



REFERENCE F 12 T 6001 3	 
Company / organisation	UIC ERTMS/GSM-R Operators Group GSM-R Industry Group

FIS FOR

LOCATION DEPENDENT ADDRESSING

ACCESS: Public

Restricted

Confidential

	NAME	DATE	VISA
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Revision	Siemens GSM-R IG	31 July 2006	P.Tiberg GSM-R IG
Reviewed	ERTMS/GSM-R Operators Group	29 January 2007	D.Masur & J.Nooijen
Approval	ERTMS/GSM-R ERIG	29 January 2007	R.Sarfati

EVOLUTION SHEET

Version	Date	Author	MODIFICATION
A	27/08/1996	AMC	Creation
B	09/09/1996	AMC	Editorial changes
1	25/09/1996	AMC	First approved version
2	31/07/2000	MORANE	Specification update second issue
2.1	27/06/2006	Siemens	Header and Reference list updated
2.2	31/07/2006	Siemens	Reference list updated
2.3	30/11/2006	Siemens	Updated with OG comments
3	29/01/2007	OG &IG	Specification update third issue

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1. SCOPE

This Functional Interface Specification (FIS) specifies the GSM-R interface requirements involved in the realisation of the GSM-R feature *Location dependent addressing*.

The called party on the fixed network side is an ISDN party or a non-ISDN party and is called by a specific Short Code, which identifies its function (for instance primary train controller, electricity supply controller, secondary controller).

2. NORMATIVE REFERENCES

- [1] MORANE FFFS for Location Dependent Addressing, F 10 T 6001 4
- [2] GSM 05.08 8.2.1 Digital cellular telecommunications system (Phase 2+); Radio subsystem link control
- [3] 3GPP TS 24.087 3.0.0 User-to-User Signaling (UUS) - Stage 3
- [4] GSM 08.08 BSS - MSC interface Layer 3 specification, version as per [7]
- [5] EIRENE SRS version 15
- [6] 3GPP TS 24.008 3.3.0 Mobile radio interface layer 3 specification, Core Network Protocols - Stage 3

3. INFORMATIVE REFERENCES

- [7] EN 301 515 v2.3.0 “Global System for Mobile Communication (GSM); Requirements for GSM operation on railways”
- [8] TR 102 281 v 2.0.0, “Detailed requirements for GSM operation on Railways”
- [9] O-2773 Interface Requirements Specification enhanced Location Dependent Addressing, version 5.0
- [10] MORANE SSRS, A 04/02 T 6002

4. DEFINITIONS AND ABBREVIATIONS

BCD	Binary Coded Decimal
BSC	Base Station Controller
BSS	Base Station System
FN	Functional Number
FNT	Fixed Network User Terminal
CGI	Cell Global Identification
GCR	Group Call Register
GMSC	Gateway MSC
GPS	Global Positioning System
GSM	Global System for Mobile Communications
GSM-R	GSM Rail
IAM	Initial Address Message
ISDN	Integrated Service Digital Network

LDA	Location Dependent Addressing
MOC	Mobile Originating Call
MS	Mobile Station
MSC	Mobile Switching Centre
MT	Mobile Termination
MTC	Mobile Terminating Call
OMC	Operation and Maintenance Centre
PABX	Private Automatic Branch eXchange
UUS1	User to User Signalling
VGCS	Voice Group Call Service
VLR	Visitor Location Register

5. INTERFACE DESCRIPTION

Like described in [1] the way adopted to realise the functionality of Location Dependent Addressing is

- Mobile originated call setup by applying cell specific routing triggered by specific Short Codes

This FIS describes the special requirements for the GSM-R functionality *Location Dependent Addressing* on the A and U_m interfaces for the mobile originated call set up.

