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AMTA Submission

Australian Communications & Media  
Authority

Review of the 700 MHz band spectrum  
licence technical framework—  
Consultation paper



## About AMTA

The Australian Mobile Telecommunications Association (AMTA) is the peak industry body representing Australia's mobile telecommunications industry. Its mission is to promote an environmentally, socially and economically responsible, successful and sustainable mobile telecommunications industry in Australia, with members including the mobile network operators and service providers, handset manufacturers, network equipment suppliers, retail outlets and other suppliers to the industry. For more details about AMTA, see <http://www.amta.org.au>.



## Introduction

AMTA thanks the ACMA for the opportunity to comment on its *Consultation paper: Review of the 700 MHz band spectrum licence technical framework* (“the consultation paper”).

In general, we are highly supportive of the ACMA’s initiative to amend the licence conditions on 700 MHz spectrum licences (SL) to support 5G and adaptive antenna systems (AAS), and the ACMA’s efforts to align unwanted emission limits with 3GPP technical specifications (TS). In this regard, we strongly support the ACMA’s proposed changes to:

1. use total radiated power (TRP) instead of equivalent isotropic radiated power (EIRP) for the in-band emission limits;
2. for the unwanted emission limits for base station (BS) transmitters, the alignment of these with 3GPP Category B Option 1 limits, and
  - for Non-AAS BS transmitters, use of mean power per transmitter port; and
  - for AAS BS transmitters, use of TRP per sector plus 9 dB AAS margin;
3. for the unwanted emission limits for user equipment (UE) transmitters, alignment of these with 3GPP limits and use of TRP; and
4. use of TRP instead of EIRP for the registration exemption requirements for 700 MHz upper band (nominally BS) transmitters and 850/900 MHz SL transmitters.

Further to point #2 above, we strongly support the ACMA’s proposal to align the unwanted emission limits for BS transmitters with 3GPP TS, for unwanted emissions in the range 803-805.5 MHz. However, we acknowledge that the proposed limits for unwanted emissions in the range 805.5-813 MHz are more stringent than 3GPP and are stated as EIRP (discussed further below).

Further to point #3 above, we strongly support the ACMA’s proposal to align the unwanted emission limits for UE transmitters below 694 MHz with the Australian and ETSI standards (in turn aligned with 3GPP)—as per the ACMA’s Option B2 for the second “unresolved issue”.

However, with respect to the first “unresolved issue”, the ACMA’s preferred Option (A2) does not support the widespread operation of thousands of devices already in operation, given the extra 2 dB is simply the amount already afforded as transmitter power tolerance (PC-3 is defined as 23 dBm, +2/-1 dB). Simply adding an external antenna, as is the case with mobile repeaters, car-kits, wireless modems (e.g., Netgear modems) or fixed wireless access, will exceed the registration exemption threshold, thereby requiring the device to be registered with the ACMA on the RRL. AMTA contends that the registration exemption requirements for

700 MHz lower band transmitters need to be relaxed to **35 dBm EIRP per occupied channel (total device power)**—a new “Option A4” for the ACMA’s consideration.

We also request that the ACMA address two further issues that are not within the scope of the proposed changes to the 700 MHz SLTF, but that are closely related to the unwanted emission limits above 803 MHz.

## ‘Unresolved issues’

### Unresolved issue #1: Registration exemption requirements

AMTA notes that Telstra conducted two rounds of testing on the potential for UE transmitters (operating in 703-748 MHz) to cause interference to broadcast TV receivers operating below 694 MHz. The first round was conducted solely by Telstra at their test laboratories in Melbourne in March and April 2024. The aim of the testing was to understand the level(s) of received LTE signal that would directly lead to television reception disruption, to ascertain whether change to the UE registration exemption limits could be supported while maintaining quality TV reception.

A second round of testing was jointly conducted by Telstra, Free-TV Australia and BAI at the Freeview test laboratories in Sydney in December 2024. The aim was to address concerns about the test methodology from the first round using an expanded range of TV receivers, and a more realistic TV broadcast signal configuration than was possible in the Telstra labs.

More detail on the two testing rounds, including a copy of the Test Report from the second round of testing, can be found in Telstra’s submission to this consultation.

At the conclusion of the testing, Telstra, Free-TV and BAI were able to agree that the 700 MHz exemption from registration requirement for equipment in the 703-748 MHz band could be increased to 35 dBm EIRP (total device power).

As such, AMTA proposes a new option, “Option A4”, with a registration exemption threshold of **35 dBm EIRP per occupied channel (total device power)**.

### Unresolved issue #2: Unwanted emission limits below 694 MHz

We strongly support the ACMA’s proposal to align the 700 MHz lower band transmitter unwanted emission limit below 694 MHz, with 3GPP by adopting the limit of -42 dBm/8MHz TRP. We concur with the need to make consequential changes to the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters — 700 MHz Band) 2023* (“the Tx RAG”) to implement this limit, and agree with the draft variation instrument accompanying the ACMA’s consultation.

