RF EXPOSURE EVALUATION REPORT

Product Name:	Smart Camera
Trade Mark:	SKYWORTH
Model No.:	LC2203
Report Number:	2307216148RFC-3
Test Standards:	FCC 47 CFR Part 1 Subpart I
FCC ID:	WNA-LSG00
Test Result:	PASS
Date of Issue:	September 21, 2023

Prepared for:

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Date: September 21, 2023

Version

Version No.	Date	Description
V1.0	September 21, 2023	Original

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Shenzhen Skyworth Digital Technology Co., LTD.
Address of Applicant:	14/F, Unit A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen Skyworth Digital Technology Co., LTD.
Address of Manufacturer:	14/F, Unit A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China

1.2 EUT INFORMATION

Product Name:	Smart Camera		
Model No.:	LC2203		
Trade Mark:	SKYWORTH		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	IEEE 802.11b/g/n	
	5 GHz U-NII Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n
Sample Received Date:	July 20, 2023		
Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.			

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For 2.4 GHz ISM Band of Wi-Fi	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2412 MHz to 2462 MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20, IEEE 802.11n-HT40
Type of Modulation:	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)
Data Rate:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS 7 IEEE 802.11n-HT40: Up to MCS 7
Number of Channels:	IEEE 802.11b:11 IEEE 802.11g:11 IEEE 802.11n-HT20:11 IEEE 802.11n-HT40:7
Channel Separation:	5 MHz
Antenna Type:	PIFA Antenna
Antenna Gain: (Provided by the customer)	1.5 dBi
Maximum conducted output power:	IEEE 802.11b: 19.99 dBm IEEE 802.11g: 21.78 dBm IEEE 802.11n-HT20: 23.25 dBm IEEE 802.11n-HT40: 23.57 dBm

For 5 GHz U-NII Bands of Wi-Fi					
Frequency Bands:	5150 MHz to 5250 MHz (U-NII-1)				
	5250 MHz to 5350 MHz (U-NII-2A)				
	5470 MHz to 5725 MHz (U-NII-2C)				
	5725 MHz to 5850 MHz (U-NII-3)				
Frequency Ranges:	5180 MHz to 5240 MHz				
	5260 MHz to 5320 MHz				
	5500 MHz to 5700 MHz				
	5745 MHz to 5825 MHz				
Support Standards:	IEEE 802.11a/n				
TPC Function:	Not Support				
DFS Operational mode:	Slave without radar Interference detection function				
Type of Modulation:	IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK)				
	IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK)				
Channel Spacing:	IEEE 802.11a/n-HT20: 20 MHz				
	IEEE 802.11n-HT40: 40 MHz				
Data Rate:	IEEE 802.11a: Up to 54 Mbps				
	IEEE 802.11n-HT20: Up to MCS7				
	IEEE 802.11n-HT40: Up to MCS7				
Number of Channels:	5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20 2 for IEEE 802.11n-HT40				
	5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20 2 for IEEE 802.11n-HT40				
	5470 MHz to 5725 MHz: 11 for IEEE 802.11a/n-HT20 5 for IEEE 802.11n-HT40				
	5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20 2 for IEEE 802.11n-HT40				
Antenna Type:	PIFA Antenna				
Antenna Gain: (Provided by the customer)	5150 MHz to 5250 MHz: 3.0 dBi				
	5250 MHz to 5350 MHz: 3.0 dBi				
	5470 MHz to 5725 MHz: 3.0 dBi				
	5725 MHz to 5850 MHz: 3.0 dBi				
Maximum conducted output power (dBm):		**U-NII-1**	**U-NII-2A**	**U-NII-2C**	**U-NII-3**
	IEEE 802.11a:	9.59	10.11	16.34	17.53
	IEEE 802.11n-HT20:	9.50	9.73	16.30	17.45
	IEEE 802.11n-HT40:	9.63	9.84	16.08	17.10

1.4 OTHER INFORMATION

Test channels for 2.4 GHz ISM Band of Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11b	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11g	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11n-HT20	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11n-HT40	2422 MHz to 2462 MHz	Channel 3	Channel 7	Channel 9
		2422 MHz	2437 MHz	2452 MHz

Test channels for 5 GHz U-NII Bands of Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11a IEEE 802.11n-HT20	5150 MHz to 5250 MHz	Channel 36	Channel 44	Channel 48
		5180 MHz	5220 MHz	5240 MHz
	5250 MHz to 5350 MHz	Channel 52	Channel 60	Channel 64
		5260 MHz	5300 MHz	5320 MHz
	5470 MHz to 5725 MHz	Channel 100	Channel 116	Channel 140
		5500 MHz	5580 MHz	5700 MHz
	5725 MHz to 5850 MHz	Channel 149	Channel 157	Channel 165
		5745 MHz	5785 MHz	5825 MHz
IEEE 802.11n-HT40	5150 MHz to 5250 MHz	Channel 38	--	Channel 46
		5190 MHz	--	5230 MHz
	5250 MHz to 5350 MHz	Channel 54	--	Channel 62
		5270 MHz	--	5310 MHz
	5470 MHz to 5725 MHz	Channel 102	Channel 110	Channel 134
		5510 MHz	5550 MHz	5670 MHz
	5725 MHz to 5850 MHz	Channel 151	--	Channel 159
		5755 MHz	--	5795 MHz

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I

All test items have been performed and recorded as per the above standards

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

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 Times $\|E\|^2$, $\|H\|^2$ 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
1500-100000	/	/	**1**	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

3.2.2 Test Procedure

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

3.3 MPE CALCULATION METHOD

FCC 47 CFR Part 1 Subpart I

S = PG/4πR^2= EIRP/4πR^2

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, the power gain factor is normally numeric gain.

