

# TEST REPORT



Applicant:	GUANGDONG SYMA MODEL AIRCRAFT INDUSTRIAL CO., LTD.
Address:	NO.2 West Xingye Road Laimei Industrial Area Chenghai Shantou Guangdong China

Manufacturer or Supplier	GUANGDONG SYMA MODEL AIRCRAFT INDUSTRIAL CO., LTD.
Address	NO.2 West Xingye Road Laimei Industrial Area Chenghai Shantou Guangdong China
Product:	Tactical Cargo Helicopter
Brand Name:	Syma
Model:	7858-4AA
Additional Models & Model Difference	S5, S5H, S8, S39-1, S39H, etc.; See item 3.1
Date of tests:	Jul. 21, 2021 ~ Aug. 07, 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 Lucas Chen Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	
	Date: Aug. 12, 2021

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <https://www.cps.bureauveritas.com/terms-conditions> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

## TABLE OF CONTENTS

<b>RELEASE CONTROL RECORD .....</b>	<b>3</b>
<b>1 SUMMARY OF TEST RESULTS.....</b>	<b>4</b>
<b>2 MEASUREMENT UNCERTAINTY .....</b>	<b>4</b>
<b>3 GENERAL INFORMATION .....</b>	<b>5</b>
3.1 GENERAL DESCRIPTION OF EUT .....	5
3.2 DESCRIPTION OF TEST MODES .....	6
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	7
3.4 DESCRIPTION OF SUPPORT UNITS.....	7
<b>4. TEST TYPES AND RESULTS.....</b>	<b>8</b>
4.1 RADIATED EMISSION MEASUREMENT .....	8
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	8
4.1.2 TEST INSTRUMENTS.....	9
4.1.3 TEST PROCEDURES .....	10
4.1.4 DEVIATION FROM TEST STANDARD .....	10
4.1.5 TEST SETUP.....	11
4.1.6 EUT OPERATING CONDITIONS .....	12
4.1.7 TEST RESULTS .....	13
4.2 20dB BANDWIDTH MEASUREMENT .....	20
4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT.....	20
4.2.2 TEST INSTRUMENTS.....	20
4.2.3 TEST PROCEDURE.....	21
4.2.4 DEVIATION FROM TEST STANDARD .....	21
4.2.5 TEST SETUP.....	21
4.2.6 EUT OPERATING CONDITIONS .....	21
4.2.7 TEST RESULTS .....	22
<b>5. PHOTOGRAPHS OF THE TEST CONFIGURATION.....</b>	<b>24</b>
<b>6. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....</b>	<b>25</b>



Test Report No.: RF2107WDG0248

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2107WDG0248	Original release	Aug. 12, 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
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>	Tactical Cargo Helicopter
<b>MODEL NO.</b>	7858-4AA
<b>ADDITIONAL MODELS</b>	S5, S5H, S8, S39-1, S39H, S107G, S107H, S109G, S111G, X4, X5, X5A, X5C, X5S, X5SC, X5SW, X5HC, X5HW, X5U, X5UC-1, X5UW, X5UW(720P)-1, X5UW(720P), X5UW-D, X8HW(720P), X8SW(720P), X8SW(720P)-D, X8PRO, X13, X15, X15W, X15A, X15T, X18, X20, X20-S, X20W, X20P, X21, X21W, X22SW, X22W, X23, X23W, X25W, X25PRO, X26, X27, X30, W1, W1PRO, Z1, Z3, X54HW, X56W, X56W-P, X57, TF1001, TF1002, TF1003, TG1001, TG1006, TG1003, TG1004S, TG1004T, TG1004C, TG1005, TG1007, TG1008, K01, K02, K03, X300, X400, S100, S200, S300, T100, T200, X30PRO, W3, W3PRO, X31, Q1, Q2, Q5, S2, Z4, Z4W, Z5, Z5W, X600, X600W, X700, X700W, X650, X500PRO, X32, Z6, Z7, Z7W, S37H, S37, TG1002, S1, 7852-9CAA, 7858-4AA (S026H), 6182-3MXAA, 6182-4NDAP, 6182-2BGMA(Z5W)
<b>FCC ID</b>	QV7-GC88752-55
<b>NOMINAL VOLTAGE</b>	DC 6V (1.5V*AAA*4) from Battery
<b>MODULATION TECHNOLOGY</b>	GFSK
<b>OPERATING FREQUENCY</b>	2405-2478MHz
<b>ANTENNA TYPE</b>	Wire Antenna, with 4dBi 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.: 2107WDG0248-1) for detailed product photo.
4. Additional models (see above table) are identical with the test model 7858-4AA except model number 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  
**PLC**: Power Line Conducted Emission

