

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

In the Matter of	)	
	)	
Unlicensed Operations in the TV Broadcast Bands	)	ET Docket No. 04-186
	)	
Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Bands	)	ET Docket No. 02-380
	)	

**COMMENTS OF MOTOROLA SOLUTIONS, INC. TO PETITIONS FOR RECONSIDERATIONS**

Motorola Solutions, Inc. (“Motorola Solutions”) provides the following brief comments in response to the petitions for reconsideration of the Commission’s Second Memorandum Opinion and Order in the above-captioned proceeding.<sup>1</sup> As further discussed below, Motorola Solutions urges the Commission to quickly resolve these few remaining technical issues so that the public can begin to experience the benefits of a thriving market for TV Band Devices (“TVBDs”).

The *Second MO&O* refined the technical standards originally adopted in the *Second Report and Order*<sup>2</sup> that are applicable to unlicensed devices designed to operate in unoccupied portions of the spectrum allocated to the TV broadcast services. Motorola Solutions is a strong supporter of the Commission’s actions in this proceeding because

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<sup>1</sup> *Petitions for Reconsideration of Action in Rulemaking Proceeding*, Public Notice, Report No. 2924 (Feb. 2, 2011). *See also, Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket Nos. 04-186 and 02-380, *Second Memorandum Opinion and Order*, FCC 10-174 (rel. Sept. 23, 2010) (*Second MO&O*).

<sup>2</sup> *In the Matter of Unlicensed Operations in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008).

TVBDs offer remarkable promise for helping this nation expand the provision of wireless broadband services, particularly to underserved and rural communities.

A total of five parties, including Motorola Solutions, filed petitions requesting limited or partial consideration of the *Second MO&O*. In general, the petitions address discrete technical provisions of the operational rules for TV band devices – none raise fundamental legal or policy questions about the regulatory regime adopted for TVBDs.

For example, the petition filed by Motorola Solutions asks only that the Commission relax the adjacent channel out-of-band emissions (“OOBE”) restrictions for fixed TVBDs.<sup>3</sup> Potentially affected broadcast television facilities would receive the same level of interference protection that was adopted in the *Second MO&O* through a corresponding increase in the required separation between fixed TVBDs and the protected contours of adjacent television stations.<sup>4</sup>

The Wireless Internet Service Providers Association (“WISPA”) and a coalition of wireless broadband interests ask that the Commission increase the 76 meter limitation on the height above average terrain (“HAAT”) of fixed TVBD station locations to allow antenna heights up to 250 meters HAAT.<sup>5</sup> These parties also support the recommendation of Motorola Solutions to relax the OOBE mask for fixed TV band

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<sup>3</sup> *Petition For Reconsideration Of Motorola Solutions, Inc.*, WT Docket Nos. 04-186, 02-380 (filed Jan. 5, 2011) (“Motorola Solutions’ Petition”). Unless otherwise noted, all other referenced petitions for reconsideration were filed on the same date in the same docketed proceeding.

<sup>4</sup> *Id.* at 3.

<sup>5</sup> *Joint Petition For Partial Reconsideration*, filed by The Wireless Internet Service Providers Association, the Federation of Internet, Solution Providers of the Americas, the Native American Broadband Association, Spectrum Bridge, Inc., Comsearch, Carlson Wireless Technologies Inc. and Wireless Strategies, Inc., ET Docket Nos. 04-186, 02-380 (filed Jan. 5, 2011) (“Joint Petitioners Reconsideration”).

devices in order to lower network and customer premise equipment costs and make broadband service more affordable.<sup>6</sup>

Cellular South asks the Commission to increase the interference protection afforded to Lower 700 MHz Band, frequency Block A licensees from unlicensed devices operating on UHF-TV Channel 51.<sup>7</sup> To this end, Cellular South recommends that the Commission: 1) provide for registration of Lower 700 MHz Block A base stations in the TV Bands database; 2) prohibit fixed TVBD operation on TV Channel 51; and, 3) limit personal/portable TVBD operation on TV Channel 51 to 40 milliwatts and adopt the adjacent channel separation table in FCC Rule Section 15.712(a)(2) as the minimum distance to the Block A base station coordinates for personal/portable TVBDs.<sup>8</sup>

The two remaining petitions were filed by the Wi-Fi Alliance and the National Cable & Telecommunications Association (“NCTA”). The Wi-Fi Alliance seeks partial reconsideration to allow indoor, stationary devices to operate on channels adjacent to TV broadcast facilities in urban and suburban environments.<sup>9</sup> The Wi-Fi Alliance also requests that the Commission adopt an absolute EIRP value in addition to the adopted relative OOB limits to allow for innovation and operational flexibility.<sup>10</sup> Finally, NCTA asks that the Commission reconsider its decision to make all information in the

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<sup>6</sup> *Id.* at 2.

