ATTACHMENT E.

- USER MANUAL -

ICS-F0837
User Manual

<Interference Cancellation System for WCDMA or CDMA 5 Watt>

2010. 1

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1. System Overview

ICS-F0837 is a digital repeater that provides optimized service with ICS (Interference Cancellation System) to make the most efficient way to enhance WCDMA network.

ICS-F0837 consists of the same construction as normal RF repeater except DSP (Digital Signal Processing) part and it can overcome oscillation problem caused by lack of the isolation level between donor and coverage antennas.

ICS-F0837 can automatically compensate rapidly-changing input signals including echo feedback signals caused by multi-path environment and it has various advantages for operation and maintenance.

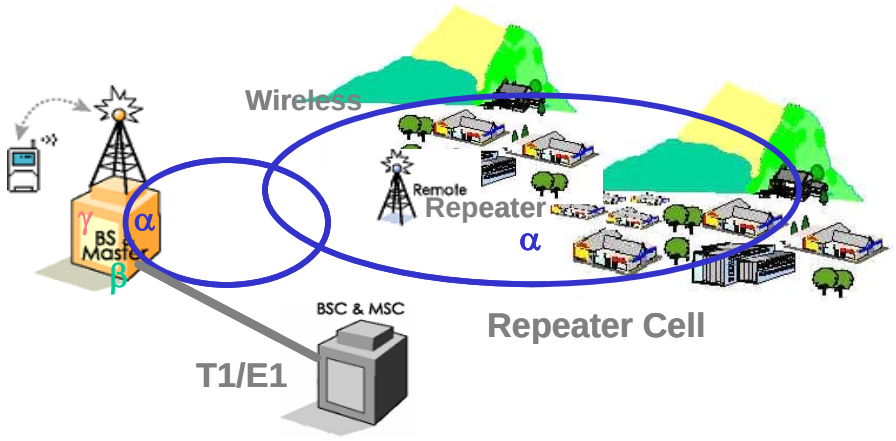
ICS-F0837 consists of ICM (Interference Cancellation Module) that cancels feedback signals, RF signal amplifier, MCU (Main Control Unit), and modem (optional) to operate with NMS(Network Management System).

2. System Network Configuration

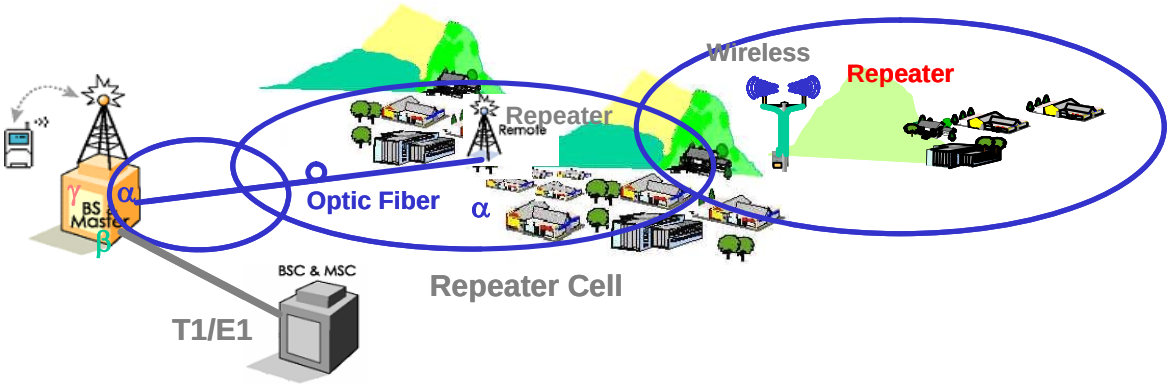
2.1. Service for Network

ICS-F0837 can provides Cell Coverage to a Node-B with using PAU and it is for expansion of WCDMA Cell Coverage.

The System Network Configuration of ICS-F0837 is shown as below



[Figure - 1] System Network Configuration 1



[Figure - 2] System Network Configuration 2

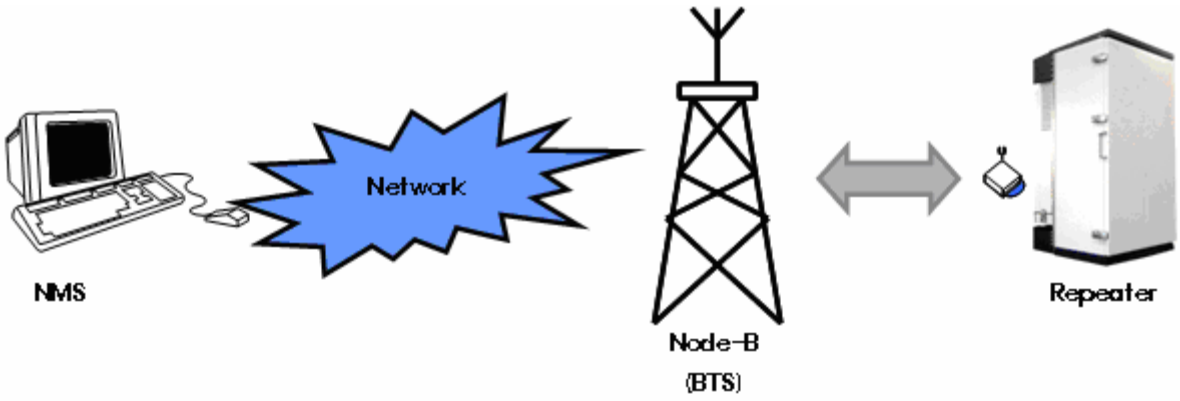
Input level of ICS-F0837 is air interfaced with RF signal of WCDMA transferred from Node-B and mobile through Donor and Service Antenna. The system consists of ICM that cancels feedback signals, RF signal amplifier, monitoring and control processor, and modem to operate with NMS (Optional).

The system has features that the Node-B RF signal through the donor antenna, ICM and amplified by PAU of down link to pass the signals to service antenna. Also, it takes the mobile input signal through service antenna, ICM and amplifier to pass the signals to donor antenna. ICM consists of two parts, RF part and Digital part and ICM cancels feedback signals for DL and UL. DL HPA consists of AMP block that amplifies RF signals and Controller block that monitor and controls Amp block.

2.2. NMS Network

ICS-F0837 can be connected with WRCS which has been already operating.

The Connection of between WRCS and ICS-F0837 meets the standard of service provider.



