



# Kymeta™ KyWay™ Terminal Troubleshooting Guide

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# 1 Basic troubleshooting

In the field, the most common sources of issues have been related to basic component assembly and handling practices. We strongly recommend that before considering the network, or a hardware failure, you review the troubleshooting procedures outlined below.

When researching an issue and preparing to report it, three things are very important:

- » **Organization:** Make sure you have tools and a clear plan of what you will do.
- » **Documentation:** As you make updates, make sure you document the behaviors.
- » **Isolation:** When troubleshooting, start with simple scenarios first, and try to change only one thing at a time.

 Prior to troubleshooting, reboot the Kymeta™ KyWay™ terminal. If the problem persists, continue with the troubleshooting steps below.

## 1.1 Check the physical setup of the ODU

 Ensure the system is powered off before attaching or detaching any components.

1. Visually inspect the mTenna<sup>u7</sup> ASM surface to make sure the radome is free of debris or standing liquid.
2. Check all cable connections to ensure they connect to the appropriate point (e.g., Rx Out to Rx In).
3. Check the 31-pin connector on the ODU interface cable to ensure all pins are seated properly. Pins should sink in with light pressure and should not be forced. When fully connected, the ring around the 31-pin connector will lock in place. The ring on an insufficiently seated connector will freely spin.
4. Check that the ODU interface cable bend radius does not violate specification. Refer to the *KyWay™ Terminal Installation Guide* for details.
5. Check the Rx and Tx coaxial cables for correct seating and ensure cables are not cross-threaded.
6. Confirm conditioned power is supplied to the system as per specifications.
7. Confirm grounding is correctly implemented.
8. Inspect the BUC fan to ensure the fan is free of debris while operating. It is normal for the BUC to be warm.

## 1.2 Check the physical setup of the IDU

1. Check the temperature, ventilation, and overall operating environment. Modems can overheat and their performance will suffer in environments outside their temperature range. Refer to the *KyWay™ Terminal Installation Guide* for details.
2. Check that the mTenna I/O vents are not blocked. It is recommended that the mTenna I/O be mounted above the modem when mounted in the same rack.

 The mTenna I/O vents are on top and on the left side from facing the front of the box. Standard rack spacing allows sufficient ventilation.

3. Verify drip loops are in place and no water ingress has occurred.

If possible, point the ASM at broadside and start troubleshooting.

## 1.3 Take Wi-Fi, firewalls, or other network factors out of the equation

To isolate the source of the problem, check the connectivity directly from the terminal, whenever possible. Wi-Fi routers, range extenders, firewalls, and other non-terminal factors can cause slowdowns and/or create confusion when troubleshooting. Start with the simplest setup possible.

## 1.4 Be aware of weather effects and standing water on the radome

Weather can affect satellite communications both at the terminal in the field and the teleport. Heavy rains may impact performance, as would standing water on the surface of the radome. Heavy weather at the teleport may also impact the satellite uplink.

## 2 mTenna<sup>u7</sup>ASM and BUC indicator lights

### 2.1 The mTenna I/O is unpowered

#### Cause

The mTenna I/O is off or is not receiving power.

#### Solution

Complete the following:

1. Reseat the AC power cable on the back of the mTenna I/O.
2. Verify the power switch on the rear panel is in the 'On' position.
3. Verify that power is applied from the outlet.
4. Check the condition of the fuse in the mTenna I/O power inlet. If the fuse is discolored or damaged, replace it following the instructions below.

#### 2.1.1 Fuse replacement

 For continued protection against risk of fire, replace only with same type and rating of fuse:  
BEL FUSE INC, 3SB / 3SBP Series, 250 V, 6A, JDYX UL Fuse.

1. Power off the mTenna I/O by switching off the power switch on the back side.
2. Unplug the power cable from the mTenna I/O and wait two minutes for power to discharge completely.
3. Remove the fuse from the power inlet.
4. Visually inspect the fuse and housing.  
If you notice any darkening or singeing, these may be signs of overheating, poor connections, or insufficient conductor ampacity, contact Kymeta customer support for help.
5. Install the new fuse into the power inlet.
6. Connect the power cable back to the mTenna I/O and power on. The power light on the front side should be solid green.

## 2.2 The status light on the back of the ASM is not solid green

### Cause

The ODU interface cable is not correctly attached to either the ASM or the mTenna I/O.

### Solution

The ASM displays a yellow light during the boot sequence. This boot sequence will complete within 90 seconds, and the ASM light turns solid green indicating that it has successfully booted.

