



## Maximum Permissible Exposure

### FCC Part 2 Sections §2.1091 and §2.1093

**Test Requirement(s):** §15.407(f): U-NII devices are subject to the radio frequency radiation exposure requirements specified in §1.1307(b), §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 @ BLE 2402 – 2480 MHz; UNII-1 5165 – 5240 MHz; UNII-2a 5260 – 5335 MHz; UNII-2c 5495 – 5710 MHz; UNII-3 5740 – 5835 MHz; 60 GHz 58320 - 70560 MHz;

**Limit for Uncontrolled exposure: 1 mW/cm<sup>2</sup> or 10 W/m<sup>2</sup>**

Equation from page 18 of OET 65, Edition 97-01

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

where, S = Power Density (mW/cm<sup>2</sup>)

P = Power Input to antenna (mW)

G = Antenna Gain (numeric value)

R = Distance (cm)

### Test Results:

#### Internal Antenna

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Margin	Distance (cm)	Result
2480*	7.35	5.43	2	1.59	0.00	1	-1	35	Pass
5230	22.72	187.07	13	19.95	0.24	1	-0.76	35	Pass
5300	16.27	42.36	13	19.95	0.06	1	-0.94	35	Pass
5515	16.77	47.53	13	19.95	0.06	1	-0.96	35	Pass
5740*	22.75	188.36	13	19.95	0.24	1	-0.76	35	Pass
58320*	18.90	77.62	20	100.00	0.50	1	-0.50	35	Pass
*Simultaneous Transmission (Worse case):					0.74	1	-0.26	35	Pass

**External Antenna**

FCC									
Frequency (MHz)	Con. Pwr. (dBm)	Con. Pwr. (mW)	Ant. Gain (dBi)	Ant. Gain numeric	Pwr. Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Margin	Distance (cm)	Result
2480*	7.35	5.43	2	1.59	0.00	1	-1	35	Pass
5230	15.96	39.45	20	100.00	0.26	1	-0.74	35	Pass
5335	9.91	9.79	20	100.00	0.06	1	-0.94	35	Pass
5570	9.82	9.59	20	100.00	0.06	1	-0.94	35	Pass
5790*	15.98	39.63	20	100.00	0.26	1	-0.74	35	Pass
58320*	18.90	77.62	20	100.00	0.50	1	-0.50	35	Pass
*Simultaneous Transmission (Worse case):					0.76	1	-0.24	35	Pass

The safe distance for SWX-WAVEAPG2 where Power Density is less than the MPE Limit listed above was found to be 35 cm. This device does not perform power tune-ups, therefore the maximum power is used for this analysis. All chains were measured and summed under the guidance of KDB 789033 Section II. E.2. and KDB 662911 D01.