HiBOOST Boost Your Bars

User Manual

Hiboost SLD+

Mobile Signal Booster

CONTENT

HOW IT WORKS

Huaptec digital repeater is actually a mobile communication signal relay amplification device with the same frequency. It has two separate internal amplification links, uplink (or forward link) and down link (or reverse link). Downlink receives signals from BTS (Adopt donor antenna and BTS by air coupling), send the signals to coverage area after amplification. At the same time, the uplink receives the signals from MS through server antenna. After amplification, the signals are sent back to BTS through donor antenna. Thereby smooth and clear communication is achieved.
Wireless repeater is a common method for mobile network optimization, mainly used for extending the coverage for BTS and eliminating the blind areas. Comparing to BTS, the features are: low engineering cost, short construction period, simple installation and maintenance.

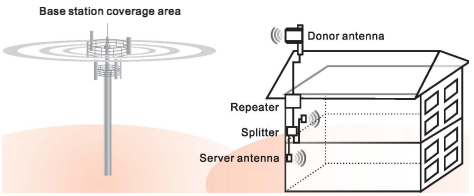


Figure 1: Application diagram

Digital repeater is also equipped with optional industry level remote control and monitoring function, to realize the functions such as setting the repeater, power switch, store all the logs for alarms and operations, repair handing, to get the operating status for all the repeaters on time, it can greatly save times for operator to maintain, and timely to maintain the stable operation of equipment. So when many Huaptec devices are being used in one big area, they can be controlled and monitored by one universal console.

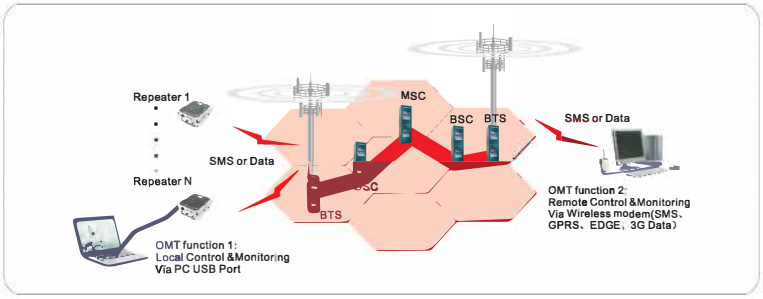
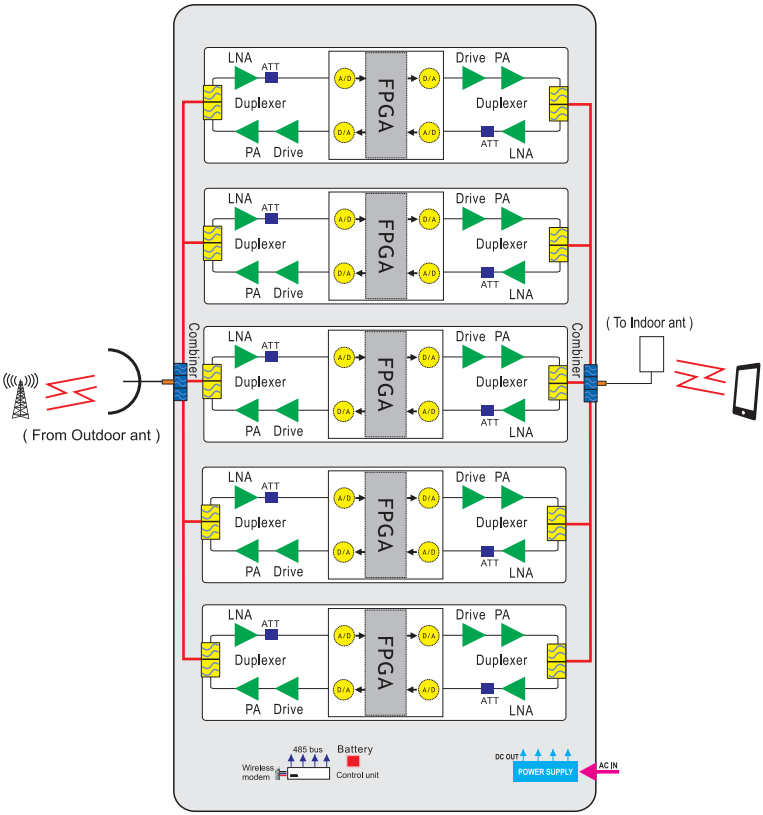


Figure 2: Monitoring function diagram

Repeater Introduction

Hiboost SLD+ is a full duplex mobile communications repeater that is designed for indoor operations and used to enhance signal strength in small-and-medium-sized areas in a 700MHZ,800MHz, 1900MHz and 2100MHz network. It is the perfect solution for providing a wireless improvement in the cellular reception of hospitals, hotels, supermarkets, or other commercial and industrial sites in the quickest time possible. One repeater can cover up to 2,000 square meters if there are enough good outdoor reception.

Block diagram and Work principle



Quint Band block diagram (with remote monitoring)

Figure 3: Block diagram

Digital repeater is basically a bi-directional amplifier, the downlink signals are received by the repeater from BTS by the donor antenna, filtered by its internal duplexers and FPGA module, amplified by low noise amplifier (LNA) and downlink PA unit, and then sent via the server antenna to the coverage area. The bandwidth is operators' working frequency only. The uplink signal of mobile terminal from the coverage area is input via the server antenna, then filtered by duplexers and FPGA module, amplified by the uplink low noise amplifier (LNA)

and the uplink PA unit and finally sent via the donor antenna to the BTS.
Local and remote monitoring and control is possible through repeater's control and monitoring module, via PC or wireless modem to OMT/OMC Software, internal backup battery can keep the control and monitoring unit running for up to 2~10 hours after power failure.

Key features

- All 2G,3G and 4G standards are supported
- Digital platform , Band & Chanel movable and tunable
- Carrier selective , Balance strong and weak signals among different operators
- Independent uplink and downlink gain control and on/off for each sub-band
- Excellent out-of-band rejections
- Local/Remote monitoring and control via integrated module (Bluetooth/Wi-Fi/Cat5/SIMCard)
- Smart functions(ALC,ISO,spectrum signal readings)to enable easy design & installation
- MGC+ Smart AGC to optimize output power level and ensure seamless coverage effect
- Quality metal construction-durable and water resilient:

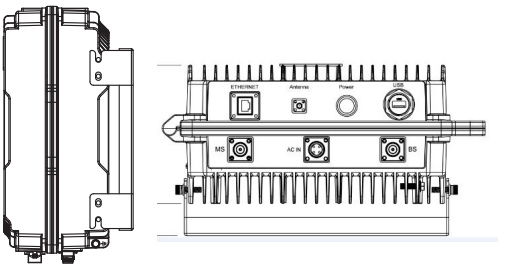
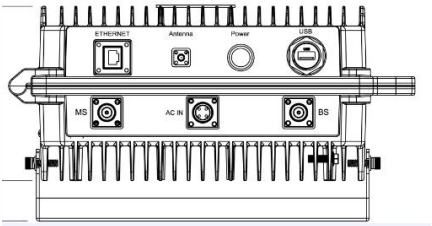


Figure 4: Exterior layout view

Table 1: Packing list

Items	Description	Quantity	Remark
Digital Repeater		1	Standard configuration
Expansion bolt	Φ 8	5	Standard configuration
Tapping Screw	M6*50	4	Standard configuration
Expansion screw	M16*120	4	Standard configuration
Hexagon Wrench		1	Standard configuration
CD (user manual, OMT)	N/A	1	Optional configuration
USB Cable	1.5m	1	Optional configuration
Wireless Modem	3G/4G modem	1	Optional configuration

Equipment Ports description



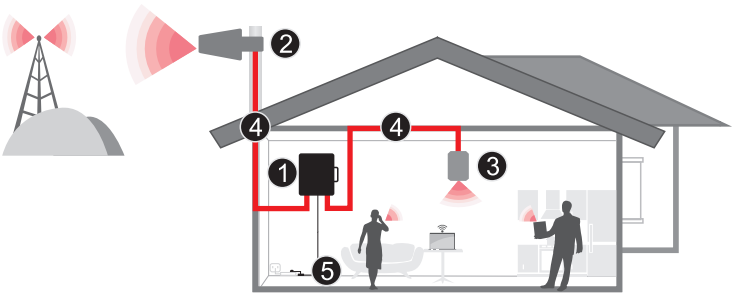
Connector	Description
BS/BTS	N-female connector, for connection to donor antenna
MS	N-female connector, for connection to service antenna
Antenna	For connection to modem antenna.
Debug	Local debug by MDS Software, for connection to USB cable.
Local	Local control andmonitoring by OMT Software,for connection to USB cable.
SIM Card	SIM Card slot.
AC IN	Power wire port
BAT ON/OFF	Control &monitoring module's battery switch
Ethernet	For connection to router

Service voltage connection
The single band equipment accepts mains voltage via the AC power adapter.
Control and monitoring
Local Port→ Connected to PC by USB cable

HOW TO INSTALL YOUR SIGNAL BOOSTER

1.1 Overview

This manual will help you properly install your signal booster. It is important to read through all of the installation steps before installing your equipment. Thoroughly read through the instructions, visualize where all the equipment will need to be installed and do a soft installation by placing the devices where they need to be before mounting any equipment.



❶ HiBoost SLD+
❷ Outdoor Antenna
❸ Indoor Antenna
❹ Cable
❺ AC Power Supply

1.2 Installation Preparation

Before you install

• Make sure you have sufficient cable length between the proposed outdoor/indoor antenna location and booster connector.
• Make sure the position you install the booster is near to an existing electrical outlet, well ventilated, and away from excessive heat, moisture, and direct sunlight.

Tools Required

Phillips Screwdriver

Drill

Mobile Phone

Before you get started, you will need to plan the layout of your system. This involves finding the location with the strongest received signal from the cellular tower, as well as antenna, booster, and cable placement.
General installation steps:
1. Find the strongest received signal for the location of the outdoor antenna.
2. Install the outdoor antenna on the roof to obtain the strongest downlink signal from the local cellular towers. It should also be as far away as possible from where you plan to place the indoor antenna (vertical separation is more important than horizontal separation).

3. Install the indoor antennas where you want to improve the signal level.
4. Mount the booster, connect the cables from the outdoor antenna and indoor antenna at the designated ports, and connect the booster to the AC supply (make sure all the cables are connected before applying power).

1.3 How to find the location with the strongest received signal

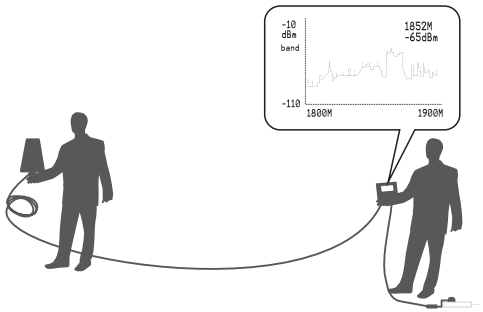
The outdoor signal strength the booster receives directly affects the efficiency of the indoor coverage. That is why it is crucially important to install the antenna at a good location and point it properly towards a tower where signal reception is the strongest.

There are many methods that can be used to find the strongest signal from the cellular towers. One is to use the LCD display on the booster that shows the testing signal strength of the booster in each band, the other is to use a mobile phone or mobile phone app to test signal strength, and the third is to use a commercially available signal strength meter.

We highly recommend that you use the LCD display on the booster as this method is generally more convenient. However, in situations where the desired carrier's signal is much weaker than the other local signals, using a mobile phone, app or signal level meter can be a more accurate method of homing in on the best signal for installation.

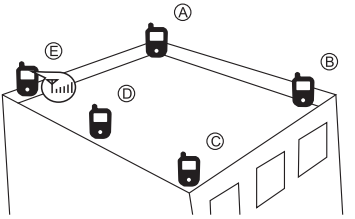
• LCD Display Method

Connect the outdoor antenna to the booster's outdoor port. Fix the outdoor antenna on the roof of the building and point it to the nearest cell tower. Then adjust the band and mark value displayed on the booster's LCD, adjust the direction of the antenna to find a best signal strength.



The outdoor antenna receives the strongest signal when the signal power reaches relatively highest level. If the LCD shows a maximum power at present, it means the present location is the best for ensuring that the booster has maximized performance.

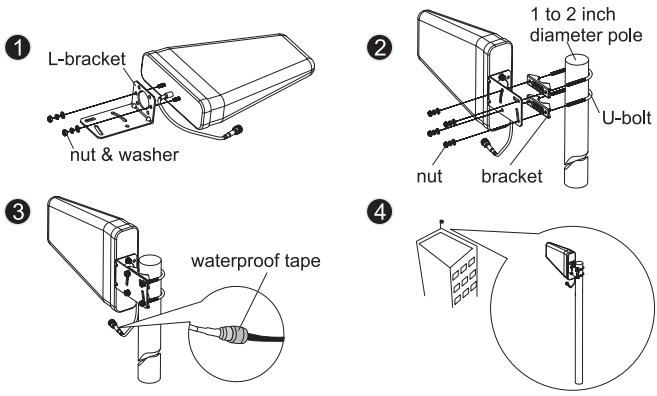
• **Mobile Phone Method**
You can use a telephone to test signal strength on the top of the building. The number of bars on the network indicator will define approximate strength of the received signal. Normally the roof of the building is the best place to receive the strongest signal. As shown on the drawing below, you need to test the signal in the points from A to E, and select the location with the best signal strength for outdoor installation. It is recommended to use a mobile app that can display in a test mode the signal level in dBm units. It is more accurate than checking the signal bars. For more details refer to http://blog.hiboostusa.com/signal-strength-measure-instructions/.



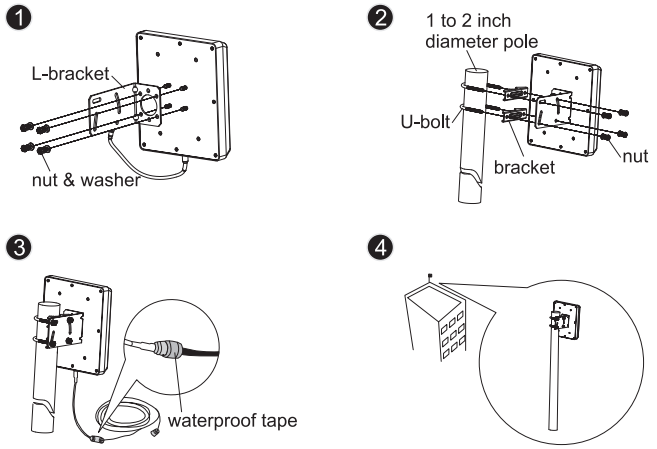
Note: Please try to receive a signal from cell towers that are not overloaded with multiple users. This can be estimated by the population density in the area served by the tower. For example, it is recommended to avoid cell towers near supermarkets, shopping malls, stadiums or any other public places visited by many people regularly. This will help maintain reliable phone call connections and higher speed data services.
Mark the strongest received signal as the installation location and direction for the outdoor antenna.

1.4 Install Outdoor Antenna

Install the outdoor antenna at the location with the strongest received signal.
IMPORTANT: Testing the signal 3 times in the desired location before installing the outdoor antenna will help ensure the most smooth and stable phone calls and data transmission.



Outdoor wide band directional antenna installation for reference

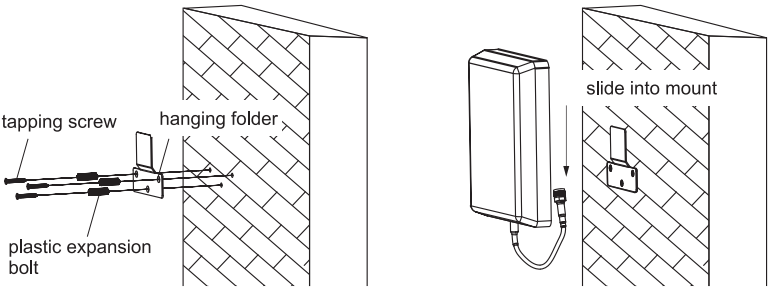


Outdoor wide band panel antenna installation for reference

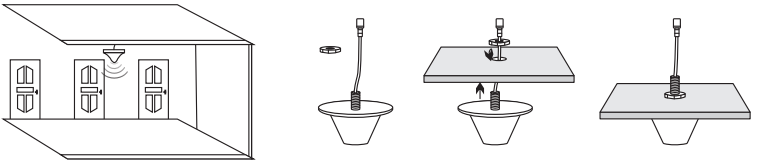
Note: Be sure the cradle is at the desired height and rotated toward the strongest cellular signal before tightening the nuts. Do not over tighten.

1.5 Install Indoor Antenna

Select a place on a wall in the area where you need better reception. Mount the indoor antenna with the included screws as shown in the figure below.



Indoor wide band panel antenna installation for reference

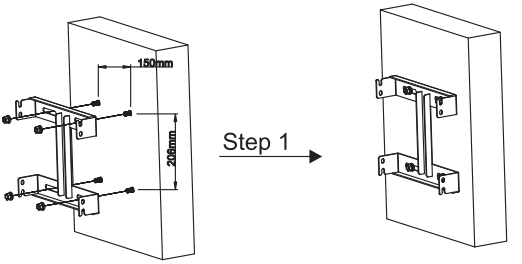


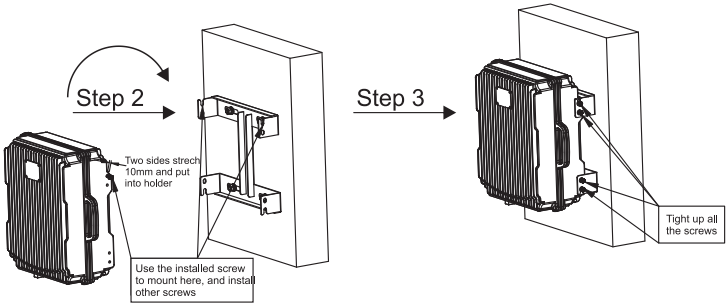
Indoor wide band dome antenna installation for reference

1.6 Install your signal booster

The signal booster should be mounted in an easily accessible area so it's easy to perform general maintenance. The area is properly ventilated and not exposed to excessive heat, moisture and/or direct sunlight. The optimal area would be on a wall located near a power outlet. Please use a surge protector rated at a minimum of 1000 Joules between the booster's power adaptor and the AC power outlet on the wall.

Mount the booster with the included screws as shown in the figure below





• According to dimension of bracket, drill 4 *M16 holes on the wall, assembly 4 pieces expansion screws.
• Put the rack onto the 4 expansion screws, to fix it on the wall with nuts.
• The repeater hang along the hole on mounting racket, then install four hex screws through the holes from mounting bracket and fixing nut rod of host, tightening screws and fix the host onto the mounting bracket.
• Ensure the firm and correct installation.
• Connect cables and power cables to the repeater respectively.

1.7 Run coaxial cable

Loosely run the supplied coaxial cable from your outdoor antenna to your booster connector marked “Outdoor”. We recommend applying waterproof tape to fully waterproof the connection.
Connect the indoor antenna cables from your indoor antenna to the booster connector marked “Indoor”. Tighten the connection by hand.
(After you have tested the system you can permanently secure the coaxial cable).
As you route and pull cabling, follow these general guidelines:
• Bend cables and route them smoothly, and protect the outer skin against any damage.
• Keep horizontal cables straight and fasten them with a tie every three to five feet.
• Bind and fasten vertical cables every six to eight feet.
• Waterproof all connectors between outdoor antenna and coaxial cables with waterproof tape to avoid water or other kinds of damage.
• Be careful when plugging the connector in so as not to damage the center pins on the connectors.

1.8 Power up your signal booster

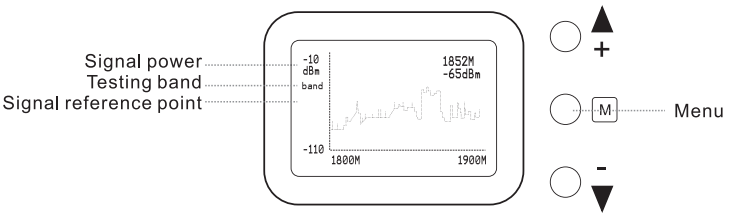
Once all the following precautions have been taken, power on the signal

booster.
1. Verify that you have left at least 20 feet of vertical separation space between the indoor and outdoor antennas.
2. Never point the front of outdoor antenna towards the inside of the indoor antenna.
3. Verify that the supplied coaxial cables from both the outdoor antenna and the indoor antenna are properly connected to the signal booster before powering it up.
4. Carefully plug in the supplied power adaptor into the signal booster where it is marked 'AC IN' and connect the other end to a power outlet.The LED indicator marked power should light up green.

SIGNAL BOOSTER STATUS

Overview: The booster has a smart startup system. When you have finished the booster system installation and power on the booster, it will start its initialization process to check the received downlink signal from the cell site and the isolation status. This an automatic process designed to ensure its best performance. This will take approximately 3-5 seconds.
After the booster starts up, please check if the coverage is good. If it is good, the booster system installation is complete. If the coverage is not adequate, please fully reread and understand the LED indications on your booster, as they will help you identify and solve any potential issues.

- **LCD Features**



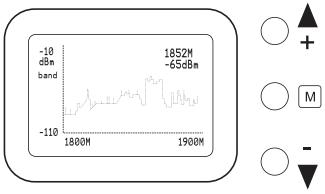
Band: Displays the testing frequency bands where the amplifier is operating (adjustment accuracy:100MHz/1step).

Power: Shows the testing signal power (dBm) range(maximum:-110dBm).You can adjust the maximum of the testing signal power range.

Mark: shows the signal power of the reference frequency point in the testing frequency band (adjustment accuracy:1MHz/1step).Define a reference frequency point by yourself, observe the power of the point in different directions and find a best direction of outdoor antenna that the

Menu: selects selective option about signal power or testing frequency or signal reference point.

+: increases the value of selected option.
-: decreases the value of selected option.

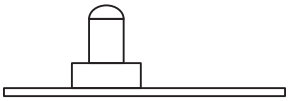


As shown in the figure above, the testing frequency band range is 1800~1900MHz, and testing signal power range is -10dBm~-110dBm, the signal reference point is 1852M, the power of the reference point is -65dBm.

- **LED Status**

LED	Status	Definition
Power LED	Green	Normal
	Off	DC power problem
Alarm	Green	It is working properly;
	Red	Alarm
	Off	No power input
Net	Flashing red	GPRS default
	red	SIM card without signal
	Flashing green	SMS communication
	Double flashing green	GPRS communication
	Off	No SIM card
Run	Flashing Green	It is working properly;
	Off	Stop working

- **Access control device**



Access control alarm device: There is an access control device at the place where the amplifier opens.When the product is opened by others, the access control device starts up and gives an alarm to inform the user.

TROUBLESHOOTING

Eliminate ISO warning problems:

1. Adjust the outdoor antenna direction, keeping it away from indoor antenna. Restart booster.
2. Increase the vertical or horizontal distance between the outdoor antenna and indoor antenna. Restart booster.
3. Use barriers such as walls to increase the isolation.
4. Change the indoor antenna type to an antenna with a more directional antenna pattern. Orient the indoor antenna and outdoor antenna so they point in opposite directions.
5. Reduce the booster's downlink gain via setting the gain parameter in app. Keep the uplink gain value and downlink gain value the same then restart the booster.

Note: Uplink gain must be equal to or not less than 5dB below the downlink gain, to avoid interference with the local carrier's cell site network.

Target: The ISO issues are solved when there is no ISO warning from the app.

Eliminate ALC warning problems:

1. Adjust the antennas' directions or locations to lower downlink received signal level.
2. Slowly reduce the downlink gain via setting the gain parameter in app.
3. If the above methods don't work, reduce the booster's gain with an external attenuator in line with the outdoor antenna or replace with lower gain antenna.

Target: The overload issues are fixed when there is no ALC warning from the app. Please note that a low gain may result in smaller coverage area. This can be improved by adjusting the outdoor antenna to receive a stronger signal.

Eliminate poor coverage problems when Power or ALC is warning:

1. If the signal has not been improved, please check below:

•The weak downlink signal leads to the low output signal level. Change the direction or position of the outdoor antenna. You may also try replacing the outdoor antenna with a higher gain antenna to increase the incoming signal.

•Check to see if it is necessary to add more indoor antennas. Barriers such as walls can block the signal indoors. You should also check the booster to make sure the power is maximized. Try installing more indoor antennas or replace the booster with a higher powered one.

2. If the signal in a small section of the building hasn't been improved, try the following:

•Check to see if the indoor antenna is installed correctly. Try moving the antenna to improve coverage.

•Try adjusting the direction the indoor antenna is pointing.

•Check whether it is necessary to add one or more antennas to enhance the coverage of special areas.

FCC RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled enviroment. This equipment should be installed and operated with minimum distance 40cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IC RF Exposure Statement

The device is compliance with RF exposure limits. The minimum distance from body to use the device is 50 CM.
Le présent appareil est conforme aux conformité ou aux limites d'intensité de champ RF. La distance minimale du corps à utiliser le dispositif est de 50 CM.

Notice: The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device.

La puissance de sortie nominale indiquée par le fabricant pour cet appareil concerne son fonctionnement avec porteuse unique. Pour des appareils avec porteuses multiples, on doit réduire la valeur nominale de 3,5 dB, surtout si le signal de sortie est retransmis et qu'il peut causer du brouillage aux utilisateurs de bandes adjacentes. Une telle réduction doit porter sur la puissance d'entrée ou sur le gain, et ne doit pas se faire au moyen d'un atténuateur raccordé à la sortie du dispositif.

Warnings

Users must follow the below principles:

Booster should follow system requirement of communication equipment, assure good grounding and lightning protection.

The power supply voltage of booster should meet the standards of security requirement; any operation shall be carried out only after cutting off power in advance. Only the professional is authorized for the operation.

Do not dismantle machine, maintain or displace accessories by yourself, because in this way, the equipment may be damaged and you may even get an

electric shock.

Do not open the booster, touch the module of booster, or open the cover of module to touch the electronic component. The components will be damaged due to electrostatic.

Please keep away from heating-equipment, because the booster will dissipate heat during working. And do not cover booster with anything that influences heat-dissipation.

WARNING.This is **NOT** a **CONSUMER** device.It is designed for installation by **FCC LICENSEES** and **QUALIFIED INSTALLERS**. You **MUST** have an **FCC LICENSE** or express consent of an FCC Licensee to operate this device.Unauthorized use may result in significant forfeiture penalties,including penalties in excess of $100,000 for each continuing violation.

Special Warnings

1. Don't use the unauthorized antennas ,cables .
2. Device cannot support home/personal use .

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with part 15 of the FCC Rules.Operation is subject to the following two conditions:(1)This device may not cause harmful interference, and (2) this device must accept any interference received,including interference that may cause undesired operation.
WARNING: E911 location information may not be provided or may be inaccurate for calls served BY USING THIS DEVICE.
Notice: When this device operating in the 1710~1755MHz band, the maximum antenna should be fixed height of 10 meters above ground. To meet FCC EIRP limit, the antenna used with this amplifier must be connected by a cable with a minimum signal loss such that the combination of the antenna gain and cable loss shall not exceed 3 dB.
the maximum antenna gain should less than 10 dBi

WARNING: This is NOT a CONSUMER device. It is designed for installation by an installer approved by an ISED licensee. You MUST have an ISED LICENCE or the express consent of an ISED licensee to operate this device.

Link to CPC-2-1-05
http://www.ic.gc.ca/eic/site/smt-gst.nsf/e ng/sf08942.html

PRODUCT WARRANTY

30-Day Money-Back: All HiBoost products are protected by a 30-day money-back guarantee. If for any reason the performance of any product is not acceptable, the product may be returned to the reseller with a dated proof of purchase.

3-Year Warranty HiBoost Signal Boosters and kits are warranted for 3 years. Customers can choose to return the Signal Boosters and kits directly to the manufacturer at the purchaser's expense with a dated proof of purchase and a Returned Material Authorization (RMA) number supplied by HiBoost.

HiBoost will supply two options: repair or replace. HiBoost will cover the cost of delivery for the consumers located within the continental U.S.

This warranty does not apply to any Signal Boosters or kits determined by HiBoost to have been subjected to misuse, abuse, neglect, or mishandling that alters or damages physical or electronic properties. Failure to use a surge protected AC Power Strip with at least a 1000 Joule rating will void your warranty. Damage caused by lightning is not covered by this warranty.

All HiBoost products that are packaged with other HiBoost accessory products are intended for resale and used as a single integrated system. Such product kits are required to be sold to the end users or subsequent reseller as packaged RMA numbers may be obtained by contacting Technical Support at 972-870-5666.


HiBOOST

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