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Review of Regulation Discussion Paper
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Qualcomm Incorporated would like to thank the Ministry for Culture & Heritage (MCH) and the Ministry of Economic Development (MED) for the opportunity to provide comments on its *Digital Broadcasting: Review of Regulation* Discussion Paper. As the MCH and MED may already be aware, Qualcomm is a leader and innovator in the development of digital wireless technologies including those based on Code Division Multiple Access (CDMA) and Orthogonal Frequency Division Multiplexing (OFDM). These solutions are available today for a number of communications applications, including mobile cellular, fixed wireless access, broadband wireless access, trunking and satellite services. Qualcomm broadly licenses its technologies to over 145 device, infrastructure, application-specific integrated circuit (ASIC) and test equipment vendors around the world and is interested in the success of all the air interfaces that use CDMA technologies, including CDMA Multi-Carrier (CDMA2000), CDMA Direct Spread (WCDMA/HSPA) and CDMA Time Division Duplex (UTRA TDD & TD-SCDMA).

Qualcomm is at the forefront of mobile multimedia broadcast technology development and has been instrumental in the developing of MediaFLO™, an end-to-end solution that enables broadcasting of high-quality video streams, audio channels, as well as other multimedia applications (video clips, IP datacasting applications, etc.) to mobile devices.¹ FLO™ (Forward-Link-Only) technology, a key component of the MediaFLO system, is an open mobile broadcast air interface standard based on coded OFDM modulation. MediaFLO has been developed from inception for wireless mobile multimedia applications and is optimized to increase capacity and coverage while reducing the cost of multimedia content delivery to mobile handsets.

MediaFLO is based on open and global standards with multiple published Telecommunications Industry Association (TIA) specifications.² MediaFLO is included as Multimedia System M in ITU-R Recommendation BT.1833 for mobile broadcasting, approved by the International

¹ www.qualcomm.com/mediaflo

² TIA-1009 (Radio interface), TIA-1102 (Receiver minimum performance specification), TIA-1103 (transmitter minimum performance specification), TIA-1104 (Test application protocol) and TIA-1120 (transport specification), TIA-1132 (Repeater minimum performance specification), and TIA-1130 (Media Adaptation Layer specification); See <https://www.tiaonline.org/standards/technology/tm3/>.

Telecommunication Union Radiocommunication Sector,³ and is in the approval process at the European Telecommunications Standards Institute (ETSI).⁴

It is recognized that operators may opt to deploy other mobile broadcast technologies and that, in today's global marketplace, operators wish to take advantage, to the greatest extent possible, of economies of scale and leverage support for multiple standards. In recognition of this trend, Qualcomm has developed a single integrated chip for mobile phones that supports multiple mobile TV standards in addition to FLO. Qualcomm announced the 2007 commercial availability of a mobile broadcast modem currently supporting the FLO, DVB-H, and ISDB-T standards on a single chip in the UHF band.⁵ Other suppliers of semiconductor solutions for mobile digital TV, including Siano Mobile Silicon and Telechips Inc., have also announced plans to design, manufacture and sell certain semiconductor chip products that implement FLO technology and to develop a multi-standard chip supporting FLO, in addition to other standards.⁶

Mobile TV is a fast evolving market of potentially great value. The service can deliver a wide range of multimedia entertainment, news, and other beneficial content to people on the move, assistance in emergencies, educational programs, and more. Qualcomm also believes that there is significant interest in mobile broadcast multimedia services in New Zealand and other countries around the world. For example, ABI Research estimates that there will be 250 million mobile video users worldwide by 2010 and the Yankee Group estimates the market for mobile TV/video to be \$11 billion by 2010.⁷ Based on this anticipation of future market demand, the MediaFLO solution was designed to address the existing and future needs of both the wireless and media broadcast industries.

Qualcomm supports the New Zealand Government's efforts to create a digital future for all New Zealanders using the power of ICT. We would also like to thank the MED for its efforts in the review of the digital broadcasting regulation to balance the views of interested parties and meet the needs of the New Zealand consumer. Qualcomm's response is limited to a sub-set of the questions posed by MCH/MED and will focus primarily on the UHF digital dividend and the regulatory framework for new mobile broadcast television services.

Question 1.1 : Do you agree with the objectives and principles set out for the review? Please give reasons for any proposed additions or amendments to the principles and objectives.

Qualcomm strongly supports all of the principles proposed for application when evaluating any proposed regulatory changes to deal with the implications of digital broadcasting and convergence. To highlight a few:

- Minimum intervention necessary:

³ ITU-R Recommendation BT.1833 on "Broadcasting of multimedia and data applications for mobile reception by handheld receivers"; <http://www.itu.int/rec/R-REC-BT.1833/en>.

