



User Manual
TR44KA
BAND 24
4TRX 4X2WATT
4G/5G NR RAT

TABLE OF CONTENTS

1	REVISION HISTORY	3
2	GENERAL	4
2.1	WARNINGS	4
2.2	SITE CONSIDERATIONS.....	5
2.3	ENVIRONMENTAL	5
2.4	WARNING MARKS.....	6
3	PREPARATION	7
3.1	UNPACKING AND INSPECTION	7
3.2	TOOLS.....	7
4	INSTALLATION OF THE TR44KA.....	8
4.1	TR44KA ACCESSORIES.....	8
4.2	WALL INSTALLATION (BACK ON THE WALL)	9
4.3	WALL INSTALLATION (SIDE ON THE WALL)	15
4.4	POLE INSTALLATION	21
4.5	TR44KA MOUNTING DIMENSION SPACING	22
5	RADIO SETUP.....	23
5.1	RADIO INTERFACE.....	23
5.2	TYPICAL CONNECTION	24
6	TROUBLESHOOTING	25

1 Revision History

Version	Date	Change Summary
1.0	25/04/2022	Initial version.
1.1	29/06/2022	Add section 5 and 6
1.2	23/08/2022	Update warnings and warning marks
1.3	16/09/2022	Add SFP+ models
1.4	03/10/2022	Update separation distance

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2 General

The TR44KA components are designed for maximum safety and reliability when they are installed, used, and maintained by trained and qualified technicians in accordance with the procedures and instructions contained in this manual. To ensure the safe operation of your system, always follow the safety and operational recommendations in this manual.

2.1 Warnings

- TR44KA is not a consumer product. Please install and use TR44KA in accordance with the instructions.
- Before installing or modifying any TR44KA equipment, read and fully understand the entire instructions in this guide.
- Only qualified personnel are authorized to install and maintain the TR44KA.
- Changes or modifications to the TR44KA equipment not expressly approved by the manufacturer could void the product warranty and the user's authority to operate the equipment.
- Follow Electrostatic Discharge precautions to avoid any damage to PCB, PSU, etc.
- Keep equipment powered-off during installing or modifying.
- Low path loss cables connected to antennas are highly recommended.
- This is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC License to operate this device.
- To comply with FCC RF exposure compliance requirements, each individual antenna used for this transmitter must be installed to provide a separation distance greater than 42.3cm or more from all persons during normal operation and must not be co-located with any other antenna for meeting RF exposure requirements.

Note: 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Only authorized person can enter the area where the antenna is installed. And the person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program

2.2 Site Considerations

- TR44KA complies with FCC RF exposure limits for an uncontrolled environment.
- The system delay should be taken into consideration when there are neighbouring BTS sites with overlapping in coverage.
- Pick an ideal easy-to-reach location for installation convenience.
- This equipment must operate at a minimum separation distance of 42.3cm from the user. Radius of space around TR44KA system equipment verified for the convenience of maintenance and on-site inspection.

2.3 Environmental

Humidity and temperature have adverse effects on the reliability of the TR44KA system. Therefore, it is highly recommended to install the equipment in locations with stable humidity, temperature, and ventilating.

The equipment has to operate within the following humidity level and temperature range:

Maximum humidity: 100%

Temperature range: -40 to 55°C

2.4 Warning Marks

The warning marks on the equipment shell should be kept clean, readable, and identifiable.



ALWAYS disconnect all lines and power connections before servicing or disassembling this equipment.

TOUJOURS débrancher toutes les lignes et connexions électriques avant de réparer ou de démonter cet équipement.



NEVER touch the surface after the devices power on.

Ne touchez JAMAIS la surface après la mise sous tension des appareils.

Notice
Inadequate circulation
Inadequate circulation of cooling air can cause some units to become too warm. This can lead to operational impairment.
Cover all installation slots for unequipped units with blanking panels.



Touching a hot heater may cause burns.
Do not touch the heaters.
Before touching the units wait until they have cooled down, wear safety gloves and clothes.



For performance and safety reasons, NEVER disassemble and remodel the devices.

Pour des raisons de performance et de sécurité, NE JAMAIS démonter et remodeler les appareils.

3 Preparation

3.1 Unpacking and Inspection

Unpack and inspect the packages as follows:

1. Open the shipping packages carefully for each unit from the protective packing sponge.
2. Ensure that all equipment and accessories have been delivered.
3. Ensure that all equipment and accessories have no damage. If there is any damage, contact your Mavenir service agent.

3.2 Tools

Electric drill, cross head screwdriver, side cutters, ladder, and other tools are needed for TR44KA installation which is not offered from Mavenir for now. Customers to provide these tools themselves.



