Notice of proposal to make the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017

Implementing a European Commission Decision

Consultation

Publication date:	11 April 2017
Closing Date for Responses:	12 May 2017

About this document

This consultation document concerns Ofcom's proposal to make new regulations by statutory instrument that would enable airline passengers to use mobile devices (with 2G, 3G and 4G technologies) onboard aircraft, if certain standards and requirements are met, without the need for a wireless telegraphy licence. These regulations intend to implement a recent decision by the European Commission, and they will replace similar exemption regulations we made in 2014.

To give proper effect to the European Commission decision, it is also necessary to vary aircraft radio wireless telegraphy licences in order to ensure that operators comply with certain new technical and operational requirements. This will be implemented through a Notice of Variation to the aircraft licence, a draft of which we have included in this document for information only.

The deadline to submit responses for this consultation is 12 May 2017.

Contents

Section 1

Executive summary

1.1 This document consults on our proposals to implement the requirements of the European Commission ("EC") Implementation Decision of 16 December 2016 (2016/2317/EU) (the "2016 Amending Decision")[1]. To do this we intend to make the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017 (the "Proposed Regulations") which would revoke and replace the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2014 (the "2014 MCA Exemption Regulations")[2].

1.2 Mobile communication services on aircraft ("MCA") systems enable airline passengers to use mobile apparatus (mobile devices such as handsets, tablets or laptop dongles) during their flight without connecting directly with land mobile networks. MCA systems normally consist of an aircraft base transceiver station ("aircraft BTS") and Network Control Unit ("NCU") to which the mobile apparatus used by air passengers must connect to. The MCA operates, in essence, similar to a land base station.

1.3 The 2014 MCA Exemption Regulations permit the use of MCA services in Global System for Mobile communication ("GSM") 1710 to 1785 MHz and 1805 to 1880 MHz (the "1800 MHz" frequency band), Universal Mobile Telecommunications Service ("UMTS") in 1920 to 1980 MHz and 2110 to 2170 MHz (the "2100 MHz" frequency band) and Long Term Evolution ("LTE") in 1710 to 1785 MHz and 1805 to 1880 MHz (the "1800 MHz" frequency band) on a licence exempt basis.

1.4 The 2014 MCA Exemption Regulations also requires the presence of the NCU as part of the MCA equipment on-board an aircraft to actively prevent on-board mobile apparatus in a number of frequency bands (currently 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz) from connecting to, or interfering with land base stations.

1.5 The EC tasked the European Conference of Postal and Telecommunications Administrations ("CEPT") to undertake technical studies to see if there was a need to keep the use of NCU mandatory on MCA enabled aircrafts. CEPT produced CEPT Report 63[3] that concluded that, at the minimum height, mobile apparatus on board aircraft using GSM and LTE technologies are unable to register with ground based networks. However, the study found that apparatus using UMTS could still register with ground networks and therefore the NCU requirement should remain for this technology deployed in the 900 MHz and 2100 MHz frequency bands.

1.6 The EC adopted the report from CEPT and agreed the 2016 Amending Decision that removes the mandatory requirements of using an NCU to prevent the connection of mobile apparatus to land base stations using GSM and LTE technologies, whilst retaining the mandatory requirements preventing the connection of mobile apparatus to UMTS ground networks

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016D2317&from=EN
[2] http://www.legislation.gov.uk/uksi/2014/953/pdfs/uksi_20140953_en.pdf
[3] http://www.erodocdb.dk/Docs/doc98/official/pdf/CEPTREP063.PDF

when on-board an MCA enabled aircraft. All European Member States are required to implement the 2016 Amending Decision.

1.7 Ofcom is responsible for authorising use of the radio spectrum. We permit the use of the radio spectrum either by granting wireless telegraphy licences under the Wireless Telegraphy Act 2006 (the "WT Act") or by making statutory regulations exempting users of particular equipment from the requirement to hold such a licence. It is unlawful and an offence to install or use wireless telegraphy apparatus without holding a licence granted by Ofcom, unless the use of such equipment is exempted.[4]

1.8 In order to meet the requirements of the 2016 Amending Decision, we propose in this consultation to make the Proposed Regulations. We set out the general effect of the Proposed Regulations in Section 3 of this document. In summary, they are seeking to:

i) revoke and replace the 2014 MCA Exemption Regulations;

ii) continue to permit, on a licence exempt basis, passengers' use of mobile apparatus in GSM, UMTS and LTE technologies connecting to MCA services (in the 1800 MHz and 2100 MHz bands) (subject to complying with various terms, provisions and limitations); and

iii) update the technical parameters that the MCA systems (to which passengers' mobile apparatus must be directly connected) must meet in order to be exempt from the need to hold a wireless telegraphy licence.

1.9 Separately to airline passengers' use of the mobile apparatus, the deployment and use of both the aircraft base station and NCU on an aircraft is itself subject to separate requirements under wireless telegraphy licences. Specifically, the use of MCA systems is authorised under Ofcom's practice via a Notice of Variation ("NoV") to the existing aircraft WT Act licences. We intend to amend the existing NoV in line with the 2016 Amending Decision. The NoV will set out the new technical conditions and operational requirements under which MCA systems would be licensed for operation in a UK aircraft. A draft copy of the updated NoV is provided in Annex 7 of this document for information only.

1.10 As with all radio equipment on an aircraft, holders of the relevant wireless telegraphy licences are responsible for the installation, operation of the on-board MCA radio equipment and the avoidance of interference to land systems. Although the Proposed Regulations will enable passengers' use of mobile apparatus when connected to the prescribed MCA systems on a licence exempt basis, there is no mandatory requirement on airlines to install these systems on their aircraft.

1.11 In accordance with the requirements of section 122(4) and (5) of the WT Act, this document gives statutory notice of our proposal to make the Proposed Regulations. We are not, however, seeking comments on the draft NoV as it is implementing the mandatory EU obligations in the 2016 Amending Decision and the variation of relevant aircraft radio wireless telegraphy licences through this NoV is done at the request of the holders of such licences.

[4] Section 8(1) of the WT Act.

1.12 Comments on the Proposed Regulations are invited by 12 May 2017. Subject to our consideration of responses, we intend to bring the new Regulations into force in June 2017. A regulatory impact assessment for the Proposed Regulations is available at Annex 4 to this document. The Proposed Regulations is included in this document at Annex 5. Further copies may be obtained from www.ofcom.org.uk or from Ofcom at Riverside House, 2a Southwark Bridge Road, London SE1 9HA.

Section 2

Background

MCA Services

2.1 Mobile communication services on aircraft ("MCA") enable airline passengers to use mobile apparatus (mobile devices such as handsets, tablets, laptops etc.) during their flight without connecting directly with land mobile networks. MCA systems normally consist of an aircraft base transceiver station (aircraft BTS) and Network Control Unit ("NCU") to which mobile apparatus used by air passengers must connect. The MCA system operates, in essence, similar to that of a land base station.

2.2 The aircraft BTS and NCU are designed to ensure that the mobile apparatus within the aircraft cabin does not connect with land mobile base stations and that the mobile apparatus on the aircraft only transmit at a minimum level. In particular, the NCU ensures that mobile service land networks in various frequency bands (currently 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz) are not visible to mobile apparatus on-board the aircraft.

2.3 New frequency bands are being allocated to mobile services which would require an upgrade of the NCU. Any change on-board an aircraft is subject to a lengthy aviation certification process and would require the aircraft to be taken out of service to install/ update the equipment. Therefore, the possibility of making the use of NCU optional for MCA systems for all bands except those frequencies used for UMTS technologies would significantly simplify the regulatory framework and cost of MCA services.

2.4 From a spectrum management perspective, the key objective is that MCA services should not generate any harmful interference to ground based networks. To ensure minimal risk to such networks, the use of MCA services is restricted to aircraft at an altitude of 3000 metres or above. However, it should be noted that there is no mandatory requirement on airlines to install MCA systems. Ultimately, any decisions roll out or deploy MCA services is the responsibility of the aircraft owner or airline operator.

2.5 We take all aircraft safety issues seriously and consider them to be of primary importance. MCA services may be provided only on the condition they fulfil air safety requirements and on the condition that they do not create harmful interference to ground based networks. Member States of the European Union are required to make MCA services available on a non-protected, non-interference basis according to specified technical conditions and the harmonised European Telecommunications Standards Institute ("ETSI") standard or equivalent specifications. The on-going certification of MCA systems with respect to air safety has also been undertaken at EU level, via the European Aviation Safety Agency ("EASA")[5].

2.6 Separately to airline passengers' use of the mobile apparatus, the deployment and use of both the aircraft base station and NCU on an aircraft is itself subject to separate requirements under wireless telegraphy licences. Specifically, the use of MCA systems is authorised under Ofcom's practice via

[5] https://www.easa.europa.eu/

a Notice of Variation ("NoV") to the existing aircraft WT Act licences. Authorisation of the base station and NCU on an aircraft was covered by a NoV to the existing aircraft WT Act licences. We intend to amend the existing NoV in line with the 2016 Amending Decision. The NoV will set out the new technical conditions and operational requirements under which MCA systems would be licensed for operation in a UK aircraft. A draft copy of the updated NoV is provided in Annex 7 of this document for information only.

