RF Exposure Evaluation Declaration

Product Name	:	Wireless Access Point
Model No.	:	AP630
FCC ID	:	WBV-AP630

Applicant	:	Aerohive Networks, Inc.
Address	:	Aerohive Networks, 1011 McCarthy Boulevard, Milpitas, CA 95035, United States

Date of Receipt	:	Mar. 20, 2018
Issued Date	:	Jul. 07, 2018
Report No.	:	1832134R-RF-US-P20V01
Report Version	:	V1.0

Test Report Certification

Issued Date : Jul. 07, 2018
Report No. : 1832134R-RF-US-P20V01

Product Name	:	Wireless Access Point
Applicant	:	Aerohive Networks, Inc.
Address	:	Aerohive Networks, 1011 McCarthy Boulevard, Milpitas, CA 95035, United States
Manufacturer	:	Aerohive Networks, Inc.
Address	:	Aerohive Networks, 1011 McCarthy Boulevard, Milpitas, CA 95035, United States
Model No.	:	AP630
FCC ID	:	WBV-AP630
Brand Name	:	Aerohive
EUT Voltage	:	PoE 57V
Applicable Standard	:	KDB 447498D01V06 FCC Part1.1310
Test Result	:	Complied
Performed Location	:	DEKRA Testing and Certification (Suzhou) Co., Ltd. Corporation - Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Designation Number: CN1199

Documented By : Kathy Feng
(Project Assistant: Kathy Feng)

Reviewed By : Frank he
(Senior Engineer: Frank He)

Approved By : Harry Zhao
(Engineering Manager : Harry Zhao)

1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4*pi*r2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1 mW/cm2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18℃and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	Wireless Access Point
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

BLE:

Model No.	N/A					
Antenna manufacturer	N/A					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Sectorized		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
			☐	Sectorized		
	☒	Internal	☐	PIFA		
			☐	PCB		
			☐	Ceramic Chip Antenna		
			☒	Metal plate type F antenna		

Antenna Technology	Ant Gain (dBi)
☒ SISO	4.18

2.4G:

<table>
<tr><td>Model No.</td><td colspan="8">N/A</td></tr>
<tr><td>Antenna manufacturer</td><td colspan="8">N/A</td></tr>
<tr><td>Antenna Delivery</td><td colspan="8">☐ 1*TX+1*RX ☒ 2*TX+2*RX ☐ 3*TX+3*RX ☒ 4*TX+4*RX</td></tr>
<tr><td rowspan="6">Antenna technology</td><td colspan="8">☒ SISO</td></tr>
<tr><td rowspan="5">☒</td><td rowspan="5">MIMO</td><td colspan="6">☐ Basic</td></tr>
<tr><td colspan="6">☒ CDD</td></tr>
<tr><td colspan="6">☐ Sectorized</td></tr>
<tr><td colspan="6">☒ Beam-forming</td></tr>
<tr><td rowspan="6">Antenna Type</td><td rowspan="2">☐</td><td rowspan="2">External</td><td colspan="6">☐ Dipole</td></tr>
<tr><td colspan="6">☐ Sectorized</td></tr>
<tr><td rowspan="4">☒</td><td rowspan="4">Internal</td><td colspan="6">☐ PIFA</td></tr>
<tr><td colspan="6">☐ PCB</td></tr>
<tr><td colspan="6">☐ Ceramic Chip Antenna</td></tr>
<tr><td colspan="6">☒ Metal plate type F antenna</td></tr>
<tr><td colspan="2" rowspan="2">Antenna Technology(2*TX+2*RX)</td><td colspan="5" rowspan="2">Ant Gain (dBi)</td><td colspan="2">Directional Gain (dBi)</td></tr>
<tr><td>For Power</td><td>For PSD</td></tr>
<tr><td>☒</td><td>CDD</td><td colspan="5" rowspan="2">Ant0:3.92 Ant1:3.85 (Not1)</td><td>3.89</td><td>6.89</td></tr>
<tr><td>☒</td><td>Beam-forming</td><td>6.89</td><td>6.89</td></tr>
<tr><td colspan="2" rowspan="2">Antenna Technology(4*TX+4*RX)</td><td colspan="5" rowspan="2">Ant Gain (dBi)</td><td colspan="2">Directional Gain (dBi)</td></tr>
<tr><td>For Power</td><td>For PSD</td></tr>
<tr><td>☒</td><td>CDD</td><td colspan="5" rowspan="2">Ant0:3.92 Ant1:3.85 Ant2: 4.52 Ant3:4.56</td><td>4.23</td><td>10.24</td></tr>
<tr><td>☒</td><td>Beam-forming</td><td>10.24</td><td>10.24</td></tr>
</table>

