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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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RSPG17-036 FINAL

RADIO SPECTRUM POLICY GROUP

Final Progress Report of the RSPG Working Group

**on a long-term strategy on spectrum requirements facing the future needs
and use of wireless audio and video PMSE applications**

RSPG work item: PMSE - update to Plenary	
Work item	A long-term strategy on spectrum requirements facing the future needs and use of wireless audio and video PMSE applications
Rapporteur/s	Franz Ziegelwanger, Austria
Rationale	The Request for an RSPG Opinion from the European Commission reflects the intention expressed by both the RSPG and the RSC that attention should be given to a long-term strategy with regard to future PMSE spectrum requirements in view of possible constraints for wireless audio and video PMSE needs, in particular noting the requirement for high quality of services in case of professional practice.
Scope	The RSPG will examine the expected impacts on PMSE services noting the evolution of existing use and taking into account a growing need for sharing of spectrum use. The Commission requests an assessment of the strategic options in terms of providing spectrum access for wireless audio and video PMSE applications that can provide the required quality of services for PMSE applications. On the basis of this long-term strategic assessment, the RSPG should also provide guidance on the relevance of a common "roadmap" to support the audio and video PMSE sector in obtaining access to spectrum taking into account different national needs. Thereby the work focuses mainly on the so called "peak demand events" and on the needs of professional users (multi-channel environment).
Planned deliverables and timing	Planned type of deliverable RSPG Opinion Time schedule: Interim draft Opinion June 2017 Public Consultation August until end September 2017 Draft Final Opinion November 2017
Analytical approach	<ul style="list-style-type: none"> • Assess possible solutions and options for meeting the expected future needs and use of audio and video PMSE applications in a time frame after 2020, taking into account the bands currently in use by audio and video PMSE and the expected spectrum re-allocations within relevant bands (e.g. 700 MHz band), while ensuring a sufficient flexibility and acknowledging that the needs vary greatly between different Member States. Which solutions are sustainable in the long term, taking due account of high quality and latency requirements of certain types of PMSE applications? • Indicate technological developments and regulatory requirements related to spectrum use which could contribute to meet the spectrum and quality of service demands for wireless audio and video PMSE. In this context consider shared use of spectrum, which could include appropriate and innovative sharing approaches e.g. the availability of geo-location databases with an appropriate geographic reach, the digitalisation of audio PMSE equipment, opportunities in higher frequency ranges, a higher level of certainty than a framework of non-interference and non-protection accessibility of spectrum in identified cases, as well as a common approach on authorisations and

	<p>opportunities of localised temporary shared use of spectrum in case of large spectrum needs.</p> <ul style="list-style-type: none"> • Assess the relevance of a common “roadmap” identifying principles and approaches of spectrum availability for audio and video PMSE. In this context collect Member States’ best practices in providing spectrum use with the required level of quality of service and increasingly flexible conditions of spectrum access for wireless audio and video PMSE applications. <p>In developing this Opinion, the RSPG work should address audio and video PMSE separately and take into account ongoing processes, such as possible new spectrum resources and the outcome of the Licenced Shared Access trials. The timing requested may be reviewed in the light of developments, such as the outcomes of ongoing CEPT work or the success and take-up of LSA solutions.</p>
Project plan	<p>Phase 1 – Information gathering Phase 2 – Analysis and assessment Phase 3 – Review conclusions (including stakeholder engagement) Phase 4 – Conclude and report, opinion</p>
Dependencies	<p>This work is not directly linked to the RSPG work items on other aspects. However dependencies could exist on the availability of spectrum for 5G and its ability to cover also PMSE.</p> <p>There is also strong relation to already ongoing CEPT work which could have an influence on the opinion and a possible roadmap. We discuss all steps in the group to ensure we share information and align the work as appropriate.</p>

Members, stakeholders and resources

Members	<p>Participating in working group meetings (at least partly):</p> <p>Austria, bmvit EC, DG CNECT Finland, Ficora France, ANFR Germany, BnetzA Sweden, PTS The Netherlands, Minez United kingdom, Ofcom Slovakia, Teleoff Portugal, ANACOM Denmark, ENS Italy, Mise Norway, Nkom ERM TG17, ETSI</p>
Key stakeholders	<p>APWPT, PEARLE, Shure, Sennheiser, Audio Technica, AKG, EBU, ... Broadcasting- and Media Content Producers Wireless microphone industry Wireless cameras industry</p>
Other resources	

Work flow (internal and external milestones)

