ATTACHMENT E.

- USER MANUAL -

INFORMATION TO USER :

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

Changes or modifications not expressly approved
by the manufacturer responsible for compliance
could void the user's authority to operate the equipment

- INDEX -

1. Summary

Tri-band In-building repeater is located in blanket / shadow area of insider of building to transmit Sprint/Nextel CDMA (PCS), iDEN800MHz, iDEN900MHz BTS signal simultaneously.

Characteristics (CDMA)

CDMA (PCS) Band: 80dB Gain with +24dBm maximum output power

iDEN Band: 65dB Gain with +25dBmmaximum output power.

Bandwidth: Entire 1900MHz CDMA (PCS) frequency A Block to G Block (65MHz). Bandwidth selection functions per user's situation.

- 5MHz, 10MHz, 15MHz Block and contiguous 20MHz combination
- Three of non contiguous 5MHz block combination
- 10MHz, 15MHz Block could be divided by 5MHz-Sub block.
- Remote control via Web based user interface

Characteristics (iDEN 800MHz)

Bandwidth

- Downlink 851MHz~869MHz, Uplink 806MHz~824MHz (18MHz Band)
- Downlink 862MHz~869MHz, Uplink 817MHz~824MHz (7MHz Band)

To avoid paging signal interference at 940MHz side, IF Converter shift SAW filter edge by 200KHz, 400KHz. (TX Edge only, not whole bandwidth).

- IDEN800MHz, iDEN900MHz simultaneous service
- Remote selection either 18MHz or 7MHz
- Downlink band-edge adjustable (SAW Filter select)

Characteristics (Tri-Band)

Basically system box is two combination types of iDEN and CDMA technologies. Functional modules are classified as below.

- 6-Plex and Hybrid Multiplex Cavity Filter to combine HyCDMA (PCS), iDEN 800MHz, iDEN 900MHz, Duplex input/output signal.
- LNA(Low Noise Amplifier),
- Gain Block to transmit output signal to PAM (Power Amplifier Module).
- Donor LNA, Server LNA Module, which include Divider / combiner for IF Module interface.
- IF Converter Module (thee in CDMA side, one of each iDEN800MHz, iDEN900MHz side)
- PAM Module to amplify output power linearly in accordance with optimal repeater output power.
- Power Supply Unit
- Controller to monitor each module in repeater.

All modules in Tri-Band repeater are commonly compatible with CDMA and iDEN standalone box.

Abbreviation

PAM: POWER AMPLIFIER MODULE

LNA: LOW NOISE AMPLIFIER

AGC: AUTO GAIN CONTROL

ALC: AUTO LIMIT CONTROL

For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.

Ethernet Instruction " This equipment is indoor use and all the communication wirings are limited to inside of the building" or similar texts.

Replaceable batteries instruction

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECTIVE TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

2. System Configuration

2.1 Tri-band repeater service network configuration

The system's operation range is from A Block to G Block (Total: 65MHz) and the system features

- to set up 20MHz using 5MHz, 10MHz, 15MHz and contiguous 'Block'
- to set up 3 non-contiguous 5MHz Block
- to set up Sub Block by 5MHz with 10MHz, 15MHz Block
- Remote control through GUI

This system is to provide iDEN800MHz and 900MHz simultaneously.

Available band selection

a. 18MHz Band of Downlink 851MHz~869MHz, Uplink 806MHz~824MHz

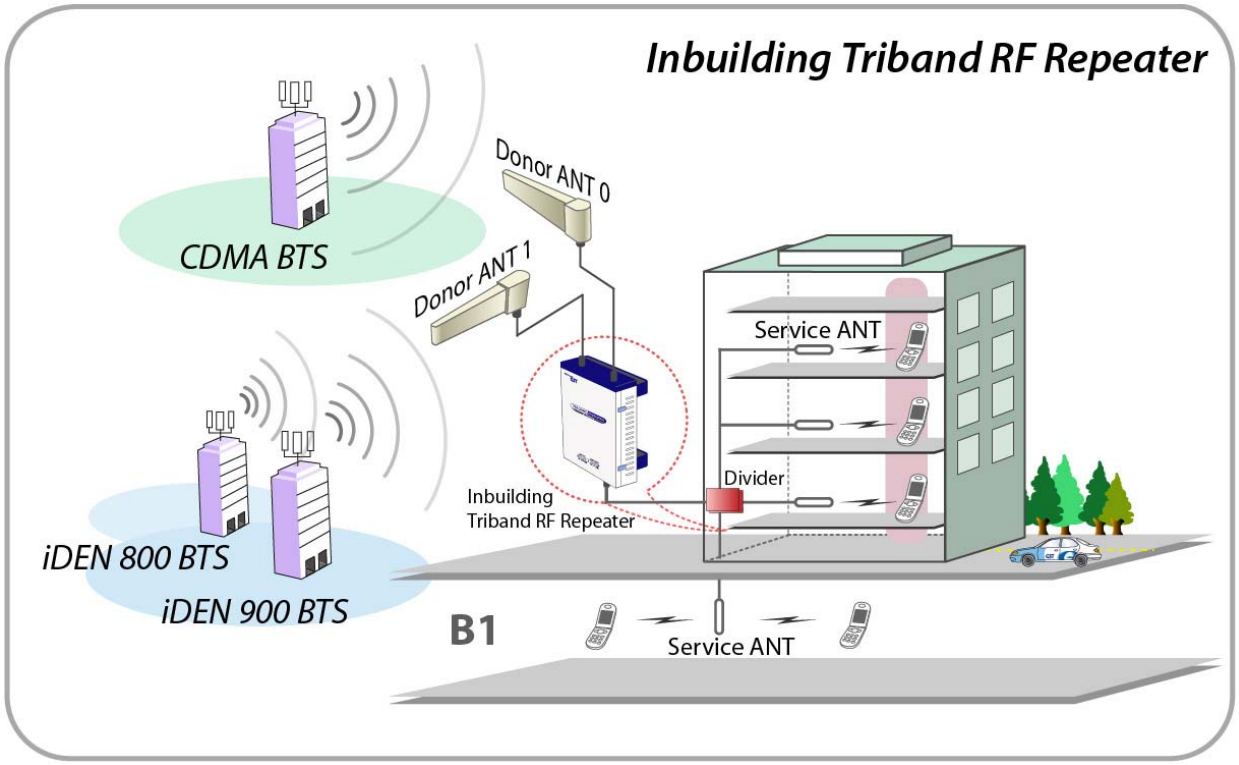
b. 7MHz Band of Downlink 862MHz~869MHz, Uplink 817MHz~824MHz

can select the 18MHz Band of Downlink 851MHz~869MHz, Uplink 806MHz~824MHz and Downlink 862MHz~869MHz, 7MHz Band of Uplink 817MHz~824MHz on remote control.

Also, high frequency edge in Downlink side could be reduced by 200 KHz or 400 KHz to attenuate adjacent band signal

- Simultaneous service of IDEN800MHz, iDEN900MHz
- IDEN800MHz remote band selection either 18MHz/7MHz

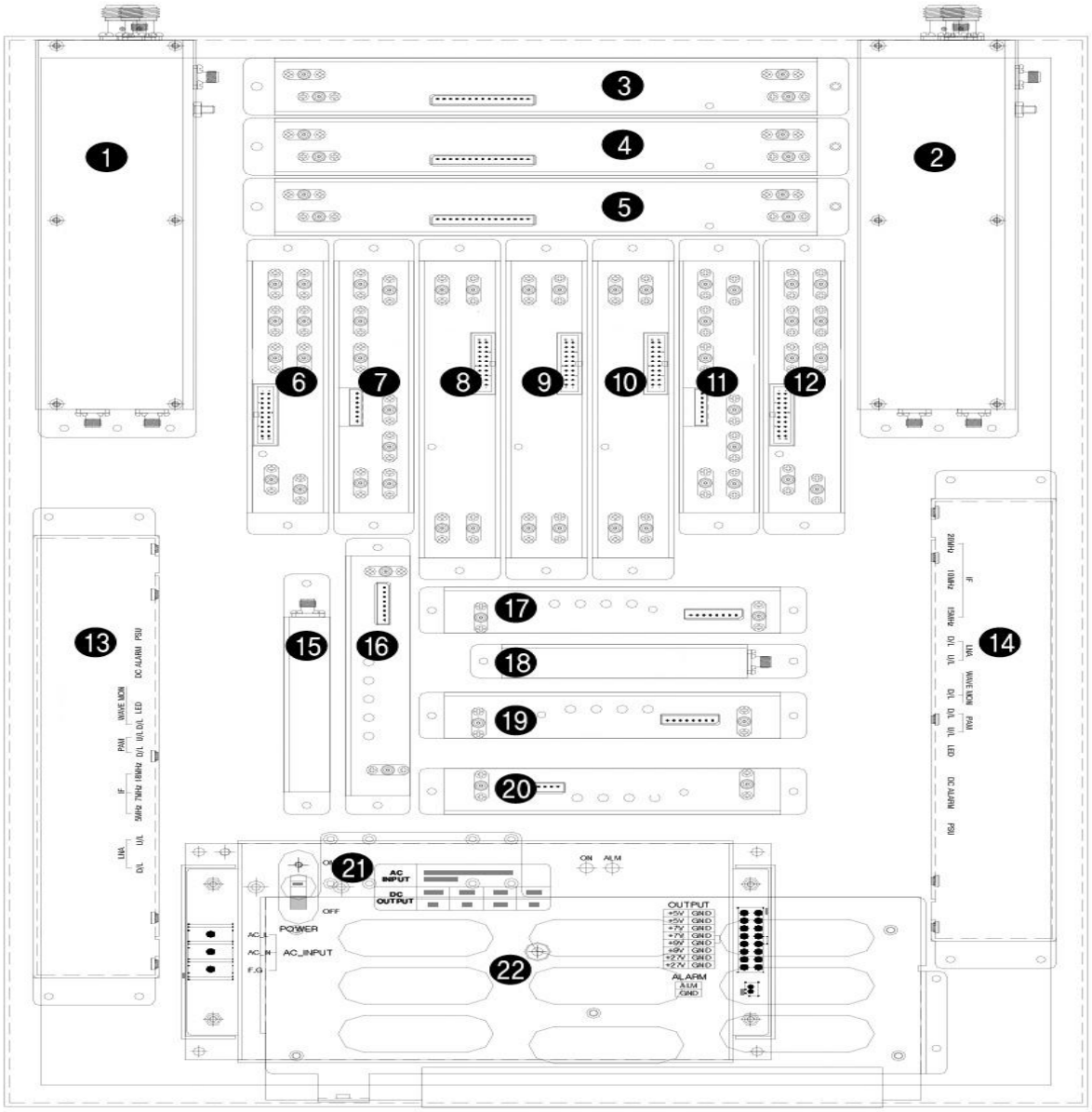
Downlink band-edge shifting is available (SAW Filter select)



