



CAL-BAY SYSTEMS

Solutions for Test, Measurement & Automation

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CALBAY.COM



Multi Channel Phase Coherent

RF Record &
Playback
System

*Revolutionizing the way engineers
model and test RF systems*

Multi Channel Phase Coherent RF Record and Playback System leads a new class of cutting-edge RF instrumentation. This new instrumentation class is poised to revolutionize the way engineers model and test complex RF systems.

OVERVIEW - Our Platform

Traditional RF signal generators excel at creating pristine RF signals, often with complex analog and digital modulation applied. Unfortunately, these “perfect” signals do not model imperfect real-world signals, which are nearly always degraded by multipath echoes, impulse noise, intermodulation effects and a host of other impairments that result from the complex and time-variant nature of RF propagation in the real world.

Similarly, traditional RF spectrum and vector signal analyzers excel at measuring the power, dynamic range and spectral content of RF signals. Some analyzers may even provide a modulation quality metric. Unfortunately, traditional analyzers provide little quantitative insight into an RF signal’s multipath impairments, one of the most important factors affecting RF signal receivability in the VHF, UHF and microwave bands.

Multi Channel Phase Coherent RF Record and Playback System is designed to break through these frustrating limitations imposed by traditional RF signal generators and analyzers. Our platform makes it possible to record (or “capture”) an RF signal in the real world, in real-time, for hours on end. These recordings can then be played back in a controlled laboratory environment, accurately reproducing complex time-variant field conditions in a highly repeatable and controlled laboratory environment.

APPLICATIONS

Design and Development

Capture RF signals with complex and dynamic multipath impairments and fades during field tests. Stress-test receivers in a repeatable and controlled laboratory environment using known, difficult signal recordings from the field.

Capture transient error events in the field; investigate the cause and nature of these events in a repeatable lab environment.

Evaluate and compare demodulation chips and algorithms from competing vendors, using libraries of challenging RF signals recorded in the field.

Build an in-house library of RF signal recordings that can be used as a basis for demodulation algorithm development and regression testing.

R&D

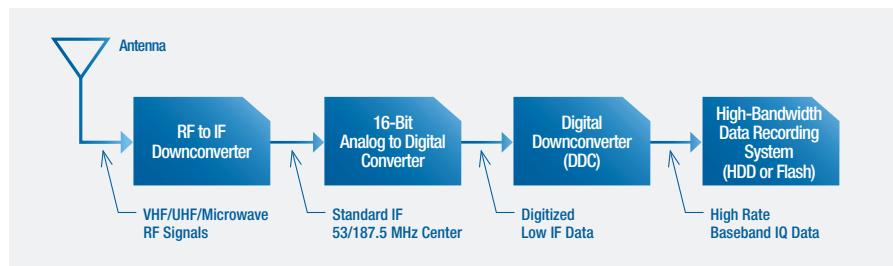
Quantify the RF propagation and channel response characteristics of a given spectrum block for service planning and receiver requirements definition.

Elint

Record large blocks of RF spectrum in the field for off-line signal identification, demodulation, decryption and data recovery.

Monitor a specified RF channel for activity and record any RF signals that appear on this channel over time.

ARCHITECTURE

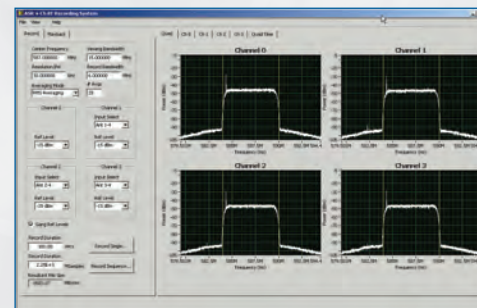


Multi Channel Phase Coherent

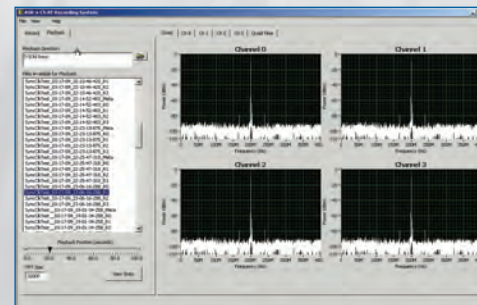
RF Record & Playback System



■ NI RF Foundation



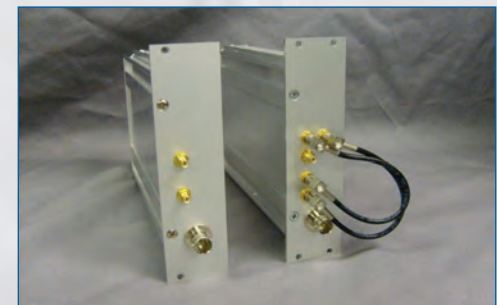
■ Application Specific Record GUI



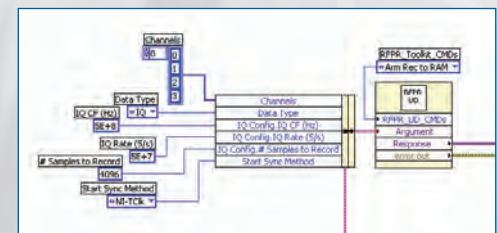
■ Application Specific Playback GUI

Key Features

- Up to 8 phase coherent record channels
- Application Specific Development Services
 - Systems Requirements Analysis
 - Graphical User Interface (GUI) Design and Development
 - Hardware and Filtering
- Open API / RF Play/Record Toolkit
- 85 MHz to 6.6 GHz frequency range
- 50 MHz instantaneous bandwidth (3 dB)
- +0.35 dB typical flatness within 20 MHz bandwidth
- 80dB typical SFDR



■ Application Specific Hardware / Filtering



■ Open API / RF Play/Record Toolkit