

1.2m Ka band Terminal Installation Manual

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1 About This Manual

This installation manual is intended for Kacific customers. It provides the instructions and guidelines to install and commission a 1.2m Ka band terminal in its standard configuration, with a 3W transceiver and a MDM2510 modem.

Version History:

The following table gives a summarizing overview of the history of this document:

Version	Date	Reason for the new version
Version 1.1	June 25, 2019	Creation
Version 1.2	September 30, 2019	Updated new information
Version 1.3	November 28, 2019	Updated new information
Version 2	February 18, 2020	Complement use of Point&Play application
Version 2.1	February 23, 2020	Annex 1: Beam Map
Version 2.2	March 09, 2020	Reformatting
Version 2.3	May, 2020	Page 7 - Alignment of Dish with the Satellite Page 9 - Length of Pipe Requirement Page 15 - Waterproofing Connectors
Version 2.4	June, 2020	Page 26 - Certification Process added
Version 2.5	August, 2020	Page 26 - Certification Process removed Annex: updated Beam List and Map to reflect beam swap.
Version 2.6	October, 2020	Page 26 - Certification Process added Annex 2: Certification Process via Laptop/PC
Version 2.7	June, 2021	Annex 3, 4 – Skyware and Jonsa Antenna Type Assembly added

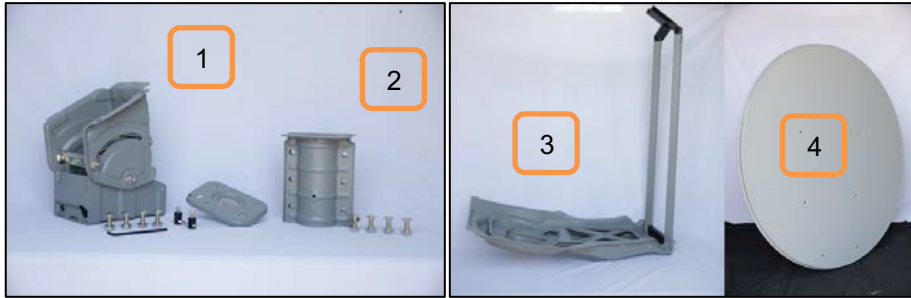
2 General

2.1 Terminal Overview

A Ka band terminal is composed of 6 main components:

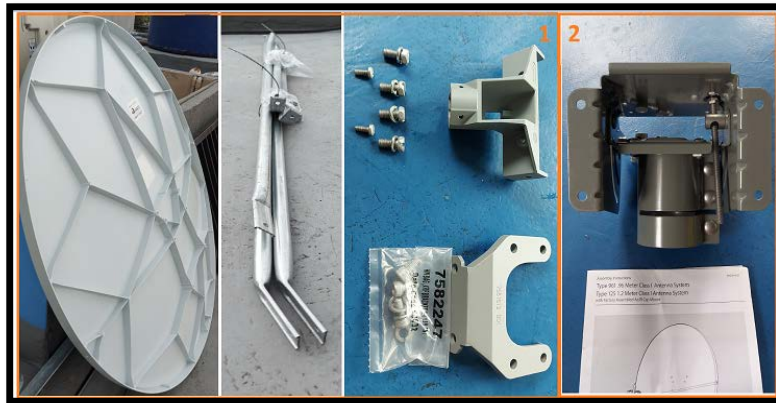
2.1.1 Ka band 1.2m Metal Antenna

a) Manufactured by **AzureShine** (delivered in 4 pieces – see pictures below):



1. The Azimuth Elevation mount structure
2. The mast brackets
3. The feed support arm
4. The dish reflector

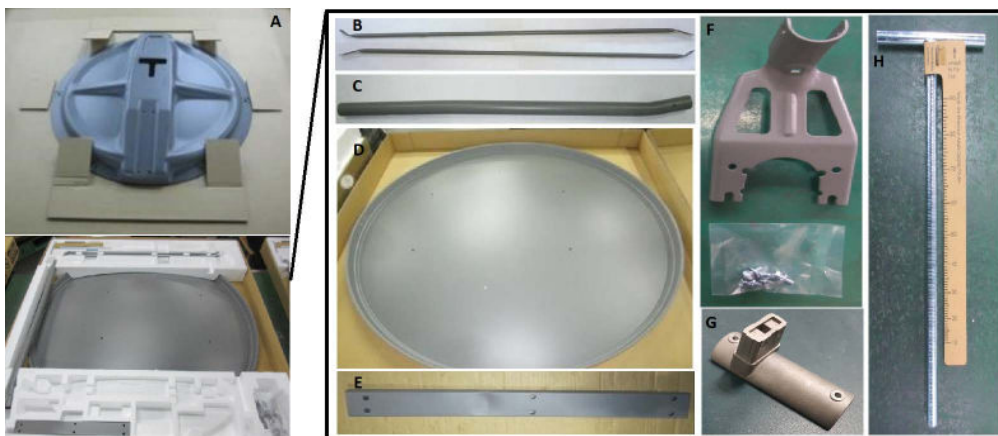
b) Manufactured by **Skyware** Type 125 1.2m (delivered in 2 parts – see pictures below):



- Part 1: Dish/reflector, feed legs, feed bracket (with bolts and nuts)
Part 2: Az/EI Cap Mount

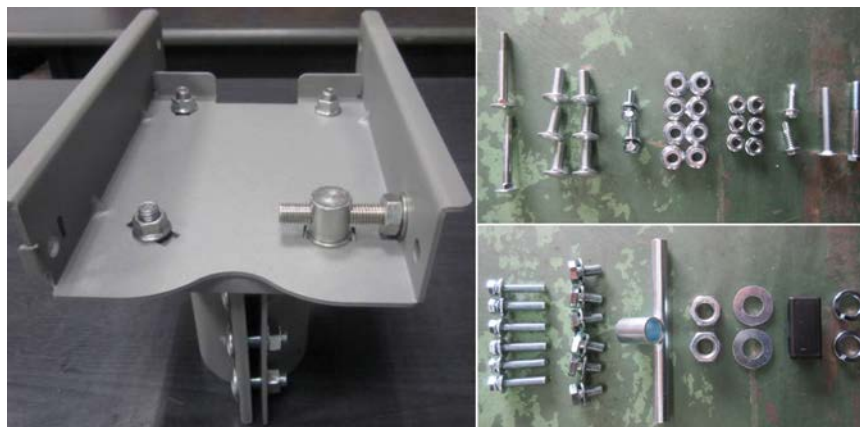
c) Manufactured by **Jonsa** Type 125 1.2m metal plate antenna (delivered in 2 boxes – see pictures below):

- Part 1: Dish/reflector box



- A. Back structure rim
- B. Feed horn supporting rod
- C. Boom arm
- D. Reflector
- E. Support arm
- F. Transceiver holder
- G. LNB arm adapter
- H. Elevation adjusting screw

- Part 2: Az/EI Mount box
Contains AZEL mount and screws.



2.1.2 Satellite modem MDM 2510

It was manufactured by ST Engineering iDirect (formerly Newtec) and delivered with its AC power adaptor.



Note: The modem power adaptor is delivered with a standard Australian power plug. Kacific does not recommend using an adaptor. Instead, users should get a local power plug.

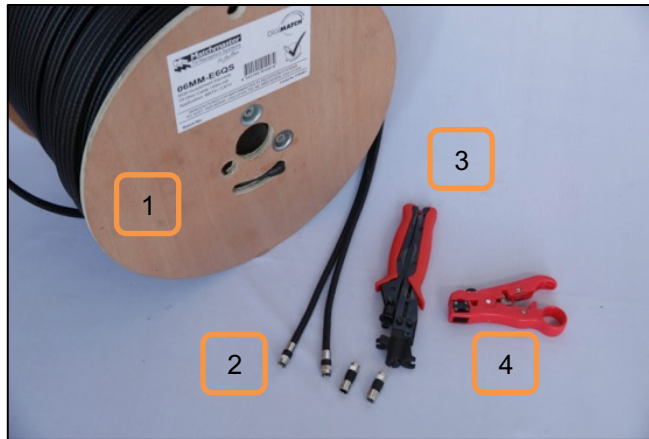


2.1.3 3W Transceiver TRX 0121

Manufactured by ST Engineering iDirect (formerly Newtec).



2.1.4 Coaxial cable and connectors



1. 150 m twin coaxial cable roll (for a minimum of 5 sites)
2. F coaxial connectors
3. Compression tool
4. Stripping tool

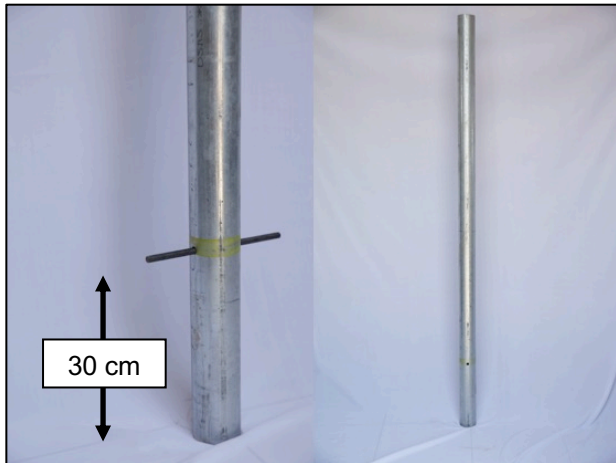
2.1.5 Auxiliary Systems

Onsite electrical power and cabling to the modem. Electrical power and grounding are provided at the site. Cabling and conduits were installed as needed.

2.1.6 Antenna mounting

Ka-band terminals require a rigid antenna fixation so that the antenna remains well pointed to the satellite even during windy conditions. The pipe shall not be too long to prevent vibrations or flexibility.

Kacific recommends an easy and cheap ground installation that requires only a hot galvanized pipe and some cement.



Mast specification:

1. Hot galvanized steel or Aluminum
2. Max length 178cm with 89mm above ground
3. Diameter 76mm or 3 inches
4. Thickness 2mm or greater.

Note: In urban areas, where ground installation may not be possible, specific roof mounting structures can be provided depending on the roof type. The roof should also be stable and able to support the antenna weight. To illustrate:

A. Structures provided for a sloped roof:



B. Structures provided for a terrace roof, either screwed in concrete or with ballast.



2.2 Additional required tools, equipment, mobile applications & websites

2.2.1 Tools & Equipment

- Pole as described in 2.1.6 (Can be provided by Kacific, on-demand)
- Crowbar, pickaxe, spade or shovel, a post hole digger
- Large bucket, water, 3 to 5 x 20 kg bags of cement (Quick set preferably)
- A long level (To check the verticality of the pole)
- Wire cutters
- Pliers
- Allen keys (With at least M6 - 5 mm, SAE 3/16 and M8 - 6 mm, SAE 7/32)
- Spanners set (With at least M8 - 12 mm, SAE 1/2 and M10 - 17 mm, SAE 11/16)
- Socket set
- Screwdrivers
- Conduit saddles
- Self-amalgamating or Rubber Butyl tape (For dry safe TX/RX cable end-points and marking cables)
- Cable ties
- Electric Multimeter (In case you need to check the DC voltages at the TX/RX cable end-points)
- Cover metal tray or plastic pipe (Long enough to protect your cables between the dish and the modem)
- Copper ground cable (Long enough to be connected to the site ground, depending on your antenna location)
- 10m Ethernet cable (If your modem is to be far from the dish during the installation - see 3.7.2 below)
- Access Point (AP Mode)
- Modern mobile phone, with the usual applications listed in 2.2.2
- Portable Power supply (if no 110/220V AC is available on site – see 3.7.2 below)
- Laptop with LAN port (for trouble-shooting via Team-viewer, Access Terminal GUI, Tracer Commands, Error Logs, Terminal Testing at the end of the installation, etc.)
- Permanent marker (To mark final elevation & azimuth after fine-tuning)

2.2.2 Applications

- The Newtec Point&Play®
- GPS data (To get the exact location of your dish after installation)
- www.dishpointer.com (If needed - see Section 3.1)



3 Installation Procedure

3.1 Alignment of Dish with Kacific 1 Satellite located at 150° East.

- A variety of equipment, Apps, and methods can be used to align the Dish with the Satellite. The standard Kacific practice is to use a free **Newtec Point&Play®** mobile application, which does not require other devices except a Wi-Fi router and a smartphone.
- Some installers prefer to use a **Spectrum Analyzer**, which is easy to use and time-saving for the overall installation. However, the Spectrum Analyser is not accessible, unlike the Newton Point&Play® mobile application. Hence, the installer would have to decide which option he prefers.

The Newtec Point & Play® mobile application is used to:

- Visualize the position of the satellite in space
- Select the terminal position
- Check the satellite azimuth and elevation at the site of installation.

Point&Play®	Supported versions	Available at
Android	as of version Android 4.0.3	Google Play Store
iOS	as of version iOS 8.0	Apple App Store

Note: The mobile phone used must be equipped with the usual following applications:

- GPS sensor
- Compass
- Gyroscope
- Accelerometer
- Minimum screen size: 4.3"
- Minimum resolution: 480x800 pixels

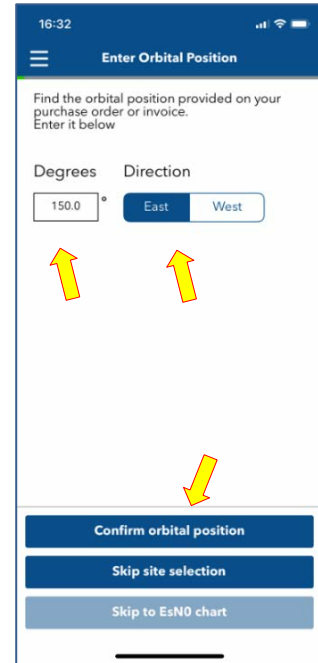
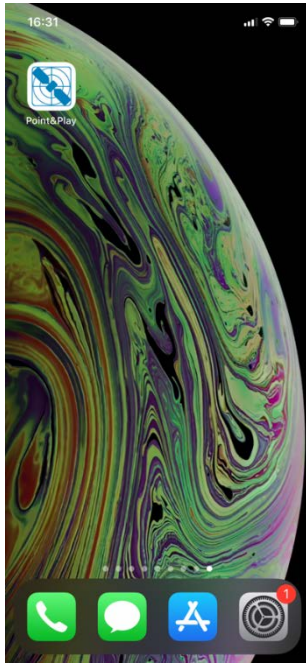


Note: If there is no local mobile telecom network coverage at the intended antenna location, you can get the satellite azimuth & elevation beforehand, when you are still connected, with Satellite pointer smartphone application or www.dishpointer.com.