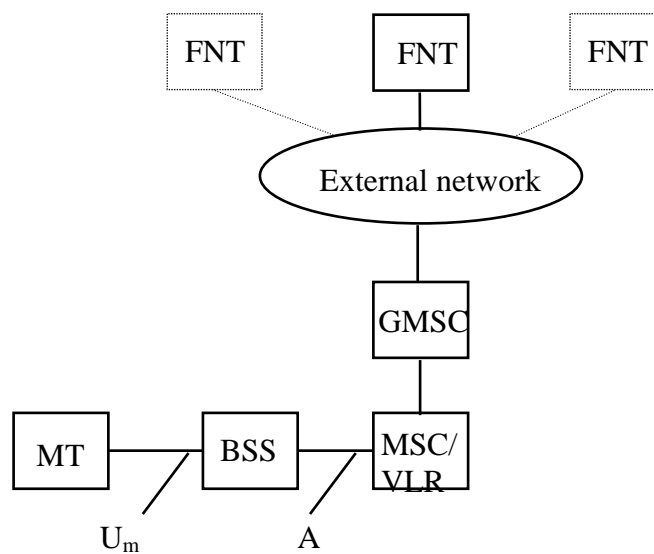


Figure 1: General architecture

6. MESSAGE FUNCTIONAL DEFINITION AND CONTENTS

In the scenario below the messages on the A and U_m interface are identified, that are used to carry the information necessary for the location dependent addressing. These messages are printed in bold letters.

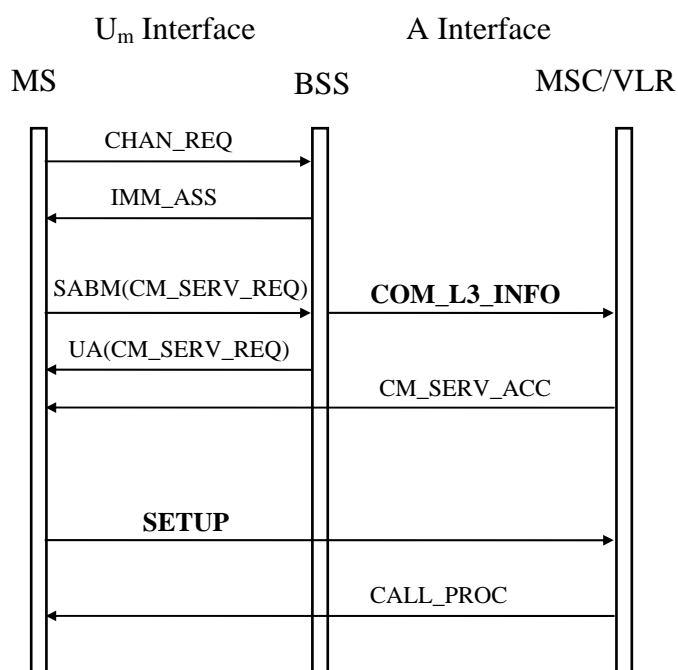


Figure 2: General Message Flow

6.1. Cell specific routing

The messages used to provide the necessary information for the GSM-R feature *Cell specific routing* are COMPLETE LAYER 3 INFORMATION (ref.: [4]) and SETUP (ref.: [6]). All other messages will not be described here.

6.1.1. COMPLETE LAYER 3 INFORMATION

The COMPLETE LAYER 3 INFORMATION message contains the mandatory information element *Cell Identification* according [4]. This cell identification will be used by the MSC to identify the correct controller. In order to avoid ambiguities in case of different network configurations always the usage of the Cell Global Identification (CGI) is recommended.

8	7	6	5	4	3	2	1	
Element identifier								octet 1
Length								octet 2
Spare				Cell identification discriminator				octet 3
				0	0	0	0	
Cell identification								octet 4 - n

Table 1: Complete Layer 3 information element

<Cell identification discriminator>
0000 The whole Cell Global Identifier (MCC,MNC,LAC,CI) is used to identify the cell

6.1.2. SETUP (mobile originated call establishment)

To trigger the MSC to perform cell specific routing a 4 digit specific Short Code corresponding to chapter *Numbering plan* in [5] has to be used.

The standard SETUP message is used to carry this functional Short Code instead of an ISDN address towards the MSC using the mandatory information element Called Party BCD Number according [6].

8	7	6	5	4	3	2	1	
Called party BCD number IEI								octet 1
Length of called party BCD number contents								octet 2
0	0	0	0	0	0	1	1	
Type of number				Numbering plan identification				octet 3
1	0	0	0	0	0	0	1	
Short Code digit 2				Short Code digit 1				octet 4
Short Code digit 4				Short Code digit 3				octet 5

Table 2: Layout of Called Party Address

For the realization of the location dependent addressing, the usage of the following values are required:

<Length of called party BCD number contents>

00000100

<Type of number>

000 unknown

<numbering plan identification>

0001 ISDN/telephony numbering plan (Rec. E.164/E.163)

<Number digit 1>

Short Code digit 1

<Number digit 2>

Short Code digit 2

<Number digit 3>

Short Code digit 3

<Number digit 4>

Short Code digit 4