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ACCF Response to Planning for wireless broadband use in urban areas in the 3400–3475 MHz band - ACMA Options paper

Executive Summary

The Australasian Critical Communications Forum “**ACCF**” is the Not For Profit regional chapter of The Critical Communications Association “**TCCA**” that represents globally all open-standard mobile critical communications technologies and complementary applications and ongoing evolution of these standards.

The TCCA provides a forum for **governments, regulators, manufacturers, operators, end-users** and other stakeholders in the critical communications sector and eco-system to discuss, debate, deliver and evolve the market for the benefit of all.

The ACCF welcomes the opportunity to comment on the ACMA Options paper based on input from ACCF members and the global expertise of TCCA members including end -users who require broadband spectrum to support future critical business operations.

We support the ACMA’s effort in evaluating the 3400–3475 MHz and management techniques that can increase the effectiveness and efficiency in spectrum usage by assessing the potential for new services / usages to flourish while ensuring that co- existence with adjacent services and public carriers is possible.

1. Our response to the ACMA discussion paper focusses on three critical points:

- The strategic value of the finite spectrum resource in spurring innovation and productivity growth and enabling use cases where public carriers may be unable or unwilling to provide services to the levels required (i.e. guaranteed availability, resilience, Quality of Service).
- The practical problems of mitigating interference issues in urban environments
- Overseas experience in managing similar issues.

2. Strategic Value

In common with many other countries Australia has experienced a decade of low productivity growth (<https://www.pc.gov.au/research/ongoing/productivity-insights/recent-developments-2021/productivity-insights-2021-recent-developments.pdf>)

The Australian Government's Digital Economy Strategy in its foreword says:-

"Australia's future prosperity depends on the policy environment created now to help boost productivity, increase access to secure infrastructure, support emerging industries and technologies, and ensure fit-for-purpose regulatory frameworks are in place."

<https://digitaleconomy.pmc.gov.au/sites/default/files/2021-07/digital-economy-strategy.pdf>

Our submission is that making spectrum available in the 3400–3475 MHz band for Government/Industry & Enterprise rather than allocating it to established carriers is more likely to foster innovation and achieve the productivity growth our nation is seeking.

The 3400–3475 MHz band spectrum is ideally suited to delivering fixed or mobile LTE/5G technology for private secure LTE/5G networks where organisations want and need full autonomy in terms of scaling, security, availability and operation of the network. It will allow Australian organisations in multiple sectors to take a giant leap forward into a new era of communications and cloud computing, making the most of broadband LTE/5G technology and catapulting it to the very forefront of digital innovation. In addition to productivity in the end use sectors the availability of this spectrum will fuel innovation in devices and applications for markets both locally and overseas.

Other nations are provisioning private or shared (CBRS) spectrum in this band and commercialisation of products and solutions is escalating accordingly. Availability of local spectrum provides the opportunity for local industry to confidently address local user demands and evolve local solutions that have potential exports markets in the many jurisdictions who have mandated spectrum availability.

We feel it will enable economic growth in Australian states by attracting investment, increasing export opportunities, building global reputation and removing barriers to business and help to create employment opportunities, economic sustainability and an internationally competitive economy.

Up to recent times, organisations have had limited choices for deploying broadband connectivity. There is WiFi, designed for basic Internet access and small deployments that don't scale up, or public cellular networks with consumer grade quality at wide area scale that don't scale down or may not be provisioned for required security and or availability.

There is a huge gap in the middle for business-critical networks and larger networks from tens of thousands of square feet to many square miles – warehouses, factories, airports, ports, transport hospitals, schools, smart buildings and venues. They need a network that provides the reliability and coverage with the simplicity, critical capability and affordability beyond the only other broadband options of public carriers or un-licensed/ class licence technologies such as WiFi.

3. Interference Management & Mitigation

ACCF contend that is far easier to manage interference through an apparatus license approach. Although the ACMA Options paper mentions the desire to manage the level of interference between the proposed new band plan, the end result still relies on a theoretical solution and even then mentions that there is a risk potential for interference to occur. We suggest that unless the risk level is managed in a realistic way there will potentially be ongoing issues if the proposed macro-cell strategy is implemented.

