

# Draft agenda input for EuMw2015

Duration: 08:30 to 17:50

Room 202 - 203



WM08

## Current and Future Use of Spectrum by PMSE

### Organisers

Georg Fischer, University of Erlangen-Nürnberg, Germany  
Matthias Fehr, Co-President APWPT, Germany

### Abstract

PMSE are, in particular, fundamental elements of our daily cultural life and essential tools for the content production. They are employed in journalistic news coverage, sports events, theatres, by educational and cultural institutions, trade fairs, film productions, conference-centres, churches, sports clubs, etc. We would like to discuss with the participants the PMSE application, their spectrum use and impact of currently foreseeable changes in the Radio Spectrum.

What decisions need to be taken at both a European and national level?

### Programme

**8:30 - 9:10 Registration and get together**

**9:10 - 9:30 Welcome and brief introduction in the 2nd PMSE Workshop at EuMW**

*Alan March*, APWPT Co-President, UK

Because of the importance of PMSE every change in spectrum has significant effects for culture, sport, education, content production and many others. This conference will describe PMSE status and future outlook.

### I. The application PMSE

**9:30 - 10:10 Short introduction in PMSE**

*Alain Richer*, APWPT Co-President, France

With reference to CEPT Report 204 the presentation will summarise PMSE application and their spectrum requirements.

[→ Read more](#)

**10:10 - 10:50 Coffee Break**

**10:50 - 11:20 PMSE Standardisation within CEPT, ETSI, GRSC and ITU-R**

*Brian Copsey*, Chairman ETSI TG17WG3, UK

In 1991 ETSI, formed a Wireless Microphone group. ES 300-422 was one of the first standards produced by ETSI. Since then ETSI ERM TG 17 has produced standards for all forms of PMSE equipment to enable the entertainment industry to fulfil the ever growing demand for PMSE use.

[→ Read more](#)

### II. PMSE spectrum regulation

**11:20 - 11:35 PMSE in Austria**

*Franz Ziegelwanger*, Austrian Ministry for Transport, Innovation and Technology, Austria

Situation for PMSE in Austria

**11:35 - 11:50 PMSE in France**

*Laurent Bodusseau*, ANFR, France

Situation for PMSE in France

**11:50 - 12:05 PMSE in United Kingdom**

*Helen Hearn*

Situation for PMSE in United Kingdom

**12:05 - 12:30 Panel discussion**

Can national PMSE regulation in the future entirely support the PMSE user requirements?

**12:30 - 13:50 Lunch Break**

(APWPT invites the workshop participants for a lunch buffet)

**13:50 - 14:15 European harmonisation process for audio and video PMSE**

*Andreas Geiss*, Head of Unit Spectrum, DG CONNECT, European Commission  
European harmonisation process for wireless audio and video PMSE and policy challenges in a search for sustainable solutions for future PMSE requirements.

[→ Read more](#)

### III. PMSE as an object of science, study groups and manufacturers

**14:15 - 14:45 How to measure PMSE live spectrum use?**

**Result of Spectrum Scans**

*Matthias Fehr*, DKE AK731.0.8 & Co-President APWPT, Germany

Methodology to record the PMSE spectrum use during a number of events.

[→ Read more](#)

**14:45 - 15:10 Outcomes of project BMWI C-PMSE and ETSI STF386 standardisation work on cognitive radio technology for PMSE**

*Georg Fischer*, University Nuremberg-Erlangen, Germany

A cognitive radio approach to ensure high availability of PMSE links is presented. Research work was conducted in the course of a German national Research project funded by the German Ministry of Research and Education (BMWl). A seamless transfer to standards was ensured by parallel work in ETSI. The standardisation was implemented through a Specialist Task Force.

