

**RF EXPOSURE EVALUATION METHOD****FCC ID: S4R-TBWP****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 Peak Conducted Output Power (PK)	Maximum Peak Conducted Output Power (AV)	Maximum Peak Conducted Output Power (AV)
	(MHz)	(dBm)	(dBm)	mW
CH01	2412	12.36	9.24	8.395
CH06	2437	12.44	9.46	8.831
CH11	2462	12.71	9.51	8.933
TX 802.11g Mode				
CH01	2412	11.72	8.16	6.546
CH06	2437	11.81	8.34	6.823
CH11	2462	12.08	8.62	7.278
TX 802.11n(20) Mode				
CH01	2412	11.04	7.11	5.140
CH06	2437	11.25	7.43	5.534
CH11	2462	11.46	7.66	5.834
TX 802.11n(40) Mode				
CH03	2422	10.96	7.03	5.047
CH06	2437	11.03	7.22	5.272
CH09	2452	11.25	7.41	5.508



BT 3.0

1Mbps			
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)
CH00	2402	6.47	4.436
CH39	2441	7.57	5.715
CH78	2480	7.18	5.224
2Mbps			
CH00	2402	5.42	3.483
CH39	2441	6.24	4.207
CH78	2480	5.73	3.741
3Mbps			
CH00	2402	5.67	3.690
CH39	2441	6.64	4.613
CH78	2480	6.14	4.111

BT 4.0

Test Channel	Frequency	Maximum Conducted Output Power(PK)	Maximum Conducted Output Power(PK)
	(MHz)	(dBm)	(mW)
CH01	2402	-4.14	0.385
CH20	2440	-4.21	0.379
CH39	2480	-4.17	0.383

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	6~8	8	6.310	5	2.402	1.956	3
CH39	6~8	8	6.310	5	2.441	1.972	3
CH78	6~8	8	6.310	5	2.480	1.987	3
2Mbps							
CH00	5~7	7	5.012	5	2.402	1.554	3
CH39	5~7	7	5.012	5	2.441	1.566	3
CH78	5~7	7	5.012	5	2.480	1.579	3
3Mbps							
CH00	5~7	7	5.012	5	2.402	1.554	3
CH39	5~7	7	5.012	5	2.441	1.566	3
CH78	5~7	7	5.012	5	2.480	1.579	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	-5~-3	-3	0.501	5	2.402	0.155	3
CH39	-5~-3	-3	0.501	5	2.441	0.157	3
CH78	-5~-3	-3	0.501	5	2.480	0.158	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.