

User Manual

Penta Band Booster (27dBm)



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Information in this manual is subject to change without notice

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NOTICE:

SWITCH **AC POWER OFF** BEFORE DONOR AND SERVICE ANTENNA CONNECTS TO REPEATER.



PLEASE READ THE USER MANUAL AND FOLLOW THE STEPS CAREFULLY. THIS QUICK START GUIDE WILL HELP YOU TO INSTALL REPEATER PROPERLY AND AVOID IMPROPER USAGE.

IF YOU HAVE OTHER INQUIRES OR NEED FURTHER TECHNICAL SUPPORT, PLEASE CONTACT WITH US IVA EMAIL: INFO@REDUTELCO.COM

Some content may differ from your device depending on the region service provided, or software version, and is subject to change without prior notice.

1 Description

The penta band repeater is a bi-directional amplifier used to enhance signals between a mobile and a base station. This repeater type is used for digital telecommunication system

It is commonly used in the area there are five type of mobile network, such as 2G/3G/LTE 4G. It will reduce site deployment cost by using one multiband donor antenna, one multiband service antenna, and multiband amplifier modules in one enclosure.



Better Indoor deep Coverage and Wide Coverage



Increasing Spectral Efficiency with higher capacity

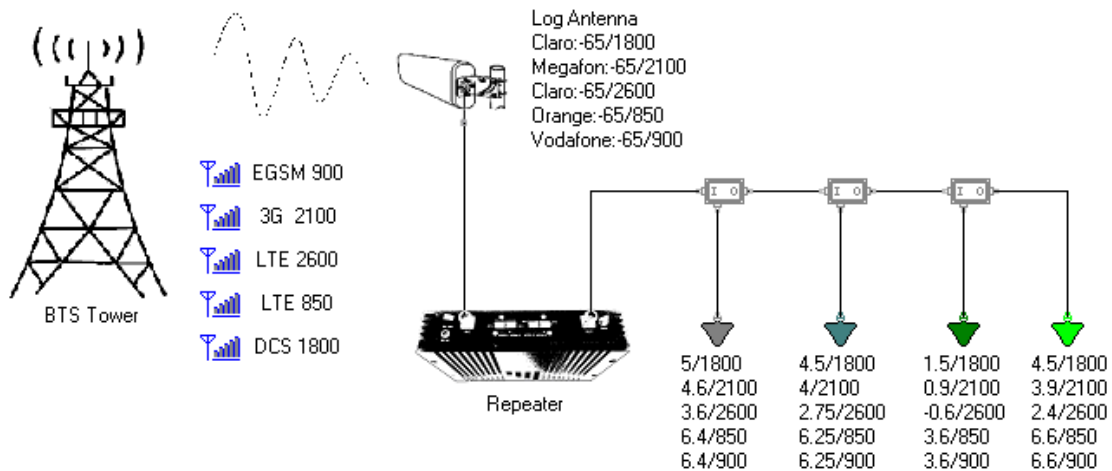


Improved Voice and Data Service Experience










Cost-effective multimode network deployment

It is applied to small, medium-size areas such as corporation office, shop mall, bus station, factory etc.



This model booster is commonly used in situations where large numbers of frequency carriers are to be repeated or when base station synthesized frequency hopping is used.

2 Technical Specifications

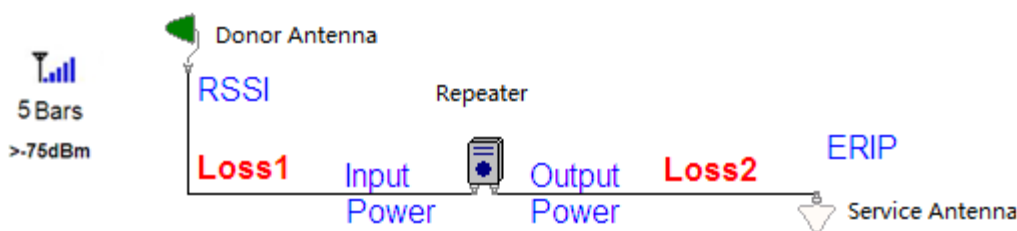
Part No.		PONP23			
	Frequency	Band	DL	UL	
		800	791 - 821	832 - 862	
		900	925 - 960	880 - 915	
		1800	1805 - 1880	1710 - 1785	
		2100	2110 - 2170	1920 - 1980	
		2600	2620 - 2690	2500 - 2570	
Output Power		23~27		dBm	
Gain		75		dB	
	Ripple	8		dB	
	IM3	45		dBc	
	Emission	-36		dBm	
	Noise Figure	6		dB	
	Function	MGC,ALC, LED Alarm			
	Connectors	2 ×N Female			
	Voltage	DC +10V/10A			
	Dimension	CTN	495 ×310 ×100		mm ³
		UNIT	440 ×270 ×60		
	Weight	G.W.	9.5		kg
		N.W.	9.0		
	Installation	Wall Mount			
	Coverage	2000		m ²	
	IP Class	IP40			
	Color	Black			
	Casing	CS910			

