

WaveBee Togo AV1024B

Mobile V2X Scenario Injector for Real-World Field Testing

Introduction

The WaveBee Togo, a mobile and self-sufficient solution for testing V2X functions in the field, is now part of Keysight's V2X product portfolio. In combination with the WaveBee Creator software for creating test cases, the system enables fast, easy, and reproducible execution of complex V2X test scenarios.

Automotive OEMs and manufacturers of traffic systems have to ensure the correct functioning of V2X-based applications: an ADAS/AD function in the vehicle, a signal request from an emergency vehicle at an intersection, or public transport prioritization.

Functional testing of V2X applications in a conventional way is costly, especially if several vehicles, infrastructure or even Vulnerable Road Users (VRUs) are to be involved in the test scenario. Vehicles and equipment such as traffic signals have to be on-site and equipped with V2X technology. Personnel are required to perform the test itself and reproducibility is not guaranteed. However, Keysight's WaveBee Togo can generate a real V2X network for the device under test, it can broadcast the V2X scenarios created by WaveBee Creator in a real map, which enables spatially and temporally valid regression tests. AV1024B is equipped with a Battery Management System (BMS) specifically designed for **non-EU markets**, aligning with regional requirements and usage conditions. For the **EU/UK/AU/NZ markets**, please choose the AV1024A.



Figure 1. WaveBee Togo AV1024B front photo

Five Features

- Rapid deployment field test system for V2X applications
- Environment generator (scenario-based) for simulation and generation of V2X messages from multiple C-ITS nodes (vehicles or RSUs)
- Multi-standard support (CSAE, ETSI, SAE)
- Hybrid communication DSRC and C-V2X
- Tests outstanding
- Battery Management System (BMS) specifically designed for non-EU customers

The WaveBee Togo replaces all real participants of the test scenario — no matter where the test is performed — with simulated V2X nodes. WaveBee Togo generates all V2X messages relevant for the test case at runtime and transmits them standard-compliant via the air interface.

The WaveBee Togo is the sophisticated solution for a consistent and efficient V2X test strategy for OEMs as well as for infrastructure manufacturers and road operators.

Typical areas of application

- V2X research and development
- Functional validation of series systems (e.g., V2X ECUs in vehicles)
- Generation of test cases during installation (e.g., of Roadside Units/C-ITS stations)
- Maintenance and operational safety (e.g., of traffic systems)
- Proving ground and test track equipment
- Simulation of congestion situations, intersections, gantries, VRUs, various types of vehicles, barrier trailers, trams, buses, emergency vehicles, and more

Technical Details



Figure 2. WaveBee Togo generates I2V messages for public transport



Figure 3. WaveBee Togo simulating vehicles for RSU testing at intersection

Communication Standard	ETSI, SAE, CSAE
Communication Technology	DSRC (IEEE 802.11p) C-V2X (PC-5 sidelink)
Power Supply	14.4 V Litium Ion battery (6800 mAh / 97.90Wh) Power supply:19V= 90W
Connectivity	Wireless LAN 2.4 GHz Cellular 3G/4G/5G
System	i.MX8M Quad CPU 2 GB RAM 16 GB eMMC Mass memory Hardware Security Module (eHSM)
Weight	5.8kg
Dimensions	320/110/325 mm (12.6/4.33/12.8 in.) (W/D/H)
Enclosure	Aluminum
Operating Temperature	-20°C to 60°C (-4°F to 140°F), max. 95% humidity
Protection	IP44

Ordering Configuration

Configure your WaveBee Togo AV1024B by choosing different V2X regional V2X standard software licenses.

Depending on your testing needs, you can choose one or multiple licenses to ensure compliance with the specific V2X standards required in your target markets.

Choose your Software Licenses

Product Models	Product Description
AV2029CNA	WaveBee Togo Configuration CN (C-SAE V2X standard)
AV2029EUA	WaveBee Togo Configuration EU (ETSI V2X standard))
AV2029USA	WaveBee Togo Configuration US (SAE V2X standard))

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