
Introducing USB Based T1 E1 Analyzer Unit



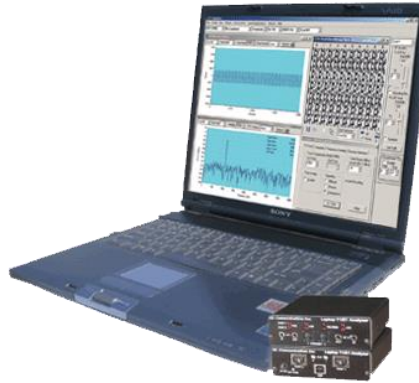
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Portable USB T1 E1 Analyzer Unit



- T1 and E1 variants for basic testing needs.
- Optional features that extend the capability far beyond the most expensive T1 / E1 testers.
- Lightweight, small footprint, easy to carry in the pouch of a Notebook PC - perfect for air travel.
- Connects to a PC via a USB 2.0 port.
- Access it remotely.

What the unit does ?



- Used for installation, test, and troubleshooting of T1 or E1 lines.
- Capability of T1 or E1 PCM signal visualization, capture, storage, analysis, and emulation.
- Includes BERT, voice band analysis, data, signaling, and protocol analyzer all in one.
- Most all “Basic Applications” and “Special Applications” are available for USB Based T1 E1 Analyzer including Comprehensive Analysis / Emulation of voice, digits, tones, fax, modem, raw data, and Echo Testing.
- Capable of simulating as well as decoding and demodulating fax calls over T1/E1 lines using Fax Simulator and FaxScan™.

Why the product is superior?

- Small package packs big performance
- Scalable
- Cost effective

Benefits

- Compatibility with Windows® 10 OS with user-friendly real-time software.
- USB 2.0 interface for complete access to T1 or E1 rate signals.
- Lightweight (less than 2 lbs) and small footprint (5" x 4" x 1.5"), convenience of using with a Notebook PC.
- Scalable - extremely simple to very complex configuration (with optional software).
- Instant field upgradeable with software download.
- Cost effective - one small footprint platform can do everything.
- Two (2) ports and four (4) ports captures of T1 and E1 signals with one or two USB T1 E1 Analyzers connected to a single PC.

T1 / E1 Basic Software

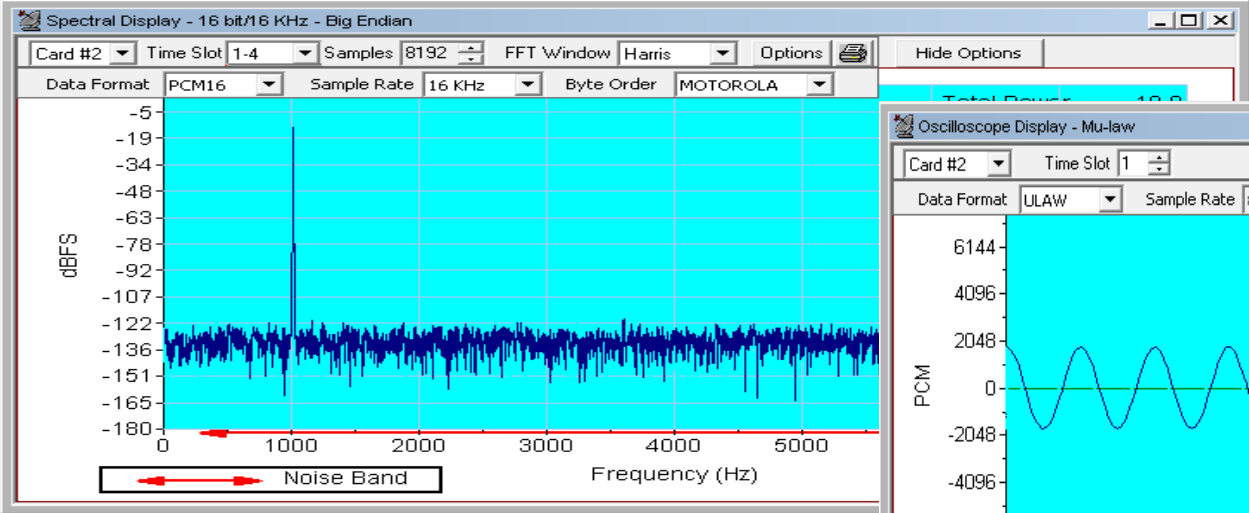
- T1 E1 Configuration Options
- VF Options
- Monitoring Options
- Intrusive Testing
- Windows Client / Server - Remote access to T1/E1 server ; Clients - C++, C#, TCL

