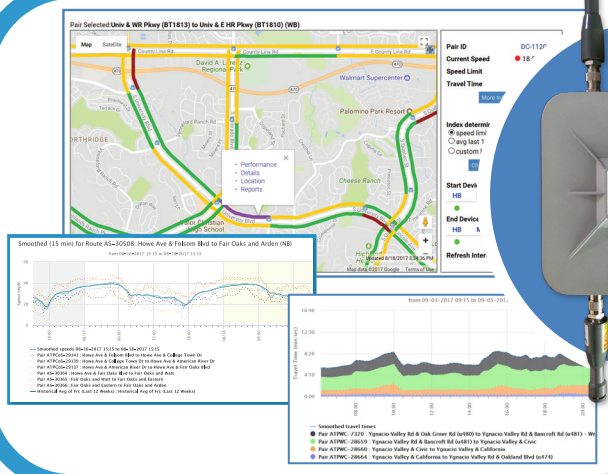
COMBINING...
the BlueTOAD Travel Time System



WITH...
Connected Vehicle Communications

BlueTOAD® Spectra RSU

BlueTOAD® Spectra™ DSRC Roadside Unit (RSU)

Connecting mobile devices and Connected Vehicles to TrafficCast's IoT data collection and analysis platform.

Providing an innovative approach to roadside sensor functionality, TrafficCast International, Inc. has **combined two wireless technologies, Bluetooth® (2.4 GHz) and Dedicated Short Range Communications (DSRC, 5.9 GHz)** installed within one roadside device. DSRC coupled with BlueTOAD Spectra real time and historical Bluetooth® device detection can help guide safety and mobility applications in Connected and Autonomous Vehicle (CAV) initiatives, while providing **synchronization with transportation agency Travel Time and Performance Measures objectives**.

TrafficCast has extensive experience working with transportation agencies and engineering services partners to install and maintain roadside technology and its very popular BlueARGUS™ web-based analytics software. By providing a **multi-purpose Vehicle-to-Infrastructure (V2I) roadside application platform,** TrafficCast products and services can be used as **the foundation to enable a variety of Connected Vehicle applications,** which include:

- Travel time and speed data collection, management and Performance Measures analytics
- Intelligent Signal Timing applications
- Transit Signal Priority and mobility efficiency
- Emergency Vehicle Priority and Preemption
- Freight Vehicle Priority
- Pedestrian & Bicycle mobility and safety

BlueARGUS is now optimized for travel-time and CAV data visualization using discoverable (unpaired) and non-discoverable (paired) Bluetooth detection along with Basic Safety Message (BSM) data aggregation and management. By implementing this integrated safety and mobility traffic monitoring system, city traffic departments, county, state, MPO's and engineering service providers can **now receive ROI on day one** for their adoption of Connected and Autonomous Vehicle initiatives.

The TrafficCast IoT Platform, enabled for today's safety and mobility monitoring systems!

BlueTOAD Spectra DSRC Roadside Unit

- Connected Vehicle Application-Ready: ships with SPaT/MAP translator, MMITSS-Ready!
- Spectra Dual-Radio (discover-able and non-discoverable) Bluetooth device detection.

TrafficCarma smartphone in-vehicle UI/UX Platform:

- SPaT & MAP Real-Time Status Display
- Real-time traffic (Travel Time / Incidents / Safety Notifications)
- User-Defined route management
- **Private-Label App** customized for your Agency and partners!

TRAFFICCAST®

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Madison, WI 53562

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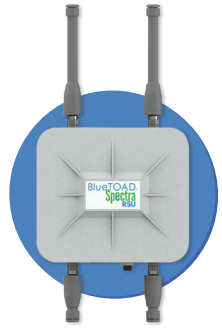
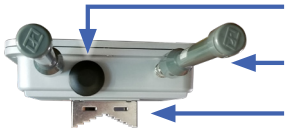
www.trafficcast.com/bluetoad.html

The TrafficCast IoT Platform, enabled for today's safety and mobility monitoring systems!

by TRAFFICAST BlueTOAD®



BlueTOAD® Spectra RSU

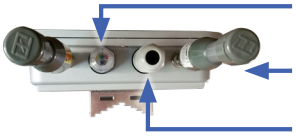


GNSS and LTE Antennas

DSRC 5.9 GHz Antennas

Universal Bracket Mount for Vertical or Horizontal Pole

TOP VIEW



Power and Status LEDs

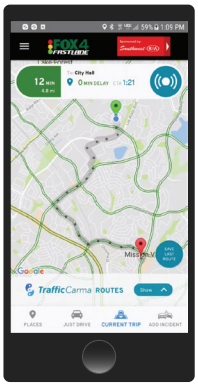
Bluetooth 2.4 GHz Antennas

PoE 48 VDC Connector

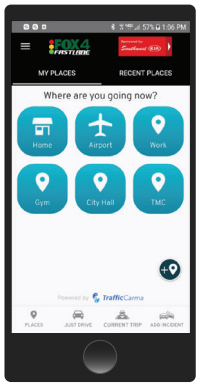
BOTTOM VIEW

TrafficCarma

SPaT Status CV App Display & Management



Location-Based Services: Travel Times, Incidents (in real time)



User-Defined Route Creation & Management

- TrafficCarma App available for iOS® or Android®!

BlueTOAD Spectra DSRC RSU (Bluetooth - 2.4 GHz and Dedicated Short Range Communications - 5.9 GHz)

Standards Compliance

DSRC Roadside Unit (RSU) Specifications Version 4.1
2016 SAE-J2735 specifications and SAE-J2945/1
IEEE 802.11p, 1609.3 (WSMP), 1609.4, 802.3at Standards
IEEE 1609.2, Draft ETSI EN 302 571 and ETSI EN 302 636 Security Standards

V2X Security

NIST/Brainpool ECC up to 384b
HSM with storage up to 610 keys

Power Specifications

Operating Voltage: 37-57 VDC
Power over Ethernet (PoE)
110/220 VAC supply to injector

Operating Range

-34 degrees C (-30 degrees F) to +74 degrees C (+165 degrees F)

Processor

ARMv7 32-bit Co-Processor
i.MX6 Processor
1GB DDR Memory
4GB Flash Onboard Storage
8GB Removable microSD Card
QNX Neutrino SDP 6.6 Operating System

Interface Options

PoE - Ethernet 10 BASE-T / 100 BASE-T
Static or DHCP IP Addressing
IPv6, IPv4
Dual antenna supports two modes:
1. Single-channel mode (2 antenna diversity operation)
2. Dual-channel mode (1 antenna per channel), 2 independent IEEE 802.11p radios operating on different radio channels.

IEEE 802.11p Class C (5 GHz band)
2.4 GHz Bluetooth Demodulator
Bluetooth Radio (adjustable) Transmit Power Range:
-90 dBm to +20 dBm
miniPCIe slot for optional LTE cellular radio interface

Antennae

2 - 2 dBi Omni (Bluetooth Discoverable and Non-Discoverable Detector)
2 - 8 dBi (5 GHz DSRC antennas)
Dual-Channel 5.x GHz RF paths (5.18 GHz to 5.93 GHz)
LNA active GNSS and LTE external antenna

Enclosure

Aluminum Die-Cast Enclosure
Dimensions: 10.7"x 9.7" x 3.5" Weight: < 7 lbs.