

MX847010A-11 HSDPA Software

MX847010A-12 HSUPA Software

MD8470A  
Signalling Tester

# MD8470A Signalling Tester

MX847010A-11: HSDPA Software

MX847010A-12: HSUPA Software

**–Product Introduction–**



**–Benchtop Mobile Communications Network–  
–Signalling Tester for Wireless Applications–**

**September 2010  
ANRITSU CORPORATION  
Ver 5.00**

# Product Overview

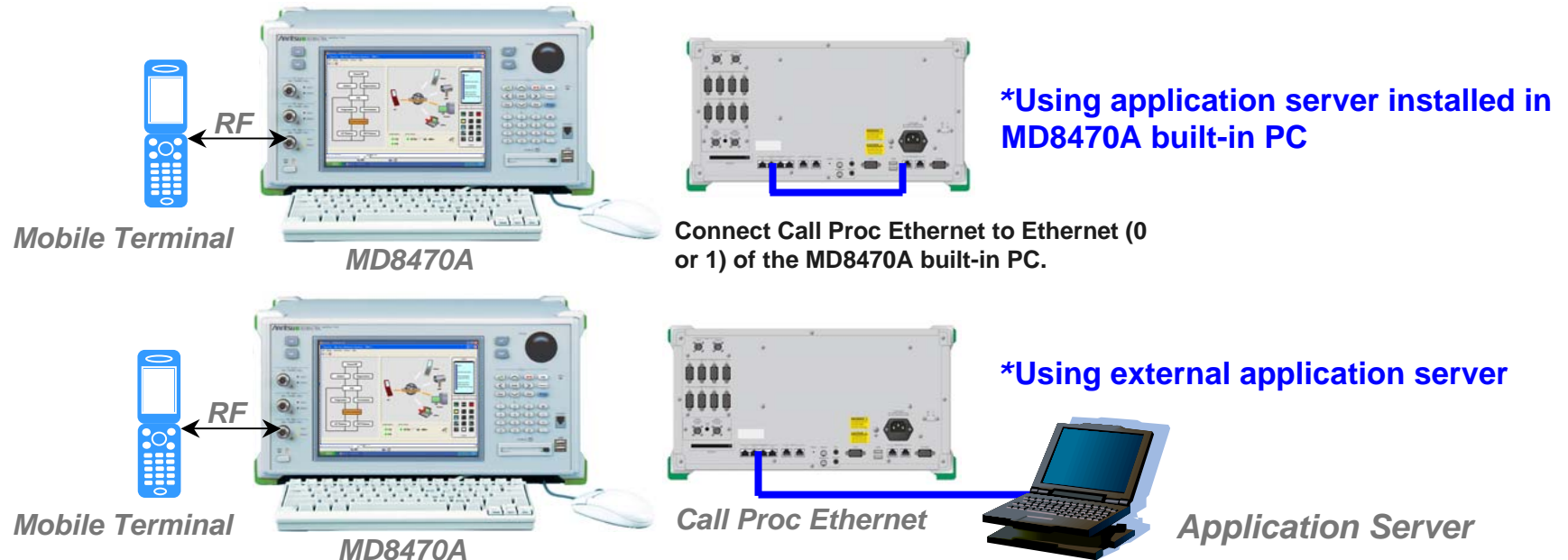
# MX847010A-11: HSDPA Software

## MX847010A-12: HSUPA Software –Product Overview (1/4)–

- The MD8470A with MX847010A-11 HSDPA Software\*1, MX847010A-12 HSUPA Software\*1, and MU847010B W-CDMA/HSPA Signalling Unit supports data communications tests for all HSDPA/HSUPA UE categories specified by 3GPP Specification Release 5/Release 6.
- The WNS (Wireless Network Simulator)\*2 or scenario with application server supports testing of application functions using HSDPA/HSUPA packet communications.

\*1: Requires Version 6.00 or later of MX847010A W-CDMA/GSM Simulation Kit.

\*2: Supports HSDPA Cat.1 to 12, HSUPA Cat.1 to 6 on WNS of MX847010A version 7.02 or later.



