

Inmarsat response to the ACMA Consultation Paper

Implementation of the Spectrum Pricing Review – Proposed guidelines and focus areas for change

30 June 2020

Inmarsat is pleased to provide comments to the Australian Communications and Media Authority (ACMA) in response to the consultation paper: *“Implementation of the Spectrum Pricing Review – Proposed guidelines and focus areas for change”* (Consultation Paper).

Inmarsat thanks the ACMA for the opportunity to comment at this phase of the work, and expects to continue to engage.

As a satellite operator, Inmarsat’s interests are largely focussed on taxes and charges associated with apparatus licences in the L-, S-, C-, Ka- and Q/V- bands. The ACMA’s fee schedules for Apparatus Licences are broken down into Divisions 1 – 9, with Division 8A on Space System Licences (for Earth, Earth Receive, Space and Space Receive) being most relevant.

As a general introductory comment, this scheme of fees seems overly complex and has historically been cobbled together and amended over a long period of time to the point where reasoning is no longer clear when individual services in the same band are compared within the ACMA document, or the level of charging is compared with international markets, or new developments in technology are making the approach anachronistic. These observations are overdue for further consideration, and the current consultation should assist in righting some of these matters.

If this were a grass roots exercise, the starting point would be a fundamental assessment of the value of spectrum in the various bands, irrespective of the service allocated or assigned within that. That also begs the question of the appropriate breakdown of the spectrum, in association with international and national spectrum allocations (which usually derive from ITU Regional allocations).

Building on this fundamental common assessment of value of spectrum would be discount considerations which apply to the special peculiarities or Government objectives for individual services. These would be summarised in an associated Schedule which would make the departures transparent. As it stands the existing Divisions have this form of discounting built in without very transparent reasoning.

Technology advances are particularly important and in need of being embraced in the fee structure. In the case of satellite systems and networks in Ka-band, for example, many satellites can co-exist without mutual interference because of orbital separation, thus multiplying the value of the spectrum re-use and introducing a sharing factor which is not recognised in the fee table. As a consequence, satellite operators are paying a massive increase for spectrum on a per operator basis. This is a natural advantage of satellite communications not available to terrestrial networks.

Question 1: Do stakeholders have any views about the status of the ACMA's role in implementing the recommendations of the Spectrum Pricing Review?

The ACMA has been given an important leading role in implementing recommendations 1, 7 and 8 of the Spectrum Pricing Review. The ACMA is knowledgeable enough to recognise the contemporary needs for further discounts, including for sharing, within the satellite sector and should engage in policy amendment to reflect this reality.

Question 2: Do stakeholders have any views on the legislative and policy environment that may be relevant to the pricing issues outlines in this paper?

The licence tax and associated spectrum formula of the apparatus licence based on geographic density have an origin with affordability across the vast continent of Australia. The current breakdown of density areas may not regulate the efficient use of spectrum well because of a lack of granularity in many cases. The hierarchical cell identification scheme (HCIS) scheme should progress to finer detail for Gateway applications and to assist where frequency bands can share better amongst services. For example, the fixed satellite service (FSS) in the Ka-band is capable of supporting multiple services from different operators in the same area in the E-s direction.

The current formula was conceived in an era of spectrum planning whereby individual services were given exclusive use of spectrum, and this means an inflexible situation.

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?

Complex presentation of a spectrum fee formula can cause confusion, and there is a need for simplicity and better transparency. The frequency band delineation could be smoother and based on natural aspects of the spectrum, in addition to the value and use of spectrum being flexible to adapt to technology development over time. This could be achieved with a Schedule of Discount Factors.

The object of the ***Australian Communications and Media Authority Act 2005*** is to provide for management of the radiofrequency spectrum in order to achieve a number of goals, five of which are listed Page 10 of the Consultation Paper. Each of the listed goals is addressed individually below:

- ***maximise, by ensuring the efficient allocation and use of the spectrum, the overall public benefit derived from using the radiofrequency spectrum***

The maximum public benefit from the use of the spectrum can only come from the delivery of the services to the public, by satisfying industry need and through recognising that in-band sharing is far more common now than it was in the early 1990s.

- ***provide a responsive and flexible approach to meeting the needs of users of the spectrum***

The current formula is inflexible and not particularly responsive. It does not take into account spectrum denial or sharing. It should recognise networks and systems with very small spectrum denial, such as FSS gateways, and also recognise the possibility to share, for example Ka-band FSS systems which can in practice occupy Geostationary Orbit (GSO) slots as close as 2 degrees apart serving the same area or the extensive spectrum sharing of non-geostationary orbit systems. As an indication of how many satellite networks would be appropriate, the ITU coordination threshold for satellite separation in Ka-band is 8 degrees. This means that satellites are recognised as being able to co-exist without coordination at this value. Given a usable orbital arc of 120 degrees over Australia this corresponds with 15 satellite networks. The discount factor for sharing may not be that high given the practical number of realistic networks, but this illustrates a very significant discount factor to be taken into account.

