BLU WIRELESS TECHNOLOGY SUBMISSION TO OFCOM'S CONSULTATION: "IMPLEMENTING OFCOM'S DECISIONS ON THE 57-71 GHZ BAND"

6th August 2018

Blu Wireless Technology Ltd is grateful to have the opportunity to respond to Ofcom's consultation, *Implementing Ofcom's decisions on the 57-71 GHz band*. As a technology provider for millimetre wave applications our primary interest is that suitable technology can be developed which can be scaled across multiple regions, frequency bands and applications in order that economies of scale can drive the widest possible adoption of the use of millimetre wave bands for new 5G wireless applications.

We welcome the proposed changes to IR2030 which extend license exempt operation for SRD applications from 57 to 71 GHz within a transmitter EIRP limit of +40 dBmi – with a maximum conducted transmitter power of +27 dBm. This aligns well with latest international regulations, for example as FCC in the United States, which encourage the use of the latest generation of mmWave products based on the use of active phased array antennas for flexible, cost effective and efficient operation.

However, as regards the proposed changes to IR2078 for fixed wireless operation we are concerned that Ofcom's proposal to leave the current regulations in the band 57-71 GHz unchanged – namely transmitter EIRP of +55 dBmi maximum, +30 dBi minimum antenna gain and +10 dBm max transmitter conducted power – represent a lost opportunity to utilise this band for compelling 5G use cases which are of particular importance to the UK economy – such as improving Track to Train wireless connectivity for improved passenger wireless services. Specifically, we believe that the upper part of this band (66-71 GHz) is well suited to this application and, moreover, Ofcom has previously confirmed that this band is currently not used for any wireless services in the UK[1].

It is well known that the UK Government has stated its view that "High quality services on heavily loaded, high capacity trains, would require at least 1 Gbps to each train today - this would support video-streaming to several hundred passengers. Given the expected growth in passenger demand, a realistic, future-proofed approach would be to target backhaul of tens of gigabits per train, particularly on the busiest routes."[2] The spectrum bandwidth needed to deliver such bit rates is only available at mm-wave frequencies. Blu Wireless is therefore working with leading actors in the UK rail industry to deliver this objective and believes that that the 66-71GHz band is the most promising band for this application due to

[1] In its consultation on "UK preparations for the World Radiocommunication Conference 2019" (7 June 2018), Ofcom states that "The 66-71 GHz band also appears to have no operating users".

[2] Commercial options for delivering mobile connectivity on trains: Call for Evidence; DCMS and DfT; December 2017:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/670551/Commercial_options_for_delivering_mobile_connectivity_on_trains__Call_for_Evidence.pdf

a combination of favourable propagation conditions and because as stated above this band it is currently unused. A modification to the IR2078 conditions – namely the removal of the limit on conducted power of +10 dBm – combined with the use of modern active phased array antenna technology will delivery cost effective trackside infrastructure that is compatible with the business case requirements of train companies planning to deploy such systems in the near term. We also comment that the conducted power limit for SRD applications in the band 57-71 GHz IR2030 of +27 dBm appears contradictory with Ofcom's proposal to limit the conducted power in IR2078 as +10 dBm for fixed wireless applications in the same band.

In addition, we believe that there a number of technical and legal issues with the proposed Statutory Instrument for IR2078 that need to be addressed before final publication at least as follows:

i) The 66-71GHz band is outside of the scope of the ETSI EN 302 217 standard that is referenced, which therefore cannot be applied without further information in the IR. Without this, there is no information on Essential Requirements such as spectrum emission mask.

ii) The technical provisions in this IR are based on mm-wave technology from more than a decade ago, which cannot be applied to the current mm-wave technology that Ofcom expects would be deployed now. For example, ETSI EN 302 217 is based on the assumption that a single transmitter feeds an antenna via a single waveguide – which is then used as a reference point in order to measure conducted power. However, today's generation of mmWave products employ multi-element active arrays which integrate transmitter and receiver electronics directly with the antenna array – therefore there is no equivalent single reference point at which the transmitter conducted power can be measured and therefore used as verification that equipment can confirm with the revised conditions stated in the draft IR 2078. We therefore, propose, as a minimum, that the IR2078 is modified to remove the requirement for a maximum conducted power of +10 dBm.

We would welcome the opportunity to meet with Ofcom in the near future to discuss these important issues in more detail.