Product Brochure

Anritsu

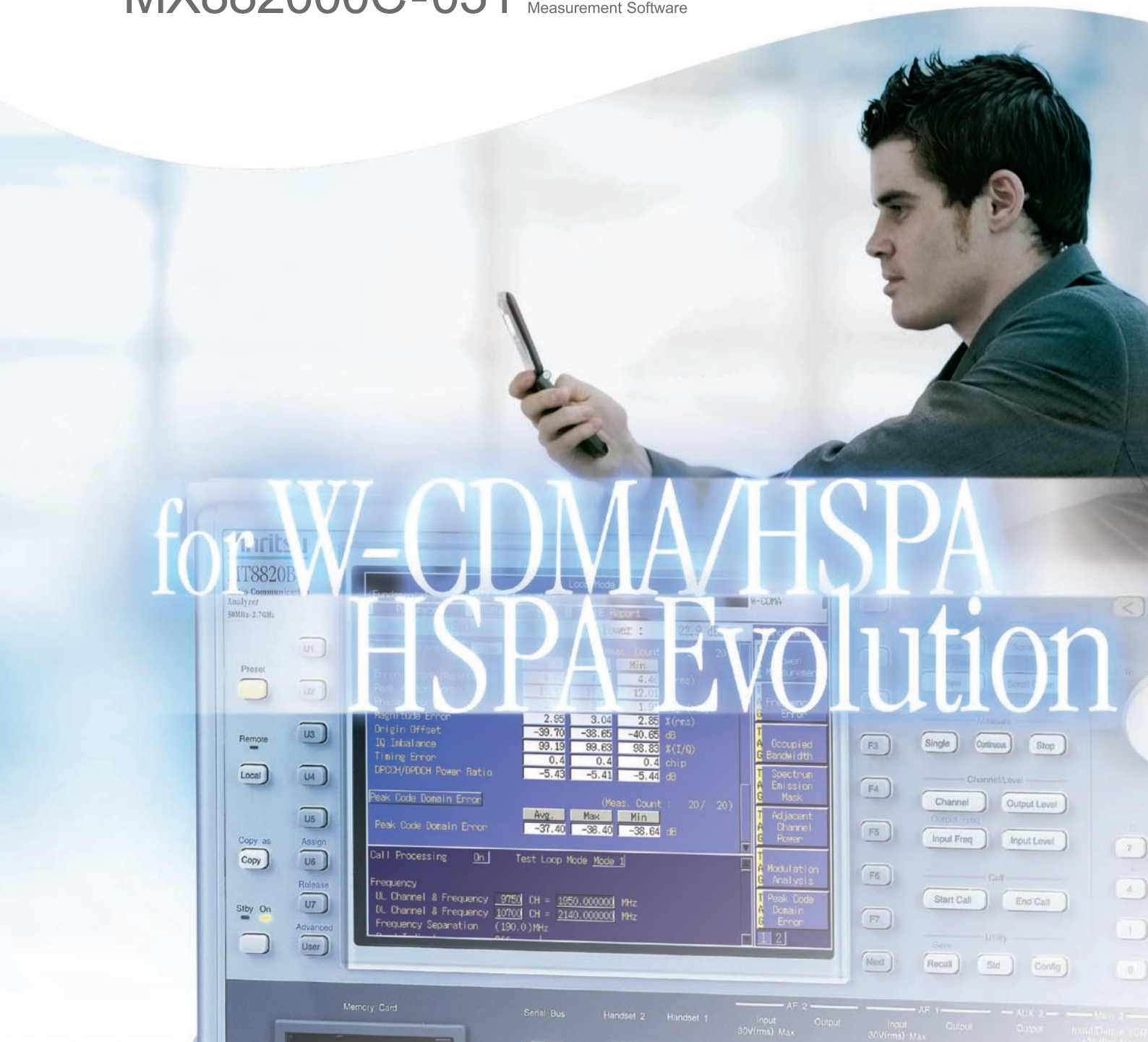
For MT8820B Radio Communication Analyzer

MX882000C W-CDMA Measurement Software

MX882000C-011 HSDPA Measurement Software

MX882000C-021 HSUPA Measurement Software

MX882000C-031 HSPA Evolution Measurement Software



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 MT8820B 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 MT8820B unit. Installing the MX88207xC W-CDMA Ciphering Software* supports testing of coded voice communications between the MT8820B 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 interface enables the MT8820B to be integrated into automated test systems for after-sales maintenance, as well as into automated production lines.

∗: Requires MX88205xC W-CDMA Call Processing Software.

Tests	3GPP TS34.121	Test Items
Transmitter 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
	5.8	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*
	5.13.3	UE Phase Discontinuity
	5.13.4	PRACH Preamble Quality
Receiver Tests	6.2	Reference Sensitivity Level
	6.3	Maximum Input Level
Performance Test	7.2	Demodulation in Static Propagation Conditions

∗: Only a single code

MX882000C W-CDMA Measurement Software

Transmitter Measurements

Transmit Power

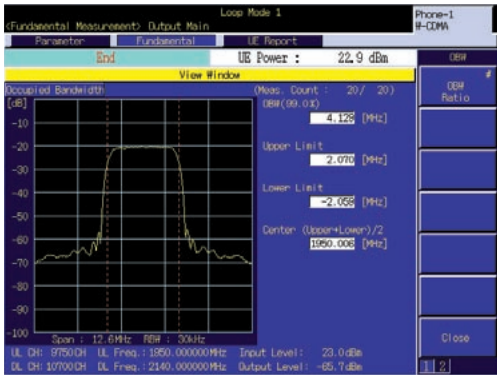
The transmit power of the W-CDMA terminal can be measured when controlled to the maximum, minimum, and any other level. When two or more measurements are made, the maximum, average, and minimum results are displayed, supporting evaluation of the transmit power distribution. This functionality is also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

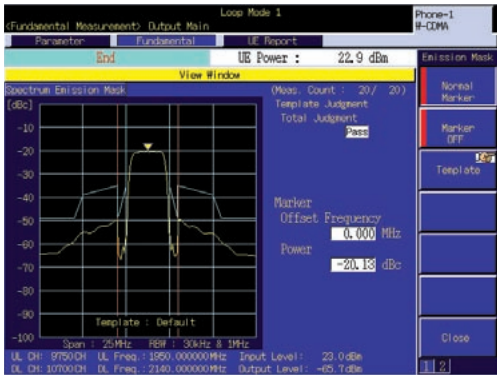
Occupied Bandwidth

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



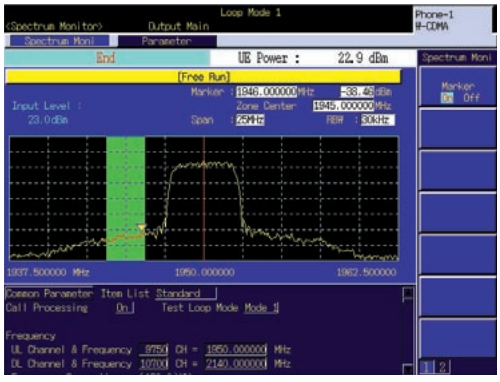
Spectrum Emission Mask

This support Go/No-Go testing of W-CDMA terminal spectrum emissions by checking whether the frequency components within ±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 ±2.5 MHz and ±12.5 MHz of the carrier frequency.
The peak spectrum in the zone can be detected by using the zone markers.



