



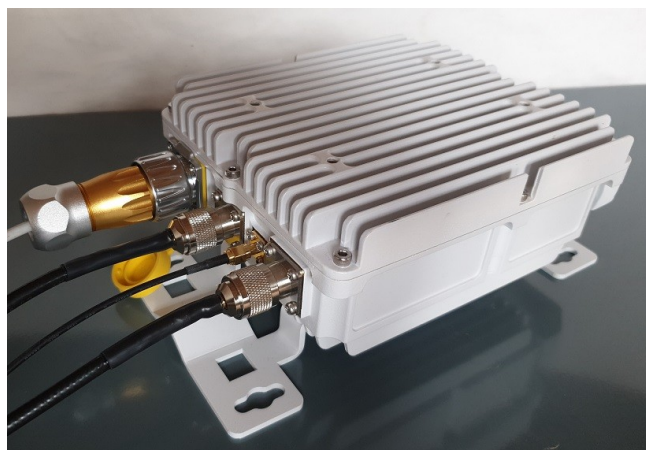
## ORS / OPEN RADIO STATION

### **User Manual**

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**Version 1.2**

**07/07/2021**



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This User Manual (UM) provides the information necessary for Telecom operators to effectively use the Open Radio Station (ORS).

The ORS is a 4G/5G LTE (Long Term Evolution) base station.

The ORS come in a white metallic case (see picture) which includes an embedded computer and a PCB radio. The ORS use Power over Ethernet (PoE) to be powered on and antennas to emit/receive the RF signal. Note that this User Manual only applies to the ORS itself, not to the power system (Power injector, cable) nor the antennas.

Each ORS is designed to work on a given LTE band (the band can be TDD or FDD): the radio PCB is mounted with filters specific to the desired band.

The band is specified on the sticker on the ORS side.

This User Manual applies to all ORS no matter the band.

ORS is IP54 ([https://en.wikipedia.org/wiki/IP\\_Code](https://en.wikipedia.org/wiki/IP_Code)) under normal condition of usage (warning: see 2.2 Cautions & Warnings).

# 1. Overview

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The ORS is intended to provide 4G/5G network in specific location. The client must install the ORS at his own convenience where it best suits its need. The client needs to check that he has the right to operate a LTE network at this location and the right to operate with LTE band used by the ORS. (warning: see 2.2 Cautions & Warnings).


## 1.1 Conventions

Many information are available online (notably in <https://handbook.rapid.space>). In this case, the link is an hyperlink in blue.

Logos on the stickers:

- (€) **CE marking** is an administrative marking with which the manufacturer or importer affirms its conformity with European health, safety, and environmental protection standards for products sold within the European Economic Area (EEA). It is not a quality indicator or a certification mark. The CE marking is also found on products sold outside the EEA that have been manufactured to EEA standards. This makes the CE marking recognizable worldwide even to people who are not familiar with the European Economic Area. It is in that sense like the FCC Declaration of Conformity used for selling certain electronic devices in the United States.

The CE marking is the manufacturer's declaration that the product meets EU standards for health, safety, and environmental protection. The CE mark indicates that the product may be sold freely in any part of the European Economic Area, regardless of its country of origin.

-  The **Waste Electrical and Electronic Equipment Directive (WEEE Directive)** is the European Community Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2011/65/EU, became European Law in February 2003. The WEEE Directive set collection, recycling and recovery targets for all types of electrical goods, with a minimum rate of 4 kilograms (9 lb) per head of population *per annum* recovered for recycling by 2009.

## 1.2 Cautions & Warnings

### LTE bands

The usage of LTE frequency bands is strictly regulated in many countries. The user needs to make sure he complies with all existing rules in the country where the ORS is run.

### Water

The ORS is waterproof ONLY IF all the following cables have been properly mounted:

- 1 ethernet cable at least cat 6
- 2 antenna cables
- 1 GPS antenna cable

Regarding the ethernet cable, it must be mounted using the special connector sent with the box. RapidSpace declines all responsibility in the event of damage resulting of water if the connector was not properly mounted.

## 1.3 Condition of usage

### Altitude :

No special altitude condition

### Operating temperatures:

The ORS could be use up to 55 ° Celsius in a very ventilated place in the shade as in the sun

The ORS cannot be started at external temperatures less than 0 ° Celsius however once started the outside temperature can drop down to -25 ° Celsius

**Water :**

The ORS is IP54 and can be mounted outdoor. Please make sure to read 2.2 Cautions & Warnings.

