

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

In the Matter of)
)
Amendment of the Commission's Rules with) GN Docket No. 12-354
Regard to Commercial Operations in the 3550-)
3650 MHz Band)

**REPLY TO OPPOSITIONS TO PETITION FOR RECONSIDERATION OF
CTIA – THE WIRELESS ASSOCIATION[®]**

I. INTRODUCTION.

CTIA – The Wireless Association[®] (“CTIA”) submits this Reply to the Oppositions filed against the Petitions for Reconsideration in the above-captioned proceeding. The record strongly supports the changes sought by CTIA on reconsideration.¹ For example, parties soundly favor CTIA’s revised out-of-band emission (“OOBE”) limits for 20 megahertz-wide channels and less restrictive power levels as necessary to enable economically viable investment in the 3550-3700 MHz band (“3.5 GHz Band”), while protecting Fixed Satellite Service (“FSS”) earth stations from harmful interference.

In contrast, the Commission should reject the Satellite Industry Association (“SIA”)’s call for overly strict emission limits and power levels that, if adopted, would apply across the country, even where no FSS earth stations exist. Such across-the-board restrictions are unnecessary and overbroad and would severely undercut the utility of the new Citizens Broadband Radio Service (“CBRS”). The *Second Further Notice* in this proceeding, moreover,

¹ See Petition for Reconsideration of CTIA – The Wireless Association[®], GN Docket No. 12-354 (filed July 23, 2015) (“CTIA Petition”).

is the more appropriate vehicle to set interference protection criteria where FSS earth stations are nearby.²

Consistent with CTIA's Petition and other filings in the docket, the Commission should take the following actions on reconsideration:

- Reject proposals by SIA that would unnecessarily limit OOB limits;
- Increase the OOB limits so that licensees operating 20 megahertz-wide LTE channels are not forced to engage in power backoff that diminishes operations in the band;
- Specify emission power measurements using a root mean square ("RMS") detector instead of a peak detector;
- Increase power limits to allow for meaningful indoor and outdoor coverage;
- Increase Priority Access License ("PAL") terms to at least five years and include an expectation of license renewal;
- Revise the policy to auction one less PAL than the total number of PALs applied for in a given census tract to avoid systematically phasing out PALs with each subsequent auction; and
- Issue PALs in census tracts with a single applicant.

With these steps, the Commission will set the CBRS on a better path towards meaningful investment, innovation, and deployment.

II. THE RECORD SHOWS THAT THE OUT-OF-BAND EMISSION LIMITS ADOPTED IN THE 3.5 GHz ORDER SHOULD BE REVISED FOR 20 MEGAHERTZ-WIDE CHANNELS.

Stakeholders strongly support CTIA's request³ to relax the OOB emission limits for 20 megahertz-wide LTE channels and overwhelmingly oppose SIA's proposal for more restrictive emission limits.

² See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 4047 ¶¶ 443-445 (2015) ("3.5 GHz Order" and "Second Further Notice").

³ See CTIA Petition at 5-6.

The OOB limits as adopted “were designed around supporting 10 MHz-wide LTE channels,” and would force 20 megahertz-wide channels to engage in significant power backoff of 3 dB A-MPR – reducing transmit power levels by half.⁴ As T-Mobile explains, “[t]he reduced power necessary to meet the -25 dBm/MHz limit [10 megahertz from the channel edge] would in turn reduce the coverage of those 20 megahertz channels and would depress operators’ desire to deploy those channels.”⁵ This problem, moreover, applies to 20 megahertz-wide channels throughout the 3.5 GHz Band and impacts both Priority Access and General Authorized Access (“GAA”) operations.

The Commission should revisit the balance it sought to achieve, and for 20-megahertz-wide channels it should adopt a limit of -13 dBm/MHz from 0-20 megahertz outside the assigned channel edge and a limit of -25 dBm/MHz for frequencies more than 20 megahertz outside each assigned channel edge. As Qualcomm explains, “[t]hese proposed revisions recognize that wider bandwidth transmission channels require a wide roll-off bandwidth and are designed to allow the emissions mask to scale with bandwidth.”⁶

At the 3.5 GHz Band edge, the Commission should apply the -25 dBm/MHz limit at 3530 MHz and eliminate the -40 dBm/MHz limit.⁷ It also should closely review the opportunities for relaxing the limits at 3700 MHz and above as part of the *Second Further Notice* proceeding.⁸

⁴ Comments of Qualcomm Incorporated on Petitions for Reconsideration, GN Docket No. 12-354, at 4 (filed Oct. 19, 2015) (“Qualcomm Comments”).

⁵ Response of T-Mobile USA, Inc., GN Docket No. 12-354, at 5-6 (filed Oct. 19, 2015) (“T-Mobile Response”).

⁶ Qualcomm Comments at 6.

⁷ See *Opposition and Comments in Support of Petitions for Reconsideration of CTIA – The Wireless Association*[®], GN Docket No. 12-354, at 4 (filed Oct. 19, 2015) (“CTIA Opposition”); Qualcomm Comments at 7 (“With regard to the lower edge of the band, the -13 and -25 dBm/MHz emissions levels addressed above will protect government radar systems and the limited Private Land Mobile operations below 3550 MHz.”).

⁸ See CTIA Opposition at 5.

There, the Commission readily acknowledged the OOB rule as adopted “leaves potential room for more optimization,” as it may be overly restrictive particularly where CBRS operations are nowhere near satellite earth stations.⁹

The Commission should reject SIA’s arguments to impose more restrictive OOB limits by requiring a -40 dBm/MHz emission limit at 3680 MHz. There is no basis for such severe limits on CBRS operation. First, as CTIA pointed out previously, the existing Part 90 rules for wireless broadband operations in the 3650-3700 MHz band specify the less stringent -13 dBm/MHz OOB limit above 3700 MHz, and the Commission has stated that it is not aware of any related formal complaints of interference filed by FSS operators, despite the fact there are 45,000 wireless broadband site locations.¹⁰ Second, Qualcomm observes that SIA’s loss calculations assume all worst case parameters – for example, SIA assumes that Citizens Broadband Radio Service Devices (“CBSDs”) and end-user devices will transmit at maximum power even though the FCC’s rules require transmit power control.¹¹ Third, SIA misstates Motorola Mobility’s earlier comments in the proceeding as a justification for its proposal.¹² The comments to which SIA refers addressed the Commission’s originally proposed emission limits,

⁹ *Second Further Notice* ¶ 443.

¹⁰ *See* CTIA Opposition at 3 (citing *3.5 GHz Order* ¶ 293).

¹¹ *See* Qualcomm Comments at 9 (citing 47 C.F.R. § 96.41(c)).

¹² *See* Opposition of the Satellite Industry Association to Petitions for Reconsideration, GN Docket No. 12-254, at 4 (filed Oct. 19, 2015) (“SIA Opposition”) (citing *3.5 GHz Order* ¶ 179, n.403; Comments of Motorola Mobility, GN Docket No. 12-354, at 9 (filed July 14, 2015) (“Motorola Mobility July 14 Comments”) (“The Order also notes that Motorola Mobility contended that ‘10 and 20 megahertz channels should not encounter any problems in meeting’ the OOB limits originally proposed by the Commission, including the -40 dBm/MHz limit.”)).

which considered stricter limits 30 megahertz off the channel edge, not the 20 megahertz off the band edge adopted in the *3.5 GHz Order*.¹³

Ultimately, as Verizon explains, SIA's framework for analysis is faulty, as it ignores the coexistence regime the *Second Further Notice* is developing for CBRS operations nearby an FSS earth station. "[SIA's] asserted interference risk would exist only to the extent the coexistence regime, including the separation distances yet to be established, fails to protect earth stations from interference from these devices."¹⁴ The Commission already is in the process of developing an interference protection regime pursuant to the *Second Further Notice* with the goal of protecting incumbent operations while fostering CBRS spectrum utilization.¹⁵

III. THE COMMISSION SHOULD SPECIFY A ROOT MEAN SQUARE DETECTOR FOR MEASURING EMISSIONS.

Both T-Mobile and Qualcomm support CTIA's request for the Commission to allow use of a RMS detector to make emissions measurements, as opposed to a peak detector as specified in the *3.5 GHz Order*.¹⁶ As Qualcomm explains, "the measurement requirement adopted in the *3.5 GHz Report & Order* could force 3.5 GHz equipment to operate with at least 10 dB less power" which would "effectively cripple the band's ability to support mobile broadband operations."¹⁷ SIA's opposition to use of an RMS detector needlessly constrains CBRS operations throughout the country, regardless of whether any satellite operations are nearby, and it fails to provide any meaningful analysis of risk of harmful interference. The Commission's

¹³ See Motorola Mobility July 14 Comments at 9. In addition, SIA's statement that CTIA seeks OOB limits for mobile broadband operations in other proceedings lacks relevance, as technical issues must be examined on a case-by-case basis. See SIA Opposition at 4.

¹⁴ Verizon's Opposition to the Satellite Industry Association's Petition for Reconsideration, GN Docket No. 12-354, at 4 (filed Oct. 19, 2015) ("Verizon Opposition").

¹⁵ See *3.5 GHz Second FNPRM* ¶¶ 443-445.

¹⁶ See CTIA Petition at 6-7; Response of T-Mobile at 6; Qualcomm Comments at 3.

¹⁷ Qualcomm Comments at 3.

rules covering virtually all licensed mobile and unlicensed operations incorporate use of RMS detector measurements, and there is no basis to deviate from such an approach.¹⁸ The Commission should reconsider its decision, as it adopted the peak detector specification without any discussion or explanation in the *3.5 GHz Order*.¹⁹

IV. THE RECORD REFLECTS BROAD SUPPORT FOR CTIA’S REQUEST TO INCREASE THE CBRS POWER LEVELS.

As CTIA and others demonstrate, the Commission should revise the power levels to allow for reasonable indoor and outdoor coverage by increasing the conducted power level to 30 dBm and the Equivalent Isotropically Radiated Power (“EIRP”) level to 36 dBm for Category A CBSDs; the maximum EIRP to 49 dBm for Category B non-rural CBSDs; and the maximum conducted power to 40 dBm and the maximum EIRP to a total of 56 dBm for Category B CBSDs in rural areas.²⁰

Verizon observes that “[t]ypical” small cells in urban areas operate at power levels “substantially higher than the very low power levels currently authorized in Section 96.41(b).”²¹ Federated Wireless concurs, noting that these “lower EIRP limits for CBSDs will decrease cell coverage, thereby increasing network costs, and constraining commercial interest and investment in Citizens Band.”²² The power levels proposed on reconsideration “would partially close the

¹⁸ See *id.* at 3, n.4 (citing 47 C.F.R. §§ 27.50(d)(6), 27.50(i), 27.50(b)(11), 27.50(c)(11), 15.407(a)(4)).

¹⁹ *Id.* at 3.

²⁰ See CTIA Petition at 7-8.

²¹ Verizon Opposition at 3.

²² Opposition and Response to Petitions for Reconsideration of Federated Wireless, Inc., GN Docket No. 12-354, at 4 (filed Oct. 19, 2015) (“Federated Wireless Opposition”).

size gap so that 3.5 GHz cells would be closer in size to (but still much smaller than) typical existing small cells.”²³

SIA’s arguments to the contrary should be rejected. First, SIA’s claim suffers from the same flaws as its call for more restrictive emission limits and opposition to the RMS detector – *i.e.*, the request to limit CBRS power levels is overbroad. The power levels at issue here apply to CBRS operations across the entire country, including in areas where no C-band earth stations are located nearby. Moreover, SIA’s claim is wholly unsupported, as SIA offers no evidence of harm from heightened power levels. As Google points out, the claim should be dismissed because it “fail[s] to state with particularity how the Commission’s rules should be changed.”²⁴

Finally, the Commission should reject the Wireless Internet Service Providers Association (“WISPA”)’s arguments against increasing the power limits, as they are premised on the flawed view that the current power levels are sufficient because operators in the band will only use high gain, sectorized antennas. That is not so. Others interested in 3.5 GHz Band deployments in dense urban areas mainly will use omnidirectional antennas that require higher power levels to enable economically viable small cell coverage.²⁵

V. THE COMMISSION SHOULD REVISE THE PAL LICENSING SCHEME TO FOSTER INVESTMENT.

The Commission should reconsider the unprecedented and unreasonably short three-year license term with no renewal mechanism for PAL licenses adopted in the *3.5 GHz Order*.²⁶

²³ Verizon Opposition at 3.

