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 28.47dBm (703.783mW) at 5825MHz (with numeric 4.81 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: 26.38 dBm (434.317mW) 802.11an HT20: 26.36 dBm (432.287mW) 802.11an HT40: 26.62 dBm (458.957mW) 802.11ac VHT20: 26.39 dBm (435.251mW) 802.11ac VHT40: 26.64 dBm (461.075mW) 802.11ac VHT80: 16.34 dBm (43.069mW) Band: 5725MHz ~ 5850MHz 802.11a: 28.28 dBm (672.859mW) 802.11an HT20: 28.42 dBm (694.670mW) 802.11an HT40: 27.25 dBm (530.286mW) 802.11ac VHT20: 28.47 dBm (703.783mW) 802.11ac VHT40: 27.27 dBm (532.852mW) 802.11ac VHT80: 25.65 dBm (367.623mW) Beamforming Band: 5150MHz ~ 5250MHz 802.11a: 23.37 dBm (217.173mW) 802.11an HT20: 23.35 dBm (216.158mW) 802.11an HT40: 23.61 dBm (229.494mW) 802.11ac VHT20: 23.38 dBm (217.641mW) 802.11ac VHT40: 23.63 dBm (230.554mW) 802.11ac VHT80: 13.33 dBm (21.536mW) Band: 5725MHz ~ 5850MHz 802.11a: 25.27 dBm (336.453mW) 802.11an HT20: 25.41 dBm (347.359mW) 802.11an HT40: 24.24 dBm (265.161mW) 802.11ac VHT20: 25.46 dBm (351.916mW) 802.11ac VHT40: 24.26 dBm (266.444mW) 802.11ac VHT80: 22.64 dBm (183.824mW)
Antenna gain (Max)	5150MHz-5250MHz: ANT A: 4.18 dBi ; ANT B: 4.81 dBi 5725MHz-5850MHz: ANT A: 4.9 dBi ; ANT B: 4.18 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	26.38	4.81	25	0.1674	1
802.11a	5725-5850	28.28	4.9	25	0.2647	1
802.11an HT20	5150-5250	26.36	4.81	25	0.1666	1
802.11an HT20	5725-5850	28.42	4.9	25	0.2733	1
802.11an HT40	5150-5250	26.62	4.81	25	0.1769	1
802.11an HT40	5725-5850	27.25	4.9	25	0.2087	1
802.11ac VHT20	5150-5250	26.39	4.81	25	0.1677	1
802.11ac VHT20	5725-5850	28.47	4.9	25	0.2769	1
802.11ac VHT40	5150-5250	26.64	4.81	25	0.1777	1
802.11ac VHT40	5725-5850	27.27	4.9	25	0.2097	1
802.11ac VHT80	5150-5250	16.34	4.81	25	0.0166	1
802.11ac VHT80	5725-5850	25.65	4.9	25	0.1446	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)
802.11a	5150-5250	23.37	7.51	25	0.1559	1
802.11a	5725-5850	25.27	7.56	25	0.2442	1
802.11an HT20	5150-5250	23.35	7.51	25	0.1551	1
802.11an HT20	5725-5850	25.41	7.56	25	0.2522	1
802.11an HT40	5150-5250	23.61	7.51	25	0.1647	1
802.11an HT40	5725-5850	24.24	7.56	25	0.1925	1
802.11ac VHT20	5150-5250	23.38	7.51	25	0.1562	1
802.11ac VHT20	5725-5850	25.46	7.56	25	0.2555	1
802.11ac VHT40	5150-5250	23.63	7.51	25	0.1655	1
802.11ac VHT40	5725-5850	24.26	7.56	25	0.1934	1
802.11ac VHT80	5150-5250	13.33	7.51	25	0.0155	1
802.11ac VHT80	5725-5850	22.64	7.56	25	0.1334	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)
VHT20	2412-2462	27.56	4.85	25	0.2220
802.11ac VHT40	5150-5250	26.64	4.81	25	0.1777
802.11ac VHT20	5725-5850	28.47	4.9	25	0.2769
Co-location Total					0.6766
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)
VHT20	2412-2462	24.55	7.64	25	0.2110
802.11ac VHT40	5150-5250	23.63	7.51	25	0.1655
802.11ac VHT20	5725-5850	25.46	7.56	25	0.2555
Co-location Total					0.632
Maximum Permissible Exposure Limit					1