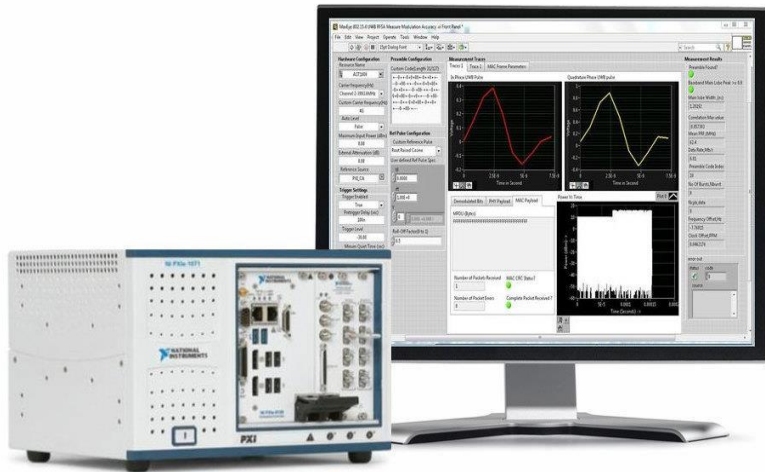


## IEEE 802.15.4 UWB RF Test and Measurement



IEEE 802.15.4 UWB is a high-level communication protocol used to create personal area networks built from small, low-power digital radios. It supports three independent bands of operation such as Sub-gigahertz (249.6 -749.6 MHz), Low band (3.1- 4.8 GHz) and high band (6 GHz to 10.6GHz). **MAXEYE Technologies** provides generation and analysis functions in LabVIEW for generating and analysing the IEEE 802.15.4 UWB standard compliant signals using **National Instruments** Vector Signal Generators (NI VSG) and Vector Signal Analysers (NI VSA) or Vector Signal Transceivers (NI VST).

### MaxEye IEEE 802.15.4 UWB Measurement Suite

The current version of the toolkit supports HRP UWB physical layer mode. The standard defines BPM BPSK modulation scheme with different data rates based on the Channel number.

Channel Number	Peak PRF MHz	Bandwidth MHz	Preamble Code Length	Modulation & Coding			Data Symbol Structure						Data		
				Viterbi Rate	RS Rate	Overall FEC Rate	#Burst Positions per Symbol $N_{burst}$	Hop Bursts $N_{hop}$	Chips Per Burst $N_{cpb}$	Chips Per Symbol	Burst Duration $T_{burst}$ (ns)	Symbol Duration $T_{dsym}$ (ns)	Symbol Rate (MHz)	Bit Rate Mb/s	Mean PRF (MHz)
{0:3, 5:6, 8:10, 12:14}	499.2	499.2	31	0.5	0.87	0.44	32	8	128	4096	256.41	8205.13	0.12	0.11	15.60
	499.2	499.2	31	0.5	0.87	0.44	32	8	16	512	32.05	1025.64	0.98	0.85	15.60
	499.2	499.2	31	0.5	0.87	0.44	32	8	2	64	4.01	128.21	7.80	6.81	15.60
	499.2	499.2	31	1	0.87	0.87	32	8	1	32	2.00	64.10	15.60	27.24	15.60
{0:3, 5:6, 8:10, 12:14}	499.2	499.2	31	0.5	0.87	0.44	128	32	32	4096	64.10	8205.13	0.12	0.11	3.90
	499.2	499.2	31	0.5	0.87	0.44	128	32	4	512	8.01	1025.64	0.98	0.85	3.90
	499.2	499.2	31	0.5	0.87	0.44	128	32	2	256	4.01	512.82	1.95	1.70	3.90
	499.2	499.2	31	1	0.87	0.87	128	32	1	128	2.00	256.41	3.90	6.81	3.90
{0:3, 5:6, 8:10, 12:14}	499.2	499.2	127	0.5	0.87	0.44	8	2	512	4096	1025.64	8205.13	0.12	0.11	62.40
	499.2	499.2	127	0.5	0.87	0.44	8	2	64	512	128.21	1025.64	0.98	0.85	62.40
	499.2	499.2	127	0.5	0.87	0.44	8	2	8	64	16.03	128.21	7.80	6.81	62.40
	499.2	499.2	127	0.5	0.87	0.44	8	2	2	16	4.01	32.05	31.20	27.24	62.40

## **KEY FEATURES - GENERATION**

- Supports both MAC and PHY layer signal configuration
- Generation of various frame formats including Data Frame, Beacon Frame, Acknowledgement Frame and MAC Command Frame
- 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**

- ♦ Correlation Main lobe width Measurement, Maximum Correlation magnitude
- ♦ Frequency Offset, Clock offset
- ♦ Mean PRF Measurement, Bit rate measurement
- ♦ Demodulated Bits ,Physical Layer Payload bits (PPDU),MAC Payload Bits (MPDU)
- ♦ Packet Error Rate Measurement (PER)
- ♦ Supported Traces
  - Baseband Impulse Response Trace, Reference Pulse Trace, Measured I vs Time and Q vs Time, Power Vs Time

## **APPLICATIONS**

- IEEE 802.15.4 UWB Manufacturing Test
- IEEE 802.15.4 UWB RF and Physical Layer Testing
- Design and Validation

## **Contact Information**

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