ETSI EN 301 908-14 V15.1.1 (2021-09)

IMT cellular networks;
Harmonised Standard for access to radio spectrum;
Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)
Release 15

Reference
REN/MSG-TFES-15-14

Keywords
3G, 3GPP, cellular, digital, E-UTRA, IMT,
IMT-2000, LTE, mobile, radio, regulation, UMTS

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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].

National transposition dates	
Date of adoption of this EN:	21 September 2021
Date of latest announcement of this EN (doa):	31 December 2021
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2022
Date of withdrawal of any conflicting National Standard (dow):	30 June 2023

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).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

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.2]. The present document is produced following the guidance in ETSI EG 203 336 [i.3] as applicable.

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.

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.25]
	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.16]
	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	
33	Transmit and Receive	1 900 MHz to 1 920 MHz	[i.24]
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.25] 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.16]
	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]

E-UTRA band	Direction of transmission	E-UTRA Base Station operating bands	Relevant EC/ECC decision
87	Transmit	420 MHz to 425 MHz	[i.16]
	Receive	410 MHz to 415 MHz	
88	Transmit	422 MHz to 427 MHz	[i.16]
	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.25], 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 BS receive UE transmit	Downlink (DL) operating band BS transmit UE receive	Relevant EC/ECC decision
	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 conducted requirements for E-UTRA Base Stations for 3GPP Release 8, 9, 10, 11, 12, 13, 14 and 15. Additionally, it includes the requirements for E-UTRA Base Station operating bands and E-UTRA CA operating bands from 3GPP Release 16.

NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.2] 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 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 TS 136 141 (V15.9.0) (07-2020): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing (3GPP TS 36.141 version 15.9.0 Release 15)".

[2] ETSI TS 125 104 (V15.5.0) (04-2019): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (3GPP TS 25.104 version 15.5.0 Release 15)".

[3] ETSI TS 125 105 (V15.0.0) (07-2018): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (TDD) (3GPP TS 25.105 version 15.0.0 Release 15)".

[4] ETSI TS 136 104 (V15.9.0) (07-2020): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 15.9.0 Release 15)".

[5] ETSI TS 125 141 (V15.4.0) (04-2019): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD) (3GPP TS 25.141 version 15.4.0 Release 15)".

[6] ETSI TS 136 211 (V15.9.0) (04-2020): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 version 15.9.0 Release 15)".

[7] ETSI EN 301 908-18 (V15.1.1) (09-2021): "IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 18: E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS) Release 15".

[8] ETSI EN 301 893 (V2.1.1) (05-2017): "5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".

[9] ETSI TS 136 213 (V15.9.0) (04-2020): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures (3GPP TS 36.213 version 15.9.0 Release 15)".

[10] ETSI TS 136 101 (V15.11.0) (08-2020): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 version 15.11.0 Release 15)".

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): "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: "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 (V15.5.0) (01-2020): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements (3GPP TS 36.214 version 15.5.0 Release 15)".

[i.10] Commission Decision 2005/513/EC of 11 July 2005 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.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: "Mobile Standards Group (MSG); IMT Cellular Networks Base Stations (BS)".

[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] ECC Decision (16)02: "Harmonised technical conditions and frequency bands for the implementation of Broadband Public Protection and Disaster Relief (BB-PPDR) systems", approved 17 June 2016.

[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)".

[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.

[i.23] ECC Decision (06)13: "Designation of the bands 880-915 MHz, 925-960 MHz, 1710-1785 MHz and 1805-1880 MHz for terrestrial UMTS, LTE, WiMAX and IoT cellular systems", approved 01 December 2006, amended 8 March 2019.

[i.24] ECC Decision (06)01: "The harmonised utilisation of the bands1920-1980 MHz and 2110-2170 MHz for mobile/fixed communications networks (MFCN) including terrestrial IMT systems", approved 24 March 2006, amended 8 March 2019.

