



Submission by Free TV Australia

**ACMA consultation
on technical design
features and allocation
considerations for the
2 GHz MSS band**

February 2024

1. Introduction

In November 2023, the ACMA published a discussion paper on technical design features and allocation considerations for the 2 GHz MSS band.

Free TV Australia represents the Seven, Nine and Ten television networks, which hold Television Outside Broadcasting (TOB) Network licences in the adjacent 2 GHz TOB band.

Thank you for the opportunity to comment on the issues raised in the November discussion paper.

1.1 About Free TV

Free TV Australia is the peak industry body for Australia's commercial television broadcasters. We advance the interests of our members in national policy debates, position the industry for the future in technology and innovation and highlight the important contribution commercial FTA television makes to Australia's culture and economy. We proudly represent all of Australia's commercial free-to-air television broadcasters in metropolitan, regional and remote licence areas.



Our members are dedicated to supporting and advancing the important contribution commercial free-to-air television makes to Australia's culture and economy. Free TV members provide vital local services to all Australians. Commercial television networks spend more than \$1.5 billion on Australian content every year, dedicating over 85% of their content expenditure to local programming.

A report released in September 2022 by Deloitte Access Economics, *Everybody Gets It: Revaluing the economic and social benefits of commercial television in Australia*, highlighted that in 2021, the commercial TV industry supported over 16,000 full-time equivalent jobs and contributed a total of \$2.5 billion into the local economy. Further, advertising on commercial TV contributed \$161 billion in brand value. Commercial television reaches an audience of 16 million Australians in an average week, with viewers watching around 3 hours per day.

The commercial television industry creates these benefits by delivering content across a wide range of genres, including news and current affairs, sport, entertainment, lifestyle and Australian drama. At no cost to the public, our members provide a wide array of channels across a range of genres, as well as rich online and mobile offerings.

A strong commercial broadcasting industry delivers important public policy outcomes for all Australians and is key to a healthy local production ecosystem. This in turn sustains Australian storytelling and local voices and is critical to maintaining and developing our national identity.

1.2 Free TV comments

TOB operators welcome and appreciate the acknowledgement given to TOB's potential need for more stringent protection from unwanted emissions.

Among other things, the ACMA sought feedback on coexistence between 2 GHz MSS licensees and other spectrum users.

Registration of TOB fixed receive sites

The discussion paper rightly identifies protection of TVOB as a core objective. A centrepiece of TV's investment in 2 GHz TVOB is the network of 26 main collection sites around the country. These are highly sensitive, omni-directional receivers, typically at elevated locations, able to receive signals from hundreds of kilometres away and each fitted with expensive filters at the band-edge. If interference from devices in adjacent bands adversely affected these receivers, all broadcasters would feel the impact and not just the licensee closest to the band edge. Interference issues, by the time they emerged, would be irreversible. The only mitigation available to broadcasters would be swapping out the present band-edge filters, in essence to create a new guard band within the industry's current 2 GHz allocation. In addition to the loss of spectrum available for TVOB, as a guide to the cost of remediation, the present filters cost approximately \$US 35,000 *per site* in 2014.

At 3.4.2 of the discussion paper, the ACMA recommended that to facilitate coordination of the proposed new MSS transmitter-licensed services with TOB receivers, TOB fixed receivers should be recorded on TOBN licences. Work is underway to register the 26 TOB receive sites.

Issue for Comment #1. *What are your views on the proposal to develop technical requirements for mobile earth stations and CGC systems based on the 2 GHz spectrum licensing technical framework. Are there alternative approaches that could be used and different resulting values for key parameters such as power and unwanted emissions that we should consider?*

TOB operators are not opposed to developing new technical requirements based on the 2GHz spectrum licensing framework in general terms, provided these arrangements do not unduly restrict spectrum access or increase interference to TOB operations.

In considering the proposed system model, aeronautical terminals create a lot of concern from their interference potential to TOB collection sites and general TOB operation. Their mobility and operation above typical ground clutter greatly increases their interference producing potential to TOB operations.

Mobile earth stations are also of concern, again due to their portability but primarily on account of sheer numbers. If operating in clusters near TOB operations, the aggregation of unwanted emissions may increase the risk of interference if the unwanted emission limits are insufficient. Class licensing for these devices also negates any possibility of tracing them should they become a source of interference.

CGC terminals appear to pose an increased risk to fixed and airborne TOB receivers. The elevated nature of CGC terminals above typical clutter naturally increases the likelihood of unwanted emissions causing interference issues for elevated TOB collection sites and aircraft being used as TOB receivers and airborne repeaters feeding back to the elevated collection sites.

Issue for Comment #2. *Having arrangements based on the 2 GHz spectrum licensing technical framework means including support for active antenna systems. We seek views about the inclusion of active antenna systems in the technical framework for 2 GHz MSS.*

The statistical nature of interference modelling for active antenna systems is concerning for TOB operations. While the statistical likelihood of interference may be calculated as being very low, should interference occur during television coverage of a one-off event, capture of that moment could be lost forever. The nature of live event coverage and the immediacy that TOB spectrum facilitates during news and sporting events is its point of difference and a major factor in its utility. If active antenna systems were able to notch out particular azimuths and elevations transparently and reliably, then TOB operators may be more supportive of their implementation on CGC terminals.

Issue for Comment #3. *What are your views on developing technical parameters for aeronautical transmitters in CGC/DA2GC systems based on ECC report 233? Are there alternative parameters that should be used?*

The ECC Report appears to appropriately address the issue of aeronautical terminals interfering with adjacent services. However, as the aeronautical elements of the proposed 2GHz MSS model are of greatest concern, TOB operators would like the opportunity to consider the report's findings carefully in the Australian TOB context before committing to its applicability. TOB operators are happy to work with the ACMA on this, carefully considering the different interference paths.

