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UK Interface Requirement (IR) 2103

Shared Access Low Power

Publication Date: 9 December 2019
2015/1535/EU Notification Number: 2019/379/UK

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1. References

1800 MHz

Directive 2009/114/EC of the European Parliament and of the Council of 16 September 2009 amending Council Directive 87/372/EEC on the frequency bands to be reserved for the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community

Commission Decision 2009/766/EC of 16 October 2009 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

Decision 2011/251/EU: Commission implementing decision 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.

COMMISSION IMPLEMENTING DECISION i[‘ve aof 20 April 2018 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 as regards relevant technical conditions for the Internet of Things.

Recommendation ITU-R M.1457 – Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2000 (IMT-2000).

Resolution ITU-R 56 – Naming for International Mobile Telecommunications

ETSI TS 136 101: LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception

ETSI TS 136 104: LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception

ETSI TS 136 106: LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); FDD repeater radio transmission and reception

ETSI EN 301 908-13: IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the Radio Equipment Directive (Directive 2014/53/EU); Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)

ETSI EN 301 908-14: IMT cellular networks; Harmonized Standard for access to radio spectrum; Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)

ETSI EN 301 908-15: IMT cellular networks; Harmonized Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU; Part 15: Evolved Universal Terrestrial Radio Access (E-UTRA FDD) (Repeaters)

ETSI EN 301 908-21: IMT cellular networks; Harmonized Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 21: OFDMA TDD WMAN (Mobile WiMAX) FDD User Equipment (UE)

ETSI EN 301 908-22: IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive ; Part 22: OFDMA TDD WMAN (Mobile WiMAX) FDD Base Stations (BS)

IEEE Std 802.16: Standard for local and metropolitan area networks – Air interface for broadband wireless access systems

CEPT Report 40: Report from CEPT to European Commission in response to Task 2 of the Mandate to CEPT on the 900/1800 MHz bands - Compatibility study for LTE and WiMAX operating within the bands 880-915 MHz / 925-960 MHz and 1710-1785 MHz / 1805-1880 MHz (900/1800 MHz bands)

CEPT Report 41: Report from CEPT to European Commission in response to Task 2 of the Mandate to CEPT on the 900/1800 MHz bands - Compatibility between LTE and WiMAX operating within the bands 880-915 MHz / 925-960 MHz and 1710-1785 MHz / 1805-1880 MHz (900/1800 MHz bands) and systems operating in adjacent bands

2.3 GHz

EEC/DECC (14)02 (June 2014) harmonised technical and regulatory conditions for the use of the band 2300-2400 MHz for Mobile/Fixed Communications Networks (MFCN)

CEPT Report 55: Technical conditions for wireless broadband usage of the 2300- 2400 MHz frequency band

CEPT Report 56 Report B1 from CEPT to the European Commission in response to the Mandate on ‘Harmonised technical conditions for the 2300-2400 MHz (‘2.3 GHz’) frequency band in the EU for the provision of wireless broadband electronic communications services’. Technological and regulatory options facilitating sharing between Wireless broadband applications (WBB) and the relevant incumbent services/applications in the 2.3 GHz band

ECC Report 216 on Practical guidance for TDD networks synchronisation

ETSI EN 301 908: IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the Radio Equipment Directive (Directive 2014/53/EU)

3.8-4.2 GHz

Commission decision 2008/411/EC of 21 May 2008 on the harmonisation of the 3400-3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community

Commission Implementing Decision (EU) 2019/235 on amending Decision 2008/411/EC as regards an update of relevant technical conditions applicable to the 3400-3800 MHz frequency band

ETSI EN 302 326: Fixed Radio Systems; Multipoint Equipment and Antennas; Harmonized EN covering the essential requirements of article 3.2 of the Radio Equipment Directive (Directive 2014/53/EU)

ETSI EN 302 623: Broadband Wireless Access Systems (BWA) in the 3400 MHz to 3800 MHz frequency band; Mobile Terminal Stations; Harmonized EN covering the essential requirements of article 3.2 of the Radio Equipment Directive (Directive 2014/53/EU)

2. Foreword

2.1 The Radio Equipment Directive (Directive 2014/53/EU) was implemented in the United Kingdom (UK) by the Radio Equipment Regulations 2017. In accordance with Articles 8 and 7 of Directive 2014/53/EU, this UK Interface Requirement contains the requirements for the licensing and use of terrestrial systems capable of providing electronic communications services in the specified frequency bands.