<sup>7</sup> *Petition For Partial Reconsideration*, Cellular South, Inc., ET Docket Nos. 04-186, 02-380 (filed Jan. 5, 2011) (“Cellular South Petition”).

<sup>8</sup> *Id.* at 3.

<sup>9</sup> *The Wi-Fi Alliance Petition For Reconsideration*, ET Docket Nos. 04-186, 02-380 at 2 (filed Dec. 29, 2010).

<sup>10</sup> *Id.*

TV bands device database publicly available.<sup>11</sup> NCTA argues that cable headends and tower receive sites are critical infrastructure and their precise geographic coordinates should not be readily available to all members of the public.<sup>12</sup>

In sum, these petitions recommend only minimal changes to the Commission's *Second MO&O*. Given their limited scope, Motorola Solutions urges the Commission to expeditiously consider and resolve these pending issues in short order so that manufacturers can commence final product development as soon as possible.

While the number of remaining issues may be small, they are however, quite significant. In particular, the OOB emissions mask issue raised by Motorola Solutions and the HAAT antenna height restrictions raised by the Joint Petitioners have serious implications that, if not favorably resolved, threaten the economic viability of TVBDs. Therefore, regulatory relief on these two issues is necessary to help achieve the goals established by the Commission to advance wireless broadband access across the country.<sup>13</sup>

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<sup>11</sup> *Petition For Reconsideration*, National Cable & Telecommunications Association, ET Docket Nos. 04-186, 02-380 at 1 (filed Jan. 5, 2011).

<sup>12</sup> *Id.*

<sup>13</sup> Recently, Adaptrum, Inc. ("Adaptrum") met with the FCC staff and stated that "while the current mask requirement is stringent, it can be realized using innovative RF and baseband technologies" and stated that "Adaptrum's radio system meets and exceeds the mask requirement specified in the current rules." *Ex Parte* Letter from Haiyun Tang, Ph.D., Adaptrum Inc. to Marlene H. Dortch, Secretary, FCC, ET Docket No. 07-196, at 1 (filed Jan. 4, 2011). This statement could be read to be in conflict with Motorola Solutions' position to relax the OOB requirements. While Motorola Solutions does not doubt that circuitry can be designed to meet the Commission's requirements, the bigger issue is at what cost. Motorola Solutions has provided the Commission with analysis showing that meeting the OOB requirements through a combined approach of reducing the occupied bandwidth and utilizing custom RF transmit circuitry results in a 65% increase in the cost of the customer premises equipment as well a 25% increase in the number of access point sites compared to a design approach that conforms to existing broadband technology transmit masks. *Ex Parte* Letter from Barry Lambergman,

Motorola Solutions supports the recommendation in the Joint Petitioners Petition to modify the antenna height restrictions for fixed TVBDs. The Joint Petitioners provide compelling data to show that the 76 meter HAAT limitation would preclude deployment in many rural areas with varying terrain and thus increase the costs of WISPs seeking to provide rural broadband service over TVBDs.<sup>14</sup> This is at odds with the fundamental goals of the Commission in establishing flexible rules for Part 15 devices to use the TV white space spectrum.<sup>15</sup>

Assuming that corresponding increases in the required separation distances to protected facilities on co-channel and adjacent channels are also adopted, there is no reason to arbitrarily limit the height of fixed TVBD transmitters to 76 meters. Motorola Solutions urges the Commission to modify its rules in support of rural deployment and increase the maximum permitted HAAT for fixed TVBD deployment as recommended by the Joint Petitioners.<sup>16</sup>

With respect to the petition submitted by Cellular South, Motorola Solutions believes that the Commission should consider the recommendations to provide for

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Director, Government Affairs, Motorola, Inc. to Marlene H. Dortch, Secretary, FCC, ET Docket No. 04-186 at 5 (filed Dec. 7, 2010). Service providers likely will pass these costs onto subscribers, which would affect the marketability of the product. If TVBDs are able to compete against products available in other bands, the OOB requirements must be brought in line with industry standards as recommended in the Motorola Solutions' Petition.

