

## RF EXPOSURE EVALUATION

### EUT Specification

<b>EUT</b>	THE AIR BLUETOOTH/WIFI HOME SPEAKER SYSTEM WITH WIRELESS ALARM CLOCK + ALEXA VOICE CONTROL
<b>Model Number</b>	CAV5
<b>FCC ID</b>	EMOCAV5
<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 checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
<b>Antenna gain (Max)</b>	5.07dBi
<b>Max. output power</b>	802.11b: 14.15dBm 802.11g: 13.29dBm 802.11n(HT20): 11.74dBm 802.11n(HT40): 9.47dBm
<b>Input Rating</b>	AC120V/60Hz for adapter
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

**Applicable Standard:**

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J. Section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m Normally can be maintained between the user and the device.

**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>				
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
<b>(B) Limits for General Population/Uncontrol Exposures</b>				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	F/1500	30
1500-100000	--	--	1	30

**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  $G$ = gain of antenna in linear scale,  $P_i=3.1416$   $R$ = distance between observation point and center of the radiator in cm  $P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. 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

### Max power Result:

Operation Mode	Channel Number	Channel Frequency (MHz)	Peak Output Power(dBm)	Limit (dBm)	Verdict
802.11b	1	2412	14.15	30	PASS
	6	2437	13.72	30	PASS
	11	2462	13.64	30	PASS
802.11g	1	2412	13.29	30	PASS
	6	2437	12.78	30	PASS
	11	2462	12.11	30	PASS
802.11n (HT20)	1	2412	11.74	30	PASS
	6	2437	10.98	30	PASS
	11	2462	9.75	30	PASS
802.11n (HT40)	3	2422	9.42	30	PASS
	6	2437	8.36	30	PASS
	9	2452	9.47	30	PASS

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	14±1	15	31.623	5.07	3.214	0.020218	1
	6	14±1	15	31.623	5.07	3.214	0.020218	1
	11	14±1	15	31.623	5.07	3.214	0.020218	1
802.11g	1	13±1	14	25.119	5.07	3.214	0.016059	1
	6	13±1	14	25.119	5.07	3.214	0.016059	1
	11	12±1	13	19.953	5.07	3.214	0.012756	1
802.11n (HT20)	1	12±1	13	19.953	5.07	3.214	0.012756	1
	6	11±1	12	15.849	5.07	3.214	0.010133	1
	11	10±1	11	12.589	5.07	3.214	0.008049	1
802.11n (HT40)	3	9±1	10	10.000	5.07	3.214	0.006393	1
	6	8±1	9	7.943	5.07	3.214	0.005078	1
	9	9±1	10	10.000	5.07	3.214	0.006393	1

signature:



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Title: Manager

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