3 Product Features

- High **gain>75dB**, High output power 23-27dBm
- Light weight, small dimensions, easy to install

- Easy set DL/UL gain via local PIN switch manually, Gain adjustment of uplink and downlink; gain adjust step is 1dB and the adjust scope is 30dB.
- Smart Automatic Level Control (**ALC**) to reduce interference to BTS
- **Linear** power amplification to effectively suppress inter-modulation and spurious emission
- An alarm interface with unique **color LEDs** to indicate power supply and signal level of uplink and downlink
- Simple installation with external **AC/DC adapter**
- Dual ports and full duplex design

4 Applications Example



$$\text{RSSI} = \text{Min Reception Signal Level} + \text{Donor Antenna Gain} \quad (1)$$

$$\text{Input Power} = \text{RSSI} - \text{Loss1} \quad (2)$$

$$\text{Output Power} = \text{Input Power} + \text{Repeater Gain} \quad (3)$$

$$\text{ERIP} = \text{Output Power} - \text{Loss2} + \text{Service Antenna Gain} \quad (4)$$

4.1 Minimum Signal Levels

It requires a minimum signal level in the place where install the donor antenna. Failure to provide sufficient input signal will only result in a poor coverage inside the building for this repeater system.

To check signal levels, use the phones in the place where antenna be install (on the roof) and observe the signal bars on the phone. The Donor (outside) antenna should be placed in the location where you get the most signal.

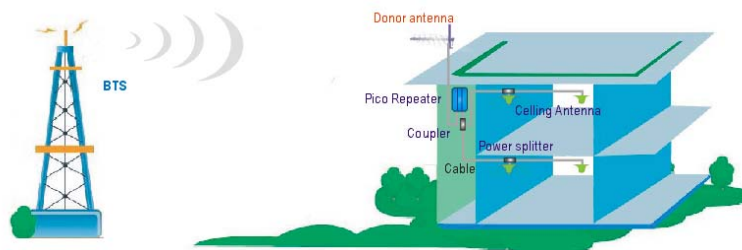


Notices:

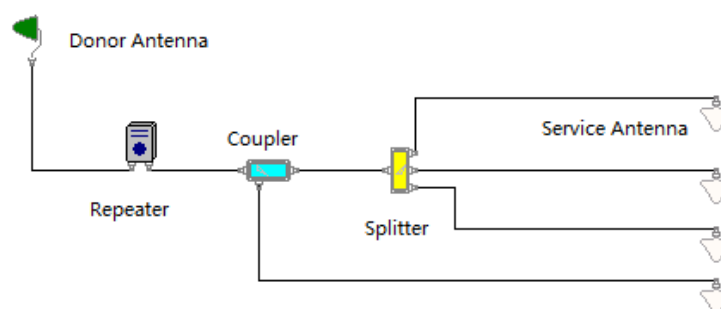
- 1) The donor antenna should have line of sight (LOS) with the BTS antenna. If the signal strength is adequate, LOS may in some cases not be necessary.
- 2) Donor antenna gains are typically 9 to 14 dB, and have a horizontal and vertical beam width of less than 30° to correctly select the donor BTS.

4.2 Custom Applications

If building is made of concrete, steel, steel roof, copper roof, brick, aluminum siding, concrete roofing tiles, metal roofing tiles or any other signal stopping material, a repeater is usually the ideal solution for your situation.



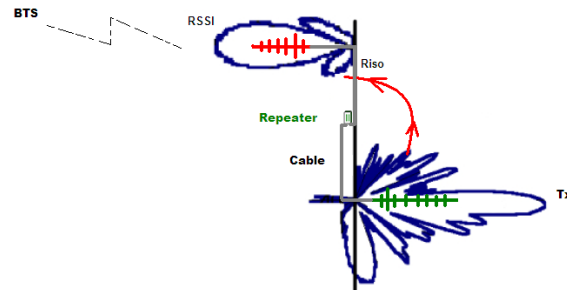
Most homes or buildings are easily covered by one repeater systems. Some buildings are larger or have multiple areas inside that need coverage.



