



How to Setup Topcon V15 Base & Rover

1. Make sure your Rover is set.



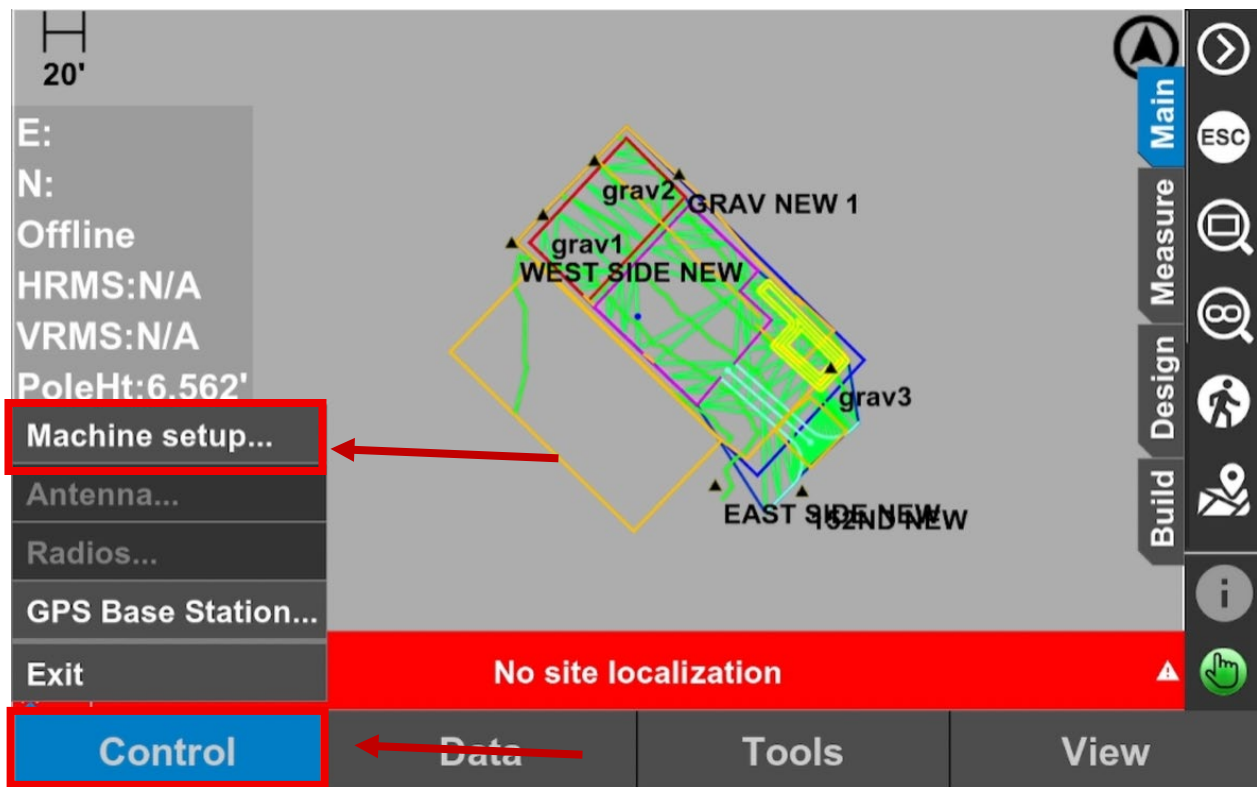
2. Long Press the power button of the Rover to turn on.



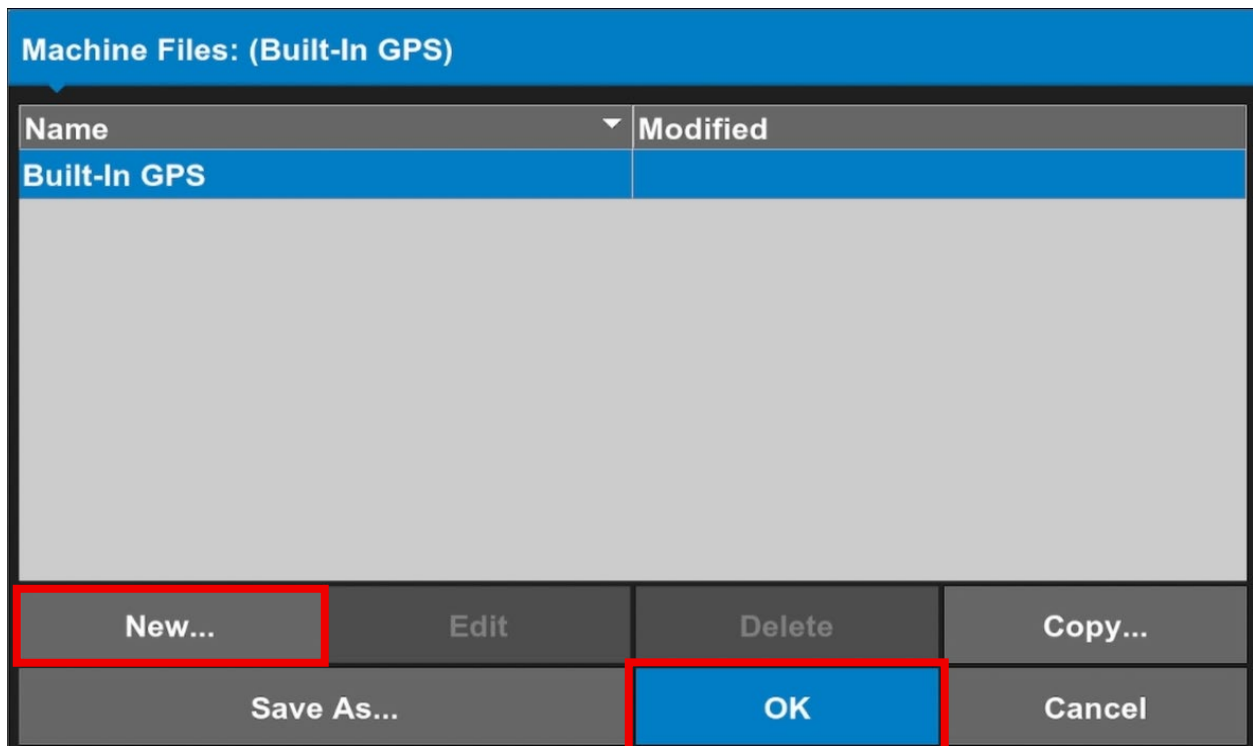
3. Make sure that your Base station is on a Base Post concreted to the ground. Turn it on by long pressing the power button.



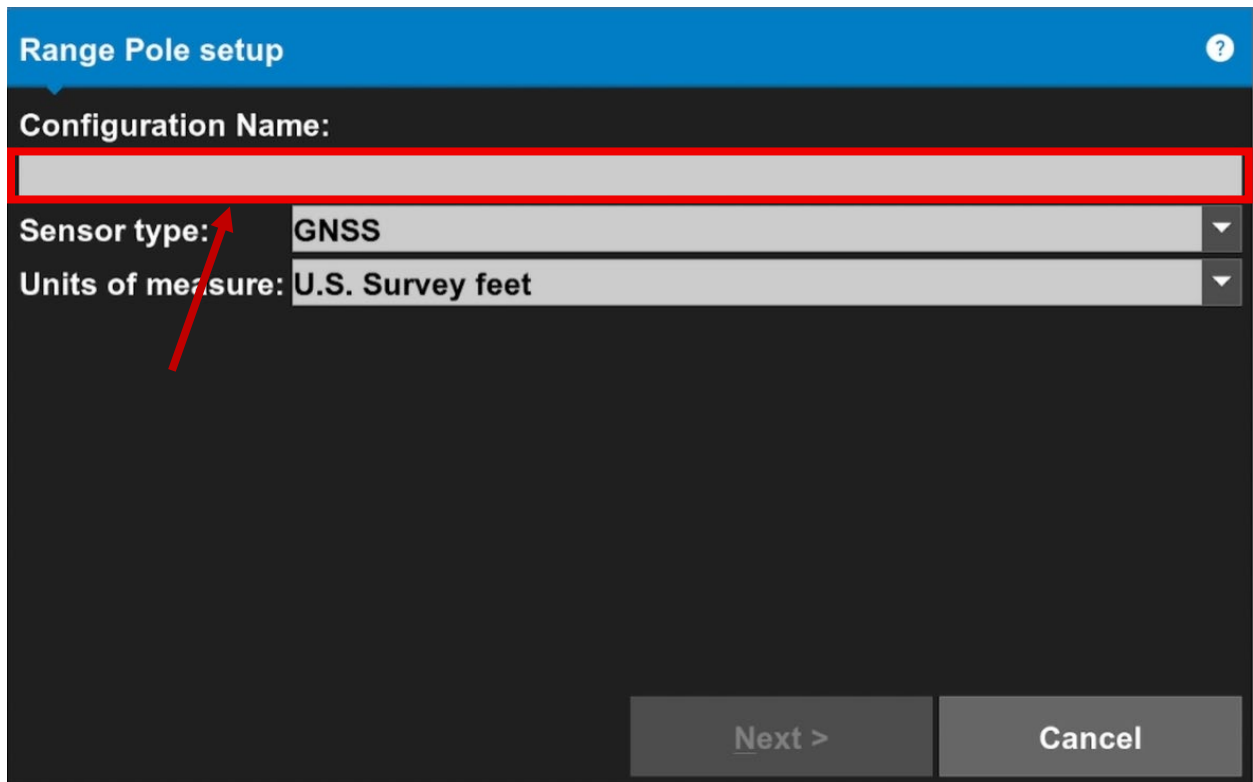
4. To make a receiver profile, click **Control** then click **Machine setup...**. (Note, if you already have a receiver profile, you do not need to create a new one each time you setup your Base & Rover)



5. Click **New...**.



- Click the long space and set the Configuration Name to **Hiper VR**, or choose a designated name.



Range Pole setup ?

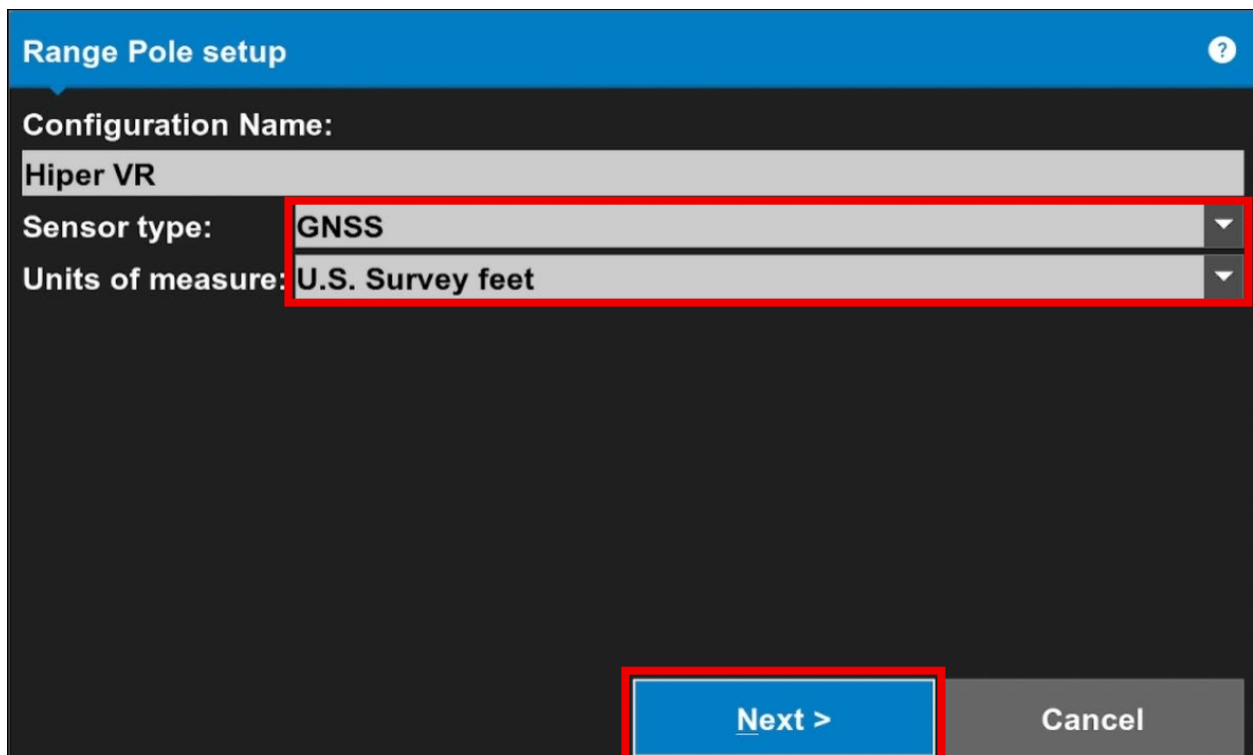
Configuration Name:

Sensor type: GNSS

Units of measure: U.S. Survey feet

Next > Cancel

- Set the Sensor type to **“GNSS”** and Units of measure to **“U.S. Survey feet”**. Once done, click **“Next”**



Range Pole setup ?

