



## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	Smart Ceiling Light
<b>Model Number</b>	62440534-01
<b>FCC ID</b>	2ARWQ62440534
<b>Antenna gain (Max)</b>	1.2dBi
<b>Operation Frequency</b>	WLAN: 2.412GHz ~ 2.462GHz
<b>Input Rating</b>	AC 120V, 60HZ
<b>Max. output power</b>	802.11b: 14.48dBm 802.11g: 10.31dBm 802.11n(HT20): 9.92dBm 802.11n(HT40): 9.64dBm

### Test Requirement:

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 <sup>2</sup> )	Average Time
<b>(A) Limits for Occupational/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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

Where

$P_d$  = Power density in mW/cm<sup>2</sup>

$P_{out}$  = 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,  $1\text{mW}/\text{cm}^2$ . 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.

### 11.2 Measurement Result

Antenna gain: 1.2 dBi

WIFI:

Operating Mode	Test Channel	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/ cm <sup>2</sup> )	Power density Limits (mW/ cm <sup>2</sup> )
802.11b	1	$13 \pm 1$	14	25.119	1.2	1.318	0.006588	1
	6	$14 \pm 1$	15	31.623	1.2	1.318	0.008293	1
	11	$14 \pm 1$	15	31.623	1.2	1.318	0.008293	1
802.11g	1	$8 \pm 1$	9	7.943	1.2	1.318	0.002083	1
	6	$10 \pm 1$	11	12.589	1.2	1.318	0.003302	1
	11	$10 \pm 1$	11	12.589	1.2	1.318	0.003302	1
802.11n (HT20)	1	$8 \pm 1$	9	7.943	1.2	1.318	0.002083	1
	6	$9 \pm 1$	10	10.000	1.2	1.318	0.002623	1
	11	$10 \pm 1$	11	12.589	1.2	1.318	0.003302	1
802.11n (HT40)	3	$9 \pm 1$	10	10.000	1.2	1.318	0.002623	1
	6	$9 \pm 1$	10	10.000	1.2	1.318	0.002623	1
	9	$10 \pm 1$	11	12.589	1.2	1.318	0.003302	1

Signature:

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