Sunsetting of 2.3 GHz spectrum licensing legislative instruments

Outcomes paper

March 2024

Canberra

Level 3  
40 Cameron Avenue   
Belconnen ACT

PO Box 78  
Belconnen ACT 2616

T +61 2 6219 5555  
F +61 2 6219 5353

Melbourne

Level 32   
Melbourne Central Tower  
360 Elizabeth Street   
Melbourne VIC

PO Box 13112  
Law Courts   
Melbourne VIC 8010

T +61 3 9963 6800  
F +61 3 9963 6899

Sydney

Level 5   
The Bay Centre  
65 Pirrama Road   
Pyrmont NSW

PO Box Q500  
Queen Victoria Building   
NSW 1230

T +61 2 9334 7700 or 1800 226 667  
F +61 2 9334 7799

Copyright notice

[Creative Commons logo](http://i.creativecommons.org/l/by/3.0/88x31.png)

<https://creativecommons.org/licenses/by/4.0/>

Except for the Commonwealth Coat of Arms, logos, emblems, images, other third-party material or devices protected by a trademark, this content is made available under the terms of the Creative Commons Attribution 4.0 International (CC BY 4.0) licence.

All other rights are reserved.

The Australian Communications and Media Authority has undertaken reasonable enquiries to identify material owned by third parties and secure permission for its reproduction. Permission may need to be obtained from third parties to re-use their material.

We request attribution as © Commonwealth of Australia (Australian Communications and Media Authority) 2024.

[Introduction 1](#_Toc159920160)

[Summary and response to issues 2](#_Toc159920161)

[Issues for comment 2](#_Toc159920162)

[Outcomes of consultation 7](#_Toc159920163)

# Introduction

The Australian Communications and Media Authority (ACMA) released the [*Proposal to remake instruments for the 2.3 GHz spectrum licensed-band*](https://www.acma.gov.au/consultations/2023-09/proposal-remake-instruments-23-ghz-spectrum-licensed-band) consultation paper (the consultation paper) on 15 September 2023. The paper sought industry feedback on our proposed draft legislative instruments linked to the technical framework for the 2.3 GHz spectrum licence band that are due to sunset on 1 April 2024.

The proposed remade legislative instruments were:

Radiocommunications Advisory Guidelines (Managing Interference from Transmitters – 2.3 GHz Band) 2023 (RAG Tx)

Radiocommunications Advisory Guidelines (Managing Interference to Receivers – 2.3 GHz Band) 2023 (RAG Rx)

Radiocommunications (Unacceptable Levels of Interference – 2.3 GHz Band) Determination 2023 (ULoI).

The ACMA also proposed the creation of the Radiocommunications (Interpretation – Technical Framework) Determination 2023 (the ITF Determination). The purpose of this instrument is to consolidate, in one place, common expressions used in the legislative instruments that form the technical framework for various spectrum licensed bands.

Four submissions were received to the consultation paper from the following organisations:

Australian Mobile Telecommunications Association (AMTA)

Ericsson

Optus

Telstra.

These submissions are available on the [ACMA website](https://www.acma.gov.au/consultations/2022-11/proposal-remake-instruments-700-mhz-1800-mhz-25-ghz-and-25-ghz-mid-band-gap-spectrum-licensed-bands-consultation-362022). A summary of submissions received and our response to the issues raised are outlined below. A summary of the [outcomes of the consultation](#_3_Outcomes_of) are listed in the final section of this paper.

# Summary and response to issues

Submissions were generally supportive of the proposed draft legislative instruments. Some editorials changes and corrections were identified. Submissions also proposed more substantive amendments to consider.

This section summarises the main issues raised in the submissions and our views on these. We have not included discussion on the simple editorial changes and corrections identified in submissions, however, these have generally been incorporated in the final instruments made.

## Issues for comment

**Question 1**

The ACMA seeks comment on the draft Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.3 GHz Band) 2023.

One submission identified that Part 4 ‘Space service’ had been updated to include reference to Recommendation ITU-R[[1]](#footnote-2) SF.1006 and Radiocommunications Assignment and Licensing Instruction (RALI) MS 37. The submitter argued this is a material change that should have been more clearly identified and explained in the consultation paper.

Another submission indicated that 2 sections in Part 5 ‘Mobile services’ contradicted each other. Subsection 13(a) states that a transmitter is not taken to cause unacceptable interference to an apparatus licensed fixed receive station used for aeronautical mobile telemetry (AMT) services, if the transmitter is operating in accordance with its licence. However, subsection 12(3) states that apparatus licensed fixed receive stations used for AMT are afforded protection from 2.3 GHz spectrum licensed radiocommunications transmitters, which appears to contradict the former provision.

