



Submission to ACMA's Consultation 07/2020 on the Implementation of the Spectrum Pricing
Review

29 June 2020



Astrocast SA (“Astrocast”) welcomes the opportunity to share its opinion with the Australian Communications and Media Authority (“ACMA”) on the Implementation of the Spectrum Pricing Review (“Consultation”). Astrocast supports the ACMA for acknowledging the importance of taxes in promoting the efficient use of spectrum.

About Astrocast

Astrocast is the first satellite operator from Switzerland whose goal it is to provide IoT communication services globally and cost effectively through a constellation of nanosatellites to be launched in Low-Earth Orbits (LEO). Astrocast has partnered with the European Space Agency, Airbus, and Thuraya to develop the most advanced and sustainable satellite IoT communication network offering, a bi-directional and highly secure connection to any IoT device on Earth that only takes a few minutes and does not require much kB of connectivity.

Astrocast’s nanosatellite IoT network address market needs in remote areas and urban LPWAN applications requiring satellite backup. This is possible using cost-efficient nanosatellites, highly optimised communication protocols, and hardware designed by Astrocast and Airbus. Astrocast is working with a wide variety of applications. For example, monitoring applications that help make oceans safer and cleaner, as well as applications in remote parts of the world that provide tools to improve quality of life and assist farmers and commercial entities like mining operators to better track their equipment and services.

Question 3: Do stakeholders have comments on the ACMA’s draft spectrum pricing guidelines including the relevant spectrum pricing decisions, guiding principles and process for changing prices?

Pricing is an important tool for efficient and effective spectrum management. Ensuring reasonable costs and maintaining an unrestrictive approach to spectrum pricing are important in achieving effective spectrum use and maximising economic and social benefits.

Reasonable pricing allows service providers of different sizes and with different business models to enter the Australian market, increasing consumer choice and innovation through a more competitive landscape. It is important that pricing is decided taking industry changes into consideration, as high prices are not feasible for companies like Astrocast, whose business model is based on low-cost IoT terminal devices and therefore would be deterred from entering the Australian market. It is crucial that spectrum pricing reflects the general cost of service.

ACMA should consider the importance of reasonable pricing. High prices can act as a barrier to entry to small and medium sized providers and defer innovative companies from entering the market in Australia. When determining spectrum pricing, ACMA should consider companies with different business forms and how high prices may lead to significant opportunity costs due to the possible loss of innovation and spectrum efficiency, consumer choice and societal benefit that high prices cause.



Question 4: Does the tax formula generally provide a solid base for incentivising the efficient use of spectrum?

For the tax formula to incentivise the efficient use of spectrum, it is important that it is easily adaptable to industry and market changes.

From the perspective of spectrum efficiency, it is important that innovation can flourish in the market. The tax formula determining spectrum pricing should be constructed in a way that allows new players to enter the telecommunications market. The ACMA should ensure that flexibility and adaptability to technological change is highlighted in the tax formula and applied in practice in a holistic manner, so that innovation in the markets is fostered and protected.

The adaptability of the tax formula should also consider the changes in the industry and market, such as inflation. Inflation decreases the operator's ability to pay for spectrum due to reduced purchasing power in the market. Therefore, in order to promote the efficient use of spectrum and to guarantee different operators the ability to access and continue participating in the market, the ACMA should have a mechanism in place to review spectrum pricing and adjust it with inflation.

The tax formula forms a good base for incentivising the efficient use of spectrum. However, in order for this to happen in practice and guarantee the functioning of the formula despite changes in the market and industry, it is very important that the ACMA guarantees the adaptability and easy adjusting of the tax formula.

Question 7: How can taxes be designed to account for multiple devices? Under what circumstances do stakeholders believe that one tax should relate to many devices and/or there should be 'discounts' for multiple devices authorised under one licence?

The current fees in Australia are charged per spectrum access, meaning that if no Class Licence applies, fees apply per station. If a Class Licence does apply, the fees will depend on the bandwidth utilised by the space stations. The Class Licence regime resembles the "blanket licensing" regime developed in other jurisdictions, under which several devices with the same characteristics can be deployed under a single licence subject to one fee.

While the Class Licence regime, essentially a blanket licence regime, is more appropriate for the deployment of low power IoT devices, it is still highly dependent on bandwidth used. However, the large bandwidth used by satellite technology results in higher regulatory fees, without considering the low interference potential and the bit rate of IoT satellite devices. Astrocast therefore welcomes ACMA's incentive to apply a 'low power discount' to the regulatory fees, as related to Question 8 of the Consultation.