# MX847010A-11: HSDPA Software

# MX847010A-12: HSUPA Software –Product Overview (2/4)–

## Supports All HSPA UE Categories

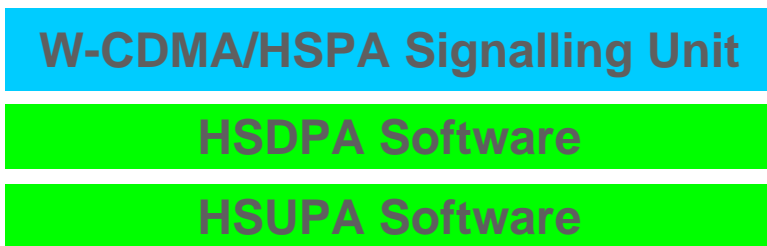
The MX847010A-11 and MX847010A-12 performance is ideal for feasibility verification of mobile terminals at the highest data rate.

### HSDPA

HS-DSCH Category	HS-DSCH Codes	Minimum Inter-TTI	TB-Sizes	Total Number of Soft Channel Bits	Modulation	Maximum Throughput [bps]
1	5	3	7298	19200	QPSK/16QAM	1216333
2	5	3	7298	28800	QPSK/16QAM	1216333
3	5	2	7298	28800	QPSK/16QAM	1824500
4	5	2	7298	38400	QPSK/16QAM	1824500
5	5	1	7298	57600	QPSK/16QAM	3649000
6	5	1	7298	67200	QPSK/16QAM	3649000
7	10	1	14411	115200	QPSK/16QAM	7205500
8	10	1	14411	134400	QPSK/16QAM	7205500
9	15	1	20251	172800	QPSK/16QAM	10125500
10	15	1	27952	172800	QPSK/16QAM	13976000
11	5	2	3630	14400	QPSK	907500
12	5	1	3630	28800	QPSK	1815000

### HSUPA

E-DCH Category	E-DCH Codes	Minimum Spreading	Support for 10 and 2 ms TTI EDCH	TB-Sizes within 10 ms	TB-Sizes within 2 ms E-DCH TTI	Maximum Throughput
1	1	SF4	10 ms TTI only	7110	–	729600
2	2	SF4	10 ms and 2 ms TTI	14484	2798	1459200 1459500
3	2	SF4	10 ms TTI only	14484	–	1459200
4	2	SF2	10 ms and 2 ms TTI	20000	5772	2000000 2918500
5	2	SF2	10 ms TTI only	20000	–	2000000
6	4	SF2	10 ms and 2 ms TTI	20000	11484	2000000 5760000

