



IFC 04/2022 Open Spectrum Submission

Improving the technical
arrangements for AWLs in
the 26 GHz and 28 GHz
bands

9 MARCH 2022

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Mr. Chris Worley
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Dear Mr. Worley,

Introduction

Open Spectrum thanks the ACMA for consulting on the technical arrangements for area-wide licences (AWLs) in the 26 GHz and 28 GHz bands—including the accompanying draft revisions of RALIs MS 44 and MS 46, along with Embargo 49—and appreciates the opportunity to provide comments. We agree that the revisions to RALI MS 46 greatly improve the clarity and readability of the document. As such, we only wish to provide comments on a few aspects of the draft RALIs MS 44 and MS 46.

Support for the ACMA's proposed updates

We wish to express our explicit support for all the changes outlined in the consultation web page *Improving the technical arrangements for AWLs in the 26 GHz and 28 GHz bands - consultation 04/2022*¹.

Only one point of the consultation page could be potentially misleading, in our view: *"clarifying that the registration of receivers is encouraged but not mandatory (as only registered receivers are afforded protection), and that requirements to be met before an AWL receiver can be registered are contained in other RALIs, as applicable"*. This point is addressed in more detail below.

Registration of AWL receivers

The point quoted above from the consultation web page implies that the protection of (Standard) AWL receivers is defined in other RALIs, which might lead an AWL applicant to think that they might have to review all the other RALIs to find something that's not defined in RALI MS 46. RALI MS 46 should contain all the information necessary to register AWL transmitters and receivers in the 26 and 28 GHz Bands, or explicitly point to the other RALIs, BOPs and legislative instruments (e.g. AWL LCD and the 26 GHz spectrum licence RAGs) which contain those requirements.

Specifically with respect to requirements to register AWL receivers, RALI MS 46 explicitly states that new receivers (intending to be registered) are not offered protection against existing apparatus licensed transmitters, and therefore the onus is on the AWL (receivers) licensee to assess the risk of interference to the proposed receivers: see sections 2.4.1 (existing earth

¹ Australian Communications and Media Authority, Feb 2022, available here:
https://www.acma.gov.au/consultations/2022-02/improving-technical-arrangements-awls-26-ghz-and-28-ghz-bands-consultation-042022?utm_medium=email&utm_campaign=Improving%20the%20technical%20arrangements%20for%20area-wide%20apparatus%20licences%20in%20the%2026%20GHz%20and%2028%20GHz%20bands&utm_content=Improving%20the%20technical%20arrangements%20for%20area-wide%20apparatus%20licences%20in%20the%2026%20GHz%20and%2028%20GHz%20bands%20Preview%20CID_25f295c96120a18ecdffb4eed64989ca&utm_source=SendEmailCampaigns&utm_term=ACMA%20website

stations), 2.4.2 (existing apparatus licensed services), 2.4.3 (FSS 'sole-primary' spectrum), 2.4.4 (existing overlapped AWLs), 2.4.5 (LIPD and body scanners), in the third paragraph of Chapter 3, section 3.6.1 (existing fixed links).

As such, we recommend that the consultation web page be updated as follows:

"clarifying that the registration of receivers is encouraged but not mandatory (as only registered receivers are afforded protection), and that RALI MS 46 contains the requirements to be met before an AWL receiver can be registered (or references to those requirements) are contained in other RALIs, as applicable."

Similarly, section 1.4 (Step 2, final paragraph), should be amended as follows:

***"Receivers are not required to be registered;** however only registered receivers will be afforded protection. Coordination requirements before a receiver can be registered (or references to those requirements) are contained in this RALI. See Chapter 3. other applicable RALIs—see section 3.8."*

... as well as Chapter 3 (third paragraph under Receiver coordination and registration):

"AWL receivers are not required to be registered before operation; however, registration of fixed receivers is encouraged as only registered receivers will be afforded protection. Receivers must comply with the coordination requirements contained (or referenced) in other applicable this RALIs before registration—see section 3.8.

Except for the requirements detailed in sections 3.1 and 3.7 and in other applicable RALIs (see section 3.8), there are no coordination procedures defined for the protection of AWL receivers from existing services. Prospective licensees should assess the risk of interference from existing services before deploying services – also see the advisory notes detailed in section 2.4."

In fact, only one of the RALIs mentioned in section 3.8 are applicable to AWL receivers—RALI MS 44—which is in turn referenced in section 3.7 "Coordination with the Mingenew earth station protection zone", and therefore section 3.7 is proposed to be explicitly mentioned above in the third paragraph of Chapter 3.

Section 3.1 explicitly states the requirements for an AWL transmitter to coordinate with existing AWL and spectrum licensed receivers. Because the existing AWL receivers have the capability to cause denial to (or at least trigger the negotiation and resolution process defined in 3.1), perhaps these requirements should also apply to proposed AWL receivers (i.e. to have to coordinate with existing AWL and spectrum licensed transmitters before registering).

ACS and Blocking

At this point, we reserve comment on the calculations at the end of section 3.1 regarding adjacent-channel selectivity (ACS) and in-band blocking. We will provide further comments to the ACMA shortly.

Additional suggestions for Section 3.6 and Appendix D

We agree with the update to Section 3.6 and Appendix D, in particular the introduction of protection ratios for earth station transmitters interfering with fixed link receivers, and the flexibility to use Frequency Dependent Rejection (FDR) if it would facilitate successful coordination.