2.2 Nothing in this UK Radio Interface Requirement shall preclude the need for equipment to comply with Directive 2014/53/EU.

2.3 It is required by the Wireless Telegraphy Act 2006 that no radio equipment is installed or used in the UK except under the authority of a licence granted by or otherwise exempted by regulations made by Ofcom. It is a condition of such a licence or exemption regulations as appropriate that, in order to be installed or used in the UK, the equipment must meet the minimum requirements specified in this UK Interface Requirement for the stated equipment types and for the stated frequency bands. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 2014/53/EU.

2.4 The requirements given in the main body of this UK Radio Interface Requirement will apply to the licensing of low power terrestrial systems capable of providing electronic communications services in the 1781.7-1785 MHz and 1876.7-1880 MHz, 2390-2400 MHz and 3.8-4.2 GHz bands (the "Shared Access Bands").

2.5 This UK Radio Interface Requirement will be revised as necessary, for example to follow:

i) current technology developments for reasons related to the effective and appropriate use of the spectrum in particular maximising spectrum utilisation; and

ii) changes to the available spectrum allocated for low power terrestrial systems capable of providing electronic communications services in the Shared Access bands.

2.6 All UK Radio Interface Requirements notified under Directive 2015/1535/EU will be published and will be made available free of charge from the Ofcom web-site at http://www.ofcom.org.uk.

2.7 Further information on this UK Radio Interface Requirement can be obtained from the technical enquiry contact given at the back of this document.

3. Minimum requirements for operation within the UK

3.1 The minimum requirements in this document are made for reasons related to the effective and appropriate use of the radio spectrum, in particular maximising spectrum utilisation.

3.2 This UK Radio Interface Requirement gives a high level description of how the spectrum in the UK is used for technologies covered by the Shared Access Low Power licence product in the Shared Access bands. It does not prescribe technical interpretation of the 'essential requirements' of Directive 2014/53/EU.

3.3 This UK Radio Interface Requirement therefore stipulates the necessary equipment parameters for the authorisation of low power terrestrial systems capable of providing electronic communications services in the Shared Access bands in the UK. Tables 3.1 to 3.3 contain the relevant equipment parameters. These taken together with the 'essential requirements' detailed in Article 3.2 of Directive 2014/53/EU constitute the minimum requirements for terrestrial systems capable of providing electronic communications services in the Shared Access frequency bands within the UK. Nothing in this UK Interface Requirement shall preclude equipment from being placed on the market in the UK that complies with the 'essential requirements' specified in Directive 2014/53/EU.

3.4 The technical parameters specified in the UK Radio Interface Requirement are applied to achieve the desired level of compatibility within the spectrum for low power terrestrial systems capable of providing electronic communications services in the Shared Access bands and with other radiocommunications services, whilst promoting enterprise, innovation and competition.

3.5 This UK Radio Interface requirement provides the necessary technical information which facilitates access to the Shared Access spectrum by making clear the assumptions that are made in planning the use of the spectrum for terrestrial systems capable of providing electronic communications services in the Shared Access bands in the UK. It is not the intention of this UK Radio Interface Requirement to duplicate or impose any additional 'essential requirements' of the Directive 2014/53/EU on products. Any specified parameters within this document are for the purpose of identifying product options and not as a national de facto product requirement.

Table 3.1: Minimum requirements for the use of: Low Power Shared Access equipment operating in the 1781.7 to 1785 MHz and 1876.7 to 1880 MHz bands

Mandatory (1 – 10)	
1. Radiocommunication Service	Fixed or Mobile Service
2. Application	TRA-ECS (Terrestrial radio applications capable of providing electronic communication services)
3. Frequency band(s)	1781.7-1785 MHz and 1876.7-1880 MHz
4. Channelling	
5. Occupied bandwidth	
6. Direction / Separation	Frequency division duplex (FDD)
7. Maximum Transmit Power / Power Density	**Base & repeater stations in 1876.7-1880 MHz:** 24 dBm / carrier (up to 3 MHz) EIRP – **see table 3.1a below**. **Mobile or nomadic terminal stations in 1781.7-1785 MHz:** 23 dBm / carrier (up to 3 MHz) TRP **Fixed or installed terminal stations in 1781.7-1785 MHz:** 23 dBm / carrier (up to 3 MHz) EIRP
8. Channel access and occupation rules	Not specified
9. Authorisation regime	WT Act licence required for base station, repeaters and fixed installations. The use of mobile / nomadic terminal stations meeting the minimum requirements outlined in this Interface Requirement is exempt from licensing provided that it meets the requirements of the relevant exemption regulations.
10. Additional essential requirements	None
Informative (11-13)	
11. Frequency Planning	Outdoor antenna systems will be limited to 10m above ground
12. Planned changes	-
13. Reference	-
14. Notification	2019/379/UK
15. Remarks	The TRP is defined as the integral of the power transmitted in different directions over the entire radiation sphere.