**Sun :**

The ORS can resist the sun. Please make sure to use ethernet cable resistant to UV.

## 2. Getting Started

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### 2.1 Material needed to use the ORS

Here is the list what you need to use the ORS :

- Poe Injector 50/60W max 50V
- Category 6 ethernet cable or higher
- two antennas with short and efficient cables
- any UE or modem compatible with the ORS' band

### 2.2 LTE band licence considerations

Warning: you need to be make sure you have the right to use the ORS band in the location you start it (see Cautions & Warnings).

### 2.3 Installation

For the warranty conditions to apply the assembly conditions below must be respected :

- Indoors or outdoors, the ORS should be mounted vertically to a wall or pole with the handles provided inside the enclosure. This ensures good cooling by the box fins and protects the ORS against any entry of humidity.
- The ORS must be placed in an airy environment.
- The choice and position of the antennas is essential for optimum operation.
- Bolts, screws, dowels or flanges for pole mounting are not provided.

In any case, you should not open the ORS. The handle or the flanges can be screwed on from the outside

### 2.4 Power on the ORS

See [https://handbook.rapid.space/user/rapid\\_space-How.To.Power.On.Your.ORS](https://handbook.rapid.space/user/rapid_space-How.To.Power.On.Your.ORS).

### 2.5 Do a first test

See <https://handbook.rapid.space/user/rapidspace-How.To.Test.Your.ORS>.

### 2.6 Poweroff the ORS

In order to poweroff the ORS, you can simply unplug the power cable from the ORS.

## 3. Maintenance & Support

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### 3.1 Maintenance

No hardware maintenance is needed and you should never open the ORS box. In case of malfunctioning, please contact RapidSpace support (see section below).

The software maintenance is done remotely by RapidSpace.

### 3.2 Support

RapidSpace fully supports the ORS with the help of Amarisoft. All support should go through RapidSpace which in turn can contact Amarisoft if needed.

Table 1 - Support Points of Contact

Contact	Organization	Email	Role	Responsibility
Jean-Marc Ouvrard	RapidSpace	jm.ouvrard@rapid.space	Engineer	Radio PCB
Thomas Gambier	RapidSpace	thomas.gambier@rapid.space	Engineer	Software



## Appendix A: Record of Changes

Table 2 - Record of Changes

Version Number	Date	Author/Owner	Description of Change
Version 1.2	05/08/2021	Thomas Gambier	Add descriptions of the logos on the stickers
Version 1.1	07/07/2021	Thomas Gambier	Add "Installation" and "Maintenance" chapters
Version 1.0	04/05/2021	Thomas Gambier	First version

## Appendix B: Acronyms

Table 3 - Acronyms

Acronym	Literal Translation
ORS	Open Radio StationRS
LTE	Long Term Evolution
PoE	Power over Ethernet
TDD	Time Division Duplexing
FDD	Frequency-Division Duplexing
PCB	Printed Circuit Board
UE	User Equipment
UM	User Manual

## Appendix C: Referenced Documents

Table 4 - Referenced Documents

Document Name	Document Location and/or URL	Comment
RapidSpace Websites	<a href="https://www.rapid.space">https://www.rapid.space</a> <a href="https://shop.rapid.space">https://shop.rapid.space</a>	Shop is to order a new ORS.
How-To Power On	<a href="https://handbook.rapid.space/user/rapid-space-How.To.Power.On.Your.ORS">https://handbook.rapid.space/user/rapid-space-How.To.Power.On.Your.ORS</a>	
How-To First Test	<a href="https://handbook.rapid.space/user/rapidspace-How.To.Test.Your.ORS">https://handbook.rapid.space/user/rapidspace-How.To.Test.Your.ORS</a>	

## Appendix D: Approvals

The undersigned acknowledge that they have reviewed the User Manual and agree with the information presented within this document. Changes to this User Manual will be coordinated with, and approved by, the undersigned, or their designated representatives.

**Table 5 - Approvals**

Document Approved By	Date Approved
Name: <Name>, <Job Title> - <Company>	Date
Name: <Name>, <Job Title> - <Company>	Date
Name: <Name>, <Job Title> - <Company>	Date
Name: <Name>, <Job Title> - <Company>	Date