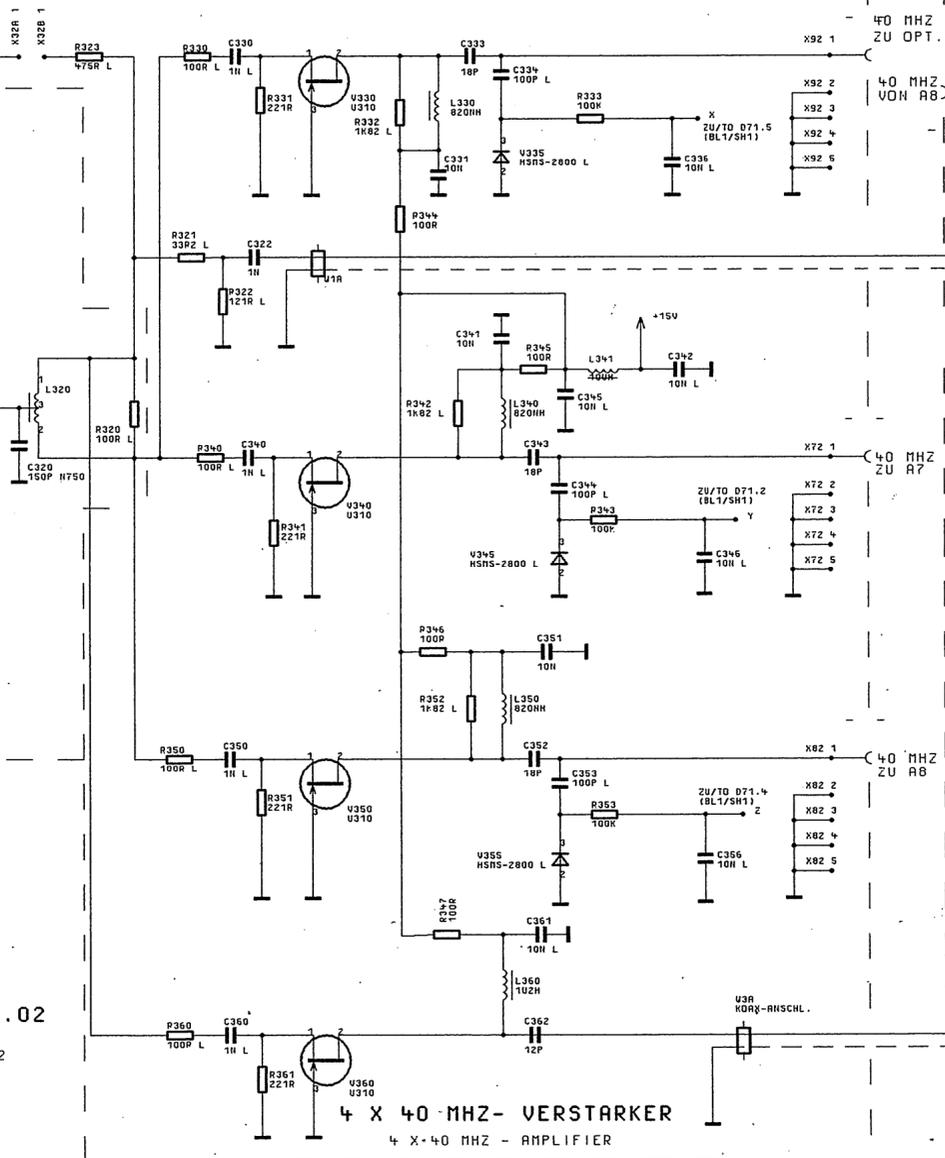
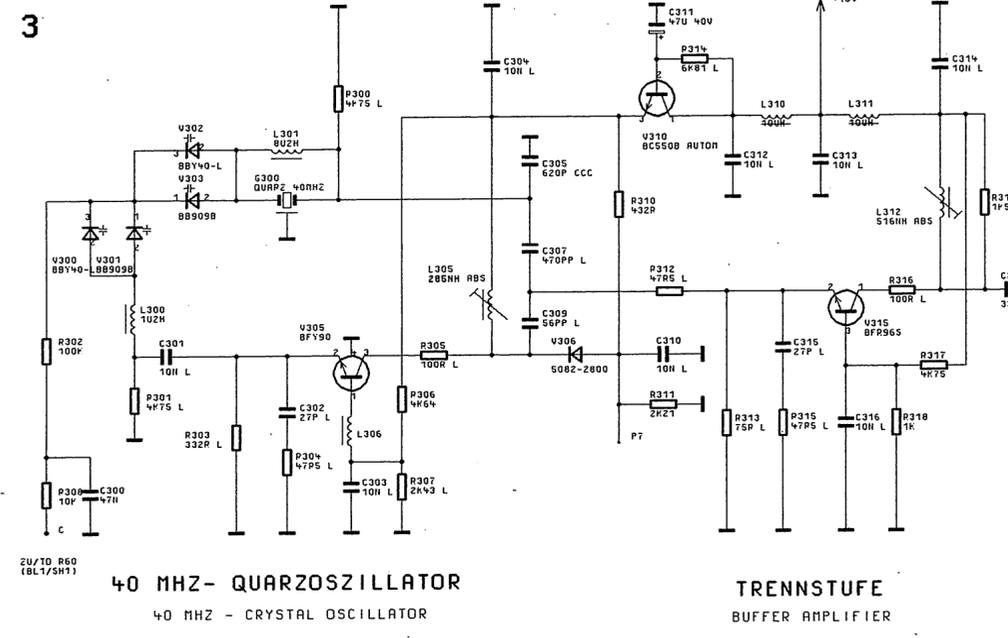
ZEICHN.-NR.



