Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Recommendations Approved By The Advisory Committee For The 2007 World Radiocommunication Conference	IB Docket No. 04-286

Comments of Motorola, Inc.

Motorola is a global manufacturer of a broad range of wireless and wireline communications products, including mobile telephones, commercial wireless network equipment, broadband wireless access equipment, public safety communications equipment and cable modems. As such, Motorola has extensive experience in developing and implementing new radio technologies for a wide variety of services, applications and environments and is uniquely situated in developing reliable and commercially viable radio-based solutions.

The Commission seeks comment on a number of draft proposals for the United States to submit to the World Radiocommunication Conference 2007 ("WRC-07"),[1] which will consider a number of changes to the international Radio Regulations pertaining to international spectrum use. The Commission's WRC Advisory Committee ("WAC"), an industry group, has developed these proposals and submitted them to the Commission for its consideration in determining the ultimate proposals of the United States to WRC-07. Motorola respectfully submits its views on two draft proposals where

[1] *See* FCC Seeks Comment On Recommendations Approved By The Advisory Committee For The 2007 World Radiocommunication Conference, Public Notice, IB Docket No. 04-286, DA 07-26, (Jan. 9, 2007) ("WAC Public Notice").

the WAC could not reach agreement on a single proposal. Specifically, in the following paragraphs, Motorola addresses 1) whether or not to identify the 3650-3700 MHz band for advanced commercial wireless services under WRC-07 agenda item 1.4; and 2) which advanced commercial wireless technologies to identify spectrum for under WRC-07 agenda item 1.4.[2]

I. The 3650-3700 MHz Band

With respect to whether or not to identify the 3650-3700 MHz band, the satellite community, in View A,[3] recommends that the United States actively oppose identification of the band. To support their proposal, the satellite community asks that the United States' proposal cite concerns of interference to a limited number of satellite downlink operations in the 3650-3700 MHz band. In contrast, the terrestrial community, in View B,[4] recommends that the United States *not* actively oppose the identification. At the same time, though, the terrestrial community does not recommend that the United States propose identification of the band, given the limitations on terrestrial use of the band in the United States (e.g., low EIRP limits).

Motorola supports View B. The Commission has made significant efforts to encourage the implementation of broadband wireless access systems in the 3650-3700 MHz band. In particular, the Commission sought to provide additional spectrum for "the needs expressed by a growing number of entrepreneurial wireless internet service providers (WISPs), that currently bring broadband services to consumers particularly

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[2] *See Id*., Document WAC/149(13.12.06) at Pgs. 33-39, and Document WAC/148(13.12.06) at Pgs. 8-32, respectively.

[3] *See Id*., at Pgs. 36-37.

[4] *See Id*., at Pgs. 38-39.

those living in rural areas in the United States."[5] In doing so, the Commission refused to accept any new applications for satellite earth stations to avoid introducing further impediments to terrestrial use of the band.[6] As the Commission has limited satellite use of the band in order to promote broadband wireless access systems, it would be inconsistent with domestic policies for the United States to oppose the identification. Further, in proposing use of this band by terrestrial services, the Commission recognized that "Internationally…there is strong interest in providing for these [FWA] services in the 3400-3700 MHz frequency range…"[7] After considering the benefits of aligning with international use, it would not be prudent for the Commission now to send a confusing message internationally by opposing terrestrial use of the band to protect limited satellite operations.[8]

II. How to Identify Spectrum

Certain frequency bands—806-960, 1710-2025, 2110-2200, and 2500-2690 MHz—are identified for use by International Mobile Telecommunications 2000, or IMT-

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[5] Wireless Operations in the 3650-3700 MHz Band; Rules for Wireless Broadband Services in the 3650-3700 MHz Band; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band; Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band, *Report and Order and Memorandum Opinion and Order*, ET Docket No. 04-151, WT Docket No. 05-96, ET Docket 02-380, 20 FCC Rcd 6502 (rel. Mar. 16, 2005), at ¶ 2.

