RF EXPOSURE EVALUATION

EUT Specification

EUT	Battery Powered Security Camera
Model Number	LBP01,LBP0X X=1-9 (is defined for different silkscreen or color)
FCC ID	2ABT4LBP01
Antenna gain (Max)	3.3dBi
Operation Frequency	BLE:2402-2480MHz WIFI:2412-2462MHz
Input Rating	DC 5V from adapter
Classification Per Stipulated Test Standard	§15.247(i), §2.1093
Modulation	BLE:(GFSK, π/4-DQPSK,8DPSK) WIFI: 802.11b: DSSS(DBPSK/DQPSK/CCK) 802.11g/n: OFDM(BPSK/QPSK/16QAM/64QAM)
Max. output power	BLE: 7.56dBm(0.005715W) WIFI: 802.11b: 18.12dBm 802.11g: 14.53dBm 802.11n(HT20): 13.56dBm

Test Requirement:

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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)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm^2)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	**--**	**--**	**F/300**	**6**
1500-100000	**--**	**--**	**5**	**6**

(B) Limits for General Population/Uncontrol Exposures				
300-1500	**--**	**--**	**F/1500**	**6**
1500-100000	**--**	**--**	**1**	**30**

1 Friis transmission formula: Pd= (Pout*G)\ (4*pi*R^2)

Where

Pd= Power density in mW/cm^2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1416

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

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

2 Measurement Result

Antenna gain: 3.3 dBi

BLE:

Operating Mode	Test Channel	Measured power (dBm)	Tune up tolerance (dBm)	Max tune up conducted power(dBm)	Output Peak power (mW)	Ant. Gain (dBi)	Ant. Gain (numeric)	Power density at 20cm (mW/cm2)	Power density Limits (mW/cm2)
GFSK	2402	7.57	7±1	8	6.30957	3.3	2.137962	0.00268367	1
GFSK	2440	7.54	7±1	8	6.30957	3.3	2.137962	0.00268367	1
GFSK	2480	7.23	7±1	8	6.30957	3.3	2.137962	0.00268367	1

WIFI:

Operating Mode	Test Channel	Measured power (dBm)	Tune up tolerance (dBm)	Max tune up conducted power(dBm)	Output Peak power (mW)	Ant. Gain (dBi)	Ant. Gain (numeric)	Power density at 20cm (mW/cm2)	Power density Limits (mW/cm2)
802.11b	1	18.12	18±1	19	79.4328	3.3	2.138	0.033785405	1
	6	17.83	18±1	19	79.4328	3.3	2.138	0.033785405	1
	11	17.76	18±1	19	79.4328	3.3	2.138	0.033785405	1
802.11g	1	14.53	14±1	15	31.6228	3.3	2.138	0.013450212	1
	6	14.34	14±1	15	31.6228	3.3	2.138	0.013450212	1
	11	14.12	14±1	15	31.6228	3.3	2.138	0.013450212	1
802.11n (HT20)	1	13.56	13±1	14	25.1189	3.3	2.138	0.010683883	1
	6	13.42	13±1	14	25.1189	3.3	2.138	0.010683883	1
	11	13.01	13±1	14	25.1189	3.3	2.138	0.010683883	1

Signature:

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