Product Brochure

Anritsu

For MT8820C Radio Communication Analyzer

# MX882002C
CDMA2000 Measurement Software

# MX882006C
1xEV-DO Measurement Software

# MX882006C-011
1xEV-DO Rev. A Measurement Software


# Advanced High-speed Measurement Method and Batch Measurement Supporting the Manufacture of CDMA2000 Terminals

The MX882002C CDMA2000 Measurement Software is for measuring the Rx and Tx performance of the widespread, CDMA2000 1X (IS-2000) compliant, 3G mobile terminal 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 and Ethernet interface supports easy configuration of automated test systems for CDMA2000 1X terminal manufacturing, R&D, and application development.



## ■ CDMA2000 1X Measurement

| Tests | 3GPP2 C.S0011-C (Release C) | Test items |
|---|---|---|
| Receiver Tests | 3. 4. 1 | Demodulation of Forward Traffic Channel in Additive White Gaussian Noise (Test 1 to 12, 16 to 21, 25 to 30, and 34 to 39 for FCH & SCH) |
| | 3. 5. 1 | Receiver Sensitivity and Dynamic Range |
| Transmitter Tests | 4. 1 | Frequency Accuracy |
| | 4. 3. 5 | Code Domain Power |
| | 4. 4. 1 | Range of Open Loop Output Power (Expected Enhanced 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 (Expected Enhanced Access Channel) |
| | 4. 4. 6 | Minimum Controlled Output Power |
| | 4. 4. 9 | Code Channel to Reverse Pilot Channel Output Power Accuracy |
| | 4. 5. 3 | Occupied Bandwidth |

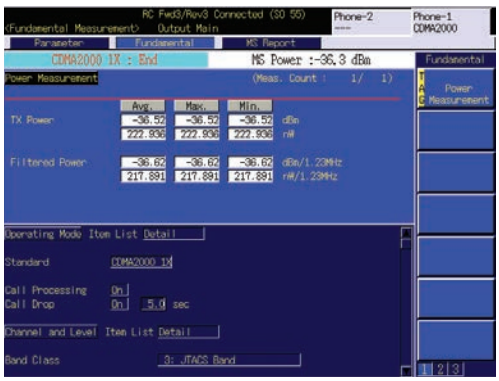
∗: Since Band Class 5 and Band Class 11 Forward Link and Reverse Link are separated by only 10 MHz, accurate Minimum Controlled Output Power measurement may not be possible if the call connection is cut for some reason.

# MX882002C CDMA2000 Measurement Software

## Transmitter Measurement

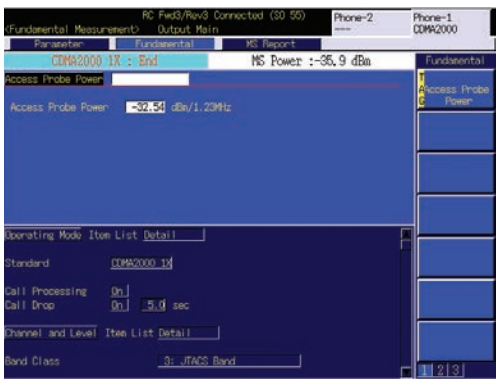
### Transmit Power

The CDMA2000 1X terminal transmit 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

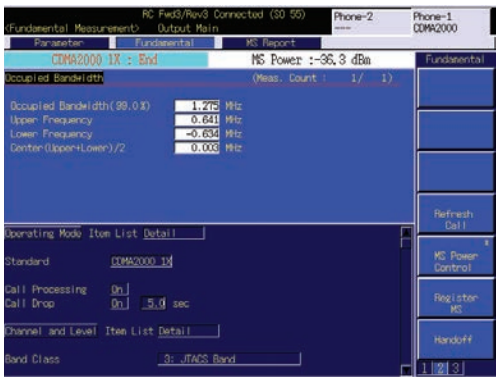
Frequency, frequency error (in kHz and ppm), ρ (waveform quality), τ (time error), error vector magnitude (EVM), peak vector error, phase error, magnitude error and origin offset are measured simultaneously.


### 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.

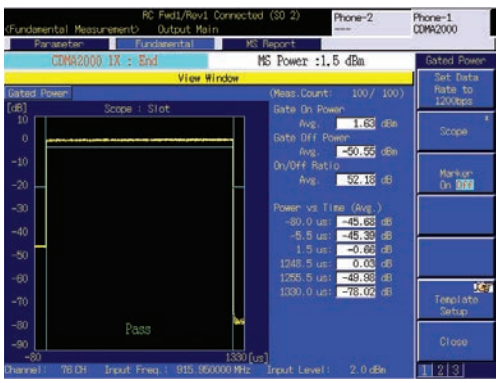
## Occupied Bandwidth

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.




## Gated Power

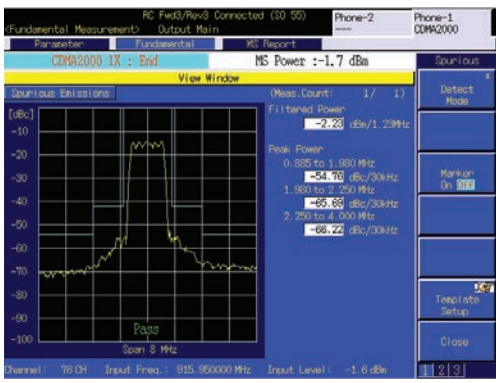
Gated Power is measured at RC1 or 2.
Gated On Power, Gated Off Power and the On/Off Ratio are measured simultaneously on screen.




## 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.


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

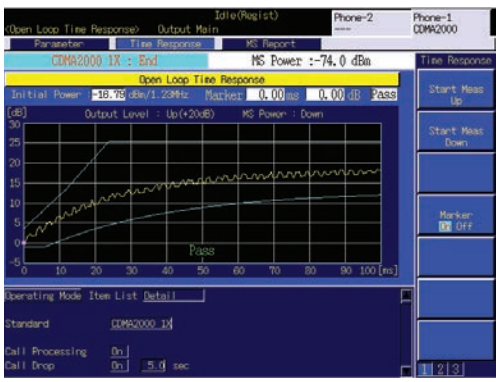


## Access Probe Power

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 1X 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

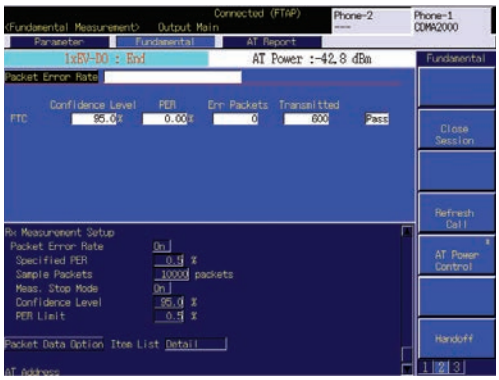
The Open Loop Time Response screen is used to measure the time response of the CDMA2000 1X terminal open loop power control. Changes in the mobile terminal transmit power are measured between 100 ms from the point where the power of the forward link signal power changed.