The real risk is that any interference to the adjacent NBN Co services will be to the detriment of the end users of NBN Co, and as they will be at 'arm's length' from the NBN Co and public carriers, the interference detection and management will not be of a high priority for either the NBN Co or the operator of the macro-cell services in the spectrum under discussion. The most suitable way to manage the risk of interference is through the judicious allocation methods contained in the appropriate RALI guidelines as part of the allocation of apparatus licences.

4. Overseas Experience

In Europe licences for spectrum allocated to mobile networks have previously been reserved for Telcos/MNOs but many European countries have or are likely to set aside mobile spectrum for private LTE/5G networks licensing e.g. regulators in Japan, Canada, France, Norway, Sweden, announced their intention to open certain bands for shared usage between new (industrial) users and existing ones. Such an approach can and has been used in bands like 2.3 GHz, TDD 2.6 GHz, 3.8-4.2 GHz, as well as in 26 GHz. Germany has made available local area spectrum in the 3.7-3.8 GHz band for Industry 4.0 use cases. Also, in the U.S CBRS spectrum (3.55 -3.7 GHz) is opening significant new opportunities for enterprises to deploy private 4G and 5G networks.

The bands that are typically used vary depending on the market in question. The most commonly used bands for LTE-based and 5G-based private networks are shown below by region worldwide from data published in June 2021 of LTE-based and 5G-based networks: (source Analysys Mason Report "Private networks: trends and analysis")

Region	LTE	5G
Europe	2.6 GHz and 3.5 GHz	3.7–3.8 GHz and 3.8–4.2 GHz

Americas	3.5 GHz (CBRS)	3.5 GHz and mmWave
Asia-Pacific	1800 MHz	28 GHz

Most of the systems listed in Analysys Mason’s tracker report are still reported to be using licensed mobile spectrum (that is, spectrum licensed to MNOs). However, a growing number of private 5G networks are making use of locally licensed spectrum that regulators have made available to support private network deployments.

<https://www.analysysmason.com/research/content/articles/private-lte-5g-networks-rdme0-rma18-rma17/>

In both Europe and the U.S small-scale private LTE and 5G-ready networks have started to be deployed in industrial IoT (Internet of Things) settings – where LTE and 5G can fulfil the stringent reliability, availability and low latency requirements for connectivity in industrial control and automation systems, besides supporting mobility for robotics and machines.

If locations like airports and seaports cannot get access to spectrum for the efficiency gains that they will get from having their own LTE/5G system, they are being forced to use the public carriers’ systems whether they like it or not. ACCF believes that like in many other countries there is a market for Private LTE/5G LA-MBB services in Australia and that there is a need for mid-band LTE/5G spectrum being available to meet those market demands.

5. What are private LTE/5G networks and why are they important?

Private LTE and 5G technology today allows anyone to build their own private 4G or 5G network that is secure, provides full autonomy in terms of scaling the network and can using widely available terminals, plug in your own “private” SIM card (physical or eSIM) and manage your own devices and your network

Such networks are most commonly deployed on a single site (for example, in a factory, airport, seaport or a mine). Private LTE/5G networks can also be deployed to address wide-area network requirements such as a utility’s need to monitor a transmission network.

Private LTE/5G networks differ from public mobile networks; the latter are designed to support the wide-area network requirements of the consumer market and non-critical enterprise operations.

There are two main network deployment models for private LTE/5G networks.

5.1 Dedicated, on-premises networks.

An enterprise deploys a dedicated, on-premises network (radio access network and core) that is purpose-built for the sole use of a single enterprise. The enterprise deploys its own edge computing assets. It can use any of the spectrum options mentioned in the next section.

5.2 Hybrid networks.

The network is based on a combination of public mobile network components and dedicated on-premises elements. For example, a slice of the public radio network may be combined with a dedicated on-premises core network. 5G enables various deployment combinations such as control and user plane separation (CUPS) of the core network.

Other models may evolve based on public network slicing or dedicated enterprise networks (for example, a specific network for utilities, public safety or public transport).