[→ Read more](#)

**15:10 - 15:30 Analysis of changes in PMSE spectrum – our prediction for PMSE spectrum demand (audio and video)**

*Norbert Hilbich*, Sennheiser electronic, Germany

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Audio and video PMSE are affected by spectrum sales. PMSE urgently requires additional spectrum to maintain and expand its services and needs protection to fulfil the quality demand. → [Read more](#)

**15:30 - 16:10 Coffee Break**

## *IV. Effect of changes*

**16:10 - 16:40 Is PMSE spectrum sharing with terrestrial broadcasting an “obsolete model”? Are there possible alternatives?**

*Darko Ratkaj*, EBU - European Broadcasting Union, Switzerland

Darko Ratkaj briefly analyses the future highly condensed RF spectrum usage in the UHF TV band and the currently foreseeable effect for PMSE spectrum. With a view on content production requirements, he is looking for alternative solutions and their required implementation. → [Read more](#)

**16:40 - 17:25 Panel discussion**

Change in PMSE spectrum their impact on culture and creative segment

**17:25 - 17:40 Closing Remarks**

*Alan March*, APWPT Co-President, United Kingdom

Alan summarises the workshop results and invites further contributions for the APWPT to address.

**17:40 - 17:50 Meet the presenter**

Find some time for your individual question

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## 9:30 - 10:10 Short introduction in PMSE

*Alain Richer, APWPT Co-President, France*

### **Detailed summary**

Today, all productions with cultural content use wireless equipment to transmit the audio signal from the stage to the audience. In audiovisual productions and live performances, wireless audio equipment is also used for communication between the technicians and stage management (talkback links and intercom), mobile communications between staff (walkie-talkies) and sound feedback (in-ear monitoring). All these types of equipment use frequencies, traditionally dedicated to audiovisual broadcasting, on channels which are not used locally by television stations. PMSE (Programme Making and Special Events) is the acronym commonly used to describe the applications of wireless audio and video equipment used in productions.

PMSE spectrum requirements can greatly differ from a medium size theatre production to large TV events, such as the Tour de France or the Olympics Games. This presentation will present the different types of PMSE applications and their spectrum requirements based on experience gained from past and current productions.

## 10:50 - 11:20 PMSE Standardisation within CEPT, ETSI, GRSC and ITU-R

*Brian Copsey, Chairman ETSI TG17WG3, UK*

### **Detailed summary**

European Standardisation of radio microphones was started by ASP Frequency Management, an independent company working for the UK Government to generate Wireless Telegraphy Act licensing of PMSE equipment. The basic problem experienced by ASP when generating suitable spectrum allocations for a show or event was that there was no single "standard" from which they could calculate an intermodulation free set of frequencies, this was further confused by the variable band widths used around both Europe and the World.

In 1991 ETSI, which had recently started to generate such European standards formed a Wireless Microphone group from ASP, Sony, Sennheiser, Shure, Audio Engineering, AKG and the BBC, I was elected Chair of the group a position I hold to this day.

ES 300-422 was one of the first standards produced by ETSI but its publication was held up due to the wide range of standards being produced and the physical limitations in printing thousands of standards.

Since then the group, which is now ETSI ERM TG 17 has produced standards for all forms of PMSE equipment, and its members work within CEPT, ITU and other bodies such as the FCC to "standardise" the technical spectrum characteristics of equipment and work with the various Administrations and within ITU to identify suitable sharing partners in spectrum outside the traditional Broadcast Spectrum (470-862MHz) in order to enable the entrainment industry to fulfil the ever growing demand for PMSE use.

## 13:50 - 14:15 European harmonisation process for audio and video PMSE

*Andreas Geiss, Head of Unit Spectrum, DG CONNECT, European Commission*

### **Detailed summary**

The presentation will give an overview of the actions taken by the European Commission, in the context of spectrum policy on wireless audio and video PMSE. The European Commission has adopted an implementation decision on harmonised technical conditions for spectrum use by wireless audio PMSE on 1 September 2014. Further work is required both for wireless audio and video PMSE taking into account foreseen spectrum reallocations at the European level. Sustainable and coordinated solutions are sought and subject to discussion. Such solutions could include the use of geo-location databases as well as standardization measures introducing PMSE use in higher frequency bands and further digitalisation of PMSE equipment. The European Commission will cooperate closely with the Member States in the development of its strategy and future actions.

