



# **FCC TEST REPORT**

Test report
On Behalf of
GuangZhou Chicken Run Network Technology Co,Ltd.
For

gamesir game controllers
Model No.: GameSir-T4,GameSir-T4W

FCC ID: 2AF9S-GST4

Prepared for: GuangZhou Chicken Run Network Technology Co,Ltd.

301A-1,NO.68-1,Huacui Street,Jianye Road,Tianhe District,

GuangZhouChina

Prepared By: Shenzhen HUAK Testing Technology Co., Ltd.

1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street,

Bao'an District, Shenzhen City, China

Date of Test: Dec. 19, 2018 ~ Jan. 15, 2019

Date of Report: Jan. 15, 2019
Report Number: HK1901090066-E

Authorized Signatory:



Report No.: HK1901090066-E

# **TEST RESULT CERTIFICATION**

Address:	301A-1,N GuangZh	O.68-1,Huacui Street,Jianye Road,Tianhe District, ouChina
Manufacture's Name	Dongguar	n KingSheng Electronics&Technology Co., Limited
Address:		fu Road, Lincun, Tangxia Town, Dongguan, ng.CHINA
Product description		
Trade Mark:	GAMESIF	₹
Product name:	gamesir g	ame controllers
Model and/or type reference .:	GameSir-	T4,GameSir-T4W
Standards	FCC Rule ANSI C63	es and Regulations Part 15 Subpart C Section 15.249
the Shenzhen HUAK Testing Teo of the material. Shenzhen HUA	chnology C K Testing es resultii d context.	nole or in part for non-commercial purposes as long as Co., Ltd. is acknowledged as copyright owner and source Technology Co., Ltd. takes no responsibility for and willing from the reader's interpretation of the reproduced
Date (s) of performance of tests.	:	Dec. 19, 2018 ~ Jan. 15, 2019
Date of Issue	:	Jan. 15, 2019
Test Result	:	Pass
Testing Engine	eer :	Good Diane
		(Gary Qian)
Technical Man	ager :	(Gary Qian) Edan Hu
		(Eden Hu)

Jason Zhou

(Jason Zhou)





Table of Contents	Page
1 . TEST SUMMARY	4
2 . GENERAL INFORMATION	5
2.1 GENERAL DESCRIPTION OF EUT	5
2.2 Carrier Frequency of Channels	6
2.3 Operation of EUT during testing	6
2.4DESCRIPTION OF TEST SETUP	6
2.5MEASUREMENT INSTRUMENTS LIST	7
3. CONDUCTED EMISSIONS TEST	8
3.1 Conducted Power Line Emission Limit	8
3.2 Test Setup	8
3.3 Test Procedure	8
3.4 Test Result	8
4 RADIATED EMISSION TEST	11
4.1 Radiation Limit	11
4.2 Test Setup	11
4.3 Test Procedure	12
4.4 Test Result	12
5 BAND EDGE	18
5.1 Limits	18
5.2 Test Procedure	18
5.3 Test Result	19
6 OCCUPIED BANDWIDTH MEASUREMENT	23
6.1 Test Setup	23
6.2 Test Procedure	23
6.3 Measurement Equipment Used	23
6.4 Test Result	23
7 ANTENNA REQUIREMENT	25
8 PHOTOGRAPH OF TEST	26
Conducted Emission	26
Radiated Emission	27





1. TEST SUMMARY

## 1.1TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	RESULT
CONDUCTED EMISSIONS TEST	COMPLIANT
RADIATED EMISSION TEST	COMPLIANT
BAND EDGE	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	COMPLIANT
ANTENNA REQUIREMENT	COMPLIANT

Report No.: HK1901090066-E

### 1.2 TEST FACILITY

Test Firm : Shenzhen HUAK Testing Technology Co., Ltd.

Address 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai

Street, Bao'an District, Shenzhen City, China

#### 1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2 Radiated emission expanded uncertainty(9kHz-30MHz) = 3.08dB, k=2 Radiated emission expanded uncertainty(30MHz-1000MHz) = 4.42dB, k=2 Radiated emission expanded uncertainty(Above 1GHz) = 4.06dB, k=2



