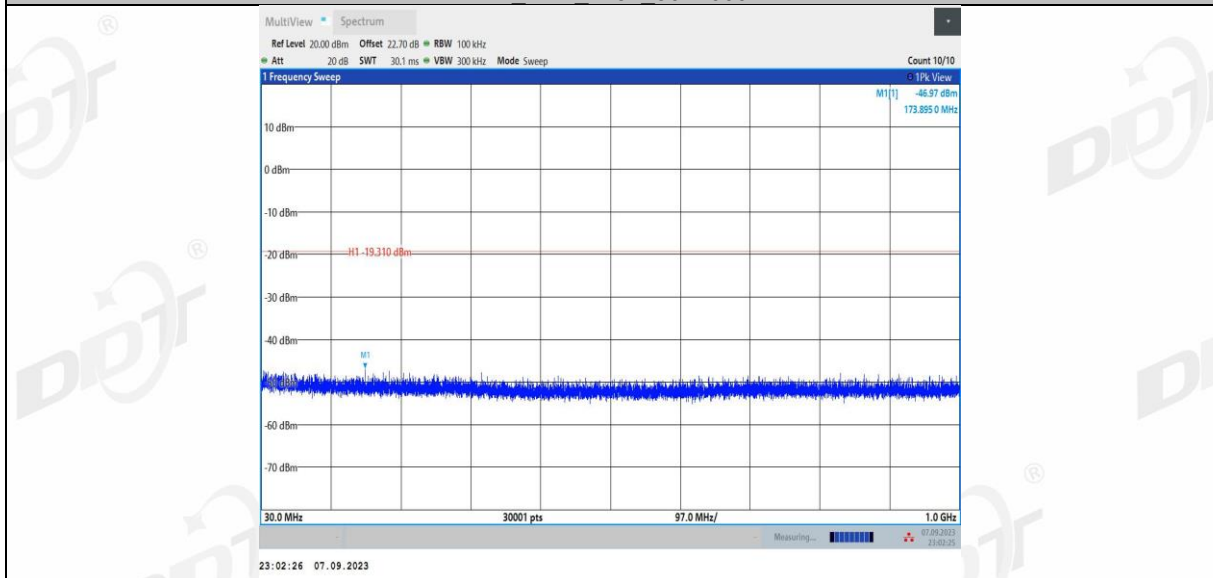
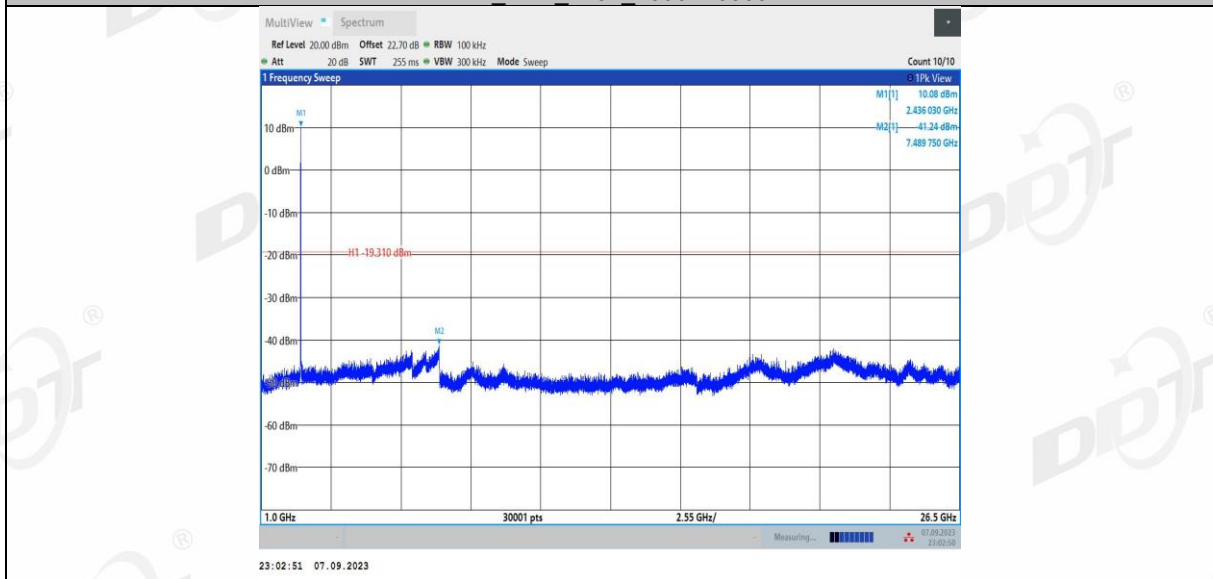


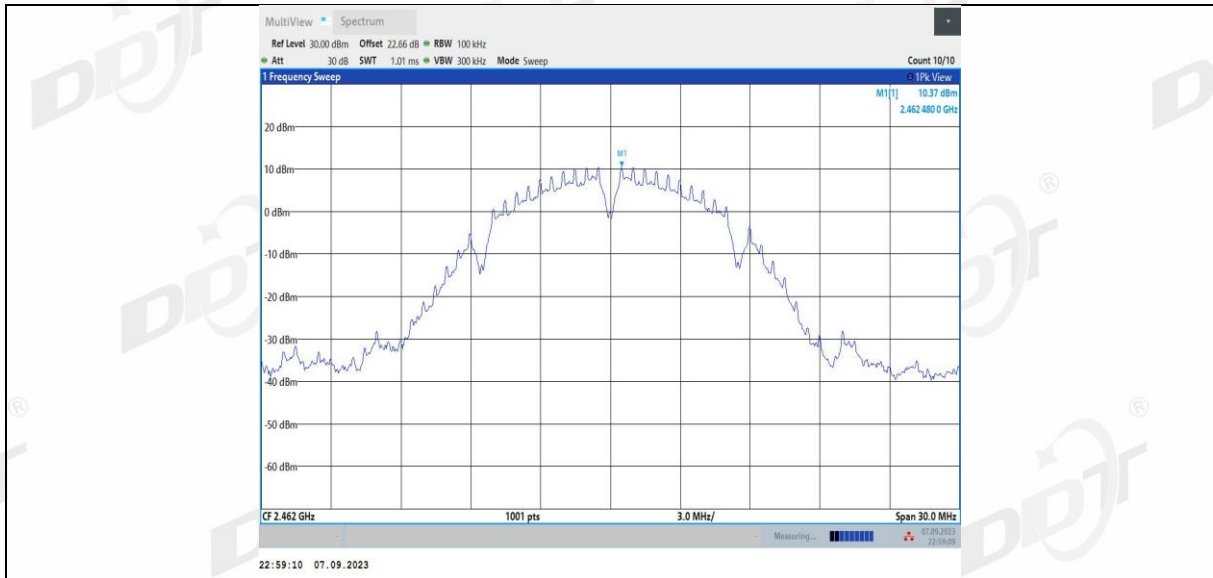
