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Test & Measurement

- sales
- rentals
- 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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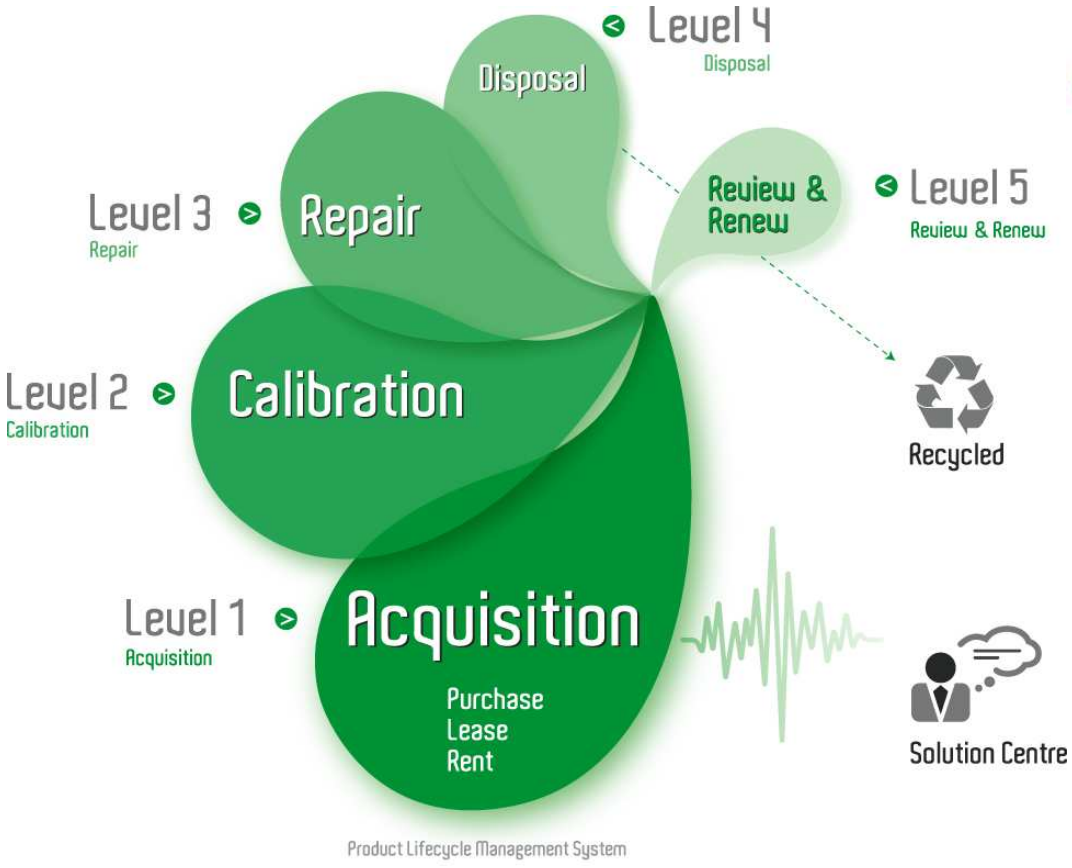