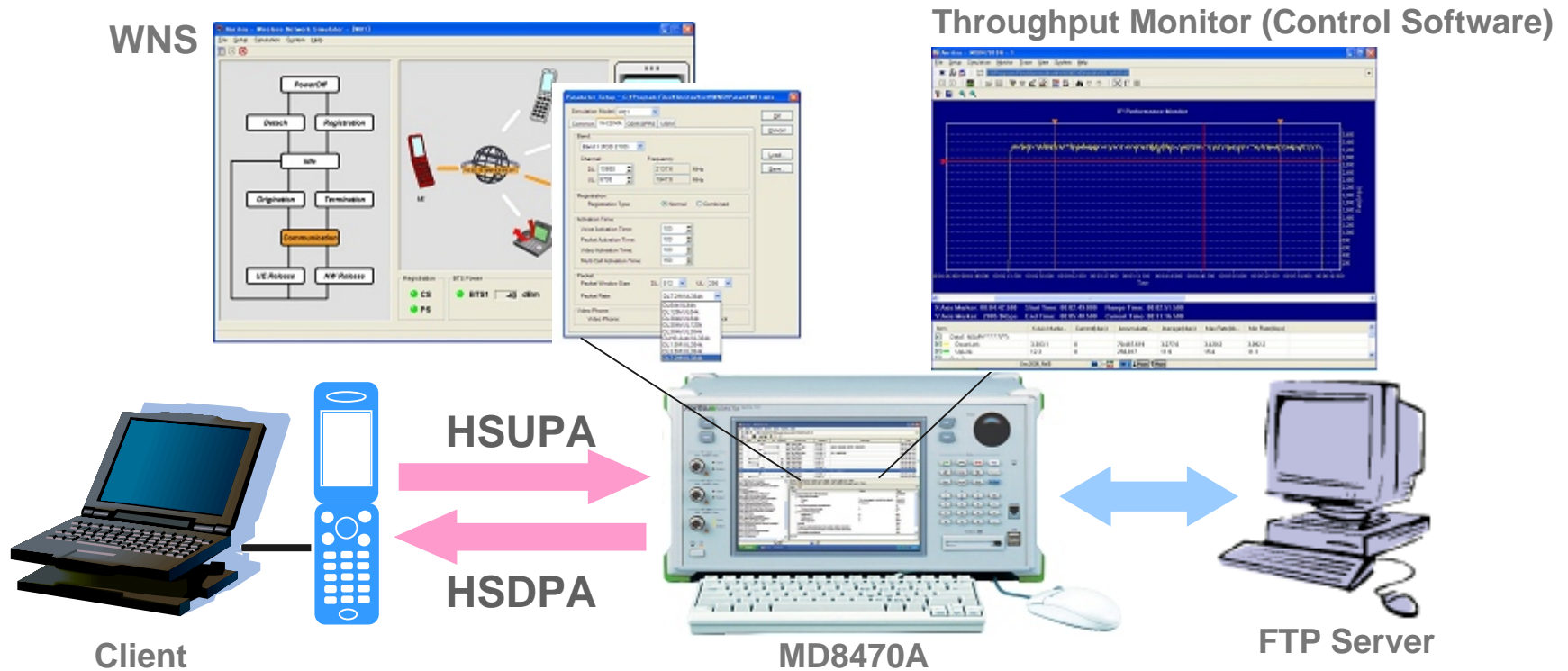


# MX847010A-11: HSDPA Software

# MX847010A-12: HSUPA Software –Product Overview (3/4)–

## Example of HSDPA/HSUPA Test

- Transfer large volumes of data from FTP server.
- Verify data throughput performance using Throughput Monitor.
- Perform service interruption testing, such as incoming voice call, video call and SMS/MMS, during HSDPA/HSUPA data communication.



