CENTRE OF TESTING SERVICE INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

FCC ID/IC TEST REPORT

TEST REPORT NUMBER : CGZ3160505-00468-EFI

CENTRE OF TESTING SERVICE CO., LTD.

A101，No.65，Zhuji Highway,Tianhe District，Guangzhou, China

TEST REPORT For FCC ID/IC

47 CFR PART 15 OCT, 2016; RSS-210 Issue 9

Report Reference No.	CGZ3160505-00468-EFI
Date of issue	07 April 2017
Testing Laboratory Name	**CENTRE OF TESTING SERVICE CO., LTD.**
Address	A101，No.65，Zhuji Highway,Tianhe District，Guangzhou, China
Testing location/ procedure	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's name	Horizon Hobby, LLC
Address	4105 Fieldstone Road, Champaign, IL 61822, USA
Test specification	
Standard	**47 CFR PART 15 OCT, 2016; RSS-210 Issue 9; RSS-Gen Issue 4** **ANSI C63.10:2013**
Test Report Form No.	CTSEMC-1.0
TRF Originator	CENTRE OF TESTING SERVICE CO., LTD.
Master TRF	Dated 2009-01

Test item description	Receiver
Trade Mark	Spektrum
Manufacturer	Horizon Hobby, LLC
Model/Type reference	SPMAR6600T
Ratings	Battery 3.5~9V
Operating Frequency	2404.0MHz ~2476.0MHz
Result	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Kate zhang / Fileadministrators	Duke yang / Technique principal	Vincent yao / Manager

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FCC ID/IC -- T E S T R E P O R T

Test Report No. : CGZ3160505-00468-EFI	07 April 2017 Date of issue

Type / Model.....	SPMAR6600T
EUT.....	Receiver
Applicant……	Horizon Hobby, LLC
Address.....	4105 Fieldstone Road, Champaign, IL 61822, USA
Telephone.....	+1-217 4033657
Fax.....	/
Contact.....	Erin Hassan
Manufacturer……	Horizon Hobby, LLC
Address.....	4105 Fieldstone Road, Champaign, IL 61822, USA
Telephone.....	+1-217 4033657
Fax.....	/
Contact.....	Erin Hassan
Factory……	Horizon Hobby, LLC
Address.....	4105 Fieldstone Road, Champaign, IL 61822, USA
Telephone.....	+1-217 4033657
Fax.....	/
Contact.....	Erin Hassan

Test Result according to the standards on page 1: **PASSED**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1.TEST STANDARDS

The tests were performed according to following standards:

■ **47 CFR PART 15 OCT, 2016**
■ **RSS-210 Issue 9**
■ **RSS-Gen Issue 4**
■ **ANSI C63.10:2013**

2.SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	05 May 2016
Testing commenced on	05 May 2016~07 April 2017
Testing concluded on	07 April 2017

2.2 FINAL ASSESSMENT

The FCC/IC requirements pertaining to the technical standards and tested operation modes are

■ - fulfilled.
□ - **not** fulfilled.

The equipment under test
■ - fulfils the FCC/IC requirements cited on page 1.
□ - **does not** fulfil the FCC/IC requirements cited on page 1.

3.EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage : ■ Battery 6V

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: **1**
Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:
□ TX- Y position
□ TX- Zposition
■ TX- X position
■ RX
Operation mode 1:TX-X Position Low (2404MHz) , TX-X Position Middle (2440MHz),
TX-X Position High (2476MHz)
RX
Note:Operation mode 1 TX -X position of EUT is the radiated test worst case; so only these test results be recorded in the test report.

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3.4 EUT configuration

3.4.1. Description of configuration (EUT)

Description	:	Receiver
Model Number	:	SPMAR6600T
Operation frequency	:	2404~ 2476 MHz ISM Band
Modulation Technology	:	GFSK Modulation
Antenna	:	External antenna, met requirement of FCC 15.203

3.4.2. Tested Supporting System Details

N/A

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4. TEST ENVIRONMENT

4.1 Address of the test laboratory

A101，No.65，Zhuji Highway,Tianhe District，Guangzhou, China

Tel：+86-20-85543113 (32 lines) Fax：+86-20-38780406

4.2 Test facility

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

CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on June 6, 2011.

FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, 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 No.791995, July 13,2012.

4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.4 Definitions of symbols used in this test report

■ - The black square indicates that the listed condition, standard or equipment is applicable for this report.
□ - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)
	1GHz~26.5GHz	±3.54dB	(1)

(1).This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5.Summary of standards and results

5.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	**Standard**	**Results**
Conducted Emission Test	FCC Part 15 § 15.207 RSS-Gen Issue 4§ 7.2.4 ANSI C63.10:2013	N/A
Radiated Emission Test	RSS-Gen Issue 4§ 7.2 RSS-210 Issue 9 § B.10 FCC Part 15 C § 15.249 FCC Part 15 § 209 ANSI C63.10:2013	PASSED
Receiver Spurious Emissions	RSS-Gen Issue 4§ 4.10 ANSI C63.10:2013	PASSED
Band Edge Compliance Test	RSS-210 Issue 9 § 4.1 RSS-Gen Issue 4 § 8.10 FCC Part 15 C § 15.249 ANSI C63.10:2013	PASSED
99% Bandwidth	RSS-210 Issue 9 § A.1.3 RSS-Gen Issue 4 § 6.6 ANSI C63.10:2013	PASSED
N/A is an abbreviation for Not Applicable.		

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6.Power Line Conducted Emission Test

6.1.Test Equipment

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2016/10
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2016/10
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/026	2016/10
4	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2016/10
5	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2016/10

6.2. Block Diagram of Test Setup

(EUT: Receiver***)***

6.3. Power Line Conducted Emission Test Limits

Standard:RSS-Gen:7.2.4,FCC Part 15 : 15.207,ANSI C63.10:2013

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

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

6.4.Test Procedure

The Notebook Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. 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 Part 15C on Conducted Emission Test.

6.5. Power Line Conducted Emission Test Results

N/A

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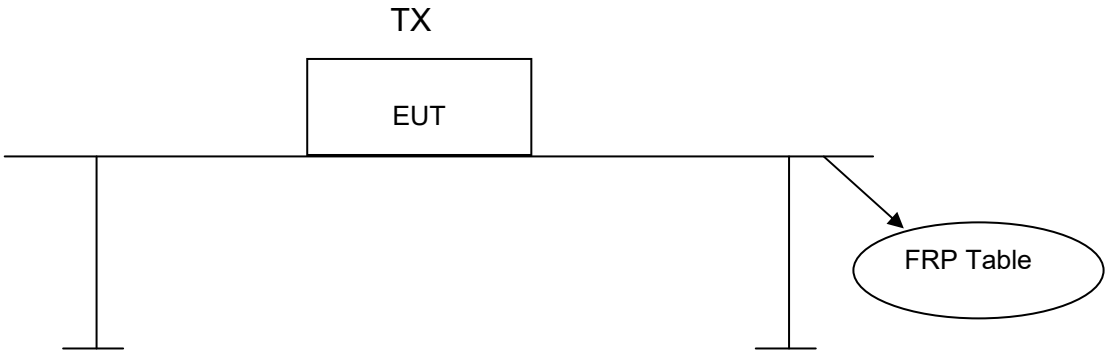
7.Radiated disturbance (electric field)