- T1E1 Line Interface Options
 - Framing Formats
 - Tx Rx Configurations
 - Clock options
 - Loop-backs
 - Monitor T1/E1 Line
 - Connection Options
 - Encoding Options

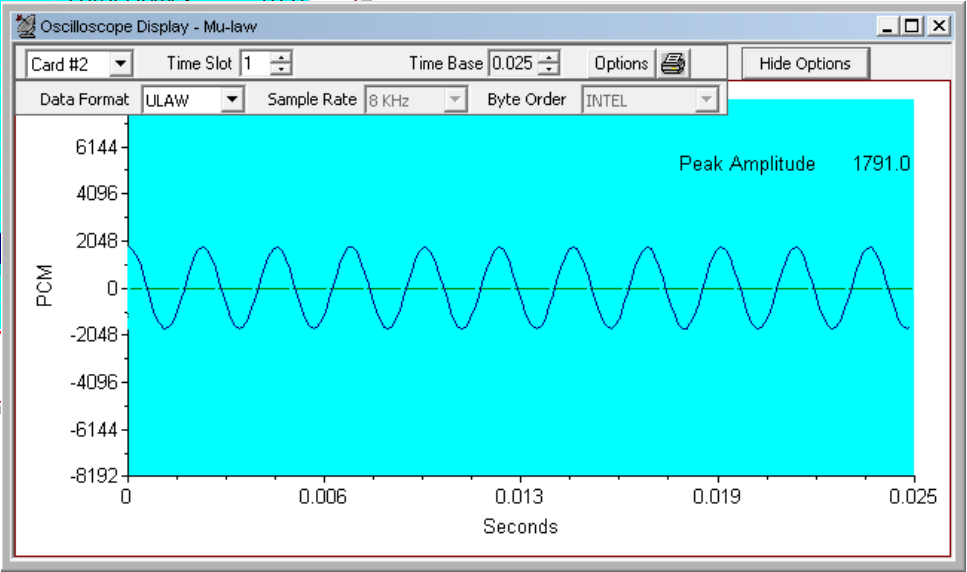
- VF Options
 - Speaker
 - Drop and Insert
 - VF In / Out TS settings
- Monitoring Features
 - Monitor T1/E1 Line
 - Byte Values & Binary Byte Values
 - Signaling bits, Power Level, DC Offset, & Frequency
 - Multiframe, and Real-time Multiframe
 - T1/E1 Data as Real-time Bitmap
 - Time-slot Window
- Monitoring Features...
 - ASCII Timeslot Display
 - Oscilloscope & Power Spectral
 - Audio Monitoring
 - Active Voice Level
 - Capture Dialed Digits
 - Realtime Strip Chart
 - Realtime Multichannel Audio Bridge
 - Signaling Bit Transitions

