Updates to RALIs LM08,   
FX16 and FX22

Outcomes paper

May 2024

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# Introduction

In November 2015, we concluded our review of the 803–960 MHz band with   
the release of [*The ACMA’s long-term strategy for the 803–960 MHz band*](https://www.acma.gov.au/publications/2015-12/report/acmas-long-term-strategy-803-960-mhz-band-decision-paper) (the   
long-term strategy paper). This paper outlined an incremental re-configuration of the   
803–960 MHz band to ensure the public benefit derived from the use of the band would be maximised. This included the shifting of apparatus-licensed trunked land mobile systems (TLMS) and fixed services to the lower part of the 803 MHz band over 5 milestone dates.

In October 2023, we [consulted on proposed changes](https://www.acma.gov.au/consultations/2023-10/proposed-updates-ralis-lm08-fx16-and-fx22) to support the final stage of the long-term strategy. At the same time, we consulted on the [proposed inclusion of revised protection criteria and guidance](https://www.acma.gov.au/consultations/2023-10/proposed-updates-ralis-lm08-fx16-and-fx22) in the following radiocommunications assignment and licensing instructions (RALIs), to aid coordination between   
800 MHz band apparatus-licensed services and spectrum-licensed services operating below 803 MHz:

* RALI LM08 – Frequency assignment requirements for the land mobile service
* RALI FX16 – Point-to-multipoint fixed services in the VHF high, 400 MHz and   
  800 MHz bands

RALI FX22 – Frequency assignment requirements for the fixed service in the   
800 MHz band.

We received 3 submissions in response to this consultation. This paper outlines the outcomes of the consultation process, provides a summary of the submissions we received and details our responses to the comments and issues raised in the submissions.

The paper should also be read in conjunction with the consultation paper, which you can find in the [key documents section of the consultation page](https://www.acma.gov.au/consultations/2023-10/proposed-updates-ralis-lm08-fx16-and-fx22).

# Outcomes of consultation

Submissions in response to the consultation indicated support for the changes related to Milestone 5 of the long-term strategy paper. We have now made these changes as proposed in the consultation paper. This includes the removal of arrangements from RALI LM8 which dealt with the legacy land mobile frequency segment and the suppression of document SP 4/93.[[1]](#footnote-2)

The submissions also provided some comments and concerns related to coexistence arrangements between 800 MHz apparatus-licensed and 700 MHz band spectrum-licensed services. We have decided to update the RALIs as proposed in the consultation paper, with the following minor additional changes to FX22, based on input from stakeholders:

Changing the assignment priority for 2-frequency point-to-point (PP) services to a descending order to provide additional frequency separation from 700 MHz band spectrum-licensed services.

Including a receiver blocking requirement and a special condition on new PP licences in the 804–805.5/849–850.5 MHz range. This requires licensees to implement appropriate site-based engineering practices (including installing additional filtering), as necessary, to manage instances of blocking interference from physically close 700 MHz spectrum-licensed transmitters.

Providing a grandfathering provision that exempts coordination of a modified spectrum-licensed transmitter where the modification does not increase the interference potential to existing receivers. This provision was also added to the updated versions of RALIs LM8 and FX16.

We have decided not to implement the other proposals suggested in submissions. Further rationale for our decisions, and our response to issues raised in submissions, is detailed in the following section. As with all of our RALIs, we welcome industry feedback at any time on the operation and relevance of arrangements for RALIs LM8, FX16, and FX22, to ensure these remain fit-for-purpose. We are also able to consider exemptions to arrangements contained in RALIs on a case-by-case basis.

# Summary and response to submissions

We received 3 submissions to the consultation process from the following stakeholders:

Australian Mobile Telecommunications Association

Optus

Telstra.

A summary of comments and issues raised is submissions, together with our responses to these, are outlined in the following subsections. As a general observation, given responses were only received from the mobile network operator sector, they were universally critical of arrangements that necessitate any form of coordination with adjacent-band apparatus-licensed services. It is worth mentioning that the changes have been put in place to give effect to the clearance and reallocation of the 850 MHz expansion band, which ultimately benefits that sector.

## Revisions to support Milestone 5

One respondent expressed support for the proposed revisions to RALI LM8 that codifies Milestone 5 of the 803–960 MHz review. This involves removing the channelling arrangements for the legacy TLMS frequency segment and suppression of SP 4/93. These revisions were not mentioned by the other respondents.

### ACMA response

Noting the support for these revisions provided by one respondent, and that we received no objections to these changes, we have implemented these changes as planned. This is namely removal of the legacy TLMS channelling arrangements from LM8 and suppression of document SP 4/93.