11B Ant2 2437 30~1000



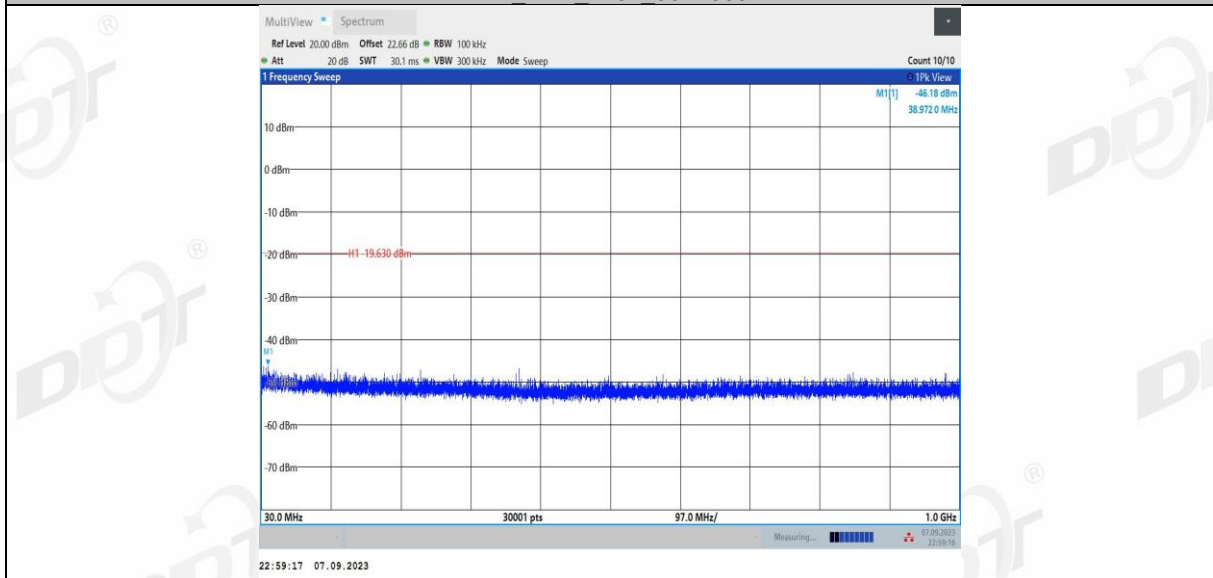
11B Ant2 2437 1000~26500



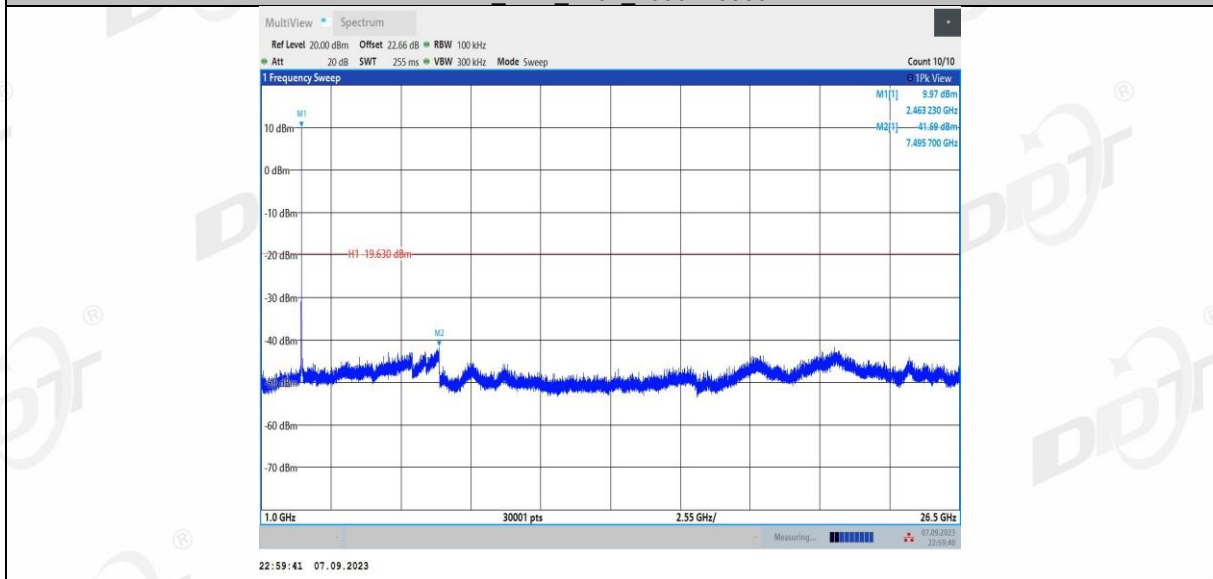
