

BlueTOAD[®]

User Guide

BlueTOAD[®] Spectra Travel Time System

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iteris[®]

Copyright and Trademarks

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Glossary

In the glossary below, terms are listed in alphabetical order along with their meanings. Below is an example of acronyms used in text.

Term	Meaning
AGL	Above Ground Level
AWS	Amazon Web Services
BlueARGUS	Web-based software to monitor BlueTOAD detectors
BlueTOAD	Bluetooth® Travel time Origin And Destination
CAT-5 Cable	Category 5 cable, a twisted pair cable for computer networks. The cable standard provides performance of up to 100 MHz and is suitable for 1000BASE-T (Gigabit Ethernet). This is also called an “Ethernet Cable” or a “LAN Cable.”
Discoverable/ Non-Discoverable	Discoverable = Bluetooth device searching to Pair with another Bluetooth device Non-Discoverable = two Paired Bluetooth devices
DNS UDP	Domain Name System—a hierarchical and decentralized naming system for resources connected to the Internet or a private network. User Datagram Protocol—an alternative comm protocol to TCP
DSRC	Dedicated Short Range Communications
Egress	Going out of (leaving) an intersection
EIRP	Effective Isotropic Radiated Power
EMAC	Ethernet Media Access Controller
ERM	Event Reporting Message
FCC	Federal Communications Commission
Free-TEXT	Custom text you type to create a message or part of a message for a TIM
GPS	Global Positioning System
HTML	Hypertext Markup Language
IEEE	Institute of Electrical and Electronics Engineers
Index-phrase	Standard text used create a message or part of a message for a TIM, defined by ITIS and assigned a code number—whose meaning is known internationally.
IoT	Internet of Things
IP address	Internet Protocol address—host or network interface identification and location addressing
ITS	Intelligent Transport System
LAN/WAN	Local Area Network/Wide Area Network

Term	Meaning
MAP	Map Data Message— intersection geography and line definitions of the intersection or street. An RSU transmits one MAP message per second to OBUs.
NTCIP	National Transportation Communications for Intelligent Transportation System Protocol
NTCIP Support	ITS Standard NTCIP 1202 Object Definitions used for communication with Actuated Traffic Signal Controller (ASC) Units
NTP	Network Time Protocol
O/D	Origin/Destination
Omni-directional	Receiving signals from or transmitting in all directions
PCB	Printed Circuit Board
PoE	Power over Ethernet
PuTTY	SSH Client terminal program for Microsoft Windows
RDS	Radio Data Service (on FM 57 kHz subcarrier)
RJ-45 Port	Registered Jack (RJ) is a standardized telecommunication network interface
SNMP	Simple Network Management Protocol—used to monitor and manage devices on networks. Typically, SNMP uses User Datagram Protocol (UDP) transport layer (layer 4) as its transport protocol.
SPaT	Signal Phase and Timing
SRM	Signal Request Message
SSH Client	A software program which uses the Secure Shell protocol to connect to a remote computer.
SYSLOG	A way for network devices to send event messages to a logging server, known as a Syslog server
TCP	Transmission Control Protocol
TMC	Traffic Management Center
UPER	Unaligned Packed Encoding Rules
URL	Uniform Resource Locator
Users	Authorized access through secure login to software application
Win SCP	File transfer application

For your notes:

1. Introduction

Purpose

This *User Guide* gives procedures to deploy Iteris BlueTOAD Spectra units. Included are procedures to confirm Network Connectivity and Data Collection. *Chapter 2* explains how to deploy the BlueTOAD Spectra detectors. Please contact Iteris support to obtain a copy of the BlueTOAD Spectra RSU (Connected Vehicle) documentation.

Features Affect Deployment

The tables below describe the four BlueTOAD Spectra units and give their main features.

BlueTOAD Spectra Unit	Function	Part Number
Ethernet PoE	Detects and transmits Data for Speed and Travel Time	BT-ETH-SPECTRA-POE
Ethernet Cellular PoE		BT-CELL-SPECTRA-POE
Solar Cellular		BT-CELL-SPECTRA-85
RSU Ethernet PoE	Receives and transmits Detection, CV and SPaT Data	BT-SPECTRA-RSU

Features affect deployment of each unit.

Example: Three of the four units are powered by Power over Ethernet (PoE) and thus must be connected to a roadside Traffic Cabinet or equivalent source for their power and communications; a Solar Cellular, however, is stand-alone because it is powered by Solar and communicates directly over the Cellular Network.

Features	BlueTOAD Spectra			BlueTOAD Spectra RSU Ethernet PoE
	Ethernet PoE	Ethernet Cellular PoE	Solar Cellular	
				

Features		Ethernet PoE	Ethernet Cellular PoE	Solar Cellular	BlueTOAD Spectra RSU Ethernet PoE
Types of Data Processed	Speed and Travel Time	X	X	X	X
	Connected Vehicle BSM				X
	Traffic Controller SPaT				X
Data is Transmitted	Through Agency Servers	X			X
	Through the Cellular Network		X	X	
Powered by	Power over Internet (PoE)	X	X		X
	Solar-Charged Battery			X	
Field Installation	Near Roadside Traffic Cabinet	X	X		X
	Stand-Alone			X	
Weight	Weights with brackets	<5 lbs.	<5 lbs.		<9 lbs.
	Weight with Battery			<40 lbs.	

Components of the different BlueTOAD Spectra and BlueTOAD Spectra RSU

The table below shows hardware and software accessories for each of the four BlueTOAD Spectra units.

Item	BlueTOAD Spectra			BlueTOAD Spectra RSU Ethernet PoE
	Ethernet PoE	Ethernet Cellular PoE	Solar Cellular	
PoE Injector + Power Supply	X	X		X
Shielded CAT-5 or CAT-6 Cable	X	X		X
Mounting Bracket + Fasteners	X	X	2	X
Cable Band	X	X	2	X
Solar Panel + Mounting Hardware			X	
Battery			X	
BlueARGUS Software	X	X	X	X
Traffic Controller (see next table)				X

An "X" under a unit indicates that the related **Item** is a component of that unit.

A "2" under a unit indicates that there are two of the related **Items** in that unit.

Compatible Traffic Controllers

For operation of the BlueTOAD Spectra RSU Ethernet PoE at signalized intersections, you must have a Traffic Controller. The table below lists the Traffic Controllers that you can use with the BlueTOAD Spectra RSU.

