Manual Echo Testing Solutions for TDM



Overview

GL's T1/E1 Echo Canceller Test Suite includes optional licensed applications including Echo Path Delay/Loss Measurement, Echo Path Delay/Loss Simulation, and Echo Canceller Simulator with graphical echo path representation. The Measure Loop Delay/ERL application measures and displays loop delay and echo return loss (ERL) on one or more time slots.

The Delay/Attenuate Timeslots application lets you delay, attenuate or amplify, and/or apply a filter to a received signal on any number of timeslots. The Delay/Attenuate Timeslots – Single Channel application supports short delay echo path modeling. This application also allows you to apply delay, attenuation or gain, and/or digital filtration to a received signal on a single timeslot.

The Digital Echo Canceller (DEC) is a four-port device that supports bi-directional voice traffic between the two ends of a connection. The GLC View application is a waveform viewer application. It has been designed specifically as a companion component for GL's T1/E1 Echo Canceller Test Suite.

For more details, refer <u>TDM (or Analog) EC Testing Solutions</u> webpage.



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A (Web) <u>www.gl.com</u> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) <u>info@gl.com</u>

Main Features

Measure Loop Delay / ERL module:

- Multiple timeslots and multiple measurement strategies supported
- User-specified minimum and maximum delays expected in the echo path
- Inputs from T1/E1 timeslots, Gaussian noise generator, and A-Law/μ-Law files

Delay / Attenuate Timeslots module:

- Single and Multi-channel versions available
- Single-channel module supports very short delays. Multiple instances may be run simultaneously
- Noise and double-talk may be injected from noise generator of signal files
- G.168 Echo Path models provided

Digital Echo Canceller Simulator:

- Supports real-time and offline processing
- Interfaces directly with A-Law or μ-Law encoded signals
- 16, 32, 64 or 128 ms tail length; programmable tail offset
- Comfort noise generator with adaptation to background noise level
- Continuous reporting of echo path delay, ERL, and dispersion

GLC View Waveform Viewer:

- Synchronized viewing of waveform and power graph
- Programmable power window
- Zoom-in and zoom-out capability

Measure Loop Delay / ERL

The Measure Loop Delay/ERL module measures and displays loop delay and Echo Return Loss (ERL) on one or more time slots. Both intrusive and non-intrusive operations are supported. Non-intrusive operation requires two GL receive ports, one of which monitors the original signal while the other monitors the returned signal. Non-intrusive operation requires one GL send port where a test signal is injected, and one GL receive port, where the returned signal is monitored.

Delay/ERL							
Original Data Card #1 💌	Return Data Card #1 💌						
Delay ERL Delay ERL Delay ERL Delay ERL Delay ERL 0 8 15 24 1 9 17 173 15.4 25 173 15.4 2 10 173 15.4 18 173 15.4 25 173 15.4 3 11 173 15.4 19 173 15.4 26 173 15.4 4 173 15.4 12 173 15.4 20 173 15.4 27 173 15.4 5 173 15.4 12 173 15.4 28 173 15.4 5 173 15.4 13 21 173 15.4 29 6 173 15.4 15 22 30 7							
Delay: Minimum 0 ms Maximum 200 ms ERL: Minimum 6 dB Maximum 60 dB							
Original Data Source © E1 Input Only when Off Hook © Gaussian Noise 10 @ Elle A-Law Samples\2x2lcq1a.pcm							
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Measure Loop Delay/ERL

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Delay Attenuate Timeslots

This is an "input-process-output" application, where a block of data retrieved from the Rx data source and is processed by delaying, attenuating, and/or filtering. They are then retransmitted on the Tx Destination. This application allows applying delay, attenuation, and/or filtering to a received signal on any number of timeslots. Also allows mixing additional signals from a numerous sources, including signal files, VF input, T1/E1 timeslots, and/or an internal Gaussian noise generator.