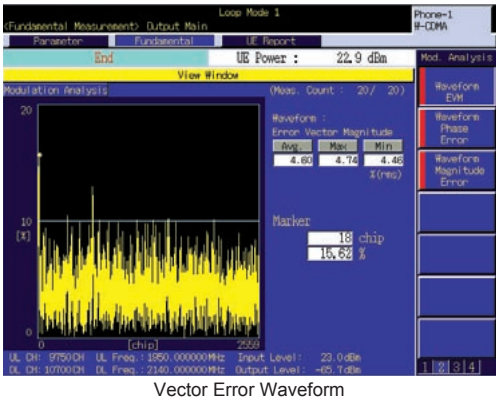
Adjacent Channel Leakage Power Ratio

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 ±5 MHz and ±10 MHz from the center frequency.

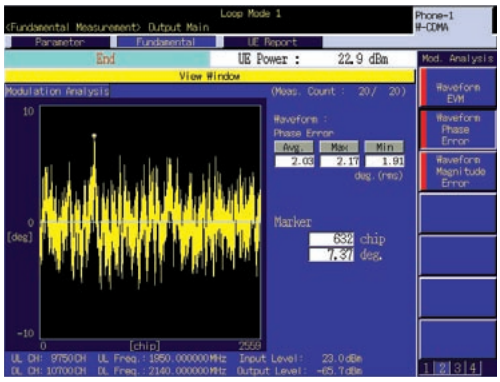
Modulation Analysis

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

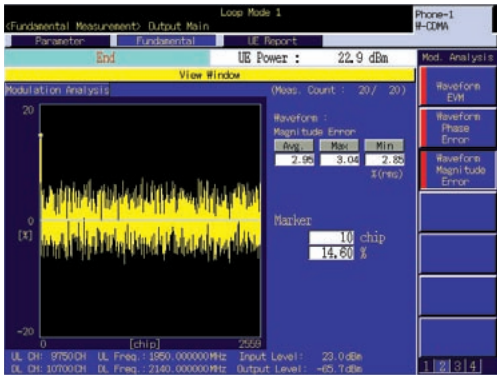
The vector error, phase error, and amplitude error at each chip point can be displayed as a waveform, which is very useful for R&D, repair and maintenance.



Vector Error Waveform



Phase Error Waveform

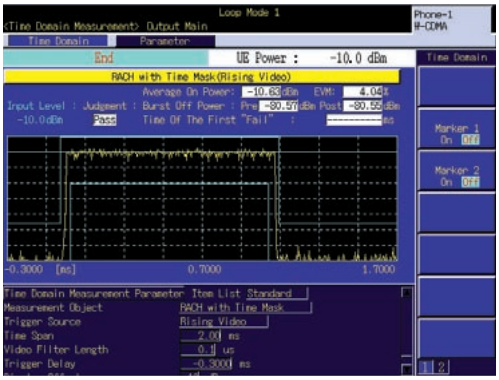


Amplitude Error Waveform

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



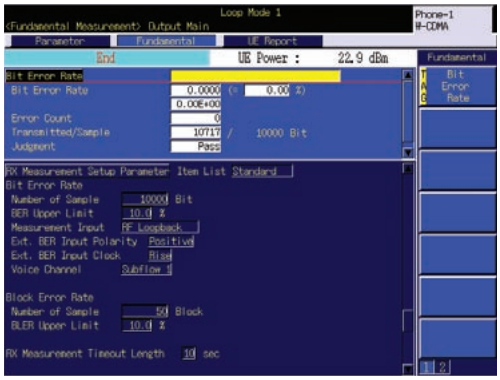
Inner Loop Power Control

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 1515 slots can be measured quickly as a batch.

Receiver Measurements

Bit Error Rate Measurement

The bit error rate can be measured using the 3GPP-specified loopback test mode.
In addition, feeding the demodulated data and clock signals from the W-CDMA terminal directly to the MT8820B supports bit error rate measurement. Both PN9 and PN15 can be set as the downlink RF signal data pattern.

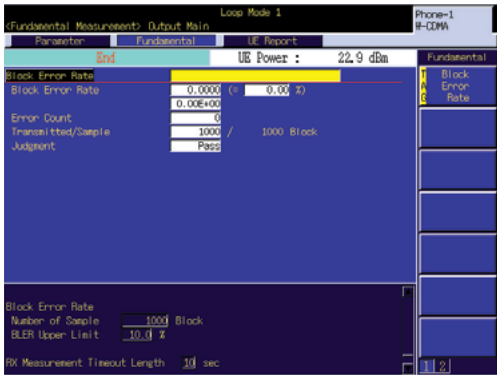


Performance Tests

Block Error Rate Measurement

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 TS34.121 3GPP specification.

*: Dedicated Channel



Downlink RF Signal Generator Functionality

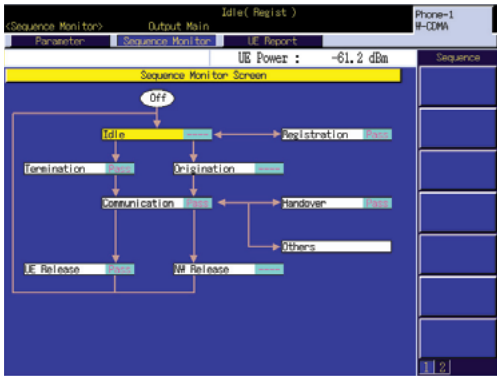
The relative level of each of the CPICH*1, P-CCPCH*2, SCH*3, PICH*4, DPCH*5, S-CCPCH*6, and AICH*7 code channels can be set within the range of –30 to 0 dB. In addition, OCNS*8 and AWGN*9 can also be provided, supporting generation of any downlink modulation signal required for Tx and Rx tests. The RF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

