

# TEST REPORT

Applicant	Shantou Jingshuo Toys Co., Ltd.
Address	Xingda Industrial District, Fengxiang Chenghai, Shantou city, Guangdong, China

Manufacturer or Supplier	Shantou Jingshuo Toys Co., Ltd.
Address	Xingda Industrial District, Fengxiang Chenghai, Shantou city, Guangdong, China
Product:	Toy RC Wave Rage
Brand Name:	Sharper Image
Model:	1013704
Additional Model & Model Difference	1014053, 1014054, 1013576
Date of tests:	Nov. 13, 2020 ~ Dec. 10, 2020

the tests have been carried out according to the requirements of the following standard:

**FCC Part 15, Subpart C, Section 15.249**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Tested by Evans He Project Engineer / EMC Department	Approved by David Huang Supervisor / EMC Department
<i>Evans He</i>	<i>David Huang</i>
Date: Dec. 14, 2020	

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Test Report No.: RF2011WDG0138

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2011WDG0138	Original release	Dec. 14, 2020

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.249)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§15.203	Antenna Requirement	PASS	No antenna connector is used
§15.207 (a)	Conducted Emission	N/A	Powered from battery
§15.205	Restricted Band of Operation	PASS	Compliant
§15.209 §15.249(a)	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant

NOTE: Test Lab Information:

**Lab:** Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch

**Test Lab Address:** Zone A, Floor 1, Building 2 Wan Ye Long Technology Park  
South Side of Zhoushi Road, Bao'an District Shenzhen, Guangdong, 518108,  
People's Republic of China

## 2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	9kHz~30MHz	2.16dB
	30MHz ~ 1GMHz	3.74dB
	1GHz ~ 18GHz	4.66dB
	18GHz ~ 40GHz	4.67dB

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



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Toy RC Wave Rage
<b>MODEL NO.</b>	1013704
<b>ADDITIONAL MODELS</b>	1014053, 1014054, 1013576
<b>FCC ID</b>	2AVX8FT019
<b>NOMINAL VOLTAGE</b>	Remote Control: DC 6V(1.5V*AA*4) from Battery
<b>MODULATION TECHNOLOGY</b>	GFSK
<b>OPERATING FREQUENCY</b>	2405-2475MHz
<b>ANTENNA TYPE</b>	Single wire,0dBi Gain for Remote Control
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	N/A

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 2011WDG0138) for detailed product photo.
4. Additional models (see about table) are identical with the test model 1013704 except the color of the appearance、 trade name and model name for trading purpose.



### 3.2 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type. The worst case was found when the EUT was positioned on Y axis for radiated emission. The EUT was tested under the following mode.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	-	√	DC 6V from New Battery

Where **RE<1G**: Radiated Emission below 1GHz      **RE≥1G**: Radiated Emission above 1GHz  
**PLC**: Power Line Conducted Emission      **BW**: 20db bandwidth

**NOTE:** No need to concern of Conducted Emission due to the EUT is powered by battery.

Following channel(s) was (were) selected for the test as listed below.

TESTED CHANNEL	TESTED FREQUENCY
Low	2405 MHz
Middle	2442 MHz
High	2475 MHz



Channel List

CHANNEL	FREQUENCY (GHZ)	CHANNEL	FREQUENCY (GHZ)	CHANNEL	FREQUENCY (GHZ)
1	<b>2.405GHz</b>	25	2.429GHz	49	2.453GHz
2	2.406GHz	26	2.430GHz	50	2.454GHz
3	2.407GHz	27	2.431GHz	51	2.455GHz
4	2.408GHz	28	2.432GHz	52	2.456GHz
5	2.409GHz	29	2.433GHz	53	2.457GHz
6	2.410GHz	30	2.434GHz	54	2.458GHz
7	2.411GHz	31	2.435GHz	55	2.459GHz
8	2.412GHz	32	2.436GHz	56	2.460GHz
9	2.413GHz	33	2.437GHz	57	2.461GHz
10	2.414GHz	34	2.438GHz	58	2.462GHz
11	2.415GHz	35	2.439GHz	59	2.463GHz
12	2.416GHz	36	2.440GHz	60	2.464GHz
13	2.417GHz	37	2.441GHz	61	2.465GHz
14	2.418GHz	<b>38</b>	<b>2.442GHz</b>	62	2.466GHz
15	2.419GHz	39	2.443GHz	63	2.467GHz
16	2.420GHz	40	2.444GHz	64	2.468GHz
17	2.421GHz	41	2.445GHz	65	2.469GHz
18	2.422GHz	42	2.446GHz	66	2.470GHz
19	2.423GHz	43	2.447GHz	67	2.471GHz
20	2.424GHz	44	2.448GHz	68	2.472GHz
21	2.425GHz	45	2.449GHz	69	2.473GHz
22	2.426GHz	46	2.450GHz	70	2.474GHz
23	2.427GHz	47	2.451GHz	<b>71</b>	<b>2.475GHz</b>
24	2.428GHz	48	2.452GHz		

Note: The more detailed channel, please refer to the product specifications

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	26deg. C, 56%RH	DC 6V from New Battery	Aaron Liang
BW	26deg. C, 56%RH	DC 6V from New Battery	Aaron Liang
PLC	-	-	-



### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C, Section 15.249**

**ANSI C63.10-2013**

All test items have been performed and recorded as per the above standards.

