

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
Revision of Part 15 of the Commission’s Rules to)
Permit Unlicensed National Information) ET Docket No. 13-49
Infrastructure (U-NII) Devices in the 5 GHz Band)

To: The Commission

REPLY TO CONSOLIDATED RESPONSE OF CISCO SYSTEMS, INC.

The Wireless Internet Service Providers Association (“WISPA”), pursuant to Section 1.429(g) of the Commission’s Rules, hereby replies to the Consolidated Response of Cisco Systems, Inc. (“Cisco”) filed in the above-captioned proceeding (“Cisco Response”).

Notwithstanding Cisco’s misguided and dismissive assault on the WISP industry and Cisco’s mischaracterizations of WISPA’s positions, the record demonstrates overwhelming support for grant of the petitions for reconsideration filed by WISPA, Cambium Networks Ltd.

(“Cambium”), JAB Wireless, Inc. (“JAB”) and Motorola Solutions, Inc. (“MSI”)¹ seeking reversal of the Commission’s decision to restrict out-of-band emissions (“OOBE”) to the Section 15.407 limits for all devices certified for operation in the 5725-5850 MHz band. Dozens of wireless Internet service providers (“WISPs”) and their customers as well as utilities and equipment companies have explained the devastating consequences that would result if the Commission fails to reverse its decision. This record also indicates that the Commission should not adopt the middle-ground approach asserted by Mimosa Networks Inc. (“Mimosa”), which

¹ Petition for Partial Reconsideration of WISPA, ET Docket No. 13-49 (filed June 2, 2014) (“WISPA Petition”); Petition for Reconsideration of Cambium Networks Ltd., ET Docket No. 13-49 (filed June 2, 2014) (“Cambium Petition”); Petition for Reconsideration of JAB Wireless, Inc., ET Docket No. 13-49 (filed June 2, 2014) (“JAB Petition”); Petition for Partial Reconsideration of Motorola Solutions, Inc., ET Docket No. 13-49 (filed June 2, 2014) (“MSI Petition”).

would render existing equipment obsolete.² The record supports only one result – grant of the petitions to permit the continuing option of manufacturing and using devices certified under the less restrictive OOB limits of Section 15.247.³

Background

In the *First Report and Order*,⁴ the Commission appropriately preserved the ability of devices operating in the 5725-5850 MHz band to be certified under rules permitting unlimited gain antennas for point-to-point use without reducing conducted transmit power, but unfortunately imposed the more restrictive OOB limits of Section 15.407. In its petition, WISPA reiterated that interference to TDWR facilities resulted from equipment that was illegally modified to operate in the U-NII-2C band, and that restricting OOB would not solve the alleged problem; instead, imposing new, more restrictive OOB limits “would have devastating, if unintended, consequences, for rural Americans who rely on wireless point-to-point and point-to-multipoint links to obtain access to fixed broadband service, public safety and other industrial and critical infrastructure services.”⁵ With their petitions, Cambium and JAB included an Appendix showing that if a user reduced power and antenna gain, the link budgets would be substantially reduced and subscribers receiving service today would not be able to receive it with equipment certified under Section 15.407.⁶ JAB estimated that the cost to lease and acquire new

² Petition for Partial Reconsideration of Mimosa Networks, Inc., ET Docket No. 13-39 (filed June 2, 2014) (“Mimosa Petition”).

³ At this time, WISPA does not support grant of the Mimosa Petition because its proposed solution would require “higher suppression than the Commission or the parties have justified” and equipment would still need to be replaced with new equipment that would not perform as well. Comments of Fixed Wireless Communications Coalition, ET Docket No. 13-49 (filed Aug. 14, 2014) (“FWCC Comments”), at 5. WISPA also opposes MSI’s alternative proposal to extend the grandfather period to five years. This view accepts the Commission’s decision and simply extends the time period in which the devastating harms reflected in the record would occur.

⁴ See *Revision of Part 15 of the Commission’s Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No.13-49 (rel. Apr.1, 2014) (“*First Report and Order*”).

⁵ WISPA Petition at 1.