# 2. GENERAL INFORMATION

# 2.1GENERAL DESCRIPTION OF EUT

Equipment	gamesir game controllers		
Model Name	GameSir-T4		
Serial No.	GameSir-T4W		
Trade Mark	GAMESIR		
Model Difference	All model's the function, software and electric circuit are the same, only with a product model named different. Test sample model: GameSir-T4.		
FCC ID	2AF9S-GST4		
Antenna Type	PCB Antenna		
Antenna Gain	0dBi		
BT Operation frequency	2402-2480MHz		
Number of Channels	40CH		
Modulation Type	GFSK		
PowerSource	DC3.7V From Battery or DC 5V from adapter with		
PowerSource	AC 120V/60Hz		
Power Rating	DC3.7V From Battery or DC 5V from adapter with		
1 Ower Italing	AC 120V/60Hz		



Page 6 of 36

2.2 Carrier Frequency of Channels

	Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	
01	2402	11	2422	21	2442	31	2462	
02	2404	12	2424	22	2444	32	2464	
03	2406	13	2426	23	2446	33	2466	
04	2408	14	2428	24	2448	34	2468	
05	2410	15	2430	25	2450	35	2470	
06	2412	16	2432	26	2452	36	2472	
07	2414	17	2434	27	2454	37	2474	
08	2416	18	2436	28	2456	38	2476	
09	2418	19	2438	29	2458	39	2478	
10	2420	20	2440	30	2460	40	2480	

Report No.: HK1901090066-E

## 2.3 Operation of EUT during testing

**Operating Mode** 

The mode is used: Transmitting mode

Low Channel: 2402MHz Middle Channel: 2440MHz High Channel: 2480MHz

## 2.4DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted testing:



Operation of EUT duringRadiation and Above1GHz Radiation testing:

EUT

Adapter information

Model: HW-051000CHQ

Input: 100-240V~, 50/60Hz, 0.5A

Output: 5VDC, 1A

Laptop information

Model:HP109

Input:DC 24V, 2A



# 2.5MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 28, 2018	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 28, 2018	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 28, 2018	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 28, 2018	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2018	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 28, 2018	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 28, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 28, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 28, 2018	1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Dec. 28, 2018	1 Year
11.	Pre-amplifier	EMCI	EMC051845 SE	HKE-015	Dec. 28, 2018	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 28, 2018	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 28, 2018	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 28, 2018	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2018	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 28, 2018	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 28, 2018	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 28, 2018	3 Year



#### 3. CONDUCTED EMISSIONS TEST

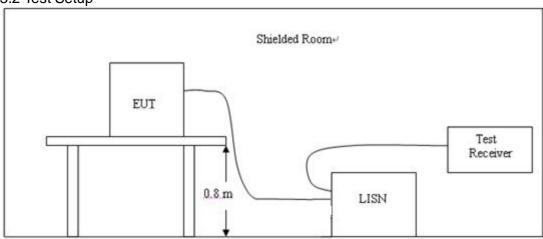
## 3.1 Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

F	IV	Maximum RF Line Voltage (dΒμV)					
Frequency (MHz)	CLAS	SS A	(	CLASS B			
(11112)	Q.P.	Ave.	Q.P.	Ave.			
0.15 - 0.50	79	66	66-56*	56-46*			
0.50 - 5.00	73	60	56	46			
5.00 - 30.0	73	60	60	50			

<sup>\*</sup> Decreasing linearly with the logarithm of the frequency
For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

### 3.2 Test Setup



### 3.3 Test Procedure

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user'smanual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed onthe ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4,If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hzpower through a Line Impedance Stabilization Network (LISN) which supplied power source and wasgrounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUTusing a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has twomonitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

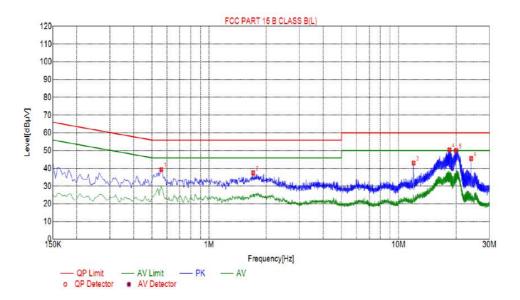
#### 3.4 Test Result

**Pass** 



EUT:	gamesir game controllers	Model Name. :	GameSir-T4				
Temperature :	l <b>26</b> ℃	Relative Humidity :	54%				
Pressure:	1010hPa	Test Date :	2018-12-20				
Test Mode:	Running	Phase :	L				
Test Voltage :	Voltage : DC 3.7V by PC AC 120V/60Hz						

