
Introducing USB Based T1 E1 Analyzer Unit



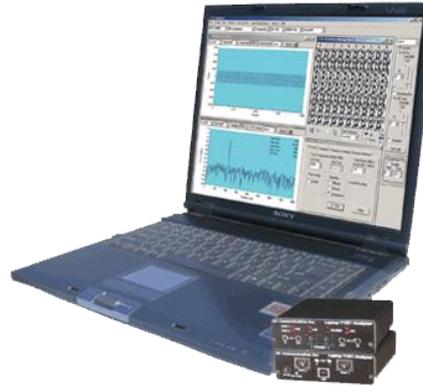
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Portable USB T1 E1 Analyzer Unit



- 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

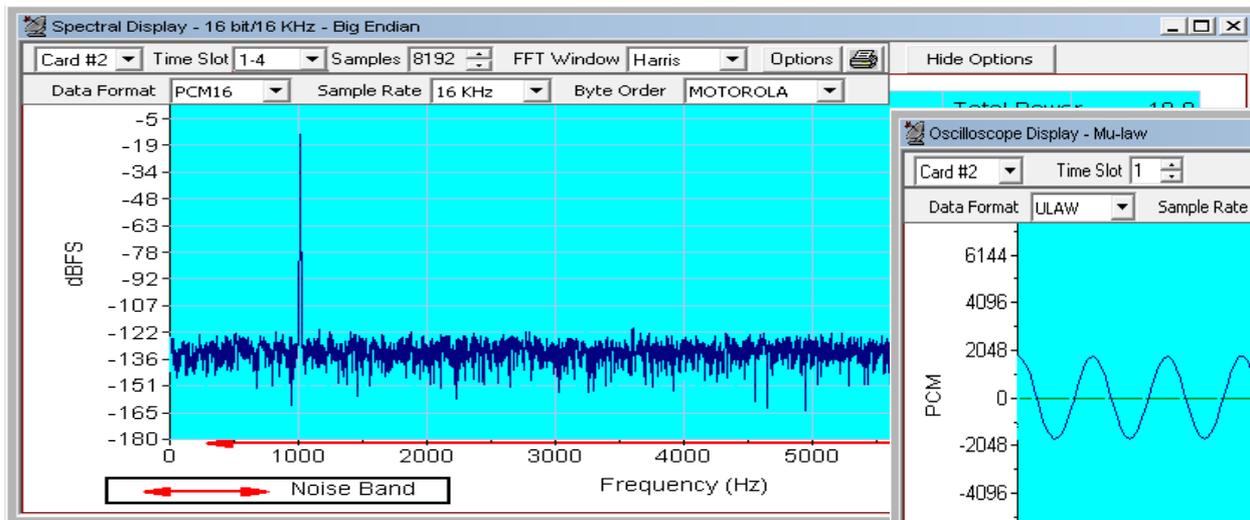
- T1 E1 Configuration Options
- VF Options
- Monitoring Options
- Intrusive Testing
- Windows Client / Server - Remote access to T1/E1 server ; Clients - C++, C#, TCL

