



# P208

## CBRS Outdoor Small Cell

### User Guide



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## IMPORTANT SAFETY AND INSTALLATION WARNINGS

**WARNING:** DO NOT ATTEMPT TO SERVICE THIS PRODUCT YOURSELF AS OPENING OR REMOVING COVERS MAY EXPOSE YOU TO DANGEROUS VOLTAGES OR OTHER HAZARDS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

### **MOUNTING:**

Mount this device only as described in the installation instructions, otherwise it may fall causing serious personal injury and/or damage the device. Use only with the brackets supplied with the device. Do not use attachments not recommended for this device as they may cause hazards.

### **SERVICING:**

Remove power from this device and refer servicing to qualified personnel under the following conditions:

1. If the inside of the device has been exposed to rain or water.
2. If the device does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of the controls may result in damage and will often require extensive work by a qualified technician to restore the device to its normal operation.
3. If the device has been dropped or the chassis has been damaged.
4. If the device exhibits a distinct change in performance.

### **REPLACEMENT PARTS:**

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.



# 1 Product Overview

## 1.1 Introduction

This manual is written to help service personnel understand and install the Sercomm P208 (P208-TP or P208-OP) Citizen Broadband Radio Service (CBRS) outdoor Small Cell. This first section gives a full product description and a block diagram. The remaining sections provide component identification diagrams, installation instructions, and specifications.

## 1.2 General Description

This Small Cell is a PoE++ power device that receives power around 30W from a PoE power source equipment through all four pairs of Ethernet. The device operates at CBRS band or LTE band 48. Its operating frequency range is from 3550MHz to 3700MHz. The device supports 2x2 MIMO and has 2W EIRP. The antennae of device is embedded. The backhaul of the Small Cell is Ethernet.

The device can be managed or monitored by Bluetooth or a HeMS server .

## 1.3 Housing

A rugged die cast aluminum on the bottom of the housing is designed. The device has wireless antennae and aluminum or metal will block wireless transceiver. Externally, the housing base has installation mounts, a ventilation valve, a connector, a grounding bolt:

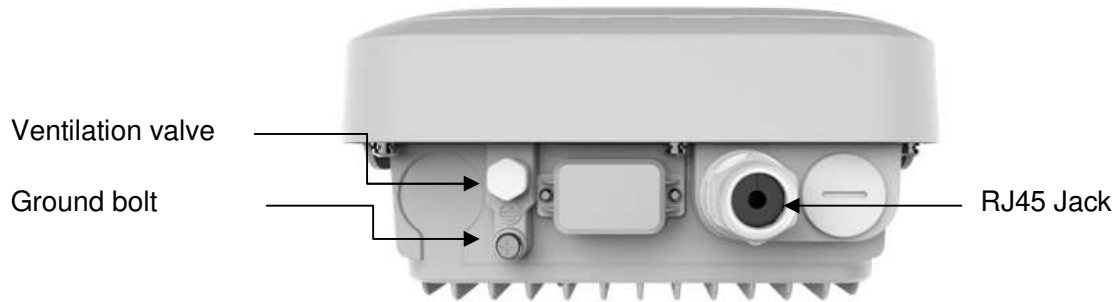
- A weather-tight RJ45 jack for connection from a PoE source equipment device to provide power and backhaul to the Small Cell.
- A waterproof, dustproof ventilation valve. Its purpose is to prevent invasive moisture, dust and other chemical crystals from entering electronics, electrical equipment and applies the characteristic of the highly microporous PTFE membrane to expel pressure generated by moisture and excess heat, to avoid too large internal pressure aggregation to damage seal housing and internal electronic components, thereby extend the life of equipment.

