



EUROPEAN COMMISSION

DIRECTORATE-GENERAL FOR COMMUNICATIONS NETWORKS, CONTENT AND TECHNOLOGY

The Director-General

Brussels,
CNECT B4

MANDATE TO CEPT

TO UNDERTAKE TECHNICAL STUDIES ON THE POTENTIAL USE OF 5G TECHNOLOGY AND ON MAKING THE USAGE OF THE NETWORK CONTROL UNIT (NCU) OPTIONAL ON BOARD MCA ENABLED AIRCRAFT

1. PURPOSE

The purpose of this mandate is to study the possibility of introducing 5G non-AAS technology and making the usage of the Network Control Unit (NCU) optional, for Mobile Communications on board Aircraft (MCA), in order to satisfy the EU policy objectives listed below.

5G

The deployment in Europe of terrestrial 5G network infrastructure is central for meeting the Gigabit connectivity targets and for enhancing the Union's industrial strategy and international competitiveness. In 2016, the Commission adopted the 5G Action Plan to make sure that the Union has the connectivity infrastructure necessary for its digital transformation as of 2020 and for comprehensive 5G deployment. The related Commission Communication on the Gigabit Society sets the ambition of ubiquitous access to broadband connectivity¹. More recently, the Commission Communication on Shaping Europe's Digital Future of February 2020² sets out the need to accelerate investments in Gigabit connectivity under its key objective "Technology that works for people".

In addition to the harmonisation of the three 5G pioneer bands (700 MHz, 3.6 GHz and 26 GHz), a number of other EU-harmonised bands have become "5G ready", including for usage with Active Antennas Systems (AAS) notably the paired terrestrial 2 GHz and the 2.6 GHz bands, through updates of the relevant EU Implementing Decisions. The update of EU harmonised technical conditions in the 900 and 1800 MHz bands is also under study by the CEPT in response to a relevant EC mandate.

¹ COM(2016)587 "Connectivity for a Competitive Digital Single Market – towards a European Gigabit Society".

² COM(2020)67 "Shaping Europe's digital future".

Further to a request from MCA stakeholders, CEPT is currently studying the harmonised technical condition to operate 5G non-AAS connectivity for MCA in the 1710-1785 MHz and 1805-1880 MHz (1800 MHz) band.

NCU

The NCU is part of the MCA onboard system. It is designed to ensure that signals transmitted by ground-based mobile systems (ECS networks) are not detectable within the aircraft cabin and that the user terminals on the aircraft transmit at a minimum power level so that they only register with the onboard MCA Base Station.

Further to the last update of the EC framework on MCA, NCU remains mandatory for the UMTS bands (900 MHz and 2100 MHz)³ to prevent User Terminals onboard the aircraft from seeing terrestrial UMTS networks. The deployment of the NCU has cost implications and should therefore be regularly reviewed in terms of its necessity.

A technical solution based just on the control function of the onboard MCA Base Station (i.e. without the need to deploy a full-fledged NCU system) in order to prevent user terminals from attempting connections to the ground should be studied in order to assess the possibility to operate MCA services on board aircraft without NCU. Enabling MCA systems without NCU would simplify the regulatory framework and reduce operating costs, thus fostering a broader adoption of MCA. It could also reduce the number of "uncontrolled" active mobile devices on board aircraft.

Making the NCU optional was already considered in a previous mandate on MCA⁴ and the consequent CEPT Report 63⁵. MCA stakeholders argue that this could be reviewed taking into consideration different assumptions like the primary common pilot channel (CPICH)⁶ pollution from terrestrial UMTS networks as seen from the aircraft, which had not been considered in CEPT Report 63, as well as the reduction of UMTS usage in Europe due to evolution towards 4G and 5G.

2. EU POLICY OBJECTIVES

Better regulation: the EU has taken the engagement to design policies and laws so that they achieve their objectives at minimum cost. This ensures that policy is prepared, implemented and reviewed in an open, transparent manner, informed by the best available evidence and backed up by involving stakeholders. To ensure that EU

³ CEPT Report 63 concluded that: *“For UMTS systems, [...] an NCU is necessary to prevent connection of User Equipment onboard to mobile communications networks on the ground, and that the resulting connection will cause a partial and temporary reduction in capacity for the connecting and neighbouring ground based cells”*.

