



ECC Report **269**

Least restrictive technical conditions for Mobile/Fixed
Communications Networks in 1427-1518 MHz

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0 EXECUTIVE SUMMARY

This Report provides proposals for least restrictive technical conditions for MFCN, including 5G, for the frequency bands 1427 - 1452 MHz and 1492 - 1518 MHz. In addition, it provides guidance on the impact of the introduction of MFCN in 1427-1452 MHz and/or 1492-1518 MHz on ECC Decision (13)03 [1].

The least restrictive technical conditions are based on the assumption of a block bandwidth of 5 MHz and on Decision ECC/DEC/13(03) for the compatibility between MFCNs, Resolution 750 (Rev. WRC-15) [2] for compatibility with EESS in 1400-1427 MHz and ECC Report 263 [3] for compatibility with MSS above 1518 MHz.

The results are as follows:

- It is assumed that the IMT block ends at 1517 MHz;
- No upper limit is necessary for in-block base station power in the frequency bands 1427-1452 MHz and 1492-1512 MHz. It is expected however that it will not be possible to use high power base stations in 1427-1432 MHz due to the requirements on unwanted emissions in 1400-1427 MHz;
- Base station power in 1512-1517 MHz should not exceed 58 dBm/5MHz e.i.r.p.;
- Base station unwanted emissions within 1427-1517 MHz are defined by the BEM in ECC/DEC/(13)03; 16.3 dBm/5MHz e.i.r.p. for the first adjacent 5 MHz block, 11 dBm/5 MHz e.i.r.p. for the second and 9 dBm/5 MHz e.i.r.p. for the third and beyond. It is proposed that this should apply also to emissions from blocks in the frequency band 1452-1492 MHz for emissions that fall into 1427-1452 MHz or 1492-1517 MHz when these are used for MFCN;
- Base station unwanted emissions into the frequency band 1400-1427 MHz should not exceed -72 dBW/27 MHz;
- Base station unwanted emissions in 1520-1559 MHz should not exceed -30 dBm/MHz e.i.r.p.;
- Base station unwanted emissions in 1518-1520 MHz should not exceed -0.8 dBm/MHz e.i.r.p.

ANNEX 1: provides recommendations on LRTCs applicable to MFCN operating in 1427-1452 MHz and 1492-1517 MHz.

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
BEM	Block Edge Mask
BS	Base Station
CEPT	European Conference of Postal and Telecommunications Administrations
ECC	Electronic Communications Committee
EESS	Earth Exploration Satellite Service
EIRP	Equivalent Isotropically Radiated Power
FDD	Frequency Division Duplex
LRTC	Least Restrictive Technical Conditions
IMT	International Mobile Telecommunications
MFCN	Mobile/Fixed Communications Network
MSS	Mobile Satellite Service
OOB	Out of Band
SDL	Supplemental Downlink
WRC	World Radiocommunication Conference

1 INTRODUCTION

ECC/DEC/(13)03 [1] harmonises the use of the band 1452-1492 MHz for terrestrial mobile/fixed communications networks supplemental downlink (MFCN SDL).

At WRC-15, the frequency bands 1427-1452 MHz and 1492-1518 MHz were identified globally for International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-15) [2].

ECC supports that the frequency band 1427-1518 MHz for IMT is for a one direction downlink service, used in connection with another IMT band that provides the uplink capabilities, and to initiate the development of this ECC Report.

The Report compiles existing results and regulations derived in other documents, and it also provides recommendation on least restrictive technical conditions applicable to MFCN operating in 1427-1452 MHz and 1492-1518 MHz in order to address:

- coexistence between MFCNs in 1427-1517 MHz;
- compatibility with services operating in 1400-1427 MHz and;
- compatibility with services operating in the band 1518-1525 MHz.

It is noted that 3GPP is developing standards for 5G system with the intention to meet the least restrictive technical conditions proposed in this Report.

2 BACKGROUND AND FREQUENCY ARRANGEMENT

2.1 BACKGROUND

ECC/DEC/(13)03 [1] harmonises the use of the band 1452-1492 MHz for terrestrial mobile/fixed communications networks supplemental downlink (MFCN SDL).

The corresponding LRTC were partly developed in ECC Report 202 [4].

At WRC-15, the frequency bands 1427-1452 MHz and 1492-1518 MHz were identified globally for International Mobile Telecommunications (IMT) in accordance with Resolution 223 (Rev.WRC-15) [2].