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	-	-	-	-	-

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	-



## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESL6	1300.5001K06-10 0262-eQ	Mar. 24, 20	Mar. 24, 21
Bilog Antenna	Sunol Sciences	JB6	A110712	Jul. 21, 20	Jul. 21, 21
Active Antenna	CMO-POWER	AL-130	121031	Jun. 30, 20	Jun. 30, 21
Signal Amplifier	HP	8447E	443008	Mar. 24, 20	Mar. 24, 21
Signal and Spectrum Analyzer	R&S	FSV40	101094	Mar. 19, 20	Mar. 19, 21
MXA signal analyzer	Agilent	N9020A	MY49100060	Mar. 24, 20	Mar. 24, 21
Horn Antenna	COM-POWER	AH-118	71259	Apr. 17, 20	Apr. 17, 21
Horn Antenna	COM-POWER	AH-118	71283	Jul. 21, 20	Jul. 21, 21
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170147	May 10, 20	May 10, 21
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170242	May 10, 20	May 10, 21
AMPLIFIER	EM Electornic Corporation	EM01G26G	60613	Mar. 24, 20	Mar. 24, 21
Pre-amplifier	Rohde&Schwarz	SCU40	100437	Oct. 17, 20	Oct. 16, 21
3m Semi-anechoic Chamber	SAEMC	9m*6m*6m	N/A	Oct. 18,18	Oct. 17, 21
Test Software	EZ-EMC	ICP-03A1	N/A	N/A	N/A

NOTE:

1. The test was performed in 966 Chamber (a 3m Semi-anechoic chamber).
2. The calibration interval of the above test instruments is 12 months (Except 3m Semi-anechoic Chamber).And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested
4. The FCC Site Registration No. is 749762.

#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

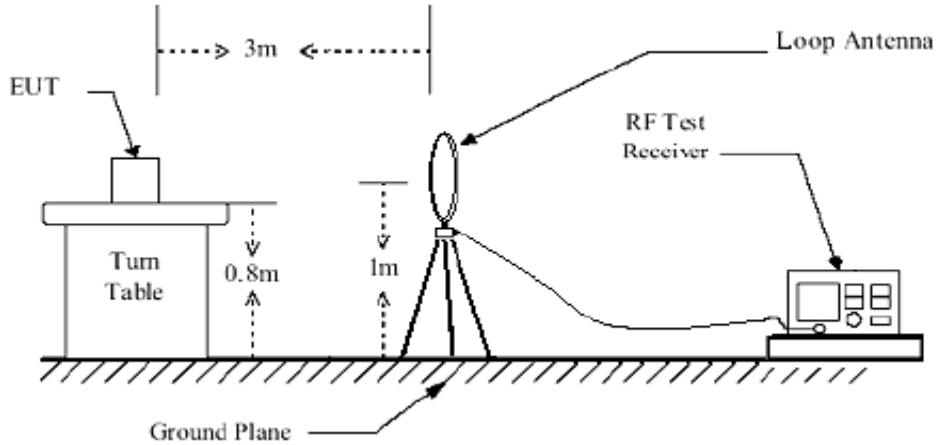
#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

