



Ofcom Consultation

British Entertainment Industry Radio Group (BEIRG)

UK Preparations for the World Radiocommunication Conference 2015 (WRC 15) - Response

Date: September 2014

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Executive Summary

- BEIRG recognises and welcomes Ofcom's commitment to work with the PMSE sector to safeguard the cultural, social and economic benefits which PMSE provides. BEIRG is encouraged by the work that has already been undertaken to consult with, and appreciate the requirements of, the PMSE sector in advance of WRC 15.

- BEIRG is disappointed that Ofcom have yet to establish and publish a clear strategy for PMSE. It is inconceivable that Ofcom can be representing the best interests of the UK PMSE sector at WRC 15 without such a strategy in place to guide its position. Ofcom should establish such a policy as a matter of urgency, to be taken into international meetings.
- BEIRG welcomes Ofcom's intention to oppose Agenda Item 1.1 but asks Ofcom to oppose Agenda Item 1.2 at WRC 15.
- BEIRG requests that, at WRC 15, Ofcom pursue a figure of -42 dBm/8 MHz for 10MHz for out of band emissions (OOBE) in the 700 MHz band, as currently proposed by CEPT. This figure should be extended to all channel bandwidths. Only this level will serve to protect spectrum below Channel 48. The currently proposed level of -25dBm/8MHz is unacceptable.
- BEIRG thinks that it is a mistake to base spectral policy on unreliable and potentially inaccurate forecasts of future mobile broadband demand, especially when the results of that policy may prove to be negative for another, important sector.
- BEIRG believes that estimates for future mobile broadband demand are unreliable. MNOs already have access to enough spectrum to satisfy their demands. BEIRG believes that, if MNO's are permitted and encouraged to use their existing spectrum holdings more efficiently, capacity would be sufficient to meet current and future demand.
- BEIRG requests that Ofcom to undertake an independent analysis of projected mobile data demand in 2020. Furthermore, BEIRG calls upon Ofcom to undertake an independent review of the efficiency with which MNOs utilise the spectrum to which they currently have access.
- If Agenda Item 1.2 is approved, then the UK PMSE industry will suffer a serious blow from which it may not recover. Not only would major national events and industries potentially be disrupted, but the amount of future investment and support for the PMSE sector may be reduced as investors lose confidence due to the loss of stability and security.

Agenda Item 1.1

BEIRG welcomes Ofcom's decision to oppose a co-primary mobile allocation in the 470 – 694 MHz band. For the reasons outlined later in this consultation response, BEIRG does not believe that MNOs need to be allocated additional spectrum. Indeed, we believe that the interests of consumers and other users of spectrum would be best served through more efficient use by MNOs of spectrum which they already hold.

By opposing the co-primary mobile allocation, Ofcom help to provide some stability for the PMSE sector which, in the past, has been sorely lacking it. The industry had been racked with uncertainty for several years as discussions regarding the clearance of the 800 MHz band progressed. PMSE users hoped that that clearance would mark the end of this uncertainty and the creation of a stable environment in which they could work. Instead, almost immediately, discussions began about the clearance of the 700 MHz band. In effect,

manufacturers, suppliers and users of PMSE equipment have not enjoyed the stability, on which any industry relies, for over a decade.

Instead, the PMSE industry in the UK has faced serious upheaval. The clearance of the 600 MHz (Channels 31-37, 550-606 MHz) and 800MHz bands has placed a serious financial burden on the industry. The threat of interference from unlicensed White Space Devices (which would compete with any future potential 'Cognitive systems for PMSE') and the proposed clearance of the 700MHz band are providing further concern for PMSE professionals and undermining investor confidence. At the same time, consumer demand for PMSE produced content is rising. BEIRG believes there will soon be insufficient clean spectrum available to operate necessary quantities of PMSE equipment for large-scale productions to be staged at prime venues across the UK.

BEIRG request that Ofcom use its considerable influence to persuade its international counterparts to oppose the co-primary mobile allocation of the 470-694 MHz band.

Agenda Item 1.2

BEIRG strongly opposed the decision taken at WRC12 to make a co-primary mobile allocation to the 700 MHz band. BEIRG continues to hold this position and calls upon Ofcom to oppose this decision at WRC 15, for the reasons explained both in this consultation response and in BEIRG's response to the "Future use of the 700 MHz band" consultation.

