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RADIO SPECTRUM COMMITTEE

Working Document

**Opinion of the RSC
pursuant to Advisory Procedure under Article 4 of Regulation 182/2011/EU and
Article 4.2 of Radio Spectrum Decision 676/2002/EC**

Subject: Mandate to CEPT to review the harmonised technical conditions for use of the 900 MHz and 1800 MHz frequency bands for terrestrial wireless broadband electronic communications services in support of the Internet of Things in the Union

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MANDATE TO THE CEPT

TO REVIEW THE HARMONISED TECHNICAL CONDITIONS FOR USE OF THE 900 MHZ AND 1800 MHZ FREQUENCY BANDS FOR TERRESTRIAL WIRELESS BROADBAND ELECTRONIC COMMUNICATIONS SERVICES IN SUPPORT OF THE INTERNET OF THINGS IN THE UNION

PURPOSE

This Mandate aims at reviewing and adapting, if necessary, the EU-harmonised technical conditions for the continued use of the EU-harmonised 880-915 MHz / 925-960 MHz ('900 MHz') and 1710-1785 MHz / 1805-1880 MHz ('1800 MHz') frequency bands for terrestrial wireless broadband (WBB) electronic communications services (ECS) with view to responding to evolution of market demand with particular focus on applications for the Internet of Things (IoT) including machine-type communications. Its deliverables should observe the principle of technology and service neutrality, promote flexible and efficient spectrum use and facilitate economies of scale of equipment.

The Commission is monitoring standardisation and market developments related to 5G and will assess in due time the need to amend the technical conditions in both bands, based on a follow-up mandate to CEPT, in order to ensure these are '5G-ready'.

POLICY CONTEXT AND INPUTS

The ITU-R vision for the next-generation (5G) mobile telecommunications sets out three major 5G usage scenarios – enhanced mobile broadband, massive machine type communications, and ultra-reliable and low latency communications. In particular, the latter two scenarios imply that pervasive IoT wireless communications are timely integrated in spectrum usage conditions for relevant EU-harmonised bands.

In terms of IoT, there are multiple technologies using different bands. Regarding mobile cellular bands, three novel technologies have been defined: (i) Extended Coverage GSM IoT, (ii) LTE Machine Type Communication (MTC) and evolved MTC (eMTC), and (iii) Narrowband IoT (NB-IoT) which can operate in an in-band, guard-band or stand-alone mode. These technologies can be readily used in bands designated for terrestrial WBB ECS. 5G standardisation is making progress at 3GPP¹ with the goal to deliver comprehensive norms, including on IoT use, at the end of 2019. A major track of 5G standardisation is dedicated to the so-called New Radio (NR) interface.

The 900 MHz and 1800 MHz frequency bands are harmonised for terrestrial WBB ECS² in a technology-neutral way on the basis of multiple wireless communications standards, which ensure coexistence with GSM systems. At present, the 1800 MHz band is a leading band for 4G deployments as it accommodates more than 45% of the world-wide LTE networks³. At the

¹ 3GPP Releases 15 and 16

² By virtue of Council Directive 87/372/EEC as amended by Directive 2009/114/EC, and Commission Decision 2009/766/EC as amended by Commission Decision 2011/251/EU

³ Source: Global mobile Suppliers Association, November 2016

same time, both bands are still used for 2G technology (GSM and its enhancements), including for machine-type communications.

In its Spectrum Roadmap for IoT⁴, the Radio Spectrum Policy Group (RSPG) takes the view that designating additional bands for IoT is not needed as further access to spectrum for IoT can be enabled in other ways, including through technical harmonisation measures which allow IoT use. In this regard, as frequency bands designated for WBB ECS may be used for emerging IoT applications and services, it should be ensured in line with the principle of technology neutrality that the existing harmonised technical conditions in such bands fit with IoT requirements.

Therefore, the suitability of the EU regulatory framework for the 900 MHz and 1800 MHz bands needs to be studied with particular focus on IoT applications. Such approach would incentivise investment, reduce equipment cost and capital expenditure through economies of scale, and render benefits for businesses and citizens. For the sake of continuity in the regulatory framework, these studies should focus on applicable *standards* and relevant frequency parameters and also ensure co-existence with current deployments in both bands.