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

09/	19.07.96	HO	16PK	TAG	NAM	BEZEICHNUNG
			BEARR.		HO	FESTFREQUENZEN
			GEPR.			REFERENCE-FREQUENZIES
			NDR			
			PLOTT	19.07.96		
						ZEICHN.-NR.
						819.6060.015
						BLATT-NR.
						2+
REND.	ÄNDERUNGS-	DATUM	NAM	ROHDE & SCHWARZ		
IND.	MITTEILUNG			ZU GERÄT	SIGU	REG.-I.V. 819.0010
						ERSTE Z.

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BEHALTEN SIE UNS ALLE RECHTE UOP

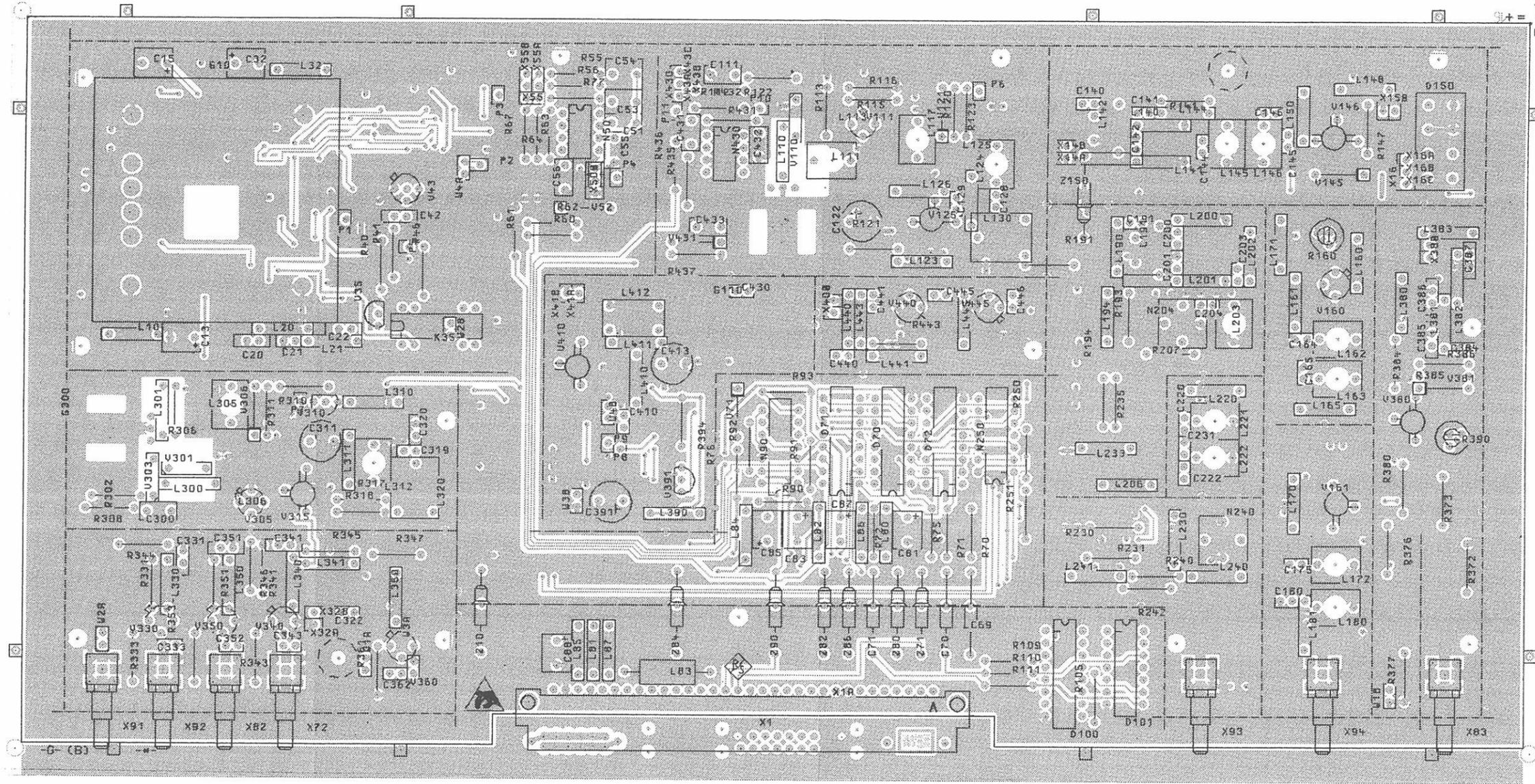


ACHTUNG: EGB!
ELEKTROSTATISCH GEFÄHRDETE
BAUELEMENTE ERFORDERN EINE
BESONDERE HANDHABUNG.

ATTENTION: ESD!
ELECTROSTATIC SENSITIVE
DEVICES REQUIRE A SPECIAL
HANDLING.

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

09/	19.07.96	HO	1GPK	TAG	NAME	BENENNUNG
			BEARB.		HO	FESTFREQUENZEN
			GEPP.			REFERENCE-FREQUENCIES
			NDRP			
			PLOTT	19.07.96		
						ZEICHN.-NR. 819.6060.015
RECHN. IND.	RECHENUNGS-NITTEILUNG	DATUM	NAME	ZU GEHÖRT	SHGU	BLATT-NR. 3+
						v. BL. PEG. I. V. 819.0010 ERSTE Z.



