

SPECTRUM MASTER MS2721A 100 kHz to 7.1 GHz



High Performance Handheld Spectrum Analyzer

NEW



The MS2721A is the first handheld spectrum analyzer to deliver the ability to measure very low level signals with a displayed average noise level of ≤ -153 dBm typical @ 1 GHz in a 10 Hz RBW. Coupled with a wide range of resolution bandwidth choices, you can configure the Spectrum Master to meet your most challenging measurement needs. As the spectrum becomes more and more congested, the ability to measure low level, closely spaced signals becomes more and more important not only for interference detection but also for wireless system planning.

Operating convenience is of paramount importance when equipment is used in the field. The input attenuation value can be tied to the reference level, reducing the number of parameters a field technician may have to set. The RBW/VBW and the span/RBW ratios can be set to values that are best for the measurements being made, further easing the technician's burden and reducing the chances of errors. Thousands of traces with names up to 15 characters long may be saved in the 64 MB non-volatile compact flash memory. These traces can later be copied into a PC using the built-in USB 2.0 connector or the 10/100 MHz Ethernet connection, or by copying them to an external Compact Flash card. The MS2721A Spectrum Master has a very wide dynamic range (>80 dB), allowing measurement of very small signals in the presence of much larger signals.

Resolution bandwidth and video bandwidth can be independently set to meet a user's measurement needs. In addition the input attenuator value can be set by the user and the preamplifier can be turned on or off as needed. For maximum flexibility, sweep triggering can be set to free run, or to do a single sweep.

Light Weight

Weighing about six pounds, including a Li-Ion battery, this fully functional handheld spectrum analyzer is light enough to take anywhere, including up a tower.

With the supplied Remote Access Software you can control an MS2721A that is miles away, seeing the screen display and operating with an interface that looks exactly like the instrument itself.

The MS2721A features eight languages English, Spanish, German, French, Japanese, Chinese, Italian and Korean, plus two custom, user defined languages can be uploaded into the instrument using Master Software Tools, supplied with the instrument.

Fast Sweep Speed

The MS2721A can do a full span sweep in ≤ 900 milliseconds, and sweep speed in zero span can be set from less than 50 microseconds up to over 4000 seconds. This is faster and more flexible than any portable spectrum analyzer on the market today, simplifying the capture of intermittent interference signals.

+43 dBm Maximum Safe Input Level

Because the MS2721A can survive an input signal of +43 dBm – 20 watts – without damage, you can rest assured that the MS2721A can survive in even the toughest RF environments.

Spectrum Monitoring

A critical function of any spectrum analyzer is the ability to accurately view a portion of the RF and microwave spectrum. The MS2721A performs this function admirably thanks to the wide frequency range and excellent dynamic range. A built-in 64 MB compact flash memory module allows over 2000 traces to be stored. An external compact flash socket allows additional compact flash memory to expand the trace storage without limit.

Multiple Markers

Display up to six markers on screen, each with delta marker capability. In addition you may select a marker table that simultaneously shows the status of all markers. In the table you can see the frequency, and amplitude measurement value for all markers along with delta frequency and delta amplitude. Each marker can have not only a measurement reference frequency but also a delta frequency and delta amplitude, effectively giving you up to twelve markers if you need them!

Noise Markers

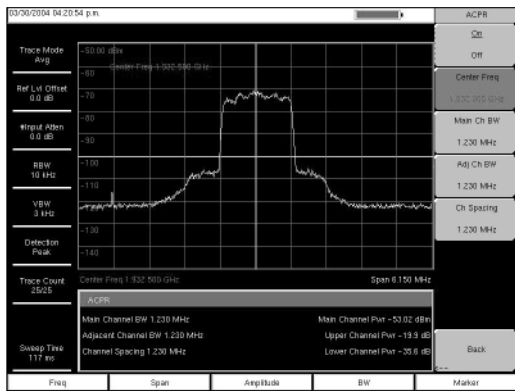
The capability to measure noise level in terms of dBm/Hz or dB μ V/Hz is a standard feature of the MS2721A.