[6] "Thus, we find that unrestrained deployment of FSS earth stations could hinder or greatly inhibit the opportunities for terrestrial operations in the band." Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band; The 4.9 GHz Band Transferred from Federal Government use, *First Report and Order and Second Notice of Proposed Rulemaking*, ET Docket No. 98-237, WT Docket 00-32, 15 FCC Rcd 20488 (rel. Oct. 24, 2000), at ¶ 18.

[7] The Commission did not propose use of 3400-3600 MHz band for terrestrial broadband services in the US because of continued military operations. Amendment of the Commission's Rules With Regard to the 3650-3700 MHz Government Transfer Band, *Notice of Proposed Rulemaking and Order*, ET Docket No. 98-237, FCC 98-337 (rel. Dec. 18, 1998), at ¶ 7, 8.

[8] A search of the International Bureau Filing System ("IBFS") shows 50 records for earth stations currently licensed in 3650-3600 MHz. In comparison, in the adjacent 3700-4200 MHz band, the same search yields over 13,000 records. The difference in density of satellite use of the two frequency bands is significant.

2000, in the international Radio Regulations. The practice of identifying spectrum for certain types of usage began in 1992, with designation of certain frequency bands for FPLMTS (future public land mobile telecommunications systems).[9] Since then, over the course of several World Radiocommunication Conferences, the term was changed to IMT-2000, more spectrum was identified, and the concept was defined. When the original identifications were made, there was no detailed definition of what "FPLMTS" or "IMT-2000" encompasses. Finally, in 1999, the ITU (in Working Party 8F) defined the five radio interface standards that make up the IMT-2000 family and captured them in Recommendation ITU-R M.1457.[10] The five standards originally adopted in 1999 have been updated, but no new technologies have been added since then. In stark contrast, mobile wireless technologies have evolved rapidly over the ensuing seven years with manufacturers and carriers focused on new technologies, particularly OFDM-based technologies such as WiMAX.[11]

Under agenda item 1.4, WRC-07 will consider identifying additional spectrum for advanced commercial wireless systems, and also review the existing identifications. In View A,[12] certain companies recommend that the United States propose identifying the 698-806 MHz band, and the existing IMT-2000 bands, for "IMT", which includes both IMT-2000 and IMT-Advanced. IMT-Advanced is a new term used in Working Party 8F

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[9] *See* International Radio Regulations, Edition of 1998 (reflecting provisions adopted at WARC-92 and subsequent updates at WRC-95 and WRC-97), Footnote S.5.388 to the Table of Frequency Allocations and Resolution 212 (rev. WRC-97).

[10] Recommendation ITU-R M.1457, "Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)."

[11] WiMAX is a broadband wireless access standard based on OFDM technology developed in IEEE, otherwise known as IEEE 802.16.

[12] *See* WAC Public Notice at Pgs. 10-15.

to describe "systems beyond IMT-2000", but has yet to be defined in a concrete way. The companies supporting View A anticipate that IMT-Advanced will be defined (e.g., the radio interface technologies that make it up) over the coming years in Working Party 8F.

In View B,[13] other companies recommend that the Commission propose identifying the 698-806 MHz band, as well as the existing IMT-2000 frequency bands, for "IMT and other broadband wireless access systems." This would include IMT-2000, the yet-to-be-defined IMT-Advanced, and broadband wireless access systems like WiMAX. Broadband wireless access technologies are recognized by the ITU in a manner similar to the IMT-2000 technologies; radio interface standards for broadband wireless access systems are contained in Recommendations ITU-R F.1763 and ITU-R M.[8A/BWA].[14] Motorola supports View B, as it provides a technology neutral way for additional advanced wireless technologies to gain global access to the existing and any newly identified frequency bands while maintaining the value of harmonizing spectrum for advanced commercial wireless systems. Further, this view is consistent with the United States' policy of technology neutrality.

The Commission has a long-held policy of technology neutrality, allowing licensees in these frequency bands the flexibility to implement any technology most appropriate and efficient for meeting their requirements, and to change technologies as

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13 *See* WAC Public Notice at Pgs. 16-33.

