SIST

SLOVENSKI STANDARD
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01-november-2022

Oddajniška oprema za storitev digitalne zvokovne radiodifuzije (DAB) - Harmonizirani standard za dostop do radijskega spektra

Transmitting equipment for the Digital Audio Broadcasting (DAB) service - Harmonised Standard for access to radio spectrum

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Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

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The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.4] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

National transposition dates	
Date of adoption of this EN:	30 August 2022
Date of latest announcement of this EN (doa):	30 November 2022
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2023
Date of withdrawal of any conflicting National Standard (dow):	31 May 2024

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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 specifies technical characteristics and methods of measurements for transmitting equipment for broadcast sound services using the Digital Audio Broadcast (DAB) modulation system operating in VHF band III (174 MHz to 240 MHz).

DAB transmissions are licensed by national administrations. The Final Acts of the CEPT T-DAB Planning Meeting Constanţa, 2007 (WI95revCO07) [i.2] and the Final Acts of the Regional Radiocommunication Conference for planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3, in the frequency bands 174 MHz to 230 MHz and 470 MHz to 862 MHz (RRC-06) [i.3] provide spectrum masks for Out-of-Band emissions under different conditions. These requirements are represented by four transmission cases in the present document, see table 0. The license conditions set by the national administration stipulate which transmission case (Out-of-Band spectrum mask) applies.

Table 0: Transmission cases

Case	Description	Identification in WI95revCO07	Identification in RRC-06
1	Applicable to DAB transmissions operating in areas critical for adjacent channel DAB to DAB interference, and in any case when it is necessary to protect other services operating on adjacent frequencies on a primary basis	1: critical	2: sensitive
2	Applicable to DAB transmissions when no other case applies	2: non-critical	1: non-critical
3	Applicable to DAB transmitters in exceptional circumstances to protect safety services	Critical case considering protection of distress and safety frequencies	
4	Applicable to DAB transmissions operating on a case-by-case basis in certain areas		3: sensitive in certain areas where channel 12D is in use

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NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.1] is given in annex A.

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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/.

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

[1] ETSI EN 300 401 (V2.1.1) (01-2017): "Radio broadcasting systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers".

[2] ETSI ETS 300 799 (Edition 1) (09-1997): "Digital Audio Broadcasting (DAB); Distribution interfaces; Ensemble Transport Interface (ETI)".

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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] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

[i.2] Final Acts of the CEPT T-DAB Planning Meeting Constanţa, 2007 (WI95revCO07).

[i.3] Final Acts of the Regional Radiocommunication Conference for planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz (RRC-06).

[i.4] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

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3 Definition of terms, symbols and abbreviations

3.1 Terms

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For the purposes of the present document, the terms given in Directive 2014/53/EU [i.1] and the following apply:

Adjacent Channel Leakage Ratio (ACLR): ratio of the mean power of the DAB signal in the OFDM block at f_L to the mean power of the unoccupied OFDM block within the MCOFDM group

antenna port: port of an apparatus which is designed, in normal operation, to be connected to an antenna using coaxial cable

broadcasting service: radiocommunication service in which the transmissions are intended for direct reception by the general public

NOTE: This service may include sound transmissions, television transmissions or other types of transmission.

DAB transmitter: device comprising a DAB exciter and RF amplifier

dBc: decibels relative to the unmodulated carrier power of the emission

NOTE: In the cases which do not have a carrier, for example in some digital modulation schemes where the carrier is not accessible for measurement, the reference level equivalent to dBc is decibels relative to the mean power P.

f_H: centre frequency of the highest frequency OFDM block generated by the DAB transmitter

f_L: centre frequency of the lowest frequency OFDM block generated by the DAB transmitter

NOTE: In the case of a single block transmitter, $f_L = f_H$.

harmonic: component of order greater than 1 of the Fourier series of a periodic quantity

high power transmitter: transmitter whose rated output power is greater than 1 000 W per OFDM block

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intermodulation products: unwanted frequencies resulting from intermodulation between carriers or harmonics of emission, or between any oscillations generated to produce the carrier

low power transmitter: transmitter whose rated output power is less than or equal to 25 W per OFDM block

MCOFDM group: group of OFDM blocks generated by a MCOFDM system

MCOFDM system: low power transmitter system that generates more than one OFDM block with an overall RF system filter spanning all blocks

mean power: average power supplied to the antenna port by a transmitter during an interval of time sufficiently long compared with the lowest frequency encountered in the modulation envelope taken under normal operating conditions

medium power transmitter: transmitter whose rated output power is greater than 25 W and less than or equal to 1 000 W per OFDM block

necessary bandwidth: width of the frequency band which is sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions

OFDM block: group of digitally modulated carriers comprising a complete DAB ensemble

out-of-band emissions: emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions

rated output power: mean power that the transmitter delivers at its antenna port under specified conditions of operation

reference bandwidth: bandwidth in which the emission level is specified

RF system filter: filter connected to the output of the RF amplifier to control output spectrum

NOTE: The RF system filter may be internal or external to the transmitter casing.

spurious emissions: emissions on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information

NOTE: Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products but exclude out of band emissions.

unwanted emissions: spurious emissions and out-of-band emissions

3.2 Symbols

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

"	inch
C/N	Carrier power to Noise power density
Hz	Hertz (cycles per second)
m	metre
µ	micro, 10^{-6}
V	Volt
W	Watt

3.3 Abbreviations

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

ACLR	Adjacent Channel Leakage Ratio
BER	Bit Error Ratio
COFDM	Coded Orthogonal Frequency Division Multiplex
CRC	Cyclic Redundancy Check
CW	Continuous Wave
DAB	Digital Audio Broadcasting