

RF Exposure / MPE Calculation

Customer	Z-Works, Inc.
Description of EUT	Z-Works 4G Gateway v4
Model Number of EUT	ZGW-ZW4100-B
FCC ID	2BSSDZW4100-B
Issue Date	July 1, 2026
Approver	<i>S. Matsuyama</i>
	Satofumi Matsuyama Engineer

Z-Works, Inc. declares that Model: ZGW-ZW4100-B 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 "ZGW-ZW4100-B" 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.

[Z-Wave Part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 0.61mW/cm² (f/1500) uncontrolled exposure limit. The Friis formula used was:

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

Where

PG = 1.23 mW (Maximum EIRP)

r = 20 cm (Separation distance)

Power Density Result S = 0.00024470073 mW/cm²

[WWAN Part]

This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 0.54mW/cm² (f/1500) uncontrolled exposure limit. The Friis formula used was:

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

Where

PG = 1318.26 mW (Maximum EIRP)

r = 20 cm (Separation distance)

Power Density Result S = 0.26225949410 mW/cm²

[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
PG = 160.16 mW (Maximum EIRP)
r = 20 cm (Separation distance)

Power Density Result S = 0.03186281961 mW/cm²

[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
PG = 162.85 mW (Maximum EIRP)
r = 20 cm (Separation distance)

Power Density Result S = 0.03239797810 mW/cm²

Therefore, if Z-Wave, WWAN and WLAN 2.4 GHz transmit simultaneously,

$$0.00024470073 / 0.61 + 0.26225949410 / 0.54 + 0.03186281961 / 1 = 0.5179296982 < 1$$

Therefore, if Z-Wave, WWAN and WLAN 5 GHz transmit simultaneously,

$$0.00024470073 / 0.61 + 0.26225949410 / 0.54 + 0.03239797810 / 1 = 0.5184648567 < 1$$