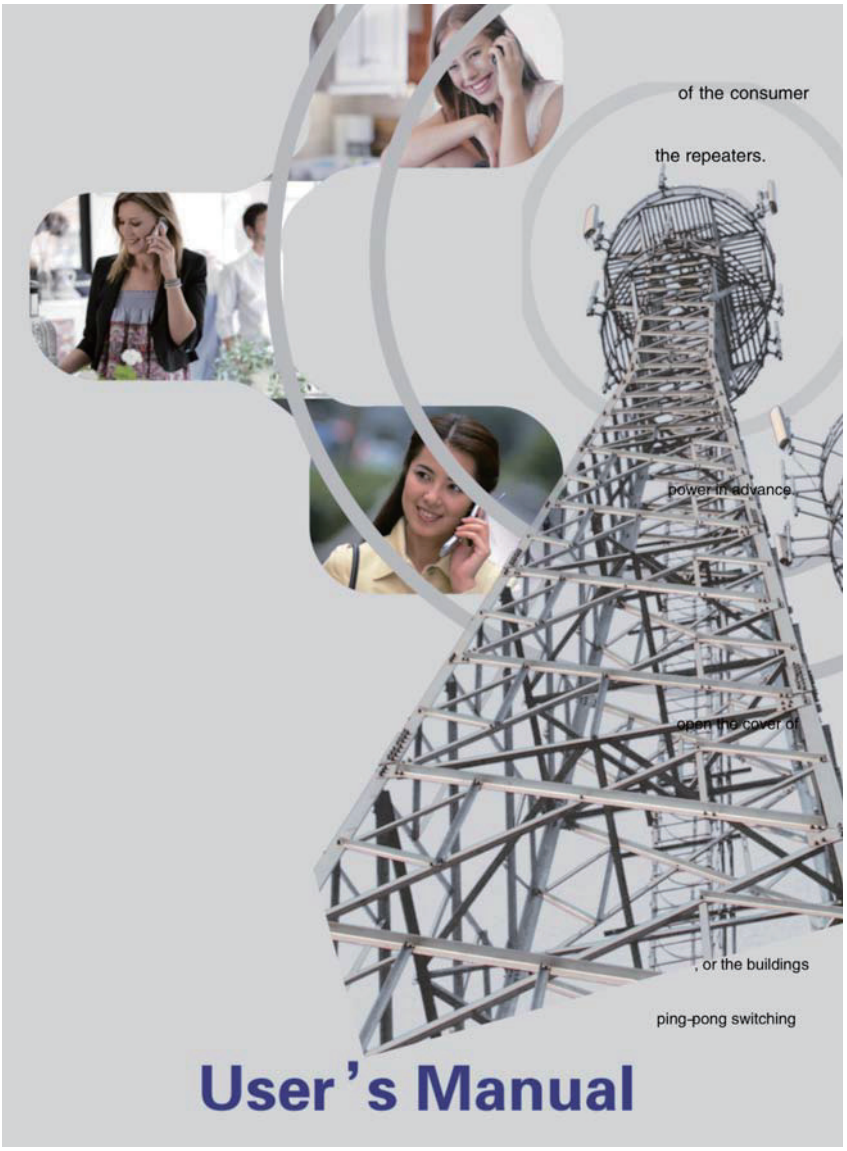


User's Manual

CONTENTS

1.The Repeater System.....1

2. Installation.....3

2.1. Installation Location Requirement.....3

2.2. Installation of Outdoor Antenna.....3

2.3. Cable Layout and Connector Assembly.....6

3. Installation of Indoor Antenna.....7

3.1. Repeater Installation.....9

3.1.1. Installation Steps.....9

3.1.2. Description of Repeater's Ports.....9

3.1.3. Accessories Selection.....10

3.1.4. Switch on the Power.....10

3.1.5. Check Coverage.....10

4. Attention.....12

5. Installation Guide.....12

5.1. Indoor Whip Antenna and Outdoor Yagi/Ldpa Antenna.....12

5.2. Indoor Whip Antenna and Outdoor Tubular Antenna.....14

5.3. Indoor Panel/Ceiling Antenna and Outdoor

Yagi/Panel/ LDPA Antenna.....16

5.4. Indoor Panel/Ceiling Antenna and Outdoor Tubular Antenna.....18

6.Package Contents..... 20

7.About the Booster.....21

7.1. When Connecting.....21

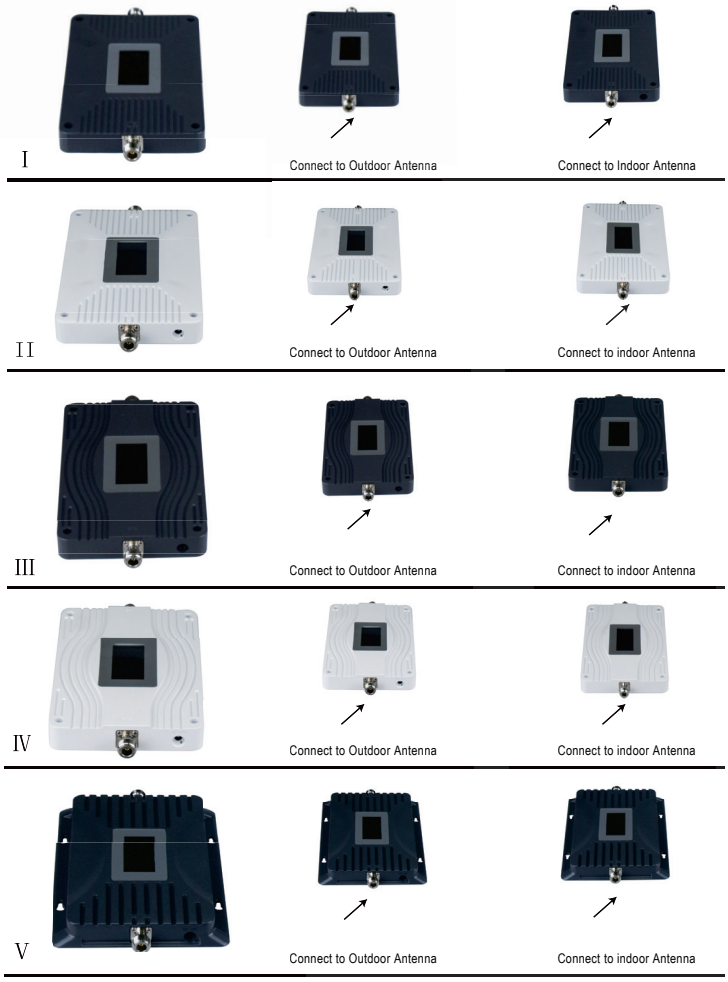
7.2. When Using.....22

8.Troubleshooting.....22

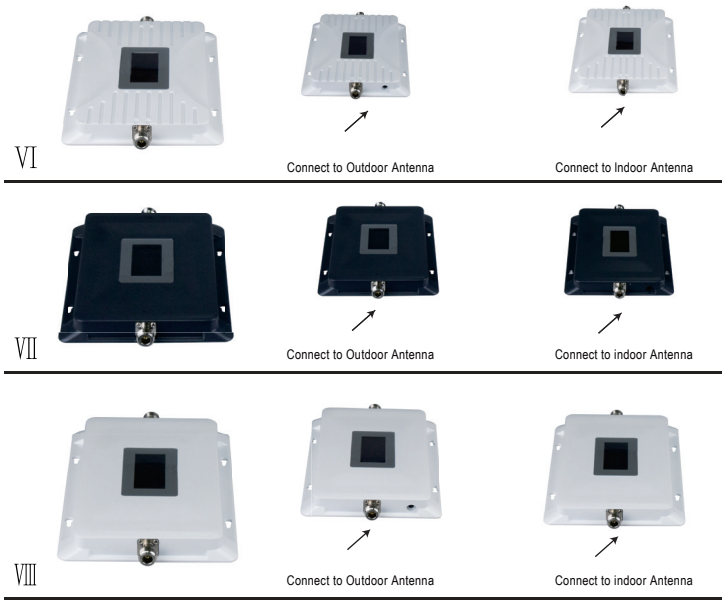
9.Safety Reminder & Warning.....24

10.FCC Statement.....25

1. THE REPEATER SYSTEM



Cell Phone Signal Solutions



Introduction:
The cell phone signal booster antenna kit includes a signal booster, an indoor antenna, an outdoor antenna, coaxial cable, power adapter, English user manual, mounting screw kit.
The outdoor antenna could pick up cell signal from signal tower, and send the signal through coaxial cable to the signal booster, the booster can boost the signal, then the boosted signal will be sent to the indoor antenna, the indoor antenna can transmit the signal into your house, so you can enjoy clearer phone call or faster mobile date inside your house.

2. INSTALLATION

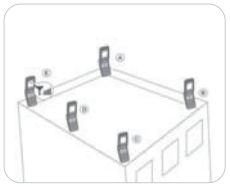
The repeaters should be used to cover the indoor area.Humidity and temperature of working environment can affect the reliability of repeater. so, temperature, humidity, dust, interference, power, space requirements and other tactors should be considered during installation of repeater.

