407521F/G-00500

SAILOR 1000 XTR Ka 4.5W/9.0W Conversion Kit

Ku to Ka – Conversion Manual

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REVISION HISTORY				
Rev.	Date	App.	Section	Description / Remarks
A	2023-12-11	MGO	All	Original
B	2024-02-05	MGO	4.2, 5.1	Added Pedestal mounted fan configuration
C	2024-03-06	MGO	3.2, 5.1	Antenna type configuration and VSAT profile moved/added to section 3.2

Table of Contents

1. Scope and Purpose

This document is for converting any SAILOR 1000 XTR Ku antenna to a SAILOR 1000 XTR Ka.

The process is required to follow the numerical order from section 3 through section 0. The conversion of the antenna to a Ka system might not function properly if the steps are not followed in the correct order.

1.1. References

[1] 98-180423 - SAILOR XTR Ka Installation Manual

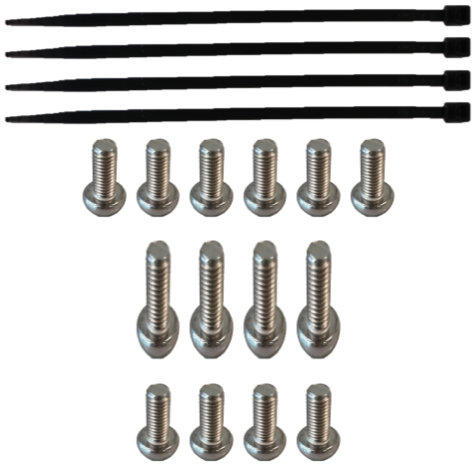
1.2. Abbreviations

ADU	Above Deck Unit
BDU	Below Deck Unit
BUC	Block Up Converter
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HW	Hardware
KDM	Key and Display Module
LAN	Local Area Network
LED	Light Emitting Diode
LNB	Low Noise Block
OTC	One Touch Calibration
POL	Polarisation
RF	Radio Frequency
SW	Software
TBC	To Be Confirmed
TBD	To Be Defined
VSAT	Very Small Aperture Terminal

2. Equipment

This section defines the equipment necessary for the conversion procedure.

2.1. Conversion kit contents

Labels and stickers: 2x Type label 1x Warning label - 30m for 4.5W - 55m for 9.0W	
Screws and cable ties: 4x cable ties 6x M5x12 bolts - *(Reflector counterweights mounting)* 4x M5x20 bolts (TX25) - *(X-elevation counterweights mounting)* 4x M5x12 bolts - *(RF Package mounting)*	
Counterweights: 2x 30g weights 4x 60g weights 2x 390g weights	
Ka Feedhorn	

Ka RF package (Top and side view)	  Top Side

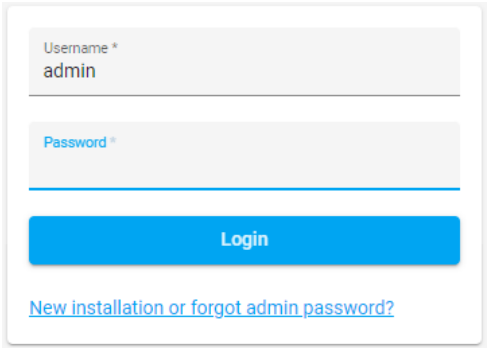
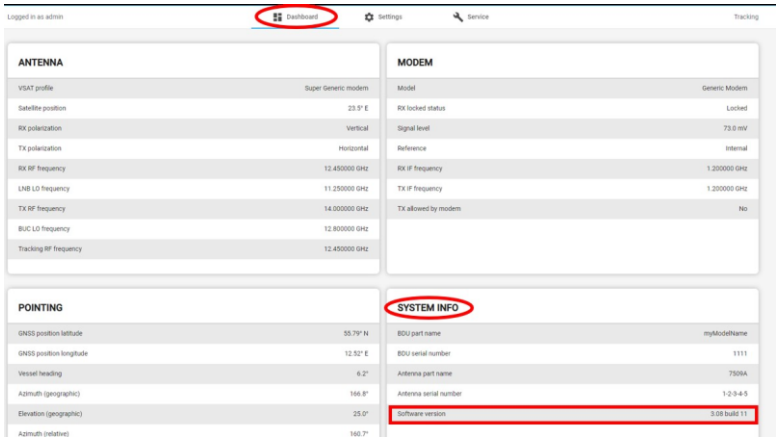
2.2. Tools needed

