UNISIG

ERTMS/ETCS
Trackside-Trainborne FIS for RADIO IN-FILL
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Company	Technical Approval	Management approval
ALSTOM		
AZD		
CAF		
HITACHI RAIL STS		
MERMEC		
SIEMENS		
THALES		

1. MODIFICATION HISTORY

Issue Number Date	Section Number	Modification / Description	Author
0.0.1 15-Sep-99	All	Creation	R. Bertolini, M. Ferrettino
1.0.0 13-Oct-99	All	Final issue	R. Bertolini, M. Ferrettino
1.1.0 15-Feb-00	All	Updating to SRS 2.0.0	M. Ferrettino
1.2.0 24-Feb-00	3	Up-date of Euroradio FIS document version number	V. Roger
2.0.0 30-March-00	3	Final issue to ECSAG	U.D. (ed)
3.0.0 03-March-12	"Class 1" instances removed as per CR 1135; Unisig template updated; References updated.	Baseline 3 release version	L. Repetti
3.0.1 14-October-2022	All	Changes due to CR1423 (removal of high priority data) and CR1359 (split of subset-037) Editorial changes.	J. Mattisson
3.0.2 05-December-2022	All	Updates according to comments from SF	J. Mattisson
3.0.3 07-February-2023		Updates according to some comments from SF, still a few for discussion.	J. Mattisson
3.0.4		Updates according to input from Luca Repetti, i.e., subset valid for both onboard and trackside, both online and offline KM shall be possible to use.	J. Mattisson
3.0.5		Corrected remarks from SF	J. Mattisson
3.9.2		Formal update for the B4R1 pre-release version	J. Mattisson + S. Fritzsche

3.9.3 04-April-2023		Word "Euroradio" written in the same way through the document. Level 2/3 change to level R Title of Subset-037-1 updated	J. Mattisson
3.9.4 25-June-2023		Correction of date mismatch between version history and document date.	J. Mattisson
4.0.0 05-July-2023	-	Baseline 4 1st release version	J. Mattisson

2. TABLE OF CONTENTS

3. GENERAL ASPECTS

3.1 Scope

3.1.1.1 This FIS is applicable to radio communication systems providing communication services for safety-related application processes using open networks. It specifies the ERTMS Level 1 message exchange between on-board equipment and Radio In-fill unit.

3.1.1.2 Radio In-fill shall use services and protocols as specified by Euroradio FIS and Key Management FFFIS.

3.1.1.3 This FIS is strictly dependent on the UNISIG Euroradio FIS [1] and [2], specifying the Radio System Interoperability for message exchange between on-board and trackside equipment in respect to safety-related application processes, like Automatic Train Control of ETCS level R.

3.1.1.4 Some features shall be optional for Radio In-fill application.

3.1.1.5 This FIS does not define:

a) the radio in-fill application functionality and application information flow.

b) the open networks used.

c) the physical architecture of the radio communication subsystem.

3.1.1.6 Within the scope of this document the terms "Radio Communication System (RCS)" and Euroradio system are used synonymously.

3.2 Acronyms and abbreviations

3.2.1.1 See [1] and [2].

3.3 Definitions

3.3.1.1 See [1] and [2].

3.4 References

[1] SUBSET-037-1
Euroradio FIS – GSM-R CS/PS Communication Functional Module and Coordinating Function FRMCS/GSM-R

[2] SUBSET-037-2
Euroradio FIS – Safety Layer

[3] SUBSET-137
On-line Key Management FFFIS

[4]   SUBSET-038
       Off-line Key Management FIS – SUBSET-038

4. REFERENCE ARCHITECTURE

4.1.1.1   See [1].

4.1.1.2   The optional service interface, interface 2a, for non-safety related applications shall not be used.

5. INTERFACE TO SAFE SERVICES

5.1.1.1   See [2].

6. INTERFACE TO THE MOBILE NETWORK

6.1.1.1   See [1].

7. SAFETY FUNCTIONAL MODULE

7.1.1.1   See [2].

8. COMMUNICATION FUNCTIONAL MODULE

8.1.1.1   See [1].

8.1.1.2   Optionally, more than one transport connection per physical channel can be supported by a CFM.

8.1.1.3   Optionally, the track-side CFM can establish transport connections. This option shall not be required for ETCS level 1 radio in-fill unit.

8.1.1.4   Multiplexing of two or more transport connections onto a single network connection can be provided as an option. This option shall not be required for ETCS level 1 radio in-fill.

8.1.1.5   The Euroradio System communication functional module offers optionally several logical connections between the trackside and the onboard equipment via the same physical channel. This option shall not be required for ETCS level 1 radio in-fill unit.

9. KEY MANAGEMENT

9.1.1.1 According to [2], [3] and [4].