

For MT8820C Radio Communication Analyzer

# MX882000C W-CDMA Measurement Software

|               |  |
|---------------|--|
| MX882000C-011 | HSDPA<br>Measurement Software          |
| MX882000C-021 | HSUPA<br>Measurement Software          |
| MX882000C-031 | HSPA Evolution<br>Measurement Software |
| MX882000C-032 | DC-HSDPA<br>Measurement Software       |
| MX882000C-033 | DC-HSUPA<br>Measurement Software       |
| MX882000C-034 | 4C-HSDPA<br>Measurement Software       |





# for W-CDMA/HSPA/ HSPA Evolution/ DC-HSPA/4C-HSDPA

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

The MX882000C W-CDMA Measurement Software is designed for measuring the transmitter and receiver of 3G W-CDMA terminals. When the MX882000C W-CDMA Measurement Software and MX882001C GSM Measurement Software are installed in the MT8820C Radio Communication Analyzer main frame, the Tx and Rx characteristics of dual-mode W-CDMA/GSM terminals, which are becoming very popular worldwide, can be evaluated using a single MT8820C unit.\*

Installing the MX88207xC W-CDMA Ciphering Software\* supports testing of coded voice communications between the MT8820C and W-CDMA terminal.

And manufacturing and inspection test times have been dramatically cut by incorporating advanced DSP and parallel measurement technologies.

Furthermore, several measurement items can be selected freely for batch measurement, and the number of measurements for each measurement item can be configured separately.

The one-touch operation supports easy and quick measurement of Tx and Rx characteristics, including transmit frequency, modulation accuracy, transmit power, spectrum emission mask, adjacent channel leakage power ratio, occupied bandwidth, and BER.

The built-in GPIB and Ethernet interface enables the MT8820C to be integrated into automated test systems for after-sales maintenance, as well as into automated production lines.

\*: Require MX88205xC W-CDMA Call Processing Software.

| Tests                | 3GPP<br>TS 34.121 | Test Items                                      |
|----------------------|-------------------|---|
| Transmitter<br>Tests | 5.2               | Maximum Output Power                            |
|                      | 5.3               | Frequency Error                                 |
|                      | 5.4.1             | Open Loop Power Control in the Uplink           |
|                      | 5.4.2             | Inner Loop Power Control in the Uplink          |
|                      | 5.4.3             | Minimum Output Power                            |
|                      | 5.4.4             | Out-of-synchronisation Handling of Output Power |
|                      | 5.5               | Transmit ON/OFF Power                           |
|                      | 5.6               | Change of TFC                                   |
|                      | 5.7               | Power setting in uplink compressed mode         |
|                      | 5.8               | Occupied Bandwidth (OBW)                        |
|                      | 5.9               | Spectrum Emission Mask                          |
|                      | 5.10              | Adjacent Channel Leakage Power Ratio (ACLR)     |
|                      | 5.13.1            | Error Vector Magnitude (EVM)                    |
|                      | 5.13.2            | Peak Code Domain Error (Only a single code)     |
|                      | 5.13.3            | UE Phase Discontinuity                          |
|                      | 5.13.4            | PRACH Preamble Quality                          |
| Receiver<br>Tests    | 6.2               | Reference Sensitivity Level                     |
|                      | 6.3               | Maximum Input Level                             |
| Performance<br>Test  | 7.2               | Demodulation in Static Propagation Conditions   |

# MX882000C W-CDMA Measurement Software

## Transmitter Measurement

### Transmit Power

The transmit power of the W-CDMA terminal can be measured when controlled to the maximum, minimum, and any other level. When two or more measurements are made, the maximum, average, and minimum results are displayed, supporting evaluation of the transmit power distribution. This functionality is also supported for other measurements.



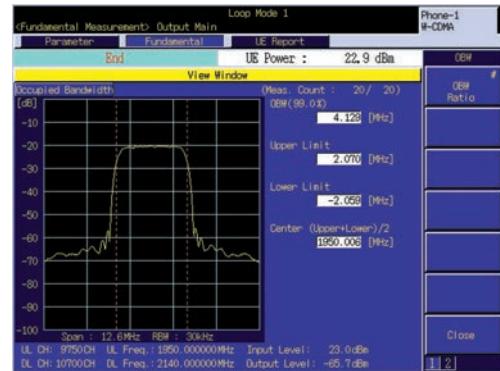
### Frequency Error

The frequency error of the W-CDMA terminal can be measured simultaneously as absolute error (kHz) and relative error (ppm).



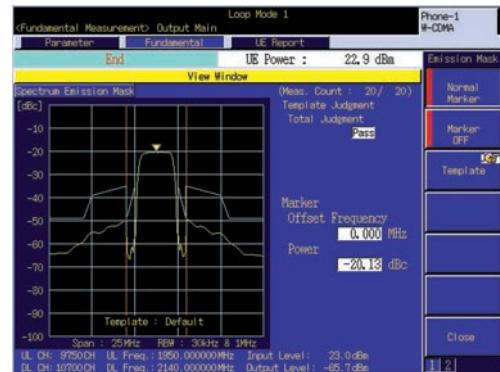
## Occupied Bandwidth

The occupied bandwidth of the W-CDMA terminal can be measured.



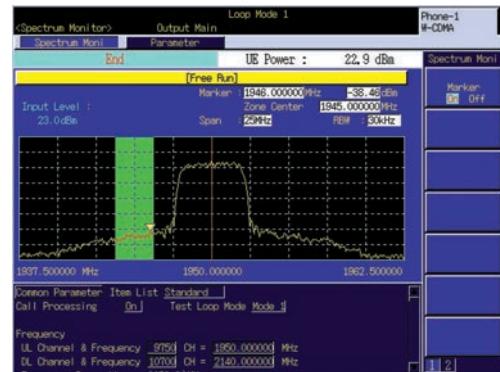
## Spectrum Emission Mask

This support Pass/Fail testing of W-CDMA terminal spectrum emissions by checking whether the frequency components within  $\pm 12.5$  MHz of the center frequency are within the limits of the power frequency template.



## Spectrum Monitor

The spectrum of the W-CDMA terminal can be checked within the range of  $\pm 2.5$  MHz and  $\pm 12.5$  MHz of the carrier frequency. The peak spectrum in the zone can be detected by using the zone markers.



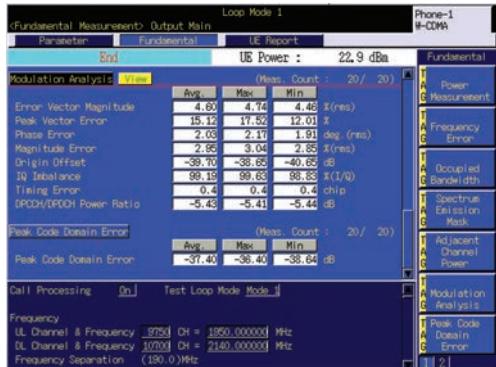
## Adjacent Channel Leakage Power Ratio

The adjacent channel leakage power ratio of the W-CDMA terminal can be measured easily, and the advanced measurement architecture supports faster power measurement at points  $\pm 5$  MHz and  $\pm 10$  MHz from the center frequency.

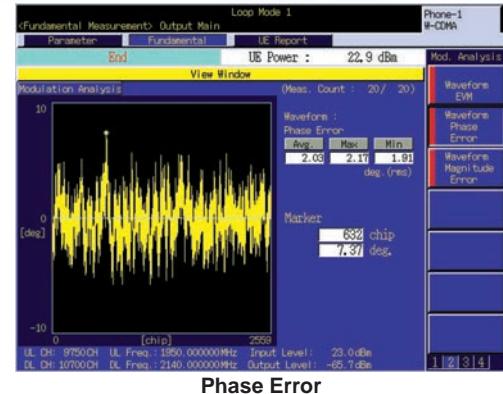
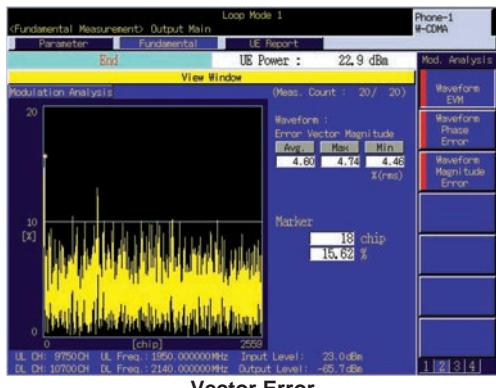


## Modulation Analysis

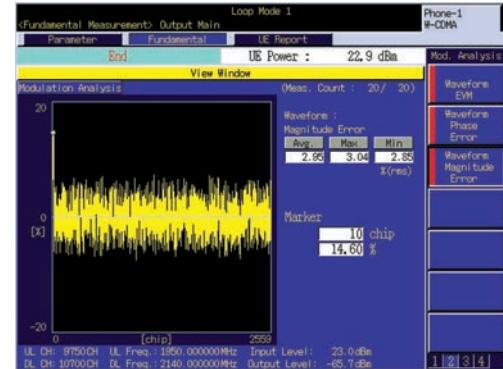
The modulation accuracy of the W-CDMA terminal can be measured. In addition to the 3GPP-compliant error vector magnitude (EVM), the phase error, amplitude error, origin offset, I/Q level ratio, and peak code domain error can also be measured.



