



# Dual Band Home Repeater

## User's Guide

(Model#: HRD-CP0819)

*Hyon Corp* Co.,Ltd

504-29, JAS B/D, Younnam-Dong, Mapo-Gu, Seoul, 121-869, South Korea

Tel: 82-2-325-1991 / Fax: 82-2-325-2442

[www.jasteletech.com](http://www.jasteletech.com)

The information provided by Hyon Corp Co.,Ltd is believed to be complete and accurate. However, no responsibility is assumed by Hyon Corp Co.,Ltd for any business or personal losses arising from its use, or for any infringements of patents or other rights of third parties that may result from its use

# Table of Contents

<b>1. Security Precautions</b>	3
<b>2. Introduction</b>	
2.1 Overview	3
2.2 Operational Concept	3
<b>3. Contents and Features</b>	
3.1 Contents	4
3.2 Features of Dual Band Home Repeater	5
3.3 Operating Displays and Connections	6
<b>4. Operational Procedure</b>	
4.1 Measuring Instruments	8
4.2 Down Link Setting	8
4.3 Up Link Setting	8
<b>5. Specifications and Overall Diagram</b>	9
5.1 Specifications	
5.2 Overall diagram	
<b>6. Maintenance and Troubleshooting</b>	
6.1 Maintenance	10
6.2 Troubleshooting	11
<b>7. Appendix</b>	
7.1 Relative product	12
<b>8. Customer Care</b>	12

## 1. Security Precautions

- Only use the power supply unit provided with the Dual Band Home Repeater (DC 5.2 V/ 1A).  
Comply with the connection values and ratings when connecting the device to the mains.
- Protect the Dual Band Home Repeater from dampness.
- Never open the device. For electrical safety reasons it may only be opened by authorized service technicians.
- Dispose of the Dual Band Home Repeater in environmentally safe manner.
- Lightning protection is recommended for all installations.

## 2. Introduction

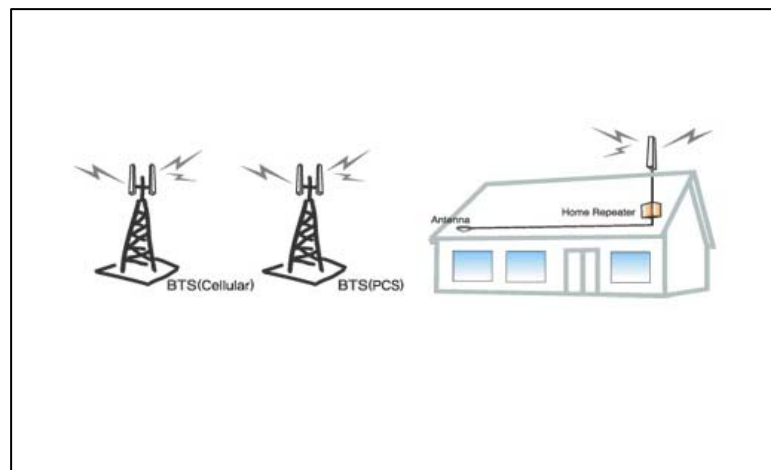
### 2.1 Overview

Dual Band Home Repeater (JAS-HRD-CP0819) is designed to improve wireless receptions, for both CDMA & PCS, in poor indoor coverage areas. Targeted as a cost effective solution for indoor coverage areas from 2,000-sq. ft. to 3,000-sq. ft., Hyon Corp Dual Band Home Repeater will allow users to operate handsets within a building or weak coverage area while maintaining call clarity and quality.

### 2.2 Operational Concept

The Dual Band Home Repeater takes the signal from a Pick-up antenna outside a building, amplifies it and rebroadcasts it to the interior of the building with a Service antenna. The same process occurs in the opposite direction taking the signal from the mobile phone and sending it outside via the antenna and amplifier.




The Dual Bank Home Repeater minimized its size and weight for easy installation and usage. Also its elegant design helps it not to be standout from its environment.