⁴ In May 2007, ETSI approved a new work item, "Forward Link Only Air Interface Specification for Terrestrial Mobile Multimedia Multicast," aimed at the publication of an ETSI technical specification for MediaFLO; http://webapp.etsi.org/WorkProgram/Report_WorkItem.asp?WKI_ID=25905.

⁵ http://www.qualcomm.com/press/releases/2006/060908_signs_flo_chip.html.

⁶ http://www.qualcomm.com/press/releases/2007/070618_siano_sign_flo_print.html;
http://www.qualcomm.com/press/releases/2007/070723_telechips_sign_flo.html.

⁷ Allied Business Intelligence Inc., June 2006; "Mobile Video/Broadcast TV Market Assessment: Will Operators Get the Picture Right," Yankee Group, November 2006.

As the MCH/MED have acknowledged, new digital technologies are encouraging increased convergence between the traditionally separate businesses of broadcasting and telecommunications, as broadcasting-like content can now be delivered across numerous platforms. This flavor of convergence is having an impact on the traditional business models for both the broadcasting and telecommunications sectors, and has created new services for consumers such as mobile broadcast television. Burgeoning services in their early stages of development require incentives for investment and innovation. Regulation has a key role to play in the successful adoption of these new services, and a timely launch of ‘converged’ mobile broadcast TV services in New Zealand can only be achieved if the licensing framework is market-driven and pro-enterprise. Qualcomm supports a regulatory approach for new services that does not place overly restrictive requirements on stakeholders in terms of service provision, licensee eligibility, ownerships and/or partnerships.

➤ Open and transparent:

Providing certainty to interested stakeholders is also critical to encouraging investment and innovation. This is particularly true for new markets such as mobile broadcast television wherein significant investment in new infrastructure is required.

➤ Technology neutral

With regard to standards for mobile broadcast television, Qualcomm believes that a market-led approach and a clear spectrum strategy are vital to the successful long-term development of commercial mobile multimedia services and, therefore, supports the principle of technology neutrality whereby no one technology is favored over another in policymaking. MCH/MED should ensure flexibility for operators to deploy the standard that best suits their business needs.

Question 7.6 : Which of the options for ensuring minimum agreed technical standards do you support? Please give reasons for your views.

Question 7.7 : Would the interests of audiences and industry be best served by industry-wide adoption of agreed technical standards?

With regard to standards for mobile broadcast television, one of the new converged services that have emerged, Qualcomm believes that a market-led approach and a clear spectrum strategy are vital to the successful long-term development of commercial mobile multimedia services. Qualcomm, therefore, supports the principle of technology neutrality whereby no one technology is favored over another in policymaking. Moreover, technology neutral policies give operators the flexibility needed to deploy the mobile TV standard that best suits their business needs. As mobile TV is in the early stages of development, services will undoubtedly evolve to create effective solutions for the delivery of video content to consumers in ways that are most appropriate, cost effective and appealing. Much will depend on overall operator economics and spectrum availability rather than technology. A host of factors (e.g., price, availability, vendor support) influence a market stakeholder’s decision to deploy a particular technology and ultimately meet consumer needs in terms of cost, choice of terminals, etc. A market-led approach to mobile broadcast TV standards is vital to the successful long-term development of commercial mobile TV services and Qualcomm urges MCH/MED to ensure that various industry-recognized standards can be deployed.

From a regulatory perspective, technology neutral principles are being applied to mobile TV regulation in other countries around the world as well. In Finland and Italy, where commercial mobile TV services have already been launched, the national law and regulatory framework are technology neutral. In the United States, where commercial services are also available, spectrum

assigned via a technology neutral auction has paved the way for the successful deployment of a national mobile TV network. Additionally, other countries in the Asia Pacific region – Australia, Hong Kong, India, Singapore and Taiwan – have announced plans to release spectrum on a technology neutral basis for mobile broadcast TV in the near term.⁸

Furthermore, the recently released Conclusions from the Council of the European Union (comprised of Member State governments) on ‘Strengthening the Internal Market for Mobile Television’ are relevant as they re-affirm the principles of technology neutrality, market-driven regulations and technology/service innovation.⁹ These core principles have also been recommended for digital mobile broadcasting by various industry organizations such as the European Mobile Broadcast Council (EMBC), the Broadcast Mobile Convergence Forum (bmcoforum), the Digital Interoperability Forum (DiF), the European Broadcasting Union (EBU), the GSM Association (GSMA), the FLO Forum, the WorldDMB Forum and the UMTS Forum.¹⁰

It is also worth noting that the European Commission (EC) announced last month its decision to include DVB-H in its Official Journal (list of standards). However, the press release issued by the EC overstates the significance of this decision. The fact remains that DVB-H can only be listed as a **non-mandatory standard** in the Official Journal and this does not exclude other mobile broadcast technologies from competing in the European Union. This decision leaves room for additional mobile TV standards to be adopted by EU Member States and ensures that the market can decide which technologies will ultimately prevail. This is in line with the Transportation, Telecommunications & Energy Council’s (TTE) conclusions, as published in November 2007, which called on the EC to uphold a technology-neutral stance on mobile TV standards.

