



TELSTRA GROUP LIMITED

Submission to ACMA Consultation:

Proposed updates to RALIs LM08, FX16 and FX22

Public Submission

1 December 2023



1 Introduction

We welcome the opportunity to provide our views to the ACMA's consultation on **Proposed updates to Radiocommunications Assignment and Licensing Instruction (RALI)s LM08, FX16 and FX22**.

We do not support the ACMA's proposed updates to the three RALIs. The ACMA's updates provide the mechanism for Two Frequency Fixed Links (TFFL) and Trunked Land Mobile Services (TLMS) to be deployed between 804-809 MHz that will mean spectrum licensees deploying IMT base stations in the 700 MHz IMT band (3GPP Band 28) will, in many circumstances, make it very difficult and expensive to deploy 3GPP standard equipment that also complies with Schedule 2 of each 700MHz licensee's spectrum licence.

Licensees in the 700 MHz IMT band purchased licences on the understanding they would be able to deploy base station equipment that meets the requirements of their licence, including out-of-band emissions (OOBE) above 803 MHz. The ACMA's proposed amendments to the three RALIs will result in more TFFL and TLMS services being deployed that impede or potentially inhibit IMT network operators from deploying or upgrading equipment for the 700 MHz band. It was not made known to 700 MHz licensees at the time of purchase that these limitations would subsequently be introduced. At the time of purchase, licensees valued the spectrum on the basis of utility facilitated by the technical framework as defined in the sample licences and associated technical instruments.

These new proposed constraints amount to a unilateral and un-foreshadowed amendment of the terms that the licensees relied on when purchasing the licences and would have the consequence of diluting the value of those purchases. We consider this prospect to be unacceptable and a fundamental infringement of a spectrum licensee's property rights.

The updates to the three RALIs must make it clear that entities considering deploying TLMS or TFFL in 804-809 MHz must assume the out-of-band emission (OOBE) characteristics prescribed in the 700 MHz. Given there has been no progress in allocating the lower segment of Band 27, i.e. the part 809-814/854-859 MHz that had notionally been set aside for Public Safety Mobile Broadband, we propose that this part of the band would be far more suitable for TFFL and TLMS services.

Finally, we commend AMTA's submission to the ACMA, which has identified additional matters beyond those captured in our submission.

2 Existing TFFL and TLMS services in the 804-809 MHz range will need to be managed by the ACMA

We appreciate that a key outcome of the 803–960 MHz band review was the progressive clearance of apparatus licensed services from the 850 MHz 'expansion' band (809–825/854–870 MHz) to allow this spectrum to be repurposed for mobile broadband services. The TFFL and TLMS services that have thus far moved into 804-809 MHz can be permitted to stay provided they do not inhibit the rollout and upgrade of our 700 MHz network. In the event that any 700 MHz build or site upgrades causes interference into a TLMS or TFFL licensee that moved into the 804-809 MHz band, we would expect the ACMA to work with those licensees to shift frequency or otherwise resolve the interference. An explanation of how TLMS and TFFL deployment can impede or potentially inhibit an upgrade to a 700 MHz base station can be found in Appendix 1.



3 New deployments must honour the 700 MHz band OOB limits

We recognise the effort the ACMA has made to attempt to develop an ongoing coexistence solution that will allow for more services to be deployed in the future. The ACMA's **proposed new protection criteria**¹ nonetheless require compromises from both 700 MHz spectrum licensees and from new TFFL and TLMS operators. Any compromise by 700 MHz spectrum licensees for new TFFL and TLMS services in 804-809 MHz, however, is not acceptable. Spectrum licensees have paid substantial amounts to acquire licences that allow them to deploy equipment that is compliant with the core conditions specified in the spectrum licences. All of the ACMA's proposed new protection criteria (i.e., for LM08, FX16 and FX22) involve an erosion of the spectrum licensee's ability to deploy equipment compliant with their licence core conditions, and cannot be accepted.

Mobile networks provide essential communication services to the public, including carriage of emergency calls to Triple Zero (000). Telstra and the other mobile network operators all use 4G-LTE in the 700 MHz low-band spectrum, and this will be upgraded to include 5G-NR over time. This spectrum is extremely important to provide wide-area coverage. Low bands have excellent propagation characteristics and deliver good building penetration. It is essential that mobile network operators are able to access this spectrum and deploy equipment that complies with the conditions of the licences they obtained, to ensure they can continue to deploy and upgrade their networks without incurring additional costs and overhead associated with working around services deployed in 804-809 MHz.

