Anritsu

UMTS Master™
MT8220A

A High Performance, Handheld Base Station Analyzer

UMTS Master verifies Node B transmitter performance.

The portable, powerful solution.

RF engineers and technicians in the field need a reliable test solution for installation and maintenance of modern cell sites. This solution should be portable and cost effective, while providing excellent performance. The solution: Anritsu's MT8220A UMTS Master. This portable, powerful solution combines transmitter analyzer functionality for verifying base station transmitter performance and the field-proven Spectrum Master (MS2721A) spectrum analyzer in one lightweight, battery-operated handheld test tool.

Outstanding performance in all frequency ranges for WCDMA/HSDPA and GSM/GPRS/EDGE.

The MT8220A is extremely flexible, with frequency ranges targeted to WCDMA/HSDPA and GSM/GPRS/EDGE testing and a spectrum analyzer span that reaches 7 GHz.

UMTS Master at a glance

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WCDMA/HSDPA Signal Analyzer	824 to 894 MHz 1710 to 2170 MHz 2300 to 2700 MHz	Band V, VI Band I, II, III, IV
WCDMA/HSDPA Signal Analyzer with four options	WCDMA/HSDPA RF Meas WCDMA Demod WCDMA/HSDPA Demod WCDMA/HSDPA OTA	
GSM/GPRS/EDGE Signal Analyzer	380-400 MHz 410-430 MHz 450-468 MHz 478-496 MHz 698-746 MHz 747-792 MHz 806-866 MHz 824-894 MHz 890-960 MHz 880-960 MHz 876-960 MHz 870-921 MHz 1710-1880 MHz 1850-1990 MHz	T-GSM 380 T-GSM 410 GSM 450 GSM 480 GSM 710 GSM 750 T-GSM 810 GSM 850 GSM 900 E-GSM 900 R-GSM 900 T-GSM 900 DCS 1800 PCS 1900
GSM/GPRS/EDGE Signal Analyzer with two options	GSM/GPRS/EDGE RF Meas GSM/GPRS/EDGE Demod	
Spectrum Analyzer	100 kHz to 7.1 GHz	
Interference Analzyer	100 kHz to 7.1 GHz	
Channel Scanner	100 kHz to 7.1 GHz	
GPS	Location Indicator Enhance Frequency Reference Oscillator Accuracy	

Introducing the incredibly accurate, rugged, handheld MT8220A UMTS Master.

GPS Connector —
RF Input
Frequency Reference Input
Compact Flash Slot
Soft Key Active Function Block
Trigger Input
2.5 mm 3-wire cellular headset connector
USB Jack
Speaker
LAN Connector
Battery Charger Input

Date and Time
Instrument Setting Summary
On/Off
Directional Buttons
Rotary Knob
Soft Keys
Dual Function Keypad

Function Hard Keys
Battery Access
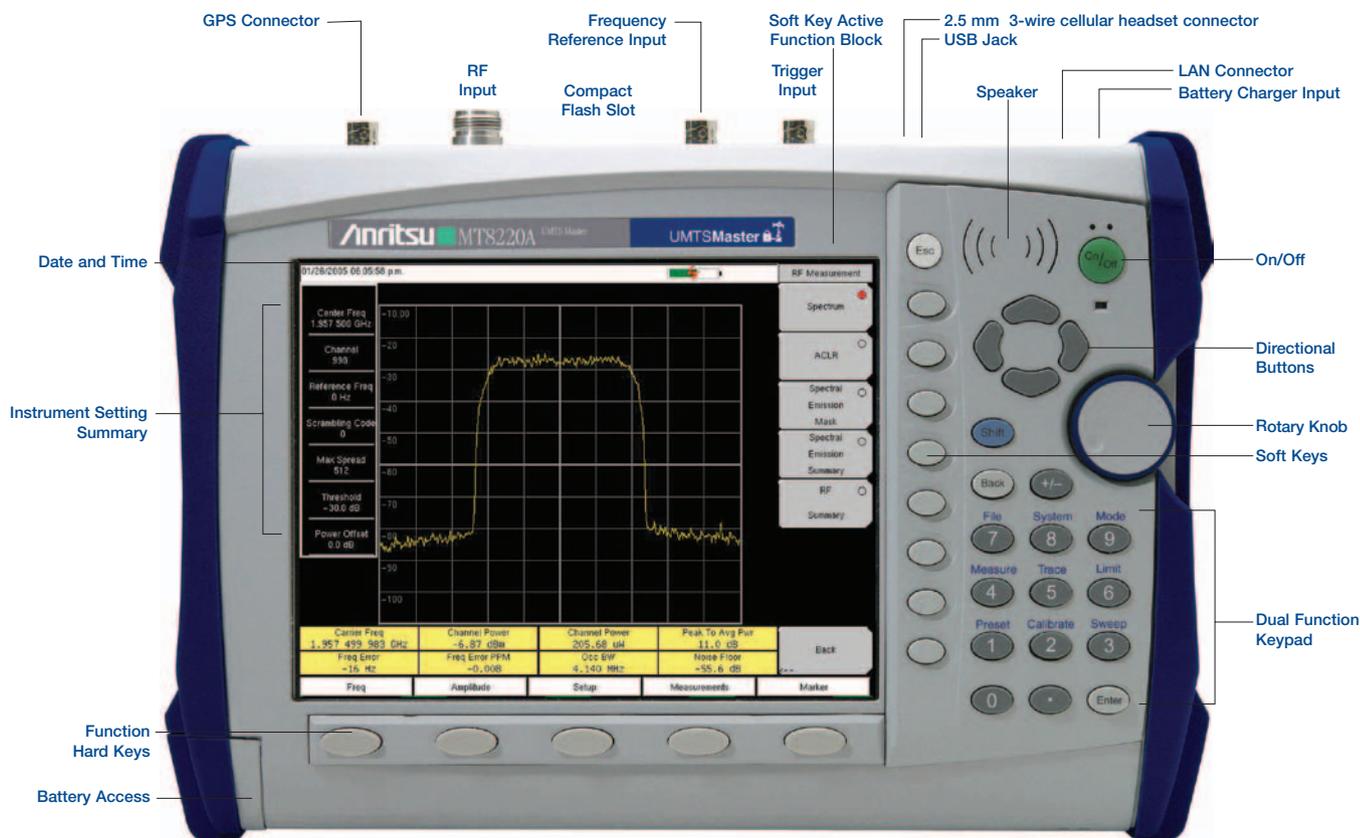
Function	Benefits
WCDMA and HSDPA measurements	Quickly check base station performance using RF, Demodulation, and Over The Air measurements Easily identify HSDPA and WCDMA OVSF codes by color
GSM, GPRS, EDGE measurements	View the applicable modulation type easily as the MT8220A automatically demodulates GSM/EDGE signals Rapidly review base station performance via RF and Demodulation measurements
Interference Analyzer	Identify intermittent interference using a spectrogram display and locate the interfering signal using the Signal Strength meter
Channel Scanner	Measure power of multiple transmitted signals at one time. Create 20 custom channels to scan by frequencies or channels.
GPS Receiver	Provide precise location information and enhance reference oscillator accuracy

Easy to carry, easy to use.

