Limited Modular Approval and U-NII Qualifications

LAM qualification

1. Shielding requirement……..…….. Refer to the attestation statement by Intel in next page.

2. Buffered modulation/data inputs requirement… ditto

3. Power regulator requirement…….. ditto

4. The modular transmitter complies with the antenna requirements of Section 15.203 and 204(c) with a unique electrical antenna connector, so called "**Electronic Handshake**".
   Refer to the separate "e-Handshake" exhibit.

   Each antenna system used for the applying module shall be approved (certified) with the module before each product's announcement. This application includes the built-in type antennas of IBM laptop computer, ThinkPad R50 Series and T40 Series.

5. The modular transmitter was tested in a stand-alone configuration with each built-in antenna of the host device that was connected to the proper AC adapter. It complies with the AC power line conducted requirements found in Section 15.207.

6. The modular transmitter is labeled with its own FCC ID number. Also the host device in which the modular transmitter is plugged has a label pointing the FCC ID number location.
   Please refer to the separate exhibit of the host antenna system, "Antenna Info" exhibit.

7. The modular transmitter complies with the applied specific rule and operating requirements applicable to the transmitter, and the adequate instructions along with the module to be explained for customers are provided with the user's manual.

8. The modular transmitter complies with the applicable RF exposure requirements. The proper RF exposure evaluations were performed with the host devices in line with the FCC Rules in Sections 2.1091 (MPE), since the antenna separation distance of 20cm or more from human's body is maintained for the host device.

U-NII device qualification regarding FCC 15.407(c), (g)

Refer to the attestation statement by Intel in next page.

Intel Corporation
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San Diego, CA 92128

August 23, 2004

International Business Machines Corporation
New Orchard Road
Armonk, NY 10504

Subject: FCC requirements

We at Intel Corporation confirm that the Intel PRO/Wireless 2915ABG Network Connection complies with the following statements.

Frequency stability (FCC 15.407 (g), RSS-210 6.2.2 q1(iv)(e))
The PPM for the transmit signal is specified up to but not to exceed 20PPM over temperature (0-80C) and voltage and crystal aging. The transmit bands include "b/g" 2.412 to 2.484GHz and the "a" band 5.18 to 5.825GHz. Based on these tolerances the transmit signal will maintain emissions with the UNII1, UNII2, and UNII3 bands under normal operating conditions specified in the user manual

Discontinue Transmitting with absence of Data or operational failure (FCC 15.407 (c), RSS-210 6.2.2 q1(iv)(d))
Data transmission is always initiated by software, which is then passed down through the MAC, the digital and analog baseband processor, and finally to the RF chip. Intel employs both a baseband processor and a microcode processor. The microcode processor conducts all real time packet transitions (including ACKs, CTS, RTS, etc.) The microcode processor is responsible for enabling and disabling the PA and TX chain. The baseband processor is responsible for submission of the packet to the microcode processor. If the RF Kill is enabled the baseband processor will not submit a packet or abort the packet prematurely.
These are the only way the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets are being transmitted as allowed by the baseband processor.

Other LMA Requirements:

1. The modular transmitter has its own metal shielding on the top side which shields all the RF circuits (VCO, RF Chip, PA's & etc.)
2. The modular transmitter has its own buffered modulation/data inputs. All inputs to the modules are buffered through the logic or microprocessor circuitry.
3. The modular transmitter has its own power supply regulator and local reference oscillator. The device operates from the 3.3V host PC supply. The design includes an on-board voltage converter and regulator for separate digital and analog power supplies.

Sincerely,

Phil Auzas
Engineering Manager
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