

FCC TEST REPORT  
for  
SHENZHEN BESTODO TECH CO., LTD.

8BITDO GamePad  
Model No.: FC30, NES30

Prepared for : SHENZHEN BESTODO TECH CO., LTD.  
Address : 727, 3/Building West, Saige Industrial Park, Huaqiang Rd.,  
Futian District, Shenzhen, Guangdong, China

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited  
Address : 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road,  
Nanshan District, Shenzhen, Guangdong, China  
Tel: (86) 755-26066544  
Fax: (86) 755-26014772

Report Number : 201310690F  
Date of Test : Oct. 10~ 29, 2013  
Date of Report : Oct. 29, 2013

## TABLE OF CONTENTS

Description

Page

Test Report

<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1 Description of Device (EUT).....	5
1.2 Auxiliary Equipment Used during Test.....	6
1.3 Description of Test Facility .....	6
1.4 Measurement Uncertainty.....	6
<b>2. TEST PROCEDURE .....</b>	<b>7</b>
<b>3. CONDUCTED EMISSION.....</b>	<b>8</b>
3.1 Block Diagram of Test Setup .....	8
3.2 Power Line Conducted Emission Measurement Limits (15.207).....	8
3.3 Configuration of EUT on Measurement .....	8
3.4 Operating Condition of EUT .....	8
3.5 Test Procedure .....	9
3.6 Power Line Conducted Emission Measurement Results .....	9
<b>4. RADIATION INTERFERENCE.....</b>	<b>12</b>
4.1 Requirements (15.247, 15.209): .....	12
4.2 Test Procedure .....	12
4.3 Test Results.....	13
<b>5. CHANNEL SEPARATION TEST .....</b>	<b>22</b>
5.1 Measurement Procedure .....	22
5.2 Test SET-UP .....	22
5.3 Test Equipment.....	22
5.4 Test Results.....	23
<b>6. 20DB BANDWIDTH TEST .....</b>	<b>27</b>
6.1 Measurement Procedure .....	27
6.2 Test SET-UP .....	27
6.3 Test Equipment.....	27
6.4 Test Results.....	27
<b>7. QUANTITY OF HOPPING CHANNEL TEST.....</b>	<b>31</b>
7.1 Measurement Procedure .....	31
7.2 Test SET-UP .....	31
7.3 Test Equipment.....	31
7.4 Test Results.....	31
<b>8. DWELL TIME TEST .....</b>	<b>33</b>
8.1 Measurement Procedure .....	33
8.2 Test SET-UP .....	33
8.3 Test Equipment.....	33
8.4 Test Results.....	33
<b>9. MAXIMUM PEAK OUTPUT POWER TEST .....</b>	<b>36</b>
9.1 Measurement Procedure .....	36
9.2 Test SET-UP .....	36

9.3 Test Equipment.....	36
9.4 Test Results.....	36
<b>10. BAND EDGE TEST.....</b>	<b>40</b>
10.1 Measurement Procedure .....	40
10.2 Test SET-UP .....	40
10.3 Test Equipment.....	40
10.4 Test Results.....	40
<b>11. ANTENNA APPLICATION.....</b>	<b>44</b>
11.1 Antenna requirement .....	44
11.2 Result.....	44
<b>12. PHOTOGRAPH.....</b>	<b>45</b>
12.1 Photo of Power Line Conducted Emission Measurement .....	45
12.2 Photo of Radiation Emission Test .....	45

APPENDIX I (External Photos) (3 Pages)

APPENDIX II (Internal Photos) (3 Pages)

## TEST REPORT

Applicant : SHENZHEN BESTODO TECH CO., LTD.  
Manufacturer : SHENZHEN BESTODO TECH CO., LTD.  
EUT : 8BITDO GamePad  
Model No. : FC30, NES30  
Serial No. : N/A  
Trade Mark : 8BITDO  
Rating : DC 5.0V, 500mA

Measurement Procedure Used:

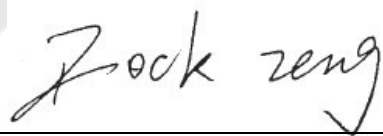
FCC Part15 Subpart C, Paragraph 15.207, 15.247 & 15.209

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

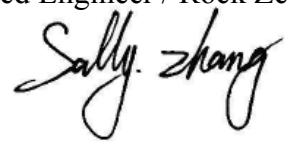
This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Oct. 10~ 29, 2013

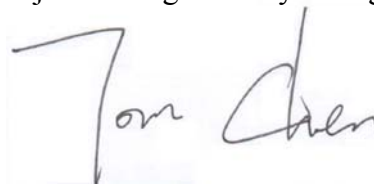
Prepared by :

  
(Tested Engineer / Rock Zeng )

Reviewer :

  
(Project Manager / Sally Zhang )

Approved & Authorized Signer :

  
(Manager / Tom Chen)

## 1. GENERAL INFORMATION

### 1.1 Description of Device (EUT)

EUT	: 8BITDO GamePad
Model Number	: FC30, NES30 (Note: All samples are the same except the model number & shape of appliances, so we prepare “FC30” for EMC test only.)
Test Power Supply	: DC 5V Via USB Port (With DC 3.7V Battery inside)
Frequency	: 2402~2480MHz
Antenna Specification	: PCB Antenna:-1.3 dBi
Modulation	: GFSK, $\pi/4$ DQPSK, 8DPSK
Applicant Address	: SHENZHEN BESTODO TECH CO., LTD. 727, 3/Building West, Saige Industrial Park, Huaqiang Rd., Futian District, Shenzhen, Guangdong, China
Manufacturer Address	: SHENZHEN BESTODO TECH CO., LTD. 727, 3/Building West, Saige Industrial Park, Huaqiang Rd., Futian District, Shenzhen, Guangdong, China
Factory Address	: SHENZHEN WENGANG Electronics Co., Ltd. 1/F, A/Building, Lianyao Industrial Park, Baoan District, Shenzhen, China
Date of receiver	: Oct. 10, 2013
Date of Test	: Oct. 10~ 29, 2013

## 1.2 Auxiliary Equipment Used during Test

Adapter	:	Power Supply Model: CW0502000 Input: 100-240V~, 50-60Hz, 0.4A Max Output: 5V $\overline{\text{---}}$ , 500mA
Phone	:	Model: I8268 Manufacturer: SAMSUNG FCC, CE

## 1.3 Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

### **CNAS - LAB Code: L3503**

Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

### **FCC-Registration No.: 752021**

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 10, 2013.

### **IC-Registration No.: 8058A-1**

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A-1, Feb. 22, 2013.

### **Test Location**

All Emissions tests were performed at  
Shenzhen Anbotek Compliance Laboratory Limited. At 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

## 1.4 Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.3dB
Conduction Uncertainty	:	Uc = 3.4dB

## 2. Test Procedure

**GENERAL:** This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

**RADIATION INTERFERENCE:** The test procedure used was ANSI STANDARD C63.4-2009 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

**Example:**

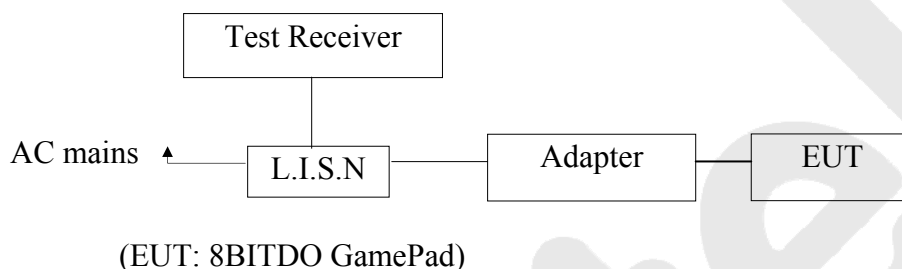
Freq (MHz) METER READING + ACF = FS  
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

**ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES:** The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

### 3. Conducted Emission

#### 3.1 Block Diagram of Test Setup

##### 3.1.1. Block diagram of connection between the EUT and simulators



#### 3.2 Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The lower limit shall apply at the transition frequencies.

#### 3.3 Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

EUT : 8BITDO GamePad  
Model Number : FC30  
Applicant : SHENZHEN BESTODO TECH CO., LTD.

#### 3.4 Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (Charging) and measure it.



### 3.5 Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

#### Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 23, 2013	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 23, 2013	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 23, 2013	1 Year

### 3.6 Power Line Conducted Emission Measurement Results

**PASS.**

The frequency range from 150KHz to 30 MHz is investigated.

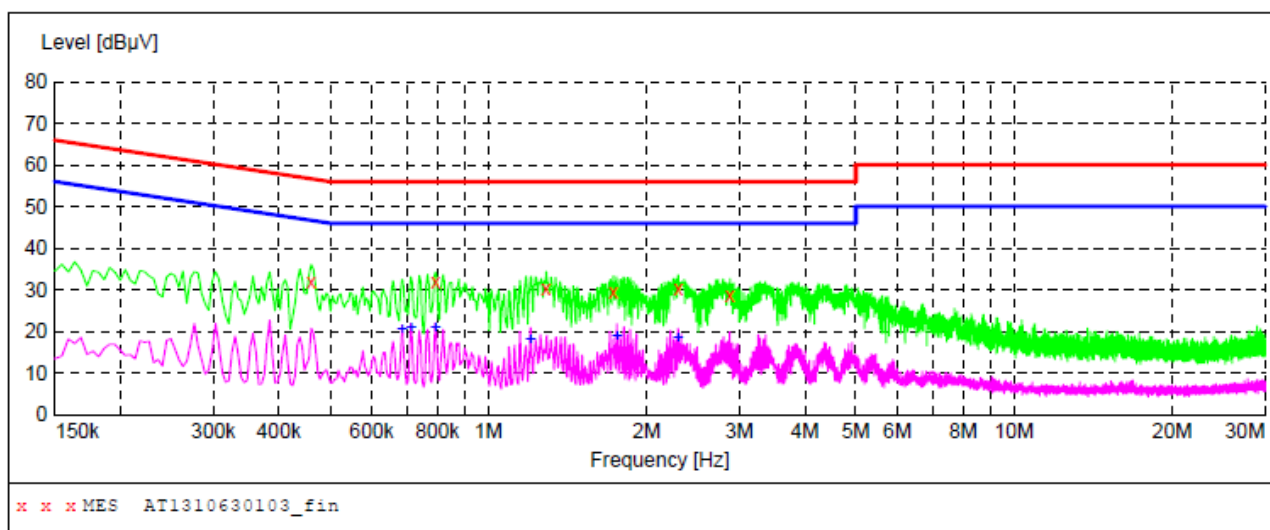
Please refer the following pages.

## CONDUCTED EMISSION TEST DATA

EUT: 8BITDO GamePad M/N: FC30  
Operating Condition: Charging  
Test Site: 1# Shielded Room  
Operator: Finley Li  
Test Specification: AC 120V/60Hz  
Comment: Live Line  
Tem:25°C Hum:50%

### SCAN TABLE: "Voltage(150K~30M)FIN"

Short Description: 150K-30M Disturbance Voltages



### MEASUREMENT RESULT: "AT1310630103\_fin"

10/11/2013 12:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.460500	32.10	20.1	57	24.6	QP	L1	GND
0.793500	31.80	20.1	56	24.2	QP	L1	GND
1.288000	30.20	20.2	56	25.8	QP	L1	GND
1.729000	29.40	20.3	56	26.6	QP	L1	GND
2.296000	30.20	20.3	56	25.8	QP	L1	GND
2.881000	28.60	20.4	56	27.4	QP	L1	GND

### MEASUREMENT RESULT: "AT1310630103\_fin2"

10/11/2013 12:00PM

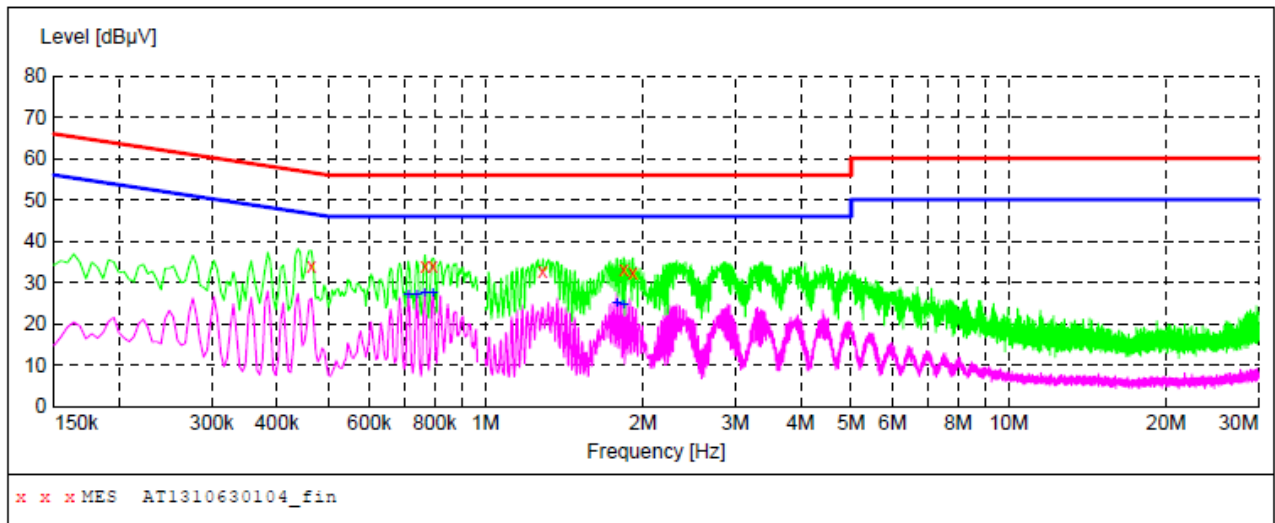
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.685500	20.50	20.1	46	25.5	AV	L1	GND
0.712500	20.90	20.1	46	25.1	AV	L1	GND
0.793500	21.10	20.1	46	24.9	AV	L1	GND
1.202500	18.20	20.2	46	27.8	AV	L1	GND
1.756000	19.00	20.3	46	27.0	AV	L1	GND
2.296000	18.40	20.3	46	27.6	AV	L1	GND

## CONDUCTED EMISSION TEST DATA

EUT: 8BITDO GamePad M/N: FC30  
Operating Condition: Charging  
Test Site: 1# Shielded Room  
Operator: Finley Li  
Test Specification: AC 120V/60Hz  
Comment: Neutral Line  
Tem:25°C Hum:50%

### SCAN TABLE: "Voltage(150K~30M)FIN"

Short Description: 150K-30M Disturbance Voltages



### MEASUREMENT RESULT: "AT1310630104\_fin"

10/11/2013 12:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.465000	33.90	20.1	57	22.7	QP	N	GND
0.766500	34.00	20.1	56	22.0	QP	N	GND
0.793500	34.10	20.1	56	21.9	QP	N	GND
1.288000	32.70	20.2	56	23.3	QP	N	GND
1.837000	33.00	20.3	56	23.0	QP	N	GND
1.913500	32.40	20.3	56	23.6	QP	N	GND

### MEASUREMENT RESULT: "AT1310630104\_fin2"

10/11/2013 12:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.712500	27.10	20.1	46	18.9	AV	N	GND
0.739500	27.20	20.1	46	18.8	AV	N	GND
0.766500	27.60	20.1	46	18.4	AV	N	GND
0.793500	27.30	20.1	46	18.7	AV	N	GND
1.783000	25.10	20.3	46	20.9	AV	N	GND
1.837000	24.60	20.3	46	21.4	AV	N	GND

## 4. Radiation Interference

### 4.1 Requirements (15.247, 15.209):

FIELD STRENGTH of Fundamental: 902-928 MHz 2.4-2.4835 GHz 94 dB $\mu$ V/m @3m	FIELD STRENGTH of Harmonics   54 dB $\mu$ V/m @3m	S15.209 30 - 88 MHz 88 - 216 MHz 216 - 960 MHz ABOVE 960 MHz	40 dBuV/m @3M 43.5 46 54dBuV/m
---	---	--	---

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 emission limits in 15.209, whichever is the lesser attenuation.

