



Mobile Communications on board Aircraft (MCA)

Ofcom statement on authorising MCA services

Statement

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Section 1

Executive summary

- 1.1 There is increasing interest in the potential for passengers to use their mobile phones on aircraft – Mobile Communications on Aircraft or MCA. Ofcom’s role in relation to MCA services is to regulate the authorisation and use of radio spectrum and Electronic Communications Services (ECS). Ofcom published a consultation on MCA services in October 2007¹, setting out proposals for authorising such services. This document summarises the comments made on the consultation and sets out Ofcom’s decisions.
- 1.2 Respondents to the consultation expressed a range of views, but on balance they gave broad support to our key proposals. Ofcom will therefore implement the following measures as soon as practicable:
- Radio equipment for MCA systems on UK aircraft will be licensed (rather than licence-exempt) under the Wireless Telegraphy Act 2006;
 - Licences will be issued to UK aircraft operators on request, via a variation to their existing spectrum licences. No additional fee will be payable;
 - The basis of the technical and authorisation regime will be the Decision of the EU Radio Spectrum Committee (RSC) and the Recommendation of the EU Communications Committee (COCOM), which make reference to the technical standards which were agreed in the Electronic Communications Committee (ECC) of the CEPT and registered by the European Electronic Telecommunications Standards Institute (ETSI). These standards ensure that any danger of harmful interference to terrestrial networks is minimised;
 - In line with the RSC Decision and COCOM Recommendation, mutual recognition will be given to EU registered aircraft which adhere to the common EU technical and authorisation standards;
 - The COCOM Recommendation defines MCA services as Electronic Communications Services (ECS). The standard obligations under the General Conditions of Entitlement (GCs) apply to them; and
 - MCA services should be allocated non-geographic international Mobile Network Codes issued by the International Telecommunications Union (ITU) for such services.
- 1.3 In addition to the points for consultation, many responses raised issues about the safety and general welfare of passengers if MCA were permitted.
- 1.4 Ofcom is well aware that the safe operation of aircraft and passenger safety is of paramount importance, and no MCA services could be introduced without the permission of the authorities responsible for safety. The European Aviation Safety Agency (EASA) and the Civil Aviation Authority (CAA) in the UK are responsible for aircraft safety and their requirements must be satisfied before MCA services can be introduced. Ofcom’s authorisation of spectrum use does not create any presumption that MCA services will or should be permitted by the aviation safety authorities.

¹ <http://www.ofcom.org.uk/consult/condocs/mca/>

- 1.5 Some of the responses to the consultation also raised concerns about passenger welfare and the potential for discomfort, anti-social behaviour and “air rage” on board. At an operational level, such considerations fall to the airlines. Ofcom notified the CAA of the non-confidential comments received during the consultation and passed comments on to them. Security concerns were also expressed and these fall within the remit of the Department for Transport (DfT) - Transport Security Branch. These issues are outside Ofcom’s remit and it will be for these regulatory bodies to consider the safety, welfare and security issues relevant to them.
- 1.6 The UK CAA, in liaison with the Department for Transport (DfT), requires that airlines have appropriate procedures to deal with disruptive passenger events and further requires that such events are notified through the formal reporting system. The CAA collates, analyses and grades these reports. This output not only shapes the operational procedures but informs Government on the appropriateness of the legislative penalties for miscreants.
- 1.7 Similar organisations in other countries, are also responsible for ensuring that airline onboard procedures are adequate to protect passengers. Such procedures must be certified by the relevant aviation body before MCA services can be permitted on aircraft.
- 1.8 Responses to the consultation also raised questions about the potential impact on consumers of the tariffs to be charged for MCA services. Ofcom is concerned about this issue as tariffs may well be high relative to other mobile communication services and there is a danger that consumers will receive unexpectedly high bills. Ofcom will be talking to all concerned parties to understand what steps can be taken to ensure consumers understand the costs of making calls from on board an aircraft. Ofcom will monitor this situation closely.
- 1.9 EU Member States have developed a common regime so that MCA operations provided on aircraft of different Member States are mutually recognised across Europe. This common approach could in the future be extended to a global regime for the mutual recognition of authorisations, drawing on the technical standards and principles developed in Europe.

Section 2

Background

- 2.1 Ofcom believes that the development of Mobile Communications on Aircraft (MCA) services may open the opportunity for a new market for mobile services, building on the ubiquitous usage of GSM handsets and consumers' expectations of being contactable anywhere and at any time.
- 2.2 There is an increasing interest in the potential for offering communications services to passengers using mobile phones on aircraft and proponents of MCA systems believe that such services could have significant consumer and commercial benefits. Ofcom is responsible for regulating spectrum and electronic communication service matters in the UK and therefore has a part to play in relation to the implementation of such services.
- 2.3 Ofcom understands that the relevant aviation authorities have identified the work necessary to ensure that mobile phones have no adverse effect on aircraft equipment and systems and that passenger safety is protected. The European Aviation Safety Agency (EASA) certificated the modification to the first aircraft type (Airbus A318) in 2007. Onboard procedures have now also been approved by the relevant national aviation authority for use on the first aircraft operated by Air France. Work on assessing other aircraft types, and their onboard procedures for MCA, is currently in progress. This is a matter for the authorities responsible for aircraft safety and does not fall within Ofcom's remit.
- 2.4 Ofcom issued a discussion document about MCA on 10 April 2006 and a consultation document on 18 October 2007. The consultation outlined the key issues and asked seven questions:

Q1 Do you have any comment in relation to the authorisation of MCA systems on the basis of a common European approach?

Q2 Do you agree that the ECC Decision² and associated technical requirements and limits will adequately protect terrestrial networks?

Q3 Do you agree that the initial authorisation regime for MCA should be via licensing rather than licence-exempt?

Q4 Do you agree that the aircraft operator should be the licensee of the radio equipment used for MCA?

Q5 Do you agree that the authorisation of radio equipment for MCA in the 1800 MHz spectrum band should be granted via an NoV (Notice of Variation) to the existing aircraft licence?

Q6 Do you agree that under the current licensing framework no additional fee should be payable for MCA spectrum authorisation?

² ECC Decision of 1 December 2006 on the harmonised use of airborne GSM systems in the frequency bands 1710-1785 and 1805-1880 MHz (ECC/DEC/(06)07) - <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC0607.PDF>

Q7 In your opinion do you think that MCA services would fall within the scope of the EC Regulation on roaming? Please explain why you think that MCA services would or would not fall within the scope of this regulation.

- 2.5 Ofcom received 35 responses to the consultation from a range of interested parties. These included individual consumers, stakeholders in the aeronautical and telecommunications industries, proponents of the new application and Mobile Network Operators (MNOs).
- 2.6 The full text of the non-confidential responses is available at: <http://www.ofcom.org.uk/consult/condocs/mca/responses/>
- 2.7 Six respondents requested that their responses be kept confidential.
- 2.8 One response was received after the closure of the consultation.
- 2.9 The responses to the specific questions raised in the consultation are summarised in Annex 1.

Structure of this document

- 2.10 Ofcom has grouped under the following headings the principal issues raised in the consultation responses that require discussion:
- Aircraft safety, security and passenger behaviour;
 - Technical questions, including interference, enforcement, jammers, interception, and ground testing issues;
 - Authorisation questions, including the applicability of the General Conditions of Entitlement (GC);
 - Concerns about end-user tariffs and the applicability of the EU Roaming Regulation;
 - Other services; and
 - MCA in the context of European decision-making.
- 2.11 These issues are discussed in detail in sections 3-8 and section 9 sets out Ofcom's conclusions and decisions on the way forward. Annex 1 summarises the responses to the consultation and Annex 2 provides an overview of recent MCA developments within Europe and globally.

Section 3

Aircraft safety, security and passenger behaviour

- 3.1 Twelve individual respondents, the Open Minds Foundation and four confidential responses expressed views about and drew attention to potential problems related to passenger behaviour, possible safety and security concerns and environmental issues relating to passenger health from the unconstrained use of mobiles on board aircraft.
- 3.2 They made various comments about the increased noise level in the aircraft cabin from passengers using their mobile phones whilst in flight and the potential annoyance this could give to other passengers sitting close by, especially given the confined space of the cabin and close seating arrangements in most aircraft.
- 3.3 A general concern was also expressed about air rage and the potential that MCA could aggravate this problem, affecting aircraft and passenger safety.
- 3.4 Three respondents raised concerns related to aircraft safety and security from mobile phones being used to hide and detonate bombs and the potential danger to aircraft from terrorism.
- 3.5 One response was concerned about the potential health risk from the close proximity of the installed MCA system on the aircraft and being exposed to continuous low level radio signals.

