



**ROHDE & SCHWARZ**

**SERVICE DOCUMENTS**

Summing Loops

819.7166.02

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## Contents

## Page

<b>5</b>	<b>Service Manual "Summing Loops"</b> .....	<b>5.1</b>
<b>5.1</b>	<b>Function Description</b> .....	<b>5.1</b>
5.1.1	Summing loop 1 .....	5.1
5.1.2	Summing loop 2 .....	5.3
5.1.3	Pulse blanking divider .....	5.5
5.1.4	Control and Diagnostics Circuit .....	5.5
<b>5.2</b>	<b>Testing and Adjustment</b> .....	<b>5.6</b>
5.2.1	Adjustment of "Oscillator 1" .....	5.6
5.2.2	Testing the Oscillator and RF Amplifier Levels of "Summing loop 1" .....	5.7
5.2.3	Testing the Closed "Summing loop 1" .....	5.7
5.2.4	Testing the IF Amplifier Level of the "Summing loop 1" .....	5.7
5.2.5	Testing the Settling of "Summing loop 1" .....	5.7
5.2.6	Adjustment of "Oscillator 2" .....	5.8
5.2.7	Testing of Levels of "Summing loop 2" .....	5.8
5.2.8	Testing the Capture Circuit .....	5.8
5.2.9	Testing the Closed "Summing loop 2" .....	5.8
5.2.10	Adjustment and Testing of "Pulse blanking divider" .....	5.9
<b>5.3</b>	<b>Troubleshooting</b> .....	<b>5.10</b>
<b>5.4</b>	<b>Interfaces</b> .....	<b>5.11</b>
5.4.1	Analog Interfaces .....	5.11
5.4.2	Digital Interfaces .....	5.11
5.4.3	Supply Voltages .....	5.11
<b>5.5</b>	<b>List of Required Test Equipment</b> .....	<b>5.12</b>

Circuit diagrams

Parts lists

Components plans



## 5 Service Manual "Summing Loops"

### 5.1 Function Description

(See circuit diagram 819.7166 S and Fig. 5-1)

The summing loop module contains two PLLs, "summing loop 1" and "summing loop 2" and a frequency divider circuit, "pulse blanking divider".

In summing loop 1, the frequency of the external FRN signal at X71 (3 to 3.625 MHz; fine resolution) and the frequency of the external STEP signal at X81 (23.125 to 29.375 MHz; resolution 0.625 MHz) are added or subtracted such that the output is a frequency of 20 to 32.8 MHz with a fine resolution. If only an addition were used, the frequency range at the output would only be half as large.

The frequency of summing loop 1 is added in loop 2 to the external fixed frequency of 300 MHz, resulting in a signal overing 320 to 332.8 MHz. The reference frequency of 40 to 41.6 MHz required for the RF oscillator module is then obtained by dividing by 8 in the pulse blanking divider.

#### 5.1.1 Summing loop 1 (see Fig. 5-1)

The addition or subtraction is performed with a PLL containing a double balance mixer which carries out frequency subtraction. A PLL, i.e. indirect frequency synthesis, has been selected to keep the unwanted mixer products as low as possible at the output of the summing loop.

Switch over between the addition and subtraction of the STEP frequency and the FRN frequency is achieved by inverting the digital phase detector D1, D2. The control signal required is designated as BAND and also switches over the oscillator between two bands (20 to 26.4 MHz/26.4 to 32.8 MHz).

**BAND phase det.  $f_{(OSC1)} =$**   
0    inverted     $f_{(STEP)} - f_{(FRN)} = 20 \text{ to } 26.4 \text{ MHz}$   
1    not inv.     $f_{(STEP)} + f_{(FRN)} = 26.4 \text{ to } 32.8 \text{ MHz}$

The above frequencies are shown in Fig. 5-1.

The oscillator has three adjustment points: OSC1 TOP, OSC1 BOTTOM and OSC1 LEVEL.

The digital phase detector D1, D2 (two edge-triggered D flip-flops), which also operates as a frequency detector prior to synchronization of the control loop, delivers two pulse signals to the control amplifier N15. The width of these pulses corresponds to the phase offset.

The control amplifier converts the pulses into a DC voltage for controlling the oscillator, and provides the control loop with the required transfer function (PI network).

The amplifiers V85, V90, V95 and the attenuator R102 to R104 prevent feedback of the frequencies  $f_{(STEP)}$ ,  $f_{(IF)}$ ,  $f_{(OSC1)} + f_{(STEP)}$  from the mixer to the output so that they do not appear as spurious signals at the output of the instrument.

As a result of the frequency detector property of the phase detector, the locking range is always large enough to enable the PLL to capture at switch on. It may be, however, that the frequency detector controls in the incorrect direction and the control amplifier is driven to full-range and remains there. If e.g.  $f_{(OSC1)} = f_{(STEP)} - f_{(FRN)}$  is the target frequency, the frequency at the IF output of the mixer is equal to the FRN frequency  $f_{(FRN)}$  even with  $f_{(OSC1)} = f_{(STEP)} + f_{(FRN)}$  so that the frequency difference at the phase detector is equal to zero. This means, however, that the sign of the frequency control is changed and that the control for  $f_{(OSC1)} > f_{(STEP)} + f_{(FRN)}$  go in the wrong direction.

The second case in which the frequency control fails is if the IF becomes so large that it falls within the stop band of the IF filter, meaning that there is no IF signal at the phase detector.

A capture circuit has therefore been installed which forces the tuning voltage into a range in which the frequency detector controls correctly. If the control loop synchronizes, the tuning voltage and the preset voltage agree sufficiently exactly that the diodes V423 and V424 block and isolate the preset value from the oscillator.

Since the preset voltages depend on the oscillator characteristic, which in turn is subject to manufacturing tolerances, aging and temperature drift, these factors can be taken into consideration by a calibration routine (SF 67). The controller in the instrument measures the characteristic by means of the Diagnostics function, generates a table of values and stores this table.

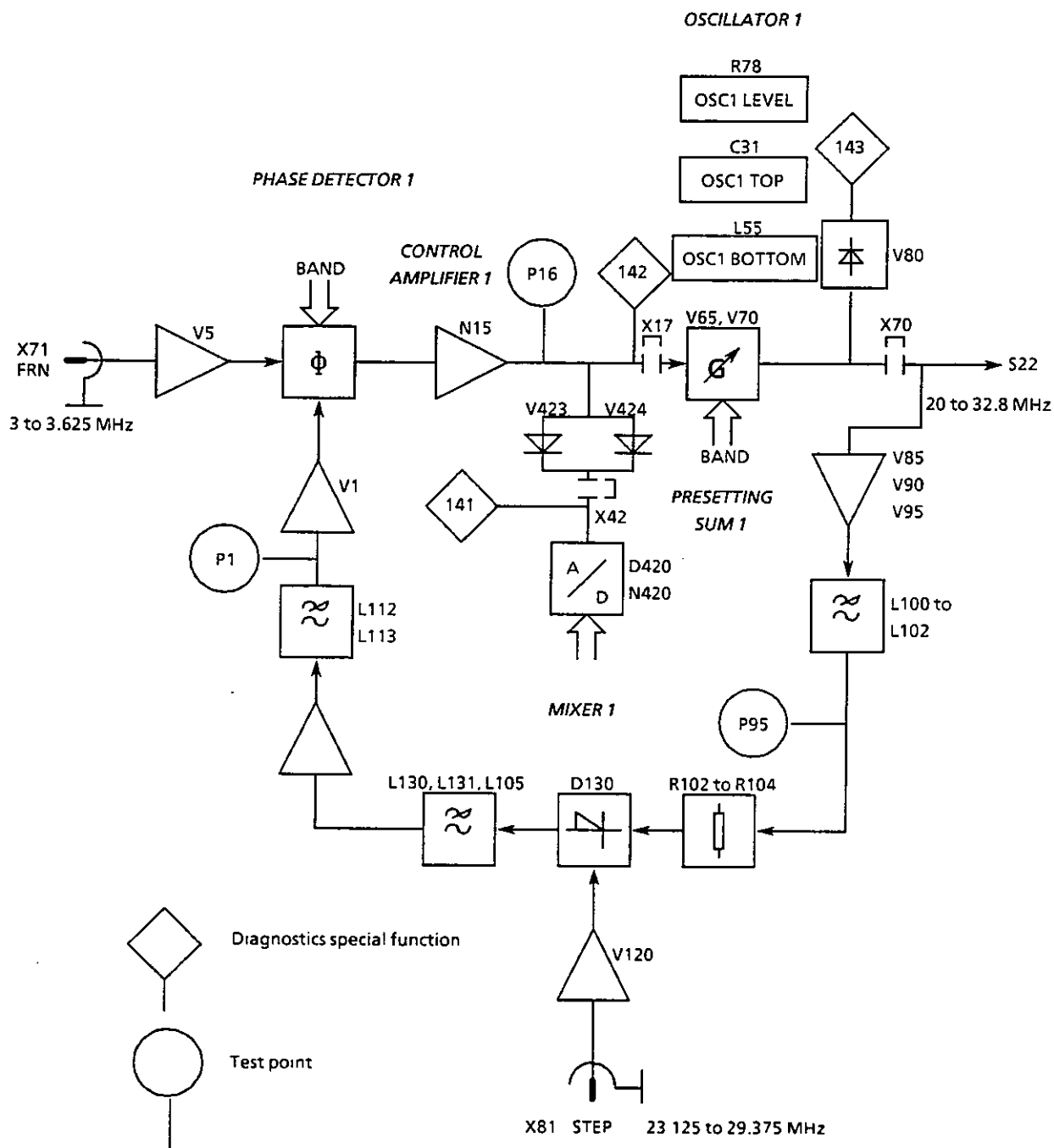


Fig. 5-1 Function diagram of "Summing loop 1"

### 5.1.2 Summing loop 2 (see Fig. 5-3)

The phase detector is a ring mixer which is overdriven (both input signals have the same level) so that amplitude variations cannot be transmitted and interfere with the control. The phase detector characteristic is triangular so that positive and negative output voltages are possible.

The oscillator does not have a range switchover and is designed for the frequency range from 320 to 332.8 MHz. The PLL can therefore only be synchronized at the total frequency of  $f_{(OSC1)}$  and  $f_{(FIXED)}$ .

The oscillator has two adjustment points OSC2 BOTTOM and OSC2 TOP.

The lowpass filter L210 to L212 suppresses the reference signal from oscillator 1 and its harmonics. The cutoff frequency of approx. 10 MHz is a compromise between suppression of the reference signal and phase shift. The latter must not be too large as this would affect the stability of the loop.

The control amplifier consists of the operational amplifier N245 acting as a PI element and the transistor amplifier V240 which takes over the operational amplifier function in the proportional band above 500 kHz. This circuit improves the phase noise of the loop above 500 kHz since the transistor amplifier has a smaller noise figure.

Since the mixer D205 does not act as a frequency detector, the frequency of the oscillator must be pulled into the capture range of the loop by the capture circuit. The capture circuit and the control amplifier constitute a triangular-wave generator which applies the signal shown in Fig. 5-2 to the oscillator input.

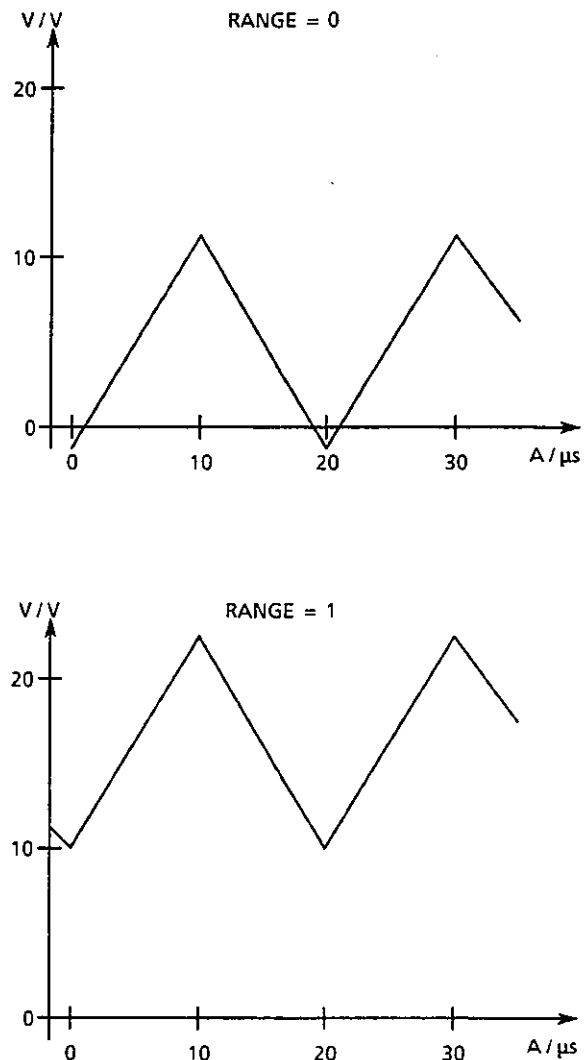


Fig. 5-2

The circuit operates in two ranges which are switched over by the RANGE signal by the controller depending on the frequency setting. The triangular-wave curve means that the oscillator is swept and reaches the lock-in range at some time so that the loop is synchronized. Synchronization of the loop is registered by the capture circuit which is then switched off. An unlocked loop detected either by the out-of-lock detector or by the window comparator of the capture circuit, and the triangular-wave signal is switched on again.





