

Open Spectrum Submission

Proposed updates to RALI FX23:
Consultation paper

20 OCTOBER 2023

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Dear [REDACTED],

Introduction

Open Spectrum thanks the ACMA for consulting on the frequency coordination and licensing procedures for apparatus licensed point-to-multipoint (PMP) services in the 5.6 GHz Band contained in RALI FX 23, and appreciates the opportunity to provide comments. We agree with the ACMA's proposed changes—namely, to remove the spectrum 'reservation' for incumbent 3.6 GHz licences and to update the table of potential future radars. As such, we only wish to provide comments on a few aspects of the draft RALI FX 23—namely the improvement of the protection criteria for PMP services in Table 3.

Support for the ACMA's proposed updates

We wish to express our explicit support for all the changes outlined in on the ACMA's consultation web page *Proposed updates to RALI FX23*¹.

Protection criteria for PMP Base Station receivers

Table 3 of RALI FX 23 contains the protection criterion for PMP base station receivers, specified in dBm per the victim receiver bandwidth (BW_{rx}). The wider the BW_{rx}, the higher the protection criterion (because thermal noise increases linearly with bandwidth). However, it should be noted that for the 15 MHz receiver case, the protection criterion becomes more stringent when the overlap between transmitter and receiver is smaller than the receiver bandwidth. This means that the protection criterion is actually being defined for the portion of the overlap (BW_{overlap}).

The intention—clarified with ACMA staff in separate correspondence back in December 2019—is that the unwanted signal power (from the interfering transmitter) is scaled by the ratio of the bandwidth overlap over the total interfering transmission bandwidth (BW_{tx}). So the total bandwidth adjustment is:

$$\dots +10\log_{10}(\text{BW}_{\text{overlap}}) \text{ [on the protection criterion side]} \geq \dots +10\log_{10}(\text{BW}_{\text{overlap}} / \text{BW}_{\text{tx}}) \text{ [on the unwanted signal power side]}$$

The $10\log_{10}(\text{BW}_{\text{overlap}})$ term cancels out from both sides of the equation, which would leave a per-MHz power spectral density (PSD) on the left-hand side and an unwanted signal power calculation—minus $10\log_{10}(\text{BW}_{\text{tx}})$ —on the right-hand side. In other words, this provision could

¹ Australian Communications and Media Authority, Sept 2023, available here: https://www.acma.gov.au/consultations/2023-09/proposed-updates-rali-fx23?utm_medium=email&utm_campaign=ACMA%20opens%20consultation%20on%20proposed%20updates%20to%20RALI%20FX23&utm_content=ACMA%20opens%20consultation%20on%20proposed%20updates%20to%20RALI%20FX23+CID_43a5728120bd8368dcc5b4a3a7644640&utm_source=SendEmailCampaigns&utm_term=released%20a%20consultation%20paper%20and%20draft%20update%20of%20RALI%20FX23

be greatly simplified by replacing Table 3 with a **single PSD threshold of -110 dBm/MHz**, instead of occupying half a page and creating confusion and more difficulty to implement.

If the ACMA really wishes to maintain a table, it should at least address the following issues with Table 3:

- a) For the Full Overlap cases: Table 3 lacks a clear instruction to scale the interferer bandwidth to the victim receiver bandwidth
- b) For the Partial Overlap cases: Table 3 lacks a clear instruction to scale the interferer bandwidth to the overlap values of 10 MHz and 5 MHz
- c) Is conceptually misleading—for example, as it suggests that the 20 MHz receiver is more susceptible to interference from a 10 MHz interferer than a 20 MHz interferer—when this is clearly incorrect.
 - o i.e. the 10 MHz → 20 MHz case has a protection criterion of -100 dBm, which is more stringent than the value of -97 MHz stated for the 20 MHz → 20 MHz case. Furthermore, the column heading says “(dBm in 20 MHz receiver BW)”, when the ACMA has intended for the -100 dBm to apply *only for the 10 MHz overlap*.
- d) Deviates from other tabled protection criteria in other RALIs e.g. RALI MS 33, RALI MS 34, RALI FX 19 etc where the interfering signal power is not scaled. This unnecessarily creates a need for Accredited Persons (APs) to implement a different approach just for RALI FX 23.

To address the above issues and align with other RALIs, we recommend that the table be revised to state the maximum unwanted signal power threshold, which can be compared to the calculated unwanted signal power, without requiring the AP to calculate any further bandwidth adjustment.

	P-MP Base Station Receiver Protection Criteria (at the input of the receiver, in dBm)
Full overlap cases*	
(10 MHz → 10 MHz)	-100
(10 MHz → 15 MHz) (15 MHz → 15 MHz)	-98
(10 MHz → 20 MHz) (15 MHz → 20 MHz) (20 MHz → 20 MHz)	-97
Partial overlap cases*	
(15 MHz → 10 MHz: 10 MHz overlap)	-98
(15 MHz → 10 MHz: 5 MHz overlap)	-95
(20 MHz → 10 MHz)	-97
(20 MHz → 15 MHz)	-97
(10 MHz → 15 MHz: 5 MHz overlap)	-95

* Note: “Full overlap” means that the full interfering emission bandwidth overlaps the victim receiver bandwidth. “Partial overlap” applies where only a portion of the interfering emission bandwidth overlaps the victim receiver bandwidth. The unwanted receive signal power—calculated as transmitter power – losses + antenna gains—is compared directly to the values in Table 3, without any further bandwidth adjustment.

Summary

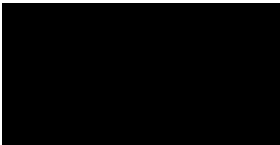
In summary, Open Spectrum supports the ACMA's proposed review of RALI FX 23, and recommends some further amendments for clarity and correctness with respect to the protection criteria for PMP receivers in Table 3. With respect to these, either one of two approaches should be adopted:

1. For the benefit of simplicity: replace Table 3 with a single PSD interference threshold value (currently equivalent to -110 dBm/MHz); or
2. For the benefit of alignment with other RALIs and avoiding unnecessarily stringent values: Table 3 replaced with the proposed table above, such that no further scaling of interfering signal bandwidth relative to the signal overlap is necessary.

At the very least, the issues mentioned in points (a) through (c) in the previous section should be addressed.

Open Spectrum looks forward to continue working with the ACMA and the wider radiocommunications industry.

Yours sincerely



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