Ofcom position

- 3.6 Ofcom takes all aircraft safety issues seriously and considers them to be of primary importance. No services could be deployed unless the relevant authorities are satisfied that safety is assured.
- 3.7 Ofcom has considered all the issues raised by the consultation exercise but can only address those issues that fall within its remit - i.e. regulation of spectrum and Electronic Communications Services (ECS). Aircraft safety issues fall outside Ofcom's remit and will need to be addressed by the relevant authorities - the Civil Aviation Authority (CAA) in the UK, the European Aviation Safety Agency (EASA) and the International Civil Aviation Organisation (ICAO).
- 3.8 These bodies are responsible for ensuring that all reasonable measures are taken to ensure that no electronic device, including the aircraft base station, NCU and mobile terminals, can adversely affect the performance of the aircraft systems or equipment or impact on the safety of its occupants. These issues will be addressed through the airworthiness certification process and operational procedures' approval process. It is essential that these issues are fully resolved before MCA systems could be allowed on any aircraft but this, as noted above, does not fall within Ofcom's remit.
- 3.9 Ofcom also understands the concerns expressed about peace and quiet on aircraft and the potential for mobile phone users to annoy other passengers. However we note that in similar cases which can lead to annoying behaviour, for example serving alcohol on board aircraft, it is a matter for aircraft operators to decide how to balance the services they offer to their passengers with the impact that they have. The airline

industry is a competitive market and consumers generally have a choice between carriers: the provision of MCA services, and approaches to mitigating any annoyance, like quiet zones or quiet periods, could become part of the marketing differentiation between airlines. Further, Ofcom considers that UK consumers could be disadvantaged if MCA services were not permitted.

- 3.10 The deployment of MCA services across air fleets is likely to be relatively slow as the fitting of the MCA system will probably be tied in with the aircraft's maintenance schedule. This will initially result in only certain aircraft within a fleet being equipped with MCA services. The initial perception may be that once the use of mobile terminals is permitted on one aircraft it will be possible to do the same on all aircraft. Flight crew and the relevant on board procedures will therefore need to ensure, as is currently the case, that all mobile phones are switched off at all times on aircraft not fitted with an MCA system.
- 3.11 Aircraft security issues are also paramount, but fall outside Ofcom's and the CAA's remit and will need to be addressed in the UK by the Transport Security Branch of the DfT.

Section 4

Technical questions

Interference and enforcement

- 4.1 Three Mobile Network Operators (MNOs), one confidential response and the GSM Association raised concerns about interference to terrestrial networks and how any reported cases of interference would be resolved and enforced.
- 4.2 These respondents felt that the deployment of MCA systems would cause interference to terrestrial mobile networks and, given the transitory nature of aircraft movement, it would be difficult and time consuming to take any appropriate enforcement action. This could have a significant impact on the affected terrestrial networks' coverage, grade of service, customer satisfaction and revenue.
- 4.3 One individual respondent, bmi and the two proponents of MCA systems thought that the interference issues had been appropriately addressed and that the requirements and limits of the ECC Decision and associated technical requirements would be sufficient to protect terrestrial networks adequately.
- 4.4 However four individuals, one MNO and one confidential response felt the ECC Decision is insufficient to protect terrestrial networks as it is based on a theoretical model which may underestimate the impact on terrestrial networks.
- 4.5 One confidential response thought that due to the practical difficulties of assessing the potential risk of interference at this stage to terrestrial networks monitoring of the MCA systems would be required once such systems were in the live environment.
- 4.6 O2 thought that Ofcom were taking an inconsistent approach to the risk of harmful interference by proposing a precautionary authorisation approach because of the possibility of interference; while at the same time proposing that no additional fee should be payable as there was no spectrum management justification for it. They also queried where the funding for interference investigation would come from.
- 4.7 Orange raised some specific technical concerns in its response. These concerns were:
- The basis for the calculation of terrestrial network antenna side lobe roll off,
 - whether the proposed standard would allow increased E.I.R.P levels at higher altitudes
 - how the E.I.R.P levels outside the aircraft would be measured.

Ofcom position

- 4.8 The technical standards set out in the consultation document limit the emission of interference from a plane in flight to a level which is calculated to cause no harmful interference to terrestrial networks. These standards were created in European technical forums. Ofcom and UK industry participated in the development of these standards through CEPT WGSE (PT7) and in preparing the ECC Report 93 and the technical annex of ECC Decision (06)07. These technical standards are referenced

in the EU RSC Decision and COCOM Recommendation which form the basis for the pan-European regime for MCA.

- 4.9 Ofcom believes that the ECC work and the ETSI standards which are being derived from it are sufficient to ensure any risk of interference to terrestrial networks is minimised.
- 4.10 Ofcom carefully considered the specific points raised by Orange and has concluded that:
- **Antenna side lobe roll-off** - In preparing ECC Report 93 the SE7 group used parameters for terrestrial base station antennas based on ITU-R F.1336-1 patterns. It also used the values commonly deployed in terrestrial networks using typical performance characteristics of state-of-the-art antennas (based on data supplied by mobile operators) for the stringent case of a noise-limited network.
 - Regulators and mobile network operators from across Europe (including the UK) approved ECC Report 93 with its assumption that the antennas in use in the terrestrial networks would have improved side-lobe performance - ie that a value of zero for the factor 'k' would be appropriate, as envisaged in the latest version of F1336. Ofcom also notes that, in co-existence studies, it is normal to use average rather than peak values for the antenna performance due to alignment and manufacture variations - and therefore that using the factor of $k=0$ is appropriate.
 - **Increased E.I.R.P levels with altitude** - The transmitted powers given in the consultation are extracted from ECC Decision (06)07 and ECC Report 93. They show the increase in power that could be permitted for an increased altitude and are consistent with the results produced in SE7. However it is not intended that the power would increase with altitude once the service has been initiated at a specified altitude, but they illustrate the power that could be available if operation was to start at more than 3000m.
 - **E.I.R.P levels outside the aircraft** – The ETSI group TC ERM GSMOBA³ is currently working on a Technical Specification (TS 102 576) which will provide an agreed measurement methodology for MCA on how the output power from the antenna port of the MCA equipment relates to the power limits outside the aircraft. Both Ofcom and UK industry have actively contributed to the development of this standard. Ofcom is following with interest the development of the TS and is encouraged to see that work is progressing. The agreed measurement methodology will then be used to determine the following key parameters:
 - Attenuation due to the aircraft fuselage in combination with the leaky feeder;
 - Attenuation at the aircraft window.
- 4.11 It is Ofcom's responsibility to investigate complaints of interference and to enforce measures to prevent it recurring. Should harmful interference be detected and reported to Ofcom, we will investigate in as timely and proportionate a manner as possible to determine whether the interference came from an aircraft; and if so which

³ ETSI Technical Committee ERM GSMOBA (Electromagnetic Compatibility (EMC) and Radio Spectrum Matters – GSM Onboard Aircraft

one. If it is proven that an individual system or a cumulative effect causes harmful interference Ofcom will take the necessary action.

- 4.12 If the aircraft is from an overseas administration, Ofcom has the power under the Wireless Telegraphy (Visiting Ships and Aircraft) Regulations 1998 (SI 1998/2970) to require the offending apparatus to be switched off immediately. These Regulations require that the apparatus for wireless telegraphy on board a visiting aircraft shall be used so as not to interfere with the emitting and receiving of any wireless telegraphy by others.
- 4.13 Access to flight plan information will greatly assist Ofcom enforcement officers with correlating reports of interference and ensuring interference cases can be resolved in a timely manner. Ofcom expects to receive co-operation from the National Air Traffic Service (NATS) in providing the necessary flight plan information to assist in the identification of reports of interference.
- 4.14 Onboard procedures to switch off all electronic equipment during take off and landing are essential to reduce the risk of interference to terrestrial networks. It is a common observation today that some mobile terminals are accidentally left on during flight. Ofcom understands that the new onboard operational procedures which will be associated with MCA could create a more active process for ensuring mobile terminals are not used below 3000m and when the onboard system is switched off. However, there will still be little practical means to guarantee that mobile terminals are not left switched on. Whilst the aircraft airworthiness certification has addressed this condition, to mitigate any effect on the aircraft and its systems and equipment, any effect on the terrestrial network would still be present.
- 4.15 Ofcom does not believe its proposals to license the aircraft operator, but not charge an additional licence fee, are inconsistent. The rationale for a licensed approach relates principally to managing the risk of interference to terrestrial systems. We do not consider that this presently creates a need to apply a fee to promote optimal use of the spectrum. Aircraft already have to pay a fee for their aircraft radio licence and there is therefore no administrative reason to charge an additional fee for the issue of a variation to this licence.. The costs of these investigations will be covered like any other interference investigation conducted by Ofcom

Network Control Unit (NCU)

- 4.16 Two individual respondents questioned the legal status and functionality of the NCU comparing its operation to that of a “jammer”, use of which is prohibited in terrestrial locations.