The vector error magnitude, phase error, and amplitude error at each chip point can be displayed as a waveform, which is very useful for R&D, repair and maintenance.



Phase Error

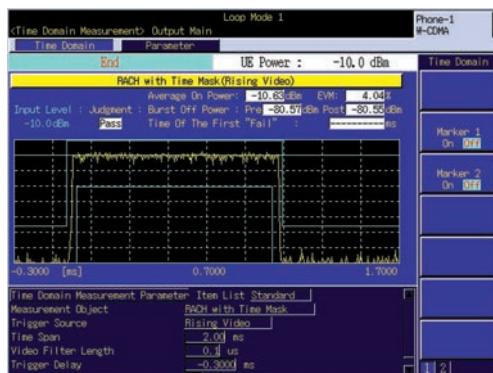


Amplitude Error

## Open Loop Power Control

The transmit power for the RACH\* preamble of the W-CDMA terminal is determined by the downlink RF signal power and RACH-related call processing parameters. The transmit power and template mask for the RACH preamble can be measured simultaneously in the time domain.

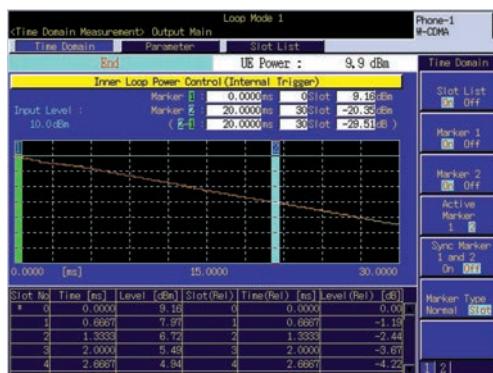
\*: Random Access Channel



## Inner Loop Power Control

Any specified TPC (Transmission Power Control) bits can be sent to the W-CDMA terminal.

The transmit power response of the W-CDMA terminal to power control can be measured in the time domain, and the transmit power for up to 1515 slots can be measured quickly as a batch.

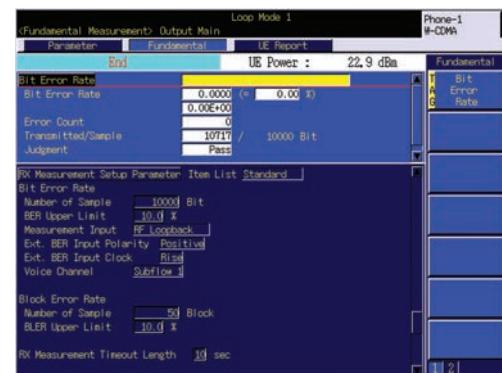


## Receiver Measurement

## Bit Error Rate (BER)

The bit error rate can be measured using the 3GPP-compliant loopback test mode.

In addition, feeding the demodulated data and clock signals from the W-CDMA terminal directly to the MT8820C supports bit error rate measurement. Both PN9 and PN15 can be set as the downlink RF signal data pattern.

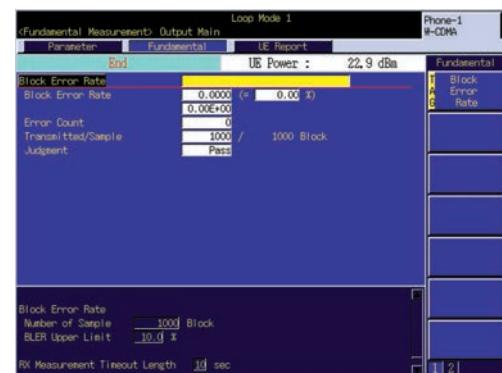


## Performance Test

## Block Error Rate (BLER)

The block error rate can be measured using test loop mode 2, supporting testing of DCH\* demodulation in accordance with section 7.2.1 of the TS 34.121 3GPP standards.

\*: Dedicated Channel



## Downlink RF Signal Generator Functionality

The relative level of each of the CPICH\*1, P-CCPCH\*2, SCH\*3, PICH\*4, DPCH\*5, S-CCPCH\*6, and AICH\*7 code channels can be set within the range of -30 to 0 dB. In addition, OCNS\*8 and AWGN\*9 can also be provided, supporting generation of any downlink modulation signal required for Tx and Rx tests.

The RF output level can be set within the range of -140 to -10 dBm (MAIN I/O connectors) in 0.1 dB steps.

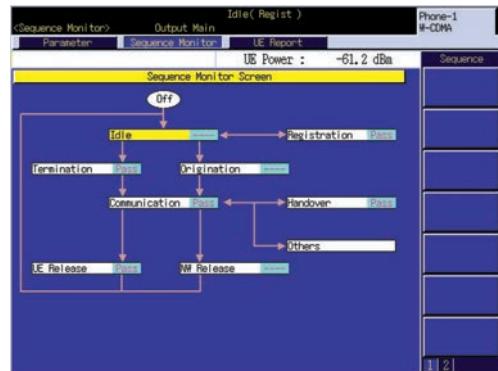
- \*1: Common Pilot Channel
- \*2: Primary Common Control Physical Channel
- \*3: Synchronization Channel
- \*4: Paging Indicator Channel
- \*5: Dedicated Physical Channel
- \*6: Secondary Common Control Physical Channel
- \*7: Acquisition Indication Channel
- \*8: Orthogonal Channel Noise Simulator
- \*9: Additive White Gaussian Noise



## Call Processing

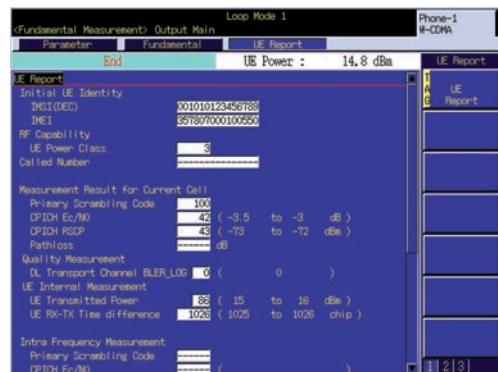
### Connection Test

Various connection tests, such as registration, origination, termination, handover, terminal disconnect and network disconnect, can be tested using the call processing functionality. Moreover, voice from the W-CDMA terminal can be echoed back while calling call to test simple voice communications.



## Mobile Terminal Report Monitor

The W-CDMA terminal transmit power and power class can be checked using this function.



# Higher Productivity

## Reducing Test Time for W-CDMA/GSM Dual-mode Terminals

### Intersystem Handover Control

Both the W-CDMA and GSM Tx and Rx characteristics of dual-mode W-CDMA/GSM terminals can be measured and voice handover from W-CDMA to GSM can be tested using the intersystem handover function, because the MT8820C application software switches quickly while the dual-mode terminal is handing over.



W-CDMA Measurement (Test loop mode or Voice communications)

High-speed system change from W-CDMA to GSM



GSM Measurement (Loopback mode or Voice communications)

# MX882050C-007/008/009

## W-CDMA Band XII, XIII, XIV, XIX, XX, XXI, XI, IX

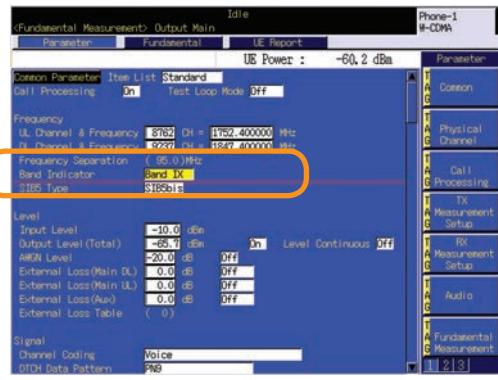
### Supports W-CDMA Band XII, XIII, XIV, XIX, XX, XXI, XI, IX

The MX882050C-007 W-CDMA Band XII, XIII, XIV, XIX, XX, XXI option supports 3GPP Bands XII, XIII, XIV, XIX, XX, and XXI (700 MHz, 800 MHz, and 1.5 GHz) in the call processing mode.

The MX882050C-008 W-CDMA Band XI option supports 3GPP Band XI (1.5 GHz) in the call processing mode.

Moreover, the MX882050C-009 W-CDMA Band IX option supports 3GPP Band IX (1.7 GHz) in the call processing mode.

Band IX can be selected at Band Indicator, and SIB5 and SIB5bis can be selected at SIB5 Type.



MX882050C-009 W-CDMA Band IX

# MX882000C-001 W-CDMA Voice Codec

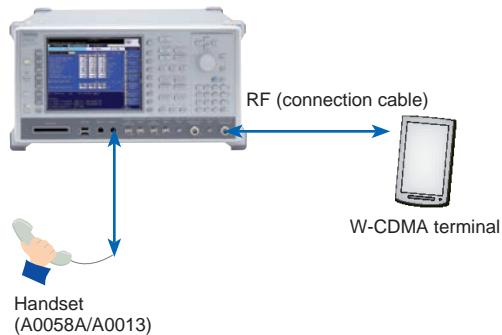
## Real-time Voice Encoding/Decoding and Audio Measurement Functions

The MX882000C-001 W-CDMA 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 transmitter and receiver can be tested while calling.

