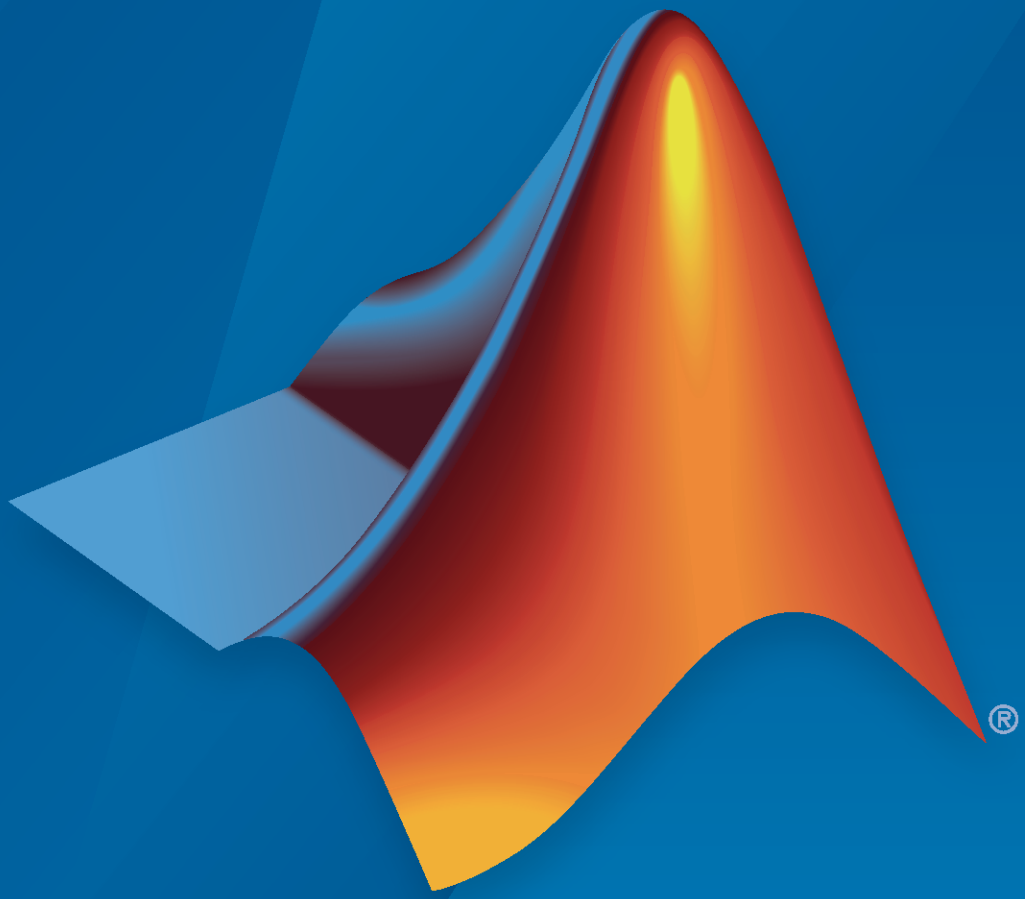
Wireless Testbench™ Release Notes



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R2023a

Version: 1.2

New Features

Bug Fixes

Compatibility Considerations

Support for NI USRP X410 radios

The Wireless Testbench™ Support Package for NI™ USRP™ Radios now provides support for USRP X410 radios. To configure these radios for use in Wireless Testbench, you must install the support package. For more information, see “Install Support Package for NI USRP Radios”.

Capture wideband spectrum by combining data from multiple antennas

The “Capture Wideband Spectrum by Combining Data from Multiple Antennas” example shows how to capture and plot a wideband spectrum by combining received data from multiple antennas.

Wideband spectrum analysis

The “Wideband Spectrum Analysis” example shows how to capture a wideband signal and analyze the captured data with the **Signal Analyzer** app.

Calibrate radio gain for signal capture

The “Calibrate Radio Gain For Signal Capture” example shows how to configure the front-end radio gain of your SDR hardware for your local environment.