The valve is setup completed before shipping. Don't have to do anything in



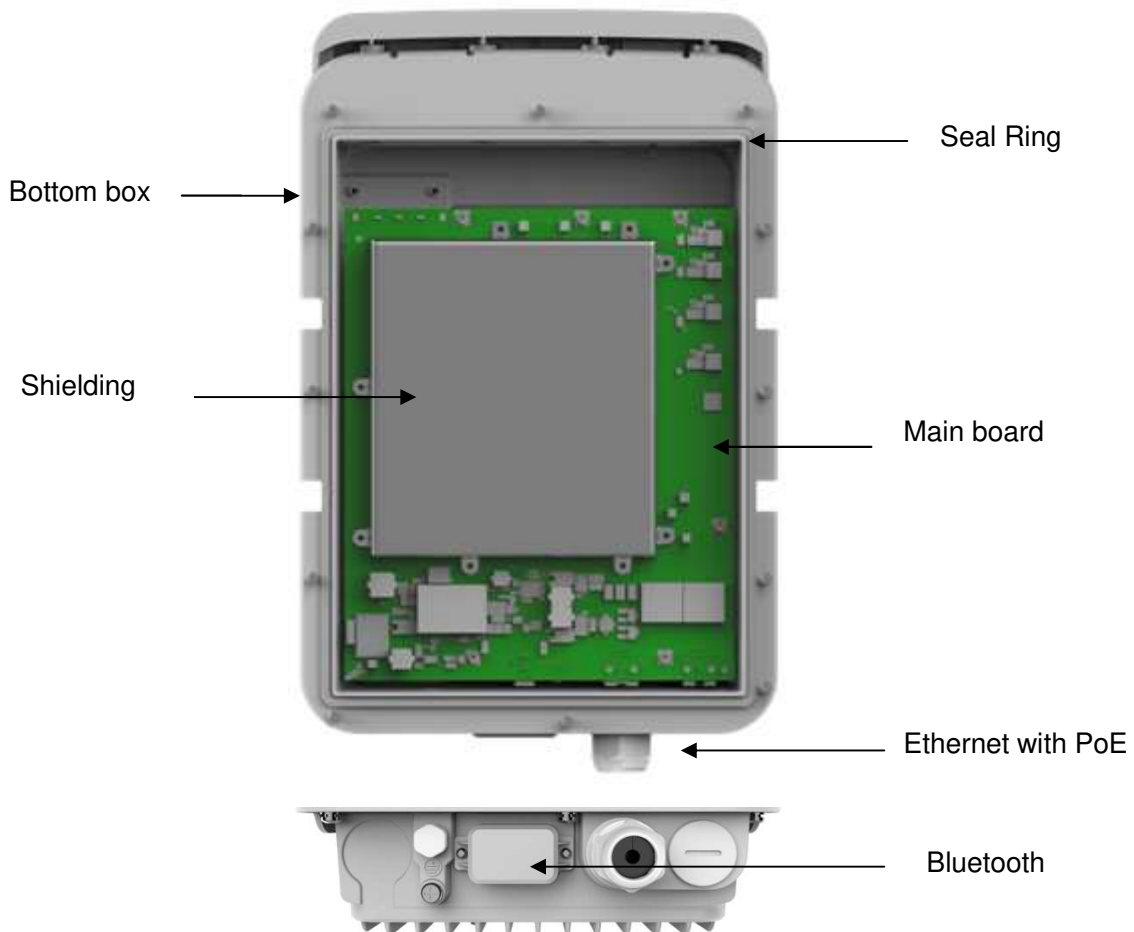
installation for that.

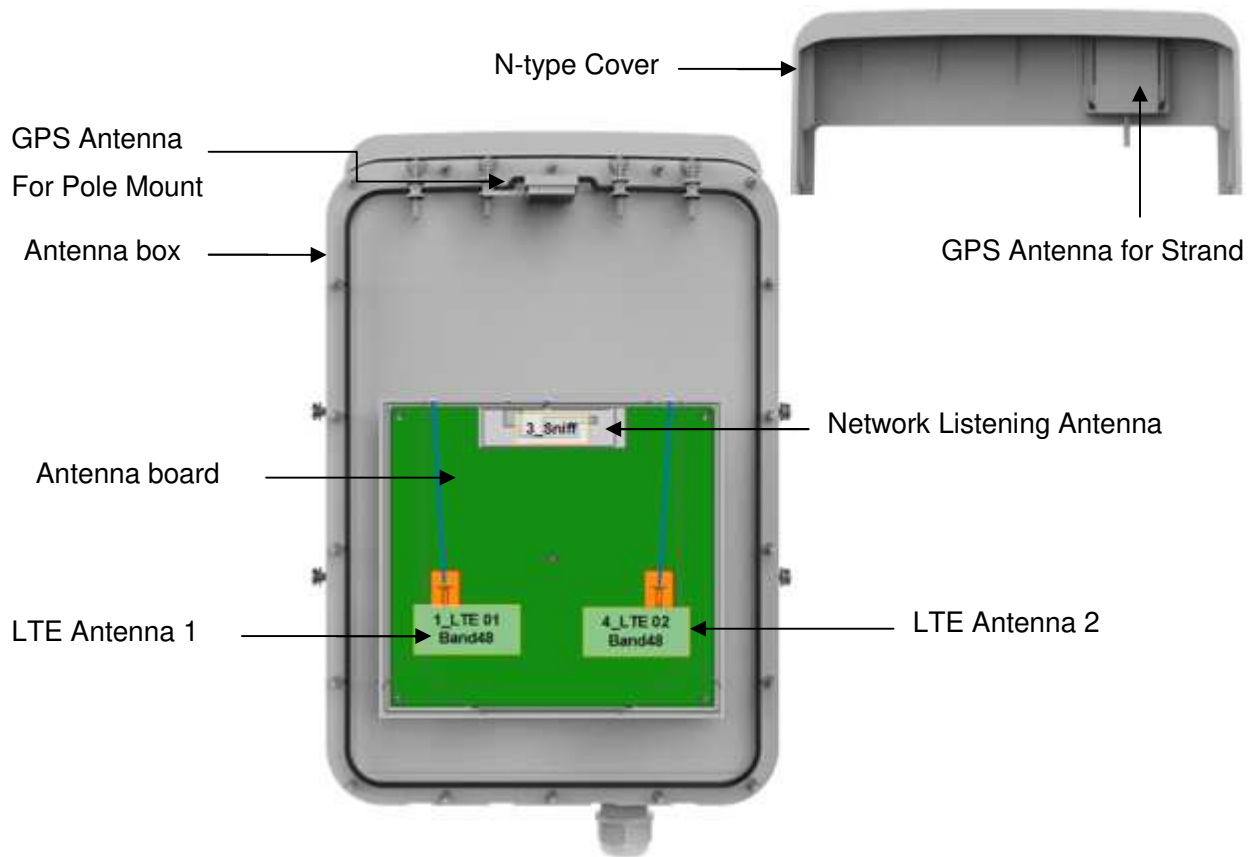
- A ground bolt is to connect ground with a ground cable.



