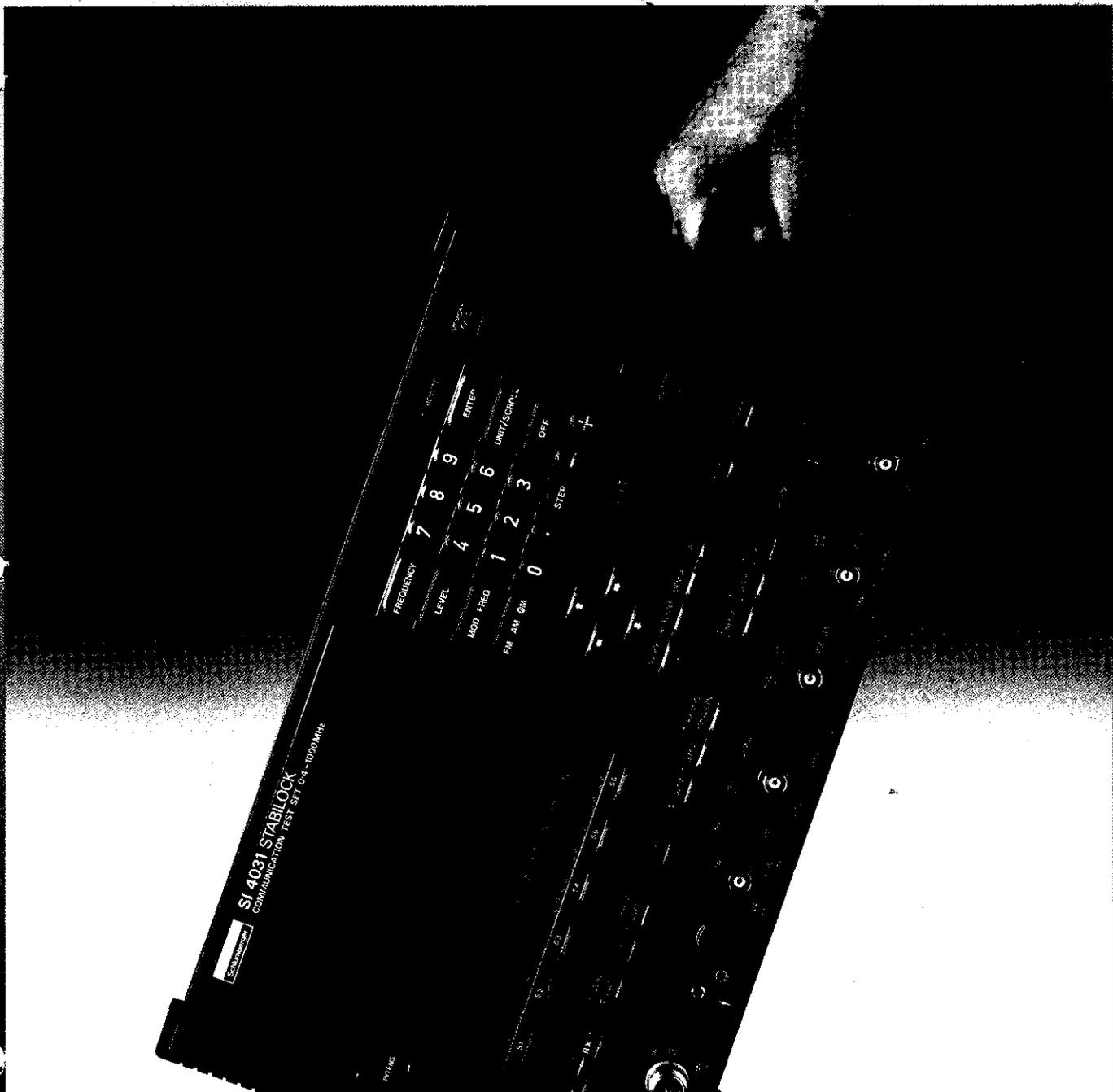


STABILOCK® 4031

The allround radio tester for the demanding



STABILOCK 4031

Professional radio testing for production and workshop

High technology, reliability and more than 30 years' experience in the field of RF test engineering are the solid foundation for the portable STABILOCK 4031 Communication Tester. It replaces as many as 24 individual instruments in impressive fashion to give you a genuinely allround radio test set.

STABILOCK 4031 earns a place and shows its worth throughout the wide range of its application: whether in computer-controlled production of mobile radios, in their maintenance or repair.

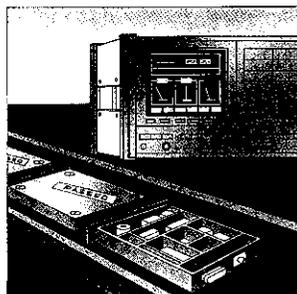
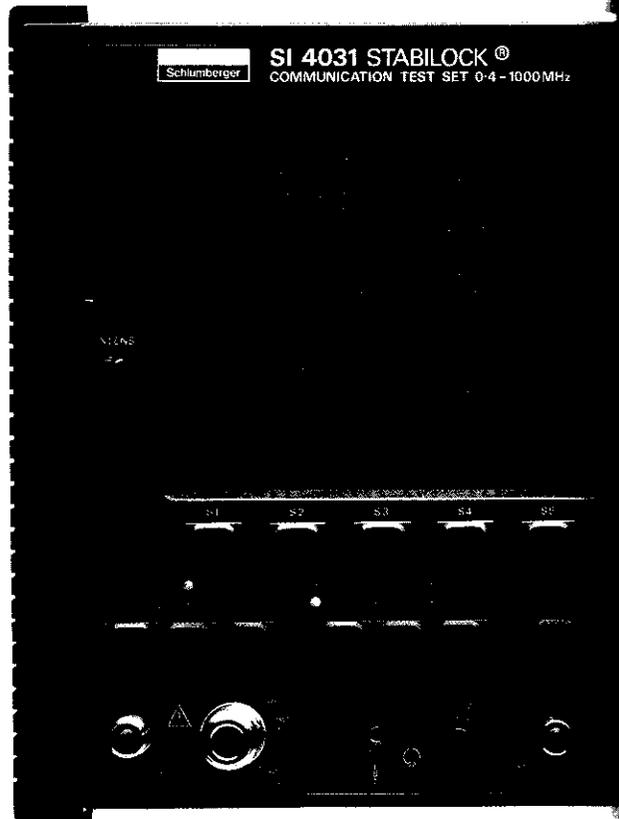
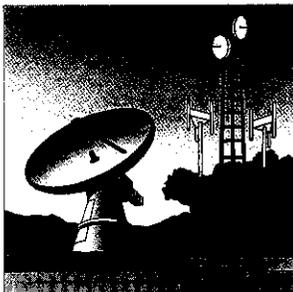
With STABILOCK 4031 you can sit back and watch your efficiency improve. Time is money, so the effort that goes into all those routine measurements and checks is reduced drastically. This is made possible by standard integrated test programs. And you can resolve special testing problems with your own programs, all the way through to comprehensive and automatic acceptance measurements.

