

# TEST REPORT



Applicant	Shantou City Chenghai District Aiwen Toys Factory
Address	Chenghai District, Shantou City, Guangdong Province, China

Manufacturer or Supplier	Shantou City Chenghai District Aiwen Toys Factory
Address	Chenghai District, Shantou City, Guangdong Province, China
Product	Toy RC Split Twister
Brand Name	Sharper Image
Model	AW2021A
Additional Model & Model Difference	1014344
Date of tests	May 19 2021 ~ Jun. 30, 2021

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 Eric Fang Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	  Date: Jul. 15, 2021

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**BUREAU  
VERITAS**

Test Report No.: RF2105WDG0232-2

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2105WDG0232-2	Original release	Jul. 15, 2021

## 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 by 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

## 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
Conducted emissions	9kHz~30MHz	3.05dB
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GMHz	4.00dB
	1GHz ~ 18GHz	5.17dB
	18GHz ~ 40GHz	5.07dB

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 Split Twister
<b>MODEL NO.</b>	AW2021A
<b>ADDITIONAL MODEL</b>	1014344
<b>FCC ID</b>	2AZYUAW2021A2GR
<b>NOMINAL VOLTAGE</b>	DC 6V (1.5V*AA*4) from Battery
<b>MODULATION TECHNOLOGY</b>	GFSK
<b>OPERATING FREQUENCY</b>	2405-2475MHz
<b>ANTENNA TYPE</b>	Wire Antenna, with 0dBi gain
<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	Refer to user's manual

**NOTES:**

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.: 2105WDG0232-2) for detailed product photo.
4. Additional model 1014344 is identical with test model AW2021A except the appearance and model No. 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 X 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 Fully Battery

Where **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission

**RE≥1G**: Radiated Emission above 1GHz  
**BW**: 20db bandwidth

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

TESTED CHANNEL	TESTED FREQUENCY
Low	2405 MHz
Middle	2440 MHz
High	2475 MHz



**Channel List**

<b>Channel</b>	<b>Freq. (MHz)</b>	<b>Channel</b>	<b>Freq. (MHz)</b>	<b>Channel</b>	<b>Freq. (MHz)</b>	<b>Channel</b>	<b>Freq. (MHz)</b>
1	2405	19	2423	37	2441	55	2458
2	2406	20	2424	38	2442	56	2459
3	2407	21	2425	39	2443	57	2460
4	2408	22	2426	40	2444	58	2461
5	2409	23	2427	41	2445	59	2462
6	2410	24	2428	42	2446	60	2463
7	2411	25	2429	43	2447	61	2464
8	2412	26	2430	44	2448	62	2465
9	2413	27	2431	45	2449	63	2466
10	2414	28	2432	46	2450	64	2467
11	2415	29	2433	47	2450	65	2468
12	2416	30	2434	48	2451	66	2469
13	2417	31	2435	49	2452	67	2470
14	2418	32	2436	50	2453	68	2471
15	2419	33	2437	51	2454	69	2472
16	2420	34	2438	52	2455	70	2473
17	2421	35	2439	53	2456	71	2474
18	2422	<b>36</b>	<b>2440</b>	54	2457	<b>72</b>	<b>2475</b>

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

**TEST CONDITION:**

<b>APPLICABLE TO</b>	<b>ENVIRONMENTAL CONDITIONS</b>	<b>INPUT POWER</b>	<b>TESTED BY</b>
<b>RE</b>	26deg. C, 55%RH	DC 6V from Fully Battery	Panda
<b>BW</b>	25deg. C, 54%RH	DC 6V from Fully Battery	yoyo

### 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 without any other necessary accessories or support units.

## 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.

#### NOTES:

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.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 07,22
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May 09, 22
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	May 29,22
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 13,22
Bilog Antenna (20MHz -2GHz)	Teseq	CBL 6111D	30643	May 29,22
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 29,22
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	May 09, 22
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 22,22
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	May 08,22
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Mar. 13,22
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A

**NOTES:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 12 months 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.

#### NOTES:

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.

