

July 27, 2015

**VIA ELECTRONIC FILING**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Re: *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 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* (ET Docket No. 14-165); *Promoting Spectrum Access for Wireless Microphone Operations* (GN Docket No. 14-166); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions* (GN Docket No. 12-268)

Dear Ms. Dortch,

On Friday, July 24, 2015, Scott Bergmann and Kara Romagnino of CTIA – The Wireless Association® (“CTIA”) met with Brendan Carr, Legal Advisor to Commissioner Ajit Pai, to discuss issues in the above-captioned proceedings. A copy of the presentation discussed is included as an attachment to this *ex parte* filing. In this meeting, CTIA explained that the incentive auction represents an important opportunity to bid for access to much-needed spectrum for mobile broadband use and noted the wireless industry’s willingness to invest in spectrum rights so long as those spectrum rights are afforded the interference protections mandated by Congress in the 2012 Spectrum Act.

While CTIA has consistently supported rules that both maximize repurposing spectrum for licensed exclusive use in the 600 MHz band and provide for non-interfering unlicensed operations, CTIA stressed the importance that certainty has for potential bidders in the forward auction and reiterated that the current proposals concerning interference protections for licensed 600 MHz operations threaten to undermine the success of the incentive auction. In particular, and as detailed in the attached presentation, CTIA highlighted the real-world testing results of V-COMM which demonstrate that the Commission’s proposed technical rules for unlicensed operations in the 600 MHz guard bands and duplex gap would result in harmful interference to licensed services in violation of the Spectrum Act. To provide the necessary and statutorily-defined rights for 600 MHz licensees, CTIA reiterated the need for the Commission to increase out-of-band emission and frequency separation as outlined in V-COMM’s report. Finally, CTIA expressed its commitment to work with the Commission to implement technical rules for unlicensed 600 MHz operations in a manner that complies with the Spectrum Act, protects licensed services from harmful interference, and creates a framework that will facilitate a successful auction.

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While CTIA continues to believe that the best course of action for the 600 MHz band is to adopt the technical rules for unlicensed devices and wireless microphone operations in the duplex gap and guard bands proposed by V-COMM and endorsed by CTIA, we noted that it is essential for the Commission to provide a means for addressing harmful interference should it occur. Therefore, consistent with the letter CTIA filed with the Commission on July 23, 2015, which is attached to this *ex parte* filing, CTIA urged the Commission to ensure that its rules include a requirement that no actual harmful interference be caused to licensed 600 MHz operations by unlicensed white space devices or wireless microphones. CTIA further urged the Commission to adopt a “Stop Buzzer” mechanism for ensuring that interfering white space devices and wireless microphones are able to be located and required to cease operations.

Pursuant to Section 1.1206 of the Commission’s rules, 47 C.F.R. § 1.1206, this letter is being electronically filed via ECFS. Please direct any questions to the undersigned.

Sincerely,

/s/ Scott K. Bergmann

Scott K. Bergmann  
Vice President, Regulatory Affairs  
CTIA – The Wireless Association®

Attachments

# Attachment A



# **Unlicensed Operations in the 600 MHz Band ET Docket Nos. 14-165 and 14-166**

July 24, 2015



# Overview

- Bidders in the Forward Auction Require Certainty To Invest in New Spectrum Rights in the Critically Important 600 MHz Band.
- The Commission is Required by the Spectrum Act to Protect Licensed 600 MHz Services from Harmful Interference Caused by Unlicensed Use of the Guard Bands.
- The Commission Can Make Adjustments to its Proposals That Will Protect Licensed Wireless Operations and Bring its Rules into Compliance with the Spectrum Act.