### ***Impact of unresolved issue #1 Option A4 on unresolved issue #2***

We note that part of the ACMA's rationale for not selecting Option A3 as its preferred solution to unresolved issue #1 is that "*Option A3 of the exemption from registration requirements limits the antenna gain on unregistered devices to a maximum of 12 dBi, which could increase unwanted emission levels below 694 MHz by 1 dB in Block E areas*". Since our proposed Option A4 also allows for an antenna gain of 12 dBi, the same comment applies to this option also.

Firstly, the ACMA's statement quoted above is incorrect, given that there are already thousands of unregistered PC-3 transmitters operating with external antennas connected. This will increase the equivalent unwanted emission *limit* (not necessarily the unwanted emission *levels* in practice) by 1 dB.

The 1 dB increase in the equivalent *limit* (again, not *level*) due to allowing 12 dBi antennas—associated with Options A3 and A4 for unresolved issue #1—presents a negligible increase in interference potential to television broadcasting receivers, for the following reasons:

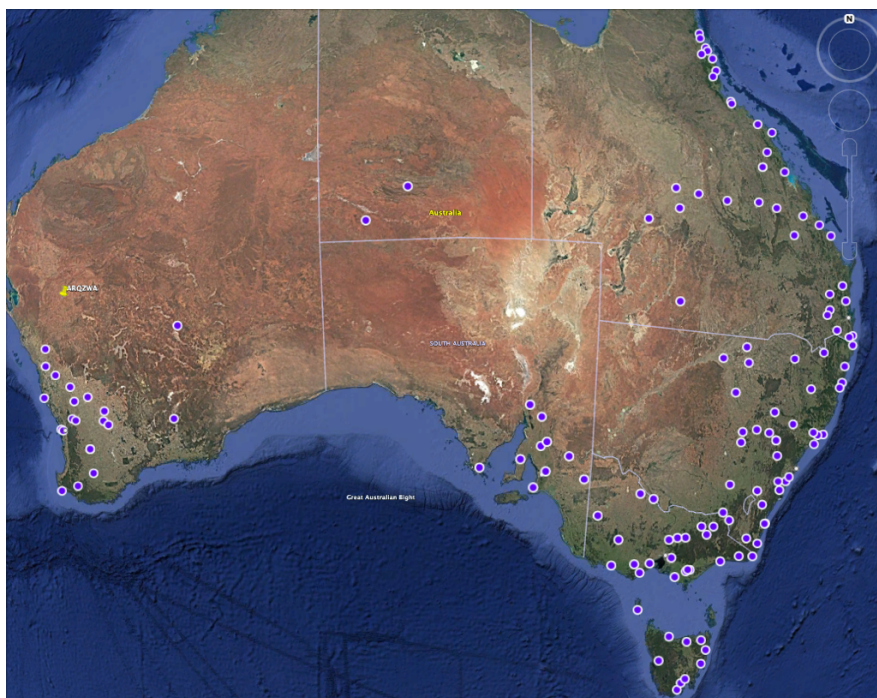
- The magnitude of the increase in the equivalent limit is itself minor (just 1 dB).
- The probability of such a system operating close to a receiver that is both at the limits of the Block E coverage *and* with its main beam oriented towards the television receive antenna *and* operating at full power (noting TPC) is extremely low.
- In practice, devices perform better than 3GPP limits.

Furthermore, we can probably add "receiving on Channel 51" to the list of low-probability conditions that would need to occur simultaneously to result in interference. This is because it's likely that—for the device to satisfy the unwanted emission limit within Channel 51—it would satisfy the unwanted emission limit by a greater margin within Channels 49 and 50. Under such circumstances, the 1 dB relaxation in the limit would *at worst* result in the unwanted emission level exceeding the former limit (by 1 dB) within Channel 51, but not within the channels below it.

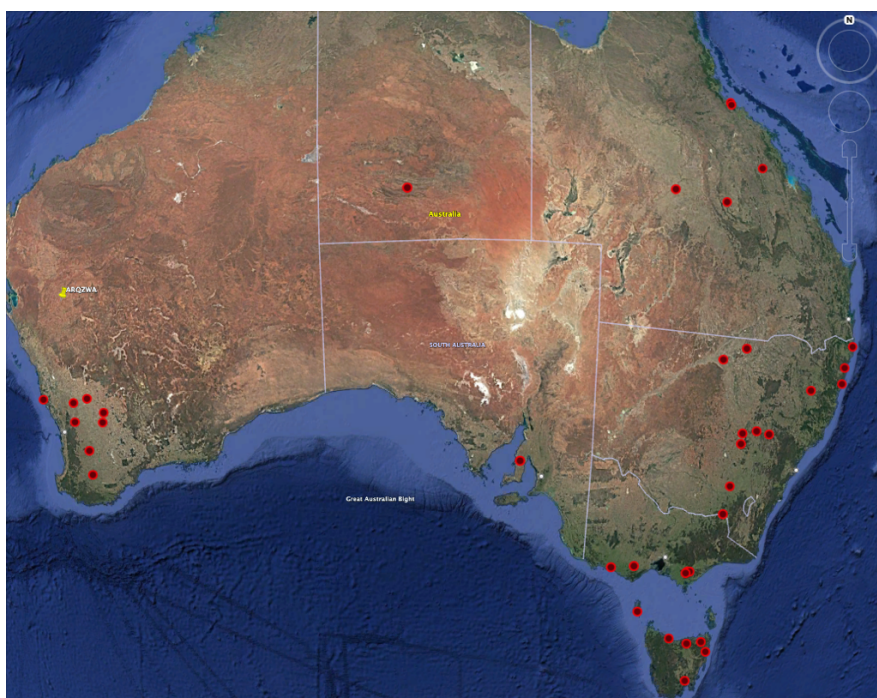
It is perhaps convenient that this highest-risk channel (51) is by far the least-used TV channel within Block E. There are only 38 licences on Channel 51, far fewer than the 118 licences on Channel 50. Below is a Figure showing all Block E sites either/both of Channels 49 and/or 50, followed by a Figure showing the Block E sites using Channel 51. In the ACMA's coverage maps<sup>1</sup> (presumably "best server" areas), the larger coverage areas of Dalwallinu WA, Swan Hill VIC and Nhill VIC do not use Ch 51; the only high power service using Ch 51 is Mt Ulandra (service SW Slopes/East Riverina). Similarly, other populated areas served by Block E services—like Gold Coast, Sunshine Coast and Toowoomba—do not use Ch 51. **None** of the in-fill services in the State capital cities use Ch 51.