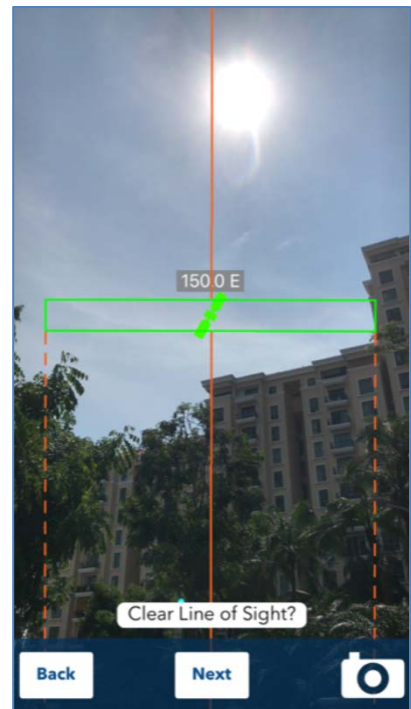
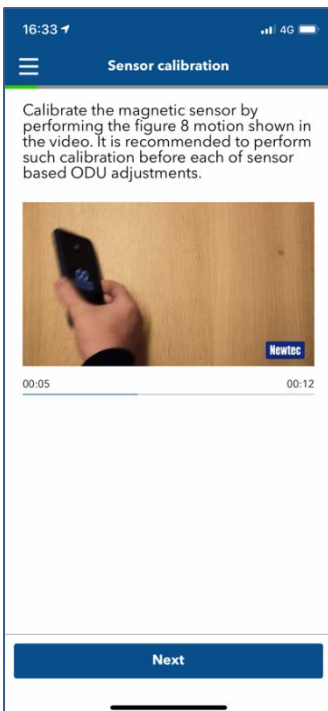
Note: We recommend downloading all mobile applications before going on the field to install.

3.2 Using Point & Play App to find the direction of the Satellite



Step 1: Download Newtec Point&Play® ([before going to the field](#)).

Step 2: Type 150.0 Degrees, select 'East' and click "Confirm orbital position".



Step 3: Calibrate your phone as per application instruction.

Step 4: Scan the sky until you find the direction of the satellite. Position your terminal ensuring you have no obstacle to the satellite. Leave the application for the moment (you'll come back to it later).

Step 5: Use a GPS app to note the longitude & latitude of the terminal location.

3.3 Antenna pole installation

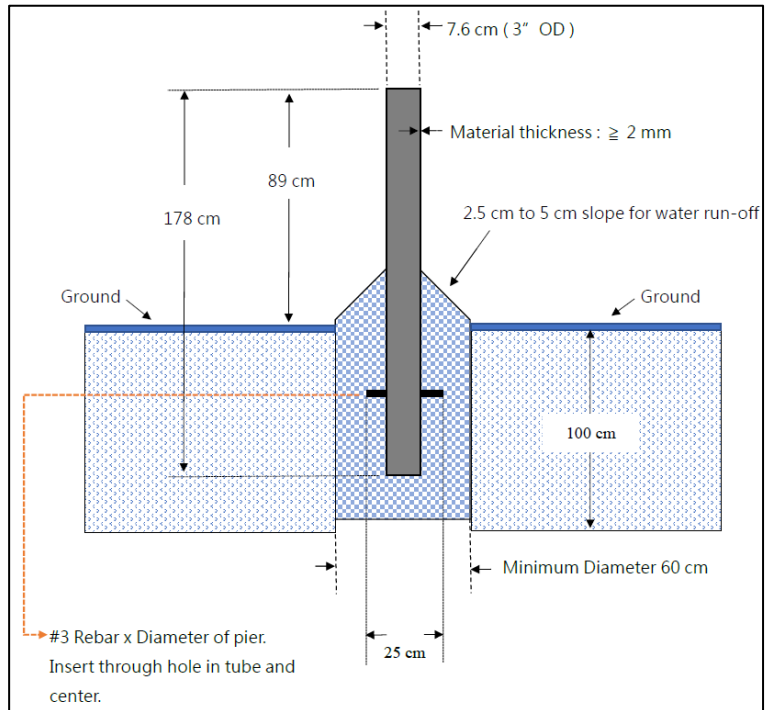
This section applies to ground installation only.



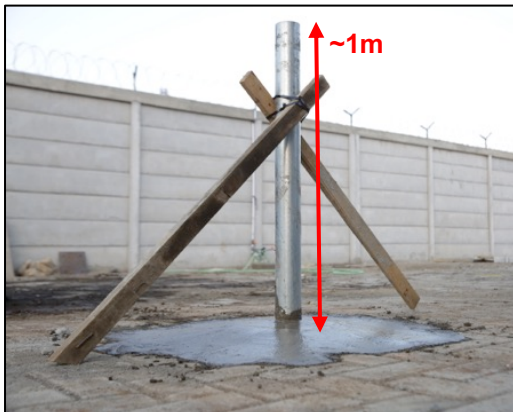
Step 6: Dig a hole with the following:

- Minimum depth: 80 cm
- Minimum diameter: 40 cm.

Note: The dimensions of the diagram on the right are given as order of magnitude. The hole diameter can be reduced when the soil is compact.



Step 7: Set the pipe vertical into the hole and start pouring the concrete. Regularly check the verticality of the pipe while pouring the concrete.



Note: You need between 0.15 and 0.3 m³ of concrete. It requires three to five bags of 20kg cement.

Step 8: Let the concrete dry for at least one day (depending on weather and humidity).

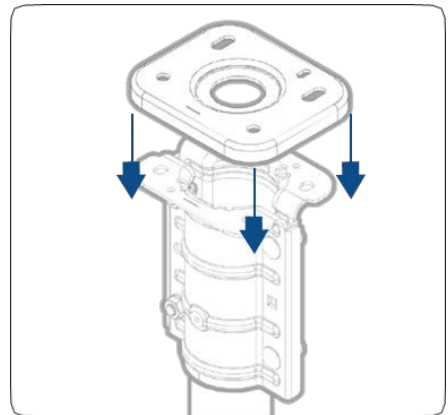
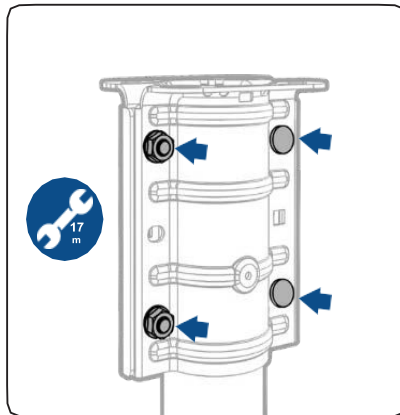
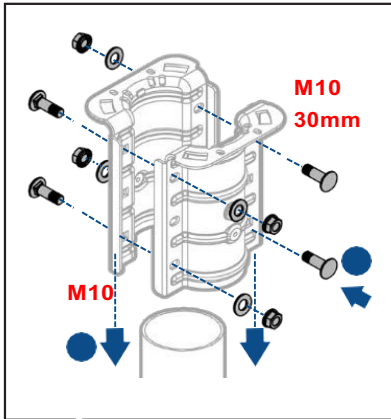


Note: Ensure that the length of the pipe (as measured from the concrete ground up) is approximately 1m, and not more. This is to ensure that the dish is not mounted too high, where wind can cause movement to the dish and affect the signal.

3.4 Antenna assembly

(AzureShine Antenna Type Only – Please refer to Annex 3 & 4 for another antenna type)

3.4.1 Install mast bracket.

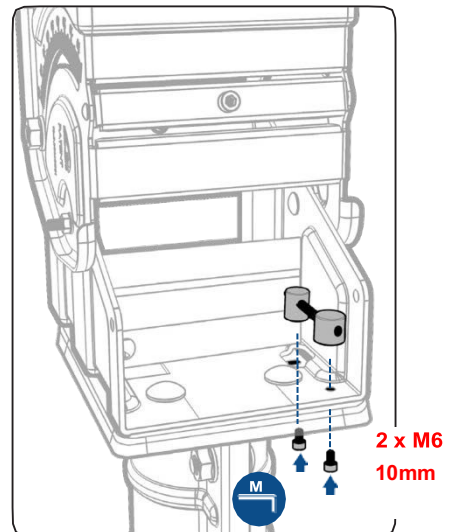
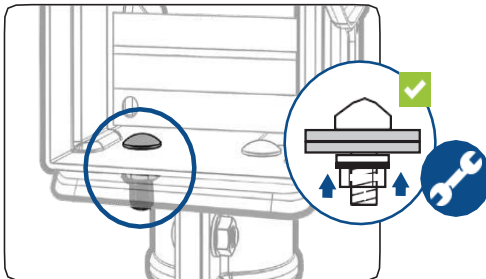
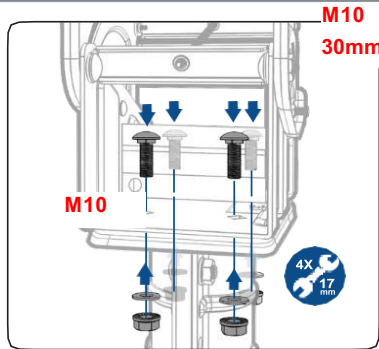
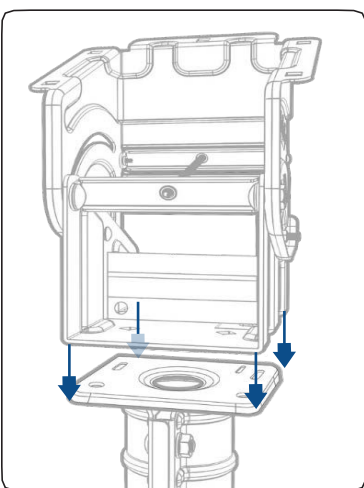


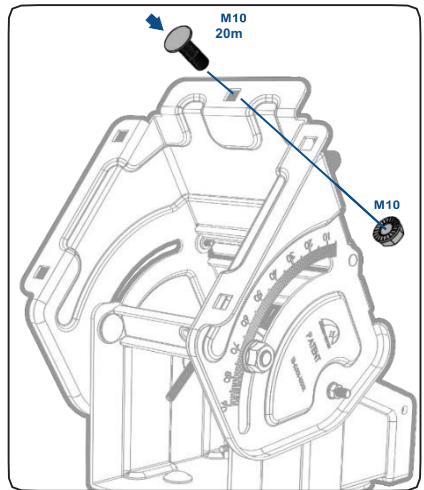
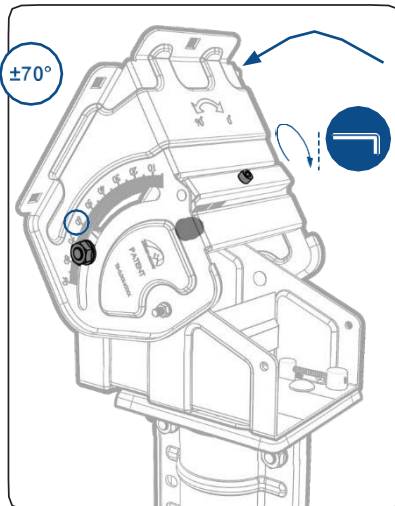
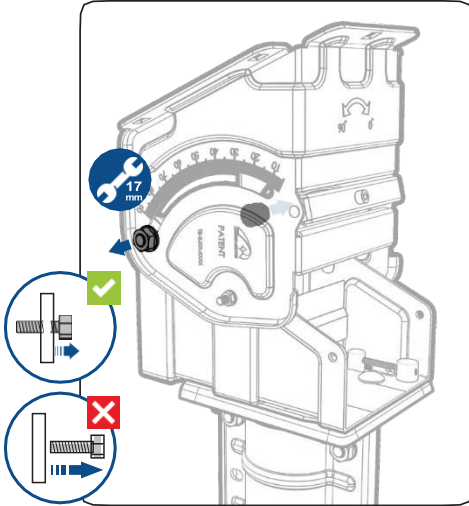
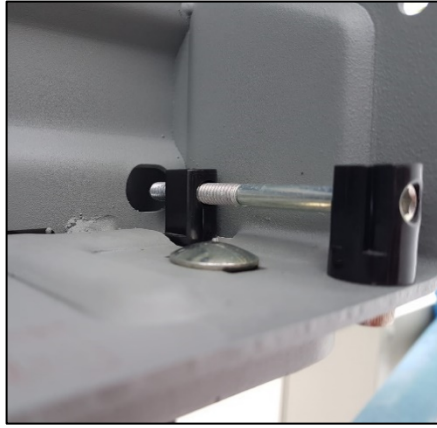
Step 9: Assemble the brackets on the mast illustrated in the diagrams.



3.4.2 Install the Az/EI mount

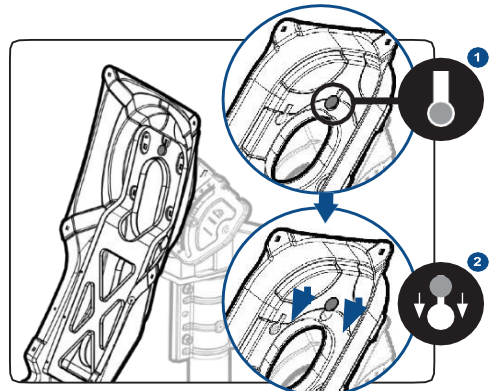
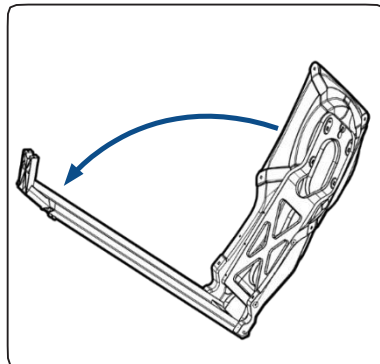
Step 10: Install the Az/EI mount on the brackets as illustrated in the diagrams below.





3.4.3 Mount the feed support arm to the AZ/EL mount structure.

Step 11: Install the feed support as illustrated in the diagrams on the right.

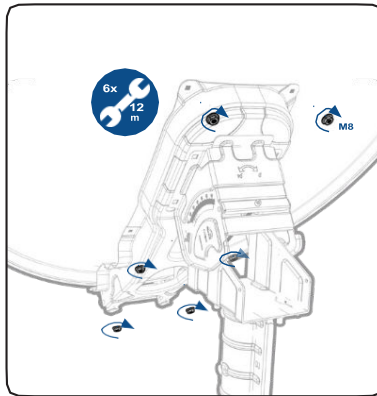
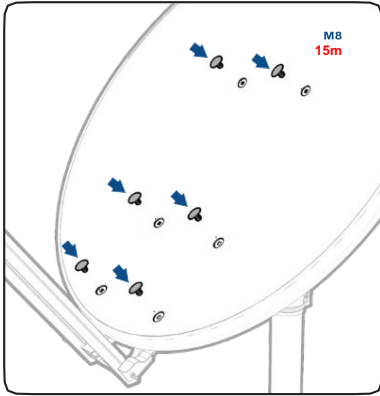


3.4.4 Mount the reflector to the feed support arm structure.

Step 12: Mount the reflector as demonstrated on the diagrams & pictures.