The same submission noted that the inclusion in Part 8 of the protection requirement for the Australian Radio Quiet Zone Western Australia (ARQZWA) is a material change not identified in the consultation paper.

#### ACMA response

We note that the current Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.3 GHz Band) 2013 (2013 RAG Tx) contains references to Recommendation ITU-R SF.1006 and RALI MS 37 for the protection of specific space-related services. So, we do not consider that the inclusion of these references to the new RAG Tx is a material change. We acknowledge that the current reference to Recommendation ITU-R SF.1006 in the 2013 RAG Tx is in the ‘Background’ section. However, this text clearly states that earth stations are to be provided in-band protection in accordance with this recommendation. Moving this text to the protection requirement section of the new RAG Tx is simply intended to improve clarity on how it applies.

We agree that the 2 subsections identified in Part 5 appear to contradict each other. We note that the intention of Part 5 is that fixed receive stations used for AMT services are afforded a defined level of protection. The level of protection afforded is based on the conditions, including core conditions (in particular, the unwanted emission limits), stated on 2.3 GHz band spectrum licences. Provided these conditions are adhered to, a radiocommunications transmitter operated under a 2.3 GHz band spectrum licence is not deemed to cause interference to a fixed receive station used for AMT services. To ensure there is no ambiguity, we have removed subsection 12(3) from the RAG Tx. This amendment ensures spectrum licences can continue to operate transmitters in the same manner as they were prior to the remaking of the instrument.

We acknowledge that the inclusion of the protection requirement for the ARQZWA was not identified in the consultation paper. However, this is not a new condition – it is set out in section 8 of Licence Schedule 4 on all 2.3 GHz band spectrum licences and its inclusion in the RAG Tx is simply intended to provide more visibility.

**Question 2**

The ACMA seeks comment on the draft Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 2.3 GHz Band) 2023.

One submission opposed the inclusion of the text in subsection 8(4). It argued that devices operating under a class licence typically do so on a ‘no interference no protection’ (NINP) basis. However, the text in subsection 8(4) states that the ACMA would not act in relation to interference caused by such devices.

Two submissions commented on the changes to the notional receiver performance. The submitters suggested that Schedule 1 had been completely re-written. While they welcomed the proposed modernisation of the notional receiver performance to align with 3GPP standards, they commented that these changes and how they compare to the existing level of performance were not identified in the consultation paper.

Two submissions identified that the filter attenuation specification in subitem 1(3) of Schedule 1 appeared to have been inadvertently carried over from the old 800 MHz band spectrum licensing technical framework. The submitters argued that the requirement would not be required for the 2.3 GHz band and should be removed from the RAG Rx.

One submission identified that in subitem 4(1) of Schedule 1, the frequency range that is subject to the receiver blocking requirement should start at 20 MHz away from the edge of the 2.3 GHz band, rather than 30 MHz away.

One submission proposed that the compatibility requirement in Schedule 2 should be framed as a maximum unwanted signal level, rather than a minimum wanted signal level. With this change, they acknowledged that the magnitude of the compatibility requirement would need to be adjusted accordingly. They requested the ACMA consult with spectrum licensees further to determine an appropriate level of protection.

#### ACMA response

Based on comments received, we have reviewed the text in subsection 8(4). We agree that the operation of a class licence is typically on a NINP basis. To resolve this issue, we have deleted the proposed text and reverted to the original text in the Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 2.3 GHz Band) 2013 (2013 RAG Tx).

As stated in the consultation paper, one aspect of the proposed remaking of the sunsetting instruments was to ensure consistency between the 2.3 GHz band technical framework instruments and other recently reviewed technical frameworks. This includes changes made as part of the recent [development and review of technical frameworks](https://www.acma.gov.au/consultations/2022-11/proposal-remake-instruments-700-mhz-1800-mhz-25-ghz-and-25-ghz-mid-band-gap-spectrum-licensed-bands-consultation-362022) for the 700 MHz, 850/900 MHz, 1800 MHz, 2 GHz, 2.5 GHz, 3.4 GHz and 26 GHz bands.

For this reason, we sought to align the text and definition of the notional receiver performance in Schedule 1 with the changes implemented in other spectrum licensed bands. A key element of this was providing further alignment with relevant 3GPP standards. The changes are based on the agreed text and parameters adopted for the notional receiver performance in the 700 MHz, 850/900 MHz and 2 GHz frequency bands. We acknowledge that there could have been more information on these provided in the consultation paper and we will endeavour to consider this in future papers.

The filter arrangements detailed in subitem 1(3) of Schedule 1 were mistakenly incorporated into the RAG Rx. We agree they are not required for the 2.3 GHz band and have removed them from the final RAG Rx.

