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Test & Measurement

- sales
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- calibration
- repair
- disposal

Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

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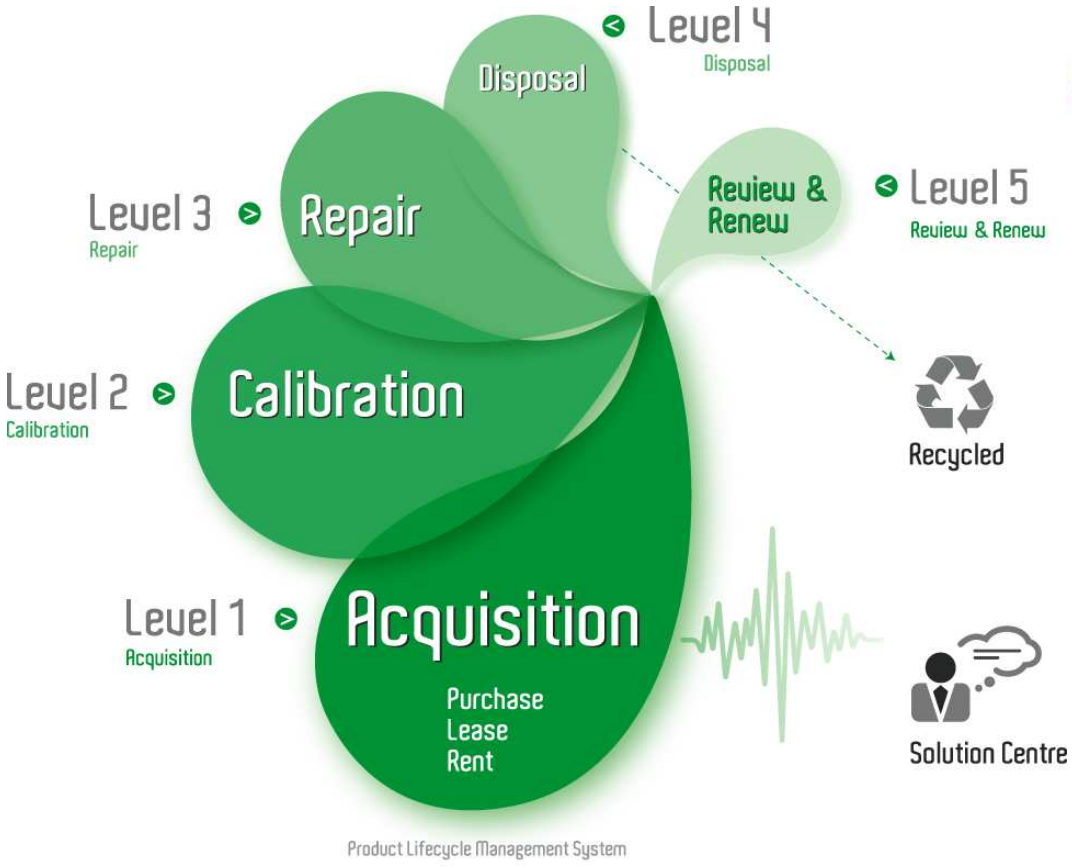

Directional Power Meter NAS

Plug in – Switch on – Read off

- Ideal for measuring power and SWR of all kinds of radio equipment
- Insertion units suitable for all fields of mobile radio as well as for powers up to 1200 W
- Special insertion units for the digital radio networks to GSM standard
- Simultaneous display of forward and reflected power or of forward power and SWR
- Simple operation
- Other features:
  selftest, autocalibration, autoranging, battery operation, automatic switchoff

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From shortwave to digital radio networks

With its frequency range from 1 MHz to 2000 MHz the NAS covers practically all RT bands – from shortwaves to the frequencies of digital radio networks.

Six insertion units are available for covering the whole range (see table „Insertion units“ on page 3).

NAS insertion units

Insertion units are either plugged to the side of the meter and secured by a bayonet holder or connected via a 1.5-m long cable for measurements at test points difficult to reach. Each insertion unit contains its individual calibration data which are read by the NAS and considered in the measurements.

NAS-Z5 is the standard insertion unit for frequency ranges of conventional mobile radio; with a range from 70 MHz to 1000 MHz, it covers important private and special mobile radio channels (used by e.g. police and fire brigade) and aircraft radio.

The Insertion Units NAS-Z6 and NAS-Z7 are predestinated for the digital networks (GSM900/1800/1900 and Cordless telephone).

When used together with Insertion Units NAS-Z1 and NAS-Z2, the NAS is suitable for RT services operating at shortwaves. Considering that transmit powers above 100 W are not uncommon in long-distance radio – e.g. communication with ships – the NAS-Z2 has been designed for powers up to 1200 W.

NAS for terminated power measurements

The NAS may also be used for terminated power measurements. For measurements on transmitters, a termination acting as a dummy antenna is connected to the output of the insertion unit. Two models with a load-handling capacity of up to 10 (15) W or 30 (50) W are available.

NAS for measurements on TDMA transceivers

The frequency range and circuit design of Insertion Units NAS-Z6 and NAS-Z7 have been especially tailored to measurements on transceivers to GSM900/1800/1900 specification. TDMA signals call for special measurement techniques since, contrary to techniques used in previous mobile networks, digital transmission employs clocked signals and no CW signals are available for measurements. Conventional directional power meters indicate a variety of average power values depending on the weighting method chosen. From such measurements no conclusions can be drawn on the true emitted power or on matching. In order to obtain accurate results, a PEP measurement of the clocked signal is carried out with due consideration of the network timing.