Ofcom position

- 4.17 The NCU is a component of the MCA system that operates to protect terrestrial networks and reduce the risk of harmful interference to them. The European Commission’s Telecommunications Conformity Assessment and Market Surveillance Committee (TCAM)⁴ has advised that the NCU is a control device rather than a jammer as its purpose is to prevent interference between different mobile systems, facilitate mobile communications and enable both airborne and terrestrial GSM

⁴ European Commission TCAM 19 (05) 86 - http://circa.europa.eu/Public/irc/enterprise/tcam/library?l=/public_documents/tcam_19/communication_systemsdocus/EN_1.0_&a=d

systems to co-exist. Ofcom supports this opinion and is content to allow the use of the NCU in the particular circumstances of MCA services.

- 4.18 The operation of an MCA service is a specific application with special conditions that justify the use of the NCU. This does not mean that similar devices can be used terrestrially. Ofcom's policy on jammers remains unchanged and can be found at: <http://www.ofcom.org.uk/radiocomms/ifi/enforcement/jammers/>

Interception

- 4.19 One confidential response expressed concerns that the consultation did not address the issue of interception by third parties when the aircraft is outside UK air space and that the usual GSM security, through encryption algorithms, could fail due to such interception.

Ofcom position

- 4.20 Ofcom is unable to comment on issues of interception that may occur in other countries. Whilst UK registered aircraft are subject to UK regulation, when they cross borders and fly over other territory they are also subject to the local laws that prevail in those countries.
- 4.21 The second concern raised by the respondent was the security of the GSM encryption algorithms due to the equipment being owned by a third party. The MCA system will be operated in flight by the airline operator, but the GSM functionality will be controlled and maintained by the MCA service provider. Using the onboard MCA system will therefore be equivalent to using a roaming service in another country.

Ground testing

- 4.22 bmi raised a question about how testing of MCA systems on the ground will be permitted and stressed that this is essential to enable correct installation and maintenance.

Ofcom position

- 4.23 As the MCA systems may only be operated above 3000m they will need separate authorisation to operate on the ground. To enable installation and testing of the system on the ground a separate Non-Operational Licence will be needed. These licences are available from Ofcom and details can be found at: <http://www.ofcom.org.uk/radiocomms/ifi/licensing/classes/noperational/>

Section 5

Authorisation questions

Should MCA be licensed or licence-exempt?

- 5.1 There was broad support for the initial authorisation regime of MCA equipment to be via a licensing approach. Nine individual respondents, three MNOs, the Advisory Committee for England, two industry responses, bmi and two confidential responses shared this view. It was felt that there was no reason why MCA operators should not be subject to the same regulatory environment as terrestrial operators; it would assist any necessary enforcement action by exercising a degree of control; and would help in regulating the use of the system.
- 5.2 The two MCA proponents and two satellite industry responses, on the other hand, expressed the view that the least burdensome regulatory regime was the right approach and that the UK national framework should be founded on key principles as established in the existing international framework for aeronautical communications.
- 5.3 The two MCA proponents argued that the authorisation regime should be licence-exemption. They felt that, assuming there is no harmful interference to terrestrial networks, such systems are entitled to be granted licence-exempt status as a matter of EU (under the Authorisation Directive) and UK law. Their view was that all equipment on board should be licence-exempt as this constitutes the simplest regime to administer and the least burdensome approach to facilitate the commercial introduction of this new service.

Ofcom position

- 5.4 The issues related to the licensing of MCA services were explored in the consultation document (section 3) and the Impact Assessment attached to the consultation. Sections A4.18 – A4.19 of the Impact Assessment specifically considered the issue of whether MCA services should be licensed or licence-exempt.
- 5.5 Section A4.19 of the Impact Assessment explained that whilst harmful interference to terrestrial networks is not expected from the MCA services, these systems are novel and the interference they might generate is untested and could potentially be harmful. Ofcom therefore proposed to begin with a licensed approach to MCA and to review it once it has been in operation for a period or if circumstances change. This approach is acknowledged in the COCOM Recommendation.
- 5.6 Ofcom agrees with the view that the authorisation regime of MCA equipment should initially be via a licensing approach. The process for administering such a licensing regime will not be onerous as it will simply extend the radio licence already held by every aircraft (see section 5.27 - 5.31 below).
- 5.7 If any enforcement action is required, then the source of the interference may be more easily identified and action more easily taken under a licensing approach.
- 5.8 At the European level Ofcom had advocated that the Commission maintain a database of all aircraft operating MCA services to assist with resolving interference issues.

- 5.9 The COCOM Recommendation provides that Member States should in a timely manner inform the Commission and other Member States of the MCA services authorised to operate in aircraft registered within their jurisdiction. Not all the administrations supported the creation of a formal register. The Commission indicated that during the initial period covering the deployment of the first MCA services a common voluntary register should be set up and maintained by the relevant MCA operators⁵.
- 5.10 The objective of the voluntary register is to provide administrations with information on the MCA services being authorised in other Member States, with a view to increasing confidence that any eventual interference cases can be resolved quickly and in a coordinated fashion. All the information on the register will be made available to the Commission and to the Member States. This approach will be kept under close review and mandatory measures will be considered if this proves unsatisfactory.
- 5.11 All the radio equipment on an aircraft is licensed and the aircraft must carry a copy of this licence. This authorisation is acquired and maintained by the current aircraft operator. Where required new radio equipment is generally added to the aircraft licence by a "Notice of Variation" (NoV). Wireless telegraphy licences for aircraft are distributed by the CAA on behalf of Ofcom. In licensing a new radio use on board there would be little additional burden on aircraft operators if this approach continued and operators of individual aircraft were licensed for MCA.
- 5.12 Equipment for MCA will therefore be licensed rather than made licence-exempt. As required by the EU RSC Decision and COCOM Recommendation Ofcom will keep this approach under review and will consider moving to a licence-exempt regime in due course if experience of the services in operation warrants this.

Who should be the licensee of the radio equipment used for MCA?

- 5.13 There was broad support for making the aircraft operator the licensee of the MCA radio equipment. This view was expressed by bmi, three MNOs, eight consumers, two confidential and one industry response. OnAir also supported this approach if a licensing approach were adopted.
- 5.14 It was felt this would assist in resolving concerns aircraft operators may have; would tie in with existing international aviation rules; would assist in resolving any cases of interference to terrestrial networks and would facilitate the speed with which services could be deployed.
- 5.15 As the aircraft will be governed by its country of registration, and will be subject to national as well as international aviation rules, it was considered that authorising the aircraft operator rather than the service provider is an appropriate, measured and consistent approach.
- 5.16 Three individual respondents, Aeromobile and one satellite industry response argued that it should be the MCA service provider who should be the licensee. It is they who will design, integrate and control the functioning of the system. They are therefore in the best position, and it is in their interest, to manage the correct operation of the onboard equipment and to resolve any matters of potential harmful interference in an efficient, effective and comprehensive manner. While the crew does have direct

⁵ http://circa.europa.eu/Public/irc/infso/cocom1/library?!=/public_documents_2008/cocom08-09_registerpdf/ EN_1.0_&a=d

control over whether the MCA system is switched on or off and can control other elements such as the enabling of voice or text service, the crew does not control the functioning of the system as a whole. The MCA service provider is responsible for this.

- 5.17 A further argument was put forward that licensing the aircraft operator could add delay to resolving any reported cases of interference as Ofcom would have to approach all aircraft operators providing a service. As the MCA service providers will be responsible to the airline and passengers for the correct functioning of the system it would be simpler for Ofcom to contact a limited number of MCA service providers than all the airlines offering a service.
- 5.18 Aeromobile argued that there was no compelling aviation reason why the aircraft operator has to be the licensee and that requiring the airline and the aircrew to be responsible for remedial action in the unlikely case of interference or other regulatory reasons for disabling the service may therefore be ineffectual. In addition, the commercial agreements to install systems on board aircraft are likely to require that the MCA service provider – who is uniquely positioned to manage the system’s conformance with regulatory requirements – should take responsibility for acquiring the necessary regulatory approvals. Requiring airlines to develop the competence and skills to secure and comply with licensing requirements will therefore increase the overall cost of the service which will have to be passed on to the consumer.