Independent research indicates that Private LTE and 5G networks for enterprise applications will grow rapidly globally over the next 1 or 2 decades, and what is spent on private or enterprise cellular LTE/5G could be more than public cellular LTE/5G as enterprise use cases will become more important than consumer use cases in order to stimulate economies, productivity, employment, public health and safety and importantly Australian innovation.

In addition to companies looking to develop their own private mobile networks for the first time, there is a large base of potential customers who currently operate narrowband LMR/PMR private networks based on technologies such as TETRA, P25 and DMR. These customers are demanding critical broadband services that are simply not available from alternative technologies and consequently, private mobile networks based on LTE and 5G have the potential to eventually replace much of this market. Refer GSA Report – “Private Mobile Networks: Executive Summary – September 2021” [Reports - GSA \(gsacom.com\)](https://www.gsa.gov/tech-reports/private-mobile-networks)

Organisations and enterprises can truly embrace a wireless-first strategy to meet their business objectives and are the ideal solution for increasing asset location flexibility as well as for providing quick, cost-effective connectivity to new assets.

However we feel that current limitations to access spectrum to support Private LTE deployments is a significant inhibitor to industrial investment in new technology to realise Industry 4.0 opportunities and advance technology deployment to achieve greater economic outputs

We believe the use of the wireless broadband spectrum in the 3400–3475 MHz band in the urban areas should be set aside for private LTE services and licensed under apparatus licence conditions for productivity benefits of critical industries and thereby the economy in Australia.

Other countries have recognised the importance of open access for new technologies like private Broadband and 5G networks alongside the grade of services that large public cellular operators provide or are willing to provide.

Investment cycles of vertical industries differ from cycles of the telecom industry: cycles for media and entertainment are typically shorter, ranging between 2-3 years, for automotive industry 7-8 years, energy, manufacturing and mechanical industries 25 years, and for oil & gas from 10 to 25 years.

Partly due to this difference, vertical industries may prefer to deploy their own networks. Furthermore, the timing for investing in wireless communications depends solely on their own business plans. Vertical industries require the assurance that for their networks there will be a continuity of service, without unjustified price increases, spectrum re-farming or technology upgrades over their planned life span. Private LTE and 5G networks for enterprises cover a wide range

of industrial IoT applications and with the growing need for increased efficiency and competitive ability, organisations are implementing a wireless-first strategy.

Organizations recognize that legacy public access wireless networks can be a weakness in their security perimeter. Whether they are hospitals with sensitive customer data or banks and retail outlets needing secure financial transactions, Private LTE/5G technologies with their zero-touch SIM-based security protocols provide an excellent fit.

Private wireless networks using cellular technologies like LTE and 5G are the perfect fit that will enable a new generation of high-impact digital solutions for the Australian industries in areas from public transport, rail safety, mine automation and other use cases that require high-performance connectivity supporting large warehouse facilities, campuses, sports stadiums, airports and container ports as well as remote mines.

6. Global view of the importance and growth of Private LTE/5G

For more information on LTE/5G based private networks, see Analysys Mason's report "what are private LTE/5G networks and why are they important?" Analysys Mason is the world's leading management consultancy focused on TMT, a critical enabler of economic, environmental and social transformation. Analysys Mason estimates that Enterprises will spend USD9 billion on private LTE/5G networks over the next 5 years, laying an important foundation for industrial transformation.

Also refer to Global Mobile Suppliers Association (GSA) report: The demand for private mobile networks based on LTE (and increasingly on 5G) – September 2021

6.1 What are private LTE/5G networks and why are they important?

<https://www.analysismason.com/research/content/articles/private-lte-5g-networks-rdme0-rma18-rma17/>

6.2 The demand for private mobile networks based on LTE (and increasingly on 5G) – September 2021 - Reports -GSA (gsacom.com)

7. The added value to the Economy

Private LTE/5G will stimulate innovation and enable a new generation of high-impact digital solutions with technology leadership across mobile, fixed and cloud networks and create value with intellectual property and long-term research, such as 5G for industry capabilities. This will benefit the growth of existing Australian industries and the creation of new industries that rely on secure high-speed, high-bandwidth and ultra-reliable connectivity in areas and situations that prohibit fixed cables and fixed connectivity.