Configuration Name:

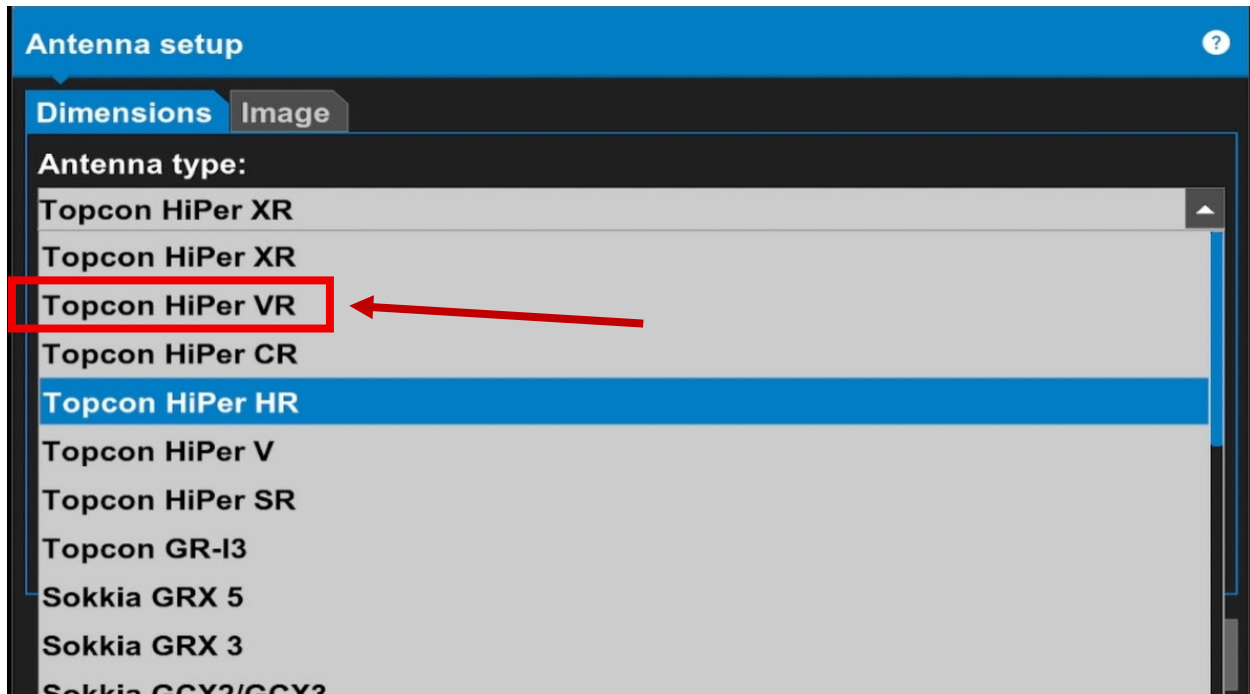
Hiper VR

Sensor type: GNSS

Units of measure: U.S. Survey feet

Next > Cancel

8. For Antenna type, select “Topcon HiPer VR”. (Note: if you are using a different unit, select that unit instead).



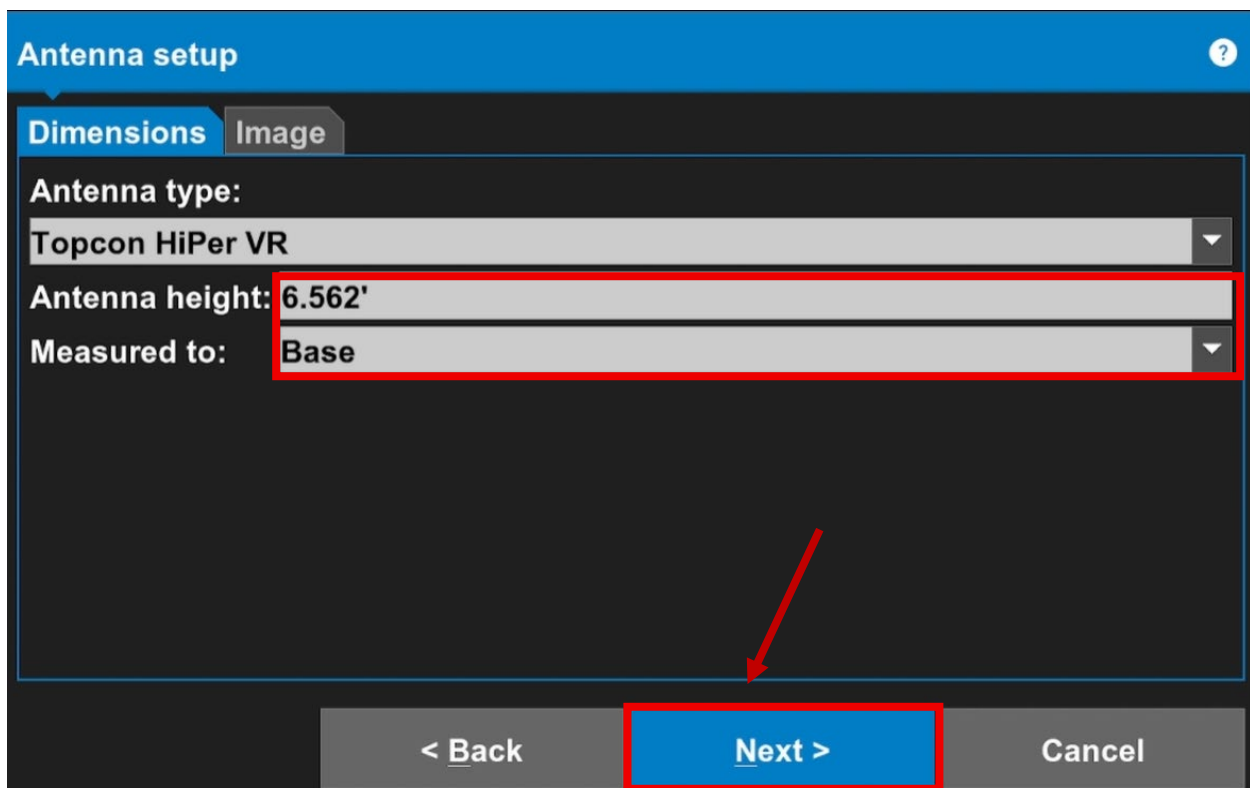
Antenna setup

Dimensions Image

Antenna type:

- Topcon HiPer XR
- Topcon HiPer XR
- Topcon HiPer VR**
- Topcon HiPer CR
- Topcon HiPer HR
- Topcon HiPer V
- Topcon HiPer SR
- Topcon GR-I3
- Sokkia GRX 5
- Sokkia GRX 3
- Sokkia GCX2/GCX3

9. Keep the antenna height to **6.562'** and make sure it is Measured to “Base”. Click “Next”. (Note: If you have a different antenna height, you need to enter it manually)



Antenna setup

Dimensions Image

Antenna type:

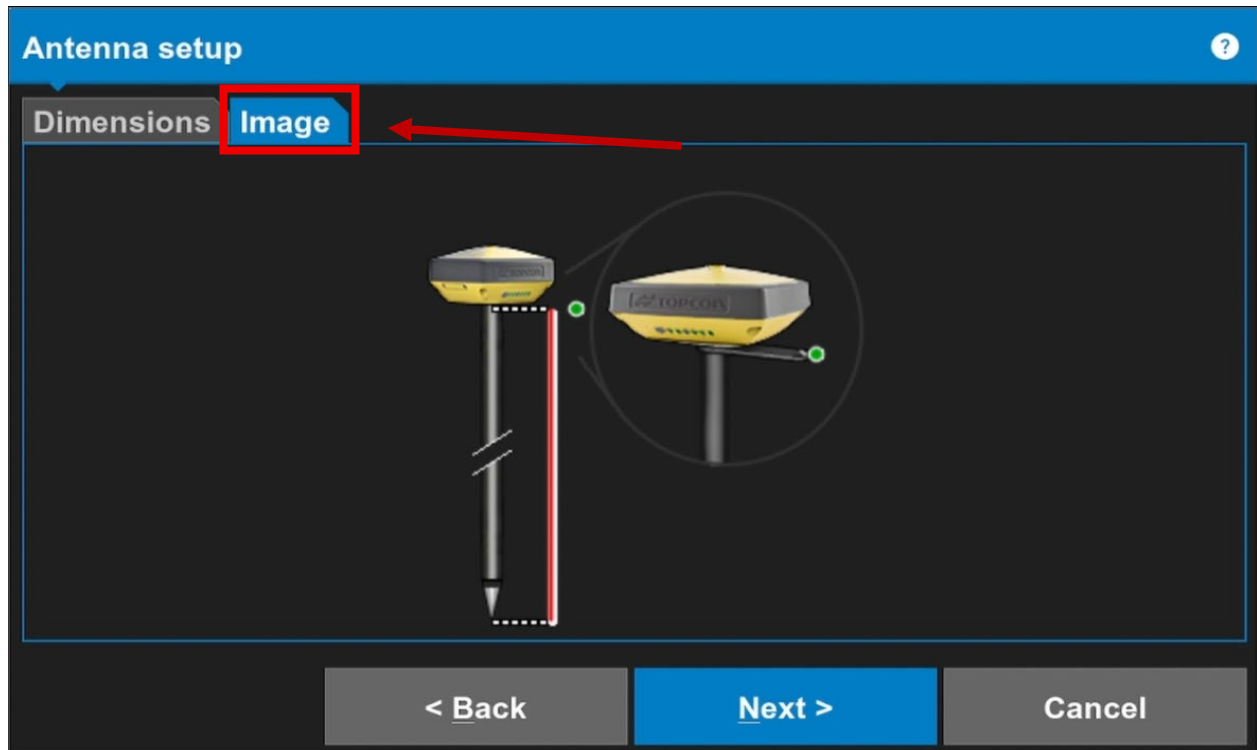
Topcon HiPer VR

Antenna height: 6.562'

Measured to: Base

< Back Next > Cancel

10. Setting the “Measured to” to “Base” means you will be measuring from the Base of the Rover to the Tip of the Rod as seen in the “Image” section.



11. Leave the measurements and click “Next”.

The screenshot shows the 'Precisions' screen with a blue header and a question mark icon. Below the header, there are three sections: 'Maximum GNSS Errors:', 'Point Measurement', and 'Control Point Measurement'. Each section has input fields for 'Sample Count', 'Horz. RMS', and 'Vert. RMS'. The 'Control Point Measurement' section is highlighted with a red box, and a red arrow points to the 'Next >' button.

