



## 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	6.8	7 ± 1	8	6.310	5	1.96
2437	7.1	7 ± 1	8	6.310	5	1.97
2462	7.4	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	6.4	7 ± 1	8	6.310	5	1.96
2437	6.6	7 ± 1	8	6.310	5	1.97
2462	6.9	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	6.2	7 ± 1	8	6.310	5	1.96
2437	6.5	7 ± 1	8	6.310	5	1.97
2462	6.6	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	6.8	7 ± 1	8	6.310	5	1.96
2437	7.1	7 ± 1	8	6.310	5	1.97
2462	7.4	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	3.9	4 ± 1	5	3.162	5	1.44
5200	4.6	4 ± 1	5	3.162	5	1.44
5240	3.6	4 ± 1	5	3.162	5	1.45

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	4.2	4 ± 1	5	3.162	5	1.44
5200	3.9	4 ± 1	5	3.162	5	1.44
5240	3.3	4 ± 1	5	3.162	5	1.45

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	4.1	4 ± 1	5	3.162	5	1.44
5230	3.6	4 ± 1	5	3.162	5	1.44

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	4.2	4 ± 1	5	3.162	5	1.44
5200	4.0	4 ± 1	5	3.162	5	1.44
5240	3.4	4 ± 1	5	3.162	5	1.45

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	4.1	4 ± 1	5	3.162	5	1.44
5230	3.6	4 ± 1	5	3.162	5	1.44



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
5210	4.0	4 ± 1	5	3.162	5	1.44

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
5180	4.2	4 ± 1	5	3.162	5	1.44
5190	4.1	4 ± 1	5	3.162	5	1.44
5200	4.6	4 ± 1	5	3.162	5	1.44
5210	4.0	4 ± 1	5	3.162	5	1.44
5230	3.6	4 ± 1	5	3.162	5	1.45
5240	3.6	4 ± 1	5	3.162	5	1.45

The Max RF exposure is 1.45

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	3.8	4 ± 1	5	3.162	5	1.44
5300	3.9	4 ± 1	5	3.162	5	1.44
5320	3.7	4 ± 1	5	3.162	5	1.45

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	3.8	4 ± 1	5	3.162	5	1.44
5300	4.0	4 ± 1	5	3.162	5	1.44
5320	4.1	4 ± 1	5	3.162	5	1.45

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	3.7	4 ± 1	5	3.162	5	1.44
5310	4.1	4 ± 1	5	3.162	5	1.44

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	3.8	4 ± 1	5	3.162	5	1.44
5300	4.2	4 ± 1	5	3.162	5	1.44
5320	4.2	4 ± 1	5	3.162	5	1.45

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	3.8	4 ± 1	5	3.162	5	1.44
5310	4.1	4 ± 1	5	3.162	5	1.44



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	4.1	4 ± 1	5	3.162	5	1.44

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	3.8	4 ± 1	5	3.162	5	1.45
5270	3.8	4 ± 1	5	3.162	5	1.45
5290	4.1	4 ± 1	5	3.162	5	1.45
5300	4.2	4 ± 1	5	3.162	5	1.46
5310	4.1	4 ± 1	5	3.162	5	1.46
5320	4.2	4 ± 1	5	3.162	5	1.46

The Max RF exposure is 1.46

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	3.0	4 ± 1	5	3.162	5	1.48
5580	4.8	4 ± 1	5	3.162	5	1.49
5720	3.8	4 ± 1	5	3.162	5	1.51

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	3.2	4 ± 1	5	3.162	5	1.48
5580	4.6	4 ± 1	5	3.162	5	1.49
5720	3.9	4 ± 1	5	3.162	5	1.51

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	3.5	4 ± 1	5	3.162	5	1.48
5550	4.5	4 ± 1	5	3.162	5	1.49
5710	4.3	4 ± 1	5	3.162	5	1.51

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	3.2	4 ± 1	5	3.162	5	1.48
5580	4.6	4 ± 1	5	3.162	5	1.49
5720	3.8	4 ± 1	5	3.162	5	1.51





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	3.5	4 ± 1	5	3.162	5	1.48
5550	4.7	4 ± 1	5	3.162	5	1.49
5710	4.2	4 ± 1	5	3.162	5	1.51

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	4.6	4 ± 1	5	3.162	5	1.49
5690	4.6	4 ± 1	5	3.162	5	1.51

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	3.2	4 ± 1	5	3.162	5	1.48
5510	3.5	4 ± 1	5	3.162	5	1.48
5530	4.6	4 ± 1	5	3.162	5	1.49
5550	4.7	4 ± 1	5	3.162	5	1.49
5580	4.8	4 ± 1	5	3.162	5	1.49
5690	4.6	4 ± 1	5	3.162	5	1.51
5710	4.3	4 ± 1	5	3.162	5	1.51
5720	3.9	4 ± 1	5	3.162	5	1.51

The Max RF exposure is 1.51

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	4.0	4 ± 1	5	3.162	5	1.52
5785	3.5	4 ± 1	5	3.162	5	1.52
5825	3.3	4 ± 1	5	3.162	5	1.53

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	4.1	4 ± 1	5	3.162	5	1.52
5785	3.7	4 ± 1	5	3.162	5	1.52
5825	3.2	4 ± 1	5	3.162	5	1.53

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	3.8	4 ± 1	5	3.162	5	1.52
5795	3.6	4 ± 1	5	3.162	5	1.52

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	4.0	4 ± 1	5	3.162	5	1.52
5785	3.7	4 ± 1	5	3.162	5	1.52
5825	3.3	4 ± 1	5	3.162	5	1.53

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	3.9	4 ± 1	5	3.162	5	1.52
5795	3.6	4 ± 1	5	3.162	5	1.52



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	3.8	4 ± 1	5	3.162	5	1.52

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	4.1	4 ± 1	5	3.162	5	1.52
5755	3.9	4 ± 1	5	3.162	5	1.52
5775	3.8	4 ± 1	5	3.162	5	1.52
5785	3.7	4 ± 1	5	3.162	5	1.52
5795	3.6	4 ± 1	5	3.162	5	1.52
5825	3.3	4 ± 1	5	3.162	5	1.53

The Max RF exposure is 1.53

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

**Conclusion:**

So no SAR is required.