Australian initiatives important to growth and innovations of private LTE/5G

7.1 Recently the federal government announced funding 19 projects totalling \$ 20 Million trialling the use of 5G. Telcos, integrators, defence contractors, agricultural companies and local

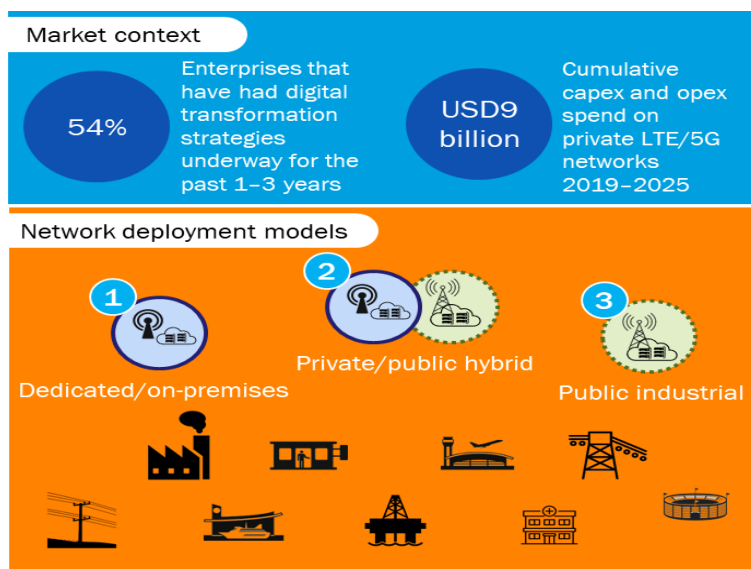
councils have received competitive grants between \$120,000 and \$2 million from the initiative, which focused on cutting edge 5G use rather than infrastructure.

This project may include autonomous cars, drones, collaborative robots, asset maintenance, virtual reality and a remote-controlled firefighting 'tank'. One grant will be used to support a 5G incubation lab in South Australia.

7.2 Another recent example is in South Australia; “With eyes firmly fixed on leveraging Space and 5G technologies to tackle the world’s most challenging issues, Microsoft and Nokia have signed an agreement with South Australia’s Department for Trade and Investment.”

<https://news.microsoft.com/en-au/features/microsoft-lands-at-lot-fourteen-joining-nokia/>

At a broader macro-economic level, Australia is lagging on the international front in relation to industry adoption of private high speed wireless broadband networks and spectrum access is a primary inhibitor to adoption.



Source: Analysys Mason

8. Global investments in private LTE and 5G network infrastructure

8.1 Research from SNS Telecom & IT. Annual global investments in private LTE and 5G network infrastructure which includes radio access network (RAN), mobile core and transport network equipment” will reach U.S \$8 billion by the end of 2023.

<https://www.snstelecom.com/private-lte>

8.2 A new study by Vodafone and WPI Economics the investment and adoption of private 5G networks could add more than £6bn annually to the value of the UK manufacturing industry by 2030. Following publication of the report, Vodafone has called on the UK government to “invest in the creation of 5G test and innovation centres” and make it easier for manufacturers to invest in private 5G networks.

<https://critcommsnetwork.com/posts/vodafone-study-claims-5g-could-add-6-3bn-manufacturing-boost>

8.3 <https://manufacturingglobal.com/technology/vodafone-uk-5g-could-boost-manufacturing-ps63bn-2030>

9. ACCF Response to Issues for comment 1- 7

Response to Question 1.

ACCF does not support the use of this spectrum for Macro-cell usage, we feel that the outlines as presented are acceptable given that they will become obsolescent with our preferred option

Response to Question 2.

ACCF supports the proposition to bring the spurious emission limits in line with 3GPP standards as a common sense approach for all wireless broadband applications. We believe that the NBN Co equipment should also meet the same specifications.

Response to Question 3.

ACCF believes the proposition outlined in the draft amendments to RALIMS44 is a good approach.

