

For MT8820A Radio Communication Analyzer

MX882000B

W-CDMA Measurement Software

MX882000B-11

HSDPA Measurement Software



MX882000B

W-CDMA Measurement Software

Advanced high-speed measurement method and batch measurement supporting the manufacture of W-CDMA terminals

The MX882000B W-CDMA Measurement Software (requires MX88205xA W-CDMA Call Processing Software) is designed for mobile terminal transmission and reception measurements of the W-CDMA system that supports the third generation digital mobile communications. With the MX882000B W-CDMA and MX882001A GSM Measurement Softwares installed in the MT8820A mainframe, the user can fully evaluate the major transmission and reception characteristics of representative digital mobile terminals used in Europe. Moreover, the addition of the MX882070A W-CDMA Ciphering Software (requires MX882050A W-CDMA Call Processing Software) can perform the connection test of cipher communication between the MT8820A and a W-CDMA terminal. Advanced DSP and parallel measurement technologies dramatically reduce manufacturing and inspection test time. Furthermore, several measurement items can be selected freely for batch measurement. A one-touch operation also allows for each selected batch measurement item to be executed repeatedly for the designated number of times. Pass/fail evaluation of the main measurement items including transmission frequency, modulation accuracy, output power, spectrum emission mask, adjacent channel leakage power ratio, occupied bandwidth and BER, can be performed easily and quickly.

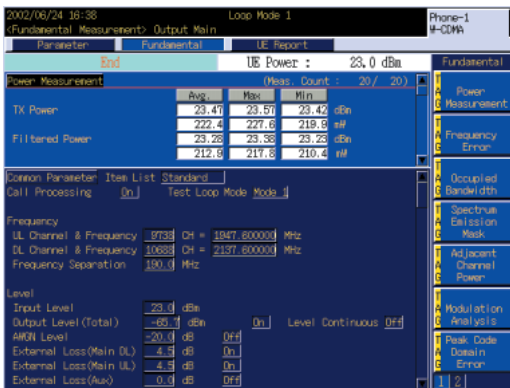
The built-in GPIB interface enables MT8820A to be integrated into automated production lines as well as to configure an automated test system for after-sales maintenance.

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
	5.5.1	Transmit 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	7.2.1	DCH Demodulation

Transmitter Tests

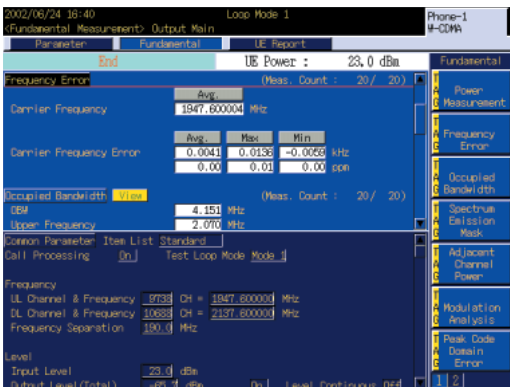
Output Power

This test measures the output power of the W-CDMA terminal with the power controlled to maximum, minimum and any other level. When the number of measurements is set to two or more, the max., average, and min. values of the result are displayed, providing evaluation of the W-CDMA terminal randomness. This repeat measurement function is also supported for other measurements.



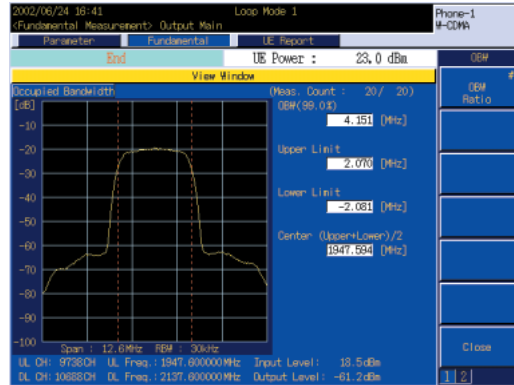
Frequency Error

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



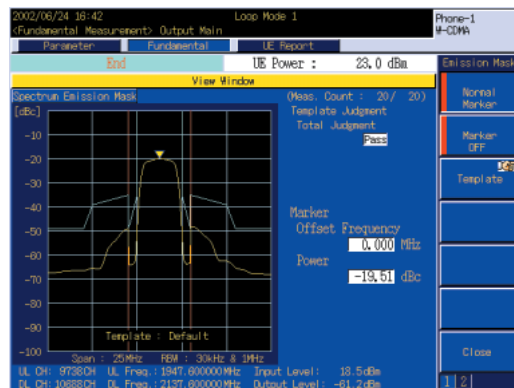
Occupied Bandwidth

This test measures the occupied bandwidth of the W-CDMA terminal. The ratio of the frequency bandwidth to the total power can be changed in a range of 80.0 to 99.9%.



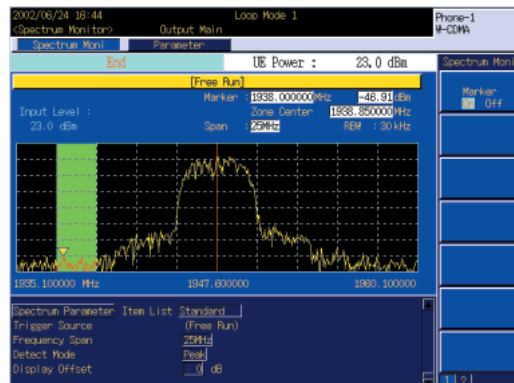
Spectrum Emission Mask

This function performs pass/fail evaluation of the W-CDMA terminal spectrum emission mask. Frequency components are checked within ± 12.5 MHz of the center frequency comparing with the specified limits of the template.



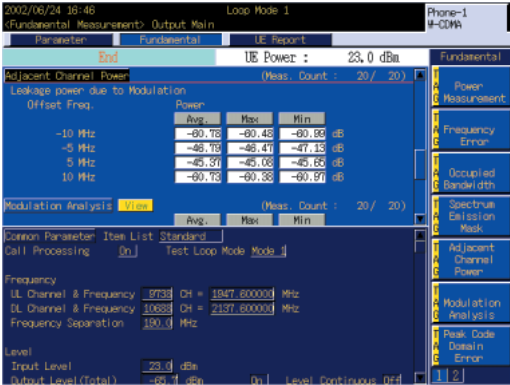
Spectrum Monitor

It is possible to monitor an uplink RF signal spectrum with a center frequency in a range of ± 2.5 MHz or ± 12.5 MHz. The zone marker function facilitates the detection of maximum spectrum level in the zone.



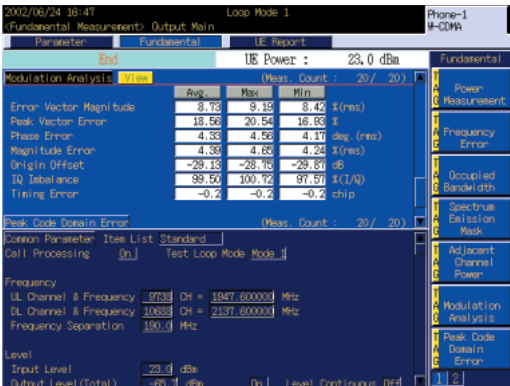
Adjacent Channel Leakage Power Ratio

This test measures the adjacent channel leakage power of the W-CDMA terminal. The leakage power at points ± 5 and ± 10 MHz from the center frequency can be measured at high speed using the advanced measurement architecture.