2.1 Installation Location Requirement

（1）It is important that the repeater is installed in a place where is away from excessive heat, direct sunlight, moisture and with proper ventilation. Do not place the repeater in an air-tight enclosure.
（2）Installation height should be easy for RF cable wiring, heat dissipation, security and maintenance.
（3）There should be an independent and stable power supply.
（4）Lightning protection is recommended for all in-building installations. Take extreme care to ensure neither you nor the antenna come in contact with any electrical power lines. stability.

2.2 Installation of Outdoor antenna

The repeater's main function is improve weak RF signals of an area. A simple formula: Input power+ Gain=output power. The signal strength from the outdoor antenna directly affects the efficiency of the indoor coverage. it is very important to choose the outdoor antenna location in order to get the best signals.

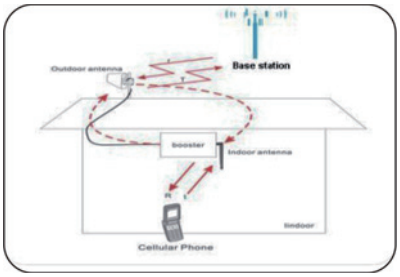


- Testing the signal strength received from outdoor antenna by mobile phone:
- Select an outside antenna location on the roof of the building to install the outdoor antenna, using a cell phone to find the strongest signal from the cell tower.
- When installing the outdoor antenna on a building with 7 stories or greater, try to select a place like a balcony or platform lower than the 7th floor because the mobile signals are clearer at less than 7 stories.
- The mobile phone should display full bar signals in location where the outdoor antenna is to be installed.
  The phone calls or data transmission shall be smooth and stable by 3 times testing in location
- Where the outdoor antenna is to be installed as shown from the above illustration, testing the signals from A to E, and select a best place that displays full bar signals to install the outdoor antenna.

- Selecting the installation direction of outdoor antenna.
- The outdoor antenna should point in the direction of the tower, and it is much better to keep line of sight.
- Select opposite directions for outdoor antenna and indoor antennas. Please test the signal quality and make sure to avoid self-oscillation first, if have to install Outdoor and Indoor antennas in the same direction. If the directional antenna is selected, the main directional angle should point to the tower antenna.
- If the performance is poor due to weak signals or poor phone call quality, please adjust the direction of outdoor antenna or change its position in order to obtain the best calling effect.
- The wide band repeater supports all mobile operators or different mobile systems, so please adjust the outdoor antenna direction to have a balance between signals of different mobile operators or various mobile systems.

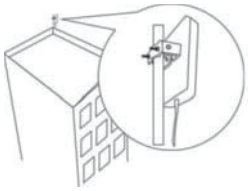
Outdoor antenna installation---Notes:

- Do not install the outdoor antenna during the rainy day with lightning. Please follow the instructions to install the outdoor antenna.
- It is very important to waterproof the connectors of outdoor antenna and feeder lines.
- In order to avoid interference, please note that the outdoor antenna should be far away from objects of metal, high voltage line, RF antennas and high voltage transformer.
- Repeater is a tow-way signal amplifier. So proper isolation between outdoor antenna and indoor antenna is necessary to avoid self oscillation. (About the definition for self oscillation, take the MIC and loudspeaker for example, if it is too close for each other, it could make loud noise.)
- The minimum distance between outdoor antenna and indoor antenna shall be more than 10 meters; again, the direction of outdoor and indoor antennas shall be opposite.
- As shown in the below illustration, the booster amplifies the downlink signal R from the tower and send to the indoor antenna hereafter. If the distance between outdoor antenna and indoor antenna is less than the required distance, the amplified signal R will go back from indoor antenna to outdoor antenna. So it will lead to self oscillation and reduce the coverage area, also the bad calling quality could happen at the same time, and the worse is that mobile network could be influenced badly and the operators will finally come to shut off the repeater system.

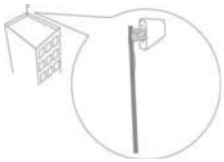
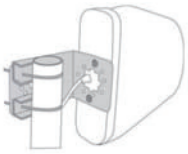


If isolation can't be achieved by the limited distance, the roof of the building or any other barriers can used in between to increase isolattion.

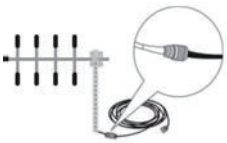
Installation Of panel Antenna As Outdoor Antenna

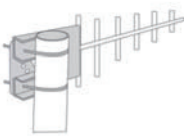


Installation Of Wide Directional Antenna As Outdoor Antenna

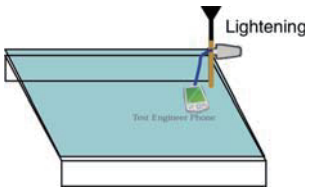
Installation Of Yagi Antenna As Outdoor Antenna





Installation Of Omni-directional Antenna

Test the call quality of Outdoor antenna (for professional installation team only)



Fix the outdoor antenna after selecting the best position, and adjust height or angles slightly in order to get the best signal with suitable input power level and calling quality.