Background to the 2016 Amending Decision

2.7 On 7 April 2008, the EC introduced rules to harmonise the technical conditions for the use of Global System for Mobile communication ("GSM") 2G technologies when connecting to a MCA service in the 1710 to 1785 MHz and 1805 to1880 MHz (the "1800 MHz" frequency band) (2008/294/EC) (the "2008 MCA Decision").[6] We implemented the 2008 MCA Decision by making the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2008 (the "2008 MCA Exemption Regulations")[7] which permitted air passengers using MCA systems on GSM mobile devices in 1800 MHz band on a licence exempt basis.

2.8 The EC amended its 2008 MCA Decision by making the "Commission Implementing Decision of 12 November 2013 amending Decision 2008/294/EC to include additional access technology and frequency bands for mobile communications services on aircraft (MCA services)" (2013/654/EU) (the "2013 MCA Decision")[8]. The 2013 MCA decision extends the harmonisation of MCA services to cover Universal Mobile Telecommunications Service ("UMTS") 3G technologies in 1920 to1980 MHz and 2110 to 2170 MHz (the "2100 MHz" frequency band) and Long Term Evolution ("LTE") 4G technologies in 1710 to 1785 MHz and 1805 to 1880 MHz (the "1800 MHz" frequency band) on-board MCA equipped aircraft.

2.9 Article 2 of the 2013 MCA Decision placed a requirement for MCA systems to provide an NCU in the 2570 to 2 690 MHz (2.6 GHz) band on 1 January 2017 pending agreement of the technical parameters for the NCU by competent aeronautical certification authorities to allow the start of the production of the NCUs.

2.10 We implemented the 2013 MCA Decision by making the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2014 (the "2014 MCA Exemption Regulations"),[9] which replaced the 2008 MCA Exemption Regulations. In addition to use of GSM technologies on MCA equipped aircraft, the 2014 MCA Exemption Regulations also allows the use of mobile devices for UMTS and LTE technologies on MCA equipped aircraft, on a licence exempt basis (subject to complying with technical and operational requirements). However, it does not include Article 2 requirements in relation to the NCU parameters for the 2.6 GHz band.

[6] https://www.ofcom.org.uk/__data/assets/pdf_file/0027/28539/mca.pdf
[7] www.legislation.gov.uk/uksi/2008/2427/pdfs/uksi_20082427_en.pdf
[8] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:303:0048:0051:EN:PDF
[9] http://www.legislation.gov.uk/uksi/2014/953/pdfs/uksi_20140953_en.pdf

The 2016 Amending Decision

2.11 On 7 October 2015, the European Conference of Postal and Telecommunications Administrations ("CEPT") was tasked with undertaking technical studies regarding the need to keep the use of NCU mandatory on MCA enabled aircrafts. On 17 November 2015, CEPT provided its report (CEPT Report 63)[10] to the EC. The report concluded that it would be possible to make the use of NCU optional for GSM and LTE technologies considering that MCA operations without NCU guaranteed a reasonable protection against interference for ground based networks.

2.12 However, the report recommended that for UMTS technologies, an NCU would be necessary to prevent connection of mobile devices on a MCA enable aircraft to land mobile networks. Any resulting connection would cause a partial and temporary reduction in capacity for the connecting and neighbouring land based cells. The report also added that the requirement in Article 2 of the 2013 MCA decision for MCA systems to provide an NCU in 2.6 GHz band from 1 January 2017, was no longer required. The report recommended that mobile apparatus using UMTS technologies should be prevented from attempting to access land networks by the inclusion of a NCU, and/or an aircraft fuselage shielding to further attenuate the signal entering and leaving the cabin.

2.13 The EC adopted the CEPT recommendation by making the Commission Implementing Decision of (EU) 2016/2317 of 16 December 2016 amending Decision 2008/294/EC and Implementing Decision 2013/654/EU, in order to simplify the operation of mobile communications on board aircraft (MCA services) in the Union (the "2016 Amending Decision")[11].

2.14 We propose to implement the 2016 Amending Decision by making the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017 (the "Proposed Regulations"). We set out the general effect of the Proposed Regulations in Section 3 of this document. In summary, they are seeking to:

i) revoke and replace the 2014 MCA Exemption Regulations;

ii) continue to permit, on a licence exempt basis, the use of mobile apparatus in GSM, UMTS and LTE technologies connecting to MCA services (in the 1800 MHz and 2100 MHz bands) (subject to complying with various terms, provisions and limitations); and

iii) update the technical parameters that the MCA systems in the 1800 MHz and 2100 MHz bands must meet in order to be exempt from the need to hold a wireless telegraphy licence.

Notice of Proposal

2.15 We are responsible for authorising use of the radio spectrum. We permit the use of the radio spectrum either by granting wireless telegraphy licences under the Wireless Telegraphy Act (the "WT Act") or by making regulations

[10] http://www.erodocdb.dk/Docs/doc98/official/pdf/CEPTREP063.PDF
[11] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016D2317&from=EN

exempting users of particular equipment from the requirement to hold such a licence.

2.16 Under section 8(1) of the WT Act, it is unlawful to establish or use a wireless telegraphy station or install or use wireless telegraphy apparatus without holding a licence granted by us, unless the installation or use of such equipment is exempted. We can exempt the installation or use of wireless telegraphy apparatus by making statutory regulations under section 8(3) of the WT Act. Such exemption may be absolute or subject to such terms, provisions and limitations as may be so specified.

2.17 Under section 8(4) of the WT Act, we have to make regulations to exempt equipment if its installation or use is not likely to:

- involve undue interference with wireless telegraphy;
- have an adverse effect on technical quality of service;
- lead to inefficient use of the part of the electromagnetic spectrum available for wireless telegraphy;
- endanger safety of life;
- prejudice the promotion of social, regional or territorial cohesion; or
- prejudice the promotion of cultural and linguistic diversity and media pluralism.

2.18 In accordance with the requirements of section 8(3B) of the WT Act, the terms, provisions and limitations specified in the regulations must be:

- objectively justifiable in relation to the wireless telegraphy stations or wireless telegraphy apparatus to which they relate;
- not such as to discriminate unduly against particular persons or against a particular description of persons;
- proportionate to what they are intended to achieve; and
- transparent in relation to what they are intended to achieve.

2.19 We make exemption regulations by means of a statutory instrument. Before making any such regulations, we are required by section 122(4) of the WT Act to give notice of our proposal to do so. Under section 122(5), the notice must state that we propose to make the regulations in question, set out their general effects, specify an address from which a copy of the proposed regulations or order may be obtained, and specify a time period of at least one month during which any representations with respect to the proposal must be made to us.

Document structure

2.20 The remainder of this document is structured as follows:

i) Section 3 sets out the general effects of the Proposed Regulations.

ii) A regulatory impact assessment ("RIA") for the Proposed Regulations is available in Annex 4. The RIA sets out the risks, costs and benefits of the proposals and the effects that the Proposed Regulations would have.

iii) Annex 5 contains a draft of the Proposed Regulations.

iv) Annex 6 contains a copy of the 2016 Amending Decision.

v) A copy of the draft amendment to the NoV for an aircraft licence is in Annex 7.

vi) Annex 8 contains a list of abbreviations used in this document.

Next steps

2.21 The deadline for responses to this Notice is on 12 May 2017. Having taken account of any comments received on the Proposed Regulations, we expect to publish a statement on this notice by June 2017 and subsequently to make and bring into force the new exemption regulations.

Section 3

General effects of the Proposed Regulations

Introduction

3.1 We have summarised in Section 2 of this document the legal framework that is relevant to the Proposed Regulations, including our role in exempting the use of wireless telegraphy apparatus by Ofcom making regulations under section 8(3) of the WT Act.

3.2 In this Section 3, we set out the general effects of the Proposed Regulations as required by section 122(5) of the WT Act. We are proposing to make the Proposed Regulations as set out in Annex 5 to this document.

Extent of application

3.3 The Proposed Regulations will apply in the United Kingdom, the Channel Islands and the Isle of Man, subject to formal agreement of the Crown Dependencies.

The Proposed Regulations

Overall general effect

3.4 The overall general effect of the Proposed Regulations is to implement the 2016 Amending Decision. The Proposed Regulations propose to replace the existing 2014 MCA Exemption Regulations by revoking them and replacing them (see regulation 2).

Interpretation (regulation 3)

3.5 Many of the expressions[12] defined for the purposes of the Proposed Regulations remain unchanged as compared to the 2014 MCA Exemption Regulations.

