Proposed area-wide apparatus licence

Consultation paper

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Executive summary

Australia’s spectrum landscape is constantly changing, with new technologies and uses of spectrum placing varying technical demands on the apparatus licensing framework. The Australian Communications and Media Authority (ACMA) is seeking ways to improve the framework to better meet emerging needs, encourage innovative use of spectrum and broaden licensee choice.

One improvement being explored by the ACMA is to provide a suitable licensing option for ‘small-area’ multi-device deployments.

The ACMA is proposing to develop a new transmitter licence type and a receiver licence type.

Except where described specifically, the two new licence types are referred to collectively in this consultation paper as the area-wide apparatus licence (AWL) type. This new licence type is intended to benefit spectrum users by complementing existing licensing options and improving apparatus licensing flexibility, particularly by providing a scalable licensing option to support area-wide multi-device deployments.

The AWL type is intended to authorise the operation of one or more radiocommunications devices within a defined geographic area at a frequency or frequencies specified on the licence, subject to the conditions included on the issued licence. The licence type will be scalable, enabling its use for authorising different-sized geographic areas and bandwidths. Unlike existing apparatus licence types— which typically align with specific uses and purposes—the AWL type will be capable of authorising a variety of services, uses, applications and technologies. The AWL type concept is consistent with the terms of reference of the Spectrum Review to promote more flexible licensing arrangements.

To give effect to the new licence type, the ACMA is proposing to make:

* amendments to the [Radiocommunications (Specified Radiocommunications Receivers and Types of Transmitter Licences and Receiver Licences) Determination 2014](https://www.legislation.gov.au/Details/F2014L01790) to reference the AWL as a transmitter and receiver licence type
* amendments to the [Radiocommunications (Interpretation) Determination 2015](https://www.legislation.gov.au/Details/F2016C00284) to define the AWL concept and related terms
* amendments to the [Radiocommunications (Register of Radiocommunications Licences) Determination 2017](https://www.legislation.gov.au/Details/F2017L01069) to enable the ACMA to exempt AWL licensees from certain device registration requirements

a new Radiocommunications Licence Conditions (Area-Wide Licence) Determination 2019 (AWL LCD), which will contain conditions in relation to the operation of radiocommunications devices authorised under the AWL transmitter type.

The ACMA invites comment from interested parties on the proposed AWL type and amendments to the apparatus licensing framework by **COB, Friday 9 August 2019**.

# Issues for comment

The ACMA welcomes comment from interested stakeholders on the issues raised in this consultation paper or any other issues relevant to the proposed AWL type. In particular, the ACMA seeks responses to the following questions:

1. Do you think the proposed characteristics of the AWL type will support your current or intended network deployments? Are there any other kinds of deployments that you believe the AWL type should support?
2. Which bands and/or geographic areas do you believe would be conducive to the use of an AWL?
3. What technical and other matters do you believe the ACMA should consider in deciding to use AWL licensing in a particular band?
4. Do you have any other comments on the AWL concept?

# Background

## Apparatus licensing framework

The apparatus licensing framework is made up of a network of regulatory instruments, technical planning documents and operational practices that define the suite of available apparatus licence types and the conditions applicable to the licence[[1]](#footnote-2). The principal elements of the apparatus licensing framework are:

* the types of apparatus licence the ACMA may issue, including the use, service or purpose associated with each apparatus licence type
* technical and non-technical conditions that restrict or limit operation of a radiocommunications device under an apparatus licence
* specifying information that must be included on the Register of Radiocommunications Licences (RRL) about radiocommunications devices operated under an apparatus licence
* tax and charging arrangements for the apparatus licensing
* the regulatory and/or administrative processes for the issue of apparatus licences

administrative technical planning documents (for example, Radiocommunications Assignment Licensing Instructions—RALIs).

### Apparatus licence types

Under subsection 98(2) of the [*Radiocommunications Act 1992*](https://www.legislation.gov.au/Details/C2018C00336) (the Act), the ACMA may only issue an apparatus licence of a type specified in a determination made under subsection 98(1) of the Act. Types may be determined for both transmitter licences and receiver licences. Consequently, the ACMA has made the [Radiocommunications (Specified Radiocommunications Receivers and Types of Transmitter Licences and Receiver Licences) Determination 2014](https://www.legislation.gov.au/Details/F2014L01790)(the Types Determination).

