

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Guoguang Electric Co.,Ltd
Address	:	No. 8 Jinghu Rd, Xinya Street, Huadu Region, Guangzhou P. R. China 510800
Equipment under Test	:	ACTIVE WIRELESS SPEAKER
Model No.	:	VIFA013
Trade Mark	:	
FCC ID	:	2AAP8-VIFA013
Manufacturer	:	Vifa Denmark A/S
Address	:	Smedeland 7, Smedeland, 2600, Glostrup, Denmark

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park,
Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, **E-mail:** ddt@dgddt.com, <http://www.dgddt.com>

REPORT

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Test Report Declare

Applicant	:	Guoguang Electric Co.,Ltd
Address	:	No. 8 Jinghu Rd, Xinya Street, Huadu Region, Guangzhou P. R. China 510800
Equipment under Test	:	ACTIVE WIRELESS SPEAKER
Model No	:	VIFA013
Trade Mark	:	vifa
Manufacturer	:	Vifa Denmark A/S
Address	:	Smedeland 7, Smedeland, 2600, Glostrup, Denmark

Test Standard Used: FCC Rules and Regulations Part 15 Subpart C

Test procedure used: ANSI C63.10:2013, 558074 D01 15.247 Meas Guidance v05r02

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-R22072104-2E03		
Date of Receipt:	Jul. 25, 2022	Date of Test:	Jul. 25, 2022~ Dec. 14, 2022

Prepared By:

Bobo Chen

Bobo Chen/Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Dec. 14, 2022	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	Standard	Results
6dB Bandwidth	FCC Part 15: 15.247 ANSI C63.10:2013	Pass
Conducted Output Power	FCC Part 15: 15.247 ANSI C63.10:2013	Pass
Power Spectral Density	FCC Part 15:15.247 ANSI C63.10:2013	Pass
Band-edge and Spurious Emissions (Conducted)	FCC Part 15: 15.209 FCC Part 15: 15.247 ANSI C63.10: 2013	Pass
Radiated Spurious Emissions	FCC Part 15: 15.247 ANSI C63.10:2013	Pass
Radiated Band Edge Compliance	FCC Part 15: 15.205 FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10:2013	Pass
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10: 2013	Pass
Antenna requirement	FCC Part 15: 15.203	Pass

2. General Test Information

2.1. Description of EUT

EUT* Name	: ACTIVE WIRELESS SPEAKER
Model Number	: VIFA013
EUT function description	: Please reference user manual of this device
Power supply	: AC 100-240V-50/60Hz 150W : DC 7.2V Polymer Li-ion built-in battery
Radio Technology	: IEEE 802.11b/g/n
Operation frequency	: IEEE 802.11b: 2412MHz-2462MHz : IEEE 802.11g: 2412MHz-2462MHz : IEEE 802.11n HT20: 2412MHz-2462MHz
Modulation	: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) : IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) : IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	: IEEE 802.11b: up to 11 Mbps : IEEE 802.11g: up to 54 Mbps : IEEE 802.11n HT20: up to 72.2 Mbps
Antenna Type	: FPC antenna, maximum PK gain: 4.3 dBi
Sample Type	: Series production
Sample Number	: S22072104-12 for conductive : S22072104-13 for radiation

Note: EUT is the ab. of equipment under test.

Channel information					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447	/	/

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Other
AC cable	Vifa	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
N/A	N/A	N/A	N/A	N/A

2.4. Block diagram of EUT configuration for test



The test software was used to control EUT work in Continuous Tx mode and select test channel, wireless mode as below table.

Test software: adb.exe

The pathloss of external cable: 0.5dB (According to the manufacturer's claims)

Tested mode, channel, and data rate information				
Mode	Setting Tx Power	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
IEEE 802.11b	58	1	LCH: CH1	2412
	58	1	MCH: CH6	2437
	58	1	HCH: CH11	2462
IEEE 802.11g	58	6	LCH: CH1	2412
	58	6	MCH: CH6	2437
	58	6	HCH: CH11	2462
IEEE 802.11n HT20	58	MCS 0	LCH: CH1	2412
	58	MCS 0	MCH: CH6	2437
	58	MCS 0	HCH: CH11	2462

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

2.5. Deviations of test standard

No Deviation

2.6. Test environment conditions

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

Temperature range:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2.8. Measurement uncertainty

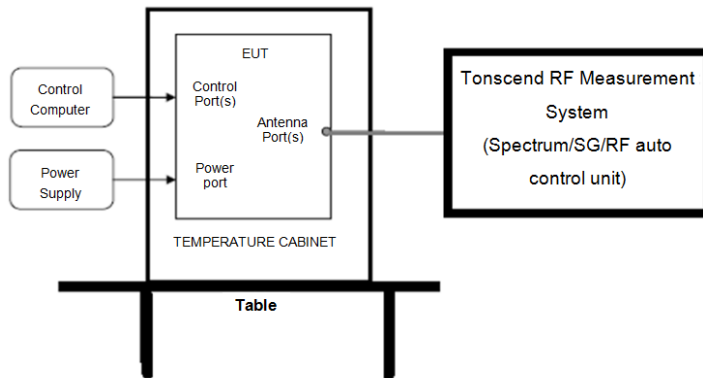
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz $\leq$ f < 3.6 GHz); 1.38 dB (3.6 GHz $\leq$ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz $\leq$ f < 3.6 GHz); 1.38 dB (3.6 GHz $\leq$ f < 8 GHz)
Frequencies Stability	6.7×10^{-8} (Antenna couple method) 5.5×10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz $\leq$ f < 3.6 GHz); 1.40 dB (3.6 GHz $\leq$ f < 8 GHz) 1.66 dB (8 GHz $\leq$ f < 22 GHz)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V) 4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz) 4.40 dB (6 GHz - 18 GHz) 3.54 dB (18 GHz - 26 GHz) 4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz) 3.72dB (9KHz-150KHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑RF Connected Test (Tonscend RF Measurement System 3#)					
MXA Signal Analyzer	Agilent	N9020A	MY49100362	Aug. 26, 2022	1 Year
SPECTRUM ANALYZER	R&S	FSV40	101407	Jul. 21, 2022	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	May 18, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY19060405	May 18, 2022	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180912	May 18, 2022	1 Year
RF Control Unit	Tonsend	JS0806-2	DDT-ZC01449	May 18, 2022	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	May 26, 2022	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.77.0518	N/A	N/A
☑Radiation 3#chamber					
EMI Test Receiver	R&S	ESU	100472	May 18, 2022	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	May 18, 2022	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 19, 2021	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Jul. 22, 2022	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA 9120 D	02468	Nov. 29, 2021	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 06, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-118A	18040084	Aug. 27, 2022	1 Year
Pre-amplifier	COM-POWER	PAM-840A	461369	Apr. 11, 2022	1 Year
Test software	Audix	E3	V 6.1.1.1	N/A	N/A
☑Power Line Conducted Emissions Test 1#					
Test Receiver	R&S	ESCI	100551	Sep. 02, 2021	1 Year
LISN 1	R&S	ENV216	101109	Sep. 07, 2021	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 07, 2021	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 02, 2021	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 02, 2021	1 Year
LISN 3	SCHWARZBECK	NSLK 8163	00017	Sep. 02, 2021	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 6dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz

4.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) 99% Bandwidth set the spectrum analyzer as follows:

RBW:	300 kHz
VBW:	1 MHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) 6dB Bandwidth set the spectrum analyzer as follows:

RBW:	100 kHz
VBW:	300 kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

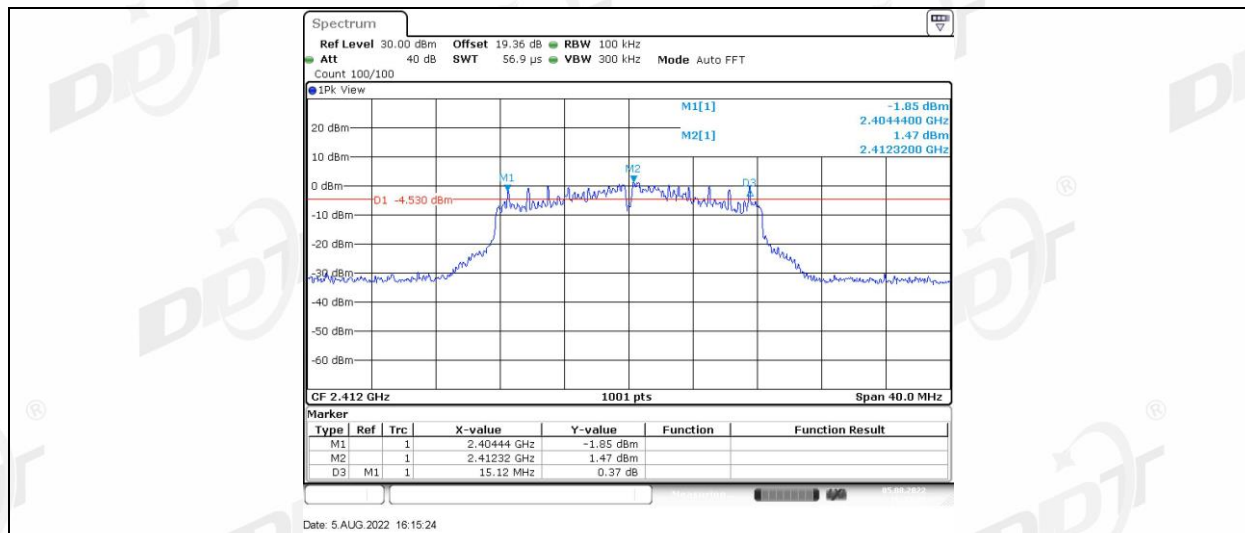
(4) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

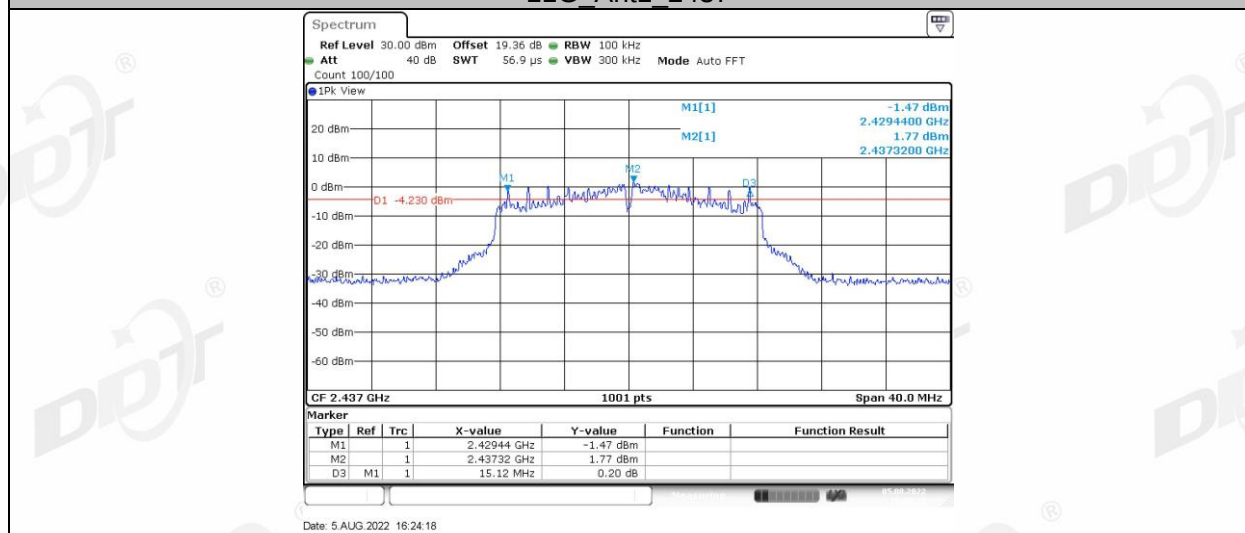
Test Mode	Test Channel (MHz)	Ant.	6dB Bandwidth (MHz)	Limit (MHz)	Verdict
11B	2412	Ant1	7.60	0.5	Pass
11B	2437	Ant1	7.32	0.5	Pass
11B	2462	Ant1	7.16	0.5	Pass
11G	2412	Ant1	15.12	0.5	Pass
11G	2437	Ant1	15.12	0.5	Pass
11G	2462	Ant1	15.12	0.5	Pass
11N20SISO	2412	Ant1	15.36	0.5	Pass
11N20SISO	2437	Ant1	15.16	0.5	Pass
11N20SISO	2462	Ant1	15.12	0.5	Pass

4.5. Original test data

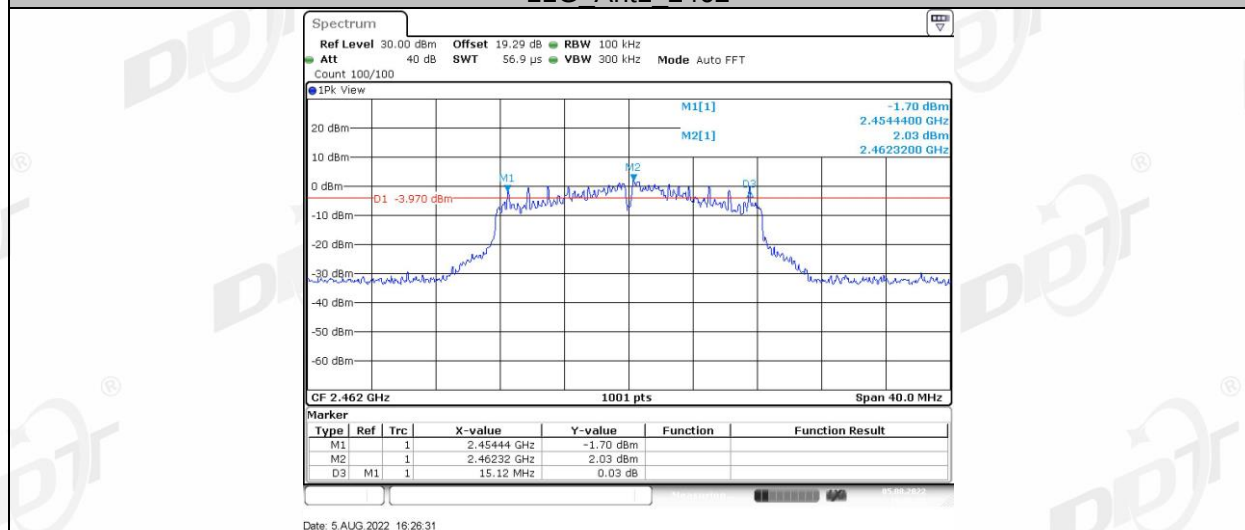




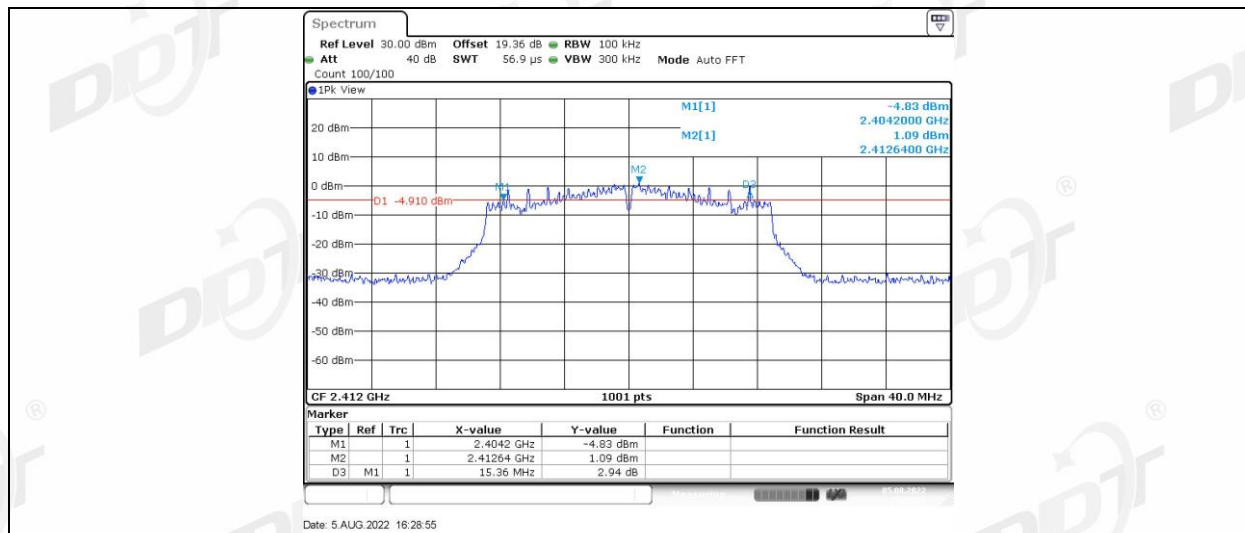
11G Ant1_2437



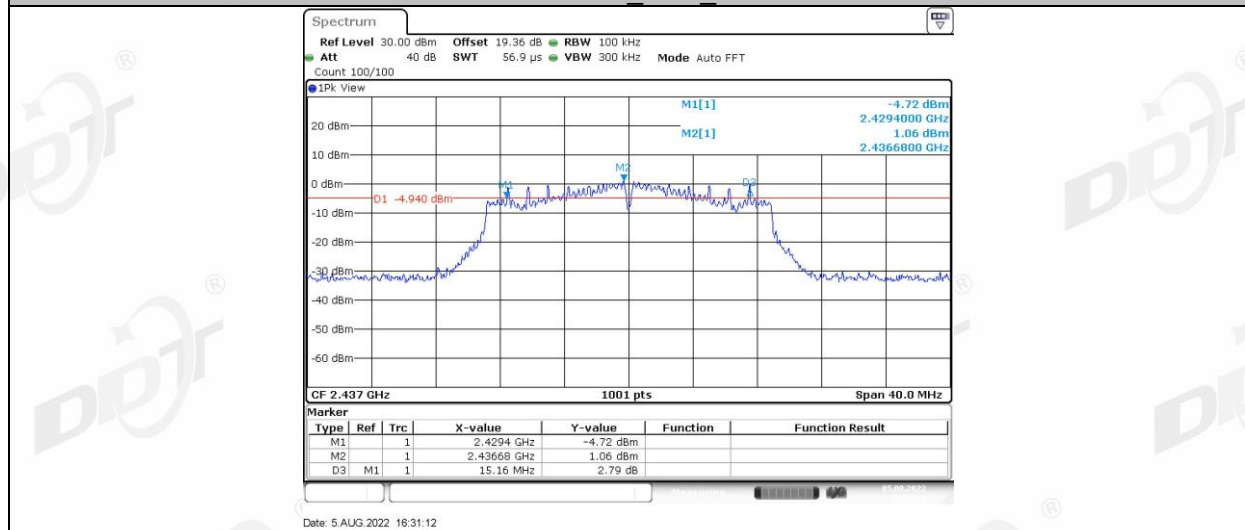
11G Ant1_2462



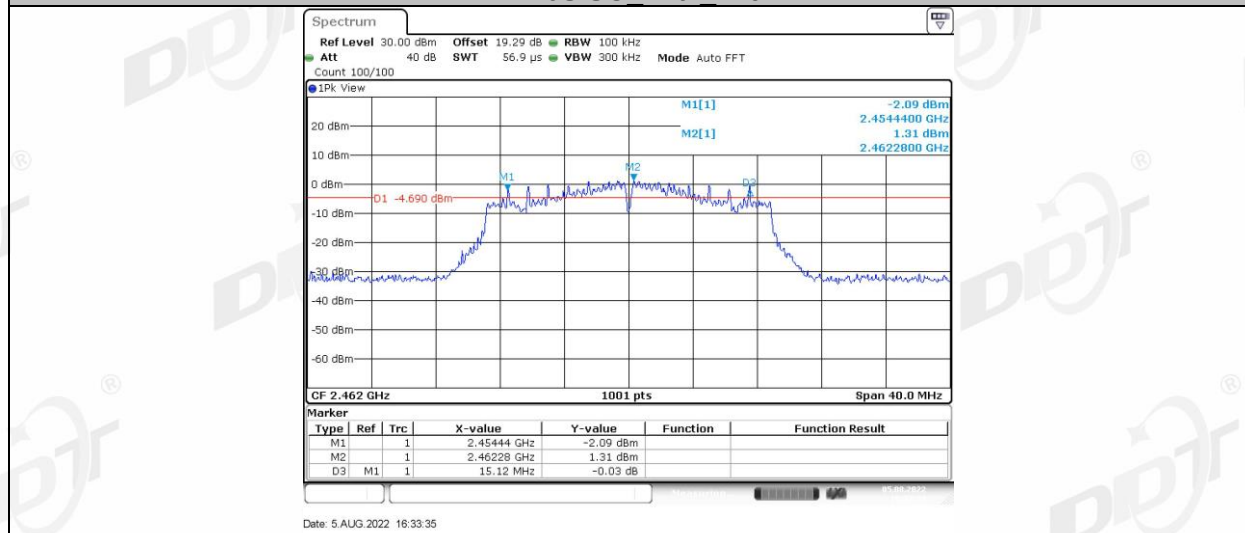
11N20SISO Ant1_2412



11N20SISO Ant1_2437



11N20SISO Ant1_2462



5. Conducted Output Power

5.1. Block diagram of test setup

Same as section 4.1

5.2. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.9.2.3.
- (2) Connect EUT's antenna output to RF power meter by RF cable, the path loss was compensated to the results.
- (3) Set the EUT as maximum power setting and enable the EUT transmit continuously, If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal.
- (4) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
- (5) Adjust the measurement in dBm by adding $[10 \log (1 / D)]$, where D is the duty cycle.
- (6) Record the RF average power of each antenna port.

5.4. Test result

Test Mode	Test Channel (MHz)	Ant.	Channel Power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Conducted Output Power (dBm)	Limit (dBm)	EIRP (dBm)	Limit (dBm)	Verdict
11B	2412	Ant1	11.79	97.56	0.11	11.90	30	16.20	36	Pass
11B	2437	Ant1	11.82	97.58	0.11	11.93	30	16.23	36	Pass
11B	2462	Ant1	11.95	98.37	0.07	12.02	30	16.32	36	Pass
11G	2412	Ant1	10.99	89.29	0.49	11.48	30	15.78	36	Pass
11G	2437	Ant1	11.24	89.29	0.49	11.73	30	16.03	36	Pass
11G	2462	Ant1	11.29	88.89	0.51	11.80	30	16.10	36	Pass
11N20SISO	2412	Ant1	10.30	88.46	0.53	10.83	30	15.13	36	Pass
11N20SISO	2437	Ant1	10.26	88.46	0.53	10.79	30	15.09	36	Pass
11N20SISO	2462	Ant1	10.46	88.46	0.53	10.99	30	15.29	36	Pass

Note: EIRP (dBm)=Conducted Output Power (dBm)+ Antenna Gain (dBi)

6. Power Spectral Density

6.1. Block diagram of test setup

Same as section 4.1

6.2. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

6.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

Center frequency	DTS Channel center frequency
RBW:	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW:	$\geq 3\text{RBW}$
Span	1.5 times the DTS bandwidth
Detector Mode:	RMS
Sweep time:	auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.