Another problem with measurements of this type, which cannot be mastered by conventional directional power meters, are transient overshoots of signal bursts which may exceed the signal level by up to 4 dB causing errors of more than 100% (see diagram „Transmit powers of GSM mobile station“ on page 3). A signal-controlled circuit in the NAS-Z6 and NAS-Z7 eliminates these overshoots so that the forward and reflected power and SWR are always measured correctly.

Carrying Bag NAS-Z10 provides room for a second insertion unit and for other accessories

Specifications

Insertion units

Model	NAS-Z1	NAS-Z2	NAS-Z3	NAS-Z5	NAS-Z6	NAS-Z7
Frequency range	(1 to 30) MHz	(1 to 30) MHz	(25 to 200) MHz	(70 to 1000) MHz	(890 to 960) MHz[1]	(890 to 960) MHz (1710 to 1990) MHz[1]
Measurement range	(0.01 to 120) W	(0.1 to 1200) W	(0.01 to 120) W	(0.01 to 120) W	(0.01 to 120) W	(0.01 to 30) W[2]
Error limits (100 to 1000) MHz (75 to 100) MHz (70 to 75) MHz	±4.5 % of rdg	±6.5 % of rdg	±5.5 % of rdg	±6.5 % v.M. (–11 to +5.5) % of rdg (–15 to –5.5) % of rdg	±5.5 % of rdg	±6/8.5 % of rdg (≤20 W)[3] ±7/9.5 % of rdg (20 to 30 W)[3]
SWR <500 MHz ≥500 MHz	<1.07	<1.07	<1.07	<1.07 <1.1	<1.1	<1.15
Directivity <500 MHz ≥500 MHz	>30 dB	>30 dB	>30 dB	>30 dB >26 dB	>26 dB	>26 dB
Insertion loss	<0.2 dB	<0.1 dB	<0.2 dB	<0.3 dB	<0.3 dB	<0.3 dB
Connectors	N female	N female	N female	N female	N female	N female
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
Dimensions (W x H x D)	(55 x 120 x 90) mm	(55 x 120 x 90) mm	(55 x 120 x 90) mm	(55 x 120 x 90) mm	(55 x 120 x 90) mm	(55 x 120 x 90) mm
Weight	0.7 kg	0.7 kg	0.7 kg	0.7 kg	0.7 kg	0.7 kg

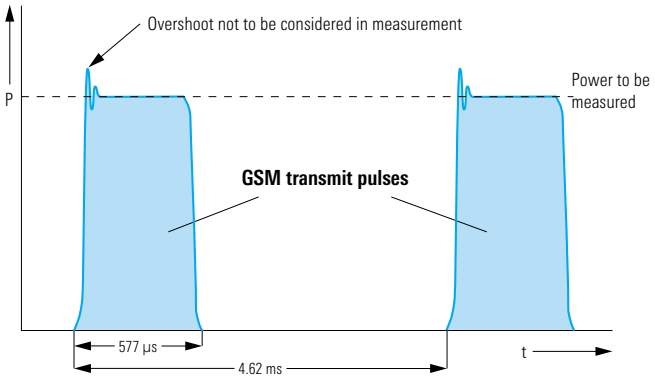
[1]) Useful frequency range: 100 MHz to 1000 MHz for NAS-Z6, 850 MHz to 2000 MHz for NAS-Z7 (with higher error limits)
[2]) Up to 100 W with higher error limits
[3]) Higher error limits are valid for frequency ranges 1880 MHz to 1990 MHz

Basic unit

Display	two moving-coil meters for forward and reflected power or forward power and SWR
Power measurement ranges with NAS-Z7 with NAS-Z1, -Z3, -Z5, -Z6 with NAS-Z2	 (0.3/1/3/10/30) W (0.3/1/3/10/30/100) W (3/10/30/100/300/1000) W
Range selection	automatic or manual, separate for forward and reflected power
Error limits (18 °C to 28 °C)	±1.5 % of selected range + error limit of insertion unit
Additional errors at temperatures >28 °C or <18 °C	≤0.25 % rdg/°C
Automatic switchoff	approx. 1 h after last keystroke
General Data	
Operating temperature range	(0 to 50) °C
Power supply	5 dry batteries IEC R20, lifetime > 150 h (with alkaline-manganese batteries)
Dimensions (W x H x D)	(210 x 145 x 90) mm
Weight	2 kg

Terminations

Model	NAZ10	NAZ30
Load-handling capacity for 1 min	10 W 15 W	30 W 50 W
Impedance	50 Ω	50 Ω
Frequency range	(0 to 2) GHz	(0 to 4) GHz
SWR	≤1.15	≤1.1 up to 2 GHz
Connector	N male	N male



Transmit power of GSM mobile station

Ordering information

Order designation		Order number
Directional Power Meter	NAS	828.6017.02
Insertion Unit (1 to 30) MHz, 120 W	NAS-Z1	828.6317.02
Insertion Unit (1 to 30) MHz, 1200 W	NAS-Z2	828.6417.02
Insertion Unit (25 to 200) MHz, 120 W	NAS-Z3	828.6517.02
Insertion Unit (70 to 1000) MHz, 120 W	NAS-Z5	828.6717.03
Insertion Unit for GSM900, 120 W	NAS-Z6	828.6723.02
Insertion Unit for GSM900/1800/1900, 30 W	NAS-Z7	828.6746.02
Accessories supplied with NAS		
Operating manual German/English/French		
Recommended extras		
Connecting Cable (1.5 m) for detached operation of insertion units	NAS-Z9	828.6969.02
Carrying Bag	NAS-Z10	828.6917.02
Termination, 10 W	NAZ10	1029.2408.02
Termination, 30 W	NAZ30	1029.2508.02

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