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29 October 2012

The ACMA to deliver a multi-layered spectrum solution to support public safety mobile broadband capability

The Australian Communications and Media Authority today announced its strategic approach to meeting the very important future spectrum needs of Australia's public safety agencies. The cornerstone of the approach is the provision of an additional 60 MHz of spectrum across a number of bands to facilitate the deployment of high-speed, nationally interoperable mobile broadband networks by the agencies.

'Australia's public safety agencies are critical to the safety and security of the community,' said ACMA Chairman, Chris Chapman. 'The ACMA places the highest degree of importance on providing spectrum to support dedicated networks that support public safety operations.

'The measures announced today will meet two specific needs identified by Australia's public safety agencies—the need for wide-ranging 4G coverage, together with very high capacity, short range coverage for specific incidents and in high demand areas.'

Following a thorough evidence-informed analysis conducted in conjunction with public safety agencies through the Public Safety Mobile Broadband Steering Committee, the ACMA is making 10 MHz of spectrum from the 800 MHz band available for the deployment of a nationally interoperable public safety mobile broadband network. This band supports 4G (LTE) systems and technologies.

A further 50 MHz of spectrum from the 4.9 GHz band will also be provided for use nationwide by public safety agencies. This spectrum is recognised internationally as a frequency band for use by public safety and other emergency response services. It is capable of extremely high capacity, short range, instantly deployable data and video communications. This represents a supplementary capacity for the public safety mobile broadband network in areas of very high demand.

'These measures build on previously announced arrangements expanding capacity in the 400 MHz band and lay the foundation for the deployment of multi-layer, flexible and interoperable networks. The ACMA's approach represents a 'state of the art' public safety spectrum solution that should facilitate voice, data and video communications for Australia's public safety agencies long into the future,' Chris Chapman said.

The details of today's announcement are in two papers. The first details the ACMA's overarching strategy for spectrum for public safety radiocommunications (including the provision of spectrum in the 800 MHz band). The ACMA will continue to work with public safety agencies on the development of an appropriate licensing framework as part of the ongoing review of the 803-960 MHz band, with a discussion paper to be released in December.

The second paper outlines arrangements for spectrum in the 4.9 GHz band.

For more information or to arrange an interview, please contact: Blake Murdoch, on (02) 9334 7817, 0411 504 687 or media@acma.gov.au.

Background

Radio networks are a critical component of public safety operations. The requirements of Public Safety Agencies (PSAs) are generally different from other types of networks, including the day to day requirements of commercial mobile networks. These unique requirements directly affect how they are designed and dimensioned. Different

scenarios require different levels of coverage, capacity and availability. At any particular time, demand for bandwidth by public safety operators varies greatly by time and location, and between agencies.

PSAs have historically relied on narrowband (particularly voice) communications to support their operations, which have been delivered primarily through dedicated land mobile systems. In 2008, the ACMA commenced an extensive examination of PSA needs in this space through a wide-ranging review of the 400 MHz band. This resulted in an expansion of public safety spectrum resources and a framework for national interoperability, which voice capability essentially remains the core communications capability for PSAs.

At the same time, agencies have identified a growing need for data capabilities to take advantage of digital technologies, which have the capacity to significantly enhance a wide range of operational functions. High speed, mobile data capabilities that can be relied upon in adverse situations and can provide for interoperability between different agencies and jurisdictions are becoming increasingly necessary in public safety operations. Consequently, in recent years, the ACMA has been exploring how best to meet these needs.

One strategy that the ACMA has pursued has been to identify 50 MHz of spectrum from the 4.9 GHz band, which will provide very high speed, short range on-demand capacity to areas of high activity to support a wide range of uses. This band is internationally harmonised for public protection and disaster relief (PPDR) communications by the International Telecommunication Union (ITU), which harmonisation will ensure for that band international interoperability (when needed) and equipment economies of scale.

