

Qualcomm Incorporated

Response to Media Development Authority  
Public Consultation on

*Policy and Regulatory Framework for Mobile Broadcasting Services in Singapore*

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Ms. Ling Pek Ling  
Director (Media Policy)  
Media Development Authority  
Email: MDA\_MTVS\_Comment@mda.gov.sg

Dear Ms. Ling Pek Ling,

Qualcomm Incorporated would like to thank the Media Development Authority (MDA) for the opportunity to provide comments on its *Policy and Regulatory Framework for Mobile Broadcasting Services in Singapore*.

As the MDA 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 140 handset and infrastructure 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 has also developed other technology solutions for wireless service providers such as MediaFLO<sup>TM</sup><sup>1</sup>, 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 handsets. FLO<sup>TM</sup>(Forward-Link-Only) technology, a key component of the MediaFLO system, is a 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.<sup>2</sup> MediaFLO is included as Multimedia System M in ITU-R Recommendation BT.1833 for mobile broadcasting, approved by the International

<sup>1</sup> [www.qualcomm.com/mediaflo](http://www.qualcomm.com/mediaflo).

<sup>2</sup> 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,<sup>3</sup> and is in the approval process at the European Telecommunications Standards Institute (ETSI).<sup>4</sup>

MediaFLO technical specifications are driven and supported by the FLO Forum ([www.floforum.org](http://www.floforum.org)), an international organization with over 90 leading wireless and broadcast industry companies from all regions of the world. The FLO Forum objective is to enable an open and wide ecosystem to meet the varied requirements of a growing standards based, multi-vendor environment. FLO Forum initiatives include the definition of necessary interface standards that will significantly lower the barriers to entry for alternative suppliers to offer compatible solutions in a modular fashion. The FLO Forum works collaboratively and on a consensus, contribution-driven basis to generate technical specifications for submission to global standards and regulatory bodies.

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 and continues to perfect 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.<sup>5</sup> 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.<sup>6</sup>

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 agrees with the MDA that "the evidence to date suggests that MTVS might offer a major new audio-visual platform in Singapore which could enhance the lives of its citizens." We believe there is significant interest in mobile broadcast multimedia services in Singapore 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.<sup>7</sup> 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 will continue to be active in supporting market players in Singapore and other countries around the world who are interested in the MediaFLO system.

Qualcomm thanks the MDA for its careful consideration of the wide-ranging regulatory issues that arise when trying to introduce a new service such as mobile broadcast TV. Qualcomm is strongly supportive of many of the proposals the MDA has put forward in its Public Consultation and would like to draw attention to the following key elements.

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<sup>3</sup> 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>.

<sup>4</sup> 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](http://webapp.etsi.org/WorkProgram/Report_WorkItem.asp?WKI_ID=25905).

<sup>5</sup> [http://www.qualcomm.com/press/releases/2006/060908\\_signs\\_flo\\_chip.html](http://www.qualcomm.com/press/releases/2006/060908_signs_flo_chip.html).

<sup>6</sup> [http://www.qualcomm.com/press/releases/2007/070618\\_siano\\_sign\\_flo\\_print.html](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](http://www.qualcomm.com/press/releases/2007/070723_telechips_sign_flo.html).

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

Technology neutrality: The MDA proposes not to mandate a single standard for mobile broadcast TV but to take account of concerns about market failure in the selection of the appropriate technologies when evaluating the bids for multiplex licenses. Qualcomm believes that enabling the market to determine which technology to deploy is instrumental in promoting competition, innovative services, increased investment and consumer choice.

UHF frequency band: The MDA proposes to license up to two multiplexes in the UHF frequency band. The UHF band is recognized as prime spectrum for mobile broadcast TV 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.<sup>8</sup> 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.

Competition: The MDA is prepared to license up to two 8 MHz channels in the UHF band. Allowing access to two UHF multiplex licenses and multiple broadcast service licenses will promote competition and increase capacity. Qualcomm is of the view that fostering competition stimulates innovation and a variety of attractive service offerings which will be critical to the growth of the mobile television service (MTVS) market in Singapore.

Recognition of a subscription based business model: The MDA recognizes that “Subscription based services are significantly more likely to be commercially viable than advertising based FTA services in Singapore.” Qualcomm agrees. The MTVS market requires significant investment in new infrastructure and user devices. Without some degree of certainty resulting from the subscription based model, we believe it could be difficult to build a sustainable business case and promote investment in a quality network, compelling content and a variety of devices. While the channel mix in Singapore could ultimately include a combination of subscription and FTA services, we agree with the MDA that the subscription based model is likely to be the most commercially viable in the long term.