SPECTRUM MASTER
MS2711B/D
100 kHz to 3.0 GHz

Fast, Accurate, Repeatable, Portable Spectrum Analysis

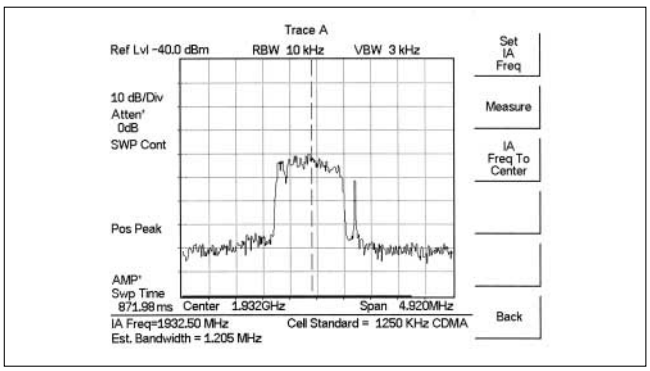
NEW

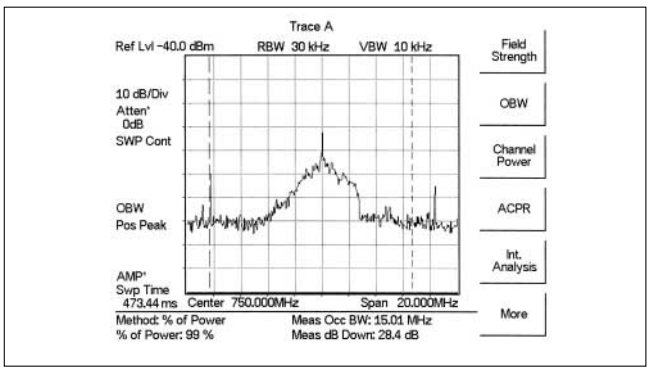
The MS2711B/D Handheld Spectrum Analyzer provides the "ultimate" in measurement flexibility for field environments and applications requiring mobility. Unlike traditional spectrum analyzers, the MS2711B/D features a rugged, ultra-lightweight, battery-operated design that enables users to conduct spectrum analysis measurements – anywhere, anytime.
Providing complete freedom from AC/DC power requirements, the MS2711B/D 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/D 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/D was designed specifically for field environments, it can easily withstand the day-to-day punishment of field use. Rugged packaging also keeps the MS2711B/D performing in harsh environments.

Easy-to-Use
Not only is the MS2711B/D 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.

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, MS2711B) or transmission measurement (option 21, MS2711D) expand the MS2711B/D's capabilities.





To meet the challenges of today's wireless market, Anritsu Company has incorporated a pre-amp (standard) for its revolutionary MS2711B/D Handheld Spectrum Analyzer which increases the analyzer's sensitivity and dynamic range while improving measurement time. With the built-in pre-amp feature, the MS2711B/D is particularly effective in measuring low-level signals. The handheld spectrum analyzer's sensitivity is improved to –115 dBm for MS2711B and –135 dBm for MS2711D (100 Hz RBW) (full span). With this option, the MS2711B/D 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/D. Weighing only 4.9 pounds (including a NiMH battery, fully loaded, base model only 4.5 pounds), the MS2711B/D is the world's lightest fully functional handheld spectrum analyzer with the built-in tracking generator option (option 20).
MS2711B/D 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/D has dedicated one button channel power, occupied bandwidth, and ACPR measurement capability to significantly reduce test time and expense. The MS2711B/D also features local language graphical user interface support (in Chinese, Japanese, French, German, and Spanish).

For product ordering information, see pages 3 – 6

Features

- Lightweight (4.5 lbs - base model, 4.9 lbs with tracking generator - option 20, or transmission measurement, option 21)
- Synthesizer-based performance
- Wide dynamic range
- One button, ACPR, OBW, channel power, C/I measurement
- Quick zoom-in, zoom-out display
- 5 minute warm up
- Manual and automatic attenuator control
- Improved user interface, with local language support in five different languages
- Automatic overload and ESD protection
- Built-in AM/FM demodulation
- Built-in field strength measurement
- Built-in interference analysis
- Ability to store and recall up to six 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 calender
- 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
- Optional Monochrome or Color LCD with backlight capability display
- Direct printer control via RS232 serial port

Applications

Convenient operating procedures, high sensitivity, and excellent repeatability enable the MS2711B/D 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

	Model	MS2711B	MS2711D
Frequency	Frequency range	100 kHz to 3.0 GHz	
	Frequency reference	Aging: ±1 ppm/yr Accuracy: ±2 ppm	
	Frequency span	1 kHz to 3 GHz in 1, 2, 5 step selections in auto mode, plus zero span	10 Hz to 2.99 GHz in 1, 2, 5 step selections in auto mode, plus zero span
	Sweep time	≥6500 msec full span; 500 msec zero span	≤ 1.1 second full span; ≤ 50 msec to 20 second zero span
	Resolution bandwidth (–3dB width)	10 kHz, 30 kHz, 100 kHz, 1 MHz, ±20%	100 Hz to 1 MHz in 1-3 sequence, ±5%
	Video bandwidth (–3dB)	100 Hz to 300 kHz in 1-3 sequence	3 Hz to 1 MHz in 1-3 sequence, ±5%
	SSB Phase Noise (1 GHz) @30 kHz Offset	≤–75 dBc/Hz	
	Spurious responses Input related	≤–45 dBc	
	Spurious residual responses	≤–90 dBm (≥500 kHz)	
Amplitude	Measurement range	+20 dBm to –115 dBm (with preamp on)	+20 dBm to –135 dBm (with preamp on)
	Displayed average noise level	–115 dBm (≥1 MHz typical with preamp on) ≤–95 dBm (≥500 kHz, typical) ≤–80 dBm (< 500 kHz, typical)	≤-135 dBm typical, ≥1 MHz (preamp on) ≤–115 dBm typical, ≥500 kHz to <1 MHz ≤–110 dBm typical, < 500 kHz for input terminated, 0 dB attenuation, RMS detection, 100 Hz RBW
	Dynamic range	>65 dB, typical	
	Total level accuracy	±2 dB, ≥500 kHz, typical; ±3 dB, <500 kHz, typical (For input signal level ≥–60 dBm)	±0.5 dB typical (±1 dB max), ≥10 MHz to 2 GHz ±1 dB typical (±1.5 dB max), >2 GHz to 3 GHz ±2 dB, ≥500 kHz to <10 MHz ±3 dB typical, <500 kHz for input signal levels ≥–60 dBm, excludes input VSWR mismatch
	Display range	1 to 15 dB/div in 1 dB steps, Ten divisions displayed	
	Max input level without damage	+23 dBm, ±50 Vdc	+43 dBm (Peak), ±50 Vdc
	Attenuator Range	0 to 50 dB, selected manually or automatically coupled to the reference level. Resolution in 10 dB steps	0 to 51 dB, selected manually or automatically coupled to the reference level. Resolution in 1 dB steps.
	RF input	VSWR 2.0:1	1.5:1 typical, (≥20 dB atten., 10 MHz to 2.4 GHz)