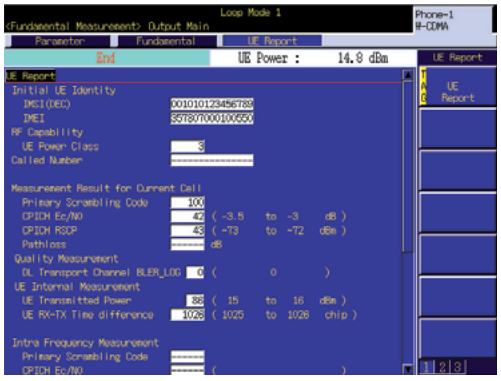
Connection Tests

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

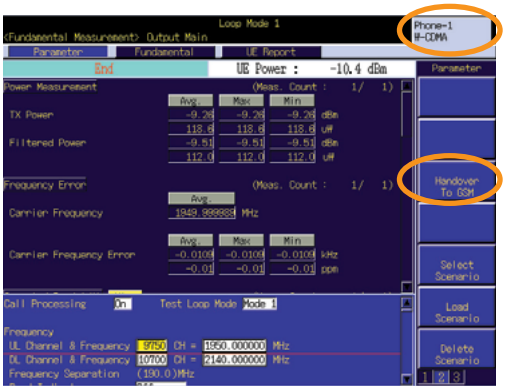
Reducing Test Time for W-CDMA/GSM Dual-Mode Mobiles

MX882050C-008/009 W-CDMA Band XI/IX

Supports W-CDMA Band XI/IX

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 MT8820B 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

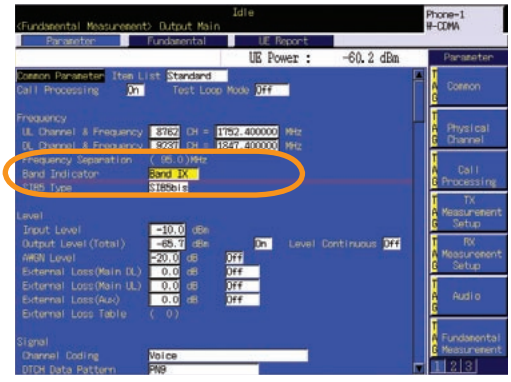
GSM measurement (Loopback mode or voice communications)

∗ Requires MT8820B-002 + MX882001C or MT8820B-032 + MX882031C + MX882031C-050.

MX882050C-008/009 W-CDMA Band XI/IX

The MX882050C-008 W-CDMA Band XI option supports 3GPP Band XI in the call processing mode.
Moreover, the MX882050C-009 W-CDMA Band IX option supports 3GPP Band IX 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

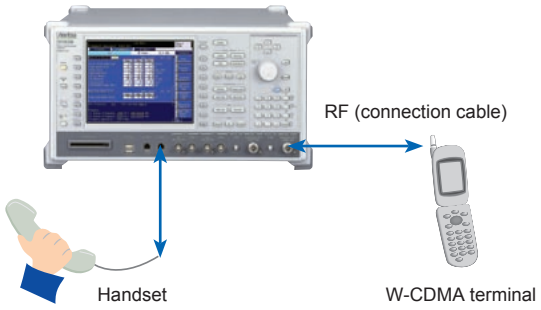
Real-time Voice Encoding/Decoding and Audio Measurement Functions

MX882000C-001 W-CDMA Voice Codec

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 MT8820B-011 Audio Board. In addition, the audio transmitter and receiver can be tested while calling.

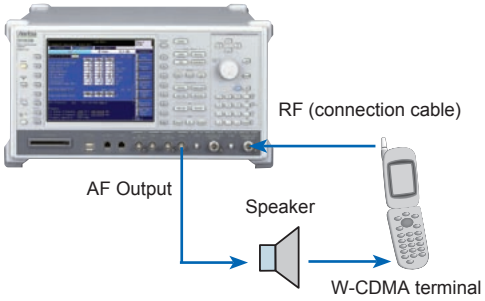
End-to-End Communications Test

This supports the end-to-end communications test between a handset connected to the RJ11 connector on the MT8820B and a W-CDMA terminal.



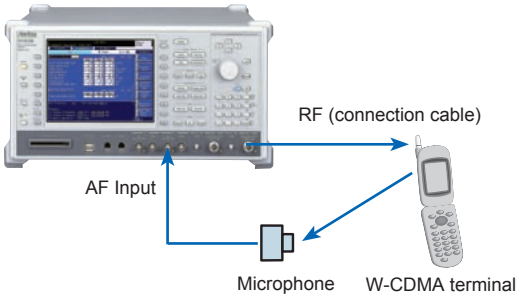
Audio Transmitter Measurement

The tone signal from the MT8820B 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 MT8820B 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 MT8820B AF Input connector and the audio receiver characteristics of the W-CDMA terminal can be measured by using the MT8820B to measure the level, frequency, and distortion of the tone signal at the AF Input.



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

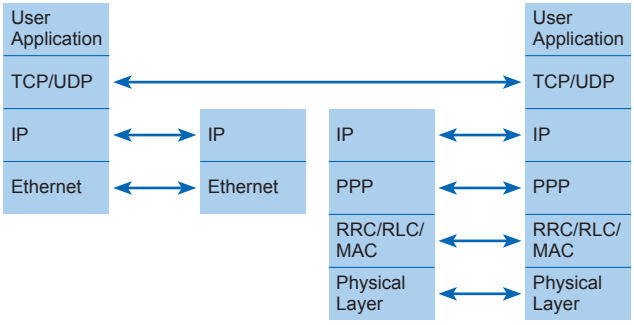
Packet Communication Data Transfer Test

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

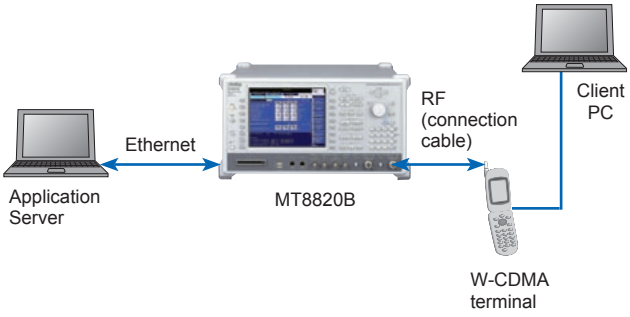
The MX882000C-002 W-CDMA External Packet Data option supports data transfer to/from external equipment via the Ethernet port. End-to-end data transfer between an application server connected to the MT8820B and the W-CDMA terminal or client PC connected to the W-CDMA terminal can be tested using the MX882050C-002 and MX882051C-002.

