



Cohda Wireless™

www.cohdawireless.com

MK5 V2X On Board Unit

Field-proven, market-ready reference design for complete V2X systems



Description

The 5th generation V2X system from Cohda Wireless, the MK5 OBU is a mature product, ready to be used in large scale field trials, after-market deployments, or serve as a reference design for automotive production. It is a small, low cost system, and incorporates dual IEEE 802.11 radios, a powerful processor running Cohda's V2X software stacks and applications, a GNSS positioning system providing lane-level accuracy, and optional V2X security with hardware acceleration and tamper-proof key storage.

The MK5 OBU leverages the automotive-grade RoadLink™ chipset developed by NXP/Cohda. It has unmatched radio performance in harsh outdoor, mobile environments – particularly in critical safety use-case scenarios for V2V, V2I, and V2P.

Use Cases

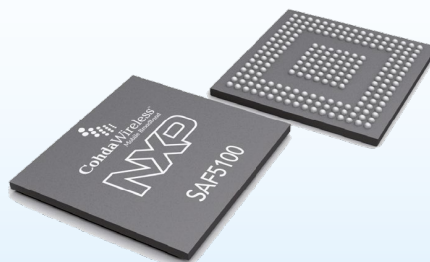
- Traffic signal priority for transit and emergency vehicles
- Situational awareness for mining safety
- Improved traffic flow and intersection safety for heavy vehicles
- Test beds and large scale V2X field operational trials
- Series-production design for the NXP/Cohda RoadLink™ chip set

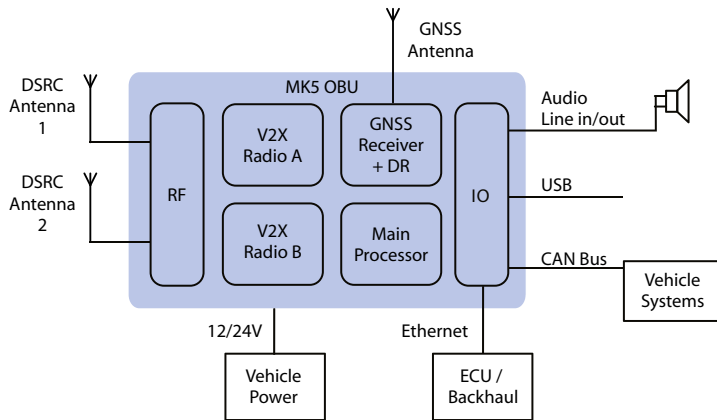
Features

- Small size & low cost
- Embedded processor with optional SDK
- Embedded GNSS with dead reckoning (optional)
- IEEE 802.11p Access Layer
- IEEE 1609 Network Layer software
- ETSI TC-ITS Network Layer software
- V2X Facilities Layer software
- V2X Applications Layer software
- Dual or single antenna operation
- Dual or single radio operation
- Outstanding performance under outdoor, mobile conditions
- Security co-processor with tamper-proof key storage (optional)
- USB 2.0 host and OTG interfaces
- CAN bus interfaces
- Ethernet interface
- Audio output
- MicroSD card slot
- 12V & 24V operation
- Expansion Card (optional)
2nd CAN, serial, SPI, I2C, HDMI, WiFi, Bluetooth, Cellular
- Available in NEMA2 OBU enclosure
- FCC ID: 2AEGPMK5OBU



RoadLINK





Functional Description

The MK5 V2X OBU is compliant with European and US vehicle-to-vehicle and vehicle-to-infrastructure standards. It is based on Cohda's own 802.11p Access Layer with best-in-world performance. It incorporates field-proven Network Layer, Facilities Layer, and Applications Layer software libraries developed by Cohda. The optional Software Development Kit allows users to develop their own applications and customize the system. The GNSS positioning system incorporates optional dead reckoning sensors and supports multiple satellite constellations simultaneously. An optional security co-processor provides hardware acceleration for message signing and tamper-proof private key storage.

The MK5 OBU has a powerful embedded multi-core 1GHz ARM Cortex-A9 processor running Linux 3.10.17 with USB 2.0, Ethernet, HDMI and CAN interfaces.

The use of a MK5 V2X OBU in V2V or V2I applications will result in performance improvements such as:

- Greatly improved range, particularly in Non-Line-of-Sight conditions
- Performance independent of vehicle speed or packet length
- Full transmit and receive diversity
- Tamper-proof storage of security keys (optional)
- Vehicle positioning with lane-level accuracy, even in challenging urban environments
- Best in class RF performance in multipath and mobility environment

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Specifications

Standard Conformance

- IEEE 802.11p - 2010
- IEEE 802.11an - 2012
- ETSI ES 202 663
- IEEE 1609 - 2010
- ARIB STD - T109 - 2012
- SAE J2735 - 2009

Bandwidth

- 10 MHz

Data Rates

- 3 - 27 Mbps

Operating System

- Linux 3.10.17

Antenna Diversity

- CDD Transmit Diversity
- MRC Receive Diversity

Receiver Sensitivity

- -100 dBm @ 3 Mbps

Environmental Operating Ranges

- -40°C to +85°C

Frequency Band

- 5 GHz

Max Tx Power

- +24 dBm (ETSI Mask C)

GNSS

- 1.5 m Best-In-Class Accuracy

Mobility & Multipath Tolerance

- Doppler Spread: 800 km/hr
- Delay Spread: 1500ns

Dimensions

- 130 x 120 x 35 mm

Power Supply

- 12/24V

Specifications subject to change without notice

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