



IBM Japan Ltd.
1623-14, Shimotsuruma, Yamato-shi
Kanagawa-ken 242-8502, Japan

January 15, 2003

To whom this may concern

TCB Requested Information

FCC ID : ANO20020300D3L
Applicant : International Business Machines Corporation
Correspondence Reference Number : 230114c.ANO
731 Confirmation Number : TC1374E
Original Requested Date : January 15, 2003

Subject 1) Please confirm all IBM installed and optional transmitters that will be available for this device.
Please clarify whether all these transmitters can transmit simultaneously ?

Answer 1) **Three** Bluetooth transmitters in the **RF Exposure exhibit** can transmit **simultaneously** with the applying transmitter.
IBM installed one is ANO20020100MTN only. The installation method of it is explained in its separated application document. Other two Bluetooth transmitters are stand alone type user's option.

Subject 2) Please confirm if the Bluetooth module (**ANO20020100MTN**) will be available as an option for this FCC ID. Recent FCC policy requires separate FCC ID for each transmitter combination.
Please clarify whether this Bluetooth option was evaluated or tested with this device.

Answer 2) The application meets the FCC ID requirement based on the confirmation from the FCC as below.

- The applying device is not a modular approval device.
- The applying built-in transmitter (TxA) has one ID.
→ "FCC ID: ANO20020300D3L"
- The LMA TxB has its own external label.
→ "Contains Transmitter Module FCC ID: **ANO20020100MTN** (See "Product_Labeling.pdf")"
- The stand alone type LMA transmitters (PCMCIA and USB Bluetooths) have their own IDs.
Please refer the FCC's position in red.

"Joe Dichoso" <JDICHOSO@fcc.gov> 03/01/03 05:54
That sound right.

>>> Tim Harrington 12/29/02 01:23PM >>>

Joe was out at end of last week, and I don't know his schedule next week, so I'll take a stab at answering now; however the final answer must await confirmation from Joe.

Per recent discussions of the rule requirements of Section 2.907 and Section 2.908, different identifiers would be required for a notebook containing OEM-installed options for TxA only, TxB only, TxA with TxB, or no Tx, because the different options are not identical. Multiple FCC identifiers are needed to readily identify the unit for consumers and the FCC. However I think **the preceding example applies if those are not modular approvals. A notebook with TxA built-in can have one ID, then LMA TxB with external label can be added with no action to ID for TxA. Similarly your PCMCIA and USB Bluetooths have their own IDs and do not affect TxA ID.**

As for the RF safety evaluation, please refer the "**Discussion Item 4**" in the Attachment of this exhibit. EAB states "For subnotebooks with separation less than 20 cm to display section antenna, EAB may establish power thresholds relative to base section antenna where SAR evaluation is **not** needed."

As shown in the RF Exposure exhibit, the separation distance between the applying transmitter's antenna and the subjected Bluetooth antenna is 20 cm or more, and the emission power of Bluetooth transmitter is within the power threshold (5mW) for the collocation. Therefore the configuration of this application is allowed to be certified in making a reference to the footnote 14 of the Section 3 in Supplement C to OET Bulletin 65.

Subject 3) Please confirm if this UNII device will be installed by IBM or installed by the user.

Answer 3) IBM install it but user can not. Please see "Outline_of_Submission.pdf". A special screw is employed for tamperproof.

Subject 4) Please correct the RF exposure evaluation for 5.2GHz band using 17.4dBm as max. conducted value. Please also send a separate RF exposure for the 5.8GHz for the 15(C) application. Each transmitter freq. band must have its own RF exposure evaluation.

Subject 5) Please confirm the antennas used by the UNII device. Does it use the same antenna as the 15(C) application (802.11 a/b adapter card) ? Please clarify.

Answer 4, 5) Please find the submittal document number FCC 19-0205-0, "RF_Exposure_UNII.pdf" for Subpart E, and FCC 19- 0206-0, "RF_Exposure_DTS.pdf" for Subpart C.

Note) The antenna is available for all bands. i.e. for 2.4GHz, 5.2GHz and 5.8GHz.

But each application document indicates only each applied band regarding UNII device or DTS device.

Subject 6) Please explain if this device meets the integral antenna requirement specified in Section 15.407(d) of the FCC Rules.