External PPP Packet Test

The MT8820B 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.



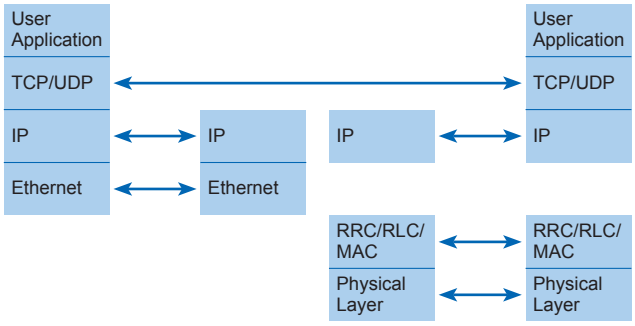
Protocol Stack for External PPP Packet Test



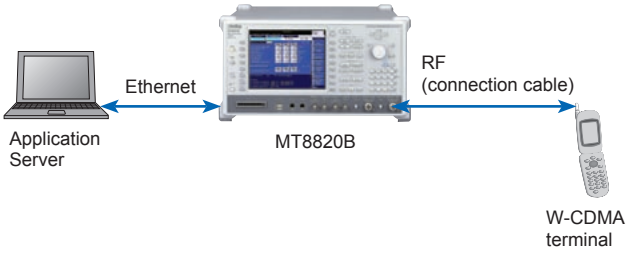
Sample MT8820B Connection

External IP Packet Test

The MT8820B 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 MT8820B Connection

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

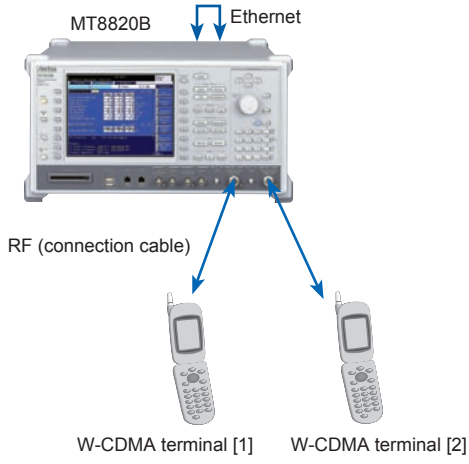
End-to-End Video Phone Test

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

End-to-end video communication via the Ethernet port in the back panel of the MT8820B can be tested using the MX882050C-003 and MX882051C-003 W-CDMA Video Phone Test. End-to-end video communication with a single MT8820B can be tested by installing this software option and the Parallel Phone Measurement Hardware.

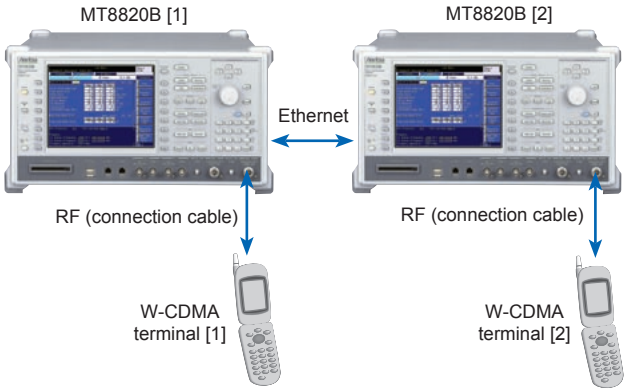
End-to-End Test

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 with Single MT8820B Configured with Parallel Phone Measurement Hardware

End-to-end video communication between W-CDMA terminals can be tested by originating a call from the W-CDMA terminal connected to the MT8820B Unit 2 (or MT8820B Unit 1) while holding the MT8820B Unit 1 (or MT8820B Unit 2) ready to receive a call using Start Call.



End-to-End Video Communication Test using Two MT8820B Units

MX882000C-011
HSDPA Measurement Software

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

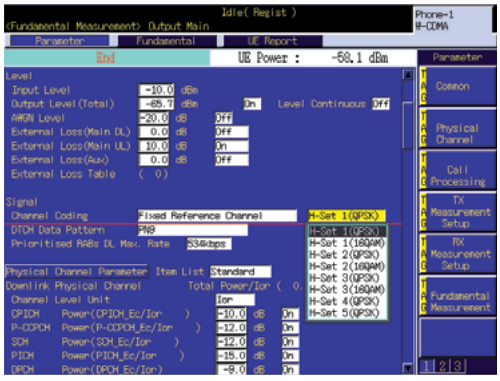
The MX882000C-011 HSDPA Measurement Software supports measurement of Tx and Rx characteristics of HSDPA terminals. It can generate the FRC (Fixed Reference Channel) signals used for testing HSDPA terminals with HS-DSCH category 1 to 6, 11, and 12 (3.6 Mbps).

Tests	3GPP TS34.121	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
Receiver Tests	6.3A	Maximum Input Level with HS-PDSCH Reception (16QAM)

HSDPA FRC Signals

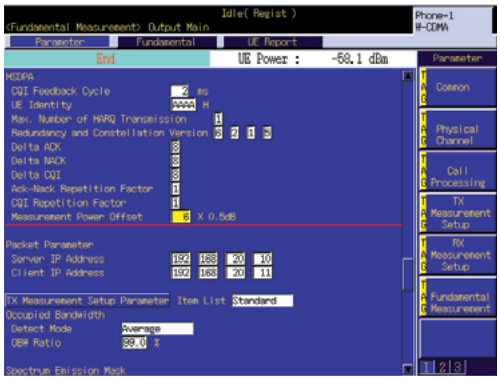
HSDPA FRC Signal

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

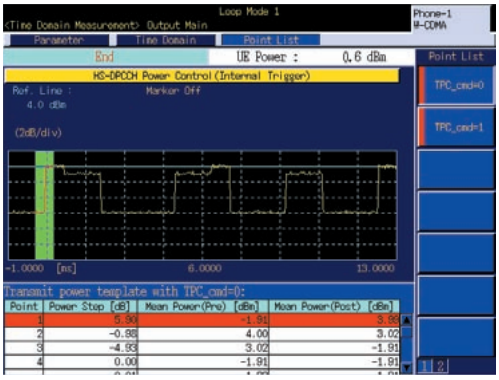
The various for HSDPA measurement parameters, such as CQI feedback cycle and repetition factor can be configured.