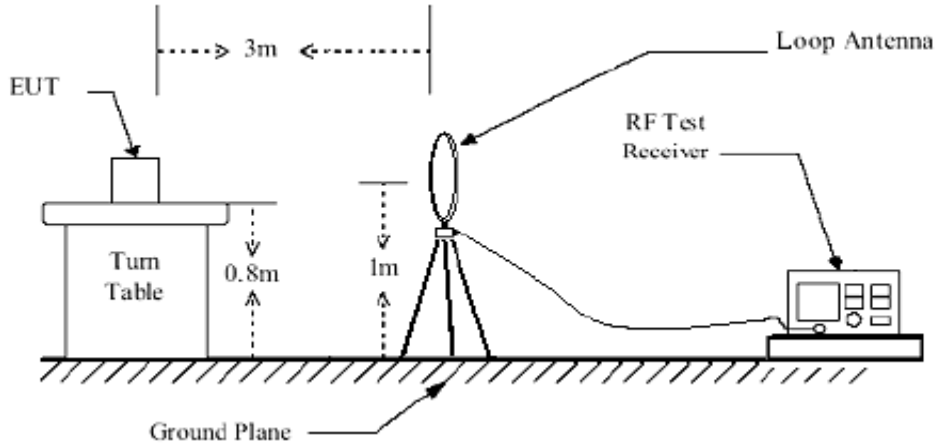
#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