- ***encourage the use of efficient radiocommunication technologies so that a wide range of services of an adequate quality can be provided***

The formula does not achieve this objective, there is nothing in the formula that provides economic incentive or compulsion to share spectrum.

- ***provide an efficient, equitable and transparent system of charging for the use of spectrum, taking account of the value of both commercial and non-commercial use of spectrum***

The current charging system is a long way from transparent.

In addition, Government use is important, but hoarding needs to be avoided.

- ***support the communications policy objectives of the Commonwealth Government.***

The policy objectives of the Government will no doubt be re-assessed and refined with the current overlapping policy review. In the meantime, with an Act which is dated to 1992 it is clear that an overhaul is definitely necessary.

The principles for spectrum management, as listed on Page 11 of the Consultation Paper, are:

1. Allocate spectrum to the highest value use (HVV) or uses.
2. Enable and encourage spectrum to move to its HVV.
3. Use the least cost and least restrictive approach to achieving policy objectives.
4. To the extent possible, promote both certainty and flexibility.
5. Balance the cost of interference and the benefits of greater spectrum utilisation.

As with the legislation the principles for spectrum management are well made but outdated. There is often more focus on the highest value use rather than the highest value combination of uses relevant to the modern sharing world.

Spectrum allocated by auction primarily for various mobile services has no real method or incentive to share. Locking in single use allocations for fifteen or twenty years through spectrum licences has a high risk and the potential to be inefficient as the ability to share matures.

Inmarsat believes the value of shared spectrum needs to be recognised in policy, and that incentives are required to ensure sharing takes place. The ACMA needs to give better definition and guidance to the meaning of and application possibilities of sharing in the satellite context. This could be done in the ACMA studies proposed in Focus Area 2.

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

Although the different area density types of spectrum accesses provide a base for incentivising the efficient use of spectrum, different normalisation factors make the tax formula less transparent and in need of simplification.

Inmarsat recommends the principles that:

- In low density and remote areas, the opportunity cost portion of the tax should be set to zero. There could be minimal charge to recover indirect administrative costs alone. This minimum fee is understood to be independent of the bandwidth assigned.
- Investment in high throughput system performance should be incentivised by lower spectrum fees which reflect the sharing observations above.
- Inmarsat recognises and applauds the 30% discount applied in 2016 by the ACMA, but feels that the originally proposed discount of 50% is now justified.
- Taking into account this 50% discount and the sharing discount, spectrum fees should realistically be an order of magnitude lower than what exist today.

Question 5: Do stakeholders have views on:

- **Prioritising the features of tax formula and other taxes by considering different focus areas.**
- **The criteria for prioritising the focus areas.**
- **Other matters or focus areas that should be considered as part of the ACMA's work program.**

Inmarsat agrees to prioritise the approach to reviewing the tax formula and other taxes through 'Focus Areas' and seeks those areas which require immediate attention.

Focus Area 1: Large bandwidth and multiple (networked devices) requirements

Inmarsat agrees that the ACMA should review the spectrum pricing for FSS systems in Ka-band at least. Many of ACMA's taxes are determined on a per spectrum access basis. Therefore, multiple networked devices imply that the amount of taxes is not consistent with denial (or lack of spectrum denial) characteristics of the service. Examples are terrestrial antenna farms being used for multiple FSS systems operating in the same frequency range (e.g. approximately 25 FSS systems¹ are able to share the same Ka-band spectrum range), and space orbital sharing.

¹ The GSO arc visible between 85E and 178W with < 10 degree antenna elevation to satellites in orbit can be coordinated as close as 2 degree apart, Therefore approximate 50 satellites can theoretically use the same spectrum providing services on land. Typically not all satellites service Australia, so a working estimate 25 satellites (half of the number) has been assumed.

Question 6: What are the relevant price points to undertake an opportunity cost analysis of taxes for services above 5 GHz? Examples of relevant information may include:

- **How prices for products and services have changed over time**
- **How prices of radiocommunications equipment have changed over time relative to spectrum prices**
- **Comparisons with international auctions results or administrative spectrum prices.**

Opportunity cost is relevant because of the array of both costs and benefits associated with spectrum's role as an input to commercial services.

As mentioned in this Consultation Paper, Earth station operators can work with a number of GSO satellites operating in different orbital locations but in the same band. Each earth station has more than a single antenna with overlapping spectrum requirements but pointing towards different orbital locations. Therefore mechanisms acting to reduce the spectrum costs are relevant. Furthermore, the geostationary satellite earth stations that operate in the remote density area and designated satellite farm e.g. at Mingenew should also be given a discount within the licence taxes.

