



APWPT e. V. / D-91081 Baiersdorf / Postfach 68 / Germany

European Commission  
Ms. Neelie Kroes  
Vice-President of the European Commission  
BERL 10/224  
1049 Brussels, Belgium

Ihr Zeichen, Ihre Nachricht

Unser Zeichen, Unsere Nachricht  
APWPT/Fe-28022014

Telefon  
09191 9790554

Datum  
28.02.2014

**Re: Consideration of Sub 2 GHz spectrum for PMSE Use (Response to the Commission's Preliminary Elements of the proposal on spectrum harmonization for wireless audio PMSE)**

Dear Ms. Kroes,

On February 18<sup>th</sup>, 2014, the European Commission Directorate General for Communications Networks, Content & Technology (DG CONNECT) presented its plans for the "Preliminary elements of the proposal on spectrum harmonization for wireless audio PMSE."

We welcome the latest and continuing initiative from the Commission to assist the PMSE sector to address the problems posed by the introduction of IMT services in the Broadcast Band 470-862 MHz that is traditionally used by PMSE.

The PMSE Industry has been working within CEPT, ITU and ETSI in order to highlight the problems and to search for creative solutions.

Radio spectrum is a scarce natural resource and the European electromagnetic environment is constantly evolving. This requires careful consideration given the broad use of radio spectrum in daily communications whether for individuals or businesses. APWPT, a member in the European Forum for Spectrum Coexistence (EFSC), aims at preserving the coexistence between devices and services when new radio services are introduced. Its mission is to collectively ensure that any radio spectrum allocation and related policy take into account deployed radio systems and non-radio electronic equipment in order to promote quality connectivity of products and services for European consumers and business.

The proposals produced by the Commission calling for some 30 MHz of clean spectrum for PMSE is only a starting point to address the potential loss of some 168

MHz to IMT services if the 700 MHz band is to be used by IMT. However, the use of IMT duplex gaps and guard bands would only produce a relatively small amount of usable spectrum to benefit PMSE due to the out of-band emissions from IMT equipment. This problem would persist even if IMT out-of-band emissions were reduced.

Whilst the concept of using pico cells to mitigate interference in these bands might be a solution, it poses a number of technical and practical issues: For instance, the question arises to which band the IMT traffic will be off loaded? Currently the 1800 MHz band is common in Europe for mobile handsets, but a shift to this band would transfer the interference from the 800 to the 1800 MHz duplex gap proposed for PMSE. While using the 2.6 GHz band would move the traffic away from PMSE, the time scales for a deployment of handsets and networks in this band remain uncertain.

We attach a range of links to recent documents which provide a better picture of the PMSE use within the EC, also an assessment of the spectrum required to be available on a daily basis for the industry which is some 96 MHz of usable spectrum for normal events.

Given the proposed and existing IMT and GSM-R spectrum allocations, it appears unlikely that any significant amount of spectrum can be found sub 1 GHz unless the aeronautical bands are considered. We thus request urgent consideration of sub 2 GHz spectrum to be studied, including the 1452 - 1559 MHz band identified in the presentation with a view of achieving PMSE access to the spectrum for both indoor and outdoor use. We also request an early identification of the tuning ranges, so that the PMSE manufacturers can start the R&D necessary to build equipment for the use in those bands. It will take approximately 4 - 6 years to develop suitable multi-channel equipment that is ready for this market.

With reference to future technologies: the industry has expended considerable resources in attempting to develop for the future fully cognitive database-controlled systems within the C-PMSE project and the ETSI STF 386, but these systems are unlikely to be market ready earlier than in 5 to 6 years. It should be noted: C-PMSE is a method for the audio quality assurance. It is not a tool that can reduce required radio spectrum for PMSE. However, the aim is that this new technology will ensure future PMSE operations in an increasingly congested and condensed RF spectrum.

We also suggest:

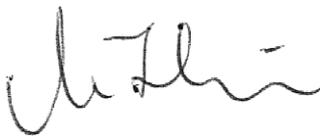
- a review of licensing conditions in order to encourage the use of cognitive radio microphones or new frequency sharing methods inside the event production; see in addition the concept "Creative spectrum" at APWPT homepage
- Study of the spectrum available in the 470-694 MHz band during DVB-T2 simulcasting
- after introduction of DVB-T2 a study on the effect on "cleared" UHF-TV spectrum

- after WRC-15 a consideration of its results on the SAB/SAP studies under the WRC-12 Resolution 232, Action Item 1.2

Discussions within ITU-R JTG 4-5-6-7 indicate that a mere "secondary" status of PMSE (instead of a primary status in one or several appropriate band(s)) will not lead to longer-term solutions safeguarding PMSE and content production. The WRC-12 Resolution 232 calls for these "studies and to indicate as quickly as possible, in the process of preparation for WRC 15, the spectrum requirement for the mobile service, the broadcasting service and the other services, in order to determine the options for the frequency band to be allocated to the mobile service, as well as the related channelling arrangements".

