



TELSTRA CORPORATION LIMITED

Proposed updates to the LIPD Class Licence for 6 GHz RLANs

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EXECUTIVE SUMMARY

We welcome the opportunity to make this submission to the Australian Communications and Media Authority (ACMA) in response to the proposed updates to the LIPD Class licence for 6 GHz RLANs.

We support the ACMA's proposal to authorise the lower 6 GHz band (5925–6425 MHz) for RLAN use and we agree with the proposed amendment to the Radiocommunications (Low Interference Potential Devices) Class Licence 2015 (LIPD Class Licence) to cap the power at 24 dBm EIRP.

At the same time, it is essential that incumbent services including the fixed satellite services and fixed links are protected, not just for services currently deployed, but also for future deployment of these apparatus licensed services. Telstra uses fixed links to provide backhaul for a range of essential services, including USO telephony services.

To this end, we consider it essential that AFC is introduced for standard-power devices (any device operating at 30 dBm EIRP or higher), and that so called 'light-licensing' (registration on the RRL but no licence fee) is also mandated so interference investigations can be conducted expeditiously. We do not have an opinion on how AFC should be introduced into Australia, or who should be responsible for developing the system, but we are strongly of the view that AFC is required to protect incumbent services and that registration must occur to facilitate interference investigations.

We have reviewed our position on the upper 6 GHz band since responding to the April 2021 issues paper. Previously, we advocated for the upper 6 GHz band to be allocated for class-licensed RLAN use, however, we now consider that a decision on the allocation of this spectrum should be delayed until after WRC-23 so that the outcomes of that conference and plans by other countries can be taken into account. Our submission also references some data contained in a recent Coleago Consulting report to substantiate delaying any decision until that time.

We consider there to be an urgent need to update the rules for the 5150-5250 MHz band to allow higher powered LPI devices as well as outdoor deployment of standard devices (with appropriate elevation restrictions), both up to an EIRP of 30 dBm, in accordance with WRC-19 Resolution 229, Resolve 3, and we recommend the ACMA should consider introducing this change to the LIPD Class Licence at the same time as the amendment to include the lower 6 GHz band for RLAN use.

Finally, we are concerned at the prospect of high-gain antennas in the 5 GHz and 6 GHz bands. Depending on the maximum gain allowed, we are of the view that the use of such antennas risks interference to incumbent and other users, and we seek clarification on what the ACMA considers to be "high-gain" and the scenarios where such antennas may be employed.



01 Lower 6 GHz band

We welcome the ACMA's proposal to update the Radiocommunications (Low Interference Potential Devices) Class Licence 2015 (LIPD Class Licence) to authorise use of RLANs in the range 5925–6425 MHz (the lower 6 GHz band). As the ACMA acknowledges, demand for Wi-Fi continues to increase both from consumer and business customers and this proposal provides much anticipated relief from the congestion our customers currently face.

As a short-term solution, we agree with and support the ACMA's proposal of 24 dBm per occupied channel with the commensurate PSD limit of 11 dBm/MHz for low power indoor (LPI) devices and 14 dBm per occupied channel with the commensurate PSD limit of 1 dBm/MHz for very low power devices (VLP). However, as explained below, in the medium term we believe a case exists for the LPI limits to be increased.

1.1. Proposed low power indoor (LPI) limits will reduce in-home coverage

In the consultation paper, the ACMA notes that some submissions to the April consultation paper (including the one from Telstra¹) requested that the proposed power limits be increased to 30 dBm EIRP per occupied channel, to better support wider bandwidth channels above 80 MHz. However, the ACMA observes that the current 802.11ax standard only supports channel bandwidths up to 160 MHz, and future generation standards which can accommodate larger bandwidth (for example, 320 MHz channel sizes under Wi-Fi 7), are still some years away². While we agree with this view, as noted in our previous submission³, the higher power limit for low power indoor (LPI) devices is not only important to support higher channel bandwidths in the future but also to resolve indoor coverage issues faced by consumers today for 80 MHz and 160 MHz channels.