# Forward Auction Participants Require Certainty To Invest

- The wireless industry has consistently demonstrated its ability to make significant investments in mobile broadband spectrum when provided certainty about the rights gained in the auction process.
- The Commission is under Congressional mandates to protect licensed 600 MHz services and to ensure that bidding in the forward auction covers the cost of the “incentives” for the reverse auction.
  - By adopting rules that fulfill the Spectrum Act’s mandate that unlicensed operations not cause interference to licensed 600 MHz services, the Commission will empower the wireless industry to invest with greater confidence, promoting the success of the incentive auction and the public interest.
  - The 600 MHz band presents novel challenges for bidders in the forward auction. For example, wireless bidders will, for the first time, be bidding on “generic” licenses rather than specific blocks.
  - Adopting rules that place licensed frequencies at a risk of harmful interference would significantly exacerbate the uncertainty for forward auction bidders.

# The Spectrum Act Requires Protection from Harmful Interference

- The Spectrum Act emphasizes that the “Commission may not permit any use of a guard band that the Commission determines would cause harmful interference to licensed services.”
  - Therefore, in accordance with the Spectrum Act, unlicensed operations in the 600 MHz guard band and duplex gap can only be introduced through a regulatory framework that ensures that such operations do not raise harmful interference concerns.
- The FCC’s current proposals for the 600 MHz spectrum band fail to balance the statutorily protected rights of licensees.
- Real-world testing demonstrates that the Commission’s proposed rules for unlicensed operations will result in harmful interference to licensed wireless services in violation of the Spectrum Act.
- White Space proponents misunderstand LTE technical characteristics and testing parameters and have provided unsound test data.

# FCC Proposals Would Result in Harmful Interference

- The degradation caused by wireless microphones and unlicensed white space devices under the Commission’s proposed framework plainly is “harmful interference” in violation of the Spectrum Act.
  - The Commission has generally based its finding of harmful interference on whether the introduction of a new use and/or service would disrupt the users of incumbent services.
  - V-COMM’s testing showed that licensed 600 MHz services would be seriously degraded, obstructed, and repeatedly interfered with under regular conditions.
  - Specifically, the 1 dB desensitization of an LTE receiver would result in a 14 percent loss in network coverage area and a 10-15 percent loss in throughput.

# The Commission Can Make Adjustments to its Proposals That Will Protect Licensed Wireless Operations

- The Commission adopt protections to eliminate harmful interference.
  - The Commission should adopt more stringent OOB limits.
  - The Commission should provide appropriate frequency buffers in the duplex gap and guard bands to separate licensed downlinks and white spaces devices/wireless microphones.
- Absent taking these needed steps to protect 600 MHz licensees from harmful interference, the Commission should list the 600 MHz spectrum affected by use of the guard bands and duplex gap as impaired in the forward auction.
- Additionally, the Commission should make clear that if its proposed interference protections do not fully protect licensed 600 MHz operations, white space devices/wireless microphones will be required to immediately cease transmissions, in accordance with the Spectrum Act requirements.

# Attachment B

July 23, 2015

**VIA ELECTRONIC FILING**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Re: *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 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* (ET Docket No. 14-165); *Promoting Spectrum Access for Wireless Microphone Operations* (GN Docket No. 14-166); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions* (GN Docket No. 12-268)

Dear Ms. Dortch,

Over the course of this proceeding, CTIA – The Wireless Association® (“CTIA”) and its members have been actively engaged in the development of a 600 MHz band framework that will maximize opportunities for repurposing spectrum to meet consumers’ significant demand for mobile broadband services. CTIA believes that the 600 MHz band can and should serve as a home for both licensed, exclusive use, and non-interfering, unlicensed operations. However, for these services to successfully coexist, the Commission must adopt a framework that adequately protects licensed services from harmful interference. Indeed, the Spectrum Act compels such action.<sup>1</sup>

As CTIA has previously indicated, independent, real-world testing conducted by V-COMM demonstrated that the Commission’s proposed technical rules for unlicensed devices and wireless microphone operations in the 600 MHz guard bands and duplex gap would result in harmful interference to licensed services in violation of the Spectrum Act. CTIA urges the Commission to heed the results of the V-COMM testing and adopt the out of band emissions (“OOBE”) limits, power limits, and other technical regulations proposed by the V-COMM test report and CTIA’s filings in this proceeding.