2.3 Cable layout and connector assembly

(1) Keep the type,specifications, routing direction, and curvature radius of cables in compliance with the design requirement. Place cables in good order, bend them smoothly and protect the outer covering against any damage.
(2) Bind cables in good order when laying them on cable racks. When leading cables in or out of troughs, use a hole opener to open the cable troughs and then install pvc lock nuts to protect them.
(3) Keep horizontal cables straight and fasten them with a fixing clip every 1 to 1.5 meters.
(4) Bind and fasten vertical cables every two meters to avoid damaging cables or connectors due to their own weight. Pull back the cables and relay them in shorter sections if you have difficulty in pulling them. Avoid using a strong force to pull them.
(5) Separate RF cables from power cables. Take proper isolation measures if they are to be placed on the same cable racks due to the limitation of site conditions.
(6) Correctly fasten all connection parts of the whole system, from the antenna to active interfaces to passive interfaces, and keep electrical interfaces well contacted. Offer waterproof treatment to outdoor connection parts.
(7) Take lightning protection measures for the antenna and feeder system in accordance with the design requirement. Avoid deforming the antenna feeder where grounding clips are placed, and offer waterproof treatment to the feeder.

(8) Keep exposed Indoor cables in good order. Install pvc troughs if the exposed cables are more than 1 meter long, and put small passive RF parts (such as power splitter) in cable troughs.
(9) The steps about how to process the both ends of RF coaxial cables as follows:
- Keep the same redundant cable length and keep the length of stripped cables to match the corresponding connectors.
- Use proper force to cut the jacket or insulating layers and avoid damaging the braided shielding net and cores.
- Solder cores firmly and smoothly with a proper amount of solder, without leaving any solder projections or nodules. Assemble coaxial cables strictly in accordance with the installation specifications.
- Keep a moderate length for heat shrinkable tubes, and heat will shrink the tubes evenly when adding heat shrinkable tubes to the end of cables.
- Protect the ends of cables against water and dampness. Use waterproof tape to do waterproof treatment for exposed cable ends. Cut off the end if it is dampened or soaked by water.

3.Installation of Indoor Antenna

Proper antennas shall be selected according to the site conditions and requirements. And more than one antenna can be used with the repeater, especially for repeaters over 20dBm; and 30dBm can be connected with upto 10 antennas in order to send the signals to larger areas or distribute the signals equally.Please consult our professional engineers about its solutions if you want to connect several antennas.

(1)Indoor ceiling Omni antenna is suitable to be installed in the center.

(2)It is better to use a directional panel antenna when the shape of coverage is long and narrow (corridors, long row of houses in tow sides, tunnels, elevators or rural open space).

(3)The small whip antenna is suitable to be installed in small room or apartment.

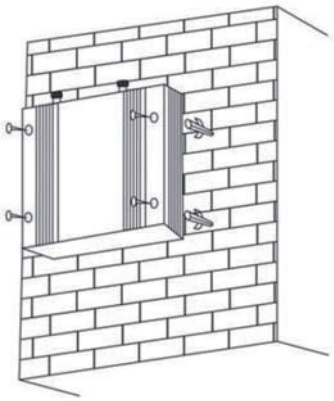
3.1Repeater Installation

3.1.1. Installation Steps

The Repeater shall be installed in Indoor areas only

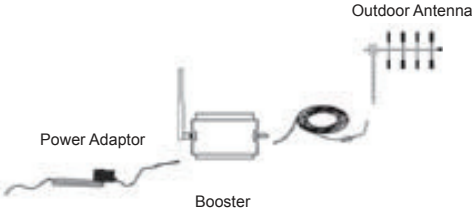
(1)Connect the power supply and cables properly to the repeater' s ports.

(2)Check again to make sure that the repeater is installed firmly and its LED on green.



3.1.2. Description of Repeaters' Ports

(1) Outdoor Port: connect with the outdoor antenna by cable.
(2) Indoor Port: connect with the indoor antenna by cable
(3) DC Port: connect with power supply.



3.1.3. Accessories Selection

Please pay attention to “frequency”and “impedance”during the selection of accessories. All accessories(feeder line, antenna, splitter, combiners, etc.) shall support the repeater’s frequency. For example, the repeater’s frequency is GSM900, all the accessories must support GSM900 frequency; and the repeater’s impedance is 50ohm, the accessories shall all be 50ohm.

3.1.4.Switch on the power

After power is on, first check the alarm and power LEDS.