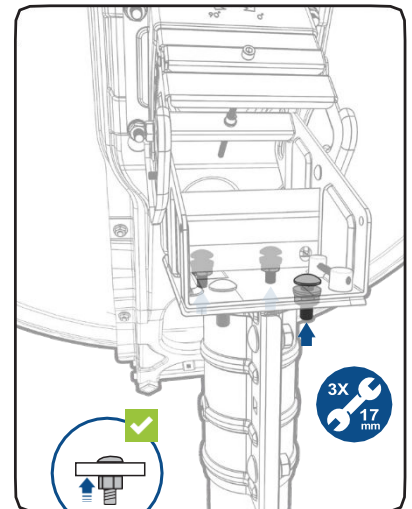
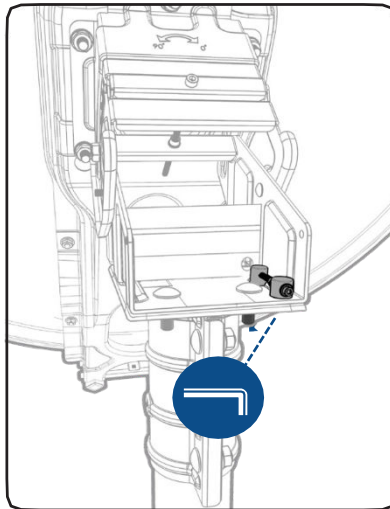
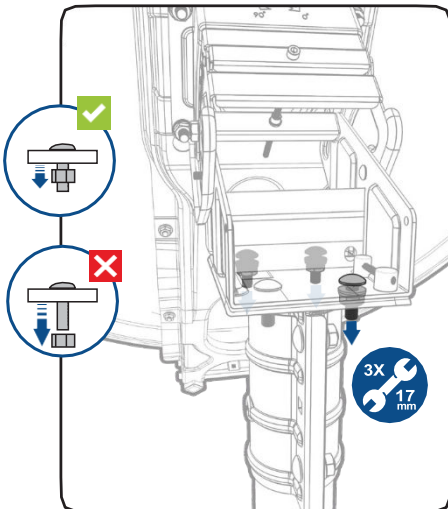
Note: Check the dish to make sure that it is not damaged during its



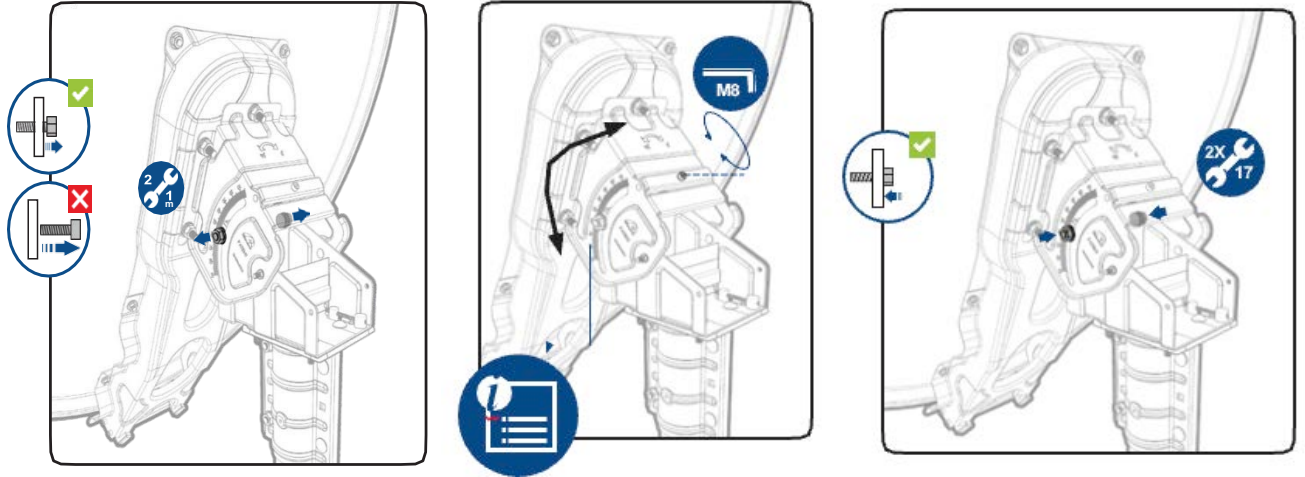
3.4.5 Antenna Fine pointing mechanism.

Step 13: Fine point the dish as demonstrated on the diagrams below.

- Azimuth fine pointing adjustments.



- Elevation fine pointing adjustment.

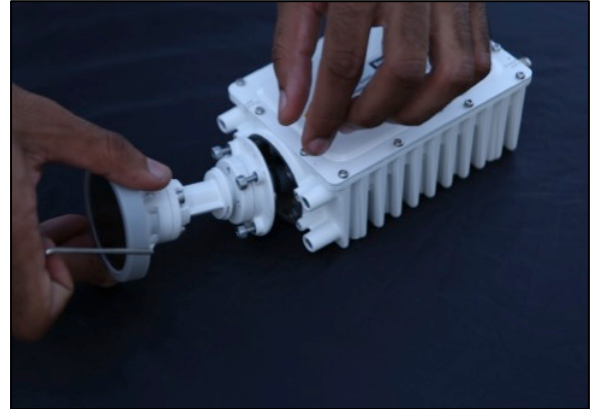
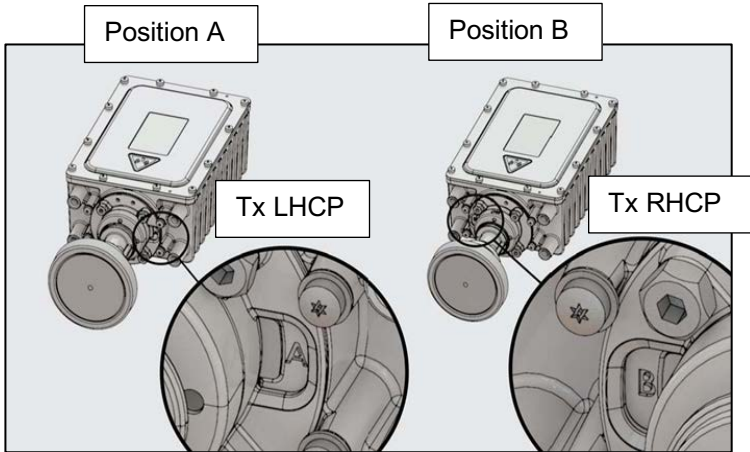


3.5 Transceiver installation

3.5.1 Adjust the transceiver polarization (if needed)

Step 14: Refer to polarization/beam table in Annex 1.

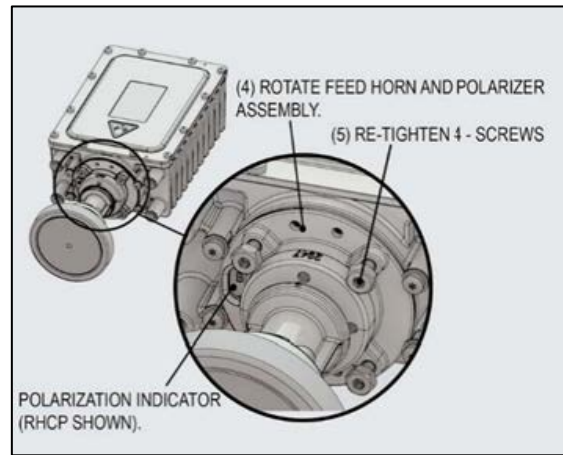
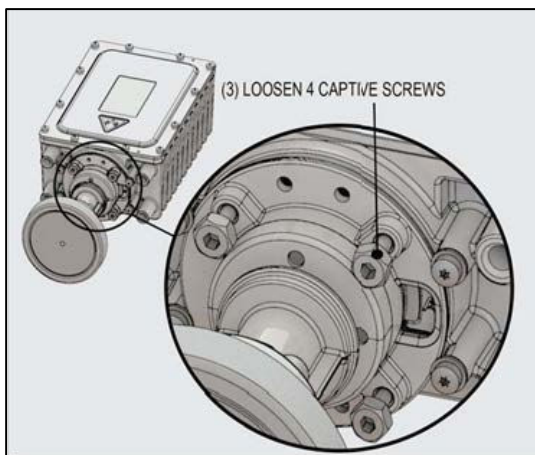
If needed, adjust the transceiver to the right polarization (see Note, diagrams & photo below).



Note:

As supplied, the transceiver is either set up for Tx LHCP (polarizer position A), or Tx RHCP (polarizer position B) as indicated in the above illustrations. If it is necessary to convert from LHCP to RHCP (or vice versa) in the field, the following procedure should be adopted:

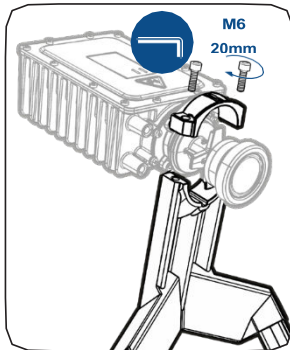
1. Remove the complete transceiver assembly from the antenna, if already fitted.
2. Using a 3mm hex wrench, loosen the four captive screws on the polarizer adaptor plate as shown in the illustrations below. Do not remove these screws, just loosen them until the complete feed horn and polariser assembly can rotate. There is no need to remove the feed horn and polarizer assembly from the transceiver.
3. Rotate the complete feed horn and polarizer assembly 180 degrees until the adaptor plate aligns with the corresponding polarization indicator (Position B is shown in the below illustration corresponding with RHCP).
4. Using a 3mm hex wrench, re-tighten the four captive screws shown.



3.5.2 Mount the transceiver on the feed bracket

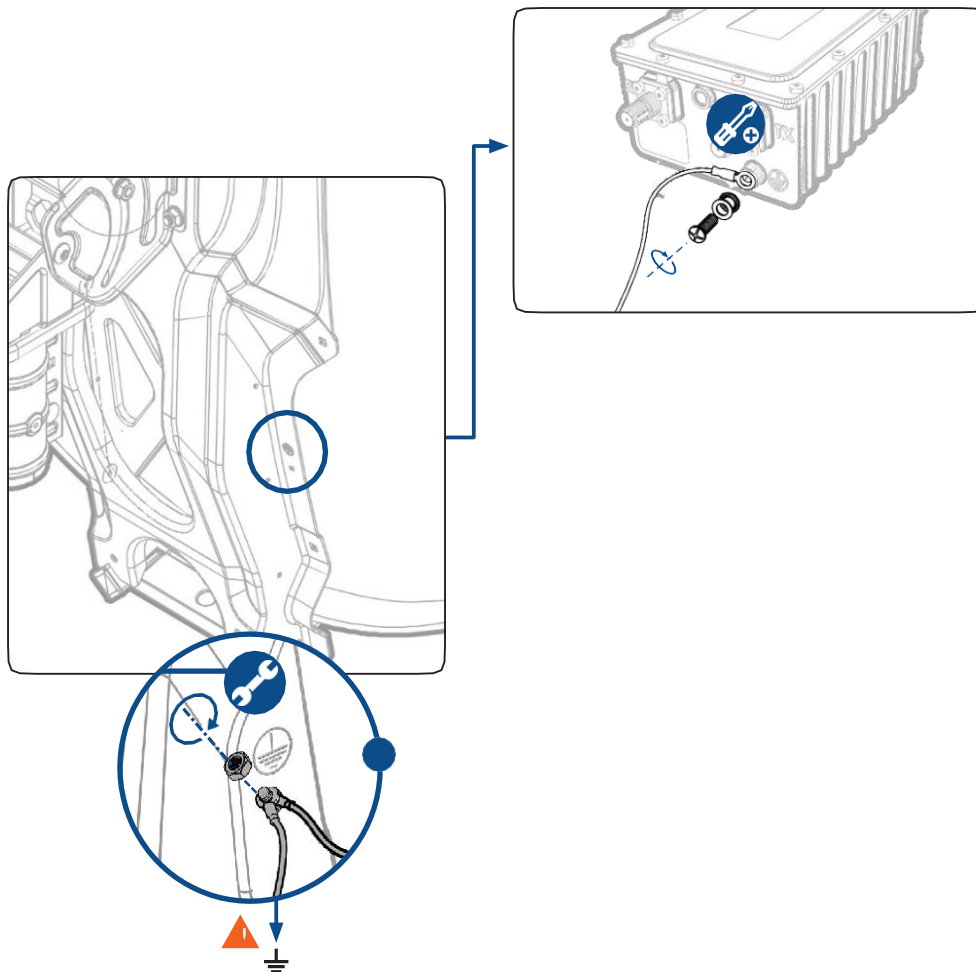
(AzureShine Antenna Type Only – Please refer Annex 3 & 4 for the other antenna types)

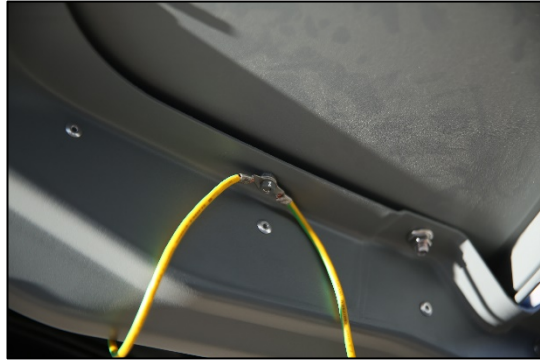
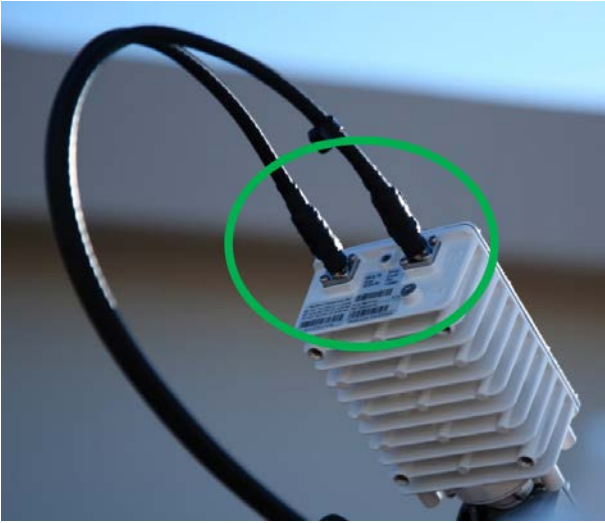
Step 15: Mount the transceiver on the feed bracket, as shown in the pictures below.



3.5.3 Wire the transceiver (All Antenna Type)

Step 16: Wire the transceiver to dish and to the copper grounding rod, as shown in the pictures below. Connect the copper wire to the site ground.





