Cambium Networks

Response to the "Apparatus Licenses in the 3.4 - 4.0 GHz band in Remote Australia - Licensing, allocation process, technical framework and pricing arrangements – consultation paper "

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1. EXECUTIVE SUMMARY

Cambium Networks appreciates the opportunity to respond to the consultation on the Allocation of AWLs (Apparatus Licenses) in the 3.4–4.0 GHz band in remote Australia.

Cambium Networks is a leading vendor of wireless products. Cambium Networks' fixed wireless portfolio includes Point to Multipoint and Point to Point products that operate in the 900MHz, 2.4GHz, 3.3 GHz to 4.2GHz, 4.9 GHz to 7GHz, 28GHz, 60GHz bands for Broadband Wireless Access (BWA), 6-38 GHz, 60GHz and 80GHz bands for PTP Fixed Microwave, narrowband IoT SCADA solutions and Cloud Managed Wi-Fi and Ethernet Switches. Current PMP products are all TDD based whilst our PTP products are available as TDD or FDD.

We also note that our PMP450m (Medusa) in 3GHz has been updated and will extend support for the 3.3-4.2GHz band, and hence we have complete support for the planned 3.4-4.0 GHz band under consideration.

Our response to this consultation paper is based on our knowledge and experience being gained in other geographies and also from our knowledge of the capabilities of our current solutions deployed in the region that cover parts of this band today.

Cambium welcomes the progress made so far and, also, the recognition of the value of licensed spectrum for Private Enterprise and Service Provider (WISP) Fixed Wireless networks.

The identified WBB use-cases in the consultation paper, which include wireless internet service providers, public mobile telecommunications services, and enterprise and campus-style private networks, such as for mine sites, agricultural uses or industrial uses are extremely valid. We do note however that this first phase and subject of this consultation only includes 600MHz for remote areas. We also note that there are planned additional allocations that will cover metro and regional areas. We strongly support this planned allocation to metro and regional areas as there are additional Smart City, IoT, and ITS applications that would benefit greatly from the planned 200MHz in the 3.8GHz – 4.0 GHz band.

Perhaps also this is also a good time to introduce a dynamic spectrum licensing model along the lines of CBRS in the US. One major benefit to users is then it's a pay as you go model.

2. INTRODUCTION TO CAMBIUM NETWORKS

At Cambium Networks, we support the communications of life for millions of people around the world and connect enterprise networks where other options cannot. No matter what the conditions or locations, wherever people or networks need to be connected, our wireless broadband solutions deliver clear voice, data and video communications people and networks can rely on.

Our Mission is Connecting the Unconnected and delivering solutions and technology that Bridge the Digital Divide.

Cambium Networks provides professional grade fixed wireless broadband, microwave, narrowband IoT and more recently Wi-Fi solutions. Our solutions are deployed in thousands of networks in over 150 countries, with our innovative technologies providing reliable, secure, cost-effective connectivity that's easy to deploy and proven to deliver outstanding performance metrics. To date Cambium Networks has delivered over eight million radio devices, a count that continues to accelerate year-over-year.

Cambium Networks are proven and respected leaders in the wireless broadband industry. We design, deploy and deliver innovative data, voice, and video connectivity solutions, through a qualified channel of distributors, Wireless Internet Service Providers, Telecommunications Companies, Value Added Resellers and System Integrators. Our solutions enable and ensure the communications of life, empowering personal, commercial, and community growth virtually everywhere in the world.

Following ten-years as a business unit within Motorola Solutions, Inc. Cambium Networks was established in Oct 2011 following divesture from Motorola Solutions. In July 2019 Cambium Networks was listed on the NASDAQ trading as a public company, CMBM.

3. ISSUES FOR COMMENT

3.1. TECHNICAL FRAMEWORK

3.1.1.1. DO YOU HAVE ANY COMMENTS, AND SUPPORTING ADDITIONAL INFORMATION, ON THE PROPOSED TECHNICAL FRAMEWORK, INCLUDING THE REVISED AWL LCD, DRAFT RALI MS 47, AND UPDATED RALI FX3 AND FX19?

The proposed changes to ensure various existing RALIs align is sound particularly with the recognition and protection requirements for existing services. There is often the need for enterprise sites to deploy simple PTP links and we suggest this option should be accommodated within the AWL apparatus license allocation. So, the LA WBB solution can be made up of a mix of PMP and PTP options.