Another plus point of STABILOCK 4031 is the unusual variety of its basic instrumentation. This includes a spectrum analyzer with panoramic display, a digital storage oscilloscope, a sequential-call encoder/decoder, memory for entire instrument setups and lots more.

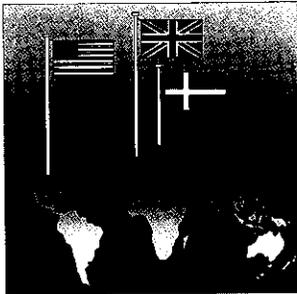
SCHLUMBERGER will come to your aid even in application problems on an industrial scale. Make the most of our experience and just ask for advice. We can present you with solutions configured for entire systems.

More than a passing acquaintanceship:

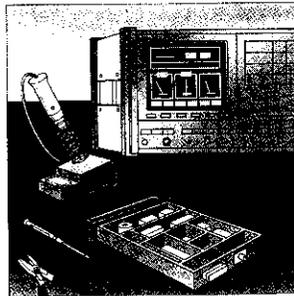
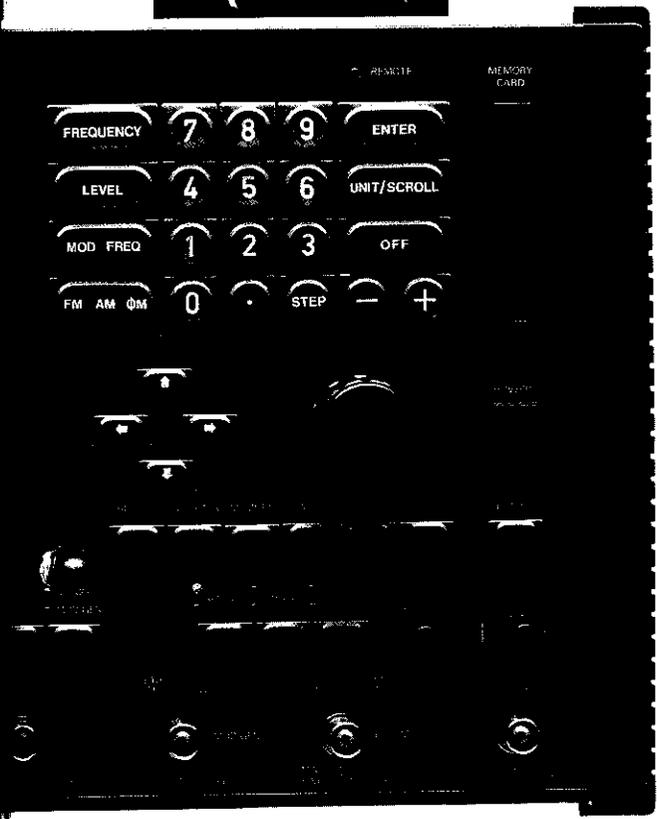
STABILOCK 4031 knows the ins and outs of the base stations of all the different cellular networks.



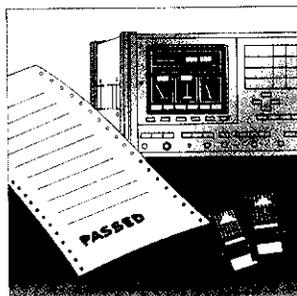
Assembly-line production: responding to the commands of an IEEE-488 controller, STABILOCK 4031 checks out each mobile. Speedily, reliably and thoroughly. So that the right quality emerges at the end.



Worldwide compatibility:
whether produced in the USA, sold in Great Britain or serviced in Scandinavia, STABILOCK 4031 can accompany a mobile through all stations in its useful life. Even national mobile-radio standards are no obstacle.



Building block for the best of service:
STABILOCK 4031 makes its way with ease in the most elaborately equipped service centers. Fast, integrated test programs take the ballast off your hands, so you are able to concentrate on the vital aspects.



Records from A to Z: for reading out test reports you can link the optional IEEE-bus printer. Or use conventional printers with a serial/parallel interface. The result: clearly formatted reports with accompanying explanatory text.

A whole load of options for tailored performance plus

The wealth of basic instrumentation in STABLOCK 4031 will cover all your requirements for standard tests. And if you have more specialized measuring chores, there is a wide choice of software and hardware options.

Software options

Software options are ready programs on memory cards the size of a cheque card. Together with the Data Module hardware option these programs can simulate the base stations of cellular networks and radio-data systems for instance. You can use them to test vital signaling procedures of mobile telephones like connection setup, change of channel and change of power level. We can offer you software options for all **NMT systems**, for **AMPS**, **TACS**, **RC 2000**, **C-Net**, **trunking** and many other systems. Just ask, we are constantly adding to the selection. And that final little something: changing a memory card is all you have to do to match STABLOCK 4031 to a particular system; there is no need for tampering inside the set.

