Europe

GSMA Europe response

Public Consultation on
Draft ECC/DEC/(09)EE and CEPT reports 30 and 31

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Martin Whitehead
Director GSMA Europe

Diamant Building
Blvd. A. Reyers 80
B- 1030 Brussels

Tel: +32 2 706 81 06
GSM: + 32 475 522 054
E-mail: mwhitehead@gsm.org
www.gsmeurope.org

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Summary

GSMA Europe thanks the ECC for the opportunity to comment on the Draft ECC/DEC/(09)EE and CEPT reports 30 and 31. In response to these public consultations we would like to make the following points:

1. The GSMA Europe fully supports the preferred harmonised frequency arrangement contained in the ECC Decision and CEPT report 31 i.e. 2x30 MHz FDD plan, with 1 MHz frequency separation at 790 MHz to 791 MHz and an 11 MHz duplex gap. Only this band plan can offer the benefits of European economies of scale and roaming, which are essential to deliver the benefits of mobile broadband to the citizens of Europe.

2. GSMA Europe members believe that the 11 MHz duplex gap is feasible to implement in terminals and that the 1 MHz frequency separation is sufficient for implementation of mitigation techniques in infrastructure that rely on filtering.

3. The title of the ECC Decision is "harmonised conditions for Mobile/Fixed Communications Networks operating in the band 790-862 MHz". The GSMA Europe recognizes that some administrations believe that they may have difficulties in implementing the preferred harmonised frequency arrangement. However, these difficulties are likely to be reduced substantially by the roadmap and associated actions proposed by the Commission in its recent consultation document. The GSMA Europe therefore suggests that ECC PT1 should consider whether there is a need for Annex 2 to be retained in the Decision.

4. The GSMA Europe has identified an inconsistency between Annex 3 and Annex 2. According to Annex 2, an Administration can partially implement the preferred harmonised frequency arrangement. However, according to Annex 3, that administration must then require terminals that meet emissions requirements relative to the band allocated in that country. That would prevent terminals designed for the full preferred harmonised frequency arrangement from being used in that country.

5. The block edge masks in Annex 3 were developed on the basis of 5MHz LTE channels. This leads to more stringent requirements for terminals for wider bandwidth channels, which are not justified by coexistence studies. GSMA Europe proposes a modification to one parameter, which only applies within the uplink band of the preferred harmonised frequency arrangement.

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Detailed comments

Part 1: Frequency arrangements developed by ECC PT1

1.0 Preferred harmonised frequency arrangement contained in the ECC Decision and CEPT report 31

The trade-off between reducing the duplex gap and a frequency separation at 790 MHz is a complex issue and we are satisfied with the conclusions of ECC PT1 on this issue, as reflected in Annex 1 of the draft Decision and CEPT Report 31. We agree that the 1 MHz agreed for the frequency separation at 790MHz is sufficient for mitigation techniques to be implemented to protect DTT reception below 790 MHz.

GSMA Europe therefore fully supports the preferred harmonised frequency arrangement contained in the ECC Decision and CEPT report 31 - i.e. 2x30 MHz FDD plan, with 1 MHz frequency separation at 790 MHz to 791 MHz and an 11 MHz duplex gap.

2.0 Frequency arrangements other than the preferred harmonised arrangement

Annex 2 to the ECC Decision contains 'Frequency arrangements other than the preferred harmonised arrangement'.

CEPT Report 31 states (section 3.2) that "Administrations wishing to use a frequency arrangement different from the CEPT-wide harmonised band plan will have to assess the cost and benefits of using a non harmonised band plan and the willingness of industry to design equipment based on national circumstances". GSMA Europe believes that these additional costs will be substantial, due to the loss of economies of scale; different terminals will be required for each national frequency arrangement (whether TDD, FDD or mixed) in order to meet the technical conditions defined in Annex 3. The benefits are likely to be limited; if other services remain in the 790-862MHz band, there will be very little spectrum available for mobile services once guard bands have been taken into account.

The European Commission has recently published a consultation document on "transforming the digital dividend opportunity into social benefits and economic growth in Europe". The GSMA Europe believes that the roadmap and associated actions proposed by the Commission will greatly reduce the obstacles to Administrations implementing the preferred harmonised frequency arrangement. The GSMA Europe therefore suggests that ECC PT1 should consider whether there is a need for Annex 2 to be retained in the Decision in its present form.

