

For MT8820A Radio Communication Analyzer

MX882002A

CDMA2000 Measurement Software

MX882003A

1xEV-DO Measurement Software



MX882002A

CDMA2000 Measurement Software

Advanced high-speed measurement system and batch measurements support CDMA2000[®] terminal manufacturing

The MX882002A CDMA2000 Measurement Software is for measuring Rx and Tx performance of mobile terminals conforming to the IS-2000 standard, today's most widespread 3G technology. It uses advanced DSP and parallel measurement to cut manufacturing inspection times for mobile terminals. Multiple measurements can be selected for simultaneous processing and individual sample sizes can be set for each measurement.

User-selected measurements can be grouped and measured with just one function, offering fast Pass/Fail evaluation and reliable repeatability optimized for high-speed production.

The built-in GPIB interface supports easy configuration of automated test systems for CDMA2000 1X terminal manufacturing, R&D, and application development.

CDMA2000[®] is a registered trademark of the Telecommunications Industry Association (TIA-USA).

• CDMA2000 1X Measurement Items

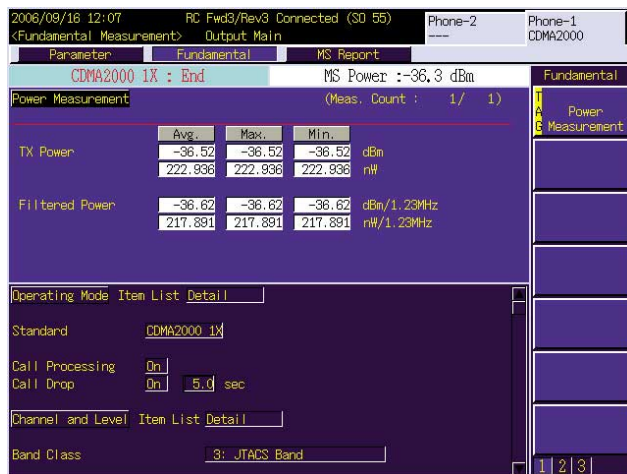
Tests	3GPP2 C.S0011	Test items
Receiver	3. 4. 1	Demodulation of Forward Traffic Channel in Additive White Gaussian Noise
	3. 5. 1	Receiver Sensitivity and Dynamic Range
Transmitter	4. 1	Frequency Accuracy
	4. 3. 1	Time Reference
	4. 3. 4	Waveform Quality and Frequency Accuracy
	4. 3. 5	Code Domain Power
	4. 4. 1	Range of Open Loop Output Power (Access Channel)
	4. 4. 2	Time Response of Open Loop Power Control
	4. 4. 3	Access Probe Output Power
	4. 4. 5	Maximum RF Output Power
	4. 4. 6	Minimum Controlled Output Power
	4. 4. 7	Standby Output Power and Gated Output Power
	4. 4. 9	Code Channel to Reverse Pilot Channel Output Power Accuracy (2.2)
	4. 5. 1	Conducted Spurious Emissions
	4. 5. 3	Occupied Bandwidth

Transmitter Measurements

Transmitter Power

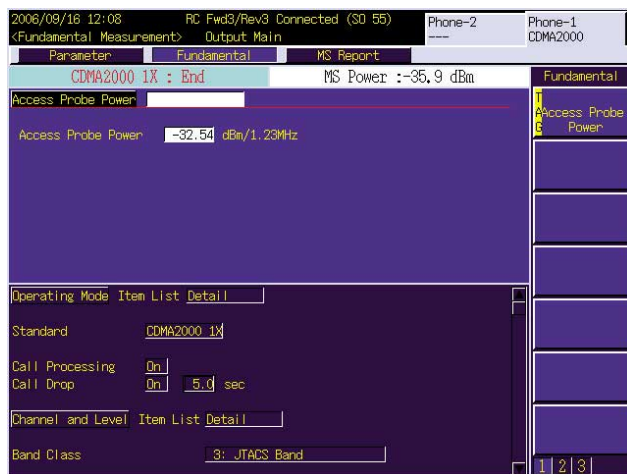
The CDMA2000 1X terminal Tx power can be measured with the power control bits set to maximum or minimum, alternating bits, or with closed loop power control. In addition, maximum, minimum, and average values of measured power results are displayed when the number of measurement samples is 2 or more. This is very useful for evaluating statistical variations in mobile terminal characteristics.

This feature also supports other measurements.



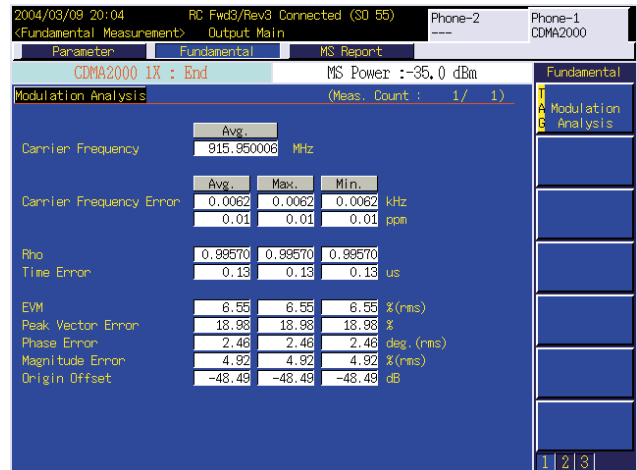
Access Probe Power

The first access probe from the CDMA2000 1X terminal is captured by the level trigger to measure average power. This value is held after terminating the probe measurement once even in the Continuous Measurement mode, which is convenient for the Open Loop Output Power measurement described in C.S0011 of the 3GPP2 standard.



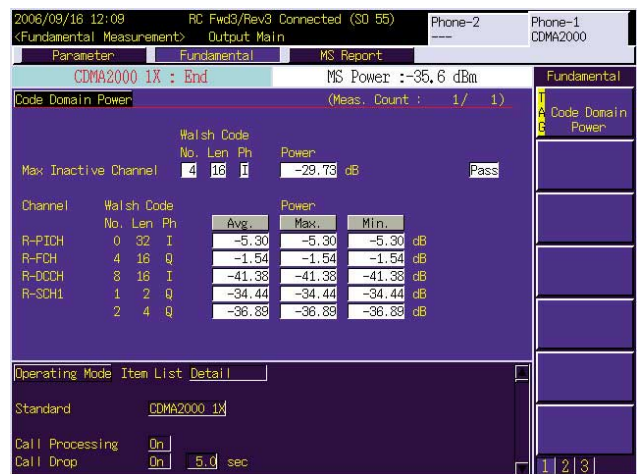
Modulation Analysis

Frequency, frequency error (in kHz and ppm), ρ (waveform quality), τ (time error), EVM, peak vector error, phase error, magnitude error and origin offset are measured simultaneously.