[i.25] Commission Implementing Decision (EU) 2020/667 of 6 May 2020 amending Decision 2012/688/EU as regards an update of relevant technical conditions applicable to the frequency bands 1 920-1 980 MHz and 2 110-2 170 MHz.

[i.26] ECC Decision 14(02): "Harmonised technical and regulatory conditions for the use of the band 2 300-2 400 MHz for Mobile/Fixed Communications Networks (MFCN)", approved 27 June 2014.

[i.27] ECC Decision 05(05): "Harmonised utilization of spectrum for Mobile/Fixed Communications Networks (MFCN) operating within the band 2 500-2 690 MHz", approved 18 March 2005, amended 05 July 2019.

[i.28] Commission Implementing Decision (EU) 2020/636 of 8 May 2020 amending Decision 2008/477/EC as regards an update of relevant technical conditions applicable to the 2 500-2 690 MHz frequency band.

[i.29] ECC Decision 11(06): "Harmonised frequency arrangements and least restrictive technical conditions (LRTC) for mobile/fixed communications networks (MFCN) operating in the band 3400-3800 MHz", approved 09 December 2011, amended 26 October 2018.

[i.30] ECC Decision 06(09): "Designation of the bands 1980-2010 MHz and 2170-2200 MHz for use by systems in the Mobile-Satellite Service including those supplemented by a Complementary Ground Component (CGC)", approved 01 December 2006, amended 05 September 2007.

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

aggregated channel bandwidth: RF bandwidth in which a Base Station transmits and/or receives multiple contiguously aggregated carriers

NOTE: The Aggregated Channel Bandwidth is measured in MHz.

Base Station class: Wide Area Base Station, Medium Range Base Station, Local Area Base Station or Home Base Station, as declared by the manufacturer

Base Station RF bandwidth: RF bandwidth in which a Base Station transmits and/or receives single or multiple carrier(s) within a supported operating band

NOTE: In single E-UTRA carrier operation, the Base Station RF Bandwidth is equal to the channel bandwidth.

Base Station RF bandwidth edge: frequency of one of the edges of the Base Station RF Bandwidth

NOTE: Base Station RF Bandwidth edges are separated by the Base Station RF Bandwidth.

carrier: modulated waveform conveying the E-UTRA or UTRA (WCDMA) physical channels

carrier aggregation: aggregation of two or more component carriers in order to support wider transmission bandwidths

carrier aggregation band: set of one or more operating bands across which multiple carriers are aggregated with a specific set of technical requirements

NOTE: Carrier aggregation band(s) for an E-UTRA BS is declared by the manufacturer according to the designations in ETSI TS 136 101 [10].

channel bandwidth: RF bandwidth supporting a single E-UTRA RF carrier with the transmission bandwidth configured in the uplink or downlink of a cell

NOTE: The channel bandwidth is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

channel edge: lowest or highest frequency of the E-UTRA carrier

NOTE: Channel edges are separated by the channel bandwidth.

clear channel assessment: mechanism used by an equipment to identify other transmissions in the channel

contiguous carriers: two or more carriers configured in a spectrum block where there are no RF requirements based on co-existence for un-coordinated operation within the spectrum block

contiguous spectrum: spectrum consisting of a contiguous block of spectrum with no sub-block gaps

downlink operating band: part of the operating band designated for downlink (BS transmit)

home Base Station: Base Station characterized by requirements derived from femtocell scenarios

inter RF bandwidth gap: frequency gap between two consecutive Base Station RF Bandwidths that are placed within two supported operating bands

inter-band carrier aggregation: carrier aggregation of component carriers in different operating bands

NOTE: Carriers aggregated in each band can be contiguous or non-contiguous.

inter-band gap: frequency gap between two supported consecutive operating bands

intra-band contiguous carrier aggregation: contiguous carriers aggregated in the same operating band

intra-band non-contiguous carrier aggregation: non-contiguous carriers aggregated in the same operating band