## **Test Graph**



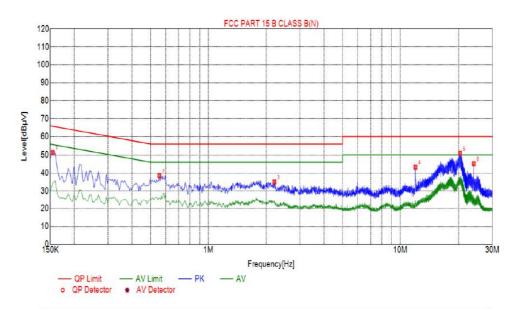
Suspected List						
NO.	Freq.	Level [dBµV]	Factor [dB]	Limit [dBµ∀]	Margin [dB]	Detector
1	0.5595	39.35	10.06	56.00	16.65	PK
2	1.7070	37.55	10.13	56.00	18.45	PK
3	12.0075	43.08	9.99	60.00	16.92	PK
4	18.5505	50.46	10.05	60.00	9.54	PK
5	20.0535	50.14	10.11	60.00	9.86	PK
6	24.0045	45.63	10.22	60.00	14.37	PK

Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level



EUT:	gamesir game controllers	Model Name. :	GameSir-T4			
Temperature:	<b>26</b> ℃	Relative Humidity :	54%			
Pressure:	1010hPa	Test Date :	2018-12-20			
Test Mode:	Running	Phase :	N			
Test Voltage : DC 3.7V by PC AC 120V/60Hz						

# Test Graph



Suspected List						
NO.	Freq.	Level [dBµV]	Factor [dB]	Limit [dBµ∀]	Margin [dB]	Detector
1	0.1545	51.26	10.03	65.75	14.49	PK
2	0.5550	38.44	10.06	56.00	17.56	PK
3	2.2065	34.87	10.17	56.00	21.13	PK
4	11.9985	43.30	9.99	60.00	16.70	PK
5	20.3370	50.92	10.12	60.00	9.08	PK
6	23.9820	45.25	10.22	60.00	14.75	PK

Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level



## **4 RADIATED EMISSION TEST**

## 4.1 Radiation Limit

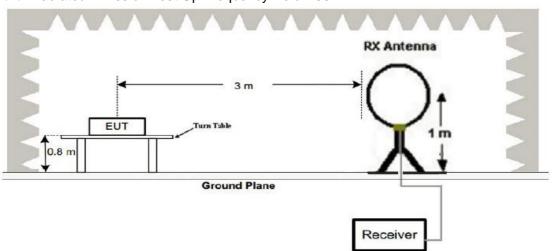
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength ofradiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency	Distance	Radiated	Radiated
(MHz)	(Meters)	(dBµV/m)	(µV/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

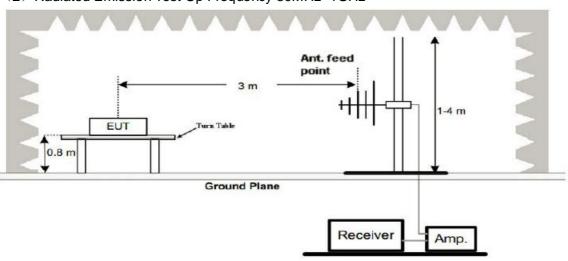
For intentional device, according to § 15.209(a), the general requirement of field strength of radiatedemissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

## 4.2 Test Setup

## (1) Radiated Emission Test-Up Frequency Below 30MHz

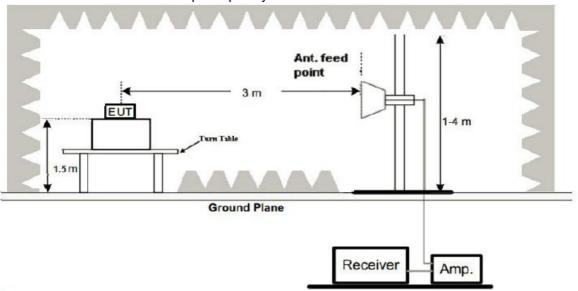


## (2) Radiated Emission Test-Up Frequency 30MHz~1GHz





## (3) Radiated Emission Test-Up Frequency Above 1GHz



#### 4.3 Test Procedure

- 1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highestemissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna bothhorizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.
- 7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

#### Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

#### 4.4 Test Result

#### PASS

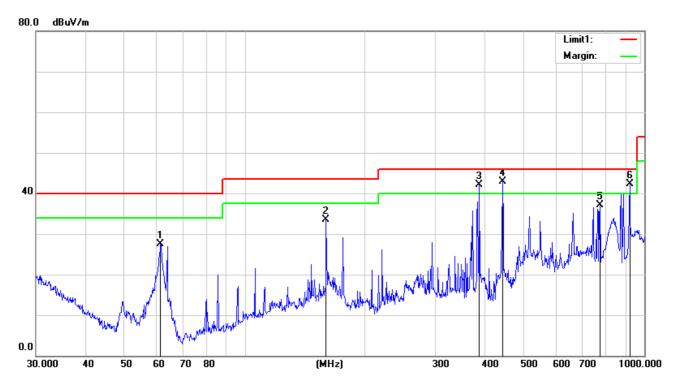
All the test modes completed for test. The worst case of Radiated Emission is CH 2402; the test data of this mode was reported.



## Below 1GHz Test Results:

EUT:	gamesir game controllers	Model Name :	GameSir-T4
Temperature:	<b>24</b> ℃	Relative Humidity :	54%
Pressure:	1010 hPa	Test Date :	2018-12-20
Test Mode :	Running	Polarization:	Horizontal
Test Power :	DC 3.7V by PC AC 230V/50	Hz	

No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	61.5618	49.26	-21.82	27.44	40.00	-12.56	34.00	100.00	QP
2	159.7844	49.30	-15.80	33.50	43.50	-10.00	86.00	100.00	QP
3!	386.6338	55.92	-13.76	42.16	46.00	-3.84	120.00	100.00	QP
4*	441.7425	55.46	-12.65	42.81	46.00	-3.19	49.00	100.00	QP
5	774.1584	45.11	-7.91	37.20	46.00	-8.80	150.00	100.00	QP
6!	919.2866	48.36	-6.02	42.34	46.00	-3.66	180.00	100.00	QP

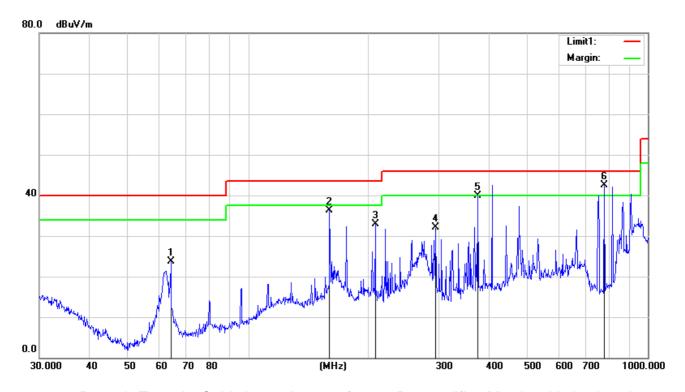


Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level



EUT:	gamesir game controllers	Model Name :	GameSir-T4			
Temperature :	1 <b>24</b> "	Relative Humidity:	54%			
Pressure:	1010 hPa	Test Date :	2018-12-20			
Test Mode :	Running	Polarization :	Vertical			
Test Power :	DC 3.7V by PC AC 230V/50Hz					

No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	63.9828	47.52	-23.91	23.61	40.00	-16.39	45.00	140.00	QP
2	159.7844	49.58	-13.33	36.25	43.50	-7.25	105.00	100.00	QP
3	207.8501	48.29	-15.36	32.93	43.50	-10.57	145.00	100.00	QP
4	294.1137	46.24	-14.23	32.01	46.00	-13.99	96.00	100.00	QP
5	375.9384	53.24	-13.28	39.96	46.00	-6.04	88.00	100.00	QP
6*	776.8777	49.39	-6.92	42.47	46.00	-3.53	204.00	100.00	QP



Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level

#### Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHzwas verified, and no any emission was found except system noise floor.
- (2) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.



# Above 1 GHz Test Results: CH Low (2402MHz)

## Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin					
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type				
2402	106.48	-5.84	100.64	114	-13.36	peak				
2402	84.35	-5.84	78.51	94	-15.49	AVG				
4804	58.46	-3.64	54.82	74	-19.18	peak				
4804	49.32	-3.64	45.68	54	-8.32	AVG				
7206	58.61	-0.95	57.66	74	-16.34	peak				
7206	43.15	-0.95	42.2	54	-11.8	AVG				
Remark: Facto	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.									

## Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2402	107.26	-5.84	101.42	114	-12.58	peak
2402	84.49	-5.84	78.65	94	-15.35	AVG
4804	63.28	-3.64	59.64	74	-14.36	peak
4804	39.22	-3.64	35.58	54	-18.42	AVG
7206	52.13	-0.95	51.18	74	-22.82	peak
7206	40.17	-0.95	39.22	54	-14.78	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



# CH Middle (2440MHz)

# Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	<b>D</b>						
(MHz)	(dBµV)	(dB) (dBµV/m) (dBµ		(dBµV/m)	(dB)	Detector Type						
2440	107.63	-5.71	101.92	114	-12.08	peak						
2440	82.49	-5.71	76.78	94	-17.22	AVG						
4880	61.35	-3.51	57.84	74	-16.16	peak						
4880	42.16	-3.51	38.65	54	-15.35	AVG						
7320	7320 56.18 -0.82 55.36 74 -18.64 peak											
7320	7320 37.63 -0.82 36.81 54 -17.19 AVG											
Remark: Facto	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.											

# Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin							
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type						
2440	108.36	-5.71	102.65	114	-11.35	peak						
2440	82.94	-5.71	77.23	94	-16.77	AVG						
4880	61.39	-3.51	57.88	74	-16.12	peak						
4880	41.08	-3.51	37.57	54	-16.43	AVG						
7320	7320 58.47 -0.82 57.65 74 -16.35 peak											
7320	7320 38.66 -0.82 37.84 54 -16.16 AVG											
Remark: Facto	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.											



## CH High (2480MHz)

## Horizontal:

i ionzontai.						
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2480	106.52	-5.65	100.87	114	-13.13	peak
2480	83.62	-5.65	77.97	94	-16.03	AVG
4960	59.34	-3.43	55.91	74	-18.09	peak
4960	43.82	-3.43	40.39	54	-13.61	AVG
7440	61.54	-0.75	60.79	74	-13.21	peak
7440	43.89	-0.75	43.14	54	-10.86	AVG

Report No.: HK1901090066-E

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

## Vertical:

Meter Reading	Factor	Emission Level	Limits	Margin	
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
108.61	-5.65	102.96	114	-11.04	peak
83.49	-5.65	77.84	94	-16.16	AVG
56.74	-3.43	53.31	74	-20.69	peak
41.38	-3.43	37.95	54	-16.05	AVG
52.29	-0.75	51.54	74	-22.46	peak
40.31	-0.75	39.56	54	-14.44	AVG
	(dBµV) 108.61 83.49 56.74 41.38 52.29	Reading     Factor       (dBμV)     (dB)       108.61     -5.65       83.49     -5.65       56.74     -3.43       41.38     -3.43       52.29     -0.75	Reading         Factor         Emission Level           (dBμV)         (dB)         (dBμV/m)           108.61         -5.65         102.96           83.49         -5.65         77.84           56.74         -3.43         53.31           41.38         -3.43         37.95           52.29         -0.75         51.54	Reading         Factor         Emission Level         Limits           (dBμV)         (dB)         (dBμV/m)         (dBμV/m)           108.61         -5.65         102.96         114           83.49         -5.65         77.84         94           56.74         -3.43         53.31         74           41.38         -3.43         37.95         54           52.29         -0.75         51.54         74	Reading         Factor         Emission Level         Limits         Margin           (dBμV)         (dB)         (dBμV/m)         (dBμV/m)         (dB)           108.61         -5.65         102.96         114         -11.04           83.49         -5.65         77.84         94         -16.16           56.74         -3.43         53.31         74         -20.69           41.38         -3.43         37.95         54         -16.05           52.29         -0.75         51.54         74         -22.46

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

#### Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz •
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 3MHz for peak measurement with peak detectorat frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.
- (7)All modes of operation were investigated and the worst-case emissions are reported.

age 18 of 36 Report No.: HK1901090066-E

**5 BAND EDGE** 

5.1 Limits
FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general

radiated emissionlimits in §15.209, whichever is the lesser attenuation.

## 5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSIC63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT issituated in three orthogonal planes (if appropriate), adjusting the measurement antenna height andpolarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength and setRBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBW to 300 KHz, to measure the conducted peak band edge.