[Figure - 3] NMS Network Configuration

3. System Specification

3.1. System

3.1.1. System Specification

1) WCDMA

Parameter	Down Link	Up Link	Remark
Frequency Range	869MHz ~ 894MHz	824MHz ~ 849MHz	
Channel Band Width	5MHz (3.84MHz/Carrier)		
Flatness	3dB p-p		
Input Power Range	-63dBm ~ -33dBm/Carrier	-50dBm/Total(Under)	@ Max Power
Output Power	+37dBm/Total	+27dBm/Total	
System Gain	70dB~100dB	70dB~100dB	
Gain Control Range	30dB @1dB/Step		
System Delay	< 8㎲		
Waveform Quality	EVM ≤ 12.5%		
PCDE	< -35dB		
Frequency Stability	< 0.01ppm		
VSWR	< 1.5 : 1		
TX/RX Isolation	> 110dBc		
Noise Figure	-	< 7dB	@Max. Gain
Out-Band ACLR	≥ 45dBc @Fc±5MHz ≥ 50dBc @Fc±10MHz		
2nd Harmonics	> 80dBc		
Impedance	50ohm		

a) ICS General Performance Specification

Parameter	Condition	Specification	Remark
Cancellation Window Length	DL, UL	6 us	
Gain Re-Tracking Time after reset	Target Gain ±1dB	< 10 Sec	
Isolation Sensing Range	-20dB < Gain < 20dB (-10dB < Gain < 10dB)	Accuracy ±3 Accuracy ±1	

b) ICS Fading Performance Specification

Gain	Feddback Condition (Multi-path 10)	Specification	Remark
G = I + 20dB	Static	EVM : < 12.5% Gain Variation : < ±2dB	No Fading
G = I + 10dB	5Hz	EVM : < 12.5% Gain Variation : < ±2dB	General Operating
G = I	10Hz	EVM : < 12.5% Gain Variation : < ±2dB	Fast Fading

2) CDMA

Parameter	Down Link	Up Link	Remark
Frequency Range	869MHz ~ 894MHz	824MHz ~ 849MHz	
Channel Band Width	1.23MHz (Carrier)		
Flatness	3dB p-p		
Input Power Range	-63dBm ~ -33dBm/Carrier	-50dBm/Total(Under)	@ Max Power
Output Power	+37dBm/Total	+27dBm/Total	
System Gain	70dB~100dB	70dB~100dB	
Gain Control Range	30dB @1dB/Step		
System Delay	< 10㎲		
Waveform Quality	Rho>0.97		
Frequency Stability	0.05ppm 이하		
VSWR	< 1.5 : 1		
TX/RX Isolation	> 110dBc		
Noise Figure	-	< 7dB	@Max. Gain
Spurious Emissions	Fo±750kHz: 45dBc Fo±1.98MHz: 60dBc Fo±3.125MHz: -13dBm/100KHz		
2nd Harmonics	> 80dBc		
Impedance	50ohm		

a) ICS General Performance Specification

Parameter	Condition	Specification	Remark
Cancellation Window Length	DL, UL	6 us	
Gain Re-Tracking Time after reset	Target Gain ±1dB	< 10 Sec	
Isolation Sensing Range	10dB < Gain < 10dB	Accuracy ±1	

b) ICS Fading Performance Specification

Gain	Feddback Condition (Multi-path 10)	Specification	Remark
G = I + 10dB	Static	Rho>0.97 Gain Variation : < ±2dB	No Fading
G = I	5Hz	Rho>0.97 Gain Variation : < ±2dB	General Operating

[Table - 1] RF System Specification

3.2. System Configuration

Parameter		Specification	Remark
Filter Type	Donor Antenna	Duplexer	
	Service Antenna	Duplexer	
Power Supply		AC Input Voltage : 100VAC ~ 240VAC(50Hz/60Hz) DC Input Voltage : +24VDC(+21VDC ~ 29.5VDC)	
RF Connector Type		Antenna : 7/8 Inch Din Type Female	
Power Connector Type		AC: MS3102A-20-18M(9Pin) (Option:-AC: MS3102A22S-2P(3Hole male) -DC: MS3102A20-8P(6Hole male)	
Size		305mm(W) X 565mm(H) X 194mm(D)	With bracket
weight		30Kg (Under)	
Power Consumption		200W (Under)	
Chasing level		IP65	
Operation Temperature		-30°C ~ +55°C(95%RH)	NEBS GR-63-CORE Section4.1.2
Storage Temperature		-40°C ~ +80°C(95%RH)	NEBS GR-63-CORE Section4.1.2
OMC		Include Monitoring-Control-Alarm	NEBS GR-63-CORESection4.1.1
Box panel for security of repeater		Proportional	
Local/Remote Control		USB Port at local, Modem(Option)	
Optional (Mute be)		Remote Access	
Software Setting		Under Windows	

Modem for remote	Include / one package	

[Table - 2] System Configuration

3.3. Environment Specification

Item	Specification	Remark
AC Power	AC 100 ~ 260V	
DC In Power	DC Input Voltage : +24VDC(+21VDC ~ 29.5VDC)	Option
Consumption power	Under 200W	
Operating Temperature	-30°C ~ +55°C	
Operating Humidity	5% ~ 95%	
Storage temperature	-40 ~ +80°C(5~95% RH)	
Ingress protection	IP65	

[Table - 3] Environment Specification

3.4. Mechanical Specification

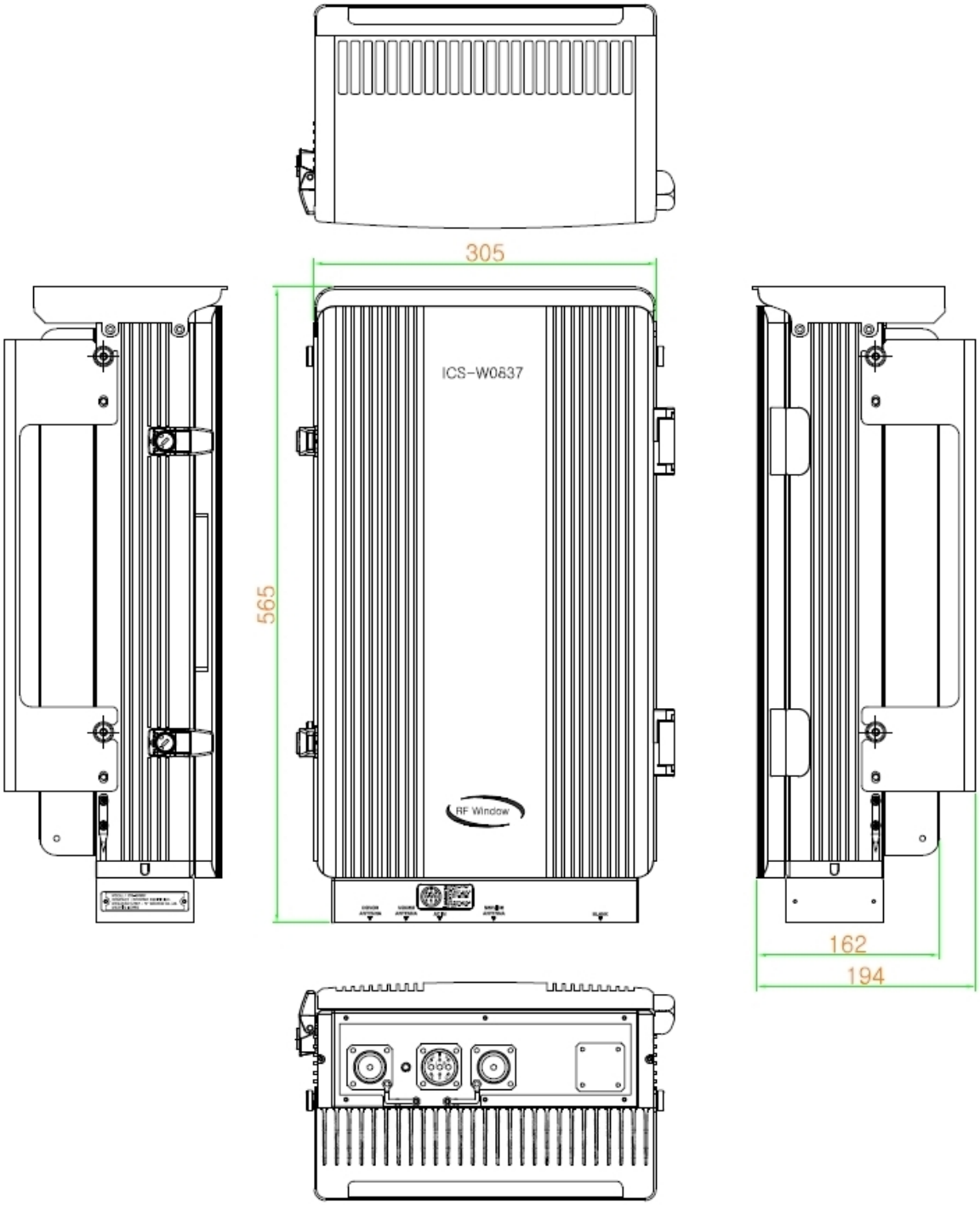
Item	Details
Size	305(W) X 565(H) X 194(D)
Weight	Under 30Kg
Convection type	Natural convection
Mounting	Wall & poll (modified based on user request)
Cabinet type	Outdoor (compliant with IP 65)