### End-to-End Communications Test

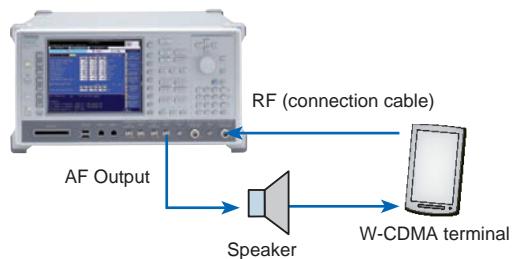
This supports the end-to-end communications test between an Anritsu handset (A0058A/A0013) connected to the RJ11 connector on the MT8820C and a W-CDMA terminal.

This option supports voice tests by dividing Tx and Rx paths.



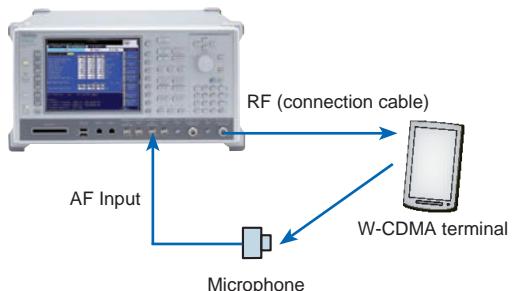
### Audio Transmitter Measurement

The tone signal from the MT8820C AF Output connector is supplied to the microphone of the W-CDMA terminal and the audio transmitter characteristics of the W-CDMA terminal can be measured using the MT8820C to demodulate the uplink RF signal and measure the level, frequency, and distortion of demodulated tone signal.



### Audio Receiver Measurement

The tone signal demodulated by the W-CDMA terminal is supplied to the MT8820C AF Input connector and the audio receiver characteristics of the W-CDMA terminal can be measured by using the MT8820C to measure the level, frequency, and distortion of the tone signal at the AF Input.



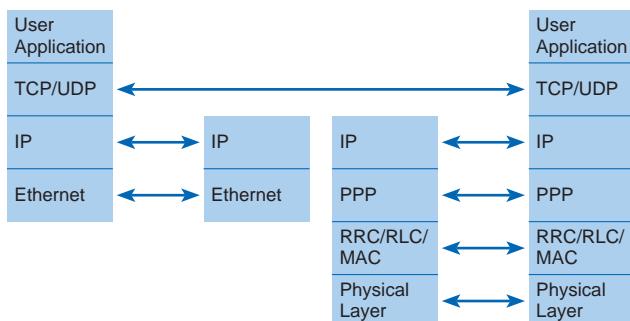
# MX882050C-002, MX882051C-002 W-CDMA External Packet Data

## Packet Communication Data Transfer Test

The MX88205x-C-002 W-CDMA External Packet Data option supports data transfer to/from external equipment via the Ethernet port. End-to-end Ping interconnect test between an application server connected to the MT8820C and the W-CDMA terminal or client PC connected to the W-CDMA terminal can be tested using the MX882050C-002 and MX882051C-002.

## External PPP Packet Test

The MT8820C with PPP server terminates PPP packets from the W-CDMA terminal and sends IP packets to the application server via the Ethernet port. It also converts IP packets from the application server to PPP packets and sends them to the W-CDMA terminal.



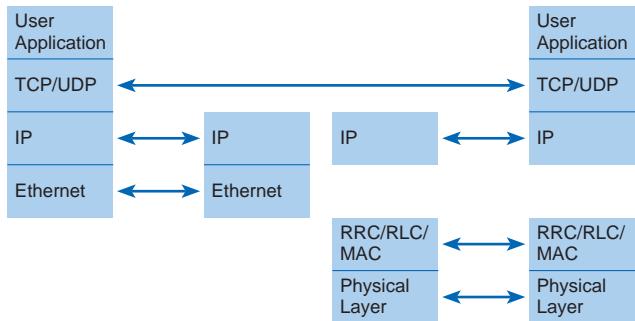
## Protocol Stack for External PPP Packet Test



## Sample MT8820C Connection



The MT8820C sends IP packets from the W-CDMA terminal to the application server. It also sends IP packets from the application server to the W-CDMA terminal.



## Protocol Stack for External IP Packet Test



## Sample MT8820C Connection

# MX882050C-003

# MX882051C-003

## W-CDMA Video Phone Test

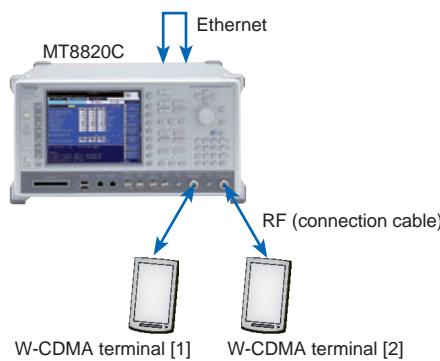
### End-to-End Video Phone Test

End-to-end video communication via the Ethernet port in the rear panel of the MT8820C can be tested using the MX882050C-003 and MX882051C-003 W-CDMA Video Phone Test. End-to-end video communication with a single MT8820C can be tested by installing this software option and the Parallel Phone Measurement Hardware.

#### End-to-End Test

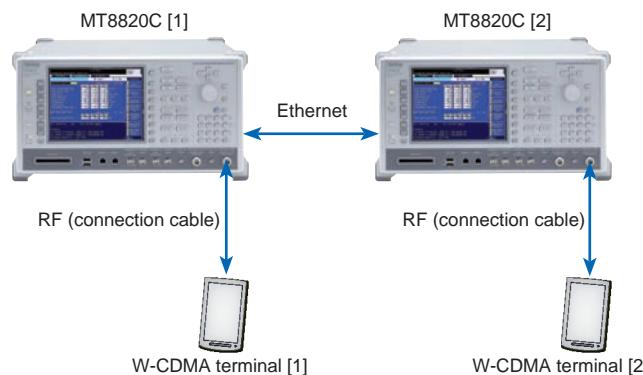
##### End-to-end Video Communication Test with Single MT8820C Configured with Parallel Phone Measurement Hardware

End-to-end video communications between W-CDMA terminals can be tested by originating a call from the W-CDMA terminal connected to Phone2 (or Phone1) while holding Phone1 (or Phone2) ready to receive a call using Start Call.



##### End-to-end Video Communication Test using Two MT8820C Units

End-to-end video communication between W-CDMA terminals can be tested by originating a call from the W-CDMA terminal connected to the MT8820C Unit 2 (or MT8820C Unit 1) while holding the MT8820C Unit 1 (or MT8820C Unit 2) ready to receive a call using Start Call.



# MX882000C-011

## HSDPA Measurement Software

### Utilizing an Advanced High-speed Measuring Method and Offering Batch Measurements to Support HSDPA Terminal Production

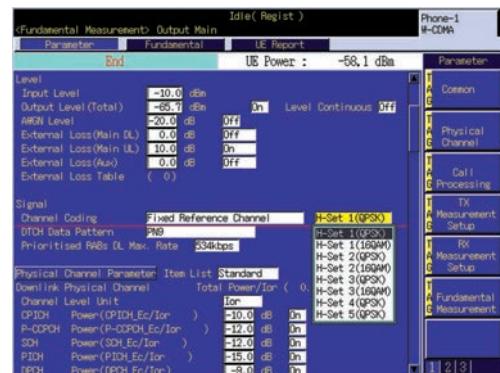
The MX882000C-011 HSDPA Measurement Software supports measurement of Tx and Rx characteristics of HSDPA terminals. It can generate the FRC (Fixed Reference Channel) signals used for testing HSDPA terminals with HS-DSCH category 1 to 6, 11, and 12 (3.6 Mbps).

| Tests             | 3GPP TS 34.121 | Test items   |
|-------------------|----------------|--|
| Transmitter Tests | 5.2A           | Maximum Output Power with HS-DPCCH (Release 5 Only)                |
|                   | 5.2AA          | Maximum Output Power with HS-DPCCH (Release 6 and later)           |
|                   | 5.2C           | UE relative code domain power accuracy                             |
|                   | 5.7A           | HS-DPCCH power control   |
|                   | 5.9A           | Spectrum Emission Mask with HS-DPCCH                               |
|                   | 5.10A          | Adjacent Channel Leakage Power Ratio (ACLR) with HS-DPCCH          |
|                   | 5.13.1A        | Error Vector Magnitude (EVM) with HS-DPCCH                         |
|                   | 5.13.1AA       | Error Vector Magnitude (EVM) and phase discontinuity with HS-DPCCH |
|                   | 5.13.2A        | Relative Code Domain Error with HS-DPCCH (Only a single code)      |
|                   | 6.3A           | Maximum Input Level with HS-PDSCH Reception (16QAM)                |
| Receiver Tests    |                |  |

#### HSDPA FRC Signals

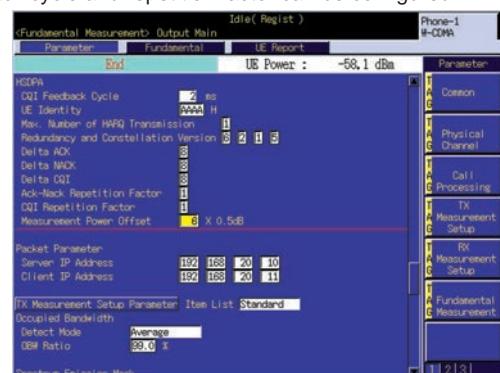
##### HSDPA FRC Signal

FRC H-Set 1 to 5 can be set as test signal to measure Tx and Rx characteristics of HSDPA terminals, and both QPSK and 16QAM modulation types are supported too.



