

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

In the Matter of	)	
	)	
Expanding Flexible Use in	)	GN Docket No. 17-183
Mid-Band Spectrum	)	
Between 3.7 and 24 GHz	)	

**REPLY COMMENTS OF MOTOROLA SOLUTIONS, INC.**

Motorola Solutions, Inc. (“Motorola Solutions” or “MSI”) hereby files these reply comments in the Federal Communications Commission’s (“FCC” or “Commission”) inquiry on expanding flexible use in mid-band spectrum between 3.7 and 24 GHz.<sup>1</sup> In these replies, Motorola Solutions focuses on the issues associated with flexible shared use of the 5.925-7.125 GHz (“6 GHz”) bands that are now used by fixed services.

During the initial comment round, several public safety and critical infrastructure entities expressed great concern over expanded use of the 6 GHz bands and the potential disruption to fixed microwave links.<sup>2</sup> For example, the Utilities Technology Council (“UTC”) and the Edison Electric Institute (“EEI”) made clear that they oppose any expanded use of the 5.925-6.425 GHz and the 6.425-7.125 GHz bands for unlicensed or licensed broadband wireless fixed and mobile services.<sup>3</sup> UTC and EEI pointed out that there are more than 28,000 fixed microwave links in the lower portion of the 6 GHz band and more than 23,000 fixed microwave links in the upper

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<sup>1</sup> In the Matter of Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, *Notice of Inquiry*, FCC 17-104, 32 FCC Rcd 6373 (“*Mid-Band NOI*”).

<sup>2</sup> See e.g., Comments of the State of Maryland, Comments of American Association of State Highway and Transportation Officials, Comments of Lower Colorado River Authority, Comments of Duke Energy Corporation. Unless otherwise noted, all referenced comments were filed in GN Docket No. 17-183 on October 2, 2017.

<sup>3</sup> Comments of the Utilities Technology Council and the Edison Electric Institute (“UTC/EEI Comments”) at 6.

portion of the 6 GHz band, many of which are licensed to utilities.<sup>4</sup> UTC and EEI describe these microwave systems as the “workhorses” of utility communications networks that have been in operation for decades to provide highly reliable point-to-point, high capacity communications over extremely long distances.<sup>5</sup> UTC and EEI aver that the 6 GHz bands are perfectly suited to utilities’ bandwidth needs for point-to-point microwave communications and, therefore, they support long term protection of those bands for utility and other mission critical communications.<sup>6</sup>

Similarly, the National Public Safety Telecommunications Council (“NPSTC”) argued that the extensive fixed public safety microwave systems in the 5.925-6.425 GHz band form complex networks with high levels of reliability required, given their role in supporting public safety’s protection of the public.<sup>7</sup> NPSTC cautions that if the difficulty of spectrum sharing for flexible use or the resultant potential for interference is underestimated at the 6 GHz band, “catastrophic results” could occur for public safety and the public it serves regardless of whether the new entrants are licensed or unlicensed.<sup>8</sup>

The Association of Public Safety Communications Officers (“APCO”) takes specific issue with the NOI’s request for comment on whether it would be feasible in the 5.925-6.425 GHz band to “adopt techniques to mitigate the risk of interference from unlicensed devices to licensed services” and “whether it may be viable to realign or retune existing incumbent

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

<sup>5</sup> *Id.*

<sup>6</sup> *Id.* at 4.

<sup>7</sup> Comments of the National Public Safety Telecommunications Council at 9.

<sup>8</sup> *Id.* at 6.

operations in this band to make more efficient use of this spectrum and better facilitate sharing.”<sup>9</sup>

APCO says that public safety spectrum use must be protected to the maximum extent possible from potential interference and that any spectrum sharing or interference protection techniques for use in public safety bands must undergo substantial testing and be proven effective in advance of implementation.<sup>10</sup>

Motorola Solutions agrees with the public safety and critical infrastructure communities that it is vitally important to protect mission critical microwave links in the 6 GHz band. These complex networks serve critical functions for those entities charged with protecting life and property and must continue to be supported and protected from disruptive interference. MSI encourages the Commission to carefully listen to all critical infrastructure and public safety stakeholders, and provide them the opportunity to shape the band moving forward but in no way should the Commission take any action in this proceeding that would negatively impact the continued use and expansion of critical infrastructure and mission critical links in the 6 GHz band.

In its initial comments filed in this proceeding, Motorola Solutions stated that the Commission *should not* consider allowing general Part 15 access in the 6 GHz band due to the lack of control of unlicensed equipment once fielded.<sup>11</sup> MSI reiterates this recommendation and, to this end, agrees with the concerns raised by UTC and EEI about the likelihood of significant increases in the noise floors created by the aggregated operation of countless unlicensed

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<sup>9</sup> Comments of APCO International at ii.

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

<sup>11</sup> Comments of Motorola Solutions, Inc. at 3.

devices.<sup>12</sup> Given the criticality of the incumbent spectrum usage, the Commission should seek additional unlicensed spectrum access in other bands.

Motorola Solutions also stated in its opening comments that the regulatory framework developed for the 3.5 GHz Citizens Broadband Radio Service (“CBRS”) would serve as a useful model to encourage new uses in spectrum within the targeted 6 GHz bands while emphasizing that “that there are a higher proportion of FS users in these bands, including public safety and critical infrastructure uses that absolutely must be protected from interference.”<sup>13</sup> To expound on this point, if appropriate protection criteria and mitigation techniques cannot be developed to maintain the required high availability of mission critical microwave links, then that portion of the targeted bands should not be made available for flexible broadband uses. However, should the Commission nevertheless decide to expand sharing opportunities in the 6 GHz band, it should rely on database-driven coordination methods with very rigorous protection levels for critical infrastructure and mission critical links. For example, in the 3.6 GHz CBRS band, both in-band and out-of-band, non-mission critical fixed satellite service receive sites are protected down to -12 dB interference to noise (I/N) ratios, meaning the aggregate interference level from other users must be at least 12 dB below the noise floor at the incumbent receiver.<sup>14</sup> In addition, the rules have several other rigorous (adjacent and alternate channel) blocking level requirements that are enforced through coordinating databases.<sup>15</sup> A similar approach would be needed if

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<sup>12</sup> UTC/EEI Comments at 12.

<sup>13</sup> MSI Comments at 3. *See also*, In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Order On Reconsideration And Second Report and Order*, GN Docket No. 12-354, 31 FCC Rcd 5011.

<sup>14</sup> In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, *Order On Reconsideration And Second Report and Order*, GN Docket No. 12-354, 31 FCC Rcd 5011, at ¶ 266.

<sup>15</sup> 47 C.F.R. § 96.17.

sharing of the 6 GHz bands were further contemplated, except that even more stringent protection levels would be appropriate for critical infrastructure and public safety fixed microwave links.

Motorola Solutions agrees that making spectrum available for advanced broadband applications is a critical national goal but the protection of mission critical links that help save lives and property should remain an even greater priority for the FCC. MSI urges the Commission to proceed with extreme care before taking any steps that could jeopardize the efficient use of these bands.

Respectfully Submitted,

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