The band 1400-1427 MHz is allocated to the EESS (passive), Radio astronomy and Space Research (passive), on a worldwide basis. In the band 1427-1452 MHz, Resolution 750 (Rev.WRC-15) [2] applies for the protection of services in 1400-1427 MHz.

The frequency band 1518-1525 MHz was allocated to the mobile satellite-service (MSS) at WRC-03 and is designated to the MSS through ECC Decision (04)09 [5]. ECC Report 263 [3] provides results on adjacent band compatibility between IMT operating in the frequency band 1492-1518 MHz and the MSS operating in the frequency band 1518-1525 MHz.

CEPT conducted a questionnaire on timing for the harmonisation of the 1427-1452 MHz and 1492-1518 MHz frequency bands and their availability for MFCN. Responses to the questionnaire led ECC to support that the frequency band 1427-1518 MHz for IMT is for a one direction downlink service, used in connection with another IMT band that provides the uplink capabilities, and to initiate the development of this ECC Report.

2.2 HARMONISED FREQUENCY ARRANGEMENT

The harmonised frequency arrangement for the band 1427-1452 MHz and 1492-1517 MHz is provided in the tables below.

Table 1: Harmonised frequency arrangement for 1427 – 1452 MHz

1427 -1432	1432-1437	1437-1442	1442-1447	1447-1452
Downlink (base station transmit)				
25 MHz (5 blocks of 5 MHz)				

Table 2: Harmonised frequency arrangement for 1492 – 1517 MHz

1492 -1497	1497-1502	1502-1507	1507-1512	1512-1517
Downlink (base station transmit)				
25 MHz (5 blocks of 5 MHz)				

It is noted that the IMT block ends at 1517 MHz.

Table 3: Combined harmonised frequency arrangement (incl. ECC Dec (13)03 for informative purpose)

1427 MHz										1517 MHz							
1427	1432	1437	1442	1447	1452	1457	1462	1467	1472	1477	1482	1487	1492	1497	1502	1507	1512
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1432	1437	1442	1447	1452	1457	1462	1467	1472	1477	1482	1487	1492	1497	1502	1507	1512	1517
Downlink (base station transmit)																	
90 MHz (18 blocks of 5 MHz)																	

Table 3 for information reveals the potential synergy with ECC/DEC/(13)03.

3 COMPATIBILITY SCENARIOS ADDRESSED IN PREVIOUS DOCUMENTS

3.1 COMPATIBILITY BETWEEN MFCN IN 1427-1452 MHZ AND SERVICES OPERATING IN 1400-1427 MHZ

The band 1400-1427 MHz is allocated to EESS (passive), Radio astronomy and Space Research (passive), on a worldwide basis. In the band 1427-1452 MHz, Resolution 750 (Rev.WRC-15) [2] applies for the protection of services in 1400-1427 MHz.

Resolution 750 (Rev. WRC-15) sets the base station maximum unwanted emission power in the band 1400-1427 MHz for base stations operating in 1427-1452 MHz.

Table 4: Base station maximum unwanted emission power in the band 1400-1427 MHz for base stations operating in 1427-1452 MHz

Frequency range of out-of-band emissions	Maximum unwanted emission power ¹	Measurement Bandwidth
1400-1427 MHz	-72 dBW	27 MHz

It is noted that further mitigation methods - e.g. geographical separation - are required for the protection of the radio astronomy service in the band 1400-1427 MHz from emissions of IMT systems in the band 1427-1452 MHz.

3.2 COMPATIBILITY BETWEEN MFCN IN 1492-1518 MHZ AND SERVICES OPERATING IN THE BAND 1518-1525 MHZ

ECC Report 263 [3] conducted adjacent band compatibility studies between IMT operating in the frequency band 1492-1518 MHz and the MSS operating in the frequency band 1518-1525 MHz. The report recommends that base station unwanted emission limits e.i.r.p. for a broadband signal interferer operating below 1518 MHz shall be -30dBm/MHz above 1520 MHz. This figure is 10 dB more stringent than ECC Decision (13)03 [1] due to a different service in the adjacent band.

ECC Report 263 does not provide recommended e.i.r.p. limits for the unwanted emissions in the band 1518-1520 MHz, but applying a 10 dB reduction to the limits in Decision ECC/DEC/(13)03 and using a reference bandwidth of 1 MHz leads to the values shown in Table 5.

