RF Exposure

1. IBM ThinkPad 802.11b Wireless LAN Mini-PCI Adapter(P/N: 26P8056)

The applying equipment is a standard fullsize laptop computer which is categorized as a mobile device by FCC CFR 47 Section 2.1091. Therefore the separation distance between the antenna and the human body is 20cm or more. As shown in the following photo, the applying equipment satisfies the requirement of antenna separation.

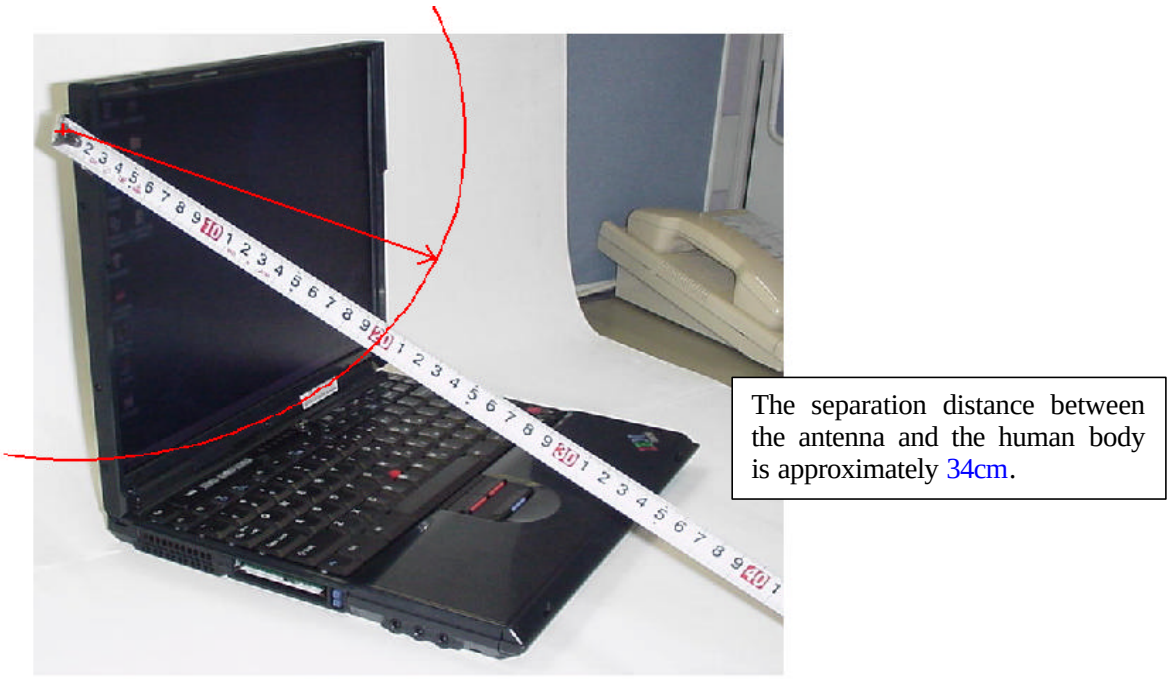
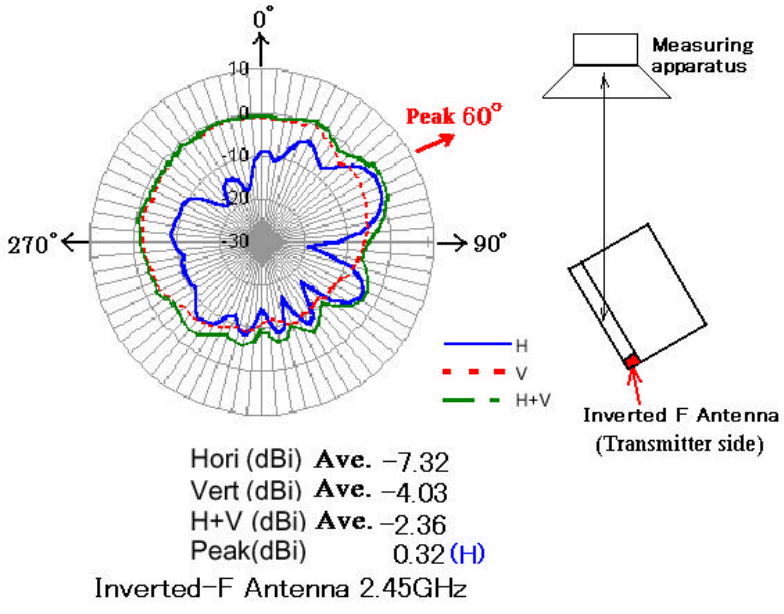


Figure 1. Location of integrated antenna

The peak conducted output power of the applying equipment is 15.5dBm(refer to the test report of original grant on April/30/2001), and the maximum antenna gain is 0.32dBi as shown below.