<sup>14</sup> Joint Petitioners Reconsideration at 3-7.

<sup>15</sup> See *Second MO&O* at ¶ 15 (“We believe these changes and clarifications will provide for improved protection of licensed services in the TV bands, resolve certain uncertainties in the rules and provide manufacturers with greater flexibility in designing products to meet market demands.”).

<sup>16</sup> To be clear, Motorola Solutions also supports the Joint Petitioners' proposal to use HAAT as the sole metric for determining TVBD antenna height. See Joint Petitioners Reconsideration at 4.

registration of the out-of-band Lower 700 MHz Block A base stations in the TV Bands database and to limit the use of personal/portable TVBD operation on TV Channel 51.<sup>17</sup> However, a blanket prohibition of fixed TVBD operation on TV Channel 51 is unnecessarily restrictive and does not make optimal use of the available spectrum. It could be years before Lower 700 MHz Block A licensees complete build out of their spectrum everywhere across the country, especially in lesser populated areas, which may never be built out. It makes no sense to prohibit fixed TV Band devices on TV Channel 51 at places where and during the time while TV Channel 52 remains white space.

Instead, Motorola Solutions recommends that fixed TVBD operation be allowed on TV Channel 51, subject to similar adjacent channel separation distances that are adopted for licensed TV Station incumbents. If, as Cellular South proposes, the Lower 700 MHz Block A base stations are registered in the TV Bands database, then this scheme for managing TV Channel 51 operation could be readily implemented. Given the relatively low power levels allowed for whitespace devices, Motorola Solutions believes that a blanket 2 kilometer circular adjacent channel keep-out zone around each registered out-of-band base station would provide adequate interference protection to Cellular South operations (similar to that enjoyed by TV receive sites under the current rules), and be straight-forward to implement in the existing geo-location databases.<sup>18</sup>

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<sup>17</sup> Cellular South Petition at 3. Motorola Solutions notes that Cellular South's concerns about interference to facilities operating immediately above the UHF-TV band would appear to apply similarly to other facilities operating immediately adjacent to the TV bands allocation (*e.g.*, below 470 MHz). Should the Commission decide to grant some portion of the Cellular South petition, it should also consider whether similar protection should be adopted for those other adjacent facilities.

<sup>18</sup> The analysis contained in Cellular South's petition concludes that a separation distance of 855 feet (261 meters) was sufficient to protect Block A base stations from harmful interference from a 4W EIRP fixed TVBD operating on channel 51. Cellular

In conclusion, Motorola Solutions is relieved that the end to the regulatory proceedings for TV white spaces is close at hand and that manufacturers and service providers can soon begin to focus on bringing new and innovative services to American consumers. With only a few important changes to the rules already adopted, the Commission can help fulfill the promise of this technology to improve broadband access for all Americans.

Respectfully submitted,

By: /s/ Chuck Powers  
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South Petition at Attachment page 2. Motorola Solutions proposes a 2 kilometer keep-out zone to account for its proposed relaxed transmit spectral mask, and to be more consistent with existing TV receive site protection rules.

**CERTIFICATE OF SERVICE**

I hereby certify that a true copy of the foregoing “**COMMENTS OF MOTOROLA SOLUTIONS, INC. TO PETITIONS FOR RECONSIDERATIONS**” was deposited in the United States mail, first class postage prepaid, on this 24th day of February, 2011, addressed to the following:

<p>Stephen E. Coran Rini Coran, PC 1140 19th Street, NW, Suite 600 Washington, DC 20036</p> <p>Counsel to the Wireless Internet Service Providers Association and Special Counsel to other Joint Petitioners</p>	<p>David L. Nace, Esquire George L. Lyon, Jr., Esquire Lukas, Nace, Gutierrez &amp; Sachs, LLP 8300 Greensboro Drive, Suite 1200 McLean, Virginia 22102</p> <p>Cellular South, Inc. Its Attorneys</p>
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*/s/ Chuck Powers*  
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