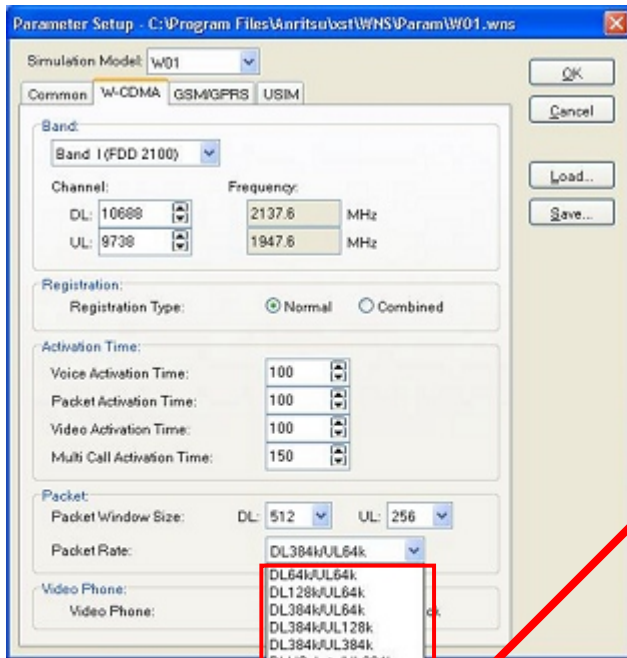


# MX847010A-11: HSDPA Software

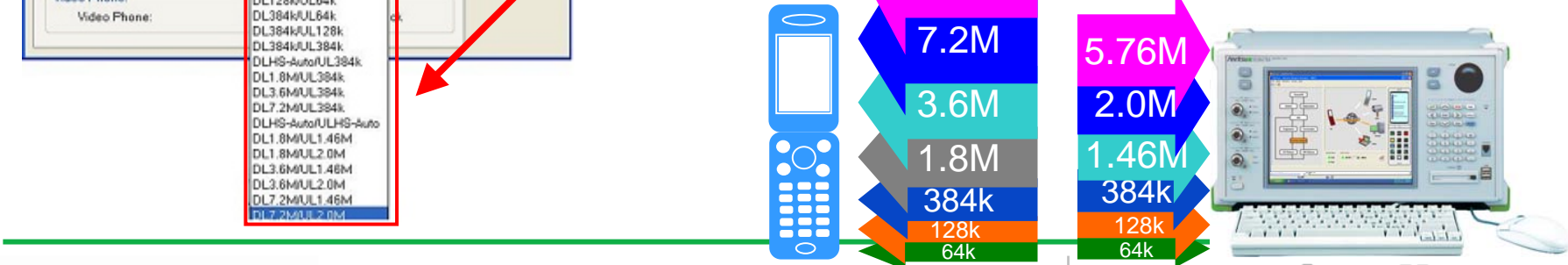
# MX847010A-12: HSUPA Software –Product Overview (4/4)–

## Packet Rate Setting

- Using WNS supports setting of W-CDMA/HSDPA/HSUPA Packet Rate at test start
- Easy packet communications testing for each bearer environment



Packet Rate設定	
DL:64k / UL:64k	DL:1.8M / UL:1.46M
DL:128k / UL:64k	DL:1.8M / UL:2.0M
DL:384k / UL:64k	DL:1.8M / UL:5.76M
DL:384k / UL:128k	DL:3.6M / UL:1.46M
DL:384k / UL:384k	DL:3.6M / UL:2.0M
DL:HS-Auto / UL:384k	DL:3.6M / UL:5.76M
DL:1.8M / UL:384k	DL:7.2M / UL:1.46M
DL:3.6M / UL:384k	DL:7.2M / UL:2.0M
DL:7.2M / UL:384k	DL:7.2M / UL:5.76M
DL:10.2M / UL:384k	DL:10.2M / UL:1.46M
DL:14.4M / UL:384k	DL:10.2M / UL:2.0M
DL:HS-Auto / UL:HS-Auto	DL:10.2M / UL:5.76M
	DL:14.4M / UL:1.46M
	DL:14.4M / UL:2.0M
	DL:14.4M / UL:5.76M



