

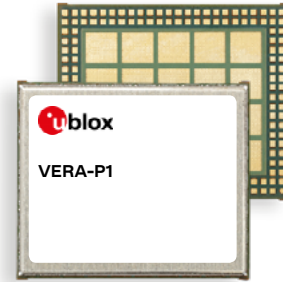
# VERA-P1 series



## DSRC 802.11p V2X host-based modules

### The most flexible and best performing V2X modules in the market

- Automotive grade 802.11p V2X transceiver modules for infrastructure and vehicles
- Compliance with WAVE and ETSI ITS G5 for US and Europe operation
- Product variants: Non-concurrent dual-channel with antenna diversity or concurrent dual-channel without antenna diversity
- Communication range of more than 1 km (with line-of-sight)
- Operational in ambient temperature -40 °C to +95 °C



24.8 × 29.6 × 3.5 mm



### Product description

The VERA-P1 series are compact, embedded transceiver modules that enable development of electronics for Vehicle-to-Everything (V2X) communication systems. These automotive grade modules are designed for applications such as traffic safety and intelligent traffic management. The modules can be used for both in-vehicle units (OBU – On Board Unit) and infrastructure (RSU – Road Side Unit). They provide superior performance compared to V2X systems based on consumer-grade Wi-Fi chipsets, especially at high vehicle speeds and in non-line-of-sight (NLOS) conditions.

The VERA-P1 series includes an integrated MAC/LLC/Baseband processor and the required RF front-end components. The module is connected to a host processor through a USB or SPI interface.

### Key features

- VERA-P1 is based on the RF chip that scored best RF performance in ETSI plug tests
- The pin-to-pin compatible product variants offer operation modes with single channel or concurrent dual-channel
- The transmit mask meets IEEE 802.11p Class C (5 GHz band) requirements
- Security acceleration is integrated in the module

### Product selector

Model	Radio	Interfaces	Power	Features	Grade
	802.11p Maximum output power Antenna type	USB 2.0 GPIO 1PPS SPI	Power supply: 3.3 V and 5.0 V	Antenna diversity Single channel operation Concurrent dual-channel operation	Standard Professional Automotive
<b>VERA-P173</b>	• 23 dBm 2p	• • • •	•	• •	•
<b>VERA-P174</b>	• 23 dBm 2p	• • • •	•	D • D	•

2p = Two antenna pins / D = Can be configured by the user as dual-channel or diversity



## Features

Standards conformance	IEEE 802.11p (IEEE 802.11-2016) ETSI ES 302 663 IEEE 1609.4 - 2016
Frequency band	5.9 GHz
Antenna	2 antenna pins for external 5 GHz antennas
Output power	0 to +23 dBm
Receiver sensitivity	-98 dBm @ 3 Mbps
Data rates	3 to 27 Mbps

## Software features

Operating modes	Non-concurrent dual-channel with antenna diversity Concurrent dual-channel without antenna diversity
Radio channel measurements	Channel utilization Channel active ratio Per-channel statistics Received signal and noise power levels

## Interfaces

Host interface	USB 2.0 (recommended) and SPI
Other interfaces	GPIO and 1PPS

## Package

Dimensions	24.8 x 29.6 x 3.5 mm
Pin-out	160 pins LCC (Leadless Chip Carrier)

## Environmental data, quality & reliability

Operating temperature	-40 °C to +95 °C
According to Baseband/radio AEC-Q100 and ISO 16750-4	

## Electrical data

Power supply	3.3 V and 5 V
Power consumption	4 W (max)

## Certifications and approvals

Europe (ETSI RED)	
US (FCC parts 90, 95L), Canada (ISED)	

## Support products

The VERA-P1 evaluation kit includes an evaluation board with full access to the module interfaces. The board has SMA connectors for connecting external antennas and two antennas.

EVK-VERA-P174	Evaluation kit for VERA-P1 modules
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## Product variants

VERA-P173	Module with single channel and diversity
VERA-P174	Module with single channel and diversity, or dual-channel

## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

For more product details and ordering information, see the [product data sheet](#).

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