Manufacturer	Model	Software	SPaT Support	NTCIP1202 Support
Econolite	ASC3/Cobalt-2100/1000/RM	Asc3app/Cobalt	Yes	Yes/Yes
Intelight	2070LDX ATC	Maxtime CV	Yes	Yes
McCain	NEMA ATC	FlexRM	Yes	Yes
Siemens	2070-1C/M60	SEPAC ECOM/SEPAC NTCIP	Yes	No/Yes
Trafficware	980/NEMA ATC/2070-1C	Apogee	Yes	Yes

2. BlueTOAD Spectra Deployment

Important: Contact Iteris BlueTOAD support, 1-608-713-9299, **before** you install any equipment to make sure all devices have been correctly tested.

Purpose

The procedures in this chapter tell you how to deploy an Iteris BlueTOAD Spectra speed/travel time detector system and then start to collect data. We assume you are familiar with the Ethernet-based communications network of your Agency and the supporting equipment listed below.

Supporting Equipment

- Windows PC and Ethernet Cables¹
- Portable Laptop, Apple iPad or Android-based tablet with wireless Internet access
- Web browser – Google Chrome or Windows Edge are preferred
- Iteris BlueTOAD Spectra detector

Procedures

The procedures that follow tell you how to deploy and test a BlueTOAD Spectra speed/travel time detector system.

Note: After notice to proceed is approved, Iteris and key collaborative team personnel will work with your Agency to create a formal deployment, implementation and operations plan document for your BlueTOAD system.

Pre-Install Evaluation

1. Before you install a BlueTOAD system, make sure things are ready at the installation sites.
 - **Location** – Prepare a sight survey of intersection locations that have been selected to deploy BlueTOAD Spectra detectors.
 - ◆ Identify power sources available in the traffic cabinets.
 - ◆ Before you install a BlueTOAD Spectra:
 - Make sure a site survey checklist has been completed for all locations.
 - Make sure you have all the necessary parts for the system. Refer to the table on Page 1-2 for a list of the items included with your type of BlueTOAD Spectra detector.

¹ Ethernet Cables are NOT necessary for the BlueTOAD Spectra Solar Cellular detector.

- **Traffic Network** –Evaluate the existing network.
 - ◆ Fiber and/or Ethernet based? Or, no network communications?
 - ◆ Confirm that the network settings (for example, IP address, gateway, subnet mask, and DNS) are correctly set and that all ports (69, 123, 8010) are open and set for outbound data traffic. Use of Port 69 is optional for firmware updates.
 - ◆ What is the IP address assigned to the BlueTOAD Spectra?

Configure the Ethernet BlueTOAD Web IP

2. To configure the Web IP of an Ethernet BlueTOAD PoE²:
 - a. Connect the Ethernet BlueTOAD™ to a switch or laptop Ethernet port.

Note: With this connection, an Ethernet BlueTOAD can auto-negotiate.

- b. Power ON the Ethernet BlueTOAD™.
- c. Log into the BlueTOAD Spectra detector:
 - i. Open a Web Browser (Google Chrome or Microsoft Edge is preferred).
 - ii. Enter the default BlueTOAD Spectra IP address (192.168.1.77) and URL (<http://192.168.1.77:8080/admin.cgi>)

Note: If the IP address has been changed from the factory default, use the new IP address to access the login website.

- iii. For the configuration tool to proceed, you must use the username and password given below at the default address:

Username: admin

Password: 77admin77

After login, the **BlueTOAD Device Administration** screen will open.

² You configure the Web IP for a Spectra Ethernet PoE type detector but NOT for a Spectra Ethernet *Cellular* PoE or a Solar *Cellular* detector. The *cellular* Spectra detectors broadcast directly to the Iteris National Servers over the cellular network, bypassing the Ethernet-based Servers-Firewall of the Agency.

- d. To change any of the fields in the **System Settings** area:
 - i. Enter the new value into each field.

Note: For a helpful workbook to keep a record of the values in each field, go to <https://bluetoad.zendesk.com/hc/en-us/articles/360015177732-Preprogramming-installation-cheat-sheet>

In the middle left of the page, select **BlueTOAD Programming Cheat Sheet.xlsx**
 At the bottom left of the Excel page, select the **Pre Installation Sheet** tab.

- ii. When done, click **Submit Changes**.

Important: If you change the IP address, **keep a record of the new BlueTOAD Spectra IP address** because you must use the new IP address to log back into this same device! Without the correct IP, you CANNOT log in.

- iii. The BlueTOAD Spectra resets automatically.

BlueToad Device Administration

Device Info

Device Id: 2136174

GMT System Time: 01/01/07 00:01:08

Firmware Version: 04.00.01.543

Ethernet MAC Address: fc:c2:3d:20:98:6e

System Settings

IP Type: static dhcp

Cellular System: on off

Cellular APN	broadband
Static IP Address	172.20.5.91
Static Netmask	255.255.255.0
Static Gateway	172.20.5.1
Static DNS Server	8.8.8.8
NTP Server	192.168.1.5
BT Server	btserver.trafficcast.com
Update Server	btserver.trafficcast.com

Radio Detector Settings

BT Classic Radio1: on off

Spectra Radio: on off

Layout Guidelines

3. After you select the target road segment for speed/travel time data collection, use the guidelines that follow to determine how many BlueTOAD detectors are necessary for your travel time study or reporting objectives.
 - BlueTOAD has an effective omni-directional detection range of an approximately 300-foot radius from the antenna.
 - The **minimum** recommended distance to space a BlueTOAD PoE or Cellular is every 0.25 mile.

Note: Power Control lets you reduce the detection zone to minimize overlap. Thus, with Power Control, the minimum spacing could be less than 0.25 mile.

- The **maximum** distance to space BlueTOAD PoE or Cellular is a function of the road type:

Road Type	Maximum Spacing, miles
Highway	4 to 5
Arterial (no traffic lights)	2 to 2 ½
Arterial (with traffic lights)	1 to 1 ½
Dense urban area*	1
* Note: The number of intersections, traffic signals, or exit ramps can affect the speed/travel time; thus, you should keep them to a minimum.	

- In an Origin/Destination (O/D) deployment, you must install BlueTOAD detectors before the destination as well as after. The number of additional BlueTOAD detectors necessary is then based on driver options.

Example: If a driver could turn either left or right at T intersection, you must install a BlueTOAD in each of the two possible directions of travel.