# Receiver Measurement

## Frame Error Rate

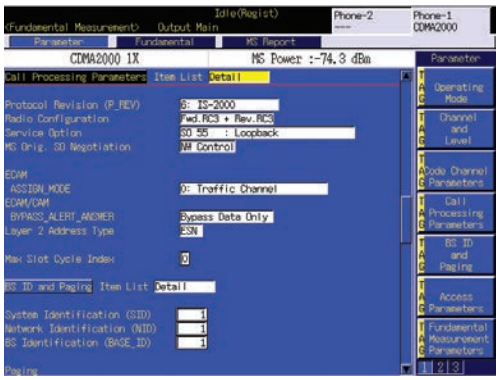
The Frame Error Rate (FER) and Pass/Fail evaluation can be performed in SO2, SO9, SO55 and SO32 (TDSO) to display the FER, error frame count, transmit frame count, confidence level and Pass/Fail results.



# Call Processing

## Connection Test

The Call Processing function supports connection tests, such as location registration, origination, termination, disconnection from network, and disconnection from 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.

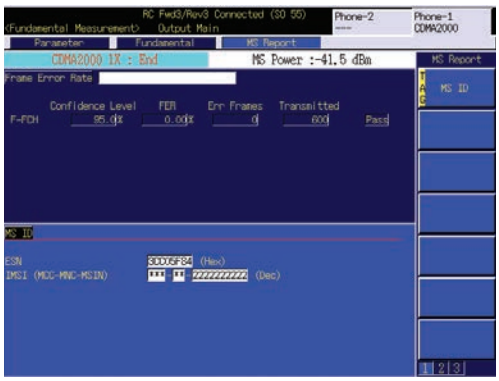



## Handoff Function

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.



# MX882002C-001 CDMA2000 Voice Codec

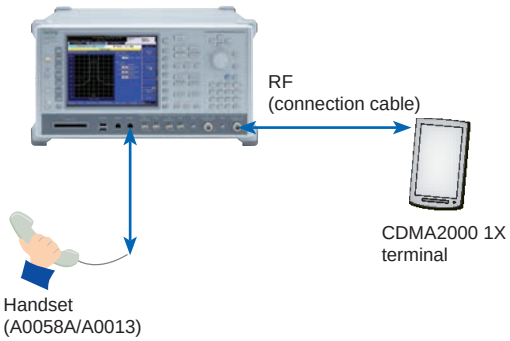
## Real-time Voice Encoding/Decoding Functions

The MX882002C-001 CDMA2000 Voice Codec supports real-time voice encoding and decoding in software, so end-to-end communication with terminals can be tested by installing this option and the MT8820C-011 Audio Board option. In addition, the audio signal input from an AF1 input connector of MT8820C and the audio signal output to an AF1 output connector of MT8820C.

∗ Audio Transmitter and Receiver Measurement does not support MX882002C-001

## End-to-End Communications Test

This supports the end-to-end communications test between an Anritsu handset (A0058A/A0013) connected to the RJ11 connector on the MT8820C and a CDMA2000 terminal.



# MX882002C-002 CDMA2000 External Packet Data

## Direct RF Connection Between CDMA2000 1X Terminal and Application Server

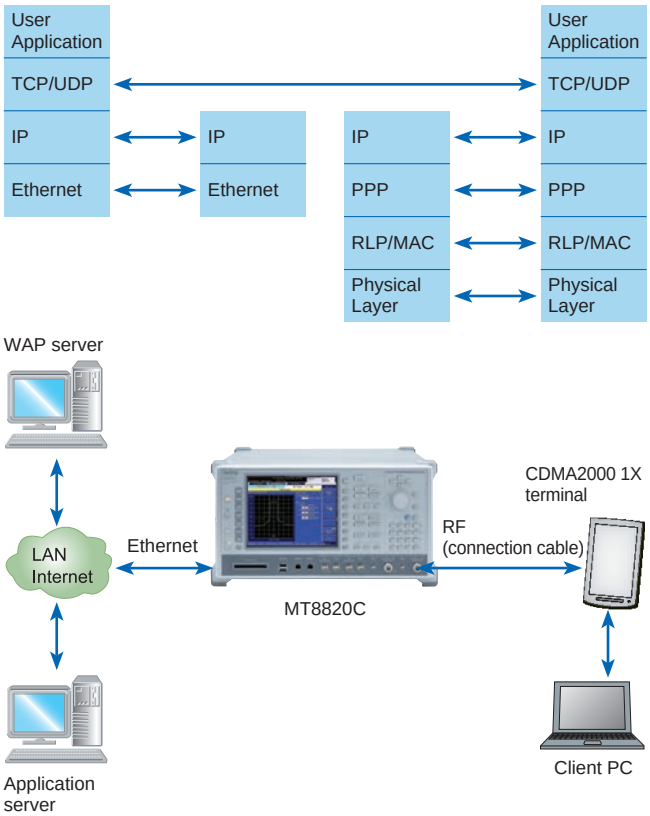
The MX882002C-002 CDMA2000 External Packet Data is an optional software application that adds CDMA2000 1X packet data communications to the MX882002C Measurement Software option. It supports transfer of packet data between a local or network application server and an Internet-enabled CDMA2000 1X terminal via an Ethernet connection to the MT8820C.
The following two packet data transfer modes are supported.