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<sup>1</sup> ACMA, December 2024, *Review of the 700 MHz band spectrum licence technical framework: Consultation paper*, pg 32-34, available at: <https://www.acma.gov.au/consultations/2024-12/review-700-mhz-spectrum-licence-technical-framework>



**Figure 1—TV transmitter sites using either Channel 49 and/or 50**



**Figure 2—TV transmitter sites using Channel 51**

The ACMA should bear in mind that the existing unwanted emission limits below 694 MHz were developed and proposed in the midst of great uncertainty and concern from the broadcasting industry, without the benefit of hindsight of a decade of operation without widespread interference to TV receivers. Accepting a relaxation of just 1 dB on limits developed in those circumstances should be a very low-risk approach to take. In any case, in our advocacy for the ACMA to adopt Option A4, we are focussing on the fact that the broadcasting industry has agreed to this option.

## Unwanted emission limits above 803 MHz

We strongly support the ACMA's proposal to align the limits for unwanted emission limits radiated by 700 MHz upper band transmitters—for unwanted emissions within 803-805.5 MHz—with those of 3GPP TS 38.104, with an added 9 dB margin for AAS transmitters. The ACMA's proposed limits referred to here are those in Tables 5 and 6 on pg 20 of the consultation paper. We support those limits and do not propose any changes to them.

However, between 805.5 MHz and 813 MHz (i.e. the boundary above which spurious emission limits apply), the ACMA's proposed limits in Table 7 on pg 20 of the consultation paper, seek to maintain the current emission limits on 700 MHz spectrum licences:

- 15 dBm/MHz EIRP for 805.5-806 MHz aligns with the first row in Table 4 of the existing licences; and
- -6 dBm/MHz EIRP for 806-813 MHz aligns with the second row in Table 5 of the existing licences.

Notably, this results in a sharp drop from +61.2 dBm/MHz EIRP<sup>2</sup> in-band to -6 dBm/MHz EIRP (a total of almost 70 dB) within just 3 MHz of the operating band upper edge. This is particularly challenging for vendors to comply with.

Apart from the costs of having to design, manufacture and implement bespoke solutions for Australia—which are ultimately passed onto the consumer—one of the main concerns is power consumption. Adding an additional filter resonator and moving it closer to the passband increases insertion loss which needs to be compensated by running the transmitters at slightly higher power—this has both environmental impacts and increases costs associated with power consumption. These challenges would be significantly eased by a slight relaxation in the unwanted emission mask. The relaxation would also allow new radios—designed and implemented with a view to meet the relaxed limits versus the current—to be smaller and lighter (which relaxes requirements for tower strength and wind-loading), more energy-efficient, and be available on the market sooner.

To balance the benefits to MNOs and vendors with the theoretical increase in interference potential to trunked land mobile services (TLMS) above 806 MHz, we request that the limits for unwanted emissions above 805.5 MHz be reviewed. We suggest a sloped limit from +20.5dBm/MHz EIRP at 805.5 MHz<sup>3</sup> to -6 dBm/MHz EIRP at 806.6 MHz.

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<sup>2</sup> Derived from the proposed new in-band emission limit of 53.2 dBm/5MHz TRP plus 15 dBi gain antenna (and adjusting from 5 MHz to 1 MHz reference bandwidth).

<sup>3</sup> Derived from the proposed unwanted emission limits in 803-805.5 MHz in Table 5 of the consultation paper—specified as mean power per transmitter—plus 15 dBi gain, plus 6 dB for 4TX MIMO (and adjusting from 100 kHz to 1 MHz reference bandwidth).