⁶ See Cambium Petition, Appendix at 5. The Appendix analyzed one of JAB’s typical rural towers and showed that the power and gain reductions would reduce the distance servable by that tower from about 16 miles to about four miles, resulting in a loss of approximately 65 percent of the subscribers receiving service from the tower.

tower sites to replicate the lost coverage would be about \$50,000 per tower.⁷ Relying on added filtering to meet the more restrictive limits instead of reducing power or gain also would not be a viable option because it would reduce the spectrum available for broadband use from 125 MHz to 45 MHz and more than double the cost of the radio.⁸

Discussion

I. THE RECORD DEMONSTRATES OVERWHELMING SUPPORT FOR GRANT OF THE WISPA, CAMBIUM, JAB AND MSI PETITIONS.

Many parties, from a range of industries including railroads, public utilities, petroleum and pipeline entities, public safety agencies and cable TV providers,⁹ supported the WISPA, Cambium, JAB and MSI petitions. More than 100 WISPs pointed out the “devastating,”¹⁰ “detrimental”¹¹ and “entirely unnecessary”¹² consequences of the new OOB restrictions. The Fixed Wireless Communications Coalition (“FWCC”) provided technical support to show that pairing unlimited antenna gain and no power penalty “with a low, fixed-value, out-of-band limit” is “unworkable.”¹³ Wave Wireless, a WISP in southeastern Kansas that serves the parents of Commissioner Pai,¹⁴ summed up the views of many WISPs: “the restrictive OOB limits in Section 15.407 will make it impossible for us to continue to provide affordable, high

⁷ See JAB Petition at 3.

⁸ See Cambium Petition, Technical Appendix at 6.

⁹ See FWCC Comments, at 1, n.1.

¹⁰ See, e.g., Letter from John D. Batis, Managing Member, TaosNet, LLC, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 29, 2014), at 1.

¹¹ See, e.g., Letter from Steve Barnes, General Manager, PCS-WIN, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 8, 2014), at 1.

¹² See, e.g., Letter from Phil Lambert, General Manager, Q-Wireless, LLC, ET Docket No. 13-49 (filed Aug. 1, 2014), at 1.

¹³ See FWCC Comments at 4.

¹⁴ See Press Release, “FCC Commissioner Ajit Pai to Keynote at Annual Awards Banquet at WISPAPALOOZA 2014,” July 11, 2014, available at <http://www.wispa.org/news/2014/07/11/fcc-commissioner-ajit-pai-to-keynote-at-annual-awards-banquet-at-wispapalooza-2014> (last visited Aug. 18, 2014).

performance broadband service in many of these areas, and will not improve the efficient use of the 5GHz band.”¹⁵

Other commenters offered specific reasons for why this is true. First, compliance with the Section 15.407 emission limits would increase operating and equipment costs. To cite just a few examples, New River Valley Unwired estimated that it would potentially lose \$396,000 in revenue and “the loss of a significant portion of the jobs we provide in our community.”¹⁶ DD Wireless, the “only true broadband provider” in a rural Colorado area that serves government, healthcare and schools, stated that it would cost \$250,000 to replace its existing 5.8 GHz infrastructure, requiring an \$18.00 monthly increase in the cost of its broadband service.¹⁷ Razzo Link, Inc., a WISP serving close to 3,000 customers in California that cannot receive cable, fiber or DSL broadband, indicated that the rule change could have a financial impact “as high as \$1.0 million in equipment change-out costs and secondarily a significant reduction in the amount of customers that Razzolink will be able to serve from this new equipment.”¹⁸ As KWISP Internet wrote, “it is uneconomical to install a \$10,000 link to feed a small tower with 10 customers.”¹⁹ Many others echoed these concerns and documented the costs to comply with the more restrictive emission limits.²⁰

¹⁵ Letter from Galen Manners, President, Wave Wireless, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 22, 2014), at 1.

¹⁶ Letter from Edwin Whitelaw, CEO, New River Valley Unwired, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 31, 2014), at 2.

¹⁷ See Letter from Michael Sanders, Owner, DD Wireless, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 29, 2014).

¹⁸ Letter from Anthony Iacopi, Razzo Link, Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 29, 2014), at 2.

¹⁹ Letter from Ken Hohhof, President, KWISP Internet, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 10, 2014), at 2.

²⁰ See, e.g., Letter from Jeffrey Harrelson, Manager of Broadband Services, Jo-Carroll Energy, Inc., to Marlene H. Dortch, ET Docket No. 13-49 (filed Aug. 13, 2014) (estimating that 700-800 customers will lose Internet access and projecting re-design cost to re-establish access to be \$1.0-\$1.5 million); Letter from Matt Larsen, CEO, Inventive Wireless of Nebraska, LLC, to Marlene H. Dortch, ET Docket No. 13-49 (July 30, 2014) (estimating cost of over \$1 million in backhaul upgrades and loss of over 50% of customers); Letter from Alex Kelly, VP/Engineering, ICON Technologies Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 30, 2014) (estimating