### 4.2 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz. The EUT is tested in 9\*6\*6 Chamber.  
The test results are listed in Section 4.3.

#### Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

#### 4.3 Test Results

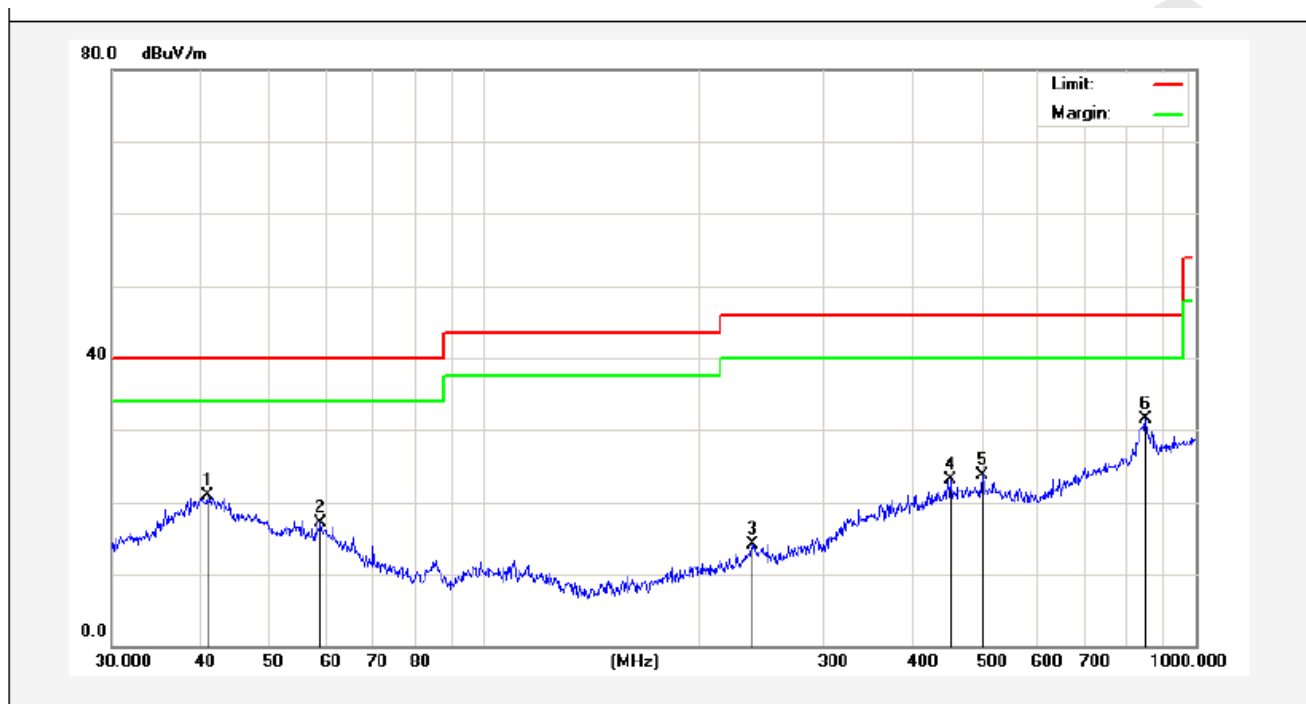
PASS.

Please refer the following pages.

Anbotek

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarization:</b>	<b>Horizontal</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C _3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (30~1000MHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:12:33</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>

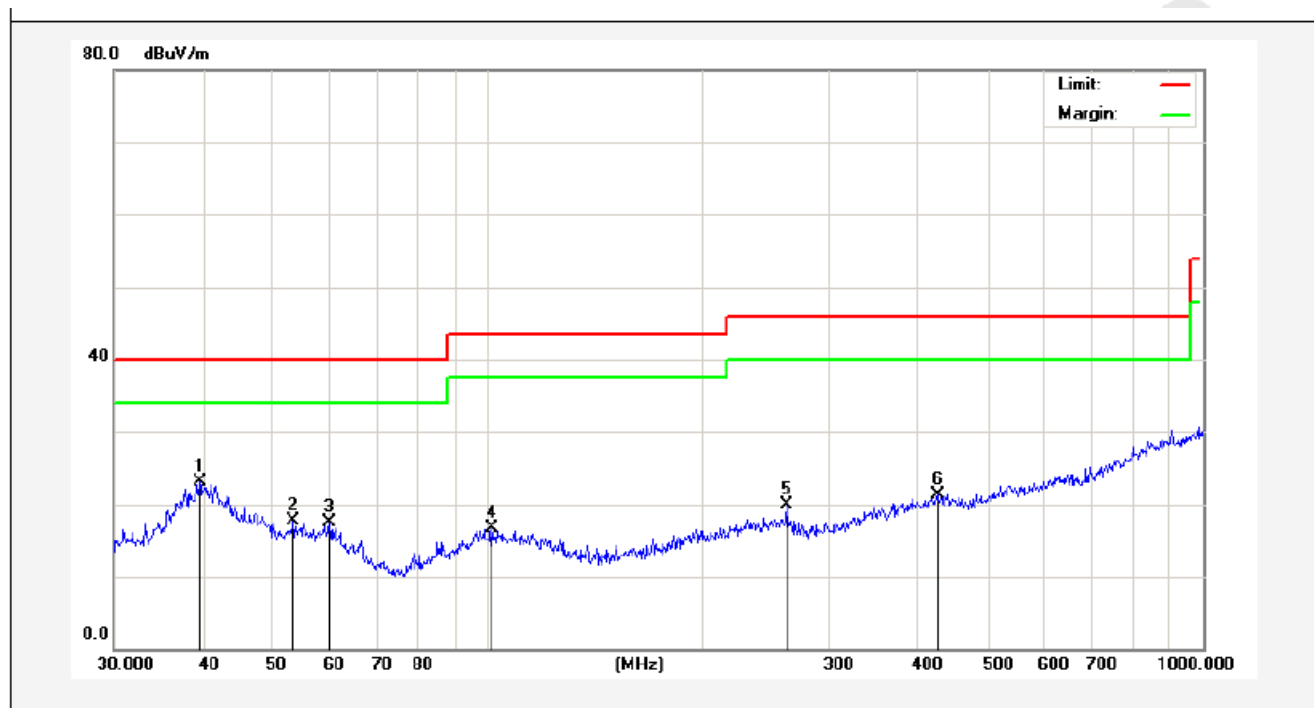
**Note:** BT Mode



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	40.8446	31.53	-10.71	20.82	40.00	-19.18	peak			
2	59.0251	32.34	-15.31	17.03	40.00	-22.97	peak			
3	238.3102	32.44	-18.26	14.18	46.00	-31.82	peak			
4	452.7197	35.17	-12.14	23.03	46.00	-22.97	peak			
5	501.1790	34.73	-10.96	23.77	46.00	-22.23	peak			
6	851.0353	37.10	-5.57	31.53	46.00	-14.47	peak			

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarization:</b>	<b>Vertical</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C _3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (30~1000MHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:15:57</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>

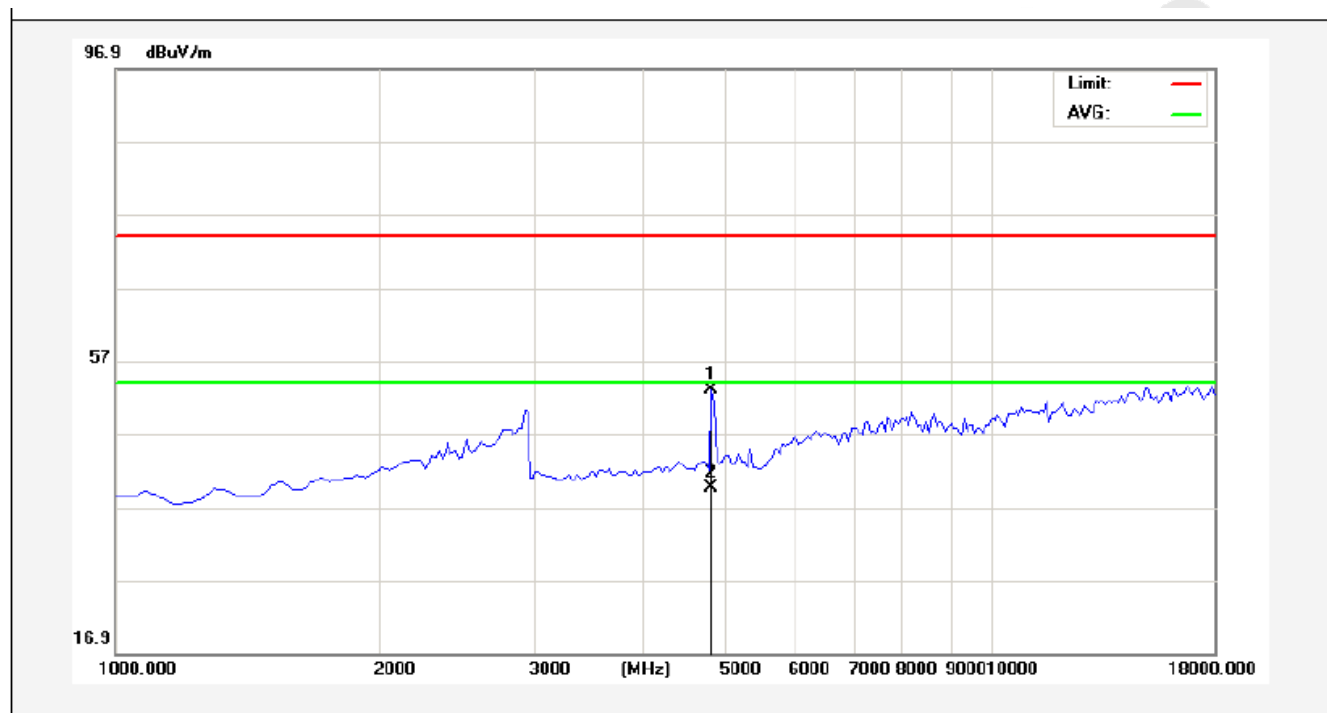
**Note:** BT Mode



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.5756	33.71	-10.70	23.01	40.00	-16.99	peak			
2	53.5052	32.56	-14.82	17.74	40.00	-22.26	peak			
3	60.0690	32.91	-15.43	17.48	40.00	-22.52	peak			
4	101.2883	32.43	-15.75	16.68	43.50	-26.82	peak			
5	261.9753	33.96	-14.12	19.84	46.00	-26.16	peak			
6	425.0280	32.53	-11.25	21.28	46.00	-24.72	peak			

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarization:</b>	<b>Horizontal</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C_Class B_3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (Above 1GHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:24:14</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>

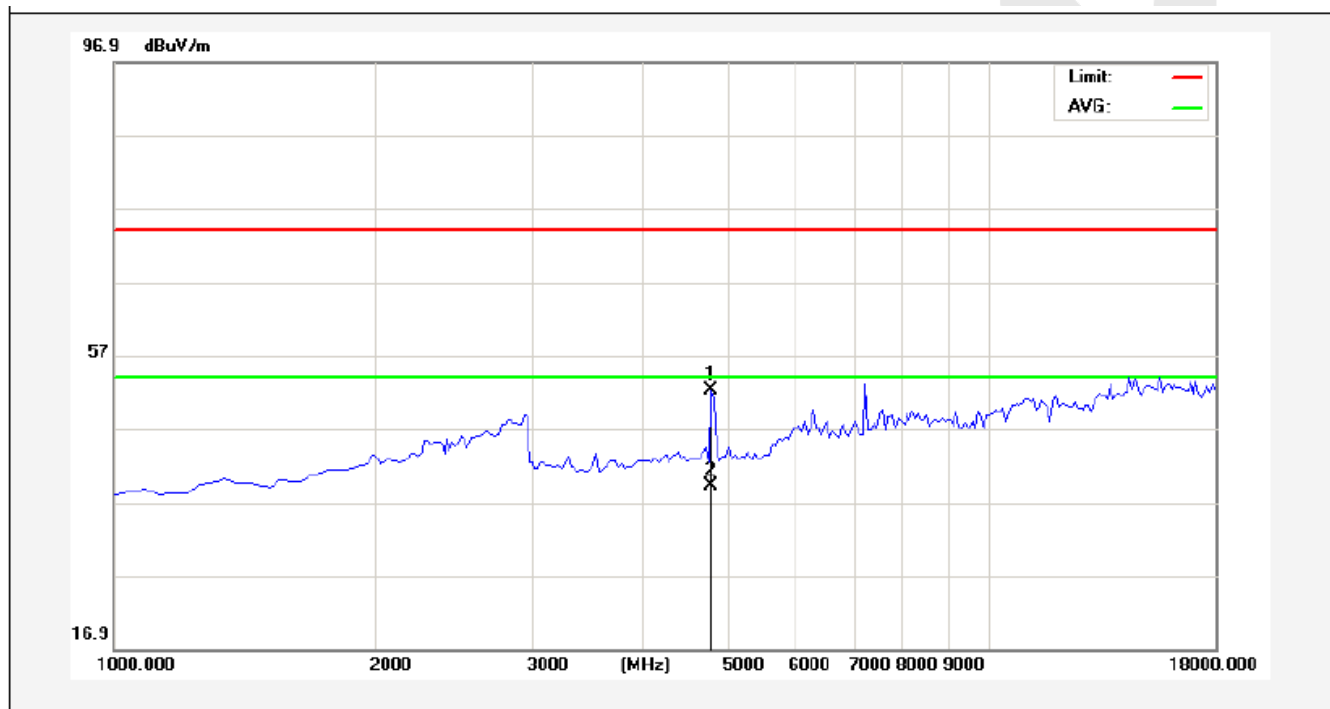
**Note:** 2402 MHz



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4825.000	49.69	3.34	53.03	74.00	-20.97	peak			
2	4825.000	36.29	3.34	39.63	54.00	-14.37	AVG			

