

Keysight Technologies

Keysight EEsof EDA

Advanced Design System (ADS) Wireless Libraries

- W2366 Integrated Wireless Libraries Element
- W2363 Mature Wireless Libraries Element
- W2364 2G/3G Cellular Libraries Element
- W2365 Wireless Networking Libraries Element
- W2367 WiMedia Wireless Library Element
- W2368 3GPP-LTE Wireless Library Element
- W2369 WWAN Wireless Library Element

The Keysight Technologies, Inc. Wireless Libraries provide “Golden Reference” models and verification templates for the latest communication standards to the Advanced Design System (ADS). They are integrated into ADS, the only design simulation platform that enables the co-design of IC, package, and board in high-frequency and high-speed applications. ADS seamlessly integrates system, circuit, and full 3D electromagnetic simulation with Keysight’s test instrumentation, resulting in repeatable, first-pass electronic design success.

Keysight’s Wireless Libraries for ADS enable the earliest possible start for the design and verification of the RF-PHY for the latest emerging wireless standards such as 3GPP-LTE, WiMedia and VWAN. These wireless libraries contain comprehensive signal processing models and pre-configured simulation setups containing sources and demodulation that comply fully with the latest wireless specifications. The signal generation and demodulation algorithms are consistent with Keysight instrumentation to bring instrument-level compliance and accuracy into RF-PHY simulation and verification.

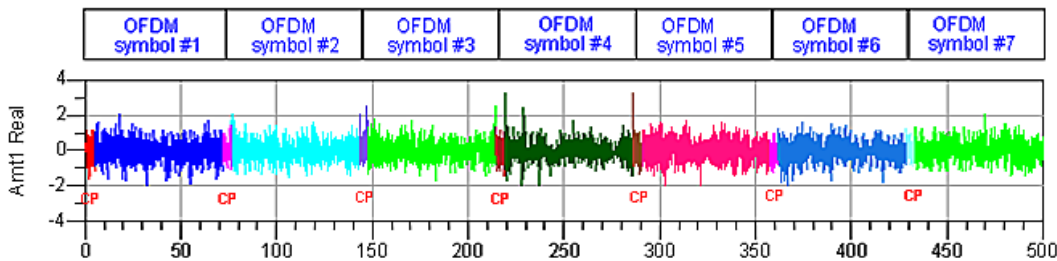
Because of Keysight’s active participation in the standards-setting committees and the company’s own critical need for test instrumentation design and development, Keysight’s wireless libraries for ADS are the industry’s first to emerge, alongside the latest communications standards.

Keysight’s Wireless Libraries for ADS enable “Connected Solutions” with Keysight instruments to generate and import actual waveforms for the verification of RF hardware designs such as RFIC, RF modules, or RF PC boards. Combining the baseband algorithmic accuracy of the wireless library models with actual RF/IF HW measurements accelerates integration and testing of high-performance RF-PHY subsystems. For example, designers can measure and optimize the EVM and ACLR of RF power amplifiers, transmitters, and receiver components for multi-mode, multi-band operations. No other available RF-PHY verification solution is as early, specification-compliant and easy to set up and use. System and RF component designers can take advantage of Wireless Libraries for ADS to save time and development costs and lower the risk of re-design spins in new wireless product development. A description of Wireless Libraries and collections of libraries follows.

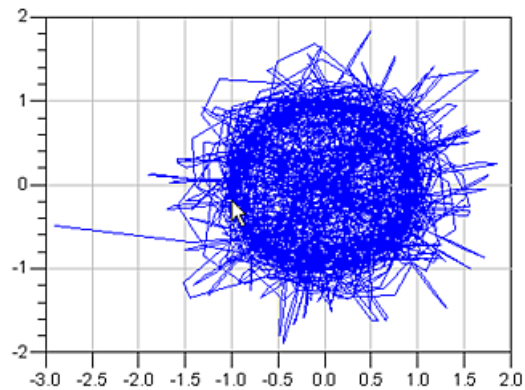
W2366 Integrated Wireless Libraries Element