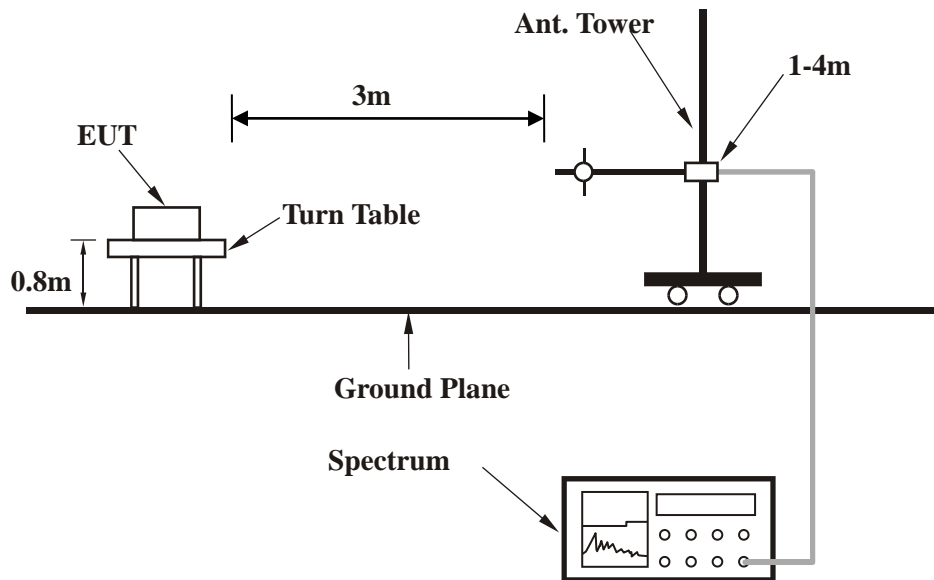


### 4.1.5 TEST SETUP

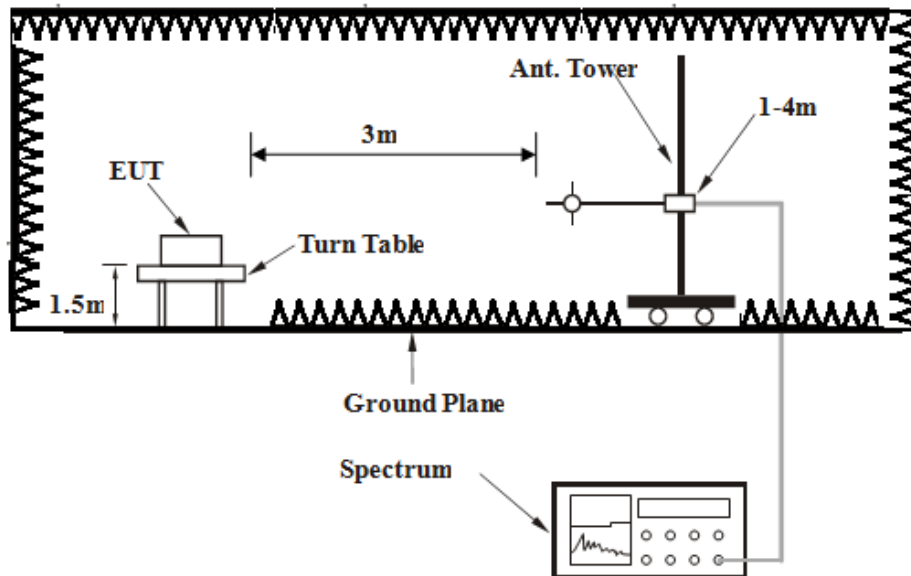
#### Below 30MHz test setup



#### Below 1GHz test setup



### Above 1GHz test setup



**Note:** For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT OPERATING CONDITIONS

- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

#### 4.1.7 TEST RESULTS

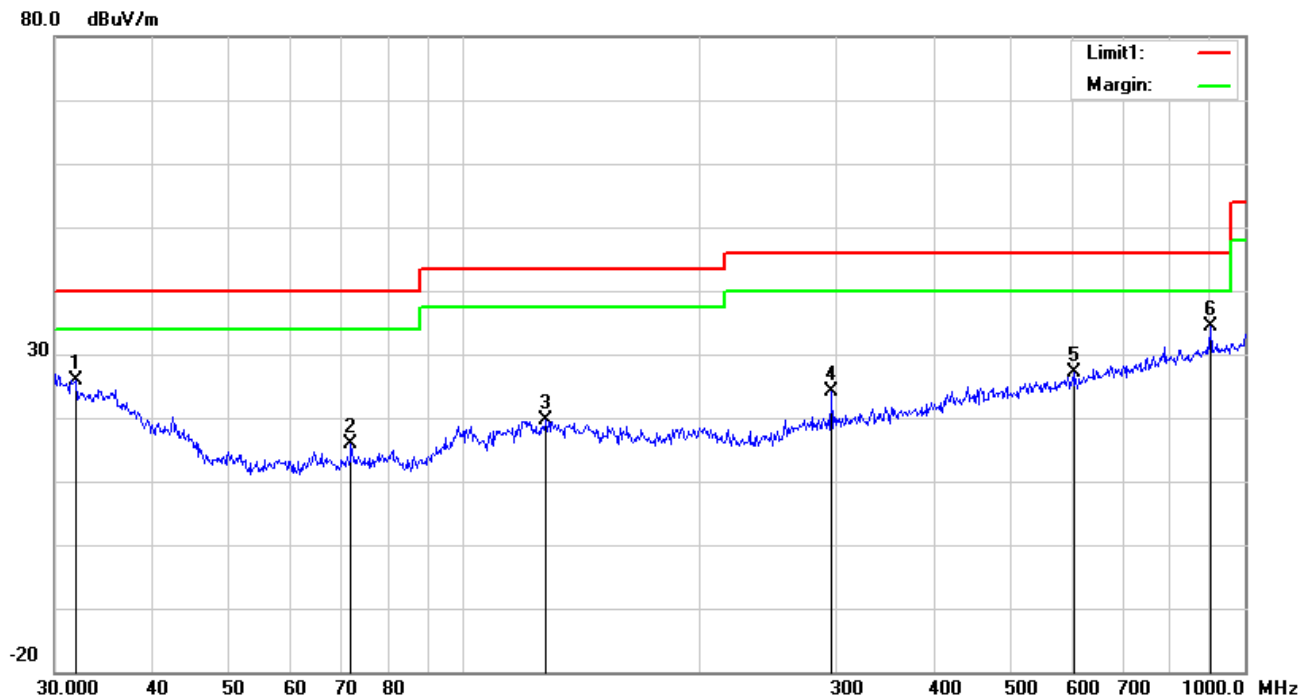
##### BELOW 1GHz WORST-CASE DATA

<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 m										
No.	Frequency (MHz)	Reading (dBuV/m)	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	31.9546	27.08	19.83	21.63	0.63	25.91	40.00	-14.09	100	180
2	71.8320	28.71	7.83	21.62	0.87	15.79	40.00	-24.21	100	143
3	127.6645	26.73	13.40	21.66	1.14	19.61	43.50	-23.89	200	30
4	296.1836	30.74	13.55	21.98	1.73	24.04	46.00	-21.96	100	104
5	603.5392	27.81	18.96	22.03	2.32	27.06	46.00	-18.94	100	197
6	903.3094	30.50	22.42	21.53	2.89	34.28	46.00	-11.72	200	341

