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FCC TEST REPORT

Report No.....: AB2506005FW05

FCC ID.....: **2A9DQ-H5A**

Applicant.....: ALPHA OPTIK(SHENZHEN) CO.,LTD.

Address.....: Room 01-04,19th Floor, Tower A, Building 12,Shenzhen Bay Eco-Technology Park, No.18 Kejinan Road, Nanshan District, Shenzhen City, Guangdong Province

Manufacturer.....: ALPHA OPTIK(SHENZHEN) CO.,LTD.

Address.....: Room 01-04,19th Floor, Tower A, Building 12,Shenzhen Bay Eco-Technology Park, No.18 Kejinan Road, Nanshan District, Shenzhen City, Guangdong Province

Product Name.....: Smart Projector

Trade Mark.....: /

Test Model.....: H5A

Additional Model(s).....: H2,H2 Mini,H5,H6,E5,P1,P2,P3,WP12503,WP12505,WP22503

Standard.....: FCC 47 CFR §2.1091
KDB 447498 D01
IEEE C95.1

Date of Receipt.....: 2025.06.04

Date of Issue.....: 2025.07.24

Test Result.....: Pass

Compiled by: (Printed Name + Signature)	Huaijie Li	<i>Huaijie Li</i>
Supervised by: (Printed Name + Signature)	Jay Liu	<i>Jay Liu</i>
Approved by: (Printed Name + Signature)	Mic Cheng	<i>Mic Cheng</i>

Testing Laboratory Name.....: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address.....: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

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FCC TEST REPORT

Test Report No.: AB2506005FW05	<u>2025.07.24</u> Date of issue
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EUT.....	: Smart Projector
Test Model.....	: H5A
Applicant.....	: ALPHA OPTIK(SHENZHEN) CO.,LTD.
Address.....	: Room 01-04,19th Floor, Tower A, Building 12,Shenzhen Bay Eco-Technology Park, No.18 Kejinan Road, Nanshan District, Shenzhen City, Guangdong Province
Telephone.....	: /
Fax.....	: /
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Telephone.....	: /
Fax.....	: /

Test Result	Positive
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



FCC ID: 2A9DQ-H5A

Report No.: AB2506005FW05

REPORT VERSION

Version No.	Issue Date	Description
01	2025.07.24	Initial Issue



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1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF EUT

Product Name:	Smart Projector	
Trade Mark:	/	
Test Model:	H5A	
Additional Model(s):	H2,H2 Mini,H5,H6,E5,P1,P2,P3,WP12503,WP12505,WP22503	
Model Difference:	All models are the same circuit and RF module, except the model name	
Hardware Version:	/	
Software Version:	/	
Power Supply:	Adapter input:100-240V ~50/60Hz 1.5A Output: 5V $\overline{\text{---}}$ 3A/ 9V $\overline{\text{---}}$ 3A/ 12V $\overline{\text{---}}$ 3A/ 15V $\overline{\text{---}}$ 3A/ 20V $\overline{\text{---}}$ 5A, 100W Max PPS: 5.0V~21.0V $\overline{\text{---}}$ 5.0A 100W Max Input: DC20V/5A	
EUT Supports Function: (Provided by the customer)	2.4GHz ISM Bands:	Bluetooth V4.2
Test Sample(s) Number:	AB2506005-01 (Engineer Sample) AB2506005-02 (Normal Sample)	
Radio Specification Subject to this Report		
Bluetooth Version:	Bluetooth LE	
Frequency Range:	2402MHz~2480MHz	
Modulation Type:	GFSK	
Channel Spacing:	2MHz	
Channel Number(s):	40	
Antenna Type:	Integral Antenna	
Antenna Gain:	4.1dBi	
Bluetooth Version:	Bluetooth BDR + EDR	
Frequency Range:	2402MHz~2480MHz	
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK	
Channel Spacing:	1MHz	
Channel Number(s):	79	
Antenna Type:	Integral Antenna	
Antenna Gain:	4.1dBi	
Radio Specification Subject to this Report		
Radio Specification:	IEEE 802.11b/g/n	
Frequency Range:	2412MHz~2462MHz for IEEE 802.11b/g/n(HT20) 2422MHz~2452MHz for IEEE 802.11n(HT40)	
Modulation Type:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT40: OFDM (64-QAM, 16-QAM, QPSK, BPSK)	
Channel Spacing:	5MHz	