Drilling Machine



Pen



Allen Wrench T5



Combination
Spanner 17mm



Nut M10 and M12

4 Installation of the TR44KA

4.1 TR44KA Accessories

	① Nut M10	② Screw M6×14	③ Flat Washer M10	④ Spring Washer M10
				
⑤ Handle	⑥ Expansion Bolt M10×90		⑦ Optical Transceiver	
				
⑧ Mounting Bracket I	⑨ Mounting Bracket II		⑩ Nut M12	
				
⑪ Flat Washer M12	⑫ Spring Washer M12		⑬ Bolt M12	
				
⑭ DC Power Lead 2m	⑮ Ground Wire 2m			
				

Figure 1. TR44KA Accessories

4.2 Wall Installation (Back on the Wall)

1. Attach and fasten the handle to the side of TR44KA with screws M6×14 using T5 Wrench.

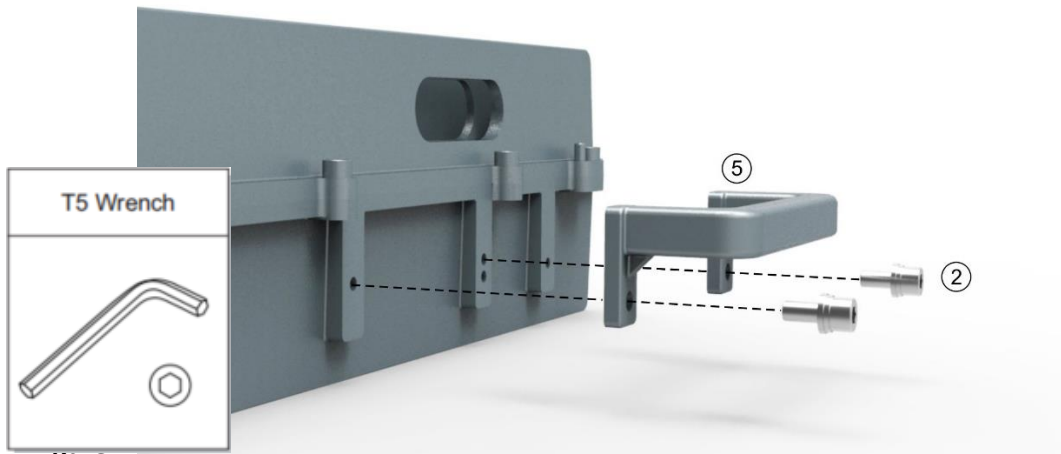


Figure 2.

2. Attach and fasten the Bracket I to the back of TR44KA with screws M6×14 using T5 Wrench.

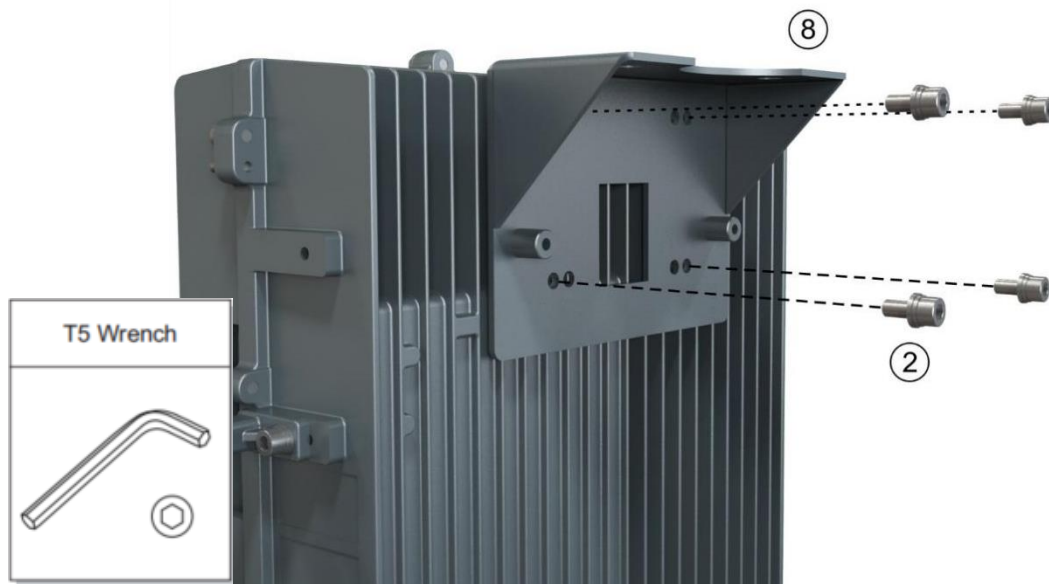


Figure 3.

3. Mark the position of the drilling holes in the mounting Bracket II. Note: $R=13\text{mm}$.

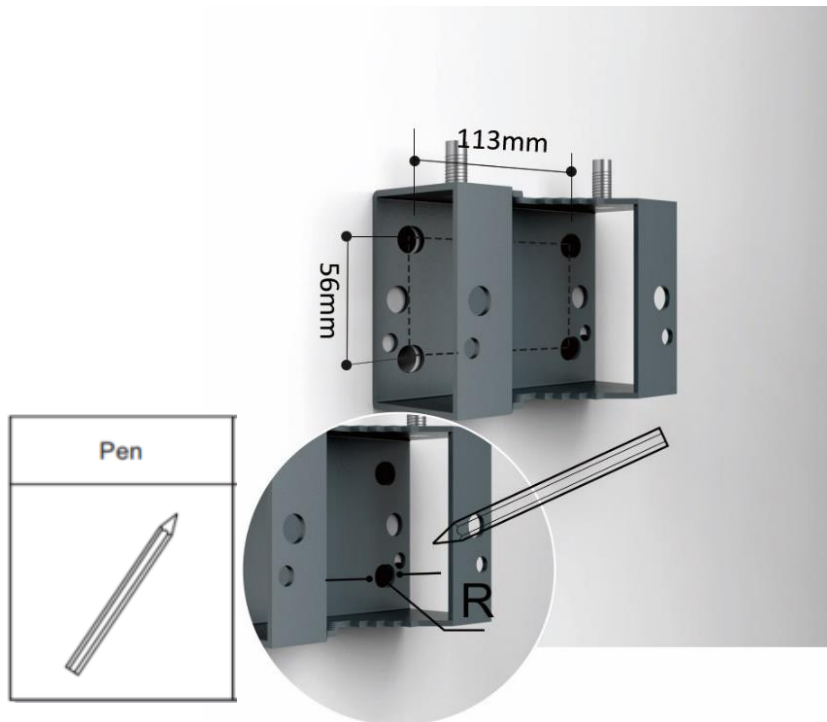


Figure 4.

4. Drill 4 holes at the marked positions. Note: $H=70\text{mm}$

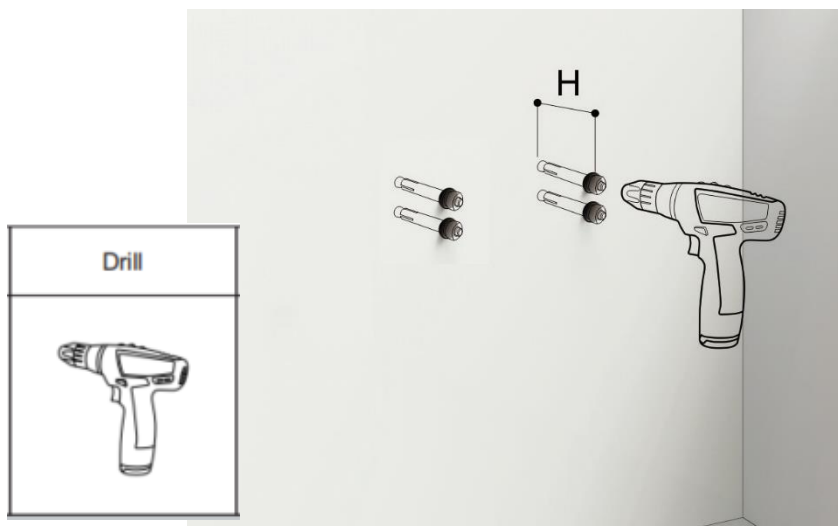


Figure 5.