5G:

Antenna Model No.	N/A							
Antenna Manufacturer	N/A							
Antenna Delivery	☐	1*TX+1*RX	☒	2*TX+2*RX	☐	3*TX+3*RX	☒	4*TX+4*RX
Antenna Technology	☐	SISO						
	☒	MIMO	☐	Basic methodology				
			☐	Sectorized antenna systems				
			☐	Cross-polarized antennas				
			☐	Unequal antenna gains, with equal transmit powers				
			☐	Spatial Multiplexing				
			☒	Cyclic Delay Diversity (CDD)				
Antenna Type	Metal Antenna							

Antenna Technology(2*TX+2*RX)	Ant Gain (dBi)	Directional Gain (dBi)	
		For Power	For PSD
☒ CDD	Ant0:4.74 Ant1: 5.17	4.96	7.97
☒ Beam-forming		7.97	7.97

Antenna Technology(4*TX+4*RX)	Ant Gain (dBi)	Directional Gain (dBi)	
		For Power	For PSD
☒ CDD	Ant0:4.74 Ant1: 5.17 Ant2:5.19 Ant3: 4.92	5.01	11.03
☒ Beam-forming		11.03	11.03

Power Density

Standlone modes:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 21 cm (mW/cm2)	Power Density Limit at R = 21 cm (mW/cm2)
802.11b/g/n/ac/ax (20MHz) with CDD	2412 ~ 2462	25.89	4.23	0.186	1.0
802.11n/ac/ax (40MHz) with CDD	2422 ~ 2452	18.43	4.23	0.033	1.0
802.11a/n/ac/ax (20MHz) with CDD	5150 ~ 5250 5725 ~ 5850	25.10	5.01	0.204	1.0
802.11n/ac/ax (40MHz) with CDD	5150 ~ 5250 5725 ~ 5850	26.56	5.01	0.259	1.0
802.11ac/ax (80MHz) with CDD	5150 ~ 5250 5725 ~ 5850	22.34	4.96	0.097	1.0
802.11b/g/n/ac/ax (20MHz) with Beam-forming	2412 ~ 2462	23.56	6.89	0.200	1.0
802.11n/ac/ax (40MHz) with Beam-forming	2422 ~ 2452	15.63	6.89	0.032	1.0
802.11a/n/ac/ax (20MHz) with Beam-forming	5150 ~ 5250 5725 ~ 5850	24.94	11.03	0.713	1.0
802.11n/ac/ax (40MHz) with Beam-forming	5150 ~ 5250 5725 ~ 5850	24.90	11.03	0.707	1.0
802.11ac/ax (80MHz) with Beam-forming	5150 ~ 5250 5725 ~ 5850	21.61	7.97	0.164	1.0
BLE	2402 ~ 2480	5.83	4.18	0.002	1.0

Simultaneous transmission:

Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 21 cm (mW/cm2)	Power Density Limit at R = 21 cm (mW/cm2)
2412 ~ 2462	23.56	6.89	0.200	1.0
5150 ~ 5250 5725 ~ 5850	24.94	11.03	0.713	1.0
2402 ~ 2480	5.83	4.18	0.002	1.0
Simultaneous transmission power density			0.915	1.0

Note: The simultaneous transmission power density is 0.915mW/cm2 for Wireless Access Point without any other radio equipment.

The End