

LUMISTAR

LS-11-F Portable FM Test Transmitter

Data Sheet

Description:

The LS-11-F portable FM test transmitter is designed for checkout and troubleshooting of telemetry receiving systems operating with FM modulation. For applications with any of the ARTM modulations (Tier 0, Tier I, or Tier II), please refer to the LS-11-M Data Sheet.



Complete ground stations including the antenna with LNA, RF down-converter, IF receiver, bit synchronizer, and PCM decommutator can be tested and bit error tests performed. The design allows secure links to be tested with an external encryptor. The Test Transmitter contains an internal PCM Simulator with Pseudorandom generator that operates in a BERT mode when used with the Lumistar LS-50 Decom or LS-24-RTR Range Telemetry Receiver allowing bit error numbers to be displayed through software. Full flexibility allows the use of

the simulator only (without transmitter) or transmitter only with an external source modulating the transmitter. Complete setup can be achieved locally through the keypad and display or remotely through the RS-232 Interface. Operational parameters include the PCM format information, pre-modulation filter selection, transmitter frequency, transmitter deviation, and output power level. Output power can be selected from -60 to +10 dBm in 5 dB steps. The Test Transmitter contains an internal lead-acid battery and battery charger and will operate for twelve hours on a full charge.

Key Features:

- Hand-Held FM test transmitter with internal simulator
- Fully Programmable through RS-232 for PCM format, pre-modulation filter, transmitter frequency, transmitter deviation, and output power.
- Local Display and Keypad
- Memory contains 4 format capability
- Simulator allows common, unique, and waveform words
- Pseudo-random burst generator for BERT mode allows forced errors
- Output power level control in 5 dB steps from -60 to +10 dBm (nominal)
- Used for checkout and/or troubleshooting of complete RF data links
- Available in L-Band or S-Band (other bands are optional)
- AC power or battery operated
- Internal battery charger
- Supports data rates to 15 Mbps NRZ-L
- Accepts modulation input from external PCM Encoder or Simulator
- On/off switch, transmitter control switch, and transmitter status indicator

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LS-11-F Simulator with FM Modulator Data Sheet

Temperature (Operating)	0 to 50 °C
Temperature (Non-Operating)	-25 to +70 °C
Host Interface	RS-232 19200 baud, 8-bit, 1 stop, ASCII without parity Optional: 600, 1200, 2400, 4800, 9600, 38400, 115200 baud
Input Power (Switchable)	110 VAC 60Hz or 220 VAC 50 Hz
Transmitter Output Connector	Type N-Female
PCM Simulator Specifications	
Format Selection	Four format definitions in non-volatile memory
Front Panel Outputs	NRZ-L and PCM Data, 0-degree clock & minor frame strobe
Output Levels	Single-ended TTL
Output Data Rate	175,000 bps to 15 Mbps (NRZ codes) 87,500bps to 7.5 Mbps (all other codes)
PCM Codes	NRZ-L/M/S; Bi-Phase -L/M/S; DM-M/S; M ² , RNRZ-L11/15, k=7 Convolutional Rate 1/2, 1/3
Word Length	Variable from 3 to 16 bits per word on a word-by-word basis
CRC Generator	CRC16/CCITT Forward/Reverse
Minor Frame Length	2 to 8,192 words per minor frame
Major Frame Length	Up to 1024 minor frames per major frame
Bit Order	MSB or LSB-first
Frame Sync Pattern	Up to 256 words (any series of 0s or 1s may be used)
Major Frame Sync	FCC (FAC), SFID
Common Words	May be a single value or selected from a group of one minor frame
Unique Words	Seven may be programmed in any mainframe, super-commutated, or subcommutated channel.
Test Output	32,767-bit PRN pattern
Waveform Words	Five may be programmed to appear in every frame at the same location.
Pseudo-random Generator	2 ¹¹ or 2 ¹⁵ PRN bit pattern
Forced Error	On or Off, one error per pattern
PCM Transmitter Specifications	
RF Bands	S-Band (2200-2400MHz.) Model LS-11-FS L-Band (1435-1540 MHz) Model LS-11-FL
Tuning Resolution	0.5 MHz
Modulation Type	Wideband FM
Modulation Source	PCM Simulator or Front-Panel input
Output Power	-60 to +10dBm Max (<i>approximate</i>) in 5dB steps
Output Power (during tuning)	Transmitter output is inhibited during tuning
Spurious Outputs	<50 dBc
Pre-Modulation Filter	Four selectable 4-Pole Bessel Filters with standard cutoffs at 0.5 MHz, 1 MHz, 2.5 MHz, 5MHz. Other cutoffs may be specified on order.
FM Deviation	Up to 7MHz