The economic and social importance of PMSE, and the creative industries which rely on it, is growing. In the UK the creative industries are currently responsible for 1.5 million jobs, and contribute nearly £72 billion annually to the UK economy. PMSE services contribute significantly to the economic, cultural and social wellbeing of the UK. For example, London theatres, which use PMSE equipment to produce much of their content, attract visitors from all over Britain and tourists from across the world. The current annual turnover of London theatres is £618.5 million, which represents just over 22 million attendances annually¹. Including downstream revenue such as merchandise, the estimated economic impact is £1.5 billion. Similar figures apply to theatres outside London. Similarly, music festivals and live music concerts also contribute a significant amount to the British economy. Yet all of this success, both economically and culturally, would be placed in jeopardy if the 700 MHz band were to be cleared for use by MNOs.

Without sufficient access to spectrum, the PMSE sector's ability to produce content for consumers will be severely hindered. It is essential to recognise that any impingement on PMSE usage poses a serious threat to the revenue generation of this sector. Industry users will be directly affected and face a huge potential loss of earnings and consumer reputation. In any production **uninterrupted** audio is absolutely critical. Consequently, any interference experienced that causes a wireless audio failure has severe repercussions for both the production and the audience alike. Therefore, new services need to recognise, respect and co-exist with PMSE users, as well as to make the most of the spectrum that they have, to ensure fair usage for all.

Unlike other technologies, wireless microphones do not have the capability to move to platforms other than radio spectrum. Whereas currently terrestrial television services may potentially be able to be broadcast online in the longer-term, PMSE equipment cannot function on any platform other than clean, interference-free spectrum. Currently there is only a limited pool of PMSE equipment that operates outside the UHF spectrum; the UHF bands offer the largest quantity of contiguous, good quality spectrum required for large

¹ SOLT, *London Theatre Report*, pg.8,
<http://www.solt.co.uk/downloads/pdfs/pressroom/London%20Theatre%20Report%202014.pdf> (accessed on 15th August 2014)

professional events. This is not the case for other “usable” blocks of spectrum like 1.8GHz, 2.4GHz, or even 5GHz, for which some manufacturers make a small amount of equipment. Furthermore, interference from TV in the UHF bands is predictable and can be accounted for, while in other parts of spectrum where radio mics can operate, PMSE users must share spectrum with license exempt devices and find that access can be much more unreliable and of a poorer quality.

While BEIRG recognises that mobile broadband may bring benefits to MNOs and consumers in the future, this should not be at cost to other industries reliant on spectrum, such as PMSE. The impact on these industries will outweigh those benefits to citizens and consumers. Demand for spectrum in the UK is extremely high, and growing. Upwards of 90,000 requests for PMSE spectrum access are made to the licensing band manager in the UK each year. Any changes to spectrum allocation which will affect the ability of these industries to operate risk diminishing their contribution to society, and reduce their capability to provide a range of benefits to consumers.

Out of Band Emissions

BEIRG is deeply concerned that the levels for out of band emissions (OOBE) for the 700MHz band have been proposed as -25dBm/8MHz. CEPT, sensibly, has proposed a value of -42 dBm/8 MHz for 10MHz channels and yet this was not accepted at the JTG4-5-6-7 meeting. It is absolutely imperative that Ofcom pursue a figure of -42 dBm/8 MHz for all channel bandwidths in order to protect spectrum below Channel 48.

Future Mobile Data Demand

Agenda item 1.2 is predicated on the idea that, in the future, demand for mobile broadband will increase dramatically. While BEIRG recognises that mobile data demand will increase, it would be irresponsible for the WRC 15 to base its decisions on hypothetical and contentious predictions of mass growth in demand. The European Broadcasting Union believes that current models offered by ITU-R SG 5D overestimate mobile traffic density in 2020 by a magnitude of two orders - a factor of one hundred². If current projections used to justify the 700MHz band are closely examined BEIRG think that the same conclusion would be drawn?