Continued on next page

General	Model	MS2711B	MS2711D
	Internal trace memory	200 maximum	
	Setup storage	10 test setups	15 test setups
	Display	VGA Monochrome LCD	VGA Color or VGA Monochrome LCD
	Inputs and Outputs Ports RF In RF Out Ext trig In Ext Freq Ref In (2 MHz to 20 MHz) Serial Interface	 Type N, female, 50 Ω Type N, female, 50 Ω N/A N/A RS-232 9 pin D-sub, three wire serial	 Type N, female, 50 Ω Type N, female, 50 Ω BNC, female (5V TTL) Shared BNC, female, 50 Ω (–15 dBm to +10 dBm) RS-232 9 pin D-sub, three wire serial
	Electromagnetic compatibility	Meets European community requirements for CE marking	
	Safety	Conforms to EN 61010-1 for Class 1 portable equipment	
	Temperature Operating Non-operating	 0°C to 50°C, humidity 85% or less –20°C to +75°C (recommend battery stored separately between 0°C to 40°C for any prolonged storage period)	 –10°C to 55°C, humidity 85% or less –51°C to +71°C (recommend battery stored separately between 0°C to 40°C for any prolonged storage period)
	Power supply External DC Input Internal	 +12.5 to +15 volts dc, 1350 mA max NiMH battery: 10.8 volts, 1800 mA mAH	
	Dimensions Size (W x H x D) Weight	 25.4 cm x 17.8 cm x 6.10 cm (10.0 in x 7.0 in x 2.4 in) 2.04 kg (4.5 lbs.) includes battery, 2.2 kg (4.9 lbs) includes tracking generator	 25.4 cm x 17.8 cm x 6.10 cm (10.0 in x 7.0 in x 2.4 in) <2.14 kg (4.7 lbs.) includes battery, <2.28 kg (5 lbs) includes transmission measurement

MS2711B/D (Option 10) Bias Tee specifications

Bias Tee	Voltage	+18 Vdc
	Current	1 A peak 200 ms, 300 mA max steady state

MS2711D (Option 21) Transmission Measurement specifications

Frequency	Frequency range Frequency resolution	25 MHz to 3 GHz 10 Hz
Output	Output power level Output impedance	–10 dBm typical 50 Ω

FCN4760 Frequency Converter specifications

Frequency	Frequency range	4.7 GHz to 6 GHz
	Frequency resolution*1	10 Hz
	Frequency reference	Aging: ±1 ppm/yr Accuracy: ±2 ppm
	SSB Phase Noise (6 GHz) @30 kHz Offset	≤–65 dBc/Hz
	Spurious responses Input related	≤–45 dBc
	Spurious residual responses[1]	≤–90 dBm
Amplitude	Measurement range	–40 dBm to –100 dBm
	Sensitivity*1 (displayed avg. noise level)	–100 dBm
	Maximum input level without damage	–5 dBm
	RF input	VSWR 2.0:1 max
General	Inputs and Outputs Ports RF In RF Out Communication Interface	 Type N, female, 50 Ω Type N, male, 50 Ω 10 pin D sub
	Electromagnetic compatibility	Meets European community requirements for CE marking
	Safety	Conforms to EN 61010-1 for Class 1 portable equipment
	Temperature Operating Non-operating	 –10°C to 50°C, humidity 85% or less –50°C to +80°C
	Power dissipation	850 mW max
	Dimensions Size (W x H x D) Weight	 6.6 cm x 10.9 cm x 3.3 cm (2.6 in x 4.3 in x 1.3 in) <0.45 kg (< 1 lb.)

