Coexistence of new services in the 700MHz band with digital terrestrial television

Response to: UHFSI@Ofcom.org.uk

Response by: Floating PowerHouse Ltd

Floating PowerHouse – Introduction

Floating PowerHouse is a company formed by a group of former Ordnance Survey and other Telco sector professionals. We work on the basis that any citizen, in any community, city or country can benefit from the ideas, technologies and business models emerging in the world of Smart. We connect, co-create and share knowledge across the multiple themes of a digital strategy.

Floating PowerHouse is currently working with the University of Glasgow to help develop their 5G strategy, and has consulted with the University's 5G consortium partners including Scottish Futures Trust and CGI UK to ensure Scotland's voice is heard.

*Between 2017 and 2025, the University of Glasgow will be investing over £1Bn in physical and digital infrastructure, with the concept of the **Smart Campus** as an enabler for service innovation and applied research. This will be developed through two broad measures, namely;*

- *A structured engagement with industry and policy partners, grant funders and research groups around how the campus development can support demonstrator projects e.g. 5G services, construction innovation, urban renewable energy and sensor supported optimised utilisation*
- *Data led decision-making where a **Smart Estate** understands real time demand and adapts for greater efficiencies; and, where this estate extends to cover the wider urban quarter, the concept of the Smart Digital District*

*The focus for **Smart Campus** will be to:*

- *Stimulate new research activities*
- *Enhance student experience*
- *Strengthen collaborations with external industry and policy partners*
- *Generate operational efficiencies in the running of a complex built environment*
- *Create new, high quality, digitally driven services across a complex stakeholder community*

Floating PowerHouse's core purpose is to ensure geospatial technology is better deployed in the UK, with the aim of creating a competitive advantage in the digital economy using digital services, and based on a robust and reliable "3D digital twin" of cities and nations. Our recent work in the mapping of all fixed and mobile assets and using unique, enhanced modelling techniques show the benefits which can be achieved as the geospatial and ICT sectors converge.

We believe citizens are businesses, visitors and residents. They form part of different communities and interact with small to global businesses, as well as utilities and public agencies.

Floating PowerHouse works with these interlinked and inter-dependent groups of citizens, communities, businesses, and public agencies across cities and countries to propose and deliver routes to success. Our previous engagements and collaborations with National Governments, citywide demonstrators, small councils and local interest groups are creating value from data, property management, transport planning for improved air quality and enhanced connectivity (5G).

The creation of a national 3D mapping capability was a manifesto pledge by the current Government, and Ofcom has a key role to play by its decisions to help to make this a reality. We believe the capture of fixed and mobile telecommunications data would be of great value in informing co-existence studies. As we move into the 5G era, it will also help to lower costs for operators by making it far easier to deploy/enhance networks (especially in the IMT-2020 bands) from the desktop by making government information more accessible.

Ofcom's active involvement in such work would help to amortise the cost of the creation of such datasets in the first instance. It is Government policy to be world leaders in 5G, and it is in the interests of citizens and consumers that the UK is at the forefront of such developments. Ofcom's duties under the 2003 Communications Act also have the same interests at their core. We believe it makes sense to "join up" all the initiatives.

CGI was founded in 1976 and is currently one of the world's largest IT Service Integrators with over 70,000 professionals and delivery centres on 5 continents. CGI is a thought-leader in the development of Future Cities and Smart technology, and has over 500 Geospatial specialists and consultants working with 3D geospatial platforms; augmented and virtual reality; satellite, LIDAR, and photogrammetric image processing; and 5G/sensor technology.

Response Summary

Interference in all its forms and its mitigation are a cornerstone of ITU Radio Regulations. Without these, much of the spectrum would be unusable. Ofcom is therefore entirely right to address coexistence of new services in the 700MHz band, and the questions asked are fair and reasonable.

In some places, we consider that Ofcom could be slightly more "consumer friendly" in its language. This band is of particular importance for "rural 5G" applications where the recent ***Which*** report highlighted many of the poorest service standards exist. This includes parts of Scotland, Northern Ireland (where systems should also be able to interwork with the Republic of Ireland without causing additional interference) and Wales.

We were surprised that that there was no mention in the consultation of where problems might be worst, and how resources would be targeted accordingly. Clearly, better 3D mapping capabilities would assist in this regard. We also understand that some issues are, of course, not "geo-specific."

Overall, however, we felt this was a comprehensive analysis of the position and are supportive of Ofcom's approach. To our mind, the critical matter to consider is that which is set out in section 2.4, where Ofcom notes, "…we are not at this stage presenting proposals for how any mitigation solutions should be delivered." That is for a consultation soon to come. The rights of all spectrum users must be protected and discrimination prevented, or there will surely be consequences.

Question 1: Do you have any comments on our conclusions that a) the risk of interference from mobile handsets to DTT will be minimal and b) the risk of interference from mobile base stations in 700MHz to DTT will be broadly similar to the risk for 800MHz, with some tens of thousands of households potentially affected?

Comments:

On the evidence, it does appear to suggest that the risk of interference from mobile handsets to DTT will be minimal, but we do still have some concerns regarding the possible scale of interference. The unfortunate choice of the words that it would be limited to the "tens of thousands" does not instil any confidence – though it has the virtue of being honest.

What is slightly more troubling from a consumer standpoint is that it is not clear from the consultation *where* the risks are felt to be greatest, nor at this stage *what* will be done to help them, and this is where we would like to have seen, at least in outline, Ofcom's initial thinking.

For example, the only reference to geography was at figure A4.11, which listed some information on in-home system gain with linear fit. We would like to see studies routinely include all nations of the UK. We do also understand and accept that part of the problem in this instance is also not geographical – but part of it is.

