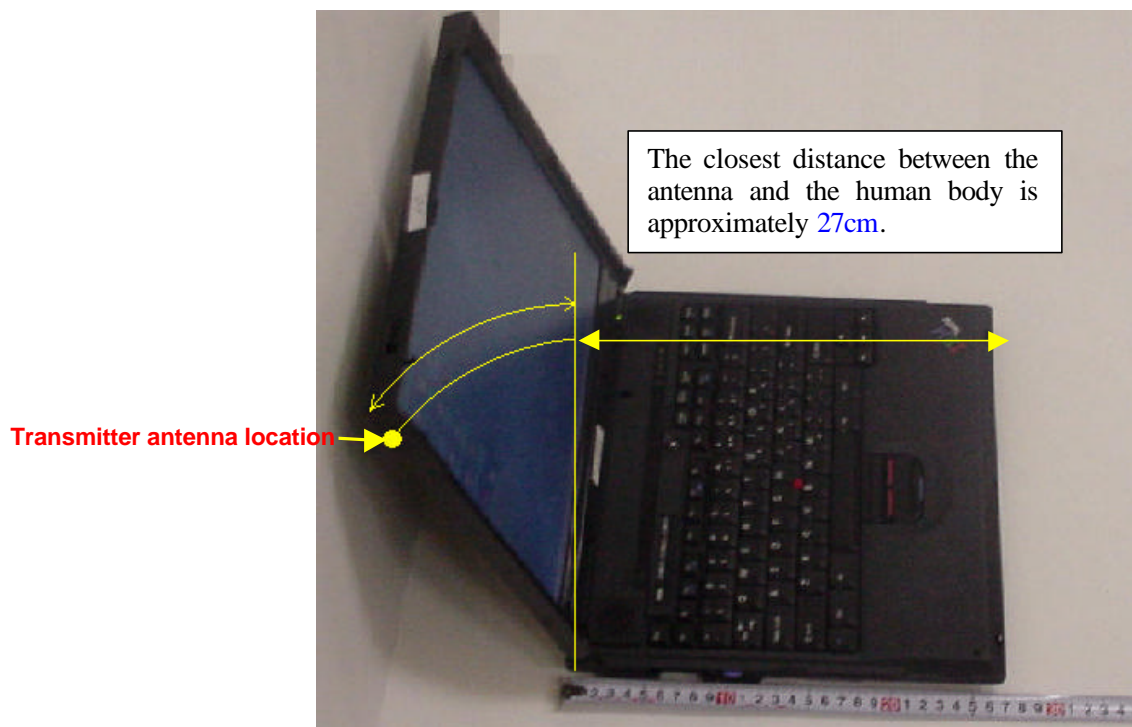
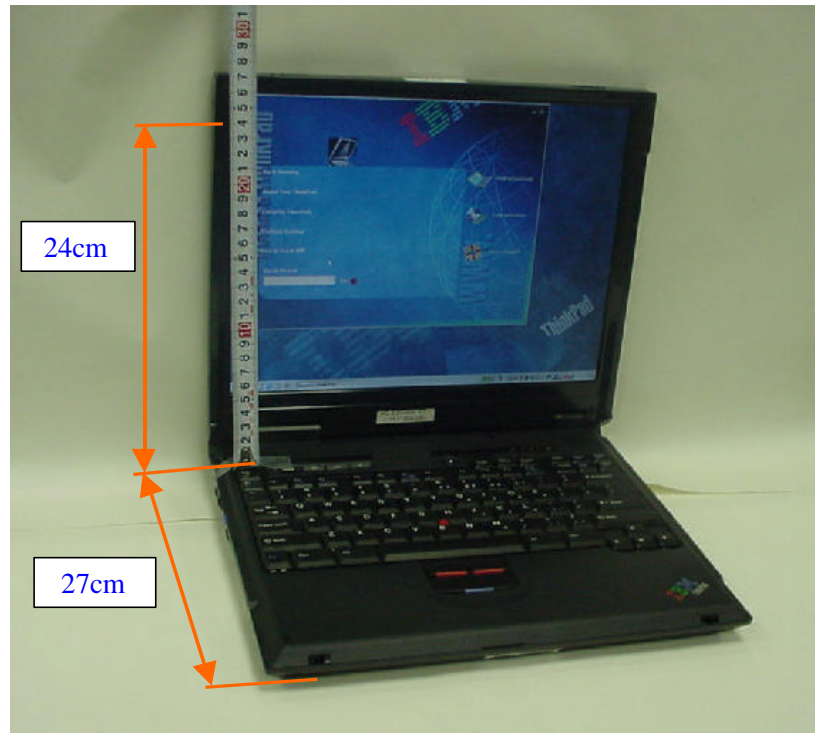


RF Exposure

1. Integrated Wireless-LAN PC card (P/N: 26P8030)

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.



