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IMT cellular networks - Harmonised Standard for access to radio spectrum - Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS) Release 17

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**IMT cellular networks;
Harmonised Standard for access to radio spectrum;
Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA)
Base Stations (BS)
Release 17**

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Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	8
Introduction	8
1 Scope	9
2 References	10
2.1 Normative references	10
2.2 Informative references.....	11
3 Definition of terms, symbols and abbreviations.....	13
3.1 Terms.....	13
3.2 Symbols.....	20
3.3 Abbreviations	21
4 Technical requirements specifications	22
4.1 Environmental profile.....	22
4.2 Conformance requirements	23
4.2.1 Introduction.....	23
4.2.2 Operating band unwanted emissions	25
4.2.2.1 Definition and applicability.....	25
4.2.2.2 Limits	25
4.2.2.2.0 General	25
4.2.2.2.1 Limits for Wide Area BS (bands 1, 3, 7, 8, 32, 33, 34, 38, 65, 69)	27
4.2.2.2.2 Limits for Wide Area BS (bands 7, 22, 38, 40, 41, 42, 43, 50, 69, 75)	29
4.2.2.2.3 Limits for Wide Area BS (bands 20, 28, 31, 67, 68, 72, 87, 88)	32
4.2.2.2.4 Limits for Local Area BS	33
4.2.2.2.5 Limits for Home BS	34
4.2.2.2.6 Void.....	36
4.2.2.2.7 Void.....	36
4.2.2.2.8 Limits for Medium Range BS	36
4.2.2.2.9 Additional limits for operation in bands 32, 75, 76	41
4.2.2.2.10 Minimum requirements for Local Area and Medium Range BS in band 46	41
4.2.2.2.11 Minimum requirements for stand-alone NB-IoT Wide Area BS.....	42
4.2.2.2.12 Minimum requirements for stand-alone NB-IoT Local Area BS	43
4.2.2.2.13 Minimum requirements for stand-alone NB-IoT Home BS	44
4.2.2.2.14 Minimum requirements for stand-alone NB-IoT Medium Range BS	45
4.2.2.2.15 Additional limits for operation in bands 50 and 75 within 1 432 - 1 452 MHz, and in bands 51 and 76	46
4.2.2.2.16 Additional limits for operation in band 43 for co-existence with FSS/FS	46
4.2.2.2.17 Additional limits for operation in band 40	47
4.2.2.2.18 Additional limits for operation in bands 31, 72	48
4.2.2.2.19 Additional limits for operation in bands 32, 50, 75	49
4.2.2.3 Conformance.....	49
4.2.3 Adjacent Channel Leakage power Ratio (ACLR)	50
4.2.3.1 Definition and applicability.....	50
4.2.3.2 Void.....	50
4.2.3.3 Void.....	50
4.2.3.4 Limits	50
4.2.3.4.1 ACLR Limits	50
4.2.3.4.2 Cumulative ACLR test requirement in non-contiguous spectrum limits	52
4.2.3.5 Conformance.....	54
4.2.4 Transmitter spurious emissions.....	54
4.2.4.1 Definition and applicability.....	54
4.2.4.2 Limits	55
4.2.4.2.1 Spurious emissions	55
4.2.4.2.2 Co-existence with other systems	55

