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RADIO SPECTRUM POLICY GROUP

Opinion on Spectrum Aspects of Intelligent Transport Systems

Final Opinion on Spectrum Aspects of Intelligent Transport Systems

Background and scope of work

The Radio Spectrum Policy Group (RSPG) is a high-level advisory group that assists the European Commission in the development of radio spectrum policy. The RSPG's "Work Programme for 2016 and beyond" identified a work item developing Europe's spectrum policy for Intelligent Transport Systems (ITS), which includes both ITS for roads and the next-generation railway communications system (to replace GSM-R).

This Opinion has been prepared by a Working Group that has cooperated closely with working groups on the Internet of things (IoT) and 5G. In developing the recommendations below, it has considered the current state of ITS, and spectrum regulatory issues, including access to spectrum and the availability of frequency bands.

Recommendations on ITS for roads

1. The spectrum at 5875-5905 MHz is designated for safety-related ITS. A designation is not an exclusive allocation. But the fact that the band is harmonised is fundamentally important to the continued development and deployment of ITS and safety-related ITS applications in the European Union.
2. The spectrum designation in 5875-5905 MHz is technology neutral. The RSPG cannot take a view on the choice of technology since this is not a matter of spectrum regulation. However, we note that the co-existence between different ITS technologies is not guaranteed by the designation. There is a risk that the development of potentially competing technologies for ITS in the same band could impact on the robust and safe operation within 5875-5905 MHz. It is important that in-band co-existence, inter-operability and cross-border operation of ITS is ensured, especially for safety-related ITS. The European Commission is invited to consider whether action is necessary to ensure interoperability between ITS equipment and how the development of coexistence and inter-operability rules for ITS technologies can be defined by the relevant European standardisation body.
3. There is no evidence that spectrum availability is currently a constraint on the development of ITS, and there is no immediate need to take regulatory action in this regard. However, given the momentum of policy and standardization development for ITS we recommend that the options for ITS to expand to share spectrum for safety-related ITS in the 20 MHz above the existing designation and, for non-safety ITS, in the 20 MHz below, should be kept available for the time being. It is also important to take into account the developments in ITS technologies (as identified in the item above) and the introduction of Communication Based Train Control (CBTC) within the ITS designation. We recognise the risk that this could constrain other potential future uses of this spectrum (e.g. RLAN) and recommend that this risk is kept under review.

4. Given the potential future use of the spectrum for ITS, the RSPG recommends that the impact on current and potential future ITS in 5855-5875, 5875-5905 and 5905-5925 MHz should be taken account of when considering changes to spectrum use in these and adjacent bands.
5. RSPG notes that mobile networks may provide opportunities for ITS services, in particular using 5G features.
6. RSPG notes that 63-64 GHz is designated for ITS in order to enable development and implementation of ITS applications in this frequency band. RSPG fully supports the continued use of this band for ITS on a shared basis.

Recommendations on spectrum for next-generation of railway communications systems

1. The European spectrum arrangement for the railway communications system (GSM-R) should remain in place for the foreseeable future as this provides Member States with a harmonised allocation of 2x4 MHz (876-880/921-925 MHz) for GSM-R and its potential successor. Additionally, member States may also allocate up to 2x3 MHz within the band 873-876/918-921 MHz by using the GSM-R bands and the Extension bands on a national basis where needed.
2. RSPG notes that the current railway communication system (GSM-R) will not be supported by the GSM-R industry beyond 2030 and will therefore need to be replaced in due course. The railways community considers that access to more spectrum may facilitate the transition from one system to another, depending on the options for new systems. The railway community is raising this now, as the transition will be a long a complex process.
3. RSPG notes that there is a wide range of options for the future of railway communications, but that the suitability of these options varies across Member States. These options include but are not limited to:
 - using the GSM-R band and the extension (E-GSM-R) band (or a part thereof) during the transition or permanently
 - using commercial networks
 - using other bands
 - sharing networks with other users (e.g. PPDR in 700 MHz or 400 MHz)

However, it will be important to ensure interoperability across Member States. A common solution would ease implementation.

4. Railway operators are invited to consider the options for the future of railways communications, including those outlined above, with the relevant administrations. Regarding the 873-876 MHz / 918-921 MHz bands, RSPG expects that SRD and IoT spectrum demand in these frequency bands will prevent harmonisation of the whole of

these bands for future Railway communications. However, a harmonisation of parts of these bands (e.g. 2x1 MHz) for future Railway communications could be studied in conjunction with the harmonisation measures for IoT/SRD.

5. RSPG notes that the spectrum demand in Europe for future rail systems remains uncertain, and will depend on the traffic and innovative applications to be accommodated and on national situations (ie, only train/track signalling and voice, or train/track video communications, rail network density, cross border corridors).

Annex to Final Opinion on Spectrum Aspects of Intelligent Transport Systems

Summary of the responses to the public consultation

A public consultation on the draft version of this Opinion was held from 18 November 2016 until 9 January 2017. We received 15 responses. The RSPG appreciated all comments received. All responses were published on the RSPG website. Below is a high level summary of the main themes of the responses.

In relation to Intelligent Transport Systems for road:

- Respondents from the automotive industry supported extending the current designation for safety-related ITS at 5875-5905 MHz to the 2x20 MHz above and below that band.
- A respondent from the satellite sector said that there is little evidence of ITS operating in the 5.9 GHz band, and objected to proposals to extend spectrum available for ITS beyond the 30 MHz designation at 5875-5905 MHz.
- A number of respondents from the telecoms and auto sectors noted the importance of technology neutrality in spectrum for ITS. They also raised concerns about coexistence between different technologies in 5875-5905 MHz, and proposed a range of ways potential coexistence issues could be mitigated and managed.
- Chipset / product vendors raised concerns that extending ITS could impact on the amount of spectrum available for RLAN in the 5 GHz band. Some also suggested that different approaches to general authorisation be considered for access to spectrum for ITS, eg licensing.

In relation to the next-generation railway communications system:

- Organisations from the railway industry said there should be a European harmonised spectrum allocation for Railway communications, in addition to the existing GSM-R band, for the transition to a new system and beyond. Their preference was for the E-GSM-R band (873-876 MHz / 918-921 MHz) to be made available for this purpose. Several respondents said it would not be sufficient for spectrum requirements for Railway communications to be dealt with by the relevant national administration and proposed that a common approach across Europe was needed to minimise costs and maximise inter-operability.
- Respondents from the telecoms and chipset / product vendor sectors noted that ITS technologies and future 5G networks can provide functionality also for Railway communications. One also said that the option of Railway communications sharing with other services should not be ruled out.