### 5.1.3 Pulse blanking divider (see Fig. 5-4)

The output signal of the digital divider D450, D451 with the frequency  $f_{OSC2}/8$  is applied via pulse shaper V455, V460 to the control input of the electronic switch V470 with which the input signal is switched on or off at the frequency  $f_{OSC2}$ . In this manner, one of the eight periods of the input signal is connected through to the output so that a pulse signal with the frequency  $f_{OSC2}/8$  is present there.

Fig. 5-4 shows that the input signal is connected to the switch (adjustment point DELAY TIME) via a delay line which can be adjusted using varicap diodes. The tuning range corresponds to a phase shift of 180 degrees. Shifting by a total of 360 degrees is possible since the signal from the divider can be inverted using a plug-in jumper (adjustment point POLARITY).

The pulse width of the control signal can also be adjusted (adjustment point WIDTH).

The selective amplifier V440 is tuned to resonance using the adjustment point AMPLITUDE.

### 5.1.4 Control and Diagnostics Circuit

The module is controlled via a serial data bus. The data for the preset values, range switching and diagnostics multiplexer are read into two shift registers D410 and D411.

Eight different diagnostics points (DC values) can be applied to output X1.A17 via the multiplexer component D412.

The "Alarm line" at output X1.A18 is switched from 5 V to 0 V if the tuning voltage of oscillator 1 leaves the range of 1.6 V to 21.6 V (window comparator N20) or if the capture circuit of summing loop 2 is in operation.

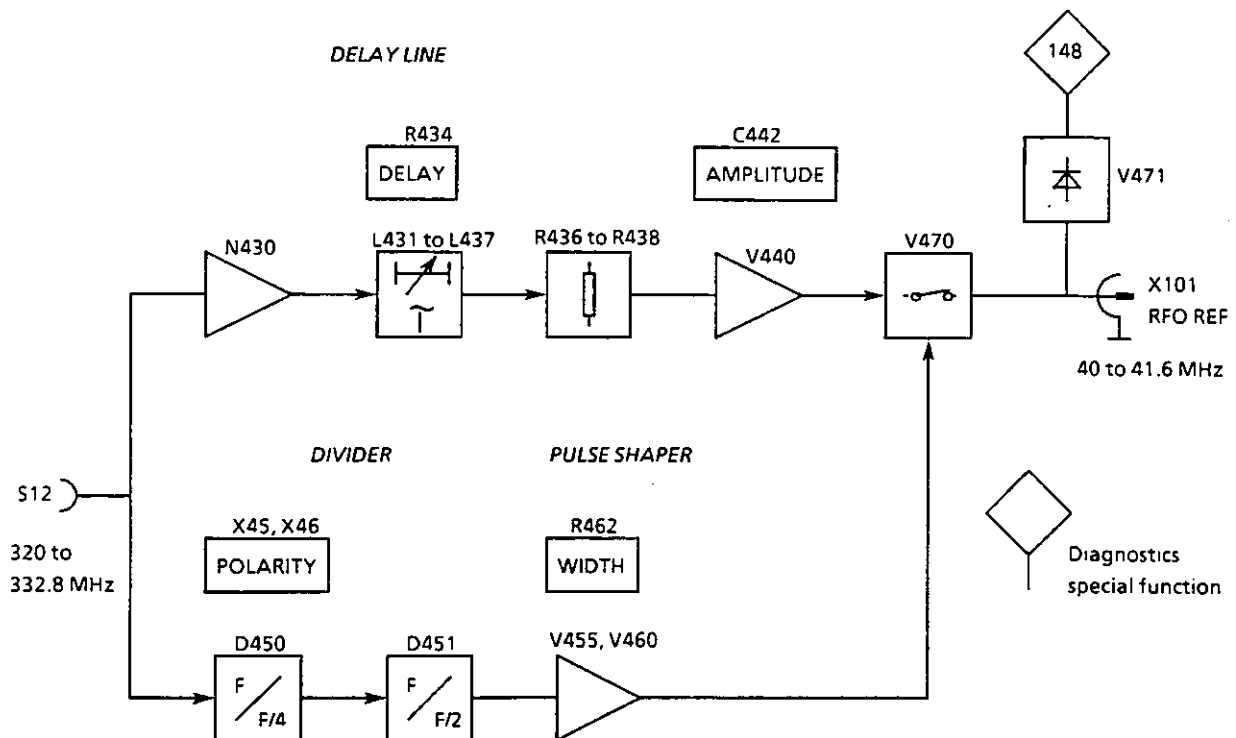


Fig. 5-4 Function diagram of "Pulse blanking divider"

## 5.2 Testing and Adjustment

- Unscrew top cover.
- Connect module to service adapter.
- Enter PRESET.

### 5.2.1 Adjustment of "Oscillator 1"

- Remove jumper X17.
- Apply DC voltage of 3 to 20 V to X17B.
- Connect a frequency counter or power meter to P95 (50  $\Omega$ ).
- Adjust the frequency using coil L55 and trimmer C31 and the level using potentiometer R78 as shown in Table 5-1.

Table 5-1

Entry	Adjust	Marking	Voltage at X17B	Nominal frequency or level at X70	Remarks
RF 1010 MHz	L55	OSZ1 BOTTOM	3 V $\pm$ 0.1 V	19.9 MHz $\pm$ 0.1 MHz	Shift windings of ring core to adjust
RF 1025 MHz	C31	OSZ1 TOP	19.7 V $\pm$ 0.1 V	32.9 MHz $\pm$ 0.1 MHz	Alternately with adjustment OSC1 BOTTOM
RF 1010 MHz			19.7 V $\pm$ 0.1 V	26.25 MHz to 28 MHz	If frequency is too large/small, correct adjustment OSC1 BOTTOM downwards/upwards
RF 1025 MHz			3 V $\pm$ 0.1 V	24.5 MHz to 26.25 MHz	If frequency is too large/small, correct adjustment OSC1 TOP downwards/upwards (within tolerance range)
RF 1025 MHz	R78	OSZ1 LEVEL	10 V $\pm$ 0.1 V	-15 dBm +0 dB -0.5 dB	

- Insert jumper X17 again.

### 5.2.2 Testing the Oscillator and RF Amplifier Levels of "Summing loop 1"

- Remove jumper X17.
- Apply DC voltage of 3 to 20 V (1-V steps) to X17.B.
- Remove jumper X70 and connect power meter to X70.A, C.
- The level must be  $-3 \text{ dBm} \pm 2 \text{ dB}$  after entering RF 1010 MHz and RF 1025 MHz on the instrument and 3 to 20 V at X17.A.
- Insert jumper X70 again.
- Connect a power meter to P95.
- The level at P15 must be  $-15 \text{ dBm} + 1 \text{ dB} - 1.5 \text{ dB}$  after entering RF 1010 MHz and RF 1025 MHz on the instrument and 3 to 20 V at X17.A.
- Insert jumper X17 again.

### 5.2.3 Testing the Closed "Summing loop 1"

- Connect two voltmeters to the plug-in jumpers X42 and X17 or use the diagnostics function 141 or 142 (SHIFT SPECIAL 141 ENTER).
- Connect a frequency counter to P95.
- Enter RF 1010 MHz on the instrument.
- Enter the frequencies listed in Table 5-2 on the instrument and check the frequencies and voltages. The sequence in Table 5-2 must always be followed as otherwise hysteresis will affect the subassembly setting.

Table 5-2

Entry on instrument	Nominal frequency at P95	Nominal voltage at X70
RF 1000.078125 MHz	20.025 MHz $\pm 2 \text{ kHz}$	3.0 V $\pm 1 \text{ V}$
RF 1010.46875 MHz	23.35 MHz $\pm 2 \text{ kHz}$	10 V $\pm 1 \text{ V}$
RF 1019.609375 MHz	26.275 MHz $\pm 2 \text{ kHz}$	17 V $\pm 1 \text{ V}$
RF 1038.984375 MHz	32.475 MHz $\pm 2 \text{ kHz}$	18.5 V $\pm 1 \text{ V}$
RF 1029.53125 MHz	29.45 MHz $\pm 2 \text{ kHz}$	11 V $\pm 1 \text{ V}$
RF 1019.453125 MHz	26.225 MHz $\pm 2 \text{ kHz}$	4.3 V $\pm 1 \text{ V}$

- The voltage difference between X42 and X17 must be  $\leq 2 \text{ V}$ .  
If this is not the case call a calibration routine using SHIFT SPECIAL 67 ENTER and attempt to reduce the voltage difference to below 2 V.

### 5.2.4 Testing the IF Amplifier Level of the "Summing loop 1"

- Connect a level meter to test point P1 (test frequency = 3 to 3.265 MHz).
- Set the following sweep on the instrument:
 

START	1000.39 MHz
STOP	1002.35 MHz
STEP	10 kHz
TIME/STEP	25 ms
- The level at P1 must be  $-15.5 \text{ dBm} \pm 3 \text{ dB}$ .

### 5.2.5 Testing the Settling of "Summing loop 1"

- Connect the signal input of a storage oscilloscope to test point P16 and the trigger input to X1.A22. Set the trigger to a positive slope and a 2.5-V threshold voltage.
- Enter RF 1001 MHz on the instrument, then RF 1019 MHz and then RF 1001 MHz again. With the second and third settings, the voltage at P16 must reach the full-scale value  $\pm 10 \%$  of the voltage jump within 250  $\mu\text{s}$ .

## 5.2.6 Adjustment of "Oscillator 2"

- Remove jumper X24 and apply a variable DC voltage of 3 V to 20 V to X24.B.
- Connect a frequency counter to test point P22.
- Adjust the oscillator using coil L287 and trimmer C285 according to Table 5-3. When reading the frequency, the oscillator chamber (chamber 7) must be covered by a metal plate.

Table 5-3

Adjust	C285	L287
Marking	OSZILLATOR 2 BOTTOM	OSZILLATOR 2 TOP
Voltage at X24B	3.6 V $\pm$ 0.1 V	19.6 V $\pm$ 0.1 V
Nominal frequency at P22	319.75 MHz $\pm$ 0.25 MHz	333.05 MHz $\pm$ 0.25 MHz
Remarks	Alternately with adjustment OSCILLATOR 2 TOP	To adjust, bend windings of air core

- Insert jumper X24 again.

## 5.2.7 Testing of Levels of "Summing loop 2"

- Remove jumper X24 and apply a variable DC voltage (5 V to 22.6 V) to X24.B.
- Enter RF 1019 MHz on the instrument.
- Connect a power meter to P30 or P22 and P25 and vary the voltage at X24.B. The levels must have the values as in Table 5-4.

Table 5-4

Test point	Nominal level	Frequency range
P30	-8 dBm $\pm$ 2 dB	310 to 335 MHz
P22	-4 dBm $\pm$ 2 dB	310 to 335 MHz
P25	-6.5 dBm $\pm$ 2 dB	10 to 35 MHz

- Insert jumper X24 again.

## 5.2.8 Testing the Capture Circuit

- Connect an oscilloscope to plug-in jumper X24.
- Disconnect RF interface plug X94.
- Enter RF 1010 MHz on the instrument.
- A triangular signal with  
with  $V(\text{MIN}) = -1 \text{ V} \pm 2 \text{ V}$   
and  $V(\text{MAX}) = 15 \text{ V} \pm 2 \text{ V}$   
must now be present at X24.
- Enter RF 1025 MHz on the instrument.
- A triangular signal with  
with  $V(\text{MIN}) = 6 \text{ V} \pm 2 \text{ V}$   
and  $V(\text{MAX}) = 23 \text{ V} \pm 2 \text{ V}$   
must now be measured at X24.