<Pic.1> Tri-band In-building Repeater Service organization

2.2 System Design and Operation

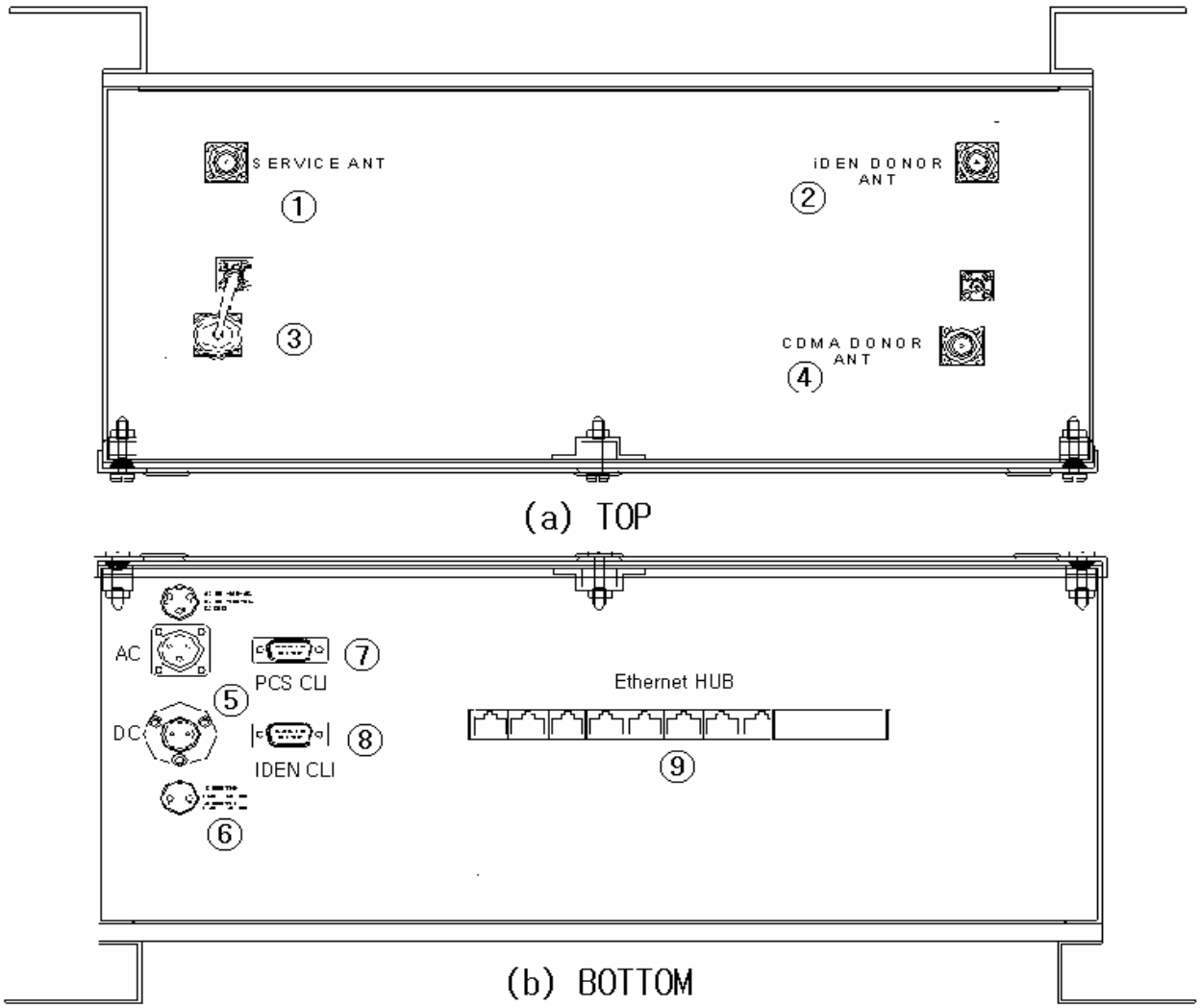
2.2.1 System design



NO.	PART	NO.	PART
1	SERVICE CAVITY MODULE	12	iDEN FWD LAN MODULE
2	DONOR CAVITY MODULE	13	iDEN NMS& I'O BOARD MODULE
3	5M IF CONVERTER MODULE	14	US PCS NMS& I'O BOARD MODULE
4	18M IF CONVERTER MODULE	15	US PCS WAVE MONITORING MODULE
5	7M IF CONVERTER MODULE	16	US PCS FWD PAM
6	iDEN RVS LAN MODULE	17	US PCS RVS PAM

7	US PCS RVS LAN MODULE	18	iDEN WAVE MONITORING MODULE
8	20M IF CONVERTER MODULE	19	iDEN RVS PAM
9	15M IF CONVERTER MODULE	20	iDEN FWD PAM
10	10M IF CONVERTER MODULE	21	PSU MODULE
11	US PCS FWD LAN MODULE	22	HUB

<Pic.2> Tri-band In-building Repeater internal design



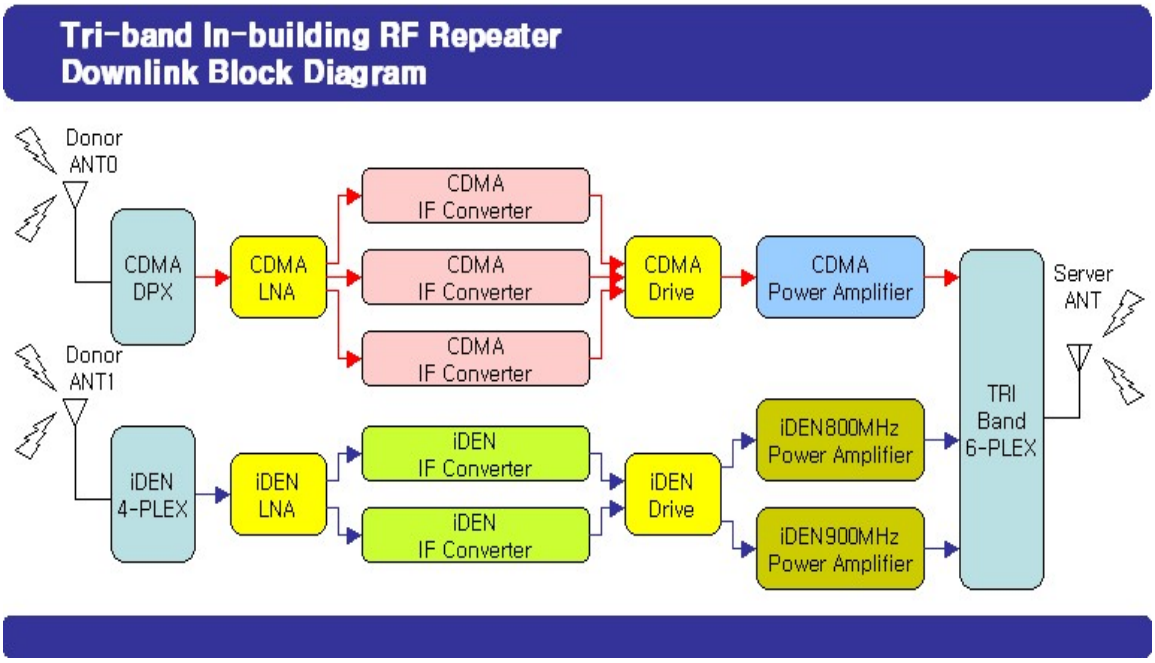
NO.	PORT	NO.	PORT
1	SERVICE ANT PORT	6	DC POWER PORT
2	iDEN DONOR ANT TERM	7	PCS MONITOR PORT
3	DONOR ANT TERM	8	iDEN MONITOR PORT
4	CDMA DONOR ANT TERM	9	ETHERNET HUB PORT
5	AC POWER PORT		

<Pic.3> iDEN 25dBm PORT design

2.2.2 Downlink Path

Tri-band In-building RF Repeater operates CDMA (PCS) and iDEN800MHz, iDEN900MHz. RF Module shares the modules used for CDMA (PCS) equipment and iDEN equipment and have differences in the configures of Donor ANT and Server ANT Port.

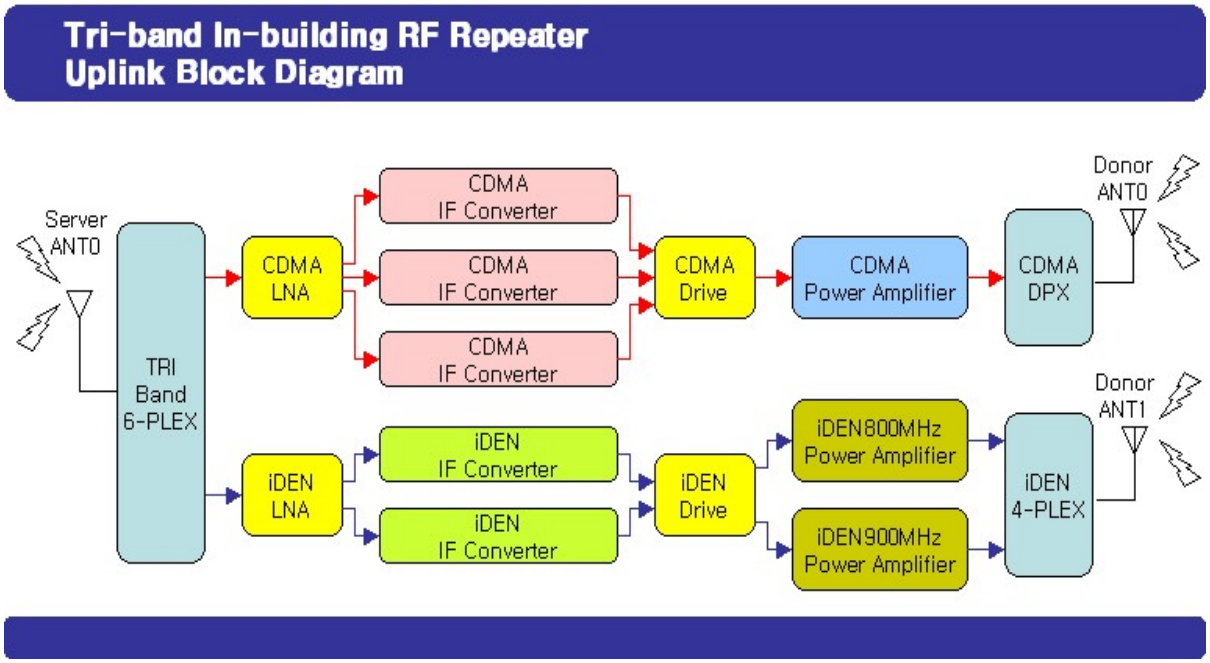
Tri-band In-building RF Repeater has separate 2 Donor ANT Port for aiming each BTS. Server Port for indoor is possible to one port. Therefore, Cavity Filter applied to Front End of Donor ANT Port consists of DPX for CDMA (PCS) and 4Plex for iDEN and Cavity Filter for Front End of Server ANT Port has 6-Plex which multiplexes all TX/RX in one path.



<Pic.4> Tri-Band In-building Repeater Downlink Block Diagram

2.2.3 Uplink Path

GST designed to use all same modules, which are used to stand alone unit, in Tri-Band unit.