[Table - 4] Mechanical Specification

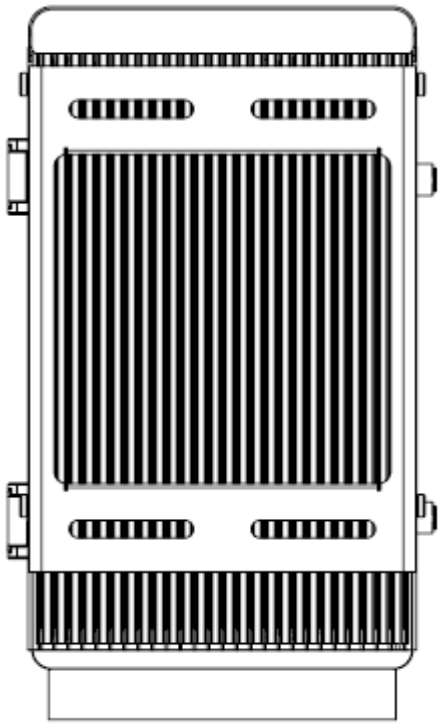
4. Housing

4.1. Housing Configuration

4.1.1. System

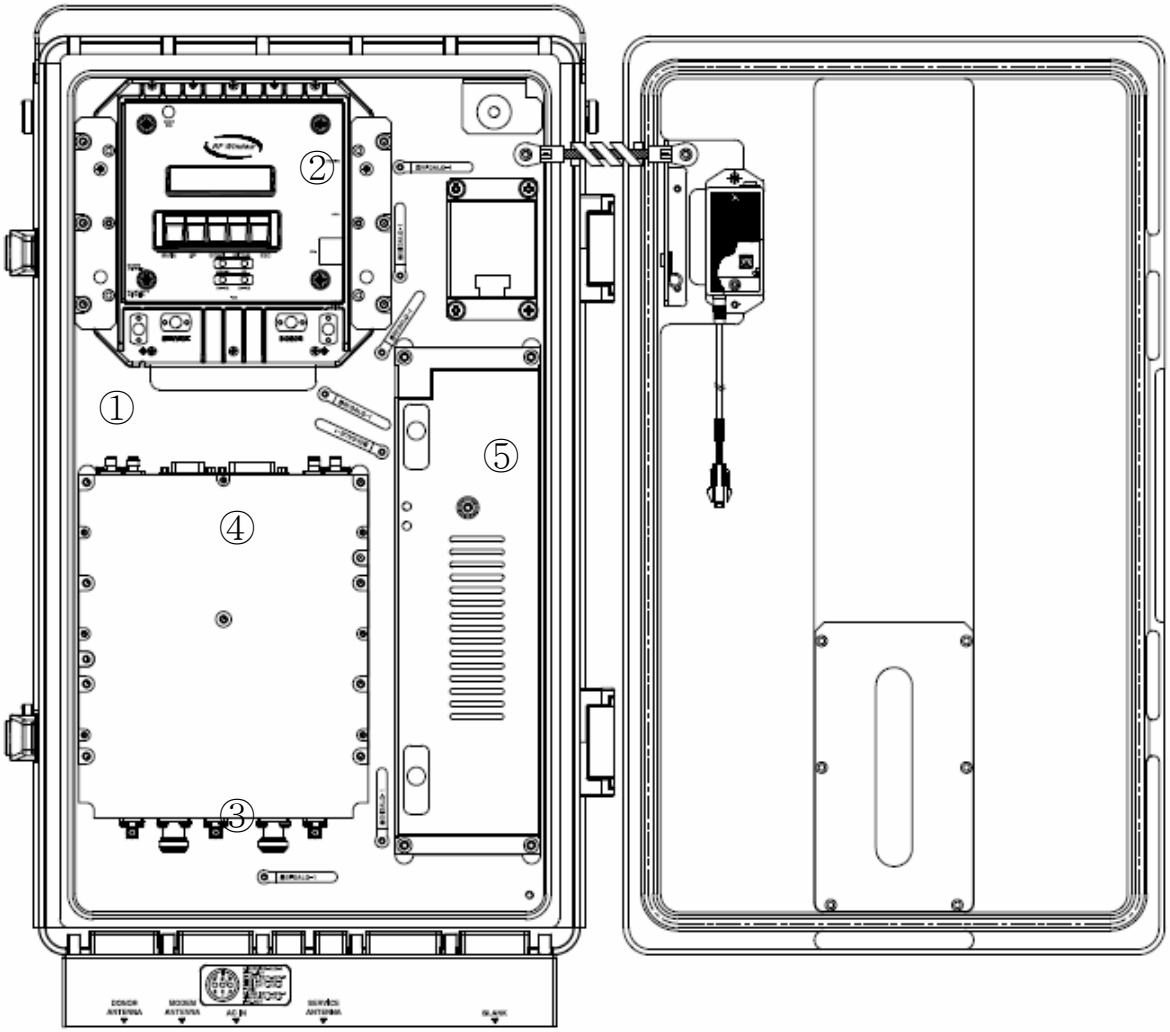


[Figure - 4] Front and Side View



[Figure - 5] Rear View

4.1.2.System Block Plan

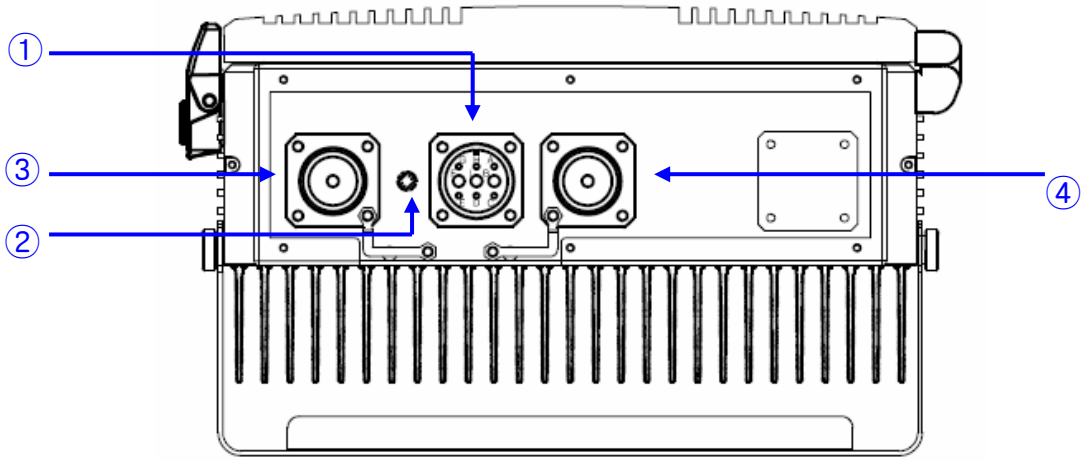


[Figure - 6] System Block Plan

No.	Module Name
1	ICM
2	INTERFACE (with Modem)
3	DUPLEXER (TOP)
4	DUAL HPA (BOTTOM)
5	PSU
6	UPS Interface

[Table - 5] Modules

4.1.3. System External Connector Plan



[Figure - 7] System External Connectors

No.	Name
1	AC Input Port
2	Bluetooth Modem port
3	Donor Antenna Port
4	Service Antenna Port

[Table - 6] System External Connectors

Item	Specification
Size	305mm(W) X 565mm(H) X 194mm(D)
Material	Aluminum(AL5052, AL6063) for rust protection
Cooling	Natural Convection with Heat Sink
Locks	2 EA on the side of cabinet