## Changes to the spectrum licence technical framework

All respondents indicated concern that the proposed changes, relating to the requirement for spectrum licensees to protect existing apparatus-licensed services, would have a negative impact on 700 MHz band spectrum licensees and the services they provide. Essentially, this concern relates to the introduction of new requirements and obligations placed on spectrum licensees that weren’t envisioned when they purchased their spectrum licences. Respondents suggested that the ‘rights’ of   
700 MHz band spectrum licensees would be eroded if a new or modified spectrum-licensed transmitter is required to coordinate with an apparatus-licensed receiver.

It was also suggested that the requirement to coordinate with apparatus-licensed services was not part of the technical framework when spectrum licences were first issued. As such, the additional costs and complexity that would arise from this requirement could not have been considered when purchasing the spectrum licences.

Respondents also questioned whether the proposed arrangements maximise the public benefit derived from the use of the spectrum. This is due to the coordination difficulties across the 803 MHz boundary, which may have a negative impact on mobile phone networks.

### ACMA response

It is important to differentiate between the changes proposed in the discussion paper and the changes made to the 700 MHz spectrum licence technical framework in   
March 2023.

At this time, we remade the [Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 700 MHz Band) 2023](https://legislation.gov.au/F2023L00248/asmade) (Tx RAG) to include a requirement for spectrum licensees to protect existing apparatus-licensed fixed and land mobile receivers. The new Tx RAG enacts our decision on the requirement for spectrum licensees to protect existing apparatus-licensed receivers utilising the established first-in-time principle regularly used to manage coexistence between users of the radiofrequency spectrum. We are not intending to change the provisions already contained in the Tx RAG.

As detailed in the Tx RAG, coordination is to be undertaken using the protection requirements already contained in RALIs LM8, FX16 and FX22. The changes proposed in the consultation paper, and now included in the updated RALIs, are made to address concerns about coordination difficulties by introducing revised (less stringent) protection requirements for certain apparatus-licensed receivers. In that sense, these changes provide a net benefit to spectrum licensees compared to the status quo.

The concerns articulated around making changes to an established spectrum license technical framework during the term of the licence relate to the March 2023 decision to update the Tx RAG and not the changes proposed in the consultation paper. As mentioned above, we do not intend to change the coexistence arrangements currently contained in the Tx RAG. In addition, spectrum licensees were involved in the consultation process for the 803–960 MHz review, which resulted in the apparatus-licensed frequency segments adjacent to the 700 MHz spectrum-licensed band.

## Arrangements for new apparatus-licensed assignments

All respondents raised concerns that the proposed changes are also aimed at allowing new apparatus licences to be issued in the segments near 803 MHz. This concern centred on increased spectrum denial to spectrum licensees, as well as higher costs related to coordination and interference mitigation as a result of increased numbers of new apparatus-licensed services. Respondents suggested measures that could be employed to limit or restrict new apparatus-licensed assignments, including:

Signalling that new apparatus licences should only be issued in frequencies near the 803 MHz boundary as a last resort (i.e., prospective licensees should seek a licence in another band first).

Migrating apparatus-licensed services to the frequency segment currently earmarked for Public Safety Mobile Broadband (PSMB) services (given that a PSMB capability in this segment is not likely to eventuate).

Retiring the point-to-multipoint (PMP) segment (805.5–806/850.5–851 MHz) given a perceived lack of interest for PMP services in this frequency range (i.e., PMP needs can be met with other existing arrangements in the 400 MHz band) and that PMP services present significant coordination difficulties for spectrum-licensed services (as they typically utilise omni-directional antennas with only a small frequency separation from spectrum-licensed services). A respondent also suggested that we should immediately place an embargo on the PMP segment to prevent any new assignments.

### ACMA response

The existing apparatus licence arrangements in the 800 MHz band, as an outcome of the 803–960 MHz band review, are intended to support services that are required to vacate the upper parts of the band, as well as new services. Potential deviation from the current band planning arrangement (such as limiting new licensees or re-purposing specific frequency segments) would be a change of policy requiring further consultation. It is therefore beyond the scope of this review, which is limited to implementing existing policy, however, as always, proposals relating to the potential replanning of the 800 MHz band can be made via the [Five-year spectrum outlook](https://www.acma.gov.au/five-year-spectrum-outlook) (FYSO) process.[[2]](#footnote-3)

Spectrum licensees have extensive device registrations in the 700 MHz band, in both metro and regional areas. Any proposed new apparatus-licensed receivers will need to be coordinated with these registrations (in effect giving spectrum licenses first-in-time status in many locations). This will also act to restrict the deployment of new apparatus-licensed services where coordination isn’t successful.