Transmitter Measurements

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

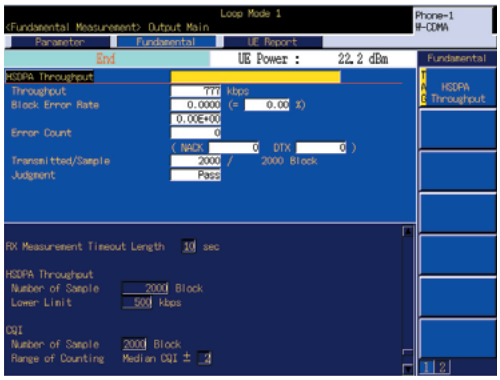
Transmit Power, Spectrum Emission Mask, Adjacent Channel Leakage Power

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

Receiver Measurement

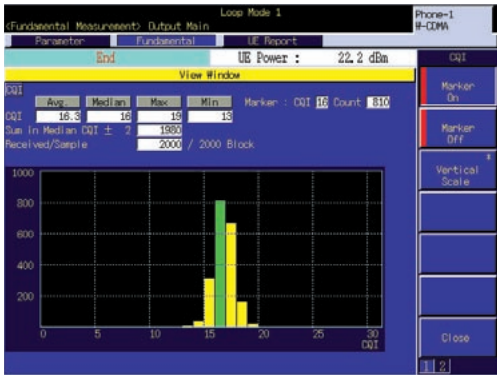
HSDPA Throughput

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

MX882050C-011
HSDPA External Packet Data
Packet Communications Data Transfer Test

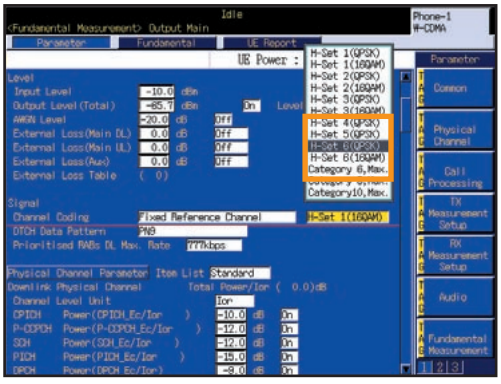
MX882000C-013 HSDPA High Data Rate

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 10, Max.	13976 kbps	Signal to test throughput of HSDPA terminal for HS-DSCH category 10 (14 Mbps class) with maximum data rate

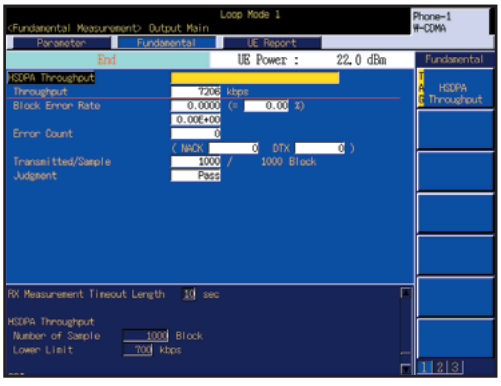
Test Signal Parameter

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



HSDPA High Data Rate Throughput Measurements

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



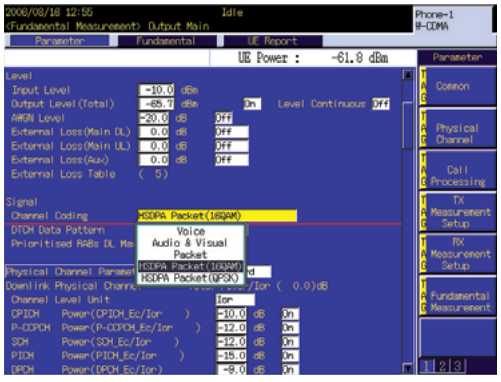
Ex. Category 8, Max.

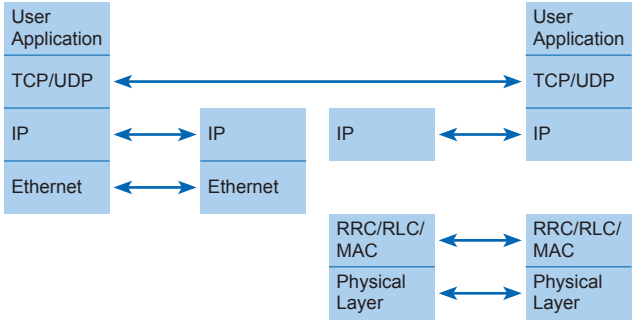
MX882050C-011 HSDPA External Packet Data

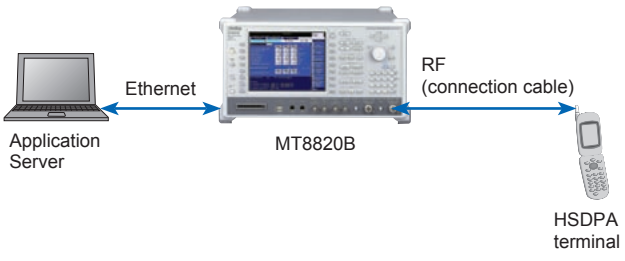
The MX882050C-011 HSDPA External Packet Data option supports data transfer to/from external equipment via the Ethernet port in the back panel of the MT8820B. End-to-end data transfer between the application server connected to the MT8820B and the HSDPA terminal or client PC connected to the HSDPA terminal can be tested using the MX882050C-011 option. The maximum data rate is 388 kbps.

External IP Packet Test

The MT8820B 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 MT8820B Connection

MX882000C-021 HSUPA Measurement Software

HSUPA terminals RF Tx Measurement, and Throughput Monitoring

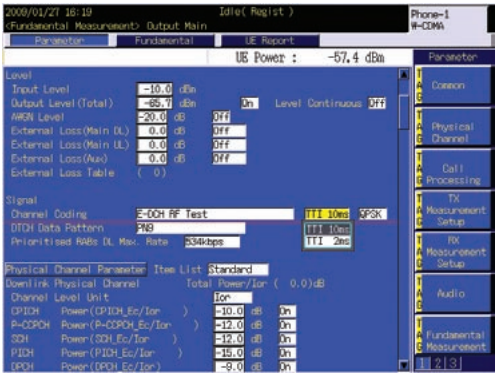
The MX882000C-021 HSUPA Measurement Software supports Tx measurements of HSUPA terminals. It can generate the signals used for testing HSUPA terminals with E-DCH category 1 to 6 (5.76 Mbps), and TTI 2 and 10 ms.

Tests	3GPP TS34.121	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 Parameters

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.