## 1.4 Major Components

Internally, the housing bottom harbors the PCBA of the Small Cell including bluetooth. The housing top harbors the LTE omni operating CBRS antennae and network listening band 41 antenna.





## 2 INSTALLATION

Installation of the outdoor Small Cell is similar to the installation of an outdoor WiFi AP.

### 2.1 Pre-Installation

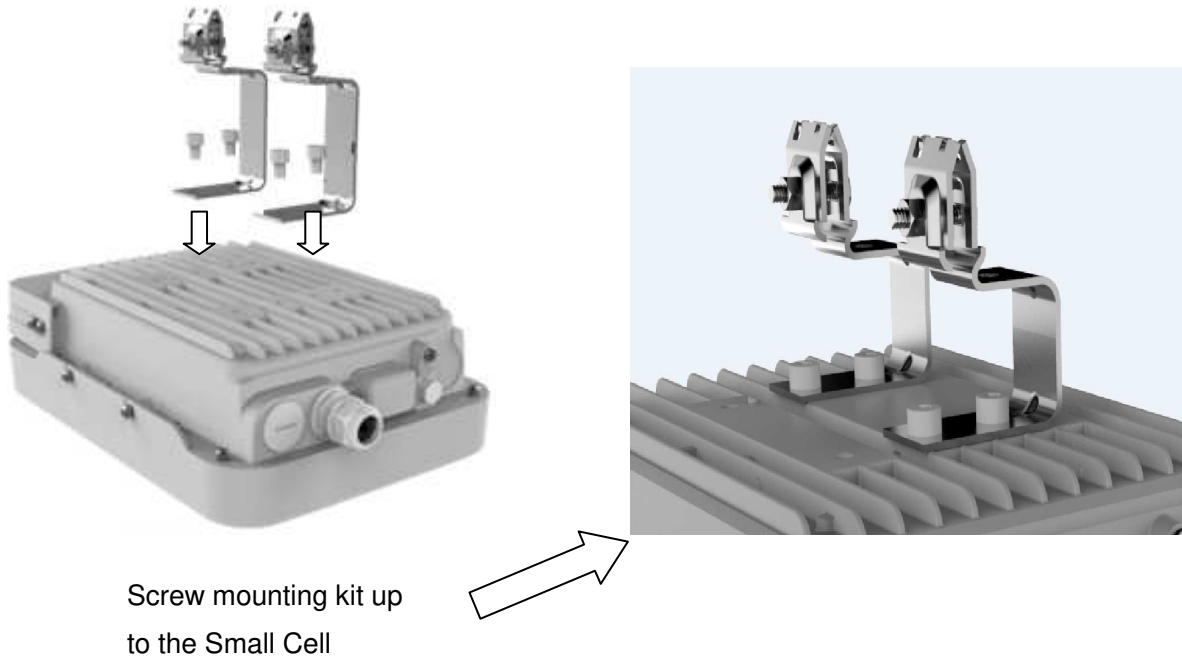
Upon receipt of the CBRS Small Cell, inspect the carton for any external damage. If damage is present inspect the Small Cell exterior for damage. Report any apparent damage to the shipping agent and Sercomm sales office.