## Data Loopback Mode

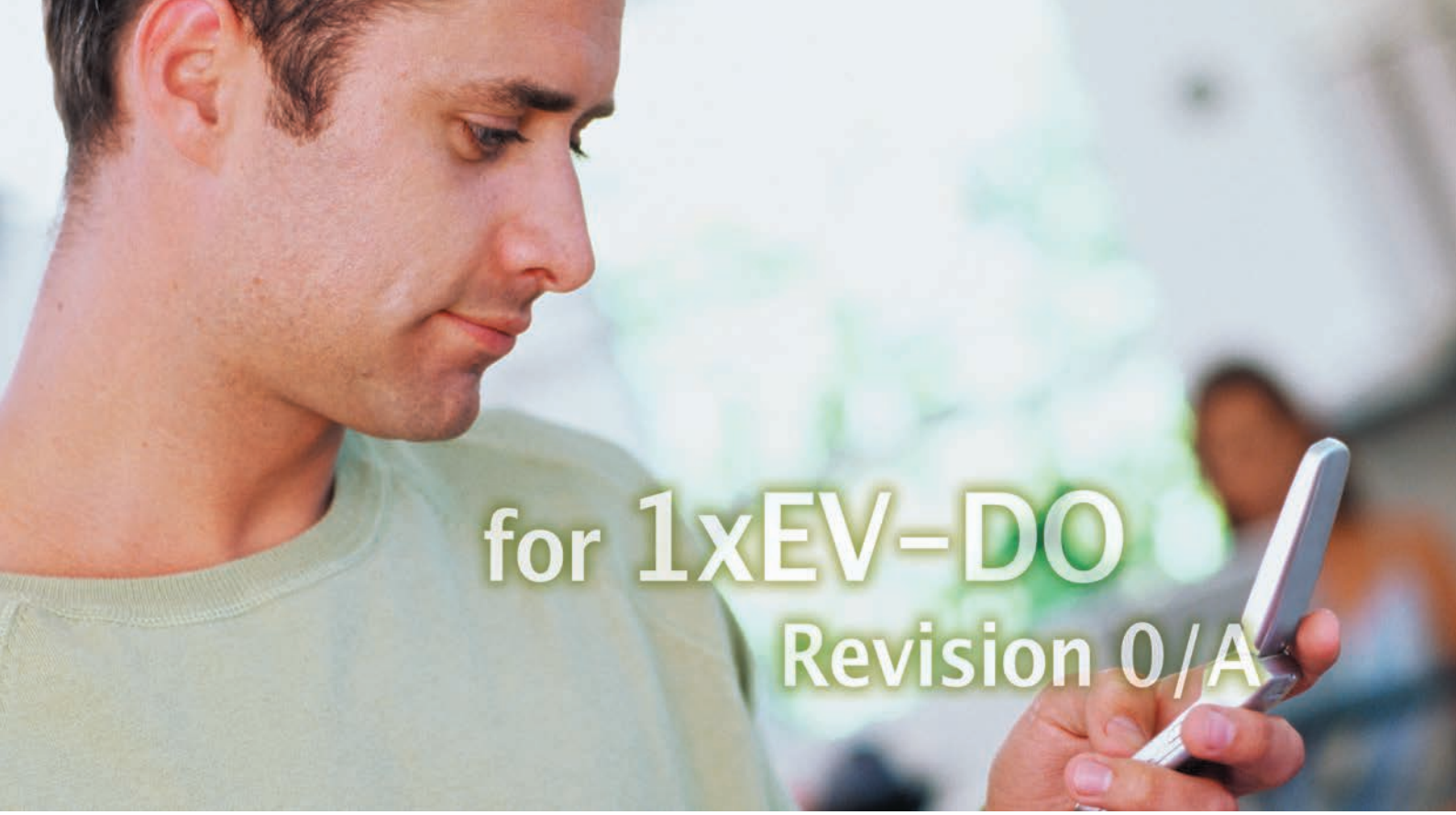
In this test mode, Radio Link Protocol (RLP) data is looped back to the RLP stack in the MT8820C and transmitted via forward link.

## 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 MT8820C 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.




**Example of IP Data Communications Mode**




# MX882006C 1xEV-DO Measurement Software

## Advanced High-speed Measurement Method and Batch Measurement Supporting the Manufacture of 1xEV-DO Revision 0 (IS-856-0) Terminals

The MX882006C 1xEV-DO Measurement Software* is for measuring the performance of mobile terminals conforming to the 1xEV-DO IS-856-0 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 Rev. 0 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 transmit frequency, modulation accuracy, transmit power, code domain power, and PER, is quick and easy.
The built-in GPIB and Ethernet interface supports easy configuration of automated test systems for 1xEV-DO Rev. 0 production lines and on-site maintenance.

*: Requires MT8820C-003, MT8820C-005 and MX882002C

### ■ Measurement Software and Protocol Revision

| Model | Protocol Revision |
|---|---|
| MX882006C | IS-856-0 (1xEV-DO Rev. 0) |
| MX882006C-002 | IS-856-0 (1xEV-DO Rev. 0) |
| MX882006C-011 | IS-856-A (1xEV-DO Rev. A) |

### ■ 1xEV-DO Measurement

| Tests | 3GPP2 C.S0033-A V1.0 | Test items |
|---|---|---|
| Receiver Tests | 3.1 | Frequency Coverage Requirement |
| | 3.3.1 | Receiver Sensitivity and Dynamic Range |
| Transmitter Tests | 4.1.1 | Frequency Coverage |
| | 4.1.2 | Frequency Accuracy |
| | 4.2.2 | Waveform Quality and Frequency Accuracy |
| | 4.3.2 | Time Response of Open Loop Power Control |
| | 4.3.4 | Maximum RF Output Power |
| | 4.3.5 | Minimum Controlled Output Power |
| | 4.3.7 | RRI Channel Output power |
| | 4.3.8.1 | DRC Channel Output power |
| | 4.3.8.2 | ACK Channel Output power |
| | 4.3.8.3 | Data Channel Output power (Test 1-5, 8-10) |
| | 4.4.3 | Occupied Bandwidth |

*: Since Band Class 5 and Band Class 11 Forward Link and Reverse Link are separated by only 10 MHz, accurate Minimum Controlled Output Power measurement may not be possible if the call connection is cut for some reason.

# Transmitter Measurement

## Code Domain Power

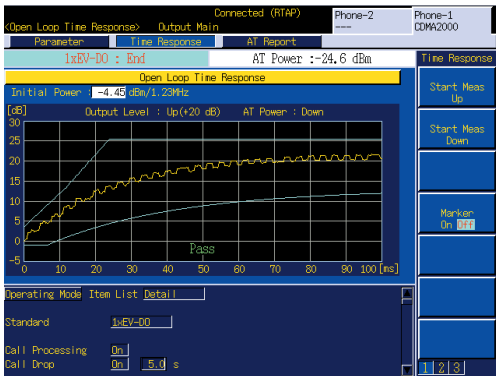
The 1xEV-DO Rev. 0 terminal code domain error is measured. The PICH (pilot-ch), RRI, DRC, ACK and Data powers are all displayed along with the maximum power and channel numbers of inactive channels on one screen.
In addition, Pass/Fail evaluation is performed to determine whether or not the inactive channel power satisfies the specifications.


## Access Probe Power

The first access probe from the 1xEV-DO Rev. 0 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 Rev. 0 terminal open loop power control. Changes in the terminal transmit power are measured between 100 ms from the point where the power of the forward link signal changed.

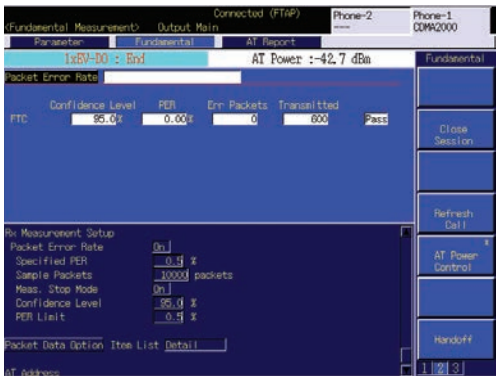



∗: Output power, Modulation analysis, Occupied bandwidth, etc., can be measured similarly to the MX882002C.

