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Dear Andrew

RE: Future use of the upper 6 GHz band Options Paper

The Communications Alliance's Satellite Services Working Group (SSWG) wishes to thank the Australian Communications and Media Authority (ACMA) for the opportunity to provide a submission on the *Future use of the upper 6 GHz band Options Paper*. Please note that this submission does not represent the views of Telstra, Optus nor FreeTV.

The members of the SSWG have differing interests in the 'upper 6 GHz' band. These are:

- 'Wi-Fi 6' with its broadband channels will enable reticulation of high-speed satellite broadband available from the new and emerging generation of satellites.
- MSS operators have or are planning feeder links in the band (both uplinks and downlinks) and the protection of their receivers is important. Equally the ability to site new MSS feeder uplinks and downlinks as required by the engineering design is also important.
- Some members operate licensed feeder downlinks (in accordance with International Radio Regulations No. 5.458B) in this band and the ongoing protection of the Earth station (gateway) receivers is particularly important.
- Some MSS operators in particular use these licensed feeder links, in Australia including to provide backhaul for the Global Maritime Distress and Safety System (GMDSS), aviation safety services (AMS(R)S), and GNSS augmentation (SBAS), and would require protection from and timely elimination of interference which may not be possible if dense IMT deployments and/or unregulated higher-power RLANS are deployed. Also, current and future Earth station (gateway) receivers need to be protected from near sited IMT or RLANS devices through appropriate e.i.r.p. levels.
- The ACMA must ensure that RLANS, operating under *class licensed* Low Interference Potential Devices (LIPD) rules, or IMT systems, do not cause harmful interference to licensed gateway receivers and do not prevent new gateways (both in the space-to-Earth and Earth-to-space directions) from being established and licensed.

SSWG notes that, while gateway licensees would, to some extent, be able to self-manage RLANS operation and the resulting interference environment on their properties, this will not be the case for RLANS operating on adjacent properties. As neighbouring co-band RLANS could easily cause harmful interference to sensitive Earth station receivers, particularly those used for feeder downlinks in non-GSO MSS networks, the SSWG would like to work with the ACMA to ensure that the LIPD rules for all varieties of RLANS (low power indoor, very low power, and perhaps in the future for standard power outdoor with AFC RLANS) are suitable.

- Finally, some FSS operators still use this band for service delivery and are concerned about space receiver protection levels, from dense IMT deployments and/or unregulated higher-power RLANs than is presently in the 'lower 6 GHz' band.

The SSWG notes that the IMT proponents already have access to very significant amounts of mid-band spectrum including 3.4 – 3.8 GHz to the detriment of the satellite community, and while it lobbied strongly for access to 26 GHz (also to the detriment of the satellite community) it has not made any substantial use of the latter. The SSWG would suggest that IMT does not need more spectrum in 6 GHz as it would represent only an incremental increase in services to areas that are already very well served in other bands. Likewise, it could be argued that the Wi-Fi/RLAN community already has 500 MHz in the 'lower 6 GHz' band which could transition to unregulated higher-power RLANs in the future.

Overall, the benefits of RLAN and the protections offered to satellite systems seem to outweigh those of IMT. The SSWG's major concern is that current gateway receivers and the ability to deploy new gateways in the future, are protected. Wi-Fi 6E and Wi-Fi 7 have been designed with protection of incumbent services including MSS feeder downlinks. This is why *Low Power Indoor (LPI)* is low power and indoor, and *Very Low Power (VLP)* is even further power limited, and *Standard Power* must use AFC. IMT has been designed for exclusive use only, with the exception of 5G NR-U, where the U is for *unlicensed*. Whatever e.i.r.p levels are allowed for these future co-band *class licensed*, LIPD RLANs (with or without the implementation of AFC), near sited non-GSO/GSO MSS licensed gateway receivers must be fully protected.

The SSWG sees no need for urgent change to allocations affecting FSS in the upper 6 GHz band in Australia and would support the ACMA's observation in their paper that "there is not yet a single, globally harmonised arrangement for the band." SSWG sees the need for more study and market analysis of any other proposed terrestrial technologies, as well as far more technical study of the ability of such technologies to fully protect incumbent satellite licensed users in the upper 6 GHz band.

Issues for Comment

The SSWG provides the following responses the ACMA's questions in the Options Paper.

Question 1: What are your views on the 4 broad planning options identified for the upper 6 GHz band?

Option 1: *Maintain existing arrangements, with potential reconsideration at a later date.*

The foremost priority of the SSWG members is to protect important current and emerging satellite services in the upper 6 GHz band extensively used by the Australian community.