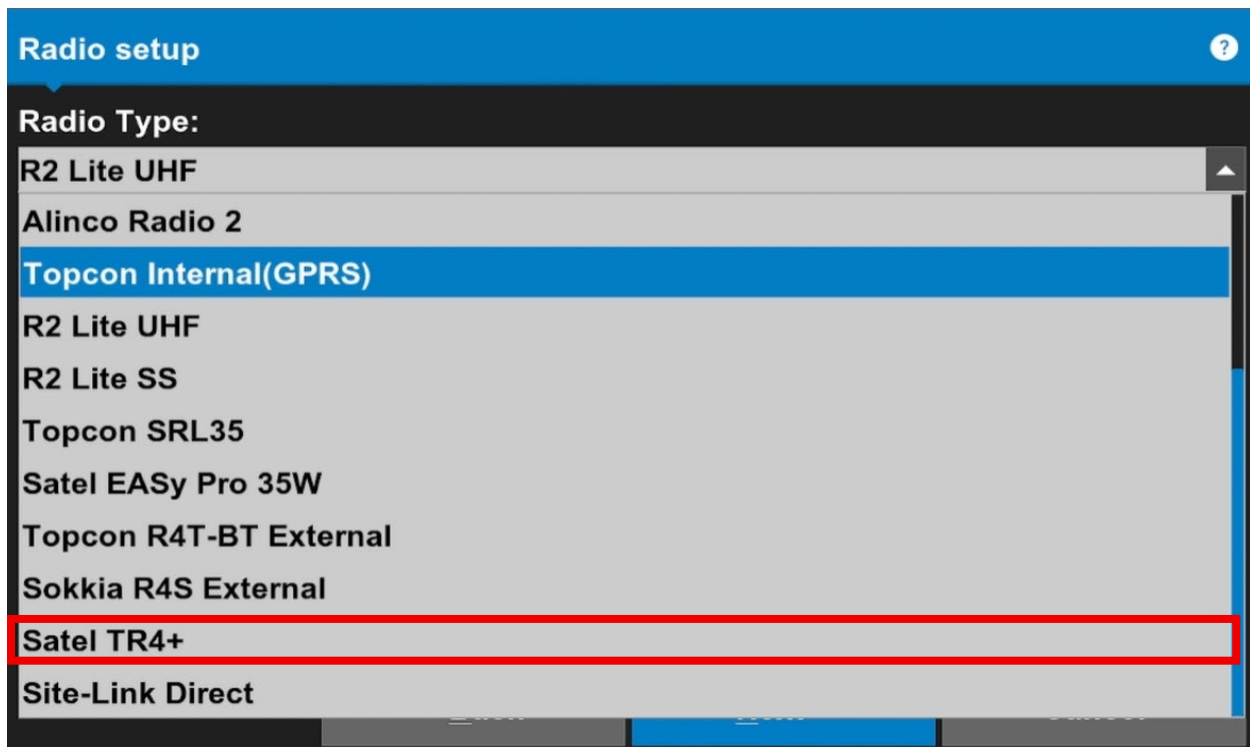
Maximum GNSS Errors:		
Roving		
Horz. RMS:	Vert. RMS:	
0.200'	0.300'	

Point Measurement		
Sample Count:	Horz. RMS:	Vert. RMS:
3	0.100'	0.200'

Control Point Measurement		
Sample Count:	Horz. RMS:	Vert. RMS:
10	0.100'	0.150'

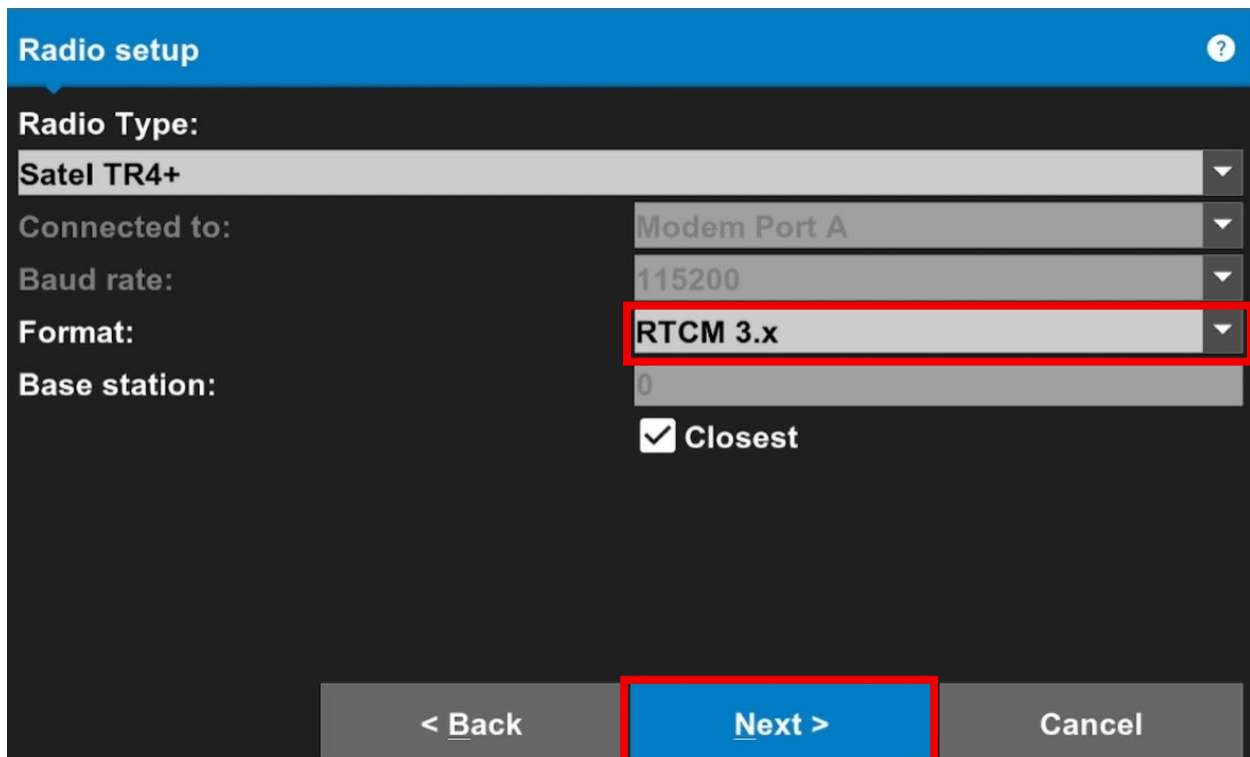
< Back **Next >** Cancel

12. Click **"Radio Type"**. Scroll down and look for **"Satel TR4+"** if you are using the Topcon HiPer VR.
(Note: If you are using a different UHF Radio, select **"R2 Lite UHF"**. And if you are using 900 MHz, Select **"R2 Lite SS"**)



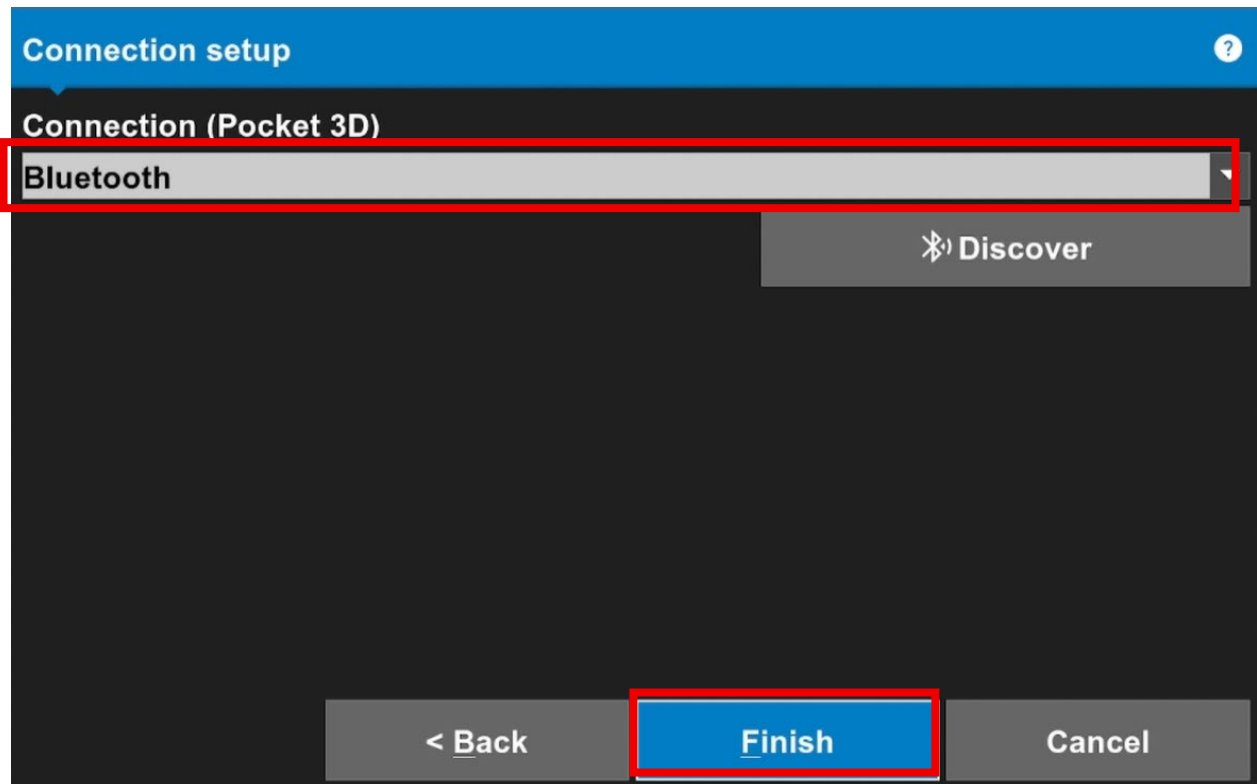
The screenshot shows the 'Radio setup' window with a blue header and a dark grey body. A list of radio types is displayed in a scrollable area. The 'Satel TR4+' option is highlighted with a red rectangular box. The list includes: R2 Lite UHF, Alinco Radio 2, Topcon Internal(GPRS), R2 Lite UHF, R2 Lite SS, Topcon SRL35, Satel EASy Pro 35W, Topcon R4T-BT External, Sokkia R4S External, Satel TR4+, and Site-Link Direct.

13. Set the Format to **"RTCM 3.x"** then click **"Next"**.

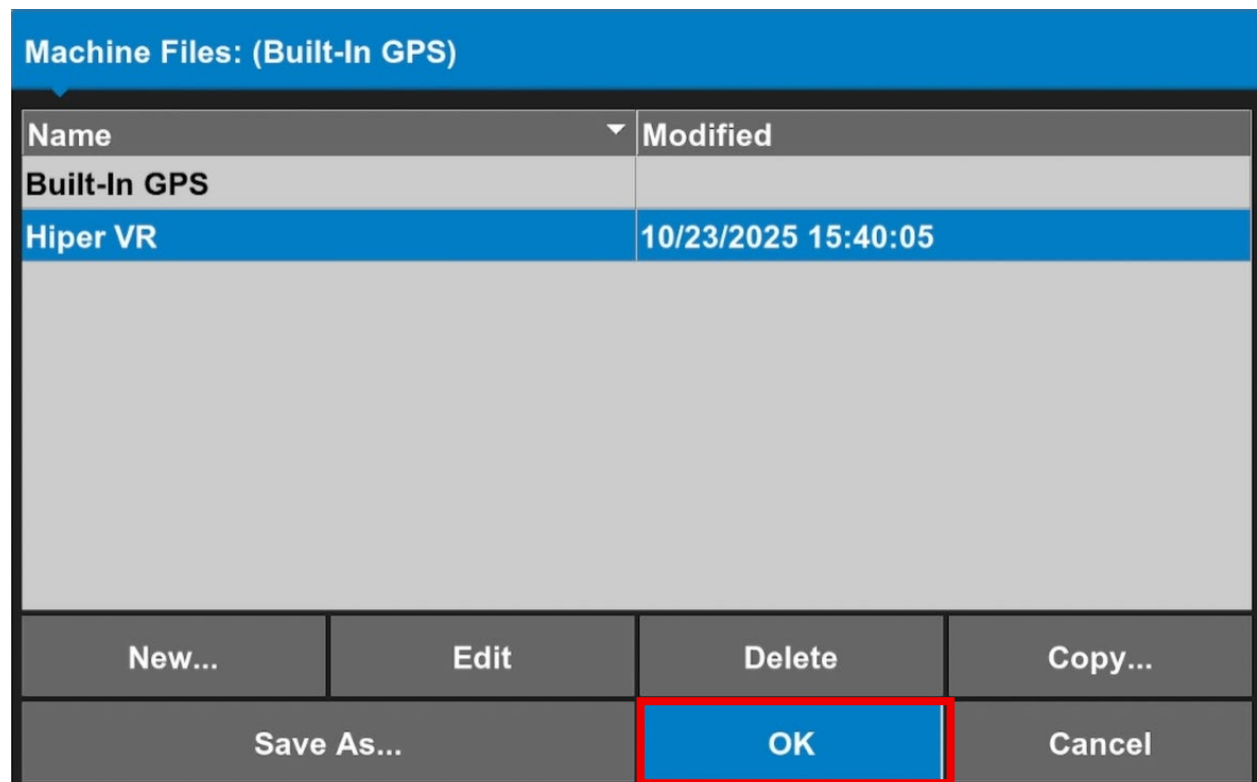


The screenshot shows the 'Radio setup' window with the 'Radio Type' set to 'Satel TR4+'. Below this, there are fields for 'Connected to:' (Modem Port A), 'Baud rate:' (115200), 'Format:' (RTCM 3.x), and 'Base station:' (0). The 'Format:' field is highlighted with a red rectangular box. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red rectangular box. A checkbox labeled 'Closest' is checked.