## 5.3 Test Result

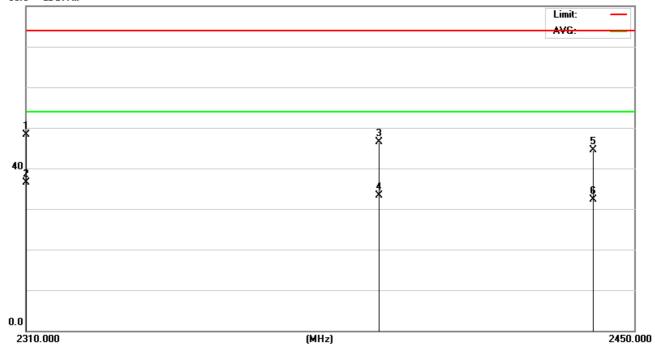
# **PASS**

Radiated Band Edge Test:

Operation Mode: TX CH Low (2402MHz)

Horizontal (Worst case)

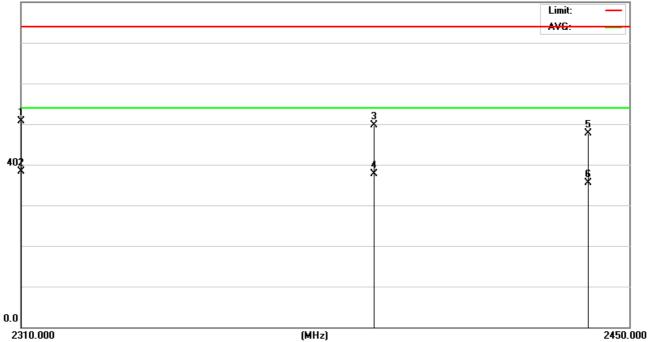
80.0 dBuV/m



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	52.17	-3.87	48.30	74.00	-25.70	peak	160	163	
2	*	2310.000	40.33	-3.87	36.46	54.00	-17.54	AVG	160	205	
3		2390.000	49.68	-3.14	46.54	74.00	-27.46	peak	155	48	
4		2390.000	36.45	-3.14	33.31	54.00	-20.69	AVG	155	127	
5		2440.000	47.33	-2.77	44.56	74.00	-29.44	peak	155	142	
6		2440.000	35.12	-2.77	32.35	54.00	-21.65	AVG	155	142	







No. Mk.         Freq.         Reading Level         Correct Factor Factor Measure- Factor ment         Limit Over         Over Height Height         Table Degree         Comment           1         2310.000         54.57         -3.87         50.70         74.00         -23.30         peak         155         78           2         * 2310.000         42.11         -3.87         38.24         54.00         -15.76         AVG         155         100           3         2390.000         52.86         -3.14         49.72         74.00         -24.28         peak         155         120           4         2390.000         40.79         -3.14         37.65         54.00         -16.35         AVG         155         120           5         2440.000         50.55         -2.77         47.78         74.00         -26.22         peak         155         76           6         2440.000         38.36         -2.77         35.59         54.00         -18.41         AVG         155         76	2310					(mi)	<b>2</b> J					2430.000
1 2310.000 54.57 -3.87 50.70 74.00 -23.30 peak 155 78 2 * 2310.000 42.11 -3.87 38.24 54.00 -15.76 AVG 155 100 3 2390.000 52.86 -3.14 49.72 74.00 -24.28 peak 155 120 4 2390.000 40.79 -3.14 37.65 54.00 -16.35 AVG 155 120 5 2440.000 50.55 -2.77 47.78 74.00 -26.22 peak 155 76	No.	Mk	k. Freq.	•			Limit	Over			_	
2 * 2310.000 42.11 -3.87 38.24 54.00 -15.76 AVG 155 100 3 2390.000 52.86 -3.14 49.72 74.00 -24.28 peak 155 120 4 2390.000 40.79 -3.14 37.65 54.00 -16.35 AVG 155 120 5 2440.000 50.55 -2.77 47.78 74.00 -26.22 peak 155 76			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
3 2390.000 52.86 -3.14 49.72 74.00 -24.28 peak 155 120 4 2390.000 40.79 -3.14 37.65 54.00 -16.35 AVG 155 120 5 2440.000 50.55 -2.77 47.78 74.00 -26.22 peak 155 76	1		2310.000	54.57	-3.87	50.70	74.00	-23.30	peak	155	78	
4 2390.000 40.79 -3.14 37.65 54.00 -16.35 AVG 155 120 5 2440.000 50.55 -2.77 47.78 74.00 -26.22 peak 155 76	2	*	2310.000	42.11	-3.87	38.24	54.00	-15.76	AVG	155	100	
5 2440.000 50.55 -2.77 47.78 74.00 -26.22 peak 155 76	3		2390.000	52.86	-3.14	49.72	74.00	-24.28	peak	155	120	
· · · · · · · · · · · · · · · · · · ·	4		2390.000	40.79	-3.14	37.65	54.00	-16.35	AVG	155	120	
6 2440.000 38.36 -2.77 35.59 54.00 -18.41 AVG 155 76	5		2440.000	50.55	-2.77	47.78	74.00	-26.22	peak	155	76	
	6		2440.000	38.36	-2.77	35.59	54.00	-18.41	AVG	155	76	