If the light is not on, complete the following:

1. Verify the mTenna I/O front panel power LED is green.  
If the LED is off, check that the mTenna I/O power cable is plugged in and that the power switch is switched to the ON position.
2. If the power LED is green but the ASM status light continues to be off, power off the mTenna I/O and check the ODU interface cable.
  - » Unplug the ODU interface cable from the mTenna I/O and verify that no pins are bent.
  - » Reseat the ODU interface cable on the mTenna I/O.
  - » Unplug the ODU interface cable from the ASM and verify that no pins are bent.
  - » Reseat the ODU interface cable on the ASM.
3. Once the ODU interface cable has been checked, power on the mTenna I/O and verify that the ASM status light turns solid green.

Contact Kymeta customer support at [support@kymetacorp.com](mailto:support@kymetacorp.com) or 1-855-525-6638 if the light is not solid green after completing the troubleshooting sequence.

## 2.3 The BUC status light is not on

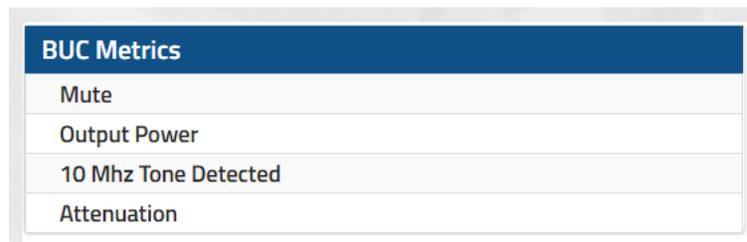
### Cause

The BUC cables are not correctly attached to the BUC.

### Solution

1. Turn off terminal power by powering off the mTenna I/O.
2. Unplug the BUC cables and verify that no pins are bent.
3. Reseat the BUC cables.
4. Power on the terminal by powering on the mTenna I/O.

To check the status of the BUC in software version 1.1, in the web-based user interface, go **Pointing > Commissioning Mode** and check the the **BUC Metrics** status field. If the status field is blank as shown in the image below, then there is no BUC communication.



BUC Metrics
Mute
Output Power
10 Mhz Tone Detected
Attenuation

## 2.4 The BUC status light is red

### Cause

The 10 MHz reference is not available.

### Solution

Check your modem settings.

## 3 ASM web-based user interface

---

### 3.1 Cannot access the web-based UI

**Cause**

Improper or unknown local network IP configuration.

**Solution**

1. Verify that the ASM has successfully booted.
2. Verify that the mTenna I/O is connected to the same Ethernet switch as the laptop. Note that some embedded switches/routers, such as on an iDirect X7, have limited functionality until the end of the boot sequence of the modem.
3. Confirm the network configuration of the laptop and ASM are on the same subnet. Details vary by operating system.

If the network configuration of the ASM is unknown, restore the ASM to its factory default configuration, as described in section 6 Recovery button .

### 3.2 The automatic gain control (AGC) value is 9929

**Cause**

The LNB may not be receiving power.

**Solution**

1. Verify that the Rx and Tx cables are not swapped and in usable condition.
2. Verify that the modem is supplying the LNB with power.
3. Verify ASM Receiver switch one ECC3100.

## 3.3 The values in the RX Antenna and TX Antenna sections are not updating

### Cause

The ASM or the modem is incorrectly configured.

### Solution

If the ASM was manually configured, verify that all manual configurations steps were completed per *mTenna<sup>u7</sup> Antenna Subsystem Module Manual Configuration for Digital Video Broadcasting - Satellite - Second Generation (DVB-S2) Tracking*.

If the ASM is using a modem with OpenAMIP, verify connectivity between the modem and the ASM. If the modem cannot ping the ASM, complete the following steps:

1. Reseat the cable.
2. Power cycle the terminal.
3. Verify the modem is properly configured for OpenAMIP.
4. Verify the VLAN configuration and the network cable are plugged into the correct ports.

## 4 Acquisition and tracking

### 4.1 The ASM is not able to acquire the intended carrier

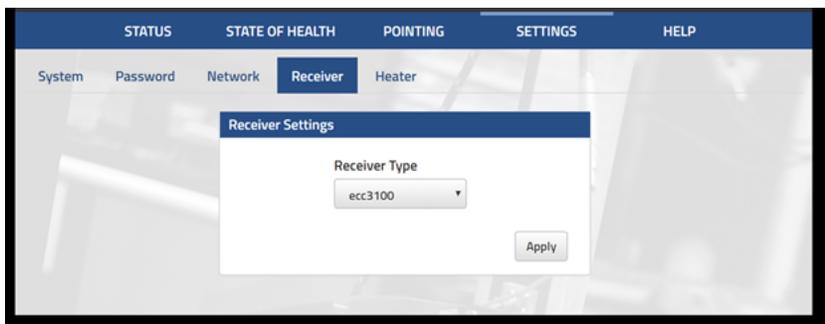
**Cause**

Mismatch between antenna and carrier configurations.