Antenna Port	1. Location : 2 Ports at the under of housing 2. Connector Type : DIN Type
Modem Port	1. Location : 1 Port at the lower of housing 2. Connector Type : SMA Type
Ground	M5 2Hole
Environmental Condition	1. Water proof : outdoor type 2. ΔT : within 20℃ 3.Vibration : 1G, 10~150Hz, 0.1oct/min, XYZ

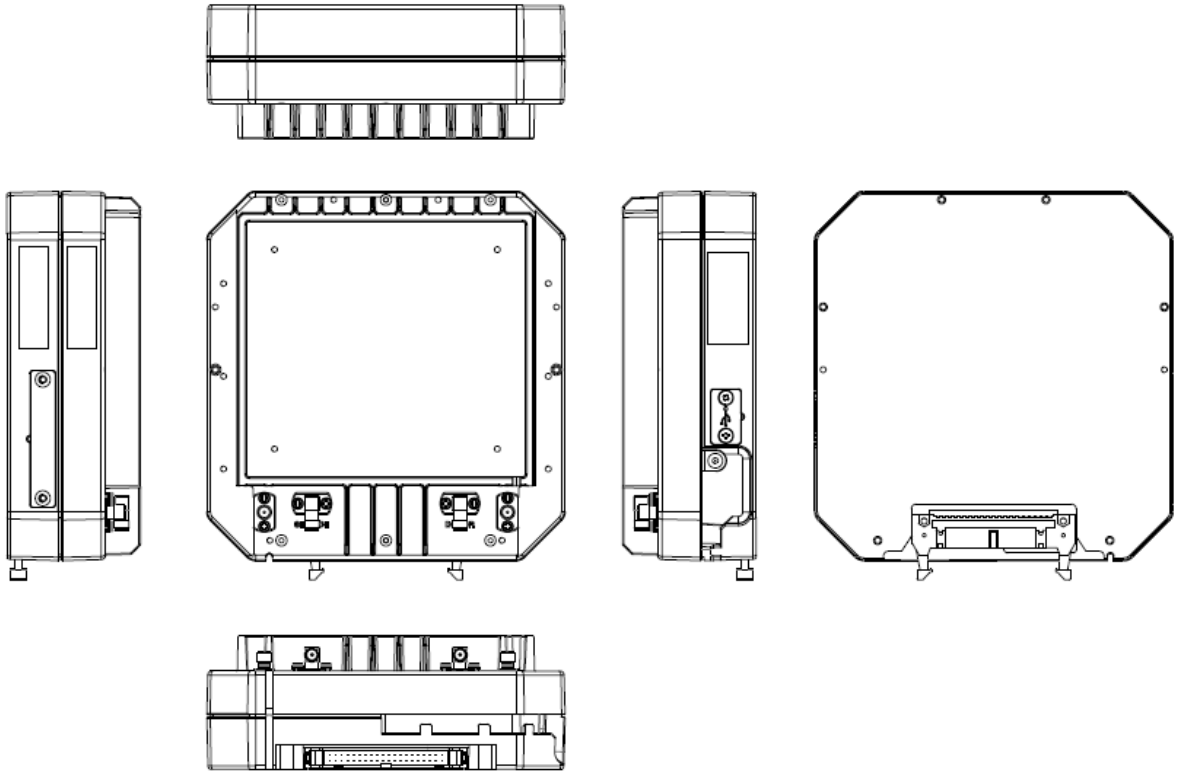
[Table - 7] Mechanical Specification

5. Main Module Configuration

5.1. ICM (Interference Cancellation Module)

ICM is located between Antenna connector and Dual HPA. It is designed to resolve the problems caused by near-far among operators and LNA built-in to amplify a low noise and make satisfied stop band rejection. It operates to transmit signals to Dual HPA and to maintain signal regularly input to final amplifier after determining gain to need for system after conversing signal processed from DSP to frequency. It is also operated the function of Remote Control Unit through INTERFACE.