The status and definition of POWER indicators:

Status	Definition
Green	Normal
Off	DC power problem

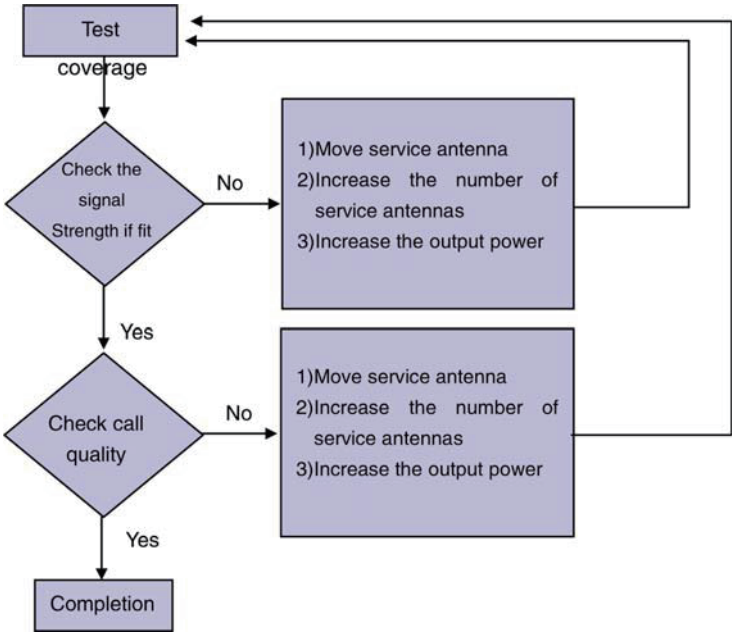
3.1.5 . Check Coverage

(1) Perform a test with a mobile phone or data card Check below:

- - A weak input signal leads to the low output power. Need to change the direction of outdoor antenna or its installation position or replace outdoor antenna with higher gain antenna to increase input signal power level.
  - Check whether it is necessary to add more Indoor antennas’ sine barriers to block the signal penetration, and check whether the repeater’s power is enough.
- Install more Indoor antennas or replace with a repeater of higher power level.

(2) If the signals in small part of the areas have not been improved,please check below:

- - Check whether the service antenna is installed correctly or not, you may need to move the antenna location to improve coverage.
- - Check if it is necessary to adjust the direction of the service antenna.
- -Check whether it is necessary to add one or more antennas to enhance the coverage of special areas.



4. Attention

1.The signal booster will only work with the correct frequency, so please make sure your phone signal is with the same frequency as the signal booster.
2.This cell phone signal booster will only make a weak signal stronger, it can't create a signal. That means it won't work if the outdoor antenna can't receive any signal.
3.The outdoor antenna should receive 2-3 bars of stable signal in the location where the outdoor antenna is fixed; otherwise, the booster won't work very well.
4.Must connect the antennas first, and then switch on the power; otherwise, may damage the repeater.
5.Determine the best location where the highest signal strength is received on your phone (most amount of bars). Once you ascertain the best location, then permanently mount the outdoor antenna. Keep the distance between the outdoor antenna and indoor antenna more than 22ft and make sure that there is a proper physical separation between the outdoor antenna and indoor antenna. The above things are of critical importance to the boosters' normal working .

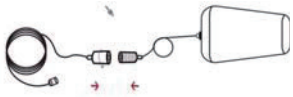
Remark: Distance Control between Outdoor and Indoor Antennas

* In a fully open environment, keep the horizontal distance between antennas over 15m and vertical distance over 3m.
* In a environment with walls, keep the horizontal distance between antennas about 7-8m and vertical distance about 3m. (The walls should be in metal or reinforced concrete, as the material in wood, glass or carbon fiber can’t block the signal)
* If available, it’s better to keep the horizontal distance between outdoor and indoor antennas at 15m; if can’t achieve the 15m, try to increase the vertical distance.

5. Installation Guide

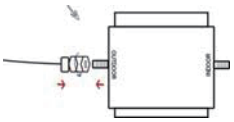
5.1.Indoor Whip Antenna and Outdoor Yagi/Ldpa Antenna

1.Tightly connect the 32ft Coaxial Cable to the Outdoor Yagi/LDPA Antenna.



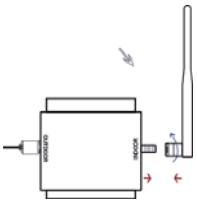
2.Check and find a place where your cell phone could receive the best signal outside your house, then mount the Outdoor Yagi/LDPA Antenna and keep Yagi/LDPA Antenna towards the cell phone signal tower.

3.Tightly connect the 32ft Coaxial Cable to the OUTDOOR port of the Signal Booster.

