

RF Exposure / MPE Calculation

No. : 12622648S-B, 12622648S-C, 12622648S-D
Applicant : JVC KENWOOD Corporation
Type of Equipment : GPS NAVIGATION SYSTEM
Model No. : DNX996XR
FCC ID : IOMJ5220

JVC KENWOOD Corporation declares that Model: DNX996XR 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 “DNX996XR” 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/cm² uncontrolled exposure limit. The Friis formula used was:

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

Where

$P =$ 1.00 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.

$G =$ 0.589 Numerical Antenna gain; equal to -2.3 dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.00012 \text{ mW/cm}^2$

WLAN (2.4 GHz) part:

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

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

Where

$P =$ 36.73 mW (Maximum average output power)

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

☒ Burst power average was used for the above value in consideration of worst condit

$G =$ 0.363 Numerical Antenna gain; equal to -4.4dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.00265 \text{ mW/cm}^2$

WLAN (5 GHz) part:

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1mW/cm² uncontrolled exposure limit. The Friis formula used was:

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

Where

$P =$ 20.13 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.

$G =$ 0.525 Numerical Antenna gain; equal to -2.8 dBi

$r =$ 20 cm (Separation distance)

Power Density Result $S = 0.00210 \text{ mW/cm}^2$

Therefore, if Bluetooth and WLAN 2.4 GHz transmit simultaneously,

$S = 0.00012 \text{ mW/cm}^2 + 0.00265 \text{ mW/cm}^2$

$= 0.00277 \text{ mW/cm}^2$

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

Therefore, if Bluetooth and WLAN 5 GHz transmit simultaneously,

$S = 0.00012 \text{ mW/cm}^2 + 0.00210 \text{ mW/cm}^2$

$= 0.00222 \text{ mW/cm}^2$

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