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TECHNICAL SPECIFICATION

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EBU
OPERATING EUROVISION

Digital Audio Broadcasting

Reference
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Foreword

This Technical Specification (TS) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE 1: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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The Eureka Project 147 was established in 1987, with funding from the European Commission, to develop a system for the broadcasting of audio and data to fixed, portable or mobile receivers. Their work resulted in the publication of European Standard, ETSI EN 300 401 [1], for DAB (see note) which now has worldwide acceptance.

NOTE 2: DAB is a registered trademark owned by one of the Eureka Project 147 partners.

The DAB family of standards is supported by World DAB, an organization with members drawn from broadcasting organizations and telecommunication providers together with companies from the professional and consumer electronics industry.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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1 Scope

The present document defines rules of implementation for certain service information features. These rules have been developed to provide a reliable and consistent experience for digital radio listeners; they provide implementation details for how the Fast Information Channel (FIC) signalling is used and how receivers will interpret and behave in response to receiving the FIC signalling.

The present document has an additional clause 8 to define the necessary behaviour for text handling, especially when using non-Latin scripts.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 300 401 (V2.1.1): "Radio Broadcasting Systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers".

[2] ETSI TS 101 756: "Digital Audio Broadcasting (DAB); Registered Tables".

[3] Unicode standard.

NOTE: Available at https://www.unicode.org/versions/latest.

[4] Unicode bidirectional algorithm, UAX#9.

NOTE: Available at http://www.unicode.org/reports/tr9/.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ISO 10646: "Information technology -- Universal Coded Character Set (UCS)".

[i.2] ETSI TS 103 461: "Digital Audio Broadcasting (DAB); Domestic and in-vehicle digital radio receivers; Minimum requirements and Test specifications for technologies and products".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

alarm announcement: announcement of type 'alarm' which has elevated priority

announcement: short audio message containing information categorized by an announcement type

Change Event Indication (CEI): set of FIG fields with particular values to indicate a change of database content for certain service information features

database entry: part of the service information addressed by a database key

database key: set of FIG fields that sub-divide a database for certain service information features

implicit linking: linking of DAB service and FM-RDS service with identical identifiers requiring no FIG 0/6 signalling

key service: DAB service carried in the tuned ensemble and placed as the first Id in the list of all services in a linkage set

linkage set: description of a network configuration consisting of lists of identifiers which carry the same (hard link) or related (soft link) content

part-time service element: service element that cycles between an on-air and an off-air status

pre-tuning memory: information stored in a receiver from previous tuning actions providing details of ensembles, tuning frequencies and services

regular announcement: announcement of any type except 'alarm' with normal priority

service element: smallest addressable part of a service; a service component, either primary or secondary

NOTE: In a service that consists of only the primary service component, the term service element refers to the entire service.

service following: process for maintaining the same audio or data content that the user has selected in spite of the varying reception conditions that occur, for example, when travelling by car or train

service list: feature of a radio receiver where a list of service elements is used for service selection

service list entry: one item in a service list that represents a single service element

SI label: text label carried in any extension of FIG type 1 and FIG type 2

user controls: all elements of a user interface of a radio receiver that are used to display service information and provide for user control

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AAC	Advanced Audio Coding
AMSS	Amplitude Modulation Signalling System
ASu	Announcement Support
ASw	Announcement Switching
C/N	Current/Next
CA	Conditional Access
CAId	Conditional Access Identifier
CEI	Change Event Indication
DAB	Digital Audio Broadcasting
DMB	Digital Multimedia Broadcasting

DRM	Digital Radio Mondiale
ECC	Extended Country Code
EId	Ensemble Identifier
F	Frequency
FI	Frequency Information
FIB	Fast Information Block
FIC	Fast Information Channel
FIG	Fast Information Group
FM	Frequency Modulation
Id	Identifier
IdLQ	Identifier List Qualifier
ILS	International Linkage Set
ISO	International Standards Organisation
LA	Linkage Actuator
LSN	Linkage Set Number
MCI	Multiplex Configuration Information
MFN	Multi-Frequency Network
MJD	Modified Julian Date
MPEG	Moving Pictures Expert Group
MSC	Main Service Channel
OE	Other Ensemble
P/D	Programme/Data service flag
PAD	Programme Associated Data
PI	Programme Identification code (RDS)
R&M	Range and Modulation
RDS	Radio Data System
Rfa	Reserved for future addition
S/H	Soft/Hard
SC	Service Component
SCI	Service Component Information
SFN	Single Frequency Network
SI	Service Information
SId	Service Identifier
UCS	Universal Character Set
UTC	Universal Temps Coordindee
UTF	Unicode Transformation Format

4 Overview

Service information (SI) in DAB is carried in the Fast Information Channel (FIC) as a series of Fast Information Groups (FIGs) carried in Fast Information Blocks (FIBs). Different FIGs are used for different service information, and several different FIGs may be needed to implement a particular service information feature, such as service linking or announcements. The dynamic label is also considered to be a service information feature. The present document provides rules of implementation for service information ***features*** and so groups the usage of the required FIGs together. Some FIG types are used by a number of different features and the rules are designed so that the FIG is always coded and decoded consistently.

The present document provides normative rules of behaviour for complex service information features:

- service following, using FIG 0/6, FIG 0/21 and FIG 0/24;
- service lists, using FIG 0/20;
- announcements, using FIG 0/18, FIG 0/19, FIG 0/25 and FIG 0/26 (and also FIG 0/21 and FIG 0/24);
- text labels, using FIG 1/x, FIG 2/x and dynamic labels.

The nominal repetition rate for SI FIGs is once per second. This rate applies to FIG 0/5, FIG 0/9, FIG 0/10, FIG 0/17, FIG 0/18, FIG 0/20, FIG 0/25, FIG 1/x and FIG 2/x. However, many of the FIGs used for the complex service information features described in the present document require several repetition rates, depending on the usage. Table 1 provides an overview of the repetition rates for these complex SI FIGs.