3.6 We have amended some of the expressions[13] used in the 2014 MCA Exemption Regulations to make them clearer.

3.7 In light of those amendments as well as new provisions included by the Proposed Regulations, we have also introduced some new expressions.[14]

[12] These relevant expressions are “aircraft BTS”, “apparatus”, “dBm”, “e.r.i.p”, “ETSI”, “kHz”, “MHz” and “relevant network”. The Proposed Regulations also delete the expressions “electronic communications network” and “electronic communications service” as they apply by virtue of section 115(1) of the WT Act.
[13] See “mobile communication services on aircraft”, “network control unit”, “the 1800 MHz band” and “the 2100 MHz band”.
[14] See “GSM apparatus”, “LTE apparatus”, “public electronic communications network”, “signal”, and “UMTS apparatus”.

Exempted use of apparatus (regulation 4)

3.8 The Proposed Regulations would exempt the use of apparatus on board an aircraft which is an aircraft registered in the British Islands, and flying over the British Islands and the territorial waters adjacent thereto, or, for the time being, beyond the British Islands and the territorial waters adjacent thereto.

3.9 That exemption is, however, not absolute. It only applies where the terms, provisions and limitations in regulation 5 are met.

Terms, provisions and limitations (regulation 5)

3.10 Regulation 5 mirrors the technical parameters and standards set in the 2016 Amending Decision (see Annex 6 to this document). It sets out the terms, provisions and limitations that must be met for the exemption in regulation 4 to apply to the apparatus on board an aircraft.

3.11 Regulations 5(1) and 5(2) provides that the exemption shall apply only if the apparatus (mobile devices such as handsets, tablets or computer dongles) comply with the ETSI standards listed in the Proposed Regulations. These are taken from Table 1 of the Annex to the 2016 Amending Decision.

3.12 Regulations 5(1) and 5(2) remain unchanged as compared to the 2014 MCA Exemption Regulations, except for the Proposed Regulations making references (in footnotes) to updated versions of relevant ETSI standards, which have legal effect upon their publication in the Official Journal of the European Union. We intend to update those references to any more recent versions of the references standards that are published in the OJEU at the time we make the new exemption regulations.

3.13 We have also deleted the reference to "(or equivalent specifications)" as currently set out in regulation 5(1) of the 2014 MCA Exemption Regulations. The 2016 Amending Decision provides that "equivalent specifications" to ETSI's standards may also be used. In that regard, recital (9) of the 2008 MCA Decision provides that: "(9) *Equipment for MCA services covered by this Decision falls within the scope of Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ([1]). Presumption of conformity with the essential requirements of Directive 1999/5/EC for equipment used for MCA services in the European Union may be demonstrated by compliance with ETSI Harmonised Standard EN 302 480 or by using the other conformity assessment procedures set out in Directive 1999/5/EC.*" As such equivalent standards become available, the Proposed Regulations make clear that Ofcom intends to amend them to make reference to such standards. We invite stakeholders to draw to our intention to any relevant equivalent specifications (to the standards referred to in the Proposed Regulations) as demonstrated to be in compliance with the essential requirements by using the conformity assessment procedures.

3.14 Regulation 5(3) states that the apparatus can only transmit in the 1800 MHz and 2100 MHz bands as set out in Table 1 of the Annex to the 2016 Amending Decision.

3.14.1 Regulation 5(4) outlines what the apparatus must be used for, when it can be used, and the applicable operational and technical

requirements, which mirror those set out in the Annex to the 2016 Decision. It states that the apparatus can only be used for mobile communication services on aircraft and only at a height of 3000 metres above ground level. It also sets out power limits that the apparatus must be limited to based on the technology in use. Regulation 5(4)(d) sets out the maximum e.i.r.p. limit outside the aircraft that the apparatus transmits at by referencing Table 1 of the Schedule to the Proposed Regulations. These provisions implement the operational requirements set out in section 3 (c) of the Annex to the 2016 Amending Decision. Regulation 5(4)(d) implements Table 5 of the Annex to the 2016 Amending Decision.

3.14.2 Regulation 5(5) provides that the apparatus must not cause or contribute to undue interference to other wireless telegraphy. This implements Article 3 of the 2013 MCA Decision.

3.14.3 Regulation 5(6) provides that the apparatus must connect directly a relevant network that complies with the requirements set out in regulation 5(7).

3.14.4 Regulation 5(7)(a) sets out the requirements for the aircraft fuselage shielding or NCU to be installed to prevent the apparatus in 900 MHz and 2100 MHz bands from connecting with UMTS networks on the ground. This implements section 2 and Table 2 of the Annex to the 2016 Amending Decision.

3.14.1 Regulation 5(7)(b) sets out the requirements for the maximum e.i.r.p. outside the aircraft that an NCU, if used, in the 900 MHz band must operate within at different heights above the ground. The power limits are set out in Column 2 of Table 2 of the Schedule of the Proposed Regulations. This implements Table 4 of the Annex to the 2016 Amending Decision.

3.14.2 Regulation 5(7)(c) sets out the requirements for the maximum e.i.r.p. outside the aircraft that an aircraft base station in the 1800 MHz band must operate within at different heights above the ground. The power limits are set out in Column 3 of Table 2 of the Schedule of the Proposed Regulations. This implements Table 4 of the Annex to the 2016 Amending Decision.

3.14.3 Regulation 5(7)(d) sets out the requirements for the maximum e.i.r.p. outside the aircraft that an aircraft base station and NCU, if used, in 2100 MHz band must operate within at different heights above the ground. The power limits are set out in Column 4 of Table 2 of the Schedule of the Proposed Regulations. This implements Table 4 of the Annex to the 2016 Amending Decision.

3.14.4 Regulation 5(7)(e) sets out the maximum e.i.r.p. outside the aircraft for other frequency bands other than the 900 MHz and 2100 MHz bands (currently 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz) if an operator decides to deploy an NCU. The limits for these optional frequencies are set out in Table 3 of the Schedule of the Proposed Regulations. This implements Tables 3 and 6 of the Annex to the 2016 Amending Decision.

3.14.5 Regulation 5(7)(f) and (g) provide the ETSI standards that the aircraft base station and NCU must comply with and these are listed in the Proposed Regulations. This implements Table 1 of the Annex to the 2016 Amending Decision.

Do you have any comments on the drafting of the Proposed Regulations? Are you aware of any relevant equivalent specifications (to the standards referred to in the Proposed Regulations) as demonstrated to be in compliance with the essential requirements by using the conformity assessment procedures? If so, please provide us with details of such equivalent specifications.

Annex 1

Responding to this consultation

How to respond

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made by **5pm on 12 May 2017**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at https://www.ofcom.org.uk/consultations-and-statements/category-3/notice-of-proposal-to-make-the-wireless-telegraphy-mobile-communication-services-on-aircraft-exemption-regulations-2017 as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email Eniola.Awoyale@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Eniola Awoyale
Ofcom
Riverside House
2A Southwark Bridge Road
London
SE1 9HA

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Eniola Awoyale on 020 7 783 4680

Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt.

If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/terms-of-use/

Next steps

A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in June 2017. Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details, please see: http://www.ofcom.org.uk/email-updates/

Ofcom's consultation processes

A1.12 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information, please see our consultation principles in Annex 2.

A1.13 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.14 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Steve Gettings, Secretary to the Corporation, who is Ofcom's consultation champion:

Steve Gettings
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email steve.gettings@ofcom.org.uk

Annex 2

Ofcom's consultation principles

Ofcom has seven principles that it follows for every public written consultation:

Before the consultation

A2.1 Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. If we do not have enough time to do this, we will hold an open meeting to explain our proposals, shortly after announcing the consultation.

During the consultation

A2.2 We will be clear about whom we are consulting, why, on what questions and for how long.

A2.3 We will make the consultation document as short and simple as possible, with a summary of no more than two pages. We will try to make it as easy as possible for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.

A2.4 We will consult for up to ten weeks, depending on the potential impact of our proposals.

A2.5 A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.

A2.6 If we are not able to follow any of these seven principles, we will explain why.

After the consultation

A2.7 We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name Signed (if hard copy)

Annex 3

Consultation question

A3.1 As required by section 122 of the WT Act, we must give notice of proposals that we intend to make and consider any representations that we receive. This document gives notice of our proposal to make the (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017 (the "Proposed Regulations").

Do you have any comments on the drafting of the Proposed Regulations? Are you aware of any relevant equivalent specifications (to the standards referred to in the Proposed Regulations) as demonstrated to be in compliance with the essential requirements by using the conformity assessment procedures? If so, please provide us with details of such equivalent specifications.

Annex 4

Regulatory Impact Assessment

Introduction

A4.1 Ofcom acts in accordance with Government practice that, where a statutory regulation is made, a Regulatory Impact Assessment ("RIA") must be undertaken. We also comply with our duty under section 7 of the Communications Act 2003 (the "2003 Act") to undertake impact assessments.

A4.2 The analysis in this document is a regulatory impact assessment relating to the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017 (the "Proposed Regulations"). It is consistent with the Government practice on RIAs and Ofcom's duty under the 2003 Act.

A4.3 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the 2003 Act, which imposes a duty on Ofcom to carry out impact assessments where our decisions would be likely to have a significant effect on businesses or the general public, or when there is a major change in our activities.

A4.4 As a matter of policy we are committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which are on our website: http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf.