The Types Determination currently lists 16 transmitter licence types and five receiver licence types. Each of the current apparatus licence types is associated with a particular radiocommunications service (for example, land mobile, fixed, amateur, etc.). Typically, this service reflects a use and/or purpose identified in the [*Australian Radiofrequency Spectrum Plan 2017*](https://www.acma.gov.au/theacma/australian-radiofrequency-spectrum-plan-spectrum-planning-acma).The current apparatus licence types are defined in the [Radiocommunications (Interpretation) Determination 2015](https://www.legislation.gov.au/Details/F2016C00284)(the Interpretation Determination).

### Licence conditions

The operation of a radiocommunications device under an apparatus licence is subject to the conditions specified in the individual licence and conditions determined in applicable licence conditions determinations (LCDs) made by the ACMA under paragraph 107(1)(f) of the Act.[[2]](#footnote-3) Conditions may be either technical (for example, maximum total radiated power and frequency) and/or non-technical (for example, registration requirements, limitations on purpose, record-keeping requirements).

While the [Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015](https://www.legislation.gov.au/Details/F2015L00210) applies across all apparatus licence types, the majority of LCDs are aligned with particular apparatus licence types. For example, the [Radiocommunications Licence Conditions (Land Mobile Licence) Determination 2015](https://www.legislation.gov.au/Details/F2015L00831)contains conditions that apply to all land mobile apparatus licences.

### Register of Radiocommunications Licences

In order to aid licensees in interference management and frequency coordination, the Act requires certain information about apparatus licences and radiocommunications devices authorised by apparatus licences to be included in the RRL. Section 147 of the Act prescribes that for each apparatus licence, the licensee’s name, postal address, and the date of issue and expiry of the licence must be included in the RRL. The ACMA may also determine further details about apparatus licences that must be contained within the RRL.

The ACMA has made the [Radiocommunications (Register of Radiocommunications Licences) Determination 2017](https://www.legislation.gov.au/Details/F2017L01069) (the RRL Determination) pursuant to sections 144, 147 and 149 of the Act. The RRL Determination prescribes certain information that must be included on the RRL about apparatus licences and devices operated under apparatus licences.[[3]](#footnote-4)

### Technical planning documents

The ACMA publishes various technical planning instructions that assist licensees and accredited persons in coordinating radiocommunications devices and assigning frequencies that are proposed for operation under an apparatus licence.

RALIs are the most common technical instructions published by the ACMA and typically apply on the basis of licence type (for example, the land mobile licences are associated with [RALI LM8](https://www.acma.gov.au/Industry/Spectrum/Spectrum-planning/Current-APs-info-and-resources/rali-lm8---frequency-assignment-requirements-for-the-land-mobile-servce)) and frequency band.

Accredited persons may have regard to RALIs when undertaking an assessment prior to issuing a frequency assignment certificate (FAC) as part of the administrative coordination process that typically precedes the issue of an apparatus licence. FACs indicate that radiocommunications device(s) proposed for operation under an apparatus licence comply with the relevant technical planning instructions (such as RALIs) and/or will not pose significant interference risk to other licensees. When deciding whether to issue an apparatus licence, the ACMA may take into account the issue of a FAC by an accredited person.[[4]](#footnote-5)

### Allocation, charges and taxation

The ACMA may issue apparatus licences administratively (‘over the counter’) or by a price-based allocation process. A price-based allocation process may only be used for specified transmitter licences. The ACMA’s practice has been to issue most apparatus licences by administrative means.

Apparatus licences are subject to [apparatus licence fees](https://www.acma.gov.au/theACMA/About/Making-payments/Apparatus-licence-fees/apparatus-licence-fees-acma) including administrative charges and annual taxation. Administrative charges seek to recover the direct costs of spectrum management such as costs incurred by the ACMA for licence issue and/or renewal. These charges are determined by the [Radiocommunications (Charges) Determination 2017](https://www.legislation.gov.au/Details/F2018C00916) (Charges Determination).

The taxation arrangements for ‘over the counter’ apparatus licences are set out in the [Radiocommunications (Transmitter Licence Tax) Determination 2015](https://www.legislation.gov.au/Details/F2019C00167) and the [Radiocommunications (Receiver Licence Tax) Determination 2015](https://www.legislation.gov.au/Details/F2019C00196) (the Transmitter Tax Determination and Receiver Tax Determination). The tax determinations specify the annual tax amounts that licensees must pay for each chargeable spectrum access. With limited exceptions (for example, PMTS licences), the pricing formula for ‘chargeable spectrum accesses’ has applied a ‘per transmitter’ pricing approach.