In our previous submission to the April consultation paper, we showed that the difference in coverage between 24 dBm EIRP and 30 dBm EIRP in a typical brick home translated to an extra room or two of coverage. While this may not seem like much, in many cases it makes the difference between needing an extender device versus not needing one⁴. As noted previously, every extender added to the home adds to general Wi-Fi noise (which in turn further reduces Wi-Fi capacity and to some extent defeating the purpose of adopting a lower general power limit), additional cost to the consumer, more points of failure in the home LAN, additional power use and e-waste creation. Therefore, while we agree with the ACMA that future generation technologies or standards capable of supporting 320 MHz channel bandwidth are still some years away, we believe the case exists for indoor power limits to be increased at an earlier time.

We acknowledge that a higher EIRP limit could potentially cause interference to incumbent services including fixed links (see section 03), particularly given the ACMA's reluctance to impose specific restrictions or definitions to ensure indoor use rules are adhered to in the 6 GHz band. For this reason, in our previous submission we advocated for an alternative approach to the one proposed by the ACMA – one in which 30 dBm EIRP is coupled with an 11 dBm/MHz PSD limit. The PSD approach (as opposed to a simple EIRP

¹ As a recap, our previous proposal to allow up to 30 dBm EIRP for LPI devices would only apply to channel sizes of 80 MHz or greater, not to smaller channel sizes.

² Consultation paper, p.9.

³ Telstra submission to RLAN use in the 5 GHz and 6 GHz bands, p.15,
<https://www.acma.gov.au/consultations/2021-04/rlan-use-5-ghz-and-6-ghz-bands-consultation-122021>

⁴ Ibid, p.15-17



limit approach) has the benefit of at least maintaining 11 dBm/MHz PSD on channel sizes up to 80 MHz which is important for in-home coverage, while ensuring incumbent services such as P2P links are not subject to PSD levels above 11 dBm/MHz on smaller channel sizes⁵. This approach has also been adopted by other jurisdictions including FCC in the US, Canada and South Korea, as illustrated in the following table.

Jurisdiction	Category	EIRP (dBm)	PSD (dBm per MHz)
USA ⁶	Outdoor AP	36	23
USA	Outdoor client	30	17
USA	Indoor AP	30	5
USA	Indoor client	24	-1
Canada ⁷	LPI	30	5
South Korea ⁸	LPI	24	2

In summary, while we support the ACMA's proposals for LPI limits in this update to the LIPD class licence, we believe consideration should be given to increasing the LPI limits in the subsequent annual update to the licence.

1.2. Power levels for very low power (VLP) devices are appropriate

We agree with and support the ACMA's proposal that the EIRP limit for VLP devices should be set at 14 dBm with maximum PSD set at 1 dBm/MHz. As the ACMA observes, internationally, most countries have adopted a 14 dBm EIRP limit, and even in the few jurisdictions allowing a 17 dBm EIRP limit, PSD limits above 1 dBm/MHz are not permitted (thereby restricting 20 MHz channels to 14 dBm EIRP to meet the PSD limit). Considering these VLP devices can operate outdoors, there is a greater risk of interference to other spectrum users, in particular incumbent services. As Telstra operates several fixed links in this band, we would be very concerned about increasing the VLP EIRP limit above 14 dBm and recommend the ACMA to not vary the VLP power limits until additional measures are implemented. Please see section 03 for further details.

⁵ Telstra's submission to RLAN use in the 5 GHz and 6 GHz bands, section 5.2, p.17-18, May 2021

⁶ Table 3, <https://docs.fcc.gov/public/attachments/FCC-20-51A1.pdf>

⁷ Innovation, Science and Economic Development Canada (ISED), Decision on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band, May 2021, Clause 19 in <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11698.html>

⁸ ACMA, Exploring RLAN use in the 5 GHz and 5 GHz Bands: Discussion and Options Paper, April 2021, p.19.



02 Upper 6 GHz band and higher power devices

2.1. Decision on potential IMT use in the upper 6 GHz band should be postponed to after WRC-23

As the consultation paper observes, one of the bands under consideration for IMT identification under agenda item 1.2 for WRC-23 is the entire upper 6 GHz band in Region 1 and the top of the upper 6 GHz band (7025–7125 MHz) in all regions⁹. While it is true that any identification under this item is only directly relevant to Australia (Region 3) in the upper 100 MHz of the band, we believe the ACMA should reserve its decision on the upper 6 GHz band (6425–7125 MHz) until after the outcome of WRC-23 is known in order to be able to take into account any ITU sharing studies that will be delivered as part of the WRC-23 process.