Pre-Installation Testing

The steps that follow give instructions to test BlueTOAD Spectra detectors before they are installed in the field:

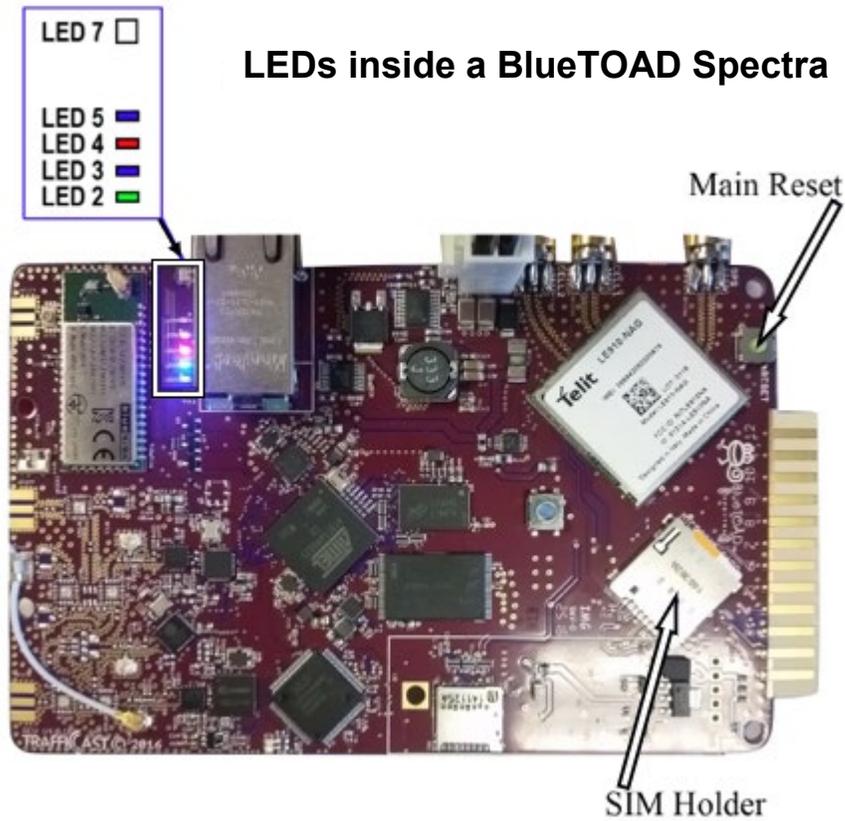
- To test a Spectra Ethernet PoE or a Spectra Ethernet Cellular PoE, go to Step 4.
 - To test a Spectra Solar Cellular, go to Step 5.
4. To test a Spectra PoE detector:
 - a. Connect the Ethernet cable to power ON the detector.
 - b. In the presence of Bluetooth signals, open the enclosure and confirm that the LEDs on the PCB³ are operating correctly.
 - c. Go to Step 6.

³ The PCB with its LEDs is the same in all three types of BlueTOAD Spectra detectors. Correct operation of the LEDs is shown in the photograph and table on Page 2-5.

5. To test a Spectra Solar Cellular detector:
 - a. Open the Spectra enclosure.
 - b. Connect the Battery to the Charge Controller with the Quick Connect from the Battery.

Note: The Quick Connect is illustrated on Page 2-16 (but do NOT attach the Battery yet).

- c. On the BlueTOAD card (PCB), LED 7 should start flashing.
- d. In the presence of Bluetooth signals, confirm the LEDs operate as shown below.
- e. Go to Step 6.



LED	Function	Color	@ Initial Startup	@ Normal State (takes up to 5 minutes)
7	Network Connection	Multi-color	White – Searching for Cell Green – Searching for GPS	OFF – Cell and GPS established
5	Bluetooth Detection	Multi-color	Blue – Discoverable Purple – Non-Discoverable	Blinks upon detection
4	Diagnostics Reporting	Red	OFF	Blinks – 1 x per 3 sec.
3	Connection Strength	Blue	OFF	Flash blue if > - 90 dbm (good) Solid blue if < - 90 dbm (poor)
2	Kernel Diagnostics	Green	OFF	Blinks – 1 x per 3 sec.

6. After you have tested the LEDs for your Spectra detector in the presence of Bluetooth signals:
 - a. Call the Iteris Customer Support Number, **(608) 713-9299**; report the BlueTOAD device number, say that the detector has been powered ON, and that the LEDs are normal.
 - b. Wait for the Iteris representative to verify the network is seeing data from the detector.
 - c. After confirmation from Iteris, remove the Ethernet cable to power OFF⁴ the detector; now the Spectra detector is ready for installation in the field.

Field Installation

The table below summarizes the steps to install each of the three types of BlueTOAD Spectra detector in the field. The two sections that follow give detailed instructions for the installation of the main types of BlueTOAD Spectra detectors:

- **Go to Step 7** to install a Spectra Ethernet PoE or a Spectra Ethernet Cellular PoE—connected to a roadside traffic signal cabinet and powered over Ethernet through a CAT-5 Cable.
- **Go to Step 9** to install a stand-alone Spectra Solar Cellular, powered with a solar-charged battery.

Field Installation				BlueTOAD Spectra		
Step	Procedure	Instructions		Ethernet PoE	Ethernet Cellular PoE	Solar Cellular
1	Select a Lamp or Signal Pole on which to mount the Spectra Enclosure	Make sure there is a clear line-of-sight from the Spectra antennas to the target road segment	Pole should be near the roadside traffic signal cabinet (for easy conduit access)	X	X	
			NOT necessary for the pole to be near a cabinet — this is a stand-alone unit			X
2	Mount Spectra enclosure	12 to 14 feet above the roadbed	Attach with 1 Cable Band thru its bracket	X	X	
			Attach with 2 Cable Bands thru 2 brackets			X
	Mount Solar Panel	Mount above the Spectra enclosure, facing true south	Attach with 2 Cable Bands thru 2 brackets Connect Solar Panel Power Cable to the Spectra enclosure			X
3	Align Spectra enclosure	Roadside Installation: align parallel to the roadway		X	X	X
		Center Median Installation: align perpendicular to the roadway		X	X	X

⁴ For a Solar Spectra, to power OFF, unplug the Quick Connect between the Battery and the Charge Controller. Remove the Battery and keep it separate until the Spectra enclosure is installed on a pole. Because of the heavy battery, it is easier to install the enclosure first and then install the Battery after the enclosure is mounted on a pole. The total weight is 40 pounds.

