



Excellence in Compliance Testing

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## **Certification Exhibit**

**FCC ID: KDZLXEBLUE**

**FCC Rule Part: 15.247**

**ACS Report Number: 10-0118.W04.11.A**

Applicant: LXE Inc.  
Equipment: Bluetooth Module

## **RF Exposure**

**General Information:**

Applicant: LXE Inc.  
 ACS Project: 10-0118.W04.11.A  
 Device Category: Mobile  
 Environment: General Population/Uncontrolled Exposure  
 Exposure Conditions: Greater than 20 centimeters

802.11a/b/g/n 2x2 MIMO (FCC ID: TWG-SDCPE15N) and 2.4 GHz Bluetooth (FCC ID: KDZLXEBLUE) can operate simultaneously within the hosts described in this filing and therefore the maximum RF exposure is determined by the summation of power densities.

**Antenna Information: FCC ID: KDZLXEBLUE**

Antenna Type: Omni-Directional Monopole  
 Antenna Gain: 0 dBi

**Antenna Information: FCC ID: TWG-SDCPE15N**

Antenna Type: Omni-Directional 2x full ¼ Potable Dual Band  
 Antenna Gain: 2.15 dBi

**MPE Calculation**

The Power Density (mW/cm<sup>2</sup>) is calculated as follows:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

## FCC ID: KDZLXEBLUE - Bluetooth (DSS)

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*								
Mode	Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm <sup>2</sup> )	Radio Power (mW)	Antenna Gain (dBi)	EIRP (mW)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )
BT	2440	13.4	1.00	21.88	0	21.88	20	0.004

## FCC ID: TWG-SDCPE15N - 802.11a/b/g/n (DTS)

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*								
Mode	Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm <sup>2</sup> )	Radio Power (mW)	Antenna Gain (dBi)	EIRP (mW)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )
802.11b	2437	24.9	1.00	309.03	2.15	506.99	20	0.101
802.11g	2437	26.5	1.00	446.68	2.15	732.82	20	0.146
802.11n20	2437	29	1.00	794.33	5.16	2606.33	20	0.519
802.11n40	2437	21.5	1.00	141.25	5.16	463.48	20	0.092
802.11a	5745	19.8	1.00	95.50	2.15	156.68	20	0.031
802.11n20	5745	22.1	1.00	162.18	5.16	532.15	20	0.106
802.11n40	5795	21.1	1.00	128.82	5.16	422.70	20	0.084

Note: Antenna gain for MIMO modes is effective gain for two transmit chains.

**FCC ID: TWG-SDCPE15N - 802.11a/n (UNII)**

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure*								
Mode	Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/cm <sup>2</sup> )	Radio Power (mW)	Antenna Gain (dBi)	EIRP (mW)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )
802.11a	5180	14.3	1.00	26.92	2.15	44.16	20	0.009
802.11a	5300	17.8	1.00	60.26	2.15	98.86	20	0.020
802.11a	5700	18.2	1.00	66.07	2.15	108.39	20	0.022
802.11n20	5180	13.2	1.00	20.89	5.16	68.55	20	0.014
802.11n20	5300	19.2	1.00	83.18	5.16	272.92	20	0.054
802.11n20	5700	20.2	1.00	104.71	5.16	343.58	20	0.068
802.11n40	5190	7.0	1.00	5.01	5.16	16.44	20	0.003
802.11n40	5270	20.3	1.00	107.15	5.16	351.58	20	0.070
802.11n40	5550	21.9	1.00	154.88	5.16	508.19	20	0.101

Note: Antenna gain for MIMO modes is effective gain for two transmit chains.

### **Summation of Power Densities – Simultaneous Transmissions**

The maximum power density is calculated by a summation of power densities for each simultaneous transmission combination as follows. The maximum power density of the 802.11a/b/g/n radio was from the HT20 mode of operation in the Part 15.247 5GHz band and therefore used in the following calculation.

802.11n20 (DTS) Mode:	0.519 (mW/cm <sup>2</sup> )
2.4GHz Bluetooth:	0.004 (mW/cm <sup>2</sup> )
<b><u>TOTAL:</u></b>	<b><u>0.523 (mW/cm<sup>2</sup>)</u></b>

### **Installation Guidelines**

The installation manual should contain text similar to the following advising how to install the equipment to maintain compliance with the FCC RF exposure requirements:

### **RF Exposure**

In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element shall be installed such that a minimum separation distance of 20 centimeters will be maintained.

### **Conclusion**

This device complies with the MPE requirements by providing adequate separation between the device, any radiating structure and the general population.