11B Ant1 2462 0~Reference



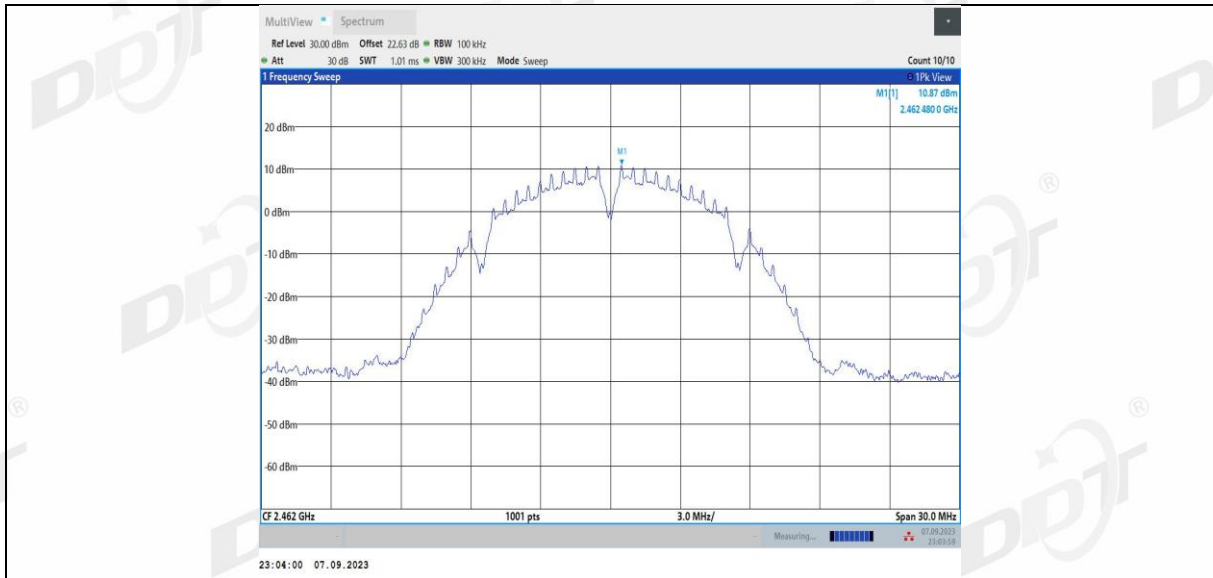
11B Ant1 2462 30~1000



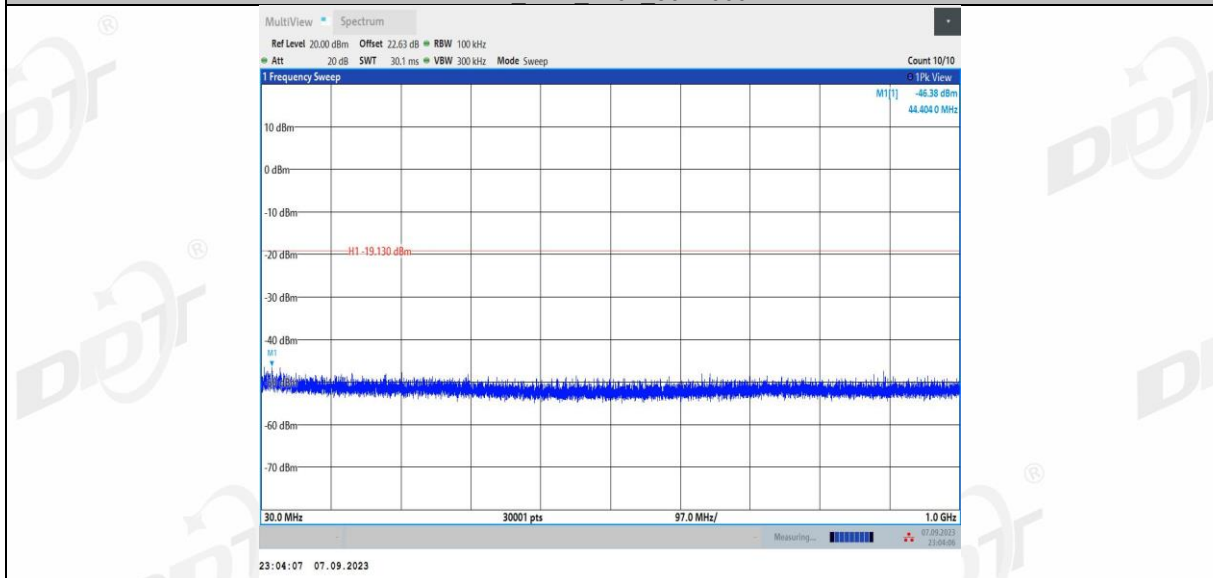
