OPERATION MANUAL
For M-WIBS SYSTEM

Version 0.1

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EXIO Communications, Inc.

CONTENTS

ACRONYM

ACP	Air Interface Specific Call Control and Processing
ACPU	Wireless Office Solutions
AGC	Automatic Gain Control
ASPB	Analog Signal Processing Card
ASPC	Analog Signal Processing Card
BMPC	BTS Main Processor Card
BOOTP	Bootstrap Protocol
BS	Base Station
BPF	Band Pass Filter
BS	Base Station
BSC	Base Station Controller
BTS	Base Transceiver System
CAI	Common Air Interface
CCOS	Channel Card OS
CDPC	CDMA Digital Processing Card
CEU	Channel Element Unit
CM	Call Manager
CP	Call Processing
CSM	Cell Site Modem
CDPC	CDMA Digital Processing Card
CE	Channel Element
CSM	Cell Site Modem
DAC	Digital to Analog Converter
DCPU	DC Processing Unit
DHCP	Dynamic Host Configuration Protocol
DNC	DownConverter
DNCC	DownCoverter Card
EMI	Electro-Magnetic Interference
FA	Frequency Assignment
FIFO	First-In First-Out
GK	Gate Keeper
GPS	Global Position System
GPSR	GPS Receiver
GW	Gate Way
HDLC	High Level Data Link Control
HLD	High Level Design
IF	Intermediate Frequency
IP	Internet Protocol
IPC	Inter Processor Communication
LNA	Low Noise Amplifier
LO	Local Oscillator
LPF	Low Pass Filter
LLD	Low Level Design

MCP	Master Call Control and Processing
MTU	Media Translation Unit
MMI	Man Machine Interface
MPC	Main Processing Card
MPM	Main Processing Module
MS	Mobile Station
MSC	Mobile Switch Center
MTBF	Mean Time Between Failure
MTBCF	Mean Time Between Critical Failure
MUX	Multiplexer
MTU	Media Translation Unit
NCP	Network Protocol Processing
NMS	Network Management Server
OAM	Operation and Maintenance
PA	Power Amplifier
PBX	Private Branch Exchange
PCI	Peripheral Communication Interface
PCS	Personal Communication Service
PLMN	Public Landline Mobile Network
PS	Personal Station
PP2S	Pulse Per Two Second
RF	Radio Frequency
RFCU	RF Converting Unit
ROM	Read Only Memory
RTOS	Real Time OS
SCC	Serial Communication Controller
SCCP	Serial Communication Controller Port
SCP	Slave Call Control and Processing
SDU	Selection and Distribution Unit
SNR	Signal To Noise Ratio
SRU	Separated RF Unit
SYN	Synthesizer
TCE	Traffic Channel Element
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TOD	Time of Day
TPS	Timing Processing Card
UDP	User Datagram Protocol
UPC	UpConverter
UPCC	UpConverter Card
WIBS	Wireless Internet Base Station
WIG	Wireless IP Gateway
WIS	Wireless IP Server
WOS	Wireless Office Solution

1. Preface

This document describes the operation of the wireless IP-based base station (WIBS) for CDMA PCS and cellular systems. The WIBS provides the interface between CDMA PCS personal stations (PS) or cellular mobile stations (MS) and a Wireless IP Server (WIS) and related IP entities. *Getting Started* provides the brief functional description of the system. *Specification* presents detailed performance, electrical, physical and reliability specification of the system. *Start Up and Basic Operation* describes the basic operation procedure including installation. *SCMenu* presents the advanced operation procedure and management for call processing and resource management. *Maintenance* gives some information regarding management of WIBS system.

2. Safety

2.1 General Safety Summary

To keep the following safety direction is very important to operate WIBS system safely and to prevent the system from damage and operator's injury.

- Proper Power Source : The power requirements presented in this manual should be kept very tightly.
- Temperature : Do not expose to extremely hot or cold environment.
  The proper temperature range is –30 °C to 50 °C
- Explosive Atmosphere : Keep the system away from explosive material
- Installation : A qualified person should install the system to avoid some failure and damage

- Failure : Stop the operation and contact customer service.
- Modification : Don't modify any part of the WIBS system.
- Electric Shock : Careful treatment require to avoid the electrical shock.

