

CAE700-DB

User's Manual

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1. Introduction

A. Introduction

- i. There are so many shadow area in doing cellular/PCS service. Especially, the big problems will happen if we can not call in emergency situation in home, office etc. because of being unable to contact the police, emergency center and so forth. In this point, it is best choice to use a repeater to remove the shadow service area with low price. The Combo repeater is designed to improve and enhance the coverage of cellular/PCS radio network. When cellular/PCS service is poor in your home and office or the calling is repeatedly dropped and missed, this repeater is used to enhance the service coverage of cellular/PCS.

B. Feature

- i. Dual Band Type
 - a. US PCS and CDMA.
 - b. Dual Band Common Donor and Service Antenna.
- ii. IF Type
 - a. Super Heterodyne system.
 - b. Higher Band Selectivity.
- iii. Alarm
 - a. Shutdown
 - b. Oscillation
 - c. LED & GUI display
- iv. GUI
 - a. Graphic User's Interface supplied.
 - b. Connection with PC by RS-232.









2. Specification

A. Electrical Specification

Item		Specification	Remark
CDMA Frequency Range	Forward	869 MHz ~ 894 MHz	
	Reverse	824 MHz ~ 849 MHz	
PCS Frequency Range	Forward	1930 MHz ~ 1990 MHz	
	Reverse	1850 MHz ~ 1910 MHz	
CDMA Bandwidth	Forward	25 MHz	
	Reverse	25 MHz	
PCS Bandwidth	Forward	60 MHz	
	Reverse	60 MHz	
CDMA Input Level	Forward	Above than -60 dBm / 20 FA	
	Reverse	Above than -57 dBm / 1 FA	
PCS Input Level	Forward	Above than -58 dBm / 20 FA	
	Reverse	Above than -65 dBm / 1 FA	
CDMA Output Level	Forward	10 dBm / 20 FA	
	Reverse	13 dBm / 1 FA	
PCS Output Level	Forward	12 dBm / 20 FA	
	Reverse	15 dBm / 1 FA	
Gain	Adjust Range	40 dB ~ 70 dB	ALC OFF
	Step	1 dB	
	Accuracy	± 1 dB	
ALC Range		30 dB	ALC ON
ALC Level		Setting up	
ALC Response Time		Setting up (Default : 300ms)	
CDMA Gain Flatness		Less than 4 dBp-p	
PCS Gain Flatness		Less than 7 dBp-p	
Over-power Shutdown	Forward	Setting up	
	Reverse	Setting up	
In-band Spurious Emission		29 dBc @ Fc ± 750 kHz	RBW : 30 kHz
		39 dBc @ Fc ± 1.98 MHz	
Out of Band Spurious Emission		Under -13 dBm/30 kHz @ 9 kHz ~ 150 kHz Under -13 dBm/30 kHz @ 150 kHz ~ 30 MHz Under -13 dBm/30 kHz @ 30 MHz ~ 1 GHz Under -13 dBm/30 kHz @ 1 GHz ~ 12.75 GHz	
Noise Figure	Forward	Less than 9 dB	@ max gain
	Reverse	Less than 7 dB	@ max gain
Delay		Less than 5 us	
TX/RX Isolation		Above than 85 dB	

Item		Specification	Remark
VSWR @ ANT Port		Max. 1:1.5	@ 50 ohm
Impedance @ ANT Port		50 ohm	
Antenna Connectors	Link ANT Port	Type-N Female	
	Service ANT Port	Type-N Female	
Power Supply		100 ~ 240 Vac @ 50/60Hz	
Operating Temperature		-5 °C ~ 55 °C	
Delta-T		Less than 20 °C	
GUI Interface		RS-232C	
Water-proof		No	

B. Front LED Display

항목	LED state	Description
Power LED		Power OFF
		Power ON
Signal LED (Forward RSSI Level)		Less than -80dBm / 20FA
		-60dBm / 20FA to -80dBm / 20FA
		Above than -60dBm / 20FA
Alarm LED		Checking isolation between link and service antennas
		Normal Operation
		Shutdown by OverPower or Oscillation

C. Mechanical Specification

- i. Power Consumption : 25W
- ii. Operating Temperature : -5 °C ~ +55 °C
- iii. Operating Humidity : 5 ~ 95%
- iv. Dimension : 203mm x 293mm x 58mm
- v. Weight : 4.5kg

