



HR900G

Operation Manual

Small Office & Home Office Repeater



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Operation Manual & Installation Guide

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Important Safety Information



The **HR900G** complies with all FCC, CE, UL, RoHS rules and regulations. Read completely and follow all guidelines before beginning the installation procedure. Do not deviate or disregard any of the safety features included in the manual or with the equipment, nor operated the system in an unintended application.



WARNING!

Only HYON, Inc. authorized products may be used with the HR900G. Using unauthorized equipment with the Repeater unit will harm the system, void the warranty and can be detected in the event of a failure.



WARNING!

Do not install antenna near power lines. Contact with any high voltage power lines could result in shock or loss of life.



WARNING!

Handle with care. Dropping or mishandling can damage sensitive RF and electrical components.

Limited Warranty

HYON, Inc. warrants cellular antennas and repeater for one (1) year that its Products sold hereunder will at the time of shipment be free from defects in material and workmanship and will conform to HYON, Inc.'s applicable specifications or, if appropriate, to Customer's specifications previously accepted by HYON, Inc. in writing.

If products sold hereunder are not as warranted, HYON, Inc. shall, at its option either refund the purchase price, or repair or replace the product, provided proof of purchase and written notice of nonconformance are received by HYON, Inc. within one (1) year of date of purchase and provide said nonconforming Products are, with HYON, Inc.'s written authorization, returned in protected shipping container. HYON, Inc. will pay for transporting the repaired or exchanged products to Customer.

Limitation on Liability

In no event shall HYON, Inc. be liable for any direct, indirect, special, punitive, incidental, exemplary or consequential damages, or any damages whatsoever, even if HYON, Inc. has been previously advised of the possibility of such damages, whether in an action under contract, negligence, or any other theory, arising out of or in connection with the use, inability to use, or performance of the information, services, products, and materials available from this manual. These limitations shall apply notwithstanding any failure of essential purpose of any limited remedy. because some jurisdictions do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of liability for consequential or incidental damages, the above limitations may not apply to you.

FCC Declaration of Conformity

This equipment complies with CFR 47, Part 15,19 of the FCC rule. Operation of the equipment is subject to the following conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with limits for a Class B digital device. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit
- Consult the dealer or an experienced radio/TV technician for help

FCC Part 24, subpart E: Broadband PCS
FCC Part 15, subpart C: Intentional radiators

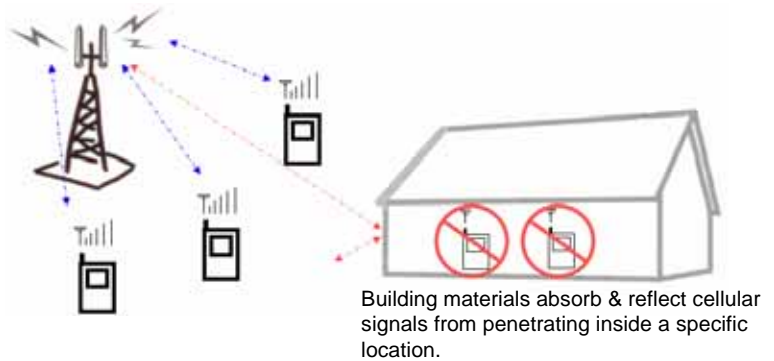
RSS – 131 Zone Enhancers for Land Mobile Service
ICES-003, Issue 4 – Interference Causing Equipment
Standard- Digital Apparatus

Security Precautions

- Only use the power supply unit provided with the HR1900P DC 5.2 V / 1 A). Comply with the connection values and ratings when connecting the device to the mains.
- Protect the Repeater unit from dampness.
- Never open the Repeater unit. For electrical safety reasons it may only be opened by authorized service technicians.
- Dispose of the HR800C in environmentally safe manner.
- Lightning protection is recommended for all installations.