Qualcomm has been actively following the digital dividend and mobile TV developments in Europe. In addition, Qualcomm and British Sky Broadcasting Limited (BSkyB) conducted two joint technical trials of the MediaFLO System in the United Kingdom.¹¹

Qualcomm firmly believes that appropriate spectrum allocation and regulation – rather than mandating standards – will ensure the development of successful business models and further enable

⁸ See Hong Kong, Commerce Industry and Technology Bureau, “Digital Broadcasting: Mobile TV and Related Issues,” 26, January 2007 <http://www.cedb.gov.hk/ctb/eng/paper/index.htm> and Hong Kong, Commerce Industry and Technology Bureau, “Second Consultation on Development of Mobile Television Services,” http://www.cedb.gov.hk/ctb/eng/paper/doc/mobile_TV2.pdf. See India, Telecom Regulatory Authority of India, “Recommendations on Issues Relating to Mobile Television Service,” January 23, 2008, <http://www.trai.gov.in/trai/upload/PressReleases/535/recom23jan08.pdf>

⁹ European Council Conclusions on ‘Strengthening the Internal Market for Mobile Television,’ 29 November 2007.

¹⁰ See [European Mobile Broadcast Council Recommendations](#); See bmcoforum [Position on the development of Mobile TV in Europe](#); See European Broadcasting Union article “[Technology alone will not decide the future of Mobile TV](#)”; See article “[FLO Forum Reacts to EU Commission Communication on European Mobile TV Market - Industry wide criticism of threat to free and fair competition in region - “GSM success story” is not directly replicable to mobile TV](#)”; See WorldDMB article “[Europe risks impeding growth of mobile TV market - Commissioner Reding ignores own expert advice Insistence on single technology threatens European jobs and investment London](#)”; See UMTS Forum article “[Imposing technology standards will threaten success of Mobile TV in Europe, warns UMTS Forum](#).”

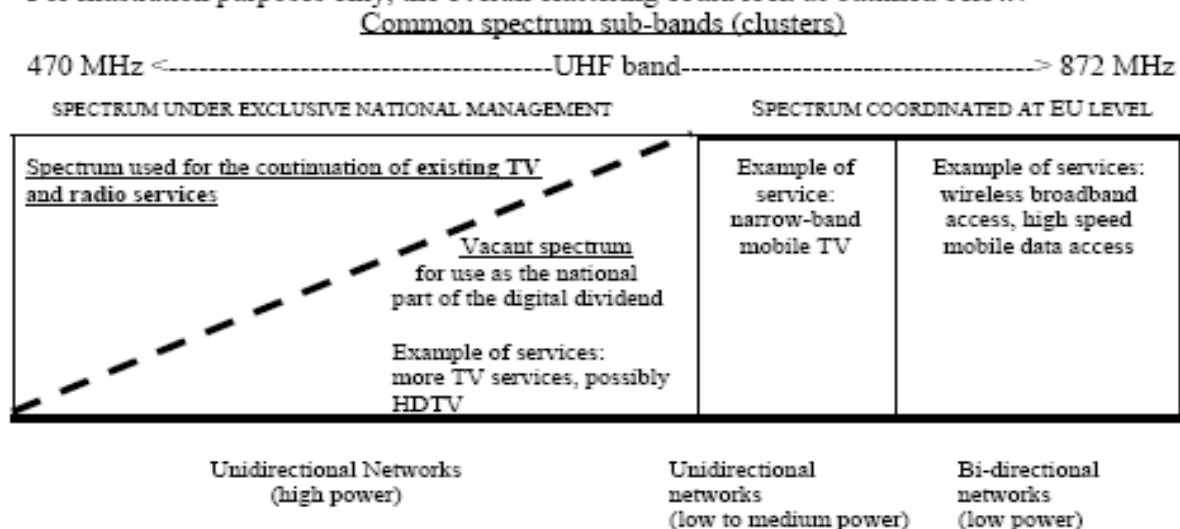
¹¹ http://www.qualcomm.com/press/releases/2007/070212_british_sky_broadcasting.html;
http://www.qualcomm.com/press/releases/2006/061204_british_sky_broadcasting.html.

the overall success of the mobile broadcast service market. With these factors emphasized, wide consumer adoption of these new services will follow.

