

RF EXPOSURE REPORT



Applicant: Arlo Technologies Inc
2200 Faraday Avenue, Suite 150, Carlsbad, CA 92008, USA
Product Name: Go 2 LTE/Wi-Fi Security Camera
Brand Name: Arlo
Model No.: VML2030
Model Difference: N/A
Report Number: ER/2021/70076
FCC ID 2APLE18300421
IC: 23815-18300421
Issue Date: August 27, 2021
Date of EUT Received: July 22, 2021

Approved By

John Yeh

We hereby certify that:

The above equipment was evaluate by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1091 and RSS-102.

The results of this report relate only to the sample identified in this report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By
ER/2021/70076	00	Original	August 27, 2021	Ariel Chang

Note:

1. Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
2. B71 is disabled for Canada.

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Contents

1	DESCRIPTION OF EQUIPMENT UNDER TEST (EUT).....	4
2	FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE).....	7

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	Go 2 LTE/Wi-Fi Security Camera	
Brand Name:	Arlo	
Model No.:	VML2030	
Model Difference:	N/A	
Hardware Version:	H4	
Firmware Version:	EC25AF.R07.A09	
EUT Series No.:	A8KU167EA009D	
WWAN Module	Module No.: EC25-AF Supplier: Quectel Wireless Solutions Company Limited	
Power Supply:	3.6Vdc from Rechargeable Li-polymer Battery or 5 / 9 / 12 / 15 / 20Vdc from AC/DC Adapter	
	Battery	Model No.: A-14 Supplier: Celxpert
IMEI:	356766550002865	

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1.2 Antenna Information:

1.2.1 WWAN

Antenna Type	Antenna Model No.
PIFA	Ant0
Note: Transmission in frequencies in this test report are only available by the above antenna(s).	

Type	Modulation	Frequency (MHz)	Peak Antenna Gain (dBi)
			Ant0
PIFA	WCDMA / HSPA Band II	1850 ~ 1910	3.00
	WCDMA / HSPA Band IV	1710 ~ 1755	2.50
	WCDMA / HSPA Band V	824 ~ 849	0.30
	LTE-Band 2	1850 ~ 1910	3.00
	LTE-Band 4	1710 ~ 1755	2.50
	LTE-Band 5	824 ~ 849	0.30
	LTE-Band 12	699 ~ 716	0.00
	LTE-Band 13	777 ~ 787	-0.80
	LTE-Band 14	788 ~ 798	-1.10
	LTE-Band 66	1710 ~ 1780	2.50
	LTE-Band 71	663 ~ 698	-1.10

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1.3 Rated Power

1.3.1 WWAN:

								FCC				ISED		
Operating Frequency (MHz)				Module	Max. Output Power (dBm)	Antenna Gain (dBi)	EIRP / ERP (dBm)	Operation Distance (cm)	Power Density (mW/cm ²)	Margin	FCC Worst Case	Power Density (W/m ²)	Margin	IC Worst Case
WCDMA / HSPA Band II	1850	~	1910	EC-25_AF	25.00	3.00	28.00	20	0.13	-0.87		1.26	-3.22	
WCDMA / HSPA Band IV	1710	~	1753		25.00	2.50	27.50	20	0.11	-0.89		1.12	-3.12	
WCDMA / HSPA Band V	824	~	849		25.00	0.30	25.30	20	0.07	-0.48		0.67	-1.90	
LTE-Band 2	1850	~	1910		25.00	3.00	28.00	20	0.13	-0.87		1.26	-3.22	
LTE-Band 4	1710	~	1755		25.00	2.50	27.50	20	0.11	-0.89		1.12	-3.12	
LTE-Band 5	824	~	849		25.00	0.30	25.30	20	0.07	-0.48		0.67	-1.90	
LTE-Band 12	699	~	716		25.00	0.00	25.00	20	0.06	-0.40		0.63	-1.67	V
LTE-Band 13	777	~	787		25.00	-0.80	24.20	20	0.05	-0.47		0.52	-1.95	
LTE-Band 14	788		798		25.00	-1.10	23.90	20	0.05	-0.48		0.49	-2.01	
LTE-Band 66	1710	~	1780		25.00	2.50	27.50	20	0.11	-0.89		1.12	-3.12	
LTE-Band 71	663	~	698	25.00	-1.10	23.90	20	0.05	-0.39	V	0.49	-1.73		