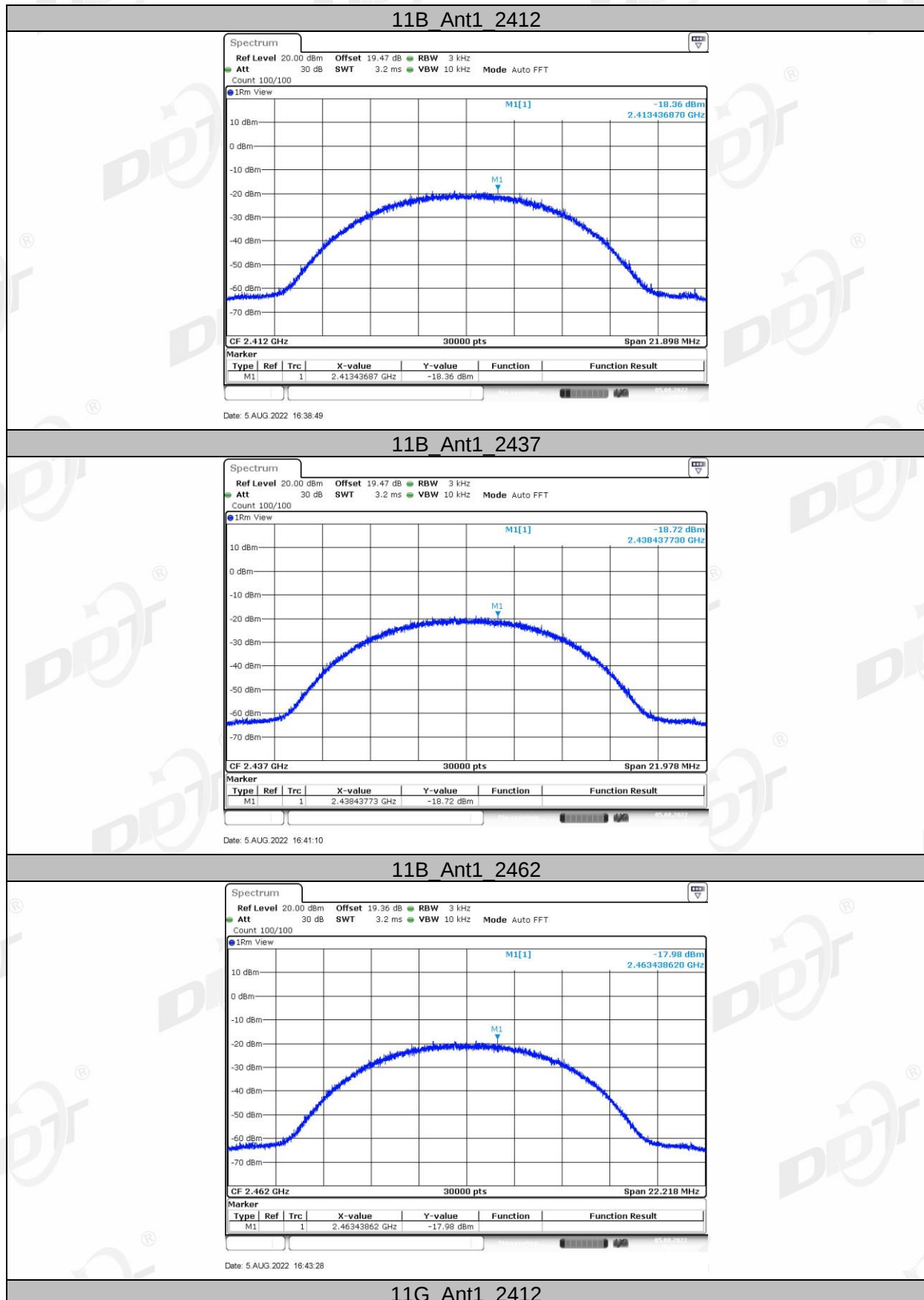
(4) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

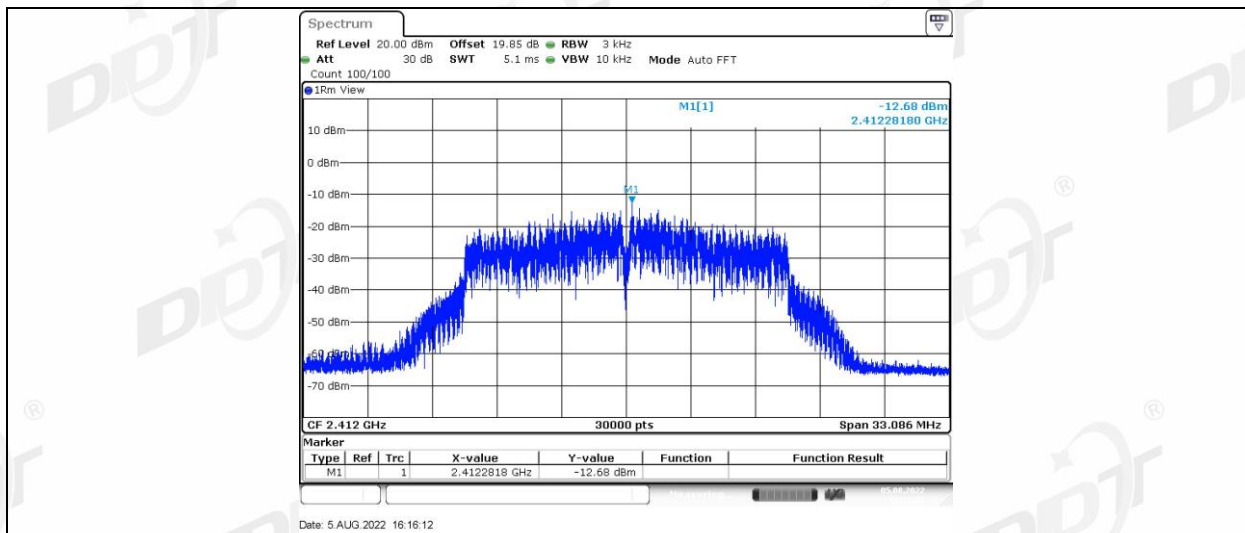
6.4. Test result

Test Mode	Test Channel (MHz)	Ant.	Duty Cycle [%]	DC Factor [dBm]	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
11B	2412	Ant1	97.56	0.11	-18.36	8.00	Pass
11B	2437	Ant1	97.58	0.11	-18.72	8.00	Pass
11B	2462	Ant1	98.37	0.07	-17.98	8.00	Pass
11G	2412	Ant1	89.29	0.49	-12.68	8.00	Pass
11G	2437	Ant1	89.29	0.49	-12.58	8.00	Pass
11G	2462	Ant1	88.89	0.51	-12.27	8.00	Pass
11N20SISO	2412	Ant1	88.46	0.53	-17.58	8.00	Pass
11N20SISO	2437	Ant1	88.46	0.53	-17.81	8.00	Pass
11N20SISO	2462	Ant1	88.46	0.53	-16.93	8.00	Pass

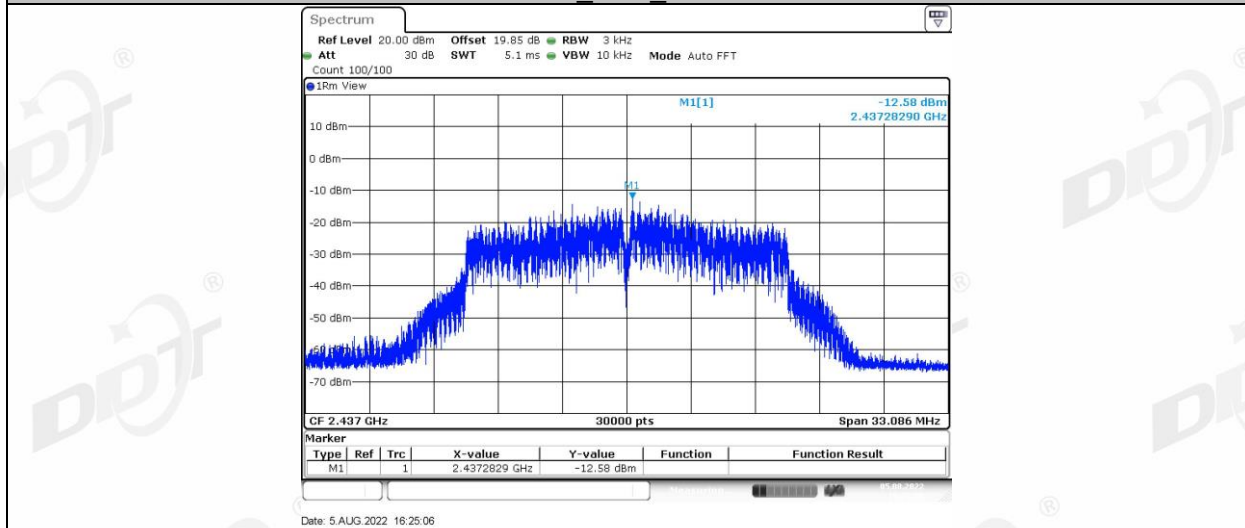
Note: The Duty Cycle Factor and RBW Factor is compensated in the graph.

6.5. Original test data

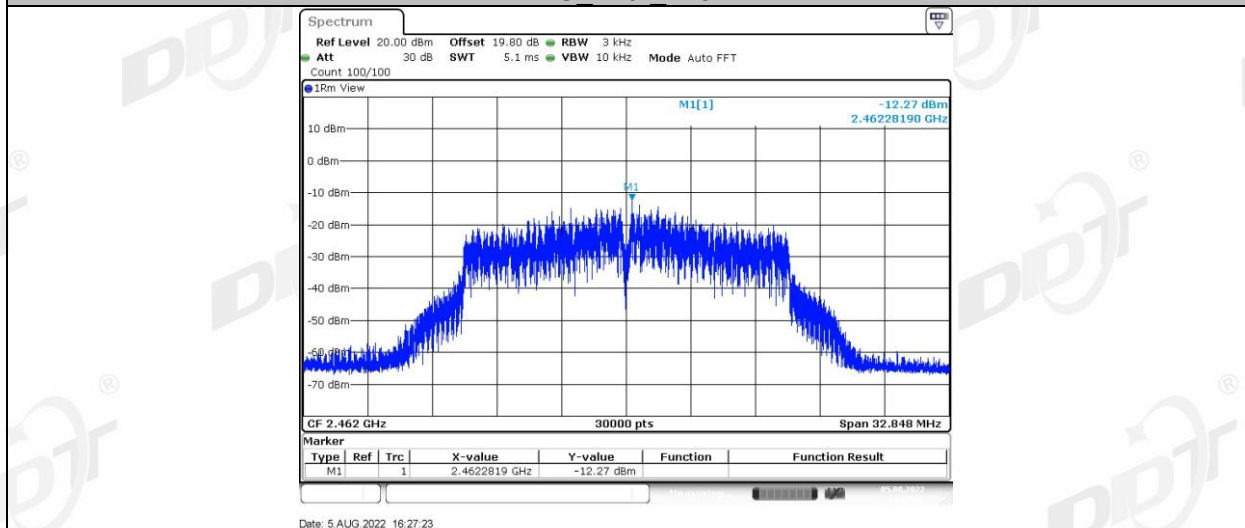




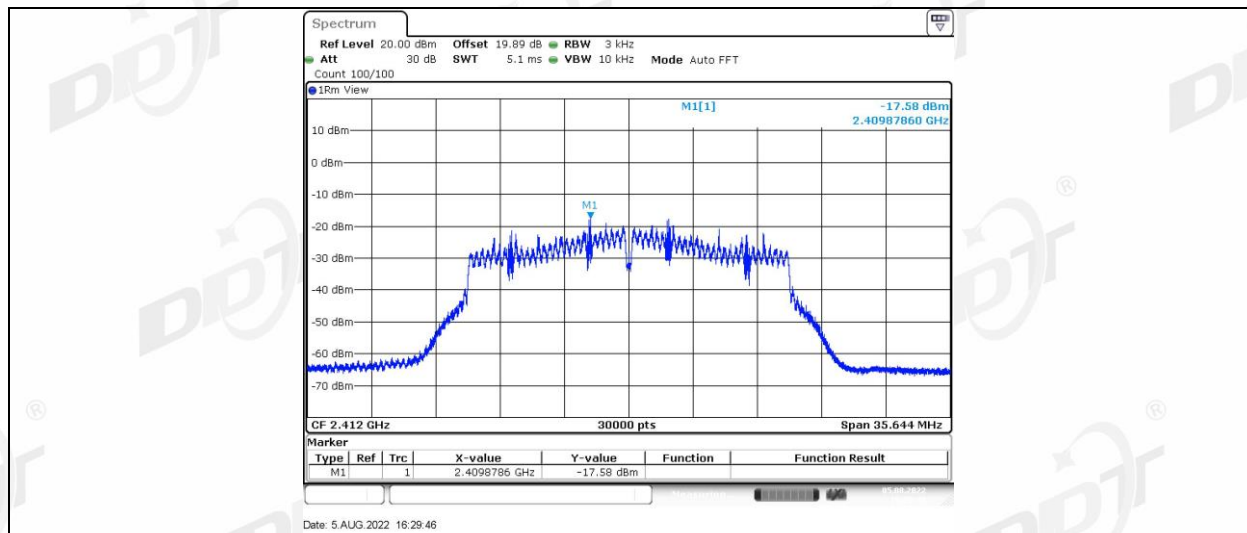
11G Ant1_2437



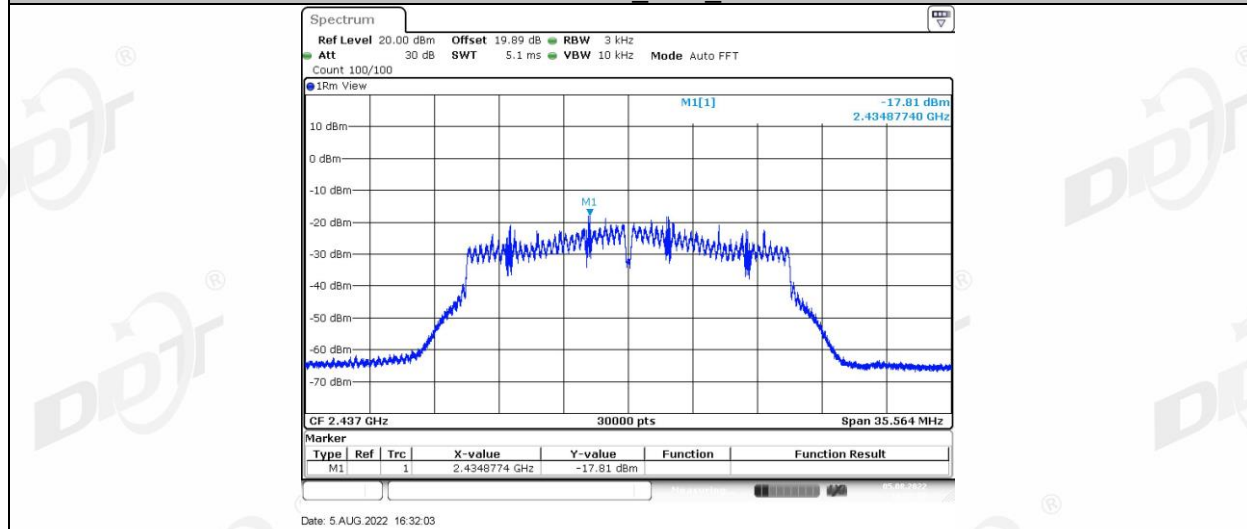
11G Ant1_2462



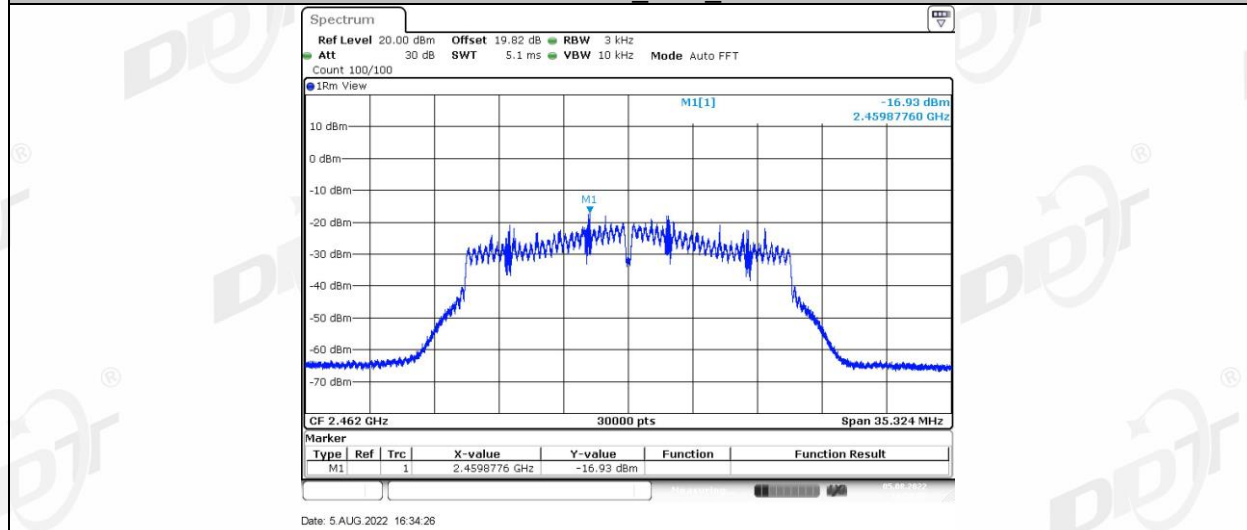
11N20SISO Ant1_2412



11N20SISO Ant1 2437



11N20SISO Ant1 2462



7. Band Edge Compliance (Conducted Method)

7.1. Block diagram of test setup

Same as section 4.1

7.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

7.3. Test procedure

- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) Establish a reference level by using the following procedure:

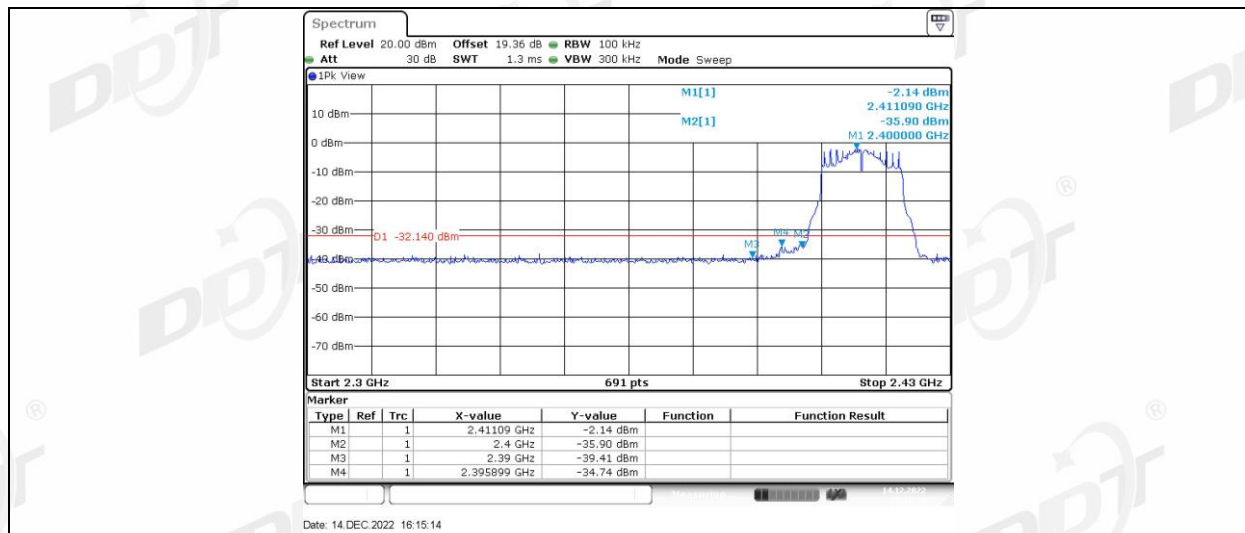
RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold
- (3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
- (4) Then mark the maximum amplitude of all unwanted emissions outside of the authorized frequency band.

7.4. Test result

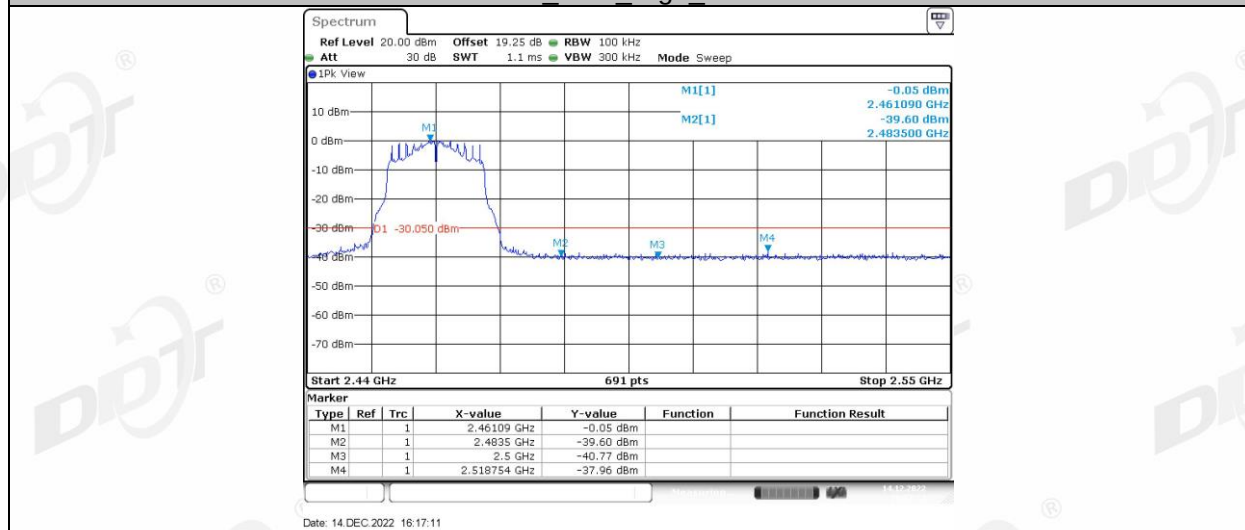
EUT Set Mode	CH or Frequency	Result (dBm)	EUT Set Mode	CH or Frequency	Result Result (dBm)
11b	CH1	Pass	11g	CH1	Pass
	CH6	Pass		CH6	Pass
	CH11	Pass		CH11	Pass
11n HT 20	CH1	Pass	/	/	/
	CH6	Pass		/	/
	CH11	Pass		/	/

7.5. Original test data

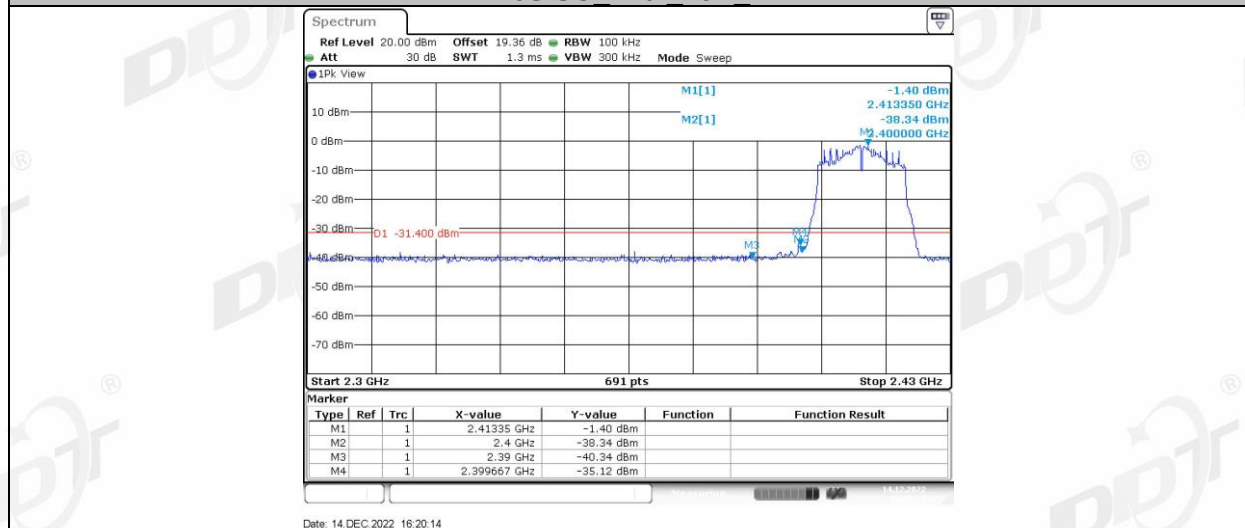




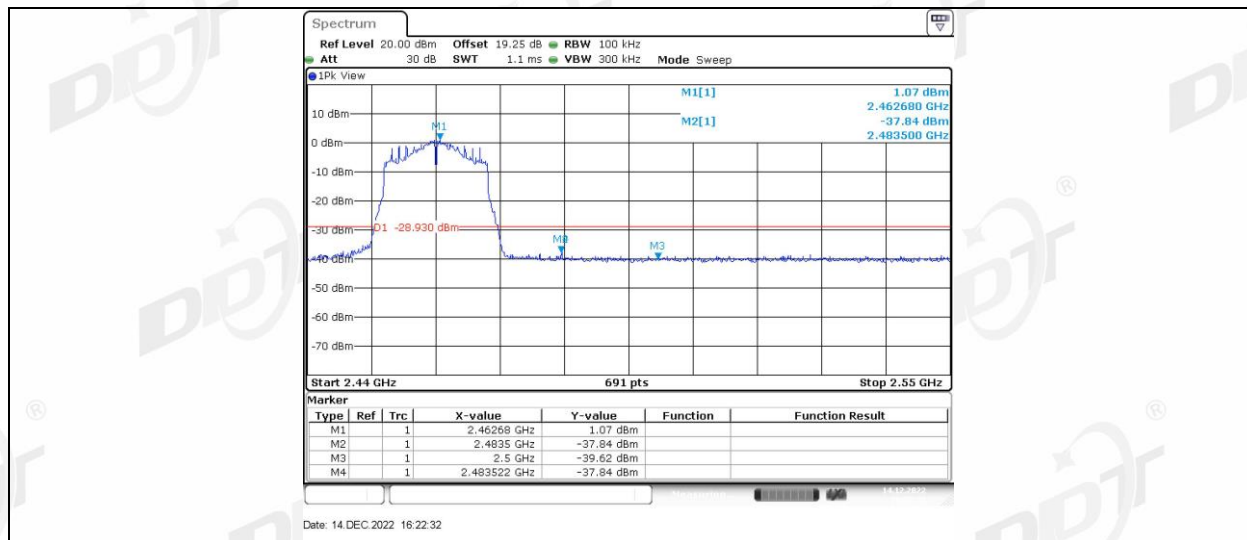
11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412