Field Installation			BlueTOAD Spectra		
Step	Procedure	Instructions	Ethernet PoE	Ethernet Cellular PoE	Solar Cellular
	Set Solar Panel Angle	Set the angle per the location. Click the link* at the end of this table for instructions.			X
4	Open the enclosure	This is necessary to install the Battery and make sure the LEDs are operating correctly			X
5	Install the Battery	Attach the Quick Connect to the Battery Install the Battery vertically Secure the Battery with the tie downs			X
6	Connect Cables	Pull the main CAT-5 PoE Cable through the roadside conduit Connect CAT-5 to the PoE Splitter (Spectra) and the PoE Injector (cabinet) Connect AC power to PoE Injector	X	X	
		Connect PoE Injector to network Ethernet Switch	X		
		Connect the Battery to the Charge Controller—LED 7 starts to flash			X
7	Close the enclosure				X

* Solar calculator link: <http://solarelectricityhandbook.com/solar-angle-calculator.html>

Field Installation for Ethernet PoE Detectors

7. Installation guidelines for Spectra Ethernet PoE and Spectra Ethernet Cellular PoE enclosures:

a. **Mounting Structure**—a lamp or signal pole that is:

- ◆ Near the roadside traffic signal cabinet

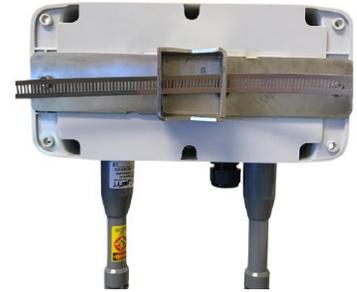
Note: The mounting pole should be near the cabinet for easy conduit access.

- ◆ Has a mounting location with a clear line-of-sight from the Spectra antennas to the target road segment

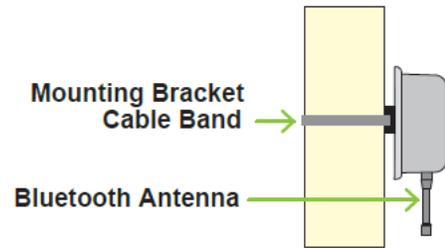
b. **Mounting Height**—12 to 14 feet above the roadbed

c. Mount the Enclosure to the Pole

- i. Insert the Cable Band through the slot in the Mounting Bracket.
- ii. Wrap the Cable Band around the pole.
- iii. Use a drill to tighten the Cable Band with a 5/16” nut driver bit or equivalent.

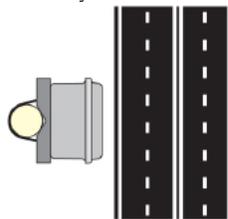


Mounting Bracket slots for up to 1-inch metal banding.



d. Align the Enclosure as shown below:

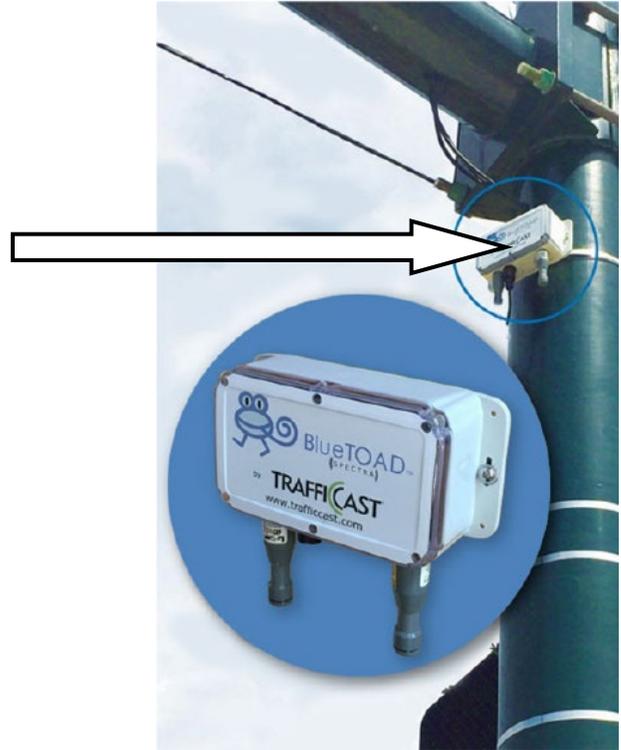
- ◆ For **Roadside Installation**, align the front cover of the enclosure **Parallel** to the roadway.



- ◆ For **Center Median Installation**, align the front cover of the enclosure **Perpendicular** to the roadway.

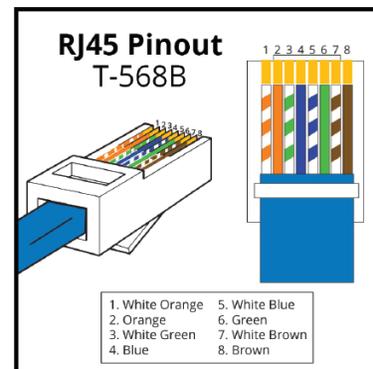
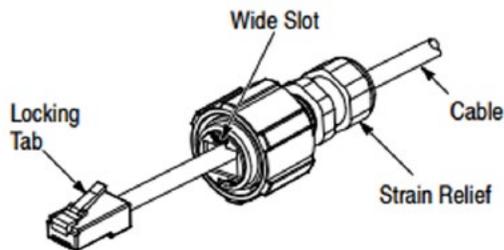


**This is a *Roadside Installation*.
The front cover of the Spectra
PoE enclosure is aligned
Parallel to the roadway.**



8. Guidelines to route and connect the cables:
 - a. **Traffic Closure**—Close traffic lanes as necessary to pull cable.
 - b. **CAT-5 Ethernet Cable**—Pull the main CAT-5 Cable through the roadside conduit.
 - c. Run the cable from the roadside cabinet to the BlueTOAD enclosure on the pole.
 - d. Pass the cable through the Liquid-Tight Cable Gland.

Note: You will have to remove the Strain Relief on the cable to pass it through the Cable Gland. However, you can slide the Strain Relief away from the RJ-45 connector without cutting the Strain Relief. Use the RJ-45 Pinout given below.



e. Install the PoE Injector in the roadside cabinet:

i. Secure the PoE injector onto a flat surface inside the roadside cabinet.