Ofcom position

- 5.19 Under the Wireless Telegraphy Act 2006 (WT Act 2006), wireless telegraphy licences are required for the establishment, installation and use of radio equipment, unless its use is licence-exempt. Further, the captain of an aircraft is guilty of an offence, without prejudice to the liability of any other person, in the event that an offence is committed in relation to a Wireless Telegraphy station or apparatus on board.
- 5.20 We note that the actual operation of the equipment is not done by the MCA service provider but by the crew on board the aircraft. The critical concern of stakeholders is the avoidance of harmful interference and therefore of the correct operation of the equipment on board. It appears that the service providers will have little responsibility in this operational area. The role of the MCA service provider is therefore less relevant so far as spectrum responsibilities are concerned. MCA service providers will, on the other hand, have greater responsibility for fulfilling the obligations under ECS regulation (see section 5.40 – 5.44).
- 5.21 All aircraft are already licensed for numerous wireless telegraphy devices and equipment. The aircraft operator is therefore likely to be fully conversant with the technical, operational and regulatory requirements of spectrum regulations. Ofcom have consequently concluded that the MCA equipment should be licensed by adding it to the aircraft’s existing WT Act licence.

How should the licence be issued?

- 5.22 There was support from four individual respondents, two MNOs, one industry response, the Advisory Committee for England and bmi for authorising the use of the MCA equipment via an Notice of Variation (NoV) to the aircraft’s existing WT licence.
- 5.23 Both OnAir and one satellite industry response (SAP REG & ESOA) felt that this process was acceptable and would require minimal administration, though they preferred a licence-exempt approach be adopted instead. The SAP REG & EOSA

response also felt that taking into account the proposal in the draft COCOM Recommendation for an aircraft register that can be accessed on a pan-European basis by relevant administrations, would remove the need for NoVs to be issued on a national basis. They felt that listing this type of information in a central database would be a more effective pan-European approach to making such information available.

- 5.24 It was generally felt the issuing of an NoV was simple, effective and had a minimal administrative impact. The onboard MCA system is completely under the operational control of the aircraft operator; and all aircraft already have licences for their WT equipment, to which this would simply be an additional schedule.
- 5.25 Five individuals and Aeromobile disagreed with this approach. Aeromobile felt it was inappropriate for the aircraft operator to be issued with an NoV and that use of the spectrum should be licensed to the MCA service providers as it will be they who have overall responsibility for design and implementation of the service and would be best placed to manage the correct operation of the on board equipment and resolve interference issues quickly and effectively. It was also argued that there is no compelling reason from a national aviation authority perspective for the aircraft operator to be the licensee.
- 5.26 One individual response felt that the issuing of an NoV was not appropriate and that a separate licensing regime should be devised with aircraft safety as its sole objective.

Ofcom position

- 5.27 The issue of who should be licensed is discussed in section 5.19 – 5.21.
- 5.28 Ofcom agrees that the authorisation of radio equipment for MCA should be granted via an NoV to the existing aircraft licence.
- 5.29 This process fits in with both aeronautical and WT Act 2006 licensing requirements. Under the WT Act 2006, licences are granted to aircraft operators and they detail the frequency ranges and types of radio equipment on board the aircraft, (such as those used for navigation), and the relevant legal requirements with which the licensee is obliged to comply. New radio equipment is generally added to the aircraft licence by an NoV. In the UK WT Act licences for aircraft are distributed by the CAA on behalf of Ofcom.
- 5.30 An MCA system will be an additional radio device installed on an aircraft and it would be simple and effective to extend the existing WT Act licence to cover the MCA system. Using an NoV to do this will not increase the regulatory burden on the aircraft operators and will meet international regulatory requirements.
- 5.31 Ofcom will therefore authorise the use of MCA equipment by issuing an NoV to the existing aircraft WT Act licence. The aircraft operator will be responsible for the installation and operation of the onboard MCA radio equipment and the avoidance of interference to terrestrial (and avionic) systems.

Licence fees

- 5.32 Seven individual respondents, two MNOs and one confidential response argued that an additional fee should be paid for the award of the NoV because:

- all use of the radio spectrum should be paid for;
 - an additional fee would incentivise MCA systems which were efficient and deter the general installation and use of MCA;
 - an additional fee would be required to cover the costs of administering the licensing regime, including the cost of investigating and monitoring cases of interference;
 - it was unclear what spectrum management argument Ofcom was considering;
- 5.33 On the other hand four individual respondents, one Industry response, the two MCA proponents, bmi and one satellite industry response agreed with Ofcom's proposal that no additional fee should be charged. They argued that there is no spectrum management reason to charge a fee. The spectrum used for this service cannot be considered a scarce resource because in each aircraft it can only be used by the aircraft operator when in flight
- 5.34 Further, the spectrum used for MCA will be on a non-exclusive and non-interference basis, so that deployment of MCA systems will increase the overall efficiency of the use of this spectrum. Applying additional fees for access to spectrum which cannot otherwise be used would be inappropriate.

Ofcom position

- 5.35 Aircraft operators already have to pay a fee for their aircraft radio licence and there is therefore currently no administrative reason to charge an additional fee for the issue of the NoV. The current annual licence fee for an Aircraft Radio Licence is linked to the take off weight of the aircraft and can be £20, £150 or £350 per aircraft.
- 5.36 There does not appear to be a spectrum management justification for an additional fee for MCA and Ofcom does not at this stage propose to charge one. The policy rationale of an additional charge would be to incentivise the licence-holder to use the spectrum efficiently. However given that the spectrum on an aircraft can only be used by the aircraft operator, no one else would be denied the opportunity to use it and therefore the opportunity cost of the spectrum would be zero. It is therefore not clear that a fee reflecting an Administered Incentive Price (AIP) would achieve any object.

General conditions of entitlement (GCs)

- 5.37 Ofcom's proposals for consultation suggested that MCA services would be subject to the General Conditions of Entitlement (GCs) for electronic communications services and networks. One confidential response raised queries about whether the GCs in general and which in particular would apply to MCA services. The respondent also questioned how Ofcom would enforce the GCs in this case and felt it was unclear whether it would be the terrestrial operator or the MCA operator who would be liable for ensuring compliance with the relevant GCs.
- 5.38 Aeromobile argued that it was not practical to apply the GCs to MCA services as they can not be applied globally and would make the overall regulatory structure complicated for MCA providers.
- 5.39 O2 noted that Ofcom recommended MCA operators seek their own advice on the applicability of the GCs and that COCOM confirmed in the Recommendation that

services provided by MCA operators are Electronic Communications Services (ECS) and therefore fall within the scope of the Authorisation Directive.

Ofcom position

- 5.40 On the basis of the COCOM Recommendation Ofcom considers that MCA systems will fall under the definition of Electronic Communication Services (ECS) and will be subject to the GCs.
- 5.41 Which of the GCs apply to individual MCA services will depend on the type of ECS which is being provided and Ofcom recommends that providers seek their own advice about which apply to their particular service parameters. An outline of the GCs of the various categories of ECS is set out on the Ofcom website at http://www.ofcom.org.uk/telecoms/ioi/g_a_regime/
- 5.42 When the current regulatory framework was introduced in 2002 one aim was to remove the obligation to apply for a licence to provide electronic communications networks and services so that providers should have greater freedom to provide such services. ECS/ECN providers must therefore take responsibility for assessing which of the detailed conditions attached to the general authorisation is relevant to their specific service. Ofcom expects that all ECS providers should take this responsibility seriously. As a result we generally only take a formal and conclusive view as to the exact scope of applicable conditions for a particular ECS as and when issues of non-compliance are brought to our attention and after having gathered and reviewed all evidence relevant to the particular case.
- 5.43 Should a COCOM Recommendation in the future provide a common basis for all Member States in this respect, Ofcom may, if appropriate, consult on exactly which conditions should apply. Following such consultation Ofcom may, where required, amend or modify existing GCs accordingly.
- 5.44 Under the Communications Act 2003 (the "Act"), Ofcom has powers to investigate breaches of conditions imposed on ECS providers. If Ofcom has reasonable grounds to believe that a person has contravened, or is contravening, a condition set under the Act, it may issue a notification to that person under section 94 of the Act. Ofcom has issued guidelines detailing its enforcement powers and procedures⁶.

