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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.

If you click on the "Click-to-Call" logo below, you can all us for FREE!

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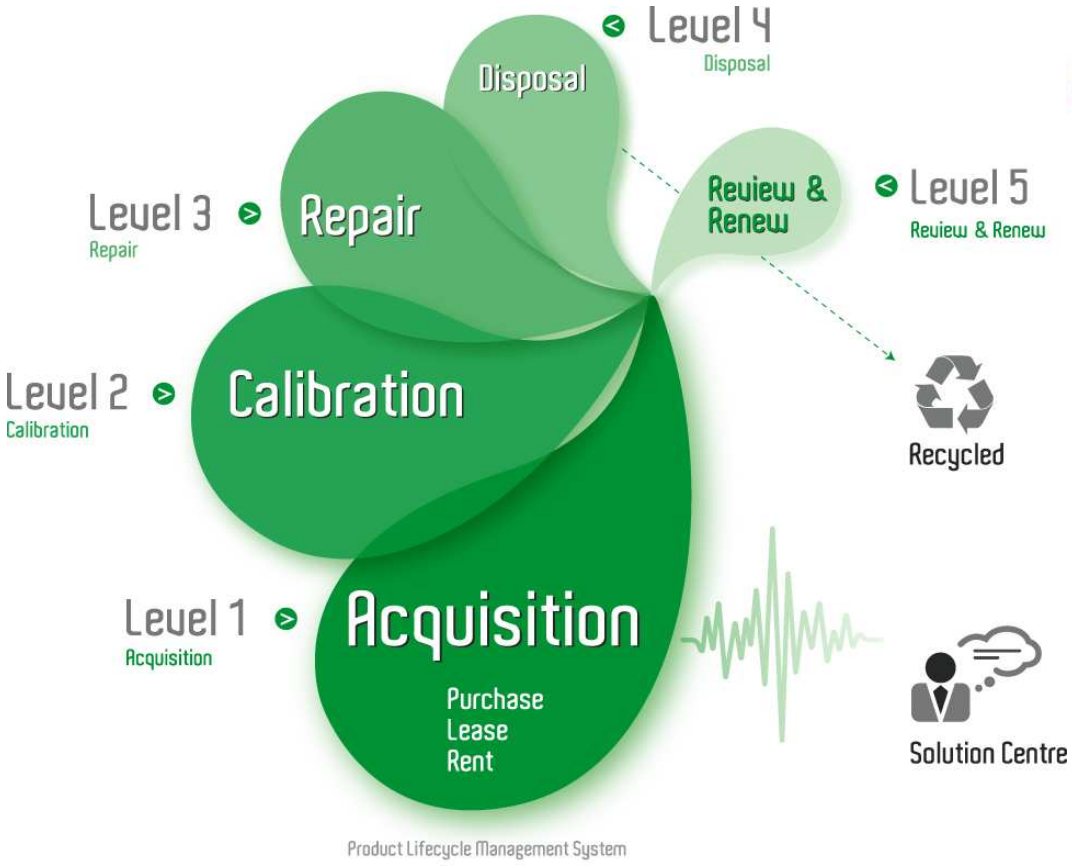

Technical Datasheet

Anritsu

MS2721A

High Performance Handheld Spectrum Analyzer

The Anritsu MS2721A is the most advanced ultra-portable spectrum analyzer on the market, featuring unparalleled performance at a modest price.

SpectrumMaster

Introduction

Continuous frequency coverage from 100 kHz to 7.1 GHz gives the wireless professional the performance needed for the most demanding measurements in harsh RF and physical environments.

Whether your need is for spectrum monitoring, WiFi and WiFi5 installation and testing, RF and microwave signal measurements or cellular signal measurements, the MS2721A Spectrum Master gives you the tool you need to make the job easier and be more productive.

High Performance Highlights

- 100 kHz to 7.1 GHz input
- 10 Hz to 3 MHz RBW range
- Very low phase noise (–100 dBc/Hz maximum at 10 kHz offset at 7.1 GHz)
- Built-in preamplifier
- 65 dB step attenuator
- Input protected to 20 watts
- True RMS detection
- Built-in AM/FM/SSB demodulator
- 3+ hours of battery life
- 2.9 kg (<6.4 lbs)

Features and Options

Functions

Multiple Marker: Display up to six markers on screen. Each marker includes a delta marker, effectively allowing up to 12 markers on screen.