Screwdriver: TX25	
Socket wrench with TX25 bit	
Adjustable Torque-Spanner: >30mm >25 Nm	
1Nm Torque Wrench: 8mm	
Side cutter	
Molykote 33 Medium *(Grease)*	

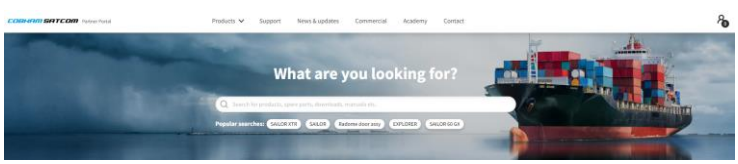
Laptop with: - Browser - SSH/PuTTy	
Ethernet cable	

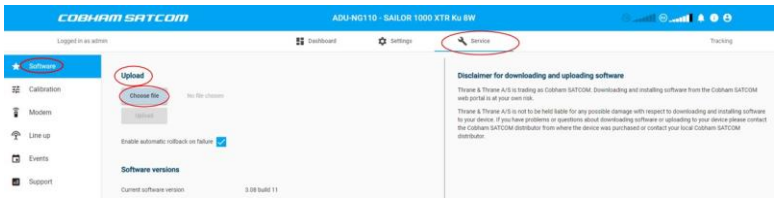
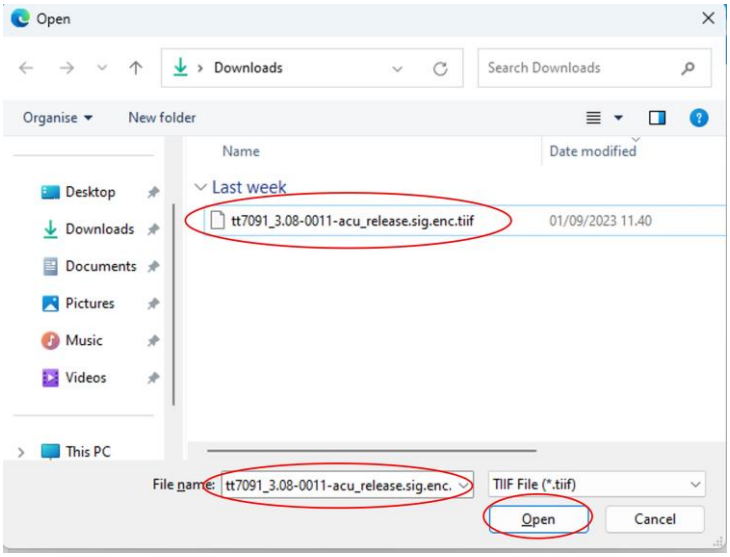
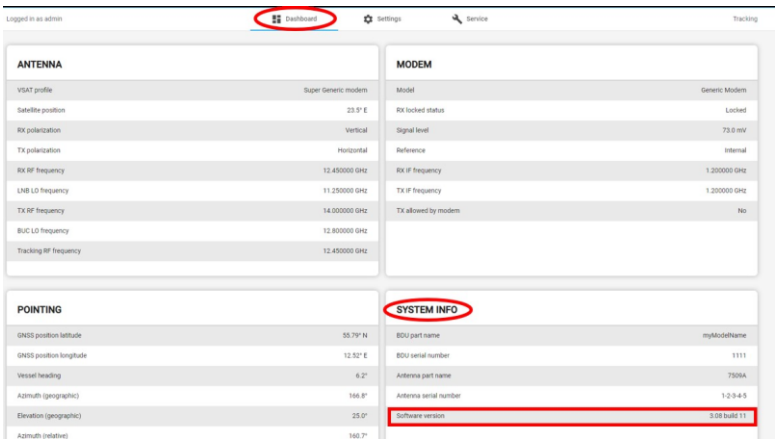
3. Stepwise procedure – Software Setup