Table 5: Base station unwanted emission limits per cell⁽¹⁾ above 1518 MHz for base stations operating in 1492-1517 MHz

Frequency range of unwanted emissions	Maximum unwanted e.i.r.p.	Measurement Bandwidth
Between 1518 and 1520 MHz	-0.8 dBm	1 MHz
Between 1520 and 1559 MHz	-30 dBm	1 MHz

⁽¹⁾ In a multi-sector site, the value per 'cell' corresponds to the value for one of the sectors.

¹ The unwanted emission power level is to be understood here as the level measured at the antenna port.

In ECC Report 263, the MCL analysis indicates that the required separation distances necessary to ensure protection of MES in the different environment types (land, sea and air, where the aircraft is considered to be on the ground, or a vessel is in port) vary in a range from tens of metres to some km. Therefore, CEPT has launched additional work to study measures to address potential blocking of MES operating in bands adjacent to 1518 MHz (including 1525-1559 MHz) at sea ports and airports.

3.3 COMPATIBILITY BETWEEN MFCN SYSTEMS OPERATING IN ADJACENT CHANNELS IN 1427-1517 MHz

ECC Decision 13(03) [1] defines the BEM to allow coexistence between MFCN SDL in the 1452-1492 MHz band. There is no fundamental difference between coexistence of MFCN in 1452-1492 MHz and coexistence of MFCN in 1427-1517 MHz. Therefore, those BEMs are still valid and can be adopted.

Table 6: Base station BEM out-of-block e.i.r.p. limits per antenna within the band 1427-1517 MHz

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
-10 to -5 MHz from lower block edge	11 dBm	5 MHz
-5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to +5 MHz from upper block edge	16.3 dBm	5 MHz
+5 to +10 MHz from upper block edge	11 dBm	5 MHz
Remaining MFCN SDL frequencies	9 dBm	5 MHz

4 MAXIMUM IN-BAND E.I.R.P. FOR BASE STATIONS OPERATING IN 1427-1452 AND 1492-1517 MHZ

4.1 LEGACY SITUATION IN 1452-1492 MHZ

The ECC Decision 13(03) [1] states that:

"Administrations should take into account the following aspects:

- *It is not desirable to restrict the in-band e.i.r.p. as the 1452-1492 MHz band could be aggregated with FDD coverage bands in lower frequencies and thus higher in-band e.i.r.p. for a base station allows benefiting of the SDL capacity across the base station cell.*
- *Based on deployment requirements and on compatibility studies with other services operating in adjacent bands (see ECC Report 202), an administration could at national level:*
 - *restrict base stations in-band e.i.r.p.. Such limit may range up to 68 dBm. Higher e.i.r.p. may be considered in specific circumstances;*
and/or
 - *according to the service considered: handle coordination of stations."*

4.2 MAXIMUM IN BAND E.I.R.P. FOR BS OPERATING IN 1427-1452 MHZ

Resolution 750 (Rev.WRC-15) [2] provides restrictions on the emissions in 1400-1427 MHz but does not specify any requirements on emission levels above 1427 MHz. As long as the equipment complies with the unwanted emissions in 1400-1427 MHz, there is no reason to restrict the in-band e.i.r.p. in 1427-1452 MHz.

Therefore, the maximum in-band e.i.r.p. framework defined in ECC Decision 13(03) is applicable to the band 1427-1452 MHz.

4.2.1 Practical limitation on maximum in band e.i.r.p. in 1427-1432 MHz

It is not expected that base stations operating at maximum power in 1427-1432 MHz will be able to comply with the emission limits below 1427 MHz specified in Table 4. On the contrary, it is expected that only lower power base stations can be deployed in the block 1427-1432 MHz.

It is not appropriate to introduce regulatory emission limits for these bands, as such limits are only related to current state-of-the-art of the technology and specific deployment models.

4.3 MAXIMUM IN BLOCK E.I.R.P. FOR BS OPERATING IN 1492-1517 MHZ

ECC Report 263 [3] defined the compatibility framework between IMT operating in the frequency band 1492-1518 MHz and the MSS operating in the frequency band 1518-1525 MHz. Compatibility requirements identified in this framework include a maximum base station in block e.i.r.p. of 58 dBm/5MHz for base stations operating in 1512-1517 MHz. Corresponding minimum blocking requirements for MSS terminals operating above 1518 MHz were defined in ECC Report 263 taking into account, in particular, a maximum in band e.i.r.p of 58 dBm for BS operating in 1512-1517 MHz. CEPT requested ETSI to change the relevant harmonised standard(s) applicable to MES in order to improve the blocking requirement and this was proposed as a compromise with the maximum in band e.i.r.p. limit in the ECC decision. Any change of this limit would undermine this compromise.