Therefore the peak radiated output power (EIRP) is calculated as follows.

EIRP = P + G = 15.5 dBm + 0.32 dBi = 15.82 dBm (38.2 mW)

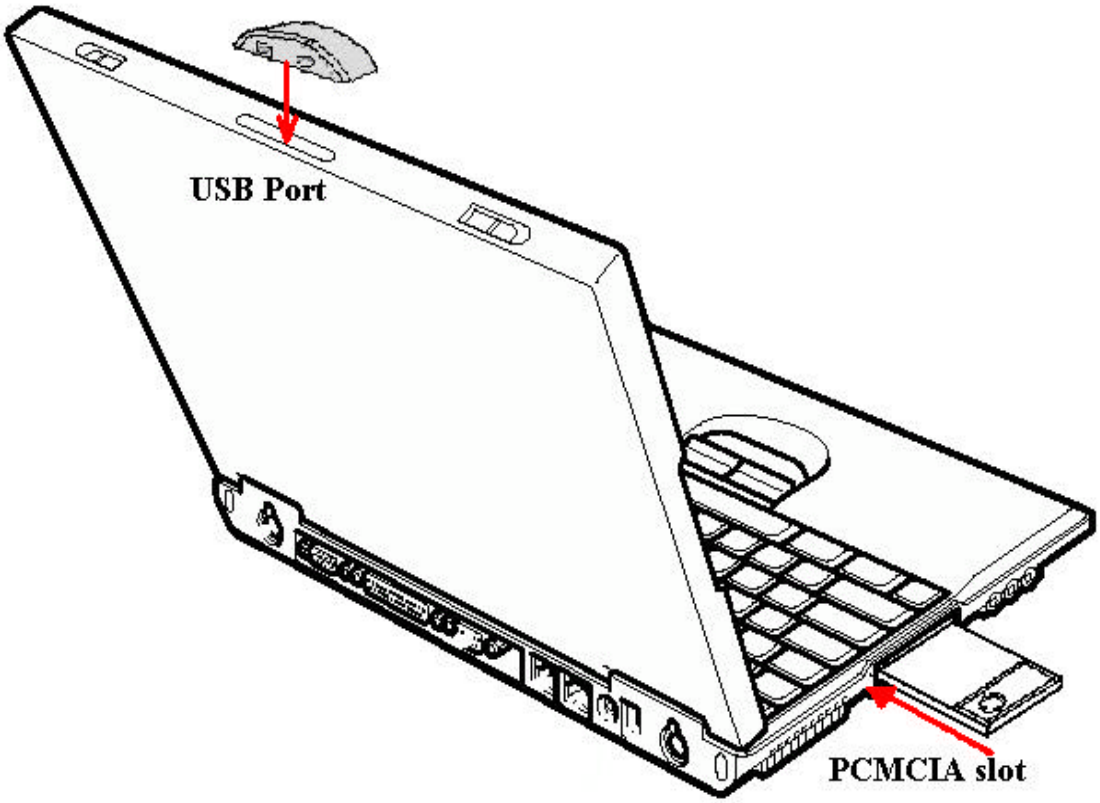
Then, the maximum power density at 20cm distance is determined as follows.

S_1 = EIRP/(4 **x** R^2 **x** π) = 0.0076 mW/cm^2

2. User option Wireless cards

The applying equipment has two interfaces to connect user's option wireless cards. The following wireless cards are used in the PC slot or USB port of the equipment.

FCC ID : PI4BT-ULTRA
Grantee Name : TDK Systems Europe Ltd.
Product Name : Bluetooth Ultraport Module
EIRP in FCC test report : 1.4 mW
Granted Date : May/22/2001



FCC ID : O2OBTPCM101
Grantee Name : Deigianswer A/S
Product Name : Motorola Bluetooth 0dBm PC-Card (type no.: BTPCM100)
EIRP in FCC test report : 2.7mW
Granted Date : October/18/2000

Figure 2. User Option Wireless Cards

The minimum antenna separation to satisfy the MPE limits (1mW/cm^2), and the maximum power density at 20cm distance of each card are :

FCC ID	EIRP	Min. separation to satisfy the MPE limits *1	Max. power density at 20cm *2
PI4BT-ULTRA	1.4mW	0.34cm	S_2 = 0.00028 mW/cm^2
O2OBTPCM101	2.7mW	0.47cm	S_3 = 0.00054 mW/cm^2

*1 = SQR [EIRP / (1mW/cm^2 x 4 x π)]
*2 = EIRP/(4 x 20cm^2 x π)

When an operator will use the tree transmitters simultaneously during 30 minutes continuously in normal operation, the time-averaging exposure is : $(S_1 + S_2 + S_3)$ x 30 = 0.26
So the source-based time-averaging duty factor is considered as 100% duty.

