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Directorate-General for Communications Networks, Content and Technology

Electronic Communications Networks and Services

Radio Spectrum Policy Group

RSPG Secretariat

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RSPG17-033 FINAL

RADIO SPECTRUM POLICY GROUP

**Progress Report of the RSPG Working Group on
Spectrum related aspects for next-generation wireless systems (5G)**

| RSPG work item: update to Plenary | |
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| Work item | Spectrum related aspects for next-generation wireless systems (5G) |
| Rapporteur/s | Bo Andersson, PTS, Sweden, Tassos Lyratzis, EETT, Greece |
| Rationale | <p>The European Commission launched in December 2013 the 5G Infrastructure Public Private Partnership (5G-PPP)¹ to deliver solutions, architectures, technologies and standards for the ubiquitous next generation (wireless and wireline) communication infrastructures thereby ensuring Union's leadership within the global context. The 5G-PPP released in February 2015 its 5G vision², which also contains considerations on spectrum requirements for access and backhaul, including for wireless broadband above 6 GHz as well as spectrum management methods. Work on 5G specifications has gained global momentum within the ITU (on network standards and spectrum regulation)³ and the 3GPP (on wireless/mobile standards)⁴ with the participation of Member States and 5G-PPP members. The agenda of WRC-15 will address spectrum for IMT-2020 (5G) systems, and the follow-up activity leading up to WRC-19 is expected to assess spectrum needs and identify appropriate frequency bands on a global scale. In this regard, it is important that Europe develops and proposes its own spectrum strategy to respond to the 5G challenges. Therefore, a coherent spectrum strategy including a roadmap is needed, which addresses human and IoT communications at various levels (connection speed, mobility, latency, duty cycle, reliability etc.), and ensures a smooth transition from currently evolving wireless systems and spectrum usage.</p> <p>RSPG outlined initial consideration on 5G spectrum issues in its Opinion on the Radio Spectrum Policy Program. RSPG notes that 5G deployment is envisaged from 2020 onwards.</p> <p>Recent deliverables published in 2015 which have already addressed spectrum challenges arising from the development towards 5G:</p> <ul style="list-style-type: none"> • The RSPG Opinion on the future of the UHF band: within this Opinion the RSPG stated that it is too early to assess the effect of the current research projects on the ability of 5G networks to enable efficient delivery of broadcast services in UHF band. • The RSPG Opinion on WRC 15 invited Member States to support generally a future Agenda item addressing "the spectrum needs for the fifth generation of mobile networks (commonly known as 5G) with the focus above 6 GHz". • The RSPG Report on "Awards and efficient usage of spectrum" highlights how the current harmonised spectrum in Europe could respond to some early and future 5G challenges. Europe benefits from a strategic opportunity of already 1 GHz of harmonised spectrum and near the mid of the decade of 1200 MHz of harmonised spectrum to support further ECS evolution. • The RSPG Report on "Wireless backhaul" recognised that some frequency bands that might be considered for 5G mobile radio access are currently used or targeted to be used for fixed links. |

¹ www.5g-ppp.eu

² <https://5g-ppp.eu/wp-content/uploads/2015/02/5G-Vision-Brochure-v1.pdf>

³ <http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/imt-2020/Pages/default.aspx> ,

<http://www.itu.int/en/ITU-T/focusgroups/imt-2020/Pages/default.aspx>

⁴ http://www.3gpp.org/news-events/3gpp-news/1614-sa_5g

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| | <p>Sufficient backhauling spectrum is needed to support the growth of 5G. The possible future usage of the same spectrum for access and backhauling appears as a major challenge and shall be addressed by the European Commission and Member States during the coming years.</p> <p>In consequence, RSPG will continue its efforts and contribute actively to the development of Europe's spectrum policy strategy regarding 5G.</p> |
| Scope | <p>The RSPG plans to develop a strategic roadmap towards 5G for Europe and make recommendations where appropriate. This should focus on the services to be offered and the goals to be achieved by the deployment of 5G systems. This requires to:</p> <ul style="list-style-type: none"> • Starting from the point of view of specific goals (such as how to ensure that the benefits of 5G-based services are available to all European citizens; or how to deliver wireless broadband in rural areas), assess the spectrum related aspects for 5G in the long term. • Consider aspects related to system architecture (as wireless network densification, network resilience and convergence), technology enablers and the heterogeneity of services (as automotive, transport/logistics, healthcare, broadcasting, energy management, smart manufacturing/industry ,4.0, etc.); 5G-PPP will be invited to present the status of its work; • Identify and analyse the spectrum related challenges such as: spectrum sharing, usage and licence conditions, rural areas, policy implementation, incentive regulation, the principle of technology and service neutrality, the reused of already harmonised spectrum to support the transition towards 5G; • Assess/address appropriate frequency bands for 5G, in particular additional bands above 6 GHz: <ul style="list-style-type: none"> ○ provide a roadmap of their availability taking into account the evolution of spectrum use including access/backhaul convergence issues and the potential of global/regional footprint; ○ focus on and prioritize those bands having the best potential for European and global harmonization. ○ take into account likely variations in demand between and within Member States, noting the need to meet the needs of all European consumers <p>RSPG should give utmost attention on the worldwide development and give recommendations on cooperation issues with others on 5G spectrum⁵.</p> <p>It is noted that RSPG will also develop common policy objectives for WRC-19. RSPG will also develop recommendations on Internet of Things. Coordination between those RSPG activities should be ensured, as appropriate.</p> |
| Planned deliverables and timing | <p>RSPG Opinion (if needed accompanied by a Report)</p> <p>Time schedule</p> <ul style="list-style-type: none"> • Early First Opinion September 2016 • Interim Opinion in September 2017 • Draft Opinion in November 2017 |