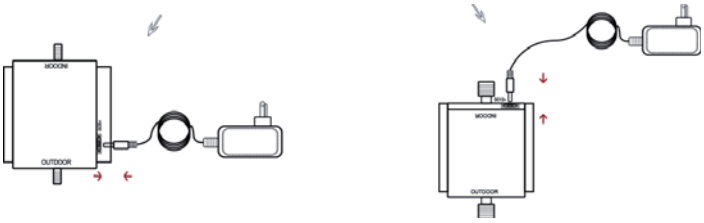


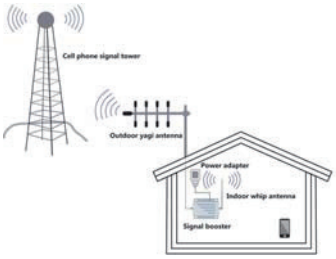
4.Mount the Signal Booster device somewhere inside the house, the Signal Booster should be mounted in a place where is near from the power socket, and have good ventilation.

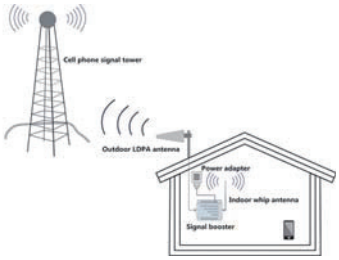
5.Tightly connect the Indoor Whip Antenna to the INDOOR port of the Signal Booster.



6.Connect the Power Adapter to the Signal Booster and Power Socket.

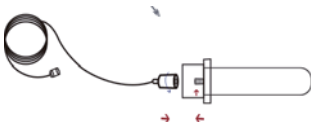






5.2.Indoor Whip Antenna and Outdoor Tubular Antenna

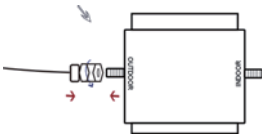
1.Tightly connect the 32ft Coaxial Cable to the Outdoor Tubular Antenna.



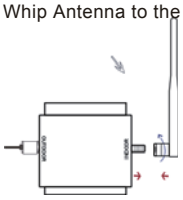
2. Check and find a place where your cell phone can receive the best signal outside your house, then mount the Outdoor Tubular Antenna.

3. Mount the Signal Booster device somewhere inside the house, the SignalBooster should be mounted in a place where is near from the power socket,and have good ventilation.

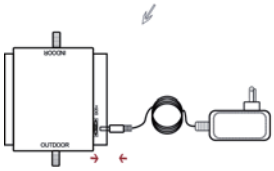
4. Tightly connect the 32ft Coaxial Cable to the OUTDOOR port of the Signal Booster.

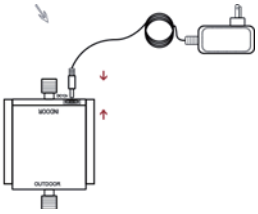


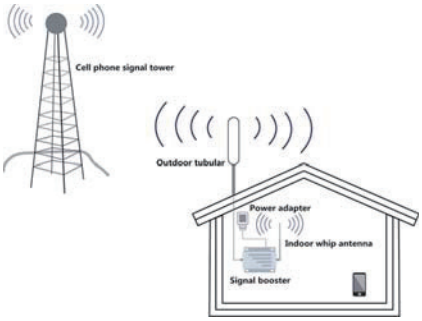
5. Tightly connect the Indoor Whip Antenna to the INDOOR port of the Signal Booster.



6. Connect the Power Adapter of the Signal Booster and Power Socket.

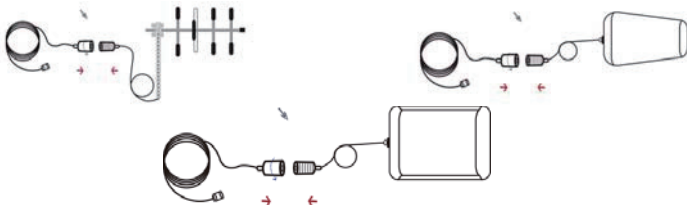




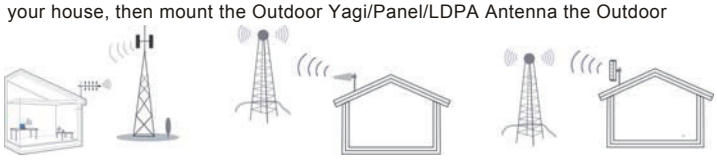


5.3.Indoor Panel/Ceiling Antenna and Outdoor Yagi/Panel/ LDPA Antenna

1. Tightly connect the 32ft coaxial cable to the Outdoor Yagi/Panel/LDPA Antenna

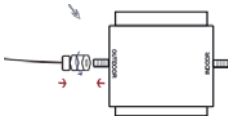


2. Check and find a place where your cell phone receives the best signal outside your house, then mount the Outdoor Yagi/Panel/LDPA Antenna the Outdoor