3.1.1.2. DO YOU HAVE ANY COMMENTS ON THE OTHER ISSUES REFERRED TO IN THE TECHNICAL FRAMEWORK THAT HAVE NOT

BEEN RESOLVED IN THE TLG, SUCH AS WBB COEXISTENCE WITH RADIO ALTIMETERS?

We suggest that if Approach B is considered that there is no impact on EIRP. No additional comments.

3.2. ALLOCATION PROCESS

3.2.1.1. DO YOU HAVE ANY COMMENTS ON OUR PROPOSAL TO USE A MULTI-STAGE ADMINISTRATIVE ALLOCATION FOR APPARATUS LICENCES IN THE 3.4–4.0 GHZ BAND IN REMOTE AUSTRALIA? PLEASE PROVIDE ANY ADDITIONAL INFORMATION IN SUPPORT OF YOUR VIEWS.

The process used for 26/28GHz worked well and similar for 3.4-4.0 GHz seems to be a suitable approach. We assume that over-the-counter AWLs would also continue to be available? We suggest there must also be a “Use it or lose it clause”.

3.2.1.2. DO YOU HAVE ANY VIEWS ON THE APPROPRIATENESS OF AN ALLOCATION QUANTUM POLICY? IF AN ALLOCATION QUANTUM POLICY IS ADOPTED, DO YOU HAVE ANY VIEWS ON WHETHER THAT QUANTUM SHOULD BE 100 MHZ OR 150 MHZ OR SOME OTHER QUANTUM PER SINGLE HCIS LEVEL 0 CELL?

Quantum policy should be backed by business need or application to accommodate the greatest potential use cases and efficient spectrum usage. In remote areas allocation of 160MHz which would allow four (4) separate channels should be possible out of an allocation of 600MHz available. In a privately held site, eg a mine site the site owner, eg BHP, Rio Tinto, FMG, Roy Hill etc should have access to at least 160MHz.

3.3. TENURE AND RENEWAL

3.3.1.1. DO YOU HAVE ANY COMMENTS ON OUR LICENCE TENURE AND RENEWAL POLICY FOR AWLS IN THE 3.4–4.0 GHZ BAND IN REMOTE AREAS?

1 to 10 years as suites the customer, with first right of renewal is suggested. Flexible annual payments are a good idea, but a perhaps a Dynamic Spectrum Licencing model based on cost per subscriber is a good alternate option.

3.4.PRICING

3.4.1.1. WE ARE PROPOSING $/MHZ/POP TAX ARRANGEMENTS FOR AWLS IN THIS BAND, SIMILAR TO AWLS IN THE 26/28 GHZ BAND, AND SIMILAR TO OTHER AREA-BASED LICENCES SUCH AS PMTS B APPARATUS LICENCES, BECAUSE WE BELIEVE IT TO BE A SIMPLE PRICING ARRANGEMENT WELL-SUITED TO AREA-BASED LICENCES NO MATTER THE SIZE OF THE LICENCE OR WHERE IT IS LOCATED. DO YOU HAVE ANY OTHER PRICING ALTERNATIVES, OR SUGGESTIONS THAT MAY IMPROVE UPON OUR PROPOSAL?

This is an effective method of pricing. The alternate option would be to use a Dynamic Spectrum model that would offer a pay as you go model.

3.5.ADDITIONAL COMMENT

We note that allocations in metro, urban and regional areas is planned in the future.

As per the consultation paper:

"*The 3.4–4.2 GHz band is a key band for the delivery of local area and wide-area 5G wireless broadband (WBB) services globally. Wide-area (WA) WBB services are typically network deployments over large, often contiguous, geographical areas, such as those traditionally undertaken by mobile network operators (MNOs). Local area (LA) WBB services are deployments by operators needing smaller geographic areas, including wireless internet service providers (WISPs), fixed wireless access providers, as well as campus-style and private network deployments by industry vertical and enterprise users. It is expected that area-wide apparatus licences will be used to facilitate LA WBB services, while spectrum licensing will be normally used to facilitate WA WBB services.*"

There is currently NO provision for LA WBB in metro or regional areas. Key applications such as CCTV backhaul, ITS backhaul, Smart parking CCTV backhaul, Security CCTV backhaul, Regional City Council inter-building connectivity, industrial campus connectivity. E.g., steel mills, petroleum plants that cannot rely on Class licensed spectrum. Many are WBB applications (PMP), but often simple, reliable PTP links are also required.

We look forward to this next stage.