## Receiver Measurement

### Packet Error Rate

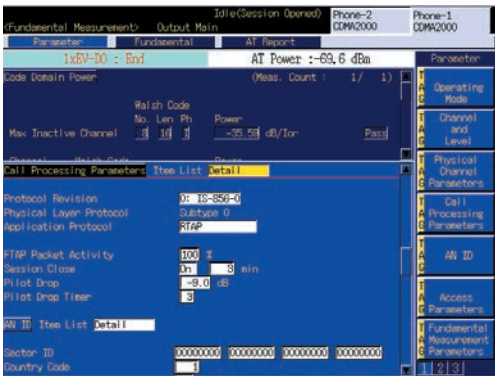
Packet Error Rate (PER) measurement and Pass/Fail evaluation can be performed in FTAP to display the PER, error packet count, transmission packet count, confidence level, and Pass/Fail results.




## Call Processing

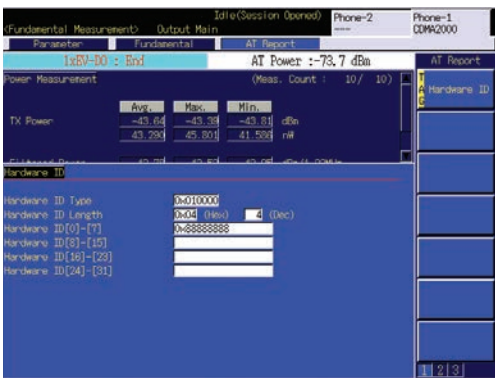
### Connection Test

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




### Mobile Terminal Report Monitor

This screen displays the periodically reported 1xEV-DO Rev. 0 terminal status.



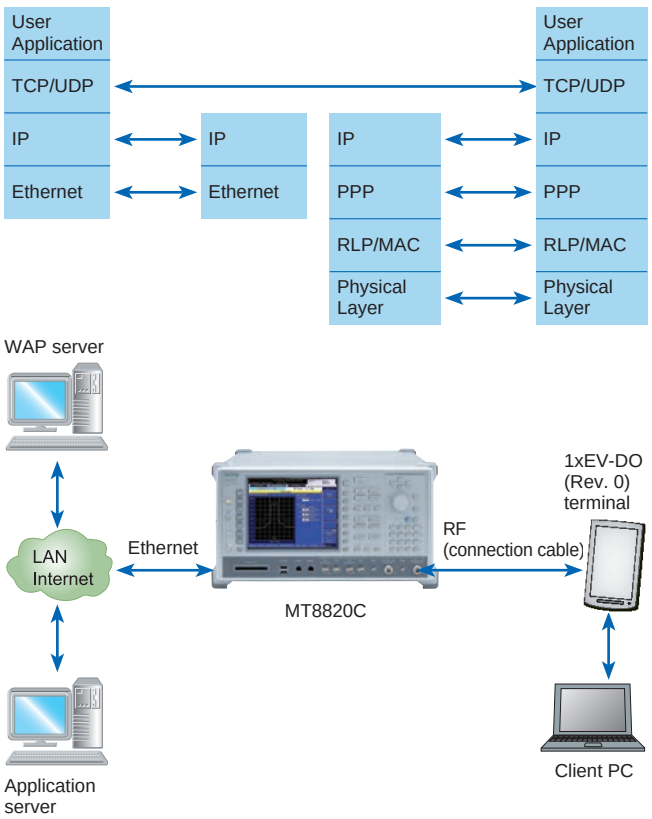
# MX882006C-002 1xEV-DO External Packet Data

## Direct RF Connection Between 1xEV-DO Terminal and Application Server

The MX882006C-002 1xEV-DO External Packet Data is an optional software application that adds 1xEV-DO external packet data communications to the MX882006C 1xEV-DO Measurement Software option.
It supports transfer of packet data between a local or network application server and an Internet-enabled CDMA2000 1xEV-DO (Rev. 0) terminal via an Ethernet connection to the MT8820C.
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 (Rev. 0) terminal in the native RF environment that is simulated by the base station simulator in the MT8820C hardware. This mode provides an IP network connection to a 1xEV-DO (Rev. 0) terminal and supports Default Packet Point to Point Protocol (PPP), Internet Protocol (IP), and direct Ethernet connection.




**Example of IP Data Communications Mode**

# MX882006C-011 1xEV-DO Rev. A Measurement Software

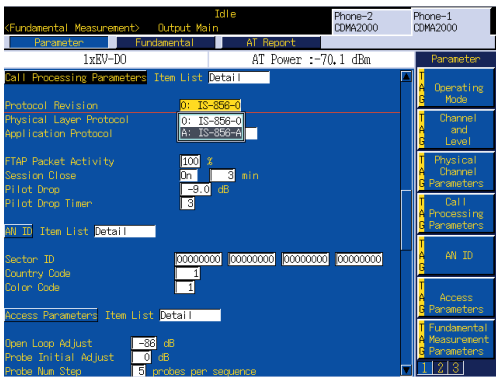
## Fastest & Batch Measurement For CDMA2000 1xEV-DO Rev. A (IS-856-A) Terminal Manufacturing

The MX882006C-011 1xEV-DO Rev. A Measurement Software* supports Rx and Tx measurements of CDMA2000 1xEV-DO (Rev. A) terminals. The MX882006C-011 supports the same measurement items as the MX882006C, which can send and receive signals supporting the Enhanced Test Application Protocol (ETAP) to perform RF tests of 1xEV-DO (Rev. A) terminals.

*: Requires MT8820C-003, MT8820C-005 and MX882006C

## 1xEV-DO Rev. A (IS-856-A) Parameters

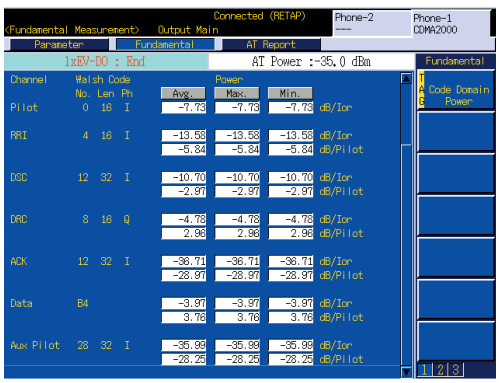
IS-856-A can be selected as the DUT signal for Rx and Tx measurements.




## Transmitter Measurement

### Code Domain

Code domain powers of 1xEV-DO Rev. A mobile terminals add DSC and AUX Pilot power. PICH, RRI, DRC, ACK, Data, DSC, Aux Pilot powers are batch displayed on-screen.

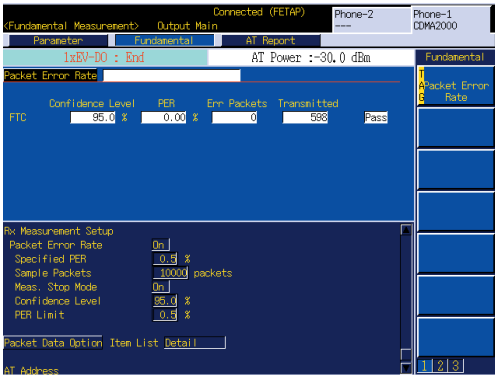



*: Measurements such as Tx power, modulation analysis, occupied bandwidth, etc., are the same as the MX882006C.

