

**COMMUNICATIONS
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**COMMUNICATIONS ALLIANCE
SATELLITE SERVICES WORKING GROUP (SSWG)**

SUBMISSION

to the

Australian Communications and Media
Authority's (ACMA)

Planning of the 2 GHz band

13 September 2019

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EXECUTIVE SUMMARY

The Communications Alliance Satellite Services Working Group (SSWG) welcomes the opportunity to provide comments to the ACMA *Planning of the 2 GHz band* Discussion Paper.

The SSWG acknowledges that there are a number of satellite operators that have services operating or planned for the 2 GHz band and agrees that it is timely for the ACMA to establish sharing criteria for service delivery in this band. This includes to achieve the goal of lifting spectrum embargo 23 which is otherwise standing in the way of market progress.

The SSWG supports the progression of the band from the initial investigation to the preliminary replanning stage of the planning process as soon as possible. The SSWG supports the ACMA facilitating the timely introduction of important new MSS services and to consider a ground component to support these services in high population areas and where man-made 'terrain' makes MSS visibility difficult.

It is anticipated that the outcome of the WRC-19 conference will provide guidance on technical sharing in the 2 GHz band, which will influence the planning of this band.

About Communications Alliance

Communications Alliance is the primary telecommunications industry body in Australia. Its membership is drawn from a wide cross-section of the communications industry, including carriers, carriage and internet service providers, content providers, equipment vendors, IT companies, consultants and business groups.

Its vision is to provide a unified voice for the telecommunications industry and to lead it into the next generation of converging networks, technologies and services. The prime mission of Communications Alliance is to promote the growth of the Australian communications industry and the protection of consumer interests by fostering the highest standards of business ethics and behaviour through industry self-governance. For more details about Communications Alliance, see <http://www.commsalliance.com.au>.

Introduction

There is growing and diversified demand for services in the 2 GHz band. This ranges from enabling Mobile Satellite Services (MSS) systems with or without a ground component, Direct-Air-to-Ground Communications (DA2GC) links (which does not involve MSS), to the continued use of the band by Television Outside Broadcast (TOB) services, currently operating on a temporary basis in the band.

The SSWG is aware that at least three of its members (Inmarsat, Omnispace and Sirion Global) have substantial ambitions in the band and anticipates that these companies will submit individually to the consultation. The SSWG is also informally aware of interest from non-members of the small-sat industry.

Spectrum in the 2 GHz band in question remains relatively fallow, largely because of an embargo being in existence for many years – except for temporary TOB usage. As a consequence, the ACMA has resorted to the workaround for satellite operators of Scientific Licences. However, these licences do not offer long term usage (normally 12 months). These factors combine to create a disincentive to investment assurance and to the conclusion that it is now timely for the ACMA to establish sharing criteria for service delivery in this band in order to ultimately lift the embargo, which is otherwise standing in the way of market progress.

With regard to availability and timeliness of technology solutions and services, in the case of Inmarsat, the Europa system is now functional in Europe as of 2019, with equipment being available. Other operators anticipate the same timeliness for bringing into use their services and systems.

Discussion

Development of MSS services in this band in Australia has been held up by the existing embargo to the point of being counterproductive for large-scale satellite operators as well as emerging small satellite operators. The Australian Government has ambitions for growth of the satellite industry, as espoused by the Government and through the establishment of the new Australian Space Agency. The 2 GHz band will contribute to the growth targets announced for the industry and will play a vital part in connecting Australians to the 'Internet of Things' (IoT) regardless of where they live.

It is anticipated that the outcome of the WRC-19 conference will provide guidance on technical sharing in the 2 GHz band which may influence the planning of this band. This leads to a likely target for ACMA decisions and sharing and assignment decisions being reached by the end of 2019. Any action taken by the ACMA should ensure that current operations are not interfered with via normal coordination processes.

Omnispace is currently offering 2 GHz MSS capacity in various markets through its existing operational on-orbit F2 satellite network. The F2 satellite network is the first element of the NGSO constellation that will be capable of providing 24 x 7 coverage around the globe. Omnispace has an operational satellite Ground station at Ningi (QLD) that provides teleport services including, feeder links, launch support, and telecommand and telemetry teleport services.

Sirion Global has under construction 2 GHz NGSO satellites to be launched in the near future and has plans for the deployment of its full constellation and has a requirement for an associated terrestrial component.

Inmarsat has pioneered a GSO MSS at 2 GHz with CGC in Europe through the 'European Aviation Network' (EAN). As of 2019, this is now a working system and a solution for inflight connectivity which would be well suited to Australia.

Recommendation

As noted in the discussion paper, the ACMA is aware of increasing interest in access to 2 GHz spectrum to provide different services, so the SSWG would urge support progression of the band from the initial investigation to the preliminary replanning stage of the planning process as soon as possible. We urge the ACMA to facilitate the timely introduction of important new MSS services and to consider a ground component to support these services in high population areas and where man-made 'terrain' makes MSS visibility difficult.

Benefits of MSS allocation

Because of its terrestrial propagation characteristics, use of the 2 GHz band combined for mobile satellite service is ideally suited to providing global IoT services, including to regional and remote areas of Australia with its extensive landmass that requires coverage. These services will further the national interest as they span sectors such as environment, energy, livestock, infrastructure, water and energy resource consideration and monitoring of fixed and movable assets. Some satellite operators plan to utilize a terrestrial component to supplement a 2 GHz MSS narrowband MSS with more robust services, including, where appropriate broadband services. Because of the hybrid nature of this MSS/terrestrial service, the spectrum would be utilized efficiently in rural, suburban and urban geographic locations.

