

Advanced Technology On Board Unit (On Board Unit) OBU



OBU Platform

The OBU is a modular telematics control unit (TCU) designed to support development of advanced vehicle safety and mobility features. Our company has built on the success of the Wireless Safety Unit product line to create a highly capable development platform bringing together the latest short-range and wide-area automotive communication technologies. Automotive grade components ensure reliable operation and our company provides excellent customer support for integration, customization, and testing.

- The OBU includes C-V2X and DSRC radios to enable V2X performance benchmarking and technology transition strategies, plus LTE & Wi-Fi/Bluetooth.
- Server configurations - OTA software and configuration update, log file upload, and integration with the Security Credential Management System (SCMS).

Quality & Stability

- Tier 1 supplier of OEM safety and communication products.
- 75 Years of success in the automotive market and will be able to support long term.

Security

- Uses the latest generation V2X hardware security module for tamper resistant key storage.
- V2X Hardware Security Module (HSM) (x2)
- 15-year key storage
- FIPS 140-2 Hardware Security Module

Features

- Modular design with plug-in daughter cards
- Supports US (IEEE, SAE) V2X protocols
- V2X Facilities Software (SAE protocols)
- V2X Services API (CAN, GNSS, V2X Radio)
- Quad-core ARM Automotive System On-Chip
- LPDDR4 SDRAM / NOR Flash
- eMMC / SD Card (Bootable)
- GNSS w/ multi-constellation support
- 4G LTE Modem
- 802.11ac Wi-Fi + Bluetooth 4.1 (Future capabilities)
- 2 Wire Ethernet / CANbus (x2)
- USB-C & USB Debug
- HDMI Output / Audio Output

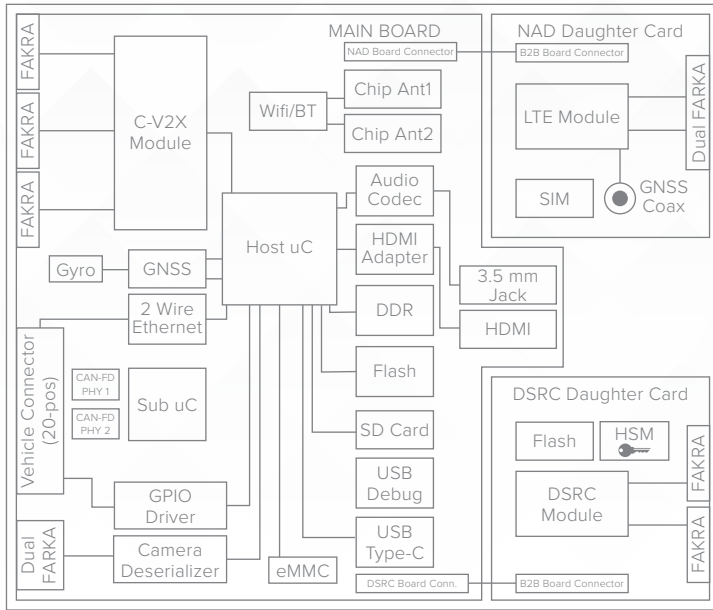
Applications

- V2X application suite
- Comprehensive list of CV applications (V2I, V2V, V2P) ready for customer deployment and integration
- Transit Signal Priority (TSP)
- Emergency Vehicle Preemption (EVP)
- Freight Signal Priority (FSP)
- Pedestrian Collision Warning (PCW)
- Red Light Violation Warning (RLVW)
- Intersection Movement Assist (IMA)
- Emergency Electronic Brake Lights (EEBL)
- Forward Collision Warning (FCW)
- Blind Spot /Lane Change Warning (BSW/LCW)
- Signal Countdown
- Wrong Way Driving

Traveler Information Message (TIM) based alerts:

- Speed Limit Advisory
- Wrong Way Remote Vehicle
- Curve Speed Warning
- Weather Advisories (e.g., freezing rain, thunderstorm, strong winds, hail)
- Road Condition Advisories (e.g., pothole, icy bridge, snow on road)
- Construction Advisories (e.g., road construction, lane closures, work-in-the-median)
- End of Queue Alerts

Hardware Architecture



V2X Standard Conformance

- IEEE 1609
- SAE J2735
- 3GPP R14 (PC5 C-V2X)
- SAE J2945/1
- SAE J3161/1

Frequency Band

- C-V2X/DSRC: 5.9GHz ITS
- WiFi/BT: 2.4GHz/5GHz
- LTE: 2/4/5/7/12/13/17/29
- GNSS: L1 C/A, L1OF, B1, B1I, E1/BC

Bandwidth

- C-V2X (20 MHz)/DSRC (10 Mhz)

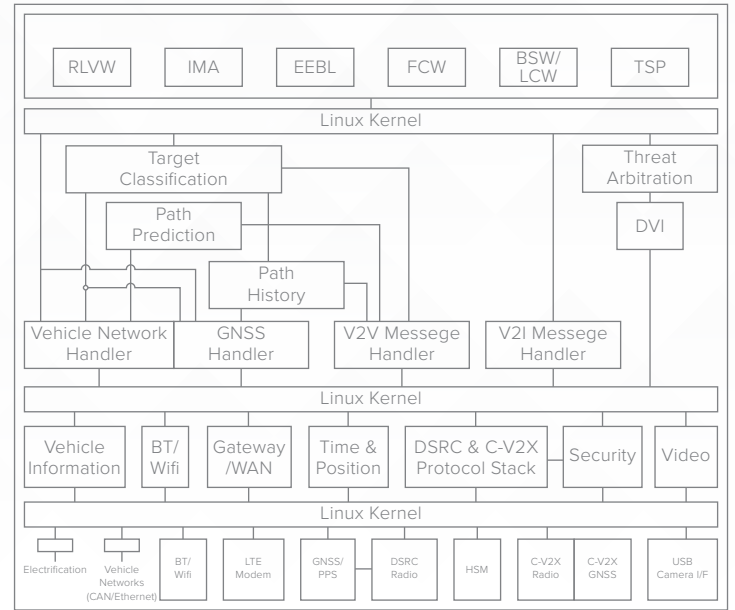
Data Rate

- DSRC: 3-27 Mbps (10MHz)
- WiFi/BT: 300Mbps/24Mbps
- LTE: 600Mbps DL/50Mbps UL

Antenna Diversity

- C-V2X: RX-MRC
- DSRC: TX-CDD, RX-MRC
- WiFi/BT: 2x2 MIMO
- LTE: 2x2 MIMO

Software Architecture



Max Transmit Power

- C-V2X/DSRC: +23dBm
- WiFi: +15dBm
- LTE: +23dBm

Receiver Sensitivity (w/ diversity)

- C-V2X: -96.5 dBm
- DSRC: -95dBm

GNSS

- 2.0m CEP (10Hz)

Operating Temperature Range

- LTE: -30°C to +70°C
- All other systems: -30°C - 85°C

Dimensions

- 160mm x 138mm x 50mm (W x D x H)

Power Supply

- 12V (< 22 Watts)

Vehicle Wire Harness

- Length 10 feet



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