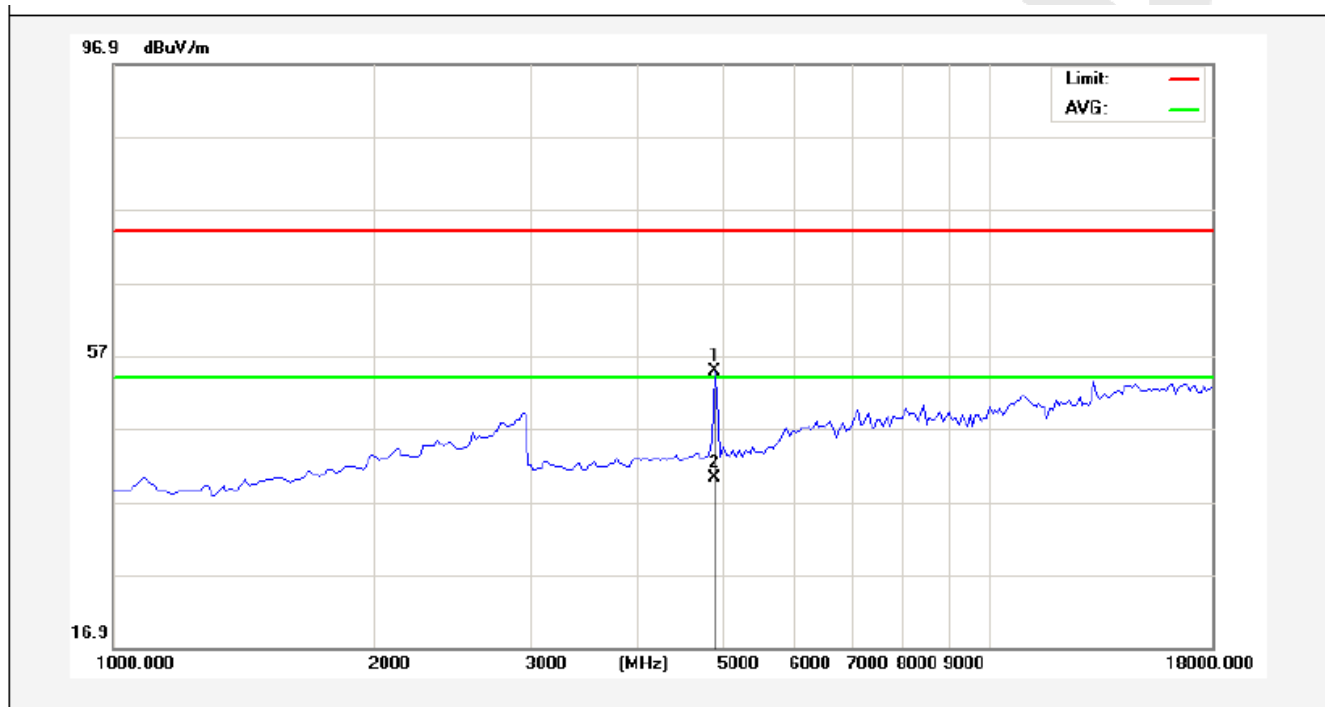


<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarziation:</b>	<b>Vertical</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C_Class B_3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (Above 1GHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:27:57</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>
<b>Note:</b>	<b>2402 MHz</b>		



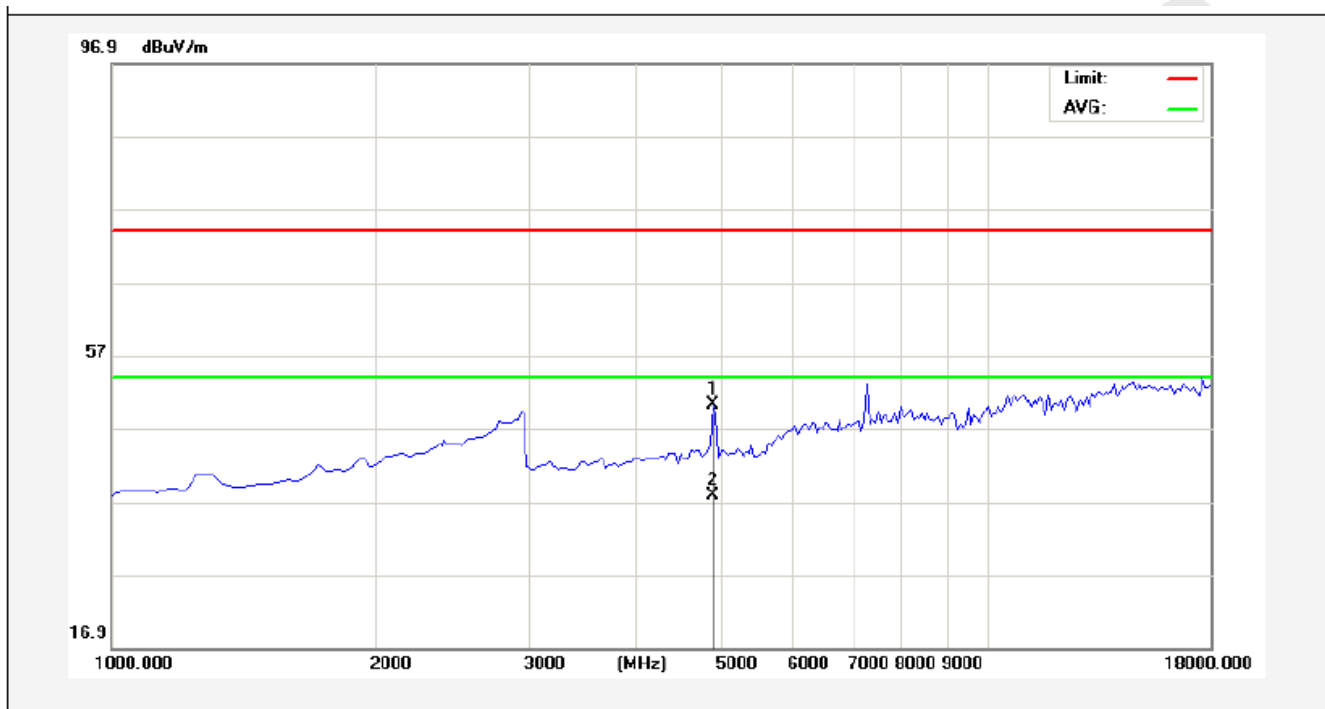
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4825.000	48.86	3.34	52.20	74.00	-21.80	peak			
2	4825.000	35.79	3.34	39.13	54.00	-14.87	AVG			

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarziation:</b>	<b>Horizontal</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C_Class B_3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (Above 1GHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:30:35</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>
<b>Note:</b>	<b>2441 MHz</b>		



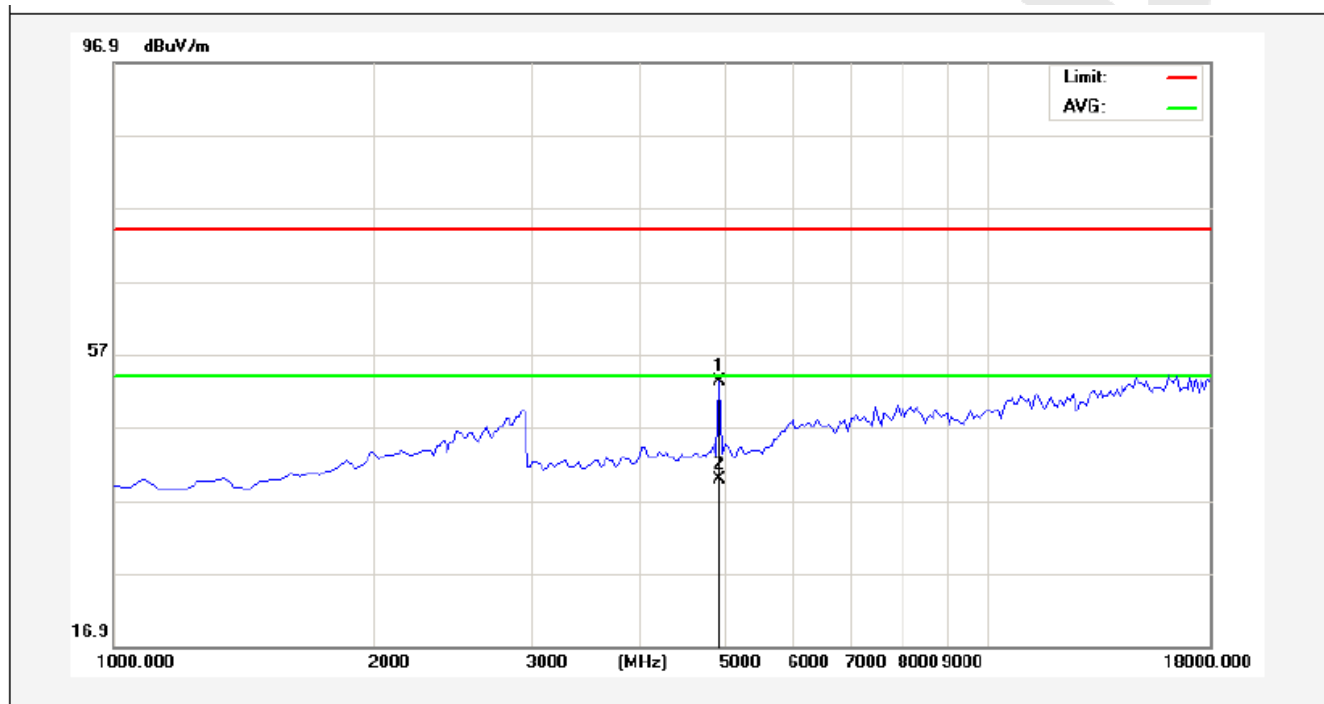
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4867.500	51.47	3.41	54.88	74.00	-19.12	peak			
2	4867.500	36.80	3.41	40.21	54.00	-13.79	AVG			

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarization:</b>	<b>Vertical</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C_Class B_3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (Above 1GHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:33:07</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>
<b>Note:</b>	<b>2441 MHz</b>		



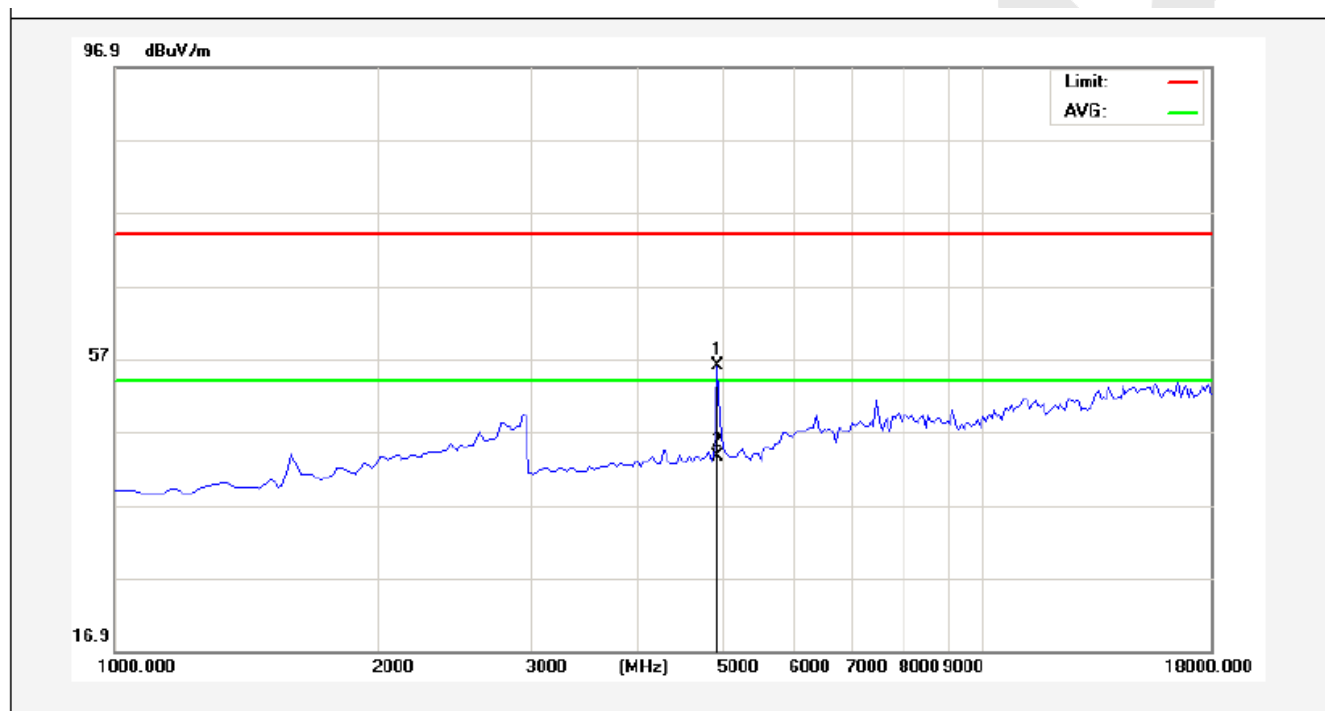
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4867.500	46.78	3.41	50.19	74.00	-23.81	peak			
2	4867.500	34.30	3.41	37.71	54.00	-16.29	AVG			

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarziation:</b>	<b>Horizontal</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C_Class B_3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (Above 1GHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:37:54</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>
<b>Note:</b>	<b>2480 MHz</b>		



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4952.500	49.70	3.57	53.27	74.00	-20.73	peak			
2	4952.500	36.29	3.57	39.86	54.00	-14.14	AVG			

<b>Job No.:</b>	<b>AT1310630F</b>	<b>Polarziation:</b>	<b>Vertical</b>
<b>Standard:</b>	<b>(RE)FCC PART 15C_Class B_3m</b>	<b>Power Source:</b>	<b>DC 3.7V</b>
<b>Test item:</b>	<b>Radiation Test (Above 1GHz)</b>	<b>Date:</b>	<b>2013/10/14</b>
<b>Temp.(C)/Hum.(%RH):</b>	<b>24.3( C)/55%RH</b>	<b>Time:</b>	<b>11:40:12</b>
<b>EUT:</b>	<b>8BITDO GamePad</b>	<b>Test By:</b>	<b>Jimly Chen</b>
<b>Model:</b>	<b>FC30</b>	<b>Distance:</b>	<b>3m</b>
<b>Note:</b>	<b>2480 MHz</b>		



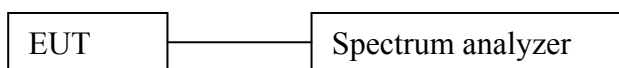
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4910.000	52.54	3.49	56.03	74.00	-17.97	peak			
2	4910.000	40.07	3.49	43.56	54.00	-10.44	AVG			

## 5. CHANNEL SEPARATION TEST

### 5.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 5.2 Test SET-UP



### 5.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

## 5.4 Test Results

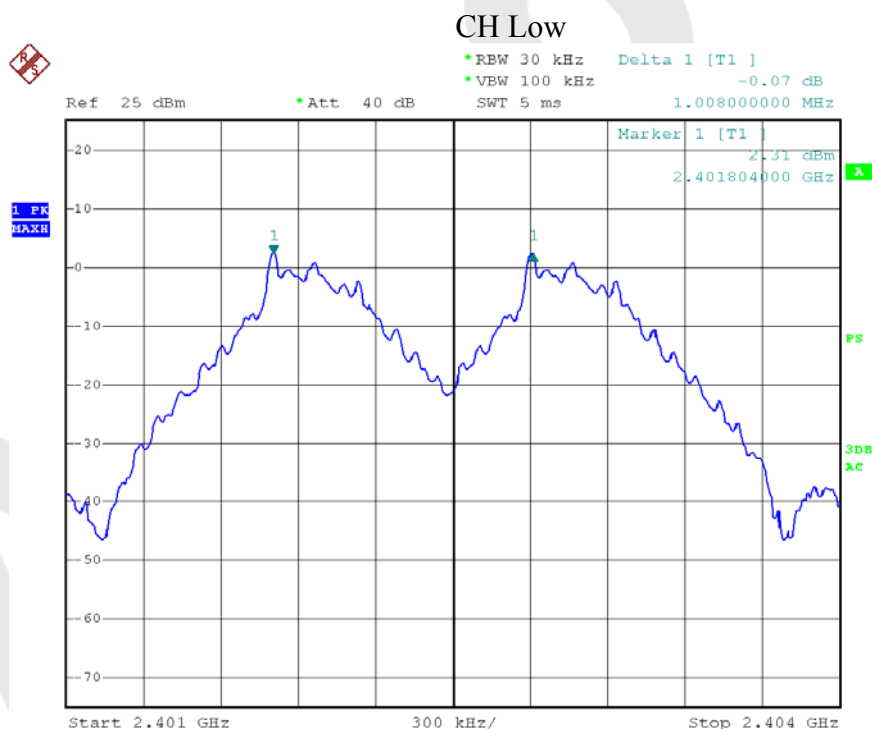
Product : 8BITDO GamePad Test Mode : CH Low ~ CH High  
Test Item : Frequency Separation Temperature : 24℃  
Test Voltage : DC 3.7V Humidity : 55%RH  
Test Result : PASS

Channel	Frequency (MHz)	Separation Read Value (kHz)	Limit (kHz)	Modulation Mode
Low	2401	1008	880	GFSK
Mid	2441	1002	880	GFSK
High	2480	1002	880	GFSK
Low	2401	1012	813.33	$\pi/4$ DQPSK
Mid	2441	1002	813.33	$\pi/4$ DQPSK
High	2480	1002	813.33	$\pi/4$ DQPSK
Low	2401	1012	813.33	8DPSK
Mid	2441	1002	813.33	8DPSK
High	2480	1002	813.33	8DPSK

Remark:

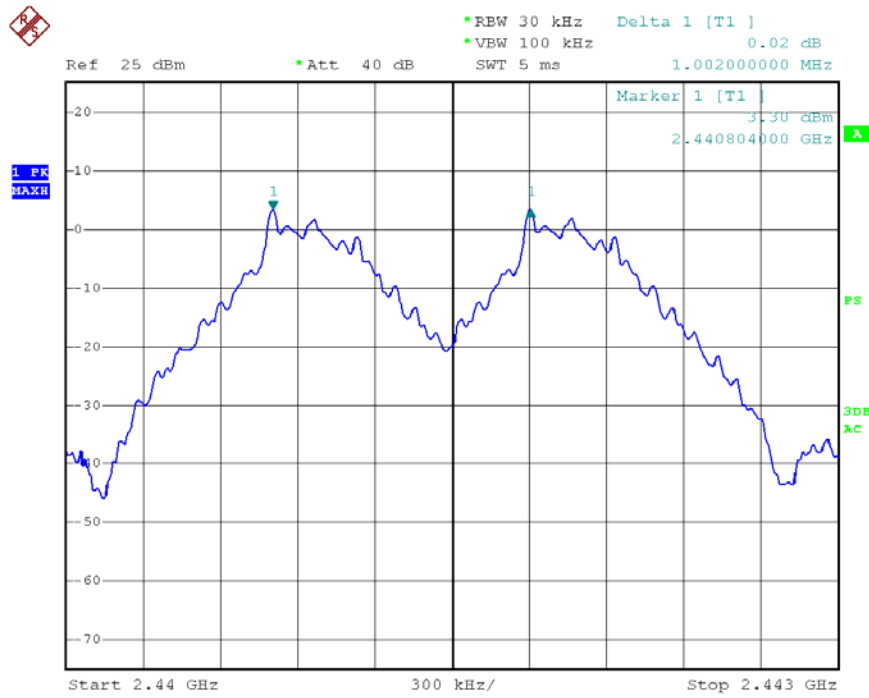
1. The limit of modulation ( $\pi/4$ DQPSK, 8DPSK) is 2/3 of 20dB BW;

Modulation Mode: GFSK



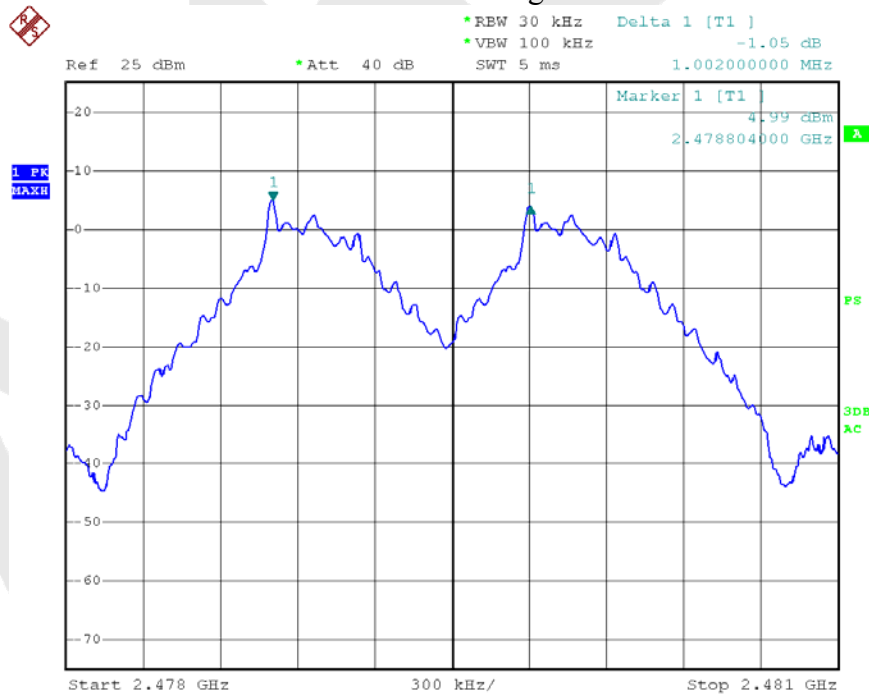
Date: 23.OCT.2013 20:05:03

### CH Mid



Date: 23.OCT.2013 20:06:01

### CH High

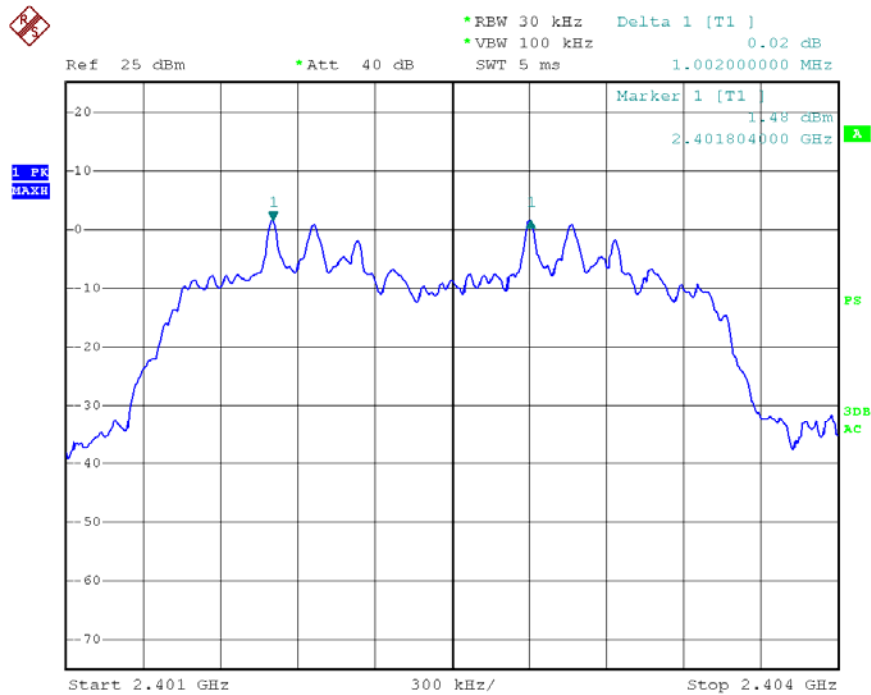


Date: 23.OCT.2013 20:06:45



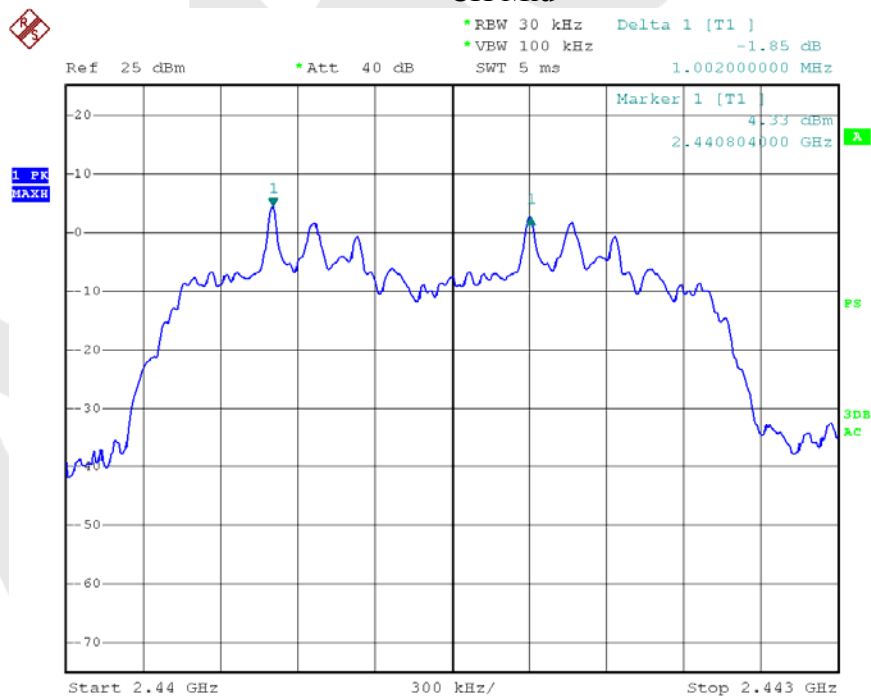
Modulation Mode:  $\pi/4$ DQPSK & 8DPSK

### CH Low

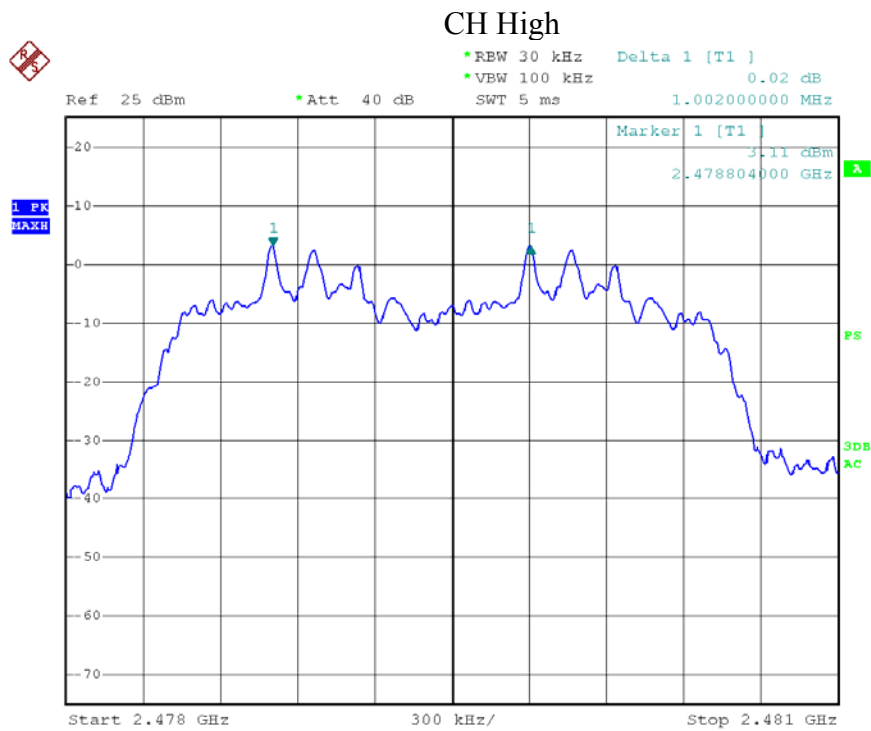


Date: 23.OCT.2013 20:07:32

### CH Mid



Date: 23.OCT.2013 20:08:15



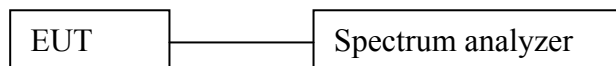
Date: 23.OCT.2013 20:09:08

## 6. 20DB BANDWIDTH TEST

### 6.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 6.2 Test SET-UP



### 6.3 Test Equipment

Same as the equipment listed in 5.3.

### 6.4 Test Results

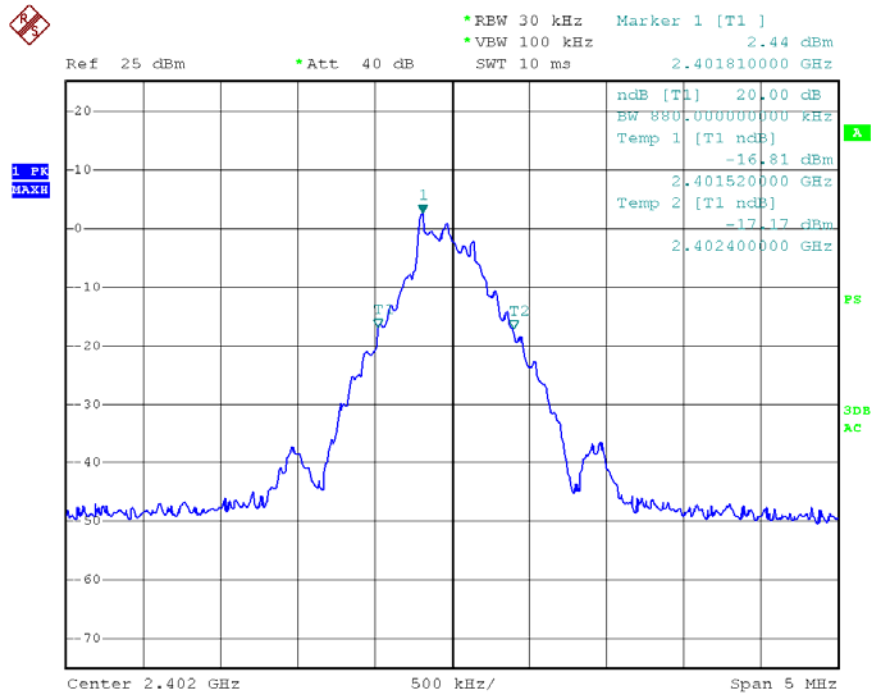
Product	: 8BITDO GamePad	Test Mode	: CH Low ~ CH High
Test Item	: 20dB BW	Temperature	: 24℃
Test Voltage	: DC 3.7V	Humidity	: 55%RH
Test Result	: PASS		

Channel	Frequency (MHz)	20dB Down BW(kHz)	Modulation Mode
Low	2401	880	GFSK
Mid	2441	880	GFSK
High	2480	880	GFSK
Low	2401	1220	$\pi/4$ DQPSK
Mid	2441	1220	$\pi/4$ DQPSK
High	2480	1220	$\pi/4$ DQPSK
Low	2401	1220	8DPSK
Mid	2441	1220	8DPSK
High	2480	1220	8DPSK

Remark: The results of modulations  $\pi/4$ DQPSK and 8DPSK are the same.