ⓘ *Warning for RF Exposure : In order to comply with FCC RF exposure limits, system should be located at a minimum distance of 7.9 inches (20 cm) or more from the body of all person.*

2.2 Applicable Documents and Standards

1. ANSI J-STD-008, Personal Station-Base Station Compatibility Requirements for 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Communications System.
2. IS-95A, Mobile Station - Base Station Compatibility Requirements for Code Division Multiple Access (CDMA) Cellular Communications System.
3. FCC part 2, part 15, part 16, part 24, and part 68.
4. FCC ICES-003 for Canada
5. Bellcore GR-487
6. Bellcore GR-63
7. Bellcore GR-1089

8. IS-634 revision A, Re-Ballot Version, 30 January 1998
9. CDG-IOS, MSC to BS Interface Inter-Operability Specification, Version 2.0; September 10, 1998
10. Simplified IS-634 Interface Specification for WiBS, Revision 0.1, ExiO Communications
11. MPC-CDPC Message Interface Specification for WiBS, Revision 0.1, ExiO Communications
12. H.323 Packet-based multimedia communications systems, ITU-T, version 2

3. Getting Started

WIBS are used to provide innovative services for enhancing mobility in a wireless office environment and covering hot spot or dead spot of traditional public cellular or PCS networks, such as on campus, on the load, etc. WIBS is connected to the IP network through 10/100base-T interface and related software stack (H.323, etc.), and can also be used for conventional PCS or cellular systems. WIBS is a part of an IP-based wireless office system which includes WIBS, WIS, IP-PBX, IP-Phones, etc.

4. SPECIFICATIONS

Some fundamental system requirements for WIBS are described in following sections.

4.1 Functional Specifications

4.1.1 Operating Frequency

The WIBS operates at frequencies specified in the following tables:

Unit (U.S. PCS)	Frequency Range (MHz)
Transmit	1930 - 1990
Receive	1850 - 1910

Table 2.1.1-1 PCS Operating Frequency

Unit (DCS)	Frequency Range (MHz)
Transmit	869 - 894
Receive	824 - 849

Table 2.1.1-2 DCS Operating Frequency

4.1.2 Interface Specification

4.1.2.1 Air Interface

The WIBS for a digital cellular system (DCS) shall comply with IS-95A (1st stage) and IS-95B (2nd stage). The WIBS for a personal communication services (PCS) shall comply with ANSI J-STD-008.

4.1.2.2 Backhaul Interface

There is a 10/100base-T Ethernet interface between the WIBS and the IP-network. A T1 or E1 trunk can be used for the interface between a WIBS and a conventional CDMA wireless network (optional).

4.1.3 Operation and Maintenance

4.1.3.1 Operation/Configuration Management

The WIBS should manage the data related to operation and configuration of its subsystems:

- Program/data downloading
- Radio resource management
- Configuration data management
- CDMA parameter management

4.1.3.2 Performance Management

The WIBS should collect and analyze data related to system performance, and send them to the higher level entity for management (WIS, etc):

- Call-related parameters and statistics
- CDMA radio performance related parameters and statistics

4.1.3.3 Maintenance Management

The WIBS should perform detection, report, and recovery of abnormal operation:

- Fault detection and management
- Alarm monitoring and processing
- Periodic test for maintenance/diagnosis
- Status management

4.1.4 Configuration Features

- One WIBS supports one FA, one sector or one unidirectional cell.
- It can be operated with several kinds of RF front-end systems, such as in-building repeaters, optical repeaters, distributed antennas, remote RF units, etc.
- A multi-sector cell site can be configured with multi-WIBSs where only soft handoff is allowed between WIBSs, but softer handoff is not. For a conventional wireless network, multiple WIBSs can be daisy-chained with one T1/E1 trunk to BSC (optional).
- Each channel element may be configured to one of following personalities:
  - ◊ A pilot channel and a sync channel
  - ◊ An access channel
  - ◊ A paging channel
  - ◊ A traffic channel

4.2 Performance Specifications

4.2.1 System Delay

The round-trip delay for voice packets through the whole paths should be less than 220 ms. A conventional delay budget for the reverse link path and the forward is as follows:

Reverse Link	Delay (ms)	Forward Link	Delay (ms)
Mobile Station	51	Mobile Station	18
Air Link	20	Air Link	20
Digital Unit	18	Digital Unit	2
Backhaul/Switching	6	IP-network	1
IP-network	1	Selector	2
Vocoder	3	Vocoder	49
Total	99	Total	92

Table 2.2.1-1 System Delay Budget

4.2.2 Capacity

The WIBS can support up to 32 channel elements, including all overhead channels.

