

PRODUCT INTRODUCTION

MD8480B

W-CDMA Signalling Tester

ANRITSU CORPORATION

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MD8480B

W-CDMA Signalling Tester

Product Introduction

Anritsu corporation
Measurement Solutions
Marketing Dept. Wireless.com Div.
Ver 6.0

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W-CDMA Signalling Tester
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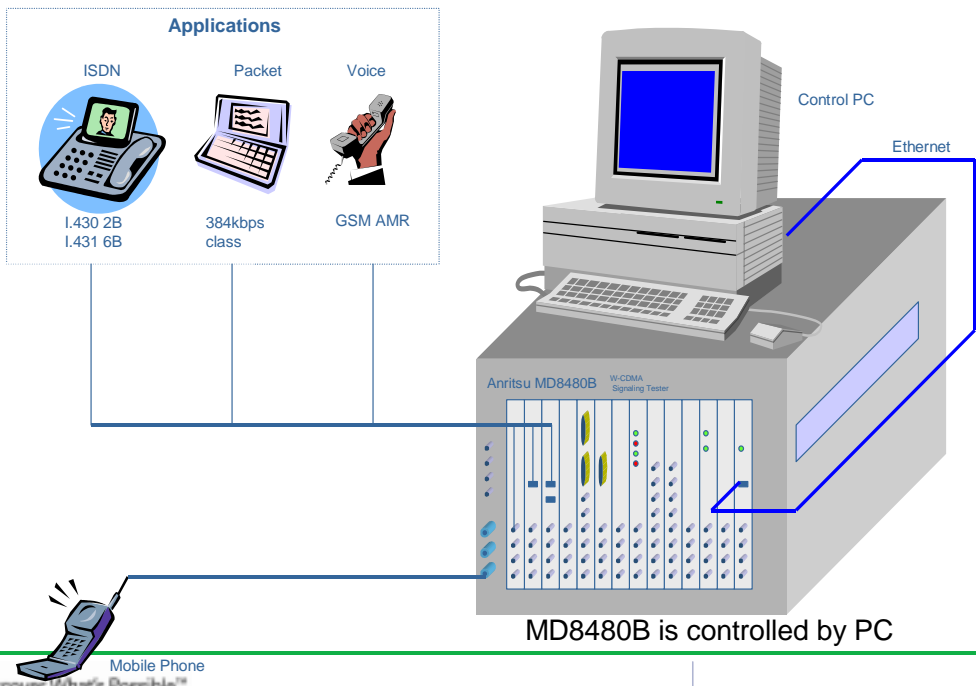
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MD8480B Entire view

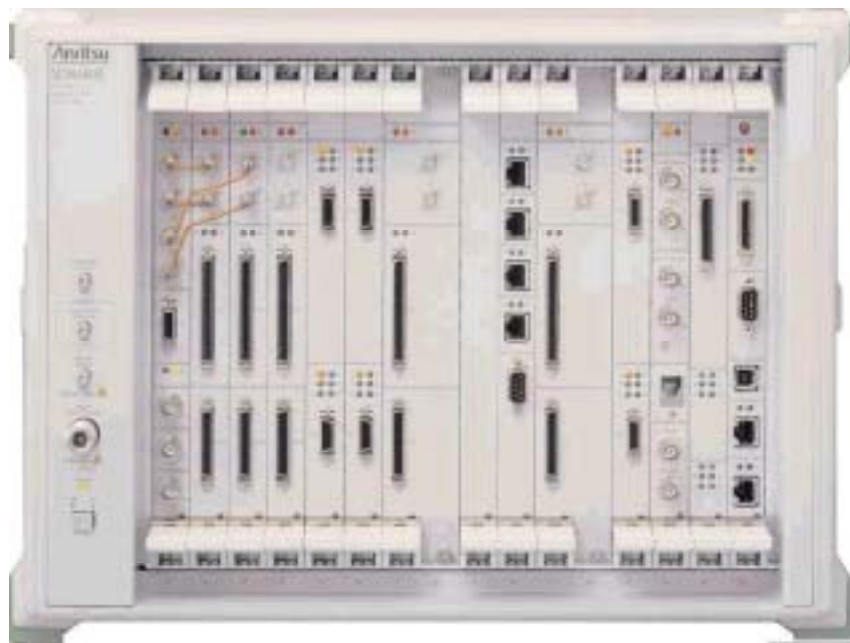


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MD8480B Front View



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MD8480B control PC's screen

The screenshot shows a control PC interface with a menu bar at the top containing buttons for SYSTEM, CONFIG, SETUP, MONITOR, START, SCENARIO, and EXIT. Below the menu is a large empty text area. At the bottom, a log window displays the following data:

APPC	MAC	LEN	TS	RTU	MAN	REQ	Description	Channel	Message	Time
L							RFC_DATA_REQ	D BCH		00:00:10.44
L							RFC_DATA_REQ	D BCH		00:00:10.46
L							RFC_DATA_REQ	D BCH		00:03:24.46
L							RFC_DATA_REQ	D BCH		00:05:24.46
L							RFC_DATA_REQ	D BCH		00:07:24.47
L							RFC_DATA_REQ	D BCH		00:09:24.48
L							RFC_DATA_REQ	D BCH		00:11:24.49
L							RFC_DATA_REQ	D BCH		00:13:24.50
L							RFC_DATA_REQ	D BCH		00:15:24.51
L							RFC_DATA_REQ	D BCH		00:17:24.52
L							RFC_DATA_REQ	D BCH		00:19:24.53
L							RFC_DATA_REQ	D BCH		00:21:24.54
L							RFC_DATA_REQ	D BCH		00:23:24.55
L							RFC_DATA_REQ	D BCH		00:25:24.56
L							RFC_DATA_REQ	D BCH		00:27:24.57
L							RFC_DATA_REQ	D BCH		00:29:24.58
L							RFC_DATA_REQ	D BCH		00:31:24.59
L							RFC_DATA_REQ	D BCH		00:33:24.60

Below the log window, there is a hex dump of the captured data:

```

HexDump: 00000000-00000000
Device: 00 HexLen: 40 Type: 0032 Type2: 00 Channel: 44 CR_No: 00 Opn1: 0000 Opn2: 0000
31 80 20 10 00 40 00 00 00 04 00 00 00 01 0F 03 78 4E C7 80 CF C3 67 7D 6F
81 0B 33 32 88 C8 28 03 9C 2C 7E 2C 7C 7F 7F 84 F8 LL 33 33 2B 8C 32 8C
03 C2 CE C7 84 CF C8 67 F0 6F 81 1B 33 3C 88 C8 28 03 9C 2C 7E 6C 7C 7F
7F 06 78 06 06 84 C5 37 80 3F 9C 00 00 00 C8 4E 78 88 03 04 10 6F C1 00 04
00 44 27 3E CE 47 24 03 00 00 02 75 3E 8D 2E 82 81 88 03 03 30 7D 00
    
```

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Concept of Signalling Tester

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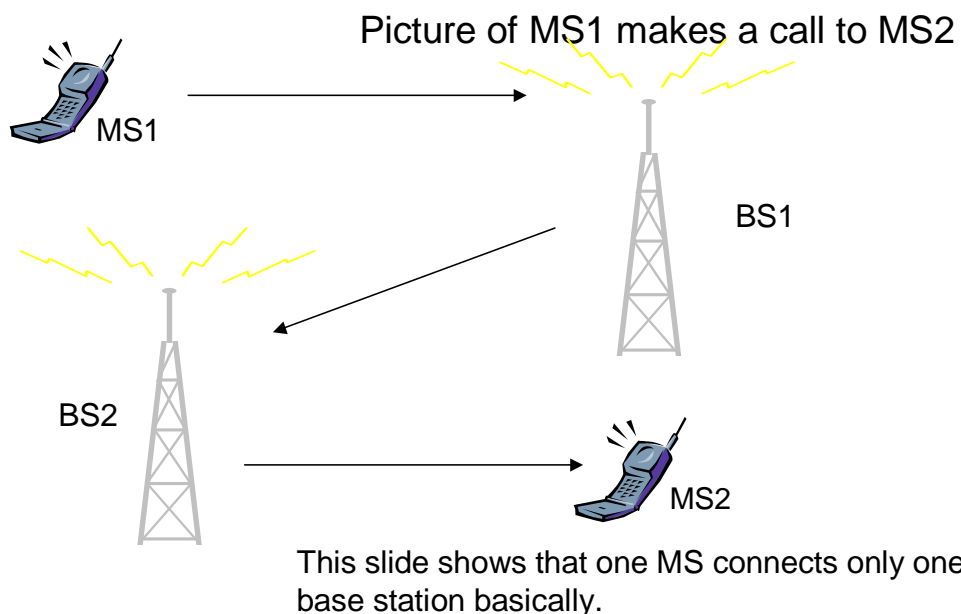
Concept of Signalling Tester (1)

- **Protocol of MS is in the specification document (W-CDMA : 3GPP). We can develop a MS based on this.**
- **Developers need to confirm their MS's function by connecting with BS!**

Concept of Signalling Tester (2)

- **In the development, some troubles always happen.**
- **So, they need to monitor a communication between MS and BS for more efficient trouble shooting.**

Concept of Signalling Tester (3)



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Concept of Signalling Tester (4)