The MT8220A is extremely flexible, with frequency ranges targeted to WCDMA/HSDPA and GSM/GPRS/EDGE testing and a spectrum analyzer span that reaches 7 GHz.
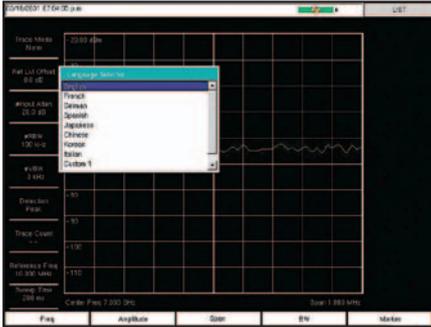
Choose from eight different languages or upload two custom languages.
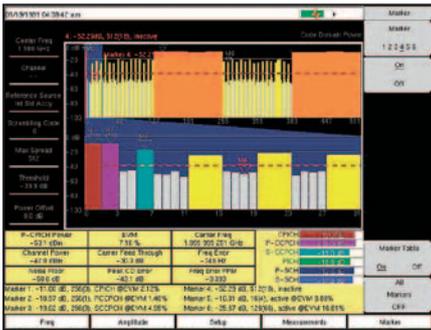
Multiple Markers simplify data analysis, such as on this CDP display.

Lightweight
Weighing less than 2.9 kgs (6.5 lbs) with its rechargeable Li-Ion battery, the MT8220A moves effortlessly from ground installations to the highest towers, or anywhere that critical measurements are needed.

Transmissive Color Display
The MT8220A's 21.5 cm (8.5 in.) SVGA color transmissive LCD display screen is easy to read even in the brightest sunlight.

Rugged and Reliable
The MT8220A is designed for portability and built to withstand the rigors of on-site testing.

Efficient
The UMTS Master runs about 3 hours on a single charge. For extended measurement sessions, swap the discharged Li-Ion battery with a spare in seconds without tools.

Eight Built-In Languages
English, Spanish, German, French, Japanese, Chinese, Italian and Korean. Can also customize two additional languages using Master Software Tools.

+43 dBm Maximum Safe Input Level
Survives the toughest RF environments, and handles input power levels to +43 dBm (20W) without damage.

Multiple Markers
Display up to six markers on screen in Spectrum Analyzer mode each with delta marker, noise marker and frequency counter marker capabilities. In WCDMA/HSDPA mode the six markers can display the selected code power, code EVM and type of code.

# Node B transmitter performance testing made simple.
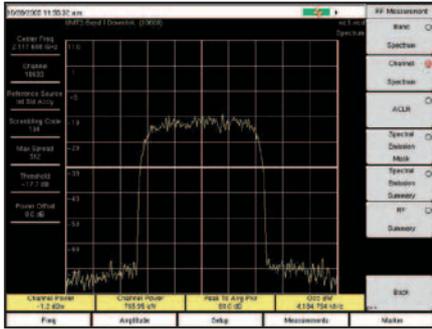
The RF Spectrum screen shows selected signals along with key parameters, such as channel power and occupied bandwidth.
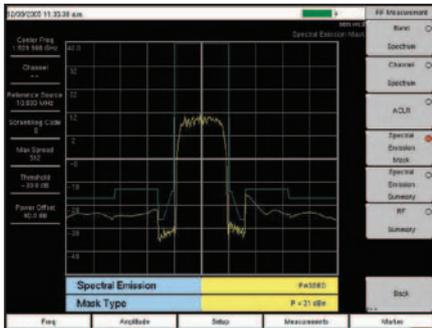
The Spectral Emission Mask screen presents a received signal framed by the 3GPP spectral mask.
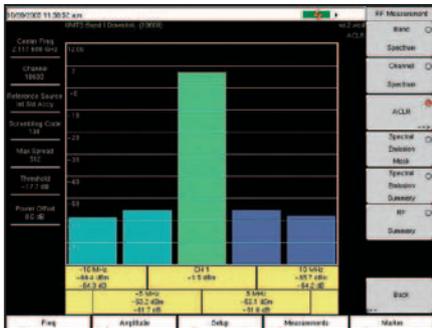
The ACLR screen shows the power levels for the main channel as well as two adjacent channels.
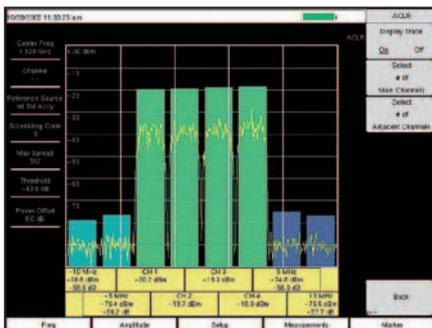
Multi-channel ACLR with four main channels and two adjacent channels on both sides.

With four measurement options — WCDMA/HSDPA RF Meas, WCDMA Demod, WCDMA/HSDPA Demod (covering all WCDMA Demod measurements) and WCDMA/HSDPA Over The Air (OTA) measurements — technicians and RF engineers can connect the MT8220A to any Node B for accurate RF and demodulator measurements. A physical connection is not required for the MT8220A to receive and demodulate WCDMA and HSDPA OTA signals. With the MT8220A, a technician no longer needs to take a Node B site off line. For details see the Option Comparison Table on page 17.

WCDMA/HSDPA RF Measurements—Option 44

RF measurements are used to measure the transmitted signal strength and signal shape of the selected Node B transmitter. For the technician's convenience, the MT8220/44 RF measurement option includes Band Spectrum, Channel Spectrum, Spectral Emission Mask, ACLR and RF Summary screens.

Band Spectrum

Select the applicable signal standard downlink spectrum, place a cursor on the desired channel, and the unit automatically selects that channel to make WCDMA/HSDPA measurements.

Channel Spectrum

The Channel Spectrum screen displays the signals of a selected channel as well as channel power (in dBm and watts), occupied bandwidth and peak to average power. Operators can select a channel by using the band channel or by choosing a signal standard and channel.

