Maximum Permissible Exposure

Test Requirement(s):   **§15.247 (h)(i):** Radio frequency devices operation under the provisions of this part are subject to the radio frequency radiation exposure requirements specified in §1.1307(b), §1.1310, §2.1091 and §2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a "general population/uncontrolled" environment.

RF Exposure Requirements: **§1.1307(b)(1) and §1.1307(b)(2):** Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

RF Radiation Exposure Limit: **§1.1310:** As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

MPE Limit: EUT's operating frequencies @ <u>Zwave 908 – 916 MHz: Zigbee 2405 – 2474 MHz</u>; **Limit for Uncontrolled exposure: 0.611 mW/cm² or 6.11 W/m²**

The relevant KDB for RF Exposure is KDB 447498.

$$S = PG / 4\pi R^2 \qquad \text{or} \qquad R = \sqrt{(PG / 4\pi S)}$$

where, S = Power Density (mW/cm²)
P = Power Input to antenna (mW)
G = Antenna Gain (numeric value)
R = Distance (cm)

Test Results:

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm²)	Limit (mW/cm²)	Margin	Distance (cm)	Result
2440* (Zigbee)	14.4	27.54	2.7	1.86	0.04	1.0	-0.96	10	Pass
916* (ZWave)	-11.1	0.078	2.0	1.59	0.00	0.611	-0.611	10	Pass
2412* (WiFi)	14.35	27.23	0.1	1.02	0.02	1.0	-0.98	10	Pass
5180 (WiFi)	7.32	5.40	4.7	2.95	0.01	1.0	-0.99	10	Pass
* Simultaneous Transmission (Worst Case)					0.06	0.611	-0.601	10	Pass

The safe distance for 2AJAC-CORE5 where Power Density is less than the MPE Limit listed above was found to be 10 cm.