11B Ant1 2462 1000~26500



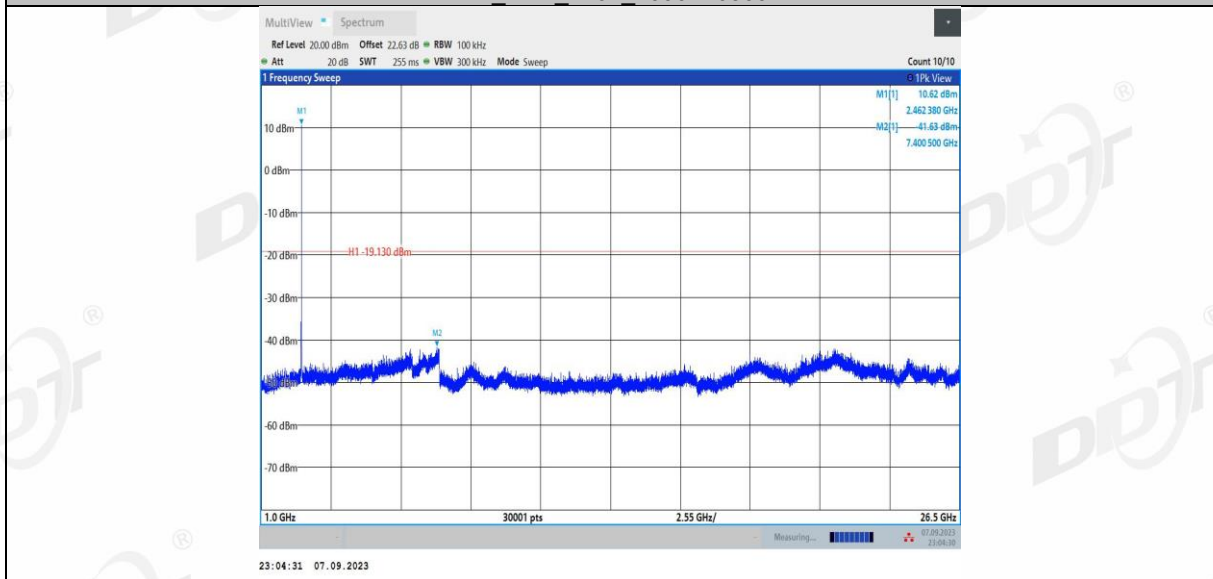
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