14 Recommendation ITU-R F.1763, "Radio interface standards for broadband wireless access systems in the fixed service operating below 66 GHz" for fixed applications and Recommendation ITU-R M.[8A/BWA], "Radio interface standards for broadband wireless access systems, including mobile and nomadic applications, in the mobile service operating below 6 GHz", for mobile and nomadic applications.

the market progresses and new, improved technologies become available. For example, in the AWS proceeding, the Commission described its overall policy:

> "In order for the communications industry to better serve the public, regulatory policy should strive to eliminate barriers to and facilitate the provision of new services. The 1710-1755 MHz and 2110-2155 MHz spectrum provides a significant opportunity for service advances. …Within the limits of the fixed and mobile allocation, the market place and not the government should determine how this spectrum is used. Thus, our proposals allow flexibility for licensees to provide third generation (3G) and other advanced wireless services in the near term, while fostering innovation and agility so they can quickly adapt to changes in technological capabilities and marketplace conditions into the future."[15]

An underlying tenant of the US commitment to technology neutrality is that it does *not* benefit US consumers to limit the technologies that can be implemented in a given frequency band.

A number of administrations around the world, however, limit use of these bands to the five IMT-2000 technologies, despite language in the Radio Regulations indicating that such use is not intended to be exclusive.[16] US consumers, manufacturers and service providers would benefit from the extension of the United States' policy of technology neutrality internationally. Agenda item 1.4 offers the world a chance to modify the spectrum identifications in a manner that would more efficiently keep pace with changes in technology. Expanding the technologies included in the spectrum identifications to include broadband wireless access technologies like WiMAX (as proposed in View B) would allow US service providers, manufacturers and consumers to reap the benefits of global economies of scale for new broadband wireless access technologies. Not

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[15] Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, *Notice of Proposed Rulemaking*, WT Docket 02-353, FCC 02-305 (rel. Nov. 22, 2002), at ¶ 2.

[16] "…This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations." International Radio Regulations, Edition of 2004, Footnote 5.384A to the Table of Frequency Allocation.

surprisingly, the last US proposal to a World Radiocommunication Conference to identify commercial wireless spectrum proposed to identify spectrum for IMT-2000 "and other advanced communications applications."[17] While View B is similar to the previous proposal, it has the added advantage of referring to a term that is defined in the ITU—radio interface standards for broadband wireless access systems, like IMT-2000, are captured in ITU-R Recommendations developed by Working Parties 8A and 9B.[18]

Beyond the general consistency of View B with the Commission's policy of technology neutrality, there are already concrete situations that expansion of the identifications could benefit. The major US licensees in the 2.5 GHz band—Sprint and Clearwire—have announced that they will deploy WiMAX.[19] WiMAX is not currently an IMT-2000 technology.[20] Both of these licensees support View B and are asking the Commission to help them achieve global economies of scale for 2.5 GHz broadband wireless access equipment.[21] WiMAX holds much promise to provide broadband services to consumers across America in a cost-effective, efficient manner. As the Commission has recognized, "because the [WiMAX] equipment will be standardized, it

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17 *Proposals for the Work of the Conference, Proposals for Terrestrial and Satellite Component of IMT-2000*, United States of America, Addendum 3 to WRC-2000 Document 12-E, (submitted April 17, 2000) (available at http://www.itu.int/itudoc/itu-r/archives/wrc/wrc-2000/docs/1-99/12-a3.html).

18 *See supra* at note 14.

19 *Intel, Clearwire to Accelerate Deployment of WiMax Networks Worldwide*, Press Release, Clearwire, Oct. 24, 2004 (available at http://www.clearwire.com/company/news/10_25_04-1.php). *Sprint Nextel Announces 4G Wireless Broadband Initiative with Intel, Motorola and Samsung*, Press Release, Sprint Nextel, Aug. 8, 2006 (available at http://www2.sprint.com/mr/news_dtl.do?id=12960).