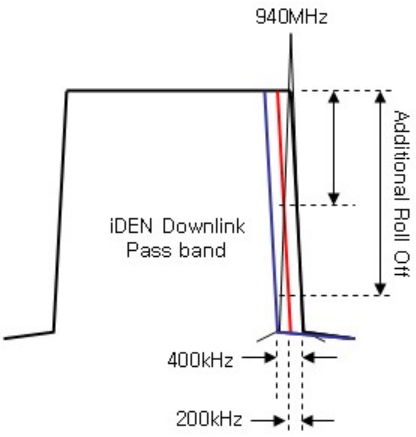


<Pic.5> Tri-band In-building Repeater Uplink Block Diagram

2.2.4 Adjustable Band Edge functional circuit configuration

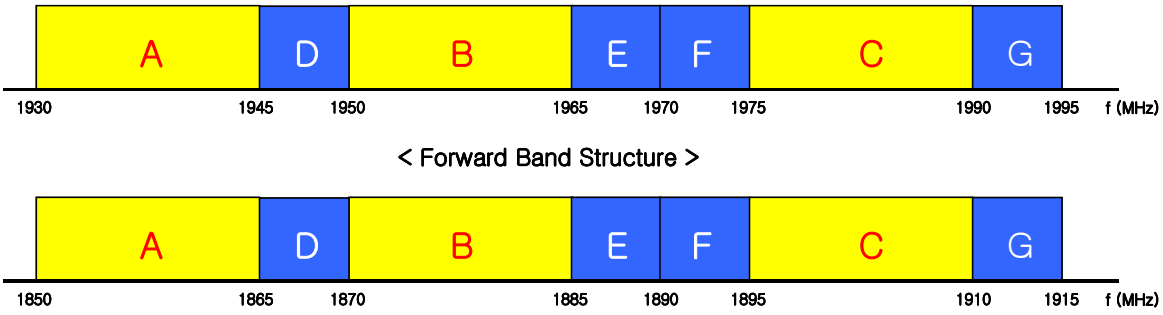
In case of IDEN using the bandwidth of 800MHz and 900MHz, many of Out of Band Signals is input via Donor ANT Outdoor. The most worried signal among them is Paging Signal. Commercial Paging Signal of 929MHz~932MHz, 940MHz~941MHz, having the strength of Max. -15dBm, is to be inputted into Donor ANT. Among this two kind of Paging Signal Band, 929MHz~932MHz bandwidth is possible for sufficient Rejection via SAW Filter, But 940MHz~941MHz is difficult to gain big decreasing volume even if use SAW Filter because Band Edge is as close as to be folded to 935MHz~940MHz of being the frequency of iDEN900MHz Downlink.

To prepare for this environment, Down Link of iDEN Repeater is designed to have additional Roll Off characteristic by decreasing band of SAW Filter in the station adjacent to paging signal, for it having the function of Adjust Band Edge that can decrease c of high frequency by 200 kHz, 400 kHz each.



<Pic.6> Achieving additional Roll Off via Adjust Band Edge

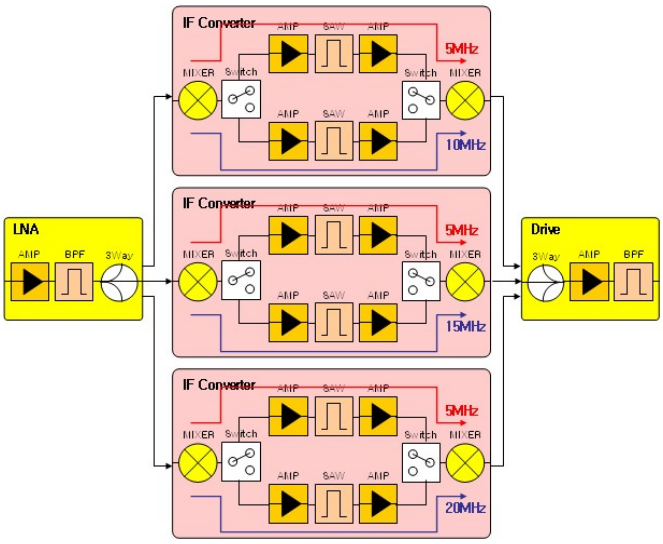
2.2.5 US PCS Frequency Selection



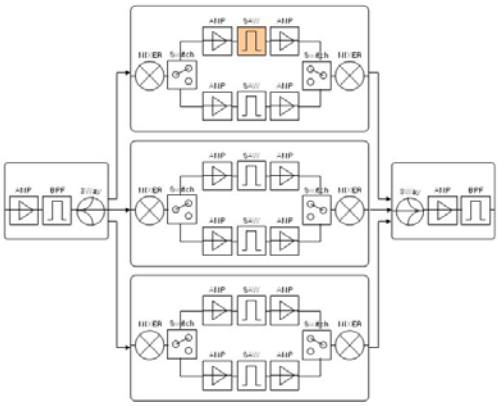
<Pic.7> PCS Band Structure

Setup of CDMA Block is formed by Switch and SAW Filter. If the operator set up the Block, Controller select the path of SAW Filter for disconnection of Switch and select the Local frequency to gain the preferable RF frequency modifying the data of PLL.

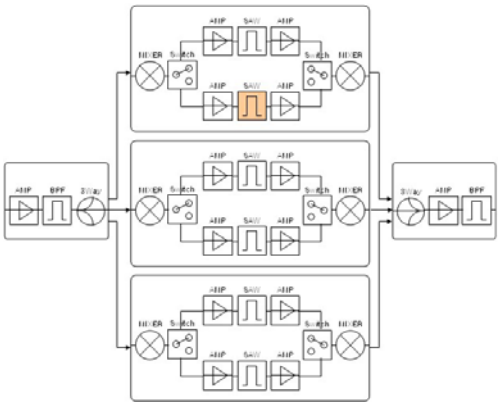
The following show a circuit diagram for Band Select of CDMA. CDMA operates 1 to 3 Blocks at once using IF Converter Module containing the path of 2 SAW Filter in Downlink/ Uplink.



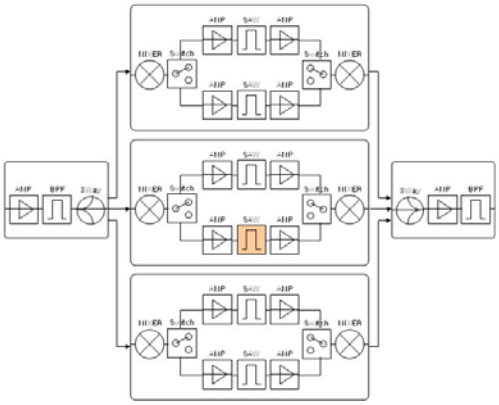
Configure of IF Converter for CDMA Block



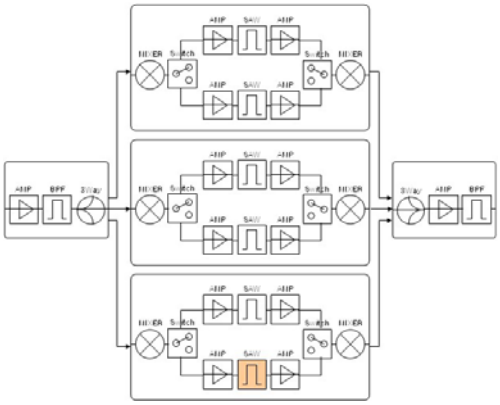
Configure for one 5MHz Block



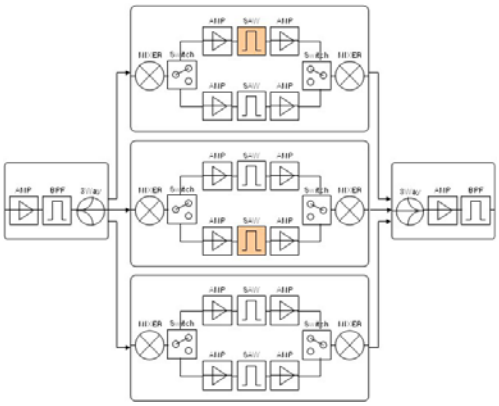
Configure for one 10MHz Block



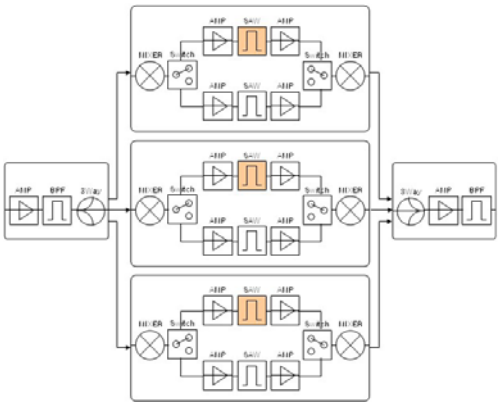
Configure for one 15MHz Block



Configure for continuous 20MHz Block



Configure of separated 20MHz



Configure of 3 separated 5MHz

3. Electric Material and Specifications

3.1 System Capacity

Item		Specification	Remark	
Down Link Frequency	IDEN800	851MHz ~ 869MHz	18MHz	Select
		862MHz ~ 869MHz	7MHz	
	IDEN900	935MHz ~ 940MHz	5MHz	
	CDMA (PCS)	1930MHz ~ 1995MHz	65MHz	
Up Link Frequency	IDEN800	806MHz ~ 824MHz	18MHz	Select
		817MHz ~ 824MHz	7MHz	
	IDEN900	896MHz ~ 901MHz	5MHz	
	CDMA (PCS)	1850MHz ~ 1915MHz	65MHz	
Port	Donor 0	CDMA TX / RX	Duplex	
	Donor 1	IDEN TX / RX	4-Plex	
	Server	CDMA / IDEN TX / RX	6-Plex	
Capacity		OMNI		
CDMA Channel Capacity		5MHz, 10MHz 15MHz, 20MHz	Can select three separated block Simultaneously	
IDEN Select Bandwidth		18MHz / 7MHz	IDEN800MHz	

Output Power (ANT Port)	iDEN	+25dBm / 316mW Composite	+22dBm / 158mW Per Single Band
	CDMA (PCS)	+24dBm / 250mW	

3.2 System Material & Mechanical Specifications

Item		Specification	Remark
RF Connector		N-Type Female	Donor & Server ANT Port
Power Connector	AC	MS3102A-10SL (3Pin)	MIL-C-5015 Type
	DC	SCK-16-2P (2Pin)	Circular Type
AC Supply		AC 120V 60Hz 3.0A	
Out Dimension		16.7*23*6.77	Inch
Net Weight		29.5	kg
Material		Module	AL6063S-T5
Operation Temperature	Cabinet	AL5052P	
	-10℃ ~ +50℃	Convection cooling	
Humidity		5% ~ 95%	Non-condensing
Dust Resistance		TELCORDIA GR63-CORE	
Vibration Resistance		1G, 10~150Hz 0.1 Octaves/min	

3.3 Electrical Specifications

Parameter		Specification	Remark
CDMA Gain	Range	40dB ~ 80dB	
	Adjust Step	±1.0dB	
	Adjust Accuracy	±0.5dB	
IDEN Gain	Range	40dB ~ 65dB	
	Adjust Step	±1.0dB	
	Adjust Accuracy	±0.5dB	
Propagation Delay	CDMA	< 4.0μ s	
	iDEN	< 5.0μ s	

Spurious Emission	F0±885kHz	< -45dBc	Δmarker: 29dB
	F0±1.98MHz	< -50dBc	Δmarker: 34dB
Out Band Spurious Emission		< -13dBm	RBW: 30MHz
Adjacent Channel Power	@ CH_{OFFSET} 25kHz	> 50dBc	Degradation of 3dB for eight (8) iDEN carriers
	@ CH_{OFFSET} 50kHz	> 55dBc	
	@ CH_{OFFSET} 500kHz	> 55dBc	
	@ CH_{OFFSET} 1MHz	> 55dBc	
	@ CH_{OFFSET} 2MHz	> 55dBc	
Adjust Band Edge	@ 869MHz	868.8MHz / 868.6MHz	200kHz 2Step
	@ 940MHz	939.8MHz/ 939.6MHz	
Flatness		< ±1.25dB	800 ~ 900MHz
Return Loss / VSWR		> 14dB / < 1.5: 1	
Up link Noise Figure	CDMA	< 4.5dB @ Max gain < 12dB @ Min gain	
	iDEN	< 5dB @ Max gain < 12dB @ Min gain	
Wave form quality (ρ)		> 0.912	CDMA (PCS)
BER			iDEN
Roll off	CDMA (PCS) ±1.0MHz	> 40dBc	Test frequency measured from band edge
	CDMA (PCS) ±1.5MHz	> 50dBc	
	IDEN ±1.0MHz	> 50dBc	
Characteristic Impedance		50Ω	

3.4 Functions

Parameter	Specification
Gain Control	• Adjustable DL and UL Gain range 40~65dB • Display default Gain and current Gain function
AGC Auto Gain Control	• It always operates in Downlink AGC ON status • To maintain same Downlink output power despite flexible input signal strength. • To add or subtract Attenuation level referring to AGC Power Limit level.

