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September 25, 2015

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20228

Re: IB Docket No. 13-213, RM-11685

Dear Ms. Dortch,

On September 25, 2015, I had a phone call with Louis Peraertz, Senior Legal Advisor to Commissioner Clyburn. The purpose of the call was to finish our meeting from September 21st.

Following up on a specific area we discussed, I sent Mr. Peraertz the attached letter after our meeting.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter and attachments are being filed for inclusion in the above-referenced dockets.

Respectfully Submitted,

Greg Gerst
Gerst Capital, LLC

cc: Louis Peraertz
Johanna Thomas
Erin McGrath
Brendan Carr
Jessica Almond



September 25, 2015

Hi Louis,

Per our conversation today, I've attached the following to this email:

1. OET Emissions report filed on May 7, 2015 (<http://apps.fcc.gov/ecfs/document/view?id=60001046632>).

As noted on page 9, this report presents results from emissions tests of the Ruckus Wireless model "ZoneFlex 7982 AP" with an FCC ID number of **S9G-MPE2N33A**. S9G-MPE2N33A (the first identifier references the 2.4GHz Wi-Fi module, while the second references the 5GHz Wi-Fi module).

2. Part 15.247 report for a device with the FCC ID number **S9G-MPE2N33A** on file at the OET's site (<https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm>)

Per the OET's "Test Firm Search" database, the report was generated by a lab accredited to conduct such testing (

https://apps.fcc.gov/oetcf/eas/reports/ViewExhibitReport.cfm?mode=Exhibits&calledFromFrame=N&RequestTimeout=500&application_id=weeLXDpLRz2NFXk8OxavLQ%3D%3D

).

3. Select slides from prior presentations:
 - o Slide 17 from July 28, 2015 filing. (<http://apps.fcc.gov/ecfs/document/view?id=60001118944>)
 - o Slides 18 & 19 from September 22, 2015 filing. (<http://apps.fcc.gov/ecfs/document/view?id=60001324716>)

Background on Detecting Differences in Test Results:

The first slide in attachment #3 is included as an example of the impact a coexistence filter will have on emissions test results conducted in/around the TLPS frequency range. The slide compares data from identical emissions tests conducted on two "flavors" of the iPad Air 2 (Left: "Wi-Fi-only", Right: "LTE-enabled"). If the hardware were identical, the same test would produce identical results (w/in a reasonable margin of error due to noise and manufacturing variances of parts). As described on the slide, for an identical test (TX on Ch13), the 10dB additional attenuation (at 2483.5MHz) for the "LTE-enabled" version proves the hardware is different. Specifically, it shows the impact of coexistence filter-induced attenuation on the "LTE-enabled" iPad Air 2 and the absence of such for the "Wi-Fi-only" version.

Per FCC rules, materially different hardware (i.e.: changes beyond manufacturing tolerances) impacting the emissions profile of a given Wi-Fi device requires separate Part 15.247 testing and a different FCC ID. As indicated in the footnote to Slide 17 of the July 27th presentation, the "Wi-Fi-only" and "LTE-enabled" iPad Air 2 have different FCC ID numbers.

Part 15.247 Report ("Commercial Version"):

Pages 83 and 85 of the Part 15.247 are the tests that allow us to detect the presence of a coexistence filter in the commercial version of the Ruckus AP. Page 83 is an emissions test conducted while transmitting a 20MHz 802.11n signal on Wi-Fi Channel 11. The three plots are results from the three transmit antennas. Notice the "knee-bend" down in the plots that starts just to the left of "Mkr2" on each plot. This "knee-bend" becomes even more noticeable for the 40MHz 802.11n test on Page 85. As detailed in my earlier filings, the "sharpness" and extent of attenuation in the frequency range around 2484-2493MHz is caused by a coexistence filter. Without a coexistence filter, the "knee-bend" would disappear.

The most important thing to understand is the location of the “knee-bend”. It happens precisely in the upper half of the TLPS channel. As detailed in other analysis, the attenuation profile in this frequency range aligns almost exactly with the publicly available specifications for commercial coexistence filters (used in access points and smartphones), and would have a materially negative effect on TLPS performance.

OET Emissions Report (“TLPS Version”):

Before looking at the OET Emissions report data, it is important to highlight a couple points:

- Since the report focused on TLPS/Ch14 measurements, it did not contain emissions results for an 802.11n transmission on Wi-Fi Channel 11.
- The emissions measurements in both reports used test equipment settings (namely Resolution Bandwidth and Video Bandwidth) that allows for “apples-to-apples” comparisons of the two reports. My analysis in the second two slides of attachment #3 scaled the horizontal (frequency) and vertical (power) axes to produce legitimate overlays. I would encourage you to check with the OET engineers to see if they agree the overlay analysis is legitimate.

Pages 88 and 89 of the OET Emissions report contain the test results that definitively show the coexistence filter was removed from the “TLPS-enabled” access points. In looking at this data, note the following:

- Page 88 & 89 show transmission on TLPS/Ch14 while the Part 15.247 report shows transmission on Channel 11.
- The frequency range from ~2484-2493MHz (upper ½ of the TLPS transmission) exhibits NO ATTENUATION AT ALL in the OET Emissions report data. This can be seen by looking at the “flat region” around “Mkr 1” (the diamond labeled 1) on each plot. The entire “flat region” is the TLPS/Ch14 “information bandwidth” (the region where the “bits” are carried).
- If a coexistence filter were present, as it is in the commercial version, there would be visually detectable attenuation in the upper half of the TLPS/Ch14 transmit signal. Since there is none, the only conclusion is that the coexistence filter was removed.

The second and third slides in attachment #3 contain overlay plots that quantify the differences in the test data from each report. The third slide starts with one Ch11 emissions test result from the Part 15.247 report, overlays an accurately scaled TLPS/Ch14 test result from the OET report, overlays the commercially available attenuation profile of an Avago coexistence filter, and finally highlights the TLPS/Ch14 frequency range in yellow. If ANY coexistence filter were used in the “TLPS-enabled” access point, the Channel 14 signal would be attenuated to some extent. It wouldn’t necessarily conform exactly to the Avago filter profile, but it certainly would not remain “flat” in the upper half of Channel 14.

If you or anyone else at the FCC still have doubts about whether coexistence filters were removed from the “TLPS-enabled” access points, you could get the answer with a quick call to Ruckus Wireless. Ask if their commercial access points with the above FCC ID employ coexistence filters, and then ask if these coexistence filters are/were removed from the access points used by Globalstar for their TLPS demonstrations and field trials.

As we discussed, please refer to the last section of the attachment to the September 22nd filing for the relevance of this discussion to the NPRM.

Regards,

Greg Gerst