Hardware options

All hardware options have one thing in common: you can retrofit them on the job at any time – all you need is a screwdriver.

The **duplex FM/ϕM stage** adds a second synthesizer to STABLOCK 4031. So the signal generator and test receiver can be active at the same time.

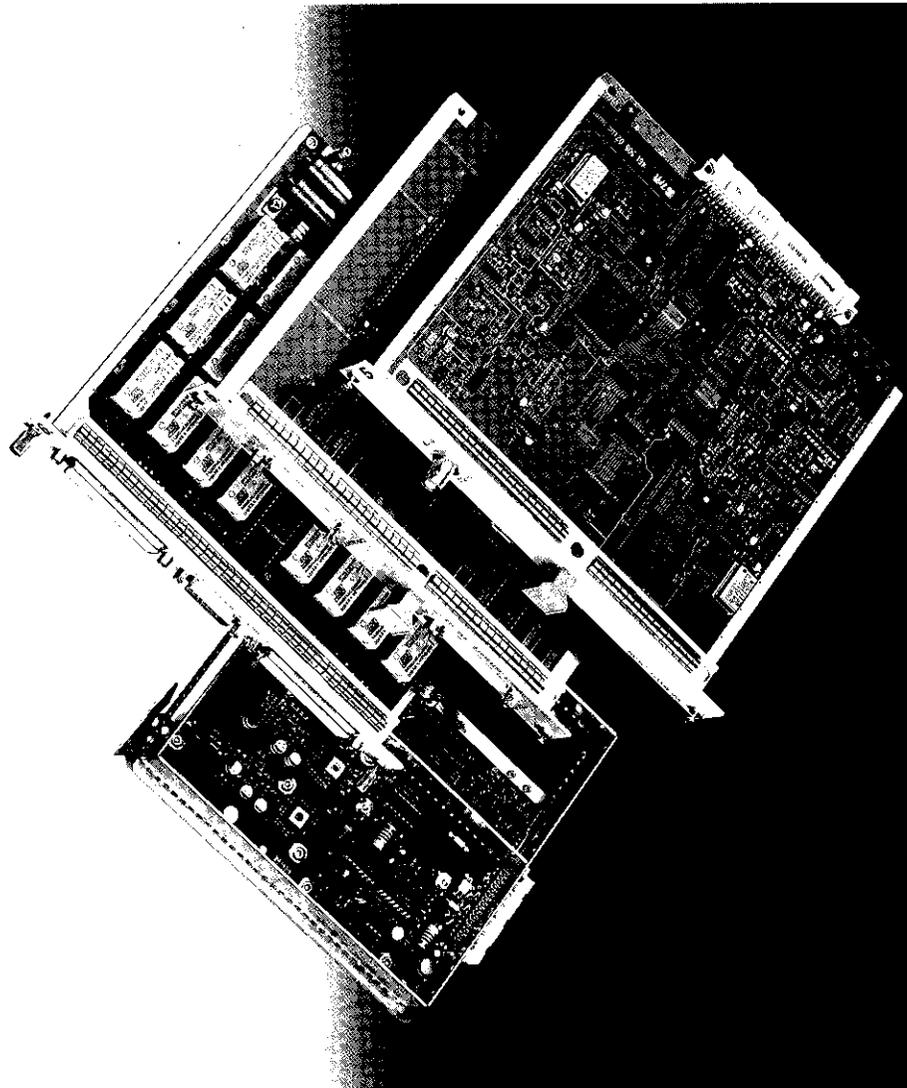
With the **adjacent-channel power meter** you can test, with strict adherence to CEPT directive T/R-27-01, how strong the carrier signal in an adjacent channel is. Channel spacing and upper/lower adjacent channel can be selected for this.

The **SSB module** expands STABLOCK 4031 into an SSB test set. Within seconds the test routines will then present important specifications like carrier and opposite side-band suppression.

The **tracking stage** is just what you need for frequency-dependent network analysis of twoports. Together with a VSWR bridge (accessory) it also permits measurement of reflection coefficient. In this way you can locate precisely any breaks in antenna cables for example.

The **control interfaces** with relays and TTL inputs/outputs handle control tasks (remote control of radio sets), the **RS-232-C/Centronics interface** controls conventional printers, and the **option card** will hold many more optional modules, like AF filters.

Turn on to the "Ordering data" section for a summary of all software and hardware options plus useful accessories.



The Schlumberger way to operating ease

AUTORUN

All functions of STABILOCK 4031 that can be worked manually can also run automatically in AUTORUN programs. In this way you solve complex testing tasks in minimal time, and errorfree. But AUTORUN programs also relieve you of the burden of performing routine series of tests. Once you have started the AUTORUN program you want, STABILOCK 4031 executes a complete set of measurements fully automatically. If adjustment and entry instructions are necessary, they are simply flashed on the monitor in plain text. The IEEE-bus printer (recommended extra) logs all the measured results including text accompaniment, eg as verification for your customers.

AUTORUN programs use the common Basic programming language and IEEE-488 commands. So within a short time you will be capable of entering your own AUTORUN programs.

