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**Myriota Response to the ACMA Consultation:
Technical Design Features and Allocation Considerations for the 2 GHz MSS Band**

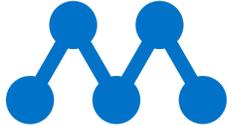
Myriota is the global leader in low-cost, low-power, secure direct-to-orbit satellite connectivity for the Internet of Things (IoT).

Myriota was founded to revolutionise IoT by offering disruptively low-cost and long-battery-life global connectivity. Based in Adelaide, a focal point of the Australian space industry and home of the Australian Space Agency, Myriota has a growing portfolio of over 100 granted patents, and support from major Australian and international investors. With deep heritage in telecommunications research, world-first transmission of IoT data direct to nanosatellite was achieved in 2013. Myriota has made this ground-breaking technology commercially available for partners worldwide.

As the leading provider of next-generation IoT services over satellite, Myriota welcomes the opportunity to provide comments on the ACMA's Discussion Paper: Technical Design Features and Allocation Considerations for the 2 GHz MSS Band.

Firstly, Myriota would like to commend the ACMA for its diligent and committed focus on the 2 GHz MSS topic in recent years, where there is no doubting the importance of these bands for a variety of uses in Australia. While generally supportive of these latest considerations for the 2 x 25 MHz spectrum allocation, Myriota underlines its view that allocating this important spectrum on an exclusive or limited basis - either to limited services, such as aeronautical uses, or to exclusive operators - would be highly undesirable and counter to the ACMA's objectives to find optimal and most efficient uses of the bands.

While use of the spectrum for aeronautical services may hold interest for a minority segment of Australian-based consumers and the aviation industry at large, there is a whole range of other services and users in Australia that would stand to benefit from access to these spectrum bands, including remote land-based IoT services; fixed or mobile broadband applications on land and sea; direct-to-cell; emergency communications; among others. Such services may even bring higher economic and societal value for Australians than aeronautical connectivity. The ACMA design and allocation model should therefore remain open-minded, and as "service and technology neutral" as possible. This regulatory approach is increasingly common in other countries as a means to ensure national spectrum regulations are not outpaced by rapidly changing technologies and consumer demands. The wider availability of the 2 GHz MSS spectrum will encourage the satellite industry to develop technological solutions that would serve



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the evolving needs and priorities of Australian society and ensure most efficient use in line with the ACMA objectives.

Myriota highlights the experience of the European Union as an example why the exclusive allocation of the 2 GHz MSS band should be avoided. The ACMA is indeed aware of this context and makes reference within the current Discussion Paper. In short, the European Commission concluded in 2009 upon the exclusive allocation of the 2 GHz MSS frequency band¹ to two operators, Inmarsat and Echostar (formerly Solaris), following an auction procedure. Each operator was granted separate 2 x 15 MHz spectrum rights, lasting until 2027 on a pan-EU basis (with the option for CGC). For the following decade, this 30 MHz of valuable spectrum sat largely unused by the selected operators, depriving other evolving operators and uses, which triggered enforcement procedures by some European countries.² Only after this did the operators progress materially with bringing into use the spectrum, and limited services finally commenced in the aeronautical sector in 2017, 10 years later (through the EAN, as the exclusive service proposition of Inmarsat).

The European Radio Spectrum Policy Group (RSPG) was recently invited by the European Commission to assess different possible scenarios for the use of the 2 GHz MSS frequency band beyond 2027 considering the current use of the spectrum.³ After a call for public consultation during which the industry had an opportunity to comment, RSPG released its Opinion on 25 October 2023 (“Opinion on assessment of different possible scenarios for the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the Mobile Satellite Services beyond 2027”). From this Opinion it may be inferred, firstly, that the spectrum allocated to Echostar had not been entirely used, and no revenues were collected after 13 years of holding the licence (none were declared in answering the report). Also noting that Inmarsat uses this spectrum only on certain aviation routes for airlines that have selected this product, and without any land-based offerings that would serve the European territories themselves.

1

<https://eur-lex.europa.eu/EN/legal-content/summary/selection-and-authorisation-of-mobile-satellite-services-mss.html>

² https://www.catribunal.org.uk/sites/cat/files/2019-10/1280_Viasat_Transcript_260618.pdf page 158

<https://www.anacom.pt/render.jsp?contentId=1320833>

https://www.ofcom.org.uk/_data/assets/pdf_file/0021/77115/2ghz_consultation.pdf paragraph 3.9

3

https://radio-spectrum-policy-group.ec.europa.eu/document/download/fbe859f2-07a6-48e7-8f0b-eeb0a0e4be03_en?filename=RSPG23-042final-Draft_Opinion-MSS-public_version.pdf



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Secondly, in terms of future allocation scenarios for the bands, the RSPG also considered different assignment options (two existing operators, several new operators, etc.) and concluded that continuing with the same exclusive allocation to Inmarsat and Echostar “may limit competition in MSS service provision, for future innovation or development, e.g. other stakeholders or usages and is therefore not a preferred scenario”. Furthermore, RSPG concluded that opening the bands to multiple assignments “would enable Europe for other usage, e.g. for the inclusion of IRIS”.

