

Test Procedure

RF exposure for licensed transmitter is handled at the time of licensing, however, an MPE calculation was performed in order to show the distance at which the device is compliant with the limits of §1.1310, assuming antenna gains of 0 dBi and 4 dBi. The highest measured conducted output power was used, adjusted by +3dB to account for two antenna MIMO operation.

FCC Limit For General Population/Uncontrolled Exposure at 2.155 GHz = 1 mW/cm²

$$\text{Power Density} = [\text{EIRP}] / [4\pi \times (\text{D}_{\text{cm}})^2]$$

Where EIRP is in milliwatts and D is in centimeters. Setting the power density equal to the limit of 1 mW/cm² and solving for D_{cm} yields the following results.

Results:

EUT EIRP = Conducted power + Array Gain + Antenna gain in dBi

$$\text{Power Density Limit} = [\text{EIRP}] / [4\pi \times (\text{D}_{\text{cm}})^2]$$

$$1 \text{ mW/cm}^2 = [\text{EIRP}] / [4\pi \times (\text{D}_{\text{cm}})^2]$$

$$\text{D}_{\text{cm}} = ([\text{EIRP}] / [4\pi])^{1/2}$$

For Gain = 0 dBi,

$$\text{EIRP} = 23.88 \text{ dBm} + 10 \cdot \text{LOG}(2) + 0 \text{ dBi} = 23.88 \text{ dBm} + 3 \text{ dB} + 0 \text{ dBi}$$

$$\text{EIRP} = 26.88 \text{ dBm or } 487.529 \text{ mW}$$

Therefore, the minimum safe distance $\text{D}_{\text{cm}} = ([516.4] / [4\pi])^{1/2}$

$$\text{D}_{\text{cm}} = 4.41 \text{ cm at } 0 \text{ dBi gain two antenna MIMO}$$

For Gain = 4 dBi,

$$\text{EIRP} = 23.88 \text{ dBm} + 10 \cdot \text{LOG}(2) + 4 \text{ dBi} = 23.88 \text{ dBm} + 3 \text{ dB} + 4 \text{ dBi}$$

$$\text{EIRP} = 30.88 \text{ dBm or } 1224.616 \text{ mW}$$

Therefore, the minimum safe distance $\text{D}_{\text{cm}} = ([1297] / [4\pi])^{1/2}$

$$\text{D}_{\text{cm}} = 9.871 \text{ cm at } 4 \text{ dBi gain two antenna MIMO}$$

For Gain = X dBi,

$$\text{EIRP} = 23.88 \text{ dBm} + 10 \cdot \text{LOG}(2) + X \text{ dBi} = 23.88 \text{ dBm} + 3 \text{ dB} + X \text{ dBi}$$

$$\text{EIRP} = 26.88 + X \text{ dBm or } 487.529 + 10^{(X/10)} \text{ mW}$$

Therefore, the minimum safe distance $\text{D}_{\text{cm}} = ([487.529 + 10^{(X/10)}] / [4\pi])^{1/2}$

$$\text{D}_{\text{cm}} = 0.282 \cdot (487.529 + 10^{(X/10)})^{1/2} \text{ cm at } X \text{ dBi gain two antenna MIMO}$$

Test Personnel: <u>Kouma Sinn <i>KPS</i></u> Supervising/Reviewing Engineer: _____ (Where Applicable) <u>N/A</u> Product Standard: <u>FCC Part 27</u> Input Voltage: <u>48 VDC (POE)</u> Pretest Verification w/ Ambient Signals or BB Source: <u>N/A</u>	Test Date: <u>10/16/2020, 10/27/2020, 11/04/2020, 11/05/2020,</u> Limit Applied: <u>See report section 6.3</u> Ambient Temperature: <u>23, 22, 21, 22, 23 °C</u> Relative Humidity: <u>59, 41, 21, 24, 59 %</u> Atmospheric Pressure: <u>1008, 1011, 1022, 1017, 1008 mbars</u>
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Deviations, Additions, or Exclusions: None