Our earlier position¹⁰ on this issue was that WRC-23 should not delay all of the upper 6 GHz band being made available for indoor and very-low power class licensed RLAN use in Australia. However, as this is an evolving area, we now believe there are merits in adopting a wait and see approach for Australia. Such an approach provides options for Australia, post WRC-23, to allocate the upper 6 GHz band either to IMT services or to unlicensed services (including Wi-Fi) depending on which has the highest value use and in alignment with global allocation.

We note that in the US it was decided that the upper band would not be made available for IMT as it would require the band to be cleared of incumbent fixed services. This challenge also exists in Australia where incumbent services, including Telstra's fixed links, need to be protected (see section 03). This may ultimately mean it makes more sense for the entire band to be made available for class licensed RLAN devices.

At the same time, there is a need for additional mid-band spectrum for IMT in Australia. Indeed, additional spectrum is required in the timeframe 2025-2030 as per a recent Coleago study¹¹ and there is a need for more mid-band spectrum to be allocated for IMT, as recently noted in AMTA's Position Paper.¹² For example, Coleago estimate that to deliver a city-wide 5G mobile data user experience of 100 Mbit/s in the downlink and 50 Mbit/s in the uplink in Sydney, a minimum additional 527 MHz mid-band spectrum is required. For Melbourne, this figure is even higher at 587 MHz, and Brisbane requires at least an additional 387 MHz. While the 6 GHz band may not have seemed ideal for IMT at first, it appears that global trends may result in an affordable ecosystem of network elements and devices for the band which Australia may take advantage of. We note 3GPP has already started its standardisation work with at least China and Russia supporting the band.¹³

Considering the above, we believe it is prudent that the ACMA does not rush into making any final arrangements in the upper 6 GHz band and preserves future flexibility for the allocation of the band until more information becomes available post WRC-23.

⁹ Consultation paper; p.17.

¹⁰ Telstra's submission to RLAN use in the 5 GHz and 6 GHz bands; p.14.

¹¹ <https://amta.org.au/wp-content/uploads/2021/12/Coleago-Report-Demand-for-mid-bands-spectrum-in-Australia.pdf>

¹² <https://amta.org.au/wp-content/uploads/2021/12/AMTA-Policy-Position-Paper-Spectrum-for-5G-and-Beyond-Nov-2021.pdf>

¹³ 3GPP RAN #90 meeting, December 2020



2.2. High ('standard') power RLANs

We are of the view that demand exists for higher-power outdoor devices (so-called 'standard-power' devices) and while it is important to be able to service this demand¹⁴, it is also essential that incumbent service types (existing deployment and future deployment) are protected. In our previous submission, we recommended that standard-power RLAN devices operating at power levels of 30 dBm to 36 dBm should be permitted under the LIPD class licence in the lower sub-band (5925-6425 MHz), with the condition that Automatic Frequency Coordination (AFC) is mandated for these devices (regardless of whether the device is intended for indoor or outdoor deployment)¹⁵ and guidelines are developed to assist with outdoor deployment to minimise the risk of interference to incumbent services. Our position has not changed.

The consultation paper notes that while there was general consensus across the industry that if higher power devices were to be allowed in the 6 GHz band some form of coordination or registration of these devices would be required, there were divergent views on the best approach¹⁶. As a result of the diverging views, the consultation paper seeks views on an AFC system versus a form of manual registration process or a 'light-licensing' process under apparatus licensing.¹⁷ The consultation paper does not provide an explanation of 'light-licensing', although observes "*Some [respondents] suggested that an online database-based AFC system may be unnecessary for Australia, and that a 'light licensing' or 'simple registration' system may be sufficient.*"¹⁸ Of the 21 submissions made to the April 2021 consultation on Exploring RLAN use in the 5 GHz and 6 GHz bands (IFC 12/2021), only two submissions (CISCO and WBA) mentioned 'light-licensing'. CISCO explained the concept as "*not conferring any license rights, but just for the purpose of creating a coordination requirement and a searchable record*"; WBA did not expand on what they meant by the term.

Assuming the ACMA interprets 'light-licensing' in the same way as proposed by CISCO, i.e., devices are registered on the ACMA's Register of Radiocommunications Licences (RRL) without any rights including a right to protection to/from interference, our view is the two approaches (AFC and 'light-licensing') are not mutually exclusive and in fact should be used *in conjunction with each other* to manage the coordination of these devices.