The difference between IoT satellite devices compared to typical satellite earth stations is that the IoT network is a low latency network with multiple device architecture (potentially hundreds of devices) and therefore requires only a few kB of connectivity a day. The blanket licensing regime should therefore apply in principal to all low-power IoT devices, since having to individually licence and pay for every device could be considered restrictive and would be a burden on providers.



Telecommunication companies deploying multiple devices usually have a different business model than traditional telecommunications companies. For example, Astrocast's business model is based on low cost IoT terminals, costing only USD 50/terminal and a few dollars/month for data usage. Maintaining a tax of hundreds of dollars per device is not viable and will discourage companies like Astrocast from entering the Australian market.

Similarly to the blanket licensing regime, several jurisdictions, especially in Europe, foresee a licence exemption regime in cases of low power IoT satellite devices. For example, in the L Band in Europe, the use of mobile satellite services spectrum is mainly overseen by three European Decisions.

- 1) ECC Decision (09)02 on the harmonisation of the bands 1610-1625.5 MHz and 2483.5-2500 MHz for use by systems in the Mobile Satellite Services.¹
- 2) ECC Decision (09)04 on exemption from individual licensing and the free circulation and use of transmit-only mobile satellite terminals operating in the Mobile Satellite Services allocations in the 1613.8-1626.5 MHz band.²
- 3) ECC Decision (12)01 on the exemption from individual licensing and free circulation and use of terrestrial and satellite mobile terminals operating under the control of networks.³

The abovementioned decisions provide for exemption from individual licensing and allow the free circulation and use of the terrestrial and satellite mobile terminals operating under the control of terrestrial or satellite networks, capable of providing electronic communications services in the frequency bands, or parts of the frequency bands. In most European jurisdictions, this exemption is translated by the free operation of these devices, which are covered by the technical characteristics of ECC Decisions and do not require a frequency license or payment of spectrum fees.

The rationale behind the license exemption is that the devices subject to this regime are low-power terminals, that do not interfere with the other services sharing the specific frequencies. Additionally, the market participation of service providers operating the license exempt devices, is controlled through the telecommunications general authorization regime (similar to the carriage service provider regime in Australia).

Question 10: Do current spectrum locations or frequency ranges remain appropriate? If not, what changes should be made and why?

There is a big difference in spectrum pricing if services are provided nationwide/in high density/low density areas in Australia. While for other services the spectrum location is important, in low power IoT devices with low interference potential, the pricing distinction between different locations should be attenuated, especially in the case of satellite services where beamwidth coverage may be more complicated to control.

¹ [ECC Decision \(09\)02](#).

² [ECC Decision \(09\)04](#).

³ [ECC Decision \(12\)01](#).



Considering the high price of spectrum in high density areas, it may be of ACMA's interest to introduce balancing elements that would offset the costs and, at the same time, incentivise the use of the technology to promote the effective use of spectrum. A possible solution could be to apply low-power discounts to utilise a low-power device in a high-density area, negating the extra cost incurred from the provision of services in high density area.

Question 15: Do stakeholders hold views on the current pricing arrangements for the scientific-assigned licences of new technologies and the proposal for new short-term scientific-assigned licence trials and alternative pricing proposals?

Innovation in the markets has positive effects not only on spectrum efficiency, but also has societal and economic benefits. Companies like Astrocast, provide direct benefits and solutions in various sectors by providing solutions such as environmental monitoring and animal tracking, with limited costs to the end-users. However, the promotion of the new technologies requires major investment efforts. Therefore, it is essential for ACMA to incentivise technological developments.

As noted by ACMA, trial licensing arrangements are based on the tax formula and, therefore, produce variance between the license prices. Furthermore, it has been observed by the ACMA that the cost of trial licences may still be prohibitive for some licensees. A possible solution would be to introduce certain criteria alongside the tax formula. For instance, reductions in the cost of the license could be granted if the new technology promotes spectrum sharing, is low-power and benefits science. An example of a solution with scientific benefits would be network sensors used for livestock tracking and environmental monitoring, which is provided by Astrocast.

Furthermore, special consideration with regards to the procedure to obtain a trial license should be awarded to companies which are not yet operating in Australia. A trial license for innovative products provided by new companies would act as an incentive to commence operations in Australia. Consequently, a proposed solution incentivising trials for innovative solutions would be a test license, obtained through a non-burdensome licensing procedure subject to less financial and procedural requirements. The trial license should be subject to a minimum fee, which is equivalent to the administrative burden incurred by the ACMA by reviewing the trial license application. This regime will create an easy testing environment, lowering the high cost of commencing operations in a new market and would encourage testing of innovative products in Australia and promoting technological developments in Australian markets.