Monitoring Features

Oscilloscope Display



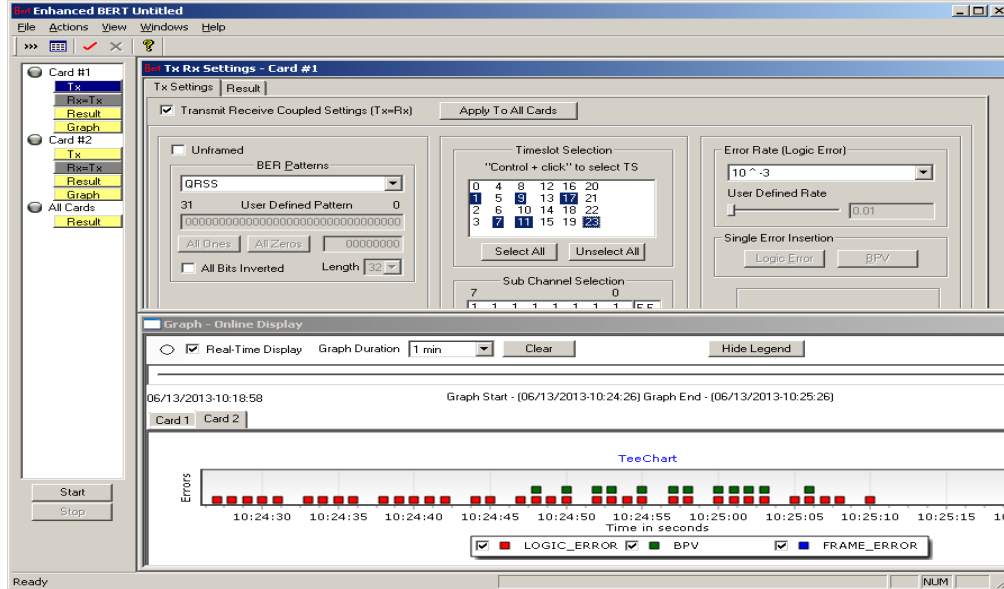
Spectral Display



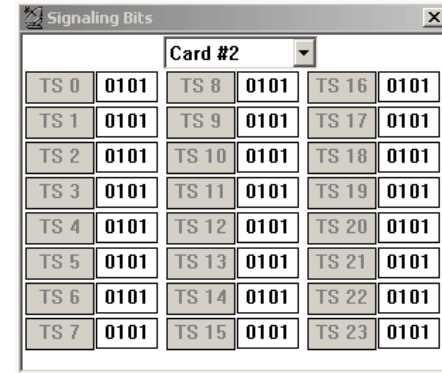
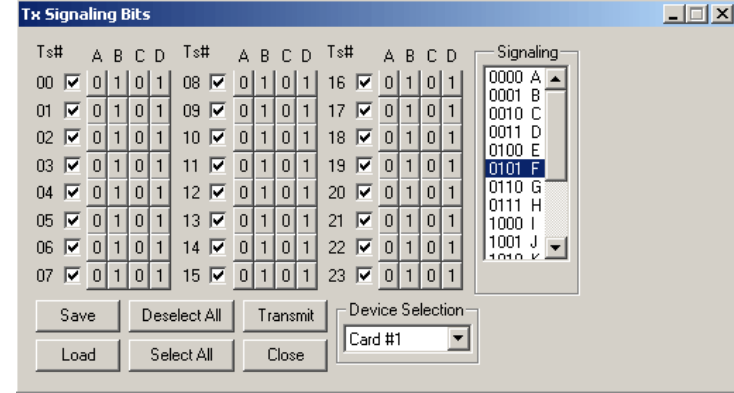
- Intrusive Tests
 - Bit Error Rate Test
 - Enhanced Bit Error Rate
 - ATM BERT
 - Transmit Tone
 - Transmit Gaussian Noise
 - Transmit Multiframe
 - Transmit Signaling Bits
 - Precision Delay Measurement
 - Rx-to-Tx Loop back
 - Error Insertion
 - Transmit Dialing Digits

Enhanced BERT and Tx Signaling Bits

Enhanced BERT

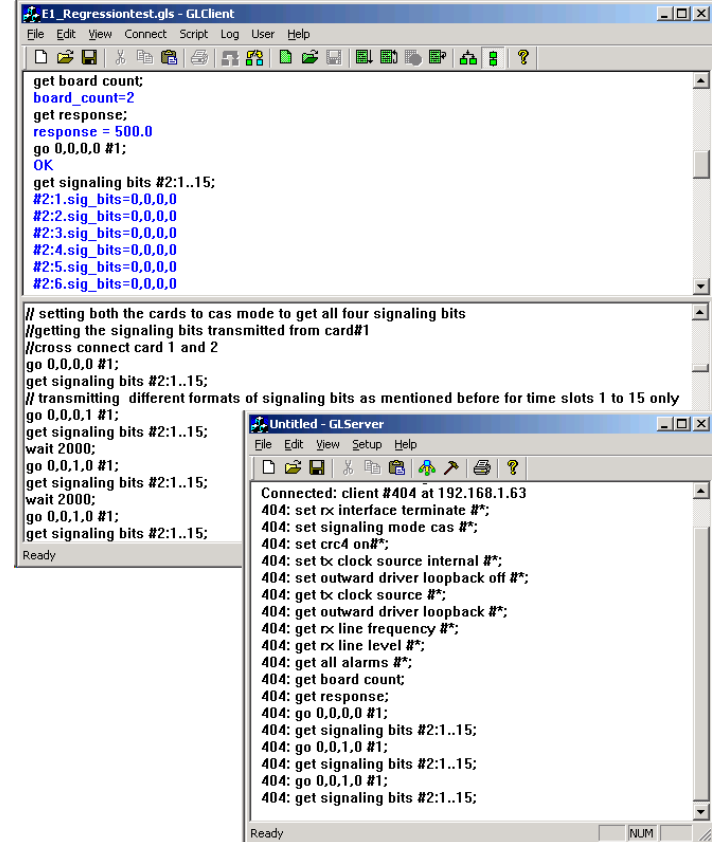


T1 or E1 Basic Software



Client Server

- Allow the user (with an appropriate client) to operate analyzers remotely, write scripts for automation, or provide multi client connectivity to a single T1 E1 VF Data analyzer.



