



INSTALLASJONSVEILEDNING

MOBILTELEFON SIGNALFORSTERKER

Nikrans LCD-Boats-Voice, 3G & 4G



Frek.: 850, 1900, 1700 MHz
Dekning: 500 m²

PREFACE

This user's manual describes the installation and maintenance of wide band consumer boosters. Please do read user manual carefully before installing and maintaining repeaters. The information in this manual is subject to change without prior notice.

1. SAFETY WARNINGS

Users must follow the principles below◇



Repeater should follow system requirements; assure good grounding and lightning protection.



The power supply voltage of repeater should meet security requirements; any operation shall be carried out only after turning off power in advance. Only the professional is authorized for the operation.



Do not dismantle machine, maintain or replace its components by yourself, because this way the equipment may be damaged and you may even get an electric shock.



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



Please keep away from heating equipment, because the repeater dissipates heat during working. And do not cover a booster with anything that influences heat dissipation.

2. INTRODUCTION AND REASONS FOR WEAK CELLULAR SIGNALS

Mobile Signal Booster is a perfect solution for providing improvement of cellular signal reception inside a house, office, restaurant, VIP Room, apartment, building or shopping mall.

Generally cell phones cannot pick up or maintain a strong cellular signal due to one of the two following reasons:

1. **Location of the Nearest Base Station** – Base stations are used to provide broad coverage. However there are many areas in which signal strength gets reduced due to topographic peculiarities or local Governmental restrictions regarding the height or location of base stations. Rural areas generally have fewer base stations than urban regions.

2. **Natural and Man-Made Obstructions** – Signal strength can also be negatively affected by trees, hills, buildings, weather and other obstructions. You may be relatively close to a base station but still unable to make a call. This often occurs inside houses, offices and other buildings with stucco, concrete or metal walls that may block the signal.

The Signal Booster works with two antennas. An Indoor antenna communicates with your cell phone and an Outdoor antenna communicates with the base station (BS). The Outdoor antenna receives a signal from the BS and sends it through the cable to the Signal Booster, where it gets amplified and re-transmitted by the Indoor antenna throughout a building. When the Indoor antenna picks up a signal from your cellular device, the Signal Booster amplifies that signal and transmits it through the cable to the Outdoor antenna and back to the BS.

(Note: The Signal Booster will only operate if there is an adequate signal to amplify.)

3. MODEL DESCRIPTION

4. SPECIFICATION


Dekningsområde:	500 m ²
Opplinkfrekvens:	824-849MHz & 1850-1910MHz & 1710-1755MHz MHz
Inngangsfrekvens:	869-894MHz & 1930-1990MHz & 2110-2155MHz MHz
Opplinkvinning:	60 dB
Nedlinkvinning:	65 dB
Strømforsyning:	AC 110~220V, DC5V/6A & DC12V/3A
Energiforbruk:	0.03 kW/h
Fungerer i temperaturer på °C:	-25/+55
Fuktighet:	5 - 95%
Størrelse (mm):	310×270×60
Forsterkerens vekt:	4.2 kg
dBm:	13 dBm