Question 7.9 : What principles and priorities do you consider should guide the development of a post-analogue switch-off spectrum allocation framework?

In response to this question, Qualcomm urges the MCH/MED to refer to the ongoing digital dividend initiatives within the European Commission. On November 13th, 2007, the EC released a Policy Communication on this subject, “Reaping the full benefits of the digital dividend in Europe: A common approach to the use of the spectrum released by the digital switchover.”¹² The objective of this decision is to adopt a pan-European practical approach toward the use of the UHF frequency spectrum for new advanced services. The concept is that increasing spectrum efficiency at the national level will enhance the overall capacity and range of uses for the UHF spectrum. Specifically, it is proposed to partition the UHF band into three clusters:

For illustration purposes only, the overall clustering could look as outlined below:



- Conventional broadcasting e.g., DTV, HDTV – High power, unidirectional
- Mobile downlink e.g., narrowband mobile TV – Low to medium power, unidirectional
- Mobile Broadband e.g., wireless broadband access, high speed mobile data access – Low power, bi-directional

By avoiding interleaved or mixed usages of the spectrum, it is possible to reduce interference and allow for new services. This Communication was developed as a result of EC mandates and is based on the technical work conducted by CEPT ECC Task Group 4. It is currently under review by the European Parliament and European Council. Work on a pan-European harmonized band plan is proceeding in CEPT ECC Task Group 4 and further EC mandates are expected. The EC is also working on a study regarding the social and economic aspects of the digital dividend and a public consultation is planned. Qualcomm supports the EC’s continued efforts to spearhead an efficient pan-European spectrum harmonization plan for the UHF band and is optimistic that New Zealand and other countries in the Asia Pacific region will adopt similar spectrum band plans.

¹² See http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/com_dd_en.pdf.

While the specific frequency bands and band plans under consideration in Europe may not be applicable to New Zealand and other Asia Pacific countries, due to differing allocations, band uses and the fact that the Asia Pacific is not constrained by the Geneva-06 Plan, some general principles could still apply:

- Maximize efficient use of valuable UHF spectrum resource,
- Segment between mobile (medium and low power) usage and fixed broadcasting (high power),
- Segment between the uplink of broadband networks and mobile downlink.

Importantly, the UHF band has been recognized as prime spectrum for mobile multimedia broadcast services due to its favorable propagation characteristics, better antenna performance, superior mobility performance, and good in-building penetration characteristics. Network deployment in higher and lower frequency bands, while feasible, could significantly impact network economics. Within the UHF band, Band V (in particular the 700 MHz range) is viewed by industry as the optimum compromise between propagation and handheld antenna characteristics. Traditional TV services, which are not constrained by handheld antenna design limitations, would benefit from the greater propagation in the lower UHF band. Encouraging such band segmentation between fixed and mobile uses, to the greatest extent possible, will facilitate co-existence and minimize any potential for interference. In addition, single frequency network (SFN) configurations are recommended for mobile broadcast TV as they typically increase the coverage and capacity in comparison to a multiple frequency network (MFN) configuration. This is because the transmissions received from multiple SFN transmitters are additive, effectively creating a stronger signal and improving network reception. This reduces network cost or allows more content bearing channels to be supported. Most of the terrestrial mobile TV networks around the world are designed based on an SFN configuration.

Question 7.11: Which of the options to encourage investment in digital content and infrastructure, and to ensure the digital broadcasting industries are yielding an optimal economic return to New Zealand, do you support? Please give reasons for your views.

In general, Qualcomm is of the view that market competition attracts investment and the development of innovative technologies, services and attractive products. It is only with these preconditions that economies of scale can be realized. Providing certainty to interested stakeholders is also critical to encouraging investment and innovation. Promising services in their early stages of development require incentives for investment and innovation. This is particularly true for new markets such as mobile broadcast television wherein significant investment in new infrastructure is required.

Regulation has a key role to play in the successful adoption of these new services, and a timely launch of ‘converged’ mobile broadcast TV services in New Zealand can only be achieved if the licensing framework is market-driven and pro-enterprise. Regulators can cultivate this process by ensuring fair and robust market competition and undertaking all possible steps to mitigate potential risks and prevent market abuse. However, worldwide experience has shown that early regulation of new markets, in particular controls on entry, can stunt market growth, restrict services, raise prices and hurt quality. Fair and effective competition, both in competing technologies and among competing operators, is a regulator’s best method of protecting the interests of consumers.