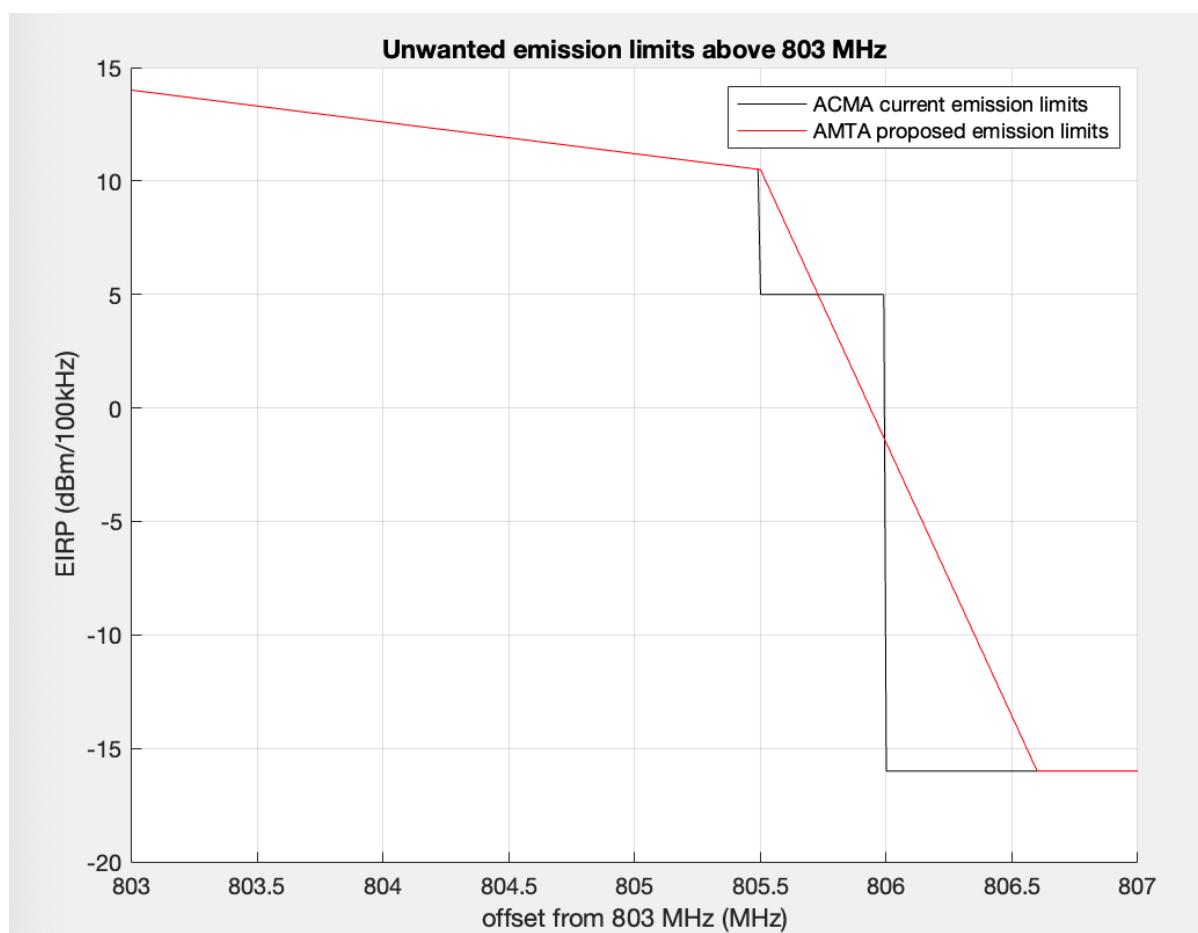
AMTA’s proposed unwanted emission limits above 803 MHz require no changes to the ACMA’s proposed limits in Tables 5 and 6 on pg 20 of the consultation paper, and would only require a couple of simple changes to the table titled Table 7 in the consultation paper, as follows:

**Table 7: Unwanted emission limits in the 805.5 to 813 MHz range for transmitters operating in the upper 700 MHz band – all transmitters [AMTA preferred option]**

Frequency range (f)	Radiated maximum true mean power (dBm EIRP)	Measurement bandwidth
805.5 MHz ≤ f < 806.6 MHz	$10.5 - 26.5/1.1 * (f_{\text{offset}} - 2.5)$	100 kHz
806.6 MHz ≤ f < 813 MHz	-6	1 MHz

Where  $f_{\text{offset}}$  = frequency offset (in MHz) from 803 MHz

AMTA’s proposed unwanted emission limits above 803 MHz are illustrated in Figure 3 below.



