14. Radio Frequency Exposure

14.1. 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

14.2. 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 = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/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 output power is 24.45dBm (278.718mW) at 5220MHz (with numeric 3 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/cm^2 even if the calculation indicates that the power density would be larger.	

14.3. Test Results

No non-compliance noted.

14.4.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:

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

Changing to units of mW and cm, using:

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

Yields

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

Where d = Distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

14.5.Maximum Permissible Exposure

Max. output power	Non-Beamforming Band: 5150MHz ~ 5250MHz 802.11a: 24.45dBm (278.718mW) 802.11an HT20: 24.35dBm (272.227mW) 802.11an HT40: 24.38dBm (274.166mW) 802.11ac VHT20: 24.37dBm (273.779mW) 802.11ac VHT40: 24.52dBm (283.400mW) 802.11ac VHT80: 14.80dBm (30.169mW) Band: 5725MHz ~ 5850MHz 802.11a: 24.06dBm (254.703mW) 802.11an HT20: 23.88dBm (244.137mW) 802.11an HT40: 24.11dBm (257.403mW) 802.11ac VHT20: 23.96dBm (248.654mW) 802.11ac VHT40: 24.25dBm (266.148mW) 802.11ac VHT80: 21.49dBm (140.952mW) Beamforming Band: 5150MHz ~ 5250MHz 802.11ac VHT20: 21.36dBm (136.899mW) 802.11ac VHT40: 21.51dBm (141.710mW) 802.11ac VHT80: 11.79dBm (15.086mW) Band: 5725MHz ~ 5850MHz 802.11ac VHT20: 20.95dBm (124.335mW) 802.11ac VHT40: 21.24dBm (133.083mW) 802.11ac VHT80: 18.48dBm (70.481mW)
Antenna gain (Max)	ANT A, B: 4.0 dBi

Maximum Permissible Exposure (Non-Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
802.11a	5150-5250	24.45	4	20	0.1393	1
802.11a	5725-5850	24.06	4	20	0.1273	1
802.11an HT20	5150-5250	24.35	4	20	0.1360	1
802.11an HT20	5725-5850	23.88	4	20	0.1220	1
802.11an HT40	5150-5250	24.38	4	20	0.1370	1
802.11an HT40	5725-5850	24.11	4	20	0.1286	1
802.11ac VHT20	5150-5250	24.37	4	20	0.1368	1
802.11ac VHT20	5725-5850	23.96	4	20	0.1243	1
802.11ac VHT40	5150-5250	24.52	4	20	0.1416	1
802.11ac VHT40	5725-5850	24.25	4	20	0.1330	1
802.11ac VHT80	5150-5250	14.80	4	20	0.0151	1
802.11ac VHT80	5725-5850	21.49	4	20	0.0704	1

Maximum Permissible Exposure (Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
802.11ac VHT20	5150-5250	21.36	7.01	20	0.1368	1
802.11ac VHT20	5725-5850	20.95	7.01	20	0.1243	1
802.11ac VHT40	5150-5250	21.51	7.01	20	0.1416	1
802.11ac VHT40	5725-5850	21.24	7.01	20	0.1330	1
802.11ac VHT80	5150-5250	11.79	7.01	20	0.0151	1
802.11ac VHT80	5725-5850	18.48	7.01	20	0.0704	1

Maximum Permissible Exposure (Co-location)

(Non Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm^2)
2.4G 11n HT20	2412-2462	29.93	3	20	0.3906
5G 11ac VHT40	5150-5250	24.52	4	20	0.1416
Co-location Total					0.5322
Maximum Permissible Exposure Limit					1

(Beamforming)

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm^2)
2.4G 11n HT20	2412-2462	29.93	3	20	0.3906
5G 11ac VHT40	5150-5250	21.51	7.01	20	0.1416
Co-location Total					0.5322
Maximum Permissible Exposure Limit					1