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Report Template Version: V05
Report Template Revision Date: 2021-11-03

RF Exposure Evaluation Report

Report No.:	CQASZ20220200253E-03
Applicant:	shandong xiangzi kejifazhan youxiangongsi
Address of Applicant:	xijinshidaidasha Bzuo 1207 jinanshi huaiyinqu shandongsheng
Equipment Under Test (EUT):	
EUT Name:	Video Game Console
Model No.:	Super Console X Max
Test Model No.:	Super Console X Max
Brand Name:	Kinhank
FCC ID:	2A44C-XMAX
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Receipt:	2022-2-24
Date of Test:	2022-2-24 to 2022-3-1
Date of Issue:	2022-3-9
Test Result:	**PASS***

***In the configuration tested, the EUT complied with the standards specified above**

Tested By: lewis zhou

(Lewis Zhou)

Reviewed By: Rock Huang

(Rock Huang)

Approved By:

(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20220200253E-03	Rev.01	Initial report	2022-3-9

2 Contents

3 General Information

3.1 Client Information

Applicant:	shandong xiangzi kejifazhan youxiangongsi
Address of Applicant:	xijinshidaidasha Bzuo 1207 jinanshi huaiyinqu shandongsheng
Manufacturer:	shandong xiangzi kejifazhan youxiangongsi
Address of Manufacturer:	xijinshidaidasha Bzuo 1207 jinanshi huaiyinqu shandongsheng
Factory:	shandong xiangzi kejifazhan youxiangongsi
Address of Factory:	xijinshidaidasha Bzuo 1207 jinanshi huaiyinqu shandongsheng

3.2 General Description of EUT

Product Name:	Video Game Console
Model No.:	Super Console X Max
Test Model No.:	Super Console X Max
Trade Mark:	Kinhank
Software Version:	V1
Hardware Version:	V1
EUT Power Supply:	INPUT:100-240V～ 50/60Hz 10W OUTPUT:5V⎓ 2A

3.3 General Description of 2.4G WIFI Classic

Operation Frequency:	2412MHz~2462MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Transfer Rate:	IEEE for 802.11b: 1Mbps/2Mbps/5.5Mbps/11Mbps IEEE for 802.11g : 6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps IEEE for 802.11n(HT20) : 6.5Mbps/13Mbps/19.5Mbps/26Mbps/39Mbps/52Mbps/58.5Mbps/65Mbps IEEE for 802.11n(HT40) : 13.5Mbps/27Mbps/40.5Mbps/54Mbps/81Mbps/108Mbps/121.5Mbps/135Mbps
Sample Type:	☒ Mobile ☐ Portable ☐ Fix Location
Antenna Type:	Metal built-in antenna
Antenna Gain:	0 dBi

3.4 General Description of BT Classic

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth Spec 4.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK
Number of Channel:	79
Transfer Rate:	1Mbps/2Mbps
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	☐ Mobile ☐ Portable ☒ Fix Location
Antenna Type:	Metal built-in antenna
Antenna Gain:	0dBi

Note：

The above parameters will directly affect the test results. The information is provided by the applicant.

Bluetooth and WiFi cannot transmit at the same time.

4 MPE Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b)

TABLE 1—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 Formula

Friis transmission formula: $Pd = (Pout*G)/(4* Pi * R^2)$

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Pd id 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.

4.1.2 Test Procedure

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

4.1.3 EUT RF Exposure

1) For 2.4G WIFI Classic

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

11B mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	7.20	7±1	8	6.31
Middle(2437MHz)	8.51	8±1	9	7.94
Highest(2462MHz)	7.85	7±1	8	6.31
11G mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	7.13	7±1	8	6.31
Middle(2437MHz)	8.06	8±1	9	7.94
Highest(2462MHz)	7.44	7±1	8	6.31
11N20 mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	7.03	7±1	8	6.31
Middle(2437MHz)	8.22	8±1	9	7.94
Highest(2462MHz)	7.50	7±1	8	6.31
11N40 mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2422MHz)	7.88	7±1	8	6.31
Middle(2437MHz)	7.67	7±1	8	6.31
Highest(2452MHz)	7.74	7±1	8	6.31

The worst case:

Maximum tune-up Power (mW)	**Antenna Gain (dBi)**	**Power Density at R = 20 cm (mW/cm^2)**	**Limit**	**Result**
7.94	0	0.00158	1.0	PASS

Note: 1) Refer to report No. CQASZ20220200253E-01 for EUT test Max Conducted Peak Output Power value.
2) Pd = (Pout*G)/(4* Pi * R2)=(7.94*1)/(4*3.1416*202)=0.00158
3) EUT's WIFI module is more than 20cm away from the human body.

4.1.4 EUT RF Exposure

1) For BT Classic

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.32	0±1	1	1.259
Middle(2441MHz)	0.57	0±1	1	1.259
Highest(2480MHz)	0.31	0±1	1	1.259
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.25	0±1	1	1.259
Middle(2441MHz)	0.5	0±1	1	1.259
Highest(2480MHz)	0.26	0±1	1	1.259

The worst case:

Maximum tune-up Power (mW)	**Antenna Gain (dBi)**	**Power Density at R = 20 cm (mW/cm^2)**	**Limit**	**Result**
1.259	0	0.00025	1.0	PASS

Note: 1) Refer to report No. CQASZ20220200253E-01 for EUT test Max Conducted Peak Output Power value.
2) Pd = (Pout*G)/(4* Pi * R2)=(1.259*1)/(4*3.1416*202)=0.00025

3) EUT's Bluetooth module is more than 20cm away from the human body.

*** END OF REPORT ***