14. Set the Connection to “Bluetooth” then hit “Finish”.



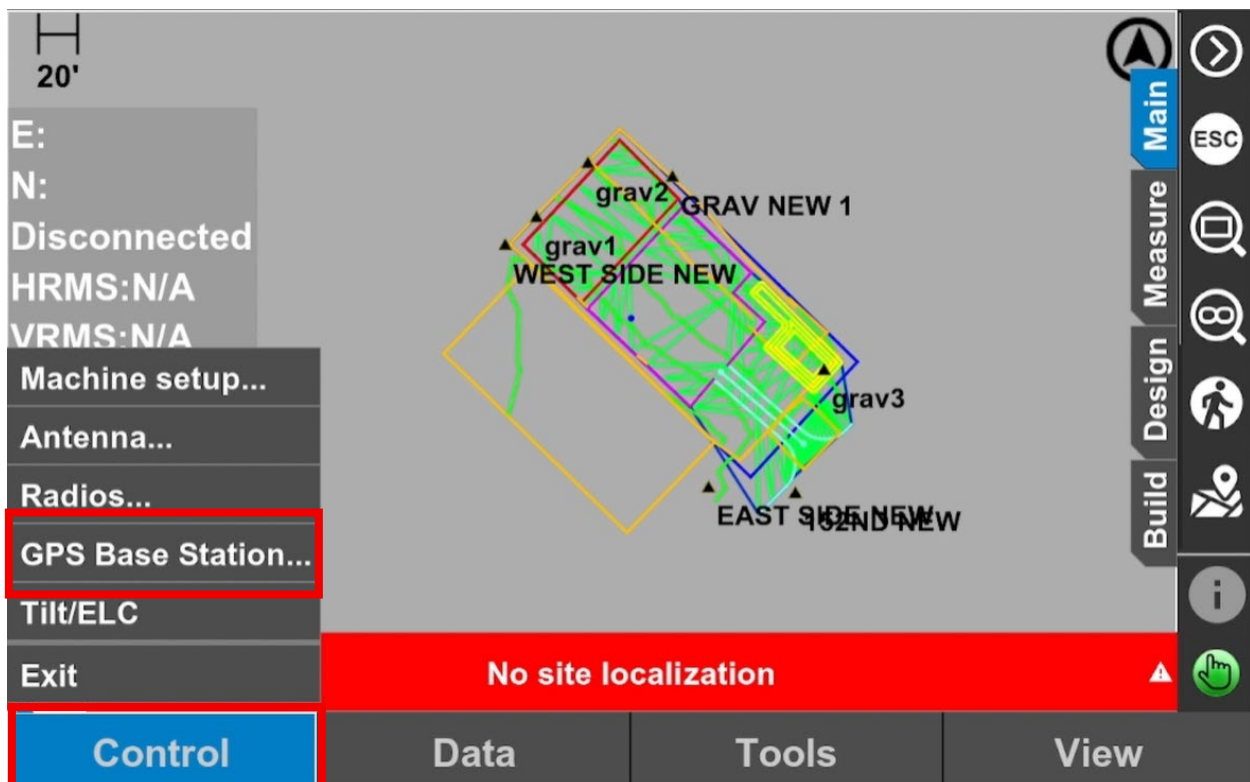
15. Once Profile is made, tap “OK”



16. Rover Profile is now set. *(Note: You only need to do this once per set of receivers)*



17. For Base setup, click **“Control”**, then click **“GPS Base Station...”**.



18. Select “Unknown Point” and click the box beside “Add point to project”. (Note: If you are setting up on a Known Control Point with your Base, you need to have a fixed tripod, levelled out, setup on a control point, measured the height and enter the value to the equipment.)

Base station

☐ Known control point

grav1

☒ Unknown point

☒ Add point to project

Name:

Description:

Next > Cancel

19. Name the point “BASE POST” then click “Next”

Base station

☐ Known control point

grav1

☒ Unknown point

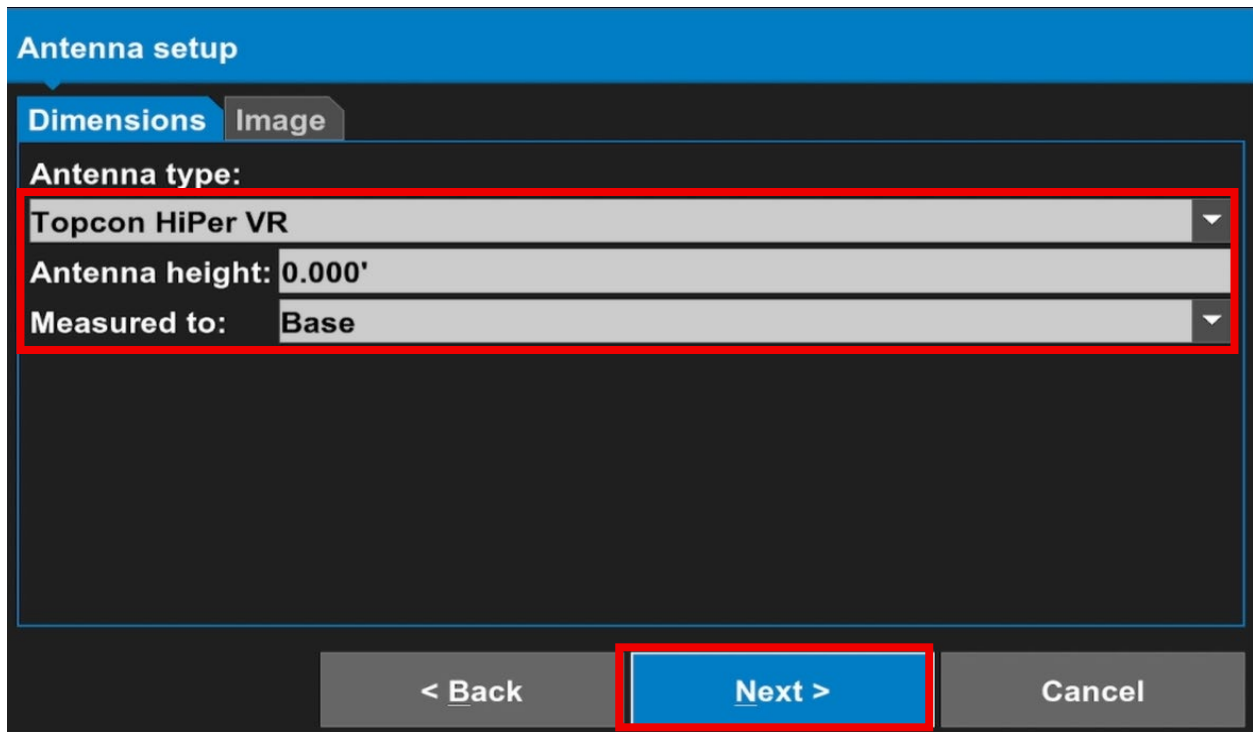
☒ Add point to project

Name:

Description:

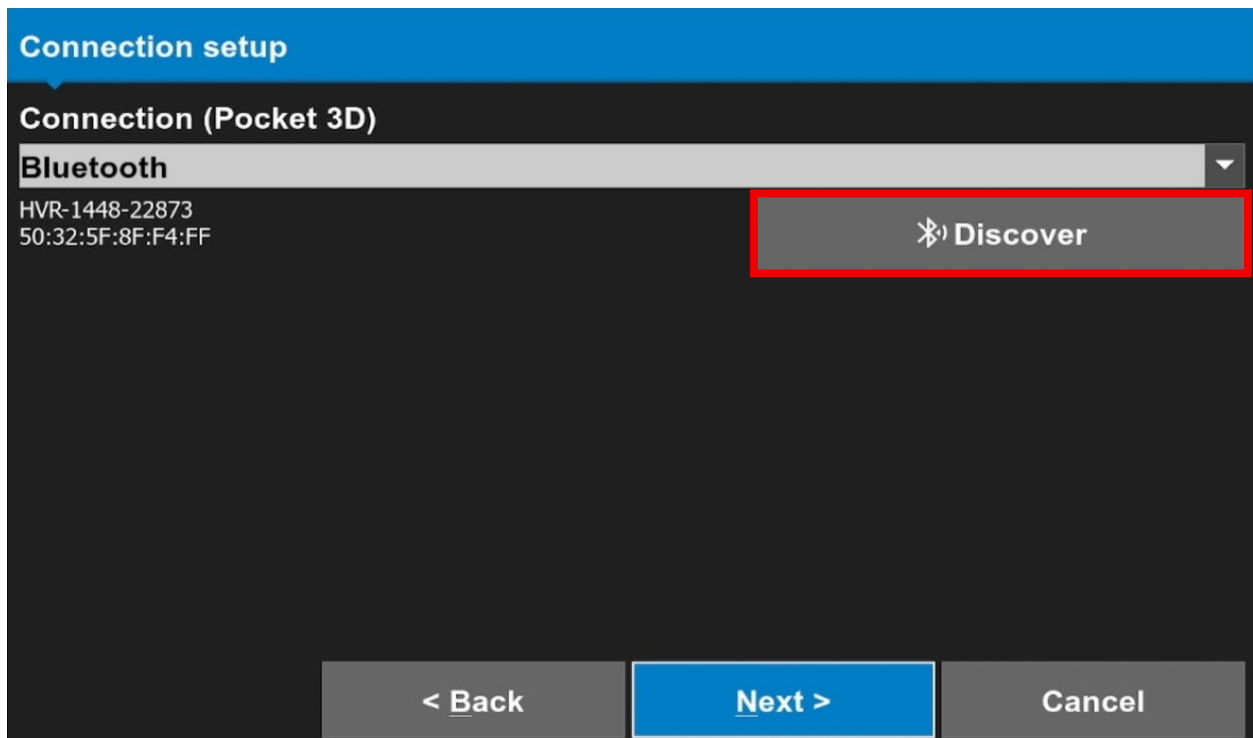
Next > Cancel

20. Set the values as seen below and click “Next”. *(Note: If you chose “Known Control Point” in Step #18, you need to change the antenna height to the actual value).*



The screenshot shows the 'Antenna setup' screen with a blue header. Below the header are two tabs: 'Dimensions' (active) and 'Image'. The 'Dimensions' section contains three fields: 'Antenna type:' with a dropdown menu showing 'Topcon HiPer VR', 'Antenna height:' with a text input showing '0.000'', and 'Measured to:' with a dropdown menu showing 'Base'. A red rectangle highlights these three fields. At the bottom, there are three buttons: '< Back', 'Next >' (highlighted with a red rectangle), and 'Cancel'.



21. Click “Discover”.



The screenshot shows the 'Connection setup' screen with a blue header. Below the header is a section titled 'Connection (Pocket 3D)' with a dropdown menu showing 'Bluetooth'. Below this, the Bluetooth address is displayed as 'HVR-1448-22873' and '50:32:5F:8F:F4:FF'. A red rectangle highlights a 'Discover' button with a Bluetooth icon. At the bottom, there are three buttons: '< Back', 'Next >' (highlighted with a red rectangle), and 'Cancel'.