⁶ http://www.ofcom.org.uk/bulletins/eu_directives/
<http://www1.bsc.org.uk/consult/condocs/enforcement/enforcement.pdf>

Section 6

Tariff transparency

The EC Regulation on Roaming and tariff transparency

- 6.1 Eight individual respondents, the Advisory Committee for England, one confidential response and one MNO considered that tariff transparency would be necessary to ensure that consumers are protected from unexpectedly high charges. They argued that MCA services do fall within the EU Regulation on Roaming in spirit if not in letter. If MCA services were not covered by the regulation this could lead to significant customer confusion, if calls on intra-EU flights led to excessive roaming charges.
- 6.2 One confidential response felt that MCA services within the EU do fall within the Regulation. This respondent believed the term “terrestrial” used in the Regulation is meant to distinguish between public mobile telephone networks and systems based on terminals which link directly to satellite systems which is not the case for the mobile aircraft systems discussed in the consultation. It is therefore outside the spirit of the Regulation to allow high priced mobile communications services within the EU and would lead to significant customer confusion, and an increased administrative burden, if calls on intra-EU flights led to excessive roaming charges.
- 6.3 O2 questioned how the Roaming Regulation would apply to MCA systems and consequently how prices might be benchmarked, whether this would apply to UK domestic flights as well as to international services and how transparency of consumer pricing information by the MCA providers would be advertised.
- 6.4 An individual respondent, two MNOs, the GSMA, Cable and Wireless, the two MCA proponents and bmi expressed the view that the EU Regulation did not apply to MCA services. These responses argued that the Roaming Regulation addresses existing terrestrial MNO services only. The Regulation was developed in response to particular terrestrial roaming issues and as MCA is a very different service and market the Regulation does not apply. In particular, MCA systems have different cost structures compared to terrestrial networks and regulations for terrestrial services are not appropriate for them.
- 6.5 Both Orange and the GSMA noted that the European Regulators Group (ERG) has already issued guidance that MCA services fall outside the scope of the Regulation. The GSMA supported this position because of the significantly greater costs of providing MCA services.

Ofcom position

(i) EC Regulation on Roaming

- 6.6 Ofcom understands that the business models of the operators of MCA systems and their airline partners may depend on higher end-user charges than are normal when roaming.
- 6.7 While the Regulation makes no explicit mention of services on aircraft, its Recital 16 states “A common approach should be employed for ensuring that users of **terrestrial** public mobile telephone networks when travelling within the Community do not pay excessive prices for Community-wide roaming services[...].” (emphasis

added). Article 2 of the Regulation goes on to define the home network (provider), the visited network and roaming customer, by reference to provision of 'terrestrial' public mobile telephone services.

- 6.8 This wording seems to suggest that MCA services, if they fall outside the definition of "terrestrial public mobile telephone network", also fall outside the scope of the Regulation.
- 6.9 Ofcom also notes the guidelines recently published by the ERG on the International Roaming Regulation⁷. The ERG conclusion is that 'the Regulation does not apply to calls made to/from ships and planes using satellite networks⁸'. However, Ofcom also notes that it is for the European Court to give ultimate guidance as to the correct interpretation of European legislation.

(ii) Tariff transparency

- 6.10 Services on aircraft may be charged at higher than normal retail rates, reflecting inter alia the additional costs of implementing and providing MCA services compared to terrestrial networks. Ofcom believes that it is in the interests of all concerned parties, and their responsibility, to ensure that consumers are informed in advance of the cost of using an MCA service. Ofcom is aware of the potential impact on consumers of receiving unexpectedly high bills for these services.
- 6.11 Actions by the MCA service providers and/or airlines could be taken to inform passengers of the likely cost of using the service. Ofcom recognises that there may not be a single or maximum tariff which will generally apply to all passengers on an aircraft. Nevertheless, practical steps might be taken (e.g. display in onboard point of sale material) to alert passengers to the likely higher charges to help avoid consumers receiving unexpectedly high bills.
- 6.12 The MNOs will also have a role to play in informing their customers in advance of the tariff which they will pay for using an MCA service. Ofcom will talk to all concerned parties to understand what steps they will be taking to ensure consumers understand the costs of making calls from on board an aircraft.
- 6.13 Ofcom will monitor this situation closely. If experience with these services indicates serious consumer detriment then Ofcom will take the appropriate action within its powers. However, MCA services are in their infancy and will be introduced slowly as aircraft are fitted with the relevant equipment. We therefore believe that it would be premature to predict serious problems at this stage.
- 6.14 Ofcom also recognises that these issues should be dealt with on a pan-European basis. Airline travel is an international business and UK consumers are likely to use airline services from many countries. If consumer detriment arises, actions on pricing information could be envisaged on a pan-European basis. Ofcom has raised this issue with the EU COCOM (Communications Committee).

⁷ http://www.erg.eu.int/doc/whatsnew/erg_07_46_2nd_release_erg_guidelines.pdf

⁸ "ERG (07) 86 International Roaming Regulation Guidelines".
http://erg.ec.europa.eu/documents/docs/index_en.htm

Section 7

Other services

Competition from WLAN services

7.1 The Advisory Committee for England enquired why WLAN development had not been considered alongside MCA in the consultation document.

Ofcom position

- 7.2 WLAN on aircraft is a different application to MCA services and is outside the scope of the EU work looking at MCA. WLAN services use a different set of frequencies (2.4 GHz / 5 GHz) which are used for licence-exempt services and are subject to a different set of regulatory, operational and technical requirements. From a radio regulatory point of view, it has been agreed at the European level that, for Short Range Devices (SRD), use of radio on aircraft is the same as that permitted on the ground. The aircraft safety certification aspects must of course remain in the hands of the appropriate aviation authorities.
- 7.3 The CEPT, through Working Groups on Frequency Management (WGFM) and Short Range Devices Maintenance (SRDMG) is considering the use of WLAN SRDs on board aircraft and it has concluded that such use is allowed under the same conditions provided in the relevant Annex of ERC Recommendation 70-03⁹, which sets out the general position on common spectrum allocations for SRDs. For aviation safety aspects, the CEPT is not the right body to address this matter which remains the responsibility of aviation regulators. Aircraft manufacturers or aircraft owners should consult with the relevant national or regional aviation bodies before the installation and use of such devices on board aircraft.
- 7.4 Further work is going on within the CEPT on the development of aircraft WLAN services with the possibility of imposing a minimum height restriction to minimise the potential for interference to terrestrial services. Following consultation with the CAA, Ofcom has been participating in this work and expects to incorporate its conclusions into the UK's National Regulations (the UK Frequency Allocation Table¹⁰ and Interface Requirement 2030 – Licence-exempt short range devices¹¹) when this work has been completed.
- 7.5 These services, especially in terms of voice over internet applications, could be a direct competitor in a converged market with MCA. It will be up to airlines to decide what system(s) they want to deploy. Rules about passenger behaviour and other onboard procedures appropriate to WLAN use would need to be certified by the relevant aviation authorities in the same way as those for MCA.

Limitation to GSM 1800 MHz

7.6 One individual respondent raised the concern that the MCA services should not be limited to just GSM 1800 MHz as it may give an unfair advantage to certain terrestrial operators.

⁹ <http://www.ero.dk/doc98/official/pdf/REC7003E.PDF>

¹⁰ <http://www.ofcom.org.uk/radiocomms/isu/ukfat/?a=87101>

¹¹ http://www.ofcom.org.uk/radiocomms/ifi/tech/interface_req/uk2030.pdf

Ofcom position

- 7.7 At present the only mobile service under consideration for deployment on aircraft is GSM using frequencies at 1800 MHz, and all the work going on in European forums is focused on this service. This decision was made at the European level to simplify the process and expedite the deployment of MCA services.
- 7.8 Ofcom understands that if the issues surrounding GSM 1800 MHz are satisfactorily resolved, then other mobile spectrum bands may also be considered for deployment of MCA. This would however require further regulatory and technical work to be undertaken at European level. It may however be more difficult to deploy MCA services in other mobile technology spectrum bands due to the physical radio properties of these bands.
- 7.9 The great majority of cellular handsets in use work to 1800 MHz, regardless of which terrestrial operator they normally use. Since handsets will roam onto the MCA service rather than their normal service provider, it is not clear that any terrestrial operator will gain any advantage if MCA services use 1800 MHz only.