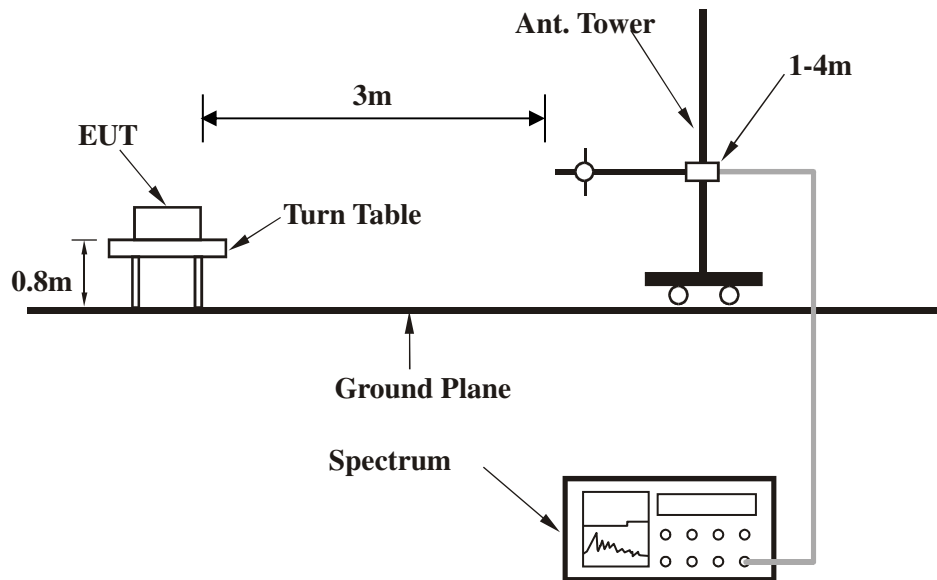


### 4.1.5 TEST SETUP

#### Below 30MHz test setup

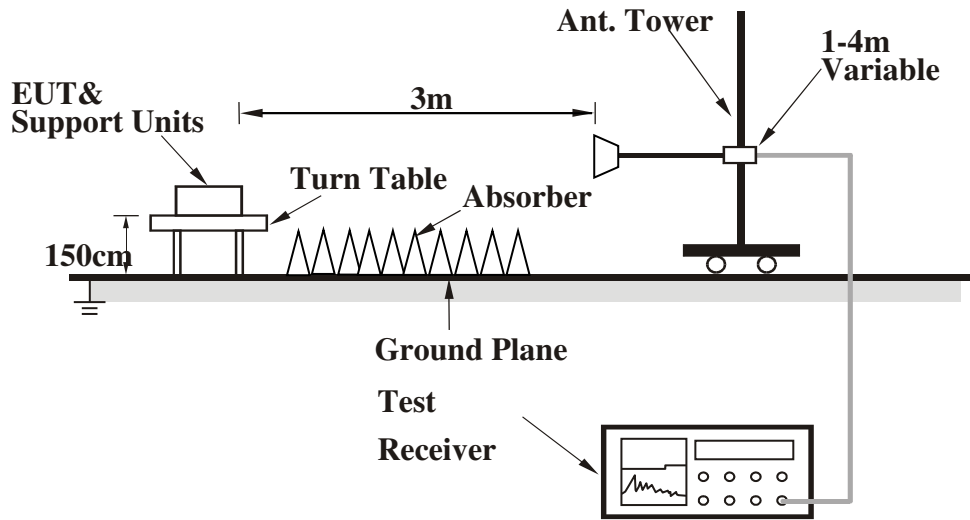


#### Below 1GHz test setup





### 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

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



### 4.1.7 TEST RESULTS

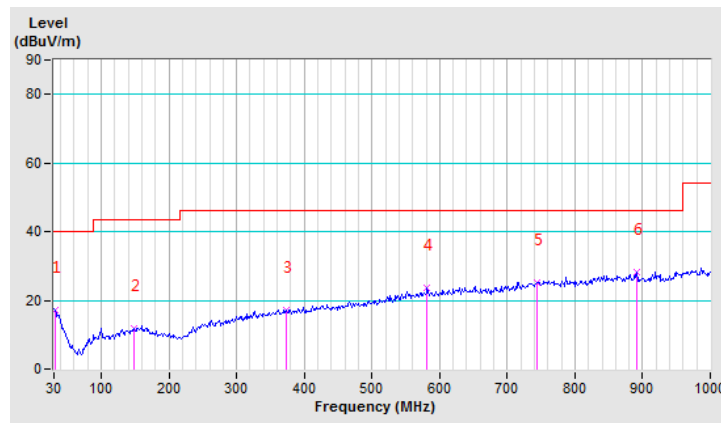
#### BELOW 1GHz WORST-CASE DATA

<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.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.55	17.29 QP	40.00	-22.71	1.00 H	58	29.92	-12.63
2	148.14	11.84 QP	43.50	-31.66	1.00 H	44	29.61	-17.77
3	373.54	17.30 QP	46.00	-28.70	1.00 H	44	29.28	-11.98
4	581.84	23.48 QP	46.00	-22.52	1.00 H	14	30.38	-6.90
5	743.51	25.25 QP	46.00	-20.75	1.00 H	4	28.66	-3.41
6	891.19	28.23 QP	46.00	-17.77	1.00 H	4	30.65	-2.42

**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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.



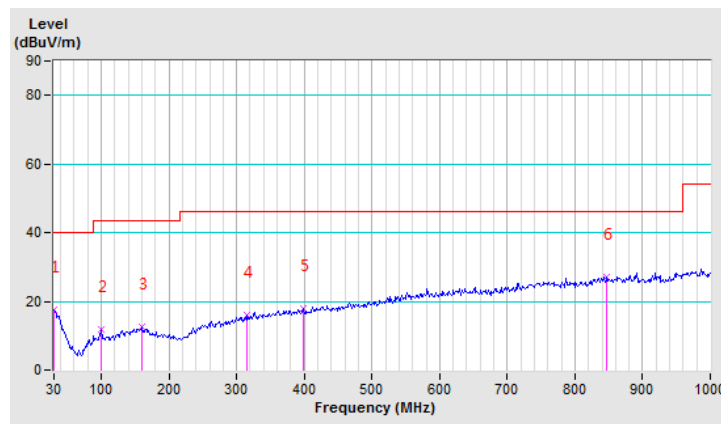


<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	17.54 QP	40.00	-22.46	1.00 V	16	29.60	-12.06
2	99.95	11.86 QP	43.50	-31.64	1.00 V	129	32.06	-20.20
3	160.58	12.40 QP	43.50	-31.10	1.00 V	55	29.42	-17.02
4	316.03	16.11 QP	46.00	-29.89	1.00 V	142	29.78	-13.67
5	398.41	18.05 QP	46.00	-27.95	1.00 V	114	29.58	-11.53
6	847.66	26.93 QP	46.00	-19.07	1.00 V	100	29.15	-2.22

**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).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.





ABOVE 1GHZ DATA:

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	45.36 PK	74.00	-28.64	1.00 H	155	40.24	5.12
2	2400.00	16.01 AV	54.00	-37.99	1.00 H	155	10.89	5.12
3	*2405.00	65.54 PK	114.00	-48.46	1.00 H	155	60.39	5.15
4	*2405.00	36.19 AV	94.00	-57.81	1.00 H	155	31.04	5.15
5	4810.00	47.50 PK	74.00	-26.50	1.00 H	145	36.87	10.63
6	4810.00	18.15 AV	54.00	-35.85	1.00 H	145	7.52	10.63
7	7215.00	50.36 PK	74.00	-23.64	1.00 H	145	33.47	16.89
8	7215.00	18.15 AV	54.00	-35.85	1.00 H	145	1.26	16.89