Operating in tandem, the AFC system will operate to suppress channels on standard-power devices in proximity to apparatus licensed incumbent devices (i.e., devices that *do* have interference protection rights), and registering standard-power RLANs (under 'light-licensing' on the RRL) will provide a visible record of any devices to allow for interference investigations to be conducted in a timely and efficient manner. All standard devices would need to periodically (e.g., daily) synchronise their data with the AFC database, which would mean that 'air-gapped' RLAN systems (i.e., not connected to the public internet) would still need to obtain updates in order to be permitted to operate.

¹⁴ The case for demand for high power RLAN was made in section 2.5 of Telstra's submission to the 6 GHz RLAN consultation, May 2021, p.9

¹⁵ Telstra submission to the 6 GHz RLAN consultation, May 2021 p.18.

¹⁶ Consultation paper, p.8 and p.19.

¹⁷ Ibid, p.19.

¹⁸ Ibid, p.7.



2.3. High-gain directional antennas

The consultation paper seeks views on permitting high-gain directional antennas, “*for example, for fixed wireless access to be deployed by wireless internet service providers (WISPs) in regional and remote locations*”.¹⁹ Telstra assumes that ACMA are referring to point-to-multipoint systems that are commonly used by WISPs to deliver services to their customers. The ACMA does not make clear what it intends to define as a “high-gain” antenna. However, in the context of WISPs, we are aware of readily available devices with antenna gains of between 17 dBi (90° sector) and 23 dBi (10° sector) operating with a TRP of 28 dBm (EIRP of 43 dBm) such as the Cambium PMP 450i Access Point²⁰ and Subscriber Module.²¹

Telstra’s concern about the use of high gain antennas stems from the need to protect our fixed (P2P) links from interference. These links provide critical USO services for our customers in regional and remote areas of Australia and are central to our ability to improve 4G and 5G coverage in these areas and therefore must be protected. Please see section 3 for our views on protecting fixed links.

Systems like those mentioned above produce an EIRP that is clearly well above the 11 dBm/MHz PSD class licence limit we have advocated for. Assuming a 40 MHz channel, 11 dBm/MHz PSD equates to an EIRP of 27 dBm and given the specifications for these systems show EIRP of 43 dBm or greater, such systems can produce emissions well above those contemplated under class licence limits. As such, high-gain antennas **must not be permitted** in conjunction with any device that would be **class licensed**.

In relation to the possible use of high-gain antennas in conjunction with standard-power devices, we also have concerns about the potential for them to cause interference to incumbent and future P2P links especially where external antennas are employed. Noting our comments in section 2.2 that all standard-power devices should have both AFC and registration (as a minimum, so called ‘light-licensing’), we consider this should apply where a standard-power device is used in conjunction with any external antenna, regardless of whether it is high-gain or not. For clarity, we consider the requirement to employ AFC and to register the device will apply to both central stations (“base-station” in mobile parlance) and customer premises equipment (CPE). It may be possible, in the future when co-existence studies have been conducted, to consider a registration exemption threshold for CPE similar to that used in spectrum-licensed spectrum.

03 Incumbent services must be protected

3.1. Fixed Services (P2P Links)

In our previous submission to the April consultation paper, we noted that Telstra operates around 660 radio bearers in the 6 GHz band and stressed the need to protect these fixed links²².

¹⁹ Consultation paper, p.11.

²⁰ Cambium PMP 450i Access Point data sheet available at https://www.cambiumnetworks.com/wp-content/uploads/2019/01/Cambium_Networks_data_sheet_PMP_450i_AP.pdf

²¹ Cambium PMP 450i Access Point data sheet available at https://www.cambiumnetworks.com/wp-content/uploads/2018/08/Cambium_Networks_data_sheet_PMP_450i_Subscriber_Module.pdf

²² Telstra submission to RLAN use in the 5 GHz and 6 GHz bands.



"It is important to us that all these links are protected from interference from class licensed RLAN devices, both from single device operation and in aggregate." (p.11)

Indeed, in *Section 3: Incumbent services must be protected*, we stated the following:

Our view is that the EIRP level for LPI devices can be increased to 30 dBm/occupied channel so long as the PSD is retained at 11 dBm/MHz, and that for 'standard' devices (higher-power allowed to be deployed outdoors) Automatic Frequency Control is required to maintain protection for incumbent services including Fixed Services and Fixed Satellite Services.

