

HANDHELD SPECTRUM ANALYZER MS2711B 100 kHz to 3.0 GHz



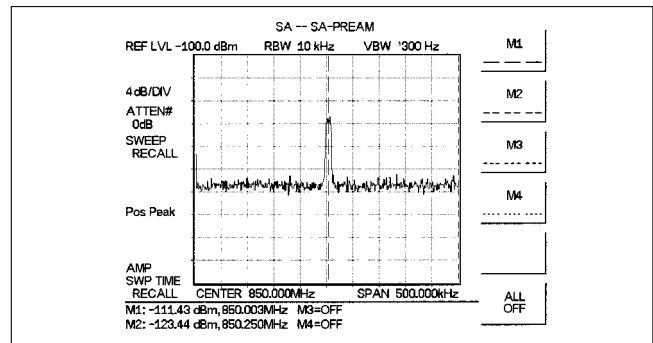
**Fast, Accurate, Repeatable, Portable
Spectrum Analysis**



Powerful Trace Management

Users are able to store ten test setups along with 200 measurement traces internally in the unit's memory. The stored data can be easily downloaded to a personal computer (PC) or a printer via an RS-232 serial cable for further analysis. A notebook computer can be used with the RS-232 interface for automated control and data collection in the field.

A standard preamplifier (option 8) plus a number of available options including an internal tracking generator (option 20) expand the MS2711B's capabilities.



The MS2711B Handheld Spectrum Analyzer provides the “ultimate” in measurement flexibility for field environments and applications requiring mobility. Unlike traditional spectrum analyzers, the MS2711B features a rugged, ultra-lightweight, battery-operated design that enables users to conduct spectrum analysis measurements – anywhere, anytime.

Providing complete freedom from AC/DC power requirements, the MS2711B enables you to locate, identify, record and solve communication systems problems quickly and easily, without sacrificing measurement accuracy.

Whether you are installing, maintaining, or troubleshooting a modern wireless communication system, the MS2711B provides exceptional performance combined with ease-of-use and broad functionality – making it an ideal solution for engineers and technicians who conduct field measurements in the 100 kHz to 3.0 GHz frequency range. In fact, it is ideal for finding the source of interfering signals in modern wireless systems.

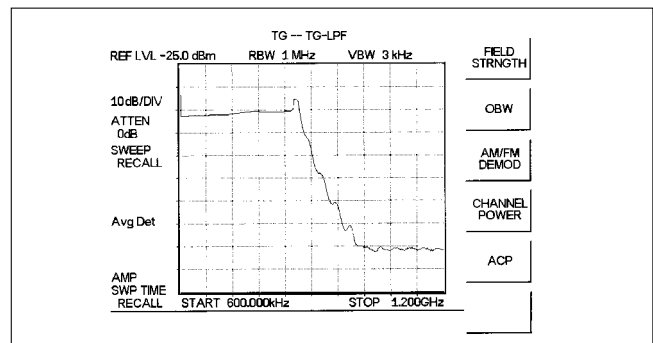
Rugged and Reliable

Because the MS2711B was designed specifically for field environments, it can easily withstand the day-to-day punishment of field use. Rugged packaging also keeps the MS2711B performing in harsh environments.

Easy-to-Use

Not only is the MS2711B the lightest fully-functional spectrum analyzer available at 4.5 pounds (base model including battery), operation is straight-forward and driven by firmware that simplifies the process of making measurements and interpreting the results shown on the large, high-resolution LCD display. The menu-driven user interface is easy to use and requires little training.

A full range of marker capabilities such as peak, center and delta functions are also provided, giving users a faster and more comprehensive measurement of displayed signals. Limit lines simplify amplitude measurements, giving users the capability to create quick, simple, pass/fail measurements. Frequency, span and amplitude functions are easily configured for optimum performance. Used together with the Save setup feature, these functions can help to make testing easier and faster for less experienced users.



