

## 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: 2ACWIWG43UX410

### EUT Specification

EUT	LED TV
<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.18GHz ~ 5.240GHz <input checked="" 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>	18.15 dBm for UNII Band I; 16.60 dBm for UNII Band III
<b>Antenna gain (Max)</b>	5.0 dBi ( for per antenna port Max) 8.01dBi 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:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$**

Where

$P_d$  = Power density in  $\text{mW}/\text{cm}^2$ ,  $P_{\text{out}}$  = 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,  $1\text{mW}/\text{cm}^2$ . 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**

For 5GHz Band:

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Level (dBm)			Limit (dBm)	Verdict
			Ant1	Ant2	Sum		
802.11a	CH36	5180	16.64	16.31		24	PASS
	CH40	5200	16.75	16.43		24	PASS
	CH48	5240	16.81	16.48		24	PASS
	CH149	5745	14.16	16.60		30	PASS
	CH157	5785	14.48	15.18		30	PASS
	CH165	5825	13.72	14.85		30	PASS
802.11n (VHT20)	CH36	5180	15.42	14.83	18.15	21.99	Pass
	CH40	5200	15.18	14.66	17.94	21.99	Pass
	CH48	5240	15.25	14.73	18.01	21.99	Pass
	CH149	5745	12.67	13.20	15.95	27.99	Pass
	CH157	5785	13.17	13.47	16.33	27.99	Pass
	CH165	5825	12.30	13.10	15.93	27.99	Pass
802.11n (VHT40)	CH38	5190	14.80	14.11	17.48	21.99	Pass
	CH46	5230	14.55	14.36	17.47	21.99	Pass
	CH151	5755	12.14	12.51	15.34	27.99	Pass
	CH159	5795	11.99	12.95	15.51	27.99	Pass
802.11ac (VHT20)	CH36	5180	15.30	14.77	18.05	21.99	Pass
	CH40	5200	15.16	14.61	17.90	21.99	Pass
	CH48	5240	15.41	14.77	18.11	21.99	Pass
	CH149	5745	12.61	12.96	15.80	27.99	Pass
	CH157	5785	12.73	13.19	15.98	27.99	Pass
	CH165	5825	11.93	13.21	15.63	27.99	Pass
802.11ac (VHT40)	CH38	5190	14.92	14.14	17.56	21.99	Pass
	CH46	5230	14.76	14.06	17.43	21.99	Pass
	CH151	5755	12.19	12.55	15.38	27.99	Pass
	CH159	5795	11.98	12.55	15.28	27.99	Pass
802.11ac (VHT80)	CH42	5210	14.18	13.42	16.83	21.99	Pass
	CH155	5775	11.48	11.99	14.75	27.99	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> )
802.11a	CH36	17±1	18	63.0957	5	3.162	0.0397	1
	CH40	17±1	18	63.0957	5	3.162	0.0397	1
	CH48	17±1	18	63.0957	5	3.162	0.0397	1
	CH149	14±1	15	31.6228	5	3.162	0.0199	1
	CH157	14±1	15	31.6228	5	3.162	0.0199	1
	CH165	14±1	15	31.6228	5	3.162	0.0199	1
802.11n (VHT20)	CH36	15±1	16	39.8107	5	3.162	0.0250	1
	CH40	15±1	16	39.8107	5	3.162	0.0250	1
	CH48	15±1	16	39.8107	5	3.162	0.0250	1
	CH149	13±1	14	25.1189	5	3.162	0.0158	1
	CH157	13±1	14	25.1189	5	3.162	0.0158	1
	CH165	12±1	13	19.9526	5	3.162	0.0126	1
802.11n (VHT40)	CH38	15±1	16	39.8107	5	3.162	0.0250	1
	CH46	15±1	16	39.8107	5	3.162	0.0250	1
	CH151	12±1	13	19.9526	5	3.162	0.0126	1
	CH159	12±1	13	19.9526	5	3.162	0.0126	1
802.11ac (VHT20)	CH36	15±1	16	39.8107	5	3.162	0.0250	1
	CH40	15±1	16	39.8107	5	3.162	0.0250	1
	CH48	15±1	16	39.8107	5	3.162	0.0250	1
	CH149	13±1	14	25.1189	5	3.162	0.0158	1
	CH157	13±1	14	25.1189	5	3.162	0.0158	1
	CH165	12±1	13	19.9526	5	3.162	0.0126	1
802.11ac (VHT40)	CH38	14±1	15	31.6228	5	3.162	0.0199	1
	CH46	14±1	15	31.6228	5	3.162	0.0199	1
	CH151	13±1	14	25.1189	5	3.162	0.0158	1
	CH159	13±1	14	25.1189	5	3.162	0.0158	1
802.11ac (VHT80)	CH42	14±1	15	31.6228	5	3.162	0.0199	1
	CH155	11±1	12	15.8489	5	3.162	0.0100	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> )
802.11a	CH36	16±1	17	50.1187	5	3.162	0.0315	1
	CH40	16±1	17	50.1187	5	3.162	0.0315	1
	CH48	16±1	17	50.1187	5	3.162	0.0315	1
	CH149	17±1	18	63.0957	5	3.162	0.0397	1
	CH157	15±1	16	39.8107	5	3.162	0.0250	1
	CH165	15±1	16	39.8107	5	3.162	0.0250	1
802.11n (VHT20)	CH36	15±1	16	39.8107	5	3.162	0.0250	1
	CH40	15±1	16	39.8107	5	3.162	0.0250	1
	CH48	15±1	16	39.8107	5	3.162	0.0250	1
	CH149	13±1	14	25.1189	5	3.162	0.0158	1
	CH157	13±1	14	25.1189	5	3.162	0.0158	1
	CH165	13±1	14	25.1189	5	3.162	0.0158	1
802.11n (VHT40)	CH38	14±1	15	31.6228	5	3.162	0.0199	1
	CH46	14±1	15	31.6228	5	3.162	0.0199	1
	CH151	13±1	14	25.1189	5	3.162	0.0158	1
	CH159	13±1	14	25.1189	5	3.162	0.0158	1
802.11ac (VHT20)	CH36	15±1	16	39.8107	5	3.162	0.0250	1
	CH40	15±1	16	39.8107	5	3.162	0.0250	1
	CH48	15±1	16	39.8107	5	3.162	0.0250	1
	CH149	13±1	14	25.1189	5	3.162	0.0158	1
	CH157	13±1	14	25.1189	5	3.162	0.0158	1
	CH165	13±1	14	25.1189	5	3.162	0.0158	1
802.11ac (VHT40)	CH38	14±1	15	31.6228	5	3.162	0.0199	1
	CH46	14±1	15	31.6228	5	3.162	0.0199	1
	CH151	13±1	14	25.1189	5	3.162	0.0158	1
	CH159	13±1	14	25.1189	5	3.162	0.0158	1
802.11ac (VHT80)	CH42	13±1	14	25.1189	5	3.162	0.0158	1
	CH155	12±1	13	19.9526	5	3.162	0.0126	1