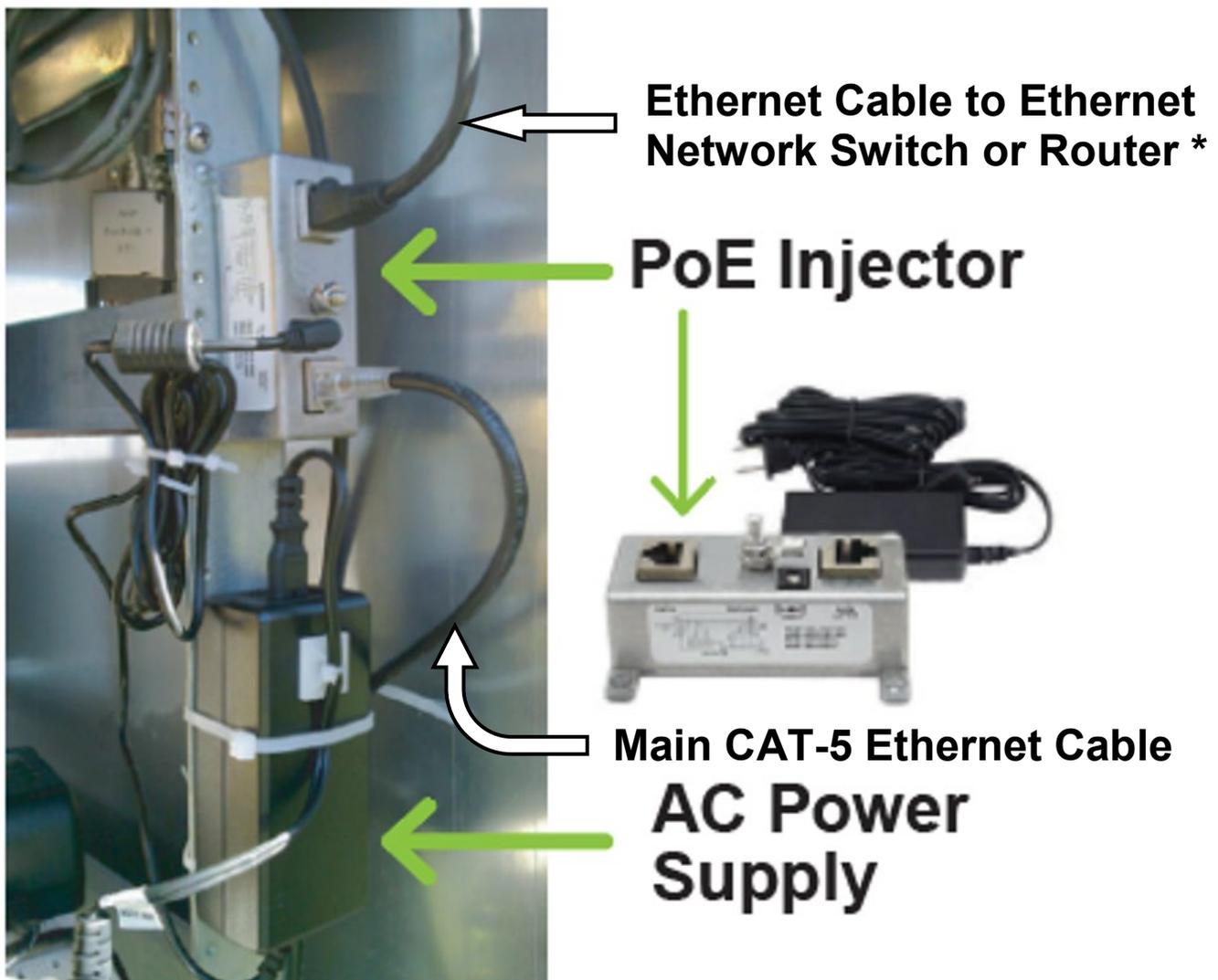
Note: The PoE Injector has two RJ-45 ports:

- **Data**—connects to the network Ethernet switch, router or hub
- **Data and Power**—connects to the PCB of the Spectra, i.e. to the PoE Splitter

ii. Connect the ground wire.

iii. Connect the Main CAT-5 Ethernet Cable to the PoE Injector.

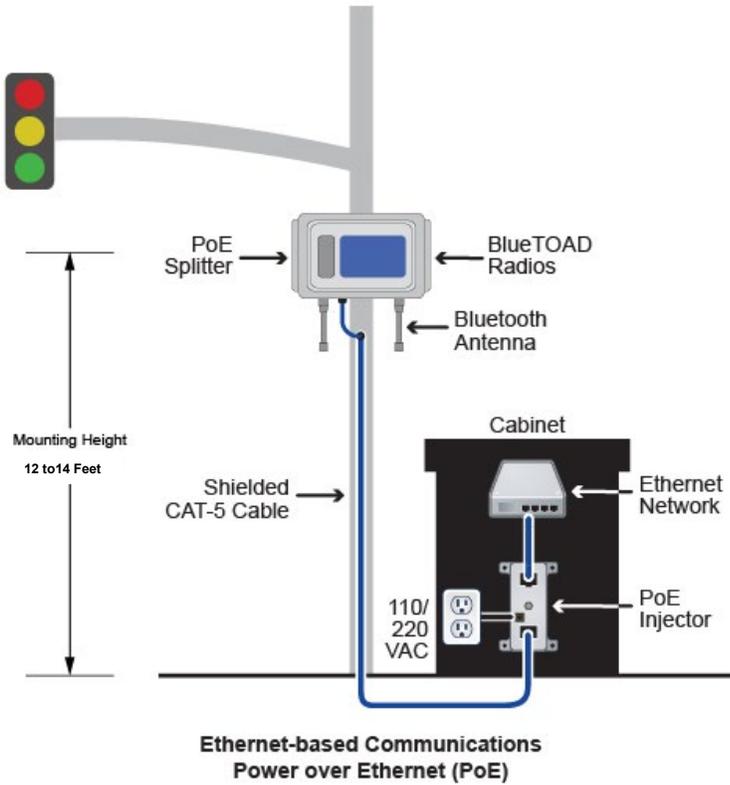
iv. Connect an Ethernet cable from the PoE Injector to the cabinet LAN/WAN Ethernet Network Switch or Router. *



* **Note:** For an Ethernet Cellular PoE detector, do NOT connect the PoE Injector to a LAN/WAN Switch/Router or to a Traffic Controller; this type of BlueTOAD detector bypasses the servers-firewall of the Agency and communicates directly with Iteris National Servers over the cellular network.

- v. Connect the Ethernet Network Switch to the Traffic Controller.
- vi. Connect the AC Power Supply to the PoE Injector.
- vii. Plug the 110 VAC cord into an AC power outlet receptacle.

This is the completed installation:



Field Installation for BlueTOAD Spectra Solar Cellular Detectors

- 9. Installation guidelines for Spectra Solar Cellular enclosures:
 - a. Mounting **Structure**—a lamp or signal pole that has a mounting location with a clear line-of-sight from the Spectra antennas to the target road segment.
 - b. **Mounting Height**—12 to 14 feet above the roadbed.
 - c. Mount the Spectra Enclosure to the Pole

Note: Make sure that the Battery is outside of the enclosure. You will install the Battery after the enclosure is mounted on the pole.