Spectral Emission Mask

The Spectral Emission Mask measurement applies the mask depending upon the transmitter output as defined in the 3GPP specification (TS 125.141). The mask varies depending upon the input signal. The UMTS Master will indicate if the signal "PASSED" or "FAILED" according to the specified limits. For ease of analysis, the spectral emission mask is also displayed in a tabular format with different frequency ranges and a PASS or FAIL indication for each range.

ACLR

The UMTS Master's ACLR screen shows measurements of main channel power as well as the power levels of the adjacent channels set at –10 MHz, –5 MHz, +5 MHz and +10 MHz according to the 3GPP standard (TS 125.141). The UMTS Master can also make multichannel ACLR measurements with as many as four main channels and four adjacent channels. See the example with four main channels and two adjacent channels on both sides.

RF Summary

The RF Summary screen displays the transmitter performance parameters in a table format so technicians can quickly check details at a glance.

Connect directly or over the air.
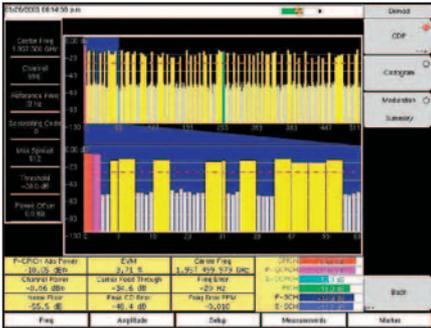
The Code Domain Power (CDP) screen shows 256 or 512 OVSF codes with flexible zoom capabilities.
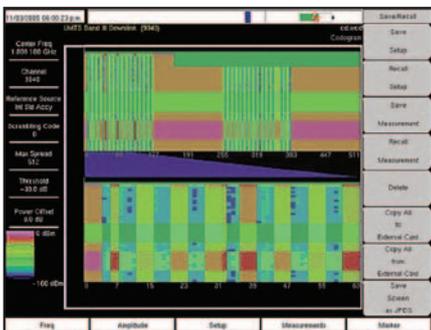
The Codogram screen shows how code levels are changing over time to simplify fault analysis.
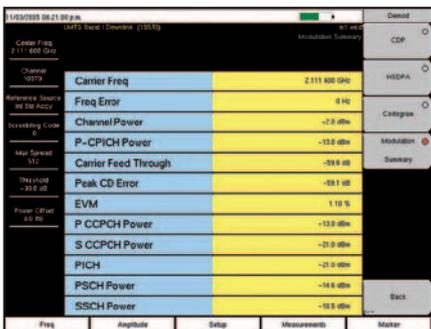
The Modulation Summary screen shows critical transmitter performance parameters in table format.


The UMTS Master offers a clear Pass/Fail display for quick evaluation of a Node B base station.

WCDMA Demodulator—Option 45

The MT8220A UMTS Master with Option 45 demodulates WCDMA signals and displays detailed measurements for evaluating transmitter modulation performance using Code Domain Power (CDP), Codogram, Modulation Summary and Pass/Fail screens.

Code Domain Power

The Code Domain Power (CDP) screen displays 256 or 512 OVSF codes with zoom capability, common pilot power (P-CPICH), channel power, error vector magnitude (EVM), carrier frequency, carrier feed through, frequency error (in Hz and ppm), Peak CD error, and noise floor. The MT8220/45 option can zoom to 32, 64, or 128 codes and the user can input the zoom code to zoom in on the OVSF codes. The demodulator also displays CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH and S-SCH power in a dedicated control channel view.

Codogram

The Codogram screen displays how code levels are changing over time, making it easier to monitor traffic, faults and hand-off activity. Showing 256 or 512 OVSF codes with zoom codes, the MT8220/45 can zoom to 32, 64 or 128 codes, or the user can directly zoom to particular OVSF codes of interest.

Modulation Summary

The Modulation Summary screen displays critical transmitter performance measurements in table format for easy viewing, showing carrier frequency, frequency error, channel power, primary common pilot channel (P-CPICH) absolute power, secondary common pilot channel (S-CCPCH) power and paging indicator channel (PICH) as well as physical shared channel (PSCH) absolute power.

Pass/Fail Mode

The UMTS Master stores the five test models covering all eleven test scenarios specified in the 3GPP specification (TS 125.141) for testing base station performance and recalls these models for quick easy measurements. After an operator selects a test model, the UMTS Master displays test results in table format with clear PASS or FAIL indications that include min/max thresholds and actual measured results.

Using Master Software Tools, additional custom tests can be easily created and downloaded into the UMTS Master. All critical parameters can be selected for pass/fail testing including each individual code's power level, the spreading factor and symbol EVM.

Demodulate and display HSDPA signals with ease.

With Option 65, the UMTS Master demodulates HSDPA and WCDMA signals and displays selected code constellation. The selected code power versus time is also displayed.
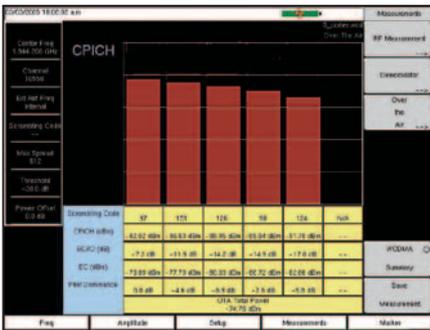
With Option 35, the UMTS Master shows six scrambling codes and CPICH data in a combination bar graph/table view.

WCDMA/HSDPA Demodulator—Option 65

High Speed Downlink Packet Access (HSDPA) uses up to fifteen dedicated physical channels to provide high downlink data rates. The UMTS Master with Option 65 allows demodulating HSDPA signals and displaying CDP, selected code power variation over time, and the constellation for the selected code, in addition to all the standard WCDMA demodulator measurements.

WCDMA/HSDPA Over The Air (OTA)—Option 35

OTA displays six scrambling codes in a bar graph format. For each scrambling code, CPICH in dBm, Ec/Io in dB, Ec in dBm, and pilot dominance in dB are displayed in table format. The user will also see OTA total power in dBm.