## 5.2.9 Testing the Closed "Summing loop 2"

- Connect a voltmeter to plug-in jumper X24 or use the diagnostics function (SHIFT SPECIAL 144 ENTER).
- Connect a frequency counter to P30.
- Cover the oscillator chamber using a metal cover.
- Enter RF 1000.25 MHz on the instrument, then RF 1020 MHz and then RF 1040 MHz.
- The voltage at X24 should be 3 V  $\pm$  2 V, 12 V  $\pm$  2 V and 20 V  $\pm$  2 V.

### 5.2.10 Adjustment and Testing of "Pulse blanking divider"

- Cover the pulse blanking divider chamber (chamber 9) using a metal cover.
- Enter RF 1020 MHz on the instrument.

#### Adjustment

- Connect an oscilloscope to the RF output X101. The 3-dB bandwidth should be at least 250 MHz. Use a low-reflection 50-Ω input. Connect attenuator to oscilloscope input if necessary.
- If the Tektronix oscilloscope 475A is used, the vertical deviation has to be calibrated at 250 MHz by means of a sinewave generator.
- DC coupling has to be switched on at the oscilloscope and the 0-V line must be fixed.
- Adjust WIDTH (R462) to the left maximum.
- Adjust  $V_1$  (amplitude of main pulse, see Fig. 5-5) for maximum using AMPLITUDE (C442).
- Adjust  $V_1$  alternately for maximum using WIDTH (R462) and DELAY (R434) (tolerance =  $3.5 \text{ V} \pm 1 \text{ V}$ ).
- Adjust  $V_3$  (amplitude of second adjacent pulse, see Fig. 5-5) for  $V_3/V_1 = 0.25 \pm 0.05$  using DELAY (R434).
- If this adjustment is unsuccessful, change the position of jumper X45/X46 (POLARITY) and repeat.
- $V_1$  should be  $3.5 \text{ V} \pm 1 \text{ V}$ .
- Enter RF 1001 MHz and RF 1039 MHz on the instrument.  
The amplitude of the main and adjacent pulses should then change by less than 0.3 V.
- Enter RF 1020 MHz, FM EXT AC on the instrument.
- Connect RF output X101 to the instrument again.
- Connect a phase noise test setup to the instrument output and measure the phase noise at 1020.45 MHz (if necessary a spectrum analyzer - overloaded by 10 dB - may be used).
- The phase noise test setup should be below 130 dBc/Hz.

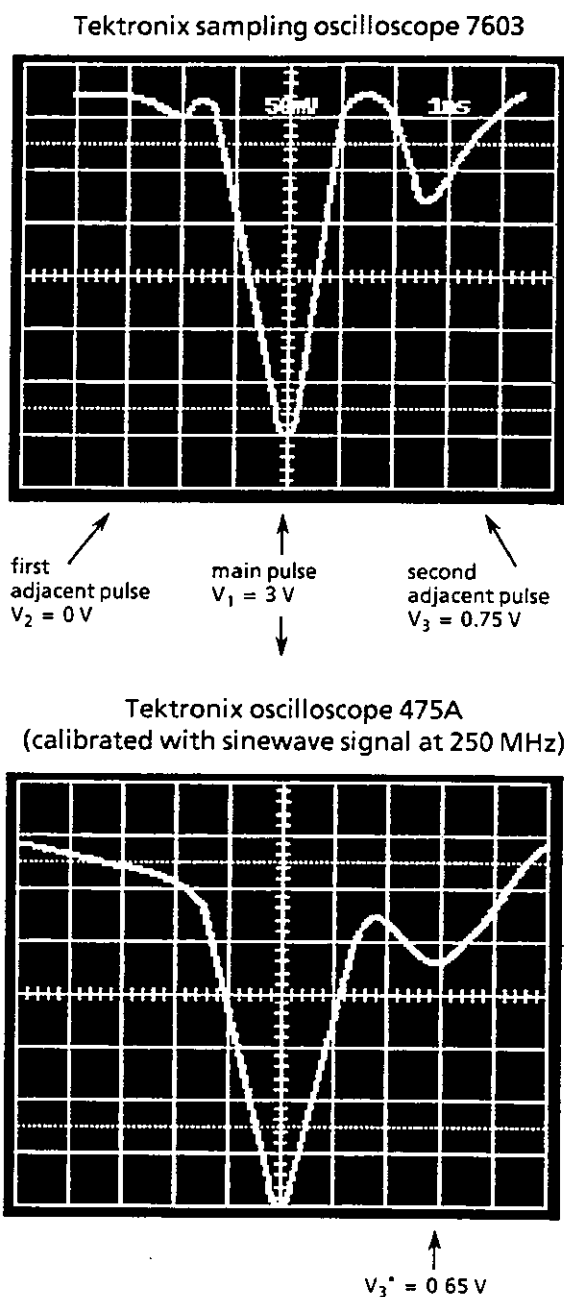


Fig. 5-5 Typical oscillograms of the output signal at X101 (RFO REF) after adjusting the pulse blanking divider

## 5.3 Troubleshooting

- Troubleshooting can be carried out using the DC voltage values and signal levels listed.
- Unscrew both covers, connect the module to the service adapter and enter PRESET RF 1000 MHz on the instrument.

Table 5-5 (DC voltage values)

Test point	Entry on instrument	DC voltage
P60	RF 1010 MHz	-14.2 V $\pm$ 1 V
P62	RF 1025 MHz	23.8 V $\pm$ 1 V
Source of V65		-6.0 V $\pm$ 0.5 V
Source of V70		6.7 V $\pm$ 0.5 V
Emitter of V85		-0.8 V $\pm$ 0.5 V
Emitter of V90		-0.7 V $\pm$ 0.5 V
Collector of V95		6.2 V $\pm$ 0.5 V
Collector of V120		7.1 V $\pm$ 0.5 V
Collector of V110		6.2 V $\pm$ 0.5 V
Collector of V200		7.3 V $\pm$ 0.5 V
Collector of V205		7.0 V $\pm$ 0.5 V
Collector of V240		6.3 V $\pm$ 0.5 V
Emitter of V290		-7.7 V $\pm$ 0.5 V
Emitter of V300		14.6 V $\pm$ 0.5 V
Collector of V330		13.8 V $\pm$ 0.5 V
Output of N310		4.4 V $\pm$ 0.5 V
Output of N315		4.3 V $\pm$ 0.5 V
Collector of V320		7.2 V $\pm$ 0.5 V
Collector of V225		6.3 V $\pm$ 0.5 V
Collector of V235		7.3 V $\pm$ 0.5 V
Output of N430		4.4 V $\pm$ 0.5 V
Kollektor of V440		4.0 V $\pm$ 0.5 V
Emitter of V455		-1.9 V $\pm$ 0.5 V
Drain of V470		14.6 V $\pm$ 0.5 V
Collector of V270	RF 1010 MHz	0.0 V $\pm$ 0.5 V
Collector of V270	RF 1025 MHz	8.6 V $\pm$ 0.5 V
Collector of V275	RF 1010 MHz	13.0 V $\pm$ 0.5 V
Collector of V275	RF 1025 MHz	21.6 V $\pm$ 0.5 V
X42	RF 1039 MHz	Voltage at
	Set SF 67	X17 $\pm$ 0.5 V

Table 5-6 (Control signals (CMOS))

Test point	Entry on instrument	Control signal
D410 / pin 14	RF 1010 MHz	1
D410 / pin 14	RF 1025 MHz	0
D410 / pin 13	RF 1010 MHz	0
D410 / pin 13	RF 1025 MHz	1
D412 / pin 6	SHIFT SPECIAL 141 ENTER	0
D412 / pin 6	SHIFT SPECIAL 0 ENTER	1

Table 5-7 (Signal level)

Test point	Frequency	Level	Remarks
P2	3 to 3.625 MHz	CMOS	
P3	3 to 3.625 MHz	CMOS	
P10	3 to 3.625 MHz	CMOS	
P11	3 ...to 3.625 MHz	CMOS	
X24	50 kHz $\pm$ 20 kHz	Triangular-wave signal with 16 V <sub>pp</sub> $\pm$ 3 V	Plug-in jumper X29 removed

### RF levels

The RF levels are measured using a plug-in jumper to which a 50- $\Omega$  cable is soldered.

Table 5-8

Test point	Entry on instrument RF	Frequency	Level
X70	1000 to 1040 MHz	20 to 32.8 MHz	-2 dBm $\pm$ 3 dB
P95	1000 to 1040 MHz	20 to 32.8 MHz	-15.5 dBm $\pm$ 3 dB
P1	1000 to 1003 MHz	3 to 3.625 MHz	-15.5 dBm $\pm$ 3 dB
P30	1000 to 1040 MHz	320 to 332.8 MHz	-10 dBm $\pm$ 2 dB
P22	1000 to 1040 MHz	320 to 332.8 MHz	-4 dBm $\pm$ 2 dB
P25	1000 to 1040 MHz	20 to 32.8 MHz	-6.5 dBm $\pm$ 2 dB

## 5.4 Interfaces

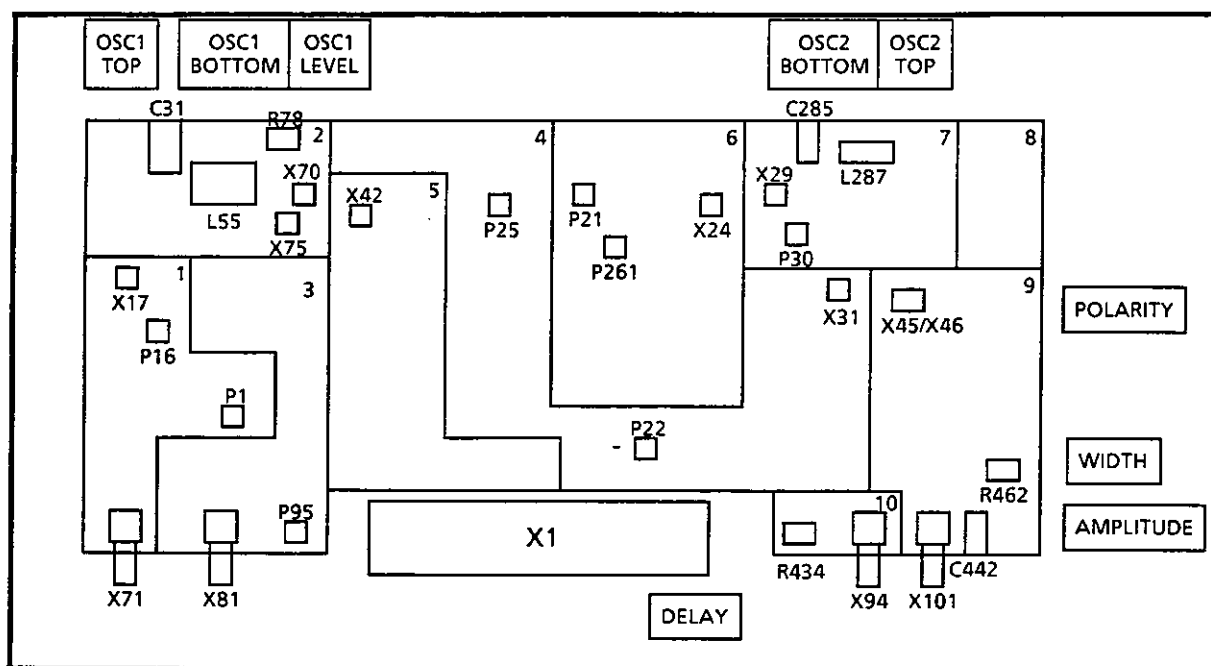


Fig. 5-6 Layout of test points and trimmers

### 5.4.1 Analog interfaces

Designation	Function	Frequency	Level
X71	RF input	3 to 3.625 MHz	5 dBm $\pm$ 1 dB
X81	RF input	23.125 to 29.375 MHz	10 dBm $\pm$ 1 dB
X94	RF input	300 MHz	5 dBm $\pm$ 2 dB
X101	RF output	40 to 41.6 MHz	3.5 V <sub>r</sub> $\pm$ 1 V
X1.A17	Diagnostics output		-5 to +5 V
X1.A18	Alarm line		CMOS

