



APPENDIX L
: RF EXPOSURE EVALUATION



1. RF Exposure Evaluation

Test Result of RF Exposure Evaluation

According to the KDB-447498 D01 V06, FCC 47CFR § 2.1093 the following RF exposure evaluation shall to demonstrate RF exposure compliance

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

2.4 GHz Band (DTS)

802.11b

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
2412	8.3	8 ± 1	9	7.943	5	2.47
2437	8.6	8 ± 1	9	7.943	5	2.48
2462	8.6	8 ± 1	9	7.943	5	2.49

802.11g

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
2412	7.9	8 ± 1	9	7.943	5	2.47
2437	8.1	8 ± 1	9	7.943	5	2.48
2462	8.1	8 ± 1	9	7.943	5	2.49

802.11n(HT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
2412	7.6	8 ± 1	9	7.943	5	2.47
2437	7.8	8 ± 1	9	7.943	5	2.48
2462	7.8	8 ± 1	9	7.943	5	2.49



802.11n(HT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Destance (mm)	RF Exposure
2422	7.7	8 ± 1	9	7.943	5	2.47
2442	7.8	8 ± 1	9	7.943	5	2.48
2462	7.7	8 ± 1	9	7.943	5	2.49

Worst case for each channel

Frequency	Max Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
2412	8.3	8 ± 1	9	7.943	5	2.47
2437	8.6	8 ± 1	9	7.943	5	2.48
2462	8.6	8 ± 1	9	7.943	5	2.49

The Max RF exposure is 2.49

Threshold at which no SAR required is << 3 for 1-g SAR, Separation distance is 5 mm



5 GHz Band (UNII 1)

802.11a

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5180	5.1	5 ± 1	6	3.981	5	1.81
5200	5.8	5 ± 1	6	3.981	5	1.82
5240	5.4	5 ± 1	6	3.981	5	1.82

802.11n(HT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5180	4.6	5 ± 1	6	3.981	5	1.81
5200	5.6	5 ± 1	6	3.981	5	1.82
5240	5.0	5 ± 1	6	3.981	5	1.82

802.11n(HT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5190	5.3	5 ± 1	6	3.981	5	1.81
5230	5.7	5 ± 1	6	3.981	5	1.82

802.11ac(VHT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5180	4.6	5 ± 1	6	3.981	5	1.81
5200	5.5	5 ± 1	5	3.981	5	1.82
5240	5.2	5 ± 1	6	3.981	5	1.82

802.11ac(VHT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5190	5.3	5 ± 1	6	3.981	5	1.81
5230	5.3	5 ± 1	6	3.981	5	1.82



802.11ac(VHT80)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Destance (mm)	RF Exposure
5210	5.5	5 ± 1	6	3.981	5	1.82

Worst case for each channel

Frequency	Max Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Destance (mm)	RF Exposure
5180	5.1	5 ± 1	6	3.981	5	1.81
5190	5.3	5 ± 1	6	3.981	5	1.81
5200	5.8	5 ± 1	6	3.981	5	1.82
5210	5.5	5 ± 1	6	3.981	5	1.82
5230	5.7	5 ± 1	6	3.981	5	1.82
5240	5.4	5 ± 1	7	3.981	5	1.82

The Max RF exposure is 1.82

Threshold at which no SAR required is << 3 for 1-g SAR, Separation distance is 5 mm



5 GHz Band (UNII 2A)

802.11a

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5260	5.3	6 ± 1	7	5.012	5	2.30
5300	6.6	6 ± 1	7	5.012	5	2.31
5320	5.6	6 ± 1	7	5.012	5	2.31

802.11n(HT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5260	5.0	6 ± 1	7	5.012	5	2.30
5300	6.2	6 ± 1	7	5.012	5	2.31
5320	5.4	6 ± 1	7	5.012	5	2.31

802.11n(HT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5270	5.2	6 ± 1	7	5.012	5	2.30
5310	5.7	6 ± 1	7	5.012	5	2.31

802.11ac(VHT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5260	4.9	5 ± 1	6	3.981	5	1.83
5300	6.1	6 ± 1	7	5.012	5	2.31
5320	5.1	6 ± 1	7	5.012	5	2.31

802.11ac(VHT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5270	5.1	6 ± 1	7	5.012	5	2.30
5310	5.7	6 ± 1	7	5.012	5	2.31



802.11ac(VHT80)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Destance (mm)	RF Exposure
5290	6.0	6 ± 1	7	5.012	5	2.31