#### Parameters for HSDPA Measurement

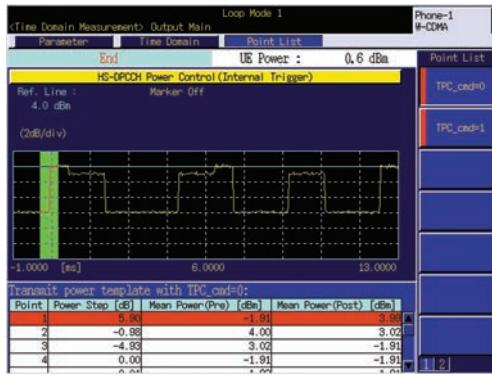
The various for HSDPA measurement parameters, such as CQI feedback cycle and repetition factor can be configured.



## Transmitter Measurement

### HS-DPCCH Power Control, Modulation Analysis, Code Domain Power

At measurement in the time domain, the power step at the HS-DPCCH slot boundary, modulation, and code domain power are measured.



HS-DPCCH Power Control

### Transmit Power, Spectrum Emission Mask, Adjacent Channel Leakage Power Ratio

The transmit power, spectrum emission mask and adjacent channel leakage power ratio of the HS-DPCCH transmission slot are measured.



## Receiver Measurement

### HSDPA Throughput

The HSDPA throughput can be measured by counting the number of ACK blocks from the HSDPA terminal.



### CQI Measurement

Statistical analysis can be performed on CQI values reported by the HSDPA terminal. The maximum, minimum, average, and median values can also be displayed.



# MX882000C-013

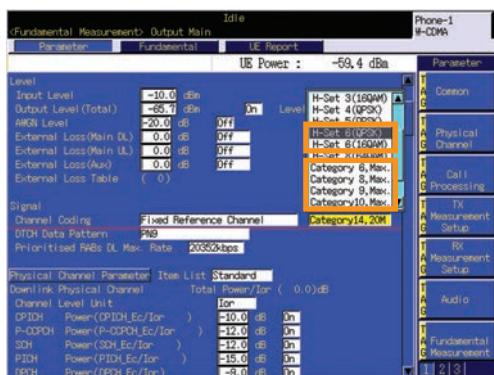
## HSDPA High Data Rate

Supports following signals for HSDPA throughput measurement.

| Parameter (Channel Coding) | Maximum data rate (Prioritized RABs DL Max Rate) | Explanation   |
|----------------------------|--|---|
| H-Set 6 (QPSK)             | 3219 kbps  | 3GPP-defined signal to test throughput of HSDPA terminal for HS-DSCH categories 7 and 8 (7.2 Mbps class) (QPSK modulation)  |
| H-Set 6 (16QAM)            | 4689 kbps  | 3GPP-defined signal to test throughput of HSDPA terminal for HS-DSCH categories 7 and 8 (7.2 Mbps class) (16QAM modulation) |
| Category 6, Max.           | 3649 kbps  | Signal to test throughput of HSDPA terminal for HS-DSCH category 6 (3.6 Mbps class) with maximum data rate                  |
| Category 8, Max.           | 7205.5 kbps                                      | Signal to test throughput of HSDPA terminal for HS-DSCH category 8 (7.2 Mbps class) with maximum data rate                  |
| Category 9, Max.           | 1012.5 kbps                                      | Signal to test throughput of HSDPA terminal for HS-DSCH category 9 (10 Mbps class) with maximum data rate                   |
| Category 10, Max.          | 13976 kbps                                       | Signal to test throughput of HSDPA terminal for HS-DSCH category 10 (14 Mbps class) with maximum data rate                  |

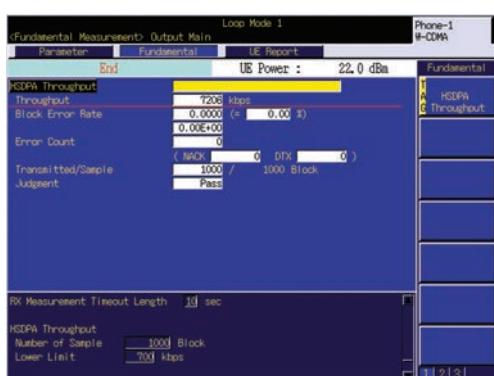
### Test Signal Parameter

FRC H-Set 6 (QPSK/16QAM), Category 6, Max., Category 8, Max., Category 9, Max., Category 10, Max. test signals can be selected for HSDPA throughput measurement.



### HSDPA High Data Rate Throughput Measurement

ACKs sent from the HSDPA terminal are counted and the throughput is measured.



Ex. Category 8, Max.

# MX882050C-011

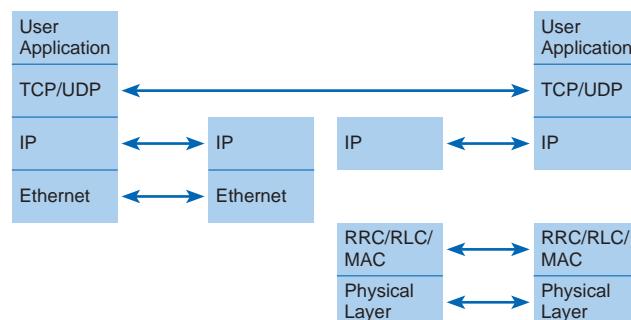
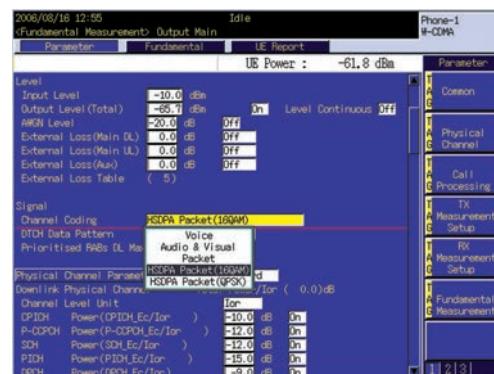
## HSDPA External Packet Data

### Packet Communications Data Transfer Test

The MX882050C-011 HSDPA External Packet Data option supports data transfer to/from external equipment via the Ethernet port in the rear panel of the MT8820C. End-to-end Ping interconnect test between the application server connected to the MT8820C and the HSDPA terminal or client PC connected to the HSDPA terminal can be tested using the MX882050C-011 option. The maximum data rate is 388 kbps.

### External IP Packet Test

The MT8820C sends IP packets from the HSDPA terminal to the application server. It also sends IP packets from the application server to the HSDPA terminal.



Sample MT8820C Connection

# MX882000C-021 HSUPA Measurement Software

## HSUPA terminals RF Tx Measurement, and Throughput Monitoring

The MX882000C-021 HSUPA Measurement Software supports Tx measurements of HSUPA terminals. It can generate the signals used for testing HSUPA terminals with E-DCH category 1 to 6 (5.76 Mbps), and TTI 2 and 10 ms.

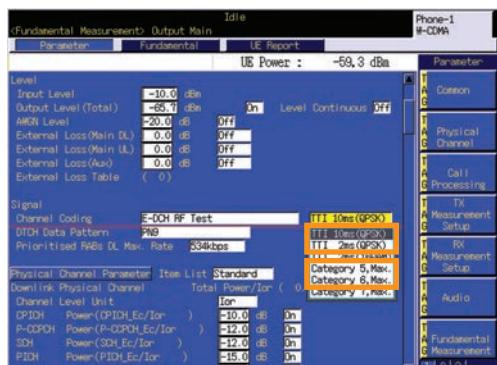
| Tests             | 3GPP TS 34.121 | Test Items  |
|-------------------|----------------|---|
| Transmitter Tests | 5.2B           | Maximum Output Power with HS-DPCCH and E-DCH                  |
|                   | 5.2D           | UE Relative Code Domain Power Accuracy for HS-DPCCH and E-DCH |
|                   | 5.9B           | Spectrum Emission Mask with E-DCH                             |
|                   | 5.10B          | Adjacent Channel Leakage Power Ratio (ACLR) with E-DCH        |
|                   | 5.13.2B        | Relative Code Domain Error with HS-DPCCH and E-DCH            |

## HSUPA Parameter

### HSUPA RF Transmitter Measurement Signals

The TTI 2, 10 ms can be selected as test signals including E-DCH for Tx measurements of HSUPA terminal supporting categories 1 to 6.\*

\*: TTI 2 ms (16QAM) and Category 7, Max. are selectable when the MX882000C-021 and MX882000C-031 HSPA Evolution Measurement Software options are installed.