Second, the WISP community is hardly “[a]lone among the industry segments impacted by the new rules,” as Cisco apparently believes.²¹ As the Utilities Telecom Council (“UTC”), stated, “it would wipe out hundreds of utility 5.8 GHz systems across the United States.”²² Like WISPs, utilities would need “to reengineer their systems and reduce the distance of their links” or “[a]lternatively, they may be forced to abandon the systems altogether.”²³ FreeWave Technologies, Inc., which provides 5.8 GHz equipment to energy, military, agriculture, mining, municipal and enterprise users, stated that “FreeWave’s customers would lose use of the edge channels on which the radios operate, as the amount of power that would need to be reduced in order to meet the OOB requirements would render them useless.”²⁴ The harm that will result from eliminating the Section 15.247 certification option transcends the WISP community to include utilities, mission critical users and governments.²⁵

cost of \$50,000-\$100,000 to replace existing access points and customer equipment); Letter from Alan Wehe, Jade Communications, LLC, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 21, 2014) (estimating \$1.7 million to change out equipment); Letter from Jerry L. Young, President, Tele-Page Incorporated, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed Aug. 1, 2014) (estimating cost of \$550,000 to comply); Letter from Alan Luelf, General Manager, ALSAT Home Electronics, LLC, to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 30, 2014) (“uneconomical” to install an \$11,000-\$13,000 link to provide backhaul” to 15 customers on a tower); Letter from L. Elizabeth Bowles, President and Chairman of the Board, Aristotle, Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 24, 2014), at 2 (estimating cost to replace 5.8 GHz point-to-point links with licensed links at \$700,000, or \$70,000 to install the filtering equipment to upgrade existing equipment); Letter from Kenneth E. Garnett, CTO, Cal.net, Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed Aug. 13, 2014) (“combined effect of the narrowing of the band and the lowering of the power levels could potentially result in 700-1000 subscribers losing their service, resulting in a revenue hit of \$40,000 to \$60,000 per month”).

²¹ Cisco Response at 5. Cisco conveniently ignores WISPA’s statements that other industries and users will be affected by the Commission’s adoption of more restrictive emission limits. *See* WISPA Petition at 14.

²² Comments of Utilities Telecom Council, ET Docket No. 13-49 (filed Aug. 14, 2014) (“UTC Comments”), at 6.

²³ *Id.* at 7.

²⁴ Comments of FreeWave Technologies, Inc., ET Docket No. 13-49 (filed Aug. 14, 2014), at 3. *See also* Letter from Kevin J. Negus, Chairman, CTO and Founder, CBF Networks, Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed Aug. 4, 2014) (noting use of long-distance point-to-point links by utilities and other critical infrastructure industry companies); Comments of MSI, ET Docket No. 13-49 (filed Aug. 14, 2014), at 3 (equipment modification options would adversely affect public safety and enterprise users); Letter from Marc Krueger, CEO/President, Convergent Technologies to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 8, 2014), at 2 (“oil and gas companies, schools, healthcare, and local governments will also potentially lose service or at least have to replace their existing WISP services with far more expensive and poorer performing service”).

²⁵ *See also* Letter from John D. Smith, General Manager, Gunby Communications Inc., to Marlene H. Dortch, Secretary, ET Docket No. 13-49 (filed July 8, 2014) (WISP that also provides public safety communications); Letter

Third, manufacturers and distributors of 5.8 GHz equipment, who have extensive experience in research, development and performance characteristics, fully support reconsideration. Ubiquiti Networks, Inc. (“Ubiquiti”), a leading global manufacturer of fixed wireless equipment, agreed with JAB’s conclusions about the cost and performance loss from added filtering, stating that, “the outcome would be products which will cost significantly more to develop” and that the “obvious outcome” of reducing transmitter output power would be “a significant reduction in link budget” that “will result in an increased requirement for more radio equipment, more towers and more spectrum for each additional relay or ‘hop.’”²⁶ Manufacturers also agreed with Cambium that the Commission’s decision would affect the existing global market. Ubiquiti stated that “given the significant development investment, the reduced market size due to increased product cost and the fact that these requirements would be limited to the US only, the business case for implementing such modifications may not be compelling for equipment manufacturers and thus likely to reduce consumer choices and competition in this market segment.”²⁷ While domestic harmonization of the 5 GHz band may seem an expedient objective, it should not come at the expense of terminating broadband service for existing customers and damaging the existing global equipment market.