We have reviewed the receiver blocking requirement text in subitem 4(1) of Schedule 1. To align with 3GPP standards, we have decided to have this subitem apply within the frequency range 2280 MHz to 2420 MHz. This applies a 20 MHz offset to the 3GPP profile band edges (which equipment specifications are based on), which is 2300–2400 MHz, rather than basing it on the frequency range subject to spectrum licensing in Australia (that is, 2302–2400 MHz).

To address comments received regarding the compatibility requirement, we have decided to adopt a maximum unwanted signal level of -108 dBm/5 MHz. We note that this aligns with the compatibility requirements implemented in the 700 MHz, 850/900 MHz, 2 GHz and 3.4 GHz frequency bands. It is based on a requirement to protect radiocommunications receivers to an interference to noise ratio (I/N) of -6 dB.

**Question 3**

The ACMA seeks comment on the draft Radiocommunications (Unacceptable Levels of Interference – 2.3 GHz Band) Determination 2023.

One submission requested that the ‘Purpose’ section of the ULoI and RAGs be maintained. The submitter noted that some of the relevant text was retained in the ‘Background’ sections of the RAGs, but suggested that the purpose of the instrument should be made clear up front.

One submission argued that paragraph 7(1)(a) was unnecessarily complicated. The submitter proposed that it be simplified to state that the operation of transmitters must not be in ‘contravention of a core condition of the licence [full stop]’. The remainder of the text in subparagraphs 7(1)(a)(i) and 7(1)(a)(ii) is superfluous and can be deleted.

The same submission argued that the provisions of subsection 7(3) effectively make subsection 7(2) redundant. They proposed that subsection 7(2) could be removed.

One submission noted that section 8 on the accuracy of parameters is also included in section 6 of the ITF Determination. They consequently proposed that section 8 could be removed. The level of accuracy in the ULoI instrument could then be specified by reference to the definition in the ITF Determination.

Another submission requested that the level of accuracy and various other expressions be better aligned with 3GPP 37.141 *NR, E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing*. For the level of accuracy this requires the inclusion of a 2 dB margin of error for the relevant parameters.

One submission indicated that the grandfathering clause in section 9 is incorrectly framed. The submission suggested that the current wording binds existing transmitter registrations in perpetuity to the ULoI in force at the time that they were registered. They recommended that section 9 should only apply when the following 2 conditions are met:

the radiocommunications transmitter was included in the register of radiocommunications licences before the commencement of the new/updated instrument

the radiocommunications transmitter is deemed to cause an unacceptable level of interference under the new/updated instrument.

One submission identified that the additional device boundary requirements specified in subsection 9(4) (and other relevant subsections) does not apply to the 2.3 GHz band. They proposed that it be removed.

One submission requested that the item detailing how to determine antenna height (and associated accuracy) for transmitters and groups of transmitters, which is defined in Part 1 of Schedule 3 to the Radiocommunications (Unacceptable Levels of Interference – 2.3 GHz Band) Determination 2013(2013 ULoI)*,* be included in the ULoI. Their position was that removing the antenna height provision, which is also not included in the ITF Determination, reduces the clarity of the ULoI instrument.

#### ACMA response

To improve stakeholder understanding of the intent of the ULoI, we have reinstated most of the ‘Purpose’ section from the existing instrument. This has resulted in the renumbering of sections in the final instrument from the ‘Definitions’ section onwards. A ‘Purpose’ section has not been included in the RAGs as we consider the ‘Background’ section effectively conveys the necessary information.

We support the simplification of text wherever possible. We agree with the proposals to remove subsection 7(2) as subsection 7(3) makes it redundant. The ULOI has been amended accordingly. However, we have retained subsection 7(1) as consulted. The intention of that subsection is to define levels of emissions that are deemed unacceptable. This means that only core conditions that relate to levels of emissions need to be referenced, which is how the proposed text has been drafted. We do note that, irrespective of whether it is a condition in the ULoI or not, all devices operated under a spectrum licence must adhere to all core conditions stated on the licence.

We do not intend to remove section 8 on the accuracy of parameters from the ULoI instrument. We believe that in this instance, the inclusion is necessary as the accuracy provision is nuanced for this band as it applies directly in Schedule 1 to the ULoI, while in the ITF Determination it applies in schedules 2 and 3 to that instrument. Trying to include this term via reference to the ITF Determination would be complex, however it is something that may be considered in future reviews of spectrum licence technical frameworks.

