≈ Elliott

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RE: Cisco Systems, Inc.
FCC ID: LDKXSCLCR14

1) The Term "FCC ID:" and the ID Number "LDKXSCLCR14" are shown on 2 separate lines. Note that 2.925 Identification of equipment, states:
(a) Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:
(b) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term *FCC ID* in capital letters on a single line, and shall be of a type size large enough to be legible without the aid of magnification.

Response: Due to the size of the Mini PCI the FCC ID label had to be reduced to size and this did not allow the FCC ID to follow before the ID number. Let us know if this is still a problem.

2) Information in the operational description mentions a Version 1 and Version 2, which utilize different components and chipsets. Because of their design differences, this will require that each version have their own unique FCC ID. Please clarify which version is being covered by this application. Note that parts lists and schematics suggest this is for Version 2.

Response: Version 1 was only produced as prototypes for debug and testing.

3) Documentation in the operational description appears to mentions that the device can contain 2 different amplifiers. Which one is evaluated for use in this application. Please explain.

Response: Version 1 (proto only) was made with different components, specifically a two chip set. Version 2 has a single chip which replaces them. The only power amp used is LX5506 which was used in the units that were tested.

4) Please provide a cover letter to address the attached licensed module policy.

Response: Module letter has been uploaded.

5) Please explain the reference to the 2.4 GHz band in the RF exposure exhibit.

Response: Per Cisco configuration guide label "manual part 5", a pre-approve Wi-Fi module will be installed with the 4.9 GHz Mini PCI module which both will be transmitting and operating at the same time. So for the RF exposure Co-location and worse case configuration was taken into consideration (Refer to MPE data).

6) Please provide a description of all circuitry and devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation, and for limiting power.

Response: Y1 = 40 MHz (XTAL) Frequency stability, The modulation limit and power is controlled by software in the Atheros chip U1 (AR5414) and scrip files, F2 DEA165850LT-1197B2 low pass filter to suppress spurious emissions at antenna port. This information has been included in the report.

7) This device could be used in point-to-point or point-to-multipoint system. Is the Applicant aware of the potential site license limitations imposed by 90.1207(d)? Given the nature of this device and being approved as a module, it may be prudent to included additional information regarding this fact in the users manual.

Response: Yes they will be made aware. Cisco has ways of informing their clients about part 90.1207(d) it could be put into documentation that is on the web rather easily.

8) Page 2 of the RF exposure for fixed installations mentions 20 cm. Given the estimated distances, this seems incorrect. Please review.

Response: MPE sheets have been corrected and uploaded a revised sheet.

9) The tune up procedure provided is actually a 300 page users manual. Please kindly provide an appropriate tune-up procedure as specified by 2.1043(c)(9).

Response: The radio has no tuning components. All tuning is control by the Atheros chip AR5414A and scrips. Letter explaining this has been uploaded.

10) The Channel frequencies specified in the operational description do not appear to match the channels specified in 90.1213. Please explain/correct as necessary.

Response: This was due to the nature of the radio software (ART) limitation that did not allow the frequency to be program by .5 MHz increments. The software only allowed programming the Mini PCI card by 5 MHz increments. Cisco's software will be operating per FCC frequency assignments. Refer to 4-7 to 4-9 of the Cisco 3200 Series Wireless MIC software configuration Guide label "manual part 5".

11) Kindly show how this device will meet the chanelization requirements of 90.1213. Please provide a complete list of all channels and their associated bandwidths. Note that the 731 form only shows 5, 10, and 20 MHz bandwidths. Are 1 MHz bandwidths not being utilized?

Response: Per the Theory of Operation page 7 of 24 it states the channelization capabilities of the radio being 5, 10, and 20 MHz. An also stated the data rates. 1.5Mbps for 5 MHz, 3Mbps for 10MHz, and 6Mbps for 20MHz. This radio does not have 1 MHz channelization capabilities. For the channel and their associated bandwidths please refer to 4-7 to 4-9 of the Cisco 3200 Series Wireless MIC software configuration Guide label "Manual part 5".

12) Kindly explain compliance to 90.1215(a) for the antenna used.

Response: Per the RF exposure calculations the antenna gain does not exceed 9dBi (Max is 7.5dBi) for mobile applications. Per statement for "fixed" locations used for point to point or point to multipoint the gain of the antenna must not exceed 26dBi (Max is 21dBi). This stated this shows that the antenna(s), for both mobile and fixed applications, do not exceed the max gain limits, before power and PSD reduction is required, as stated in section 90.1215(a).

13) 90.1205 prohibit aeronautical mobile operation. Some of the information in the antennas specifications appear to suggest designs for helicopters, etc. Please comment.

Response: Although antenna is specified for use in helicopters, the true applications will be for cars only.

14) In addition to the RF Exposure evaluation, a statement confirming compliance with the RF Safety requirements for both fundamental and unwanted emissions must be submitted. Please see 90.1217.

Response: Letter stating compliance with the RF exposure has been uploaded.

15) Please explain/show the derivation of the 58.2 and –37dBm limit on pages 27 and 28 of the test report.

Response: Limit has been corrected to –36dBm base on 17dBm – 53dB attenuation. All data has been changed to reflect –36dBm limit. The correct field strength is 59.2 base on the –36dBm + 95.2dB conversion factor used to convert dBm to dBuV/m. Revise Report w/ data have been uploaded

16) Please explain why the reading on the bottom plot on page 40 is significantly lower than the reading on the plot above it.

Response: The plot above is base with a peak detector. The plot in the bottom is the 2nd harmonic that is based with an average detector. This statement is also included in the data. Revise Report w/ data have been uploaded

17) Please explain/show the derivation of the –35.5dBm limit on plots on pages 40 - 47 of the test report.

Response: Limit has been corrected to –36dBm base on 17dBm – 53dB attenuation. All data has been changed to reflect –36dBm limit. Revise Report w/ data have been uploaded

18) Please note the method for power measurement in 90.1215(b). Please explain how your measurements meet with the requirement that the results are calibrated in terms of rms equivalent voltage.

Response: The peak power measurements are base on the UNII procedure. The HP analyzer does not have a true RMS detector so a Sample detector was used as stated in the plots. 60 sec max hold method was used as the transmitter had a 95% duty cycle.

19) Frequency stability appears odd. Was this actually measured? Please comment on the degree of resolution of the measurement.

Response: Frequency Stability has been corrected. Drift has been entered for each temperature and voltage. Revise Report w/ data have been uploaded

20) FYI……Regarding short term confidentiality, please ensure that both the applicant and Elliott labs understand the following:
a) Note that any documents held under the short-term confidentiality will automatically become public after 45 days. A manufacturer may extend this period up to an additional 45 days. This requires an additional cover letter requesting this extension must be submitted to ATCB a minimum of 7 days prior to the expiration of the original 45 day temporary grant of confidentiality
b) If the manufacturer engages in public marketing activities or otherwise publicizes the device prior to the expiration of the short-term confidentiality period, the applicant must immediately notify ATCB so the exhibits can be made publicly available.

Response: Yes understood. Applicant has been notified.

21) FYI…Although simultaneous EMC intermodulation testing results are no longer required to be reported to the FCC, the manufacturer is still responsible for ensuring the final device is compliant (including intermodulation results).

Response: Understood. Applicant has been made aware of this.

Regards,

Juan Martinez
Senior EMC Engineer
JM/dmg