Finally, consumers have weighed in on how eliminating the Section 15.247 option would affect their businesses and their lives. In addition to letters that subscribers filed in the record, the comments submitted by Rick Harnish, WISPA’s Executive Director, include a list of more than 3,000 consumers and businesses that support WISPA’s petition, as well as quotes from

from David L. Giles, President, InvisiMax, Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 8, 2014) (WISP that serves border patrol and areas around U.S. Air Force Base).

²⁶ Letter from Greg Bedian, Director of Engineering, Ubiquiti Networks, Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed July 30, 2014), at 2.

²⁷ *Id.* See also Letter from William Brown, CEO, Deliberant Inc., to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed Aug. 12, 2014), at 1 (the tighter emission standards “would be limited to products sold to US customers solely, it would reduce the production efficiencies currently shared by a global market”).

some of those consumers that emphasize the importance of preserving fixed wireless Internet services to rural Americans.²⁸

This is hardly “a handful of outliers,” as Cisco derisively asserts, but a significant representation of the plethora of users of long-distance communications in the 5.8 GHz band.²⁹ It also must be noted that the Wi-Fi Alliance and the National Cable & Telecommunications Association – both significant players in the Wi-Fi industry – opposed the petition for reconsideration filed by the Alliance for Global Automakers, Inc., but remained silent with respect to the WISPA, Cambium, JAB, MSI and Mimosa petitions.

II. THE CISCO RESPONSE FAILS TO PRESENT ANY LEGITIMATE TECHNICAL BASIS FOR DENIAL OF THE PETITIONS.

Only Cisco opposed the WISPA, Cambium, JAB and MSI petitions. Conveniently ignoring the extensive record, Cisco contends that the Commission adequately justified its rule change, stating that the *First Report and Order* “could not have been more clear in explaining that the decision to impose the more restrictive unwanted emissions limit . . . not only provides consistency across the entire 5 GHz band, but also ensures appropriate interference protection to TDWR and Dedicated Short Range Communication (“DSRC”).”³⁰ Cisco argues that WISPs and equipment manufacturers are not willing to shoulder the burden of regulatory changes to address the alleged interference issues. Cisco goes so far as to note that the Commission afforded “WISPs and their vendors substantial relief by not requiring compliance with Section 15.407’s unwanted emission limit immediately upon the effective date of the new rules.”³¹

²⁸ See letter from Rick Harnish to Marlene H. Dortch, FCC Secretary, ET Docket No. 13-49 (filed Aug. 14, 2014).

²⁹ Cisco Response at 2.

³⁰ *Id.* at 10.

³¹ *Id.* at 9. Cisco ignores the fact that, as WISPA has noted, Commission records show more than 9,700 devices have been certified under Section 15.247. See WISPA Comments, ET Docket No. 13-49 (filed May 28, 2014) (“WISPA Initial Comments”), at 14 n. 29 (9,700 devices certified under Part 15.C of the Commission’s Rules). In two years, these devices will no longer be commercially available if the Commission’s rules stand. This is yet

If the existing record is not convincing enough, Cisco's objections are rather easily dismissed. First, the "convoluted regulatory regime" in the 5 GHz band that apparently bothers Cisco has been in place for years and has enabled the myriad consumer benefits discussed in the record.³² Without Section 15.247 devices, there is little doubt that more rural consumers would today lack affordable broadband, the cost to deliver utilities would be higher and public safety communications would be less reliable. Moreover, as the WISPA Petition makes clear, the so-called benefits of harmonization do not disappear by reinstating the option of 5725-5850 MHz equipment certification under the Section 15.247 emission limits. As they have for years – and Section 15.247 was adopted *before* Section 15.407 – the two rules can harmoniously co-exist.

Second, Cisco's unproven hypothesis that so-called "loose" emissions from legally operating Section 15.247 devices interfere with TDWR facilities is wrong. Cisco confuses its *hypothetical* Section 15.247 interference with *actual* TDWR interference found by the NTIA to be caused by off-channel emissions from Section 15.407 DFS devices that simply didn't move far enough away from TDWR stations.³³ To reiterate what WISPA and others have demonstrated in the record, there is *no* evidence that OOBE from any *lawfully operating* Section 15.247 device has ever caused interference to TDWR facilities that operate 75-125 MHz away. Although there are a number of causes for TDWR interference, Section 15.247 OOBE was never one of them.³⁴

As FWCC explained, restricting OOBE is not the appropriate means to mitigate harmful interference: "considering that TDWR is 75 MHz away, and that past TDWR interference arose

another consequence of the Commission's decision and another example of Cisco's selective ignorance of the record.

³² *Id.* at 6.

