RF Exposure / MPE Calculation

No. : 10689818H

Applicant	**:**	**Murata Manufacturing Company, Ltd.**
Type of Equipment	**:**	**Communication Module (Bluetooth Part)**
Model No.	**:**	**LBEE5ZZ1EN**
FCC ID	**:**	**VPYLB1EN**

Murata Manufacturing Company, Ltd. declares that Model : LBEE5ZZ1EN
complies with FCC radiation exposure requirement specified in the FCC Rules 2.1091 (for mobile).

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided with the "LBEE5ZZ1EN" as calculated from (B) Limits for General Population / Uncontrolled Exposure of TABLE 1- LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) of §1.1310 Radiofrequency radiation exposure limits.
This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1.0mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

$S = (P * G) / (4 * \pi * r2)$

Where

P = 60.53 mW (Maximum average output power)
G = 2.24 Numerical Antenna gain; equal to 3.5 dBi
r = 20 cm

For: LBEE5ZZ1EN (Antenna 1 Maximum average output power (WLAN 2.4GHz band Part) **S = 0.02696 mW/cm2**

$S = (P * G) / (4 * \pi * r2)$

Where

P = 25.8226 mW (Maximum peak output power)
G = 3.16 Numerical Antenna gain; equal to 5.00 dBi
r = 20 cm

For: LBEE5ZZ1EN (Antenna 1 Maximum average output power (WLAN 5GHz band Part) **S = 0.01625 mW/cm2**

$S = (P * G) / (4 * \pi * r^2)$

Where

P = 1.28 mW (Maximum average output power)
G = 2.24 Numerical Antenna gain; equal to 3.50 dBi
r = 20.0 cm

For: LBEE5ZZ1EN (Antenna 2 Maximum average output power (Bluetooth Part) **S = 0.00057 mW/cm^2**

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Therefore, if Antenna 1(WLAN 2.4GHz band) and Antenna 2 (Bluetooth) transmit simultaneously,

S= 0.02696 mW/cm^2 + 0.00057 mW/cm^2
= 0.02753 mW/cm^2

Therefore, if Antenna 1(WLAN 5GHz band) and Antenna 2 (Bluetooth) transmit simultaneously,

S= 0.01625 mW/cm^2 + 0.00057 mW/cm^2
= 0.01682 mW/cm^2

Even taking into account the tolerance, this device can be satisfied with the limits.

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