7.1.Test Equipment

Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2016/10
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2017/03
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2017/03
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2017/03
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2016/10

7.2.Block Diagram of Test Setup

7.2.1 Block Diagram of connection between EUT and simulators



(EUT: Receiver***)***

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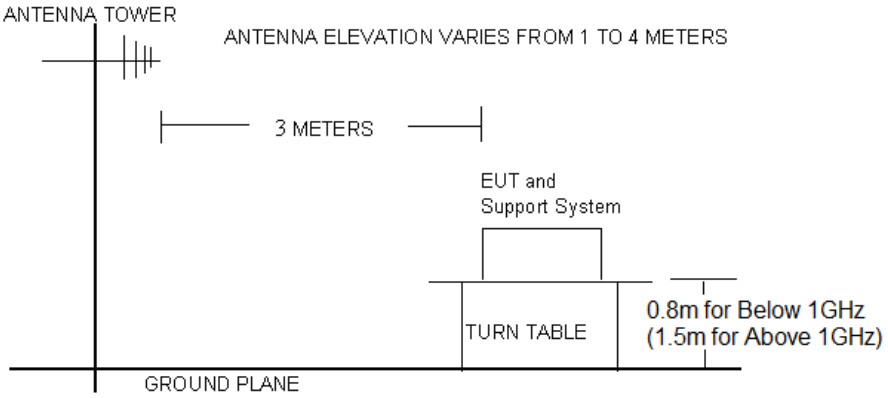
7.2.2 Anechoic Chamber Setup Diagram



7.3.Radiated Emission Limit :

Standard: FCC 15.249 , FCC 15.209; RSS-Gen:7.2; RSS-210 B.10.

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/m
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

7.4.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high (1.5m for above 1GHz) above 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 between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated emission Test.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 120kHz RBW below 1GHz and a Peak and Average detector with 2MHz RBW above 1GHz,

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 300kHz VBW below 1GHz and a Peak detector with1MHz VBW above 1GHz, A average detector with 10Hz VBW above 1GHz

Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

The test modes (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on section 7.5

7.5.Radiated Emission Test Results

PASSED.

The frequency range from 9KHz~30MHz,30MHz to 230MHz, 230MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

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Test Mode:	TX –X Position Mode	Result:	■ - passed □ - not passed
Frequency range:	9KHz~30MHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
Remark: The test result reading value is to low, margin all > 20dB of the limit.							

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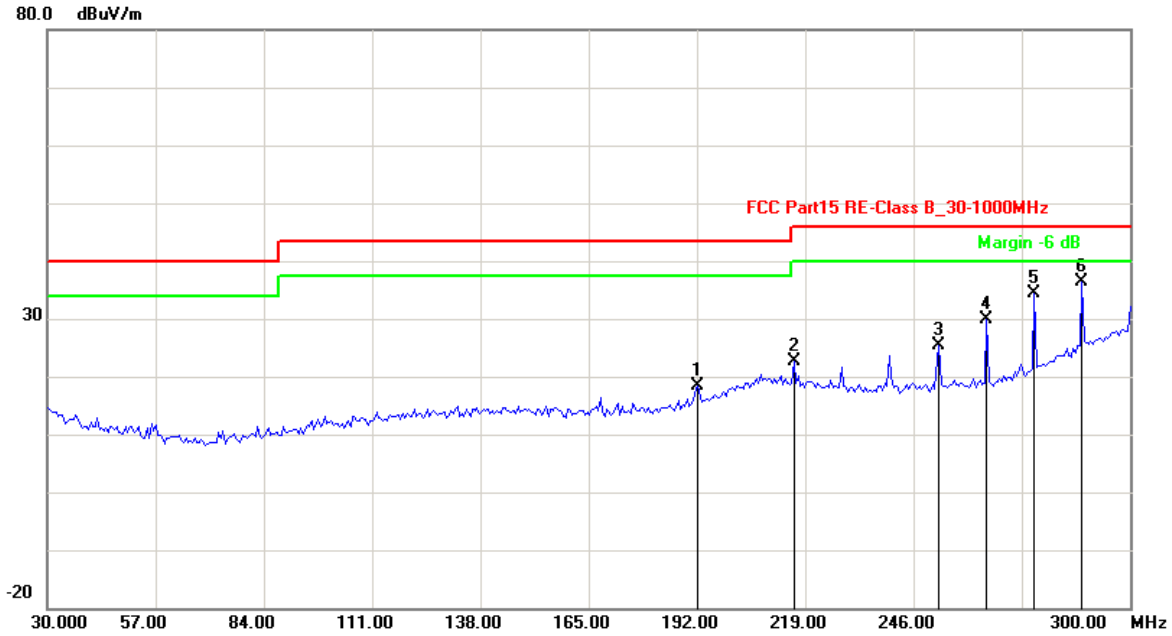
Channel: Test point: Frequency range:	TX –X Position Horizontal 30MHz-1GHz	Result:	■ - passed □ - not passed

EUT	Receiver
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	05 May 2016~07 April 2017
Operator	**Duke**
MODEL NO	SPMAR6600T



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	192.3246	-13.89	32.30	18.41	43.50	-25.09	QP
2	216.1323	-10.64	33.27	22.63	46.00	-23.37	QP
3	252.3848	-11.31	36.72	25.41	46.00	-20.59	QP
4	264.2886	-10.52	40.39	29.87	46.00	-16.13	QP
5	276.1924	-8.26	42.73	34.47	46.00	-11.53	QP
6	288.0962	-4.65	40.96	36.31	46.00	-9.69	QP
Remark: Other frequency mini margin all >6 dB of Limit							

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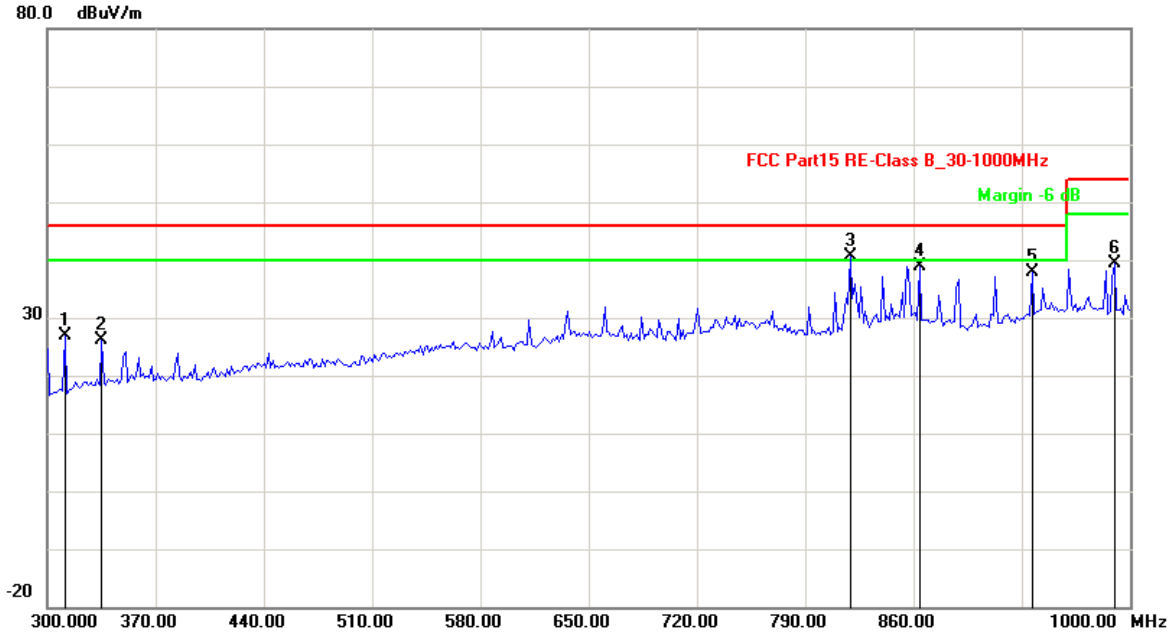