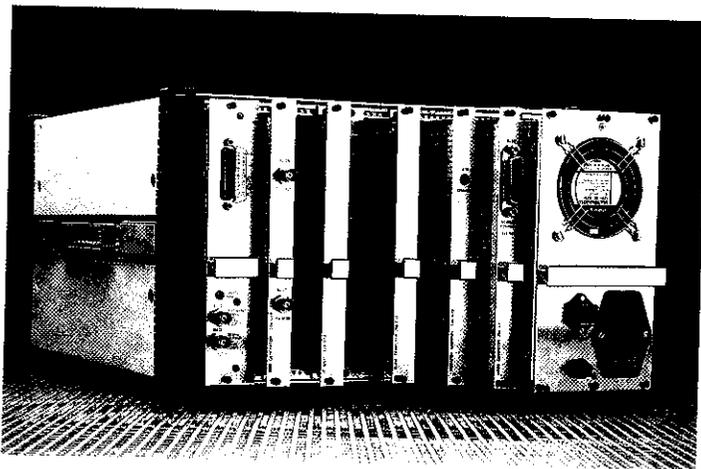
```

AUTORUN FUG_EXTEND
LIST 760,850
760 rem TEST CHANNEL 400
770 S=75.275 MHZ
780 FREQUENZ #S
790 PAUSE "Channel 400 !"
800 rem
810 rem MOD SENSITIVITY
820 rem
830 GENAL 5 MV
840 RDOUT (MDEM0D,A,B)
850 PRINT "1.3 Mod-Sens.      (5mV)      : ",A

EDIT 830
830 GENAL 5 MV
830 GENAL 5 MV
    
```

LIST PRINTER HELP_VAR RUN RETURN

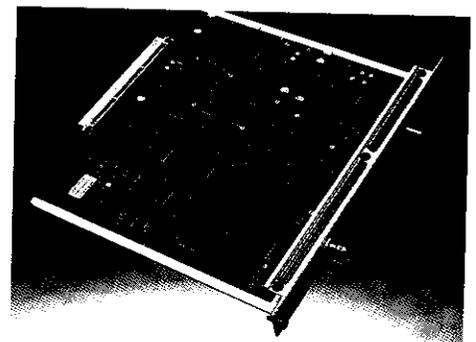
Listing of an AUTORUN program. There is a line editor available for entering and correcting program lines.



High-Tech production methods guarantee the reliability of STABILOCK 4031.

Maintenance

An integrated diagnostics program and modularity throughout are the guarantee for high availability of STABILOCK 4031. Any repair can be carried out quite simply on the job by exchanging the faulty subassembly, and **without any need for subsequent realignment.**



STABILOCK 4031: Technical Data

Synthesizer

Spectral purity

● Phase noise (25-kHz offset)	
f < 500 MHz	< -121 dBc/Hz
f ≥ 500 MHz	< -115 dBc/Hz
● Residual FM	
f < 500 MHz	4 Hz (rms, CCITT-weighted)
f ≥ 500 MHz	8 Hz (rms, CCITT-weighted)

● Nonharmonic spurious signals	> 500 Hz off carrier	< -55 dBc
● Harmonics	Level < -15.1 dBm	< -25 dBc
	Level ≥ -15.1 dBm	< -20 dBc
● Residual AM		< 0.02 % (rms, CCITT-weighted)

10-MHz reference oscillator

● Warmup time	< 3 min for frequency error < $5 \cdot 10^{-7}$ (T = 20 °C)
	< 10 min for frequency error < 10^{-7}
	< $1 \cdot 10^{-7}$ (T = 0 to 45 °C)
● Aging	< $5 \cdot 10^{-8}$ /month approx. 0.4 V (into 50 Ω)
● Output level	10 MHz, V > 150 mV _{rms} (into 200 Ω)
● Synchronization	

Receiver test

Carrier frequency

● Frequency range	0.4 to 999.9999 MHz
● Resolution	
f < 500 MHz	50 Hz
f ≥ 500 MHz	100 Hz
● Frequency error	as reference oscillator

Output level

● RF socket	-142 to -7 dBm (max. -13 dBm with AM)
● RF DIRECT socket	-122 to +13 dBm (max. +7 dBm with AM)
● Resolution	0.1 dB

● Level error into 50 Ω RF socket	Level ≥ -130 dBm < 1.3 dB
	Level > -15.0 dBm < 2 dB
● RF DIRECT socket	Level ≥ -110 dBm < 1.6 dB
	Level > +5.0 dBm < 2.5 dB
● VSWR (50 Ω) RF socket	< 1.1
● EMF setting range without interruption (not with AM)	0 to 20 dB
Additional level error	0.1 dB per dB

RX modulation

FM (AC-coupled)

● Frequency deviation	0 to 40 kHz
● Modulation frequency (int. and ext.)	30 Hz to 30 kHz
● Resolution	10 Hz
● Setting error	
f _{mod} = 300 Hz to 3 kHz	< 5 % + 3 digits
f _{mod} = 30 Hz to 20 kHz	< 10 % + 3 digits
● Distortion dev. < 10 kHz,	
f _{mod} = 300 Hz to 3 kHz	< 1 %
● Ext. mod. input	20 kHz FM = 0.707 V _{rms} into 600 Ω

FM (external DC-coupled)

● Frequency deviation	0 to 5 kHz
● Modulation frequency	0 to 30 kHz
● Centre-frequency error	< 100 Hz + frequency error of reference oscillator

ΦM

● Phase deviation	0 to 6 rad (f _{mod} · rad ≤ 20 kHz)
● Resolution	0.01 rad
● Modulation frequency	200 Hz to 6 kHz
● Setting error	
f _{mod} = 300 Hz to 3 kHz	< 6 % + 0.02 rad
● Distortion	
f _{mod} = 300 Hz to 3 kHz	< 1 %
● Ext. mod. input	20 rad ΦM = 0.707 V _{rms} into 600 Ω

AM

● Modulation depth	m = 0 to 99.9%
● Resolution	0.1 %
● Modulation frequency	30 Hz to 10 kHz
● Setting error for m ≤ 90 %	
f _{mod} = 30 Hz to 10 kHz	< 0.1 · m + 1 digit
● Distortion for m < 50 %	
f _{mod} = 300 Hz to 3 kHz	< 2 %
● Ext. mod. input	50 % AM = 0.707 V _{rms} into 600 Ω

Transmitter test

Frequency measurement

- Frequency range 2 to 999.9999 MHz
- Resolution 10 Hz
- Admissible input level on RF socket 0.1 mW to 125 W
- Measuring error as reference oscillator + 10 Hz