Section 8

MCA in the context of European decision-making

European issues

- 8.1 It was generally acknowledged by respondents that MCA systems should be authorised on the basis of a common European approach. MCA services will be pan-European and possibly global and will need a coherent regime for authorisations and mutual recognition between Member States and other countries to allow the service to cross national borders. A common European framework for mutual recognition of authorisations from other jurisdictions would help the successful commercial launch of MCA services across Europe and beyond
- 8.2 T-Mobile and the GSM Association referred to the RSC and COCOM work and suggested that it should include more information on the MCA systems, such as installation documentation and specific power levels allowed for the aircraft, consistent with the requirements of ECC Decision (06)07¹².
- 8.3 O2 proposed that the RSC Decision and COCOM Recommendation should not finally be adopted until an appropriate number of countries' aviation authorities have approved onboard operational procedures and, as a result, sufficient evidence is available that the mutual recognition approach to this issue is a practical one.

Ofcom position

- 8.4 Ofcom agrees that MCA systems will benefit from being authorised on the basis of a consistent European approach and that it is important to work within a common European framework to address and support the necessary business requirements; enable mutual recognition of authorisations from other jurisdictions; and facilitate the successful commercial launch of these services across Europe.
- 8.5 Ofcom has always made it clear that its preference has been to work in concert with other European authorities in order to create a coherent pan-European regime for MCA. It will be desirable for this to develop into a global regime in due course. The responses to the consultation document strongly supported this approach.
- 8.6 Ofcom supports work to develop mutual recognition between Member States which will facilitate the free movement of MCA-equipped aircraft in the EU.
- 8.7 The RSC Decision and COCOM Recommendation make reference to the technical details of ECC Decision (06)07: Ofcom believes this provides adequate technical detail.
- 8.8 The COCOM Recommendation envisages either the licence-exempt route or the granting of individual rights for authorising MCA services. Ofcom and the other EU Member States will be working with both scenarios and need to recognise

¹² ECC Decision of 1 December 2006 on the harmonised use of airborne GSM systems in the frequency bands 1710-1785 and 1805-1880 MHz (ECC/DEC/(06)07) - <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCDEC0607.PDF>

each others authorisations whichever approach they adopt, to enable the deployment of MCA systems across Europe.

- 8.9 Ofcom's view is that the authorisation of spectrum use and of ECS on board aircraft is a necessary preliminary to the launch of MCA services, but is not by itself sufficient, since aircraft safety and passenger safety are paramount concerns. It is now for the authorities responsible for aircraft safety and passenger safety to decide on the required certification of specific aircraft and approval of operational procedures.
- 8.10 The Commission entered the draft RSC Decision and COCOM Recommendation into a written procedure on 22 January 2008. These procedures closed on 5 February 2008 with a positive opinion. It is anticipated that the two measures will be formally adopted by the Commission and published in the Official Journal around April 2008. Member States will then have six months from this date of adoption to implement both measures.

Section 9

Conclusions and way forward

Conclusion

- 9.1 Ofcom is committed to creating a regulatory environment in which new services can be launched for the benefit of citizens and consumers. In the case of MCA Ofcom recognises concerns expressed about the potential for annoyance to passengers; but we consider that, in the competitive and international market for air travel, it is a matter for airlines to strike the right balance between offering services and considering the preferences of their customers.
- 9.2 The framework set out in the RSC Decision and COCOM Recommendation forms the basis for the European common approach and the inter-administration agreements which ensure that authorisations for MCA services are mutually recognised by participating countries. In line with this framework, which will soon be adopted, Ofcom will proceed with the authorisation of MCA services.
- 9.3 Ofcom stresses once more that its remit is limited to spectrum and ECS regulation. No MCA systems would be allowed to operate without the airworthiness certification by the relevant aviation safety authority and using onboard procedures which are also approved by the relevant aviation authorities.
- 9.4 It will be for the relevant regulatory bodies responsible for aircraft safety, welfare and security and airlines to consider the safety, passenger and security concerns raised in the responses to the consultation.

Next steps

- 9.5 In line with the European regulatory framework, Ofcom will issue an NoV to existing aircraft licences, so that the existing licensees (usually the aircraft's owner or operator) will also be licensed to use the relevant spectrum on board the aircraft for MCA service. NoVs will be available when Ofcom has made appropriate arrangements with the CAA for their inclusion in and addition to aircraft radio licences. The NoVs will be available on request from the CAA and applicants will have to apply in writing to obtain a NoV.
- 9.6 The NoVs will be issued free of charge. Licensees should not install or use MCA systems until their aircraft radio licence has been varied.
- 9.7 Ofcom expects that the issuing of NoVs will commence as soon as possible subject to the completion of the relevant Interface Requirement (IR) and ETSI Technical Specification (TS) process. Ofcom's draft IR was submitted to the European Commission on 30 January 2008: Ofcom expect the European Commission's detailed response shortly. The ETSI TS is currently being drafted. We will notify stakeholders when the NoVs become available.
- 9.8 Any enquiries related to this statement and the background for issuing NoV's for MCA services can be addressed to:

Aeronautical and Maritime Team,
Ofcom Licensing Centre,
Ofcom,

Riverside House
2a Southwark Bridge Road,
London SE1 9HA

Tel: +44 (0) 20 7981 3131
Fax: +44 (0) 20 7783 4235

Email: contact@ofcom.org.uk

- 9.9 The Wireless Telegraphy (Exemption) Regulations 2003 (SI 2003/74) will be amended to extend the current exemption on terrestrial mobile terminal use and a United Kingdom Interface Requirement will be written to cover the basic technical parameters for the aircraft base station and NCU component.
- 9.10 Providers of MCA systems must have an International Mobile Country Code (MCC) and Mobile Network Code (MNC) to enable passengers' handsets to roam onto the MCA network. These codes are allocated through the ITU. The following web link details the process for obtaining an MCC and MNC from the ITU:
<http://www.itu.int/rec/T-REC-E.212/en>.
- 9.11 Ofcom will continue to play an active part in all relevant EU regulatory and ETSI groups to progress the work necessary to bring outstanding issues (e.g. completion of the ETSI Technical Standard) to a conclusion and progress any future work items to extend the application of MCA both globally and to other radio spectrum frequency bands.
- 9.12 In line with the requirements of the COCOM Recommendation and depending on the impact of the deployment of MCA services, Ofcom will keep under review the regulatory environment under which it authorises MCA services in the UK.

Annex 1

Summary of the responses to the MCA consultation

A1.1 The following provides a summary of the response comments to the MCA consultation.

A1.2 Question 1:

Q1 – Do you have any comment in relation to the authorisation of MCA systems on the basis of a common European approach?	
Response comments	Ofcom position
<p>MCA systems do need to be authorised on the basis of a common European approach and that this position is the most desirable.</p> <p>MCA will be a true pan European (possibly global) service and will need a coherent regime for authorisations and mutual recognition between Member States to maintain the sustainability of the service as it crosses territorial borders.</p> <p>It is important to work within a common European framework to address and support the necessary business requirement; enable mutual recognition of authorisations from other jurisdictions and facilitate the successful commercial launch of these services across Europe.</p> <p>European approach needs to progress in partnership with the relevant aviation agencies and that this position needs to go beyond Europe and be extended globally.</p> <p>Concerns were also expressed in regard to the Radio Spectrum Committee Decision and Communications Committee Recommendation; interference to terrestrial and avionic systems; behavioural issues; limiting competition by restricting the service to only the GSM 1800 MHz band and general increased agitation within the aircraft due to the rise in noise level.</p>	<p>It is generally acknowledged that a multi-lateral approach to authorisation will be desirable and that states should mutually recognise each others' authorisations.</p> <p>Ofcom agrees with the consensus view that it is important to develop the deployment of MCA services within a common European framework.</p> <p>This will facilitate the mutual recognition process between European Member States.</p>

A1.3 Question 2:

Q2 – Do you agree that the ECC Decision and associated technical requirements and limits will adequately protect terrestrial networks?	
Response comments	Ofcom position
<p>Some respondents were confident that the interference issues had been appropriately addressed and that the technical requirements of the ECC Decision would be sufficient to protect terrestrial networks whilst others were not convinced.</p> <p>The responses that agreed the ECC Decision requirements were sufficient to protect terrestrial networks felt that the limits will adequately protect terrestrial networks from interference. They feel that MCA system operators will be able to meet the specified technical conditions and will be able to comply with the ECC Decision and associated technical requirements. Some however qualified this confidence so long as these conditions were implemented by all Administrations.</p> <p>Those responses that felt the ECC Decision requirements are insufficient to protect terrestrial networks cited concerns relating to the ECC analysis being based on a theoretical model and that it over estimates the technical characteristics of a terrestrial network; technical issues relating to the impact from increased E.I.R.P. levels on a terrestrial network; the functionality of the Network Control Unit (NCU) component as a jammer; the possibility of a rise in the radio noise floor along aircraft corridors and the difficulty of identifying and addressing interference sources.</p>	<p>Ofcom believes that the limits set in the ECC Decision will minimise any danger of interference to the terrestrial networks.</p> <p>Should harmful interference be detected and reported to Ofcom, we will investigate in as timely and proportionate a manner as possible to determine whether the interference came from an aircraft; and if so which one. If it is proven that an individual system or a cumulative effect causes harmful interference Ofcom will take the necessary action.</p>

