

User Manual 02P

HiBoost Booster - Hi10-3S-Pro, Hi10-4S-Pro, Hi10-5S-Pro and Hi10-6S-Pro

HiBoost Consumer Mobile Signal Booster

Manuel de l'utilisateur 15P

HiBoost Booster - Hi10-3S-Pro, Hi10-4S-Pro, Hi10-5S-Pro and Hi10-6S-Pro

Amplificateur de signal Mobile Consommateur HiBoost

Betriebsanleitung 28P

HiBoost Booster - Hi10-3S-Pro, Hi10-4S-Pro, Hi10-5S-Pro and Hi10-6S-Pro

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Manuale d'uso 42P

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HiBoost Amplificatore del Segnale Mobile

Manual de Usuario 55P

HiBoost Booster - Hi10-3S-Pro, Hi10-4S-Pro, Hi10-5S-Pro and Hi10-6S-Pro

HiBoost Amplificador de Señal Móvil de Consumo

MADE BY HUAPTEC

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Preface



AT	BE	CY	CZ	DK	EE	FI
FR	DE	EL	HU	IE	IT	LV
LT	LU	MT	NL	PL	PT	SK
SI	ES	SE	UK	BG	RO	HR

This user manual describes design, installation, commissioning and maintenance of Hiboost professional signal boosters.
Please read user manual carefully before installing and maintaining the boosters.
The information in this manual is subject to change without prior notice. Suggestions are welcomed about the manual improvement.

Note: Hi10-3S-Pro, Hi10-4S-Pro, Hi10-5S-Pro and Hi10-6S-Pro boosters are compliant with UK Ofcom VTS requirements.

Booster Model

The user manual can be used for the models as below:
Hi10-3S-Pro, Hi10-4S-Pro, Hi10-5S-Pro and Hi10-6S-Pro

Note: The users of repeaters should get permission from the mobile providers for the use and installation of the repeater.

Glossary of Terms

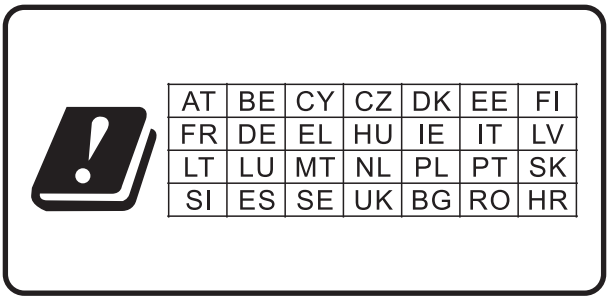
Item	Definition
700MHz	Available on LTE/NR700(703~733MHz/758~788MHz) network
800MHz	Available on LTE800(832~862MHz/791~821MHz) network
900MHz	Available on EGSM900(880~890MHz/925-935MHz) and PGSM900 (890~915MHz/935~960MHz) ,
1800MHz	Available on GSM/LTE1800(1710~ 1785MHz/1805-1880MHz) networks
2100MHz	AAvailable on 3G(WCDMA/UMTS2100)(1920-1980MHz/2110-2170MHz) networks
2600MHz	Available on LTE2600(2500-2570MHz/2620~2690MHz) network
RF	Radio Frequency
ATT	Attenuation
ALC	Automatic Level Control
AGC	Automatic Gain Control
MGC	Manual Gain Control
dB	Decibel
dBm	Decibels relative to 1 mill watt
UL	Uplink
DL	Downlink
MHZ	Megahertz
NF	Noise Figure
RSSI	Received Signal Strength Indicator

Safety Warnings

Users must follow the principles stated below:

- The booster should follow system requirements of mobile signal enhancement, assure good grounding and lightning protection.
- Booster's power supply voltage should meet the standards of security requirements;
- Any operation should be carried out only after cutting off power in advance. Only the professional user is authorized for the operation.
- Do not dismantle the machine, maintain or displace accessories by yourself. In this way, the equipment can be damaged and you can 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.
- Keep away from heating equipment, because the booster will dissipate heat during working. And do not cover booster with anything that influences heat-dissipation.
- The device has a plug connection, the socket must be close to the device and accessible.
- During the transportation and storage process, the device should avoid the humid environment, prevent violent impact and avoid strong vibration.
- Operating Temperature range is -10 - +55 degrees Celsius.
- The Body Separation distance is 50cm by using the procedure of MPE calculation.

