

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554**

In the Matter of	)	
	)	
Amendment of Part 15 of the Commission’s Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, and	)	ET Docket No. 14-165
	)	
Amendment of Part 74 of the Commission’s Rules For Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600 MHz Duplex Gap	)	
	)	
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions	)	GN Docket No. 12-268
	)	
To: The Commission		

**REPLY OF CARLSON WIRELESS TECHNOLOGIES, INC. AND CAL.NET, INC.**

Carlson Wireless Technologies, Inc. (“CWT”) and Cal.net, Inc. (collectively, “Petitioners”), pursuant to Section 1.429 of the Commission’s Rules,<sup>1</sup> respectfully submit this Reply to the Opposition of the National Association of Broadcasters (“NAB Opposition”),<sup>2</sup> filed February 29, 2016 in the above-captioning proceeding, regarding Petitioners’ Petition for Reconsideration (“Petition”) of one aspect of the *Report and Order*.<sup>3</sup>

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<sup>1</sup> 47 C.F.R. § 1.429(g).

<sup>2</sup> Opposition to Petitions for Reconsideration of the National Association of Broadcasters, ET Docket No. 14-165, *et al.*, at 11-15 (February 29, 2016).

<sup>3</sup> *Amendment of Part 15 of the Commission’s Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, et al.*, *Report and Order*, 30 FCC Rcd. 9551 (2015) (“*Report and Order*”).

As explained below, the NAB Opposition is grounded in ambiguous and unsupported testing, methodologies, and data. Petitioners have urged the Commission to revise its adjacent channel separation rule to better achieve spectrally efficient use of unlicensed operations in the TV White Spaces that do not risk interference to TV broadcasters or other incumbent users of the band. Petitioners' approach to corroborating that such use would not cause harmful interference to adjacent operating TV broadcasters has been to pursue joint testing with NAB of CWT's TVWS equipment. Although NAB claims it has not yet committed to that approach, NAB also has provided no adequate basis for opposing Petitioners' proposed relaxation of the current adjacent channel rule.

As set forth in their December 23, 2015 Petition, CWT and Cal.net request that the Commission reconsider the decision at paragraph 37 of the *Report and Order* to not allow fixed white spaces devices to operate at 4 watts EIRP within three megahertz of an occupied broadcast TV station band edge. As Petitioners explained, in paragraph 37 the Commission reversed its prior position, which was that a 3 MHz separation would *not* cause substantial interference to TV broadcasters;<sup>4</sup> in doing so, the *Report and Order* relied entirely on comments submitted by NAB.<sup>5</sup> Those comments (like NAB's Opposition to the Petition) were not supported by any documented engineering report or test results. Moreover, NAB's comments cited in the *Report and Order* analyzed the interference potential assuming zero buffer space, and did not address the interference potential when a fixed TV white spaces device operates with 3 MHz of separation from the operating TV broadcaster's channel. Accordingly, the *Report and Order*

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<sup>4</sup> See Petition at 4-5.

<sup>5</sup> Comments of the National Association of Broadcasters, ET Docket No. 14-165, *et al.*, at 10-11 (February 14, 2015).

relied on a flawed analysis by NAB.<sup>6</sup> To provide the Commission with sound engineering data based on a transparent methodology and reasonable stated assumptions, Petitioners offered to conduct joint engineering testing and jointly prepare a report with NAB on the matter.<sup>7</sup>

The cursory analysis in the NAB Opposition (at 11-15) is not an acceptable substitute for accurate testing and reporting. NAB's summary statements fail in several respects. For example, NAB states that it "conducted extensive laboratory testing,"<sup>8</sup> but that assertion has no objective support. NAB states that it performed testing of devices it purchased from CWT and other manufacturers, but only to "characterize the emissions from those devices."<sup>9</sup> Then, NAB "used laboratory signal generators" – not any of the actual devices – "to simulate the operation of the TVWS devices."<sup>10</sup> But there is no way to determine if the simulation was sufficiently accurate in its representation of the CWT device. The only way to confirm this is to test with CWT equipment modified appropriately for the half-channel offset – as CWT had discussed doing with NAB.

NAB also states that it tested recent-model DTV receivers "that represent the general population of TV sets currently in use,"<sup>11</sup> but does not identify those products.

NAB reports that its tests showed "median improvement in performance."<sup>12</sup> But median measurements are meaningless; each device must be tested independently in order to produce accurate results.

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<sup>6</sup> Notably, the NAB Opposition does not attempt to justify or explain the prior analysis filed in its 2015 Comments.

<sup>7</sup> Petition at 6.

<sup>8</sup> Opposition at 14.

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

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

<sup>11</sup> *Id.*

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

In addition, Petitioners note that the testing results would be completely skewed by certain rough order of magnitude assumptions believed to have been made by NAB. One example is the effect of a fixed vs. personal/portable white spaces device antenna with orthogonal polarization. Relying on the Commission's analysis, NAB has stated to CWT that assuming fixed devices are elevated at least 9 meters, a full 10 dBd gain of an outdoor home TV antenna also should be assumed rather than the -2 dBd of gain at the antenna from a personal/portable device, and thus the difference between an interfering fixed device signal and a personal/portable device signal at the TV antenna is 12 dB. However, NAB also has asserted to CWT that orthogonal polarization will have a minimal impact on signal reduction due to non-line of sight conditions – ignoring the fact that if optimal conditions of both a height of 9 meters and the full gain of a home TV antenna are assumed, then the effect of orthogonal polarization also is optimized, likely resulting in 12 to 15 dB of signal reduction and effectively negating the propagation differences between fixed and portable devices.

Petitioners' skepticism of the conclusory statements in the NAB Opposition is reinforced by the process by which they were arrived at by NAB. Shortly after NAB filed its Petition, CWT contacted a senior executive at NAB and, after discussion, they agreed they should proceed with joint testing regarding the separation issue. NAB asked CWT to contact one of NAB's contractors regarding testing parameters. Shortly thereafter, CWT contacted the contractor, who told CWT that the contractor was busy at that time but would respond shortly. Several weeks later CWT again contacted the contractor, who again stated that it was too busy but would respond later. However, the contractor never contacted CWT. Then, on February 22, 2016, NAB informed CWT that the contractor had conducted testing but had provided NAB test data only, with no report. NAB promised to send the report once it received it from the contractor.

Since then, CWT twice has asked NAB for the contractor's report of the testing methodology and analysis. Both times, NAB responded that it did not have the report. To date, NAB still has not provided Petitioners the promised report. Given that NAB also did not file the report with its Opposition, it is reasonable to assume either that NAB did not rely on the report of its own contractor for purposes of its Opposition, or that it had the report but chose not to disclose it publicly or to Petitioners for independent review and analysis.

As the Commission is aware, CWT and NAB have worked cooperatively on TV white spaces regulatory matters in the past. Petitioners continue to believe that joint work on this matter will benefit all parties, and that documented test results ultimately are necessary for the Commission to make a sound decision based on facts, rather than vague and unsupported assertions. Petitioners therefore will again attempt to perform joint testing and prepare a joint report with NAB, with the goal of filing the report by April 30, 2016. However, if NAB and Petitioners are unable to agree on such a joint effort, then Petitioners will conduct separate testing and file a report with the Commission by June 30, 2016.

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For the reasons presented above, Petitioners ask the Commission to reconsider and reverse its decision not to allow fixed white spaces devices to operate at up to 4 watts EIRP within a spectral separation of three megahertz from an occupied TV station band edge.

Respectfully submitted,

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March 10, 2016

## CERTIFICATE OF SERVICE

I, Jessica D. Gyllstrom, certify that on this 10<sup>th</sup> day of March, 2016, I have caused a true and correct copy of the foregoing Reply to Opposition to Petition for Reconsideration to be served via first class mail, postage prepaid, on:

Rick Kaplan  
Patrick McFadden  
National Association of Broadcasters  
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By: /s/ Jessica Gyllstrom  
Jessica D. Gyllstrom