### 5.4.2 Digital interfaces

Designation	Function
X1.A21	LSB of address
X1.A20	
X1.A19	MSB of address
X1.A22	Strobe
X1.A11	Clock
X1.A13	Data

### 5.4.3 Supply voltages

Designation	Voltage
X1.A24	+24 V +0.5 V to -0.7 V
X1.A26	+15 V $\pm$ 0.3 V
X1.A28	+5 V $\pm$ 0.2 V
X1.A30	-15 V +0.8 V to +0.3 V
X1.A10, A12, A14, A16, A23, A25, A27, A29, A31	Ground

## 5.5 List of Required Test Equipment

DC power supply	0 to 20 V	eg NGT 25
Frequency counter	0 to 350 MHz	eg FAM
Power meter	50Ω, -20 to 5 dBm	eg NRV
Multimeter		eg UDL 33
Storage oscilloscope		eg BOS
Oscilloscope	min. 250 MHz, 3-dB bandwidth	





**ROHDE & SCHWARZ**

**Schaltteillisten**

**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
C1	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C5	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C6	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C7	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C8	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C9	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C10	CC 1,8NF+-10%4X5R2000 CAPACITOR	CC 0087.7054.00	PHILIPS_CO	2222 630 01182	
C11	CC 1,8NF+-10%4X5R2000 CAPACITOR	CC 0087.7054.00	PHILIPS_CO	2222 630 01182	
C12	CK 15NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2875.00	ROEDERSTEI	MKT 1826-315-06-4	
C13	CK 15NF+-5%63V RD2,5H7MKT CAPACITOR	CK 0099.2875.00	ROEDERSTEI	MKT 1826-315-06-4	
C14	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C15	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C16	CK 470NF+-5%63V RD5H10MKT CAPACITOR	CK 0099.2975.00	ROEDERSTEI	MKT 1826-447-06-4	
C17	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C18	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C30	CC 33PF+- 5% 63V N750 VIE CERAMIC CAPACITOR	0060.0265.00	ERIE	RPE110 U2J 330J 50	
C31	CT 9,2PF TAUCHTR.RD 7X12 AIR-TYPE TRIMMER	CT 0025.7373.00	TEKELEC	TL 191	
C40	CC 3,9PF+-0,25PF3X4NPD CAPACITOR	CC 0087.6370.00	PHILIPS_CO	2222 678 .....	
C55	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C56	CC 33PF+- 5% 63V N750 VIE CERAMIC CAPACITOR	0060.0265.00	ERIE	RPE110 U2J 330J 50	
C59	CC 1,2NF+-1% 50V NPD 1206 CERAMIC CHIP CAPACITOR	CC 0007.7400.00	PHILIPS_CO	2222 863 18122	
C60	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C61	CC 27NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8473.00	PHILIPS_CO	2238 581 16633	
C65	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C66	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C67	CC 56PF+-2%5X6NPD CAPACITOR	CC 0087.6512.00	PHILIPS_CO	2222 678 .....	
C70	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C71	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C75	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C76	CE 10UF+-20%25V SAL ELECTR.CAPACITOR	CE 0007.3934.00	VALVO	2222 128 36109	
C80	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C81	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C85	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C87	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
..90 C95	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C96	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
..99 C100	CC 82PF+-2%6X7NPD CAPACITOR	CC 0087.6535.00	PHILIPS_CO	2222 678 10 829	
C101	CC 180PF+-2%6X7N750 CAPACITOR	CC 0087.6935.00	PHILIPS_CO	2222 678 58181	
C102	CC 4,7PF+-0,25PF3X4NPD CAPACITOR	CC 0087.6387.00	PHILIPS_CO	2222 678 .....	
MENP5 502 3PUA AI Datum Date					
Schaltzetteliste für Parts list for			Sachnummer Stock No		Blatt-Nr Page
 <b>ROHDE &amp; SCHWARZ</b>			39 04.02.98 EE SUMMIERSCHLEIFEN SUMMING LOOPS		0819.7166.01 SA 1+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C103	CC 180PF+-2%6X7N750 CAPACITOR	CC 0087.6935.00	PHILIPS_CO	2222 678 58181	
C104	CC 82PF+-2%6X7NP0 CAPACITOR	CC 0087.6535.00	PHILIPS_CO	2222 678 10 829	
C105	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C106	CC 180PF+-2%6X7N750 CAPACITOR	CC 0087.6935.00	PHILIPS_CO	2222 678 58181	
C107	CC 47NF+-10%50V5K1200VIEL CAPACITOR	CC 0082.7810.00	UNION_CARB	CK 05 BX 473K	
C108	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	
C110	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C111	CC 680PF+-10%4X5R2000 CAPACITOR	CC 0087.7019.00	PHILIPS_CO	2222 630 51681	
C112	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C113	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C114	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C115	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	PHILIPS_CO	2222 863 18681	
C120	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C121	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C126	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C127	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C130	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C131	CC 390PF+-10%3X4R2000 CAPACITOR	CC 0087.6987.00	PHILIPS_CO	2222 630 51391	
C132	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C200	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C201	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C202	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C203	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C204	CK 220NF+-5%63VRD3,5H9MKT CAPACITOR	CK 0099.2952.00	ROEDERSTEI	MKT 1826-422-06-4	
C205	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C206	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C210	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C211	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C212	CC 56PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8809.00	MURATA	GRM42-6COG 560F 50PT	
C213	CC 470PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8515.00	PHILIPS_CO	2238 863 18471	
C214	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C215	CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6COG 470F 50PT	
C220	CC 27PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8409.00	MURATA	GRM42-6COG 270F 50PT	
C221	CC 150PF+-2%5X6N750 CAPACITOR	CC 0087.6929.00	PHILIPS_CO	2222 678 58151	
C222	CC 150PF+-2%5X6N750 CAPACITOR	CC 0087.6929.00	PHILIPS_CO	2222 678 58151	
C223	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C224	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C225	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C226	CC 10PF+-0,25 50VNPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8480.00	MURATA	GRM42-6COG 100 C50PT	


MENP5	502	3PUA	AI	Datum Date	Schalttafeliste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
				39 04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	0819.7166.01 SA	2+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C230	CC 47PF+-2%5X6NPO CAPACITOR	CC 0087.6506.00	PHILIPS_CO	2222 678 .....	
C231	CC 100PF+-2%6X9NPO CAPACITOR	CC 0087.6541.00	PHILIPS_CO	2222 678 .....	
C232	CC 47PF+-2%5X6NPO CAPACITOR	CC 0087.6506.00	PHILIPS_CO	2222 678 .....	
C233	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C235	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C236	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C237	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C238	CC 1PF+-0,25PF3X4P100 CAPACITOR	CC 0087.6170.00	PHILIPS_CO	2222 678 .....	
C239	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C240	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C241	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C242	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C243	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C244	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6COG 220F 50PT	
C245	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C246	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C247	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C248	CC 120PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8838.00	MURATA	GRM42-6COG 121F 50PT	
C249	CC 120PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8838.00	MURATA	GRM42-6COG 121F 50PT	
C251	CC 82PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8821.00	MURATA	GRM42-6COG 820F 50PT	
C252	CC 120PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8838.00	MURATA	GRM42-6COG 121F 50PT	
C255	CC 100PF+-2%6X9NPO CAPACITOR	CC 0087.6541.00	PHILIPS_CO	2222 678 .....	
C256	CC 100PF+-2%6X9NPO CAPACITOR	CC 0087.6541.00	PHILIPS_CO	2222 678 .....	
C257	CC 100NF+-10%50V5K1200VIE CAPACITOR	CC 0084.5350.00	UNION_CARB	CK 05 BX 104K	
C258	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C270	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C271	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C272	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C283	CC 120PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8838.00	MURATA	GRM42-6COG 121F 50PT	
C284	CC 3,9PF/0,25PF63V3X5N750 CAPACITOR	CC 0099.5568.00	ROEDERSTEI	ROU 744 J4	
C285	CT 3PF LUFTTR.3,6X13F.G.S PISTON TRIMMER	CT 0037.7121.00	TEKELEC	AT 5801	
C286	CC 1,8PF+-0,25PF63V3X5NPO CAPACITOR	CC 0099.5539.00	PHILIPS_CO	2222 678 .....	
C287	CC 33PF+-2%3X4N750 CAPACITOR	CC 0087.6841.00	PHILIPS_CO	2222 678 58339	
C288	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C289	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C290	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6COG 180F 50PT	
C291	CC 15PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8750.00	MURATA	GRM42-6COG 150F 50PT	
C292	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C293	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
MENP5 502 3PUA AI Datum Date					
Schaltteilliste für Parts list for			Sachnummer Stock No.		Blatt-Nr Page
 <b>ROHDE &amp; SCHWARZ</b>			39 04.02.98 EE SUMMIERSCHLEIFEN SUMMING LOOPS		0819.7166.01 SA 3+

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C300	CC 22NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8467.00	PHILIPS_CO	2238 581 16632	
C301	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	
C302	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C303	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C305	CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8667.00	PHILIPS_CO	2238 863 15108	
C308	CC 120PF+-2%6X9NPO CAPACITOR	CC 0087.6558.00	PHILIPS_CO	2222 678 10121	
C310	CC 100PF+-2%6X9NPO CAPACITOR	CC 0087.6541.00	PHILIPS_CO	2222 678 .....	
C311	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C312	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C313	CC 1,8PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8165.00	MURATA	GRM42-6COG 1R8 C50PT	
C315	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C316	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C317	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C318	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C319	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C320	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C321	CC 22PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8396.00	MURATA	GRM42-6COG 220F 50PT	
C322	CC 2,2NF+-10%5X6R2000 CAPACITOR	CC 0087.7060.00	PHILIPS_CO	2222 630 51222	
C323	CC 10NF-20+50%7X8R4000 CAPACITOR	CC 0087.7525.00	VALVO	2222 640 51103	
C324	CC 470PF+-10%3X4R2000 CAPACITOR	CC 0087.6993.00	PHILIPS_CO	2222 630 51471	
C330	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C331	CC 6,2PFO,25PF50V NPO1206 CERAMIC CHIP CAPACITOR	CC 0099.8709.00	MURATA	GRM42-COG6R2 C 50PT	
C332	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6COG 101F 50PT	
C335	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6COG 330F 50PT	
C336	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C337	CC 1,5PF+-0,25 50VNP01206 CERAMIC CHIP CAPACITOR	CC 0007.8159.00	MURATA	GRM42-6COG 1R5 C50PT	
C401	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C402	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C410	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	0911.0705.00	SPECTRUM	SCI-9920-101HT	
C411	LD FILT.40DB/10GHZ10A300V LOWPASS-FILTER	0911.0705.00	SPECTRUM	SCI-9920-101HT	
C412	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C419	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C420	CK 1UF+-5%50V7,5X5,5X10,5 CAPACITOR	CK 0099.2998.00	ERO	MKT 1826-510/054-R	
C421	CC 1NF+-10%63V K2000 CERAMIC CAPACITOR	CC 0022.0784.00	PHILIPS_CO	2222 630	
C422	CC 47PF+-1%50V COG 1206 CERAMIC CHIP CAPACITOR	CC 0099.8496.00	MURATA	GRM42-6COG 470F 50PT	
C423	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C425	CE 10UF+-20%25V SAL ELECTR.CAPACITOR	CE 0007.3934.00	VALVO	2222 128 36109	
C426	CE 100UF+-20%35V RM5 ELECTROLYTIC CAPACITOR	0008.7510.00	PHILIPS_CO	2222 116 90042	
C427	CE 22UF+-20%10V SAL ELECTR.CAPACITOR	CE 0007.3940.00	VALVO	2222 128 34229	


MENP5	502 3PUA	AI	Datum Date	Schalttafeliste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
		39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	<b>0819.7166.01 SA</b>	4+