²⁴ Response of Google Inc. to Petitions for Reconsideration, GN Docket No. 12-354, at 6 (filed Oct. 19, 2015) (citing 47 C.F.R. § 1.429(c)).

²⁵ See Declaration of Max A. Solondz ¶ 6, *attached to Verizon Petition for Reconsideration*, GN Docket No. 12-354 (filed July 23, 2015) (“In urban areas, most [small cells] use omnidirectional antennas.”).

²⁶ See CTIA Petition at 2-3; *3.5 GHz Order* ¶ 105.

T-Mobile supports CTIA’s request to extend the license term, explaining that “[t]he resounding success of the wireless industry has been built on licensees’ access to spectrum that they can incorporate into their networks on a long term basis.”²⁷ The very short license term adopted here creates a substantial risk that Priority Access licensees will face stranded investments, which will diminish the attractiveness of incorporating PAL spectrum into wide-area networks and thereby reduce investment and innovation in the 3.5 GHz Band.²⁸

The Commission should reject WISPA’s Opposition to increased PAL terms and a renewal mechanism.²⁹ While WISPA’s members may not need the certainty a PAL can provide, the Commission has recognized that “PALs should be available for applications that require greater certainty. . . .”³⁰ Further, WISPA ignores the “novelty and complexity” that mobile operators will face rolling out higher frequency small cell deployments in the 3.5 GHz context.³¹

In a similar vein, the Commission should revise the 3.5 GHz Band auction scheme to avoid systematically phasing out PALs with each subsequent auction.³² T-Mobile supports CTIA’s request, explaining that the rule as adopted “will disadvantage licensees that have made an investment in the 3.5 GHz band by reducing the number of PALs available – a ‘musical

²⁷ T-Mobile Response at 3. In fact, T-Mobile requests a 10-year PAL term including an expectation of renewal, which would be consistent with licenses the Commission issues in other wireless services. *Id.*

²⁸ *See* CTIA Petition at 2-3.

²⁹ *See* Opposition of Wireless Internet Service Providers Association, GN Docket No. 12-354, at 11-12 (filed Oct. 19, 2015) (“WISPA Opposition”).

³⁰ *3.5 GHz Order* ¶ 133.

³¹ CTIA Petition at 3.

³² *See id.* at 4.

chairs' result that is not in the public interest.”³³ Simply adopting a renewal expectancy for PALs will eliminate this illogical result.³⁴

Finally, the Commission should allow for an entity to obtain a PAL where no other party in a given census tract seeks a similar level of interference protection – *i.e.*, where no other party has applied for a PAL and there is therefore no mutual exclusivity. CTIA, Federated Wireless, and WISPA all support the Petitions filed by Motorola Solutions and Professor Jon Peha seeking reconsideration of the Commission's decision not to grant a PAL in a census tract for which only one application is filed.³⁵ As the parties point out, a PAL may be necessary for a provider to serve hospitals or critical infrastructure, or to provide video surveillance, telemetry, monitoring, and other services that demand guaranteed quality of service.³⁶ Federated Wireless notes that the Commission's rule as adopted is likely to disproportionately affect prospective users in rural areas, where demand for PALs may be more limited than in urban areas but where there is nevertheless a need for high quality of service and interference protection that only a PAL can provide.³⁷

VI. CONCLUSION.

For the reasons set forth above, the Commission should revise the 3.5 GHz Band regime consistent with CTIA's Petition for Reconsideration and reject the amendments to the technical rules proposed by SIA. Such action will foster investment, innovation, and deployment in the 3.5 GHz Band.

³³ T-Mobile Response at 4.

³⁴ See CTIA Petition at 4; T-Mobile Response at 4.

³⁵ See CTIA Opposition at 6; WISPA Opposition at 13; Federated Wireless Opposition at 6-8.

³⁶ See Motorola Solutions Petition for Reconsideration, GN Docket No. 12-354, at 6 (filed July 23, 2015); Jon M. Peha Petition for Reconsideration, GN Docket No. 12-354, at 2 (filed July 23, 2015); WISPA Opposition at 13; Federated Wireless Opposition at 7; CTIA Opposition at 6.

³⁷ See Federated Wireless Opposition at 7-8.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Marc D. Knox, hereby certify that on October 29, 2015, I caused a true and correct copy of the foregoing to be served by first-class mail on the following:

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