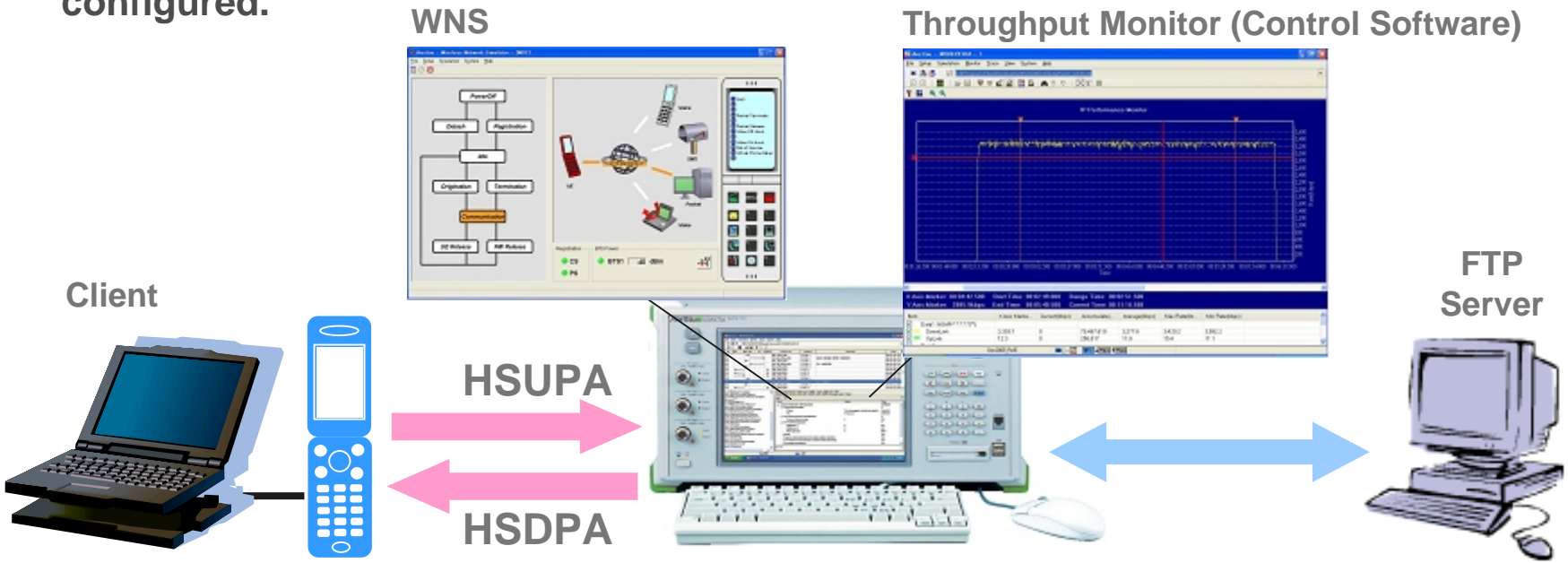
# Throughput Monitor / Measure Function



# Throughput Monitor Function (1/2)

## Data Throughput Testing

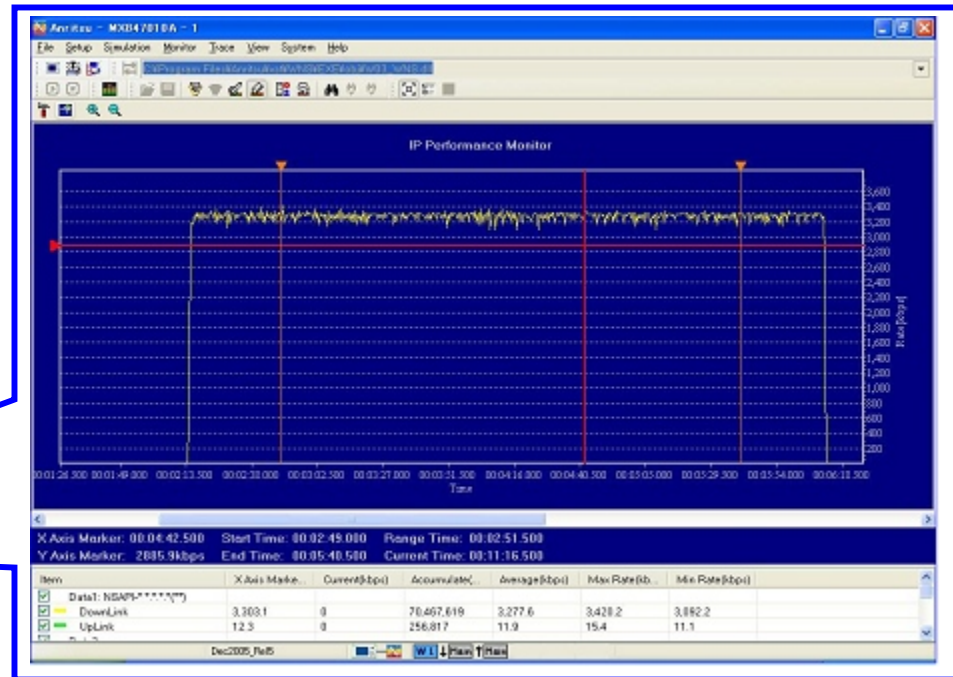
- The built-in Throughput Monitor function\*<sup>1</sup> supports monitoring of **IP data throughput performance** and **MAC-hs/e performance**\*<sup>2</sup> in real time.
- Actual data throughput performance can be verified at a fixed rate or at a rate set decided by UE category and CQI value in HSDPA/HSUPA.
- An efficient development environment for optimizing terminal throughput is easily configured.