The screenshot shows two windows from a software application. The top window, titled "E1_Regressiontest.gls - GLClient", contains a script with the following commands:

```
get board count;
board_count=2;
get response;
response = 500.0;
go 0,0,0,0 #1;
OK
get signaling bits #2:1..15;
#2:1.sig_bits=0,0,0,0
#2:2.sig_bits=0,0,0,0
#2:3.sig_bits=0,0,0,0
#2:4.sig_bits=0,0,0,0
#2:5.sig_bits=0,0,0,0
#2:6.sig_bits=0,0,0,0

// setting both the cards to cas mode to get all four signaling bits
//getting the signaling bits transmitted from card#1
//cross connect card 1 and 2
go 0,0,0,0 #1;
get signaling bits #2:1..15;
go 0,0,0,1 #1;
// transmitting different formats of signaling bits as mentioned before for time slots 1 to 15 only
get signaling bits #2:1..15;
wait 2000;
go 0,0,1,0 #1;
get signaling bits #2:1..15;
wait 2000;
go 0,0,1,0 #1;
get signaling bits #2:1..15;
```

The bottom window, titled "Untitled - GLServer", shows the server's response to the client's commands:

```
Connected: client #404 at 192.168.1.63
404: set rx interface terminate #*;
404: set signaling mode cas #*;
404: set crc4 on#*;
404: set tx clock source internal #*;
404: set outward driver loopback off #*;
404: get tx clock source #*;
404: get outward driver loopback #*;
404: get rx line frequency #*;
404: get rx line level #*;
404: get all alarms #*;
404: get board count;
404: get response;
404: go 0,0,0,0 #1;
404: get signaling bits #2:1..15;
404: go 0,0,1,0 #1;
404: get signaling bits #2:1..15;
404: go 0,0,1,0 #1;
404: get signaling bits #2:1..15;
```

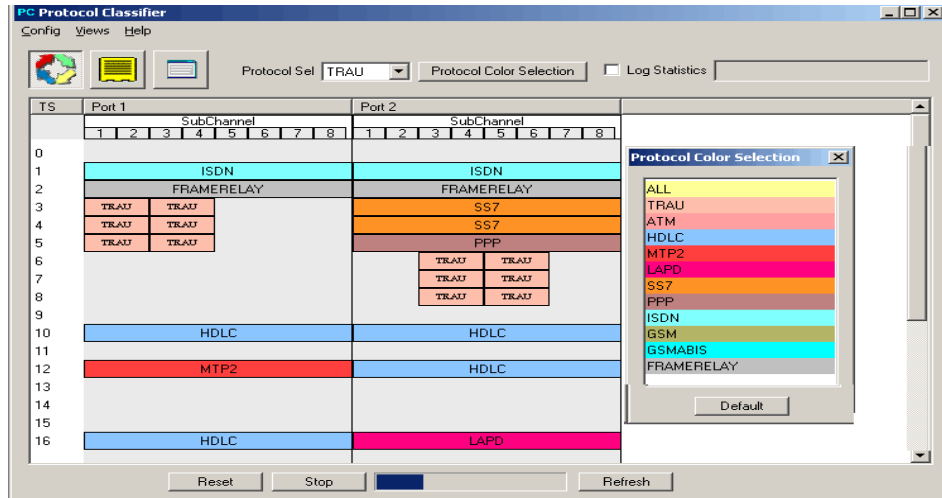
T1 / E1 Special Applications

- Protocol Analysis
 - ISDN, HDLC, SS7, Frame Relay, TRAU, CDMA, DCME, T1 Facility Data Link.
 - E1 Maintenance Data Link, UMTS, PPP, ATM, GSM, V5.x, CAS, GPRS, GR303, SS1.
- Protocol Emulation
 - ISDN, HDLC, MLPPP, MLPPP Conformance, CAS, TRAU, SS7.
 - SS7 conformance suite, GSM A, GSM Abis, MAP, CAMEL, Frame Relay, ATM IMA, and SS1.
 - Capture, Analysis, & Emulation
 - BER / Playback.
 - Manual & Automated Record / Playback files.
 - Call Capture and Analysis (CCA).
 - Multiple Call Capture and Analysis.