Frequency-offset measurement

- Frequency range 2 to 999.9999 MHz
- Measuring range 0 to ± 99.99 kHz
- Resolution
 - $f < 10$ kHz 1 Hz
 - $f \geq 10$ kHz 10 Hz
- Admissible input level on RF socket 2 μ W to 125 W
- on RF DIRECT socket 1 mV to 1 V (measuring range: 0 to ± 15 kHz)

- Measuring error as reference oscillator + 3 Hz (+ 1 digit for offset ≥ 10 kHz)

RF-power measurement (broadband)

- Frequency range 2 to 999.9999 MHz
- Measuring range 1 mW to 125 W (average)
- Resolution
 - $P < 1$ W 1 mW
 - $P < 10$ W 10 mW
 - $P \geq 10$ W 100 mW
- Measuring error (w/o modulation)
 - $P > 200$ mW $< 10\% + 1$ digit ($f = 20$ to 500 MHz)
 - $< 12\% + 1$ digit ($f = 6$ to 999.9999 MHz)

RF-power measurement (bandwidth approx. 3 MHz)

- Frequency range 2 to 999.9999 MHz
- Measuring range
 - RF socket -45 to $+37$ dBm
 - RF DIRECT socket -65 to $+17$ dBm
- Measuring error < 3 dB
- Resolution 0.1 dBm

TX modulation measurement

FM measurement, RF socket (broadband)

- Frequency range 2 to 999.9999 MHz
- Input level 0.1 mW to 125 W
- Measuring range 0 to 25 kHz
- Resolution 10 Hz
- Measuring error (dev. < 10 kHz)
 - $f_{mod} = 300$ Hz to 3 kHz $< 5\% + 1$ digit + peak residual FM
 - $f_{mod} = 100$ Hz to 10 kHz $< 10\% + 1$ digit + peak residual FM
- Demodulation distortion
 - $f_{mod} = 300$ Hz to 3 kHz $< 0.5\%$
- Peak residual FM < 50 Hz or < 10 Hz/100 MHz

FM measurement, RF DIRECT socket (narrowband)

- Frequency range 2 to 999.9999 MHz
- Input level -50 to -20 dBm
- Measuring range 0 to 10 kHz (f_{mod} dev. < 10 kHz)
- Modulation frequency $f_{mod} = 0$ to 6 kHz
- Resolution 10 Hz
- Sensitivity better than 2 μ V (3 kHz FM dev., 10 dB SINAD, CCITT-weighted)
- IF bandwidth 30 kHz

Φ M measurement, RF socket (broadband)

- Frequency range 2 to 999.9999 MHz
- Input level 0.1 mW to 125 W
- Measuring range 0 to 6 rad (FM dev. < 50 kHz)
- Resolution 0.01 rad
- Measuring error
 - $f_{mod} = 300$ Hz to 3 kHz $< 6\% + 2$ digits
 - $f_{mod} = 200$ Hz to 10 kHz $< 10\% + 2$ digits
- Demodulation distortion
 - $f_{mod} = 300$ Hz to 3 kHz $< 0.5\%$

Φ M measurement, RF DIRECT socket (narrowband)

- Frequency range 2 to 999.9999 MHz
- Input level -50 to -20 dBm
- Measuring range 0 to 3 rad (f_{mod} Φ M dev. < 15 kHz)
- Modulation frequency 200 Hz to 6 kHz
- Sensitivity better than 2 μ V (3 rad Φ M dev., 10 dB SINAD, CCITT-weighted)
- IF bandwidth 30 kHz

AM measurement

- Frequency range 2 to 999.9999 MHz
- Measuring range 0 to 100 %
- Input level
 - RF socket 1 mW to 125 W
 - RF DIRECT socket 0.01 mW to 0.5 W
- Resolution 0.1 %
- Measuring error ($m \geq 10\%$)
 - $f_{mod} = 200$ Hz to 10 kHz $< 10\% + 2$ digits
- Demodulation distortion
 - $f_{mod} = 300$ Hz to 3 kHz $< 1\%$
- Modulation frequency DC to 10 kHz

Spurious-modulation measurement

- Input level
 - RF socket 1 mW to 125 W
 - RF DIRECT socket 20 mV to 1 V
- Measuring range 0 to -40 dB (CCITT-weighted) referred to 3 kHz FM dev., 3 rad Φ M dev. or 30 % AM
- Measuring error < 1 dB

AF generator

Modulation generator GEN A

● Frequency range	30 Hz to 30 kHz	● Resolution	EMF \leq 5V	10 mV	● Distortion	f = 30 Hz to 3 kHz	< 0.5 %
● Resolution			EMF \leq 1V	1 mV		f > 3 kHz	< 1 %
f < 3 kHz	0.1 Hz		EMF \leq 0.1 V	0.1 mV	● Output impedance	(balanced)	
f \geq 3 kHz	1 Hz		EMF \leq 10 mV	10 μ V		f = 300 Hz to 3 kHz	< 10 Ω
● Frequency error	< 0.01 %	● Level error				f = 30 Hz to 30 kHz	< 40 Ω
● Level range (EMF)	0.1 mV _{rms} to 5 V _{rms}	f = 100 Hz to 10 kHz		< 3 %	● Output impedance	(unbalanced)	600 Ω \pm 5 %
		f = 30 Hz to 30 kHz		< 10 %	● Permissible load impedance		> 200 Ω

AF evaluation

AF voltmeter

● Frequency range	30 Hz to 30 kHz or to CCITT P 53A
● Measuring range	0.1 mV to 20 V
● Resolution	
Level < 0.1 V	0.1 mV
Level < 1 V	1 mV
Level < 10 V	10 mV
Level < 20 V	100 mV
● Measuring error	
f = 300 Hz to 3 kHz	< 3 %
f = 50 Hz to 15 kHz	< 6 %
● Source impedance	> 100 k Ω or 600 Ω \pm 3 %
● Input capacitance	20 pF