# Discussion

As Australia’s use of spectrum evolves, the apparatus licensing framework must also develop to better meet emerging needs, encourage innovative use and broaden licensee choice. As part of this development, the ACMA is exploring amending the apparatus licensing framework to provide a suitable licensing option for area-wide, multi-device deployments.

Historically apparatus licences have authorised licensees to operate specific radiocommunications devices or kinds of radiocommunications devices at identified geographic locations on specified frequencies. This form of licence is referred to as a ‘site-coordinated licence’.

Over time, the ACMA has developed different approaches to provide more flexibility for licensees. This includes land mobile system and PMTS Class B apparatus licences, both of which permit licensees to operate multiple radiocommunications devices within a defined or notional geographic area. While land mobile system and PMTS Class B licences provide greater flexibility, both licences are restricted to uses and services associated with the land mobile and Public Telecommunications Service (PTS) licence types respectively.

In contrast, spectrum licences have generally been used to authorise large bandwidths of frequency across large geographic areas. Spectrum licences provide broad flexibility for area-wide deployments while being tradeable and capable of aggregation (individual spectrum licences may be combined into a single licence). They may also be disaggregated post allocation. However, the typical scale, cost and limited availability of spectrum licences means that they may not be suitable for authorising smaller-scale deployments.

## The area-wide apparatus licence concept

To improve the flexibility of the apparatus licensing framework the ACMA is proposing to develop a new transmitter licence type and a new receiver licence type. Both are proposed to be area-wide apparatus licence types that may be used to authorise a variety of different services. For brevity, these proposed new types are referred to collectively as the ‘area-wide’ licence (AWL) type.[[5]](#footnote-6)

The ACMA believes that the AWL will be particularly conducive to scenarios where there are multiple radiocommunications devices operated within smaller defined geographical areas and specified frequencies than those typically authorised by spectrum licences. The AWL type concept is also consistent with the terms of reference of the Spectrum Review to promote more flexible licensing arrangements.

A number of overseas jurisdictions have developed a licensing option for small-area, multi-device deployments, including for proposed 5G applications.[[6]](#footnote-7) These overseas arrangements, while not exclusively restricted to industrial or commercial applications of spectrum, have often been utilised by a variety of ‘industry verticals’—industries outside of the telecommunications industry who use spectrum to facilitate their operations (for example, mining and infrastructure).[[7]](#footnote-8)

An AWL would authorise the operation of multiple radiocommunications devices in a particular frequency band within a particular geographic area, subject to any conditions placed on, or applicable to, the licence.

Key attributes of the AWL type:

* Area-wide: Licences will authorise one or more radiocommunications devices in the geographic area at the frequency/frequencies specified in the licence.
* Broad application: The licences may be used for a wide range of purposes, uses, services, applications and technologies. However, an individual licence, when issued, may include special conditions that limit the operation of a radiocommunications device under the licence to an identified purpose, use or service.

Scalable: The licences will be capable of being adapted to a variety of technologies and/or uses, with different size geographical areas and frequency bandwidths. It is intended that the licence type may be used to authorise deployments in geographic areas smaller than those common to spectrum licences.

These attributes will provide the foundation for an apparatus licence type which will be suitable for a wide range of usage and is adaptable to licensee needs. For example, the AWL type could be used to authorise Internet of Things (IoT) applications. IoT applications are characterised by various interconnected devices that generate, exchange and consume data without human intervention. Thus, the AWL type could be used to authorise the automatic communication of messages between ‘things’ such as remotely operated or autonomous machines (machine-to-machine communications) that facilitate the application such as information about location, speed, direction, activity or battery level.

The ACMA is proposing to establish a receiver-only version of the AWL type to cater for possible future demand for such a (receiver-only) licence option. The intended purpose of a receiver licence is to provide receivers protection from interference through coordination and registration. As with existing receiver licences, radiocommunications devices operated under the area-wide receive licence would only be permitted to receive radiocommunications and would not be permitted to transmit radiocommunications of any kind.

### Application to specific bands

The AWL type will not be limited to a particular frequency band. The ACMA’s use of AWLs in any given band on a regular basis will be contingent upon an analysis of the suitability of the licence type for the band. This analysis will:

* assess the potential utility and benefit to spectral efficiency of issuing AWLs in the relevant band
* consider the technical and economic implications of allowing both AWLs and other apparatus licence types to be issued in the same frequency band
* identify the technical conditions that should apply to radiocommunications devices operating under the licence and the ‘boundary conditions’ (for example, the maximum signal strength levels at the geographical and/or frequency boundaries of the licence) to mitigate the risk of interference to neighbouring and/or adjacent spectrum users
* the minimum and/or maximum geographic area and frequency bandwidth for licences issued in the band

whether radiocommunications devices (or a subset of devices) authorised under the proposed AWLs should be required to be registered prior to operation (see further below).