Table 3.1a: Base & repeater stations in 1876.7-1880 MHz

Frequency offset from the lower frequency of the band edge	Maximum Mean EIRP density
0 to 0.05 MHz	-33.6 + 153.3 x Δ_{FL}* dBm / kHz
0.05 to 0.1 MHz	-26 + 60 x (Δ_{FL}*- 0.05) dBm / kHz
0.1 to 0.2 MHz	-23 + 230 x (Δ_{FL}*- 0.1) dBm / kHz
0.2 to 3.2 MHz	24 dBm / carrier
3.2 to 3.3 MHz	-23 + 230 x (3.3 - Δ_{FL}*) dBm / kHz

* Note: ΔFL in MHz is the offset from the lower edge of the permitted frequency band at 1876.7 MHz (it has values in the range 0 to +0.2 MHz and +3.2 to +3.3MHz)

Table 3.2: Minimum requirements for the use of: Low Power Shared Access equipment operating in the 2390 to 2400 MHz band

Mandatory (1 – 10)		
1.	Radiocommunication Service	Fixed or Mobile Service
2.	Application	TRA-ECS (Terrestrial radio applications capable of providing electronic communication services)
3.	Frequency band(s)	2390 to 2400 MHz
4.	Channelling	
5.	Modulation/ Occupied bandwidth	
6.	Direction / Separation	Time-division duplex (TDD)
7.	Maximum Transmit Power / Power Density	**Base & repeater stations:** 24 dBm / carrier (up to 10 MHz) EIRP **Mobile or nomadic terminal stations:** 25 dBm TRP (25 dBm includes a 2 dB tolerance) **Fixed or installed terminal stations:** 25 dBm EIRP (25 dBm includes a 2 dB tolerance)
8.	Channel access and occupation rules	Licensee shall ensure that the Radio Equipment is operated in compliance with any Synchronisation Procedures as notified within the Licence
9.	Authorisation regime	WT Act licence for all equipment.
10.	Additional essential requirements	None
Informative (11-13)		
11.	Frequency Planning	Outdoor antenna systems will be limited to 10m above ground
12.	Planned changes	-
13.	Reference	-
14.	Notification	2019/379/UK
15.	Remarks	The TRP is defined as the integral of the power transmitted in different directions over the entire radiation sphere

Table 3.3: Minimum requirements for the use of: Low Power Shared Access equipment operating in the 3.8 to 4.2 GHz band

Mandatory (1 – 10)	
1. Radiocommunication Service	Fixed or Mobile Service
2. Application	TRA-ECS (Terrestrial radio applications capable of providing electronic communication services)
3. Frequency band(s)	3.8 to 4.2 GHz
4. Channelling	10, 20, 30, 40, 50, 60, 80, 100 MHz
5. Modulation/ Occupied bandwidth	
6. Direction / Separation	Time-division duplex (TDD)
7. Maximum Transmit Power / Power Density	**Base & repeater stations:** 24 dBm / carrier for carriers ≤ 20 MHz EIRP; OR 18 dBm / 5 MHz for carriers > 20 MHz EIRP **Mobile or nomadic terminal stations:** 28 dBm TRP (28 dBm includes a 2 dB tolerance) **Fixed or installed terminal stations:** 28 dBm EIRP (28 dBm includes a 2 dB tolerance)
8. Channel access and occupation rules	Licensee shall ensure that the Radio Equipment is operated in compliance with any Synchronisation Procedures as notified within the Licence
9. Authorisation regime	WT Act licence for all equipment.
10. Additional essential requirements	None
Informative (11-13)	
11. Frequency Planning	Outdoor antenna systems will be limited to 10m above ground
12. Planned changes	-
13. Reference	-
14. Notification	2019/379/UK
15. Remarks	The TRP is defined as the integral of the power transmitted in different directions over the entire radiation sphere.

4. Additional performance parameters

Informative

4.1 None specified

5. Contact details

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6. Document history

Version	Date	Changes
1.0	9 December 2019	Published