Transmitter Measurements

Transmit Power, Spectrum Emission Mask, Adjacent Channel Leakage Power

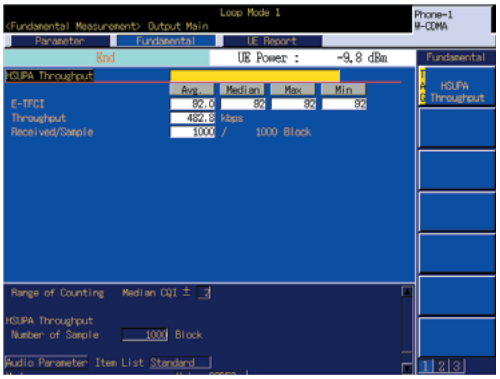
The transmit power, spectrum emission mask, and adjacent channel leakage power ratio at HS-DPCCH and E-DCH transmission are measured.

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

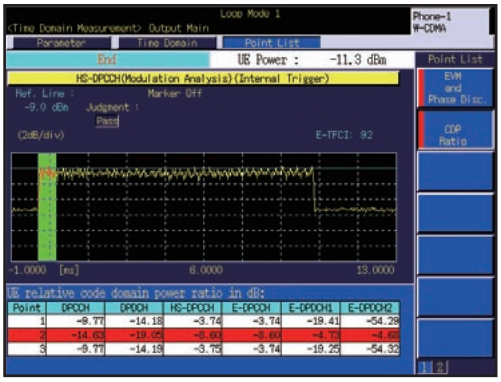
MX882000C-031 HSPA Evolution Measurement Software supports TRx measurements (measurement items defined in 3GPP TS34.121 shown the table below) of HSPA Evolution terminals.

Tests	3GPP TS34.121	Test items
Transmitter Tests	5.2E	UE Relative Code Domain Power Accuracy 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 Measurements

UE Relative Code Domain Power Accuracy, Relative Code Domain Error

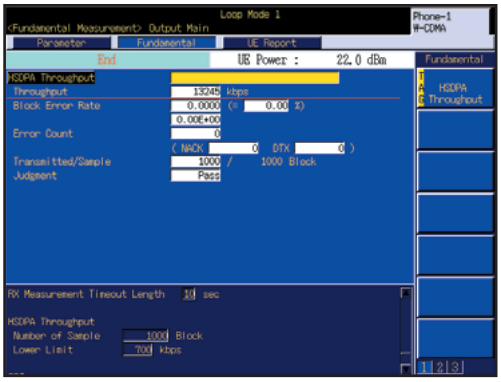
UE Relative Code Domain Power Accuracy and Relative Code Domain Error for HS-DPCCH and E-DCH with 16QAM are measured.



Receiver Measurements

HSDPA Throughput with 64QAM

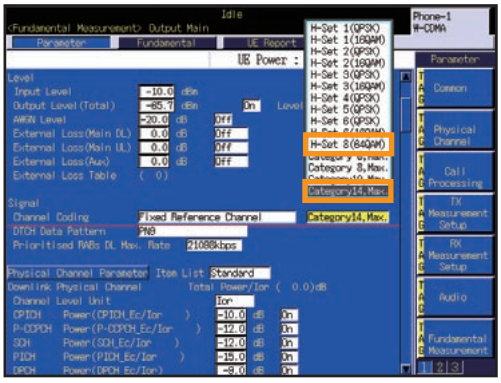
The HSDPA throughput with 64QAM can be measured by counting the number of ACK blocks from the terminal.



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.

Specifications

• MT8820B-001 W-CDMA Measurement Hardware, MX882000C W-CDMA Measurement Software, MX88205xC W-CDMA Call Processing Software

Modulation Analysis	Frequency: 300 to 2700 MHz Input level: –30 to +35 dBm (Main) Carrier frequency accuracy: ± (Setting frequency × Reference oscillator accuracy + 10 Hz) Modulation accuracy (residual vector error): ≤2.5% (at input of single DPCCH and single DPDCH)
RF Power	Frequency: 300 to 2700 MHz Input level: –65 to +35 dBm (Main) Measurement accuracy: ±0.5 dB (–25 to +35 dBm), ±0.7 dB (–55 to –25 dBm), ±0.9 dB (–65 to –55 dBm) ∗After calibration Linearity: ±0.2 dB (–40 to 0 dB, ≥–55 dBm), ±0.4 dB (–40 to 0 dB, ≥–65 dBm) Measurement object: DPCH, PRACH
Occupied Bandwidth	Frequency: 300 to 2700 MHz Input level: –10 to +35 dBm (Main)
Adjacent Channel Leakage Power Ratio	Frequency: 300 to 2700 MHz Input level: –10 to +35 dBm (Main) Measurement points: ±5, ±10 MHz Measurement range: ≥50 dB (at ±5 MHz), ≥55 dB (at ±10 MHz)
RF Signal Generator	Output frequency: 300 to 2700 MHz (1 Hz step) Channel level CPICH, P-CCPCH, SCH, PICH, DPCH, S-CCPCH, AICH : Off, –30 to 0 dB [0.1 dB step, relative level for Ior (total level)] OCNS: Off, Auto-setting Channel level accuracy: ±0.2 dB (relative level accuracy for Ior) AWGN level: Off, –20 to +5 dB [0.1 dB step, relative level for Ior (total level)] AWGN level accuracy: ±0.2 dB (relative level accuracy for Ior)
Error Rate Measurement	Functions: Insert PN9 or PN15 pattern in DTCH Measurement items: BER, BLER Measurement object: Loopback data imposed on uplink DTCH (BER, BLER), Serial data input from back-panel call processing I/O port (BER)
Call Processing	Call control: Registration, Origination, Termination, Handover, Network disconnect, Terminal disconnect (executes each processing conforming to 3GPP standards and performs pass/fail evaluation) Mobile terminal control: Output level, Loopback (executes each terminal control conforming to 3GPP standards)

• MX882000C-011 HSDPA Measurement Software

RF Power	Frequency: 300 to 2700 MHz Input level: –65 to +35 dBm (Main) Measurement accuracy: ±0.5 dB (–25 to +35 dBm), ±0.7 dB (–55 to –25 dBm), ±0.9 dB (–65 to –55 dBm) ∗After calibration Linearity: ±0.2 dB (–40 to 0 dB, ≥–55 dBm), ±0.4 dB (–40 to 0 dB, ≥–65 dBm) Measurement object: HS-DPCCH
CQI Measurement	Statistical analysis of CQI values reported from a mobile terminal
Call Processing	Call control: Registration, Call processing for Fixed Reference Channel (executes each processing conforming to 3GPP standards and performs pass/fail evaluation) Mobile terminal control: Output level (executes each 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, and 10 Measured items: BLER, Throughput Measurement object: ACK and NACK data imposed on uplink HS-DPCCH
Call Processing	Call control: Fixed Reference Channel (H-Set 6), HSDPA Full Rate (category 6, 8, and 10)(executes each processing conforming to 3GPP standards and performs pass/fail evaluation)