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Part 2: Technical conditions developed by CEPT SE42

Annex 3 to the ECC Decision contains the Technical conditions based on BEM approach. The block edge masks were derived on the basis of 5MHz LTE channels. As a consequence, one of the requirements is more stringent than 3GPP specifications for wider channel bandwidths. This difference is not justified by the technical studies. The relevant 3GPP requirement is "band independent", which means that it does not take account of specific features of individual bandplans. In principle, the same issue affects both the FDD uplink band and the centre gap. However, the duplexer in the terminal will provide additional filtering in the centre gap, which is not taken into account in the 3GPP specs. Therefore, the GSMA Europe believes that the change only needs to apply within the FDD uplink band.

The GSMA Europe has identified an inconsistency between Annex 3 and Annex 2. According to Annex 2, an Administration can partially implement the preferred harmonised frequency arrangement. However, according to Annex 3, that administration must then require terminals that meet emissions requirements applicable to the band allocated in that country. That would prevent terminals designed for the full preferred harmonised frequency arrangement from being used in that country.

If these proposals are accepted, the corresponding changes will also need to be made to CEPT report 30.

Rationale for the proposed changes

1. Adding the two tables for terminals for the preferred harmonised frequency arrangement resolves the inconsistency between Annexes 2 and 3.
2. Having separate tables for the preferred harmonised frequency arrangement allows the emissions limits within the uplink band to be modified without changing them in the centre gap.
3. This also allows the measurement bandwidths to be different (1MHz for 10-11MHz offset in the centre gap and 5MHz for >10MHz offset within the uplink band).
4. For the preferred harmonised frequency arrangement, the requirements for the terminal must be defined relative to the edge of the channel to ensure that roaming is possible.
5. The footnote to Table 11 is not valid if broadcasting channels remain above 790MHz. Moving this footnote to the table for the preferred harmonised frequency arrangement clarifies this.
6. The emissions limit for terminals is relaxed within the uplink band to align with 3GPP specifications. This relaxation is only needed when the instantaneous transmission bandwidth is greater than 10MHz (when, of course, a smaller number of terminals will be transmitting simultaneously in a particular geographic area). The link budget will only allow a wide bandwidth when the terminal is in a small part of the cell close to the basestation. The probability of this relaxation having any impact on interference is therefore low.
7. A number of editorial clarifications are suggested.

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Proposed changes to Annex 3 to the ECC Decision

It should be noted that the proposed new tables largely apply the existing technical conditions in this annex to the preferred harmonised frequency arrangement. The only technical changes are in the top and bottom two rows of Table 8:

In the top row, the measurement bandwidth is changed to 5MHz and the maximum mean out-of-block power is adjusted accordingly. There is no change in the effective requirement.
In the second row, the mean out-of-block power is relaxed when the terminal is transmitting with an instantaneous bandwidth of >10MHz. This relaxation is only effective within the FDD uplink band, because Table 7 also applies in the centre gap.

The bottom two rows are the corresponding changes for the opposite end of the uplink band.

The following provide the GSMA Europe changes to Annex 3:

Technical conditions based on BEM approach

The technical conditions presented in this annex are in the form of block-edge masks (BEMs) as derived in CEPT Report 30. BEMs are related to spectrum licensing and the avoidance of interference between users of spectrum.

A BEM is an emission mask that is defined, as a function of frequency, relative to the edge of a block of spectrum that is licensed to an operator. It consists of in-block and out-of-block components which specify the permitted emission levels over frequencies inside and outside the licensed block of spectrum respectively. The out-of-block component of the BEM itself consists of a baseline level and, where applicable, intermediate (transition) levels which describe the transition from the in-block level to the baseline level as a function of frequency.

Accordingly, the BEM levels are built up by combining the values listed in the tables below in such a way that the limit at any frequency is given by the higher (less stringent) value of a) the baseline requirements, b) the transition requirements, and c) the in-block requirements (where appropriate). Illustrative examples can be found in section 6.6.4. of CEPT Report 30 in relation with FDD and TDD channelling arrangement.

The BEMs in the 790-862 MHz band are optimised for, but are not limited to, FDD and TDD mobile/fixed communications networks (two-way). In addition, a number of technical conditions have also been derived for Programme Making and Special Events (PMSE) equipments and low-power applications in the FDD duplex gap or TDD guard band. Therefore, the BEMs are derived for base stations (BSs), terminal stations (TSs) and PMSE equipments.

