

RF exposure evaluation

§ 2.1093 Radiofrequency radiation exposure evaluation: Portable Devices.

According to § 15.247(i) and § 1.1307b(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 guidance.

The 1-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, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- When the minimum test separation distance is < 5 mm, a distance of 5 mm according is applied to determine SAR test exclusion.
- The result is rounded to one decimal place for comparison

For BDR+EDR:

Channel	Frequency (GHz)	Tune up Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)
CH 00	2.402	4.5±1	5.50	3.55
CH 39	2.441	5.0±1	6.00	3.98
CH 78	2.480	5.0±1	6.00	3.98

Channel	Frequency (GHz)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH 39	2.441	6.00	3.98	5	1.24	3.0

For BLE:

Channel	Frequency (GHz)	Tune up Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)
CH 00	2.402	5.5±1	6.5	4.47
CH 19	2.440	5.5±1	6.5	4.47
CH 39	2.480	5.5±1	6.5	4.47

Channel	Frequency (GHz)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH 19	2.440	6.5	4.47	5	1.40	3.0

For 5G WIFI Band 1 (5150 - 5250 MHz):

Mode	channel	Frequency (GHz)	Tune up Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)
20MHz	CH36	5.18	7.0±1	8.00	6.31
	CH40	5.2	7.0±1	8.00	6.31
	CH48	5.24	7.0±1	8.00	6.31
40 MHz	CH38	5.19	7.0±1	8.00	6.31
	CH46	5.23	7.0±1	8.00	6.31

Channel	Frequency (GHz)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH 48	5.24	8.00	6.31	5	2.89	3.0

For 5G WIFI Band 2A (5250 - 5350 MHz)

Mode	channel	Frequency (GHz)	Tune up Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)
20MHz	CH52	5.26	7.0±1	8.00	6.31
	CH60	5.3	7.0±1	8.00	6.31
	CH64	5.32	7.0±1	8.00	6.31
40 MHz	CH54	5.27	7.0±1	8.00	6.31
	CH62	5.31	7.0±1	8.00	6.31

Channel	Frequency (GHz)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH64	5.32	8.00	6.31	5	2.91	3.0

For 5G WIFI Band 2C (5470 - 5750 MHz)

Mode	channel	Frequency (GHz)	Tune up Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)
20MHz	CH100	5.5	6.9±1	7.90	6.17
	CH120	5.6	6.9±1	7.90	6.17
	CH144	5.72	6.9±1	7.90	6.17
40 MHz	CH102	5.51	6.9±1	7.90	6.17
	CH118	5.59	6.9±1	7.90	6.17
	CH142	5.71	6.9±1	7.90	6.17

Channel	Frequency (GHz)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH144	5.72	7.90	6.17	5	2.95	3.0

For 5G WIFI Band 3 (5725 - 5850 MHz)

Mode	channel	Frequency (GHz)	Tune up Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)
20MHz	CH149	5.745	6.5±1	7.50	5.62
	CH157	5.785	6.5±1	7.50	5.62
	CH165	5.825	6.5±1	7.50	5.62
40 MHz	CH151	5.755	6.5±1	7.50	5.62
	CH159	5.795	6.5±1	7.50	5.62

Channel	Frequency (GHz)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
CH165	5.825	7.50	5.62	5	2.71	3.0