

TEST REPORT

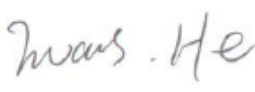
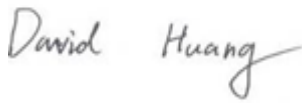
Applicant	SHANTOU CHENAO WANTENG TOYS CO.,LTD
Address	NO. 3, MEICHENG ROAD, GUANGYI STREET, CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG PROVINCE

Manufacturer or Supplier	SHANTOU CHENAO WANTENG TOYS CO.,LTD
Address	NO. 3, MEICHENG ROAD, GUANGYI STREET, CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG PROVINCE
Product:	DISTORTION CAR
Brand Name:	N/A
Model:	WT2020
Additional Model & Model Difference	WT2020,WT2021,WT2022,WT2023,WT2024,WT2020-A,WT2020-B,WT2020-C
Date of tests:	Jan. 22, 2021 ~ Feb. 01, 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 Evans He Project Engineer / EMC Department	Approved by David Huang Supervisor / EMC Department
	 Date: Feb. 02, 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 <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/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

RELEASE CONTROL RECORD	3
1 SUMMARY OF TEST RESULTS.....	4
2 MEASUREMENT UNCERTAINTY	4
3 GENERAL INFORMATION	5
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
4. TEST TYPES AND RESULTS.....	8
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
5. PHOTOGRAPHS OF THE TEST CONFIGURATION	24
6. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	25



Test Report No.: RF2101WDG0233-1

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2101WDG0233-1	Original release	Feb. 02, 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 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

PRODUCT	DISTORTION CAR
MODEL NO.	WT2020
ADDITIONAL MODELS	WT2020,WT2021,WT2022,WT2023,WT2024, WT2020-A,WT2020-B,WT2020-C
FCC ID	2AYRQ-WT2020
NOMINAL VOLTAGE	Remote Control(TX): DC 3V(1.5V*AAA*2) from Battery
MODULATION TECHNOLOGY	GFSK
OPERATING FREQUENCY	2410-2473MHz
ANTENNA TYPE	Single wire,0dBi Gain for Remote Control
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	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.: 2101WDG0233-1) for detailed product photo.
4. Additional models (see about table) are identical with the test model WT2020 except the color of the appearance.

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 3V from Full 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	2410 MHz
Middle	2445 MHz
High	2473 MHz

Channel List

CHANNEL	FREQUENCY (GHZ)	CHANNEL	FREQUENCY (GHZ)	CHANNEL	FREQUENCY (GHZ)
1	2.410GHz	3	2.427GHz	5	2.445GHz
2	2.415GHz	4	2.437GHz	6	2.473GHz

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 3V from Full Battery	Aaron Liang
BW	26deg. C, 56%RH	DC 3V from Full 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.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESL6	1300.5001K06-10 0262-eQ	Mar. 24, 21
Bilog Antenna	Sunol Sciences	JB6	A110712	Jul. 21, 21
Active Antenna	CMO-POWER	AL-130	121031	Jun. 30, 21
Signal Amplifier	HP	8447E	443008	Mar. 24, 21
Signal and Spectrum Analyzer	R&S	FSV40	101094	Mar. 19, 21
MXA signal analyzer	Agilent	N9020A	MY49100060	Mar. 24, 21
Horn Antenna	COM-POWER	AH-118	71259	Apr. 17, 21
Horn Antenna	COM-POWER	AH-118	71283	Jul. 21, 21
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170147	May 10, 21
SHF-EHF Horn	Schwarzbeck	BBHA9170	BBHA9170242	May 10, 21
AMPLIFIER	EM Electornic Corporation	EM01G26G	60613	Mar. 24, 21
Pre-amplifier	Rohde&Schwarz	SCU40	100437	Oct. 16, 21
3m Semi-anechoic Chamber	SAEMC	9m*6m*6m	N/A	Oct. 17, 21
Test Software	EZ-EMC	ICP-03A1	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:

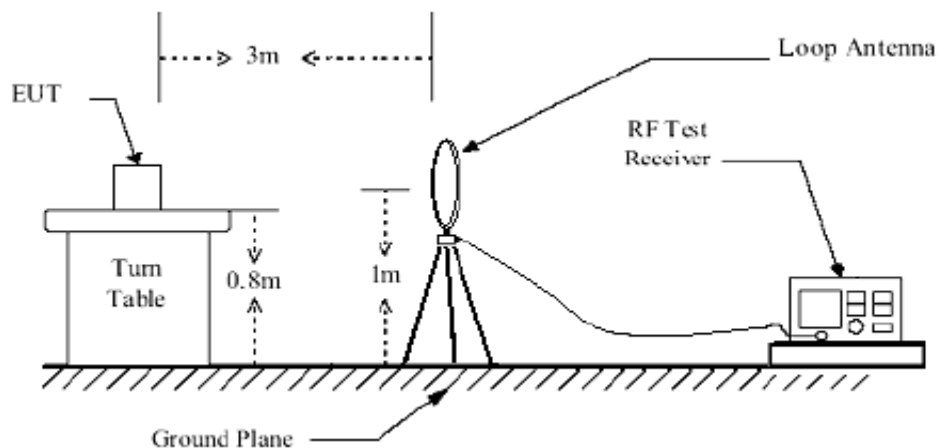
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution 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

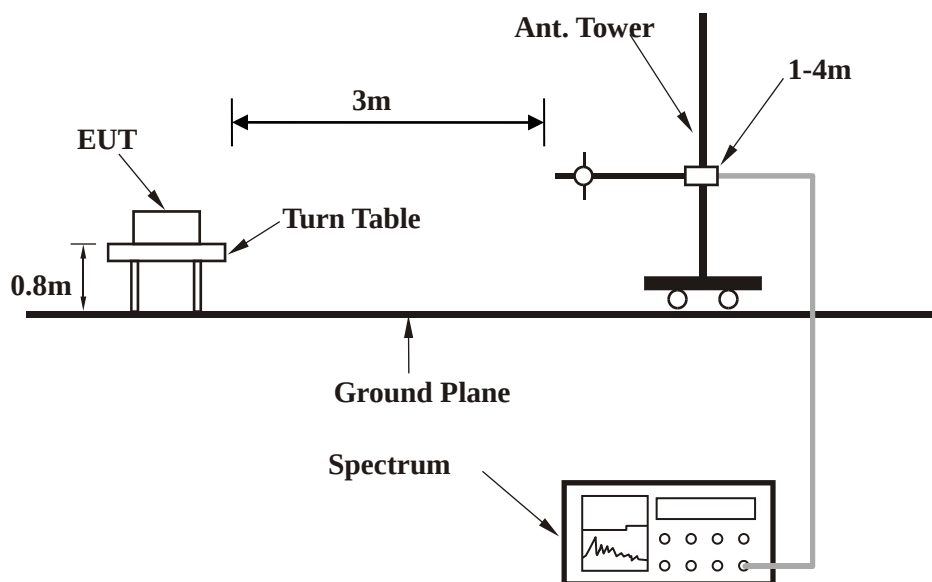
No deviation.