AF counter

● Frequency range	30 Hz to 30 kHz
● Input level	5 mV to 20 V
● Resolution	
f < 300 Hz	0.1 Hz
f < 10 kHz	1 Hz
f \geq 10 kHz	10 Hz
● Measuring error	< 0.01 % + 1 digit

Distortion meter

● Input level	0.1 to 20 V
● Test frequency	1 kHz \pm 5 Hz
● Measuring range	0 to 99 %
● Resolution	0.1 %
● Measuring error	< 5 % of meas. value + 3 digits

SINAD meter

● Input level	0.1 to 20 V
● Measuring range	1 to 46 dB
● Resolution	
SINAD < 30 dB	0.1 dB
SINAD \geq 30 dB	0.5 dB
● Measuring error	
for SINAD < 30 dB	< 0.8 dB + 1 digit

Scope & Analyzer

Spectrum analyzer

● Frequency range	2 to 999.9999 MHz
● Frequency accuracy	better than 2 % of sweep width
● Input-level range for measuring error < 3 dB in the frequency range $0.5 \cdot f_c \leq f \leq 2 \cdot f_c$	
RF socket	-70 to +47 dBm
RF DIRECT socket	-90 to +13 dBm
● Sweep width	200 kHz, 2 MHz, 10 MHz
● Sweep time	
Sweep width 2 MHz and 10 MHz	approx. 500 ms
Sweep width 200 kHz	approx. 2 s

Evaluation bandwidth

Sweep width 2 MHz and 10 MHz	30 kHz
Sweep width 200 kHz	6 kHz
● Inherent noise on RF DIRECT socket	
Sweep width 2 MHz and 10 MHz	-95 dBm
Sweep width 200 kHz	-105 dBm

Oscilloscope

● Inputs	
external	Z _i = 1 M Ω /40 pF (AC/DC)
internal	RX mod, TX demod, duplex demod, AF voltmeter, residual distortion

● Frequency range	DC (3 Hz) to 20 kHz
● Level error	< 10 % + 0.2 div
● Grating	6 x 10 div
● Horizontal deflection	100 μ s/div to 500 ms/div
● Vertical deflection	2 mV/div to 10 V/div or 160 Hz/div to 8 kHz/div (FM); 0.16 rad/div to 8 rad/div (Φ M); 0.8 %/div to 40 %/div (AM)
● Trigger	\pm slope selectable trigger level auto, norm, one-shot, freeze, time measurement (max. resolution 2.5 μ s)
● Operating modes	

Selective-call encoder and decoder

Standard tone sequences

• ZVEI 1	CCIR	VDEW
• ZVEI 2	EEA	NATEL
• EIA	EURO	CCITT

User-defined tone sequences

Sequence of up to 30 tones can be stored by user. Also double tones and underlying continuous tone (with GEN B option).

Encoder

Operating modes

- Single-tone sequence (max. 30 tones)
- Double-tone sequence (with GEN B option) (single-tone and double-tone sequences can be transmitted continuously)
- Acknowledgement call (max. 15 double tones) from response time of < 100 ms acknowledgement call only possible with optional duplex FM/PhM stage
- Frequency error $1 \cdot 10^{-4}$ Hz

Setting ranges

With all standard and user-defined tone sequences it is possible to vary tones 1 to 15 in all parameters (tones 16 to 30: duration and pause can only be varied uniformly).

- Frequency 200 to 3000 Hz
- Resolution 0.1 Hz
- Tone duration 1 to 9999 ms at least 1 cycle
- Resolution 1 ms
- Pause duration 0 to 9999 ms
- Resolution 1 ms

Decoder

Decoding of each tone of tone sequences (max. 30 tones). Continuous decoding can be set.

Frequency measurement

- Measuring range 300 to 3000 Hz
- Resolution 0.1 Hz
- Measuring error *) < 2 digits

Tone-duration measurement

- Measuring range 40 to 9999 ms
- Resolution 0.1 ms
- Measuring error *) < 3 ms + 2 cycles of lowest frequency in tone sequence

Pause-duration measurement

- Measuring range 2 to 9999 ms
- Resolution 0.1 ms
- Measuring error *) < 3 ms + 2 cycles of lowest frequency in tone sequence

*) Measuring errors referred to signal on VOLTIN socket with level > 360 mV_{rms}.

Receiving bandwidth

- Measuring range ± 0.1 to ± 9.9 %
- Response-time measurement 2 to 9999 ms
- Resolution 1 ms

Options

HARDWARE OPTIONS

Duplex FM/ Φ M stage

- Frequency range 27 to 999.9999 MHz
- Input level 1 mW to 125 W
- Measuring range 0 to 20 kHz
- Measuring error 0 to 6 rad as for FM or Φ M measurement
- Peak residual FM < 50 Hz or 15 Hz/100 MHz

All other values as for FM and Φ M measurement

Tracking

This permits frequency-dependent network analysis, eg the graphic display of filter curves (screen or printer).

- Frequency range 27 to 999.9999 MHz
- Min. window width 1 MHz
- Max. frequency resolution 5 kHz/pixel
- Displayed level dynamic range 70 dB

Modulation generator GEN B

Specifications as for GEN A

Control interface A

- Changeover relays *) 8
- TTL inputs 8 (electric strength: ± 30 V)
- Trigger inputs 1

Control Interface C

- Changeover relays *) 24 (16 BCD-, BCD-inv. - or HEX-encodeable)
- TTL control outputs 20 (open collector)
- TTL inputs 8 (electric strength: ± 30 V)
- TTL trigger inputs 2

*) $I_{max} = 1$ A, $V_{max} = 30$ V

RS-232/Centronics interface

- Baud rate 110/150/300/600/1200/2400/4800/9600 Bd
- Transmission protocol 7/8 bits, even/odd parity, 1/2 stop bits
- Socket connectors 25-way submini D

Keyboard

ASCII keyboard for writing Autorun programs and for interactive entries (eg adjustment instructions) in the course of a program.

Option card

The option card houses the optional modules.