3. Structure

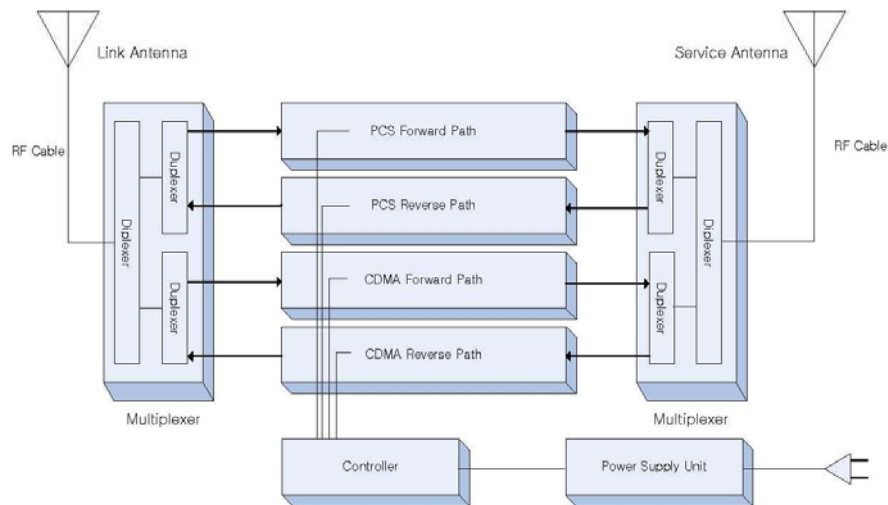
A. Inter/Outer Structure

i. Outer Structure

- a. The RF Repetition System is Constructed by Link Antenna, Service Antenna, and the Repeater.

ii. Internal Structure

- a. The Repeater is constructed by Multiplexer, RF module, Controller, and the Power Supply Block.
- b. The Block Diagram of a This Repeater is following. Link port is connected to a link antenna which transmits and receivers to BTS. Service port is connected to a service antenna which transmits and receivers to MS. (mobile phone)