4.3 Electrical Specifications

4.3.1 Transmitter RF Power

The WIBS shall have maximum 10dBm (10mW) at the output port on the main enclosure. The remote RF units shall have maximum 40dBm (10W). The other RF front-end facilities, such as in-building repeaters, optical repeaters, and distributed antennas, shall have proper performance and maximum transmit power according to installation environments.

4.3.2 Primary Power

The primary power source for the WIBS is the conventional commercial power. The nominal voltage shall be 120/240VAC, 50/60Hz. The power supply units in the WIBS shall convert the commercial AC power into DC power with nominal voltage of +27VDC. The +27VDC is then converted into lower voltages such as +5V, +12V, -12V, +3.3V and +7.5V.

4.3.3 Battery Backup (Optional)

The WIBS shall have a battery backup system for AC power failure. The battery shall be monitored during normal operation, and charged if necessary. The optional backup battery is secured in an external compartment.

4.4 Physical Specifications

Configuration	Specifications
Size	15"(W) x 25" (H) x 10" (D)
Weight	Maximum 80 lbs

Table 2.4-1 Physical specifications

4.5 Environmental Specifications

The WIBS shall meet the environmental specifications in in-building and moderate outdoor conditions:

Configuration	Specifications	Comments
Environmental Sealing	NEMA 4X	
Lightning Protection	ANSI 6241 Class B	
Acoustic Performance	BELLCORE GR-487	60 dBA @ 5 feet
Seismic Performance	BELLCORE GR-63	
Random Vibration	BELLCORE GR-63	
Sinusoidal Vibration	BELLCORE GR-63	
Shock	BELLCORE GR-63	
EMI & RF Performance	FCC part 15 for EMI FCC part 16 in cellular band FCC part 24 in PCS band	

Configuration	Specifications	Comments
T1/E1 Trunk	FCC part 68	
Intrusion Resistance	BELLCORE GR-487	
Shotgun Resistance	BELLCORE GR-487	
Climatic Environment		
Internal Heat Load	120 watts	Maximum
Ambient Air Temperature	$-20^0C \sim +46^0C$	
Solar Load	$70W/ft^2$	
Ambient Humidity	5% - 95 %	
Altitude	TBD	

Table 2.5-1 Environmental Specifications

4.6 Reliability Specifications

4.6.1 Mean Time Between Critical Failures(MTBCF)

The MTBCF shall be longer than 50,000 hours.

4.6.2 Enclosure Material

The aluminum for the WIBS enclosure shall have better than or equal to the quality of aluminum 6082 in accordance with standard QQ-A-2501/II TEMP T6.

4.6.3 Grounding Requirement

Grounding and electric safety of the WIBS shall comply with the requirements of TR-NWT-001089.

4.6.4 Alarm Requirements

The WIBS shall monitor alarms and status, and report them to the upper level controller. Followings are some alarms:

- AC power failure
- DC power failure
- major control processors failure
- High temperature
- Low Battery Alarm

5. Installation

- WIBS System having a characteristic such as covering small area of dense population can be installed at any place where customers want to install.
- The system can be mounted on the stable standing type structure or sturdy object inside building or outside wall.
- Customer should contact customer service center to install WIBS system properly.
- An only qualified person has to install WIBS system
- No responsibility is required for manufacturer regarding any injury or damage causing from inappropriate installation.

6. Basic Operation

A GPS signal should be locked and aging before we run it.
Aging process should be done.