## Transmitter Measurement

### Transmit Power, Spectrum Emission Mask, Adjacent Channel Leakage Power Ratio

The transmit power, spectrum emission mask, and adjacent channel leakage power ratio at HS-DPCCH and E-DCH transmission are measured.



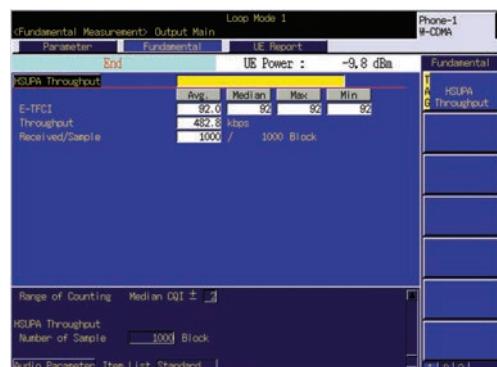
## Code Domain Power

The code domain power of the E-DCH are measured.



## Throughput Monitor

The E-DCH throughput is calculated from the E-TFCI notification from the HSUPA terminal. In addition, the E-TFCI statistic (average, median, maximum and minimum) are displayed.



# MX882000C-031 HSPA Evolution Measurement Software

## HSPA Evolution Terminals RF TRx and Throughput Measurement

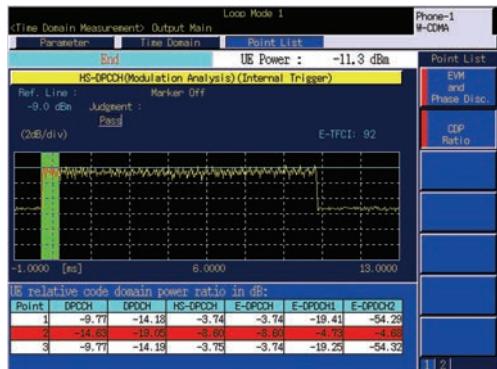
MX882000C-031 HSPA Evolution Measurement Software supports TRx measurements (measurement items defined in 3GPP TS 34.121 shown the table below) of HSPA Evolution terminals.

| Tests             | 3GPP TS 34.121 | Test items   |
|-------------------|----------------|--|
| Transmitter Tests | 5.2E           | UE Relative Code Domain Power Accuracy for HS-DPCCH and E-DCH with 16QAM |
|                   | 5.13.1AAA      | EVM and IQ origin offset for HS-DPCCH and E-DCH with 16QAM               |
|                   | 5.13.2C        | Relative Code Domain Error for HS-DPCCH and E-DCH with 16QAM             |
| Receiver Tests    | 6.3B           | Maximum Input Level for HS-PDSCH Reception (64QAM)                       |

## Transmitter Measurement

### UE Relative Code Domain Power Accuracy, Relative Code Domain Error

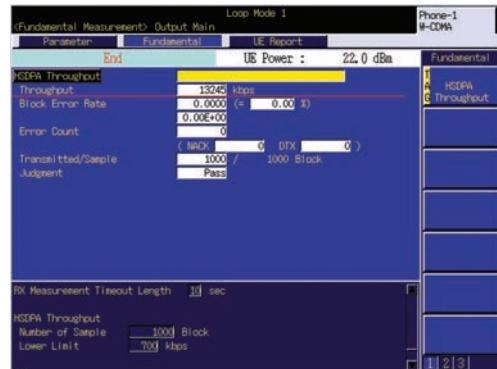
UE Relative Code Domain Power Accuracy and Relative Code Domain Error for HS-DPCCH and E-DCH with 16QAM are measured.



## Receiver Measurement

### HSDPA Throughput with 64QAM

The HSDPA throughput with 64QAM can be measured by counting the number of ACK blocks from the terminal.



## Test Signal Parameter

FRC H-Set 8 (64QAM), and Category 14, Max. test signals can be selected for throughput measurement.

| Parameter (Channel Coding) | Maximum data rate (Prioritized RABs DL Max Rate) | Explanation   |
|----------------------------|--|---|
| H-Set 8 (64QAM)            | 13245 kbps                                       | 3GPP-defined signal to test throughput of HSDPA terminal for HS-DSCH category 13 (17.6 Mbps class) and category 14 (21 Mbps class) (64QAM modulation) |
| Category 14, Max.          | 21098 kbps                                       | Signal to test throughput of HSDPA terminal for HS-DSCH category 14 (21 Mbps class) with maximum data rate  |

\* For terminal connectivity, contact your Anritsu sales representative.

# MX882000C-032

## DC-HSDPA

## Measurement Software

### DC-HSDPA Terminals RF Rx, Throughput and CQI Measurement

Measurements of key Rx characteristics related to 3GPP-compliant DC-HSDPA, Throughput, and CQI are supported.

| Tests          | 3GPP TS 34.121 | Test items   |
|----------------|----------------|--|
| Receiver Tests | 6.2A           | Reference Sensitivity Level for DC-HSDPA           |
|                | 6.3C           | Maximum Input Level for DC-HSDPA Reception (16QAM) |
|                | 6.3D           | Maximum Input Level for DC-HSDPA Reception (64QAM) |

| Parameter (DC-HSDPA Set of Parameters) | Maximum data rate (Prioritized RABs DL Max Rate) | Explanation   |
|--|--|---|
| H-Set 1A (16QAM)                       | 1554 kbps  | 3GPP-defined signal to test throughput of DC-HSDPA terminal (16QAM modulation)                                |
| H-Set 8A (64QAM)                       | 26504 kbps                                       | 3GPP-defined signal to test throughput of DC-HSDPA terminal (64QAM modulation)                                |
| H-Set 12 (QPSK)                        | 120 kbps   | 3GPP-defined signal to test throughput of DC-HSDPA terminal (QPSK modulation)                                 |
| Category 22, Max.                      | 27952 kbps                                       | Signal to test throughput of DC-HSDPA terminal for HS-DSCH category 22 with maximum data rate                 |
| Category 24, Max.                      | 42192 kbps                                       | Signal to test throughput of DC-HSDPA terminal for HS-DSCH category 24 (42 Mbps class) with maximum data rate |

## Receiver Measurement

DC-HSDPA call processing can be measured using the two RF ports of the MT8820C.

Moreover, the number of ACK blocks sent from the mobile terminal can be counted and two-cell throughput can be measured.

Measurement of the highest throughput (42 Mbps) in HS-DSCH category 24 is supported.



Throughput



Sample MT8820C Connection

\* MT8820C-012, MT8820C-001 2 sets, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882000C-032, and MX882050C required for DC-HSDPA measurements (MT8820C 1 unit)

\* DC-HSDPA only supported by MT8820C

\* For terminal connectivity, contact your Anritsu sales representative.

# MX882000C-033

## DC-HSUPA

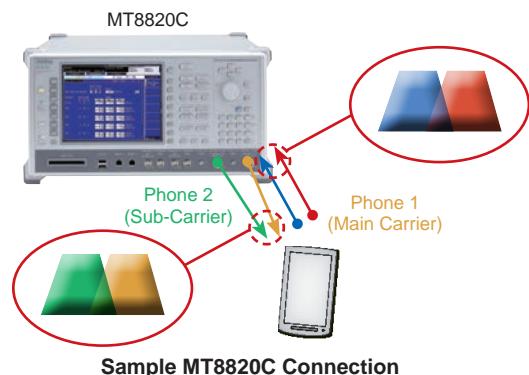
## Measurement Software

### DC-HSUPA Terminals RF Tx Measurement

The MX882000C-033 DC-HSUPA Measurement Software supports Tx measurement of DC-HSUPA terminals. It can generate the signals used for testing DC-HSUPA terminals with E-DCH TTI 2 ms.

| Tests             | 3GPP TS 34.121* | Test items  |
|-------------------|-----------------|---|
| Transmitter Tests | 5.2BA           | UE Maximum Output Power for DC-HSUPA (QPSK)   |
|                   | 5.2BB           | UE Maximum Output Power for DC-HSUPA (16QAM)  |
|                   | 5.2DA           | UE Relative Code Domain Power Accuracy for HS-DPCCH and EDCH for DC-HSUPA with QPSK |
|                   | 5.2EA           | UE Relative Code Domain Power Accuracy for DC-HSUPA with 16QAM                      |
|                   | 5.3A            | Frequency Error for DC-HSUPA  |
|                   | 5.4.1A          | Open Loop Power Control in the Uplink for DC-HSUPA                                  |
|                   | 5.4.2A          | Inner Loop Power Control in the Uplink for DC-HSUPA                                 |
|                   | 5.4.3A          | Minimum Output Power for DC-HSUPA   |
|                   | 5.8A            | Occupied Bandwidth (OBW) for DC-HSUPA   |
|                   | 5.9C            | Additional Spectrum Emission Mask for DC-HSUPA (QPSK)                               |
|                   | 5.9D            | Additional Spectrum Emission Mask for DC-HSUPA (16QAM)                              |
|                   | 5.10C           | Adjacent Channel Leakage Power Ratio (ACLR) with E-DCH for DC-HSUPA (QPSK)          |
|                   | 5.10D           | Adjacent Channel Leakage Power Ratio (ACLR) with E-DCH for DC-HSUPA (16QAM)         |
|                   | 5.13.2BA        | Relative Code Domain Error with HS-DPCCH and E-DCH for DC-HSUPA                     |
|                   | 5.13.2CA        | Relative Code Domain Error for HS-DPCCH and E-DCH with 16QAM for DC-HSUPA           |
|                   | 5.13.5          | In-band emission for HSUPA  |

\*: 3GPP TS 34.121 (V10.6.0, 2013-03)



Sample MT8820C Connection

# MX882000C-034 4C-HSDPA Measurement Software

## 3C/4C-HSDPA Terminals RF Rx and Throughput Measurement

MX882000C-034 4C-HSDPA Measurement Software supports RX measurements (measurement items defined in 3GPP TS 34.121 shown below) of 3C/4C-HSDPA terminals.