PRCF curves

Further to this, we consider that additional flexibility can also be introduced in the Protection Ratio Correction Factor (PRCF) in Appendix D.3. Appendices D.1 and D.2 include instructions to “for other path lengths and rainfall rates refer to the appropriate path length correction factors graph in section D.3”.

The PRCF curves represent the difference in the fade margin for the path of interest and the fade margin for the notional path (i.e. 2 km length and R=40mm/hr). If the PRCF curves in Appendix D.3 have been derived in the same way as those in RALI FX 3, these have been calculated using the method defined in Appendix 4 of RALI FX 3 (specifically, section 4 of that Appendix). While the curves are developed for a continuum of path lengths, and for three discrete rainfall rate values, they also assume other parameter input values (e.g. path elevation angle and polarisation) which could give yield different fade margin values for different paths. Furthermore, different fade margin values would result if a method other than that in Appendix 4 of RALI FX 3 were used—e.g. the latest version of Recommendation ITU-R P.530.

As such, we recommend that the ACMA add a note permitting flexibility in the methods for calculating fade margin for the purposes of calculating PRCF.

Consideration of registration-exempt transmitters

In Step 3 of section 3.6.1, “Case 2” posited by the ACMA is applicable for a traditional cellular architecture in which the user equipment (UE) or customer premises equipment (CPEs) are communicating with associated infrastructure (access point or base station (BS)) which is registered under “Case 1”. In this scenario, Case 2 is appropriate, except we recommend the following amendment:

“However, an AWL transmitter may still be registered in the RRL if it can be shown that the coverage area of the associated case 1 case-2 transmitter does not overlap the interference zone of the fixed link receiver, assuming the notional transmitter characteristics in Table 8.”

However, there’s a potential further scenario which isn’t explicitly addressed, in which even the access points/BS are exempt from registration. Is this case simply covered by the “no interference” condition under which registration-exempt transmitters operate?

Steps in the coordination process

In Appendix D, there is some conflation between Step 4 and Step 5. It appears that Step 4 is intended to determine the required protection ratio, whereas Step 5 is intended to determine whether or not coordination passes, based on a comparison between the PR and the W/U ratio. As such, the reference to unwanted power levels at the victim receiver exceeding protection criteria does not belong in Step 4, and we proposed the following edits:

*“**Step 4:** Determine the applicable protection ratio criteria for each victim receiver identified in step 1. ~~To protect receivers from unacceptable interference, the unwanted power levels at a victim receiver must not exceed the required protection ratios criteria for fixed link that receivers are as detailed in Appendix D: Protection criteria for fixed link receivers.~~*

***Step 5:** Compare the calculated wanted-to-unwanted ratios from steps 2 and 3 to the required protection ratio from step 4 ~~determine if the required protection criteria at the victim fixed link receiver is achieved.~~ If the wanted-to-unwanted ratio is less than the required protection ratio ~~is not met~~, the coordination is deemed to fail and the prospective AWL transmitter is not to be registered in the RRL.”*

Propagation model for the fixed link wanted path

Lastly, we note that in section 3.6, “appropriate propagation model” has a footnote suggesting Recommendation ITU-R P.452 ($p = 20\%$) or P.526 (with k-Factor = 3). However, these propagation models only apply to the *unwanted* path. For the *wanted* path, the suggested propagation models should be either free space loss (FSL) or P.526 (with k-Factor = 4/3). A reference to the body of RALI FX 3, for further information, may also be helpful.

Other clarifications and editorial revisions

- We note that the ACMA uses the term “*spectrum space*” in section 1.4. We wonder whether “*spectrum space*” can be defined in section 1.3 and perhaps replace the term “*frequency and area*” in parts of the RALI (e.g. in step 1 of section 1.4). For consideration.
- Section 2.3.3 Assignment priority: “*Where possible, this should avoid the 25.1-27.5 GHz range unless alternative spectrum is either unavailable or unsuitable*”. We suggest the inclusion of a footnote clarifying that the ACMA accepts that alternative spectrum can be considered unsuitable by an applicant if that alternative spectrum is FSS “sole-primary” spectrum. In other words, to acknowledge that it’s reasonable for an applicant to consider that being assigned a secondary service is unsuitable for them.
- Section 2.3.4 FSS-only condition: In the last part of the text of the FSS-only condition, beginning with “*This applies for interference from:*”, we recommend replacing “*a transmitter*” with “*an earth station transmitter*”, for increased clarity.
- Section 2.4.4 Overlapping AWLs: In the last part of the text of the condition, beginning with “*This applies for interference to:*”, we recommend replacing “*from*” with “*and receiving interference from*”, and replacing “*transmitter*” with “*earth station transmitter*”.
- Section 3.3 Coordination at geographic boundary.

Notes on RALI MS 44

Even though footnote 3 is stating that coordination is not mandatory for certain proposed receivers, perhaps it could be amended to clarify that coordination is still *recommended* so that applicants are aware of the risk of potential from interference from potential future earth stations that may operate within the Mingenew earth station protection zone.

Summary

In summary, Open Spectrum supports the ACMA's proposed review of RALI MS 46, and recommends some further amendments for clarity. We also ask the ACMA to consider whether the coordination requirements of section 3.1 should also apply to proposed receivers to be registered, and to consider the addition of further flexibility in coordination with fixed link receivers (sections 3.6 and Appendix D).

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

Yours sincerely



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