The technical conditions, minimum frequency bandwidth and geographic area are expected to form the basis for calculating the price of licences issued in the band (see below under ‘Pricing and licence issue processes’).

The ACMA will consult prior to deciding to issue licences of the AWL type in a new frequency band. As noted in the recent consultation, [*Draft spectrum reallocation recommendation for the 26 GHz band in cities and regional centres*](https://www.acma.gov.au/theACMA/draft-spectrum-reallocation-recommendation-for-the-26-ghz-band), the ACMA is considering the use of a AWL to authorise access for wireless broadband services in some parts of the 26 GHz band.

### Licence conditions and technical planning

Each AWL issued by the ACMA may include conditions which specify:

* the frequencies in which radiocommunications devices are authorised to operate
* the geographical area in which radiocommunications devices may be operated
* the maximum Equivalent Isotropically Radiated Power (EIRP) or Total Radiated Power (TRP) levels for radiocommunications devices operated under the licence
* the maximum signal level at the boundary/edge of the licence area

any other conditions relating to the operation of radiocommunications devices under the licence.

The technical conditions for radiocommunications transmitters (and radiocommunications receivers, if applicable), and the boundary conditions for an AWL in a particular band will derive from band-specific planning considerations. An AWL Licence Condition Determination will contain conditions that are common to all transmitter AWLs and may include band-specific schedules containing conditions relevant to AWLs within the corresponding frequency band.

Where necessary or appropriate, the ACMA may publish technical planning information to assist in the production of a FAC. This technical planning information is likely to be in the form of a RALI that is specific to the relevant band.

Depending on the interference risk associated with authorised uses under the licence, a condition that radiocommunications devices (other than portable or mobile devices) be registered prior to operation may be included on the licence or within the LCD (see below).

### Device coordination and registration

AWLs will not require coordination of devices prior to issue of the licence. Further, AWLs will generally not require registration of devices prior to the device being operated.

Registration of a device prior to operation under an AWL should only be required if registration is necessary to manage the risk of interference with other devices. The ACMA will assess this interference risk as part of the technical planning and economic assessment process referred to above. Where such a risk is identified, the AWL LCD or the individual licence may include conditions requiring registration of radiocommunications devices prior to operation. Mobile or portable stations (for example, hand-held devices) will not require registration prior to operation. Even where the technical and economic assessment process identifies an interference rationale for device registration, it is expected that ‘low-power’ devices will not be required to be registered.[[8]](#footnote-9)

The RRL Determination currently requires details about all devices authorised under the licence to be included in the RRL. The ACMA is proposing to amend the RRL Determination so that licensees are only required to include details about devices authorised under an AWL if a condition applies to the licence that requires the device(s) to be registered. Should a licensee not be required to register a device, the AWL LCD will require licensees to provide information about radiocommunications devices operated under the licence upon written request.

Consistent with the approach adopted currently for PMTS Class B licences, the ACMA will take into consideration the production of a FAC in deciding whether to register the device. Where device registration is required, the ACMA expects to publish a RALI to provide technical and administrative assistance to licensees and accredited persons in ensuring that devices are properly coordinated.

### Pricing and licence issue process

Apparatus licences have traditionally been allocated and priced via an administrative (‘over the counter’) process. However, the ACMA may also determine a price-based issue process for specified transmitter licences under subsection 106(1) of the Act.

In deciding whether to use administrative or price-based allocation for AWLs in a particular band, the ACMA will have regard to a range of factors, including the expected demand for the licences and the administrative efficiency of running a price-based process (including determining an appropriate starting price).

Administrative pricing

Administrative pricing of apparatus licences typically has two components, namely: an issue or renewal charge determined by the Charges Determination[[9]](#footnote-10); and a taxation charge for access to spectrum. Taxes for apparatus licences issued ‘over the counter’ are determined currently via the Transmitter Tax Determination or the Receiver Tax Determination.

The ACMA proposes to adopt a consistent approach to the pricing of AWLs across multiple bands using set of parameters (for example, frequency band, lot size, population coverage), with weighting of each parameter needing to be considered on a band-by-band basis.

