Data Sheet

BOONTON
A WIRELESS TELECOM GROUP COMPANY

9102 Handheld Spectrum Analyzer
9103 Handheld Spectrum Analyzer

Taking performance to a new peak

Boonton 9102 and 9103 Handheld Spectrum Analyzers

The 9102 and 9103 Handheld Spectrum Analyzers provide RF engineers and service technicians with the excellent performance of a workbench analyzer in a handheld form, at a competitive price.

One instrument for all your needs

- Installation troubleshooting, repair and maintenance.
- Acceptance and installation troubleshooting of antenna and cable installations.
- Assessment and verification of electromagnetic radiation to verify measures against EMI.
- Production test and alignment of the output of RF modules.
- Field measurements and verification of base station emissions.
- Used to detect and locate faulty mobile phone parts and components.

Typical measurements with the 9102 or 9103 Handheld Spectrum Analyzer include transmitter testing, alignment of modulators and measuring switch breakthrough. Additional options such as a tracking generator, the 9160 VSWR/DTF Bridge and the 9130 VSWR/DTF Reflection Measurement Option expand the capabilities of the 9102 and 9103. This full-featured analyzer is fully controllable via the front panel or by remote control from a PC.

For base station installation or maintenance engineers, the 9102 and 9103 offer the full scope of common performance measurements of BTS antenna systems: Return Loss (Reflection), Tower-Mounted Amplifier (Transmission) and Distance to Fault measurement with a standard resolution of 501 points in one lightweight device.

Measurement results and instrument settings can easily be transferred to a PC for presentation or post-processing.
This rugged portable instrument is suitable for indoor and outdoor use, and with its excellent technical data and extensive feature set meets many application needs.

Highlights

Covering all applications in a frequency range up to 4 GHz or 7.5 GHz depending on the model

Supporting radiation measurements at base stations and broadcast transmitters

Ideal for cable and antenna test and mobile service and repair

Applicable for commissioning, installation, maintenance and manufacturing

External reference connection for highest frequency accuracy

The 9100 series – companions with a rugged design for field and lab applications

We have tested the 9102 and 9103 Handheld Spectrum Analyzers according to all relevant and applicable standards for bench and portable field measurement equipment against RF radiation, conduction, static discharge (EN 55022, IEC 61000-4) and shock steadiness (EN 60068).

Wide frequency band covers 3G, Wireless LAN and GPS

Comprehensive feature set in single-button measurement
With its clear and easy operation, the 9102 and 9103 Handheld Spectrum Analyzers present all measurement functions required to quickly and precisely resolve measurement tasks. The user-friendly interface with logical softkeys enhances operation.

Frequencies are increasing...
needn't break the budget
The wide frequency range from 100 kHz to 4 GHz (7.5 GHz is optional) enables testing in RF systems and modules such as modern wireless local oscillators.

This frequency coverage also captures the higher harmonics from amplifier or oscillator modules, plus any spurious signals that can mix and break through into the pass-band. Its complete coverage of carrier, IF stages and audio frequencies provides the performance needed.

With the 9103 Handheld Spectrum Analyzer, the frequency range is wide enough to cover also the frequency range between 5 and 6 GHz. This band serves new broadband wireless access technologies such as WiMAX and Wireless LAN; commercial and military radio services in the C band are located here as well. The 7.5 GHz frequency range is also available in the 9102 equipped with the optional 9151 Frequency Extension 7.5 GHz.

Manual or automatic control made simple
Controlling the 9102 or 9103 from a PC is easy and convenient with the built-in RS-232 interface and Ethernet port. All functions of the spectrum analyzer can be controlled via the industrial standard remote control SCPI command set.

Convenience
No time is wasted in setting up the instrument or hand-copying settings from one instrument to the other. The 9100 Data Exchange Software, which comes with the 9100 series instruments, supports enhanced manage and transfer functions.

Channel systems, limit templates, settings and correction tables can be easily set up and maintained on a PC. Building new limit templates and correcting tables is child's play, using the PC's mouse.

A live trace can be continuously downloaded from the instrument using optional software. An easy export to standard graphic formats such as BMP and JPG supports the need for quick documentation of measurement data. Likewise, stored traces can be uploaded to set the unit to the previous measurement settings.

Easy-to-read screen facilitates signal tracing
The high-resolution color VGA display (640 x 480 pixels) is excellent for finding misleading spurs or aligning modulators. Multiple colors facilitate the comparison of measurement traces on the screen. The extra bright 6.5" TFT display has a superb 140° viewing angle and thanks to its high luminous intensity, is ideally suited for outdoor applications. 500 measuring points in a trace allow the comprehensive evaluation of a complex frequency spectrum at a glance.

Markers assist in precise reading of signals
Up to six markers allow for exact reading of complex signals. The transmitter performance can be checked, spurious signals can be detected and sideband levels can be established, using the six markers with their flexibility and clear on-screen display. By pressing Delta Marker, second and third harmonic levels can easily be checked. Power level and frequency are displayed in relation to a reference point.