20 IEEE and the WiMAX Forum have applied in Working Party 8F for WiMAX to become an IMT-2000 technology (to be added to Recommendation ITU-R M.1457). While Motorola strongly supports and is participating in this effort, it is not clear at this time if that process will be successful or when it will be completed. The WRC offers the opportunity to ensure WiMAX/BWA inclusion in the identifications in the most expeditious manner, if the addition to Recommendation ITU-R M.1457 is not successful prior to the WRC.

21 *See* WAC Public Notice at Pg. 9.

will be interoperable across networks and is expected to be less expensive than proprietary standards."[22] The reduced costs are attributable in large part to the economies of scale that can be realized through regional or global markets for these products and to competition among manufacturers. Reducing the cost of equipment and services fulfills the public interest in that it allows service providers to offer new and improved services at competitive prices, making such services accessible to the largest possible base of consumer and business customers. It will be difficult to achieve regional or global economies of scale, however, if the international regulations provide artificial barriers to the entry of new technologies. If changes are not made to specifically include broadband wireless access systems at WRC-07 new technologies like WiMAX will be left with applying the potentially lengthy process in Working Party 8F to become either part of IMT-2000 or IMT-Advanced.[23,24] It is in the interest of the United States to minimize delays for inclusion of technologies that are already being implemented by US licensees.

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[22] Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, *Tenth Report*, WT Docket No. 05-71, FCC 05-173, (rel. Sept. 30, 2005) at ¶ 122.

[23] As mentioned previously, it was seven years after spectrum was first identified that the IMT-2000 technologies were defined. Further, while IMT-Advanced is still being defined within Working Party 8F, Recommendation ITU-R M.1645 ("Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000") does indicate a timeframe of around 2010 for the introduction of radio interfaces for systems beyond IMT-2000, with related systems being deployed around 2015.

[24] The process for revising Recommendation ITU-R M.1457 is laid out in Circular Letter 8/LCCE/95, "Update procedure for revisions of Recommendation ITU-R M.1457 (Detailed specifications of the radio interfaces of IMT-2000)" (March 28, 2001); and Addendum 4 to Circular-Letter 8/LCCE/47, "Summary of IMT-2000 Requirements and Objectives and Compliance Template" (June 22, 1998). The more streamlined process typically followed for modifying ITU-R Recommendations is found in Resolution ITU-R 1-4, "Working methods for the Radiocommunication Assembly, the Radiocommunication Study Groups, and the Radiocommunication Advisory Group" (2003).

Some have expressed views that identifying the spectrum for something beyond "IMT" goes further than the agenda item. Agenda item 1.4 asks WRC-07 "to consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of the ITU-R studies in accordance with Resolution 228 (Rev. WRC-03)." When the agenda item was adopted at WRC-03, and to date, there has been no concrete definition of the term "systems beyond IMT-2000." There is no defined set of technologies that make up IMT-Advanced or systems beyond IMT-2000. As a result, it is impossible to argue that "systems beyond IMT-2000"—language specifically used in the agenda item—do not include BWA systems.

Motorola would also like to highlight the importance of modifying the WRC Resolutions associated with the identification footnotes.[25] Beyond the necessity to update the Resolutions to correspond to the revised version of the footnotes, it is also important to recognize other uses of the identified frequency bands. In particular, portions of the 698-806 MHz band are used for important public safety services in the United States and elsewhere. In order to ensure that those uses are recognized and not impacted, it is important to include text in the associated Resolution 224 regarding public safety use.[26] View B makes such modifications, but they are not included in View A.

In summary, Motorola urges the Commission to support US proposals to WRC-07 that are consistent with its domestic policies of promoting terrestrial use in 3650-3700

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[25] *See* WAC Public Notice at Pgs. 22–33.

[26] In particular, new *recognizings* d), e) and f), the modification to *emphasizing* a) and the new *resolves* 2 in Resolution 224 address public safety use. *Id*. at Pgs. 23, 24.

MHz and encouraging technology neutrality in spectrum identified for advanced commercial wireless applications.

Respectfully submitted,

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February 5, 2007