Federal Communications Commission
Washington, D.C. 20554

October 30, 2013

Mr. Michael J. Hart
Alpental Technologies, Inc.
10203 NE 156th Pl.,
Bothell, WA 98011

Dear Mr. Hart:

This is in response to your letter of September 10, 2013 in which you request a clarification of the rule in Section 15.255 that was adopted by the Commission in ET Docket No. 07-113 on August 9, 2013 for unlicensed devices operating in the 57-64 GHz (60 GHz) frequency band. You specifically request that we clarify that Section 15.255(b)(1) should be read such that products other than fixed field disturbance sensors, operating in this band and located outdoors, may choose to comply with either Section 15.255(b)(1)(i) or Section 15.255(b)(1)(ii).

Section 15.255(b), adopted on August 9, 2013 in the above proceeding, states in relevant part:

> (b) Within the 57-64 GHz band, emission levels shall not exceed the following equivalent isotropically radiated power (EIRP):
>
> "(1) Products other than fixed field disturbance sensors shall comply with one of the following emission limits, as measured during the transmit interval:
>
> (i) Except as indicated in paragraph (ii) below, the average power of any emission shall not exceed 40 dBm and the peak power of any emission shall not exceed 43 dBm.
>
> (ii) For transmitters located outdoors, the average power of any emission shall not exceed 82 dBm minus 2 dB for every dB that the antenna gain is less than 51 dBi. The peak power of any emission shall not exceed 85 dBm minus 2 dB for every dB that the antenna gain is less than 51 dBi..."

Your letter states that this rule language could be misinterpreted in a particular scenario when a device that can operate both indoors and outdoors uses a low-gain antenna (*e.g.* 20 dBi) and that this incorrect interpretation would result in a significant EIRP penalty when a device is located outdoors relative to that allowed under the original rules for Part 15.255(b).

We first note that your interpretation of the text of the rules is consistent with the plain language of the rule, as it states in the introductory text of subsection (b)(1), as reproduced above, "products other than...shall comply with <u>one</u> of the following..." options, *i.e.*, either subparagraph(i) or (ii). Therefore, an outdoor 60-GHz device with a low-gain antenna could choose to meet the emission limit in either subparagraph, whichever is higher, as long as other conditions are met. In this example, the device would be acceptable if it meets the 40 dBm EIRP (average)/43 dBm EIRP (peak) limit in subparagraph (i). There is nothing in the rule to suggest that subparagraph (ii) should be read out of the full context of its relationship to the rest of subsection (b).

Moreover, the Commission's intention in adopting the rule is clear. The Commission adopted the *Notice of Proposed Rulemaking* (*NPRM*) in this proceeding in response to a petition from the Wireless Communications Association (WCA). To encourage broader deployment of point-to-point digital systems in the 60 GHz band without increasing the potential for harmful interference, the Commission proposed,

inter alia, to increase the emission limit from the existing 40 dBm EIRP to 82 dBm EIRP for 60-GHz devices using an antenna with gain greater than 51 dBi. The *Report and Order* (*Order*) in this proceeding adopted this proposal and specifically stated in paragraph 8 "for 60-GHz devices located outdoors, we *increase* the average equivalent isotropically radiated power (EIRP) limit *from* 40 dBm to 82 dBm minus 2 dB for every dB that the antenna gain is below 51 dBi, and peak EIRP emission limit *from* 43 dBm to 85 dBm minus 2 dB for every dB that the antenna gain is below 51 dBi [emphasis added]." Elsewhere in paragraph 24, the *Order* also confirms that "consistent with our proposals in the *NPRM*, we are modifying the rules to adopt an average EIRP limit of 82 dBm and a peak EIRP limit of 85 dBm, in each case minus 2 dB for every dB that the antenna gain is below 51 dBi, for 60-GHz devices using very high gain antennas that are located outdoors," and emphasizes that "this *increase* in emission limits for antennas located outdoors will facilitate the use of longer range 60-GHz devices in wireless applications [emphasis added]."

Throughout this proceeding, and supported by the record, the Commission's intent has been to allow higher average and peak power of 60-GHz devices operating outdoors in order to encourage broader deployment of point-to-point digital systems in the 60 GHz band, not to lower the existing emission limit applicable to both indoor and outdoor 60-GHz devices (*i.e.*, 40 dBm EIRP (average)/43 dBm EIRP (peak)) that it adopted in 1995. Further, the Commission spoke at length on the necessity of higher power for 60-GHz outdoor devices due to the oxygen and water vapor absorption and scattering phenomena that occur at 60 GHz. *Order* at paragraphs 25 and 40. It is therefore clear that the rules in Section 15.255(b)(1) provide 2 options for outdoor 60-GHz devices to comply with the EIRP power limits stated therein. The first option, provided in subparagraph (i), specifies an emission limit of 40 dBm EIRP (average)/43 dBm EIRP (peak); it can be used for both outdoor and indoor 60-GHz devices. The second option, provided in subparagraph (ii), applies specifically to outdoor devices with very high-gain antennas that would exceed the emission limit in subparagraph (i); these devices may comply with the higher limit provided in subparagraph (ii), but must reduce their power from the maximum 82 dBm EIRP (average)/85 dBm EIRP (peak) by 2 dB for each dB that the antenna gain exceeds 51 dBi.

I trust that the above is responsive to your inquiry. Please let me know if I can be of further assistance.

Sincerely,

Julius P. Knapp
Chief,
Office of Engineering and Technology

Alpental Technologies
10203 NE 156th Pl, Bothell, WA, 98011

September 10, 2013

VIA: ECFS
Electronic Mail

Mr. Julius P. Knapp
Chief
Office of Engineering & Technology
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

RE: Revision of Part 15 of the Commission's Rules Regarding Operation in the 57-64GHz Band, ET Docket No. 07-113

Dear Mr. Knapp,

Alpental Technologies has been following the Petition and NPRM related to the above referenced proceeding that led to the recent Report and Order. We are developing next generation, low-cost, multi-gigabit per second 60GHz communications solutions that we believe will enable service providers, enterprises and consumers to fully benefit from the very positive regulatory environment that the FCC has put in place for this band. We were very pleased to see the FCC was proposing to further evolve the rules in the NPRM to foster on-going investment in technologies related to this band.

We believe that the slight changes to the rule language introduced in the Report & Order relative to that in the NPRM for Part 15.255(b)(1) regarding allowed EIRP, could make it possible for the new rule to be misinterpreted. The particular scenario under which this could occur is for a device that can operate both indoors and outdoors, using a lower gain antenna (e.g. 20dBi).

Our understanding, given the spirit of the Petition and NPRM, and all the documents on the record, is that Part 15.255(b)(1) should be read such that products other than fixed field disturbance sensors, operating in this band and located outdoors may chose to comply with either Part 15.255(b)(1)(i) or Part 15.255(b)(1)(ii). It is our understanding that this is what is intended by the highlighted language in the following excerpt of the new rule for Part 15.255(b)(1):

"(1) Products other than fixed field disturbance sensors shall comply **with one of the following** emission limits,..."

On the contrary, it should not be interpreted that Part 15.255(b)(1)(ii) shall always apply for a device when it is located outdoors, as could be wrongly interpreted due to the "Except as indicated in paragraph (ii), …" language at the start of Part 15.255(b)(1)(i). This incorrect interpretation would result in a significant EIRP penalty for a device with a lower gain antenna (e.g. 20dBi) when the device was located outdoors relative to that allowed under the original rules for Part 15.255(b).

We have discussed this issue with others in the industry and have found other companies have similarly reached the conclusion that the possibility for misinterpretation exists, particularly if the rules are not read in the context of the proceeding. Given this, we would be very grateful if you could confirm our interpretation of the rules is correct – specifically please clarify that a device when located outdoors can chose to comply with either Part 15.255(b)(1)(i) or Part 15.255(b)(1)(ii).

If you have any questions regarding this request, please do not hesitate to contact me.

Sincerely,

/s/ Michael J. Hart

Michael J. Hart
CTO
Alpental Technologies, Inc

cc (via electronic mail): Mark Settle
Tom Peters