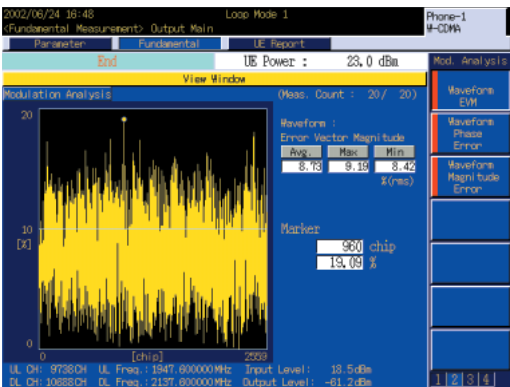


Modulation Analysis

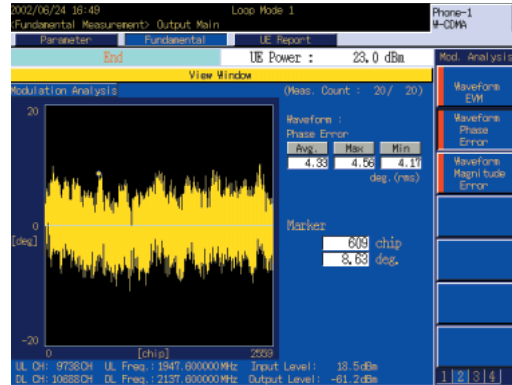
This test performs modulation analysis of the W-CDMA terminal. In addition to the error vector magnitude (EVM) specified in the 3GPP measurement items, the phase error, amplitude error, origin offset and I/Q level ratio can also be measured.



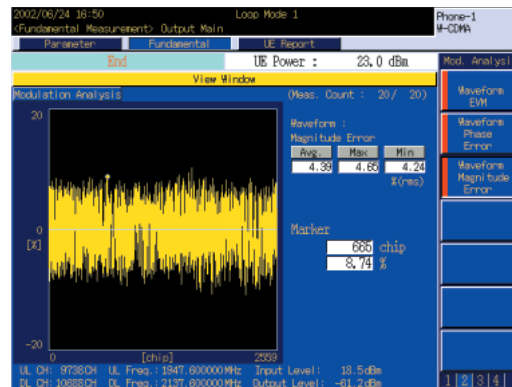
Vector error, phase error and amplitude error can be displayed in waveform. This function is useful for R&D, repair and maintenance purposes.



Vector error waveform



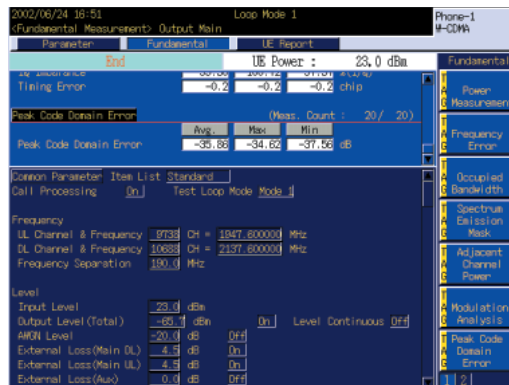
Phase error waveform



Amplitude error waveform

Peak Code Domain Error

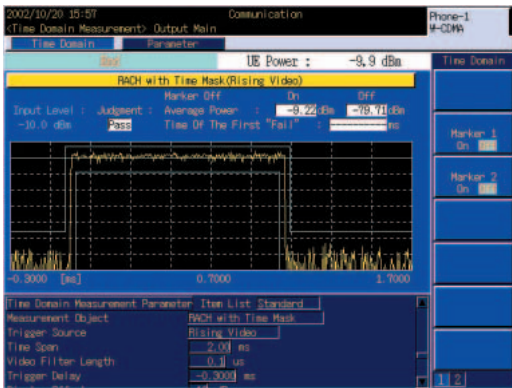
The test measures the peak code domain error of the W-CDMA terminal.



Open Loop Power Control

Transmission level for RACH*1 preamble of a W-CDMA terminal is determined by the downlink RF signal level and RACH-related parameter of call processing. Time domain measurement can perform transmission level measurement of RACH preamble and template mask evaluation simultaneously.

*1: Random Access Channel



Close Loop Power Control

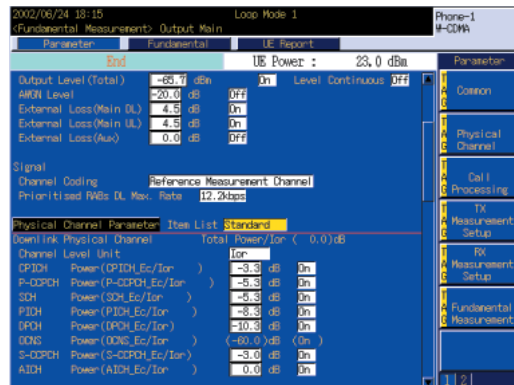
It is possible to transmit any particular TPC (Transmission Power Control) bit row to a W-CDMA terminal. W-CDMA terminal's transmission power response to power control can be monitored on the Time Domain Measurement screen, and transmission power for max. 1515 slots can be measured at high speed in a batch.



Downlink RF Signal Generation Function

The relative level for 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 in a range of -30 to 0 dB. In addition, OCNS*8 and AWGN*9 are also provided, enabling to generate any downlink modulation signal required for transmitter and receiver tests. The RF output level can be set in 0.1 dB steps across a range of -140 to -10 dBm (MAIN I/O connectors).

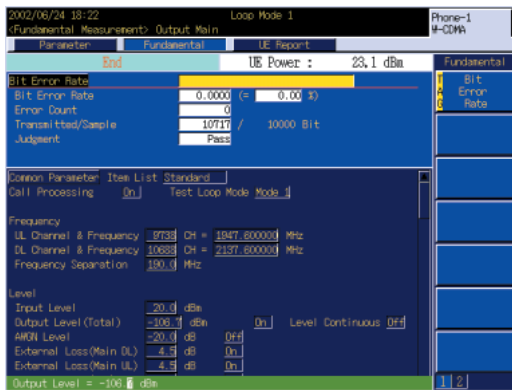
- *1: Common Pilot Channel
- *2: Primary Common Control Physical Channel,
- *3: Synchronization Channel
- *4: Paging Indicator Channel
- *5: Dedicated Physical Channel
- *6: Secondary Common Control Physical Channel
- *7: Acquisition Indication Channel
- *8: Orthogonal Channel Noise Simulator,
- *9: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



Receiver Tests

Bit Error Rate Measurement

Bit error rate can be measured by the loopback test mode specified in the 3GPP standards. In addition, bit error rate can also be measured by directly inputting the demodulated data and clock signals from a W-CDMA terminal when the W-CDMA terminal test is executed. Either PN9 or PN15 can be selected for data pattern inserted in the downlink RF signal.

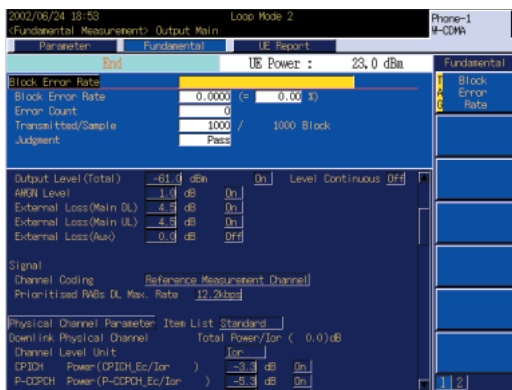


Performance Tests

Block Error Rate Measurement

Block error rate is measured based on the test loop mode 2, enabling to perform the DCH*1 demodulation tests in accordance with the 7.2.1 of the 3GPP standards TS34.121.