It can generate the FRC (Fixed Reference Channel) signals used for testing HSDPA terminals with HS-DSCH category 22, 24, 29, 31 (84 Mbps)\*.

| Tests          | 3GPP TS 34.121* | Test items   |
|----------------|-----------------|--|
| Receiver Tests | 6.2C            | Reference Sensitivity Level for Single band 4C-HSDPA |
|                | 6.2D            | Reference Sensitivity Level for Dual band 4C-HSDPA   |
|                | 6.3G            | Maximum Input Level for 4C-HSDPA Reception (16QAM)   |
|                | 6.3H            | Maximum Input Level for 4C-HSDPA Reception (64QAM)   |

\*: 3GPP TS 34.121 (V10.6.0, 2013-03)



\* Phone1, Phone2: max 3 cells per port and totally max. 4 cells

# Specifications

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

- **MT8820C-001 W-CDMA Measurement Hardware, MX882000C W-CDMA Measurement Software, MX88205xC W-CDMA Call Processing Software**

|                                      |   |
|--------------------------------------|---|
| Modulation Analysis                  | Frequency: 300 MHz to 2.7 GHz<br>Input level: -30 to +35 dBm (Main)<br>Carrier frequency accuracy: $\pm$ (Setting frequency $\times$ Reference oscillator accuracy + 10 Hz)<br>Modulation accuracy (residual vector error): $\leq 2.5\%$ (at input of single DPCCH and single DPDCH)  |
| RF Power                             | Frequency: 300 MHz to 2.7 GHz<br>Input level: -65 to +35 dBm (Main)<br>Measurement accuracy: $\pm 0.3$ dB (typ.), $\pm 0.5$ dB (-25 to +35 dBm), $\pm 0.7$ dB (-55 to -25 dBm), $\pm 0.9$ dB (-65 to -55 dBm)<br>*After calibration, 10° to 40°C<br>Linearity: $\pm 0.2$ dB (-40 to 0 dB, $\geq -55$ dBm), $\pm 0.4$ dB (-40 to 0 dB, $\geq -65$ dBm)<br>Measurement object: DPCH, PRACH  |
| Occupied Bandwidth                   | Frequency: 300 MHz to 2.7 GHz<br>Input level: -10 to +35 dBm (Main)   |
| Adjacent Channel Leakage Power Ratio | Frequency: 300 MHz to 2.7 GHz<br>Input level: -10 to +35 dBm (Main)<br>Measurement points: $\pm 5$ MHz, $\pm 10$ MHz<br>Measurement range: $\geq 50$ dB ( $\pm 5$ MHz), $\geq 55$ dB ( $\pm 10$ MHz)  |
| RF Signal Generator                  | Output frequency: 300 MHz to 2.7 GHz (1 Hz step)<br>Channel level<br>CPICH, P-CCPCH, SCH, PICH, DPCH, S-CCPCH, AICH<br>: Off, -30 to 0 dB [0.1 dB step, relative level for lor (total level)]<br>OCNS : Off, Auto-setting<br>Channel level accuracy: $\pm 0.2$ dB (relative level accuracy for lor)<br>AWGN level: Off, -20 to +5 dB [0.1 dB step, relative level for lor (total level)]<br>AWGN level accuracy: $\pm 0.2$ dB (relative level accuracy for lor) |
| Error Rate Measurement               | Measurement items: BER, BLER<br>Measurement object: Loopback data imposed on uplink DTCH (BER, BLER),<br>Serial data input from rear-panel call processing I/O port (BER)   |
| Call Processing                      | Call controlling: Registration, Origination, Termination, Handover, Network disconnect, Terminal disconnect<br>(executes each processing conforming to 3GPP standards and performs Pass/Fail evaluation)<br>Mobile terminal controlling: Output level, Loopback<br>(executes each mobile terminal control conforming to 3GPP standards)   |

- **MX882000C-011 HSDPA Measurement Software**

|                        |   |
|------------------------|---|
| RF Power               | Frequency: 300 MHz to 2.7 GHz<br>Input level: -65 to +35 dBm (Main)<br>Measurement accuracy: $\pm 0.3$ dB (typ.), $\pm 0.5$ dB (-25 to +35 dBm), $\pm 0.7$ dB (-55 to -25 dBm), $\pm 0.9$ dB (-65 to -55 dBm)<br>*After calibration, 10° to 40°C<br>Linearity: $\pm 0.2$ dB (-40 to 0 dB, $\geq -55$ dBm), $\pm 0.4$ dB (-40 to 0 dB, $\geq -65$ dBm)<br>Measurement object: HS-DPCCH |
| Throughput Measurement | Functions: Transmit HS-SCCH, HS-PDSCH based on Fixed Reference Channel<br>Measurement items: BLER, Throughput<br>Measurement object: ACK and NACK data imposed on HS-DPCCH  |
| CQI Measurement        | Function: Statistical analysis of CQI on HS-DPCCH values reported from a mobile terminal  |
| Call Processing        | Call controlling: Registration, Call processing for Fixed Reference Channel<br>(executes each processing conforming to 3GPP standards and performs Pass/Fail evaluation)<br>Mobile terminal controlling: Output level (executes each mobile terminal control conforming to 3GPP standards)  |

- **MX882000C-013 HSDPA High Data Rate**

|                        |   |
|------------------------|---|
| Throughput Measurement | Functions: HS-SCCH and HS-PDSCH transfer according to fixed reference channel (H-Set 6) HS-SCCH and HS-PDSCH transfer according to HSDPA Full Rate for category 6, 8, 9, and 10<br>Measured items: BLER, Throughput<br>Measurement object: ACK and NACK data imposed on uplink HS-DPCCH |
| Call Processing        | Call controlling: Fixed Reference Channel (H-Set 6),<br>HSDPA Full Rate (category 6, 8, 9, and 10) (executes each processing conforming to 3GPP standards and performs Pass/Fail evaluation)  |

- **MX882000C-021 HSUPA Measurement Software**

|                 |   |
|-----------------|---|
| RF Power        | Frequency: 300 MHz to 2.7 GHz<br>Input level: -65 to +35 dBm (Main)<br>Measurement accuracy: $\pm 0.3$ dB (typ.), $\pm 0.5$ dB (-25 to +35 dBm), $\pm 0.7$ dB (-55 to -25 dBm), $\pm 0.9$ dB (-65 to -55 dBm)<br>*After calibration, 10° to 40°C<br>Linearity: $\pm 0.2$ dB (-40 to 0 dB, $\geq -55$ dBm), $\pm 0.4$ dB (-40 to 0 dB, $\geq -65$ dBm)<br>Measurement object: DPCH, HS-DPCCH, E-DPCCH, E-DPDCH |
| Call Processing | Call controlling: Registration, Call processing for E-DCH RF Test<br>(executes each processing conforming to 3GPP standards and performs Pass/Fail evaluation)<br>Mobile terminal controlling: Output level (executes each mobile terminal control conforming to 3GPP standards)  |

### • MX882000C-031 HSPA Evolution Measurement Software

|                        |   |
|------------------------|---|
| Throughput Measurement | Functions: Transmit HS-SCCH, HS-PDSCH based on Fixed Reference Channel (H-Set 8)<br>Transmit HS-SCCH, HS-PDSCH based on HSDPA full rate for Category 13 and 14<br>Measurement items: BLER, Throughput<br>Measurement object: ACK and NACK data imposed on HS-DPCCH  |
| Call Processing        | Call control: Fixed Reference Channel (H-Set 8) HSDPA Full Rate (Category 13 and 14) and E-DCH RF Test (16QAM)<br>(executes operation conforming to 3GPP standards and performs Pass/Fail evaluation)<br>Mobile terminal controlling: Output level (executes each mobile terminal control conforming to 3GPP standards) |

### • MX882000C-032 DC-HSDPA Measurement Software

|                        |   |
|------------------------|---|
| Throughput Measurement | Functions: Transmit HS-SCCH and HS-PDSCH based on Fixed Reference Channel<br>Measurement items: BLER, Throughput<br>Measurement object: ACK and NACK applied to HS-DPCCH  |
| CQI Measurement        | Measurement object: Periodic CQI reports over HS-DPCCH  |
| Call Processing        | Call control: Fixed Reference Channel (H-Set 1A, H-Set 8A, H-Set 12) and at Full Rate from Category 22 and 24 HSDPA terminals (executes operation conforming to 3GPP standards and performs Pass/Fail evaluation) |