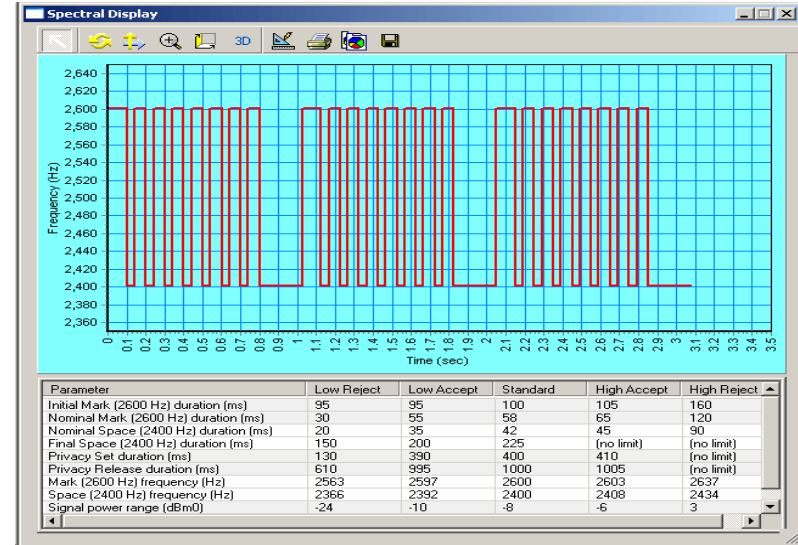
- Voice Band Analysis Software
 - Call Data Records (CDR)
 - Voice Band Analyzer (VBA)
- Fax Emulation and Analysis
 - Fax Simulator
 - Fax Analysis using GLInsight™ or FaxScan™
- Echo Cancellation Testing / Compliance
 - Manual
 - Semi-automated
 - Automated
- WCS Modules
 - Transmission/reception of files/digits
 - Multi-channel BERT
 - CAS Emulation
 - DSP operations, Dynamic DSP capability
 - SA Bits/ FDL/ HDLC/ TRAU/ MC-MLPPP/ SS7/ ISDN / ML Frame Relay
- Protocol Identifier
- Multi-Channel BERT
- Multiplex / Demultiplex Software
- Network Surveillance

Special Applications

Protocol Identifier



SS1 Analyzer and Emulator



Call Capture and Analysis

Call Capture and Analysis

Multiple Call Capture - UsbE1 Card #1 and #2

File Capture Settings

Capture Directory
D:\CapturedFiles\ManualCall1210091146

Capture File #1
Dec10w01.000

Bytes Captured: 17024

Capture File #2
Dec10E01.000

Bytes Captured: 17024

Signaling File: Dec1001.000.000

Timeslot Activity

01 02 03 04 05 06 07 08 09 10 11 12
16 17 18 19 20 21 22 23 24 25 26 27 28

Multi Call Capture and Analysis

Multi Call Capture for Manual - Untitled

File Edit Trigger Options Process

CC No	Capture Name	West(Port)	East(Port)	Timeslots	Storage Location	Trigger Option	Action
1	CCA1	1	2	0-23	C:\Program Files\GL Communications Inc\Dual Ultra HD T1 Analyzer	Edit	Abort
2	CCA2	1	2	0-23	C:\Program Files\GL Communications Inc\Dual Ultra HD T1 Analyzer	Edit	Abort
3	CCA3	1	2	0-23	C:\Program Files\GL Communications Inc\Dual Ultra HD T1 Analyzer	Edit	Abort
4	CCA4	1	2	0-23	C:\Program Files\GL Communications Inc\Dual Ultra HD T1 Analyzer	Edit	Abort