Table 7: Maximum in block e.i.r.p. per cell⁽¹⁾ for BS operating in 1512-1517 MHz

MFCN block	Maximum in block e.i.r.p.	Measurement bandwidth
1512-1517 MHz	58 dBm	5 MHz

⁽¹⁾ In a multi-sector site, the value per 'cell' corresponds to the value for one of the sectors.

For base stations operating below 1512 MHz (i.e. more than 6 MHz away from MSS terminals), there is no reason to restrict the MFCN BS maximum in-block e.i.r.p. Therefore, the maximum in-block e.i.r.p. framework defined in ECC/DEC/(13)03 is applicable to the band 1492-1512 MHz.

5 IMPACT ON LRTC FOR MFCN BS OPERATING IN 1452-1492 MHZ

5.1 CURRENT EMISSION LIMITS IN ADJACENT BAND

ECC/DEC/(13)03 [1] harmonises the use of the band 1452-1492 MHz for terrestrial mobile/fixed communications networks supplemental downlink (MFCN SDL).

ECC/DEC/(13)03 currently specifies emission limits below 1452 MHz and above 1492 MHz, based on the services that were operating in 1427-1452 MHz and 1492-1518 MHz when the Decision was adopted (See Table 8 below). Although the initial technical studies may have considered interference per cell and not just per antenna, these limits should not be modified since already part of existing licences.

Table 8: Base station OOB e.i.r.p. limits out of the band 1452-1492 MHz as specified in ECC/DEC/(13)03

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
Below 1449 MHz	-20 dBm	1 MHz
1449-1452 MHz	14 dBm	3 MHz
1492-1495 MHz	14 dBm	3 MHz
Above 1495 MHz	-20 dBm	1 MHz

5.2 CURRENT EMISSION LIMITS NOT REQUIRED AND PROBLEMATIC WHEN MFCN OPERATES IN ADJACENT BAND

The limits detailed in Table 8 are not required when MFCN is deployed either below 1452 MHz or above 1492 MHz, since the service in the adjacent band is MFCN, i.e. no longer the service for which the protection limits in ECC/DEC/(13)03 were derived.

In addition, a base station transmitting on two carriers, for example one carrier below 1452 MHz and one carrier above 1452 MHz could not comply with the requirements from Table 6.

Therefore, these requirements would limit deployment opportunities for no reason and are not appropriate.

5.3 PROPOSED UPDATE OF THE REGULATORY FRAMEWORK APPLICABLE TO MFCN OPERATING IN 1452-1492 MHZ

It is recommended to indicate in the ECC Decision addressing introduction of MFCN in 1427-1452 MHz and 1492-1518 MHz, that the Base Station OOB e.i.r.p. limits out of the band 1452-1492 MHz as currently specified in ECC/DEC/(13)03 are not applicable when MFCN is deployed below 1452 MHz and/or above 1492 MHz.

The ECC Decision should include the Table 9 and Table 10 below.

Table 9: Base station BEM out-of-block e.i.r.p. limits per antenna within the band 1427-1492 MHz for BS operating in 1452-1492 MHz when MFCN is deployed in 1427-1452 MHz

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
-10 to -5 MHz from lower block edge	11 dBm	5 MHz
-5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to +5 MHz from upper block edge	16.3 dBm	5 MHz
+5 to +10 MHz from upper block edge	11 dBm	5 MHz
Remaining MFCN SDL frequencies	9 dBm	5 MHz

Table 10: Base station BEM out-of-block e.i.r.p. limits per antenna within the band 1452-1517 MHz for BS operating in 1452-1492 MHz when MFCN is deployed in 1492-1517 MHz

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
-10 to -5 MHz from lower block edge	11 dBm	5 MHz
-5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to +5 MHz from upper block edge	16.3 dBm	5 MHz
+5 to +10 MHz from upper block edge	11 dBm	5 MHz
Remaining MFCN SDL frequencies	9 dBm	5 MHz

6 CONCLUSIONS

The report is assuming that the harmonised frequency arrangement for MFCN in the band 1427-1452 MHz and 1492-1517 MHz is for downlink, based on 5 MHz blocks, and takes into account ECC/DEC/(13)03 [1] for the frequency band 1452 - 1492 MHz.

