CANBERRA DEEP SPACE COMMUNICATION COMPLEX
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Options for wireless broadband in the 26 GHz band – Questions for Consultation (IFC 32/2018)
(Consultation closes: 09 November 2018)

Dear Manager,

CSIRO welcomes the opportunity to comment on the ACMA's recently released consultation paper titled "Options for wireless broadband in the 26 GHz band". These comments are made in the context of an established licensed user across the 25.5 – 27.0 GHz band and are supplementary to comments previously made to ACMA by CSIRO to IFC 22/2017 Spectrum for broadband in mmWave bands (11 September 2017, closed 20 October 2017).

Introduction.

CSIRO Astronomy and Space Science (CASS) is responsible for the management and operation of the Canberra Deep Space Communication Complex (CDSCC) under a government to government treaty between Australia and the USA as well as a Cooperating Agency Agreement between CSIRO and NASA.

CDSCC is an integral and vital part of NASA's Deep Space Network (DSN) providing invaluable contributions to international space exploration. It comprises substantial assets developed over 50 years of cooperation including (in addition to its extensive real property assets) one 70m antenna, four 34m antennas and an additional 34m antenna planned for future construction. The CDSCC facility enables tracking of dozens of international Near-Earth and Deep-Space missions representing spacecraft assets in excess of $35 Billion dollars.

CSIRO/CDSCC's interest in the consultation paper on Options for wireless broadband in the 26 GHz band relates to our management of the CDSCC facility in Australia and the need to utilise the 25.5 – 27.0 GHz band, allocated to the Space Research Service (space-to-Earth) on a primary basis, for very long term planned critical tracking, telemetry and control purposes, under the partnership arrangement with NASA, for an expanding list of multiple international spacecraft missions.

CSIRO is pleased to continue to work closely with the ACMA to ensure the continued availability and protection of these frequency allocations for this important work. In offering the following comments, CSIRO notes that the questions are targeted to prospective new 5G Wireless Broadband licensed operators. CSIRO has a limited scope to fully address the intent of most of the questions, but is nevertheless pleased to provide some input from the perspective of a current licensed user in the 25.5 – 27.0 GHz band. Accordingly, CSIRO is pleased to offer the following comments:

1. **Does the three-type model constitute an appropriate high-level representation of potential usage of the 26 GHz band? If not, are there any use cases that should be included, excluded or omitted?**

   No comment.

2. **What are the implications for 26 GHz wireless broadband in Australia of the Electronic Communication Committee of CEPT (ECC) decision on emission limits to protect passive EESS?**

   While CSIRO as a licensed SRS operator has limited scope to respond to this question, we are aware that studies are ongoing within the ITU-R in relation to this important Science Services matter. CSIRO therefore strongly urges ACMA, in considering this matter of adjacent band interference, to ensure that the lower extremity of the proposed domestically allocated band be determined giving regard to the critical importance of the Earth Exploration-Satellite Service passive allocation at 24 GHz. Unacceptable interference from wireless broadband into this EESS passive band will severely contaminate the critical work of ongoing environmental observations and monitoring of global parameters.

3. **Are the proposed defined geographic areas for wide-area licensing appropriate?**

   CSIRO notes with some concern that the proposed geographic area in the Canberra region also encompasses CDSCC. While the methodology in the ITU-R WP 7B preliminary draft new recommendation to determine requisite 5G mobile broadband exclusion zones has not yet been finalised, an example exclusion zone of tens of kms is included for the ESA station in Cebreros, Spain. While the terrain screening around CDSCC is different to that in Cebreros, an exclusion zone that extends into the Canberra urban region may well be required and will need to be established in consultation between the ACMA and CSIRO, to ensure the integrity of CDSCC is preserved through the avoidance of an undermining of the critically important radio quiet environment of CDSCC, as defined within the ITU-R Radio Regulations.

   As CSIRO previously indicated in comments in response to IFC 22/2017 Spectrum for broadband in mmWave bands, question 10. "CSIRO believes that based on preliminary studies carried out by NASA that significant coordination distances may be required in the 25.5-27.0 GHz band (up to 79.5km), in the 31.8-32.3 GHz band (up to 69.3km) and in the 37-38 GHz band (up to 63km) in order to adequately protect the CDSCC from unacceptable interference. These coordination distances would increase further when aggregate interference from multiple IMT base stations is considered. Therefore CSIRO believe that special consideration will be required in the geographical area surrounding CDSCC to ensure adequate protection."

   In addition CSIRO notes that the wording in table 6 of Appendix 1 in the ACMA options paper pertaining to TG 5/1 EESS/SRS sharing studies may lead to a misleading conclusion for a reader that a very low separation distance (less than 1km) may be required for a SRS Earth Station. As noted above this is unlikely to be the case, with a significant separation distance probable for CDSCC using realistic SRS parameters and noting that there will be little clutter loss around the SRS Earth stations. CSIRO looks forward to a constructive consultation with the ACMA before determination of the final separation distances required.

4. **What is the expected proliferation of—or demand for—services deployed under type 2 (apparatus-licensed) and/or 3 (class-licensed) models?**

   No comments.

5. **Comment is sought on preferred option(s) for configuring and licensing the 26 GHz band.**

   No comments.

6. **If options 3 or 5 (all variants) are preferred, how much of the band should be available for spectrum licensing and apparatus licensing?**

   No comments.

7. **If options 4 or 5 (all variants) are preferred, how much of the band should be available for class licensing?**

   No comments.

8. **If options 4 or 5 (all variants) are preferred, what conditions should be applied to a class licence to protect co-frequency spectrum-licensed operations (in defined areas)? Would it be appropriate to define a means of making class-licensed use visible (for example, through a form of voluntary device registration)?**

   No comments.

9. **Are there any other replanning options that should be considered?**

   No comments.

10. **Is there likely to be sufficient demand for type 1 services in regional centres outside metropolitan areas, and if so, what centres (either explicitly listed or by population threshold) should be included in the expanded licence areas?**

    No comment.

Conclusion.

CSIRO believes that before any "proactive approach is adopted to potentially make bands available very early in a more speculative manner" that the necessary sharing studies must be completed and approved in order to demonstrate that for any existing users already licensed to utilise the bands in question that sharing is (or is not) feasible.
CSIRO is of the view that an increasing number of international scientific missions will utilise the band 25.5 – 27 GHz to take advantage of the high downlink data rates enabled by this wide frequency range and as technological developments have allowed. Failure to ensure adequate protection to these existing communications requirements of the CDSCC

facility could risk the ability to communicate to multiple international spacecraft and would be in conflict with the existing government to government treaty in place between Australia and the USA.

Thank you for the opportunity to consider and comment on this ACMA consultation document.

Yours Sincerely,

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9th November 2018