

13 RF EXPOSURE

13.1 Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in the manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device with its physical nature to be used nearby, the distance between radiating structure and human is less than 20cm.

As per KDB 447498 D01 §4.3.1.1, The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm, and ≤ 5 m (not to exceed) are determined by:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

f (GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The operational distance is 20mm with the verification of KDB inquiry, WiFi SD Card with micro SD slot, that KDB941225 D07 can be referred and used to evaluate the most proper way how RF exposure concern shall be met.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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13.2 Measurement Result:

IEEE 802.11b/g/n_20MHz

802.11b

Cable loss = 0		Average Power Output (dBm)				
CH	Frequency (MHz)	Data Rate				Power (mW)
		1	2	5.5	11	
1	2412	9.90	9.92	9.89	9.83	9.82
6	2437	9.56	9.58	9.61	9.50	9.08
11	2462	9.46	9.49	9.49	9.35	8.89

802.11g

Cable loss = 0		Average Power Output(dBm)								
CH	Frequency (MHz)	Data Rate								Power (mW)
		6	9	12	18	24	36	48	54	
1	2412	8.66	8.43	8.40	8.37	7.84	7.80	7.80	7.76	7.35
6	2437	8.79	8.62	8.58	8.67	8.14	8.04	7.45	7.37	7.57
11	2462	8.70	8.61	8.58	8.51	7.42	7.28	7.35	7.09	7.41

802.11n_20M

Cable loss = 0		Average Power Output(dBm)								
CH	Frequency (MHz)	Data Rate								Power (mW)
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
1	2412	8.63	8.34	8.46	7.85	7.76	7.74	7.73	7.71	7.29
6	2437	8.75	8.56	8.20	7.69	7.61	7.50	7.45	7.37	7.50
11	2462	8.74	8.48	8.51	7.46	7.49	7.31	7.11	7.03	7.48

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Step 1: ($\leq 20\text{mm}$)

This is a portable device and the Max output power is (9.92mW) lower than the threshold given and derived as formula given above, where

Wifi 802.11b/g/n_20MHz:

Mode	Frequency	Power (avg in dBm)	Power (avg mw)	Distance (mm)	Threshold ($<20\text{mm}$)
802.11b	2412	9.92	9.81747943	20	0.762357463
802.11g	2437	8.79	7.56832895	20	0.590741891
802.11n	2437	8.75	7.498942093	20	0.585325937

Conclusion:

As the result of calculation result indicates, the RF exposure generating from given transmitter (transmitter employed digital modulation) can be excluded from SAR measurement, (<0.3), and therefore is deemed compliant with RF exposure as per KDB 447498 D01, FCC.

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