



13. Radio Frequency Exposure

13.1. Applicable Standards

The measurements shown in this test report were made in accordance with the procedures given in FCC Part 2 (Section 2.1091)

KDB 447498

13.2. EUT Specification

Frequency band (Operating)	☒ WLAN: 2412MHz ~ 2462MHz ☒ WLAN: 5150MHz ~ 5250MHz ☒ WLAN: 5250MHz ~ 5350MHz ☒ WLAN: 5470MHz ~ 5725MHz ☒ WLAN: 5725MHz ~ 5850MHz ☐ Bluetooth: 2402MHz ~ 2480MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation)
Exposure classification	☐ Occupational/Controlled exposure ($S = 5\text{mW/cm}^2$) ☒ General Population/Uncontrolled exposure ($S=1\text{mW/cm}^2$)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☒ Tx/Rx diversity
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A
Remark: 1. The maximum conducted output power is <u>21.85dBm (152.95mW)</u> at <u>5590MHz</u> (with <u>3.5dBi antenna gain</u> .) 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/cm^2 even if the calculation indicates that the power density would be larger.	

13.3. Test Results

No non-compliance noted.



13.4.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:

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

Changing to units of mW and cm, using:

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



13.5. Maximum Permissible Exposure

Max. output power	Non-Beamforming Band: 5250MHz ~ 5350MHz 802.11a: 21.71dBm 802.11n HT20: 21.68dBm 802.11n HT40: 21.62dBm 802.11ac VHT20: 21.71dBm 802.11ac VHT40: 21.65dBm 802.11ac VHT80: 17.36dBm Band: 5470MHz ~ 5725MHz 802.11a: 21.18dBm 802.11n HT20: 21.46dBm 802.11n HT40: 21.81dBm 802.11ac VHT20: 21.49dBm 802.11ac VHT40: 21.85dBm 802.11ac VHT80: 19.68dBm Beamforming Band: 5250MHz ~ 5350MHz 802.11a: 18.70dBm 802.11n HT20: 18.67dBm 802.11n HT40: 18.61dBm 802.11ac VHT20: 18.70dBm 802.11ac VHT40: 18.64dBm 802.11ac VHT80: 14.35dBm Band: 5470MHz ~ 5725MHz 802.11a: 18.17dBm 802.11n HT20: 18.45dBm 802.11n HT40: 18.80dBm 802.11ac VHT20: 18.48dBm 802.11ac VHT40: 18.84dBm 802.11ac VHT80: 16.67dBm
Antenna gain (Max)	5250-5350MHz: ANT A: 3.5dBi, ANT B: 3.2dBi 5470-5725MHz: ANT A: 3.1dBi, ANT B: 3.5dBi

**Maximum Permissible Exposure (Non-Beamforming)**

Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
5250-5350	21.71	3.5	20	0.066	1
5470-5725	21.85	3.5	20	0.068	1

Maximum Permissible Exposure (Beamforming)

Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm ²)	Limit (mW/cm ²)
5250-5350	18.70	6.36	20	0.064	1
5470-5725	18.84	6.31	20	0.065	1

**Maximum Permissible Exposure (Co-location)****(2.4G Non-Beamforming + 5G Band 1 Non-Beamforming)**

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
802.11g	2412-2462	29.97	1.9	20	0.306	1.000	0.306
11a	5180-5240	21.88	3.7	20	0.072	1.000	0.072
Co-location Total							0.378
Σ MPE ratios Limit							1

(2.4G Non-Beamforming + 5G Band 4 Non-Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
802.11g	2412-2462	29.97	1.9	20	0.306	1.000	0.306
11ac VHT40	5725-5850	21.95	3.7	20	0.073	1.000	0.073
Co-location Total							0.379
Σ MPE ratios Limit							1

(2.4G Non-Beamforming + 5G Band 3 Non-Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
802.11g	2412-2462	29.97	1.9	20	0.306	1.000	0.306
11ac VHT40	5470-5725	21.85	3.5	20	0.068	1.000	0.068
Co-location Total							0.374
Σ MPE ratios Limit							1

**(2.4G Non-Beamforming + 5G Band 1 Beamforming)**

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
802.11g	2412-2462	29.97	1.9	20	0.306	1.000	0.306
11a	5180-5240	18.87	6.32	20	0.066	1.000	0.066
Co-location Total							0.372
Maximum Permissible Exposure Limit							1

(2.4G Non-Beamforming + 5G Band 4 Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
802.11g	2412-2462	29.97	1.9	20	0.306	1.000	0.306
11ac VHT40	5725-5850	18.94	6.71	20	0.073	1.000	0.073
Co-location Total							0.379
Maximum Permissible Exposure Limit							1

(2.4G Non-Beamforming + 5G Band 3 Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	MPE Ratio
802.11g	2412-2462	29.97	1.9	20	0.306	1.000	0.306
11ac VHT40	5470-5725	18.84	6.31	20	0.065	1.000	0.065
Co-location Total							0.371
Maximum Permissible Exposure Limit							1