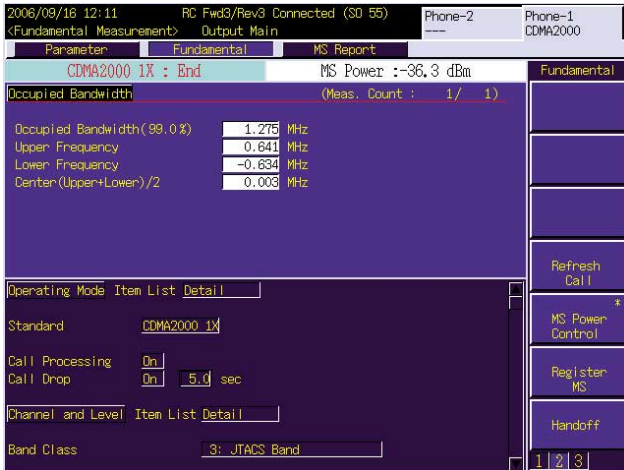
Code Domain Power

The CDMA2000 1X terminal code domain power and error are measured when Reverse RC is set to 3 or more. The R-PICH, R-FCH, and R-SCH powers are all displayed along with the maximum power and channel numbers for inactive channels. In addition, Pass/Fail evaluation is performed to determine whether or not the inactive channel power satisfies the specifications.



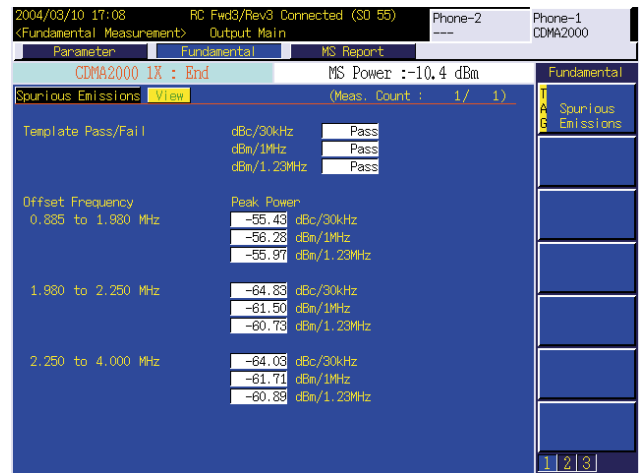
Occupied Bandwidth

Occupied bandwidth measurement can be user-defined in the range of 80% to 99.9% for the ratio of in-band power to total power.



Spurious Emission

Pass/Fail evaluation of spurious emissions is easy. Spurious levels within ± 4 MHz of the center frequency are compared with the template. The default for each band is a standard 3GPP2 template, saving setup time. In addition, the templates can be customized for any requirement and either 1 or 1.23 MHz bandwidth measurements can be performed as necessary.

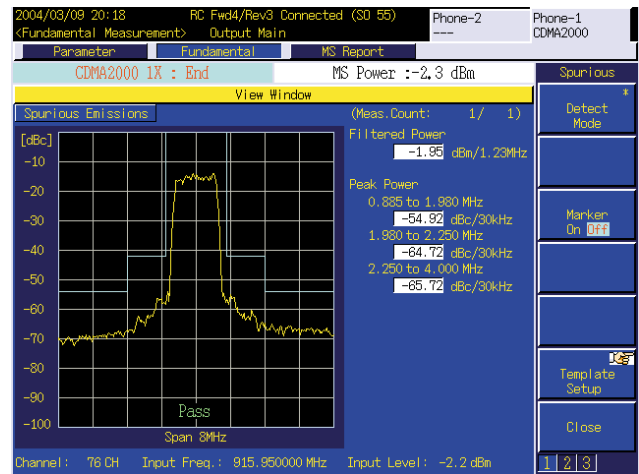


Gated Power Measurement

Gated Power is measured at RC1 or 2. Gated On Power, Gated Off Power and the On/Off Ratio are measured simultaneously on screen.

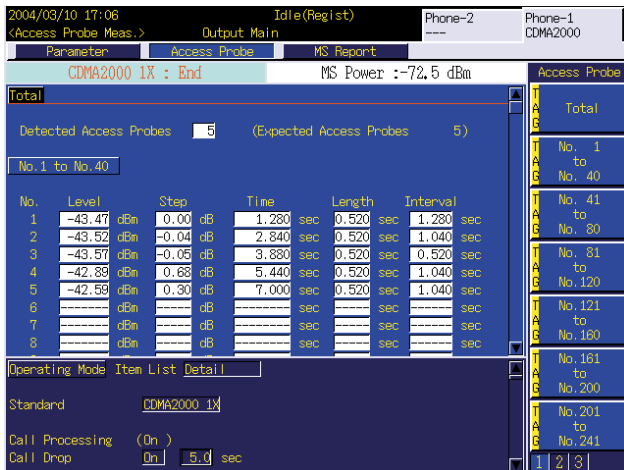


A graph of the spurious emission waveform offers an at-a glance check of whether the waveform satisfies the 3GPP2 standard template.



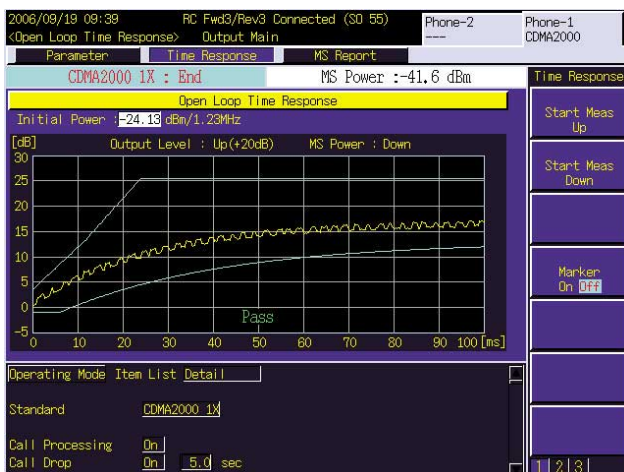
Access Probe Power Measurement

The Access Probe Power screen measures the Access Probe transmitted continuously from a CDMA2000 1X terminal. (During measurement, Ack is not returned to the Access Probe from a CDMA2000 terminal.) In addition to the level of each probe, the difference from the last probe level, probe detection time, probe transmission time and probe interval are measured simultaneously.



Open Loop Time Response Screen

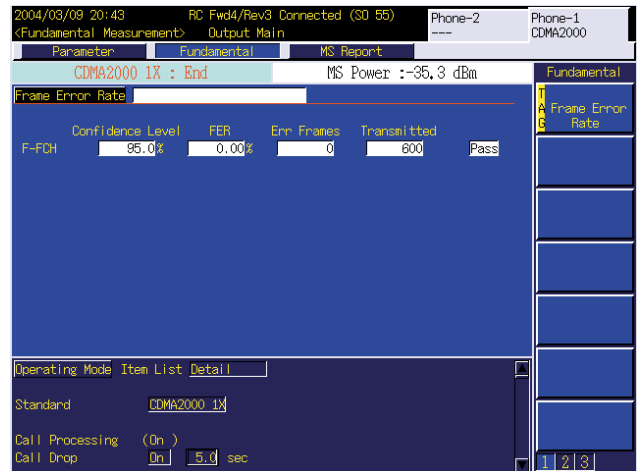
The Open Loop Time Response screen is used to measure the time response of the CDMA2000 terminal terminal open loop power control. Changes in the mobile terminal Tx power are measured between 100 ms from the point where the power of the forward link signal power changed.



