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：**S8J-W1200**

EUT Specification

EUT	1200Mbps Wireless Dual Band 11AC Gigabit Router
Frequency band (Operating)	☒WLAN: 2.412GHz ~ 2.462GHz ☐WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☒WLAN: 5.745GHz ~ 5825GHz ☐Others
Device category	☐Portable (<20cm separation) ☒Mobile (>20cm separation) ☐Others ___
Exposure classification	☐Occupational/Controlled exposure (S = 5mW/cm2) ☒ General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	☐Single antenna ☒Multiple antennas ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Max. output power	For 2.4GHz Band: 802.11b: 16.67dBm(0.046451W) 802.11g: 15.71dBm (0.037239W) 802.11n(HT20): 14.57dBm(0.028642W) 802.11n(HT40): 14.72dBm (0.029648W) For 5GHz Band: 802.11a: 19.11dBm(0.08147W) 802.11ac(VHT20): 17.59dBm(0.057412W) 802.11ac(VHT40): 14.02dBm(0.025235W) 802.11ac(VHT80): 12.31dBm(0.017022W)
Antenna gain (Max)	5.0dBi (For Per Antenna Port Max) 8.0dBi for MIMO(Ant2+Ant3 Directional Gain)
Evaluation applied	☒MPE Evaluation ☐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^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**

Friis transmission formula: Pd=(Pout*G)\(4*pi*R2)

Where
Pd= Power density in mW/cm^2
Pout=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
Pd the limit of MPE, 1mW/cm2. 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.

Maximum Peak Output Power Result

For 2.4GHz Band:

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Level (dBm)			Limit (dBm)	Verdict
			Ant2	Ant3	Sum		
802.11b	1	2412	16.36	13.13	--	27.99	PASS
	6	2437	16.67	13.69	--	27.99	PASS
	11	2462	16.58	13.59	--	27.99	PASS
802.11g	1	2412	15.09	11.76	--	27.99	PASS
	6	2437	15.71	8.35	--	27.99	PASS
	11	2462	15.50	8.14	--	27.99	PASS
802.11n (HT20)	1	2412	11.86	9.85	13.98	27.99	PASS
	6	2437	12.54	10.18	14.53	27.99	PASS
	11	2462	12.67	10.06	14.57	27.99	PASS
802.11n (HT40)	3	2422	13.12	8.20	14.33	27.99	PASS
	6	2437	13.75	6.96	14.58	27.99	PASS
	9	2452	13.93	6.90	14.72	27.99	PASS

For 5GHz Band:

Operation Mode	Channel Number	Channel Frequency (MHz)	Measurement Level (dBm)			Limit (dBm)	Verdict
			Ant2	Ant3	Sum		
802.11a	149	5745	16.24	15.96	19.11	27.99	PASS
	157	5785	16.12	15.43	18.80	27.99	PASS
	165	5825	16.08	14.36	18.31	27.99	PASS
802.11ac (VHT20)	149	5745	15.32	13.69	17.59	27.99	PASS
	157	5785	15.46	12.34	17.18	27.99	PASS
	165	5825	15.22	11.04	16.62	27.99	PASS
802.11ac (VHT40)	151	5755	11.36	10.62	14.02	27.99	PASS
	159	5795	10.72	9.42	13.13	27.99	PASS
802.11ac (VHT80)	155	5785	9.27	9.33	12.31	27.99	PASS

Measurement Result

For 2.4GHz Band:

Antenna 2:

Channel Frequency (MHz)	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)
2412	16±1	17	50.12	5	3.162	0.031530	1
2437	17±1	18	63.10	5	3.162	0.039694	1
2462	17±1	18	63.10	5	3.162	0.039694	1
2412	15±1	16	39.81	5	3.162	0.025045	1
2437	16±1	17	50.12	5	3.162	0.031530	1
2462	16±1	17	50.12	5	3.162	0.031530	1
2412	12±1	13	19.95	5	3.162	0.012552	1
2437	13±1	14	25.12	5	3.162	0.015803	1
2462	13±1	14	25.12	5	3.162	0.015803	1
2422	13±1	14	25.12	5	3.162	0.015803	1
2437	14±1	15	31.62	5	3.162	0.019894	1
2452	14±1	15	31.62	5	3.162	0.019894	1