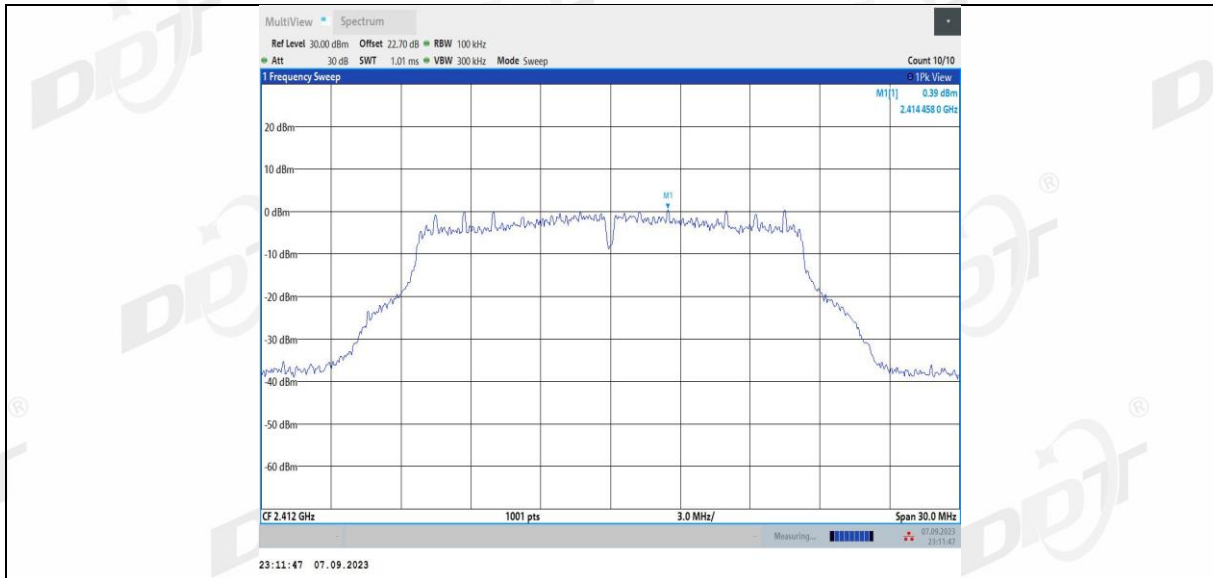
11B Ant2 2462 30~1000



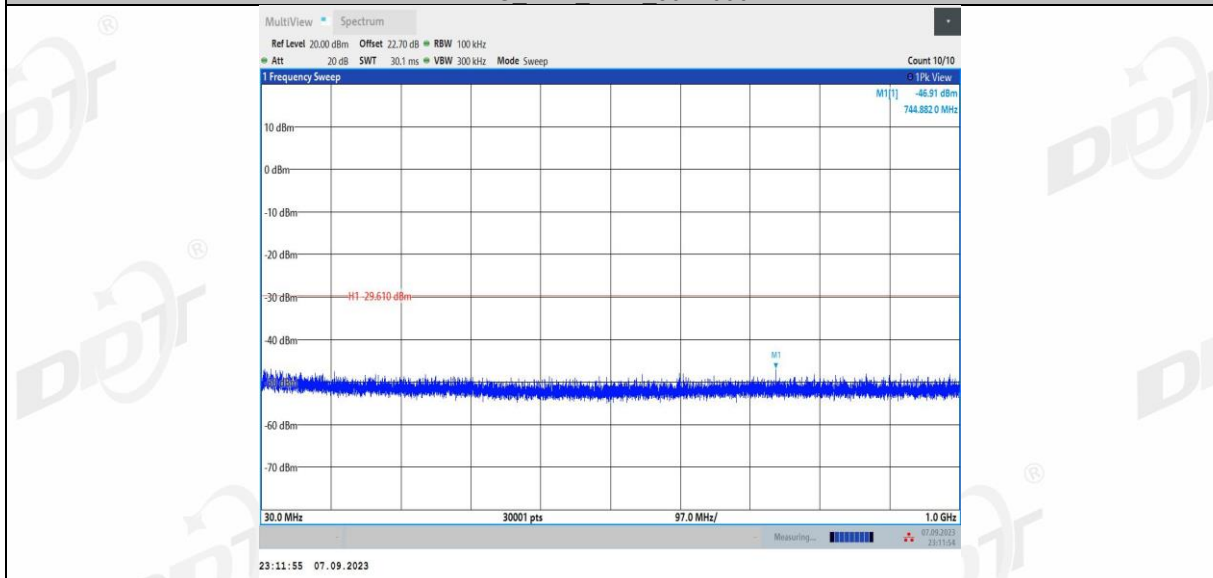
