Postbus 255
1200 AG Hilversum
The Netherlands

Radio Spectrum Policy Group – Secretariat
DG CNECT B4: Spectrum – Office: BU33 7/065
European Commission, B-1049 Bruxelles, Belgium

Hilversum, August 18, 2017

RESPONSE OF NEP the Netherlands

To RSPG consultation ("Consultation")

An Opinion on a long-term strategy on future spectrum needs and use of wireless audio and video PMSE applications.

PMSE response

NEP the Netherlands welcomes the opportunity to provide input to RSPG on this Consultation, a proceeding that marks an important and necessary effort to identify additional new spectrum for Programme Making and Special Events ("PMSE") in the European Union.

The RSPG was asked to advise the European Commission on a long-term strategy on wireless audio and video PMSE spectrum use and requirements. NEP the Netherlands (further named as NEP) is pleased that the European Commission asked the RSPG to develop an Opinion on a mid- to long-term strategy for PMSE and is also appreciative that the RSPG accepted the request. The opinion had to focus on the challenges of satisfying peak demand requirements. However, the suggested plans will require further coordination and discussions with the incumbent band users, other national and EU regulators, and bodies dealing with spectrum matters. NEP will support in a coordinated, systematic approach to explore the PMSE opportunities and to find mutually acceptable solutions to obstacles. The clients of NEP include broadcasters, production firms, theater, events, film industry, and other users. NEP is operating local and global. We think that international coordination is necessary for better spectrum in cross border situations. We don't think that the solution comes from national authorities.

Our remarks:

1. **PMSE plays a critical role in the national and international economy, culture, and everyday life; the negative impact of the expected PMSE spectrum shortfall will be widespread.** Wireless microphones are critical production tools essential to activities in many sectors—broadcast, entertainment, music- and sporting events as outlined in the Consultation. NEP would add that today audio PMSE is also important to commercial, educational, civic, religious events and (news) gatherings. PMSE use has increased across all sectors and is now embedded in many facets of everyday life. As

such, ensuring that users and audiences across these various applications can continue to rely on high-quality audio PMSE is a matter of economic, cultural, and civic concern.

2. **NEP welcomes thoughtful work to date exploring potential new spectrum resources suitable for sharing with PMSE. Targeted spectrum should be free from interference and not slated for reallocation to other services.**
   Wireless microphones have made excellent use of available spectrum resources. PMSE has successfully shared spectrum with other services for many years, well before spectrum sharing became the focus of national policies. For decades, wireless microphones have shared spectrum with TV broadcasters, and, depending on the jurisdiction, other services without any known interference incidences. Further, manufacturers have pushed technical advances to achieve significant gains in spectral efficiency and wireless microphone channel counts per megahertz continue to increase. However, production demands for spectrum are high and expanding every year; interference, latency or too little spectrum significantly undermines PSME services by restricting the ability to increase channel counts, and/or by degrading quality thereby frustrating both PMSE users, and the millions in the live, televised and online audiences who expect
   flawless, crystal clear audio for all professional productions.
   Technological developments and regulatory requirements indicates related to spectrum use which could contribute to meet the spectrum and quality of service demands for wireless audio and video PMSE. Shared use of spectrum, which could include appropriate and innovative sharing approaches e.g. the availability of geo-location, 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 authorizations and opportunities of localized temporary shared use of spectrum in case of large spectrum needs. PMSE applications typically share spectrum with other services based on sharing criteria, primarily defined to protect these other services from mutual interference. We think that sharing possibilities between applications (as with the Licensed Shared Access for PMSE video in the Netherlands) could give solutions for sharing on a peak-demand bases.
3. **RSPG should weigh the possibility of harmonization between countries' regulations.**
   RSPG should also pay close attention to the impact this proceeding will have on the international level. NEP don't think that identified national needs can be satisfied better on national level according to national circumstances. Often, we see in the report the remark that frequencies could be subject to some evolution of use at national level. The RSPG-report is to advise the European commission on a long-term strategy on wireless audio and video PMSE spectrum use and requirements. We hope that international tuning ranges give the PMSE market possibilities to make global equipment and not for some exclusive countries.
   We don't agree that due to the local and temporary nature of PMSE, especially for peak demand situations, requirements are best addressed on a case-by-case basis at a national level using the "tuning range concept" developed by CEPT. If there's local no or less spectrum available the PMSE market cannot borough from other services. Single market solutions often make it difficult to justify the business case for new development.
4. **The PMSE industry has already reaped the benefits of skilled frequency planning and digital techniques.**
   The Consultation suggests that PMSE users can address the spectrum shortfall by