5. Attach the dowels, expansion screws or the like and fasten the Bracket II to the wall.

Tips: use Bracket II as a reference to control each devices' separation distance before hanging and locking TR44KA up.

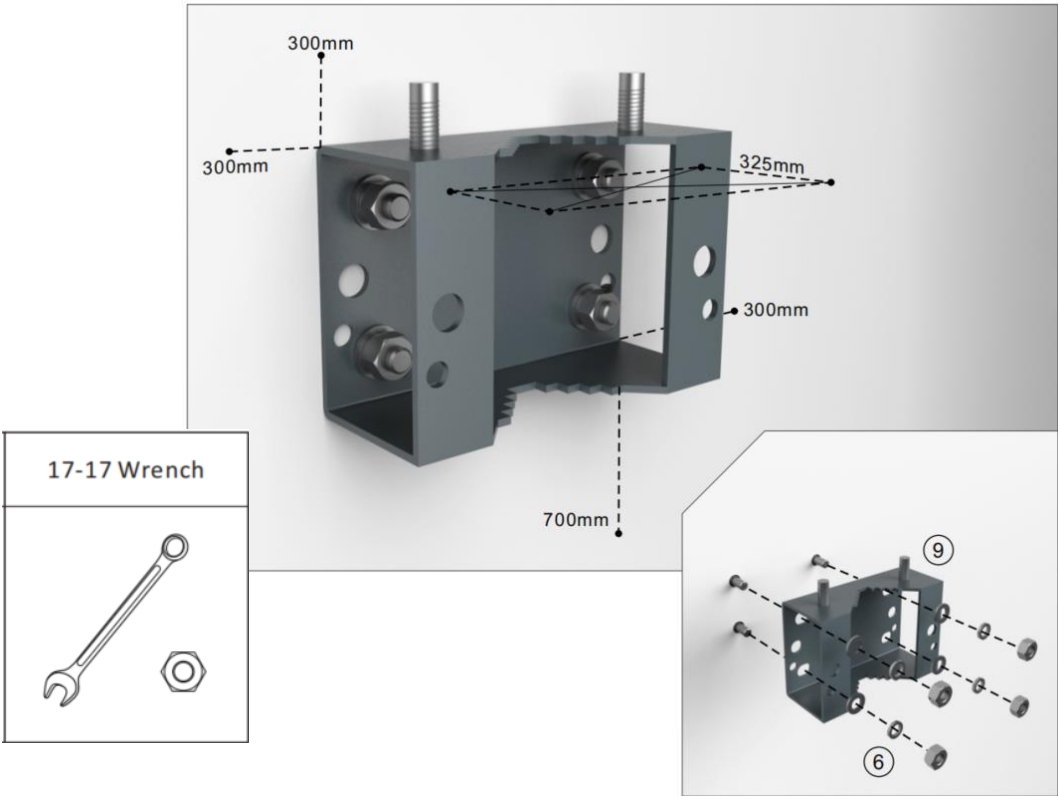


Figure 6.

6. Hang the TR44KA on the mounting bracket II and fasten with nuts M10.

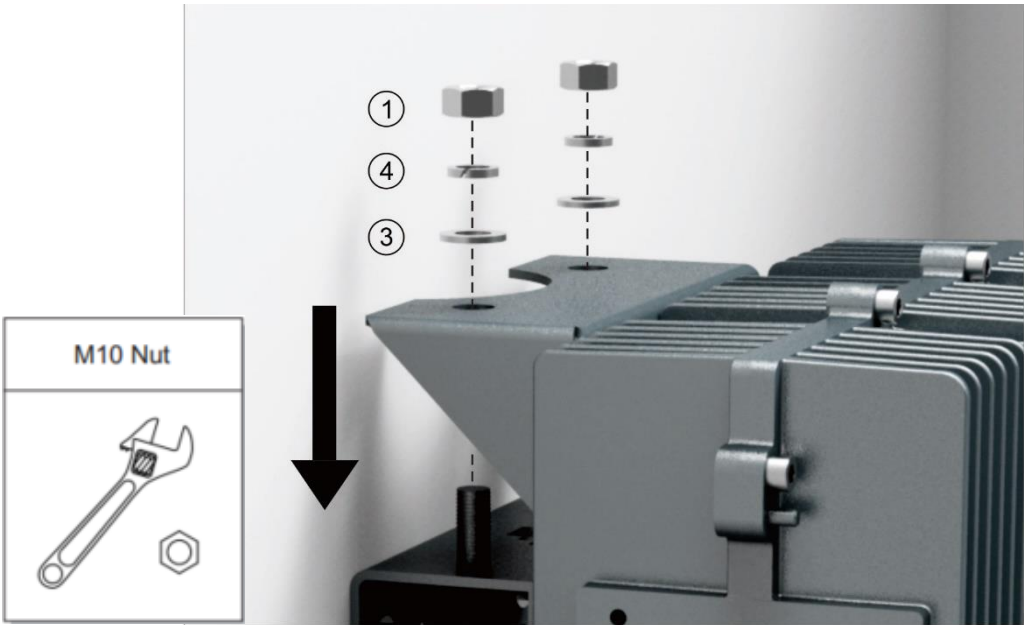


Figure 7.

7. Fasten the Bracket I and II with screws M6×14.



Figure 9.

8. Connect and lock the power cable at the TR44KA rear side



Figure 10.

