

Apple Inc. (Apple) Feedback to ACMA consultation on "Proposed updates to the LIPD Class Licence for 6 GHz RLANs"

Executive Summary

Apple Inc. (Apple) appreciates the opportunity to submit this filing in response to the Australian Communications and Media Authority (ACMA) "Proposed updates to the LIPD Class Licence for 6 GHz RLANs".

Apple proposes ACMA allow additional VLP scenario with higher PSD limits (10dBm/MHz) for FHSS applications into the LIPD Class Licence, which will be in line with current regulation in EC (48 countries) and United Kingdom (1 dB stricter).

Feedback to Questions

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

Q1: 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?

Apple Response

An out of band emission limit of -37dBm/MHz is overly cautious for the protection of Intelligent Transport System (ITS), since ITS equipment is constructed to work with emission from devices below 5875 MHz which are limited to -30 dBm/MHz.

Q2: 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?

Apple Response

Specifying concrete contention based protocols limits innovation and should be avoided. This level of details is best left for industry to find a solution.

Q3: Are there any broader comments on the proposed update to the LIPD Class Licence?

Apple Response

Regarding to EC Decision - COMMISSION IMPLEMENTING DECISION (EU) 2021/1067, the power spectral density up to 10dBm/MHz for Narrow band will encourage more innovation of wireless access system applications in 5925-6425 MHz.

Please refer to the comparison among ACMA/CEPT EC/UK, **VLP** requirements in 6GHz lower band were summarised in this table.

VLP Regulation	ACMA LIPD Drafts Consultation	EC 6GHz Decision 2021/1067	UK OFCOM IR2030/7/6
Power	14 dBm EIRP	14 dBm EIRP	14 dBm EIRP
PSD	1 dBm/MHz EIRP	1 dBm/MHz EIRP ⁽¹⁾ 10 dBm/MHz EIRP ^{(1) (2)}	11dBm/MHz EIRP

Frequency (Width)	5925-6425 MHz	5945-6425 MHz	5925-6425 MHz
<p>Note 1: The mean e.i.r.p. refers to the e.i.r.p. during the transmission burst which corresponds to the highest power, if power control is implemented.</p> <p>Note 2: Narrowband defined as devices operating with channel bandwidth of less than 20MHz.</p> <p>Frequency Hopping mechanism (15 hop channel minimum) for operation with PSD greater than 1dBm/MHz EIRP</p>			

Apple proposes one entry (Item 63AC) for VLP in LIPD Class Licence as following

63AA	Radio Local Area Network transmitters	5925-6425	250 mW	<p>(a) The transmitter must only be used indoors.</p> <p>(b) The power spectral density of a transmitter must not exceed 12.5 mW EIRP per MHz.</p> <p>(c) Contention-based protocols for multiple access such as Carrier Sense Multiple Access (CSMA) or Multiple Access Collision Avoidance (MACA) must be implemented.</p>
63AB	Radio Local Area Network transmitters	5925-6425	25 mW	<p>(a) The power spectral density of a transmitter must not exceed 1.25mW EIRP per MHz.</p> <p>(b) Contention-based protocols for multiple access such as Carrier Sense Multiple Access (CSMA) or Multiple Access Collision Avoidance (MACA) must be implemented.</p>
63AC	Frequency hopping transmitters Wireless Access System	5925-6425	25 mW	<p>(a) Frequency Hopping mechanism (15 hop channel minimum) for operation</p> <p>(b) The power spectral density of a transmitter must not exceed 10dBm EIRP per MHz</p>

Upper 6 GHz band/higher power RLAN devices

Q4: 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?

Apple Response

No Comment.

Q5: If 'high power' class-licenced 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?

Apple Response

No Comment.

Q6: If 'high power' class-licenced 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

Apple Response

No Comment.

Q7: 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?

Apple Response

No Comment.

Q8: 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?

Apple Response

No Comment.

Q9: Are there additional sharing scenarios and/or studies relevant to this band that have not been identified in this paper?

Apple Response

Yes, there is a study that addresses Narrow Band vs Incumbents(Fixed Service) within lower 500MHz band in 6GHz in CEPT, please reference to ECC SE45(20)018. For VLP devices with a bandwidth of less than 30 MHz the interference impact is given by the absolute power level of the device (i.e. 25 mW). This means that the actual PSD level in this case has no effect on the results. Therefore, simulation results show that NB devices with 10 dBm/MHz will have no effect on the result.

5 GHz band

Q10: 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?

Apple Response

Apple supports implementing the conclusion of WRC-19, contained in Resolution 229, in particular allowing limited outdoor use in 5150-5250 MHz.

Q11: 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)?

Apple Response

CEPT decided to allow limited outdoor use. Equipment used outdoors" shall not be attached to a fixed installation or to the external body of road vehicles, a fixed infrastructure or a fixed outdoor antenna". See ECC Decision (ECC/DEC/(04)08) of 9 July 2004 "on the harmonised use of the 5 GHz frequency bands for Wireless Access Systems including Radio Local Area Networks (WAS/RLAN)" - <https://docdb.cept.org/document/381>. Apple supports to allow such limited outdoor use in Australia.

Q12: 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?

Apple Response

No Comment.