APOGEE LABS

AL6601
RF LINK TEST PLATFORM

FEATURES

- Bit Error Rate Tester operates stand alone up to 80 Mbps
- Modulator: ARTM Tier 0 (PCM/FM) legacy waveform as well as the more spectrally-efficient Tier I (SOQPSK-TG) and Tier II (ARTM CPM) waveforms

- Single or Multi Band Transmitter (L, S, C)
- 10mW output (higher power levels available)
- Modular, Scalable architecture
- Rugged, Compact unit

OVERVIEW

The AL6601 RF LINK TEST PLATFORM combines a general purpose bit error transmitter & receiver function with a modulator and microwave transmitter in one compact unit. The microwave signal can be used to verify complete RF link operation by injecting a signal directly at the receive site's antenna or at the receiver input. Passing the signal thru a receiver, demodulator and bit sync, the recovered data and clock are fed back into the AL6601's receiver inputs for measurement.

Of the six available slots in the AL6600 chassis, the BERT occupies one and the transmitter three additional. This leaves 2 slots for auxiliary functions such as a Bit Sync, Viterbi Decoder, Signal Distribution Amplifier, etc. All of the modules supported in Apogee Labs' AL2073 and AL2873 products are compatible with this unit. Consult the factory for your unique application requirements.

SPECIFICATIONS

BERT

TRANSMITTER

- Codes: 27-1 ,29-1 ,211-1 215-1, 220-1, 223-1and 231-1 PRN patterns
- Rate: 100 bps to 80 Mbps in 1 bps steps (+/-50 ppm accuracy)
- Frequency sweep clock rate with start & stop frequency set plus sweep rate
- Output: selectable data and clock polarity (normal / inverted); NRZ-L coded with 0° clock (min 40/60 symmetry); TTL, BNC connectors
- Output control: On/Off
- Error insertion: 1 bit slip; 1 bit error; 10e-3 BER
- Delay Marker (8 consecutive bit errors every 1 sec = DMARK)

RECEIVER

- Codes: 27-1 ,29-1 ,211-1 215-1, 220-1, 223-1and 231-1 PRN patterns
- Rate: 100 bps to 80 Mbps in 1 bps steps (+/-50 ppm accuracy)
- Input: selectable source (local transmitter / external TTL input); chassis internal daisy chain bus; selectable data and clock polarity (normal/inverted); NRZ-L coded with 0° clock (min 30/70 symmetry); TTL, BNC connectors per signal
- Sync acquisition: automatic, adaptive loop
- Counter measurements:
  - Bits received
  - Bits in error
  - 1-bits in error
  - Bit error rate
  - Error seconds
  - Bit slips
  - Received bit rate in bps (+/- 50 ppm accuracy)
- BER measurement type:
  - Accumulate mode: Counts until operator performs reset. A freeze display control is provided to view intermediate results while counters continue to count in background mode
  - Automatic reset: Counts errors for selected interval, then calculates and displays results 103 up to 1011 bit test lengths provided
- Link Delay Measurement (Insert DMARKS to enable):
  - Auto measure every second
  - Range: 0 to 9.99 seconds
  - Resolution: 33ns +/- 1 bit time
  - Accuracy: +/- 50 ppm +/- 1 bit time
- Receive bit rate
  - Measures and displays selected RX

RF MODULATOR / TRANSMITTER

OUTPUT

- 10 mw power on SMA type connector
- Three band operation (tunable in 0.5 MHz steps):
  - 1435.5-1534.5 MHz (Lower-L band)
  - 1750.0-1855.0 MHz (Upper-L band)
  - 2200.5-2394.5 MHz (S band)
  - 4400.0-4950.0 MHz (Lower-C band)
  - 5091.0-5150.0 MHz (Mid-C band) *optional*
- Carrier frequency accuracy: +/- 2.5 ppm over temperature, +/- 7.5 ppm all causes (including aging) over 5 years
- Modulation: ARTM Tier 0 (PCM/FM) legacy waveform as well as the more spectrally efficient Tier I (SOQPSK-TG) and Tier II (ARTM CPM) waveforms
- Data rates: 1-20 Mbps (0.5-10 Mbps for PCM/FM) PCM/FM, SOQPSK-TG, ARTM, CPM, BPSK, QPSK

DISPLAYS

RESULTS DISPLAY FORMAT

- Bit oriented test results are displayed as 1.2345e+12
- Slips, error seconds, and RX frequency are displayed as 123456789
- Bit rate displayed as12345678 bps
- Bit error rate is displayed as 1.23e-08
- Control: reset to zero control is provided to restart tests
- Status: Synchronization (Search/Lock) Data, Clock (Present/LOS)

FRONT PANEL

- 6.3" diagonal LCD (no touch screen)
- Hex keypad w/ alphas as 2nd-ary for test and file names
- Nav Keys for easy movement between page fields and module pages
- Action Keys: Enter/Clear/Exit
- Soft Keys: can be software defined by module
- Rubber pushbuttons (oval or rectangle)
- (4) BNC's connected to BERT TTL Data & Clock In and Out

GENERAL

REMOTE CONTROL

- ASCII Serial 232 Command Interface

POWER

- +5V input; 5.5 watts

ENVIRONMENT

- Operating temperature: 0^0 C to +50° C
- Relative humidity: 0 to 95%, non-condensing
- Altitude: Sea level to 10,000 feet

MEAN TIME BETWEEN FAILURES

- ~50,000 hours

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