

Portable device

According to §15.247(e)(i) and §1.1307(b)(1), 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 level in excess of the Commission's guidelines.

According to KDB447498 D01 General RF Exposure Guidance V05

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

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

$f(\text{GHz})$ is the RF channel transmit frequency in GHz;

$f(\text{GHz})$ is the RF channel transmit frequency in GHz;

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

The result is rounded to one decimal place for comparison;

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

We use 5mm as separation distance to calculate.

Maximum measured transmitter power:

BT:

Modulation	Channel Freq. (GHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
GFSK	2.402	1.36	1.37	2±1	3.00	2.00	0.61847	3.00
	2.441	2.28	1.69	2±1	3.00	2.00	0.62347	3.00
	2.480	2.72	1.87	2±1	3.00	2.00	0.62843	3.00
$\pi/4$ -DQPSK	2.402	-3.17	0.48	-2.5±1	-1.50	0.71	0.21944	3.00
	2.441	-2.16	0.61	-2.5±1	-1.50	0.71	0.22121	3.00
	2.480	-1.57	0.70	-2.5±1	-1.50	0.71	0.22297	3.00
8DPSK	2.402	-3	0.50	-2±1	-1.00	0.79	0.24622	3.00
	2.441	-2.02	0.63	-2±1	-1.00	0.79	0.24821	3.00
	2.480	-1.38	0.73	-2±1	-1.00	0.79	0.25018	3.00

BLE:

Modulation	Channel Freq. (GHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
GFSK	2.402	0.19	1.04	1±1	2.00	1.58	0.49127	3.00
	2.44	0.73	1.18	1±1	2.00	1.58	0.49514	3.00
	2.480	1.29	1.35	1±1	2.00	1.58	0.49918	3.00

WIFI ANT A (2.4G)

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
802.11b	2412	9.6	9.12	8.6±1	9.60	9.12	2.83282	3.00
	2437	9.5	8.91	8.6±1	9.60	9.12	2.84746	3.00
	2462	9.5	8.91	8.6±1	9.60	9.12	2.86203	3.00
802.11g	2412	9.1	8.13	8.5±1	9.50	8.91	2.76834	3.00
	2437	9	7.94	8.5±1	9.50	8.91	2.78264	3.00
	2462	9	7.94	8.5±1	9.50	8.91	2.79688	3.00
802.11n HT20	2412	9	7.94	8.5±1	9.50	8.91	2.76834	3.00
	2437	9.1	8.13	8.5±1	9.50	8.91	2.78264	3.00
	2462	8.9	7.76	8.5±1	9.50	8.91	2.79688	3.00
802.11n HT40	2422	8.9	7.76	8.5±1	9.50	8.91	2.77407	3.00
	2437	8.8	7.59	8.5±1	9.50	8.91	2.78264	3.00
	2452	9	7.94	8.5±1	9.50	8.91	2.79120	3.00

WIFI ANT B (2.4G)

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
802.11b	2412	9.3	8.51	8.5±1	9.50	8.91	2.76834	3.00
	2437	9.4	8.71	8.5±1	9.50	8.91	2.78264	3.00
	2462	9.3	8.51	8.5±1	9.50	8.91	2.79688	3.00
802.11g	2412	9	7.94	8.5±1	9.50	8.91	2.76834	3.00
	2437	9.1	8.13	8.5±1	9.50	8.91	2.78264	3.00
	2462	8.9	7.76	8.5±1	9.50	8.91	2.79688	3.00
802.11n HT20	2412	8.9	7.76	8.5±1	9.50	8.91	2.76834	3.00
	2437	8.9	7.76	8.5±1	9.50	8.91	2.78264	3.00
	2462	8.6	7.24	8.5±1	9.50	8.91	2.79688	3.00
802.11n HT40	2422	8.8	7.59	8.5±1	9.50	8.91	2.77407	3.00
	2437	8.7	7.41	8.5±1	9.50	8.91	2.78264	3.00
	2452	8.8	7.59	8.5±1	9.50	8.91	2.79120	3.00

Note: The wireless module is 1x1 Wi-Fi support 802.11b / g / n / ac; does not support MIMO

WIFI ANT A (5G Band I)

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
802.11a	5180	7.8	6.03	7.0±1	8.00	6.31	2.87207	3.00
	5200	7.7	5.89	7.0±1	8.00	6.31	2.87761	3.00
	5240	7.5	5.62	7.0±1	8.00	6.31	2.88865	3.00
802.11n HT20	5180	6.9	4.90	7.0±1	8.00	6.31	2.87207	3.00
	5200	6.6	4.57	7.0±1	8.00	6.31	2.87761	3.00
	5240	6.8	4.79	7.0±1	8.00	6.31	2.88865	3.00
802.11AC HT20	5180	6.7	4.68	7.0±1	8.00	6.31	2.87207	3.00
	5200	6.5	4.47	7.0±1	8.00	6.31	2.87761	3.00
	5240	6.3	4.27	7.0±1	8.00	6.31	2.88865	3.00
802.11n HT40	5190	6.5	4.47	7.0±1	8.00	6.31	2.87484	3.00
	5230	6.3	4.27	7.0±1	8.00	6.31	2.88590	3.00
802.11AC HT40	5190	7.2	5.25	7.0±1	8.00	6.31	2.87484	3.00
	5230	7.4	5.50	7.0±1	8.00	6.31	2.88590	3.00
802.11AC	5210	7.2	5.25	7.0±1	8.00	6.31	2.88037	3.00

