



## **Exhibit: RF Exposure – FCC**

FCC ID: XEY-ZX-WU  
IC: 8410A-ZXWU

Client	<b>Verdant Environmental Technologies Inc</b>	
Product	<b>ZX Root Node Thermostat</b>	
Standard(s)	FCC Part 15 Subpart 15.247:2016 FCC KDB 447498:2015	

## SAR Calculations: 902.8 – 927.7 MHz FHSS transmitter

The EUT contains both 902 – 928 MHz and 2402 – 2480 Bands of FHSS transmitters. The firmware guarantees simultaneous operation will not occur and therefore antenna co-location testing is not applicable. This device is designed to be operated handheld and for the purpose of demonstrating compliance with MPE requirements and SAR exemption; we present for a worst case 5mm distance and 100 % duty cycle.

### 902 – 928 MHz Band

#### FCC Requirements: SAR test exclusion guidance

As per FCC KDB 447498 D01 Section 4.3.1 a), the 1-g extremity SAR Test Exclusion Threshold for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm is determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] [\sqrt{f(\text{GHz})}] \leq 3.0$$

Performing the calculation, of the worst case mentioned above, using the maximum power measured of 12.8mW (see Table 20 in page 50 of TR-7169005571-FCC-ISED-ZX Wired Thermostat.pdf) yields to:

$$\frac{12.8}{5} \cdot \sqrt{0.927525} = 2.47,$$

2.47 is below the 3.0 worst case limit, so this device complies with FCC requirements

#### ISED Requirements: SAR test exclusion guidance

As per Table 1 in RSS-102, Section 2.5.1 at 1900MHz is 7mW at 5mm or less.

This device has effective isotropic radiated power (as worst-case vertical polarization at 915MHz, with a peak value of  $100 \text{ dB}\mu\text{V}/\text{m}^2$  - 95.2 (factor to convert to EIRP at 3 meters) of 4.8dBm, or 3mW.

- 3mW is less than 7mW limit as per section 2.5.1 on RS-102, thus the device meets the exception rules.

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## 2402 – 2480 MHz Band

### FCC Requirements: SAR test exclusion guidance

As per FCC KDB 447498 D01 Section 4.3.1 a), the 1-g extremity SAR Test Exclusion Threshold for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm is determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] [\sqrt{f(\text{GHz})}] \leq 3.0$$

Performing the calculation, of the worst case mentioned above, using the maximum power measured of 7.56mW (see Table 19 in page 50 of TR-7169005571-FCC-ISED-ZX Wired Thermostat.pdf) yields to:

$$\frac{7.56}{5} \cdot \sqrt{0.927525} = 1.44,$$

1.44 is below the 3.0 worst case limit, so this device complies with FCC requirements

### ISED Requirements: SAR test exclusion guidance

As per Table 1 in RSS-102, Section 2.5.1 at 2450MHz is 4mW at 5mm or less.

This device has effective isotropic radiated power (as worst-case vertical polarization at 915MHz, see, for instance with a peak value of 100 dB $\mu$ V/m<sup>ii</sup> - 95.2 (factor to convert to EIRP at 3 meters) of 4.8dBm, or 3mW.

- 3mW is less than 4mW limit as per section 2.5.1 on RS-102, thus the device meets the exception rules.

<sup>i</sup> See, pag.90 in TR-7169005571-FCC-ISED-ZX Wired Thermostat.pdf

<sup>ii</sup> See pag.94 in TR-7169005571-FCC-ISED-ZX Wired Thermostat.pdf