RE: Cirronet
FCC ID: HSW-2450
Enclosed is my response to your comments.

After a review of the submitted information, I have a few comments on the above referenced Application.

**Administrative Issues:**

1)  Please provide the updated confidentiality Letter referenced in your response.

    This has been uploaded with the addition of the integration guide.

2)  The labeling mentioned in the modular approval letter does not appear to mention the labeling on the device or remainder of the application. What is the correct FCC ID?

    HSW-2450

3)  Item 7 of the modular letter mentions user…This should likely reference integrator instead. Please review.

    Corrected.

4)  Modular approval letter mentions 20 cm only.

    Corrected

5)  Regarding the MPE exhibit, it appears that most antennas are listed for fixed applications. This is unusual. Typically only high gain directional antennas are listed or large omni-directional high gain antennas are listed as fixed. I.E. 2 dBi dipoles can not usually expected to be fixed locations.
    Additionally, it is to the manufacturer to list as many mobile (in liu of fixed) as possible. Please review. Also note that your worse case justification mentions a 12 dBi patch that does not match your list. Also, the list in the report and the manual for mobile/fixed must be consistent. Call to discuss as necessary. Note the manual does not appear consistent with this list.

    All items have been corrected in the manual, and regrouped for maximum benefit to Cirronet.

6) Mobile RF exposure calculation should compare result to calculated power density. Please fix.

    Corrected

6)  RF exposure still mentions 2 cm in the first paragraph for mobile application. Please review per our discussion.

    Typo corrected

8)  7428 MHz in Table 4d does not appear to be denoted properly. Note that while the other data shows a -1 dB high pass filter correction, this plot does not contain this. Was a high pass filter

used. If so, then this should be denoted, as well as the 3 to 1 meter correction. Currently the data does not appear to take into consideration the 1 dB correction, but it is uncertain if it should as well.

Corrected. 1 db loss from filter was originally calculated but not denoted.

9) My previous references to 2.1033(b)(10) were incorrectly referencing an older version of the rules. What was being requested was information on "the system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals". Please provide information for this.

This statement on Cirronet letterhead has been uploaded.

10) The users manual states the device meets with Class A emissions. Please explain precautions taken to ensure that Receiver emissions meet with Appropriate limits (these are equivalent to Class B levels).

As stated in the report, the unit met Class B levels. The Integration Guide has been corrected to state this.

11) The response to equally on the average references a 17 mS TX time for a remote is 13 mS per channel with a 30 second dwell time. However, information used to calculate average emissions and MPE RF exposure both mention a maximum of 4.86 mS. This information is not consistent. Please review and correct as necessary. Additionally the users manual page 27 suggests a maximum dwell of 17.627 ms. All information appears inconsistent. Note that this may affect previously provided average duty cycle calculations, data and MPE exhibits.

Please disregard this response from the customer, as it is incorrect. The values stated are intended for possible EU sales and has been removed from the Integration Guide. As stated in the Average Limits section, the worst case transmit duty cycle yields a maximum transmit time of 4.86 milliseconds. A plot of the transmit channel follows in this letter.

12) Users manual specifications page 41 cite 95 US channels which is not consistent with report.

Corrected.

13) Section 7.3 of the users manual appears to suggest the normal N connectors are used and not
reverse N connectors. Please review/correct as necessary.

Corrected.

14) Section 7.3 of users manual mentions a 12 dBi gain omni which is not consistent with the rest of the application (MPE/Report).

Corrected.

15) Note the antenna connection types given in the application (MPE/Report) do not match section 7.3 of users manual.

Corrected

16) It appears several approved antennas may not be listed in section 7.3 of the users manual (6 dBi Omni, 12 dBi patch) or in the front cover RF exposure information.

Corrected.

17) Please consider adding additional information to the integrator as provided in the end of this document. While portions of this appear to be covered, guidance on RF exposure statements,

statement regarding the end user can not be provided instructions on how to install/remove, and following approved mobile/fixed conditions do not appear to be fully addressed. Note current users
manual does not appear to address non-colocation requirements as well.


18) Information in the users manual does not appear to explain which power levels are for use with which antennas. This information must be very clear. Additionally, please explain compliance to 15.15 given the various power levels and the integrator adjusts this.

>       Network Commands on page 24 have been modified in the Integration Guide. All units
>       will be provided at 18dBm-output power level (default). Point to Point applications, (3
>       parabolic dish antennas) will be referenced for higher power level, but the Guide will
>       instruct the integrator to contact Cirronet Customer Support for commands, which they
>       will instruct cannot be released to the end user.


19) Given the various power levels, it appears that the power measured on the high channel may be for the default level and not high power level. Please explain. If necessary, please provide low, middle, and high channel measurements at default levels as well.

>       Identical commands on all frequencies were used for testing. High channel had lower
>       power output.

20) The MPE exhibit should adequately reflect the 2 power levels and calculations accurately denote this. Note this typically would require default power level measurements to calculate mobile antennas.

>       Corrected.

21) Given the nature of information in the users manual, if this manual is only provided to integrators and not the public/end-user, it may be suggested to cover this under confidentiality as well.

>       Confidentiality letter has been corrected.

22) Information on dwell time appears to mention all 86 channels are used, however information in the users manual section 5.3 suggests that hop-tables can be adjusted with fewer channels. What is the minimum number of hopping channels ever used? Also, please explain compliance to 15.247(g). Additionally how does this affect duty cycle and MPE calculations previously provided.

>       Protocol Commands in Section 5.3 to set Alternative Frequency Band have been
>       removed as stated earlier. Minimum number of Channels is 86.


Thank you for your consideration.

Sincerely,

Louis A. Feudi
Operations Manager
US Technologies