ALC Auto Limit Control	• To limit output power as far as default range • Set up via GUI • Automatic Gain decrement when output power of repeater is higher than default level • Automatic Gain recovery when output power of repeater is reduced. • Shutdown when output power is higher than default level in Minimum Gain • Automatic Recovery Algorithm conversion after Shutdown status
Band Select	• To select either 18MHz or 7MHz in 800MHz Band
Band Edge Adjust	• To shift Band edge of DL high frequency side by 200kHz, 400kHz step
Power Monitoring Function	• Monitoring repeater's output level
Oscillation Check	• Isolation Check in initial set up or Reset • Monitoring Oscillation comparing to minimum/maximum Noise Floor level • When Oscillation occurred, repeater attempts to stabilize Isolation through Gain control function. • Shutdown repeater when Oscillation still goes in Minimum Gain • Automatic Recovery Algorithm conversion after Shutdown status
DL Input control	• Monitoring Donor ANT input power of DL
Automatic Recovery	• When in repeater shutdown, it periodically recovers output power of repeater then monitors alarming
Security	• Support HTTPS for Web Browser security • User authentication through User ID and Password
Temperature control	• Monitoring temperature of repeater • Maximum and minimum set up is possible. Shutdown in over temperature • Automatic recovery after temperature becomes normal. (Hysteresis 10degree)
VSWR Monitoring	• Monitoring VSWR of Donor ANT Port (Every one and half minute) • Reporting VSWR Alarm and Shutdown when the rate is 3:1 • Automatic Recovery Algorithm conversion after Shutdown status
IP address report via E-mail	• When in PPP reconnection, E-mail which includes HTML to connect to newly assigned IP Address, reports to operator.
DHCP Client	• Automatic IP assignment
DHCP Server	• Server function for automatic IP assignment
Web GUI	• Remote and local user browser support through Web Browser
SNMP Agent	• NMS report via SNMPv2 Trap

LED Display	• LED displays power and operation status on front side of repeater system. • DL input and output signal level is verified by LED bar.

4. SET UP

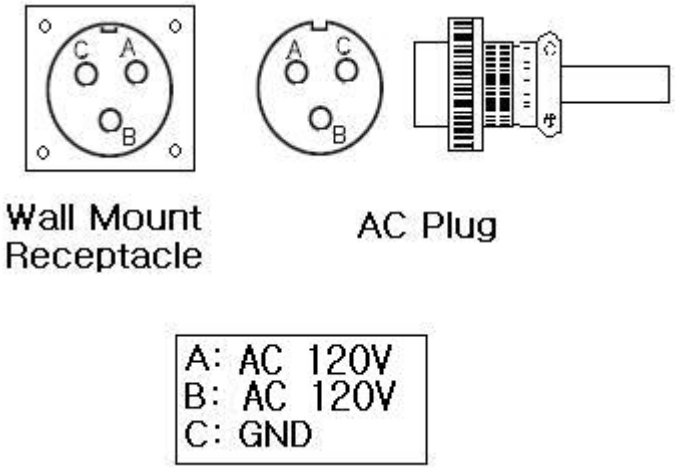
4.1 System Set up

4.1.1 Constitution (based on 1 SET)

Parameter	Item	Quantity
Major accessory	TRI Case	1 EA
Additional components	Main power input Cable Mountable Bracket Fixable Screw	1 EA 1 EA 1 SET
User Manual	Manual	1 EA

4.1.2 Notice

1) System Power check: Major electricity is AC120V, therefore please input electricity after power verification.



<Pic.8> MS 3100 A 10SL-3 (Wall Mount Receptacle) & MS3010 A 10SL-3(Plug)

2) Input condition optimization: DL input condition of iDEN is -43 ~ -18dBm, and -56 ~ -16dBm for CDMA. User should verify input condition of Donor ANT

3) Isolation check between DONOR/SERVICE ANT: Isolation condition of this equipment is 80dBc (Gain+15dB) in iDEN, and 95dBc (Gain+15dB) in US PCS. User should check its condition before installation.

4) This equipment is basically wall mountable installation.

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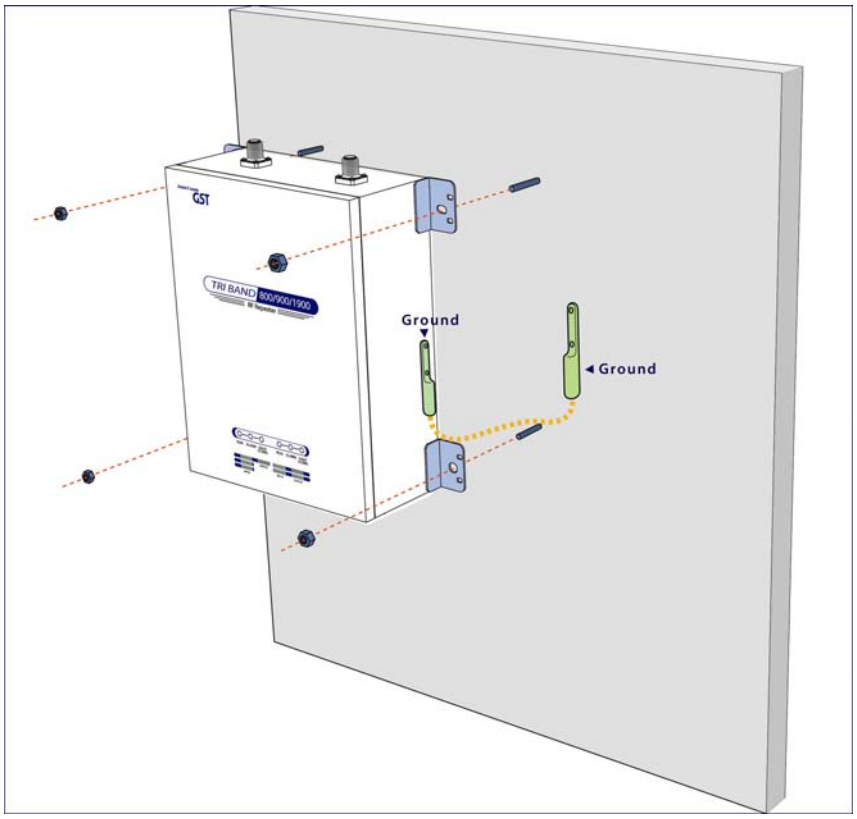
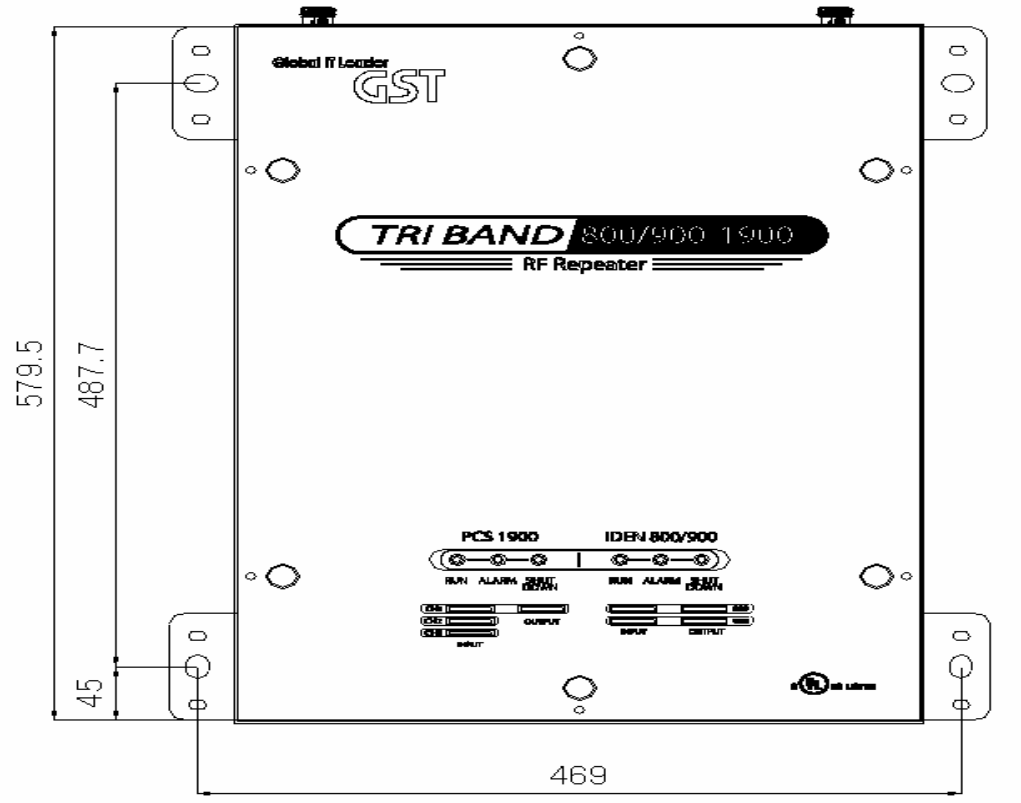


<Pic.9> Tri-band In-building Repeater Case mounts



<Pic.10> Tri-band In-building Repeater Case installation

4.1.3 System set up

1) Once aforementioned process is done, open for service get ready.

2) For grounding, there is a grounding terminal in main power supply side and the grounding terminal on a site and unit should be connected same.

3) System installation work is basically performed more than two people and should be careful for unexpected accident.

4.1.4 Open for service

1) Check points before open

a. Verification of system installation status

Electricity, In/out antenna, coaxial cable connection, equipment mounts status.

b. Verification of system accessories

User should check whole necessary accessories.

c. Check receipt signal level

User should check whether receipt environmental condition is in accordance with system specification, so that system operation will be optimized.

2) Check points after open

a. Check by external LED

① RUN: Green light ON (Off: Green light off)

② ALARM: Green light in normal status, Red light in alarming

③ SHUT DOWN: Green light in normal status, Red light in Shutdown

④ iDEN

Number of LED bar on front side of repeater will show input signal level.

-43 dBm~38dBm: LED 1bar

-37dBm~-33dBm: LED 2 bars

-32dBm~-28dBm: LED 3 bars

-27dBm~-23dBm: LED 4 bars

Up than -22dBm: LED 5 bars

Number of LED bar in output power side will show output power signal level.

+0dBm~+4dBm: LED 1bar

+5dBm~+9dBm: LED 2bars

+10dBm~+14dBm: LED 3bars

+15dBm~+19dBm: LED 4bars

Up than +20dBm: LED 5bars

⑤ CDMA:

Number of LED bar on front side of repeater will show input signal level.