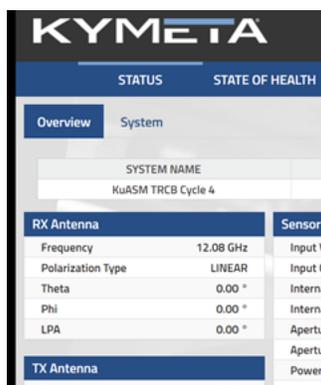
🔧 These troubleshooting steps should be followed only if you are certain of the expected carrier configuration, and your setup is not using openAMIP. If your services are using openAMIP, and you are unable to acquire, confirm you are not in blockage and no other symptoms are present that could result in an inability to acquire, and contact Kymeta customer support.

**Solution**

1. Verify that the tracking receiver is enabled. In the web-based user interface, go to the **Settings** page > **Receiver** window.

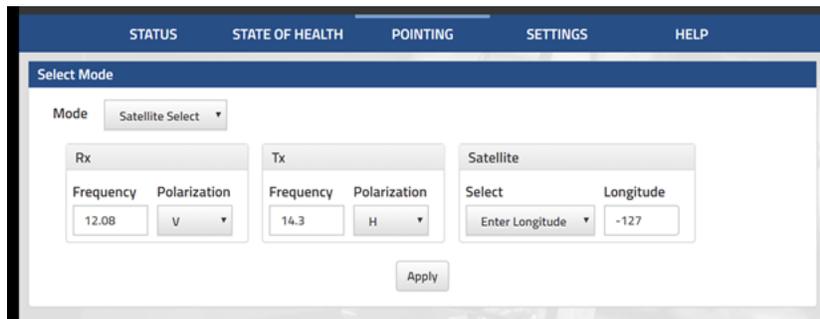


2. Verify that the receive frequency matches the expected downlink carriers. Go to the **Status** page > **Overview** window to check the receive frequency.



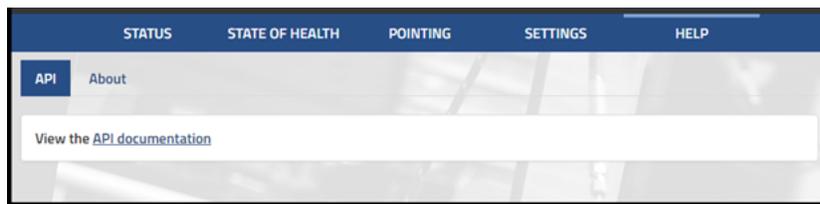
With an OpenAMIP-enabled configuration, this can indicate a configuration issue on the modem or the management VLAN. Details will vary by implementation.

For a non-OpenAMIP terminal configuration, update the pointing mode to **Satellite Select** and provide the appropriate frequencies and satellite longitude.



Configure the tracking receiver for the carrier.

1. Open the tracking receiver API. Go to the **Help** page > **API** window. Click **API documentation**.



2. Click **setup** to expand the list of operations.



3. Under **Get/setup/receiver**, click **Try it out**.

GET /setup/point Get the beam pointing angle.

PUT /setup/point Electrically point to the specified angle (Manual Lab mode).

GET /setup/receiver Get receiver type.

**Implementation Notes**  
This method returns the receiver type that was last configured using the 'PUT /setup/receiver' request.

**Response Class (Status 200)**  
Model | Model Schema

```

{
  "frequency-mhz": 0,
  "id": 0,
  "integral-agg-gain": "string",
  "iq-swap": true,
  "pl-esno-alpha": "string",
  "prop-agg-gain": "string",
  "radial-esno-alpha": "string",
  "search-range-percent": 0,
  "status": "string",
  "status-agg-gain": 0
}
    
```

Response Content Type: application/json

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
id	<input type="text"/>	Transaction identifier, deprecated.	query	integer

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
default	Failed to return the receiver type.		

[Try it out!](#)

PUT /setup/receiver Set receiver type.

GET /setup/satellite Get the satellite longitude.

PUT /setup/satellite Electrically point to the specified geosynchronous satellite.

- In the **Response Body** box, check that the frequency-mhz value matches the expected IF frequency. Check that the symbol-rate-msyms value (displayed in Msps) matches the expected symbol rate in ksps. The symbol rate must match exactly; an error of even 1 Hz can prevent tracking. Note that the ASM is designed to track carriers with symbol rates of 5 Msps or greater. Entries with a symbol rates below 5 Msps are valid but not recommended.

