Telit eCall Solution

Application Note

80000NT10046A Rev. 6 - 2014-06-16

Making machines talk.

APPLICABILITY TABLE

	SW Versions	AT Ref. Guide	Standards
GC Family (Compact)		[2]	GSM/GPRS
GC864-QUAD	10.00.xx8		
GC864-QUAD V2	10.00.xx8		
GC864-DUAL V2	10.00.xx8		
GE/GL Family (Embedded)			
GE864-QUAD	10.00.xx8		
GE864-QUAD V2	10.00.xx8		
GE864-QUAD Automotive V2	10.00.xx5		
GE864-QUAD ATEX	10.00.xx8		
GE864-DUAL V2	10.00.xx8		
GE864-GPS	10.00.xx5		
GE865-QUAD	10.00.xx8		
GL865-DUAL	10.00.xx8		
GL865-QUAD	10.00.xx5		
GL868-DUAL	10.00.xx8		
GE910-QUAD	13.00.xx4		
GE910-GNSS	13.00.xx4		
GL865-DUAL V3	16.00.xx3		
GL865-QUAD V3	16.00.xx3		
GL868-DUAL V3	16.00.xx3		
GE910-QUAD V3	16.00.xx3		
GE866-QUAD	16.01.xx0		
GT Family (Terminal)			
GT863-PY	10.00.xx8		
GT864-QUAD	10.00.xx8		
GT864-PY	10.00.xx8		
HE910 Family		[5]	HSPA-GSM/GPRS
HE910 [1]	12.00.xx4		
HE910-GA	12.00.xx4		
HE910-EUR	12.00.xx4		
HE910-NAR	12.00.xx4		
UE910 Family			
UE910-EUR	12.00.xx4		
UE910-NAR	12.00.xx4		
UL865 Family			
UL865-EUR	12.00.xx4		
UL865-NAR	12.00.xx4		
HE920 Family		[6]	HSPA-GSM/GPRS
HE920-EU	14.12.xx1		
HE920-NA	14.12.xx1		
HE910 V2 Family		[7]	
HE910-EUG V2	14.22.xx1		
HE910-NAG V2	14.22.xx1		
UE910 V2 Family		[8]	HSDPA-GSM/GPRS
UE910-EU V2	19.10.xx1		
UE910-NA V2	19.10.xx1		
LE920 Family		[9]	LTE-WCDMA-GSM/GPRS
LE920-EU	17.00.xx3		
LE920-NA	17.00.xx3		

Note: the features described in the present document are provided by the products equipped with the software versions equal or higher than the versions shown in the table. See also the Document History chapter.

[1] HE910 is the "type name" of the products marketed as HE910-G & HE910-DG.

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Contents

Figures

1. Introduction

The document is divided in two sections. The first one describes the AT commands used to manage the Telit IVS modem implementation. The second one describes the Telit eCall Test Architecture.

1.1. Scope

The Application Note is addressed to Telit applications (IVS modem, eCall test architecture), does not cover exhaustively the eCall Service, for that purpose there are dedicated Standard Technical Specifications

1.2. Audience

This document is intended for users interested to develop an application using the Telit In-Vehicle System modem and test the developed application via the Public-Safety Answering Point Support provided by Telit.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit Technical Support Center (TTSC) at:

TS-EMEA@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:

http://www.telit.com/en/products/technical-support-center/contact.php

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Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

1.4. Related Documents

[1] 3GPP TS 26.267, 3GPP TS 27. 007
[2] Telit AT Commands Reference Guide, code: 80000ST10025a
[3] EN 16062:2011
[4] EN 15722:2011
[5] HE910/UE910 AT Commands Reference Guide: 80378ST10091A
[6] HE920 AT Commands Reference Guide: 80404ST10113A
[7] HE910 AT Commands Reference Guide: 80418ST10126A
[8] UE910 V2 AT Commands Reference Guide: 80419ST10124A
[9] LE920 AT Commands Reference Guide: 80407ST10116A

1.5. Document History

Revision	Date	Products/SW Version	Changes
0	2011-03-08	/	First issue.
1	2011-05-17	/	Added T3, T5, T6, T7 on fig. 3.
2	2011-07-19	/	Added products into “Applicability Table” and modified chapter 1.1.
3	2011-09-21	/	Modified chapter 4.2.
4	2012-01-12	/	Modified: Applicability Table, Chapters 4, 3; fig. 5, fig. 7, fig. 8.
5	2013-12-03	/	The document title has been changed from “Telit Solution for eCall Testing” to “Telit eCall Solution”. The Applicability Table has been rearranged with new products supporting the eCall functionality. The following products were already present in the previous release: GE864-QUAD-Automotive-V2, 10.00.xx5 GE864-GPS, 10.00.xx5 GL865-QUAD, 10.00-xx5
6	2014-06-16	/	Added chapter 3.4
		Products added: HE920 Family / 14.12.xx1 HE910 V2 Family / 14.22.xx1 UE910 V2 Family / 19.10.xx1 LE920 Family / 17.00.xx3 GE866-QUAD / 16.01.xx0 HE910-NAG V2 / 14.22.xx1	/

1.6. Abbreviations & Acronyms

ASN1	Abstract Syntax Notation One
DTE	Data Terminal Equipment
IVS	In-Vehicle System
LAB	Laboratory
MSD	Minimum Set of Data
NAD	Network Access Device, e.g. a GSM module
PSAP	Public-Safety Answering Point
SIP	Session Initiation Protocol
UMTS	Universal Mobile Telecommunications System
USIM	UMTS Subscriber Identity Module
VIN	Vehicle Identification Number

2. eCall System Overview

The eCall is an emergency voice call established from the vehicle (IVS) via the cellular network to the local emergency agencies (PSAP). The eCall allows transferring a data message (MSD) from the IVS over the cellular network to the PSAP. The MSD can include, e.g. vehicle location information, time stamp, number of passenger, Vehicle Identification Number (VIN), and other relevant accident information.