- So developer requires ...
- BS equipment (Emulator)
- monitoring the communication between MS and BS for more efficient trouble shooting.
- This BS equipment doesn't need to connect to many MS like actual BS. (cut the cost instead of supporting this)
- The product which is based on these concept is
 - **Signalling Tester**

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Concept of Signalling Tester (5)

- **Signalling Tester is...**
 - **Base Station simulator**
 - **supporting L1 and L2**
 - **able to edit L3 protocol sequence which controls L1 and L2**
 - **monitoring the communication between MS and Signalling Tester**

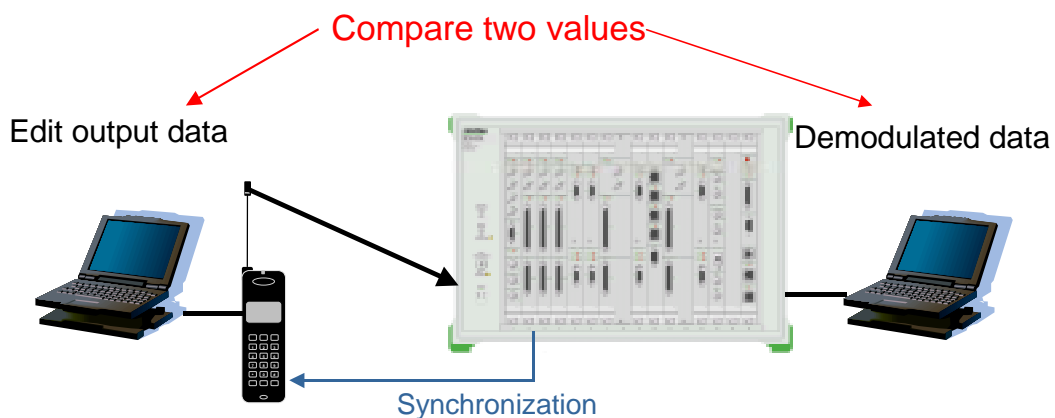
**Solution which MD8480B
W-CDMA Signalling Tester
provides**

Solution Which MD8480B W-CDMA Signalling Tester Provides

- **MD8480B has mainly 3 solutions**
 - Confirmation of modulation and demodulation part of MS (**Solution 1**)
 - Confirmation of protocol sequence between MS and BS (**Solution 2**)
 - Simulating applications (**Solution 3**)

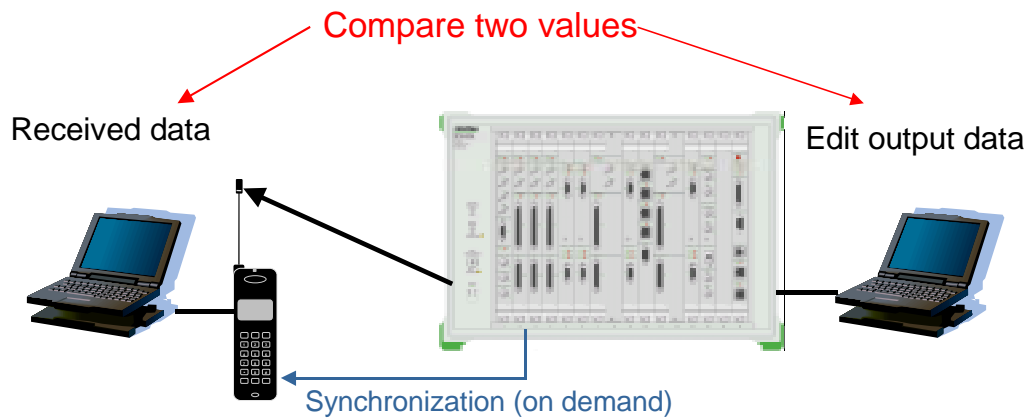
Solution 1

- **Confirmation of modulation part of MS (Uplink physical channels)**



Solution 1

- Confirmation of demodulation part of MS (Downlink physical channels)



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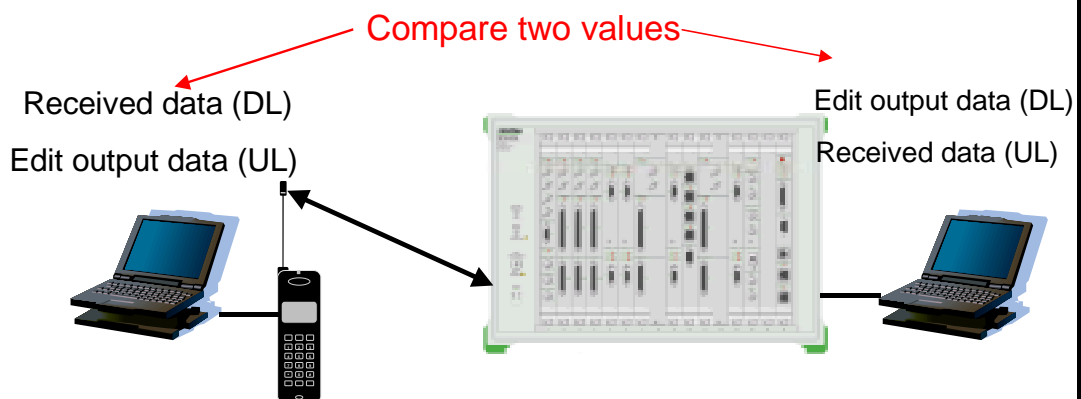
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Solution 1