6.1 Power On

When the power is on, the LED should be shown like below

	Green	Yellow1	Yellow2	Green	Red
Status	On	On	On	On	On

6.2 GPS Locking

The GPS Antenna should be installed and connected to WIBS system properly.
Under the condition of proper GPS installation, LED should be shown like below

	Green	Yellow1	Yellow2	Green	Red
Status	Blink	Blink	Blink	Blink	Blink

If the received power of GPS signal is strong enough, GPS signal is locked easily.
It takes around 15min. to be locked, but it depends on the physical location of GPS Antenna.
On complete GPS lock, LEDs should be on like below

	Green	Yellow1	Yellow2	Green	Red
Status	On	Off	Off	On	Off

6.3 Aging

Usually, it takes about 1 hour to get aging after GPS locking
When aging is done, LED should be on like below

	Green	Yellow1	Yellow2	Green	Red
Status	on	off	off	on	off

Red LED indicates the timing problem possibly.
If you get the timing problem, just restart GPS locking and aging procedure like above

7. System Starts Up

Before ScMenu program activates, the environment which enables the program work properly should be installed. PC connects to BTS system through RS 232 port and initialize IP network to get download test program from our own server. Then, the test program, ScMenu , can be started for call processing related test. Using dummy terminal, we may starts up this process, and typing in shift-C use for restarting up.

VxWorks System Boot

Copyright 1984-1998 Wind River Systems, Inc
CPU: ExiO WiBS BMPC
Version: 5.4
BSP version: 2.0/1
Creation date: Nov 26 2000, 17:40:
Press any key to stop auto-boot...
1
0
auto-booting...
boot device : motfcc
unit number : 0
processor number : 0
host name : WIS
file name : vxWorks
inet on ethernet (e) : 209.237.49.226:ffffffc0
host inet (h) : 209.237.49.228
gateway inet (g) : 209.237.49.193
user (u) : wibs
ftp password (pw) : wibs
flags (f) : 0x8
target name (tn) : wibs17

Attached TCP/IP interface to motfcc0.
Attaching network interface lo0... done.

Loading... 2866180

Starting at 0x100000...

[motFccInitMem] memArea 0x201c0000, memSize 0x27eef

Attached TCP/IP interface to motfcc unit 0
Attaching interface lo0...done
Adding 5683 symbols for standalone.

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                    CPU: ExiO WiBS BMPC.  Processor #0.
                   Memory Size: 0x2000000.  BSP version 2.0/1.
                  WDB: Ready.

task spawned: id = 0x1c40560, name = t1
[LdPld] SNMP_TRAP_PKT send to request WiBS Number.

-> [LdPld] Waiting for  SNMP_SET_PKT with WiBS Number from OAM.