TS	TS Status	West Filename	Bytes Captured(West)	East Filename	Bytes Captured(East)
0	Capturing	C:\Program Files\GL Communications In...	742224	C:\Program Files\GL Communications Inc\Dual Ultra ...	742224
1	Capturing	C:\Program Files\GL Communications In...	742224	C:\Program Files\GL Communications Inc\Dual Ultra ...	742224
2	Capturing	C:\Program Files\GL Communications In...	742224	C:\Program Files\GL Communications Inc\Dual Ultra ...	742224
3	Capturing	C:\Program Files\GL Communications In...	742224	C:\Program Files\GL Communications Inc\Dual Ultra ...	742224
4	Capturing	C:\Program Files\GL Communications In...	742224	C:\Program Files\GL Communications Inc\Dual Ultra ...	742224
5	Capturing	C:\Program Files\GL Communications In...	742224	C:\Program Files\GL Communications Inc\Dual Ultra ...	742224

CCA Details Timeslots Map

Protocol Analysis

PPP Protocol Analysis

PPP Protocol Analysis PPP

File View Capture Statistics Database Configure Help

Dev	TSlot	SubCh	Fram...	TIME (Relative)	Len	Error	PPP Laye...	LCP Code	IPCP Code	BCF
✓ 1	1-31		0	00:00:00.000000	14		Link Control	Echo-Request		
✓ 2	1-31		1	00:00:00.000625	14		Link Control	Echo-Reply		
✓ 2	1-31		2	00:00:00.088625	14		Link Control			
✓ 1	1-31		3	00:00:00.092000	14		Link Control			
✓ 1	1-31		4	00:00:09.993996	14		Link Control			
✓ 2	1-31		5	00:00:09.994625	14		Link Control			
✓ 2	1-31		6	00:00:10.082625	14		Link Control			
✓ 1	1-31		7	00:00:10.090000	14		Link Control			

Card1 TimeSlots=1-31 Frame=0 at 00:00:00.000000 OK Len=14
HDLC Frame Data + FCS
===== PPP Link Layer =====
Address = 11111111 (255)
Ctl = 00000011 (3)
Protocol = 11000000 00100
===== Link Control Layer =====
Code = 00001001 Echo=
Identifier = 172 (xAC)
Length = 8 (x0008)
Magic Number = 1654110210 (x00)

Hex Dump of the Frame Data

Hex	ASCII
FF 03 C0 21 09 AC 00 08 09 DC 19 2E 85 63	ÿ Å! - Ü

Off-line Viewing D:\misc\MLPPP.hdl 23 726 Fi

PPP Packet Data Analysis

Traffic Analyzer - Summary View

File View Call Summary Settings Help

Sip Calls Show All Sessions

Call Summary Registraton Summary Alert Summary

Call #	SSRC	Payload	Packet Received	Conversat MOS/R...	Listening MOS/R...	Packets Discard...	Missing Packets...	Duplicate Packets...	Out Of Sequen...	Average Gap(ms)	Average Delay	Average Jitter	Average Inter A...
Call#000001	Caller:0001@192.168.40.245	Callee:0001@192.168.20.20	CallId:GLPG1413613128143612	Call StartTime:2011-11-23 09:56:52.064	Call End Time:2011-11-23 09:56:52.064	Call Duration:0.000	Call Status:Completed	Call Type:Voice	Call Priority:Normal	Call QoS:Default	Call Codec:PCMU	Call SampleRate:8000	Call Channels:1
1	22145...	PCMU...	1	0.00 / 0	0.00 / 0	0 / 0.00	0 / 0.00	0 / 0.00	0 / 0.00	0.00	0.00	0.00	0
1	22117...	PCMU...	1	0.00 / 0	0.00 / 0	0 / 0.00	0 / 0.00	0 / 0.00	0 / 0.00	0.00	0.00	0.00	0
Call#000002	Caller:0001@192.168.40.245	Callee:0001@192.168.20.20	CallId:GLPG1421035128143618	Call StartTime:2011-11-23 09:56:59.475	Call End Time:2011-11-23 09:56:59.475	Call Duration:0.000	Call Status:Completed	Call Type:Voice	Call Priority:Normal	Call QoS:Default	Call Codec:PCMU	Call SampleRate:8000	Call Channels:1
2	22141...	PCMU...	1	0.00 / 0	0.00 / 0	0 / 0.00	0 / 0.00	0 / 0.00	0 / 0.00	0.00	0.00	0.00	0
2	22194...	PCMU...	1	0.00 / 0	0.00 / 0	0 / 0.00	0 / 0.00	0 / 0.00	0 / 0.00	0.00	0.00	0.00	0
Call#000003	Caller:0002@192.168.40.245	Callee:0002@192.168.20.20	CallId:GLPG1428645128143624	Call StartTime:2011-11-23 09:57:07.082	Call End Time:2011-11-23 09:57:07.082	Call Duration:0.000	Call Status:Completed	Call Type:Voice	Call Priority:Normal	Call QoS:Default	Call Codec:PCMU	Call SampleRate:8000	Call Channels:1
3	22137...	PCMU...	1	0.00 / 0	0.00 / 0	0 / 0.00	0 / 0.00	0 / 0.00	0 / 0.00	0.00	0.00	0.00	0
3	22168...	PCMU...	1	0.00 / 0	0.00 / 0	0 / 0.00	0 / 0.00	0 / 0.00	0 / 0.00	0.00	0.00	0.00	0