Receiver Measurements

Frame Error Rate

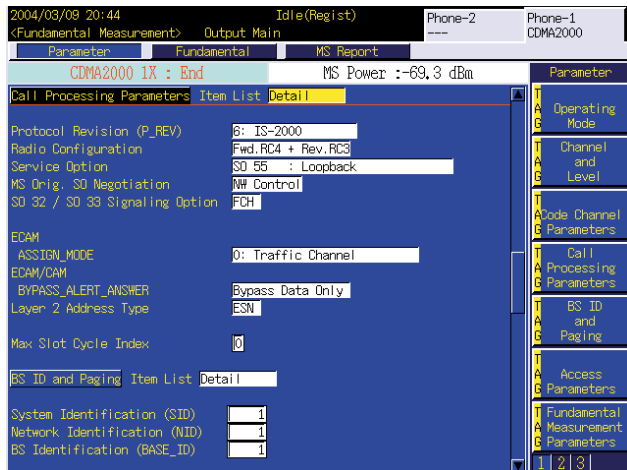
The Frame Error Rate (FER) and Pass/Fail evaluation can be performed in SO2, SO9, SO55 and SO32 (TDSO) to display the FER, error frame count, Tx frame count, confidence level and Pass/Fail results.



Call Processing

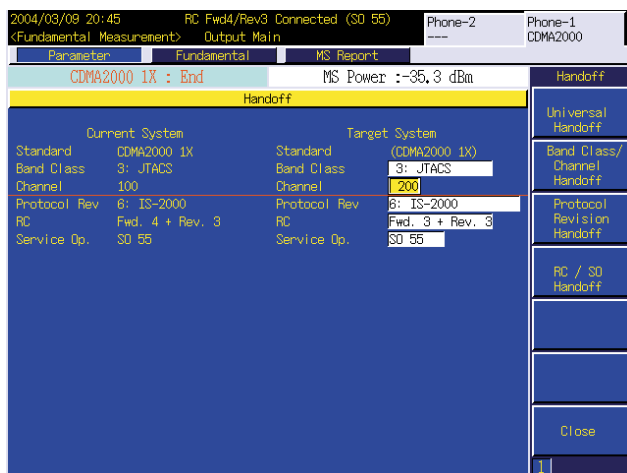
Connection Test

The Call Processing function supports connection tests, such as location registration, origination, termination, disconnection from network, and disconnection from mobile terminal. Service Options 1, 2, 3, 9, 33, 55, and 32768 are supported. A basic voice function can be tested by using loopback during a call.



Handoff Function

The Handoff window is used to set parameters after Handoff [Band Class Channel, Protocol Revision (P_REV), Radio Configuration Service Option], and to perform Handoff according to the preset parameters.



Mobile Terminal Report Monitor

This screen displays the periodically reported CDMA2000 1X terminal status.



Fast and Easy GPIB Control

Streamlined Interface

Measurement results can be captured and settings can be changed easily without changing screens, regardless of which screen is currently displayed. The time savings are especially useful during plot captures.

Fast Batch Measurements

Batch measurement results can be read using the "ALLMEAS?" command, although commands for specific measurement targets, such as "ALLMEAS? MOD" (Modulation Analysis) are provided too. This reduces the number of GPIB commands required for typical test sequences, resulting in less overhead for the PC controller and higher test throughput. In addition, GPIB control programs are easier to maintain and port because they are smaller.

Specifications

MT8820A-03 CDMA2000 Measurement Hardware, MX882002A CDMA2000 Measurement Software

Amplitude measurement	<p>Frequency: 300 to 2200 MHz Input level: -65 to +35 dBm (Main Input/Output) Measurement accuracy: ± 0.5 dB (-25 to +35 dBm), ± 0.7 dB (-55 to -25 dBm), ± 0.9 dB (-65 to -55 dBm) (Filtered Power measurement, after Full cal, Input Level Setting) Linearity: ± 0.2 dB (0 to -40 dB, ≥ -55 dBm), ± 0.4 dB (0 to -40 dB, ≥ -65 dBm) (Filtered Power measurement, Input Level Setting for reference)</p>
Frequency/Modulation measurement	<p>Frequency: 300 to 2200 MHz Input level: -30 to +35 dBm Carrier frequency accuracy: \pm(Set frequency x reference oscillator accuracy + 10 Hz) Residual waveform quality: >0.999 Residual EVM: $<2\%$ rms</p>
Occupied bandwidth	<p>Input level: -10 to +35 dBm</p>
Code domain power	<p>Can be measured at Reverse RC3/RC4. Input level: -30 to +35 dBm Measurement accuracy: ± 0.2 dB (code power: ≥ -15 dBc), ± 0.4 dB (code power: ≥ -23 dBc)</p>
RF signal generator	<p>Output frequency: 300 to 2200 MHz (1 Hz step) Channel level [Relative level to Ior (total level)] Pilot channel: -30 to 0 dB, 0.25 dB step or off FCH, SCH: -30 to 0 dB, 0.1 dB step or off SYNC, PCH: -30 to 0 dB, 0.25 dB step or off OCNS: Auto, 0.01 dB step or off QPCH channel level (relative level to pilot channel): -5 to +2 dB (1 dB step) or off Channel level accuracy: $<\pm 0.2$ dB (typ.) (≥ -20 dB) PN offset: 0 to 511 Waveform quality: >0.99 (pilot only, AWGN off) AWGN AWGN level: -20 to +12 dB (relative level to cdma signal) or off Maximum CDMA signal output level at AWGN On: -28 dBm (at Main output), -18 dBm (at AUX output)</p>
Error rate measurement	<p>FER (Frame Error Rate) measurement: FER measurement with service option 2, 9, 55 and 32 (TDSO) Display items: FER, Confidence level, Sample frame count, Error frame count</p>
Call processing	<p>Band class: BC 0 to 10 Call control: Location registration, Origination, Termination, Disconnection from network, Disconnection from mobile terminal Paging channel data rate: Full Radio configuration: F-RC1 + R-RC1, F-RC2 + R-RC2, F-RC3 + R-RC3, F-RC4 + R-RC3, F-RC5 + R-RC4 Service option: SO 1, 2, 3, 9, 32, 33, 55, 32768. PCH Data Rate: Full QPCH Data Rate: Full Fwd. FCH Data Rate: Full, half, quarter, eighth Fwd. FCH Walsh Code: 10, 14, 26, 30, 42, 46, 58, 62 Fwd. DCCH Data Rate: Full (RC3, RC4, RC5) Fwd. DCCH Walsh Code: 10, 14, 26, 30, 42, 46, 58, 62 Fwd. SCH: Max. 1 channel Fwd. SCH data rate RC3: 9.6, 19.2, 38.4, 76.8, 153.6 Kbps RC4: 9.6, 19.2, 38.4, 76.8, 153.6 Kbps RC5: 14.4, 28.8, 57.6, 115.2, 230.4 Kbps Access channel: Access Ch. Rev. closed loop power control mode: Closed loop, All 1 (all down), Alternate, All 0 (all up) Supported protocols: IS-95B, J-STD-008C, ARIB T-53, Korean PCS, IS-2000 (SR1) Handoff: Universal Handoff, Band Class/Channel Handoff, Protocol Revision Handoff, RC/SO Handoff, Analog Handoff (only when the MT8815A/MT8820A-11 audio board is installed.)</p>

MX882002A-02 CDMA2000 External Packet Data

Direct RF connection between CDMA2000 1X terminal and application server

The MX882002A-02 CDMA2000 External Packet Data is an optional software application that adds CDMA2000 1X packet data communications to the MX882002A Measurement Software option.

It supports transfer of packet data between a local or network application server and an Internet-enabled CDMA2000 1X terminal via an Ethernet connection to the MT8820A.