The present document assumes that the reader is familiar with the terminology and the basic concepts concerning the eCall Service. The eCall Architecture is shown in fig. 1, refer to [1].

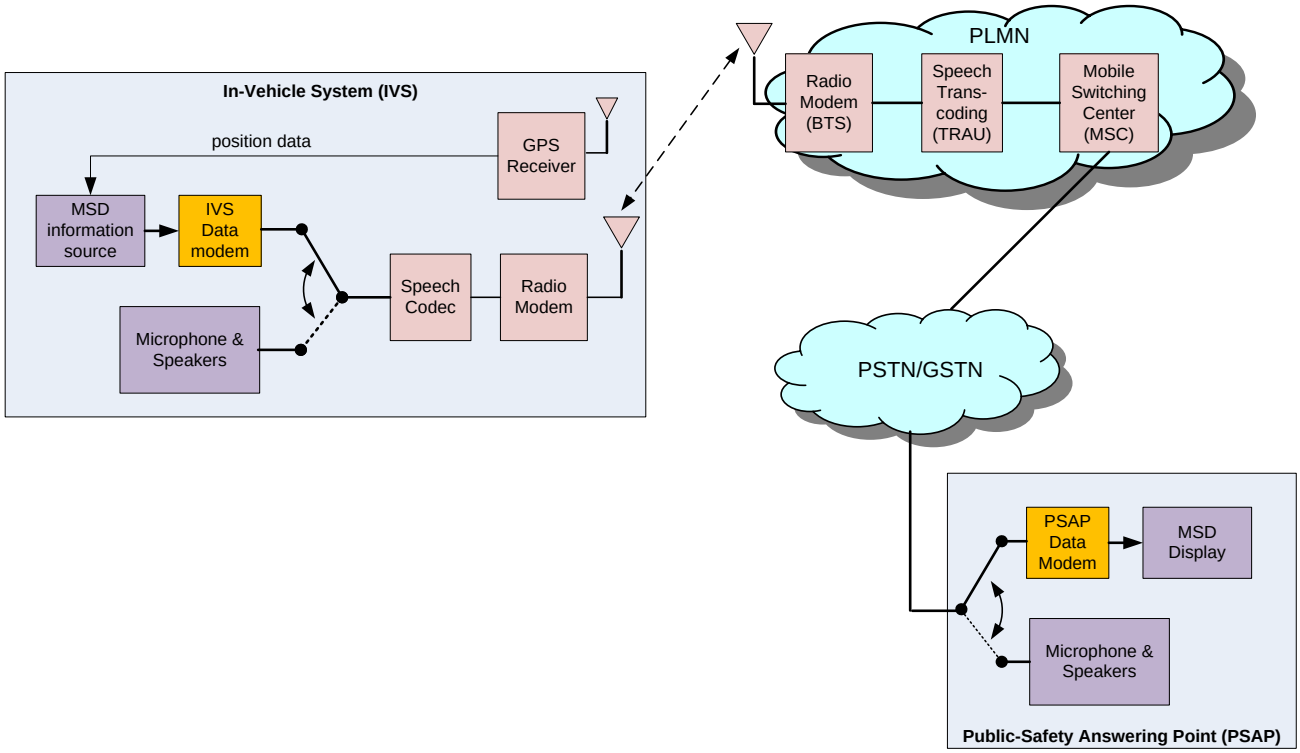

fig. 1: eCall Service Chain

2.1. eCall Types

eCall capable NADs are divided into two types, unrestricted and restricted. Unrestricted eCall NADs are those that have the capability and are configured to also access other non-emergency subscription services. Restricted eCall NADs are those that either do not support the capability to access other non-emergency services, or are normally unrestricted eCall NADs that have been configured to make only eCalls. In the latter case the restricted eCall capable NAD is referred to as an 'eCall only'.

Warning: Telit IVS modem implementation does not provide the 'eCall only' feature.

In the event of vehicle collision, the eCall can be established in two ways:

- Manually initiated eCall (MIeC):
  the emergency call is generated manually by the vehicle occupants.

- Automatically initiated eCall ((AIeC):
  the emergency call is generated automatically via activation of in-vehicle sensor.

In addition, there are test and reconfiguration calls. Their purpose is to ensure that the NAD under test is capable of establishing a call to each of the non-emergency fixed dialing numbers stored on the USIM.

- Test call:
  It ascertains that an emergency call can be established, and conveys the expected information. Except for test specifically agreed with a PSAP, the IVS shall set the test bit of the MSD.

- Reconfiguration call:
  It requests terminal reconfiguration (e.g. convert an eCall-only terminal into a terminal able to provide normal services as well as eCall).

2.2. PUSH & PULL Modes

As stated in document [1] the eCall Service supports two operative modes:

- PUSH
- PULL

In the PUSH mode the MSD data is pushed by the IVS Modem, in the PULL mode the MSD data is required by the PSAP Modem, a simplified handshake is shown in the figure below.