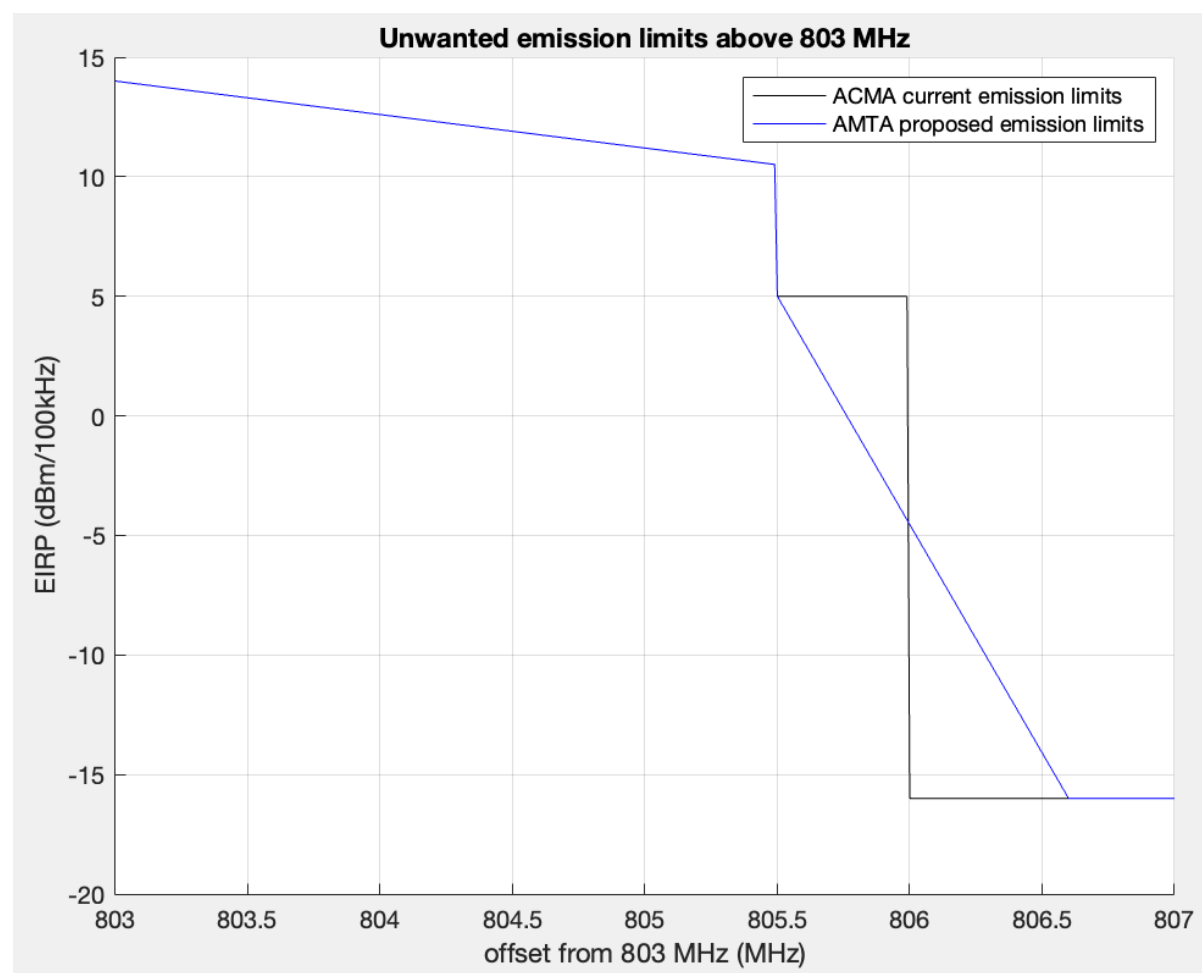
**Figure 3— AMTA proposed revised unwanted emission limits for 700 MHz upper band (base station) transmitters above 803 MHz—preferred option.**

If the ACMA is still concerned about increasing the unwanted emission limits within 805.5-806 MHz—despite our justifications in the next section below—and prefers to ensure that the unwanted emission limits within this 0.5 MHz range are not altered, then we propose a fallback option involving a sloped limit from +15 dBm/MHz EIRP at 805.5 MHz<sup>4</sup> to -6 dBm/MHz EIRP at 806.6 MHz.

**Table 7: Unwanted emission limits in the 805.5 to 813 MHz range for transmitters operating in the upper 700 MHz band – all transmitters [AMTA fallback option]**

Frequency range (f)	Radiated maximum true mean power (dBm EIRP)	Measurement bandwidth
805.5 MHz $\leq f < 806.6$ MHz	$5 - 21/1.1 * (f_{\text{offset}} - 2.5)$	100 kHz
806.6 MHz $\leq f < 813$ MHz	-6	1 MHz

Where  $f_{\text{offset}}$  = frequency offset (in MHz) from 803 MHz



**Figure 4—AMTA proposed revised unwanted emission limits for 700 MHz upper band (base station) transmitters above 803 MHz—fallback option.**

<sup>4</sup> Taken from the proposed unwanted emission limits in 805.5-806 MHz in Table 7 of the consultation paper—specified as radiated maximum true mean power (dBm EIRP).

## Impact to PMP services in 805-806 MHz

### *Impact of AMTA preferred option*

As addressed further below in this response, the PMP arrangements in the 800/900 MHz bands are extremely lowly utilised: there is only one PMP licence under post-transition arrangements, and two PMP licences under pre-transition arrangements. They are both in Remote NW WA, and are held by commercial mining entities (so there can be no claim of being critical or public safety comms). The demand for these services is also extremely low: there have been no new PMP licences since we made the same point in our TLG response 18 months ago.

The increase of the unwanted emission limits will have negligible impact on existing services: the (max) three existing services can be protected from the higher unwanted emission levels by first-in-time coordination. On the other hand, future PMP services (if any) need to be aware of the new unwanted emission levels (if the ACMA agrees to adopt them) and plan their systems accordingly.