A1.4 Question 3:

Q3 – Do you agree that the initial authorisation regime of equipment for MCA should be via licensing rather than licence-exemption?	
Response comments	Ofcom position
<p>Overall there was a majority support for the initial authorisation regime of MCA equipment to be via a licensing approach.</p> <p>There is no reason why MCA operators should not be subject to the same regulatory environment as terrestrial operators; it would assist any necessary enforcement action by</p>	<p>Ofcom agrees with the licensing approach</p> <p>Each aircraft already holds a WT Act licence for the radio systems which it uses for navigation and air-to-ground communication. Installation of a further wireless device will be closely controlled under the airworthiness regulations. The WT licence is renewed</p>

<p>exercising a degree of control and would help in regulating the use of the NCU.</p> <p>The alternative view argued that the least burdensome, light regulatory regime/framework is the right approach and any suitable national framework needs to be founded on key principles as established in the existing international framework for aeronautical communications. Respondents with this view were in favour of the lightest practicable authorisation regime and considered a regime of mutual recognition of licences issued by the country of origin of the airline is best served by the explicit grant of licences under a simple procedure which demonstrates that the network operator is duly licensed in the country of origin.</p> <p>The initial authorisation regime should be via licence-exemption as MCA services will be a pan-European service and will not cause interference to either avionic equipment or terrestrial networks. It was argued that assuming there is an absence of harmful interference to terrestrial networks, such systems are entitled to be granted licence-exempt status as a matter of EU (Authorisation Directive) and UK law. It was further stated that all equipment on board should be licence-exempt as this constitutes the simplest regime to administer and least burdensome approach to facilitate the commercial introduction of this new service.</p>	<p>annually and the WT Act 2006 provides that the Captain of an aircraft could be liable in the event of WT offence on board. Article 36.1 of the ITU Radio Regulations also states that the service of a mobile station is placed under the authority of the person responsible for the aircraft carrying the mobile station. Adding a further WT device to the existing aircraft WT licence therefore appears to be no more than a minor additional administrative overhead.</p>
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A1.5 Question 4:

<p>Q4 – Do you agree that the aircraft operator should be the licensee of the radio equipment used for MCA?</p>	
<p>Response comments</p>	<p>Ofcom position</p>
<p>Overall there was a majority support for the for the aircraft operator to be the licensee of the MCA equipment. It was felt this would assist in resolving concerns aircraft operators may have; would tie in with existing international aviation rules and UK obligations; will assist in resolving any cases of interference to terrestrial networks and would facilitate the speed with which services could be deployed.</p> <p>As the aircraft will be governed by the Operator’s country of registration, and will be subject to the complexities of national as well</p>	<p>Ofcom agrees with the position that the aircraft operator should be the licensee. This approach fits in with both aeronautical and Wireless Telegraphy Act 2006 licensing requirements.</p> <p>Ofcom notes that in practice, no such services can be operated without the active participation of the aircraft operator, who must not only ensure the safe installation of the equipment, but must also control the operation of the service while airborne.</p> <p>As mentioned in Q3 a comprehensive</p>

as international aviation rules, it was considered that authorising the Aircraft Operator rather than the MCA service provider is an appropriate, measured and consistent approach.

By contrast several responses argued that it should be the MCA service provider who is the licensee as it is they who will design, integrate and control the functioning of the system. It was felt that the MCA service providers are in the best position, and it is in their interest, to manage the correct operation of the onboard equipment and to resolve any matters of potential harmful interference in an efficient, effective and comprehensive manner.

A further argument was put forward that by licensing the aircraft operator this could add delay to resolving any reported cases of interference as Ofcom would have to approach all aircraft operators providing a service. As the MCA service providers will be responsible to the airline and passengers for the correct functioning of the system it would be simpler for Ofcom to contact a limited number of service providers than all the airlines providing a service.

A view was also expressed that there is no compelling aviation reason why the aircraft operator has to be the licensee and requiring the airline to be the licence holder and the aircrew to be responsible for remedial action in the unlikely case of interference or other regulatory reasons why the service should be disabled, may therefore be ineffectual. In addition, conditions of commercial partnerships that form agreement to install systems on board aircraft often require that the MCA service provider – which is uniquely positioned to manage the system's conformance with regulatory requirements – takes responsibility for acquiring the necessary regulatory approvals. Requiring airlines to develop the competence and skills to secure and comply with licence requirements will therefore increase the overall cost of the service which will have to be passed on to the consumer in the last instance.

process for the WT licensing of aircraft already exists, and there is already responsibility on the captain and aircraft operator for the operation of many items of WT equipment on board. This suggests that this new application could simply be added onto the existing WT regime, with a minimum additional regulatory burden.

It would therefore be appropriate for the aircraft operator to be the licensee. There would of course be no obstacle to the aircraft operator making its own choice of partners for the technical and commercial operation of the service, both on board and on the ground.

A1.6 Question 5

Q5 – Do you agree that the authorisation of radio equipment for MCA in the 1800 MHz spectrum band should be granted via an NoV to the existing aircraft licence?

Response comments	Ofcom position
<p>It was generally felt that granting a NoV to the existing aircraft licence was simple and effective, fits in with existing aeronautical regulatory requirements and would have a minimal administrative impact.</p> <p>A few responses argued that this was an inappropriate method for authorising the MCA equipment and that the MCA service provider should be authorised instead. It was reasoned that the aircraft operator should not be considered the licensee as while the aircraft crew does have direct control over whether the MCA system is switched on or off and can control other elements such as the enabling of voice or text service, the crew alone does not control the functioning of the system as a whole. It is the MCA service provider who will be responsible for this.</p> <p>Two responses also thought that the proposal in the draft COCOM Recommendation for a pan-European aircraft register would remove the need for issuing NoV's on a national basis.</p> <p>Other views expressed were either ambivalent; simply disagreed with the question, or thought there should be a separate licensing regime. One common view however was that MCA services should only be authorised so long as they do not cause interference to the aircraft and interference issues can be enforced.</p>	<p>Ofcom agrees that the authorisation of radio equipment for MCA in the 1800 MHz spectrum band should be granted via an NoV to the existing aircraft licence.</p> <p>As above this process fits in with both aeronautical and Wireless Telegraphy Act 2006 licensing requirements.</p> <p>As above in Q3 and Q4 wireless telegraphy licences are granted to aircraft operators and they detail the frequency ranges of the radio equipment on-board the aircraft, (such as those used for navigation etc), and the relevant legal instruments with which the licensee is obliged to comply. New radio equipment is generally added to the aircraft licence by a "Notice of Variation". Wireless telegraphy licences for aircraft are distributed by the CAA on behalf of Ofcom.</p> <p>Adding MCA equipment to this licence via a NoV is therefore a simple measure with low administrative overhead.</p>

A1.7 Question 6:

Q6 - Do you agree that under the current licensing framework no additional fee should be payable for MCA spectrum authorisation?