A4.5 This RIA relates to our proposals with regards to mobile communication services on aircraft (MCA). MCA systems enable airline passengers to use mobile apparatus (mobile devices such as handsets, tablets or laptop dongles) during their flight without connecting directly with land mobile networks. MCA systems normally consist of an aircraft base transceiver station (aircraft BTS) and Network Control Unit (NCU) to which the mobile apparatus used by air passengers must connect to. The MCA operates, in essence, similar to a land base station.

Legislative background

A4.6 In the UK, we are responsible for authorising use of the radio spectrum. We permit the use of the radio spectrum either by granting wireless telegraphy licences under the Wireless Telegraphy Act (the "WT Act") or by making regulations exempting users of particular equipment from the requirement to hold such a licence. Under section 8(1) of the WT Act, it is unlawful to establish or use a wireless telegraphy station or install or use wireless telegraphy apparatus without holding a licence granted by us, unless the installation or use of such equipment is exempted. We can exempt the installation or use of wireless telegraphy apparatus by making statutory regulations under section 8(3) of the WT Act. Such exemption may be

absolute or subject to such terms, provisions and limitations as may be so specified.

A4.7 However, under section 8(4) of the WT Act, we have to make regulations to exempt equipment if its installation or use is not likely to:

- involve undue interference with wireless telegraphy;
- have an adverse effect on technical quality of service;
- lead to inefficient use of the part of the electromagnetic spectrum available for wireless telegraphy;
- endanger safety of life;
- prejudice the promotion of social, regional or territorial cohesion; or
- prejudice the promotion of cultural and linguistic diversity and media pluralism.

A4.8 In accordance with the requirements of section 8(3B) of the WT Act, the terms, provisions and limitations specified in the regulations must be:

- objectively justifiable in relation to the wireless telegraphy stations or wireless telegraphy apparatus to which they relate;
- not such as to discriminate unduly against particular persons or against a particular description of persons;
- proportionate to what they are intended to achieve; and
- transparent in relation to what they are intended to achieve.

Proposal

A4.9 It is our intention to implement the requirements of the European Commission ("EC") Implementation Decision of 16 December 2016 (2016/2317/EU) (the "2016 Amending Decision")[15]. We propose to make the Proposed Regulations by revoking and replacing the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2014 (the "2014 MCA Exemption Regulations")[16].

A4.10 The 2014 MCA Exemption Regulations permit the use of MCA services in Global System for Mobile communication ("GSM") 1710 to 1785 MHz and 1805 to 1880 MHz (the "1800 MHz" frequency band), Universal Mobile Telecommunications Service ("UMTS") in 1920 to 1980 MHz and 2110 to 2170 MHz (the "2100 MHz" frequency band) and Long Term Evolution ("LTE") in 1710 to 1785 MHz and 1805 to 1880 MHz (the "1800 MHz" frequency band) on a licence exempt basis.

A4.11 The 2014 MCA Exemption Regulations also requires the presence of the NCU as part of the MCA equipment on-board an aircraft to actively prevent

[15] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016D2317&from=EN
[16] http://www.legislation.gov.uk/uksi/2014/953/pdfs/uksi_20140953_en.pdf

on-board mobile apparatus from connecting to, or interfering with land base stations.

A4.12 The 2016 Amending Decision removes the mandatory requirements of using an NCU to prevent the connection of mobile apparatus to land base stations operating in GSM and LTE technologies whilst retaining the mandatory requirements preventing the connection of mobile apparatus to land UMTS networks when on-board an MCA enabled aircraft. All European Member States are required to implement the 2016 Amending Decision.

A4.13 In order to meet the requirements of the 2016 Amending Decision, we propose to make the Proposed Regulations. In summary, they are seeking to:

i) revoke and replace the 2014 MCA Exemption Regulations;

ii) continue to permit, on a licence exempt basis, passengers' use of mobile apparatus in GSM, UMTS and LTE technologies connecting to MCA services (in the 1800 MHz and 2100 MHz bands) (subject to complying with various terms, provisions and limitations); and

iii) update the technical parameters that the MCA systems (to which passengers' mobile apparatus must be directly connected) must meet in order to be exempt from the need to hold a wireless telegraphy licence.

A4.14 Separately to airline passengers' use of the mobile apparatus, the deployment and use of both the aircraft base station and NCU on an aircraft is itself subject to separate requirements under wireless telegraphy licences. Specifically, the use of MCA systems is authorised under Ofcom's practice via a Notice of Variation ("NoV") to the existing aircraft WT Act licences. We intend to amend the existing NoV in line with the 2016 Amending Decision. The NoV will set out the new technical conditions and operational requirements under which MCA systems would be licensed for operation in a UK aircraft. A draft copy of the updated NoV is provided in Annex 7 of this document for information only.

The citizen and/or consumer interest

A4.15 Our principal duty under section 3 of the 2003 Act is to further the interests of citizens in relation to communications matters and of consumers in relevant markets, where appropriate by promoting competition. We take account of the impact of our decisions upon both citizen and consumer interests in the markets we regulate.

A4.16 We must, in particular, have regard to securing the optimal use for wireless telegraphy of spectrum and have regard to the principle under which all regulatory activities should be proportionate, consistent and targeted only at cases in which action is needed. Ofcom's priority for the Proposed Regulations is to remove unnecessary regulatory burdens, while ensuring that MCA services can be safely made available. We have considered the wider impact beyond immediate stakeholders in the radiocommunications community. We believe that the Proposed Regulations will be of benefit to consumers for the following reasons:

i) The authorisation of the licence exempt use of GSM, UMTS and LTE technologies available on board aircrafts reduces the regulatory and administrative burden on our stakeholders and helps to secure the optimal use of spectrum.

ii) Updating the regulatory framework to reflect that the use of the NCU should be made optional where GSM and LTE technologies are in operation and the proposal to invite MCA operators to stop current NCU operation at 2.6 GHz wherever possible would help significantly reducing their cost to MCA operators.

iii) The Proposed Regulations allows for the mutual recognition of Member States' authorisations for MCA on the basis of common technical and authorisation requirements. This will make communication more assessable to citizens and consumers on board aircrafts across the EU. If the UK did not participate in this approach, the competitive position of UK airlines compared to those of the other Member States might be damaged and it might be argued that UK businesses and consumers would be disadvantaged in not implementing the Proposed Regulations.

Ofcom's policy objective

A4.17 We seek, wherever possible, to reduce the regulatory burden upon our stakeholders, in this instance users of the radio spectrum. We can achieve this by to removing the need for spectrum users to apply for an individual wireless telegraphy licence to authorise the use of radio equipment.

A4.18 In accordance with the WT Act, we aim to exempt from licensing the use of specified equipment where it is not likely that such use will cause undue interference to other legitimate users of the radio spectrum. We are also required to implement EU legislation relating to radio spectrum and, from time to time, this requires licence exemption arrangements to be changed. As a Member State of the European Union, the UK is bound by the terms of the 2016 Amending Decision and the requirement to implement them.

Options considered

A4.19 The options open to Ofcom in relation to the implementation of the 2016 Amending Decision are as follows:

- to make the Proposed Regulations to implement the 2016 Amending Decision; or
- to do nothing.

Analysis of the different options

Make Proposed Regulations

A4.20 The EC defined the technical and authorisation parameters and requirements which will allow MCA to be launched across Europe. The outcome of the 2016 Amending Decision is a mandatory requirement for Member States to make the use NCU optional for GSM and LTE technologies when connecting to MCA systems but continue to make NCU mandatory for UMTS technologies. The requirement in the 2016 Amending

Decision cannot be disregarded and Member States are expected to authorise the use of MCA services.

A4.21 The most efficient route to mandatory compliance is to make the Proposed Regulations as consistent with the 2016 Amending Decision as closely as possible.

Costs to business

A4.22 Costs to business are likely to be lower under a licence-exemption approach than the requirement for users to obtain individual licences. Licence-exemption represents the least cost regulatory approach to authorisations on the use of spectrum. For example, if use of spectrum is authorised through a WT Act licence, businesses face administrative costs associated with applying for the licence. In addition, there are licence charges that must be paid on the initial issue of the licence and on its renewal.

A4.23 Whenever new frequency bands are released and allocated to mobile services, this would require an upgrade to the NCU to cover the new frequency band being used. These upgrades require the aircraft to be taken out of service and fitted with the new equipment costing the airline providers both for the upgrade but also for the loss of an aircraft whilst it is being serviced. The removal of the mandatory requirement to use NCU for GSM and LTE technologies is likely to mean that businesses running MCA systems benefit from a simpler and cheaper MCA system as any future bands allocated for mobile services will be for 4G and 5G generation technologies rather than the older 3G one (UMTS). This would mean that once installed on an aircraft the NCU will not require to be updated/replaced.

Costs to Ofcom

A4.24 There are one-off administrative costs associated with making Regulations. We considered that the implementation costs to be low, both in absolute terms and in comparison to licensing alternatives that might require an auction or the maintenance of an annually renewable licence scheme if licences are awarded on a first come first served basis. Moreover, the costs such as they are will also be offset by the benefits to business and consumer outlined above.