Less than -56dBm: LED 1bar

-56dBm~-48dBm: LED 2bars

-48dBm~-39dBm: LED 3 bars

-39dBm~-31dBm: LED 4 bars

-31dBm~-23dBm: LED 5 bars

Number of LED bar in output power side will show output power signal level

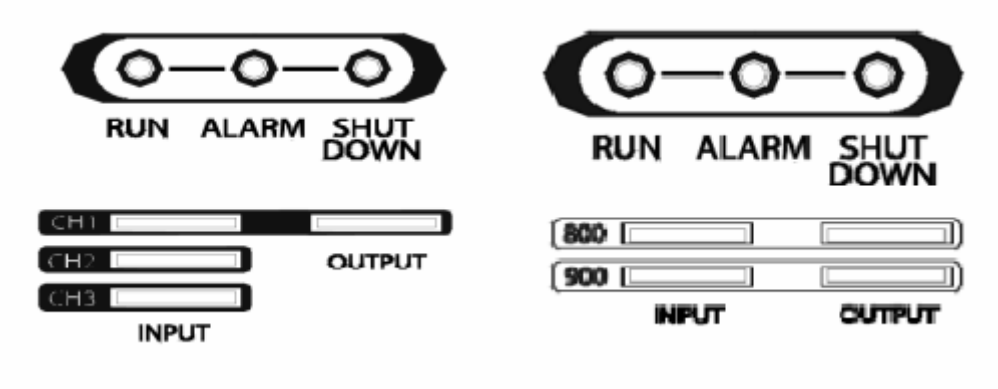
Less than +6dBm: LED 1bar

+6dBm~+12dBm: LED 2 bars

+12dBm~+15dBm: LED 3 bars

+15dBm~+18dBm: LED 4 bars

+18dBm~+22dBm: LED 5 bars



<Pic.11> Tri-band In-building Repeater front LED

b. Verification via Debug Program

User should check operation status of repeater system via Debug Program.

c. Verification of operation status

Use should verify following status with Output monitoring terminal, which is provided by Spectrum Analyzer.

- Output power generation status, system spurious emission characteristics.

d. Verification of signal quality and strength in service area

User should verify signal strength and quality of in-service coverage area by using cell phone or other terminal.

e. Verification of upper-level NMS operation status

4.2 Troubleshooting

In case, abnormal operation is detected, user should check abnormal parts via remote accessible function or field debug, then conduct repair after turn it off.

4.2.1 Necessary Testing and Measuring equipment

a. RF Power Meter: 10Watt Max, 50ohm

b. Signal Generator: 3GHz

c. Spectrum Analyzer: 3GHz

d. Multi Meter

4.2.2 Notice

a. Trouble shooting should be performed with drastic knowledge basis.

b. Unsure parts should not be disassembled.

c. When in trouble shooting, technician should use attenuator to check output side.

4.2.3 Simple trouble shooting method

a. In not important trouble, technician adjust the unit via remote accessible function or field debugging and should verify the reason of trouble.

b. Each Alarm LED included in each module should be verified trouble. Normal operation: Green light On. Alarming: Red LED on

c. Technician should check external and internal connectors then fasten them. Those connectors should be cleaned up regularly.

d. If technician think this is heavy problem, call after sales team immediately.

5. WEB USER INTERFACE

5.1 Common set up (PCS, IDEN)

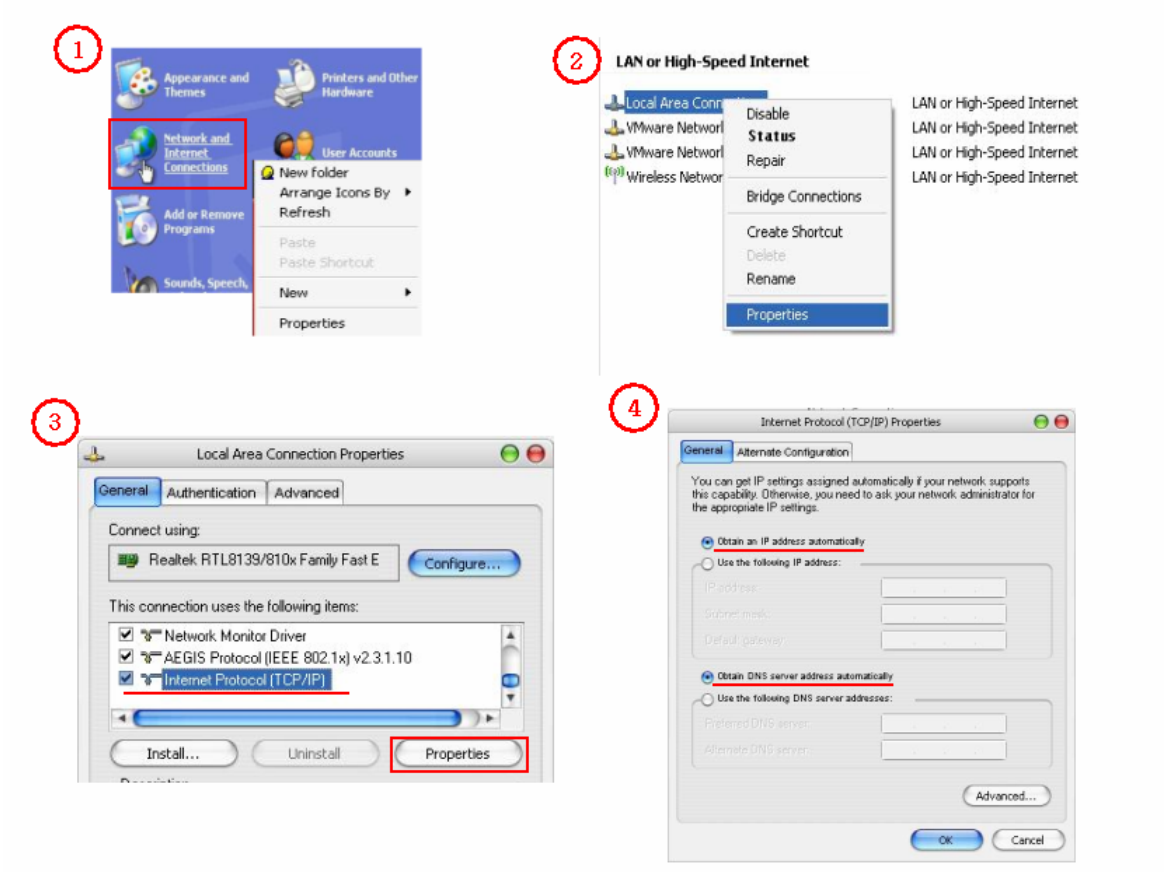
5.1.1 IP Address verification and Explorer setting

(1) Start->Control Panel->Network Connections

(2) Double-click Local Area Connections at LAN or High Speed internet

(3) Click Internet Protocol (TCP/IP) at General tap and click Properties.

(4) Apply automatic IP address assignment at local connection

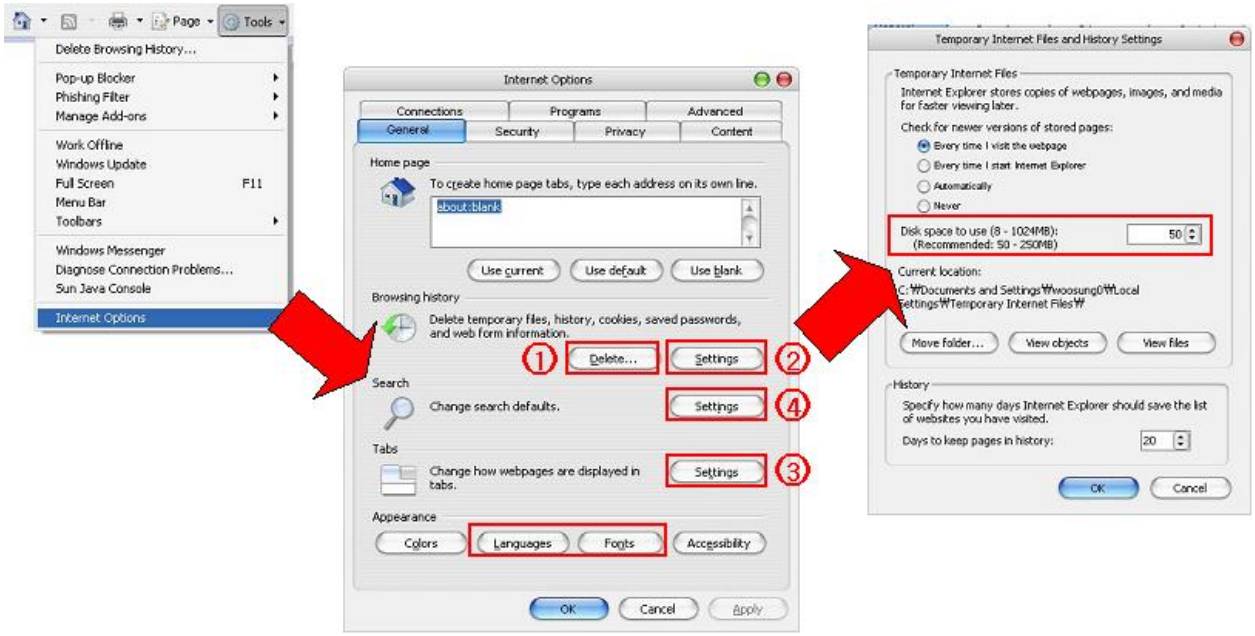


(5) Verify assigned IP address at local connection.

(Unless IP address is not assigned, please click repair.)

5.1.2 Explorer option setting

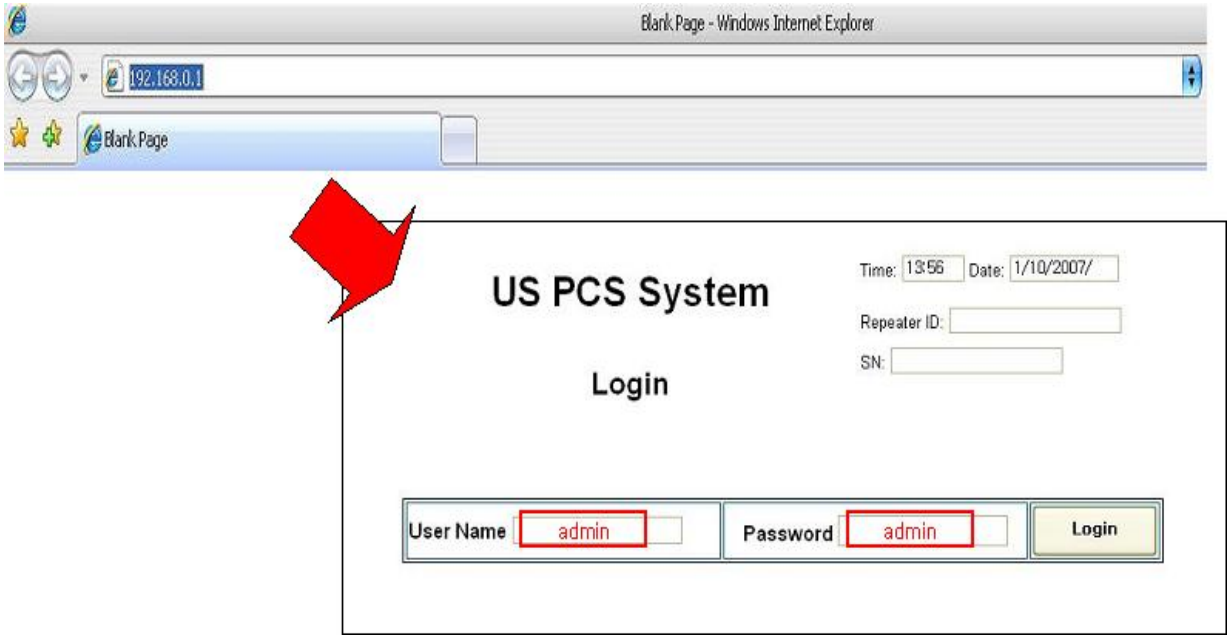
- Proceed step by step as indicated in below. All files and records should be removed.
- Set up mode will be displayed after (2) click.
- Please proceed along following set up mode screen shot.