- Confirmation of modulation part and demodulation part of MS



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Solution 2

- **Confirmation of protocol sequence between MS and BS**

(Making a call, Receiving a call,

Disconnect from MS and BS, **Trouble shooting by using trace**

Handover and Registration)



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Solution 3

- **MD8480B can simulate the following various applications**

AMR Voice Test: A handset is connected to the MD848A to perform a voice test Between MS and MD8480B.

User Data Test: Any data can be inserted into the DTCH being transmitted and the demodulated DTCH data is output externally. This is an effective method for measuring bit error rate.

IP Packet Test: A PC with 10Base-T connection is connected to the MD8480B to test the IP protocol data communications.

PPP Packet Test (Option): A PC with RS-232C connection is connected to the MD8480B to test the PPP protocol data communications. PPP is the internet dialup connection protocol.

PPP Packet Test (Built-in Server): MD8480B has the PPP protocol stack and acts as the PPP terminal in this method. The connection with PC is 10Base-T. So this method can support 384kbps of high-speed service.

ISDN Test (Option): A videophone, e.t.c. is connected to the MD8480B to test video and audio communications between MS and MD8480B.

Communications between 2 MS test: 2 MD8480Bs are connected by 10Base-T connection to test communications between 2 MS.

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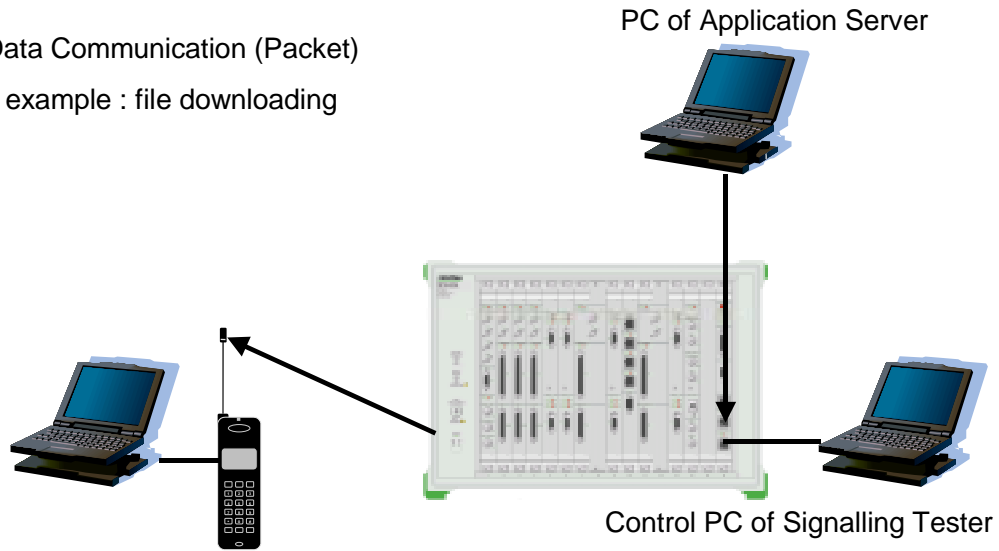
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Solution 3

- **Simulating applications**

Data Communication (Packet)
example : file downloading



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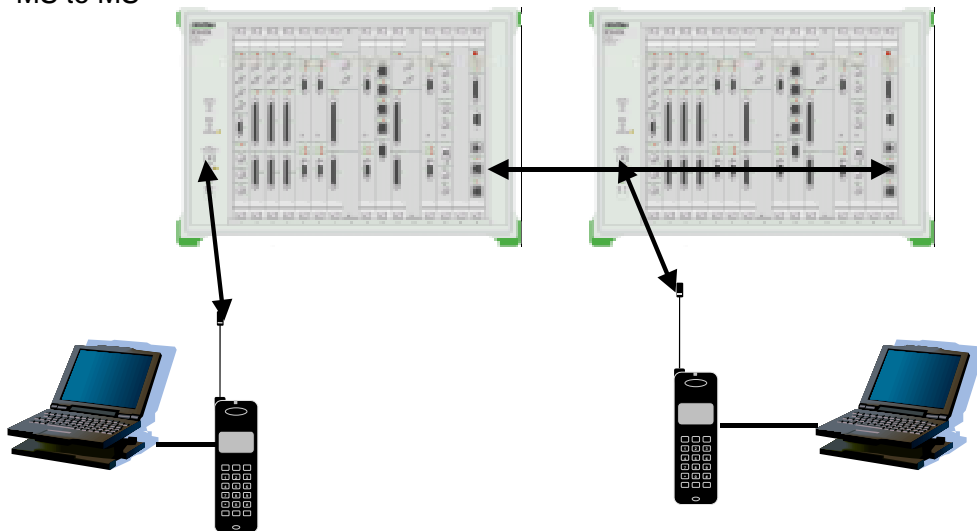
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Solution 3