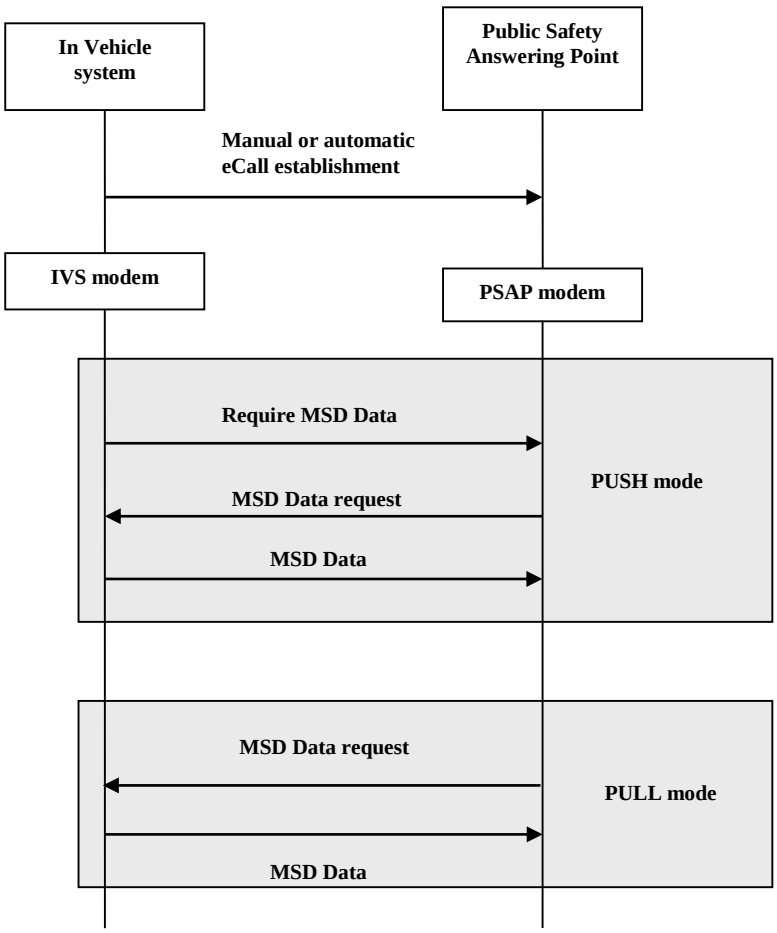

fig. 2: PUSH & PULL mode

3. Telit IVS Modem Implementation

The next sub-chapters describe the AT commands provided by the IVS Modem developed by Telit. The messages exchange between IVS and PSAP is depicted in fig. 3. For detailed information about T3, T5, T6, and T7 refer to [3] (Annex A, Table of timings), see also [4].

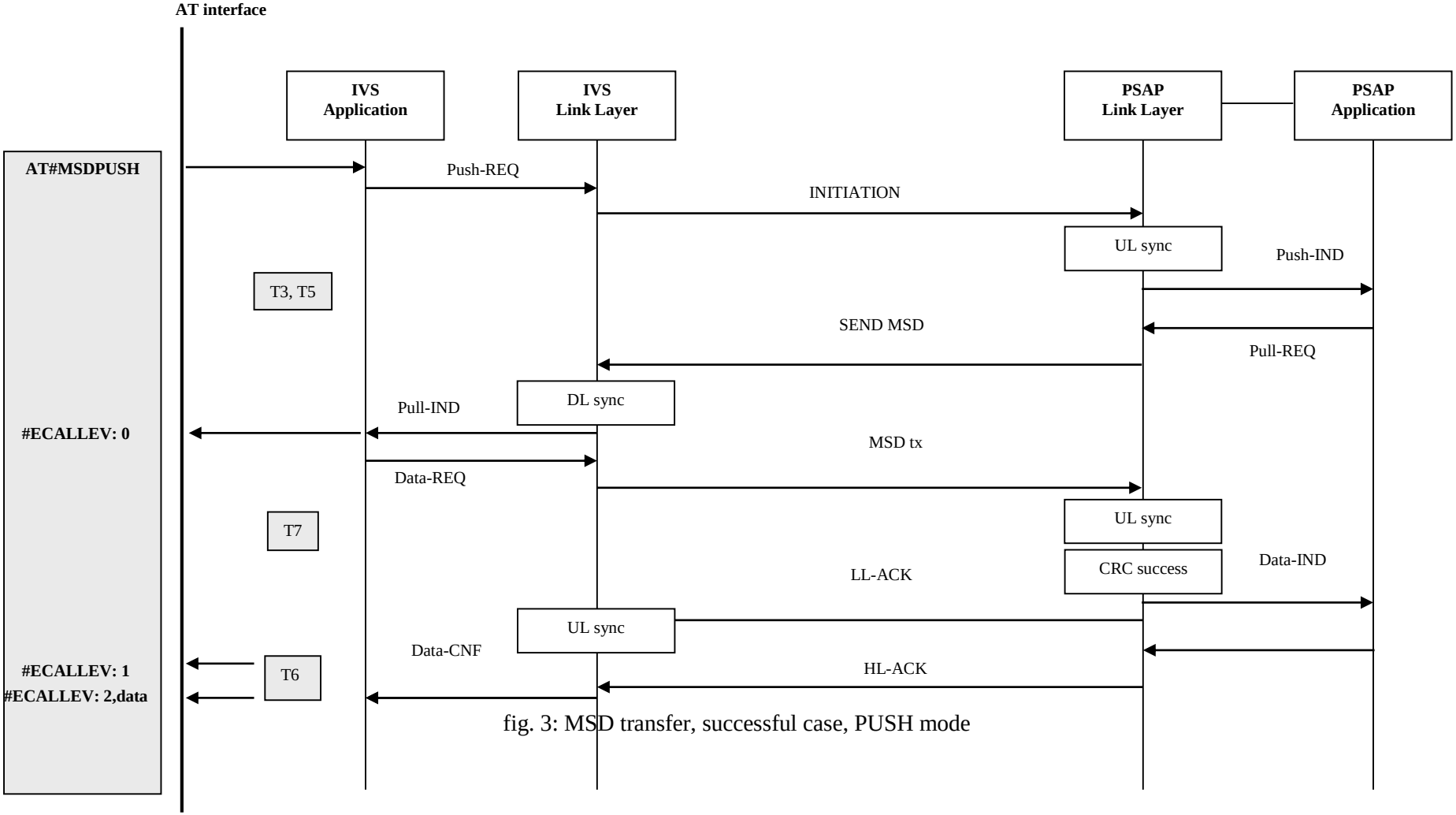

fig. 3: MSD transfer, successful case, PUSH mode

3.1. Test and Reconfiguration numbers

The test and reconfiguration numbers may be contained only in USIM. If they are present, the user can establish test or reconfiguration call using the numbers provided by the USIM as shown in chapters 3.1.1 and 3.1.2.

