



Maximum Permissible Exposure Report For

Shenzhen Qiyue Optronics Company Limited

Flat3,Tower 3, Excellence Meilin Center Plaza, Zhongkang Road 128, Shangmeilin,
Futian District, Shenzhen, China

FCC ID: XOMRNSMU5536

FCC Rule(s):	<u>FCC 47CFR Part 2.019</u>
Product Description:	<u>55" SMART 4K UHD TV</u>
	<u>D55A114-U-A-I RNSMU5536</u>
Tested Model:	<u>XXXXXXXXXXXXXXXXXXXX55XXXXXXXXXXXX</u> <u>XXXXXXXX (Where "X" can be any</u> <u>alphanumeric of A-Z or 0-9 or blank or -,</u> <u>indicates different client)</u>
Report No.:	<u>WTG19G06036283W-2</u>
Sample Receipt Date:	<u>June 05, 2019</u>
Tested Date:	<u>June 06 ~ 20, 2019</u>
Issued Date:	<u>June 21, 2019</u>
Tested By:	<u>Jason Su / Engineer</u> 
Reviewed By:	<u>Silin Chen / EMC Manager</u> 
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TABLE OF CONTENTS

1. GENERAL INFORMATION	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
2. MAXIMUM PERMISSIBLE EXPOSURE	5
2.1 APPLICABLE STANDARD	5
3. MPE CALCULATION METHOD	6
4.CONDUCTED POWER RESULT	7
4.1 ANTENNA 1	7
4.2 ANTENNA 2	7
5. CALCULATED RESULT AND LIMIT	8
5.1 ANTENNA 1	8
5.2 ANTENNA 2	8
5.3 ANTENNA 1+2	9

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information	
Applicant:	Shenzhen Qiyue Optronics Company Limited
Address of applicant:	Flat3, Tower 3, Excellence Meilin Center Plaza, Zhongkang Road 128, Shangmeilin, Futian District, Shenzhen, China
Manufacturer:	SHENZHEN QIYUE OPTRONICS COMPANY LIMITED BRANCH
Address of manufacturer:	SEIYU INDUSTRIAL PARK, DA SAN VILLAGE, DA SHUI KENG, GUANLAN TOWN, LONGHUA NEW DISTRICT, SHENZHEN, P.R.C

General Description of EUT	
Product Name:	55" SMART 4K UHD TV
Trade Name:	RCA smarTVirtuoso, RCA, PROSCAN, RCA SCENIUM, TECHNICOLOR, SYLVANIA
Model No.:	D55A114-U-A-I RNSMU5536 XXXXXXXXXXXXXXXXXX55XXXXXXXXXXXXXXXXXX XX (Where "X" can be any alphanumeric of A-Z or 0-9 or blank or -, indicates different client)
Adding Model(s):	N/A
Rated Voltage:	Input: AC 100-120V, 60Hz, 90W Output: USB DC 5V, 500mA(Each Port)
Power Adapter Model:	N/A
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	IEEE 802.11b/ g / nHT20: 2412MHz~2462MHz IEEE802.11nHT40: 2422MHz~2452MHz
Modulation:	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)

Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Type of Antenna:	Wi-Fi Antenna
Antenna Gain:	Antenna 1: 3 dBi Antenna 2: 3 dBi
	Note: 11b,g,n uses Antenna 1 / Antenna 2 11n uses MIMO

2. Maximum Permissible Exposure

2.1 Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) 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
1500-10000			5	6

(b)

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	842/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

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

3. MPE Calculation Method

$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d$ Power Density: $P_d \text{ (W/m}^2\text{)} = E^2 / 377$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$P_d = (30 \cdot P \cdot G) / (377 \cdot d^2)$

From the peak EUT RF output power, the minimum mobile separation distance, $d=0.2\text{m}$, as well as the gain of the used antenna, the RF power density can be obtained

4. Conducted Power Result

4.1 Antenna 1

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	15.32	34.00	15±1	3.0	2.0
	2437	14.73	29.70	14±1	3.0	2.0
	2462	14.39	27.50	14±1	3.0	2.0
IEEE 802.11g	2412	9.93	9.80	9±1	3.0	2.0
	2437	9.61	9.10	9±1	3.0	2.0
	2462	9.48	8.90	9±1	3.0	2.0
IEEE 802.11n HT20	2412	9.54	9.00	9±1	3.0	2.0
	2437	9.16	8.20	9±1	3.0	2.0
	2462	9.54	9.00	9±1	3.0	2.0
IEEE 802.11n HT40	2422	6.69	4.70	6±1	3.0	2.0
	2437	6.94	4.90	6±1	3.0	2.0
	2452	7.08	5.10	7±1	3.0	2.0

4.2 Antenna 2

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
IEEE 802.11b	2412	15.57	36.10	15±1	3.0	2.0
	2437	15.36	34.40	15±1	3.0	2.0
	2462	14.71	29.60	14±1	3.0	2.0
IEEE 802.11g	2412	10.24	10.60	10±1	3.0	2.0
	2437	10.02	10.00	10±1	3.0	2.0
	2462	9.78	9.50	9±1	3.0	2.0
IEEE 802.11n HT20	2412	9.83	9.60	9±1	3.0	2.0
	2437	9.41	8.70	9±1	3.0	2.0
	2462	9.79	9.50	9±1	3.0	2.0
IEEE 802.11n HT40	2422	7.37	5.50	7±1	3.0	2.0
	2437	7.56	5.70	7±1	3.0	2.0
	2452	7.32	5.40	7±1	3.0	2.0

5. Calculated Result and Limit

5.1 Antenna 1

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
		(dBi)	(Linear)			
WiFi						
IEEE 802.11b	16	3.0	2.0	0.0158	1	Compiles
IEEE 802.11g	10	3.0	2.0	0.0040	1	Compiles
IEEE 802.11n HT20	10	3.0	2.0	0.0040	1	Compiles
IEEE 802.11n HT40	8	3.0	2.0	0.0025	1	Compiles

5.2 Antenna 2

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
		(dBi)	(Linear)			
WiFi						
IEEE 802.11b	16	3.0	2.0	0.0158	1	Compiles
IEEE 802.11g	11	3.0	2.0	0.0050	1	Compiles
IEEE 802.11n HT20	10	3.0	2.0	0.0040	1	Compiles
IEEE 802.11n HT40	8	3.0	2.0	0.0025	1	Compiles

5.3 Antenna 1+2

Mode	Power Density (S) (mW /cm2) Antenna 1	Power Density (S) (mW /cm2) Antenna 2	Power Density (S) (mW /cm2) Total	Limited of Power Density (S) (mW /cm2)	Test Result
WiFi					
IEEE 802.11n HT20	0.0040	0.0040	0.0080	1	Compiles
IEEE 802.11n HT40	0.0025	0.0025	0.0050	1	Compiles