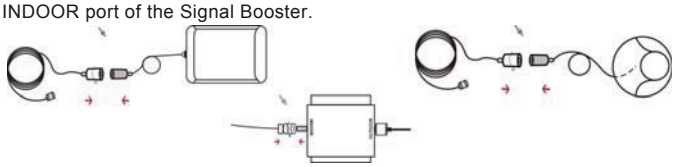


3.Mount the Signal Booster device somewhere inside the house. The Signal Booster should be mounted in a place where is near a power outlet and have good ventilation.

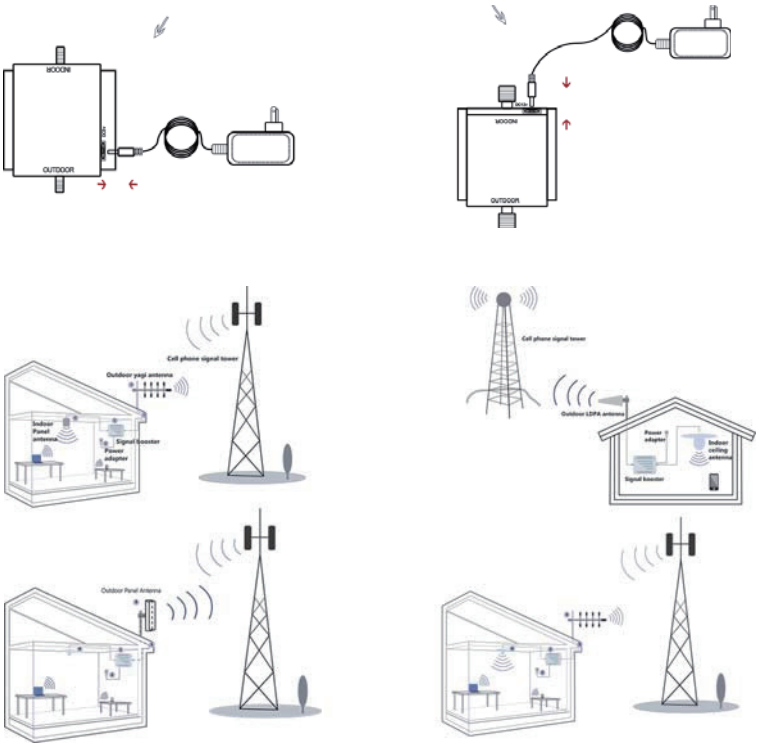
4.Tightly connect the 32ft Coaxial Cable to the OUTDOOR port of the Signal Booster.



5.Tightly connect the 16ft Coaxial Cable to the Panel/Ceiling Antenna and the INDOOR port of the Signal Booster.

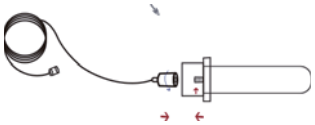


6. Connect the Power Adapter to the Signal Booster and Power Socket.



5.4. Indoor Panel/Ceiling Antenna and Outdoor Tubular Antenna

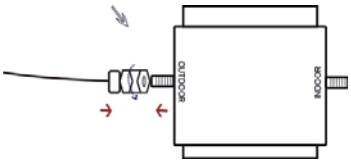
1. Tightly connect the 32ft Coaxial Cable to the Outdoor Tubular Antenna.



2. Check and find a place where your cell phone can receive the best signal outside your house, then mount the Outdoor Tubular Antenna.

3. Mount the Signal Booster device somewhere inside the house, the Signal-Booster should be Mounted in a place where is near from the power socket, and have good ventilation.

4. Tightly connect the 32ft Coaxial Cable to the OUTDOOR port of the Signal Booster.



Reason 1: There are loose or wrong connections in the repeater system.
Solution: Check that the connections between the different parts of the system are hooked up correctly and tightly.
Reason 2: The signals of other operators nearby received by outdoor antenna are too strong. (For example, the other operator's signals are 10 db stronger than the needed signals).
Solution 1: Change the direction of outdoor antenna or its installation position, so that the gap of signal strength is reduced between operators.
Solution 2: Use barriers (like buildings) to block signals of other operators.

· The solution to different LED lights' status:

* Connecting indoor and outdoor antennas and then power on, the signal booster and power adapter can work normally if the LED of booster stay on green and adapter's LED also keep on green or red.
* If the booster's LED are flashing in green or red, or its red indicator light stay on without connecting any antenna, meaning that the booster break down and please contact the Customer Service to do the replacement.
* If the power indicator is not on and the adapter can't work, please contact the Customer Service to do the replacement.