B. Picture

i. Front



ii. Rear



iii. Side

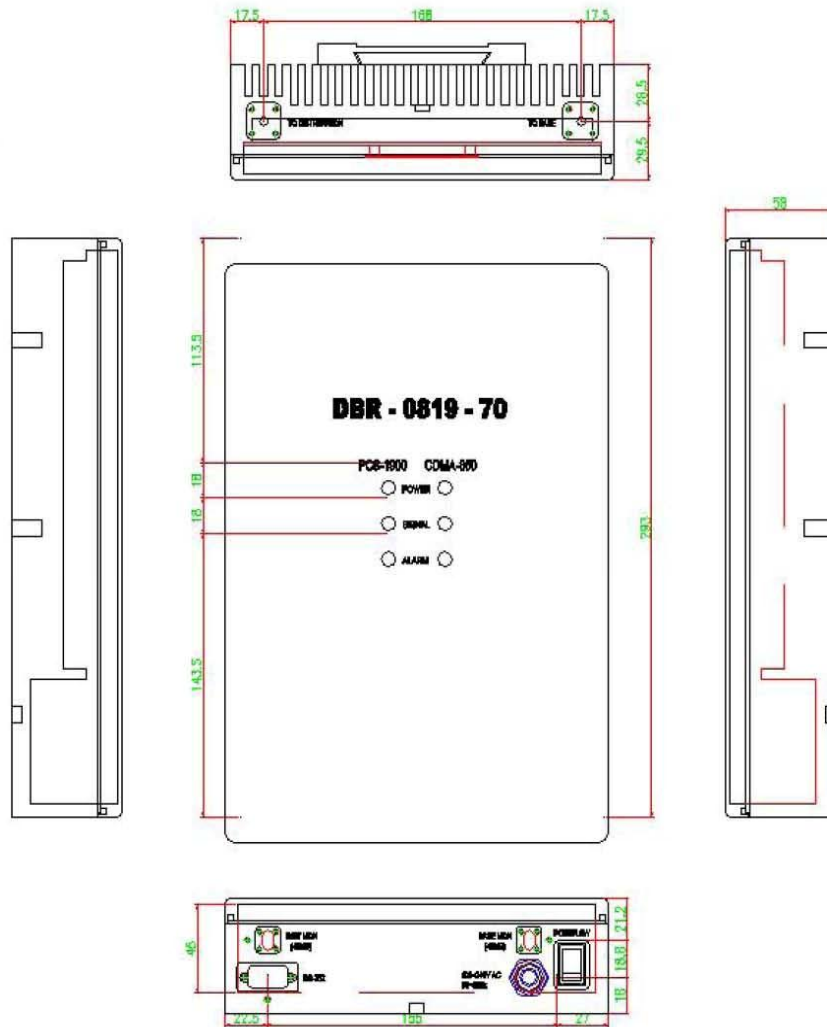


iv. Bracket



C. Case Drawing

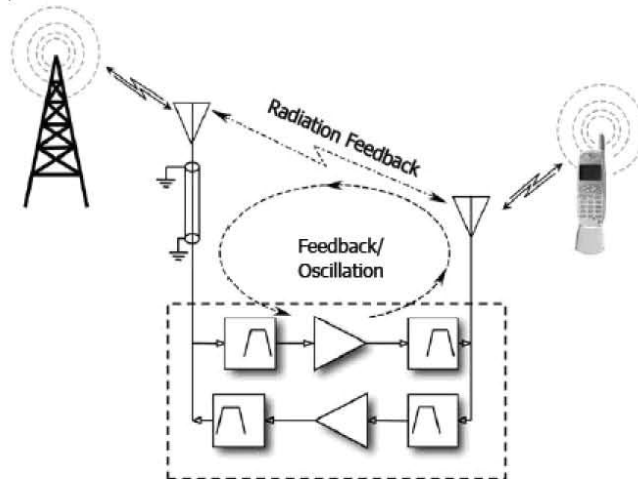
i. Case Drawing



4. Operation

A. Isolation Check between Link and Service Antenna

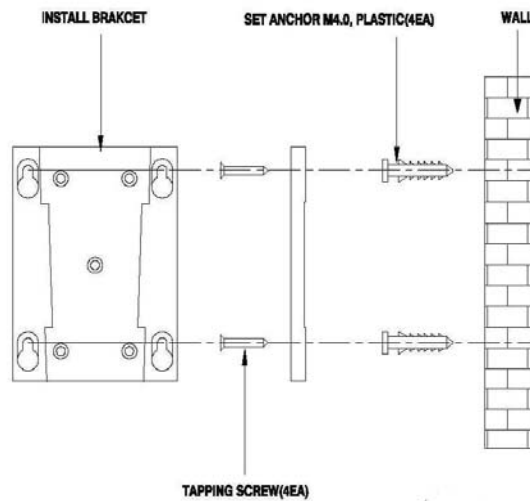
- i. Because the amplifiers in the repeater's input and output ports are tuned to the same frequency, oscillation (feedback) between link and service Antennas can occur if they are placed too close together like Following Figure.
- ii. The effect is similar to that of a microphone that is held too close to its output speaker; you will hear a loud whistling (oscillation) noise. If the oscillation occurs in the repeater, it will jam BTS near the repeater and disrupt the operation of both your and other 3G phones in the area.



- iii. There are several ways to prevent oscillation between link and service Antennas. The first involves increasing the distance between the antennas (just as you would move the microphone away from its speaker to stop the feedback.) The second is to decrease the gain of the repeater (similar to lowering the volume of the microphone's speaker.) The third is simple: turn the system off.
- iv. The function which checks isolation will be implemented in this repeater to prevent oscillation and to install easily as installing the repeater. When the power of a repeater turns on, the repeater checks isolation between link and service antennas and sets up the maximum gain of the repeater to (isolation - 15 dB). At this time, the isolation is displayed in GUI. The isolation check of a repeater can be done anytime with GUI.

5. Installation

A. Installation guide



- i. Make 4 Holes to the Wall with Concrete Drilling machine.
- ii. Insert Set Anchor to the Hole of the Wall.
- iii. Position the Install Bracket, and Fasten it to the wall with M4x25L, PH+, STS304, Tapping Screw.
- iv. Like Following Figure, Fix the Repeater.