Channel Number(s):	11 Channels for IEEE 802.11b/g/n(HT20) 7 Channels for IEEE 802.11n(HT40)	
Antenna Type:	Integral Antenna	
Antenna Gain:	ANT1:4.19dBi ANT2:4.23dBi Directional Gain = GANT+10*log(NANT)dBi = 4.23dBi + 10*Log(2)dBi = 7.24dBi	
Radio Specification Subject to this Report		
Radio Specification:	IEEE 802.11a/n/ac	
Frequency Range:	5180MHz~5240MHz for U-NII Band1 5745MHz~5825MHz for U-NII Band3	
Modulation Type:	IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)	
Channel Spacing:	IEEE 802.11a/n(HT20)/ac(VHT20): 20MHz IEEE 802.11n(HT40)/ac(VHT40): 40MHz IEEE 802.11ac(VHT80): 80MHz	
Channel Number(s):	U-NII Band1: 4 for IEEE 802.11a/n(HT20)/ac(VHT20) 2 for IEEE 802.11n(HT40))/ac(VHT40) 1 for IEEE 802.11ac(VHT80) U-NII Band3: 5 for IEEE 802.11a/n(HT20)/ac(VHT20) 2 for IEEE 802.11n(HT40))/ac(VHT40) 1 for IEEE 802.11ac(VHT80)	
Antenna Type:	Integral Antenna	
Antenna Gain:	U-NII Band1:	ANT1:3.88dBi, ANT2:5.11dBi
		MIMO Gain: 8.12dBi
	U-NII Band3:	ANT1:3.56dBi, ANT2:4.72dBi
		MIMO Gain: 7.73dBi

**1.2. DESCRIPTION OF SUPPORT EQUIPMENT**

Description	Manufacturer	Model	Serial Number	Supplied by
AC/DC Adapter	Quick Charger	PD1005UX-1001P	5003982	Applicant

1.3. DESCRIPTION OF EXTERNAL I/O

I/O Port Description	Quantity	Cable
USB Type-C Interface	1	0.8m, unshielded
Earphone Jack	1	N/A



1.4. DESCRIPTION OF TEST FACILITY

Test Lab: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

Tel.: +(86) 0755 85250797

E-mail: Aibonorm@aibonorm.com

Website: www.Aibonorm.com

The test facility is recognized, certified, or accredited by the following organizations:

A2LA-Lab Certificate No.: 7514.01

Aibo Standard Technology (Shenzhen) Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1411

Test Firm Registration Number: 567066

ISED Wireless Device Testing Laboratories

CAB identifier: CN0185

2. RF EXPOSURE EVALUATION

2.1 Limit

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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 (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) 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
1500-100,000			1.0	30

f = frequency in MHz

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm², P_{out} = output power to antenna in mW;

G = gain of antenna in linear scale, π = 3.1416;

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2.2 Evaluation Result

BR/EDR

Mode	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
8DPSK	5.14	3.266	0.0017	1.0	PASS

BLE

Mode	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
GFSK	4.60	2.884	0.0015	1.0	PASS

2.4G Wi-Fi (MIMO POWER)

Mode	MIMO power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11n(HT40)	9.96	9.908	0.01045	1.0	PASS

5.2G Wi-Fi (MIMO POWER)

Mode	MIMO power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11n(HT20)	9.12	8.166	0.01054	1.0	PASS

5.8G Wi-Fi (MIMO POWER)

Mode	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
802.11ac40	9.84	9.638	0.01137	1.0	PASS

Remark: BT antenna gain=4.1dBi,

2.4GWiFi antenna gain=ANT1:4.19dBi, ANT2:4.23dBi, MIMO Gain: 7.24dBi,

U-NII Band1: ANT1:3.88dBi, ANT2:5.11dBi, MIMO Gain: 8.12dBi,

U-NII Band3: ANT1:3.56dBi, ANT2:4.72dBi, MIMO Gain: 7.73dBi.



Results for transmit simultaneously

No.	Configurations	Maximum MPE Value mW/cm ²		Transmit simultaneously	Limits
1	BLE+2.4GWiFi	0.0017	0.01045	0.01215	1
2	BLE+5.8GWiFi	0.0017	0.01137	0.01307	1

At the transmit simultaneously calculation method is as follows:

Transmit simultaneously MPE = Σ of MPE ratios²

MPE ratios = Field strengths or power density / MPE limit at the test frequency

So a SAR test is not required

*****THE END*****