Additionally, it is essential that the Commission provide a means for addressing harmful interference from unlicensed white space devices and wireless microphone operations in the event they cause harmful interference to licensed wireless services in the 600 MHz band. In other proceedings where the Commission has used a predictive model to prevent interference, the Commission also has adopted rules requiring the termination of interfering operations. For example, in the concurrent inter-service interference proceeding, the Commission has proposed

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<sup>1</sup> Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6407(e) (codified at 47 U.S.C §1452), 126 Stat. 156 (2012) (“Spectrum Act”).



to require wireless licensees to eliminate any actual harmful interference to television service in the 600 MHz band, even if no harmful interference is predicted under the Commission's model.<sup>2</sup> Similarly, when the Commission adopted rules for unlicensed TV white space device operation, it required TV white space device operators to cooperate with the Commission's investigation of potential interference and, where necessary, prohibit the interfering device from transmitting.<sup>3</sup>

As it has done in the past and proposes to do with respect to other 600 MHz coexistence scenarios, the Commission should ensure that its rules include a requirement that no actual harmful interference be caused to licensed 600 MHz operations by unlicensed white space devices or wireless microphones. CTIA also believes that a mechanism for ensuring that interfering white space devices and wireless microphones are able to be located and required to cease operations can leverage the Spectrum Act requirement that these devices utilize a database. All white space devices and wireless microphones are required by the Spectrum Act to "rely on a database."<sup>4</sup> The Commission has proposed that unlicensed wireless microphones that operate in the guard bands and duplex gap rely on a database prior to operation,<sup>5</sup> while white space devices have always been required to rely upon a database.<sup>6</sup> To protect licensed 600 MHz operations, the Commission should require that database administrators cooperate in the termination of interfering operations. The FCC has proposed that licensed wireless microphones not be required to utilize a database,<sup>7</sup> but presumably these sophisticated users can be required to manage their use and comply with provisions to cease interfering operations. Consistent with the Commission's experimental licensing rules, the Commission should require the provision of a "Stop Buzzer" point of contact for each device and adopt a rule requiring this person or entity to

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<sup>2</sup> *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Second Report and Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd 13071, ¶¶ 74-75 (2014) ("While we propose to use a predictive model to prevent inter-service interference to television stations based on wireless base station deployments, we also propose to require a wireless licensee to eliminate any actual harmful interference to television service in the 600 MHz Band, even if no harmful interference is predicted. This proposed requirement will ensure that television stations assigned to the 600 MHz Band are not detrimentally affected by being co-channel or adjacent channel to wireless operations."); *see also id.* at Proposed Rule § 27.1310.

<sup>3</sup> *Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807, ¶ 212 (2008) ("If there is a claim of interference, a database administrator, upon request from the Commission, must provide TVBD identifying information. If a device is found to be causing interference, the Commission may then require that the party responsible for the unlicensed device take corrective actions or cease operating the device until the interference is resolved. In addition, if a representative of the Commission attempts and is unable to contact the person responsible for a device that is determined to be causing interference, the Commission may require the TV bands database to return a message of 'no channels available' to the device at its next scheduled re-check. This will effectively shut down the device until contact is made with the responsible party so that the interference can be resolved. The database administrator will rescind a 'no channels available' status for that device only upon authorization by the Commission.").

<sup>4</sup> Spectrum Act §6407(d).

<sup>5</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, and Amendment of Part 74 of the Commission's Rules for Low Power Auxiliary Stations in the Repurposed 600 MHz Band and 600MHz Duplex Gap*, Notice of Proposed Rulemaking, 29 FCC Rcd 12248, ¶ 163 (2014) ("Unlicensed NPRM").

<sup>6</sup> 47 C.F.R. § 15.713.

