



Unit 2702-04, 27<sup>th</sup> Floor  
9 Queen's Road Central  
Central, Hong Kong  
Telephone : (852) 3144 8300  
Facsimile : (852) 2537 1188

[www.qualcomm.com](http://www.qualcomm.com)

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The Project Manager  
Spectrum Review  
Department of Communications  
GPO Box 2145, Canberra ACT 2601  
Australia  
*Via email to [spectrumreview@communications.gov.au](mailto:spectrumreview@communications.gov.au)*

Dear Sir or Madam,

Qualcomm Incorporated, on behalf of itself and its subsidiaries (collectively, "Qualcomm") appreciates the opportunity to provide input to the Department of Communications (hereafter, "the Department") on its "Spectrum Review: Potential Reform Directions" consultation paper (hereafter, "the directions paper"). Qualcomm is a world leader in 3G, 4G and next-generation wireless technologies. Our ideas and inventions have driven the evolution of wireless communications, connecting people more closely to information, entertainment and each other. Qualcomm Technologies, Inc., a wholly-owned subsidiary of Qualcomm Incorporated, is the world's largest fabless semiconductor producer and the largest provider of wireless chipset and software technology, which powers many wireless devices commercially available today. Qualcomm is a recognized world leader in advanced wireless technologies and continues to bring enhancements to market that increase network capacity and performance.

Global mobile data consumption is growing at a rapid pace, with many Asia-Pacific countries experiencing exponential traffic growth in recent years. Worldwide, mobile data consumption grew by 81 percent in 2013, according to one estimate.<sup>1</sup> While the projections vary, all indications point to this growth continuing unabated. The mobile industry is therefore preparing for a major increase in mobile data traffic growth that Qualcomm refers to as "The 1000x Data Challenge."<sup>2</sup> The mobile industry's latest wireless technologies and trends offer solutions that help to relieve the 1000x challenge, and there is a robust roadmap for more improvements.

However, as wireless networks strain to meet the growing demand for mobile broadband services, access to additional radio frequency spectrum remains critical. While there are many enhancements allowing for more efficient use of existing spectrum, meeting an increase of the magnitude of 1000x will unquestionably require more

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<sup>1</sup> Cisco, "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2013-2018," available at [http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white\\_paper\\_c11-520862.html](http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html).

<sup>2</sup> <http://www.qualcomm.com/solutions/wireless-networks/technologies/1000x-data>.

spectrum. Given the increasing demand for ever faster mobile data connections, the demand for an increasing number of connections, and the corresponding need for additional spectrum suitable for mobile broadband services, Qualcomm believes the Department's consultation on the future of the spectrum policy and management framework is a timely and important step in ensuring a forward-looking approach to Australia's spectrum policy. We believe that periodic reviews of spectrum management frameworks are crucial in ensuring efficient allocation and use of a valuable and scarce resource. We agree with the Department's view that the guiding framework should be flexible and employ light-touch regulation whenever possible, while maximizing transparency and regulatory certainty.

The remainder of this contribution addresses specific proposals presented in the directions paper. Qualcomm has no comment on the Proposals that are not addressed below.

### **Proposal 1: Implement a clear and simplified framework of policy accountability**

Qualcomm agrees that it is important to clearly define the respective decision-making roles of the Minister and the Australian Communications and Media Authority (ACMA), and supports the division outlined in the decision paper; namely that the Minister would be responsible for decisions with significant public policy implications while the ACMA would oversee day-to-day spectrum management in line with government policy as set by the Minister. We believe that this division allows the Minister to focus on high-level policy issues, while minimizing the potential for unnecessary diversion of Department resources to the minutiae of spectrum management and enforcement. Furthermore, the ACMA will be able to focus on the execution of a clear government policy. From the perspective of a private sector stakeholder, such a division also ensures a clear understanding of responsibility for spectrum policy and management. Qualcomm also believes that a transparent, regular flow of information between the Minister and the ACMA – as well as to stakeholders – should help to minimize the need for the Minister to intervene in more routine spectrum management activities, which would contribute to the continued streamlining of spectrum management in Australia.

Qualcomm also recognizes that there will be cases in which ministerial intervention in spectrum management matters may be necessary. We agree with the view stated in the directions paper that such interventions should be on an exception basis, and carried out in a transparent manner. Examples of potential conditions under which ministerial intervention would be warranted could include, but are not limited to, reserving spectrum for future use in a spectrum plan, changing allocations to meet evolving market needs, or to otherwise address national policy goals. In general, such interventions should be accompanied by a clear justification.

### **Proposal 3: More flexible allocation and reallocation processes**

Qualcomm believes that the ACMA should be empowered to devise more flexible allocation and reallocation processes, although transparency must be a key characteristic of any such process. Wireless technology and services evolve rapidly, and we believe that the ACMA should have the tools at its disposal to be able to respond in as nimble a fashion as is practical. This would be facilitated by removing or minimizing the need for legislative processes and ministerial actions in the reallocation process. Instead, an ACMA guided by clear government policy and day-to-day familiarity with the needs and expectations of Australia's spectrum users should be able to employ the allocation mechanisms and timing that are believed to best balance user demands and government policy and priorities without the need for government or legislative intervention.

Qualcomm also supports the approach described in the directions paper, requiring the ACMA to specify allocation mechanisms and timelines in its annual work program, and providing for accountability if timing diverges from the

stated estimates. Investment in mobile communications infrastructure and services in particular depends upon regulatory certainty with respect to spectrum allocations and assignments, given the significant costs of securing spectrum rights and deploying widespread physical infrastructure. Thus, while we appreciate the need for flexibility in spectrum allocation, we also strongly support measures intended to ensure that spectrum allocation timelines are respected once finalized.