USAGE AND INSTALLATION RESTRICTIONS



Signal booster devices for NR700, LTE800, EGSM/PGSM/WCDMA/UMT900, GSM/LTE1800, WCDMA/UMTS2100, and LTE2600 mobile network operators, holders of the corresponding licenses and in each case within the frequencies assigned to them, since they are broadband amplifiers acts.

The new HiBoost generations are self-regulating and switch themselves off in critical situations because they are equipped with automatic shutdown control. If installed incorrectly, these systems can cause serious disruptions to mobile network operators, with legal and economic consequences for the owner of the kit and the installer who installed the antennas.

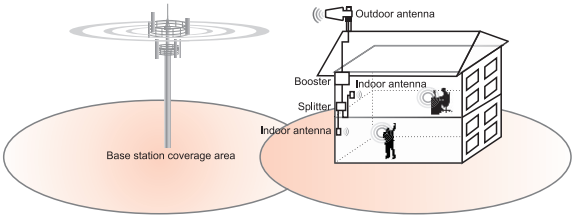
Huaptec Telecom GmbH assumes no liability for incorrect installation by inexperienced and unqualified personnel or in any case by personnel without the necessary equipment and license.

Furthermore, Huaptec Telecom GmbH also assumes no liability for improper use of the field expansion kits due to incorrect positioning and alignment of the external and internal antennas, which can cause problems for other users or disruptions to mobile network operators and providers.

Note: Mobile network boosters are not telecommunications terminal equipment, but rather radio equipment whose operation constitutes spectrum use and therefore require frequency allocation. However, since the operating frequencies in question have been allocated to mobile network operators and are no longer available, the operation of a repeater is subject to the approval of mobile network operators.

Overview

HiBoost professional boosters are designed to help mobile users to amplify weak cell phone signal. The devices are bi-directional. The outdoor antenna receives the signal from the cell tower and transmits it to the signal booster, the booster amplifies the signal and the indoor antenna sends it to your mobile device. Visa versa, the signal produced by your phone is also received by the indoor antenna, amplified by the booster, and then sent back to the cell tower through the outdoor antenna.



Package Contents

Hiboost Professional Signal Booster Standard Packing List

No.	Name	Description	Quantity
1	Hiboost Professional Signal Booster		1
2	Adapts	Triple Band 12V/4A Quad Band 12V/4A Quintuple Band 12V/4A Sextuplet Band 12V/4A	1
3	Power Cord	European Standard Plug	
4	Plastic expansion bolt	Triple Band ^6 Quad Band ^6 Quintuple Band ^6 Sextuplet Band ^6	3
5	Tapping screw	Triple Band M4*25 Quad Band M4*25 Quintuple Band M4*25 Sextuplet Band M4*25	2
6	Hanging folder	Triple Band mount hardware	1
7	User Manual	Triple/Quad/Quint/Sextuplet Band	1
8	Outdoor wide Band Directional Antenna	N-Female	1
9	Hiboost 5D low-loss cable	50 feet (15mt),N-male	1

Hiboost Professional Signal Booster optional panel pro kit/omni pro kit includes the following accessories:

Note: You can view the product pictures of Accessories Kit on page 6. Accessories Kit is available at an additional cost.

