C-ITS ROADSIDE UNIT (RSU)

FULL HYBRID C-ITS V2X PLATFORM FOR SECURE STANDARDIZED COMMUNICATION

OVERVIEW

Q-Free's industry-leading roadside unit (RSU) enables real-time broadcasting of traffic information to create a safer, more efficient, and environmentally friendly driving experience. The secure and durable RSU easily adapts to existing traffic infrastructure to enhance road safety and mobility.

Designed to meet the full needs of autonomous and connected vehicles, the C-ITS Roadside Unit can integrate and disseminate real-time information from a variety of ITS devices, including:

- Roadside controller with sensor/actuator interfaces
- Variable message signs (VMS)
- Advanced traffic signal controllers
- Parking systems

It's easy and quick to set up a full end-to-end application involving roadside stations, on-board units, and personal stations (smartphones) - all connected to central ITS stations running cloud services. The developer's toolkit includes ITS communications, ITS messaging, position and time, sensors, and test and maintenance.

The C-ITS RSU supports ISO-standard SPaT/MAP intersection messages and the full I2V 5.9 GHz protocol stack and message sets from ETSI, ISO and IEEE, including security.

BENEFITS

- Enable real-time broadcasting of traffic information from a variety of ITS devices
- Mount to existing traffic infrastructure with ease, such as atop a traffic signal or on a signpost adjacent to the roadway
- Rapidly develop new services with the wide variety of demonstration C-ITS applications and API
- Deploy and update services and applications remotely or locally
- Support the full I2V 5.9 GHz protocol stack

LOW INTEGRATION COSTS

REAL-TIME TRANSPORTATION DATA

SUPPORTED STANDARDS

Architecture	ISO 21217/ETSI 320 665
ETSI transport and networking	EN 302 636 series
ETSI security standards	TS 103 097/102 940 series
EU PKI	C-ITS Point of Contact (CPOC) Protocol
ETSI media access	ITS G5 series
IEEE	1609 series

ISO ITS STANDARDS

- ISO 21210 lower layer series for IPv6 networking
- ISO 24102 management series
- ISO 29281 ITS station series

ITS MESSAGES

- ETSI EN 102 637-2 Cooperative Awareness Basic Service (CAM)
- ETSI EN 302 637-3 Decentralized Environmental Notification Basic Service (DENM)
- ETSI TS 103 301 Facilities layer protocols and communication requirements for infrastructure services
- SAE J2735 DSRC Message Set Dictionary (BSM, TIM, PSM, SPAT, MAP, SRM, SSM)
- CEN ISO TS 19321 In-Vehicle Information (IVI)
- CEN ISO TS 19091 Signal Phase and Timing (SPAT), Maps (MAP), Single Request Message (SRM), Signal Status Message (SSM)

APPLICATION ENVIRONMENTS

- Linux native applications in C/C++ for real-time, I/O, and computing-intensive tasks
- Java-based OSGi environment for the most flexible and portable ITS applications

TECHNICAL SPECIFICATIONS

PRODUCT NUMBER

V2X RSU controller:	ITS801
V2X RSU antenna:	ITS802

HARDWARE SPECIFICATIONS

Wireless connectivity:	GSM/3G/LTE voice and internet, eSIM included, option for removable SIM
	IEEE 802.11p — two channels
	Wi-Fi AP or STA
	Bluetooth 5.1
Wired connectivity:	Gigabit Ethernet, RJ45
	USB-C
Power:	12-24 Volt DC, 20 Watts
Sensors:	Timing with GPS and GLONASS
Security:	Hardware security module
Main processor:	ARM® i.MX8, 4GB memory, 16GB flash drive
Enclosure:	Two piece design: Controller: 180 x 150 x 45 mm, IP41 Antenna: 110 x 75 x 30 mm, IP68

SOFTWARE SPECIFICATIONS

Operating system:	Linux, remote web management
Applications environment:	OSGi and Java, remote management
Communications and networking:	ETSI G5 and IEEE 802.11p
	ETSI GeoNetworking, IEEE 1609 WAVE
	IPv4/IPv6 and ITS Messaging

Controller unit, network connectors

Controller unit, power connector

Antenna unit

www.q-free.com | info@q-free.com