

Application Document for FCC Part 15, Subpart C (Intentional Radiator) Class II Permissive change

Model Number: AR5BMB-44

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FCC ID: ANO20040600BTL

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Outline of Submission

1. Objective

This is a certification compliance test report for **Class II permissive change** of the following LMA transmitter device pursuant to FCC Part 15 subpart C (Intentional Radiator).

- FCC ID : **ANO20040600BTL**
- Model Number : AR5BMB-44
- Advertising Name : IBM 11a/b/g Wireless LAN Mini PCI Adapter II
- Grant dates : July/26/2004
September/10/2004 (Class II change)

The following new co-located Bluetooth modular transmitter is to be added, then the radiated spurious in multiple transmission with the applying WLAN and Bluetooth modules was examined in this Class II change application.

- FCC ID : **ANO20040700HER** (under certification process separately)

There is no hardware nor electrical modification made to the applying modular transmitter itself. Also the supported antenna systems are the same as the previous applications, therefore some exhibits are omitted as follows.

[Submittal documents]

- Product Labeling : included
- LAM Qualification : omitted
- Internal Photos : omitted
- External Photos : omitted
- Block Diagrams : omitted
- Schematic Diagrams : omitted
- Parts List : omitted
- Circuitry Descriptions : omitted
- Electronic Handshake BIOS Lock logic: included
- Test Report : included (radiated spurious measurement only)
- Test Setup Photos : included
- RF Exposure : included
- Users Manual : included
- Antenna system Info. : omitted ^{*1}

^{*1}: Antenna Info. for the supported host PC devices (IBM ThinkPad G40, T40, R50, X30 and X40 Series) are entirely the same as the previous applications except non-lead soldering antennas below.

| Host PC | Designator | Manufacture | Antenna type | Cable type and length | Gain (dBi) |
|---------------------------------------|-----------------------|-----------------------------------|--|-----------------------|------------------|
| IBM ThinkPad T40 Series LCD 14" model | 62P4204 | Foxconn Electronics Inc. (R.O.C.) | Dual Band Meander Antenna | Coax 745 mm | 2400-2500MHz |
| | 91P6900 ^{*2} | | | | 0.99 dBi (peak) |
| | Main antenna | | Dual-Band Coupled Floating Element Antenna | coax 845 mm | 5725-5850MHz |
| | 62P4203 | | | | -0.23 dBi (peak) |
| | 91P6898 ^{*2} | | | | 2400-2500MHz |
| | Auxiliary antenna | | | | -0.48 dBi (peak) |
| | | | | | 5725-5850MHz |
| | | | | | -0.37 dBi (peak) |

^{*2}: Non-lead soldering antenna according to RoHS environmental direction. The radiation characteristics (gain and Omni directional pattern) are the same regardless with-lead or non-lead soldering.

2. Product Description

The applying modular transmitter device is an OEM mini-PCI wireless LAN card supplied by Atheros Communications, Inc. The modular device complies with the following transmission modes.

- IEEE802.11a (5180MHz ~ 5320MHz band OFDM)
- **IEEE802.11a (5745MHz ~ 5825MHz band OFDM)**
- **IEEE802.11b (2412MHz ~ 2462MHz band Direct Sequence Spread Spectrum)**
- **IEEE802.11g (2412MHz ~ 2462MHz band OFDM)**

The 5180MHz~5320MHz band OFDM mode is subjected to the FCC 15 subpart E (U-NII device), and is to be certified with the separate application as **composite** device.

3. Installation of the applying transmitter

- IBM ThinkPad **T40, R50, X30, X40** Series:

The applying module is pre-installed by IBM. Also **user installable** option cards are provided.

- IBM ThinkPad **G40** Series: also pre-installed by IBM, but users option is not provided due to the intricate location of mini-PCI card slot.

A unique electrical connector (so called “**Electronic Handshake**” BIOS Lock) is employed for both applying modular device and host units to satisfy the FCC Part 15.203 or RSS-210 §5.5, and RSS 6.2.2 q1(i). This mechanism enables user to install the applying LMA transmitter to the specified hosts (IBM ThinkPad T40, R50, X30 and X40 Series).

The detail explanation of the unique coupling between the LMA transmitter and antenna systems is shown in the separate exhibit “Confidential_e-Handshake.pdf”, however IBM would like to hold it in confidence to maintain the secure "unique operability" with the applying device and IBM antenna systems.

The Electronic Handshake BIOS Lock function is also effective for the user's maintenance in replacing a broken card with a spare part for T40, R50, X30 or X40 Series. As for G40 Series, IBM Service centers or dealers replace broken cards.

4. Co-located Transmitters

The applying LMA transmitter collocates with **one of** the following Bluetooth modules and transmits RF frequency simultaneously.

- FCC ID: ANO20020100MTN (IBM Integrated Bluetooth III with 56 Modem) ; granted
- FCC ID: ANO20040700HER (IBM Integrated Bluetooth IV with 56 Modem) ; new

As for the RF safety evaluation, refer to the separate exhibit “RF_Exposure.pdf”.

Note) **ThinkPad G40 Series does not support those Bluetooth modules, so the radiated spurious test in multiple transmission for G40 Series is excluded.**

5. Related Submittal(s)/Grant(s)/Notes

During the applying modular device stops RF transmission, the host unit with full peripheral devices including the applying modular device is classified as an unintentional radiator, Digital Device under the FCC Part 15 Subpart B or the Industry Canada Class B Emission Compliance (ICES-003), and subject to DoC.