#### REMARKS:

1. Result (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Result level – Limit value



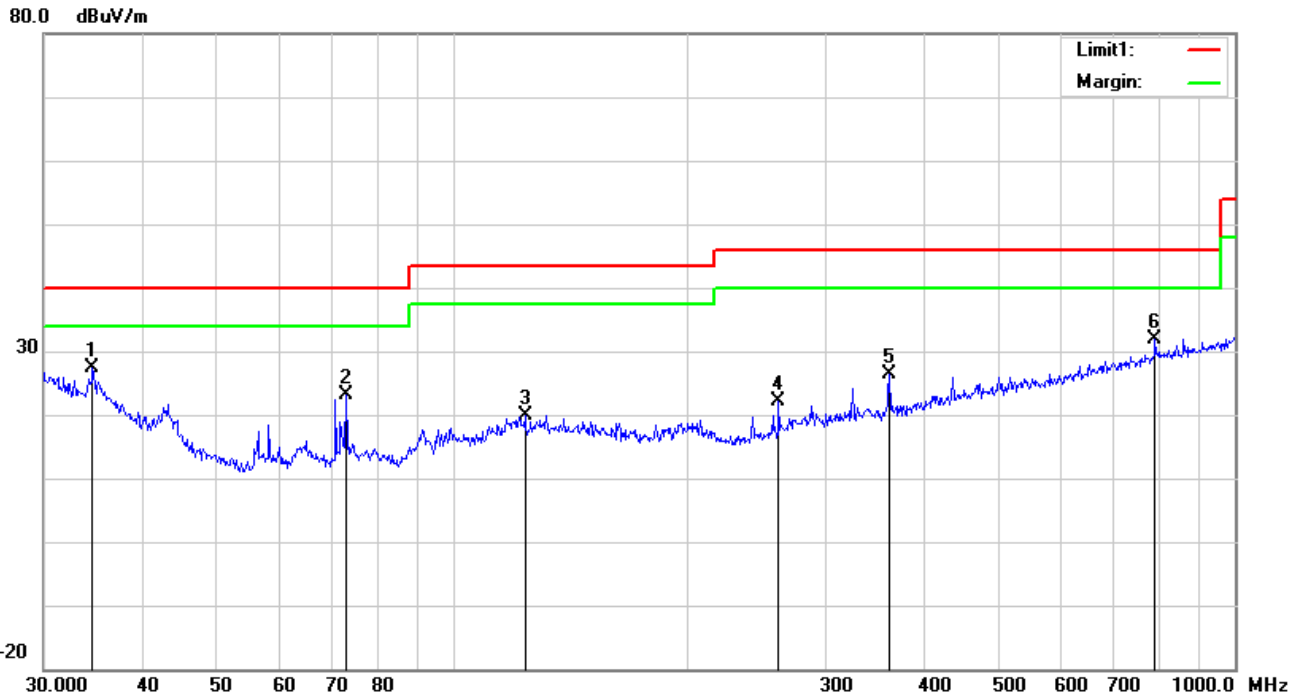


<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 m										
No.	Frequency (MHz)	Reading (dBuV/m)	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	34.6385	30.41	17.95	21.62	0.65	27.39	40.00	-12.61	200	136
2	73.1025	36.09	7.78	21.62	0.88	23.13	40.00	-16.87	100	44
3	123.6985	27.05	13.33	21.66	1.12	19.84	43.50	-23.66	200	20
4	261.0583	30.19	12.24	21.92	1.60	22.11	46.00	-23.89	100	98
5	361.7139	31.83	14.63	22.00	1.86	26.32	46.00	-19.68	100	252
6	790.6188	29.69	21.27	21.72	2.67	31.91	46.00	-14.09	100	248

**REMARKS:**

1. Result (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Result level – Limit value



**ABOVE 1GHz WORST-CASE DATA:**

<b>CHANNEL</b>	TX Low Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	FREQ.	Emission Level	Limit	Margin	Height	Degree	Raw Value	Correction Factor
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	(dBuV)	(dB/m)
1	2347.12	52.55 PK	74	-21.45	145	106	63.93	-11.38
2	2347.12	19.28 AV	54	-34.72	145	106	30.66	-11.38
3	*2405	66.98 PK	114	-47.02	141	299	78.36	-11.38
4	*2405	33.71 AV	94	-60.29	141	299	45.09	-11.38
5	4810	49.82 PK	74	-24.18	156	10	55.89	-6.07
6	4810	16.55 AV	54	-37.45	156	10	22.62	-6.07
7	7215	54.45 PK	74	-19.55	166	122	54.16	0.29
8	7215	21.18 AV	54	-32.82	166	122	20.89	0.29
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	FREQ.	Emission Level	Limit	Margin	Height	Degree	Raw Value	Correction Factor
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	(dBuV)	(dB/m)
1	2392.77	52.26 PK	74	-21.74	151	154	63.64	-11.38
2	2392.77	18.99 AV	54	-35.01	151	154	30.37	-11.38
3	*2405	65.63 PK	114	-48.37	150	239	77.01	-11.38
4	*2405	32.36 AV	94	-61.64	150	239	43.74	-11.38
5	4810	48.76 PK	74	-25.24	166	111	54.83	-6.07
6	4810	15.49 AV	54	-38.51	166	111	21.56	-6.07
7	7215	55.42 PK	74	-18.58	145	190	55.13	0.29
8	7215	22.15 AV	54	-31.85	145	190	21.86	0.29

