December 17, 2013

RE: ATCB014863 – Original Equipment & Single Certification Applications – Model: 41915

FCC ID: TYD-CS41915 & IC: 8471A-CS41915 for LogicMark, LLC

I have a few comments on this Application. Please do not put confidential information in your responses to these questions because the response letter will not be held confidential by the FCC. Depending on your answers there may be more questions.

1. I have the following comments on the submitted UPCS test report which need to be addressed for Certification of this device with the FCC and IC:
   (a) On page 9 in paragraph B.1, the general description of measurements using a spectrum analyzer state that measurements were made at the antenna port of the EUT. This EUT has no antenna port but uses a wire antenna soldered to the PC board. Please elaborate on this section and others in the test report that state the same type of RF antenna conducted port measurements were made.

Response: A temporary connection was made via a u.fl pad and is mentioned on page 6 section 3.2 of the report.

   (b) Please provide the information listed in Section 4.11 of ANSI C63.17-2006 (C63.17) for help in determining how this device operates. If you consider this information confidential, you may upload it as part of the block diagram or schematic exhibits.

Response: A chart has been added to the revised report.

   (c) Please confirm that power spectral density measurements on pages 12 and 13 were made with the analyzer sampling at a rate of 30,000 samples per second per Section 6.1.5 of C63.17.

Response: With a sweep time of 2ms and number of points at 601 the effective sampling rate is much greater than 30,000 samples per second (300,500 samples per second). This has been confirmed with the test equipment manufacturer.

   (d) On page 14, please provide the bandwidth used in Section B.1.3 to generate the emissions mask shown in the plots on page 15 The emission mask is between 1B and 2B above and below the center frequency (etc.) used in the plot, where B is the bandwidth of the emission.

Response: Page 14 of the revised report contains additional calculation to show how the RBW was selected.

   (e) The RF conducted emission plots outside the bands appear to be only for transmitter harmonic emissions instead of the complete band from 30 to 19.4 MHz, excluding the operating band +/- 2.5 MHz. I will accept these plots if radiated emission measurements are provided showing compliance with Section 15.209 of the FCC Rules as specified in Section 6.1.6.2(d) of C63.17. Please address. (I've got an inquiry in to both the FCC and IC to see if radiated emission measurements are required for showing compliance with Section 15.205 Restricted bands emission limits of 15.209. The C63.17 test procedure seems to require them but the FCC and IC standards appear to not require them!?!?!)

Response: Section 6.1.6.2 of ANSI C63.17-2006 contains information on out-of-band tests. It is my understanding that option (c) allows for transmitter emissions to be measured in an RF Conducted manner. It may be that a peak limit of -39.5 dBm in a 15 kHz bandwidth if converted to field strength at 3 meters using (-39.5dBm + 95.2(dBm to dBµV/m @ 3m conversion) + 10log(15kHz/1MHz) BW conversion) = 74 dBµV/m at 3m for peak emissions from transmitter harmonics which is comparable to the 15.209 field strength limit)
Also my understanding from that the section of C63.17 that receiver and digital device emissions must still meet radiated 15.109 limits which is included in the test report.

(f) On page 22 in paragraph B.1.5, Section 6.2.3 of C63.17 requires recording of the peak-to-peak, the mean and the standard deviation values of the jitter for 100,000 readings. Please provide the missing information and confirmation that 100,000 readings were taken on these measurements.

Response: The R&S CMD 60 was used to monitor maximum values of jitter as a worst case comparison to the limit (no mention of peak-peak, mean, standard deviation of jitter in FCC 15.323 (e). Since a pulse occurs every 10 ms, over 360,000 pulses were observed in the 1 hour period thus confirming compliance to the rule part.

(g) On page 23 in paragraph B.1.6, please confirm that the carrier frequency stability over time was measured in accordance with Section 6.2.1.1 of C63.17. Also describe the length of time the frequency was monitored and the number of frequency reading taken for these results.

Response: The R&S CMD 60 was used for measurement over at least a 1 hour period with a measurement recorded as rapidly as the measurement instrumentation could permit. Maximum deviation reported as a worst case comparison to limit.

(h) On page 25 in paragraph B.2.3, please explain the abbreviations FP and PP under the section heading Manufacturer Declares. Which one applies to the equipment under test (EUT)?

Response: The terms FP and PP are common terms for DECT equipment. FP=fixed part or base unit and PP=portable part or mobile unit. This additional information has been added to the revised report as well as the information request from comment (b) above.

(i) Please provide a block diagram of each different spectrum etiquette test along with a list of the specific test equipment used for each test and its calibration date. The submitted test equipment list is missing the devices used for these tests.

Response: Diagram and equipment list added to revised report. The equipment used was previously added to the general equipment list.

(j) On page 26 in paragraph B.2.4, Section 7.3.4 of C63.17 states frequencies of F1 and F2 are used at power levels described therein. Please identify the frequency of F1 and F2 and their respective power levels in dBm applied during this test. Also confirm that these test results were for both F1 and F2 as described in this section of C63.17. Please also add a description of what the plot on page 26 shows.

Response: Additional clarification added to revised report.

(k) On page 28 in paragraph B.2.7 under the heading Manufacturer Declares, I'm not sure what this is trying to say. If FP sets up communication, the reply from PP must be received within 1 second or the device fails. Also a periodic acknowledgment must be received every 30 seconds. This appears to not be the case. Please elaborate.

Response: The PP initiates communication. If no reply from FP, the PP immediately terminate communication bearer. The periodic acknowledgement occurs every 1.28 seconds as seen in the plots. If the periodic acknowledgement is not received the communication ceases within 5 seconds as seen in the plots.

(l) On page 29 in paragraph B.2.8, identify F1, F2 and the interfering signal level in dBm. Confirm that the interfering signal was varied in level from $T_U + U_M + 10$ dB down to $T_U + U_M$, and describe these levels in dBm and the level in dBm when the EUT first transmitted.

Response: Additional clarification added to revised report.

(m) On page 31 in paragraph B.2.10, provide details and results of Section 7.4 or Section 7.5 testing per C63.17. EUT may be a transceiver but tests are applicable to this device.

Response: Section B.2.10 of the test report shows testing per section 7.5 of C63.17. Per section 7.4 of C63.17, "If the monitoring is made through the radio receiver used by the EUT for communication, the intended bandwidth requirement on the monitoring system is met." Since this device is a transceiver and does not use a separated dedicated monitoring receiver section 7.4 requirements do not apply to this device.

(n) On page 32 in paragraph B.2.11, the regulations ask questions about the EUT antenna. The section Manufacturer Declares talks about using the same receiver!?!?! The receiver is not the antenna. Please elaborate.

Response: The text has been revised to say the same antenna is used for receiving since as the device is a transceiver. The device therefore does meet the regulations.

(o) Section 8.1 of C63.17 requires an EUT using beacons to pass Section 8.1.1 testing and either Section 8.1.2 or 8.1.3 tests. Accordingly, please provide test results for the EUT that uses beacons to establish the links of communication.

Response: This device is a PP that only transmits if it receives the beacon from the FP therefore section 8.1 of C63.17 does not apply to this device.