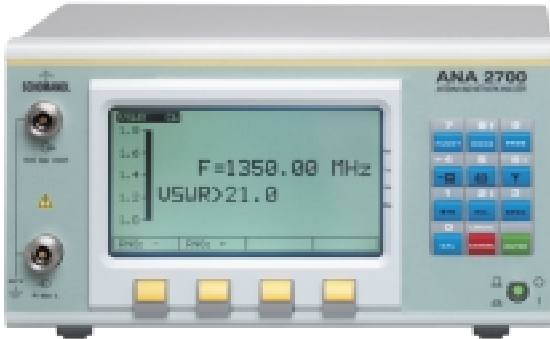


ANTENNA AND NETWORK ANALYZER

ANA 2700



- Frequency range 1 MHz to 2700 MHz
- Accurate return loss/VSWR measurements
- Distance-to-fault measurement
- Accurately measures RF-transmission lines and antennas
- High immunity to RF interference
- Insertion Loss/Gain
- Synthesizer accurate to 5 ppm
- Internal memory saves in 40 files up to 200 pairs of data
- Time, Date stamp
- Battery – operated
- Direct printing via RS-232 serial port or IEEE-interface
- Remote operation via IEEE-bus
- Solid metal housing
- Modular construction

The Antenna and Network Analyzer ANA 2700 is the ideal instrument to test the installation of new transmission lines and all types of antennas, as well as for the maintenance of such installations.

The use of the Antenna and Network Analyzer ANA 2700 is the best way to reduce maintenance cost and improve quality. It replaces heavy, expensive, and complex test equipment. ANA 2700's measuring technique allows it to find problems and locate them easy and fast, thereby creating huge cost savings.

The ANA 2700 is a precision, hand-held return loss/VSWR and fault location measurement instrument. The ANA 2700 offers a wide frequency coverage, from 1 MHz to 2700 MHz. The light weight, rugged design, and a wide operating temperature range make it ideal for field applications. ANA 2700 's proprietary design provides immunity to RF interference, which is important for live site testing.

The software LOG 600 is a Windows compatible software program provided with every Antenna and Network Analyzer ANA 2700. This software program provides many useful features, including a database for ANA 2700



measurements zoom capability, a “drag-n-drop” overlay for measurement comparison, the capability to download data to a PC, the capability to upload data such as custom cable list or traces to selected ANA 2700 model, and distance-to-fault calculation from return loss or VSWR plots.

Advanced printing capabilities are provided by ANA 2700 Software Tools including user definable plot scaling and a multiple plots per page option. ANA 2700 is the first test tool to provide the required accuracy, interference immunity, and repeatability for transmission line/antenna commissioning, and maintenance of today’s wireless systems infrastructures.

Cellular, ISM, PCS/PCN, paging service, safety service, avionics, two-way radio, military, and microwave point-to-point radio. ANA 2700 allows implementation of preventative maintenance procedures. ANA 2700 can spot RF degradation before failures occur. Problems can be fixed before expensive cables are ruined. ANA 2700 is designed for field requirements. Its rugged construction survives rough field treatment. Battery power, light weight, small size, wide temperature range, and simple user interface are exactly what field technicians want today. Technicians can test antennas from ground level because ANA 2700’s distance-to-fault measurement compensates for cable insertion loss.

SPECIFICATIONS: ANA 2700

Measured quantities:

	0.41 ... 0.60	± 0.10
VSWR	0.61 ... 0.80	+ 0.15
voltage reflection coefficient ρ		
Insertion loss I.L.	P.I. : ± 0 ... 20 dB	±0.5 dB (± 0.25 dB typical)
Location of faults		

Operating mode:

Sweep, single sweep (200 meas. points) and CW

Fault location:

resolution = 5×10^{-3} x max. distance of meas. scale (3)

Display, dynamic range

VSWR:	1.0 ... 1.8
.....	1.0 ... 3.0
.....	1.0 ... 21

Field mode (antenna measurements):

RF overloads permitted < +25 dBm/50 Ω	(4)
Attenuation of RF disturbances < 30 dB	(5)

ρ V:	0.0 ... 0.4
.....	0.0 ... 0.8
.....	0.0 ... 1.0

Max. level at the outputs and input : +19 dBm
 Impedance: 50 Ω
 Connectors: N socket

pdB:	0 ... 20 dB
.....	0 ... 40 dB
.....	10 ... 50 dB

Display:

Alphanumeric or graphic display at the backlighted LCD
 240 x 128 points

I.L:	0 ... 10 dB
.....	0 ... 20 dB
.....	0 ... 30 dB

Generator:

Operating mode: swept or fixed frequency (CW)
 Frequency range: 1MHz ... 2700 MHz
 Frequency increment: 10 kHz
 Frequency accuracy: better than $\pm 5 \times 10^{-6}$ (6)
 Frequency stability: better than $\pm 1.10^{-6}$ /year
 Frequency retracing: ... better than $\pm 1 \times 10^{-5}$ in one minute (7)
 Harmonic and non-harmonic spectral purity: ≤ 35 dB
 (40 dB typical)