The BEMs have been derived to allow coexistence between applications in the 790-862 MHz band and other applications in adjacent bands but in the same geographical area. The derived BEMs do not take into account of coexistence with Aeronautical Radio Navigation Systems (ARNS) operating in some CEPT countries (RR No. 5.312). Therefore, the BEMs have to be associated with other requirements in such instances. This can be done at a national level or with cross-border coordination developed by bilateral or multilateral agreements.

BEMs shall be applied as an essential component of the technical conditions necessary to ensure coexistence between services at a national level. However, it should be understood that the derived BEMs do not always provide full protection of victim services, and additional mitigation techniques would need to be applied in order to resolve any remaining cases of interference.

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Operators of Mobile/~~f~~Fixed ~~c~~Communications ~~n~~Networks ~~operators~~ in the 790-862 MHz band may agree, on a bilateral or multilateral basis, less stringent technical parameters providing that they continue to~~remain~~ comply~~iant~~ 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 less stringent technical parameters can be used, if agreed among all affected parties~~, these less stringent technical parameters may be used~~ (e.g. between synchronised TDD operators) [1].

The BEMs are presented as upper limits on the mean EIRP, which is defined as the maximum EIRP value measured or integrated by an RMS detector over the specified measurement bandwidth, and over an averaging time interval of a signal burst duration. In general, and unless stated otherwise, the BEM levels correspond to the power radiated by the relevant device irrespective of the number of transmit antennas, except transition requirements which are specified per antenna.

The term *block edge* refers to the frequency boundary of spectrum licensed to a ~~n~~Mobile/~~f~~Fixed communication network. The term *band edge* refers to the boundary of a range of frequencies allocated for a certain use (e.g., 790 MHz is the upper band edge for broadcasting, while 832 MHz is the lower band edge for FDD uplink). The term *channel edge* refers to the block edge when the carrier is located an the minimum offset from the *block edge* envisaged by the specifications for the system[2]. For requirements with a *measurement bandwidth* of 5 MHz, the measurement bandwidth is aligned within a block.

1. Technical conditions for FDD or TDD base stations

An administration may choose to specify an in-block EIRP limit for base stations. Such limit may range from 56 dBm/{5 MHz} to 64 dBm/{5 MHz} based on compatibility studies and deployment requirements in this band. It should be noted that administrations may consider authorising higher in-block EIRPs in specific circumstances, e.g. in rural deployments.

Tables 1 to 4 define~~show~~ the out-of-block BEM requirements for base stations within the spectrum allocated to ~~n~~Mobile/~~f~~Fixed ~~c~~Communications ~~n~~Networks.

Frequency range ~~in which~~of out-of-block emissions ~~are received~~	**Maximum mean out-of-block EIRP**	**Measurement bandwidth**
Frequencies allocated to FDD uplink or TDD in the 790-862 MHz band	–49.5 dBm	5 MHz

Table 1: Baseline requirements – BS BEM out-of-block EIRP limit

Frequency offset from FDD (lower/upper) block edge	**Maximum mean out-of-block EIRP**	**Measurement bandwidth**
FDD downlink lower band edge to –10 MHz from FDD lower block edge	9 dBm	1 MHz
–10 to –5 MHz from FDD lower block edge	18 dBm	5 MHz
–5 to 0 MHz from FDD lower block edge	22 dBm	5 MHz
0 to +5 MHz from FDD upper block edge	22 dBm	5 MHz
+5 to +10 MHz from FDD upper block edge	18 dBm	5 MHz
+10 MHz from FDD upper block edge to FDD uplink lower band edge	9 dBm	1 MHz

[1] The BEMs for TDD devices are derived here with the assumption that TDD networks in adjacent frequencies are unsynchronised.

[2] This condition ensures that a terminal will meet the requirements when it roams onto another network using the preferred harmonised frequency arrangement.

Table 2: Transition requirements – FDD BS BEM out-of-block EIRP limits per antenna[3] over frequencies of the FDD channelling arrangement

Frequency offset from TDD (lower/upper) block edge	Maximum mean out-of-block EIRP	Measurement bandwidth
–10 to –5 MHz from TDD lower block edge	18 dBm	5 MHz
–5 to 0 MHz from TDD lower block edge	22 dBm	5 MHz
0 to +5 MHz from TDD upper block edge	22 dBm	5 MHz
+5 to +10 MHz from TDD upper block edge	18 dBm	5 MHz

Table 3: Transition requirements – TDD BS BEM out-of-block EIRP limits per antenna[3] over frequencies of the TDD channelling arrangement

