

## RF Exposure Report

### (Spot Check)

**Report No.:** SA180830E03G

**FCC ID:** 2APLE18300394

**Original FCC ID:** 2APLE18300398

**Test Model:** VMB5000

**Revision:** V035

**Received Date:** June 02, 2019

**Test Date:** June 02, 2019

**Issued Date:** July 18, 2019

**Applicant:** Arlo Technologies, Inc.

**Address:** 2200 Faraday Ave. Suite 150, Carlsbad, CA 92008, United States

**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 R.O.C.

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

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

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### Release Control Record

Issue No.	Description	Date Issued
SA180830E03G	Original release.	July 18, 2019

## 1 Certificate of Conformity

**Product:** Alro Gen5 Entry Hub

**Brand:** Arlo

**Test Model:** VMB5000

**Revision:** V035

**Sample Status:** Pre Production Unit

**Applicant:** Arlo Technologies, Inc.

**Test Date:** June 02, 2019


**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.

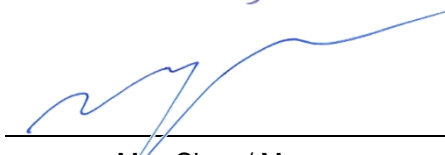
**Prepared by :**

  
Wendy Wu / Specialist

**Date:**

July 18, 2019

**Approved by :**

  
May Chen / Manager

**Date:**

July 18, 2019

## 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

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

where

Pd = power density in mW/cm<sup>2</sup>

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**.

## 2.4 Antenna Gain

Sub-GHz							
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (MHz)	Antenna type	Connector type	
1	NA	902P00214N0	1.5	860~930	PIFA	NA	
Z-Wave							
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (MHz)	Antenna type	Connector type	
1	NA	902P00213N0	2.5	860~930	PIFA	NA	
Zigbee							
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type	
1	INPAQ TECHNOLOGY CO., LTD.	ACA-5036-A2-CC-S	3.5	2.4~2.4835	CHIP	NA	
WLAN							
Ant No.	Brand	Model	Antenna Net Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type	Cable Length (mm)
1	NA	9 07X01052X0	2.5	2.4~2.4835	Dipole	i-pex	75
			1.8	5.15~5.25			
			2	5.25~5.35			
			2.2	5.47~5.725			
			1.6	5.725~5.85			
2	NA	9 07X00747X19	2.5	2.4~2.4835	Dipole	i-pex	90
			2.2	5.15~5.25			
			1.2	5.25~5.35			
			3.2	5.47~5.725			
			3.5	5.725~5.85			

## 2.5 Calculation Result

For 2.4GHz, 5GHz (UNII-1, U-NII-3), Zigbee, Z-Wave and Sub-GHz data was copied from the original test report (Report No.: SA180830E03)

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	508.821	5.51	20	0.35999	1
WLAN U-NII-1	5200	571.179	5.01	20	0.36016	1
WLAN U-NII-2A	5320	249.483	4.62	20	0.14380	1
WLAN U-NII-2C	5550	249.543	5.72	20	0.18530	1
WLAN U-NII-3	5745	490.624	5.61	20	0.35520	1
Zigbee	2405	90.991	3.5	20	0.04053	1
Sub-GHz	915	92.89	1.5	20	0.02610	0.61

Note:

2.4GHz: Directional gain = 2.5dBi + 10log(2) = 5.51dBi

5GHz:

For U-NII-1 band: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 5.01\text{dBi}$

For U-NII-2A band: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 4.62\text{dBi}$

For U-NII-2C band: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 5.72\text{dBi}$

For U-NII-3 band: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 5.61\text{dBi}$

### Z-Wave Field Strength Conversion:

Frequency (MHz)	Field Strength of Fundamental (dBuV/m) @3m	EIRP (dBm)	EIRP (mW)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
908.4	93.9	-1.33	0.7362	20	0.00015	0.6056

Note: 1. Pout EIRP (dBm) = Field Strength of Fundamental (dBuV/m) - 95.23 (dB)

2. Power Density Limit = F/1500

### Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz + Zigbee + Sub-GHz + Z-Wave = 0.35999 / 1 + 0.36016 / 1 + 0.04053 / 1 + 0.02610 / 0.61 + 0.00015 / 0.6056 = 0.80371

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

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