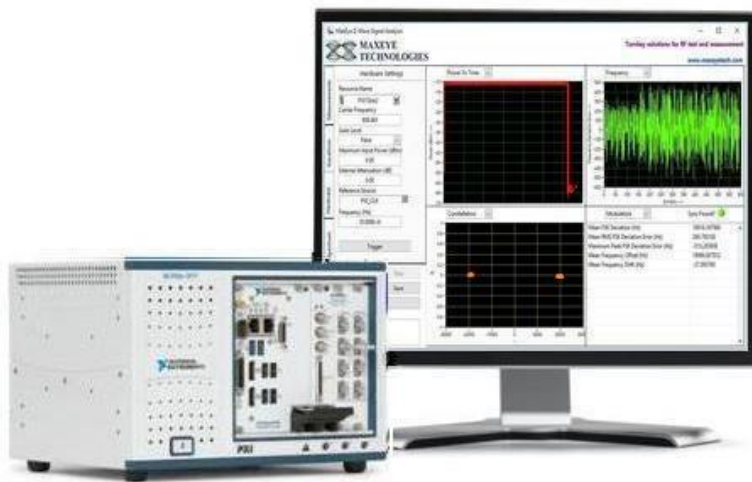


## Z-Wave RF Test and Measurement



Z-Wave is a low-power, low-cost wireless technology enabling consumer-grade products with networked features. Examples include remote controlled light dimmers, networked temperature sensors, electronic door locks and AV systems. MaxEye Technologies provides the signal generation and analysis tools using National Instruments Vector Signal Generators/Analyzers or Vector Signal Transceiver to test the physical layer and RF front end of the Z-Wave devices.

### MaxEye Z-Wave Measurement Suite

The Z-Wave measurement suite supports generating and analyzing the signal as per the ITU-T G.9959 standard MAC and PHY protocol.

- i. 9.6 kbps
- ii. 40 kbps
- iii. 100 kbps

The standard defines different modulation types, data rates and frequency separation.

Data Rate	Bit Rate	Symbol Rate	Modulation Type	Coding	Frequency Offset	Separation
R1	9.6 kbps	19.2 kbaud	FSK	Manchester	20 kHz	40kHz $\pm$ 20%
R2	40 kbps	40 kbaud	FSK	NRZ	0 kHz	40kHz $\pm$ 20%
R3	100 kbps	100 kbaud	GFSK, BT=0.6	NRZ	0 kHz	58kHz $\pm$ 20%

## Key Features - Generation

- Supports both MAC and PHY Layer signal configuration
- Generation of various frame formats including Singlecast Frame, Multicast Frame, Acknowledgement Frame, etc.
- Payload Types: PN Sequence, User Defined Bits, Test Pattern and From File
- Generation of multiple frames with user configurable inter frame spacing. The payload is continuous across frames. This enables receiver sensitivity tests with longer payload sequence.
- Impairments : AWGN, IQ Impairments (Gain Imbalance, Quadrature Skew and IQ offset), Frequency Offset and Clock Offset

## Key Features - Analysis

- Mean FSK Deviation (Hz), Mean RMS FSK Deviation Error (Hz), Maximum Peak FSK Deviation Error (Hz)
- Mean Frequency Offset (Hz), Mean Frequency Drift (Hz)
- Transmit Power, Spectral Emission Mask and offset channel power measurements
- Multiple Frame Decoding, Demodulated Bits , Physical Layer Payload bits (PPDU), MAC Payload Bits (MPDU)
- Packet Error Rate Measurement (PER)
- Supported Traces
  - Constellation Trace, FSK Deviation Error Trace, I Vs Time Trace, Q Vs Time Trace, Power vs Time Trace, Spectral Emission Mask Trace

## Applications

- Z-Wave Manufacturing Test
- Z-Wave RF and Physical Layer Testing
- Design and Validation

## Contact Information

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