Response comments	Ofcom position
<p>Those who supported the proposal that no additional fee should be paid argued that there is no spectrum management reason to charge a fee. This argument was that the spectrum used for this service cannot be considered a scarce resource because it can be reused on each aircraft and hence should not be subject to the same conditions</p>	<p>Ofcom agrees with the argument that there should not be an additional fee for the award of the NoV.</p> <p>Aircraft already have to pay a licence fee for their aircraft radio licence and there is therefore no administrative reason to charge</p>

<p>applicable to terrestrial assignments which cannot be reused amongst terrestrial operators.</p> <p>Supplementary arguments considered that MCA services are fundamentally different from many other services. Principally, MCA services do not require the protection of exclusive use; and are offered as “unilateral” roaming services to other licensed network operators. As the spectrum will be used on a secondary (non-exclusive), non-interference basis, deployment of MCA systems will in fact increase the overall efficiency of the use of this spectrum. To apply additional fees for access to a system which requires no additional co-ordination would be inappropriate.</p> <p>Those who thought an additional fee should be payable argued:</p> <ul style="list-style-type: none"> • that all use of the radio spectrum should be paid for; • any additional fee should be high; • an additional fee would be required to cover administrative costs of issuing an NoV; • a fee is required to cover the cost of investigating and monitoring cases of interference; • an additional fee would act as an incentive to install efficient MCA systems were efficient to do so. 	<p>an additional fee for the issue of the NoV.</p> <p>The policy rationale of an additional charge would be to incentivise the licence-holder to use the spectrum efficiently. Given that the spectrum on an aircraft can only be used by the aircraft operator, no one else would be denied the opportunity to use the spectrum and therefore the opportunity cost of the spectrum would be zero. In this situation AIP should not be applied.</p> <p>As the fees for aircraft licensing are based on cost recovery, it is more appropriate for Ofcom to simply include MCA in the existing aircraft licensing fee regime. (The annual fee for an Aircraft Radio Licence depends on the approved maximum take off weight of the aircraft and can be £20, £150 or £350 per aircraft.)</p>
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A1.8 Question 7:

<p>Q7 – In your opinion do you think that MCA services would fall within the scope of the EC Regulation on roaming? Please explain why you think that MCA services would or would not fall within the scope of this regulation.</p>	
<p>Response comments</p>	<p>Ofcom position</p>
<p>It was argued that within the European Community MCA services do fall within the Roaming Regulation and that it would be outside the spirit of the Regulation to allow high priced mobile communications services within the EC. If MCA services were not covered by the Regulation this could lead to significant customer confusion, if calls on intra-EC flights led to excessive roaming charges.</p> <p>Other responses felt the EC Regulation on roaming did not apply to these MCA services. They argued that it is incorrect to</p>	<p>The applicability (or not) of the Regulation will be a matter for EU institutions to decide. However the wording of the EC regulation seems to suggest that MCA services, if they fall outside the definition of “terrestrial public mobile telephone network”, also fall outside the scope of the Regulation.</p> <p>The tariffs for these in-flight MCA services might be higher than those charged for terrestrial services due to the differing costs of MCA compared to terrestrial networks. Consumers should therefore be made aware in advance of the price of using the service.</p>

<p>include MCA services within the scope of the Roaming Regulation as they are designed to address existing terrestrial MNO charges only. It was also argued that the EC Regulation was developed in response to particular terrestrial roaming issues and the Roaming regulation should not apply as MCA systems are subject to different cost structures and other factors when compared, to terrestrial networks and their operators.</p> <p>Concerns were also expressed as to how the Roaming Regulation will apply to such systems and consequently, how prices might be benchmarked, whether this will apply to UK domestic flights as well as to international services and how transparency of consumer pricing information by the MCA providers will be advertised.</p> <p>A few responses noted that the ERG has already concluded that MCA services fall outside the scope of the Regulation.</p>	<p>Ofcom will monitor closely the potential for consumer harm in this area.</p>
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Annex 2

MCA Developments

A2.1 The following section provides an overview of developments within Europe and globally since the closure of the consultation.

ETSI

A2.2 The ETSI working group ERM GSMOBA held a resolution meeting for the draft Harmonised Standard (HS) EN 302 480 for MCA systems on 12 December 2007. This meeting was to address the comments raised during the Public Enquiry phase of the ETSI EN process.

A2.3 The ETSI resolution meeting produced a revised standard based on the comments received. The modified standard and the resolution comments will now be presented to the ETSI ERM and ETSI MSG for approval to go forward to national vote. If the HS is approved then the standard will be published on 1 April 2008.

A2.4 The group also worked on the Technical Specification (TS) ETSI TS 102 576. The work on the TS is on-going and a final completion date is difficult to determine as it will depend on the results of the tests that are being analysed and aligning these results between the tests from different companies.

Radio Spectrum Committee

A2.5 The RSC Decision requires Member States to make the 1800MHz frequency band available for MCA systems on a non-protected, non-interference basis according to specified technical conditions. The RSC Decision is based on the December 06 ECC Decision (ECC Decision (06)07 and also refers to the CEPT Report 016 and the harmonised standard developed by ETSI.

A2.6 The approved Decision includes some minor changes since the last draft, notably the title has been changed to alleviate confusion (the word 'onboard' has been deleted) and the Commission has added a general statement about minimum altitude in the core text of the Decision and the specific height of 3000m was detailed in the annex.

COCOM

A2.7 The European Communications Committee (COCOM) has in parallel developed a Recommendation for the coordination and mutual recognition of national authorisations granted for MCA.

A2.8 Final discussions, before the Recommendation was agreed, focused on the strengthening of previous text with respect to air safety, the reference to possible recognition of non-EU aircraft authorisation; the links with the RSC Decision; a common MCA Register to be maintained by the relevant operators, and reference to the ETSI Standards

A2.9 The Commission entered the RSC Decision and COCOM Recommendation into a written procedure on 22 January 2008. These procedures closed on 5 February 2008 with a positive opinion. It is anticipated that the two measures will be formally adopted by the Commission and published in the Official Journal around April 2008.

Member States will then have six months from this date of adoption to implement both measures.

ECC

- A2.10 The CEPT Electronic Communications Committee (ECC) reached a Decision in December 2006 ECC/DEC/(06)07¹³. This Decision covers the free circulation and harmonised usage of MCA systems and sets out the technical limits which must be observed to ensure that MCA systems do not cause any harmful interference.
- A2.11 ECC Decisions are regulatory texts providing measures on significant harmonisation matters, which CEPT member NRAs are strongly urged to follow. As any other CEPT deliverables, ECC Decisions are not obligatory legislative documents.
- A2.12 To date seven Administrations (Denmark, Finland, Germany, Iceland, Norway, Slovenia and Sweden) have signed up to implement the requirements of the ECC Decision.

ECC WGSE (PT7).

- A2.13 WGSE (PT7) continues to investigate the compatibility between GSM equipment on board aircraft and terrestrial networks using the 2.6 GHz band. This work is to ensure that the MCA system does not cause harmful interference to any terrestrial networks using the 2.6 GHz band. This will be included in a new Annex G to EEC Report 93. The study follows the same process as carried out in the previous ECC Report 093 and the results will be added as an annex to this Report.
- A2.14 The proposed Annex G has now been sent to public consultation. However the new annex excludes any values for Long Term Evolution (LTE). These values for the 2.6 GHz equipment have not yet been agreed, but it is expected they will be agreed soon.
- A2.15 The new Annex G is on the use of the 2.6 GHz band by the NCU of the GSM onboard aircraft system (this is to prevent the connectivity between the 2.6 GHz mobiles on-board aircraft connecting to ground networks and is not intended to provide any on-board connectivity). However the draft revised Technical Annex for ECC Decision (06)07 which will include NCU power values for the frequency band 2500 - 2690 MHz, has not been finalised and agreed by WGSE. The draft Technical Annex is expected to be ready for the WGSE meeting in May 2008 and would be expected to include LTE (E-UTRA), if the 3GPP Technical Specification is completed by then.

Global developments

- A2.16 In April 2007 the Australian Communications and Media Authority (ACMA) authorised Qantas to conduct a GSM and GPRS trial on one aircraft (a domestic Boeing 767) for a maximum of 12 months. The initial test was scheduled to last for 3 months. In October 2007 Qantas announced it was extending the trials until February 2008. It is expected that Qantas will release its test results later in 2008. At present Qantas's trial only permits email and mobile text services. It does not permit voice calls. The ACMA and other Australian Government agencies will consider what further action to take next once they have analysed Qantas's results.

¹³ http://www.erodocdb.dk/docs/implement_doc_adm.aspx?docid=2184

- A2.17 Between 27 August - 8 October 2007 the Irish communications regulator (Commission for Communications Regulation (COMREG)) ran a consultation on Mobile Communications on Board Aircraft (MCA)¹⁴. The consultation offered four possible regulatory options ranging from prohibiting use to general authorisation.
- A2.18 Before implementing the requirements of ECC/DEC(06)07 France is waiting for the position of its civil aviation authorities on MCA. However on 20 December 2007 Air France and OnAir issued a press release¹⁵ announcing that Air France had become the first airline in the world to offer an in-flight mobile phone service on an international flight between Paris and Warsaw. Air France announced that it is conducting a six month trial on a single Airbus A318 to enable the use of mobile communication (text and email only) devices during flights. The trial began on 17 December 2007 and will take place on short-haul flights within Europe and to and from North African destinations.

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http://www.comreg.ie/publications/consultation_on_mobile_communications_on_board_aircraft_mca.583.102744.p.html

¹⁵ <http://www.onair.aero/admin/fil/AF%20OnAir%2020%20Dec%202007%20FINAL.pdf>