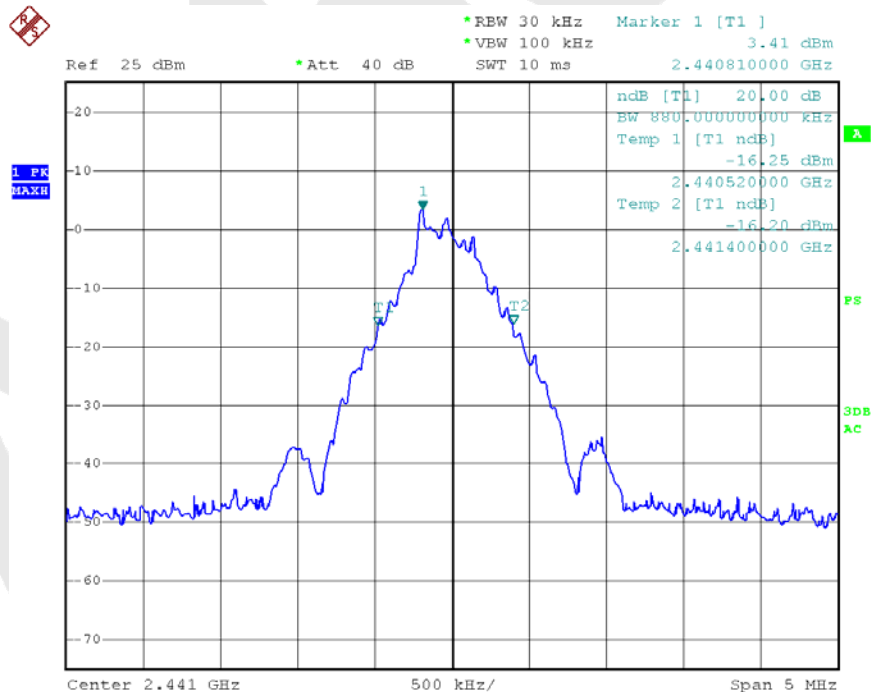
Modulation Mode: GFSK

### CH Low



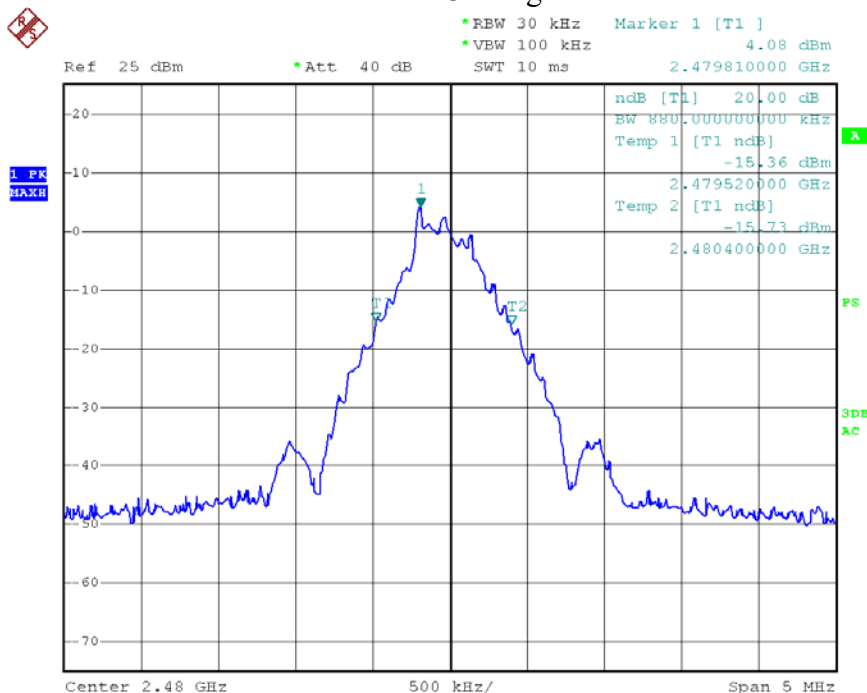
Date: 23.OCT.2013 19:51:55

### CH Mid



Date: 23.OCT.2013 19:52:19

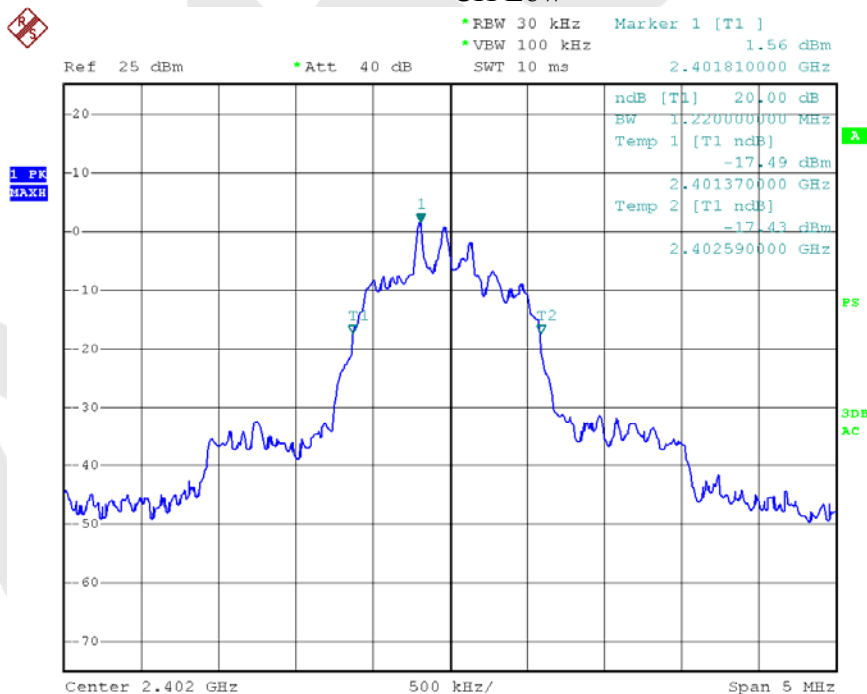
### CH High



Date: 23.OCT.2013 19:52:46

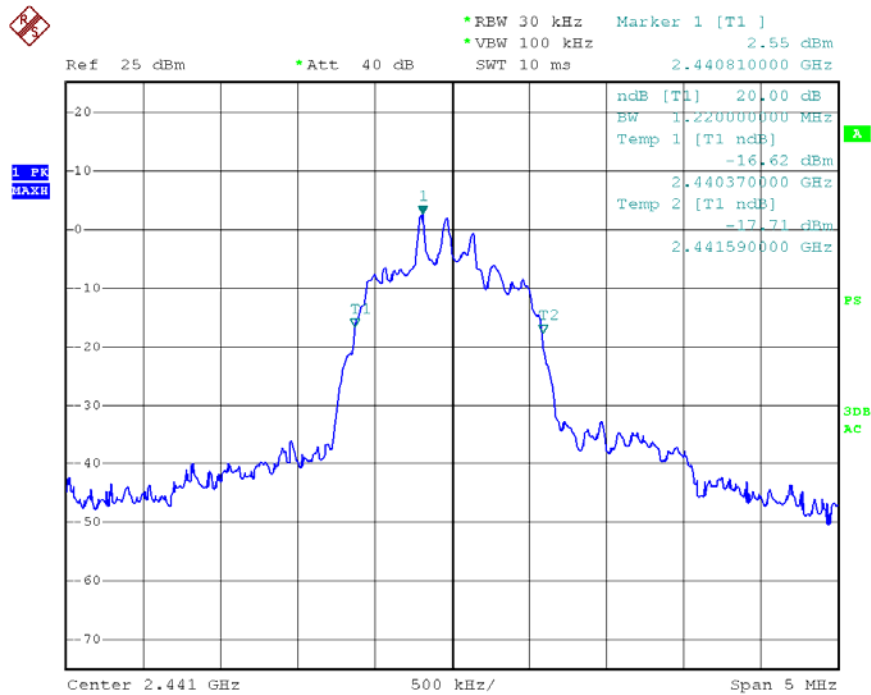
Modulation Mode:  $\pi/4$ DQPSK & 8DPSK

### CH Low



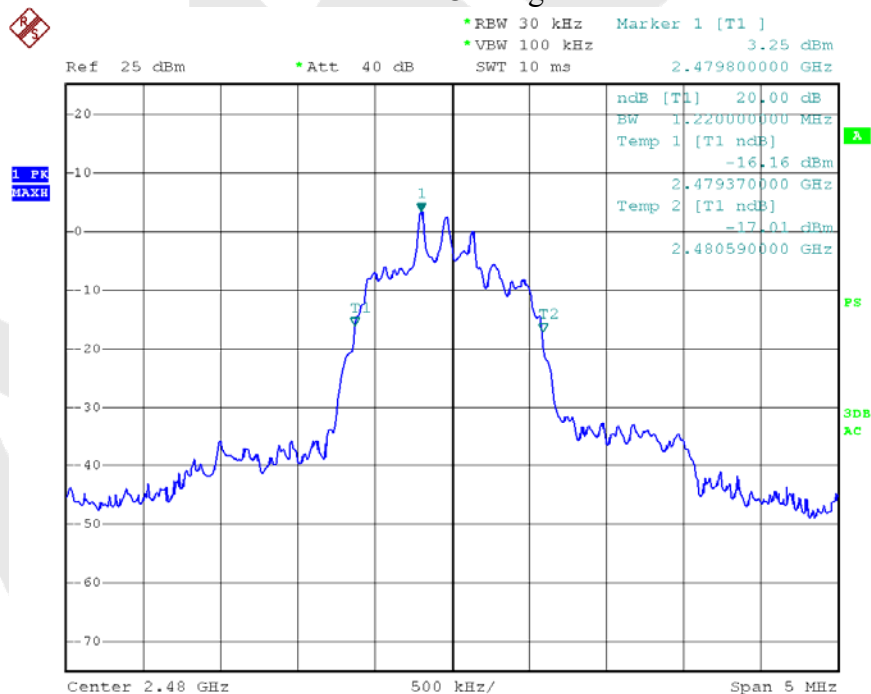
Date: 23.OCT.2013 19:53:20

### CH Mid



Date: 23.OCT.2013 19:53:46

### CH High



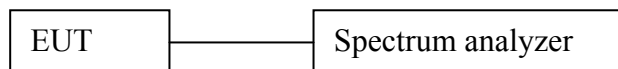
Date: 23.OCT.2013 19:54:13

## 7. QUANTITY OF HOPPING CHANNEL TEST

### 7.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 7.2 Test SET-UP



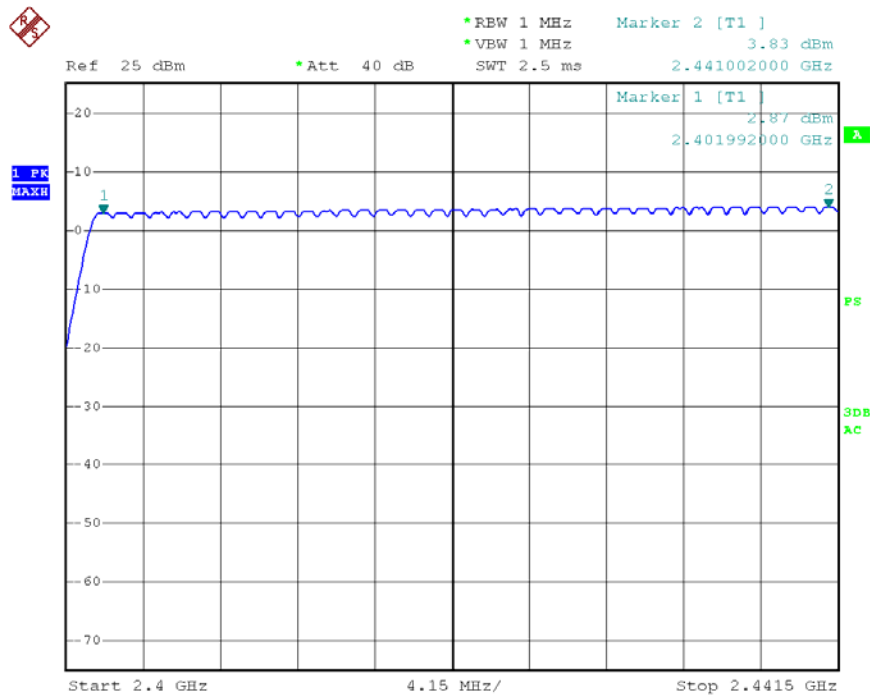
### 7.3 Test Equipment

Same as the equipment listed in 5.3.

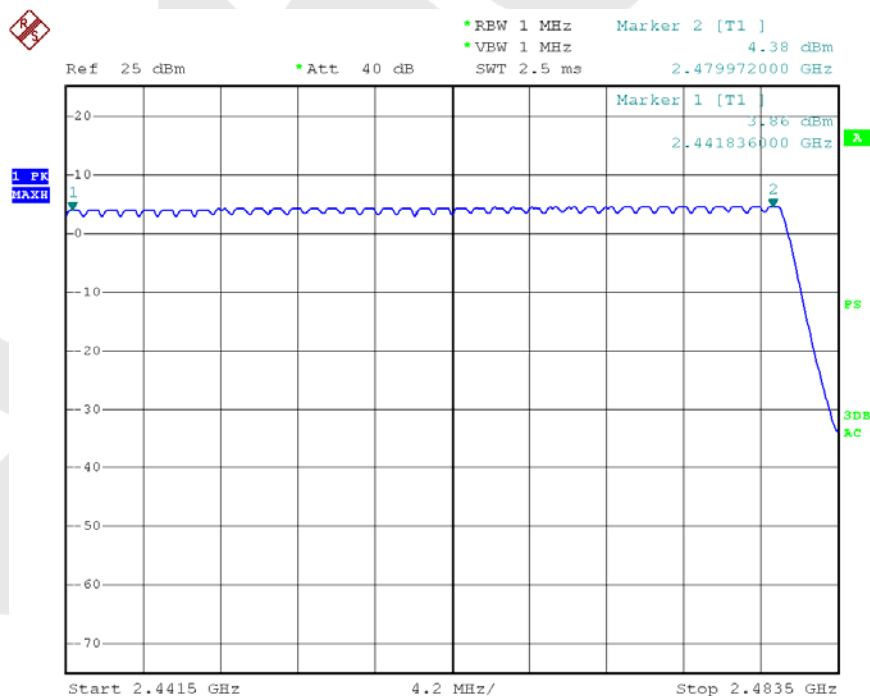
### 7.4 Test Results

Product	: 8BITDO GamePad	Test Mode	: CH Low ~ CH High
Test Item	: Number of Hopping Frequency	Temperature	: 24°C
Test Voltage	: DC 3.7V	Humidity	: 55%RH
Test Result	: PASS		

Hopping Channel Frequency Range	Quantity of Hopping Channel	Quantity of Hopping Channel
2402-2480	79	> 15



Date: 23.OCT.2013 20:16:40



Date: 23.OCT.2013 20:19:25

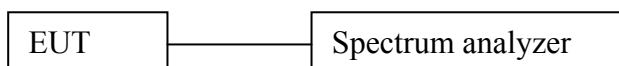


## 8. DWELL TIME TEST

### 8.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 8.2 Test SET-UP



### 8.3 Test Equipment

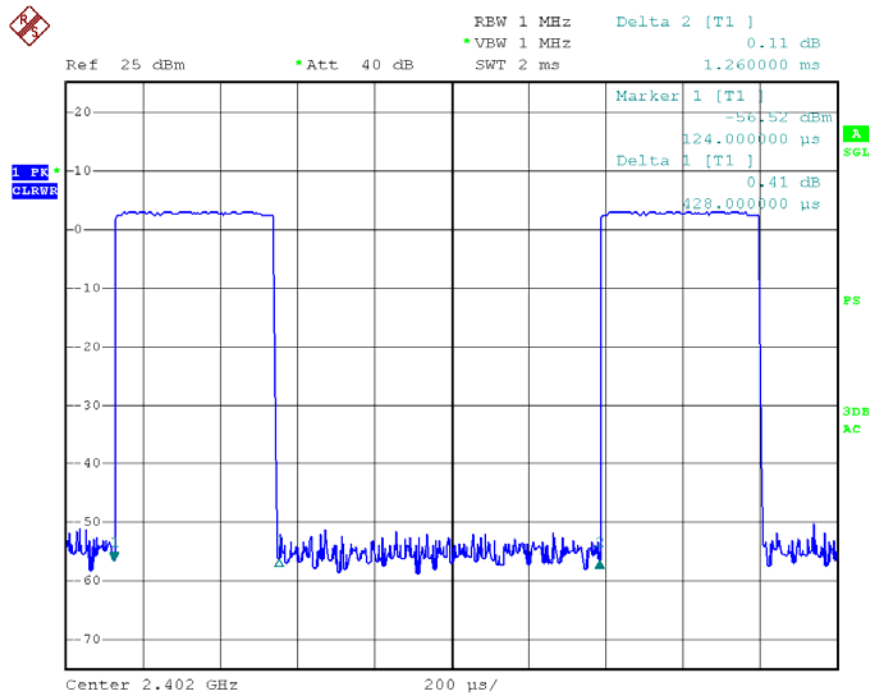
Same as the equipment listed in 5.3.

### 8.4 Test Results

Product	: 8BITDO GamePad	Test Mode	: CH Low ~ CH High
Test Item	: Time of Occupancy	Temperature	: 24°C
Test Voltage	: DC 3.7V	Humidity	: 55%RH
Test Result	: PASS		

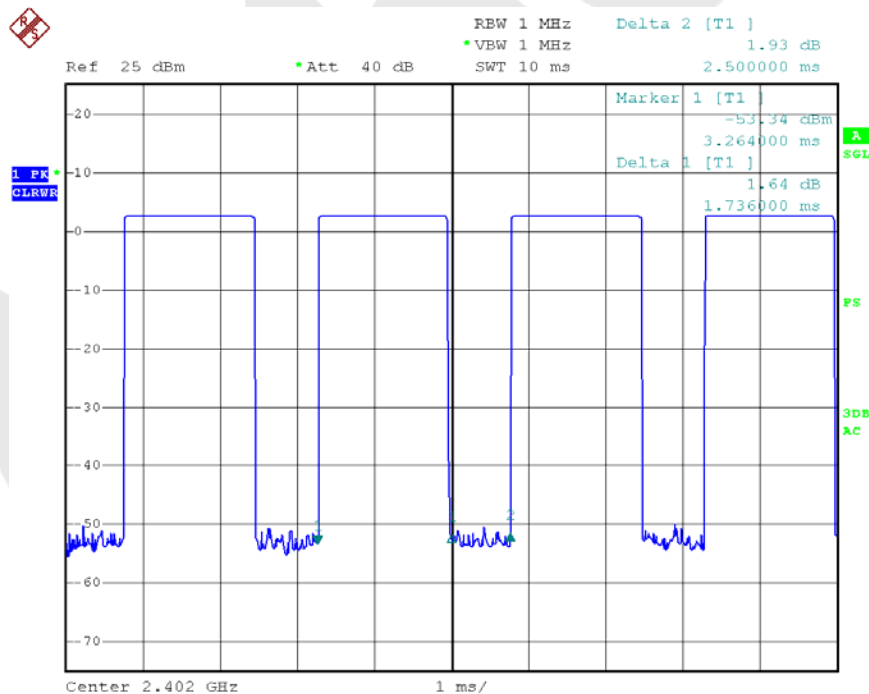
Package Type	Pulse width (ms)	Time slot length(ms)	Dwell time (ms)	Limit (s)
DH1	0.428	time slot length *1600/2 /79 * 31.6	136.96	0.4
DH3	1.736	time slot length *1600/4 /79 * 31.6	277.76	0.4
DH5	2.996	time slot length *1600/6 /79 * 31.6	319.57	0.4

DH1



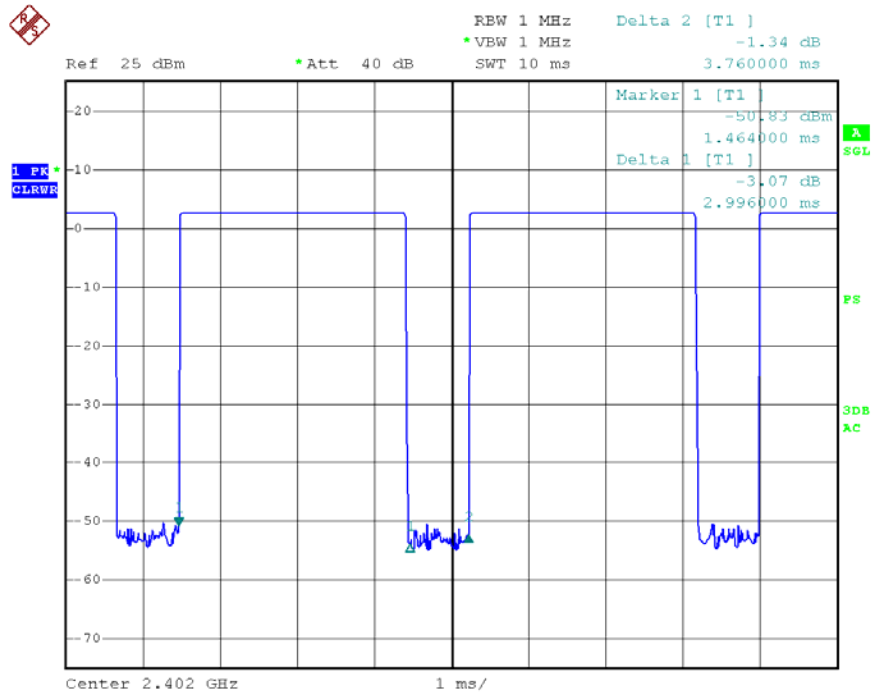
Date: 23.OCT.2013 20:21:07

DH3



Date: 23.OCT.2013 20:22:19

DH5



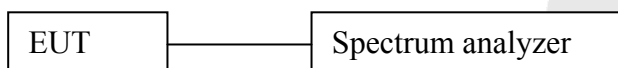
Date: 23.OCT.2013 20:23:05

## 9. MAXIMUM PEAK OUTPUT POWER TEST

### 9.1 Measurement Procedure

- Check the calibration of the measuring instrument(SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- The center frequency of the spectrum analyzer is set to the fundamental frequency and using proper RBW and VBW setting.
- Measure the captured power within the band and recording the plot.
- Repeat above procedures until all frequencies required were complete.

### 9.2 Test SET-UP



### 9.3 Test Equipment

Same as the equipment listed in 5.3.

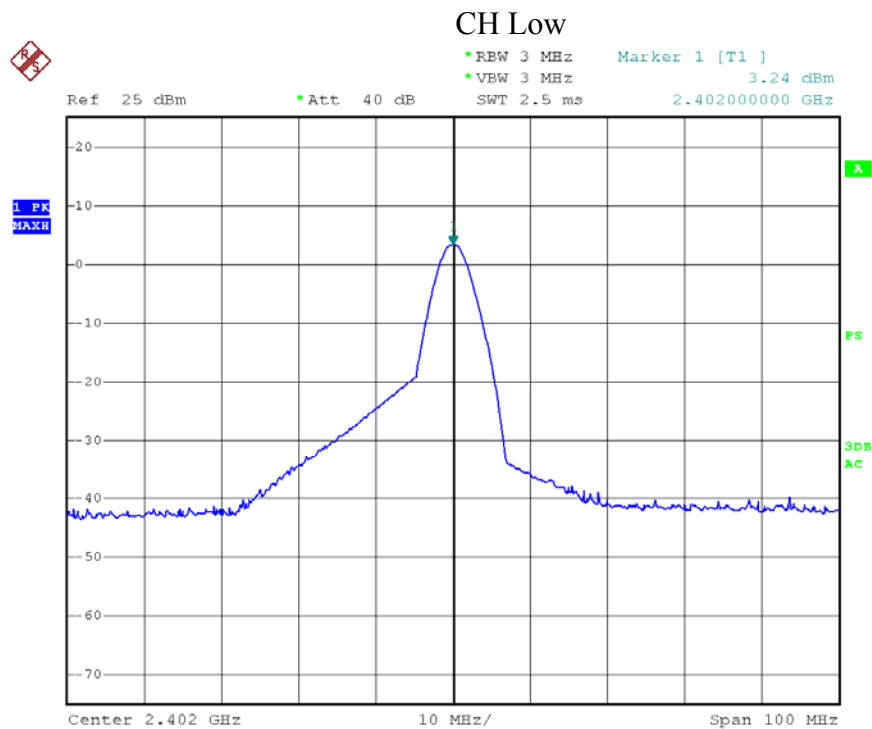
### 9.4 Test Results

Product	: 8BITDO GamePad	Test Mode	: CH Low ~ CH High
Test Item	: Max. peak output power	Temperature	: 24°C
Test Voltage	: DC 3.7V	Humidity	: 55%RH
Test Result	: PASS		

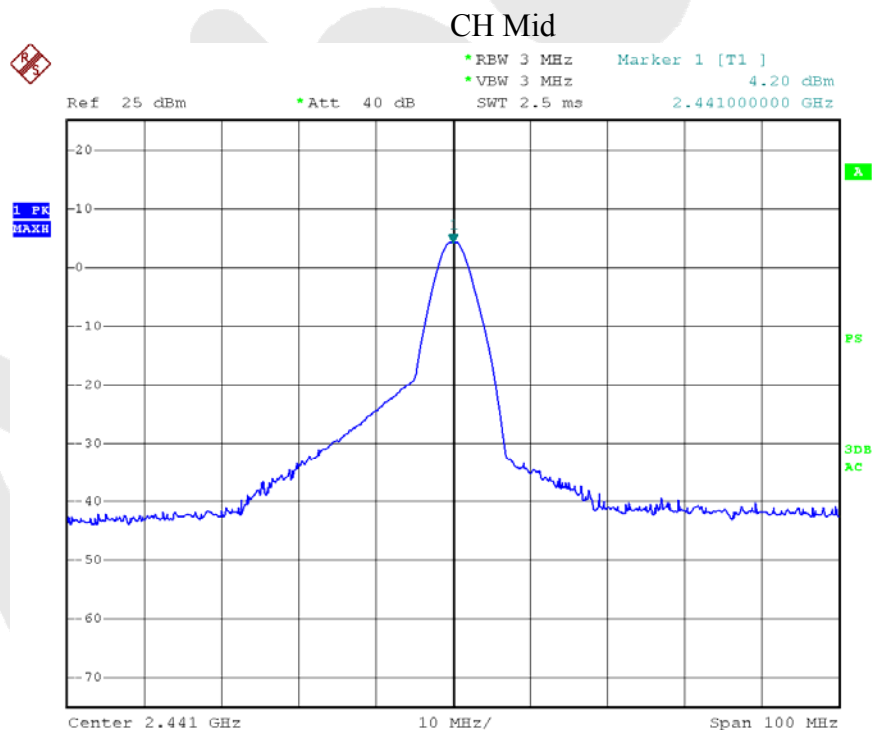
Channel Frequency (MHz)	Peak Power output(mW)	Peak Power output(dBm)	Peak Power Limit(mW)	Results	Modulation
2402	2.10	3.24	125	PASS	GFSK
2441	2.63	4.20	125	PASS	GFSK
2480	<b>3.08</b>	<b>4.88</b>	125	PASS	GFSK
2402	2.11	3.25	125	PASS	$\pi$ /4DQPSK
2441	2.64	4.21	125	PASS	$\pi$ /4DQPSK
2480	3.08	4.88	125	PASS	$\pi$ /4DQPSK
2402	2.11	3.25	125	PASS	8DPSK
2441	2.64	4.21	125	PASS	8DPSK
2480	3.08	4.88	125	PASS	8DPSK

Remark: The results of modulations  $\pi$ /4DQPSK and 8DPSK are the same.