The website CBROnline recently reported that research from Goldman Sachs has suggested that Wi-Fi will become the dominant wireless access technology for the Internet of Things (IoT). Goldman Sachs reported that 70% of respondents to a survey by VDC Research stated that Wi-Fi would be the dominant technology³. CBROnline also reported, in May, comments from Neul that 4G technologies such as LTE will struggle to play a meaningful role in the IoT⁴. These assessments reveal the vast uncertainty surrounding predictions of future uses of technology such as mobile broadband.

² European Broadcasting Union, Spectrum Factsheet, <http://www3.ebu.ch/files/live/sites/ebu/files/Knowledge/Publication%20Library/Fact%20sheets/Fact%20sheet%20-%202014-07%20Spectrum.pdf>, (accessed 23rd July 2014)

³ CBROnline, “Wi-Fi, Not Cellular, To Lay The Foundation For The Internet Of Things”, <http://www.cbronline.com/news/mobile-and-tablets/wi-fi-not-cellular-to-lay-the-foundation-for-the-internet-of-things-4307312> (accessed 23rd July 2014)

⁴ CBROnline, “Internet of Things can’t be built on LTE”, <http://www.cbronline.com/news/internet-of-things-cant-be-built-on-lte-4263590> (accessed 23rd July 2014)

The predictions for data use on which Ofcom and WRC 15 have based their position regarding Agenda Item 1.2 appear to be rooted in speculation. There does not appear to be a consideration of market forces or economic constraints. For example, will consumers actually be prepared to pay for so much data? BEIRG would also be keen for Ofcom to quantify what this explosion in data usage would actually translate into in terms of daily use as this may give some insight into how realistic these predictions are.

In its consultation on the clearance of the 700 MHz band, Ofcom acknowledge the “uncertainty over forecasts of demand”⁵. And yet a decision which will have a negative, potentially catastrophic, effect on one of the UK’s most vital sectors, the Creative Industries, may be taken based on this “uncertainty”. While some predications indicate that demand for mobile data will increase based on current usages, they do not reflect the consumer’s willingness to pay for additional data. Nor do they recognise the fact that the content for which consumers need mobile data is created by PMSE users. Any damage to the PMSE sector will inevitably reduce the quantity and quality of the content consumed over mobile data, thus potentially reducing data demand itself.

Before any decision is made regarding Ofcom’s stance on Agenda Item 1.2 at WRC 15, BEIRG urges Ofcom to carry out **clearly independent** analysis of future mobile data demand.

Also, BEIRG asks that Ofcom carry out independent analysis of the efficiency with which MNOs use the spectrum to which they currently have access. BEIRG believes that if MNOs were made to use their current spectrum more efficiently there would be less, if not no, need to allocate them additional spectrum.

The past actions of extending mobile broadband spectrum access, without supporting or demanding the reuse of existing resources, have not encouraged sufficient efficiency amongst the mobile telephone industry. Whilst PMSE is an efficient user of spectrum, able to utilise interleaved spectrum and to operate alongside other users such as DTT, mobile telephone technology is, at present, not and is unable to coexist with other users.

Additional spectrum should only be allocated for use by MNOs once they have shown that they have made efficient use of their current spectrum and their need for additional spectrum has been confirmed by critical, independent analysis. Currently, BEIRG does not believe that MNOs have made a convincing case in this regard. Much more efficient and cost-effective use could be made of this spectrum, and it is therefore imperative that mobile telephone companies make the most of their large spectrum holdings, as meeting any likely future demand will be greatly dependent on this. Ofcom should model the outcome of a re-farming effort by the mobile companies and ensure they comply with this to ensure the greatest possible level of spectral efficiency, before finalising its support for Agenda Item 1.2 and a clearance of the 700 MHz band.

The increasing complexity of handsets has already led to a steady decline in mobile handset radio performance, which in turn leads to an increase in the required number of base stations to maintain network coverage⁶. The addition of further complexity to mobile handsets (and/or other mobile network user equipment such as dongles and tablet computers) will not promote spectral efficiency. BEIRG believes that MNOs should be encouraged to exclude poor performing handsets from their networks.

⁵ Ofcom, Consultation on the Future Use of the 700 MHz Band, pg. 19

⁶ Eurexcem Engineering, *Study for the European Commission – Enterprise and Industry Directorate General: Technical support relating to performance of antennas of mobile phones, Final Report*, 28 January 2014

In addition to the proposed use of the 700 MHz band by MNOs the exceptionally high levels of out of band energy for both 10MHz channels and even higher for > 10MHz channels will pollute the adjacent spectrum and the duplex gap for PMSE or DTV use. Is this efficient use of spectrum?