- **Simulating applications**

MS to MS



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Product structure of MD8480B

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Product structure of MD8480B (1)

- **Standard**
 - Main Frame (MD8480B)
 - Frame Decoder (MU848052A)
 - RX Baseband (MU848053A)
 - Frame Coder (MU848057A)
 - TX Baseband (MU848058A)
 - CPU (MU848051A)
 - Voice Codec (MU848056A)
 - Timing Generator 2 (MU848059B)
 - Blank Board

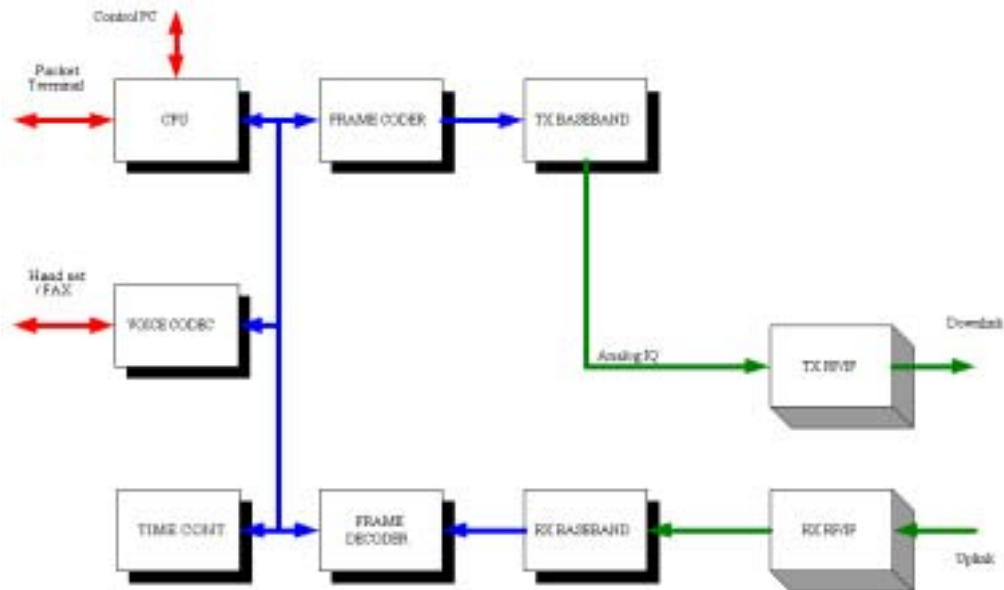
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Standard Configuration



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Product structure of MD8480B (2)

- **Additional Base Station 1 (Hardware Option)**
 - Frame Coder (MU848057A)
 - TX Baseband (MU848058A)
- **Additional Base Station 2 (Hardware Option)**
 - TX Baseband (MU848058A)

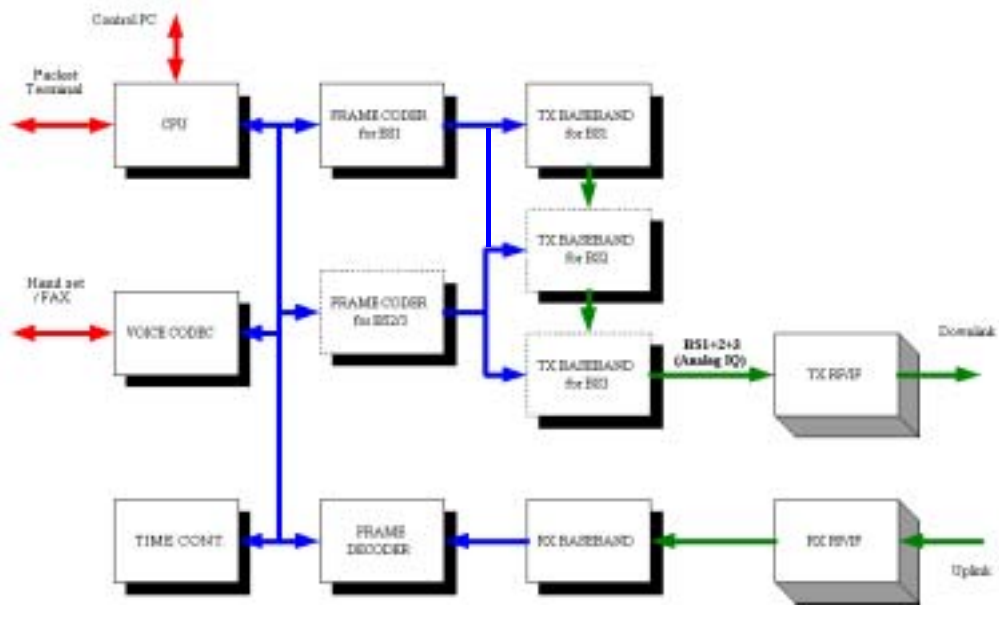
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Soft Handover Configuration



