RF Exposure Evaluation

According to *KDB 447498 D01 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 ≤ 5 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity 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
The result is rounded to one decimal place for comparison

Here,

BT(BR+EDR)								
Mode	Frequency (MHz)	Max Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Max Power (mW)	Min. Distance (mm)	Calc. thresholds	limit
GFSK	2402	-1.57	-2±1.0	-1.0	0.794	5.00	0.246	3.0
	2441	-1.64	-2±1.0	-1.0	0.794	5.00	0.248	3.0
	2480	-1.78	-2±1.0	-1.0	0.794	5.00	0.250	3.0
Π/4-DQPSK	2402	-2.74	-3±1.0	-2.0	0.631	5.00	0.196	3.0
	2441	-2.79	-3±1.0	-2.0	0.631	5.00	0.197	3.0
	2480	-1.03	-1±1.0	0.0	1.000	5.00	0.315	3.0
8DPSK	2402	-2.18	-3±1.0	-2.0	0.631	5.00	0.196	3.0
	2441	-2.21	-3±1.0	-2.0	0.631	5.00	0.197	3.0
	2480	-2.46	-3±1.0	-2.0	0.631	5.00	0.199	3.0
BT(BLE)								
GFSK	2402	-2.84	-3±1.0	-2.0	0.631	5.00	0.196	3.0
	2440	-3.02	-3±1.0	-2.0	0.631	5.00	0.197	3.0
	2480	-3.64	-4±1.0	-3.0	0.501	5.00	0.158	3.0

WIFI 2.4G								
Mode	Frequency (MHz)	Max Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Max Power (mW)	Min. Distance (mm)	Calc. thresholds	limit
802.11b	2412	7.28	7±1.0	8.0	6.310	5.00	1.960	3.0
	2437	7.78	7±1.0	8.0	6.310	5.00	1.970	3.0
	2462	6.61	6±1.0	7.0	5.012	5.00	1.573	3.0
802.11g	2412	7.33	7±1.0	8.0	6.310	5.00	1.960	3.0
	2437	7.93	7±1.0	8.0	6.310	5.00	1.970	3.0
	2462	7.59	7±1.0	8.0	6.310	5.00	1.980	3.0
802.11n (HT20)	2412	8.28	8±1.0	9.0	7.943	5.00	2.467	3.0
	2437	7.91	7±1.0	8.0	6.310	5.00	1.970	3.0
	2462	7.38	7±1.0	8.0	6.310	5.00	1.980	3.0
802.11ax (HT20)	2412	7.83	7±1.0	8.0	6.310	5.00	1.960	3.0
	2437	8.25	8±1.0	9.0	7.943	5.00	2.480	3.0
	2462	7.35	7±1.0	8.0	6.310	5.00	1.980	3.0
802.11n (HT40)	2422	7.99	7±1.0	8.0	6.310	5.00	1.960	3.0
	2437	8.24	8±1.0	9.0	7.943	5.00	2.480	3.0
	2452	7.71	7±1.0	8.0	6.310	5.00	1.976	3.0
802.11ax (HT40)	2422	8.14	8±1.0	9.0	7.943	5.00	2.467	3.0
	2437	8.35	8±1.0	9.0	7.943	5.00	2.480	3.0
	2452	8.85	8±1.0	9.0	7.943	5.00	2.488	3.0

WIFI 5.2G								
Mode	Frequency (MHz)	Max Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Max Power (mW)	Min. Distance (mm)	Calc. thresholds	limit
802.11a	5180	5.63	5±1.0	6.0	3.981	5.00	1.812	3.0
	5200	5.22	5±1.0	6.0	3.981	5.00	1.816	3.0
	5240	4.59	4±1.0	5.0	3.162	5.00	1.448	3.0
802.11n (HT20)	5180	5.96	5±1.0	6.0	3.981	5.00	1.812	3.0
	5200	5.52	5±1.0	6.0	3.981	5.00	1.816	3.0
	5240	6.92	6±1.0	7.0	5.012	5.00	2.295	3.0
802.11ac (HT20)	5180	5.80	5±1.0	6.0	3.981	5.00	1.812	3.0
	5200	5.49	5±1.0	6.0	3.981	5.00	1.816	3.0
	5240	6.16	6±1.0	7.0	5.012	5.00	2.295	3.0
802.11ax (HT20)	5180	7.14	7±1.0	8.0	6.310	5.00	2.872	3.0
	5200	6.82	6±1.0	7.0	5.012	5.00	2.286	3.0
	5240	6.16	6±1.0	7.0	5.012	5.00	2.295	3.0
802.11n(HT40	5190	6.51	6±1.0	7.0	5.012	5.00	2.284	3.0
	5230	6.00	6±1.0	7.0	5.012	5.00	2.292	3.0
802.11ac (HT40)	5190	6.46	6±1.0	7.0	5.012	5.00	2.284	3.0
	5230	5.77	6±1.0	7.0	5.012	5.00	2.292	3.0
802.11ax (HT40)	5190	6.43	6±1.0	7.0	5.012	5.00	2.284	3.0
	5230	5.84	5±1.0	6.0	3.981	5.00	1.821	3.0

WIFI 5.8G								
Mode	Frequency (MHz)	Max Power (dBm)	Target power W/ tolerance (dBm)	Max tune up power tolerance (dBm)	Max Power (mW)	Min. Distance (mm)	Calc. thresholds	limit
802.11a	5745	4.16	4±1.0	5.0	3.162	5.00	1.516	3.0
	5785	3.85	3±1.0	4.0	2.512	5.00	1.208	3.0
	5825	3.37	3±1.0	4.0	2.512	5.00	1.212	3.0
802.11n (HT20)	5745	3.87	3±1.0	4.0	2.512	5.00	1.204	3.0
	5785	4.09	4±1.0	5.0	3.162	5.00	1.521	3.0
	5825	3.61	3±1.0	4.0	2.512	5.00	1.212	3.0
802.11ac (HT20)	5745	3.87	3±1.0	4.0	2.512	5.00	1.204	3.0
	5785	4.06	4±1.0	5.0	3.162	5.00	1.521	3.0
	5825	3.63	3±1.0	4.0	2.512	5.00	1.212	3.0
802.11ax (HT20)	5745	3.89	3±1.0	4.0	2.512	5.00	1.204	3.0
	5785	4.53	4±1.0	5.0	3.162	5.00	1.521	3.0
	5825	3.64	3±1.0	4.0	2.512	5.00	1.212	3.0
802.11n(HT40	5755	3.11	3±1.0	4.0	2.512	5.00	1.205	3.0
	5795	3.24	3±1.0	4.0	2.512	5.00	1.209	3.0
802.11ac (HT40)	5755	3.21	3±1.0	4.0	2.512	5.00	1.205	3.0
	5795	3.30	3±1.0	4.0	2.512	5.00	1.209	3.0
802.11ax (HT40)	5755	3.23	3±1.0	4.0	2.512	5.00	1.205	3.0
	5795	3.30	3±1.0	4.0	2.512	5.00	1.209	3.0

Remark：1. BTAntenna gain is 0.68dBi, wifi2.4G Antenna gain is 0.31dBi
Wifi5.2G Antenna gain is 3.7dBi，5.8g Antenna gain is 0.6dBi
2. Wifi2.4g, wifi5.2g and wifi5.8g donot transmit at the same time
BT and wifi can transmit at the same time
3. In the case of simultaneous launches for wifi and BT:
The Max Calc. Thresholds : BT: 0.315, Wifi: 2.480
BT and Wifi: 0.315/3+2.480/3 =0.932 ≤ 1
So a SAR test is not required