Therefore the applying equipment meets the MPE requirements for general Population/ Uncontrolled exposure.

Note) The distance from the USB port to the human body is more than 20cm.
Also operators can maintain the sufficient antenna separation from the PC slot when the operation will be done with a normal posture. (See figure 4.)

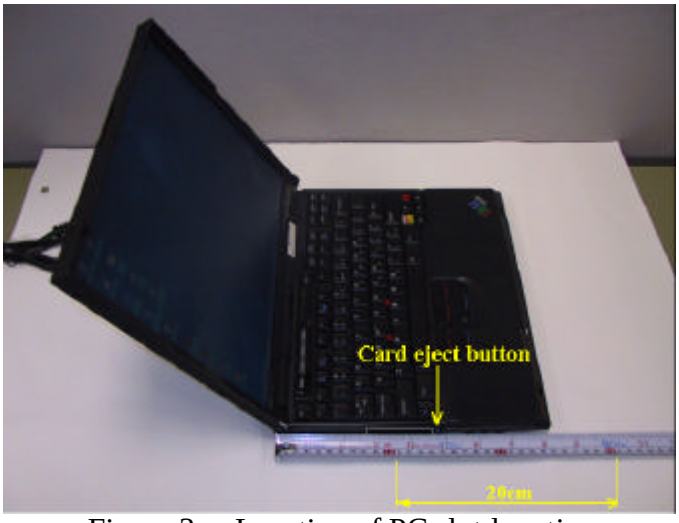


Figure 3. Location of PC slot location

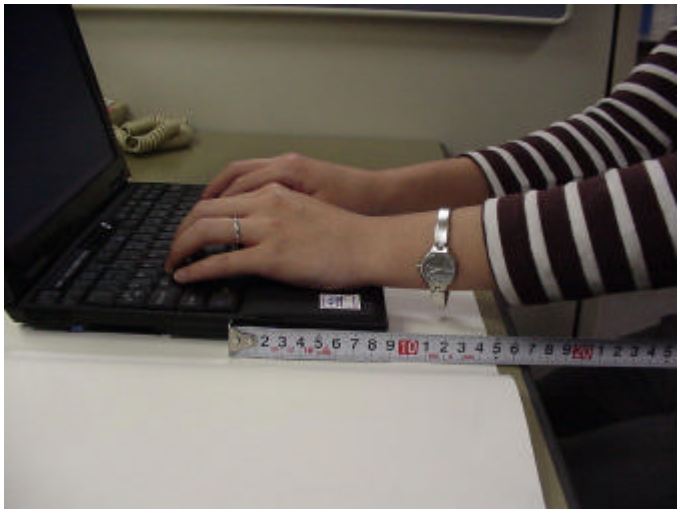


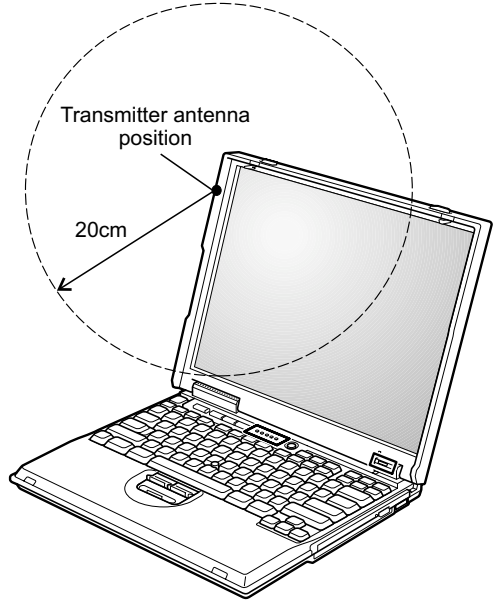
Figure 4. Operation in normal posture

3. RF Exposure Info of User's Manual :

The user's notification for the RF exposure requirement described in the User's manual is to be revised as shown in the next page.

shall be used in such a manner that the potential for human contact during normal operation is minimized as follows:

- **CAUTION**: To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm (8 inches) must be maintained between the antenna of this device and all persons.



- The FCC certification of this ThinkPad wireless model, at time of this manual's printing, prohibits the use of any other Radio Frequency (RF) wireless device while the integrated wireless LAN card is in use. The FCC certification requires that you disable the integrated wireless LAN device before you use any wireless PCMCIA cards or the Bluetooth option. Please visit the IBM site at **www.ibm.com/pc/support** for an updated list RF devices that have received FCC certification on your ThinkPad.

Interference Statement

An improper installation or unauthorized use may cause harmful interference to radio communications. Also any tampering of the internal antenna will void the FCC certification and your warranty. Refer to the "Electronic emission notices" on page 58 for more detail.

Canada - Industry Canada (IC)

Low Power License-Exempt Radiocommunication Devices (RSS-210)

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.