Listen Before Talk (LBT): mechanism by which an equipment applies Clear Channel Assessment (CCA) before using the channel

local area Base Station: Base Station characterized by requirements derived from picocell scenarios with a BS to UE minimum coupling loss equal to 45 dB

lower sub-block edge: frequency at the lower edge of one sub-block

NOTE: It is used as a frequency reference point for both transmitter and receiver requirements.

maximum Base Station RF Bandwidth: maximum RF bandwidth supported by a BS within each supported operating band

maximum output power: mean power level per carrier of the Base Station measured at the antenna connector in a specified reference condition

maximum radio bandwidth: maximum frequency difference between the upper edge of the highest used carrier and the lower edge of the lowest used carrier

maximum throughput: maximum achievable throughput for a reference measurement channel

mean power: when applied to E-UTRA transmission, power measured in the channel bandwidth of the carrier where the period of measurement is at least one subframe (1 ms), unless otherwise stated

medium range Base Station: Base Station characterized by requirements derived from micro cell scenarios with a BS to UE minimum coupling loss equal to 53 dB

multi-band Base Station: Base Station characterized by the ability of its transmitter and/or receiver to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different operating band (which is not a sub-band or superseding-band of another supported operating band) than the other carrier(s)

multi-band receiver: receiver characterized by the ability to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different operating band (which is not a sub-band or superseding-band of another supported operating band) than the other carrier(s)

multi-band transmitter: transmitter characterized by the ability to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different operating band (which is not a sub-band or superseding-band of another supported operating band) than the other carrier(s)

multi-carrier transmission configuration: set of one or more contiguous carriers that a BS is able to transmit simultaneously according to the manufacturer's specification

NB-IoT guard band operation: operation if NB-IoT utilizing the unused resource block(s) within a E-UTRA carrier's guard-band

NB-IoT In-band operation: operation of NB-IoT utilizing the resource block(s) within a normal E-UTRA carrier

NB-IoT standalone operation: operation of NB-IoT utilizing its own spectrum

EXAMPLE: The spectrum currently being used by GERAN systems as a replacement of one or more GSM carriers, as well as scattered spectrum for potential IoT deployment.

non-contiguous spectrum: spectrum consisting of two or more sub-blocks separated by sub-block gap(s)

operating band: frequency range (paired or unpaired) that is defined with a specific set of technical requirements, in which E-UTRA operates

NOTE: The operating band(s) for an E-UTRA BS is declared by the manufacturer according to the designations in table 1-1. Operating bands for E-UTRA are designated with Arabic numerals, while the corresponding operating bands for UTRA are designated with Roman numerals.

output power: mean power of one carrier of the Base Station, delivered to a load with resistance equal to the nominal load impedance of the transmitter

rated output power: mean power level per carrier that the manufacturer has declared to be available at the antenna connector

rated total output power: mean power level that the manufacturer has declared to be available at the antenna connector

resource block: physical resource consisting of a number of symbols in the time domain and a number of consecutive subcarriers spanning 180 kHz in the frequency domain

sub-band: part of the uplink and downlink frequency range of the operating band

sub-block: one contiguous allocated block of spectrum for transmission and reception by the same Base Station

NOTE: There may be multiple instances of sub-blocks within a Base Station RF Bandwidth.

sub-block bandwidth: bandwidth of one sub-block

sub-block gap: frequency gap between two consecutive sub-blocks within a Base Station RF Bandwidth, where the RF requirements in the gap are based on co-existence for un-coordinated operation

superseding-band: band that includes the whole of the uplink and downlink frequency range of the operating band

synchronized operation: operation of TDD in two different systems, where no simultaneous uplink and downlink occur

throughput: number of payload bits successfully received per second for a reference measurement channel in a specified reference condition

total RF bandwidth: maximum sum of Base Station RF Bandwidths in all supported operating bands

transmission bandwidth: bandwidth of an instantaneous transmission from a UE or BS, measured in resource block units