5.2 PCS Web UI

5.2.1 Web UI connection

- Input desirable IP address.
- Default Use Name and Password for Web UI is 'admin'.



5.2.1 Link menu

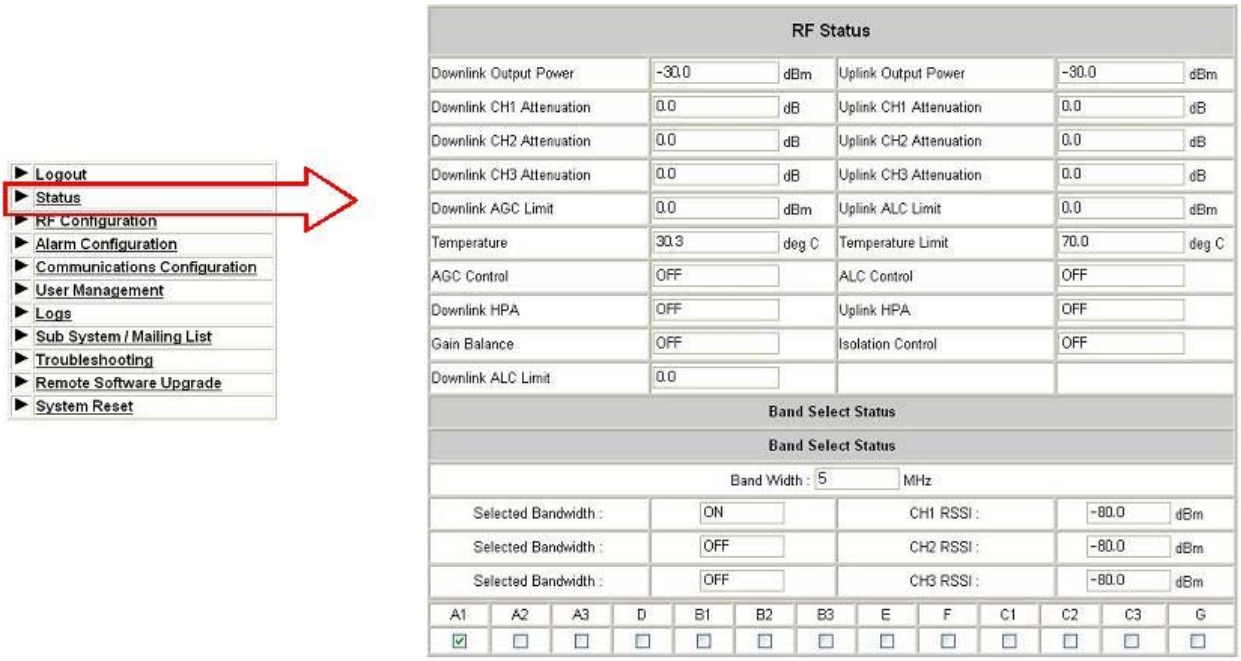
- Following screen shot is located left-top side of main menu and those are linked to relative window.

1. Logout
2. Status : It displays current status of Repeater
3. RF Configuration : It can control Repeater parameters
4. Alarm Configuration : It displays arising alarms
5. Communication Configuration : It displays communication mode in connection with Repeater
6. User Management : User addition and deletion
7. Logs : History data for setting & controls, each route
8. Sub System/Mailing List : Mailing List
9. Troubleshooting : Q&A
10. Remote Software Upgrade : Software upgrade
11. System Reset : Reset

5.2.2 Web UI control

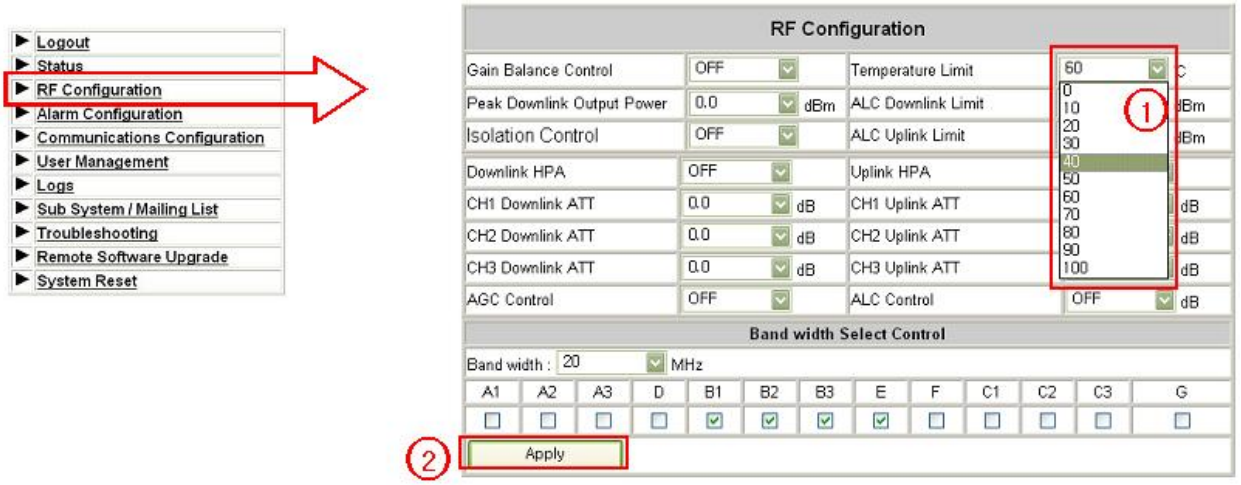
5.2.2.1 Status

- Currently setting level check at this menu tap.



5.2.2.2 RF Configuration

- Setting level can be changed at this menu tap.
  - (1) Level change
  - (2) Click Apply button



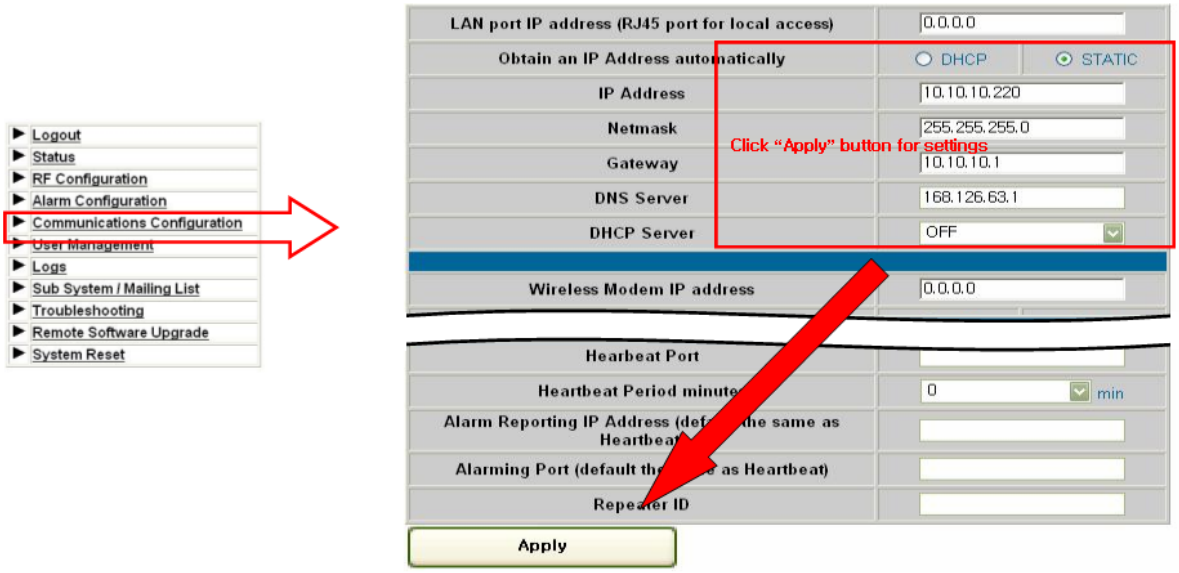
5.2.2.3 Alarm Configuration

- (1) On/Off function for entire alarm report

- (2) Alarm status
- (3) On/Off function for individual alarm category
- (4) Alarm SNMP Mapping
- User may set and change its level per it field condition and click apply button.

5.2.2.4 Communication Configuration

- This provides all necessary information related to network
- To provide relative information about DHCP and modem

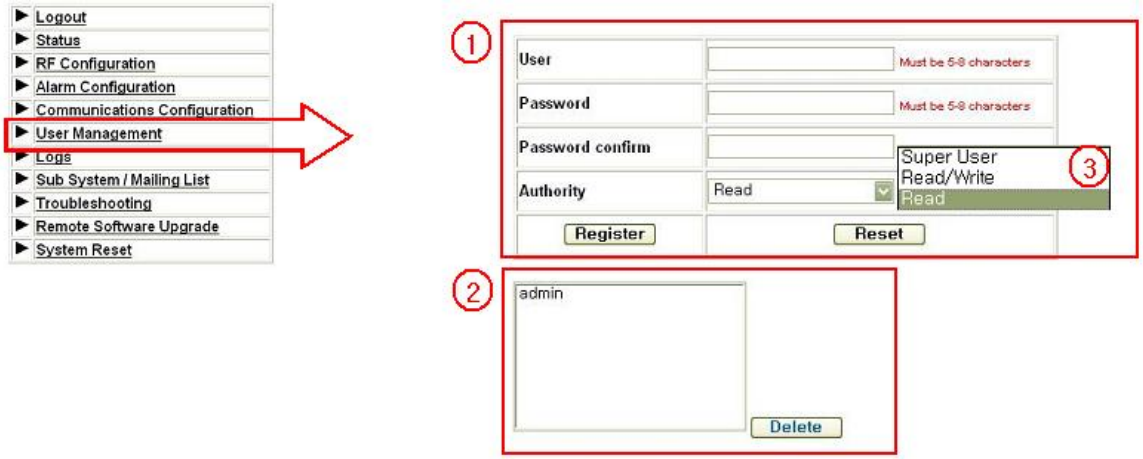


5.2.2.5 User Management

- Add and Remove user, Assigning accessibility
- (1) User Registration: Click Register after input required information
- (2) User Removal: Click Delete upon click of user name you wish to remove.
- (3) Super User: Accessible to all kinds of information path

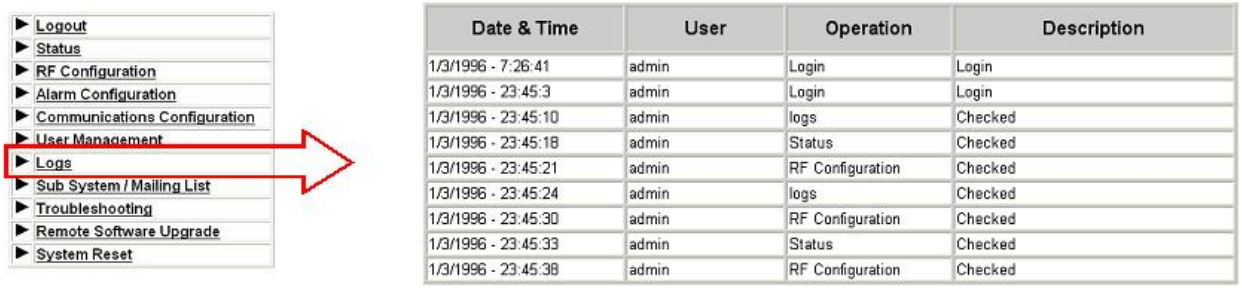
  Read/Write: Accessible to all kinds of information path except for User management path.