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

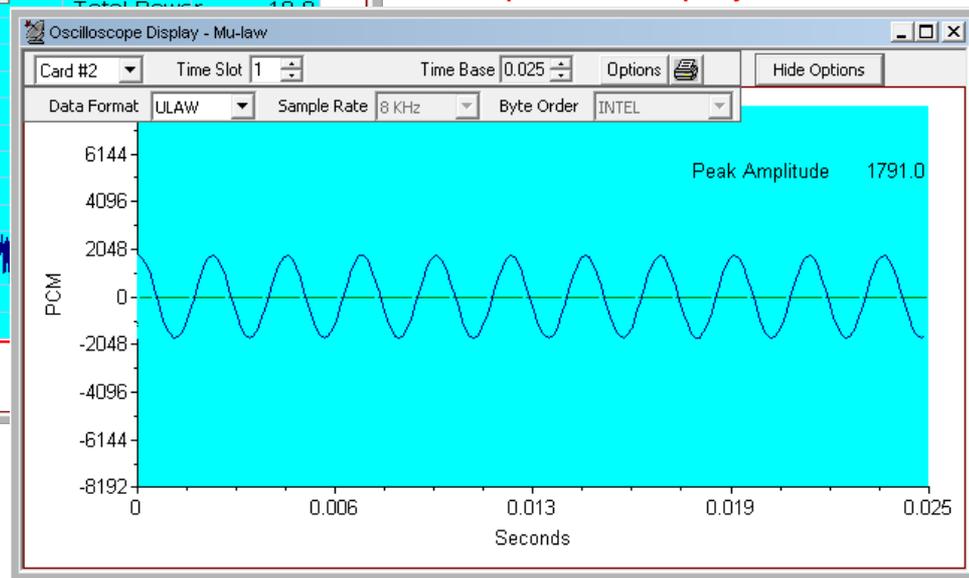
- VF Options
 - Speaker
 - Drop and Insert
 - VF In / Out TS settings
- Monitoring Features
 - Monitor T1/E1 Line
 - Byte Values & Binary Byte Values
 - Signaling bits, Power Level, DC Offset, & Frequency
 - Multiframes, and Real-time Multiframes
 - T1/E1 Data as Real-time Bitmap
 - Time-slot Window
- 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

The screenshot shows the 'Enhanced BERT Untitled' application window. The 'Tx Rx Settings - Card #1' tab is active, displaying various configuration options for transmitting and receiving data. Below the settings, the 'Graph - Online Display' section shows a 'TeeChart' graph of errors over time. The graph displays three error types: LOGIC_ERROR (red), BPV (green), and FRAME_ERROR (blue). The x-axis represents time in seconds, and the y-axis represents the number of errors.

BER Patterns

Pattern	Value
QRSS	31
User Defined Pattern	0

Timeslot Selection

TS	0	4	8	12	16	20
1	5	9	13	17	21	
2	6	10	14	18	22	
3	7	11	15	19	23	

Graph - Online Display

Graph Start - (06/13/2013-10:24:26) Graph End - (06/13/2013-10:25:26)

Card 1 | Card 2

Errors

Time in seconds

LOGIC_ERROR BPV FRAME_ERROR

T1 or E1 Basic Software

The screenshot shows the 'Tx Signaling Bits' application window. It displays a table of signaling bits for 24 different timeslots (Ts#). Each timeslot has a checkbox for selection and a 4-bit binary value (A, B, C, D). A 'Signaling' list on the right shows the corresponding 4-bit values for each timeslot.

Ts#	A	B	C	D	Ts#	A	B	C	D	Ts#	A	B	C	D
00	0	1	0	1	08	0	1	0	1	16	0	1	0	1
01	0	1	0	1	09	0	1	0	1	17	0	1	0	1
02	0	1	0	1	10	0	1	0	1	18	0	1	0	1
03	0	1	0	1	11	0	1	0	1	19	0	1	0	1
04	0	1	0	1	12	0	1	0	1	20	0	1	0	1
05	0	1	0	1	13	0	1	0	1	21	0	1	0	1
06	0	1	0	1	14	0	1	0	1	22	0	1	0	1
07	0	1	0	1	15	0	1	0	1	23	0	1	0	1

Signaling

0000	A
0001	B
0010	C
0011	D
0100	E
0101	F
0110	G
0111	H
1000	I
1001	J
1010	K

Save Deselect All Transmit Device Selection
Load Select All Close Card #1

The screenshot shows the 'Signaling Bits' application window for 'Card #2'. It displays a grid of signaling bits for 24 different timeslots (TS 0 to TS 23). Each timeslot has a 4-bit binary value (0101).