\*1: Requires Version 6.00 or later of MX847010A W-CDMA/GSM Simulation Kit.  
\*2: Requires Version 7.00 of MX847010A W-CDMA/GSM Simulation Kit.

# Throughput Monitor Function (2/2)

- Check throughput at terminal in real time.
- Freely configure display time range and stop/restart trace.
- Check throughput performance at marker position and average throughput performance at specified range.
- Support for W-CDMA and GPRS/EGPRS.



**IP Performance Monitor**

# Measure Function (1/3)

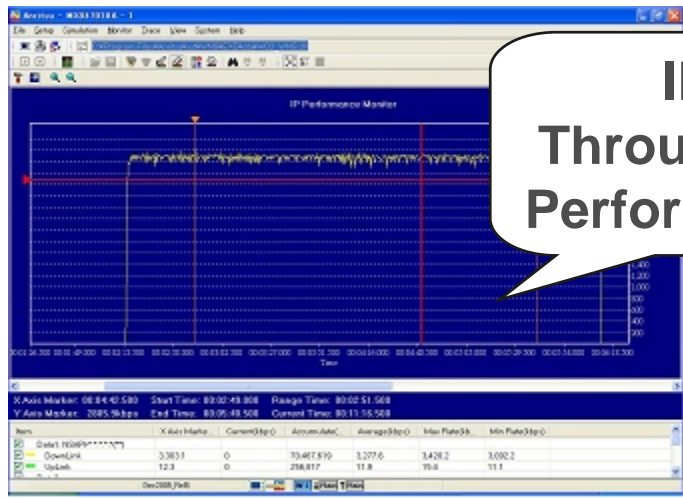
## Layer1/ Layer2 Communication Performance

- The new built-in measure function on MX847010A V7.00 supports monitoring of Layer 1 and Layer 2 communication performance.
- Since some parameters such as CQI, ACK/NACK, BLER can be measured on the newly designed GUI, it allows users to configure effective test environment for determining failure during data throughput test by combining existing throughput monitor.
- Collected data using measure function can be saved as CSV format which offers offline analysis after testing.

CQI, ACK, NACK, BLER etc

	Current (BTSB1)	Accumulate (B)	Current (BTSB2)	Accumulate (B)
Current (BTSB1)	0.000	0.000	0.000	0.000
Accumulate (B)	0.000	0.000	0.000	0.000
Current (BTSB2)	0.000	0.000	0.000	0.000
Accumulate (B)	0.000	0.000	0.000	0.000
...	...	...	...	...
Average CQI	23.332	27.437	0.000	0.000
...	...	...	...	...

Measure (L1/L2)



IP Throughput Performance

Throughput Monitor

# Measure Function (2/3)

## Layer1 Measurement Items

Layer	Minor classification	Measurement item	Description
Layer 1	UL-DCH	Rx Transport Blocks (DCH#0~#7)	Number of received Transport Block for each uplink DCH
		Rx CRC NG Transport Blocks (DCH#0~#7)	Number of received Transport Block for which CRC Error, for each uplink DCH
		BLER (DCH#0~#7)	Number of received Block Error Rate for each uplink DCH
	HS-DSCH	Tx MAC-hs PDU	Number of transmitted MAC-hs PDU
		Acknowledged Tx MAC-hs PDU	Number of MAC-hs PDUs for which HS-DSCH arrival at DUT was confirmed through reception of HS-DPCCH ACK
		Tx Rate [kbps]	Transmission rate of MAC-hs PDUs based on Tx MAC-hs PDUs
		Tx Throughput [kbps]	Transmission rate (throughput) based on Acknowledged Tx MAC-hs PDUs
	HS-DPCCH	ACK	Number of ACKs used for the HS-DSCH transmission
		NACK	Number of NACKs used for the HS-DSCH transmission
		DTX	Number of DTXs used for the HS-DSCH transmission.
		Average CQI	Average CQI value
		CQI (#0~#30)	Number of receptions per CQI
		TB counts for CQI (#0~#30)	Displays the number of transmission Transport Blocks for each CQI
	E-DCH	Error TB counts for CQI (#0~#30)	Displays the number of transmission Transport Blocks (receiving NACK/DTX), for which there were errors, for each CQI
		Rx Throughput [kbps]	Reception rate (throughput) of MAC-e PDUs
		Rx MAC-e PDU	Number of received MAC-e PDU
		CRC-NG MAC-e PDU	Number of received MAC-e PDU for which CRC=NG
		BLER	Block Error Rate (The ratio of Rx MAC-e PDUs to CRC-NG MAC-e PDUs)
		MAC-e PDU average size [bit]	Average MAC-e PDU size