**RE≥1G**: Radiated Emission above 1GHz  
**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	2441 MHz
High	2478 MHz

#### Channel List

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	2405	20	2424	39	2443	58	2462
2	2406	21	2425	40	2444	59	2463
3	2407	22	2426	41	2445	60	2464
4	2408	23	2427	42	2446	61	2465
5	2409	24	2428	43	2447	62	2466
6	2410	25	2429	44	2448	63	2467
7	2411	26	2430	45	2449	64	2468
8	2412	27	2431	46	2450	65	2469
9	2413	28	2432	47	2451	66	2470
10	2414	29	2433	48	2452	67	2471
11	2415	30	2434	49	2453	68	2472
12	2416	31	2435	50	2454	69	2473
13	2417	32	2436	51	2455	70	2474
14	2418	33	2437	52	2456	71	2475
15	2419	34	2438	53	2457	72	2476
16	2420	35	2439	54	2458	73	2477
17	2421	36	2440	55	2459	<b>74</b>	<b>2478</b>
18	2422	<b>37</b>	<b>2441</b>	56	2460		
19	2423	38	2442	57	2461		

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



**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	27deg. C, 56%RH	DC 6V from New Battery	Panda
BW	25deg. C, 56%RH	DC 6V from New Battery	yoyo
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 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**

<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Next Cal.</b>
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 07,22
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Feb. 24,22
Bilog Antenna	Teseq	CBL 6111D	30643	May 29,22
Horn Antenna	ETS-Lindgren	3117	00062558	May 29,22
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	N/A
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
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	May 09, 22
Amplifier	Burgeon	BPA-530	100220	Mar. 13,22
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	May 08,22
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Mar. 13,22
Power Sensor	Keysight	U2021XA	MY55060016	N/A
Power Sensor	Keysight	U2021XA	MY55060018	May 09, 22
Digital Multimeter	FLUKE	15B	A1220009DG	Aug. 05,22
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Nov. 03,21
Oscilloscope	Agilent	DSO9254A	MY51260160	Aug. 10,21
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May 09, 22
Spectrum Analyzer	Keysight	N9020A	MY55400499	Feb. 24,22
Signal Generator	Agilent	N5183A	MY50140980	Aug. 10,21
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Sep. 04,21
Wireless Connectivity Tester	Rohde&Schwarz	CMW270	100908	Sep. 26,21
Vector Signal Generator	Rohde&Schwarz	SMBV100A	257579	Sep. 04,21
Attenuator	MINI	BW-S10W2+	S130129FGE2	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.

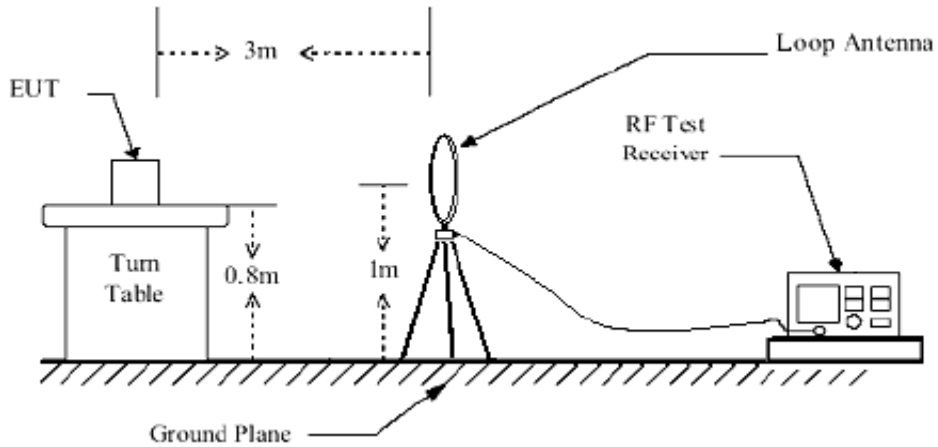
#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