Pass/fail verdict with limit templates
Limit lines simplify assessment of complex displayed signals, allowing users to decide whether the signal passes or fails. These limit templates can be set up with 30 segments. Simultaneously, it can be established if the signal exceeds an upper and/or lower limit or not.

High-precision frequency measurement
The integrated frequency counter expands the range of applications to high-precision frequency measurements, required for many tasks, such as mobile phone repair. These can now be performed with the 9102 and the 9103. For high-precision frequency measurements, users no longer need to utilize expensive spectrum analyzers or additional frequency counters. The precision can be increased even further by connecting an external frequency reference.

Get more out of digitally modulated signals through channel power measurement functions
The 9102 and 9103 offer Channel Power, Adjacent Channel Power Ratio (ACPR) and Occupied Bandwidth (OBW) measurement capabilities.

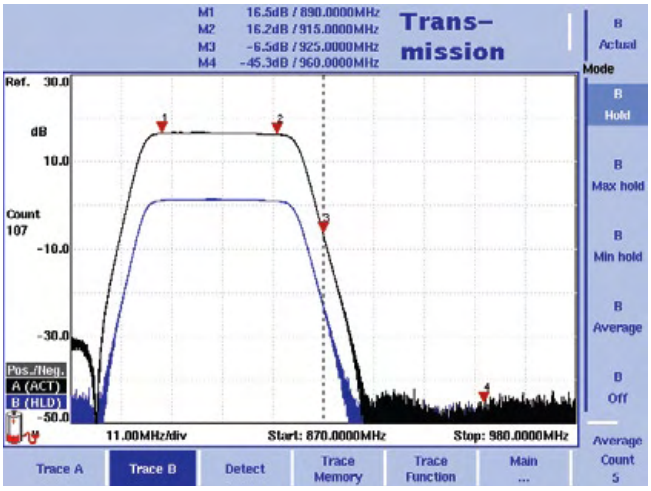
ACPR enables measurements of the leakage power from a modulated communication channel into an adjacent channel.

The occupied bandwidth measurement represents the part of the transmitted power that lies in a specified bandwidth.

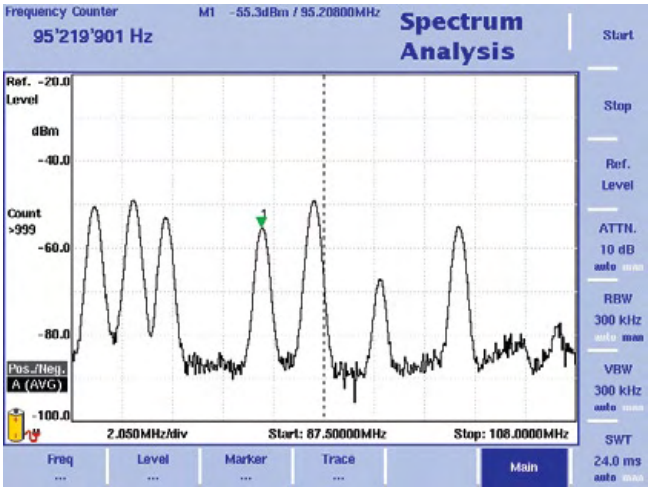
This measurement function can supply useful qualitative information about the used bandwidth, e.g. give useful insight into transmitter operation.

This single-button function allows rapid measurement delivering information on the characteristics of the specified communication channel. All significant values are displayed at a glance.

Additionally, channel power measurement, ACPR and OBW are implemented into the spectrum analysis mode. In contrast to the single-button operation, an experienced user can set measuring range, resolution and sweep time freely according to individual needs. In this way, measurements can easily be set up when predefined communication systems cannot be used.



Measuring the amplifier characteristics with the 9150 Tracking Generator Option



Checking the exact frequency with the built-in frequency counter

Accurate measurements
in different RF environments
When making accurate amplitude measurements with a spectrum analyzer, it is necessary to correct any effects, while measuring, that alter the signal of interest between the device under test (DUT) and the analyzer. External devices such as cables, amplifiers, antennas and additional attenuators can influence the signal level. In the instrument software, built-in amplitude correction is realized. The external device compensation function takes a list of frequency and amplitude pairs.

Connected linearly, these points offset the input signal accordingly. It is easy to set up this correction table using the "9100 Data Exchange Software".

Easy adjustment to different
impedance situations
While an impedance of 50 Ω is most common in most RF environments, cable TV systems apply 75 Ω. The 9102 and the 9103 support this standard as well. When switching between impedances, the corresponding correction table will automatically be loaded to ensure correct measurements. An optional matching pad is available to correctly terminate the cable.

AM and FM demodulation
The presence of audio signals can be checked by demodulation of AM or FM signals using Zero Span mode or demodulation at the marker position and listening via the built-in loudspeaker.

