



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	UAP AC
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz <input checked="" type="checkbox"/> WLAN: 5.725GHz ~ 5.850GHz <input type="checkbox"/> Bluetooth: <u>2.402GHz ~ 2.480 GHz</u>
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	802.11b: 21.29 dBm (134.62 mW) 802.11g: 24.75 dBm (298.83 mW) 802.11n (20MHz): 24.74 dBm (297.72 mW) 802.11n (40MHz): 24.65 dBm (291.94 mW) 802.11ac(20MHz): 24.95 dBm(312.83 mW) 802.11ac(40MHz): 24.67 dBm(293.23 mW) 802.11ac(80MHz): 24.54 dBm(284.19 mW)
Antenna gain (Max)	ANT R: 6 dBi ANT M: 6 dBi ANT L: 6 dBi Directional antenna gain for N mode: 10.77 dBi
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 24.95 dBm (312.83 mW) at 5785 MHz (with numeric 10.77 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

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

- 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:

$P (mW) = P (W) / 1000$ and
 $d (cm) = d(m) / 100$

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/cm2)	Limit (mW/cm2)
802.11b	2412-2462	21.29	10.77	20	0.320	1
802.11g	2412-2462	24.75	10.77	20	0.709	1
802.11n (20MHz)	2412-2462	24.74	10.77	20	0.708	1
802.11n (40MHz)	2422-2452	24.65	10.77	20	0.693	1
802.11ac (20MHz)	5180-5240	24.95	10.77	20	0.743	1
802.11ac (40MHz)	5190-5260	24.67	10.77	20	0.696	1
802.11ac (80MHz)	5210	24.54	10.77	20	0.676	1
802.11ac (20MHz)	5745-5286	10.27	10.77	20	0.025	1
802.11ac (40MHz)	5755-5795	11.69	10.77	20	0.035	1
802.11ac (80MHz)	5775	11.37	10.77	20	0.033	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