11B Ant2 2462 1000~26500



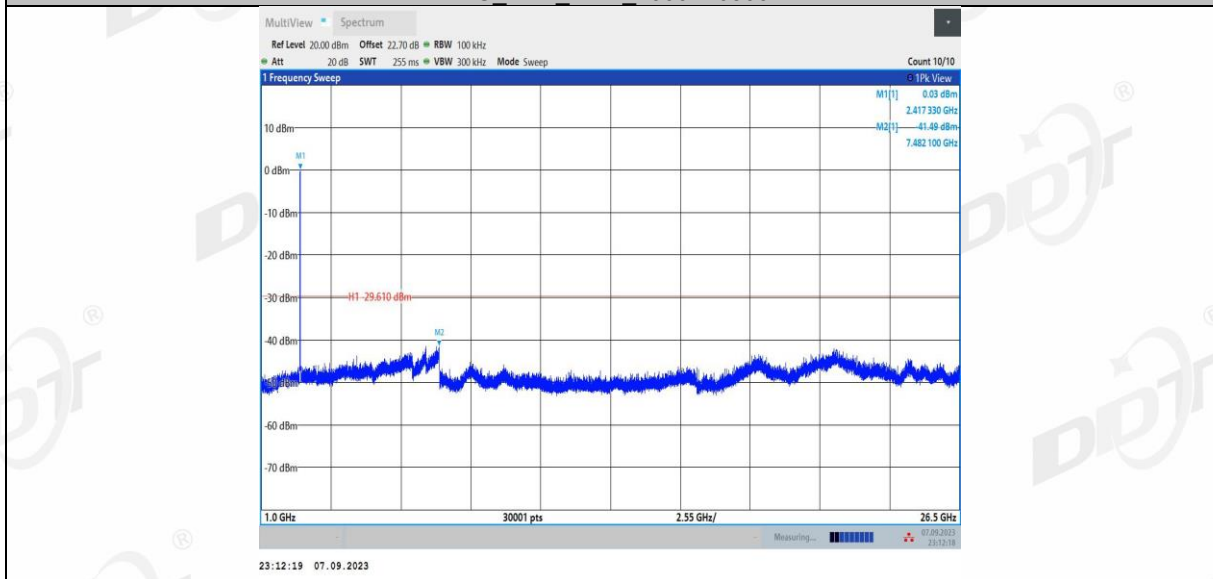
11G Ant1 2412 0~Reference



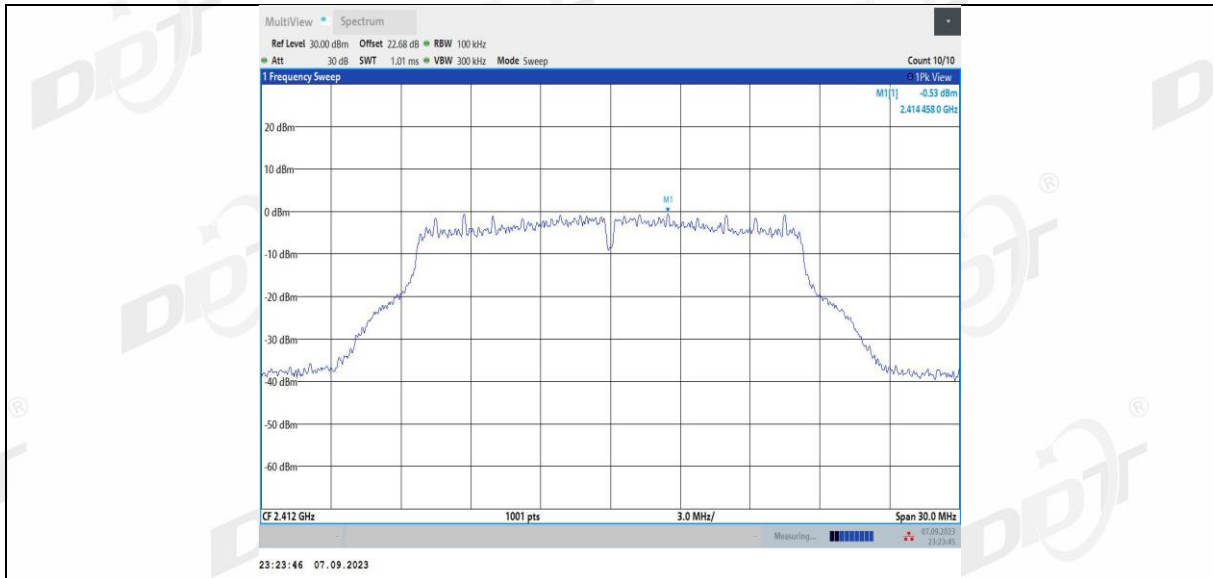
