

Multi-companies' (Apple, Broadcom, Cisco, HPE, Intel and Meta) response to Automatic Frequency Coordination-assisted spectrum sharing in the 6 GHz band Discussion paper

1. Do you support the adoption of an AFC framework in Australia to enable outdoor standard-power operation in the 6 GHz band? What are the key benefits and concerns? In particular, who would the main beneficiaries be, and what would be the implications for consumers in the telecommunications market?

The companies strongly support ACMA adopting an AFC framework to enable standard-power RLAN operation in the 6 GHz band in Australia.

An AFC framework is essential to allow 6 GHz standard-power RLAN deployments while continuing to protect incumbent services. It would enable important use cases such as connectivity in stadiums, manufacturing sites, agriculture, and large campuses. AFC-enabled 6 GHz RLAN can also extend fixed wireless broadband coverage, particularly in regional and rural areas where additional capacity is needed.

ACMA should also consider authorising indoor standard-power RLAN operation under AFC. Most Internet traffic is generated indoors, and indoor standard-power use under AFC would significantly improve network performance when required, such as in large auditoriums, performance halls, airports and large residential units, while still ensuring incumbent protection through geolocation based frequency and power coordination.

The main beneficiaries of an AFC framework would be consumers, businesses, and service providers. Cost-efficient Wi-Fi equipment and the use of LIPD class licence spectrum would reduce deployment costs, improve broadband performance, and increase competition in the telecommunications market. This would deliver better services and more choice for Australian consumers and businesses while supporting innovation and economic growth.

2. How might AFC change the way WISPs and other communications service providers operate, particularly in terms of supporting greater spectrum efficiency or service innovation?

The introduction of an AFC framework would significantly change how WISPs and other communications service providers design and deliver their services, particularly by improving spectrum efficiency and enabling new deployment and service models in the 6 GHz band.

For WISPs, AFC would allow the use of standard-power 6 GHz RLAN devices to deliver high capacity broadband connections under the LIPD class licence framework. This is especially important in regional and remote areas where fibre is unavailable or uneconomic. Access to 6 GHz standard-power operation would increase link capacity, improve reliability, and allow WISPs to support higher customer data demands using cost-effective equipment.

For enterprise IT and managed service providers, AFC would enable seamless Wi-Fi coverage with consistent performance across indoor and outdoor environments. This would support modern enterprise use cases such as large campuses, logistics hubs, industrial sites, and smart infrastructure, where reliable connectivity is required across wide areas.

Mobile Network Operators (MNOs) could also benefit from AFC by making greater use of Wi-Fi to complement cellular networks. AFC enabled 6 GHz Wi-Fi can help offload traffic from mobile networks, reduce deployment costs, and speed up service rollout. Technologies such as OpenRoaming (based on Wi-Fi Passpoint) already demonstrate how Wi-Fi and cellular networks can be integrated to provide seamless user connectivity in Australia¹. This approach allows operators to improve user experience in a cost-efficient manner while using spectrum more effectively.

¹ <https://www.telstra.com.au/business-enterprise/services/managed-services/managed-networks/openroaming>

3. Are there any alternatives to AFC that could support dynamic and efficient frequency assignments in the 6 GHz band?

AFC is currently the most effective solution because it allows channel and power assignments to be adjusted in a coordinated fashion based on device location and up-to-date incumbents' information. The solution has been well studied and proven by international deployment.

Alternative approaches would likely be less spectral efficient, require more difficult implementation and conservative technical limits to manage interference risks, and it does not have any international harmonisation.

4. Would established models in other jurisdictions such as the US and Canada, or aspects of these models, be appropriate for the Australian radiocommunications environment?

Yes, established AFC models used in US and Canada, are appropriate for the Australian radiocommunications environment and provide a strong foundation for implementation.

The AFC frameworks adopted by the FCC in the US and by ISED in Canada have been proven both technically and economically. They demonstrate that standard-power 6 GHz RLAN can be introduced successfully while maintaining effective protection for incumbent services. We encourage ACMA to follow these international approaches rather than developing a new framework.

