

RF EXPOSURE TEST FCC ID:L73-92801 IC:7377A-92801

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.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	
MHz	30	35	40	45	50	mm
150	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

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,¹⁶ where

☐ $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz

☐ Power and distance are rounded to the nearest mW and mm before calculation¹⁷

☐ 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.

According to RSS-102 Issue 5 Section 2.5.1: SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

For FCC:

Maximum Rated Peak RF power for OP: 2.8dBm.

modulation	Maximum Rated Peak RF power (dBm)	Maximum Rated Peak RF power (mW)	Exclusion Thresholds Results	Limit
FHSS	2.8	1.91	1.236	3.0

Conclusion: No SAR is required.

Note: Exclusion Thresholds Results=[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√ f(GHz)]

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

☐ Distance=5mm

Maximum measured transmitter power.

frequency range (MHz)	Maximum Peak Conducted Output Power (dBm)	Maximum Conducted Output Power (mW)	Exclusion Thresholds Results	Limit
2403	-2.49	0.56	0.174	3.0
2442	2.65	1.84	0.574	3.0
2478	1.42	1.39	0.436	3.0
Conclusion: No SAR is required.				
Note: Exclusion Thresholds Results= $[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}]$ $f_{\text{(GHz)}}$ is the RF channel transmit frequency in GHz <input type="checkbox"/> Distance=5mm				

For IC:

Maximum Rated Peak RF power for OP: 2.8dBm.

modulation	Maximum Rated Peak RF power (dBm)	Maximum Rated Peak RF power (mW)	Limit (mW)
FHSS	2.8	1.91	4.0
Conclusion: No SAR is required.			

modulation	EIRP (dBm)	EIRP (mW)	Limit (mW)
FHSS	5.94	3.93	4.0
Note: The antenna gain max is 3.14dB, EIRP= Rated Peak RF power + antenna gain Conclusion: No SAR is required.			

Maximum measured transmitter power.

frequency range (MHz)	Maximum Peak Conducted Output Power (dBm)	Maximum Conducted Output Power (mW)	Limit (mW)
2403	-2.49	0.56	4.0
2442	2.65	1.84	4.0
2478	1.42	1.39	4.0
Conclusion: No SAR is required.			