A4.25 More importantly, if we did not implement an EU Decision, the EC and others could begin legal proceedings against the UK, the costs of which we deem to be potentially very high both quantitive and qualitively, outweighing any costs we consider to be associated with correct implementation.

Do nothing

A4.26 By doing nothing, we would be in breach of the 2016 Amending Decision and could be open to infraction proceedings initiated by the EC or others. Doing nothing would also mean that MCA operators will be faced with unnecessary regulatory burdens faced with the mandatory requirement to use NCU for GSM and LTE systems.

The preferred option

A4.27 The preferred option therefore is to make the Proposed Regulations as indicated in order to comply with the 2016 Amending Decision. The benefits of this option are that the UK remains compliant with its EU obligations. Furthermore, it will continue to allow air passengers to benefit from use of their mobile devices on MCA systems in GSM, UMTS and LTE technologies which still removing some unnecessary administrative burdens and costs.

Equality Impact Assessment

A4.28 Following an initial assessment of our policy proposals, we consider that it is reasonable to assume that any impacts on consumers and citizens arising from the Proposed Regulations would not differ significantly between groups or classes of UK consumers and citizens, all of whom would have access to these services, potentially at end-user prices reflective of all general input costs, including opportunity costs of spectrum used.

A4.29 We do not consider that there is evidence to suggest that the decision to make the Proposed Regulations would have a significantly greater direct financial impact on groups including based on gender, race or disability or for consumers in Northern Ireland relative to consumers in general.

A4.30 We have not carried out a full Equality Impact Assessment in relation to race equality or equality schemes under the Northern Ireland and disability equality schemes at this stage. This is because we are not aware that the proposals being considered here are intended (or would, in practice) have a significant differential impact on different gender or racial groups, on consumers in Northern Ireland or on disabled consumers compared to consumers in general.

Annex 5

Draft Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017

STATUTORY INSTRUMENTS

2017 No. 0000

ELECTRONIC COMMUNICATIONS

The Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017

Made - - - -	*[0000]*
Coming into force - -	*[0000]*

The Office of Communications ("OFCOM") make the following Regulations in exercise of the powers conferred by section 8(3) and section 122(7) of the Wireless Telegraphy Act 2006([a]) (the "Act").

Before making these Regulations, OFCOM have given notice of their proposal to do so in accordance with section 122(4)(a) of the Act, published notice of their proposal in accordance with section 122(4)(b) of the Act, and have considered the representations made to them before the time specified in the notice in accordance with section 122(4)(c) of the Act.

Citation and commencement

1. These Regulations may be cited as the Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017 and come into force on [0000].

Revocation

2. The Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2014([b]) are hereby revoked.

([a]) 2006 c.36. Section 8(3) was extended to the Bailiwick of Guernsey by article 2 of the Wireless Telegraphy (Guernsey) Order 2006 (S.I. 2006/3325); to the Bailiwick of Jersey by article 2 of the Wireless Telegraphy (Jersey) Order 2006 (S.I. 2006/3324); and to the Isle of Man by article 2 of the Wireless Telegraphy (Isle of Man) Order 2007 (S.I. 2007/278).
([b]) S.I. 2014/953.

Interpretation

3. In these Regulations—

"aircraft BTS" means a base transceiver station located in an aircraft;

"apparatus" means wireless telegraphy apparatus;

"dBm" means decibels of power referenced to one milliWatt;

"e.i.r.p" means equivalent isotropic radiated power;

"ETSI" means the European Telecommunications Standards Institute;

"GSM apparatus" means apparatus used for an electronic communications network that complies with standards developed for Global System for Mobile Communications (also known as GSM) referred to in regulation 5(2)(a);

"kHz" means kilohertz;

"LTE apparatus" means apparatus used for an electronic communications network that complies with standards developed for Long Term Evolution (also known as LTE) referred to in regulation 5(2)(c);

"MHz" means megahertz;

"mobile communication services on aircraft" means electronic communications services provided by an undertaking to enable airline passengers to use public electronic communications networks during flight without establishing direct connections with electronic communications networks based on the ground;

"network control unit" means equipment located in an aircraft that ensures that signals transmitted by electronic communications networks based on the ground are not detectable within the cabin by raising the noise floor inside the cabin in mobile communication receive bands;

"public electronic communications network" has the meaning given to it by section 151(1) of the Communications Act 2003([a]);

"relevant network" means an electronic communications network that includes an aircraft BTS and a network control unit;

"signal" has the meaning given to it by section 32(10) of the Communications Act 2003;

"the 1800 MHz band" means the 1710–1785 MHz frequency band (for the uplink from the apparatus to the aircraft BTS) and the 1805–1880 MHz frequency band (for the downlink from the aircraft BTS to the apparatus);

"the 2100 MHz band" means the 1920–1980 MHz frequency band (for the uplink from the apparatus to the aircraft BTS) and the 2110–2170 MHz frequency band (for the downlink from the aircraft BTS to the apparatus);

"UMTS apparatus" means apparatus used for an electronic communications network that complies with standards developed for Universal Mobile Telecommunications System (also known as UMTS) referred to in regulation 5(2)(b); and

"UMTS networks" means electronic communications networks based on the ground that are available for use with UMTS apparatus.

Exemption

4. The use of any apparatus on board an aircraft which is—

(a) an aircraft registered in the British Islands; and

(b) flying over the British Islands and the territorial waters adjacent thereto, or, for the time being, beyond the British Islands and the territorial waters adjacent thereto,

([a]) 2003 c.21.

is hereby exempt from the provisions of section 8(1) of the Wireless Telegraphy Act 2006 where the terms, provisions and limitations in regulation 5 are met.

Terms, provisions and limitations

5.—(1) The apparatus must comply with the standards in paragraph 2(a), (b) or (c) published by ETSI([a]).

(2) The standards referred to in paragraph (1) are—

(a) for GSM apparatus, the GSM standard EN 301 511([b]);

(b) for UMTS apparatus, the UMTS standards—

(aa) EN 301 908–1([c]); and

(bb) EN 301 908–2([d]);

(c) for LTE apparatus, the LTE standards—

(aa) EN 301 908–1; and

(bb) EN 301 908–13([e]).

(3) The apparatus must only operate in the 1800 MHz band or the 2100 MHz band.

(4) The apparatus must only be used—

(a) for mobile communication services on aircraft;

(b) when the aircraft is three thousand metres or more above the ground;

(c) where the following operational requirements are met—

(i) the aircraft BTS, while in operation, limits the transmission power of all GSM apparatus to a nominal value of 0 dBm/200 kHz at all stages of communication, including initial access;

(ii) the aircraft BTS, while in operation, limits the transmission power of all LTE apparatus in the 1800 MHz band to a nominal value of 5 dBm/5 MHz at all stages of communication; or

(iii) the aircraft BTS, while in operation, limits the transmission power of all UMTS apparatus in the 2100 MHz band to a nominal value of -6 dBm/3.84 MHz at all stages of communication and the maximum number of users does not exceed 20; or

(d) where the e.i.r.p outside the aircraft emanating from the apparatus transmitting in the frequency bands specified in the headings of Columns 2 to 4 of Table 1 of the Schedule does not, at each of the heights above ground specified in Column 1 of that Table, exceed the value specified in each of Columns 2, 3 or 4 of that Table.

(5) The apparatus must not cause or contribute to any undue interference to any wireless telegraphy.

(6) The apparatus must connect directly to a relevant network that complies with the requirements set out in paragraph (7).

(7) The requirements referred to in paragraph (6) are—

(a) the apparatus must be prevented from operating on the frequency bands 925–960 MHz and 2110–2170 MHz to register with UMTS networks by the installation of—

(i) shielding in the aircraft's fuselage that prevents signals from entering and leaving the fuselage; or

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([a]) Commission Decision 2016/2317/EU, OJEU No L 345, 20.12.2016, p 67, provides that "equivalent specifications" to ETSI's standards may also be used. As such equivalent standards become available, Ofcom will amend these Regulations to make reference to them.

([b]) EN 301 511 (version 12.1.1) published in OJEU No C 249, 8.7.2016, p 29.

([c]) EN 301 908–1 (version 11.1.1) published in OJEU No C 460, 9.12.2016, p 8.

([d]) EN 301 908–2 (version 7.1.1) published in OJEU No C 249, 8.7.2016, p 33.

([e]) EN 301 908–13 (version 7.1.1) published in OJEU No C 249, 8.7.2016, p 34.

