



Cassia
Networks

Overview of Cassia's Cellular Support

Making Bluetooth IoT Easy. Scalable. Secure.



Cassia's Cellular Solutions

USB extension cable



Solution 1
USB cellular modem
inside X1000/X2000

Solution 2
USB cellular modem
outside X1000/X2000

Solution 3
Cellular modem that provides
Wi-Fi hotspot mode or Ethernet
connection



Cassia's Cellular Solutions- Examples



X1000



X2000



E1000/S2000





Supported USB Cellular Modems- Examples [1]

Model [2]	Vendor	Market	Technology
MTCM-LNA3-B03	MultiTech	USA/Canada	4G (CAT 1)
MTCM2-L4G1-B03	MultiTech	Europe	4G
E8372h-320	HW	Europe	4G
E8372h-820	HW	China	4G
MF79U	ZTE	China	4G

[1] Please check **Cassia User Manual appendix B** for the full list

[2] Model type should be exactly the same, e.g. E8372h-820 and E8372h-155 is different



Cellular Modems Connected via Wi-Fi or Ethernet- Examples



Cradlepoint IBR200



Teltonika RUT955



Cassia X2000 Gateway Enhancement

Reliability

Enhance “USB Cellular Modem Auto Recovery” functions by power resetting the USB cellular modem

Visibility

New 4G LED indicator to show USB cellular modem status

Flexibility

More room for USB cellular modem & antennas



X2000



X1000



Check Cellular Connection

- 1 If using a USB cellular modem, please ensure it is supported by a Cassia gateway
- 2 Check LED on cellular modem or 4G LED on the X2000 gateway
- 3 Check cellular signal strength on the AC or gateway's local console (supported by MultiTech, HW and ConnectedIO cellular modems)
- 4 Check the uplink connection by using the integrated debug tools on the gateway's local console

The screenshot shows the 'Status' page of a Cassia gateway. The top navigation bar includes 'Status', 'Basic', 'Container', 'Events', and 'Other'. The main content area displays the following information:

Model	X1000
MAC	CC:1B:E0:E0:A1:AC
Working Mode	AC Managed
AC-Router Protocol	MQTT
Uplink	Cellular
Uplink Signal Strength	POOR
ETH IP	192.168.1.92
WLAN IP	192.168.40.1

A red arrow points to the 'Uplink Signal Strength' field, which is labeled 'POOR' in a red box. Below this, the 'Debug Tools' section is visible, featuring a dropdown menu set to 'SpeedTest', a 'Time(Second)' input field with '10', and a blue 'Start' button. The results of the speed test are displayed in a black box at the bottom:

```
Your IP: 121.69.75.86 And ISP: China Unicom Beijing
Lat: 39.928799 Lon: 116.388901
Grabbed 1000 servers
Best Server URL: http://speedtest.bmcc.com.cn:8080/speedtest/upload.php
Name: Beijing Country: China Sponsor: China Mobile Group Beijing Co.Ltd Dist: 1 km
Latency: 1767 ms
```



Tips for Troubleshooting a Bad Cellular Connection

- Enable “USB Cellular Modem Auto Recovery”
- Remove any objects that interfere with the cellular reception
- Identify the closest cell tower to try and find a better cellular signal strength
- Use a USB extension cable to place the cellular modem outside the X1000/X2000 and use a larger 4G antenna to improve the signal strength
- Try to avoid highly populated/noisy areas
- Contact your cellular carrier for a cell signal booster
- Try a SIM card from other cellular carriers
- Try other uplink solutions i.e. Ethernet or Wi-Fi





USB Cellular Modem Auto Recovery^[1]

Recovery Action	Description	Gateway
Soft reset USB interface	If the gateway can't reconnect to a cellular network in 10 minutes	X1000, E1000, S2000
Power reset USB cellular modem	If the gateway can't reconnect to a cellular network in 10 minutes	X2000
Soft reboot the gateway	If the cellular connection can't be recovered in one hour	All AC managed gateway

[1] All cellular modems connected by USB port are able to support this function



Minimize Cellular Data Bandwidth Usage

Traffic	Suggestions
Uplink Bluetooth traffic	<ul style="list-style-type: none">• Disable “Gateway Auto-Selection” function in AC settings page• Use scan filters, for example RSSI, name, MAC filters• Avoid scan all the time• Use edge computing
Management traffic between gateway and AC	Set “AC-Gateway Protocol Priority” to MQTT (default in v2.x)
Downlink traffic of upgrading gateway firmware, container and APP	Upgrade gateway firmware, container and APP locally via gateway’s local console



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