Deployment of Products with Multiple Features & Protocols

Simulates BSSMAP and DTAP Messages

Call Flow Customization with Message & Sequence Editors

Supports Call Control, Mobility Management, & Radio Resource Messages

Graphically Depicts Call Flows in Ladder Diagrams

Provides Fault Insertion, & Erroneous Call Flow Testing

High Volume TDM Traffic Simulation

User-defined and Auto Traffic Types - Voice, Digits, Tones, Fax, Dynamic VF, VQT, and IVR

Multiple T1/E1 Interfaces

Ready Scripts for Simpler & Less Time Consuming Tests

MAPS™ GSM - A Interface Emulator

(GSM A Interface Emulation over TDM)

Overview

GL’s MAPS™ GSM A Interface Emulator is an advanced protocol simulator/tester for GSM simulation over A Interface that can simulate MSC and BSC network elements for exchanging BSSMAP and DTAP messages as defined by 3GPP standards. The tester supports Error tracking, regression testing, conformance testing, load testing/call generation and generation of high volumes of GSM traffic over TDM. It is able to run pre-defined test scenarios against GSM A interface test objects in a controlled & deterministic manner.

MAPS™ GSM A over TDM supports mobility management procedures over GSM A interface such as Location Management Procedure, Mobile Originating and Terminating Procedures, and Handover Management Procedures. It supports send/receive SMS simultaneously using signaling channel with the voice/data/fax services over a GSM network.

GSM A Interface Emulator supports powerful utilities like Message Editor, Script Editor and Profile Editor which allow custom call scenarios to be created or existing scenarios to be modified.

With the purchase of TDM traffic licenses (xx610, xx620, xxFT0) GSM traffic can be simulated over T1/E1 interfaces. Supported traffic includes transmission and detection of digits, voice files, single tone, dual tones, FAX, Dynamic VF, User defined Traffic, IVR, and VQT.

For more details, refer to https://www.gl.com/maps-gsma.html

Main Features

- GSM A Interface simulation over TDM (E1/T1)
- GSM A Interface Emulator can be configured to act as either BSC or MSC
- Call simulation over single or multiple T1/E1 timeslots along with high volume automated traffic
- User-friendly GUI for configuring the MTP Layers
- Supports all Call Control, Mobility Management, and Radio Resource Management messages
- Access to all BSSMAP and DTAP message parameters like TMSI, IMSI, CIC, MCC, LAC, and more
- User controlled access to optional parameters such as timers
- Supports Authentication, TMSI Reallocation, Encryption, and other optional procedures
- Ready scripts for Mobile Originating, Mobile Terminating, Location Updating procedures and SMS call procedures
- Logging of all messages in real-time
- Automation, Remote access, and Schedulers to run tests 24/7
**Testbed Setup Configuration**

Test Bed setup is provided to establish communication between MAPSTM GSM A and the DUT. It includes Source and Destination node parameter configurations, MTP signaling, Link Set parameters, Circuit Group parameters, and end user configuration to transmit and receive GSM A messages. Default profile used to configure MAPSTM GSM A with BSC and MSC end terminal parameters.

**Pre-processing Tools**

**PROFILE EDITOR**

This feature allows loading profile to edit the values of the variables using GUI, replacing the original value of the variables in the message template.

An XML file defines a set of multiple profiles with varying parameter values that allow users to configure call instances in call generation and to receive calls.

Users can configure the traffic options for Auto traffic type or User-defined traffic type. Supported traffic configuration includes Voice file, Digits, Tones, FAX, Dynamic VF, VQT, and IVR.

**SCRIPT EDITOR**

The script editor allows the user to create / edit scripts and access protocol fields as variables for the message template parameters. The script uses pre-defined message templates to perform send and receive actions.

**Message Editor**

With message editor, users can build a template for each protocol message type. The value for each field may be changed in the message template prior to testing. The protocol fields comprises of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.
**Typical GSM A Interface Call Procedures**

MAPS™ GSM A can be configured as Base Station Controller (BSC) and at the network as MSC. Location Update procedure is initiated by sending request message to the Network (MSC), and following the LUC procedure the Mobile Originating Call (MOC) is initiated with CM Service Request sent to the Network (MSC).