Answer 6) The antenna is built-in the LCD section **permanently**, and the transmitter module is furnished in the laptop PC with a tamperproof screw so that users can not remove it. Therefore the application meets the requirement.

Please refer "Outline_of_Submission.pdf" and "Confidential_Circuitry_Description.pdf".

Sincerely, January 15, 2003



Toshiya Murota,
Staff Engineer, EMC Engineering,
Yamato Laboratory, IBM Japan Ltd.

Attachment

Reply comments from FCC/OET/Lab/EAB, 3 Sep. 2002.

General comments:

- 1) TCBs can do BIOS lock LMAs. The BIOS lock grant condition must be on the grants. EAB will circulate a processing info sheet for TCBs.
- 2) Only 5mW PCMCIA options were shown by IBM. Other powers may have separate considerations.

>>> "George Kavelak" <kavelakg@us.ibm.com> 08/12/02 09:36AM >>>

>>> Re: Confirmation of August 8, 2002 Meeting Results >>>

Thank you for taking the time to meet with us to answer our questions regarding TCB authorization capability for LMA and co-located transmitters. Projected quantities of IBM application submissions will necessitate our ability to use of TCBs for expedient application processing.

This note is to document our understanding of the results of our meeting with you on August 8, 2002 at the FCC Columbia Lab. Please confirm or correct any misunderstanding.

Attendees:

Joe Dichoso, FCC, OET Laboratory Division, Equipment Authorization Branch
Tim Harrington, FCC, OET Laboratory Division, Equipment Authorization Branch
Toshiya Murota, IBM-Japan
George Kavelak, IBM

We presented the four "Discussion Items" in the attached file:
(See attached file: FCC-Aug2002.pdf)

Discussion Item 1:

This laptop configuration of co-transmitters (a 50-100 mW 2.4 GHz WLAN LMA [with BIOS Lock] with transmit antenna in the top of the laptop display panel and a 5 mW wireless PCMCIA device in the PCMCIA slot in the laptop base) represents that which IBM currently has obtained FCC certification by submission directly to the FCC.

You have agreed that this configuration of co-transmitters can be submitted to an appropriate TCB for certification. It does not violate conditions of the TCB Exclusion List of 17 July 2002. TCB Exclusion List II) b) is compliant and TCB Exclusion List II) f) is compliant.

You indicated that TCB Exclusion List II) h) would not be an applicable condition for determination due to the separation (>15-20 cm; even 10-20 cm may be acceptable for these low Bluetooth device transmit powers) between the transmit antennas and their relative powers.

EAB:

As discussed in meeting, if display section antenna can be treated as mobile, July 02 TCB Excl List II) h) 2) does not apply. II) h) 2) also depends on colocation conditions and definition, where in general above 1 GHz colocation should be considered if devices are within 20 cm of each other. For example, per II) h) 2) TCB could not do 50mW LAN and 2mW Bluetooth if antennas for both are in base section. Devices used within 20 cm of a person's body are subject to SAR limits. For subnotebooks with separation less than 20 cm to display section antenna, EAB may establish power thresholds relative to base section antenna where SAR evaluation is not needed.

Discussion Item 2:

This laptop configuration is the same as Discussion Item 1 with the addition of a low power Bluetooth transmitter built into the laptop.

You agreed that this configuration of co-transmitters could be submitted to an appropriate TCB for

Prepared by T. Murota.

certification. TCB Exclusion List II) h) would not be an applicable condition for determination due to the separation (>15-20 cm; even 10-20 cm may be acceptable with these transmit powers) of the transmit antennas and their relative powers.

EAB:

Comments from Discussion Item 1 apply. Converse situation of 50-100mW LAN in keyboard section with Bluetooth in display requires separate consideration. IBM picture states "FCC ID: zzzzz (for PC)" – note that ID goes with transmitter configuration, not PC.

Discussion Item 3:

This laptop configuration is the same as Discussion Item 2 with the exception that the built-in Bluetooth transmitter card would be an LMA certified device, similar to the WLAN LMA device.

You agreed that this Bluetooth card could be processed as an LMA option card and that an appropriate TCB could process the Bluetooth LMA application. You indicated that our BIOS Lock condition would also have to be implemented for this Bluetooth transmitter card.

EAB:

Comments from Discussion Items 1, 2 apply. Class II not needed to add hosts for 5mW Bluetooth LMA with configurations as described, but is needed to add hosts for 50-100mW LAN LMA.