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
Year 2016			

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
20 October (Vienna)	First meeting of work group – discuss scope and plan	Work group	n/a
9 November	Update to Plenary	Rapporteur	Plenary
13 December (Vienna)	Second meeting of work group – discuss Roadmap, First Opinion draft, discussion of different stakeholder inputs	Work group	(ETSI joined WG)
Year 2017			
27 January (Vienna)	Third meeting of work group – discuss feedback from Plenary and strategic Roadmap, discussion of further inputs and again on first Opinion draft	Work group	
7 February (Brussels)	<p>Update to Plenary</p> <p>For discussion at RSPG Plenary:</p> <p><u>Involvement of stakeholders:</u> WG welcomes guidance from Plenary on the extent and shape of 'stakeholder involvement' as outlined in the 'RSPG Second Stakeholder Workshop: Update on the Work Programme for 2016 and beyond' (e.g. involvement limited to consultation/input on draft Opinion or a dedicated workshop?)</p> <p>(Stakeholders are industry and users – especially the professional users. Discussion should focus around some direct, relevant questions, or perhaps a first initial draft of our opinion could be discussed in a stakeholder meeting)</p> <p><u>Strategic roadmap:</u> Inclusion of a relevant roadmap for industry and users after 2020 Y/N? Dedicated recommendations on frequency bands Y/N?</p>	Rapporteur	Plenary

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
22 February (Vienna)	Fourth Meeting of working group – discussion on: <ul style="list-style-type: none"> • definition of PMSE • Equipment availability within Tuning ranges in Rec 70-03 • conclusion on audio PMSE • conclusions on video PMSE roughly touched • future digital dividends in UHF and timing on regulatory side – align with Lamy Report (2025, 2030) • not include past 2030 • high level requirements • UHF still fundamental for audio PMSE • Discussion about recommending 960 – 1164 MHz and/or 1400 MHz as a new global band for audio PMSE • digitalisation, cognitive abilities, WMAS, acceptable interference to PMSE, more intensive planning more efficient use of spectrum for events • encourage producers to improve spectrum efficiency • main messages in the conclusions part of draft opinion; 	Work group	
13 March	GoTo - Meeting <ul style="list-style-type: none"> • work on specific point of the recommendations of the opinion • work on specific points on the structure of the opinion 	Rapporteur	
21 March (Vienna)	Fifth Meeting of working group – discussion on: <ul style="list-style-type: none"> • new aspects proposed to the draft in regard to working practice and real life behavior of media and rental companies for large events • clear distinction between mass market and multichannel (professional) usage • work on alignment and compromise text • structure of audio and video part, and common text to both 	Work group	
21 – 22 April (Vienna)	Sixth Meeting of working group – discussion on: <ul style="list-style-type: none"> • work with text which are almost ok, concentrate on high level recommendations • work with main text, shortening and positioning of elements • proposal to include text on drones for video PMSE part • lifespan of and rental hold time for equipment 	Work group	

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
22 – 23 May (Vienna)	Seventh Meeting of working group - discussion on: <ul style="list-style-type: none"> • baseline of video • finalise main body text (shortening, solve similar text, final wording and position of text) Disussion about need for new global band and selecting criteria in case of a need	Work group	
1 June	Goto Meeting (Webmeeting) of Working Group: <ul style="list-style-type: none"> • improved text of draft opinion; WG could find compromise text on harmonisation needs and global band issue; • editorial improvements; • discussion on adding an executive summary (supported by some delegates) • due to the fact that this would change the overall structure of the document, it was decided to deliver the revision of the document without the addition of an executive summary – the addition could be proposed by delegation directly to the plenary. • Document is submitted to RSPG plenary for public consultation 	Rapporteur	
6 June (Brussels)	Update to Plenary draft opinion for discussion at RSPG Plenary (RSPG17-024rev1-draft-RSPG_opinion_PMSE) State of play for the Opinion – Public consultation will follow after written procedure later in June, if guidance from RSPG plenary is to review the document and include an executive summary. Draft Opinion (RSPG17-024rev1-draft-RSPG_opinion_PMSE) was modified accordingly; No controversial issues left. Evolution in the UHF band, such a recommendation should be seen also with some dependency (if UHF disappears for serving the PMSE peak demand and demand is bigger than proposed mitigation as described in all the sections cannot serve long term needs for audio PMSE) As this discussion arose in full in the WG in May 2017, further discussions were necessary on this topic.	Rapporteur	Plenary, [Publication]
7 June	Meeting of working group via GoToMeeting Completion of Draft opinion by adding an executive summary.	Work group	

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
June/July (Launch of written procedure by EC)	Discussion of wording concerning long-term aspects for audio PMSE in UHF in a wider RSPG context during written procedure.	Rapporteur	Publication for Public Consultation after written procedure