• MX882000C-021 HSUPA Measurement Software

RF Power	Frequency: 300 to 2700 MHz Input level: –65 to +35 dBm (Main) Measurement accuracy: ±0.5 dB (–25 to +35 dBm), ±0.7 dB (–55 to –25 dBm), ±0.9 dB (–65 to –55 dBm) ∗After calibration Linearity: ±0.2 dB (–40 to 0 dB, ≥–55 dBm), ±0.4 dB (–40 to 0 dB, ≥–65 dBm) Measurement object: DPCH, HS-DPCCH, E-DPCCH, E-DPDCH
Call Processing	Call control: Registration, Call processing for E-DCH RF Test (executes each processing conforming to 3GPP standards and performs pass/fail evaluation) Mobile terminal control: Output level (executes each terminal control conforming to 3GPP standards)

• MX882000C-031 HSPA Evolution Measurement Software

RF Power	Frequency: 300 to 2700 MHz Input level: –65 to +35 dBm (Main) Measurement accuracy: ±0.5 dB (–25 to +35 dBm), ±0.7 dB (–55 to –25 dBm), ±0.9 dB (–65 to –55 dBm) ∗After calibration Linearity: ±0.2 dB (–40 to 0 dB, ≥–55 dBm), ±0.4 dB (–40 to 0 dB, ≥–65 dBm) Measurement object: DPCH, HS-DPCCH, E-DPCCH, E-DPDCH
Throughput Measurement	Functions: Transmit HS-SCCH and HS-PDSCH based on Fixed Reference Channel (H-Set 8) Transmit HS-SCCH and HS-PDSCH based on HSDPA Full Data Rate for category 14 Measurement items: BLER, Throughput Measurement object: ACK and NACK data imposed on uplink HS-DPCCH
CQI Measurement	Statistical analysis of CQI values reported from a mobile terminal
Call Processing	Call control: Registration, Call processing for Fixed Reference Channel and E-DCH RF Test (executes each processing conforming to 3GPP standards and performs pass/fail evaluation) Mobile terminal control: Output level (executes each terminal control conforming to 3GPP standards)

• MT8820B-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 Handset microphone volume: 0, 1, 2, 3, 4, 5 Handset speaker volume: 0, 1, 2, 3, 4, 5
AF Output	Frequency range: 30 Hz to 10 kHz, 1 Hz step Setting range: 0 to 5 Vpeak (AF Output) Setting resolution: 1 mV (≤5 Vpeak), 100 µV (≤500 mVpeak), 10 µV (≤50 mVpeak) Accuracy: ±0.2 dB (≥10 mVpeak, ≥50 Hz), ±0.3 dB (≥10 mVpeak, <50 Hz) Waveform distortion: ≤30 kHz band ≤–60 dB (500 mVpeak, ≤5 kHz), ≤–54 dB (≥70 mVpeak) Output impedance: ≤1 Ω Max. output current: 100 mA
AF Input	Frequency range: 50 Hz to 10 kHz Input voltage range: 1 mVpeak to 5 Vpeak (AF Input) Max. allowable input voltage: 30 Vrms Input impedance: 100 kΩ
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	Frequency: 1 kHz in ≤30 kHz band ≥60 dB (≥1000 mVpeak), ≥54 dB (>50 mVpeak), ≥46 dB (≥10 mVpeak)
Distortion Rate Measurement	Frequency: 1 kHz in ≤30 kHz band ≤–60 dB (≥1000 mVpeak), ≤–54 dB (>50 mVpeak), ≤–46 dB (≥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 UL: 64 kbps 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 388 kbps maximum for 16QAM 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 UL: 64 kbps DL: 267 kbps/PS RAB for QPSK 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 UL: 64 kbps DL: 64 kbps/CS RAB