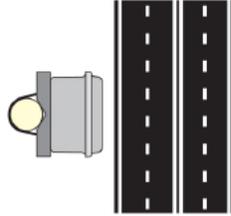
Supplied with a Solar Cellular are:

- ◆ 2 Mounting Brackets with screws to attach them to the detector enclosure
 - ◆ 2 Cable Bands designed to fasten the enclosure to poles up to 14 inches in diameter
- i. As shown below, secure the Mounting Brackets to the enclosure with the Cable Band slots facing away from the enclosure.
 - ii. Insert the Cable Bands through the slots in the Mounting Brackets.
 - iii. Wrap the Cable Bands around the pole.
 - iv. Use a drill to tighten the Cable Bands with a 5/16” nut driver bit or equivalent.



d. Align the Enclosure—as shown below:

- ◆ For Roadside **Installation**, align the front cover of the enclosure **Parallel** to the roadway.

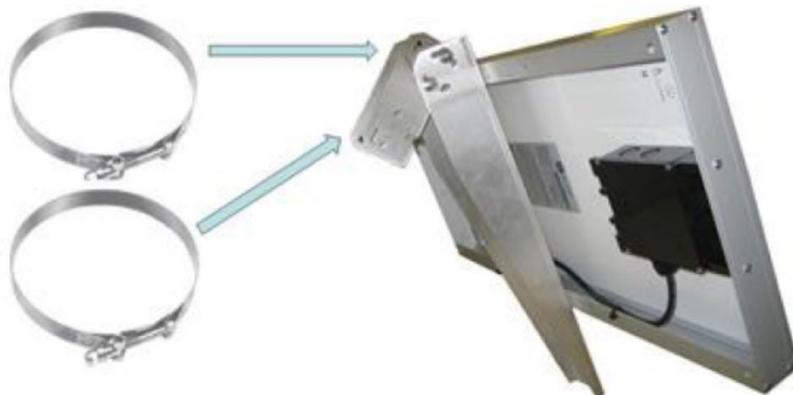
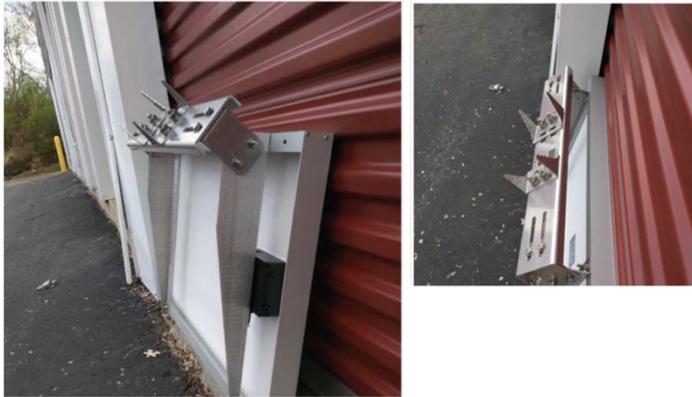


- ◆ For Center **Median Installation**, align the front cover of the enclosure **Perpendicular** to the roadway.

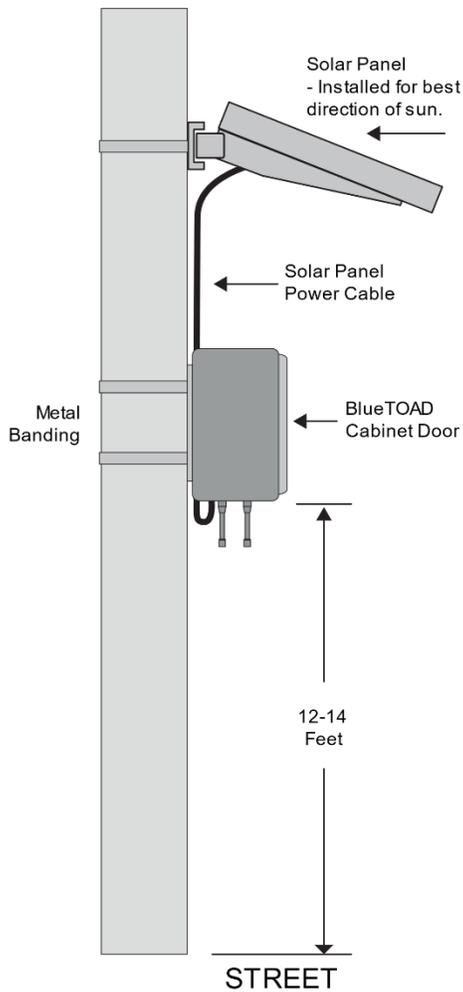


e. Install the Solar Panel

- i. Attach the Mounting Bracket to the Solar Panel.



- ii. Mount the Solar Panel above the BlueTOAD enclosure.
- iii. Mount the Solar Panel facing true south.
- iv. Use a drill to tighten the Cable Band with a 5/16” nut driver bit or equivalent.
- v. Go to this website and enter data in a Solar Calculator to set the Solar Panel to the optimum angle for your location:
<http://solarelectricityhandbook.com/solar-angle-calculator.html>



- f. As shown below, connect the Solar Panel Power Cable to the Junction Box on the Solar Panel:



Important: After connecting the cable, use a multi-meter to make sure that:

- The cable is correctly connected to the junction box
- The solar panel is outputting voltage to the cable