### • MX882000C-033 DC-HSUPA Measurement Software

|                 |  |
|-----------------|--|
| RF Power        | Frequency range: 300 MHz to 2.7 GHz<br>Input level: -65 to +35 dBm (Main)<br>Measurement accuracy: $\pm 0.3$ dB (typ.), $\pm 0.5$ dB (-25 to +35 dBm), $\pm 0.7$ dB (-55 to -25 dBm), $\pm 0.9$ dB (-65 to -55 dBm)<br>*After calibration, at 10° to 40°C<br>Linearity: $\pm 0.2$ dB (-40 to 0 dB, $\geq -55$ dBm), $\pm 0.4$ dB (-40 to 0 dB, $\geq -65$ dBm)<br>Measurement object: DPCH, HS-DPCCH, E-DPCCH, E-DPDCH |
| Call Processing | Call control: Location registration, E-DCH RF Test<br>(executes operation conforming to 3GPP standards and performs Pass/Fail evaluation)<br>UE control: Output level (UE control conforming to the 3GPP standards can be performed)   |

### • MX882000C-034 4C-HSDPA Measurement Software

|                        |   |
|------------------------|---|
| Throughput Measurement | Functions: Transmit HS-SCCH and HS-PDSCH based on Fixed Reference Channel<br>Transmit HS-SCCH and HS-PDSCH according to HSDPA Full Rate of Category 22, 24, 29, and 31<br>Measurement items: BLER, Throughput<br>Measurement object: ACK and NACK applied to HS-DPCCH |
| CQI Measurement        | Measurement object: Periodic CQI reports from UE over HS-DPCCH  |
| Call Processing        | Call control: Fixed Reference Channel (H-Set 1A, H-Set 8A, H-Set 12, H-Set 1B, H-Set 8B, H-Set 1C, H-Set 8C) and HSDPA Full Rate (Category 22, 24, 29, and 31)<br>(executes operation conforming to 3GPP standards and performs Pass/Fail evaluation)                 |

### • MT8820C-011 Audio Board, MX882000C-001 W-CDMA Voice Codec

|                             |  |
|-----------------------------|--|
| Voice Codec                 | AMR 12.2 kbps  |
| Codec Level Adjustment      | Encoder input gain: -3 to +3 dB, 0.01 dB step<br>Handset microphone volume: 0, 1, 2, 3, 4, 5<br>Handset speaker volume: 0, 1, 2, 3, 4, 5   |
| AF Output                   | Frequency range: 30 Hz to 10 kHz, 1 Hz step<br>Carrier frequency accuracy: $\pm$ (Setting frequency $\times$ Reference oscillator accuracy + 0.1 Hz)<br>Setting range: 0 Vpeak to 5 Vpeak (AF Output)<br>Setting resolution: 1 mV ( $\leq 5$ Vpeak), 100 $\mu$ V ( $\leq 500$ mVpeak), 10 $\mu$ V ( $\leq 50$ mVpeak)<br>Accuracy: $\pm 0.2$ dB ( $\geq 10$ mVpeak, $\geq 50$ Hz), $\pm 0.3$ dB ( $\geq 10$ mVpeak, $< 50$ Hz)<br>Waveform distortion: $\leq 30$ kHz band<br>$\leq -60$ dB (500 mVpeak, $\leq 5$ kHz), $\leq -54$ dB ( $\geq 70$ mVpeak)<br>Output impedance: $\leq 1$ $\Omega$<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: 100 k $\Omega$  |
| Frequency Measurement       | Accuracy: $\pm$ (Reference oscillator accuracy + 0.5 Hz)   |
| Level Measurement           | Accuracy: $\pm 0.2$ dB ( $\geq 10$ mVpeak, $\geq 50$ Hz), $\pm 0.4$ dB ( $\geq 1$ mVpeak, $\geq 1$ kHz)  |
| SINAD Measurement           | Frequency: 1 kHz in $\leq 30$ kHz band<br>$\geq 60$ dB ( $\geq 1000$ mVpeak), $\geq 54$ dB ( $> 50$ mVpeak), $\geq 46$ dB ( $\geq 10$ mVpeak)  |
| Distortion Rate Measurement | Frequency: 1 kHz in $\leq 30$ kHz band<br>$\leq -60$ dB ( $\geq 1000$ mVpeak), $\leq -54$ dB ( $> 50$ mVpeak), $\leq -46$ dB ( $\geq 10$ mVpeak)   |

- **MX882050C-002, MX882051C-002 W-CDMA External Packet Data**

|                   |   |
|-------------------|---|
| Ethernet          | 10Base-T  |
| Data Rate         | DL: 384 kbps, UL: 64 kbps                                       |
| Server IP Address | 0.0.0.0 to 255.255.255.255                                      |
| Client IP Address | 0.0.0.0 to 255.255.255.255                                      |
| Channel Coding    | Interactive or background<br>UL: 64 kbps<br>DL: 384 kbps/PS RAB |
| DTCH Data Pattern | External PPP packet, External IP packet                         |

- **MX882050C-011 HSDPA External Packet Data**

|                   |   |
|-------------------|---|
| Ethernet          | 10Base-T  |
| Data Rate         | DL: 267 kbps maximum for QPSK<br>388 kbps maximum for 16QAM<br>UL: 64 kbps                            |
| Server IP Address | 0.0.0.0 to 255.255.255.255  |
| Client IP Address | 0.0.0.0 to 255.255.255.255  |
| Channel Coding    | Interactive or background<br>UL: 64 kbps<br>DL: 267 kbps/PS RAB for QPSK<br>388 kbps/PS RAB for 16QAM |
| DTCH Data Pattern | External IP packet  |

- **MX882050C-003, MX882051C-003 W-CDMA Video Phone Test**

|                |   |
|----------------|---|
| Ethernet       | 10Base-T  |
| Data Rate      | DL: 64 kbps, UL: 64 kbps                                  |
| Channel Coding | Conversation/Unknown<br>UL: 64 kbps<br>DL: 64 kbps/CS RAB |

- **MX882050C-007 W-CDMA Band XII, XIII, XIV, XIX, XX, XXI**

|                |   |
|----------------|---|
| Band Indicator | Band XII, XIII, XIV, XIX, XX, XXI can be selected |
|----------------|---|

- **MX882050C-008 W-CDMA Band XI**

|                      |   |
|----------------------|---|
| Frequency Separation | Linked with Channel and set to 48.0 MHz |
| Band Indicator       | Band XI can be selected                 |

- **MX882050C-009 W-CDMA Band IX**

|                |   |
|----------------|---|
| Band Indicator | Band IX can be selected                 |
| SIB5 Type      | Auto, SIB5, and SIB5bis can be selected |

