AMplitec C20L Triple Band Consumer Repeater User Manual

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PLEASE KEEP APPROPRIATELY AND CAREFULLY READ THIS USER MANUAL BEFORE INSTALLATION

- The power supply voltage of repeater should meet the standards of security requirements.
- The repeater should be installed and started by professionals.
- Keep the repeater away from heat source, do not install in a narrow space
- Ensure of grounding, waterproof and lightning protection when installing the repeater .
- Do not dismantle the repeater for repair or replacement of components.

Contents

PACKAGE CONTENT

- C20L Signal Repeater 1pc

- 12V/3A Power Adapter 1 set

- Installation Screws 1pack

PRODUCT DESCRIPTION

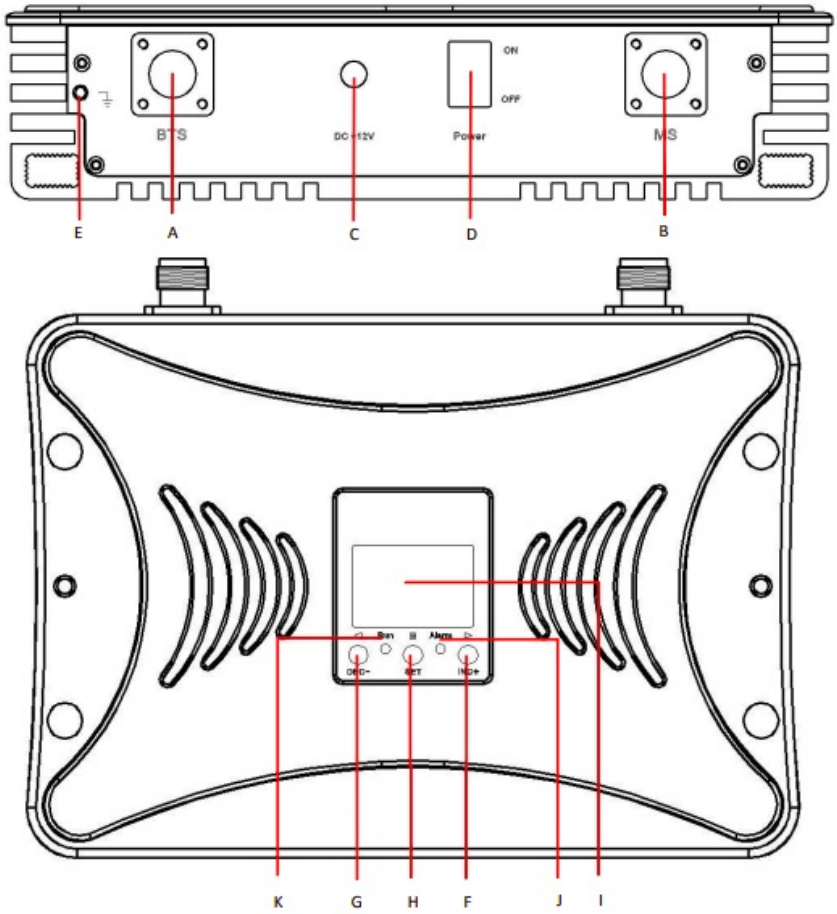
C20L triple band series is an intelligent mobile phone signal repeater, It adopts digital AL C and anti-interference technology, which can detect the signal quality in the coverage area in real time and auto adjust the working status accordingly. The signal repeater can automatically attenuate the gain of uplink and downlink according to the detected signal intensity so as to maintain the link balance; when there is insufficient isolation between indoor and outdoor antennas ,it will automatically decrease gain to eliminate self-oscillation; and when there is no user in the coverage area, the device will automatically shut off uplink to lower the power consumption and decrease the interference to the base station.

C20L triple band series support three different systems, It can amplify 2G, 3G, 4Gor 5Gsignals in local several operator’s network by selecting suitable model. With features like elegant appearance, compact size and easy to install and maintain, the coveragecanbeupto600 square meters when it is properly installed, it’s the best choice to solve week signal problems in the house, office, elevator and basement etc.