4.1.5 TEST SETUP

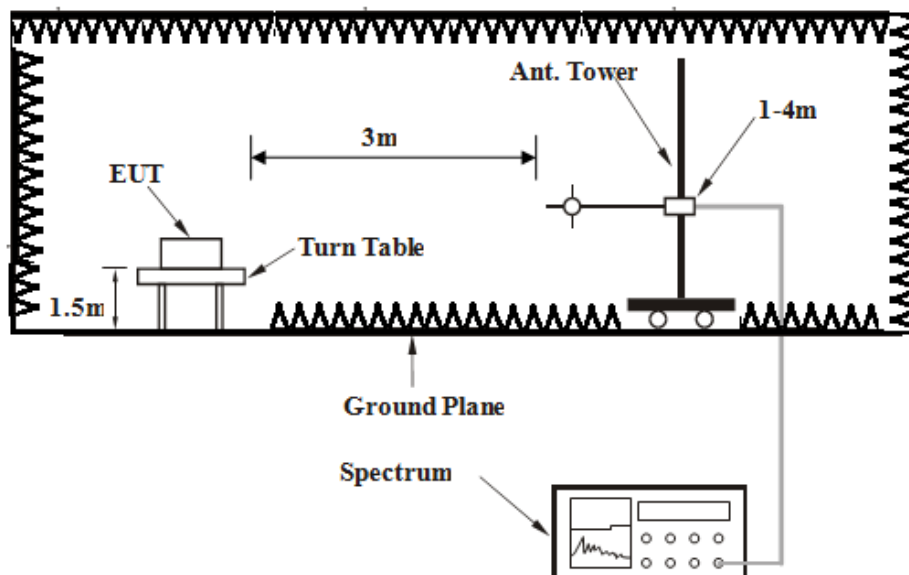
Below 30MHz test setup



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

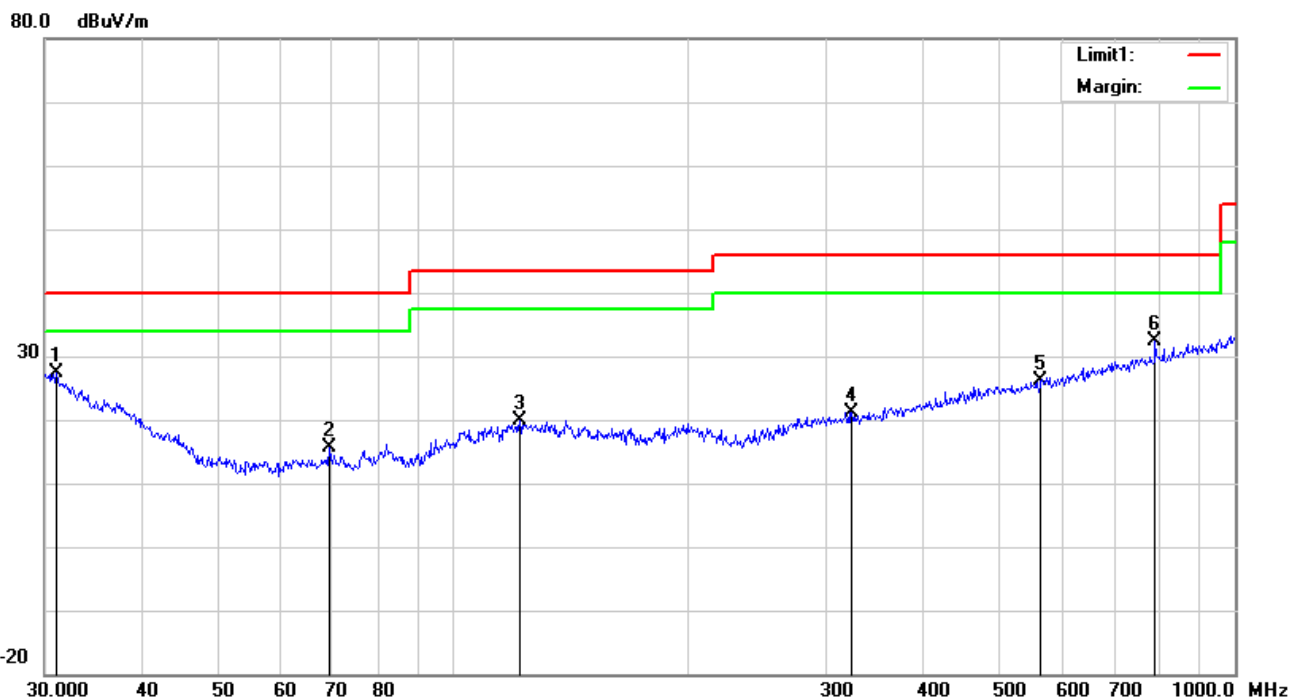
BELOW 1GHz WORST-CASE DATA

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

ANTENNA POLARITY & test distance: HORIZONTAL at 3 m								
No.	Frequency (MHz)	Reading (dBuV/m)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	31.0706	28.14	20.45	21.63	0.43	27.39	40.00	-12.61
2	69.3568	28.68	7.89	21.62	0.76	15.71	40.00	-24.29
3	121.5486	27.44	13.04	21.65	1.12	19.95	43.50	-23.55
4	323.3204	27.28	13.97	21.99	1.87	21.13	46.00	-24.87
5	564.6389	27.36	18.33	22.03	2.42	26.08	46.00	-19.92
6	790.6188	30.00	21.27	21.72	2.94	32.49	46.00	-13.51

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

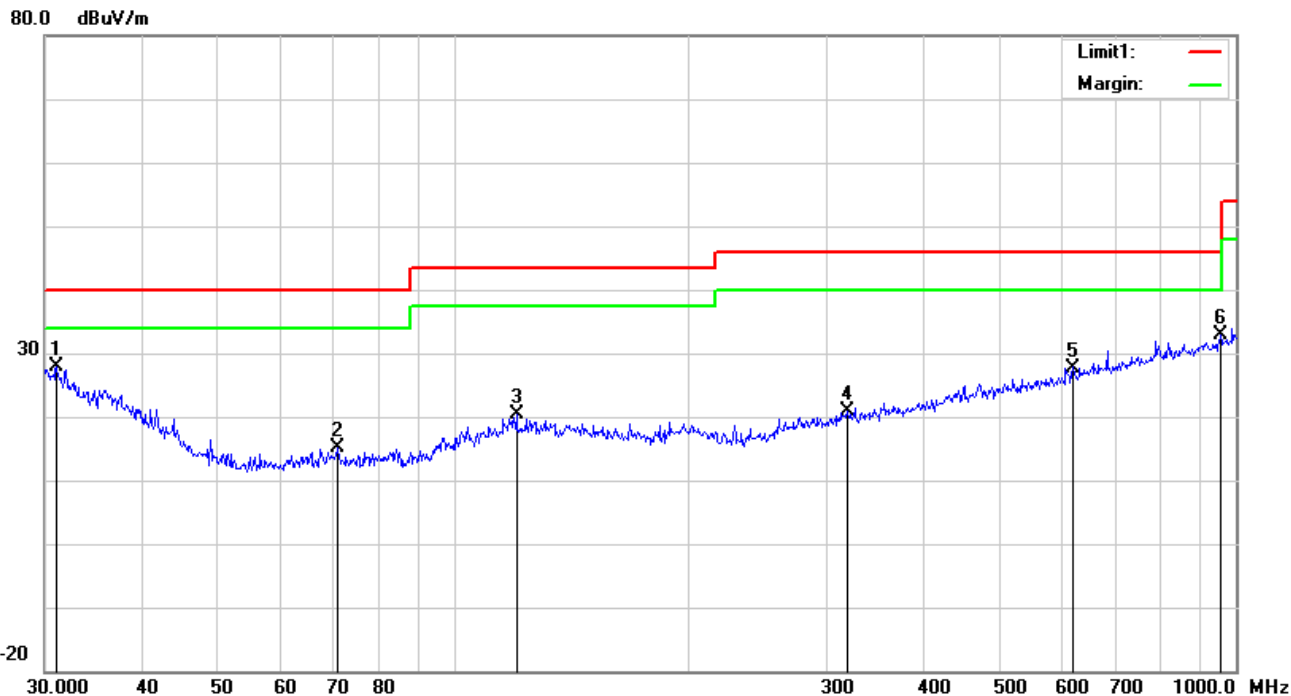


CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & test distance: Vertical at 3 m								
No.	Frequency (MHz)	Reading (dBuV/m)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	31.0706	28.57	20.45	21.63	0.43	27.82	40.00	-12.18
2	71.0803	28.20	7.86	21.62	0.78	15.22	40.00	-24.78
3	120.2766	27.97	12.88	21.65	1.11	20.31	43.50	-23.19
4	318.8170	27.16	13.90	21.99	1.86	20.93	46.00	-25.07
5	618.5369	28.01	19.20	22.01	2.55	27.75	46.00	-18.25
6	955.4381	28.16	22.72	21.44	3.32	32.76	46.00	-13.24

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:

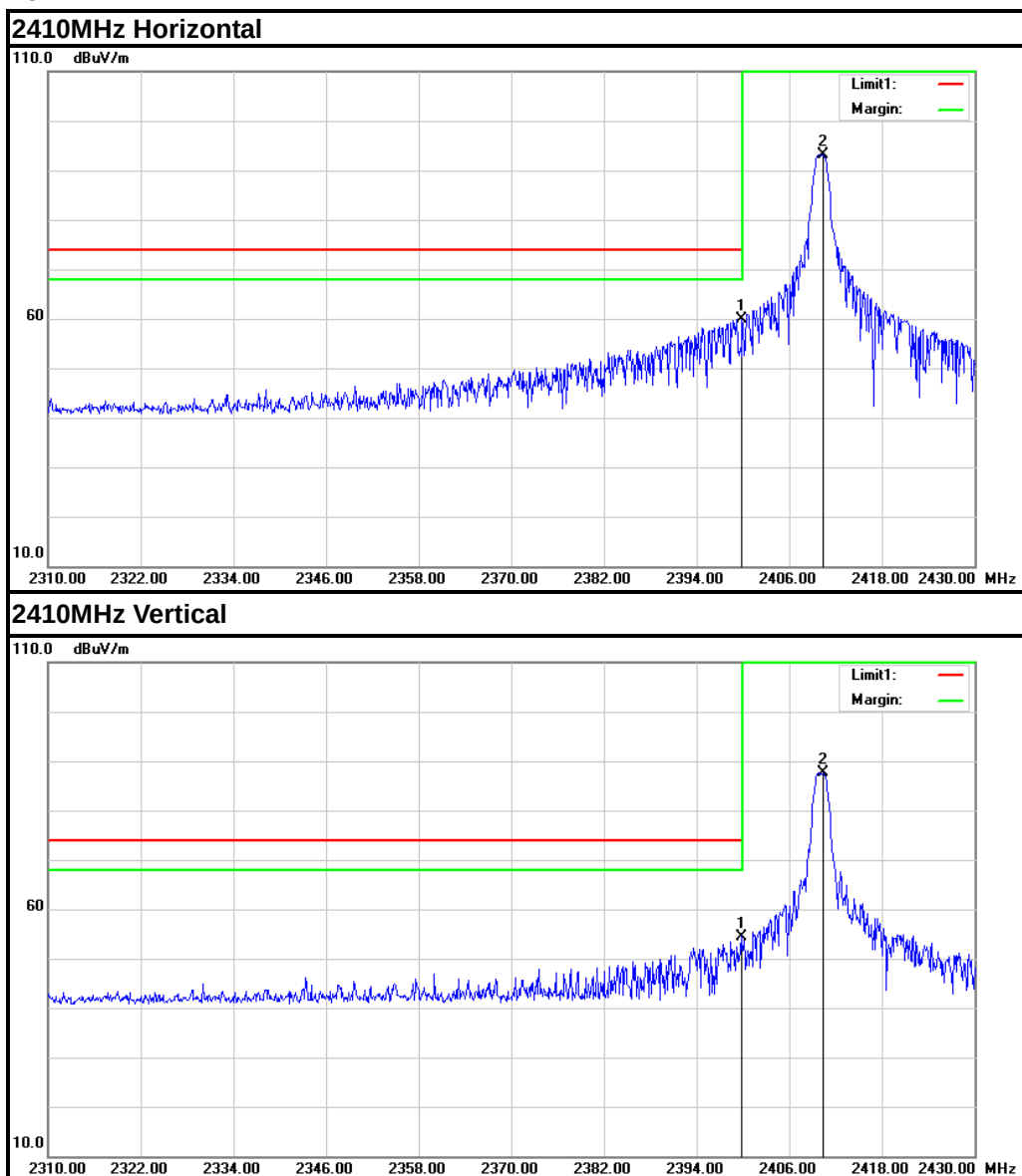
CHANNEL	TX Low Channel	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2399.88	59.9 PK	74	-14.1	167	19	71.28	-11.38
2	2399.88	53.01 AV	54	-0.99	167	19	64.39	-11.38
3	*2410	93.11 PK	114	-20.89	144	0	104.49	-11.38
4	*2410	86.22 AV	94	-7.78	144	0	97.6	-11.38
5	4820	53.87 PK	74	-20.13	133	235	59.94	-6.07
6	4820	46.98 AV	54	-7.02	133	235	53.05	-6.07
7	7230	54.73 PK	74	-19.27	157	312	54.44	0.29
8	7230	47.84 AV	54	-6.16	157	312	47.55	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	2399.76	54.5 PK	74	-19.5	165	239	65.88	-11.38
2	2399.76	47.61 AV	54	-6.39	165	239	58.99	-11.38
3	*2410	87.6 PK	114	-26.4	170	77	98.98	-11.38
4	*2410	80.71 AV	94	-13.29	170	77	92.09	-11.38
5	4820	50.78 PK	74	-23.22	131	283	56.85	-6.07
6	4820	43.89 AV	54	-10.11	131	283	49.96	-6.07
7	7230	54.33 PK	74	-19.67	168	321	54.04	0.29
8	7230	47.44 AV	54	-6.56	168	321	47.15	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.

Band edge Plot



CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	*2445	92.76 PK	114	-21.24	138	274	104.14	-11.38
2	*2445	85.87 AV	94	-8.13	138	274	97.25	-11.38
3	4890	55.32 PK	74	-18.68	156	272	61.39	-6.07
4	4890	48.43 AV	54	-5.57	156	272	54.5	-6.07
5	7335	54.99 PK	74	-19.01	152	28	54.7	0.29
6	7335	48.1 AV	54	-5.9	152	28	47.81	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	*2445	88.92 PK	114	-25.08	143	151	100.3	-11.38
2	*2445	82.03 AV	94	-11.97	143	151	93.41	-11.38
3	4890	52 PK	74	-22	143	11	58.07	-6.07
4	4890	45.11 AV	54	-8.89	143	11	51.18	-6.07
5	7335	53.76 PK	74	-20.24	136	318	53.47	0.29
6	7335	46.87 AV	54	-7.13	136	318	46.58	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.

