

## 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: **2ACWIE4SFC5017**

### EUT Specification

<b>EUT</b>	<b>LED TV</b>
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others
<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>	13.50dBm for 802.11b; 12.62dBm for 802.11g; 12.55Bm for 802.11n(HT20); 12.08dBm for 802.11n(HT40);
<b>Antenna gain (Max)</b>	2.0dBi ( for per antenna port Max) 5.01dBi for MIMO(Ant1+Ant2 Directional Gain)
<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	--	--	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

## 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

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Level (dBm)			Limit (dBm)	Verdict
			Ant1	Ant2	Sum		
802.11b	1	2412	14.63	15.1	--	30	PASS
	6	2437	8.64	13.84	--	30	PASS
	11	2462	9.98	15.46	--	30	PASS
802.11g	1	2412	5.69	7.18	--	30	PASS
	6	2437	2.19	5.47	--	30	PASS
	11	2462	3.98	7.44	--	30	PASS
802.11n (HT20)	1	2412	7.84	8.01	10.94	30	PASS
	6	2437	2.03	6.48	7.81	30	PASS
	11	2462	3.56	8.42	9.65	30	PASS
802.11n (HT40)	3	2422	5.77	7.88	9.96	30	PASS
	6	2437	6.42	2.04	7.77	30	PASS
	9	2452	6.52	7.95	10.30	30	PASS

Antenna 1

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	15±1	16	39.811	2	1.585	0.012553	1
	6	9±1	10	10.000	2	1.585	0.003153	1
	11	10±1	11	12.589	2	1.585	0.003970	1
802.11g	1	6±1	7	5.012	2	1.585	0.001580	1
	6	2±1	3	1.995	2	1.585	0.000629	1
	11	4±1	5	3.162	2	1.585	0.000997	1
802.11n (H20)	1	8±1	9	7.943	2	1.585	0.002363	1
	6	2±1	3	1.995	2	1.585	0.000629	1
	11	4±1	5	3.162	2	1.585	0.000997	1
802.11n (H40)	3	6±1	7	5.012	2	1.585	0.001580	1
	6	6±1	7	5.012	2	1.585	0.001580	1
	9	7±1	8	6.310	2	1.585	0.001990	1

Antenna 2:

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	15±1	16	39.811	2	1.585	0.012553	1
	6	14±1	15	31.623	2	1.585	0.009972	1
	11	15±1	16	39.811	2	1.585	0.012553	1
802.11g	1	7±1	8	6.310	2	1.585	0.001990	1
	6	5±1	6	3.981	2	1.585	0.001255	1
	11	7±1	8	6.310	2	1.585	0.001990	1
802.11n (HT20)	1	8±1	9	7.943	2	1.585	0.002363	1
	6	6±1	7	5.012	2	1.585	0.001580	1
	11	8±1	9	7.943	2	1.585	0.002363	1
802.11n (HT40)	3	8±1	9	7.943	2	1.585	0.002363	1
	6	2±1	3	1.995	2	1.585	0.000629	1
	9	8±1	9	7.943	2	1.585	0.002363	1

MPE Result:

Operation Mode	Channel Number	Channel Frequency (MHz)	Power density at 20cm (mW/ cm <sup>2</sup> )			Power density Limits (mW/cm <sup>2</sup> )	Verdict
			Ant1	Ant2	Sum		
802.11b	1	2412	0.012553	0.012553	--	1	PASS
	6	2437	0.003153	0.009972	--	1	PASS
	11	2462	0.003970	0.012553	--	1	PASS
802.11g	1	2412	0.001580	0.001990	--	1	PASS
	6	2437	0.000629	0.001255	--	1	PASS
	11	2462	0.000997	0.001990	--	1	PASS
802.11n (HT20)	1	2412	0.002363	0.002363	0.004726	1	PASS
	6	2437	0.000629	0.001580	0.002209	1	PASS
	11	2462	0.000997	0.002363	0.002987	1	PASS
802.11n (HT40)	3	2422	0.001580	0.002363	0.003943	1	PASS
	6	2437	0.001580	0.000629	0.002209	1	PASS
	9	2452	0.001990	0.002363	0.004353	1	PASS

Signature:



Print: Sam Lv

Title: Manager

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