## Receiver Measurement

### Packet Error Rate

Go/No-Go evaluation of FETAP PER measurements is supported. PER, error-packet count, sent-packet count, Confidence Level, and Go/No-Go evaluation results are displayed.



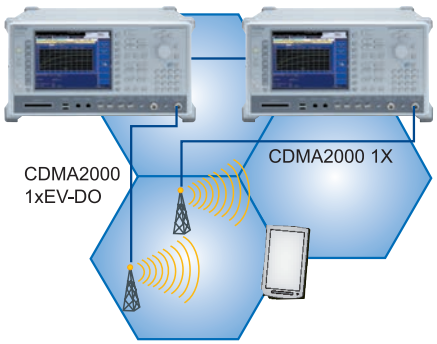

*: PER Measurement can test with FETAP. However, Anritsu approves Rx measurement in the Non-Call processing mode.

# CDMA2000 1X/1xEV-DO Synchronous Function

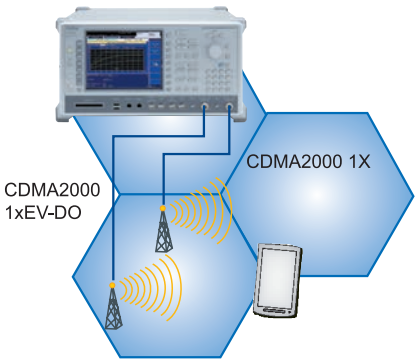
## For Functional Tests of CDMA2000 1X and 1xEV-DO

By using the MX882002C and MX882006C with two MT8820C units or one MT8820C unit with the Parallelphone*1 measurement option, the CDMA2000 1X and 1xEV-DO (Rev. 0) forward link signals can be output with synchronized system times, supporting function tests of terminals for both CDMA2000 1X and 1xEV-DO (Rev. 0) systems*2, *3

∗1: Parallelphone is the registered trademark of Anritsu Corporation
∗2: This function cannot be used when the MX882000C W-CDMA Measurement Software or MX882007C TD-SCDMA Measurement Software is loaded. Please perform unload, when MX882000C or MX882007C is loaded.
∗3: Installing the MX882006C-011 option supports the UE-connection test with ETAP only.




**Sample MT8820C connection: when MT8820C is two sets**




**Sample MT8820C connection: when MT8820C is one set (Parallelphone measurement correspondence)**

# Specifications

* Typical values are for reference only; specifications are not guaranteed.

**• MT8820C-003 CDMA2000 Measurement Hardware, MX882002C CDMA2000 Measurement Software**

| | |
|---|---|
| Amplitude measurement | Frequency: 300 MHz to 2.7 GHz<br>Input level: –65 to +35 dBm (Main)<br>Measurement accuracy: ±0.3 dB (typ.), ±0.5 dB (–25 to +35 dBm), ±0.7 dB (–55 to –25 dBm), ±0.9 dB (–65 to –55 dBm)<br>Filtered Power measurement, after Full cal, Input Level Setting, 10˚ to 40˚C<br>Linearity: ±0.2 dB (0 to –40 dB, ≥–55 dBm), ±0.4 dB (0 to –40 dB, ≥–65 dBm)<br>Filtered Power measurement, Input Level Setting for reference |
| Frequency/Modulation measurement | Frequency: 300 MHz to 2.7 GHz<br>Input level: –30 to +35 dBm<br>Carrier frequency accuracy: ± (Setting frequency x reference oscillator accuracy + 10 Hz)<br>Residual waveform quality: >0.999 |
| Occupied bandwidth | Input level: –10 to +35 dBm |
| Code domain power | Can be measured at Reverse RC3/RC4.<br>Input level: –30 to +35 dBm<br>Measurement accuracy: ±0.2 dB (code power: ≥–15 dBc), ±0.4 dB (code power: ≥–23 dBc) |
| RF signal generator | Output frequency: 300 MHz to 2.7 GHz (1 Hz step)<br>Channel level [Relative level to Ior (total level)]<br>Pilot channel: –30 to 0 dB, 0.25 dB step or off<br>FCH, DCCH, SCH: –30 to 0 dB, 0.1 dB step or off<br>SYNC, PCH: –30 to 0 dB, 0.25 dB step or off<br>OCNS: Auto, 0.01 dB step or off<br>QPCH (relative level to pilot channel): –5 to +2 dB (1 dB step) or off<br>Channel level accuracy: <±0.2 dB (typ.) (≥–20 dB)<br>PN offset: 0 to 511<br>Waveform quality: >0.99 (pilot only, AWGN off)<br>AWGN<br>AWGN level: –40 to +12 dB (relative level to CDMA signal) or off<br>Maximum CDMA signal output level at AWGN On: –28 dBm (Main output), –18 dBm (AUX output) |
| Error rate measurement | FER (Frame Error Rate) measurement: FER measurement with service option 2, 9, 55 and 32 (TDSO)<br>Display items: Confidence level, FER, Error frame count, Sample frame count |
| Call processing | Band class: BC 0 to 12, 14, 15, 18 to 20<br>Call control: Location registration, Origination, Termination, Disconnection from network, Disconnection from terminal<br>Radio configuration: F-RC1 + R-RC1, F-RC2 + R-RC2, F-RC3 + R-RC3, F-RC4 + R-RC3, F-RC5 + R-RC4<br>Service option: SO 1, 2, 3, 9, 32, 33, 55, 32768.<br>PCH Data Rate: Full<br>QPCH Data Rate: Full<br>Fwd. FCH Data Rate: Full, half, quarter, eighth (RC1 to 5)<br>Fwd. FCH Walsh Code: 10, 14, 26, 30, 42, 46, 58, 62<br>Fwd. DCCH Data Rate: Full (RC3, RC4, RC5)<br>Fwd. DCCH Walsh Code: 10, 14, 26, 30, 42, 46, 58, 62<br>Fwd. SCH: Max. 1 channel<br>Fwd. SCH data rate<br>RC3: 9.6, 19.2, 38.4, 76.8, 153.6 kbps<br>RC4: 9.6, 19.2, 38.4, 76.8, 153.6 kbps<br>RC5: 14.4, 28.8, 57.6, 115.2, 230.4 kbps<br>Access probe: Access channel<br>Rev. closed loop power control mode: Closed loop, All 1 (all down), Alternate, All 0 (all up)<br>Supported protocols: IS-95B, J-STD-008C, ARIB T-53, Korean PCS, IS-2000 (SR1)<br>Handoff: Universal Handoff, Band Class/Channel Handoff, Protocol Revision Handoff, RC/SO Handoff |

