BBC response to the Ofcom consultation on Optimal use of 3.9GHz Spectrum

15 July 2024

Introduction

The BBC is grateful for the opportunity to comment on Ofcom's proposals for the optimal use of 3.9GHz Spectrum. The frequency range 3800-4200MHz, within which the 3.9GHz band falls, is vital to the operations of the BBC and that will continue to be the case.

Within the range 3800-4200MHz the BBC operates a number of satellite Receive Only Earth Stations (ROES) in the UK. These sites are registered with Ofcom through Recognised Spectrum Access (RSA). The RSA at the BBC's Wood Norton site facilitates the monitoring of transponders used for the distribution of BBC World Service content outside the UK.

BBC Monitoring at Crowsley Park receives foreign broadcasts across the entire 3800-4200MHz protected by longstanding RSA, supporting the tracking and analysis of local media sources around the world, which is increasingly important in an age of rising global insecurity and disinformation. This activity is undertaken in support of the BBC's commitments to various government departments as specified in an agreement until at least the end of 2027¹. Satellite services are subject to change without notice, requiring BBC Monitoring to be able to access the full 3800-4200MHz range as well as other spectrum at all times.

Also in the range 3800-4200MHz the BBC has deployed low and medium power 5G Private Networks to enhance live BBC coverage at a number of major events following the introduction by Ofcom of Shared Access Licences (SAL). Examples include the 2022 Commonwealth Games in Birmingham and the late Queen's funeral procession through Edinburgh Airport. Live news contribution was also provided for thirty international news organisations via multiple 5G Private Networks on the Mall during the Coronation of King Charles. Most recently the BBC employed multiple 5G Private Networks at the NW200 motorcycle event in Northern Ireland to supplement public networks and provide further live camera positions around a rural course where public network capacity was insufficient. Significant equipment investment has now been made in anticipation of further use of 5G Private Networks for routine Content Production and Newsgathering.

Internationally, an EU Mandate to CEPT in 2021² promoted the deployment of terrestrial wireless broadband systems in 3800-4200MHz, to provide local area network capability for base stations of low and medium power. The CEPT has pursued this through PT1 and FM60 to produce the recent ECC Report 358 considering sharing mechanisms with other services. Following the report the CEPT has now published an ECC Decision harmonising technical conditions for the shared use of the 3.8-4.2GHz band by 'low/medium power terrestrial

¹

https://assets.publishing.service.gov.uk/media/5a750e5eed915d60d3b90c45/BBC_Monitoring_Agreement_D ec_2016.pdf

² https://cept.org/files/6813/Mandate%203 8-4 2GHz.pdf

wireless broadband systems' (WBB LMP). Similar trials and regular use of 5G Private Networks for Content Production has also become established in a number of European countries including Germany, Switzerland, Denmark and Norway, particularly in 3800-4200MHz.

The SAL framework in 3800-4200MHz has been crucial for deployment of these 5G Private Networks in the UK. The BBC has seen and contributed to the significant efforts already made by Ofcom to identify suitable spectrum, particularly to ensure compatibility with adjacent users and the existing Hutchinson 3G Limited (H3G) assignments. Ofcom's proposals in the recent 'Evolution of the Shared Access Licence Framework'³ consultation were very welcome to improve the application processes with revised technical assumptions and co-ordination.

These changes will be crucial to improved geographical availability and speed of access to spectrum as the BBC moves to a greater routine reliance on 5G Private Networks supporting high-quality solutions for Content Production.

However, while we welcomed these developments, the BBC has serious concerns with the proposals in the current consultation. These relate to the protection of existing and future C-band ROES through the RSA process, as well as continued access to suitable spectrum in 3800-4200MHz for 5G Private Networks, despite the reassurance given in the consultation document.

Whilst the proposals in the draft licence retain similar levels of co-channel emissions, introducing the high power 5G network into the range 3925-4009MHz excessively compromises the full range 3800-4200MHz for low and medium power use. Ofcom recognise this and consider the possibility of moving H3G to start at 3800MHz to 'promote more efficient use of the wider 3.8-4.2GHz band' (4.42). More efficient use is however rejected by Ofcom due to the need to retune ten Fixed Links and nearly 150 SALs in SE England on the basis of not being 'proportionate to the benefits' (4.44). The BBC would challenge this assertion given the opportunities for a continuous range with only one spectrum boundary for SALs rather than three. We believe that it would be appropriate for H3G to fund retunes of these existing licensees, given these proposals would benefit H3G.

Not moving H3G to the 3800MHz boundary would be a lost opportunity and hobble the aspirations of low and medium power users across the entire UK as well as those of Ofcom to ensure 'the radio spectrum is used in the most effective way'⁴.

Also serious are the proposals to substantially increase the permitted Out of Band (OOB) emissions. The existing licence permits a level of -36dBm/5MHz greater than 10MHz from the block edge but the proposal is to instead permit 13dBm/5MHz, an increase of <u>49dB</u>, with Ofcom assuming a 10dB relaxation on that for co-ordination purposes. Such a massive increase in OOB emissions will sterilise wide areas for low and medium power use as well as impact on ROES around H3G base stations, an extensive network of 9000 sites and 26000

³ <u>https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/shared-access-licence-framework-evolution/</u>

⁴ https://www.ofcom.org.uk/about-ofcom/what-we-do/what-is-

ofcom/#:~:text=Ofcom%20is%20the%20regulator%20for,eye%20on%20TV%20and%20radio.

assignments. Details of the H3G sites and their assignments were requested from Ofcom to further analyse the potential impact but were not forthcoming before the consultation submission deadline. In considering the impact on these changes Ofcom say they expect *'very little or no impact on other Shared Access users'* (3.25) and will re-coordinate new H3G base stations with ROES. The only co-ordination mitigation that Ofcom suggest *'may include Shared Access users further away in frequency'* (3.22) again sterilising spectrum and reducing the capacity of the band for innovation.