As such, we were disappointed that our position was not accurately reflected in the consultation paper, with Telstra attributed to having "agreed that fixed links would be suitably protected, even from higher indoor RLAN devices."²³

As the ACMA is aware, Telstra's 660 radio bearers (traditional microwave links) deployed across Australia carry USO, mobiles and data services to tens of thousands of customers. These links provide critical services for customers in regional and remote areas of Australia and are also central to our ability to improve 4G and 5G coverage in these areas.

Over the next 3-5 years, there are programs planned (including 3G Exit) to deploy many hundreds of additional fixed links supporting new coverage and/or greater capacity into these regions. Considering the typical radio path lengths and environments in these areas, many of these links will need to be in the 6 GHz band. Many radio paths are too long to be supported by P2P links operating in higher frequency bands. Alternative options such as new sites and higher frequencies (on shorter paths), or fibre deployments would be very costly and uneconomic. The 6 GHz band will enable growth of coverage and higher quality (capacity) services to customers in these locations.

High-capacity bands below 6 GHz previously available to fixed link deployments now have limited availability for fixed links in metro and regional areas (e.g., 3.8 GHz band channels below 3700 MHz must be cleared by 30 March 2025), making the 6 GHz band the lowest frequency, high-capacity band available. Again, we want to emphasise the importance of protecting 6 GHz links from interference from class licensed RLAN devices, both from single device operation and in aggregate.

While we are comfortable with outdoor deployment of standard-power devices in the lower 6 GHz band provided AFC is used (as noted in section 2.2), we are nevertheless concerned about the risk of interference to fixed link services, especially when installed at height, for example on poles, towers, water towers or other structures. These deployments are likely to be at similar heights to P2P links, which can commonly be deployed from as low as 4m above ground level. As such, we consider that standard devices must be registered on the ACMA's RRL under 'light-licensing' apparatus licensing and interference issues managed through some sort of Automatic Frequency Coordination (AFC) mechanism, and the ACMA must develop deployment guidelines to protect incumbent services.²⁴

²³ Consultation paper, p.20.

²⁴ As stated in our May submission to RLAN use in 5 and 6 GHz band, p.12.



04 Priority should be given to the 5 GHz band

Regarding the 5150-5250 MHz segment of the 5 GHz band, we remain of the view that the ACMA should allow for higher powered LPI devices as well as outdoor deployment of standard devices, both up to an EIRP of 30 dBm, in accordance with WRC-19 Resolution 229, Resolve 3. We consider this to be an urgent requirement, and as we noted²⁵ in our May 2021 submission to the ACMA's consultation, we recommend the ACMA should issue deployment guidelines to advise on optimal outdoor deployment for 'standard' devices, including details of elevation pointing restrictions.²⁶

In the same submission,²⁷ we recommended the ACMA adopt a similar approach to our proposal for the 6 GHz band, namely allowing up to 30 dBm EIRP but with only a slight increase in the PSD from 10 dBm/MHz to 11 dBm/MHz. This would make wider channels (40 MHz and 80 MHz) capable of achieving the same coverage as a 20 MHz channel, as the PSD would be the limiting factor, not the total power. Under this proposal, there would be only a minimal rise in the overall PSD, as for example, one 40 MHz channel operating at 27 dBm EIRP produces the same PSD as two 20 MHz channels each operating at 24 dBm EIRP (i.e., both produce 11 dBm/MHz), and so the rise in the noise floor should be very minimal (hence no noticeable increase in interference), but the benefit to indoor coverage would be substantial, as wider channels could be used. We do not support higher EIRP levels such as those adopted in the US.

The consultation notes that this band is not a priority for the ACMA and is therefore not included in this round of updates to the LIPD Class Licence. However, considering that we can use the 5150-5250 MHz band almost immediately and that a compatible device ecosystem exists to support the even higher power limit in the US, we request the ACMA to consider prioritising this work with a focus on increasing indoor power levels as soon as possible, preferably as part of this update to the LIPD class licence.

Our views on other aspects of this band are contained in answer to questions 10-12.

