

WaveBee Carkit Software

HMI framework and SDK for V2X applications

The WaveBee Carkit Software is now part of Keysight's V2X product portfolio. As a universal retrofit solution for the development and testing of V2X based applications, the WaveBee Carkit Software enhances the WaveBee Plus On Board Unit with an open framework for visualization of V2X use cases. In addition, the WaveBee Carkit Software already offers a variety of ready-to-use Day 1 use cases for performing test drives, such as for the GLOSA, IVS, RWW, TJAW or EEBL functions. The sophisticated plug-and-play concept allows installation in the vehicle within a few minutes.

Additionally, user-defined V2X events can be triggered. The coding and sending of the corresponding messages is done automatically without the need for programming or V2X knowledge. The triggering of the events occurs either manually via the touchscreen or by means of defined geo positions, e.g., for regression tests or for testing public transport prioritization and emergency vehicle priority applications.

It is therefore used wherever fast and intuitive functional testing of C-ITS systems or V2X applications is required. For extended analysis tasks and conformance tests on expert level, a validation system on protocol level is available with the Keysight WaveBee Touch.



Figure 1. WaveBee Carkit software installed on a Window tablet

Five features

- Making V2X use cases tangible
- Verifying V2X functions
- Templatized prototyping
- Universal and reversible installation
- Modular future-proof plug-in concept

The optionally available Software Development Kit (SDK) provides the function developer with a powerful visualization framework for the development of new applications. It enables the fast prototypical realization of C-ITS services. The template-based designs, the broad support of relevant message types, as well as the extensive libraries provided (e.g., traffic or warning signs) reduce the rapid prototyping effort enormously.

Additionally, custom design templates can be created for visual design. For multimodal UI designs, the WaveBee CarKit Software supports individual acoustic outputs as well as text-to-speech.

Typical areas of application

- Functional validation of series systems (e.g., V2X ECUs in vehicles)
- Maintenance and operational safety (e.g., traffic systems)
- Reference system for visual verification of C-ITS services
- Rapid prototyping of V2X functions
- Making V2X easy to experience / communicate
- Test and proving ground



Figure 2. WaveBee Carkit: Showing EEBL use case (Day 1 Plugin EU)



Figure 3. WaveBee Carkit: Multi lane signal phases at intersection

Technical details

EU - basic functions	Icon plugin Ego vehicle plugin traffic light plugin Traffic sign plugin Sensor data plugin	Day 1 / Day X plugins and SDK optionally available
US - basic functions	Icon plugin Ego vehicle plugin Traffic light plugin	Day 1 / Day X plugins and SDK optionally available
CHN - basic functions	Icon plugin Ego vehicle plugin traffic light Plugin sensor data plugin	Day 1 / Day X plugins and SDK optionally available
Communication standard	ETSI SAE CSAE	
Hardware suggestion	i7+ RAM 16G+	
Supporting systems	Windows 10 and 11	
Communication technology	DSRC (IEEE 802.11p) C-V2X (PC-5 sidelink) (*Depending on WaveBee system used for broadcasting)	

Specifications are subject to change without notice due to product updates and future developments.

Ordering Configuration

Configure your WaveBee Carkit by choosing regional software and use case packs

Choose your software

Product models	Product description
AV2012CNA	WaveBee Carkit CN (C-SAE)
AV2012EUA	WaveBee Carkit EU (ETSI)
AV2012USA	WaveBee Carkit US (SAE)
AV2013CNA	WaveBee Carkit CN (C-SAE) use case pack
AV2013EUA	WaveBee Carkit EU (ETSI) use case pack
AV2013USA	WaveBee Carkit US (SAE) use case pack

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