



**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	7.85	7 ± 1	8	6.310	5	1.96
2437	7.23	7 ± 1	8	6.310	5	1.97
2462	7.30	7 ± 1	8	6.310	5	1.98

#### 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	6.92	7 ± 1	8	6.310	5	1.96
2437	6.41	7 ± 1	8	6.310	5	1.97
2462	6.58	7 ± 1	8	6.310	5	1.98

#### 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	6.95	7 ± 1	8	6.310	5	1.96
2437	6.39	7 ± 1	8	6.310	5	1.97
2462	6.52	7 ± 1	8	6.310	5	1.98



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	7.85	7 ± 1	8	6.310	5	1.96
2437	7.23	7 ± 1	8	6.310	5	1.97
2462	7.30	7 ± 1	8	6.310	5	1.98

The Max RF exposure is 1.98

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	6.76	6 ± 1	7	5.012	5	2.28
5200	6.91	6 ± 1	7	5.012	5	2.29
5240	6.36	6 ± 1	7	5.012	5	2.29

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	6.53	6 ± 1	7	5.012	5	2.28
5200	6.65	6 ± 1	7	5.012	5	2.29
5240	6.35	6 ± 1	7	5.012	5	2.29

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	6.70	6 ± 1	7	5.012	5	2.28
5230	6.02	6 ± 1	7	5.012	5	2.29

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	6.62	6 ± 1	7	5.012	5	2.28
5200	6.77	6 ± 1	7	5.012	5	2.29
5240	6.34	6 ± 1	7	5.012	5	2.29

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	6.84	6 ± 1	7	5.012	5	2.28
5230	6.33	6 ± 1	7	5.012	5	2.29



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	6.24	6 ± 1	7	5.012	5	2.29

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	6.76	6 ± 1	7	5.012	5	2.28
5190	6.84	6 ± 1	7	5.012	5	2.28
5200	6.91	6 ± 1	7	5.012	5	2.29
5210	6.24	6 ± 1	7	5.012	5	2.29
5230	6.33	6 ± 1	7	5.012	5	2.29
5240	6.36	6 ± 1	7	5.012	5	2.29

The Max RF exposure is 2.29

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	6.19	6 ± 1	7	5.012	5	2.30
5300	6.79	6 ± 1	7	5.012	5	2.31
5320	6.09	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	6.44	6 ± 1	7	5.012	5	2.30
5300	6.99	6 ± 1	7	5.012	5	2.31
5320	6.14	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	5.73	6 ± 1	7	5.012	5	2.30
5310	6.36	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	6.36	6 ± 1	7	5.012	5	2.30
5300	6.97	6 ± 1	7	5.012	5	2.31
5320	6.01	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	6.08	6 ± 1	7	5.012	5	2.30
5310	6.70	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	6.71	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	6.44	6 ± 1	7	5.012	5	2.30
5270	6.08	6 ± 1	7	5.012	5	2.30
5290	6.71	6 ± 1	7	5.012	5	2.31
5300	6.99	6 ± 1	7	5.012	5	2.31
5310	6.70	6 ± 1	7	5.012	5	2.31
5320	6.14	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	6.52	6 ± 1	7	5.012	5	2.35
5580	6.16	6 ± 1	7	5.012	5	2.37
5720	6.51	6 ± 1	7	5.012	5	2.40

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	6.74	6 ± 1	7	5.012	5	2.35
5580	6.28	6 ± 1	7	5.012	5	2.37
5720	6.68	6 ± 1	7	5.012	5	2.40

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	6.44	6 ± 1	7	5.012	5	2.35
5550	6.14	6 ± 1	7	5.012	5	2.36
5710	6.03	6 ± 1	7	5.012	5	2.40

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	6.51	6 ± 1	7	5.012	5	2.35
5580	6.17	6 ± 1	7	5.012	5	2.37
5720	6.74	6 ± 1	7	5.012	5	2.40





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	6.82	6 ± 1	7	5.012	5	2.35
5550	6.41	6 ± 1	7	5.012	5	2.36
5710	6.20	6 ± 1	7	5.012	5	2.40

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	6.72	6 ± 1	7	5.012	5	2.36
5690	6.40	6 ± 1	7	5.012	5	2.39

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	6.74	6 ± 1	7	5.012	5	2.35
5510	6.82	6 ± 1	7	5.012	5	2.35
5530	6.72	6 ± 1	7	5.012	5	2.36
5550	6.41	6 ± 1	7	5.012	5	2.36
5580	6.28	6 ± 1	7	5.012	5	2.37
5690	6.40	6 ± 1	7	5.012	5	2.39
5710	6.20	6 ± 1	7	5.012	5	2.40
5720	6.74	6 ± 1	7	5.012	5	2.40

The Max RF exposure is 2.40

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	6.20	6 ± 1	7	5.012	5	2.40
5785	5.77	6 ± 1	7	5.012	5	2.41
5825	6.03	6 ± 1	7	5.012	5	2.42

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	6.33	6 ± 1	7	5.012	5	2.40
5785	5.88	6 ± 1	7	5.012	5	2.41
5825	6.52	6 ± 1	7	5.012	5	2.42

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	6.30	6 ± 1	7	5.012	5	2.40
5795	6.45	6 ± 1	7	5.012	5	2.41

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	6.87	6 ± 1	7	5.012	5	2.40
5785	5.66	6 ± 1	7	5.012	5	2.41
5825	6.43	6 ± 1	7	5.012	5	2.42

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	5.59	6 ± 1	7	5.012	5	2.40
5795	5.85	6 ± 1	7	5.012	5	2.41



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
5775	6.11	6 ± 1	7	5.012	5	2.41

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
5745	6.87	6 ± 1	7	5.012	5	2.40
5755	6.45	6 ± 1	7	5.012	5	2.40
5775	6.11	6 ± 1	7	5.012	5	2.41
5785	5.88	6 ± 1	7	5.012	5	2.41
5795	5.85	6 ± 1	7	5.012	5	2.41
5825	6.52	6 ± 1	7	5.012	5	2.42

The Max RF exposure is 2.42

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

**Conclusion:**

So no SAR is required.