  Read: Checking status only. No control



5.2.2.6 Logs

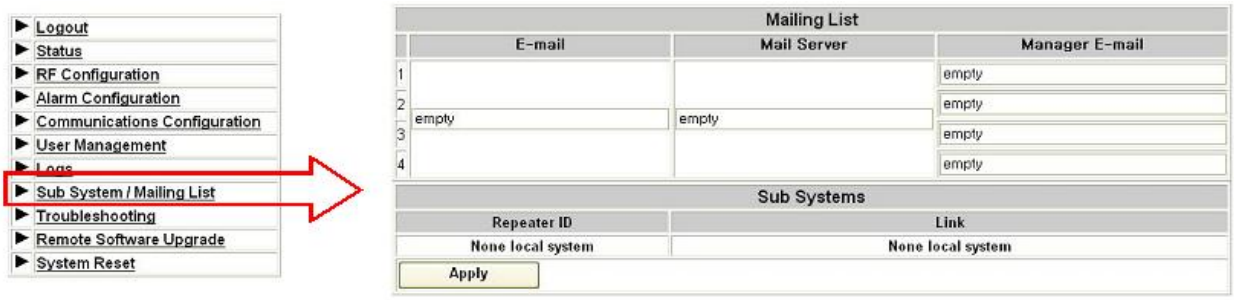
- All users' access record will be saved as a log.



Date & Time	User	Operation	Description
1/3/1996 - 7:26:41	admin	Login	Login
1/3/1996 - 23:45:3	admin	Login	Login
1/3/1996 - 23:45:10	admin	logs	Checked
1/3/1996 - 23:45:18	admin	Status	Checked
1/3/1996 - 23:45:21	admin	RF Configuration	Checked
1/3/1996 - 23:45:24	admin	logs	Checked
1/3/1996 - 23:45:30	admin	RF Configuration	Checked
1/3/1996 - 23:45:33	admin	Status	Checked
1/3/1996 - 23:45:38	admin	RF Configuration	Checked

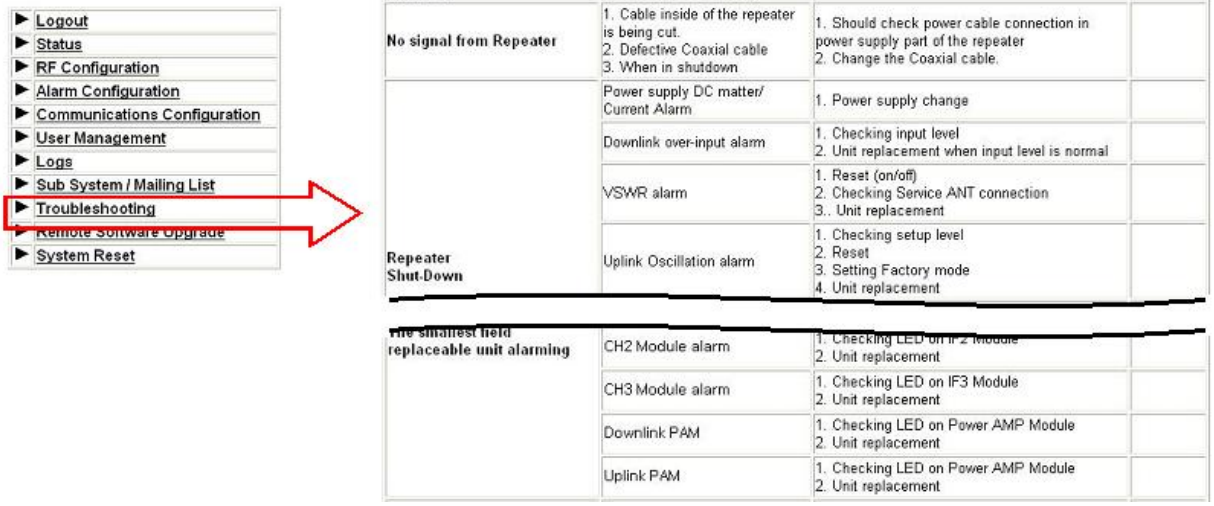
5.2.2.7 Sub System / Mailing List

- Set up e-mail address the place you wish to receive alarm.



5.2.2.8 Troubleshooting

Following is a trouble shooting table, which is frequently occurred to repeater and treatment me thod.

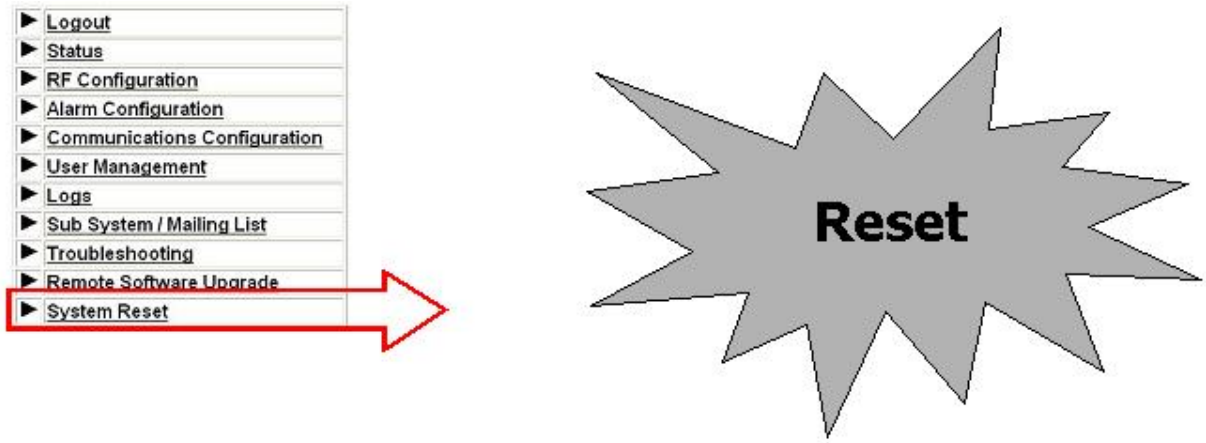


5.2.2.9 Remote Software Upgrade

- Upload repeater operation program.

5.2.2.10 System Reset

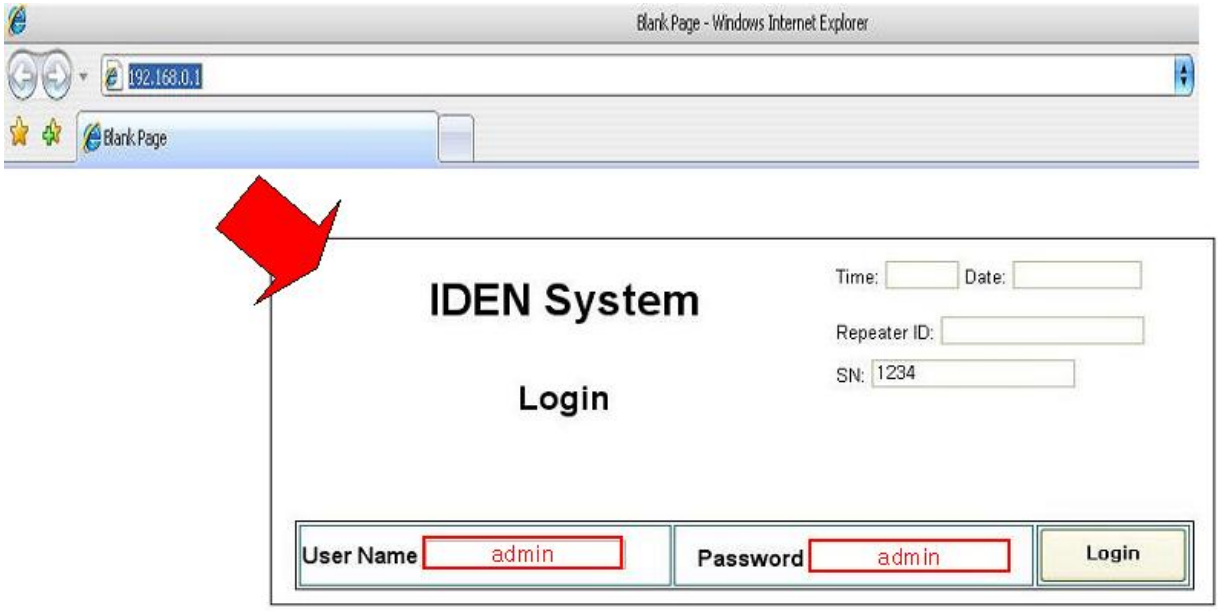
- Reset repeater.



5.3 IDEN Web UI

5.3.1 Web UI connection

- Input IP address, want to reach.
- Default setting User Name and Password for Web UI is 'admin'.



5.3.1.2 Link menu

Following screen shot is located left side of main menu and those are linked to relative window.

1. Logout
2. Status : It displays current status of Repeater
3. RF Configuration : It can control Repeater parameters
4. Alarm Configuration : It displays arising alarms
5. Communication Configuration : It displays communication mode in connection with Repeater
6. User Management : User addition and deletion
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8. Sub System/Mailing List : Mailing List
9. Troubleshooting : Q&A
10. Remote Software Upgrade : Software upgrade
11. System Reset : Reset

5.3.2 Web UI Control

5.3.2.1 Status

- Currently setting level check at this menu tap.

RF Status

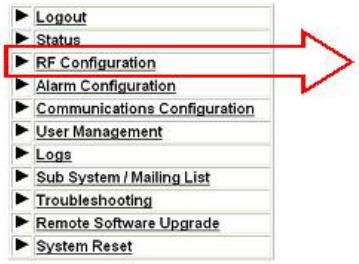
IDEN 800			IDEN 900		
Downlink Output Power	0.0	dBm	Downlink Output Power	0.0	dBm
Uplink Output Power	0.0	dBm	Uplink Output Power	0.0	dBm
Downlink Attenuation	5.0	dB	Downlink Attenuation	5.0	dB
Uplink Attenuation	5.0	dB	Uplink Attenuation	5.0	dB
AGC Downlink Limit	3.0	dBm	AGC Downlink Limit	3.0	dB
ALC Uplink Limit	4.0	dBm	ALC Uplink Limit	4.0	dBm
ALC Downlink Limit	1.0	dBm	ALC Downlink Limit	1.0	dBm
AGC Control	OFF		AGC Control	OFF	
ALC Control	OFF		ALC Control	OFF	
Gain Balance Control	OFF		Gain Balance Control	OFF	
Temperature	33.5	deg C	Temperature Limit	20.0	deg C
Downlink HPA	OFF		Isolation Control	OFF	
Uplink HPA	OFF				

Band Select Status

IDEN 800 Selected Band :	18MHz	IDEN 800 RSSI :	-15.0 dBm
IDEN 900 Selected Band :	5MHz	IDEN 900 RSSI :	-15.0 dBm

5.3.2.2 RF Configuration

- Setting level can be changed at this menu tap.
- (1) Level change
- (2) Click Apply button