The SSWG supports any options that provide protection to satellite services in the upper 6 GHz band in Australia and would support the ACMA's observation in their paper that "there is not yet a single, globally harmonised arrangement for the band" for new MS or FS applications. The SSWG see the need for more study and market analysis of any other proposed terrestrial technologies, as well as far more technical study of the ability of such technologies to fully protect incumbent licensed users in the upper 6 GHz band.

Although this option may not be the ACMA's preferred option, there are some arguments for adopting this option and postponing action at the current time:

- The ACMA has in the last few years made extensive "mid-band" spectrum available around 3.6/3.7 GHz for WA WBB.

- There are signs that the growth in mobile data consumption is slowing and may plateau in the next few years. For example, the Netherlands' long delayed 5G award of 3.5 GHz spectrum concluded on 2 July 2024 with the auction being a non-event. Only the three incumbent MNOs competed, and the spectrum sold at close to reserve price.¹
- The ACMA has in the last few years made extensive additional spectrum available for RLAN in the lower 6 GHz band (5925 – 6425 MHz).
- WRC-27 agenda item 1.7 is looking at possible new IMT identifications in several bands.

Following this option, at least until the outcome of WRC-27 agenda item 1.7 is known, would permit the ACMA to monitor global and regional trends and make a decision aligned with, as far as possible, the dominant global/regional trend.

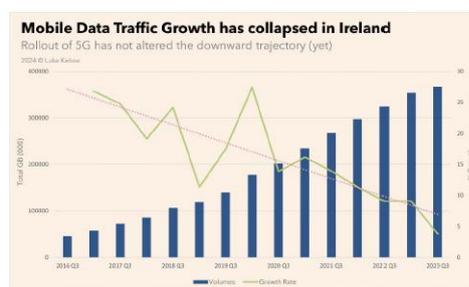
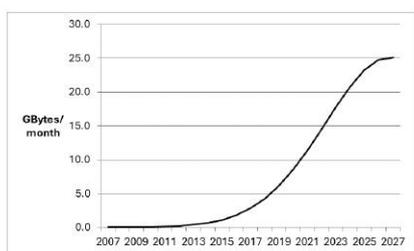
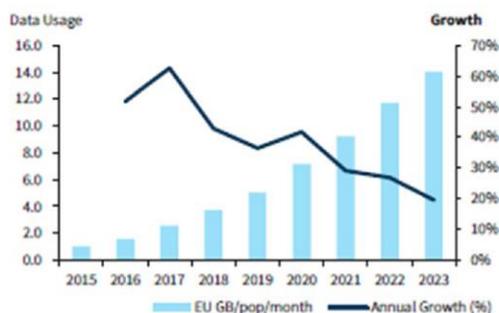


FIGURE 1. Europe: Average mobile data consumption (GB/pop/mth)



Growth rates in data usage are in steady decline and will reach zero before 6G arrives

Figure 1 Presentation from William Webb at 6G Global Summit

Option 2: Introduce arrangements to enable RLAN access to some or all of the upper 6 GHz band, via a variation to the LIPD Class Licence. There would be no introduction of arrangements introduced for WA WBB.

If the ACMA did decide to take action in the coming months to make the upper 6 GHz band available for new terrestrial technologies, provided RLANs protect Earth station and satellite space receivers, and MSS feeder links (both uplink and downlink) receivers, then they could be considered over WA WBB. RLAN is inherently better able to share with other services, including the FSS, provided they deploy low/medium powers as has been demonstrated with the introduction of RLAN into the lower 6 GHz band.

If RLAN were given access to all of the upper band, under the same regulatory and technical arrangements as the lower 'Wi-Fi' (LIPD) band, it would make all of the 320 MHz RLAN channels available to universities, hospitals, schools, conference

¹ [5G spectrum auction in Netherlands fetches € 174.4 mn \(Source: telecomlead, July 2, 2024\)](#)

centres, TAFE colleges, enterprise level deployment, mines, remote communities and large agricultural businesses. This would allow maximum reticulation of broadband satellite services which in turn would promote economic activity.

Subject to suitable conditions on RLAN operations to protect satellite services and the ACMA taking swift compliance action to rectify interference should it occur, the SSWG believes that RLAN operation on a No Interference / No Protection basis would also enable the future development of satellite services in the band.

Option 3: *Introduce arrangements to enable WA WBB access to some or all of the upper 6 GHz band, using apparatus and/or spectrum licensing. There would be no arrangements introduced for RLANs.*

Australia differs from most other developed nations in that vast areas of the country, and a significant number of Australians living and working there, are denied the same level of digital connectivity enjoyed by those who live in the cities. IMT (WA WBB) already has access to large quantities of spectrum and the IMT proponents are seeking more 'mid band spectrum'.

