## - RF Exposure

### 1-1. FCC Regulation

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this Chapter.

Limits for Maximum Permissive Exposure: RF exposure is calculated.

| Frequency Range | Electric Field Strength [V/m] | Magnetic Field Strength [A/m] | Power Density [㎽/㎠] | Averaging Time [minute] |
|---|---|---|---|---|
| Limits for General Population / Uncontrolled Exposure | | | | |
| 0.3 ~ 1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34 ~ 30 | 824/f | 2.19/f | *(180/f$^2$) | 30 |
| 30 ~ 300 | 27.5 | 0.073 | 0.2 | 30 |
| 300 ~ 1 500 | / | / | f/1 500 | 30 |
| 1 500 ~ 15 000 | / | / | 1.0 | 30 |

*f=frequency in ㎒, *= plane-wave equivalent power density*

**MPE (Maximum Permissive Exposure) Prediction**

Predication of MPE limit at a given distance: Equation from page 18 of OET Bulletin 65, Edition 97-01

$S = PG/4\pi R^2 \quad \left(\Rightarrow R = \sqrt{PG/4\pi S}\right)$

S = power density [㎽/㎠]

P = Power input to antenna [㎽]

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna [㎝]

## 2. RF Exposure Compliance Issue

The information should be included in the user's manual:
This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20 ㎝ must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

## 3-1. Calculation Result of RF Exposure (FCC)

Bluetooth

- Maximum tune up tolerance

| Mode | Target power [dBm] | Tune up tolerance [dB] | Max tune up power [dBm] | Max tune up power [㎽] | Ant Gain [dBi] | Ant Gain [㎽] | Power Density at 20 ㎝ [㎽/㎠] | Limit [㎽/㎠] |
|---|---|---|---|---|---|---|---|---|
| Bluetooth_GFSK | 1.00 | ±1.0 | 2.00 | 1.58 | -0.01 | 1.00 | 0.000 31 | 1.000 00 |