



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

March 17, 2004

RE: Universal Scientific Industrial Co, Ltd.

FCC ID: IXMWM-BB-AG-01

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

- 1) We agree that the RF exposure is not an issue, but the FCC still requires calculations as part of the application. I have provided a sample regarding a device with 2 RF outputs, both capable of transmitting at the same time if applicable.
- 2) Please note that it is uncertain if the device may simultaneously transmit for both the 802.11b and bluetooth transmitters. If they will not ever transmit simultaneously when in use by the end user, please properly document the filing. If they may transmit simultaneously when in use by the end user, inter-modulation radiated testing is required, including bandedge for simultaneous TX for radiated intermod. Please note that when the radios do not share an antenna, only radiated tests for simultaneous transmission is required. Only one set of worst case simultaneous transmission data is going to be requested to be submitted at this time. The test engineer should indicate the worst case condition and provide justification as to why the worst case condition was chosen. The grantee should be reminded that even though the FCC requests only one set of data, they are responsible for compliance for all modes of simultaneous transmission.. Note that information given in the users manual supports the fact that the 2 transmitters may transmit simultaneously.
- 3) Please provide clearer external photographs. Additionally, it is recommended to show/label the photographs to clearly distinguish just the EUT. Additionally, it does not appear that photographs of the bottom of the EUT were provided as part of the external photos. Please provide.
- 4) Please provide clearer internal photos. Additionally, due to the nature of 2 different antennas, and the fact that each is only approved for one part of the transmitter, please clearly label the external photographs to distinguish which antennas are for use with which part of the device.
- 5) The schematics are not clear on the regulator(s) used for 3.3 V. Please provide further information in order to support modular approval and adjust the modular approval letter as necessary.
- 6) Please note that since this device is being approved as a modular device, inclusion of the DoC statement or labeling of the device for a DoC (FCC logo) is not necessary. The integrator will be responsible to test the end device for Digital device emissions or PC peripheral emissions as applicable to the end use device. Please either justify or remove the FCC logo from the product.
- 7) The manual mentions PCMCIA cards as a possible device that this may be integrated into. Note that a PCMCIA card is not normally considered to meet with the 20 cm requirement. Therefore the users manual should contain further detailed information to adequately caution the OEM integrator as to conditions necessary to maintain compliance. For example:

This device is intended only for OEM integrators under the following conditions:

- a) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- b) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the 2 conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations, general purpose PCMCIA or similar cards, or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

- 8) Information in the manual mentions "Since this module is installed inside the end product, the end product should be affixed a label on visible area showing that this product contain a RF module, and also its FCC ID.". Please note that the label on the exterior of the device must not simply be labeled with "FCC ID: IXMWM-BB-AG-01", as this label denotes the device as approved (which is not the case once it is integrated). The label on any final assembled device should indicate that the approved transmitter is internal by using a format such as "Contains TX FCC ID: IXMWM-BB-AG-01" or similar. Please adjust the documentation to make this clear.

802.11b report

- 9) Only conducted emissions test photographs were provided. Please also provide a separate exhibit for the radiated test photographs.
- 10) Data for spurious emission of the 802.11 shows the same limit (74 dBuV) for both peak and average measurements. Please adjust the limit as appropriate for the average measurements.
- 11) Please provide information regarding the RBW/VBW settings used for radiated emissions.
- 12) Photographs shown in the test report for radiated emissions appear to be conducted emissions. Please review/correct as necessary.
- 13) Several pieces of test equipment appear to be out of calibration (2 RF cables, Receiver, Bilog Antenna). Calibration interval is stated as 1 year. Equipment this far out of calibration could shed doubts on the results obtained. Please explain/correct as necessary.
- 14) Power spectral density results have not been provided. Please provide.
- 15) FYI. For future applications, please provide plots to support band edge emissions. Bandedge measurements are a common source of error and are frequently measured improperly. Therefore plots supporting this results are typically desired.

Bluetooth Report

- 12) Please indicate if this portion of the device should be reviewed as a DSS or DTS device. If reviewed as a DTS device (> 500 kHz bandwidth, etc.), only one grant will be issued for both the 802.11 and Bluetooth transmitters. However if two separate grants are desired, the Bluetooth will be reviewed as a DSS device. Note there are additional charges for issuing 2 grants for a composite application, while costs may be saved if approved under a single grant. Note several recent grants have combined both 802.11 and Bluetooth on one grant as long as the requirements of DTS were met.
- 13) Power spectral density results have not been provided. Depending on the response whether 1 or 2 grants are to be issued, if only one grant is desired to cover both Bluetooth and 802.11, then spectral density results for the Bluetooth need to be provided (or at least a justification included as to why the test is not necessary).
- 14) According to Bluetooth theory, time slots are 625 us each. A DH5 packet would therefore be 5 * 625 us or 3.125 ms each. This equates to 320 time slot hops per second compared to the 266.7 quoted in section 5.4. Please explain/correct as necessary. Note the measured packet size appears to be 3 ms in the data provided and the expected dwell time approaches 400 msec.
- 16) FYI. For future applications, please provide plots to support band edge emissions. Bandedge measurements are a common source of error and are frequently measured improperly. Therefore plots supporting this results are typically desired.
- 17) Data for spurious emissions shows the same limit (74 dBuV) for both peak and average measurements. Please adjust the limit as appropriate for the average measurements.
- 18) Several pieces of test equipment appear to be out of calibration (2 RF cables, Receiver, Bilog Antenna). Calibration interval is stated as 1 year. Equipment this far out of calibration could shed doubts on the results obtained. Please explain/correct as necessary.
- 15) FYI.....Further technical documentation may be required (i.e. theory of operation regarding bluetooth discussing RX bandwidths, hopping tables, etc.) if a separate grant is desired for the Bluetooth portion of the product. This information will not be necessary if only one grant is desired.



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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.