• 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
	Main frame
MT8820B	Radio Communication Analyzer
	Standard accessories
	Power Cord, 2.6 m: 1 pc
Z0956A	ANR-CFX40T256 (CF card, 256 MB): 1 pc
CA68ADP	PC Card Adapter : 1 pc
W2778AE	MT8815B/MT8820B Operation Manual (CD-ROM): 1 copy
	Options
MT8820B-001	W-CDMA Measurement Hardware
MT8820B-002	TDMA Measurement Hardware
MT8820B-003	CDMA2000 Measurement Hardware
MT8820B-004	1xEV-DO Measurement Hardware*1
MT8820B-005	1xEV-DO Measurement Hardware*1
MT8820B-007	TD-SCDMA Measurement Hardware
MT8820B-011	Audio Board
MT8820B-012	Parallel Phone Measurement Hardware
MT8820B-031	W-CDMA Measurement Hardware Lite
MT8820B-032	TDMA Measurement Hardware Lite
MT8820B-043	CDMA2000 Time Offset CAL For GPS SG (requires MT8820B-003 and MX882002C)
MT8820B-101	W-CDMA Measurement Hardware Retrofit
MT8820B-102	TDMA Measurement Hardware Retrofit
MT8820B-103	CDMA2000 Measurement Hardware Retrofit
MT8820B-104	1xEV-DO Measurement Hardware Retrofit*1
MT8820B-105	1xEV-DO Measurement Hardware Retrofit*1
MT8820B-107	TD-SCDMA Measurement Hardware Retrofit
MT8820B-111	Audio Board Retrofit
MT8820B-112	Parallel Phone Measurement Hardware Retrofit
MT8820B-131	W-CDMA Measurement Hardware Lite Retrofit
MT8820B-132	TDMA Measurement Hardware Lite Retrofit
MT8820B-143	CDMA2000 Time Offset CAL For GPS SG Retrofit (requires MT8820B-003 and MX882002C)
MT8820B-177	TD-SCDMA Measurement Retrofit
	Softwares
MX882000C	W-CDMA Measurement Software (requires MT8820B-001 and MX88205xC)
MX882000C-001	W-CDMA Voice Codec (requires MT8820B-011 and MX882000C)
MX882000C-011	HSDPA Measurement Software (requires MT8820B-001, MX882000C, and MX882050C)
MX882000C-012	HSDPA H-Set 6 Throughput Test (requires MT8820B-001, MX882000C, MX882000C-011, and MX882050C)
MX882000C-013	HSDPA High Data Rate (requires MT8820B-001, MX882000C, MX882000C-011, and MX882050C)
MX882000C-021	HSUPA Measurement Software (requires MT8820B-001, MX882000C, MX882000C-011, and MX882050C)
MX882001C	GSM Measurement Software (requires MT8820B-002)
MX882001C-001	GSM Voice Codec (requires MT8820B-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 MT8820B-003)
MX882002C-001	CDMA2000 Voice Codec (requires MT8820B-011 and MX882002C)
MX882002C-002	CDMA2000 External Packet Data (requires MX882002C)
MX882003C	1xEV-DO Measurement Software (requires MT8820B-003, MT8820B-004, and MX882002C)
MX882003C-002	1xEV-DO External Packet Data (requires MX882003C)
MX882005C	PHS Measurement Software (requires MT8820B-002)
MX882005C-011	Advanced PHS Measurement Software (requires MX882005C)
MX882006C	1xEV-DO Measurement Software (requires MT8820B-003, MT8820B-005, and MX882002C)
MX882006C-002	1xEV-DO External Packet Data (requires MX882006C)
MX882006C-011	1xEV-DO Rev. A Measurement Software (requires MX882006C)
MX882007C	TD-SCDMA Measurement Software (requires MT8820B-001 and MT8820B-007)
MX882007C-001	TD-SCDMA Voice Codec (requires MT8820B-011 and MX882007C)
MX882007C-003	TD-SCDMA Video Phone Test (requires MX882007C)
MX882007C-011	TD-SCDMA HSDPA Measurement Software*3 (requires MT8820B-001, MT8820B-007, and MX882007C)
MX882010C	Parallel Phone Measurement Software*2 [requires MT8820B-012, the two same measurement hardware (2 board/set) and one measurement software]
MX882030C	W-CDMA Measurement Software Lite (requires MT8820B-031)
MX882030C-001	W-CDMA Voice Codec (requires MT8820B-011 and MX882030C)
MX882030C-008	W-CDMA Band XI*3 (requires MX882030C-050)
MX882030C-009	W-CDMA Band IX*3 (requires MX882030C-050)
MX882030C-011	HSDPA Measurement Software (requires MX882030C)
MX882030C-021	HSUPA Measurement Software (requires MX882030C and MX882030C-011)
MX882030C-040	W-CDMA High-speed Adjustment (requires MX882030C)
MX882030C-050	W-CDMA Call Processing Software*3, *4 (requires MX882030C)
MX882031C	GSM Measurement Software Lite (requires MT8820B-032)
MX882031C-001	GSM Voice Codec (requires MT8820B-011 and MX882031C)
MX882031C-011	EGPRS Measurement Software (requires MX882031C)
MX882031C-040	EGPRS Predistortion Adjustment (requires MX882031C)
MX882031C-041	GSM High-speed Adjustment (requires MX882031C)
MX882031C-050	GSM Call Processing Software (requires MX882031C)
MX882050C	W-CDMA Call Processing Software*3 (requires MX882000C)
MX882050C-002	W-CDMA External Packet Data*3, *4 (requires MX882050C)
MX882050C-003	W-CDMA Video Phone Test*3 (requires MX882050C)
MX882050C-008	W-CDMA Band XI*3 (requires MX882050C)
MX882050C-009	W-CDMA Band IX*3 (requires MX882050C)
MX882050C-011	HSDPA External Packet Data*3 (requires MX882000C-011)
MX882070C	W-CDMA Ciphering Software*3 (requires MX882050C)
MX882051C	W-CDMA Call Processing Software*3 (requires MX882000C)
MX882051C-002	W-CDMA External Packet Data*3 (requires MX882051C)
MX882051C-003	W-CDMA Video Phone Test*3 (requires MX882051C)
MX882071C	W-CDMA Ciphering Software*3 (requires MX882051C)
	Warranty
MT8820B-ES210	Extended Two Year Warranty Service
MT8820B-ES310	Extended Three Year Warranty Service
MT8820B-ES510	Extended Five Year Warranty Service
	Application parts
P0019	TEST USIM001*5
P0035B	W-CDMA/GSM Test USIM
A0013	Handset
J1249	CDMA2000 Cable [D-Sub (15 pin, P-type) · D-Sub (15 pin, P-type), used in combination with J1267 (sold separately)]
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)]
J0576B	Coaxial Cord (N-P · 5D-2W · N-P), 1 m
J0576D	Coaxial Cord (N-P · 5D-2W · N-P), 2 m
J0127A	Coaxial Cord (BNC-P · RG58A/U · BNC-P), 1 m
J0127C	Coaxial Cord (BNC-P · RG58A/U · BNC-P), 0.5 m
J0007	GPIB Cable, 1 m
J0008	GPIB Cable, 2 m
MN8110B	I/O Adapter (for call processing I/O)
B0332	Joint Plate (4 pcs/set)
B0333G	Rack Mount Kit
B0499	Carrying Case (hard type, with protective cover and casters)
B0499B	Carrying Case (hard type, with protective cover, without casters)
W2776AE	MT8815B/MT8820B Operation Manual (booklet)
W2765AE	MX882000C Operation Manual (booklet)
W2771AE	MX882001C Operation Manual (booklet)
W2790AE	MX882002C Operation Manual Panel Operation (booklet)
W2791AE	MX882002C Operation Manual Remote Control (booklet)
W2793AE	MX882003C Operation Manual Panel Operation (booklet)
W2794AE	MX882003C Operation Manual Remote Control (booklet)
W2769AE	MX882005C Operation Manual (booklet)
W2930AE	MX882006C Operation Manual (booklet)
W2931AE	MX882006C Operation Manual Remote Control (booklet)
W2940AE	MX882007C Operation Manual (booklet)
W2894AE	MX882030C Operation Manual (booklet)
W2895AE	MX882031C Operation Manual (booklet)
W2767AE	MX88205xC Operation Manual (booklet)
W2773AE	MX88207xC Operation Manual (booklet)

∗1: The MT8820B-004 hardware supports IS-856-0 (1xEV-DO Rev. 0) RF measurements but does not support IS-856-A (1xEV-DO Rev. A) measurements.
The MT8820B-005 hardware supports both IS-856-0 (1xEV-DO Rev. 0) and IS-856-A (1xEV-DO Rev. A) RF measurements.

∗2: The following measurement hardware supports the Parallelphone measurement option: MT8820B-001, MT8820B-002, MT8820B-003, MT8820B-004 (or MT8820B-005), MT8820B-007. All the measurement hardware can be installed simultaneously. However, the MT8820B-004 and MT8820B-005 cannot be installed simultaneously.

∗3: For terminal connectivity, contact your Anritsu sales representative.

∗4: These options preinstall the integrity protection function.

∗5: This Test USIM can be worked on only W-CDMA mode. When the connection of GSM or TD-SCDMA is necessary, P0035B can be applied.

Anritsu

Specifications are subject to change without notice.

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