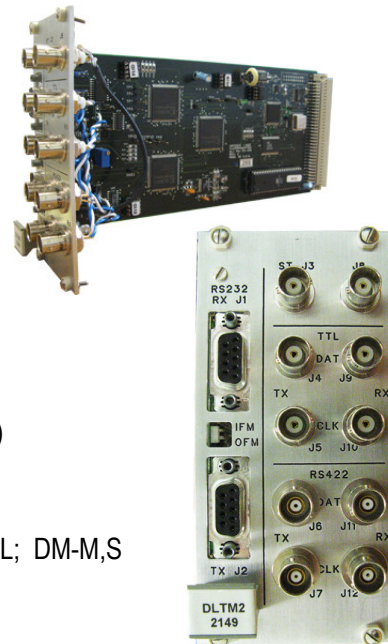# APOGEE LABS

2149 DLTM2
DATA LINK TEST MODULE

FEATURES

- Operates from 100 bps to 35 Mbps (adjustable in 1 bps steps)
- Internal synthesizer 100 ppm accuracy & stability
- External clock input provided
- Input/Output code selection: NRZ-L,M.S; BiP-L,M,S; RNRZ-L; DM-M,S
- Remote control operation
- Data Logging

OVERVIEW

The 2149 Data Link Test Module (DLTM2) is a full duplex PRN pattern generator and PCM simulator. This version provides features such as selectable PRN pattern lengths, PCM frame simulation of up to 4096 words, Doppler Simulation, and Data Logging.

Additional features include a sub frame counter for the PCM simulator, Link Delay Measurements, and code conversion on the input as well as the output.

The DLTM2 has a large selection of measurements that can be displayed (see SPECIFICATIONS). Each module provides BNC connectors for TTL I/O, Triax connectors for RS-422 I/O, and D-9 connectors for RS-232 I/O. A BNC connector is provided for a TTL level remote 'ST' clock input.

The module occupies three of the 17 available slots in the AL63xx Data Link Test Set chassis. It can also operate in the AL43xx series Communications and Recording Multiplexer/Demultiplexer Chassis'.

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1 of 2
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SPECIFICATIONS

TRANSMITTER

Selectable Outputs:
- TTL – 50/75 ohm
- BNC Connector
- RS422 – 120 ohm
- Triax connector
- RS232 (to 150 kbps) – D-9 connector, 2 k ohm

Selectable Data Patterns:
- PRN: 2^7-1(127)
- 2^9-1(511)
- 2^{11}-1(2047)
- 2^{15}-1(32k)
- 2^{20}-1(1M)
- 2^{23}-1(8M)
- 2^{31}-1(4B)
- Forward & Reverse of all patterns

Pattern: Dotting (1010) Repeat 8, 16, 32 bit patterns

PCM:
- 4-32 Sync Bits
- 4-16 Bits/Word, General and Unique
- Up to 4096 words/frame
- Programmable word patterns

ERRORS: Inject one error per command, or inject 10^{-2} to 10^{-6} error rates with uniform or random distribution

Blanking: 10 to 4096 bits every 64 to 1024 bits, either free running or synchronized to frames

Force output to all zeros
Force 1 TX bit slip

User Selectable Doppler shift rates

Output frame markers

RECEIVER

Input: 0° Clock and Data, polarity selectable

Auto Synchronization to PRN data
Auto Alignment of PCM data

Test Modes:
- Accumulate (manual reset and re-start)
- Time based interval (1 second to 500 hours)
- Bit based intervals (10^3 to 10^{12} bits)

Selectable measurement for display:
- Bit count
- Receiver re-syncs (slips)
- Bit error count
- Ones in error
- Bit error rate
- Bit slip probability
- Symmetry
- Frames in error
- Seconds in error
- Receiver clock frequency
- Link delay
- Bits in test
- Bits in error
- Received bit rate
- Seconds in counter