



Radio Frequency Exposure

LIMIT

According to §15.247(i), 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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

EUT	11ac 3x3 WIFI Adapter
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz <input type="checkbox"/> WLAN: 5.250GHz ~ 5.350GHz <input type="checkbox"/> WLAN: 5.470GHz ~ 5.725GHz <input checked="" type="checkbox"/> WLAN: 5.725GHz ~ 5.850GHz <input type="checkbox"/> Bluetooth: 2.402GHz ~ 2.480 GHz
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
Max. output power	Band: 2402-2462MHz 802.11b: 26.15 dBm (411.76 mW) 802.11g: 27.04 dBm (506.00 mW) 802.11n (20MHz): 26.50 dBm (446.68 mW) 802.11n (40MHz): 20.37 dBm (108.80 mW) 802.11ac (20MHz): 26.53 dBm (450.06 mW) 802.11ac (40MHz): 20.43 dBm (110.40 mW) Band: 5150-5250 MHz 802.11a: 25.96 dBm 802.11an (20MHz): 24.12 dBm 802.11an (40MHz): 22.10 dBm 802.11ac (20MHz): 24.18 dBm 802.11ac (40MHz): 22.14 dBm 802.11ac (80MHz): 12.52 dBm Band: 5725-5850 MHz 802.11a: 24.41 dBm 802.11an (20MHz): 22.55 dBm 802.11an (40MHz): 24.31 dBm 802.11ac (20MHz): 22.59 dBm 802.11ac (40MHz): 24.35 dBm 802.11ac (80MHz): 20.36 dBm
Antenna gain (Max)	1.62dBi
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A



Remark:

1. *The maximum output power is 27.04dBm (506.00 mW) at 2437 MHz (with numeric 2 antenna gain.)*
2. *DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.*
3. *For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.*

**Note: Simultaneous transmission is not applicable for this EUT.*

**TEST RESULTS**

No non-compliance noted.

Calculation

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

**Maximum Permissible Exposure**

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
11b	2412-2462	26.15	2	20	0.1298	1
11g	2412-2462	27.04	2	20	0.1595	1
11n HT20	2412-2462	26.50	2	20	0.1408	1
11n HT40	2422-2452	20.37	2	20	0.0343	1
11ac VHT20	2412-2462	26.53	2	20	0.1418	1
11ac VHT40	2422-2452	20.43	2	20	0.0348	1
11a	5150-5250	25.96	2	20	0.1242	1
	5725-5850	24.41	2	20	0.0871	1
11n HT20	5150-5250	24.12	2	20	0.0815	1
	5725-5850	22.55	2	20	0.0567	1
11n HT40	5150-5250	22.10	2	20	0.0511	1
	5725-5850	24.31	2	20	0.0851	1
11ac VHT20	5150-5250	24.18	2	20	0.0825	1
	5725-5850	22.59	2	20	0.0572	1
11ac VHT40	5150-5250	22.14	2	20	0.0516	1
	5725-5850	24.35	2	20	0.0859	1
11ac VHT80	5150-5250	12.52	2	20	0.0056	1
	5725-5850	20.36	2	20	0.0342	1

NOTE:

Total (Chain0+Chain1) , the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1

CPD = Calculation power density

LPD = Limit of power density