RF Configuration

IDEN 800MHz			IDEN 900MHz		
AGC Downlink Limit	3.0	dBm	AGC Downlink Limit	3.0	dBm
ALC Uplink Limit	4.0	dBm	ALC Uplink Limit	4.0	dBm
ALC Downlink Limit	1.0	dBm	ALC Downlink Limit	1.0	dBm
Downlink ATT	5.0	dB	Downlink ATT	5.0	dB
Uplink ATT	5.0	dB	Uplink ATT	5.0	dB
AGC Control	OFF		AGC Control	OFF	
ALC Control	OFF		ALC Control	OFF	
Gain Balance Control	OFF		Gain Balance Control	OFF	
Downlink HPA	OFF		Uplink HPA	OFF	
Temperature Offset	3		Temperature Limit	20	
Isolation Control	OFF				

(1)

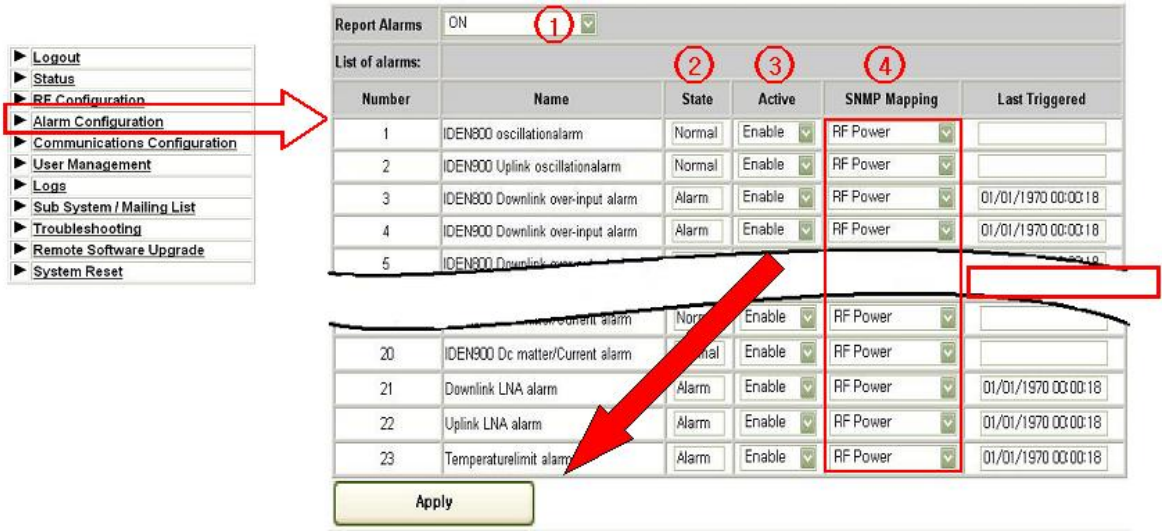
Bandwidth Select Control

IDEN 800MHz	IDEN 900MHz
Band width : 18 MHz	Band width : 5 MHz

(2) Apply

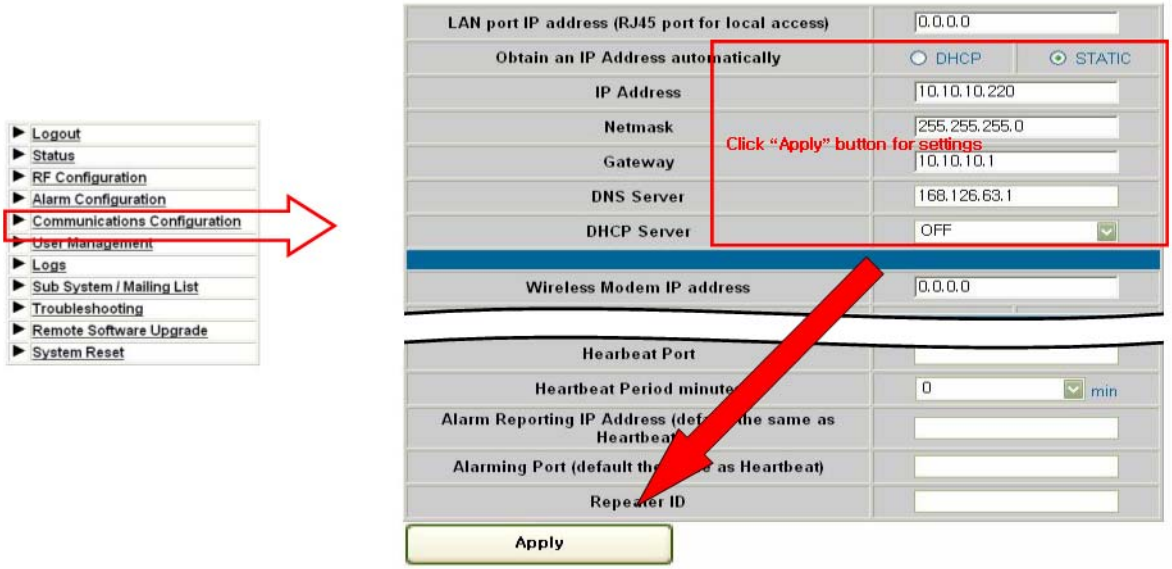
5.3.2.3 Alarm Configuration

- (1) On/Off function for entire alarm report
- (2) Alarm status
- (3) On/Off function for individual alarm category
- (4) Alarm SNMP Mapping
- User may set and change its level per it field condition and click apply button.



5.3.2.4 Communication Configuration

- This provides all necessary information related to network
- To provide relative information about DHCP and modem



5.3.2.5 User Management

- Add and Remove user, Assigning accessibility

(1) User Registration: Click Register after input required information

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(3) Super User: Accessible to all kinds of information path

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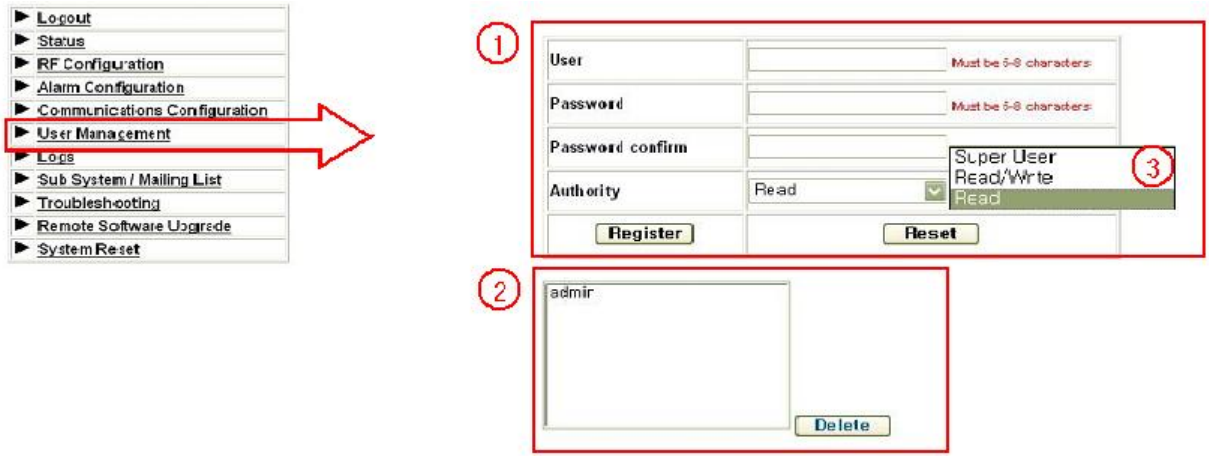
Read: Checking status only. No control



5.3.2.6 Logs

- All users' access record will be saved as a log.

Date & Time	User	Operation	Description
1/3/1996 - 7:26:41	admin	Login	Login
1/3/1996 - 23:45:3	admin	Login	Login
1/3/1996 - 23:45:10	admin	logs	Checked
1/3/1996 - 23:45:18	admin	Status	Checked
1/3/1996 - 23:45:21	admin	RF Configuration	Checked
1/3/1996 - 23:45:24	admin	logs	Checked
1/3/1996 - 23:45:30	admin	RF Configuration	Checked
1/3/1996 - 23:45:33	admin	Status	Checked
1/3/1996 - 23:45:38	admin	RF Configuration	Checked

5.3.2.7 Sub System / Mailing List

- Set up e-mail address, the place you wish to receive alarm

Mailing List

	E-mail	Mail Server	Manager E-mail
1			empty
2			empty
3	empty	empty	empty
4			empty

Sub Systems

Repeater ID	Link
None local system	None local system

Apply

5.3.2.8. Troubleshooting

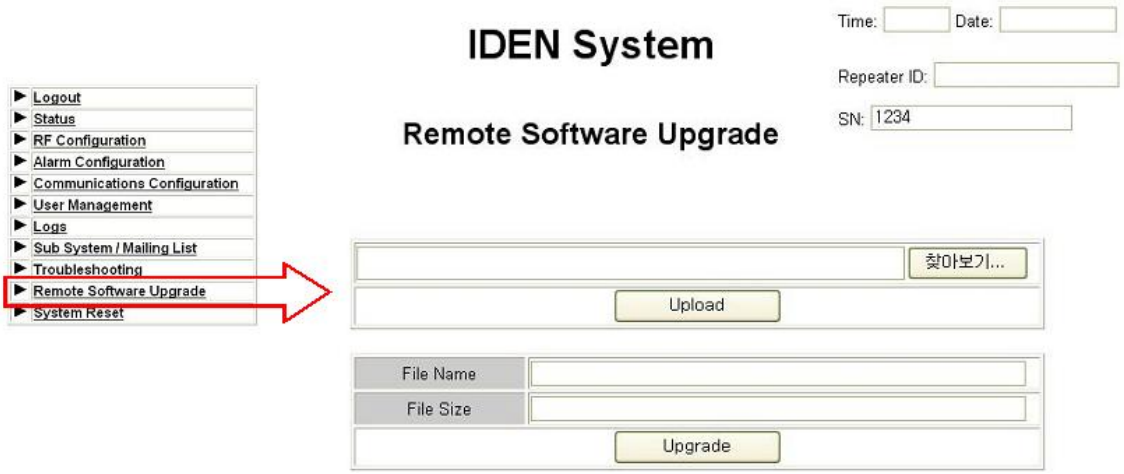
-

Following is a trouble shooting table, which is frequently occurred to repeater and treatment me thod.

STATE	CAUSE	ACTION	Remark
STATUS LED Display turned off	1.Cable in power supply connecting is being cut 2. Defective LED Display	Checking cable connection	
No signal from Repeater	1. Cable inside of the repeater is being cut. 2. Defective Coaxial cable 3. When in shutdown	1. Should check power cable connection in power supply part of the repeater 2. Change the Coaxial cable.	
Repeater Shut-Down	Power supply DC matter/ Current Alarm	1. Power supply change	
	Downlink over-input alarm	1. Checking input level 2. Unit replacement when input level is normal	
	VSWR alarm	1. Reset (on/off) 2. Checking Service ANT connection 3.. Unit replacement	
	Uplink Oscillation alarm	1. Checking setup level 2. Reset 3. Setting Factory mode 4. Unit replacement	
The smallest field replaceable unit alarming	CH2 Module alarm	1. Checking LED on IF2 Module 2. Unit replacement	
	CH3 Module alarm	1. Checking LED on IF3 Module 2. Unit replacement	
	Downlink PAM	1. Checking LED on Power AMP Module 2. Unit replacement	
	Uplink PAM	1. Checking LED on Power AMP Module 2. Unit replacement	

5.3.2.9 Remote Software Upgrade

- Upload repeater operation program



5.3.2.10 System Reset

- Reset repeater