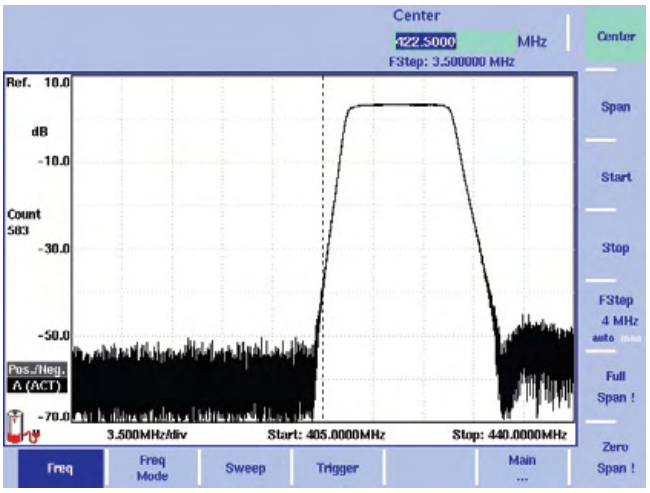
Digital signal processing with reloadable digital IF
RF signals are digitally processed by microprocessor and field-programmable gate arrays (FPGA) to ensure both superb accuracy and repeatability as well as flexibility for future requirements.

7.5 GHz – standard in the 9103, optional in the 9102
The standard 9102 already delivers a wide bandwidth of 4 GHz With the 9103, the frequency range of the 9102 is almost doubled! Looking into signals between 4 and 7.5 GHz is now possible with a small, hand-portable instrument. All the new broadband wireless standards within this range are covered; the option makes the complete C band uplink and downlink frequency ranges for satellite services available for testing. All the spectrum analyzer measurement functions of the instrument, such as Channel Power, OBW and EMF are also available in the extended frequency range.

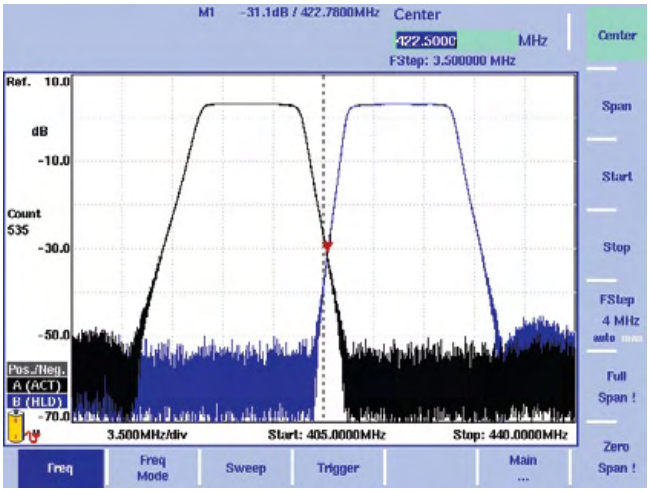
The 9103 Handheld Spectrum Analyzer takes measurements up to 7.5 GHz and can also hold an additional tracking generator.

The 9102 can be fitted with the 9151 Frequency Extension if it does not have the tracking generator installed. Existing 9102 instruments can be upgraded to the extended frequency range!

9132 RMS Detector Option
The 9132 RMS Detector helps to get more out of digitally modulated signals. It adds high precision to the channel power measurements of the 9102 and the 9103. Broadband and narrowband signals can be measured alike with superb accuracy, as the new detector is capable of analyzing signals that are similar to noise on the spectrum display. Such signals are smoothed and displayed with the precise RMS level.



Typical measurements tasks: cut-off frequencies in the pass-band ...



... and isolation between receive and transmit stages

Small and portable
With its minimal footprint, the 9100 series is suitable for usage both on the bench and in the field. The low weight make these spectrum analyzers highly portable instruments in the lab and supports mobile applications in the field that seemed impossible before. With the Boonton 1500 Battery Charger, additional battery modules can be re-charged outside of the 9100. The batteries are easy to exchange, preparing the instrument for many hours of independent operation in the field.

Tracking Option
The tracking generator with its output frequency range from 1 MHz to 4 GHz expands the application range of the 9102 and 9103 Handheld Spectrum Analyzers into areas which require a tracking generator, Distance-to-Fault (DTF) and reflection measurement (VSWR) capabilities. The level of the tracking generator is adjustable from –10 to –30 dBm; this allows adaptation of the output signal to the demands of passive and active devices under test. (Note: The Tracking Generator is not available for the 9102 with the 9151 Frequency Extension 7.5 GHz installed.)