We note the comments about potentially relocating apparatus-licensed services to the ‘PSMB’ segment (809–814/854–859 MHz). However, the use of this segment remains subject to ongoing consideration by the Australian Government[[3]](#footnote-4) and we are unable to provide further commentary on the use of that frequency segment.

## Comments on coordination arrangements

One respondent indicated acceptance of the need to coordinate with apparatus-licensed services that were required to vacate the legacy frequency segments as part of the 803–960 MHz band review. That respondent also accepted that the proposed revised protection criteria could be used for coordination between those migrating apparatus-licensed services and 700 MHz band spectrum-licensed transmitters. One respondent also expressed support for attaching an advisory note to a licence when the licensee chooses to accept a higher level of interference.

Respondents also suggested a range of changes to the proposed coordination arrangements, including:

Mandating that apparatus-licensed services accept interference to the level of the unwanted emission limits set out on spectrum licences.

Updating the PP assignment priority to make new assignments at the top of the segment (i.e., descending from 805.5/850.5 MHz) and introduce a requirement for PP links to utilise receiver filtering.

Introducing grandfathering arrangements where the coordination arrangements do not apply to:

Spectrum-licensed transmitters registered before a certain date (16 March 2024 was suggested).

Modifications to existing spectrum-licensed transmitters that do not significantly increase the interference potential (a 3 dB increase in interference was suggested).

A respondent also highlighted that modification to existing device registrations in the register of radiocommunications licences (RRL) results in the registration date being reset, which could lead to difficulties in establishing when devices where first deployed in the event that interference occurs.

### ACMA response

We agree that the assignment priority for 2-frequency PP services should be changed to a descending order from 805.5/850.5 MHz, given that the upper-adjacent PMP segment is lightly used in comparison to the 700 MHz spectrum-licensed band. This change has been incorporated into RALI FX22.

We understand that there may be some instances of blocking interference or receiver overload when a PP receiver is physically located in close proximity to a 700 MHz band spectrum-licensed transmitter (in particular for transmitters operating at the top of the spectrum-licensed band). In the updated RALI FX22, PP receivers will be afforded protection from receiver blocking interference to a wanted-to-unwanted level of   
-30 dB.[[4]](#footnote-5) However, for PP licences issued after commencement of the updated   
RALI FX22, protection to this level may only be claimed if certain mitigations have been put in place by the operators of the affected receiver.

While we have decided to not mandate the use of receiver filtering on all PP services, good site engineering practices are important in managing interference from co-sited (or near co-sited) transmitters. With this in mind, a special condition will be included on new PP licences that requires the licensee to implement filtering, as necessary, to mitigate cases of localised interference. The required minimum level of filtering is detailed in the updated RALI FX22 and is consistent with filtering requirements for other 800 MHz services (for example, land mobile requirements in RALI LM8).

This combination of measures is needed to provide a basis for the effective management and resolution of instances of receiver blocking interference, while minimising deployment costs by only requiring filtering when necessary.

We have also included a provision that exempts existing transmitters that have been modified from re-coordinating with an existing receiver, if the modification has not resulted in any increase in interference potential for those receivers. For example, coordination would not be required if the transmitting antenna has been modified but the EIRP in the direction of the receiver is the same or less than produced by the old antenna. As per normal practice, modifications that result in an increased interference potential will require re-coordination.

We have decided not to implement grandfathering arrangements where the interference potential has increased or other changes that would give automatic priority to spectrum-licensed services. The long-standing system of coordinating with existing services provides equitable access to different spectrum users. As above, spectrum licensees already have a significant number of device registrations, which provides a notable first-in-time advantage. In addition, the revised protection criteria represent a net relaxation, meaning that transmitters that successfully coordinated against the previous criteria will also be able to coordinate against the revised criteria.

We are aware of the points raised regarding dates recorded in the RRL and note that this is also an issue relevant to apparatus licensees, as well as services outside the 700/800 MHz bands. If needed, we can use historical data to determine when services were first registered (or licensed) and when any modifications where made. We understand that some Accredited Persons also maintain historical data from the RRL. This can be addressed on a case-by-case basis if needed.

1. Document SP 4/93 previously contained the coordination procedure for apparatus-licensed services in the 857–861 MHz band. [↑](#footnote-ref-2)
2. We are aiming to consult on the next update to the FSYO in Q2 2024. [↑](#footnote-ref-3)
3. In May 2023, the [government committed $10.1 million](https://www.infrastructure.gov.au/department/media/news/release-public-safety-mobile-broadband-review-and-government-response) to establish a taskforce to drive the delivery of a PSMB capability. [↑](#footnote-ref-4)
4. Based on the blocking provisions contained in ETSI EN 302 217. [↑](#footnote-ref-5)