3.1. Checking for current software version

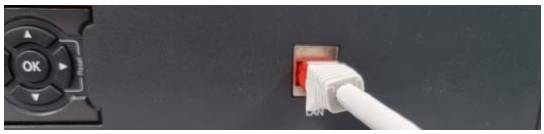
Step	Description	Graphical illustration
1.	Login as admin on **antenna** web-interface https://192.168.0.1/	
2.	Navigate to "**Dashboard**" in the top bar and then scroll down to "**System info**" and the current software version can be seen next to "**Software version".**	
3.	If the software version installed is not the newest version, proceed to follow the software update procedure.	

3.2. Updating to newest software

Step	Description	Graphical illustration
1.	Download newest software from Sync/Partner Portal.	

2.	Navigate to “**Service**” in the top bar, then “**Software**” in the side bar, then under “**Upload**” click “**Choose file”**.	
3.	In the newly opened window select the new software file “**tt7091_x.xx-xxxx-acu_release.sig.enc.tiif”** and click “**Open**”	
4.	Click “**Upload”**. The antenna system will upload the new software and reboot.	
5.	After the system becomes available again navigate to “**Dashboard**” in the top bar and then scroll down to “**System info**” and verify that the new software version can be seen next to “**Software version”.**	

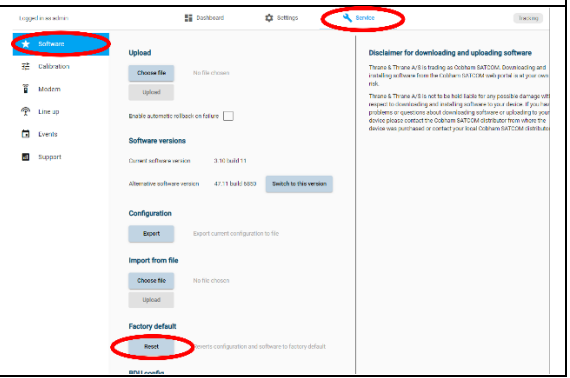
3.3. Configuring antenna system type

Step	Description	Graphical illustration
1.	Connect Laptop to front ethernet port on BDU	
2.	Login via SSH/PuTTy as admin *Admin password is set during the initial installation of the antenna. See **SAILOR XTR Ka Installation Manual** for details on how to reset this.*	`ssh admin@192.168.0.1`

3.	Read out antenna **sub type**
	
	The sub type can be either '0' or '1'
		`antenna_data type`
		
		Example output:
		`System: 7509A`
		`Type: 1`
		`Oem: generic`
		`sub type: 1`
		`lnb type: 0`
		`buc type: 1`

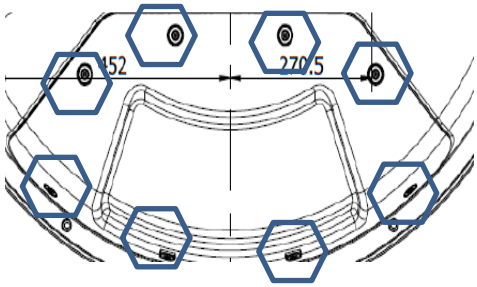
4.	Change antenna type in UCLI
	
	*The **<subtype>** part of the command should be substituted with the subtype read out from step 3 above.*
		For **4.5W** transceiver:
		`antenna_data type 7509F <subtype>`
		
