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The Manager
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In response to the **ACMA consultation paper on Licensing, Technical Framework and Pricing arrangements for Apparatus licences in the 26 GHz and 28 GHz bands** published in September 2020, OneWeb submits the following comments.

Sincerely,

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OneWeb

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OneWeb is pleased to submit comments to this consultation paper on licensing, technical framework, and pricing arrangements for allocating apparatus licenses in the 26 GHz and 28 GHz bands, as well as the proposed use of Area Wide Licences (AWLs).

General Background on OneWeb

OneWeb is a global telecommunications provider, headquartered in London, UK, but with an Australian entity and ACMA licenses. In fact, Australia is a key part of our global gateway layout, and we expect close and positive customer and service relationship as well. The OneWeb system will provide low latency, high capacity, connectivity solutions to customers through a new generation of low-earth orbit (LEO) satellites. OneWeb believes that satellite systems have a key role to play in a multi-network broadband ecosystem, often in a complementary way to terrestrial telecommunication solutions.

Satellites already play significant roles in today's 2G, 3G and 4G/LTE networks and are well placed to continue playing such roles for 5G networks. This is especially the case with the new generation of LEO satellites, such as OneWeb's, that will be able to provide low latency (<50msec delay round trip on RF paths), high-throughput connections. OneWeb's satellite service will be supported by innovative low-cost user terminals that can provide 3G, 4G LTE, 5G and Wi-Fi connectivity, thus bringing high-speed access to surrounding areas of a satellite terminal independent of 5G terrestrial mobile cellular coverage.

In a complementary role, OneWeb will enable terrestrial 5G operators to extend their connectivity to those places that are not so well-connected or where terrestrial networks would not or cannot otherwise reach (e.g. remote areas, aircraft, ships, and trains). OneWeb has commenced work on the establishment of three gateway uplink facilities in Australia that will facilitate broadband access to rural and remote Australians at fixed locations as well as to mobile terminals for aeronautical, maritime and land applications.

OneWeb in Australia

At the outset, OneWeb re-affirms its commitment to investing in Australia and bringing advanced operating systems and networks to the Australian market. OneWeb is well advanced in implementing its plans to provide satellite broadband access to Australian customers and it is about to finish the construction of three Ka-band gateway earth stations in Australia. The up-link frequencies for these gateway stations (and for similar OneWeb gateways all over the world) fall within the range 27.5 ~ 30.0 GHz and therefore OneWeb has a deep stake in the development of these bands in Australia.

While OneWeb has long-term connectivity plans in Australia, those three gateway earth stations are temporarily authorized through Scientific Apparatus Licenses as the current licensing framework cannot accommodate the requirements of non-geostationary (NGSO) gateway earth stations. OneWeb recognizes that

the licensing arrangements under consultation consider the particularities of NGSO gateway earth stations and will facilitate the deployment of this innovative technology in Australia.

General introductory remarks

In general terms OneWeb supports the introduction of an AWL regime for both terrestrial and satellite earth station transmitters, as such a regime flows from the earlier 28 GHz planning decisions, which are also supported by OneWeb. The comprehensive manner in which the options have been outlined in the paper has greatly assisted OneWeb is forming views on each of the options.

The new regime has the potential to offer enhanced flexibility for operators, while maintaining adequate levels of protection from interference. A further positive is the scope for license fee reductions compared to the existing apparatus licensing regime. This is of importance for OneWeb noting the challenge of establishing very expensive satellite infrastructure at a global level.

Total Radiated Power (TRP) limit and coexistence with space receive stations

One issue that has received a large amount of attention is the determination of license conditions for fixed wireless access (FWA) that are adequate for the protection of the Fixed Satellite Service (FSS). This matter was intensively studied in the ITU-R and followed up by domestic deliberations in the Technical Liaison Group (TLG). OneWeb commends the ACMA for the seriousness with which it managed this difficult task.

We support the conclusions drawn by the ACMA from the technical studies and the consequential development of a practical regulatory framework aimed at facilitating shared use the 28 GHz band by terrestrial and satellite services. Broadly speaking the proposed technical conditions for the licensing of the services to be facilitated in the 28 GHz band represent a sound and practical balance that avoids the imposition of undue constraints on any of the anticipated services while achieving an adequate level of protection from interference. In light of the above, and with the aim of protecting our satellite receivers specifically, we are firmly opposed to any relaxation of TRP and associated limits in the proposed technical conditions proposed for FWA.