PRODUCT FEATURES

- LCD screen to display device’s operating parameters clearly, button control to make it easier to operate;
- Able to support several mobile operators’ networks;
- Low power consumption, low interference;
- Manual gain control, with 1dB step to attenuate the gain among the range of 1-31dB;
- Digital ALC technology, auto controlling the output power to ensure stable signal coverage;
- Anti interference technology, auto detecting real time isolation. When isolation is insufficient, the device will auto attenuating the gain, to prevent self-oscillation occurring to interfering the base station;
- Uplink dormant function, when no mobile user is in the coverage area, device will shut off up link output, to lower the power consumption and not to interfere the base station;
- Downlink shut off function, when the repeater is self-oscillating or overloaded, the device will shut off; and after self-oscillation and overload is eliminated, device will automatically return to work.

CONNECTOR DESCRIPTION



- A Outdoor antenna connection port(N-Female)
- B Indoor antenna connection port(N-female)
- C 12V DC power connection port
- D Power switch
- E Grounding screws
- F To value decrease button
- G To value increase button
- H To select and confirm button
- I LCD display screen
- J Alarm indicator
- K Working status indicator

OPERATION AND DISPLAY DESCRIPTION

Buttons on the Control Panel

- INC+ To increase the value
- DEC- To decrease the value
- SET To select and confirm the operation

Screen and Display

After power-on, the device will display the working frequency(The frequencies in the following operation are for reference only and the real working frequency will be matching the equipment in use.), downlink and uplink gain,

downlink output power, and isolation and ALCalarm. (figure 1)

figure 1

Frequency Checking and Setting

Press “SET” button till “Band 5:850 MHz” flashing, then press “INC+” or “DEC” to change working frequency, press “SET” button to exit.(figures 2 and 3)

figure 2

figure 3

Output Power Checking

Press “SET” button, “pout” lights, then the real-time downlink output power will be displayed on the right side of the screen.(figure 4)

figure 4

Gain Checking and Gain Attenuation Setting

Just follow step “Ⅲ” to select the frequency you want, and then press “SET” button, when “Gain UL” lights, the real time uplink gain will be displayed on the right of screen(figure5),and then press “INC+”or “DEC-” button to adjust the uplink gain(figure 6); press “SET” button, “GainDL” lights, the real-time downlink gain will be displayed on the right of screen(figure7), and then press “INC+” or “DEC-” to adjust the downlink gain(figure 8)

figure 5

figure 6

figure 7

figure 8

Uplink Auto Shutoff Function

When uplink signal input is less than -80dBm (or there is no mobile user in the coverage area), uplink automatically shut off, “Work” in the left lower of the screen will go out and “RUN” LED starts flashing(figure 9), when uplink signal input is less than -75dBm, the uplink starts to work and “RUN” LED lights.(as figure 10).