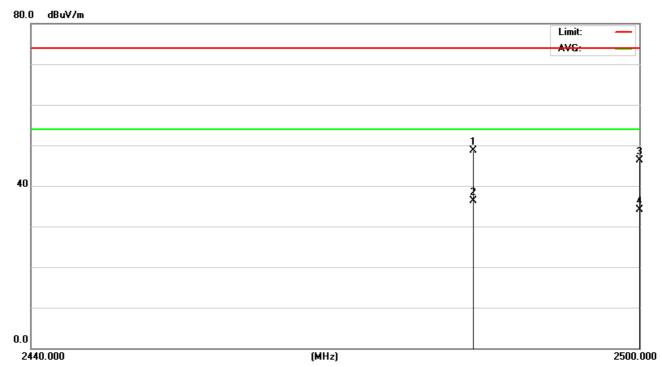


Page 21 of 36

Report No.: HK1901090066-E

Operation Mode: TX CH High (2480MHz)

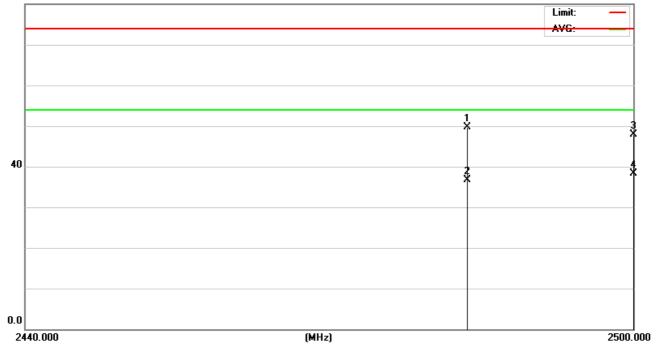
Horizontal (Worst case)



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	51.13	-2.45	48.68	74.00	-25.32	peak	155	145	
2	*	2483.500	38.77	-2.45	36.32	54.00	-17.68	AVG	155	145	
3		2500.000	48.69	-2.33	46.36	74.00	-27.64	peak	155	36	
4		2500.000	36.36	-2.33	34.03	54.00	-19.97	AVG	155	36	







No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	2	2483.500	52.14	-2.45	49.69	74.00	-24.31	peak	155	70	
2	2	2483.500	39.25	-2.45	36.80	54.00	-17.20	AVG	155	70	
3	2	2500.000	50.33	-2.33	48.00	74.00	-26.00	peak	155	86	
4	* 2	2500.000	40.69	-2.33	38.36	54.00	-15.64	AVG	155	86	



## 6 OCCUPIED BANDWIDTH MEASUREMENT

## 6.1 Test Setup

Same as Radiated Emission Measurement

## 6.2 Test Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Set EUT as normal operation.
- 3. Based on ANSI C63.10 section 6.9.2: RBW= 30KHz. VBW= 100 KHz, Span=4MHz.
- 4. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

## 6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

## 6.4 Test Result

#### **PASS**

Frequency	20dB Bandwidth (MHz)	Result		
2402 MHz	0.827	PASS		
2440 MHz	0.826	PASS		
2480 MHz	0.830	PASS		

## CH: 2402MHz





## CH: 2440MHz



#### CH: 2480MHz





## 7 ANTENNA REQUIREMENT

## Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed toensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.249, if transmitting antennas of directional gain greater than6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antennaexceeds 6dBi.

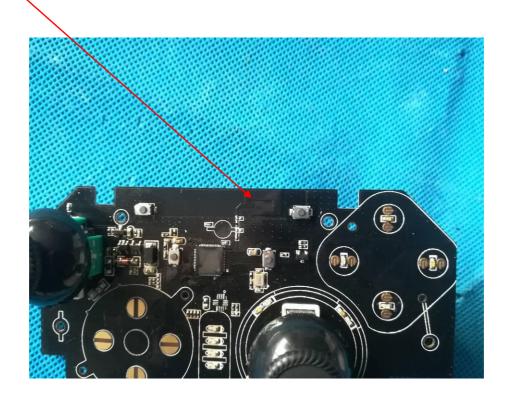
## Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of astandard antenna jack or electrical connector is prohibited. Further, this requirement does not apply tointentional radiators that must be professionally installed.