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
August/September	<p>Public consultation was launched 4 August 2017 after written procedure. The public consultation finished by 30 September 2017. 17 responses were received from:</p> <p>APWPT - Association of Professional Wireless Production Technologies e. V. ARD and ZDF – German Broadcasting Companies B.Copsey – Copsey Communications Consultants BBC – British Broadcasting Corporation BEIRG – British Entertainment Industry Radio Group EBU – European Broadcasting Union EMG - Euro Media Group NEP NL - Northeast Pennsylvania Broadcasting Netherlands OETHG - Österreichische Theatertechnische Gesellschaft Pearle – Performing Arts Employees Associations League Europe PMSE.NL – Nederlandse Belangenvereniging Draadloze A/V Verbindingen PMSE SEINEP (FR) – Syndicat des Entreprises de Negoce en Electronique Professionnelle Sennheiser – German Manufacturer Shure Inc. – U.S. Manufacturer SOS-Save-Our-Spectrum – Interests of Manufacturers and Users Initiative United NL – United Studios Netherlands BMVIT – Fed. Min. f. Tramsport, Austria</p> <p><u>Comments concentrated on following points:</u></p> <ul style="list-style-type: none"> - the call for regulatory certainty (at least until 2030, some requests until 2040) in UHF band 470-694 MHz which is considered by PMSE industry and users of PMSE equipment as key spectrum for the operation of professional audio PMSE; - action should be taken against a possible use of UHF spectrum in 470-694 MHz by "disruptive technologies" such as SDL (Mobile supplementary Downlink Technology) and WSD (White Space Device Technology); - concept of tuning ranges for audio PMSE: technical issues with audio PMSE equipment that should support too broad tuning ranges, tuning ranges do not guarantee the bands available in MSs; - for audio PMSE: distinction should be made between the suitability of different parts of spectrum below 2 GHz because of different propagation characteristics (indoor/outdoor use, LoS and non-LoS), e.g. 470-862 MHz as compared to frequencies above 1 GHz including request to access the DECT band and ranges in CEPT recommendations; - for high-quality audio productions – the suitability of frequencies located within duplex gaps and guard bands for audio PMSE equipment is questioned due to interference issues from mobile broadband; - talkback to be included as an important PMSE application; - there are views (from industry and users) that 	RSPG plenary info	

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
23 and 24 October 2017 (Paris/ANFR)	<p>8th meeting of the working group in Paris/ANFR:</p> <p>Finalization of the opinion based on comments received since launch of the public consultation. Beside discussion and alignment of points in the draft opinion the rapporteur informed the WG about presentations of this work in the <u>RSPG stakeholder workshop (4th October, Warsaw, Poland)</u> and in the <u>PMSE WS at European Microwave Week (9th October in Nürnberg, Germany)</u>. Stakeholders raised questions on recommendations in the draft opinion as well as their wish for more harmonized spectrum for PMSE on European level.</p> <p>The working group came to the conclusion, that the “tuning range approach” as developed by CEPT already is a sort of “soft-harmonisation”, which gives the basis for the use of spectrum PMSE in the “day-to-day” business and for “peak demand” events. This approach should be even more promoted and should be made as visible as possible to stakeholders involved.</p> <p><u>The focal point of discussions is audio PMSE in UHF -> in a future review of the sub-700 MHz band (below 694 MHz) PMSE should be considered carefully to give long term certainty and stability to the sector.</u></p> <p>Main points of changes in the opinion:</p> <ul style="list-style-type: none"> -clarification on tuning range concept and addition of ANNEX 4 on this subject -clarifications on “peak demand” and “day-to-day” demand -clarification on 5G abilities and technological advances, including strengthening R&D efforts (also towards 5G) -clarify the <u>roadmap on audio PMSE (future review of sub 700MHz band as trigger point)</u> -clarification on detailed points in video PMSE -editorials as they were raised 	Work group	

Date	Action / deliverable	Internal Work group only	External Plenary, Publication
21 st November (Brussels)	<p>Update to Plenary – presentation of final opinion for adoption and publication.</p> <p><u>Opinion addresses as key issues:</u> -no immediate mandatory harmonization needs -technological development including 5G and its influence on PMSE -different mitigation issues to overcome “peak demand” (time and location specific) -<u>careful consideration of audio PMSE needs in future review of the sub-700 MHz band ->further harmonization work, if necessary, for audio PMSE below 2 GHz after 2020</u> -enable video PMSE in higher frequency bands while the need for use cases in lower further exists -further development of tuning range concept by CEPT including studying of new bands as necessary for addition -enhance visibility of information on CEPT website for PMSE stakeholders on spectrum availability in different locations</p> <p><u>Information for RSPG secretariat:</u> The link to the web address where the public consultation comments are published should be added by RSPG secretariat (footnote 40) after adoption by plenary.</p>	Rapporteur	Plenary, Publication (update link in footnote 40)