The following two packet data transfer modes are supported.

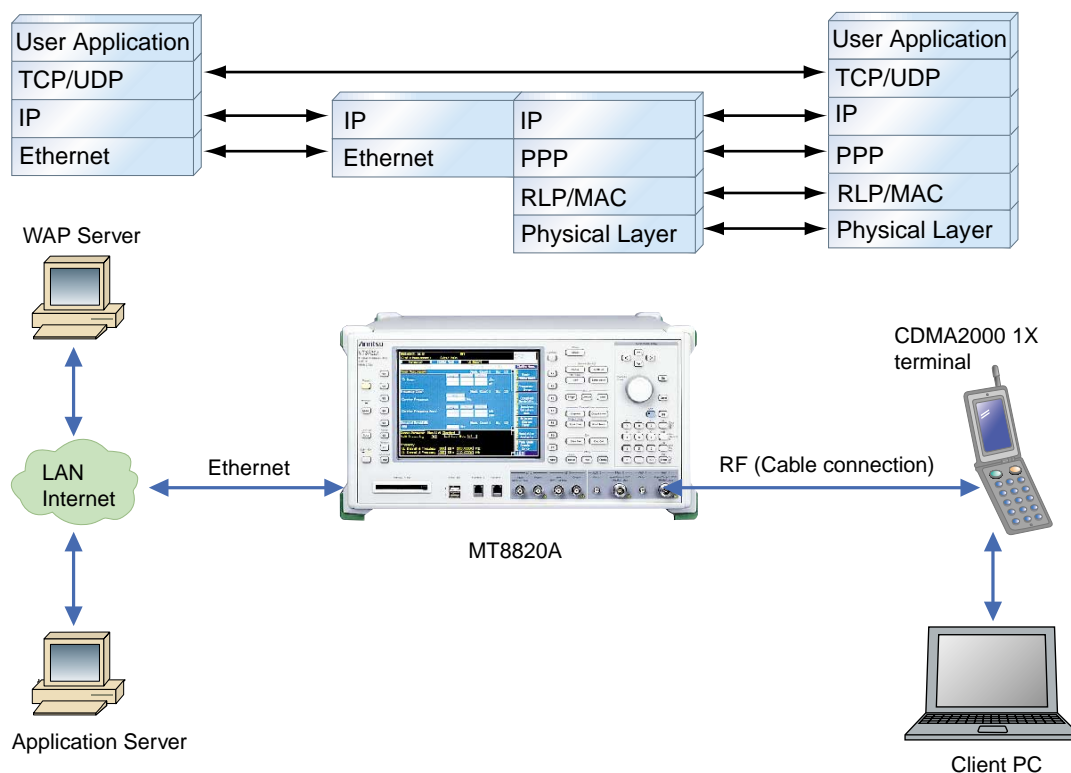
Data Loopback Mode

In this test mode, Radio Link Protocol (RLP) data is looped back to the RLP stack in the MT8820A and transmitted via forward link.

IP Data Communications Mode

This mode provides a predictable and controllable test “pipe” between the Internet (or other local application server) and CDMA2000 1X terminal in the native RF environment that is simulated by the base station emulator in the MT8820A hardware.

This mode provides an IP network connection to a CDMA2000 1X terminal and supports the CDMA2000 Packet Data Service Option (SO33), RLP, Point to Point Protocol (PPP), Internet Protocol (IP), and direct Ethernet connection.



Specifications

MX882002A-02 CDMA2000 external packet data

Service option	SO33
Radio configuration	F-RC3 + R-RC3, F-RC4 + R-RC3
Signaling ch	FCH
Supplemental ch	Encoding: Convolutional, Turbo Data rates: 9.6, 19.2, 38.4, 76.8, 153.6 Kbps
RLP (Radio Link Protocol)	RLP3
Packet data mode	RLP loopback, PPP/IP RLP loopback: The mode to loopback the RLP data unit received in reverse link to forward link. PPP/IP: The mode to transfer IP packet data between a CDMA2000 1X terminal and a server.

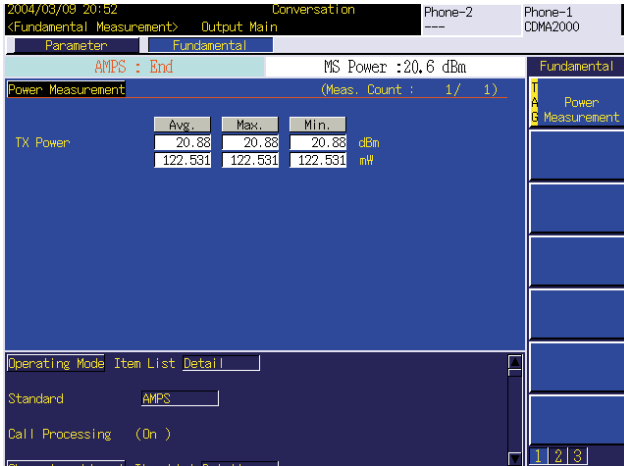
American Mobile Phone System (AMPS)

Transmitter Measurement

When the MX882002A CDMA2000 Measurement Software is installed in a main frame with the MT8820A Audio Board (Option 11), measurement of the RF characteristics of AMPS terminals as well as output and measurement of audio signals (requires MT8820A-11) are supported.

Transmitter Power

This function measures the output power of an AMPS terminal.



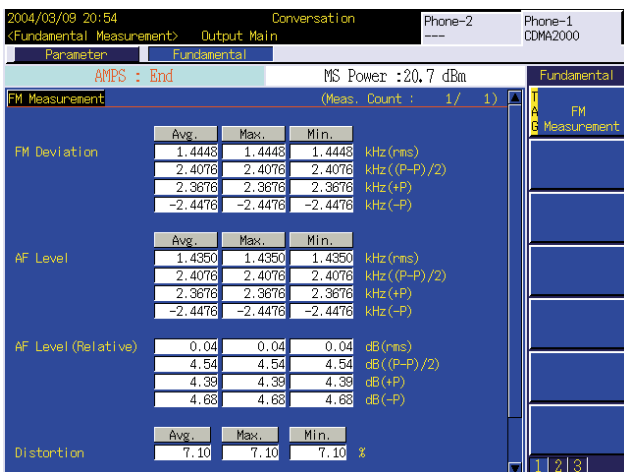
Frequency Error

The Frequency (kHz) and frequency error (ppm) are measured simultaneously on one screen.



FM Measurement

The FM Deviation, AF Level, Distortion, and Audio Frequency are measured simultaneously on one screen.



Audio Measurement

Frequency, Level, SINAD (Signal to Noise And Distortion) and Distortion are measured simultaneously on one screen.