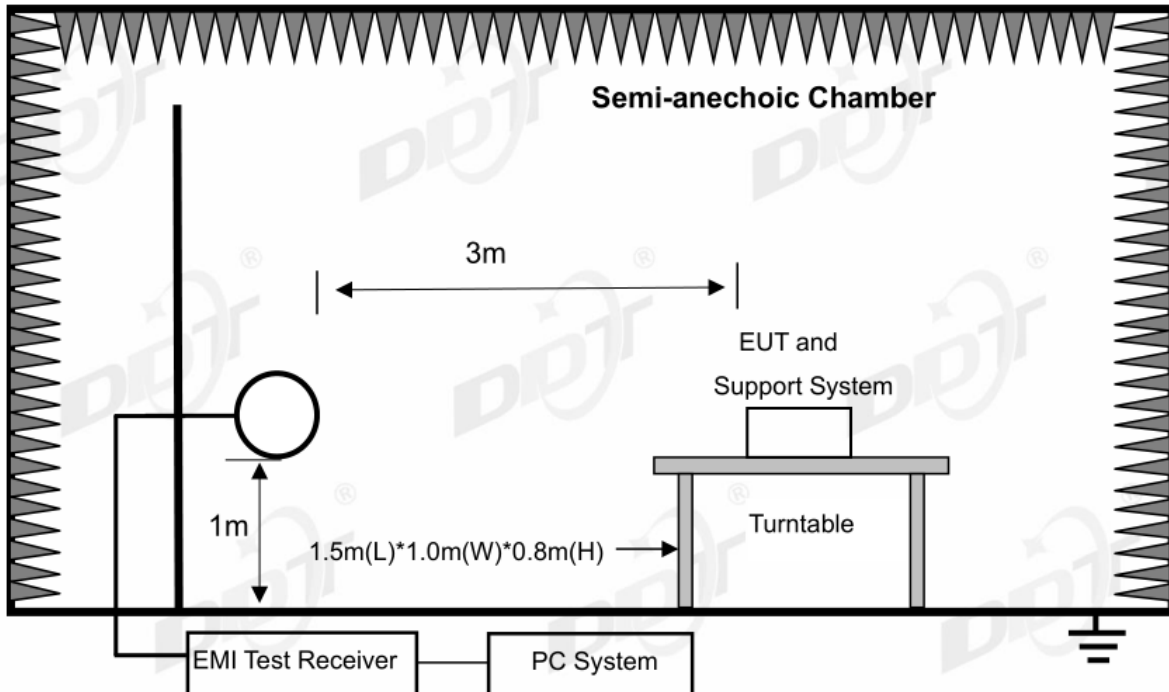
11N20SISO_Ant1_High_2462



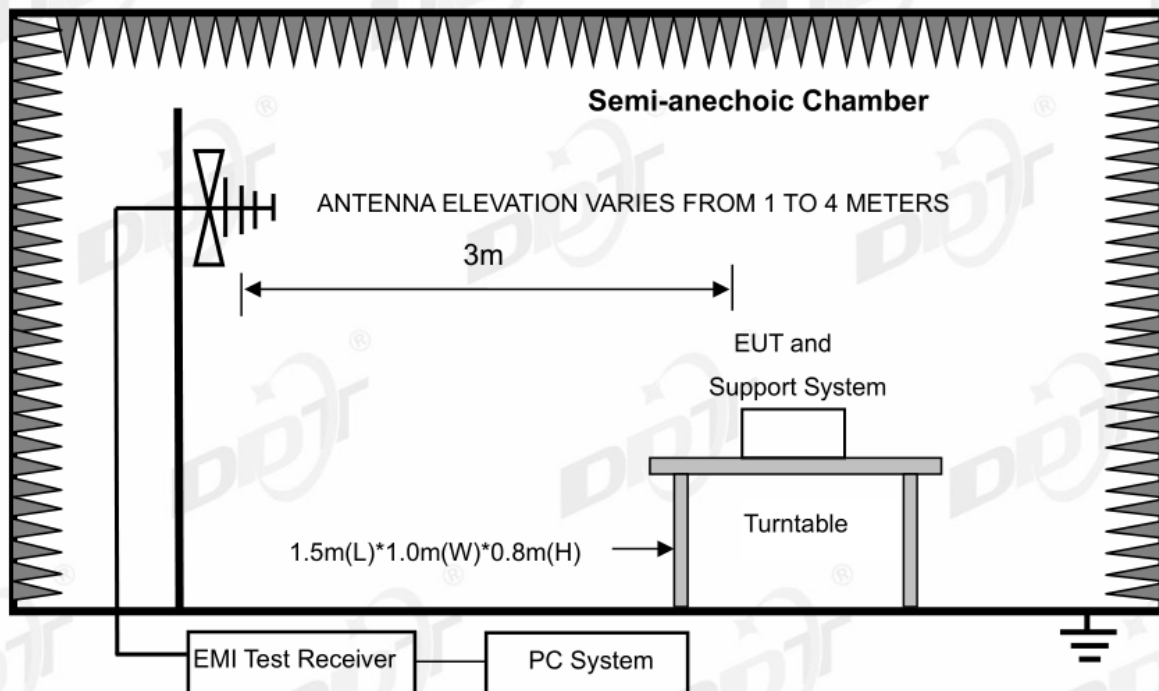
8. Radiated Spurious Emissions

8.1. Block diagram of test setup

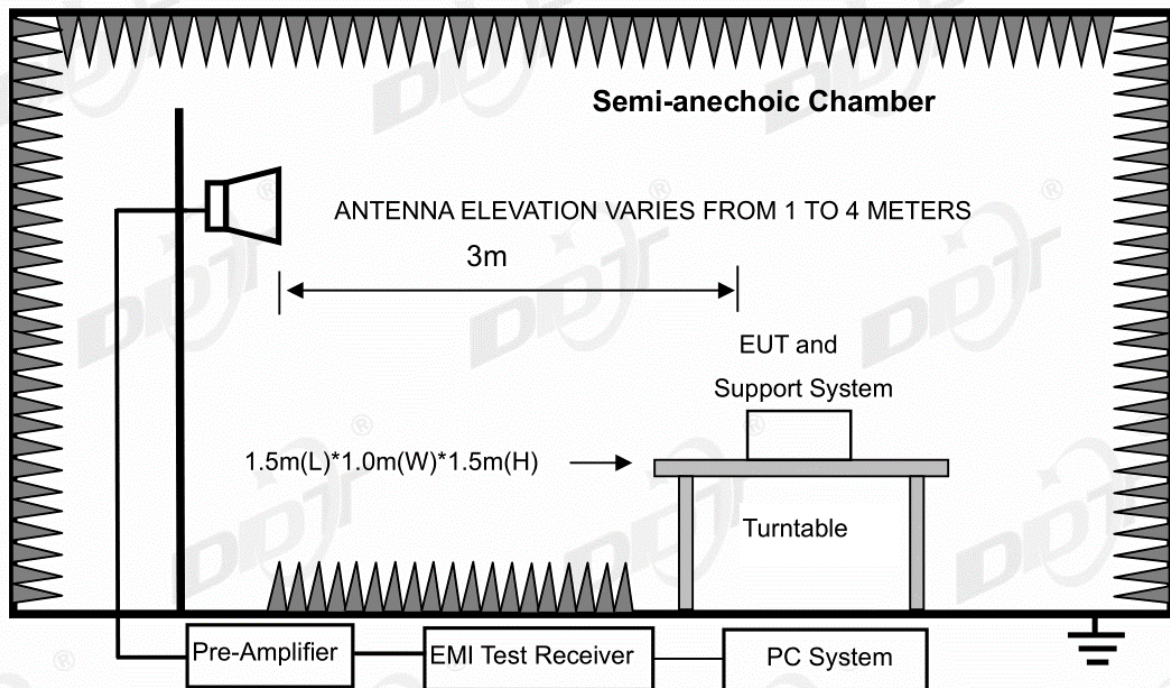
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

8.2. Limit

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6

(2) FCC 15.209 Limit & RSS-Gen section 8.9 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30 MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dB}\mu\text{V}/\text{m}) = \text{Limit}_{30\text{m}}(\text{dB}\mu\text{V}/\text{m}) + 40\text{Log}(30\text{m}/3\text{m})$$

(3) Limit for this EUT

The emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20 dB below the fundamental emissions or comply with 15.209 limits.

8.3. Test procedure

(1) EUT height should be 0.8 m for below 1 GHz at a semi-anechoic chamber while EUT height should be 1.5 m for above 1 GHz at full chamber or semi-anechoic chamber ground with absorbers.

(2) The antenna used as below table.

Test frequency range	Test antenna used	Measuring distance
9 kHz-30 MHz	Active Loop antenna	3 m
30 MHz-1 GHz	Trilog Broadband Antenna	3 m
1 GHz-18 GHz	Double Ridged Horn Antenna(1GHz-18GHz)	3 m
18 GHz-40 GHz	Horn Antenna(18GHz-40GHz)	1 m

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also

be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30 MHz, the Trilog Broadband Antenna or Horn Antenna was located 3 m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 25 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 18GHz to 25GHz, so below final test was performed with frequency range from 9kHz to 18GHz.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

(5) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9-90 kHz, 110-490 kHz, for emissions from 9 kHz-90 kHz, 110 kHz-490 kHz and above 1 GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW

Frequency band	RBW
9 kHz-150 kHz	200 Hz
150 kHz-30 MHz	9 kHz
30 MHz-1 GHz	120 kHz

(7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; RMS detector RBW 1 MHz VBW 10 Hz for Average measure (according ANSI C63.10:2013 clause 4.2.3.2.3 procedure for average measure).

8.4. Test result

Pass. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 limits.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: 30 MHz ~ 25 GHz: (Scan with all mode, the worst case is 802.11b mode)

Note3: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in 802.11b mode.

Note4: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit. And the BT+2.4GWIFI is the worst simultaneous case and reported.

Radiated Emission test (below 1GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
BELOW 1G.EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

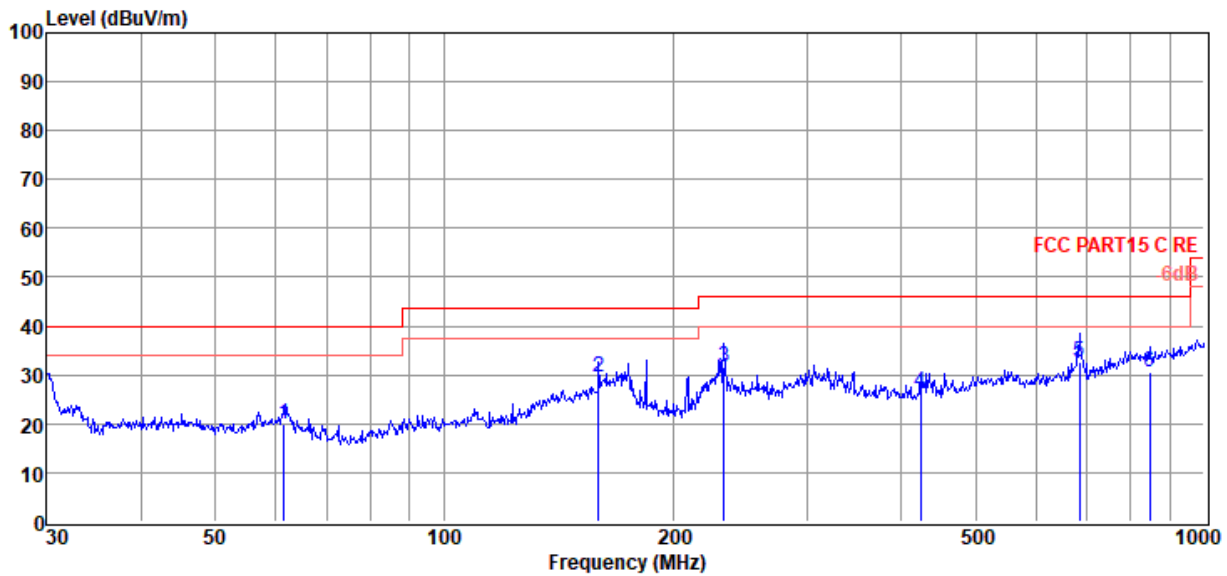
Model Number : VIFA013

Power Supply : AC 120V/60Hz

Test Mode : Tx mode

Condition : Temp:23.2°C,Humi:57.1%,Press:100.3kPa Antenna/Distance : 2022 9161 #3/3m/HORIZONTAL

Memo :

Data:
5

Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	61.56	4.28	11.73	3.76	19.77	40.00	-20.23	QP	HORIZONTAL
2	159.78	6.35	18.86	4.30	29.51	43.50	-13.99	QP	HORIZONTAL
3	233.35	15.36	11.57	4.59	31.52	46.00	-14.48	QP	HORIZONTAL
4	423.54	4.82	16.34	5.23	26.39	46.00	-19.61	QP	HORIZONTAL
5	684.75	6.47	20.10	5.95	32.52	46.00	-13.48	QP	HORIZONTAL
6	848.06	2.18	22.24	6.34	30.76	46.00	-15.24	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
BELOW 1G.EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

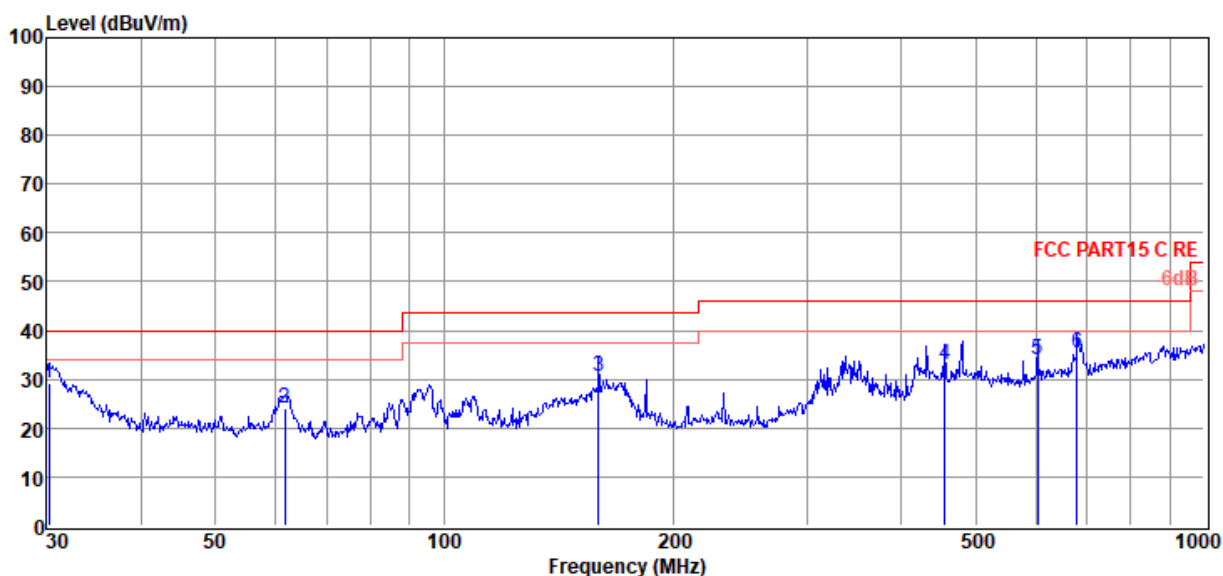
Test Mode : Tx mode

Condition : Temp:23.2°C,Humi:57.1%,Press:100.3kPa

Antenna/Distance : 2022 9161 #3/3m/VERTICAL

Memo :

Data:
6



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	30.21	14.70	10.84	3.55	29.09	40.00	-10.91	QP	VERTICAL
2	61.78	8.48	11.67	3.76	23.91	40.00	-16.09	QP	VERTICAL
3	159.78	7.58	18.86	4.30	30.74	43.50	-12.76	QP	VERTICAL
4	455.91	10.70	17.12	5.34	33.16	46.00	-12.84	QP	VERTICAL
5	603.54	9.17	19.17	5.75	34.09	46.00	-11.91	QP	VERTICAL
6	679.96	9.48	20.10	5.94	35.52	46.00	-10.48	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission test (above 1GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

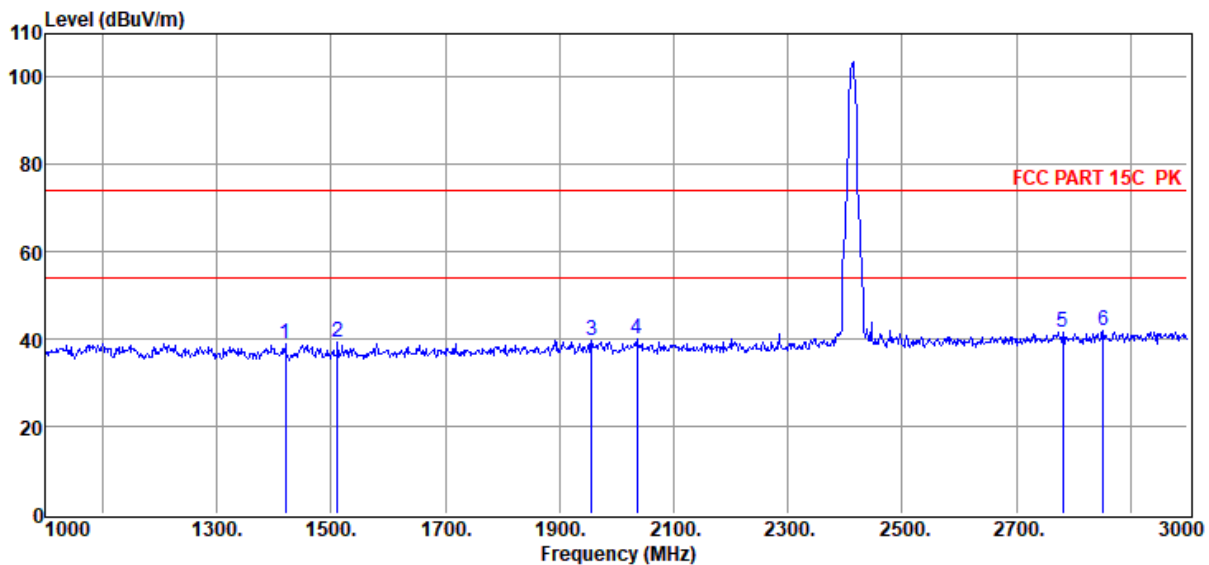
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2412

Data: 13



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1420.00	50.03	25.42	38.53	1.34	0.58	38.84	74.00	-35.16	Peak	HORIZONTAL
2	1512.00	50.43	25.43	38.67	1.39	0.59	39.17	74.00	-34.83	Peak	HORIZONTAL
3	1956.00	50.18	26.59	39.33	1.58	0.67	39.69	74.00	-34.31	Peak	HORIZONTAL
4	2036.00	50.47	26.76	39.42	1.61	0.68	40.10	74.00	-33.90	Peak	HORIZONTAL
5	2782.00	50.00	28.67	39.79	1.81	0.77	41.46	74.00	-32.54	Peak	HORIZONTAL
6	2852.00	50.22	28.94	39.83	1.83	0.77	41.93	74.00	-32.07	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

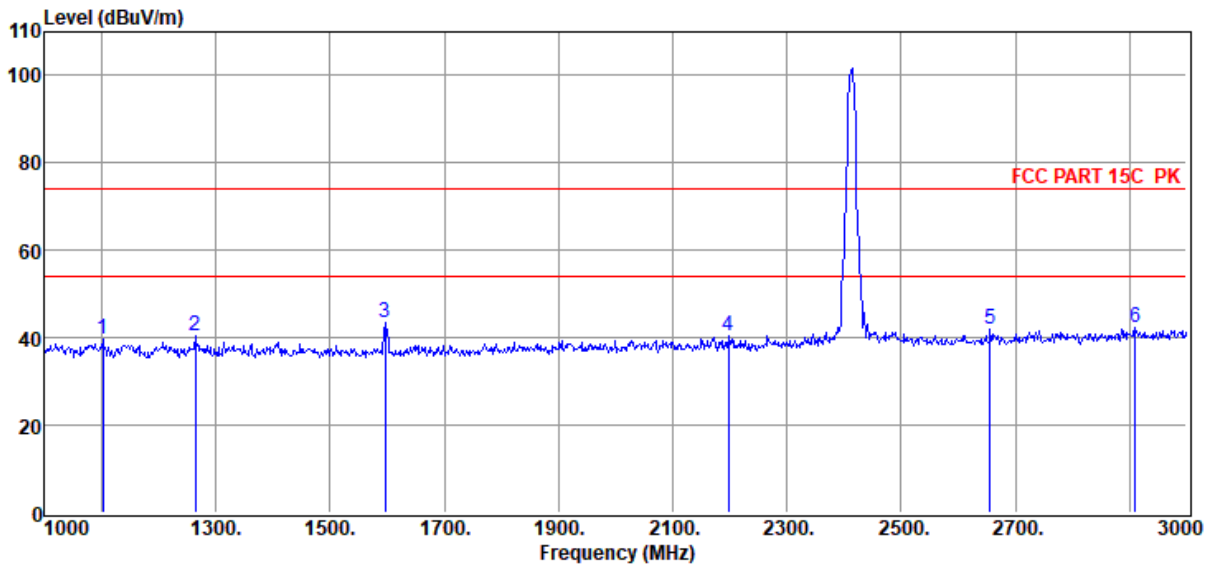
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11B 2412

Data: 14



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1102.00	50.65	25.48	38.05	1.16	0.52	39.76	74.00	-34.24	Peak	VERTICAL
2	1264.00	51.48	25.45	38.30	1.25	0.55	40.43	74.00	-33.57	Peak	VERTICAL
3	1596.00	54.72	25.65	38.79	1.42	0.61	43.61	74.00	-30.39	Peak	VERTICAL
4	2198.00	50.62	27.06	39.50	1.66	0.70	40.54	74.00	-33.46	Peak	VERTICAL
5	2656.00	50.78	28.19	39.73	1.78	0.75	41.77	74.00	-32.23	Peak	VERTICAL
6	2910.00	50.31	29.16	39.86	1.85	0.78	42.24	74.00	-31.76	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

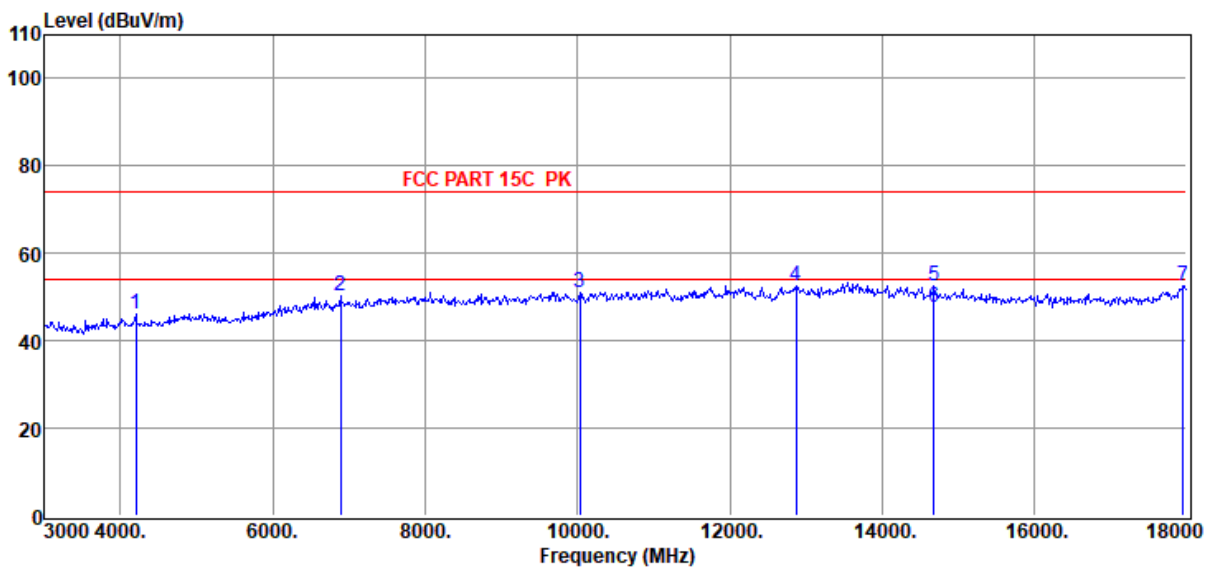
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2412

Data: 15



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	4200.00	50.67	31.26	40.24	2.21	2.07	45.97	74.00	-28.03	Peak	HORIZONTAL
2	6885.00	48.77	35.82	39.79	3.08	2.32	50.20	74.00	-23.80	Peak	HORIZONTAL
3	10035.00	47.20	38.44	40.59	3.67	2.48	51.20	74.00	-22.80	Peak	HORIZONTAL
4	12870.00	46.25	39.44	40.36	4.22	2.89	52.44	74.00	-21.56	Peak	HORIZONTAL
5	14685.00	45.25	39.75	39.63	4.39	2.71	52.47	74.00	-21.53	Peak	HORIZONTAL
6	14685.00	40.37	39.75	39.63	4.39	2.71	47.59	54.00	-6.41	Average	HORIZONTAL
7	17955.00	42.35	42.22	40.67	4.95	3.78	52.63	74.00	-21.37	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

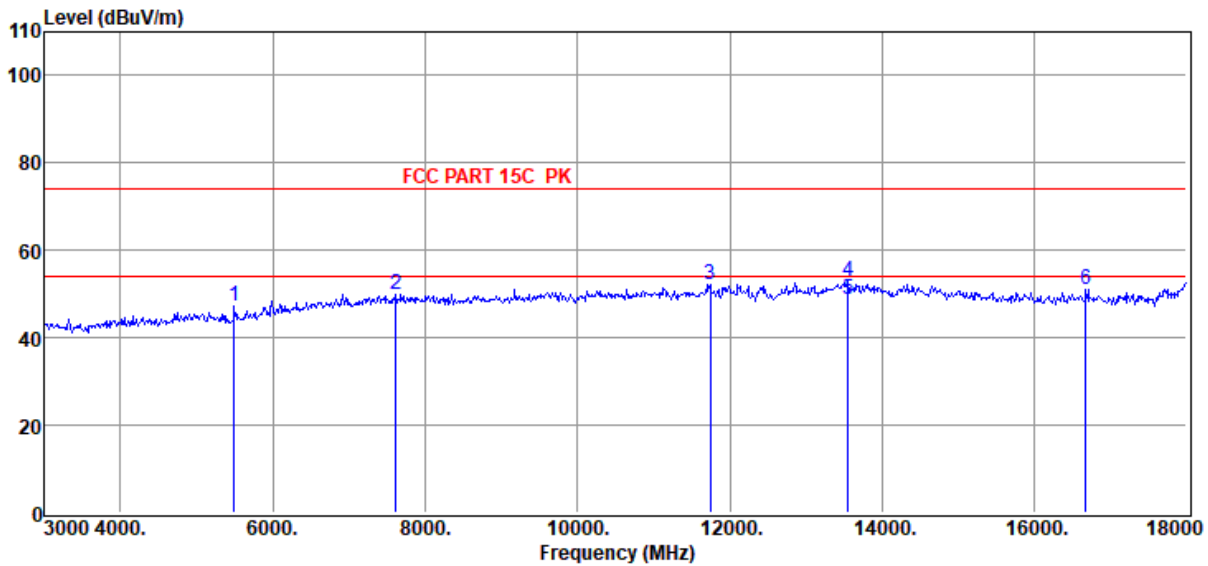
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11B 2412

Data: 16



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5490.00	49.81	32.81	40.45	2.57	2.49	47.23	74.00	-26.77	Peak	VERTICAL
2	7620.00	47.70	36.54	39.76	3.15	2.27	49.90	74.00	-24.10	Peak	VERTICAL
3	11745.00	46.97	39.10	40.13	4.01	2.39	52.34	74.00	-21.66	Peak	VERTICAL
4	13560.00	45.84	39.99	40.01	4.05	2.93	52.80	74.00	-21.20	Peak	VERTICAL
5	13560.00	41.72	39.99	40.01	4.05	2.93	48.68	54.00	-5.32	Average	VERTICAL
6	16680.00	44.73	38.12	40.04	4.72	3.39	50.92	74.00	-23.08	Peak	VERTICAL
7	18000.00	42.19	42.50	40.70	4.96	3.79	52.74	74.00	-21.26	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