(ii) a network control unit;

(b) the relevant network must operate such that the total e.i.r.p of the network control unit outside the aircraft for the frequency band 925–960 MHz does not, at each height above ground specified in Column 1 of Table 2 of the Schedule, exceed the value specified in Column 2 of that Table;

(c) the relevant network must operate such that the total e.i.r.p of the aircraft BTS outside the aircraft for the frequency band 1805–1880 MHz does not, at each height above ground specified in Column 1 of Table 2 of the Schedule, exceed the value specified in Column 3 of that Table;

(d) the relevant network must operate such that the total e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 2110–2170 MHz does not, at each height above ground specified in Column 1 of Table 2 of the Schedule, exceed the value specified in Column 4 of that Table;

(e) if the network control unit also operates on one of the frequency bands specified in the heading of Columns 2 to 5 of Table 3 of the Schedule, the network control unit and the aircraft BTS must operate such that the total e.i.r.p outside the aircraft does not, at each height above ground specified in Column 1 of that Table, and at each of those frequency bands, exceed the value specified in each of Columns 2 to 5 of that Table;

(f) the aircraft BTS must comply with the following standards published by ETSI—

(i) the GSM standards—

(aa) EN 301 502([a]); and

(bb) EN 302 480([b]);

(ii) the UMTS standards—

(aa) EN 301 908–1; and

(bb) EN 301 908–3([c]) or EN 301 908–11([d]); or

(iii) the LTE standards—

(aa) EN 301 908–1; and

(bb) EN 301 908–14([e]) or EN 301 908–15([f]); and

(g) the network control unit must comply with the standard EN 302 480 published by ETSI.

Philip Marnick
Group Director, Spectrum Group
[Date] For and by the authority of the Office of Communications

([a]) EN 301 502 (version 12.1.1) published in OJEU No C 249, 8.7.2016, p 29.
([b]) EN 302 480 (version 2.1.2) published in OJEU No C 76, 10.3.2017, p 26.
([c]) EN 301 908–3 (version 7.1.1) published in OJEU No C 249, 8.7.2016, p 37.
([d]) EN 301 908–11 (version 11.1.2) published in OJEU No C 44, 10.2.2017, p 9.
([e]) EN 301 908–14 (version 7.1.1) published in OJEU No C 249, 8.7.2016, p 35.
([f]) EN 301 908–15 (version 11.1.2) published in OJEU No C 44, 10.2.2017, p 9.

SCHEDULE

Regulation 5

Table 1

Column 1 *Height above ground (in metres)*	*Column 2* *Maximum e.i.r.p, outside the aircraft, from the GSM apparatus for the 1800 MHz band* *(in dBm per 200 kHz)*	*Column 3* *Maximum e.i.r.p, outside the aircraft, from the LTE apparatus for the 1800 MHz band* *(in dBm per 5 MHz)*	*Column 4* *Maximum e.i.r.p, outside the aircraft, from the UMTS apparatus for the 2100 MHz band* *(in dBm per 3,84 MHz)*
3000	–3.3	1.7	3.1
4000	–1.1	3.9	5.6
5000	0.5	5	7
6000	1.8	5	7
7000	2.9	5	7
8000	3.8	5	7

Table 2

Column 1 *Height above ground (in metres)*	*Column 2* *Maximum e.i.r.p of the network control unit outside the aircraft for the frequency band 925–960 MHz* *(in dBm per 3.84 MHz)*	*Column 3* *Maximum e.i.r.p of the aircraft BTS outside the aircraft for the frequency band 1805–1880 MHz* *(in dBm per 200 kHz)*	*Column 4* *Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 2110–2170 MHz* *(in dBm per 3.84 MHz)*
3000	–6.2	–13.0	1.0
4000	–3.7	–10.5	3.5
5000	–1.7	–8.5	5.4
6000	–0.1	–6.9	7.0
7000	1.2	–5.6	8.3
8000	2.3	–4.4	9.5

Table 3

Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*
Height above ground (in metres)	*Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 460–470 MHz (in dBm per 1.25 MHz)*	*Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 791–821 MHz (in dBm per 10 MHz)*	*Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 1805–1880 MHz (in dBm per 200 kHz)*	*Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 2570–2690 MHz (in dBm per 4.75 MHz)*
3000	–17.0	–0.87	–13.0	1.9
4000	–14.5	1.63	–10.5	4.4
5000	–12.6	3.57	–8.5	6.3
6000	–11.0	5.15	–6.9	7.9
7000	–9.6	6.49	–5.6	9.3
8000	–8.5	7.65	–4.4	10.4

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations give effect to EU obligations of the United Kingdom contained in the Commission Implementing Decision 2016/2317/EU of 16th December 2016 amending Decision 2008/294/EC and Implementing Decision 2013/654/EU to simplify the operation of mobile communications on board aircraft (MCA services) in the Union (OJEU No L 345, 20.12.2016, p 67). These Regulations therefore revoke the Wireless Telegraphy (Mobile Communications Services on Aircraft) (Exemption) Regulations 2014 (S.I. 2014/953).

These Regulations exempt the use of any wireless telegraphy apparatus which complies with certain terms, provisions and limitations, from the requirement to be licensed under section 8(1) of the Wireless Telegraphy Act 2006 (c.36). The apparatus must be on board an aircraft which is registered in the British Islands or the Isle of Man and the exemption applies when the aircraft is flying over the British Islands and the territorial waters adjacent thereto, or, for the time being, beyond the British Islands and the territorial waters adjacent thereto (regulation 4).

The terms, provisions and limitations for the exemption to apply are set out in regulation 5. These include the requirement that apparatus complies with specified standards published by the European Telecommunications Standards Institute ("ETSI") (regulation 5(1)). The apparatus must only operate in the 1800 MHz band or the 2100 MHz band (regulation 5(3)). The apparatus must only be used for mobile communication services on aircraft, when the aircraft is three thousand metres or more above the ground, where specified operational requirements are met and when it does not emanate outside the aircraft specified values for the equivalent isotropic radiated power (e.i.r.p)(regulation 5(4). The apparatus must not cause or contribute to any undue interference to any wireless telegraphy (regulation 5(5)). Finally, the apparatus must connect to a relevant network that complies with further technical requirements set out in regulation 5(7). Some of these requirements relate to the base transceiver station to which the apparatus is connected (in the case of UMTS and LTE systems, the base transceiver station is commonly known as "Node B").

The ETSI standards referred to in the Regulations are published in the Official Journal of the European Union (OJEU) and available to the public from the official website of the European Union at http://eur-lex.europa.eu/oj/direct-access.html or from the EU Bookshop (as managed by the Publications Office of the European Union) by emailing: bookshop@publications.europa.eu.

A full regulatory impact assessment of the effect that these Regulations will have on the costs to business is available to the public from OFCOM's website at http://www.ofcom.org.uk or from the OFCOM Library at Riverside House, 2a Southwark Bridge Road, London SE1 9HA. Copies of this assessment have also been placed in the library of the House of Commons.

Annex 6

The 2016 Amending Decision

20.12.2016 EN Official Journal of the European Union L 345/67

COMMISSION IMPLEMENTING DECISION (EU) 2016/2317

of 16 December 2016

amending Decision 2008/294/EC and Implementing Decision 2013/654/EU, in order to simplify the operation of mobile communications on board aircraft (MCA services) in the Union

(notified under document C(2016) 8413)

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision) [1], and in particular Article 4(3) thereof,

Whereas:

(1) Commission Decision 2008/294/EC [2] sets technical and operational conditions necessary to allow the use of GSM, UMTS and LTE on board aircraft (MCA services) in the European Union.

(2) Current legislation requires the presence of a Network Control Unit (NCU) as part of MCA equipment on board airplanes to prevent mobile terminals on board aircraft from attempting to register with terrestrial mobile communications networks.

(3) The Commission gave a mandate on 7 October 2015 to the European Conference of Postal and Telecommunications Administrations ('the CEPT'), pursuant to Article 4(2) of Decision No 676/2002/EC, to undertake technical studies regarding the need to keep the usage of the NCU mandatory on-board MCA enabled aircraft.

(4) Following that mandate, the CEPT adopted on 17 November 2016 its Report 63 which concluded that it is possible to make the use of an NCU optional for GSM and LTE systems considering that MCA operations without NCU guarantee a reasonable protection against interference for terrestrial networks.

(5) In accordance with the conclusions of the CEPT Report, it is no longer necessary to actively prevent through an NCU the connection of mobile terminals to terrestrial mobile networks operating in the band 2 570-2 690 MHz. Article 2 of Commission Implementing Decision 2013/654/EU [3] therefore becomes obsolete and should be deleted.

(6) However, with regard to UMTS systems, the CEPT concluded that an NCU remains necessary to prevent connections between terrestrial UMTS networks and user equipment on board aircraft. Studies showed that such connections could cause a partial and temporary reduction in capacity for the connecting and neighbouring cells on the ground. The other solution to attenuate signals entering and leaving the cabin and to prevent unwanted connections is to add sufficient shielding to the aircraft fuselage.

(7) MCA technical specifications should remain under review in order to ensure that they always match technological progress.

(8) The measures provided for in this Decision are in accordance with the opinion of the Radio Spectrum Committee,

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[1] OJ L 108, 24.4.2002, p. 1.
[2] Commission Decision 2008/294/EC of 7 April 2008 on harmonised conditions of spectrum use for the operation of mobile communication services on aircraft (MCA services) in the Community (OJ L 98, 10.4.2008, p. 19).
[3] Commission Implementing Decision 2013/654/EU of 12 November 2013 amending Decision 2008/294/EC to include additional access technologies and frequency bands for mobile communications services on aircraft (MCA services) (OJ L 303, 14.11.2013, p. 48).