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

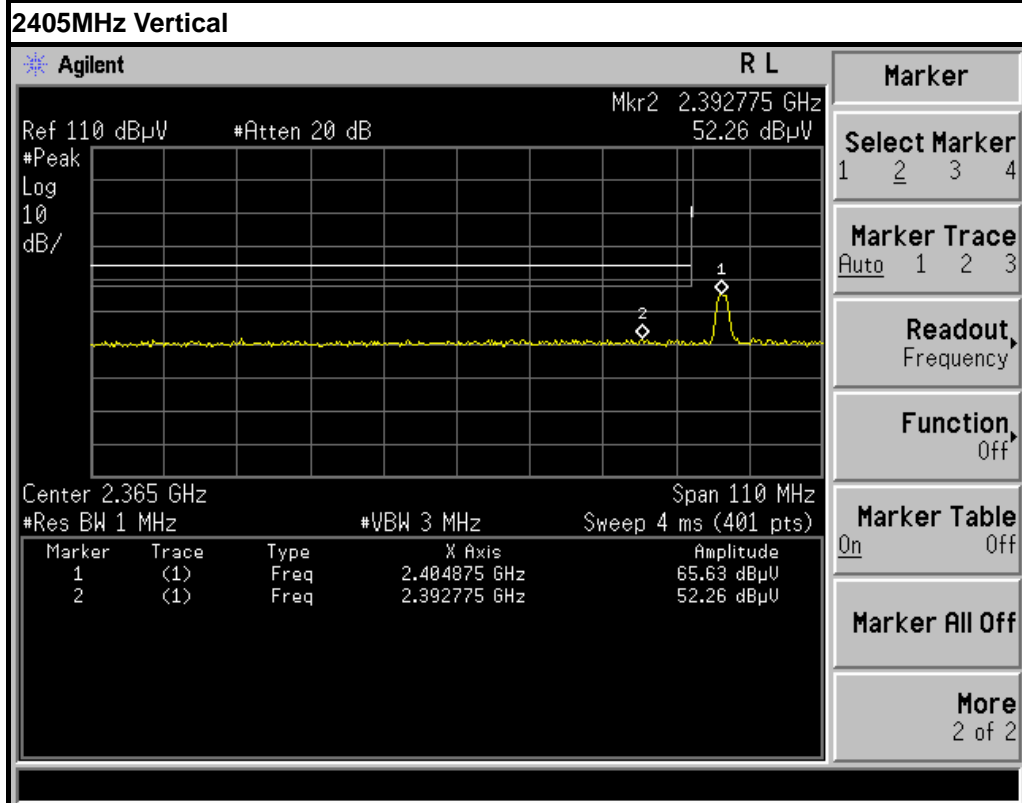
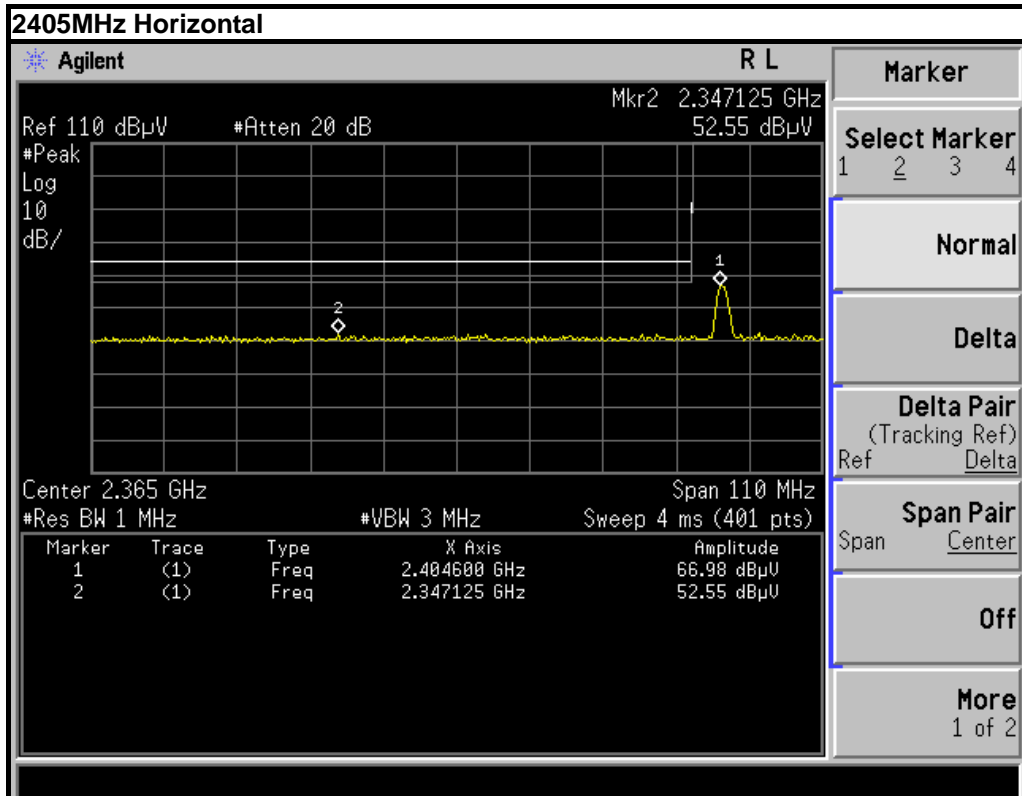




**BUREAU  
VERITAS**

Test Report No.: RF2011WDG0138

**Band edge Plot**





<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	FREQ. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Raw Value (dBuV)	Correctio n Factor (dB/m)
1	*2440	71.09 PK	114	-42.91	133	37	82.47	-11.38
2	*2440	37.82 AV	94	-56.18	133	37	49.2	-11.38
3	4880	53.7 PK	74	-20.3	134	65	59.77	-6.07
4	4880	20.43 AV	54	-33.57	134	65	26.5	-6.07
5	7320	54.22 PK	74	-19.78	147	58	53.93	0.29
6	7320	20.95 AV	54	-33.05	147	58	20.66	0.29

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	FREQ. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Raw Value (dBuV)	Correctio n Factor (dB/m)
1	*2440	72.31 PK	114	-41.69	146	213	83.69	-11.38
2	*2440	39.04 AV	94	-54.96	146	213	50.42	-11.38
3	4880	51.09 PK	74	-22.91	157	40	57.16	-6.07
4	4880	17.82 AV	54	-36.18	157	40	23.89	-6.07
5	7320	54.94 PK	74	-19.06	147	136	54.65	0.29
6	7320	21.67 AV	54	-32.33	147	136	21.38	0.29

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.

<b>CHANNEL</b>	TX High Channel	<b>DETECTOR FUNCTION</b>	Peak (PK)
<b>FREQUENCY RANGE</b>	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	FREQ.	Emission Level	Limit	Margin	Height	Degree	Raw Value	Correction Factor
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	(dBuV)	(dB/m)
1	2489.37	55.15 PK	74	-18.85	154	173	66.53	-11.38
2	2489.37	21.88 AV	54	-32.12	154	173	33.26	-11.38
3	*2475	79.81 PK	114	-34.19	153	195	91.19	-11.38
4	*2475	46.54 AV	94	-47.46	153	195	57.92	-11.38
5	4950	51.22 PK	74	-22.78	167	66	57.29	-6.07
6	4950	17.95 AV	54	-36.05	167	66	24.02	-6.07
7	7425	54.63 PK	74	-19.37	155	352	54.34	0.29
8	7425	21.36 AV	54	-32.64	155	352	21.07	0.29
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	FREQ.	Emission Level	Limit	Margin	Height	Degree	Raw Value	Correction Factor
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	(dBuV)	((dB/m)
1	2489.37	52.68 PK	74	-21.32	150	142	64.06	-11.38
2	2489.37	19.41 AV	54	-34.59	150	142	30.79	-11.38
3	*2475	73.51 PK	114	-40.49	163	309	84.89	-11.38
4	*2475	40.24 AV	94	-53.76	163	309	51.62	-11.38
5	4950	51.61 PK	74	-22.39	157	36	57.68	-6.07
6	4950	18.34 AV	54	-35.66	157	36	24.41	-6.07
7	7425	54.11 PK	74	-19.89	147	322	53.82	0.29
8	7425	20.84 AV	54	-33.16	147	322	20.55	0.29

**REMARKS:**

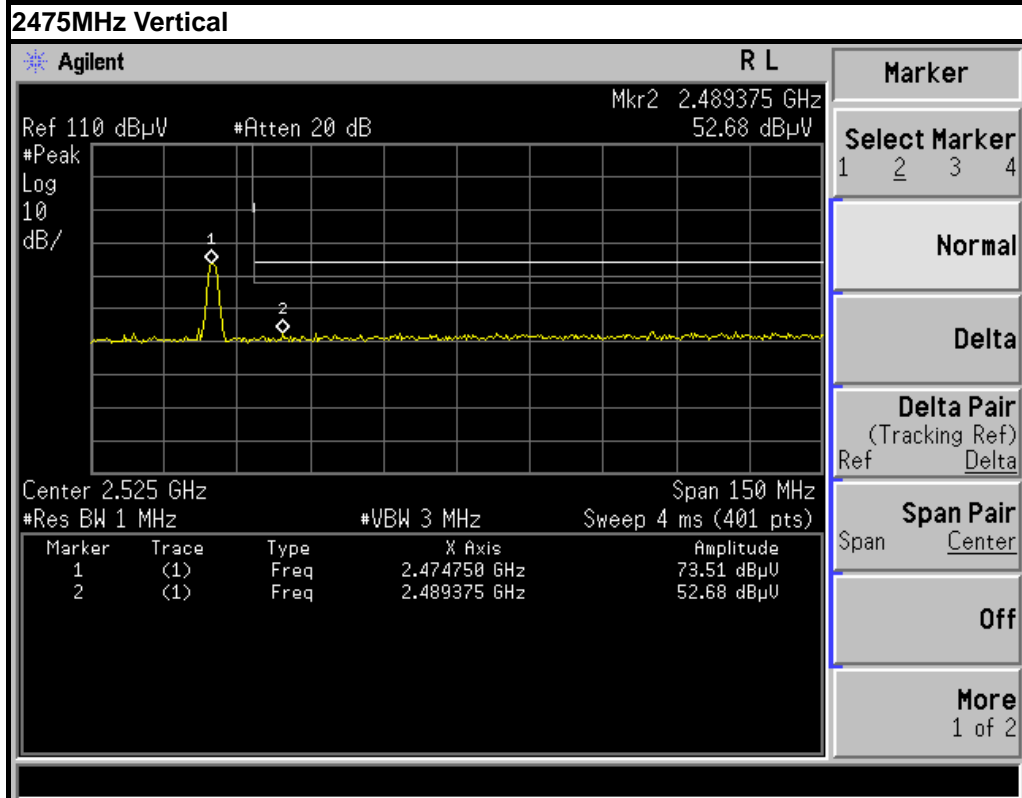
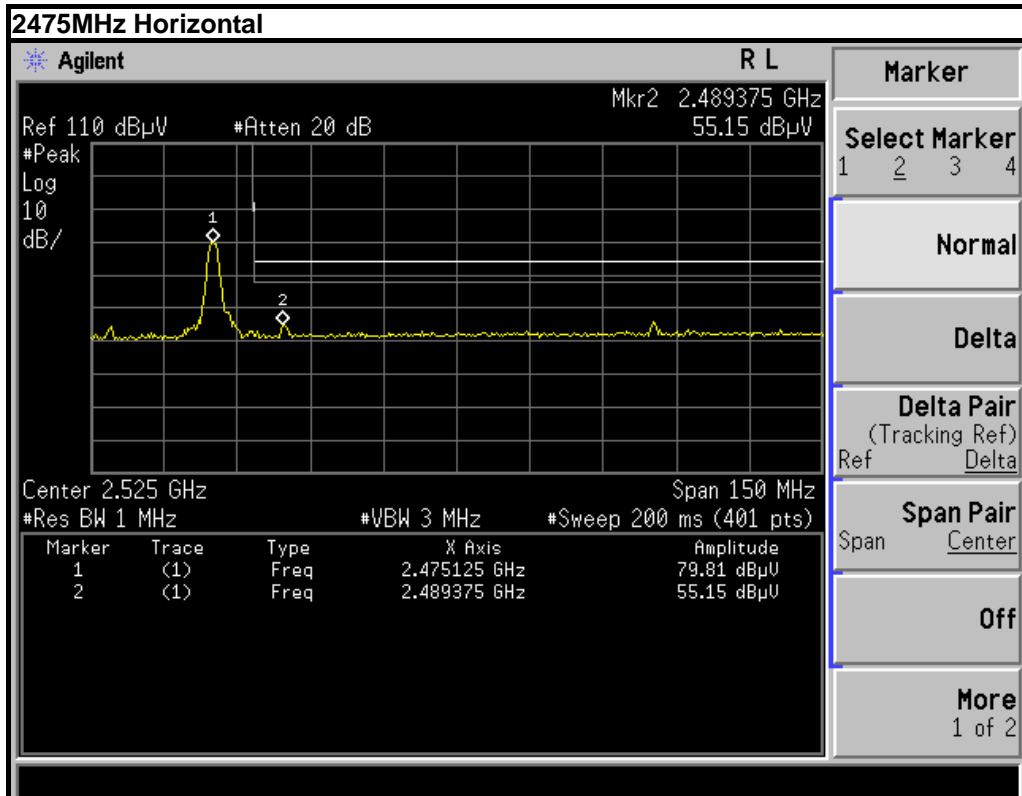
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.



