TECHNICAL SPECIFICATION FOR RF (TEST &MEASUREMENT) DEVICE

Test and measuring device supports the following measurement functions:

A- *Cable and Antenna Analyzer, 2 MHz to 4 GHz.*
B- Spectrum Analyzer, 100 kHz to 4 GHz.

C- Power Meter.

D- Interference Analyzer.

E- Channel Scanner .

F- GPS Receiver .

G- High Accuracy Power Meter.

- ***All Necessary accessories that guarantee using all functions above must be provided.***

A- Cable and antenna analyzer

1- Measurements.

VSWR_ Return Loss_ Cable Loss_ Distance-to-Fault (DTF) Return Loss_ Distance-to-Fault (DTF) VSWR_ 1-Port Phase_ Smith Chart.

2- Frequency.

Frequency Range 2MHz TO 4GHz**.**

Frequency Accuracy ≤ ± 2.5 ppm @ 25 °C

Frequency Resolution 1kHz, (RF immunity low) 100 kHz, (RF Immunity high)

3- Output Power.

High 0 dBm ,typical.

Low -30dBm,typical**.**

4- Interference Immunity.

On-Channel +17 dBm @ > 1.0 MHz from carrier frequency

On-Frequency 0 dBm within ± 10 kHz of the carrier frequency

5- Return Loss.

Measurement Range 0 to 60 dB

Resolution 0.01 db

6- VSWR.

Measurement Range 0 to 65

Resolution 0.01

7- Cable Loss.

Measurement Range 0 to 30dB

Resolution 0.01 dB

8- Distance-to-Fault.

Vertical Range Return Loss 0 to 60 dB**.**

Vertical Range VSWR 1 to 65**.**

Fault Resolution (meters) (1.5 x 108 x vp)/ΔF (vp = velocity propagation constant, ΔF is F2-F1 in Hz).

Horizontal Range (meters) 0 to (Data Points-1) x Fault Resolution, to a maximum of 1500 meters (4921 ft).

9- 1-Port Phase.

Measurement Range –180° to +180°

Resolution 0.01°

10 -Smith Chart.

Resolution 0.01

11-Measurement Accuracy.

Corrected Directivity > 42 dB, OSL Calibration

> 38 dB, InstaCal™ Calibration

B-Spectrum Analyzer

1- Measurements.

Field Strength - Occupied Bandwidth - Channel Power - ACPR - AM/FM/SSB Demodulation - Coverage Mapping - C/I - Emission Mask.

2- Frequency.

Frequency Range 100 kHz to 4 GHz,

Frequency Reference Aging: ± 1.0 ppm/year

Accuracy: ± 1.5 ppm (25 °C ± 25 °C)

Frequency Span 10 Hz to 4 GHz including zero span

Sweep Time Minimum 100 ms, 10 µs to 600 seconds in zero span

Sweep Time Accuracy ± 2% in zero span

3- Bandwidth.

Resolution Bandwidth (RBW) 10 Hz to 3 MHz in 1–3 sequence ± 10%

Video Bandwidth (VBW) 1 Hz to 3 MHz in 1–3 sequence

RBW with Quasi-Peak Detection 200 Hz, 9 kHz, 120 kHz

VBW with Quasi-Peak Detection Auto VBW is On, RBW/VBW = 1

4- Amplitude Ranges.

Dynamic Range **>** 95 dB (2.4 GHz), 2/3 (TOI-DANL) in 10 Hz RBW

Measurement Range DANL to +26 dBm

Display Range 1 to 15 dB/div in 1 dB steps, ten divisions displayed

Reference Level Range –120 dBm to +30 dBm

Attenuator Range 0 to 55 dB, 5.0 dB steps

Maximum Continuous Input +43 dBm

Amplitude Units Log Scale : dBm, dBV, dBmv, dBµV

Linear Scale: nV, µV, mV, V, kV, nW, µW, mW, W, Kw

5- Amplitude Accuracy.

100 kHz to 4.0 GHz ± 1.25 dB, ± 0.5 dB typical

6- Markers.

Marker types Normal, noise marker

Number of markers or delta markers 6.

Marker functions Peak, next peak, peak left, peak right, marker to center, minimum search.

7- Displayed Average Noise Level (DANL).

10 Hz RBW, 10 Hz VBW, 50 ohm termination on input, 0 dB attenuation, average detector.

Preamplifier OFF

20 to 30 °C

10 MHz to 2.4 GHz -130 dBm (typical).

> 2.4 GHz to 5.0 GHz -125 dBm (typical).

Preamplifier ON

20 to 30 °C

10 MHz to 2.4 GHz -148 dBm (typical).

> 2.4 GHz to 5.0 GHz -145 dBm (typical).

-10 to 55 °C

10 MHz to 2.4 GHz < -141 dBm.

> 2.4 GHz to 5 GHz < -138 dBm.

8- Spurs Residual responses

Input terminated, 0 dB attenuation, preamplifier off, RBW ≤ 1 kHz, VBW auto-coupled.

20 MHz to 3 GHz -90 dBm (nominal).

> 3 GHz to 6 GHz -85 dBm (nominal).

Spurious responses

Input mixer level -30 dBm

RFsig = RFtune + 417 MHz -70 dBc (nominal).

RFsig = RFtune + 1.716 GHz -80 dBc (nominal).

Input mixer level -10 dBm, first IF image response

RFsig = RFtune – 2 x 0.8346 GHz,

for RFtune 5.7 to 6.0 GHz -50 dBc (nominal).

Sidebands	-80 dBc (nominal).
	-60 dBc (nominal) when battery charging,260KHZ offset.