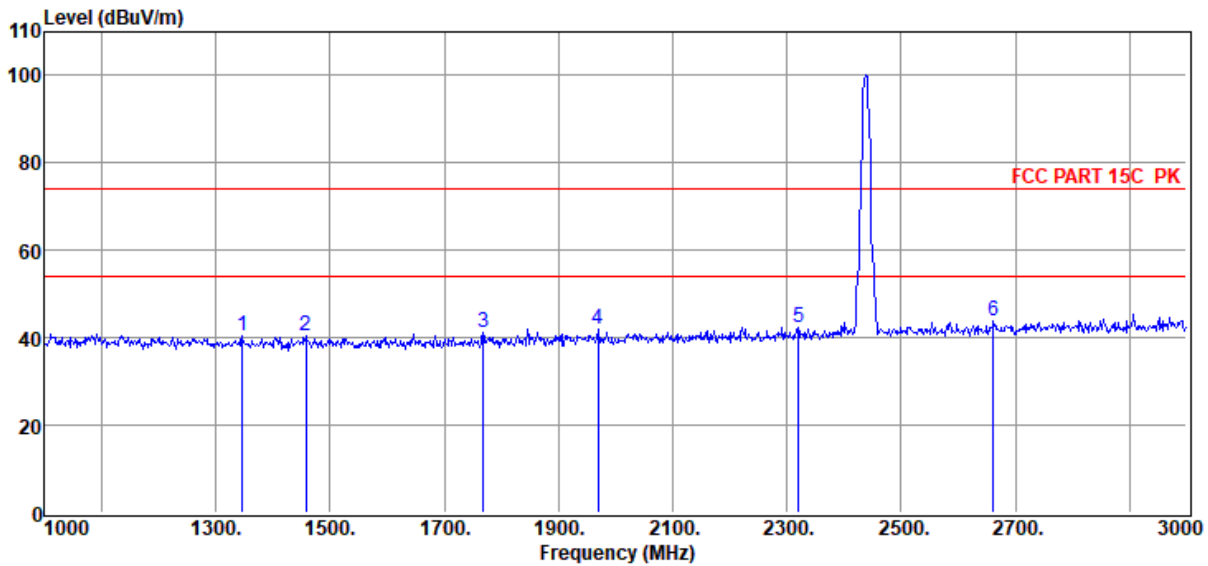
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2437

Data: 17



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1346.00	51.72	25.43	38.42	1.29	0.56	40.58	74.00	-33.42	Peak	HORIZONTAL
2	1458.00	51.58	25.41	38.59	1.36	0.58	40.34	74.00	-33.66	Peak	HORIZONTAL
3	1768.00	51.83	26.10	39.05	1.50	0.64	41.02	74.00	-32.98	Peak	HORIZONTAL
4	1970.00	52.57	26.62	39.36	1.59	0.67	42.09	74.00	-31.91	Peak	HORIZONTAL
5	2320.00	52.27	27.28	39.56	1.69	0.72	42.40	74.00	-31.60	Peak	HORIZONTAL
6	2662.00	52.67	28.22	39.73	1.78	0.75	43.69	74.00	-30.31	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

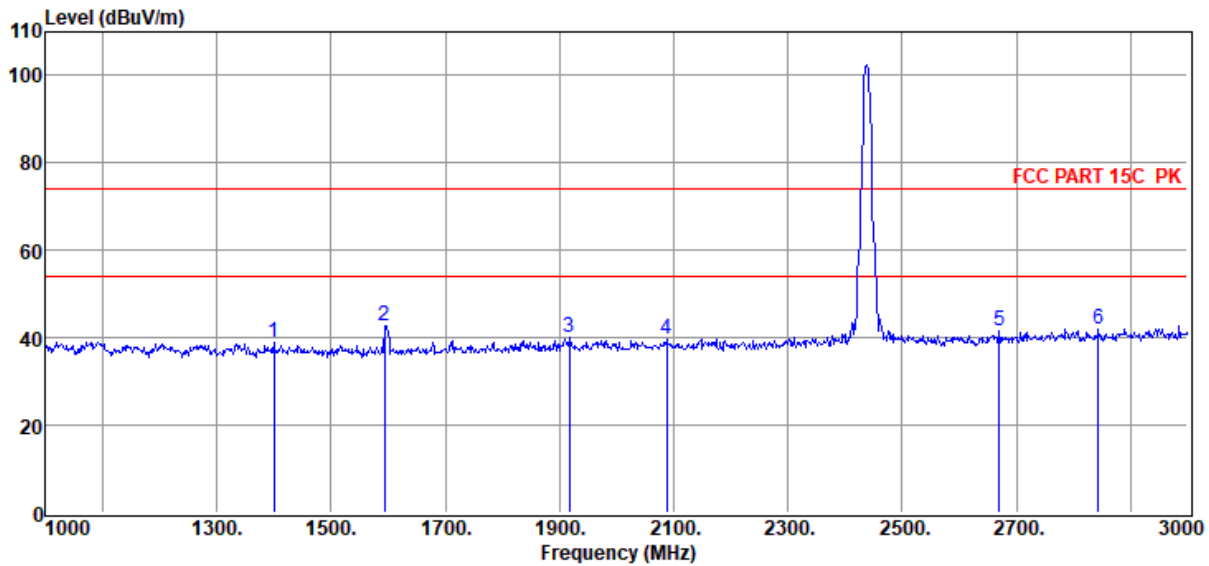
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11B 2437

Data: 18



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1400.00	50.19	25.42	38.50	1.32	0.57	39.00	74.00	-35.00	Peak	VERTICAL
2	1594.00	53.74	25.64	38.79	1.42	0.61	42.62	74.00	-31.38	Peak	VERTICAL
3	1918.00	50.50	26.49	39.28	1.56	0.67	39.94	74.00	-34.06	Peak	VERTICAL
4	2088.00	49.79	26.86	39.44	1.62	0.69	39.52	74.00	-34.48	Peak	VERTICAL
5	2670.00	50.64	28.25	39.74	1.78	0.75	41.68	74.00	-32.32	Peak	VERTICAL
6	2844.00	50.20	28.91	39.82	1.83	0.77	41.89	74.00	-32.11	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

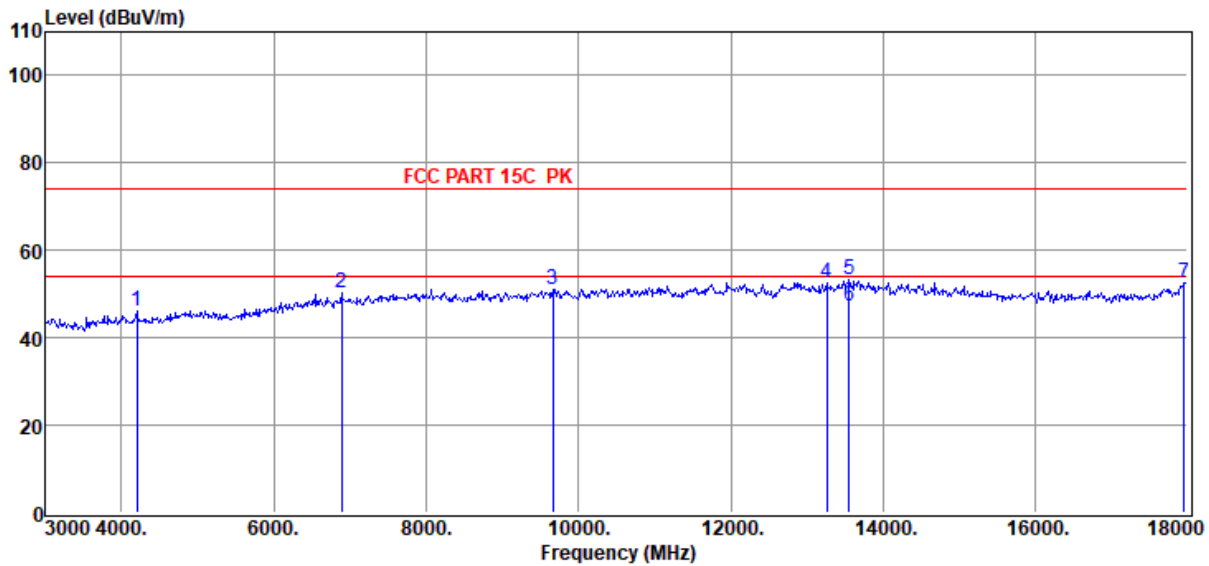
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2437

Data: 19



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4200.00	50.67	31.26	40.24	2.21	2.07	45.97	74.00	-28.03	Peak	HORIZONTAL
2	6885.00	48.77	35.82	39.79	3.08	2.32	50.20	74.00	-23.80	Peak	HORIZONTAL
3	9660.00	46.65	38.60	40.36	3.64	2.38	50.91	74.00	-23.09	Peak	HORIZONTAL
4	13260.00	45.91	39.81	40.22	4.19	2.94	52.63	74.00	-21.37	Peak	HORIZONTAL
5	13560.00	46.25	39.99	40.01	4.05	2.93	53.21	74.00	-20.79	Peak	HORIZONTAL
6	13560.00	40.28	39.99	40.01	4.05	2.93	47.24	54.00	-6.76	Average	HORIZONTAL
7	17955.00	42.35	42.22	40.67	4.95	3.78	52.63	74.00	-21.37	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

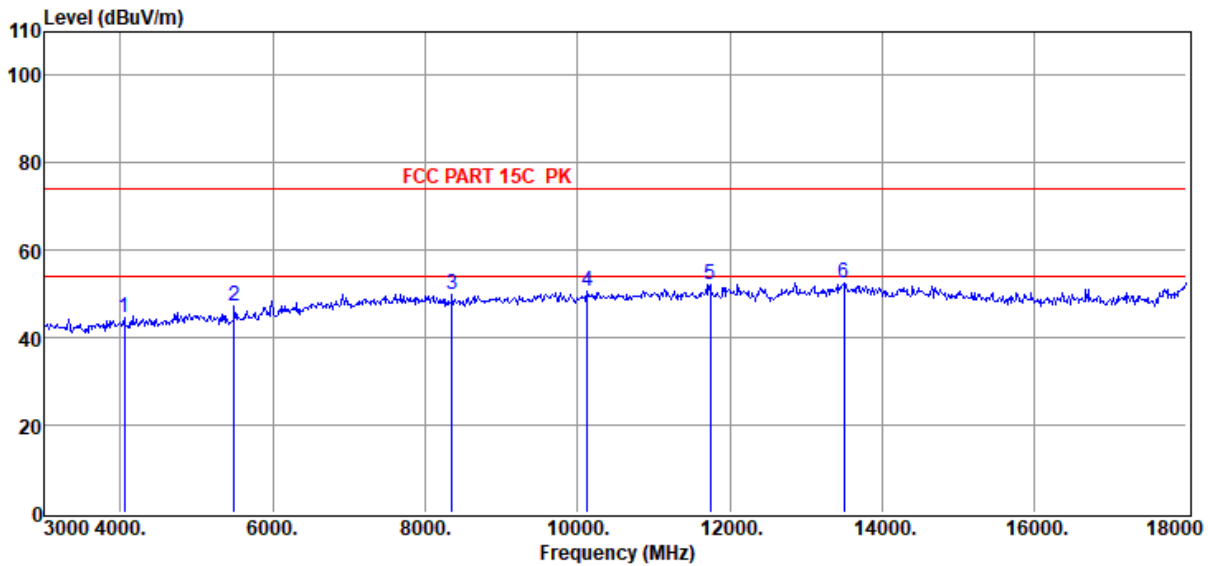
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11B 2437

Data: 20



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	4050.00	49.66	31.14	40.21	2.13	2.05	44.77	74.00	-29.23	Peak	VERTICAL
2	5490.00	49.81	32.81	40.45	2.57	2.49	47.23	74.00	-26.77	Peak	VERTICAL
3	8355.00	46.58	37.57	39.84	3.21	2.24	49.76	74.00	-24.24	Peak	VERTICAL
4	10125.00	46.44	38.55	40.55	3.67	2.47	50.58	74.00	-23.42	Peak	VERTICAL
5	11745.00	46.97	39.10	40.13	4.01	2.39	52.34	74.00	-21.66	Peak	VERTICAL
6	13500.00	45.50	40.00	40.05	3.99	2.93	52.37	74.00	-21.63	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

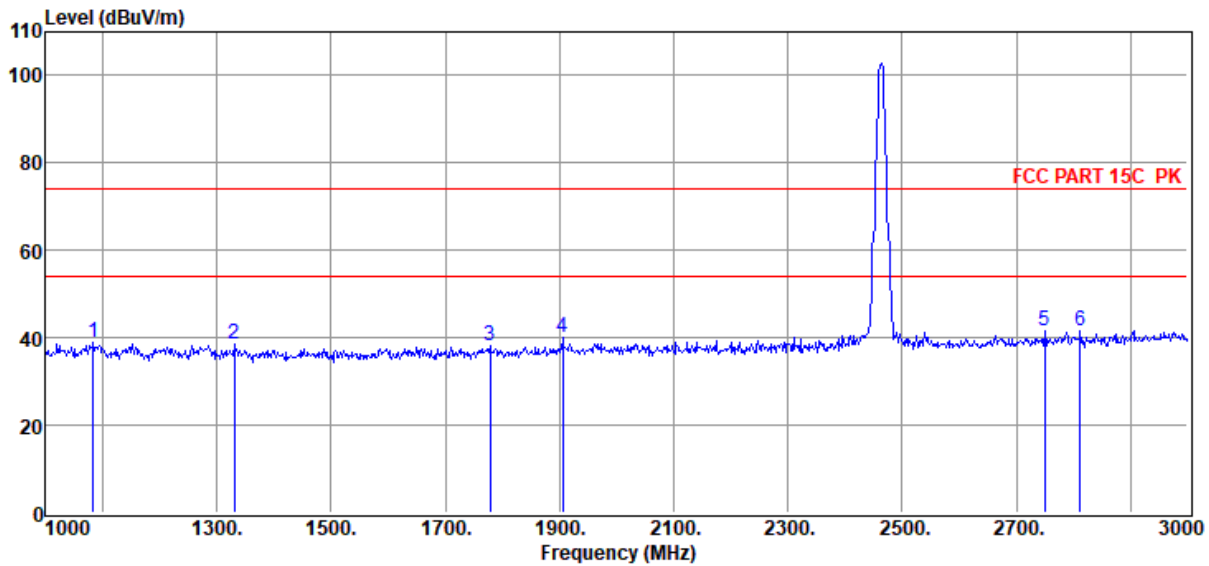
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2462

Data: 21



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1084.00	49.76	25.48	38.03	1.15	0.52	38.88	74.00	-35.12	Peak	HORIZONTAL
2	1330.00	49.59	25.43	38.40	1.28	0.56	38.46	74.00	-35.54	Peak	HORIZONTAL
3	1778.00	48.82	26.12	39.07	1.50	0.64	38.01	74.00	-35.99	Peak	HORIZONTAL
4	1906.00	50.71	26.46	39.26	1.56	0.66	40.13	74.00	-33.87	Peak	HORIZONTAL
5	2750.00	50.06	28.55	39.78	1.81	0.76	41.40	74.00	-32.60	Peak	HORIZONTAL
6	2812.00	49.93	28.79	39.81	1.82	0.77	41.50	74.00	-32.50	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

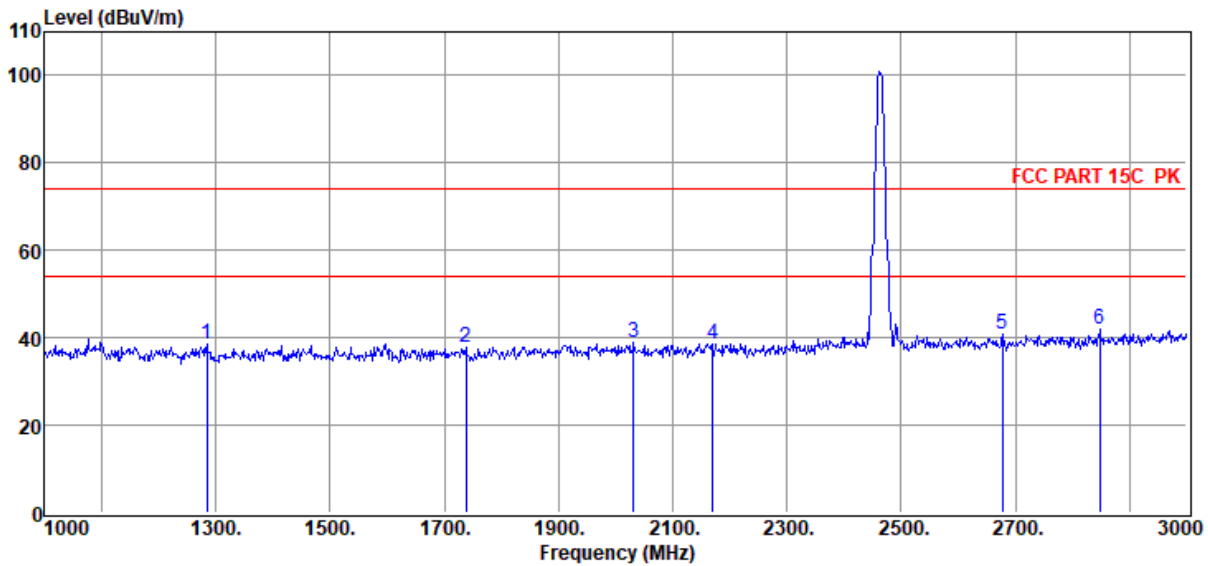
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11B 2462

Data: 22



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1284.00	49.48	25.44	38.33	1.26	0.55	38.40	74.00	-35.60	Peak	VERTICAL
2	1738.00	48.70	26.02	39.01	1.48	0.63	37.82	74.00	-36.18	Peak	VERTICAL
3	2032.00	49.31	26.76	39.42	1.61	0.68	38.94	74.00	-35.06	Peak	VERTICAL
4	2170.00	48.83	27.01	39.49	1.65	0.70	38.70	74.00	-35.30	Peak	VERTICAL
5	2678.00	49.72	28.28	39.74	1.79	0.75	40.80	74.00	-33.20	Peak	VERTICAL
6	2848.00	50.10	28.92	39.82	1.83	0.77	41.80	74.00	-32.20	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

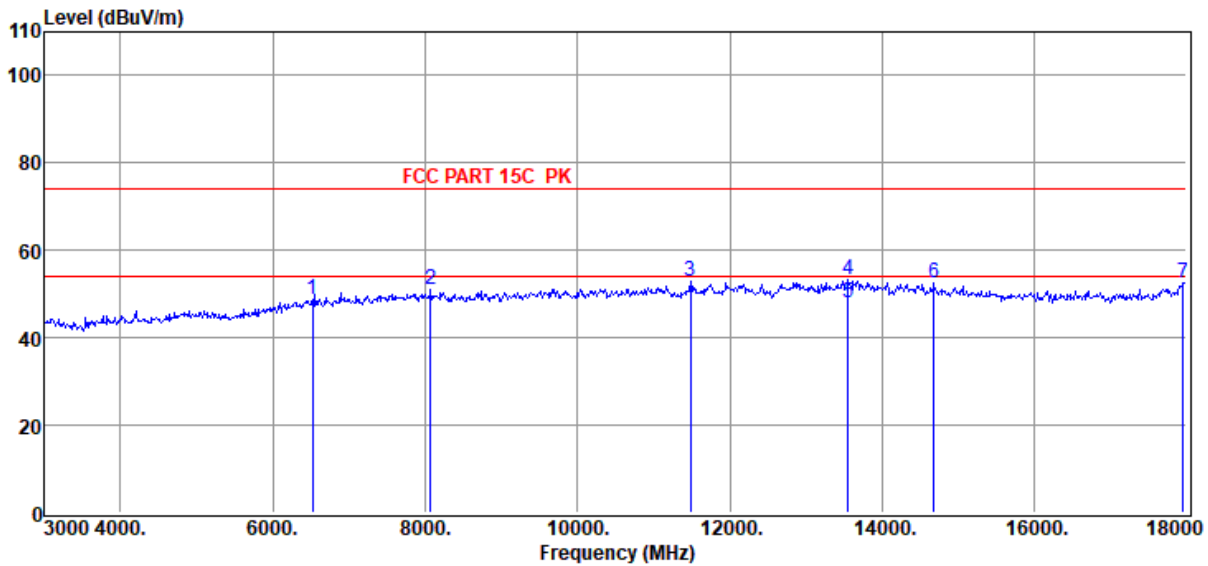
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2462

Data: 23



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	6525.00	48.01	35.24	40.08	3.26	2.52	48.95	74.00	-25.05	Peak	HORIZONTAL
2	8070.00	48.24	37.11	39.81	3.19	2.27	51.00	74.00	-23.00	Peak	HORIZONTAL
3	11490.00	47.56	39.01	40.15	3.97	2.39	52.78	74.00	-21.22	Peak	HORIZONTAL
4	13560.00	46.25	39.99	40.01	4.05	2.93	53.21	74.00	-20.79	Peak	HORIZONTAL
5	13560.00	41.18	39.99	40.01	4.05	2.93	48.14	54.00	-5.86	Average	HORIZONTAL
6	14685.00	45.25	39.75	39.63	4.39	2.71	52.47	74.00	-21.53	Peak	HORIZONTAL
7	17955.00	42.35	42.22	40.67	4.95	3.78	52.63	74.00	-21.37	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

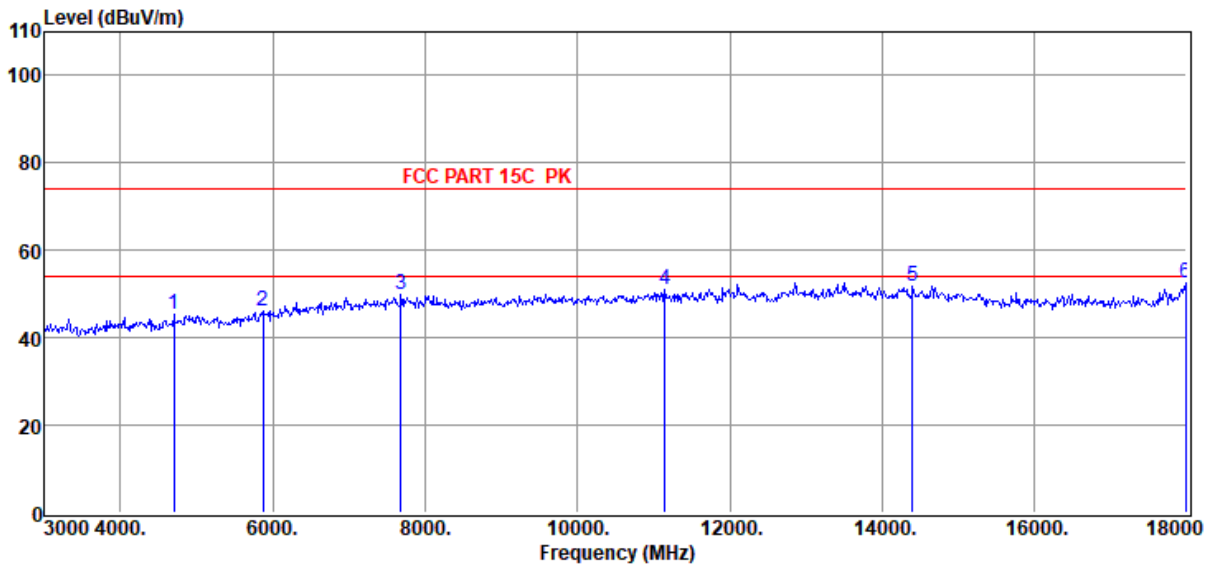
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11B 2462

Data: 24



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	4695.00	48.85	32.12	40.34	2.43	2.14	45.20	74.00	-28.80	Peak	VERTICAL
2	5865.00	47.21	33.68	40.49	2.91	2.72	46.03	74.00	-27.97	Peak	VERTICAL
3	7680.00	47.61	36.62	39.77	3.16	2.27	49.89	74.00	-24.11	Peak	VERTICAL
4	11145.00	45.69	39.21	40.19	3.85	2.38	50.94	74.00	-23.06	Peak	VERTICAL
5	14400.00	44.27	39.90	39.66	4.39	2.79	51.69	74.00	-22.31	Peak	VERTICAL
6	17985.00	42.21	42.41	40.69	4.96	3.79	52.68	74.00	-21.32	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

9. RF Conducted Spurious Emissions

9.1. Block diagram of test setup

Same as section 4.1

9.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

9.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Establish a reference level by using the following procedure:

Center frequency	Test frequency
RBW:	100 kHz
VBW:	300 kHz
Span	Wide enough to capture the peak level of the in-band emission
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.