Specifications

MT8820A-11 Audio board, MX882002A CDMA Measurement Software (requires option 03)

Frequency/Amplitude measurement	<p>Frequency range: 800 to 960 MHz</p> <p>Measurement level range: -65 to +35 dBm (Main Input/Output)</p> <p>Accuracy: (After calibration, at Input Level setting value)</p> <p>±0.5 dB (-25 to +35 dBm), ±0.7 dB (-55 to -25 dBm), ±0.9 dB (-65 to -55 dBm)</p> <p>*MAIN Input/Output, after calibrated by internal power meter</p> <p>Linearity: (Filter Power measurement, referenced to Input Level setting value)</p> <p>±0.2 dB (0 to -40 dB, ≥-55 dBm), ±0.4 dB (0 to -40 dB, ≥-65 dBm)</p>
RF Frequency	<p>Measurement level range: -30 to +35 dBm</p> <p>Carrier frequency accuracy: ± (set frequency x reference oscillator accuracy + 10 Hz)</p>
FM measurement	<p>Measurement level range: -30 to +35 dBm</p> <p>Measurement deviation: 0 Hz to 20 kHz</p> <p>Demodulation frequency range: 30 Hz to 20 kHz</p>
Deviation measurement	<p>Accuracy: Indicated value ±2% + residual FM (at 1 kHz demodulation frequency)</p> <p>Frequency response: ±0.5 dB (demodulation frequency 30 Hz to 20 kHz, referenced to 1 kHz, 5 kHz deviation)</p> <p>Residual FM: <10 Hz rms (demodulation frequency 300 Hz to 3 kHz)</p>
Demodulation distortion	<p>Demodulation distortion: <0.3% (demodulation frequency: 1 kHz, demodulation bandwidth 0.3 to 3 kHz, deviation 5 kHz)</p>
Analog RF signal generator (FM)	<p>Output frequency range: 800 to 960 MHz, 1 Hz steps</p> <p>Deviation: 0 to 20 kHz, 5 Hz steps</p> <p>Modulation signal: Internal modulation only, Sine wave, Setting frequency range 20 Hz to 10 kHz, (5 Hz steps)</p> <p>Deviation accuracy: ± (3.5 + 10 Hz)</p> <p>(at 1 kHz modulation frequency, demodulation bandwidth 300 Hz to 3 kHz)</p> <p>Frequency response: ±0.5 dB (modulation frequency: 0.3 to 3 kHz)</p> <p>±1.0 dB (modulation frequency: 20 Hz to 10 kHz)</p> <p>(4 Hz deviation, modulation frequency: referenced to 1 kHz)</p> <p>Modulation deviation: ≤-50 dB</p> <p>(modulation frequency: 1 kHz, deviation: ≥4 kHz, demodulation bandwidth: at 0.3 to 3 kHz)</p>
Analog RF signal generator (SAT)	<p>Modulation frequency: 5970, 6000, 6030 Hz, Off</p> <p>Deviation: 2 kHz fixed</p>
AF measurement	<p>Input frequency</p> <p>Frequency range: 50 Hz to 10 kHz</p> <p>Input level</p> <p>Input voltage range: 1 mV peak to 5 V peak (AF Input connector)</p> <p>Maximum allowable input voltage: 30 V rms</p> <p>Frequency measurement</p> <p>±(reference oscillator accuracy + 0.5 Hz)</p> <p>Level measurement</p> <p>Accuracy: ±0.2 dB (≥10 mV peak), ±0.4 dB (≥1 mV peak, ≥1 kHz)</p> <p>SINAD measurement</p> <p>Measurement range: ≥60 dB (≥1000 mV peak), ≥54 dB (≥50 mV peak), ≥46 dB (≥10 mV peak)</p> <p>(At Frequency: 1 kHz)</p> <p>Distortion ratio measurement</p> <p>Measurement range (At Frequency: 1 kHz):</p> <p>≤-60 dB (≥1000 mV peak), ≤-54 dB (≥50 mV peak), ≤-46 dB (≥10 mV peak)</p> <p>Input impedance</p> <p>100 kΩ</p>
AF output	<p>Output Frequency</p> <p>Frequency range: 30 Hz to 10 kHz, 1 Hz step</p> <p>Accuracy: ±(Set frequency x reference oscillator accuracy + 0.1 Hz)</p> <p>Output level</p> <p>Set range: 0 to 5 V peak (AF Output connector)</p> <p>Set resolution: 1 mV (≤5 V peak), 100 μV (≤500 mV peak), 10 μV (≤50 mV rms)</p> <p>Accuracy: ±0.2 dB (≥10 mV peak, ≥50 Hz), ±0.3 dB (≥10 mV peak, <50 Hz)</p> <p>Waveform distortion (At Band ≤30 kHz)</p> <p>≤-60 dB (≥500 mV peak, ≤5 kHz)</p> <p>≤-54 dB (≥70 mV peak)</p> <p>Output impedance: ≤1 Ω</p> <p>Maximum output current: 100 mA</p>

MX882003A

1xEV-DO Measurement Software

Advanced high-speed measurement system and batch measurements support 1xEV-DO terminal manufacturing

The MX882003A 1xEV-DO Measurement Software^{*1} is for measuring the performance of mobile terminals conforming to the 1xEV-DO standard (CDMA2000[®] 1X Evolution Data Only defined in the 3GPP2 standard). It uses advanced DSP and parallel measurements to cut manufacturing and inspection times for 1xEV-DO terminals. Several measurement items can be selected freely for batch measurement and a one-touch operation allows each selected batch measurement item to be executed repeatedly for the specified number of times. Pass/Fail evaluation of the main measurement items, including transmission frequency, modulation accuracy, output power, Code Domain power, and PER, is quick and easy. The built-in GPIB interface supports easy configuration of automated test systems for 1xEV-DO production lines and on-site maintenance.

*1: Requires MT8820A-03, MT8820A-04 and MX882002A

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• 1xEV-DO Measurement Items

Tests	3GPP2 C.S0033	Test items
Receiver	3.1.1.1	Frequency Coverage Requirement
	3.1.1.3.1	Receiver Sensitivity and Dynamic Range
Transmitter	3.1.2.1	Frequency Requirement
	3.1.2.2.1	Time Reference
	3.1.2.2.2	Waveform Quality and Frequency Accuracy
	3.1.2.3.2	Time Response of Open Loop Power Control
	3.1.2.3.4	Maximum RF Output Power
	3.1.2.3.5	Minimum Controlled Output Power
	3.1.2.3.6	Standby Output Power
	3.1.2.3.7	RRI Channel Output power
	3.1.2.3.8	Code Domain Power
	3.1.2.4.1	Conducted Spurious Emissions
	3.1.2.4.3	Occupied Bandwidth



Transmission Measurement

Code Domain Power

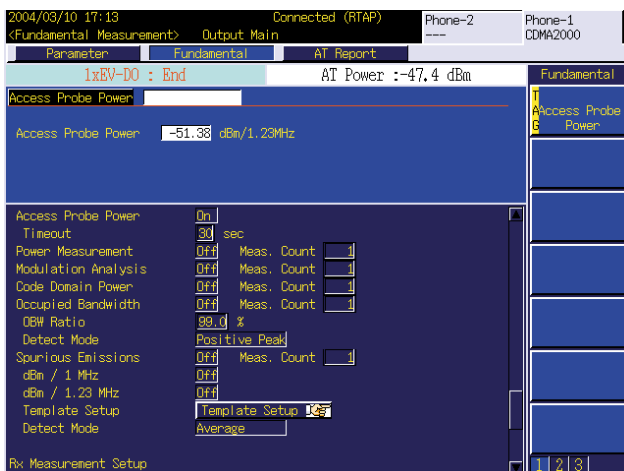
The 1xEV-DO terminal code domain error is measured. The PICH (pilot-ch), RRI, DRC, ACK and Data powers are all displayed along with the maximum power and channel numbers of inactive channels on one screen. In addition, Pass/Fail evaluation is performed to determine whether or not the inactive channel power satisfies the specifications.



