

RF EXPOSURE EVALUATION METHOD

FCC ID:2ABEPIM1003

SAR Test Exclusion Thresholds for 100 MHz - 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

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:

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

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.

Maximum measured transmitter power.

WIFI:

TX 802.11b Mode				
Test Channel	Frequency	Maximum Conducted Output Power(PK)	Maximum Conducted Output Power(AV)	LIMIT
	(MHz)	(dBm)	(dBm)	(dBm)
CH01	2412	12.87	9.47	30
CH06	2437	12.89	9.58	30
CH11	2462	12.65	9.43	30
TX 802.11g Mode				
CH01	2412	11.58	8.45	30
CH06	2437	11.75	8.62	30
CH11	2462	11.69	8.56	30
TX 802.11n-HT20 Mode				
CH01	2412	10.58	8.35	30
CH06	2437	10.66	8.43	30
CH11	2462	10.25	8.02	30
TX 802.11n-HT40 Mode				
CH03	2422	9.77	7.35	30
CH06	2437	9.65	7.23	30
CH09	2452	9.37	6.95	30

BT 3.0

1Mbps			
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH00	2402	3.68	30
CH39	2441	4.11	30
CH78	2480	3.84	30
2Mbps			
CH00	2402	5.08	20.96
CH39	2441	5.17	20.96
CH78	2480	4.57	20.96
3Mbps			
CH00	2402	5.07	20.96
CH39	2441	5.38	20.96
CH78	2480	4.68	20.96

BT 4.0

Test Channel	Frequency	Maximum Conducted Output Power(PK)	Maximum Conducted Output Power(PK)
	(MHz)	(dBm)	mW
CH00	2402	-2.34	0.160
CH19	2440	-2.35	0.223
CH39	2480	-2.56	0.308

Remark: The best case gain of the antenna is 1.0dBi.

1.0 dBi logarithmic terms convert to numeric result is nearly 1.26

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:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$$

WIFI:

Test Channel	Range	tune up max power (dBm)	[(max. power of channel, including tune-up tolerance, mW)	(min. test separation distance,mm)]	[f(GHz)]	Result	Limit
TX 802.11b Mode							
CH01	7.6~9.6	9.6	9.120	5	2.412	2.83	3
CH06	7.6~9.6	9.6	9.120	5	2.437	2.85	3
CH11	7.6~9.6	9.6	9.120	5	2.462	2.86	3
TX 802.11g Mode							
CH01	7.0~9.0	9.0	7.943	5	2.412	2.47	3
CH06	7.0~9.0	9.0	7.943	5	2.437	2.48	3
CH11	7.0~9.0	9.0	7.943	5	2.462	2.49	3
TX 802.11n-HT20 Mode							
CH01	7.0~9.0	9.0	7.943	5	2.412	2.47	3
CH06	7.0~9.0	9.0	7.943	5	2.437	2.48	3
CH11	7.0~9.0	9.0	7.943	5	2.462	2.49	3
TX 802.11n-HT40 Mode							
CH03	6.0~8.0	8.0	6.310	5	2.422	1.96	3
CH06	6.0~8.0	8.0	6.310	5	2.437	1.97	3
CH09	6.0~8.0	8.0	6.310	5	2.452	1.98	3

BT 3.0

Test Channel	Range	tune up max power (dBm)	[(max. power of channel, including tune-up tolerance, mW)	(min. test separation distance,mm)]	[f(GHz)]	Result	Limit
1Mbps							
CH00	2.5~4.5	4.5	2.818	5	2.402	0.874	3
CH39	2.5~4.5	4.5	2.818	5	2.441	0.881	3
CH78	2.5~4.5	4.5	2.818	5	2.480	0.888	3
2Mbps							
CH00	4~6	6	3.981	5	2.402	1.234	3
CH39	4~6	6	3.981	5	2.441	1.244	3
CH78	4~6	6	3.981	5	2.480	1.254	3
3Mbps							
CH00	4~6	6	3.981	5	2.402	1.234	3
CH39	4~6	6	3.981	5	2.441	1.244	3
CH78	4~6	6	3.981	5	2.480	1.254	3

BT 4.0

Test Channel	Range	tune up max power (dBm)	[(max. power of channel, including tune-up tolerance, mW)	(min. test separation distance,mm)]	[f(GHz)]	Result	Limit
CH00	-4~-2	-2	0.631	5	2.402	0.196	3
CH39	-4~-2	-2	0.631	5	2.441	0.197	3
CH78	-4~-2	-2	0.631	5	2.480	0.199	3

The test Result is less than 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR.

Conclusion: No SAR is required.