The companies have a slight preference for the Canadian ISED model, as it provides more detailed and prescriptive requirements for AFC system operation. This clarity can reduce uncertainty for equipment vendors, AFC providers, and network operators, and support faster and more consistent deployment.

Both the US and Canada also allow indoor SP RLAN operation under AFC, with the FCC further permitting the use of Building Entry Loss (BEL) to manage interference risk and improve spectrum efficiency. We consider indoor AFC operation to be important, as it enables many valuable use cases in enterprise networks, large venues, and industrial environments with higher ceilings where most data traffic is generated indoors. Most of these uses are currently supported by network cell/coverage designs and deployments for 5 GHz Wi-Fi. The AP deployment grid can be reused with 6 GHz enabled standard-power APs to provide additional capacity with similar power levels and regulations allowed in the 6 GHz SP mode.

5. How much spectrum should be made available under AFC, and what bandwidths should be allocated to support individual AFC service offerings? Should part or all of the 6 GHz spectrum available for RLAN use be made available for AFC-enabled access by standard power devices, or is there a case for arrangements supporting a range of power levels above VLP/LPI and below/including standard power?

We recommend ACMA making the entire 6 GHz spectrum available for AFC-enabled operation with a maximum of EIRP 36 dBm. This would enable SP RLAN to use wider channel bandwidths such as 80 MHz, 160 MHz, and up to 320 MHz, supporting high-capacity and high-density deployments.

International precedent demonstrates that AFC can be used as a flexible, future-proof spectrum management tool across the entire 6 GHz band. The UK regulator, Ofcom, has recently proposed enabling AFC-controlled licence exempt use across the full 5925 – 7125 MHz band². Under Ofcom's proposed framework, AFC systems can be used to permit Standard-power RLAN access across the entire 6 GHz band where they are compatible with incumbent protection requirements and have the ability to restrict, modify, or withdraw access to portions of the upper 6 GHz band at certain areas should those frequencies later be repurposed for mobile or cellular services.

Ofcom's approach illustrates that AFC is not only a protection mechanism for incumbents, but also an access control framework capable of adapting to future spectrum policy decisions. Given that UK's 6 GHz usage and policy objectives have some similarities as Australia's, we recommend that ACMA adopts a similar whole-band AFC framework, ensuring both maximised near-term spectrum utility and long-term flexibility for the upper 6 GHz band. Unlike in the US where the 6 GHz band has mobile service

² Ofcom consultation: Enabling automated frequency coordination (AFC) in the 6 GHz band
<https://www.ofcom.org.uk/spectrum/innovative-use-of-spectrum/enabling-automated-frequency-coordination-afc-in-the-6-ghz-band>

in some sub-bands, Australia only has FS and FSS. As such, there is no need to differentiate sub-bands for 6 GHz RLAN device since characteristics of incumbents are similar over the entire 6 GHz band. It is not necessary to support a range of power levels above VLP/LPI and below/including standard power. Standard-power mode under the supervision of an AFC System inherently enables and support variable admissible power levels above VLP/LPI power levels in an optimum fashion while protecting the incumbent services. However, we recommend that ACMA maintains a contention-based protocol to ensure LPI, VLP and standard-power RLAN client devices can self-coordinate.

6. What degrees of geographic and spectrum segmentation should be considered when planning for individual AFC system deployments? For example, would planning for localised, self-contained areas or multiple sub-bands foster competition in the market for the provision of AFC services, or would that come at too much of a cost to spectrum efficiency (through the need for guard bands/spaces)?

AFC system deployments should be planned on a national basis, with all AFC systems referencing a common incumbents database. This approach would avoid fragmented or localised coordination zones and prevent a “patchwork” outcome where different rules or protections apply in different areas.

National scale AFC operation would support economies of scale, reduce deployment complexity, and make it easier for device manufacturers, service providers, and AFC operators to implement and maintain compliant systems across Australia.

Excessive geographic or spectrum segmentation, such as dividing the country into many self-contained coordination areas or allocating separate sub-bands to different AFC providers, would reduce spectrum efficiency. It would likely require guard bands or unused spectrum between segments, resulting in unnecessary loss of usable capacity.

While competition between AFC service providers is important, it should be enabled through multiple providers accessing the same incumbent data and operating under common technical rules, rather than through geographic or spectrum segmentation. This approach would maximise spectrum efficiency while still supporting a competitive AFC services market.

