



Submission in response to  
ACMA Consultation Paper

**Review of 2 GHz spectrum  
licensing technical  
framework – consultation  
38/2022**

PUBLIC VERSION

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## OPTUS RESPONSE TO ISSUES FOR COMMENT

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1. Optus welcomes the opportunity to provide feedback to the Australian Communication and Media Authority's (ACMA) consultation paper "*Review of the 2 GHz band spectrum licence technical framework – November 2022*" (the "Consultation Paper").
2. The ACMA has indicated that the review of the 2 GHz SLTF is part of its broader work program to review existing spectrum licence technical frameworks to cater for new developments such as 5G and Advanced Antenna Systems (AAS). The 2 GHz band is subject to spectrum licensing in metropolitan and regional areas of Australia. The 2 GHz SLTF was last updated in 2015 and is not optimised for deployment of commercially available AAS in operators 5G networks.
3. This Consultation Paper follows the outcomes of the ACMA's Technical Liaison Group (TLG) which were published in October 2022. In light of concerns expressed by Television outside broadcast (TOB) operators, the ACMA is now seeking feedback on two options to address unwanted emissions limits in the 2100-2110 MHz spectrum band.
4. In particular, comment is sought on the effect proposed changes may have on incumbent services in the 2 GHz band and adjacent bands. Subject to stakeholder feedback the preferred option is to be implemented in amendments to the SLTF along with any changes needed to align with arrangements in other bands.
5. Optus supports most of the ACMA's proposals set out in the Consultation Paper and agrees with the benefits of accommodating AAS and 5G technologies within the 2 GHz SLTF identified under the section "Case for action".
6. However, in regard to emission limits for the 2100-2110 MHz, Optus reiterates two points from its June 2022 submission; namely that a (i) non-3GPP compliant framework will create costs and delays to network deployment and (ii) the nature of AAS reduces interference potential. Optus submit that unwanted emission limits should be designed with these points in mind and notes that we do not consider either option proposed in the Consultation Paper adequately reflects these points. That said, if an option is to be implemented, Option 2 is preferable to Option 1.
7. From a spectrum management perspective, Optus considers that the ACMA's approach to emission limits in 2100-2110 MHz appears to be a disproportionate response to the interference risk particularly given TOB's stated intention to only utilise the band infrequently. Therefore, adopting conservative emissions limits will likely result in an inefficient underutilisation of the 2 GHz spectrum band.
8. Further, the compliance implications of introducing more stringent emission limits as spectrum licence conditions means that operators must be able to obtain compliant equipment. While we understand that this may not be an issue for this band, such an approach should be the exception rather than the rule as the development of customised and/or bespoke equipment for the Australian market will only add (unnecessary) cost to network deployment. Optus considers that the ACMA should have a general preference to default to 3GPP standards as much as possible.
9. Optus refers the ACMA to the Australian Mobile Telecommunications Association (AMTA) submission in response to the Consultation Paper. Optus generally supports the position set out in the AMTA submission, other than in relation to the comments set out below. Where Optus has not directly responded to an issue, Optus supports the AMTA submission or has no objection to the ACMA's proposed approach.

## RESPONSE TO SPECIFIC ISSUES FOR COMMENT

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10. Optus has reviewed all the proposed changes to the 2 GHz SLTF set out in the Consultation Paper. Optus supports all the ACMA's proposed amendments set out in the draft *Radiocommunications (Unacceptable Levels of Interference – 2 GHz Band) Determination 2023* (s.145(4) Determination), the draft *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2 GHz band) 2023* (Tx RAG) and the draft *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Receivers – 2 GHz band) 2023* (Rx RAG).
11. In regard to the proposed changes to the conditions of the 2 GHz spectrum licences, Optus generally supports the ACMA's approach though we have concerns about the options to change spectrum licence core conditions relating to unwanted emission limits.
12. That said, Optus accepts that if changes are to be made to the core conditions of the 2 GHz spectrum licences, then it agrees to the changes based on Option 2 outlined in the Consultation Paper. We refer the ACMA to comments from AMTA on further modification to Option 2 that we consider should be accommodated.

