

ACMA Proposed spectrum re-allocation declaration for the 3.4 GHz and 3.7 GHz bands Consultation

Closing 4th May 2022



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EXECUTIVE SUMMARY

Dense Air welcomes the opportunity to comment on the ACMA's IFC 10/2022 "Proposed spectrum re-allocation declaration for the 3.4 GHz and 3.7 GHz bands"

About Dense Air

Dense Air builds and operates Open RAN "neutral host" networks. Dense Air's single shared architecture provides a secure, seamless, and simultaneous experience for mobile network operators, ISPs, enterprise private networks, and municipal uses such as borderless classrooms and first responder networks. Dense Air pursues innovative partnerships with communities to deploy neutral host small cell architecture across cities, using intelligent network insights to efficiently extend and enhance connectivity without overbuilding.

Access to 5G Spectrum

Fundamental to realising the economic and social benefits of a fully functioning 5G ecosystem is equitable access to 5G spectrum. Diverse use-cases and very broad range of stakeholders brings a new dimension to effective valuation and allocation of spectrum. Spectrum regulators around the world are, along with releasing new bandwidth, introducing innovative allocation schemes to underpin industry uptake.

5G Small Cells

Small Cells are essential for economically sustainable 5G densification. Small cells improve spectrum efficiency, reduce power consumption and greatly increase both capacity and speed. Macro cells in 3400-4000MHz have poor indoor penetration, low power indoor Small Cells provide highest license utility in providing indoor coverage with high capacity. Spectrum allocation mechanisms should support widespread deployment of Small Cells.

Shared Infrastructure – shared spectrum

Infrastructure and spectrum sharing approaches are rapidly being adopted to ensure 5G networks with ever expanding capability can remain cost effective.

Dense Air Response

The ACMA's preferred planning approach: urban excise spectrum

Do you have comments on our preferred approach to:

- > issue spectrum licences in the 3400–3475 MHz frequency range in urban excise areas in accordance with Option A?
- > allocate spectrum in the 3800-4000 MHz band for LA WBB use using the segmentation approach?

Dense Air response re allocation in 3400-3475 Urban Excise

- > Coverage: Urban areas should have limited power, as the main utility of the licenses will be to provide indoor 5G coverage where Macro cell deployments cannot reach effectively, and to provide Enterprises, Industry and Government / Critical Comms with the ability to build 5G private networks. Wide area, 5G Massive MIMO networks would dramatically limit that utilisation. MNOs provide wide-area 5G connectivity in Urban areas.
- > Capacity: Small cells make more efficient use of the spectrum as the frequencies will be re-used in more locations to deliver more capacity overall.
- > 225MHz of the 3400-4000MHz band is already held as spectrum licenses in Metro areas between the 3 Mobile Network Operators, and another 100MHz in 3700-3800MHz will be made available soon. This will mean the 3 Mobile Network Operators will hold 325MHz between them, ample to deliver comprehensive Macro-based 5G services. Spectrum for Small Cell operation is complimentary to Macro spectrum.
- > Spectrum Licences can be offered, with no restrictions on type of equipment deployed as long as the interference conditions are met.

Dense Air response re allocation in 3800-4000MHz

- > Dense Air is already deploying 5G equipment for the 3800-4000MHz band, targeted in many regulatory domains for shared spectrum allocation and enterprise / industry application. We are also developing optimised neutral host 3.8-4.0 GHz solutions for the US and UK markets.
- > Coverage: Urban areas should have limited power, as the main utility of the licenses will be to provide indoor 5G coverage where Macro cell deployments cannot reach effectively.
- > Capacity: Small cells make more efficient use of the spectrum as the frequencies will be re-used in more locations to deliver more capacity overall.
- > 225MHz of the 3400-4000MHz band is already held as spectrum licenses in Metro areas between the 3 Mobile Network Operators, and another 100MHz in 3700-3800MHz will be made available soon. This will mean the 3 Mobile Network Operators will hold 325MHz between them, ample to deliver comprehensive Macro-based 5G services. Spectrum for Small Cell operation is complimentary to Macro spectrum.
- > 3800-4000MHz should be made available as AWL licenses, with 3900-4000MHz allocated for low power and indoor use and 3800-3900MHz AWL's allocated for restricted-power outdoor use.
- > Low power enables a wide variety of use-cases and user profiles for a complete 5G ecosystem
- > High power AWL's should be restricted to regional and rural locations.
- > AWL licenses should be available on a per-building / per-campus basis. The cost should be proportional to geographic areas and/or population coverage.



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The ACMA's preferred planning approach: 3400–3575 MHz and 3700–3800 MHz

Do you have comments on our preferred planning option (Option 3), which updates the previous preliminary planning decisions (Option 1)?

Please provide evidence in support of your comments. See also the 'Specified parts of the spectrum' section of this paper.

Dense Air response:

- > Spectrum licenses in 3.4 and 3.7 GHz bands raise no issues for Dense Air providing there is timely and equitable access to the 3.8-4.0 GHz band via AWL licenses

The ACMA's proposal: parts of the spectrum

If the ACMA makes a re-allocation declaration, do you have comments on our proposal to declare for re-allocation the parts of the spectrum in accordance with our proposed planning option (Option 3, 'Planning options', above)?

We welcome stakeholder views on the parts of the spectrum proposed for re-allocation, particularly the inclusion of the frequency ranges 3475–3492.5 MHz, 3492.5–3510 MHz and 3510–3542.5 MHz in specified geographic areas as described under Option 3 in 'Planning options'.

Dense Air response:

- > No specific view.

The ACMA's proposal: re-allocation period and deadline

If the ACMA makes a re-allocation declaration, do you have comments on our proposal for a re-allocation period of 5 years from the commencement of the re-allocation declaration, and a re-allocation deadline of 12 months before the end of the re-allocation period?

Please provide evidence in support of your comments.

Dense Air response:

- > No specific view.

The ACMA's view: licence term and commencement

We seek stakeholder views on the appropriate spectrum licence duration.

Our preliminary view is that licences should commence shortly after an auction.

Dense Air response:

- > Spectrum licenses should commence shortly after an auction.

The ACMA's view: lot configuration (geography)

We welcome submissions from stakeholders on the most appropriate geographic area configuration for the spectrum.



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Dense Air response:

> No specific view.

The ACMA's preferred view: allocation methodology

Do you have comments on the proposal to use the 2-stage generic lots clock auction format for this allocation?

Please provide evidence in support of your comments.

Dense Air response:

> No specific view.

The ACMA's preferred view: minimum spectrum requirement

Do you have comments on our preliminary view to offer bidders at auction an MSR of 2 lots, particularly if the 2-stage clock auction with generic lots is used?

Please provide evidence in support of your comments.

Dense Air Response:

> No specific view.