No.	Name	Description	Quantity
1	Indoor Wide Band Panel Antenna / Indoor Wide Band Omni Antenna	N-Female	1
2	Hiboost 5D low-loss cable	50 feet(15mt), N-male	1

Standard Package Content	Accessories Kit
Hi10-3S-Pro Hi10-4S-Pro Hi10-5S-Pro Hi10-6S-Pro		 

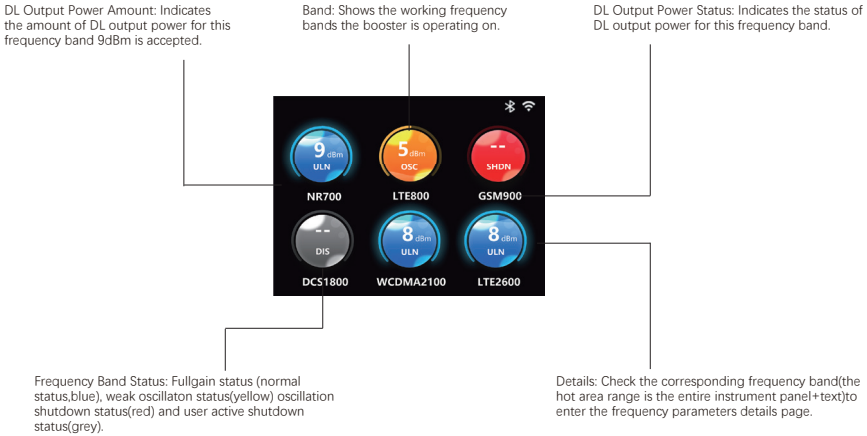
Note: The booster requires outdoor and indoor antennas connected with appropriate RF cables. The length of cable or other accessories needed can vary according to the size and construction materials used in the building, outdoor signal strength and layout of the structure. Please contact us for assistance in designing your system.

(If you need to add more indoor antennas or other accessories, please contact Huaptec Support Team on the phone 044- 20-3239 5802, +44 20 3239 5808; + 44 (20) 8144-7969 or by email: sales@huaptec.eu; sales1@huaptec.eu; sales2@huaptec.eu)

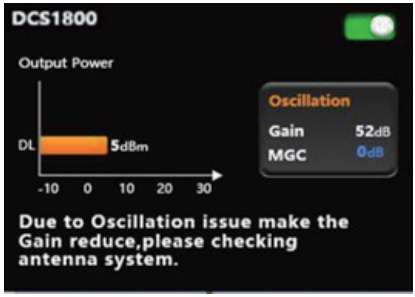
Features

- ✓ **Embedded CPU:** self-adaptive intelligent system very easy to use and install, better performance is guaranteed even under complicated and constantly changing RF environment conditions.
- ✓ **ISO:** Intelligent isolation processing to avoid self-oscillation, quite wide adjusting range to stabilize the signal strength/quality for clearer voice/ higher data throughput and avoid interference with mobile networks.
- ✓ **ALC:** Intelligent automatic level control, quite wide adjusting range to stabilize the output power and improve the signal quality for clearer voice and higher data throughput.
- ✓ **LCD Display:** Displays each of Sub-Band status, actual gain, uplink and downlink output power which makes booster installation and troubleshooting much easier.
- ✓ **MGC:** Control buttons to adjust the gain for both uplink and downlink independently, 31dB range.
- ✓ **Excellent RF performance:** larger coverage area, clearer voice and higher data throughput.
- ✓ **Elegant design, compact size:** very low power consumption to minimize cost during operation and low heat dissipation.
- ✓ **Local Monitoring:** It's easy to adjust and control booster performance locally via Bluetooth or a mobile app using Wi-Fi.
- ✓ **Built-in Antenna:** Built-in antenna with external antenna port.

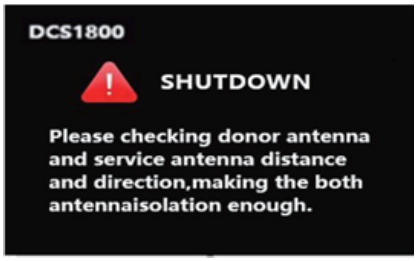
Booster Operation Guide
System Page



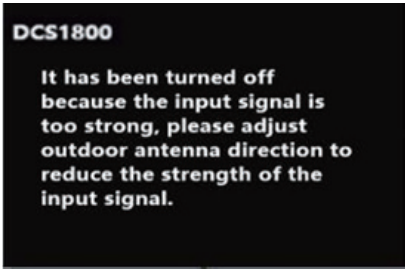
Warning Message Interface



Repeater system will strictly check Self-oscillation degree for all of sub-band and firstly will show abnormal status (Orange) in Menu page, ISO and ALC function would auto generate and if user enter into the soft Self-oscillation sub-band, user could check more details about Self-oscillation with recommend info.