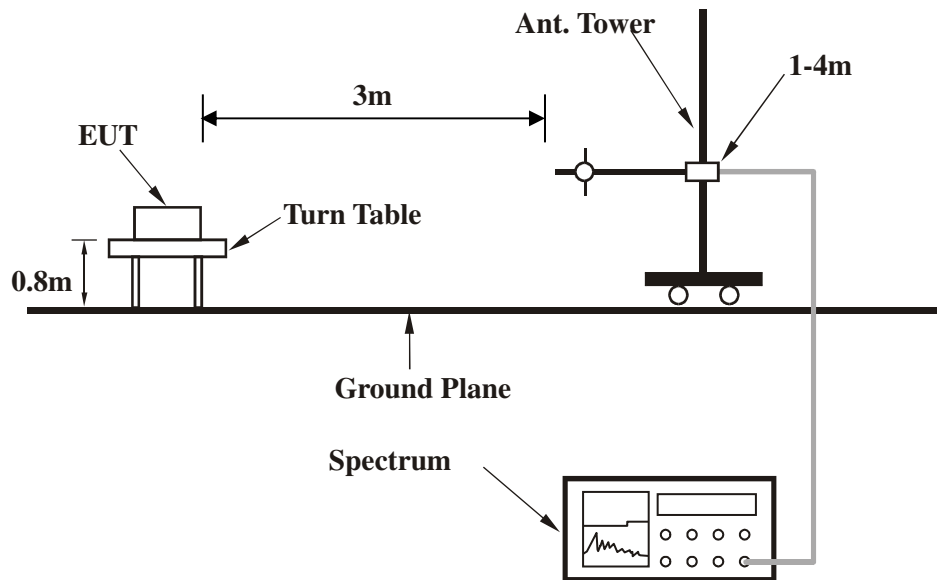


### 4.1.5 TEST SETUP

#### Below 30MHz test setup

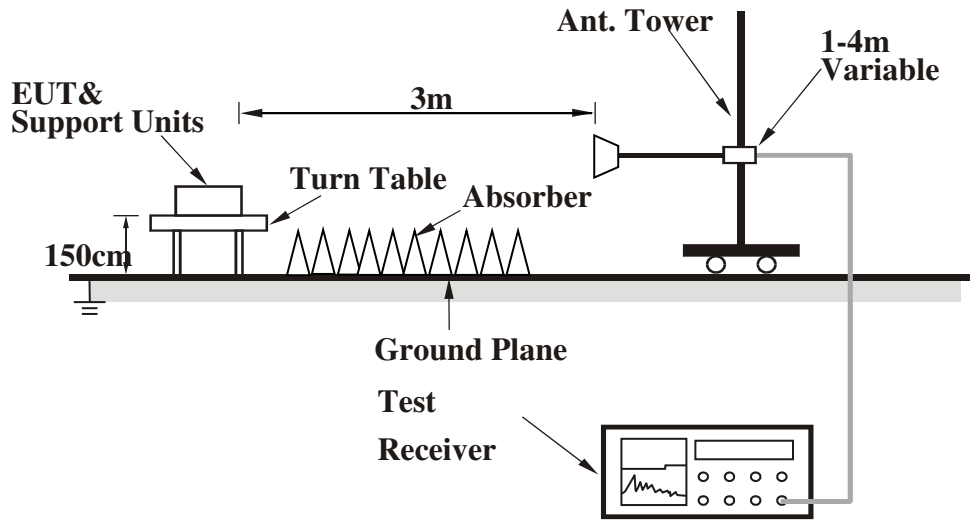


#### Below 1GHz test setup





## 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

- 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

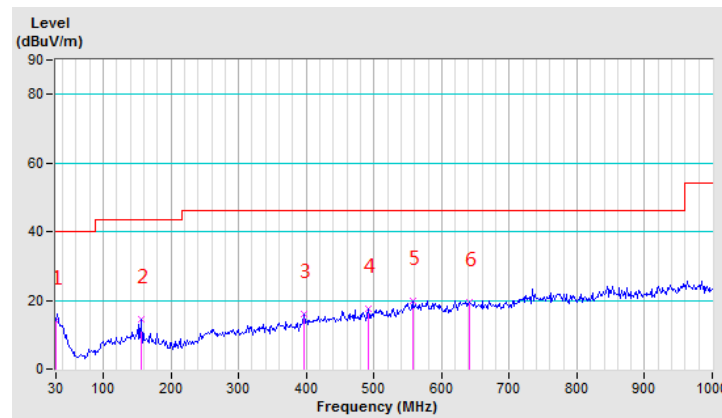
##### BELOW 1GHz WORST-CASE DATA

<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.	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	14.16 QP	40.00	-25.84	1.00 H	214	27.16	-13.00
2	155.91	14.57 QP	43.50	-28.93	1.00 H	24	33.28	-18.71
3	396.86	16.05 QP	46.00	-29.95	1.00 H	124	29.65	-13.60
4	491.68	17.39 QP	46.00	-28.61	1.00 H	245	29.06	-11.67
5	556.97	19.74 QP	46.00	-26.26	1.00 H	342	28.27	-8.53
6	640.91	19.35 QP	46.00	-26.65	1.00 H	47	27.24	-7.89