Active Calls

Counter Type Counters

Counter Type	Counters
Total Packet Count	8472
Total Calls	67
Active Calls	0
Completed Calls	24
Pruned Calls(Completed)	0

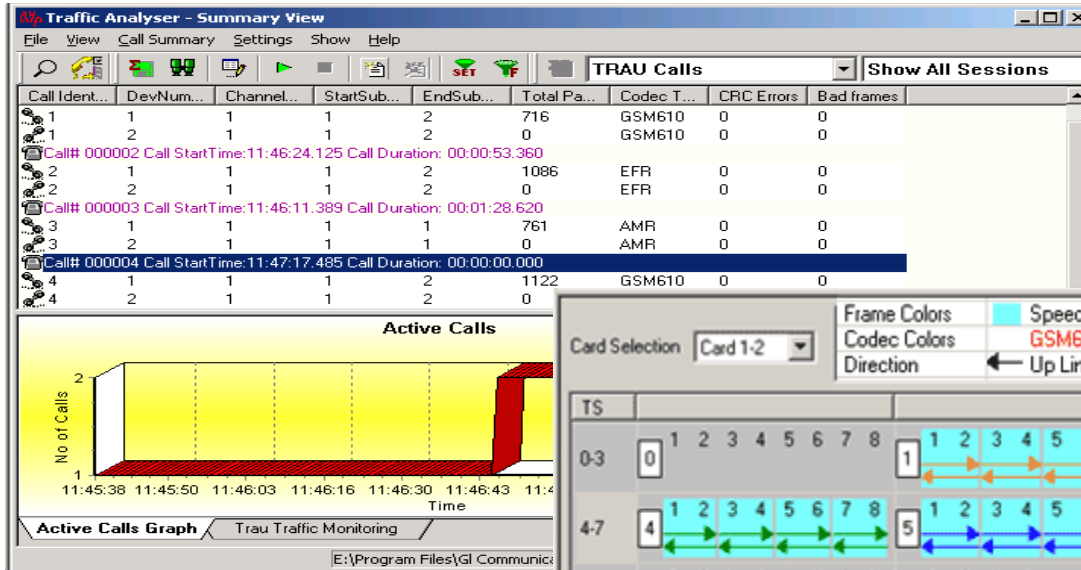
Counter Type Counters

Counter Type	Counters
Total SIP Packets	2904
SIP Calls	67
SIP Active Calls	0

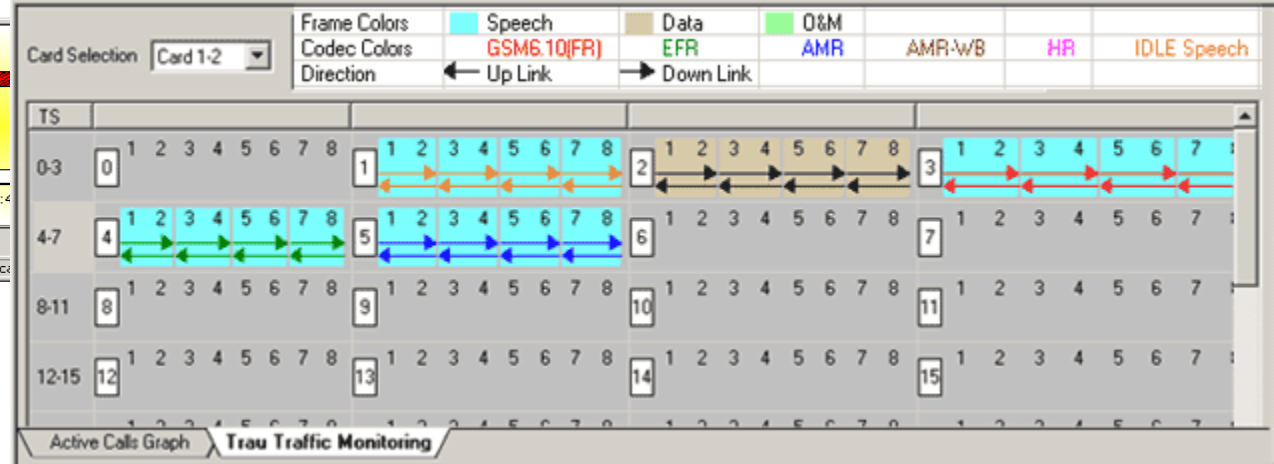
Active Calls Graph Average Jitter Distribution E-Model RTP Packets Graph SIP H323 RTP MEGACO