Response to Question 4.

ACCF believes that not all relevant factors have been given sufficient consideration. Our opinion is based on the following factors:

- a) The potential for interference from Macro-cell systems has been outlined but then left for the licensees to manage, a situation that is not realistic when the actual outcomes are considered. It must be kept in mind that the interference will be suffered by the NBN Co users much more than the users of the wide-area broadband services. The NBN Co users will not be able to be catered for by moving to other cell sites or carrier spectrum, they will be locked in to the NBN Co service.
- b) ACCF proposes that the adoption of Option 3 with Restricted-cell operation will mean that the management of interference will be much better because of firstly the localised problems caused by low-power services, and secondly because the actual equipment locations and service model will be defined under the terms of the apparatus licence allocation.
- c) The development of the options paper has not provided real recognition of the demand for private or enterprise wireless broadband systems in the mid-band; future spectrum availability in the 26 GHz band should not be a substitute for the needs for mid-band spectrum for these services.
- d) It may be easy to assume that since there are very few of these services in the major urban areas that this is an indicator of demand. In fact, this is the very reason that there needs

to be a re-consideration of the ACMA planning outcomes as until now there has effectively been no available spectrum for private LTE services in these urban areas.

e) ACCF believes that the adoption of Option 3 with restricted-cell operation will open up new markets for Private LTE/5G services, very much along the lines of the Minister for Communications has recently outlined with the 5G incentive options announced earlier this year.

Response to Question 5.

ACCF understands that the various options outlined in the ACMA document cover the possible methods of utilising the available spectrum as part of the review of NBN Co licences, however, as outlined in our responses to Question 4.

a) We believe that the ACMA has not given sufficient weight to the negative issues that macro-cell services will cause to existing NBN Co licensees in adjacent areas, nor to the benefits that would accrue from dedicating the spectrum for restricted-cell operations.

b) We understand there is already interest from the operators of maritime ports and aviation areas for having their own wireless broadband services, as well as new markets that will open as spectrum becomes available. We believe that the ACMA would in fact not be realising the best public use of the spectrum by simply taking the fees from an auction of spectrum licences rather than permitting the economy to be enhanced by the efficiency gains from private wireless broadband access for industry.

Response to Question 6.

a) ACCF believes that the preferred option of the ACMA would create a significant risk of interference against the outlined restricted-cell models. When the format of use is examined as per 4 a) above, the potential for poor diagnosis of interference issues and the effect that may have on NBN Co users that could effectively denigrate the service they have been promised by their retail suppliers, then the interference mitigation for any of the macro-cell solutions presents unacceptable risks to the NBN Co grade of service.

b) With a combination of NBN Co, possible retail providers and the ACMA all having limited resources and capacity to track down and manage interference, we believe that anything other than the restricted-cell solution is fraught with risks.

Response to Question 7.

a) ACCF believes that the developed options paper does not recognise the demand for private or enterprise networks. The only acceptable utilisation of this spectrum should be as per Option 3, this addresses the interference management risks and assists industry to create and supply markets for private and enterprise wireless broadband solutions.

b) There is already interest by companies in having their own wireless broadband services, as well as new markets that will open as spectrum becomes available. Option 3. realises the best public use of the spectrum that will enhance economic growth by the efficiency gains from private wireless broadband access for industry to build their own private 4G or 5G network that is secure, provides full autonomy in terms of scaling the network and can

using widely available terminals, plug in your own “private” SIM card (physical or eSIM) and manage your own devices and your own network.

10. ACCF Response to ACMA Options

ACCF supports Option 3 and rejects Options 1, 2 and 4.

Option 3 provides support for multiple different operators to access spectrum on the same frequency in the same urban excise area.