*Output power, modulation analysis, occupied bandwidth, etc., can be measured similarly to the MX882002A..

Access Probe Power

The first access probe from the 1xEV-DO terminal is captured by the level trigger to measure the average power. This value is held after terminating the probe measurement once even in the Continuous Measurement mode, which is convenient for the Open Loop Output Power measurement described in C.S0033 of the 3GPP2 standard.



Open Loop Time Response Screen

The Open Loop Time Response screen is used to measure the time response of the 1xEV-DO terminal open loop power control. Changes in the mobile terminal transmitted power are measured between 100 ms from the point where the power of the forward link signal changed.



Receiver Measurement

Packet Error Rate

PER (Packet Error Rate) measurement and Pass/Fail evaluation can be performed in FTAP to display the PER, error packet count, transmission packet count, confidence level, and Pass/Fail results.

2004/03/10 18:12 Connected (FTAP) Phone-2 Phone-1
 <Fundamental Measurement> Output Main CDMA2000

Parameter Fundamental AT Report
 1xEV-DO : End AT Power : -64.1 dBm Fundamental

FTC	Confidence Level	PER	Err. Packets	Transmitted	Pass
	95.0%	0.00%	0	600	Pass

Rx Measurement Setup
 Packet Error Rate On
 Specified PER 0.5%
 Sample Packets 10000 packets
 Meas. Stop Mode On
 Confidence Level 95.0%
 PER Limit 0.5%

Packet Data Option Item List Detail

AT Address 1 2 3

Call Processing Function

Connection Test

The Call Processing function supports connection tests, such as Open Session, Closed Session, AT Origination, AN Release, and AT Release.

2004/03/09 21:33 Idle (Session Opened) Phone-2 Phone-1
 <Fundamental Measurement> Output Main CDMA2000

Parameter Fundamental AT Report
 1xEV-DO : Stop AT Power : -70.4 dBm

Code Domain Power (Meas. Count : 1/ 1)
 Walsh Code No. Len Ph Power
 Max Inactive Channel 13 16 9 -19.54 dB/Tor Fail

Call Processing Parameters Item List Detail
 Application Protocol RTAP
 AN ID Item List Detail

Sector ID 00000000 00000000 00000000 00000000
 Country Code 1
 Color Code 1

Access Parameters Item List Detail
 Open Loop Adjust -86 dB
 Probe Initial Adjust 0 dB
 Probe Num Step 5 probes per sequence

Parameter
 Operating Mode
 Channel and Level
 Physical Channel Parameters
 Call Processing Parameters
 AN ID
 Access Parameters
 Fundamental Measurement Parameters

1 2 3

Terminal Report Monitor

This screen displays the periodically reported 1xEV-DO terminal status.

2004/03/09 21:34 Idle (Session Opened) Phone-2 Phone-1
 <Fundamental Measurement> Output Main CDMA2000

Parameter Fundamental AT Report
 1xEV-DO : End AT Power : -69.1 dBm

Power Measurement (Meas. Count : 1/ 1)

	Avg.	Max.	Min.
TX Power	-82.65	-82.65	-82.65
	5.432	5.432	5.432
			pW

Hardware ID
 Hardware ID Type 0x010000
 Hardware ID Length 0x04 (Hex) 4 (Dec)
 Hardware ID[0]-[7] 0x5175B616
 Hardware ID[8]-[15]
 Hardware ID[16]-[23]
 Hardware ID[24]-[31]

AT Report
 Hardware ID

1 2 3

Fast and Easy GPIB Control

Control without Measurement Window

Measurement results can be read and changed even when not displayed, saving time that would be lost by displaying the relevant measurement window.

Fast Batch Measurements

Batch measurement results can be read using the "ALLMEAS?" command, although commands for specific measurement targets, such as "ALL MEAS? MOD" (Modulation Analysis) are supported too.

This reduces the number of GPIB commands required for typical test sequences, resulting in less overhead for the PC controller and higher test throughput.

In addition, control programs are easier to maintain and port because they are smaller.

Specifications

MT8820A-04 1xEV-DO Measurement Hardware, MX882003A 1xEV-DO Measurement Software

Amplitude measurement	Dependent on the performance of MX882002A
Modulation analysis	Frequency: 300 to 2200 MHz Input level: -30 to +35 dBm Carrier frequency accuracy: reference oscillator accuracy + 10 Hz Residual waveform quality: >0.999 Residual EVM: <2% rms
Code domain power	Input level: -10 to +35 dBm Measurement accuracy: ± 0.2 dB (code power ≥ -15 dBc), ± 0.4 dB (code power ≥ -23 dBc)
RF signal generator	Output frequency: 300 to 2200 MHz (1 Hz step) Channel level: Pilot channel, MAC channel, Control channel, Traffic channel, All 0 dB (reference lor) PN offset: 0 to 511 Wave quality: >0.99 (pilot only, AWGN Off) AWGN: AWGN Level: -20 to +12 dB (relative to CDMA signal) or Off Maximum output level of cdma signal at AWGN on: -28 dBm (at Main output) -18 dBm (at AUX output)
Error rate measurement	PER (Packet Error Rate) measurement: PER measurement with FTAP Display items: PER, Confidence level, Sample packet count, Error packet count
Call processing	Band class: BC0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 Call control: Close session, Open session origination, Termination, Disconnection from network, Disconnection from mobile terminal Rev. closed loop power control mode: Closed loop, Alternate, All 0 (all up), All 1 (all down) Test application protocol: RTAP, FTAP, FTAP + RTAP

MX882003A-02 1xEV-DO External Packet Data

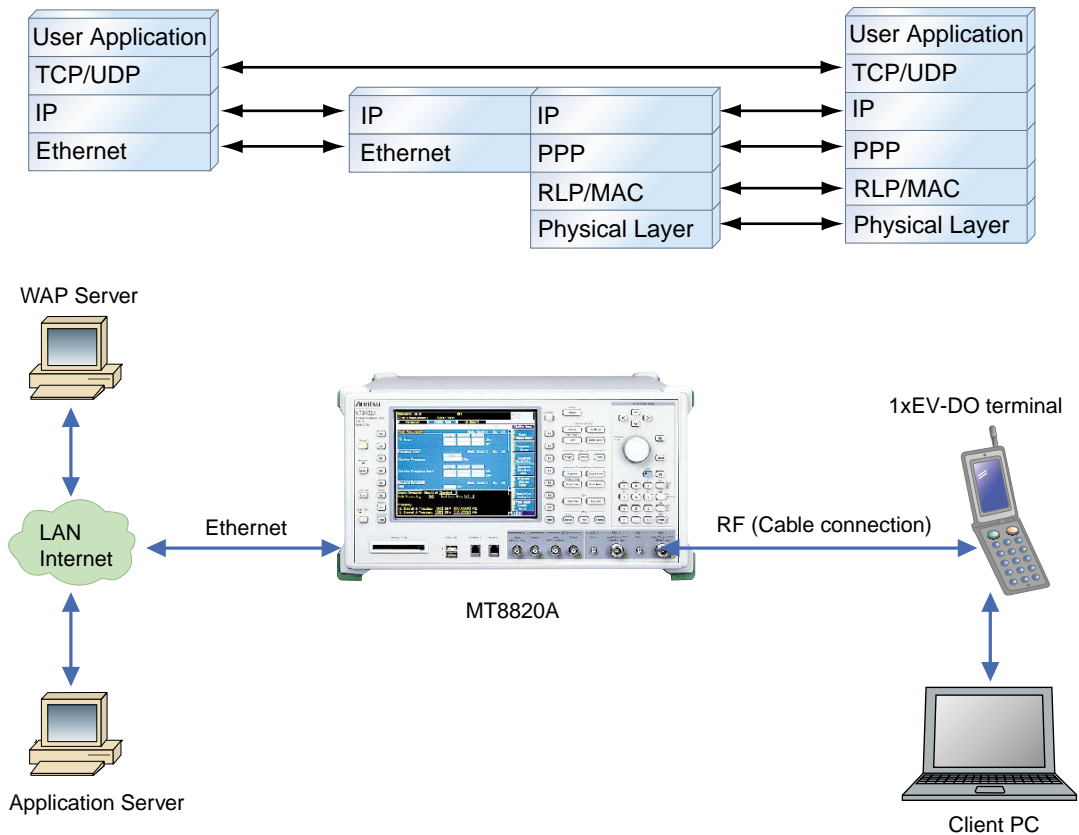
Direct RF connection between 1xEV-DO terminal and application server