## 14:15 - 14:40 Circuit challenges and optimization of far-field wireless power transfer systems

*Matthias Fehr, DKE AK 731.0.8 & Co-President APWPT, Germany*

### **Detailed summary**

This presentation attempts to provide answers to the question "How to measure, analyse and compare the PMSE live spectrum use". For this DKE AK 731.0.8 has monitored PMSE usage during events since 2007 in a number of countries such as Austria, Denmark, Finland, Germany, Spain or Switzerland. These are typical events that happen all around us all year long: from sports to exhibitions, political reports such as elections, international music productions, open air theatre, exhibitions such as international motor shows up to the Bavarian Oktoberfest. The demand for high quality and clean spectrum, with no interference from other sources, ranges from several MHz right up to the entire UHF-TV-Band (470 to 862 MHz).

## **14:45 - 15:10 Outcomes of project BMWI C-PMSE and ETSI STF386 standardisation work on cognitive radio technology for PMSE**

*Georg Fischer, University Nuremberg-Erlangen, Germany*

### ***Detailed summary***

In this talk a cognitive radio approach to ensure high availability of PMSE links is presented. Research work was conducted in the course of a German national Research project funded by German Ministry of Research and Education (BMW). A seamless transfer to standards was ensured by parallel work in ETSI Standardisation implemented through a Specialist Task Force. This STF 386 has generated 3 reports, whereof its main concepts are presented. It turned out that the cognitive radio approach helps in ensuring high availability of links, but cannot serve for capacity increase. It mitigates interference and assists in overcoming interference situations, however it will not increase spectral efficiency. The talk will detail what cognitive behaviour will mean in the context of PMSE. Furthermore the talk will stress the specific radio requirements of PMSE.

## **15:10 - 15:30 Analysis of changes in PMSE spectrum – our prediction for PMSE spectrum demand (audio and video)**

*Norbert Hilbich, Sennheiser electronic, Germany*

### ***Detailed summary***

Norbert Hilbich briefly analyses the changes in audio and video PMSE spectrum. Both are affected by spectrum sales and so far have not been compensated for the significant losses. The effect will not be seen immediately after the auctions, but will show up later when the new spectrum owners go on air. This is expected after 2018. PMSE urgently requires additional spectrum to maintain and expand its services. Besides that the status of PMSE needs to be lifted: in a spectrum of higher density and more users PMSE needs priority to guarantee the demanded production quality: it is a contradiction that the distribution of wireless produced content is protected, but not the production itself. This needs alignment by lifting the PMSE status to Co-Primary or Primary level.

## **16:10 - 16:40 Is PMSE spectrum sharing with terrestrial broadcasting an “obsolete model”? Are there possible alternatives?**

*Darko Ratkaj, EBU - European Broadcast Union, Switzerland*

### ***Detailed summary***

Terrestrial broadcasting transmission is moving out of the 800 MHz band and will eventually also move out of the 700 MHz band. Wherever possible the affected DTT services are re-located to the spectrum below 700 MHz. As a result, the sub-700 MHz band will be used more intensely which will in turn

reduce the amount of interleaved spectrum that has traditionally been the main ‘home’ of wireless microphones and other audio links.

At the same time the requirements for PMSE services are continuously increasing and this trend is expected to continue in the future.

This prompts a question how will the future PMSE requirements be met, in particular for the application that require high level of protection from interference, such as professional content production and live performances?

Possible solutions include both finding alternative spectrum for PMSE to compensate the loss of the 700 MHz and the 800 MHz bands, and increasing the efficiency of use of the available spectrum. Different approaches come with different advantages and constraints for the involved stakeholders. This presentation will outline the perspective of Public Service Broadcasters.