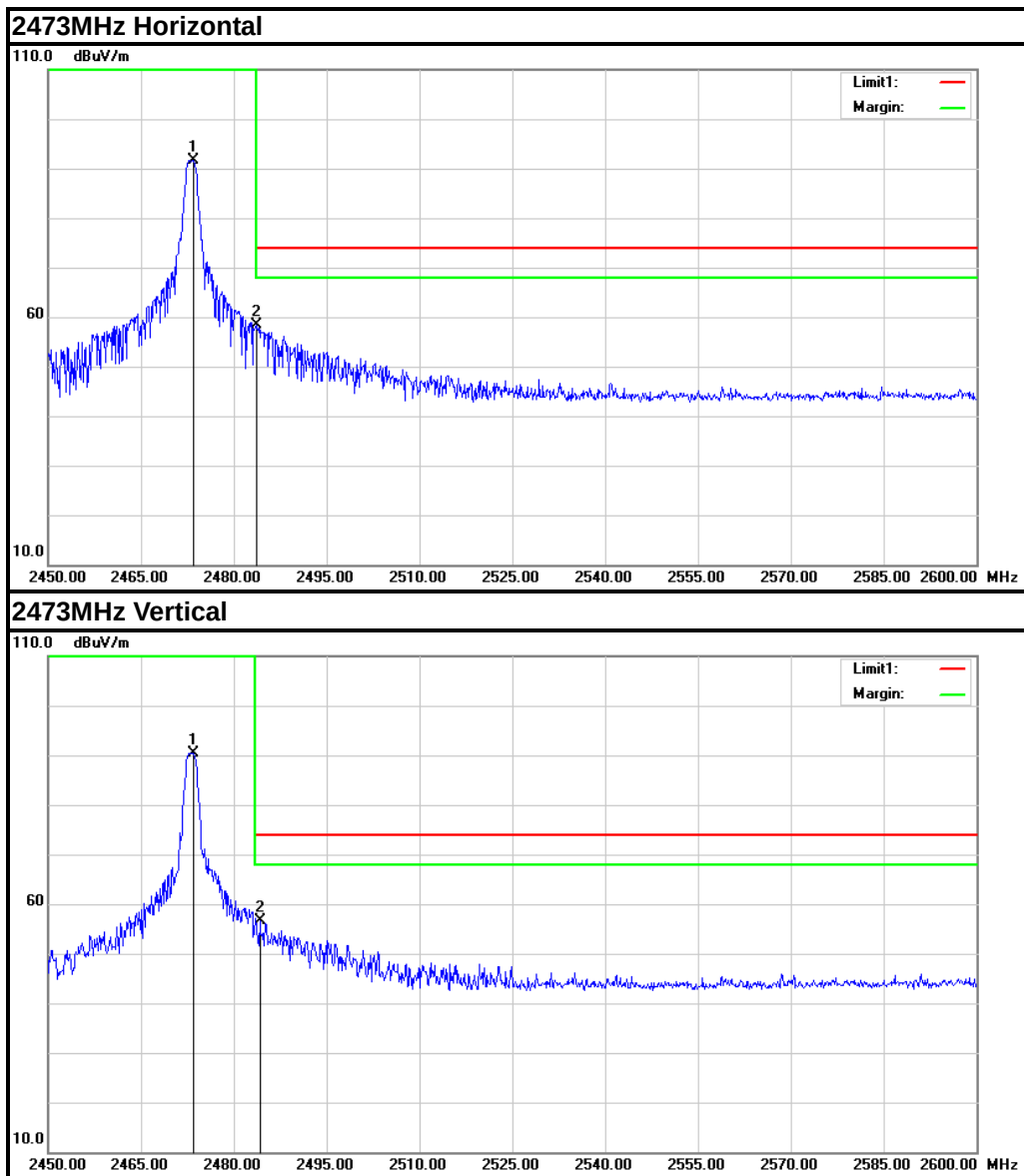
CHANNEL	TX High Channel	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2483.5	58.34 PK	74	-15.66	144	283	69.72	-11.38
2	2483.5	51.45 AV	54	-2.55	144	283	62.83	-11.38
3	*2473	91.7 PK	114	-22.3	166	271	103.08	-11.38
4	*2473	84.81 AV	94	-9.19	166	271	96.19	-11.38
5	4946	58.22 PK	74	-15.78	167	358	64.29	-6.07
6	4946	51.33 AV	54	-2.67	167	358	57.4	-6.07
7	7419	53.47 PK	74	-20.53	139	329	53.18	0.29
8	7419	46.58 AV	54	-7.42	139	329	46.29	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	2484.2	56.66 PK	74	-17.34	157	58	68.04	-11.38
2	2484.2	49.77 AV	54	-4.23	157	58	61.15	-11.38
3	*2473	90.49 PK	114	-23.51	131	58	101.87	-11.38
4	*2473	83.6 AV	94	-10.4	131	58	94.98	-11.38
5	4946	51.18 PK	74	-22.82	162	99	57.25	-6.07
6	4946	44.29 AV	54	-9.71	162	99	50.36	-6.07
7	7419	55.37 PK	74	-18.63	161	95	55.08	0.29
8	7419	48.48 AV	54	-5.52	161	95	48.19	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.