In its detailed Study, the RSPG also made reference to multiple types of technologies and services, rather than mainly aeronautical. The RSPG noted that the expiry of the current 2 GHz MSS allocation in the EU “concur[s] with important recent technological and market developments in the satellite sector in Europe and worldwide. This (therefore) provides a timely opportunity to assess at the EU level the current and future use of the band.” RSPG previously invited the ETSI and CEPT to provide information on the latest technological developments in satellite communications and trends in the provision of MSS services with relevance to the future use of the 2 GHz MSS frequency band. The responses can be summarised as follows:

“The current usage by the Mobile-Satellite Service (MSS) / Complementary Ground Components (CGC), has been highlighted, but also potential future opportunities have been outlined for the 2 GHz MSS bands. These include the latest technical developments on Non-Terrestrial Networks (NTN), Machine-type-communication (M2M), Internet-of-Things (IoT) also covering LoRa, Aero-CGC, and generic MSS applications. The ongoing considerations on direct-to-cell (D2C) and direct-to-device (D2D) connectivity are also reflected. It is to be noted that all presented usages and opportunities are equally based on GSO networks and non-GSO systems. This would require, that the principle of technology neutrality continues to apply”.

It is therefore recommended that ACMA follow the open-minded approach of the RSPG in taking into account a range of services, as outlined by the ETSI and CEPT above, rather than limiting the technologies in the 2 GHz MSS band mainly to aeronautical systems. The geography of Australia and the limited flight corridors that may be used for installation of this aeronautical MSS/CGC solution raises questions about the efficiency of using such a large part of the spectrum while serving only limited parts of Australia, but at the same time covered under a nationwide spectrum assignment.

Based on the European example, and taking into account the risks of limiting the evolution and opportunities of services in Australia, Myriota advises against any exclusive or limited assignment models for the 2 GHz MSS band. The ACMA has not formed a final view on the allocation approach, and Myriota commends the ACMA for suggesting different possible configurations at this stage. Of the two configuration options proposed by the ACMA, Myriota would have closer support for Configuration 2, i.e. five generic 2 x 5 MHz paired lots, which



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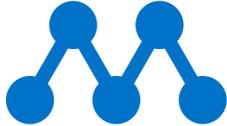
would provide participants in the allocation the opportunity to bid for as many blocks as suited. In any case, it follows from the ACMA's underlying spectrum objectives, that any selected future operators should also be required to justify the amount of spectrum requested for operating the services identified when making the licence application. Myriota strongly recommends that the most appropriate frequency lot configuration would include one sufficient portion as a shared use allocation. Up to 2 x 15 MHz of paired bandwidth can accommodate different uses and systems in the 2 x 25 MHz available paired bands, while the remaining portions could still be licensed bands, exclusive to the licence holders. This will enable the newer entrants to develop their technology in the shared frequency band, and open the door to future models of partnership with the matured technology.

Access to a shared band in the 2 GHz MSS spectrum could be possible under the ACMA's existing Space Class Licence. The Space Class Licence can be amended to include frequency ranges of the 2 GHz MSS shared band. Operators can apply to the ACMA for a space licence or space receive licence in the relevant frequencies of the 2 GHz MSS shared band. The ACMA will be able to control which operators are deemed suitable to use the 2 GHz MSS shared band, due to the requirement of an operator to also hold a space licence and space receive licence.

Myriota is also opposed to the idea of an auction for the 2 GHz MSS spectrum. While auctions are a possible way to stimulate the use of the spectrum by the winning bidders, it will clearly privilege access by the operators who can afford it, and therefore will not obviously stimulate innovation that often comes from smaller developing players. Furthermore, despite the government revenue that auctions may generate short term, there will be far greater long term benefit to Australia by enabling some shared access. Myriota calls for the ACMA to be cautious in adopting an auction model to the entire band, and proposes that at least part of the band is not proposed for auction; instead enabling shared access.

Myriota also wishes to comment on the ACMA's statements in the Discussion Paper regarding the ITU satellite coordination process, "In the development of a technical framework for 2 GHz MSS, we have not considered requirements for space stations, noting that requirements for space stations are addressed by the ITU satellite coordination process", and "While we can develop a framework to support the licensing of a mobile-satellite service, as with any satellite service, its viability is largely part dependent on the status of the satellite network in the ITU satellite coordination process. This a matter for prospective licensees to assess, and we make no assurances in this regard."

While Myriota notes that an ITU filing is an important component of any satellite system that is to operate in the 1980–2005 and 2170–2195 MHz bands, Myriota suggests that the ACMA can play a further role in this field. This frequency band in particular has not necessarily been highly



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utilised globally, and the ITU satellite coordination process might not be particularly effective in this specific example.

Regardless of the ITU satellite coordination process, the ACMA does have some ability to provide Australia with the most efficient and effective use of the 2 GHz MSS band, which will provide superior benefit to the Australian public and industry, far beyond what this band can provide outside of Australia. This is an opportunity for the Australian space sector to flourish. The ACMA should not rely on the status of an ITU filing as the only method of determining who can use this frequency band. Such an approach is too simplistic, and prevents use of the band reaching its full potential.

To explain this point further, the ACMA has full control over terrestrial operations within Australian territory, enabling it to prevent the operation of any transmitter or receiver. Furthermore, due to the geographic size of Australia and its separation from other nations, under the right conditions, it is possible for space stations to provide uplink and downlink in the 2 GHz band over most of Australia, without causing harmful interference to services of other nations operating in the 2 GHz MSS band. Also, the ACMA has control over at least one ITU filing in the 2 GHz MSS band which can be described as having a favourable date of receipt with respect to the status of the satellite network in the ITU satellite coordination process. These points suggest there is opportunity for the ACMA to control how this frequency band is used in Australia. Rather than simply dismissing the matter as ITU process dependent, and outside of the ACMA's control; at a minimum the ACMA should consider this Discussion Paper as an opportunity to explore what is possible, which may have enormous benefits for the Australian space industry in the decades to come.

Yours sincerely,

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