RF Exposure Evaluation Declaration

Product Name	:	Wireless Access Point
Model No.	:	AP650X
FCC ID	:	WBV-AP650X

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

Date of Receipt	:	Mar. 20, 2018
Issued Date	:	Aug. 03, 2018
Report No.	:	1842039R-RF-US-P20V01
Report Version	:	V1.0

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.
This report must not be used to claim product endorsement by TAF, A2LA or any agency of the government.
The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.

Test Report Certification

Issued Date : Aug. 03, 2018
Report No. : 1842039R-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.	:	AP650X
FCC ID	:	WBV-AP650X
Brand Name	:	Aerohive
EUT Voltage	:	PoE 48V
Applicable Standard	:	KDB 447498D01V06 FCC Part1.1310
Test Result	:	Complied
Performed Location	:	DEKRA Testing and Certification (Suzhou) Co., Ltd. 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

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Approved By : Harry Zhao
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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	4.2

2.4G:

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				
			☒	CDD				
			☐	Sectorized				
			☒	Beam-forming				
Antenna Type	☐	External	☐	Dipole				
			☐	Sectorized				
	☒	Internal	☐	PIFA				
			☐	PCB				
			☐	Ceramic Chip Antenna				
			☒	Metal plate type F antenna				

Antenna Technology(2*TX+2*RX)	Ant Gain (dBi)	Directional Gain (dBi)	
		For Power	For PSD
☒ CDD	3.5	3.5	6.5
☒ Beam-forming		6.5	6.5

Antenna Technology(4*TX+4*RX)	Ant Gain (dBi)	Ant Gain (dBi)	
		For Power	For PSD
☒ CDD	3.5	3.5	9.5
☒ Beam-forming		9.5	9.5

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	5.5	5.5	8.5
☒ Beam-forming		8.5	8.5

Antenna Technology(4*TX+4*RX)	Ant Gain (dBi)	Directional Gain (dBi)	
		For Power	For PSD
☒ CDD	5.5	5.5	11.5
☒ Beam-forming		11.5	11.5

Power Density

Standlone modes:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (dBm)	Directional Gain (dBi)	Power Density at R = 24.5 cm (mW/cm2)	Power Density Limit at R = 24.5 cm (mW/cm2)
802.11b/g/n/ac/ax 2T2R with CDD	2400 ~ 2483.5	24.61	3.5	0.086	1.0
802.11b/g/n/ac/ax 4T4R with CDD	2400 ~ 2483.5	27.03	3.5	0.150	1.0
802.11a/n/ac/ax 2T2R with CDD	5150 ~ 5250 5725 ~ 5850	21.61	5.5	0.068	1.0
802.11a/n/ac/ax 4T4R with CDD	5150 ~ 5250 5725 ~ 5850	26.76	5.5	0.223	1.0
802.11b/g/n/ac/ax 2T2R with BF	2400 ~ 2483.5	23.79	6.5	0.142	1.0
802.11b/g/n/ac/ax 4T4R with BF	2400 ~ 2483.5	25.90	9.5	0.460	1.0
802.11a/n/ac/ax 2T2R with BF	5150 ~ 5250 5725 ~ 5850	23.86	11.5	0.455	1.0
802.11a/n/ac/ax 4T4R with BF	5150 ~ 5250 5725 ~ 5850	24.40	11.5	0.516	1.0
BLE	2400 ~ 2483.5	5.44	4.2	0.001	1.0

Simultaneous transmission:

Wireless Configure	Frequency Range (MHz)	Maximum EIRP (dBm)	Limit of Power Density S(mW/cm2)	Power Density S at R = 24.5 cm (mW/cm2)	Rate	Limit
WIFI	2400 ~ 2483.5	35.40	1.0	0.460	0.977	1
	5150 ~ 5250 5470 ~ 5850	35.90	1.0	0.516		
BT	2400 ~ 2483.5	9.64	1.0	0.001		

The EUT support simultaneously transmit with WIFI 2.4G+5G+ BLE.

The worst combination should be shown in the report. The Simultaneously safety distance is 24.5cm for installed for Wireless Access Point without any other radio equipment.

The End