# 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  | Model/Order No. | Name   |
|-----------------|---|-----------------|--|
| MT8820C         | <b>Main frame</b><br>Radio Communication Analyzer   | MX882007C-021   | TD-SCDMA HSUPA Measurement Software* <sup>2</sup><br>(requires MT8820C-001, MT8820C-007, MX882007C, MX882007C-011)   |
| W3320AE         | <b>Standard accessories</b><br>Power Cord: 1 pc<br>CF Card: 1 pc<br>PC Card Adapter (For CF card): 1 pc<br>MT8820C Operation Manual (CD-ROM): 1 pc  | MX882010C       | Parallel Phone Measurement Software* <sup>5</sup><br>[requires MT8820C-012, the two same measurement hardware (2 board/set) and one measurement software]  |
| MT8820C-017     | <b>Options</b><br>Extended RF Hardware* <sup>1</sup>  | MX882012C       | LTE FDD Measurement Software* <sup>2</sup> (requires MT8820C-008)  |
| MT8820C-001     | W-CDMA Measurement Hardware   | MX882012C-006   | LTE FDD 2x2 MIMO DL* <sup>2, *6</sup> (requires MT8820C-012 and MX882012C)   |
| MT8820C-002     | TDMA Measurement Hardware   | MX882012C-011   | LTE FDD CS Fallback to W-CDMA/GSM* <sup>7</sup> (requires MX882012C)   |
| MT8820C-003     | CDMA2000 Measurement Hardware   | MX882012C-016   | LTE FDD CS Fallback to CDMA2000* <sup>7</sup> (requires MX882012C)   |
| MT8820C-007     | TD-SCDMA Measurement Hardware   | MX882012C-017   | LTE-Advanced FDD DL CA Measurement Software* <sup>2, *8</sup><br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, and MX882012C)  |
| MT8820C-008     | LTE Measurement Hardware  | MX882012C-021   | LTE-Advanced FDD DL CA IP Data Transfer* <sup>9</sup><br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882012C, MX882012C-006, MX882012C-021)  |
| MT8820C-011     | Audio Board   | MX882012C-026   | LTE-Advanced FDD DL CA 3CCs Measurement Software* <sup>2, *10</sup><br>(requires MT8820C 2 sets.<br>One is required MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882012C and MX882012C-021.<br>The other is required MT8820C-008, MX882012C.)   |
| MT8820C-012     | Parallel Phone Measurement Hardware   | MX882012C-031   | LTE TDD Measurement Software* <sup>2</sup> (requires MT8820C-008)  |
| MT8820C-018     | Extended RF 3.4 GHz to 3.8 GHz<br>(requires MT8820C-017, MT8820C-119, or MT8820C-120)   | MX882013C       | LTE TDD IP Data Transfer* <sup>2</sup> (requires MX882013C)  |
| MT8820C-043     | CDMA2000 Time Offset CAL for GPS SG<br>(requires MT8820C-003 and MX882002C)   | MX882013C-006   | LTE TDD 2x2 MIMO DL* <sup>2, *6</sup> (requires MT8820C-012 and MX882013C)   |
| MT8820C-101     | W-CDMA Measurement Hardware Retrofit  | MX882013C-011   | LTE TDD CS Fallback to W-CDMA/GSM* <sup>11</sup> (requires MX882013C)  |
| MT8820C-102     | TDMA Measurement Hardware Retrofit  | MX882013C-016   | LTE FDD CS Fallback to CDMA2000* <sup>7</sup> (requires MX882013C)   |
| MT8820C-103     | CDMA2000 Measurement Hardware Retrofit  | MX882013C-017   | LTE TDD CS Fallback to TD-SCDMA/GSM* <sup>11</sup> (requires MX882013C)  |
| MT8820C-107     | TD-SCDMA Measurement Hardware Retrofit  | MX882013C-018   | LTE-Advanced TDD DL CA Measurement Software* <sup>2, *8</sup><br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, and MX882013C)  |
| MT8820C-108     | LTE Measurement Hardware Retrofit   | MX882013C-021   | LTE-Advanced TDD DL CA IP Data Transfer* <sup>9</sup><br>(requires MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882013C, MX882013C-006, MX882013C-021)  |
| MT8820C-111     | Audio Board Retrofit  | MX882013C-026   | LTE-Advanced TDD DL CA 3CCs Measurement Software* <sup>2, *10</sup><br>(requires MT8820C 2 sets.<br>One is required MT8820C-008 (2 sets), MT8820C-012, MX882010C, MX882013C, MX882013C-021.<br>The other is required MT8820C-008, MX882013C.)  |
| MT8820C-112     | Parallel Phone Measurement Hardware Retrofit  | MX882013C-031   | LTE TDD Measurement Software Lite* <sup>2</sup>  |
| MT8820C-119     | Extended RF Hardware for SPM Retrofit   | MX882032C       | 1xEV-DO Measurement Software Lite* <sup>2</sup>  |
| MT8820C-120     | Extended RF Hardware for PPM Retrofit   | MX882036C       | 1xEV-DO Rev. A Measurement Software* <sup>2</sup>  |
| MT8820C-143     | CDMA2000 Time Offset CAL for GPS SG Retrofit<br>(requires MT8820C-003 and MX882002C)  | MX882036C-011   | LTE FDD Measurement Software Lite* <sup>2</sup>  |
| MT8820C-177     | TD-SCDMA Measurement Retrofit (requires MT8820C-001)  | MX882042C       | LTE TDD Measurement Software Lite* <sup>2</sup>  |
| MX882000C       | <b>Software options</b><br>W-CDMA Measurement Software<br>(requires MT8820C-001 and MX88205xC)<br>W-CDMA Voice Codec (requires MT8820C-011 and MX882000C)<br>HSDPA Measurement Software<br>(requires MT8820C-001, MX882000C, and MX882050C)<br>HSDPA High Data Rate (requires MT8820C-001, MX882000C, MX882000C-011, and MX882050C)<br>HSUPA Measurement Software (requires MT8820C-001, MX882000C, MX882000C-011, and MX882050C)<br>HSPA Evolution Measurement Software* <sup>2</sup><br>(requires MT8820C-001, MX882000C, MX882000C-011, MX882000C-021, and MX882050C)<br>DC-HSDPA Measurement Software* <sup>2, *3</sup><br>(requires MT8820C-001 (2 sets), MT8820C-012, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882010C, and MX882050C)<br>DC-HSUPA Measurement Software* <sup>2, *4</sup><br>(requires MT8820C-001 (2 sets), MT8820C-012, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882000C-032, MX882010C, MX882050C)<br>4C-HSDPA Measurement Software* <sup>2, *4</sup><br>(requires MT8820C-001 (2 sets), MT8820C-012, MX882000C, MX882000C-011, MX882000C-021, MX882000C-031, MX882000C-032, MX882010C, MX882050C) | MX882043C       | W-CDMA Call Processing Software* <sup>2, *12</sup> (requires MX882000C)<br>W-CDMA External Packet Data* <sup>2</sup> (requires MX882050C)<br>W-CDMA Video Phone Test* <sup>2</sup> (requires MX882050C)<br>W-CDMA Band XII, XIII, XIV, XIX, XX, XXI* <sup>2, *13</sup> (requires MX882050C)<br>W-CDMA Band XI* <sup>2</sup> (requires MX882050C)<br>W-CDMA Band IX* <sup>2</sup> (requires MX882050C)<br>HSDPA External Packet Data* <sup>2</sup> (requires MX882000C-011)<br>W-CDMA Call Processing Software* <sup>2</sup> (requires MX882000C)<br>W-CDMA External Packet Data* <sup>2</sup> (requires MX882051C)<br>W-CDMA Video Phone Test* <sup>2</sup> (requires MX882051C)<br>W-CDMA Ciphering Software* <sup>2</sup> (requires MX882050C)<br>W-CDMA Ciphering Software* <sup>2</sup> (requires MX882051C) |
| MX882000C-033   |   | MX882050C       |  |
| MX882000C-034   |   | MX882050C-003   |  |
| MX882000C-035   |   | MX882050C-007   |  |
| MX882000C-036   |   | MX882050C-008   |  |
| MX882000C-037   |   | MX882050C-009   |  |
| MX882000C-038   |   | MX882050C-011   |  |
| MX882001C       | GSM Measurement Software (requires MT8820C-002)   | MX882051C       | W-CDMA Call Processing Software* <sup>2</sup> (requires MX882000C)   |
| MX882001C-001   | GSM Voice Codec (requires MT8820C-011 and MX882001C)  | MX882051C-002   | W-CDMA External Packet Data* <sup>2</sup> (requires MX882051C)   |
| MX882001C-002   | GSM External Packet Data (requires MX882001C)   | MX882051C-003   | W-CDMA Video Phone Test* <sup>2</sup> (requires MX882051C)   |
| MX882001C-011   | EGPRS Measurement Software (requires MX882001C)   | MX882070C       | W-CDMA Ciphering Software* <sup>2</sup> (requires MX882050C)   |
| MX882001C-041   | GSM High-speed Adjustment (requires MX882001C)  | MX882070C       | W-CDMA Ciphering Software* <sup>2</sup> (requires MX882051C)   |
| MX882002C       | CDMA2000 Measurement Software (requires MT8820C-003)  | MX882071C       |  |
| 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* <sup>2</sup><br>(requires MT8820C-001, MT8820C-007, and MX882007C)   |                 |  |
| MX882007C-012   | TD-SCDMA HSDPA Evolution Measurement Software* <sup>2</sup><br>(requires MT8820C-001, MT8820C-007, MX882007C, MX882007C-011)  |                 |  |
|                 |   |                 | <b>Warranty</b><br>2 years Extended Warranty Service<br>3 years Extended Warranty Service<br>5 years Extended Warranty Service   |
|                 |   |                 | <b>Application parts</b><br>W-CDMA/GSM Test USIM<br>W-CDMA/GSM Test USIM* <sup>14</sup><br>Anritsu Test UICC GA (Nano UICC size)* <sup>15</sup><br>Anritsu Test UICC GA (Micro UICC size)* <sup>15</sup><br>Anritsu Test UICC GT (Nano UICC size)* <sup>15</sup><br>Anritsu Test UICC GT (Micro UICC size)* <sup>15</sup><br>Anritsu Test UICC GM (Nano UICC size)* <sup>15</sup><br>Anritsu Test UICC GM (Micro UICC size)* <sup>15</sup><br>Anritsu Test UICC GA (Nano UICC size)* <sup>15</sup><br>Anritsu Test UICC GA (Micro UICC size)* <sup>15</sup><br>Anritsu Test UICC GT (Nano UICC size)* <sup>15</sup><br>Anritsu Test UICC GT (Micro UICC size)* <sup>15</sup><br>Anritsu Test UICC GM (Nano UICC size)* <sup>15</sup><br>Anritsu Test UICC GM (Micro UICC size)* <sup>15</sup><br>Handset         |

| Model/Order No. | Name  |
|-----------------|---|
| J1195A          | PP2S Output Cable   |
| J1249           | CDMA2000 Cable  |
|                 | [D-Sub (15 pin, P-type) · D-Sub (15 pin, P-type), used in combination with J1267 (sold separately)]*16          |
| J1267           | CDMA2000 Cross Cable  |
|                 | [D-Sub (9 pin, P-type) · D-Sub (9 pin, P-type), reverse cable 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           | GPIO Cable, 1 m   |
| J0008           | GPIO 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 2x2 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.

- Parallelphone™ is a registered trademark of Anritsu Corporation.
- CF® card is a registered trademark of SanDisk Corporation in the United States and is licensed to CFA (Compact Flash Association).

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