if not working and Self-oscillation get seriously, which overcome ISO and ALC function address range (ALC≥42dB, ISO≥ 42dB), the Sub-band (with Self-oscillation) would be auto-shutdown ass above message, which shows shutdown status (red) for this Sub-band in Menu Page, to protect Base Station wouldn't get interference.



This system auto-generate message caused by excessively strong signals from cell tower, referring to below troubleshooting sections.

Install Hiboost Booster System
Before You Install

- ✓ Make sure you have sufficient cable length between the outdoor, indoor antennas and the booster in case you do not have a standard kit.
- ✓ Make sure the place where you install the booster is near to one existing electrical outlet. It should also be well ventilated, away from excessive heat, moisture, and direct sunlight.

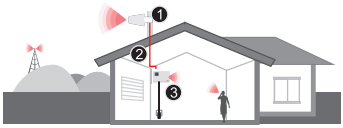
Hi10-3S/4S/5S/6S-Pro installation tools and accessories

Num.	Name	Specification	Quantity	Remark
1	Plastic expansion bolt	^6	3	Standard accessories
2	Tapping screw	M4*25	2	Standard accessories
3	Hanging folder		1	Standard accessories
4	Reciprocating drill		1	Provided by engineer
5	Shot bit	^8	1	Provided by engineer

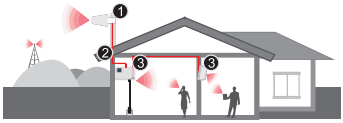
Installation Overview
Installation is easy to perform in 4 simple steps:

- ✓ Find the strongest received signal for the location of the outdoor antenna.
- ✓ 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).
- ✓ Install the indoor antennas where you want to improve the signal level.
- ✓ 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).

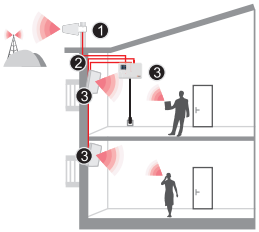
Booster System Installation Examples



1 -Outdoor wide band Directional antenna
2-50ft (15.2m)5D-FB cable
3-HiBoost booster with built-in antenna



1-Outdoor wide band Directional antenna
2-50ft(15.2m) 5D-FB cable
3-You can add an indoor panel/omni antenna and 50ft (15.2m) 5D-FB cable to extend the coverage



1-Outdoor Wide Band Directional Antenna
2-5D-FB Low-loss Cable
3-You can add an indoor panel/omni antenna to connect 50ft (15.2m) 5D-FB cable to extend the coverage
(built-in antenna will be automatically disabled)

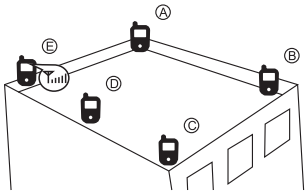
Step 1. Installation of Outdoor Antenna

1.1 How to find the location with the strongest received signal

The booster's main function is to improve a weak RF signal inside a house, office or any other indoor area. The received outdoor downlink signal strength 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 two methods that can be used to find the strongest downlink signal from the local towers.

✓Mobile Phone Method

You can use a mobile to test signal strength near the window or on the top of the building. The number of bars on network indicator will define the approximate strength of the received signal. Normally, the roof of the building is the best place to receive the strongest signal. As shown in the graph below, you need to test the signal in points from A to E, and select a place with the best signal strength for outdoor installation. It is recommended to use a mobile app that can display signal level, since it is more accurate than checking signal bars.