Note: *Ensure both connectors are sealed with self-amalgamating tape to prevent water ingress.*

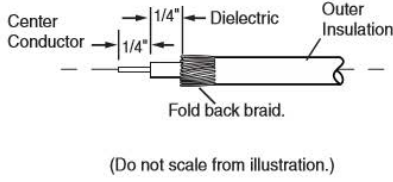
3.6 Coaxial cable installation between Modem and Transceiver

3.6.1 Cable and connectors preparation

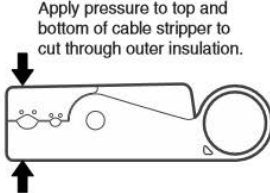
Step 17: Follow instructions and pictures below to prepare the cable for the installation.

Preparing the Cable

1. Insert the cable into the proper sized hole in the cable stripper and line up the cable end flush with the side of the tool.
2. Rotate the tool several times. Apply pressure if necessary, but do not over cut the braids.
3. Pull the cable out of the tool with the tool still closed.

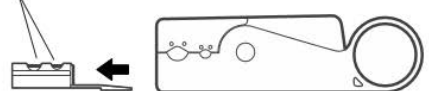


(Do not scale from illustration.)



Apply pressure to top and bottom of cable stripper to cut through outer insulation.

WARNING
Sharp cutting blades.

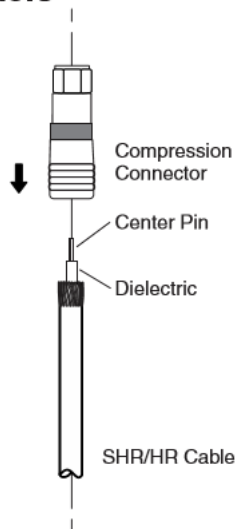


Use care when removing or replacing cutting blade cartridge.



Cable with F-type connectors

1. Push the compression connector onto the cable until the dielectric is flush with the inner ring of the connector. The center pin should stand out slightly from the front ring.
2. Select and place the correct adapter into the compression tool. Use the gold adapter for gold connectors and the silver adapter for nickel connectors.
3. Place the cable and connector in the opened compression tool.
4. Compress the cable and connector together, as shown on the other side of this card (closed).



3.6.2 Cable path

Kacific supplies a twin coaxial cable for the Tx/Rx connection between the transceiver and the modem.

This twin cable must be protected:

- Inside a covered cable tray (As indicated as (1)) OR
- Within a plastic/metal pipe (As displayed as (2))

Step 18: Pass the twin cable in its protection between the transceiver & the modem, as shown below. Connect the cable to the transceiver (but not to the modem at this stage as you will have to manipulate it in following steps – see Section 3.8.3).



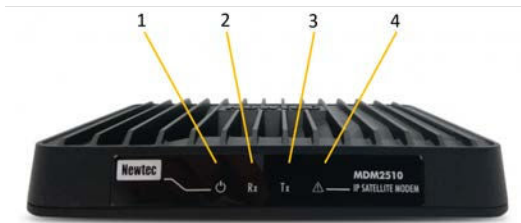
Note: To avoid mixing the connectors up between the modem and the transceiver, we recommend marking the cables on their 2 ends with stickers (Tx or Rx) at the beginning of the operation.



Note: The length of the cable shall not be more than 30 meters.
Kacific does not approve installations with more than 30 meters of L-Band cable.

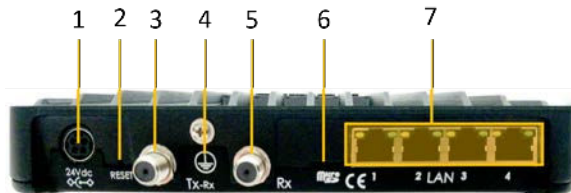
3.7 Modem installation

3.7.1 Modem Front Panel



Nr	What	Description
1	Power LED	White continuous - when powered up.
2	RX indicator LED	White continuous - forward satellite signaling receiving.
3	TX indicator LED	White blinking / continuous - traffic transmitting via the satellite link.
4	Warning LED	Yellow continuous - when the terminal is not logged on to the satellite network.

3.7.2 Modem Back Panel

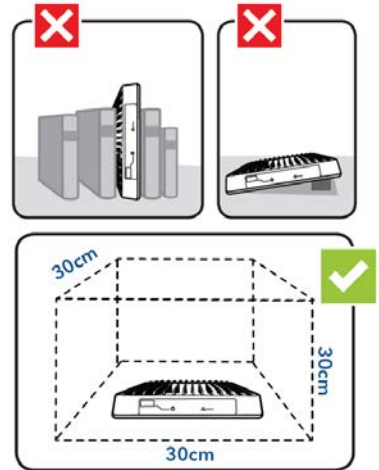


Nr	What	Description
1	Power connect	24 Volt DC Power connector.
2	Reset button	Multi-functional button: <ul style="list-style-type: none"> Press once briefly (hold less than 5 seconds) to reboot the modem. Press and hold for more than 5 seconds to perform a Factory Reset. This will reboot the modem and change all IP-settings back to the default factory settings.
3	TX connector	Indoor connection for the transmit coax cable. RG-6 maximum 30m.
4	Earthing	Technical earth connection; used when the modem is installed within a rack to ensure that all equipment chassis fixed within a rack is at the same technical earth potential. <i>Note: The grounding thread of the device must be connected according to local regulations.</i>
5	RX connector	Indoor connection for the receive coax cable. RG-6 maximum 30m.
6	Micro SD slot	Not used in current release
7	Gigabit Ethernet cable connectors	Connection for the LAN, type RJ-45 (Ethernet cable). <ul style="list-style-type: none"> Left LED (orange continuous): Link layer status. Right LED (orange blinking): Ethernet frames are received or transmitted.

3.7.3 Indoor installation

Notes:

- The modem shall be installed in a clean room, in horizontal position
- The length of the cable between the modem & the transceiver shall not be more than 30 meters
- For heat dissipation purpose, a 30x30x30cm³ space shall be kept free around the modem



3.7.4 Power modem

Step 19: Connect the power cord to the modem power supply.
Connect the power supply to the modem 24V DC (taking note of the pins).



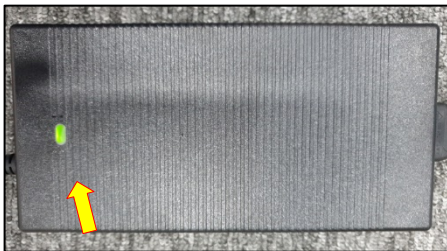
Modem power supply



Final connection (arrow indicator on top)



Step 20: Switch on the modem.
Check that the LED are lit on both the power supply and the modem.



3.8 Terminal commissioning and qualification

3.8.1 Load Newtec Point&Play® mobile application

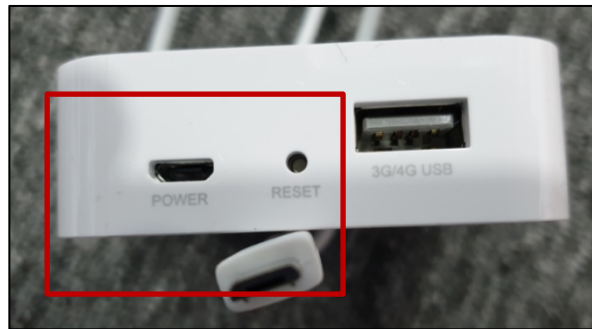
Refer to Section 3.2.

3.8.2 WiFi router installation

You need to link your smartphone to the modem via a WiFi connection.

Notes: The procedure below is given for a TPLink WiFi router. Any other WiFi router could be used provided it can be adjusted as an Access Point (AP) and cabled to a RJ45 port.

Step 21: Connect the router to the power using the USB cable.



Note: If there is no 110/220V AC available, use a Portable Power supply (for TPLink router) as shown below:

- Insert 4 AA batteries into the portable power supply according to the correct polarity.
- Push the switch to USB position to power ON,
- Connect the router to the power supply.



Step 22: Set the router to AP mode (WiFi access point).



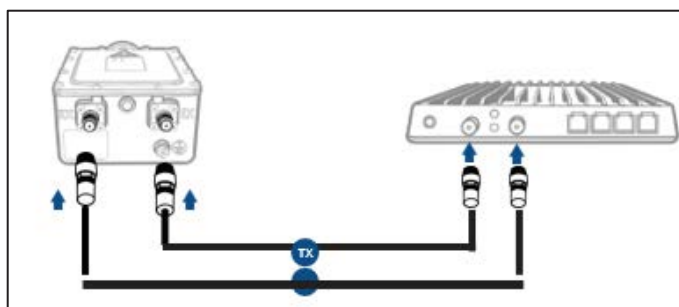
Step 23: Connect the router to any Ethernet port of the Newtec Modem with the 10-meter Ethernet cable.



Note: A 10m Ethernet cable is recommended to allow you to place the TP link router closer to the antenna, providing a better Wi-Fi signal in case the modem is far from the antenna.

3.8.3 Transceiver and modem connections

Step 24: Connect the Tx and Rx connectors in the modem and the transceiver, as shown below.



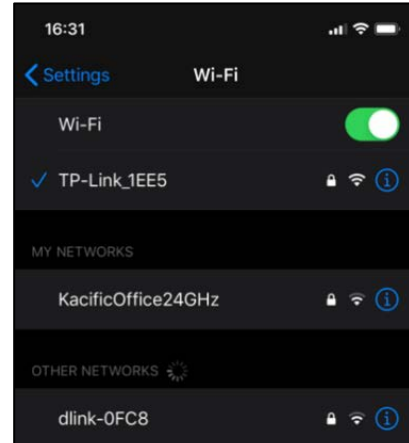
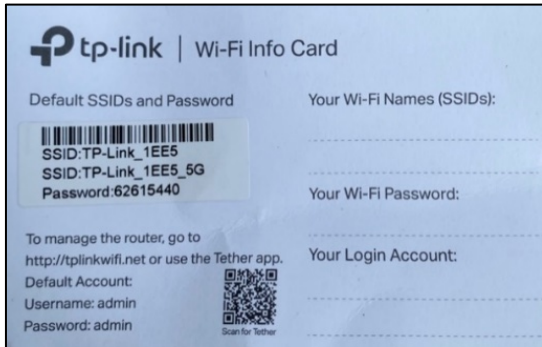
Step 25: Check that the modem, router & portable power supply (if you use one) are switched on with LED indicators lit up.

3.8.4 Point&Play application connection

Step 26: Connect your smartphone to the WiFi router (info card provided with TPLink WiFi SSID & password).



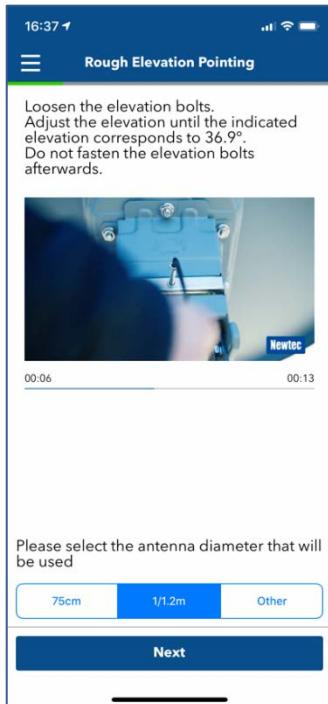
Note: Ensure you are connected to the WiFi router and not to any other WiFi network.



3.8.5 Point the antenna

Step 27: Re-open Newtec Point&Play® mobile application on your smartphone connected to the modem via the WiFi router (in AP mode).

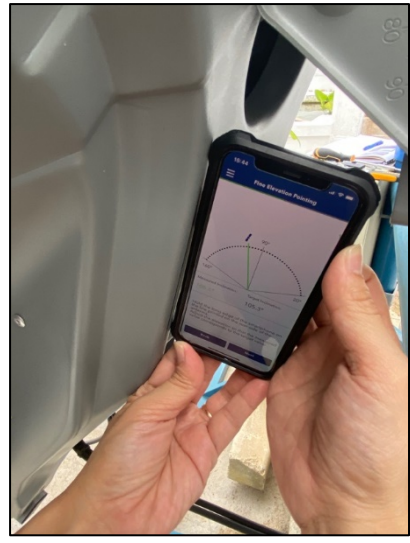
- Select "1.2m" antenna.
- Select the transceiver (10|TRX0121ANT2035).
- Select beam number (see table in Annex).



Elevation adjustment (Azureshine Antenna Only)



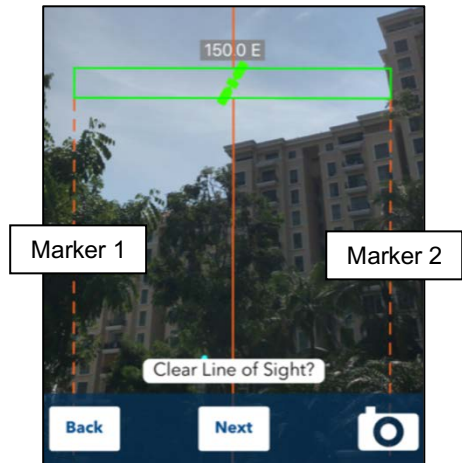
Step 28: Loosen the dish elevation bolts & adjust the elevation to point to the satellite.



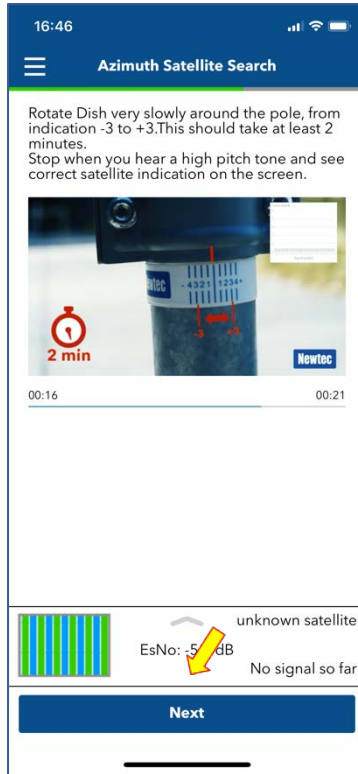
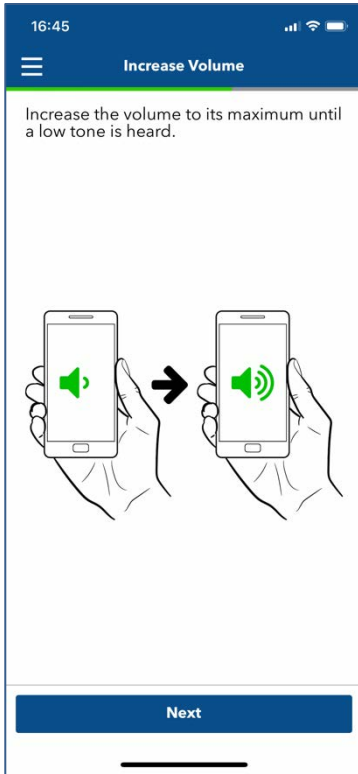
Step 29: Hold the long edge of the smartphone on the line printed on the rear side of the antenna. Adjust the elevation by hand, slowly ($\pm 0.5^\circ$ each time), until the red line becomes green. The elevation is now correct.