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	311.2224	-13.11	39.87	26.76	46.00	-19.24	QP
2	335.0701	-12.03	38.13	26.10	46.00	-19.90	QP
3	819.0381	-2.14	42.73	40.59	46.00	-5.41	QP
4	863.9279	-0.71	39.68	38.97	46.00	-7.03	QP
5	936.8737	-0.16	38.00	37.84	46.00	-8.16	QP
6	990.1804	0.04	39.23	39.27	54.00	-14.73	QP
Remark: Other frequency mini margin all >6 dB of Limit							

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Channel:	TX –X Position Low CH	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2404.00	-6.83	93.40	86.57	114.00	-27.43	Peak
2	2404.00	-6.83	90.55	83.72	94.00	-10.28	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1727.455	-11.03	60.84	49.81	74.00	-24.19	peak
2	1727.455	-11.03	46.71	35.68	54.00	-18.32	AVG
3	6444.890	7.46	42.31	49.77	74.00	-24.23	peak
4	6444.890	7.46	27.32	34.78	54.00	-19.22	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Channel:	TX –X Position Middle CH	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2440.00	-6.62	92.90	86.28	114.00	-27.72	Peak
2	2440.00	-6.62	90.06	83.44	94.00	-10.56	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1749.499	-10.88	47.52	36.64	74.00	-37.36	peak
2	1749.499	-10.88	32.23	21.35	54.00	-32.65	AVG
3	5827.655	5.97	41.12	47.09	74.00	-26.91	peak
4	5827.655	5.97	26.88	32.85	54.00	-21.15	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Channel:	TX –X Position High CH	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2476.00	-6.40	93.04	86.64	114.00	-27.36	Peak
2	2476.00	-6.40	89.64	83.24	94.00	-10.76	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1749.499	-10.88	45.28	34.40	74.00	-39.60	peak
2	1749.499	-10.88	31.29	20.41	54.00	-33.59	AVG
3	5871.743	6.13	41.44	47.57	74.00	-26.43	peak
4	5871.743	6.13	26.42	32.55	54.00	-21.45	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

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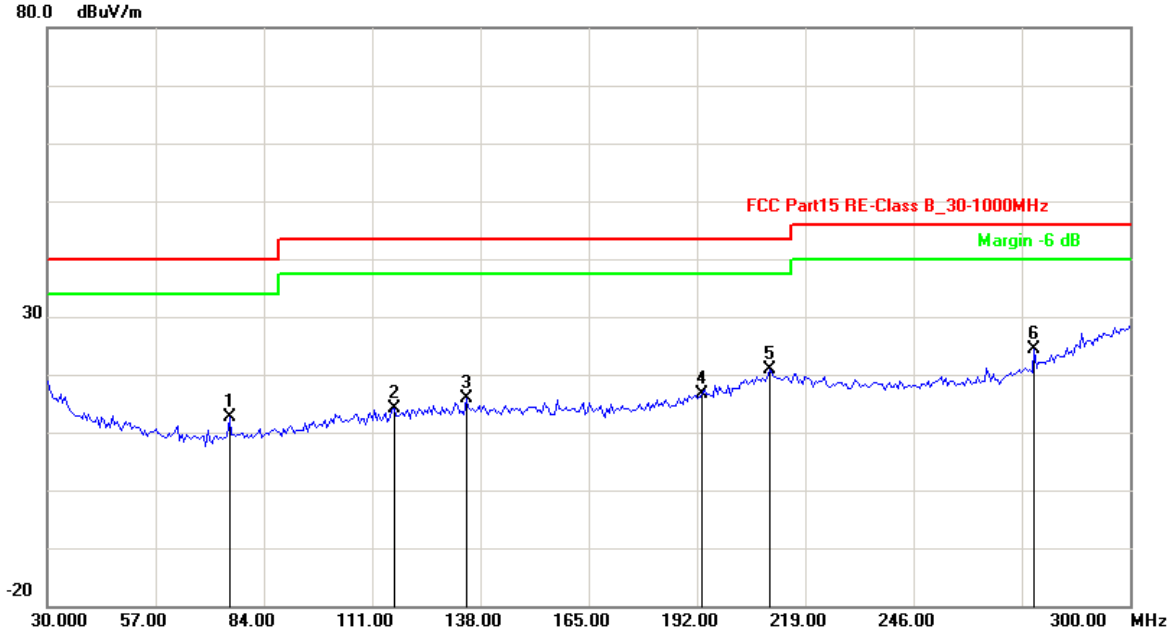
Channel:	TX –X Position	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	30MHz-1GHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	75.4509	-20.32	32.97	12.65	40.00	-27.35	QP
2	116.5731	-16.92	30.97	14.05	43.50	-29.45	QP
3	134.4289	-16.10	32.00	15.90	43.50	-27.60	QP
4	193.4068	-13.67	30.41	16.74	43.50	-26.76	QP
5	210.1804	-10.20	30.97	20.77	43.50	-22.73	QP
6	276.1924	-8.26	32.68	24.42	46.00	-21.58	QP
Remark: Other frequency mini margin all >6 dB of Limit							

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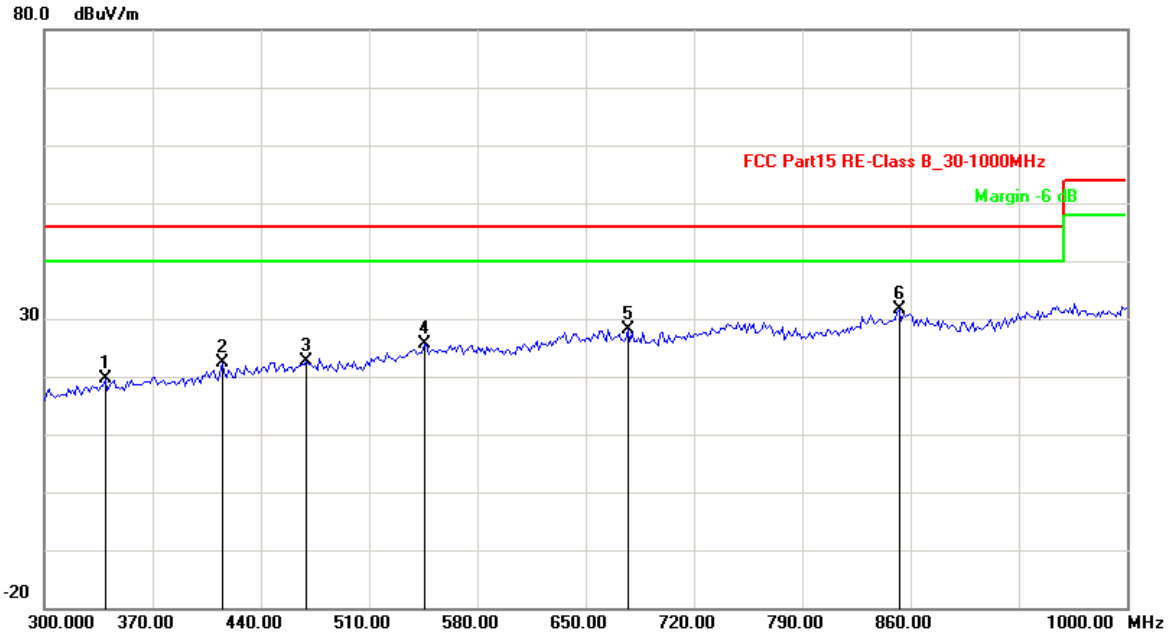

