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RADIO SPECTRUM COMMITTEE

Working Document

Subject: Draft Mandate to CEPT on spectrum for the future railway mobile communications system.

Discussion document

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At the last meeting of the Radio Spectrum Committee several Member States (Austria, Germany, Hungary, Ireland, Sweden and the Netherlands) supported a mandate to CEPT on railway communications, which should include 2 x 1.6 MHz in the ER-GSM band, but also other frequency bands, as well as the option of using (partly) commercial networks, in order to better guide the way forward for railway communications.

This document contains a first draft for discussion. Member States are invited to give their position on the principle of having a mandate and to make comments on the draft text during the meeting. Written comments after the meeting will also be taken into account.

The following sections contain the draft elements of the mandate.

1. PURPOSE

The objective of this Mandate is to identify appropriate spectrum bands, study feasibility and develop harmonised technical conditions for a sustainable and efficient use of such bands for the operation of the future railway mobile communications system, which is the successor of GSM-R.

This mandate gives priority to the following bands for the operation of the future railway mobile communication system:

- 874.4-880 MHz and 919.4-925 MHz
- 1900-1920 MHz

Further spectrum bands or the (partial) use of commercial networks may also be relevant. In this regard, the progressive phase out of the existing GSM-R technology and the need for coexistence between the existing and the forthcoming system for several years should be considered.

2. EU POLICY CONTEXT

Railways are essential for the EU economy. The European railway network covers over 220 000 km of lines and carries 9 billion passengers and 1 700 million tonnes of freight per year¹.

The radiocommunication system used for railway operation is currently GSM-R. Today, over 100 000 km of railway lines are operated by GSM-R² and this amount is still growing. It is defined through the basic parameters included in section 4 of the

¹ Source: *"The economic footprint of railway transport in Europe"*, CER 2014.

² Source: UIC.

CCS TSI³. The air interface is specified to use the R-GSM⁴ band (see table 3-A in 3.5.1 of the EIRENE SRS). The so-called "UIC band" reserved for GSM-R operation is 876-880/921-925 MHz. These bands are harmonised EU-wide by Commission Decision 1999/569/EC of 28 July 1999⁵ which in its Article 2 provides that *"The frequency bands used for GSM-R radio links shall be 876-880 MHz for the train-to-ground link and 921/925 MHz for the ground-to-train link"*.

As telecommunication standards are evolving and new railway applications are needed, GSM technology will become obsolete at some stage. The manufacturing industry is unlikely to support the GSM technology after 2030 and given the long time needed for selecting a technology and making it ready for operation, work has started at various levels (UIC, ERA, CEPT...) on the definition of the most suitable radio technology for railway communications of the next generation. Within CEPT, Project Team FM56 is preparing two ECC reports, respectively on spectrum requirements and on candidate bands for the implementation of the successor to GSM-R.

Recent discussions in the Radio Spectrum Committee and CEPT have shown that the 874.4-880 MHz and 919.4-925 MHz bands as well as the 1900-1920 MHz band are the currently most prominent options for the future rail mobile communication system. However, other bands are also still under discussion.

3. JUSTIFICATION

Pursuant to Article 4(2) of the Radio Spectrum Decision⁶ 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.

The Radio Spectrum Policy Programme⁷ (RSPP) requires that Member States, in cooperation with the Commission, ensure spectrum availability *"improving transport systems (...) and for intelligent transport safety and transport management systems"*⁸.

Taking into account the work of CEPT, ERA, UIC, the evolving work of ETSI and the wider cooperation among stakeholders, the EU regulatory framework on the

³ Control Command and Signalling Technical Specifications for Interoperability.
<http://www.era.europa.eu/Core-Activities/ERTMS/Pages/Current-Legal-Reference.aspx>

⁴ GSM-R refers to the radio elements of ERTMS (network and equipment) while R GSM is a designation for the frequency band 876-915 & 921-960 MHz. This includes the public mobile GSM network.

⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01999D0569-19990729&qid=1519396120758&from=EN>

⁶ 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 L108 of 24.4.2002.

⁷ Decision 243/2012/EU of 14 March 2012, OJ L81 of 21.3.2012.

⁸ Article 8 (1) of the RSPP.

harmonised use of radio spectrum for railways should be updated in order to cope with the needs of the future railway mobile communications system.

4. TASK ORDER AND SCHEDULE

In order to support a common approach to spectrum for the future railway mobile communications system across the EU, CEPT is mandated to carry out the following technical tasks:

- Task 1** Assess the spectrum needs for the future railway mobile radio communications system (successor system of GSM-R) in terms of required bandwidth and frequency ranges. Study solutions for the typical/average need and increased need at limited geographical areas (hotspots) separately.
- Task 2** Assess the technical feasibility for operating the successor system in the 874.4-880 MHz / 919.4-925 MHz frequency band while ensuring simultaneous operation of GSM-R and the successor system during a migration period. In this regard, take into account the spectrum needs and requirements of the railway system and ensure coexistence with services in adjacent bands (WBB, SRD and Defence)⁹.
- Task 3** Assess the technical feasibility for operating the successor system (partially) in the 1900-1920 MHz frequency band while taking into account the specific requirements of the railway system and ensuring coexistence with adjacent WBB use above 1920 MHz¹⁰. In this regard, study the impact of shared use between the railway system and other systems under study within this band, with the objective of safeguarding the railway system.
- Task 4** Study and assess the technical feasibility and scenarios of using commercial mobile networks, taking into account wireless coverage needs of the railway system.
- Task 5** Develop EU-harmonised technical conditions, possibly for shared spectrum use, for the future railway mobile radio communications system, which are also suitable for a migration period, taking into account the results of tasks 1, 2, 3 and 4.

In performing the tasks above, CEPT should take due consideration of the anticipated simultaneous operation between GSM-R and the future railway mobile communications system for several years, which may necessitate a solution for temporary supplementary spectrum allocation for the migration period. During the migration period, pan-European railway interoperability rules are assumed to continue relying on GSM-R carriers within 876-880 / 921-925 MHz frequency bands.

⁹ Cfr. RSCOM17-50 and RSCOM17-60

¹⁰ In particular within the paired 2GHz frequency band in line with Commission Decision 2012/688/EU

Receiver characteristics of the future railway mobile communications system (for user terminals and possibly base stations) should fulfil the specific railway availability requirements and ensure appropriate co-existence with services in adjacent bands.

CEPT should work in cooperation with ETSI, as appropriate. CEPT should also ensure close cooperation with all concerned stakeholders when assessing scenarios and developing technical conditions for the shared use of spectrum.

In the work carried out under the Mandate, the overall policy objectives of the Radio Spectrum Policy Programme (RSPP) such as effective and efficient spectrum use and the support for specific Union policies shall be given utmost consideration. In implementing this Mandate, the CEPT shall, whenever relevant, take utmost account of the applicable EU law 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 2020	Final draft CEPT Report A to the Commission	Draft results under tasks 1, 2, 3 and 4
July 2020	Final CEPT Report A to the Commission taking into account the outcome of the public consultation	Final results under tasks 1, 2, 3 and 4
July 2020	Final draft CEPT Report B to the Commission	Draft results under task 5
November 2020	Final CEPT Report B to the Commission taking into account the outcome of the public consultation	Final results under task 5

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.