Ansicht und Leitungsfuehrung Bauteilseite
View of tracks on component side

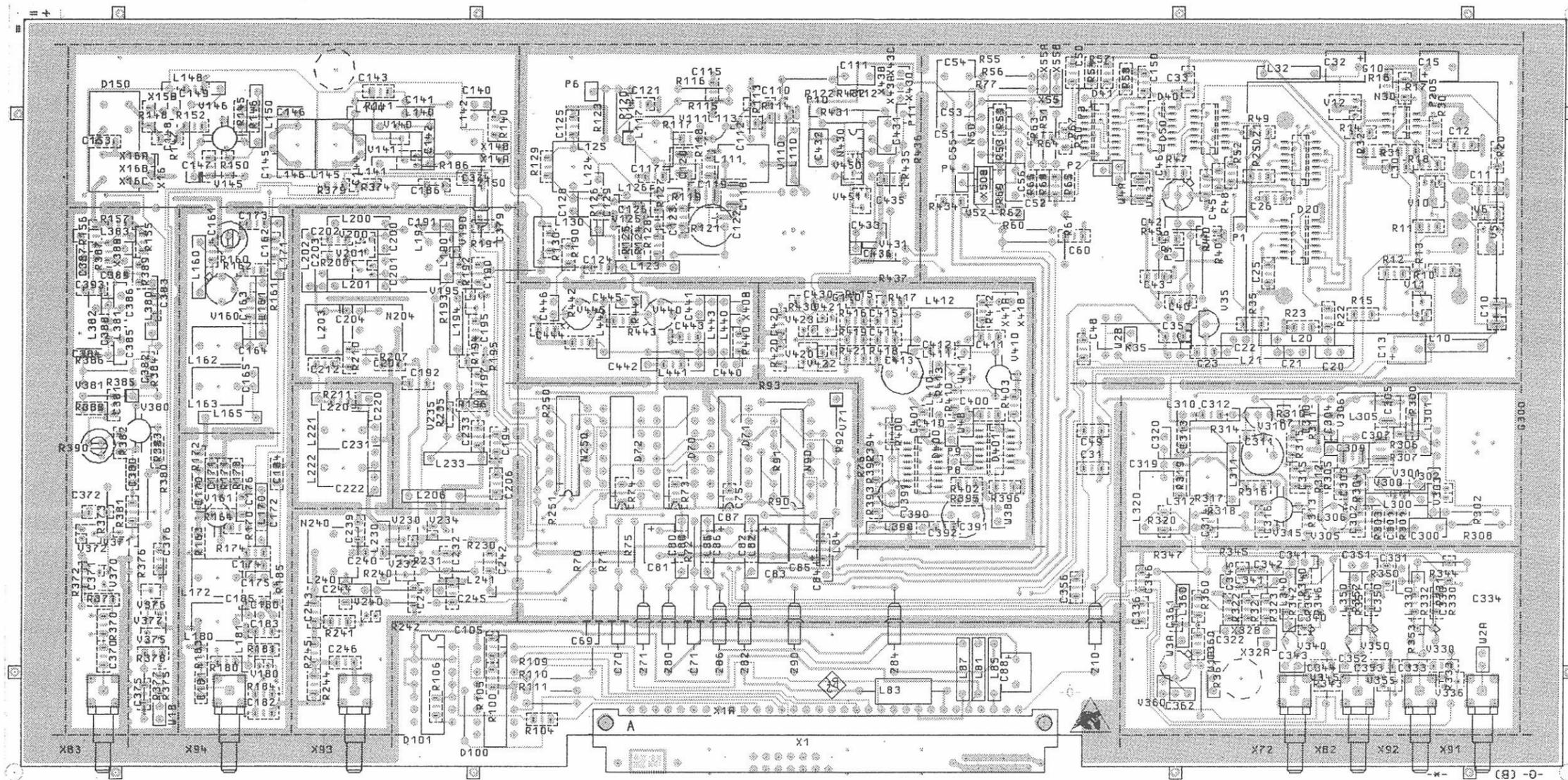
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ACHTUNG: EGB!
Elektrostatisch gefährdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION ESD!
Electrostatic sensitive devices require a special handling.

VARIANTENERKLÄRUNG/VERSION
VAR02-GRUNDAUSFUEHRUNG/BASIC MODEL

F	41825	07.89	HM	Maße ohne Toleranzangabe	Maßstab 1:1		
					Halbzeug, Werkstoff		
				1KGB Tag Name	Benennung	Z	
				Bearb. 07.89 HM	FESTFREQUENZEN REFERENCE-FREQUENCIES		
				Gepr.			
				Norm			
				ROHDE & SCHWARZ	Zeichn.-Nr.	Blatt-Nr.	
				zu Gerät SMGU	819.6060.01	2	
Änd. Zust.	Änderungs-Mitteilung	Tag	Name	reg. i. V.	819.0010 V	EE v. 4 Bl.	
				erste Z.			



Ansicht und Leitungsfuehrung Loetseite
View of tracks on solder side

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Elektrostatisch gefährdete Bauelemente erfordern eine besondere Handhabung.
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Electrostatic sensitive devices require a special handling.

VARIANTENERKLÄRUNG/VERSION
VAR02-GRUNDAUSFUEHRUNG/BASIC MODEL

F	41825	07.89	HM	Maße ohne Toleranzangabe	Maßstab 1 : 1	Halbzeug, Werkstoff	Benennung FESTFREQUENZEN REFERENCE-FREQUENCIES	Z
				1KGB Tag	Name	Zeichn.-Nr. 819.6060.01		Blatt-Nr. 3
				Bearb. 07.89	HM	reg. i. V. 819.0010 V		v. 4 Bl.
				Gepr.		erste Z.		
				Norm				
And. Zust.	Änderungs-Mitteilung	Tag	Name			zu Gerät SMGU		