9. Connect and screw the ground cable at the TR44KA's left side

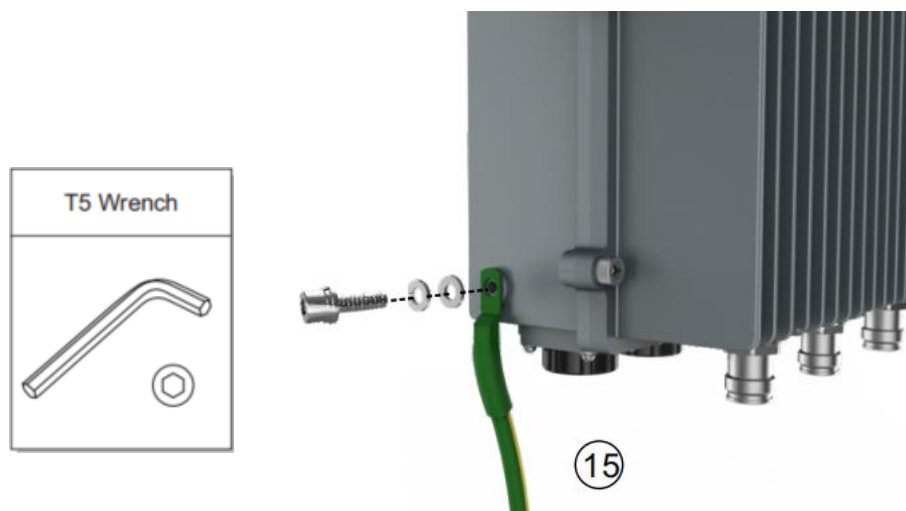


Figure 11.

10. Connect and tighten the waterproof RJ45 cable to TR44KA

Note: waterproof sleeve needs to be purchased separately



Figure 12.

11. Connect and tighten the waterproof cable

Note: waterproof sleeve needs to be purchased separately



Figure 13.



Figure 14.

4.3 Wall Installation (Side on the Wall)



Figure 15.

1. Attach and fasten the handle to the side of TR44KA with screws M6×14 using T5 Wrench.

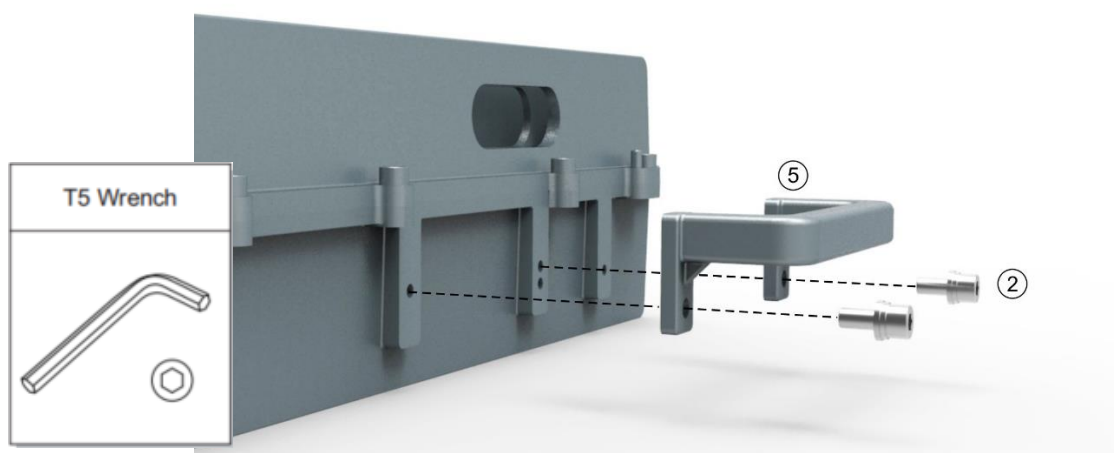


Figure 16.

2. Attach and fasten the Bracket I to the left side of TR44KA with screws M6×14 using T5 Wrench.

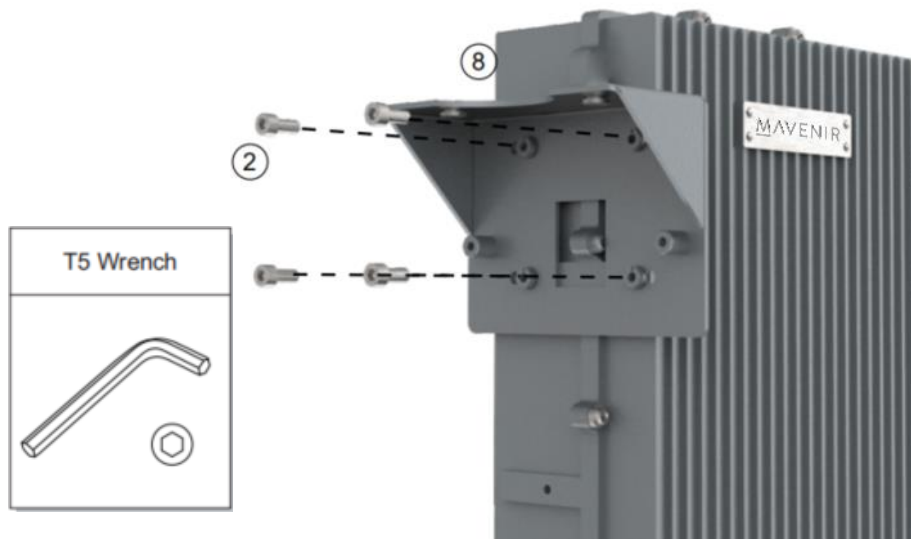


Figure 17.