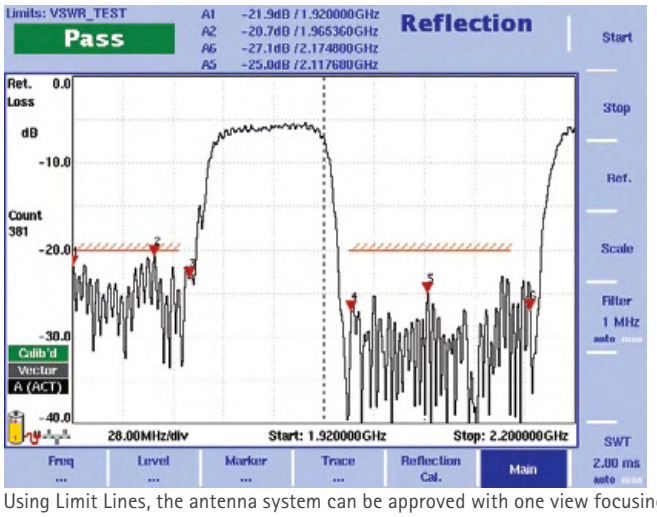
9162 Insertion Power Sensor
Whenever high power levels up to 50 W have to be measured, the 9102 or the 9103 with the 9162 Insertion Power Sensor is the right solution. An exceptionally wide frequency range enables many purposes and applications. The output power of base stations, radios and other transmitters can be easily monitored. The Power Sensor menu shows the forward and reverse power in one view. Measurements are particularly optimized for CW, GSM, UMTS, CDMA and DVB-T signals.

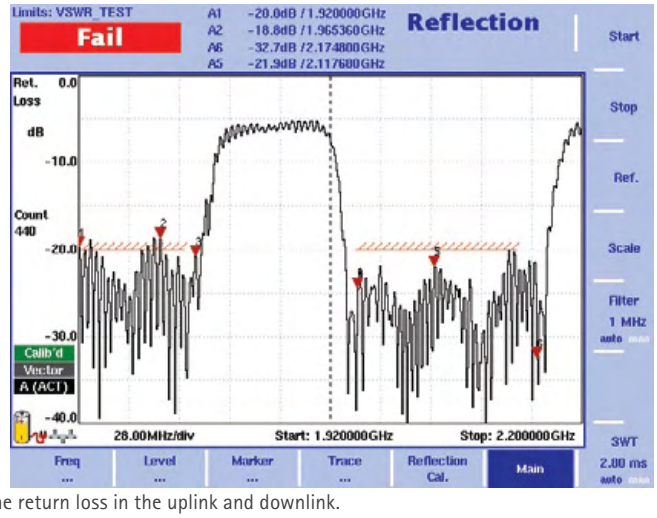
9168 GPS Receiver Option
To obtain precise measurements and the current GPS-derived coordinates from a device with only one command, the 9168 GPS Receiver Option is the right expansion for the 9102 and 9103 Handheld Spectrum Analyzers. The option uses the Multi Port and the RS -232 interface of the instrument. The current position, speed and altitude can be read out and displayed on the screen in different formats. The 9168 GPS Receiver Option also makes it easy to prove the location where a measurement trace has been taken, which can be important when performing reflection or EMF measurements in the field.

9130 VSWR/DTF Reflection Measurement Option, 9160 VSWR/DTF Bridge

The 9130 VSWR/DTF Reflection Measurement Option, in conjunction with the 9160 VSWR/DTF Bridge, turns the 9102 or 9103 into a full-featured reflection test set.

Today's complex antenna installations include tower mounted amplifiers, cross polarized antennas and long cable feeds. Measuring the antenna impedance match is the state-of-the-art method to analyze the antenna system performance.





Using Limit Lines, the antenna system can be approved with one view focusing on the return loss in the uplink and downlink.

With the 9102 or 9103 and the 9130 VSWR/DTF Reflection Measurement Option, measurement technicians are ready for all the test challenges involved between 1 MHz and 4 GHz.

Using the reflection measurement mode, all the relevant functional parameters are available on a glance. With the limit line capability results can easily be compared with the limits specified by the network operator.

Depending on user preference, the device displays the measured value either as a return loss or in other custom units such as standing wave ratio (VSWR), reflection coefficient (rho) or reflected power ratio.

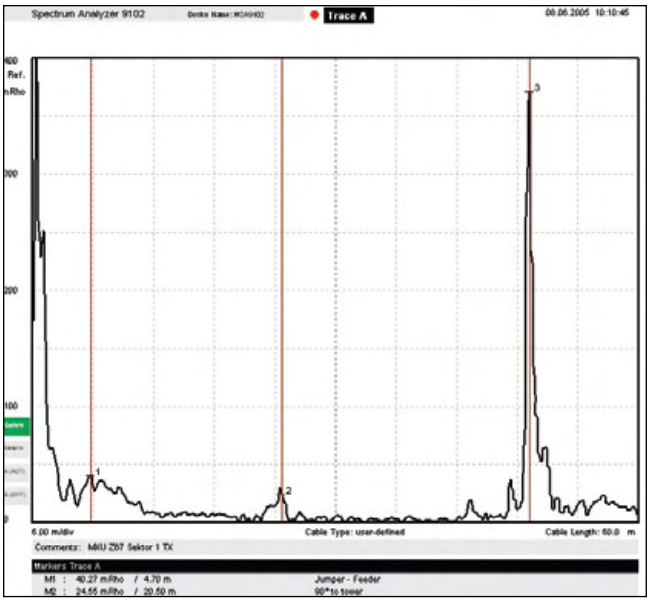
Vector analysis for accurate reflection measurements
Modern antenna systems for professional applications are characterized by a low reflection and a good match. The high performance is validated for field acceptance and maintenance using precise instruments. The 9130 VSWR/DTF Reflection Measurement Option provides high precision because it performs vector measurements on the reflected wave. This type of measurement warrants advanced accuracy and highly reliable results even at low reflected signal levels beyond –20 dB of return loss.