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
C428	CE 10UF+-20%25V SAL ELECTR.CAPACITOR	CE 0007.3934.00	VALVO	2222 128 36109	
C430	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C431	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	PHILIPS_CO	2222 863 18681	
C432	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C433	CE 2,2UF+-20%40V SAL ELECTR.CAPACITOR	CE 0007.3911.00	VALVO	2222 128 37228	
C434	CC 680PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0007.7375.00	PHILIPS_CO	2222 863 18681	
C435	CC 3,9PF+-0,25 50VNPO1206 CERAMIC CHIP CAPACITOR	CC 0007.8207.00	MURATA	GRM42-6C0G 3R9 C50PT	
C436	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C437	CC 100PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8415.00	MURATA	GRM42-6C0G 101F 50PT	
C440	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C441	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C442	CT 9,2PF TAUCHTR.RD 7X12 AIR-TYPE TRIMMER	CT 0025.7373.00	TEKELEC	TL 191	
C443	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C444	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C450	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C451	CC 150PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8509.00	PHILIPS_CO	2238 863 18151	
C452	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C453	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8438.00	MURATA	GRM42-6 X7R 102 K50	
C454	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C455	CC 33PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8780.00	MURATA	GRM42-6C0G 330F 50PT	
C456	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8438.00	MURATA	GRM42-6 X7R 102 K50	
C460	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C461	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C462	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C470	CC 18PF+-1% 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8767.00	MURATA	GRM42-6C0G 180F 50PT	
C472	CC 220PF+-1%50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8850.00	PHILIPS_CO	2238 863 18221	
C473	CC 1PF+-0,25 50V NPO 1206 CERAMIC CHIP CAPACITOR	CC 0099.8667.00	PHILIPS_CO	2238 863 15108	
C474	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8438.00	MURATA	GRM42-6 X7R 102 K50	
C475	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8438.00	MURATA	GRM42-6 X7R 102 K50	
C476	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C477	CE 2,2UF+-20%40V SAL ELECTR.CAPACITOR	CE 0007.3911.00	VALVO	2222 128 37228	
C478	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C479	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C481	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C483	CC 1NF+-10%50VX7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8438.00	MURATA	GRM42-6 X7R 102 K50	
C484	CC 100NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0007.5237.00	PHILIPS_CO	2238 581 55649	
C490	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
C492	CC 10NF+-10%50V X7R 1206 CERAMIC CHIP CAPACITOR	CC 0099.8521.00	MURATA	GRM42-6X7R103K 50PT	
MENP5 502 3PUA					
ÄI		Datum Date	Schaltteilleiste für Parts list for		Blatt-Nr. Page
 <b>ROHDE &amp; SCHWARZ</b>		39 04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS		0819.7166.01 SA 5+


Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
D1	BL PC74HC74T 2XD-FF DUAL D-TYPE FLIPFLOP	BL 0007.3505.00	PHILIPS_SE	(PC)74HC74D(T)	
D2	BL PC74HC10T 3X3IN NAND TRIPLE 3 INPUT NAND GATE	BL 0804.1115.00	PHILIPS_SE	(PC)74HC10(D/T)	
D130	BM TAK 1H-A SELECT MIXER SELECTED	0819.7337.00			0819.7320.00
D205	BM TAK 1H-B SELECT MIXER SELECTED	0819.7343.00			0819.7320.00
D220	BM SFK 1H-C SELECT MIXER SELECTEC	0819.7350.00			0819.7320.00
D270	BL MM74HCOON 4X2IN.NAND QUAD 2-INPUT NAND GATE	0571.3194.00	PHILIPS_SE	(PC)74HCOON(P)	
D280	BS TL607CP 2X ANALOGSCH ANALOG SWITCH	BJ 0339.6160.00	TEXAS	TL607CP	
D400	BL PC74HC08T 4X2IN.ANDG QUAD 2INPUT AND GATE	BL 0007.3486.00	PHILIPS_SE	(PC)74HC08(D/T)	
D401	BL PC74HC238T 3TO8 L.DEC DECODER/DEMULPLEXER	BL 0820.3277.00	PHILIPS_SE	(PC)74HC238(D/T)	
D410	BL PC74HC4094P 8ST.SH.REG 8ST.SHIFT A.STORE REGIST.	0099.9711.00	PHILIPS_SE	(PC)74HC4094N(P)	
D411	BL PC74HC4094P 8ST.SH.REG 8ST.SHIFT A.STORE REGIST.	0099.9711.00	PHILIPS_SE	(PC)74HC4094N(P)	
D412	BL MM74HC4051N 8CH.AN.MUX 8CH.ANALOG MUX/DEMUX	0099.9670.00	PHILIPS	(PC)74HC4051N(P)	
D420	BJ AD7523JN 1X8B-DAC D/A CONVERTER	0801.8219.00	ANALOG_DEV	AD-7523JN	
D450	BL CA3199 4:1 PRESC IC PRESCALERDIVBY4	0372.1106.10	RCA	CA3199E	
D451	BL MC10H131P 2XD FLIPFL DUAL-D-MS-FLIPFLOP	0345.8190.00	MOTOROLA	MC10H131P (L)	
L1	LD 47,0UH10%4,500HMO,110A CHOKE	LD 0067.3060.00	DALE	IM2	
L17	LD 39,0UH10%3,600HMO,125A CHOKE	LD 0067.3053.00	DALE	IM2	
L20	LD 4,70UH10%1,200HMO,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L30	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L31	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L40	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L50	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L51	LD 50UH 0,4A 3,00HM CHOKE	LD 0026.4649.00	FASTRON_GE	SMSC-500M-00	
L55	LD SPULE 0,94 UH COIL	0819.7214.00			0819.7208.00
L95	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L100	LD 0,39UH10%0,300HMO,710A CHOKE	LD 0067.2811.00	DALE	IM2	
L101	LD 0,39UH10%0,300HMO,710A CHOKE	LD 0067.2811.00	DALE	IM2	
L102	LD 0,39UH10%0,300HMO,710A CHOKE	LD 0067.2811.00	DALE	IM2	
L105	LD 1,50UH10%0,220HMO,560A CHOKE	LD 0067.2886.00	DALE	IM2	
L106	LD 100 UH10%8,000HMO,084A CHOKE	LD 0067.3101.00	DALE	IM2	
L110	LD 1,20UH10%0,180HMO,620A CHOKE	LD 0067.2870.00	DALE	IM2	
L112	LD 2,70UH10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L113	LD 2,70UH10%0,550HMO,355A CHOKE	LD 0067.2911.00	DALE	IM2	
L114	LD 1,20UH10%0,180HMO,620A CHOKE	LD 0067.2870.00	DALE	IM2	
L120	LD 15,0UH10%2,800HMO,157A CHOKE	LD 0067.3001.00	DALE	IM2	
L121	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L130	LD 1,00UH10%1,000HMO,390A CHOKE	LD 0067.2863.00	DALE	IM2	
L131	LD 2,20UH10%0,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	


MENP5	502	3PUA	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
 <b>ROHDE &amp; SCHWARZ</b>				39 04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	<b>0819.7166.01 SA</b>	6+



Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
L210	LD 0,56UH10%0,500HMO,550A CHOKE	LD 0067.2834.00	DALE	IM2	0819.7208.00
L211	LD 1,00UH10%1,000HMO,390A CHOKE	LD 0067.2863.00	DALE	IM2	
L212	LD 1,00UH10%1,000HMO,390A CHOKE	LD 0067.2863.00	DALE	IM2	
L220	LD 0,18UH10%0,120HMO,120A CHOKE	LD 0067.2770.00	DALE	IM2	
L221	LD 0,33UH10%0,220HMO,830A CHOKE	LD 0067.2805.00	DALE	IM2	
L222	LD 0,15UH10%0,100HMO,1230A CHOKE	LD 0067.2763.00	DALE	IM2	
L223	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L230	LD 0,27UH10%0,160HMO,975A CHOKE	LD 0067.2792.00	DALE	IM2	
L231	LD 0,27UH10%0,160HMO,975A CHOKE	LD 0067.2792.00	DALE	IM2	
L251	LD 100NH 10% 0,080HMO 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L255	LD 56,0UH10%5,700HMO,100A CHOKE	LD 0067.3076.00	DALE	IM2	
L265	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L285	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L286	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L287	LD LUFTSPULE 80 NH COIL	0819.7220.00			
L288	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L290	LD 1,00UH10%1,000HMO,390A CHOKE	LD 0067.2863.00	DALE	IM2	
L300	LD 1,00UH10%1,000HMO,390A CHOKE	LD 0067.2863.00	DALE	IM2	
L310	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L311	LD 100NH 10% 0,080HMO 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L315	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L316	LD 100NH 10% 0,080HMO 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L317	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L320	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L329	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L330	LD 100NH 10% 0,080HMO 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L331	LD 100NH 10% 0,080HMO 1,4A CHOKE	LD 0067.2740.00	DALE	IM2	
L401	LD 100 UH10%8,000HMO,084A CHOKE	LD 0067.3101.00	DALE	IM2	
L402	LD 10UH BEI 0,81A 0,660HMO CHOKE	LD 0026.4126.00	DALE	IM 6	
L403	LD 10UH BEI 0,81A 0,660HMO CHOKE	LD 0026.4126.00	DALE	IM 6	
L404	LD 10UH BEI 0,81A 0,660HMO CHOKE	LD 0026.4126.00	DALE	IM 6	
L410	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L415	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L416	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L430	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L431	LD LUFTSPULE 15NH COIL	0819.7250.00			0819.7208.00
L432	LD LUFTSPULE 29NH COIL	0819.7266.00			0819.7208.00
L433	LD LUFTSPULE 29NH COIL	0819.7266.00			0819.7208.00
L434	LD 0,47UH10%0,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
MENP5 502 3PUA Ai Datum					
Schaltteilliste für Parts list for		Sachnummer Stock No		Blatt-Nr Page	
 <b>ROHDE &amp; SCHWARZ</b>		39 04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS		0819.7166.01 SA 7+


Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthaltene in contained in
L435	LD LUFTSPULE 29NH COIL	0819.7266.00			0819.7208.00
L436	LD LUFTSPULE 29NH COIL	0819.7266.00			0819.7208.00
L437	LD LUFTSPULE 15NH COIL	0819.7250.00			0819.7208.00
L440	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L441	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L442	LD LUFTSPULE 15NH COIL	0819.7250.00			0819.7208.00
L443	LD 47,0UH10%,4,500HMO,110A CHOKE	LD 0067.3060.00	DALE	IM2	
L450	LD 5MHZ/20DB 10A CHOKE	LD 0453.4404.00	SPECTRUM	51-750-302	
L451	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L452	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L453	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L454	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L455	LD LUFTSPULE 29NH COIL	0819.7266.00			0819.7208.00
L456	LD 10GHZ 50DB100V10A4RDX9 LEAD-THROUGH FILTER	LD 0451.4636.00	SPECTRUM	51-713-036	
L460	LD 10 UH 10% 3R3 144 MA CHOKE	LD 0026.4184.00	DALE	IM2	
L470	LD 0,47UH10%,350HMO,660A CHOKE	LD 0067.2828.00	DALE	IM2	
L471	LD 4,70UH10%,1,200HMO,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L472	LD 4,70UH10%,1,200HMO,239A CHOKE	LD 0067.2940.00	DALE	IM2	
L481	LD 2,20UH10%,400HMO,415A CHOKE	LD 0067.2905.00	DALE	IM2	
N15	BO SE5534AFE LN OPAMP OPERATIONAL AMPLIFIER	BO 0301.3335.00	SIGNETICS	SE5534AFE	
N20	BO LM393N 2X COMPAR COMPARATOR	BO 0803.0696.00	NSC	LM393N	
N245	BO SE5534AFE LN OPAMP OPERATIONAL AMPLIFIER	BO 0301.3335.00	SIGNETICS	SE5534AFE	
N270	BO LM339N 4X COMPAR COMPARATOR	BO 0342.2062.00	NSC	LM339N	
N310	BM MSA0304 MMIC BROADBAND AMPLIFIER	0840.6094.00	AVANTEK	MSA0304	
N315	BM MSA0304 MMIC BROADBAND AMPLIFIER	0840.6094.00	AVANTEK	MSA0304	
N330	BM MSA0304 MMIC BROADBAND AMPLIFIER	0840.6094.00	AVANTEK	MSA0304	
N420	BO SE5534AFE LN OPAMP OPERATIONAL AMPLIFIER	BO 0301.3335.00	SIGNETICS	SE5534AFE	
N430	BM MSA0304 MMIC BROADBAND AMPLIFIER	0840.6094.00	AVANTEK	MSA0304	
P2	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P3	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P10	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P11	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P15	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P16	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P21	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P26	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P27	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
P28	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	


MENP5	502	3PUA	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
 <b>ROHDE &amp; SCHWARZ</b>			39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	<b>0819.7166.01 SA</b>	8+