⁵ See cooperation current/future joint declarations with Korea, Japan, China

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| | <ul style="list-style-type: none"> Final Opinion in February 2018 |
| Analytical approach | <p>Overall ambition for RSPG to communicate early about 5G</p> <p>Identify the challenges from a European perspective regarding what is necessary to do in order to launch 5G on a large scale by 2020</p> <p>Analyse both on a policy level as well as on a level covering different spectrum bands and technologies</p> <p>Consider what applications and services European consumers will want to have to access to</p> <p>Consider the use cases and future applications and services in demand from different vertical industries in Europe</p> <p>Assess possible constraints on these developments depending on the availability of different spectrum bands</p> |
| Project plan | <p>Phase 1 – Information gathering</p> <p>Phase 2 – Analysis and assessment</p> <p>Phase 3 – Review conclusions (including stakeholder engagement)</p> <p>Phase 4 – Conclude and report</p> |
| Dependencies | <p>This work is closely linked to the RSPG work item on <i>Spectrum aspects of the Internet of Things</i>. We plan to have regular discussions with the rapporteurs for the IoT work item to ensure we share information and align the work as appropriate.</p> <p>The work is also closely related to the RSPG work item on <i>Spectrum aspects of Intelligent Transport Systems</i>. We plan to have regular discussions with the rapporteurs for the ITS work item to ensure we share information and align the work as appropriate.</p> |

Members, stakeholders and resources

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| Members | <p>Denmark, Danish Energy Agency</p> <p>EU, DG CNECT</p> <p>Finland, Ficora</p> <p>France, ANFR</p> <p>France, ARCEP</p> <p>Germany, BNetzA</p> <p>Germany, BMVI BUND</p> <p>Greece, EETT</p> <p>Greece, Ministry of Digital Policy</p> <p>Ireland, DCENR</p> <p>Ireland, COMREG</p> <p>Italy, AGCOM</p> <p>Luxembourg, SMC ETAT</p> <p>Norway, Ministry of Transport and Communications</p> <p>Spain, Minetur</p> <p>Sweden, PTS</p> <p>The Netherlands, Minez</p> <p>United Kingdom, Ofcom</p> |
| Key stakeholders | <p>Telecom operators</p> <p>Vertical industries</p> <p>Equipment suppliers</p> |

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| Other resources | |
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Work flow (internal and external milestones)

| Date | Action / deliverable | Internal Work group only | External Plenary, Publication |
|--------------------------|---|--|---|
| Year 2016 | | | |
| 25 April (Brussels) | First meeting of work group – discuss scope and plan | Work group | n/a |
| 2 June (Stockholm) | Second meeting of work group – discuss Roadmap, First Opinion draft and possible Press Release regarding 5G. | Work group | n/a |
| 8 June | Update to Plenary | Rapporteur | Plenary |
| 13 July (Dublin) | Third meeting of work group – discuss feedback from Plenary and emerging Roadmap and First Opinion | Work group | 5G-PPP representative invited to present to the group |
| 8 September (London) | Fourth meeting of work group – Drafting of final First Opinion following public consultation of draft First Opinion and results of survey of present use in member states. | Work group | |
| 1 November (Athens) | Fifth meeting of work group – Update of prioritised Roadmap following input from public consultation of draft First Opinion and objectives put forward in First Opinion. | Work group | |
| 9 November | Update to Plenary – Final Opinion and updated Roadmap presented | Rapporteur | Plenary |
| Year 2017 | | | |
| 12 January (Brussels) | Sixth meeting of work group - Further discussion on the Roadmap for a supplementary opinion - Drafting of the Table of contents of the supplementary opinion - Allocation of the drafting work among the participating Member States | Work group (Sweden, Greece, UK, France, The Netherlands, Spain, Denmark, Germany, DG CNECT) | |
| 7 February | Progress of Supplementary Opinion work presented to Plenary | Rapporteur | Plenary |
| 23 February (Mainz) | Seventh meeting of work group - Discussion on the first Draft of supplementary opinion, further drafting of text | Work group | |
| 23 March (Brussels) | Eighth meeting of work group - Discussion of draft of supplementary opinion - Draft of key messages | Work group | 5G-PPP representative invited to present to the group |
| 4 May (Helsinki) | Ninth meeting of work group - Drafting of supplementary opinion | Work group | |

| Date | Action / deliverable | Internal Work group only | External Plenary, Publication |
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| 6 June | Progress of Supplementary Opinion work presented to Plenary | Rapporteur | Plenary |
| 14 July (Brussels) | Tenth meeting of work group | Work group | |
| 14 September (Bonn) | Eleventh meeting of work group | Work group | GSA representatives invited to present to the group |
| 17 September (Brussels) | Twelfth meeting of 5G working group | Work group | GSMA representatives invited to present to the group |
| Future dates and actions to be decided in light of agreed work plan | | | |