DTF measurements for cable performance testing
Antenna installations are never complete without distance-to-fault (DTF) measurements. The 9130 VSWR/DTF Reflection Measurement Option provides this type of test, based on FDR (Frequency Domain Reflectometry) technology. This system option supports a detailed analysis of the antenna feeder cable with a total length of up to 1000 m. Weak connectors, cable kinks, water ingress or other cable related problems can be easily detected and located. The high measurement resolution of 501 points ensures quick and efficient troubleshooting by detecting even small reflections; these result in a displayed distance to fault.

Prepared for all cable types
Boonton provides predefined cable parameter files for most known coaxial cables used for installations. They can easily be uploaded to the 9100; the parameters for rare cable types can be determined step by step on the instrument. The user decides whether he wants to set the measurement range manually or automatically.

One port cable loss measurement
Measuring cable loss is easy only as long as both ends of a cable are accessible. However, for cables which are either reeled or already installed, this does not apply. The one port cable loss measurement mode helps to test from one end of the cable while the other end is either shorted or left open. After defining the applicable frequency range for the measurement, the average attenuation can be read from the result field, while the screen shows the frequency response of the cable.

9160 VSWR/DTF Bridge – just plug and go!
A measurement bridge is the necessary tool for reflection measurements. Boonton offers such a tool, tailor made for the 9102 and 9103 Handheld Spectrum Analyzers: The 9160 VSWR/DTF Bridge covers the frequency range up to 4 GHz and fits perfectly to the RF connectors of the 9102 and 9103. High directivity is the basis for the precision achieved in the return loss measurement. The 9102 and 9103 both provide supply voltage through its Multi Port. Just plug in the bridge and it is ready for a full set of new features!



Precise detection and location of even smallest cable faults on site with the DTF mode, easy and time-saving documentation of the installer's work quality in the office with the Data Exchange Software.

Specifications

Specifications valid after 30 minutes warm-up time at ambient temperature, specified environmental conditions and typical measurement range, within a period of one year after calibration.

Frequency

Frequency range

Measurement range	
9102 (without 7.5 GHz option)	100 kHz to 4 GHz
9103, 9102 with 7.5 GHz option	100 kHz to 7.5 GHz
Resolution	1 kHz

Reference frequency

Temperature stability	±2 ppm
Aging	±1.5 ppm
Frequency uncertainty	±1.5 ppm

Frequency counter

Resolution	1 Hz, 10 Hz, 100 Hz
Min. required input level	–90 dBm

Frequency span

Setting range	
9102 (w/o 7.5 GHz option)	0 Hz, 10 kHz to 4 GHz
9103, 9102 with 7.5 GHz option	0 Hz, 10 kHz to 7.5 GHz

Sweep time

Span > 10 kHz	1 ms to 250 s
Span = 0 Hz	1 ms to 250 s

Resolution bandwidth (RBW)

RBW selection	manual or automatic
RBW (–3 dB) range	100 Hz to 1 MHz
Steps	1, 3, 10

Video bandwidth (VBW)

VBW selection	manual or automatic
VBW range (–3 dB)	10 Hz to 1 MHz
Steps	1, 3, 10

SSB noise

9102 (w/o 7.5 GHz option)	
f = 2 GHz, Δf = 100 kHz,	< –80 dBc/Hz
RBW = 10 kHz, VBW = 1 kHz	typ. < –83 dBc/Hz
9103, 9102 with 7.5 GHz option	
f = 5.7 GHz,Δf = 100 kHz,	< –80 dBc/Hz
RBW = 10 kHz, VBW = 1 kHz	typ. < –83 dBc/Hz

Amplitude

Maximum safe DC voltage at RF-in	±50 V
Maximum safe input power	30 dBm
Display units	dBm, dBµV, dBmV, dBV, dB, V, mV, µV, mW, µW

Measurement range

in automatic mode	
	average noise floor to 20 dBm

Displayed average noise level (DANL)

9102 (without 7.5 GHz option)	(RBW = 100 Hz, attenuation = 0 dB)
10 MHz to 1 GHz	< –127 dBm
	typ. –130 dBm
1 GHz to 4 GHz	< –130 dBm
	typ. –135 dBm
9103, 9102 with 7.5 GHz option	
10 MHz to 5 GHz	< –120 dBm
	typ. < –123 dBm
5 to 7.5 GHz	< –118 dBm,
	typ. < –120 dBm

Input attenuation

User-defined by direct entry or step keys. 0 dB only selectable by direct entry to protect the first mixer.