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Product structure of MD8480B (3)

- **Hard Handover (Hardware Option) *1**
 - RX Baseband (MU848053A)
 - Additional RF Unit (MD8480A/B-02*) **NEW**

*MD8480A-02: It is an additional RF unit for MD8480A and supports GSM frequency hopping.
 MD8480B-02: It is an additional RF unit for MD8480B and supports GSM frequency hopping.

*1: This option requires the Additional Base Station 1 & 2 option

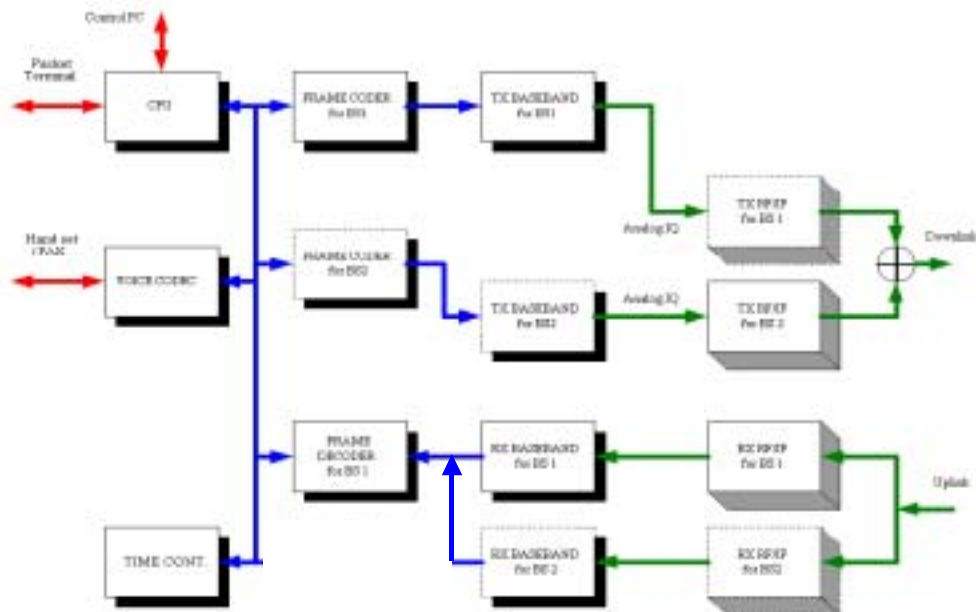
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Hard Handover Configuration



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Product structure of MD8480B (4)

- **GSM/GPRS (Hardware Option)**
 - TDMA (MU848060B)
- **ISDN (Hardware Option)**
 - ISDN (MU848055A)

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Product structure of MD8480B (5)

- **Tx Diversity (Software Option) *1**
 - MX848001A-01 (Using without MX848041A)
 - MX848041A-01 (Using with MX848041A)
- **Compressed Mode (Software Option)**
 - MX848001A-02 (Using without MX848041A)
 - MX848041A-02 (Using with MX848041A)
- **Ciphering (Software Option)**
 - MX848041A

*1: This option requires the Additional Base Station 1 &2 option

Product structure of MD8480B (6)

- **MD8480A Support Service (Software Maintenance Contract)**
 - MD8480A-20 (Using without MX848041A)
 - MD8480A-21 (Using with MX848041A)
- **MD8480B Support Service (Software Maintenance Contract)**
 - MD8480B-20 (Using without MX848041A)
 - MD8480B-21 (Using with MX848041A)

Product structure of MD8480B (7)

- **Router Connection (Software Option)**
 - MX848001A-03 (Using without MX848041A)
 - MX848041A-03 (Using with MX848041A)
- **GSM CSD (Software Option) *1**
 - MX848001A-04 (Using without MX848041A)
 - MX848041A-04 (Using with MX848041A)

*1: This option requires GSM/GPRS, Additional RF Unit option and MD8480A/B Support Service Contract

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Product structure of MD8480B (8)

NEW

- **GSM Frequency Hopping (Software Option)**
 - MX848001A-05 (Using without MX848041A)
 - MX848041A-05 (Using with MX848041A)

This option requires GSM/GPRS, Additional RF Unit option (*1) and MD8480A/B Support Service Contract

(*1) An additional RF unit must be GSM frequency hopping compliant for the use of this option.