7. What are the respective roles and responsibilities for industry and government in realising an AFC regime? Should AFC be operated by industry under government-set rules or should government play a more direct role in providing AFC services?

AFC systems should be operated by industry under a clear regulatory framework set by ACMA. This approach is consistent with delegated band management principles and reflects international best practice.

Industry-led operation allows AFC systems to be developed, deployed, and maintained efficiently, using existing technical expertise and commercial capability. It also supports innovation and competition between AFC service providers, while avoiding the need for ACMA to build and operate complex technical systems itself.

ACMA's role should focus on setting and maintaining the regulatory and technical rules for AFC operation. This includes accrediting AFC operators, defining protection criteria for incumbent services, and establishing requirements for database accuracy, update frequency, and system reliability.

ACMA should also ensure transparency in AFC operation and enforce compliance by both AFC operators and device manufacturers. This may include auditing AFC systems, monitoring performance, and taking enforcement action where necessary.

This clear separation of responsibilities would allow government oversight and assurance, while enabling industry to deliver AFC services efficiently and at scale.

8. What role should databases such as the ACMA's RRL or other coordination mechanisms, such as those administered by the ACMA but used by accredited assigners, play in the process?

Databases such as ACMA's RRL should play a central role in an AFC regime by serving as the authoritative source of incumbents data. AFC systems should rely on the RRL to identify and protect licensed FS and FSS operating in the 6 GHz band.

In addition to the RRL, ACMA may choose to provide supplementary datasets where needed, for example to improve data completeness or simplify implementation. Providing standardised data formats would support accurate and efficient AFC system operation.

A daily refresh of incumbent data is considered acceptable, as actual spectrum use generally occurs after licences are granted and recorded. This update frequency would balance the need for accuracy with practical system and operational considerations.

ACMA should also retain a role in data governance by issuing notices to incumbent licensees where inaccurate, outdated, or missing data is identified. Clear obligations on licensees to maintain correct information would improve overall data quality and reduce coordination risks.

9. What is the need for, and potential structure of, a tiered access model for incorporating standard power RLAN devices in the 6 GHz band?

A tiered access model for standard-power RLAN devices in the 6 GHz band is not necessary. In both the FCC and ISSED frameworks, Standard-power, LPI and VLP are different regulatory modes treated as a single unlicensed tier under the non-protection, non-interference regime to enable different usages and deployment models maximally utilizing the spectrum. Standard-power devices are not considered a higher tier, they are simply a different power class that requires AFC coordination to protect incumbents.

LPI and VLP devices operate without AFC only because their low EIRP makes harmful interference unlikely, not because they belong to a lower policy tier. Creating a separate “higher tier” for standard-power RLAN in Australia would be inconsistent with international harmonisation, increase regulatory complexity, and could unintentionally degrade the performance of LPI and VLP devices.

RLAN devices based on IEEE 802.11 standards are designed to self-coordinate using contention-based protocols. This means standard-power, LPI, and VLP devices can coexist efficiently under a single class-licence tier with incumbent protection ensured by AFC for standard-power devices.

A simple two-tier model — incumbents + all RLAN devices under LIPD class licence is easier to manage, safer, and aligns with international best practice. It also avoids unnecessary prioritisation of SP devices, maximising spectrum efficiency and simplifying deployment for industry.

10. With respect to licensing, should individual AFC-coordinated devices be registered on the RRL or covered by broader system-wide licensing arrangements, or are there other authorisation models that we should consider?

We recommend that ACMA use a class licence framework for AFC-coordinated RLAN devices. Under this approach, individual devices would not need to be registered directly on the RRL.

Standard-power RLAN devices would still be coordinated through the AFC system, which maintains a record of each device's location, ID, and operational parameters. If any issues arise, AFC providers can report relevant information to ACMA. This approach reduces administrative burden, maintains effective incumbent protection, and ensures that the AFC system has full visibility of SP device operation without requiring direct registration of every device on the RRL.

11. What processes and safeguards would need to be established to accredit, audit and ensure ongoing compliance of industry-led AFC operators? What type of rules should be imposed on prospective AFC operators and how should those rules be codified?