11G Ant1 2412 30~1000



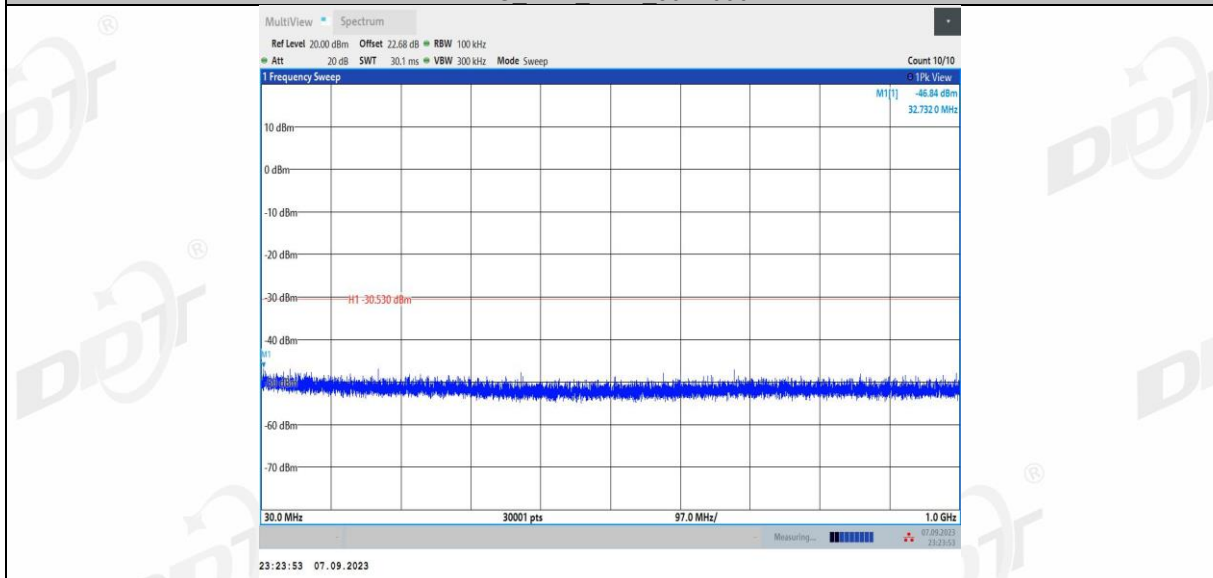
11G Ant1 2412 1000~26500



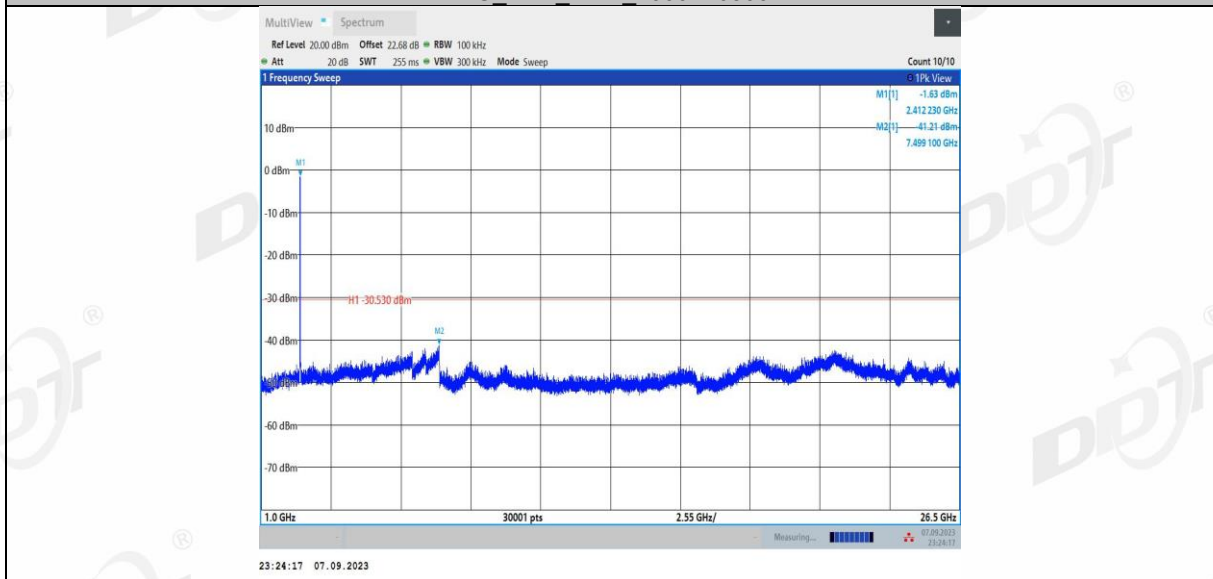