TS	Value	TS	Value	TS	Value
TS 0	0101	TS 8	0101	TS 16	0101
TS 1	0101	TS 9	0101	TS 17	0101
TS 2	0101	TS 10	0101	TS 18	0101
TS 3	0101	TS 11	0101	TS 19	0101
TS 4	0101	TS 12	0101	TS 20	0101
TS 5	0101	TS 13	0101	TS 21	0101
TS 6	0101	TS 14	0101	TS 22	0101
TS 7	0101	TS 15	0101	TS 23	0101

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.

```
E1_Regressiontest.gls - GLClient
File Edit View Connect Script Log User Help
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;
// transmitting different formats of signaling bits as mentioned before for time slots 1 to 15 only
go 0,0,0,1 #1;
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;
Ready

Untitled - GLServer
File Edit View Setup Help
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;
Ready
```

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

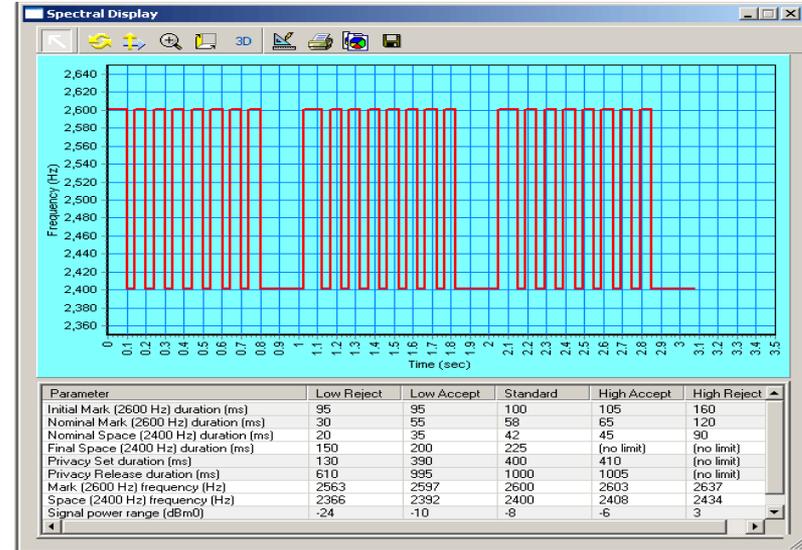
Special Applications

Protocol Identifier

The screenshot shows the 'PC Protocol Classifier' window. It features a menu bar (Config, Views, Help), a toolbar with icons for refresh, help, and log statistics, and a main display area. The 'Protocol Sel' dropdown is set to 'TRAU'. The main display is a table with columns for 'Port 1' and 'Port 2', each containing 'SubChannel' (1-8) and 'TS' (0-16). A 'Protocol Color Selection' dialog box is open, showing a color-coded list of protocols: ALL (yellow), TRAU (orange), ATM (red), HDLC (blue), MTP2 (red), LAPD (magenta), SS7 (orange), PPP (pink), ISDN (cyan), GSM (green), GSMABIS (cyan), and FRAMERELAY (grey). A 'Default' button is at the bottom of the dialog.

TS	Port 1	Port 2
0	SubChannel 1-8	SubChannel 1-8
1	ISDN	ISDN
2	FRAMERELAY	FRAMERELAY
3	TRAU	SS7
4	TRAU	SS7
5	TRAU	PPP
6		TRAU
7		TRAU
8		TRAU
9		TRAU
10	HDLC	HDLC
11		
12	MTP2	HDLC
13		
14		
15		
16	HDLC	LAPD