HAS ADOPTED THIS DECISION:

Article 1

The Annex to Decision 2008/294/EC is replaced by the text in the Annex to this Decision

Article 2

Article 2 of Implementing Decision 2013/654/EU is deleted.

Article 3

This Decision is addressed to the Member States.

Done at Brussels, 16 December 2016.

For the Commission
Günther H. OETTINGER
Member of the Commission

ANNEX

1. **Frequency bands and systems allowed for MCA Services**

Table 1

Type	Frequency	System
GSM 1 800	1 710-1 785 MHz (uplink) 1 805-1 880 MHz (downlink)	GSM complying with the GSM Standards as published by ETSI, in particular EN 301 502, EN 301 511 and EN 302 480, or equivalent specifications.
UMTS 2 100 (FDD)	1 920-1 980 MHz (uplink) 2 110-2 170 MHz (downlink)	UMTS complying with the UMTS Standards as published by ETSI, in particular EN 301 908-1, EN 301 908-2, EN 301 908-3 and EN 301 908-11, or equivalent specifications.
LTE 1 800 (FDD)	1 710-1 785 MHz (uplink) 1 805-1 880 MHz (downlink)	LTE complying with LTE Standards, as published by ETSI, in particular EN 301 908-1, EN 301 908-13, EN 301 908-14, and EN 301 908-15, or equivalent specifications.

2. **Prevention of connection of mobile terminals to ground networks**

Mobile terminals receiving within the frequency bands listed in Table 2 must be prevented from attempting to register with UMTS mobile networks on the ground:

— by the inclusion, in the MCA system, of a Network Control Unit (NCU), which raises the noise floor inside the cabin in mobile receive bands, and/or

— by aircraft fuselage shielding to further attenuate the signal entering and leaving the fuselage.

Table 2

Frequency bands (MHz)	Systems on the ground
925-960 MHz	UMTS (and GSM, LTE)
2 110-2 170 MHz	UMTS (and LTE)

MCA operators may also decide to implement an NCU in the other frequency bands listed in Table 3.

Table 3

Frequency bands (MHz)	Systems on the ground
460-470 MHz	LTE (1)
791-821 MHz	LTE
1 805-1 880 MHz	LTE and GSM
2 620-2 690 MHz	LTE
2 570-2 620 MHz	LTE

(1) On a national level, administrations could use LTE technology for different applications such as BB-PPDR, BB-PMR or Mobile Networks.

3. **Technical parameters**

(a) **Equivalent isotropic radiated power (e.i.r.p.), outside the aircraft, from the NCU/aircraft BTS/aircraft Node B**

Table 4

The total e.i.r.p., outside the aircraft, from the NCU/aircraft BTS/aircraft Node B must not exceed:

Height above ground (m)	Maximum e.i.r.p. of the System outside the aircraft in dBm/channel		
	NCU	Aircraft BTS/Aircraft Node B	Aircraft BTS/Aircraft Node B and NCU
	Band: 900 MHz	Band: 1 800 MHz	Band: 2 100 MHz
	Channel Bandwidth = 3,84 MHz	Channel Bandwidth = 200 kHz	Channel Bandwidth = 3,84 MHz
3 000	– 6,2	– 13,0	1,0
4 000	– 3,7	– 10,5	3,5
5 000	– 1,7	– 8,5	5,4
6 000	– 0,1	– 6,9	7,0
7 000	1,2	– 5,6	8,3
8 000	2,3	– 4,4	9,5

(b) **Equivalent isotropic radiated power (e.i.r.p.), outside the aircraft, from the on-board terminal**

Table 5

The e.i.r.p., outside the aircraft, from the mobile terminal must not exceed:

Height above ground (m)	Maximum e.i.r.p., outside the aircraft, from the GSM mobile terminal in dBm/200 kHz	Maximum e.i.r.p., outside the aircraft, from the LTE mobile terminal in dBm/5 MHz	Maximum e.i.r.p., outside the aircraft, from the UMTS mobile terminal in dBm/3,84 MHz
	GSM 1 800 MHz	LTE 1 800 MHz	UMTS 2 100 MHz
3 000	– 3,3	1,7	3,1
4 000	– 1,1	3,9	5,6
5 000	0,5	5	7
6 000	1,8	5	7
7 000	2,9	5	7
8 000	3,8	5	7

When MCA operators decide to implement an NCU in the frequency bands listed in Table 3, the maximum values indicated in Table 6 apply for the total e.i.r.p. outside the aircraft, from the NCU/aircraft BTS/aircraft Node B, in conjunction with the values mentioned in Table 4.

Table 6

Height above ground (m)	Maximum e.i.r.p. outside the aircraft, from the NCU/aircraft BTS/aircraft Node B			
	460-470 MHz	791-821 MHz	1 805-1 880 MHz	2 570-2 690 MHz
	dBm/1,25 MHz	dBm/10 MHz	dBm/200 kHz	dBm/4,75 MHz
3 000	– 17,0	– 0,87	– 13,0	1,9
4 000	– 14,5	1,63	– 10,5	4,4
5 000	– 12,6	3,57	– 8,5	6,3
6 000	– 11,0	5,15	– 6,9	7,9
7 000	– 9,6	6,49	– 5,6	9,3
8 000	– 8,5	7,65	– 4,4	10,4

(c) **Operational requirements**

I. The minimum height above ground for any transmission from an MCA system in operation must be 3 000 metres.

II. The aircraft BTS, while in operation, must limit the transmit power of all *GSM* mobile terminals transmitting in the 1 800 MHz band to a nominal value of 0 dBm/200 kHz at all stages of communication, including initial access.

III. The aircraft Node B, while in operation, must limit the transmit power of all *LTE* mobile terminals transmitting in the 1 800 MHz band to a nominal value of 5 dBm/5 MHz at all stages of communication.

IV. The aircraft Node B, while in operation, must limit the transmit power of all *UMTS* mobile terminals transmitting in the 2 100 MHz band to a nominal value of -6 dBm/3,84 MHz at all stages of communication and the maximum number of users should not exceed 20.

Annex 7

Draft amendment to the Notice of Variation (NoV) of aircraft licence

WIRELESS TELEGRAPHY ACT 2006

VARIATION OF AIRCRAFT RADIO LICENCE
FOR THE PURPOSE OF INSTALLING AND USING AN AIRCRAFT-BASE TRANSCEIVER STATIONS AND NETWORK CONTROL UNITS ON BOARD AN AIRCRAFT

1 Licence reference details

Sector/class/product	**XXXXXX**
Licence number	**[system generated licence number]**
Aircraft Registration	**[taken from AC Reg field]**
Aircraft Type	**[taken from Aircraft Type field]**
Licensee Name	**[Licensee name]**
Licensee address	**[Licensee address]**
Date of issue	**[date licence first issued]**
Licence start date	**[date system generated licence]**
Date of issue of this variation	**Xx xxxxxxx 201x**

2 Ofcom, in exercise of powers conferred by paragraph 6 of Schedule 1, to the Wireless Telegraphy Act 2006 ("the Act"), hereby varies the Aircraft Radio Licence identified above ("the Licence"), at the request or with the consent of the holder of the Licence ("the Licensee").

3 General

(a) Terms and expressions defined in the Licence shall have the same meaning herein except where the context requires otherwise.
(b) This Variation shall be read as an integral part of the Licence and the following additional terms shall apply in respect of the aircraft base transceiver stations ("aircraft BTS") and network control unit ("NCU").
(c) This Variation forms part of the Licence and must be attached to the Licence.
(d) This Variation replaces and supersedes any Variation issued to vary the Licence for the purpose of installing and using aircraft-BTS and NCUs on board an aircraft.
(e) This Variation does not grant any authorisation on its own. It has effect only when read together with the Licence, which it varies.
(f) This Variation shall remain in force unless
  (i) Ofcom revokes the licence; or
  (ii) Ofcom further varies the Licence, such that the effect of this Variation is altered or cancelled; or
  (iii) the Licensee surrenders the licence; or
  (iv) the Licensee requests Ofcom further to vary the licence such that the effect of this Variation is altered or cancelled.

4 Variation

The Licence shall be varied as and from the Date of issue of this Notice of Variation, such that the Licence shall be read and construed as if the following rows are added

after the last row in the table (headed “Radio Equipment”) in clause 2 “Licence Terms and Conditions” of the Licence:

5 Terms and conditions

The Licence shall be varied as and from the Date of Issue of this Notice of Variation, such that the additional terms below shall apply in respect of the establishment, installation and use of the radio equipment described in the table in clause 4 above:

(a) The relevant network must only be used for mobile communication services on aircraft.

(b) The relevant network shall be operated on a ‘non-interference, non-protected’ basis.

(c) The relevant network shall only be switched on when the aircraft is 3000 metres or more above the ground.

(d) The aircraft BTS shall only operate in the frequency bands listed in Table 1.