²⁵ Telstra submission to RLAN use in the 5 GHz and 6 GHz bands, section 3.4, p.14.

²⁶ Resolution 229 (Rev. WRC-19) Resolve 5 is a good example. While Resolve 5 is specifically required for devices operating outdoor in the range 5250-5350 MHz, we consider it to be a useful proxy for the 6 GHz band.

²⁷ Telstra submission to RLAN use in the 5 GHz and 6 GHz bands, p.19.



Appendix 1: Response to consultation questions

This appendix contains our responses to the questions contained in the consultation paper.

Lower 6 GHz band/proposed update to the LIPD Class Licence

1. **Are the proposed out-of-band emission limits of -37 dBm/MHz for outdoor very low power (VLP) devices and -27 dBm/MHz for low power indoor devices suitable, both in terms of protecting intelligent transport systems (ITS) services and their effect on the operation of RLAN devices near/adjacent to the 5925 MHz boundary?**

Telstra does not have specific views on this question as this is more a matter for original equipment manufacturers to comment on. However, we support the ACMA's overall objective of harmonising the 6 GHz RLAN technical conditions, including OOB emission limits, with overseas jurisdictions so the Australian market can benefit from the economies of scale offered by the developing 6 GHz RLANs ecosystem. To that end, we consider there is no impediment to lifting the out-of-band emission limit for outdoor VLP devices to -27 dBm/MHz into the ITS band from 5855-5925 MHz if this achieves alignment with the United States and avoids a requirement for bespoke devices for the Australian market.

2. **Is the specification of contention management protocols in the LIPD Class Licence necessary to enable equitable access between potentially competing technologies such as RLANs and 5G new radio-unlicensed (NR-U) services? If so, is the proposed condition, and the language used to express it, appropriate?**

We support the ACMA's proposal in relation to contention management protocols.

3. **Are there any broader comments on the proposed update to the LIPD Class Licence?**

As a first step, we support the ACMA's proposal to permit devices to operate in the lower 6 GHz band (5925–6425 MHz) with the following power limits:

1. Low power indoor (LPI) devices:
 - > maximum power 24 dBm EIRP
 - > maximum power density 11 dBm/MHz EIRP
 - > must operate indoors
2. Very low power (VLP) devices:
 - > maximum power 14 dBm EIRP
 - > maximum power density 1 dBm/MHz EIRP
 - > may operate in any location.



However, as a subsequent step, we request the ACMA consider increasing the LPI limit to 30 dBm EIRP coupled with a 11 dBm/MHz PSD limit to resolve indoor coverage issues faced by consumers today for 80 MHz and 160 MHz channels. See section 1.1 in the body of our submission for further details.

Upper 6 GHz band/higher power RLAN devices

4. Should the ACMA make arrangements that permit high-gain directional antennas (for example, for wireless internet service providers in remote areas) under a class licensing regime?

We strongly oppose any “high-gain directional antennas” that are not that are not at least registered under a light-licensing scheme in the 6 GHz bands, as we have serious concerns about the potential risk of interference of these devices with our fixed (P2P) links. These links provide critical USO services for our customers in regional and remote areas of Australia and are central to our ability to improve 4G and 5G coverage in these areas and therefore must be protected. Please see section 2.3 in the body of the submission for further information.

5. If ‘high power’ class-licensed devices were to be introduced under an AFC system, what aspects of the system would need to be considered in setting it up? Is there interest from industry in administering such a system?

We recommended that standard-power RLAN devices operating at power levels of 30 dBm to 36 dBm should be permitted in the LIPD class licence in the lower sub-band (5925-6425 MHz), with the condition that Automatic Frequency Coordination (AFC) is mandated for these devices (regardless of whether the device is intended for indoor or outdoor deployment)²⁸ and guidelines are developed to assist with outdoor deployment to minimise the risk of interference to incumbent services. Please see section 2.2.

We are watching AFC developments globally, such as the FCC request for proposals for an AFC system²⁹ with interest. As we noted in our previous submission, we consider it important that outdoor use of ‘standard’ power devices are accommodated in the lower 6 GHz band to support wireless backhaul links in LAN extension or outdoor site coverage (e.g. university campuses, train stations, etc). As such, we would welcome the opportunity to participate in specifying requirements for an Australian AFC system to manage standard-power devices, which we recommend the ACMA should facilitate.

