

## RF Exposure Report

**Report No.:** SA190912E02A

**FCC ID:** 2AHBN-AP33

**Test Model:** AP32

**Series Model:** AP32E, AP33

**Received Date:** Sep. 26, 2019

**Test Date:** Dec. 04, 2019

**Issued Date:** Feb. 19, 2020

**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  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan.

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan.

**FCC Registration /  
Designation Number:** 723255 / TW2022

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### Release Control Record

Issue No.	Description	Date Issued
SA190912E02A	Original release.	Feb. 19, 2020

## 1 Certificate of Conformity

**Product:** Wi-Fi & BLE Array AP

**Brand:** Mist

**Test Model:** AP32

**Series Model:** AP32E, AP33

**Applicant:** Mist Systems, Inc.

**Test Date:** Dec. 04, 2019

**Standards:** FCC Part 2 (Section 2.1091)  
IEEE C95.3-2002

**References Test Guidance:** KDB 447498 D01 General RF Exposure Guidance v06

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:** Feb. 19, 2020  
Claire Kuan / Specialist

**Approved by :**  , **Date:** Feb. 19, 2020  
Clark Lin / Technical 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 <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz ; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 40 cm away from the body of the user.

So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

Model: AP32						
Antenna NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
Int Dual Ant 3 (WiFi 5G+BT)	-	-	5 6	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
Int WiFi Dual Ant 1	-	-	4.5 5.4	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
Int WiFi Dual Ant 0	-	-	4.6 5.7	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
Int WiFi 5G Ant 2	-	-	5.8	5.15~5.85GHz	PIFA	Ipex
Scanning Ant	-	-	5 6	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
Model: AP32E						
Antenna NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
Ext WiFi Dual Ant (2.4+5G)	AccelTex	ATS-OO-245-46-6RPSP-36	4 6	2.4~2.4835GHz 5.15~5.85GHz	omnidirectional	RPSMA Plug
Ext WiFi Dual Ant (2.4+5G)			4 6	2.4~2.4835GHz 5.15~5.85GHz	omnidirectional	RPSMA Plug
Ext WiFi Dual Ant (5G)			4 6	2.4~2.4835GHz 5.15~5.85GHz	omnidirectional	RPSMA Plug
Ext WiFi Dual Ant (5G)			4 6	2.4~2.4835GHz 5.15~5.85GHz	omnidirectional	RPSMA Plug
Ext WiFi Dual Ant (Scanning)			4 6	2.4~2.4835GHz (Scanning) 5.15~5.85GHz (Scanning)	omnidirectional	RPSMA Plug
Int Scanning Ant	-	-	5 6	2.4~2.4835GHz (Scanning) 5.15~5.85GHz (Scanning)	PIFA	Ipex
Int BT Ant	-	-	5	2.4~2.4835GHz	PIFA	Ipex
Model: AP33						
Antenna NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
Int WiFi Dual Ant 0	-	-	3.7 6	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
Int WiFi Dual Ant 1	-	-	4.6 6	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
Int WiFi 5G Ant 2	-	-	6	5.15~5.85GHz	PIFA	Ipex
Int WiFi 5G Ant 3	-	-	5.9	5.15~5.85GHz	PIFA	Ipex
Scanning Ant	-	-	5 6	2.4~2.4835GHz 5.15~5.85GHz	PIFA	Ipex
BT Slot_Direct Antenna	-	-	6	2.402~2.480GHz	Slot_Direct	Ipex
BT Array Antenna	-	-	Beam 1 :3.9 Beam 2 :3.9 Beam 3 :4.7 Beam 4 :4.4 Beam 5 :4.8 Beam 6 :5.1 Beam 7 :5.1 Beam 8 :4.2	2.402~2.480GHz	Array Antenna	Ipex

Note: The max. Antenna gain was selected for their final test of Antenna Port Conducted test items.

## 2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN 2.4GHz	2437	381.986	7.61	40	0.10958	1
WLAN U-NII-1	5230	493.303	12.02	40	0.39065	1
WLAN U-NII-3	5795	886.912	12.02	40	0.70234	1
Scanning Radio_2.4GHz	2462	193.642	5.00	40	0.03046	1
Scanning Radio_WLAN U-NII-1	5200	86.896	6.00	40	0.01721	1
Scanning Radio_WLAN U-NII-3	5795	111.429	6.00	40	0.02206	1
BT-LE	2402	2.312	6.00	40	0.00046	1

### NOTE:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- WLAN 2.4GHz: The directional gain  $4.6 \text{ dBi} + 10\log(2) = 7.61 \text{ dBi}$   
WLAN 5GHz: Directional gain  $= 6\text{dBi} + 10\log(4) = 12.02\text{dBi}$

### Conclusion:

The formula of calculated the MPE is:

$$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} + \text{Scanning Radio\_WLAN 2.4GHz} + \text{Scanning Radio\_WLAN 5GHz} + \text{BT-LE} = 0.10958 / 1 + 0.70234 / 1 + 0.03046 / 1 + 0.02206 / 1 + 0.00046 / 1 = 0.86490$$

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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