## • MT8820C-011 Audio Board, MX882002C-001 CDMA2000 Voice Codec

| | |
|---|---|
| Voice codec | EVRC (SO 3) |
| Codec level control | Encoder input gain: –3.00 to +3.00 dB, 0.01 dB step<br>Handset microphone volume: 0, 1, 2, 3, 4, 5<br>Handset speaker volume: 0, 2, 3, 4, 5 |
| AF output | Frequency range: 30 Hz to 10 kHz<br>Frequency accuracy: ± (Setting frequency × Reference oscillator accuracy + 0.1 Hz)<br>Level setting range: 0 to 5 Vpeak (AF output)<br>Level setting resolution: 1 mV (≤5 Vpeak), 100 µV (≤500 mVpeak), 10 µV (≤50 mVpeak)<br>Level accuracy: ±0.2 dB (≥10 mVpeak, ≥50 Hz), ±0.3 dB (≥10 mVpeak, <50 Hz)<br>Waveform distortion: ≤30 kHz bandwidth<br>≤–60 dB (≥500 mVpeak, ≤5 kHz), ≤–54 dB (≥70 mVpeak)<br>Output impedance: ≤1Ω<br>Max. Output current: 100 mA |
| AF input | Frequency range: 50 Hz to 10 kHz<br>Input voltage range: 1 mVpeak to 5 Vpeak (AF input)<br>Max. allowable Input voltage: 30 Vrms<br>Input impedance: 100kΩ |
| Frequency measurement | Accuracy: ± (Reference oscillator accuracy + 0.5 Hz) |
| Level measurement | Accuracy: ±0.2 dB (≥10 mVpeak, ≥50 Hz), ±0.4 dB (≥1 mVpeak, ≥1 kHz) |
| SINAD measurement | At frequency 1 kHz<br>≥60 dB (≥1000 mVpeak), ≥54 dB (>50 mVpeak), ≥46 dB (≥10 mVpeak) |
| Distortion rate measurement | At frequency 1 kHz<br>≤–60 dB (≥1000 mVpeak), ≤–54 dB (>50 mVpeak), ≤–46 dB (≥10 mVpeak) |

∗: Audio Transmitter and Receiver Measurement does not support MX882002C-001

## • MX882002C-002 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<br>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<br>RLP loopback: Loops back the traffic data of Reverse Link signal on RLP3 to the Mobile Station<br>PPP/IP: Transfers IP packet data between the Mobile Station and the server |

### • MT8820C-005 1xEV-DO Measurement Hardware, MX882006C 1xEV-DO Measurement Software

| | |
|---|---|
| Amplitude measurement | Dependent on the performance of MX882002C |
| Modulation analysis | Frequency: 300 MHz to 2.7 GHz<br>Input level: –30 to +35 dBm<br>Carrier frequency accuracy: (Setting frequency × Reference oscillator accuracy + 10 Hz)<br>Residual waveform quality: >0.999 |
| Occupied bandwidth | Dependent on the performance of MX882002C |
| Code domain power | Input level: –10 to +35 dBm<br>Measurement accuracy: ±0.2 dB (code power ≥–15 dBc), ±0.4 dB (code power ≥–23 dBc) |
| RF signal generator | Output frequency: 300 MHz to 2.7 GHz (1 Hz step)<br>Channel level: Pilot channel, MAC channel, Control channel, Traffic channel, All 0 dB (reference Ior)<br>PN offset: 0 to 511<br>Wave quality: >0.99 (pilot only, AWGN Off)<br>AWGN<br>AWGN level: –40 to +12 dB (relative to CDMA signal) or Off<br>Maximum output level of CDMA signal at AWGN on: –28 dBm (Main output)<br>–18 dBm (AUX output) |
| Error rate measurement | PER (Packet Error Rate) measurement: PER measurement with FTAP<br>Display items: PER, Confidence level, Sample packet count, Error packet count |
| Call processing | Band class: BC 0 to 12, 14, 15, 18 to 20<br>Call control: Open Session, Close Session, AT Origination, NW Origination, AT Release, NW Release, Hard Handoff, Softer Handoff<br>Rev. closed loop power control mode: Closed loop, Alternate, All 0 (all up), All 1 (all down)<br>Test application protocol: RTAP, FTAP, FTAP + RTAP |

### • MX882006C-002 1xEV-DO External Packet Data

| | |
|---|---|
| Application protocol packet data mode | Default Packet<br>PPP/IP (The mode to transfers IP packet data between 1xEV-DO Rev. 0 terminal and a server) |

### • MT8820C-005 1xEV-DO Measurement Software, MX882006C 1xEV-DO Measurement Software, MX882006C-011 1xEV-DO Rev. A Measurement Software

| | |
|---|---|
| Amplitude measurement | Dependent on the performance of MX882006C |
| Frequency/Modulation measurement | Dependent on the performance of MX882006C |
| Occupied bandwidth | Dependent on the performance of MX882006C |
| Code domain power | Dependent on the performance of MX882006C |
| PER | FETAP PER measurements<br>Display items: Confidence Level, PER, Error Packet count, Sample Packet count |
| RF signal generator | Output frequency: 300 MHz to 2.7 GHz, 1 Hz step<br>Channel: 0 dB for Pilot, MAC, Control and Traffic channels (Ior reference)<br>PN Offset: 0 to 511 can be set<br>Waveform Quality: (Pilot, at AWGN Off) >0.99<br>AWGN: Dependent on the performance of MX882006C |
| Call processing | Band class: BC 0 to 12, 14, 15, 18 to 20<br>Call processing: Open Session, Close Session, AT Origination, NW Origination, AT Release, NW Release, Hard Handoff, Softer Handoff<br>Rev. closed loop power control modes: Closed Loop, All 1 (All down), Alternate, All 0 (All up)<br>Physical layer protocol: Subtype 2<br>Enhanced test application protocol:<br>FETAP (Forward Enhanced Test Application Protocol), RETAP (Reverse Enhanced Test Application Protocol), FETAP + RETAP |

# Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

| Model/Order No. | Name |
|---|---|
| | **Main frame** |
| MT8820C | Radio Communication Analyzer |
| | **Standard accessories** |
| | Power Cord: 1 pc |
| | CF Card: 1 pc |
| | PC Card Adapter (For CF card): 1 pc |
| W3320AE | MT8820C Operation Manual (CD-ROM): 1 pc |
| | **Options** |
| MT8820C-017 | Extended RF Hardware*1 |
| MT8820C-001 | W-CDMA Measurement Hardware |
| MT8820C-002 | TDMA Measurement Hardware |
| MT8820C-003 | CDMA2000 Measurement Hardware |
| MT8820C-007 | TD-SCDMA Measurement Hardware |
| MT8820C-008 | LTE Measurement Hardware |
| MT8820C-011 | Audio Board |
| MT8820C-012 | Parallel Phone Measurement Hardware |
| MT8820C-018 | Extended RF 3.4 GHz to 3.8 GHz<br>(requires MT8820C-017, MT8820C-119, or MT8820C-120) |
| MT8820C-043 | CDMA2000 Time Offset CAL for GPS SG<br>(requires MT8820C-003 and MX882002C) |
| MT8820C-101 | W-CDMA Measurement Hardware Retrofit |
| MT8820C-102 | TDMA Measurement Hardware Retrofit |
| MT8820C-103 | CDMA2000 Measurement Hardware Retrofit |
| MT8820C-107 | TD-SCDMA Measurement Hardware Retrofit |
| MT8820C-108 | LTE Measurement Hardware Retrofit |
| MT8820C-111 | Audio Board Retrofit |
| MT8820C-112 | Parallel Phone Measurement Hardware Retrofit |
| MT8820C-119 | Extended RF Hardware for SPM Retrofit |
| MT8820C-120 | Extended RF Hardware for PPM Retrofit |
| MT8820C-143 | CDMA2000 Time Offset CAL for GPS SG Retrofit<br>(requires MT8820C-003 and MX882002C) |
| MT8820C-177 | TD-SCDMA Measurement Retrofit (requires MT8820C-001) |
| | **Software options** |
| MX882000C | W-CDMA Measurement Software<br>(requires MT8820C-001 and MX88205xC) |
| MX882000C-001 | W-CDMA Voice Codec (requires MT8820C-011 and MX882000C) |
| MX882000C-011 | HSDPA Measurement Software<br>(requires MT8820C-001, MX882000C, and MX882050C) |
| MX882000C-013 | HSDPA High Data Rate (requires MT8820C-001,<br>MX882000C, MX882000C-011, and MX882050C) |
| MX882000C-021 | HSUPA Measurement Software (requires MT8820C-001,<br>MX882000C, MX882000C-011, and MX882050C) |
| MX882000C-031 | HSPA Evolution Measurement Software*2<br>(requires MT8820C-001, MX882000C, MX882000C-011,<br>MX882000C-021, and MX882050C) |
| MX882000C-032 | DC-HSDPA Measurement Software*2, *3<br>(requires MT8820C-001 (2 sets), MT8820C-012, MX882000C,<br>MX882000C-011, MX882000C-021, MX882000C-031,<br>MX882010C, and MX882050C) |
| MX882000C-033 | DC-HSUPA Measurement Software*2, *4<br>(requires MT8820C-001 (2 sets), MT8820C-012, MX882000C,<br>MX882000C-011, MX882000C-021, MX882000C-031,<br>MX882000C-032, MX882010C, MX882050C) |
| MX882000C-034 | 4C-HSDPA Measurement Software*2, *4<br>(requires MT8820C-001 (2 sets), MT8820C-012, MX882000C,<br>MX882000C-011, MX882000C-021, MX882000C-031,<br>MX882000C-032, MX882010C, MX882050C) |
| MX882001C | GSM Measurement Software (requires MT8820C-002) |
| MX882001C-001 | GSM Voice Codec (requires MT8820C-011 and MX882001C) |
| MX882001C-002 | GSM External Packet Data (requires MX882001C) |
| MX882001C-011 | EGPRS Measurement Software (requires MX882001C) |
| MX882001C-041 | GSM High-speed Adjustment (requires MX882001C) |
| MX882002C | CDMA2000 Measurement Software (requires MT8820C-003) |
| MX882002C-001 | CDMA2000 Voice Codec (requires MT8820C-011 and MX882002C) |
| MX882002C-002 | CDMA2000 External Packet Data (requires MX882002C) |
| MX882005C | PHS Measurement Software (requires MT8820C-002) |
| MX882005C-011 | Advanced PHS Measurement Software (requires MX882005C) |
| MX882007C | TD-SCDMA Measurement Software<br>(requires MT8820C-001 and MT8820C-007) |
| MX882007C-001 | TD-SCDMA Voice Codec (requires MT8820C-011 and MX882007C) |
| MX882007C-003 | TD-SCDMA Video Phone Test (requires MX882007C) |
| MX882007C-011 | TD-SCDMA HSDPA Measurement Software*2<br>(requires MT8820C-001, MT8820C-007, and MX882007C) |
| MX882007C-012 | TD-SCDMA HSDPA Evolution Measurement Software*2<br>(requires MT8820C-001, MT8820C-007, MX882007C, MX882007C-011) |