Furthermore, the proposed AMTA limits are higher than the current limits only for the lower half of 805.5-806 MHz; for the upper half they are actually more stringent than the ACMA's limits. This is due to a need to start rolling-off lower in frequency to be able to achieve the much more stringent attenuation above 806.6 MHz.

### *Impact of AMTA fallback option*

AMTA's fallback proposal for the revised unwanted emission limits are actually more stringent than the current limits across the entire segment 805.5-806 MHz. As such, our fallback proposal does not present any additional impact to PMP services.

## Impact to TLMS services above 806 MHz

Section 5.5.3 of RALI LM8 states: *"For 12.5/25 kHz channel spacing, 240/120 channels are arranged so as to comprise of 12/6 blocks, **each consisting of groups of five channels**".*

*"Channels should be assigned at any given site in groups of five, as shown in Tables B4.1 and B5.1 in Annex B of this RALI, wherever possible. Note: for assignments in the 800 MHz trunking band, the minimum assignment size is one five-channel group, **however it is not mandatory to assign only full groups (i.e. assignments are not confined to multiples of five channels)** as was the case under previous arrangements".* (emphasis added)

In terms of existing licensed services, there are 156 assignments in total across the entire country (the vast majority with 25 kHz channel width), using spectrum arrangements with 120 available 25 kHz channel pairs. This means that spectrum utilisation is quite low. To break this down further, each State has no more than (often far less than) 44 assignments within

100 km of the capital city, meaning that **no more than 37% of channels are being used in any particular State capital city** (which are still the highest demand areas).

*Side note:* Compare this to TPG—the 700 MHz spectrum licensee for which the current unwanted emission limits are hardest to achieve—which has **over 67,000 registrations** in the 700 MHz band over 7200 sites, all of which are impacted by the tighter unwanted emissions mask.

Back to the existing TLMS services: there are only 40 unique Site records used, and only 20 of those use the first channel in the Group. *Only 20 sites nationwide would be subject to higher unwanted emission limits under our proposal.*

Of those, only six (6) sites use all five channels in the Group; the rest have at least one unallocated channel in the Group that could potentially be used instead of the first channel (from the lower 600 kHz). These 6 fully-loaded sites are:

- Crown Casino Southbank in Melbourne VIC (100126)
- Tennis Australia Melbourne Olympic Park in Melbourne VIC (10012975)
- Osborne Australian Submarine Corp (130645) and South End ASC Site Outer Harbour (9008456), both at Osborne SA
- Burswood Entertainment Complex in Perth WA (137035)
- Tetra Site Smelter Boyne Island near Gladstone QLD (10034351)

**These make up a handful of fully-loaded sites which could be considered separately.**

Furthermore, 800 MHz TLMS systems have alternative spectrum options in the 400 MHz band; particularly in Segment E-M<sup>5</sup> which is almost *unused* in Melbourne (just 2 assignments), Hobart (4 assignments) and Perth (16 assignments), and lightly used in Brisbane (78 assignments). In Sydney, Segment E-M is indeed heavily used by the NSW Government, but Sydney does not have any 800 MHz TLMS which could even theoretically be impacted by our proposal.

One argument that could be made to counter the suggestion that Segment E-M presents a viable spectrum option is that TETRA's operating ranges do not cover Segment E-M. However, we are talking about a very limited number of 800 MHz TLMS systems which use all five channels in a Group (all operated by private companies in the mining, manufacturing and entertainment industries); we are not talking about Statewide Government radio networks.

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<sup>5</sup> Segment E is designated for TLMS base station receivers in 406.1-408.6375 MHz, while Segment M is designated for TLMS base station transmitters in 415.5625-418.0875 MHz; together these are referred to as paired Segment E-M.

With this in mind, it would be possible to use an alternative technology to TETRA (albeit at a cost).

To minimise the theoretical potential for any impacts to TLMS, we would recommend that the ACMA add an instruction in Section 5.5.3 of RALI LM8 that:

**5.5.3.1 Higher unwanted emissions in 806-806.6 MHz**

*Where less than five (5) channels from a Group are required at a particular site, the lowest channel in the Group should **not** be assigned, unless the required number of channels cannot be accommodated within the second to fifth channels in any single Group. This is with a view to avoiding the lower 600 kHz of the TLMS base receive (BRx) segment, where unwanted emission limits from 700 MHz base stations are more relaxed than in the remaining 2.4 MHz of the TLMS BRx segment.*

*Note: To be clear, this instruction has a lower priority than the previous instruction to assign channels in groups of five. Therefore, where at least five channels are indeed required, full Groups should be assigned where possible.*

Even if an assignment on the first channel of the Group cannot be avoided, another mechanism which could be used to lower the likelihood of interference in practice is to adjust the trunk channel preference settings such that the first channel of the Group has the lowest priority/preference. We are aware of DMR Tier III trunked systems that have such channel allocation features allowing operators to configure their preferences for usage of an RF channel.