### 2.2 Power Requirements

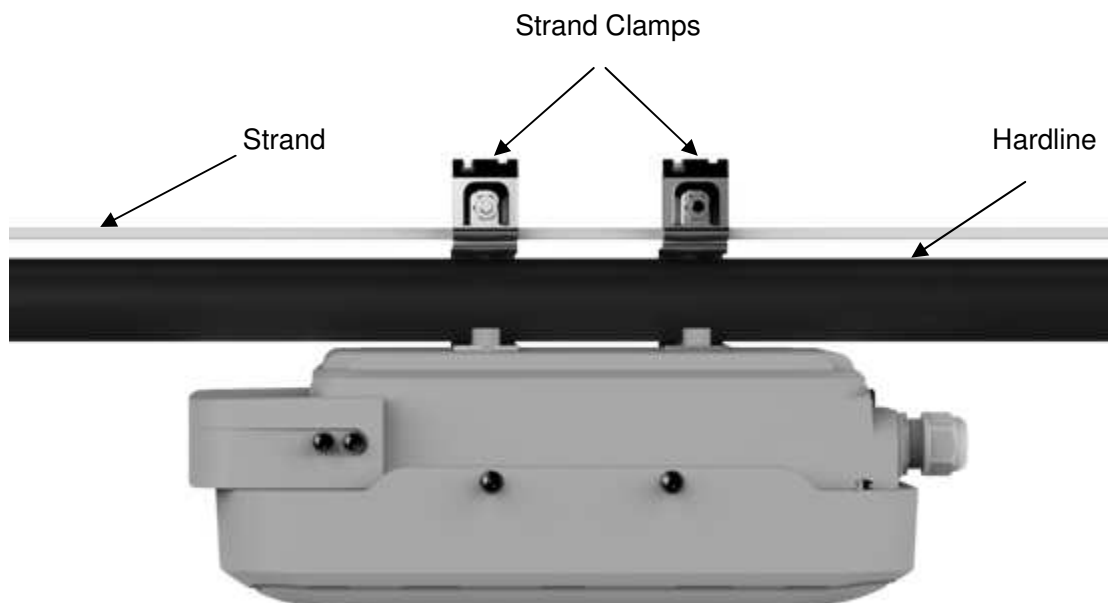
The CBRS Small Cell needs 30W power from a PoE source equipment like a DOCSIS Gateway through a Cat 5 cable.

## 2.3 Installation Diagrams

### Strand Mount



Make strand through mounting kit clamps and then screw the bolts on the clamps to lock the strand. Finally, it will look like below:



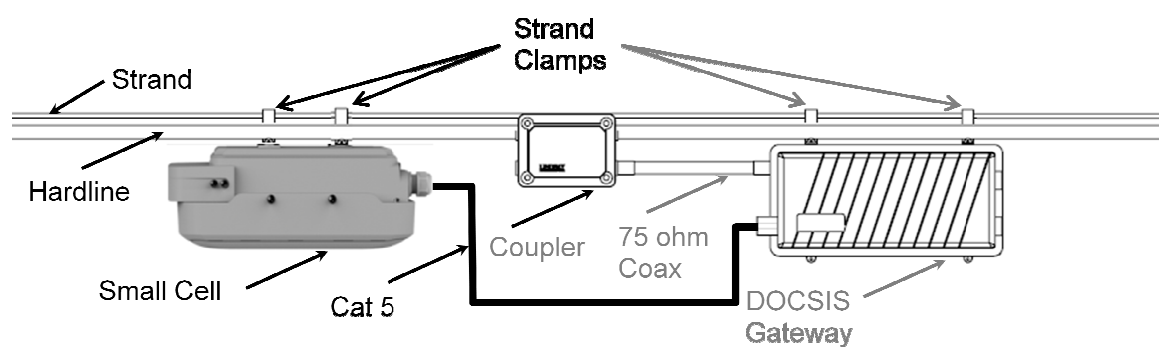


## Pole Mount



Loose the screws to clamp the pole by re-screwing the screws.