The MX882003A-02 1xEV-DO External Packet Data is an optional software application that adds 1xEV-DO external packet data communications to the MX882003A 1xEV-DO External Measurement Software option. It supports transfer of packet data between a local or network application server and an Internet-enabled CDMA2000 1xEV-DO terminal via an Ethernet connection to the MT8820A.

The IP data communications mode is supported as described below.

IP Data Communications Mode

This mode provides a predictable and controllable test “pipe” between the Internet (or other local application server) and 1xEV-DO terminal in the native RF environment that is simulated by the base station simulator in the MT8820A hardware. This mode provides an IP network connection to a 1xEV-DO terminal and supports Default Packet Point to Point Protocol (PPP), Internet Protocol (IP), and direct Ethernet connection.



Example of IP Data Communications Mode

Specifications

MX882003A-02 1xEV-DO external packet data

Application Protocol Packet Data Mode	Default Packet PPP/IP (transfers IP packet data between 1xEV-DO terminal and server)
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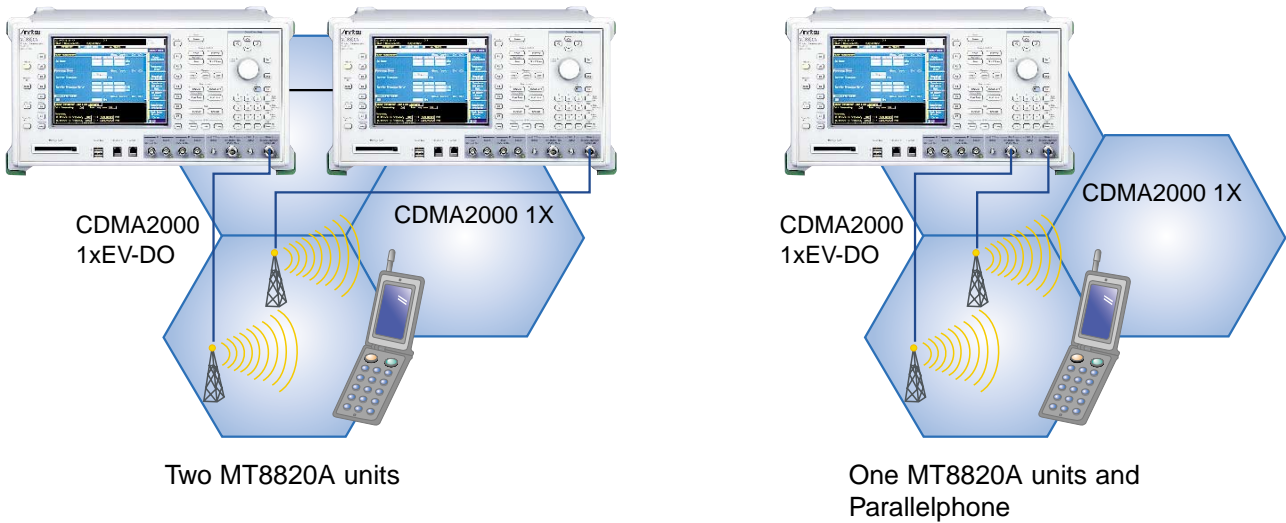
CDMA2000 1X/1xEV-DO Synchronous Function

For Functional Tests of CDMA2000 1X and CDMA2000 1xEV-DO

By using the MX882002A and MX882003A with two MT8820A units or one MT8820A unit with the Parallelphone*¹ measurement option, the CDMA2000 1X and 1xEV-DO forward link signals can be output with synchronized system times, supporting function tests of mobile terminals for both CDMA2000 1X and 1xEV-DO systems*².

*1: Parallelphone is the registered trademark of Anritsu Corporation.

*2: This function cannot be used when MX882000B W-CDMA Measurement Software is loaded.
Please perform unload, when MX882000B is loaded.



Ordering Information

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

Model/Order No.	Name
MT8820A	Main frame Radio Communication Analyzer
	Standard accessories
	Power cord, 2.6 m: 1 pc
Z0906A	ANR-CFX00T64 (CF card, 64 MB): 1 pc
CA68ADP	PC card adapter: 1 pc
W2458AE	MT8815A/MT8820A operation manual (CD-ROM): 1 copy
	Options
MT8820A-01	W-CDMA Measurement Hardware
MT8820A-02	TDMA Measurement Hardware
MT8820A-03	CDMA2000 Measurement Hardware
MT8820A-04	1xEV-DO Measurement Hardware
MT8820A-11	Audio Board
MT8820A-12	Parallel Phone Measurement Hardware
MT8820A-21	W-CDMA Measurement Hardware retrofit
MT8820A-22	TDMA Measurement Hardware retrofit
MT8820A-23	CDMA2000 Measurement Hardware retrofit
MT8820A-24	1xEV-DO Measurement Hardware retrofit
MT8820A-31	Audio Board retrofit
MT8820A-32	Parallel Phone Measurement Hardware retrofit
	Softwares
MX882000B	W-CDMA Measurement Software (requires MT8820A-01 and MX88205xA)
MX882000B-01	W-CDMA Voice Codec (requires MT8820A-11 and MX882000B)
MX882000B-11	HSDPA Measurement Software (requires MT8820A-01, MX882000B and MX882050A)
MX882001A	GSM Measurement Software (requires MT8820A-02)
MX882001A-01	GSM Voice Codec (requires MT8820A-11 and MX882001A)
MX882001A-02	GSM External Packet Data (requires MX882001A)
MX882001A-11	EGPRS Measurement Software (requires MX882001A)
MX882002A	CDMA2000 Measurement Software (requires MT8820A-03)
MX882002A-02	CDMA2000 External Packet Data (requires MX882002A)
MX882003A	1xEV-DO Measurement Software (requires MT8820A-03, MT8820A-04 and MX882002A)
MX882003A-02	1xEV-DO External Packet Data (requires MX882003A)
MX882004A	PDC Measurement Software (requires MT8820A-02)
MX882005A	PHS Measurement Software (requires MT8820A-02)
MX882005A-11	ADVANCED PHS Measurement Software (requires MX882005A)
MX882010A	Parallel Phone Measurement Software*1 [requires MT8820A-12, the two same measurement hardware (2 board/set) and one measurement software]
MX882022A	CDMA2000 Wireless Application Test Software (requires MT8820A-03)
MX882050A	W-CDMA Call Processing Software*2 (requires MX882000B)
MX882050A-02	W-CDMA External Packet Data*2, *3 (requires MX882050A)
MX882050A-03	W-CDMA Video Phone Test*2 (requires MX882050A)
MX882050A-09	W-CDMA Band IX*2 (requires MX882050A)
MX882050A-11	HSDPA External Packet Data*2 (requires MX882000B-11)
MX882070A	W-CDMA Ciphering Software*2 (requires MX882050A)
MX882051A	W-CDMA Call Processing Software*2 (requires MX882000B)
MX882051A-02	W-CDMA External Packet Data*2 (requires MX882051A)
MX882051A-03	W-CDMA Video Phone Test*2 (requires MX882051A)
MX882071A	W-CDMA Ciphering Software*2 (requires MX882051A)