(4) Set the spectrum analyzer as follows:

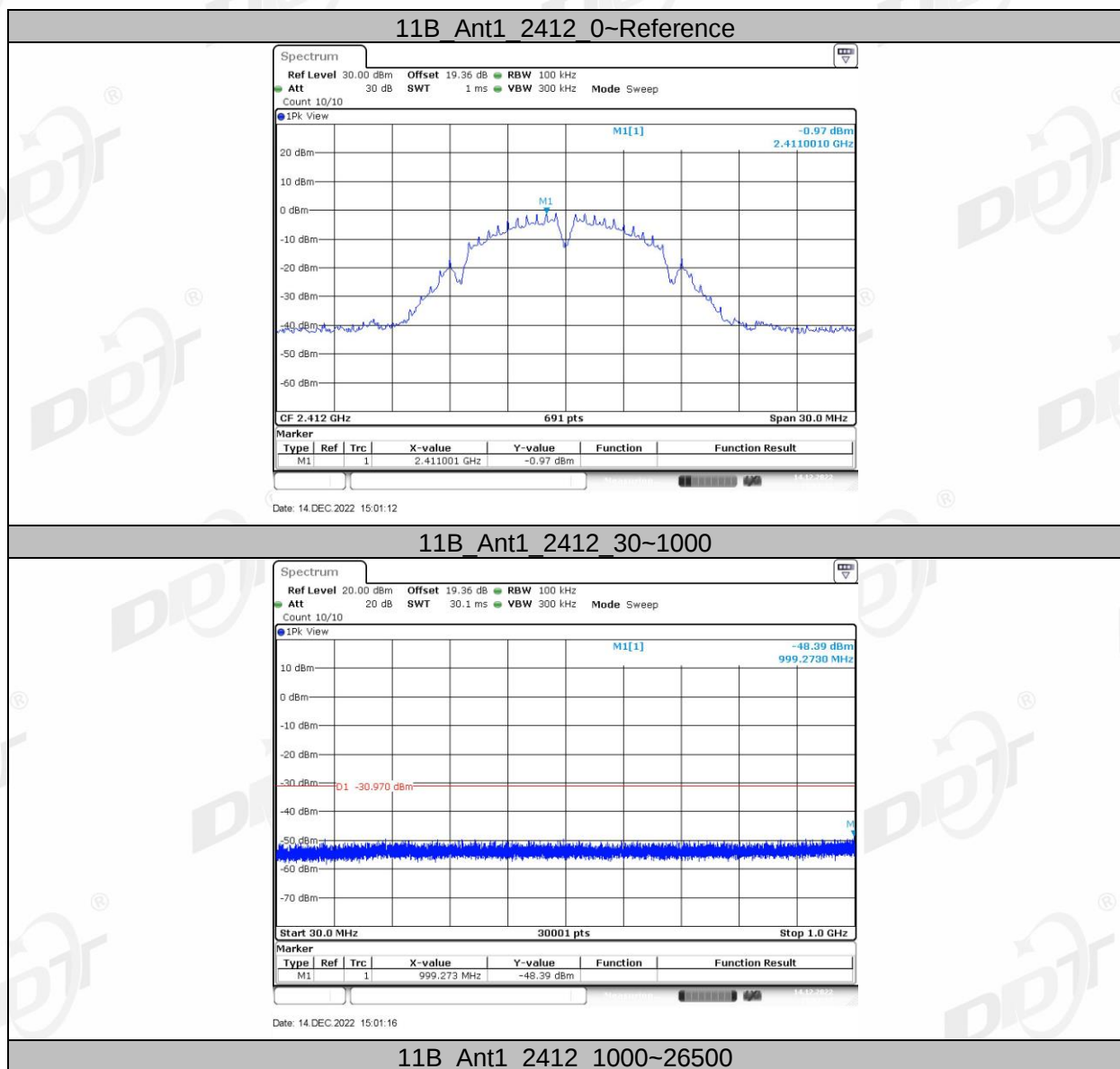
RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Number of measurement points	$\geq \text{span}/\text{RBW}$
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

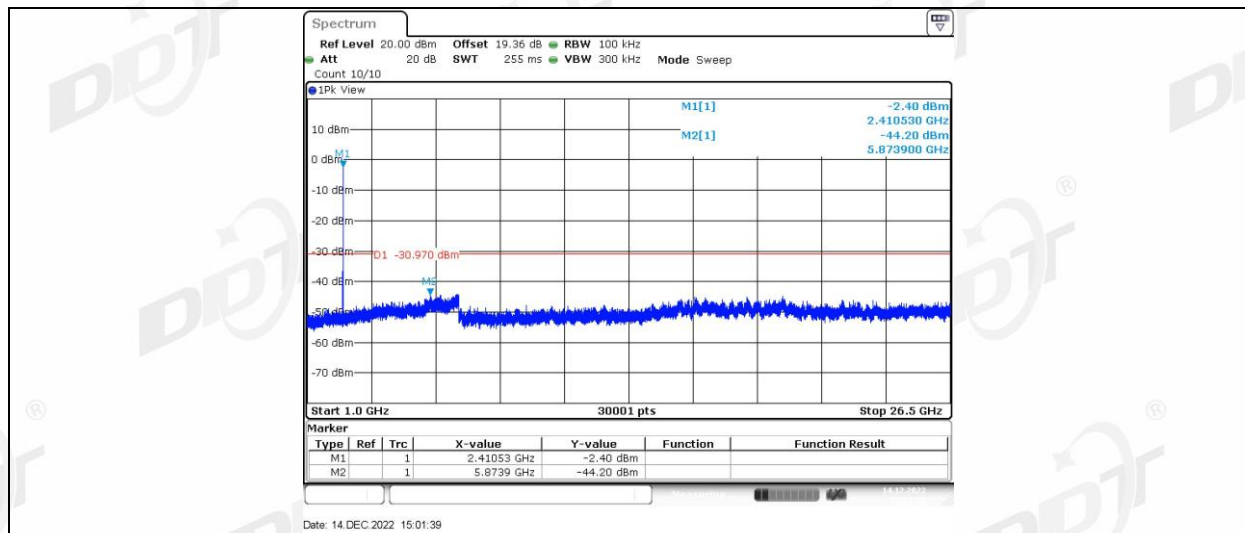
(5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

9.4. Test result

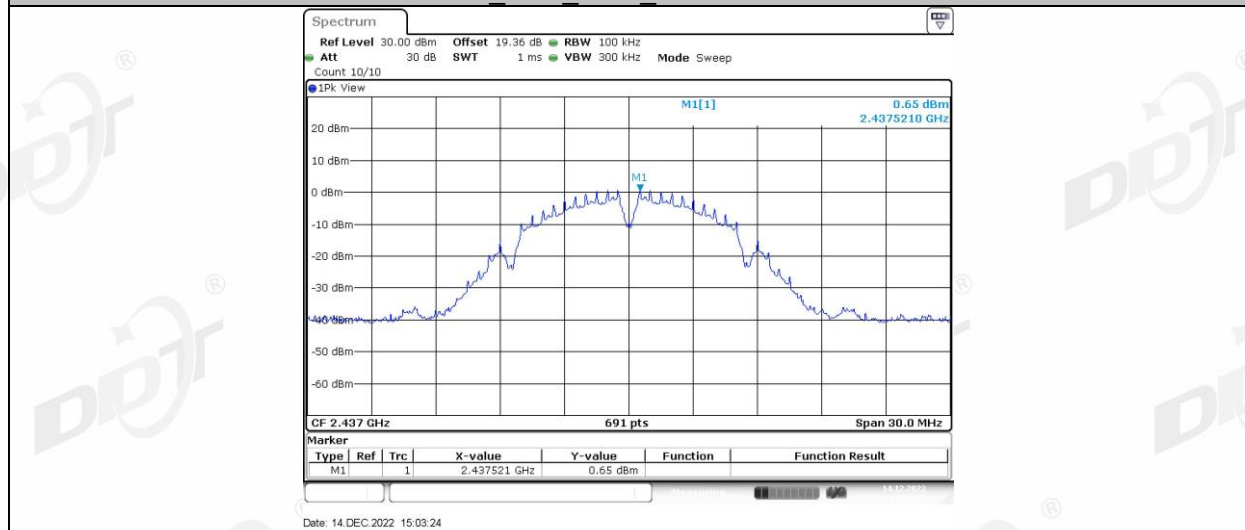
EUT Set Mode	CH or Frequency	Result (dBm)	EUT Set Mode	CH or Frequency	Result Result (dBm)
11b	CH1	Pass	11g	CH1	Pass
	CH6	Pass		CH6	Pass
	CH11	Pass		CH11	Pass
11n HT 20	CH1	Pass	/	/	/
	CH6	Pass		/	/
	CH11	Pass		/	/

9.5. Original test data

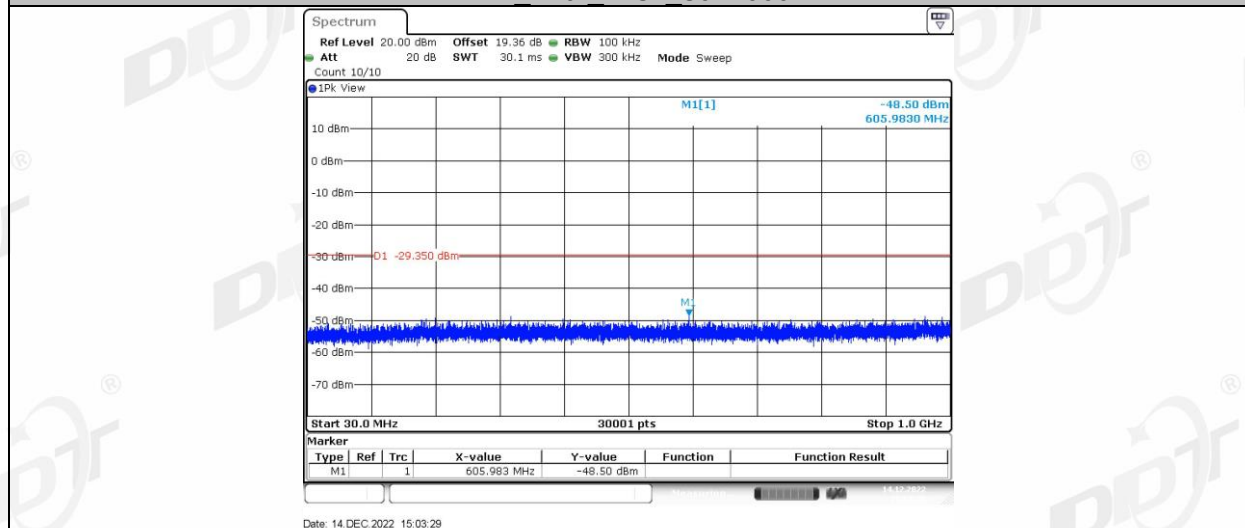




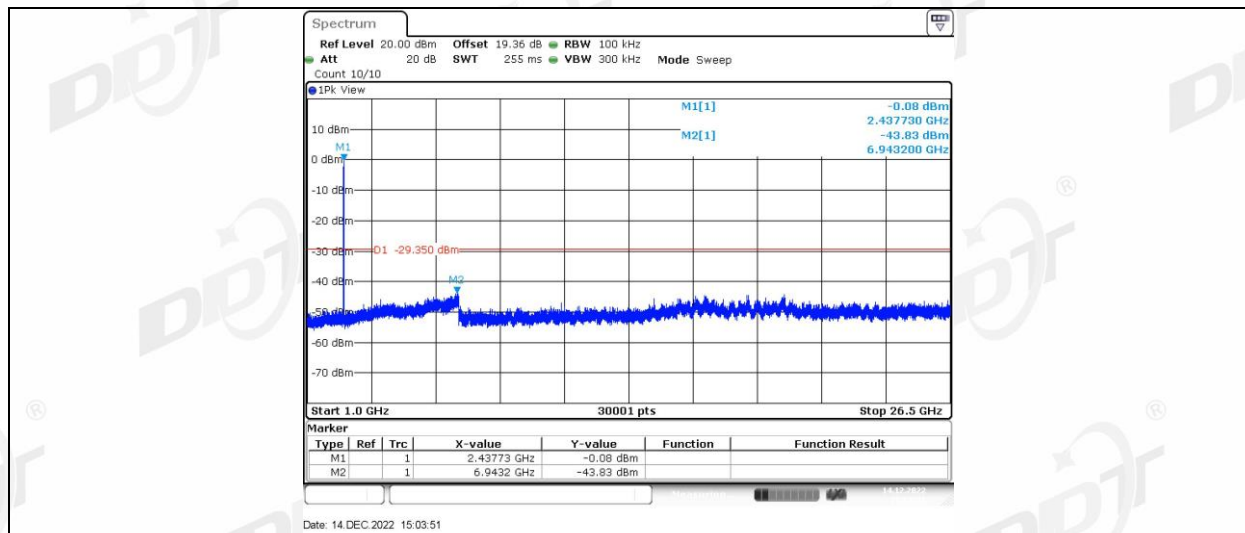
11B_Ant1_2437_0-Reference



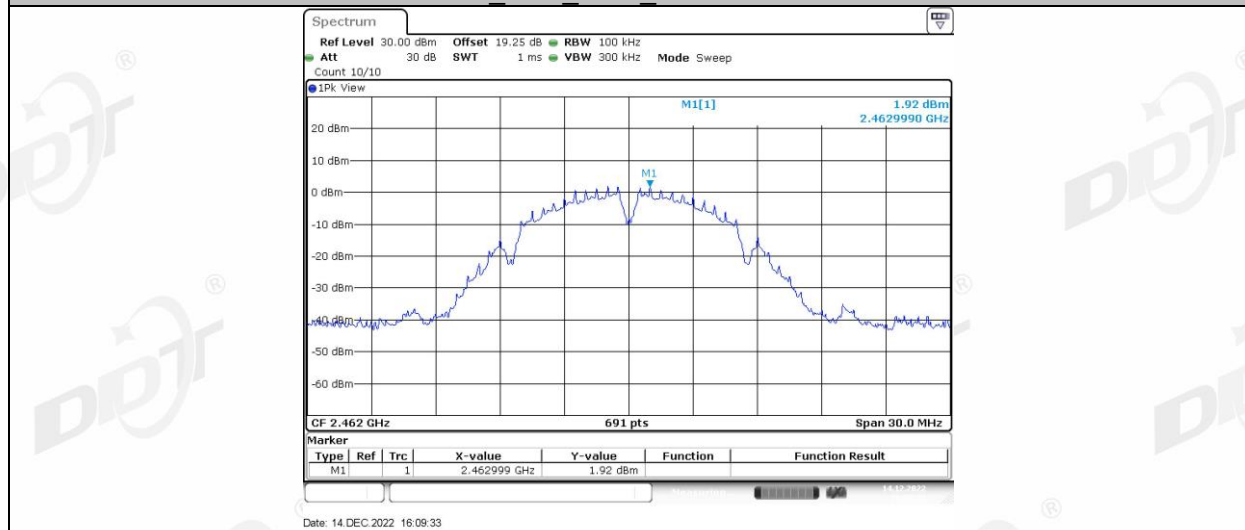
11B_Ant1_2437_30-1000



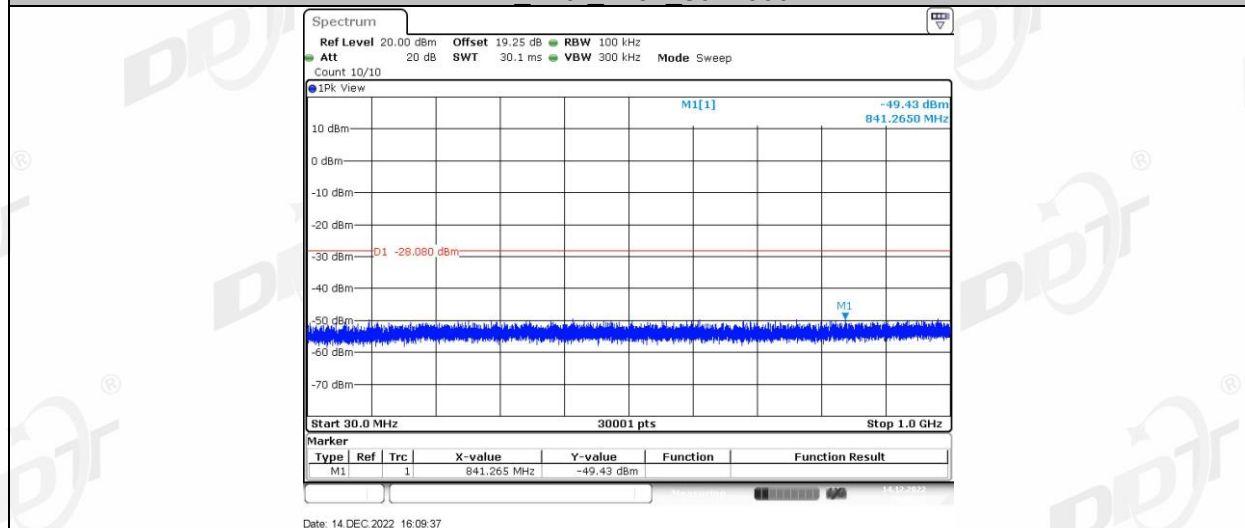
11B_Ant1_2437_1000-26500



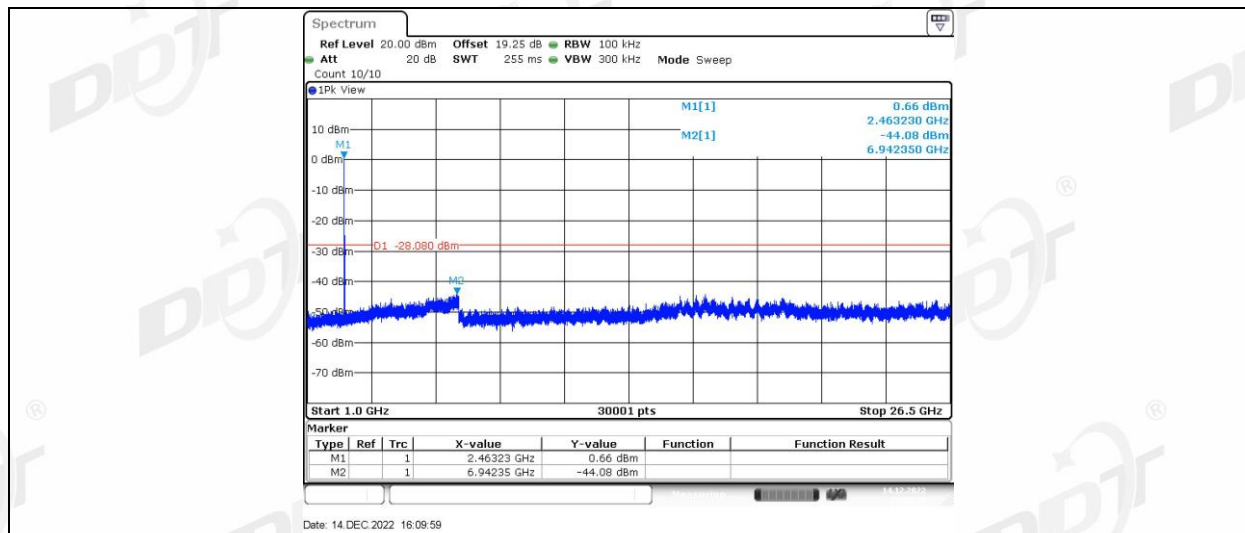
11B_Ant1_2462_0~Reference



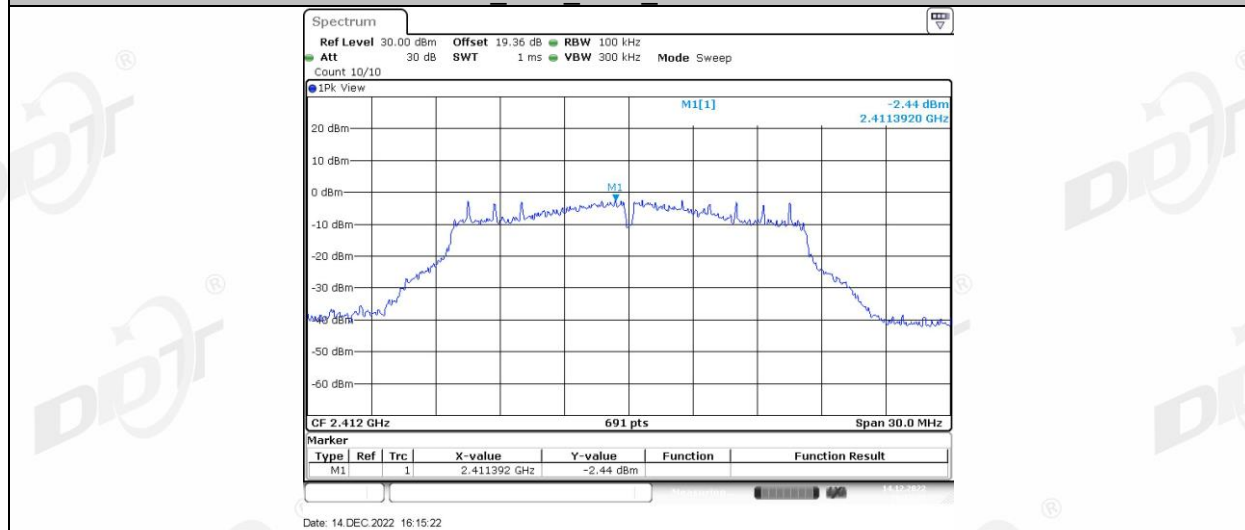
11B_Ant1_2462_30~1000



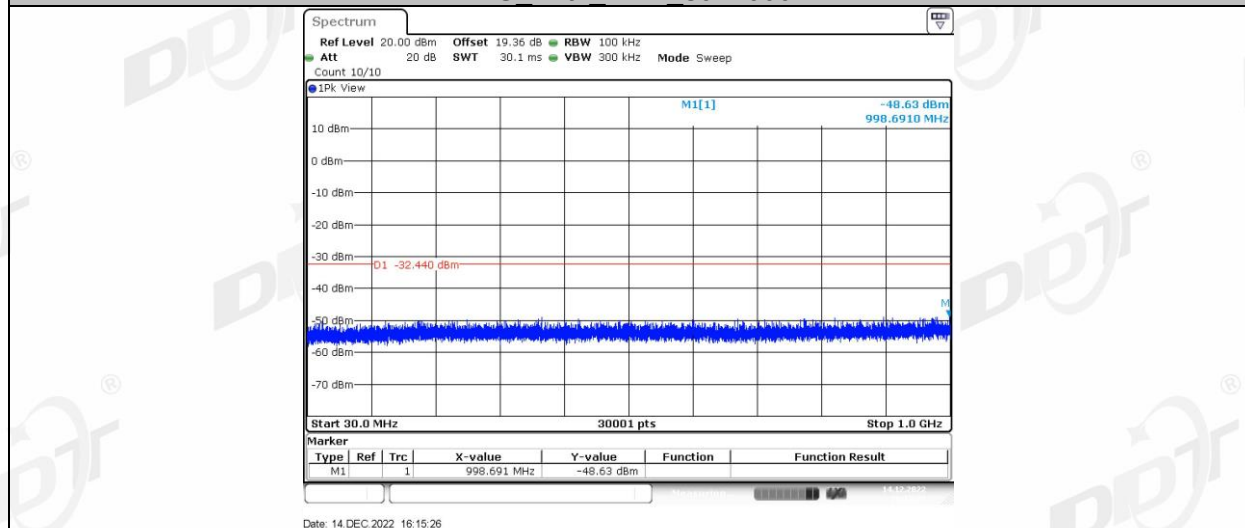
11B_Ant1_2462_1000~26500



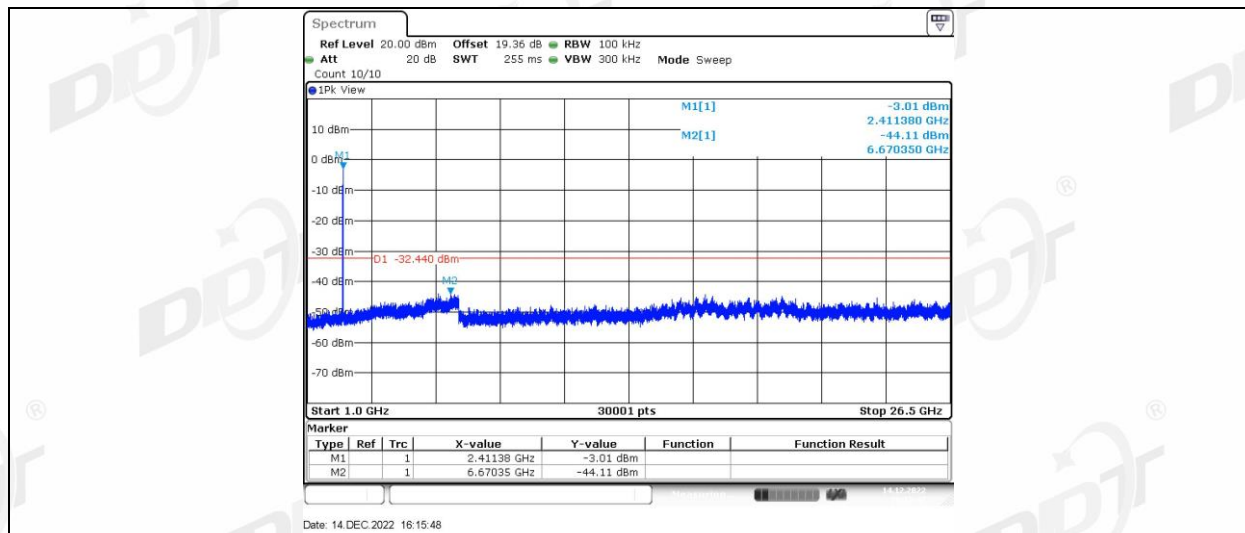
11G_Ant1_2412_0~Reference



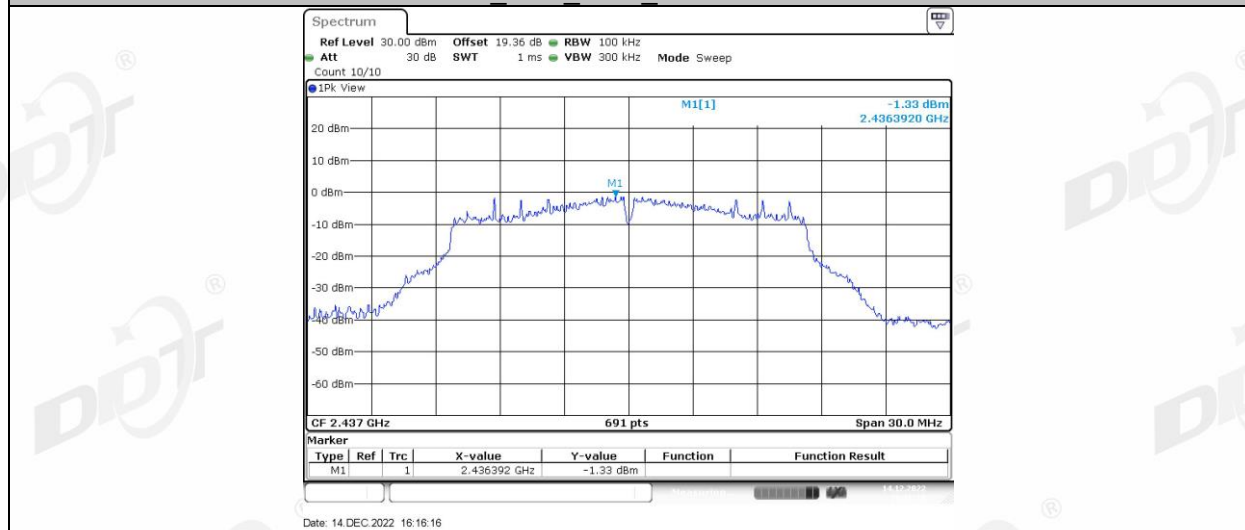
11G_Ant1_2412_30~1000



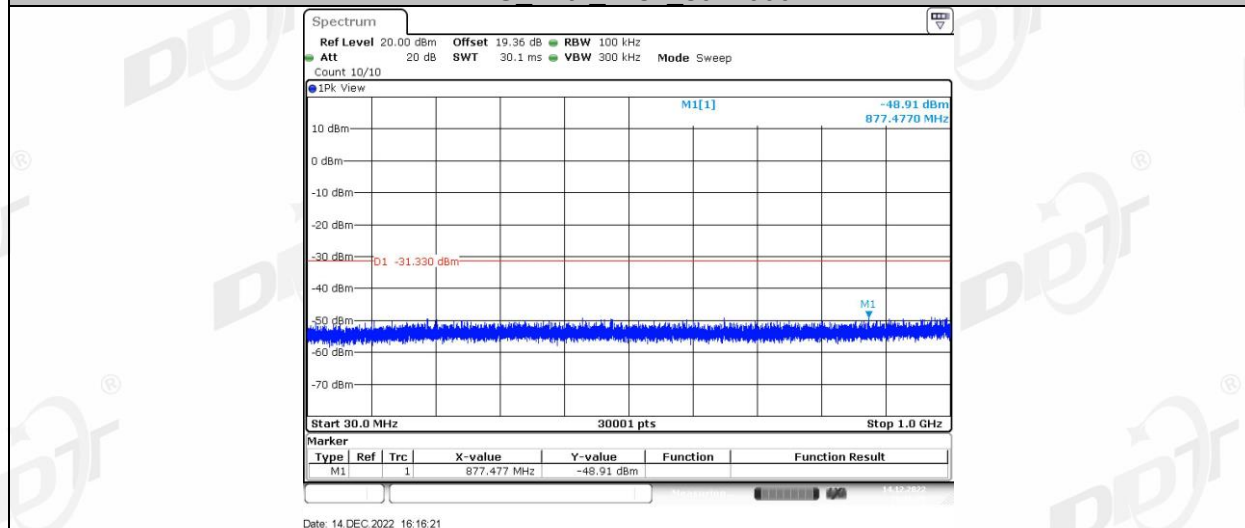
11G_Ant1_2412_1000~26500



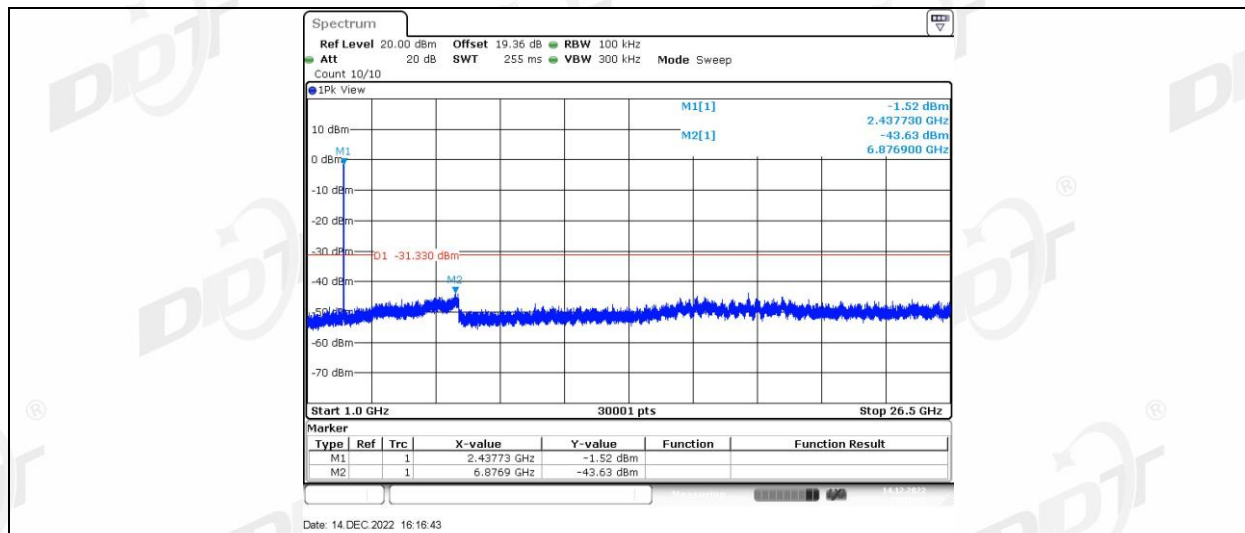
11G_Ant1_2437_0~Reference



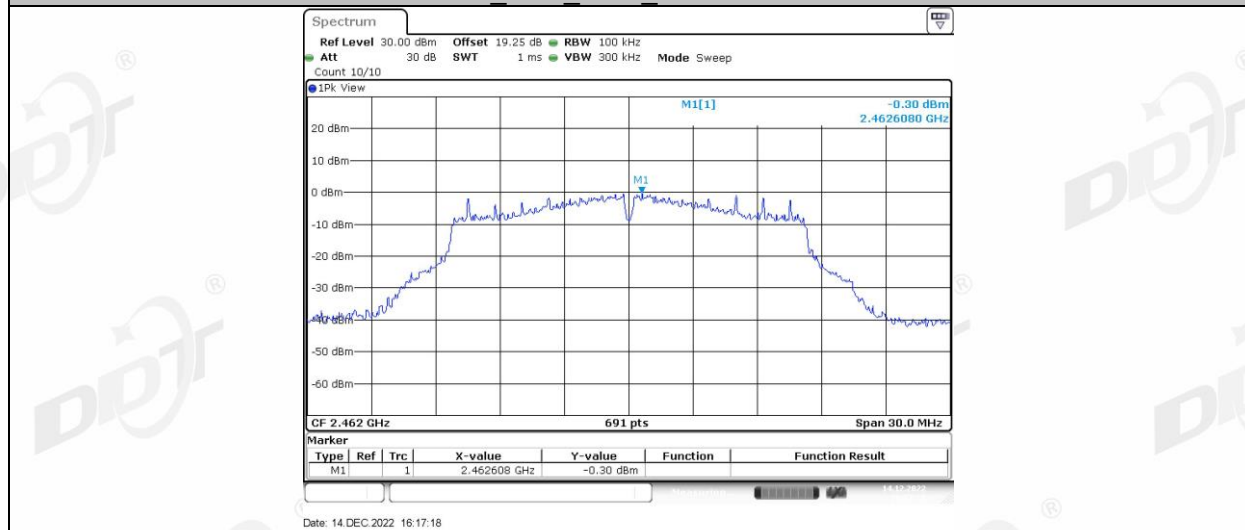
11G_Ant1_2437_30~1000



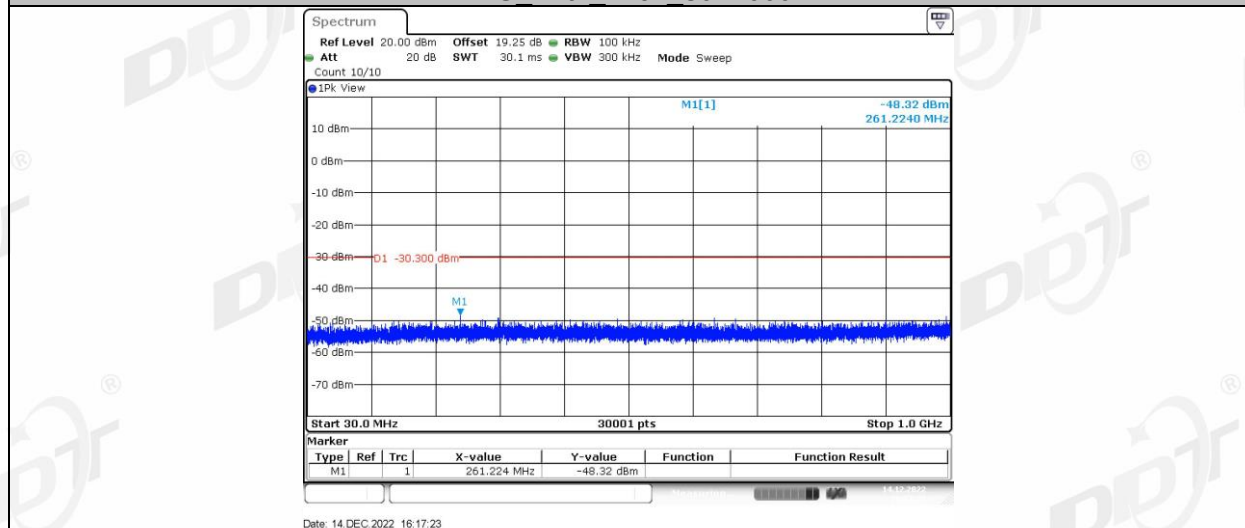
11G_Ant1_2437_1000~26500



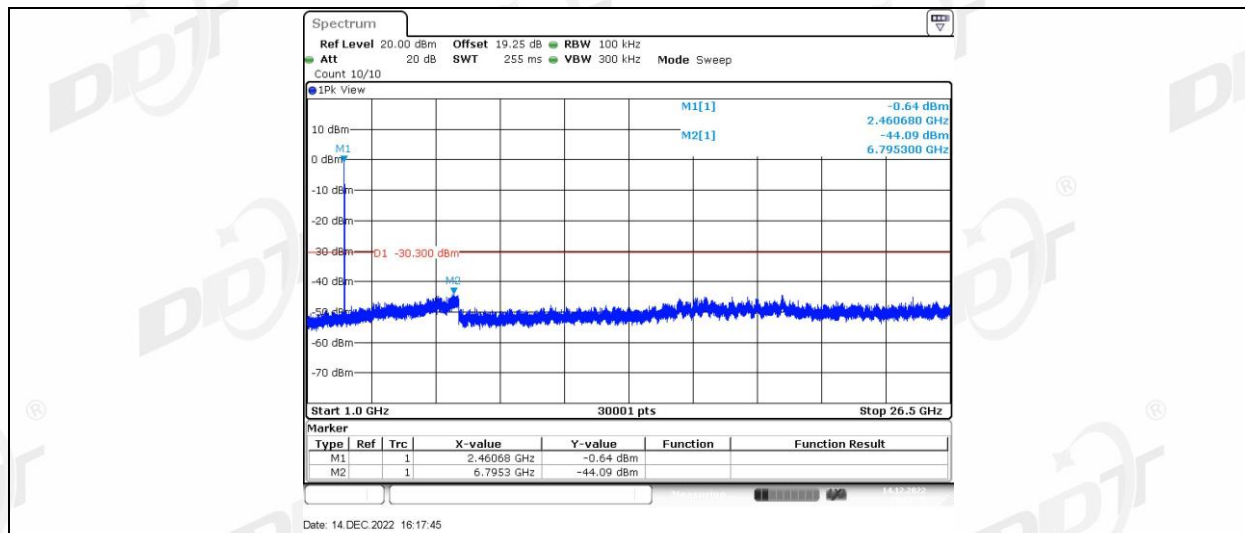
11G_Ant1_2462_0~Reference



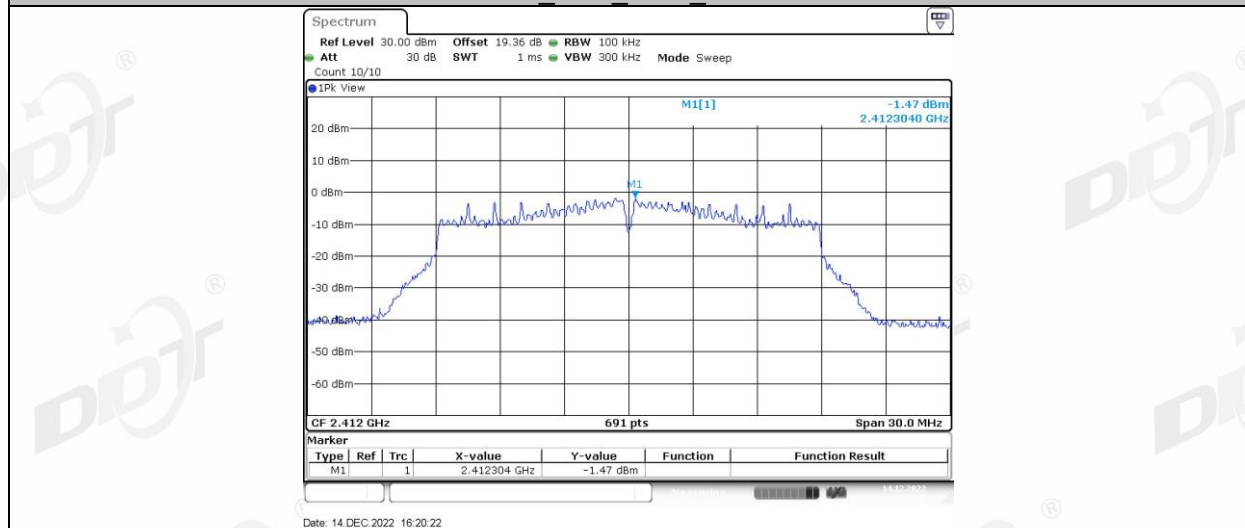
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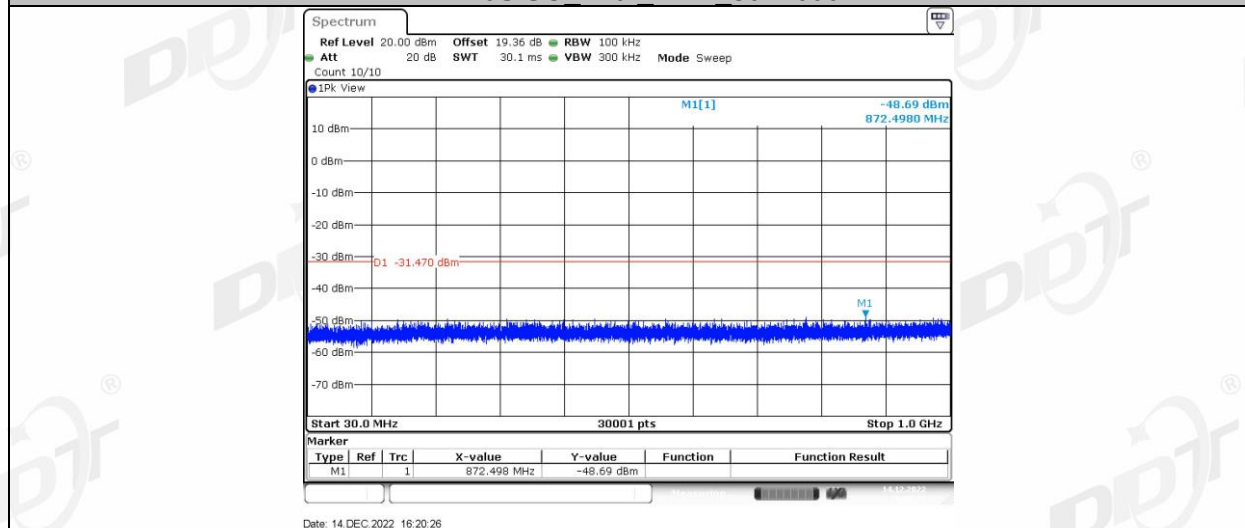
11G_Ant1_2462_1000~26500



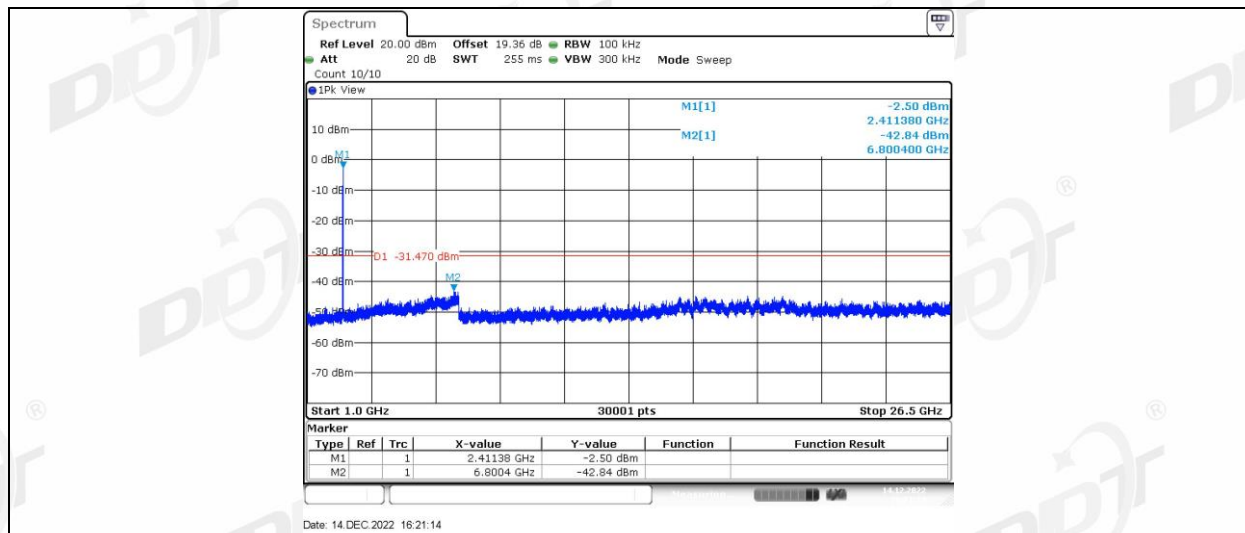
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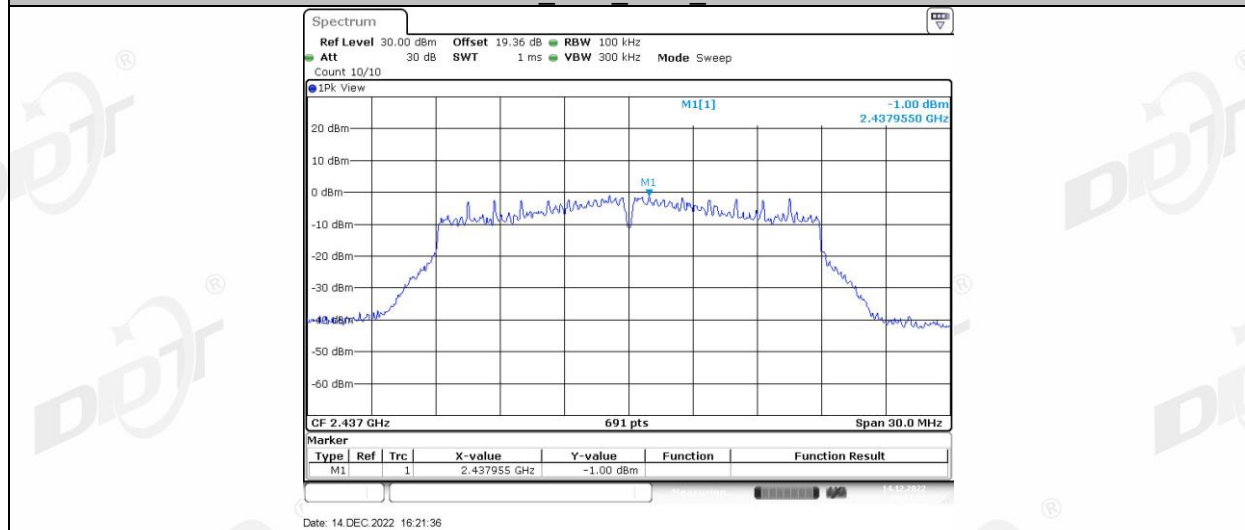
11N20SISO_Ant1_2412_30~1000