Compatibility of MFCN operating in 1427-1452 MHz with EESS (passive) operating in 1400-1427 MHz is addressed in Resolution 750 (Rev.WRC-15) [2].

Compatibility of MFCN operating in 1492-1517 MHz with services operating above 1518 MHz is studied in ECC Report 263 [3].

The compatibility between MFCNs is addressed in ECC/DEC/(13)03.

The report proposes least restrictive technical conditions for MFCN, including 5G, for the frequency bands 1427-1452 MHz and 1492-1518 MHz based on a compilation of these previous results and further provide guidance on the impact of the introduction of MFCN in 1427-1452 MHz and/or 1492-1518 MHz on ECC/DEC/(13)03.

ANNEX 1: provides recommendations on LRTCs applicable to MFCN operating in 1427-1518 MHz.

ANNEX 1: LEAST RESTRICTIVE TECHNICAL CONDITIONS FOR MOBILE/FIXED COMMUNICATIONS NETWORKS IN 1427-1518 MHZ

The least restrictive technical conditions (LRTC) are in the form of a block-edge mask (BEM) and out of band (OOB) emission limits. LRTC are related to the avoidance of interference between users of spectrum. The LRTC in the 1427-1452 MHz and 1492-1518 MHz bands are optimised for, but are not limited to MFCN SDL.

A BEM is an emission mask that is defined, as a function of frequency, relative to the block edge of spectrum. BEMs are emission restrictions without implication on the levels of the emission restriction applicable to the spurious domain. The term block edge refers to the frequency boundary of spectrum licensed to a mobile/fixed communication network.

The BEM has been derived to allow coexistence between MFCN SDL systems in the 1427-1518 MHz bands.

In addition, OOB emission limits for MFCN SDL have been defined to address compatibility between MFCN SDL in the 1427–1452 MHz and 1492–1518 MHz bands and other applications in adjacent bands but in the same geographical area.

Other deliverables will address:

- in-band cross-border coordination between MFCN SDL and low capacity fixed links;
- cross-border coordination between two MFCN SDL systems applicable in the 1427-1452 MHz and 1492-1518 MHz bands.

Operators of MFCN in the 1427-1518 MHz bands may agree, on a bilateral or multilateral basis, different technical parameters providing that they continue to comply with the technical conditions applicable for the protection of other services, applications or networks and with their cross-border obligations. Administrations should ensure that these technical parameters can be used, if agreed among all affected parties.

A1.1 TECHNICAL CONDITIONS FOR BASE STATIONS

Administrations should take into account the following aspects:

It is not desirable to restrict the in-band e.i.r.p. for base stations operating in 1427-1452 MHz and 1492-1512 MHz, as the band could be aggregated with FDD coverage bands in lower frequencies and thus higher in-band e.i.r.p. for a base station allows benefiting of the SDL capacity across the base station cell.

Based on deployment requirements and on compatibility studies with other services operating in adjacent bands, or with legacy services operating in the band, an administration could at national level:

- restrict base stations in-band e.i.r.p. in the band 1452-1512 MHz. Such limit may range up to 68 dBm. Higher e.i.r.p.s may be considered in specific circumstances;
and/or
- according to the service considered: handle coordination of stations.

It should be noted that it is not expected that base station operating in the block 1427-1432 MHz can transmit a large power while respecting the emission limits detailed in Table 12 below. On the contrary, it is expected that only lower power base stations can be deployed in the block 1427-1432 MHz. It is not appropriate to introduce regulatory emission limits for these bands as such limits are only related to current state-of-the-art of the technology and specific deployment models.

Compatibility requirements identified in ECC Report 263 [3] require restricting the in-band e.i.r.p. for base stations operating in 1512-1517 MHz to 58 dBm in band e.i.r.p.

Table 11, Table 12, Table 13 and Table 14 below define, respectively, the maximum in-band e.i.r.p. per cell for BS operating in 1512-1517 MHz, the base station BEM out-of-block e.i.r.p. limits per antenna for emissions within the band 1427-1517 MHz, the base station maximum unwanted emission power in the band 1400-1427 MHz for base stations operating in 1427-1452 MHz and the base station unwanted emission

limits per cell above 1518 MHz for base stations operating in 1492-1517 MHz. In a multi sector site “cell” refers to one of the sectors.