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in	
P60	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P75	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P261	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P1A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P1B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P22A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P22B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P25A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P25B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P30A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P30B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P95A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
P95B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001		
R1	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2		
R2	RL 0,60W 68,1 OHM+-1%TK50 RESISTOR	RL 0082.9636.00	RESISTA	MK2		
R3	RL 0,60W 2,74KOHM+-1%TK50 RESISTOR	RL 0083.0926.00	RESISTA	MK2		
R4	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2		
R5	RL 0,60W 100 OHM+-1%TK50 RESISTOR	RL 0082.6543.00	RESISTA	MK2		
R6	RL 0,60W 68,1 OHM+-1%TK50 RESISTOR	RL 0082.9636.00	RESISTA	MK2		
R7	RL 0,60W 2,74KOHM+-1%TK50 RESISTOR	RL 0083.0926.00	RESISTA	MK2		
R8	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2		
R9	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25		
R11	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2		
..14						
R15	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2		
R16	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2		
R17	RL 0,60W 33,2KOHM+-1%TK50 RESISTOR	RL 0083.1674.00	RESISTA	MK2		
R18	RL 0,60W 316 OHM+-1%TK50 RESISTOR	RL 0083.0232.00	RESISTA	MK2		
R19	RL 0,60W 121 OHM+-1%TK50 RESISTOR	RL 0082.9859.00	RESISTA	MK2		
R20	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2		
R21	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2		
R22	RG 1,5 KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5714.00	ROEDERSTEI	D25		
R23	RL 0,60W 18,2KOHM+-1%TK50 RESISTOR	RL 0083.1480.00	RESISTA	MK2		
R24	RL 0,60W 1,37KOHM+-1%TK50 RESISTOR	RL 0083.0690.00	RESISTA	MK2		
R25	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2		
R55	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2		
R56	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2		
R59	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2		
R60	RL 0,60W 10,0KOHM+-1%TK50 RESISTOR	RL 0083.1297.00	RESISTA	MK2		
MENP5	502 3PUA	ÄI	Datum Date	Schaltteilleiste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
	ROHDE & SCHWARZ	39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	0819.7166.01 SA	9+

Für diese Unterlage behalten  
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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R61	RL 0,60W 100KOHM+-1%TK50 RESISTOR	RL 0082.1764.00	RESISTA	MK2	
R62	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R63	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R64	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	
R65	RL 0,60W 47,5 OHM+-1%TK50 RESISTOR	RL 0082.9507.00	RESISTA	MK2	
R66	RL 0,60W 27,4KOHM+-1%TK50 RESISTOR	RL 0082.2583.00	RESISTA	MK2	
R67	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	
R68	RL 0,60W 1,82KOHM+-1%TK50 RESISTOR	RL 0082.2277.00	RESISTA	MK2	
R70	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R71	RL 0,60W 18,2KOHM+-1%TK50 RESISTOR	RL 0083.1480.00	RESISTA	MK2	
R72	RL 0,60W 10,0KOHM+-1%TK50 RESISTOR	RL 0083.1297.00	RESISTA	MK2	
R73	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R74	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R75	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R76	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R77	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R78	RS 0,5W200 OHM+-10%10X10X CERMET POTENTIOMETER	RS 0247.7949.00	BI_TECHNOL	72X-R	
R80	RL 0,60W 10,0KOHM+-1%TK50 RESISTOR	RL 0083.1297.00	RESISTA	MK2	
R81	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R82	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R85	RL 0,60W 121 OHM+-1%TK50 RESISTOR	RL 0082.9859.00	RESISTA	MK2	
R86	RL 0,60W22,10 OHM+-1%TK50 RESISTOR	RL 0082.9188.00	RESISTA	MK2	
R87	RL 0,60W 332 OHM+-1%TK50 RESISTOR	RL 0083.0255.00	RESISTA	MK2	
R88	RL 0,60W22,10 OHM+-1%TK50 RESISTOR	RL 0082.9188.00	RESISTA	MK2	
R89	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R90	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R91	RL 0,60W 56,2 OHM+-1%TK50 RESISTOR	RL 0082.9571.00	RESISTA	MK2	
R92	RL 0,60W 182 OHM+-1%TK50 RESISTOR	RL 0083.0010.00	RESISTA	MK2	
R95	RL 0,60W 10,0 OHM+-1%TK50 RESISTOR	RL 0082.8852.00	RESISTA	MK2	
R96	RL 0,60W 1,50KOHM+-1%TK50 RESISTOR	RL 0083.0732.00	RESISTA	MK2	
R97	RL 0,60W 562 OHM+-1%TK50 RESISTOR	RL 0083.0461.00	RESISTA	MK2	
R98	RL 0,60W 332 OHM+-1%TK50 RESISTOR	RL 0083.0255.00	RESISTA	MK2	
R99	RL 0,60W 332 OHM+-1%TK50 RESISTOR	RL 0083.0255.00	RESISTA	MK2	
R100	RL 0,60W 47,5 OHM+-1%TK50 RESISTOR	RL 0082.9507.00	RESISTA	MK2	
R101	RL 0,60W 47,5 OHM+-1%TK50 RESISTOR	RL 0082.9507.00	RESISTA	MK2	
R102	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R103	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R104	RG 82,5 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8861.00	PHILIPS_CO	RC02	
R105	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	

MENP5	502 3PUA	Äl	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
 <b>ROHDE &amp; SCHWARZ</b>	39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	<b>0819.7166.01 SA</b>	10+	


Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R106	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R107	RL 0,60W 10,0 OHM+-1%TK50 RESISTOR	RL 0082.8852.00	RESISTA	MK2	
R108	RL 0,60W 10,0 OHM+-1%TK50 RESISTOR	RL 0082.8852.00	RESISTA	MK2	
R110	RL 0,60W 392 OHM+-1%TK50 RESISTOR	RL 0082.2183.00	RESISTA	MK2	
R111	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R112	RL 0,60W 51,1 OHM+-1%TK50 RESISTOR	RL 0082.9536.00	RESISTA	MK2	
R120	RL 0,35W271 OHM+-0,1%TK25 RESISTOR	RL 0083.8056.00	DRALORIC	SMA0207	
R121	RL 0,60W18,20 OHM+-1%TK50 RESISTOR	RL 0082.9107.00	RESISTA	MK2	
R122	RL 0,35W271 OHM+-0,1%TK25 RESISTOR	RL 0083.8056.00	DRALORIC	SMA0207	
R123	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R124	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R125	RL 0,60W 10,0 OHM+-1%TK50 RESISTOR	RL 0082.8852.00	RESISTA	MK2	
R126	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R127	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R130	RL 0,60W 51,1 OHM+-1%TK50 RESISTOR	RL 0082.9536.00	RESISTA	MK2	
R200	RL 0,60W 56,2 OHM+-1%TK50 RESISTOR	RL 0082.9571.00	RESISTA	MK2	
R201	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R202	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R203	RL 0,60W 332 OHM+-1%TK50 RESISTOR	RL 0083.0255.00	RESISTA	MK2	
R204	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R205	RL 0,60W 10,0 OHM+-1%TK50 RESISTOR	RL 0082.8852.00	RESISTA	MK2	
R206	RL 0,60W 681 OHM+-1%TK50 RESISTOR	RL 0083.0490.00	RESISTA	MK2	
R207	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R208	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R209	RL 0,60W12,10 OHM+-1%TK50 RESISTOR	RL 0082.8930.00	RESISTA	MK2	
R210	RL 0,60W 51,1 OHM+-1%TK50 RESISTOR	RL 0082.9536.00	RESISTA	MK2	
R211	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R219	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R220	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R221	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R222	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R223	RG 51,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8810.00	ROEDERSTEI	D25	
R224	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R225	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R226	RL 0,60W12,10 OHM+-1%TK50 RESISTOR	RL 0082.8930.00	RESISTA	MK2	
R227	RL 0,60W12,10 OHM+-1%TK50 RESISTOR	RL 0082.8930.00	RESISTA	MK2	
R228	RL 0,60W 392 OHM+-1%TK50 RESISTOR	RL 0082.2183.00	RESISTA	MK2	
R230	RL 0,60W 51,1 OHM+-1%TK50 RESISTOR	RL 0082.9536.00	RESISTA	MK2	
R231	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
MENP5	502 3PUA	ÄI	Datum Date	Schalttailliste für Parts list for	Sachnummer Stock No.
 <b>ROHDE &amp; SCHWARZ</b>		39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	<b>0819.7166.01 SA</b>
					Blatt-Nr. Page
					11+

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Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R235	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R236	RL 0,60W 681 OHM+-1%TK50 RESISTOR	RL 0083.0490.00	RESISTA	MK2	
R237	RL 0,60W 12,10 OHM+-1%TK50 RESISTOR	RL 0082.8930.00	RESISTA	MK2	
R238	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R239	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R240	RL 0,60W 56,2 OHM+-1%TK50 RESISTOR	RL 0082.9571.00	RESISTA	MK2	
R241	RL 0,35W 511 OHM+-1%TK50 RESISTOR	RL 0083.0426.00	RESISTA	MK2	
R242	RL 0,60W 121 OHM+-1%TK50 RESISTOR	RL 0082.9859.00	RESISTA	MK2	
R243	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R244	RL 0,60W 56,2 OHM+-1%TK50 RESISTOR	RL 0082.9571.00	RESISTA	MK2	
R245	RL 0,60W 681 OHM+-1%TK50 RESISTOR	RL 0083.0490.00	RESISTA	MK2	
R246	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R247	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	
R248	RL 0,60W 2,00KOHM+-1%TK50 RESISTOR	RL 0083.0826.00	RESISTA	MK2	
R249	RL 0,60W 825 OHM+-1%TK50 RESISTOR	RL 0082.2502.00	RESISTA	MK2	
R250	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R251	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R255	RL 0,60W 562 OHM+-1%TK50 RESISTOR	RL 0083.0461.00	RESISTA	MK2	
R256	RL 0,60W 2,21KOHM+-1%TK50 RESISTOR	RL 0082.2477.00	RESISTA	MK2	
R257	RL 0,60W 2,21KOHM+-1%TK50 RESISTOR	RL 0082.2477.00	RESISTA	MK2	
R258	RL 0,60W 221 KOHM+-1%TK50 RESISTOR	RL 0083.2270.00	RESISTA	MK2	
R259	RL 0,60W 681 KOHM+-1%TK50 RESISTOR	RL 0083.2735.00	RESISTA	MK2	
R260	RL 0,60W 681 KOHM+-1%TK50 RESISTOR	RL 0083.2735.00	RESISTA	MK2	
R261	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R262	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R265	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R266	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R267	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R270	RL 0,60W 10,0KOHM+-1%TK50 RESISTOR	RL 0083.1297.00	RESISTA	MK2	
R271	RL 0,60W 7,87KOHM+-1%TK50 RESISTOR	RL 0083.1216.00	RESISTA	MK2	
R272	RL 0,60W 1,54KOHM+-1%TK50 RESISTOR	RL 0083.0749.00	PHILIPS_CO	MRS 25	
R273	RL 0,60W 13,0KOHM+-1%TK50 RESISTOR	RL 0083.1368.00	RESISTA	MK2	
R274	RL 0,60W 22,1KOHM+-1%TK50 RESISTOR	RL 0083.1545.00	RESISTA	MK2	
R275	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R276	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R277	RL 0,60W 33,2KOHM+-1%TK50 RESISTOR	RL 0083.1674.00	RESISTA	MK2	
R278	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R279	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R280	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	

MENP5	502	3PUA	AI	Datum Date	Schaltplanliste für Parts list for	Sachnummer Stock No	Blatt-Nr Page
 <b>ROHDE &amp; SCHWARZ</b>				39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	0819.7166.01 SA 12+


Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R281	RL 0,60W 5,62KOHM+-1%TK50 RESISTOR	RL 0082.2190.00	RESISTA	MK2	
R282	RL 0,60W 5,62KOHM+-1%TK50 RESISTOR	RL 0082.2190.00	RESISTA	MK2	
R283	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	
R285	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R286	RG 825 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.7259.00	ROEDERSTEI	D25	
R287	RL 0,60W 182 OHM+-1%TK50 RESISTOR	RL 0083.0010.00	RESISTA	MK2	
R290	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R291	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R292	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R300	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R301	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R302	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R303	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R304	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R305	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R307	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R308	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R310	RL 0,60W 182 OHM+-1%TK50 RESISTOR	RL 0083.0010.00	RESISTA	MK2	
R311	RL 0,60W 182 OHM+-1%TK50 RESISTOR	RL 0083.0010.00	RESISTA	MK2	
R312	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R313	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R314	RG 121 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8903.00	ROEDERSTEI	D25	
R315	RL 0,60W 150 OHM+-1%TK50 RESISTOR	RL 0082.9942.00	RESISTA	MK2	
R316	RL 0,60W 182 OHM+-1%TK50 RESISTOR	RL 0083.0010.00	RESISTA	MK2	
R320	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R321	RL 0,35W470 OHM+-0,1%TK25 RESISTOR	RL 0083.8510.00	DRALORIC	SMA0207	
R322	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R323	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R324	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R325	RL 0,60W 221 OHM+-1%TK50 RESISTOR	RL 0083.0084.00	RESISTA	MK2	
R328	RL 0,60W 332 OHM+-1%TK50 RESISTOR	RL 0083.0255.00	RESISTA	MK2	
R329	RG 10,0 OHM+-1%TK100 1206 CHIP -RESISTOR	RG 0006.8649.00	PHILIPS_CO	RC02	
R330	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R331	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R332	RG 221 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5614.00	ROEDERSTEI	D25	
R333	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R334	RG 2,21KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5743.00	ROEDERSTEI	D25	
R335	RG 4,75KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5820.00	ROEDERSTEI	D25	
R336	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	

MENP5	502 3PUA	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt Nr. Page
	39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	0819.7166.01 SA	13+	


Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R337	RG 562 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9068.00	PHILIPS_CO	RC02	
R400	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	ROEDERSTEI	D25	
R401	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	ROEDERSTEI	D25	
R402	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R410	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R411	RL 0,60W 475 OHM+-1%TK50 RESISTOR	RL 0083.0390.00	RESISTA	MK2	
R412	RL 0,60W 4,75KOHM+-1%TK50 RESISTOR	RL 0083.1097.00	RESISTA	MK2	
R420	RL 0,60W 3,32KOHM+-1%TK50 RESISTOR	RL 0083.0990.00	RESISTA	MK2	
R421	RL 0,60W 9,09KOHM+-1%TK50 RESISTOR	RL 0082.2177.00	RESISTA	MK2	
R422	RL 0,60W 5,23KOHM+-1%TK50 RESISTOR	RL 0083.1122.00	RESISTA	MK2	
R423	RL 0,60W 47,5KOHM+-1%TK50 RESISTOR	RL 0083.1800.00	RESISTA	MK2	
R424	RL 0,60W 12,1KOHM+-1%TK50 RESISTOR	RL 0083.1351.00	RESISTA	MK2	
R430	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R431	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R432	RL 0,60W 274 OHM+-1%TK50 RESISTOR	RL 0083.0178.00	RESISTA	MK2	
R433	RG 3,32KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5789.00	ROEDERSTEI	D25	
R434	RS 0,5W50KOHM+-10%10X10X5 CERMET POTENTIOMETER T	RS 0087.7677.00	SPECTROL	63X ... T010	
R435	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R436	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R437	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R438	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R439	RG 39,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5543.00	ROEDERSTEI	D25	
R440	RG 475 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5695.00	ROEDERSTEI	D25	
R441	RG 1,21KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9968.00	ROEDERSTEI	D25	
R442	RG 1,82KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5720.00	ROEDERSTEI	D25	
R443	RG 274 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5637.00	ROEDERSTEI	D25	
R444	RG 47,5 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5566.00	ROEDERSTEI	D25	
R450	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R451	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R452	RG 392 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5672.00	ROEDERSTEI	D25	
R455	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R456	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R457	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R458	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R460	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R461	RG 681 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.9080.00	ROEDERSTEI	D25	
R462	RS 0,5W500 OHM+-10%10X10X CERMET POTENTIOMETER	RS 0247.7955.00	SPECTROL	63X ... T010	
R463	RG 6,81KOHM+-1%TK100 1206 CHIP RESISTOR	RG 0007.0758.00	ROEDERSTEI	D25	
R464	RL 1W 182 OHM+-15TK100 METAL FILM RESISTOR	RL 0006.3799.00	ROEDERSTEI	MK 5	


MENP5	502	3PUA	AI	Datum Date	Schaltteilliste für Parts list for	Sachnummer Stock No	Blatt-Nr. Page
 <b>ROHDE &amp; SCHWARZ</b>			39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	<b>0819.7166.01 SA</b>	14+

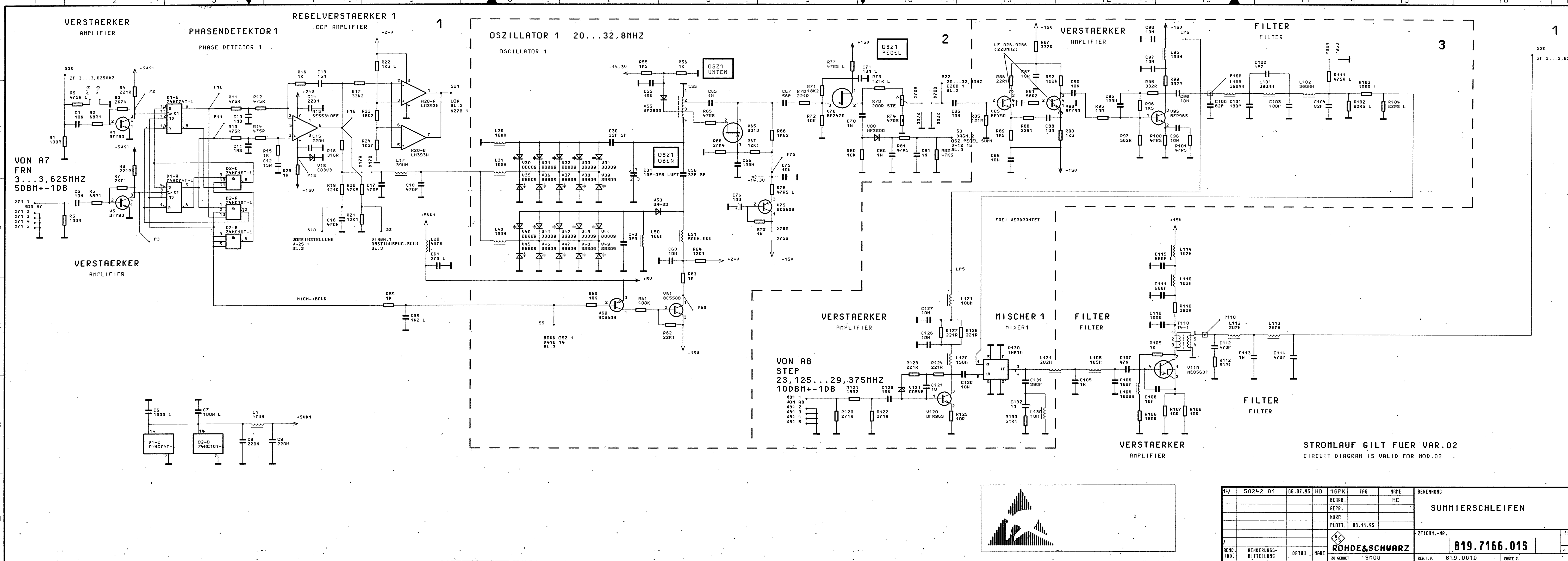


Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
R465	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R470	RG 47,5KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5950.00	ROEDERSTEI	D25	
R476	RG 3,92KOHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5808.00	ROEDERSTEI	D25	
R477	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R480	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R481	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R482	RG 1,0 KO +-1%TK100 1206 CHIP RESISTOR	RG 0006.7271.00	PHILIPS_CO	RC02	
R483	RL 0,60W 1KOHM+-1%TK50 RESISTOR	RL 0082.2160.00	RESISTA	MK2	
R484	RG 100 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8884.00	PHILIPS_CO	RC02	
R485	RG 10,0KOHM+-1%TK100 1206 RG CHIP RESISTOR	RG 0007.0793.00	PHILIPS_CO	RC02	
R487	RG 18,2 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5466.00	ROEDERSTEI	D25	
R488	RG 68,1 OHM+-1%TK100 1206 CHIP RESISTOR	RG 0006.8849.00	ROEDERSTEI	D25	
R489	RG 22,1 OHM+-1%TK100 1206 RESISTOR CHIP	RG 0007.5489.00	ROEDERSTEI	D25	
T110	LU HF-UEBERTR. 0,2-350MHZ WIDE-BAND TRANSFORMER	0276.3619.00	MINI-CIRCU	T 4-1 W38	
T205	LU HF-UEBERTR. 0,2-350MHZ WIDE-BAND TRANSFORMER	0276.3619.00	MINI-CIRCU	T 4-1 W38	
T225	LU HF-UEBERTR. 0,2-350MHZ WIDE-BAND TRANSFORMER	0276.3619.00	MINI-CIRCU	T 4-1 W38	
T235	LU HF-UEBERTR. 0,2-350MHZ WIDE-BAND TRANSFORMER	0276.3619.00	MINI-CIRCU	T 4-1 W38	
V1	AK BFY90 N 15V 25MA TRANSISTOR	AK 0010.4550.00	VALVO	BFY90	
V5	AK BFY90 N 15V 25MA TRANSISTOR	AK 0010.4550.00	VALVO	BFY90	
V15	AE BZX79B3V3 2% 0.5W ZDI ZENER	AE 0008.7704.00	PHILIPS_SE	BZX79B3V3	
V30 ..49	AE B8809 26/ 6PF CDI TUNING DIODE	AE 0092.9616.00	VALVO	B8809	
V50	AE BA483 BER.SCH.DI.UHF DIODE	AE 0568.2290.00	VALVO	BA483	
V55	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V60	AK BC560B P 45V 100MA TRANSISTOR	AK 0007.2044.00	SIEMENS	BC560B	
V61	AK BC550B N 50V 100MA TRANSISTOR	AK 0007.2050.00	SIEMENS	BC550B	
V65	AM U310 N-D 25V JFET FET	AM 0454.6217.00	SILICONIX	U310	
V70	AM BF247A N-D 25V JFET FET	AM 0247.6536.00	TEXAS	BF247A	
V75	AK BC560B P 45V 100MA TRANSISTOR	AK 0007.2044.00	SIEMENS	BC560B	
V80	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V85	AK BFY90 N 15V 25MA TRANSISTOR	AK 0010.4550.00	VALVO	BFY90	
V90	AK BFY90 N 15V 25MA TRANSISTOR	AK 0010.4550.00	VALVO	BFY90	
V95	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V110	AK NE85637 N 12V 100MA TRANSISTOR	0801.8231.00	NEC	NE85637(2SC3358)	
V120	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V121	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V200	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V201	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V205	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
MENP5 502 3PUA AI Datum Date Schalttafeliste für Parts list for Sachnummer Stock No. Blatt-Nr Page					
 <b>ROHDE &amp; SCHWARZ</b>		39 04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS		0819.7166.01 SA 15+