The three draft RALIs must be **redrafted** to state that going forward, new TFFL and TLMS must assume OOB above 803 MHz at the levels specified in the 700 MHz licences, and must conduct their coordination on the basis of this assumption. Similar changes also need to be reflected throughout the *Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 700 MHz Band) 2023* ("Transmitter RAG"),² for example, Part 2 Section 7(3)(c) and 7(3)(d), and Parts 6 and 7.

4 Changes to be made to the RALIs

To address the concerns in sections 2 and 3 above the following changes must be made to the RALIs.

4.1. Changes to be made to RALI LM08

The following changes are required to RALI LM08:

- Annex E3 must be rewritten. The coordination requirements for TLMS deployed at 806-809 MHz must simply state that the TLMS receiver must be capable of accepting OOB in the range 806-809 MHz (i.e., in-band for the TLMS) at the levels specified in 700 MHz licences, Schedule 2 (Core Conditions), Section 8, Table 5.
- The subsection (no section number) titled "Additional guidance for coordination with 700 MHz spectrum licensed base transmitters" in Annex E3 must be removed entirely.

¹ Consultation paper, pp.7-16.

² Available at: <https://www.legislation.gov.au/Details/F2023L00248>



4.2. Changes to be made to RALI FX16

The following changes are required to RALI FX16:

- Section 5.6 must be rewritten. The coordination requirements for PMP services deployed at 804-805 MHz must simply state that the PMP receiver must be capable of accepting OOB in the range 804-805 MHz (i.e., in-band for the PMP service) at the levels specified in 700 MHz licences, Schedule 2 (Core Conditions), Section 8, Table 5.
- Subsection 5.6.1 titled “Additional guidance for coordination with 700 MHz spectrum licensed base transmitters” must be removed entirely.

4.3. Changes to be made to RALI FX22

The following changes are required to RALI FX22:

- Section 3.1 must be rewritten. The coordination requirements for TFFL services deployed at 804-805 MHz must simply state that the TFFL receiver must be capable of accepting OOB in the range 804-805 MHz (i.e., in-band for the TFFL) at the levels specified in 700 MHz licences, Schedule 2 (Core Conditions), Section 8, Table 5.
- Section 3.2 titled “Additional guidance for coordination with 700 MHz spectrum licensed base transmitters” must be removed entirely.

5 Preservation of “First In Time” status for all existing 700 MHz device registrations

Given the terms and conditions under which 700 MHz spectrum licenses were purchased, licensees expect to be able to have unfettered deployment of equipment compliant with the licence conditions and associated technical instruments that existed at the time, for the 15-year duration of the licence. This expectation fundamentally underpinned the value of the spectrum.

At a minimum, we expect that all existing 700 MHz device registrations will retain their original registration date for the purposes of any “first in time” assessment, should that be necessary to coordinate with any extant or future TFFL or TLMS service.

Further, the original 700 MHz registration date should remain regardless of any changes whatsoever to the 700 MHz equipment or antennas that registration related to. That means, for example, the following would not result in a change to the original registration date:

- Splitting an existing 700 MHz sector at a given site (ACMA Site ID); or
- Uptilting a 700 MHz antenna, or
- Replacing a 700 MHz antenna with one of higher gain or different antenna pattern; or
- Replacing a 700 MHz radio with one of higher power; or
- Replacing a 700 MHz radio with one of wider bandwidth (but within the Band 28 frequency range); or



- Replacing a radio with different OOBE emission characteristics that is still 3GPP compliant and compliant with our original 700 MHz spectrum licence conditions; or
- Any other technical change whatsoever that are compliant with the original 700 MHz spectrum licence conditions and related technical framework.

We advocate that under any of these circumstance the original 700 MHz device registration date **would remain unchanged in the ACMA RRL**, even though the specific 700 MHz device registration at an existing ACMA Site ID was updated with new and potentially substantially different emission parameters.

This needs to be codified in all the relevant RALIs so that Accredited Persons can correctly apply any “first in time” assessments should that be necessary for coordination with a TFFL or TLMS service.

We consider this to be essential in order to preserve our spectrum rights and spectrum value.

6 Consider using the lower 2 x 2MHz of Band 27

The Department of Infrastructure, Transport, Regional Development, Communications and the Arts commissioned an independent review³ of Public Safety Mobile Broadband (PSMB). Part 2 of the final report⁴ observes, “*Band 27 is the only unallocated low-band spectrum with potential for use in a PSMB solution. However, due to its limited ecosystem and narrow bandwidth it is impractical, leaving shared spectrum approaches as the only practical solution.*”

On the basis of this independent review commissioned by the Government, and absent any significant advancements in PSMB devices for Band 27,⁵ we consider continuing to reserve Band 27 for a hypothetical future PSMB use is unwarranted. We recommend the ACMA consider using the lower 2 MHz pair of Band 27, i.e., 809-810/854-855 MHz for TFFL services. By only using the lower 2 MHz for TFFL services, a 3 MHz guard band is maintained against the bottom of the 850 MHz IMT band, leaving sufficient space for filters to be applied to TFFL transmitters to ensure their OOBE do not interfere with the 850 IMT band and while also leaving sufficient spectrum to enable 850 MHz base station receivers operating on the lower FDD band to avoid blocking from the TFFL transmitters.