		For **9.0W** Transceiver:
		`antenna_data type 7509G <subtype>`

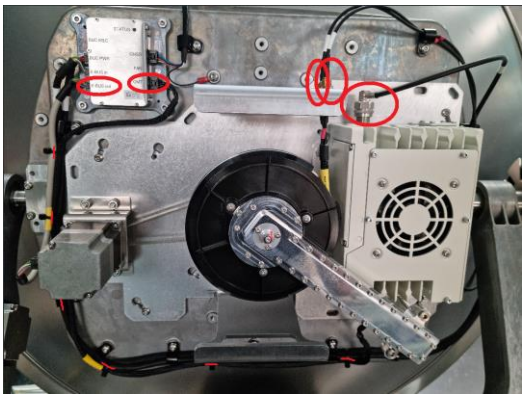
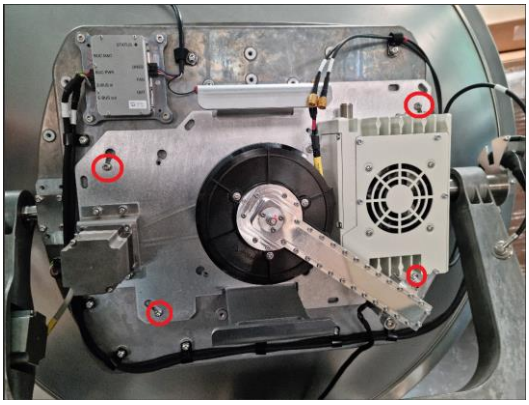
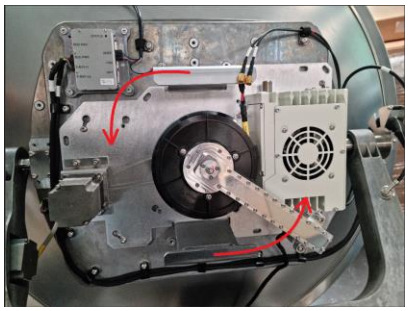
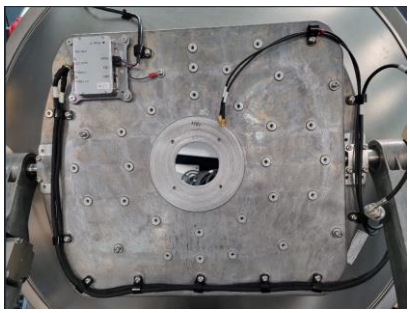
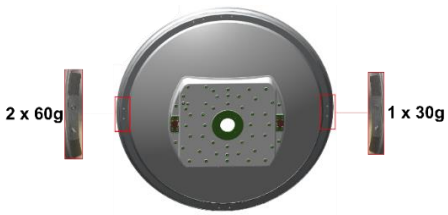
5.	Press 'y'.
	
	UCLI output shown to the right:
		`Warning! Changing the antenna type may render the system useless unless the correct conversion kit is mounted on the system.`
		
		`Press 'y' within 10 seconds to confirm or any other key to cancel`
		
		`- Changes are only applied after reboot!`

6.	Restart the antenna and wait until it has rebooted twice	`system restart`
7.	Reset the antenna to Factory Default, to make sure everything is set up and configured correctly. Navigate to **Service > Software > Factory default** and press **Reset** *Take a screenshot of all settings, e.g. the blocking zones (**Settings** > **Blocking zones**), as these will be reset.*	