22. Click **“Refresh”** to find the Base and Rover. *(Note: To identify your device, look underneath and find “SN” or Serial Number. Take note of the last four digits)*

Bluetooth Devices

Name	ID
 HVR-1448-22873	50:32:5F:8F:F4:FF
 HVR-1653-10145	00:04:07:28:BE:0F

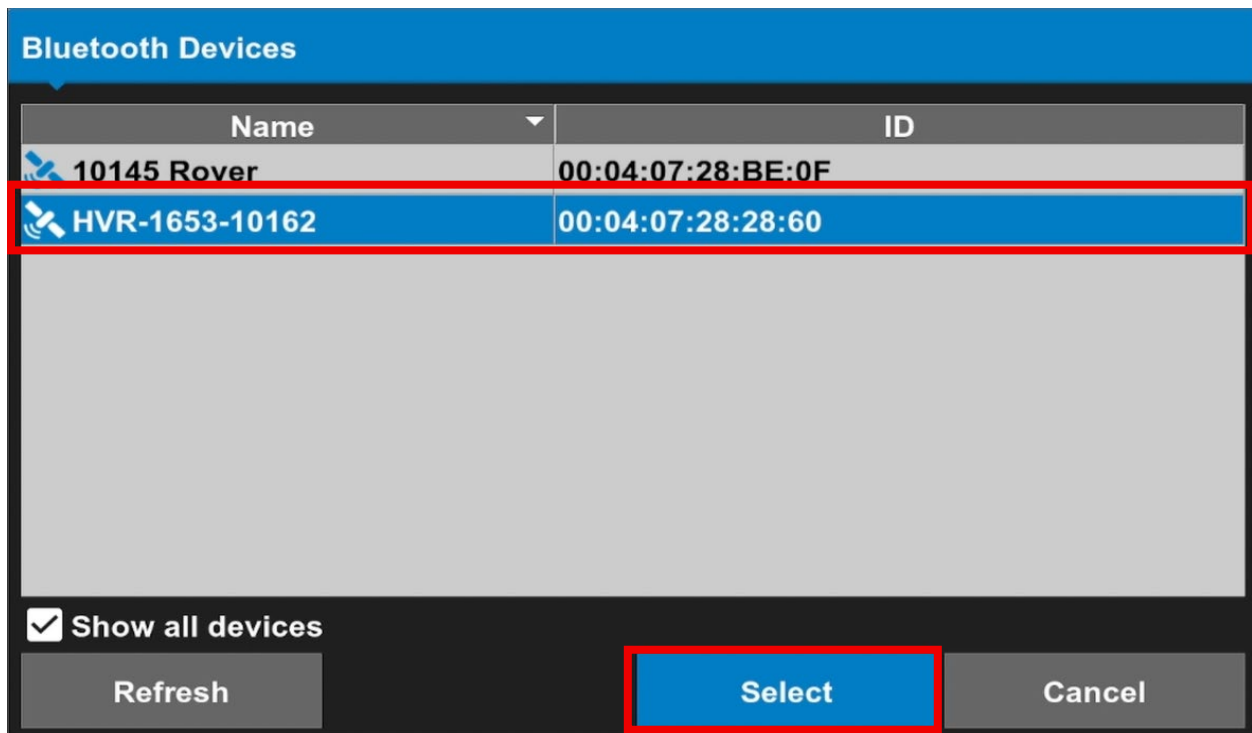
☒ Show all devices

Refresh

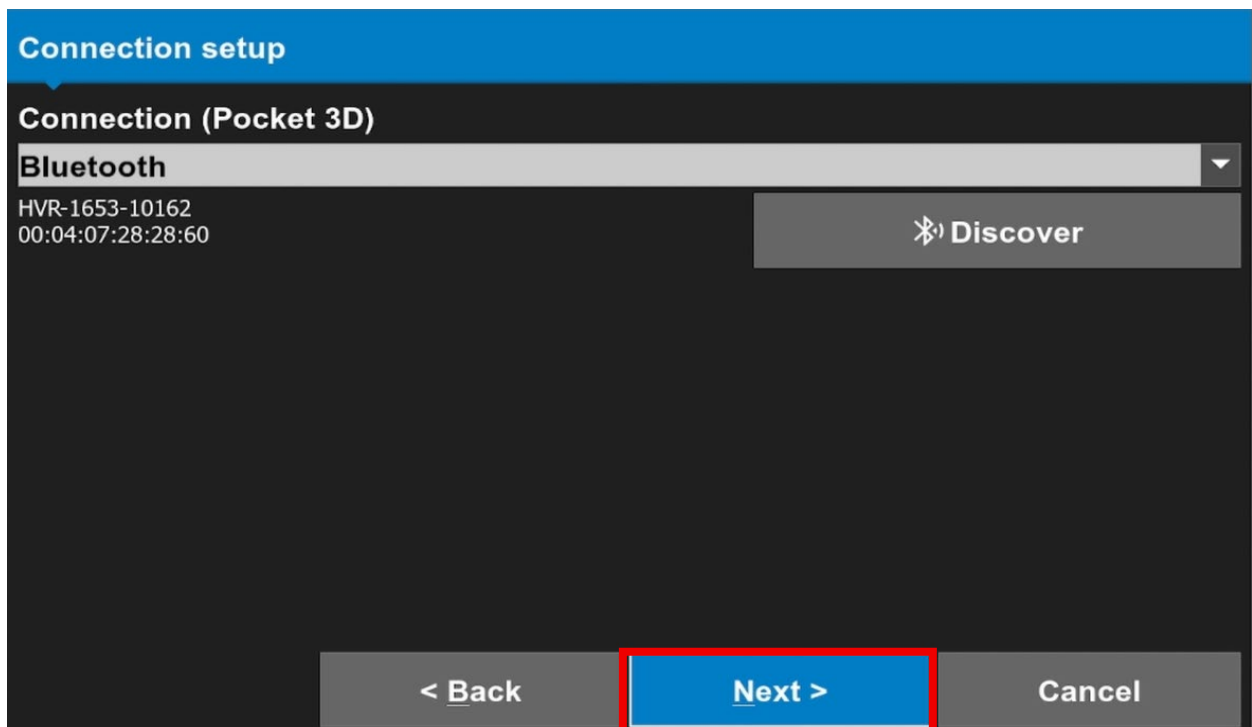
Select

Cancel

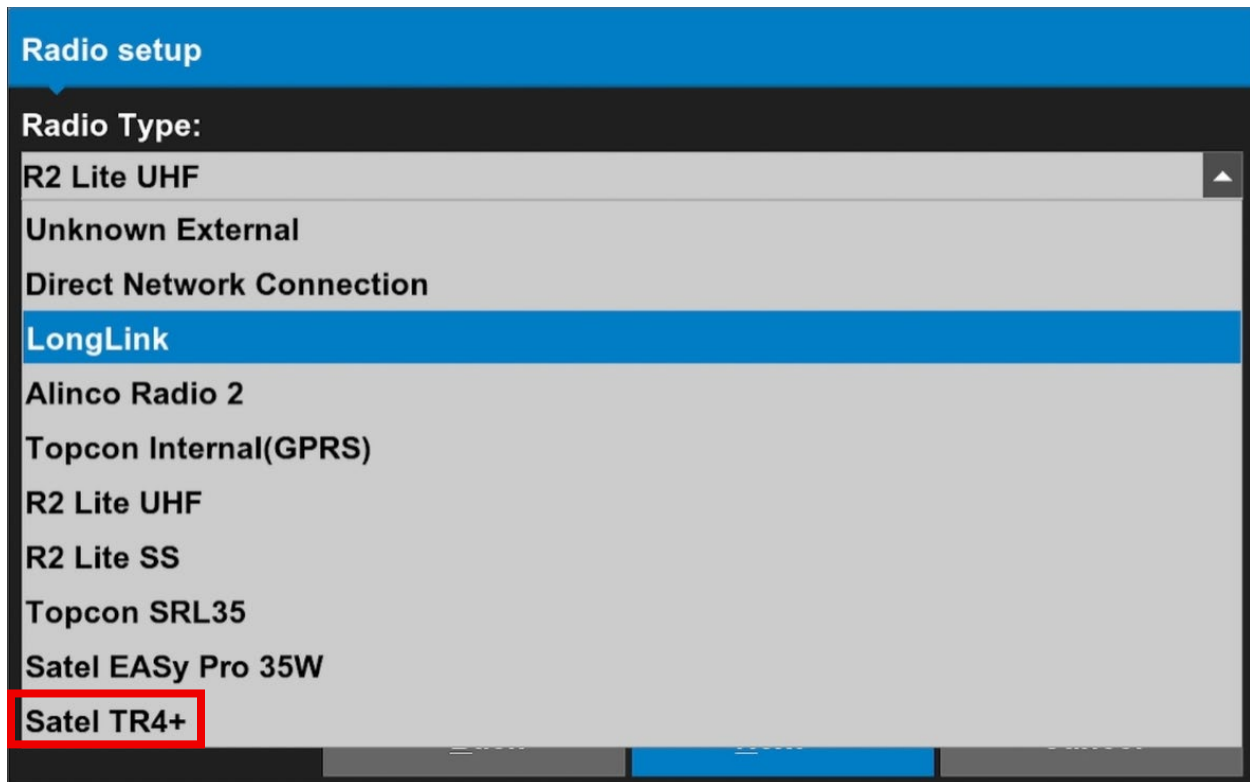
23. Once you have the last four digits of your SN, take a look at the refreshed device list and click the one that matches your last four digits then hit **“Select”**. *(In this example, our device has “0162” in the last four digits of the SN)*



24. Click **“Next”**.

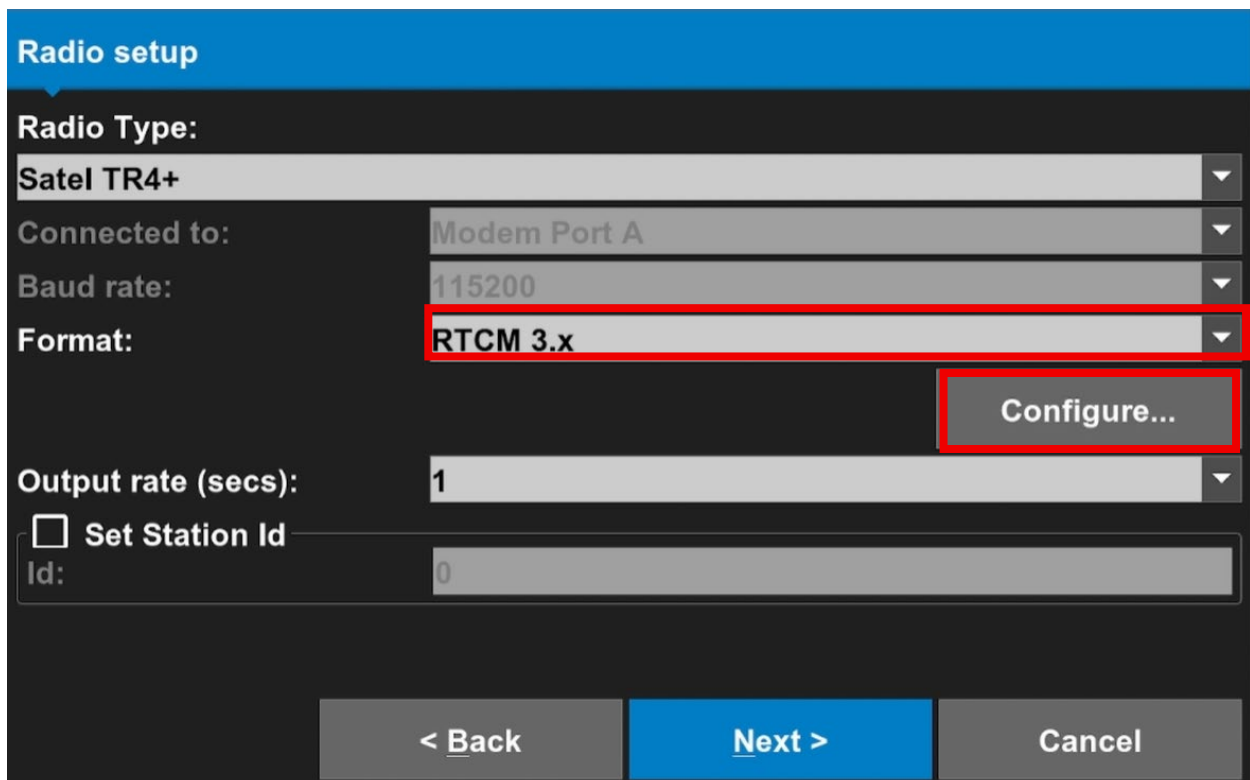


25. Click the Radio Type selection, scroll down and click **"Satel TR4+"**



The screenshot shows the 'Radio setup' screen with a list of radio types. The list includes: R2 Lite UHF, Unknown External, Direct Network Connection, LongLink (highlighted in blue), Alinco Radio 2, Topcon Internal(GPRS), R2 Lite UHF, R2 Lite SS, Topcon SRL35, Satel EASy Pro 35W, and Satel TR4+ (highlighted with a red box).

26. Keep the Format to **"RTCM 3.x"** then click **"Configure..."**



The screenshot shows the 'Radio setup' screen with configuration options for 'Satel TR4+'. The options are: Connected to: Modem Port A, Baud rate: 115200, Format: RTCM 3.x (highlighted with a red box), Output rate (secs): 1, and a checkbox for 'Set Station Id' which is unchecked. The 'Configure...' button is also highlighted with a red box. At the bottom, there are three buttons: '< Back', 'Next >' (highlighted in blue), and 'Cancel'.