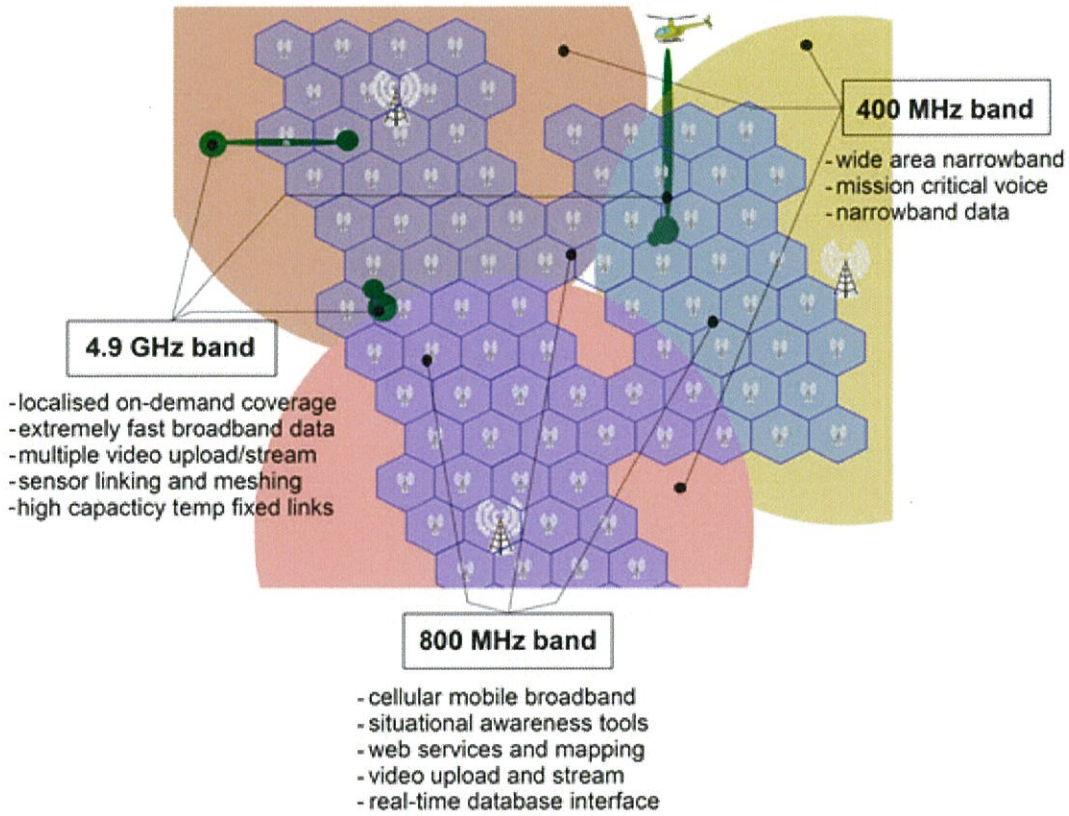
In addition to this, the ACMA has worked closely with the Public Safety Mobile Broadband Steering Committee (PSMBSC), which was established in May 2011 to identify options for how spectrum from the 800 MHz band could be used to implement a nationally-interoperable mobile broadband capability for Australia's PSAs.

This importance of realising a broadband capability for PSAs has been reflected in the ACMA's close engagement with the work of the PSMBSC. A significant body of work has been undertaken by the PSMBSC in gathering user requirements and determining the most efficient and cost-effective ways to deliver the capability. The ACMA took an evidence-informed approach, undertaking a rigorous evaluation of the various PSA and manufacturer submissions and other data collected throughout the PSMBSC process, and dimensioned it against the capabilities and constraints inherent in the current 4G Long Term Evolution (LTE) standard, to determine an appropriate amount of spectrum from the 800 MHz band. This would enable a scalable Public Safety Mobile Broadband (PSMB) capability that would meet the PSAs' needs, with sufficient headroom to allow for future growth in data demand. The PSMB capability will be available to a wide-coverage area, which will likely be achieved through a combination of deploying infrastructure using the 10 MHz provided, with the potential to utilise commercial networks.

The ACMA initiatives announced today will improve spectrum resources for public safety in Australia as follows:

- **Making provision for 10 MHz of spectrum from the 800 MHz band** for the specific purpose of realising a dedicated, nationally interoperable PSMB cellular 4G data capability. This band supports 4G (LTE) systems and, as such, is considered to be 'beach front' spectrum by carriers and PSAs alike. The precise frequencies (to be provided from within the 800 MHz band) will be determined later in the context of the ACMA's full review of the 803–960 MHz band.
- **Providing 50 MHz of spectrum from the 4.9 GHz band** for PSAs. This spectrum is recognised internationally as a public protection and disaster relief band, capable of extremely high capacity, short range, deployable data and video communications (including supplementary capacity for the PSMB network in areas of very high demand).
- **Implementing critical reforms in the 400 MHz band**, where spectrum has been identified for the exclusive use of government, primarily to support national security, law enforcement and emergency services.