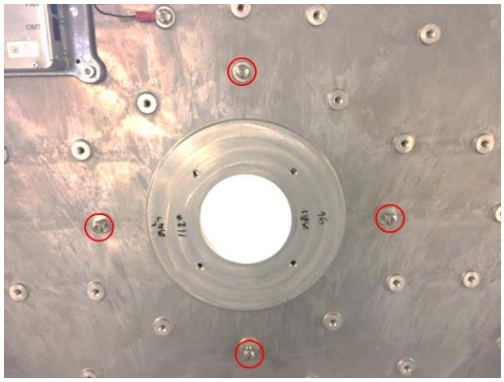
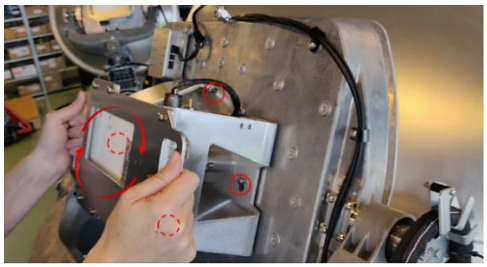
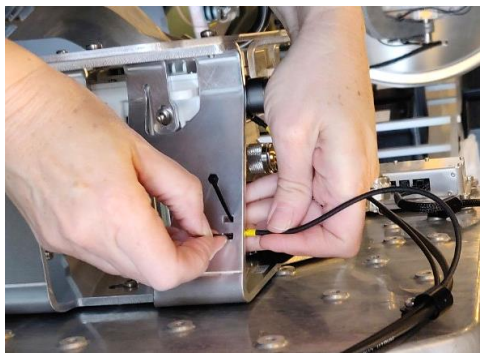
4. Stepwise procedure – Hardware

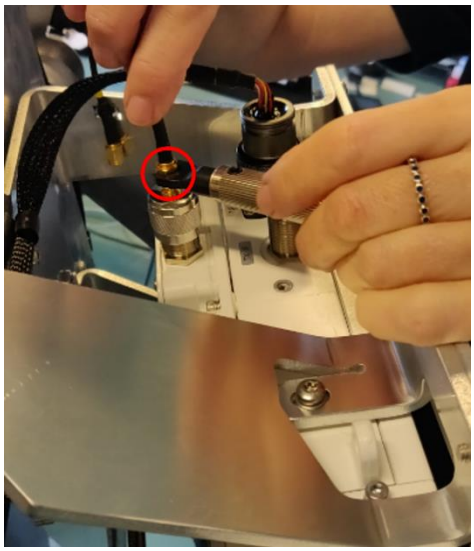
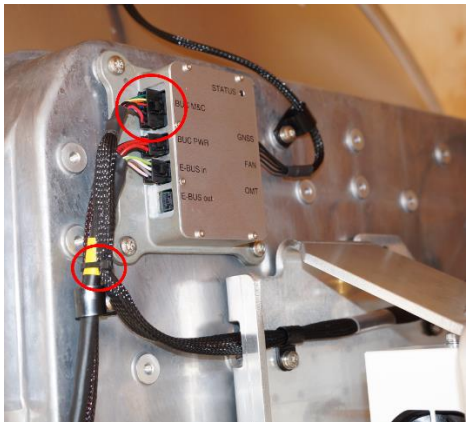
4.1. Removing Ku hardware

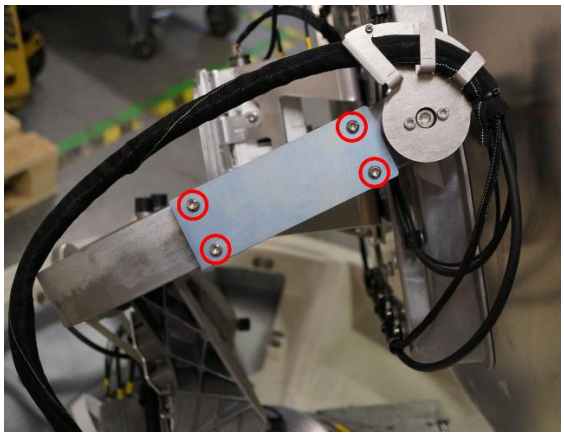
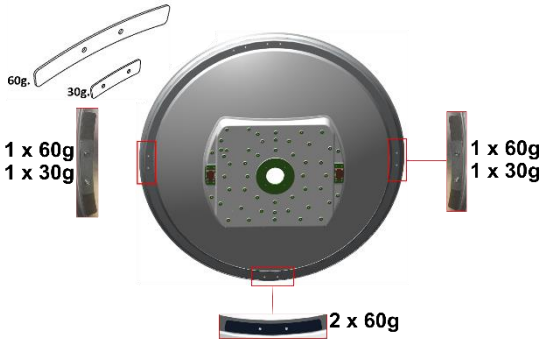
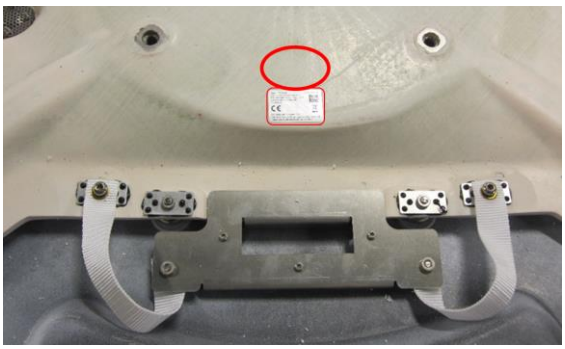
Step	Description	Graphical illustration
4.	Turn off power to the antenna system Remove cables to VSAT Ku Modem from the back of the BDU.	
5.	Open radome hatch	
6.	For safety, disable ACM by pushing the power button to the "***out***" position	
7.	Remove Ku-feedhorn *Be gentle with the feedhorn. The tip of the horn might break if bumped or handled too roughly.*	