Distance to fault: 5 cm ... 856 m (*) for $\epsilon = 1.3$ (1)
 3.8 cm ... 966 m (*) for $\epsilon = 2.3$

Output level (at center frequency): 0 dBm ± 1 dB

* ideal cable with constant attenuation per length-unit

Accuracy with the calibration references :

Standard calibration references: Short + open + 50 Ω	
ρ V (2): 0.025 ... 0.07	± 0.01
0.071 ... 0.20	± 0.025
0.21 ... 0.50	± 0.05
0.51 ... 0.80	± 0.15

Remote control: as per IEEE 488 standard

Accuracy with the optional calibration references :

VSWR 3-L + VSWR 3-H + 50 Ω	
ρ V (2): 0.025 ... 0.07	± 0.01
0.071 ... 0.20	± 0.025
0.21 ... 0.40	± 0.05

Printing results: via the RS232 or IEEE488 interface
 or analogue output: 0 to 1 V/1 k Ω , at BNC socket

Storing of results: 40 storage registers of 200 pairs
 of „Frequency-(VSWR or ρ)“
 or „Distance-VSWR“ counts (8)



Processing of the results

Processing of the results and automatic recovery on PC using LOG 600 software

Power supply

- by internal battery (Ni-MH), typ. op. time : 3 hrs (9)
- by ext. charger (115 to 230 V \pm 10%, 48 to 63 Hz)
 - by direct external dc between 12 and 24 V

Dimensions: 245 mm x 140 mm x 290 mm

Weight: 5 kg

Electrical safety (IEC 1010, ed. 08/93):

Overvoltage category I (10)
Pollution level 2 (11)
Rated voltage: 30 V max.

Electromagnetic compatibility and susceptibility:

Emission as per NF EN 50 081.1
Immunity as per NF EN 50 082.1

Ambient:

Temperature: reference : 23°C \pm 1°C

Operation: - 10°C to + 55°C

Humidity :

Operation : < 70% RH (without condensation)

Supplied accessories:

1 ea Transportation case
1 ea Battery charger
1 ea Overload protection
1 ea Short / open circuit
1 ea 50 Ω termination
1 ea Adapter N-socket / N-socket
1 ea Adapter N-plug 7 N-plug
1 ea flexible coax cable, N-plug/N-plug, 50 cm long
1 ea T, N-connectors

Ordering information:

Antenna and Network Analyzer ANA 2700
German menu BN 86830.000

Antenna and Network Analyzer ANA 2700
English menu BN 86830.001

Accessories:

Amplifier AMP601; 1 MHz 1 GHz; 30 dB ... BN 86830.101
Amplifier AMP602; 0.8 GHz ... 2 GHz; 30 dB .. BN 86830.102
Reference set for VSWR:
N-plug; 1.2; 1.5; 2.0 BN 86830.103
Reference set for attenuation:
3 dB; 6 dB; 10 dB; 20 dB; BN 86830.104

- 1) Maximum distances of measurement scales depend on the value of the dielectric constant of the cable being tested. The number of authorised scales (maximum 7) depends on the cable's unit-length attenuation constant. The amplitude of the fault is represented in VSWR, ρ V or ρ dB, with the three corresponding scales.
- 2) Accuracy specified on ρ V, after calibration (CAL key)
When using the „PRO600“ protection accessory („Overload“ function in Field Mode), add +0.1 to the previous tolerances. When using the „Parasite“ function of Field Mode, add +0.05 to the tolerances specified on ρ V.
The corresponding accuracy for ρ dB and for V.S.W.R. will be deduced by the following relations :
 ρ dB = 20 log ρ V SWR = (1 + ρ V) : (1- ρ V)
- 3) The accuracy of fault location depends on the knowledge of the actual epsilon of the cable under test.
- 4) On the V.S.W.R. Measurement input, with the protection accessory PRO600 in use („Overload“ function of Field Mode activated), value is restored to +19 dBm if the „PRO600“ is not used.
- 5) Typical value for an injected HF disturbance level of 0 dBm (with Field Mode „Parasites“ function activated)
- 6) On the fixed frequency (CW), the marker frequency, the terminals and the center frequency of the domain swept
- 7) When power is switched on after being cut off.
- 8) Also includes measurement configuration information, plus the names of the file, the operator and the site, as well as the date and time of the file.
- 9) Typical autonomy is 3 hrs, varies between 2 and 4 hrs depending on the configuration of the instrument,(9), charge time approximately 3.5 h (see § 8.3).
- 10) Overvoltage category I: circuits in overvoltage category I must be connected to electrical installations protected and by devices limiting transient overvoltages to a low level (see IEC 664-1).
- 11) Pollution level II: Absence of pollution or dry, non-conductive pollution. Occasional temporary conductivity caused by condensation may be accepted. For example: closed, heated room without mist or steam.