(e) The aircraft-BTS shall ensure that all apparatus connecting to the aircraft BTS complies with the operational requirements as specified in Regulation 5 of The Wireless Telegraphy (Mobile Communication Services on Aircraft) (Exemption) Regulations 2017. The operational requirements are:

i. the aircraft BTS, while in operation, shall limit the transmission power of all GSM apparatus to a nominal value of 0 dBm/200 kHz at all stages of communication, including initial access;

ii. the aircraft BTS, while in operation, shall limit the transmission power of all LTE apparatus in the 1800 MHz band to a nominal value of 5 dBm/5 MHz at all stages of communication; or

iii. the aircraft BTS, while in operation, shall limit the transmission power of all UMTS apparatus in the 2100 MHz band to a nominal value of -6 dBm/3.84 MHz at all stages of communication and the maximum number of users does not exceed 20; or

iv. where the e.i.r.p outside the aircraft emanating from the apparatus transmitting in the frequency bands specified in Table 2 of the Variation does not, at each of the heights above ground specified in Column 1 of that Table, exceed the value specified in each of Columns 2, 3 or 4 of that Table.

(f) Apparatus receiving within the frequency bands 925 – 960 MHz and 2110 – 2170 MHz shall be prevented from attempting to register to networks on the ground either:
   i. by the deployment of an NCU, which raises the noise floor inside the cabin; or
   ii. by sufficient fuselage shielding to further attenuate the signal entering and leaving the fuselage.

(g) The relevant network shall operate such that the total e.i.r.p of the network control unit outside the aircraft for the frequency band 925–960 MHz does not, at each height above ground specified in Column 1 of Table 3 of the Variation, exceed the value specified in Column 2 of that Table.

(h) The relevant network shall operate such that the total e.i.r.p of the aircraft BTS outside the aircraft for the frequency band 1805–1880 MHz does not, at each height above ground specified in Column 1 of Table 3 of the Variation, exceed the value specified in Column 3 of that Table.

(i) The relevant network shall operate such that the total e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 2110–2170 MHz does not, at each height above ground specified in Column 1 of Table 3 of the Variation, exceed the value specified in Column 4 of that Table.

(j) Where the NCU operates in a frequency band listed in heading of Columns 2 to 5 of Table 4 of the Variation, the relevant network shall operate such that the total e.i.r.p outside the aircraft does not, at each height above the ground specified in Column 1 of that Table and at each of those frequency bands, exceed the value specified in Columns 2 to 5 of that Table.

(k) Where the NCU operates in a frequency band listed in heading of Columns 2 to 5 of Table 4 of the Variation, the relevant network shall operate such that the total e.i.r.p outside the aircraft does not, at each height above the ground specified in Column 1 of that Table and at each of those frequency bands, exceed the value specified in Columns 2 to 5 of that Table.

(l) The relevant network shall comply with the ETSI Standards[1] listed in Table 1 of the Variation.

(m) Operation of the relevant network within the territory of administrations other than the UK, Isle of Man, Guernsey or Jersey, or their respective territorial sea, or, radio equipment on board an aircraft registered within the territory of administrations other than the UK, Isle of Man, Guernsey or Jersey, is subject to the regulations and authorisations of those administrations.

[1] Commission Decision 2016/2317/EU, OJEU No L 345, 20.12.2016, p 67, provides that “equivalent specifications” to ETSI’s standards may also be used. As such equivalent standards become available, Ofcom will amend this Variation to make reference to them.

Table 1

Type	Frequency	System
GSM 1800	1710 - 1785 MHz (uplink) 1805 - 1880 MHz (downlink)	GSM complying with the GSM Standards as published by ETSI, in particular EN 301 502, EN 301 511 and EN 302 480, or equivalent specifications.
UMTS 2100 (FDD)	1920 -1980 MHz (uplink) 2110 - 2170 MHz (downlink)	UMTS complying with the UMTS Standards as published by ETSI, in particular EN 301 908-1, EN 301 908-2, EN 301 908-3 and EN 301 908-11, or equivalent specifications.
LTE 1800 (FDD)	1710 - 1785 MHz (uplink) 1805 - 1880 MHz (downlink)	LTE complying with LTE Standards, as published by ETSI, in particular EN 301 908-1, EN 301 908-13, EN 301 908-14, and EN 301 908-15, or equivalent specifications.

Table 2

Column 1 **Height above ground (in metres)**	**Column 2** **Maximum e.i.r.p, defined outside the aircraft, resulting from the GSM apparatus in dBm/channel**	**Column 3** **Maximum e.i.r.p, defined outside the aircraft, resulting from the LTE apparatus in dBm/channel**	**Column 4** **Maximum e.i.r.p, defined outside the aircraft, resulting from the UMTS apparatus in dBm/channel**
	1800 MHz	**1800 MHz**	**2100 MHz**
3000	-3.3	1.7	3.1
4000	-1.1	3.9	5.6
5000	0.5	5	7
6000	1.8	5	7
7000	2.9	5	7
8000	3.8	5	7

Table 3

Column 1 **Height above ground (in metres)**	**Column 2** **Maximum e.i.r.p of the network control unit outside the aircraft for the frequency band 925–960 MHz, (in dBm per 3.84 MHz)**	**Column 3** **Maximum e.i.r.p of the aircraft BTS outside the aircraft for the frequency band 1805–1880 MHz** **(in dBm per 200 kHz**	**Column 4** **Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 2110-2170 MHz, (in dBm per 3.84 MHz)**
3000	-6.2	-13.0	1.0
4000	-3.7	-10.5	3.5
5000	-1.7	-8.5	5.4
6000	-0.1	-6.9	7.0
7000	1.2	-5.6	8.3
8000	2.3	-4.4	9.5

Table 4

Column 1 Height above ground (in metres)	**Column 2 Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 460-470 MHz, (in dBm per1.25 MHz)**	**Column 3 Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 791-821 MHz, (in dBm per 10 MHz)**	**Column 4 Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 1805-1880 MHz, (in dBm per 200 kHz)**	**Column 5 Maximum e.i.r.p of the network control unit and the aircraft BTS outside the aircraft for the frequency band 2570-2690 MHz, (in dBm per 4.75 MHz)**
3000	-17.0	-0.87	-13.0	1.9
4000	-14.5	1.63	-10.5	4.4
5000	-12.6	3.57	-8.5	6.3
6000	-11.0	5.15	-6.9	7.9
7000	-9.6	6.49	-5.6	9.3
8000	-8.5	7.65	-4.4	10.4

6. Interpretation

"aircraft BTS" means a base transceiver station located in an aircraft;

"apparatus" means wireless telegraphy apparatus;

"dBm" means decibels of power referenced to one milliWatt;

"e.i.r.p" means equivalent isotropic radiated power;

"ETSI" means the European Telecommunications Standards Institute;

"GSM apparatus" means apparatus used for an electronic communications network that complies with standards developed for Global System for Mobile Communications (also known as GSM) referred to in regulation 5(2)(a);

"kHz" means kilohertz;

"LTE apparatus" means apparatus used for an electronic communications network that complies with standards developed for Long Term Evolution (also known as LTE) referred to in regulation 5(2)(c);

"MHz" means megahertz;

"mobile communication services on aircraft" means electronic communications services provided by an undertaking to enable airline passengers to use public electronic communications networks during flight without establishing direct connections with electronic communications networks based on land;

"network control unit" means equipment located in an aircraft that ensures that signals transmitted by ground based mobile electronic communication systems are not detectable within the cabin by raising the noise floor inside the cabin in mobile communication receive bands;

"public electronic communications network" has the meaning given to it by section 151(1) of the Communications Act 2003([2]);

"relevant network" means an electronic communications network that includes an aircraft BTS and a network control unit;

"signal" has the meaning given to it by section 32(10) of the Communications Act 2003;

([2]) 2003 c.21.

"the 1800 MHz band" means the 1710–1785 MHz frequency band (for the uplink from the apparatus to the aircraft BTS) and the 1805–1880 MHz frequency band (for the downlink from the aircraft BTS to the apparatus);

"the 2100 MHz band" means the 1920–1980 MHz frequency band (for the uplink from the apparatus to the aircraft BTS) and the 2110–2170 MHz frequency band (for the downlink from the aircraft BTS to the apparatus); and

"UMTS apparatus" means apparatus used for an electronic communications network that complies with standards developed for Universal Mobile Telecommunications System (also known as UMTS) referred to in regulation 5(2)(b).

Issued by the CAA on behalf of Ofcom

Radio Licensing
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Annex 8

Abbreviations

- BTS - Base Transceiver Station
- CEPT - European Conference of Postal and Telecommunications Administrations
- EASA - European Aviation Safety Agency
- EC - European Commission
- ETSI - European Telecommunications Standards Institute
- GHz - Gigahertz
- GSM - Global System for Mobile Communications
- IR **-** Radio Interface Requirement
- LTE - Long Term Evolution
- NoV - Notice of Variation
- NCU - Network Control Unit
- MHz – Megahertz
- UMTS - Universal Mobile Telecommunications System
- WT Act - Wireless Telegraphy Act 2006