Frequency Counter Markers

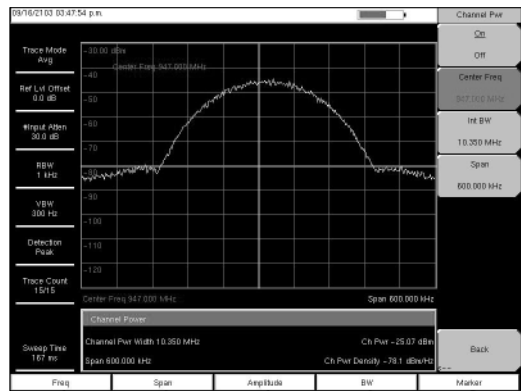
The MS2721A Spectrum Master has frequency counter markers with resolution to 1 Hz. Tie this capability to an external precision time base to get complementary accuracy and resolution.

Smart Measurements

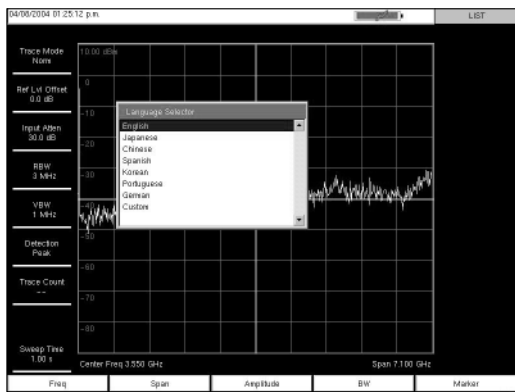
The MS2721A has dedicated routines for smart measurements of field strength, channel power, occupied bandwidth, Adjacent Channel Power Ratio (ACPR) and C/I.



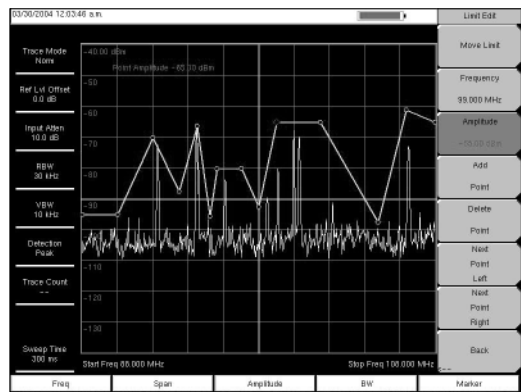
Adjacent Channel Power Ratio



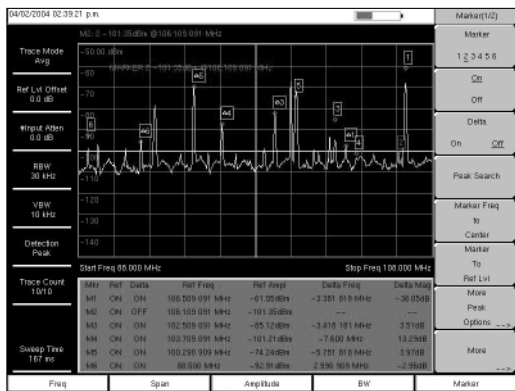
Measurement of Channel Power for a GSM Signal



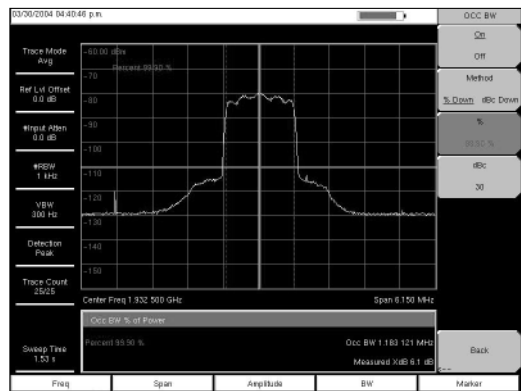
Multiple Language Support



Segmented Limit Line



Multiple Markers plus Multiple Delta Markers



Occupied Bandwidth

5

Specifications

Frequency	Frequency Range	100 kHz to 7.1 GHz (useable to 9 kHz)
	Tuning resolution	1 Hz
	Frequency Reference	Aging ± 1 ppm/year Accuracy ± 1 ppm (25°C \pm 25°C) + long term drift
	Frequency Span	10 Hz to 7.1 GHz plus 0 Hz (zero span)
	Span Accuracy	Same as frequency reference accuracy
	Sweep Time minimum	100 ms, 50 μ s in zero span
	Sweep Time Accuracy	$\pm 2\%$ in zero span
	Sweep Trigger	Free run, Single, Video, External
	Resolution Bandwidth (-3 dB width)	10 Hz to 3 MHz in 1-3 sequence $\pm 10\%$, 8 MHz demodulation bandwidth
	Video Bandwidth (-3 dB)	1 Hz to 3 MHz in 1-3 sequence
SSB Phase Noise	-100 dBc/Hz max at 10, 20 & 30 kHz offset from carrier -102 dBc/Hz max at 100 kHz offset from carrier	

