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	HP Wireless Streaming Connector
Model	HSTND-C008
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz 802.11a: 5180 ~ 5240MHz / 5745 ~ 5825MHz 802.11n HT20: 5180 ~ 5240MHz / 5725 ~ 5825MHz 802.11n HT40: 5190 ~ 5230MHz / 5755 ~ 5795MHz ☐ 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 Specification	5GHz: Antenna Gain : 5.9 dBi (Numeric gain 3.89) 2.4GHz: Antenna Gain : 5.3 dBi (Numeric gain 3.39)
Maximum Average output power	IEEE 802.11b Mode: 19.32 dBm (85.507 mW) IEEE 802.11g Mode: 22.14 dBm (163.682 mW) IEEE 802.11n HT 20 Mode: 20.73 dBm (118.304 mW) IEEE 802.11n HT 40 Mode: 21.36 dBm (136.773 mW) UNII Band I IEEE 802.11a Mode: 13.56 dBm (22.699 mW) IEEE 802.11n HT20 Mode: 13.38 dBm (21.777 mW) IEEE 802.11n HT40 Mode: 13.24 dBm (21.086 mW) UNII Band III IEEE 802.11a Mode: 13.53 dBm (22.542 mW) IEEE 802.11n HT20 Mode: 13.47 dBm (22.233 mW) IEEE 802.11n HT40 Mode: 13.36 dBm (21.677 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2014/09/04	Initial Issue	ALL	Gloria Chang

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:

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

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

Maximum Permissible Exposure

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

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

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

IEEE 802.11b mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2412 ~ 2462	85.507	3.39	20	0.0577	1

IEEE 802.11g mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2412 ~ 2462	163.682	3.39	20	0.1104	1

IEEE 802.11n HT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2412 ~ 2462	118.304	3.39	20	0.0798	1

IEEE 802.11n HT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
2422 ~ 2452	136.773	3.39	20	0.0923	1

IEEE 802.11a mode (UNII Band I):

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
5180 ~ 5240	22.699	3.89	20	0.0176	1

IEEE 802.11a HT20 mode (UNII Band I):

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
5180 ~ 5240	21.777	3.89	20	0.0169	1

IEEE 802.11a HT40 mode (UNII Band I):

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
5190 ~ 5230	21.086	3.89	20	0.0163	1

IEEE 802.11a mode (UNII Band III):

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
5745 ~ 5825	22.542	3.89	20	0.0174	1

IEEE 802.11a HT20 mode (UNII Band III):

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
5745 ~ 5825	22.233	3.89	20	0.0172	1

IEEE 802.11a HT40 mode (UNII Band III):

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
5755 ~ 5895	21.677	3.89	20	0.0168	1