Frequency range ~~in which~~of out-of-block emissions ~~are received~~	Maximum mean out-of-block EIRP	Measurement bandwidth
Broadcasting band edge to FDD downlink lower band edge	17.4 dBm	1 MHz
Broadcasting band edge to -5 MHz from TDD lower band edge	14 dBm	2 MHz
-5 MHz from TDD lower band edge to TDD lower band edge	22 dBm	5 MHz
+5 MHz from TDD upper band edge to TDD upper band edge	22 dBm	5 MHz
Broadcasting band edge to +5 MHz from TDD upper band edge	14 dBm	2 MHz

Table 4: Transition requirements – BS BEM out-of-block EIRP limits per antenna[3] over frequencies (e.g. above 790 MHz) used as guard band[4] between mobile/fixed communications network blocks and broadcasting channels

The last two rows take into account mixed use of the 790-862 MHz band by TDD and broadcasting, where broadcasting could be at higher frequencies than TDD.

Table 5 shows the out-of-block BEM baseline requirements for mobile/fixed communications network base stations within the spectrum allocated to the broadcasting (DTT) service.

Case	Frequency range	Condition on base station in-block EIRP, P dBm/{10 MHz}	Maximum mean out-of-block EIRP	Measurement bandwidth
A	For DTT frequencies where broadcasting is protected	P ≥ 59	0 dBm	8 MHz
		44 ≤ P < 59	(P-59) dBm	8 MHz
		P < 44	-15 dBm	8 MHz
B	For DTT frequencies where broadcasting is subject to an intermediate level of protection	P ≥ 59	10 dBm	8 MHz
		44 ≤ P < 59	(P-49) dBm	8 MHz
		P < 44	-5 dBm	8 MHz
C	For DTT frequencies where broadcasting is not protected	No conditions	22 dBm	8 MHz

Table 5: Baseline requirements – BS BEM out-of-block EIRP limits over frequencies occupied by broadcasting

[3] For one to four antennas.
[4] Note that guard bands of 1 MHz and 7 MHz are assumed in the FDD and TDD channelling arrangements, respectively.

For the protection of digital terrestrial broadcasting in use in adjacent frequencies to mobile/fixed communications networks (M/FCNs), the baseline requirement in case A shall be applied. In circumstances where the relevant broadcasting channels are not in use at the time of deployment of M/FCNs, an administration may choose between the baseline requirements in cases A, B and C on a national basis. An administration may choose baseline requirement in case A where there are firm plans to bring the relevant broadcasting channels into use in the foreseeable future, and the administration wishes to provide these with the same level of protection as other broadcasting channels already in use. The baseline requirement in case B may be used where an administration wishes to reserve the option of bringing the relevant broadcasting channels into use at a future date, but does not want to over-restrict the deployment of M/FCNs in adjacent frequencies. Baseline requirement in case C may be used where an administration has no plans to bring the relevant broadcasting channels into use.

Other baseline requirements can be applied in specific circumstances subject to agreements between the broadcasting authority, M/FCN operators and the administration if required.

2. Technical conditions for ~~FDD or TDD~~ terminal stations

2.1 Technical conditions for all terminal stations

Table 6 shows the maximum in-block emission level for FDD or TDD terminal stations (TS). Administrations may relax this limit in certain situations, for example fixed installations in rural areas.

Maximum mean in-block power	25 dBm

Table 6: FDD or TDD TS in-block emission limit

2.2. Technical conditions for FDD terminal stations for the preferred harmonised frequency arrangement

A terminal intended for the preferred harmonised frequency arrangement needs to be able to roam between networks, operate on any channel within this frequency arrangement, and meet the technical conditions for any channel within the spectrum licensed to a fixed mobile communications network. The technical conditions for these terminals are therefore defined relative to the edge of the nominal channel rather than the block edge.

Tables 7 and 8 define the out-of-block BEM requirements for FDD terminal stations intended to operate in the preferred harmonised frequency arrangement. In the frequency range 822-832MHz, the more stringent of the requirements applies.

Frequency range of emissions	Maximum mean out-of-block power	Measurement bandwidth
Below 790 MHz	-65 dBm*	8 MHz
790-791 MHz	–44 dBm	1 MHz
791-821 MHz	-37 dBm	5 MHz
821-822 MHz	–25 dBm	1 MHz
822-827 MHz	-6 dBm	5 MHz
827-832 MHz	1.6 dBm	5 MHz

Table 7: Emission limits below 832MHz

* Full duplex FDD terminal stations designed to operate in the preferred harmonised FDD channelling arrangement are expected to be inherently compliant with this out-of-block emission level.