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	339.2786	-11.84	31.38	19.54	46.00	-26.46	QP
2	415.0301	-9.89	32.28	22.39	46.00	-23.61	QP
3	469.7395	-8.33	30.91	22.58	46.00	-23.42	QP
4	545.4910	-5.90	31.65	25.75	46.00	-20.25	QP
5	677.3547	-3.49	31.59	28.10	46.00	-17.90	QP
6	852.7054	-0.37	31.88	31.51	46.00	-14.49	QP
Remark: Other frequency mini margin all >6 dB of Limit							

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Channel:	TX –X Position Low CH	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2404.00	-6.83	101.44	94.61	114.00	-19.39	Peak
2	2404.00	-6.83	98.37	91.54	94.00	-2.46	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1749.499	-10.88	54.54	43.66	74.00	-30.34	peak
2	1749.499	-10.88	39.53	28.65	54.00	-25.35	AVG
3	6466.934	7.50	43.53	51.03	74.00	-22.97	peak
4	6466.934	7.50	29.24	36.74	54.00	-17.26	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Channel:	TX –X Position Middle CH	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2440.00	-6.62	100.97	94.35	114.00	-19.65	Peak
2	2440.00	-6.62	98.04	91.42	94.00	-2.58	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1727.455	-11.03	47.36	36.33	74.00	-37.67	peak
2	1727.455	-11.03	33.17	22.14	54.00	-31.86	AVG
3	5783.567	5.80	41.43	47.23	74.00	-26.77	peak
4	5783.567	5.80	26.88	32.68	54.00	-21.32	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Channel:	TX –X Position High CH	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2476.00	-6.40	100.63	94.23	114.00	-19.77	Peak
2	2476.00	-6.40	97.42	91.02	94.00	-2.98	AVG

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1749.499	-10.88	42.82	31.94	74.00	-42.06	peak
2	1749.499	-10.88	27.46	16.58	54.00	-37.42	AVG
3	5232.465	3.96	40.70	44.66	74.00	-29.34	peak
4	5232.465	3.96	26.16	30.12	54.00	-23.88	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

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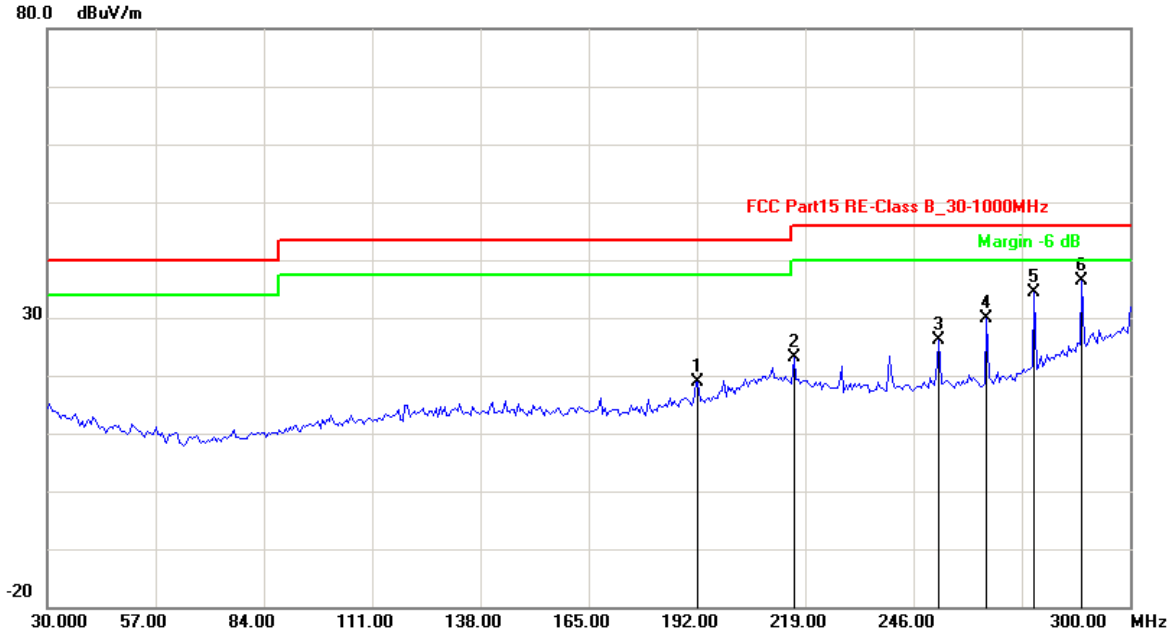
Channel: Test point: Frequency range:	RX Horizontal 30MHz-1GHz	Result:	■ - passed □ - not passed

EUT	Receiver
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	05 May 2016~07 April 2017
Operator	**Duke**
MODEL NO	SPMAR6600T



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	192.3246	-13.89	32.74	18.85	43.50	-24.65	QP
2	216.1323	-10.64	33.85	23.21	46.00	-22.79	QP
3	252.3848	-11.31	37.36	26.05	46.00	-19.95	QP
4	264.2886	-10.52	40.38	29.86	46.00	-16.14	QP
5	276.1924	-8.26	42.64	34.38	46.00	-11.62	QP
6	288.0962	-4.65	40.91	36.26	46.00	-9.74	QP
Remark: Other frequency mini margin all >6 dB of Limit							

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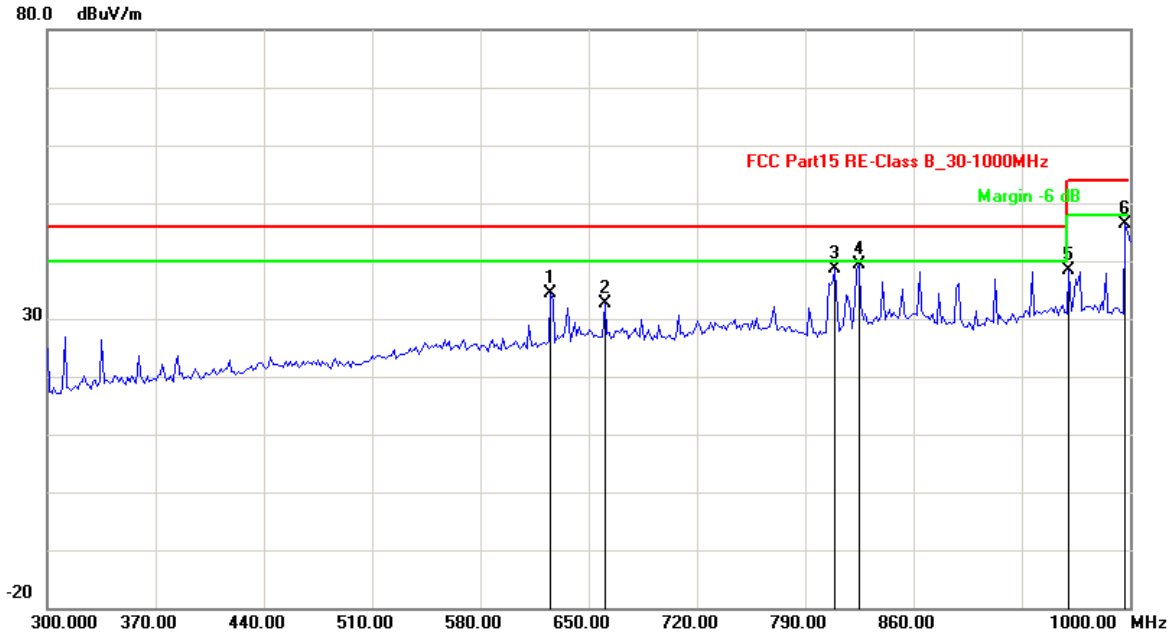

