

Test Result of RF Exposure Evaluation

According to the KDB-447498 D01 V06, FCC 47CFR § 2.1091 the following RF exposure evaluation shall to demonstrate RF exposure compliance.

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

Where

P_d = power density in mW/cm², 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.

BT2.1

Frequency (MHz)	Output Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
GFSK								
2402	-2.292	-3.2±1.0	-2.2	0.603	1	0.00015	1	Pass
2441	-2.170	-3.1±1.0	-2.1	0.617	1	0.00015	1	Pass
2480	-3.130	-4.1±1.0	-3.1	0.490	1	0.00012	1	Pass
Pi/4DQPSK								
2402	-3.352	-4.3±1.0	-3.3	0.468	1	0.00012	1	Pass
2441	-3.274	-4.2±1.0	-3.2	0.479	1	0.00012	1	Pass
2480	-4.590	-5.5±1.0	-4.5	0.355	1	0.00009	1	Pass
8-DPSK								
2402	-3.051	-4.0±1.0	-3.0	0.501	1	0.00013	1	Pass
2441	-3.033	-4.0±1.0	-3.0	0.501	1	0.00013	1	Pass
2480	-4.148	-5.1±1.0	-4.1	0.389	1	0.00010	1	Pass

WIFI 2.4GHz ANT A

Frequency (MHz)	Output Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm2)	Limit (mW/cm2)	Result
802.11b								
2412	10.23	9.7±1.0	10.7	11.749	3.3	0.00500	1	Pass
2437	10.65	9.7±1.0	10.7	11.749	3.3	0.00500	1	Pass
2462	10.54	9.7±1.0	10.7	11.749	3.3	0.00500	1	Pass
802.11g								
2412	9.64	8.8±1.0	9.8	9.550	3.3	0.00406	1	Pass
2437	9.79	8.8±1.0	9.8	9.550	3.3	0.00406	1	Pass
2462	9.32	8.8±1.0	9.8	9.550	3.3	0.00406	1	Pass
802.11n(20)								
2412	8.38	7.8±1.0	8.8	7.586	3.3	0.00323	1	Pass
2437	8.72	7.8±1.0	8.8	7.586	3.3	0.00323	1	Pass
2462	8.43	7.8±1.0	8.8	7.586	3.3	0.00323	1	Pass
802.11n(40)								
2422	7.58	6.9±1.0	7.9	6.166	3.3	0.00262	1	Pass
2437	7.82	6.9±1.0	7.9	6.166	3.3	0.00262	1	Pass
2452	7.65	6.9±1.0	7.9	6.166	3.3	0.00262	1	Pass

ANT B

Frequency (MHz)	Output Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm2)	Limit (mW/cm2)	Result
802.11b								
2412	10.37	10.0±1.0	11.0	12.589	3.3	0.00535	1	Pass
2437	10.85	10.0±1.0	11.0	12.589	3.3	0.00535	1	Pass
2462	10.71	10.0±1.0	11.0	12.589	3.3	0.00535	1	Pass
802.11g								
2412	9.54	8.5±1.0	9.5	8.913	3.3	0.00379	1	Pass
2437	9.84	8.5±1.0	9.5	8.913	3.3	0.00379	1	Pass
2462	9.61	8.5±1.0	9.5	8.913	3.3	0.00379	1	Pass
802.11n(20)								
2412	8.47	7.5±1.0	8.5	7.079	3.3	0.00301	1	Pass
2437	8.79	7.5±1.0	8.5	7.079	3.3	0.00301	1	Pass
2462	8.56	7.5±1.0	8.5	7.079	3.3	0.00301	1	Pass
802.11n(40)								
2422	7.48	6.7±1.0	7.7	5.888	3.3	0.00250	1	Pass
2437	7.92	6.7±1.0	7.7	5.888	3.3	0.00250	1	Pass
2452	7.75	6.7±1.0	7.7	5.888	3.3	0.00250	1	Pass