#### Response to specific MDA Questions:

##### **1) Not to mandate any particular standard for MTVS in Singapore (Section 2.3)**

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<sup>8</sup> See European Commission Communication on “Reaping the full benefits of the digital dividend in Europe; A common approach to the use of the spectrum released by the digital switchover” (November 2007) which introduces the partitioning of the UHF band into three different segments or “clusters of services” by network type (e.g., traditional broadcasting, mobile multimedia, wireless broadband) leading to innovation and efficient use of the spectrum;

[http://ec.europa.eu/information\\_society/policy/ecomms/doc/library/proposals/com\\_dd\\_en.pdf](http://ec.europa.eu/information_society/policy/ecomms/doc/library/proposals/com_dd_en.pdf).

Qualcomm supports the MDA's proposal not to mandate any particular standard for MTVS in Singapore and to adopt technology neutral principles for mobile broadcast TV standards. We believe this proposal gives operators the flexibility needed to deploy the MTVS standard that best suits their business needs. As mobile TV is in a nascent stage 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. As the MDA has acknowledged, a market-led approach to mobile broadcast TV standards is vital to the successful long-term development of commercial mobile TV services. We, therefore, urge the MDA to ensure that various industry-recognized standards can be deployed.

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, Hong Kong and Australia have both announced plans to auction spectrum on a technology neutral basis for mobile broadcast TV in the 2008/2009 timeframe.

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 principle of technology neutrality.<sup>9</sup> This core principal has 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.<sup>10</sup>

Qualcomm firmly believes that appropriate spectrum allocation and successful business models – rather than mandating standards - underpin the 'success' of the mobile broadcast TV market and consumer adoption of these new services. Market failure could occur with unnecessary government interference. For these reasons and based on international precedent, we strongly urge the MDA to uphold the Singapore Government's long standing adherence to technology neutral policies.

## **2) To impose minimum network coverage requirements of 95% (outdoor coverage) on multiplex operators (Section 2.4)**

Qualcomm supports the MDA's proposal.

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<sup>9</sup> European Council Conclusions on 'Strengthening the Internal Market for Mobile Television,' 29 November 2007.

<sup>10</sup> 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.](#)"

**3) Not to impose any quality of service on picture quality and indoor coverage at this instance but will reserve the right to do so when necessary (Section 2.4)**

Qualcomm supports the MDA's proposal not to impose any quality of service on picture quality and indoor coverage at this instance and agrees these requirements should be determined by market forces. Nevertheless, Qualcomm believes picture quality and indoor coverage are among the most critical elements for the widescale adoption of mobile broadcast TV services. Therefore, we also support the MDA's proposal to consider these parameters as part of the multiplex license tender evaluation.

**4) To require both MTVS and cellular mobile TV service operators to obtain broadcast services licenses before transmitting TV services over their networks (Section 3.1)**

Mobile TV is a nascent service and the market, in this early stage of development, requires 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 MTVS in Singapore can only be achieved if the licensing framework is indeed 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.

MTVS 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 and IPTV services. For example, MTVS 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."<sup>11</sup> Qualcomm shares this view and believes that diversity and pluralism of the media will be ensured by the market – that is, competition from multiple MTVS networks and business/market considerations will ensure rich and diverse programming material. We also feel it is premature to make the determination that legacy broadcasting regulations should be applied to MTVS at this stage. The overarching goal of the new MTVS 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.

While governments around the world are adopting varied approaches to mobile TV regulation, thus far there appear to be significant trends – that is, mobile TV is recognized as a convergent new service and is regulated outside of conventional broadcasting regimes, e.g., United States and Australia. In Hong Kong, respondents to the Commerce Industry and Technology Bureau's "Consultation on Digital Broadcasting: Mobile TV and Related Issues"<sup>12</sup> demonstrated a strong preference for a legislative framework under the "Telecommunications Ordinance." In Europe as well, mobile TV regulation is likely to fall under the New Regulatory Framework ("Telecom

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<sup>11</sup> See OECD, *Mobile Multiple Play: New Service Pricing And Policy Implications*, DSTI/ICCP/TISP(2006)1/FINAL, January 15, 2007, p. 6.

<sup>12</sup> See Hong Kong, Commerce Industry and Technology Bureau, *Digital Broadcasting: Mobile TV and Related Issues*, 26, January 2007. A second consultation is expected to be released in early 2008.

Package”) which encompasses all “Electronic Communications.”<sup>13</sup> While mobile TV regulation thus far remains fragmented by country, European regulators have recognized the need for a light-touch regulatory framework avoiding the application of traditional broadcast rules.

Prior to adapting the IPTV broadcast service licensing framework for MTVS, Qualcomm urges the MDA to consider more flexible alternatives to the existing broadcast service licensing framework that has been proposed.