[Mibway] Launching the Rapid Logic WEB Server!
[Mibway] motfcc0 IP Address : 209.237.49.226
[LdPld] OK! Got the SNMP_SET_PKT with WiBS Number from OAM.
[LdPld] WiBS Number is "17"
```

[LdPld] PLD loading start.
[LdPld] Loading PLD (common.o, pld17.o)
[LdPld] Loading common.o
[LdPld] Loading common.o..... OK !!
[LdPld] Loading pld17.o
[LdPld] Loading pld17.o .....OK !!
[LdPld] Loading snmp.out

Wait for PLD download...

[LdPld] Loading snmp.out.... OK !!
[LdPld] Loading initPgm.out
[LdPld] Loading initPgm.out....OK !!
[LdPld] Looking up initPgm in symbol table ...
[LdPld] Spawning initPgm ...
[InitPgm] PLD SNMP Tree Add.

task spawned: id = 0x1c28f48, name = t2

[LdPld]

*[LdPld] ********** ALL PLD Loading OK. **********

[InitPgm] Link PLD Instance Start.*
[InitPgm] Applicaiton Program Start.
PLD downloaded

-> simStart "IP Addr1","IP Addr2", (ex: "209.237.49.226","209.237.49.228")
=>This command need to be typed in

[AlInit] MyIp 0xd1ed31e2(209.237.49.226), McpIp 0xd1ed31e2(209.237.49.226), NcpIp 0xd1ed31e4(209.237.49.228), CaIp 0xd1ed31e4(209.237.49.228)

[ddInit] ddBspAdjust() ok!
[ddInit] DdBufPoolInit() ok!
[ddInit] DdPortsInit(DdPORTS_NUM_1) ok!
[ddInit] DdTickInit(0) ok!
[ddInit] DdBrgInit(0) ok!
[ddInit] DdTimerInit(DdTIMER_NUM_4) ok!
[ddInit] DdSccInit(0) ok!
[ddInit] DdCPrxInit(0) ok!
[ddInit] DdSmcInit(0) ok!
[ddInit] DdTodInit(0) ok!
[ddInit] DdIrqInit(0) ok!
[ddInit] Dd1PpsInit(0) ok!

[ddInit] DdCacheInit() ok!
[CLS] CLS initialized
[DBX] Initialized
[GPSRX] GPSRX initialized
[SCP] scInitScp() initilization started
[RFCX] TxAtt: 63.0dB
[RFCX] rfSetDownSynth Down Synth(65.05MHz) Locked

[RFCX] rfSetUpSynth Up Synth(145.05MHz) Locked
[RFCX] UHF Synth is locked and set to ch 225.
[RFCX] ClockRate[100] minimum timer resolution[10]
[GPSRX] 1PPS present
[SCP] cmInit() ended
[SCP] scInitScp() SCP initilization success
[PM] PM initialized
[TD] TD initialized
value = 20 = 0x14

-> 0x1bfac98 (sdumsgMain): [SDU] SDUmsg initialized.

0x1bf6c00 (sduMain): SDU initialized.
[DSAMX] Initialize
[DSAMX] _dsSendRestartToCdpc (-1)
0x1bfcdf0 (mcMain): LOGMSG PLD win_a(26) tadd(31) tdrop(cc) tcomp(13) ttdrop(9d)
0x1bfcdf0 (mcMain): [MCP] s 20 socketid 21
0x1bfcdf0 (mcMain): MCP Initialized.
0x1bfcdf0 (mcMain): [MCP] Rsip_MN

[GPSRX] TOD present
[CLS 34] Load Request accepted
[CLS 34] Reading file from server
[CLS 34] Sending Text to CDPC
[CLS 34] Sending Data to CDPC
[CLS 34] CDPC Loaded

[RMX] rmUpdateCeInfo CeId[0] ChannelType[3]
[RMX] rmUpdateCeInfo CeId[1] ChannelType[2]
[RMX] rmUpdateCeInfo CeId[2] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[3] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[4] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[5] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[6] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[7] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[8] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[9] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[10] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[11] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[12] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[13] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[14] ChannelType[1]
[RMX] rmUpdateCeInfo CeId[15] ChannelType[1]

-> ScMenu

8. ScMenu

By SCP in BMPC Unit, we may control and monitor call processing between Mobile Station and Base Station. Using ScMenu program, the call processing can be monitored in terms of RF Characteristics and Call Processing Status. The brief functional description is as below.

- Display CDPC Status ; The present status of channel card unit in WIBS is checked
- MarKov Call ; The BER is checked ,while the call is processed between Base station and mobile station in reverse and forward link.
- RF Test Call ; In forward link, RF characteristics (ex. Power) is tested.
- Change Device Gain ; The output gain of pilot, sync and paging signal is controlled
- Display Call Flow ; For system debugging, the display call flow function can be used
- Call Statistic ; The statistic related with call processing ,paging and access is shown.