If the USIM does not provide the eCall service[2] (the test and reconfiguration numbers are not available), before using the procedure described in chapters 3.1.1 and 3.1.2, the AT#TESTNUM command shall be used:

AT#TESTNUM=0,<number> with <number> = eCall test number.

AT#TESTNUM=1,<number> with <number> = eCall reconfiguration number.

NOTICE: if the USIM provides the eCall service, after the PIN insertion the eCall test and reconfiguration numbers are set. The numbers can be overwritten via the AT#TESTNUM command.
If the user sets the two eCall numbers via AT#TESTNUM command and after that enters the PIN, the two just entered numbers will be overwritten by the numbers stored in USIM.

[2] If Service n°4 Service Dialing Numbers (SDN) and Service n°89 eCall Data are not available, then the test and reconfiguration numbers are not available.
If Service n° 89 and Service n° 2 are "available" and FDN service is enabled in EFEST and eCall only calls are supported then EFFDN shall only contain two entries. The first entry shall contain the eCall test number and the second entry shall contain the eCall reconfiguration number. A terminal in eCall only mode performs the FDN related procedures

3.1.1. Test Call

Warning: test number can be available in USIM or shall be entered via **AT#TESTNUM** command, see chapter 3.1.

AT#CPUMODE=3	sets the IVS modem at the maximum clock speed to improve performances. Not all modules provide this command; in this case skip this step because the modem works already at the maximum clock speed.
AT#ECALLTYPE=1	Set for using unified AT command. Not all modules provide this command; in this case skip this step because the modem use already unified AT command.
AT#MSDSEND	enter codified MSD data (compliant with ASN.1 language)

>… codified MSD data…..

AT#MSDPUSH	PUSH mode is activated, see fig. 2, and [3]. Refer to fig. 3: INITIATION msg is sent to PSAP Link Layer to synchronize the Up Link and wake up the PSAP Application. In response, PSAP Application sends back SEND MSD msg to require the MSD data.
AT+CECALL=0	the index 0 selects the eCall test number, see chapter 3.1. In accordance with the selected index the test eCall is established.

Expected unsolicited messages, refer to fig. 3:

#ECALLEV:0	unsolicited msg indicates that the Down Link is synchronized and the MSD request msg is received.
#ECALLEV:1	unsolicited msg indicates that MSD data has been successfully received by PSAP.
#ECALLEV:2, data	unsolicited msg asks to IVS Modem to accomplish some actions. The actions are codified by data argument, e.g.: clear down the call,

To hang up the call enter the following command:

ATH

NOTICE: If **#ECALLEV:16** msg is received in place of one of the above unsolicited msg it means that the synchronization between IVS and PSAP is lost. It can happen in any phase of transmission.

3.1.2. Reconfiguration Call

Warning: reconfiguration number can be available in USIM or shall be entered via **AT#TESTNUM** command, see chapter 3.1.

AT#CPUMODE=3	sets the IVS modem at the maximum clock speed to improve performances. Not all modules provide this command; in this case skip this step because the modem works already at the maximum clock speed.
AT#ECALLTYPE=1	Set for using unified AT command. Not all modules provide this command; in this case skip this step because the modem use already unified AT command.
AT#MSDSEND	enter codified MSD data (compliant with ASN.1 language)
>… codified MSD data…..	
AT#MSDPUSH	PUSH mode is activated, see fig. 2, and [3]. Refer to fig. 3: INITIATION msg is sent to PSAP Link Layer to synchronize the Up Link and wake up the PSAP Application. In response, PSAP Application sends back SEND MSD msg to require the MSD data.
AT+CECALL=1	the index 1 selects the eCall reconfiguration number, see chapter 3.1. In accordance with the selected index the reconfiguration eCall is established.

Expected unsolicited messages, refer to fig. 3:

#ECALLEV:0	unsolicited msg indicates that the Down Link is synchronized and the MSD request msg is received.
#ECALLEV:1	unsolicited msg indicates that MSD data has been successfully received by PSAP.
#ECALLEV:2, data	unsolicited msg asks to IVS Modem to accomplish some actions. The actions are codified by data argument, e.g.: clear down the call,

To hang up the call enter the following command:

ATH

NOTICE: If **#ECALLEV:16** msg is received in place of one of the above unsolicited msg it means that the synchronization between IVS and PSAP is lost. It can happen in any phase of transmission.

3.2. Manually Initiated eCall

AT#CPUMODE=3	sets the IVS modem at the maximum clock speed to improve performances. Not all modules provide this command; in this case skip this step because the modem works already at the maximum clock speed.
AT#ECALLTYPE=1	Set for using unified AT command. Not all modules provide this command; in this case skip this step because the modem use already unified AT command.
AT#MSDSEND	enter codified MSD data (compliant with ASN.1 language)
>… codified MSD data…..	
AT#MSDPUSH	PUSH mode is activated, see fig. 2, and [3]. Refer to fig. 3: INITIATION msg is sent to PSAP Link Layer to synchronize the Up Link and wake up the PSAP Application. In response, PSAP Application sends back SEND MSD msg to require the MSD data.
AT+CECALL=2	manually initiated eCall is established.

Expected unsolicited messages, refer to fig. 3:

#ECALLEV:0	unsolicited msg indicates that the Down Link is synchronized and the MSD request msg is received.
#ECALLEV:1	unsolicited msg indicates that MSD data has been successfully received by PSAP.
#ECALLEV:2, data	unsolicited msg asks to IVS Modem to accomplish some actions. The actions are codified by data argument, e.g.: clear down the call,

To hang up the call enter the following command:

ATH

NOTICE: If **#ECALLEV:16** msg is received in place of one of the above unsolicited msg it means that the synchronization between IVS and PSAP is lost. It can happen in any phase of transmission.