Model/Order No.	Name
W2477AE	MX882000B Operation Manual*4 (with MX882000B)
W2463AE	MX882001A Operation Manual*4 (with MX882001A)
W2472AE	MX882002A Operation Manual*4 (with MX882002A)
W2473AE	MX882003A Operation Manual*4 (with MX882003A)
W2464AE	MX882004A Operation Manual*4 (with MX882004A)
W2465AE	MX882005A Operation Manual*4 (with MX882005A)
W2484AE	MX882022A Operation Manual*4 (with MX882022A)
W2480AE	MX88205xA Operation Manual*4 (with MX88205xA)
W2478AE	MX88207xA Operation Manual*4 (with MX88207xA)
	Warranty
MT8820A-90	Extended 3-year Warranty Service
MT8820A-91	Extended 5-year Warranty Service
	Application parts
P0019	TEST USIM001*5
P0027	W-CDMA/GSM Test USIM
A0012	Handset
J1249	CDMA2000 Cable [D-sub (15 pin, P-type) - D-sub (15 pin, P-type), used with J1267 (sold separately)]
J1267	CDMA2000 cross-over cable [D-sub (9 pin, P-type) - D-sub (9 pin, P-type), reverse cable, used with J1249 (sold separately)]
J0576B	Coaxial Cord (N-P · 5D-2W · N-P), 1 m
J0576D	Coaxial Cord (N-P · 5D-2W · N-P), 2 m
J0127A	Coaxial Cord (BNC-P · RG58A/U · BNC-P), 1 m
J0127C	Coaxial Cord (BNC-P · RG58A/U · BNC-P), 0.5 m
J0007	GPIB Cable, 1 m
J0008	GPIB Cable, 2 m
MN8110B	I/O Adapter (for call processing I/O)
B0332	Joint Plate (4 pcs/set)
B0333G	Rack Mount Kit
B0499	Carrying Case (hard with protective cover and casters)
B0499B	Carrying Case (hard with protective cover and no casters)
W2457AE	MT8815A/MT8820A Operation Manual (booklet)
W2476AE	MX882000B Operation Manual (booklet)
W2466AE	MX882001A Operation Manual (booklet)
W2470AE	MX882002A Operation Manual Panel Operation (booklet)
W2471AE	MX882002A Operation Manual Remote Control (booklet)
W2474AE	MX882003A Operation Manual Panel Operation (booklet)
W2475AE	MX882003A Operation Manual Remote Control (booklet)
W2467AE	MX882004A Operation Manual (booklet)
W2468AE	MX882005A Operation Manual (booklet)
W2482AE	MX882022A Operation Manual Panel Operation (booklet)
W2483AE	MX882022A Operation Manual Remote Control (booklet)
W2481AE	MX88205xA Operation Manual (booklet)
W2479AE	MX88207xA Operation Manual (booklet)

- *1: Parallellphone is supported by the MT8820A-01, MT8820A-02, MT8820A-03, and MT8820A-04 hardware, which can be used simultaneously.
 - *2: For supported UE connections, contact your Anritsu sales representative.
 - *3: The MX882050A preinstalls the integrity protection function.
 - *4: On CDROM
 - *5: TThis Test USIM operates only in the W-CDMA mode. When GSM is required, use the P0027.
- Parallellphone™ is a registered trademark of Anritsu Corporation.
 - CF® card is a registered trademark of SanDisk Corporation in the USA and is licensed to the CFA (Compact Flash Association).

Anritsu Corporation

5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Phone: +81-46-223-1111
Fax: +81-46-296-1264

● U.S.A.

Anritsu Company

1155 East Collins Blvd., Richardson, TX 75081, U.S.A.
Toll Free: 1-800-267-4878
Phone: +1-972-644-1777
Fax: +1-972-671-1877

● Canada

Anritsu Electronics Ltd.

700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

● Brazil

Anritsu Eletrônica Ltda.

Praca Amadeu Amaral, 27 - 1 Andar
01327-010-Paraiso-São Paulo-Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

● U.K.

Anritsu EMEA Ltd.

200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

● France

Anritsu S.A.

9 Avenue du Québec, Z.A. de Courtabœuf
91951 Les Ulis Cedex, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

● Germany

Anritsu GmbH

Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

● Italy

Anritsu S.p.A.

Via Elio Vittorini 129, 00144 Roma, Italy
Phone: +39-6-509-9711
Fax: +39-6-502-2425

● Sweden

Anritsu AB

Borgafjordsgatan 13, 164 40 KISTA, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

● Finland

Anritsu AB

Teknobulevardi 3-5, FI-01530 VANTAA, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

● Denmark

Anritsu A/S

Kirkebjerg Allé 90, DK-2605 Brøndby, Denmark
Phone: +45-72112200
Fax: +45-72112210

● United Arab Emirates

Anritsu EMEA Ltd.

Dubai Liaison Office

P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suit 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

● Singapore

Anritsu Pte. Ltd.

10, Hoe Chiang Road, #07-01/02, Keppel Towers,
Singapore 089315
Phone: +65-6282-2400
Fax: +65-6282-2533

● P.R. China (Hong Kong)

Anritsu Company Ltd.

Suite 923, 9/F., Chinachem Golden Plaza, 77 Mody Road,
Tsimshatsui East, Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

● P.R. China (Beijing)

Anritsu Company Ltd.

Beijing Representative Office

Room 1515, Beijing Fortune Building,
No. 5, Dong-San-Huan Bei Road,
Chao-Yang District, Beijing 10004, P.R. China
Phone: +86-10-6590-9230
Fax: +86-10-6590-9235

● Korea

Anritsu Corporation, Ltd.

8F Hyunjuk Building, 832-41, Yeoksam Dong,
Kangnam-ku, Seoul, 135-080, Korea
Phone: +82-2-553-6603
Fax: +82-2-553-6604

● Australia

Anritsu Pty. Ltd.

Unit 21/270 Ferntree Gully Road, Notting Hill,
Victoria 3168, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

● Taiwan

Anritsu Company Inc.

7F, No. 316, Sec. 1, Neihu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

● India

Anritsu Corporation

India Liaison Office

Unit No. S-3, Second Floor, Esteem Red Cross Bhavan,
No. 26, Race Course Road, Bangalore 560 001, India
Phone: +91-80-32944707
Fax: +91-80-22356648

Please Contact: