

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Amendment of the Commission’s Rules with	)	
Regard to Commercial Operations in the 1695-	)	GN Docket No. 13-185
1710 MHz, 1755-1780 MHz, and 2155-2180 MHz	)	
Bands	)	

**REPLY COMMENTS OF THE GPS INNOVATION ALLIANCE**

The GPS Innovation Alliance (“GPSIA”) hereby submits these reply comments in response to the Notice of Proposed Rulemaking (“Notice”) issued in the above-captioned proceeding seeking comment on the Commission’s proposed rules for the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz and 2155-2180 MHz bands (“AWS-3” bands) for Advanced Wireless Services.<sup>1</sup>

In its comments GPSIA voiced strong support for the Commission’s AWS-3 initiative, but raised concerns with respect to one aspect of the proposed AWS-3 service rules.<sup>2</sup> Specifically, GPSIA discussed why the proposed AWS-3  $43 + 10 \log_{10}(P)$  dB (“43+10log”) out-of-band emission (“OOBE”) limit would permit the marketing and sale of devices that would allow generation of emissions into the 1559-1610 MHz Radio Navigation Satellite Service

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<sup>1</sup> *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands, et al.*, Notice of Proposed Rulemaking and Order on Reconsideration, GN Docket No. 13-185, *et al.*, FCC 13-102 (rel. July 23, 2013) (“NPRM”); *see also Revised Filing Deadlines Following Resumption Of Normal FCC Operations*, Public Notice, DA 13-2025 (rel. Oct. 17, 2013).

<sup>2</sup> *See* Comments of the GPS Innovation Alliance, GN Docket No. 13-185, at 5-10 (filed Sept. 18, 2013) (“GPSIA Comments”).

(“RNSS”) band with sufficient strength to interfere with Global Positioning System (“GPS”) satellite signals if terrestrial mobile broadband systems were actually operated at these limits.<sup>3</sup> GPSIA explained that the  $43+10\log$  limit was developed over 30 years ago in a different era when handheld and portable radiofrequency devices were far less common and unlikely to come into close contact with equipment enabled with GPS technology.<sup>4</sup> GPSIA discussed the dramatic increase in proliferation of handheld and portable devices, and that in 2013 the radiofrequency environment was dramatically different, with more ambient energy and an elevated noise floor.<sup>5</sup> GPSIA further elaborated that a meaningful review of the  $43+10\log$  limit had not occurred in the intervening decades, and that given the dramatically different radiofrequency environment the  $43+10\log$  limit does not adequately protect GPS navigational signals that underpin our nation’s infrastructure and many life-safety systems nor does it reflect improvements in wireless terminal operations that minimize intersystem and interchannel interference within the wireless service and may make different OOB limits more achievable.<sup>6</sup> No other commenter provided meaningful technical support for the  $43+10\log$  limit. Instead, the small minority of comments that reference the  $43+10\log$  limit suggest it is an appropriate OOB mask for AWS-3 service solely because it is convenient and familiar to cellular licensees. These comments do not adequately consider the other spectrum uses or the dramatically changed circumstances relative to the late 1970s and early 1980s when the  $43+10\log$  OOB limit was initially contemplated for cellular equipment.

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<sup>3</sup> See *GPSIA Comments* at 6-7. Most 3G terminals operate at levels substantially below the limits imposed by the rules -- at -60 dBm/3.84 MHz to minimize intersystem and interchannel interference within the wireless service. See International Telecommunication Recommendation ITU-R M.1581-4, Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT 2000 (March 2012).

<sup>4</sup> See *Id.*

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

<sup>6</sup> See *Id.*

GPSIA again urges the FCC to carefully consider appropriate OOB limits for future AWS-3 devices with respect to GPS signals in the 1559-1610 RNSS band given the changed radiofrequency environment. Important government stakeholders are developing new spectrum interference standards for the GPS signals in the 1559-1610 MHz RNSS band. The FCC should take into consideration this multi-stakeholder effort and ensure that new interference standards developed through this effort are incorporated into AWS-3 service rules.

**I. COMMENTS SUPPORTING 43+10LOG LIMIT FOR AWS-3 DID NOT PROVIDE TECHNICAL ANALYSIS OR ACCOUNT FOR THE CROWDED RADIOFREQUENCY ENVIRONMENT IN 2013**

While the majority of commenters did not address OOB limits for AWS-3 service, a small minority endorsed the 43+10log limit without providing meaningful technical analysis or a policy basis to support their endorsement.

Specifically, AT&T Inc.'s comments stated without further elaboration that the company "supports the Commission's proposal to adopt AWS-1 OOB limits,  $43 + 10 \log (P)$ dB, in all the AWS-3 blocks."<sup>7</sup> Motorola Mobility stated that the "Commission should apply the OOB attenuation factor of  $43 + 10 \log (P)$  dB to AWS-3 operations in all bands."<sup>8</sup> Motorola Mobility further elaborated without technical support that the 43+10log is a limit "commonly used in commercial mobile devices that has been demonstrated to adequately protect adjacent services from harmful interference. Applying this same factor—which is also applied to AWS-1 and AWS-4 operations—to AWS-3 will reduce cost and complexity in device development and will

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<sup>7</sup> See Comments of AT&T Inc., GN Docket No. 13-185, at 11 (filed Sept. 18, 2013) ("AT&T Comments").

<sup>8</sup> See Comments of Motorola Mobility LLC, GN Docket No. 13-185, at 5-6 (filed Sept. 18, 2013) ("Motorola Mobility Comments").

promote smooth integration of AWS-3 into the Commission’s overall commercial band plan.”<sup>9</sup> T-Mobile indicated that it “supports the Commission’s proposal to make the AWS-3 OOB rules, including the measurement of OOB, consistent with the AWS-1 and AWS-4 rules where possible. The OOB rules applicable to the AWS-1 and AWS-4 bands are familiar to licensees and have generally proven to be sufficient in addressing interference concerns. Moreover, harmonizing the rules for the AWS-3 bands with the rules for the AWS-1 and AWS-4 bands, where feasible, will help make the most efficient use of these bands.”<sup>10</sup>

These comments lack substantive support -- technical or policy-based -- for the adoption of the  $43+10\log$  OOB limit for AWS-3 service. Instead, they assert without taking into consideration changes to the radiofrequency environment that the  $43+10\log$  limit has “generally proven to be sufficient” at addressing interference issues, will be helpful in “reduc[ing] cost,” and is “familiar to licensees.” Given the dramatically changed spectral environment and circumstances as described in GPSIA’s own comments, however, adopting an OOB limit that is more than 30 years old with respect to emissions into the 1559-1610 MHz RNSS band would be inappropriate. Whereas in 1981 it would have been practically impossible to create interference for GPS signals given that the navigation network had not been approved for civilian use and because handheld and portable wireless devices capable of generating OOB into the 1559-1610

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<sup>9</sup> *Id.*

<sup>10</sup> See Comments of T-Mobile USA Inc., GN Docket No. 13-185, at 29-30 (filed Sept. 18, 2013) (“T-Mobile Comments”). Both Motorola Mobility and T-Mobile wrongly assert that the  $43+10\log$  limit applies to AWS-4 service. As the GPSIA explained in its own comments, more restrictive OOB limits into the 1559-1610 MHz RNSS band apply to AWS-4 transmitters. See *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, et al.*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, ¶ 121 (2012) (“AWS-4 Order”).

MHz RNSS band largely did not exist, just the opposite is true in 2013, when handheld/portable electronics are often operated within one or two meters of GPS devices.<sup>11</sup>

Proponents of the  $43+10\log$  limit for AWS-3 service also overlook the Commission's longstanding policy of adjusting OOB as "necessary to protect adjacent spectrum occupants and sensitive operations."<sup>12</sup> In particular, where sensitive incumbent services or incumbent services that support safety-of-life applications are adjacent to a new entrant the Commission has taken a cautious case-by-case approach when setting OOB levels for the new entrant.<sup>13</sup> Consistent with this policy, given the irreplaceable and sensitive nature of GPS-based services including its critical role in national security and safety of life services, the Commission has previously recognized the value of setting OOB levels into the 1559-1610 MHz RNSS band from new spectrum uses.<sup>14</sup> Accordingly, in the instant case, adopting the  $43+10\log$  limit for the 1559-1610 MHz RNSS band "off the shelf" without a comprehensive technical evaluation would be inconsistent and irreconcilable with the Commission's established policy for developing OOB limits.

Moreover, AWS-3 frequencies are closer to the 1559-1610 MHz RNSS band than any other frequency allocation approved for terrestrial cellular service.<sup>15</sup> Given that the Commission has previously evaluated the impact of OOB from proposed cellular services that are

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<sup>11</sup> For example, an automobile navigation system may be operated within a meter of handheld electronics used by passengers inside the vehicle.

<sup>12</sup> See *Unlicensed NII Devices in the 5 GHz Frequency Range*, Report and Order 12 FCC Rcd 1576, ¶ 53 (1997) ("UNII Order").

<sup>13</sup> See, e.g., *Id.* ¶ 54 (explaining that a more restrictive OOB "requirement is needed [for UNII transmitters] to protect sensitive and safety-of-life operations in adjacent bands").

<sup>14</sup> See, e.g., *AWS-4 Order* ¶ 121. (Explaining that the "Commission has long recognized the importance of GPS and our responsibility to ensure that it receives appropriate interference protections from other radiocommunication services" in its decision to enforce more strenuous OOB limits for AWS-4 devices).

<sup>15</sup> The proposed AWS-3 service would have an allocation at 1695-1710 MHz, less than 100 megahertz removed from the 1559-1610 MHz RNSS band.

significantly further removed from the 1559-1610 MHz RNSS band, a thorough evaluation of the contemplated AWS-3 service should be a prerequisite before formalizing new service rules.<sup>16</sup>

### **III. AWS-3 OOBE LIMITS MUST SATISFY FORTHCOMING MULTI-STAKEHOLDER RECOMMENDATIONS REGARDING GPS INTERFERENCE**

Important government stakeholders, led by the Department of Transportation (DOT) and the Federal Aviation Administration (FAA) and at the request of the National Telecommunications Information Administration (NTIA) and the National Space-Based Positioning, Navigation and Timing<sup>17</sup> (“PNT”) Executive Committee (“EXCOM”), are currently developing new GPS spectrum interference standards that the EXCOM previously indicated will “help inform future proposals for non-space, commercial uses in the bands adjacent to the GPS signals and ensure that any such proposals are implemented without affecting existing and evolving uses of space-based PNT services vital to economic, public safety, scientific, and national security needs.”<sup>18</sup>

Passing support for the 43+10log limit should not prevent the FCC from examining appropriate OOBE levels into the 1559-1610 MHz RNSS band given the dramatic changes that have occurred over the last 30 years. Accordingly, GPSIA reaffirms its recommendation that the

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<sup>16</sup> For example, the most proximate AWS-4 block is 2000-2020 MHz, almost 400 megahertz removed from the 1559-1610 MHz RNSS band.

<sup>17</sup> The following agencies are member of the PNT: Department of Defense (co-chair), Department of Transportation (co-chair), Department of State, Department of Interior, Department of Agriculture, Department of Commerce, Department of Homeland Security, Joint Chiefs of Staff, and NASA.

<sup>18</sup> See *GPS Adjacent Band Compatibility Assessment*, Karen Van Dyke, Department of Transportation, (Sept., 17, 2013), available at: <http://www.gps.gov/cgsic/meetings/2013/vandyke.pdf>; see also, Letter from Ashton B. Carter, EXCOM Co-Chair, Deputy Secretary of Defense, and John D. Porcari, EXCOM Co-Chair, Deputy Secretary of Transportation, to the Honorable Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Dep’t of Commerce (Jan. 13, 2012), available at <http://www.gps.gov/news/2012/01/lightsquared/2012-01-13-LightSquared-letter-to-NTIA.pdf>; see also, Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Dep’t of Commerce, to the Honorable Julius Genachowski, Chairman, FCC, at 6 (Feb. 14, 2012), available at [http://www.ntia.doc.gov/files/ntia/publications/lightsquared\\_letter\\_to\\_chairman\\_genachowski\\_-\\_feb\\_14\\_2012.pdf](http://www.ntia.doc.gov/files/ntia/publications/lightsquared_letter_to_chairman_genachowski_-_feb_14_2012.pdf) (explaining that EXCOM is moving forward “to develop and establish new GPS spectrum interference standards that will help inform future proposals for non-space commercial uses in the bands adjacent” to GPS bands).

FCC participate in the above-referenced multi-stakeholder initiative to address the OOB component of proposed AWS-3 service rules.<sup>19</sup> Specifically, the FCC should cooperate to ensure the success of the recently initiated PNT-EXCOM multi-stakeholder process, which is working to determine how best to protect GPS reception from OOB, on the one hand, and assure that wireless broadband operations are not unnecessarily restricted, on the other.

### **III. CONCLUSION**

GPSIA supports promoting expanded wireless broadband service in the AWS-3 bands. The proposed  $43+10\log$  OOB mask for AWS-3 handsets, however, is an antiquated, inadequate and inappropriate standard for protecting GPS signals in the 1559-1610 MHz RNSS band. Important government stakeholders are evaluating appropriate interference protections for GPS signals, and GPSIA urges the Commission to engage in this multi-stakeholder effort and develop appropriate OOB levels for AWS-3 service into the 1559-1610 MHz RNSS band based on these forthcoming protections.

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<sup>19</sup> See *GPSIA Comments* at 10.

Respectfully submitted,

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