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

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

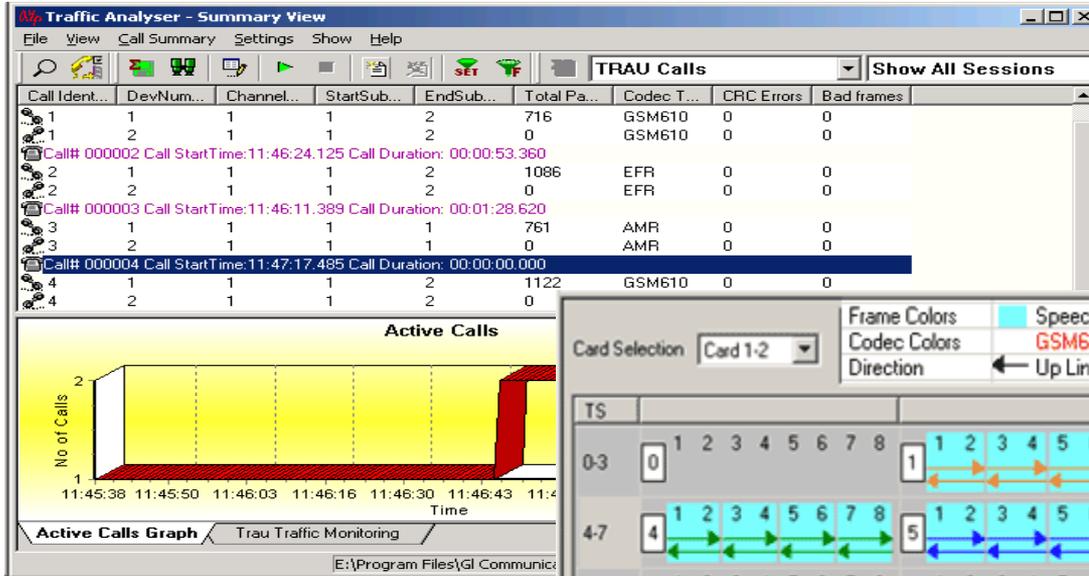
The screenshot shows the 'PPP Protocol Analysis PPP' window. The top part is a table with columns: Dev, TSlot, SubCh, Fram..., TIME (Relative), Len, Error, PPP Laye..., LCP Code, IPCP Code, and BCF. The table lists several events, mostly Link Control and Echo-Request/Reply. Below the table, there is a detailed view of the Link Control Layer, showing fields like Address, Ctl, Protocol, Code, Identifier, and Length. At the bottom, there is a 'Hex Dump of the Frame Data' showing the hexadecimal values: FF 03 C0 21 09 AC 00 08 09 DC 19 2E 85 63.

PPP Packet Data Analysis

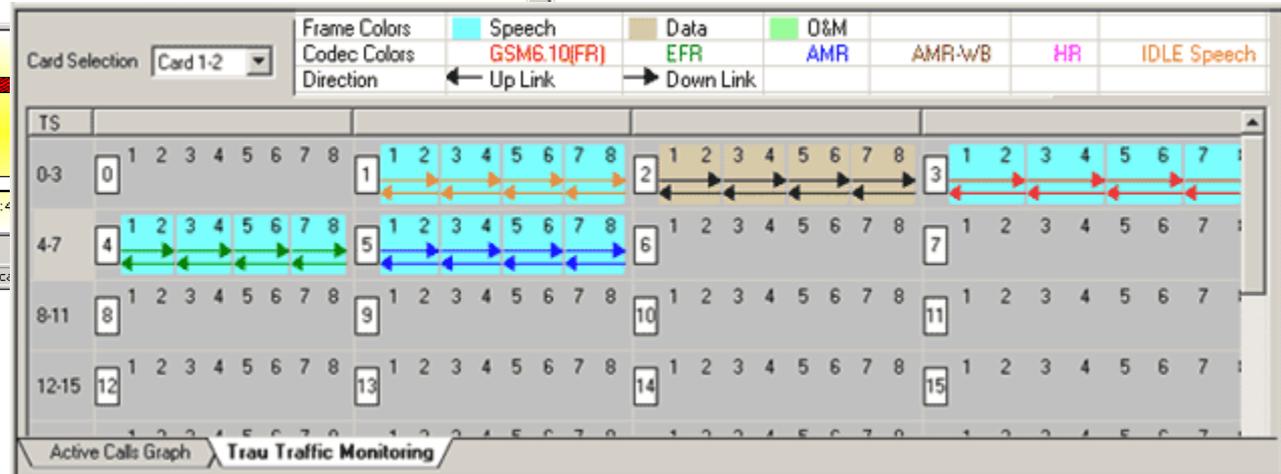
The screenshot shows the 'Traffic Analyzer - Summary View' window. It features a 'Call Summary' table with columns: Call #, SSRC, Payload, Packet Received, Conversat MOS/R..., Listening MOS/R..., Packets Discard..., Missing Packets..., Duplicate Packets..., Out Of Sequen..., Average Gap(ms), Average Delay, Average Jitter, and Averag Inter A... The table lists several calls, including Call#000001, Call#000002, and Call#000003. Below the table is an 'Active Calls' graph showing the number of active calls over time. The graph has a Y-axis labeled 'No of Calls' and an X-axis labeled 'Time' with values from 10:04:33 to 10:14:40. To the right of the graph is a 'Counter Type' table with columns: Counter Type and Count. The table lists: Total Packet Count (8472), Total Calls (67), Active Calls (0), Completed Calls (24), and Pruned Calls(Completed) (0). Below this is another 'Counter Type' table with columns: Counter Type and Counters. It lists: Total SIP Packets (2904), SIP Calls (67), and SIP Active Calls (0). At the bottom, there are navigation buttons for 'Active Calls Graph', 'Average Jitter Distribution', 'E-Model', 'RTP Packets Graph', and '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	Pass	None		Pass	Infinite	0
2	BSC_MTC_Ce...	Pro1.xm...	0x22222222	Start	Pass	None		Pass	1	0
3	BSC_MTC_Ce...	Pro2.xm...	0x33333333	Start	Pass	None		Pass	Infinite	0
4	BSC_MTC_Ce...	Pro3.xm...	0x44444444	Abort	Pass	None		Pass	Infinite	0
5	BSC_MTC_Ce...	Pro4.xm...	0x55555555	Start	Pass	None		Pass	Infinite	0
6	BSC_MTC_Ce...	Pro5.xm...	0x66666666	Abort	Pass	None		Pass	Infinite	0
7	BSC_MTC_Ce...	Pro6.xm...	0x77777777	Abort	Pass	None		Pass	Infinite	0
8	BSC_MTC_Ce...	Pro7.xm...	0x88888888	Abort	Pass	None		Pass	Infinite	0