WIFI ANT B (5G Band I)

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
802.11a	5180	7.3	5.37	7.0±1	8.00	6.31	2.87207	3.00
	5200	7.5	5.62	7.0±1	8.00	6.31	2.87761	3.00
	5240	7.6	5.75	7.0±1	8.00	6.31	2.88865	3.00
802.11n HT20	5180	6.5	4.47	7.0±1	8.00	6.31	2.87207	3.00
	5200	6.6	4.57	7.0±1	8.00	6.31	2.87761	3.00
	5240	6.5	4.47	7.0±1	8.00	6.31	2.88865	3.00
802.11AC HT20	5180	6.3	4.27	7.0±1	8.00	6.31	2.87207	3.00
	5200	6.3	4.27	7.0±1	8.00	6.31	2.87761	3.00
	5240	6.4	4.37	7.0±1	8.00	6.31	2.88865	3.00
802.11n HT40	5190	6.2	4.17	7.0±1	8.00	6.31	2.87484	3.00
	5230	6.1	4.07	7.0±1	8.00	6.31	2.88590	3.00
802.11AC HT40	5190	7.2	5.25	7.0±1	8.00	6.31	2.87484	3.00
	5230	7.2	5.25	7.0±1	8.00	6.31	2.88590	3.00
802.11AC	5210	7.3	5.37	7.0±1	8.00	6.31	2.88037	3.00

Note: The wireless module is 1x1 Wi-Fi support 802.11b / g / n / ac; does not support MIMO

WIFI ANT A (5G Band IV)

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
802.11a	5745	7.6	5.75	7.0±1	8.00	6.31	2.87207	3.00
	5785	7.5	5.62	7.0±1	8.00	6.31	2.87761	3.00
	5825	7.5	5.62	7.0±1	8.00	6.31	2.88865	3.00
802.11n HT20	5745	6.8	4.79	6.0±1	7.00	5.01	2.28137	3.00
	5785	6.7	4.68	6.0±1	7.00	5.01	2.28577	3.00
	5825	6.9	4.90	6.0±1	7.00	5.01	2.29454	3.00
802.11AC HT20	5745	6.6	4.57	6.0±1	7.00	5.01	2.28137	3.00
	5785	6.7	4.68	6.0±1	7.00	5.01	2.28577	3.00
	5825	6.7	4.68	6.0±1	7.00	5.01	2.29454	3.00
802.11n HT40	5755	6.9	4.90	6.0±1	7.00	5.01	2.28357	3.00
	5795	6.8	4.79	6.0±1	7.00	5.01	2.29235	3.00
802.11AC HT40	5755	6.6	4.57	6.0±1	7.00	5.01	2.28357	3.00
	5795	6.7	4.68	6.0±1	7.00	5.01	2.29235	3.00
802.11AC	5775	6.4	4.37	6.0±1	7.00	5.01	2.28796	3.00

WIFI ANT B (5G Band IV)

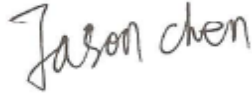
Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Conducted power (mW)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Result calculation	1g SAR
802.11a	5745	7.3	5.37	7.0±1	8.00	6.31	2.87207	3.00
	5785	7.2	5.25	7.0±1	8.00	6.31	2.87761	3.00
	5825	7.2	5.25	7.0±1	8.00	6.31	2.88865	3.00
802.11n HT20	5745	6.7	4.68	6.0±1	7.00	5.01	2.28137	3.00
	5785	6.6	4.57	6.0±1	7.00	5.01	2.28577	3.00
	5825	6.6	4.57	6.0±1	7.00	5.01	2.29454	3.00
802.11AC HT20	5745	6.5	4.47	6.0±1	7.00	5.01	2.28137	3.00
	5785	6.6	4.57	6.0±1	7.00	5.01	2.28577	3.00
	5825	6.6	4.57	6.0±1	7.00	5.01	2.29454	3.00
802.11n HT40	5755	6.8	4.79	6.0±1	7.00	5.01	2.28357	3.00
	5795	6.7	4.68	6.0±1	7.00	5.01	2.29235	3.00
802.11AC HT40	5755	6.5	4.47	6.0±1	7.00	5.01	2.28357	3.00
	5795	6.6	4.57	6.0±1	7.00	5.01	2.29235	3.00
802.11AC	5775	6.3	4.27	6.0±1	7.00	5.01	2.28796	3.00

Note: The wireless module is 1x1 Wi-Fi support 802.11b / g / n / ac; does not support MIMO

Note: The wireless module is 1x1 Wi-Fi support 802.11b / g / n / ac; does not support MIMO, At the same time, A antenna BT and WIFI, B antenna only supports WIFI, but only one antenna is transmitter, A antenna transmitter B antenna only supports receiving, B antenna transmitter A antenna only supports receiving.

Conclusion:

For the max result : $2.88865 \leq 3.0$ for 1-g SAR, No SAR is required.



Signature:

Date: 2017-8-21

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