To meet the challenges of today's wireless market, Anritsu Company has incorporated a pre-amp (standard) for its revolutionary MS2711B hand-held spectrum analyzer which increases the analyzer's sensitivity and dynamic range while improving measurement time. With the pre-amp option, the MS2711B is particularly effective in measuring low-level signals. The handheld spectrum analyzer's sensitivity is improved to -115 dBm (full span). With this option, the MS2711B can identify and make measurements on low-level signals much faster than previously possible.

The improved sensitivity, dynamic range, and measurement speed complement the existing benefits of the MS2711B. Weighing only 4.9 pounds (including a NiMH battery, fully loaded, base model only at 4.5 pounds), the MS2711B is the world's lightest fully functional hand-held spectrum analyzer with the built-in tracking generator option (option 20).

MS2711B has been enhanced so that it can make highly accurate channel power measurements, occupied bandwidth and Adjacent Channel Power Ratio (ACPR) measurements. These are increasingly critical measurements, particularly for power amplifiers used in wireless communication systems. With the enhancements, the MS2711B has dedicated one button channel power, occupied bandwidth, and ACPR measurement capability to significantly reduce test time and expense. The MS2711B also features local language graphical user interface support (in Chinese, Japanese, French, German, and Spanish).

Features

- Lightweight (4.5 lbs - base model, 4.9 lbs with tracking generator - option 20)
- Synthesized-based performance
- Wide dynamic range
- One button, ACP, OBW, channel power measurement
- Quick zoom-in, zoom-out display
- 5 min warm up
- Manual and automatic attenuator control
- Improved user interface, with local language support in 5 different languages
- Automatic overload and ESD protection
- Built-in AM/FM demodulation
- Built-in field strength measurement
- Ability to store 6 and recall antenna factors
- Full range of marker capabilities including peak, center, and delta functions
- Limit lines for quick, simple pass/fail measurements
- Rugged, reliable packaging
- Battery operated design
 - 2.5 hours of continuous operation
 - Built-in energy conservation that extends battery life beyond an eight-hour workday
 - Operation using a 12.5 Vdc source AC-DC adapter or automotive cigarette lighter adapter, which simultaneously charges the battery
 - Field replaceable battery
- Built in clock and calendar
- Low cost ownership, global warranty

- Data storage and memory
 - Store up to ten test setups and 200 measurement traces in non-volatile memory
 - Stored data is easily and quickly downloaded to a personal computer (PC) or printer
- Powerful trace management
 - Automatically date/time stamped
 - Alphanumeric labeling
- PC reporting software
 - Windows® 95/98/2000/ME, XP, NT Workstation compatible
 - Supports long file names for descriptive labeling
 - Can display an unlimited number of traces for comparison to historical performance
- Monochrome LCD with backlight capability display
- Direct printer control via RS232 serial port

Applications

Convenient operating procedures, high sensitivity, and excellent repeatability enable the MS2711B to pinpoint the smallest system performance degradation and allow for easy verification of system compliance. Typical applications include

- Transmitter Spectrum Analysis – occupied bandwidth, power, modulation measurements, location and identification of in-band, out-of-channel spurious and out-of-band spurious signals
- Receive Signal Analysis – measure receiver sensitivity, locate and identify sources of interfering signals
- Modulation identification, modulation depth, deviation, and spectral mask
- Signal Strength Mapping – to determine the most suitable location for antennas, base stations, and repeaters; or pinpoint Electromagnetic (EM) leakage in broadcast systems

Specifications

Except where noted otherwise, specified values are obtained after warming up the Anritsu MS2711B Handheld Spectrum Analyzer for 5 minutes at a constant ambient temperature. The typical values are given for reference and are not guaranteed.