3.3. Automatically Initiated eCall

AT#CPUMODE=3	sets the IVS modem at the maximum clock speed to improve performances. To minimize power consumption, the clock speed can be maximized only during the voice call using the **AT#CPUMODE=6** command. Not all modules provide this command; in this case skip this step because the modem works already at the maximum clock speed.
AT#ECALLTYPE=1	Set for using unified AT command. Not all modules provide this command; in this case skip this step because the modem use already unified AT command.
AT#MSDSEND	enter codified MSD data (compliant with ASN.1 language)
>… codified MSD data…..	
AT#MSDPUSH	PUSH mode is activated, see fig. 2, and [3]. Refer to fig. 3: INITIATION msg is sent to PSAP Link Layer to synchronize the Up Link and wake up the PSAP Application. In response, PSAP Application sends back SEND MSD msg to require the MSD data.
AT+CECALL=3	automatically initiated eCall is established.

Expected unsolicited messages, refer to fig. 3:

#ECALLEV:0	unsolicited msg indicates that the Down Link is synchronized and the MSD request msg is received.
#ECALLEV:1	unsolicited msg indicates that MSD data has been successfully received by PSAP.
#ECALLEV:2, data	unsolicited msg asks to IVS Modem to accomplish some actions. The actions are codified by data argument, e.g.: clear down the call,

To hang up the call enter the following command:

ATH

NOTICE: If **#ECALLEV:16** msg is received in place of one of the above unsolicited msg it means that the synchronization between IVS and PSAP is lost. It can happen in any phase of transmission.

3.4. Internal MSD encoder for eCall

Warning: Telit IVS modem internal MSD encoder only applicable on HE920, HE910V2 family and UE910 V2 family

AT#ECALLTYPE=2 Set to use codified MSD data with ASN.1 language

AT#MSDGI=<GPS mode>,<message identifier>,<confidence>,<passengers> ,<time stamp>,<current latitude>,<current longitude>,<current direction>[,<recent latitude n-1>,<recent longitude n-1>[,<recent latitude n-2>,<recent longitude n-2>]]

Configure MSD data which are related the information of geography

AT#MSDVI=<type>,<VIN>,<storage type>,[<Nb of passengers>]>

Configure MSD data which are related the information of vehicle

AT+CECALL=<type of eCall>

Initiated eCall is established and pushed MSD automatically within 2s after connect with PSAP.

Expected unsolicited messages, refer to fig. 3:

#ECALLEV:0 unsolicited msg indicates that the Down Link is synchronized and the MSD request msg is received.

#ECALLEV:1 unsolicited msg indicates that MSD data has been successfully received by PSAP.

#ECALLEV:2, data unsolicited msg asks to IVS Modem to accomplish some actions. The actions are codified by data argument, e.g.: clear down the call,

To hang up the call enter the following command:

ATH

NOTICE: When use internal MSD encoder, start push mode at eCall is established.

NOTICE: if GPS mode is set to 1, GPS data of #MSDGI are overwritten to internal GPS position. (UE910-V2 doesn't support GPS)

4. Telit eCall Test Architecture

Telit has developed an eCall Test Architecture to test its own IVS Modem implementation, evaluate performances and tune up optimizations. Telit Test Architecture is based on the following items:

- Telit MSD Support to create MSD data: it substitutes the MSD information source and GPS Receiver functional blocks shown on fig. 1.
- Telit PSAP Modem implementation and PSAP Data Base Interface: they substitute the PSAP Modem and MSD Display functional blocks, shown on fig. 1.

This section introduces the Telit eCall Test Architecture and point out the characteristics of PSAP Service that can be offered to the Customers involved in IVS applications developing.

The DTE shown in fig. 4 runs the following two applications:

- MDS Support application to generate the MSD text file,
- HyperTerminal session, or some other equivalent application, to send the AT commands and the MSD text file to the IVS Modem.

The module engine interprets the entered commands and manages the IVS Modem in accordance with them, additionally displays on DTE the unsolicited msg coming back from the PSAP side, see fig. 3. For detailed info about T3, T5, T6, T7 refer to [3] (Annex A, Table of timings).

The module establishes a voice call using the PSAP phone number. On the receiving side, there is an ISDN BRI PSTN Gateway connected to the Telit LAB Ethernet network. The ISDN Gateway converts the ISDN protocol present on its input to a VOIP protocol, see fig. 4.

When the IVS Modem is connected to the speech channel (fig. 1), the packets running on the Telit LAB Ethernet network (fig. 4), belonging to the call in progress, hold codified eCall data[3]. If the IVS Modem is not connected to the speech channel, it means that microphone and speaker are connected, the packets hold voice.

The interaction among Gateway, PSAP and PABX can be briefly summarized as follows: Let's suppose both Gateway and PSAP are registered on PABX. In addition, a calling phone number filter is activated on the PABX.

- The Gateway receives an entering call (indicating information about the used codec) and forwards it to the PABX;
- The PABX checks if the call must be forwarded to the PSAP, let's suppose that the call is for the PSAP;

[3] In uplink MSD data, in downlink PSAP messages (full duplex).

- If both PSAP and entering call are using the same codec the connection between PSAP and Gateway is accomplished: a real time voice channel is set up. The received codified MSD data block is stored on the PSAP data base. Using a simple interface, the user can read the received MSD data blocks.

Using the Telit eCall supports the operator can create the codified MSD message, send it to the PSAP and read the codified MSD data on the PSAP data-base in order to evaluate if the MSD created and the MSD received are the same.