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	625.4509	-4.37	38.79	34.42	46.00	-11.58	QP
2	660.5210	-3.33	36.00	32.67	46.00	-13.33	QP
3	809.2184	-2.72	41.24	38.52	46.00	-7.48	QP
4	824.6493	-1.80	41.10	39.30	46.00	-6.70	QP
5	960.7214	0.32	38.04	38.36	54.00	-15.64	QP
6	997.1944	-0.02	46.41	46.39	54.00	-7.61	QP
Remark: Other frequency mini margin all >6 dB of Limit							

Channel:	RX	Result:	■ - passed
Test point:	Horizontal		□ - not passed
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2014.028	-9.15	39.47	30.32	74.00	-43.68	peak
2	2014.028	-9.15	25.38	16.23	54.00	-37.77	AVG
3	5144.289	3.71	38.54	42.25	74.00	-31.75	peak
4	5144.289	3.71	23.70	27.41	54.00	-26.59	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

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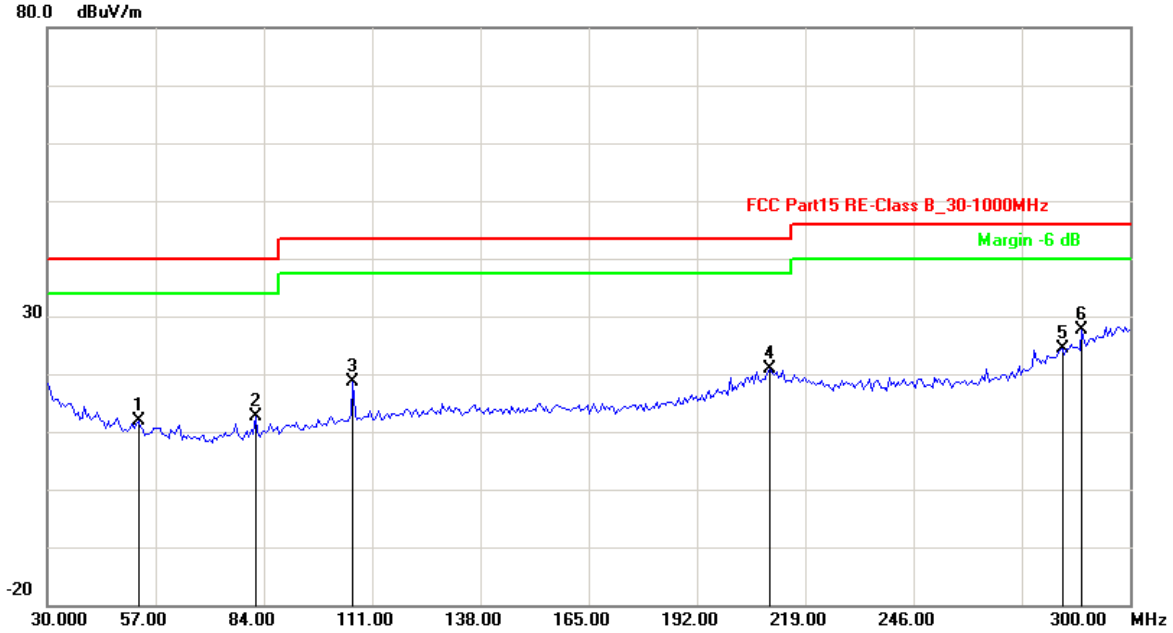
Channel:	RX	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	30MHz-1GHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	52.7255	-18.91	30.81	11.90	40.00	-28.10	QP
2	81.9439	-19.79	32.48	12.69	40.00	-27.31	QP
3	106.2926	-17.64	36.17	18.53	43.50	-24.97	QP
4	210.1804	-10.20	30.98	20.78	43.50	-22.72	QP
5	283.2265	-6.13	30.49	24.36	46.00	-21.64	QP
6	288.0962	-4.65	32.34	27.69	46.00	-18.31	QP
Remark: Other frequency mini margin all >6 dB of Limit							

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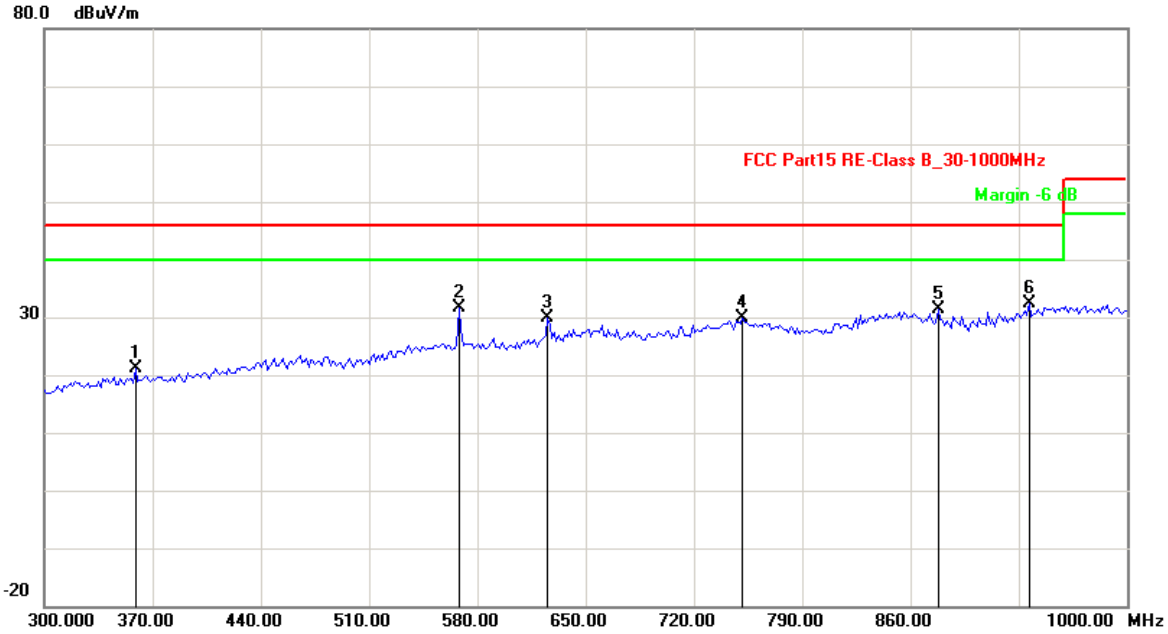

