IEEE C95.1
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47 C.F.R. Part 1, Subpart I, Section 1.1310
47 C.F.R. Part 2, Subpart J, Section 2.1091

RF EXPOSURE REPORT

For

Guitar Processor

Model: HEADRUSH PEDALBOARD

Data Applies To:N/A

Trade Name: HEADRUSH

Issued to

inMusic Brands, Inc.
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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	December 15, 2016	Initial Issue	ALL	Daphne Liang

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1. 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.

2. EUT SPECIFICATION

EUT	Guitar Processor		
Model	HEADRUSH PEDALBOARD		
Brand	HEADRUSH		
RF Module	SMS	**Model:**	AP6335
Frequency band (Operating)	☒ **802.11b/g/n HT20: 2.412GHz ~ 2.462GHz** 802.11n HT40: 2.422GHz ~ 2.452GHz 802.11a/n HT20: 5.180GHz ~ 5.240GHz / 5.745 ~ 5.825GHz 802.11n HT40: 5.190GHz ~ 5.230GHz / 5.755~ 5.795GHz 802.11ac VHT80: 5.210GHz / 5.775GHz ☒ **Others (Bluetooth 4.0: 2402MHz~2480MHz)**		
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	PCB Antenna / Gain: 4.600 dBi (Numeric gain: 2.88) worst		
Maximum Average output power	IEEE 802.11b Mode : 11.610 dBm (14.488 mW) IEEE 802.11g Mode : 16.380 dBm (43.451 mW) IEEE 802.11n HT20 Mode : 16.270 dBm (42.364 mW) Bluetooth 4.0 Mode : 2.350 dBm (1.716 mW)		
Maximum Tune up Power	IEEE 802.11b Mode : 11.710 dBm (14.825 mW) IEEE 802.11g Mode : 16.480 dBm (44.463 mW) IEEE 802.11n HT20 Mode : 16.370 dBm (43.351 mW) Bluetooth 4.0 Mode : 2.450 dBm (1.758 mW)		
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A		

3. TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

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:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***Equation 1***

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

4. 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 :

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
Mid	2437	14.825	2.88	20	0.0085	1	Pass

IEEE 802.11g Mode :

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
MId	2437	44.463	2.88	20	0.0255	1	Pass

IEEE 802.11n HT20 Mode :

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
Low	2412	43.351	2.88	20	0.0248	1	Pass

Bluetooth 4.0 Mode :

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)	Result
Mid	2442	1.758	2.88	20	0.0010	1	Pass