As tax arrangements for the AWL will be determined on a band-by-band basis, the Transmitter Tax Determination and Receiver Tax Determination will require amendment each time the ACMA decides to issue the AWL type in a new band. The ACMA will consult on amendments to the Tax Determinations prior to a decision to issue AWLs in the relevant band.

# Proposed amendments to the apparatus licensing framework

The ACMA is proposing regulatory changes to certain elements of the apparatus licensing framework to create the AWL type. Drafts of the relevant instruments are attached to this consultation paper.

## Draft Radiocommunications Legislation (2019 Measures No. 1) Instrument 2019

This omnibus instrument contains amendments to existing legislative instruments that make up the apparatus licensing framework.

### Radiocommunications (Specified Radiocommunications Receivers and Types of Transmitter Licences and Receiver Licences) Determination 2014

The ACMA proposes to amend the Types Determination to add the AWL type to Schedule 1 for transmitters and Schedule 2 for receivers. This will enable the ACMA to issue both a transmitter and receiver apparatus licence of the AWL type.

### Radiocommunications (Interpretation) Determination 2015

The ACMA proposes to amend the Interpretation Determination to add a definition for an AWL.

The proposed definition of an AWL is based on the following attributes:

* the licence will authorise the operation one or more radiocommunications devices;
* the licence will authorise the operation of radiocommunications devices that are operated:
* in the frequency band(s) specified in the licence;
* are located within the geographical area specified in the licence;
* in accordance with any other conditions in the licence or within an applicable LCD (for example, boundary conditions).

The AWL type definition also incorporates and develops several other definitions to satisfy requirement of the Act and other instruments (for example, defining an area-wide station to identify a kind of radiocommunications transmitter, or an area-wide service). These are defined broadly to enable licensees to have high levels of flexibility relating to device deployment.

### Radiocommunications (Register of Radiocommunications Licence) Determination 2017

The ACMA proposes to amend the RRL Determination to qualify the application of section 10 of the Determination to AWLs. The amendment will provide that, for radiocommunications devices authorised under an AWL, the device information requirements under subsections 10(4), 10(5), 10(6) and 10(7) will apply only if the licence is subject to a condition requiring the licensee to register radiocommunications devices prior to operation.

## Draft Radiocommunications Licence Conditions (Area-Wide Licence) Determination 2019

The ACMA is proposing to make the Radiocommunications Licence Conditions (Area-Wide Licence) Determination 2019 (the AWL LCD). The proposed AWL LCD would apply only to the AWL apparatus licence type.

The proposed AWL LCD will have a general part that will contain conditions applicable to all AWLs and ‘band-specific’ schedules that will likely contain conditions that are specific to AWLs issued in the corresponding band (for example, technical conditions that vary with frequency).[[10]](#footnote-11)

Under the general part of the proposed AWL LCD, if the licence does not include a condition requiring the licensee to register a radiocommunications device, the licensee must provide certain operational and technical details of radiocommunications devices operated under the licence upon written request by any person. The purpose of this condition is to aid in the management and resolution of interference issues.[[11]](#footnote-12)

## Use of AWLs in a particular band

The proposed and amended instruments described above are necessary to establish the foundations of the AWL type. Where the ACMA proposes to use AWLs on a regular basis in a particular band, the ACMA expects to consult publicly on additional regulatory changes and administrative documents prior to the issue of an AWL in a particular band. The ACMA anticipates that, at a minimum, public consultation will cover:

* the ACMA’s analysis of the technical and economic implications of issuing AWLs in a particular band
* proposed technical conditions (including transmitter conditions and boundary conditions) for AWLs in the relevant band, including amendments to the AWL LCD to give effect to ‘band-wide’ technical conditions
* proposed technical and/or administrative guidance (for example, a RALI) relevant to the coordination and registration of a radiocommunications transmitter
* proposed amendments to the Tax Determinations (including proposed taxation arrangements) for AWLs issued in the relevant band (including receivers, if proposed for issue).

# Invitation to comment

## Making a submission

The ACMA invites comments on the issues set out in this discussion paper.

* [Online submissions](http://www.acma.gov.au/theACMA/Consultations/Consultations) can be made via the comment function or by uploading a document. Submissions in Microsoft Word or Rich Text Format are preferred.
* Submissions by post can be sent to:

The Manager

Spectrum Management Outlook and Strategy Section

Spectrum Allocations Branch

Australian Communications and Media Authority

PO Box 13112

Law Courts

Melbourne VIC 8010

**The closing date for submissions is COB, Friday 9 August 2019.**

Consultation enquiries can be emailed to [LicensingDesign@acma.gov.au](mailto:SSAL@acma.gov.au).