3. Mark the position of the drilling holes in the mounting Bracket II. Note: R=13mm.

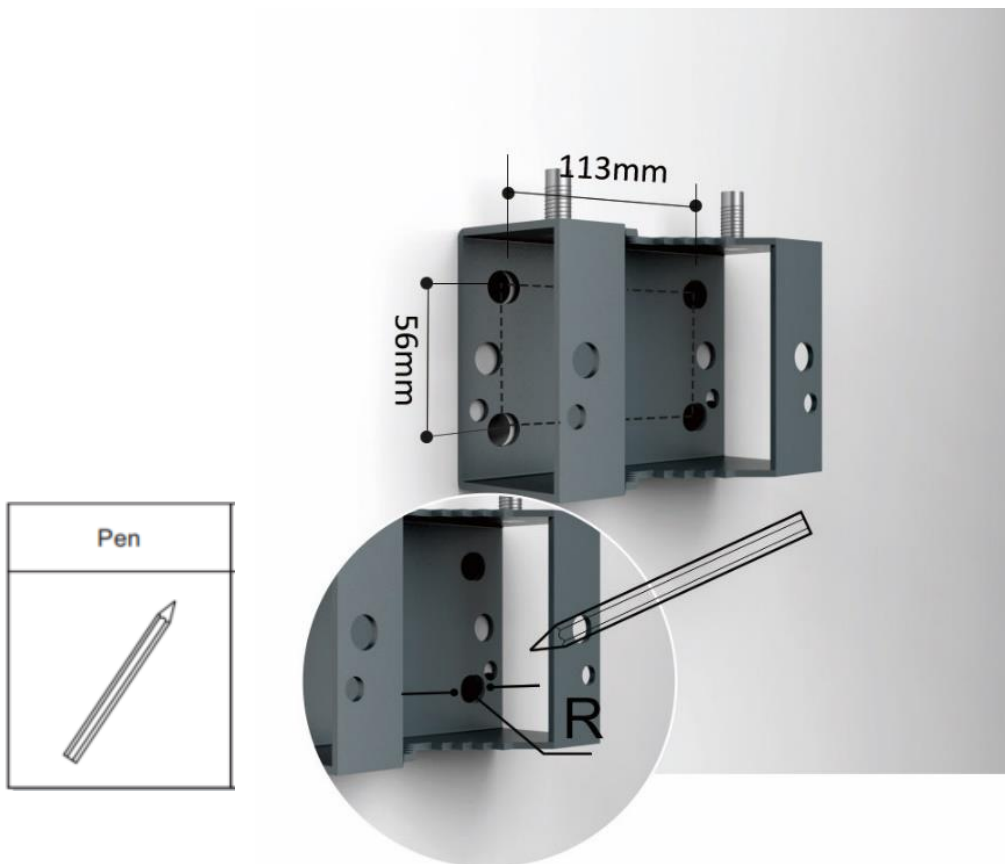


Figure 18.

4. Drill 4 holes at the marked positions. Note: H=70mm.

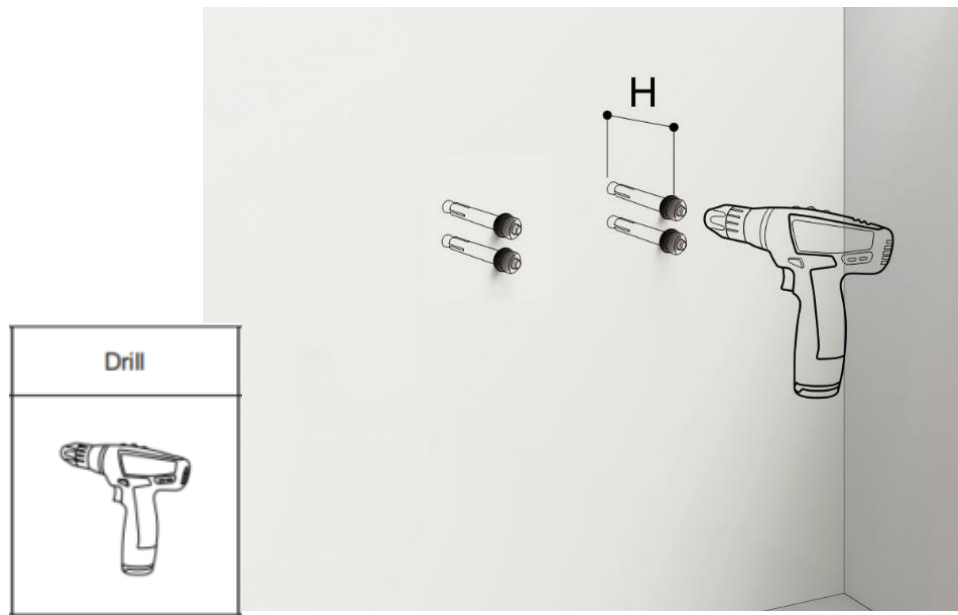


Figure 19.

5. Attach the dowels, expansion screws or the like and fasten the Bracket II to the wall.

Tips: use Bracket II as a reference to control each devices' separation distance before hanging and locking TR44KA up.

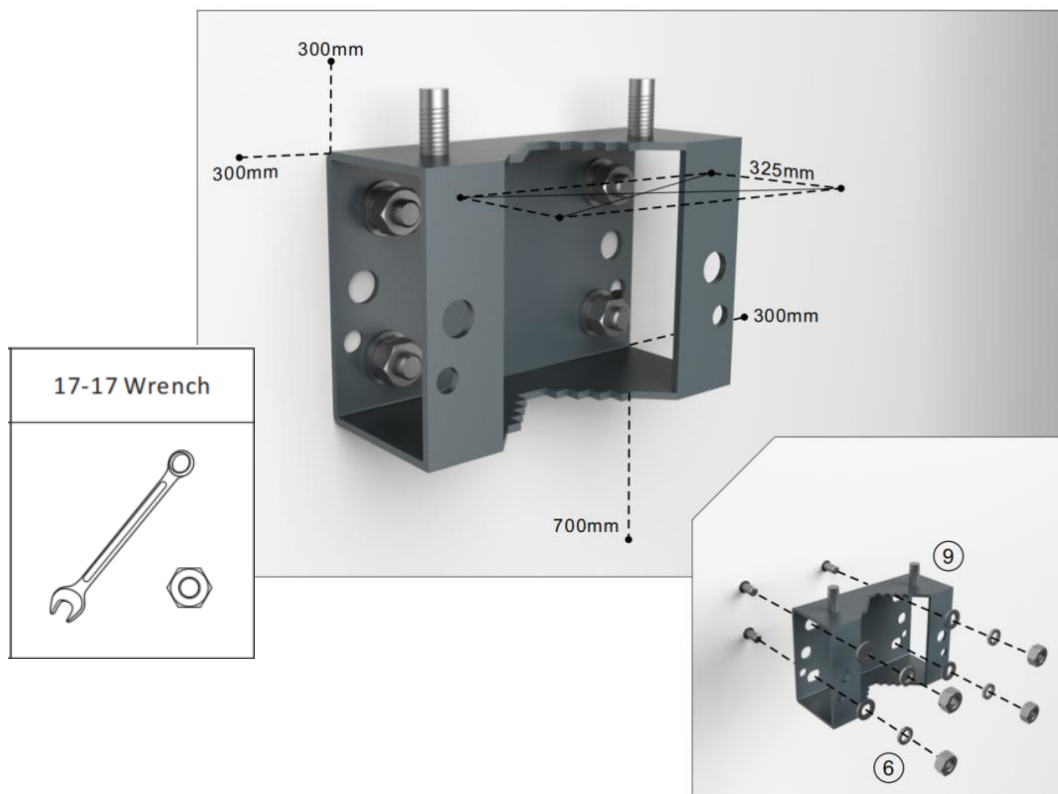


Figure 20.