**5) To adapt the two-tier IPTV framework to regulate the MTVS operators and cellular mobile TV operators and to license the service providers under the niche broadcasting service framework (Section 3.1)**

Qualcomm believes the ‘Niche’ broadcast service framework proposed for MTVS contains disincentives which could negatively affect this nascent sector and create deterrents to investment. In particular, more efficient service providers in the Niche market (measured by consumer uptake) would be punished by the 100,000 subscriber cap, as their ability to grow to meet market demand would be artificially limited by regulation. Moreover, the guidance provided by the MDA for when the Niche licensee grows beyond the 100,000 subscriber limit seems incomplete. Additional criteria that the MDA would take into consideration is specified (e.g., location, language and reach and impact of channels), but the MDA does not address the alternative (i.e., the regulatory consequences of such additional criteria not being met) and its possible effects on a Niche licensee that has outgrown the Niche category due to a successful business. Due to the emerging nature of mobile broadcasting services and the possible uncertainties associated with such an embryonic sector, investors may be reluctant to invest in a sector that seems to have punitive regulatory actions for a successful business plan. In light of these concerns, we urge the MDA to revisit the 100,000 subscriber limitation and the possibilities of eliminating this two-tiered system.

We also have some general questions about how the transition from Niche to Nationwide would operate. We understand the two-tier model proposed for MTVS is based on the IPTV licensing scheme adopted in January 2007. Because of the significant regulatory differences between the Niche and Nationwide licenses proposed by MDA - which include critical issues such as the ownership structure of both types of licensees, as well as restrictions on foreign ownership and control that are imposed on Nationwide but not Niche licensees - close attention should be paid to guaranteeing the possibility of a seamless transition between both types of licenses. Therefore, we urge the MDA to examine the possibilities for relaxing the ownership restrictions proposed for MTVS Nationwide licensees and contained in Part X of the Broadcasting Act. Under this framework, it would be extremely difficult to encourage both local and foreign investment in this new market opportunity – objectives the MDA has said it would like to achieve through this proceeding. Alternatively, it may be appropriate to consider ownership rules similar to those required under the telecommunications framework.

**6) To issue 10 year multiplex licenses, with an option to renew for a further five years, via a comparative tender process and to issue five year niche broadcasting service license (Section 3.2 and 3.3)**

Qualcomm believes that a comparative tender could be an effective way to assign MTVS licenses in Singapore provided that: 1) the evaluation criteria and the weighting of each criterion are developed in a fair, balanced, and transparent manner, and 2) the evaluation criteria and weighting are made clear to each interested applicant well in advance of the application filing deadline. We also believe

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<sup>13</sup> [http://ec.europa.eu/information\\_society/policy/ecommm/tomorrow/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/tomorrow/index_en.htm).

limiting evaluation criteria to technical, financial, and commercial criteria would be most consistent with the market-led, pro-enterprise approach the MDA is proposing.

In particular, we have some concerns about the proposal to “...take account of concerns about market failure in the selection of the appropriate technologies when evaluating the bids for multiplex licenses.” As in any new market, the assessment of market failure should not lead to subjective conclusions. Any concerns should be clearly identified to all bidders in advance of the application process. It is also difficult to understand how it would be possible to make an assessment of market failure at the time of evaluation of bids for the multiplex license. As mentioned, other international commercial launches have not demonstrated any technology winner but instead have highlighted the need for significant investment, appropriate spectrum allocation and a market-led light touch approach.

Qualcomm notes that auctions have proven to be an effective and efficient method for assigning spectrum licenses in Singapore and believes they could be used for assigning MTVS multiplex licenses as well. Auctions tend to be very transparent, thus making them subject to fewer disputes from losing bidders. Moreover, they are less time consuming for the regulator to carry out than lengthy comparative analyses that tend to involve more subjective regulatory action than auctions.

In Section 3.3, the MDA proposes a 10 year multiplex license duration and five year broadcasting service license duration with the possibility of a five year renewal. Qualcomm, however, believes that these timeframes may be too short a period to allow a reasonable return on network investment and to provide certainty to licensees. Qualcomm, therefore, proposes that the MDA consider adopting longer licensing terms, such as 15 years for both the multiplex and broadcast service licenses. It is important that the MDA make the terms of both the multiplex and the broadcast service licenses the same – particularly for those licensees that wish to also provide facilities-based MTVS as their multiplex licenses would have no value without the broadcast service license if the MDA maintains this dual licensing framework. Furthermore, Qualcomm urges the MDA to give licensees an expectation of renewal, unless they have not complied with the terms of the license, as this will create more certainty for investors, particularly those investing in a multiplex license.