27. Wait for the loading screen to finish.

Radio setup

Radio Type:

Sa Co Ba Fo

Connecting to HVR-1653-10162

Cancel

Output rate (secs): 1

☐ Set Station Id

Id: 0

< Back Next > Cancel

28. Wait for it to connect.

Radio setup

Radio Type:

Sa Co Ba Fo

Connecting... (115200bps)

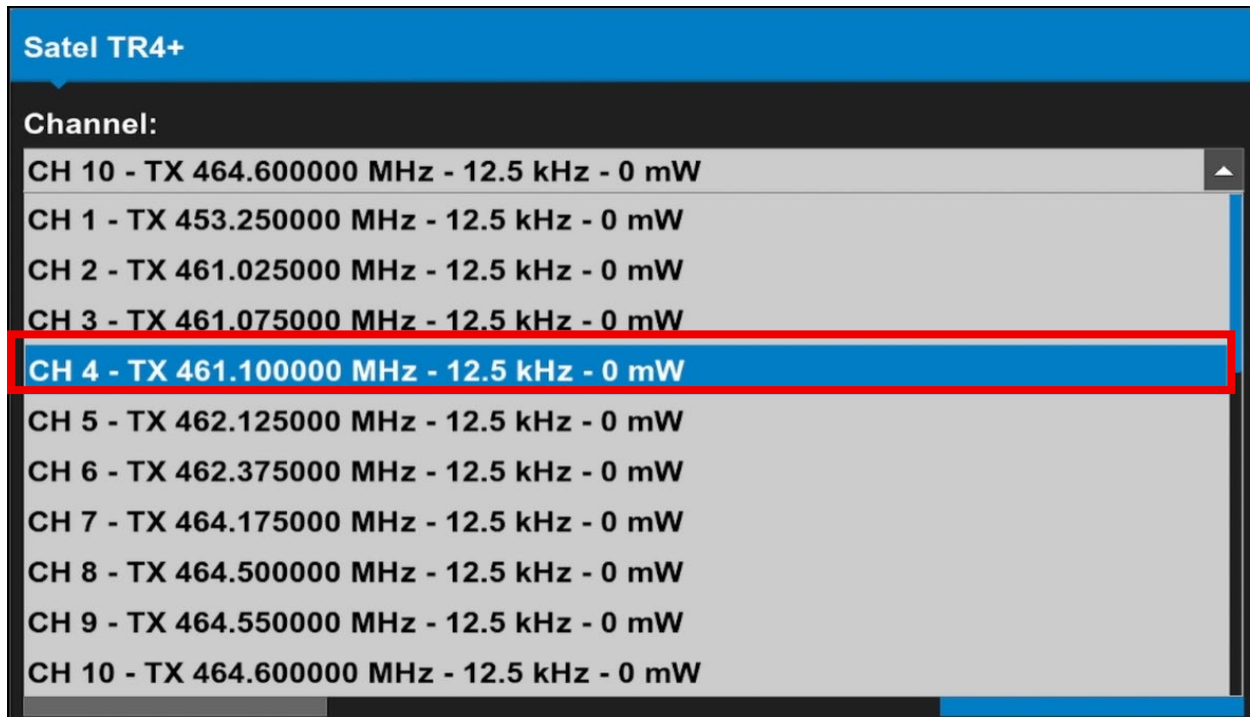
Output rate (secs): 1

☐ Set Station Id

Id: 0

< Back Next > Cancel

29. Once Radio list pops up, change the channel to “461.100000 MHz -12.5 kHz – 0 mW” (*Note: You can choose any channel from the list as long as your Base and Rover are on the same channel*)

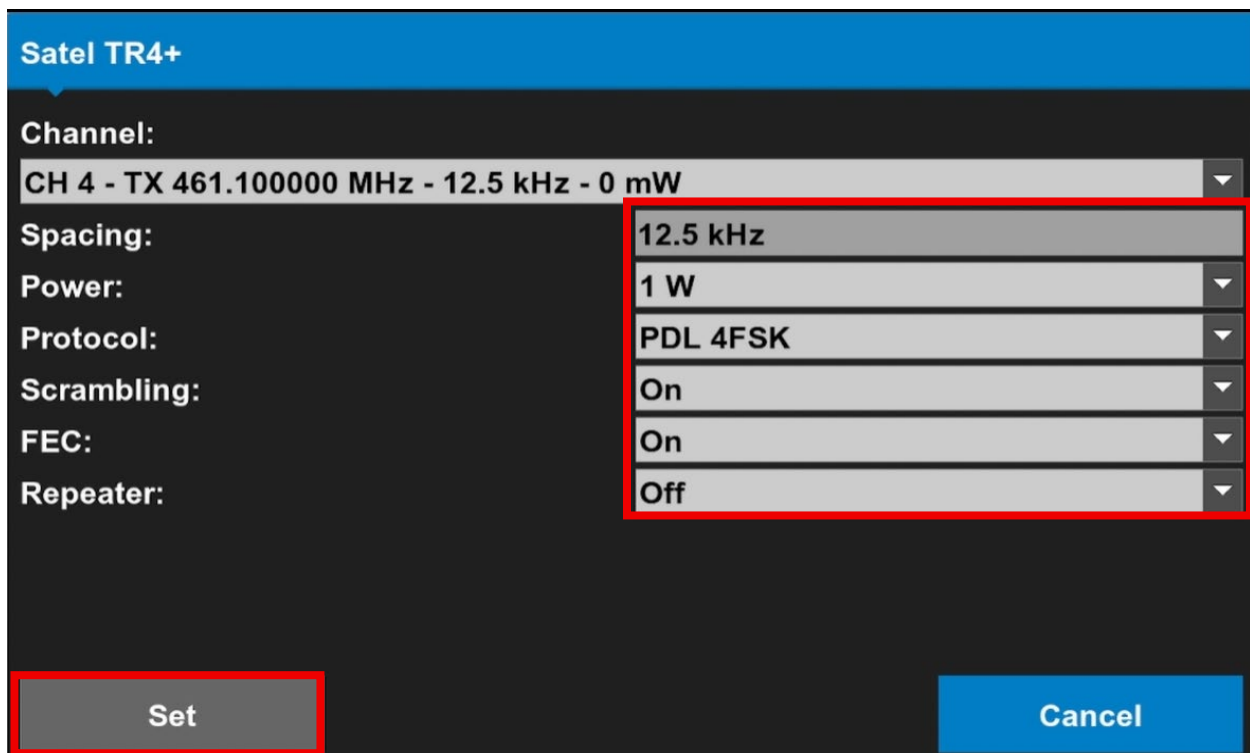


Satel TR4+

Channel:

- CH 10 - TX 464.600000 MHz - 12.5 kHz - 0 mW
- CH 1 - TX 453.250000 MHz - 12.5 kHz - 0 mW
- CH 2 - TX 461.025000 MHz - 12.5 kHz - 0 mW
- CH 3 - TX 461.075000 MHz - 12.5 kHz - 0 mW
- CH 4 - TX 461.100000 MHz - 12.5 kHz - 0 mW**
- CH 5 - TX 462.125000 MHz - 12.5 kHz - 0 mW
- CH 6 - TX 462.375000 MHz - 12.5 kHz - 0 mW
- CH 7 - TX 464.175000 MHz - 12.5 kHz - 0 mW
- CH 8 - TX 464.500000 MHz - 12.5 kHz - 0 mW
- CH 9 - TX 464.550000 MHz - 12.5 kHz - 0 mW
- CH 10 - TX 464.600000 MHz - 12.5 kHz - 0 mW

30. We recommend using the settings as seen below. But you can change them depending on the requirement of the project. Once satisfied, click “Set”



Satel TR4+

Channel:

CH 4 - TX 461.100000 MHz - 12.5 kHz - 0 mW

Spacing: 12.5 kHz

Power: 1 W

Protocol: PDL 4FSK

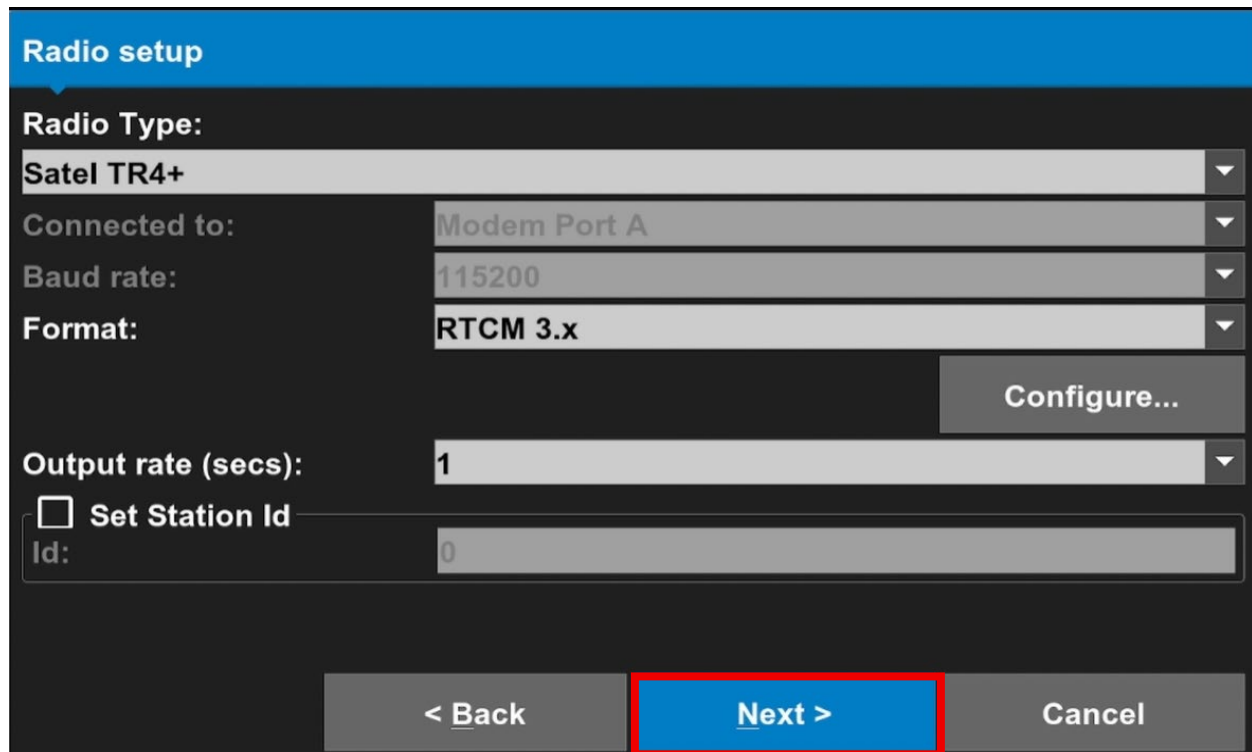
Scrambling: On

FEC: On

Repeater: Off

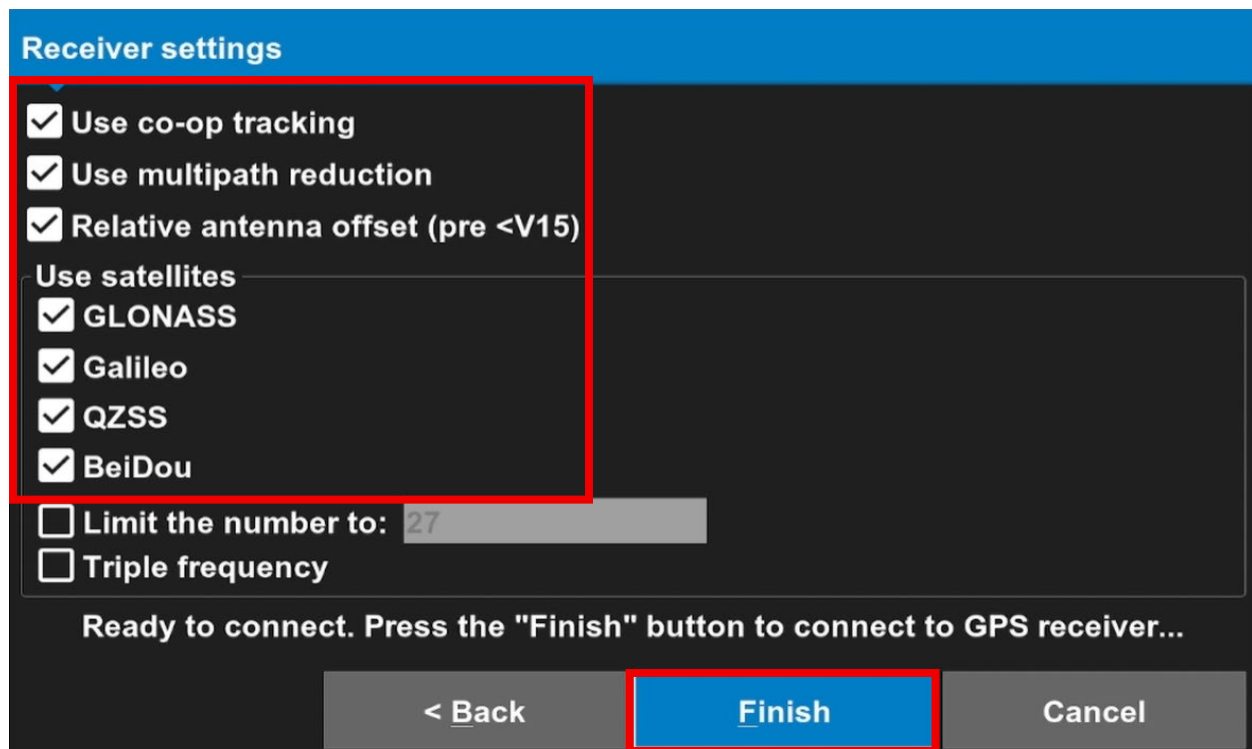
Set **Cancel**

31. Click “Next”.



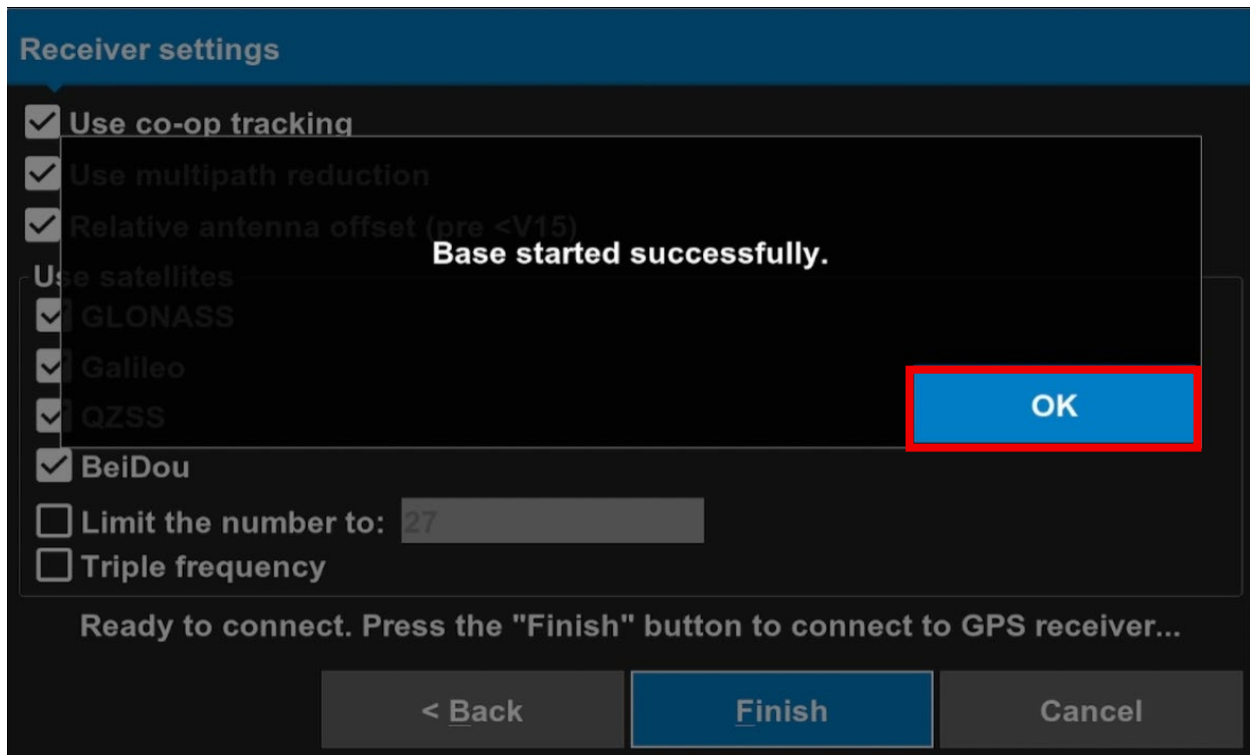
The "Radio setup" screen features a blue header. Below it, the "Radio Type:" dropdown is set to "Satel TR4+". The "Connected to:" dropdown is "Modem Port A", "Baud rate:" is "115200", and "Format:" is "RTCM 3.x". A "Configure..." button is to the right of the format dropdown. The "Output rate (secs):" dropdown is set to "1". There is a checkbox for "Set Station Id" which is unchecked, with an "Id:" field below it containing the value "0". At the bottom, there are three buttons: "< Back", "Next >" (highlighted with a red border), and "Cancel".

32. Make sure these settings have check marks. Once done, click “Finish”.

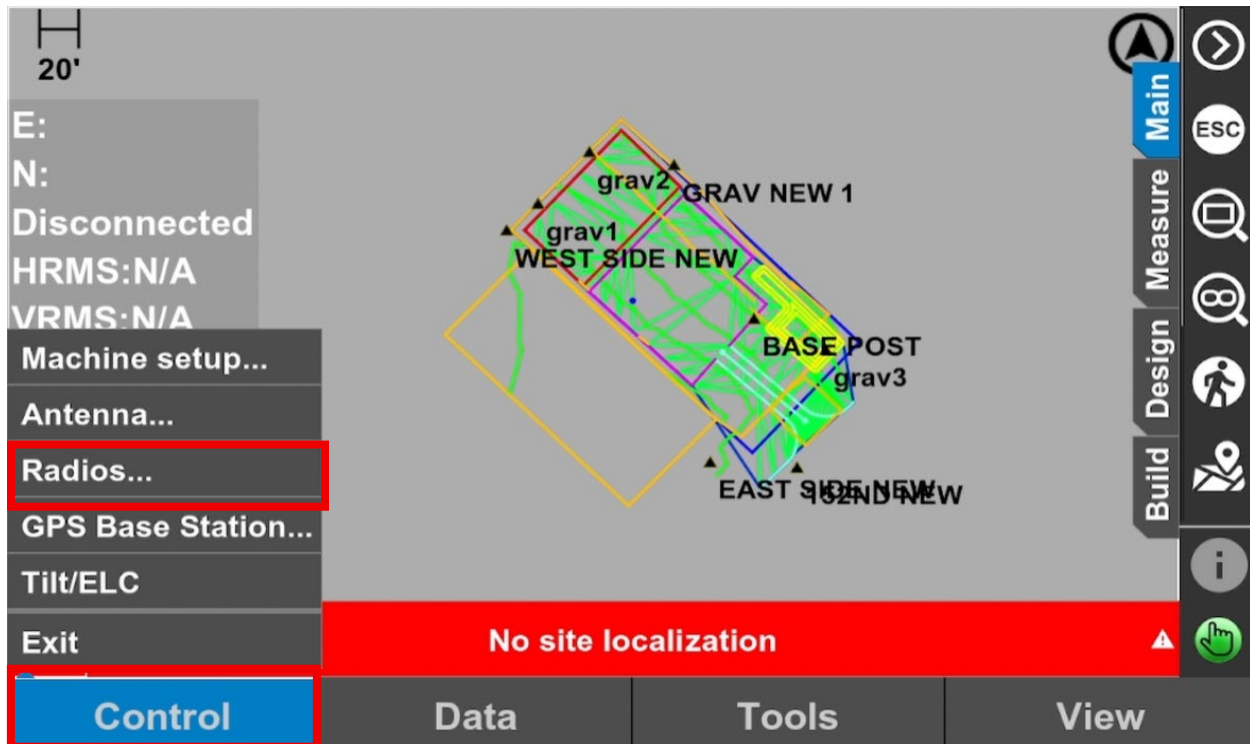


The "Receiver settings" screen has a blue header. A red box highlights a group of settings: "Use co-op tracking", "Use multipath reduction", and "Relative antenna offset (pre <V15)" are all checked. Below these, under "Use satellites", are four checked options: "GLONASS", "Galileo", "QZSS", and "BeiDou". Below the highlighted area, there is an unchecked checkbox for "Limit the number to:" followed by a field with the value "27", and another unchecked checkbox for "Triple frequency". A status message at the bottom reads "Ready to connect. Press the 'Finish' button to connect to GPS receiver...". At the very bottom are three buttons: "< Back", "Finish" (highlighted with a red border), and "Cancel".

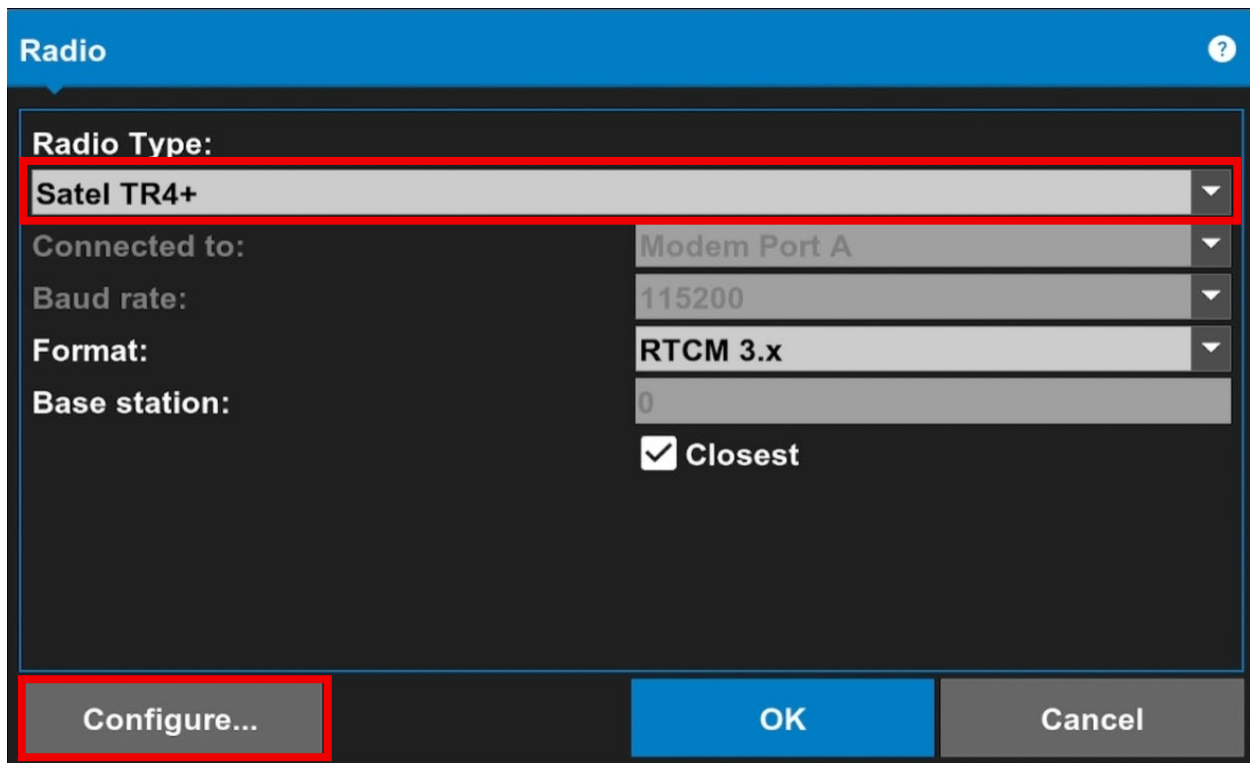
33. Wait for multiple loading screens to finish, and when it says “**Base started successfully**”, click “**OK**”.



34. To setup the rover, click “**Control**” and select “**Radios...**”



35. Set the Radio Type to the one used in the Rover, then click **“Configure...”**



The 'Radio' dialog box has a blue header with a question mark icon. It contains several configuration options, each with a dropdown menu. The 'Radio Type' dropdown is highlighted with a red box and shows 'Satel TR4+'. Other options include 'Connected to:' (Modem Port A), 'Baud rate:' (115200), 'Format:' (RTCM 3.x), and 'Base station:' (0). There is a checkbox labeled 'Closest' which is checked. At the bottom, there are three buttons: 'Configure...' (highlighted with a red box), 'OK', and 'Cancel'.