After several years of encouraging developments to promote Shared Access for innovation and encouraging investment, Ofcom now appear to be proposing technical changes that will <u>severely impact</u> future opportunities and spectrum availability for low and medium power use in 3800-4200MHz. These proposals are also at odds with the EU Mandate to CEPT to now harmonise this frequency range internationally for low and medium power use. The BBC has embraced Shared Access in 3800-4200MHz for Content Production, successfully developing it alongside partners to support the most high profile events using 5G technologies. Despite the reassurances in the consultation document concerns also remain over protection of our existing ROES sites.

Optimal use of the 3.9GHz spectrum may be achieved for H3G and their high power 5G FWA network, but these proposals permit massively higher OOB emission limits which risk devastating consequences for all other users of 3800-4200MHz. Innovative low and medium power Shared Access use, encouraged and promoted by Ofcom and DSIT over recent years appears now to be facing an existential threat. For the BBC and our audiences, this could impact the quality of our news reporting and coverage of major events, which are central to our roles of pursuing truth with no agenda and bringing people together.

Our responses to the specific questions are set out below.

The BBC would be very happy to engage with Ofcom on these matters at any time.

Question 1: Do you agree with our proposed technical changes to the licence?

The BBC does not agree with the proposal to relax OOB limits, particularly the increase over most of the band from -36dBm/5MHz to 13dBm/5MHz, a substantial increase of 49dB liable to lead to spectrum sterilisation over wide areas for Shared Access and adversely impact performance of our ROES.

Question 2: Do you agree with our assessment of the impacts of our proposed technical changes to the licence?

Relaxation of OOB emission limits by 10dB over the proposed limits for co-ordination purposes only facilitates higher than assumed interference levels to other services sharing the band given that there is no incentive for H3G to exceed the OOB emissions masks.

For our ongoing Shared Access Licences the BBC remain concerned over excessive increases in unwanted H3G interferers which may arise because of their substantially higher permitted OOB emissions compared to current limits used for their original co-ordination. The proposal to amend the coordination process for satellite earth stations and to recoordinate H3G assignments (3.18) does not provide us with the necessary confidence that protection will be maintained.

The possibility of interference to the continued interference free operation of satellite earth stations, particularly our existing ROES in the UK, is important to the BBC. The BBC would like clarity from Ofcom on the definitions of 'undue interference' that will be used.

In coordinating Shared Access base stations with adjacent H3G assignments and their proposed much higher levels of OOB emissions, the BBC does not agree that the risk of interference will be trivial. Simply moving Shared Access users further away in frequency will result in less efficient use of spectrum.

It is not clear how establishing a new high power network to deliver 5G FWA services would not have an impact on the competition in the market particularly those FWA operators already established and operating under low and medium power SALs.

Question 3: Do you agree with our proposal to introduce a use clause, including the specific timeframes proposed?

The introduction of use clauses is welcomed by the BBC to reduce spectrum hoarding in general.

Ofcom considered moving H3G's frequency range to start at 3.8GHz to benefit from only one high power shared boundary with other spectrum users recognising it would promote more efficient use of 3800-4200MHz. It is disappointing that Ofcom are not minded to propose this move and the BBC asks Ofcom to reconsider. With ten Fixed Links and around 150 SAL licensees affected perhaps the costs of retuning could be borne by H3G.

Question 4: Do you agree with our assessment of the impacts of our proposed use clause?

No comment.

Question 5: Do you have any other comments on our proposed use clause?

It has already become apparent through historical applications for short term SALs that unused H3G assignments have been unnecessarily protected, sterilising spectrum and impacting on availability and utility of the band. The proposals are for a further 3.5 years before H3G are required to commission their sites. The BBC therefore asks that during this time, inactive H3G assignments are not considered in coordination for short term Shared Access applications to maximise spectrum availability for innovation. Content Production requirements are generally applied for at short notice and for a period of less than 14 days with low risk to H3G.

Question 6: Do you agree with our proposal to update coordination with Shared Access users to assume synchronisation?

The BBC welcomed the proposal by Ofcom in its recent Shared Access Consultation to assume compatible frame structures for coordination but not insist on their implementation. The BBC therefore strongly support Ofcom not proposing to mandate the

frame structure for Shared Access in 3800-4200MHz for coordination with H3G (4.30). This retains the valuable flexibility to use bespoke frame structures employing more heavily weighted uplinks suited to Content Production requirements.

Question 7: Do you agree with our proposal to remove adjacent channel protections of H3G assignments from Shared Access users?

We agree with this proposal.

Question 8: Do you have any comments on our impact assessment (to the extent not covered by previous questions)?

Satellite Receive Only Earth Stations (ROES) typically have very little tuning or selectivity within the Low Noise Block downconverter (LNB) and are designed to operate over a range of frequencies. Indeed, even the most restrictive LNB designs have an operating range of 200MHz and significant amounts of gain outside of this range. Typically Recognised Spectrum Access (RSA) for ROES licences will cover a single transponder on which the required signal is being transmitted. With such high levels of emission being proposed in this licence variation, both in-band and out-of-band, it is possible that ROES will suffer blocking due to RF overload even with significant frequency separation between the wanted downlink frequency and the H3G operation. For this reason the coordination process between the H3G operation and RSA for ROES may not identify these issues.

Question 9: Do you have any comments on our Equality impact assessment?

No comment.