Setting range	(0) 10 to 50 dB
Attenuation steps	10 dB

Dynamic range

Range	> 70 dB
Max. measurable input level (attenuation = 40 dB)	20 dBm
9102 (without 7.5 GHz option)	
Min. measurable input level	–130 dBm
9103, 9102 with 7.5 GHz option	
Min. measurable input level (<4 GHz)	–119 dBm
Min. measurable input level (4 GHz to 7 GHz)	–120 dBm
Min. measurable input level (7 GHz to 7.5 GHz, attenuation = 0 dB)	–112 dBm

Level accuracy

(Input attenuation = 10 dB, ambient temperature from +20°C to +26°C)	
10 MHz to 3.6 GHz	±1 dB

RF input match

(input attenuation = 10 dB)	
VSWR	
9102 (w/o 7.5 GHz option), 10 MHz to 4 GHz	< 1.6, typ. < 1.5
9103, 9102 with 7.5 GHz option	
100 MHz to 4 GHz	< 1.6, typ. < 1.3
4 GHz to 6 GHz	< 2.0, typ. < 1.6
6 GHz to 7.5 GHz	< 2.3, typ. < 2.0

Reference level

Reference level setting by keyboard entry or step keys	
Setting range	–100 to +30 dBm
Resolution	0.1 dB

Spurious response of 9102 w/o 7.5 GHz option

Image rejection (f = 1 GHz)	> 80 dB
Spurious level (attenuation = 0 dB)	< –90 dBm
LO leakage (attenuation = 10 dB)	< –77 dBm
Intermodulation-free range (input level –30 dBm, f1 = 990MHz, f2 = 992MHz)	> 63 dB

Spurious response of 9103 and 9102 with 7.5 GHz option

Image rejection (f = 6.7 GHz)	> 60 dB
Spurious level (100 kHz to 3 GHz)	< –86 dBm
Spurious level (3 GHz to 7.5 GHz, attenuation = 0 dB)	< –80 dBm
LO leakage (f = 7.7 GHz) (attenuation = 10 dB)	< –57 dBm

Functions

Detector & sweep

Detector types	pos./neg. peak, pos. peak neg. peak, sample, (RMS optional)
Sweep processing	actual, average, max. hold min. hold

Trace

Max. displayed traces	2
Trace points	2 x 5011
Trace functions	A + B → A, A – B → A, copy a>b, copy b>a
Trace A	color selectable (default is black)
Trace B	color selectable (default is blue)

Marker

Max. markers	6
Delta markers	5
Marker functions	max. peak, next peak
Transfer functions	M → centre frequency M → ref. level M → f step

Limit check

Max. no. of limit templates	99
Limit functions	upper, lower, upper and lower
Max. no. of limit segments	30

Supported measurement modes

Spectrum analysis
Channel power
Signal generator (option)
Transmission (option)
Reflection (option)
Distance to fault (option)
Cable loss (option)

Power measurement

Max. no. of channel systems	99
Measurement functions	Channel Power, ACPR, OBW
Default systems	GSM, WCDMA, DECT, WLAN

Demodulation

Min. input level	–50 dBm
AM/FM	on marker/permanent/on multi marker

Keyboard

Key type	silicon click
Parameters shortcut keys	Cent, Span, Ref
Quick setting keys	Preset, Hold/Run, Clr Trc, RCL/Store, PARAM, MODE, MKR

General

Display (TFT)

Size	6.5"
Resolution	640 x 480
Colors	256
Brightness	300 cd
Measurement result points	2 x 5011

1 Two independent traces are available (min. hold, max. hold at the same time)

Power supply

DC voltage, external	11 to 15 V / max. 28 W
Internal battery	Li-Ion
Operating time, battery fully charged, full brightness, Tracking Generator on	min. 2.0 h

Memory

Type	Flash disk
Capacity (setups and traces)	257

Dimensions (W x H x D)

9102	355 x 190 x 91 [mm] 14.0 x 7.5 x 3.6 [inch]
9103	355 x 190 x 104 [mm] 14.0 x 7.5 x 4.1 [inch]

Weight

With battery	
9102	3.2 kg (7 lbs)
9103	3.6 kg (8 lbs)
Power supply only	0.32 kg (0.7 lbs)

Environmental conditions

(unless otherwise specified)	MIL-PRF28800F class 2C
Operating temperature	0 to +45°C
Storage temperature	–10 to +50°C
Rel. humidity (non-condensing)	80%

Connectors

RF in

Connector	type N (female)
Impedance	50 Ω

Multi Port

Connector	7-pin ODU
DC voltage	10 V, 300 mA
Short-circuit protected	active
Switched control bus	I2C

