

# Training by Glenn

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RF Modulations/Demodulation, PCM Processing, Data Transport and Storage



Extensive Coverage / Live Demonstrations / Flexible Location

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# Course Outline

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## Section 1 - Telemetry Definitions and Standards

- Introduction
- Telemetry Definition and Examples
- Telemetry Standards (IRIG106-11 and others)

## Section 2 - Telemetry Data Acquisition System

- Types of Sensors
- Sensor Signal Conditioning
- Methods of Digitizing Signal Conditioned Data
- Sampling Theorem and Aliasing

## Section 3 – Methods of Data Modulation

- FM Baseband Modulation
- Pulse Code Modulation (PCM)
- Data Encryption

## Section 4 – Telemetry Transmission

- Transmission RF Bands
- Transmitter Modulations (FM/BPSK/QPSK/OQPSK/SOQPSK/Multi-h CPM)

## Section 5 – Telemetry Ground Station Concept

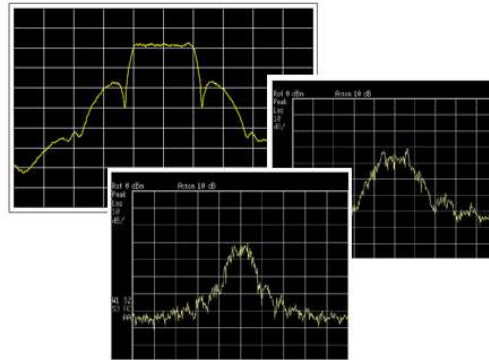
- Antenna / Receivers
  - Downconverter RF to IF
  - Demodulation Techniques
  - Pre-D recording vs. Post-D recording
- Bit Synchronizers
  - Clock Recovery, Bit recognition, Eye Pattern, Bit Decoding, Eb/NO Noise rejection, Bit Error, Noise
- Frame Synchronizers
  - Major/Minor Frame Sync Criteria
  - Frame Archive
- Decommutators
  - Channel Sampling
  - Bit Concatenation
  - Frame Format Identifier
- Simulator
- IRIG Time Code Reader

## Section 6 – Data Analysis

- Realtime Analysis
  - Realtime Displays
  - Sampling/Commutation Effects on the Display
- Post Analysis
  - Math Functions
  - Data Storage
- Recording
  - Archive .tad files
  - Chapter 10 recording

## Section 7 – Telemetry Market Products

- Airborne PCM Encoders, Transmitters, Antenna
- Ground Based Antenna, Receivers, PCM Processing Systems, Station Checkout



PCM/FM Spectral Analysis Demonstration

**\*Specifications are subject to change without notice.**

Revised: October 19, 2018

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