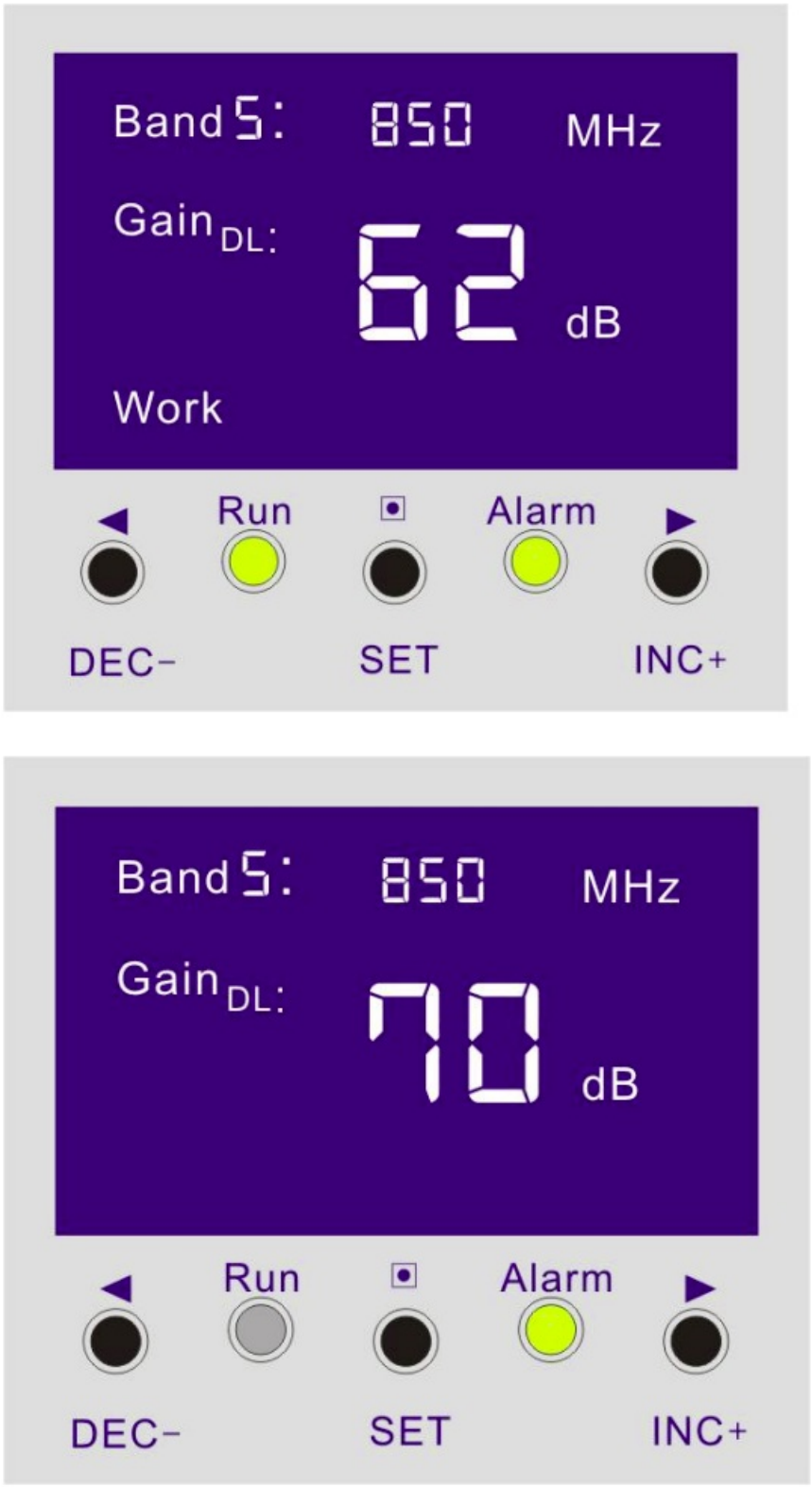

Band 5: 850 MHz
Gain DL: 62 dB
Work
Run
Alarm
DEC-
SET
INC+
Band 5: 850 MHz
Gain DL: 70 dB
Run
Alarm
DEC-
SET
INC+

figure 9

figure 10

Self-oscillation Elimination and Auto Shutoff Function

The device will automatically detect the real time isolation. When there is insufficient isolation between outdoor and indoor antennas, with “I.S.O” lighting(figure 11) ,the device will automatically attenuate its gain to make it work normally; when the isolation of outdoor and indoor antenna is less than 55dB and over, the device will self-oscillate seriously, with “I.S.O ”flashing (figure 12), the device will automatically shutoff to prevent self-oscillation from interfering the base station. In this case, turn this device off, adjust antenna orientation and height until the isolation is greater than 85dB, and then turn the power back on.

