octoScope

## Product Description

octoFade-WiFi Channel Modeling Software

octoFade-WiFi is a software based 802.11n/ac channel emulator that operates on an input file with IQ samples and produces an output file of IQ samples. octoFade software runs on Linux and Windows PCs and is controllable via an API (applications programming interface).

With the ability to loop on a single Wi-Fi packet to generate an output waveform of arbitrary length, octoFade can be used to create a library of test waveforms that are subject to multipath and Doppler fading per the standard 802.11n/ac channel models and other impairments including AWGN (average white Gaussian noise), spurious, phase noise, IQ imbalance and frequency shift.
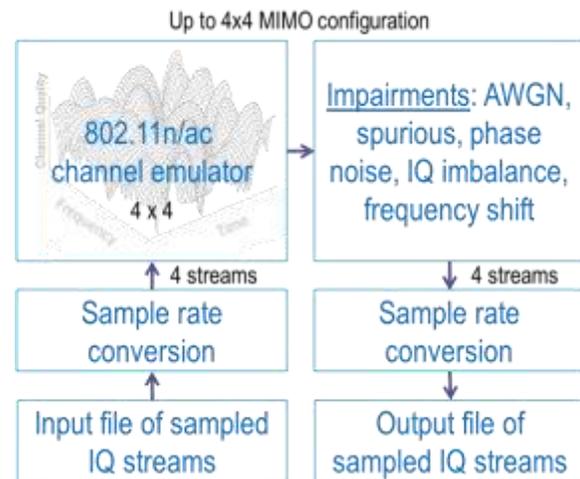
octoFade software block diagram

Features

- Operates on binary files of sampled IQ streams
- Produces output files for 'playing' on off-the-the shelf RF test equipment (e.g. VSG)
- Supports 802.11n/ac models A-F, Identity Matrix and Butler Matrix
- Supports the following channel impairments: SNR, frequency shift, phase noise, IQ imbalance and spurious
- Allows creation of waveform libraries for thorough testing of radio receivers
- Supports automation using Linux API

Applications

- R&D and QA testing of 802.11n/ac and other radios using up to 4x4 MIMO and up to 40 MHz wide channels
- Ability to re-use general purpose VSA/VSG (vector signal analyzer/generator) instrumentation for channel emulation

Supported RF Instrumentation

- Will run on National Instruments hardware
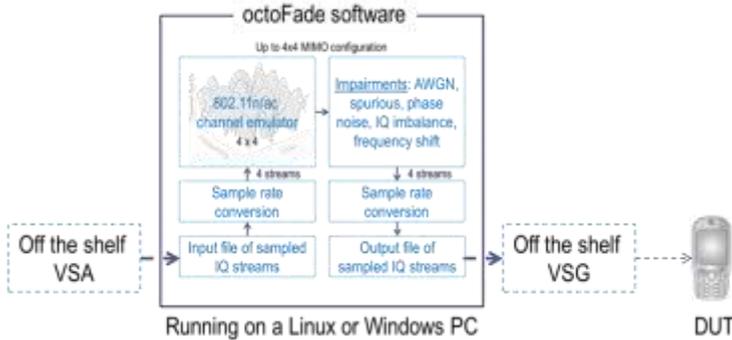- Support for other instruments can be provided

octoScope, Inc.
www.octoscope.com
Email: sales@octoscope.com
Phone: +1.978-222-3114

Visit the octoFade website

octoFade-WiFi Software Specifications

octoFade software comes with a set of pre-generated 802.11n/ac packets in the form of IQ sample files. The provided files include 1, 2, 3 and 4 stream transmissions and also tones.

Use these supplied waveforms or captures from off-the-shelf test equipment, such as a VSA (vector signal analyzer), as inputs to octoFade for creating a library of test waveforms. Output waveforms can have 1 to 4 streams, selected sampling rate and arbitrary length.

Output waveforms are created from input waveforms by applying selected 802.11n/ac channel models and other impairments. Output waveforms and can be 'played' using a VSG (vector signal generator) to thoroughly test the DUT receiver under a variety of emulated conditions.

The supported models and impairments are as follows:

802.11n/ac channel model		Distance to 1st wall (avg)	# taps	Delay spread (rms)	Max delay
A*	test model		1	0 ns	0 ns
B	Residential	5 m	9	15 ns	80 ns
C	small office	5 m	14	30 ns	200 ns
D	typical office	10 m	18	50 ns	390 ns
E	large office	20 m	18	100 ns	730 ns
F	large space (indoor or outdoor)	30 m	18	150 ns	1050 ns

Impairments
AWGN
Phase offset
Frequency offset
Spurious
IQ imbalance

You can either process the input file once or elect to loop through the input file multiple times to generate the required 'play time' of the output waveform. Fading sequences are non-repeating by default, but can be generated using the same seed to create repeatable and deterministic fading for testing.

Control, automation and configuration of octoFade is done via a Linux API (application programming interface).