**7) To require multiplex licensees to offer capacity to third parties on fair, reasonable and non-discriminatory conditions (Section 4.4)**

While we are of the general view mobile TV licensees should have the flexibility to allocate their capacity in accordance with their own business judgment without governmental intervention, we note this model has proven successful in other countries and would avoid duplication of infrastructure costs and increase business viability. For example, this model has been implemented in the United States where MediaFLO USA, Inc. (a wholly owned subsidiary of Qualcomm) has deployed a national SFN MediaFLO mobile TV network in spectrum it was awarded via auction in 2003 (UHF channel 55 from 716–722 MHz). MediaFLO USA, Inc. is delivering its mobile TV service as a wholesaler to wireless carriers. It has contracted with major broadcasters and content providers (e.g., ESPN, CBS, Fox, NBC, and Viacom) to deliver their content, which includes news, entertainment, sports, and children’s programming. MediaFLO USA, Inc. has entered into commercial agreements with wireless carriers whereby the carriers will offer the MediaFLO mobile TV service to their subscribers on a retail basis. The platform offered by MediaFLO USA, Inc. is designed to support a number of wireless carriers and additional content programs based on market demand. To date, MediaFLO USA, Inc. has entered into these agreements with the top two wireless carriers in the United States (based on numbers of subscribers), Verizon Wireless (CDMA2000 carrier) and AT&T/Cingular Wireless (HSDPA/UMTS/GSM carrier). These two mobile operators combined



have over 120 million wireless subscribers.<sup>14</sup> As of December 2007, Verizon had launched the mobile TV service in over 50 major markets and AT&T has stated it intends to launch the service to its customers early this year. In this example it should be noted that the United States Federal Communications Commission does not regulate how MediaFLO USA, Inc. allocates its capacity, and instead, the spectrum licensee allocates its capacity based on its own business considerations.

**8) Not to impose an advertising revenue cap (Section 4.5)**

Qualcomm supports the MDA's proposal.

**9) To apply MDA's programming codes for fixed TV services (FTA content, subscription content, VOD and other kinds of content) (Section 5.2)**

As the MDA and Qualcomm both agree, a light-touch and pro-enterprise regulatory framework will attract more players to the mobile broadcast TV market as well as encourage innovation and competition. The requirement for compliance with the MDA's programming codes, including *ex ante* approval, is a significant burden on new MTVS licensees and could have a deleterious impact on MTVS market growth in Singapore. We, therefore, recommend the programming codes be revised or relaxed.

**10) Not to impose public service broadcasting obligations (Section 5.3.1)**

Qualcomm supports the MDA's proposal.

**11) Not to impose must-carry obligations (Section 5.3.2)**

Qualcomm supports the MDA's proposal.

**12) To require mobile TV operators not to block access by their users to any local FTA channels offered by Mediacorp using compatible technologies (Section 5.3.2)**

While it is technically feasible for mobile broadcast technologies to receive local FTA channels - assuming that the programming content has been made available for mobile TV reception - the ability to access content over multiple platforms requires commercial agreements with content-rights holders in order to be able to offer the programming. Again, we believe the MTVS channel offering should be a business decision that is driven by commercial negotiations and not governed by strict regulation. It is possible that the channel mix in Singapore could be a combination of both subscription based and FTA services. We note the MDA states on page 15 of the Public Consultation paper, "Subscription based services are significantly more likely to be commercially viable than advertising based FTA services in Singapore." Qualcomm agrees and this proposed requirement for mobile TV operators not to block access to any local FTA channels seems inconsistent with this line of thinking.

In addition, it is important to consider any "must-carry" obligations within the context of the capacity available to the MTVS licensee. For example, requiring the licensee to carry all local FTA channels may limit the flexibility of the overall channel offering.

**13) To apply the current framework for advertising regulation (as specified in the MDA TV advertising and sponsorship codes and voluntary SCAP code) (Section 5.4)**

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<sup>14</sup> World Cellular Information Service, March 2007.

No comment.

### **Conclusion**

Qualcomm appreciates this opportunity to provide comments on the MDA's Public Consultation on *Policy and Regulatory Framework for Mobile Broadcasting Services in Singapore*. Qualcomm supports the MDA's goals of developing a market-driven, light-touch and pro-enterprise regulatory framework that will attract more players to the mobile broadcast TV market as well as encourage innovation and competition. We also applaud the MDA for adhering to Singapore's long standing policy of technology neutrality and extending it to mobile broadcast TV standards. Qualcomm firmly believes that spectrum availability, continued technology neutrality and a market-led approach will spur investment and innovation critical for the ultimate success of the MTVS market in Singapore.

Should you have questions, please do not hesitate to contact me at < +852 2537 5000 > 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

cc: Mr. SengHee Tan, Qualcomm Director of Business Development and Country Manager  
for Singapore