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	358.9178	-11.20	32.34	21.14	46.00	-24.86	QP
2	567.9359	-5.63	37.14	31.51	46.00	-14.49	QP
3	625.4509	-4.37	34.23	29.86	46.00	-16.14	QP
4	751.7034	-1.66	31.47	29.81	46.00	-16.19	QP
5	877.9559	-1.13	32.41	31.28	46.00	-14.72	QP
6	936.8737	-0.16	32.42	32.26	46.00	-13.74	QP
Remark: Other frequency mini margin all >6 dB of Limit							

Channel:	RX	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1947.896	-9.57	41.34	31.77	74.00	-42.23	peak
2	1947.896	-9.57	26.09	16.52	54.00	-37.48	AVG
3	5585.170	5.06	41.25	46.31	74.00	-27.69	peak
4	5585.170	5.06	26.41	31.47	54.00	-22.53	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

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8. Band Edge Compliance test

8.1. Test Equipment

Band Edge Compliance test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2016/10
2	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2017/03
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03

8.2. Test Information

EUT	Receiver
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	05 May 2016~07 April 2017
Operator	Duke
MODEL NO	SPMAR6600T

8.3. Test procedure

1、 The EUT operates at hopping-off test mode. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
2、 Max hold the trace of the setp 1,and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.
3、 Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz ; VBW=3KHz (1/On Time) / Sweep=AUTO

8.4. Test Results

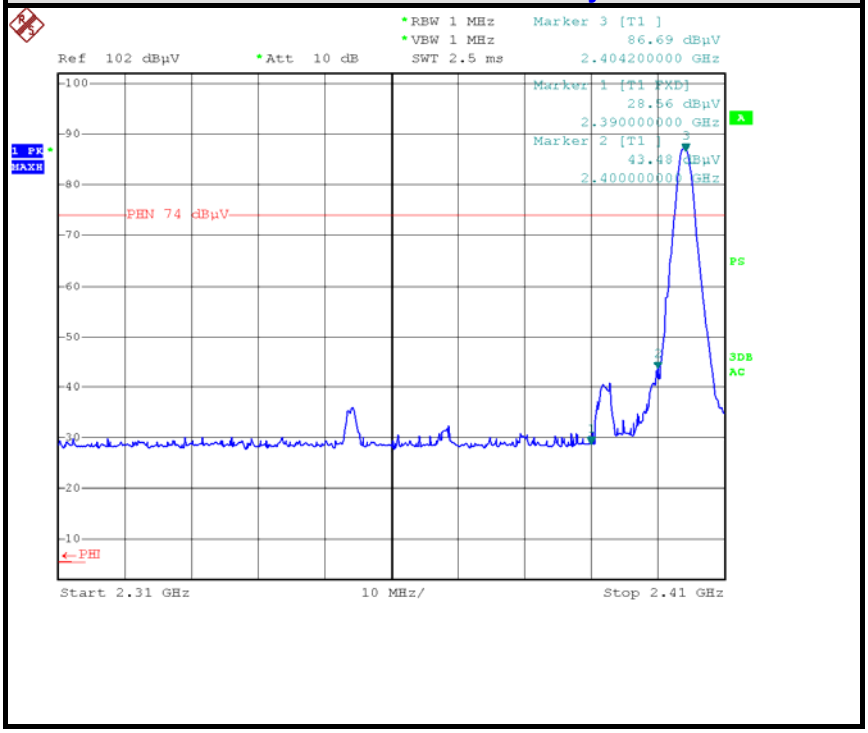
PASSED.

The EUT operates at hopping-off test mode. The lowest and highest channels are tested to verify the band edge emissions.

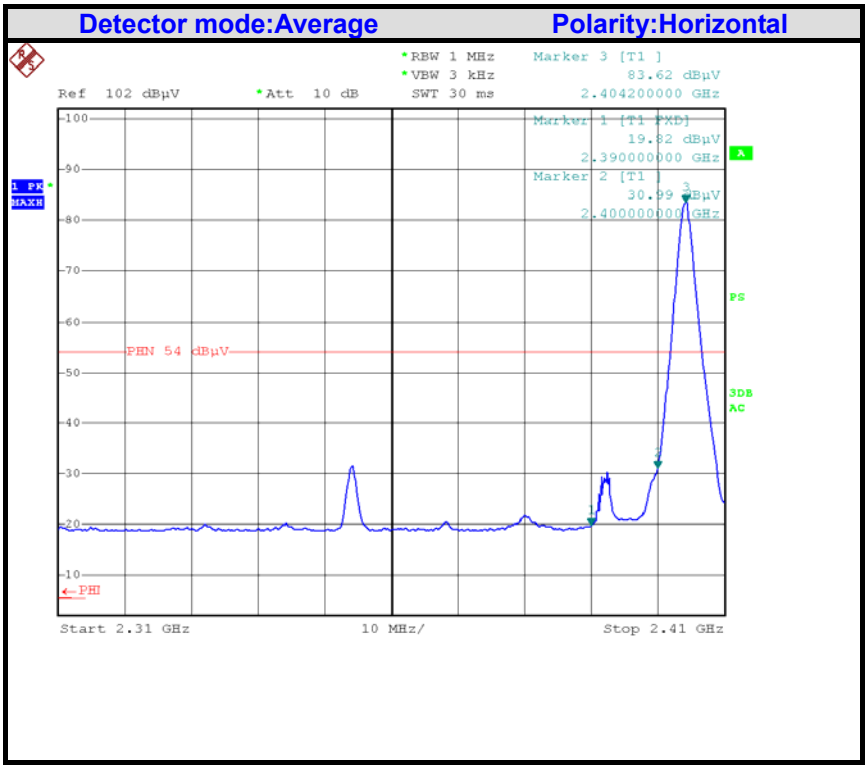
Test Mode	Channel Marked Frequency	Test Result Highest Emission (dBuv/m)			
		Horizontal		Vertical	
		Peak	Average	Peak	Average
Low Channel	2390MHz	28.56	19.82	33.92	24.72
	2400MHz	43.48	30.99	49.25	39.81
High Channel	2483.5MHz	30.04	20.38	37.60	24.58
	2500MHz	29.14	18.74	31.61	20.70

Band Edges (Low)