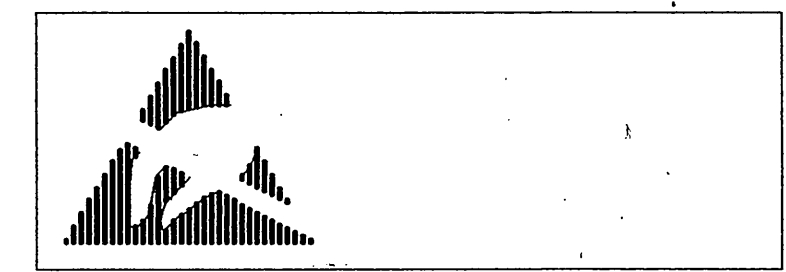
Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
V206	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V225	AK NE85637 N 12V 100MA TRANSISTOR	0801.8231.00	NEC	NE85637(2SC3358)	
V235	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V236	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V237	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V240	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V241	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V246	AE BZX79B3V3 2% 0.5W ZDI ZENER	AE 0008.7704.00	PHILIPS_SE	BZX79B3V3	
V255	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V256	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V270	AK BC550B N 50V 100MA TRANSISTOR	AK 0007.2050.00	SIEMENS	BC550B	
V275	AK BC560B P 45V 100MA TRANSISTOR	AK 0007.2044.00	SIEMENS	BC560B	
V276	AD 1N4448 75V UDI DIODE	AD 0012.0700.00	PHILIPS_SE	1N4448 "	
V277	AD 1N4448 75V UDI DIODE	AD 0012.0700.00	PHILIPS_SE	1N4448 "	
V278	AD 1N4448 75V UDI DIODE	AD 0012.0700.00	PHILIPS_SE	1N4448 "	
V285	AE BB809 26/ 6PF CDI TUNING DIODE	AE 0092.9616.00	VALVO	BB809	
V286	AE BB809 26/ 6PF CDI TUNING DIODE	AE 0092.9616.00	VALVO	BB809	
V290	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V300	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V305	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V320	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V321	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V330	AK BFR91A N 12V 35MA TRANSISTOR	0644.0730.00	VALVO	BFR 91A	
V423	AE BZV86/2V6 STABISTOR ZENER DIODE	AE 0086.8292.00	PHILIPS_SE	BZV86-2V6	
V424	AE BZV86/2V6 STABISTOR ZENER DIODE	AE 0086.8292.00	PHILIPS_SE	BZV86-2V6	
V430	AE BB621 11/ 2PF CDI TUNING DIODE	0840.6188.00	ITT-SEMICO	BB621	
V440	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V455	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V460	AK BFR96S N 15V 100MA TRANSISTOR	0644.0830.00	VALVO	BFR 96S	
V470	AM BF963 20V N-D DG MOSF DUALGATE MOSFET	2020.4704.00	SIEMENS	BF963 (Q62702-F937)	
V471	AE 5082-2800 SCHOTTKY DIODE	AE 0012.9066.00	HEWLETT_PA	5082-2800	
V480	AE BZX79/B5V6 0,5W ZDI ZENER DIODE	AE 0012.5254.00	VALVO	BZX79B5V6	
V494	AK BC560B P 45V 100MA TRANSISTOR	AK 0007.2044.00	SIEMENS	BC560B	
W1	DV KABEL W1 CABLE	0819.7366.00			
X1	FP STECKERLEISTE 32POL. MULTIPOINT CONNECTOR	FP 0514.4550.00	SIEMENS	V42254-B1200-B641	
X71	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X81	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X94	FJ EINBAUKABELSTECKER SMB CONNECTOR	FJ 0063.7631.00	IMS	81.1213.311	0819.7366.00

MENP5	502	3PUA	AI	Datum Date	Schalttafeliste für Parts list for	Sachnummer Stock No	Blatt-Nr. Page
				39 04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	0819.7166.01 SA	16+

Kennz. Comp. No.	Benennung Designation	Sachnummer Stock No.	Hersteller Manufacturer	Bezeichnung Designation	enthalten in contained in
X101	FJ EINBAUSTECKER F.GS SMB ANGLE CONNECTOR	FJ 0602.8804.00	IMS	81.1524.201	
X17A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X17B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X24A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X24B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X29A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X29B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X31A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X31B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X31C	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X31D	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X42A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X42B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X45A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X45B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X46A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X46B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X47A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X47B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X70A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X70B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X70C	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X70D	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X75A	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
X75B	VL WIRE-WRAP PIN L=8,7 WIRE-WRAP PIN	0088.4507.00	DUPONT CON	75403-001/75401-001	
MENP5 502 3PUA Äi Datum Date Schalteilliste für Parts list for Sachnummer Stock No. Blatt-Nr. Page					
 <b>ROHDE &amp; SCHWARZ</b>		39	04.02.98	EE SUMMIERSCHLEIFEN SUMMING LOOPS	0819.7166.01 SA 17-

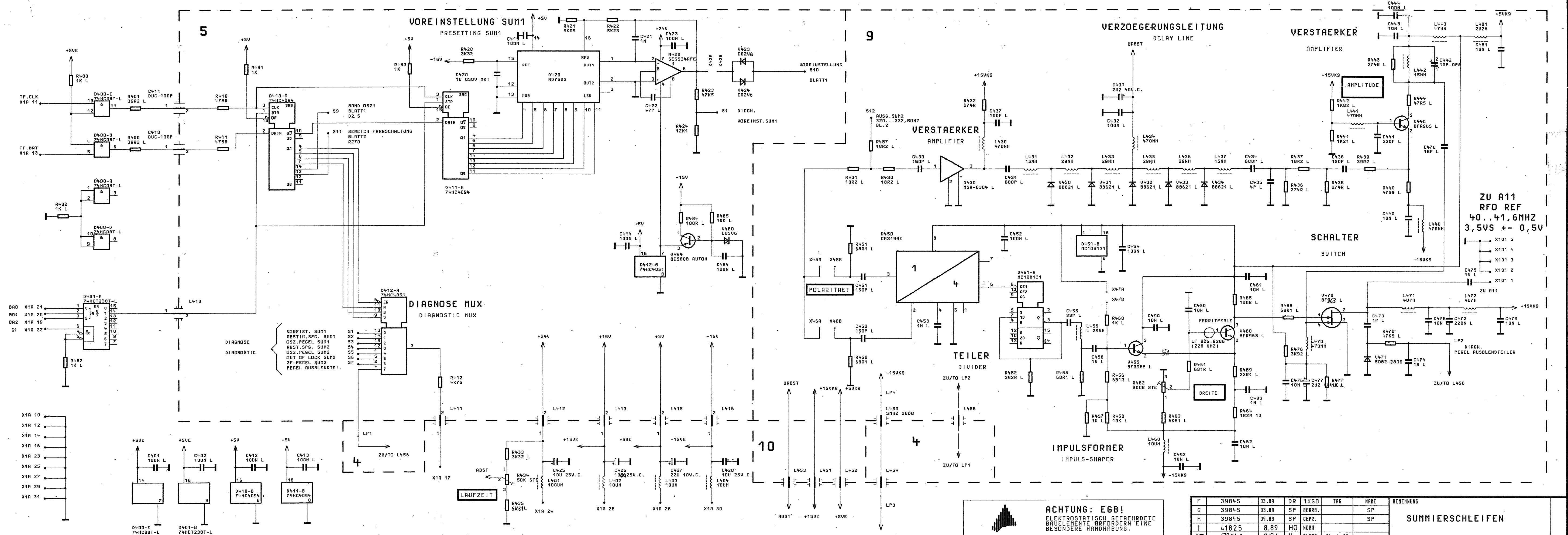


FÜR DIESE UNTERLAGE  
BEHALTEN WIR UNS ALLE RECHTE VOR



1/4	50242 01	06.07.95	HO	16PK	TAG	NAME	BENENNUNG
				BEARR.		HO	
				GEPR.			
				NORM			
				PLOTT.	08.11.95		
1							
REND. IND.	RENDERUNGS-MITTEILUNG	DATUM	NAME	ROHDE & SCHWARZ		ZEICHN.-NR.	BLATT-NR.
				ZU GERÄT SMGU		819.7166.015	1+
						REG. I. V.	U. BL.
						819.0010	
						ERSTE Z.	



ZU A11  
RFO REF  
40.41,6MHZ  
3,5VS ± 0,5VX101 5  
X101 4  
X101 3  
X101 2  
X101 1ZU A11  
X101 5  
X101 4  
X101 3  
X101 2  
X101 1ZU/TO L456  
X101 5  
X101 4  
X101 3  
X101 2  
X101 1ZU/TO L456  
X101 5  
X101 4  
X101 3  
X101 2  
X101 1ZU/TO L456  
X101 5  
X101 4  
X101 3  
X101 2  
X101 1ZU/TO L456  
X101 5  
X101 4  
X101 3  
X101 2  
X101 1ZU/TO L456  
X101 5  
X101 4  
X101 3  
X101 2  
X101 1



(hierzu HVC 250)

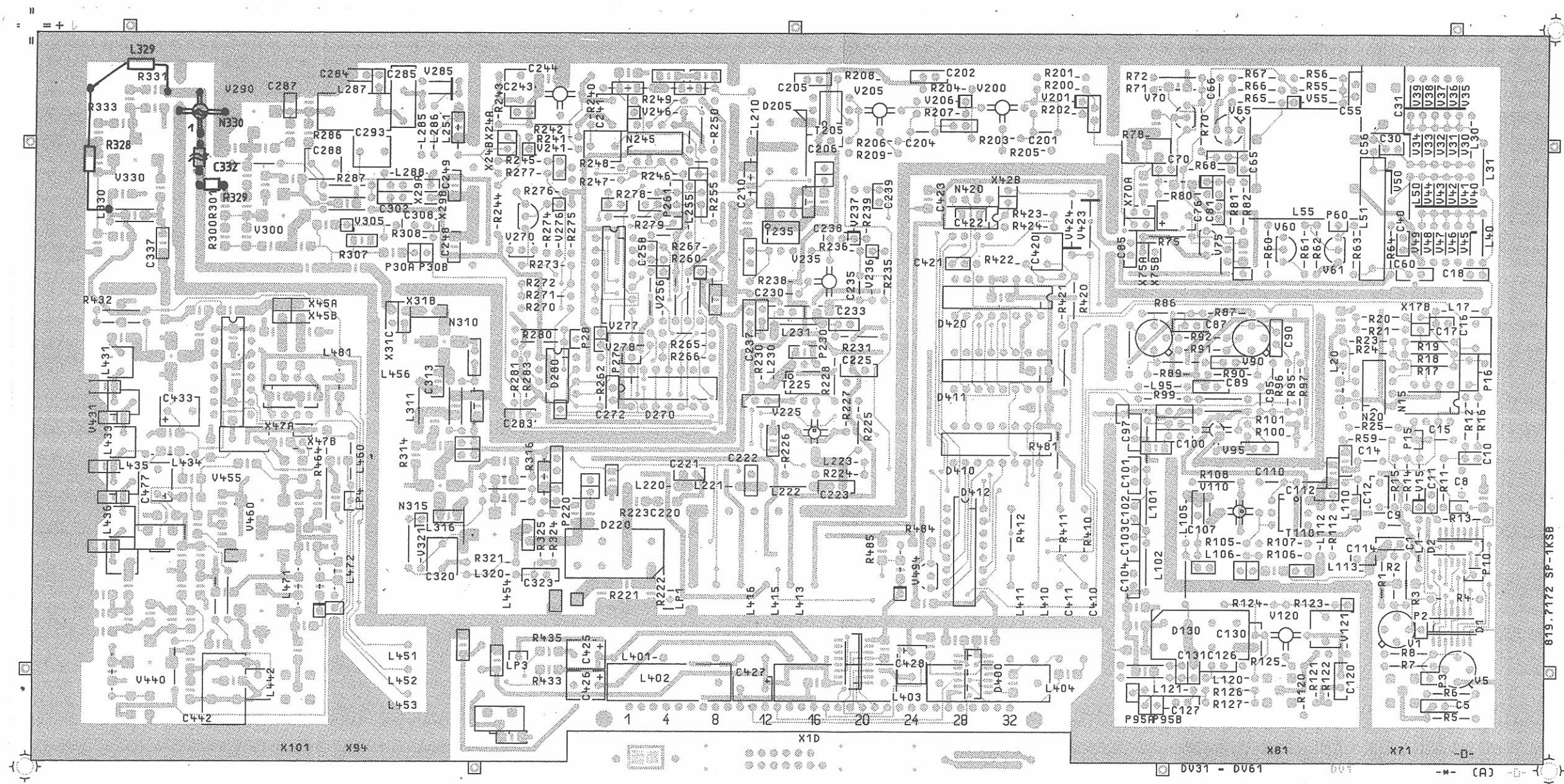

**ROHDE & SCHWARZ**

Maßstab	1 : 1	
Halbzeug, Werkstoff		
Benennung		
SUMMIERSCHLEIFEN		Z
Zeichn.-Nr.		Blatt-Nr.
819.7166.02		2
reg. i. V. 819.0010 V		v. Bl.
		erste Z.



≈ Leiterbahntrennung  
● Lötstellen

# Ansicht und Leitungsführung Lötseite View of tracks on solder side



Für diese Unterlage behalten  
wir uns alle Rechte vor.

## VARIANTENERKLÄRUNG / VERSION VAR 02 - GRUNDAUSFÜHRUNG / BASIC MODEL

H	41825	04.89	SP	Maße ohne Toleranzangabe		Maßstab 1 : 1	
L	44800	03.90	SP			Halbzeug, Werkstoff	
				1KGB	Tag	Name	Benennung
				Bearb.	04.89	SP	SUMMIERSCHLEIFEN
				Gepr.			
				Norm			
						Zeichn.-Nr.	Blatt-Nr.
Änd. Zust.	Änderungs-Mitteilung	Tag	Name			819.7166.02	3
				zu Gerät SMGU		reg. i. V. 819.0010 V	erste Z.

(hierzu HVC 250)



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

50-  
lethou E