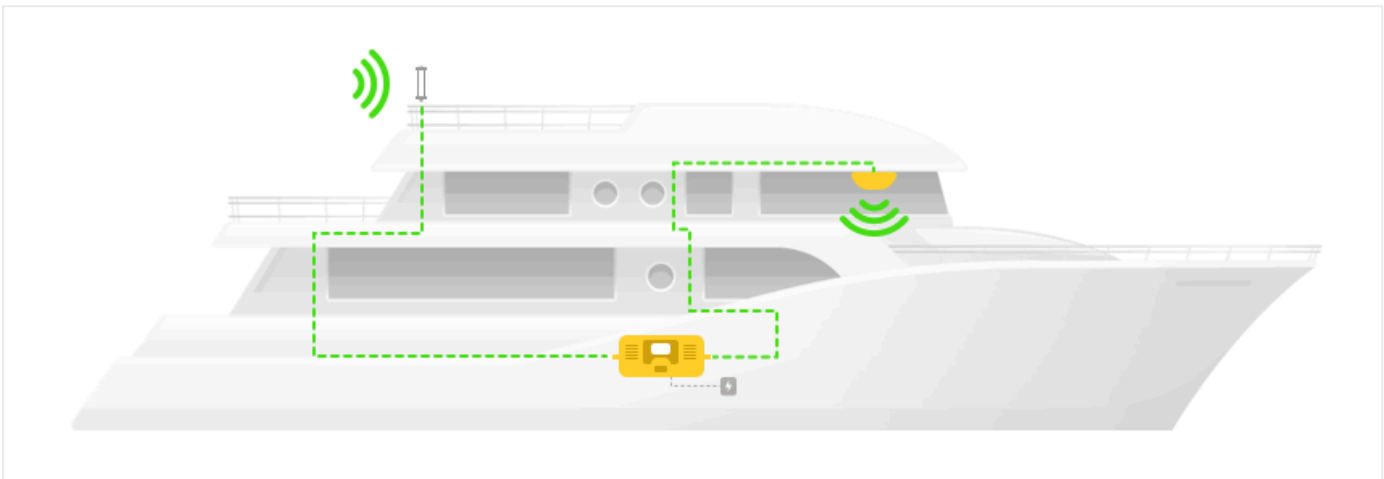
5. REPEATER SYSTEM OVERVIEW

The picture below shows how simple and fast booster installation is and how effectively it works.

Out-of-car antenna should be fixed in a proper place (for example, on a car trunk) and connected with the booster by cable. Then fasten the in-car antenna to the booster and plug the power supply into the cigar lighter. Just in a few seconds the signal will become boosted in your car.

A repeater kit includes:

- **Out-of-car Antenna** 
Function: To pick up outside signals from the base station and send them by cable to the repeater; out-of-car antenna also transmits the uplink signals from the repeater back to the base station.
- **In-car Antenna:**
It is mounted inside the vehicle with the purpose to transmit the improved signals throughout the coverage area.
- **Cables:** cables for connecting indoor and outdoor antennas.
- **Mountings:** Special mountings for antennas and the booster (depends on a booster model)
- Power Supply (12V for a cigar lighter)



6. ANTENNAS AND CABLES SETTING UP

6.1. Outdoor antenna installation

Mount out-of-car antenna onto the car trunk fixing it on a magnetic antenna's surface.

Cable layout and connector assembly

1. Keep the type, specifications, routing direction, location and curvature radius of cables in compliance with the model requirements. Place cables in correct order, bend them smoothly, and protect the surface from any damage.
2. Place RF cables separately from power cables. Take proper isolation measures if they have to be placed on the same cable racks owing to the site condition restrictions.
3. Fasten all connection parts of the whole system in correct order, from the antenna to repeater interfaces, and make sure that the electrical interfaces are well contacted. Give waterproof treatment to outdoor connection parts.
4. Take lightning protection measures for the antenna and feeder system in accordance with the system requirements. Avoid deforming the antenna feeder where grounding clips are placed, and give waterproof treatment to the feeder.

Indoor antenna installation

1. Find a suitable position for an in-car antenna (e.g. under the seat of a driver).
2. Clear and dry the place where you're going to fix the in-car antenna. Put up the nylon strap tightly on the chosen position and stick the antenna firmly.
3. Plug in the in-car antenna into the booster interface and fasten it tightly.

7. REPEATER INSTALLATION

7.1 Installation requirements

7.1.1 Installation Location Requirements

No specific installation requirements shall be followed.

7.1.2 Power requirement

DC 12V. Connect the Power adapter to the cigar lighter.

7.2. Installation Steps

INSTALLATION STEPS

1. Find a suitable position for an in-car antenna (e.g. under the seat of a driver).
2. Clear and dry the place where you're going to fix the in-car antenna. Put up the nylon strap tightly on the chosen position and stick the antenna firmly.
3. Plug in the in-car antenna into the indoor booster interface and fasten it tightly.
4. Mount out-of-car antenna onto the car trunk fixing it on the antenna's magnetic surface.
5. Plug in the out-of-car antenna into the outdoor booster interface and fasten it tightly.
6. Connect the Power adaptor to the cigar lighter. If the indicator on the booster lights up the installation has been made correctly.