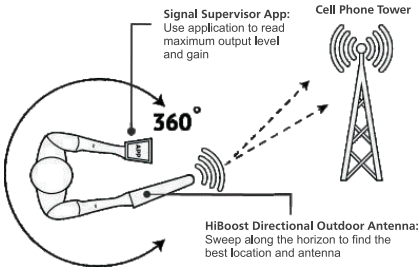


Signal Supervisor method (for Hi10 Model)

Connect your booster with your smartphone through the Signal Supervisor application. Temporarily fix the outdoor antenna on the roof and check the output power and gain values on your mobile phone. Turn the antenna slowly until the application shows maximum power.

Once this is achieved, the current location is the best to maximize the performance of your amplifier.

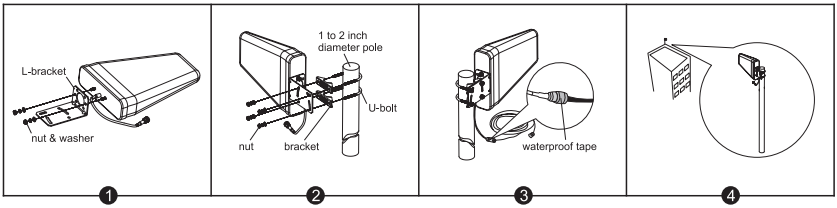
Attention: for Hi10 models of the Hi10-3S-Pro/ Hi10-4S-Pro/ Hi10-5S-Pro/ Hi10-6S-Pro Series the output power is 10 dBm, the maximum output gain is 65dB;



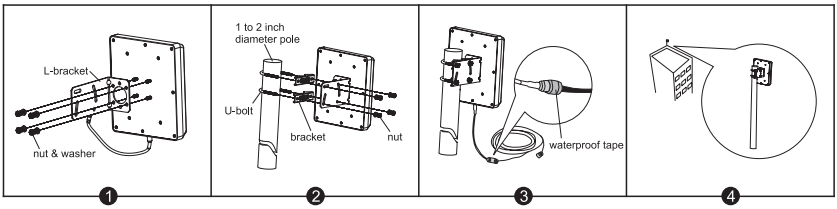
1.2 Install Outdoor Antenna

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 smoothest and stable phone calls and data transmission.
In most cases, outdoor wideband directional antenna is the best choice. You can also choose an outdoor wide- band panel antenna as an option.
Pole mounting is recommended for your convenience:
Outdoor Wide Band Directional Antenna Installation:



Outdoor Wide Band Panel Antenna Installation:



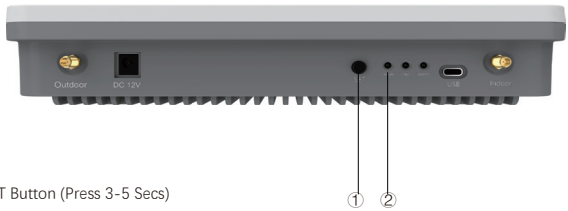
Note: Wrap waterproof tape around the connectors between outdoor antenna and feeder line to avoid water or other kind of damage.

Step2.Install Indoor Antenna

Before installing the indoor antenna, please note that the device uses the internal antenna mode by default. If you need to switch to the external indoor antenna mode, please follow the steps below:

1. Press and hold the set button for 3-5 seconds.
2. Wait for the device's LED indicator to turn blue, indicating that it has successfully switched to the external antenna mode.

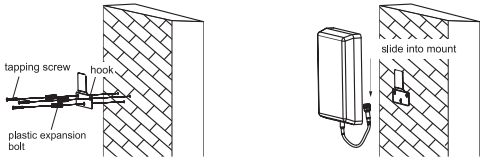
After completing the above steps, the device will use the external indoor antenna.



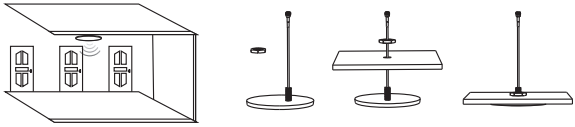
① SET Button (Press 3-5 Secs)
- External Indoor Antenna Mode
- Built-in Antenna Mode

② Mode LED
- Green Light Up: Built-in Antenna Mode
- Blue Light Up: External Indoor Antenna Mode

Select indoor panel antenna or omni-ceiling antenna as an indoor antenna according to your needs to provide indoor coverage. Install the indoor panel antenna as shown on the graph below.