Discussion Item 4:

This laptop configuration of co-transmitters consists of a 50 mW 5 GHz U-NII device built-in to the laptop with transmit antenna in the top of the laptop display panel and a 5 mW combination of wireless PCMCIA device in the PCMCIA slot in the laptop base and a 2.4 GHz Bluetooth LMA transmitter with antenna in the laptop base.

The built-in U-NII card contains a connector for the antenna cable to attach. You agreed the built-in U-NII card in the base with its connected transmit antenna in the top of the laptop display is considered to comply to the requirement of 15.407(d), "Any U-NII device that operates in the 5.15-5.25 GHz band shall use a transmitting antenna that is an integral part of the device."

This configuration can be processed by an appropriate TCB as well.

EAB:

To fulfill integral requirement, antenna and card cannot be removable. Note that if antenna was in base section, SAR evaluation may be needed, also collocation evaluation with Bluetooth and PCMCIA options. For subnotebooks with separation less than 20 cm to display section antenna, EAB may establish power thresholds relative to base section antenna where SAR evaluation is not needed.

You indicated the term "unlicensed" in TCB Exclusion List II) h) referred to the fact of the operator being unlicensed and thus all the Part 15 intentional radiators. It was not meant to differentiate between "Subpart C - Intentional Radiators" and "Subpart E - Unlicensed National Information Infrastructure Devices". Therefore, TCB Exclusion List II) h) is applicable to all applications under Part 15, but as indicated above in Discussion Item 2, it would not be applicable due to the transmit powers and separations of the various antennas.

EAB: Agree.

Other discussion items at the meeting follow:

Replacement of a broken transmit card:

Given a transmit card which is certified as built-in to a laptop (i.e. system unit certification with the FCC ID on the laptop host), you indicated that the replacement of a broken transmit card could be performed by the customer without the need to return the laptop to IBM or IBM's authorized repairer. Certification did not cover repair actions, other than to return the product to its certificated state.

IBM indicated that the replacement of a broken part would only be that identical to that of the FCC certification.

You indicated that the replacement instructions must be supplied with the replacement part. You also indicated that these instructions should not be supplied with the normal User Manual.

Follow up question: Given that a Grant has been issued for a built-in intentional radiator and the User Manual indicated that the laptop was required to be repaired by IBM or an IBM authorized repairer, is a Class I or Class II permissive change required in order to implement a change allowing the customer to replace the broken part (with proper replacement instructions provided)? In other words, do we have process a Class II change to change the User Manual statement?

EAB: Class II is for changes to transmitter or exposure conditions.

Selection of TCB:

As you have indicated the TCB Exclusion List would not prevent a TCB from processing applications for Grant of Equipment Authorization (Certification) of our typical wireless product configurations, you requested IBM to notify you about one week prior to submittal to ensure that the FCC lab time to notify the TCBs of the specific Notes to be included on our LMA Grants of Equipment Authorization. These Notes would pertain to the LMA approval based upon BIOS Lock and co-location of approved transmitters listed on IBM's Web page.

U-NII Composite Device:

You indicated that a 5 GHz transmitter could be authorized as a composite device (one FCC ID; two applications; two FCC certification fees) for operation in the following:

5.15-5.25 GHz (Part 15 Subpart E, U-NII operational characteristics)

5.25-5.35 GHz (Part 15 Subpart E, U-NII operational characteristics)

5.725-5.850 GHz (Part 15 Subpart C, DTS operational characteristics)

IBM Formal Request to FCC:

IBM would like to formally request the FCC to consider that LMA approval be granted to a U-NII option device with the antenna separately built into the laptop as long as the BIOS Lock condition is applied to meet the requirements of 15.407(d). This would be similar to that which is done for the 2.4 GHz WLAN Mini-PCI transmitter option card.

EAB:

IBM Formal Request to FCC:

Once an LMA certification is obtained for a transmitter option card for laptop family or series of families, it has been the custom to submit Class II permissive changes to add any additional laptop family to the series. Is it possible to eliminate the need for the Class II change if the additional laptop family being added is of similar form factor and similar antenna/antenna gain?

EAB:

New antenna requires Class II. For mobile exposure conditions with same antenna, installation and configuration similarity is applicable, but not for portable exposure conditions with antennas in base section with power greater than 60/f.

Regards,

George Kavelak
IBM Corp.