In “Future use of the 700MHz band: Cost benefit analysis of changing its use to mobile services” Ofcom list several ways by which MNOs could increase their mobile data capacity. MNOs should be required to employ these options before, **not after**, they are allocated additional spectrum. A mobile telephone industry that in general refuses, for example, to share network infrastructure resources such as masts, clearly has more interest in its market penetration than in the efficient use of spectrum.

Mobile users already offload onto Wi-Fi to make voice calls and to send and receive data in an already overloaded SRD Band. As a more efficient, reliable and better quality means of data transfer, this raises the question of how much more spectrum the mobile community actually needs in future. The future may see most consumers offloading services onto Wi-Fi, as a preference to mobile broadband, especially with increasing amounts of people working from home. Use of Wi-Fi could allow for a much larger capacity and faster throughput of data. This offloading of voice calls and data is not accurately reflected in predictions for future data use.

It should also be noted that mobile broadband is only one mechanism for data delivery; one which cannot deliver the benefits of a wired connection. Ofcom should encourage the use of wired Wi-Fi systems to facilitate data delivery wherever possible. While there is a difference in relative costs, the life of a wired network is 30-50 years, compared to 10-15 years for wireless. Spectral efficiency of networks should be Ofcom’s primary focus, and a concentration now on Wi-Fi provision to provide data access would help to relieve a great burden on spectrum use, and allow PMSE to continue operating at its current level.

Ofcom’s Approach to Preparation for WRC 15

BEIRG welcomes and appreciates the lengths that Ofcom goes to in order to engage with stakeholders from the PMSE community. We have been particularly buoyed by current bi-monthly meetings between Ofcom and representatives of the PMSE sector. However, BEIRG still has concerns with the approach adopted by Ofcom to preparations for WRC 15.

Notably, BEIRG is concerned that Ofcom remain without a codified PMSE strategy. Such a strategy has been discussed with Ofcom on numerous occasions, yet as we approach WRC 15, when critical decisions will be taken regarding the future of the PMSE sector in the UK, there remains a notable vacuum where that strategy should exist. How can Ofcom advocate for the best interests of the UK’s creative industries when it has no strategy on which to base that advocacy? This problem has manifested itself in relation to work carried out by JTG4-5-6-7 regarding SAB/SAP (PMSE). Ofcom should be actively supporting this work and yet, because it has no codified PMSE strategy, it is unable to, thus disenfranchising the PMSE sector.

BEIRG is also concerned about the foundation of Ofcom’s position regarding Agenda Item 1.2. As explained in this response, BEIRG does not believe that Ofcom have sufficiently accurate or reliable predictions of future mobile data demand on which to base its strategy. Before any decision is made regarding the future use of the 700 MHz band, BEIRG urge Ofcom to carry out **clearly independent** analysis of future mobile data demand.

British Entertainment Industry Radio Group

The British Entertainment Industry Radio Group (BEIRG) is an independent, not-for-profit organisation that works for the benefit of all those who produce, distribute and ultimately consume content made using radio spectrum in the UK. Venues and productions that depend on radio spectrum include TV, film, sport, theatre, churches, schools, live music, newsgathering, political and corporate events, and many others. BEIRG campaigns for the maintenance of 'Programme Making and Special Events' (PMSE) access to sufficient quantity of interference-free spectrum for use by wireless production tools such as wireless microphones and wireless in-ear monitor (IEM) systems.

As well as being vital in producing live content, wireless PMSE technologies play a key role in helping to improve security and safety levels within the entertainment industry and other sectors. Their benefits include improving the management of electrical safety, the reduction of noise levels, the development of safety in communications and reducing trip hazards as well as providing an essential tool for the security orientated services. Wireless equipment and the spectrum it operates in are now crucial to the British entertainment industry.

BEIRG is a member of the Association of Professional Wireless Production Technologies (APWPT)⁷, which promotes on an international level the efficient and demand-driven provision and use of production frequencies for professional event productions, as well as safeguarding such production frequencies for the users on the long run.

⁷ <http://www.apwpt.org/>