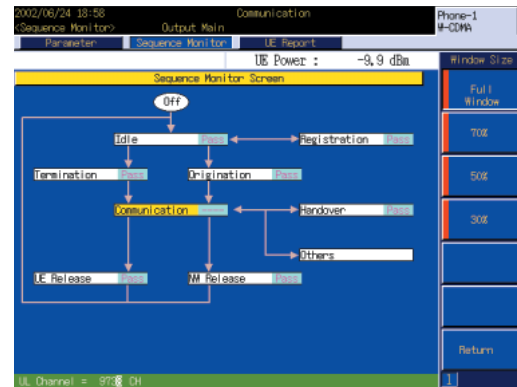
*1: Dedicated Channel



Call Processing Function

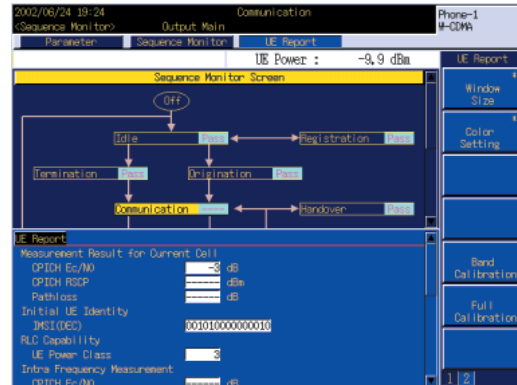
Connection Tests

The call processing function performs various connection tests such as registration, origination, termination, handover, disconnection from mobile terminal and disconnection from network. In addition, the voice signal from the W-CDMA terminal can be looped back during conversation to perform a simple voice communications test.



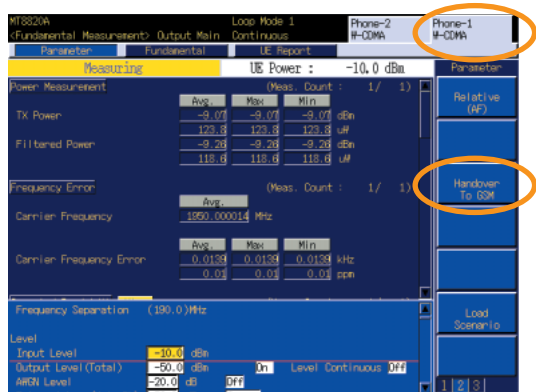
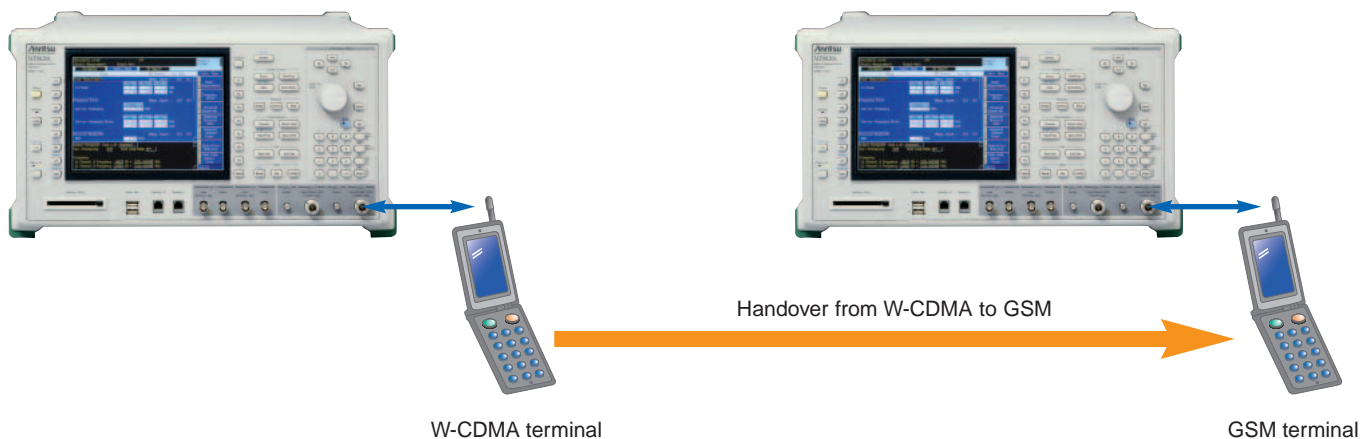
Terminal Monitor

This function enables to periodically monitor the W-CDMA terminal transmission power level and power class.



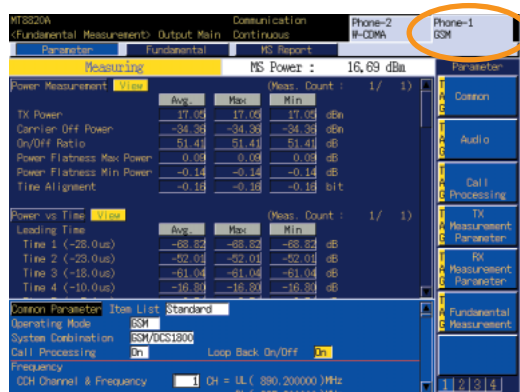
Intersystem Handover Control

Transmission/Reception measurements or voice communications of mobile terminal's W-CDMA and GSM parts can be tested continuously by controlling handover of a W-CDMA/GSM dual-mode mobile terminal from MT8820A. The MT8820A performs high-speed system change while a mobile terminal executes handover.



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)

Specifications

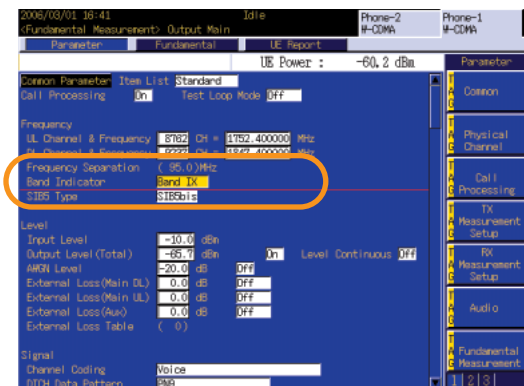
• **MT8820A-01 W-CDMA Measurement Hardware, MX882000B W-CDMA Measurement Software, MX88205xA W-CDMA Call Processing Software**

Modulation analysis	<p>Frequency: 300 to 2200 MHz Input level: -30 to +35 dBm (MAIN Input/Output) Carrier frequency accuracy: \pm (Setting frequency x Reference oscillator accuracy + 10 Hz) Modulation accuracy (residual vector error): $\leq 2.5\%$ (at input of a single DPCCH and a single DPDCH)</p>
RF power	<p>Frequency: 300 to 2200 MHz Input level: -65 to +35 dBm (MAIN Input/Output) Measurement accuracy: ± 0.5 dB (-25 to +35 dBm), ± 0.7 dB (-55 to -25 dBm), ± 0.9 dB (-65 to -55 dBm) *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</p>
Occupied bandwidth	<p>Frequency: 300 to 2200 MHz Input level: -10 to +35 dBm (MAIN Input/Output)</p>
Adjacent channel leakage power ratio	<p>Frequency: 300 to 2200 MHz Input level: -10 to +35 dBm (MAIN Input/Output) Measurement points: ± 5 MHz, ± 10 MHz Measurement range: ≥ 50 dB (at ± 5 MHz), ≥ 55 dB (at ± 10 MHz)</p>
RF signal generator	<p>Output frequency: 300 to 2200 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): Auto-setting Channel level accuracy: ± 0.2 dB (relative level accuracy for Ior) AWGN level: Off, -20 to +5 dB (0.1 dB step) AWGN level accuracy: ± 0.2 dB (relative level accuracy for Ior)</p>
Error rate measurement	<p>Functions: Insert PN9 or PN15 pattern in DTCH Measurement items: BER, BLER Measurement objective: Loopback data imposed on uplink DTCH (BER, BLER), serial data inputted from rear-panel call processing I/O port (BER)</p>
Call processing	<p>Origination control: Registration, origination, termination, handover, disconnection from network, disconnection from mobile terminal (executes each processing conforming to 3GPP standards and performs pass/fail evaluation) Mobile terminal control: Output level, loopback (executes each mobile function control conforming to 3GPP standards)</p>