Frequency offset from FDD (lower/upper) channel edge	Maximum mean out-of-block power	Measurement bandwidth
822 MHz to –10 MHz from FDD lower channel edge	~~–25~~ -18 dBm	~~1~~5 MHz
822 MHz to –10 MHz from FDD lower channel edge, when the terminal is transmitting with an instantaneous bandwidth of >10MHz	-6 dBm	5 MHz
–10 to –5 MHz from FDD lower channel edge	-6 dBm	5 MHz
–5 to 0 MHz from FDD lower channel edge	1.6 dBm	5 MHz
0 to +5 MHz from FDD upper channel edge	1.6 dBm	5 MHz
+5 to +10 MHz from FDD upper channel edge	-6 dBm	5 MHz
+10 MHz from FDD upper channel edge to 862 MHz, when the terminal is transmitting with an instantaneous bandwidth of >10MHz	-6 dBm	5 MHz
+10 MHz from FDD upper channel edge ~~to~~ to 862 MHz	~~–25~~ -18 dBm	~~1~~5 MHz

Table 8: Emission limits in the frequency range 822-862MHz

2.3. Technical conditions for other FDD terminal stations and for TDD Terminal stations

Tables ~~9~~7 to ~~12~~9 define~~show~~ the out-of-block BEM requirements for generic FDD and TDD terminal stations within the spectrum allocated to ~~m~~Mobile/~~f~~Fixed ~~c~~Communication ~~n~~Networks.

Frequency range ~~in which~~of out-of-block emissions ~~are received~~	Maximum mean out-of-block power	Measurement bandwidth
Frequencies allocated to FDD downlink or TDD in the 790-862 MHz band	-37 dBm	5 MHz

Table ~~9~~7: Baseline requirements – TS BEM out-of-block emission limits

Frequency offset from FDD (lower/upper) block edge	Maximum mean out-of-block power	Measurement bandwidth
FDD downlink upper band edge to –10 MHz from FDD lower block edge	–25 dBm	1 MHz
–10 to –5 MHz from FDD lower block edge	-6 dBm	5 MHz
–5 to 0 MHz from FDD lower block edge	1.6 dBm	5 MHz
0 to +5 MHz from FDD upper block edge	1.6 dBm	5 MHz
+5 to +10 MHz from FDD upper block edge	-6 dBm	5 MHz
+10 MHz from FDD upper block edge to FDD uplink upper band edge	–25 dBm	1 MHz

Table 10~~8~~: Transition requirements – FDD TS BEM out-of-block emission limits over frequencies of the FDD channelling arrangement

Frequency offset from TDD (upper/lower) block edge	Maximum mean out-of-block power	Measurement bandwidth

-10 to -5 MHz from TDD lower block edge	-6 dBm	5 MHz
-5 to +0 MHz from TDD lower block edge	1.6 dBm	5 MHz
0 to +5 MHz from TDD upper block edge	1.6 dBm	5 MHz
+5 to +10 MHz from TDD upper block edge	-6 dBm	5 MHz

Table 119: Transition requirements – TDD TS BEM out-of-block emission limits over frequencies of the TDD channelling arrangement

Frequency range ~~in which~~of out-of-block emissions ~~are received~~	Maximum mean out-of-block power	Measurement bandwidth
Broadcasting band edge to FDD downlink lower band edge	–44 dBm	1 MHz
Broadcasting band edge to -5 MHz from TDD lower band edge	–10 dBm	2 MHz
-5 MHz from TDD lower band edge to TDD lower band edge	+1.6 dBm	5 MHz
+5 MHz from TDD upper band edge to TDD upper band edge	+1.6 dBm	5 MHz
Broadcasting band edge to +5 MHz from TDD upper band edge	–10 dBm	2 MHz

Table 120: Transition requirements – TS BEM out-of-block emission limits over frequencies (e.g., above 790 MHz) used as guard band[5] between mobile/fixed communication networks blocks and broadcasting channels

The last two rows take into account mixed use of the 790-862 MHz band by TDD and broadcasting, where broadcasting could be at higher frequencies than TDD.

Table 131 ~~1~~ defines~~shows~~ the out-of-block BEM requirements for mobile/fixed communication networks terminal stations within the spectrum used by the broadcasting (DTT) service.