NOTE: Switch on the signal booster only after installing out-of-car and in-car antennas correctly!

7. Test the signal of your mobile telephone. After installation, mobile signal should get maximally strong within all the car area. In case the mobile connection is still instable try to change the position of the antennas for a better result.

7.2.2 Repeater's ports description

1. Outdoor port: connected with the outdoor antenna by cable
2. Indoor port: connected with indoor antenna directly or by cable (depending on a booster model)
3. Connect the Power supply into the cigar lighter.

7.2.3 Accessories selection

No need. Use standard accessories.

7.3. Repeater Settings

7.3.1. Indicator Light Instructions



- There are 5 indicator lights: PWR (power), ALM (alarm), three signal strength indicators.
- Power light is always on (green).
- ALM light is red. When the booster works normally, this light is off, when the booster suffers from self-oscillation or input signal is too strong, this light is flicking. In this case the power turns off automatically and restarts after 30seconds. After repeating 5 times, the light turns on again, and it will restart after 1 hour. If the problem still exists, the light will be flicking again.
- There are totally 3 signal strength indicators, they indicate signal strength as: 0dBm, 5dBm, +10dBm, no matter of what frequency is the signal that reaches the booster, that light will be on. The light colors are yellow (0dBm), green (5dBm), blue (10dBm).