DC in

Connector	2.1 mm dia. barrel jack socket
Max. current	3 A

Headphone

Headphones output	3.5 mm mini jack
Loudspeaker	

Serial interface

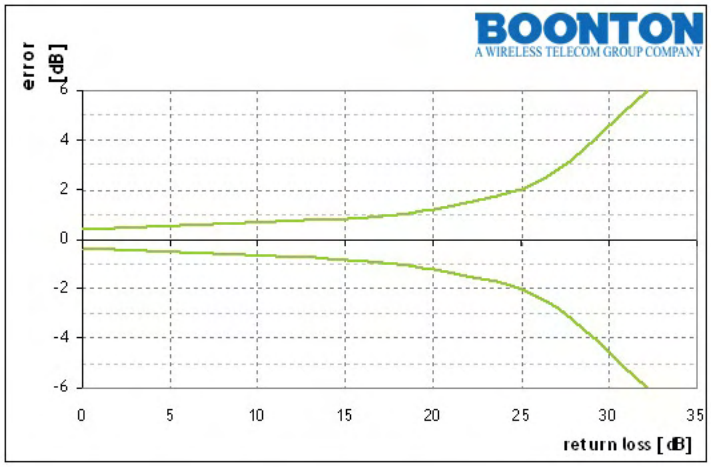
For software updates and remote control	
Connector	DB-9 (male)
Speed	57.6 kbit/s
Required cable	null modem cable

LAN (TCP/IP)

For software updates and remote control	
Connector	RJ-45
Speed	10 Mbit/s

External time reference

Ref. frequency input	5 MHz, 10 MHz, 13 MHz
Ref. frequency offset	< 10 ppm
Input level	> 0 dBm
Connector	BNC



Maximum error chart for the return loss measurement with the 9160 VSWR/DTF Measurement Option

Options

Tracking Generator

Output frequency range	1 MHz to 4 GHz
Output level setting range	
1 MHz to 4 GHz	–10 to –30 dBm
	adjustable in 1 dB steps
Output level uncertainty	
1 MHz to 4 GHz	< ±2 dB
Harmonics at –10 dBm	
1 MHz to 4 GHz	< –20 dBc
Spurious level offset at –10 dBm	
1 MHz to 10 MHz	< –63 dBc
SSB – phase noise	
f = 100 kHz	< –73 dBc/Hz
Frequency stability	
	according to reference frequency
Connector	type N, female
Output impedance	50 Ω

9160 VSWR/DTF Bridge

Frequency range	1 MHz to 4 GHz
Directivity	10 MHz to 3 GHz, typ. 35 dB
Insertion loss, 10 MHz to 3 GHz	
RF in to DUT	< typ.11 dB
RF out to DUT	< typ. 9 dB
Impedance	50 Ω
Weight	410 g
Connectors	N-type
Maximum input power	+20 dBm

9130 VSWR/DTF Reflection Measurement Option

Return loss measurement range	70 dB
Reflection measurement units	dB, VSWR, mRho
Reflection measurement	vector, scalar
DTF sweep setting	automatic or manual
DTF resolution	501 points
DTF max. cable length	
	1000 m, depending on cable attenuation

9162 Insertion Power Sensor

Frequency range	70 MHz to 2.7 GHz
Measurement range	20 mW to 50 W
Measurement units	mW, W, dBm
Directivity	> 25 dB
Insertion loss	< 1 dB
Signal types	CW, GSM, UMTS, CDMA, DVB-T, TETRA

Standard delivery

Power supply (90 to 240 V, 50 to 60 Hz)
Getting started manual
User's guide on CD
9100 Data Exchange Software (1 license)
Cross-link Ethernet communication cable

Ordering information

Product packages

9102 Handheld Spectrum Analyzer Bench Edition	B 100 412
9102 Handheld Spectrum Analyzer Field Edition	B 248 806
9102 Handheld Spectrum Analyzer Tracking Edition	B 248 801
9102 Handheld Spectrum Analyzer VSWR/DTF Edition	B 248 802
9103 Handheld Spectrum Analyzer Bench Edition	B 100 403
9103 Handheld Spectrum Analyzer Field Edition	B 248 813
9103 Handheld Spectrum Analyzer Tracking Edition	B 248 814
9103 Handheld Spectrum Analyzer VSWR/DTF Edition	B 248 815