Azimuth adjustment

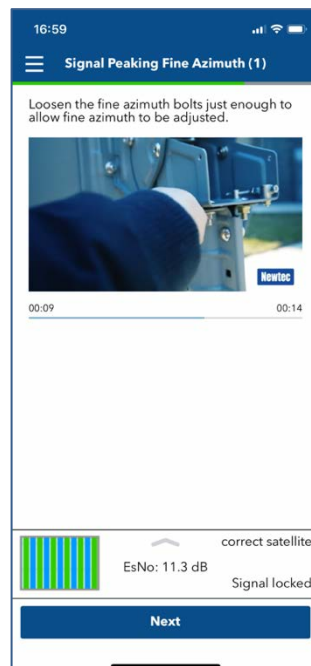
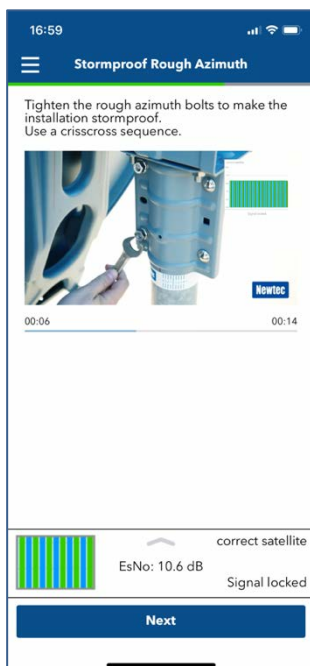
Step 30: Go behind the antenna, loosen the rough azimuth bolts just enough to rotate around the pole. Rotate the dish until it is pointed between Marker 1 and Marker 2.



Step 31: Increase volume of your smartphone to hear a tone proportional to the received signal level. Click on EsNo:5.0db to open the signal chart. Rotate the dish slowly by hand, in small steps. Stop and wait few seconds after each step to see if the tone and the satellite indication (EsNo) increase or decrease. Stop when you reach the maximum.



Step 32: Tighten the rough azimuth bolts on the pole. Loosen 3 fine azimuth bolts enough to allow fine azimuth to be adjusted. 1 bolt should stay tightened.

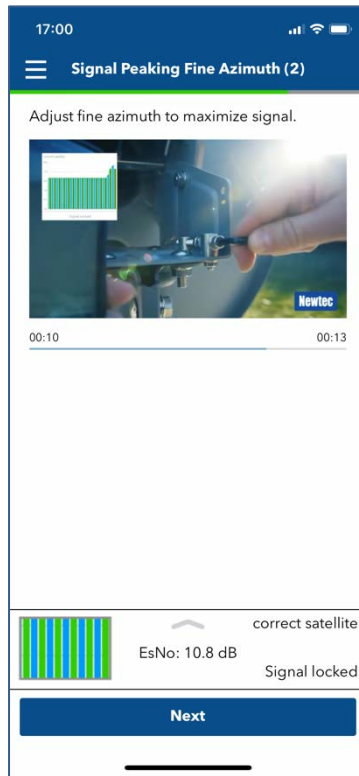
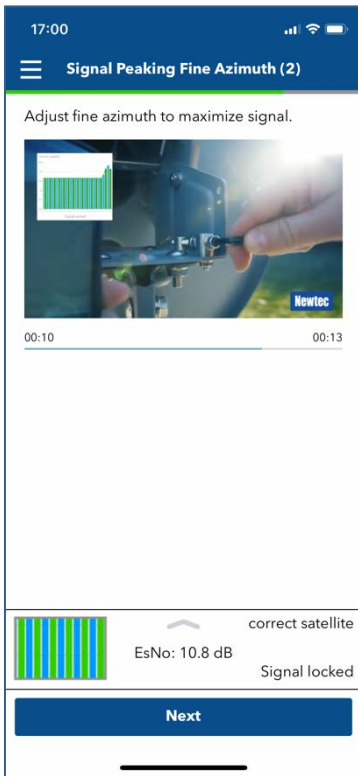


Fine azimuth bolts

Rough azimuth bolts

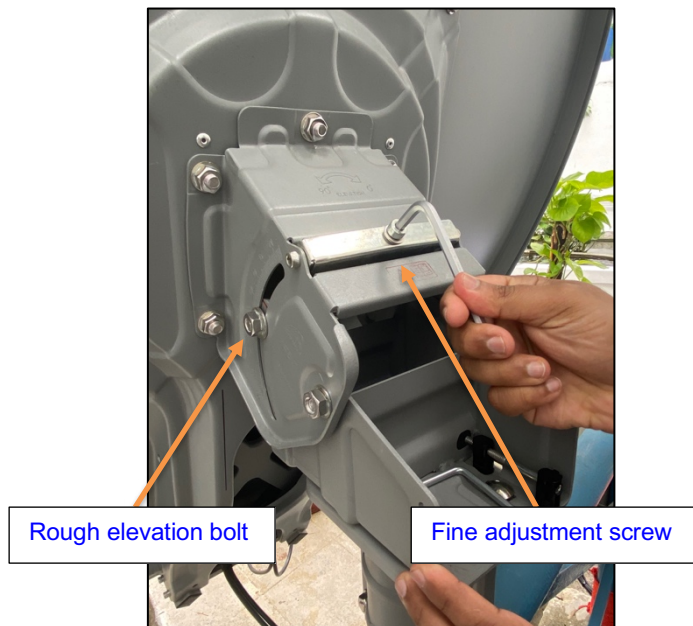
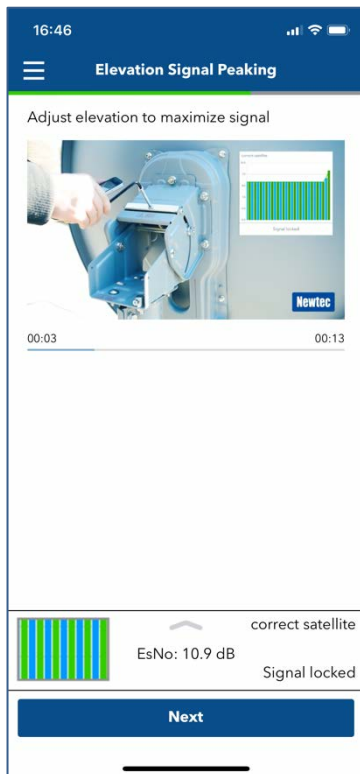
This bolt should stay tightened

Step 33: Adjust fine adjustment, with the handle, slowly, in small steps. Wait for a few seconds each time to stabilize the received signal.



Fine elevation adjustment

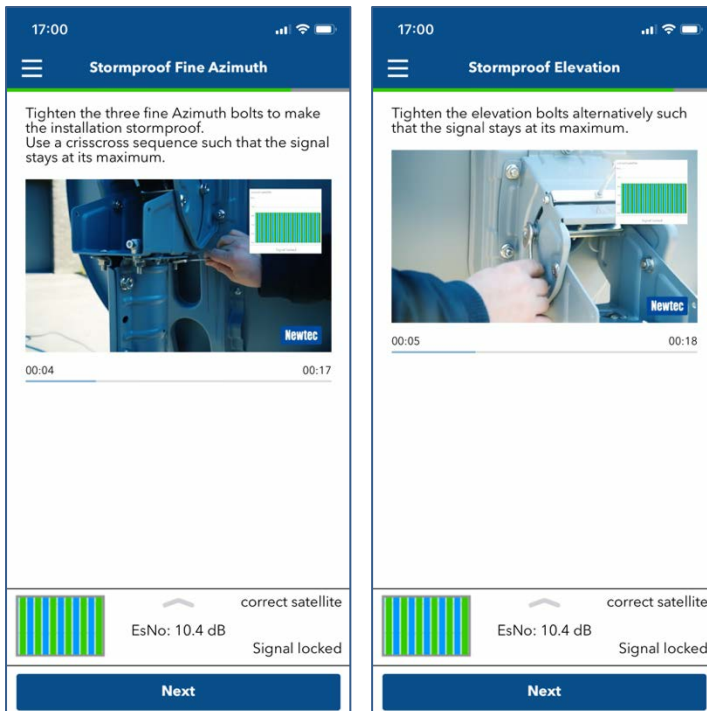
Step 34: Loosen the 2 rough elevation bolts by $\frac{1}{4}$ turn.
 If the elevation fine adjustment screw does not actuate properly, loosen the elevation bolts more.
 Adjust elevation with the fine adjustment screw to maximize the EsNo value displayed on the application.



Final tightening

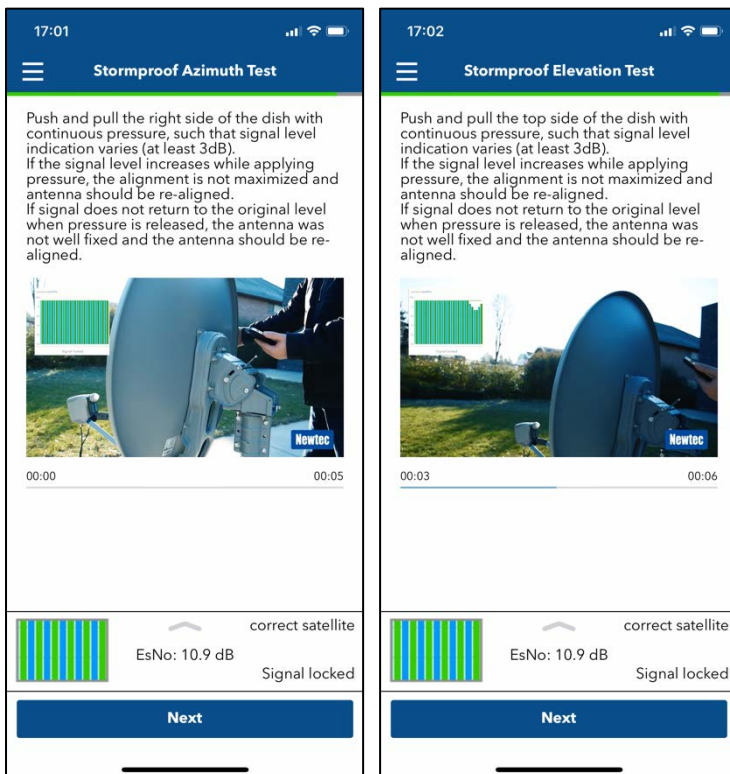
Step 35: When the maximum signal is reached for both Azimuth and Elevation:

- Tighten the rough elevation bolts alternatively so that the signal stays at its maximum.
- Tighten the 3 fine Azimuth bolts alternatively so that the signal stays at its maximum.

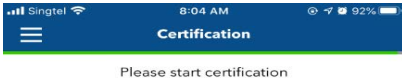


Step 36: Check the rigidity of the antenna fixing by pushing & pulling gently the right & top sides of the dish.

- If the signal level increases while applying pressure, the alignment is not maximized.
 - If the signal does not return to its original level, the antenna screws were not tightened properly.
- In both cases the antenna should be re-aligned.

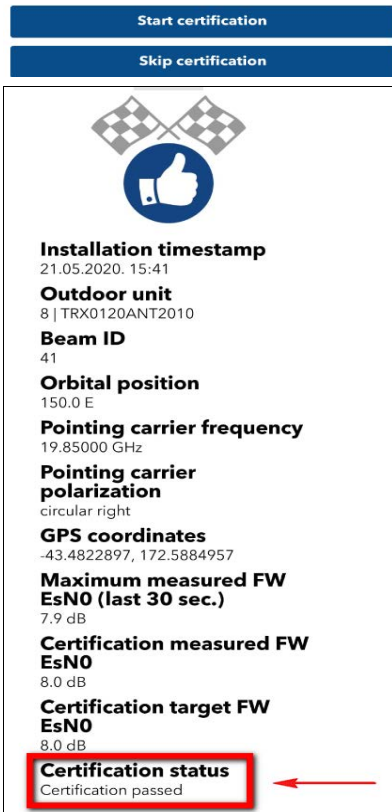
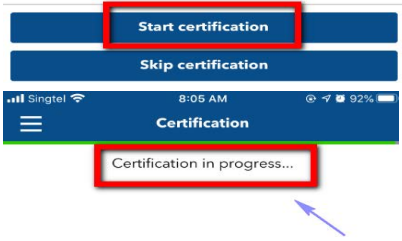


The antenna is now well pointed, and the modem signal is locked.



Note: With effect 19 October 2020, certification process is turned on to ensure that the antenna is properly aligned to the satellite before it can come online.

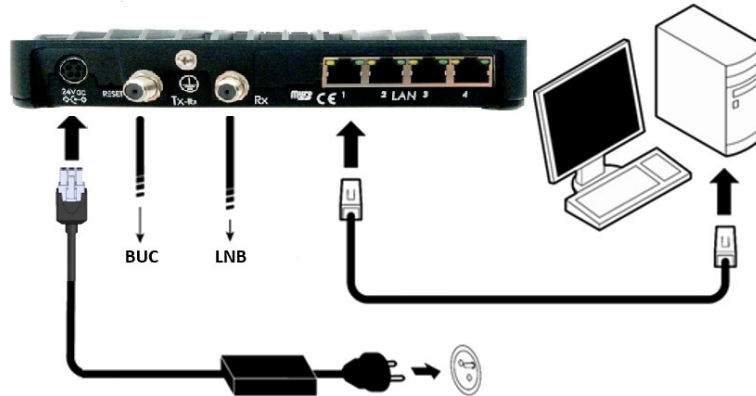
Step 37: Click “Next” and click “Start Certification” to start the certification process. Refer to Annex 2 if you are using a laptop to do the certification.



Step 38: Once the certification is successful, you will see the message “Certification passed”. If certification fails, return to Step 32 onwards to fine tune the azimuth and elevation to obtain a better EsNo.

4 Terminal testing

Step 39: Connect your laptop to the modem with the Ethernet cable.
Check your laptop IP setting is set to DHCP to be able to receive an IP address from the modem.



Step 40: Type the modem address 192.168.1.1 in the address bar of the browser to be directed to the terminal status page.

