RF Exposure / MPE Calculation

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.