March 11, 2015

VIA ELECTRONIC FILING

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


Dear Ms. Dortch,

On March 9, 2015, Scott Bergmann and Krista Witanowski of CTIA – The Wireless Association®, together with CTIA outside counsel and consultants, and CTIA members had separate meetings with Renee Gregory (advisor to Chairman Tom Wheeler) and Louis Peraertz (advisor to Commissioner Mignon Clyburn). A full list of meeting attendees is attached. Wireless industry representatives discussed testing conducted by V-COMM, Inc. that examined potential interference from white space devices and wireless microphones to 600 MHz licensed mobile broadband services.

CTIA supports rules that maximize the repurposing of spectrum for licensed exclusive use in the 600 MHz band and provide for unlicensed use of the 600 MHz guard band and duplex gap, consistent with the Spectrum Act’s requirements. Specifically, 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 interference concerns.

To develop a framework for unlicensed white space devices and wireless microphones that would ensure protection of licensed services from interference, CTIA and its members commissioned V-COMM to test interference from these sources to licensed mobile broadband devices. In the meeting, CTIA members/representatives and V-COMM discussed the results of V-COMM’s testing, a summary of which is attached.

CTIA is committed to promoting a 600 MHz frequency environment where licensed and unlicensed services can coexist without harmful interference. The wireless industry representatives at the meeting stressed that the Commission can enable this environment through careful consideration of V-COMM’s testing and adoption of rules consistent with CTIA’s and V-COMM’s proposals.

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

Sincerely,

/s/ Krista L. Witanowski

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

Attachments
Attachment
March 9, 2015 Meeting Participants

Meeting with Renee Gregory, Legal Advisor, Engineering and Technology, Wireless and Incentive Auction (Office of Chairman Tom Wheeler)
Scott Bergmann, Vice President, Regulatory Affairs, CTIA
Krista Witanowski, Assistant Vice President, Regulatory Affairs, CTIA
Sean Haynberg, Director of RF Technologies, V-COMM, Inc.*
Thomas Dombrowsky, Senior Engineering Advisor, Wiley Rein LLP (on behalf of CTIA)
Jessica Lyons, Wiley Rein LLP (counsel to CTIA)
Brian Benison, AT&T
Darryl Degruy, U.S. Cellular*
Chris Oatway, Verizon
Harry Perlow, Sprint*
Grant Spellmeyer, U.S. Cellular

Meeting with Louis Peraertz, Legal Advisor, Wireless, International, and Public Safety (Office of Commissioner Mignon Clyburn)
Scott Bergmann, Vice President, Regulatory Affairs, CTIA
Krista Witanowski, Assistant Vice President, Regulatory Affairs, CTIA
Sean Haynberg, Director of RF Technologies, V-COMM, Inc.*
Thomas Dombrowsky, Senior Engineering Advisor, Wiley Rein LLP (on behalf of CTIA)
Jessica Lyons, Wiley Rein LLP (counsel to CTIA)
Brian Benison, AT&T
Chris Oatway, Verizon
Harry Perlow, Sprint*
Grant Spellmeyer, U.S. Cellular
Neeti Tandon, AT&T*

* - participated via teleconference.
V-COMM Testing in the 600 MHz Band

- Section 6407(e) of the Spectrum Act states, “The Commission may not permit any use of a guard band that the Commission determines would cause harmful interference to licensed services.”

- To provide real world analysis based on accepted wireless industry standards and practices, CTIA and its members commissioned testing to develop a framework for unlicensed white space devices and wireless microphones that would ensure protection of licensed services from interference.

- Based on the results of this testing, CTIA urges the Commission to:
  - Modify its proposed rules for unlicensed and wireless microphone operations to ensure compliance with the Spectrum Act’s mandate that these operations adequately protect the substantial investments of 600 MHz licensees; and
  - Adopt out of band emission requirements and buffers in the duplex gap and guard bands consistent with the findings of CTIA’s test vendor V-COMM.
Recommendations Based Upon V-COMM Test Findings

- **More Stringent OOBE Requirements Are Needed To Protect Licensed Services**
  - The Commission’s proposed -56.8 dBm/100 kHz OOBE attenuation requirement must be increased to -89 dBm/100 kHz at the downlink band edge to fully protect licensed services in the 600 MHz band
  - Should the FCC adopt its -56.8 dBm/100 kHz OOBE limit, LTE devices will suffer harmful interference as much as 20 meters away

- **Duplex Gap Requirements Must Be Modified To Protect Licensed Services**
  - The OOBE limit must be -89 dBm/100 kHz at the downlink band edge
  - White Space Devices must have a five megahertz buffer from licensed downlink spectrum to operate at 40 milliwatts (16 dBm)
  - Wireless microphones must have a five megahertz buffer from licensed downlink spectrum to operate at 20 milliwatts (13 dBm)

- **Guard Band Requirements Must Be Modified To Protect Licensed Services**
  - The OOBE limit must be -89 dBm/100 kHz at the downlink band edge
  - White Space Devices must have a five megahertz buffer from licensed downlink spectrum and be limited in transmit power to 5 milliwatts (6.6 dBm)
  - Wireless microphones must have a nine megahertz buffer from licensed downlink spectrum to operate at 20 milliwatts (13 dBm)
Duplex Gap Proposal

Licensed Downlinks (Handset receivers)  Buffer (5 MHz)  White Space Devices and wireless microphones (6 MHz)  Licensed Uplinks (Base station receivers)

Note: Assumes White Space Devices and wireless microphones are subject to OOBε limit of -89 dBm/100 kHz.
Guard Band Proposal

Guard Band Proposal – White Space Devices

11 MHz Guard Band Case for Unlicensed White Space Devices

- White Space Devices at 5 milliwatts (6 MHz)
- Buffer (5 MHz)
- Licensed Downlinks (Handset receivers)

11 MHz Guard Band

9 MHz Guard Band Case for Wireless Microphones

- Buffer – No wireless microphones (9 MHz)
- Licensed Downlinks (Handset receivers)

9 MHz Guard Band

7 MHz Guard Band Case for Wireless Microphones

- Buffer – No wireless microphones (7 MHz)
- Licensed Downlinks (Handset receivers)

7 MHz Guard Band

Note: Assumes White Space Devices are subject to OOB limit of -89 dBm/100 kHz.

Note: Assumes wireless microphones are subject to OOB limit of -89 dBm/100 kHz.