#### **Antenna Connected Construction**

The antenna used in this product is a Internal Antenna, The directional gains of antenna used for transmitting is 0dBi.

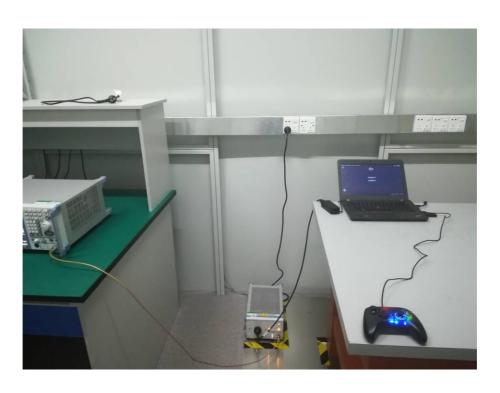
## **ANTENNA**





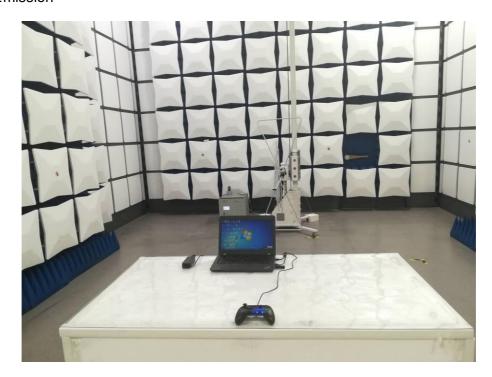
# 8 PHOTOGRAPH OF TEST

# Conducted Emission





# Radiated Emission







# EUT Photo 1

Page 28 of 36



Photo 2





Photo 3



Photo 4









Photo 6





Photo 7

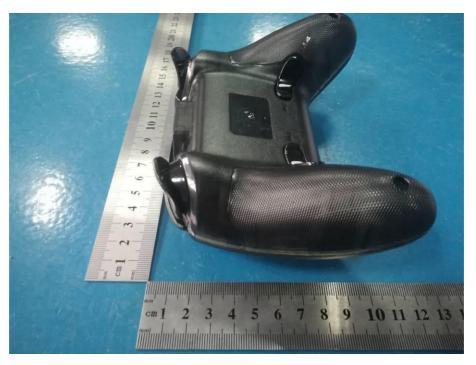


Photo 8





Photo 9

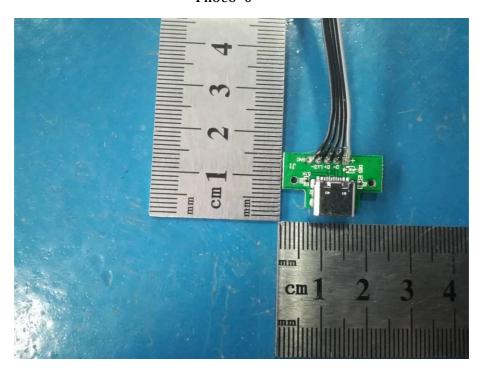


Photo 10

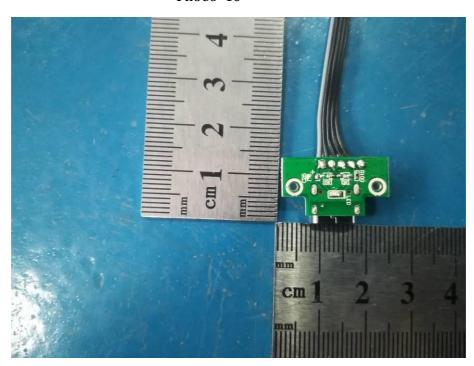




Photo 11



Photo 12





Photo 13



Photo 14









Photo 16

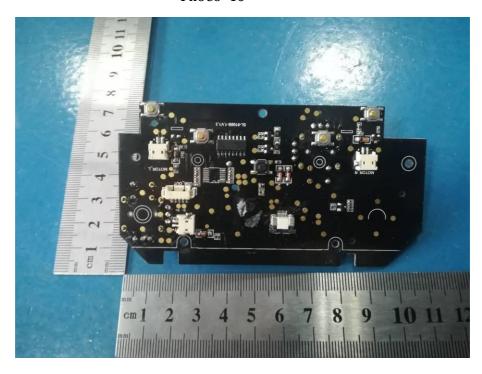




Photo 17



\*\*\*\*\*THE END OF REPORT\*\*\*\*\*