MX882050A-09 W-CDMA Band IX

Call connection tests in W-CDMA Band IX

The MX882050A-09 W-CDMA Band IX option is capable of sending the broadcast message specified in 3GPP Band IX. A registration and call connection in Band IX can be established with this option. In case of disconnecting a call after handover from another band to Band IX, the UE does not go out of service.



"Band IX" for band indicator and "SIB5bis" for SIB5 type are available by installing this option.

Specifications

• MX882050A-09 W-CDMA Band IX

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

MX882000B-01 W-CDMA Voice Codec

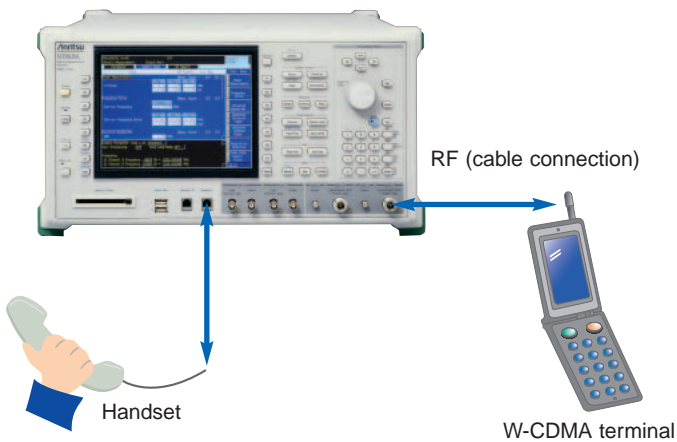
Real-time voice encoding and decoding audio measurement function

The MX882000B-01 W-CDMA Voice Codec is optional software that brings real-time voice encoding and decoding to the W-CDMA Measurement Software. The installation of this option and MT8820A Option11 Audio Board enables end-to-end communication testing with a handset.

Also, transmission/reception audio measurement is performable in call processing state.

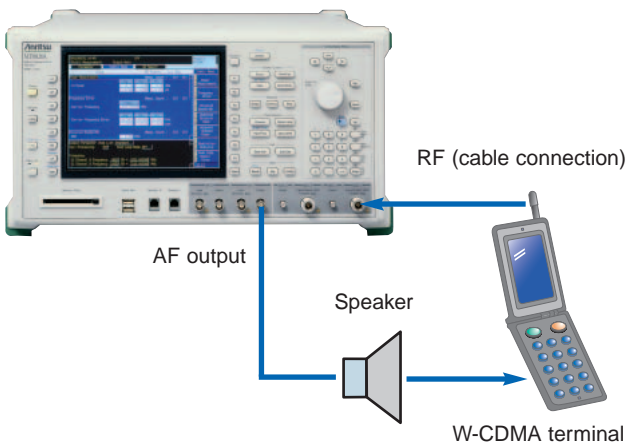
End-to-end Communications Testing

Connection of a handset to the MT8820A RJ11 connector enables end-to-end communications testing between the MT8820A and a W-CDMA terminal.



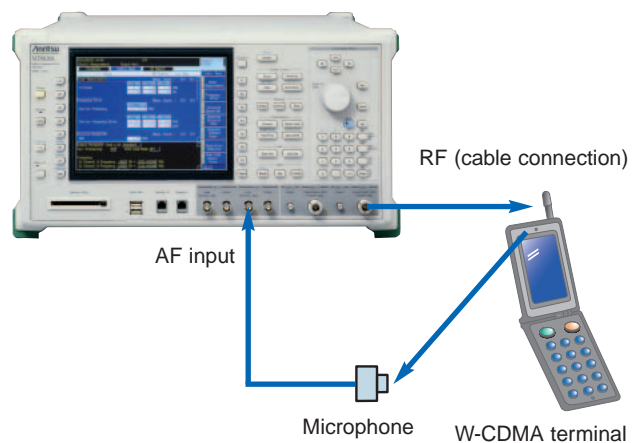
Transmission Audio Measurement

The tone signal outputted from AF Output connector is inputted to the W-CDMA terminal microphone. Then the MT8820A demodulates uplink RF signal and measures the level, frequency and distortion rate of demodulated tone signal. This function achieves the evaluation of audio characteristic on transmitter side of the W-CDMA terminals.



Reception Audio Measurement

The tone signal demodulated by the W-CDMA terminal is inputted to AF Input connector of the MT8820A. The audio characteristic on receiver side of the W-CDMA terminals can be evaluated by measuring the level, frequency and distortion rate of the tone signal inputted to AF Input connector.



Specifications

• MT8820A-11 Audio Board, MX882000B-01 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 μ V (≤ 500 mVpeak), 10 μ V (≤ 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: $\leq 1 \Omega$ 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 k Ω
Frequency measurement	Accuracy: Reference oscillator accuracy + 0.5 Hz
Level measurement	Accuracy: ± 0.2 dB (≥ 10 mVpeak), ± 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)

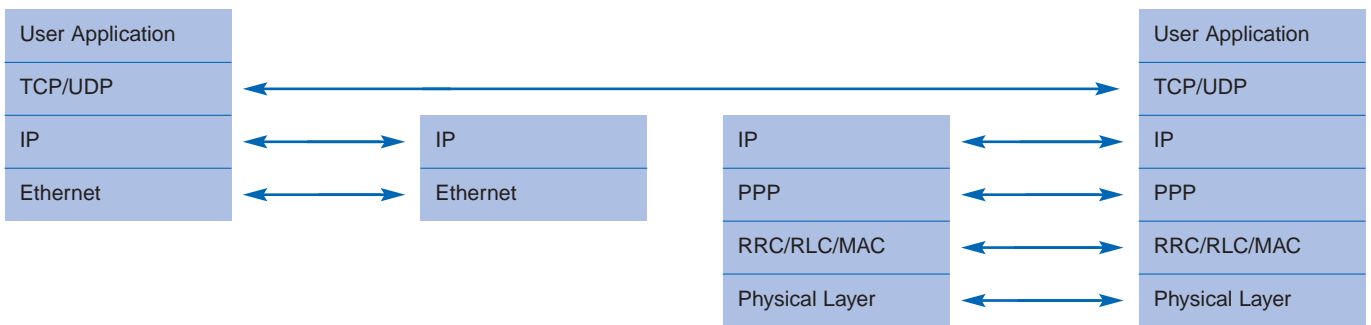
MX882050A-02, MX882051A-02 W-CDMA External Packet Data