In the particular case of Scotland, 700MHz is very important indeed, especially when compared to the other two 5G candidate bands, as it can be anticipated that it will be the lower two frequencies that will form the bulk of deployments by reason of population density.

We believe that the kind of work on 5G mapping that Ordnance Survey was recently doing for DCMS and HM Treasury could easily be extended to include more specific modelling of co-existence issues in other bands quickly, cheaply, and easily – which would be of benefit to everyone in all the nations. We do not believe at this time that this foundation work has been leveraged more widely - but it could be.

We would also add that consumers actually pay for a licence to receive wireless telegraphy signals via an aerial *whether inside or out* – and we wonder how many of them would understand Ofcom's position set out at paragraph 4.6 (the recommendation in favour of roof top aerials over indoor solutions).

Do they not already have a legitimate expectation that they, as licence holders, can receive a quality of service free from interference, just as a mobile operator purchasing Spectrum would expect? We would be keen on consumers having Service Level Agreements (SLA's), along with compensation rights should they be impacted by Quality of Service (QoS) issues.

We believe this would be a most effective way of focusing minds on the need to quickly fix any issues that materialise - it is not the fact that the absolute numbers likely to be impacted are small, but rather that anybody at all is impacted in the first place. The fact it might (or might not) be only a fraction of 1% rather misses the point.

Question 2
Do you have any comments on our analysis of coexistence risks related to set-top aerials, direct signal ingress to receivers, impact of DTT on mobile services, and interference from cable TV?

Comments:

We were pleased to see that Ofcom was aware of the ETSI harmonised standard on performance targets for amplified set-top aerials (discussed at paragraph 4.5). We simply repeat, however, that most of the general population is unlikely to know of, or even care about, Ofcom's position. They will simply want the TV they purchased to work properly.

The science behind Ofcom's case is entirely right, but Ofcom has itself a role to play in the wider dissemination of such statements in language that non-specialists (few of whom will be responding to – or will even know about - this consultation), so they, too, can understand and engage in the debate if they wish. A consultation like this is a good start.

Many DTT users have already subsidised the whole process by moving to improved group k aerials at their own cost. As Ofcom note at 5.16, installers have (even) been encouraged to use wideband aerials…" In tougher times, resistance to any additional investments without some benefit to the consumer is likely. The move to DTT gave them more channels. What will they get out of this migration that is as clear to point to (unless it is some form of SLA)?

On the matter of direct signal ingress from base stations to TV receivers and cabling systems, we would agree that experiences between 800MHz and 700MHz are probably comparable.

We were somewhat concerned to read at page 19 (5) that "…real equipment often out-performs the standard limits by a substantial margin…" Is this backed by a substantial empirical evidence base? Even if it is true today, we cannot be certain that this will remain so into the future since the Radio Equipment Directive will actually raise the bar as to what "standards limits" actually are. However, the Directive will mean that, over time, there should be fewer poor quality devices available. We also note that at 3.53 Ofcom notes "…the full benefits of improved receiver performance may not be realised until 2025…"

Overall, we conclude that, provided the UK continues to adopt relevant EU law – particularly including the RED, the problem will diminish. So far, at the time of writing only two nations (Greece and the UK) have failed to transpose the RED into National law even though the period for adoption has expired and publication has occurred in the Official Journal.

We would observe, that in the post-BREXIT UK, it will not be in our National interest to do other than adopt parallel laws and build an infrastructure to compete, since to do otherwise would make consumer equipment more expensive – assuming manufacturers were prepared to supply customised equipment in any event.

If we want the cross border benefits, such as those that came with cross border mobile use with a same device, that came from common standards like GSM and TETRA, we would do well to remember that the 700MHz band has already been released in some European Countries. The device problem that could emerge is a significant one, should we fail to adopt

the RED in the UK. We recognise that the UK may simply be “running late”, but feel this should be addressed.

Finally, concerning cable set-top boxes and modems that can potentially suffer interference due to ingress when a 700MHz mobile handset is operating nearby, we note at 4.20 Ofcom makes reference to the Electromagnetic Compatibility Directive (2014/30/EU), as well as to EuroDOCSIS 3.1 (the new cable TV specification).

In both cases, there is a danger that UK policy over time diverges from the rest of Europe – and indeed *by the time this band is cleared the UK will not even be a member of the European Union*.

Reliance on any law from an EU institution cannot be guaranteed as being the UK position. What contingency planning has Ofcom done to consider these key issues, and what advice has already been passed to Government in this regard (since BREXIT negotiations are already underway)? We agree strongly with Ofcom’s approach – but fear the uncertainty of not knowing that that approach can be sustained.

Question 3:
Do you agree with our conclusions that DTT receiver filters will be the most effective mitigation technique for the 700MHz band and that group k aerials will also help to mitigate against the 700MHz coexistence issues.

Comments:
It does appear to us that DTT receiver filters will be the most effective mitigation technique, and that group k aerials will also help to mitigate against 700MHz coexistence issues.

Consumers however should be made aware of all aerial options. Why should they be paying to “future proof” something? The benefit of additional mobile capacity needs to be shown to be greater than the costs, and the trade-offs more widely understood.

It would seem to be appropriate to do a new study to more precisely measure the costs and benefits to citizens and consumers above all others in line with the Statute. That is where the principal duty lies.

To our mind, the critical matter to consider is that set out in 2.4, where Ofcom note “…we are not at this stage presenting proposals for how any mitigation solutions should be delivered.” This is simply the other side of the coin, and the sooner a harmonious resolution of the issues here is achieved then the sooner change can be delivered – or not.