figure 11

figure 12

TECHNICAL SPECIFICATION

	Items	Uplink	Downlink
Model/ Frequency Range	C20L-B1B3B5	824~849/1710~1785/1920~1980	869~894/1805~1880/2110~2170
	C20L-B1B3B8	880~915/1710~1785/1920~1980	925~960/1805~1880/2110~2170
	C20L-B2B4B5	824~849/1850~1910/1710~1755	869~894/1930~1990/2110~2155
	C20L-B3B7B8	880~915/1710~1785/2500~2570	925~960/1805~1880/2620~2690
	C20L-B3B8B20	832~862/880~915/1710~1785	791~821/925~960/1805~1880
	C20L-B1B3B7	1710~1785/1920~1980/2500~2570	1805~1880/2110~2170/2620~2690
	C20L-B1B8B28A(B)	03~733(718~748)/880~915/ 1920 ~1980	758~788(773~803)/925~960/ 211 0~2170
	C20L-B1B3B20	832~862/1710~1785/1920~1980	791~821/1805~1880/2110~2170
Gain		65±3 dB	70±3 dB
Ripple in Band	6 ~ 15 dB		
VSWR		≤2.5	≤2.5
Output Power		15±2 dBm	20±2 dBm
ALC Adjustable Range		31 dB	31dB

Max Input Power Without Damage		0 dBm	0 dBm
Inter-modulation Products(CW)		≤-40 dBc	≤-40 dBc
Spurious Emission	9KHz~1GHz	≤-36 dBm	≤-36 dBm
	1GHz~12.75GHz	≤-30 dBm	≤-30 dBm
MGC(ATT)Gain Adjustable Range		31 dB, 1dB Step	31 dB 1dBStep
Noise Figure	5MHz	≤8 dB ≥ 20dB	≤8 dB ≥ 20dB
ACRR(W)	10MHz	≥ 20dB	≥ 20dB
EVM		≤ 8~12.5%	≤ 8~12.5%

	Items	**Uplink**	**Downlink**
Time Delay		≤1.5 μs	≤1.5 μs
RUN Light	Normal working	Green On	
	Uplink Idle Off	Green flashing	
	Derated ISO Working	Orange	
	Stop Working	Red	
Alarm Indication (ALC Alarm)	ALC not Active	—	Green
	ALC Active @ 5~10 dB	—	Orange
	ALC Active @15~25 dB	—	Red
LCD Indication	Band	Display working band and frequency	
	Gain	Display uplink and downlink gain	
	Pout	Display downlink output power	
	Work	Normal Operating: display ;	display; Uplink idle off No display

	ISO	Normal Operating : No display Derated ISO Operating: display; Self-oscillation Shutoff: flashing
	ALC	Not active: No display Active@5-10dB: display Active @15-29dB flashing
Uplink Idle Shutoff Function	The uplink PA will be off when there is no user in the coverage area	
Real-time Self Oscillation Elimination Function	The gain will be decreased when the isolation is less than it, and the amplifier's output will be shutoff when severe self-oscillation occurs	
Shutoff Function	Shutoff functions when severe self-oscillation or overload occur	
Power Supply	DC: 12V	
Power Consumption	< 25 W	
RF Connector	N-Female	
Protection Class	IP40	
Operating Humidity	< 90%	
Operating Temperature	0℃ ~ +50℃	
Size	L178 xW253xH59mm	
Weight	≤ 2.5Kg	

INSTALLATION GUIDES

Installation Requirements

1. The repeater shall be installed in an indoor space free from leakage of corrosive gas, fumes, and liquids.
2. Install outdoor antenna at good signal sources area, and maintain a height difference of more than 8meters with the indoor antenna.
3. The mounting height should be easy for cabling and dissipation, safe and easy for maintenance.
4. With the stable and independent power supply.