7

Demodulate GSM, GPRS and EDGE signals.
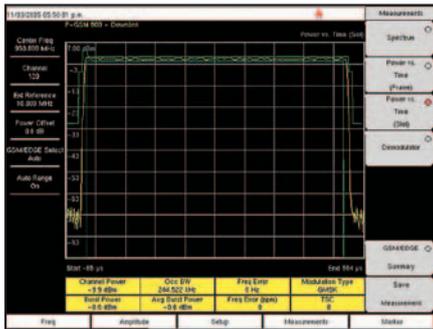
Option 40 displays the first detected timeslot mask as specified in 3GPP TS 05.05.
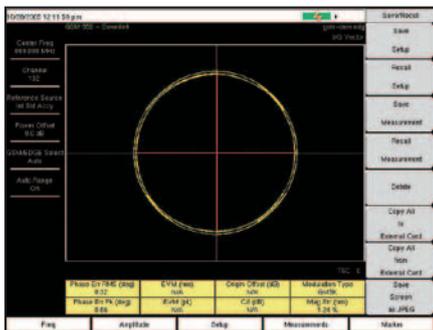
Option 41 demodulates and displays GSM/GPRS/EDGE signals, including vector diagrams.
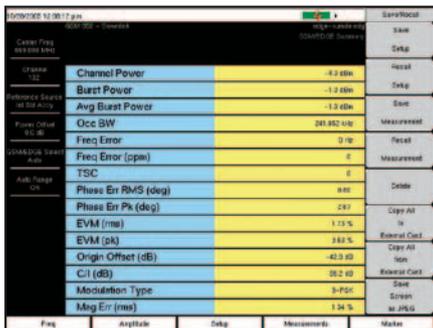
Option 41 provides a quick, table view of critical test parameters, including channel power, occupied bandwidth, phase error and EVM.
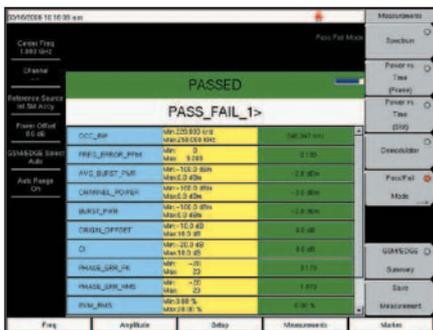
Using Master Software Tools, custom GSM/GPRS/EDGE Pass/Fail test sets can be created and downloaded in UMTS Master.

GSM/GPRS/EDGE Measurements

For flexibility, the UMTS Master features two GSM/GPRS/EDGE measurement modes: RF Meas and Demod. Technicians and RF engineers can connect the MT8220A to any GSM/GPRS/EDGE base station for accurate RF and demodulator measurements. When a physical connection is not required, the MT8220A can receive and demodulate GSM/GPRS/EDGE signals over the air.

GSM/GPRS/EDGE RF Measurements—Option 40

GSM/GPRS/EDGE RF measurements provide views of single-channel spectrum, multichannel spectrum, power versus time (frame), power versus time (slot) with mask per 3GPP TS 05.05 specification and summary screens.

The spectrum view displays channel spectrum and multichannel spectrum. The channel spectrum screen includes channel power, burst power, average burst power, frequency error, modulation type and Training Sequence Code (TSC). The multichannel spectrum allows the user to show as many as ten channels with measurements displayed for the selected channel.

GSM/GPRS/EDGE Demodulator—Option 41

Option 41 demodulates GSM/GPRS/EDGE signals and displays the results of detailed measurements to analyze transmitter modulation performance. Results are shown for phase error (rms), phase error peak, EVM (rms), EVM (peak), origin offset, C/I, modulation type and magnitude error (rms) and a vector diagram of the signal.

Pass/Fail Mode

Using Master Software Tools, custom GSM/GPRS/EDGE Pass/Fail test sets can be easily created and downloaded into the UMTS Master. The test results are displayed in table format with clear pass or fail indicators that include min/max thresholds and actual measured results.

Enhance frequency accuracy with built-in GPS.
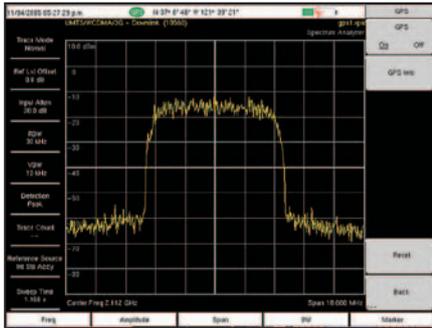
With GPS Option 31, the location information (longitude, latitude) is shown at the top of the screen.
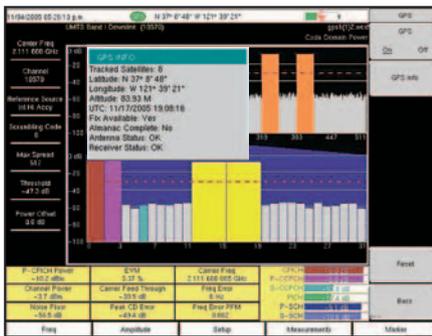
With GPS Option 31, enhance the frequency reference oscillator accuracy to make accurate frequency error measurements.

GPS—Option 31

GPS information allows confirmation of the correct measurement location. The GPS option provides exact location information (longitude, latitude) which is saved with each measurement in addition to date and time. Included with the GPS option is a magnet mount antenna with a 5m (15 feet) cable allowing use on a car roof or other useful surface.

The GPS Option MT8220/31 also enhances the frequency accuracy of the UMTS Master's internal OCXO oscillator. Within three minutes of GPS satellite acquisition, the built-in GPS receiver provides a frequency accuracy to better than 25 ppb (parts per billion). After the GPS antenna is disconnected, the instrument will remain in High-Accuracy mode for three days, preserving frequency accuracy to better than 50 ppb.

Typical frequency accuracy of the UMTS Master for 72 hours following the GPS antenna disconnect over full specified temperature range.
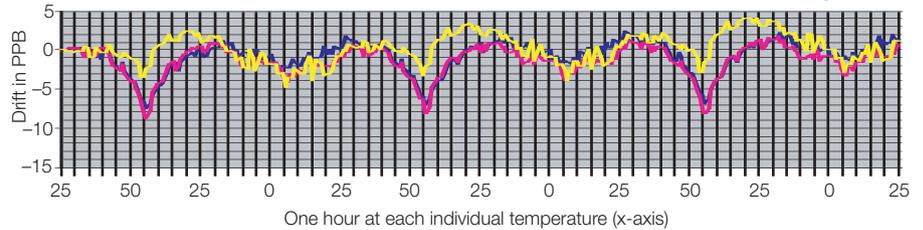