Radio Type:
Satel TR4+

Connected to:
Modem Port A

Baud rate:
115200

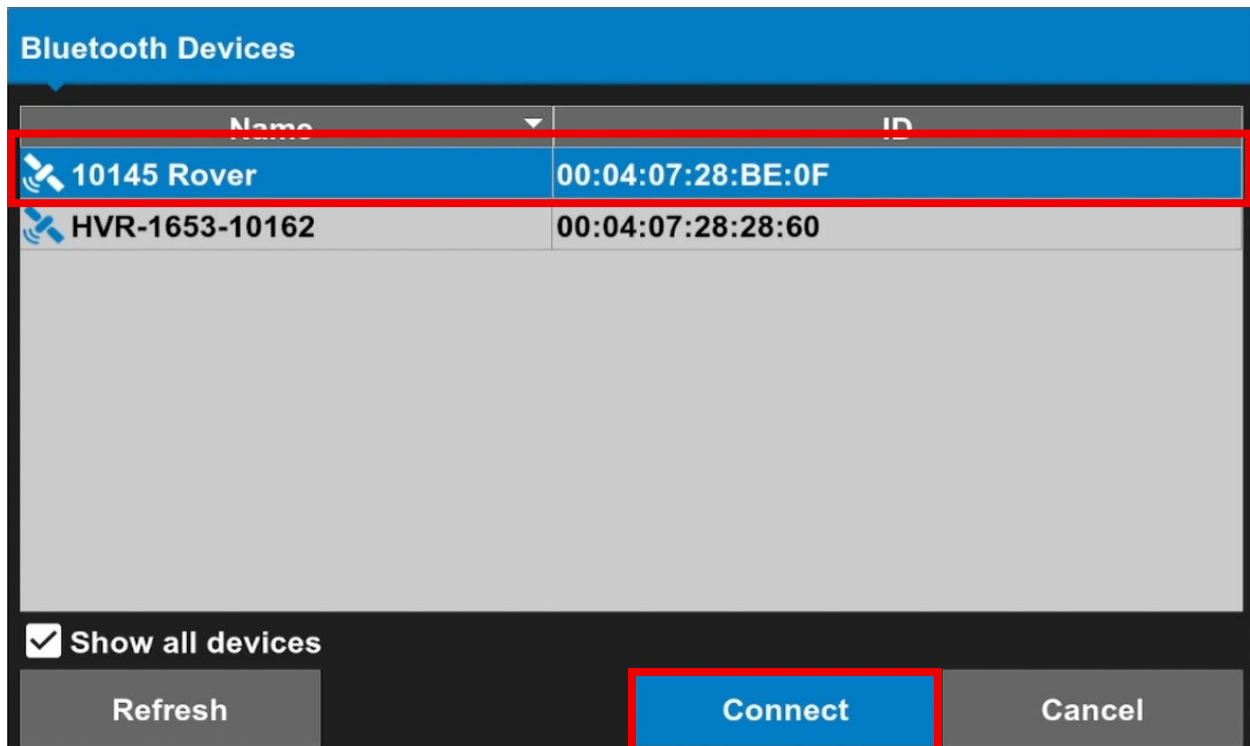
Format:
RTCM 3.x

Base station:
0

☒ Closest

Buttons: Configure..., OK, Cancel

36. Select your Rover and click **“Connect”**. (Note: Again, take note of the last four digits of the SN of your Rover. In this example, we have **“0145”** as the last four digits.)



The 'Bluetooth Devices' dialog box has a blue header. It contains a table with two columns: 'Name' and 'ID'. The first row is highlighted with a red box and shows '10145 Rover' with ID '00:04:07:28:BE:0F'. The second row shows 'HVR-1653-10162' with ID '00:04:07:28:28:60'. Below the table is a checkbox labeled 'Show all devices' which is checked. At the bottom, there are three buttons: 'Refresh', 'Connect' (highlighted with a red box), and 'Cancel'.

Name	ID
10145 Rover	00:04:07:28:BE:0F
HVR-1653-10162	00:04:07:28:28:60

☒ Show all devices

Buttons: Refresh, Connect, Cancel

37. Once Channel list is available, match the channel to your Base station by setting it to **"461.100000 MHz -12.5 kHz – 0 mW"** or whichever you selected.

Satel TR4+

Channel:

CH 12 - RX 462.375000 MHz - 12.5 kHz - 1 W
CH 3 - RX 464.600000 MHz - 12.5 kHz - 1 W
CH 4 - RX 461.025000 MHz - 12.5 kHz - 1 W
CH 5 - RX 464.625000 MHz - 12.5 kHz - 1 W
CH 6 - RX 461.075000 MHz - 12.5 kHz - 1 W
CH 7 - RX 464.650000 MHz - 12.5 kHz - 1 W
CH 8 - RX 461.100000 MHz - 12.5 kHz - 1 W
CH 9 - RX 464.700000 MHz - 12.5 kHz - 1 W
CH 10 - RX 462.125000 MHz - 12.5 kHz - 1 W
CH 11 - RX 464.725000 MHz - 12.5 kHz - 1 W
CH 12 - RX 462.375000 MHz - 12.5 kHz - 1 W

38. Match the settings of the Base station.

Satel TR4+

Channel:

CH 8 - RX 461.100000 MHz - 12.5 kHz - 1 W

Spacing: 12.5 kHz

Protocol: PDL 4FSK

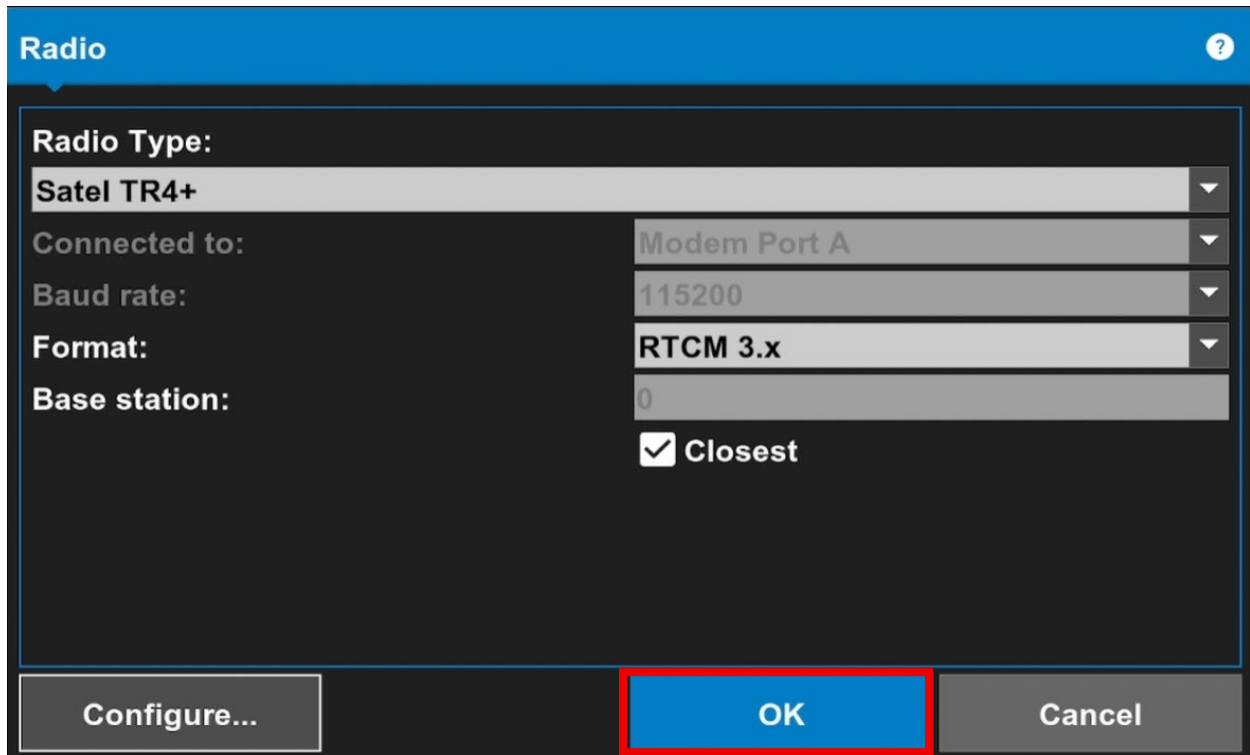
Scrambling: On

FEC: On

Repeater: Off

Set **Cancel**

39. Tap **“OK”** once loading is completed.

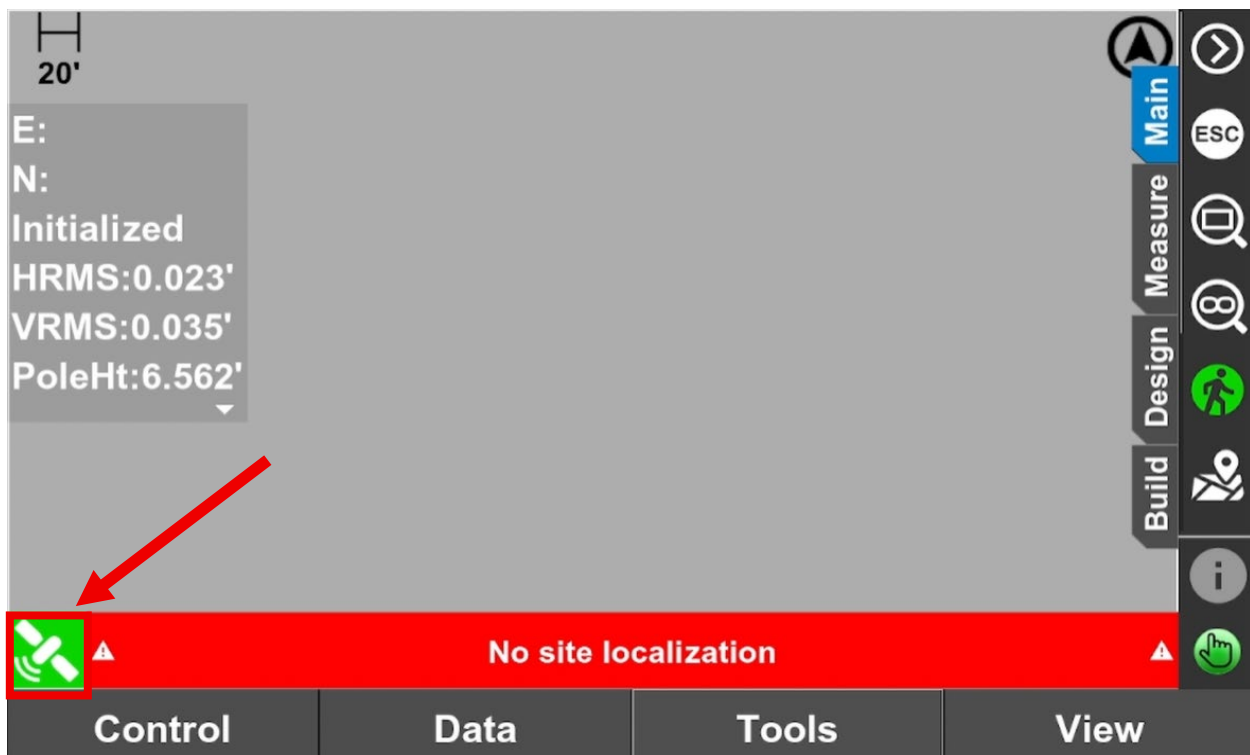


The image shows a 'Radio' configuration dialog box with a blue header and a dark grey body. The settings are as follows:

Radio Type:	Satel TR4+
Connected to:	Modem Port A
Baud rate:	115200
Format:	RTCM 3.x
Base station:	0

Below the settings, there is a checkbox labeled 'Closest' which is checked. At the bottom of the dialog, there are three buttons: 'Configure...', 'OK' (highlighted with a red border), and 'Cancel'.

40. Once the Satellite icon on the bottom left turns from **orange** to **green**, your Base & Rover is successfully initialized. Tap on the **“satellite icon”**.



41. Make sure that is **“Initialized”**. You could also click **“Info”**.

GNSS Info

Fix

Position

Satellites

Info

Planning

Advanced

Initialized

Total sats used(tracked)

15(36)

GPS	GLO	GAL	BEI	QZSS	SBAS
9(11)	6(6)	0(7)	0(12)	0(0)	0(0)

Horz. RMS:

0.021'

Vert. RMS:

0.032'

OK

Cancel

42. Check if the Correction values is equal to **1s, 100%**. If the radio is not corrected right, your percentage might be at 99.99% or 0% or you could also get other second values so always double check these values. If all are verified, you can click **“OK”** and start your project.

GNSS Info

Fix

Position

Satellites

Info

Planning

Advanced

Receiver ID:

00IQ36K9VYO

Firmware:

receiver:5.6.2+2505070000, board: 9

Corrections:

RTCM 3.x,age=1s,100%

Dist. to base:

3.952'

Connected to:

10145 Rover

98%

Reset receiver

Reset RTK

OK

Cancel

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