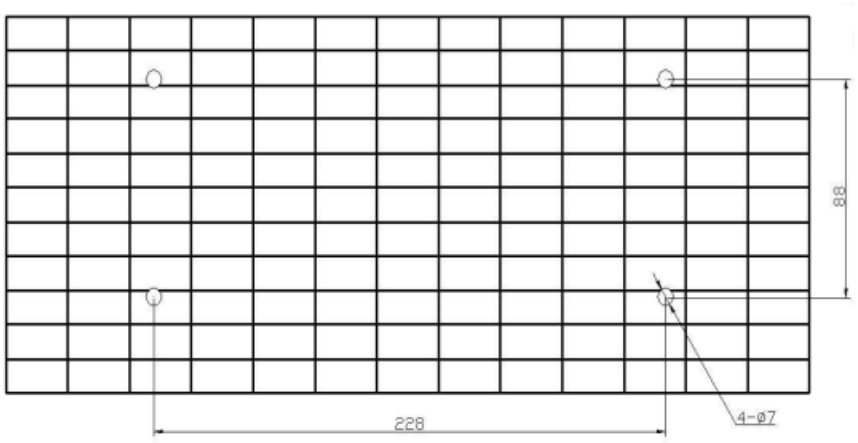
Installation Tools

No.	Items	Qty	Remarks
1	Percussion drill	1	Drill holes on wall, self-provided
2	Wrench	1	Reinforce the interface connection, self-provided
3	Mobile phone for testing	1	Test installation effectiveness, self-provided
4	Multimeter	1	Test Voltage and wiring connection, self-provided
5	Screwdriver	1	Tighten the mounting screws , self-provided
6	Waterproof tape	A few	Prevent liquid from leaking into the feeder interface, self-provided

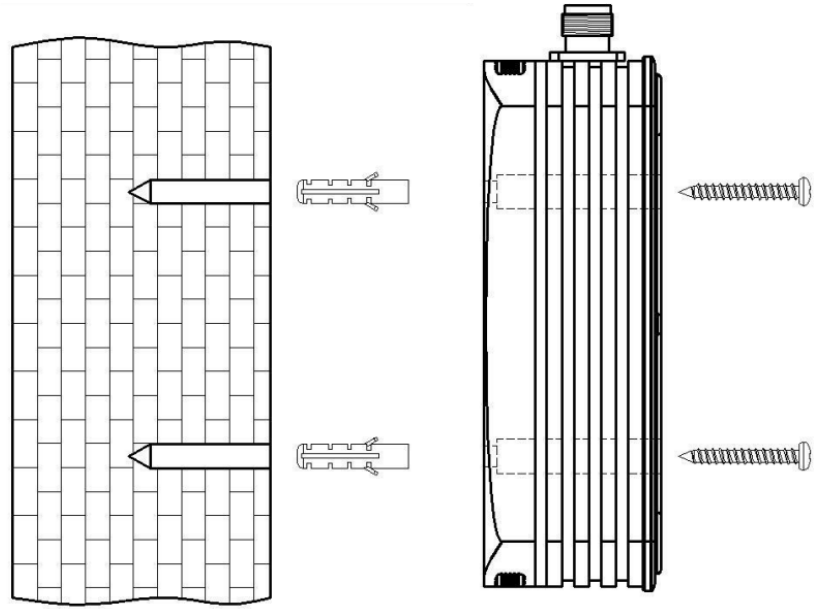
Installation Steps

The repeater should be installed on a solid wall, with the installation steps as follows:

1. Find a suitable site accordingly to the installation requirements and dimension of repeater
2. Drill 4 holes with percussion drill according to the installation holes, and the sizeare7mm,The expected hole sizes are as the following diagram indicates.(unit: mm)

