

## RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

FCC ID: 2A2KW-H3

### EUT Specification

<b>EUT</b>	Trail Camera
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.24GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input checked="" type="checkbox"/> Others: 2.402GHz~2.480GHz
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others ____
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna diversity</b>	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	BT:2.13dBm (0.0016W); 2.4G WIFI: 17.77dBm (0.0598W)
<b>Antenna gain (Max)</b>	BT:1.5dbi WIFI:2dbi
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

Limits for Maximum Permissible Exposure(MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
300-1500	--	--	<b>F/300</b>	<b>6</b>
1500-100000	--	--	<b>5</b>	<b>6</b>
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
300-1500	--	--	<b>F/1500</b>	<b>6</b>
1500-100000	--	--	<b>1</b>	<b>30</b>

## Friis transmission formula: $P_d = \frac{P_{out} * G}{4 * \pi * R^2}$

Where

$P_d$  = Power density in  $mW/cm^2$

$P_{out}$  = output power to antenna in Mw

$G$  = gain of antenna in linear scale

$\pi = 3.1416$

$R$  = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE,  $1mW/cm^2$ . If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

## Measurement Result

Operating Mode	Channel Frequency	Measured Power	Tune up tolerance	Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits ( $mW/cm^2$ )
	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	( $mW/cm^2$ )	
802.11b	2412	16.17	16.17 ±1	17.17	2	0.0164	1
	2437	15.32	15.32 ±1	16.32	2	0.0135	1
	2462	14.60	14.60 ±1	15.6	2	0.0114	1
802.11g	2412	16.54	16.54 ±1	17.54	2	0.0179	1
	2437	17.75	17.75 ±1	18.75	2	0.0236	1
	2462	17.22	17.22 ±1	18.22	2	0.0209	1
802.11n (HT20)	2412	16.48	16.48 ±1	17.48	2	0.0176	1
	2437	17.77	17.77 ±1	18.77	2	0.0238	1
	2462	17.00	17.00 ±1	18	2	0.0199	1
BLE	2402	2.13	2.13 ±1	3.13	1.5	0.0006	1
	2440	1.47	1.47 ±1	2.47	1.5	0.0005	1
	2480	0.45	0.45 ±1	1.45	1.5	0.0004	1

**For Transmit Simultaneously Max Result:**

**BLE+2.4G WIFI**

**Ratio: BLE  $_{RF\ ratio}$  + 2.4G WIFI  $_{RF\ ratio}$  = 0.0006+0.0238=0.0244<1.0**