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2 FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

2.1 FCC Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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 ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equipment power density

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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2.2 ISED Standard Applicable

This submittal(s) (test report) is intended to comply with RSS-102 issue 5 Radio frequency Radiation Exposure requirement.

This is a Mobile device, the MPE is required.

Limits for Maximum Permissible Exposure (MPE)

RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field Strength (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

F = frequency in MHz

* = Based on nerve stimulation (NS).

** = Based on specific absorption rate (SAR)

Maximum Permissible Exposure (MPE) Evaluation

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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2.3 Power Density Calculation (Worst Case)

FCC Standalone MPE

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. output Power (dBm)	Antenna Gain (dBi)	Max. output Power EIRP (mW)	Power Density (PD) (mW/cm ²)	Limit (mW/cm ²)	Pass / Fail	Power Density / Limit
WCDMA / HSPA Band 2	1852.40	20	25	3.00	630.96	0.126	1.000	Pass	0.126
WCDMA / HSPA Band 4	1712.40	20	25	2.50	562.34	0.112	1.000	Pass	0.112
WCDMA / HSPA Band 5	826.40	20	25	0.30	338.84	0.067	0.551	Pass	0.122
LTE-Band 2	1880.00	20	25	3.00	630.96	0.126	1.000	Pass	0.126
LTE-Band 4	1753.50	20	25	2.50	562.34	0.112	1.000	Pass	0.112
LTE-Band 5	844.00	20	25	0.30	338.84	0.067	0.563	Pass	0.120
LTE-Band 12	714.50	20	25	0.00	316.23	0.063	0.476	Pass	0.132
LTE-Band 13	782.00	20	25	-0.80	263.03	0.052	0.521	Pass	0.100
LTE-Band 14	795.50	20	25	-1.10	245.47	0.049	0.530	Pass	0.092
LTE-Band 66	1745.00	20	25	2.50	562.34	0.112	1.000	Pass	0.112
LTE-Band 71	668.00	20	25	-1.10	245.47	0.049	0.445	Pass	0.110

ISED Standalone MPE

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. output Power (dBm)	Antenna Gain (dBi)	Output Power EIRP (mW)	Power Density (PD) (W/m ²)	Limit (W/m ²)	Pass / Fail	Power Density / Limit
WCDMA / HSPA Band 2	1852.40	20	25	3	630.96	1.256	4.480	Pass	0.280
WCDMA / HSPA Band 4	1712.40	20	25	2.5	562.34	1.119	4.246	Pass	0.264
WCDMA / HSPA Band 5	826.40	20	25	0.3	338.84	0.674	2.581	Pass	0.261
LTE-Band 2	1880.00	20	25	3	630.96	1.256	4.526	Pass	0.277
LTE-Band 4	1753.50	20	25	2.50	562.34	1.119	4.315	Pass	0.259
LTE-Band 5	844.00	20	25	0.30	338.84	0.674	2.618	Pass	0.258
LTE-Band 12	714.50	20	25	0.00	316.23	0.629	2.336	Pass	0.269
LTE-Band 13	782.00	20	25	-0.80	263.03	0.524	2.485	Pass	0.211
LTE-Band 14	795.50	20	25	-1.10	245.47	0.489	2.514	Pass	0.194
LTE-Band 66	1745.00	20	25	2.50	562.34	1.119	4.301	Pass	0.260
LTE-Band 71	668.00	20	25	-1.10	245.47	0.489	2.231	Pass	0.219

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.

~ End of Report ~

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