Options

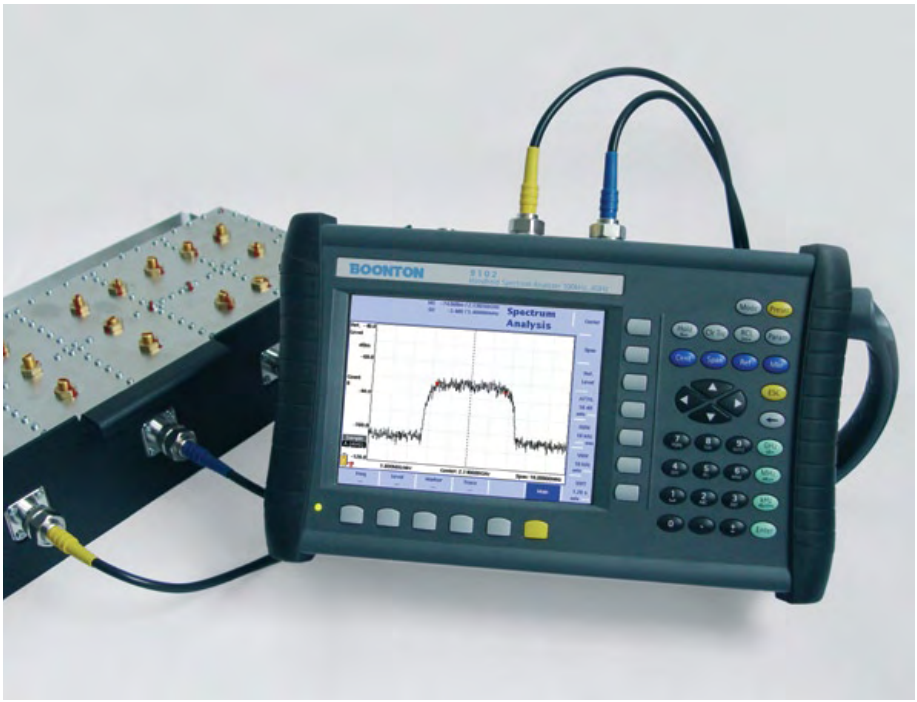
9130 VSWR/DTF Reflection Measurement Option	B 897 261
9132 RMS Detector Option	B 897 275
9151 Frequency Extension 7.5 GHz (option to the 9102)	B 248 812
9160 VSWR/DTF Bridge	B 248 966
9162 Insertion Power Sensor	B 248 968
9168 GPS Receiver Option	B 248 811
9102 Tracking Generator Upgrade	B 248 804
9151 Frequency Extension 7.5 GHz Upgrade for the 9102 (re-calibration necessary)	B 248 812

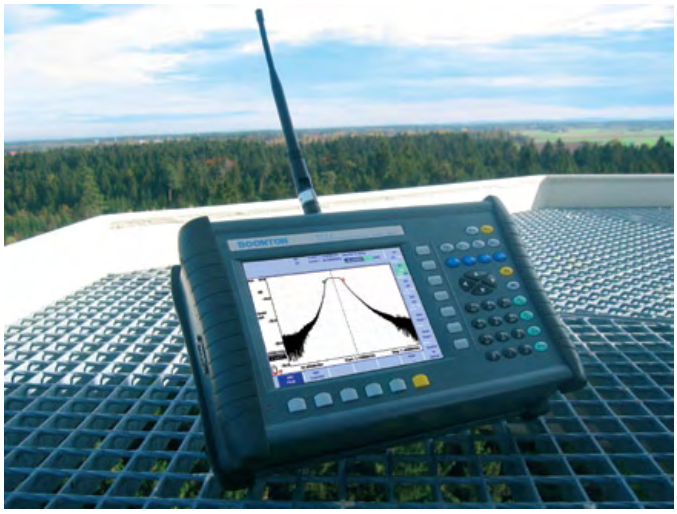
Accessories

9100 Battery module, 7.2 Ah	B 205 012
9100 Outdoor backpack	B 241 015
9100 Soft carrying bag	B 241 013
1500 Battery charger	B 204 097
9100 Power supply	B 248 328
9100 12 V car adapter	B 860 389
9100 Safety lock	B 867 037
9100 Data Exchange Software	B 897 137
9100 Serial communication cable	B 860 388
9100 Ethernet cross-link cable	B 880 629
1205 RF Probe 20 dB Frequency range 100 kHz to 4 GHz RF attenuation (nominal at 50 Ω) 20 dB including adapter N (male), BNC (female)	B 248 640
1207 Inductive Probe Frequency range 4 MHz to 6 GHz 30 dB amplifier	B 248 971
Antenna 400 MHz band (TNC)	B 860 264
Antenna 900 MHz band (TNC)	B 860 261
Antenna 1800 MHz band (TNC)	B 860 262
Antenna 1880 MHz band (BNC)	B 860 260
Antenna 2400 MHz band (TNC)	B 860 146
Adapter N – TNC	B 886 098
Adapter N – BNC	B 886 097
Adaptor N (f) – 7/16" (m)	B 886 334
Adaptor N (m) – 7/16" (f)	B 886 332
Adaptor N (m) – 7/16" (m)	B 886 333
Adaptor N (f) – 7/16" (f)	B 886 331
Matching pad N 50 Ω to N 75 Ω	B 886 205
Matching pad N 50 Ω to F 75 Ω	B 886 204
Attenuator 18 GHz, 6 dB	B 874 061
Calibration Set Open/Short/Load, Type DIN 7/16 inch male	B 860 548
Calibration Set Open/Short/Load, Type N male	B 860 549
OASIS Spectrum Monitoring Software	B 897 828

Related products

9101 Handheld Spectrum Analyzer Bench Edition	B 100 411
9101 Handheld Spectrum Analyzer Field Edition	B 248 800





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