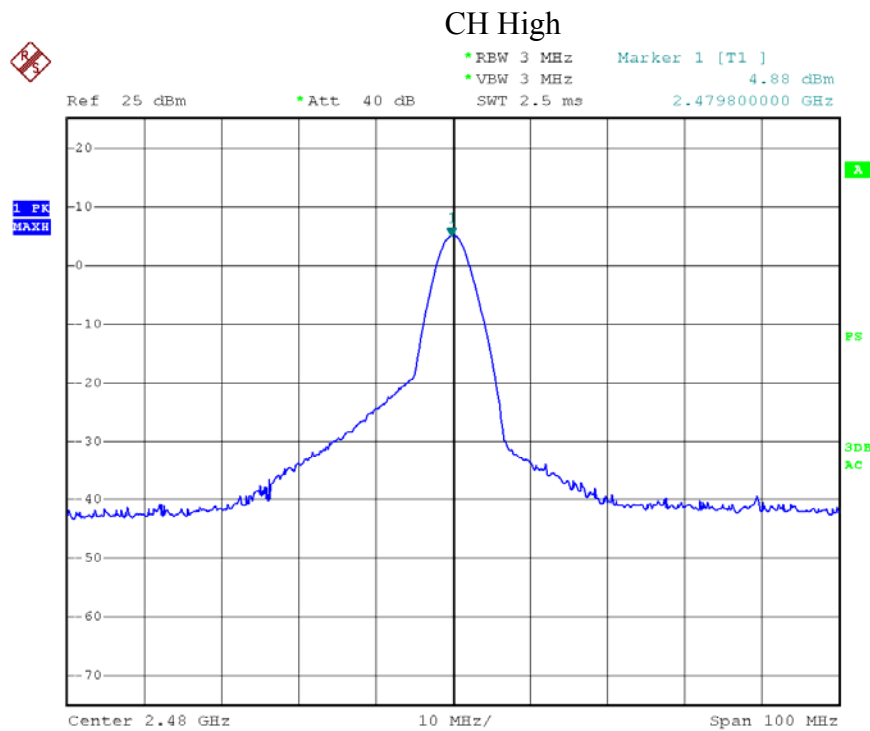
Modulation Mode: GFSK



Date: 23.OCT.2013 19:48:45

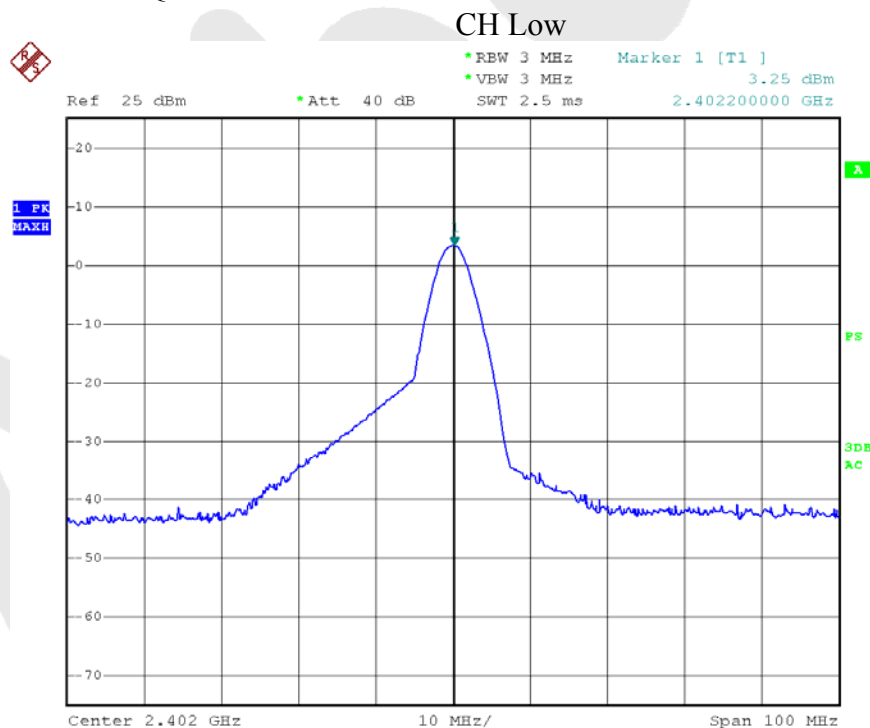


Date: 23.OCT.2013 19:49:12

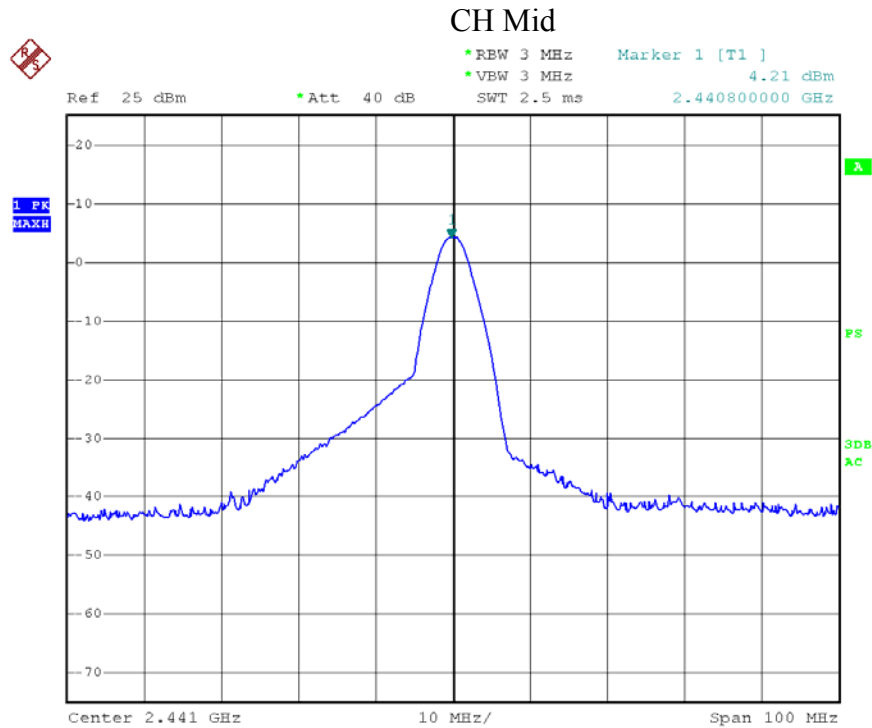


Date: 23.OCT.2013 19:49:33

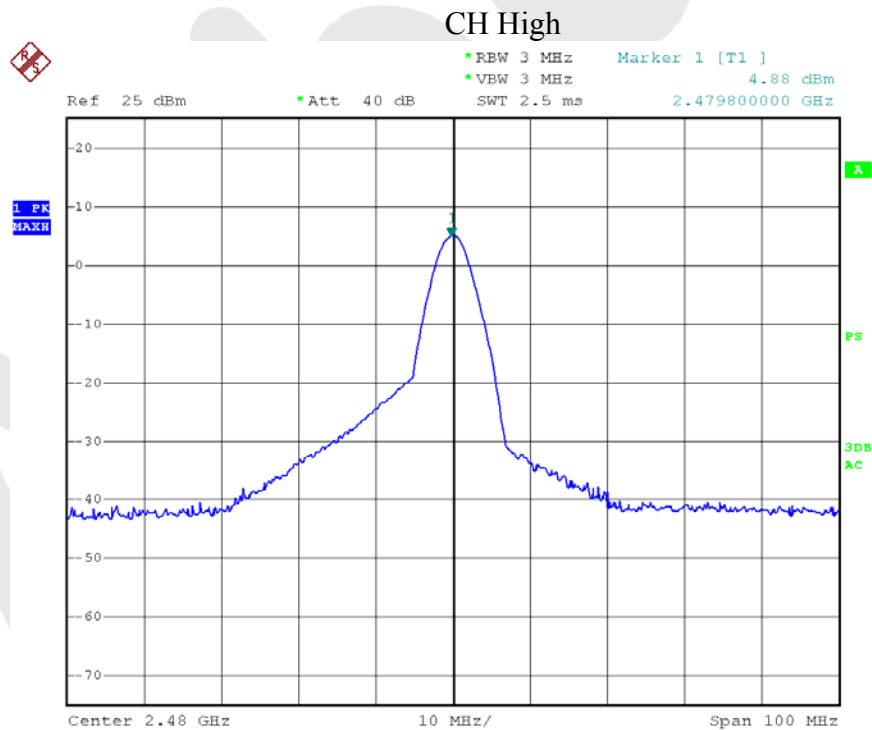
Modulation Mode:  $\pi/4$ DQPSK & 8DPSK



Date: 23.OCT.2013 19:50:09



Date: 23.OCT.2013 19:50:28



Date: 23.OCT.2013 19:50:54

## 10. BAND EDGE TEST

### 10.1 Measurement Procedure

1. The EUT was Operating in hopping mode or could be controlled its channel. Printed out test result from the spectrum by hard copy function.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

### 10.2 Test SET-UP

Same as the radiated emission test.

### 10.3 Test Equipment

Same as the equipment listed in 5.3.

### 10.4 Test Results

Pass.

Please refer the following data.



Product	: 8BITDO GamePad	Test Mode	: CH Low ~ CH High
Test Item	: Band eadge	Temperature	: 24°C
Test Voltage	: DC 3.7V	Humidity	: 55%RH
Test Result	: PASS		

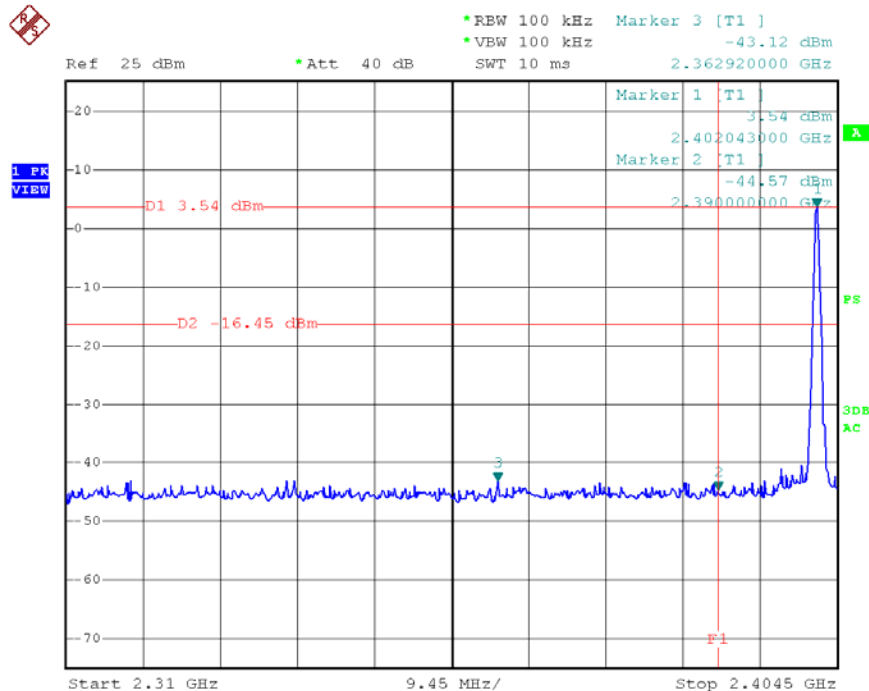
#### 1. Conducted Test

Frequency (MHz)	Peak Power Output(dBm)	Emission read Value(dBm)	Result of Band edge(dBc)	Band edge Limit(dBc)	Modulation
<2400	3.54	-44.57	48.11	>20dBc	GFSK
	3.50	-45.30	48.8	>20dBc	$\pi$ /4DQPSK
	3.50	-45.30	48.8	>20dBc	8DPSK
>2483.5	3.95	-47.18	51.13	>20dBc	GFSK
	3.99	-45.49	49.48	>20dBc	$\pi$ /4DQPSK
	3.99	-45.49	49.48	>20dBc	8DPSK

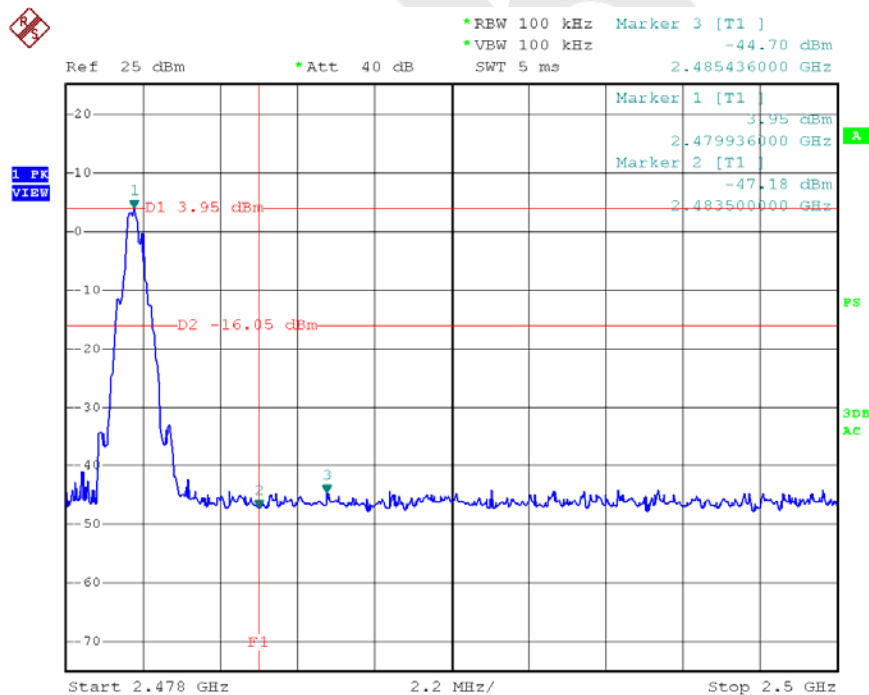
#### 2. Radiated emission Test

Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)		Band edge Limit (dBuV/m)		Modulation
		PK	AV	PK	AV	
<2400	V	55.94	37.29	74.00	54.00	GFSK
	V	53.65	38.61	74.00	54.00	$\pi$ /4DQPSK
	V	52.12	35.77	74.00	54.00	8DPSK
>2483.5	V	51.03	38.12	74.00	54.00	GFSK
	V	53.11	36.89	74.00	54.00	$\pi$ /4DQPSK
	V	50.47	38.02	74.00	54.00	8DPSK

Modulation Mode: GFSK

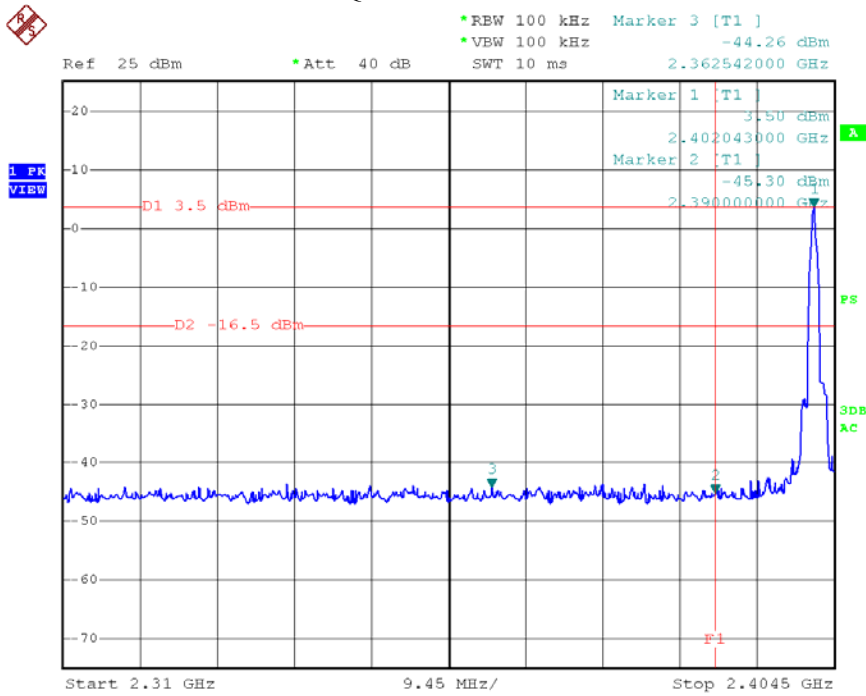


Date: 23.OCT.2013 19:56:55

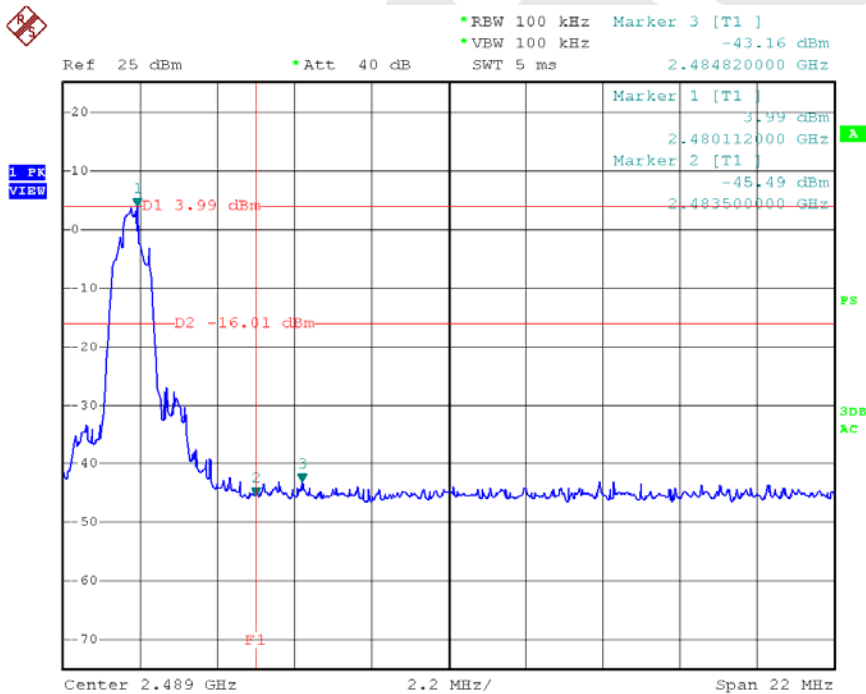


Date: 23.OCT.2013 20:01:40

Modulation Mode:  $\pi/4$ DQPSK & 8DPSK



Date: 23.OCT.2013 19:57:44



Date: 23.OCT.2013 20:03:28

## 11. ANTENNA APPLICATION

### 11.1 Antenna requirement

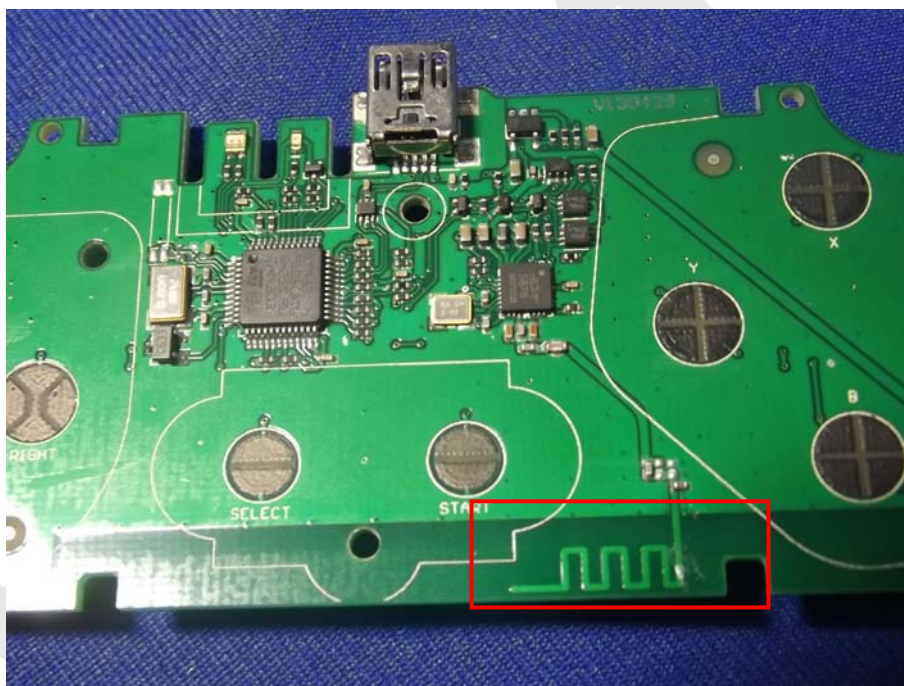
The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

FCC part 15C section 15.247 requirements:

Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

### 11.2 Result

The EUT's antenna used a chip antenna and integrated on PCB, The antenna's gain is -1.3dBi and meets the requirement.

