TEST REPORT

Report No.:	**E20190626729101-6**	**Application No.:**	**E20190626729101**
Applicant:	SCREENEO INNOVATION SA		
Address:	Route de Lully 5C 1131 Tolochenaz Switzerland		
Sample Description:	Home Projector		
Model:	Screeneo U3		
Adding Model:	/		
FCC ID:	2ASRT-HDP3550		
Test Specification:	KDB 447498 D01 General RF Exposure Guidance v06 FCC Part 2 §2.1091		
Test Date:	2019/08/28 to 2019/11/12		
Issue Date:	2019/12/12		
Test Result:	**PASS**		

Prepared By:	**Reviewed By:**	**Approved By:**
Wu Haoting/ Test Engineer	Xie Jiemin /Technical Manager	Zhu Yan / Manager
Wu Haoting	Xie Jiemin	Zhu Yan

Other Aspects:

/

Abbreviations: *ok / P = passed; fail / F = failed; n.a. / N = not applicable*

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.

DIRECTIONS OF TEST

1. This company carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.

2. 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.

3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

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1. GENERAL DESCRIPTION OF EUT

1.1. APPLICANT

Name:	SCREENEO INNOVATION SA
Address:	Route de Lully 5C 1131 Tolochenaz Switzerland

1.2. MANUFACTURER

Name:	SCREENEO INNOVATION SA
Address:	Route de Lully 5C 1131 Tolochenaz Switzerland

1.3. FACTORY

Factory 1

Name :	Zhangzhou Wanlida Technology Co.,Ltd.
Address :	Wanlida Industrial Zone, Nanjing,Zhangzhou, Fujian, China

1.4. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Home Projector
Model No.:	Screeneo U3
Adding Model:	/
Trade Name:	PHILIPS
FCC ID:	2ASRT-HDP3550
Power supply:	100V-240V~4.0A 50/60Hz
Frequency Range:	**BT3.0:**2402MHz~2480MHz; **BT4.0:** 2402MHz~2480MHz; **2.4GHz:** 2412MHz~2462MHz: 802.11b; 802.11g; 802.11n(HT20)
Transmit Power:	**BT3.0:** 9.56dBm for GFSK 8.17dBm for π/4-DQPSK 8.45dBm for 8DPSK: **BT4.0:** 2.84dBm for GFSK **2.4GHz:** 16.87dBm for 802.11b mode 23.43dBm for 802.11g mode 23.06dBm for 802.11n HT20 mode
Type of Modulation:	**BT3.0:**FHSS (GFSK for 1Mbps, π/4-DQPSK for 2Mbps, 8DPSK for 3Mbps)

	BT4.0: GFSK for 1Mbps **2.4GHz:** DSSS for 802.11b mode; OFDM for 802.11g mode; OFDM for 802.11n mode.
Antenna Specification:	Internal antenna with 4.0dBi gain (Max.)
Temperature Range:	+5℃ ~+35℃
Hardware Version:	9124C
Software Version:	V0.XX
I/O Port :	AC IN port *1, USB(5V/0.5A)port *1, 12V TRIGGER port*1, USB(5V/1A) port*1, AUDIO OUT port *2, AUDIO IN port *1, S/PDIF OPTICAL port *1, HDMI port *3, VGA port *1, AV-IN port *1, AV-L port *1, AV-R port *1
Note:	AC cable: unsheilded, 1.80m

2. LABORATORY AND ACCREDITATIONS

The tests and measurements refer to this report were performed by EMC Laboratory of GRG METROLOGY & TEST (SHENZHEN) CO., LTD

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3. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies.

A2LA	Certificate Number 2861.01

4. Evaluation method

Exposure category: General population/uncontrolled environment
EUT Type: Production Unit
Device Type: Mobile Device

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.
In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.
In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0. The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

5. Limits for General Population/Uncontrolled Exposure

(B) 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)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

6. Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

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

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the maximum gain of the used 4.0dBi for BT and wifi, the RF power density can be obtained.