Response Content Type: application/json

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
id	<input type="text"/>	Transaction Identifier, deprecated.	query	integer

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
default	Failed to return the receiver type.		

[Try it out!](#) [Hide Response](#)

**Curl**

```
curl --user user:pass -X GET --header "Accept: application/json" "http://10.10.42.70:8013/v1/setup/receiver"
```

**Request URL**

```
http://10.10.42.70:8013/v1/setup/receiver
```

**Response Body**

```
{
  "frequency-mhz": 1234,
  "integral-agc-gain": "0xba",
  "iq-swap": true,
  "message": "",
  "pl-esno-alpha": "0x5555",
  "prop-agc-gain": "0x45",
  "radial-esno-alpha": "0x2222",
  "search-range-percent": 20,
  "status": "ok",
  "symbol-rate-msyms": 3,
  "tuner-offset-mhz": 5,
  "type": "ecc3100"
}
```

**Response Code**

```
200
```

**Response Headers**

```
{
  "date": "Fri, 20 Oct 2017 17:13:17 GMT",
  "server": "lighttpd/1.4.39",
  "content-length": "120",
  "content-type": "application/json"
}
```

**PUT /setup/receiver** Set receiver type.

**GET /setup/satellite** Get the satellite longitude.

- If the frequency or symbol rate is incorrect, correct them using the PUT option on the same API. Note that PUT changes will not persist across antenna boots.

GET /setup/receiver Get receiver type.

PUT /setup/receiver Set receiver type.

**Implementation Notes**  
 This method configures the receiver type, enabling the special communication elements of that particular receiver to be utilized by the antenna. The following receivers are recognized: ecc3100 nbr none.

**Response Class (Status 200)**  
 Model | Model Schema

```

            {
              "id": 0,
              "message": "string",
              "status": "string"
            }
            
```

Response Content Type application/json ▼

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
type	<input type="text" value="ecc3100"/>	Receiver type.	query	string
id	<input type="text"/>	Transaction identifier, deprecated.	query	integer
frequency-mhz	<input type="text"/>	Receiver frequency, MHz.	query	double
symbol-rate-msyms	<input type="text"/>	Receiver symbol rate, Msps.	query	float
search-range-percent	<input type="text"/>	Search range, percent.	query	integer
tuner-offset-mhz	<input type="text"/>	Tuner offset, MHz.	query	float
iq-swap	<input type="text" value=""/>	Spectral inversion.	query	boolean
p1-esno-alpha	<input type="text"/>	Tracking parameter.	query	string
radial-esno-alpha	<input type="text"/>	Tracking parameter.	query	string
integral-agc-gain	<input type="text"/>	Tracking parameter.	query	string
prop-agc-gain	<input type="text"/>	Tracking parameter.	query	string
status-ms	<input type="text"/>	Update rate, msec.	query	integer

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
default	Failed to set the receiver type.		

[Try it out!](#)

GET /setup/satellite Get the satellite longitude.

PUT /setup/satellite Electrically point to the specified geosynchronous satellite.

## 4.2 The satellite teleport/hub is unable to receive the transmitted signal from the KyWay terminal

### Possible cause 1

ASM transmission characteristics are incorrect or the BUC is not operating correctly.

### Solution

1. Verify that the terminal modem transmit is enabled.
2. Verify that the BUC light is green. This indicates that the BUC is not muted.
3. Verify that the transmit frequency and polarization matches the expected uplink carrier. In many cases, the LPA value reported will be approximately 90° offset from the receiver. This applies for commissioning as well.

### Possible cause 2

Issue with transmit including issues with improperly connected cable or damaged cable, weather impairment, or BUC is not operating correctly.

### Solution

1. Check BUC cable connection and cable integrity.
2. Verify that the Tx frequency is correct in the web-based user interface.
3. Contact Kymeta Support. A NOC engineer can verify reception of a CW signal.

## 5 KĀLO™ network services

### 5.1 Unable to connect to the iDirect X7 modem via network

#### Possible cause 1

Update the installer laptop to be on the same subnet using one of the following possible X7 modem IP addresses. Note that any one of the following could be correct, so you may have to try each one to find the right one:

- » 192.168.0.1
- » 192.168.1.10
- » 192.168.44.1

#### Possible cause 2

The mTenna<sup>u7</sup> ASM and/or the installer laptop are not connected to the correct port on the modem.

#### Solution

1. Load the LAN configuration file.
2. Connect the ASM to port 1 and the installer laptop to port 2.
3. Connect the console cable to the modem and verify the modem's IP.