Typical frequency accuracy of the UMTS Master for 24 hours following the GPS antenna disconnect over temperature range 15° C to 35° C.
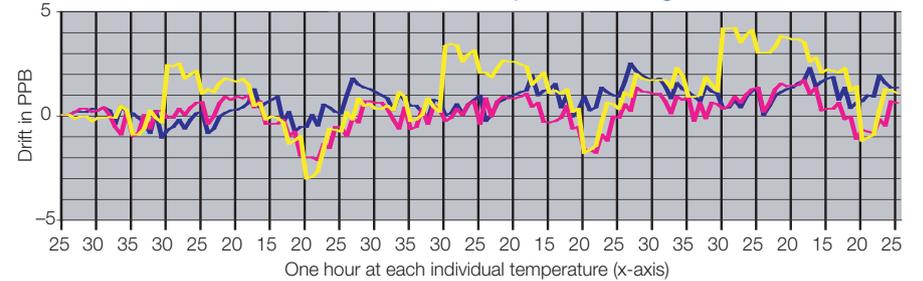
Lab-grade spectrum analysis in a handheld package.
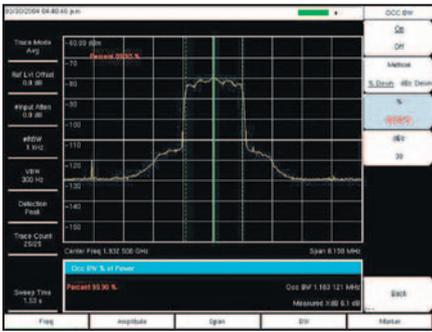
The Occupied Bandwidth screen displays the amount of spectrum used by a modulated signal.
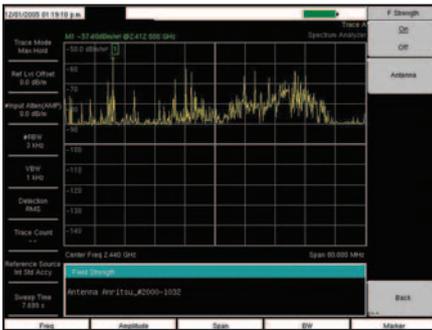
Field Strength measurement accurately corrects the antenna gain or loss.

Smart Measurements

Dedicated routines for one-button measurements of field strength, channel power, occupied bandwidth, Adjacent Channel Power Ratio (ACPR) and Carrier to Interference Ratio (C/I) make the MT8220A the ideal choice for the field. Its simple interface significantly reduces test time and increases analyzer usability, putting more power in the hands of the technician.

Fast Sweep Speed

UMTS Master automatically sweeps as fast as possible for the selected settings consistent with accurate results. This is faster and more flexible than any portable spectrum analyzer on the market today, simplying the capture of intermittent interference signals.

Occupied Bandwidth

This measurement determines the amount of spectrum used by a modulated signal. You can choose between two different methods of determining bandwidth: the percent of power method or the "x" dB down method, where "x" can be from 3 dB to 100 dB down the skirts of the signal.

Field Strength

All antennas have loss or gain that should be corrected in a field strength measurement. The UMTS Master applies an antenna factor to correct these measurements. The antenna factors of all the antennas offered by Anritsu are stored in the unit. Using Master Software Tools, the user can create antenna factors for other antennas and upload the data into the unit. When the measurement is activated, the UMTS Master will automatically adjust the measurement results of the selected antenna frequency band based on the antenna factor.
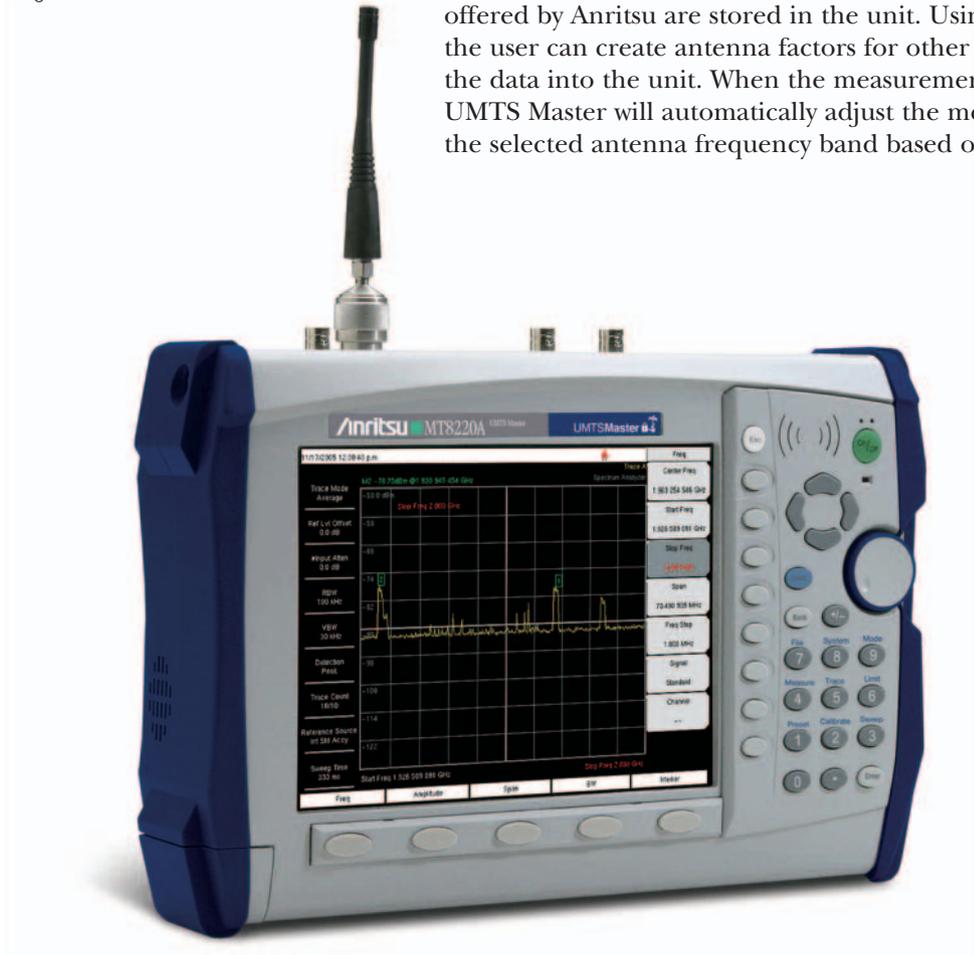
Extend the functionality with valuable options.
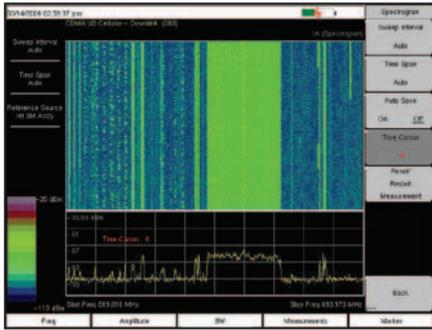
With Option 25, spectrogram measurements identify intermittent interference.