The companies recommend ACMA to adopt an accreditation and compliance framework similar to those used by the FCC or ISSED. This should include a requirement for prospective AFC operators to demonstrate their technical capability to meet ACMA's protection criteria, system performance requirements, and operational rules before being approved.

We have a preference for an accreditation approach similar to ISSED's model, where the regulator works directly with AFC operators during the approval process. This model provides greater clarity, enables early issue resolution, and supports consistent interpretation of technical requirements.

Accredited AFC operators should be required to provide ACMA with audit access to their AFC systems. This would allow ACMA to verify database integrity, calculation methods, update processes, and overall system performance on an ongoing basis.

ACMA could also leverage existing industry developed compliance and testing frameworks, such as the Wi-Fi Alliance (WFA) System Under Test (SUT) and Device Under Test (DUT) test specifications, as part of the accreditation and compliance process. Using established test specifications would reduce duplication, support international alignment, and provide confidence that AFC systems and devices operate as intended.

These rules should be clearly codified in licence conditions, technical standards, or regulatory instruments to ensure transparency, consistency, and enforceability.

12. What technical or administrative features (e.g., real-time geolocation, exclusion zones, device registration, database accuracy and latency) will be critical to the successful implementation of AFC?

First, high-accuracy geolocation of standard-power RLAN devices is essential for efficient use of the spectrum by standard-power RLAN, together with accurate technical parameters and geolocation information for incumbent receivers. Reliable location information along with supported uncertainty level to meet 95% confidence underpins correct interference calculations and effective protection of FS and FSS incumbents.

Second, AFC systems should include a secure device authentication and registration process. This ensures that only authorised devices can access the AFC system and that device identity, location, and operating parameters are reliably recorded.

Third, ACMA should define standardised propagation models and protection criteria for AFC operation. For simplicity and consistency, incumbent protection criteria should be based on a maximum interference-to-noise (I/N) requirement at the FS receivers calculated for interference from each individual standard-power RLAN device. ACMA should not require coordination between different AFC systems operating in the same regions, as this is not needed for typical unlicensed technology traffic, has not been required under the FCC or ISED frameworks and would add unnecessary and unmanageable complexity.

Fourth, AFC systems should be required to support logging and auditability. This includes retaining records of device registrations, frequency assignments, power levels, and calculation outcomes, so that compliance can be verified and issues can be investigated if interference concerns arise.

The initial implementation should focus on fixed AFC operation. As SP RLAN devices are deployed at fixed locations, updating geolocation information once per day is sufficient. Support for mobile AFC-coordinated SP access points to be considered at a later stage, once experience with fixed deployments has been gained.

13. How should data integrity, ownership, and update mechanisms be managed in AFC systems? Are ACMA's existing systems (such as the RRL) sufficient, or would changes or new systems be required to support real-time coordination?

Data integrity, ownership, and update mechanisms are critical to the reliable operation of AFC systems.

ACMA should designate the RRL as the authoritative source of incumbent licence data for AFC coordination. AFC operators should rely on the RRL to obtain accurate and up-to-date information on licensed fixed and satellite services that require protection.

To support AFC operation, ACMA should enhance RRL interfaces and data governance arrangements. This could include providing standardised APIs, clear access rules, and an AFC testing or sandbox environment that mirrors production data. These measures would allow AFC operators to integrate reliably with ACMA systems and test updates without affecting live coordination.

In addition to incumbent data held in the RRL, ACMA should maintain a device certification identifier for standard-power RLAN devices. This would allow AFC systems to confirm that only approved device types are authorised to operate under AFC control, supporting compliance and interference management.

Any further development of the RRL or related systems should take into account existing and emerging AFC operational needs. This includes continued support for commonly used data formats such as CSV files, as well as API-based access, to ensure compatibility and minimise disruption to AFC providers.

14. What is the expected market for the provision of AFC services in Australia?

There is a clear and sustainable market for the provision of AFC services in Australia, supported by demand from both broadband users and service providers.

Regional and rural WISPs are expected to be a key source of demand, as AFC enabled standard-power RLAN operation would allow higher-capacity fixed wireless services in areas where fibre is unavailable or uneconomic.