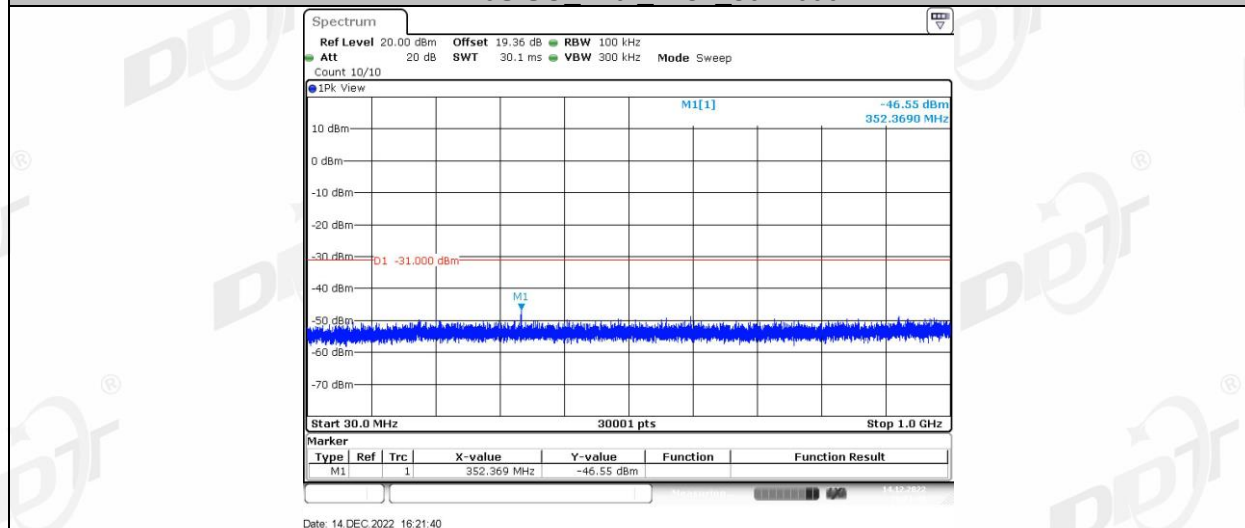
11N20SISO_Ant1_2412_1000~26500



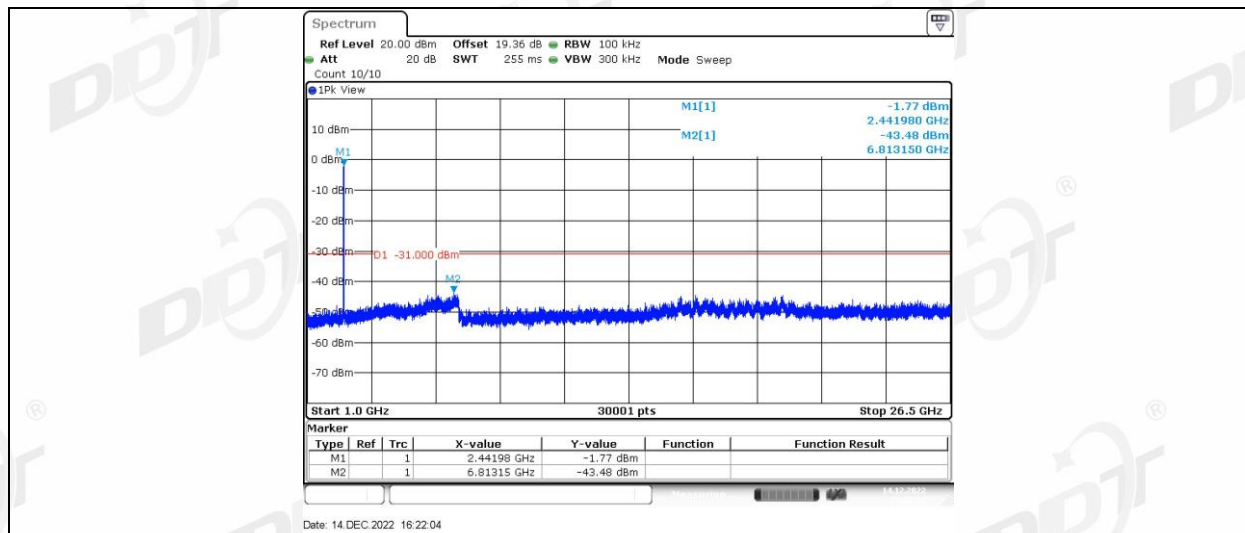
11N20SISO_Ant1_2437_0~Reference



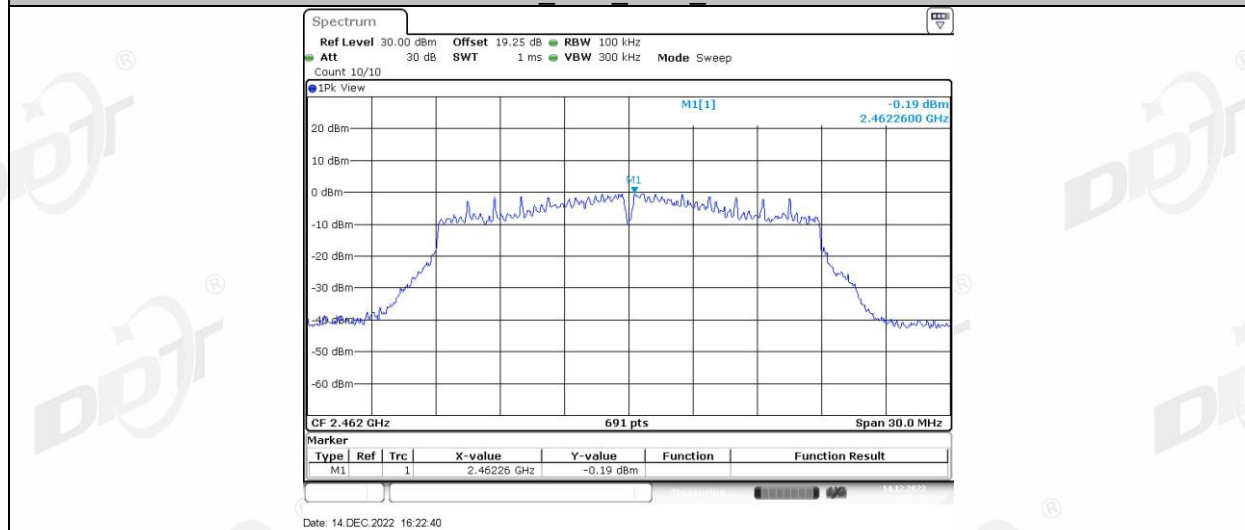
11N20SISO_Ant1_2437_30~1000



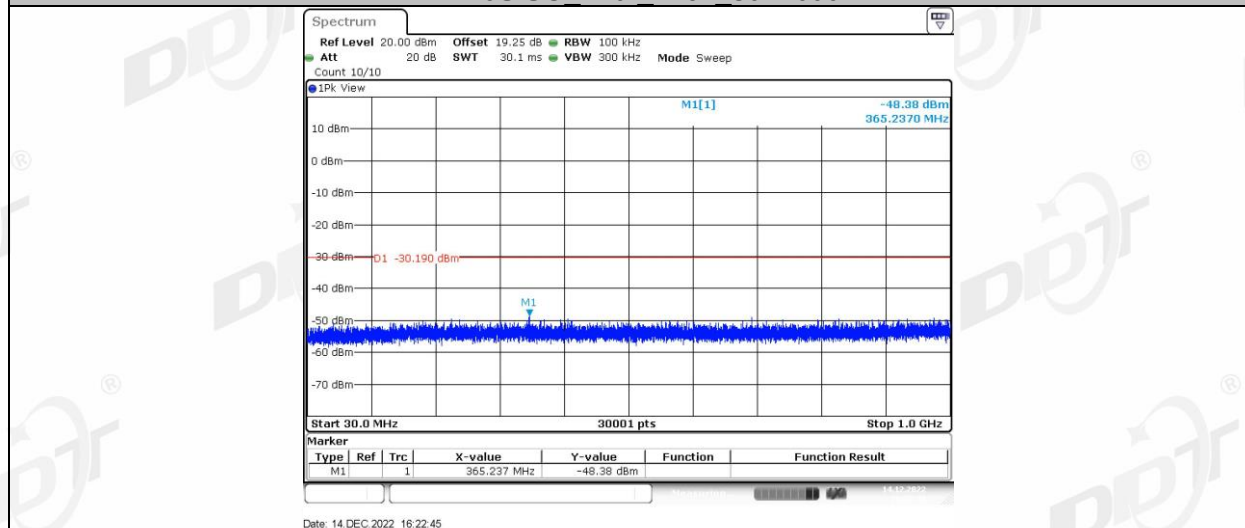
11N20SISO_Ant1_2437_1000~26500



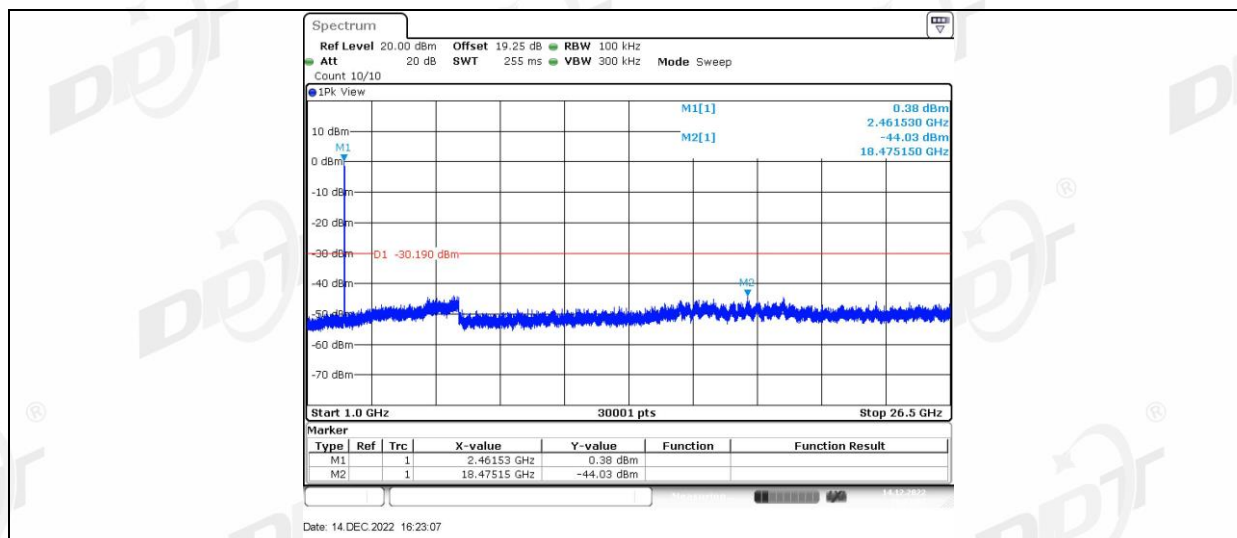
11N20SISO_Ant1_2462_0~Reference



11N20SISO_Ant1_2462_30~1000

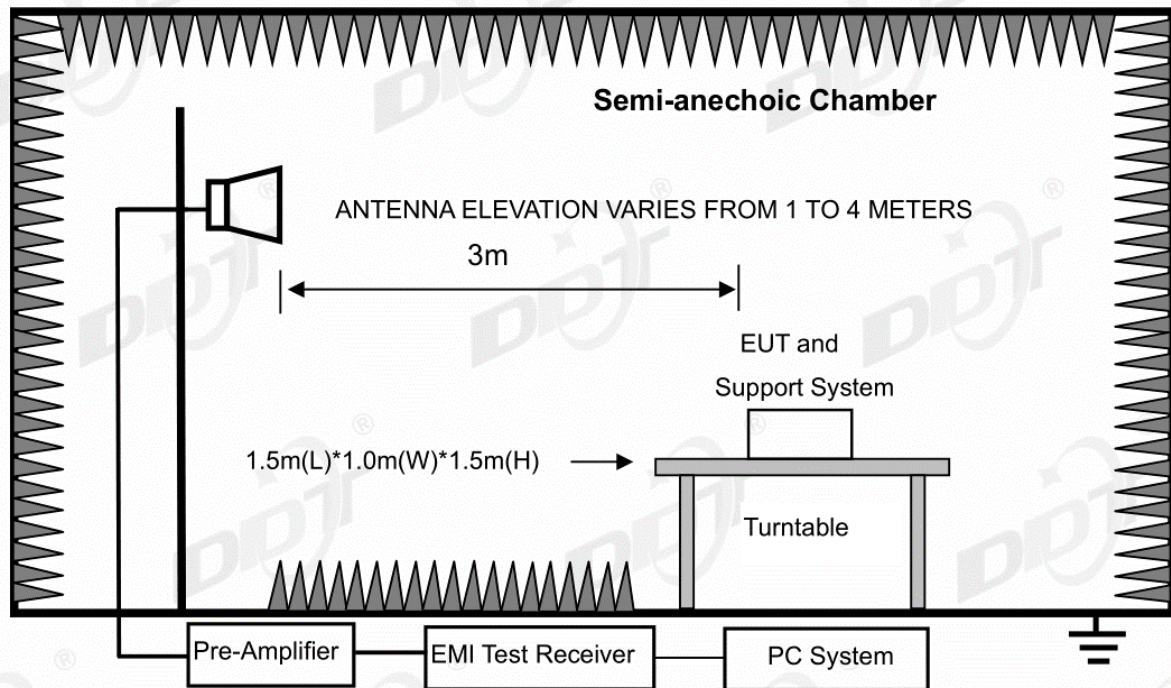


11N20SISO_Ant1_2462_1000~26500



10. Radiated Band Edge Compliance

10.1. Block diagram of test setup



10.2. Limit

All restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400 MHz to 2483.5 MHz shall be at least 20dB below the fundamental emissions or comply with FCC 15.209 limits.

10.3. Test procedure

Same with clause 8.3 except change investigated frequency range from 2310 MHz to 2430 MHz and 2450 MHz to 2500 MHz.

10.4. Test result

Pass. (See below detailed test result)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

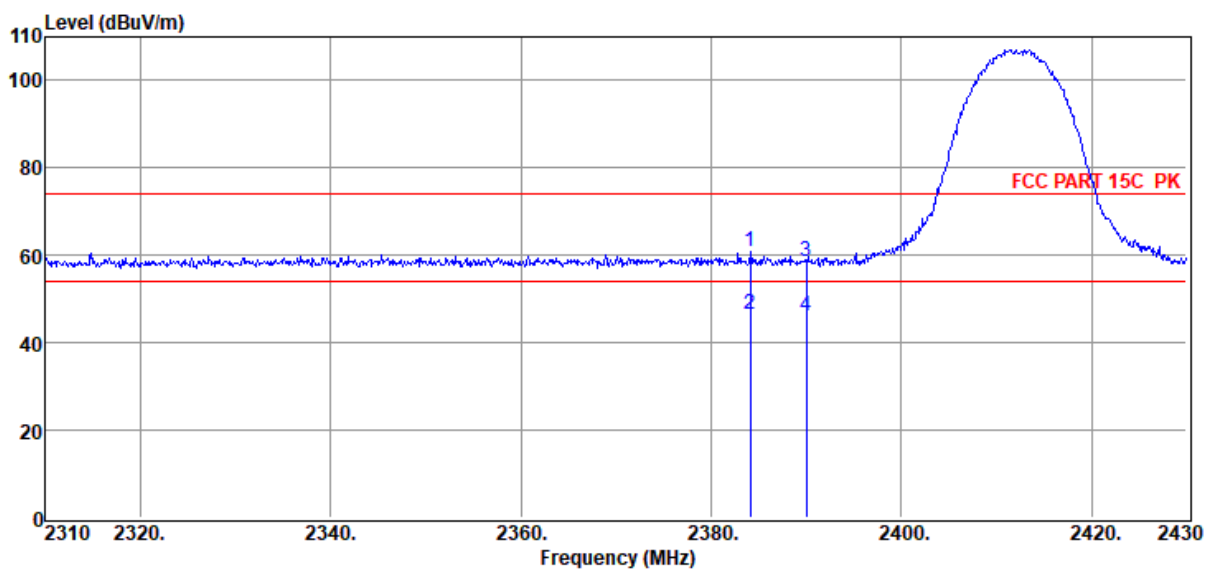
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2412

Data: 1



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2384.16	50.81	27.39	39.59	1.71	0.72	61.04	74.00	-12.96	Peak	HORIZONTAL
2	2384.16	36.33	27.39	39.59	1.71	0.72	46.56	54.00	-7.44	Average	HORIZONTAL
3	2390.04	48.44	27.40	39.60	1.71	0.72	58.67	74.00	-15.33	Peak	HORIZONTAL
4	2390.04	35.97	27.40	39.60	1.71	0.72	46.20	54.00	-7.80	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

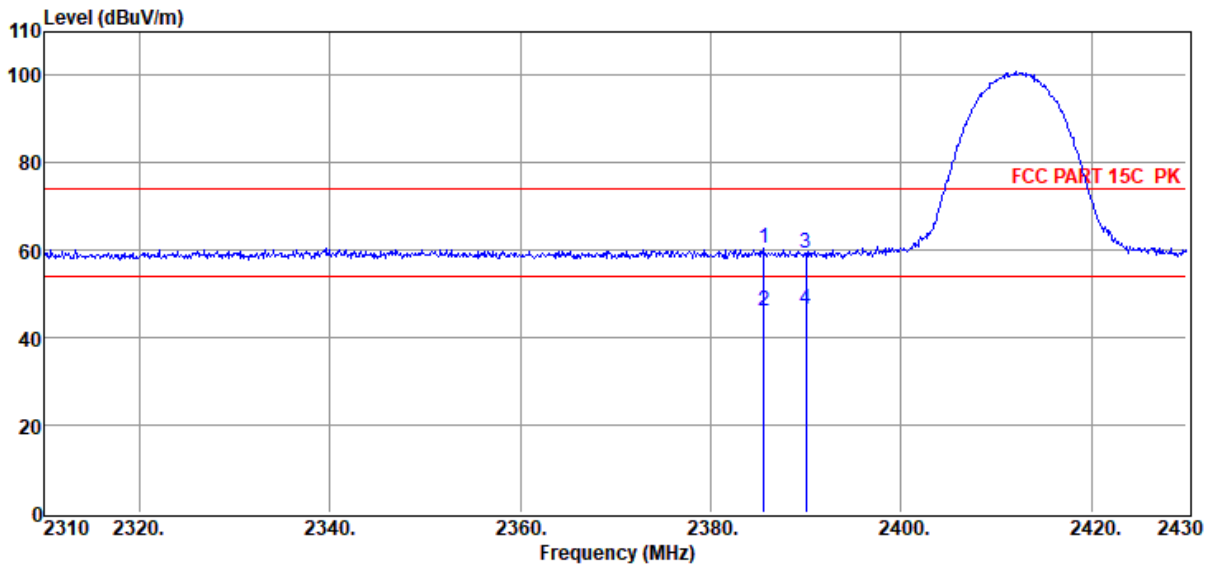
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
ABOVE 1G .EM6**Test Date** : 2022-08-03**Tested By** : Bairong**EUT** : ACTIVE WIRELESS SPEAKER**Model Number** : VIFA013**Power Supply** : AC 120V/60Hz**Test Mode** : Tx mode**Condition** : Temp:21.7°C,Humi:59.9%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL**Memo** : 11B 2412

Data: 2



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2385.60	50.08	27.39	39.59	1.71	0.72	60.31	74.00	-13.69	Peak	VERTICAL
2	2385.60	35.95	27.39	39.59	1.71	0.72	46.18	54.00	-7.82	Average	VERTICAL
3	2390.04	49.11	27.40	39.60	1.71	0.72	59.34	74.00	-14.66	Peak	VERTICAL
4	2390.04	36.38	27.40	39.60	1.71	0.72	46.61	54.00	-7.39	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

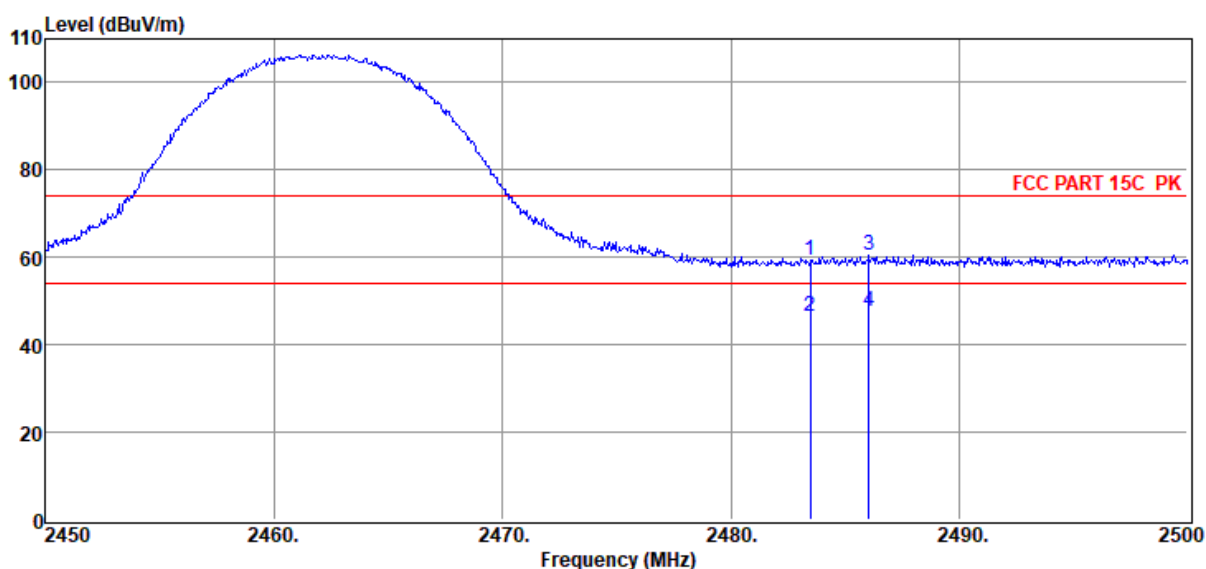
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11B 2462

Data: 3



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	48.97	27.57	39.64	1.74	0.73	59.37	74.00	-14.63	Peak	HORIZONTAL
2	2483.50	36.09	27.57	39.64	1.74	0.73	46.49	54.00	-7.51	Average	HORIZONTAL
3	2486.05	50.10	27.57	39.64	1.74	0.73	60.50	74.00	-13.50	Peak	HORIZONTAL
4	2486.05	37.41	27.57	39.64	1.74	0.73	47.81	54.00	-6.19	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

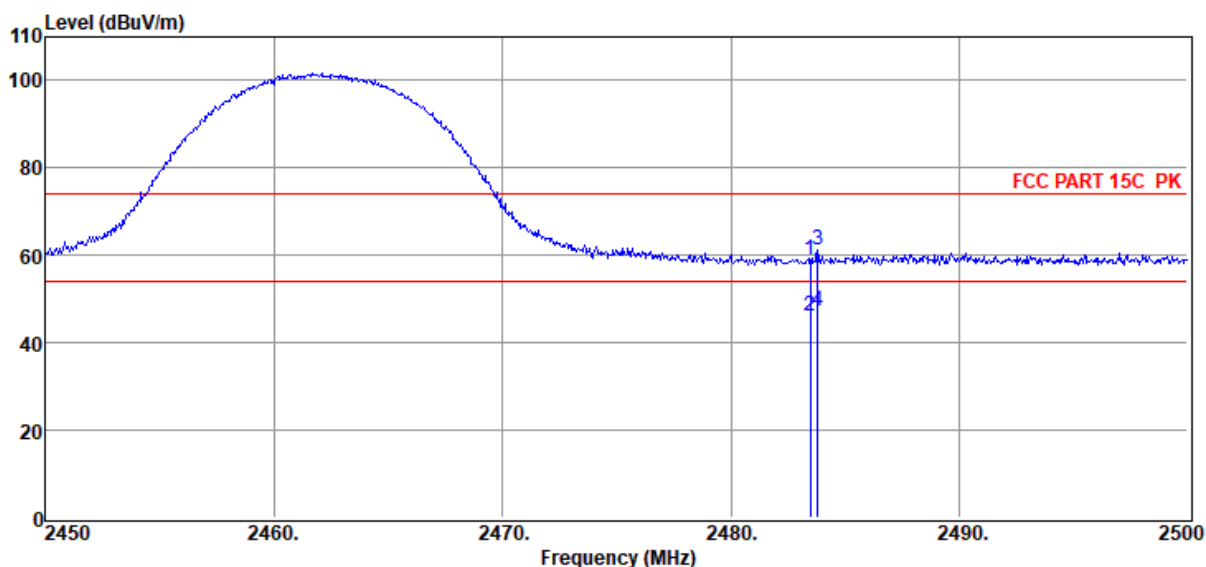
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03**Tested By** : Bairong**EUT** : ACTIVE WIRELESS SPEAKER**Model Number** : VIFA013**Power Supply** : AC 120V/60Hz**Test Mode** : Tx mode**Condition** : Temp:21.7°C,Humi:59.9%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL**Memo** : 11B 2462

Data: 4



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	48.42	27.57	39.64	1.74	0.73	58.82	74.00	-15.18	Peak	VERTICAL
2	2483.50	35.88	27.57	39.64	1.74	0.73	46.28	54.00	-7.72	Average	VERTICAL
3	2483.80	50.65	27.57	39.64	1.74	0.73	61.05	74.00	-12.95	Peak	VERTICAL
4	2483.80	36.76	27.57	39.64	1.74	0.73	47.16	54.00	-6.84	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

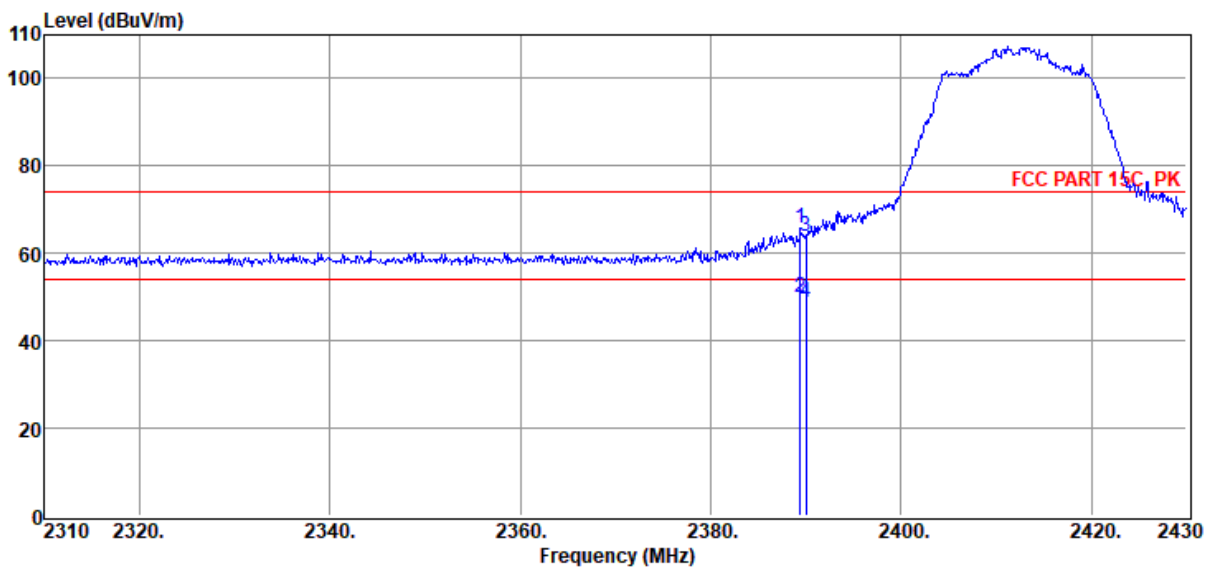
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#
Test Date : 2022-08-03
EUT : ACTIVE WIRELESS SPEAKER
Power Supply : AC 120V/60Hz
Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa
Memo : 11G 2412

Tested By : James Gan
Model Number : VIFA013
Test Mode : Tx mode
Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Data: 5



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2389.44	55.50	27.40	39.59	1.71	0.72	65.74	74.00	-8.26	Peak	HORIZONTAL
2	2389.44	39.77	27.40	39.59	1.71	0.72	50.01	54.00	-3.99	Average	HORIZONTAL
3	2390.04	53.69	27.40	39.60	1.71	0.72	63.92	74.00	-10.08	Peak	HORIZONTAL
4	2390.04	38.56	27.40	39.60	1.71	0.72	48.79	54.00	-5.21	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3# **D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6**

Test Date : 2022-08-03 **Tested By** : James Gan

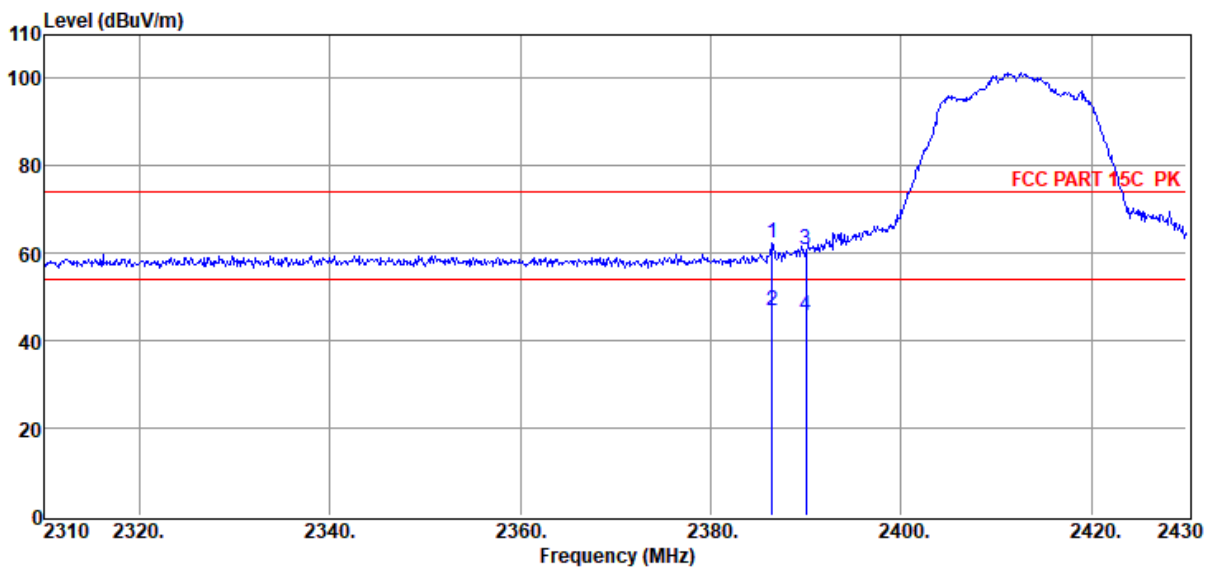
EUT : ACTIVE WIRELESS SPEAKER **Model Number** : VIFA013

Power Supply : AC 120V/60Hz **Test Mode** : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL

Memo : 11G 2412

Data: 6



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2386.44	51.97	27.40	39.59	1.71	0.72	62.21	74.00	-11.79	Peak	VERTICAL
2	2386.44	36.71	27.40	39.59	1.71	0.72	46.95	54.00	-7.05	Average	VERTICAL
3	2390.04	50.58	27.40	39.60	1.71	0.72	60.81	74.00	-13.19	Peak	VERTICAL
4	2390.04	35.40	27.40	39.60	1.71	0.72	45.63	54.00	-8.37	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

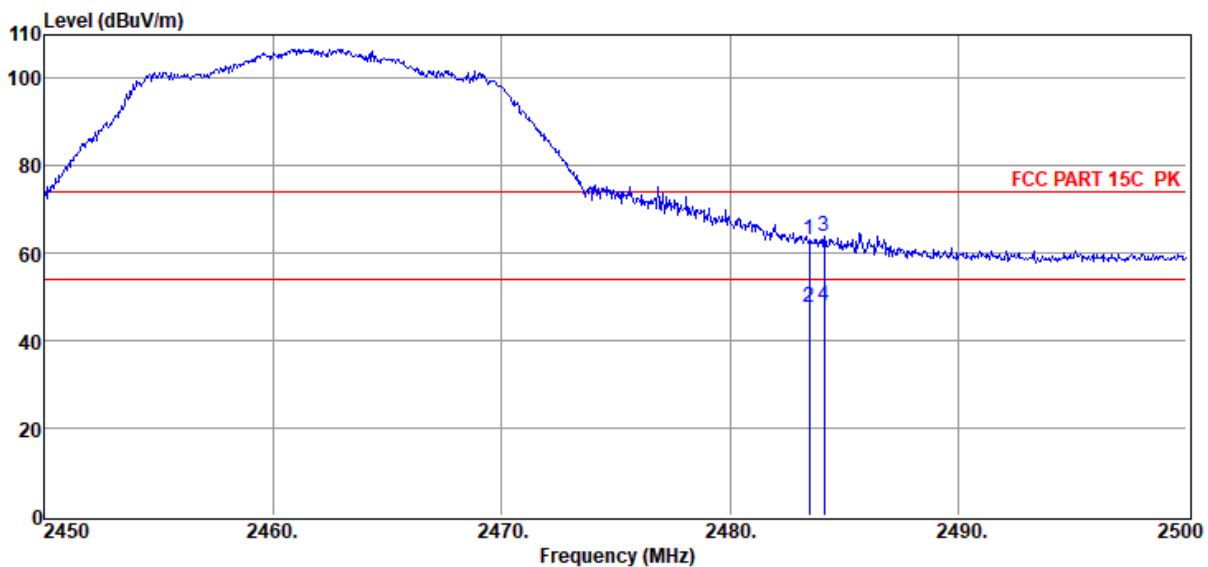
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#
Test Date : 2022-08-03
EUT : ACTIVE WIRELESS SPEAKER
Power Supply : AC 120V/60Hz
Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa
Memo : 11G 2462

