

LUMISTAR

LS-58-M IF Receiver, ARTM Demodulator, Bit Sync & Decom Data Sheet

Description:

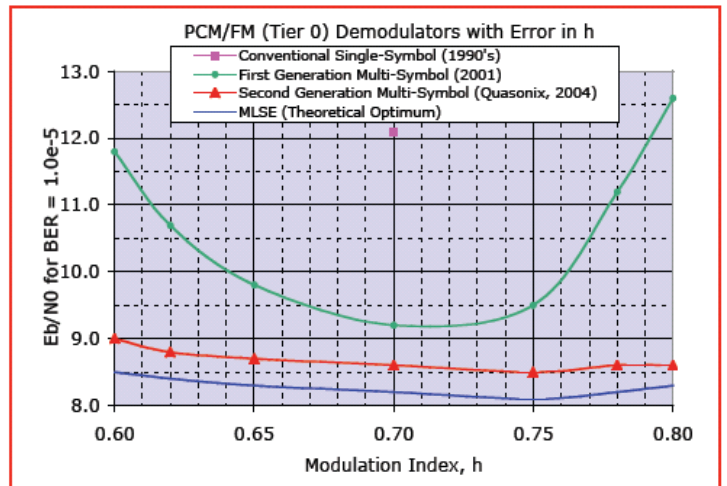
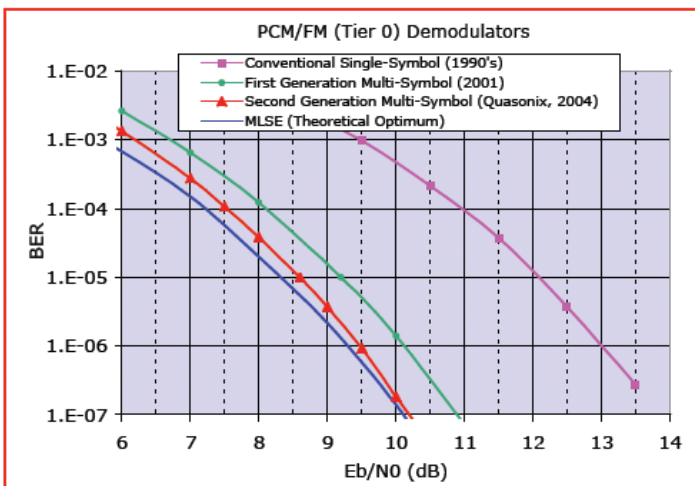
The Lumistar LS-58-M is a PCI IF Receiver with ARTM Tier 0, Tier I, and Tier II multi-mode demodulator, bit synchronizer, and Multi-function PCM Decommutator in a single short PCI card. The multi-function decom and simulator have been implemented in FPGA using the same design as the LS-50-D and contains the simulator, decommutator, time code reader and time code generator on the main board. A Quasonix multi-mode demodulator with bit synchronizer is contained on a daughterboard. CVSD voice decoding, h.261 video decoding, and IRIG Chapter 8 decoding are achieved through software.



The IRIG Time Code Reader and Generator operate with IRIG A, B, or G time codes. The Time Code Generator creates and outputs time information in accordance with the IRIG Time Code Standards. The Time Code Reader is typically used to insert time information into the PCM minor frame block of data. The Decom can be used for extremely large formats (65,530 words per minor frame up to 1,024 frames deep) and contains dual ping-pong data output buffers with up to 128K bytes of memory. The PCM simulator generates common, unique, and waveform pattern data words or pseudo-random test pattern (11 through 25 bit) to allow bit error loop calculations to be performed.

Key Features:

- **Quasonix IF Receiver/Demodulator/Bit Synchronizer**
 - True Trellis Demodulator for ARTM Tier 0, Tier 1, and Tier 2 waveforms
 - 3.5 dB Improvement in PCM/FM performance
 - Modulation index tracking to +/- 15%
- **PCI Multifunction PCM Decommutator containing**
 - PCM Simulator with BERT generation capability
 - PCM Decommutator with BERT read capability
 - IRIG Time Code Reader and IRIG Time Code Generator
- **Short PCI Board only 7.55 inches long**



Lumistar, Inc.

2701 Loker Avenue West, Suite 230

Carlsbad, CA 92010

PHONE: 760-431-2181

FAX: 760-431-2665

EMAIL: sales@lumistar.net

<http://www.lumi-star.com>

Specifications are subject to change. Please verify the latest specifications at time of order.