R = 20cm, distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.4 MPE CALCULATION RESULTS

Note: *For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.*

3.4.1 For WLAN

For Wi-Fi function, operating at 2412MHz to 2462 MHz for IEEE802.11b/g/n and
operating at 5150 MHz to 5250 MHz for IEEE802.11a/n/ and
operating at 5250 MHz to 5350 MHz for IEEE802.11a/n/ and
operating at 5470 MHz to 5725 MHz for IEEE802.11a/n/ and
operating at 5725 MHz to 5850 MHz for IEEE802.11a/n.

3.4.1.1 Antenna Type:

PCB Antenna

3.4.1.2 Antenna Gain:

2412MHz to 2462 MHz: 1.5 dBi
5150 MHz to 5250 MHz: 3.0 dBi
5250 MHz to 5350 MHz: 3.0 dBi
5470 MHz to 5725 MHz: 3.0 dBi
5725 MHz to 5850 MHz: 3.0 dBi

3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I

	Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
		(MHz)	(dBm)		(dBi)	(dBm)	(mW)	(mw/cm^2)	
SISO	IEEE 802.11b	2412	19	1	1.5	21.5	141.2538	1	0.0281
		2437	19	1	1.5	21.5	141.2538	1	0.0281
		2462	19	1	1.5	21.5	141.2538	1	0.0281
	IEEE 802.11g	2412	21	1	1.5	23.5	223.8721	1	0.0445
		2437	21	1	1.5	23.5	223.8721	1	0.0445
		2462	21	1	1.5	23.5	223.8721	1	0.0445
	IEEE 802.11n-HT20	2412	23	1	1.5	25.5	354.8134	1	0.0706
		2437	23	1	1.5	25.5	354.8134	1	0.0706
		2462	23	1	1.5	25.5	354.8134	1	0.0706
	IEEE 802.11n-HT40	2422	23	1	1.5	25.5	354.8134	1	0.0706
		2437	23	1	1.5	25.5	354.8134	1	0.0706
		2452	23	1	1.5	25.5	354.8134	1	0.0706
	IEEE 802.11a	5180	9	1	3.0	13.0	19.9526	1	0.0040
		5220	9	1	3.0	13.0	19.9526	1	0.0040
		5240	9	1	3.0	13.0	19.9526	1	0.0040
		5260	10	1	3.0	14.0	25.1189	1	0.0050
		5300	10	1	3.0	14.0	25.1189	1	0.0050
		5320	10	1	3.0	14.0	25.1189	1	0.0050
		5500	14	1	3.0	18.0	63.0957	1	0.0126
		5580	16	1	3.0	20.0	100.0000	1	0.0199
		5700	16	1	3.0	20.0	100.0000	1	0.0199
		5745	15	1	3.0	19.0	79.4328	1	0.0158
		5785	17	1	3.0	21.0	125.8925	1	0.0250
		5825	17	1	3.0	21.0	125.8925	1	0.0250
	IEEE 802.11n-HT20	5180	9	1	3.0	13.0	19.9526	1	0.0040

Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)		(dBi)	(dBm)	(mW)	(mw/cm^2)	
	5220	9	1	3.0	13.0	19.9526	1	0.0040
	5240	9	1	3.0	13.0	19.9526	1	0.0040
	5260	9	1	3.0	13.0	19.9526	1	0.0040
	5300	9	1	3.0	13.0	19.9526	1	0.0040
	5320	9	1	3.0	13.0	19.9526	1	0.0040
	5500	15	1	3.0	19.0	79.4328	1	0.0158
	5580	16	1	3.0	20.0	100.0000	1	0.0199
	5700	15	1	3.0	19.0	79.4328	1	0.0158
	5745	17	1	3.0	21.0	125.8925	1	0.0250
	5785	17	1	3.0	21.0	125.8925	1	0.0250
	5825	17	1	3.0	21.0	125.8925	1	0.0250
IEEE 802.11n-HT40	5190	9	1	3.0	13.0	19.9526	1	0.0040
	5230	9	1	3.0	13.0	19.9526	1	0.0040
	5270	9	1	3.0	13.0	19.9526	1	0.0040
	5310	9	1	3.0	13.0	19.9526	1	0.0040
	5510	15	1	3.0	19.0	79.4328	1	0.0158
	5550	16	1	3.0	20.0	100.0000	1	0.0199
	5670	16	1	3.0	20.0	100.0000	1	0.0199
	5755	17	1	3.0	21.0	125.8925	1	0.0250
	5795	17	1	3.0	21.0	125.8925	1	0.0250

3.4.2 Simultaneous Multi-band Transmission MPE Analysis

3.4.2.1 List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Support/Not Support
1	2.4G _WLAN + 5G _WLAN	Not Support

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***

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