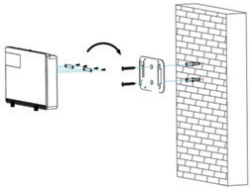
If you have an indoor omni-ceiling antenna, the best place to install it is the center of your house. Install omni-ceiling antenna as shown in the graph below.



Note: the required distance between the indoor and outdoor antennas is 10-15 m.

Step 3. Install Signal Booster

✓Select the location near a power supply on a wall
Mount the booster with the screws included into the kit as shown on the graph below.



✓Connect the outdoor antenna cable to booster connector marked as "outdoor". Tighten the connection by hand or with a wrench.

✓Connect the indoor antenna cables to booster connector marked as "indoor". Tighten the connection by hand or with a wrench.

✓Connect AC power cord to the signal booster, then connect the plug to the electrical outlet to power on the booster. Note: the required booster mounting distance above the floor is 1-1,8 m
If it's necessary to install multiple indoor antennas solutions, please contact us. We will provide you with a professional installation coverage plan.

Step 4. Booster Commissioning

Overview: The booster has an intelligent startup system; booster commissioning is an automatic process able to guarantee system optimal performance.
As soon as you finish booster system installation, plug it in a power supply to power on the booster. It will start working and checking the receiving signal strength and the isolation to ensure best system performance. Automatic adjustment will take about 3-5 seconds.
After the booster starts, check if the coverage is improved as you wish. The booster commissioning is completed.

In case the coverage is not enough, please check the following conditions.

1. The rated output power is reached, but the coverage is not enough or the signal in some areas are not improved:

✓ Check whether the indoor antenna is installed correctly or not, try to change the antenna position to improve coverage.

✓ Check if it is necessary to adjust the direction of the indoor antenna.

✓ Check whether it is necessary to add more indoor antennas since barriers block the signal.

2. The rated output power is not reached.

✓ Change the position or direction of the outdoor antenna to get a stronger receiving signal and higher output power. (Not necessarily to reach rated value as long as the coverage is enough).

More about "Alarm" legend indication

Alarm Status: indicates if the booster has enough isolation between outdoor and indoor antennas in order to avoid loop back or so-called self-oscillation. Hiboost is an ideal mechanism. Smart AGC, to avoid interference with operator mobile networks. "Alarm" long-team up on LCD display means not only device is powering on, but also ISO function is working great and self-oscillation has been eliminated.

LCD	Status	Meaning	Solution
ISO LED	Green	No loop back or no self- oscillation	NO action is needed.
	Slow Flashing Green (Per 2.5S off, 0.5S	Slight loop back or self-oscillation (1dB≤ISO Attenuation≤14dB)	NO action is needed.
	Quick Flashing Green (Per 0.5S off, 0.5S on)	Deep loop back or self-oscillation (15dB≤ISO Attenuation<42dB)	Not working properly. Check if there would be self-oscillation message and Sub-band interface. Please check the Troubleshooting section to get a solution if coverage is not good.
	Red	The booster sub-band auto shuts off for protection due to severe loop back or self-oscillation (ALC≥42dB,ISO≥42dB)	Not working properly. Please check the Troubleshooting section to get a solution.
	OFF	The booster not power up	

More about "NET" legend indication

NET indicates the connection establishment between booster and Bluetooth/Wi-Fi, if the connection established well, NET LED will show Blue UP status, otherwise light would be blinking or off.

LCD	Status	Meaning	Solution
NET Status	Blue Light up	Mobile is connected to booster through Bluetooth	Working Properly
	Blue Flashing	Connected signal supervisor successful through Wi-Fi	
	No Light	Mobile is not connect to booster through Bluetooth/Wi-Fi	Not working properly, please contact with Huaptec EU for assistance.