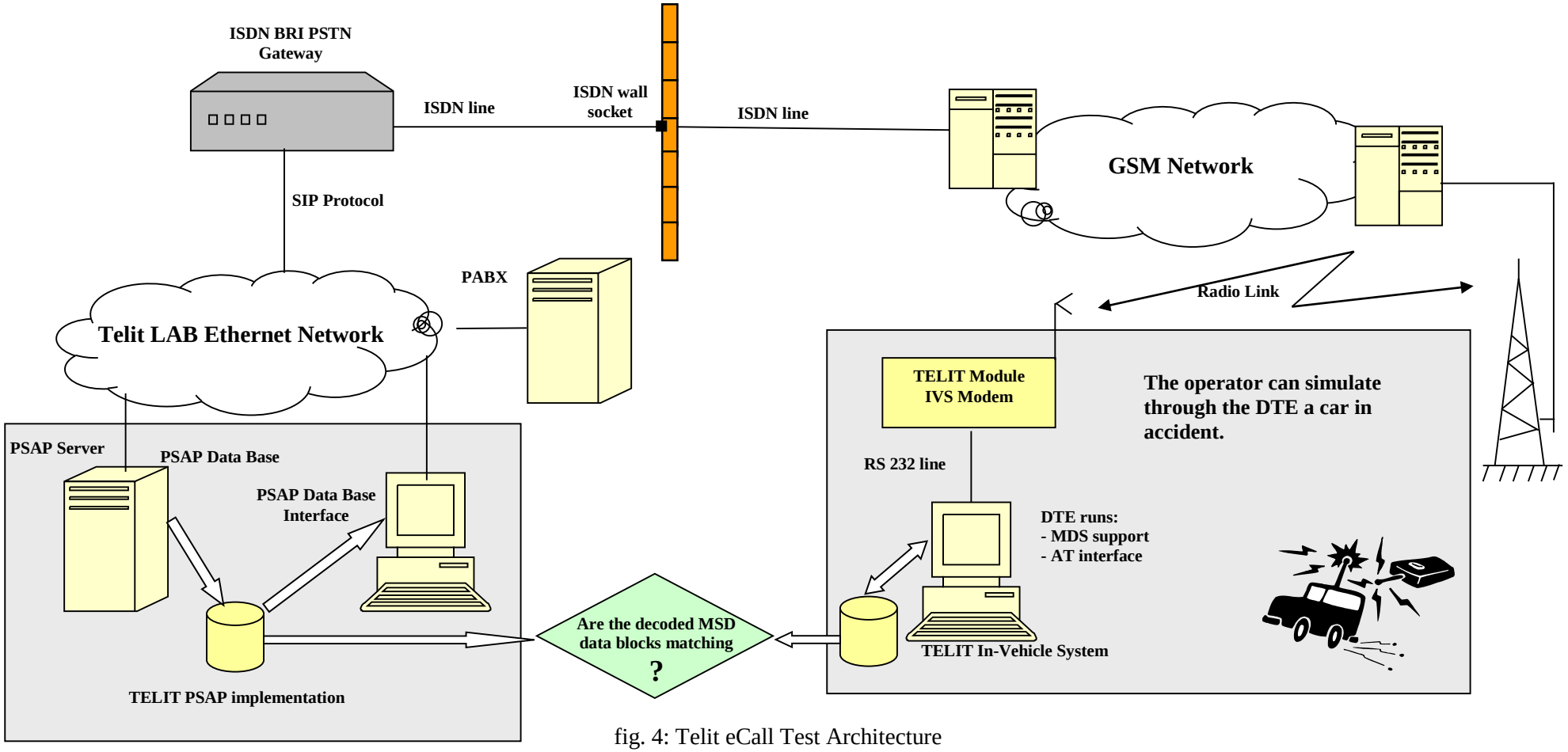

fig. 4: Telit eCall Test Architecture

4.1. MSD Support

Telit MSD Support is a web application that helps the user to arrange and create codified MSD data through a user friendly interface and store it on an MSD text file.

Firstly, the MSD data block is arranged and then is codified using the ASN.1 language. The block can hold a maximum of 140 bytes, includes vehicle location information, time stamp, number of passengers, Vehicle Identification Number (VIN) and other relevant accident information.

The fig. 5 shows the main page of the web application. On the right side, there is the information that the user enters to arrange the MSD data. When all information is entered, the user pushes the “create MSD” button and entered information is coded and displayed on the lower box. The codified MSD data block can be saved on a text file using the “Save” button. Refer to [4] to get detailed information about the MSD data meaning.