Detector mode:Peak **Polarity:Horizontal**



Detector mode:Average **Polarity:Horizontal**



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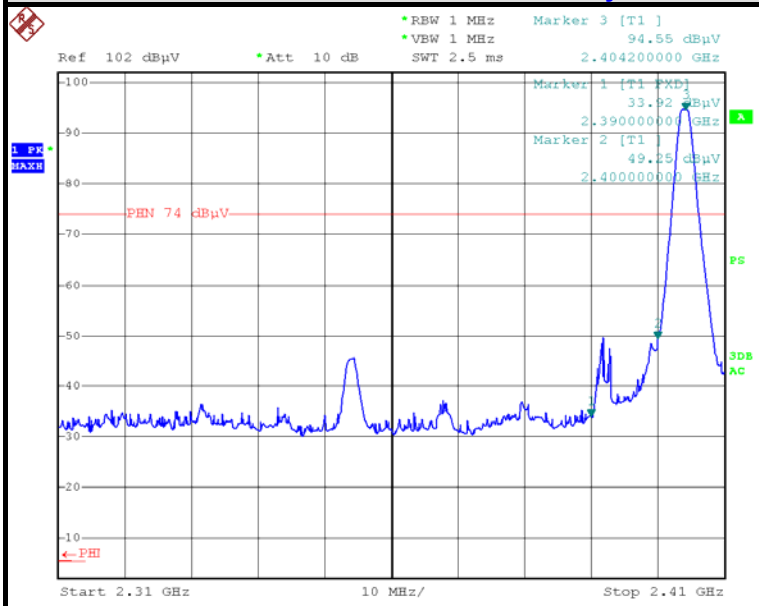
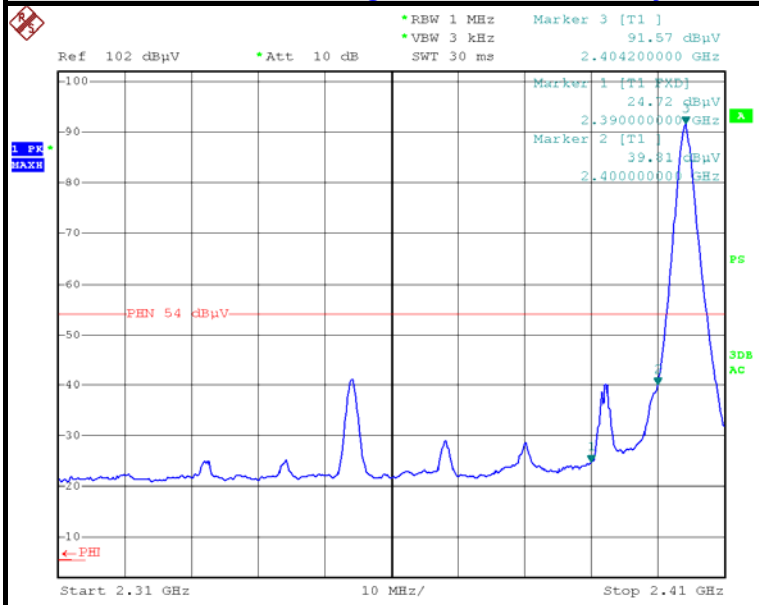
Detector mode:Peak **Polarity:Vertical**



Detector mode:Average **Polarity:Vertical**



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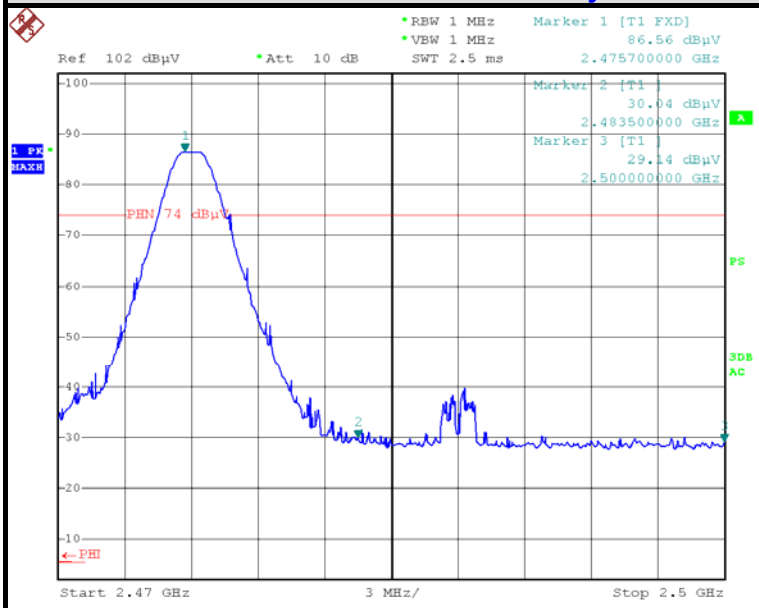
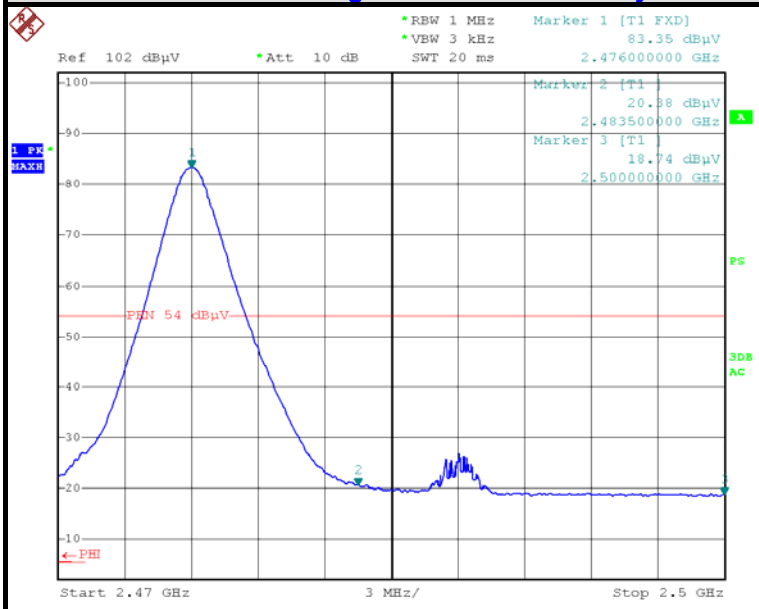
Band Edges (High)

Detector mode:Peak Polarity:Horizontal



Detector mode:Average Polarity:Horizontal



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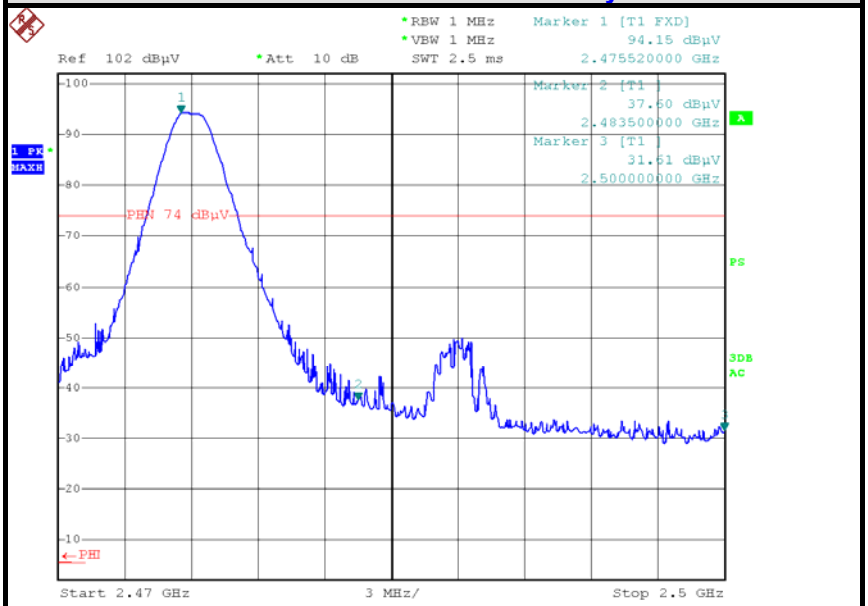
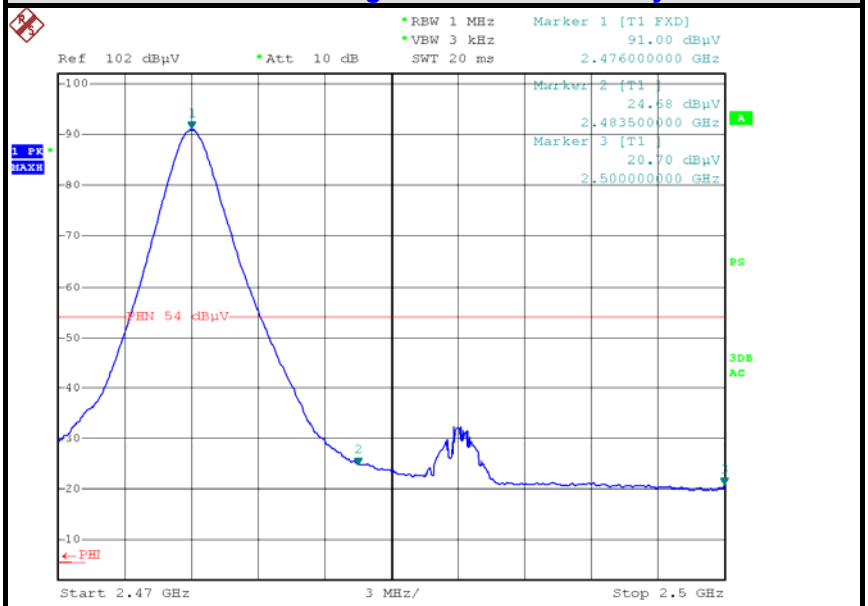
Detector mode:Peak **Polarity:Vertical**