5.1.1. ICM

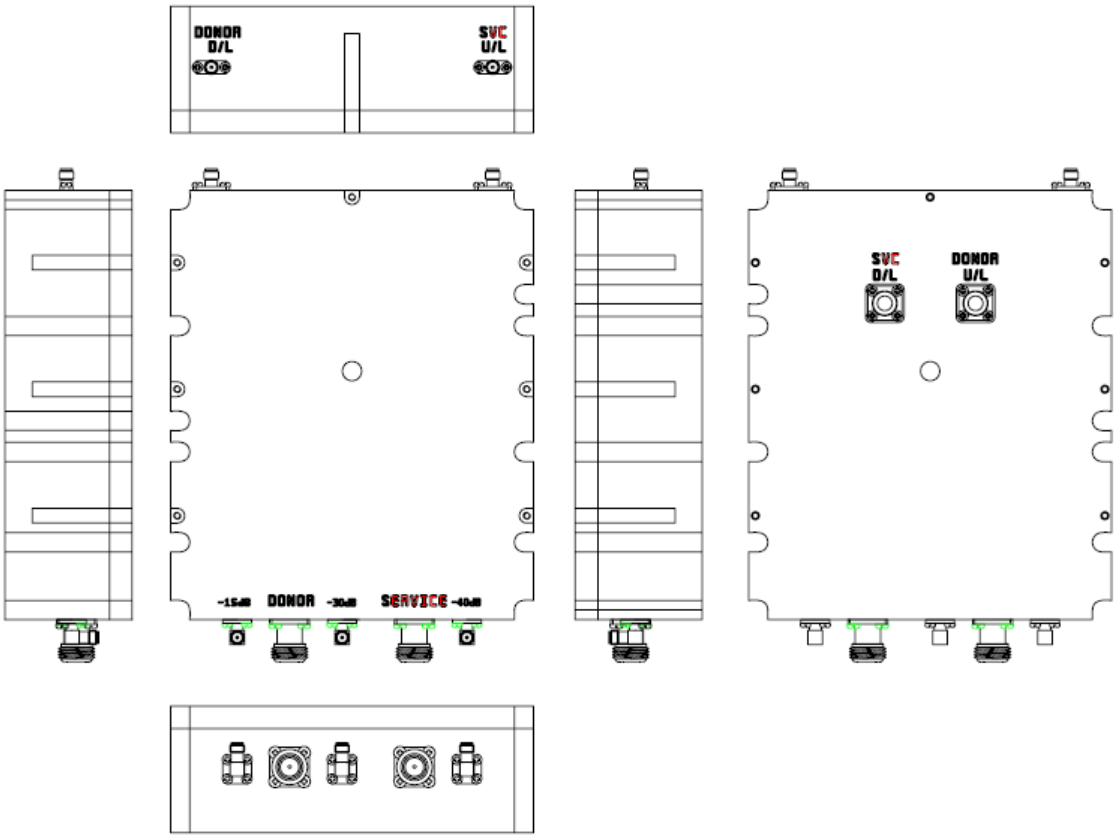


[Figure - 8] Down Link/Up Link ICM

5.2. Filter

It is 25MHz Band Pass Filter(DL:869~894,UL:824~849) and consists of Service and Donor. Service Duplexer has 40dB Coupler to monitor Output power and Donor Duplexer has 30dB Coupler to monitor Input power. Hence it can enable to measure the signal level and to observe its specification.

5.2.1. Donor & Service Duplexer



[Figure - 9] Donor & Service Duplexer

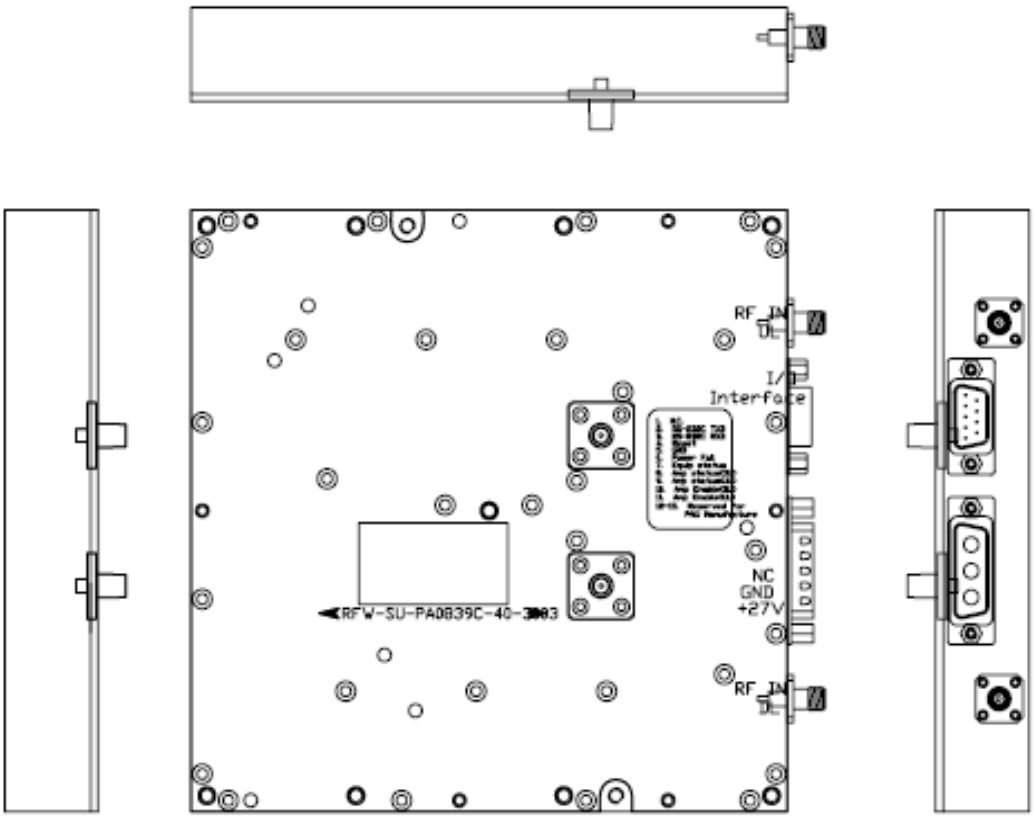
5.3. Dual HPA

Down link PAU receives the signal from ICM and amplifies it finally. This is designed to keep up the stable output power of system in order to satisfy electrical specification of system output power.

It is a Linear Amp with output power 8W(total power) in down link, 1W in up link (total power) and executes Drive Amp feature simultaneously while Gain is 47dB in Down Link, 33dB in Up Link.

Input Voltage is 27VDC and has alarm feature for over power, over temperature, and VSWR. It has the same mount hole which can be applied for the same specification and configuration according to output power amount (8W/1W) and HPA manufacturer.

