RF Exposure Report

Report No.: SA151230E03

FCC ID: 2AHBN-AP41

Test Model: AP41

Received Date: Dec. 23, 2015

Test Date: Dec. 24, 2015 ~ Jan. 19, 2016

Issued Date: Jan. 25, 2016

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
SA151230E03	Original release.	Jan. 25, 2016

1 Certificate of Conformity

Product:	Premium Wi-Fi & BLE Array AP
Brand:	Mist
Test Model:	AP41
Sample Status:	Engineering sample
Applicant:	Mist Systems, Inc.
Test Date:	Dec. 24, 2015 ~ Jan. 19, 2016
Standards:	FCC Part 2 (Section 2.1091)
	KDB 447498 D01 (October 23, 2015)
	IEEE C95.1

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:** _____ Jan. 25, 2016 _____
Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** _____ Jan. 25, 2016 _____
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 25cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

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	22.65	3.06	25	0.047	1
2412-2462	2TX	25.45	6.37	25	0.194	1
2412-2462	3TX	27.07	8.13	25	0.422	1
2412-2462	4TX	28.38	9.43	25	0.769	1
5180-5240	1TX	25.14	3.85	25	0.101	1
5180-5240	2TX	27.46	7.19	25	0.371	1
5180-5240	3TX	27.25	8.73	25	0.505	1
5180-5240	4TX	25.84	9.96	25	0.484	1
5745-5825	1TX	23.32	4.18	25	0.072	1
5745-5825	2TX	25.95	7.10	25	0.257	1
5745-5825	3TX	27.27	8.94	25	0.532	1
5745-5825	4TX	28.22	10.19	25	0.883	1
Radio 2						
2412-2462	1TX	13.49	3.61	25	0.007	1
5180-5240	1TX	24.17	3.59	25	0.076	1
5745-5825	1TX	23.88	4.29	25	0.084	1
Radio 3						
BT EDR	-	10.90	11.05	25	0.020	1
BT LE	-	6.13	11.05	25	0.007	1

Note:

2412-2462MHz:

2TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 6.37dBi

3TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 8.13dBi

4TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 9.43dBi

5180-5240MHz:

2TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 7.19dBi

3TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 8.73dBi

4TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 9.96dBi

5745-5825MHz:

2TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 7.10dBi

3TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 8.94dBi

4TX: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N]$ = 10.19dBi

BT EDR/BT LE: Directional gain = 5.03dBi + 10log(4) = 11.05dBi

	MAX POWER (dBm)			TOTAL POWER (dBm)	POWER LIMIT (dBm)
	Radio 1: WLAN	Radio 2: WLAN	Radio 3: BT		
2.4GHz	28.38	13.49	10.90	28.59	30
5GHz: U-NII-1	27.46	24.17	-	29.13	30
5GHz: U-NII-3	28.22	23.88	-	29.58	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 = 0.769 +0.084 + 0.020 =0.873

Radio 1: 5G + Radio 2: 5G + Radio 3: BT = 0.883 + 0.084 + 0.020= 0.997

Radio 1: 5G + Radio 2: 2.4G + Radio 3: BT = 0.883 + 0.007 + 0.020 = 0.910

Radio 1: 2.4G + Radio 2: 2.4G + Radio 3: BT = 0.769 + 0.007 + 0.020= 0.796

Therefore, the maximum calculation of this situation is 0.997, which is less than the "1" limit.

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