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	Measurement Range	DANL to +30 dBm	
	Absolute amplitude accuracy (Power levels ≥ -50 dBm, ≤ 35 dB input attenuation, preamp off)	100 kHz to ≤ 10 MHz	± 1.5 dB
		>10 MHz to 4 GHz	± 1.25 dB
		>4 GHz to 7.1 GHz	± 1.75 dB
	Second Harmonic Distortion (0 dB input attenuation, -30 dBm input)	-50 dBc, 0.05 to 0.75 GHz -40 dBc, >0.75 to 1.05 GHz -50 dBc, >1.05 to 1.4 GHz -70 dBc, >1.4 to 2 GHz -80 dBc, >2 GHz	
	Third Order Intercept (TOI) (preamplifier off)	Frequency	Typical
		50 MHz to 300 MHz	>8 dBm
		>300 MHz to 2.2 GHz	>10 dBm
		>2.2 GHz to 2.8 GHz	>15 dBm
		>2.8 GHz to 4.0 GHz	>10 dBm
		>4.0 GHz to 7.1 MHz	>13 dBm
	Displayed Average Noise Level DANL in 10 Hz RBW, dBm	Frequency	Preamp On Typical Max
		10 MHz to 1 GHz	-153 dBm -151 dBm
		>1 GHz to 2.2 GHz	-150 dBm -149 dBm
		>2.2 GHz to 2.8 GHz	-146 dBm -143 dBm
		>2.8 GHz to 4.0 GHz	-150 dBm -149 dBm
		>4.0 GHz to 7.1 GHz	-148 dBm -146 dBm
Amplitude	Noise Figure (Derived from DANL measurement) 0 dB attenuation, reference level -50 dBm, 23°C, preamplifier on	Frequency	Typical
		10 MHz to 1.0 GHz	11 dB
		>1 GHz to 2.2 GHz	14 dB
		>2.2 GHz to 2.8 GHz	18 dB
		>2.8 GHz to 4.0 GHz	14 dB
		>4.0 GHz to 7.1 GHz	16 dB
	Display Range	1 to 15 dB/div in 1 dB steps. Ten divisions displayed.	
	Amplitude Units	Log Scale modes dBm, dBV, dBmV, dB μ V	
	Linear Scale Modes	nV, μ V, mV, V, kV, nW, μ W, mW, W, kW	
	Attenuator range	0 to 65 dB	
Attenuator resolution	5 dB steps		
General	Input-Related Spurious	-60 dBc max*, (<-70 dBc typical), -30 dBm input, 0 dB RF attenuation *Exceptions: Input frequency	
		1674 MHz	Spur Level -46 dBc max (-56 dBc typical), 0 to 2800 MHz
		>1674 to 1774 MHz	-50 dBc max (-60 dBc typical) at (Finput – 1674 MHz)
		>1774 to 2900 MHz	-48 dBc max (-68 dBc typical) at (Finput – 1674 MHz)
	Residual Spurious, preamp off	(RF input terminated, 0 dB RF attenuation) -90 dBm max**, 100 kHz to <3200 MHz -84 dBm max**, 3200 to 7100 MHz **Exceptions: Frequency	
		250, 300 & 350 MHz	Spur Level -85 dBm max
		~ 4010 MHz	-80 dBm max (-90 dBm typical)
		~ 5084 MHz	-70 dBm max (-83 dBm typical)
		~ 5894 MHz	-75 dBm max (-87 dBm typical)
		~ 7028 MHz	-80 dBm max (-92 dBm typical)
Residual Spurious, preamp on:	-100 dBm max (RF input terminated, 0 dB RF attenuation)		
Maximum Continuous Input	≥ 10 dB attenuation, +30 dBm		
Input Damage Level	≥ 10 dB attenuation, $>+43$ dBm, ± 50 Vdc <10 dB attenuation, $>+23$ dBm, ± 50 Vdc		
RF Input VSWR	2.0:1 maximum, 1.5:1 typical (≥ 10 dB attenuation)		
Reference Level	Adjustable over amplitude range		
ESD Damage Level	>10 kV ≥ 10 dB attenuation		
Functions	Multiple Marker Display up to six markers on screen, each marker includes a delta marker. Marker Table Display a table of up to six marker frequency and amplitude values plus delta marker frequency offset and amplitude. Upper & Lower Limit Lines Each upper and lower limit can contain up to 40 segments.		