Frequency Band	Antenna type and antenna number	Maximum antenna gain
2.4GHz	BT Antenna	4.0 dBi
	Wifi Antenna	4.0 dBi

7. Estimation Result

7.1. Conducted Power Results

Bluetooth

Mode	Channel	Frequency(MHz)	Peak Conducted Output Power (dBm)
GFSK-BLE	00	2402	2.62
	19	2440	2.84
	39	2480	2.58
GFSK	00	2402	7.91
	39	2441	9.56
	78	2480	9.19
π/4DQPSK	00	2402	5.96
	39	2441	8.17
	78	2480	7.58
8DPSK	00	2402	6.14
	39	2441	8.45
	78	2480	7.89

2.4GHz WIFI

Mode	Channel	Frequency(MHz)	Peak Conducted Output Power (dBm)
IEEE 802.11b	1	2412	16.12
	6	2437	16.63
	11	2462	16.87
IEEE 802.11g	1	2412	22.60
	6	2437	23.00
	11	2462	23.43
IEEE 802.11n HT20	1	2412	22.25
	6	2437	23.02
	11	2462	23.06

7.2. Manufacturing tolerance

Bluetooth

GFSK-BLE			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	2.0	2.0	2.0
Tolerance ±(dB)	1.0	1.0	1.0

GFSK			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	7.0	9.0	9.0
Tolerance ±(dB)	1.0	1.0	1.0

π/4DQPSK			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	5.0	8.0	7.0
Tolerance ±(dB)	1.0	1.0	1.0

8DPSK			
Frequency (MHz)	2402	2441	2480
Maximum Output Power(dBm)	6.0	8.0	7.0
Tolerance ±(dB)	1.0	1.0	1.0

2.4GHz WIFI

IEEE 802.11b			
Frequency (MHz)	2412	2437	2462
Maximum Output Power(dBm)	16.0	16.0	16.0
Tolerance ±(dB)	1.0	1.0	1.0

IEEE 802.11g			
Frequency (MHz)	2412	2437	2462
Maximum Output Power(dBm)	22.0	23.0	23.0
Tolerance ±(dB)	1.0	1.0	1.0

IEEE 802.11n HT20			
Frequency (MHz)	2412	2437	2462
Maximum Output Power(dBm)	12.0	12.0	13.0
Tolerance ±(dB)	1.0	1.0	1.0

7.3. Measurement Results

7.3.1. Standalone MPE

Bluetooth

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
GFSK-BLE	3.0	1.9953	4.00	2.5119	100%	0.0010	1.0000
GFSK	10.0	10.0000	4.00	2.5119	100%	0.0050	1.0000
π/4DQPSK	9.0	7.9433	4.00	2.5119	100%	0.0040	1.0000
8DPSK	9.0	7.9433	4.00	2.5119	100%	0.0040	1.0000

2.4GHz WIFI

Mode	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	Duty Cycle	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	(dBm)	(mW)					
IEEE 802.11b	17.0	50.1187	4.00	2.5119	100%	0.0251	1.0000
IEEE 802.11g	24.0	251.1886	4.00	2.5119	100%	0.1256	1.0000
IEEE 802.11n HT20	14.0	25.1189	4.00	2.5119	100%	0.0126	1.0000

Remark:

1. *Maximum power including tune-up tolerance;*
2. *MPE use distance is 20cm from manufacturer declaration of user manual.*

7.3.2. Simultaneous Transmission MPE

The sample support one BT modular and 2.4GHz modular, they supports difference antenna, need consider simultaneous transmission;

Maximum Simultaneous transmission MPE Ratio for BT and 2.4GHz

Maximum MPE $Ratio_{BT}$	Maximum MPE $Ratio_{2.4G}$	∑MPE ratios	Limit	Results
0.0050	0.1256	0.1306	1.0	PASS

Remark:

1. Output power including tune-up tolerance;

2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

8. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

---------- END OF REPORT----------