*1: Specifications apply when connected to the MS2711D spectrum analyzer

For product ordering information, see pages 3 – 6

MS2711B (Option 20) 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

MS2711B (Option 29) Power meter specifications

Frequency Range	3 MHz to 3.0 GHz
Total Level Accuracy	± 1 dB max (± 0.5 dB typical) for input signal levels >-60 dBm (10 MHz to 2 GHz, excludes input VSWR) ± 1.5 dB max (± 1 dB typical), >2 GHz to 3 GHz ± 2 dB max, 3 MHz to 10 MHz
Measurement Range	+20 dBm to -80 dBm
Frequency Span	3 MHz to 2.99 GHz
Display Range	+80 dBm to -80 dBm
Offset Range	0 to 60 dB
Maximum Input Power	+20 dBm without input attenuator

Ordering Information

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

Model/Order No.	Name
MS2711B/8	Handheld Spectrum Analyzer: 100 kHz to 3.0 GHz
MS2711D	Handheld Spectrum Analyzer: 100 kHz to 3.0 GHz
	Standard Accessories
	User's Guide, MS2711B
	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 Accessories
Option 3	Color display - MS2711D only
Option 6	Frequency converter controller module for use with FCN4760 (MS2711D only)
Option 10	Bias Tee (built-in)
Option 20	Tracking generator (built-in) - MS2711B only
Option 21	Transmission measurement (built-in) - MS2711D only
Option 29	Power Meter (MS2711D only)
	Optional Accessories
5400-71N50	RF Detector, N(m), 50 Ω, 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 Ω, N(m) to N(m)
34NFNF50C	Precision Adapter, DC to 18 GHz, 50 Ω, N(f) to N(f)
15NN50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(m), 6.0 GHz
15NN50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(m), 6.0 GHz
15NN50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(m), 6.0 GHz
15NNF50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(f), 6.0 GHz
15NNF50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(f), 6.0 GHz
15NNF50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(f), 6.0 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, 7/16 DIN(f) to N(f), 7.5 GHz
510-92	Adapter, 7/16 DIN(m) to N(m) 7.5 GHz
510-96	Adapter 7/16 DIN (m) to 7/16 DIN (m), 7.5 GHz
510-97	Adapter 7/16 DIN(f) to 7/16 DIN(f), 7.5 GHz
61N50	RF SWR Bridge, 10-2500 MHz, 50 Ω, N(m)
61NF50	RF SWR Bridge, 10-2500 MHz, 50 Ω, N(f)

Model/Order No.	Name
1030-86	Band Pass Filter, 800 MHz band, 806-869 MHz, Loss = 1.7 dB, N(m)-SMA(f)
1030-87	Band Pass Filter, 900 MHz band, 902-960 MHz, Loss = 1.7 dB, N(m)-SMA(f)
1030-88	Band Pass Filter, 1900 MHz band, 1.85-1.99 GHz, Loss = 1.8 dB, N(m)-SMA(f)
1030-89	Band Pass Filter, 2400 MHz band, 2.4-2.5 GHz, Loss = 1.9 dB, N(m)-SMA(f)
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
760-229	Transit case for Anritsu Handheld Spectrum Analyzer
2300-347	Anritsu Handheld 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
10580-00097	Anritsu HHSA User's Guide, Model MS2711D
10580-00098	Anritsu HHSA Programming Manual, Model MS2711D
10580-00099	Anritsu HHSA Maintenance Manual, Model MS2711D
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 Ω, SMA (m) 1.71-1.88 GHz
2000-1031	Portable antenna, 50 Ω, SMA (m) 1.85-1.99 GHz
2000-1032	Portable antenna, 50 Ω, SMA (m) 12.4-2.5 GHz
2000-1035	Portable antenna, 50 Ω, SMA (m) 896-941 MHz
2000-1200	Portable antenna, 50 Ω, SMA (m) 806-869 MHz
	Printers
2000-1214	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
2000-667	Power cable (So. Africa) for DeskJet printer
2000-1217	Rechargeable battery for DeskJet printer
2000-1216	Black print cartridge for DeskJet printer