5.3.1. Dual HPA



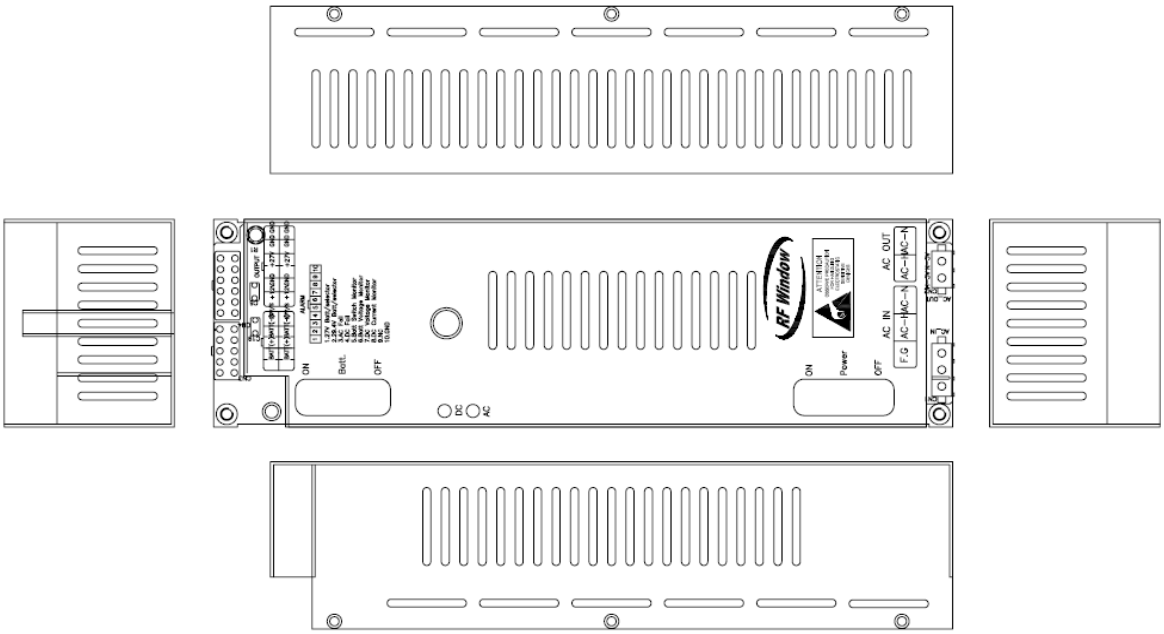
[Figure - 10] Down Link PAU

5.4. Power Supply

PSU is designed to input AC 100~260V and to output DC +27V and +12V.

+27V and Battery is designed for the Pin short protection by inferior and can provide a stable power supply. It also has Back-Up Battery terminals so that the service can be provided even if there is power shortage.

5.4.1. Power Supply

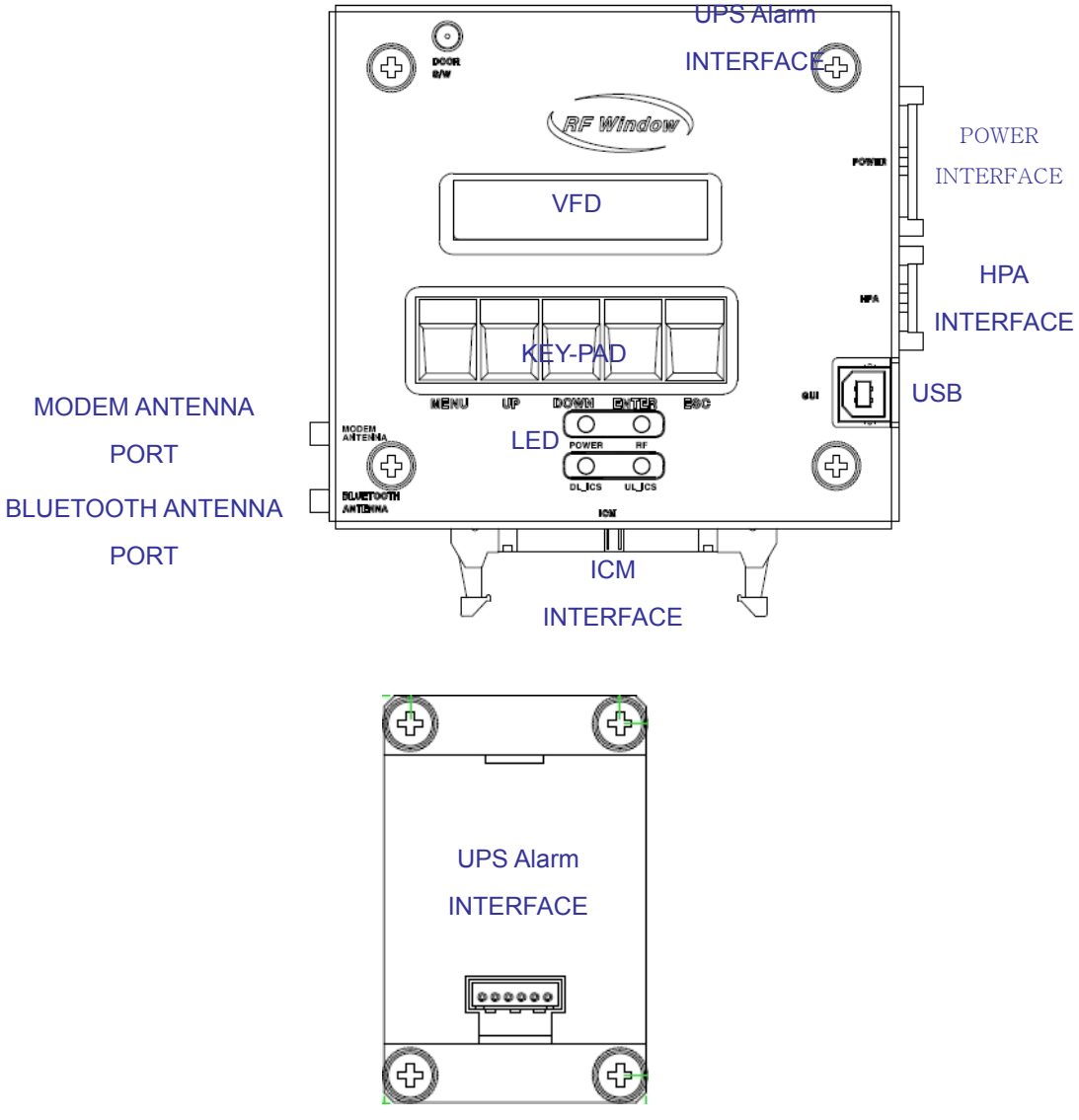


[Figure - 11] Power Supply

5.5. INTERFACE

User can monitor and control the repeater by VFD and Keypad. Interface board consists of 40Pin connector for communication with ICM, 16pin connector for communication with Dual HPA, 24pin connector for communication with Interface board receives electrical power from PSU and distributed the power to all of active module except Dual HPA. It also can communicate with all of active module. Debug port is designed based on USB connection

5.5.1. INTERFACE



[Figure - 12] INTERFACE

Term	Feature
VFD	Monitor and check the status
KEY-PAD	Check and control the status
LED	Check the status of Module
Modem Ant.	Modem Antenna connection Port
Bluetooth Ant.	Bluetooth Modem Antenna connection Port
USB	GUI Port, System check with USB, PC
Power Supply	ICM, INTERFACE, reverse Dual HPA power
PSU Status	Status information of Power Supply Unit
Module Interface	ICM, Dual HPA, Modem Power supply/ Data Interface