Publication of submissions

The ACMA publishes submissions on our website, including personal information (such as names and contact details), except for information that you have claimed (and we have accepted) is confidential.

Confidential information will not be published or otherwise released unless required or authorised by law.

Privacy

[*Privacy and consultation*](https://www.acma.gov.au/theACMA/About/Corporate/Accountability/privacy-and-consultations) provides information about the ACMA’s collection of personal information during consultation and how we handle that information.

Information on the *Privacy Act 1988* and the ACMA’s privacy policy (including how to access or correct personal information, how to make a privacy complaint and how we will deal with the complaint) is available at [acma.gov.au/privacypolicy](http://www.acma.gov.au/privacypolicy).

1. Radiocommunications devices refers to both radiocommunications transmitters and radiocommunications receivers. [↑](#footnote-ref-2)
2. Additional requirements applicable to operators of amateur and maritime licences are contained within the [Radiocommunications (Qualified Operators) Determination 2016](https://www.legislation.gov.au/Details/F2016L00375) made under section 119 of the Act. [↑](#footnote-ref-3)
3. Information relating to use under ‘classified licences’ is not made publicly available. [↑](#footnote-ref-4)
4. See subsection 100(4A) of the Act. [↑](#footnote-ref-5)
5. The area-wide licence type was originally referred to in the [*Draft five-year spectrum outlook 2019–23*](https://www.acma.gov.au/theACMA/draft-five-year-spectrum-outlook-2019-23) as the ‘spectrum space’ apparatus licence. The term ‘area-wide’ has been chosen to reflect the fact that the licence will authorise the operation of radiocommunications devices within a defined geographic area. The ACMA notes that ‘area-wide’ is currently used as a colloquial description of various licensing options under existing licence types (for examples, PTS and land mobile). The new licence type should not be confused with these existing licensing options. [↑](#footnote-ref-6)
6. For example, Radio Spectrum Policy Group, ‘[RSPG Opinion on 5G implementation challenges (RSPG19-007)](http://www.rspg-spectrum.eu/rspg-opinions-main-deliverables/)’; Ofcom,‘[Supporting the expanding role of wireless innovation in UK industry’](https://www.ofcom.org.uk/spectrum/spectrum-management/supporting-role-wireless-innovation-uk-industry); Communications Authority Hong Kong, ‘[Guidelines for the submission of proposals applying for the wireless Internet of Things licence](https://www.coms-auth.hk/en/policies_regulations/cop_guidelines/telecomm/index_yr_all-ca_28-sb_all-p_1.html)’. [↑](#footnote-ref-7)
7. Examples of relevant (international) cases: itnews, ‘[Cows given 5G collars that talk to robotic milking system](https://www.itnews.com.au/news/cows-given-5g-collars-that-talk-to-robotic-milking-system-523770)’; Venture Beat, ‘[Inside Nokia’s factory of the future](https://venturebeat.com/2019/04/10/inside-nokias-factory-of-the-future-robots-data-automation-5g-and-even-some-humans/)’; Healthcare IT News, ‘[The Journey to 5G’](https://www.healthcareitnews.com/news/journey-5g); Nokia, ‘[A healthy birth for the 5G hospital’](https://www.nokia.com/blog/healthy-birth-5g-hospital/), ZD Net, ‘[Spark NZ tests 5G autonomous car](https://www.zdnet.com/article/spark-nz-tests-5g-autonomous-car/)’. [↑](#footnote-ref-8)
8. ‘Low power’ will be determined on the basis of the technical conditions in the relevant band. [↑](#footnote-ref-9)
9. Under the Charges Determination, the issue charge will be based on the per hour general service charge. The charge for renewing a licence is set out in Schedule 2 Part 8 at $4. [↑](#footnote-ref-10)
10. The licence itself is expected to include conditions relating to spectrum access (for example, the frequency and area in which the licensee is authorised to operate) and may also include conditions relating to the operation of radiocommunications devices under the licence, including registration, unwanted emissions, and managing interference. It is also likely that a range of conditions that are common to all AWLs in a band would be placed in the LCD rather than in the licence. [↑](#footnote-ref-11)
11. The existing Radiocommunications Licence Conditions (Apparatus Licence) Determination 2015will also be applicable to AWLs. That instrument imposes conditions dealing with matters such as electromagnetic radiation requirements and record-keeping rules. [↑](#footnote-ref-12)