<sup>7</sup> Unlicensed NPRM ¶ 165.

be available at all times to resolve interference concerns and/or cease transmissions immediately in the event of interference.<sup>8</sup> Unlicensed users of the guard bands and duplex gap could be managed by a database and database administrators would be the responsible “Stop Buzzer” parties. Licensed wireless microphones would be required, as part of their licensing process, to identify a “Stop Buzzer” point of contact. Such action is consistent with the Spectrum Act’s mandate that these secondary operations not cause harmful interference to licensed 600 MHz wireless services. CTIA has attached text that the Commission could insert in its rules to serve this purpose.

CTIA continues to believe that the best course of action for the 600 MHz band is to adopt the technical rules for unlicensed devices and wireless microphone operations in the duplex gap and guard bands proposed by V-COMM and endorsed by CTIA. Such rules will help ensure that forward auction bidders who must make enormous capital investments have access to the spectrum purchased at auction free from harmful interference. In addition, a rule prohibiting *actual* harmful interference is necessary to ensure Spectrum Act compliance.

Pursuant to Section 1.1206 of the Commission’s rules, 47 C.F.R. § 1.1206, this letter is being electronically filed via ECFS. Please direct any questions to the undersigned.

Sincerely,

/s/ Krista L. Witanowski

Krista L. Witanowski  
AVP, Regulatory Affairs  
CTIA – The Wireless Association®

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<sup>8</sup> 47 C.F.R. §§ 5.307, 5.308.

## Appendix: Proposed Part 15 and Part 74 Rules

**The Commission's Proposed Section 15.236 is amended by adding new paragraph (c)(7) to read as follows:**

**§ 15.236 Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz.**

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(7)(i) Wireless microphone operation in the frequencies identified in paragraphs (c)(3)-(5) of this section must cause no harmful interference to reception of licensed wireless transmissions in the repurposed 600 MHz band. If a wireless microphone operating in the 600 MHz duplex gap or 600 MHz guard band causes harmful interference to any 600 MHz Band licensee, that wireless microphone must cease operations immediately, consistent with the rules for secondary use. A "Stop Buzzer" point of contact must be identified and available at all times during operation of any unlicensed wireless microphone in the 600 MHz duplex gap or 600 MHz guard band. A "Stop Buzzer" point of contact is a person who can address interference concerns and cease all transmissions immediately if interference occurs. This "Stop Buzzer" point of contact can be provided by a database administrator. *See* § 15.707.

**The Commission's Proposed Section 15.707 is amended by adding new paragraph (g) to read as follows:**

**§ 15.707 Permissible channels of operation.**

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(g) Fixed and personal/portable device operation in the frequencies identified in paragraphs (e)-(f) of this section must cause no harmful interference to reception of licensed wireless transmissions in the repurposed 600 MHz band. If a fixed or personal/portable device operating in the 600 MHz duplex gap or 600 MHz guard band causes harmful interference to any 600 MHz Band licensee, that device must cease operations immediately. Further, white spaces database administrators shall provide relevant device information to the Commission in the event of a claim of harmful interference, and shall cooperate in taking any corrective action requested by the Commission, including returning a "no channels available" to the interfering device. In addition, a "Stop Buzzer" point of contact must be identified by each white spaces database administrator and available at all times during operation of any fixed or personal/portable device in the 600 MHz duplex gap or 600 MHz guard band. A "Stop Buzzer" point of contact is a person who can address interference concerns and cease all transmissions immediately if interference occurs.

**Section 74.802 is amended by adding new paragraph (f) to read as follows:**

**§ 74.802      Frequency assignment**

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*(f) No interference to licensed wireless operations in the repurposed 600 MHz band.*

Low power auxiliary stations operating in the 600 MHz duplex gap must cause no harmful interference to reception of licensed wireless transmissions in the repurposed 600 MHz Band. Any low power auxiliary station operating in the 600 MHz duplex gap that causes harmful interference to any 600 MHz Band licensee in the repurposed 600 MHz band must cease operations immediately, consistent with the rules for secondary use. A “Stop Buzzer” point of contact must be identified in the license application and available at all times during operation of any low power auxiliary station in the 600 MHz duplex gap. A “Stop Buzzer” point of contact is a person who can address interference concerns and cease all transmissions immediately if interference occurs.