##### 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.

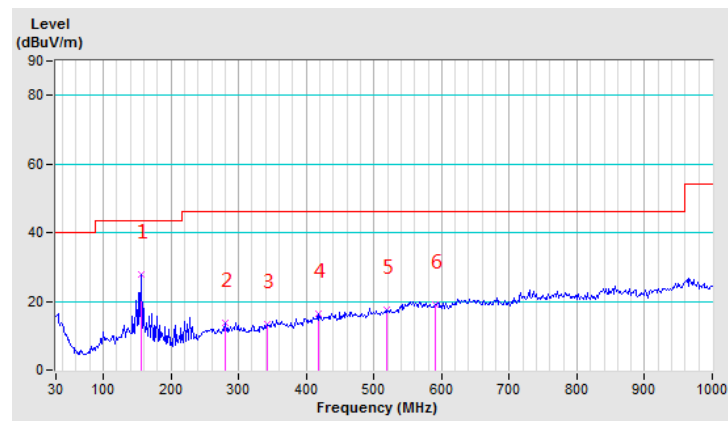


<b>CHANNEL</b>	TX Middle Channel	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9KHz ~ 1GHz		

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	155.91	27.76 QP	43.50	-15.74	1.00 V	24	46.47	-18.71
2	280.27	13.77 QP	46.00	-32.23	1.00 V	44	30.76	-16.99
3	342.45	13.41 QP	46.00	-32.59	1.00 V	242	28.84	-15.43
4	417.07	16.48 QP	46.00	-29.52	1.00 V	124	29.39	-12.91
5	518.11	17.65 QP	46.00	-28.35	1.00 V	242	28.65	-11.00
6	591.17	19.06 QP	46.00	-26.94	1.00 V	311	28.13	-9.07

**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	65.24 PK	74.00	-8.76	1.00 H	257	59.66	5.58
2	2400.00	43.38 AV	54.00	-10.62	1.00 H	257	37.80	5.58
3	*2405.00	92.54 PK	114.00	-21.46	1.00 H	257	86.95	5.59
4	*2405.00	70.70 AV	94.00	-23.30	1.00 H	257	65.11	5.59
5	4810.00	56.24 PK	74.00	-17.76	1.00 H	0	45.28	10.96
6	4810.00	34.37 AV	54.00	-19.63	1.00 H	0	23.41	10.96
7	7215.00	60.54 PK	74.00	-13.46	1.00 H	0	42.73	17.81
8	7215.00	35.48 AV	54.00	-18.52	1.00 H	0	17.67	17.81