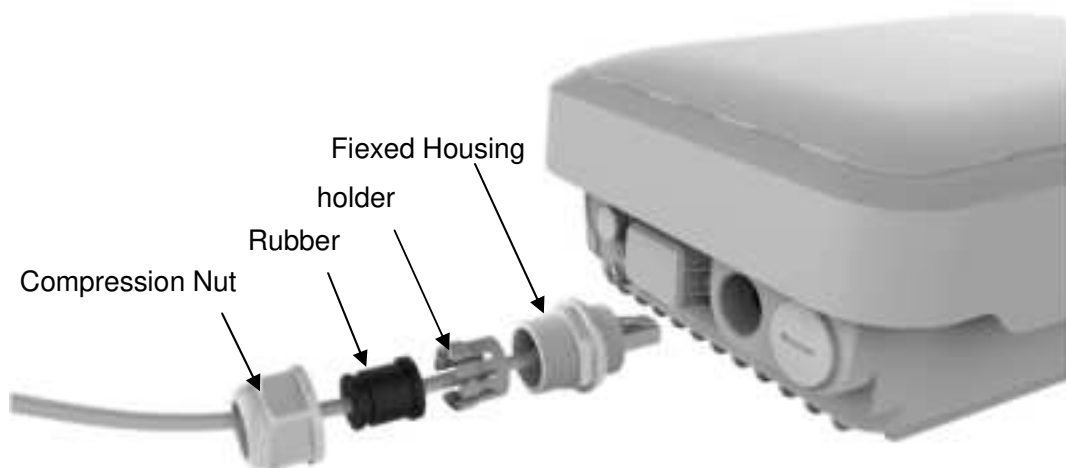
## Strand Mount with DOCSIS Gateway



## 2.4 Installation

*Installing the device requires professional training. The device must be professionally installed by a qualified engineer familiar with system. Failure to properly install this product may result in physical injury and/or damage to property.*

1. Before installing the device, please make sure the PoE source equipment (like a DOSCIS gateway that provides PoE power source) has been installed.
2. Using the diagrams in this section as guide, mount the Small Cell at its final location.
3. Attach the shielded Ethernet outdoor CAT 5 cable from PoE source equipment to the device as shown in section 3.5. like below diagram.



## 2.5 Attaching the Ethernet Cable

1. Loosen the compression nut, rubber, holder and fixed housing completely.
2. Insert the cable, with pre-installed RJ45 connector, through the nut, rubber holder and fixed housing to the device.
3. Screw the entire compressed nut into the fixed housing, which is already mounted on the enclosure. The rubber gasket should be between the fixed housing and the holder. Tighten the holder and rubber to create a seal.



## 3 Small Cell Specifications

### 3.1 HOUSING DIMENSIONS





## 3.2 Table of Specifications

Key Item	Specification
Small Cell Type	Outdoor
Working LTE Band/frequency	Band48/CBRS band /3550~3700MHz
Listening bands	Band 48 & Band 41
3GPP Release	Release 9
TDD Configuration	1,2
Bandwidth Supported	5, 10, 15, 20 MHz and bandwidth of air sniffing is 10 or 20MHz
Total Tx Output Power	2W EIRP
Transmit dynamic range of the UUT (in EIRP, dBm/MHz).	EIRP Dynamic Range / MHz: [-36dbm, 30dbm]
Transmission Mode Support	TM2, TM3, TM4
MIMO	2x2 MIMO Support
LTE Antennae	Internal Antenna
GPS antenna	Internal Antenna
Active user number	64
Number of UEs in RRC Connected	96
Time Synchronization	OTA, GPS & IEEE1588v2
VoLTE with QoS	Support
Backhaul port	1 x Giga Ethernet
TR-69	Support
IPSec	Support
SSH over Public IP Address	Support
SAS	WINNF-TS Support
SON	SuperSON™ Support
HeMS	Support TR069 standard HeMS or Sercomm's SuperSON™
Local wireless maintenance port	Bluetooth
Input Power Requirement	From PoE
Operating temperature	-20oC ~ +55oC
Mount	Strand mount or Pole mount
Enclosure rate	IP65
Physical Size	339 x 232 x 119 mm (13.3 x 9.1 x 4.7 in)
Weight	Around 9.9 lbs (4.5kg)



## Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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 of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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

### Radiation Exposure Statement:

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.

## Professional installation instruction

### 1. Installation personal

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

### 2. Installation location

The product shall be installed at a location where the radiating antenna can be kept 20cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

### 3. Installation procedure

Please refer to user's manual for the detail.

### 4. Warning

Please carefully select the installation position and make sure that the final output power does not exceed the limit set forth in relevant rules. The violation of the rule could lead to serious federal penalty.