Modules for option card

- DTMF device
 - Encoder/decoder
 - Tone/pause duration user-defined
- Network C expander

DC voltmeter/ammeter

- Voltmeter
 - Measuring range 0 to ± 42 V
 - Resolution 100 μ V to 100 mV
 - Measuring error ≤ 1 % ± 1 digit
- Ammeter
 - Measuring range 0 to ± 15 A
 - Resolution 1 to 100 mA
 - Measuring error ≤ 4 % ± 10 mA
- Variable notch filter 200 to 600 Hz

- 300-Hz highpass filter
- 300-Hz lowpass filter
- 3-kHz lowpass filter
- 4-kHz bandpass filter
- 6-kHz bandstop filter

Data module

For generating and decoding FFSK, NRZ and RZ signaling. The data module is the hardware requirement for testing cellular car telephones and radio-data systems with the software options.

VSWR test probe

- Frequency range 25 to 500 MHz
- Admissible forward power 1 to 50 W

Options

SSB stage

TX

- Frequency range 2 MHz to 999.9999 MHz
- RF power 1 mW to 125 W
- Measuring error see standard unit
- Preselectable intermodulation for power measurement 0 to 45 dB
- Test tones/frequency 2 / freely selectable
- Frequency offset ± 1 kHz
- AF bandwidth 10 Hz to 30 kHz
- Carrier suppression 0 to 60 dB for $f = 1$ kHz
- Opposite sideband suppression 0 to 60 dB for $f = 1$ kHz
- Measuring error 0 to 40 dB ± 1 dB
0 to 60 dB ± 2 dB
- AGC delay time 0 to 9999 ms selectable

RX

- Carrier-frequency range 0.4 MHz to 999.9999 MHz
- SSB modulation 0 to 30 kHz
- Resolution 10 Hz
- Accuracy as reference oscillator
- Intermod. meas. range for intermodulation product 0 to 50 dB
2.3 kHz or 2.7 kHz
 ± 2 dB
- Measuring error 1 to 10 dB SINAD freely selectable
see standard unit
- Measurable sensitivity
- Measuring error
- Max. RF level on RF DIRECT socket +13 dBm
on RF socket -7 dBm
- Max. RF level for intermod. measurement on RF DIRECT socket -16 dBm
on RF socket -15,5 dBm
-36 dBm

ACPM

Adjacent-channel power meter

- Standard CEPT T/R-27-01
- Frequency range 10 to 960 MHz
- Min. input level > 100 mW on RF socket
< -73 dBc for $f < 492$ MHz (typ. < -75 dBc)
< -70 dBc for $f \geq 492$ MHz (typ. < -72 dBc)
< 3 dB
- Measuring error
- Selectable channel spacing 10 / 12.5 / 20 / 25 kHz

SOFTWARE OPTIONS

Tests on car telephones and radio-data systems call for the appropriate software option on a memory card (see check-list) and the data module.

General data

Dimensions

- HxWxD 230 mm x 375 mm x 486 mm

Weight

- approx. 18.5 kg

Power supply

- AC 94 to 132 V or 187 to 264 V (47 to 450 Hz)
- DC 10.5 to 32 V
- P_{max} approx. 110 W (incl. options)

Environment

- Operating temperature 0 to 45°C
- Storage temperature -40 to +70°C
- Relative humidity max. 90 %

Mechanical strength (to DIN 40046)

- Shock 30 g
- Vibration 5 to 10 Hz for 10 mm amplitude
10 to 60 Hz,
2 g constant

RFI

- to VDE 0871 / class B corr.
to PTT decree 1046/84

Damp tropical/ cold test

- to Def. Std. 66-31 issue 1/cat. 3
to VDE 0411/IEC 348

Safety

IEEE-bus interface

- Standard IEEE 488
- Connector 24-way
- Functions AH1, SH1, L2, T1, SR1, RL1, DC1

Ordering data

STABLOCK 4031	108801	300-Hz highpass filter	248199 ^{1) 2)}	Network C (Portugal)	897062
		300-Hz lowpass filter	248174 ^{1) 2)}	C-Net SAPO	897063
		3-kHz lowpass filter	248186 ^{1) 2)}	EAMPS	897950
		4-kHz bandpass filter	248175 ^{1) 2)}	ETACS UK	897940
		6-kHz bandstop filter	248177 ^{1) 2)}	ETACS Japan (JTACS)	897945
		Variable notch filter	248179 ¹⁾	RADIOCOM 2000 HD	897970
		¹⁾ requires 1 x option card 236033		FMS	897082
		²⁾ max. 2 of 5 filters may be installed at one time		VDEW direct dialing	897086
Hardware options				VDEW digital	897090
Duplex FM/ Φ M stage	229062			ZVEI binary	897084
Tracking IF stage	229054			ZVEI binary (600 baud)	897085
Control interface A	236035			POCSAG (NRZ)	897080
Control interface C	236037			POCSAG (FFSK)	897081
Modulation gen. GEN B	208032			Cityruf	897083
RS-232/Centronics interface	236043			Trunking (MPT 1327 / PAA 2424)	897089
Keyboard	248192			Microcell	897096
VSWR test probe	248104			Combiner Test	897985
Data module	236034			US-Signalling Formats	897092
Option card	236033			LTR + US Signalling	897093
SSB	248154			ARE AUTORUN Editor	
Adjacent channel power meter (ACPM) ...	229035			(5 1/4 or 3 1/2" discettes)	897100
ACPM retrofit	248270				
Network C expander	248116 ¹⁾				
DTMF device	248171 ¹⁾				
DC voltmeter/ammeter	248172 ¹⁾				
		Software options			
		NMT 450/900 (Scandinavia)	897900		
		NMT France	897925		
		NMT Benelux	897920		
		NMT Turkey	897901		
		NMT 450 Universal	897915		
		NMT Base-Station Test	897905		
		NATEL-C (Switzerland)	897930		
		Network C (Austria)	897910		
		Network C (FRG)	897960		