The Integrated Wireless Libraries Element is a comprehensive collection of 15 Keysight wireless libraries covering all 2G/3G/3.9G cellular standards from GSM to 3GPP LTE; all wireless networking standards from WLAN to Mobile WiMAX and WiMedia and Digital TV standard (but not including VWAN, which is restricted to members of the Wireless HD consortium). It enables the design of the latest wireless cellular, networking and home entertainment product RF-PHY layer while maintaining backward compatibility with older standards for multi-mode, multi-band operation across the world. It is also useful for defense-aerospace applications such as designing systems for jamming and surveillance of all wireless signals. It provides the foundation reference for developing custom proprietary standards based on established technology for secure data and voice communication. Comprehensive descriptions of each of the standards are summarized in the wireless libraries table.

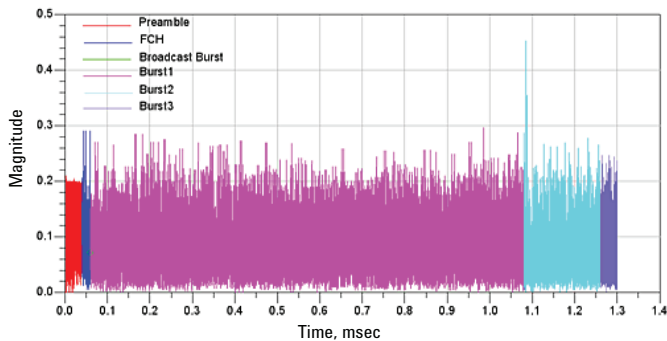
3GPP LTE DL OFDMA waveform
One slot (0.5 msec)



SCFDMA signal



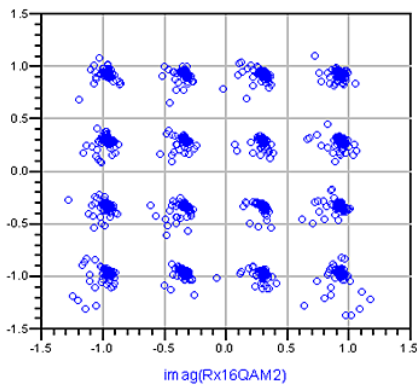
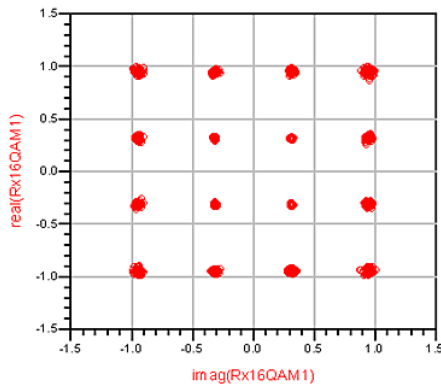
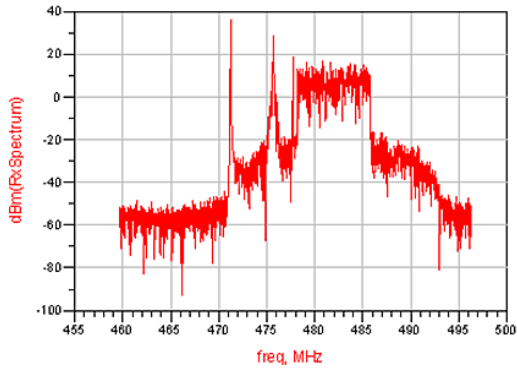
WiMax transmit waveform



The Integrated Wireless Library collection fully verifies RF physical layer component designs against all 2G, 3G and 4G cellular; wireless networking and DTV standards.

W2363 Mature Wireless Libraries Element

The Mature Wireless Libraries Element is a collection of older wireless standards for cellular and DTV applications. It enables the verification of the RF-PHY for backward compatibility with older standards for multi-mode, multi-band operations; and development of custom proprietary standards for secure communication derived from established technologies as references. It enables simulation interference from multiple cellular and networking signals on communication system performance. Comprehensive descriptions of each of the standards are summarized in the wireless libraries table.