Regardless, our view is that these TLMS systems will not be negatively impacted. For example, the Mexican regulator *Instituto Federal de Telecomunicaciones* (IFT) has imposed unwanted emission limits on UEs—including in the 700 MHz lower band—in its *Disposición Técnica IFT-011-2017*<sup>6</sup>, but they have not imposed any such limits on base stations (beyond 3GPP TS). We are not aware of any compatibility issues with TLMS above 806 MHz in that large market (pop. 130 million). We have not performed a comprehensive review of regulator-imposed emission limits (or lack thereof) worldwide, but we believe that this serves as a useful example.

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<sup>6</sup> Instituto Federal de Telecomunicaciones, Jan 2018, *Disposición Técnica IFT-011-2017: Technical specifications for mobile terminal equipment that can use the radiofrequency spectrum or be connected to telecommunications networks. Part 2. Mobile terminal equipment that operates in the bands 700 MHz, 800 MHz, 850 MHz, 1900 MHz, 1700 MHz/2100 MHz and/or 2500 MHz*, available at: [https://www.ift.org.mx/sites/default/files/2018\\_01\\_03\\_mat\\_ift3a.pdf](https://www.ift.org.mx/sites/default/files/2018_01_03_mat_ift3a.pdf)

In conclusion:

- AMTA's proposed emission limits are *at worst* -4.55/-1.55 dBm/100kHz EIRP at 806 MHz (compared to the current -16 dBm/100kHz EIRP equivalent), but slope down to meet the current limit at 806.6 MHz; the theoretical impact of the proposed emission limit relaxation reducing linearly as the channel number (of the first channel in the Group) increases across the lower 600 kHz.
- Interference from unwanted emissions is unlikely in practice; this is indicated by the lack of stringent emission limits imposed on 700 MHz BS in another (much larger) overseas market.
- The second to fifth channels (i.e. 4/5 channels) in any Group are completely unaffected by the proposed emission limit relaxation, and the ACMA can make amendments to RALI LM8 to encourage assignment of these channels wherever the TLMS licensee does not need to utilise a full Group.
- Half of the sites with TLMS base stations (20) are not impacted at all by the proposed emission limit relaxation (due to not having been allocated the first channel in the Group).
- Of the other 20, even if there was potential for interference in practice, changes to the system could be implemented in practice:
  - Trunk channel preference could be modified to minimise use of the first channel in the Group.
  - The systems could be migrated to the 400 MHz band (either TETRA in 450-470 MHz or another digital technology like P25 or DMR Tier III in Segment E-M).
  - For the majority of these sites (14/20): the same number of channels (4 or less) could be accommodated higher up in the segment (to avoid the lower 600 kHz).

## Out-of-scope requests

### **Imposition of filtering requirements on fixed PTP link receivers in RALI FX 22**

In our August 2023 submission to the 700 MHz TLG, as well as in previous correspondence with the ACMA in relation to the re-making of the 700 MHz legislative instruments, AMTA expressed serious concerns about the need for 700 MHz spectrum licensees—who bid for the spectrum licences as part of the digital dividend auction in 2013 completely unaware of these constraints—to have to protect PTP link receivers as little as 1 MHz above the upper band edge on a first-in-time basis. Regardless, the requirement to do so remains in both the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 700 MHz Band) 2023* (“the 700 MHz SL Tx RAG”) and in RALI FX 22 itself.

After the aforementioned consultative processes, in 2024, the ACMA made updates to RALI FX 22—which deals with 800 MHz fixed point to point (PTP) links—to include additional criteria and guidance for coordination of such PTP links with spectrum-licensed services in the 700 MHz and 800 MHz bands.

With these updated to RALI FX 22, the ACMA sought to reduce the potential spectrum denial that could be caused to 700 MHz spectrum-licensed network rollout, by introducing the following measures:

1. Relaxed protection criteria for PTP receivers licensed after 17 May 2024, including protection ratio (PR) adjustments to account for shorter link paths that are less susceptible to multipath fading;
2. A form of ‘grandfathering’ provision stating that a SL transmitter being modified does not need to be re-coordinated against a PTP receiver if the interference potential for that receiver has not increased;
3. Where proposed PTP receivers fail coordination against existing SL transmitters but are licensed anyway—because the applicant accepted the interference risk—a Special Condition is added stating that the PTP receiver is not afforded any protection for unwanted signal levels below that which was accepted by the applicant at the time of licensing the receiver;
4. Clarification of receiver blocking requirements (PR = -30 dB) and introduction of an assumed minimum filter performance in Table 3, along with a Special Condition stating that protection to the blocking requirement cannot be claimed without satisfactory implementation of additional filtering.

It is important to note that the filter response imposed by the ACMA is not particularly effective: it only provides approx. 8 dB of additional attenuation at 803 MHz, and 16 dB of additional attenuation at 802 MHz (well within the 700 MHz band). While the receiver itself will provide its own frequency rejection (i.e. when tuned to a particular x-hundred kHz

channel), these levels are still much lower than what the 700 MHz BS needs to provide at the 804 MHz boundary, at least: (61.2 dBm/MHz EIRP<sup>7</sup> minus 20.5-22.6 dBm/MHz EIRP<sup>8</sup> =) 38.6-40.7 dB. The total attenuation provided by the receiving system as a whole (including receiver and any additional filtering) needs to be at least 40 dB. The ACMA should bear in mind that this ~40 dB margin is the drop to the mandated limits for the 700 MHz BS; in practice the radio may do better than this with a view to satisfying the much more stringent limit at 806/806.6 MHz.

