

*WRC-27
&
Audio PMSE
SPF Cluster 4- 29 November 2021*



COPSEY COMMUNICATIONS CONSULTANTS



Who am I? and my credentials

1966 first outside broadcast

1966-1995 wide range of OB's plus theatre, film and airshows, at both technical and practical level. an especially challenging one was
Treasure Hunt

1989-1997 MD of ASP FM licensing PMSE use on behalf of DTI

1991 to present, Chair of PMSE & Broadcast groups within ETSI, also
Chair of TC Safety

1993 to present, Member of various CEPT groups dealing with PMSE &
Broadcast issues

2000 to present , delegate to ITU-R study groups 1, 5, 6 and TG 6/1

Attended WRC 12, 15 and 19

Attend EC Radio Experts Group

2020 appointed ETSI Fellow

PMSE – What is it?

Program Making & Special Events can be considered the pen and pencil of the content production industry which includes web, theatre, adverts, films, sports, concerts and public and cultural events

pmse devices include radio microphones, in-ear monitors, talk-back systems, video cameras and scenery control systems.

It requires “clean” spectrum as most events cannot be repeated and HDTV and above require ever higher audio quality



IS this important to the UK?

Yes

The UK has held a dominant position in the world of content production, and this continues to grow...

The following statistics demonstrate the growth of the 'Live' audience as well as the emerging 'digital' audience, and the content consumption via new delivery platforms:

interesting facts & formula

Theatre audiences have grown year on year for over a decade.

- Theatre sales throughout the UK reached 34 million tickets in 2018, up 80% from 18 million in 2014.
- In addition to the traditional live audiences, both recorded & live streams to cinemas, globally opened a whole new audience. In the face of a pandemic, this has grown to include the online, on demand, live-streaming platforms – a new engagement that is here to stay.
- The National Theatre's NT at Home scheme was one of the biggest virtual successes of lockdown; it screened 17 productions and garnered more than 15m views from audiences in more than 170 countries.



Film & TV Production

Productions values, audio capture, location-recording and reality TV productions have developed exponentially, in terms of volume, scope and scale of production.

- The industry spend was £3.6Bn in 2019, showing a 16% increase on 2018
- Revenue represents 20% of the Whole creative sector
- Globally, Netflix anticipated \$17bn spend on Content Creation in 2020, rising to \$26Bn in 2026
 - Disney allocated \$500m

The 2021 audience



prime video

Disney+

NETFLIX

Music gigs, festivals - The expanding audience

In the music sector, over 30million fans attended gigs and festivals in 2019, contributing £4.5bn to the UK economy alone.

During the pandemic we have seen a transition driven by the resilience of the sector and the power of the human spirit that has found new ways of reaching not only that same that audience as before but a more diverse, wider global audience as well.

- Facebook and Instagram report that 800 million people per day are watching live streams.
- The trend is projected to continue with 74% of live stream viewers saying they'd continue to watch live streams even after concerts returned, and 70% would be willing to pay for live stream

The 2021 audience



Within ITU there are at least 10 abbreviations for different uses of PMSE devices and a plethora of reports, these have grown because ITU is a vertical structure based on “services” and PMSE is a horizontal application, this has hampered PMSE and there are currently two areas of work:

**1. Resolution 59-02 started in 2012 but blocked by USA until this study cycle where Germany,UK,BBC & EBU have managed to restarted the work. The RES seeks to identify PMSE spectrum available in ITU Member states and to generate an ITU database for users. Last weeks ITU-R-SG 5C appears to have agreed that separate reports based on ITU-R SG Services should go ahead. There is a good group of PMSE enthusiasts attempting to forward this work
PMSE is relevant to ITU-R SG 6A-5A-5C-5D & 1**