Delay/Attenuate T	imeslots
Timeslots	Rx Data Source
Start 4	Card Card #1 💌 Decode u-Law 💌 Inhibit
End 31 👻	Delay 1000 ms Gain 20 dB Filter Browse None
Rx Delay Range	0 1 2 -40 0 +20
C 18 - 200 ms	
💿 0 - 2 sec	Mix Speech
	C None File C:\Program Files\GI Communi V Browse
Configuration	Speech from File O Once C Continuous
Save	C Speech from VF Input Gain 0 dB
Load	Timeslot 1 🚽 🔳 🖬 🗛 40 0 +20
	Mix Noise
	O None File Browse
Processing	C Noise from File C Once C Continuous
Options	White Noise Gain 0 dB
	Tx Destination
	Card Card #2 💌 Encode A-Law 💌 Tx Signaling Don't Care 💌
Burst Threshold	* Mixes with Rx signal Inhibit Rx
-50 📑 dB	
Sync Start	Stop Tx Write: ExceptOverRun Apply Close
with Bx Burst	Errors - (983) Tx=3584, Rx=5

Delay Attenuate Timeslots

Delay Attenuate Timeslots – Single Channel

This application facilitates Short-delay echo path modeling. It allows you to apply delay, attenuate (gain), and/or filtering to a received signal on a single timeslot. The signals from other sources can be mixed-in, including speech signals from VF input and Gaussian noise or tone signals generated internally by the module.

Delay/Attenuate - Single Timeslot	
Process Receive Signal Data	
Card Card #2 Timeslot 2 Decode ULaw Tilter	Rx Signal #2:2
Delay 0.000 ms Gain +0.0 dB Type CSS/Tone 0 32 64 -40 0 +20	u-Law Decode
Add Speech From VF Input Use the "Insert" and "Gain" controls, on the Tx section of the VF toolbar to add speech from VF input	VF Input
Image: Add Application Data Timeslot	Appin. Data
Tx Destination	u-Law Encode
Card #2 Timeslot Timeslot Encode ULaw Capture To Receive Bulfer	Tx Signal
Configuration Start Apply Close	

Single Channel Delay Attenuate Timeslot

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Digital Echo Canceller

A Digital Echo Canceller is a four-port device that supports bi-directional voice traffic between the far end and the near end of a connection. The function of the echo canceller is to detect and remove the echo. It does this by estimating the transfer function of the hybrid that produces the echo, which it accomplishes by comparing the echo to the original signal. This module interfaces directly with A-Law or μ -Law encoded signals. Both real-time and offline processing are supported.

GL Digital Echo Canceller Simulator									<u> </u>
Provisioning View Statistics ogging About EC Tail Length 128 💌 Offset 0 (ms)	E	iource 1 In File		ard #	_	- ïles\G	il Com	munic	ē DeMux
Double-Talk Detector Enable ON Sensitivity 10922 2 Defaults OFF Sensitivity 21844 2	E	Desti Out File		ard #2	_	r iles\G	il Com	munic	ē Mux
Enable Threshold -18.1 :::: (dBm Defaults Attenuation -12 :::: (dB) Smoothness 8 :::: :::: ::::	Sin Source E1 In Card #2 File C\Program Files\GI Communics DeMux Sout Destination								
Tone Detector Final Detection Threshold 20-(dB)		Out File		ard # \Prog	_	r] Tiles\G	il Com	munic	ε Mux
Comfort Noise Generator									
Enable Power Level 0 (dB)	0	1 9	2 10	3 11	4 12	5 13	6 14	7 15	Select All
Reset All H Save All H Clear Log Display	16 24	17 25	18 26	19 27	20 28	21 29	22 30	23 31	
Enable Echo Canceller Adaptation NLP	Enal DT]					٥	Run

Digital Echo Canceller

GLC View

GLC View is a waveform-viewer application. The program is used to view previously captured raw data files and their corresponding power.





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Buyer's Guide

Item No	Product Description
<u>XX062</u>	Echo Path Delay/Loss Simulation Software w/GLCView
<u>XX063</u>	Echo Path Delay/Loss Measurement Software
<u>XX066</u>	Digital Echo Canceller

Item No	Related Software
<u>SA048</u>	Goldwave Software
<u>XX065</u>	G.168 Echo Canceller Test Suite
<u>XX067</u>	Automated Echo Canceller Testing for TDM-TDM
<u>PKB080</u>	Automated Echo Canceller Testing for VoIP-TDM
<u>XX068</u>	Semi-automated Scripted EC Testing

Item No	Related Hardware
<u>PTE001</u>	tProbe™ T1 E1 Base Unit
<u>FTE001,</u> <u>ETE001</u>	Quad and Octal T1 E1 Analyzer Boards
<u>XTE001</u>	Dual Express (PCIe) T1 E1 Boards
<u>TTE001</u>	tScan16™ T1 E1 Boards

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

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