³ <https://www.infrastructure.gov.au/departments/media/news/release-public-safety-mobile-broadband-review-and-government-response>

⁴ <https://nema.gov.au/sites/default/files/inline-files/Public%20Safety%20Mobile%20Broadband%20%28PSMB%29%20Review%20-%20Final%20Report.pdf>

⁵ Technically, Band 27 is 807-824/852-869 MHz (See https://en.wikipedia.org/wiki/LTE_frequency_bands and scroll down to the list of “**Obsolete Bands**”), however for the purposes of this submission, we consider Band 27 to be 809-814/854-859 MHz.



Appendix 1: How TFFL and TLMS deployments potentially inhibit 700 MHz IMT upgrades

In this appendix, we present two case studies that demonstrate how TFFL and TLMS deployments can potentially limit or make 700 MHz IMT upgrades very costly and difficult or even unviable. When this occurs, the additional time and cost associated with completing an upgrade can run to several months of additional design work and tens of thousands of dollars of extra cost per site.

Case 1 – Site upgrade. Our earliest 700 MHz sites have a legacy narrowband B28 radio, but in coming years we will want to upgrade those radios to support 5G, and to do that, dual-band low-band radios (B26+B28) are becoming the standard. These radios have a less “brick-wall” OOB profile but one that still meets Schedule 2 of our licence. We may also change antennas to extend the lifespan and serviceability of the site. However, the radio or antenna change will trigger a reregistration in the ACMA RRL causing that site to have a new registration date, which under our current understanding of how “first in time” operates, will now cause the site to fail in the presence of a TFFL or TLMS service because that other service pre-dates our reregistration (but not the original 700 MHz registration). This will trigger additional filtering costs to enable the MNO to proceed to upgrade the site which would not have been required under our original licence conditions or associated technical framework. The ACMA’s proposed changes therefore reduces our spectrum utility and reduces our spectrum value since it now costs us more to use our 700 MHz spectrum in a way that was never anticipated or foreshadowed.

This can occur within 2-5km of a TLMS or 60+ km⁶ for a TFFL depending on the other service’s configuration.

Case 2 – New site deployment. We have existing 700 MHz sites in areas where, if TFFL and TLMS had been required to coordinate with our 700 MHz services under the ACMA defined emission limits for the 700 MHz Spectrum licence, those TFFL or TLMS services would have failed coordination and could not be deployed. If we now want to deploy a greenfield site among the legacy transmitters, the new greenfield is considered “second in time” to the TFFL/TLMS, despite all the surrounding sites all having first in time rights, and potentially a greater chance of causing interference to the TLMS/TFFL. The new site is then forced to have additional filtering when none of its surrounding sites have filters. The cumulative noise load would still be coming from the surrounding sites and the new site is unfairly penalised, all because the TFFL/TLMS decided to take the coordination risk. The presence of those other services causes a significant cost increase to all future 700 MHz deployment activities despite the TFFL/TLMS services tacitly agreeing to tolerate the spectrum licensee noise in the first place.

We suggest that the band segment proposed by ACMA for these services as part of the Band 26 spectrum reallocation was not wise without putting in place adequate coordination rules to protect 700 MHz spectrum licensee rights. There was no guidance issued to prospective licensees of TLMS and TFFL services regarding coordination with spectrum licenced transmitters operating in the adjacent 700 MHz band and how

⁶ Consultation paper, Table 1, p.6.



to avoid harmful interference from 700 MHz base stations to their receivers. This problem was of ACMA's making and we consider it inappropriate for 700 MHz licensees to subsequently bear the cost of dealing with this problem.

In our view, the ACMA should not permit any further TFFL/TLMS licence allocations in the 804-809 MHz band segment, and instead the ACMA looks to select a more appropriate spectrum allocation for all future services of this type as proposed (e.g., use the 854-856 and 809-811 MHz band segment).

If and when any 700 MHz IMT network upgrades cause interference to any existing TFFL/TLMS services that were deployed prior to the ACMA ceasing allocations in 804-809 MHz band segment, we believe that the ACMA should work with those licensees to relocate them higher up in the band in order to resolve the interference, and that the 700 MHz licensee bears no additional costs to deploy a service it had full expectation that it would be able to deploy under the original rules of the spectrum licence it purchased.