6. Hang the TR44KA on the mounting bracket II and fasten with nuts M10.



Figure 21.

7. Fasten the Bracket I and II with screws M6×14.

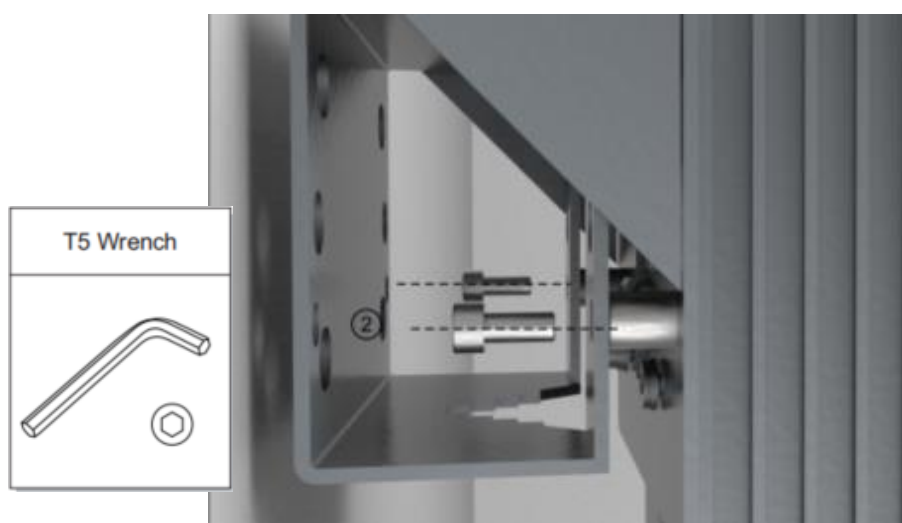


Figure 22.

8. Connect and lock the power cable at the TR44KA rear side



Figure 23.

9. Connect and screw the ground cable at the TR44KA's left side

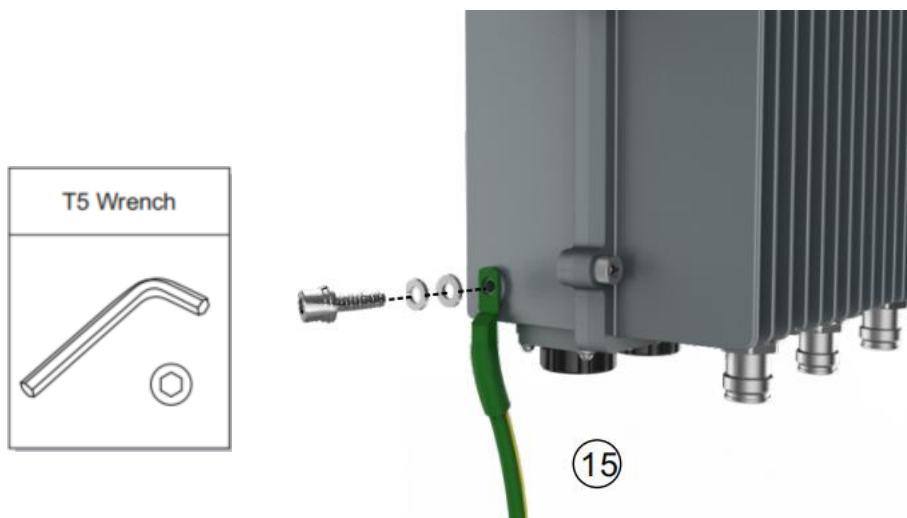


Figure 24.

10. Connect and tighten the waterproof RJ45 cable to TR44KA

Note: waterproof sleeve needs to be purchased separately



Figure 25.

11. Connect and tighten the waterproof cable

Note: waterproof sleeve needs to be purchased separately



Figure 26.

4.4 Pole Installation

1. Install the handle and Bracket I to the back of TR44KA.
2. Install the bracket II and Bracket III to the pole.
3. Hang the TR44KA on the mounting bracket and fasten with nuts M10.
4. Connect the ground cable and power cable.

Note: The diameter of Pole shall not be over 110mm or less than 55mm.