4.2.4.2.3	Protection of the BS receiver of own or different BS	58
4.2.4.2.4	Co-existence with Home BS operating in other bands	59
4.2.4.3	Conformance	60
4.2.5	Base Station output power	60
4.2.5.1	Definition and applicability	60
4.2.5.2	Limit	60
4.2.5.3	Conformance	61
4.2.6	Transmitter intermodulation	61
4.2.6.1	Definition and applicability	61
4.2.6.2	Limit	61
4.2.6.3	Conformance	62
4.2.7	Receiver spurious emissions	62
4.2.7.1	Definition and applicability	62
4.2.7.2	Limit	62
4.2.7.3	Conformance	63
4.2.8	Blocking characteristics	63
4.2.8.1	Definition and applicability	63
4.2.8.2	Limit	63
4.2.8.3	Conformance	75
4.2.9	Receiver intermodulation characteristics	75
4.2.9.1	Definition and applicability	75
4.2.9.2	Limit	75
4.2.9.3	Conformance	87
4.2.10	Adjacent Channel Selectivity (ACS) and narrow-band blocking	88
4.2.10.1	Definition and applicability	88
4.2.10.2	Limit	88
4.2.10.3	Conformance	97
4.2.11	Home BS output power for adjacent UTRA channel protection	97
4.2.11.1	Definition and applicability	97
4.2.11.2	Limit	97
4.2.11.3	Conformance	98
4.2.12	Home BS output power for adjacent E-UTRA channel protection	98
4.2.12.1	Definition and applicability	98
4.2.12.2	Limit	98
4.2.12.3	Conformance	99
4.2.13	Home BS output power for co-channel E-UTRA protection	99
4.2.13.1	Definition and applicability	99
4.2.13.2	Limit	99
4.2.13.3	Conformance	100
4.2.14	Reference sensitivity level	100
4.2.14.1	Definition and applicability	100
4.2.14.2	Limits	101
4.2.14.3	Conformance	105
4.2.15	Downlink channel access procedure (Listen Before Talk (LBT))	106
4.2.15.1	General	106
4.2.15.2	Limits	106
4.2.15.3	Conformance	106
4.2.16	Dynamic Frequency Selection (DFS)	106
4.2.16.1	General	106
4.2.16.2	Limits	106
4.2.16.3	Conformance	106
4.2.17	Base Station output power (band 46)	106
4.2.17.1	General	106
4.2.17.2	Limits	107
4.2.17.3	Conformance	107
5	Testing for compliance with technical requirements	107
5.1	Environmental conditions for testing	107
5.2	Void	107
5.3	Essential radio test suites	107
5.3.0	Introduction	107
5.3.1	Operating band unwanted emissions	108

5.3.1.0	General	108
5.3.1.1	Initial conditions	108
5.3.1.2	Procedure	108
5.3.1.3	Test requirement	109
5.3.2	Adjacent Channel Leakage power Ratio (ACLR)	109
5.3.2.1	Initial conditions	109
5.3.2.2	Procedure	110
5.3.2.3	Test requirement	110
5.3.3	Transmitter spurious emissions.....	110
5.3.3.0	General	110
5.3.3.1	Initial conditions	110
5.3.3.2	Procedure	111
5.3.3.3	Test requirements.....	111
5.3.4	Base Station output power	112
5.3.4.0	General	112
5.3.4.1	Initial conditions	112
5.3.4.2	Procedure	112
5.3.4.3	Test requirement	113
5.3.5	Transmitter intermodulation	113
5.3.5.0	General	113
5.3.5.1	Initial conditions	113
5.3.5.2	Procedures.....	113
5.3.5.3	Test requirement	114
5.3.6	Receiver spurious emissions	114
5.3.6.0	General	114
5.3.6.1	Initial conditions	115
5.3.6.2	Procedure	115
5.3.6.3	Test requirement	116
5.3.7	Blocking characteristics	116
5.3.7.0	General	116
5.3.7.1	Initial conditions	116
5.3.7.2	Procedure	116
5.3.7.3	Test requirement	118
5.3.8	Receiver intermodulation characteristics	118
5.3.8.0	General	118
5.3.8.1	Initial conditions	118
5.3.8.2	Procedures.....	119
5.3.8.3	Test requirement	120
5.3.9	Adjacent Channel Selectivity (ACS) and narrow-band blocking	120
5.3.9.0	General	120
5.3.9.1	Initial conditions	120
5.3.9.2	Procedure for Adjacent Channel Selectivity	120
5.3.9.3	Procedure for narrow-band blocking.....	121
5.3.9.4	Test requirement	123
5.3.10	Home BS output power for adjacent UTRA channel protection.....	123
5.3.10.1	Initial conditions	123
5.3.10.2	Procedure	123
5.3.10.3	Test requirement	124
5.3.11	Home BS output power for adjacent E-UTRA channel protection.....	124
5.3.11.1	Initial conditions	124
5.3.11.2	Procedure	125
5.3.11.3	Test requirement	125
5.3.12	Home BS output power for co-channel E-UTRA protection.....	125
5.3.12.1	Initial conditions	125
5.3.12.2	Procedure	126
5.3.12.3	Test requirement	126
5.3.13	Reference sensitivity level.....	127
5.3.13.0	General	127
5.3.13.1	Initial conditions	127
5.3.13.2	Procedure	127
5.3.13.3	Test requirement	127
5.3.14	Downlink channel access procedure.....	127