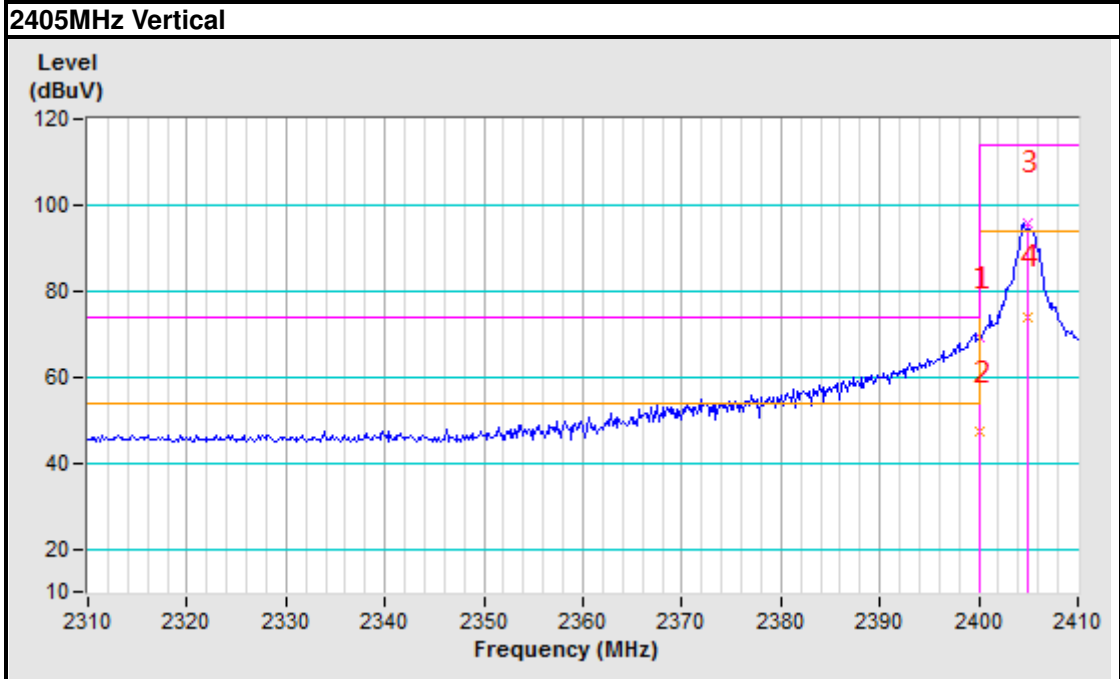
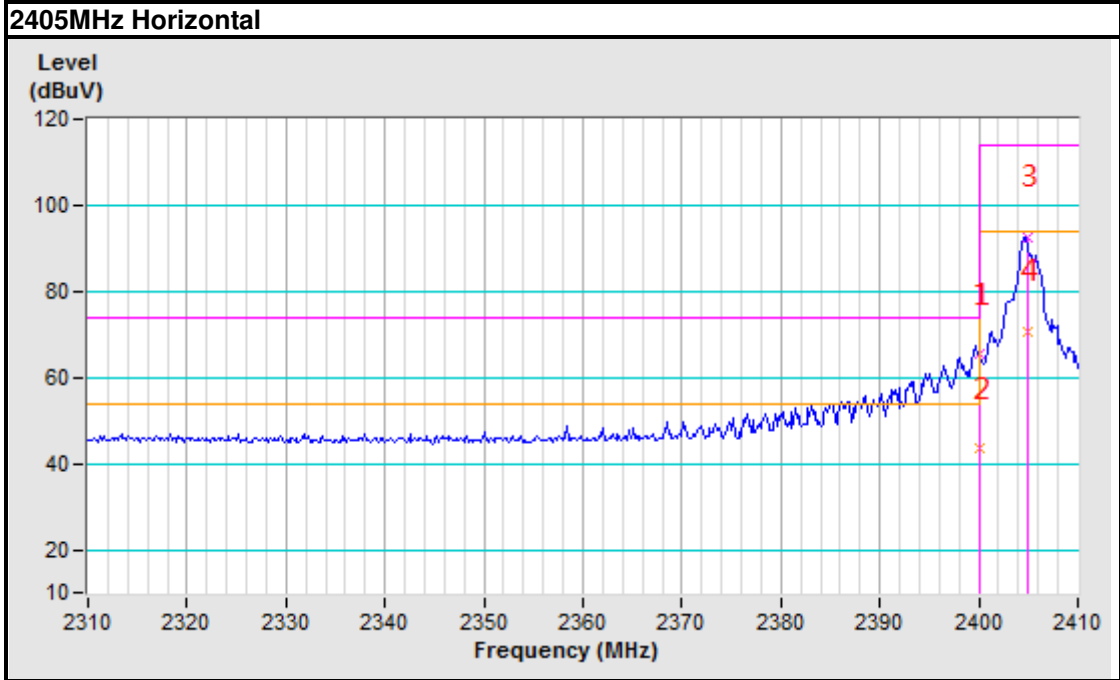
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2400.00	69.01 PK	74.00	-4.99	1.00 V	123	63.43	5.58
2	2400.00	47.15 AV	54.00	-6.85	1.00 V	123	41.57	5.58
3	*2405.00	95.83 PK	114.00	-18.17	1.00 V	123	90.24	5.59
4	*2405.00	73.97 AV	94.00	-20.03	1.00 V	123	68.38	5.59
5	4810.00	57.40 PK	74.00	-16.60	1.00 V	0	46.44	10.96
6	4810.00	35.54 AV	54.00	-18.46	1.00 V	0	24.58	10.96
7	7215.00	61.23 PK	74.00	-12.77	1.00 V	0	43.42	17.81
8	7215.00	39.37 AV	54.00	-14.63	1.00 V	0	21.56	17.81

REMARK:

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







<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	*2441.00	96.25 PK	114.00	-17.75	1.00 H	50	90.60	5.65
2	*2441.00	74.39 AV	94.00	-19.61	1.00 H	50	68.74	5.65
3	4882.00	58.51 PK	74.00	-15.49	1.00 H	0	47.25	11.26
4	4882.00	36.75 AV	54.00	-17.25	1.00 H	0	25.49	11.26
5	7323.00	60.51 PK	74.00	-13.49	1.00 H	0	42.31	18.20
6	7323.00	38.65 AV	54.00	-15.35	1.00 H	0	20.45	18.20
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	*2441.00	92.20 PK	114.00	-21.80	1.00 V	147	86.55	5.65
2	*2441.00	70.34 AV	94.00	-23.66	1.00 V	147	64.69	5.65
3	4882.00	57.47 PK	74.00	-16.53	1.00 V	0	46.21	11.26
4	4882.00	35.61 AV	54.00	-18.39	1.00 V	0	24.35	11.26
5	7323.00	61.03 PK	74.00	-12.97	1.00 V	0	42.83	18.20
6	7323.00	39.17 AV	54.00	-14.83	1.00 V	0	20.97	18.20