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Frequency range ~~in which~~of out-of-block emissions ~~are received~~	Maximum mean out-of-block power	Measurement bandwidth
Frequencies allocated to broadcasting	-65 dBm~~*~~	8 MHz

Table 131: Baseline requirements – TS BEM out-of-block emission limits over frequencies occupied by broadcasting

~~* Full duplex FDD terminal stations designed to operate in the preferred harmonised FDD channelling arrangement are expected to be inherently compliant with this out-of-block emission level.~~

3. Technical conditions for PMSE and low-power (LP) applications within the duplex gap of the FDD channelling arrangement or the guard band of the TDD channelling arrangement

PMSE devices (channel bandwidth ≤ 200 kHz) and low-power (LP) applications (channel bandwidth ≥ 5 MHz) and are allowed on a non-protected, non-interfering basis within the duplex gap of the FDD channelling arrangement. PMSE devices (channel bandwidth ≤ 200 kHz) are also allowed on a non-protected, non-interfering basis within the guard band of the TDD channelling arrangement.

The technical conditions below can be relaxed at a national level subject to specific restrictions (e.g., minimum spatial distance between interferer and victim), or where it is judged that no material interference would arise.

[5] Note that guard bands of 1 MHz and 7 MHz are assumed in the FDD and TDD channelling arrangements, respectively.

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3.1 Technical conditions for PMSE equipment and low-power terminal stations

Table 142 shows the maximum permitted in-block emission level for PMSE equipment and LP terminal stations operating within the duplex gap of the FDD channelling arrangement or within the guard band of the TDD channelling arrangement.

Frequency offset from FDD downlink upper band edge[+]	Maximum mean in-block EIRP
> 5 MHz	20 dBm
+2 to +5 MHz[*]	13 dBm handheld terminals 20 dBm bodyworn terminals

Table 142: In-block requirements – PMSE equipment and LP TSs

[+] For narrow-band (bandwidth ≤ 200 kHz) PMSE equipment, this offset also applies to the TDD lower band edge.
[*] This only applies to narrow-band (bandwidth ≤ 200 kHz) PMSE equipment.

Tables 153 to 175 define~~show~~ the out-of-block BEM requirements for PMSE equipment and LP terminal stations within the spectrum allocated to mobile/fixed communication networks.

Frequency range ~~in which~~of out-of-block emissions ~~are received~~	Maximum mean out-of-block EIRP	Measurement bandwidth
Frequencies allocated to FDD downlink or TDD	-43 dBm	5 MHz
Frequencies allocated to FDD uplink	-25 dBm	5 MHz

Table 153: Baseline requirements – PMSE and LP TS BEM out-of-block EIRP limits

Frequency offset	Maximum mean out-of-block EIRP	Measurement bandwidth
0 to +2 MHz from FDD downlink upper band edge	-20.6 dBm	2 MHz
-2 to 0 MHz from the TDD lower band edge or 0 to +2 MHz from TDD upper band edge	-20.6 dBm	2 MHz

Table 164: Transition requirements – PMSE BEM out-of-block EIRP limits

Frequency offset from FDD downlink upper band edge	Maximum mean out-of-block EIRP	Measurement bandwidth
0 to +5 MHz	1.6 dBm	5 MHz

Table 175: Transition requirements – LP TS BEM out-of-block EIRP limit

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3.2 Technical conditions for low-power base stations

Table 16~~6~~ defines~~shows~~ the maximum permitted in-block EIRP for LP base stations operating within the duplex gap of the FDD channelling arrangement.

Frequency offset from FDD downlink upper band edge	Maximum mean in-block EIRP	Measurement bandwidth
> 5 MHz	13dBm	5 MHz

Table 16: In-block requirements – LP base stations

Tables 19~~7~~ and 20~~18~~ define~~show~~ the out-of-block BEM requirements for LP base stations within the spectrum allocated to mobile/fixed communication networks.

Frequency range ~~in which~~of out-of-block emissions ~~are received~~	Maximum mean out-of-block EIRP	Measurement bandwidth
Frequencies allocated to FDD downlink and uplink	-43dBm	5 MHz

Table 19~~7~~: Baseline requirement – LP BS BEM out-of-block EIRP limit

Frequency offset from FDD downlink upper band edge	Maximum mean out-of-block EIRP	Measurement bandwidth
0 to +5 MHz	-9dBm	5 MHz

Table 20~~18~~: Transition requirements – LP BS BEM out-of-block EIRP limits

About the GSMA in Europe

The **GSMA** in Europe represents 171 operators in 51 countries/areas in Europe and counts around 600 million subscribers. Globally, the GSM Association represents over 700 operators in over 200 countries and counts around 3.8 billion subscribers (www.gsmeurope.org).