The issues mentioned in this letter are of high significance for the APWPT and its members as they will have an immediate impact on the European Creative Industries, content production and its competitiveness. The APWPT is prepared to fully engage with the commission and would be delighted to provide further input on the spectrum identification and the other measures suggested in this letter.

Kind regards,



Matthias Fehr  
- President -

Annex: List of references

## List of references

- ECC Report 204, Spectrum use and future requirements for PMSE  
<http://www.erodocdb.dk/doks/doccategoryECC.aspx?doccatid=4>
- CEPT Report 50, Technical conditions regarding spectrum harmonisation options for wireless radio microphones and cordless video-cameras  
<http://www.erodocdb.dk/doks/filedownload.aspx?fileid=3968&fileurl=http://www.erodocdb.dk/Docs/doc98/official/pdf/CEPTREP050.PDF>
- CEPT Report 32, Technical considerations regarding harmonisation options for the digital dividend in the European Union <http://www.erodocdb.dk/doks/doccategory.aspx?doccatid=16>
- EBU Technical Report 001, Results of the EBU questionnaire on spectrum requirements for SAB/SAP & ENG/OB applications, <http://tech.ebu.ch/docs/techreports/tr001.pdf>
- EN 301 357, Cordless audio devices in the range 25 MHz to 2 000 MHz  
[http://www.etsi.org/deliver/etsi\\_en/301300\\_301399/30135701/01.04.01\\_60/en\\_30135701v010401p.pdf](http://www.etsi.org/deliver/etsi_en/301300_301399/30135701/01.04.01_60/en_30135701v010401p.pdf)
- EN 300 422, Wireless microphones in the 25 MHz to 3 GHz frequency range  
[http://www.etsi.org/deliver/etsi\\_en/300400\\_300499/30042201/01.03.02\\_60/en\\_30042201v010302p.pdf](http://www.etsi.org/deliver/etsi_en/300400_300499/30042201/01.03.02_60/en_30042201v010302p.pdf)
- ETSI TR 102 546, Technical characteristics for Professional Wireless Microphone Systems (PWMS), System Reference Document  
[http://www.etsi.org/deliver/etsi\\_tr/102500\\_102599/102546/01.01.01\\_60/tr\\_102546v010101p.pdf](http://www.etsi.org/deliver/etsi_tr/102500_102599/102546/01.01.01_60/tr_102546v010101p.pdf)
- ERC Report 042, Handbook on radio equipment and systems radio microphones and simple wide band audio links <http://www.erodocdb.dk/Docs/doc98/official/pdf/REP042.PDF>
- ECC Report 159, Cognitive radio systems in the 'white spaces' in 470-790 MHz  
<http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP159.PDF>
- ECC Report 191, Adjacent band compatibility between MFCN and PMSE audio applications in 1785 to 1805 MHz <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP191.PDF>
- DKE AK 731.0.8 (DIN/VDE), DKE Radio spectrum monitoring in the context of Eurovision Song Contest 2011  
Report main part: [http://www.apwpt.org/downloads/esc2011\\_20122011\\_english\\_framedoc.pdf](http://www.apwpt.org/downloads/esc2011_20122011_english_framedoc.pdf)  
Report annex: [http://www.apwpt.org/downloads/esc2011\\_20122011\\_english\\_annex.pdf](http://www.apwpt.org/downloads/esc2011_20122011_english_annex.pdf)
- Institut für Rundfunktechnik (IRT), LTE interference on analogue and digital PMSE devices  
<http://www.irt.de/webarchiv/showdoc.php?z=NjQ5OSMxMDAzMDC3MTAxNDEwI2RvY3g=>
- University Hannover, Institute of Radiofrequency, Report on the frequency resource requirements of PWMS  
<http://www.apwpt.org/downloads/reportonthefrequencyresourcerequirementsofpwms.pdf>
- DKE AK 731.0.8 (DIN/VDE), Long-term study on audio PMSE spectrum usage  
[http://www.apwpt.org/downloads/dke\\_ak73108-dke-study-on-audio-pmse-spectrum-u.pdf](http://www.apwpt.org/downloads/dke_ak73108-dke-study-on-audio-pmse-spectrum-u.pdf)

- ECC/CEPT TG 6, Draft working document towards ECC Report on Long Term Vision for the UHF broadcasting band  
[www.cept.org](http://www.cept.org)
  - ITU-R, JTG 4-5-6-7, Draft CPM text pending WRC-15  
<http://www.itu.int/en/ITU-R/study-groups/jtg4-5-6-7/Pages/default.aspx>
  - ITU-R, JTG 4-5-6-7, Draft CPM text pending WRC-15, Preliminary Draft New Report on SAB/SAP, SAB/SAP Spectrum Use in Region 1 and the implication of the Co-Primary allocation for mobile services in the Frequency Band 694-790 MHz  
<http://www.itu.int/en/ITU-R/study-groups/jtg4-5-6-7/Pages/default.aspx>
-