[Table - 8] INTERFACE Features

5.5.2.2. RCU status control menu

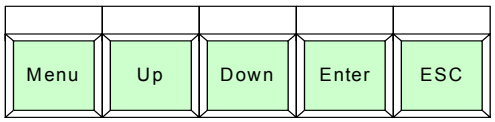
RCU status control menu		
Item	**Details**	**Remark**
“FWD Status”	“ Fwd Status “ ” ICS : [Normal] “	
	“ Fwd Status “ “ OUTPWR : 000dBm”	
	“ Fwd Status “ “ INPWR : -000dBm”	
	“ Fwd Status “ “ ISO. : 000dB”	
	“ Fwd Status “ “ GAINMODE : [GAIN]dB>”	Down Link GAIN setup Mode [OFF]/[GAIN]
	“ Fwd Status “ “ GAIN : 000dB>”	Down Link GAIN Setup Mode
	“ Fwd Status “ “ATTN : 000dB>”	Down Link Attenuator Setup Mode
	“ Fwd Status “ “ HIGH : [Normal]”	
	“ Fwd Status “ “ LOW : [Normal]”	
“RVS Status”	“ Rvs Status “ ” ICS : [Normal] “	
	“ Rvs Status “ “ OUTPWR : 000dBm”	
	“ Rvs Status “ “ INPWR : -000dBm”	
	“ Rvs Status “ “ ISO. : 000dB”	
	“ Rvs Status “ “ GAINMODE : [GAIN]dB>”	Up Link GAIN Setup Mode [OFF]/[GAIN]/[BAL]
	“ Rvs Status “ “ GAIN : 000dB>”	Up Link GAIN Setup Mode

	“ Rvs Status “ “ ATTN : 000dB>”	Up Link Attenuator Setup Mode
	“ Rvs Status “ “ BAL : 000dB>”	Up Link Balance Setup Mode
	“ Rvs Status “ “ HIGH : [Normal]”	
“FWD AMP Status”	“ Fwd AMP Status “ “ OVERPWR : [NORMAL] ”	
	“ Fwd AMP Status “ “ HI. TEMP : [NORMAL]”	
	“ Fwd AMP Status “ “ VSWR : [NORMAL]”	
	“ Fwd AMP Status “ “ DC : [NORMAL]”	
	“ Fwd AMP Status “ “ Device : [NORMAL]”	
	“ Fwd AMP Status “ “ Amp : [ON]>”	Down Link Amplifier On/Off Setup Mode
“RVS AMP Status”	“ Rvs AMP Status “ “Amp : [ON]>”	Up Link Amplifier On/Off Setup Mode
“Environment”	“ Environment ” “ DOOR : [OPEN]”	
	“ Environment ” “ TEMP : 000 ℃”	
	“ Environment ” “ AC : [NORMAL]”	
	“ Environment ” “ DC : [NORMAL]”	
	“ Environment ” “ BATT : [NOTUSE]>”	Battery Use Setup Mode (Unistall, 29V embedded)
	“ Environment ” “ FAMODE : [MANUAL]>”	FA Mode Setup Mode Manual (FA1~FA4), Auto
	“ Environment ” “ FAN : [MANUAL]>”	

	“ Environment ” “ SLANT : [RESET]>”	Slop Sensor Setup Reset
	“ Environment ” “ SLANT : [NORMAL]>”	

[Table - 9] RCU Status Control Details

5.5.3. KEY-PAD



[Figure - 14] KEY-PAD

KEY-PAD uses 5 keys as above. Each meaning and operation is as below. The setup Mode is only in P#02 and it can change a mode by setup.

In P#02, a menu which can be setup is displayed as ‘>’

Key	Step	Status Mode	Setup Mode
Menu	P#00	Move to P#01	N/A
	P#01	Move to P#00	N/A
	P#02	Move to P#00	Move to P#00
Up	P#00	N/A	N/A
	P#01	Upper menu of P#01	N/A
	P#02	Upper menu of P#02	On or Increase
Down	P#00	N/A	N/A
	P#01	Lower menu of P#01	N/A
	P#02	Lower menu of P#02	Off or Decrease
Enter	P#00	Password window if press for 2 sec	N/A
	P#01	Move to P#02	N/A
	P#02	switch over to MoPe on setting menu	Setting Value
Esc	P#00	N/A	N/A
	P#01	Move to P#00	N/A
	P#02	Move to P#01	Cancel setiting

[Table - 10] Key Feature

6. Main features of system operation and monitoring program

6.1. Download Feature

6.1.1. Objective

To changed and updated features of system operation and monitoring program.

6.1.2. Procedure

CPU (in ICM) performs download remotely through TCP/IP function of modem installed in a repeater.

6.2. ICS Gain Setup Feature

6.2.1. Objective

To keep up the fixed value of Gain desired by users for Down Link Path and Up Link Path

6.2.2. Procedure

1. Gain setup mode
   1) User can set up Gain within a certain range.
      ① Down Link : 70B ~ 100B
      ② Up Link : 70dB ~ 100dB
   2) Gain should be set up according to ICS repeater input condition.
      (ex) When input is -40dBm, Gain can be over Max. 67 dB because ICS repeater output cannot be over 37dBm)
   3) When the Gain is less compared to Isolation, ICM set Attenuator. to optimized value in order to protect the system, and CPU occurs alarm and displays “Isolation deficient”
      → When Isolation is back to normal, Gain return to the previous set-up and “Isolation deficient” alarm is removed
2. OFF Mode
   1) This can be established at the initial set-up or special occasion. When OFF mode, Attenuator is set up to Maximum in order to protect the system
3. Gain Balance Mode
   1) Up Link Gain is set up automatically as low as “Gain Balance set-up value compared to Down Link current Gain

2) Gain Balance set-up range is 0 ~ 10dB and this mode can be set up at the Up Link

6.2.3. Others

At the initial execution, if Gain set-up is not executed normally, it is notified to the user and holds the default Attenuator value

6.3. Total Power Limit

6.3.1. Objective

To give out Total Power to be less than the output power value which user wants and to operate output power limit feature when output power is more than max. Output power set-up

6.3.2. Procedure

1. Total Power Limit does not have additional operation Mode and it works based on “max. output power value’ set up by user

   1) Down Link Output Power set-up Range : ~ 38dBm/Total
   2) Up Link Output Power set-up Range : ~ 28dBm/Total

2. Total Power Limit operating point: monitored value ≥ “max. output power set-up value
3. Total Power Limit Attenuator operating: After Down Link Attenuator change, turn down Attenuator. To be 1 dB less than “max. output power set-up value”
   1) The changed Attenuator. value should be stored in the system
   2) When the changed Attenuator. value is reset
      ① RCU Reset
      ② Change User Attenuator. Value before changed Attenuator. value restored

4. Total Power Limit Restoration Point: Down Link Attenuator restoration condition is to restore by 1 dB Step from 3 dB less than “max. output power set-up value”

5. Total Power Limit Restoration Attenuator operation: restore Attenuator. up to the value of “max. output power set-up value: 2”
6. Restore preferentially the changed Attenuator. value

7. Once Attenuator. is restored, this routine ends

.