Where it makes sense to do so, we support aligning expressions used in the technical framework instruments with those in international standards. However, we think the changes proposed require more detailed examination and consultation with affected stakeholders before implementation. We may consider it as part of a future review of spectrum licence technical frameworks.

We agree that the grandfathering clause in section 9 could be made clearer with regards to when it applies. The intent of the grandfathering clause is to allow an existing transmitter to continue operating when it doesn’t meet the requirement of a new/updated ULoI. This includes allowing for minor modification to an existing transmitter. We have consequently reviewed section 9 and amended subsection 9(1) to provide further clarity on this issue.

We agree that retaining Part 1 in Schedule 3 to the 2013 ULoI will help to improve the clarity on how to determine antenna height.

**Question 4**

The ACMA seeks comment on the proposed new structure for technical framework instruments.

Submissions were supportive of the proposed structure for the technical framework instruments. No substantial issues were raised.

**Question 5**

The ACMA seeks comment on the proposed new draft Radiocommunications (Interpretation – Technical Framework) Determination 2023

Two submissions raised a concern with section 6 which describes the level of accuracy of specified parameters, in particular the 95% confidence provision. The submitters recommended that the ACMA align with 3GPP standards on the definition and application of the 95% confidence provision. Their recommendation was that section 6 be updated to align with 3GPP compliance requirements and methodologies. One of these submissions further proposed that various other expression should be modified to better align with 3GPP 37.141 *NR, E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing*.

One submission identified that the definition of the location of a radiocommunications receiver and group of receivers had not been included in the ITF Determination and is also not included in the ULoI.

#### ACMA response

We have considered comments made regarding section 6. We support adopting globally recognised compliance requirements and methodologies where possible. However, as stated in our response to question 3, we think the changes proposed require more detailed examination and consultation with affected stakeholders before implementing. We may consider it as part of a future review of spectrum licence technical frameworks.

At this stage we have not amended the definitions of other expressions, as that would require more detailed examination and consultation with affected stakeholders. We may consider it as part of a future review of the spectrum licence technical framework, in consultation with spectrum licensees.

The ACMA agrees that definitions for the location of a radiocommunications receiver and group of receivers are required, which we have included in subitems 5(3) and 5(4) of Schedule 1.

# Outcomes of consultation

After considering submissions to the consultation paper, we have remade the identified legislative instruments as proposed in the consultation paper, with the amendments summarised in this section. We have also made numerous editorial changes and corrections that were identified in submissions, which are not individually detailed here. For example, the year the instruments apply has been updated from 2023 to 2024. We have also changed the commencement date for all instruments to 31 March 2024. This is to provide time for accredited persons and affected licensees to review and implement any changes required.

A summary of the main changes made to the instruments follows:

* Radiocommunications Advisory Guidelines (Managing Interference from Spectrum Licensed Transmitters – 2.3 GHz Band) 2024:

Subsection 12(3) has been removed to ensure spectrum licences can continue to operate in the same manner prior to the remaking of the instrument.

* Radiocommunications Advisory Guidelines (Managing Interference to Spectrum Licensed Receivers – 2.3 GHz Band) 2024:

The text in subsection 8(4) has been replaced with the original text in the 2013 RAG Rx. This states that the interference management framework for radiocommunications devices operated under a class licence, if required, is contained in the relevant class licence.

Subitem 1(3) of Schedule 1 has been removed as the filter arrangements are not required for the 2.3 GHz band.

The frequency range that the receiver blocking requirement applies to in subitem 4(1) of Schedule 1 has been amended to 2280 MHz to 2420 MHz, to align with 3GPP standards.

In Schedule 2, the compatibility requirement has been amended to define a maximum unwanted signal level of -108 dBm/5 MHz. This aligns with the compatibility requirements implemented in the 700 MHz, 850/900 MHz, 2 GHz and 3.4 GHz frequency bands.

* Radiocommunications (Unacceptable Levels of Interference – 2.3 GHz Band) Determination 2024:

A ‘Purpose’ section has been included in the instrument. This has resulted in a consequent change to the numbering of sections from the definitions onwards.

Subsection 7(2) of the instrument consulted on, has been removed as it is redundant.

Subsection 10(1) (previously section 9 of the instrument consulted on) has been amended to clarify the circumstances the grandfathering provision applies to.

Item 4 of Schedule 1 has been included to provide clarity on how to determine the antenna height of a transmitter for use in device boundary calculations.

* Radiocommunications (Interpretation – Technical Framework) Determination 2024:

Subitems 5(3) and 5(4) of Schedule 1 have been amended to include definitions for the location of a radiocommunications receiver and group of receivers.

1. The ITU-R is the Radiocommunication Sector of the International Telecommunications Union. [↑](#footnote-ref-2)