



20 May 2022

## MYRIOTA PTY LTD

### Submission in response to Ofcom's Consultation: Space Spectrum Strategy

Myriota was founded to revolutionise the Internet of Things (IoT) by offering disruptively low-cost and long-battery-life global connectivity. With headquarters in Australia, Myriota has a growing portfolio of more than 20 patents, and support from major Australian and international investors. Myriota has deep heritage in telecommunications research, achieving world-first transmission of IoT data direct to nanosatellite in 2013. Myriota has made this ground-breaking technology commercially available for partners worldwide, using our network of NGSO satellites operating in VHF and UHF frequency bands.

Myriota welcomes the opportunity to provide a submission to Ofcom in response to the Space Spectrum Strategy consultation. It is evident from the consultation paper that Ofcom already recognises the importance of IoT applications, including direct-to-satellite IoT communications technology, which enable connectivity in areas out of range of terrestrial networks. Myriota appreciates this recognition, and intends to clarify how Ofcom can further support UK industry through access to spectrum for use by NGSO satellite IoT systems.

#### The VHF and UHF MSS bands

Myriota's direct-to-satellite IoT system utilises VHF and UHF spectrum in the following frequency bands, which are internationally allocated to the Mobile Satellite Service (MSS):

- VHF MSS
  - 137-138 MHz (space-to-Earth)
  - 148-149.9 MHz (Earth-to-space)
  - 149.9-150.05 MHz (Earth-to-space)
- UHF MSS
  - 399.9-400.05 MHz (Earth-to-space)
  - 400.15-401 MHz (space-to-Earth)

These frequency bands are already included in ERC Decision (99)06<sup>1</sup> for use by the satellite systems listed in Annex 2, which enables operation in many European countries. Currently ERC

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<sup>1</sup> ERC Decision of 10 March 1999 on the harmonised introduction of satellite personal communication systems operating in bands below 1 GHz, amended 4 March 2022 <https://docdb.cept.org/download/3741>



Decision (99)06 is partially implemented in the UK, enabling access to VHF MSS. However, there is currently no network licence that applies to the UHF MSS frequencies.

These VHF and UHF MSS frequency bands have allocations for use by MSS in ITU Regions 1, 2, and 3, which highlights that it is not only CEPT nations using both VHF and UHF. Both VHF and UHF MSS frequency bands are already licensable in many other countries outside of Europe, including the USA, Canada, and Australia, to name only a few. Enabling licensing of the UHF MSS spectrum in the UK will be consistent with international regulations, and will achieve harmonisation with CEPT and various national spectrum regulators around the world.

The frequency range 399.9-400.05 MHz is exclusively allocated to MSS uplink for NGSO systems in all ITU regions<sup>2</sup>. Within this range, 399.9-400.02 MHz is internationally restricted to low power MSS Earth stations (maximum 5 dBW EIRP)<sup>3</sup>. Since it is not clear if this band could be used for any other purpose<sup>4</sup> under these international conditions, it seems inevitable for Ofcom to enable use of the 399.9-400.05 MHz frequency band for MSS uplink within the UK. Expediting access to the UHF MSS spectrum in the UK by commercial systems would enable industry to promptly utilise the technology benefits of additional satellite IoT systems.

### **Updates to national authorisation approach**

The Ofcom Consultation considers moving national authorisation from exemption to "light" (network) licensing. Myriota notes that VHF MSS systems are currently authorised on a licence exempt basis in the UK, but this is not the case for UHF MSS systems. It is in the public interest to activate industry by enabling the CEPT approved UHF MSS systems to operate in the UK as soon as possible. Myriota has concerns that waiting for the implementation of network licensing arrangements may cause significant delays for satellite operators to provide necessary services in the UK using the UHF MSS band. In the first instance, it may be appropriate to allow UHF MSS systems to operate on a licence exempt arrangement, following the precedent for VHF MSS. Following this, if a network licensing approach is implemented, then it could be applied to both VHF and UHF frequency bands. In accordance with Ofcom's regulatory principles<sup>5</sup>, Myriota recommends that Ofcom's proposed implementation of "light" licensing avoids introducing additional burdens to operators of systems already approved by CEPT.

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<sup>2</sup> ITU Radio Regulations Articles, provision 5.209

<sup>3</sup> ITU Radio Regulations Articles, provision 5.260A

<sup>4</sup> UK Footnote 1.1 of the United Kingdom Frequency Allocation Table: *"Responsibility for assigning frequencies to this Allocation rests with Ofcom. Frequencies in this Allocation are exclusively assigned for civilian use. Exceptionally, Ofcom may agree to the use of these frequencies for military purposes with the Ministry of Defence."*

<sup>5</sup> Regulatory principles *"Ofcom will always seek the least intrusive regulatory methods of achieving its objectives."* <https://www.ofcom.org.uk/about-ofcom/policies-and-guidelines>

## **CEPT framework for MSS systems below 1 GHz**

Myriota appreciates Ofcom's focus on MSS operations below 1 GHz in this consultation, and concurs with Ofcom on the importance of providing direct-to-satellite IoT applications in the UK. Ofcom has noted in the consultation that the CEPT framework under ERC Decision (99)06 is "...no longer fit for purpose and risks creating delays and barriers for new entrants". It appears the purpose of Ofcom's involvement in reforming the CEPT framework is "...to streamline the processes to enable speedy access to the spectrum for new MSS systems". Myriota takes this opportunity to remind Ofcom that a significant barrier already exists for UHF MSS systems under Ofcom's current licensing framework. Irrespective of any reforms at CEPT, Ofcom should modify its own licensing framework to enable UHF MSS operations. This will prevent delays and barriers to systems that are already approved for operation by CEPT.

Myriota acknowledges that the CEPT framework under ERC Decision (99)06 is not fast, but it does serve a valid purpose. It should be acknowledged that many studies have already been completed for several systems, and we should be careful not to undervalue the significance of systems already being accepted into Annex 2 of ERC Decision (99)06 by CEPT.

Ofcom proposes to support CEPT plans to review the framework. Whilst this may be an appropriate direction, a more fundamental issue to consider is how to accommodate the spectrum requirements of additional MSS systems that deliver IoT applications. Only a limited number of systems can be supported in the VHF and UHF MSS frequency bands. The bandwidth in these frequency bands is fundamentally limited, especially the mere 150 kHz bandwidth of the 149.9-150.05 MHz and 399.9-400.05 MHz used for uplink. It would be unproductive to assume that these bands have infinite capacity to support infinite new entrants.

Spectrum below 1 GHz is important for direct-to-satellite IoT applications for several reasons, including propagation characteristics, power consumption properties, and device antenna dimensions. For these reasons, the existing VHF and UHF MSS frequency bands with global allocations are suitable for satellite IoT, but they are a scarce resource. Myriota forecasts that these existing allocations will be unable to accommodate the demands of future operators, and additional spectrum with global MSS allocation will be required below 1 GHz. Myriota encourages Ofcom to be open to MSS operations in more frequency bands below 1 GHz which might not currently be allocated to MSS.



Myriota thanks Ofcom for providing this opportunity to aid in transforming a globally respected space industry that lifts the broader economy, underpinned by strong international and national engagement. Myriota looks forward to working with Ofcom towards enabling operations of satellite IoT systems in the UK.