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Digital Audio Broadcasting (DAB); Distribution interfaces; Service Transport Interface (STI)

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Foreword

This European Standard (EN) 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 2) 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.

National transposition dates	
Date of adoption of this EN:	21 November 2017
Date of latest announcement of this EN (doa):	28 February 2018
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 2018
Date of withdrawal of any conflicting National Standard (dow):	31 August 2018

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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Introduction

The present document is one of a set associated with DAB. ETSI EN 300 401 [1] describes the transmitted signal; the interface between the broadcaster's transmitters and the listener's receiver. The associated documents, ETSI EN 300 798 [2] and ETSI ETS 300 799 [3] describe additional interfaces which can be used by broadcasters or network providers to build DAB networks.

Figure 1 shows a DAB network in outline. For convenience, the Network is split into a number of different parts, each managed by a different entity. The different entities are; the Programme/Data provider, the Service Component provider, the Ensemble provider and the Transmission Network provider.

NOTE: A Service Component provider may be generating a full DAB service or a component of a DAB service. For the purposes of the present document, the terms Service provider and Service Component provider are interchangeable.

Programme/Data provider

The Programme/Data provider is the originator of the audio programme or the data being carried within the DAB Service Component. The format for the output of the Programme/Data provider may take many different forms and should be agreed between the Programme/Data provider and the Service Component provider.

Service Component provider

The Service Component provider is producing one or more complete service components which may form the complete DAB Service, but may not. Data from the Service Component provider will comprise three different parts:

- Service Component data which is to be inserted into the DAB Main Service Channel (MSC).
- Service Information related to the Service Component data which is to be inserted into the Fast Information Channel (FIC).
- Other data, not intended for transmission, including status monitoring or control.

The interface between the Service Component provider and the Ensemble provider is known as the Service Transport Interface (STI) and is the subject of the present document.

Ensemble provider

The Ensemble provider receives a set of service components from one or more Service Component providers. He then formats the FIC, and generates an unambiguous description of the full DAB ensemble.

The ensemble description is passed to the Transmission Network provider via an interface called the Ensemble Transport Interface (ETI) which is defined in ETSI ETS 300 799 [3].

Transmission Network provider

The Transmission Network provider generates the DAB Ensemble and transmits it to the receiver. The output of the Transmission Network provider is defined by ETSI EN 300 401 [1]. The Transmission Network provider is usually the final recipient of the ETI and is responsible for turning it into the DAB transmission signal using an OFDM generator.

In some cases, as an intermediate step, the Transmission Network provider may find it convenient to generate a baseband representation of the signal to be transmitted. The baseband representation, known as the Digital baseband I/Q Interface (DIQ), is a set of digital samples defining the In-phase (I) and Quadrature (Q) components of the final carrier. This interface is defined in ETSI EN 300 798 [2], and provides a convenient interface between digital processing equipment and radio-frequency modulating equipment.