Terminal Status

Air MAC Address: 00:08:39:8b:2a:28

Ethernet | Satellite | Software

Terminal Status

Overview

Ethernet	Ethernet Status	Ok
Satellite	Active Beam ID	2
	Modem Status	synchronised - CPM * Loopback test *
	Demodulator	-25.0 dBm, Es/No: 35.8 dB, "Dialog 3 network"
	Actual Receive Polarization	Vertical
Software	Version	4.2.0.8

Interface Statistics

Interface		Volume	Packets	Errors	Dropped
Ethernet Interface	RX	10.92 GB	19 764 351	0	0
	TX	511.37 MB	3 223 164	0	0
Satellite Interface	RX	4.68 MB	33 150	0	0
	TX	1.63 GB	1 068 539	11 650	11 650

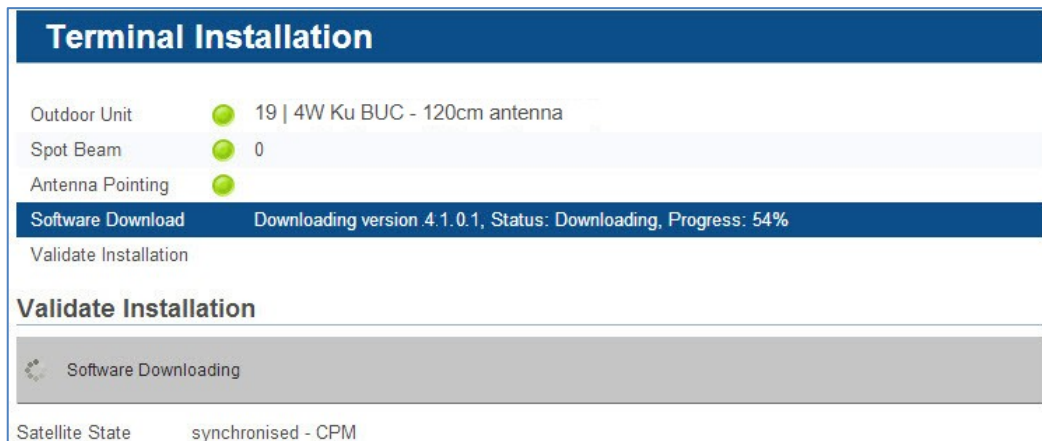
A – Banner: contains the Air MAC address and the languages in which the GUI can be displayed.

B - Status bar: always shows the most important status LEDs. This information will be specified in the body of the Status page.

C - Menu structure: Click an item to select it.

D - Body: contains the actual content of the web interface. It shows the page title and one or more content blocks or forms.

Step 41: Let the modem confirm it has the latest version or (automatically) download it and reboot to activate the new software. Otherwise, go to Step 42 directly.



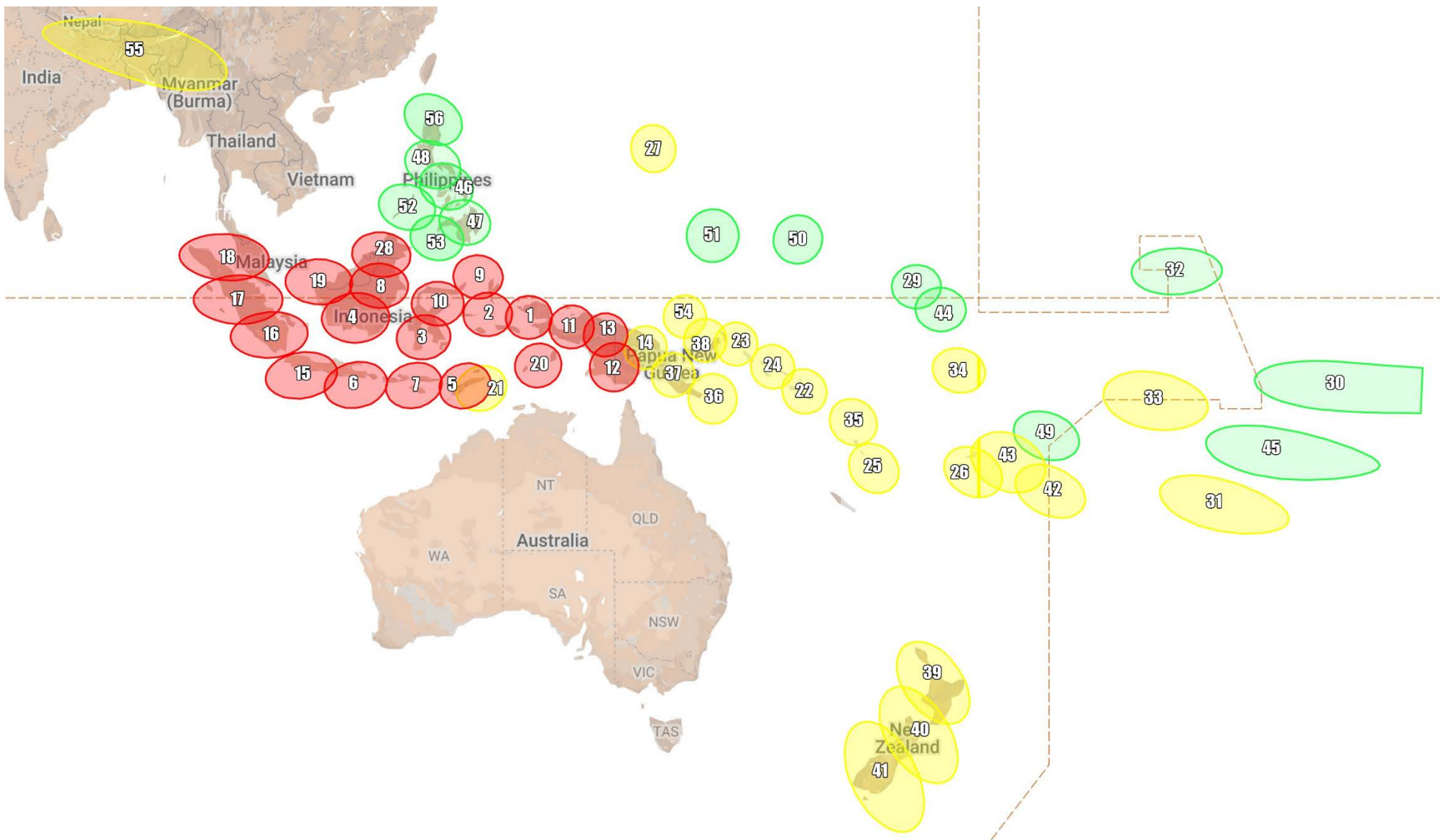
Step 42: Launch the Ping Test by typing in “ = ping -t 8.8.8.8” in Command Prompt function.
Test the download and upload speed by connecting your computer to the modem port.
Open Google Chrome browser and type in “ <https://172.18.2.10/speedtest>” in the address bar.

**The site is connected to the Kacific 1 network, and you can start getting Kacific service.
CONGRATULATIONS!**

Step 43: Please take a photo of your installation and upload to Gigstarter portal (Active Sites- Pictures).

Annex 1: List of Beams and Polarization

RFP Beam	Beam Name	Downlink polarization	Transceiver polar adjustment
#			
1	Papua	LHCP	B
2	Moluccas	RHCP	A
3	Sulawesi	LHCP	B
4	East Kalimantan	LHCP	B
5	East Nusa Tenggara	RHCP	A
6	West Nusa Tenggara	RHCP	A
7	Middle Nusa Tenggara	RHCP	A
8	North Kalimantan	RHCP	A
9	North Sulawesi	RHCP	A
10	Mid Sulawesi	LHCP	B
11	West Papua	RHCP	A
12	Highlands	LHCP	B
13	Highlands2	LHCP	B
14	Highlands3	RHCP	A
15	Java + Indonesian Teleport	RHCP	A
16	South Sumatra	RHCP	A
17	Mid Sumatra	RHCP	A
18	North Sumatra	RHCP	A
19	Rikit / Borneo	LHCP	B
20	Maluku	RHCP	A
21	Timor	LHCP	B
22	Solomon	RHCP	A
23	Bougainville	RHCP	A
24	North Solomon	LHCP	B
25	Mid Vanuatu	RHCP	A
26	Fiji	RHCP	A
27	Marshall1 / CNMI	LHCP	B
28	Majuro / Sabah	RHCP	A
29	Tarawa	RHCP	A
30	Marquisas	LHCP	B
31	Tubuai	LHCP	B
32	Line Islands	RHCP	A
33	Tautua	LHCP	B
34	Tuvalu	LHCP	B
35	Vanuatu North	LHCP	B
36	PNG East	RHCP	A
37	PoM	LHCP	B
38	New Britain	LHCP	B
39	Auckland	LHCP	B
40	Christchurch	RHCP	A
41	NZ South Island	RHCP	A
42	Niue	LHCP	B
43	Rotuma	LHCP	B
44	Gilbert	RHCP	A
45	Papeete	LHCP	B
46	Central Philippines	RHCP	A
47	Davao	LHCP	B
48	Manila	RHCP	A
49	Am Samoa	RHCP	A
50	Kosrae	LHCP	B
51	Chuuk	RHCP	A
52	Palawan	LHCP	B
53	Sulu	LHCP	B
54	Manus	RHCP	A
55	Bangladesh	LHCP	B
56	Batanes	LHCP	B



Annex 2: Certification through Laptop/PC

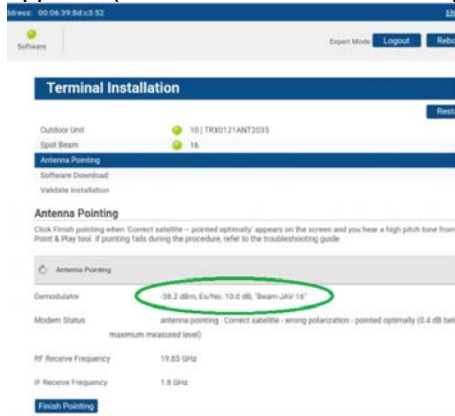
Follow the steps below when doing certification via a laptop/PC.

- 1) Ensure the correct beam and ODU unit are chosen.

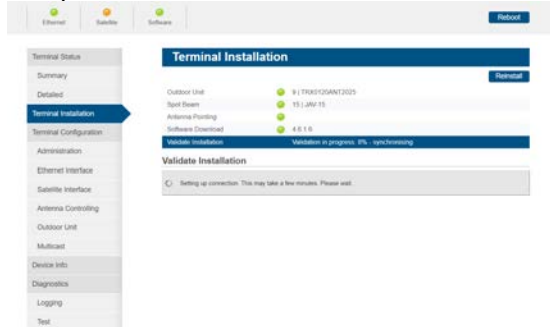
ODU UNIT – 10| TRX0121ANT2035 (For 1.2m Dish)

ODU UNIT – 9| TRX0120ANT2025 (For 75 cm Dish)

- 2) Follow the installation process on the “Terminal Installation” page on the left side menu. When EsNo value appears (Correct Satellite – Pointed optimally), click “Finish Pointing.”



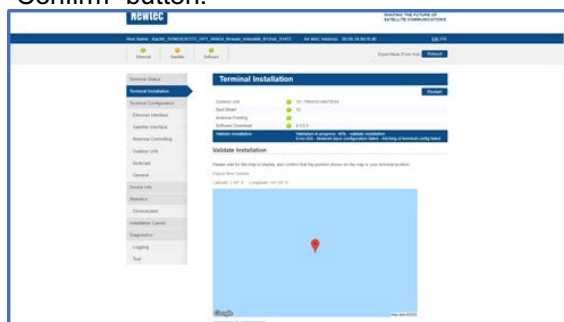
- 3) The process will continue to “Validate Installation.”



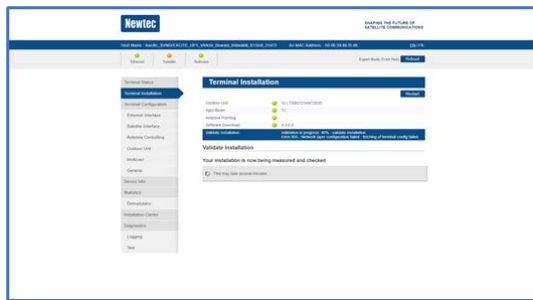
- 4) Key in the correct Latitude/Longitude of the terminal, then click on “Next.”



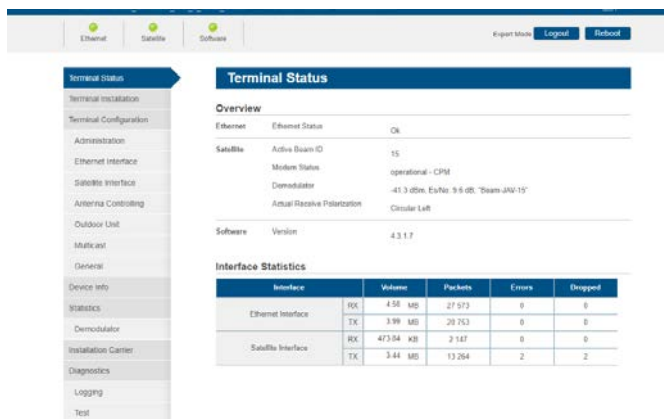
- 5) Confirm the Latitude/Longitude provided by verifying the location on the map. Continue by clicking the “Confirm” button.



- 6) It will continue automatically to the “Site Certification” process. Take attention on that screen until the process is completed (about 3 minutes). Confirm the certification process is successful by notification “Certification: **PASSED**”.



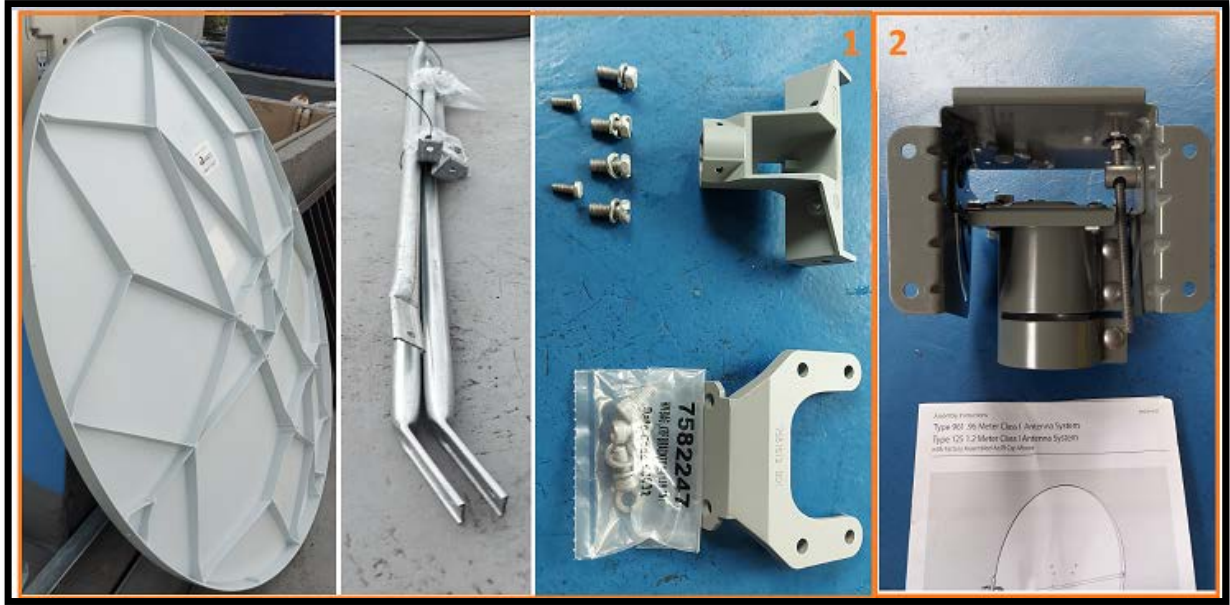
- 7) Go back to the terminal status page to verify that the terminal is now operational.