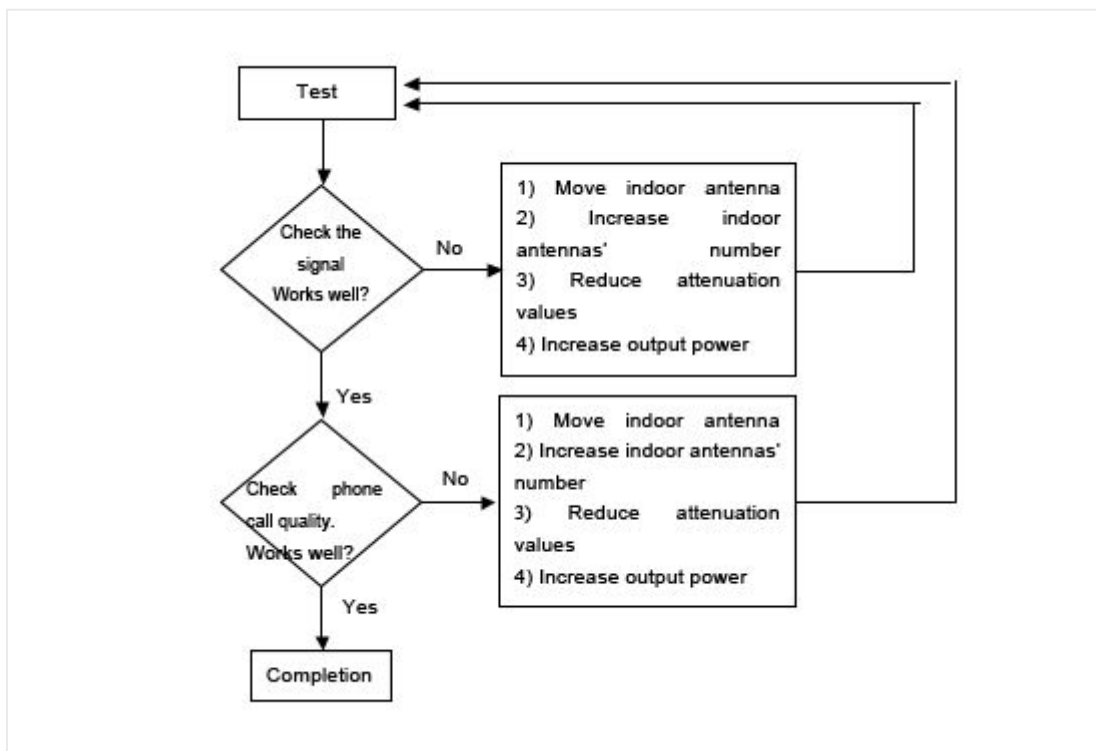
Troubleshooting

- When the ALM light is flicking or on, and the booster has self-oscillation issue, it indicates the wrong installation of indoor and outdoor antenna. In this case, please, read antenna installation instructions again and re-install the antennas.
- When the ALM light is flicking or on, and the input signal is too strong, please, change the direction or place of your outdoor antenna.

7.4. System Test

7.4.1. Check whether the coverage is good

1. If the signals in small parts of the area have not been improved, please check the following:
 - Check whether the indoor antenna is installed correctly or not; you may try to change the antenna location to improve coverage.
 - Check if it is necessary to adjust the direction of the indoor antenna.



For maximum precision in signal level testing, switch your cell phone into Field Test Mode and see dB parameter. The closer dB signal level to 0, the better cell phone reception you'll get.

- -105 to -100 = Bad/drop call
- -99 to -90 = Getting bad/signal may break up
- -89 to -80 = OK/shouldn't have problems, but maybe
- -79 to -65 = Good
- Over -65 = Excellent

Your task is to get at least -79dB signal to ensure reliable communication and strong signal inside the building.

Remark:

- **Reduce attenuation values** * — by ensuring the isolation level
- **Increase output power** * — recommended ways: to adjust outdoor antenna direction/location, or replace it to an antenna with higher gain to increase input signal strength.

7.4.2 Repeater can not communicate in Power-ON status

The repeater's power is on but the phone cannot get connected to the network and still can not communicate.

Reason: There are loose or wrong connections in the repeater system.

Solution: Please try to fasten the connections between different parts of the system.

8. FAQ

1. Will booster increase the RF radiation?

No, it will decrease instead.

Every cell phone irradiates heavily being in zones with poor mobile signal as a cell phone is constantly in searching mode. The danger is your cell phone is about 2cm to your body, which makes its usage rather harmful. And when a booster is installed, it improves the mobile signals in the coverage, and your cell phone stops irradiating strongly, thus it will reduce the RF radiation of the mobile phone tremendously.

The maximum power level of booster is 0.01W, and it decreases to be maximum 0.001W when reaching indoor antenna. And since the indoor antenna is installed over the ceiling or onto the wall, there is usually more than 3 meter away from the human body, 3meter away means at least 40dB propagation loss, or 10000 times less, 0.0000001W, and therefore it is too weak to influence human bodies though it is still a very good signal for mobile phones.

2. If the power indicator is off after installing the repeater, what should I do?

Check if the repeater's power supply works normally or not.

3. If repeater's power supply is normal, ALM light is on or flashing all the time, what should I do?

Firstly, check whether all connectors are connected well or not. If it is all right, please, adjust the direction of the outdoor and indoor antenna. Make sure the horizontal distance is 75 feet or more, the vertical distance is 20 feet or more.

4. If the repeater and power supply are installed correctly, why the signal is still bad?

1. According to the steps above, verify if all the cables and connectors are connected correctly or not and correct the connections if necessary.

2. If connections are correct, please, adjust the direction of the outdoor antenna, point it towards BTS antenna, and make sure it can accept the strongest signal.

5. After installing the repeater, the signal is good, but the connection is slow or intermittent, or I cannot hear clearly the other side?

1. Please, check the indoor antenna position, and whether the cables and connectors are connected correctly or not.

2. Adjust the indoor antenna direction and make sure it can easily receive a cell phone signal.



Hereby, Nirkans declares that this signal booster is in compliance with the essential requirements and other relevant provisions of Radio Equipment Directive (RED) 2014/53/UE (CE marking).

In Norway, it is necessary to obtain the appropriate permissions from the respective service providers. The installation of Personal Repeaters must be conducted in accordance with regulations set by the Norwegian Communications Authority (Nkom).

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