



Willow Run (WR) Test Labs, Inc.  
7117 Fieldcrest Drive  
Brighton, MI 48116  
Phone: (734) 252-9785, Fax (734) 926-9785  
e-mail: [info@wrtest.com](mailto:info@wrtest.com)

## RF EXPOSURE CALCULATIONS

### Requirement:

According to USA CFR 15 §1.1307 (b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. For Canada, RSS-102 sets out the requirements and measurement techniques used to evaluate radio frequency (RF) exposure compliance of radiocommunication apparatus designed to be used within the vicinity of the human body.

### Maximum Permissible Exposure Calculations:

USA REF: 1.1310, 2.1091/1093, 447498 D01 General RF Exposure Guidance v06  
IC REF: RSS-102 Issue 5, Safety Code 6

Min. Sep. Distance: 20 cm (Mobile)

Test Date: 5-Apr-20  
Test Engineer: J. Brunett  
EUT: PassiveBolt S9  
EUT Mode: Worst Case  
Meas. Distance: 3 meters

Mode	Freq. MHz	Worst Case EIRP(Avg)** dBm	E20cm(Avg) dBuV/m	S20cm(Avg)**** mW/cm2	SC6 Limit (S20cm) mW/cm2	MPE Ratio		S Limit mW/cm2	MPE Ratio
Mode	Freq. MHz	Worst Case EIRP(Avg)** dBm	E20cm(Avg) dBuV/m	S20cm(Avg)**** mW/cm2	SC6 Limit (S20cm) mW/cm2	MPE Ratio		S Limit mW/cm2	MPE Ratio
Zigbee Module	2402	24.8	143.5	0.05967	5.4	.0112	1.00000	.0597	
BLE – Port 1 (worst case)	2402	-0.4	118.3	0.00018	5.4	.0000	1.00000	.0002	
					MPE Total (<1):	.0000	MPE Total (<1):	.0598	
					Complies?	Yes	Complies?	Yes	

\*As Measured / Computed from highest fundamental emission, see fundamental emission section of this report.

\*\*maximum of either EIRP or Pout as measured.

\*\*\* For FCC MPE, use of 300 kHz limit for signals below 300 kHz as previously requested by FCC.

\*\*\*\* EIRP (mW) = S (mW/cm<sup>2</sup>) x 4 x PI x 20cm<sup>2</sup>

### Summary:

The EUT with all transmitters is compliant with both the FCC power density limit and the ISED Exposure Evaluation limits.