These factors lead to a current price point which is approximately 10X higher than necessary.

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 the one licence.

The frequency bands used by satellite systems, which allow the same frequencies to be reused by satellites serving the same area, spaced by a few degrees in longitude. Hence, there should be a discount for these satellites systems operating with sharing of spectrum at same area density.

When an earth station serving two or more co-frequency terminals (where frequencies are congruent or overlap) are located within a radius of 3 km.

In ubiquitous implementation of user terminals the umbrella arrangement under a Space Licence is appropriate, and furthermore where those terminals operate on a non-interference, non-protection basis the Class Licence and a minimum tax is the most effective

Question 8: While the current low power discount provides for a significant reduction in taxes of 90%, the ACMA is interested in considering further incentives to promote the greater sharing of spectrum.

Do the lower potential denial areas of different services provide a case of considering different or additional low power discounts? In responding, please provide:

- **Examples of these services and the denial characteristics of these services**
- **The information that may be required for the ACMA to be able to apply a discount**
- **Views on whether such approaches can be applied across different licence types and bands**

Focus Area 2: Sharing and low interference potential devices

Greater sharing will be promoted by a policy recognition and fee discounting of the benefits of orbital sharing. For example, Ka-band Gateways have minimal denial areas of approximately 0.2 km². This should be built into the discount factors. Ubiquitous terminal services have low or zero denial.

Question 9: Do stakeholders have comments on:

- **The proposal to monitor bands for potential changes in taxes and the balance and precision required in monitoring and pricing spectrum?**
- **The use of inflation to keep apparatus licence taxes contemporary and whether there are alternative approaches?**

Focus Area 3: Defined approach to considering changes in taxes and opportunity cost pricing

A step change down is presently required as a result of satellite sharing prospects. Beyond that the capability to share will grow and should be monitored. As more Ka-band services come to market, the International Telecommunication Union (ITU) will modify coordination triggers to lower levels and hence the coexistence capability/ sharing will grow.

The annual CPI increases to apparatus licence taxes is a tried and appropriate approach in many areas of the economy. Alternative approaches do not need consideration.

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

Focus Area 4: Consistency of pricing approach across geographic areas and bands

See previous comments. However, Focus Area 4 should be high in priority along with Focus Area 1.

Question 11: what factors should the ACMA consider in determining new spectrum locations or frequency ranges?

International allocations are most relevant. These offer the best possibility of global harmonisation. Within Australia the above recommendations which apply to modernisation of the ACMA principles and technology developments should assist.

Question 12: Do the different tax rates with different spectrum locations or frequency ranges influence decisions about deploying radiocommunications equipment?

These are the outstanding factors which influence industry investment and commitment to Australia. A lack of flexibility and sensitivity to these may have a critical influence over the economic and social development within Australia and its relevance in international markets.

Question 13: How does the value of spectrum changes across geographic locations?

The fundamental value of spectrum is a universal factor irrespective of service assigned. However the discount of that value is depends on the varied characteristics of individual services, the location they are targeted for and government policy objectives. In an individual service, population density serves as a surrogate to calculating spreading of the fees applied.

Question 14: The ACMA also seeks views from stakeholders about:

- **should density areas be refined for different services/bands?**
This would make comparisons difficult and lack transparency.
- **rather than having density areas, do models of congestion (like that used in the 400 MHz work) potentially better reflect demand for services and the value of spectrum? If so, what features would such a model have?**
No comment
- **whether different pricing constructs such as \$/MHz/Pop for different licence types should be considered?**
This works for mobiles but may not be relevant to satellites.
- **whether there should be parity in pricing arrangements between services like commercial broadcasting taxes and open narrowcasting taxes?**
Discounts should deal with this and they may rely on policy decisions.
- **whether there are other services where the ACMA should be considering providing greater parity in pricing?**
Parity should be the fundamental starting point, then supplemented by judiciously considered discounts.

Question 15: Do stakeholders have views on:

- **the current pricing arrangements for scientific assigned licences for new technologies?**
- **the proposal for new short-term scientific assigned licence trials and alternative pricing proposals?**

Focus Areas 5: New technologies and trials

Inmarsat supports ACMA's proposal of introducing new pricing arrangement for short-term trials. Nonetheless, Inmarsat proposes that the ACMA allows licensees to be extended one additional term of trial. This would allow for unforeseen developments.

Question 16: Do these proposal promote transparency and ease in calculating taxes?

Focus Area 6: Transparency and ease of calculating taxes

This Focus Area may not be needed as it would have been dealt with in other Focus Areas.

Transparency and ease of calculating taxes are so important that they extend into many of the other Focus Areas.