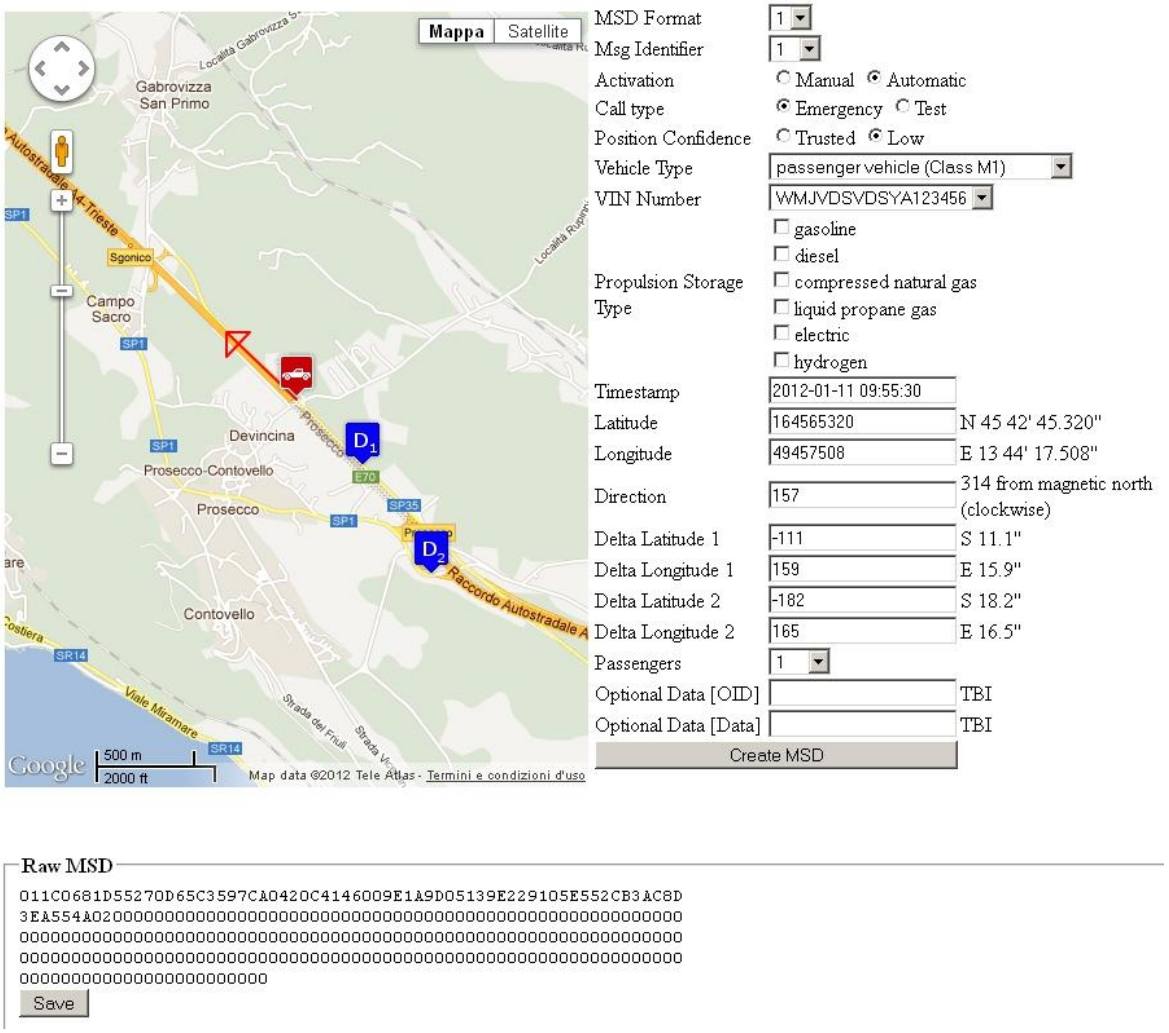

fig. 5: MSD Support interface

4.2. PSAP Data Base Interface

Telit PSAP Data Base Interface is a web application that enables the user to read the MSD data block stored on the PSAP Data Base.

The fig. 6 shows the main page of the PSAP Data Base Interface:

- Last Call: date and time of the last call.
- Phone Number: calling number.
- Total: total calls related to the calling number.
- MSD Received: MSD successfully received / Percentage of successful calls.

To display the Main parameters page, fig. 7, click on the calling number:

- Call Id: progressive number.
- Duration: time information about the call.
- Timers: for internal purposes only.
- Caller: calling number.
- MSD: codified MSD data.

To display the Details page, fig. 8, click on “Open Details” button:

- Map: indicates the location where is happened the incident car.
- Id:… the box on the upper right corner shows the MSD data in readable format.
- Raw MSD: the box on the lower left corner shows the codified MSD data.
- PSAP Log Mess. the box on the lower right corner shows the PSAP log used during test sessions.

PSAP Data Base Interface

Last Call	Phone Number	Total	Msd Received	
2011-02-22 13:52:35	335151	9582	9314	97.3%
2011-02-15 13:32:46	+0419	134	1	0.8%
2011-02-15 12:17:34	335151	40	33	82.5%
2011-02-09 11:19:18	3351509	16	14	87.5%
2011-02-07 17:14:23	60	41	0	0%
2011-02-04 09:14:54	34 85197	353	327	92.7%
2011-02-03 15:11:20	3387 5278	110	106	96.4%
2011-01-26 17:52:50	79 335 79	7	5	71.5%
2011-01-26 17:25:16	792 3453 1	1	1	100%
2011-01-26 16:37:33	ar nym is	4	4	100%
2011-01-26 15:28:03	1191 470	3	2	66.7%
2010-12-28 11:12:47	795 875856	1	1	100%
2010-12-23 18:30:10	13801421	14	7	50%
2010-12-21 17:24:06	5	13	0	0%
2010-12-20 15:16:35	PSA alls	27	3	11.2%
2010-12-14 15:09:08	33 458761	49	48	98%
2010-12-02 11:11:35	33 458762	194	190	98%
2010-12-01 12:35:03	38 762	50	49	98%
2010-11-24 14:18:56	78 207145	1	0	0%
2010-11-19 03:18:08	3351 4719	1115	1075	96.5%
2010-11-16 18:15:20	346600 87	24	19	79.2%
2010-11-04 14:59:33	3284334 50	246	200	81.4%
2010-09-20 18:29:30	320332 .86	246	82	33.4%
2010-09-15 15:49:17	103	62	0	0%
2010-09-15 14:17:13	6002	2	0	0%
2010-09-08 15:26:33	335151	1953	1851	94.8%
2010-09-06 18:29:34	348 01803	102	57	55.9%
2010-08-24 16:21:06	334 3145	2	1	50%
2010-07-28 15:59:47	2087740	9	9	100%
2010-07-26 15:34:11	02	1	0	0%
2010-05-26 09:22:06	3 0569 35	7	7	100%
2010-05-20 15:26:34	wn	61	52	85.3%
	All	14470	13458	93.1%

fig. 6: Main page of PSAP Data Base interface

PSAP Data Base Interface
Main parameters

Index Next 50

Call Id	Duration		Caller	MSD	
18719	Start: End: Elapsed:	2011-10-17 10:18:09 N.P. N.P.	8000	011C0681D55270D65C35 97CA0420C4146009E1A9 D05139E229105E552CB3 AC8D3EA554A020000000 ... 00000000000000000000 00000000000000000000	Open Details
18718	Start: End: Elapsed:	2011-10-14 17:50:09 N.P. N.P.	8000	011C0681D55270D65C35 97CA0420C4146009E1A9 D0513A8479705CED1330 AD1E54F8650020000000 ... 00000000000000000000 00000000000000000000	Open Details
18717	Start: End: Elapsed:	2011-10-14 17:38:28 N.P. N.P.	8000	011C0681D55270D65C35 97CA0420C4146009E1A9 D051397999105E9837E6 D11AF92339C020000000 ... 00000000000000000000 00000000000000000000	Open Details