Ordering Information

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

Model/Order No.	Name
MS2721A	Handheld Spectrum Analyzer: 100 kHz to 7.1 GHz
Standard Accessories	
10580-00103	MS2721A User's Guide
61382	MS2721A Soft Carrying Case
2300-498	Master Products Software Tools Program CD ROM
633-44	Rechargeable Li-Ion Battery
40-168	AC-DC Adapter
806-62	Automotive Cigarette Lighter 12 Volt DC Adapter
2000-1360	USB A/mini-B Cable
2000-1371	Ethernet Cable, 7 feet (213 cm)
1091-27	Type-N male to SMA female Adapter
1091-172	Type-N male to BNC female Adapter
Optional Accessories	
42N50A-30	30 dB, 50W, Bi-dir., DC-18 GHz, N(m) to N(f) Attenuator
34NN50A	Precision Adapter, DC to 18 GHz, 50 , N(m) to N(m)
34N50A	Precision Adapter, DC to 18 GHz, 50 , N(f) to N(f)
15NNF50-1.5B	Test port cable armored, 1.5 meter, N(m) to N(f), 18.0 GHz
15NNF50-1.5B	Test port cable, armored, 1.5 meter N(m) to N(f) 18 GHz
15NN50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(m), 6 GHz
15NN50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(m), 6 GHz
15NN50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(m), 6 GHz
15NNF50-1.5C	Test port cable armored, 1.5 meter, N(m) to N(f), 6 GHz
15NNF50-3.0C	Test port cable armored, 3.0 meter, N(m) to N(f), 6 GHz
15NNF50-5.0C	Test port cable armored, 5.0 meter, N(m) to N(f), 6 GHz
15ND50-1.5C	Test port cable armored, 1.5 meter, N(m) to 7/16 DIN(m), 6.0 GHz
15NDF50-1.5C	Test port cable armored, 1.5 meter, N(m) to 7/16 DIN(f), 6.0 GHz

Model/Order No.	Name
510-90	Adapter, 7/16 DIN (f) to N(m), DC to 7.5 GHz, 50Ω
510-91	Adapter, 7/16 DIN (f)-N(f), DC to 7.5 GHz, 50Ω
510-92	Adapter, 7/16 DIN (m)-N(m), DC to 7.5 GHz, 50Ω
510-93	Adapter, 7/16 DIN(m)-N(f), DC to 7.5 GHz, 50Ω
510-96	Adapter 7/16 DIN (m) to 7/16 DIN (m), DC to 7.5 GHz, 50Ω
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)
510-97	Adapter 7/16 DIN (f) to 7/16 DIN (f), 7.5 GHz
61382	Spare Soft Carrying Case
40-168	Spare AC/DC Adapter
806-62	Spare Automotive Cigarette Lighter 12 Volt DC Adapter
760-229	MS2721A Transit Case
2300-498	Master Software Tools Program CD ROM
10580-00103	Anritsu User's Guide, Model MS2721A
10580-00104	Anritsu Programming Manual, Model MS2721A
10580-00105	Anritsu Maintenance Manual, Model MS2721A
633-44	Rechargeable battery, Li-Ion
2000-1374	Dual Battery charger, Li-Ion with universal power supply
2000-1030	Portable antenna, 50Ω, SMA (m) 1.71-1.88 GHz
2000-1031	Portable antenna, 50Ω, SMA (m) 1.85-1.99 GHz
2000-1032	Portable antenna, 50Ω, SMA (m) 2.4-2.5 GHz
2000-1035	Portable antenna, 50Ω, SMA (m) 896-941 MHz
2000-1200	Portable antenna, 50Ω, SMA (m) 806-869 MHz
2000-1361	Portable Antenna, 50Ω, SMA (m) 5725-5825 MHz
2000-1358	64 MB Compact Flash Memory Module