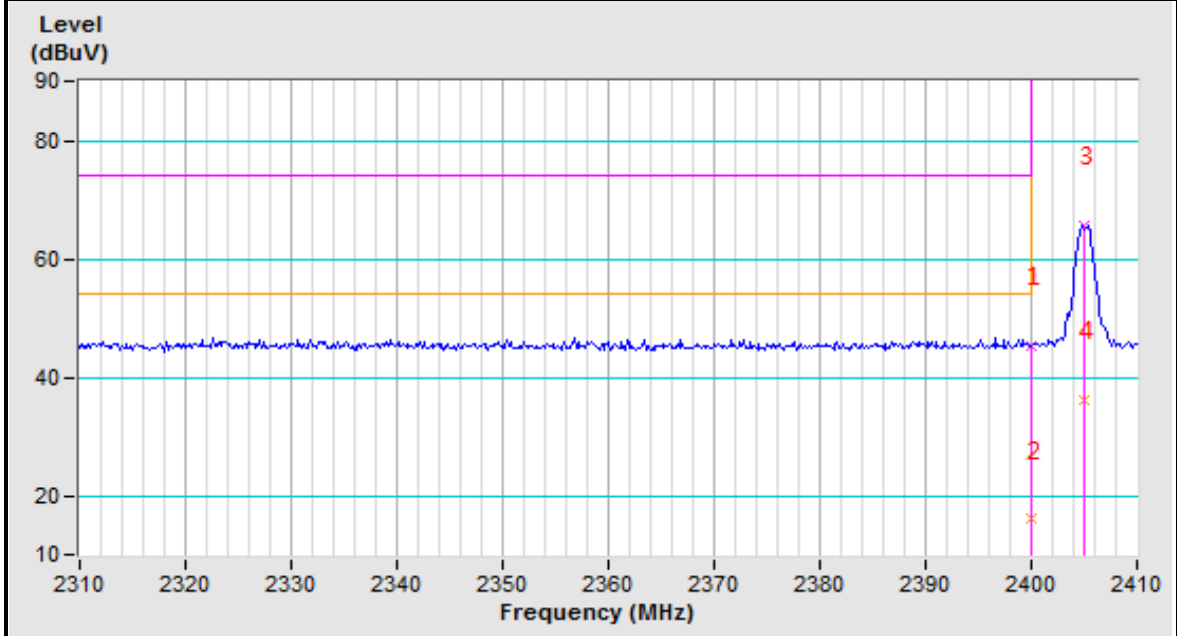
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	45.65 PK	74.00	-28.35	1.00 V	123	40.53	5.12
2	2400.00	16.30 AV	54.00	-37.70	1.00 V	123	11.18	5.12
3	*2405.00	62.15 PK	114.00	-51.85	1.00 V	123	57.00	5.15
4	*2405.00	32.80 AV	94.00	-61.20	1.00 V	123	27.65	5.15
5	4810.00	46.55 PK	74.00	-27.45	1.00 V	107	35.92	10.63
6	4810.00	17.20 AV	54.00	-36.80	1.00 V	107	6.57	10.63
7	7215.00	49.62 PK	74.00	-24.38	1.00 V	107	32.73	16.89
8	7215.00	20.27 AV	54.00	-33.73	1.00 V	107	3.38	16.89