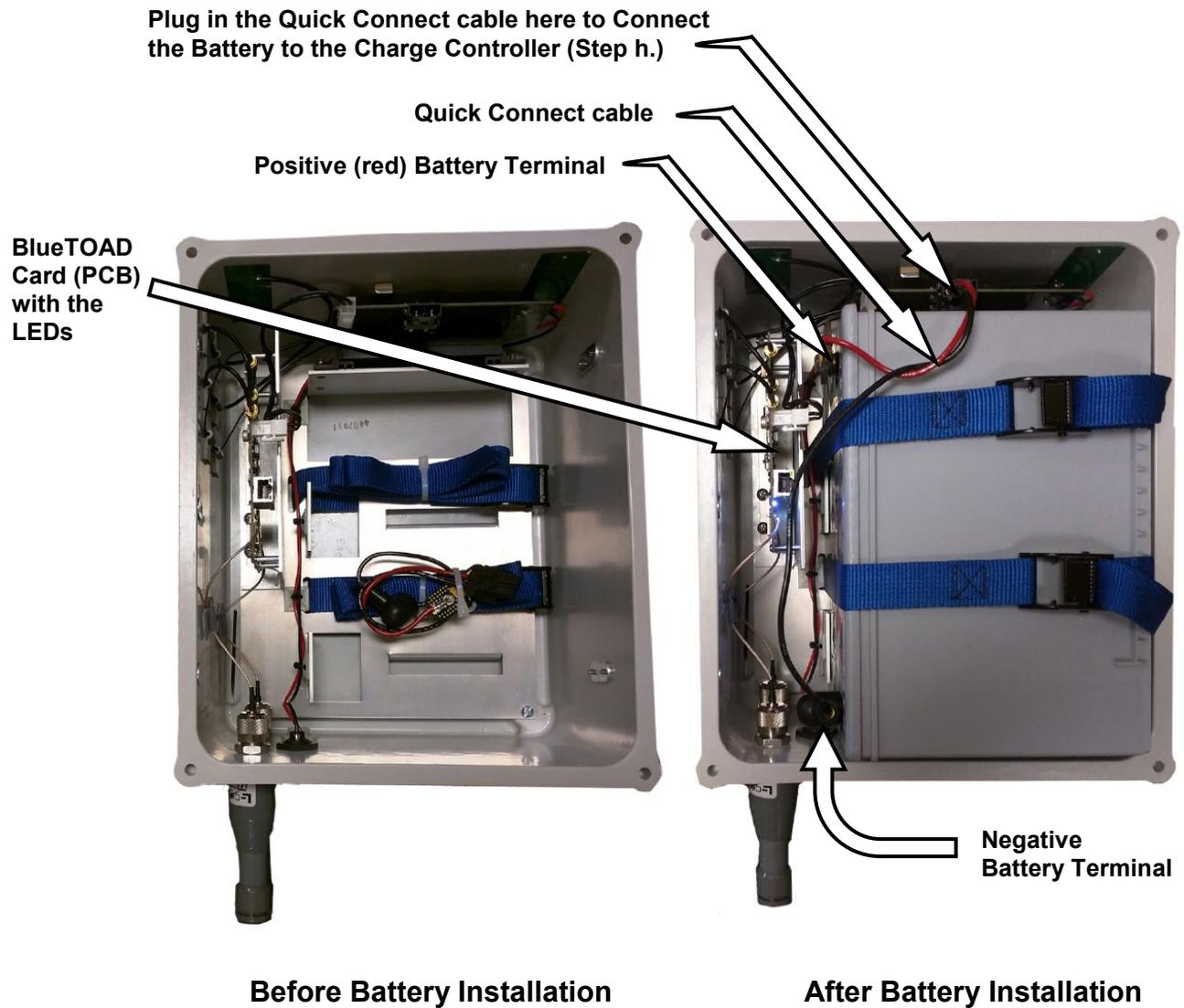
- g. Connect the Solar Panel Power Cable to the Spectra enclosure:
- i. Insert the cable plug into its connector on the enclosure.

Note: The plug is keyed—you can only insert it in the correct position.

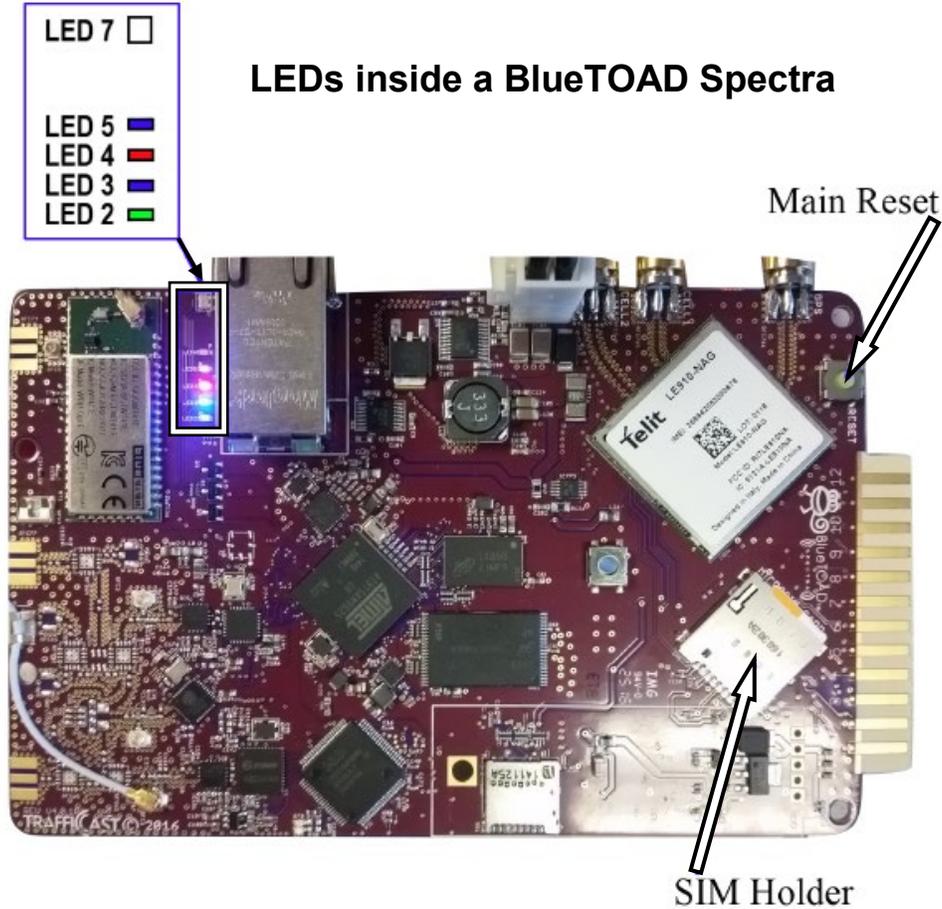
- ii. Hand tighten the connector nut.



- h. **Install the Battery** (cables, connectors, and tie-downs are supplied)
 - i. Open the Spectra Solar enclosure.
 - ii. Attach the Quick Connect to the Battery—with the self-healing fuse connected to the positive (red) terminal.
 - iii. Mount the Battery vertically with the positive terminal on the top.
 - iv. Secure the Battery with the tie-downs.



- i. Connect the Battery and Power ON the Detector.
 - i. Refer to the photograph on the previous page to connect the Battery to the Charge Controller with the Quick Connect cable.
 - ii. On the BlueTOAD Card (PCB), LED 7 should start flashing.
 - iii. In the presence of Bluetooth signals, confirm LEDs on the PCB operate as shown below.
 - iv. Close and fasten the Solar Cellular Enclosure.
- j. Go to Step 11, *Confirm Network Connectivity and Data Collection*.