| Model/Order No. | Name |
|---|---|
| MX882007C-021 | TD-SCDMA HSUPA Measurement Software*2<br>(requires MT8820C-001, MT8820C-007, MX882007C, MX882007C-011) |
| MX882010C | Parallel Phone Measurement Software*5<br>[requires MT8820C-012, the two same measurement hardware<br>(2 board/set) and one measurement software] |
| MX882012C | LTE FDD Measurement Software*2 (requires MT8820C-008) |
| MX882012C-006 | LTE FDD IP Data Transfer*2 (requires MX882012C) |
| MX882012C-011 | LTE FDD 2×2 MIMO DL*2, *6 (requires MT8820C-012 and MX882012C) |
| MX882012C-016 | LTE FDD CS Fallback to W-CDMA/GSM*7 (requires MX882012C) |
| MX882012C-017 | LTE FDD CS Fallback to CDMA2000*7 (requires MX882012C) |
| MX882012C-021 | LTE-Advanced FDD DL CA Measurement Software*2, *8<br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, and<br>MX882012C) |
| MX882012C-026 | LTE-Advanced FDD DL CA IP Data Transfer*9<br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C,<br>MX882012C, MX882012C-006, MX882012C-021) |
| MX882012C-031 | LTE-Advanced FDD DL CA 3CCs Measurement Software*2, *10<br>(requires MT8820C 2 sets.<br>One is required MT8820C-008 (2 sets), MT8820C-012,<br>MX882010C, MX882012C and MX882012C-021.<br>The other is required MT8820C-008, MX882012C.) |
| MX882013C | LTE TDD Measurement Software*2 (requires MT8820C-008) |
| MX882013C-006 | LTE TDD IP Data Transfer*2 (requires MX882013C) |
| MX882013C-011 | LTE TDD 2×2 MIMO DL*2, *6 (requires MT8820C-012 and MX882013C) |
| MX882013C-016 | LTE TDD CS Fallback to W-CDMA/GSM*11 (requires MX882013C) |
| MX882013C-017 | LTE FDD CS Fallback to CDMA2000*7 (requires MX882013C) |
| MX882013C-018 | LTE TDD CS Fallback to TD-SCDMA/GSM*11 (requires MX882013C) |
| MX882013C-021 | LTE-Advanced TDD DL CA Measurement Software*2, *8<br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, and<br>MX882013C) |
| MX882013C-026 | LTE-Advanced TDD DL CA IP Data Transfer*9<br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C,<br>MX882013C, MX882013C-006, MX882013C-021) |
| MX882013C-031 | LTE-Advanced TDD DL CA 3CCs Measurement Software*2, *10<br>(requires MT8820C 2 sets.<br>One is required MT8820C-008 (2 sets), MT8820C-012,<br>MX882010C, MX882013C, MX882013C-021.<br>The other is required MT8820C-008, MX882013C.) |
| MX882032C | CDMA2000 Measurement Software Lite*2 |
| MX882036C | 1xEV-DO Measurement Software Lite*2 |
| MX882036C-011 | 1xEV-DO Rev. A Measurement Software*2 |
| MX882042C | LTE FDD Measurement Software Lite*2 |
| MX882043C | LTE TDD Measurement Software Lite*2 |
| MX882050C | W-CDMA Call Processing Software*2, *12 (requires MX882000C) |
| MX882050C-002 | W-CDMA External Packet Data*2 (requires MX882050C) |
| MX882050C-003 | W-CDMA Video Phone Test*2 (requires MX882050C) |
| MX882050C-007 | W-CDMA Band XII, XIII, XIV, XIX, XX, XXI*2, *13 (requires MX882050C) |
| MX882050C-008 | W-CDMA Band XI*2 (requires MX882050C) |
| MX882050C-009 | W-CDMA Band IX*2 (requires MX882050C) |
| MX882050C-011 | HSDPA External Packet Data*2 (requires MX882000C-011) |
| MX882051C | W-CDMA Call Processing Software*2 (requires MX882000C) |
| MX882051C-002 | W-CDMA External Packet Data*2 (requires MX882051C) |
| MX882051C-003 | W-CDMA Video Phone Test*2 (requires MX882051C) |
| MX882070C | W-CDMA Ciphering Software*2 (requires MX882050C) |
| MX882071C | W-CDMA Ciphering Software*2 (requires MX882051C) |
| | **Warranty** |
| MT8820C-ES210 | 2 years Extended Warranty Service |
| MT8820C-ES310 | 3 years Extended Warranty Service |
| MT8820C-ES510 | 5 years Extended Warranty Service |
| | **Application parts** |
| P0035B | W-CDMA/GSM Test USIM |
| P0035B7 | W-CDMA/GSM Test USIM*14 |
| P0135A6 | Anritsu Test UICC GA (Nano UICC size)*15 |
| P0135A7 | Anritsu Test UICC GA (Micro UICC size)*15 |
| P0250A6 | Anritsu Test UICC GT (Nano UICC size)*15 |
| P0250A7 | Anritsu Test UICC GT (Micro UICC size)*15 |
| P0260A6 | Anritsu Test UICC GM (Nano UICC size)*15 |
| P0260A7 | Anritsu Test UICC GM (Micro UICC size)*15 |
| P0135B6 | Anritsu Test UICC GA (Nano UICC size)*15 |
| P0135B7 | Anritsu Test UICC GA (Micro UICC size)*15 |
| P0250B6 | Anritsu Test UICC GT (Nano UICC size)*15 |
| P0250B7 | Anritsu Test UICC GT (Micro UICC size)*15 |
| P0260B6 | Anritsu Test UICC GM (Nano UICC size)*15 |
| P0260B7 | Anritsu Test UICC GM (Micro UICC size)*15 |
| A0058A | Handset |

| Model/Order No. | Name |
|---|---|
| J1195A | PP2S Output Cable |
| J1249 | CDMA2000 Cable<br>[D-Sub (15 pin, P-type) · D-Sub (15 pin, P-type),<br>used in combination with J1267 (sold separately)]*16 |
| J1267 | CDMA2000 Cross Cable<br>[D-Sub (9 pin, P-type) · D-Sub (9 pin, P-type), reverse cable<br>used in combination with J1249 (sold separately)] |
| J1606A | Cable*16 |
| J0576B | Coaxial Cord, 1 m (N-P · 5D-2W · N-P) |
| J0576D | Coaxial Cord, 2 m (N-P · 5D-2W · N-P) |
| J0127A | Coaxial Cord, 1 m (BNC-P · RG58A/U · BNC-P) |
| J0127C | Coaxial Cord, 0.5 m (BNC-P · RG58A/U · BNC-P) |
| 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) |
| B0643A | Rack Mount Kit (MT8820C) |
| B0499 | Carrying Case (Hard type) (with protective cover and casters) |
| B0499B | Carrying Case (Hard type) (with protective cover, without casters) |

∗1: MT8820C-017 has been a standard option that MT8820C are shipped with until July 2012 (Simultaneous order is required MT8820C and MT8820C-017).
∗2: For terminal connectivity, contact your Anritsu sales representative.
∗3: MX882000C-032 is required a Parallelphone measurement configuration of W-CDMA HSPA Evolution.
For use MT8820C 2 units, contact your Anritsu sales representative.
∗4: MX882000C-033 (034) is required W-CDMA DC-HSDPA configuration.
∗5: The following measurement hardware supports the Parallelphone measurement option: MT8820C-001, MT8820C-002, MT8820C-003, MT8820C-007, MT8820C-008.
All the measurement hardware can be installed simultaneously.
∗6: MX882012C-011 is required MT8820C-012.
∗7: The MX882012C-016 (017) LTE FDD CS Fallback to W-CDMA/GSM (CDMA2000) requires a separate MT8820C with the W-CDMA/GSM (CDMA2000) configuration. Contact your Anritsu sales representative for the CS Fallback function test configuration.
∗8: MX882012C (12C)-021 is required a Parallelphone measurement configuration of LTE FDD (TDD).
For Use MT8820C 2 units, contact your Anritsu sales representative.
∗9: MX882012C (13C)-026 function test is required external server PCs (2 sets). LTE Advanced FDD (TDD) DL CA IP Data Transfer (2CCs, 2Layer) is required MT8820C LTE 2×2 MIMO DL configuration (2 sets) and external server PCs (2 sets).
∗10: One is required LTE FDD (TDD) ParallelPhone Configuration.
The other is required LTE FDD Single Phone Configuration.
For use MT8820C 3 units, contact your Anritsu sales representative.
A synchronized cable is required too.
∗11: The MX882013C-016 (018) LTE TDD CS Fallback to W-CDMA/GSM (TD-SCDMA/GSM) requires a separate MT8820C with the W-CDMA/GSM (TD-SCDMA/GSM) configuration. Contact your Anritsu sales representative for the CS Fallback function test configuration.
∗12: These options preinstall the integrity protection function.
∗13: MX882050C-007 supports W-CDMA Band 12, 13, 14, 19, 20, 21.
∗14: The P0035B7 MicroSIM is a cut-down P0035B W-CDMA/GSM Test USIM. The P0035B7 Test USIM is a microSIM. It CANNOT be used in a normal size USIM card slot. A commercial SIM adapter CANNOT be used with the P0035B7. If used, it may jam and break in the terminal.
∗15: Refer to the P0135Ax/P0250Ax/P0260Ax leaflet for details.
∗16: J1267 (J1606A) cable can use for LTE-Advanced DLCA synchronized cable. Contact your Anritsu sales representative for details.

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Specifications are subject to change without notice.


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