The peak conducted output power of the applying equipment is 15.6 dBm and the antenna gain is 1.4dBi. Therefore the peak radiated output power (EIRP) is calculated as follows.

$$\text{EIRP} = P + G = 15.6 \text{ dBm} + 1.4 \text{ dBi} = 17.0 \text{ dBm} (50.1 \text{ mW})$$

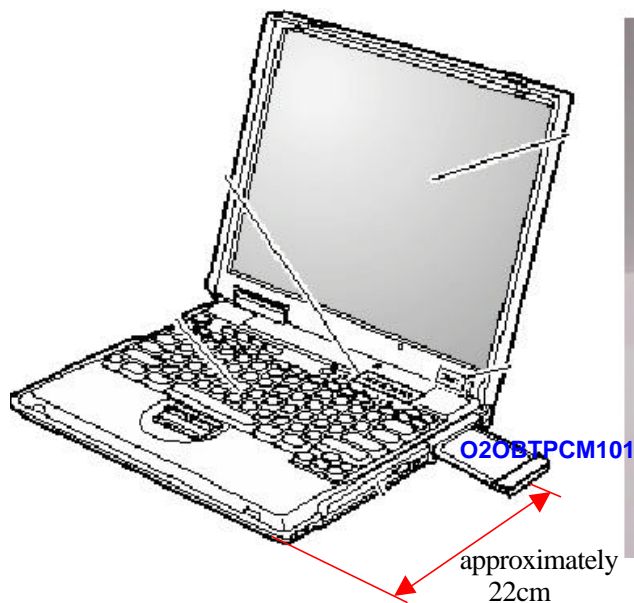
Then the maximum power density at 20cm distance is determined as follows.

$$S_1 = \text{EIRP} / (4 \times R^2 \times \pi) = 0.010 \text{ mW/cm}^2$$

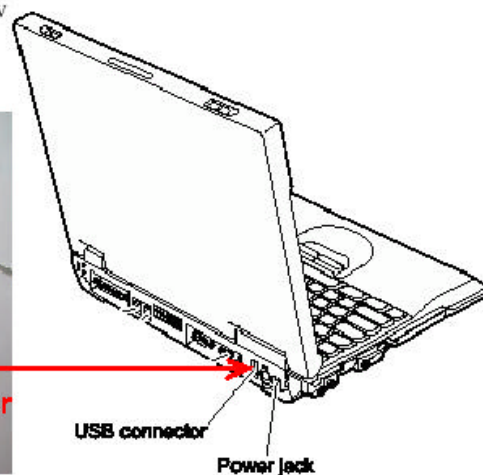
2. Users Option Wireless Adapters

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

FCC ID	Grantee Name	Product Name	Granted Date	EIRP in FCC test report
PI4BT-ULTRA	TDK Systems Europe Ltd.	Bluetooth Ultraport Module	May/22/2001	1.4 mW
O2OBTPCM101	Degianswer A/S	Motorola Bluetooth 0dBm PC-Card (type no.: BTPCM100)	October/18/2000	2.7mW



Rear view



As shown with the illustration in the previous page, operators can maintain at least 20 cm of distance for the antenna separation between the human body and each antenna of the option cards.

The minimum antenna separation to satisfy the MPE limits(1mW/cm²) and the maximum power density at 20cm distance of each option card are calculated as follows.

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

$$*1 = \sqrt{\text{EIRP} / (1\text{mW/cm}^2 \times 4 \times \pi)}$$

$$*2 = \text{EIRP} / (4 \times 20\text{cm}^2 \times \pi)$$

note) MPE distance figures(*1) are just given for a reference to predict a conservative worse case.

Though no calculation for duty factor is taken into account, the minimum distance in practice will be much shorter than the requirement(20 cm).

3. Total RF exposure evaluation

When an operator will use those three transmitters in normal operation simultaneously during 30 minutes continuously, the time-averaging exposure is given as :

$$(S_1 + S_2 + S_3) \times 30 = (0.010 + 0.00028 + 0.00054) \times 30 = 0.325$$

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.

4. RF Exposure Info of User's Manual

The attachment in the next page is the user's notification for the RF exposure requirement described in the User's manual.

When the wireless option cards in this Class II Permissive change will be granted, those will be introduced by the IBM Web site.

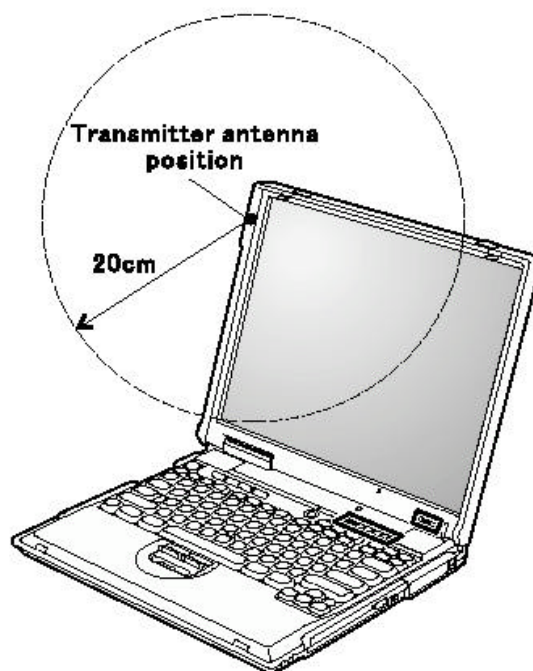
If an additional option card regardless of the IBM logo will be available for the original applying equipment(ThinkPad A22) after the grant, and the RF power will exceed the existing condition (the current EIRP limits are 2.7mW for the PC slot and 1.4mW for the USB port), IBM will repeat the Class II change submission for the update.

RF Exposure info. in User's manual

Exposure to Radio Frequency Radiation

The radiated output power of IBM Internal High Rate Wireless LAN PC Card is far below the FCC radio frequency exposure limits. Nevertheless, the ThinkPad A22 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 60](#) for more detail.