CEPT has completed analysis of the technical conditions for the future deployment of wideband and narrowband machine-to-machine communications in EU-harmonised bands currently in use for terrestrial WBB ECS (s. ECC Report 266⁵). The outcome of these studies would generate synergies in delivering results under this Mandate within a short timeframe and may also advise on the need to review the technical conditions in other EU-harmonised bands. According to ECC Report 266, for the EU-harmonised frequency bands under FDD mode other than the 900 MHz and 1800 MHz bands, the current regulatory framework based on least restrictive technical conditions (BEM) does not require a particular update for usage for IoT, including the three novel technologies as described above.

In its "Strategic Roadmap towards 5G for Europe: Opinion on spectrum related aspects for next-generation wireless systems (5G)"⁶, the RSPG recognises the need to ensure that technical and regulatory conditions for all EU-harmonised frequency bands for wireless broadband electronic communications services *are fit for 5G use*. The Commission services are monitoring technology and market developments on 5G and will respond to any need to amend the technical conditions of EU-harmonised bands used for terrestrial WBB ECS (including the 900 MHz and 1800 MHz bands) in a follow-up mandate to CEPT.

JUSTIFICATION

Pursuant to Article 4(2) of the Radio Spectrum Decision the Commission may issue mandates to the CEPT for the development of technical implementing measures with 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. Pursuant to Article 1 of the Radio Spectrum Decision, activities under the Decision must facilitate policy making with regard to the strategic planning and harmonisation of radio spectrum use as well as ensure the effective implementation of radio spectrum policy in the EU while serving the aim of coordination of policy approaches.

⁴ RSPG17-006 final

⁵ Link: <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCRep266.pdf>

⁶ RSPG16-032 final

Furthermore, they shall take due account of the work of international organisations related to spectrum management such as the ITU and the CEPT.

The Radio Spectrum Policy Programme (RSPP) requires Member States and the Commission to foster the development of standards and the harmonisation of spectrum allocation for IoT communications across the Union⁷.

Advances in standardisation regarding IoT, also relevant for the evolution towards 5G, call for a swift and coordinated Union-level process on updating the technical conditions in EU-harmonised bands, wherever necessary. Therefore, the harmonised technical conditions for terrestrial WBB ECS in the 900 and 1800 MHz frequency bands should be reviewed and timely adapted to cater for growing IoT use in the short term. Such approach will contribute to the overarching Union policy objective of providing high-quality (wireless) connectivity.

TASK ORDER AND SCHEDULE

CEPT is herewith mandated to review the harmonised technical conditions for spectrum use in the 900 MHz and 1800 MHz frequency bands for the continued provision of terrestrial wireless broadband electronic communications services with view to supporting IoT usage scenarios and applications. CEPT should give utmost consideration to overarching Union-level spectrum policy objectives⁸ such as efficient spectrum use and take utmost account of applicable principles of Union law such as technological and service neutrality, non-discrimination and proportionality insofar as technically possible.

CEPT is requested to collaborate actively with the European Telecommunications Standardisation Institute (ETSI) which develops harmonised standards for conformity under the Radio Equipment Directive. In particular, CEPT should also take into consideration emerging technologies and ETSI (harmonised) standards which facilitate shared spectrum use and foster economies of scale.

In particular, CEPT is tasked to:

1. *Study and assess* the harmonised technical conditions applicable to the **880-915 MHz / 925-960 MHz and 1710-1785 MHz / 1805-1880 MHz** frequency bands with view to their suitability for IoT applications.
2. Based on the results under Task 1, *amend, if necessary*, the harmonised technical conditions applicable to both bands, with focus on applicable technology standards, for the provision of terrestrial wireless broadband electronic communications services, so as to ensure both, backward compatibility with existing use, and suitability for IoT applications.

The amended technical conditions to address IoT use should also be sufficient to ensure co-existence with GSM and other incumbent services and services/applications in adjacent bands, in line with their regulatory status, including at the EU outer borders.

⁷ Article 8(6), RSPP, s. <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32012D0243>

⁸ Enshrined in the RSPP and the Radio Spectrum Decision

CEPT should provide deliverables according to the following schedule:

Delivery Date	Deliverable	Subject
November 2017 ⁹	Draft Report from the CEPT to the Commission	Description of the work undertaken and the results.
March 2018 ¹⁰	Final Report from the CEPT to the Commission taking into account the outcome of the public consultation	Description of the work undertaken and the results.

CEPT is requested to report on the progress of its work pursuant to this Mandate in advance of 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 and subject to the results of the spectrum inventory and relevant guidance of the RSPG.

⁹ Subject to a public consultation

¹⁰ In time for the RSC meeting in March 2018