With Option 25, RSSI analyzes the signal strength of a signal over time.

The Signal Strength Meter can be used to locate an interfering signal.

With Option 27, channel scanner measures power of multiple transmitters.

Interference Analyzer (Option 25)

With its built-in low-noise preamplifier, the UMTS Master with interference analyzer option provides the ability to identify and locate interfering signals down to –154 dBm, allowing technicians to better address the quality issues that affect user service.

Spectrogram

The Spectrogram display is a three dimensional display of frequency, power, and time of the spectrum. It is applicable for identifying intermittent interference and tracking signal levels over time. The UMTS Master can save data for up to 72 hours.

RSSI

The received signal strength indicator is useful to observe the signal strength of a single frequency over time. Data can be collected for up to 72 hours.

Signal Strength Meter

The Signal Strength meter locates an interfering signal by measuring the strength of the interfering signal. Power is displayed in Watts, dBm and in the graphical analog meter display. The strength of the signal is also indicated by an audible beep.

The Field Strength measurement is included to the Signal Strength Meter menu for quick determination of calibrated field strength.

Channel Scanner (Option 27)

The channel scanner option measures the power of multiple transmitted signals and is very useful for measuring channel power in AMPS, iDEN, GSM, TDMA, CDMA, WCDMA, and HSDPA networks. Up to 20 channels can be scanned at the same time. You can select to display the frequencies or the scanned data, to be displayed by frequencies or the channel number. Display data in graph or table format. In the custom setup menu each channel can be custom built with different frequency, bandwidth, or channels from different signal standards.

# Master Software Tools augments the power of the MT8220A.

To further increase the power of the MT8220A, each UMTS Master comes with Master Software Tools—comprehensive data management and analysis software that provides simple and easy methods to manage, archive, analyze, print and report system performance. For the most current version of Anritsu Master Software Tools, please visit www.us.anritsu.com.
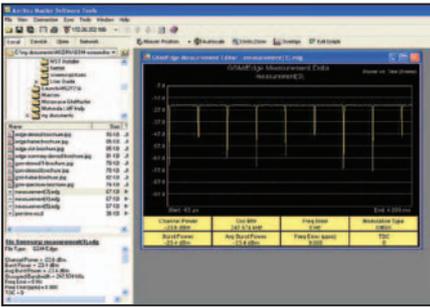
Windows-compatible Master Software Tools simplifies the process of formatting data and generating reports.
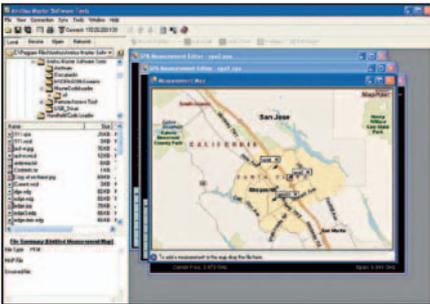
Master Software Tools integrated with Mappoint can display the geographic location of measurements with GPS data.
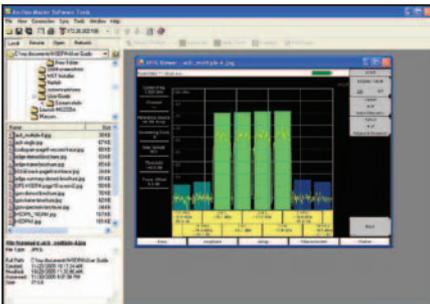
Use Master Software Tools to save details with the measurement and display for rapid analysis.

With Master Software Tools (Windows® 2000/XP compatible) the UMTS Master can:

- Store an unlimited number of data traces to a PC easing the task of analyzing and monitoring historical performance

- Coordinate cell site locations using Microsoft Mappoint and GPS location mapping

- Automatically update the UMTS Master with the latest firmware available from the Anritsu web site

- Create and download new signal standards, Pass/Fail Mode custom lists and antenna factors to existing lists into the unit

- Modify existing languages or add two custom languages to the UMTS Master

- Establish a connection to a PC using USB, Ethernet LAN, or Direct Ethernet

- Export plot data as text files for use in spreadsheets or graphic files (JPG format)

- View multiple Spectrum Analyzer measurements on the same screen using Trace Overlay

- Capture live traces from the instrument and view them on the PC

- Add or modify Limit Lines and Markers

- Handle long file names for easy, descriptive data labeling

WCDMA/HSDPA Specifications

Frequency Range	824–894 MHz, 1710–2170 MHz	2300–2700 MHz
WCDMA/HSDPA RF Measurements MT8220/44		
RF Channel Power (Temperature range 15ºC to 35ºC)	±0.7 dB typical (±1.25 dB max)	±0.7 dB typical (±1.25 dB max)
Occupied Bandwidth Accuracy	±100 kHz	±100 kHz
Residual Adjacent Channel Leakage Ratio (ACLR)[1]	-54 dB typical at 5 MHz offset -59 dB typical at 10 MHz offset	-54 dB typical at 5 MHz offset -57 dB typical at 10 MHz offset
ACLR Accuracy (Single Channel Archive)	±0.8 dB for ACLR ≥-45 dB at 5 MHz offset ±0.8 dB for ACLR ≥-50 dB at 10 MHz offset	±1.0 dB for ACLR ≥-45 dB at 5 MHz offset ±1.0 dB for ACLR ≥-50 dB at 10 MHz offset
Frequency Error	±10 Hz + Time Base Error, 99% confidence level	±10 Hz + Time Base Error, 99% confidence level
WCDMA Demodulation and WCDMA/HSDPA Demodulator MT8220/45 and MT8220/65		
EVM Accuracy[1]	(3GPP Test Model 4) ±2.5%; 6%≤EVM≤25% (3GPP Test Model 5) ±2.5%; 6%≤EVM≤20%	±2.5% for 6 ≤EVM ≤20%
Residual EVM	2.5% typical	2.5% typical
Code Domain Power	±0.5 dB for code channel power >-25 dB 16, 32, 64 DCPH (test model 1) 16, 32 DCPH (test model 2, 3)	±0.5 dB for code channel power >-25 dB 16, 32, 64 DCPH (test model 1) 16, 32 DCPH (test model 2, 3)
CPICH (dBm) Accuracy	±0.8 dB typical	±0.8 dB typical
Scrambling Code	3 seconds	3 seconds
WCDMA/HSDPA OTA MT8220/35		
Resolution	0.1 dB	0.1 dB