improvements in central planning and frequency management "on the ground" as well as by incorporating digital techniques. The PMSE community is populated with many professional frequency coordinators and producers highly skilled and experienced in the task of providing audio PMSE support to the complex broadcast, entertainment, sports and other productions that are typical in today's production environment. Today, these professionals work cooperatively across different venues and productions to balance competing demands for PMSE spectrum. The everyday examples of events are **daily business** with a lot of area's with more request (especially more than the suggested 60MHz for Audio PMSE). PMSE-users are al ready requiring sophisticated skills, technologies, and extensive consultation among the stakeholders.

Digital techniques also are not a simple cure to spectrum scarcity. Clean, interference free spectrum must be available in order for users to reap the full potential of spectrum efficiencies made available by digital techniques. Without clean spectrum, the potential for alleviating spectrum congestion through the use of digital technology is limited. PMSE users cannot realize the full potential for efficiency and an expanded channel count even with digital equipment if, for example, it is operating in a noisy duplex gap situated between LTE or other signals.

Useable spectrum.

Another important aspect of these sharing arrangements is that the spectrum is able to provide the high quality of service required for live events and programme making. There has been growth in the use of wireless PMSE in the last decade and decrease of useful spectrum. For this moments, the PMSE equipment operators are already reporting a capacity crunch at daily normal events (especially in cross-border coordinated area's)

The loss of the 700 MHz band for PMSE users is already "a challenge". A further review of the UHF band in 2025 could mean the industry loses even more spectrum in future. Stable spectrum is needed which industry can focus on in the foreseeable future. Although the present document covers all spectrum, it should be emphasized that multi-channel audio PMSE systems used in professional productions are best suited to spectrum under 2 GHz for reasons of propagation and body interaction.

In the RSPG document there is a suggestion that tuning ranges will solve planning's issues we make the comment that tuning ranges of equipment give no guaranty on usable spectrum.

Further information on audio PMSE is available in ECC Report 204 [i.15].

5. **Technical solutions alone will not solve spectrum shortage.**

   An increase in the use of PMSE equipment does not necessarily mean that the use of spectrum should also increase. But a loss of spectrum in the spectrum (e.g. UHF band) will not be solved by new technology. In the longer term, perhaps new technology will help. However, new technology presents regulatory and standardization challenges that must be overcome before equipment can be placed on the market and adopted by PMSE operators.

6. **Solution in Cognitive-PMSE:**

   The most important objective in the C-PMSE project is the preservation and possibly increase of the operational reliability under the conditions of dynamic and heterogeneous frequency utilization. The basic idea is, to scan continuously the usable frequency range against potential risks. As soon as potential interferers are detected, countermeasures will be initiated. The basic principle sounds quite easy, but it

requires very complex interactions between different components and different stake-holders, which are currently - with the required specifications - not available on the market or are still under research.

7. **Video PMSE**

   Wireless camera equipment might be developed which could be more spectral efficient and might be available within the next few years, with codec technology improving roughly in step with the demand for increasing resolution. Codec technology gives latency in a video stream. In live broadcast situations, the latency and battery-use will become an issue. We think there is still a need to have spectrum for wireless camera's (especially needed for Ultra HD). Monitoring the development in the area of 5G should be fostered – it could have an impact on the long-term bandwidth needs of extra spectrum for video PMSE and multichannel Audio PMSE. The telecom networks on large events provide for this moment not the high quality of service required for live events and programme making (and are not allowed due net-neutrality). There's also a risk of overloaded network and capacity problems in case of calamities. We agree that there is a new use in situations as point-to-point delivery of video and audio but this is not reliable in peak-demand situations.
   To meet specific short-term peak demand, NEP recommends that RSPG should continue to supplement audio and video PMSE use possibilities with spectrum not designated to PMSE on a national level, where possible and appropriate but also cross-border possibilities for large (sport)events.

Kind regards,

Nico Roest
COO | NEP The Netherlands

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