5.3.14.1	General	127
5.3.14.2	Initial conditions	128
5.3.14.3	Procedure	128
5.3.14.4	Test requirements	128
5.3.15	Dynamic Frequency Selection (DFS)	128
5.3.16	Base Station output power (band 46).....	129
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	130
Annex B (normative):	Base Station configurations.....	132
B.1	Reception with multiple receiver antenna connectors, receiver diversity	132
B.2	Duplexers	132
B.3	Power supply options	132
B.4	Ancillary RF amplifiers.....	132
B.5	BS using antenna arrays	133
B.5.0	General	133
B.5.1	Receiver tests.....	133
B.5.2	Transmitter tests	134
B.6	Transmission with multiple transmitter antenna connectors	134
B.7	BS with integrated Iuant BS modem	135
Annex C (informative):	Maximum measurement uncertainty	136
Annex D (informative):	Checklist	138
Annex E (informative):	Bibliography.....	139
Annex F (informative):	Change history	140
History		141

SIST EN 301 908-14 V17.1.1:2025

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Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Mobile Standards Group (MSG).

For non-EU countries, the present document may be used for regulatory (Type Approval) purposes.

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.1] 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.2].

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.

The present document is part 14 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.7].

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Modal verbs terminology

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Introduction

The present document is part of a set of standards developed by ETSI that are designed to fit in a modular structure to cover radio equipment within the scope of the Radio Equipment Directive [i.1]. The present document is produced following the guidance in ETSI EG 203 336 [i.3] as applicable.

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1 Scope

The present document specifies technical characteristics and methods of measurements for the types of equipment:

- 1) Base Station for Evolved Universal Terrestrial Radio Access (E-UTRA).
- 2) Base Station for Evolved Universal Terrestrial Radio Access (E-UTRA) with NB-IoT.
- 3) Base Station for NB-IoT standalone.

NOTE: UTRA TDD is not included in Release 17 of ETSI EN 301 908.

This radio equipment type is capable of operating in all or any part of the operating bands given in table 1-1. Unless stated otherwise, requirements specified for the TDD duplex mode apply for downlink and uplink operations in Frame Structure Type 2. NB-IoT is designed to operate in the E-UTRA operating bands 1, 3, 8, 20, 28, 31, 41, 42, 43, 65, 72, 87, 88 which are defined in table 1-1.

Table 1-1: E-UTRA Base Station operating bands

E-UTRA band	Direction of transmission	E-UTRA Base Station operating bands	Relevant EC/ECC decision
1	Transmit	2 110 MHz to 2 170 MHz	[i.24] and [i.28]
	Receive	1 920 MHz to 1 980 MHz	
3	Transmit	1 805 MHz to 1 880 MHz	[i.22] and [i.23]
	Receive	1 710 MHz to 1 785 MHz	
7	Transmit	2 620 MHz to 2 690 MHz	[i.26] and [i.27]
	Receive	2 500 MHz to 2 570 MHz	
8	Transmit	925 MHz to 960 MHz	[i.22] and [i.23]
	Receive	880 MHz to 915 MHz	
20	Transmit	791 MHz to 821 MHz	[i.17] and [i.18]
	Receive	832 MHz to 862 MHz	
22	Transmit	3 510 MHz to 3 590 MHz	[i.12] and [i.29]
	Receive	3 410 MHz to 3 490 MHz	
28 (note 5)	Transmit	758 MHz to 803 MHz	[i.14] and [i.15]
	Receive	703 MHz to 748 MHz	
31	Transmit	462,5 MHz to 467,5 MHz	[i.31]
	Receive	452,5 MHz to 457,5 MHz	
32 (note 1)	Transmit	1 452 MHz to 1 496 MHz	[i.19], [i.20] and [i.21]
	Receive	N/A	
34	Transmit and Receive	2 010 MHz to 2 025 MHz	[i.24]
38	Transmit and Receive	2 570 MHz to 2 620 MHz	[i.27] and [i.28]
40	Transmit and Receive	2 300 MHz to 2 400 MHz	[i.26]
41 (note 6)	Transmit and Receive	2 496 MHz to 2 690 MHz	[i.27] and [i.28]
42	Transmit and Receive	3 400 MHz to 3 600 MHz	[i.12] and [i.29]
43	Transmit and Receive	3 600 MHz to 3 800 MHz	[i.12] and [i.29]
46 (notes 3 and 4)	Transmit and Receive	5 150 MHz to 5 925 MHz	[i.10] and [i.11]
50 (note 1)	Transmit	1 432 MHz to 1 517 MHz	[i.20]
	Receive	1 432 MHz to 1 517 MHz	
51 (note 1)	Transmit	1 427 MHz to 1 432 MHz	[i.20]
	Receive	1 427 MHz to 1 432 MHz	
65 (note 7)	Transmit	2 110 MHz to 2 200 MHz	[i.24], [i.28] and [i.30]
	Receive	1 920 MHz to 2 010 MHz	
67	Transmit	738 MHz to 758 MHz	[i.14] and [i.15]
	Receive	N/A	
68	Transmit	753 MHz to 783 MHz	[i.14] and [i.15]
	Receive	698 MHz to 728 MHz	
69 (note 1)	Transmit	2 570 MHz to 2 620 MHz	[i.27] and [i.28]
	Receive	N/A	
72	Transmit	461 MHz to 466 MHz	[i.31]
	Receive	451 MHz to 456 MHz	
75 (note 1)	Transmit	1 432 MHz to 1 517 MHz	[i.19], [i.20] and [i.21]
76 (note 1)	Transmit	1 427 MHz to 1 432 MHz	[i.20] and [i.21]
87	Transmit	420 MHz to 425 MHz	[i.31]