Annex 3: SKYWARE Antenna Type Diameter 1.2m

Skyware antenna Ka-band 1.2m is a fibre antenna.

Manufactured by Skyware (delivered in 2 parts – see pictures below):



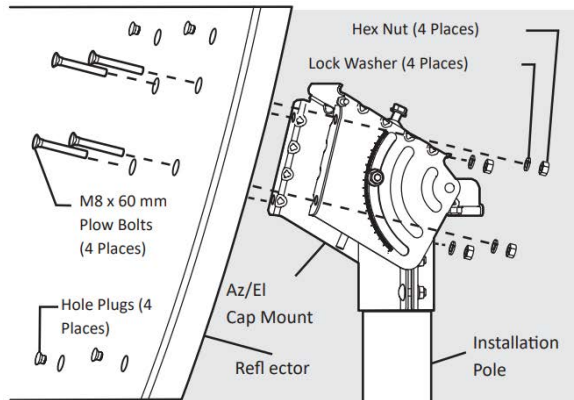
- Part 1: Dish/reflector, feed legs, feed bracket (with bolts and nuts)
- Part 2: Az/EI Cap Mount

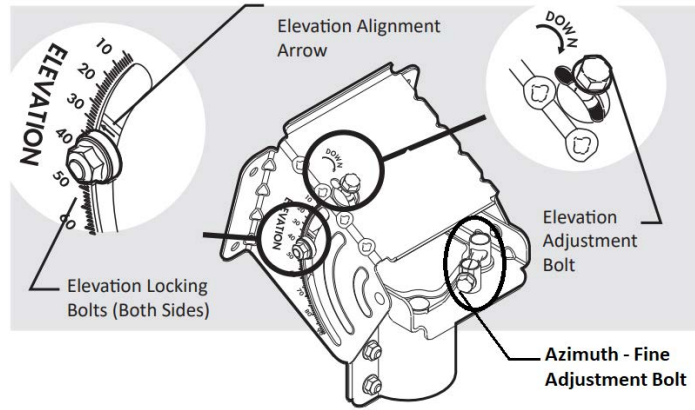
Antenna assembly

1. Install the Az/EI ap mount on the 76mm (3') pole, as demonstrated in the pictures below.

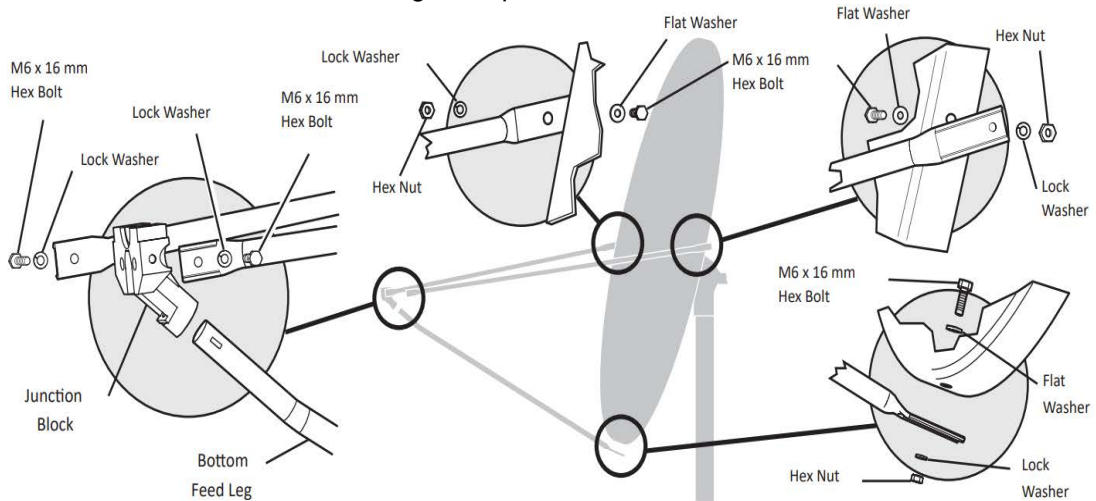


2. Install the dish/reflector to the Az/EI mount cap.





3. Assemble the feed bracket and feed legs with provided bolts and nuts.



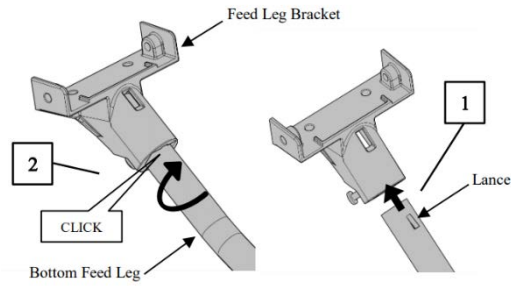
3a. Take bottom feed legs with lance on its tip (in the middle) and feed leg bracket



3b. Insert the tip of the bottom feed leg to feed leg bracket socket as shown in the picture below:



3c. Insert feed leg to feed leg bracket until fully seated, rotate 90 degrees for the lance on leg is securely engaged in socket.

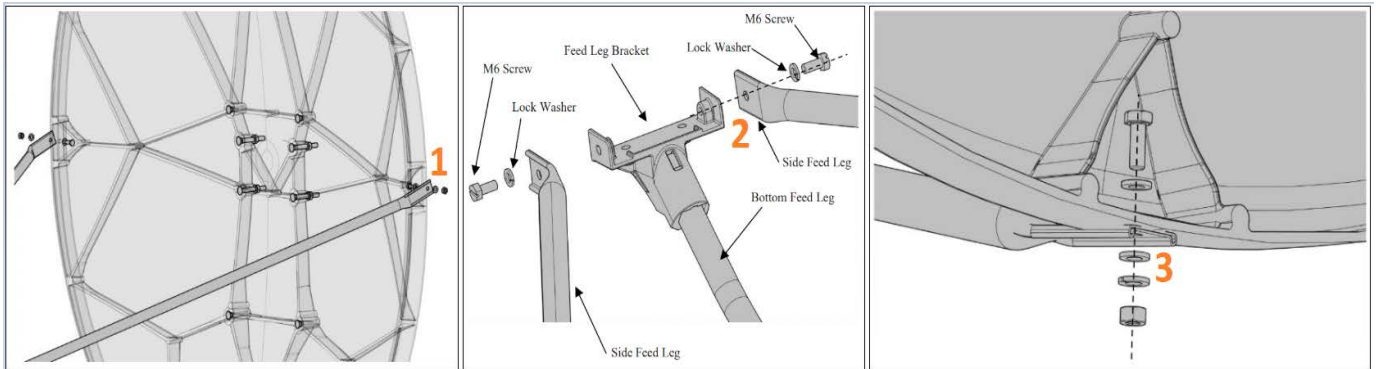


4. Install the feed legs by these sequences:

Seq. 1: Attach side feed legs to the dish reflector. **DO NOT** tighten the screws.

Seq. 2: Attach side legs to side flanges of feed bracket. **DO NOT** tighten the screws.

Seq. 3: Attach the bottom-feed leg to the bottom of the dish reflector. **DO NOT** tighten screws.

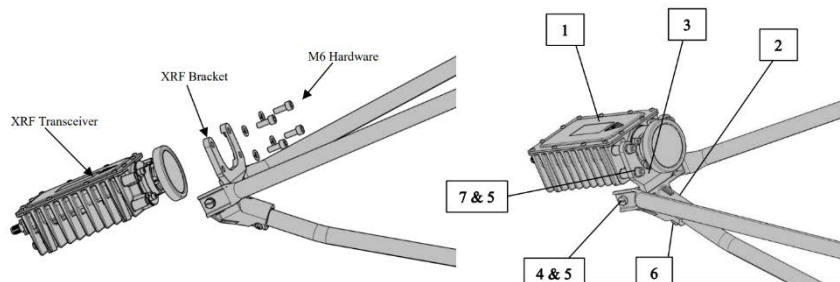


Then, **tighten screws** securing feed legs to the dish reflector, and **alternately tighten screws** on the feed leg bracket.

5. Assemble TRX feed bracket into feed leg bracket.



6. Mount the Transceiver to TRX feed bracket.





7. Take pictures of the complete installation:

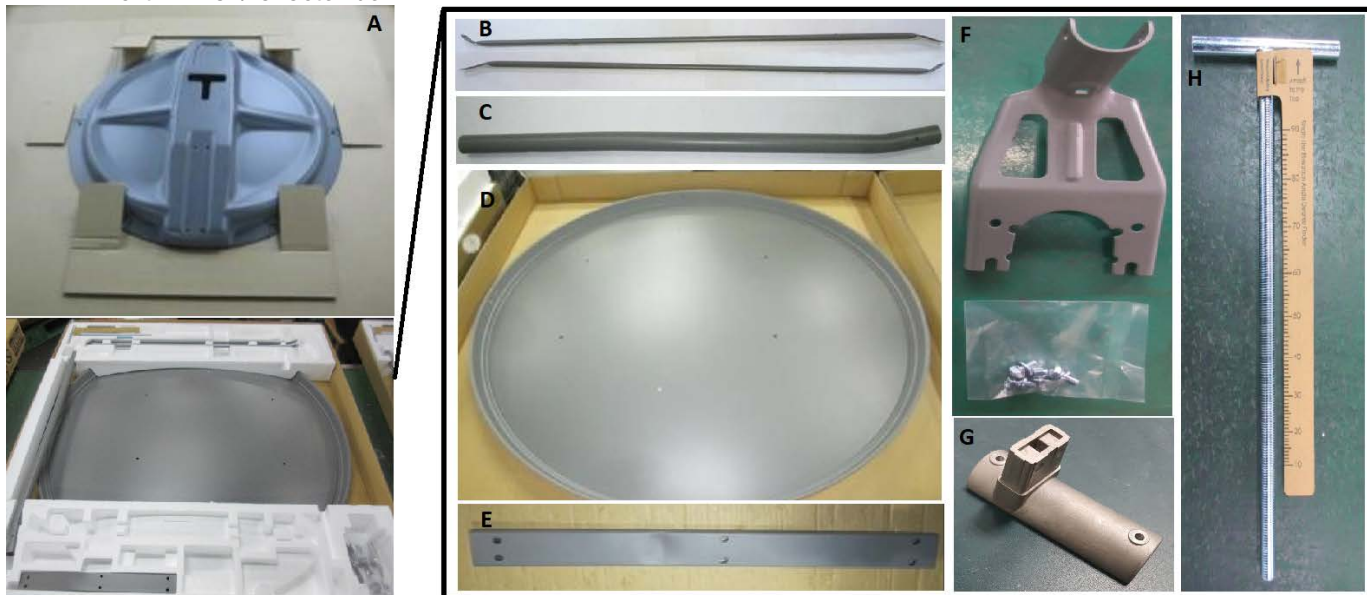


Annex 4: JONSA Antenna Type Diameter 1.2 m

JONSA antenna Ka-band 1.2m is a metal plate antenna.

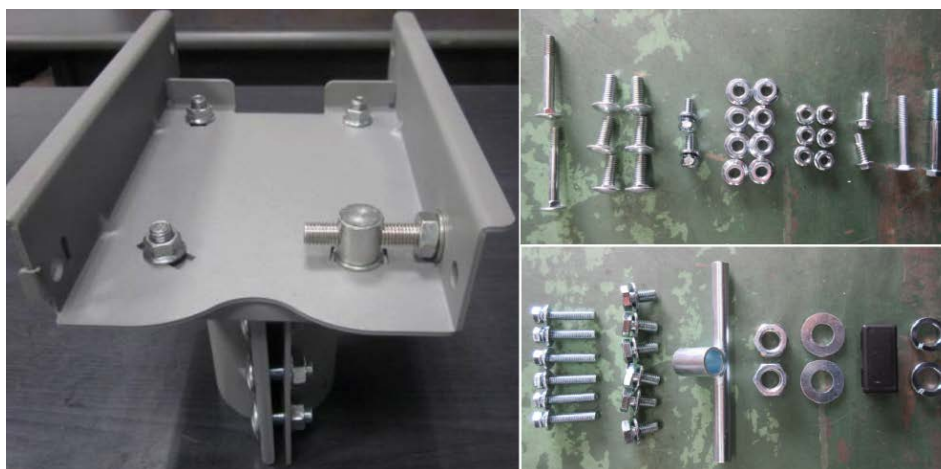
Manufactured by JONSA (delivered in 2 boxes – see pictures below):

- Part 1: Dish/reflector box




- A. Back structure rim
- B. Feed horn supporting rod
- C. Boom arm
- D. Reflector
- E. Support arm
- F. Transceiver holder
- G. LNB arm adapter
- H. Elevation adjusting screw

- Part 2: Az/EI Mount box
Contains AZEL mount and screws.

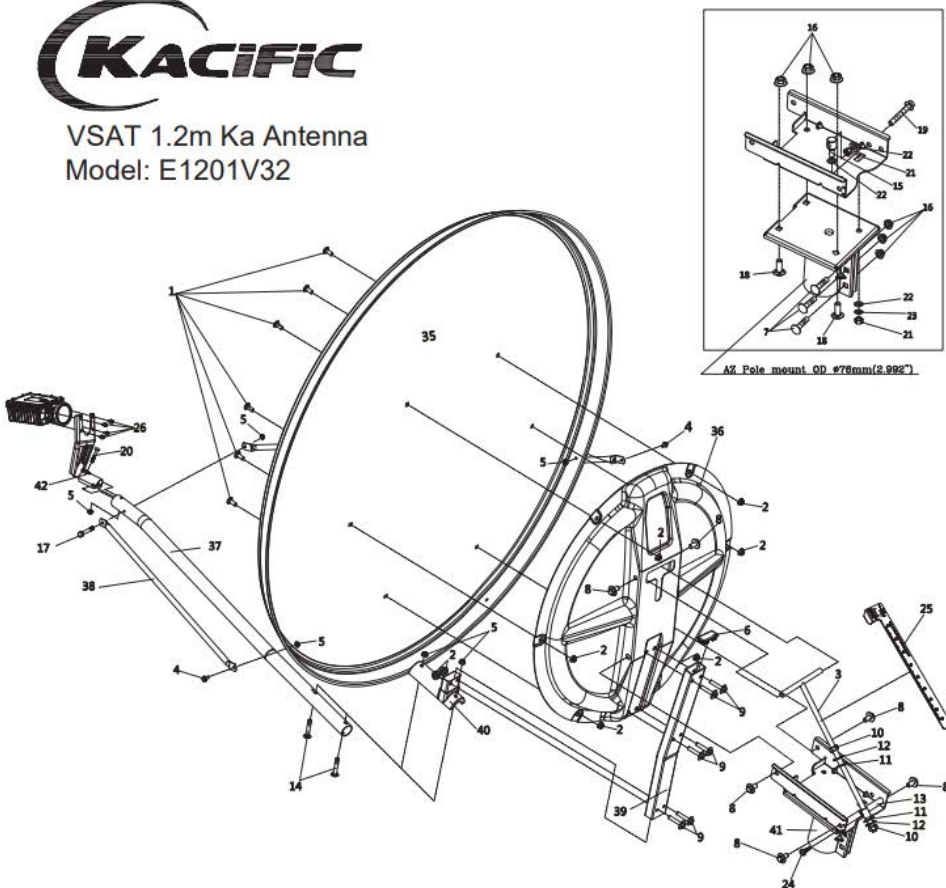


Antenna assembly

Cheat sheet



VSAT 1.2m Ka Antenna
Model: E1201V32



Grade 5 screw	Recommend torque			
	N.m	Kgf.cm	N.m	Kgf.cm
M6	4.9-6	48.9-61.2	8.9-10.5	87.7-107.1
M8	11.7-14.5	119.3-147.9	21-26	214.1-265.1

remark: 1N.m = 10.197Kgf.cm

NO.	ITEM	DESCRIPTION	Q'TY
42		Transceiver holder	1
41		AZ&Pole Clamp Assy	1
40		LNB ARM Adapter	1
39		Support Arm	1
38		Feedhorn(LNB) Supporting Rods	2
37		Boom arm	1
36		Back Structure Rim	1
35		Reflector	1
26		M6*L12 hex-head cap screw w/sw/w	4
25		Elevation degree card board	1
24		#10*3/4" METAL TEK SCREW	2
23		M10 spring Washer	1
22		M10 Washer	3
21		M10 hex nut	2
20		M6*45 round-head screw(Grade5)	1
19		M10*60 hex-head flange screw	1
18		M10*20 round-head screw	3
17		M6*50 hex-head cap screw	1
16		M10 flange nut	6
15		M10 SHAFT	1
14		M6*50 round-head screw(Grade5)	2
13		EL Adjust Divot	1
12		M16 spring Washer	2
11		M16 Washer	2
10		M16 hex nut	2
9		M8*40 hex-head cap screw w/sw/w(Grade5)	6
8		M10*20 hex-head cap screw w/w	6
7		M10*40 round-head screw	3
6		Cover	1
5		M6 flange nut	6
4		M6*16 hex-head cap screw w/sw/w	2
3		Adjusting screw M16	1
2		M8 flange nut	8
1		M8*20 round-head screw(Grade5)	6