[1]Depends on reference level, input signal level and single channel conditions

Option Specifications

Interference Analyzer–Option 25

Frequency Range	100 kHz to 7.1 GHz
Strength of the Interferer	Locate the Interferer
Spectrogram	Collect data up to 72 hours
RSSI	Collect data up to 72 hours

Channel Scanner–Option 27

Frequency Range	100 kHz to 7.1 GHz
Frequency Accuracy	±10 Hz + Time base error, 99% Confidence level
Measurement Range	+20 dBm to –110 dBm
Channel Power	±1 dB typical (±1.5 dB max)
Adjacent Channel Power Accuracy	±0.75 dBc

GPS–Option 31

GPS Location Indicator	Latitude, Longitude and Altitude on display Latitude, Longitude and Altitude with trace storage
GPS High Accuracy when GPS antenna is connected	±25 ppb with GPS ON, 3 minutes after satellite lock
Internal High Accuracy, when GPS antenna is not connected	Better than ±50 ppb for 3 days from a High Accuracy GPS Lock and within 0 to 50°C ambient temperature

GSM/GPRS/EDGE RF Measurements–Option 40

Occupied Bandwidth	Bandwidth within which 99% of the power transmitted on a single channel lies
Burst Power	±1 dB typical for -50 dBm to +20 dBm (±1.5 dB max)
Frequency Error	±10 Hz + time base error, 99% confidence level

GSM/GPRS/EDGE Demodulator–Option 41

GSMK Modulation Quality (RMS Phase) Measurement Accuracy	±1 deg
Residual Error (GSMK)	1 deg
8PSK Modulation Quality (EVM) Measurement Accuracy	±1.5%
Residual Error (8PSK)	2.5%

Spectrum Analyzer Specifications

Frequency	
Maximum Continuous Input	100 kHz to 7.1 GHz
Tuning Resolution	1 Hz
Frequency Reference	Aging ±1 ppm/10 years Accuracy ±0.3 ppm (25ºC ±25ºC) + aging
Frequency Span	10 Hz to 7.1 GHz plus 0 Hz (zero span)
Sweep Time	Minimum 100 ms, 10 µs 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
Absolute amplitude accuracy Power Levels ≥ -50 dBm, ≥35 dB input attenuation, Preamplifier 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
Displayed Average Noise Level (DANL in 10 Hz RBW, 0 dB attenuation, Reference level –50 dBm, preamp on)	Frequency 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 -144 dBm
Display Range	1 to 15 dB/div in 1 dB steps. Ten divisions displayed
Amplitude Units Log Scale Modes	dBm, dBV, dBmv, dBµV
Attenuator Range	0 to 65 dB
Attenuator Resolution	5 dB steps

Spectrum Analyzer Measurements

Measurements	Spectrum Analyzer
Channel Power	✓
Adjacent Channel Power Ratio	✓
Field Strength	✓
Carrier to Interference Ratio	✓
AM/FM/SSB Demodulation	✓

General Specifications

Maximum Continuous Input	≥10 dB attenuation, +30 dBm (10 dB continuation)
RF Input VSWR	2.0:1 maximum, 1.5:1 typical (≥10 dB attenuation)
Internal Time Base Accuracy	±0.3 ppm
Interfaces	Type N female RF Connector BNC female connectors for external reference and external trigger Reverse BNC connector for GPS antenna RJ45 connector for Ethernet 10/100-Base T 2.5 mm 3-wire cellular headset connector
Environmental	MIL–PRF–28800F Class 2 Operating: -10ºC to 55ºC, humidity 85% Storage: -51ºC to 71ºC 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
Size	31.3 x 21.1 x 7.7 cm (12 x 7 x 2.4 in.)
Weight	2.9 kg (6.4 lbs.)

MT8220A Trigger Input, Frequency Reference Input, RF Input and GPS Connector

Option Comparison Tables

WCDMA/HSDPA Option Comparison Table

WCDMA/HSDPA Measurements	WCDMA/HSDPA RF Measurements Option 44	WCDMA Demodulator Option 45	WCDMA/HSDPA Demodulator Option 65	WCDMA/HSDPA Over The Air Option 35
Band Spectrum	✓			
Channel Spectrum	✓			
Carrier Frequency	✓	✓	✓	✓
Frequency Error	✓	✓	✓	
Channel Power	✓	✓	✓	✓
Occupied Bandwidth	✓			
Peak to Average Power	✓			
Noise Floor	✓			✓
ACLR	✓			
Spectral Emission Mask	✓			
P-CPICH Abs Power		✓	✓	
EVM		✓	✓	
Symbol EVM		✓	✓	
Carrier Feed Through		✓	✓	
Peak CD Error		✓	✓	
CPICH		✓	✓	✓
P-CCPCH Power		✓	✓	
S-CCPCH Power		✓	✓	
PICH		✓	✓	
P-SCH Power		✓	✓	
S-SCH Power		✓	✓	
WCDMA, HSDPA Color-Coded Codes			✓	
Code Power vs Time Display			✓	
OVSF Code Constellation Display			✓	
Pass/Fail Mode	✓	✓	✓	
Six Scrambling Codes				✓
Ec/Io				✓
Ec				✓
Pilot Dominance				✓

Option Comparison Tables

GSM/GPRS/EDGE Option Comparison Table

GSM/GPRS/EDGE Measurements	GSM/GPRS/EDGE RF Measurements Option 40	GSM/GPRS/EDGE Demodulator Option 41
Channel Spectrum	✓	
Multi-Channel Spectrum	✓	
Channel Power	✓	
Burst Power	✓	
Frequency Error	✓	
Occupied Bandwidth	✓	
Training Sequence Code	✓	✓
Power Versus Time	✓	
IQ Vector Display		✓
Phase Error RMS		✓
Phase Error Peak		✓
EVM (RMS)		✓
EVM (Peak)		✓
Origin Offset		✓
C/I		✓
Modulation Type	✓	✓
Magnitude Error		✓
Pass/Fail Mode	✓	✓

Ordering Information for MT8220A UMTS Master

MT8220A - UMTS Master

WCDMA/HSDPA Mode Frequency Range:
824 to 894 MHz, 1710 to 2170 MHz, and 2300 to 2700 MHz

GSM/GPRS/EDGE Mode Frequency Range:
380 to 400 MHz, 410 to 430 MHz. 450 to 468 MHz, 478 to 496 MHz,
698 to 746 MHz, 747 to 792 MHz, 806 to 866 MHz, 824 to 894 MHz,
890 to 960 MHz, 880 to 960 MHz, 876 to 960 MHz, 870 to 921 MHz,
1710 to 1990 MHz