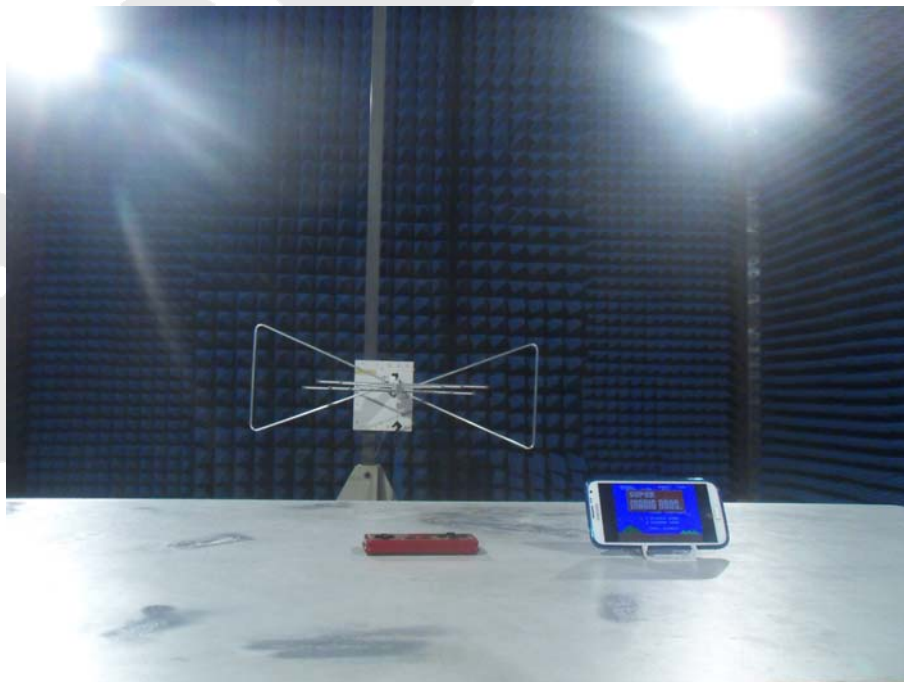


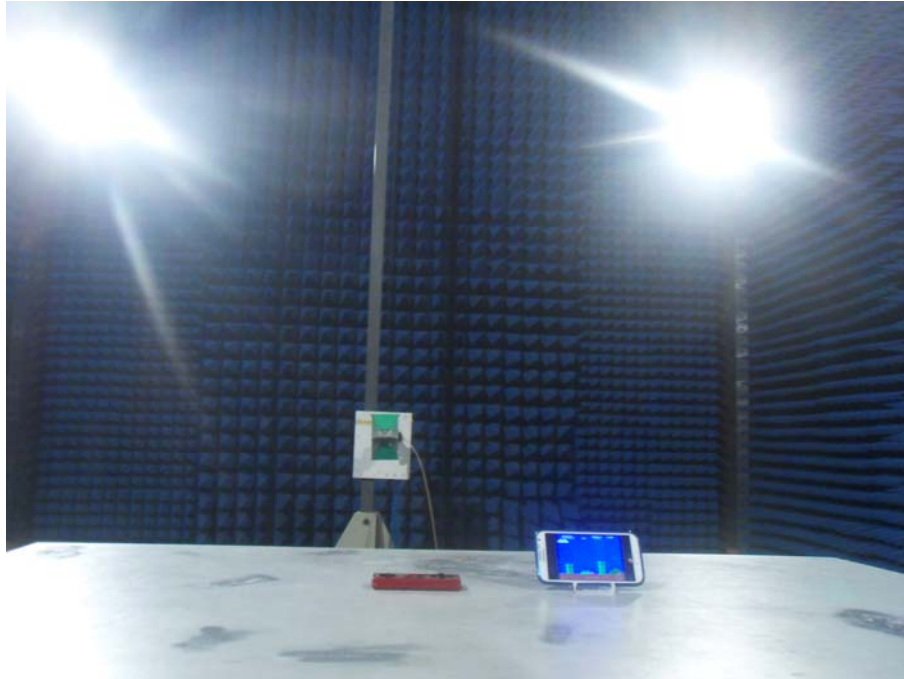
## 12. PHOTOGRAPH

### 12.1 Photo of Power Line Conducted Emission Measurement



### 12.2 Photo of Radiation Emission Test







## APPENDIX I (External Photos)

Figure 1  
The EUT-Overall View



Figure 2  
The EUT-Front View



Figure 3  
The EUT-Back View

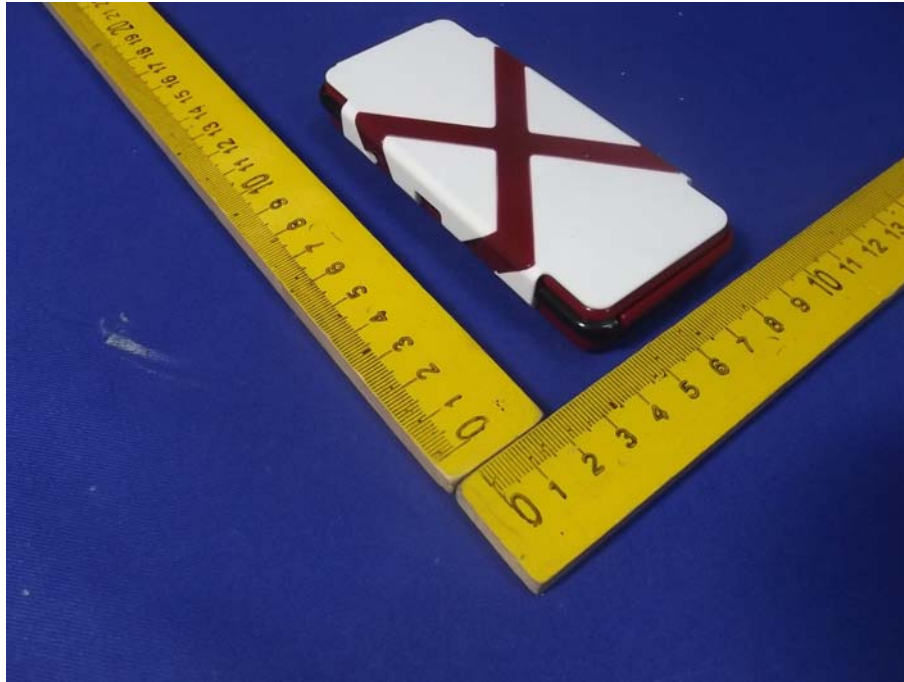


Figure 4  
The EUT-Port View





Figure 5  
The EUT-Enclosure View



## APPENDIX II (Internal Photos)

Figure 6

The EUT-Inside View

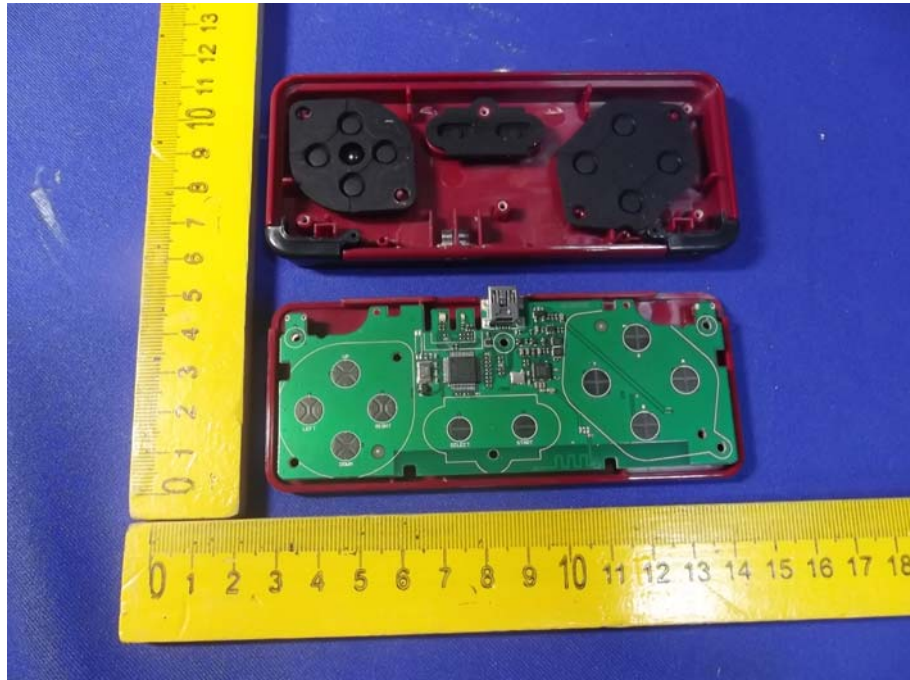


Figure 7

PCB of the EUT-Front View

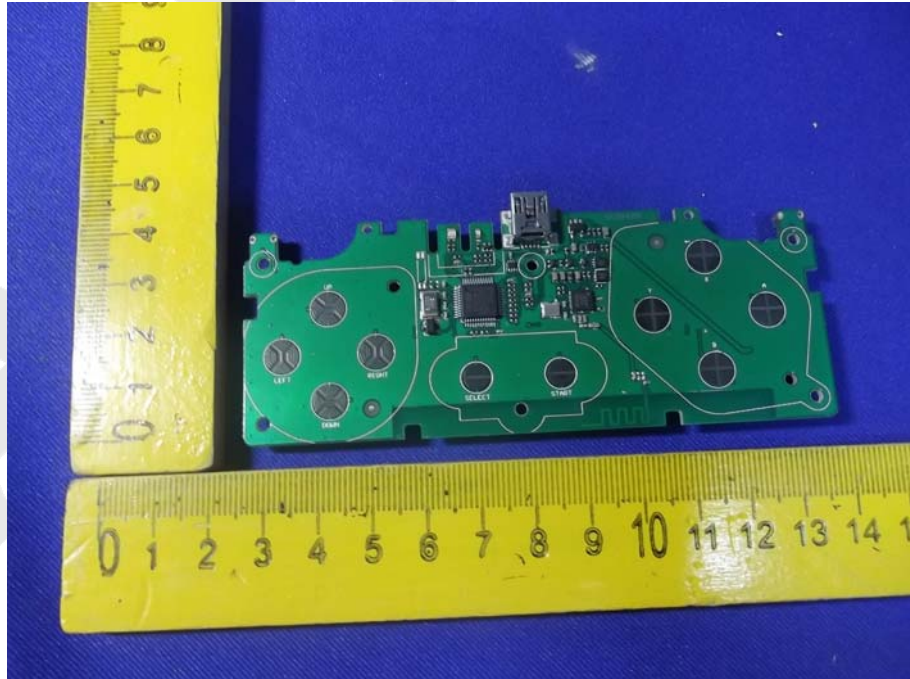


Figure 8  
PCB of the EUT-Back View

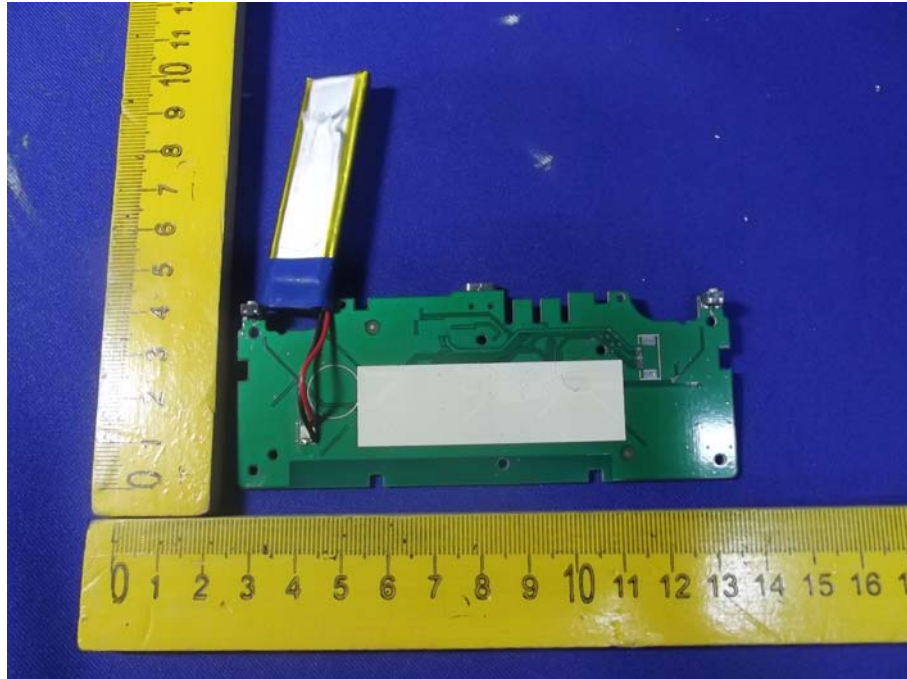


Figure 9  
The EUT-Battery View

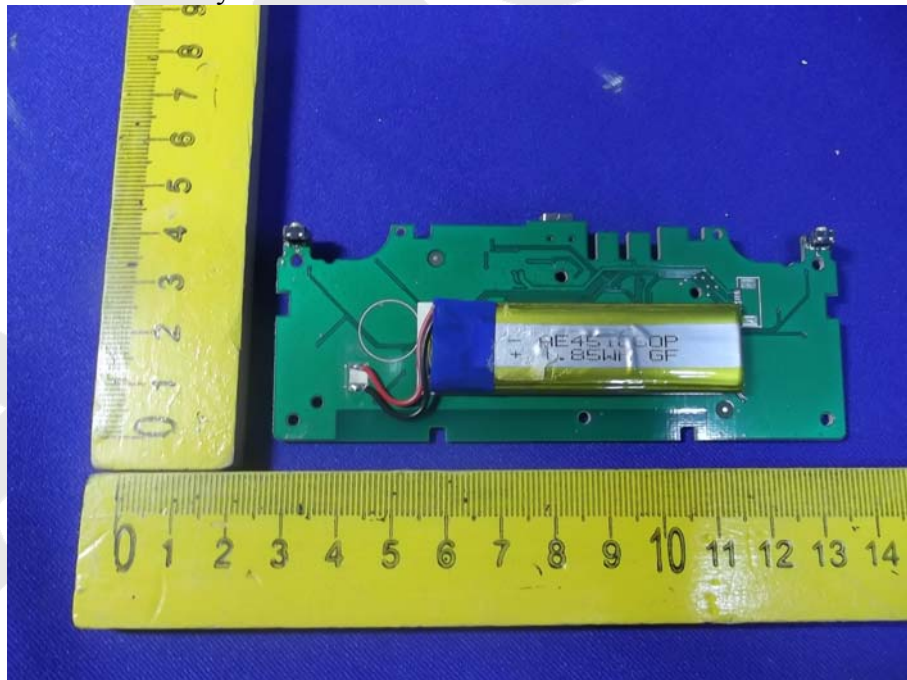




Figure 10  
PCB of the Module View