Save captured signal with metadata to baseband file

The “Save Captured Signal with Metadata to Baseband File” example shows how to capture a signal from the air and save the captured signal to a baseband file with metadata that includes a custom label.

Functionality being removed or changed

Preamble detection updates

- The valid length of the preamble sequence specified by the `Preamble` property of the `preambleDetector` object has changed. The preamble sequence now must be a vector of length between 4 and 1024. In previous releases, the maximum sequence length is limited by the master clock rate that the object automatically selects for the radio based on the sample rate.
- The vector elements of the preamble sequence are now in the range [–1, 1]. In previous releases, you cannot set the vector elements of the preamble sequence to `1`.

R2022b

Version: 1.1

New Features

Bug Fixes

Transmission with Wireless Waveform Generator app

The **Wireless Waveform Generator** app now integrates Wireless Testbench capabilities that enable you to transmit generated waveforms over the air using your radio. For an example, see Transmit App-Generated Wireless Waveform Using Radio Transmitters.

Support for NI USRP X310 UBX 160 radios

The Wireless Testbench Support Package for NI USRP Radios now provides support for radios that consists of a USRP X310 board and a UBX 160 daughterboard.

To configure these radios for use in Wireless Testbench, you must install the support package. For more information, see Install Support Package for NI USRP Radios.

R2022a

Version: 1.0

New Features

Introducing Wireless Testbench

Wireless Testbench provides reference applications that are ready to run on off-the-shelf software-defined radio (SDR) hardware such as USRP using over-the-air signals for high-speed data transmit, capture, and spectrum monitoring.

Using MATLAB® command line instructions, you can connect to supported SDR hardware, configure and execute prebuilt FPGA bitstreams as reference applications, and perform real-time measurements.

Using the configurable preamble detector, you can define a trigger to capture only the signal of interest for offline analysis in MATLAB.

Support for NI USRP radios

The Wireless Testbench Support Package for NI USRP Radios provides support for these USRP Networked Series radios.

- USRP N310
- USRP N320
- USRP N321

To configure these radios for use in Wireless Testbench, you must install the support package. For more information, see Install Support Package for NI USRP Radios and Connect and Set Up NI USRP Radios.

Transmit and capture IQ data over the air for use in simulation, testing, and validation

The objects listed in this table are reference applications that enable you to configure your radio for high-speed data capture and transmit. You can use the captured data to analyze, simulate, test, and validate wireless systems.

Object	Description	Related Example
`basebandReceiver`	Configure SDR as baseband receiver	The Capture from Frequency Band and Capture from Frequency Band with Multiple Antennas examples show how to capture IQ data from the air by using the `basebandReceiver` object.
`basebandTransceiver`	Configure SDR as baseband transceiver	The Loopback Transmit and Capture example shows how to transmit and capture a custom wireless waveform over the air by using the `basebandTransceiver` object.

Object	Description	Related Example
`basebandTransmitter`	Configure SDR as baseband transmitter	The Transmit Waveform example shows how to transmit a custom wireless waveform to the air by using the `basebandTransmitter` object.

Triggered data capture from the air using preamble detection

The `preambleDetector` object is a reference application that enables you to configure your radio to detect and capture a signal of interest from the air using preamble detection. You can specify standard-based or custom waveforms for detection by using a programmable FIR filter.

- The Triggered Capture Using Preamble Detection example shows how to use the `preambleDetector` object to calibrate the thresholding and triggering operation of a triggered capture.
- The Triggered WLAN Waveform Capture Using Preamble Detection example shows how to use the `preambleDetector` object to capture a WLAN waveform from the air by detecting the legacy long training field (L-LTF).

OFDM WiFi scanner using preamble detection

The OFDM WiFi Scanner Using SDR Preamble Detection example shows how to capture OFDM packets from the air and how to retrieve information about WLAN networks by decoding the captured OFDM packets.

Model triggered data capture in Simulink without a radio

The Simulate Triggered Capture Using Preamble Detection example shows how to model triggered data capture without a connected radio using a Simulink® model.