Worst case for each channel

Frequency	Max Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Destance (mm)	RF Exposure
5260	5.3	6 ± 1	7	5.012	5	2.30
5270	5.2	6 ± 1	7	5.012	5	2.30
5290	6.0	6 ± 1	7	5.012	5	2.31
5300	6.6	6 ± 1	7	5.012	5	2.31
5310	5.7	6 ± 1	7	5.012	5	2.31
5320	5.6	6 ± 1	7	5.012	5	2.31

The Max RF exposure is 2.31

Threshold at which no SAR required is << 3 for 1-g SAR, Separation distance is 5 mm



5 GHz Band (UNII 2C)

802.11a

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5500	3.1	3 ± 1	4	2.512	5	1.18
5580	1.6	2 ± 1	3	1.995	5	0.94
5720	0.2	1 ± 1	2	1.585	5	0.76

802.11n(HT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5500	2.7	3 ± 1	4	2.512	5	1.18
5580	1.2	2 ± 1	3	1.995	5	0.94
5720	0.0	1 ± 1	2	1.585	5	0.76

802.11n(HT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5510	2.1	3 ± 1	4	2.512	5	1.18
5590	1.1	2 ± 1	3	1.995	5	0.94
5710	0.8	1 ± 1	2	1.585	5	0.76

802.11ac(VHT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5500	2.7	3 ± 1	4	2.512	5	1.18
5580	1.1	2 ± 1	3	1.995	5	0.94
5720	-0.2	0 ± 1	1	1.585	5	0.60



802.11ac(VHT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5510	1.9	2 ± 1	3	1.995	5	0.94
5590	1.0	2 ± 1	3	1.995	5	0.94
5710	0.6	1 ± 1	2	1.585	5	0.76

802.11ac(VHT80)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5530	-0.1	0 ± 1	1	1.259	5	0.59
5610	0.1	1 ± 1	2	1.585	5	0.75
5690	1.0	1 ± 1	2	1.585	5	0.76

Worst case for each channel

Frequency	Max Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5500	3.1	3 ± 1	4	2.512	5	1.18
5510	2.1	3 ± 1	4	2.512	5	1.18
5530	-0.1	0 ± 1	1	1.259	5	0.59
5580	1.6	2 ± 1	3	1.995	5	0.94
5590	1.1	2 ± 1	3	1.995	5	0.94
5610	0.1	1 ± 1	2	1.585	5	0.75
5690	1.0	1 ± 1	2	1.585	5	0.76
5710	0.8	1 ± 1	2	1.585	5	0.76
5720	0.2	1 ± 1	2	1.585	5	0.76

The Max RF exposure is 1.18

Threshold at which no SAR required is << 3 for 1-g SAR, Separation distance is 5 mm



5 GHz Band (UNII 3)

802.11a

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5745	0.8	1 ± 1	2	1.585	5	0.76
5785	1.9	1 ± 1	2	1.585	5	0.76
5825	-0.5	0 ± 1	1	1.259	5	0.61

802.11n(HT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5745	0.4	1 ± 1	2	1.585	5	0.76
5785	1.6	1 ± 1	2	1.585	5	0.76
5825	-0.7	0 ± 1	1	1.259	5	0.61

802.11n(HT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5755	1.0	1 ± 1	2	1.585	5	0.76
5795	1.2	1 ± 1	2	1.585	5	0.76

802.11ac(VHT20)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5745	0.4	1 ± 1	2	1.585	5	0.76
5785	1.4	1 ± 1	2	1.585	5	0.76
5825	-0.8	0 ± 1	1	1.259	5	0.61

802.11ac(VHT40)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5755	1.2	1 ± 1	2	1.585	5	0.76
5795	1.1	1 ± 1	2	1.585	5	0.76



802.11ac(VHT80)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5775	1.3	1 ± 1	2	1.585	5	0.76

Worst case for each channel

Frequency	Max Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
5745	0.8	1 ± 1	2	1.585	5	0.76
5755	1.2	1 ± 1	2	1.585	5	0.76
5775	1.3	1 ± 1	2	1.585	5	0.76
5785	1.9	1 ± 1	2	1.585	5	0.76
5795	1.2	1 ± 1	2	1.585	5	0.76
5825	-0.5	0 ± 1	1	1.259	5	0.61

The Max RF exposure is 0.76

Threshold at which no SAR required is << 3 for 1-g SAR, Separation distance is 5 mm

RF 418 MHz (DSR)

Frequency	Average Conducted Output Power(dBm)	Target Power /tolerance (dBm)	Max tune up power Tolerance (dBm)	Maximum Average Output Power(mW)	Separation Distance (mm)	RF Exposure
418	4.43	5 ± 1	6	3.981	5	0.51

The Max RF exposure is 0.51

Threshold at which no SAR required is << 3 for 1-g SAR, Separation distance is 5 mm

Conclusion:

So no SAR is required.

※ This device does not operate in simultaneous mode.