(1) MD8480A/B-02 is an additional RF unit that supports GSM frequency hopping.

(2) For customers who have already mounted MD8480A-01: Additional RF Unit in their mainframes, [Z0730: Additional RF Unit for Frequency Hopping] offers factory upgrade to an additional RF unit that supports GSM frequency hopping.

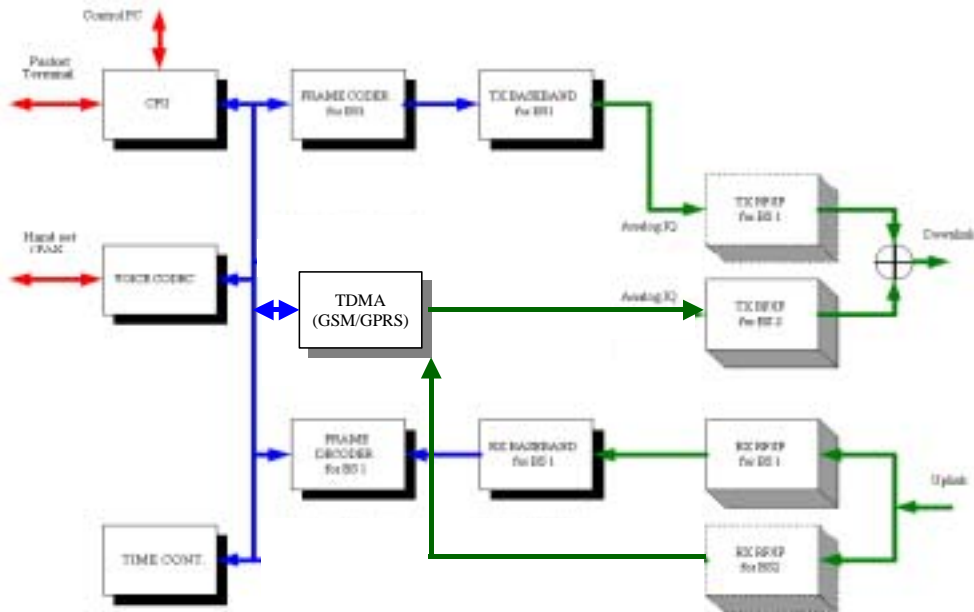
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Inter-System(GSM/GPRS) Handover Configuration



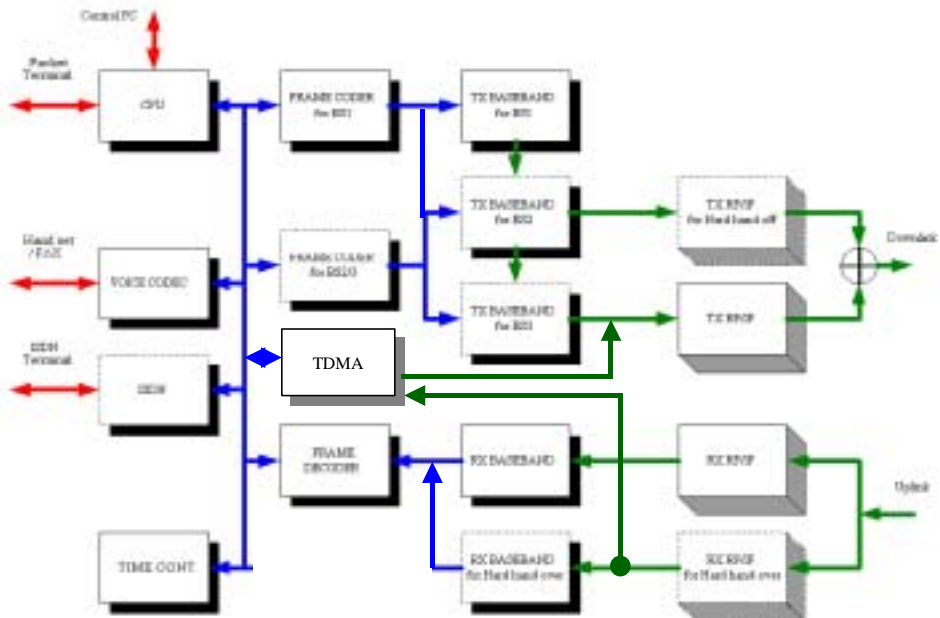
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Full Option Configuration