C- *Power Meter.*

Frequency	Center/Start/Stop, Span, Frequency Step, Signal Standard, Channel Full Band.
Amplitude	Maximum, Minimum, Offset, Relative On/Off, Units, Auto Scale.
Average	Acquisition Fast/Med/Slow, of Running Averages.
Limits	Limit On/Off, Limit Upper/Lower
Frequency Range	10 MHz to 4 GHz
Span	1 kHz to 100 MHz
Display Range	–140 dBm to +30 dBm, ≤ 40 dB span
Measurement Range	–120 dBm to +30 dBm
Offset Range	0 to +100 dB
VSWR	1.5:1 typical**.**
Maximum Continuous Input	+43 dBm without attenuator.
Accuracy	Same as Spectrum Analyzer.
Application Options	Impedance (50 Ω, 75 Ω, Other).

D- *Interference Analyzer*

Measurements

- **Spectrum**
- **Field Strength**
- **Occupied Bandwidth**
- **Channel Power**
- **Adjacent Channel Power (ACPR)**

- **AM/FM/SSB Demodulation**
- **Carrier-to-Interference ratio (C/I)**
- **Spectrogram (Collect data up to 72 hours)**
- **Signal Strength**
- **Received Signal Strength Indicator (RSSI)**
- **Signal ID (up to 12 signals)**
- **Center Frequency**
- **Bandwidth**
- **Signal Type (FM, GSM, W-CDMA, CDMA, Wi-Fi, LTE)**
- **Closest Channel Number**
- **Number of Carriers**
- **Signal-to-Nose Ratio (SNR) > 10 dB**
- **Interference Mapping**
- **Triangulate location of interference with on display maps**

Application Options Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other).

E- Channel Scanner.

Number of Channels	1 to 20 Channels (Power Levels)
Measurements	Graph/Table, Max Hold (On/5 sec/Off), Freq/Channel, Current/Max, Single/Dual Color
Scanner	Sca Channels, Scan Frequencies, Scan Customer List,scan script
Amplitude	Reference Level, Scale
Custom Scan	Signal Standard, Channel, # of Channels, Channel Step Size, Custom Scan
Frequency Range	100 kHz to 4 GHz (S332E)
Frequency Accuracy	± 10 Hz + Time base error

Measurement Range –110 dBm to +26 dBm

Application Options Bias-Tee (On/Off), Impedance (50 Ω, 75 Ω, Other)

F- GPS Receiver .

Setup On/Off, Antenna Voltage 3.3/5.0 V, GPS Info

GPS Time/Location Indicator Time, Latitude, Longitude and Altitude on display Time, Latitude, Longitude and Altitude with trace Storage

High Frequency Accuracy Spectrum Analyzer, Interference Analyzer, CW Signal Analyzers.

when GPS Antenna is connected < ± 50 ppb with GPS On, 3 minutes after satellite lock in selected mode.

Connector SMA, Female.

General Specifications.

1-Connectors

RF Out Type N, female, 50 Ω

RF Out Damage Level 23 dBm, ± 50 VDC

RF In Type N, female, 50 Ω

RF In Damage Level +43 dBm peak, ± 50 VDC

GPS SMA(f)

External Power 5.5 mm barrel connector, 12.5 VDC to 15 VDC, < 4.0 Amps

USB Interface (2) Type A, Connect USB Flash Drive and Power Sensor

USB Interface 5-pin mini-B, Connect to PC for data transfer

Headset Jack 2.5 mm mini-phone plug

External Reference In BNC, female, 50 Ω, Maximum Input +10 dBm 1 MHz, 5 MHz, 10 MHz, 13 MHz

External Trigger/Clock Recovery BNC, female, 50 Ω, Maximum Input ± 50 VDC.

2- Display.

Type Resistive Touchscreen

Size 8.4” daylight viewable color LCD

Resolution 800 x 600

3- Battery.

Type Li-Ion

Battery Operation 4.0 hours**,**

4- POWER.

Power supply External DC input 12 to 16 VDC.

External AC power adapter **Input** 100 to 290 VAC, 50 to 60 Hz; 1.25 to 0.56 A.

Output 12 VDC, 5 A.

5- EMC.

Complies with European EMC Directive 2004/108/EC.

IEC/EN 61326-2-1).

CISPR Pub 11 Group 1, Class A.

AS/NZS CISPR 11.

ICES/NMB-001.

6- Safety.

Complies with European Low Voltage Directive 2006/95/EC

IEC/EN 61010-1 2nd Edition

Canada: CSA C22.2 No. 61010-1-04

USA: UL 61010-1 2nd Edition.

7- Environmental.

Meets MIL-PRF-28800F Class 2 specification

Humidity 95% at 40 °C

Operating Temperature –10 ºC to 55 ºC

Storage –40 ºC to 71 ºC

8- Weight & size.

Weight < 4 Kg.

Size < 300mm × 200mm × 100mm.

9- ESD.

IEC/EN 61000-4-2, functional up to 20 kV test.

10- Internal storage.

Internal Trace/Setup Memory 2,000 traces, 2,000 Setups.

11- Languages.

English, Chinese, French, Spanish, Russian, German.

Line Sweep Tools.

1-Trace Capture.

Browse to Instrument View and copy traces from the test equipment to our PC using Windows Explorer

Open legacy files Open DAT files captured with Hand Held Software Tools.

Open Current files Open VNA or DAT files

Capture plots to The Line Sweep Tools screen, DAT files, Database, or JPEG

2- Traces.

Trace Types Return Loss, VSWR, DTF-RL, DTF-VSWR, Cable Loss, Smith

Trace formats DAT, VNA, CSV, PNG, BMP, JPG, HTML, Data Base, and PDF.

3- Connectivity.

Connections Connect to PC using USB, Ethernet, or Serial.

Firmware Updates Product Update: download latest firmware version .