Verification test function for packet communication data transfer

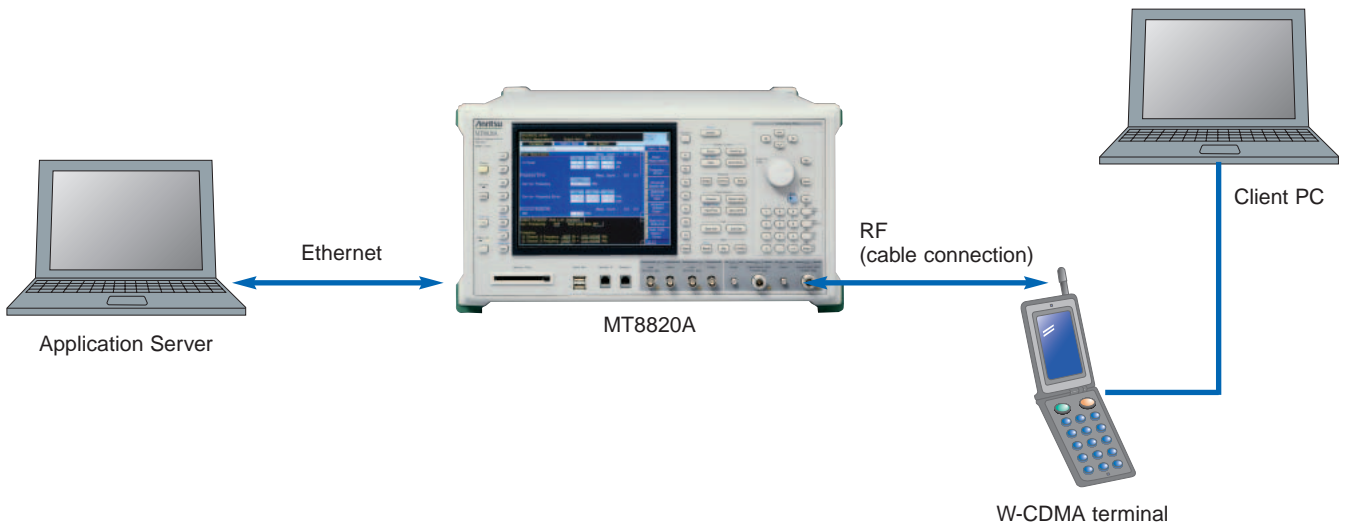
The MX882050A-02 and MX882051A-02 W-CDMA External Packet Data option enables data transfer to/from external equipment by using the Ethernet port on the rear of the MT8820A. Installing the MX882050A-02 and MX882051A-02 enables end-to-end data transfer between an application server connected to the MT8820A and a W-CDMA terminal or client PC connected to a W-CDMA terminal.

External PPP Packet Test

The MT8820A equipped with a PPP server terminates PPP packets received from a W-CDMA terminal and outputs IP packets to the Ethernet port. It also converts IP packets input from the Ethernet port to PPP Packets, then transmits them to a W-CDMA terminal.



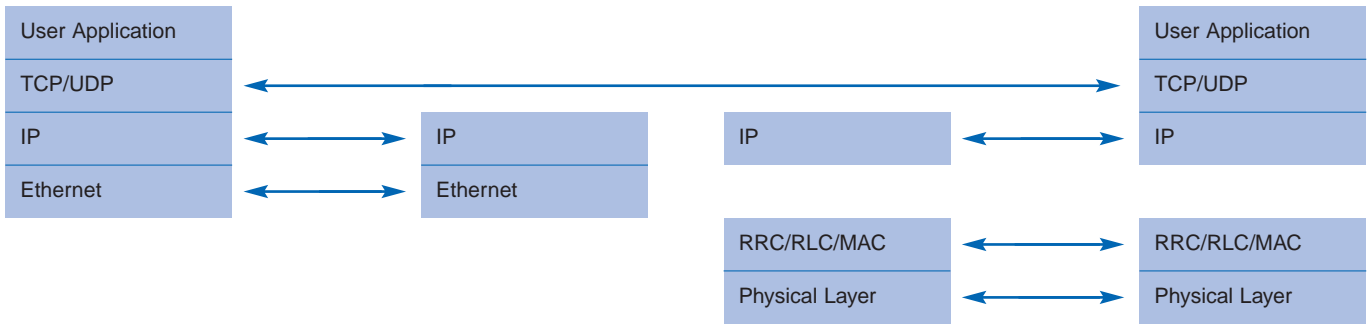
Protocol Stack for External PPP Packet Test



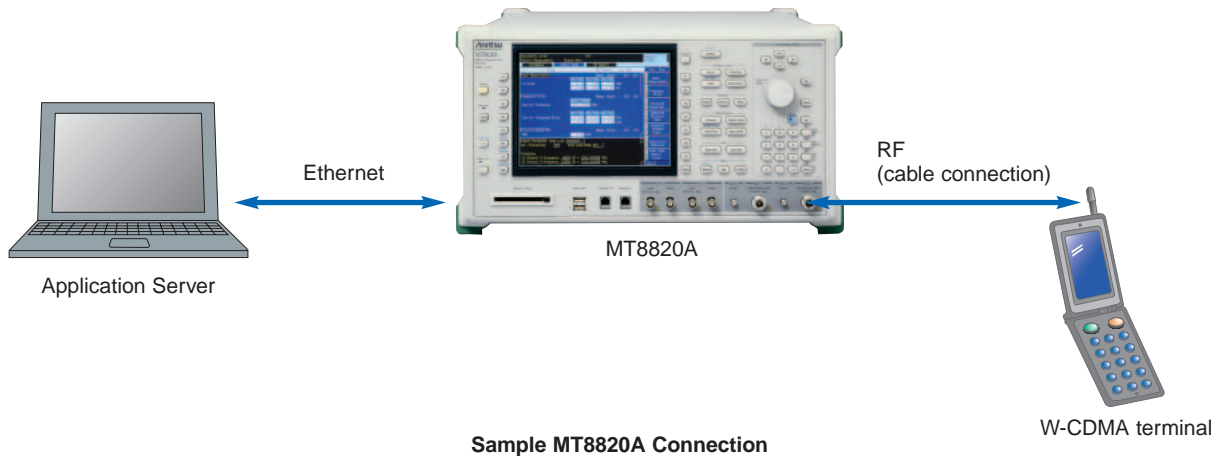
Sample MT8820A Connection

External IP Packet Test

The MT8820A outputs IP packets received from a W-CDMA terminal. It also transmits IP packets input from the Ethernet port to a W-CDMA terminal.



Protocol Stack for External PPP Packet Test



Sample MT8820A Connection

Specifications

• MX882050A-02, MX882051A-02 W-CDMA External Packet Data

Ethernet	10BASE-T
Data rate	Downlink: 384 kbps, Uplink: 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

MX882050A-03, MX882051A-03 W-CDMA Video Phone Test

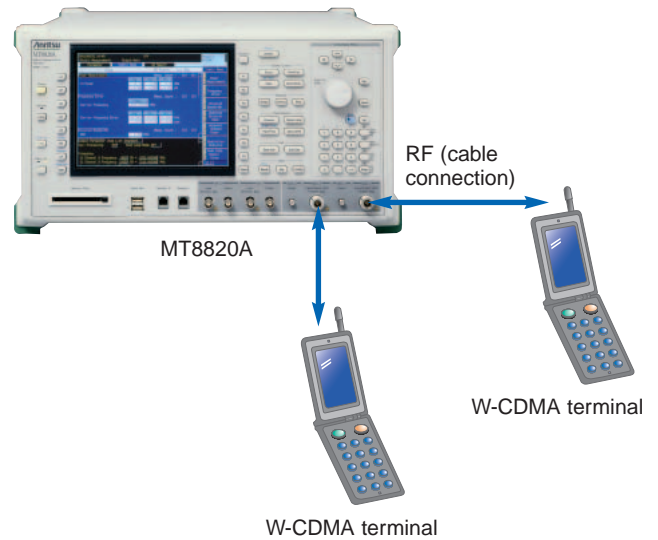
The end-to-end video phone test function

MX882050A-03 and MX882051A-03 W-CDMA Video Phone Test realizes the data transfer function between W-CDMA terminals via an Ethernet port in the rear of MT8820A. When these software options are installed in the MT8820A mainframe, a single platform (in case the MT8820A mainframe is configured for parallelphone measurement use) is able to perform the end-to-end video communication test between W-CDMA terminals.