Tested By : Bairong
Model Number : VIFA013
Test Mode : Tx mode
Antenna/Distance : 2021 BBHA 9120D
 3#/3m/HORIZONTAL

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Data: 7



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	52.90	27.57	39.64	1.74	0.73	63.30	74.00	-10.70	Peak	HORIZONTAL
2	2483.50	37.22	27.57	39.64	1.74	0.73	47.62	54.00	-6.38	Average	HORIZONTAL
3	2484.15	53.51	27.57	39.64	1.74	0.73	63.91	74.00	-10.09	Peak	HORIZONTAL
4	2484.15	37.51	27.57	39.64	1.74	0.73	47.91	54.00	-6.09	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

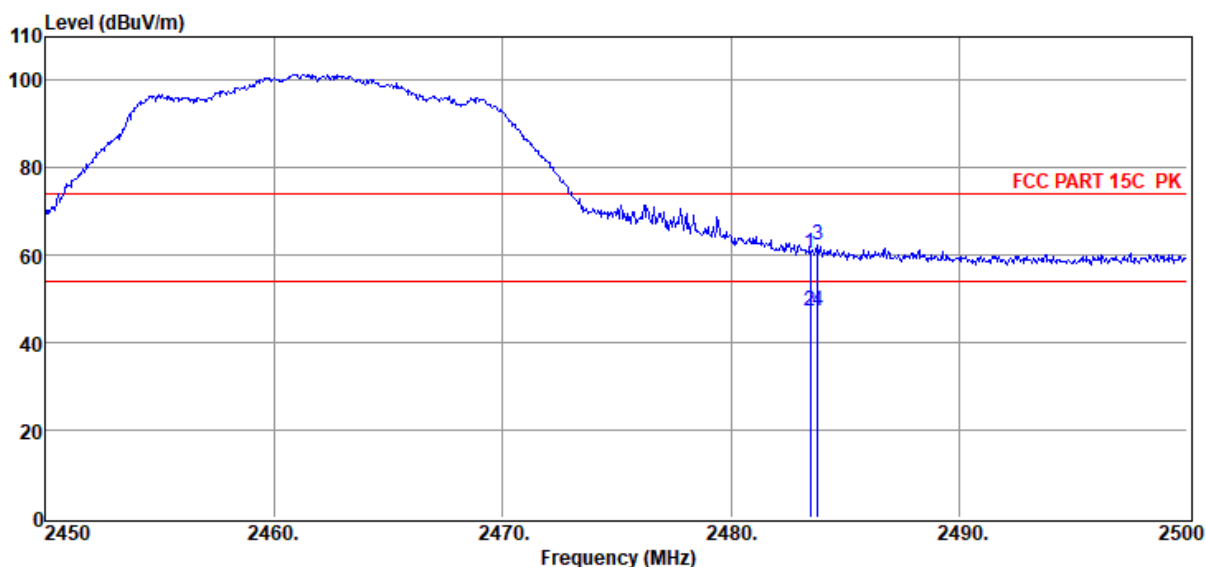
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03**Tested By** : Bairong**EUT** : ACTIVE WIRELESS SPEAKER**Model Number** : VIFA013**Power Supply** : AC 120V/60Hz**Test Mode** : Tx mode**Condition** : Temp:21.7°C,Humi:59.9%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL**Memo** : 11G 2462

Data: 8



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	49.98	27.57	39.64	1.74	0.73	60.38	74.00	-13.62	Peak	VERTICAL
2	2483.50	36.98	27.57	39.64	1.74	0.73	47.38	54.00	-6.62	Average	VERTICAL
3	2483.80	51.92	27.57	39.64	1.74	0.73	62.32	74.00	-11.68	Peak	VERTICAL
4	2483.80	36.85	27.57	39.64	1.74	0.73	47.25	54.00	-6.75	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

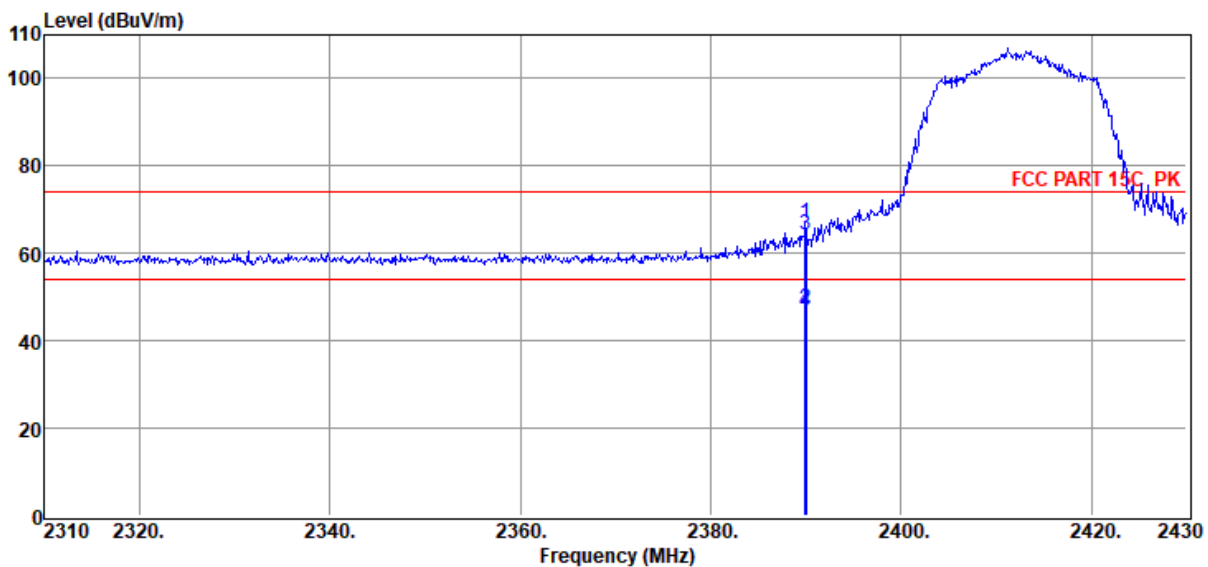
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#
Test Date : 2022-08-03
EUT : ACTIVE WIRELESS SPEAKER
Power Supply : AC 120V/60Hz
Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa
Memo : 11N20 2412

Tested By : James Gan
Model Number : VIFA013
Test Mode : Tx mode
Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Data: 9



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2389.92	56.78	27.40	39.59	1.71	0.72	67.02	74.00	-6.98	Peak	HORIZONTAL
2	2389.92	36.97	27.40	39.59	1.71	0.72	47.21	54.00	-6.79	Average	HORIZONTAL
3	2390.04	53.95	27.40	39.60	1.71	0.72	64.18	74.00	-9.82	Peak	HORIZONTAL
4	2390.04	36.75	27.40	39.60	1.71	0.72	46.98	54.00	-7.02	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

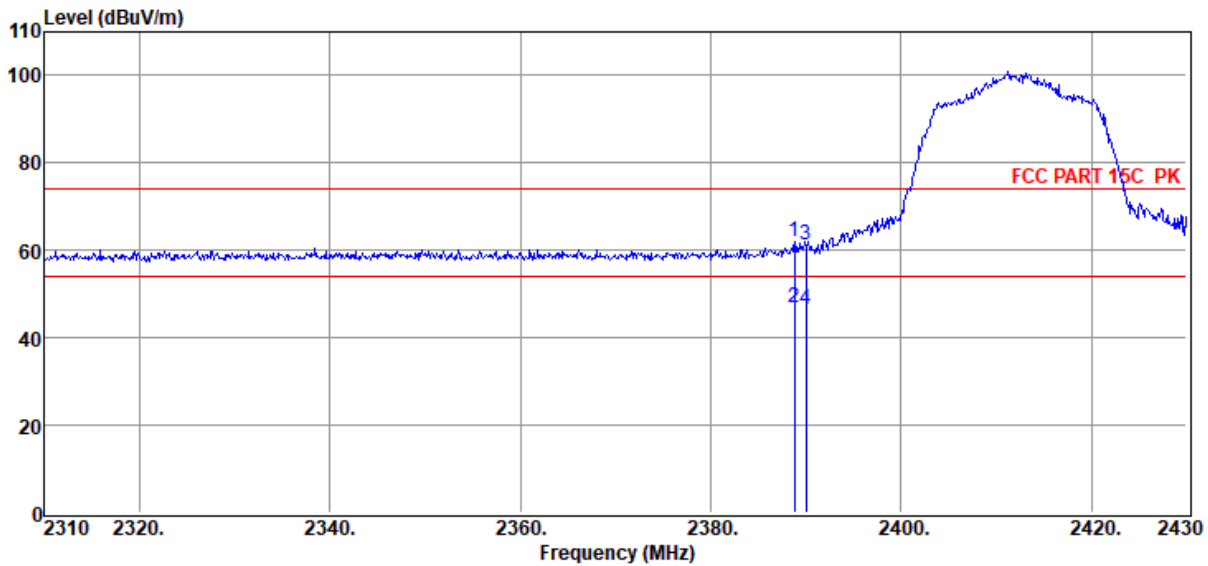
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC
ABOVE 1G .EM6**Test Date** : 2022-08-03**Tested By** : James Gan**EUT** : ACTIVE WIRELESS SPEAKER**Model Number** : VIFA013**Power Supply** : AC 120V/60Hz**Test Mode** : Tx mode**Condition** : Temp:21.7°C,Humi:59.9%,Press:100.3kPa **Antenna/Distance** : 2021 BBHA 9120D 3#/3m/VERTICAL**Memo** : 11N20 2412

Data: 10



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2388.84	51.90	27.40	39.59	1.71	0.72	62.14	74.00	-11.86	Peak	VERTICAL
2	2388.84	36.45	27.40	39.59	1.71	0.72	46.69	54.00	-7.31	Average	VERTICAL
3	2390.04	51.13	27.40	39.60	1.71	0.72	61.36	74.00	-12.64	Peak	VERTICAL
4	2390.04	36.34	27.40	39.60	1.71	0.72	46.57	54.00	-7.43	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Test Date : 2022-08-03

Tested By : Bairong

EUT : ACTIVE WIRELESS SPEAKER

Model Number : VIFA013

Power Supply : AC 120V/60Hz

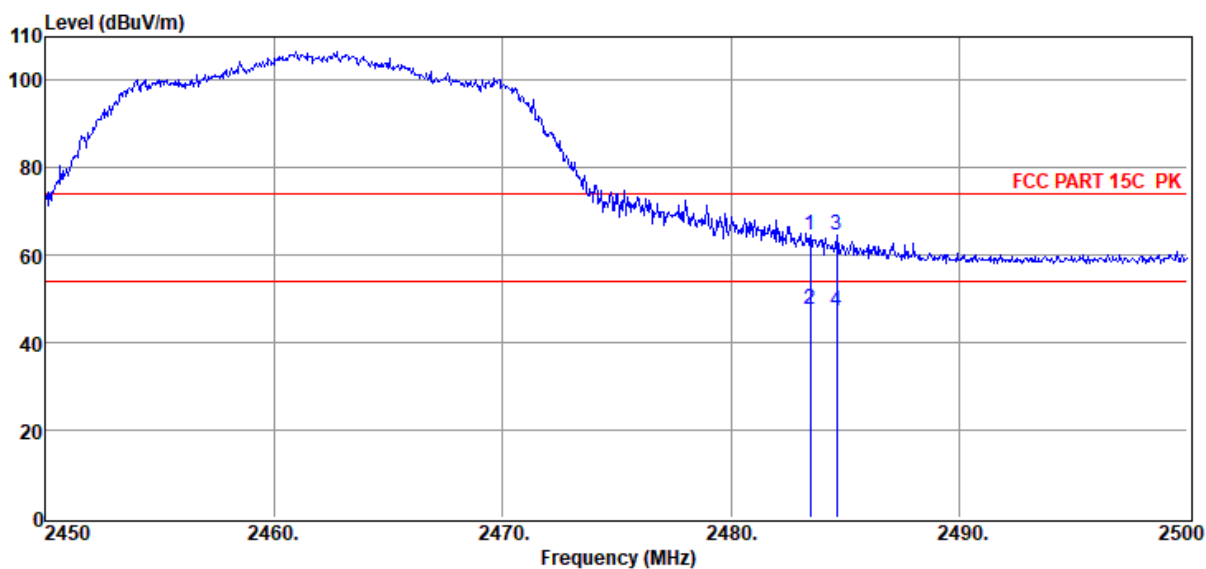
Test Mode : Tx mode

Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa

Antenna/Distance : 2021 BBHA 9120D
3#/3m/HORIZONTAL

Memo : 11N20 2462

Data: 11



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	54.06	27.57	39.64	1.74	0.73	64.46	74.00	-9.54	Peak	HORIZONTAL
2	2483.50	37.11	27.57	39.64	1.74	0.73	47.51	54.00	-6.49	Average	HORIZONTAL
3	2484.65	54.42	27.57	39.64	1.74	0.73	64.82	74.00	-9.18	Peak	HORIZONTAL
4	2484.65	36.87	27.57	39.64	1.74	0.73	47.27	54.00	-6.73	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

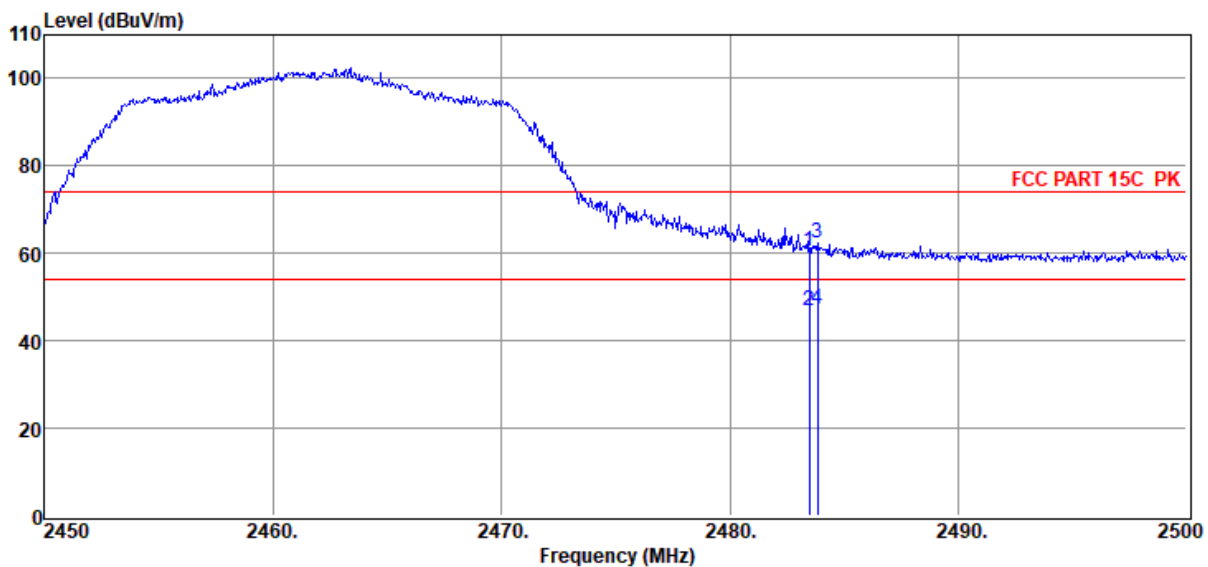
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 3#
Test Date : 2022-08-03
EUT : ACTIVE WIRELESS SPEAKER
Power Supply : AC 120V/60Hz
Condition : Temp:21.7°C,Humi:59.9%,Press:100.3kPa
Memo : 11N20 2462

Tested By : Bairong
Model Number : VIFA013
Test Mode : Tx mode
Antenna/Distance : 2021 BBHA 9120D 3#/3m/VERTICAL

D:\E3 6.111\2022 Report Data\Q22072104-2E VIFA013\FCC ABOVE 1G .EM6

Data: 12



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Filter Factor dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	50.08	27.57	39.64	1.74	0.73	60.48	74.00	-13.52	Peak	VERTICAL
2	2483.50	36.33	27.57	39.64	1.74	0.73	46.73	54.00	-7.27	Average	VERTICAL
3	2483.85	51.81	27.57	39.64	1.74	0.73	62.21	74.00	-11.79	Peak	VERTICAL
4	2483.85	36.74	27.57	39.64	1.74	0.73	47.14	54.00	-6.86	Average	VERTICAL

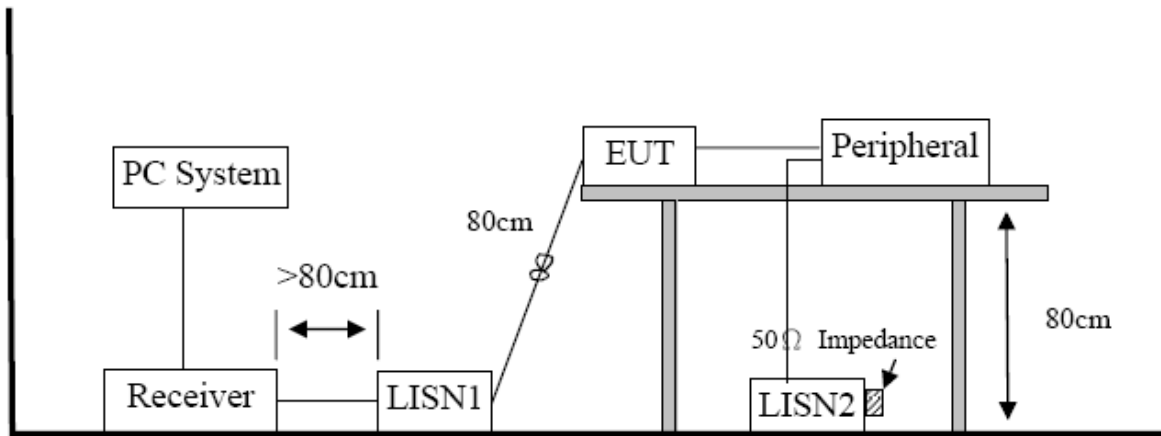
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss + Filter Factor - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

11. Power Line Conducted Emission

11.1. Block diagram of test setup



11.2. Power Line Conducted Emission Limits (Class B)

Frequency	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

11.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

11.4. Test result

Pass. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

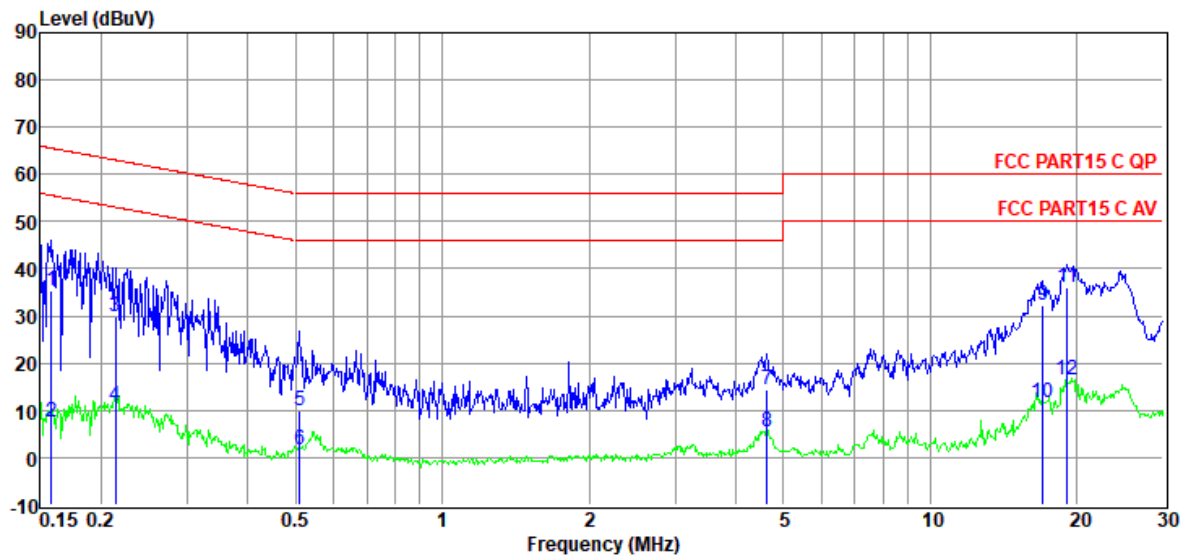
Note2: “----” means peak detection; “----” means average detection

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/60Hz, recorded worse case.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2022 CE report date\Q22072104-2E VIFA013\FCC.EM6**
Test Date : 2022-08-04 **Tested By** : Bairong
EUT : ACTIVE WIRELESS SPEAKER **Model Number** : VIFA013
Power Supply : AC 120V/60Hz **Test Mode** : Tx mode
Condition : TEMP:23.8°C, RH:62.0%, BP:101.2kPa **LISN** : 2021 1# ENV216/NEUTRAL
Memo :

Data: 6



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.16	15.54	9.80	0.01	9.92	35.27	65.56	-30.29	QP	NEUTRAL
2	0.16	-12.11	9.80	0.01	9.92	7.62	55.56	-47.94	Average	NEUTRAL
3	0.21	10.19	9.78	0.01	9.92	29.90	63.05	-33.15	QP	NEUTRAL
4	0.21	-8.83	9.78	0.01	9.92	10.88	53.05	-42.17	Average	NEUTRAL
5	0.51	-9.40	9.52	0.02	9.91	10.05	56.00	-45.95	QP	NEUTRAL
6	0.51	-17.66	9.52	0.02	9.91	1.79	46.00	-44.21	Average	NEUTRAL
7	4.62	-5.33	9.75	0.06	9.93	14.41	56.00	-41.59	QP	NEUTRAL
8	4.62	-14.44	9.75	0.06	9.93	5.30	46.00	-40.70	Average	NEUTRAL
9	17.02	12.48	9.69	0.16	9.94	32.27	60.00	-27.73	QP	NEUTRAL
10	17.02	-8.00	9.69	0.16	9.94	11.79	50.00	-38.21	Average	NEUTRAL
11	19.12	16.17	9.77	0.17	9.96	36.07	60.00	-23.93	QP	NEUTRAL
12	19.12	-3.35	9.77	0.17	9.96	16.55	50.00	-33.45	Average	NEUTRAL

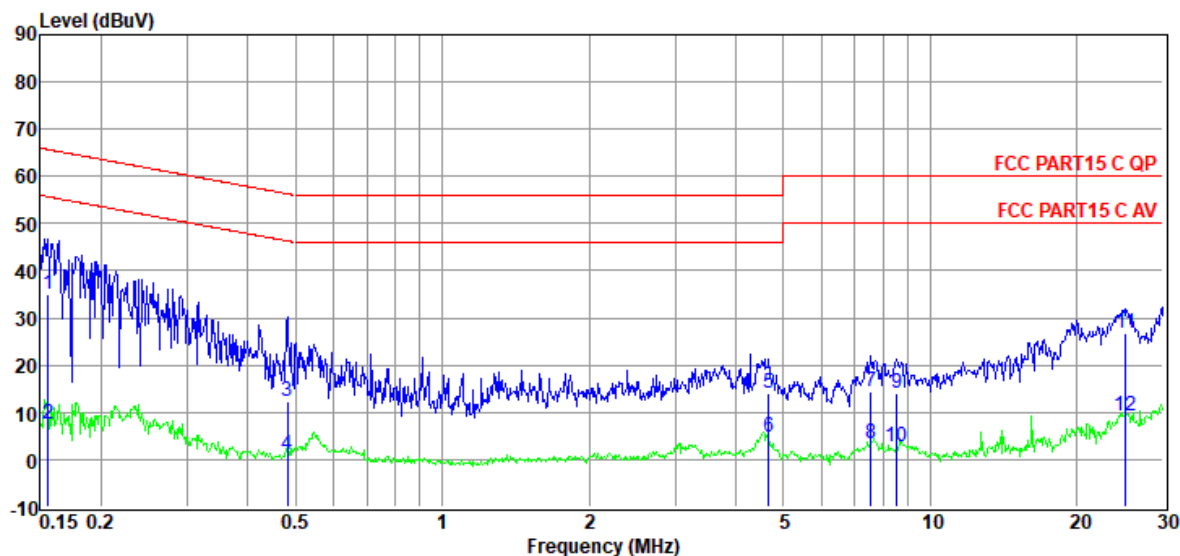
Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2022 CE report date\Q22072104-2E VIFA013\FCC.EM6**
Test Date : 2022-08-04 **Tested By** : Bairong
EUT : ACTIVE WIRELESS SPEAKER **Model Number** : VIFA013
Power Supply : AC 120V/60Hz **Test Mode** : Tx mode
Condition : TEMP:23.8°C, RH:62.0%, BP:101.2kPa **LISN** : 2021 1# ENV216/LINE
Memo :

Data: 14



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.16	15.40	9.63	0.01	9.92	34.96	65.69	-30.73	QP	LINE
2	0.16	-12.04	9.63	0.01	9.92	7.52	55.69	-48.17	Average	LINE
3	0.48	-7.30	9.61	0.02	9.91	12.24	56.32	-44.08	QP	LINE
4	0.48	-18.66	9.61	0.02	9.91	0.88	46.32	-45.44	Average	LINE
5	4.67	-5.66	9.57	0.06	9.93	13.90	56.00	-42.10	QP	LINE
6	4.67	-14.72	9.57	0.06	9.93	4.84	46.00	-41.16	Average	LINE
7	7.57	-4.97	9.50	0.09	9.94	14.56	60.00	-45.44	QP	LINE
8	7.57	-16.05	9.50	0.09	9.94	3.48	50.00	-46.52	Average	LINE
9	8.55	-5.54	9.50	0.10	9.94	14.00	60.00	-46.00	QP	LINE
10	8.55	-16.82	9.50	0.10	9.94	2.72	50.00	-47.28	Average	LINE
11	25.19	7.06	9.66	0.19	9.98	26.89	60.00	-33.11	QP	LINE
12	25.19	-10.74	9.66	0.19	9.98	9.09	50.00	-40.91	Average	LINE

Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

12. Antenna Requirements

12.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

12.2. Result

The product is FPC antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain is 4.3 dBi.

13. Photos of the EUT

Please refer to appendix I

END OF REPORT