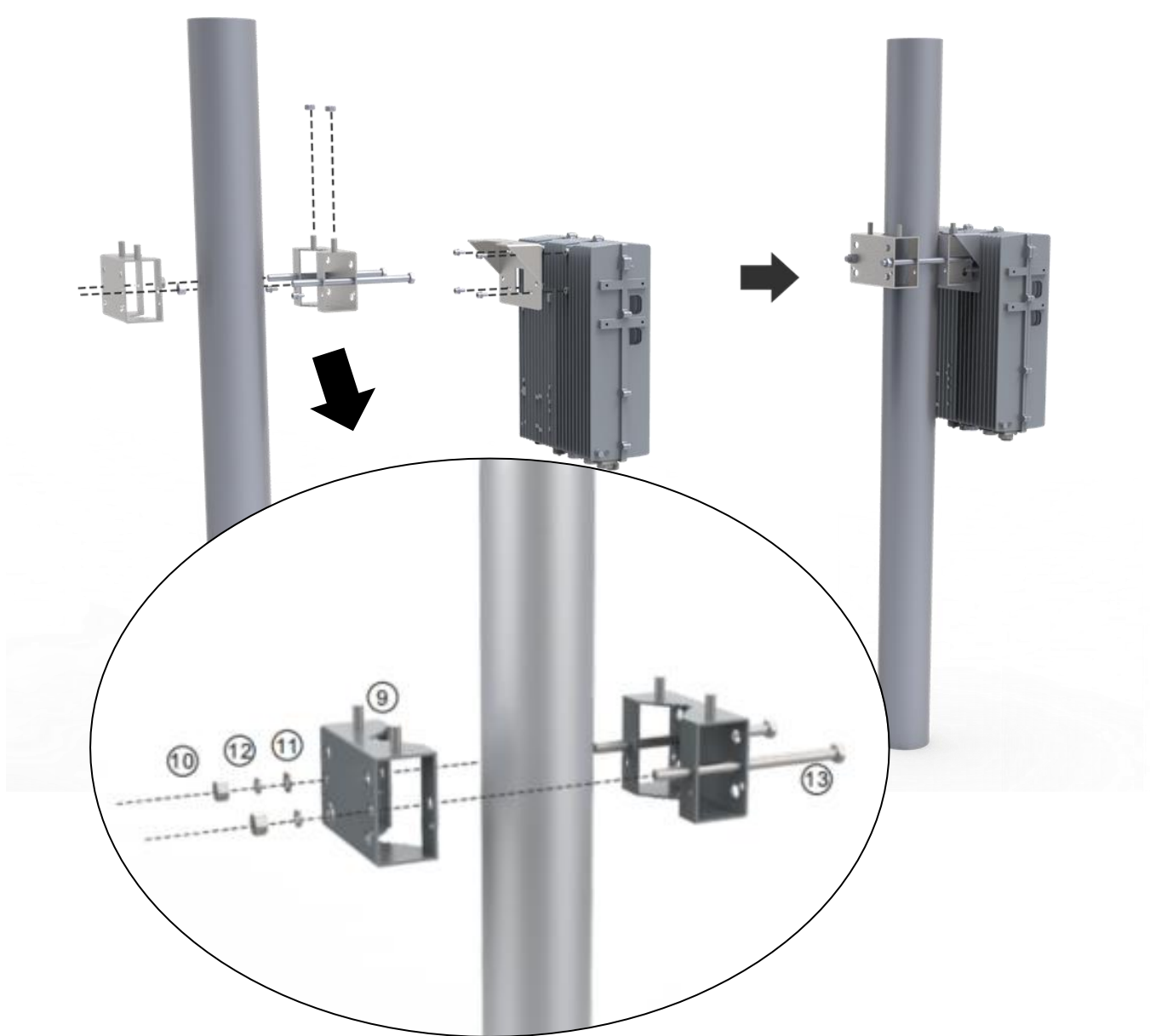


Figure 27.

4.5 TR44KA Mounting Dimension Spacing

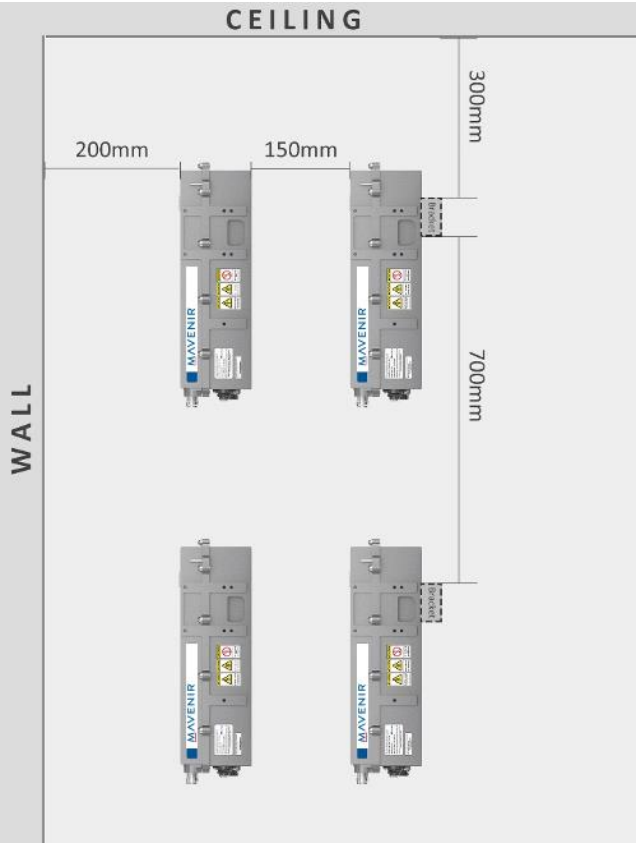


Figure 28.

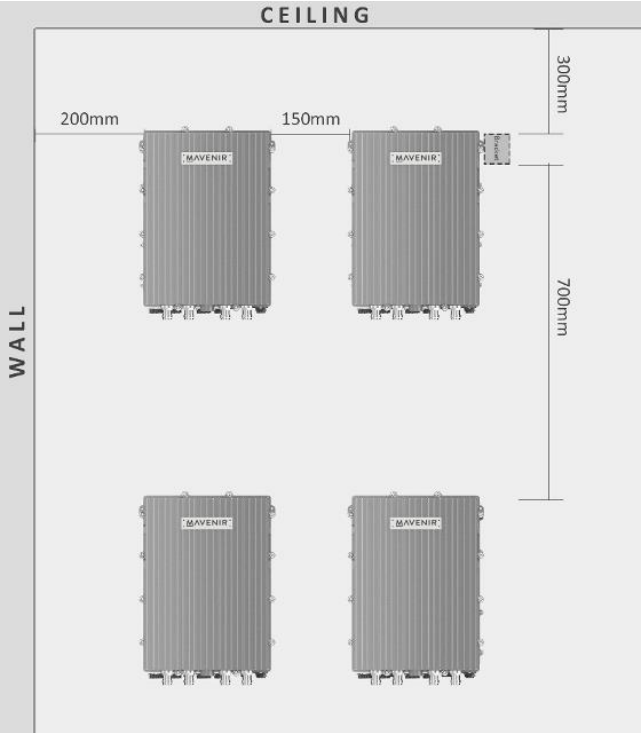


Figure 29.