### 5.2 The X7 modem is unable to communicate with the ASM during commissioning

#### Cause

The X7 modem is unable to acquire the target satellite.

#### Solution

1. Connect the ASM to the X7 modem and ensure that you can ping the 192.168.44.2 IP address of the ASM.
2. If the ASM green light indicator is not on, reboot the ASM. Reboot the ASM via the web-based user interface or the reset button on the mTenna I/O.

#### 5.2.1 Ping check

To perform a ping check:

1. Open **Command Prompt**.
2. Type **ping** followed by a space and then the IP address of the ASM . For example:  
`ping 192.168.44.2`

 Perform a ping test on the modem, the ASM, or an internet website (for example, google.com) to quickly isolate or diagnose the source of connectivity issues. If you're able to ping a website, you have internet connectivity.

## 5.3 The KyWay terminal is unable to achieve Rx lock

### Possible cause 1

The ASM is blocked.

### Solution

1. Verify that the ASM is not blocked by any obstacles, for example a pole, tree, or other obstruction.
2. Clear ASM's look angle of any obstacles or move the ASM (if possible) to unblocked area.

### Possible cause 2

The look angle is past the 75° mute point.

### Solution

Attempt to lock on broadside angle (if you can move the antenna). Note that if this solution corrects the problem, your look angle is past the 75° mute point.

## 5.4 The network light is yellow or flashing green, but Rx and Tx icons are solid green in the X7 modem console

### Cause

Intelsat or KĀLO Network Operations Center (NOC) provided an incorrect options file.

### Solution

1. Check the error message in the console to determine the cause (e.g., WRONG\_NETWORK).
2. Contact KĀLO NOC (855-KALONET) for escalation to Intelsat.

## 5.5 The network light is red, but the Rx and Tx icons are solid green in the X7 modem console

### Cause

Intelsat or KĀLO NOC provided an incorrect options file.

### Solution

1. Check the error message in the console to determine the cause (e.g., WRONG\_NETWORK).
2. Contact Kymeta customer support at [support@kymetacorp.com](mailto:support@kymetacorp.com) or 1-855-525-6638 for escalation to Intelsat.

## 5.6 The KyWay terminal achieves Rx/Tx lock but Net light keeps flashing and is not in network, and the X7 modem console displays acquisition errors

### Possible cause 1

The KyWay terminal encountered a Velocity Network bug.

### Solution

1. Disable the network SSPCs on the hub side.
2. Re-enable the network SSPCs.
3. Apply configurations.

If you do not know how to do this, contact Kymeta customer support at [support@kymetacorp.com](mailto:support@kymetacorp.com) or 1-855-525-6638.

## 5.7 The TEMP light on the front of the modem is yellow

### Cause

The TEMP light turns yellow when the modem temperature rises above 45° C.

### Solution

Turn off the modem or use a fan to cool it.

## 5.8 The TEMP light on the front of the modem is red

### Cause

The TEMP light turns red when the modem temperature rises above 50° C, the modem's maximum operating temperature.

### Solution

Turn off the modem or use a fan to cool it.

 The modem does not have an automatic shutoff mechanism if the temperature exceeds 50° C.

## 6 Recovery button

---

The recovery button is a three-function pin-hole button that may be used to reset the ASM network and user configuration if the ASM local network is not responding.

### 6.1 Reset

To reset the **ASM network configuration** to the factory default values:

1. Make sure the ASM is running.
2. Press and hold the Recovery button for four seconds.

The LED on the ASM will blink and then stay on indicating the network configuration was reset. The changes take effect immediately; no restart is necessary.

### 6.2 Restore

To restore the **ASM network configuration and user configuration** to the factory default values:

1. Power off the ASM.
2. Press and hold the Recovery button, and then power on the ASM.
3. Release the Recovery button 30 seconds after the power is turned on.

### 6.3 Software image restore

To restore the **ASM software image** to the factory default:

1. Power off the ASM.
2. Press and hold the Recovery button, and then power on the ASM.
3. Release the Recovery button 60 seconds after the power is turned on.

 If the ASM is reset or powered off within 3 minutes of the software image restore operation being requested, the operation will not be completed and the original software image will remain.

### 6.4 Recover

If the KyWay terminal is not responding, cycle the system power to reset.

## 7 Revision history

Revision	Change	Date
1	Initial release	1 December 2017
2	Added "Recovery button" section	9 March 2018
3	Added "KĀLO™ network services" section	27 March 2018
4	Added "Check the physical setup of the ODU" and "Check the physical setup of the IDU" sections	8 June 2018

## 8 Legal information

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