Buttons: Add, Delete, Insert, Start, Abort, Refresh, Start All, Abort

Message Sequence Diagram (MAPS vs DUT):

- MAPS sends PAGING CoMmanD to DUT at 11:44:13.296000.

BT Layer Details:

- 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.

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	Transmitting File	None		Pass
4	MTC.gls	9341141852	Abort	Transmitting File	Terminate		Pass
5	RX_Channel Activat...	4	Completed	Transmitting File	None		Pass
6	MTC.gls	9341141853	Abort	Transmitting File	Terminate		Pass
7	RX_Channel Activat...	4	Completed	Transmitting File	None		Pass
8	MTC.gls	9341141854	Abort	Transmitting File	Terminate		Pass
9	RX_Channel Activat...	4	Completed	Transmitting File	None		Pass
10	RX_Channel Activat...	4	Completed	Transmitting File	None		Pass
11	MTC.gls	9341141855	Abort	Transmitting File	Terminate		Pass
12	RX_Channel Activat...	4	Completed	Transmitting File	None		Pass
13	MTC.gls	9341141856	Abort	Transmitting File	Terminate		Pass
14	MTC.gls	9341141857	Completed	RR Connection Failed	None		Unknown

Buttons: Abort, Auto Trash, Trash

Message Sequence Diagram (MAPS vs DUT):

- DUT sends PAGING CoMmanD to MAPS at 11:41:58.421000.
- MAPS sends CHANnel ReQuireD to DUT at 11:41:58.421000.
- DUT sends Immediate Assignment to MAPS at 11:41:59.515000.
- MAPS sends PAGING RESPONSE to DUT at 11:41:59.515000.
- DUT sends AUTHENTICATION REQUEST to MAPS at 11:41:59.859000.

BTSM Layer Details:

- T-bit
- Message Group = 000C
- Message Type = 0001
- Channel number = 000C
- IE Identifier (Ch No) = 1001
- Channel Type = 000C
- Time Slot # = 000C
- Paging Group = 000C
- IE Identifier (PGr) = 000C
- Paging Group = 000C
- MS Identity = 000C
- IE Identifier (MSId) = 000C
- Length Of MS Identity = 5 (x)

Thank you