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

PANEL PC

Model: VT1020-ABCXXXXXX
(A for power input voltage: can be “L” or “H”, B for touch screen type: can be “R” or blank, C for defrost function: can be ”D” or blank, X for marketing used only : can be alphanumeric or blank)

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0240

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	12/08/2015	Initial Issue	All Page	Gloria Chang

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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

Product Name	PANEL PC
Model Number	VT1020-ABCXXXXXX (A for power input voltage: can be “L” or “H”, B for touch screen type: can be “R” or blank , C for defrost function: can be ”D” or blank , X for marketing used only : can be alphanumeric or blank)
Identify Number	T151020D04
Received Date	October 20, 2015
Frequency band (Operating)	☒ 802.11b/g/gn HT20: 2412MHz ~ 2462MHz 802.11gn HT40: 2422MHz ~ 2452MHz 802.11a, 802.11ac VHT20: 5180 MHz ~ 5240 MHz / 5260 MHz ~ 5320 MHz / 5500 MHz ~ 5700 MHz / 5745 MHz ~ 5825 MHz 802.11ac VHT40: 5190 MHz ~ 5230 MHz / 5270 MHz ~ 5310 MHz / 5510 MHz ~ 5670 MHz / 5755 MHz ~ 5795 MHz 802.11ac VHT80: 5210 MHz / 5290 MHz / 5530 MHz / 5775 MHz Bluetooth 2.1 + EDR / 4.0: 2402 ~ 2480 MHz ☐ 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	Dipole Antenna × 2 (External), 5GHz: Antenna 1(Chain A), Antenna Gai 5.50 dBi (Numeric gain: 3.55) 5GHz: Antenna 2(Chain B), Antenna Gai 5.50 dBm (Numeric gain: 3.55) 2.4GHz: Antenna 1(Chain A), Antenna Gai 5.00 dBi (Numeric gain: 3.16) 2.4GHz: Antenna 2(Chain B), Antenna Gai 5.00 dBm (Numeric gain: 3.16) PCB Antenna × 2 (Internal), 5GHz: Antenna 1(Chain A), Antenna Gai 4.73 dBi (Numeric gain: 2.97) 5GHz: Antenna 2(Chain B), Antenna Gai 5.39 dBm (Numeric gain: 3.46) 2.4GHz: Antenna 1(Chain A), Antenna Gai 3.17 dBi (Numeric gain: 2.07) 2.4GHz: Antenna 2(Chain B), Antenna Gai 3.21 dBm (Numeric gain: 2.09)

Maximum Peak output power	2.4G		
	Bluetooth 3.0 Mode :	2.65 dBm	(1.841 mW)
	Bluetooth 4.0 Mode :	5.47 dBm	(3.524 mW)
	IEEE 802.11b Mode:	18.46 dBm	(70.146 mW)
	IEEE 802.11g Mode:	20.50 dBm	(112.202 mW)
	IEEE 802.11gn HT 20 Mode:	23.24 dBm	(210.863 mW)
	IEEE 802.11gn HT 40 Mode:	18.98 dBm	(79.068 mW)
	5G UNII Band 1		
	IEEE 802.11a Mode:	14.73 dBm	(29.717 mW)
	IEEE 802.11ac VHT20 Mode:	16.71 dBm	(46.881 mW)
	IEEE 802.11ac VHT40 Mode:	16.35 dBm	(43.152 mW)
	IEEE 802.11ac VHT80 Mode:	10.43 dBm	(11.041 mW)
	5G UNII Band 2A		
	IEEE 802.11a Mode:	15.77 dBm	(37.757 mW)
	IEEE 802.11ac VHT20 Mode:	17.70 dBm	(58.884 mW)
	IEEE 802.11ac VHT40 Mode:	17.18 dBm	(52.240 mW)
	IEEE 802.11ac VHT80 Mode:	11.80 dBm	(15.136 mW)
	5G UNII Band 2C		
	IEEE 802.11a Mode:	15.51 dBm	(35.563 mW)
	IEEE 802.11ac VHT20 Mode:	16.75 dBm	(47.315 mW)
	IEEE 802.11ac VHT40 Mode:	17.25 dBm	(53.088 mW)
	IEEE 802.11ac VHT80 Mode:	12.88 dBm	(19.409 mW)
	5G UNII Band 3		
	IEEE 802.11a Mode:	15.01 dBm	(31.696 mW)
	IEEE 802.11ac VHT20 Mode:	16.79 dBm	(47.753 mW)
	IEEE 802.11ac VHT40 Mode:	16.64 dBm	(46.132 mW)
	IEEE 802.11ac VHT80 Mode:	10.67 dBm	(11.668 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 watts / meter

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 / cm²

IEEE 802.11b mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2462	70.146	3.16	20	0.0441	1

IEEE 802.11g mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2437	112.202	3.16	20	0.0706	1

IEEE 802.11gn HT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2437	210.863	3.16	20	0.1326	1

IEEE 802.11gn HT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2452	79.068	3.16	20	0.0497	1

Bluetooth 2.1+EDR mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2480	1.841	3.16	20	0.0012	1

Bluetooth 4.0 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
2480	3.524	3.16	20	0.0022	1

UNII Band 1

IEEE 802.11a mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5240	29.717	3.55	20	0.0210	1

IEEE 802.11ac VHT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5240	46.881	3.55	20	0.0331	1

IEEE 802.11ac VHT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5230	43.152	3.55	20	0.0305	1

IEEE 802.11ac VHT80 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5210	11.041	3.55	20	0.0078	1

UNII Band 2A

IEEE 802.11a mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5300	37.757	3.55	20	0.0267	1

IEEE 802.11ac VHT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5300	58.884	3.55	20	0.0416	1

IEEE 802.11ac VHT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5270	52.24	3.55	20	0.0369	1

IEEE 802.11ac VHT80 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5290	15.136	3.55	20	0.0107	1

UNII Band 2C

IEEE 802.11a mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5580	35.563	3.55	20	0.0251	1

IEEE 802.11ac VHT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5580	47.315	3.55	20	0.0334	1

IEEE 802.11ac VHT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5550	53.088	3.55	20	0.0375	1

IEEE 802.11ac VHT80 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5530	19.409	3.55	20	0.0137	1

UNII Band 3

IEEE 802.11a mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5785	31.696	3.55	20	0.0224	1

IEEE 802.11ac VHT20 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5785	47.753	3.55	20	0.0337	1

IEEE 802.11ac VHT40 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5795	46.132	3.55	20	0.0326	1

IEEE 802.11ac VHT80 mode:

Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm2)
5775	11.668	3.55	20	0.0082	1