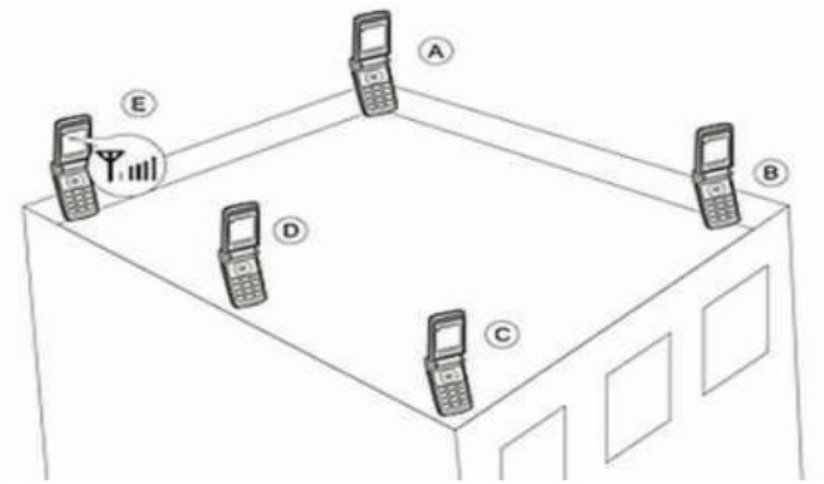


3. Put the expansion pipes(size:8mm)into the drilled holes
4. Align the fixing holes of the repeater with corresponding holes on the wall, anddrive4M6*40 screws into expansion plugs with screwdriver and fasten the repeater firmly.



Outdoor Antenna Connection

1. Take a mobile phone to test the signal strength in different direction on the roof, and select the strongest signal position to install the outdoor antenna. Make sure the outdoor antennais8meters higher than the indoor antenna.

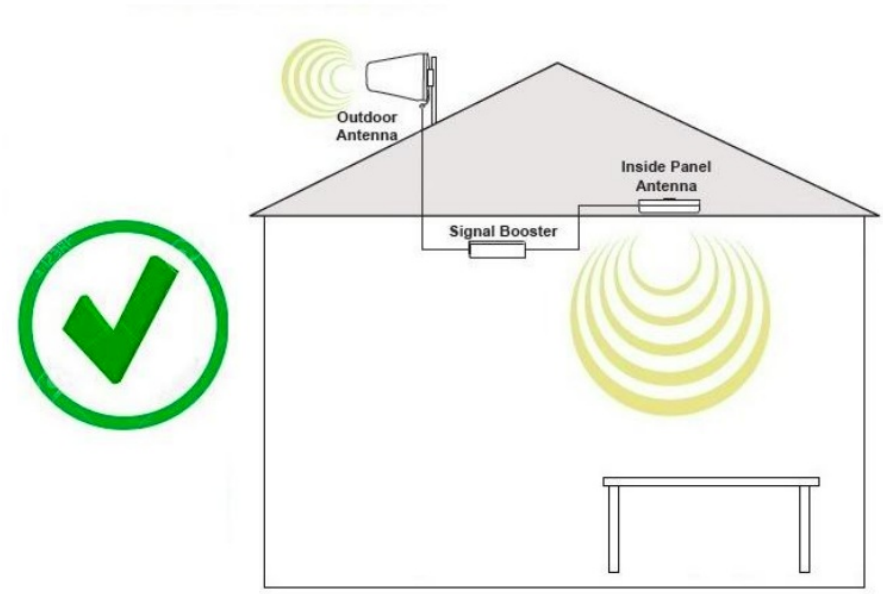


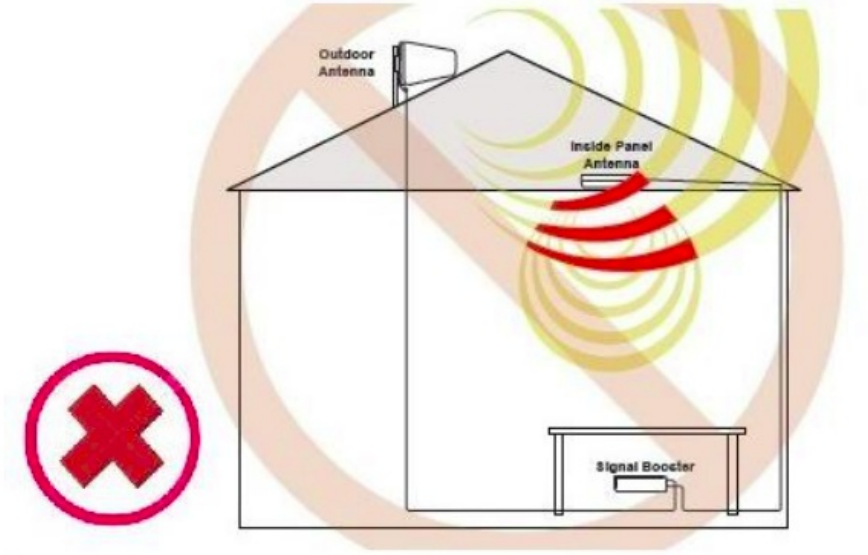
2. Install the antenna fixing rob in the direction where the signal is strongest, fix the outdoor antenna and make sure that the antenna is facing the base station as much as possible.