fig. 7: Main parameters

PSAP Data Base Interface Details

Id: 18718 - Event Time (PSAP side): 2011-10-14 17:50:09

Format:	1
Identifier:	1
Activation:	Automatic
Call Type:	Emergency
Position Confidence:	Low
Vehicle Type:	passenger vehicle (Class M1)
VIN Number:	WMJVDSVDSYA123456
Propulsion Storage:	
Timestamp:	Wed, 11 Jan 2012 08:55:30 GMT
Position Latitude:	N 45 48' 17.739"
Position Longitude:	E 13 32' 0.025000"
Direction:	266
Delta Latitude 1:	S 9.3"
Delta Longitude 1:	E 29.8"
Delta Latitude 2:	S 1.6"
Delta Longitude 2:	E 29.6"
Passengers:	1
Optional Data [OID]:	n. p.
Optional Data [Data]:	n. p.

Raw MSD

```
011C0681D55270D65C35    97CA0420C4146009E1A9
D0513A8479705CED1330    AD1E54F8650020000000
00000000000000000000    00000000000000000000
00000000000000000000    00000000000000000000
00000000000000000000    00000000000000000000
00000000000000000000    00000000000000000000
00000000000000000000    00000000000000000000
```

PSAP Log Messages

```
[PSAP] reset receiver
[PSAP] reset transmitter
[PSAP] reset receiver
[PSAP] reset transmitter
```

fig. 8: Details

5. Telit PSAP Customer Support

The previous chapters illustrate the eCall architecture developed by Telit to test its IVS modem implementation. This architecture can be shared with customers in order to give them the possibility to test and evaluate their IVS applications, refer to fig. 10. To avoid simultaneous phone-calls towards the single ISDN line, each customer has an agreed PSAP calling time slot.

The PSAP data-base, provided by the current Telit Architecture, is not accessible by client equipments. During testing a TTSC operator can read the received MSD Data from PSAP server and send it to the customer.

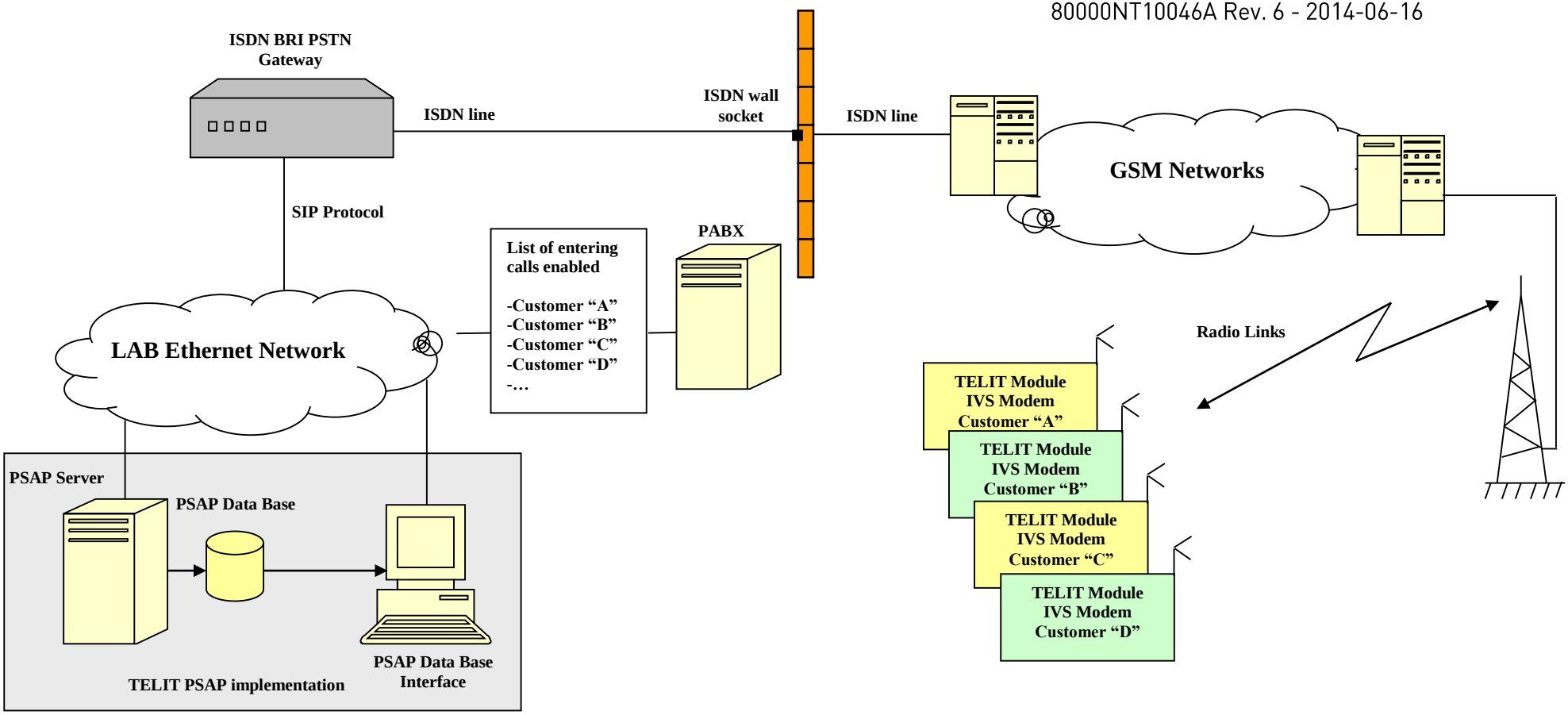

fig. 9: Telit PSAP shared with Customers