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Australian Competition & Consumer Commission,
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Attn: Ms Tara Morice.

Ref: Allocation limits advice for the 26GHz spectrum allocation.

Our Association represents the Land Mobile Radio (LMR) industry in Australia, perhaps more commonly known as the two-way radio industry. As our industry is a critical component of most 'Mission critical' and 'Business critical' operations in Australia, we offer essential services to many applications, yet we are little known to anyone outside of the industry. One of the important aspects to keep in mind as you work through your evaluation is that when you consider the possible 'Enterprise' markets, our industry and our clients are the basis for many of the enterprise systems and have been as communications users for many years, there is no doubt that our clients will be market leaders in this new technology opportunity.

In particular, our role in supplying equipment and support services for many business critical industries around Australia has meant that we are aware of the high levels of interest in 'Private LTE' (PLTE) or Enterprise systems. Most of the present interest for these services is coming from users who are already clients of our members and who are leaders in their industry sectors with regard to business efficiency. There are already PLTE services operating within the resources sector now and more are being installed at present. It is with this background that we present information for your consideration as part of this review.

One of the most important facets to PLTE systems that must be understood is that unlike the public carriers who bid for and obtain spectrum before any other factor is considered, the PLTE users see spectrum as an accessory to their needs for communications and mobile data. For an enterprise system it will usually be a case of considering a business model that will improve efficiency and productivity, looking into the capital costs involved in purchase, installation and commissioning of the proposed system, and then at decision stage looking into the availability of spectrum. This will be common to most of the potential 'Enterprise' user segment.

This different format means that enterprise systems will not be aware of spectrum auctions or similar activities that will be required to have spectrum available for future implementation, their recognition of the need for spectrum will only become evident once a business case has been evaluated and the need for investment recognised. This is a fundamental difference to the spectrum allocation methodology previously implemented by the Australian Communications and Media Authority (ACMA), and must be considered as a factor in any competition enquiry as the PLTE systems are being forced to compete for spectrum under an unfair system at this stage. The ACMA are now beginning to recognise that there is a market for PLTE and part of the planning for the 26GHz band recognises this situation.

Until recently the reaction of both the ACMA and the Department of Communications towards private users requiring mobile broadband was met with a response of the public carriers assuring everyone they could provide the necessary facilities. On the surface this was a reasonable argument, however, when the end users investigated they were concerned that the reliability of the public carriers' services did not meet the levels required for safe operations.

In the mining industry, where the major benefits of high quality mobile broadband will lead to autonomous vehicle operations, any break in the mobile data facility, even for a couple of minutes, will lead to a potential safety closure of operations. This is caused by the remote operators not being completely sure where equipment is located and so a total shut-down will occur for OH&S reasons. A full start-up from there could then take several hours and at running costs of over $50,000 per hour it becomes an expensive break in communications. For this reason alone the 'Business critical' user segment are hesitant to utilise the public carriers networks, they prefer to be in control of their systems and design them for much higher reliability factors.

Against a background of suitable spectrum only available by auction and public carrier networks designed for consumer level reliability and redundancy, there is already an existing market for PLTE or Enterprise mobile data networks. The ability for these end users to install their own systems utilising licenced spectrum has been very limited, and the concept of spectrum trading or secondary licensing has not been viable. Whenever an enquiry is made to the public carriers for permission to gain access to their spectrum for a private network, the public carriers then realise there might be a longer term opportunity for them to fulfil that role and so they either decline to make spectrum available, or price it at ridiculous levels to discourage any PLTE networks.

It is our opinion that the technology and equipment pricing is now heading towards the stage where PLTE systems will become viable in many applications. To date this has primarily been in the mining industry where the level of investment involved can be justified and the efficiency gains achieved are to a level where the investment is seen as worthwhile. However, we would suggest that over the coming years there will be many other applications and market segments that will also recognise the gains and be prepared to make the investment in PLTE systems. This will only be possible where the spectrum can be applied for and allocated on a system similar to the present Apparatus Licence format and where having to bid for spectrum at auction is no longer the only method available.

As we look to the future and how wireless technology is going to become the great enabler of efficiency gains, the following industry segments are highly likely to be those who will look towards PLTE as the communications medium –

- Airports – where a large number of users are located and coverage by all of the public carriers becomes an issue, if the airport operators install a system it will ensure that coverage and reliability are both set to the critical demands of the operations
- Marine ports – in a similar application, the provision of business critical grade services will increase the efficiency and safety of port operations leading to efficiency gains.
- Major shopping centres – where again the public carriers will struggle to provide suitable coverage as part of their 5G (and later) technology systems purely on capital investment factors. A shopping centre landlord can offer the tenants a complete package of high-speed data and wireless communications at a much higher level than at present. In such an environment existing operations on Wi-Fi networks will be better suited for operation on dedicated enterprise data systems and the centre owners will be able to manage and analyse data utilisation to offer better customer and tenant experiences.
- High-rise buildings – again this will be a challenge for the public carriers, yet for a building owner to install a localised LTE service will then offer the tenants the best connectivity available. This will potentially permit the landlord to offer total wireless communications packages to the tenants and so attract the higher rentals commensurate with technology advantages.
- Local Government – with the present environment of looking towards concepts such as 'Smart cities' and the implementation of the Internet of Things (IoT) into many aspects of local Government operations, it is going to become practical for a local Government entity to install their own Enterprise data system to accommodate all of this technology, as well as being able to offer mobile data facilities for the contractors who are providing services to the rate-payers. The underlying benefit of this format would be that the local Government entity would then be able to analyse and utilise the data from within the system to increase efficiency and offer better services to both ratepayers and the public.

