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February 14, 2003

To whom this may concern

OET Requested Information

FCC ID : **ANO20020302R1L**
 Applicant : **International Business Machines Corporation**
 Correspondence Reference Number: **230207RC.ANO**
 Confirmation Number : **TC3010**
 Original Requested Date : **February 07, 2003**

Subject 1) Please clarify the frequency of operation of the transmitter. The users manual provided (pages 7, 13) shows 5.15-5.25, 5.25-5.35, and 5.65-5.85 GHz operation. Please revise users manual or send supporting test data, as appropriate.

Answer 1) Those frequency bands are not the specifications of the applying transmitter, but the ones of MSS or High Power radars. The notice of indoor use in 5.15-5.25GHz band is mandated by the CFR47 Part 15.407(e), and the other notice about the interference with High Power radars in 5.25-5.35GHz or 5.65-5.85GHz band is voluntary. Therefore the manual revision may not be required.

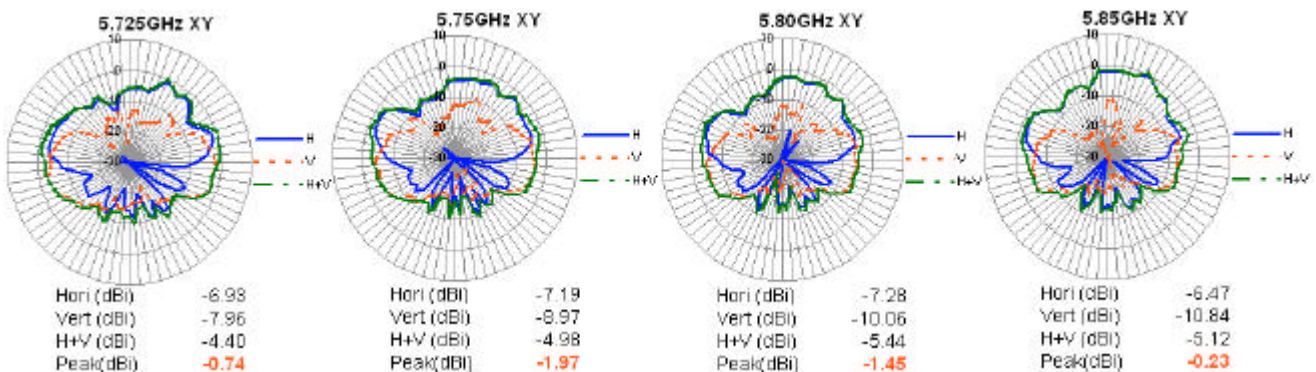
Subject 2) Please clarify the user installed wireless module option antenna installation procedure stated on page 8-9 of the users manual. Please provide how the antenna will be installed or selected by the user and provide antenna installation to satisfy RF exposure compliance.

Answer 2) The users manual of the host device (IBM ThinkPad T40 Series) introduces 4 kinds of transmitters. The page 8-9 are showing different transmitters which are to be certified separately from this application. Please refer to page 6-7 for the applying ANO20020302R1L. The FCC ID and installation method is described clearly in those pages. Also please refer to "Outline of Submission" exhibit. The applying transmitter is pre-installed by IBM, so the latter question is not applicable for the device.

Subject 3) Please clarify the RF Exposure (MPE) exhibit shown on the Power Table page 7/8 (5.725 - 5.85 GHz) which shows operational frequencies outside the requested frequency band of operation. Please confirm.

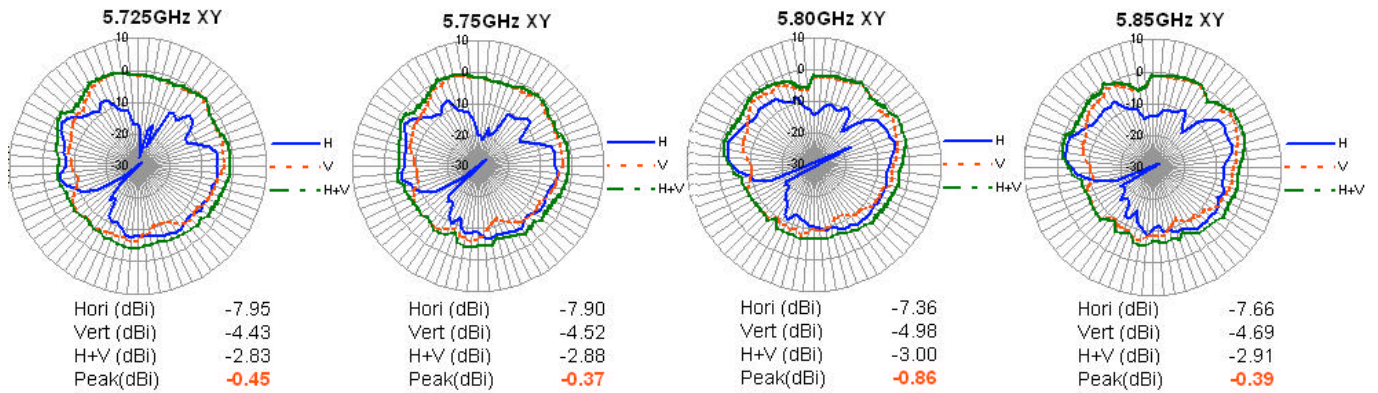
Answer 3) The operation band for the applying transmitter is 5.745 – 5.825GHz, but the measurement was performed with the full allocated frequency band of DTS devices (i.e. 5725M-5850MHz). The plots below show the peak antenna gains for the **main (left)** antenna. The gains at the both band-edge frequencies are higher than the operation band's gain. So the peak gain of the operation band never exceeds –0.23 dBi for the main antenna.