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.
Wireless Connectivity Tester	R&S	CMW270	1201.0002K75	Dec. 26, 21
MXA VEXTOR SIGNAL	Agilent	n5182a	MY50140530	Mar. 24, 21
MXA signal analyzer	Agilent	n9020a	MY49100060	Mar. 24, 21
RF Control Unit	Tonscend	JS0806-2	188060112	Mar. 24, 21
Signal Generation	Agilent	E4421B	US40051152	Dec. 17, 21
DC Power Supply	Agilent	E3640A	MY40004013	Mar. 30, 21
Programmable Temperature & Humidity Chamber	Hongjin	HYC-TH-225 DH	DG-180746	Mar. 24, 21
Test System	Tonscend	JS 1120-3	N/A	N/A
Power Splitter	Weinschel	1580-1	TL177	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.

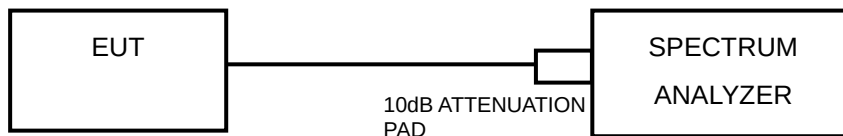
4.2.3 TEST PROCEDURE

- 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



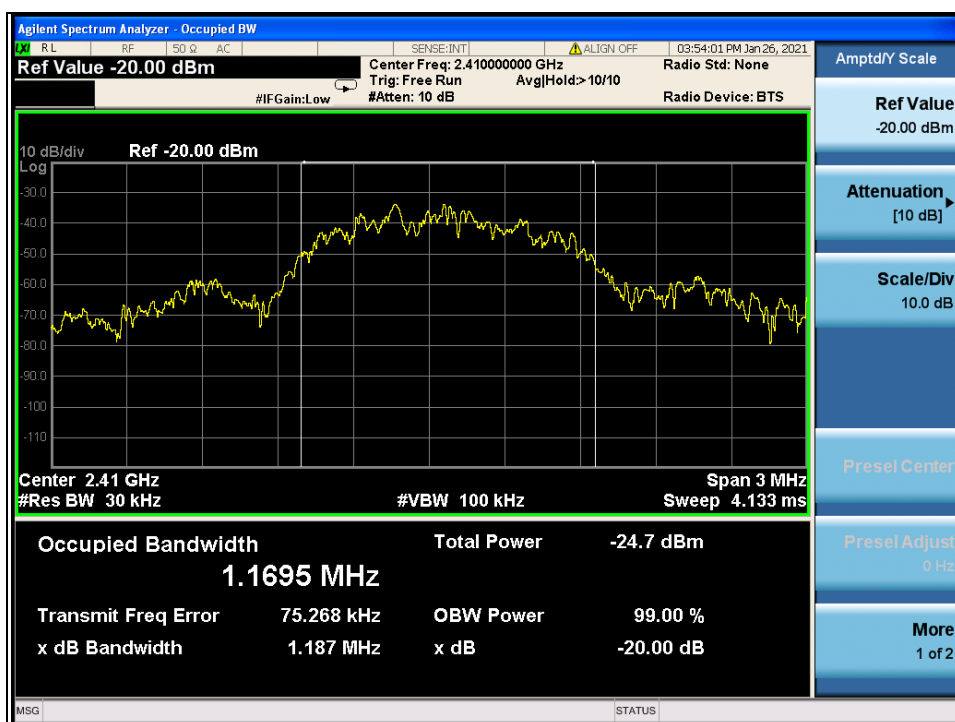
4.2.6 EUT OPERATING CONDITIONS

- 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.