For the 800 MHz TFFL receivers, AMTA is aware of readily-available filters which provide at least 50 dB of rejection below 803 MHz, which would significantly reduce any risk of receiver blocking, since with such high receive filtering, the dominant interference mechanism would be unwanted emissions. For example, Commscope offers the E14V00P95 interference mitigation filter with a passband of 804-809 MHz and at least 50 dB across 788-803 MHz.

As such, we request that Table 3 (and the references to it) on page 13 of RALI FX 22 be replaced with a very simple requirement to employ a filter with at least 50 dB of rejection below 804 MHz. There are no other systems within 803-804 MHz, so *how* the filter response rolls off within this 1 MHz range is irrelevant.

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<sup>7</sup> Derived from the proposed in-band emission limit of 53.2 dBm/5MHz plus 15 dBi gain and adjusting from 5 MHz to 1 MHz reference bandwidth.

<sup>8</sup> Derived from the proposed unwanted emission limits in 803-805.5 MHz in Table 5 of the consultation paper—specified as mean power per transmitter—(i.e. -10.5 dBm/100kHz at 805.5 MHz and -8.4 dBm/100kHz at 804 MHz) plus 15 dBi gain, plus 6 dB for 4TX MIMO (and adjusting from 100 kHz to 1 MHz reference bandwidth).

## **Cancellation of PMP arrangements in 805.5-806 MHz**

In our August 2023 submission to the 700 MHz TLG, we recognised the constraints that the point-to-multipoint (PMP) arrangements could potentially impose on 700 MHz spectrum-licensed networks. We believe that the ACMA at least partially addressed the potential impacts to existing 700 MHz BS deployments:

- Slightly relaxed protection criterion for PMP receivers licensed after 17 May 2024;
- A form of ‘grandfathering’ provision, as described in #2 in the previous section;
- Special Condition described in #3 in the previous section.

However, PMP systems still present potential barriers to 700 MHz BS upgrades<sup>9</sup> and future network expansion.

In our August 2023 TLG submission, we noted that there were only four (4) remaining 900 MHz band PMP services required to migrate to the 400 MHz band (instead of to the 800 MHz band). Since then, only one of those migrated to the 800 MHz band, while two remain in the 900 MHz band. All are in Remote NW WA, and are held by commercial mining entities (so there can be no claim of these being critical or public safety comms). Not a single new PMP service was applied for in the space of 18 months.

If maintained, then considering the very low use of and demand for these arrangements, any new PMP licences should be issued on a “buyer beware” / best-efforts basis and therefore operate on a no protection basis with respect to 700 MHz transmitters (regardless of first-in-time status).

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<sup>9</sup> The ‘grandfathering’ provisions do not allow for any increase in unwanted signal in the direction of the PMP receiver.

## Fixed PTP links under pre-transition arrangements

Despite having transition deadlines of 30 June 2021 (Milestone 3) and 30 June 2024 (Milestone 5) of *The ACMA's long-term strategy for the 803-960 MHz band: Decision paper*<sup>10</sup> there are a number of two-frequency and single-frequency (respectively) fixed PTP links which remain under pre-transition arrangements:

- Single-channel two-frequency fixed links (TFFL) in 852-854 MHz: 31 licences held by the Tasmanian State Fire Commission and Santos WA Energy,
- Low-capacity TFFL in 854-857 MHz: 9 licences held by the Tasmanian State Fire Commission and Airservices Australia,
- single-frequency fixed links (SFFL) in 857-859 MHz: 16 licences held by the Tasmanian State Fire Commission and a number of other entities.

Irrespective of the fact that these links are in spectrum which was not re-allocated for spectrum licensing, their requirement to migrate was part of ACMA policy in relation to the long-term planning arrangements in the band, not solely due to the re-allocation declaration corresponding to 850/900 MHz. Furthermore, their presence in this part of the spectrum was not expected to continue in the development of the SLTF for the 850/900 MHz.

For example, 850 MHz spectrum licensees did expect to have to protect fixed link receivers when they participated in the spectrum auction of late 2021, but only below 851 MHz, not all the way up to 859 MHz. This is reflected in section 12 of the *Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters — 850/900 MHz Band) 2021* (“the 850/900 MHz SL Tx RAG”): “Fixed services receivers, including point-to-point links and point-multipoint link services, operate in the frequency bands 804 MHz to 806 MHz and 845 MHz to 851 MHz, adjacent to the 850/900 MHz band”.

As such, these fixed links should either be:

- a) required to be cleared from the spectrum in 852-859 MHz; or
- b) have a special condition applied to them that they are not consistent with the 800 MHz band plan and therefore operate on a “no interference, no protection” basis with respect to 850/900 MHz SL services.

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<sup>10</sup> ACMA, November 2015, *The ACMA's long-term strategy for the 803-960 MHz band: Decision paper*.

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