# Measure Function (3/3)

## Layer2 Measurement Items

Layer	Minor classification	Measurement item	Description
Layer 2	RLC Send	Rx RLC-SDU (LoCh#0~ #7)	Number of received RLC-SDU
		RLC-SDU Rx Rate (LoCh#0~#7) [kbps]	Reception rate derived from Rx RLC-SDU
		Tx RLC-PDU (LoCh#0~#7)	Number of transmitted RLC-PDU
		RLC-PDU Tx Rate (LoCh#0~#7) [kbps]	Transmission rate derived from Tx RLC-PDU
		Tx AMD-PDU (LoCh#0~ #7)	Number of AMD-PDU transmissions
		AMD-PDU Tx Throughput (LoCh#0~#7) [kbps]	Transmission rate of AMD-PDU derived from Rx AMD-PDU
	RLC Receive	Rx RLC-PDU (LoCh#0~#7)	Number of received RLC-PDU
		RLC-PDU Rx Rate (LoCh#0~#7) [kbps]	Reception rate of RLC-PDU derived from Tx RLC-PDU
		Tx RLC-SDU (LoCh#0~#7)	Number of transmitted RLC-SDU
		RLC-SDU Tx Rate (LoCh#0~#7) [kbps]	Transmission rate of RLC-SDU derived from Tx RLC-PDU
		Rx AMD-PDU (LoCh#0~#7)	Number of received AMD-PDU
		AMD-PDU Rx Throughput (LoCh#0~#7) [kbps]	Reception rate of AMD-PDU derived from Rx AMD-PDU
		Tx AMD-PDU ACK (LoCh#0~#7)	Number of acknowledged AMD-PDU transmissions



Items	Current (BTS#1)	Accumulate (B...	Current (BTS#2)	Accoun...
BLER				
DCH#0	0.000	0.000	0.000	0.000
DCH#1	0.000	0.000	0.000	0.000
DCH#2	0.000	0.000	0.000	0.000
DCH#3	0.000	0.000	0.000	0.000
DCH#4	0.000	0.000	0.000	0.000
DCH#5	0.000	0.000	0.000	0.000
DCH#6	0.000	0.000	0.000	0.000
DCH#7	0.000	0.000	0.000	0.000
HS-DSCH				
Tx MAC: Its PDU	250	13693	0	0
Acknowledged...	250	13693	0	0
Tx Rate [kbps]	3584.000	1188.515	0.000	0.000
Tx Throughput...	3584.000	1187.991	0.000	0.000
HSPA-DSCH				
ACK	250	13693	0	0
NACK	0	0	0	0
DTx	0	0	0	0
Average CGI	28.392	27.437	0.000	0.000
CGI				
#0	0	0	0	0
#1	0	0	0	0
#2	0	0	0	0
#3	0	0	0	0
#4	0	0	0	0
#5	0	0	0	0
#6	0	0	0	0
#7	0	0	0	0

# Required Product Configuration

# Required Product Configuration

HSDPA/HSUPA tests require the following (minimum) MD8470A configuration.

## Main Frame

- MD8470A Signalling Tester

## Hardware Option

- MU847010B W-CDMA/HSPA Signalling Unit

## Software Options

- MX847010A W-CDMA/GSM Simulation Kit
- MX847010A-11 HSDPA Software
- MX847010A-12 HSUPA Software

## Software Support Contract

- MX847010A-20 MX847010A Support Service (1 year)

Select either English or Japanese Windows® XP when ordering the MD8470A.

\*Windows is a registered trademark of Microsoft Corporation in the USA and other countries.



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