Figure: LUC and MOC Call Procedures

MAPS™ GSM A at network can be configured to act as Mobile Station Controller (MSC) initiates the MTC procedure by sending the Paging Request message to the Mobile Station (BSC). The DUT (BSC) on receipt of a Paging message, sends a Paging Response message back to MSC. Also, simulates the complete call flow as in Mobile Terminating Call (MTC) call flow.

Figure: MTC Call Procedure

**SMS Call Procedures**

Short Message Service (SMS) is a mechanism of short messages delivery over the mobile networks. It is a store and forward way of transmitting messages to and from mobile phones. The messages (text only) from the sending mobile is stored in a central short message centre (SMC) which then is forwarded to the destination mobile.

Figure: SMS Call Procedures

**Call Generation and Reception**

In call generation, MAPS™ is configured for the outgoing messages, while in call receive mode, it is configured to respond to incoming messages. Tests can be configured to run once, multiple iterations and continuously. Also, allows users to create multiple entries using quick configuration feature.

The editor allows to run the added scripts sequentially (order in which the scripts are added in the window) or randomly (any script from the list of added script as per the call flow requirements). The test scripts may be started manually or they can be automatically triggered by incoming messages.

Figure: Call Generation
## Supported Protocol Standards

<table>
<thead>
<tr>
<th>Supported Protocols</th>
<th>Standard / Specification Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCCP</td>
<td>Q.713, CCITT (ITU-T) Blue Book</td>
</tr>
<tr>
<td>MTP3</td>
<td>Q.703, ITU-T Blue Book</td>
</tr>
<tr>
<td>BSSMAP/DTAP</td>
<td>3GPP TS 08.08 V8.9.0</td>
</tr>
<tr>
<td>MM / CC</td>
<td>3GPP TS 04.08 V7.17.0</td>
</tr>
<tr>
<td>RR</td>
<td>3GPP TS 04.18 V8.13.0</td>
</tr>
<tr>
<td>SMS</td>
<td>3GPP TS 03.40 V7.5.0 &amp;</td>
</tr>
<tr>
<td></td>
<td>3GPP TS 04.11 V7.1.0 GSM 03.38 version 7.2.0 Release 1998</td>
</tr>
</tbody>
</table>

## Buyer's Guide

**XX692** – MAPS™ GSM-A Interface Emulator  
**xx610, xx620**—TDM Traffic Options

## Recommended Software

**XX120** - SS7 Analysis Software  
**PKV107** - LTE Protocol Analyzer  
**XX165** - T1 or E1 UMTS Protocol Analyzer  
**OLV165** - Offline UMTS Protocol Analyzer  
**LTS206** - OC-3 / STM-1 UMTS Protocol Analysis  
**LTS306** - OC-12 / STM-4 UMTS Protocol Analysis  
**XX100** - ISDN Analyzer Software

## Related Software

**XX648** – MAPS™ ISDN  
**XX642** - MAPS™ ISDN LAPD Conformance Test Suite  
**XX693** – MAPS™ GSM-Abis  
**PKS130** - MAPS™ SIGTRAN (SS7 over IP)  
**PKS132** - MAPS™ MAP over IP  
**PKS140** - MAPS™ LTE- S1 Interface  
**PKS142** - MAPS™ LTE- eGTP (S3, S4, S5, S8, S10, S11 and S16) Interfaces  
**PKS164** - MAPS™ UMTS - IuPS Interface Emulation  
**PKS160** - MAPS™ UMTS - IuCS and Iuh Interface Emulation  
**PKS135** - MAPS™ ISDN-SIGTRAN (ISDN over IP)  
**PKS120** - MAPS™ SIP  
**PKS121** - MAPS™ SIP Conformance Test Suite (Test Scripts)  
**PKS122** – MAPS™ MEGACO  
**PKS123** – MAPS™ MEGACO Conformance Test Suite (Test Scripts)  
**PKS124** - MAPS™ MGCP & Conformance Test Suite (Test Scripts)

## Related Hardware

**HTE001** - Universal HD T1 or E1 PCI Cards  
**UTE001** - USB based Dual T1 or E1 Laptop Analyzer  
**PTE001** - tProbe™ T1 E1 Base Unit  
**FTE001** - QuadXpress T1 E1 Main Board (Quad Port– requires additional licenses)  
**FTE001** - OctalXpress T1 E1 Main Board plus Daughter Board (Octal Port– requires additional licenses)

For complete list of MAPS™ products, refer to [https://www.gl.com/maps.html](https://www.gl.com/maps.html) webpage.