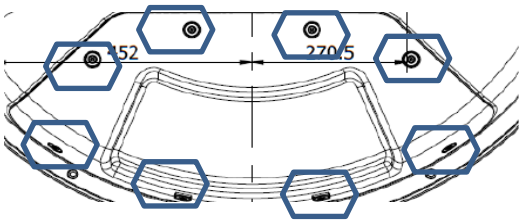
8.	Cut necessary cable ties and disconnect cables to Ku RF Package - E-BUS out - OMT - X-POL - CO-POL - BUC Tx	
9.	Slightly loosen the 4 screws holding the RF Package in place	
10.	Twist counterclockwise and remove RF Package	 
11.	Remove counterweights from the back of the reflector	

4.2. Mounting Ka hardware

Step	Description	Graphical illustration
1.	Move screws to correct location	
2.	Mount Ka RF Package: - Remove Protection film before mounting - Twist RF Package clockwise ○ *Make sure RF-package is twisted all the way to the end-stops* - Tighten the 4 screws to 4.5 Nm	 
3.	Mount the CO-POL cable on the bracket with the Cable Tie. *The CO-POL cable is not used and shall be left open-ended as shown.*	 

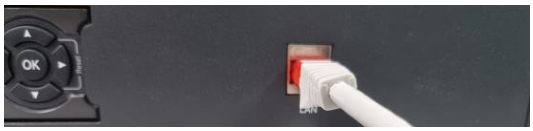
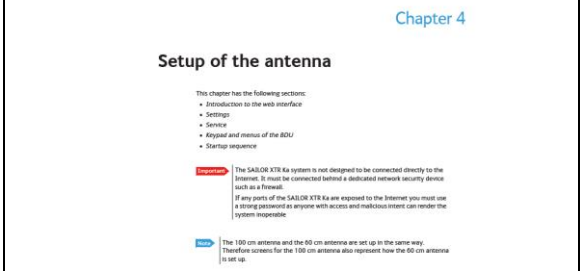
4.	Connect the X-POL cable to the Transceiver Rx port. Tighten connector to 1 Nm	
5.	Connect the BUC Tx cable to the Transceiver Tx port Tighten connector to 2 Nm	
6.	Connect BUC M&C cable from RF Package to ISCM, and fasten with cable tie	
7.	Apply Molykote 33 Medium to new Ka-feedhorn. Then mount it and tighten to 25 Nm *Be gentle with the feedhorn. The tip of the horn might break if bumped or handled too roughly.*	 

8.	Mount the 390g counterweights on the right side of the pedestal cross-elevation arm. Tighten screws to 4.5 Nm	
9.	Mount the counterweights on the back of the reflector and tighten screws to 4.5 Nm - Left: 1x 60g + 1x 30g - Right: 1x 60g + 1x 30g - Bottom: 2x 60g	
10.	Place one type label on the inside of the radome bottom, next to the previous type label	
11.	Enable the ACM by pushing the power button to the "***in***" position	

