

EUROPEAN MICROWAVE WEEK 2015

SIX DAYS • THREE CONFERENCES • ONE EXHIBITION

PALAIS DES CONGRÈS, PARIS, FRANCE
SEPTEMBER 6 - 11, 2015

Exhibition Opening Hours:

- Tuesday 8th September: 9.30 – 18.00
- Wednesday 9th September: 9.30 – 17.30
- Thursday 10th September: 9.30 – 16.30

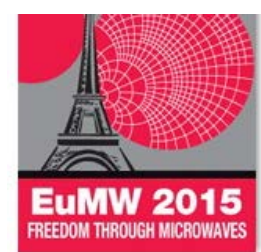
UK strategy for future PMSE spectrum access

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WM08 - PMSE Workshop at EuMW2015



Content

- Our current approach
- Our PMSE Review - Trends in demand and supply of spectrum
- Our strategy for video PMSE applications
- Our strategy for audio PMSE applications



Current management

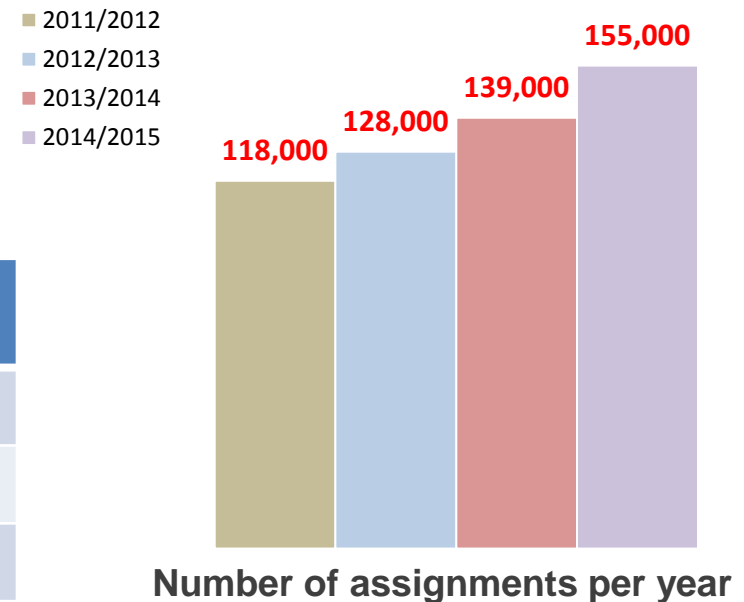
- PMSE refers to any wireless equipment used for the production, management and support of a wide range of events from TV and film making, newsgathering, concerts, plays and cultural and religious events
- PMSE has access to a number of spectrum bands from 48 MHz to 48 GHz for a range of wireless applications
- Spectrum outside these allocations is often 'borrowed' to meet peak demand or accommodate visiting broadcasters and/or event participants
- All PMSE use is licensed mainly on an individual authorisation basis but there is some shared use for wireless microphones in VHF and UHF
- Assignment fees depend on band, channel size and duration. Shared (microphone) licences are charged on an annual basis and authorise access at any time at any location
- PMSE licensing now carried out by Ofcom having been outsourced since 1997

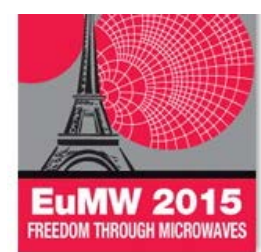
Increasing use

From licensing data

- The number of PMSE assignments issued has grown steadily
- More events
 - 24,000 in 2011/2012
 - 33,000 in 2014/2015 (38% increase)
- Events getting larger

Annual event	Assignments 2011	Assignments 2015
Glastonbury	823	1035
British F1 Grand Prix	590	611
T in the Park	347	387
Open Golf	255	301
Wimbledon	219	281





PMSE Review

Why we need to review our strategic approach to spectrum access for PMSE

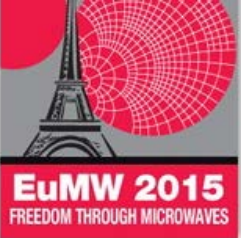
- Focussing on PMSE to ensure there is sufficient spectrum to satisfactorily meet increasing demand in an environment of reducing supply

Supply of spectrum

With expansion of mobile services, PMSE is facing pressure on its established allocations as spectrum is reallocated. We need to ensure that there is sufficient spectrum for PMSE to satisfactorily meet demand in the future.