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### Band edge Plot





## 4.2 20dB BANDWIDTH MEASUREMENT

### 4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

According to FCC 15.215(c), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Wireless Connectivity Tester	R&S	CMW270	1201.0002K75	Dec. 28, 19	Dec. 27, 20
MXA VEXTOR SIGNAL	Agilent	n5182a	MY50140530	Mar. 24, 20	Mar. 24, 21
MXA signal analyzer	Agilent	n9020a	MY49100060	Mar. 24, 20	Mar. 24, 21
RF Control Unit	Tonscend	JS0806-2	188060112	Mar. 24, 20	Mar. 24, 21
Signal Generation	Agilent	E4421B	US40051152	Dec. 18, 19	Dec. 17, 20
DC Power Supply	Agilent	E3640A	MY40004013	Mar. 30, 20	Mar. 30, 21
Programmable Temperature & Humidity Chamber	Hongjin	HYC-TH-225 DH	DG-180746	Mar. 24, 20	Mar. 24, 21
Test System	Tonscend	JS 1120-3	N/A	N/A	N/A
Power Splitter	Weinschel	1580-1	TL177	Mar. 27, 20	Mar. 27, 21

**NOTE:**

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

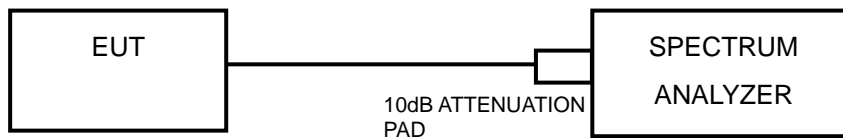
#### 4.2.3 TEST PROCEDURE

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. 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.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