E-UTRA band	Direction of transmission	E-UTRA Base Station operating bands	Relevant EC/ECC decision
	Receive	410 MHz to 415 MHz	
88	Transmit	422 MHz to 427 MHz	[i.31]
	Receive	412 MHz to 417 MHz	
NOTE 1: Restricted to E-UTRA DL operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.			
NOTE 2: Void.			
NOTE 3: This band is an unlicensed band restricted to licensed-assisted operation using Frame Structure Type 3. In Europe according to [i.10] and [i.11], radio equipment in band 46 operates between 5 150 MHz and 5 725 MHz as in table 1-2.			
NOTE 4: In this version of the present document, restricted to E-UTRA DL operation when carrier aggregation is configured. Band 46 is divided into three sub-bands as in table 1-2.			
NOTE 5: In Europe according to [i.14] and [i.15], radio equipment in band 28 operates between 758 MHz to 791 MHz for the transmitter ($F_{DL_low} = 758$ MHz and $F_{DL_high} = 791$ MHz) and between 703 MHz to 736 MHz for the receiver ($F_{UL_low} = 703$ MHz and $F_{UL_high} = 736$ MHz).			
NOTE 6: In Europe according to [i.27] and [i.28], radio equipment in band 41 operates between 2 570 MHz and 2 620 MHz ($F_{DL_low} = 2 570$ MHz and $F_{DL_high} = 2 620$ MHz).			
NOTE 7: This band includes two frequency ranges that are harmonised in Europe:			
(a) Based on [i.30], radio equipment in band 65 operates between 2 170 MHz to 2 200 MHz for the transmitter ($F_{DL_low} = 2 170$ MHz and $F_{DL_high} = 2 200$ MHz) and between 1 980 MHz to 2 010 MHz for the receiver ($F_{UL_low} = 1 980$ MHz and $F_{UL_high} = 2 010$ MHz) as the Complementary Ground Component (CGC) of a Mobile-satellite service by reference to the present Harmonised Standard.			
(b) According to [i.24] and [i.28], radio equipment in band 65 operates between 2 110 MHz to 2 170 MHz for the transmitter ($F_{DL_low} = 2 110$ MHz and $F_{DL_high} = 2 170$ MHz), and between 1 920 MHz to 1 980 MHz for the receiver ($F_{UL_low} = 1 920$ MHz and $F_{UL_high} = 1 980$ MHz).			

Table 1-2: Sub-bands for band 46

E-UTRA Operating band	Uplink (UL) operating band	Downlink (DL) operating band	Relevant EC/ECC decision
	BS receive UE transmit	BS transmit UE receive	
	$F_{UL_low} - F_{UL_high}$	$F_{DL_low} - F_{DL_high}$	
46a	5 150 MHz to 5 250 MHz	5 150 MHz to 5 250 MHz	[i.10] and [i.11]
46b	5 250 MHz to 5 350 MHz	5 250 MHz to 5 350 MHz	[i.10] and [i.11]
46c	5 470 MHz to 5 725 MHz	5 470 MHz to 5 725 MHz	[i.10] and [i.11]

The present document covers the requirements for E-UTRA Base Stations for 3GPP Release 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17. Additionally, it includes the requirements for E-UTRA Base Station operating bands from 3GPP Release 18.

The RF requirements in the present document do not apply for multi-band operation supporting bands for both FDD and TDD.