Spectrum Analyzer Mode
Frequency Range: 100 kHz to 7.1 GHz

Interference Analyzer Mode
Frequency Range: 100 kHz to 7.1 GHz

Channel Scanner Mode
Frequency Range: 100 kHz to 7.1 GHz

Options

Option MT8220/25	Interference Analyzer
Option MT8220/27	Channel Scanner
Option MT8220/31	GPS (includes GPS antenna)
Option MT8220/35	WCDMA/HSDPA OTA
Option MT8220/40	GSM/GPRS/EDGE RF Meas
Option MT8220/41	GSM/GPRS/EDGE Demod
Option MT8220/44	WCDMA/HSDPA RF Meas
Option MT8220/45	WCDMA Demod
Option MT8220/65	WCDMA/HSDPA Demod

Standard Accessories

10580-00125	User's Guide
61382	Soft Carrying Case
40-168	AC-DC Adapter
806-141	Automotive Cigarette Lighter/12 Volt DC Adapter
2300-498	Master Software Tools CD ROM
2000-1360	USB A-mini B cable
2000-1371	Ethernet Cable
633-44	Rechargeable Battery, Li-Ion
2000-1358	64 MB Compact Flash Memory Module
64343	Tilt Bail
	One-Year Warranty
	Certificate of Calibration and Conformance

Accessories

61382	Soft Carrying Case
40-168	AC/DC Adapter
806-141	Automotive Cigarette Lighter/12 Volt DC Adapter
760-235	Transit Case for Anritsu MT8220A UMTS Master
2300-498	Master Software Tools CD ROM
633-44	Rechargeable Battery, Li-Ion
2000-1374	Dual External, Li-Ion Charger with Universal Power Supply
2000-1358	64 MB Compact Flash Memory Module
2000-1410	Magnet Mount GPS Antenna with 3m (15 ft) Cable

Adapters

510-90	7/16 DIN(f) to N(m), DC to 7.5 GHz, 50 ohm
510-91	7/16 DIN(f) to N(f), DC to 7.5 GHz, 50 ohm
510-92	7/16 DIN(m) to N(m), DC to 7.5 GHz, 50 ohm
510-93	7/16 DIN(m) to N(f), DC to 7.5 GHz, 50 ohm
510-96	7/16 DIN(m) to 7/16 DIN(m), DC to 7.5 GHz, 50 ohm
510-97	7/16 DIN(f) to 7/16 DIN(f), DC to 7.5 GHz, 50 ohm
510-102	N(m) to N(m) 90 degrees right angle, DC to 11 GHz, 50 ohm

Precision Adaptors

34NN50A	Precision Adapter, DC to 18 GHz, 50 ohm, N(m) to N(m)
34NFNF50	Precision Adapter, DC to 18 GHz, 50 ohm, N(f) to N(f)

Directional Antennas

2000-1411	Portable Yagi Antenna, 10 dBd, N(f), 822 to 900 MHz
2000-1412	Portable Yagi Antenna, 10 dBd, N(f), 885 to 975 MHz
2000-1413	Portable Yagi Antenna, 10 dBd, N(f), 1.71 to 1.88 GHz
2000-1414	Portable Yagi Antenna, 9.3 dBd, N(f), 1.85 to 1.99 GHz
2000-1415	Portable Yagi Antenna, 10 dBd, N(f), 2.4 to 2.5 GHz
2000-1416	Portable Yagi Antenna, 10 dBd, N(f), 1.92 to 2.23 GHz

Portable Antennas

2000-1030	SMA(m), 1.71 to 1.88 GHz, 50 ohm
2000-1031	SMA(m), 1.85 to 1.99 MHz, 50 ohm
2000-1032	SMA(m), 2.4 to 2.5 GHz, 50 ohm
2000-1035	SMA(m), 896 to 941 MHz, 50 ohm
2000-1200	SMA(m), 806 to 869 MHz, 50 ohm
2000-1361	SMA(m), 5725 to 5825 MHz, 50 ohm
2000-1473	SMA(m), 870 to 960 MHz, 50 ohm
2000-1474	SMA(m), 1.71 to 1.88 GHz, 50 ohm
2000-1475	SMA(m), 1920 to 1980, 2.11 to 2.17 GHz, 50 ohm
61532	Antenna Kit: 2000-1030, 2000-1031, 2000-1032 2000-1035, 2000-1200, and 2000-1361

Attenuator

42N50A-30	30 dB, 50 Watt, Bi-directional, DC to 18 GHz, N(m) to N(f)

Band Pass Filters

1030-105	890 to 915 MHz Band, N(m) to N(f), 50 ohm
1030-106	1710 to 1790 MHz Band, N(m) to N(f), 50 ohm
1030-107	1910 to 1990 MHz Band, N(m) to N(f), 50 ohm
1030-109	824 to 849 MHz Band, N(m) to SMA(f), 50 ohm
1030-110	880 to 915 MHz Band, N(m) to SMA(f), 50 ohm
1030-111	1850 to 1910 MHz Band, N(m) to SMA(f), 50 ohm
1030-112	2400 to 2484 MHz Band, N(m) to SMA(f), 50 ohm
1030-114	806 to 869 MHz Band, N(m) to SMA(f), 50 ohm

Test Port Cable Armored

15NN50-1.5C	1.5 meters, N(m)-N(m), 6 GHz, 50 ohm
15NNF50-1.5B	1.5 meter N(m) to N(f), 18 GHz, 50 ohm
15NN50-3.0C	3.0 meters, N(m)-N(m), 6 GHz, 50 ohm
15NN50-5.0C	5.0 meters, N(m)-N(m), 6 GHz, 50 ohm
15NNF50-1.5C	1.5 meters, N(m)-N(f), 6 GHz, 50 ohm
15NNF50-3.0C	3.0 meters, N(m)-N(f), 6 GHz, 50 ohm
15NN50-5.0C	5.0 meters, N(m)-N(m), 6 GHz, 50 ohm
15ND50-1.5C	1.5 meters, N(m)-7/16 DIN(m), 6 GHz, 50 ohm
15NDF50-1.5C	1.5 meters, N(m)-7/16 DIN(f), 6 GHz, 50 ohm

Literature

10580-00125	Anritsu UMTS Master User's Guide, Model MT8220A
10580-00126	Anritsu UMTS Master Programming Manual, Model MT8220A
10580-00127	Anritsu UMTS Master Maintenance Manual, Model MT8220A

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Please Contact: