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Introduction

Thank you for purchasing HEENNGEEI HG5B-US20I cellular signal booster kit. HG5B-US20I was specifically designed to eliminate frustrations over dropped calls, limited range and slow data rates by amplifying incoming and outgoing cellular signals in homes up to 10,000 square feet. The HG5B-US20I provides enhanced cellular signals for multi-carrier voice and data reception.

If you have any questions while assembling this kit please contact tech support at:

Call: +86-176-2828-2827 / +86-28-61485995

Email: support@1booster.com

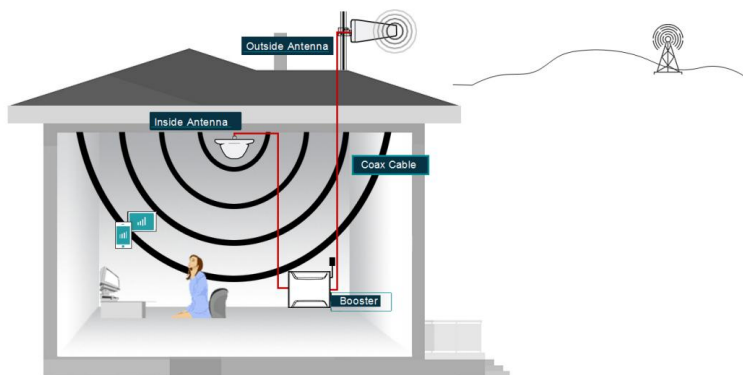
Website: www.1booster.com

How it works

HEENNGEEI HG5B-US20I is a high-quality bidirectional signal booster that enhances cellular signals to areas that are prone to weak cellular coverage.

HG5B-US20I works with two types of antennas: A Service antenna (Built in antenna) that communicates with your cell phone and a Donor antenna that communicates with the cell tower.

1. One Donor antenna is used to collect signal from the cell tower.
2. The antenna then sends the signal to the booster through coax cable.
3. The booster amplifies the cell signal and rebroadcasts the signal indoors via the Service antenna to all mobile devices within range.
4. The system also works in reverse amplifying outgoing signal back to the tower.



Package Content

1. Unpack all package contents. For missing or damaged items, contact your reseller.
 2. Turn over the signal booster and record the model and serial number for reference:
Serial #: _____
 3. Keep the carton and packing material to store the product in case you need to return it.
- For example: Standard HG5B-US20I signal booster packages include the following items:
- ♦ One booster (Built in Service antenna) and One Power adapter.

- ◆ One Donor antenna (Omni or Yagi)
- ◆ One outdoor cable (50 ft)



Booster



Donor Antenna(Yagi)



Outdoor Cable

kits use the following antenna options based on environmental and coverage requirements



Service Antennas (Opt.)



Donor Antenna
(Omin)



Indoor Cable (Opt.)



Splitter
(for Multi-antenna Kits)

NOTE: Available accessories can be purchased through: www.amazon.com/shops/onebooster

Model Name		HG5B-US20I Standard	HG5B-US20 Extended	HG5B-US20 Enhancement	HG5B-US15I Standard	HG5B-US15 Extended
Model Booster		HG5B-US20I	HG5B-US20	HG5B-US20	HG5B-US15I	HG5B-US15
Coverage Size		4K-6K Sq. FT	6K-8K Sq. FT	8K-10K Sq. FT	1K-4K Sq. FT	4K-5K Sq. FT
Outdoor Antenna		Outdoor Wide-Band Directional Antenna (Yagi)			Omni Antenna	
Outdoor Cable		Low-loss Cable 50ft (Qty:1)				
Service antenna	Built-in Antenna	✓				
	Indoor Antenna	✗	Wide-Band Directional Panel Antenna (Qty:1)	Wide-Band Directional Panel Antenna(Qty:1) Omni Dome(Qty:1)	✗	Wide-Band Directional Panel Antenna(Qty:1)
Indoor Cable		✗	Low-loss Cable 30ft (Qty:1)	Low-loss Cable 30ft (Qty:1); 50ft (Qty:1)	✗	Low-loss Cable 30ft (Qty:1)
Splitter		✗	Qty:1	Qty:2	✗	Qty:1
Warning: Un-authorized antennas, cables, and/or coupling devices are prohibited by new FCC rules. Please contact FCC for details: 1-888-CALL-FCC (1-888-225-5322)						

Before installation

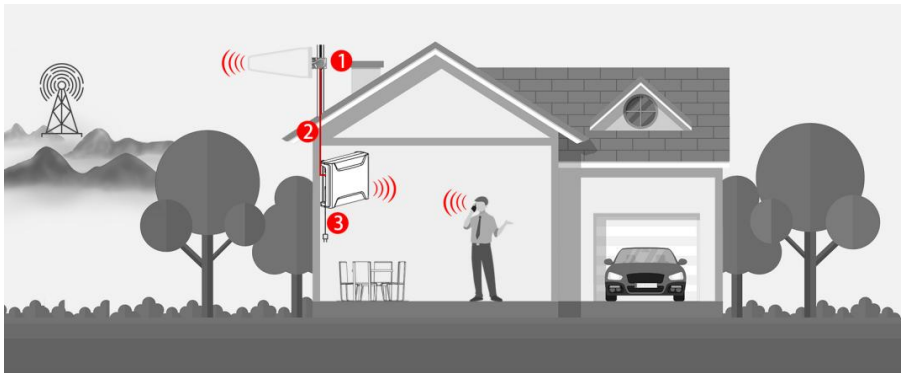
1. Completely read the user's manual and gather all necessary tools, material and accessories before installing the booster.
2. Different schemes and the number of expansion antennas are selected according to the size of the indoor area covered.
3. Make sure you have sufficient separation between outdoor antenna and indoor antennas. At least 50 ft. is recommended for best performance.
4. Ensure sufficient cable length between the outdoor antenna location and booster location the length of the provided cable is 50 ft.
5. Prior to securing the location of any booster parts, A "soft installation" is recommended before permanently mounting any equipment.

NOTE: *Soft installation refers to simply fixing the antenna and booster after the positions are preliminarily determined. At this time the height and angle of the antenna and the position of the amplifier can still be adjusted.*

6. The HEENNGEEI HG5B-US20I features a built-in indoor antenna and an expansion indoor antenna port, so users can customize their solution.

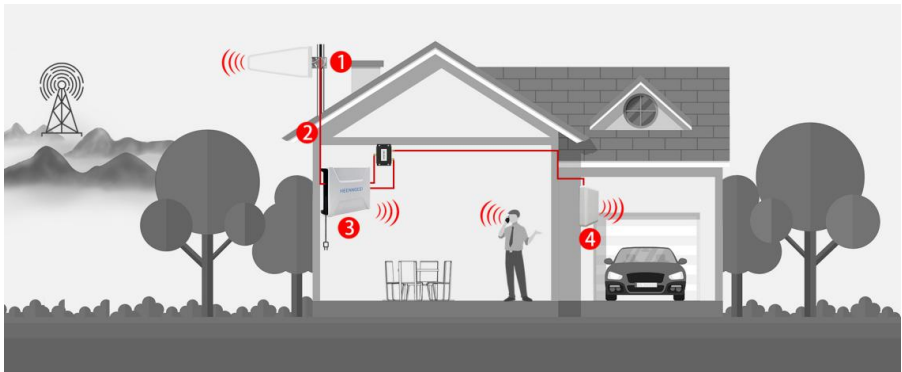
7. application diagram case:

CASE 1: Built-in Antenna Method(Standard Package)



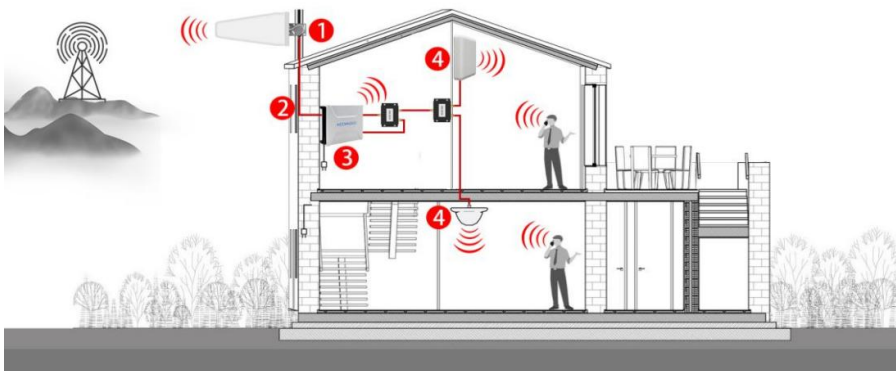
1. Outdoor wide band Directional antenna
 2. 50ft (15.2m) low-loss cable
 3. HG5B-US20I with built-in antenna Signal Booster
- Noted: Applicable to HG5B-US20I and HG5B-US15I

CASE 2: Built-in and indoor Antenna Method (Extended Package)



1. Outdoor wide band Directional antenna
2. 50ft (15.2m) low-loss cable
3. HG5B-US20 with built-in antenna Signal Booster
4. You can add an indoor panel antenna and 30ft (9.1m) cable and splitter to extend the coverage

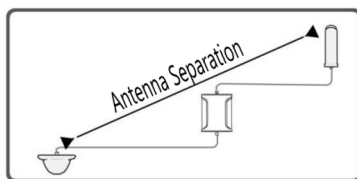
CASE 3: Built-in and two indoor Antenna Method(Enhancement Package)



1. Outdoor Wide Band Directional Antenna
2. 50ft (15.2m) Low-loss Cable
3. HG5B-US20 Signal Booster with built-in antenna Signal Booster
4. You can add 2* indoor antenna kit with splitter to extend the coverage (Omni & Directional)

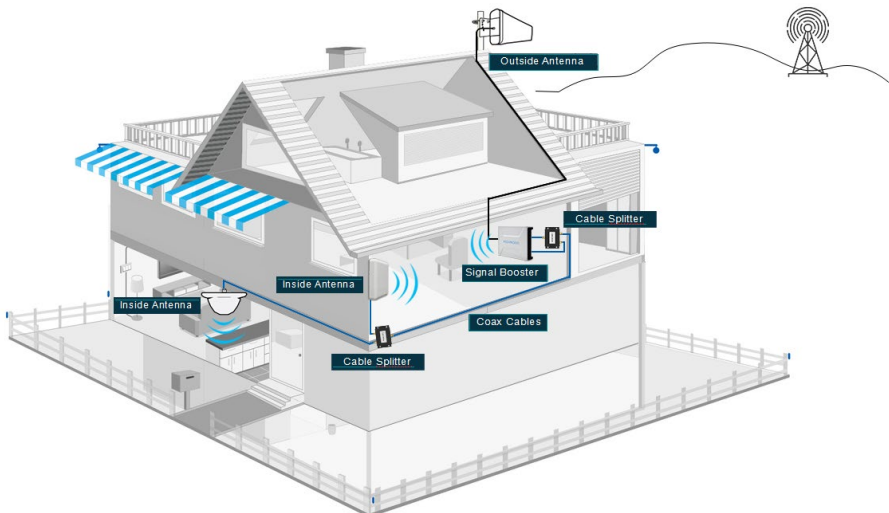
Installation Overview

- Step 1. Find the outdoor area that has the strongest signal. (You can use **CELLUAR-Z APP** to find position with the strongest signal)
- Step 2. Install the outdoor antenna in the area identified in step 1.
- Step 3. Install the indoor antenna(s) where signal is needed perhaps HG5B-US20I Signal Booster with built-in antenna Signal Booster.
- Step 4. Place the booster in appropriate location and route cables from outdoor and indoor antennas to the booster.
- Step 5. Connect cables to the booster and connect the adapter power supply to the booster.
- Step 6. Power on and Check System, optimize Installation, if needed.



Outdoor/ Indoor Antenna Separation

Attention: A minimum of 50 ft. of separation between the outdoor antenna and indoor antennas is recommended for best performance. It is recommended that at least one concrete wall be separated between donor antenna and service antenna.



If there are any issues while installing a HEENNGEEI booster, please contact the HEENNGEEI technical support team through the following:

Online Support: Create a ticket or chat via Signal Supervisor App

Phone: +86-176-2828-2827 / +86-28-61485995

Email: support@1booster.com

Website: www.1booster.com

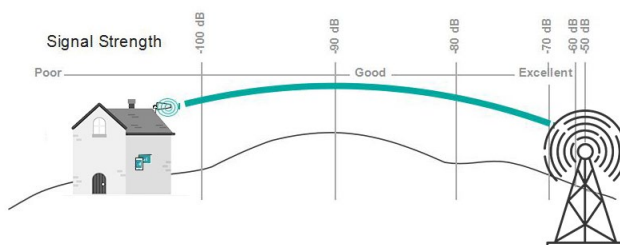
Installation Procedure

Step 1. Finding the Strongest Outdoor Signal

Using your phone, identify the outside location with the strongest signal for placement of your outdoor antenna. The outdoor signal strength will directly affect coverage performance. It is important that users install the outdoor antenna in the right position, pointing at cell tower from the roof. It may help to narrow down the location of the nearest cell tower by visiting www.cellreception.com or www.antennasearch.com.

Generally, gaining height of Donor antenna may also help if users are in rural areas where cellular signal is generally weaker.

Note: *The Bars of signal indication are not always a reliable measure of signal. The best way to confirm signal quality is the ability to hold high speed data rate or voice call.*



Connect the outdoor antenna to the booster (Donor port) using the outdoor coaxial cable included in

the kit, Place the booster in a location where it will be potentially installed, ensure that there is at least 30 ft of separation between the booster and outdoor antenna, Connect the adapter power supply to the booster and power on, Carry the outdoor antenna to the highest point on the roof to find the strongest signal direction.



While pointing the outdoor antenna towards the horizon, slowly rotate around in a 360-degree circle. When the LED signal indicator turns to stable blue, the direction and position of the donor antenna is the position we determined.



Professional Tips:

- ♦To optimize the signal for one carrier, point the Donor antenna towards the closest cell tower designated to that carrier
- ♦To optimize the signal for more than one carrier, point the Donor antenna between multiple towers
- ♦If the direction of cell tower appears in different directions, especially in the opposite direction, replacing the Donor antenna with an omni antenna(option)

Step 2. Install the Donor Antenna

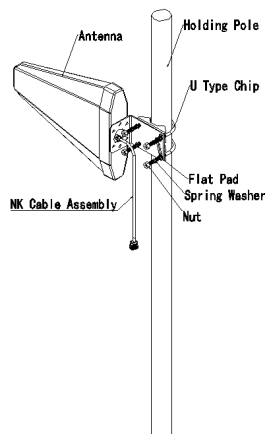
After identifying the position of strongest signal, choose the surface where you will mount your Donor antenna.

Option A: Outdoor Yagi Antenna

Before installing a Yagi directional antenna, note that the antenna should be mounted on a pole or pipe (not provided), at the highest possible location above the roof line where the antenna can “see” your cell tower.

The antenna is mounted horizontally and aimed in the direction of your determined. Once you have identified your install location, ensure that the mounting area has at least a 10-ft radius clear of obstructions.

As shown, assemble the U-bolt, bracket, Nuts and washers onto a pole or pipe as shown in the illustration. Keep the connections loose enough to allow the antenna to rotate until the optimum direction is found. Once the outside antenna is secured to a pipe or pole, connect antenna to cable connector for the outdoor cable provided with your kit and run along route to planned location of your booster.



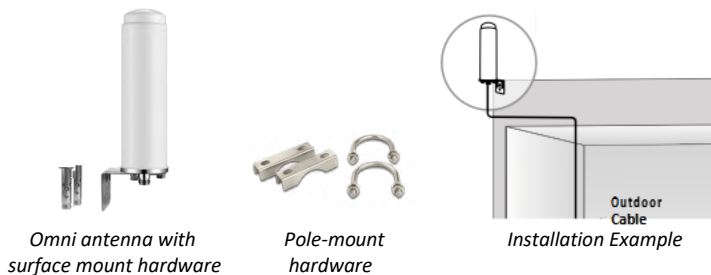
Option B: Outdoor Omni Antenna

The omni antenna is omni directional, which receives and sends signals in a 360° radius. The provided hardware allows for either a surface mount or pole-mount.

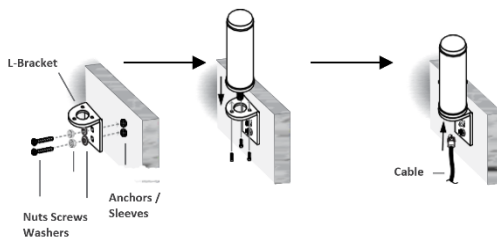
For best performance, be sure to place the outdoor antenna at least 50 feet from the indoor antennas. Place the antenna as high as possible. Make sure that the mounting area has at least a 36-inch radius clear of obstructions and other radiating elements. The antenna should be mounted in upright position. See illustration.

To mount antenna to a vertical surface:

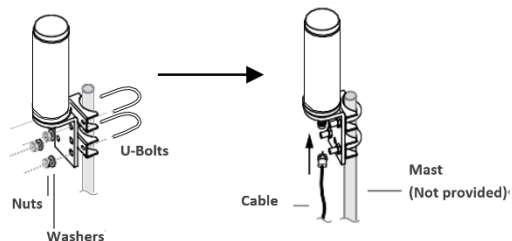
1. Using vertical plate of L-bracket, mark position of desired placement.
2. Place vertical L-bracket into desired location and tap the screws, headfirst, along with sleeve, into stucco 1/2 to 5/8 inches deep into place. (Note: Alternate screws may be required for different surfaces such as wood or concrete.)
3. In this order, place washer, lock washer and nut on each screw and tighten until secure. When tightening screw, sleeve will expand to secure plate.
4. Use provided screws to secure antenna base onto horizontal plate.
5. Connect antenna to cable connector for the outdoor cable provided with your kit and run along route to planned location of your booster.



Surface Mount



Pole Mount



Step 3. Install Indoor Antenna(s)

Indoor antennas may be either omni antenna or directional panel antennas. One indoor cable is provided per antenna. For kits with multiple antennas, a cable splitter and joining cable is also supplied.

♦For indoor dome antennas, mount on a ceiling in a central location where signal is needed.

♦For indoor panel antennas, mount on a wall that faces in the direction signal is needed.



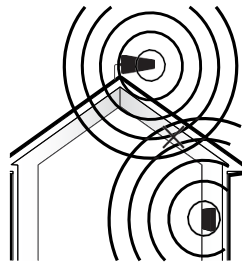
Option A: Omni Antenna Option B: Directional Antenna Splitter (for multiple antenna kits)

♦The indoor antenna location should allow for sufficient separation between the outdoor antenna and indoor antenna. Vertical separation is preferred as it is more effective than horizontal separation.

♦The minimum separating distance recommended is 30 vertical feet; however, increased Horizontal separation, may be needed, especially where vertical separation cannot be achieved.

The service area provide by indoor antenna is dependent on the following factors:

1. Received signal strength by the outdoor antenna.
2. Physical obstructions between the antenna and mobile devices.
3. Distance between mobile and indoor antenna.
4. Solation / separation between the outdoor and indoor antennas.

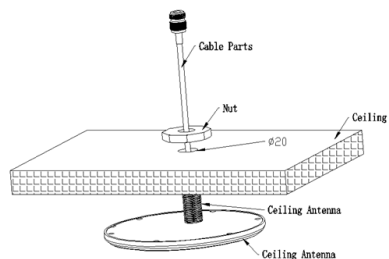


Antenna aiming and Isolation. A significant factor in determining booster coverage performance

Option A: Indoor Dome Antenna

The HG-0638102 wide band antenna is the latest ultra-thin ceiling antenna that sends and returns signals from all sides.

1. Drill a 20 mm diameter hole in the ceiling. The ceiling thickness should not exceed 20 mm.
2. Unscrew fixing nut from antenna. Place antenna cable
3. Upwards through ceiling hole.
4. Screw the fixing nut back onto the antenna and tighten fixing nut to secure antenna.
5. Once secure, connect one end of the indoor cable to the antenna connector and route cable toward the location of your booster.
6. connect the other end of the indoor cable to the booster connector (service port)

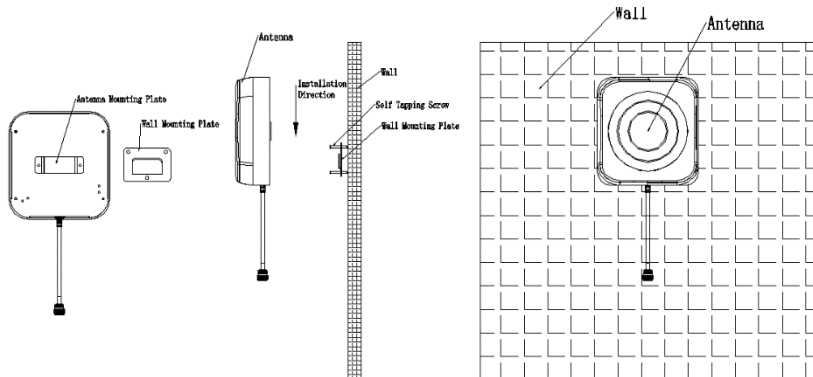


Option B: Panel Antenna

HG-0627103 panel antennas are directional with a 75° reach. They should be mounted facing the area

signal is needed and away from the outdoor antenna

1. Using plate, mark position of desired screw placement.
2. Screw mounting plate into place with the slide panel protruding towards you.
3. Slide antenna securely onto mounting plate.
4. Following panel antenna placement, connect antenna to one end of cable for the indoor antenna cable and route toward the location of your booster.



Step 4. Install the Booster

There are two ways to install the Booster. The user can choose wall mounting and desktop placement
1. Try to Select a location close to an AC outlet. Do not expose the signal booster to excessive heat, direct sunlight, damp, and Enclosed space. When you want to mount the booster to a wall, mark location of screw tabs on the wall in the desired location.

2. Remember that there must be at least 30 ft of vertical separation between the outdoor antenna and the booster with built-in antenna.

3. Install the back frame hook on the wall with corresponding screws

4. Connect the Donor antenna cable to the booster connector marked Donor and tighten the connection.

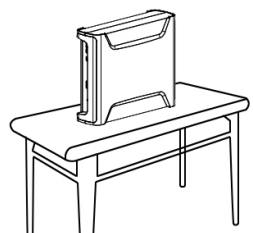
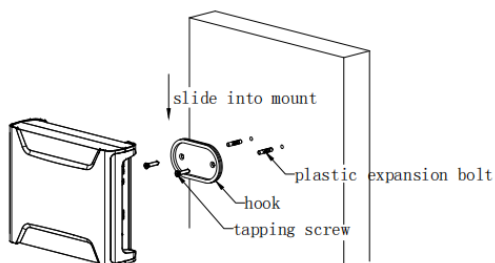
5. Hang the booster vertically down on the hook.

6. Connect the inside antenna cable to the booster connector marked Service and tighten the connection.

7. Connect the plug on the other end of the 110V AC power outlet and connect the AC power cord to the signal booster.

8. Turn the booster's power switch on.

Noted: This booster is equipped with a built-in antenna, please install the booster in an appropriate position, facing the place where you need to cover the signal.



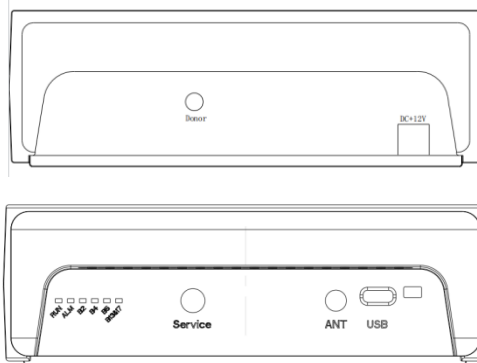
Installation skills

1. Keep at least 30 feet worth of vertical separation in between the indoor and outdoor antennas
2. The front of the outdoor antenna is NOT facing towards the front of the indoor antenna
3. All coaxial cable connections to the antennas and booster are properly connected
4. Keep horizontal cables straight and secure with zip-ties every 3-5 feet
5. Keep vertical cables straight and secure with zip-ties every 6-8 feet
6. Avoid water damage by using the waterproof tape provided in the kit on the connector attached to the outdoor antenna transmission cable
7. Be careful and avoid damaging the pins in the center of the connectors while attaching cables

Led indicators

Interface Description

- Donor:** Connect Outdoor cables
- DC+12V:** Connect the power adapter
- Service:** Connect indoor cables
- ANT:** The connector of Built-in Antenna, user can connect the indoor cable here when using the built-in antenna
- USB:** Software debugging interface, Commissioning by professional engineering



Optional Indoor Expansion Kit

The port labeled **Service** allows users to double their existing indoor coverage using an external indoor antenna while also using the internal antenna built into the booster unit.

To add a secondary antenna, connect the indoor antenna and coaxial cable to the port labeled **Service**.

Multiple Antenna:

1. Connect the first indoor antenna and cable to Indoor1.
2. Connect the second indoor antenna and cable to Indoor2.
3. Use the indoor antenna adapter included in the booster kit.
4. Walk around and check the gain and power output values.

if there are any issues while installing a HEENNGEEI signal booster, please contact the technical support team through the following channels:

Call: +86-176-2828-2827 / +86-28-61485995

Email: support@1booster.com

Website: www.1booster.com

Quick Troubleshooting Guide

Problem	Causes of problems and Resolution
ALM led on	Causes: Yellow led on indicate the signal of B5 or B13/B17 has Self excited oscillation; Red Led on indicate the signal of B2 or B4 has Self excited oscillation, for network security, the booster will automatically turn off. Resolution: 1. The outdoor cable connected to the booster is damaged or the connector is not tightly fitted, user should change the cable or tighten the connector. 2. Adjust the outdoor antenna direction, keeping it away from the indoor antenna and restart the booster 3. Adjust the outdoor antenna direction, keeping it away from the indoor antenna and restart the booster 4. Change the indoor Dome antenna type to an antenna with a more directional antenna pattern – adjust the indoor antenna and the outdoor antenna so they are not pointing at each other, then restart the booster
Booster has no power or inoperative	1. Verify that the booster power is turned on. 2. Be sure the power source is not controlled by a switch that can remove power from the outlet by connecting to an alternate power source. 3. If the RUN LED on the signal booster remains OFF or green Solid, contact tech support at: +86-28-61485995 or support@1booster.com
Coverage has not improved or. Section of the building hasn't been improved	1. Verify that cable connections are tightly fitted to the booster and antennas. 2. Check the installation of your Donor antenna. A weak outdoor signal leads to the low output signal level – change the direction or position of the Donor antenna. 3. If you use a Yagi antenna as Donor antenna, verify that the antenna is properly aimed in the direction of your carrier's cell tower. 4. Verify the outdoor signal strength at the site the Donor antenna. If signal level is low, your resulting coverage will be limited. Try to replace the Donor antenna with a higher gain antenna to increase the amount of signal being received 5. Verify to see if it is necessary to add more indoor antennas, for barriers such as walls can block the signal indoors 6. Verify the output power is maximized (the Led lit blue), the user may need to replace the booster with a more powerful one if the amount of outdoor signal available is limited 7. Verify the indoor antenna is installed correctly, try moving and adjusting the indoor antenna to improve coverage

FCC and IC Statements

FCC RF EXPOSURE STATEMENT FCC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. End users must follow the specific operating instruction for satisfying RF exposure compliance.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IC RF EXPOSURE STATEMENT IC

The device is compliance with RF exposure limits. The minimum distance from body to use the device is 20 CM.

This is a **CONSUMER** device.

BEFORE USE, you **MUST REGISTER THIS DEVICE** with your wireless provider and have your provider's consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. If you are unsure, contact your provider.

In Canada, **BEFORE USE**, you must meet all requirements set out in ISSED CPC-2-1-05.

You **MUST** operate this device with approved antennas and cables as specified by the manufacturer. Antennas **MUST** be installed least 20 cm (8 inches) from (i.e., **MUST NOT** be installed within 20 cm of) any person.

You **MUST** cease operating this device immediately if requested by the FCC (or ISED in Canada) or a licensed wireless service provider.

WARNING. E911 location information may not be provided or may be inaccurate for calls served by using this device.

This device may be operated **ONLY** in a fixed location (i.e., may operate in a fixed location only) for in-building use.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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:

- ◆ Re-orient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and receiver
- ◆ Consult the dealer or an experienced radio/TV technician for help

Changes or modifications not expressly approved by HEENNGEEI could void the user's authority to operate the equipment. For a complete list of antennas and cables approved for use with these boosters see Authorized Kitting Options

FCC 27.50(d)(4) Statement: Fixed, mobile, and portable (handheld) stations operating in the 1710-1755 MHz band are limited to 1-watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground.

FURTHER INFORMATION ON SIGNAL BOOSTER END-USE REGISTRATION

The following links are the currently active contacts for booster registration with U.S. wireless providers:

Verizon: <http://www.verizonwireless.com/wcms/consumer/register-signal-booster.html>

AT&T: <https://securec45.securewebsession.com/attsigalbooster.com/>

T-Mobile: <https://support.t-mobile.com/docs/DOC-9827>

Sprint: https://www.sprint.com/legal/fcc_boosters.html

U.S. Cellular: <http://www.uscellular.com/uscellular/support/fcc-booster-registration.jsp>

IC Statement: This device complies with Innovation, Science and Economic Development Canada ICES-003 Compliance Label: CAN ICES-3 (B) / NMB-3(B). Le présent appareil est conforme Innovation, science et développement économique Canada ICES-003Etiquette de conformité: CAN ICES-3 (B) / NMB-3 (B). Please follow the link to access the CPC-2-1-05:

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08942.html>

Specification

Power Supply and Mechanical Specifications

Product number	HG5B-US20
Power Supply	DC IN: 12VDC, Adapter: 100~240VAC, 50/60Hz
Dimension and Weight	205mm*165*60mm, ≤1.2kg
Power Consumption	≤12W
Temperature	-10~+55℃
Humidity	≤85%
Environmental Class	IP40
RF Connector	Donor: SMA Female, Service: SMA Female
Built-in antenna gain	≤6dBi
Impedance	50ohm
MTBF	≥50000 hr.
Monitor	Run: LED (blue: Normal、red: Alarm) Power indicator: blue led

Electronic Specifications

Item		Specification	
		Downlink	Uplink
Frequency Range	B17/B13	734 – 746MHz \ 746– 756MHz	704 – 716MHz \ 777 – 787MHz
	B5	869 – 894MHz	824 – 849MHz
	B2	1930-1990MHz	1850-1910MHz
	B4	2110-2155MHz	1710-1755MHz
Gain (Max.)	B17/B13	1.2 dB	4 dB
	B5	1.4 dB	4 dB
	B2	2.2 dB	6 dB
	B4	2.3dB	6 dB
Output Power (Max.)		16.74 dBm	26.02dBm
NF		≤8dB	
ALC		≥20dB	
Maxim Input Power		-20dBm	
VSWR		≤2.5	
Time Delay		≤1.0μs	
EVM (LTE)		≤8%	
PCDE (UMTS)		≤-35dB	
Spurious Emission		9kHz~1GHz ≤ -36dBm 1GHz~12.75GHz ≤ -30dBm	
Supported Standards		CDMA, WCDMA, GSM, EDGE, HSDPA, EVDO, LTE, etc.	

Return and Warranty

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 within 30-days with proof of purchase. Please contact the HEENNGEEI customer support.

3-Year Warranty: HEENNGEEI warrants its products for three years from the date of purchase against defects in workmanship and/or materials. One Boost will repair or replace the unit and will cover the cost of delivery for consumers located within the continental U.S and Canada.

Products returned by customers must be in their original, unmodified condition, shipped in the original

or protective packaging with proof-of-purchase documentation enclosed, and a Return Merchandise Authorization (RMA) number printed clearly on the outside of the shipping container. RMA numbers may be obtained by contacting customer support at +86-176-2828-2827 / +86-28-61485995 or support@1booster.com

This warranty does not apply to any signal boosters or kits determined by HEENNGEEI to have been subjected to tampering, misuse, abuse, neglect, or mishandling that alters or damages physical or electronic properties.

HEENNGEEI is not liable for any Signal Supervisor application network connectivity issues. The cell phone signal booster relies on a strong, continuous and reliable connection to the internet in order to communicate with the cell phone application. For all Signal Supervisor Application related issues, please check your network strength and call our technical support.

All HEENNGEEI products that are packaged with other HEENNGEEI 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.

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