APPENDIX I
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	Wireless Access Point
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☐ Others
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others
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

Max. output power	IEEE 802.11b Mode: 13.83dBm (24.15mW) IEEE 802.11g Mode: 12.89 dBm (19.45mW)
Antenna gain (Max)	2 dBi (Numeric gain: 1.58)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

Remark:
1. *The maximum output power is <u>13.83dBm (24.15mW)</u> at <u>2437MHz</u> (with <u>1.58 numeric 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.*

TEST RESULTS

No non-compliance noted.

Calculation

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

$\quad\quad$ *Where* $\quad$ *E = Field strength in Volts / meter*

$\quad\quad\quad\quad\quad\quad$ *P = Power in Watts*

$\quad\quad\quad\quad\quad\quad$ *G = Numeric antenna gain*

$\quad\quad\quad\quad\quad\quad$ *d = Distance in meters*

$\quad\quad\quad\quad\quad\quad$ *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:

$\quad\quad$ *P (mW) = P (W) / 1000 and*

$\quad\quad$ *d (cm) = d(m) / 100*

Yields

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

$\quad\quad$ *Where* $\quad$ *d = Distance in cm*

$\quad\quad\quad\quad\quad\quad$ *P = Power in mW*

$\quad\quad\quad\quad\quad\quad$ *G = Numeric antenna gain*

$\quad\quad\quad\quad\quad\quad$ *S = Power density in mW / cm²*

Maximum Permissible Exposure

EUT output power = 24.15 mW

Numeric Antenna gain = 1.58

Substituting the MPE safe distance using d = 20 cm into Equation 1:

Yields

$\quad S = 0.000199 \times P \times G$

Where $\quad$ *P = Power in mW*

$\quad\quad\quad\quad$ *G = Numeric antenna gain*

$\quad\quad\quad\quad$ *S = Power density in mW / cm²*

→ *Power density = 0.0077 mW / cm²*

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.)