10-22-07

LUMISTAR

LS-58-P IF Receiver, ARTM Demodulator, Bit Sync & Decom Data Sheet

SPECIFICATIONS:

70 MHz IF RECEIVER/DEMODULATOR:

IF Input Frequency	70 MHz
IF Input Level	-10 to 0 dBm
De-modulation Types	ARTM Tier 0 (PCM/FM) ARTM Tier I (SOQPSK-TG) ARTM Tier II (ARTM CPM)
Bit Rates (in 1bps steps)	Tier 0: 30 kbps to 22 Mbps Tier I: 500 kbps to 44 Mbps Tier II: 500 kbps to 44 Mbps
Synchronization Time	Tier 0: 250 bits @ 0 dB Eb/No Tier I: 385 bits @ 2dB Eb/No Tier II: 2,800 bits @ 2 dB Eb/No
Acquisition Threshold	Tier 0: -2 dB Eb/No Tier I: 0 dB Eb/No Tier II: 2 dB Eb/No

PCM DECOMMUTATOR:

Input Data Rate	10 bps to 20 Mbps
Input Signals	NRZ-L data & 0 degree clock
Input Levels	Single-ended TTL & RS-422
Word Length (VWL)	Variable from 3 to 16 bits per word on a word-by-word basis
CRC checker	CRC16/CCITT
Minor Frame Length	2 to 16,383 words per minor frame
Major Frame Length	Up to 1024 minor frames per major frame
Bit Order	MSB or LSB-first (word-by-word basis)
Frame Sync Pattern	Up to 64 bits (any pattern with don't care bits (X) may be used)
Frame Sync Location	Beginning or end of the frame
Frame Sync Strategy	Adaptive mode (search-lock-verify) & burst mode (search-lock)
Sync Error Tolerance	0 to 15 bits (selectable)
Sync Slip Window	1 or 3 bits wide (selectable)
Data Polarity	Normal, inverted or automatic
Subframe Sync	FCC (FAC), SFID or URC (Optional)
URC Location	Any 64 bit window within the first minor frame not including the last bit in the minor frame
SFID Location	Any series of contiguous bits not including the last bit in the minor frame

IRIG A/B/G READER/GENERATOR:

Time Reader Input Format	IRIG A, B, or G
Input signal level	1V p-p nominal
Latency	2µsec (maximum)
Data Outputs	Automatic time tags for PCM data blocks (time accessible in register space)
Time Generator Output	IRIG A, B, or G

MECHANICAL:

PCI	PCI Board 7.25" Long
Daughterboard Form Factor	IF Receiver/Demodulator

PCM SIMULATOR:

Outputs	Data, 0 degree clocks & minor frame strobes
Output Levels	Single-ended TTL & RS-422
Output Data Rate	1.0 bps to 20.0 Mbps (NRZ codes) 1.0 bps to 10.0 Mbps (all other codes)
PCM Codes	NRZ-L/M/S, BI ϕ -L/M/S DM-M/S, RNRZ-L (2 ¹¹ -1, 2 ¹⁵ -1)
Word Length (VWL)	Variable from 3 to 16 bits per word on a word-by-word basis
CRC Generator	CRC16/CCITT
Minor Frame Length	2 to 16,383 words per minor frame
Major Frame Length	Up to 1024 minor frames per major frame
Bit Order	MSB or LSB-first on a word-by-word basis
Frame Sync Pattern	Up to 64 bits (any series of 0s or 1s may be used)
Sub-Frame Sync	FCC (FAC), SFID & URC; URC location may be any 64 bit window within the first minor frame not including the last bit in the minor frame
Common Words	May be a single value or selected from a group of one minor frame or 2048 words whichever is less.
Unique Words	Seven may be programmed in any mainframe, super-commutated, or subcommutated channel.
Waveform Words	Five may be programmed to appear in every frame at the same location.

BERT:

Pseudo-random patterns	11, 15, 17, 19, 21, 23, and 25 bit
Bit Error Rate	Indicated on Software
Error Count	Indicated on Software
Forced Error Capable	Yes
History Log	Yes

ENVIRONMENTAL:

Temperature (Operating)	10 to 50 °C
Temperature (Non-Op)	-25 to +70 °C
Humidity (Operating)	10% to 90% Non-Condensing
Humidity (Non-Op)	Packaging must prevent contact with moisture and contaminants
Special Handling	Standard ESD methods required

POWER REQUIREMENTS:

5V	2400 ma
-12 V	120 ma
+12V	30 ma

Lumistar, Inc.

2701 Loker Avenue West, Suite 230

Carlsbad, CA 92010

PHONE: 760-431-2181

FAX: 760-431-2665

EMAIL: sales@lumistar.net

<http://www.lumi-star.com>

Specifications are subject to change. Please verify the latest specifications at time of order.

10-1-06