Troubleshooting

Problem	Solution Methods
The signal booster has no power.	Check that the AC outlet is working.
The booster's power is on but the phone is not connected to the network and still cannot communicate with the signal.	Try to fasten the connections between the different parts of the system. Change the direction of donor antenna or its installation position.
Good downlink signal with poor communication quality.	Check whether there's interference. Consult the operator whether the signal source base station works well.
The power is on but the coverage is not good.	Check Alarm LED indications. Take the actions

Eliminate Alarm LED Quick Flashing and RED problems:

- Adjust the outdoor antenna direction, keeping it away from the indoor antenna. Restart booster.
- Increase the vertical or horizontal distance between the outdoor antenna and indoor antenna. Restart booster.
- Use barriers such as walls to increase the isolation.
- 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.
- Reduce the booster's downlink gain using the manual gain controls. Keep the uplink gain value and downlink gain value the same, then restart the booster.

IMPORTANT: Testing the signal 3 times in the desired location before installing the outdoor antenna will help ensure the smoothest and stable phone calls and data transmission.

Target: This situation refers to ISO issue and if issue resolved, the Alarm LED would show Green light UP status.

Eliminate poor coverage problems when gain or output power value abnormal in Sub-Band Interface:

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.

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
- Try adjusting the direction the indoor antenna is pointing

Remark:

- When increasing the downlink gain, make sure the isolation is adequate to prevent system oscillation

Note: The Alarm LED long-term Green up and the problems of self-oscillation and strong downlink signals are fixed. In most cases, there is no need to take any additional measures except for deep self-oscillation or excessively strong signals from the tower. The self-adaptive ALC and isolation gain processing system automatically solve most problems.

Product Warranty

30-Day Money Back Guarantee

All Hiboost products are protected by 30-day money back guarantee. If for any reason you're not happy with the performance of the received booster kit , you can return it within 30-day period and get your money back.

2-Year Warranty

Hiboost mobile signal boosters are covered with 2-year warranty. Huaptec offers two options for the products under warranty: repair or replace.

This warranty does not apply to Hiboost mobile signal boosters or kits that have been subjected to misuse, abuse, neglect or mishandling and that have its physical or electronic properties altered or damaged. Failure to use surge protected AC power strip with at least a 1000 Joule rating will void your warranty.

All Hiboost products that are packaged with Hiboost accessory products are intended for use and resale as a single unit and such product kits are required to be sold to the end users or subsequent reseller as packaged.

For any questions or suggestions do not hesitate to contact Huaptec Support Team at 044-20-32395808 or by e-mail sales@huaptec.eu.

Main Specification

RF Parameter		UL	DL
Frequency Range	700 MHz 800 MHz 900 MHz 1800 MHz 2100 MHz 2600 MHZ	703-733 MHz 832-862 MHz 880-915 MHz 1710-1785 MHz 1920-1980 MHz 2500-2570 MHZ	758-788 MHZ 791-821 MHZ 925-960 MHZ 1805-1880 MHZ 2110-2170 MHZ 2620-2690 MHZ
Max. Gain	Hi10 Model	60 dB	65 dB
Max. output power	Hi10 Model	20dBm	10dBm
MGC (Step Attenuation)		>31 dB/1 dB step	
Intelligent AGC*power	ALC ISO	>22 dB >22 dB	
Electrical Parameter			
Power Supply	Triple/Quad/Quint/ Sextuplet Band	Input AC 90-264 V, 50/60 Hz, Output DC 12 V / 4 A	
Power Consumption	Triple/Quad/Quint/ Sextuplet Band	<20W	
Input & Output Impedance		50 ohm	
Mechanical Parameter			
1 /O Port Type		SMA-Female	
Dimensions	Triple/Quad/Quint/ Sextuplet Band	171*266*55 mm	
Weights	Triple/Quad/Quint/ Sextuplet Band	<2.5 kg	
Environment Parameter			
Operating Temperature Relative Humidity Barometric Pressure Environment Conditions		- 10ºC ~ +55ºC 5%-95% 55 kPa -106 kPa IP40	

Huaptec Contact Details

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