Accessories

Accessories supplied	Recommended extras	
Set of miniature fuses consists of	IEEE-488 Interface PC II A	Carrying grip kit
2 pieces 2 A	(for ARE AUTORUN Editor)	378256
2 pieces 3,15 A	Microphone	RF probe
2 pieces 16 A	248170	860108
Power cable	Telescopic antenna	Oscilloscope probe
880604	248120	860148
TNC/BNC adapter	Carrying bag	Service manual
886255	378258	291088
Protective front-panel cover	Transport container	Ink-jet printer
501350	300692	896092
Headphones jack plug	Protective back-panel cover	Spare ink cartridge
884123	501350	860133
Connector for battery cable	19-inch adapter	Printer paper 2500 sheets
884015	378257	860134
1 memory card (blank, 32 KByte)	Connector set	50-way D connector
897050	300690	for control interface
Operating manual	N/BNC adapter	25-way connector
290088	2 x 1 m cable BNC/BNC	for control interface
	1 x 1 m cable N/N	300641
	1 x 1 m cable BNC/banana	Battery attachment
	Memory card (32 KByte)	248185
	897050	Carrying rack
	Memory card (64 KByte)	248191
	897051	Protective bracket
	Memory card (128 KByte)	248190
	897052	

Check-List

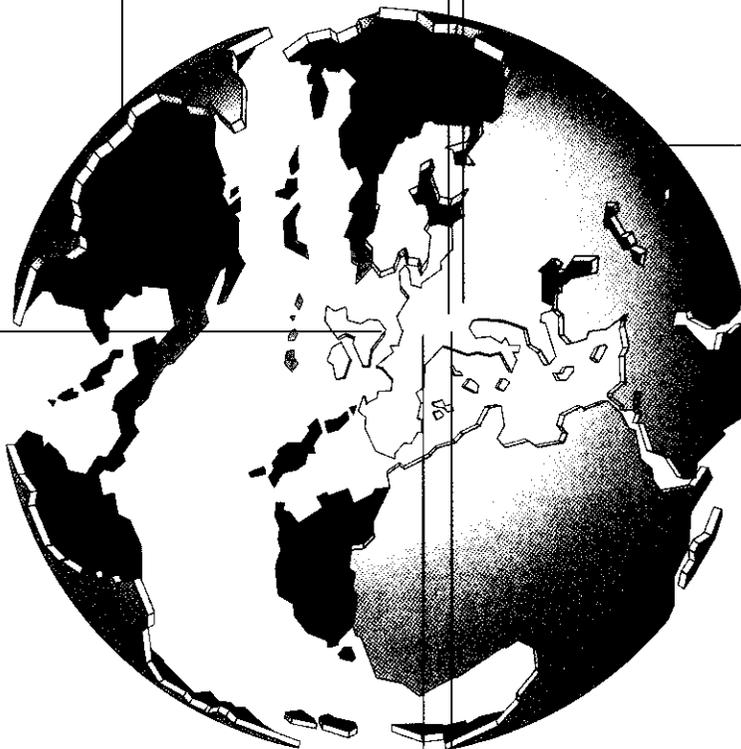
Order number	Option	Measuring task	860 182	236 035	236 037	208 032	229 062	236 033	248 199	248 174	248 175	248 179	248 171	248 116	248 172	248 104	236 034	229 054	248 192	248 154	229 035
	IEEE-488 interface PC II A		•																		
	Control interface A	Control of radio under test with 8 relays		•																	
	Control interface C	Control of radio under test with 24 relays + 20 TTL output			•																
	Audio generator GEN B	Simulation of fast answer back systems (response time < 100 ms)				•															
	Duplex FM/4M stage	Distortion measurement 200 to 600 Hz					•														
	OPTION CARD	DC voltage/current measurements						•							•						
	300 Hz high-pass filter	DTMF signal encoding/decoding																			
	300 Hz low-pass filter	Subaudio squelch tones (CTCSS) and double tone signalling				•															
	4 kHz band-pass filter 1)	Measurement on squelch tone radios					•	•	•												
	variable notch filter	Program controlled measurements (AUTORUN)																			•
	DTMF module	ARE: Software package for PC based development of AUTORUN programs	•																		
	Netz-C expander module	Tracking (graphic display of filter curves)					•														
	DC voltage/ammeter	Measuring result explanatory text																			
	VSWR directional coupler	VSWR measurement																			
	Data module	Measurements on SSB radios						•													
	Tracking IF stage	Adjacent-channel power measurement																			
	Keyboard 2)	Cellular system NMT 450/900 (Scandinavia)																			•
	SSB	Cellular system NMT France					•	•			•										
	ACPM	Cellular system NMT Benelux					•	•			•										
	Memory Card containing system software	Cellular system NMT 450 Universal					•				•										
		Cellular system NMT Base-Station Test					•														
		Cellular system NMT Turkey					•				•										
		Cellular system NATEL C (Switzerland)					•	•			•										
		Cellular system C-Netz (Austria)					•	•			•										
		Cellular system Netz-C (FRG)					•	•							•						
		Cellular system Network C (Portugal)					•	•							•						
		Cellular system C-Net SAPO					•	•							•						
		Cellular system EAMPS					•														
		Cellular system ETACS UK					•														
		Cellular system ETACS Japan (JTACS)					•														
		Cellular system RADIOCOM 2000 HD					•														
		FMS					•														
		VDEW direct dialing					•	•					•								
		VDEW digital					•														
		ZVEI binary					•														
		ZVEI binary (600 baud)					•														
		POCSAG (FFSK)																			
		POCSAG (NRZ)																			
		Cityruf																			
		Trunking (MPT 1327 / PAA 2424)					•														
		Microcell					•														
		Combiner Test																			
		US Signalling Formats					•														
		LTR + US Signalling					•														

1) Required for SAT measurements only.
 2) The use of the keyboard needs a control interface.

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