6.4. Auto Recovery

6.4.1. Objective

To restore Dual HPA when the down link path of Dual HPA is shutdown (S/W based Recovery feature).

6.4.2. Procedure

1. When Dual HPA is shutdown caused by over power until Down Link Path is in service normally, CPU (in ICM) detects HPA shutdown and checks Down Link input level as well as the gain right before the shutdown.
2. Dual HPA(in Down Link Path) Shutdown condition on Re-Check
   1. When “Down Link Input Level” + “Gain right before Shutdown” ≥ System output power + 1dBm
      - ➢ “Over Power” Alarm on

      ✓ Recovery Condition
   2. When “Down Link Input Level” + “Gain right before Shutdown” ≤ System output power
      - ➢ Over Power Alarm off

6.5. Up Link Auto Shutdown Mode

6.5.1. Objective

To reduce unnecessary Up Link output power so that it minimizes influence to Base Station

6.5.2. Procedure

1. It is operated by Auto Shutdown mode
2. If Down Link output power is OFF, then it turns off Up Link output power (except turning off by user)
3. When Up Link output power is OFF, it executes Amp Off alarm and reports Reason
4. If Down Link output power is ON by Auto Recovery feature, then Up Link output power is ON as well

6.6. NMS Operation

6.6.1. Alarm Monitoring feature

1. Alarm occurs when alarm situation keeps on 10 sec continuously
2. Recovery is applied when alarm situation is not occurred for 10 sec continuously
3. Threshold Alarm : over and under each threshold is occurred and restored

6.6.2. LED Feature

1. POWER LED: Red LED is on when AC/DC Fail alarm occurred (Normal : Green)
2. DL ICM LED : Red LED is on when Down Link ICM alarm occurred (Normal : Green)
3. UL ICM LED : Green LED is on when Up Link ICM alarm occurred (Normal : Green)
4. RF LED : Red LED is on when RF module alarm occurred (Normal: Green)
5. Green LED is on when all is normal

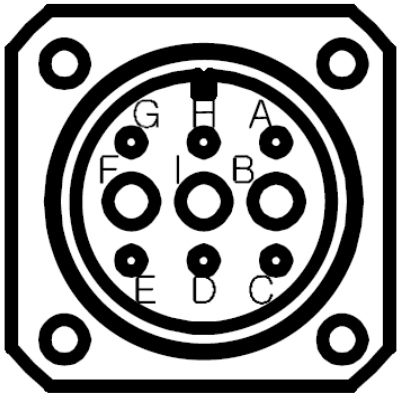
7. System Installation and Setup

7.1. Installation

7.1.1. Configuration

Item	Specification
Repeater Cabinet	ICS-F0837
AC & UPS Connector	MS3106A-20-18(9Pin Female)
Quick manual	User Manual

[Table - 11] System Configuration

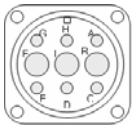
AC & UPS Connector	MS3106A-20-18(9Pin Female)
Pin A : SERVICE_ALM_A	
Pin B : AC_NUT	
Pin C : LOW BATT_ALM_B	
Pin D : ON BATT_ALM_A	
Pin E : ON BATT_ALM_B	
Pin F : GND	
Pin G : LOW BATT_ALM_A	
Pin H : SERVICE_ALM_B	
Pin I : AC_HOT	

[Table - 12] AC Connector Pin Assign

7.1.2. Installation

- Locate repeater at necessary place and fix the bracket
- Connector both antennas to Antenna Port
  (DIN - Type Female Connector)
- Ground repeater
- Supply the Electrical Power (AC100~260V)
- Verify if Main Power LED if the connection is correct (Extension code can be used if necessary, not included)
- Port Connection to Repeater is as follows

Item	Function

AC IN	 B : AC 100V~260V+ I : AC 110V~260V- F : GND
Modem Port	Tx/Rx
Donor Port	TX Input / RX Output
Service Port	TX Output / RX Input

[Table - 13] System Connection Port

7.1.3. Check List before operation

- Verify if all the connections are correct including Power Cable, RF Cables, Ground and so on.
- Verify if Power Box (100~260V) is connected correctly.
- Verify if RF Cables have correct connection regarding block diagram.
- Verify if each module power and data cable have correct connection
- Verify if Connection with Antennas is correct.

7.1.4. RF Monitor Port

Donor Antenna		Service Antenna	
TX(To BTS)	**RX(from BTS)**	**TX(To Mobile)**	**RX(From Mobile)**
15 dB Coupling	30 dB Coupling	40 dB Coupling	-

[Table - 14] RF Monitor Port

7.3. Fault / Alarm Handling

7.3.1. Down Link / Up Link ALARM Handling

Module Name	Alarm	Alarm Status	Symptom and Action
RF Power	High Input Power (DL / UL)	Alarm : Red Normal : Green	Verify Donor Antenna Input Level
			Add Fix Attenuator, Use LNA Attenuator (RF Window)
	Low Input Power (DL)	Alarm : Red Normal : Green	Verify Donor Antenna Cable, Antenna Direction, RF Cables in Repeater, Input level to ICS module
			Replace cables, adjust ANT direction
	High Output Power (DL / UL)	Alarm : Red Normal : Green	Verify Gain and real output power using CPL port
			Adjust Gain
	Low Output Power (DL)	Alarm : Red Normal : Green	Verify Gain and real output power using CPL port, Verify Each module In/Output
			Adjust Gain, Replace the Module
ICS	ICS (DSP) (DL / UL)	Alarm : Red Normal : Green	Verify Isolation, Verify ICS Module defected.
			Adjust ANT Direction and GAIN. Replace ICS Module
DL PAU	Over Power (DL)	Alarm : Red Normal : Green	Verify PAU Input Level, Output Level using CPL Port
			Adjust GAIN
	High Temp. (DL)	Alarm : Red Normal : Green	Verify if PAU not fixed, Verify if dust on a Heat Sink . Verify if PAU defected.
			Fix PAU, Replace PAU
	VSWR (DL)	Alarm : Red Normal : Green	Verify Output cable status, Verify if antenna defected. Verify if PAU defected
			Replace the defected Part
RF Device	RF Device (DL / UL)	Alarm : Red Normal : Green	Verify if the Module defected
			Replace the Module

UL PAU	PAU (UL)	Alarm : Red Normal : Green	Verify if PAU defected. Cable Connection Status Replace the Module

[Table - 15] Down Link / Up link Alarm Handling

7.3.2. Environment Alarm

Item	Alarm Status	Symptoms and Actions	Remark
Door Open Alarm	Alarm : Red Normal : Green	DOOR Status, DOOR SW operation Check	
		DOOR Lock and Updating SW	
AC Alarm	Alarm : Red Normal : Green	Verify AC Voltage	
		Re-construct AC Power	
DC Alarm	Alarm : Red Normal : Green	Verify if PSU output is 27V	
		Replace PSU	
Housing Temp Alarm	Alarm : Red Normal : Green	Verify Housing Temp.	

[Table - 16] Environment Alarm

8. Manufacturer Information

RF Window co. ltd.

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