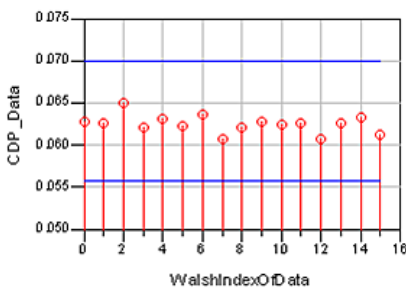
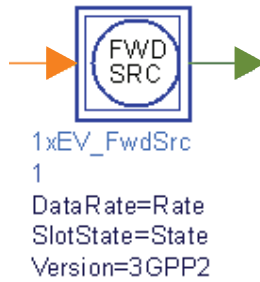
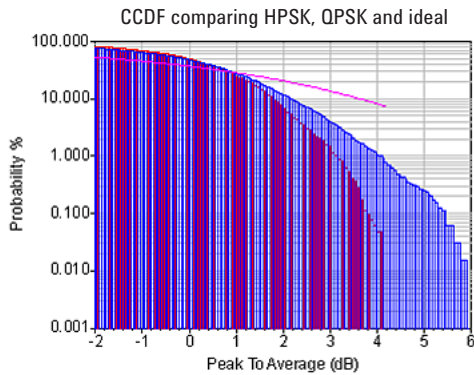


DTV_QAM64Coder
D2
Alpha=1

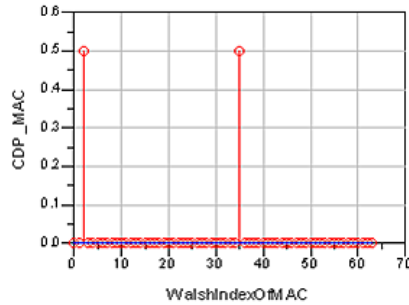
The Mature Wireless Library collection fully verifies RF physical layer component designs against established 2G, 3G, WLAN and DTV wireless standards.

W2364 2G/3G Cellular Libraries Element

The 2G/3G Cellular Libraries Element is a collection of 2G and newer 3G cellular (but not including 3GPP LTE) wireless standards for the development of the RF-PHY of multi-mode and multi-band cellular equipment; or to verify effects of interference from competing cellular signals on single-mode equipment. Comprehensive descriptions of each of the standards are summarized in the wireless libraries table.



Traffic or control channel



MAC channel

2G/3G Cellular Wireless Library Collection fully verifies RF physical layer component designs against all existing 2G and 3G cellular wireless standards.

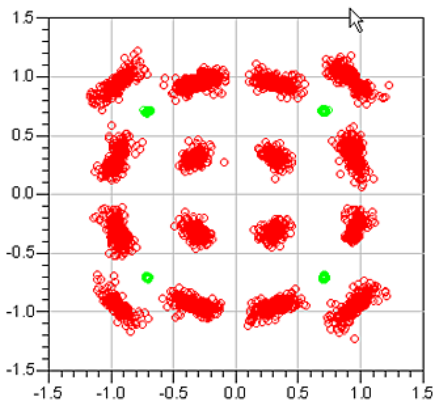
W2365 Wireless Networking Libraries Element

The Wireless Networking Libraries Element is a collection of wireless networking standards from WLAN to Mobile WiMAX (but not including WiMedia) for the development of RF-PHY wireless networking equipment that is compatible with multiple available signals. The libraries are also used to verify effects of heterogeneous networking signal interference. Comprehensive descriptions of each of the standards are summarized in the wireless libraries table.