These are just a few of the potential users of Private LTE systems and as technology develops there will be many more applications. With this background we will now respond to the questions raised as part of your discussion document. Although our response might not appear to fit completely within the bounds of the existing consultation, we feel it is important that as part of the wider scope and discussion on spectrum and the implementation of mobile data networks, these factors must be considered and the applicability of the technology to many other applications outside of the public carriers realm should be considered. Any recommendations made by your organisation should be carefully examined to ensure that they don't limit or restrict the opportunities for the Private LTE market.

Yours sincerely,
Australian Radio Communications Industry Association (ARCIA) Inc.

Ian Miller – Executive Officer

Consolidated list of issues for comment

1. Do you have any competition concerns about the allocation of spectrum licences in the 26 GHz band? If so, how do you think these concerns should be addressed?

Our concerns relate to the need for spectrum to be available for users other than the public carriers, as outlined in our covering letter. Having access to spectrum on an allocated basis is fundamental to the successful operation of Private LTE or Enterprise services. Auctions of spectrum preclude many potential markets for mobile data systems.

2. Does this allocation impact your ability to compete effectively in relevant markets in the short and/or long-term? If so, please provide examples.

Our covering letter outlines our concerns.

3. Do you have any competition concerns about the relationship between spectrum and apparatus licences in the 26 GHz and 28 GHz bands? If so, how do you think these concerns should be addressed?

Again, as outlined in our covering letter, the present allocation of spectrum by auction favours the incumbent public carriers, most Enterprise systems will be looking at the viability of the business model first ahead of any decisions on spectrum requirements, this means that they will not even consider taking part in allocations of spectrum through the existing methods. This means that for enterprise systems the apparatus licence format will be much more suitable.

4. Do you view the apparatus licences as complements or substitutes for the 26 GHz spectrum licences?

We believe that with the potential for Enterprise systems there will be a much higher demand for Apparatus licence services, this will be because many of these services will be within a defined area and not operating over large areas.

5. What are the likely intended uses of 26 GHz and/or 28 GHz spectrum in Australia? Do you expect these intended uses to change over the term of the licence/s?

As per our covering letter, we foresee that these services will offer a very wide range of facilities and in many cases will encompass features being provided by alternative means at present. Developments in Smart City technologies as well as the Internet of Things will all fall into the new formats.

6. What do you consider is the optimal allocation of 26 GHz and/or 28 GHz spectrum to support your likely intended uses? What is the minimum allocation necessary?

This is crystal ball forecasting, however, we believe that significant spectrum should be held for enterprise systems. The benefit of the enterprise format is that in most cases the operating areas will be known and defined so the spectrum will be able to be re-used in other geographic areas. The basic requirement will be to at least have several services operating independently in any geographic area.

7. How does this spectrum support the technical requirements for the deployment of 5G services?

The characteristics of milli-metre wave technology means that transmission distances are physically small and so Cell-sizes will lead towards multiple cell sites of low-power to give high data throughput.

8. Does your demand for spectrum differ across geographic areas, such as metropolitan and regional areas? If so, please provide examples.

We foresee that there will be manty different applications and they will be spread across all operating areas, this will be set by technology development and the factor of reducing costs for systems into the future.

9. What, if any, additional investment is required to deploy this spectrum for your likely intended uses? Please provide examples.

Private LTE systems will be installed in the reverse manner to the existing public carrier networks (and this is the model most people who think mobile data automatically consider) where the actual business model and efficiency gains are considered first, then the level of capital investment required is evaluated and finally the spectrum needs are considered.

10. What are the relevant downstream markets for the purpose of advice on allocation limits for spectrum licences, noting that markets may have particular geographic dimensions? Please provide reasons for your view.

In the main the spectrum licence format will suit major carriers or other MNO operators who wish to provide wide area services. When we consider the potential enterprise markets many of them may need wide area services, users such as utilities and local government may well fall into this area, however, it is also highly likely that the proposed Area Wide Licence (AWL) being considered by the ACMA at present will meet the needs of most users for enterprise services.

11. What are the relevant downstream markets for the purpose of considering competition issues associated with apparatus licences, noting that markets may have particular geographic dimensions? Please provide reasons for your view.

Our covering letter outlines some of these markets, however, we would suggest that the real identity of many of the potential users has not yet even begun to be realised. For this reason it is important to ensure that spectrum allocations do not preclude any of these future developments. It is important to recognise that although the public carriers will assert they can meet any and all needs, their systems which are designed for commercial levels of performance do not always suit business critical applications. We would suggest that most enterprise systems will prefer apparatus licence allocations.

12. Are there likely to be future relevant markets that have not been identified?

Yes, without a doubt.

13. Do you have any views on the state of competition in the relevant markets?

From our point of view the public carriers provide excellent competition for the general consumer users of mobile data, the current system seems to work effectively for the bulk of users.

14. Do you have any concerns about future competition in the relevant markets as a result of the allocation of spectrum and/or apparatus licences?

Our covering letter outlines our main concerns.

15. Do you consider that substitutable spectrum exists for the likely intended uses of the 26 and 28 GHz spectrum? To what extent are these fully effective substitutes?

As we look towards the future and technology advances, every sector of the spectrum has its own peculiar advantages and disadvantages, with this in mind each band should be considered on its own particular merits, but with a view to the overall spectrum availability to meet all potential and existing market requirements.