Frequency	Frequency range	100 kHz to 3.0 GHz
	Frequency reference	Aging: ± 1 ppm/yr Accuracy: ± 2 ppm
	Frequency span	100 kHz to 3 GHz in 1, 2, 5 step selections in auto mode, plus zero span
	Sweep time	≥ 6500 ms full span; 500 ms zero span
	Resolution bandwidth (–3dB width)	10 kHz, 30 kHz, 100 kHz, 1 MHz, $\pm 20\%$
	Video bandwidth (Range –3dB)	100 Hz to 300 kHz in 1-3 sequence
	SSB Phase Noise @30 kHz Offset	≤ -75 dBc/Hz, 30 kHz offset
	Spurious responses	Input related: ≤ -45 dBc
	Spurious residual responses	≤ -95 dBm, ≥ 500 kHz
Amplitude	Measurement range	-95 dBm to 20 dBm (≥ 300 kHz) -115 dBm to 20 dBm (≥ 300 Hz with Option 8)
	Displayed average noise level	≤ -115 dBm (≥ 300 kHz, typical with Option 8) ≤ -95 dBm (≥ 300 kHz, typical) ≤ -80 dBm (< 299 kHz, typical)
	Dynamic range	> 65 dB, typical
	Total level accuracy	± 2 dB, ≥ 200 kHz, typical*; ± 3 dB, < 200 kHz, typical* (*For input signal level ≥ -60 dBm)
	Display range	2 to 15 dB/div. In 1 dB steps Ten divisions displayed
	Max input level	+20 dBm, maximum damage -25 dBm with Option 8 ± 50 Vdc
	Attenuator	Range: 0 to 50 dB, selected manually or automatically coupled to the reference level Resolution: 10 dB steps
	RF input VSWR	2.0:1
General	Internal trace memory	200 maximum
	Setup storage	10 test setups
	RS-232	9 pin D-sub, three wire serial
	Electromagnetic compatibility	Meets European community requirements for CE marking
	Temperature	Operating: 0°C to 50°C, humidity 85% or less Non-operating: -20°C to $+75^\circ\text{C}$
	Power supply	External DC Input: +12.5 to +15 volts dc, 1100 mA max
	Size	25.4 cm (W) 17.8 cm (H) x 6.10 cm (D) 10.0 in (W) x 7.0 in (H) x 2.4 in (D)
	Weight	2.04 kg (4.5 lbs.) includes battery, 2.2 kg (4.9 lbs) fully loaded

MS2711B Preamplifier specifications

Frequency	Frequency range	1 MHz to 3 GHz
Amplitude	Measurement range	+20 dBm to -115 dBm
	Displayed average noise level	≤-115 dBm (full span typical), ≥300 kHz RBW
	Gain	20 dB, 1 MHz to 3 GHz typical

MS2711B Tracking generator specifications

Frequency	Frequency range	10 MHz to 3 GHz
	Frequency resolution	5 KHz
	Tracking offset range	±5 MHz
Output	Output power level	0 to -60 dBm
	Output power level resolution	0.1 dB
	Absolute level accuracy	±1.5 dB, 0 to -40 dBm ±4 dB, -40 dBm to -60 dBm
	Output flatness	≤±1.5 dB (10 MHz – 3 GHz)
	Output tracking VSWR	<2.0:1, <0 dBm
	Spurious harmonics	≤-20 dBc
	Non-Spurious	≤-20 dBc

Ordering Information

Please specify model/order number, name, and quantity when ordering.