### 3. Contents & Features

#### 3.1 Contents

The package contains the following items:

No.	Contents	Q'ty	Remark
1	Home Repeater 	1 unit	Model #: HRD-CP0819
2	Adaptor 	1 unit	Power Supply for Dual Band Home Repeater (110~220V/60Hz, +5V, 1.2A)
3	Screw 	2 units	They are used to mount bracket installation

### 3.2 Features of Dual Band Home Repeater

Front Panel



Back Panel



Upper Panel



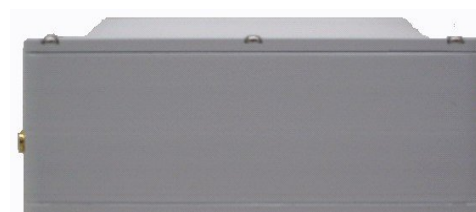
Bottom Panel



Right Panel

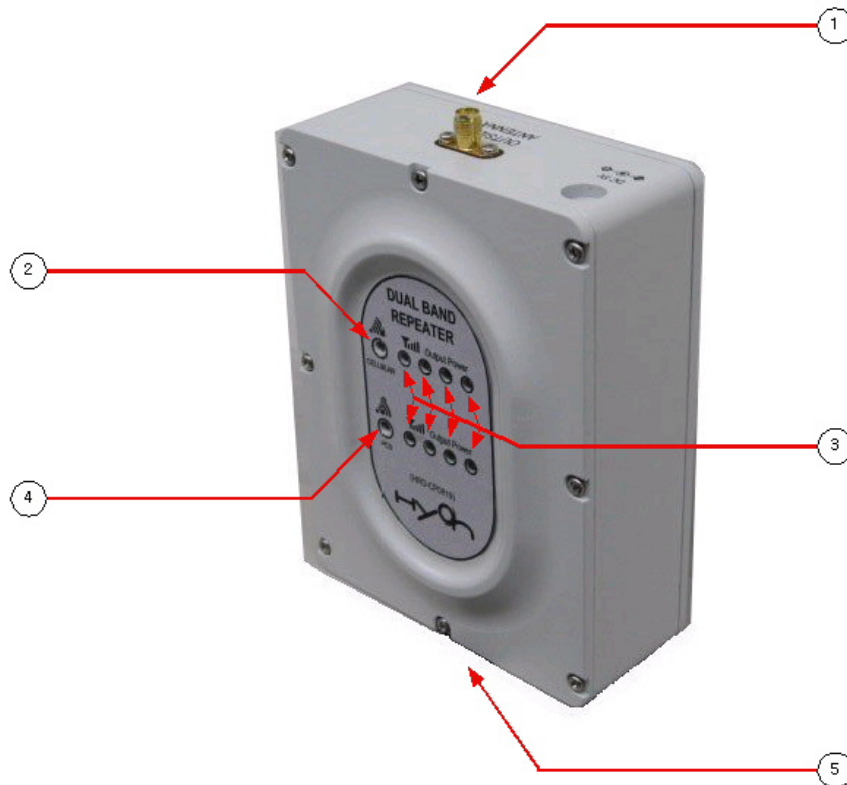


Left Panel



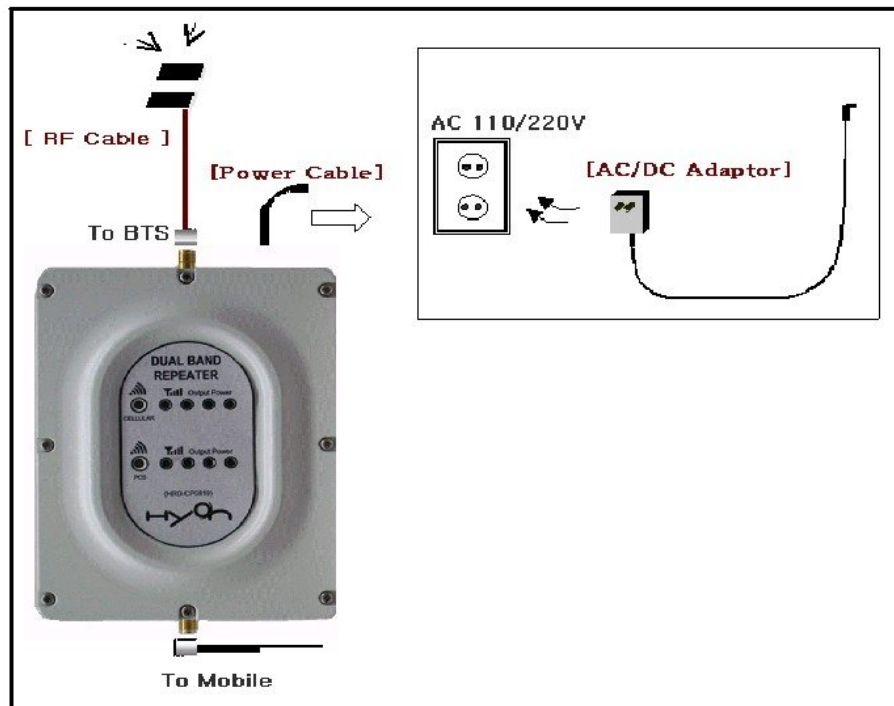
### 3.3 Operating Displays and Connections

#### 3.3.1 Operating Displays

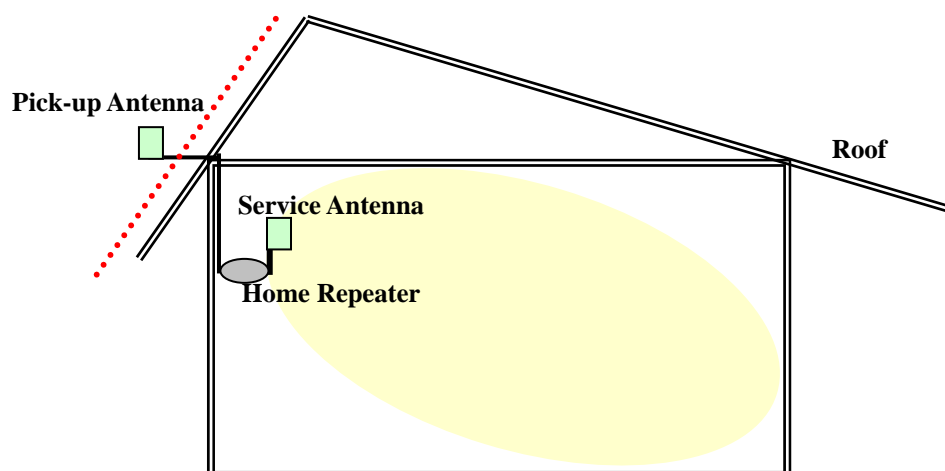


- ① **To BTS:** Port for receiving the signal from BTS, and a signal pick-up antenna should be connected to the port.
- ② **CDMA Service Status:** Display status of receiving CDMA signal  
**Green:** Normal    **Blinking Red:** Waning    **Red:** Critical
- ③ **Output Power Status:** Display outgoing signal strength; top for CDMA and bottom for PCS.
- ④ **PCS Service Status:** Display status of Receiving PCS signal.  
**Green:** Normal    **Blinking Red:** Waning    **Red:** Critical
- ⑤ **To Mobile:** Port for emitting the amplified signal to mobiles, and service antenna such as dipole, patch, omni antenna should connected to the port.

### 3.3.2 Connections



- ① Before installation, Check out whether all the parts are included in the box or not.
- ② Pick-up antenna needs to be installed outside of building to receive both CDMA & PCS signal from the base station. There are two ports on the Dual Band Home Repeater: [To BTS] for pick-up antenna and [To Mobile] for service antenna.
- ③ Use power supply unit included in the box to connect the power.  
 \*Using other than the power supply unit provided with the Dual Band Home Repeater (DC 5.2 V / 1 A) may cause problems.



## 4. Operational Procedure

After installation is over, use measuring tools to process operational test followed by orders below.

### 4.1 Measuring Tool Descriptions

- Spectrum Analyzer: To measure spurious emission and wave, input and output power level.
- Signal Generator: To measure repeater's gain
- RF Power Meter: To measure repeater's output power
- Site Master: To measure VSWR on antenna and antenna cable
- Multi Tester: To measure AC input power and others

### 4.2 Down Link Setting

**Power Check:** Use AC adaptor to connect the power to the repeater and check whether power is turned on.

**Base Station Input Power Check:** Connect the Spectrum Analyzer, described above, to [To BTS] port on the repeater and check total power of down link input power level from the base station. Total power should between  $-50\text{dBm} \sim -43\text{dBm}$ .

- For input level measurement, accurate offset value for Spectrum Analyzer should be determined considering Cable Loss and etc.

Connect the Spectrum Analyzer to [To Mobile] port and measure down Link Gain and check whether the spurious emission meets the standard.

### 4.3 Up Link Setting

Connect the Signal Generator to [To Mobile] port and confirm C.W signal. It should be  $-50\text{dBm}$ .

Connect the Spectrum analyzer to [To BTS] port and check Up Link Gain.

- If Procedures above are not available, use Spectrum Analyzer to get repeater's gain by using noise level measurement.

Ex) If Up Link Gain is  $50\text{dBm}$ ; noise level can be found by following equation.

$$\begin{aligned} & \text{White Noise Level} + \text{Repeater Gain} + \text{Repeater N/F} \\ & = -56\text{dBm}/1.25\text{Mhz} \end{aligned}$$