Mobile broadcast TV will be offered via a new delivery platform which implies different dynamics in terms of services, programming content, and consumption as compared to existing broadcasting services. For example, mobile broadcast TV requires new and significant investment in network, content and devices. The Organization for Economic Co-operation and Development (OECD) has taken the position that “in view of the fact that mobile TV services are new and innovative, it is

important that regulators tread lightly, and delay imposing broadcasting type obligations such as the protection of the public, the promotion of cultural diversity and pluralism of the media until it is clearly determined that they are necessary.”¹³ Qualcomm shares this view and believes that diversity and pluralism of the media will be ensured by the market – that is, competition from multiple mobile TV networks and business/market considerations will ensure rich and diverse programming material. We also feel it would be premature to apply legacy broadcasting regulations to new mobile broadcast TV services. The overarching goal of any new policy framework should be to drive market investment and innovation in order to provide incentives to mobile TV service operators to offer attractive services to consumers.

It is also worthwhile noting the approaches to mobile multimedia broadcast regulation that are being considered in other countries. For example, the Hong Kong Commerce Industry and Technology Bureau’s “*Consultation on Digital Broadcasting: Mobile TV and Related Issues*”¹⁴ proposed that mobile TV be regulated under the “Telecommunications Ordinance.” Similar views have been articulated in India and resulted in the Telecommunications Regulatory Authority of India (TRAI) recommendations on “*issues relating to mobile television services*”.¹⁵ In Europe, mobile TV regulation is still fragmented amongst European Union member states although it is likely to fall under the New Regulatory Framework (“Telecom Package”) which encompasses all *Electronic Communications*, with the objective of addressing digital convergence.¹⁶ So far, European regulators have recognized the need for a light-touch regulatory framework avoiding the application of traditional broadcast rules.

With respect to content to mobile devices, in view of the nascent nature of the mobile broadcast TV marketplace, we encourage the adoption of a “light-touch” approach. Self-regulatory industry codes of practice for regulating content to mobile devices have been adopted in a number of countries, including the United States, and we encourage the MCH/MED to consider a similar approach for New Zealand.¹⁷

In summary, Qualcomm supports a regulatory approach for new services that does not place overly restrictive requirements on stakeholders in terms of service provision, licensee eligibility, ownerships and/or partnerships.

Conclusion

In conclusion, Qualcomm appreciates this opportunity to provide comments on the Discussion Paper on *Digital broadcasting: Review of regulation*. Qualcomm strongly supports the MCH/MED’s

¹³ See OECD, *Mobile Multiple Play: New Service Pricing And Policy Implications*, DSTI/ICCP/TISP(2006)1/FINAL, January 15, 2007, p. 6.

¹⁴ See Hong Kong, Commerce Industry and Technology Bureau, “*Digital Broadcasting: Mobile TV and Related Issues*,” 26, January 2007.

¹⁵ <http://www.trai.gov.in/trai/upload/PressReleases/526/pr3jan08no4.pdf>

¹⁶ http://ec.europa.eu/information_society/policy/ecommm/tomorrow/index_en.htm.

¹⁷ Cellular Telecommunications Industry Association (CTIA) in the United States helped industry to develop voluntary guidelines for classifying content provided over wireless handsets. These can be found at http://www.ctia.org/consumer_info/service/index.cfm/AID/10394 and a reference to these guidelines and a further explanation can be found at the FCC’s website, <http://www.fcc.gov/cgb/consumerfacts/protectingchildren.html>. The recently released 2nd mobile TV consultation from CEDB/OFTA proposed an industry self-regulatory approach as one of the options for regulating content. It is also worth noting that a number of respondents to the Singapore MDA’s recent mobile TV consultation also advocated an industry self-regulatory approach.

existing market-driven, light-touch and pro-enterprise regulatory framework and believes this continued approach will attract more players to the new markets emerging as well as encourage innovation and competition. We also believe that appropriate spectrum allocation and regulation – rather than mandating standards – will ensure the development of successful business models and further enable the overall success of new markets and services, such as mobile broadcast television.

Should you have any questions or comments on this submission, please do not hesitate to contact me at +852 6348 6687 (mobile) or jgwelch@qualcomm.com.

Sincerely,

A handwritten signature in blue ink that reads "Julie Garcia Welch". The signature is written in a cursive, flowing style.

Julie Garcia Welch
Director, Government Affairs
Southeast Asia & Pacific

cc: Robert Hart, Qualcomm Senior Director of Business Development and Country Manager
for New Zealand and Australia