Model/Order No.	Name
MS2711B	HandHeld Spectrum Analyzer: 100 kHz to 3.0 GHz
10580-0070	Standard Accessories User's Guide Soft Carrying Case AC – DC Adapter Automotive Cigarette Lighter/12 Volt DC Adapter One Year Warranty CD ROM containing Software Management Tools Serial Interface Cable Rechargeable battery, NiMH Pre-amplifier (built-in)
Option 20	Tracking generator (built-in)
5400-71N50	RF Detector, N(m), 50 Ohm, 1 to 3000 MHz
42N50A-30	30 dB, 50 Watt, Bi-directional, DC to 18 GHz, N(m) to N(f) Attenuator
34NN50A	Precision Adapter, DC to 18 GHz, 50 Ohm, N(m) to N(m)
34NFN50C	Precision Adapter, DC to 18 GHz, 50 Ohm, N(f) to N(f)
15NN50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(m), 3.5 GHz
15NN50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(m), 3.5 GHz
15NN50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(m), 3.5 GHz
15NNF50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(f), 3.5 GHz
15NNF50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(f), 3.5 GHz
15NNF50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(f), 3.5 GHz
15ND50-1.5C	Test port cable armored, 1.5 meter, N(m) to 7/16 DIN(m), 3.5 GHz
15NDF50-1.5C	Test port cable armored, 1.5 meter, N(m) to 7/16 DIN(f), 3.5 GHz
510-90	Adapter 7/16 (f) to N(m), 3.5 GHz
510-91	Adapter, DC to 3.5 GHz, 50 Ohm, 7/16 (f)-N(f)
510-92	Adapter, DC to 3.5 GHz
510-96	Adapter 7/16 DIN (m) to 7/16 DIN (m), 3.5 GHz
61N50	RF SWR Bridge, 10-2500 MHz, 50 Ohm, N(m)
61NF50	RF SWR Bridge, 10-2500 MHz, 50 Ohm, N(f)
1030-86	Band Pass Filter, 800 MHz band, 806-869 MHz, R L = 1.7 dB, N(m)-SMA(f)
1030-87	Band Pass Filter, 900 MHz band, 902-960 MHz, R L = 1.7 dB, N(m)-SMA(f)
1030-88	Band Pass Filter, 1900 MHz band, 1.85-1.99 GHz, R L = 1.8 dB, N(m)-SMA(f)
1030-89	Band Pass Filter, 2400 MHz band, 2.4-2.5 GHz, R L = 1.9 dB, N(m)-SMA(f)

Model/Order No.	Name
510-97	Adapter 7/16 DIN (f) to 7/16 DIN (f), 3.5 GHz
48258	Spare soft carrying case
40-115	Spare AC/DC adapter
806-62	Spare automotive cigarette lighter/12 Volt DC adapter
800-441	Spare serial interface cable
760-215A	Transit case for Anritsu HandHeld Spectrum Analyzer
2300-347	Anritsu HandHeld Spectrum Analyzer Software Tools
10580-00074	Anritsu HHSA User's Guide, Model MS2711B (spare)
10580-00071	Anritsu HHSA Programming Manual, Model MS2711B
10580-00072	Anritsu HHSA Maintenance Manual, Model MS2711B
633-27	Rechargeable battery, NiMH
551-1691	USB to Serial adapter
70-28	Headset
2000-1029	Battery charger, NiMH with universal power supply
2000-1030	Portable antenna, 50 Ohm, SMA (m) 1.71-1.88 GHz
2000-1031	Portable antenna, 50 Ohm, SMA (m) 1.85-1.99 GHz
2000-1032	Portable antenna, 50 Ohm, SMA (m) 12.4-2.5 GHz
2000-1035	Portable antenna, 50 Ohm, SMA (m) 902-960 MHz
2000-1200	Portable antenna, 50 Ohm, SMA (m) 806-869 MHz
2000-1214	Printers HP DeskJet printer Includes: interface cable, black print cartridge, and US power cable
2000-753	Spare serial-to-parallel converter cable
2000-663	Power cable (Europe) for DeskJet printer
2000-664	Power cable (Australia) for DeskJet printer
2000-1218	Power cable (UK) for DeskJet printer
2000-666	Power cable (Japan) for DeskJet printer
2000-667	Power cable (So. Africa) for DeskJet printer
2000-1217	Rechargeable battery for DeskJet printer
2000-1216	Black print cartridge for DeskJet printer