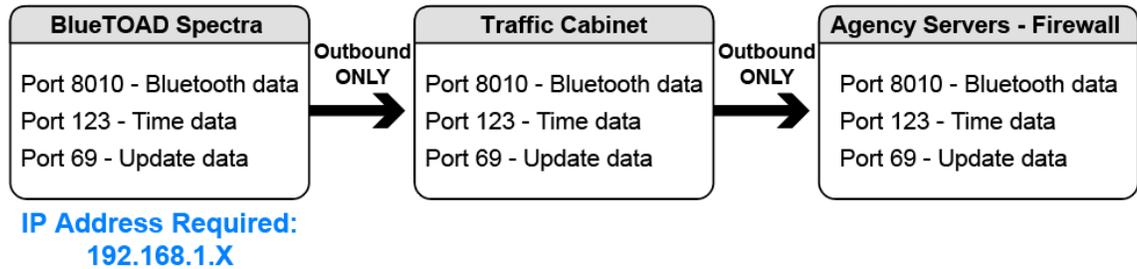
LED	Function	Color	@ Initial Startup	@ Normal State (takes up to 5 minutes)
7	Network Connection	Multi-color	White – Searching for Cell Green – Searching for GPS	OFF – Cell and GPS established
5	Bluetooth Detection	Multi-color	Blue – Discoverable Purple – Non-Discoverable	Blinks upon detection
4	Diagnostics Reporting	Red	OFF	Blinks – 1 x per 3 sec.
3	Connection Strength	Blue	OFF	Flash blue if > - 90 dbm (good) Solid blue if < - 90 dbm (poor)
2	Kernel Diagnostics	Green	OFF	Blinks – 1 x per 3 sec.

Test after you Mount a BlueTOAD Spectra PoE Detector to a Pole

10. Go to the procedure below (a or b) that is related to your Spectra PoE type of detector.

a. For a **Spectra Ethernet PoE**

- i. Plug the main CAT-5 cable from the PoE Injector (in the cabinet) into the PoE Splitter (in the Spectra enclosure), as shown in the drawing on Page 2-11.
- ii. Spectra detector should power ON.
- iii. Confirm all LEDs (on cabinet Ethernet switch, PoE Power supply or Ethernet port connections) are normal.
- iv. Ensure Network and Port configuration:



v. Go to Step 11, *Confirm Network Connectivity and Data Collection*.

b. For a **Spectra Ethernet Cellular PoE**:

- i. Plug the main CAT-5 cable from the PoE Injector (in the cabinet) into the PoE Splitter (in the Spectra enclosure), as shown in the drawing on Page 2-11.
- ii. The Spectra detector should power ON.
- iii. Confirm LED (on cabinet PoE Power supply) is normal.

Confirm Network Connectivity and Data Collection

11. Now that you have tested the LEDs, make sure that data is being received by the Iteris National Servers:

- a. Using a laptop, iPad or Android tablet with access to the Internet, launch Google Chrome or Microsoft Edge web browser.
- b. Log in to BlueARGUS (Iteris will provide login Username and Password before installation).

- c. BlueARGUS Login page: <https://bluetoad.trafficcast.com/>

- d. Enter Diagnostics URL to test that data collection is active and generate a diagnostics report: <https://bluetoad.trafficcast.com/diagnostics>
- e. Select BlueTOAD Device ID from the dropdown list.
- f. From Report Type dropdown list, select Heartbeat Information.
- g. From **Output Type** dropdown list, select **HTML**.

Bluetoad Diagnostics

– Generate Diagnostics Report

Please note all times are in GMT

Report Parameters

Device
1651800
Start Date
2019-01-28 00:00:00
End Date
2019-01-28 23:59:59
Type
hb

Device	Time	Latency	Volts	Temp	Status
1651800	2019-01-28 23:59:37	00:00:00	12.1	48°C	16
1651800	2019-01-28 23:58:40	00:00:01	12.1	48°C	15
1651800	2019-01-28 23:57:44	00:00:00	12.1	48°C	14
1651800	2019-01-28 23:56:47	00:00:02	12.1	48°C	13
1651800	2019-01-28 23:55:50	00:00:01	12.1	48°C	12
1651800	2019-01-28 23:54:54	00:00:01	12.1	48°C	11
1651800	2019-01-28 23:53:57	00:00:02	12.1	48°C	10
1651800	2019-01-28 23:53:01	00:00:00	12.1	48°C	9
1651800	2019-01-28 23:52:04	00:00:01	12.1	49°C	8
1651800	2019-01-28 23:51:07	00:00:01	12.1	49°C	7
1651800	2019-01-28 23:50:11	00:00:01	12.1	49°C	6
1651800	2019-01-28 23:49:14	00:00:01	12.1	49°C	5

- h. Select **Generate** to open the diagnostics report. BlueTOAD Spectra should start to collect data within 2-5 minutes after you enable power connections.

Troubleshooting

12. Troubleshooting BlueTOAD Spectra Connectivity

After the detector has started detecting Bluetooth signals, communicated the device ID number, and the LEDs are normal:

- a. Call the Iteris **Customer Support Number**, (608) 713-9299.
- b. Confirm from Iteris that the network is transmitting the data from this detector.
- c. Possible issues include:
 - Network Port settings are incorrect – confirm the settings with the Agency IT department (as above)
 - Ethernet switch port not active or communicating
 - BlueTOAD Spectra not powered – check PoE connections

Troubleshooting of Server Errors

Error Message	Possible Issues
NTP Server Error	Port 123 is not open NTP server address is not correct
BlueTOAD Server Error	Port 8010 is not open TCP protocol not allowed BlueTOAD server address is not correct
NTP Server Error – or – BlueTOAD Server Error	IP address is not correct Gateway address is not correct DNS address is not correct Port 53 for DNS is not open DSN UDP protocol not allowed EMAC address is blocked

Record Keeping

13. In the pre-installation process, Iteris adds each installed BlueTOAD detector to a list of detector locations within the BlueARGUS web-based reporting application (for your records, also keep a list of device ID, location, and installation date for each detector).

Note: For a helpful workbook to keep a record of information for each detector, go to <https://bluetoad.zendesk.com/hc/en-us/articles/360015177732-Preprogramming-installation-cheat-sheet>

In the middle left of the page, select **BlueTOAD Programming Cheat Sheet.xlsx**
At the bottom left of the Excel page, notice the **Pre Installation Sheet** and **Field Installation Check List** tabs.

Customer Support Number: (608) 713-9299

Iteris Support Website: <https://bluetoad.zendesk.com> (Iteris will schedule an installation appointment.)

Data and Device Management via BlueARGUS

14. Iteris Support will set up and configure Agency access to BlueARGUS data collection and management system.
- You can monitor each BlueTOAD detector using the web-based BlueARGUS software.
 - You will be given login credentials (Username and Password) before field installation, based on your predetermined Role (Administrator or User) when the Account was initially set up.
BlueARGUS Website: <https://bluetoad.trafficcast.com/>

On-Going Operations / On-Going Customer Support

15. Each Connected Vehicle system deployed will have access to the full suite of support resources available through the Iteris and BlueARGUS system management software:
- BlueARGUS On-Going Operations Website: <https://bluetoad.trafficcast.com>
 - Iteris Support Website: <https://trafficcast.zendesk.com/>
 - Iteris Support Number: 608-713-9299