²⁸ Telstra submission to the 6 GHz RLAN consultation, May 2021 p.18

²⁹ <https://www.federalregister.gov/documents/2021/10/21/2021-22765/fcc-requests-6-ghz-automated-frequency-coordination-proposals>



6. If 'high power' class-licensed devices were to be introduced under an AFC system:

- > Is there interest from industry in administering such a system?
- > Are there any impediments to developing and/or operating a system in Australia? What could be done to help enable, or otherwise encourage, the development and/or operation of a system in Australia?
- > To what extent would an Australian system need to be aligned with those to be implemented elsewhere? What scope could there be for customisation in an Australian system?
- > What aspects of an AFC system would need to be considered in the design, establishment, and ongoing operation, of such a system, including:
 - > regulator and industry commitments
 - > technical spectrum coordination and coexistence rules – for example, a tiered hierarchy framework for spectrum uses
 - > IT infrastructure and system design, including security and system reliability issues
 - > communication interfaces between an AFC system, the ACMA's Register of Radiocommunications Licences (RRL) and devices
 - > ongoing interaction between the ACMA and system operators

Telstra does not have specific views on the issues set out in the questions above. However, we reiterate our views that an AFC system is essential for protecting incumbent services if standard-power devices are introduced in the lower 6 GHz band.

7. If 'high power' devices were to be introduced under a manual registration process, what might those arrangements look like? Would the introduction of apparatus licensing for such devices be an appropriate option?

Our view is that AFC and 'light-licensing' are not mutually exclusive and in fact should be used *in conjunction with each other* to manage the coordination of 'high power' devices.

High-gain directional antennas should not be permitted with class-licensed devices, as they will exceed the EIRP limit of the LIPD class licences, and we consider any high-gain antennas used in conjunction with standard-power devices should be registered (preferably on the RRL) for visibility to enable interference investigations. Please see sections 2.2 and 2.3 in the body of our submission for further details.

8. Would there be advantages in implementing different licensing and/or access management arrangements in different geographic areas for the use of high power RLAN devices?

Fixed links are in situ Australia wide. Therefore, we strongly recommend all standard-power RLAN devices to be registered (preferably on the RRL) for visibility to enable interference investigations, regardless of their location, as there is a high risk of interference to incumbent P2P links.



9. Are there additional sharing scenarios and/or studies relevant to this band that have not been identified in this paper?

We are not aware of any other additional sharing studies. We reiterate our request for the ACMA to postpone deciding on the upper 6 GHz band until new sharing studies coming out of WRC-23 are considered. Please refer to section 2.1.

5 GHz band

10. In addition to comments made to the April 2021 consultation paper, do you have any comments on the other proposals for updates to the 5 GHz band listed in this paper?

Regarding the 5150-5250 MHz segment of the 5 GHz band, we remain of the view that the ACMA should immediately allow for higher powered LPI devices as well as outdoor deployment of standard devices, both up to an EIRP of 30 dBm, in accordance with WRC-19 Resolution 229, Resolve 3. This would be a pragmatic and effective option for quickly enabling additional Wi-Fi capability. We would like to see the ACMA consider this opportunity as soon as possible, preferably as part of this update to the LIPD class licence.

11. If outdoor and/or higher power RLAN devices were authorised in parts of the 5 GHz band (for example, 5150–5250 MHz), would it be appropriate to implement measures similar to those being considered for high power devices in the 6 GHz band (for example, a registration system, or apparatus licensing)?

The implementation measures being considered for 6 GHz include AFC and 'light-licensing' (registration on the RRL but no licence fee). We consider these mechanisms are not required for the 5 GHz band, due to the absence of incumbent P2P fixed link services requiring protection. However, we consider elevation restrictions are required to allow higher powered LPI devices as well as outdoor deployment of standard devices, both up to an EIRP of 30 dBm in the 5150-5250 MHz band.

See section 04 for further detail.

12. If high power devices were to be authorised in both the 5 GHz and 6 GHz band, would it be appropriate to use the registration/authorisation method and system for both?

We consider the same registration/authorisation method is not required for the 5 GHz band, due to the absence of incumbent P2P fixed link services requiring protection (which do exist in the 6 GHz band and are required to be protected). See our answer to Q11 and section 04 for further detail.