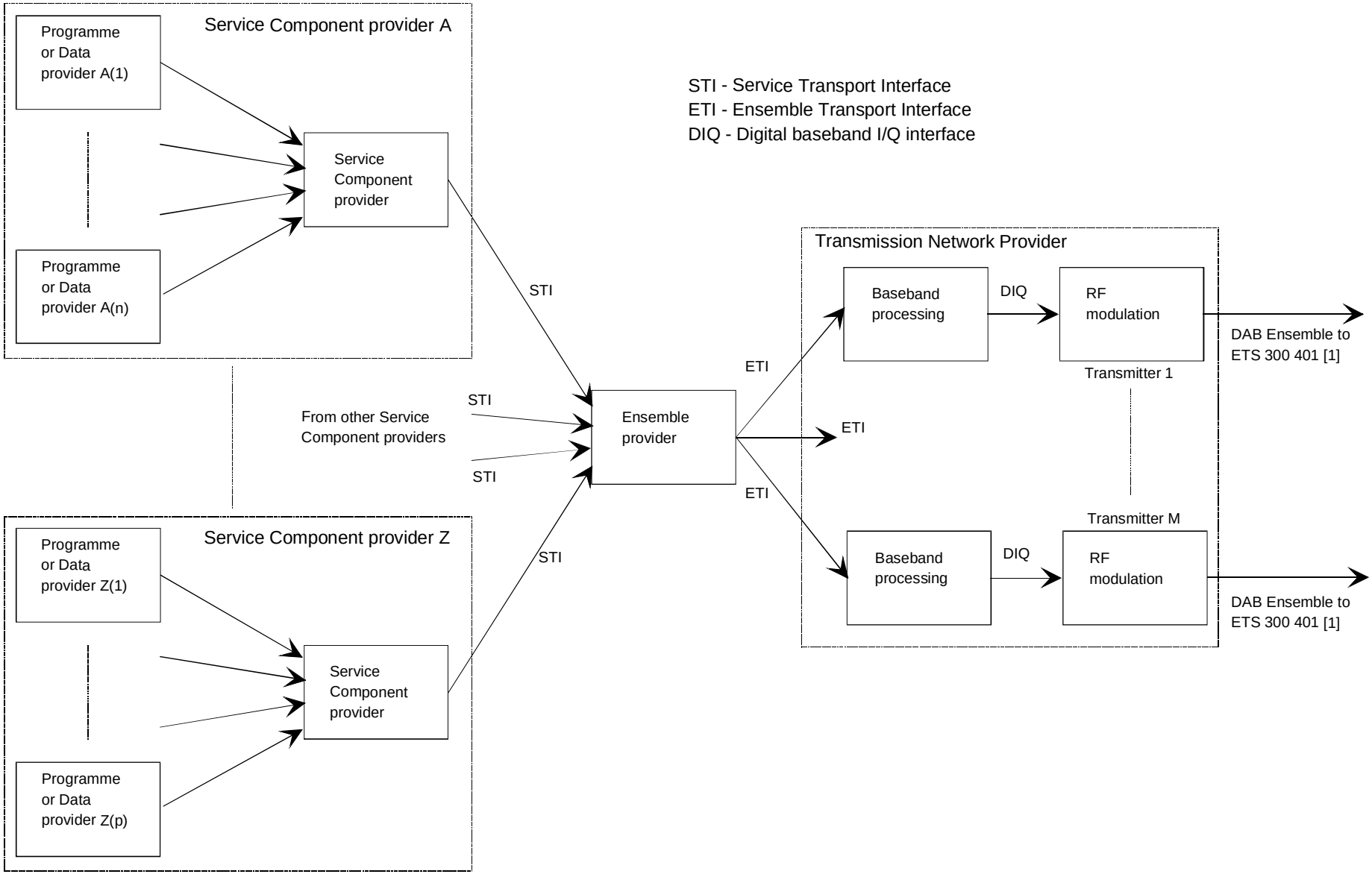

Figure 1: DAB network outline

1 Scope

The present document establishes a standard method for transporting Service components (audio and data) produced by Service providers at their own studios to the DAB multiplexing equipment located at the Ensemble provider's centre.

The present document is applicable to Collection Networks used in a DAB System. It describes the characteristics of a signal suitable for transporting Service Components, Service Information and control data between a Service provider and an Ensemble provider. The interface is suitable for use on a number of different physical media and telecommunication networks. Provision is made for the inclusion of appropriate error detection and correction and for the management of network transit delay.

This version of the present document has been aligned to V2.1.1 of ETSI EN 300 401 [1], by adding control for User Application information.

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 EN 300 798: "Digital Audio Broadcasting (DAB); Distribution interfaces; Digital baseband In-phase and Quadrature (DIQ) Interface".

[3] ETSI ETS 300 799: "Digital Audio Broadcasting (DAB); Distribution interfaces; Ensemble Transport Interface (ETI)".

[4] Recommendation ITU-T G.703: "Physical/electrical characteristics of hierarchical digital interfaces", (section 6: "Interface at 2048 kbit/s").

[5] Recommendation ITU-T X.24: "List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) on public data networks".

[6] Recommendation ITU-T V.11: "Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s".

[7] Recommendation ITU-T G.704: "Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s hierarchical levels", (section 2.3: "Basic frame structure at 2048 kbit/s").

[8] Recommendation ITU-T G.706: "Frame alignment and cyclic redundancy check (CRC) procedures relating to basic frame structures defined in Recommendation G.704".

[9] Recommendation ITU-T V.24: "List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)".

[10] Recommendation ITU-T V.28: "Electrical characteristics for unbalanced double-current interchange circuits".

[11] Recommendation ITU-T H.221: "Frame structure for a 64 to 1920 kbit/s channel in audiovisual teleservices".

[12] Recommendation ITU-T H.242: "System for establishing communication between audiovisual terminals using digital channels up to 2 Mbit/s".

[13] IEC 60958 (all parts): "Digital audio interface".

[14] ISO/IEC 646: "Information technology - ISO 7-bit coded character set for information interchange".

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.

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

Not applicable.

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