It may need longer cables, more than 2 coverage antennas or other items in order to fully cover your building. We can make (almost) any cable length and can help design a system that fits your application.

4.3 Isolation and Separation

Isolation refers to the proper distance or separation needed to keep the Donor antenna signal pattern and the Coverage antenna signal pattern away from each other.



Isolation becomes particularly problematic when Omni-directional antennas are used for both the Donor and the Coverage antennas. Since these antennas transmit in a circle (or more accurately a sphere) it is very easy for these spheres to overlap and thus negate the repeater system.

5 Production Operation

5.1 Notices

Follow below safety items carefully before installation, implementation, maintenance and operation for this product

- ☞ BS and MS port must be connected to donor antenna and service antenna when powers supply on; otherwise the equipment will be damage for long term use.
- ☞ When use repeater for outdoor, the distance between donor antenna and service antenna must be >20metes, otherwise the repeater will be damage because isolation problem for long term use.
- ☞ Donor antenna need to be lighting proof and lighting rod need to be install for donor antenna installation pole outside
- ☞ Check input power, require input power less than maximum input power of repeater, otherwise the repeater cannot work well.
- ☞ Keep clear for label and indicator on surface of repeater to be identified.

5.2 Installation

Step 1: Start by taking phone up to the roof or other location outside to find where the signal is strongest.

Step 2: Temporarily mount the Donor (outside) antenna in that location. It may need to adjust and move the antenna later.

Step 3: Run coaxial cable into the building to a convenient location where you can also get standard 220VAC power for the repeater.

Step 4: Place the repeater in that location and connect the coaxial cable to the Donor Side of the repeater and the donor antenna.

Step 5: Mount coverage (inside) antenna in a productive location. It may need to adjust or move the antenna later.

Step 6: Connect coaxial cable between the coverage antenna and the repeater output port.

Step 7: Power up the system and check for signal inside the building. If needed, tune system by moving and or pointing the Donor and Coverage antennas until get the most signal possible.

Step 8: Secure all antennas and cables, securely mount the repeater and clean up the installation

5.3 Commissioning

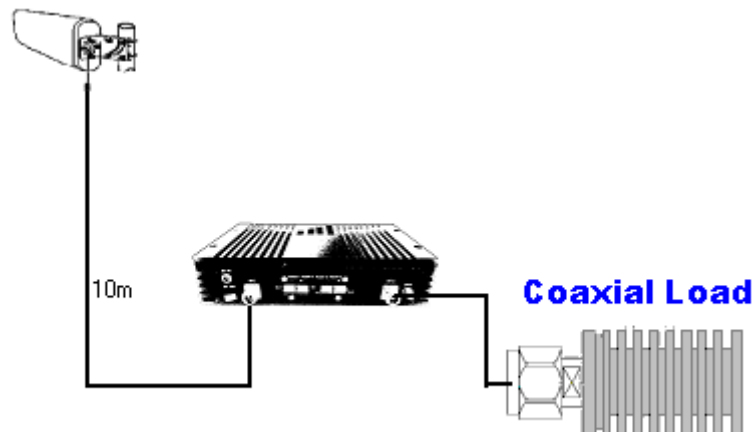


Power		220V Power supply switch on	
Left Panel	Sys-1	800M, Alarm when output power is higher than output power	Push Button Select to change current system
	Sys-2	900M, Alarm when output power is higher than output power	
	Sys-3	1800M, Alarm when output power is higher than output power	
Right Panel	Sys-1	2100M, Alarm when output power is higher than output power	
	Sys-2	2600M, Alarm when output power is higher than output power	
	Sys-3	Not used	
+		Increase UL/DL Gain	Notice:

-	Decrease UL/DL Gain	Press Gain Button to light gain value LED, then Press Button SEL to select system
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After switch on power supply, please check indication LED as following items.

- Put one load to MS port as below diagram



- Power switch ON.
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- Select system via Button "SEL" in monitor board.
- Decrease Band 900 gain(Downlink) until sys1 not alarm if BTS signal is too strong (900 M DL LNA module)
- Decrease Band 1800 gain(downlink) until sys1 not alarm if BTS signal is too strong (1800M DL LNA module)
- Decrease Band 2100 gain(downlink) until sys1 not alarm if BTS signal is too strong (2100M DL LNA module)
- Set uplink gain=downlink gain-5 for each band. (UL PA module)
- Same as 2600M LTE, 800M LTE
- Remove load and connect MS port to indoor antennas system.
- **Check LED status, if LED RED ON, it means there is antenna isolation problem, in this case, we do:**
 - Move indoor antenna far from external antenna.
 - Reduce repeater gain according to BAND LED .