* Connecting indoor and outdoor antennas and then power on, but the phone's signal can't get enhancement while the green or red booster's LED are flashing or its red indicator stay on; meaning that outdoor antennas receive a stronger signal and the boosters stay on Overpower or Self-oscillation status. Users need to turn off the power and exclude the external faults by yourself, then adjust the distance between outdoor and indoor antennas; finally restart your booster.

During the process of using your Amplifier, move the Amplifier further away from those devices if the Amplifier interferes with your radio or other electronic device. If necessary, please contact your local dealer directly.

Remark:

Increase the output power*---Recommended ways: adjust the outdoor antenna direction/location, or replace with a higher gain antenna to increase input signal strength.

6.Package Contents :

1.Signal Booster 2.Indoor Antenna

3.Outdoor Antenna 4.Coaxial Cable

5.Power Adapter 6.User Manual

You should receive the Mobile Booster kit which includes the similar above-mentioned fittings. Before using it, please confirm that your Booster's frequency range is the same as your service provider's network, otherwise, the amplifier will not work properly.

7.Troubleshooting:

•The power is on but there is no signal strength on the phone.
It could be caused by insufficient isolation between outdoor antenna and server antenna.
Please try the measures below:
First check whether the connection is correct.
Second adjust the antennas' directions/locations or enlarge the distance between them.
Third replace the original one with a lower gain repeater if you have one as a backup.
The following measures can also be tried:
Use the roof of the building to increase the isolation (please try to place the outdoor antenna and indoor antenna on different floors).
Use some obstacles (such as wall).

•The power is on, but the phone is not connected into the network and still cannot communicate.

8.Safety Reminder & Warning:

The Federal Communications Commission (FCC) has tested this product and found it to comply with their RF Exposure Requirements, pursuant to FCC Part 22 and 24.

To comply with the FCC RF exposure requirements, keep the human user' s body at least 8" (20cm) from the indoor antenna of the booster.

Don't expose this product to extreme low or high temperature (-20℃ and 55℃).

There are on consumer serviceable or modifiable parts inside this booster product. Alteration or abuse of the booster or other components will void this product's warranty, and could be dangerous to the user.

Repeater should follow system requirement of communication equipment, assure good grounding and lightning protecction.

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

Do not dismantle machine, maintain or displace acce ssories by yourself, because in this away, the repeater, touch the module ofrepeater, or module to touch the electronic component. The components will be damaged due to eleectrostatic.

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

This is a CONSUMER device.

BEFORE USE ,you **MUST FEGISTER THIS DEVICE** with your wireless provider and have your provider's.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.

You **MUST** operate this device with approved antennas and cables as specifile by the manufacturer.Antennas **MUST** be installed at least 20 cm(8 inches)from any person.

You **MUST** cease operating this device immediately if requested by the **FCC** 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 for in-building use.

a complete list of authorized antennas, cables, and cable loss:

Antenna、cables (outdoor)

Optional 1：The Yagi antenna is equipped with 15 m 4D-FB cable to connect the "OUT DOOR" port.

Frequency(MHz)	776-787
Gain(dBi)	6
Cable loss(dB)	3.8

Optional 2：Logarithmic periodic antenna with 15 m 4D-FB cable connected to the "OUT DOOR" port.

Frequency(MHz)	776-787
Gain(dBi)	8
Cable loss(dB)	3.8

Optional 3：The tubular antenna is equipped with a 15-meter 4D-FB cable to the "OUT DOOR" port.

Frequency(MHz)	776-787
Gain(dBi)	4
Cable loss(dB)	3.8

Optional 4：The plate-like antenna is equipped with a 15-meter 4D-FB cable to ground the "OUT DOOR" port.

Frequency(MHz)	776-787
Gain(dBi)	6.5
Cable loss(dB)	3.8

Antenna、cables (indoor)

Optional 1：Device "INDOOR" port connected to right angle antenna (direct connection).

Frequency(MHz)	746-757
Gain(dBi)	2.5
Cable loss(dB)	/

Optional 2：The equipment "INDOOR" port is connected to the sucker antenna (direct connection).

Frequency(MHz)	746-757
Gain(dBi)	4
Cable loss(dB)	/

Optional 3：The omni-directional ceiling antenna is equipped with a 5-meter 4D-FB cable to ground the "INDOOR" port.

Frequency(MHz)	746-757
Gain(dBi)	2
Cable loss(dB)	1.4

Optional 4：The plate-like antenna is equipped with a 5-meter 4D-FB cable to be connected to the "INDOOR" port.

Frequency(MHz)	746-757
Gain(dBi)	6
Cable loss(dB)	1.4

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