AFC is a key enabler of Wi-Fi and cellular convergence. ISPs are also expected to be major users of AFC. AFC-enabled standard-power 6 GHz Wi-Fi allows NBN, MNOs and VMNOs to extend and complement cellular coverage using carrier-grade Wi-Fi. Technologies such as Wi-Fi Passpoint/Openroaming enable seamless user authentication and roaming between cellular and Wi-Fi networks, allowing Wi-Fi to function as an extension of the mobile network rather than a standalone access service. This approach enables traffic offload, improved indoor and outdoor coverage, faster deployment, and lower cost compared with traditional cellular-only solutions. AFC is critical to this model, as standard-power Wi-Fi provides the range, capacity, and reliability required for carrier use cases while ensuring protection of incumbent services.

Enterprises with large campuses or industrial outdoor environments, such as mining sites, ports, utilities, logistics hubs, and manufacturing facilities, represent another important market segment. These users require reliable outdoor connectivity that integrates seamlessly with indoor networks.

Municipalities and local governments may adopt AFC enabled standard-power Wi-Fi to support smart city applications, public connectivity, and infrastructure monitoring.

Indoor use cases in large venues, including airports, stadiums, and convention centres, and large residential units are also expected to drive demand where higher capacity and consistent performance are required.

The AFC services market is likely to include specialist AFC vendors, including local branches of international providers as well as new Australian entrants. Large enterprise network vendors may also offer AFC capabilities as part of integrated networking solutions.

Consortiums formed by large WISPs or industry associations could operate neutral-host AFC models to reduce costs and support shared infrastructure. Systems integrators, professional services firms and ACMA accredited persons are also expected to play an important role by supporting AFC deployment, auditing, and ongoing compliance.

15. What standards or other mandatory specifications should be prescribed to ensure AFC-enabled devices comply with operational rules (for example, GPS accuracy, firmware requirements, revalidation intervals)? What are the implications for manufacturers and operators?

To ensure AFC-enabled devices comply with operational rules, ACMA should prescribe a clear set of technical and compliance requirements that align with existing international standards where possible.

Harmonisation with Wi-Fi Alliance standard interface and regulatory compliance specifications, including AFC-related certification programs can be quite useful. This would support the availability of cross-market devices, reduce costs for manufacturers, and accelerate deployment in Australia. ACMA can require the use of established DUT and SUT test specifications as part of the compliance process. These test frameworks provide consistent validation of both device behaviour and AFC system performance.

In addition, relevant WINNF (Wireless Innovation Forum) technical specifications should be recognised as industry standards for AFC operation, particularly where they define requirements, procedures, and performance expectations.

ACMA should also consider accepting compliance for standard-power RLAN devices that have already been certified under FCC or ISSED rules, provided the technical requirements are equivalent with small modification. In particular, ACMA should allow the use of composite AP and dual-mode client devices, where a single device supports both LPI and standard-power operating modes. In such devices, the operating mode can be selected based on geolocation availability or deployment scenario (for example, indoor versus outdoor operation).

This approach is consistent with FCC guidance provided through KDB (Knowledge Database) publications, which recognise that a single device may support multiple 6 GHz operating modes, provided that each mode independently complies with the applicable technical and operational requirements³. Allowing composite devices avoids unnecessary hardware separation, reduces device cost and complexity, and supports global product alignment.

Support for composite AP and dual-mode client devices is important for market enablement. It enables seamless indoor–outdoor operation, supports Wi-Fi and cellular convergence use cases, and improves user experience while maintaining effective incumbent protection.

For location requirements, ACMA should focus on location accuracy and uncertainty rather than mandating a specific positioning technology such as GPS. This approach allows flexibility in how devices determine their location while providing a confidence level that ensures AFC calculations remain reliable.

For manufacturers, these measures would provide regulatory clarity and support global product alignment. For operators, they would ensure predictable device behaviour, reliable AFC coordination, and a stable deployment environment.

³ 987594 D01 U-NII 6GHz General Requirements v03r01 provides general requirements for filling form 731 and supporting information requirements for all types of 6 GHz devices.
<https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=277034&switch=P>