The flow and brief description associated with Forward link is like below

********** SCP(Slave Call Processing) Menu **********

0. Quit the SCP Menu

1. Display CDPC Status

2. Markov Call

3. RF Test Call

4. Change Device Gain

5. Display Call Flow

6. Call Statistic

Enter choice(q to quit): 1

********** SCP Menu **********

0.Go to Main Menu

1.Display CDPC data

2.Display Using TCE

3.Display Tce Status

4.Display Frame Offset

-> 1. Display CDPC data

; This menu enables to show the status of CDPC(Digital Channel Card) like bellows

CeID] CeType, Equip, Block, Status, Use, FrameO, Walsh

0 :	PSA	EQP	UBLK	NORM	BUSY	255	0
1 :	PCE	EQP	UBLK	NORM	BUSY	255	1
2 :	TCE	EQP	UBLK	NORM	BUSY	0	20
3 :	TCE	EQP	UBLK	NORM	BUSY	1	21
4 :	TCE	EQP	UBLK	NORM	BUSY	2	22
5 :	TCE	EQP	UBLK	NORM	BUSY	3	23
6 :	TCE	EQP	UBLK	NORM	BUSY	4	24
7 :	TCE	EQP	UBLK	NORM	BUSY	5	25
8 :	TCE	EQP	UBLK	NORM	IDLE	255	255
9 :	TCE	EQP	UBLK	NORM	IDLE	255	255
10 :	TCE	EQP	UBLK	NORM	IDLE	255	255
11 :	TCE	EQP	UBLK	NORM	IDLE	255	255
12 :	TCE	EQP	UBLK	NORM	IDLE	255	255
13 :	TCE	EQP	UBLK	NORM	IDLE	255	255
14 :	TCE	EQP	UBLK	NORM	IDLE	255	255
15 :	TCE	EQP	UBLK	NORM	IDLE	255	255

-> 2. Display Using TCE

; This menu displays the traffic channel which is using currently

---------- Used Channel Element Status ----------

TceTotalCnt[14] TceNormalCnt [14] TceAllocCnt[6]
[CeID] Equip, Block, Status, FrameO, Walsh

0 :	EQP	UBLK	NORM	BUSY	255	0
1 :	EQP	UBLK	NORM	BUSY	255	1
2 :	EQP	UBLK	NORM	BUSY	0	20
3 :	EQP	UBLK	NORM	BUSY	1	21
4 :	EQP	UBLK	NORM	BUSY	2	22
5 :	EQP	UBLK	NORM	BUSY	3	23
6 :	EQP	UBLK	NORM	BUSY	4	24
7 :	EQP	UBLK	NORM	BUSY	5	25

-> 3. Display TCE Status

; This menu displays the status of traffic channel and statistics of call processing.

---------- rmTceData ----------

CeId] Block, Status, ALLOCNT, ABNCNT, NOMSACK, NOBSACK, RESCNT

2	UBLK	BUSY	2	0	0	0	0
3	UBLK	BUSY	2	0	0	0	0
4	UBLK	BUSY	2	0	0	0	0
5	UBLK	BUSY	2	0	0	0	0
6	UBLK	BUSY	1	0	0	0	0
7	UBLK	BUSY	1	0	0	0	0
8	UBLK	IDLE	1	0	0	0	0
9	UBLK	IDLE	1	0	0	0	0
10	UBLK	IDLE	1	0	0	0	0
11	UBLK	IDLE	1	0	0	0	0
12	UBLK	IDLE	1	0	0	0	0
13	UBLK	IDLE	1	0	0	0	0
14	UBLK	IDLE	0	0	0	0	0
15	UBLK	IDLE	0	0	0	0	0

->4. Display Frame Offset

; This menu functions to display statistic of frame offset.

---------- rmFrameOffsetData ----------

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

---

1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0

Enter choice(q to quit): 2

********** SCP Menu **********
0.Go SCP Menu
1.Markov Call Play
2.Markov Call Release

-> 1. Markov Call Play

Markov functions to check out BER in air interface between mobile station and base station

********** SCP Menu **********
0.Go SCP Menu
1.Markov Call Configuration
2.Markov Call Start

=> 1. Markov Call Configuration

This menu enables Markov call process and display sub_menu like below.

********** SCP Menu **********
0.Go Markov Menu
1.IMSI select
2.Service Option Select
3.Input Data rate
4.Input ESN

⇒ *1. IMSI Select*

We may designate the phone number to test the base station using mobile station.

Ex) IMSI> 4088940001

⇒ *2. Service Option Select*

We may choose the quality of service such as 8K or 13K.

Ex) Service Option (0: 8K, 1: 13K)> 1

⇒ *3. Input Data rate*

We may select Input data rate like belows.

********** SCP Menu **********
SC] Input Data Rate : 1
0. Return
1. Eight Rate
2. Quarter Rate
3. Half Rate
4. FUll Rate
5. Variable Rate

⇒ 4. Input ESN

To identify mobile station, we may use ESN of mobile station.

Ex) SC] Input ESN (1234abcd): 1234abcd

Go to Markov Call Start Menu if we enter ‘ 0 ‘

********** SCP Menu **********
0.Go SCP Menu
1.Markov Call Configuration

2.Markov Call Start

=> 2. Markov Call Start

To enter ‘ 2 ‘ make Markov call start.

********** SCP Menu **********

0.Go SCP Menu

1.Markov Call Play

2.Markov Call Release

⇒ *1. Markov Call Play*

To enter ‘ 1 ‘ make Markov Call play.

⇒ *2. Markov Call Release*

To enter ‘ 2 ‘ make Markov Call release

Enter choice(q to quit): 3

The function of RF Test Call is selected for test of RF characteristics on Base station while we set up the call processing between Base and Mobile station.

