§ 15.407(f) 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 @ UNII-1 5180 – 5240 MHz, UNII-2A 5250 - 5350MHz, UNII-2C 5470 – 5725 MHz and UNII-3 5745 – 5825 MHz, BLE 2402 – 2480 MHz, **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

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^2)
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**
2402*	26.92	492	4.0	2.51	0.245	1.0	-0.755	20	Pass
5320	23.57	228	6.4	4.4	0.200	1.0	-0.800	20	Pass
5720	23.57	228	6.4	4.4	0.200	1.0	-0.800	20	Pass
5240	26.6	457	6.4	4.4	0.400	1.0	-0.600	20	Pass
5775*	28.3	676	6.4	4.4	0.592	1.0	-0.408	20	Pass
*Simultaneous Transmission (Worse case):					0.837	1.0	-0.163	20	Pass

The U6+may have simultaneously transmission of the 15.247 2.4 GHz WiFi, and 15.407 UNII-1 UNII-2A, UNII- 2C, or UNII-3 bands. However, UNII-1, UNII-2A, UNII-2C and UNII-3 bands do not transmit simultaneously. Asterisk notes the worst case of the possible simultaneously transmitter combinations.

Simultaneously Transmitters Summed:

+ 0.245 (2.4 GHz WiFi)
+ 0.592 (UNII-3)
= 0.837
Limit of 1.0 – 0.837 (summed value) = -0.163 Margin

The safe distance for SWX-U6P where Power Density is less than the MPE Limit listed above was found to be 20 cm.