**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	*2478.00	96.67 PK	114.00	-17.33	1.00 H	87	90.95	5.72
2	*2478.00	75.01 AV	94.00	-18.99	1.00 H	87	69.29	5.72
3	2483.50	69.03 PK	74.00	-4.97	1.00 H	87	63.29	5.74
4	2483.50	47.17 AV	54.00	-6.83	1.00 H	87	41.43	5.74
5	4956.00	60.21 PK	74.00	-13.79	1.00 H	0	48.63	11.58
6	4956.00	38.35 AV	54.00	-15.65	1.00 H	0	26.77	11.58
7	7434.00	61.24 PK	74.00	-12.76	1.00 H	0	42.64	18.60
8	7434.00	39.38 AV	54.00	-14.62	1.00 H	0	20.78	18.60

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

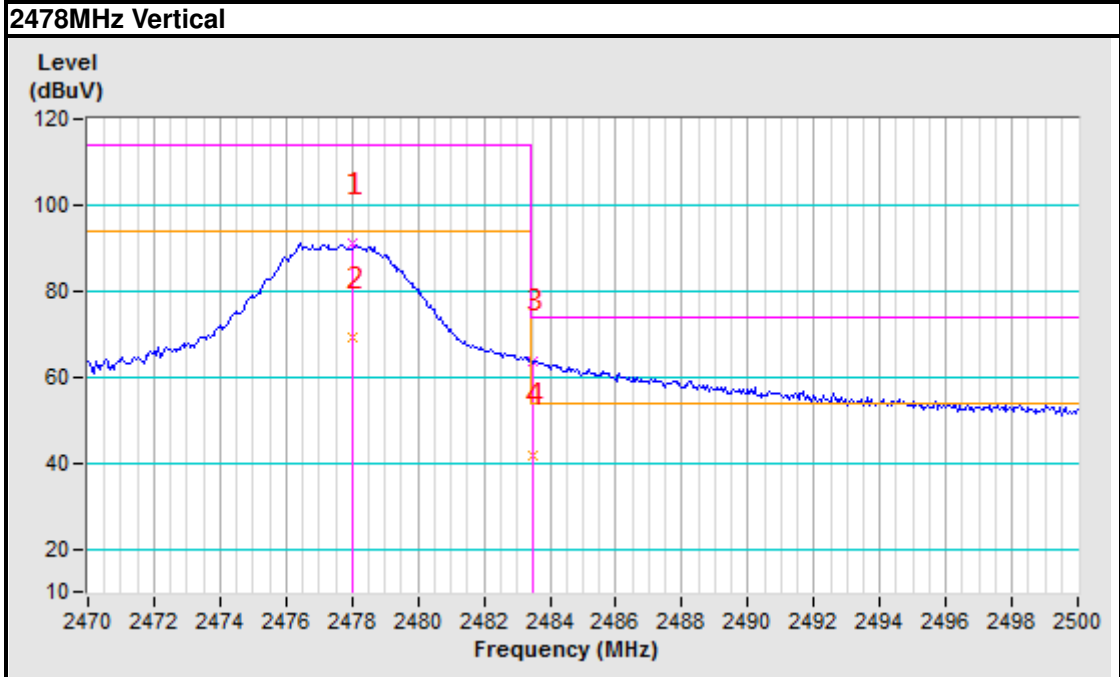
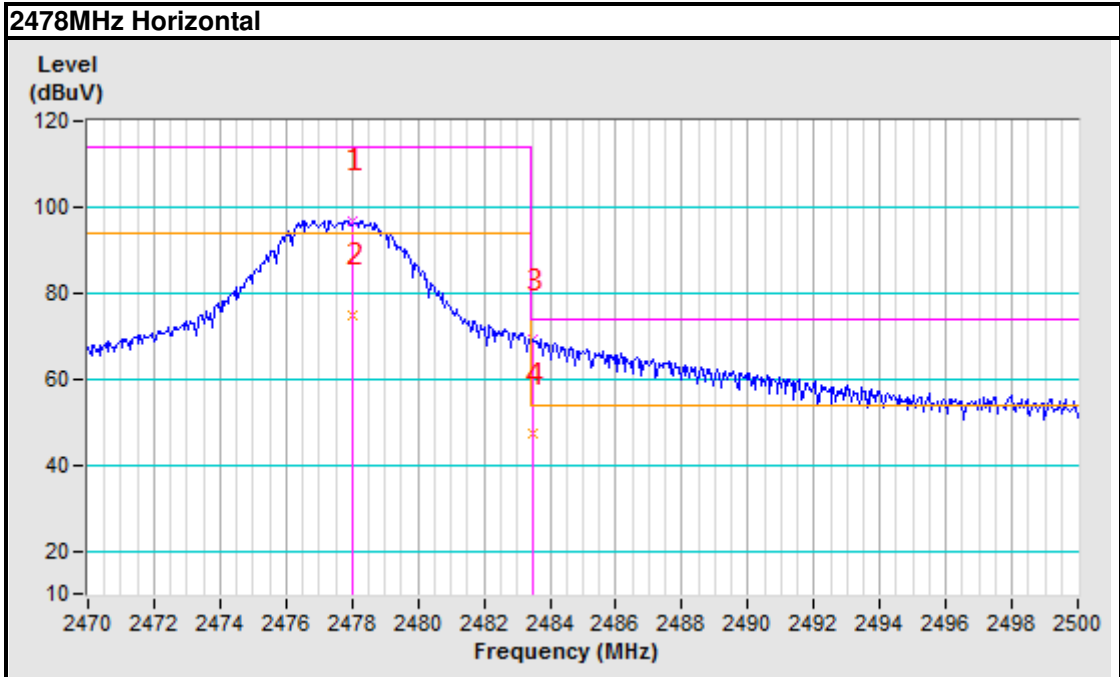
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2478.00	90.88 PK	114.00	-23.12	1.00 V	124	85.16	5.72
2	*2478.00	69.02 AV	94.00	-24.98	1.00 V	124	63.30	5.72
3	2483.50	63.50 PK	74.00	-10.50	1.00 V	124	57.76	5.74
4	2483.50	41.65 AV	54.00	-12.35	1.00 V	124	35.91	5.74
5	4956.00	58.51 PK	74.00	-15.49	1.00 V	0	46.93	11.58
6	4956.00	36.55 AV	54.00	-17.45	1.00 V	0	24.97	11.58
7	7434.00	60.80 PK	74.00	-13.20	1.00 V	0	42.20	18.60
8	7434.00	38.94 AV	54.00	-15.06	1.00 V	0	20.34	18.60