⁴ RSCOM15-45rev.1

⁵ <https://www.ecodocdb.dk/download/d8623f8a-1ff1/CEPTREP063.pdf>

⁶ To distinguish base stations in the network from each other, to perform handover decisions, cell selections and reselections, each base station transmits on the primary common pilot channel (P-CPICH) and its level is transmitted at a constant power.

action is effective, the Commission assesses the expected and actual impacts of policies, legislation and other important measures at every stage of the policy cycle - from planning to implementation, to review and subsequent revision.

Competitiveness: should technical studies prove that the MCA services without NCU could coexist with terrestrial mobile networks, keeping the undue obligation of NCU installation would constitute an undue hindrance to competitiveness. Inclusion of new 5G connectivity in the MCA capability is needed in order to provide the highest service standards to European citizens.

Socioeconomic dimension: Simplifying and making a less complex regulatory framework for MCA operation while at the same time adding 5G connectivity, facilitates connectivity to citizens during travel, whilst making use of the latest available technologies.

3. JUSTIFICATION

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, as modified by Commission Implementing Decisions 2013/654/EU⁷ and 2016/2317/EU⁸, contains the obligation to install a Network Control Unit⁹ in all MCA enabled aircraft.

Implementing Decision 2013/654/EU imposes, *inter alia*, the upgrading of NCUs in order to cover new terrestrial mobile frequencies. This involves several steps including the design, product certification, airworthiness certification, marketing and installation (which can be done only on the occasion of major aircraft maintenance overhauls).

Meanwhile, at this stage, no interference case has been reported to or from terrestrial mobile systems. Furthermore, every day several mobile terminals are inadvertently left in "transmit" mode in "non-connected" aircraft. It should however be reminded that the sources of interferences (as well as of any signalling issues) on mobile networks are more and more difficult to detect.

Pursuant to Article 4(2) of the Radio Spectrum Decision¹⁰ the Commission may issue mandates to the CEPT for the development of technical implementing measures with

⁷ 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 communication services on aircraft (MCA services). OJ L303, 14.11.2013, p.48.

⁸ 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.

⁹ According to Article 2 (4) of Decision 2008/294/EC, "*network control unit (NCU) means equipment to be located in the aircraft that ensures that signals transmitted by ground-based mobile electronic communication systems listed in Table 2 in the Annex are not detectable within the cabin by raising the noise floor inside the cabin in mobile communication receive bands*".

¹⁰ Decision 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, OJ L 108 of 24.4.2002.

a view to ensuring harmonised conditions for the availability and efficient use of radio spectrum necessary for the functioning of the internal market. Such mandates shall set the tasks to be performed and their timetable.

4. TASK ORDER AND SCHEDULE

CEPT is herewith mandated to undertake work to introduce 5G non-AAS technologies on board MCA equipped aircraft and to determine the possibility to make the installation of a Network Control Unit on board MCA equipped aircraft optional.

Task 1

Study and assess conditions to operate 5G non- AAS connectivity for MCA in the 1800 MHz (1710-1785 MHz and 1805-1880 MHz) frequency band and develop harmonised technical conditions for the consequential revision of Commission Implementing Decision 2008/294/EC (as amended).

Task 2

Study and assess whether and under what conditions the usage of an NCU in MCA operations could be made optional.

In the work carried out under the Mandate, the general and specific policy objectives of the RSPP, such as effective and efficient spectrum use and the support for specific Union policies shall be given utmost consideration. In implementing this mandate, CEPT shall, where relevant, take utmost account of EU law applicable and support the principles of service and technological neutrality, non-discrimination and proportionality insofar as technically possible.

CEPT should provide deliverables under this Mandate according to the following schedule:

Delivery date	Deliverable	Subject
March 2021	Interim Report from CEPT to the Commission	Description of work undertaken, initial assessment and, if available, interim results.
September 2021	Draft Report from CEPT to the Commission	Description of work undertaken and final results subject to public consultation.
December 2021	Final Report from CEPT to the Commission, taking into account the outcome of the public consultation.	Description of work undertaken and final results.

CEPT is requested to report on the progress of its work pursuant to this Mandate to all meetings of the Radio Spectrum Committee taking place during the course of the Mandate.

The Commission, with the assistance of the Radio Spectrum Committee and pursuant to the Radio Spectrum Decision, may consider applying the results of this mandate in the EU, pursuant to Article 4 of the Radio Spectrum Decision.