- a) The ACCF, supports the reason outlined above, that recommends that option 3 be adopted. We believe that the adoption of Option 3 with Restricted-cell operation will mean that the management of interference will be much better because of firstly the localised problems caused by low-power services, and secondly because the actual equipment locations and service model will be defined under the terms of the apparatus licence allocation.
- b) The development of the options paper has not provided real recognition of the demand for private or enterprise wireless broadband systems in the mid-band; future spectrum availability in the 26 GHz band should not be a substitute for the needs for mid-band spectrum for these services.
- c) On the surface it is very easy to assume that because there are very few (if any) of these services in the major urban areas that this may be an indicator of demand. In fact, this is the very reason that there needs to be a re-consideration of the ACMA planning outcomes as until now there has effectively been no available spectrum for private LTE services in these urban areas.
- d) In our response we have indicated that there are enterprise opportunities available now that will stimulate innovation and economic growth through efficiency gains and productivity such as ports and airports. The availability of 26GHz spectrum could be an issue since this spectrum has only recently become available and to date there is limited equipment available in these bands.

ACCF proposes that the adoption of Option 3 with restricted-cell operation will open up new markets for LTE/5G services, much along the lines of the Minister for Communications has recently outlined with the 5G incentive options announced earlier this year.

Option 4. The ACCF has concerns regarding ACMA selection of Option 4 as the preferred option as we believe that not all relevant factors have been sufficiently considered. Our concern is based on the following factors:

- a) The potential for interference from Macro-cell systems has been outlined and left for the licensees to manage, a situation, not realistic when the actual outcomes are considered. We believe that the interference will be suffered by the BNB Co users much more than the users of the wide-area broadband services. The NBN Co users may not be able to move to other cell sites or carrier spectrum as they will be locked in to the NBN Co service.

b) At such time as the end user of the NBN Co services realises that they are suffering interference and degradation of their service, they are required under the NBN Co system to report the problem to the retail provider of the service

c) We believe that in first instance the end user will be forced to go back and try to define the problem, and after further complaint it is going to fall on the service provider to handle the complaint. If we look at the typical retail service providers, do not have the facilities or knowledge to even recognise the interference problems, let alone have the technical knowledge to track it down.

11. ACCF Summary of Response

The ACCF supports the **Australian Radio Communications Association (ARCIA)** submission and for the reasons outlined above recommends that **option 3 be adopted** and create the opportunity for new innovative services rather than providing more capacity on existing public cellular services

If option 3 were implemented there would be multiple new opportunities to service new markets and provide different opportunities for the public benefit against simply increasing capacity on existing services.

In a given area, multiple operators could be supported and it makes it possible to create an affordable secure and custom designed independent LTE private network without having to rely on a wireless carriers whilst ensuring economic growth by attracting investment, increasing exports, building global reputation and removing barriers to business whilst helping to create employment opportunities, innovation and technological leadership, economic sustainability and an internationally competitive economy.

And these capabilities will enable a new generation of high-impact digital solutions in remote areas such as rail safety, mine automation, agriculture and other use cases that require high-performance connectivity.

We submit that by choosing Option 3 the ACMA will be opening wireless broadband to more operators who will design their systems to meet the specific needs of the users industry, in preference to the 'one size fits all' of the public carriers formats.

In addition, the restricted cell format with multiple operators being licensed within the urban excise areas will offer a higher degree of competition and the public benefits will accrue from increases in business efficiency and the relevant increases in GDP for the country.

Engagement with carriers to release or lease spectrum for private use is not in line with their volume subscription business model and creates a significant barrier to the broader use of spectrum for advanced next-generation industrial application which in turn will limit opportunity to advance Australia's economic performance in the broader global market.

Private LTE/5G service creation will allow Australian organisations in multiple sectors to take a giant leap forward into a new era of communications and cloud computing, making the most of broadband LTE/5G technology and catapulting it to the very forefront of digital innovations in Australia that will secure its future as a modern and leading digital economy and society by 2030

12. Conclusion

The Australasian Critical Communications Forum (ACCF) provides this submission for your consideration and look forward to assist in any matters and respond to any queries that may arise out of the information we have supplied. We would be pleased to further assist, contribute and facilitate exchange of information in the area of mission critical communications and 3GPP and ETSI standardisation directly or with our international affiliations.

Roger Kane

Chairman

Australasian Critical Communications Forum Ltd



About Us

The **Australasian Critical Communications Forum (ACCF)** is the NFP regional Forum of **The Critical Communications Association (TCCA)** that globally represents all standard mobile critical communications technologies and complementary applications.