**REMARK:**

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



## 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.

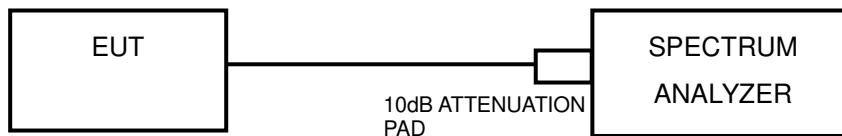
#### 4.2.3 TEST PROCEDURE

- 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



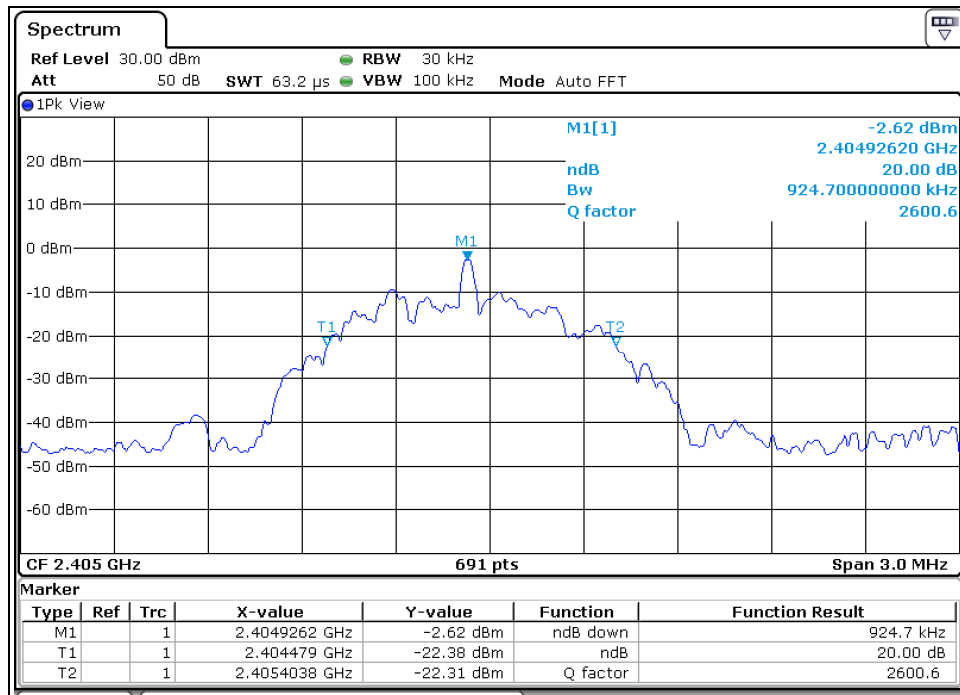
#### 4.2.6 EUT OPERATING CONDITIONS

- 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.