The diagram below provides a conceptual overview of how these provisions will combine to form a holistic strategy to meet PSAs' future voice, data and video communications needs. The development and deployment of multi-layer, integrated networks will deliver the necessary flexibility, interoperability and capacity to operators where and when needed. The result will be an unprecedented level of situational awareness and interoperability, and a substantial operational advantage for PSAs to carry out their duties.



Conceptual depiction of multi-band layering

The 800 MHz-based PSMB capability will provide PSAs with access to a range of mobile applications, including video transfer and streaming, database interrogation and real-time mapping. It will be cellular in topology and is based on the 3GPP Long Term Evolution (LTE, or '4G') standard that is currently being deployed by commercial operators. The ACMA will ensure that the spectrum made available is planned in a way that mirrors the technical frameworks that enable commercial operators to deploy 4G networks, so that PSAs can realise the benefits of leading edge technology and the applications that it supports.

Furthermore, while the 50 MHz being provided from the 4.9 GHz band will help support a number of standalone applications (including video links, WiFi hot spots and mesh networks), a large part of its utility will be to work in conjunction with the 800MHz PSMB network to deliver a high amount of on-demand additional capacity to areas where it is needed.

There is no single band solution for meeting all of the mobile communications requirements of PSAs. Integrating the provisions announced today in a layered—or 'system of systems'—architecture will provide a flexible way of meeting the current and future radiocommunications needs of PSAs.

The ACMA will continue to work with PSAs on developing an appropriate licensing framework as part of the ongoing review of the 803-960 MHz band. The new measures in the 800 MHz band will be outlined in a discussion paper to be released in December.

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Spectrum for public safety radiocommunications

In October 2012, the Australian Communications and Media Authority announced its strategic approach to meeting the spectrum needs of Australia's public safety agencies into the future. The cornerstone is the provision of an additional 60MHz of spectrum from the 800 MHz and 4.9 GHz bands to facilitate the deployment of high-speed, nationally interoperable mobile broadband networks by public safety agencies.

Australia's public safety agencies (PSAs) are critical to the safety and security of the community, and the Australian Communications and Media Authority (the ACMA) places a high degree of importance on providing adequate spectrum to support dedicated networks that optimally support their operations.

The ACMA is undertaking a number of initiatives to improve spectrum provisions for public safety. The most important are:

- **Making provision for 10 MHz of spectrum from the 800 MHz band** for the specific purpose of realising a dedicated nationally interoperable PSMB cellular 4G data capability. This band supports 4G (LTE) systems and as such is considered to be 'beach front' spectrum by carriers and PSAs alike. The precise frequencies to be provided from within the 800 MHz band will be determined later in the context of the ACMA's full review of the 803–960 MHz band.
- **Providing 50 MHz of spectrum from the 4.9 GHz band** for PSAs. This spectrum is recognised internationally as a public protection and disaster relief band, capable of extremely high capacity, short range, deployable data and video communications (including supplementary capacity for the PSMB network in areas of very high demand). The ACMA has released a consultation paper on this issue.
- **Implementing critical reforms in the 400 MHz band**—where spectrum has been identified for the exclusive use of government, primarily to support national security, law enforcement and emergency services—is continuing. More information is available on the ACMA engage site.

The ACMA's ongoing challenge is to make adequate spectrum available for PSAs to carry out their duties effectively, while optimising the benefit of the spectrum as a whole to the community. This requires balancing a range of economic and public interest (including public safety) drivers to deliver solutions that best serve the community as a whole. The ACMA released a paper (Word [.docx 1.3 mb] or PDF [832 kb]) covering the ACMA decisions and current initiatives that are intended to provide for current and future public safety radiocommunications needs in Australia.

Additional information

- Media release: The ACMA to deliver additional spectrum to support public safety mobile broadband capability
- Review of the 803-960 MHz band