3. Connect the feeder, wrap the connection with waterproof tape prevent water entering, and the length of feeder should not exceed 20meters.
4. Tighten the other end of the feeder to the “BTS” or “INPUT” or “OUTDOOR” connector port of the repeater.

Indoor Antenna Connection

1. Choose an appreciate indoor antenna installation site in the indoor area to be covered.
2. Indoor antenna should towards to the coverage area, and avoid to toward same direction as outdoor antenna.(refer to below pictures)





3. Indoor antenna should be at least 3 meters away from the testing mobile phone.
4. The feeder of the indoor antenna is connected to the “MS” or “OUTPUT” or “INDOOR” port of the repeater and tightened.

Starting

1. If possible, wire the repeater grounding screws to the grid ground line.
2. Make sure the feeder cables between repeater and antennas are firmly connected.
3. Connect the DC plug of the 12V/3A power adapter to the DC+12V port of the repeater. The input AC plug connecting to the nearby 110V or 220V power outlet.
4. Check if the repeater can work normally or not, by checking the operation parameters on the screen, please refer to the “Operation and Display description” section.
5. Test signal intensity and dialing quality with the testing mobile phone in the repeater coverage area.

Maintenance and Repairing

Frequently Ask Questions and Solutions

Problems	**Reasonable Causes**	**Solutions**
Screen and indicator lights are off	Disconnected to power source	Check power adapter and power outle t, and reconnect it
“Alarm” red light display	Downlink over signal received	Attenuate gain till alarm light turns yell ow

“RUN” red light display	Downlink over signal input	Adjust outside antenna direction to we aken signal input till “RUN” light turns green; it is the best alarm indication li ght turns orange
	Uplink over signal input	Use mobile phone away from indoor a ntenna
	Outdoor &indoor antennas isolati on is less than 55dB	Adjust the direction and distance of outdoor and indoor antennas to make the isolation
I.S.O flashing on the screen	Outdoor & indoor isolation is not sufficient	Adjust the direction &distance of outd oor & indoor antenna till I.S.O. not flas hing
Everything is okay after power on, but no improvement in signal	The network of that SIM card is n ot comply with the network	Change the SIM card or change the si gnal repeater
	Indoor antenna is not successfull y connected	Check indoor connectors and cable, make sure they are connected succes sfully
	Indoor antenna damage	Change indoor antenna
Effectiveness of the repeater degra des after working for a while	Outdoor antenna damage	Change outdoor antenna
	Outdoor antenna gets loose and not toward to BTS	Adjust outdoor antenna direction and f asten it
	Cable damage	Change cable

Notes

Please disconnect the power supply when the following situations occur:

- Power supply is abnormal.
- liquid flows into device or too close to fire.
- working conditions is abnormal such as overheating or emitting a strange odor.

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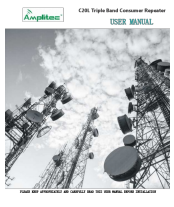
Documents / Resources

	AMplitec C20L Triple Band Consumer Repeater [pdf] User Manual C20L Triple Band Consumer Repeater, C20L, Triple Band Consumer Repeater, Band Consumer Repeater, Consumer Repeater, Repeater

References

- Amplitec | Mobile Signal Booster & Cellular Repeater Manufacturer
- User Manual