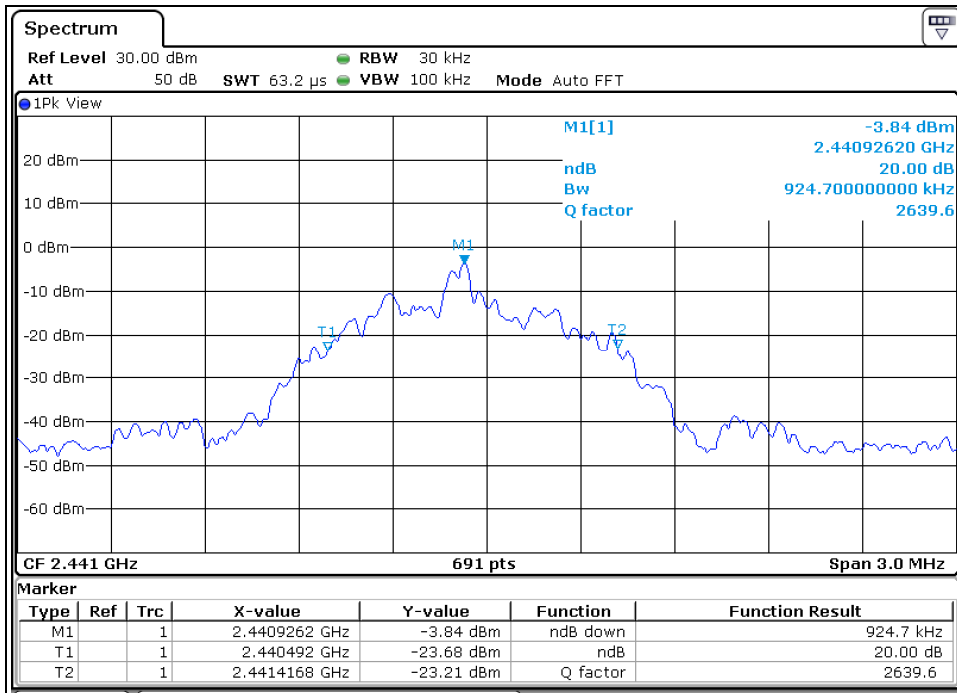
### 4.2.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2405	0.925
Middle	2441	0.925
High	2478	0.981

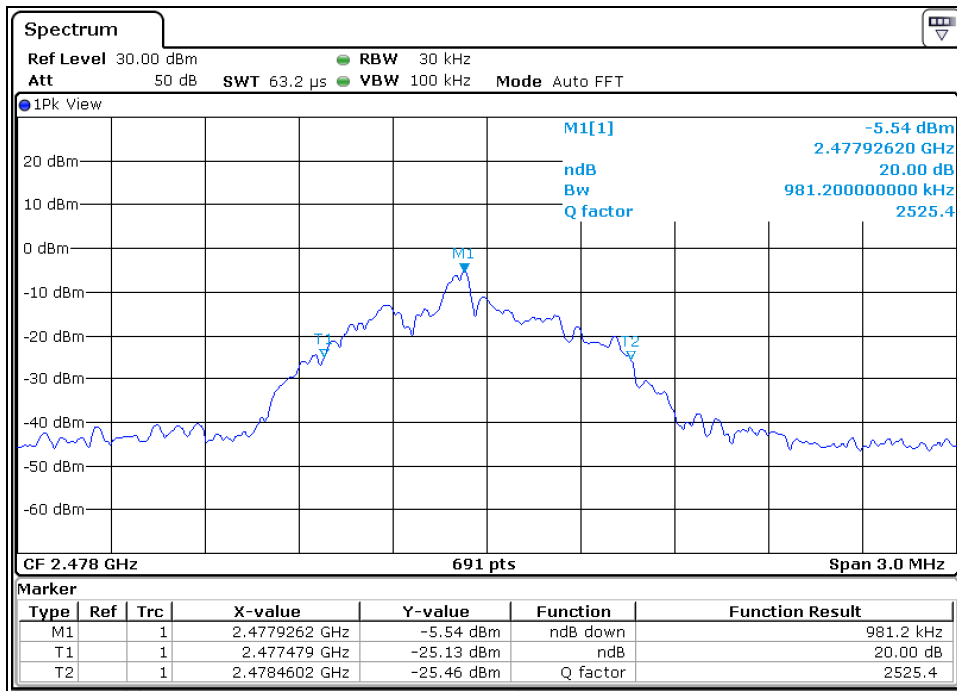
#### Test Data: Low channel



Test Data: Middle channel



Test Data: High channel





Test Report No.: RF2107WDG0248

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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





## 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---**