6 GHz WA WBB is in reality only a metropolitan based solution, so the economic and social benefits that could be derived from the use of the band by other terrestrial technologies in other areas would be foregone.

There are major concerns about the impact of the introduction of WA WBB on the use of the upper 6 GHz band by FSS satellite systems. While WRC-23 adopted "expected e.i.r.p." limits, which are intended to control the aggregate interference to FSS satellites, there remain doubts about whether those limits will actually be complied with by deployed equipment, and doubts about whether those limits will in any case provide adequate protection to FSS satellite receivers. The ability for WA WBB systems to share with FSS earth stations is also a concern, which has parallels to the recent situation in the 3.6 and 3.7 GHz bands, where earth stations have gradually been required to terminate operations to accommodate WA WBB.

The SSWG holds the view that allocation of all of the 'upper 6 GHz' spectrum to IMT (WA WBB) would not be the best outcome for Australia.

Option 4: *Introduce arrangements to enable both RLAN and WA WBB access to different frequency segments within the upper 6 GHz band, using the respective authorisation arrangements in options 2 and 3.*

The SSWG's views related to the introduction of RLAN and WA WBB are discussed under Options 2 and 3 above. Also, the more complex arrangement of a solution identified in this hybrid Option 4 needs further study in line with our comments in Option 1 above and Question 4 below.

Question 2: If we decide to divide the band into different RLAN and WA WBB segments, should the WA WBB segment:

(a) be a multiple of 100 MHz? This would align with the largest 3GPP channel size (noting that the ability for WA WBB operators to deploy one or more 100 MHz channels will depend on the outcome of the assignment process).

The SSWG does not have a view on this matter.

(b) align with the 160/320 MHz wi-fi channel raster? This would maximise the number of the larger wi-fi channels available (by avoiding options that would split these channels).

The SSWG does not have a view on this matter.

Question 3: Of the segmentation options based on wi-fi channels (schemes 1–3 in this paper), what is the preferred option and why?

The SSWG does not have a view on this matter.

Question 4: Is it appropriate to limit our consideration of hybrid options for accommodating multiple services to frequency segmentation only? For example, should geographic segmentation or less traditional sharing models be considered when determining models for enabling access to the upper 6 GHz band by both WA WBB and RLAN services?

If the ACMA does not decide to postpone action in line with Option 1, given the large amount of spectrum already available to WBB (IMT) and the additional spectrum being considered via ITU processes, the SSWG believes that allocating the majority of the upper 6 GHz band to RLAN with the caveats and reasons mentioned above for Option 2 will deliver the most benefit to Australia.

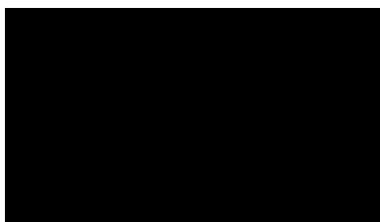
If the ACMA does however pursue a hybrid option, the only option that could be satisfactory to the SSWG, without further studies, would be to:

- allow RLAN in the band below 7025 MHz (with the caveats for Option 2 above),
- allow WA WBB in the band with WA WBB limited to 7075 – 7125 MHz as identified for IMT in Region 3 and is not allocated to the FSS. This additional 50 MHz of bandwidth could be a supplement to spectrum that might be identified for IMT in the portions of the band 7125 – 7250 MHz under WRC-27 agenda item 1.7 that are also not allocated to the FSS, and
- provide a guard band of 50 MHz within the IMT band to protect the sensitive receivers of the MSS feeder links, FSS space and Earth stations.

Conclusion

In light of our review of the four options, the SSWG can support either Option 1 or Option 2 for the reasons stated above. Option 4 would need further study. The SSWG would like to thank the ACMA for the opportunity to be involved in the consultation process and offers our support as we move forward. If you have any questions with respect to this submission, please contact Mike Johns at Communications Alliance on 0414 898 841.

Yours sincerely,



John Stanton
Chief Executive Officer

Communications Alliance

Communications Alliance is the primary communications 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, platform providers, equipment vendors, IT companies, consultants and business groups.

Its vision is to be the most influential association in Australian communications, co-operatively initiating programs that promote sustainable industry development, innovation and growth, while generating positive outcomes for customers and society.

The prime mission of Communications Alliance is to create a co-operative stakeholder environment that allows the industry to take the lead on initiatives which grow the Australian communications industry, enhance the connectivity of all Australians and foster the highest standards of business behaviour.

For more details about Communications Alliance, see <http://www.commsalliance.com.au>.