RF Exposure Report

Report No.:	SA170505C03A
FCC ID:	2AHBN-AP21
Test Model:	AP21
Received Date:	May 05, 2017
Test Date:	May 17 ~ Dec. 19, 2017
Issued Date:	Dec. 20, 2017
Applicant:	Mist Systems, Inc.
Address:	1601 South De Anza Blvd. Suite 248 Cupertino California United States 95014
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

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Release Control Record

Issue No.	Description	Date Issued
SA170505C03A	Original release.	Dec. 20, 2017

1 Certificate of Conformity

Product:	Wi-Fi & BLE Array AP
Brand:	Mist
Test Model:	AP21
Sample Status:	Engineering sample
Applicant:	Mist Systems, Inc.
Test Date:	May 17 ~ Dec. 19, 2017
Standards:	FCC Part 2 (Section 2.1091) KDB 447498 D01 General RF Exposure Guidance v06 IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Dec. 20, 2017

Polly Chien / Specialist

Approved by : _____ , **Date:** Dec. 20, 2017

Ken Liu / Senior Manager

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result Of Maximum Conducted Power

CDD mode:

Frequency Band (MHz)	TX Function	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
Radio 1						
2412-2462	1TX	22.82	3.63	20	0.088	1
	2TX	25.39	6.54	20	**0.310**	1
Radio 2						
5180-5240	1TX	21.13	4.93	20	0.080	1
	2TX	23.46	7.87	20	0.270	1
5250-5350	1TX	21.88	4.93	20	0.095	1
	2TX	23.83	7.87	20	0.294	1
5470-5725	1TX	23.46	4.62	20	0.128	1
	2TX	23.15	7.58	20	0.235	1
5745-5825	1TX	23.03	4.96	20	0.125	1
	2TX	24.29	7.97	20	**0.335**	1
Radio 3						
BT LE	-	5.22	4.98	20	**0.002**	1

Beamforming Mode

Frequency Band (MHz)	TX Function	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
Radio 1						
2412-2462	2TX	19.55	6.54	20	0.081	1
Radio 2						
5180-5240	2TX	23.26	7.87	20	0.258	1
5250-5350	2TX	21.77	7.87	20	0.183	1
5470-5725	2TX	21.95	7.58	20	0.179	1
5745-5825	2TX	23.98	7.97	20	0.312	1

Note:

1. There are three radios for the EUT.

Radio	Antenna	Brand	Model	Function	Band
Radio 1	WIFI Ant. 1	WNC	81EAAH15.GEP	WLAN 2.4G	2.4G
	WIFI Ant. 2	WNC	81EAAH15.GEQ	5G (RX only)	U-NII-1/ U-NII-2A /UNII-2C/UNII-3
Radio 2	WIFI Ant. 1	WNC	81EAAH15.GER	WLAN 5G	U-NII-1/ U-NII-2A /UNII-2C/UNII-3
	WIFI Ant. 2	WNC	81EAAH15.GES		
Radio 3	BT-Omni Ant.	WNC	81EAAH15.GET	BT LE	2.4G

2. Antenna gain:

2412-2462MHz:
1TX: Max. antenna gian: 3.63dBi
2TX: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 6.54dBi

5180-5240MHz & 5250-5350MHz:
1TX: Max. antenna gian: 4.93dBi
2TX: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 7.87dBi

5470-5725MHz:
1TX: Max. antenna gian: 4.62dBi
2TX: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 7.58dBi

5745-5825MHz:
1TX: Max. antenna gian: 4.96dBi
2TX: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 7.97dBi

	Max Power (dBm)		Total Power (dBm)	Power Limit (dBm)
	Radio 1: WLAN	Radio 3: BT		
2.4GHz	25.39	5.22	25.43	30

CONCULSION:

Both of the WLAN 2.4G & WLAN 5G & BT can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Radio 1: 2.4G + Radio 2: 5G + Radio 3: BT = 0.310 +0.335 + 0.002 =0.647 < 1

Therefore the maximum calculations of above situations are less than the “1” limit.

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