Table 11: Maximum in band e.i.r.p. per cell⁽¹⁾ for BS operating in 1512-1517 MHz

MFCN block	Maximum in band e.i.r.p.	Measurement bandwidth
1512-1517 MHz	58 dBm	5 MHz

⁽¹⁾ In a multi-sector site, the value per ‘cell’ corresponds to the value for one of the sectors.

Table 12: Base station BEM out-of-block e.i.r.p. limits for emissions within the band 1427-1517 MHz per antenna

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
-10 to -5 MHz from lower block edge	11 dBm	5 MHz
-5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to +5 MHz from upper block edge	16.3 dBm	5 MHz
+5 to +10 MHz from upper block edge	11 dBm	5 MHz
Remaining MFCN SDL frequencies	9 dBm	5 MHz

Table 13: Base station maximum unwanted emission power in the band 1400-1427 MHz for base stations operating in 1427-1452 MHz

Frequency range of out-of-band emissions	Maximum unwanted emission power ²	Measurement Bandwidth
1400-1427 MHz	-72 dBW	27 MHz

Table 14: Base station unwanted emission limits per cell⁽¹⁾ above 1518 MHz for base stations operating in 1492-1517 MHz.

Frequency range of unwanted emissions	Maximum unwanted e.i.r.p.	Measurement Bandwidth
Between 1518 and 1520 MHz	-0.8 dBm	1 MHz
Between 1520 and 1559 MHz	-30 dBm	1 MHz

⁽¹⁾ In a multi-sector site, the value per ‘cell’ corresponds to the value for one of the sectors.

² The unwanted emission power level is to be understood here as the level measured at the antenna port.

A1.2 APPLICABLE LRTC FOR BS IN 1452-1492 MHZ WHEN MFCN IS DEPLOYED EITHER BELOW 1452 MHZ AND/OR ABOVE 1492 MHZ

When MFCN is deployed either below 1452 or above 1492 MHz, the Base Station OOB e.i.r.p. limits out of the band 1452-1492 MHz as currently specified in ECC/DEC/(13)03 are not applicable when MFCN is deployed below 1452 MHz and/or above 1492 MHz. The applicable Base Station OOB e.i.r.p. limits out of the band 1452-1492 MHz are specified in the tables below.

Table 15: Base station BEM out-of-block e.i.r.p. limits per antenna within the band 1427-1492 MHz for BS operating in 1452-1492 MHz when MFCN is deployed in 1427-1452 MHz

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
-10 to -5 MHz from lower block edge	11 dBm	5 MHz
-5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to +5 MHz from upper block edge	16.3 dBm	5 MHz
+5 to +10 MHz from upper block edge	11 dBm	5 MHz
Remaining MFCN SDL frequencies	9 dBm	5 MHz

Table 16: Base station BEM out-of-block e.i.r.p. limits per antenna within the band 1452-1517 MHz for BS operating in 1452-1492 MHz when MFCN is deployed in 1492-1517 MHz

Frequency range of out-of-block emissions	Maximum mean out-of-block e.i.r.p.	Measurement Bandwidth
-10 to -5 MHz from lower block edge	11 dBm	5 MHz
-5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to +5 MHz from upper block edge	16.3 dBm	5 MHz
+5 to +10 MHz from upper block edge	11 dBm	5 MHz
Remaining MFCN SDL frequencies	9 dBm	5 MHz

ANNEX 2: LIST OF REFERENCE

- [1] ECC Decision (13)03: The harmonised use of the frequency band 1452-1492 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL), November 2013 and amended July 2015
- [2] ITU Radio Regulations Edition of 2016
- [3] ECC Report 263: Adjacent band compatibility studies between IMT operating in the frequency band 1492-1518 MHz and the MSS operating in the frequency band 1518-1525 MHz, March 2017
- [4] ECC Report 202: Out-of-Band emission limits for Mobile/Fixed Communication Networks (MFCN) Supplemental Downlink (SDL) operating in the 1452-1492 MHz band, September 2013
- [5] ECC Decision (04)09: Designation of the bands 1518-1525 MHz and 1670-1675 MHz for the Mobile-Satellite Service, November 2004 and amended June 2009