

Maximum Permissible Exposure

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 2400 – 2483.5 MHz; WiFi 2412 – 2474 MHz; LTE Bands 663 – 1910 MHz

Limit for Uncontrolled exposure: 0.44 – 0.57 (< 1500 MHz) or 1 mW/cm² (> 1500 MHz)

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/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/cm ²)	Limit (mW/cm ²)	Margin	Distance (cm)	Result
2480*	-3.21	0.478	0	1	0.00	1.0	-0.99	20	Pass
2437*	22.15	164.06	0	1	0.03	1.0	-0.97	20	Pass
699-849 ⁽¹⁾	24.00	251.19	4	2.51	0.02	0.47	-0.45	20	Pass
663-698* ⁽²⁾	24.00	251.19	3	2.00	0.10	0.44	-0.34	20	Pass
1710-1780 ⁽³⁾	24.00	251.19	4	2.51	0.13	1.0	-0.87	20	Pass
1710-1910 ⁽⁴⁾	24.00	251.19	6	3.98	0.20	1.0	-0.80	20	Pass
*Simultaneous Transmission (Worse case):					0.13	0.44	-0.31	20	Pass

1. LTE Bands 5, 12, 13, 14 and 26
2. LTE Band 71
3. LTE Band 66
4. LTE Bands 2, 4, 25

The safe distance for SWX-ULTEBP where Power Density is less than the MPE Limit listed above was found to be 20 cm.