



FCC RF EXPOSURE REPORT

For

Ultra Short Throw Laser Projector

FCC MODEL NUMBER: AL-UK535A, AL-UK** (* may be 0-9, A-Z)**

ISED MODEL NUMBER: AL-UK535A

REPORT NUMBER: 4790678406-1-RF-5

ISSUE DATE: January 17, 2023

FCC ID:2ALQL-AL-UK535A

Prepared for

APPOTRONICS CO., LTD

**20F to 22F, High-Tech Zone Union Tower, No.63 Xuefu Road, Nanshan District
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Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	January 17, 2023	Initial Issue	



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
3.1. DESCRIPTION OF EUT	6
4. REQUIREMENT	7



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: APPOTRONICS CO., LTD
Address: 20F to 22F, High-Tech Zone Union Tower, No.63 Xuefu Road,
Nanshan District Shenzhen 518051 China

Manufacturer Information

Company Name: APPOTRONICS CO., LTD
Address: 20F to 22F, High-Tech Zone Union Tower, No.63 Xuefu Road,
Nanshan District Shenzhen 518051 China

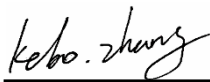
EUT Information

EUT Name: Ultra Short Throw Laser Projector
FCC Model: AL-UK535A, AL-UK**** (* may be 0-9, A-Z)
ISED Model: AL-UK535A
Brand:  **APPOTRONICS®**

Sample Received Date: December 20, 2022
Sample Status: Normal
Sample ID: 5645955
Date of Tested: January 12, 2023 to January 17, 2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47CFR§2.1091	PASS
KDB-447498 D01 V06	

Prepared By:



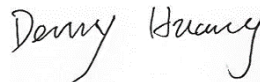
Kebo Zhang
Senior Project Engineer

Approved By:



Stephen Guo
Operations Manager

Checked By:



Denny Huang
Senior Project Engineer



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 447498 D01 General RF Exposure Guidance v06.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China



3.1. DESCRIPTION OF EUT

EUT Name	Ultra Short Throw Laser Projector
FCC Model	AL-UK535A, AL-UK**** (* may be 0-9, A-Z)
ISED Model	AL-UK535A
Model difference	AL-UK**** (* may be 0-9, A-Z) have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction with AL-UK535A .The difference lies only the model number. all these changes do not degrade the unwanted emissions of the certified product.



4. REQUIREMENT

LIMIT

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
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/150	30
1500-100,000	--	--	1.0	30
Note 1: f = frequency in MHz, * means Plane-wave equivalent power density				
Note 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.				
Note 3: The limit value 1.0mW/cm ² is available for this EUT.				

MPE CALCULATION METHOD

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

where: S = power density (in appropriate units, e.g. mW/ cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

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 (appropriate units, e.g., cm)



CALCULATED RESULTS

Radio Frequency Radiation Exposure Evaluation

BT (Worst case)					
Operating Mode	Max. Tune up Power	Antenna Gain		Power density	Limit
	(dBm)	(dBi)	(num)	(mW/ cm ²)	
BT	8	2.88	1.94	0.00244	1

WIFI 2.4G (Worst case)					
Operating Mode	Max. Tune up Power	Directional Gain		Power density	Limit
	(dBm)	(dBi)	(num)	(mW/ cm ²)	
802.11n HT20	16	5.82	3.82	0.03025	1

WIFI 5G (Worst case)					
Operating Mode	Max. Tune up Power	Directional Gain		Power density	Limit
	(dBm)	(dBi)	(num)	(mW/ cm ²)	
802.11ac VHT80	18	5.98	3.96	0.04974	1

Note:

1. The Power comes from report operation description.
2. The minimum separation distance of the device is greater than 20 cm.
3. Calculate by WORST-CASE mode.

END OF REPORT