

## RF Exposure Justification in co-locating with other transmitters

As shown in the separate exhibits “WLAN Antenna Info-xxx” (total 13 files) , the applying host PC devices incorporate the four kinds of transmitters. i.e. WLAN (or WiMAX), WWAN, UWB and Bluetooth.

The separation distances between human body and the WLAN Tx/Rx antennas of the host PC devices are all over than 200 mm.

Therefore the applying WLAN transmitter (FCC ID: **PPD-AR5BHB63-L**, IC: **4101A-ARBHB63L**) and the antenna systems are subjected to “Mobile device” pursuant to FCC CFR 47 Section 2.1091 and “RF Exposure Evaluation” category pursuant to IC RSS-102e clause 2.5.2.

This applying transmitter module has been tested and found to comply with the MPE (Maximum Permissive Exposure) limit pursuant to FCC CFR 47 Section 1.1310 and IC RSS-102e clause 4.2.

The MPE is calculated as below.

$$MPE = 10^{[(P+G)/10]} / (4 \times \pi \times 20^2) = \mathbf{0.063 \text{ mW/cm}^2}$$

Where:

**P** = conducted peak power of the applying transmitter = 197.7mW = 23dBm

**G** = the maximum antenna gain of the applying host PCs = 1.99dBi

### RF exposure justification regarding WLAN & WWAN co-location

The WLAN antennas locate very close to WWAN Tx (main) antenna. However both transmitter modules do not establish network link connections simultaneously, but switch the operation each other within 11 seconds of handover time if one of them is in active. See “Handover logic” exhibit.

Therefore, no RF Exposure evaluation in co-locating with any WWAN transmitter is required.

### RF exposure justification regarding WLAN & Bluetooth co-location

The antenna separation distance between the WLAN and Bluetooth antennas is over 290mm, so the Bluetooth device is not considered as a co-located transmitter. And the transmission power of the Bluetooth device installed in the host PC is within 5.0mW as below.

Bluetooth Model name	FCC ID, IC Cert. Number	Grantee Name	Granted Date	Conducted Tx power
BCM92046MD_GEN	FCC ID: QDS-BRCM1033	Broadcom Corporation	Dec./ 14 / 2007	4.1 mW
	IC: 4324A-BRCM1033		Dec./ 19 / 2007	

Therefore, no RF Exposure evaluation in co-locating with the Bluetooth transmitter is required pursuant to the FCC document “616217 D01 SAR for Laptop v01”, issued on December 7,2007.

### RF exposure justification regarding WLAN & UWB co-location

UWB transmitter is not mentioned in FCC CFR 47 Section 2.1091 and 2.1093, so it does not subject to RF exposure requirement. Therefore, no additional SAR testing or RF Exposure evaluation is required for any combination with UWB transmitter.