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

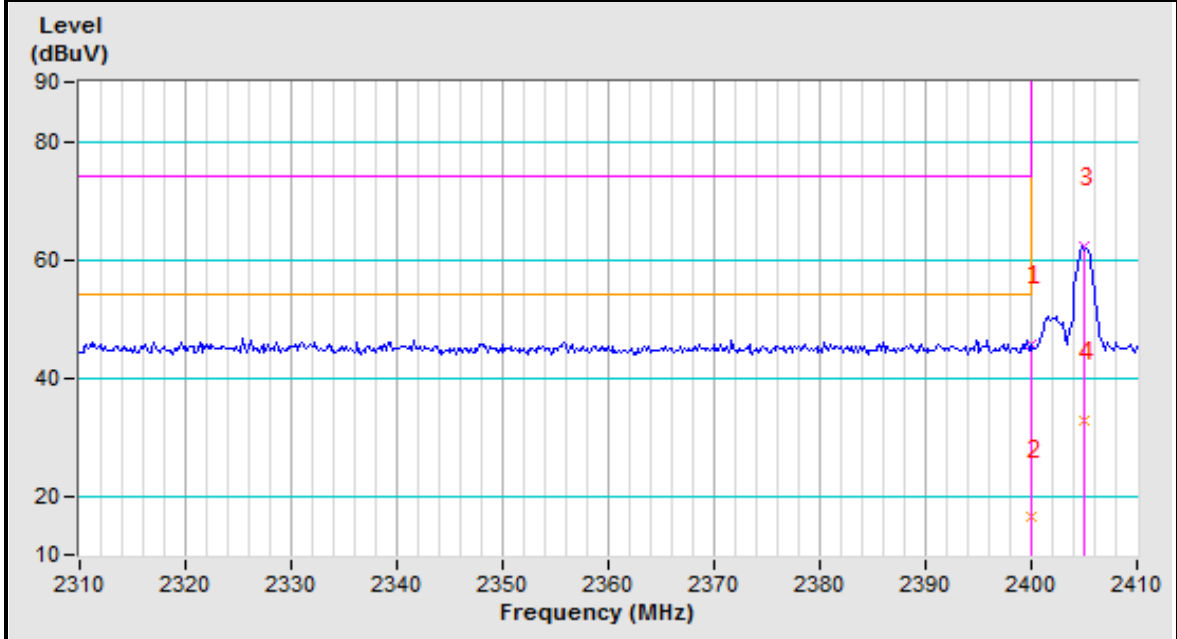


### Band edge Plot

#### 2405MHz Horizontal



#### 2405MHz Vertical





<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)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	64.58 PK	114.00	-49.42	1.00 H	60	59.25	5.33
2	*2440.00	35.23 AV	94.00	-58.77	1.00 H	60	29.90	5.33
3	4880.00	45.58 PK	74.00	-28.42	1.00 H	198	34.66	10.92
4	4880.00	16.23 AV	54.00	-37.77	1.00 H	198	5.31	10.92
5	7320.00	51.18 PK	74.00	-22.82	1.00 H	198	33.99	17.19
6	7320.00	21.83 AV	54.00	-32.17	1.00 H	198	4.64	17.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	63.26 PK	114.00	-50.74	1.00 V	105	57.93	5.33
2	*2440.00	33.91 AV	94.00	-60.09	1.00 V	105	28.58	5.33
3	4880.00	47.55 PK	74.00	-26.45	1.00 V	100	36.63	10.92
4	4880.00	18.20 AV	54.00	-35.80	1.00 V	100	7.28	10.92
5	7320.00	52.28 PK	74.00	-21.72	1.00 V	198	35.09	17.19
6	7320.00	22.93 AV	54.00	-31.07	1.00 V	198	5.74	17.19

**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).
3. The emission levels of other frequencies were greater than 20dB margin.
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. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2475.00	57.52 PK	114.00	-56.48	1.00 H	159	51.99	5.53
2	*2475.00	28.17 AV	94.00	-65.83	1.00 H	159	22.64	5.53
3	2483.50	44.11 PK	74.00	-29.89	1.00 H	159	38.54	5.57
4	2483.50	14.76 AV	54.00	-39.24	1.00 H	159	9.19	5.57
5	4950.00	50.28 PK	74.00	-23.72	1.00 H	0	39.09	11.20
6	4950.00	20.93 AV	54.00	-33.07	1.00 H	206	9.73	11.20
7	7425.00	53.30 PK	74.00	-20.70	1.00 H	91	35.82	17.48
8	7425.00	23.95 AV	54.00	-30.05	1.00 H	91	6.47	17.48

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2475.00	59.02 PK	114.00	-54.98	1.00 V	129	53.49	5.53
2	*2475.00	29.67 AV	94.00	-64.33	1.00 V	129	24.14	5.53
3	2483.50	46.40 PK	74.00	-27.60	1.00 V	129	40.83	5.57
4	2483.50	17.05 AV	54.00	-36.95	1.00 V	129	11.48	5.57
5	4950.00	49.62 PK	74.00	-24.38	1.00 V	206	38.42	11.20
6	4950.00	20.27 AV	54.00	-33.73	1.00 V	206	9.07	11.20
7	7425.00	52.02 PK	74.00	-21.98	1.00 V	177	34.54	17.48
8	7425.00	22.67 AV	54.00	-31.33	1.00 V	266	5.19	17.48