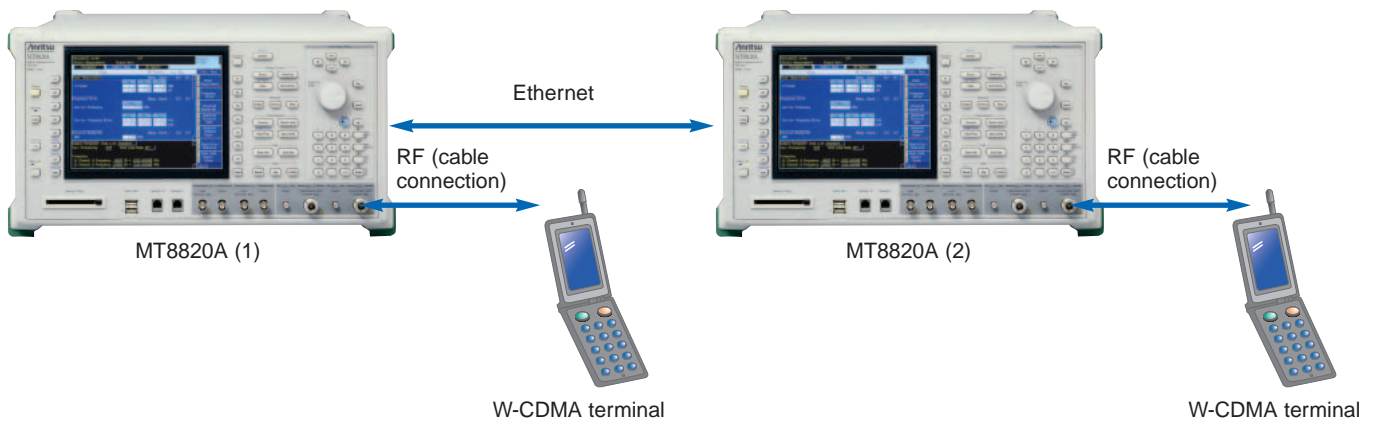
End-to-end Test

Phone1 (or Phone2) enters standby mode when a “Start Call” button of MT8820A is pressed. A W-CDMA terminal connected to Phone2 (or Phone1) originates a call and a W-CDMA terminal connected to Phone1 (or Phone2) terminates a call. Thus, the end-to-end video communication test is achieved.

MT8820A (1) enters standby mode when a “Start Call” button of MT8820A is pressed. A W-CDMA terminal connected to MT8820A (2) originates a call and a W-CDMA terminal connected to MT8820A (1) terminates a call. Thus, the end-to-end video communication test is achieved.



Configuration of the end-to-end video communication test performed with one set of MT8820A (in case the MT8820A mainframe is configured for parallelphone measurement use)



Configuration of the end-to-end video communication test performed with two sets of MT8820A

Specifications

• MX882050A-03, MX882051A-03 W-CDMA Video Phone Test

Ethernet	10BASE-T
Data rate	Downlink: 64 kbps, Uplink: 64 kbps
Channel coding	Conversation/unknown/UL: 64 kbps DL: 64 kbps/CS RAB

MX882000B-11 HSDPA Measurement Software

Utilizing an advanced high-speed measuring method and offering batch measurements to support W-CDMA/HSDPA terminal production

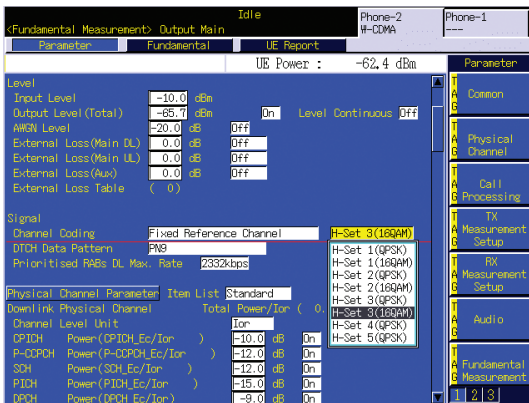
The MX882000B-11 HSDPA Measurement Software supports transmission and reception measurements of mobile terminals conforming to HSDPA which is the advanced system of W-CDMA. MX882000B-11 HSDPA Measurement Software supports the dedicated FRC (Fixed Reference Channel) of maximum rate 3.6 Mbit/s (HS-DSCH category 1 to 6, 11 and 12) for RF test and can change the modulation type between QPSK and 16QAM.

Test	3GPP TS34.121	Test items
Transmitter tests	5.2A	Maximum Output Power with HS-DPCCH
	5.7A	HS-DPCCH
	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
Receiver tests	6.3A	Maximum Input Level with HS-PDSCH Reception (16QAM)

HSDPA Parameters

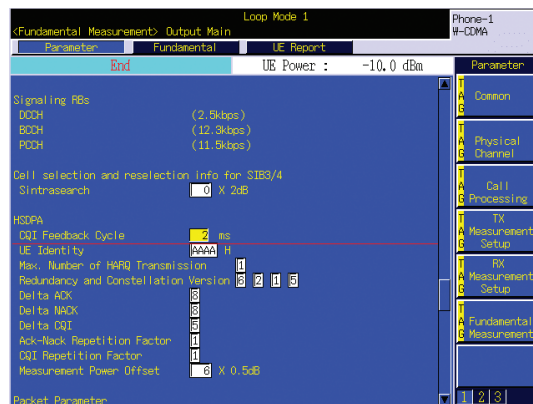
HSDPA FRC Signal

H-Set 1 to 5 is configurable as a FRC signal used for TRX measurements.



HSDPA Call Processing

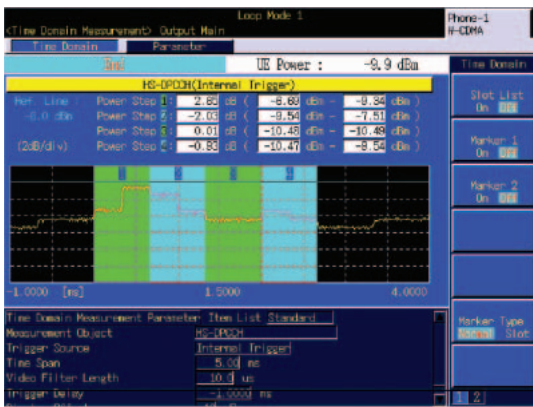
The various parameters related to HSDPA are configurable.