********** SCP Menu **********

0.Go SCP Menu

1.FWD CALL PLAY

2.FWD CALL RELEASE

=> 1. FWD CALL PLAY

; Call start function is selected.

RF Call Number (1 - 20): (ex : 6)

; The Number of call is selected, in above case, 6 calls are selected.

TC Gain (0 - 127): (ex : 74)

; The gain of traffic channel is determined using 7bit digital control.

Service option (0 = 8K, 1 = 13K) : (ex : 1)

; The data transfer rate is selected. A 13K is a usual choice.

********** SCP Menu **********

0.Go SCP Menu

1.FWD CALL PLAY

2.FWD CALL RELEASE

=> 2. FWD CALL RELEASE

: This function makes a call release

-> 0. Go SCP Menu

; Go back to main menu to assign the gain of pilot, sync and paging signal

********** SCP Menu **********

0. Quit the SCP Menu

1. Display CDPC Status

2. Markove Call

3. RF Test Call

4. Change Device Gain

5. Display Call Flow

6. Call Statistic

Enter choice(q to quit): 4

; Change Device Gain function assigns the gain of pilot, sync and paging signal.

********** SCP Menu **********

0.Go SCP Menu

1.Pilot Sync Gain Change

2.Paging Gain Change

3.RFC Gain Change

4.Change Channel

-> 1.Pilot Sync Gain Change

; The gain of pilot and Sync signal is assigned.

Pilot Gain (0 - 127) : (ex : 108)

Sync Gain (0 - 127) : (ex : 52)

********** SCP Menu **********

0.Go SCP Menu

1.Pilot Sync Gain Change

2.Paging Gain Change

3.RFC Gain Change

4.Change Channel

-> 2. Paging Gain Change

; The gain of paging signal is determined.

Paging Gain (0 - 127) : (ex : 105)

********** SCP Menu **********

0.Go SCP Menu

1.Pilot Sync Gain Change

2.Paging Gain Change

3.RFC Gain Change

4.Change Channel

-> 3.RFC Gain Change

; The output power of transmitted RF signal can be controlled.

RFCX Gain (0 - 127) : (ex : 52)

[RFCX] TxAtt: 5.2dB

; The RF power is attenuated. Normally 15dB is setup as attenuation.

********** SCP Menu **********

0.Go SCP Menu

1.Pilot Sync Gain Change

2.Paging Gain Change

3.RFC Gain Change

4.Change Channel

-> 4.Change Channel

: A Channel number to assign frequency in use can be specified by typing in,
for example, 25, 300, 377

Enter choice(q to quit): 5

; For debugging purpose, we may use this menu to print out the status of system on the monitor screen.

********** SCP Menu **********

0.Go SCP Menu

1.Configuration Display

2.Call Display

3.Handoff Display

4.Registration Display

5.Status Display

6.Error Display

-> 1. Configuration Display

; It make us monitor the initialization of each component such as CDPC, RFC, and GPS. If we enter '1', then CM is on, one more entry make it off.

Ex) SC] CM ON

-> 2. Call Display

; We may monitor the call process with printing out the call process status on the screen. It is the same way as Configuration Display.

Ex) SC] Call On

-> 3. Handoff Display

; The procedure of Handoff process can be monitored by this menu.

Ex) SC] HO ON

-> 4. Registration Display

; The Registration also can be monitored by this menu.

Ex) SC] Reg ON

-> 5. Status Display

; The status related system resource can be monitored by this menu.

Ex) SC] Status ON

-> 6. Error Display

; The Error can be monitored by this menu.

Ex) SC] ERR ON

Enter choice(q to quit): 6

A Statistic related with Call will be displayed by this menu.

9. Maintenance Advice

9.1 Operation/Configuration Management

The WIBS system has the ability to control and manage the data regarding the operation and configuration of its subsystems like below

- Initial Loading
- Radio Resource Management
- Hardware Configuration Data Management
- CDMA Parameter Management

9.2 Performance Management

The WIBS system can collect and analyze data regarding the performance of system, and send a data to the proper higher level entity for management. Examples are like below

- Call Processing parameters can be collected for statistics
- Radio Performance also can be collected for statistics
- Periodic Report

9.3 Maintenance Management

The WISB system detects the abnormal function. Examples are like below

- Fault detection and Management
- Alarm generation and processing
- Periodic Test of Maintenance
- Status Management