2. WRC19 A 1.5 dealt with in following slides

**PMSE is identified as a secondary service in the UHF broadcast band by footnote
5.296**

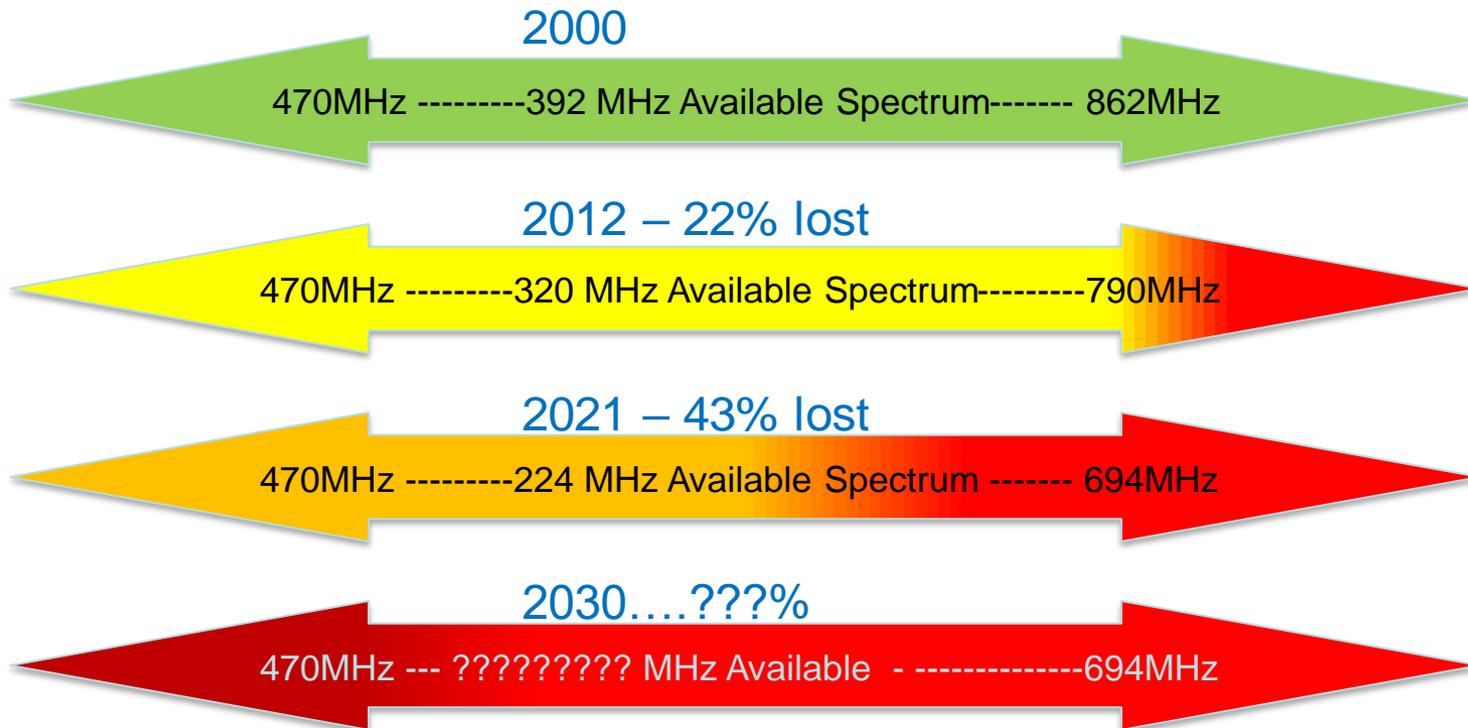
WRC-19 generated major problems for the PMSE industry. The broadcast band 470-862 MHz had already been reduced to 470 – 694 MHz:

WRC-19 A1.5 seeks to review the 470-960 MHz band with the view of considering future mobile allocations in the 470-694 MHz band.

TG6/1 is tasked with this work. In addition article 1.4 high altitude platforms may offer a threat to the DECT frequency band which is currently used for talkback following the reduction in UHF broadcast band spectrum.

Work in TG6.1 has been hampered by filibustering from members who do not appear to want any studies or information to be provided to WRC-23,

PMSE Spectrum Availability over 20 years



AI 1.5 the future of the UHF band 470 – 960 MHz in region 1 (EMEA)

TG6/1
develops
proposal /
possibilities

CPM
and WRC23

1

2

3

No change
Broadcast is primary; PMSE is secondary FN
5.296

Add Mobile
Co-primary Broadcast and Mobile;
PMSE FN deleted, as PMSE is mobile

mobile IMT allocation

Consequences:
Mobile stakeholders will go for WRC2027

Middle East countries have decided to
use parts of the band 470 – 694 MHz for
IMT already.

Consequences:
Keep lobbying
Mobile stakeholders will push for an IMT
allocation

Lobby: A potential IMT allocation should
not cover the complete 470 – 694 MHz

not final
PPDR wants to get xx spectrum as well?

Middle East countries have decided to
use parts of the band for IMT already.

Not on WRC agenda, but can happen

Lobby for
A potential ITM allocation should not
cover the complete 470 – 694 MHz

Consequences:
Spectrum allocated will be lost quickly in
Middle East, other regions/countries
might follow after 2030 ?

PMSE options

alternative bands below 2 GHz ?

Europe: What about 1350 – 1400 MHz ?
(UK is blocking)

Start of WRC27 prep

IMT mobile / PPDR
will ask for more

The changing Spectrum landscape, and the future solutions:

- We have already seen PMSE spectrum availability in the UK shrink by nearly 50% in the last decade
- With changing delivery methods, and viewing patterns, the reduction in terrestrial TV networks leaves PMSE exposed -
- Global regulators must recognize the collective need to for a long-term, global solution that allows PMSE to thrive and in turn feed the digital revolution mobile enables
- Globally harmonized spectrum, dedicated to content creation is a critical requirement for us all.

Why not use 5G ?

It should also be noted that in spite of the many PR statements 5G and potentially 6G, cannot do *anything and everything*, currently research projects in Germany have clearly shown this is not the case for audio PMSE. There are many issue identified, the major one's being :

- latency : especially for In Ear Monitors (analogue system allowing Artist to be in tune with music etc.)
- Reliability: majority of Audio PMSE use requires 100% quality 110% of the time
- The commercial case and cost for using public networks when an event will require between 60 and 100 radio microphones.
- Electronic News Gathering (ENG) has used public networks for many years as the quality required is less important than the information
- Spectrum efficiency: 50MHz per radio microphone(currently 22 per 8 MHz)

Dependent upon the outcome and horse-trading at WRC- 23 any form of allocation for mobile within the 470-694 band will reduce further the ability of audio PMSE to operate in Region 1 as PSME CANNOT Operate co-channel with IMT (see ITU-R BT 1824)..

The UK should consider:

- 1. preparing input to WRC-23 CPM to identify suitable clean spectrum for PMSE at WRC-27***
- 2. Such spectrum should have coverage similar to the existing Broadcast allocation***
 - 3. Be below 2000MHz for propagation and coverage***
 - 4. Consider the position of PMSE if the 470-694 MHz band becomes mobile as presumably the existing footnote would disappear***
 - 5. Support at RA the continuation of RES 59***
 - 6. Ensure protection for DECT band***

How can we achieve such an input to CPM 23?

- *Thank you for your attention*
- *For further information please contact
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