**Proposal 4: Establish a more transparent and flexible approach for spectrum pricing to promote efficient use and re-use of spectrum**

Qualcomm believes that spectrum pricing should be market-based to the greatest extent possible, thereby allowing spectrum to move to its highest-value use. Thus, we support the proposal to ensure that market-determined or market-equivalent prices play a key role in determining spectrum value, in conjunction with a spectrum pricing methodology that is transparent, cost-reflective and provides incentives for spectrum to move to its highest value use. Further, we believe that such a methodology is most valuable when it is applied consistently.

Qualcomm also agrees that the pricing methodology should be based upon a review of pricing for administrative allocations, and that the ACMA should be responsible for setting spectrum prices. The review should consider all available options for setting spectrum prices and should also take into account the need to balance the change in spectrum values based on evolving market conditions with the need to make such changes in a measured and transparent fashion. Qualcomm believes that a spectrum pricing policy that is market-based, transparent, and consistent will help enable spectrum to move to its highest-value use and will also provide an element of regulatory certainty, which is crucial to the licensees or potential licensees as they make significant investment decisions.

**Proposal 11: The ACMA to continually review options for allocating spectrum to alternative/higher value uses and to ensure that barriers to achieving this are reviewed and removed where appropriate**

Qualcomm strongly supports frequent or continuous reviews of options for alternative or higher-value uses of spectrum. As noted, the mobile communications market continues a rapid evolution, including an ongoing search for additional spectrum to meet the needs of mobile broadband users. By conducting regular reviews of spectrum usage and evaluating whether current spectrum allocations are in line with market demand, the ACMA would be able to quickly move to meet the changing spectrum needs of Australia's private and public sectors.

While the directions paper focuses on the potential transition to different uses of spectrum currently used for terrestrial broadcasting, Qualcomm believes that the continuous review of all spectrum bands is equally important. Meeting the 1000x challenge will require a mix of solutions, both in terms of technologies and suitable spectrum bands. An annual review – including a public consultation or stakeholder input component – would ensure that the ACMA is aware of fluctuations in market interest in various bands and allow for appropriate planning.

**Comments on Case Study 1: Spectrum sharing**

Qualcomm is encouraged by the Department's interest in spectrum sharing. As noted in the case study, there is interest in increased use of spectrum sharing as a means to allow greater access to scarce spectrum resources. For the cases when licensing for exclusive 3G/4G use is not feasible in a timely manner or at all geographic locations, Qualcomm is proposing, together with our partners, a new and innovative regime called ASA (Authorized Shared Access). ASA provides a regulatory framework for operators to collaborate with incumbent spectrum holders (e.g., Defense Department) to obtain exclusive access to the latter's spectrum on a shared basis. The sharing can be in terms of geography, frequency, or time, on an exclusive basis without interfering with the incumbent's

operations. Extending higher performance and reliability of LTE Advanced to licensed spectrum allows operators to augment capacity with a unified network and to provide enhanced broadband experience to users. Higher frequency bands are one of the options for new spectrum and the target for ASA.

We note there have been some developments on ASA in Europe and the United States. For example, the European Conference of Postal and Telecommunications Administrations (CEPT) has issued a report on the benefits of Licensed Shared Access (LSA, also known as Authorized Shared Access, or ASA) and is undertaking additional work to support the introduction of LSA.<sup>3</sup> In the United States, the Federal Communications Commission has considered the authorization of a variety of small cell and other broadband uses of the 3.5 GHz band on a shared basis with incumbent federal and non-federal users of the band.<sup>4</sup>

As the 2.3 GHz and 3.5 GHz frequency bands in Australia are already allocated to the mobile service on a primary basis and licensed on an exclusive basis, ASA would not be beneficial for these bands in Australia. Nevertheless, the ASA regulatory framework is independent of frequency band.

The current reconsideration of Australian spectrum policy provides an opportunity for Australia to be a thought leader in the Asia-Pacific region with respect to spectrum sharing. We note that there are both technical and regulatory issues to be considered. As such, Qualcomm would like to highlight questions and issues that we believe must be addressed during the development of a comprehensive spectrum sharing policy. For example:

- Under what conditions would spectrum sharing be permitted or prohibited?
- How would dynamic spectrum sharing be managed? Who would be responsible for such management?
- Will sharing terms or guidelines be established on a case-by-case basis (or by band or service), or will some minimum set of guidelines apply across all eligible bands?
- Will sharing agreements have a minimum term, in order to allow operators to justify investments and risk?
- What procedures will be following to resolve any interference that does occur?
- What status will the new spectrum sharing applications have vis-à-vis incumbent users?

These questions are intended as a representative sample of the types of issues that should be considered with respect to the development of an Australian spectrum sharing regime. We look forward to learning more about the Department's vision for spectrum sharing.

Qualcomm appreciates the opportunity to provide input to the Department on this consultation paper. Should you desire more detail on Qualcomm's views relating to the spectrum policy and management framework, please do not hesitate to let me know.

Sincerely,



Julie Garcia Welch  
Senior Director, Government Affairs, Southeast Asia & Pacific

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<sup>3</sup> See, for example, CEPT ECC Report 205 on Licensed Shared Access (LSA) (February 2014), available at <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP205.PDF>.

<sup>4</sup> See, for example, GN Docket No. 12-354 Further Notice of Proposed Rulemaking (April 23, 2014), available at <http://www.fcc.gov/document/proposes-creation-new-citizens-broadband-radio-service-35-ghz>.