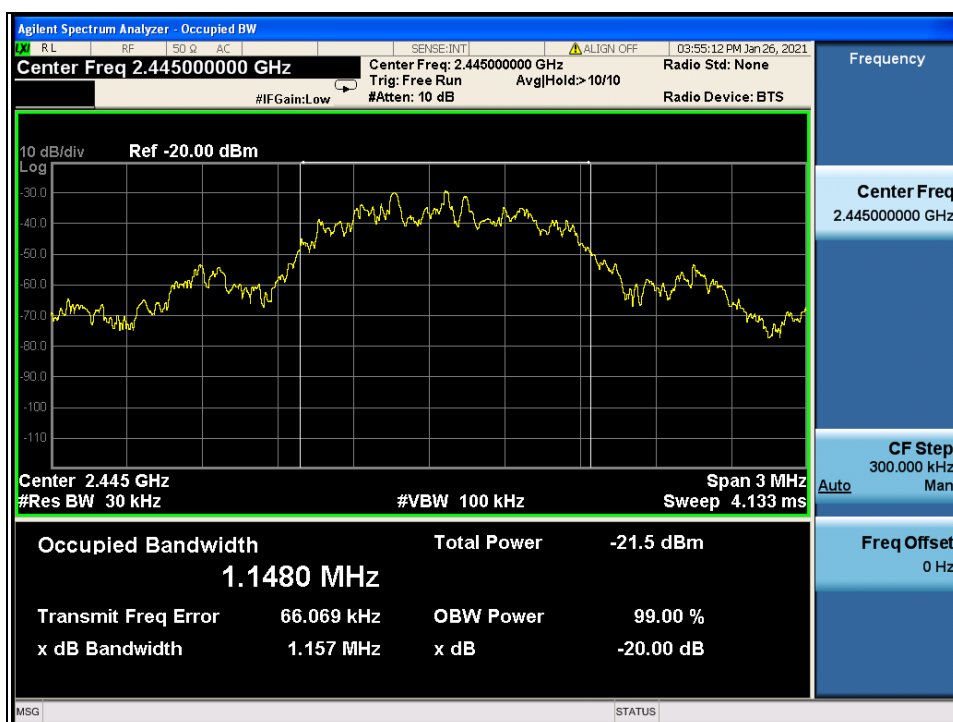
4.2.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2410	1.187
Middle	2445	1.157
High	2473	1.196

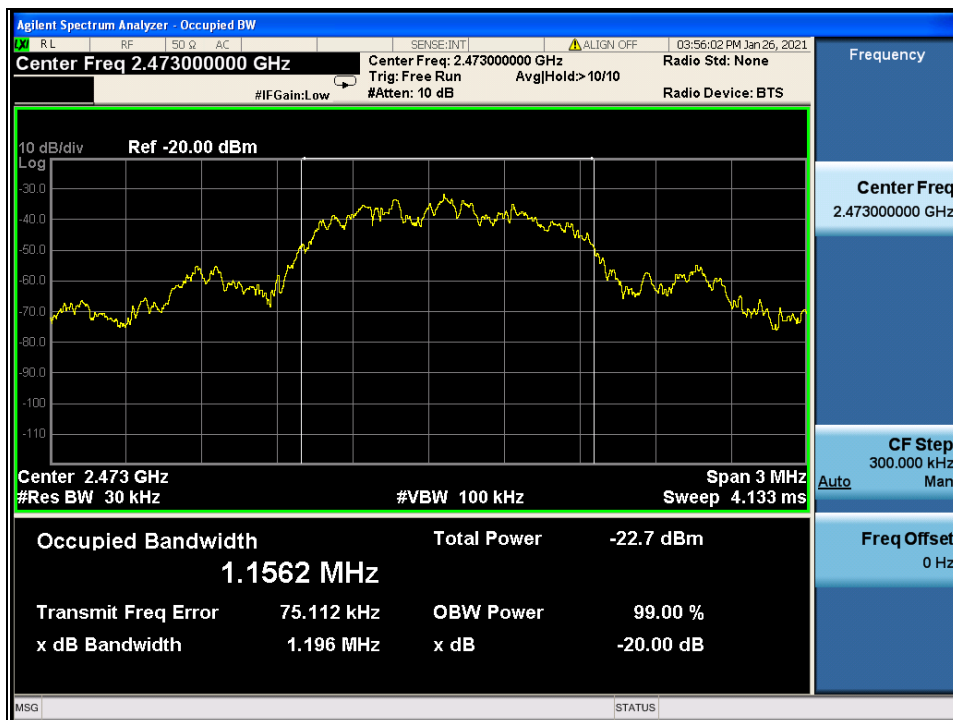
Test Data: Low channel



Test Data: Middle channel



Test Data: High channel



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---