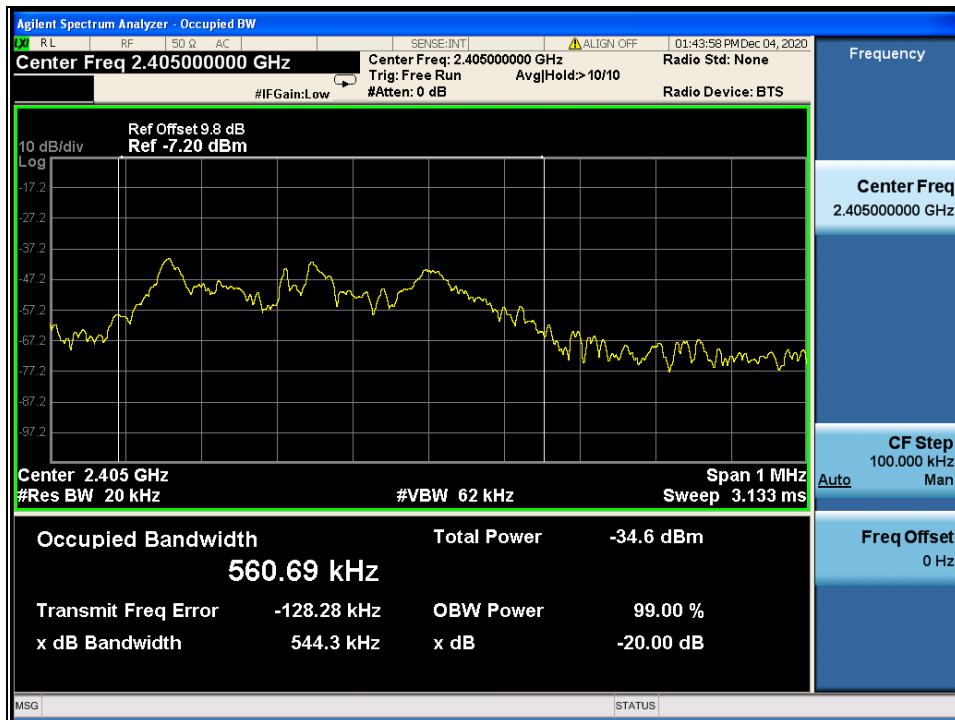
#### 4.2.6 EUT OPERATING CONDITIONS

- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

### 4.2.7 TEST RESULTS

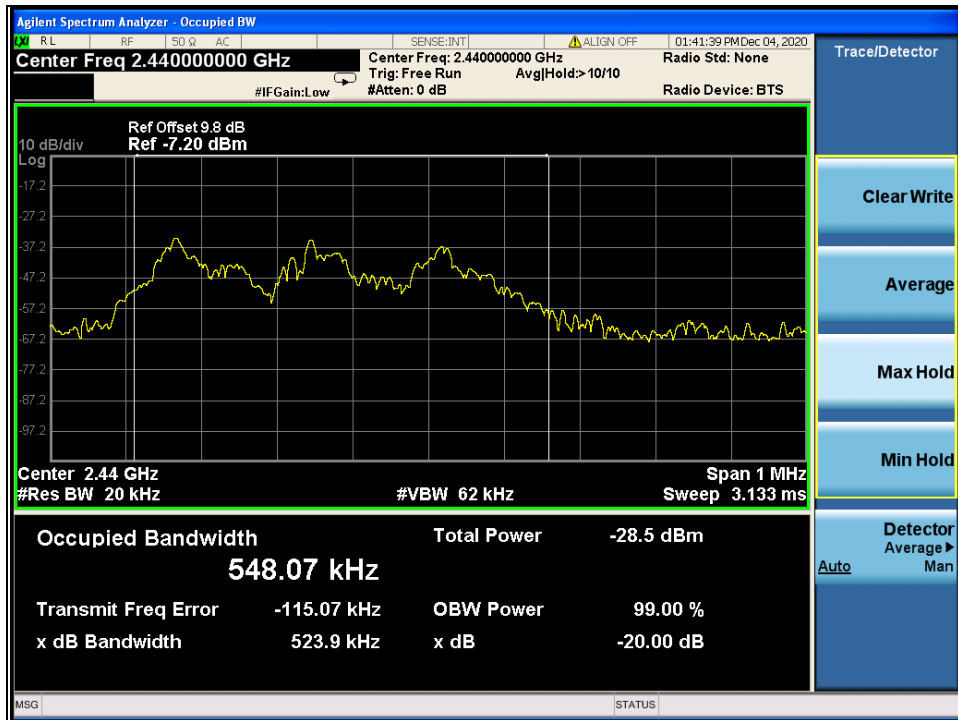
CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2405	0.5443
Middle	2440	0.5239
High	2475	0.5226

#### Test Data: Low channel

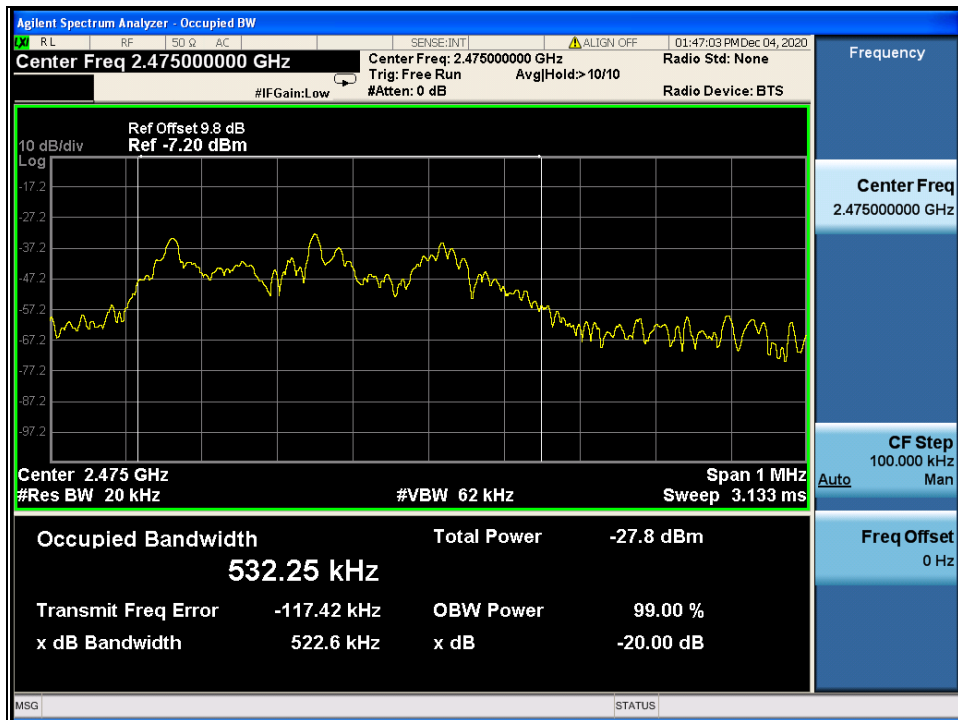




Test Data: Middle channel



Test Data: High channel







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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



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## 6. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

**---END---**