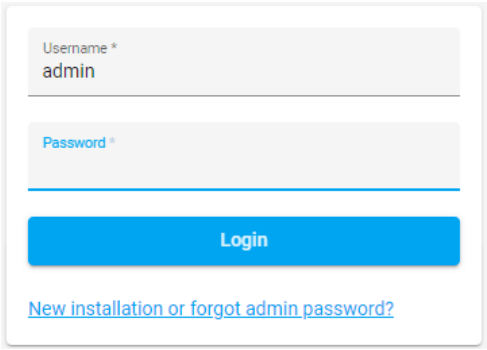
12.	Close radome hatch	
13.	Place the other type label on the outside of the radome bottom, next to the previous type label, left of the radome hatch	
14.	Place the warning label on top of the old warning label, on the outside of the radome. *The illustrated warning label in the image to the right is from a 4.5W conversion kit.*	

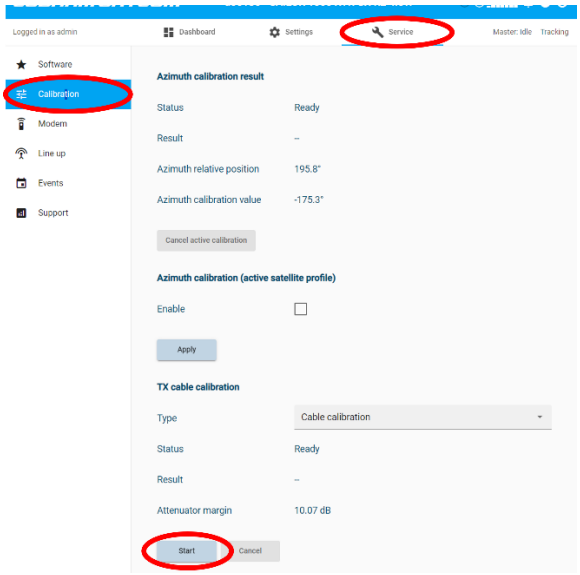
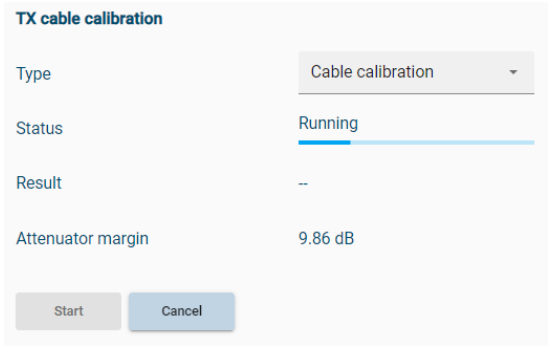
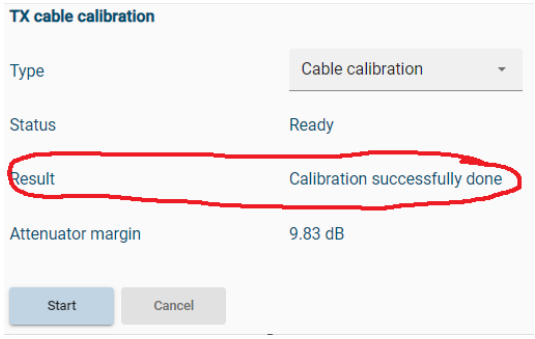
5. Stepwise procedure – Software and Setup