MPE Result:

Operation Mode	Channel Number	Channel Frequency (MHz)	Power density at 20cm (mW/ cm <sup>2</sup> )			Power density Limits (mW/c m <sup>2</sup> )	Verdict
			Ant1	Ant2	Sum		
802.11a	CH36	5180	0.0397	0.0315		1	PASS
	CH40	5200	0.0397	0.0315		1	PASS
	CH48	5240	0.0397	0.0315		1	PASS
	CH149	5745	0.0199	0.0397		1	PASS
	CH157	5785	0.0199	0.0250		1	PASS
	CH165	5825	0.0199	0.0250		1	PASS
802.11n (VHT20)	CH36	5180	0.0250	0.0250	0.0500	1	Pass
	CH40	5200	0.0250	0.0250	0.0500	1	Pass
	CH48	5240	0.0250	0.0250	0.0500	1	Pass
	CH149	5745	0.0158	0.0158	0.0316	1	Pass
	CH157	5785	0.0158	0.0158	0.0316	1	Pass
	CH165	5825	0.0126	0.0158	0.0284	1	Pass
802.11n (VHT40)	CH38	5190	0.0250	0.0199	0.0449	1	Pass
	CH46	5230	0.0250	0.0199	0.0449	1	Pass
	CH151	5755	0.0126	0.0158	0.0284	1	Pass
	CH159	5795	0.0126	0.0158	0.0284	1	Pass
802.11ac (VHT20)	CH36	5180	0.0250	0.0250	0.0500	1	Pass
	CH40	5200	0.0250	0.0250	0.0500	1	Pass
	CH48	5240	0.0250	0.0250	0.0500	1	Pass
	CH149	5745	0.0158	0.0158	0.0316	1	Pass
	CH157	5785	0.0158	0.0158	0.0316	1	Pass
	CH165	5825	0.0126	0.0158	0.0284	1	Pass
802.11ac (VHT40)	CH38	5190	0.0199	0.0199	0.0398	1	Pass
	CH46	5230	0.0199	0.0199	0.0398	1	Pass
	CH151	5755	0.0158	0.0158	0.0316	1	Pass
	CH159	5795	0.0158	0.0158	0.0316	1	Pass
802.11ac (VHT80)	CH42	5210	0.0199	0.0158	0.0357	1	Pass
	CH155	5775	0.0100	0.0126	0.0226	1	Pass

Signature:



Print: Lisa Wang

Title: Manager

Date: 2018-06-05