OneWeb responses to Issues for comment.

OneWeb's responses are outlined below for each question.

1. **The ACMA is proposing to use a two-stage administrative allocation for apparatus licences in certain segments of the 26 GHz band and in all of the 28 GHz band. Do stakeholders agree with this approach? If not, please explain why.**

OneWeb supports the two-stage allocation proposal, but has some residual concerns about the potential for conflicts that may arise in the likely event that both satellite and terrestrial stakeholders seek access to overlapping geographic areas in the same portion of spectrum once the first round of bids for AWLs has been received for the 27.5 to 28.1 GHz portion of the band.

OneWeb has already deployed gateway infrastructure in the three locations where it intends to operate in Australia, and which required an important investment. These stations are currently licensed under three scientific apparatus licenses.

Subject to compliance with the proposed AWL technical conditions, OneWeb seeks the grandfathering of these stations. OneWeb considers that NGSO gateway earth stations currently authorized under scientific apparatus licenses should be able to transition into AWLs prior to the first round of the two-stage administrative allocation. Otherwise, the investment made into this infrastructure could be placed at significant risk.

2. Do stakeholders have any concerns with the licence duration and renewal policy for AWLs in the 26 GHz and 28 GHz bands?

OneWeb supports the license duration and renewal policy proposed in the consultation paper.

3. The ACMA is proposing that AWLs be available for issue for the operation of FSS earth stations in the 27–29.5 GHz range. Do stakeholders support this proposal? If not, please explain why.

OneWeb supports this proposal while noting that in the case of FSS, it is common practice to acquire earth receive licenses in the paired downlink band. While the ACMA has made reference to a future initiative aimed at facilitating AWLs in other bands, we see merit in expediting this for the paired 17.7 to 21.2 GHz FSS downlink band in order to simplify the licensing process for satellite operators and potentially assist them with reduced license fees.

4. The draft technical framework is optimised for both wireless broadband and FSS earth stations. Fixed earth stations in the range 29.5–30 GHz are still authorised under a fixed-earth apparatus licence. We are seeking views on a proposal to authorise FSS in the 29.5–30 GHz range with AWLs. Do stakeholders have any comments about this proposal?

No concerns with this proposal.

5. Do stakeholders have any specific comments about the draft AWL LCD or RALI [new] or updated RALI MS 38?

In the proposed technical conditions for FWA, the TRP limits are expressed in a reference bandwidth of 200MHz. OneWeb suggests that this is changed to a more practical reference of 50 MHz and the TRP adjusted by 6 dB. This adjustment is a practical approach based on the fact that licenses in this band will be made available based on a minimum channel sizes of 50 MHz, and the expectation that emissions will generally occupy channels of around 50 MHz as a minimum.

In relation to the conditions proposed for earth station emissions, OneWeb supports no limitation on the minimum elevation angle. OneWeb concurs that a limit on the EIRP towards the horizon is a more effective way of limiting interference into terrestrial services. OneWeb can accommodate the proposed limit of –60 dBW/Hz per transmitter.

Regarding the coordination at the geographic boundary established in the section 3.3 of RALI MS 38, OneWeb seeks confirmation that the calculation of the PFD at the area boundary is made using Clear Sky EIRP Levels. Using worst case levels would overestimate the size of the PFD contours and would provide a level of protection that is not needed.

Additionally, OneWeb seeks clarification on the percentages of time associated to the PFD thresholds in table 4 of RALI MS 38. As these thresholds were calculated on the basis of a long-term protection criterion (I/N=-6dB), OneWeb considers that these thresholds should not be exceeded 80% of the time. This is a relevant consideration for NGSO systems where earth station emissions dynamically track the satellites and the average EIRP towards the horizon will be far lower than the allowable maximum.

6. **Do stakeholders agree with the proposed apparatus licence tax? As explained in Appendix A, at this time in Australia there is limited information about the value of the spectrum on offer for administrative allocation. The ACMA is open to reviewing the apparatus licence tax for AWLs in light of developments in domestic markets that have occurred or will occur over time. What considerations should the ACMA take into account?**

OneWeb accepts the rationale for the imposition of the proposed license tax, but in general invites the ACMA to continue to monitor developments in other markets.