³³ See Department of Commerce, *Evaluation of the 5350-5470 MHz and 5850-5925 MHz Bands Pursuant to Section 6406(B) of the Middle Class Tax Relief and Job Creation Act of 2012* (Jan. 2013), available at http://www.ntia.doc.gov/files/ntia/publications/ntia_5_ghz_report_01-25-2013.pdf (last visited Aug. 23, 2014)..

³⁴ *Id.* at 3-4.

from improperly modified devices, the reference to protecting TDWR makes more sense if applied to the new software security requirements, rather than the out-of-band limits.”³⁵ UTC agreed, stating that “[t]here is no evidence to suggest that [OOBE] is a cause of interference, and the fact that the U-NII-3 band is at least 75 MHz separated from the TDWR band practically rules out the possibility that there would be any interference that would result from out-of-band emissions.”³⁶ As for the potential for harmful interference to DSRC, the absence of any objection from DSRC licensees should demonstrate that this is not a serious claim.³⁷

Third, Cisco mischaracterizes the spectrum options available to WISPs.³⁸ As Cisco well knows, all of the unlicensed bands have dissimilar propagation characteristics, technical regulations and interference environments. Cisco conveniently fails to consider that the 5725-5850 MHz band is the only band that allows unlimited gain antennas without a power reduction and thus the only band that enables long-distance point-to-point backhaul operations that have proved so vital to consumers. The 900 MHz, 2.4 GHz and 3.65 GHz bands do not permit such operations, and the rules for the 3550-3650 MHz band are not in place. Any suggestion that these other bands are suitable replacements for 5725-5850 MHz is absurd.

Cisco is dead wrong in accusing the WISP community for not accepting responsibility for supporting measures that address the Commission’s interference concerns. As Cisco is well aware, WISPA and WISP equipment manufacturers participated in a series of discussions with the Commission, FAA, NTIA and 5 GHz interests including Cisco in 2009 and 2010 in an effort to mitigate potential interference to TDWR facilities and re-open the UNII-2C band for new device certifications. WISPA conducted an ongoing education campaign for the WISP

³⁵ FWCC Comments at 6.

³⁶ UTC Comments at 4-5.

³⁷ See FWCC Comments at 6 (stating that DSRC “still exists mostly in PowerPoint”).

³⁸ See Cisco Response at 13.

community³⁹ and has voluntarily operated an online TDWR database since 2010.⁴⁰ A review of Commission decisions shows there has been a steady decline in the number of new enforcement cases for alleged TDWR interference. Therefore, these efforts appear to be working well.

In this proceeding, both WISPA and MSI supported the Commission's proposed rules to require improved waveform detection and improved software security features, and believe that these rules alone will address any future cases of interference.⁴¹ WISPA well understands the consequences of harmful interference on its members' ability to obtain access to much-needed unlicensed spectrum in other bands.⁴² More than "lifting a finger,"⁴³ WISPA and the WISP community have offered helping hands and real solutions throughout this process.

Conclusion

Cisco is the sole opponent to a return to a regulatory environment that will allow WISPs, utilities, critical infrastructure providers and others to continue serving the public without having to suffer from significant additional costs, loss of service, or both. The public also has weighed in, filling the record with specific examples and cost estimates on the harmful effects of more restrictive OOB limits. The Commission should grant WISPA's petition for reconsideration.

Respectfully submitted,

WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION

September 2, 2014

By: */s/ Chuck Hogg, President*
/s/ Alex Phillips, FCC Committee Chair
/s/ Jack Unger, Technical Consultant

³⁹ See <http://www.wispa.org/tdwr-resources> (last visited Aug. 19, 2014).

⁴⁰ See <http://www.spectrumbridge.com/udia/home.aspx> (last visited Aug. 20, 2014).

⁴¹ See Comments of WISPA, ET Docket No. 13-49 (filed May 28, 2013), at 16-17.

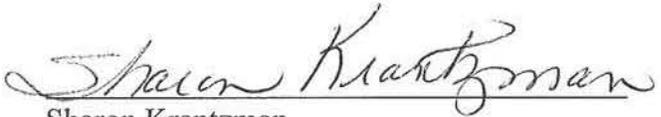
⁴² See, e.g., Comments of WISPA, GN Docket No. 12-354 (filed July 14, 2014) (recommending measures to allow responsible shared use of the 3550-3650 MHz band).

⁴³ Cisco Response at 5.

CERTIFICATE OF SERVICE

I, Sharon Krantzman, hereby certify that a true and correct copy of the foregoing Reply to Consolidated Response of Cisco Systems, Inc. was sent by first-class, postage prepaid mail, this 2nd day of September, 2014, to the following:

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Sharon Krantzman