5.1. Antenna type configuration

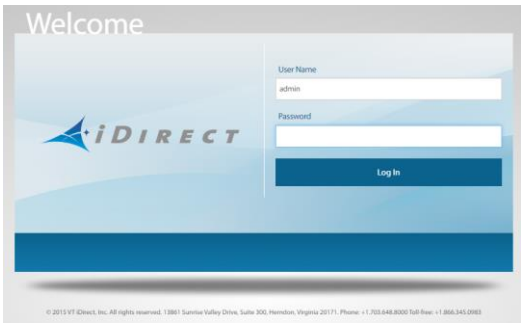
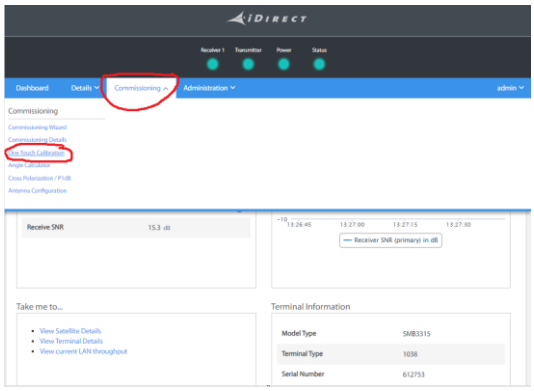
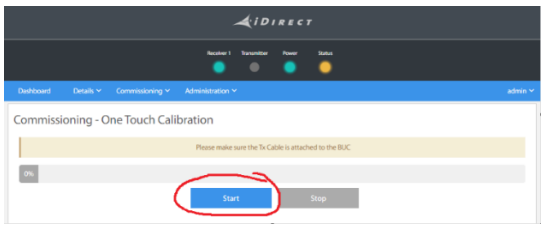
Step	Description	Graphical illustration
1.	Turn on power to the antenna system	
2.	Connect Laptop to front ethernet port on BDU	
3.	Connect the Ka modem to the BDU and create a VSAT Ka profile via the antenna web-interface *See **SAILOR XTR Ka Installation Manual** for details on how to do this. The manual can be downloaded from https://partnerportal.cobhamsatcom.com*	 Chapter 4 Setup of the antenna This chapter has the following sections: • Introduction to the web interface • Settings • Service • Keypad and menus of the BDU • Startup sequence Important The SAILOR XTR Ka system is not designed to be connected directly to the Internet. It must be connected behind a dedicated network security device such as a firewall. If any ports of the SAILOR XTR Ka are exposed to the Internet you must use a strong password as anyone with access and malicious intent can render the system inoperable Note The 100 cm antenna and the 60 cm antenna are set up in the same way. Therefore screens for the 100 cm antenna also represent how the 60 cm antenna is set up.

5.2. Tx Calibration

Step	Description	Graphical illustration
1.	Login as admin on **antenna** web-interface https://192.168.0.1/	

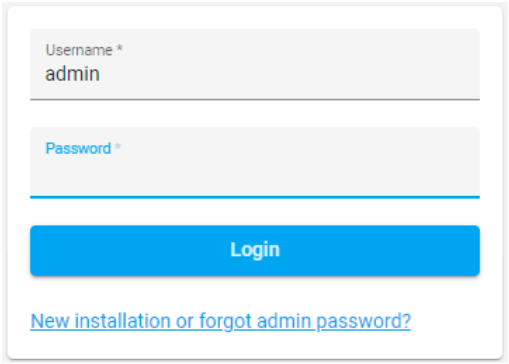
2.	Navigate to “**Service**” in the top bar, then “**Calibration**” in the side bar, then scroll down to “**TX cable calibration**” and press “**Start**”.	
3.	Wait for calibration to finish	
4.	Calibration is finished when “**Result**” shows: *Calibration successfully done*	

5.3. One Touch Calibration – Only for iDirect Modems

Step	Description	Graphical illustration
1.	Login as admin on **modem** web-interface https://192.168.0.1:8443/	
2.	Navigate to "**Commissioning**", → "**One Touch Calibration**".	
3.	Press "**Start**" / "**Repeat**".	
4.	Wait until OTC has finished. Modem will reboot automatically	 

6. Verification of installation

6.1. Verification

Step	Description	Graphical illustration
1.	Login as admin on **antenna** web-interface https://192.168.0.1/	
2.	Verify that the antenna goes into "**Ready**", **"Acquiring"** or **"Tracking"** mode, and that there are no errors, warnings or event messages.