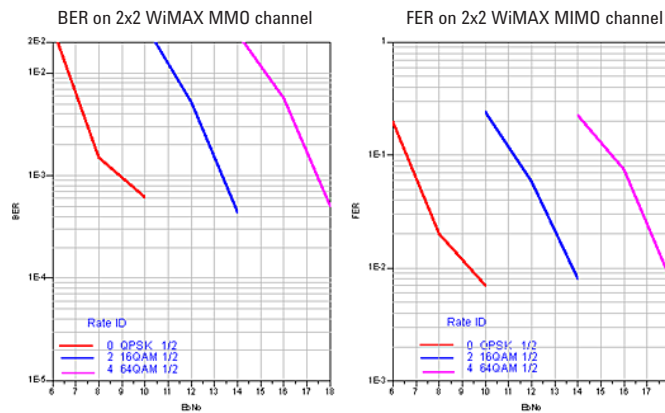
EVM (or RCE)

Avg_RCE_dB	...g_RCE_rms_percent
-33.818	2.037

Constellation



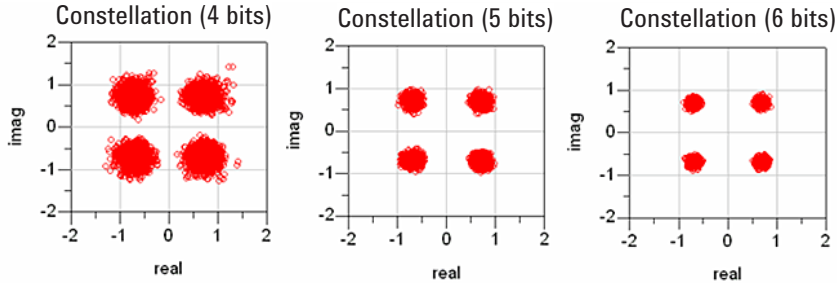
Uplink BER and FER on 2x2 WiMAX MIMO channel



Wireless Networking Library Collection fully verifies RF physical layer component designs against all WLAN and WiMax wireless standards.

W2367 WiMedia Wireless Library Element

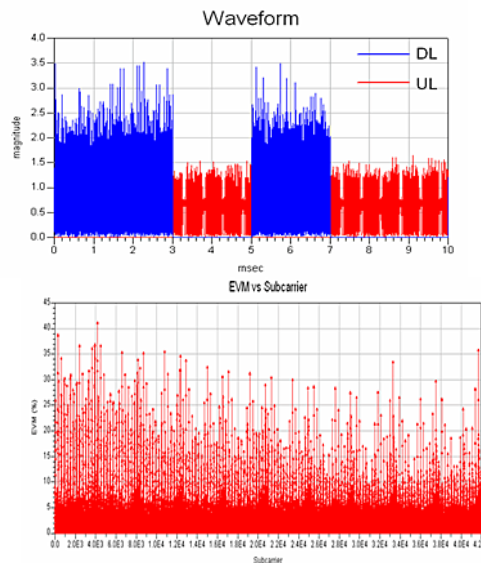
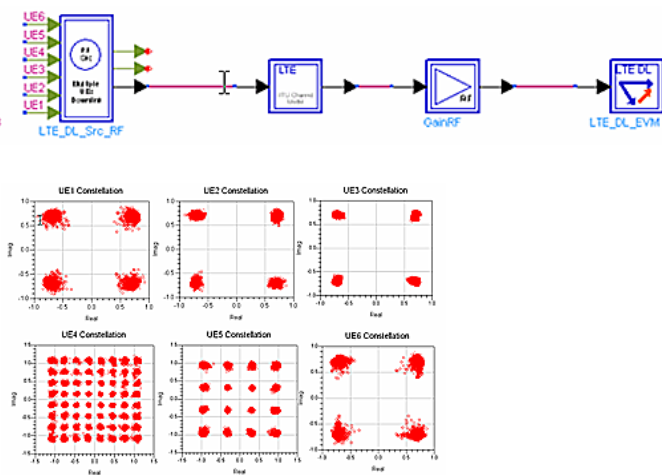
The WiMedia Wireless Library Element provides the full RF-PHY verification for the Ultra Wideband (UWB) WiMedia wireless personal area network (PAN) that delivers high-speed (>480 Mbps), low-power multimedia capabilities for PC, consumer electronics, mobile, automotive and military applications. This wireless library provides the “Golden Standard” signal processing models and preconfigured simulation for Keysight’s ADS software to verify the RF components of the physical layer for compliance against the WiMedia UWB specifications. More details can be found in the wireless libraries table.