The TCCA provides a forum for governments, regulators, manufacturers, operators, end-users – for any and every stakeholder in the critical communications sector – to discuss, debate, deliver and evolve the market for the benefit of all. The association accounts for more than 150 government and non-government members around the world.

ACCF www.criticalcommsforum.com.au

TCCA www.tcca.info

ACCF/TCCA members are drawn from end users, manufacturers and vendors, operators and industries across the globe and our members design, manufacture, build, implement, utilise, analyse, promote, develop and deploy critical communications worldwide.

- We believe in and promote the principle of open and competitive markets worldwide through the use of open standards and harmonised spectrum and support multivendor interoperability and global certification.
- We support, maintain and enhance (non-proprietary) Professional Mobile Radio (PMR) land mobile radio standards, and drive the development of a common global mobile standard for critical Broadband/LTE/5G through our association with European Telecommunications Standardisation Institute (ETSI), and the 3GPP as a 3GPP Market Representation Partner.

Our members actively contribute in the 3GPP working groups and we support **ETSI MCX Plugtests™** inter-operability activities for critical Broadband/LTE/5G and the **MCS TaaSting program** Led by the University of the Basque Country (UPV/EHU). www.mcstaasting.com

MCS-TaaSting gathers together leading organisations in MC communications, the most relevant industry associations and testing experts including **Enensys, GridGears, Nemergent Solutions, PSTA, Sonim, TCCA and Texas A&M University (TAMU)**. The Mission Critical Services (MCS) Testing-as-a-Service approach aims to fulfill the needs of the mission critical and public safety community in terms of compliance testing.

The U.S National Institute of Standards and Technology's (NIST) Public Safety Communications Research (PSCR) division has granted more than \$6 million to the **Mission Critical Voice Test Equipment (PSIAP-MCVTE) initiative**. The largest share of the grant, more than \$3.5 million, was

awarded to the Networking, Quality and Security (NQaS) research group, part of the University of the Basque Country.

ACCF/TCCA goal is to drive innovation for public safety by making compliance with open standards more accessible to all.

Developing and deploying compliance remote testing services will allow not only the industry to prove the 3GPP standards-compliance of their implementation, but will also give the public safety users and operators the confidence to buy compliant products.

TCCA are a member of the **Mission Critical Open Platform project MCOP** which is a collaborative project with the financial assistance award 70NANB17H151 from U.S. Department of Commerce, National Institute of Standards and Technology through the Public Safety Innovation Acceleration Program (PSIAP). <https://www.mcopenplatform.org/>

With the increasing strength of the critical broadband market, there is a need for a formal interoperability testing and certification process to ensure compliance to standards and give end users a seamless service which does not tie them in to one provider.

The TCCA and the **Global Certification Forum (GCF)** have been carrying out work to assess the possibility for a certification scheme based on prioritising industry requirements and have completed a gap analysis of frequency bands and mission-critical functionalities against current available processes in GCF.

This new GCF mission critical services program is moving forward to shape the development of the industry in providing end users with a seamless service through mission critical device certification. <https://www.globalcertificationforum.org/>

ACCF/TCCA provide access to knowledge and information and our members are invited to participate in the many influential working groups within the Association that include:

- Critical Communications Broadband Group
- Broadband Industry Group
- SCADA, Smart Grid and Telemetry working group
- Security and Fraud Prevention group
- Apps Working Group
- Technical Forum

<https://tcca.info/about-tcca/tcca-working-groups/>



In Australia the ACCF is active in providing masterclasses, workshops and training programmes both for critical PMR/LMR and Broadband technologies for our members and the industry in general. That includes the provision of white papers and hosting of webinars and workshops.

ACCF cooperates with industry groups such as the Australian Radio Communications Industry Association (ARCIA), Australian Control Room Network Association (ACRNA and the University of Melbourne Centre for Disaster Management and Public Safety (CDMP) in the promotion and advocacy of open and competitive markets through the use of open standards, harmonised spectrum and the support of multivendor interoperability and global certification.

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