Marker Table: Display a table of up to six marker frequency and amplitude values plus delta marker frequency offset and amplitude.

Upper/Lower Limit

Fixed and segmented: Each upper and lower limit can be made up of between one and 40 segments.

Smart Measurements

Occupied Bandwidth: Measures 99.99% to 1% power channel of a spectrum.

Channel Power: Measures the total power in a specified bandwidth.

C/I: Measures carrier to interference ratio.

ACPR: Measures power levels in the channels immediately above and below the center channel.

Field Strength: Uses antenna calibration tables to measure dBm/meter.

Specifications

Frequency

Frequency Range: 100 kHz to 7.1 GHz
(useable down to 9 KHz)

Tuning Resolution: 1 Hz

Frequency Reference:

Aging: ±1 ppm/yr.

Accuracy: ±1 ppm (25C ± 25C) + 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 µs in zero span

Sweep Time Accuracy: ±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 ± 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 and 30 kHz offset from carrier.
–102 dBc/Hz max at 100 kHz offset from carrier.

Amplitude

Measurement Range: DANL to +30 dBm

Display Range: 1 to 15 dB/div in 1dB steps.
Ten divisions displayed.

Amplitude Units:

Log Scale Modes: dBm, dBV, dBmv, dBµV,

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

Attenuator Range: 0 to 65 dB

Attenuator Resolution: 5 dB steps

Absolute Amplitude Accuracy:

Power levels ≥–50 dBm, ≤35 dB input attenuation
100 kHz to ≤10 MHz ±1.5 dB
>10 MHz to 4 GHz ±1.25 dB
>4 to 7.1 GHz ±1.75 dB

40 to 55 dB input attenuation
100 kHz to ≤10 MHz ±1.5 dB
>10 MHz to 4 GHz ±1.75 dB
>4 to 6.5 GHz ±1.75 dB
>6.5 to 7.1 GHz ±2 dB

60 to 65 dB input attenuation
100 kHz to ≤10 MHz ±1.5 dB
>10 MHz to 6.5 GHz ±1.75 dB
>6.5 to 7.1 GHz ±3 dB

Preamplifier on, 0 or 10 dB input attenuation
100 kHz to 4 GHz ±1.5 dB
>4 to 7.1 GHz ±1.75 dB

Second Harmonic Distortion
(0 dB input attenuation, –30 dBm input):

0.05 to 0.75 GHz, –50 dBc

>0.75 to 1.05 GHz, –40 dBc

>1.05 to 1.4 GHz, –50 dBc

>1.4 to 2 GHz, –70 dBc

>2 GHz, –80 dBc

Third Order Intercept (TOI) (preamplifier off)

–20 dBm tones 100 kHz apart

–20 dBm Ref level

0 dB attenuation

Frequency	Typical
50 MHz to 300 MHz	>8 dBm
>300 MHz to 2.2 GHz	>10 dBm
>2.2 to 2.8 GHz	>15 dBm
>2.8 to 4.0 GHz	>10 dBm
>4.0 to 7.1 GHz	>13 dBm

0 dB attenuation, –20 dBm reference level, –20 dBm tones, spaced 100 kHz

Displayed Average Noise Level: DANL in 10 Hz RBW

Frequency	Preamplifier On		Preamplifier Off	
	Typical	Max	Typical	Max
10 MHz to 1 GHz	–153	–151	–130	–127
>1 GHz to 2.2 GHz	–150	–149	–126	–123
>2.2 to 2.8 GHz	–146	–143	–120	–116
>2.8 to 4.0 GHz	–150	–149	–129	–126
>4.0 to 7.1 GHz	–148	–144	–121	–117

Test conditions: Input attenuation: 0 dB, RMS detection, Reference level = –20 dBm for preamplifier off and –50 dBm for preamplifier on.

Note: Discrete spurious signals are not included in the measurement of DANL as they are covered by the residual spurious specification.