Step by Step assembly

1. Assemble the support arm to the back structure rim.

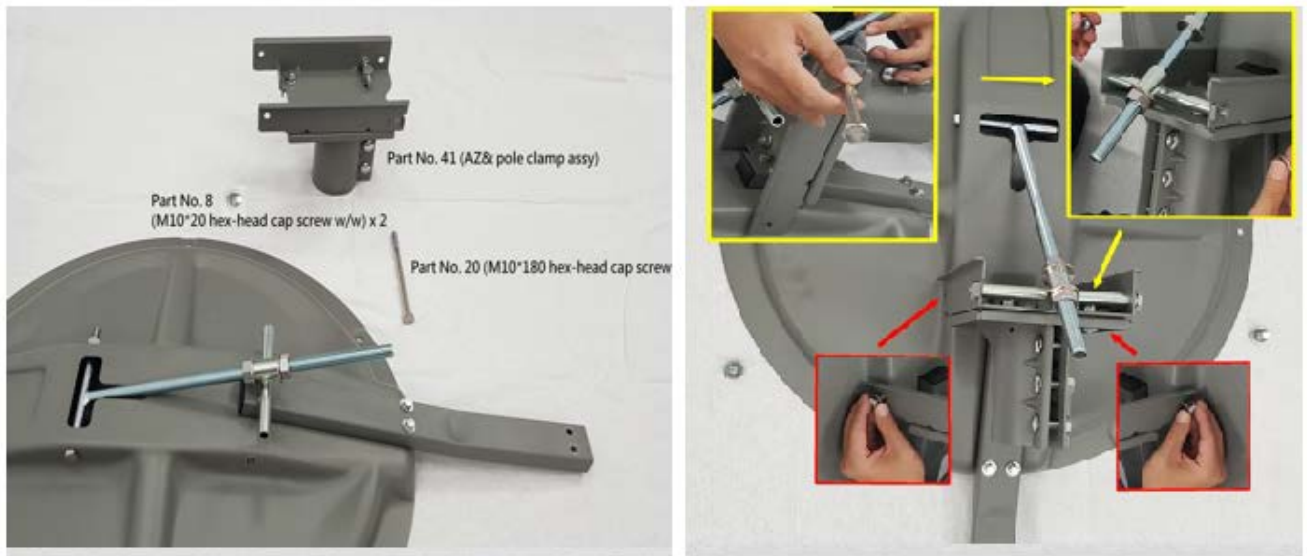


2. Assemble EL adjusting screw to the back structure rim.



Note: EL adjust divot assembly direction with long side down as in the picture above.

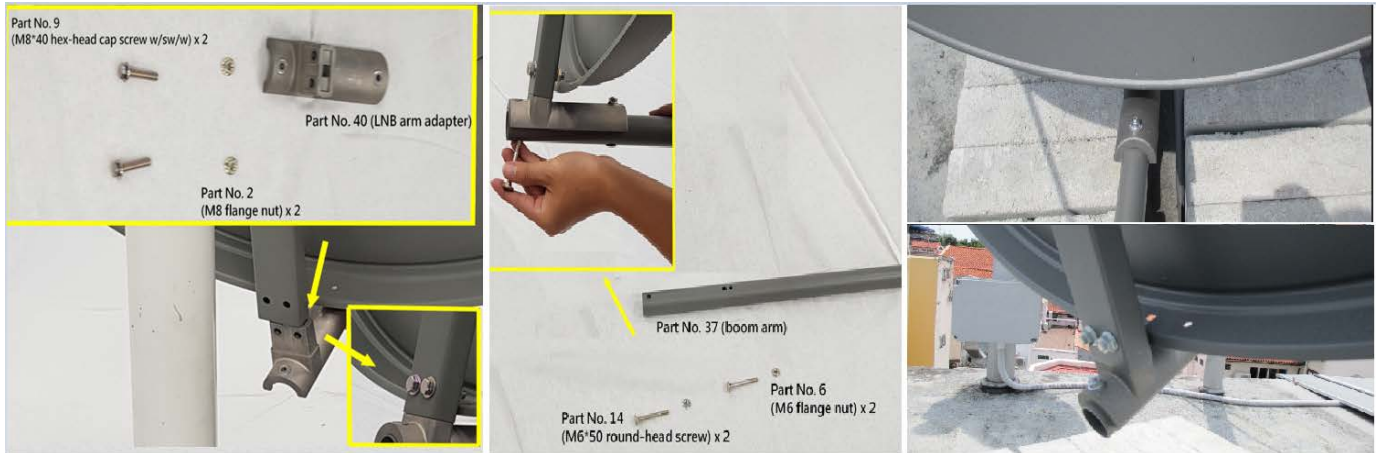
3. Assemble AZEL mount to the back structure rim.



4. Place the AZEL mount (with back structure rim) to the pole then assemble the reflector.



5. Assemble the LNB arm adaptor to support arm.



6. Install the feed horn supporting rod legs by these sequences:

Seq. 1: Attach the side feed horn supporting rod to the dish reflector. DO NOT tighten the screws.

Seq. 2: Attach side feed horn supporting rod to the boom arm DO NOT tighten the screws.



Seq. 3: Then, **tighten screws** securing feed horn supporting rod to dish reflector, and **alternately tighten screws** on the boom arm.

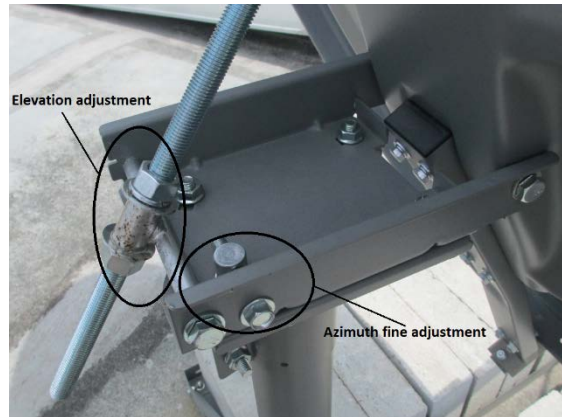
7. Assemble the Transceiver holder into the boom arm and mount the Transceiver to the TRX holder.



Then continue to do the alignment of the antenna to the Kacific-1 satellite location in 150E.

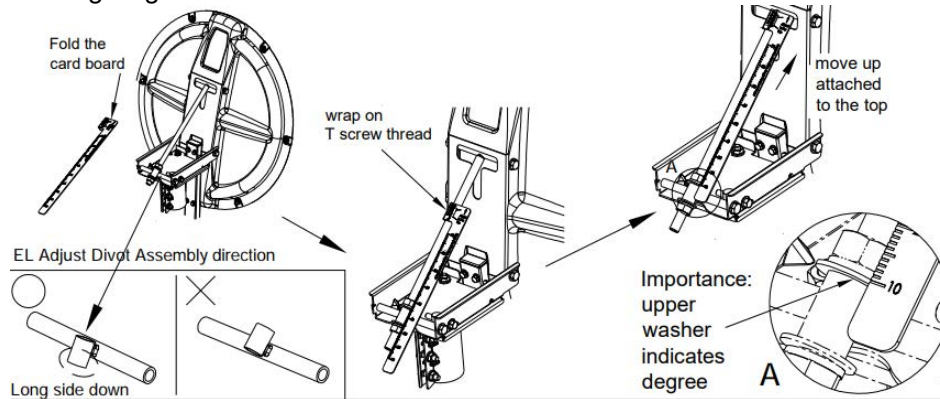
Important Notes

Note 1: Elevation and Azimuth fine adjustment in the AZEL mount is as follow:



Note 2: Finding dish elevation can be done in 2 ways.

A. Using single-use cardboard in the box as follows

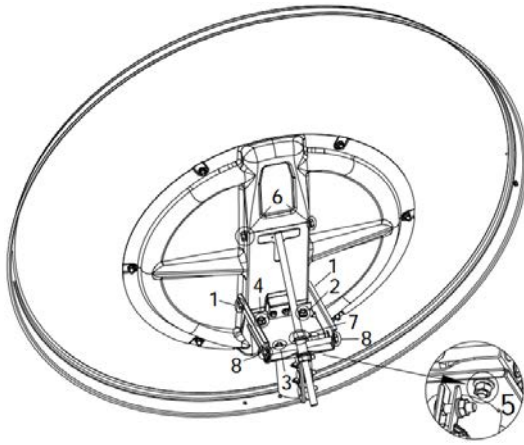


B. Using the Inclinator as follows:



WHEN inclinometer reading	ACTUAL VSAT elevation degree
78	5
83	10
88	15
90	17
87	20
82	25
77	30
72	35
67	40
62	45
57	50
52	55
47	60
42	65
37	70
32	75
27	80
22	85
17	90

Note 3: Tightening sequence to lock dish position after alignment (peak EsNo reached) is as follows:



A MUST-FOLLOW screw tightening sequence after alignment:

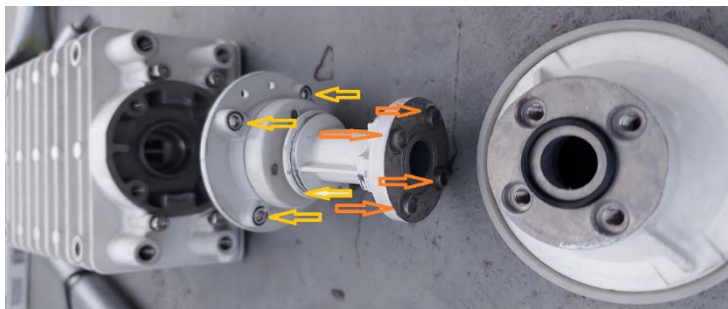
- No. 1: M10*20 hex-head cap screw (elevation axis)
- No. 2: M10 flange nut (upper right on azimuth deck)
- No. 3: M10 flange nut (lower left on azimuth deck)
- No. 4: M10 flange nut (upper left on azimuth deck)
- No. 5: M10 hex nut (the fine tune below azimuth deck)
- No. 6: M10*20 hex-head cap screw w/w (upper elevation axis on adjusting screw)
- No. 7: M16 hex nut (on adjusting screw M16)
- No. 8: M10*20 hex-head cap screw w/w (to tighten and hold EL adjust divot)

Note 4: Take pictures of the complete installation and upload them on the Gigstarter portal (Active Sites – Pictures)



Before antenna assembly, please note that the waveguide part of Transceiver **TRX0121** needs to be removed with the following steps:

Step 1: Remove the eight bolts as displayed below:



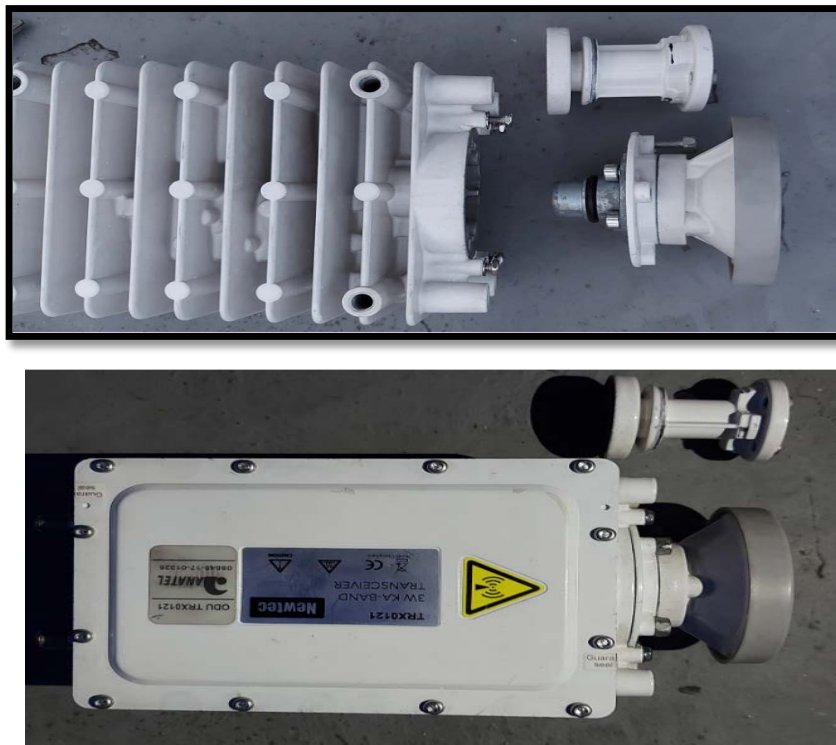
Step 2: Remove four bolts to release the polarization set below:



Step 3: Take out the waveguide part (shaded white):



Step 4: Re-assembly without the waveguide. Note the polarization according to the beam table:



For Transceiver **TRX0120** needs to be removed waveguide and install new feedhorn:





Re-assembly with new feedhorn without the waveguide, note the polarization according to beam table