WIFI 5GHz ANT A

Frequency (MHz)	Output Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm2)	Limit (mW/cm2)	Result
802.11a								
5180	12.43	11.5±1.0	12.5	17.783	3.25	0.00748	1	Pass
5200	11.72	11.5±1.0	12.5	17.783	3.25	0.00748	1	Pass
5240	11.59	11.5±1.0	12.5	17.783	3.25	0.00748	1	Pass
5745	11.67	11.5±1.0	12.5	17.783	3.25	0.00748	1	Pass
5785	11.46	11.5±1.0	12.5	17.783	3.25	0.00748	1	Pass
5825	11.28	11.5±1.0	12.5	17.783	3.25	0.00748	1	Pass
802.11n(20)								
5180	11.36	10.4±1.0	11.4	13.804	3.25	0.00580	1	Pass
5200	11.29	10.4±1.0	11.4	13.804	3.25	0.00580	1	Pass
5240	11.13	10.4±1.0	11.4	13.804	3.25	0.00580	1	Pass
5745	11.28	10.4±1.0	11.4	13.804	3.25	0.00580	1	Pass
5785	10.97	10.4±1.0	11.4	13.804	3.25	0.00580	1	Pass
5825	10.65	10.4±1.0	11.4	13.804	3.25	0.00580	1	Pass
802.11n(40)								
5190	9.89	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass
5230	9.64	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass
5755	9.87	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass
5795	9.57	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass

WIFI 5GHz ANT B

Frequency (MHz)	Output Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Output power to antenna (mW)	Antenna Gain(dBi)	Power Density at R=20cm (mW/cm2)	Limit (mW/cm2)	Result
802.11a								
5180	12.18	11.2±1.0	12.2	16.596	3.25	0.00698	1	Pass
5200	11.54	11.2±1.0	12.2	16.596	3.25	0.00698	1	Pass
5240	11.63	11.2±1.0	12.2	16.596	3.25	0.00698	1	Pass
5745	11.65	11.2±1.0	12.2	16.596	3.25	0.00698	1	Pass
5785	11.39	11.2±1.0	12.2	16.596	3.25	0.00698	1	Pass
5825	11.47	11.2±1.0	12.2	16.596	3.25	0.00698	1	Pass
802.11n(20)								
5180	11.45	10.5±1.0	11.5	14.125	3.25	0.00594	1	Pass
5200	11.26	10.5±1.0	11.5	14.125	3.25	0.00594	1	Pass
5240	10.87	10.5±1.0	11.5	14.125	3.25	0.00594	1	Pass
5745	11.09	10.5±1.0	11.5	14.125	3.25	0.00594	1	Pass
5785	10.86	10.5±1.0	11.5	14.125	3.25	0.00594	1	Pass
5825	10.75	10.5±1.0	11.5	14.125	3.25	0.00594	1	Pass
802.11n(40)								
5190	9.84	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass
5230	9.53	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass
5755	9.72	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass
5795	9.85	8.9±1.0	9.9	9.772	3.25	0.00411	1	Pass

Simultaneous transmission MPE According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations; $\sum$ of MPE ratios ≤ 1.0

WIFI 2.4G ANT A+ANT B

Model	Frequency (MHz)	Power Density at R=20cm (mW/cm2) ANT A	Power Density at R=20cm (mW/cm2) ANT B	Power Density at R=20cm (mW/cm2) ANT A+ANT B	Limit (mW/cm2)	Result
802.11n20	2412	0.00323	0.00301	0.00624	1	Pass
	2437	0.00323	0.00301	0.00624	1	Pass
	2462	0.00323	0.00301	0.00624	1	Pass
802.11n40	2422	0.00262	0.00250	0.00513	1	Pass
	2437	0.00262	0.00250	0.00513	1	Pass
	2452	0.00262	0.00250	0.00513	1	Pass

WIFI 5G ANT A+ANT B

Model	Frequency (MHz)	Power Density at R=20cm (mW/cm2) ANT A	Power Density at R=20cm (mW/cm2) ANT B	Power Density at R=20cm (mW/cm2) ANT A+ANT B	Limit (mW/cm2)	Result
802.11n20	5180	0.00580	0.00594	0.01174	1	Pass
	5200	0.00580	0.00594	0.01174	1	Pass
	5240	0.00580	0.00594	0.01174	1	Pass
	5745	0.00580	0.00594	0.01174	1	Pass
	5785	0.00580	0.00594	0.01174	1	Pass
	5825	0.00580	0.00594	0.01174	1	Pass
802.11n40	5190	0.00411	0.00411	0.00822	1	Pass
	5230	0.00411	0.00411	0.00822	1	Pass
	5755	0.00411	0.00411	0.00822	1	Pass

Conclusion:

So no SAR is required.