Transmitter Tests

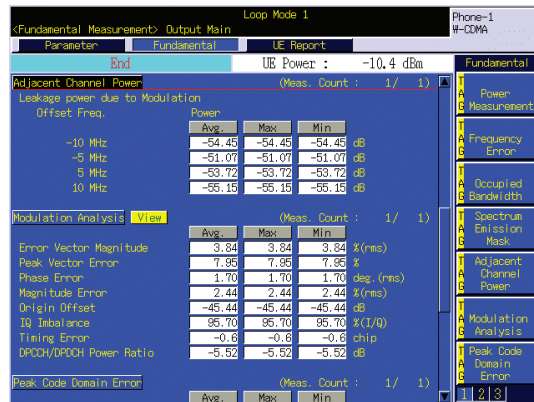
HS-DPCCH

HS-DPCCH measures in the time domain. HS-DPCCH measures the power steps at HS-DPCCH slot boundaries.



Output Power, Spectrum Emission Mask, Adjacent Channel Leakage Power Ratio and Modulation Analysis

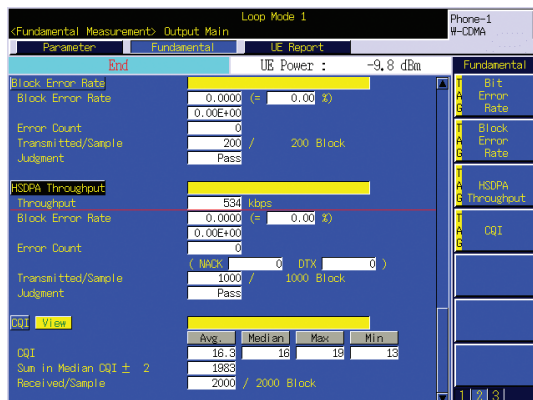
The various transmitter tests related to HSDPA are performed in Fundamental Measurements. They are measured in the slots of HS-DPCCH transmitted.



Receiver Tests

HSDPA Throughput

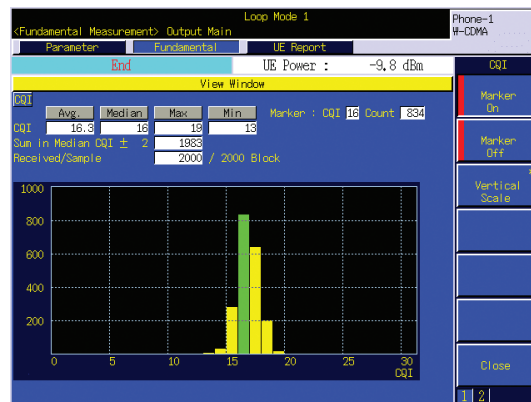
HSDPA Throughput can be measured by counting the number of ACK blocks.



CQI Measurement

Statistical analysis is performed based on the CQI values that the HSDPA terminal reports.

The maximum, minimum, average, and median values of the repeat measurements are displayed.



Specifications

• MT8820A-01 W-CDMA Measurement Hardware, MX882000B-11 HSDPA Measurement Software

Modulation analysis	<p>Frequency: 300 to 2200 MHz Input level: -30 to +35 dBm (MAIN Input/Output) Carrier frequency accuracy: \pm (Setting frequency x Reference oscillator accuracy + 10 Hz) Modulation accuracy (residual vector error): $\leq 2.5\%$ (at input of a single DPCCH, a single DPDCH, and a single HS-DPCCH)</p>
RF power	<p>Frequency: 300 to 2200 MHz Input level: -65 to +35 dBm (MAIN Input/Output) Measurement accuracy: ± 0.5 dB (-25 to +35 dBm), ± 0.7 dB (-55 to -25 dBm), ± 0.9 dB (-65 to -55 dBm) *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</p>
Adjacent channel leakage power ratio	<p>Frequency: 300 to 2200 MHz Input level: -10 to +35 dBm (MAIN Input/Output) Measurement points: ± 5 MHz, ± 10 MHz Measurement range: ≥ 50 dB (at ± 5 MHz), ≥ 55 dB (at ± 10 MHz)</p>
RF signal generator	<p>Output frequency: 300 to 2200 MHz (1 Hz step) Channel level (CPICH, P-CCPCH, SCH, PICH, DPCH, S-CCPCH, AICH, HS-SCCH, HS-PDSCH) : Off, -30 to 0 dB [0.1 dB step, relative level for Ior (total level)] (OCNS): Auto-setting Channel level accuracy: ± 0.2 dB (relative level accuracy for Ior) AWGN level: Off, -20 to +5 dB (0.1 dB step) AWGN level accuracy: ± 0.2 dB (relative level accuracy for Ior)</p>
Throughput measurement	<p>Functions: Transmit HS-SCCH, HS-PDSCH based on Fixed Reference Channel Measurement items: BLER, Throughput Measurement objective: ACK and NACK data imposed on uplink HS-DPCCH</p>
CQI measurement	<p>Statistical analysis of CQI values reported from a mobile terminal</p>
Call Processing	<p>Origination control: Registration, Connection based on Fixed reference Channel (executes each processing conforming to 3GPP standards and performs pass/fail evaluation) Mobile terminal control: Output level (executes each mobile terminal's control conforming to 3GPP standards)</p>

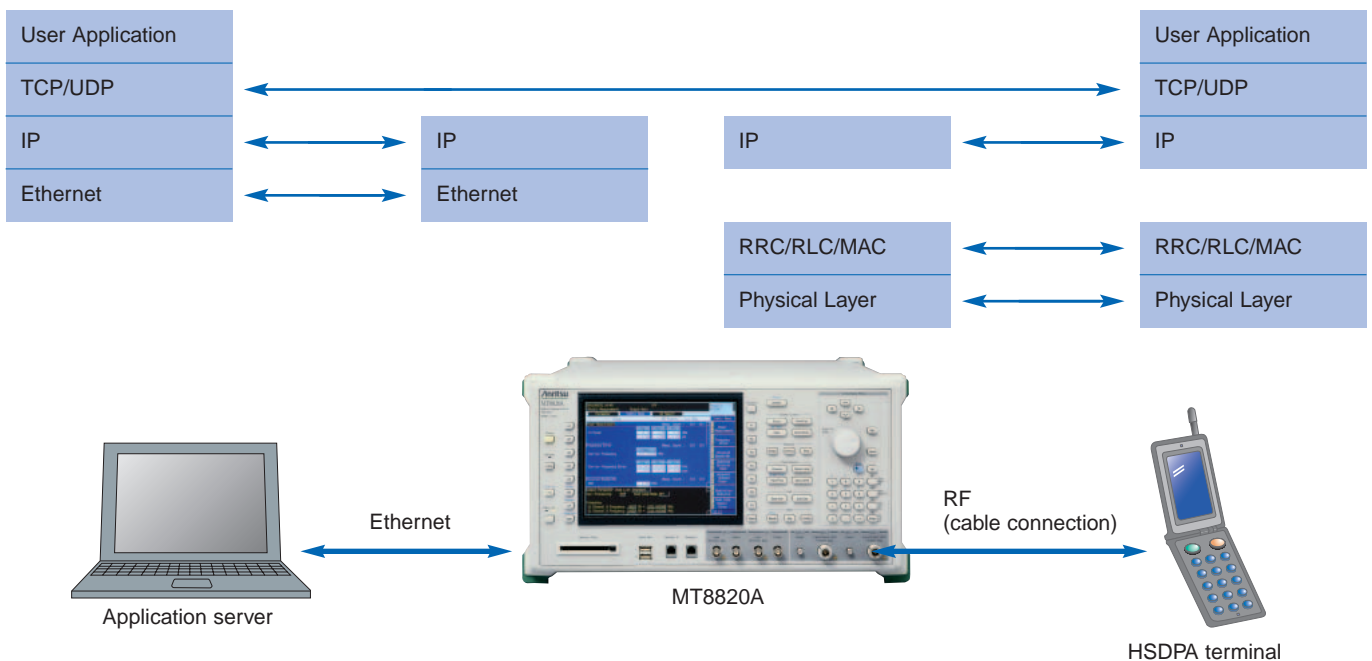
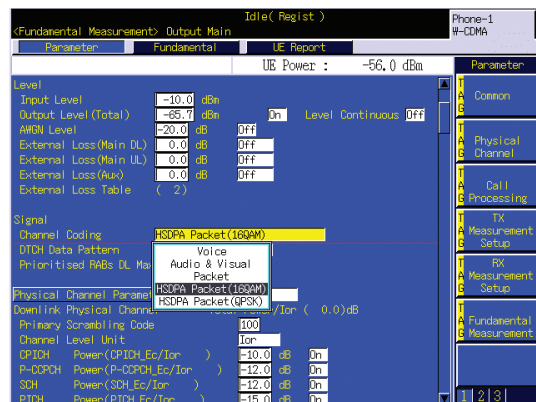
MX882050A-11 HSDPA External Packet Data