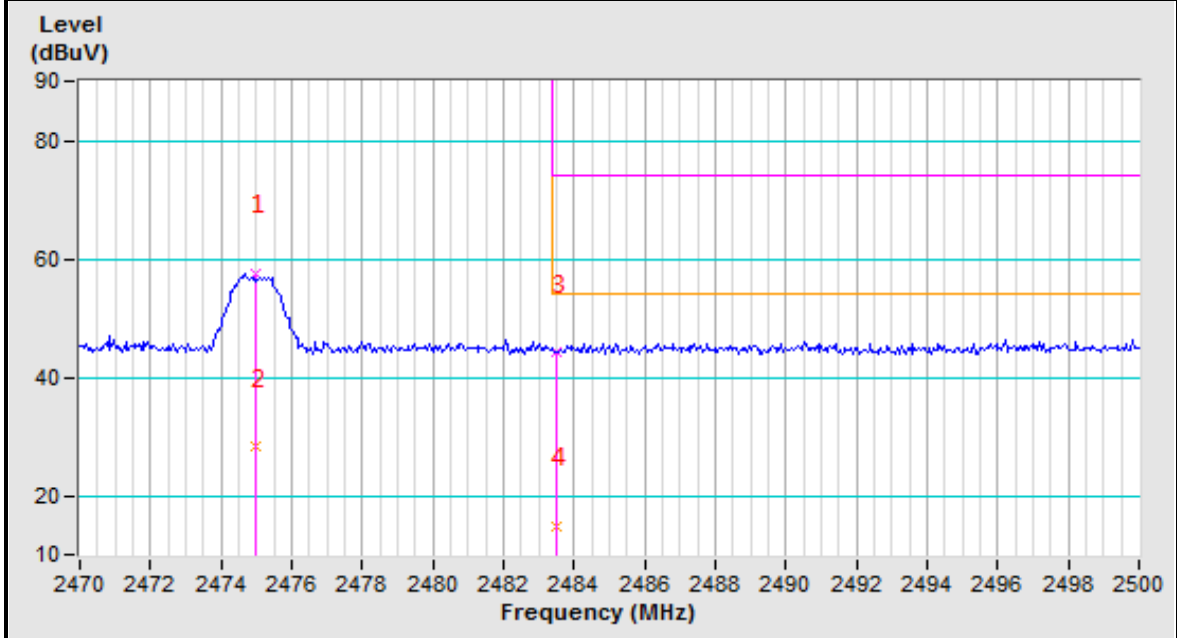
REMARKS:

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

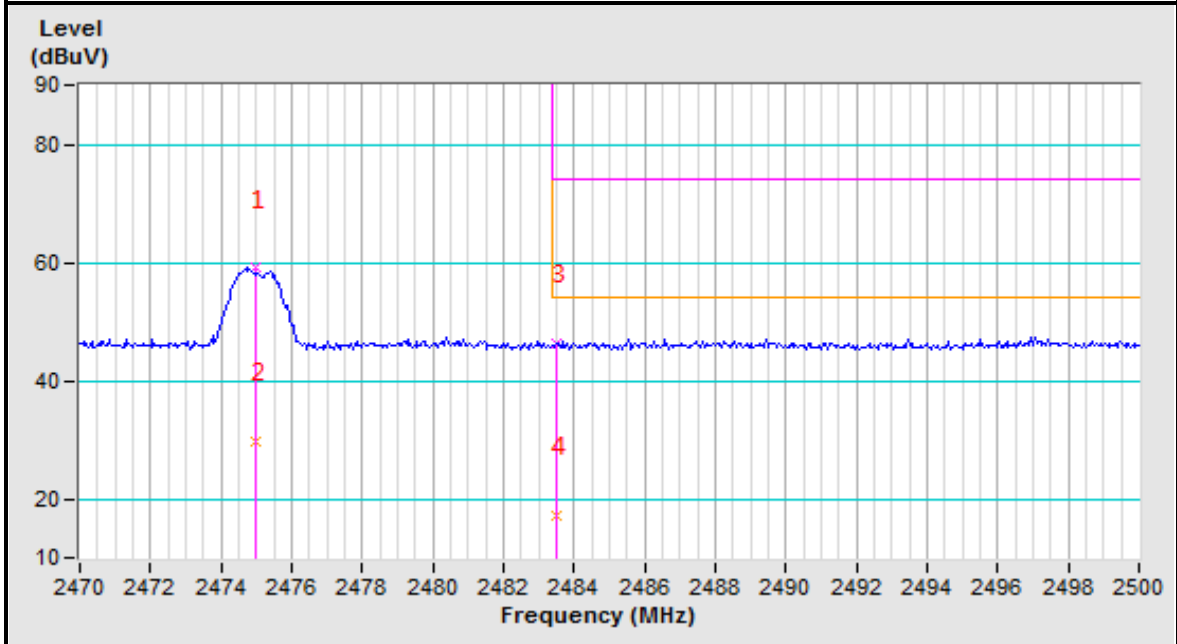


### Band edge Plot

#### 2475MHz Horizontal



#### 2475MHz Vertical





## 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.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	N/A
Power Sensor	Keysight	U2021XA	MY55060018	May 09, 22
Power Meter	Anritsu	ML2495A	1139001	Feb. 24,22
Power Sensor	Anritsu	MA2411B	1531155	Feb. 24,22
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 03,21
Oscilloscope	Agilent	DSO9254A	MY51260160	Aug. 10,21
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Feb. 24,22
Signal Generator	Agilent	N5183A	MY50140980	Aug. 10,21
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Sep. 04,21
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A

#### NOTES:

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

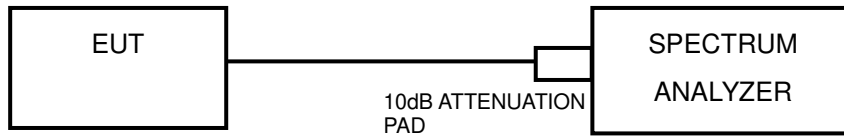
- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the 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



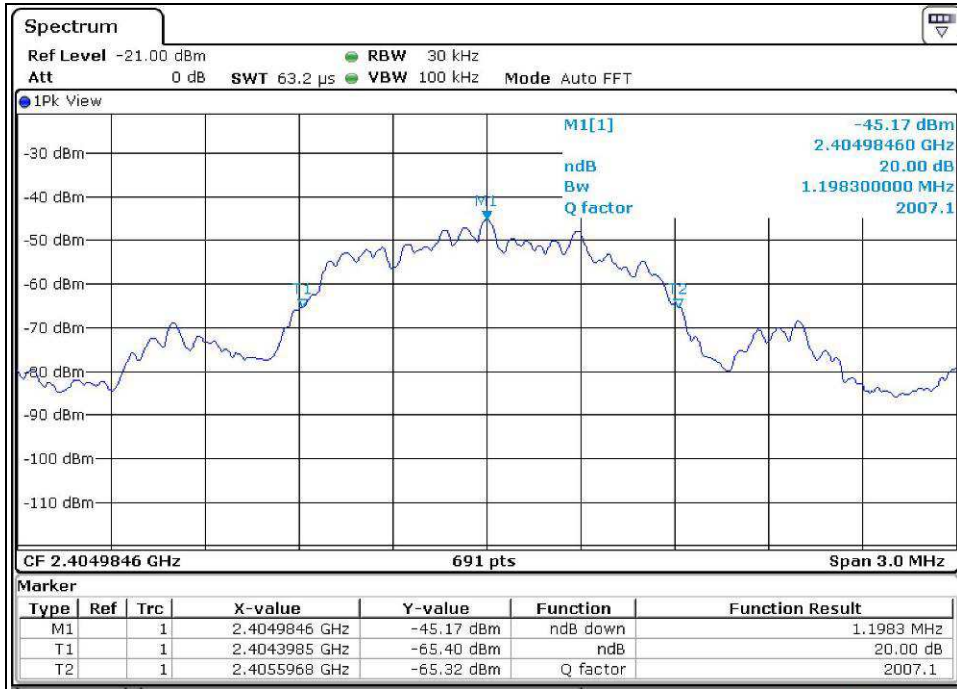
#### 4.2.6 EUT OPERATING CONDITIONS

- 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.