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Others

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Control PC of MD8480B

- **Control PC**
 - Windows98, Windows95, Windows NT 4.0 Workstation, Windows2000
 - CPU \geq 200MHz
 - Memory \geq 32MByte
 - 10Base-T interface
 - RS-232C interface (for installing software)
- **Visual C++ 6.0 or .NET (Standard Edition)**
 - use only when compiling the scenario

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Supported Functions (1)

- **Transmitting Downlink signal**
- **Receiving Uplink signal**
- **Basic Signalling (making a call, e.t.c.)**
- **Inner loop Power Control (TPC)**
- **BLER measurement (the external BER counter is required to measure BER)**

Supported Functions(2)

- **Soft Handover (Option)**
- **TX diversity (Option)**
- **Hard Handover (Option)**
- **Ciphering (Option)**
- **Compressed Mode (Option)**
- **GSM/GPRS (Option)**
- **Router Connection (Option)**
- **GSM CSD (Option)**
- **GSM Frequency Hopping (Option)** **NEW**

Supported Services (1)

- **Protocol : Stand alone DCCH**
- **Voice : GSM-AMR 12.2Kbps**
- **ISDN : 1B(64Kbps)**
- **Packet : 32Kbps, 64Kbps, 128Kbps, 384Kbps class**
- **Audio Visual : 32Kbps, 64Kbps**
- **Reference Measurement Channel : DCCH, 12.2Kbps, 64Kbps, 144Kbps, 384Kbps, BTFD**

Supported Services (2)

- **Multi-call(Voice and Packet) :**
12.2Kbps + 32Kbps class, 12.2Kbps + 64Kbps class, 12.2Kbps + 384Kbps class
- **Multi-call(Voice and ISDN(1B)) :**
12.2Kbps + 64Kbps class

Supported transmitting channels

Channel	LOGICAL CH	TRANSPORT CH	PHYSICAL CH	Symbol Rate Ksps
Common Channel	BCH	BCH	P-CCPCH	15
			P-SCH	
			S-SCH	
			(P-)CPICH	15
			PICH	15
			AICH	15
	PCCH	PCH	S-CCPCH	60/120
	CCCH/DCCH/DTCH	FACH		
Dedicate Channel			DPCCH	15/30/60/120/240/480
	DCCH+DTCH	DCH	DPDCH	15/30/60/120/240/480
	DCCH+DTCH		DPDCH	
	DCCH+DTCH		DPDCH	

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Supported receiving channels

Channel	LOGICAL CH	TRANSPORT CH	PHYSICAL CH	Symbol Rate Ksps
Common Channel			PRACH(Preamble)	
			PRACH (Control)	
	CCCH/DCCH/DTCH	RACH	PRACH(Message)	60/120
Dedicate Channel			DPCCH	15
	DCCH/DTCH	DCH	DPDCH	15/30/60/120/240/480/960

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Sample Scenarios (1)

- We can edit the protocol sequence executed on the MD8480B. We call this protocol sequence 'SCENARIO'. We provide many kinds of sample scenarios for easier testing.
- Sample Scenarios for testing modulation and demodulation of MS are the following;

Start_UDI.c: Scenario to make DPCH(UDI) sending and receiving state possible.

BCH_Data.c: Scenario to output PCCPCH with the data that made BCH arbitrarily

PCH_Data.c: Scenario to output SCCPCH with the data that made PCH arbitrarily

FACH_Data(CCCH).c: Scenario to output SCCPCH with the data that made FACH(CCCH) arbitrarily

FACH_Data(DTCH).c: Scenario to output SCCPCH with the data that made FACH(DTCH) arbitrarily

DCH_Data(UDI).c: Scenario to output DPCH with the data that made DCH(UDI) arbitrarily

DCH_Data(DCCH).c: Scenario to output DPCH with the data that made DCH(DCCH) arbitrarily

MD8480B provides all kinds of Samples which are for testing the physical channel which MD8480B supports. Also, it can support various tests by customizing Scenario.

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Sample Scenarios (2)

- Sample Scenarios for testing protocol sequence between MS and MD8480B are the following;

Idle.c: Scenario to transmit BCH information

Loca.c: Scenario to perform position registration

Orig_Q931.c: Scenario to send(UDI) from mobile equipment side

Term_Q931.c: Scenario to send(UDI) from network side

Ms_Disc_Q931.c: Scenario to disconnect(UDI) from mobile equipment side

Nw_Disc_Q931.c: Scenario to disconnect(UDI) from network side

Various Samples (such as GSM/GPRS) are available in addition. Also, it can support various tests by customizing Scenario.

- Sample Scenarios for using application interface of MD8480B are the following;

AirOrig_IPPacket.c: It makes IP Packet Interface usable

AirDisc_IPPacket.c: It makes IP Packet Interface unusable

MD8480B provides all kinds of Samples of application interface. Also, it can support various tests by customizing Scenario.

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Specifications are subject to change without notice.

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