

RF Exposure Evaluation

According to WS-1 General RF Exposure Guidance v06 and part 2.1093, Unless specifically required by the *published RF exposure KDB procedures*, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding *SAR Test Exclusion Threshold* condition(s), listed below, is (are) satisfied.

For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}] \leq 3.0$ 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

Here,

For EDR

Test Mode	Frequency	Max Power(dBm)	Tune UP tolerance (dBm)	Max Tune UP power (dBm)	Max Tune UP power (mW)	Min. distance (mm)	Calc. thresholds	limit
GFSK	2441	1.32	1 ± 1	2	1.58	5	0.49524	3.0
$\pi/4$ -DQPSK	2441	6.369	6 ± 1	7	5.01	5	1.56608	3.0
8-DPSK	2441	6.466	6 ± 1	7	5.01	5	1.56608	3.0

For 5.2G WIFI

Test Mode	Frequency	Max Power(dBm)	Tune UP tolerance (dBm)	Max Tune UP power (dBm)	Max Tune UP power (mW)	Min. distance (mm)	Calc. thresholds	limit
802.11a	5240	2.433	2 ± 1	3	2.00	5	0.91347	3.0
802.11n20	5240	2.265	2 ± 1	3	2.00	5	0.91347	3.0
802.11n40	5230	2.36	2 ± 1	3	2.00	5	0.91260	3.0
802.11ac20	5240	2.178	2 ± 1	3	2.00	5	0.91347	3.0
802.11ac40	5230	2.445	2 ± 1	3	2.00	5	0.91260	3.0
802.11ax20	5240	2.239	2 ± 1	3	2.00	5	0.91347	3.0
802.11ax40	5230	2.152	2 ± 1	3	2.00	5	0.91260	3.0

For 5.8G WIFI

Test Mode	Frequency	Max Power(dBm)	Tune UP tolerance (dBm)	Max Tune UP power (dBm)	Max Tune UP power (mW)	Min. distance (mm)	Calc. thresholds	limit
802.11a	5825	3.764	3 ± 1	4	2.51	5	1.21249	3.0
802.11n20	5825	3.637	3 ± 1	4	2.51	5	1.21249	3.0
802.11n40	5795	3.353	3 ± 1	4	2.51	5	1.20936	3.0
802.11ac20	5825	3.66	3 ± 1	4	2.51	5	1.21249	3.0
802.11ac40	5795	3.361	3 ± 1	4	2.51	5	1.20936	3.0
802.11ax20	5825	2.906	2 ± 1	3	2.00	5	0.96311	3.0
802.11ax40	5795	2.767	2 ± 1	3	2.00	5	0.96063	3.0

Note: Only one single wireless transmission mode can be used at the same time

.The same antenna cannot transmit at the same time, but ANT1 and ANT2 can transmit at the same time, so the worst simultaneous transmitting consideration:

The ratio = $\text{ANT1MPE}(\text{MAX}) / \text{limit} + \text{ANT2MPE}(\text{MAX}) / \text{limit}$

$$= 1.56608 / 3 + 1.21249 / 3$$

$$= 0.92619 < 1.0$$

Conclusion:

1. $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] * [\sqrt{f}(\text{GHz})] < 3.0$.

SAR Test Exclusion Thresholds is 3.0 for separation distance 5mm. Therefore, SAR test is not required