Verification test function for packet communication data transfer

The MX882050A-11 HSDPA External Packet Data option enables data transfer to/from external equipment by using the Ethernet port on the rear of the MT8820A. Installing the MX882050A-11 enables end-to-end data transfer between an application server connected to the MT8820A and a HSDPA terminal or client PC connected to a HSDPA terminal. The maximum data rate is 388 kbps.

External IP Packet Test

The MT8820A outputs IP packets received from the HSDPA terminal. It also transmits IP packets input from the Ethernet port to the HSDPA terminal. It supports QPSK and 16QAM modulation of the downlink signal.



Sample MT8820A Connection

Specifications

• MX882050A-02, MX882051A-02 W-CDMA External Packet Data

Ethernet	10BASE-T
Data rate	Downlink: 267 kbps maximum for QPSK, 388 kbps maximum for 16QAM Uplink: 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

Ordering Information

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

Model/Order No.	Name
MT8820A	Main frame Radio Communication Analyzer
	Standard accessories
	Power cord, 2.6 m : 1 pc
HB28B064C8H	CF card (64 MB) : 1 pc
CA68ADP	PC card adapter : 1 pc
W2458AE	MT8820A/MT8815A operation manual (CD-ROM) : 1 copy
	Options
MT8820A-01	W-CDMA Measurement Hardware
MT8820A-02	TDMA Measurement Hardware
MT8820A-03	CDMA2000 Measurement Hardware
MT8820A-04	1xEV-DO Measurement Hardware
MT8820A-11	Audio Board
MT8820A-12	Parallel Phone Measurement Hardware
MT8820A-21	W-CDMA Measurement Hardware retrofit
MT8820A-22	TDMA Measurement Hardware retrofit
MT8820A-23	CDMA2000 Measurement Hardware retrofit
MT8820A-24	1xEV-DO Measurement Hardware retrofit
MT8820A-31	Audio Board retrofit
MT8820A-32	Parallel Phone Measurement Hardware retrofit
	Softwares
MX882000B	W-CDMA Measurement Software (requires MT8820A-01 and MX88205xA)
MX882000B-01	W-CDMA Voice Codec (requires MT8820A-11 and MX882000B)
MX882000B-11	HSDPA Measurement Software (requires MT8820A-01, MX882000B and MX882050A)
MX882001A	GSM Measurement Software (requires MT8820A-02)
MX882001A-01	GSM Voice Codec (requires MT8820A-11 and MX882001A)
MX882001A-02	GSM External Packet Data (requires MX882001A)
MX882001A-11	EGPRS Measurement Software (requires MX882001A)
MX882002A	CDMA2000 Measurement Software (requires MT8820A-03)
MX882002A-02	CDMA2000 External Packet Data (requires MX882002A)
MX882003A	1xEV-DO Measurement Software (requires MT8820A-03, MT8820A-04 and MX882002A)
MX882003A-02	1xEV-DO External Packet Data (requires MX882003A)
MX882004A	PDC Measurement Software (requires MT8820A-02)
MX882005A	PHS Measurement Software (requires MT8820A-02)
MX882005A-11	ADVANCED PHS Measurement Software (requires MX882005A)
MX882010A	Parallel Phone Measurement Software*1 [requires MT8820A-12, the two same measurement hardware (2 board/set) and one measurement software]
MX882022A	CDMA2000 Wireless Application Test Software (requires MT8820A-03)
MX882050A	W-CDMA Call Processing Software*2 (requires MX882000B)
MX882050A-02	W-CDMA External Packet Data*2, *3 (requires MX882050A)
MX882050A-03	W-CDMA Video Phone Test*2 (requires MX882050A)
MX882050A-09	W-CDMA Band IX*2 (requires MX882050A)
MX882050A-11	HSDPA External Packet Data*2 (requires MX882000B-11)
MX882070A	W-CDMA Ciphering Software*2 (requires MX882050A)
MX882051A	W-CDMA Call Processing Software*2 (requires MX882000B)
MX882051A-02	W-CDMA External Packet Data*2 (requires MX882051A)
MX882051A-03	W-CDMA Video Phone Test*2 (requires MX882051A)
MX882071A	W-CDMA Ciphering Software*2 (requires MX882051A)

Model/Order No.	Name
W2477AE	MX882000B operation manual*4 (attached to MX882000B)
W2463AE	MX882001A operation manual*4 (attached to MX882001A)
W2472AE	MX882002A operation manual*4 (attached to MX882002A)
W2473AE	MX882003A operation manual*4 (attached to MX882003A)
W2464AE	MX882004A operation manual*4 (attached to MX882004A)
W2465AE	MX882005A operation manual*4 (attached to MX882005A)
W2484AE	MX882022A operation manual*4 (attached to MX882022A)
W2480AE	MX88205xA operation manual*4 (attached to MX88205xA)
W2478AE	MX88207xA operation manual*4 (attached to MX88207xA)
	Warranty
MT8820A-90	Extended three year warranty service
MT8820A-91	Extended five year warranty service
	Application parts
P0019	TEST USIM001*5
P0027	W-CDMA/GSM Test USIM
A0012	Handset
J1249	CDMA2000 cable [D-sub (15 pin, P-type) · D-sub (15 pin, P-type), used 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)
W2457AE	MT8820A operation manual (booklet)
W2476AE	MX882000B operation manual (booklet)
W2466AE	MX882001A operation manual (booklet)
W2470AE	MX882002A operation manual panel operation (booklet)
W2471AE	MX882002A operation manual remote control (booklet)
W2474AE	MX882003A operation manual panel operation (booklet)
W2475AE	MX882003A operation manual remote control (booklet)
W2467AE	MX882004A operation manual (booklet)
W2468AE	MX882005A operation manual (booklet)
W2482AE	MX882022A operation manual panel operation (booklet)
W2483AE	MX882022A operation manual remote control (booklet)
W2481AE	MX88205xA operation manual (booklet)
W2479AE	MX88207xA operation manual (booklet)

*1: The Measurement Hardwares applied to Parallel Phone Measurement are MT8820A-01, MT8820A-02, MT8820A-03, MT8820A-04. And these hardwares can be implemented all together.

*2: For terminal connectivity, contact your Anritsu sales representative.

*3: MX882050A preinstalls the integrity protection function.

*4: Supplied by CD-ROM

*5: This Test USIM can be worked on only W-CDMA mode.

When the connection of GSM is necessary, P0027 can be applied.

- 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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