Noise Figure (derived from DANL measurement)
0 dB attenuation, 23°C: Preamplifier On

Frequency	Typical
10 MHz to 1 GHz	11 dB
>1 GHz to 2.2 GHz	14 dB
>2.2 to 2.8 GHz	18 dB
>2.8 to 4.0 GHz	14 dB
>4.0 to 7.1 GHz	16 dB

Input-Related Spurious: –60 dBc max*, (<–70 dBc typical), –30 dBm input, 0 dB RF attenuation

***Exceptions:**

Input Frequency	Spur Level
1674 MHz	–46 dBc max (–56 dBc typical), 0 to 2800 MHz
>1674 to 1774 MHz	–50 dBc max (–60 dBc typical) at (F_{input} –1674 MHz)

Residual Spurious, preamplifier 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	Spur Level
250, 300, and 350 MHz	–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, preamplifier on: –100 dBm max (RF input terminated, 0 dB RF attenuation)

General

RF Input VSWR: 2.0:1 maximum, 1.5:1 typical (≥10 dB 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

* Input protection relay opens at >30 dBm with ≥10 dB input attenuation and at approximately 10 to 23 dBm with <10 dB attenuation.

ESD Damage Level: ≥10 dB attenuation, >10 kV

External Reference Frequencies: 1, 1.2288, 1.544, 2.4576, 4.8, 4.9152, 5, 9.8304, 10, 13 and 19.6608 MHz at –10 to +10 dBm

Display

Bright daylight-viewable color transmissive LCD: Full SVGA, 8”

Languages

Built-in English, Spanish, Italian, French, German, Japanese, Korean, and Chinese. The instrument also has the capability to have customized languages and soft key definitions installed from Master Software Tools.

Marker Modes

6 Markers, 7 Modes: Normal, Delta, Marker to Peak, Marker to Center, Marker to Reference Level, Next Peak Left, Next Peak Right, All Markers Off, Noise Marker, Frequency Counter Marker (1 Hz resolution).

Sweeps

Full span, Zero span, Span Up/Span Down

Detection

Peak, Negative, Sample, RMS

Memory

Trace and Setup storage is limited only by the capacity of the installed Compact Flash card. For a 64 MB card, storage is greater than 1000 traces and 1000 setups.

Traces

Displayed Traces: Three Traces with trace overlay. One trace is always the live data; two traces can be either stored data or traces which have been mathematically manipulated.

Interfaces

Type N female RF connector

BNC female connectors for ext. reference and ext. trigger

5-pin Mini-B USB 2.0 for data transfer to a PC

RJ45 connector for Ethernet 10/100 Base T

2.5 mm 3-wire headset connector

Size & Weight

Size: 313 x 211 x 77 mm (12 x 8 x 3 in.)

Weight: 2.9 kg (<6.4 lbs.) typical

Environmental

MIL-PRF-28800F class 2

Operating: –10 C to 55 C, humidity 85% or less

Storage: –51 C to 71 C

Altitude: 4600 meters, operating and non-operating

Safety

Conforms to EN 61010-1 for Class 1 portable equipment

Electromagnetic Compatibility

Meets European Community requirements for CE marking.

Ordering Information

Model

MS2721A Handheld Spectrum Analyzer
100 kHz to 7.1 GHz

Standard Accessories Include:

10580-00103	User's Guide
61382	Soft Carrying Case
40-168	AC – DC Adapter
806-62	Automotive Cigarette Lighter/12 Volt DC Adapter
2300-498	CD ROM containing Master Software Tools
2000-1360	USB A-mini B cable
2000-1371	Ethernet Cable
633-44	Rechargeable battery, Li-Ion
2000-1358	64 MB Compact Flash
1091-27	Type-N male to SMA female adapter
1091-172	Type-N male to BNC female adapter
	One Year Warranty
64343	Tilt Bale Stand Accessory

Optional Accessories:

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, 50Ω, N(m) to N(m)
34NFNF50C	Precision Adapter, DC to 18 GHz, 50Ω, N(f) to N(f)
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
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
64343	Tilt Bale Stand Accessory
40-168	Spare AC/DC adapter
806-62	Spare automotive cigarette lighter/12 Volt DC adapter
760-235	Transit case for Anritsu MS2721A Handheld Spectrum Analyzer
2300-498	Anritsu Master Software Tools
10580-00103	Anritsu HHSA User's Guide, Model MS2721A (spare)
10580-00104	Anritsu HHSA Programming Manual, Model MS2721A
10580-00105	Anritsu HHSA Maintenance Manual, Model MS2721A
663-44	Rechargeable battery, Li-Ion
2000-1374	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

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