Antenna 3:

Channel Frequency (MHz)	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)
2412	13±1	14	25.12	5	3.162	0.015803	1
2437	14±1	15	31.62	5	3.162	0.019894	1
2462	14±1	15	31.62	5	3.162	0.019894	1
2412	12±1	13	19.95	5	3.162	0.012552	1
2437	8±1	9	7.94	5	3.162	0.004997	1
2462	8±1	9	7.94	5	3.162	0.004997	1
2412	10±1	11	12.59	5	3.162	0.007920	1
2437	10±1	11	12.59	5	3.162	0.007920	1
2462	10±1	11	12.59	5	3.162	0.007920	1
2422	8±1	9	7.94	5	3.162	0.004997	1
2437	7±1	8	6.31	5	3.162	0.003969	1
2452	7±1	8	6.31	5	3.162	0.003969	1

Operation Mode	Channel Number	Channel Frequency (MHz)	Power density at 20cm (mW/ cm^2)			Power density Limits (mW/cm^2)	Verdict
			Ant2	Ant3	Sum		
802.11b	1	2412	0.031530	0.015803	--	1	PASS
	6	2437	0.039694	0.019894	--	1	PASS
	11	2462	0.039694	0.019894	--	1	PASS
802.11g	1	2412	0.025045	0.012552	--	1	PASS
	6	2437	0.031530	0.004997	--	1	PASS
	11	2462	0.031530	0.004997	---	1	PASS
802.11n (HT20)	1	2412	0.012552	0.007920	0.020472	1	PASS
	6	2437	0.015803	0.007920	0.023723	1	PASS
	11	2462	0.015803	0.007920	0.023723	1	PASS
802.11n (HT40)	3	2422	0.015803	0.004997	0.020800	1	PASS
	6	2437	0.019894	0.003969	0.023863	1	PASS
	9	2452	0.019894	0.003969	0.023863	1	PASS

For 5GHz Band:

Antenna 2:

Channel Frequency (MHz)	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)
5745	16±1	17	50.12	5	3.162	0.031530	1
5785	16±1	17	50.12	5	3.162	0.031530	1
5825	16±1	17	50.12	5	3.162	0.031530	1
5745	15±1	16	39.81	5	3.162	0.025045	1
5785	15±1	16	39.81	5	3.162	0.025045	1
5825	15±1	16	39.81	5	3.162	0.025045	1
5755	11±1	12	15.85	5	3.162	0.009971	1
5795	11±1	12	15.85	5	3.162	0.009971	1
5785	9±1	10	10.00	5	3.162	0.006291	1

Antenna 3:

Channel Frequency (MHz)	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)
5745	16±1	17	50.12	5	3.162	0.031530	1
5785	15±1	16	39.81	5	3.162	0.025045	1
5825	14±1	15	31.62	5	3.162	0.019894	1
5745	14±1	15	31.62	5	3.162	0.019894	1
5785	12±1	13	19.95	5	3.162	0.012552	1
5825	11±1	12	15.85	5	3.162	0.009971	1
5755	11±1	12	15.85	5	3.162	0.009971	1
5795	9±1	10	10.00	5	3.162	0.006291	1
5785	9±1	10	10.00	5	3.162	0.006291	1

Operation Mode	Channel Number	Channel Frequency (MHz)	Power density at 20cm (mW/ cm^2)			Power density Limits (mW/cm^2)	Verdict
			Ant2	Ant3	Sum		
802.11a	149	5745	0.03153	0.03153	0.063060	1	PASS
	157	5785	0.03153	0.025045	0.056575	1	PASS
	165	5825	0.03153	0.019894	0.051424	1	PASS
802.11ac (VHT20)	149	5745	0.025045	0.019894	0.044939	1	PASS
	157	5785	0.025045	0.012552	0.037597	1	PASS
	165	5825	0.025045	0.009971	0.035016	1	PASS
802.11ac (VHT40)	151	5755	0.009971	0.009971	0.019942	1	PASS
	159	5795	0.009971	0.006291	0.016262	1	PASS
802.11ac (VHT80)	155	5785	0.006291	0.006291	0.012582	1	PASS

Signature

Date: 2016-03-08