The WiMedia Wireless Test Bench fully verifies RF physical layer component designs against the latest WiMedia ultra-wideband (UWB) standards.

W2368 3GPP-LTE Wireless Library Element

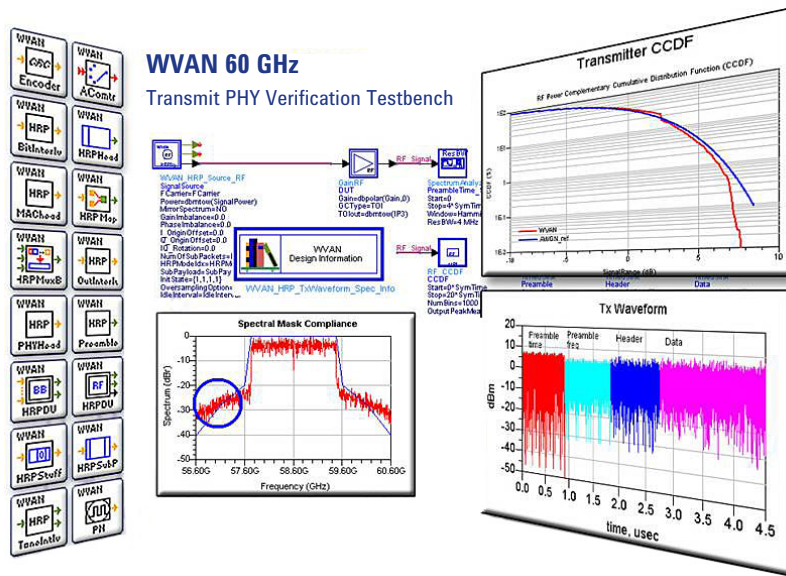
The W2368 3GPP-LTE Wireless Library Element provides the full RF-PHY verification for the latest 3GPP Long Term Evolution (LTE) cellular standard. LTE encompasses high-speed data, high-capacity voice and multi-media broadcast services. This wireless library provides the “Golden Standard” signal processing models and preconfigured simulation for Keysight’s Advanced Design System (ADS) EDA software to verify the RF components of the physical layer for compliance against the 3GPP LTE standards. More details can be found in the wireless libraries table.



The LTE Wireless Test Bench verifies RF physical layer component designs with instrument-grade accuracy against full LTE specifications.

W2369 WVAN Wireless Library Element

The WVAN Wireless Library Element is licensed for use only by Promoter/Adopter member of the WirelessHD consortium. It provides preconfigured simulation setups, signal sources, receiver models and TX/RX analysis for verification of wireless video network (WVAN) physical layer (PHY) designs. WVAN is a wireless networking standard for the connection of consumer electronics (CE) high definition video and audio devices. It works with the Keysight Ptolemy simulator W2361 within the Keysight ADS co-design EDA platform to enable the design, verification and optimization of RF and baseband components within the WVAN PHY. More details can be found in the wireless libraries table.



The WVAN Wireless Test Bench verifies RF physical layer component designs against the latest wireless high-definition (HD) specifications.

Advanced Design System (ADS) Wireless Libraries Table

Wireless Library	Mature Wireless Libraries Element	2G/3G Cellular Libraries Element	Wireless Networking Libraries Element	Integrated Wireless Libraries Element	Wimedia Wireless Library Element	3GPP-LTE Wireless Library Element	WVAN Wireless Library Element
	W2363	W2364	W2365	W2366	W2367	W2368	W2369
CDMA	•	•		•			
GSM	•	•		•			
Digital TV (DTV)	•			•			
Mobile WiMAX			•	•			
Fixed WiMAX			•	•			
802.11n			•	•			
TD-SCDMA	•	•		•			
Wireless LAN (WLAN)	•		•	•			
3GPP FDD W-CDMA	•	•		•			
CDMA2000	•	•		•			
CDMA 1xEV	•	•		•			
EDGE	•	•		•			
HSPA		•		•			
WiMedia				•	•		
3GPP LTE				•		•	
WVAN							•

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