Increasing demand

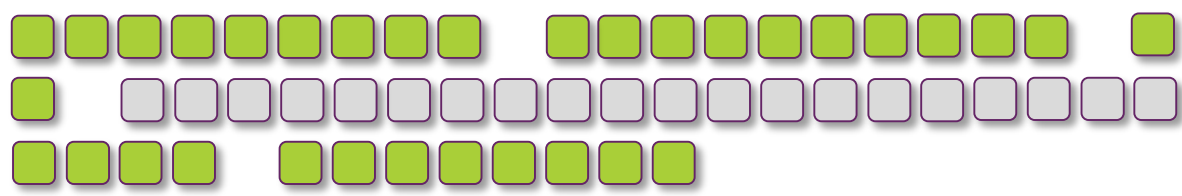
The creative industries sector is making increasing use of spectrum to produce and develop content. The trend in production is towards bigger and better shows. Technology developments are being incorporated e.g. small 'point of view' cameras.



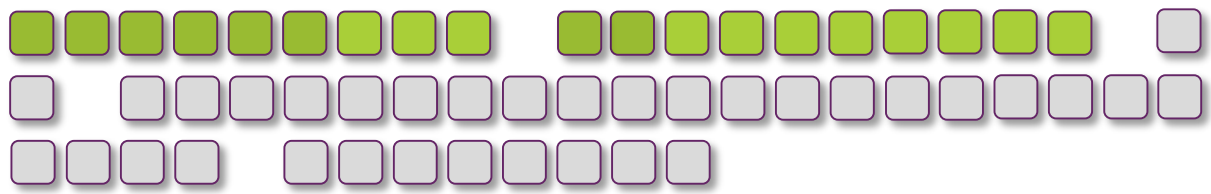
Video PMSE strategy

- Preferred spectrum range for video PMSE is 2-4 GHz
- Spectrum in this range is under pressure
- The forecast outcome after spectrum releases in the 2.3 and 3.4 GHz bands is 19x10 MHz channels

33 PMSE Channels between 2010 and 3580 MHz before release



19 PMSE Channels between 2010 and 2300 MHz – Forecast after release





Video PMSE strategy

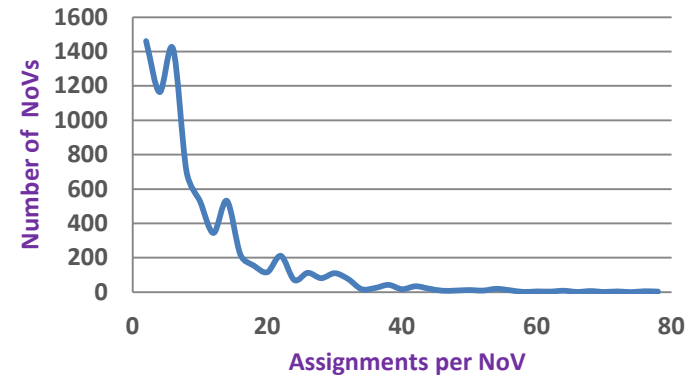
- Assessed impact of spectrum changes on events in the UK to determine spectrum shortfall
- Spectrum requirements are easily met in the majority of cases
 - 75% of occasions, the total requirement of all users is no more than 2 video channels
 - 95% of occasions, the total requirement is no more than 5 video channels
- Spectrum shortage becomes significant for peak demand events
- Examined peak demand events in detail to gauge spectrum shortfall and assessed the effect of various actions to mitigate this
- Our video PMSE strategy published in November 2014 satisfies current demand
 - Greater use of 7 GHz bands while maintaining access to a core of 2 GHz spectrum
 - Growth in demand broadly satisfied by developments in technology (Cambridge Consultants)

(<http://stakeholders.ofcom.org.uk/binaries/consultations/pssr-2014/statement/cambridge-main-report.pdf>)



Audio PMSE strategy

- Carried out an impact assessment of loss of 700 MHz band for PMSE
- 93% of events require fewer than 24 assignments (for microphones and in-ear monitors)
- Release of 700 MHz hits peak demand events – approximately 1000 events per year
- Started looking for alternative spectrum bands against following criteria:
 - Below 2 GHz
 - Not used by mobile
 - Not identified as a candidate mobile band
 - Potential for PMSE use to be harmonised
 - Significant block of spectrum
- Identified two bands as good candidates:
 - 960-1164 MHz sharing with aero navigation services
 - 1525-1559 MHz sharing with Mobile Satellite Services (MSS)





Audio PMSE strategy

- 960-1164 MHz sharing with DME (Distance Measuring Equipment)
 - Working with UK Civil Aviation Authority and Ministry of Defence
 - Carried out coexistence measurements
 - Conclusions broadly positive for sharing
- 1525-1559 MHz sharing with MSS (space to Earth)
 - Carried out coexistence measurements with MSS devices (Earth station receivers)
 - Assessed density and profile of use of MSS
 - Worked with MSS stakeholder to understand network architecture and channel allocation within global, wide and spot beams
- Making spectrum available is one thing but equipment needs to be available
- Met with manufacturers to get their views on the bands and what they need to invest:
 - Security of tenure
 - Some form of harmonisation to generate economies of scale