Since the temporary assignment of the band to TOB, many technologies have emerged. The SSWG understands the band is only lightly used by TOB and is mostly used to support events such as sports and motor racing. With the advent of 5G services, expected within the planning period for this band, there will be many alternatives to transmit video and sound and it is now timely that this band is released for more important country wide services.

It is now possible to make all of the available 2 x 30 MHz on a shared basis to the important MSS and associated terrestrial mobile broadband as an integrated license for MSS with a ground component. In this way, the operator(s) for this service will be in a situation to best utilize the spectrum for its highest value (for satellite or terrestrial) based on actual user demand and need. It is impossible for any entity, even a regulator, to determine which areas of a country are best served by terrestrial versus satellite services. By assigning the spectrum to an integrated licence for both services, the operator can make informed and practical decisions. Having said that, we also have no objection to having a licensing framework that allows for deployment of stand-alone mobile terrestrial service, independent of the MSS component and vice versa.

To this end, this is a particularly good time for ACMA to take such action. For the first time, there are commercial standards in 3GPP that have been developed for Band Class 65, which involves the 2 GHz band spectrum. These commercial standards will ensure that the MSS licensee, potentially with a ground component, is able to develop a network and equipment that are economically sustainable. This is part of the practical significance of AI 9.1.1 sharing.

Issues for comment

The following responses are to the questions posed by the ACMA in the Discussion Paper, taking into account the four planning scenarios identified by the ACMA. The planning scenarios offered are not exclusive in nature and depend critically on sharing capabilities which need to be evaluated. It is recommended that the ACMA establish a *pro tem*

Technical Advisory Group to develop pathway sharing guidelines before the scenarios are finalised.

Question 1

What TOB services use the 2 GHz band under current arrangements? Is demand for TOB in this band growing or decreasing?

This is largely an issue for TOB operators – the SSWG has no issues if sharing arrangements can be satisfactorily achieved without limiting MSS services. The SSWG also notes that some broadcasters have selectively tended to avoid this band, because of the lack of long-term certainty in using the band. Regardless, the rollout of 5G services will mean there are multiple alternatives to using this band and thus TOB should be phased out.

Question 2

What interest do you have in making further use of the 2 GHz band?

The SSWG members are interested in providing the following MSS services in the 2 GHz band, but existing Embargo 23 has prevented this:

- a. there is a wide array of commercial and government communications needs which can be satisfied, including:
 - commercial MSS services to enterprises in oil and gas, mining, agriculture, etc.;
 - in areas that are lacking in coverage or capacity due to blockage or density;
 - Internet connectivity in rural and remote areas;
 - communications during natural and man-made emergencies;
 - disaster warnings to the public and government agencies;
 - Internet of Things (IoT): Connected car applications, smart city (urban and rural), energy infrastructure (on-shore and off-shore);
 - Terrestrial MS as a component of a combined MSS/MS system for inflight connectivity ; and
 - telecommand and telemetry teleport services.
- b. many countries around the world have licensed both MSS with an ancillary terrestrial component (ATC) also known as a complementary ground component (CGC), including Europe, Canada, the United States and most recently Mexico. Allowing ATC/CGC in the 2 GHz band improves spectrum efficiency and maximizes the use of the valuable scarce resource of spectrum, especially in this part of the spectrum.
- c. Inmarsat, Omnispace, and Sirion agree that the band should be maintained for MSS with an associated ground component. With respect to existing earth stations, these should be factored into the regulatory arrangements, and satellite operators should be invited to voice their views in the next stage of development of planning implementation, along with the metro / regional outlook for service implementation.
- d. Telstra has an interest in this band for DA2GC and maintains that the MSS and terrestrial component although complimentary, should be allowed to be provisioned

independently of each other to allow for more flexible and efficient utilisation of this band.

- e. Pivotel has an interest in this band for the provision of Terrestrial Mobile Broadband services, typically located in remote locations for providing remote connectivity and IoT solutions. It is suggested that 2 x 10 MHz of the band be reserved for such use, with the remainder for MSS or other uses.

Question 3

Given the points raised in this discussion paper:

a. How much spectrum is required to provide the service?

To provide the wide array of services specified in Q2 above, the SSWG members would require 2 x 30 MHz Australia wide as per the international allocation for MSS in this band. A consultation should be issued to determine the licence terms, etc.

b. Is there a clear geographical delineation—for example, metropolitan or regional—for the service?

The proposed mobile satellite service in this band would be primarily to provide services to areas that are lacking in coverage or capacity, and especially for rural and remote areas. If combined with a terrestrial component, the coverage for the seamless MSS and ground component would be nationwide. This is important for applications such as asset tracking and Supervisory Control and Data Acquisition (SCADA) where the ground station will travel through cities and towns.

c. Is there, or will there be, readily available equipment for the service?

Suitable satellite modems and systems for this band are currently available. As more and more services are being implemented around the world in the S band, the availability of terrestrial equipment is also increasing, and 3GPP has standardised the 1980 to 2010 MHz and the 2170 to 2200 MHz frequencies as part of its Band 65 creating the device ecosystem needed for continued development of equipment, and observing the coexistence of satellite and terrestrial complementarity which is needed.



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