Protocol Analysis...

TRAU Packet Data Analysis - Active Calls Graphs



TRAU Traffic Monitoring



Protocol Emulation

GSM Call Generation

Call Generation - MTC_BulkCall

Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Events Profile	Result	Total Iterations	Completed Iterations
1	BSC_MTC_Ce...	Pro0.xm...	0x99999999	Abort		None		Pass	Infinite	0
2	BSC_MTC_Ce...	Pro1.xm...	0x22222222	Start		None		Pass	1	0
3	BSC_MTC_Ce...	Pro2.xm...	0x33333333	Start		None		Pass	Infinite	0
4	BSC_MTC_Ce...	Pro3.xm...	0x44444444	Abort		None				
5	BSC_MTC_Ce...	Pro4.xm...	0x55555555	Start		None				
6	BSC_MTC_Ce...	Pro5.xm...	0x66666666	Abort		None				
7	BSC_MTC_Ce...	Pro6.xm...	0x77777777	Abort		None				
8	BSC_MTC_Ce...	Pro7.xm...	0x88888888	Abort		None				

Add Delete Insert Start Abort Refresh Start All Abort

MAPS DUT

PAGING CoMmanD 11:44:13.296000

===== BT

T-bit
Message Group
Message Type
Channel number
IE Identifier
Channel Type
Time Slot #
Paging Group
IE Identifier
Paging Group
MS Identity
IE Identifier
Length Of MS
Type of ident
Odd/Even Ind.

Scripts Message Sequence Event Config Script Flow Profile

GSM Call Reception

Call Reception

Sr No	Script Name	Call Info	Script Execution	Status	Events	Events Profile	Result
1	MTC.gls	9341141850	Abort		Transmitting File	Terminate	Pass
2	MTC.gls	9341141851	Completed		Establishing TRAU session	None	Pass
3	RX_Channel Activat...	4	Completed			None	Pass
4	MTC.gls	9341141852	Abort		Transmitting File	Terminate	Pass
5	RX_Channel Activat...	4	Completed			None	Pass
6	MTC.gls	9341141853	Abort		Transmitting File	Terminate	Pass
7	RX_Channel Activat...	4	Completed			None	Pass
8	MTC.gls	9341141854	Abort		Transmitting File	Terminate	Pass
9	RX_Channel Activat...	4	Completed			None	Pass
10	RX_Channel Activat...	4	Completed			None	Pass
11	MTC.gls	9341141855	Abort		Transmitting File	Terminate	Pass
12	RX_Channel Activat...	4	Completed			None	Pass
13	MTC.gls	9341141856	Abort		Transmitting File	Terminate	Pass
14	MTC.gls	9341141857	Completed		RR Connection Failed	None	Unknown

Abort

Auto Trash Trash

MAPS DUT

PAGING CoMmanD 11:41:58.421000

CHANnel ReQuireD 11:41:58.421000

Immediate Assignment 11:41:59.515000

PAGING RESPONSE 11:41:59.515000

AUTHENTICATION REQUEST 11:41:59.859000

===== BTSM Layer =====

T-bit
Message Group
Message Type
Channel number
IE Identifier (Ch No)
Channel Type
Time Slot #
Paging Group
IE Identifier (PGr)
Paging Group
MS Identity
IE Identifier (MSId)
Length Of MS Identity

Scripts Message Sequence Event Config Script Flow Profile

Thank you