TOB operators support apparatus licensing of aeronautical terminals as it would give greater ability manage areas of operation, technical operating parameters, and coordination requirements of these devices to help mitigate interference risks to TOB operations.

Issue for Comment #4. *What are your views on the proposal to reduce the current the emission limit at the 2010 MHz boundary from of -66 to -60 dBW/MHz EIRP intended to provide protection for TOB receivers operating above 2010 MHz?*

TOB operators would have concerns about any relaxation of the emission limit at the 2010MHz boundary from -66dBW/MHz to -60dBW/MHz. Our preference would be no change, as real-world testing carried out in 2020 revealed some interference to TOB at the current limit. We would support more thorough investigation of this issue before any change.

Issue for Comment #5. *For 2 GHz MSS emission limits above 2010 MHz and 2200 MHz, which are intended to protect TOB receivers, do the limits achieve that objective? If not, please explain why and outline what the limits should be.*

In alignment with the position explained in our response to IFC #4 above, TOB operators are broadly comfortable with the current emission limits above 2010 MHz and proposed limits above 2200 MHz. The 2.5GHz spectrum license technical framework is seen as the most relevant to provide suitable protection to TOB in this upper band.

Issue for Comment #6. *For 2 GHz MSS emission limits above 2010 MHz and 2200 MHz, we seek views on the merits of applying more relaxed limits in areas of lower TOB usage and views on relevant emissions limits to apply in areas on low TOB usage.*

TOB operators do not support relaxing any emission limits on a geographical basis. While it is acknowledged that TOB usage in extremely remote areas is minimal and sporadic, usage in regional areas is more regular than many may assume. The TOB licenses are national licenses, and their value lies in spectrum availability as and when required, anywhere anytime. Commitment to protecting this utility is evident through the high level of ongoing cooperation with space port operators in these regional areas for space related activities. TOB operators have committed energy and resources to maximising the use of these bands through sharing with compatible use cases. The numerous coordination agreements TV networks have entered into with space port operators demonstrate TOB operators' willingness to be good spectrum custodians. These agreements stipulate that no interference to TOB is allowed and contain turn-off provisions to facilitate TOB operation when required near an interfering space port. Relaxation of unwanted emission limits in these areas would be contrary to the spirit of ensuring TOB operators' solitary enjoyment of the bands, nationally, when required.

Issue for Comment #7. *Views are sought on the coordination requirements outlined in section 3.*

TOB operators welcome the recognition of the need to protect their operations in both this and the narrowband MSS consultations processes. We support all proposed coordination requirements in section 3.4.2 of the consultation paper. As noted above, the process of recording the TOB fixed receivers on TOBN licenses is well underway.

As described earlier in this submission, the operation of aeronautical transmitters needs to be carefully considered in the context of TOB operations. TOB aircraft, cameras, vans, and collection stations operate in several different configurations depending on circumstances. These different configurations need to be considered and appropriate coordination requirements implemented. RALI FX 21 Appendix B provides suitable parameters on which to base these considerations. TOB operators are prepared to work with the ACMA on this and develop suitable coordination requirements as necessary.

Issue for Comment #8. *Views are sought on the approach of coordinating CGC transmitters operating in the band 2170–2195 MHz with earth station receivers using the level of CGC unwanted emissions at the earth station receiver. What are appropriate earth station protection levels under such a methodology? Are there alternative approaches that we should consider?*

This is primarily a matter for earth station operators. However, RALI FX 21 contains relevant coordination guidance for TOB with earth stations that may serve as a tried and tested starting point for CGC coordination with earth stations.

Issue for Comment #9. *Views are sought on the suitability of the arrangement for coordination with the radio quiet zone, and what requirements should apply for aeronautical transmitters in 1980–2005 MHz with respect to the radio quiet zone.*

We would suggest RALI FX 21 contains relevant, tried and tested coordination guidance that may be a useful starting point for coordination arrangements with the Mid-West Radio Quiet Zone.

Issue for Comment #11. *We propose that the current the emission limit at the 2010 MHz boundary could reduce from -66 to -60 dBW/MHz EIRP. Are there other elements of arrangements for narrowband MSS that would be beneficial to review?*

In relation to reducing the current emission limit, we would repeat the concerns raised in our response to IFC#4 .

TOB operators would support a review of NBMSS arrangements in relation to mobile earth station deployment density. It is easily conceivable that device density would exceed 2.4 per km² once services become well established, likely also in areas where TOB activity occurs. We believe it prudent to review the arrangements in accordance with the contemporary ITU recommendations and current best practice.

Issue for Comment #12. *We are considering whether ITU-R Recommendation P.1812 configured to 10% time (percentage of average year for which the calculated signal level is exceeded) and 10% location (percentage of locations for which the calculated signal level is exceeded) is an appropriate propagation model to use if arrangements are reviewed. What are your views on this proposal?*

ITU-R Recommendation P.1812 configured to 10% time and 10% locations would seem an appropriate propagation model to apply to unwanted narrowband MSS emissions for interference modelling into TOB in areas where TOB use is infrequent. However, because of their importance to TOB operations

24x7x365, in areas sufficiently close to risk interference to the 26 elevated TOB collection sites, a configuration of 1% time is considered more appropriate and preferable to TOB operators.

We thank the ACMA for the opportunity to make submissions on the issues raised in the 2 GHz MSS discussion paper and look forward to continuing collaboration.

Please do not hesitate to contact Free TV if you require any further information.