Plots of the antenna gain (left antenna)



On the other hand, the highest peak antenna gain for the **Auxiliary (Right)** antenna was found in the operation band as shown below. i.e. -0.37 dBi at 5750MHz.

Plots of the antenna gain (Right antenna)



Subject 4) Please correct the circuit description shown on the Power Table page 9/9 which shows transmitter operation in the 5.18-5.32 GHz frequency band (Ch 36-64). Please provide a statement that the device will be marketed without this additional frequency/channel capability, as appropriate.

Answer 4) The subjected circuitry description was provided by the original manufacturer of the applying transmitter, and the document covers both composite specifications for Subpart C (this application) and Subpart E (separate one). The Ch 36-64 belongs to the Subpart E application.

- As for the former request , please see page 3 of this correspondence.
- But IBM can not agree with the latter one because of the above reason.

Subject 5) Please send the FCC/OET correspondence pertaining to the subject device. Each filing must stand on its own with all the required exhibits/documents.

Answer 5) Yes, we send each correspondence to each subject device with each separate exhibit.

This is the answer for the Subpart C portion of FCC ID: ANO20020302R1L. (Document #: FCC 19-0220)

Sincerely, February 14, 2003

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

Attachment: Revision of the circuit description page 9/9, Power Table

4. Power Table

The Table-A shows the power level settings for North America.

The Table includes all the supported channels for Subpart C DTS device and Subpart E UNII device.

Table-A: Output Power Control table

Operation Frequency [GHz]		Rated output power (conducted) [dBm]										
		Bit rate 1/2M bps	5.5M bps	11M bps	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	18M bps	54M bps
DTS	2.412 (Ch. 1)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.417 (Ch. 2)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.422 (Ch. 3)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.427 (Ch. 4)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.432 (Ch. 5)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.437 (Ch. 6)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.442 (Ch. 7)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.447 (Ch. 8)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.452 (Ch. 9)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.457 (Ch. 10)	+17	+17	+17	-	-	-	-	-	-	-	-
	2.462 (Ch. 11)	+17	+17	+17	-	-	-	-	-	-	-	-
UNII	5.180 (Ch. 36)	-	-	-	+14	+14	+14	+14	+14	+14	+14	+13
	5.200 (Ch. 40)	-	-	-	+14	+14	+14	+14	+14	+14	+14	+13
	5.220 (Ch. 44)	-	-	-	+14	+14	+14	+14	+14	+14	+14	+13
	5.240 (Ch. 48)	-	-	-	+14	+14	+14	+14	+14	+14	+14	+13
	5.260 (Ch. 52)	-	-	-	+17	+17	+17	+17	+17	+15	+14	+13
	5.280 (Ch. 56)	-	-	-	+17	+17	+17	+17	+17	+15	+14	+13
	5.300 (Ch. 60)	-	-	-	+17	+17	+17	+17	+17	+15	+14	+13
DTS	5.320 (Ch. 64)	-	-	-	+14	+14	+14	+14	+14	+14	+14	+13
	5.745 (Ch.149)	-	-	-	+16	+16	+16	+16	+16	+15	+12	+10
	5.765 (Ch.153)	-	-	-	+16	+16	+16	+16	+16	+15	+12	+10
	5.785 (Ch.157)	-	-	-	+16	+16	+16	+16	+16	+15	+12	+10
	5.805 (Ch.161)	-	-	-	+16	+16	+16	+16	+16	+15	+12	+10
	5.825 (Ch.165)	-	-	-	+16	+16	+16	+16	+16	+15	+12	+10