Operational Concept

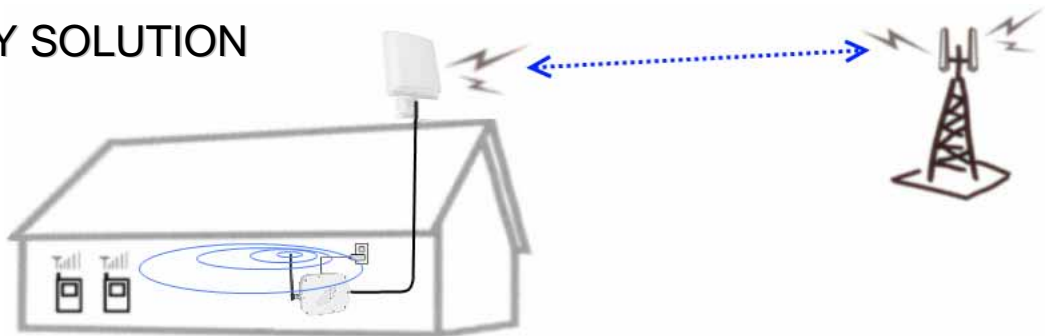
PROBLEM AREA



As mobile usage continues to increase, the macro network (outdoor mobile coverage) had improved over time. Deployments of additional cell sites and enhancements of existing networks resulted to fewer dropped calls, clear connections, and stronger signals.

However, many subscribers encounter incomplete coverage in certain areas because the wireless network continues to face challenges of delivering seamless coverage by overcoming physical obstacles made of steel and concrete. Many factors are held accountable which limit the penetration of cellular signals within an establishment, including the change of weather and environmental conditions.

TURN-KEY SOLUTION



Every home, every office, every application is complex. The HR900G are engineered to specifically address these challenges.

The HR900G seamlessly relay radio communication signals between a cell tower and mobile handset located inside an environment. The system consists two main components: a bi-directional repeater unit and the directional patch antenna unit. The antenna unit is aligned to the closest cell tower to captures available cellular signals. The signals are sent to the repeater unit via low-loss coaxial cable. The repeater unit filters unwanted noise and amplifies clean signal via omni-directional dipole antenna.

Introduction

Congratulations! You have purchased the finest, most comprehensive SOHO (small office, home office) repeater kit available.

The HR900G extends cellular coverage for low signal strength areas. You will experience broader coverage through enhanced filtering and superior amplifying performance.

Understanding tomorrow's market demands and the mix of technology standards, the HR900G is intelligently designed to provide interference protection of any existing wireless networks and/or radio communications frequencies.

HR900G Standard Repeater Kit Contents

SYSTEM INCLUDES

Repeater Unit

Antenna Unit w/ cable

Dipole Antenna

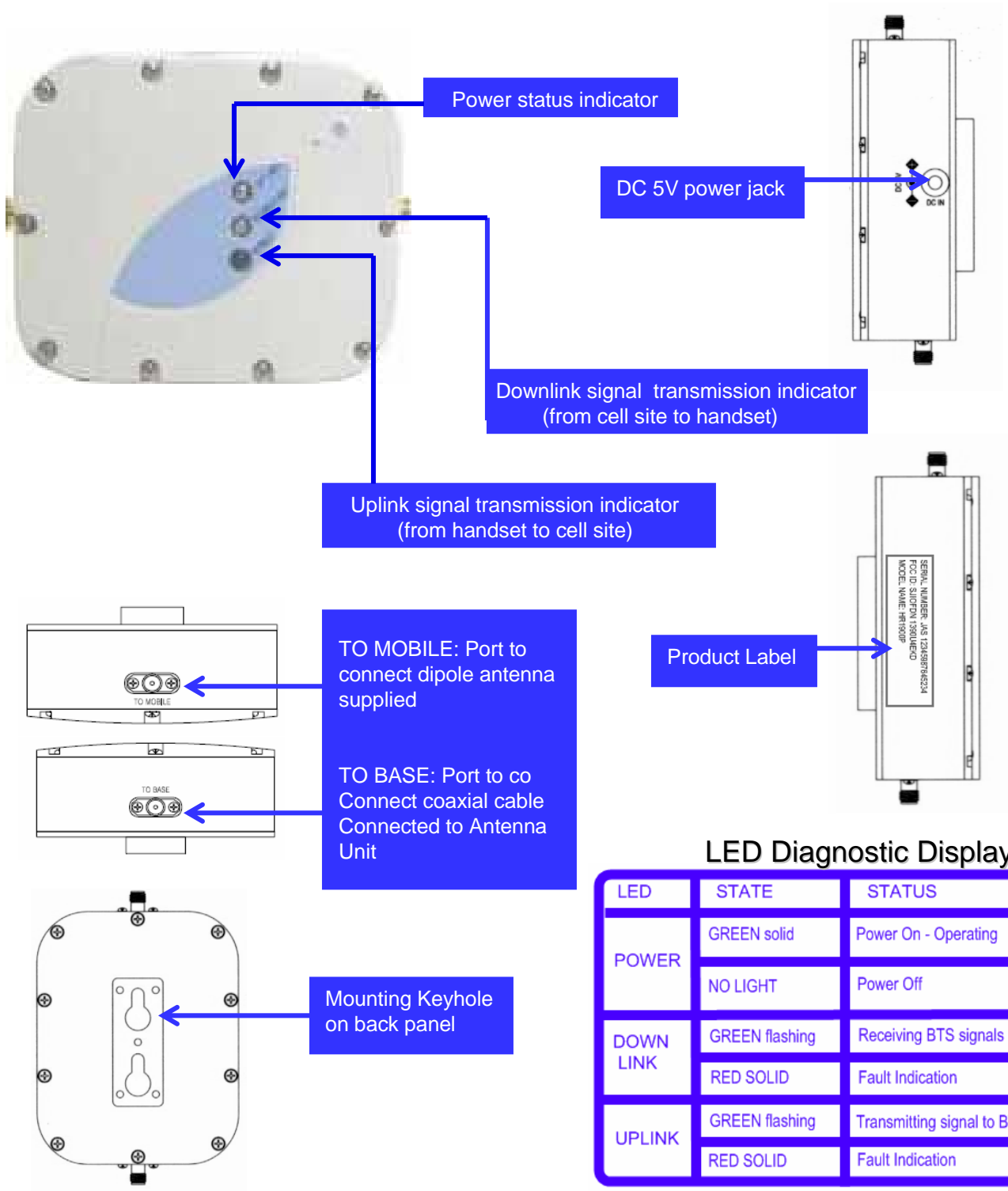
Mounting Hardware

Operational Manual

Quick Installation Guide



Understanding the Repeater Unit



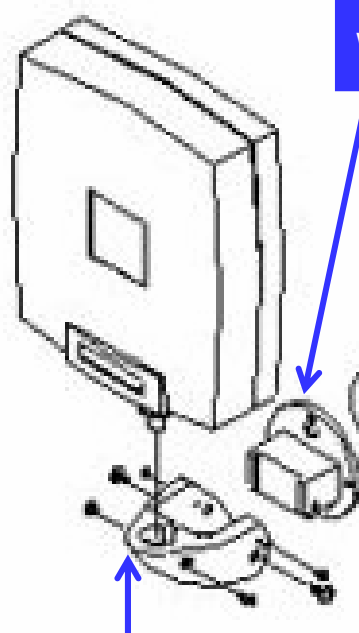
Understanding the Antenna Unit



33 feet RG58 Low Loss Coaxial cable attached to Antenna Unit



SMA male connector to be connected where indicated TO BASE on side panel of Repeater Unit.



Wall Panel disk

Tightening pole ring

Antenna Unit Mount for tightening attachment.

System Configuration

The basic HR900G Standard Repeater Kit configuration consist *Repeater Unit connected with coaxial cable to the *Antenna Unit. The HR900G Repeater's power is supplied by the power adapter connected to power outlet.



Pre-Installation Guidelines

OUTDOOR SIGNAL STRENGTH

The Antenna unit receives/transmits cellular signals from/to the nearest cell site. Locate and identify an area for mounting of the Antenna unit as high as possible . The use of a cellular phone's signal level indicator helps locate the strongest signal location for mounting the antenna unit.

ISOLATION

The dipole antenna connected to repeater unit and antenna unit requires a minimum separation distance of 15 feet and/or separation between an exterior wall. It is important to create isolation between the two antennas.

VOID INTERIOR OBSTRUCTION

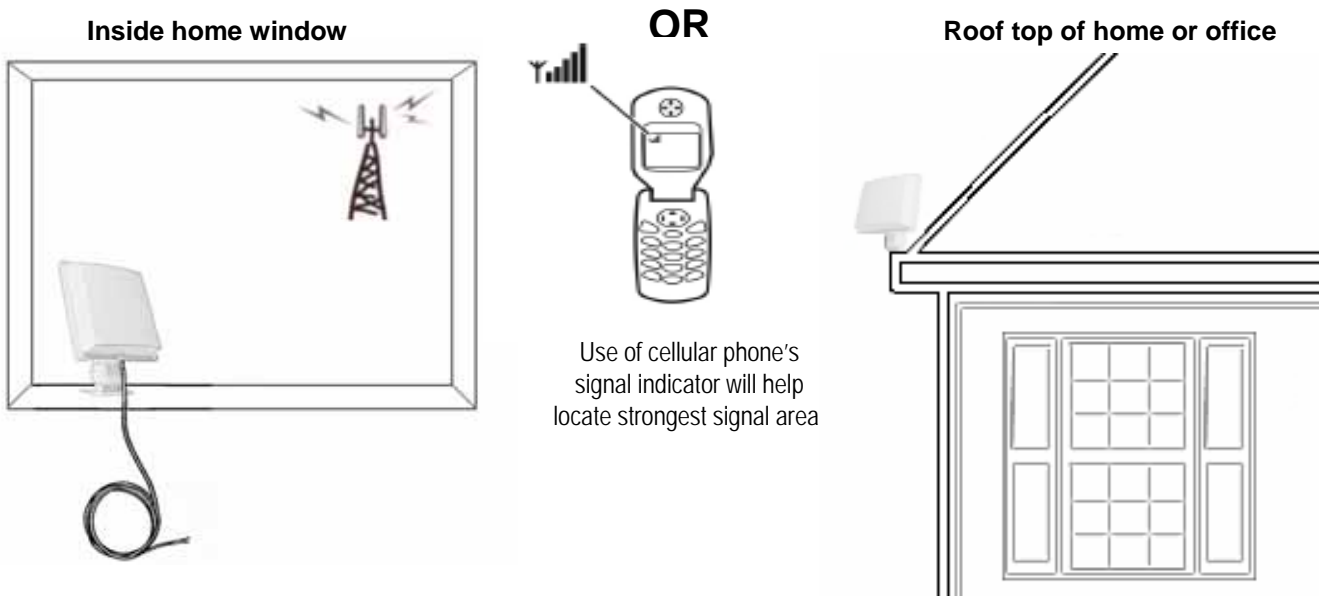
The repeater unit receives/transmits cellular signals from/to the handset. The location of the repeater unit should have a direct line-of-site to as much of the coverage area desired. The repeater unit should not be place behind heavy furniture or metal objects that may block, absorb, or reflect the signal.

CENTRAL LOCATION

Based upon the desired coverage area, find a location for the repeater unit for accessibility within reach and within 6 feet of nearest power outlet. The provided power supply is 6 feet in length.

Home/Office Installation Procedure

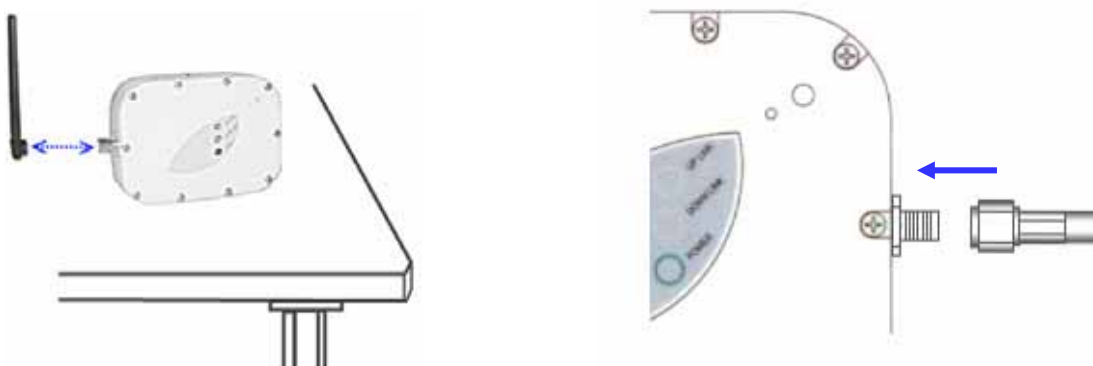
- 1 Locate an area with strong cellular signal to place the antenna unit. Typically 1 to 2 bars or $-90\text{dBm} \sim 95\text{dBm}$ will be sufficient for the HR900G Repeater to relay cellular reception to desired area.



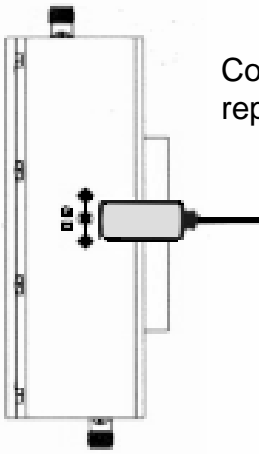
Temporarily set and position the antenna unit where cellular signal is strongest.

- 2 Tightly connect the supplied dipole antenna on repeater unit where indicated **TO MOBILE** on side panel of repeater unit.

Place the repeater unit where coverage is required. Connect the repeater unit and antenna unit via coaxial cable where indicated **TO BASE** on side panel of repeater unit. Note the signal level your mobile phone shows at the area where coverage is needed.

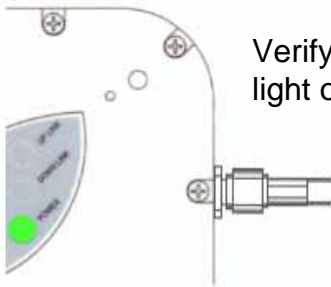
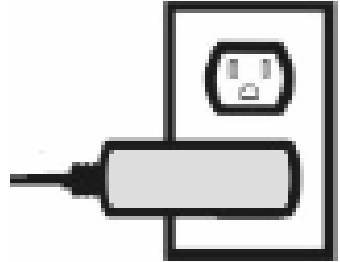


3



Connect power plug to repeater unit jack first.

Then connect the power adapter to the power outlet.



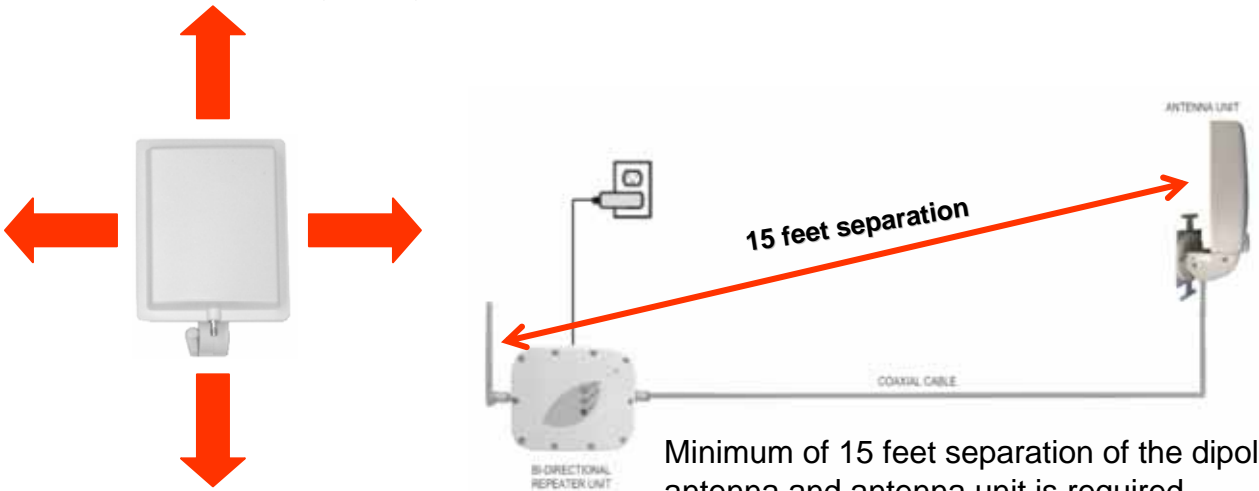
Verify the system is working by checking for the GREEN light on the repeater unit's LED display.

Compare signal level from step 2. If there is improvement, skip to STEP 5. If there is no improvement, go to STEP 4.

4

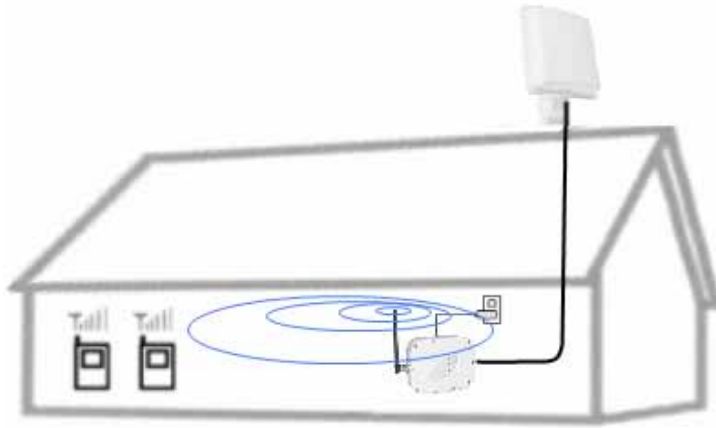
Re-positioning of the antenna unit is required. Simply adjust the panel until locating the line of sight to the nearest cell site/ base transreceiver station.

*Rotate panel in one inch increments and wait 20 seconds for results. Continue process until strongest signal position is determined.



Minimum of 15 feet separation of the dipole antenna and antenna unit is required.

- 5 Permanently mount antenna unit and repeater unit that resulted in the strongest signal level in the coverage area. Installation is now complete. For additional information refer to page 12 or visit www.hyoninc.com.



Repeater Unit Specification

No	Parameters		Specifications	Remarks
1	Frequency Range		800 ~ 960MHz	25MHz B.W
2	Output Power		+7dBm [Max.]	
3	Gain		50dB ±2dB/Fc	
4	Gain Flatness		± 7dB	
5	Spurious Emission	Fc +750KHz	≥45dBc/30KHz	
		Fc -750KHz	≥45dBc/30KHz	
		Fc +1.96MHz	≥60dBc/30KHz	
		Fc -1.96MHz	≥60dBc/30KHz	
6	Out of Band Spurious	Less than -13dBm/1MHz	-13dBm	
7	P1dB		≥ +14dBm	
8	Output IP3		≥ +24dBm	
9	Down/Up Link shutdown Function		≥ +9dBm	
10	Noise Figure		± 7dB	@ Full Band
11	V.S.W.R.		± 1 : 2.0	Up/Down Link Port
12	Impedance		50Ω	
13	Operating Temperature		0°C ~ +50°C	
14	Dimension (W x H x D)		120mm x 97mm x 43mm [Max.]	Without Connector
15	Weight		± 600 g	
16	RF Connector		SMA-Type (Female)	Up/Down Link Port

Trouble Shooting

If the HR900G does not operate properly after installation and the signal level is same as before, refer to the following steps below:

Most Common FAULTS

NO LIGHT – Indicates HR900G is missing power source.

- Ensure proper connection between repeater unit and power adapter.
- Ensure proper connection between power adapter and electrical outlet.
- Test for line voltage availability on electrical outlet. If electrical outlet is verified in working condition, repeater unit and/or power adapter may be defective. Contact dealer with available serial number located on side of repeater unit.

RED solid – Indicates a fault. Disconnect the power adapter from repeater unit and continue with necessary verifications below:

- The indoor antenna and outdoor antenna are placed too closed to each other indicating poor isolation. Relocation of minimum separation distance of 15 feet or more is required. A isolation of repeater unit and antenna unit between a exterior wall is also recommended for better operation. The Antenna unit should face away from the Repeater Unit towards the closest cell tower.

If red light remains on, this indicated overload of input signal. Unplug the power source from the Repeater unit. Rotate the direction of the Antenna unit or relocation to a position where signal is weaker.

- If red light remains on, Repeater unit may be defective. Contact dealer with available serial number located on side of repeater unit.

Technical Support

HR900G Repeater's serial number must be available to authorize technical support and/or to establish a return authorization for defective units. The serial numbers are located on the side panel of repeater unit, as well as on the box in which they were delivered.

Additional support information may be obtained by accessing the HYON, INC. website at www.hyoninc.com.