



American Telecommunications Certification Body Inc.
6731 Whittier Ave, McLean, VA 22101

February 15, 2005

RE: Leica Geosystems, Inc.

FCC ID: QOHSR20

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

- 1) The block diagram should show the frequencies of all oscillators in the TX portion of the device (CFR 2.1033(a)(5)), unless this portion of the device is an OEM part from another manufacturer. Please provide either the block diagram for the TX portion, or alternatively provide a parts list that shows that this part is provided by another manufacturer. If confidentiality is required on any of these exhibits, please refer to item 5 below.
- 2) Please provide complete external photographs (top and bottom) showing the entire host device.
- 3) Please provide top and bottom internal photographs of each board in the device. Additional photographs are also required to show the area underneath any sub-shields if present (i.e. Bluetooth module).
- 4) Please provide an agency agreement form.
- 5) Is confidentiality requested on any exhibits (block diagram, operational description, schematic, etc.). If so, please upload a confidentiality letter to request this.
- 6) The schematics do not include the Bluetooth card. Note that a schematic for the TX portion of the device is required as specified 2.1033(b)(5) for the RF section. Please provide either a schematic for the Bluetooth device or as an alternative, you may provide a parts list that lists that shows that this part is provided by another manufacturer. Please provide either a schematic or parts list as specified. If necessary, please update the confidentiality letter to include the parts list.
- 7) Test photographs must be provided for radiated emissions. Please provide as a test configuration photograph exhibit.
- 8) This device appears to be possibly used in hand held configurations as well and therefore 20 cm can not be assumed for MPE. However, the power is significantly low such that SAR is not required. Please provide an appropriate exhibit for RF exposure. An example has been provided but will need to be adjusted for this device.
- 9) The device appears to be capable of connecting to a PC via a data cable is also categorized as a PC peripheral device. Please clarify if you are asking for:
 - a) Certification of the device as a TX, and a DoC has been performed by an appropriately accredited test lab for a PC peripheral
 - b) Certification as a TX + PC peripheral.

Note 1: The option b) would be considered as a composite application and 2 certificates (one for the TX, one for the PC peripheral portion) would be issued. There are additional review costs associated with this additional certification.

Note 2: To qualify to perform DoC applications, the test lab must be accredited (i.e. NVLAP or A2LA) to perform testing under the DoC procedure and the device has additional labeling and manual requirements for the DoC. Currently the device does not appear to be appropriately labeled for a DoC..

Note 3: Note that for DoC tests, the device is configured with a minimum test configuration as specified by ANSI C63.4 which includes complete computer + 2 I/O devices attached (one may be the EUT).

- 10) User Manual page 30 states a 2.7 dBi antenna. The MPE information mentions 1 dBi. Please correct and explain as necessary.
- 11) Users manual appears to be missing information required by 15.21. Please explain where this may be found or correct.
- 12) Please consider adding the following or similar to the users manual: "This device complies with the Federal Communications Commission (FCC) RF exposure limits for the General Population/Uncontrolled exposure environment."
- 13) The test methodology on page 11 of the test report mentions 3 meters, but the limits in the data do not appear to be for 3 meter. Please correct and explain as necessary. What test distance was used? Measurements are generally provided at 3 meters, especially > 1 GHz.
- 14) Peak conducted power must be measured with a RBW > bandwidth. Please remeasure using either 1 or 3 MHz RBW as appropriate.
- 15) The device is a portable device. Therefore radiated emissions must be tested with the device positioned in each of 3 axis in order to obtain worse case results. Please confirm if this was done.
- 16) Emissions appear to be tested only up to 1 GHz. Spurious emissions must be investigated up to 10 * the fundamental or highest oscillator. Please explain/provide data as necessary. For example > 1 GHz, there are peak limits of 74 dBuV/m and average limits of 54 dBuV/m. The FCC expects the device to be hop stopped and measured for compliance to peak. Compliance to average may be shown by mathematically correcting the peak results to average based upon worse case duty cycle that can occur in any 100 msec period of time. However, please note that worse case duty cycle is unknown given this transmitter does not behave like a normal Bluetooth. Theory must be provided to support worse case duty cycle (not just typical). Please review. Additionally, please note that from conducted spurious, high emissions at the 2nd harmonic are expected.
- 17) Please provide test data to show compliance in the restricted bands < 2390 MHz and > 2483.5 MHz to the 54 and 74 dBuV/m limits.
- 18) Most Bluetooth operate from 2402-2480. This also matches the same frequency band specified on the 731 form. However, it appears from the data that the device only operates on frequencies 2415 – 2478 which is unusual for a Bluetooth device. Please note that the FCC requires testing on the lowest and highest channels and additionally a channel around the center. Please confirm the actual operational band for this device and if necessary please provide additional data as necessary.
- 20) Please provide a complete tunable list of frequencies for this device.



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The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information may result in application termination. Correspondence should be considered part of the permanent submission and may be viewed from the Internet after a Grant of Equipment Authorization is issued.

Please do not respond to this correspondence using the email reply button. In order for your response to be processed expeditiously, you must submit your documents through the AmericanTCB.com website. Also, please note that partial responses increase processing time and should not be submitted.

Any questions about the content of this correspondence should be directed to the sender.