### ***General support for proposed changes to conditions on the 2GHz spectrum licence***

13. Optus agrees with the ACMA's proposed definition of devices exempt from registration. Optus supports the proposal to change the maximum power of the devices that are exempt from registration on the Register of Radiocommunications Licences from 25 dBm EIRP per occupied bandwidth to 25 dBm TRP per occupied bandwidth as this simplifies the licence condition and is aligned with a change in metric from EIRP to TRP for AAS.
14. Optus also appreciates the adoption of TRP instead of EIRP for unwanted emission limits. Optus also supports the ACMA's proposed:
  - (a) unwanted emission limits for transmitters operating in the lower 2 GHz band.
  - (b) unwanted emission limits for receivers operating in the upper 2 GHz band.
  - (c) unwanted emission limits for transmitters operating inside the 2110–2170 MHz band, which are based on 3GPP TS 38.104 Category-B Option-1 limits.
  - (d) adopting spurious emissions limits specified in the 3GPP TS 38.104.
  - (e) adopting 3GPP Category-B Option-1 unwanted emission limits in the 2170–2180 MHz band for non-AAS transmitters.
15. Although 3GPP Category B Option-2 unwanted emission limits are more stringent than Option-1 limits, Optus do not oppose the adoption of Option-2 limits in the 2170–2180 MHz band for AAS transmitters.
16. However, Optus view is that neither of the proposed Options to change to the unwanted emissions limits defined in core conditions in the 2 GHz band spectrum licences is desirable. This is because neither option is based on 3GPP standards. We outline our concerns about the proposed approach in more detail below.

### ***Unwanted emissions limits in the 2100-2110 MHz band***

17. Optus has previously stated its view that a key objective for the 2 GHz band should be to prepare the band for 5G network deployments. AAS antenna technology is a key

component of 5G innovation and Optus considers that the SLTF should be designed to facilitate AAS deployment.

18. The ACMA has noted that “while an aim of the review is to maximise the potential of the technical framework for spectrum licensed services, coexistence and the spectrum utility of other spectrum uses” is also an objective.<sup>1</sup> The current service adjacent to the lower edge of the 2GHz spectrum licensed base transmit (below 2110 MHz) is TOB for which there is a 4 MHz (2106 – 2110 MHz) guard band in place.
19. During the TLG, TOB operators expressed concern that relaxing the existing out-of-band limits between 2100-2110 MHz could increase the risk of interference to existing TOB collection stations. This is despite the fact that there is already a 4 MHz guard band in place. TOB operators added that further protection is warranted due to the fact that:
  - (a) while the top channel is licensed to the ABC, it is utilised by multiple TOB operators during major events and
  - (b) due to lack of directionality of the antenna on helicopters communicating with collection stations (that is, lower antenna gain), the power received at the collection station would be lower and more susceptible to interference due to the relaxation of emission limits.
20. Optus does not agree that these reasons justify the imposition of more conservative non-3GPP compliant emissions limits in the core conditions of the 2GHz spectrum licence. Accordingly, Optus considers that both options set out in the Consultation Paper represent a disproportionate response to the TOB concerns and will ultimately result in efficient utilisation of the 2 GHz spectrum.
21. As a general principle, Optus considers that technical requirements that necessitate market specific equipment will create delays and add costs to network deployment. The imposition of Australian-specific licence conditions will hinder licensees’ ability to deploy 5G networks in a cost-effective and timely manner, and ultimately undermine the potential benefits of fully realised 5G networks for Australia.
22. Optus believes that in order to reach the optimum balance between certainty and flexibility, the economic impacts of imposing overly protective emission limits should be considered. While imposing tighter emission limits may provide some certainty for using a small portion of the band for TOB applications which naturally have a very low level of utilisation, it impacts thousands of MNOs’ base stations in terms of extra costs and delays.
23. While the proposed Option-2 (hybrid emission mask) provides less stringent limits than the Option-1, it is still tighter than 3GPP limits and includes no adjustments for AAS transmitter. As discussed in Optus’ previous submissions, the nature of AAS reduces interference potential.
24. Optus notes the proposed Option-2 limits in the 2106-2110 band is based on 3GPP Category B Option-2 unwanted emission limits. Optus sees no reason why the 4 MHz between 2106-2110 MHz cannot be aligned to 3GPP Option 1, since it does not overlap the TOB spectrum at all.
25. From a spectrum management perspective, Optus considers that the ACMA’s approach to emission limits in 2100-2110 MHz appears to be a disproportionate response to the

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<sup>1</sup> Consultation Paper, p.3

interference risk particularly given TOB's stated intention to only utilise the band infrequently. Adopting conservative emissions limits will likely result in an inefficient underutilisation of the 2 GHz spectrum band.

26. Further, the compliance implications of introducing more stringent emission limits as spectrum licence conditions means that operators must be able to obtain compliant equipment. This will add to deployment costs and cause delays due to the fact that bespoke, non-3GPP compliant equipment and radios typically take longer to get to market, are more expensive, are often larger and heavier and cause tower loading issues.
27. While we understand that these concerns may not affect the use of this band in the short term, such an approach should be the exception rather than the rule. Optus considers that the ACMA should have a general preference to default to 3GPP standards as much as possible.
28. For clarity, Optus prefers Option 2 ("Hybrid emission mask") over Option 1 ("express existing EIRP limits as TRP") because Option 2 reflects a more flexible arrangement that is more compatible with AAS and 5G deployment.