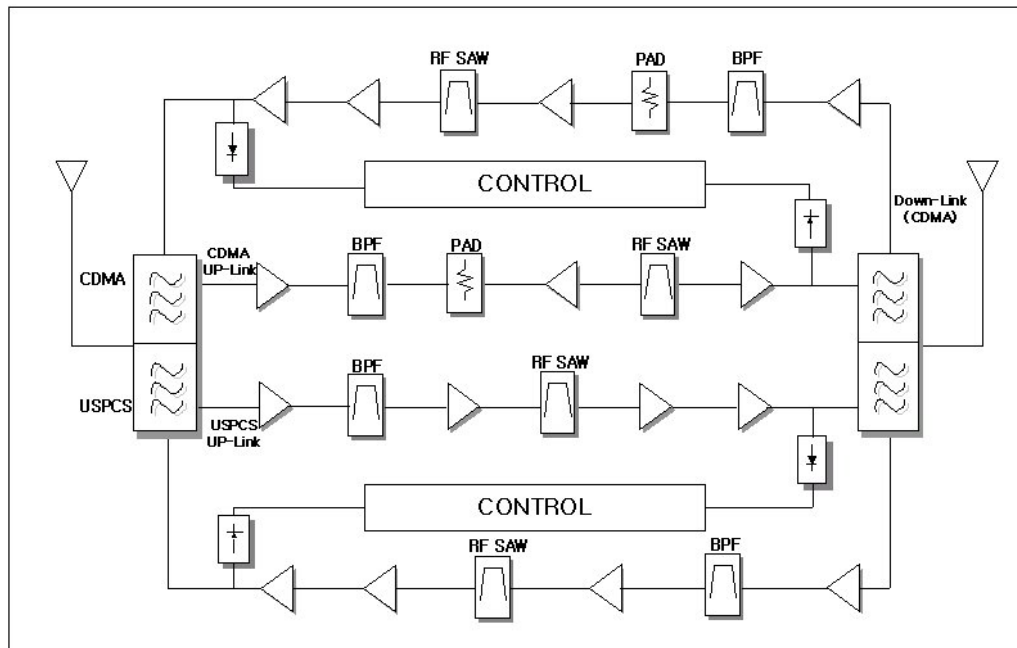


## 5. Specifications and Overall Diagram

### 5.1 Specifications

No.	Parameters		Specifications		Remarks
			Downlink	Uplink	
1	Frequency Range	US-PCS	1930~1990 MHz	1850 ~ 1910 MHz	B.W :60MHz
		CDMA800	869 ~ 894 MHz	824 ~ 849 MHz	B.W :25MHz
2	Input Power Range		-60 ~ -40dBm	-102 ~ -60dBm	
3	Max. Output Power	US-PCS	+7dBm / Total		@+4dBm/ Tone
		CDMA800	+7dBm / Total		@+7dBm/ 1FA
4	Max. Gain	US-PCS	50dB ±2dB		
		CDMA800	50dB ±2dB		
5	IMD Products (ETS300 609-4 /GSM11.26)	US-PCS	≤ -36dBm/3KHz		In Band
			9KHz~1GHz : ≤ -36dBm/3KHz		Out Band
			1GHz~12.75GHz : ≤ -30dBm/3KHz		
6	Spurious Emission	CDMA800	≥45 dB @ fo±750KHz ( Δ marker : 29dB), RBW : 30KHz ≥60dB @ fo±1.98MHz ( Δ marker: 44dB), RBW : 30KHz		@+7dBm/ 1FA
7	Shut Down Level		≥ +9.0dBm		Auto Recovery
8	V.S.W.R		≤ 2.0 : 1[Max]		
9	Impedance		50Ω		
10	RF Connector		SMA-Type (Female)		Up/Down Link Port
11	Power Supply		5V / 1.2A		External Adapter
12	Operating Temperature		-5℃ ~ +60℃		
13	Operating Humidity		5% ~ 85%		
14	Dimension (WxHxD)		121mm x 90mm x 46mm		Without Connector

## 5.2 Overall Diagram



## 6. Maintenance and Troubleshooting

### 6.1 Maintenance

If there is any problem, find out the part with the problem. Then turn off the equipment and prepare for maintenance test with measurement tools.

- This test should be processed with enough knowledge about the product.
- If you are not sure which part seems to be a problem, you must not disassemble the product.
- For checking output ports, Dummy Load is necessary.

#### 6.1.1 Measuring Tool Descriptions

- Spectrum Analyzer: To measure spurious emission and wave, input and output power level.
- Signal Generator: To measure repeater's gain
- RF Power Meter: To measure repeater's output power
- Site Master: To measure VSWR on antenna and antenna cable
- Multi Tester: To measure AC input power and others

### 6.1.2 Simple Adjustment

- This adjustment should be used for only simple problems. Contact Customer Care for any other problems.
- Connect the Spectrum analyzer or Power Meter to the output port and check output power level. If the output power level does not meet the standard, please contact Customer Care.
- To maintain its qualities of the product, all the connectors should be tightened at anytime and kept clean.

## 6.2 Troubleshooting

### When the output power level decreases.

- Symptoms: Mobile receives weak signal and the repeater's service coverage decreases.
- Cause and Solving Method: Base Station input level decreasing: Check the input signal level on [To BTS] port whether it is -50dBm ~ -43dBm. If it is not, input parts need to be checked.

### When spurious emission is blazing

- Symptoms: Phone signal quality decreases.
- Cause and Solving Method:
  - Base Station input Spurious Emission blazing: Measure the Spurious Emission on the [To BTS] port and if it doesn't meet the standard, input port needs to be checked.
  - Base Station input level decreasing: Check the input signal level on [To BTS] port whether it meets the standard. If it does not meet the standard, input port need to be checked.

### When the Power LED is off.

- Most of times, the power supply unit (adaptor) causes this problem. Change the power supply unit and if the problem still occurs, please contact Customer Care.

## 7. Appendix

### 7.1 Relative Products

#### Cable

The RF cable is for connection between the Home Repeater and patch antenna (Pick-up antenna).

The following information is the specification of the RF cable.

	Specification	Remark
Model	RG 58	
Cable Loss	0.7dB/3.28ft	
Connector type	SMA type	

※ As much as you use the cable, there would be more loss on the cable. Therefore, you should calculate the maximum cable length regarding antenna usage. Because the Home Repeater has 50dB gain which is fixed.

## 8. Customer Care (Service)

If you need further assistance with your installation or any problem with *Dual Band Home Repeater*, please call us at 82-2-325-1991 or send E-mail to [smp500@jasteletech.com](mailto:smp500@jasteletech.com). Also you may contact sales representative.