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.

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 in the [ETSI docbox](#).

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 TS 136 141 \(V17.12.0\) \(05-2024\)](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing (3GPP TS 36.141 version 17.12.0 Release 17)".
- [2] [ETSI TS 125 104 \(V17.0.0\) \(04-2022\)](#): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (3GPP TS 25.104 version 17.0.0 Release 17)".
- [3] Void.
- [4] [ETSI TS 136 104 \(V17.12.0\) \(05-2024\)](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 17.12.0 Release 17)".
- [5] [ETSI TS 125 141 \(V17.0.0\) \(04-2022\)](#): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD) (3GPP TS 25.141 version 17.0.0 Release 17)".
- [6] [ETSI TS 136 211 \(V17.4.0\) \(09-2023\)](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 17.4.0 Release 17)".
- [7] [ETSI EN 301 908-18 \(V17.1.1\) \(02-2025\)](#): "IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 18: NR, E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS) Release 17".
- [8] [ETSI EN 301 893 \(V2.2.1\) \(11-2024\)](#): "5 GHz WAS/RLAN; Harmonised Standard for access to radio spectrum".
- [9] [ETSI TS 136 213 \(V17.6.0\) \(02-2024\)](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures (3GPP TS 36.213 version 17.6.0 Release 17)".
- [10] [ETSI TS 136 101 \(V17.13.0\) \(06-2024\)](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 version 17.13.0 Release 17)".

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.

- [i.1] [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.
- [i.2] [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.3] ETSI EG 203 336 (V1.2.1) (05-2020): "Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.4] Recommendation ITU-R SM.329-12 (09-2012): "Unwanted emissions in the spurious domain".

- [i.5] ETSI TR 100 028 (all parts) (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [i.6] Void.
- [i.7] ETSI EN 301 908-1 (V15.2.1) (01-2023): "IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 1: Introduction and common requirements; Release 15".
- [i.8] Void.
- [i.9] ETSI TS 136 214 (V17.0.0) (04-2022): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements (3GPP TS 36.214 version 17.0.0 Release 17)".
- [i.10] [Commission Implementing Decision 2022/179/EC](#) of 8 February 2022 on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of wireless access systems including radio local area networks and repealing Decision 2005/513/EC.
- [i.11] [Commission Decision 2007/90/EC of 12 February 2007](#) amending Decision 2005/513/EC on the harmonised use of radio spectrum in the 5 GHz frequency band for the implementation of Wireless Access Systems including Radio Local Area Networks (WAS/RLANs).
- [i.12] [Commission Decision 2019/235/EC of 24 January 2019](#) on amending Decision 2008/411/EC as regards an update of relevant technical conditions applicable to the 3 400-3 800 MHz frequency band.
- [i.13] ETSI TS 103 807 (V1.1.1) (10-2021): "Mobile Standards Group (MSG); IMT Cellular Networks Base Stations (BS) Additional Regulatory Requirements".
- [i.14] [ECC Decision \(15\)01](#): "Harmonised technical conditions for mobile/fixed communications networks (MFCN) in the band 694-790 MHz including a paired frequency arrangement (Frequency Division Duplex 2x30 MHz) and an optional unpaired frequency arrangement (Supplemental Downlink)", approved 06 March 2015.
- [i.15] [Commission Implementing Decision \(EU\) 2016/687 of 28 April 2016](#) on the harmonisation of the 694-790 MHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services and for flexible national use in the Union.
- [i.16] Void.
- [i.17] [ECC Decision \(09\)03](#): "Harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz", 30 October 2009.
- [i.18] [Commission Decision 2010/267/EU of 6 May 2010](#) on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union.
- [i.19] [ECC Decision \(13\)03](#): "The harmonised use of the frequency band 1 452-1 492 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)", amended 2 March 2018.
- [i.20] [ECC Decision \(17\)06](#): "The harmonised use of the frequency bands 1 427-1 452 MHz and 1492-1518 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)", approved 17 November 2017, corrected 2 March 2018.
- [i.21] [Commission Implementing Decision \(EU\) 2018/661 of 26 April 2018](#) amending Implementing Decision (EU) 2015/750 on the harmonisation of the 1452-1492 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Union as regards its extension in the harmonised 1427-1452 MHz and 1492-1517 MHz frequency bands.
- [i.22] [Commission Implementing Decision 2011/251/EU of 18 April 2011](#) amending Decision 2009/766/EC on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community.