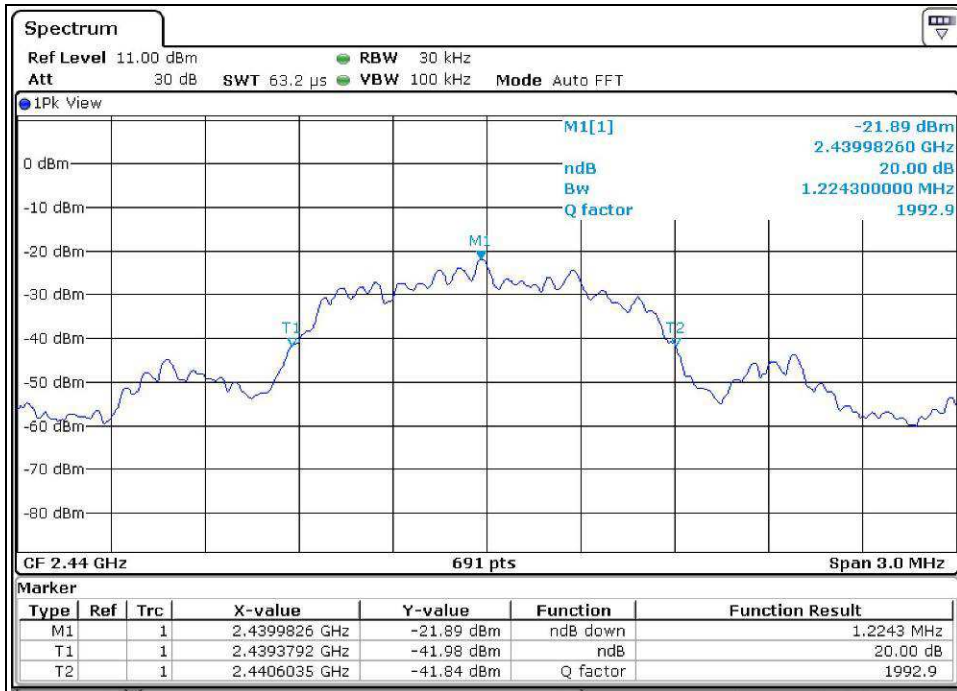
#### 4.2.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2405	1.1983
Middle	2440	1.2243
High	2475	1.2287

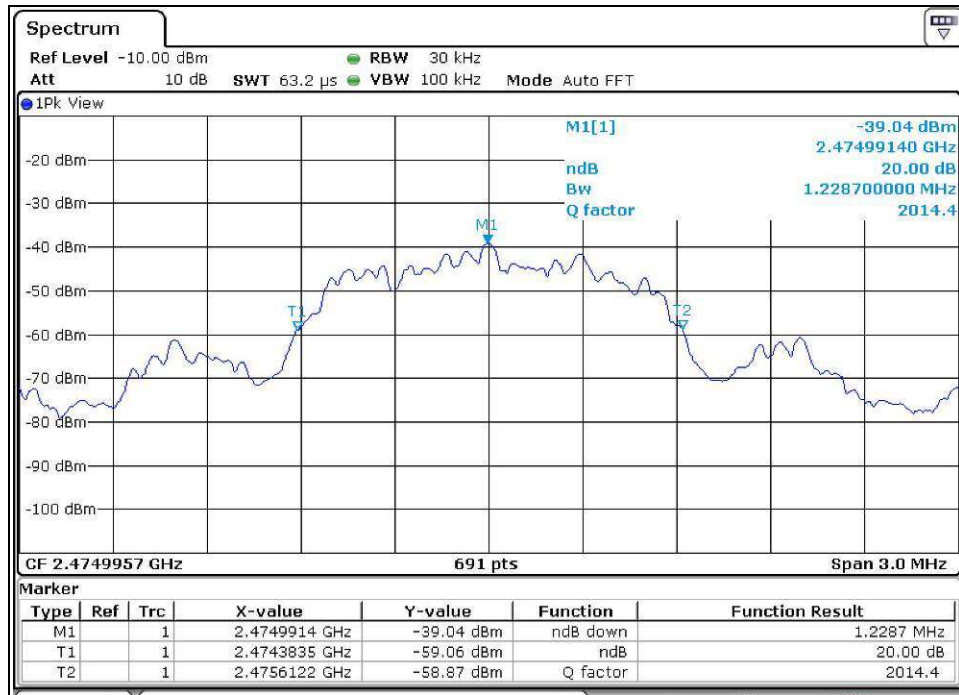
Test Data: Low channel



Test Data: Middle channel



**Test Data: High channel**





Test Report No.: RF2105WDG0232-2

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



**BUREAU  
VERITAS**

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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---**