



Engineering Solutions & Electromagnetic Compatibility Services

MPE CO-LOCATION CALCULATIONS

From FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is 1mW/cm².

From OET 65, $S = EIRP / 4\pi R^2$

where:

S = Power density (mw/cm²)

EIRP = Equivalent Isotropic Radiated Power

R = 20 cm separation distance

Power density for Zwave daughter card FCC ID: YL6-143IS205V4

The MPE calculation for the above device operating at 912 -924 MHz for the uncontrolled environment is 0.6 mW/cm²

EUT field strength with carrier at 912.5 MHz = 110.9 dBuV/m at 3 meters

Applying EIRP = E + 20Log (D) – 104.8

Measured EIRP = 107.2 + 9.54 – 104.8 = 11.94 dBm = 15.6 mW

$S = (15.6 / 4 * 3.14 * 20.0^2) = 0.0031 \text{ mW/cm}^2 = \text{at } 20 \text{ cm separation}$

Power density for Image sensor FCC ID: YL6-143200N25V4

The MPE calculation for the above device operating at 912 -924 MHz for the uncontrolled environment is 0.6 mW/cm²

EUT field strength with carrier at 908.4 MHz = 76.2 dBuV/m at 3 meters

Applying EIRP = E + 20Log (D) – 104.8

Measured EIRP = 76.2 + 9.54 – 104.8 = -19.1 dBm = 0.012 mW

$S = (0.012 / 4 * 3.14 * 20.0^2) = 0.0000024 \text{ mW/cm}^2 = \text{at } 20 \text{ cm separation}$

Summary of MPE

Frequency (MHz)	MPE Result (mW/cm ²)	Limit (mW/cm ²)
912.5	0.0031	0.6
908.4	0.0000024	0.6

MPE (1)	MPE (2)	MPE Power Density Aggregate {MPE(1) & MPE(2) < 0.6}	MPE Results (mW/cm ²)	Power Density Limit (mW/cm ²)
912.5 MHz	908.4 MHz			
0.0031	0.0000024	0.0031	0.0031	0.6

Thus, the EUT meets the uncontrolled exposure limit at 20 cm when both transmitters are transmitting simultaneously.