Detector mode:Average **Polarity:Vertical**



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9. 99% bandwidth

9.1 Test procedure

According to RSS-210 A1.3 and RSS-Gen 4.6.1 The Receiver output is connected to the spectrum analyzer. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual. The sweep time is coupled.

9.2. Test Equipment

Band Edge Compliance test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2017/03/26
2	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03/24

9.3. Test Results

PASSED.

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	2404	1.122
Middle	2440	1.152
High	2476	1.206

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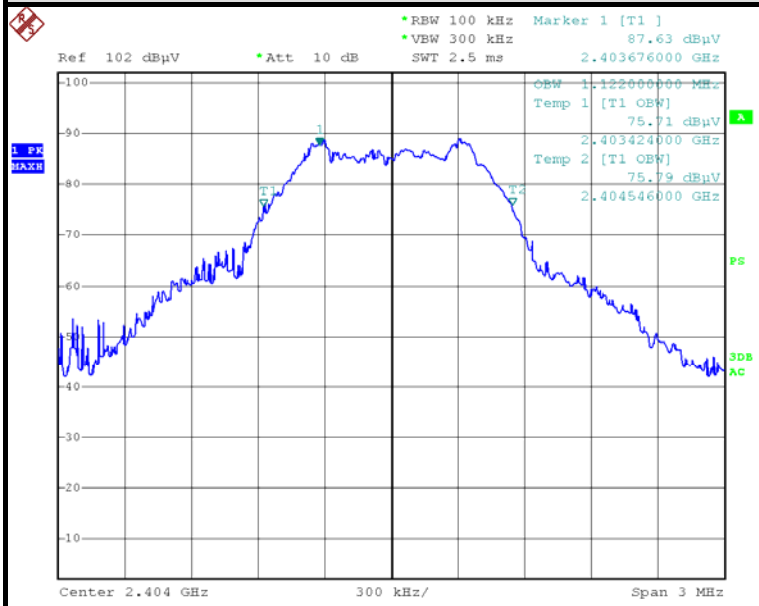
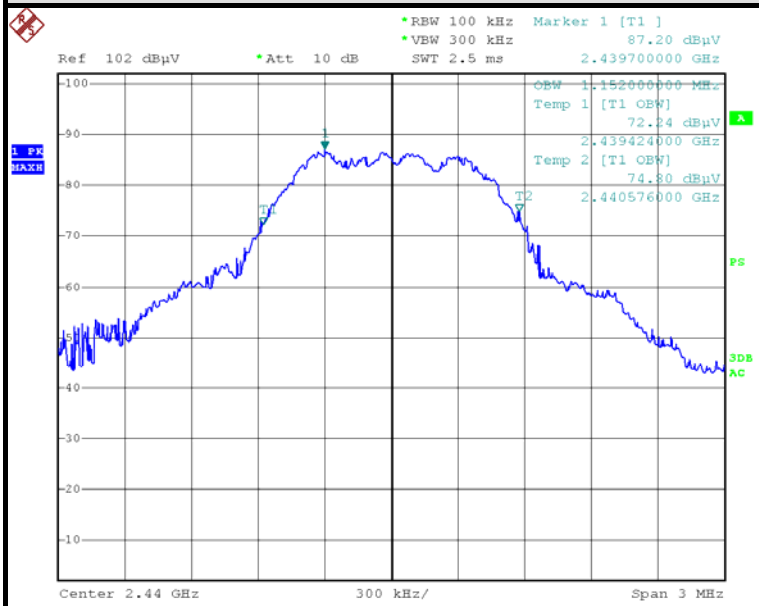
99% Bandwidth	Low CH: 2404MHz



99% Bandwidth	Middle CH: 2440MHz



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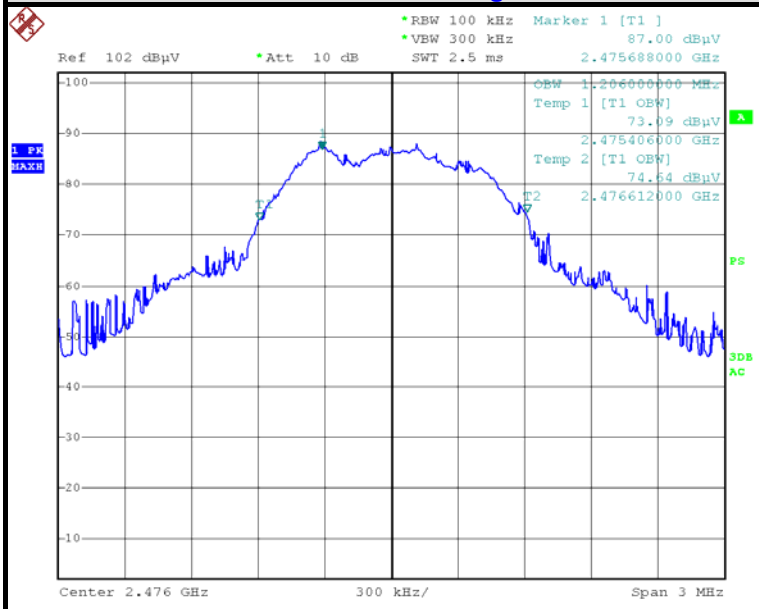
99% Bandwidth	High CH: 2476MHz



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10 Antenna Requirements

10.1 Standard Applicable

The EUT is External antenna with 2dBi, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

10.2 Antenna Construction and Directional Gain

Antenna type: External Antenna
Antenna Gain: 2dBi

11.Deviation to test specifications

The following identical model(s):

SPMAR6270T

Belong to the tested device:

Product description: **Receiver**
Model name: **SPMAR6600T**

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