5 Radio Setup

5.1 Radio Interface

Please find Table 1-1 for interface definitions shown in the figure below:

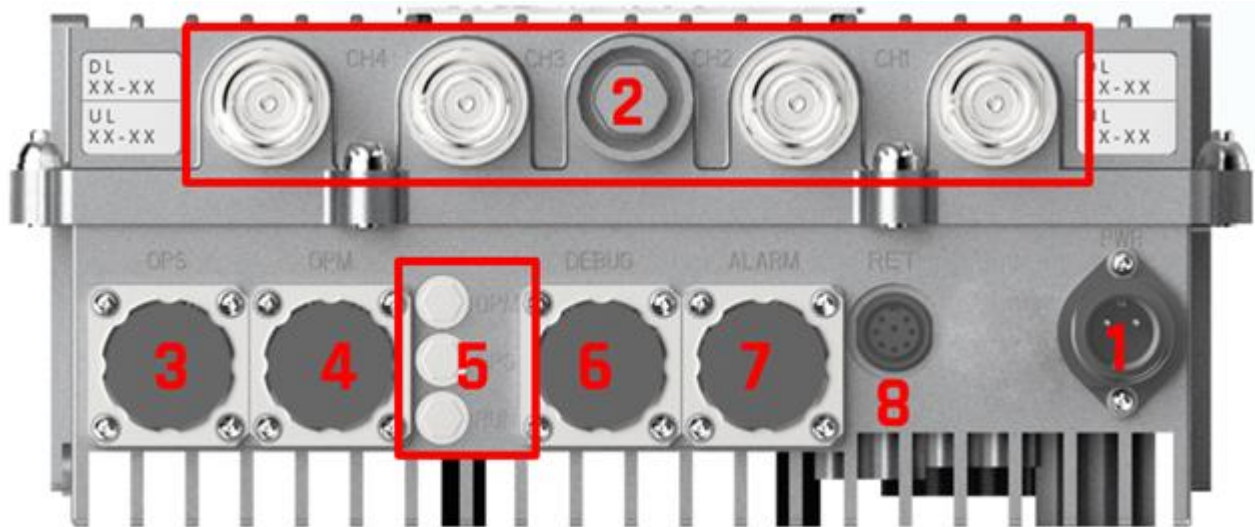
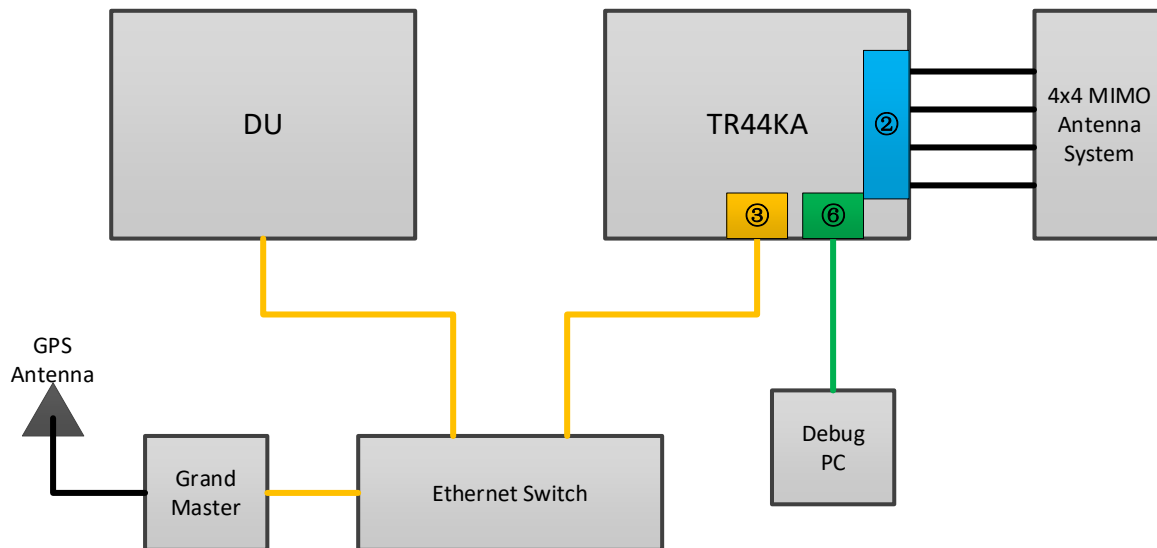


Table 1-1 Interface definition

Index Number	Port Name	Description
1	PWR	DC 48V input Power Cable Connector.
2	ANT	Antenna connectors
3	OPS	10G Ethernet SFP+ Slot
4	OPM	Reserved SFP+ Slot
5	LED	OPS / OPM: - Blank = No Connection - Green = Ethernet Link UP - Red = Ethernet Link Down <hr/> RUN: - Blank = No Power - Orange = Booting - Green & Flashing = Running - Red & Flashing = Running with Warning
6	DEBUG	Local debug Ethernet port, connect to debug PC
7	EXTALM	External ALARM RJ45 I/O port
8	RET	Remote Electrical Tilt Antenna Control Port

5.2 Typical Connection

The Picture below shows the typical connection of TR44KA in an ORAN application.



Noe: Please use 10G port for DU and TR44KA.

SFP+ Recommendation:

Type	Status - Validated
FTLX8573D3BTL	10Gb/s 400m Multi Mode Bidirectional SFP+ Transceiver, Duplex, Duplex LC Connector, Wavelength 850nm
FTLX2072D333	10Gb/s 10km Single Mode Bidirectional SFP+ Transceiver, Duplex, Single LC Connector, Wavelength 1331nm
FTLX2072D327	10Gb/s 10km Single Mode Bidirectional SFP+ Transceiver, Duplex, Single LC Connector, Wavelength 1271nm

6 Troubleshooting

1) LED of RUN Indicator

Status Indicator	Description
Flash Green	Element is working without an alarm
Flash Red	Element is working but with alarm
Solid Orange	Element is booting
Blank	No Power

2) LED of OPS/OPM Indicator

Status Indicator	Description
Solid Green	Fiber Link UP
Solid Red	Fiber Link Down
Blank	No Connection

3) Check the physical connection.

Make sure the cable between DU and TR44KA is fine and connected to OPS port on TR44KA side. DO NOT USE OPM port because it is reserved.