# RF Exposure / MPE Calculation

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|---|---|---|
| No. | : | 13328641H-R1 |
| Applicant | : | Pioneer Corporation |
| Type of Equipment | : | Car Audio with Bluetooth/ WLAN |
| Model No. | : | SN211 |
| FCC ID | : | AJDK115 |

Pioneer Corporation declares that Model: SN211 complies with FCC radiation exposure requirement specified in the FCC Rule 2.1091 (for mobile).

**RF Exposure Calculations:**

The following information provides the minimum separation distance for the highest gain antenna provided with the "SN211" 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.

**Bluetooth part**

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P$ = 2.76 mW (Maximum average output power)

☑ Time average was used for the above value in consideration of 6-minutes time-averaging

☐ Burst power average was used for the above value in consideration of worst condition.

$G$ = 0.290 Numerical Antenna gain; equal to -5.38 dBi

$r$ = 20 cm (Separation distance)

***Power Density Result S =*** **0.00016 mW/cm$^2$**

**WLAN part**

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm^2 uncontrolled exposure limit. The Friis formula used was:

$$S = \frac{P \times G}{4 \times \pi \times r^2}$$

Where

$P$ = 19.86 mW (Maximum average output power)

☐ Time average was used for the above value in consideration of 6-minutes time-averaging

☑ Burst power average was used for the above value in consideration of worst condition.

$G$ = 0.729 Numerical Antenna gain; equal to -1.37 dBi

$r$ = 20 cm (Separation distance)

***Power Density Result S =*** **0.00288 mW/cm$^2$**

Therefore, if Bluetooth and WLAN transmit simultaneously,

**S= 0.00016 mW/cm$^2$ + 0.00288 mW/cm$^2$ = 0.00304 mW/cm$^2$**

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