11G Ant2 2412 0~Reference



11G Ant2 2412 30~1000

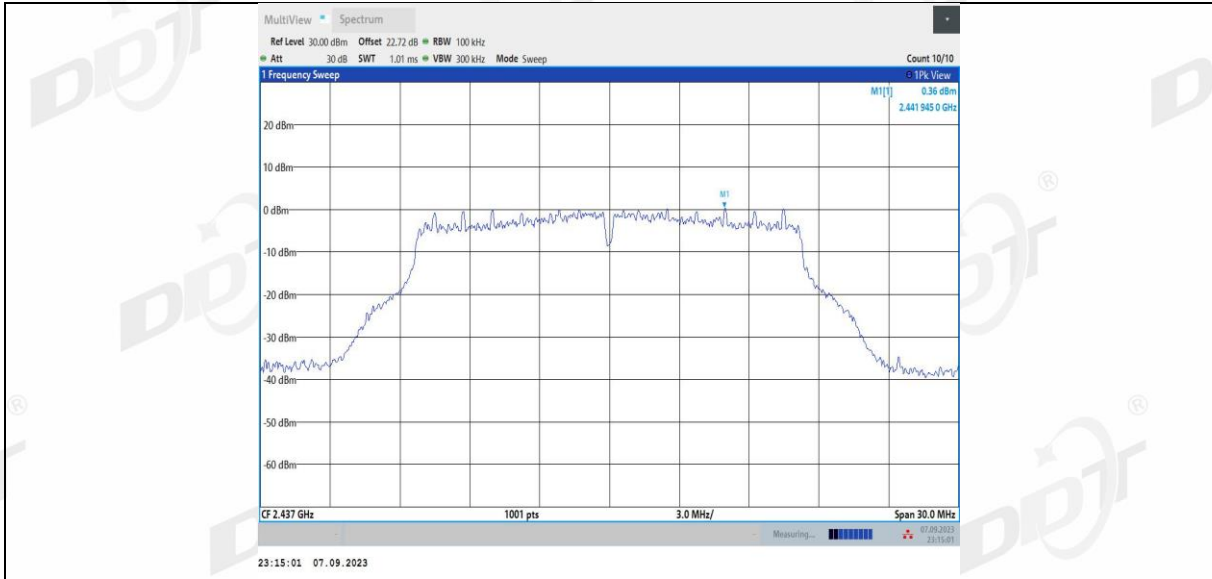


11G Ant2 2412 1000~26500

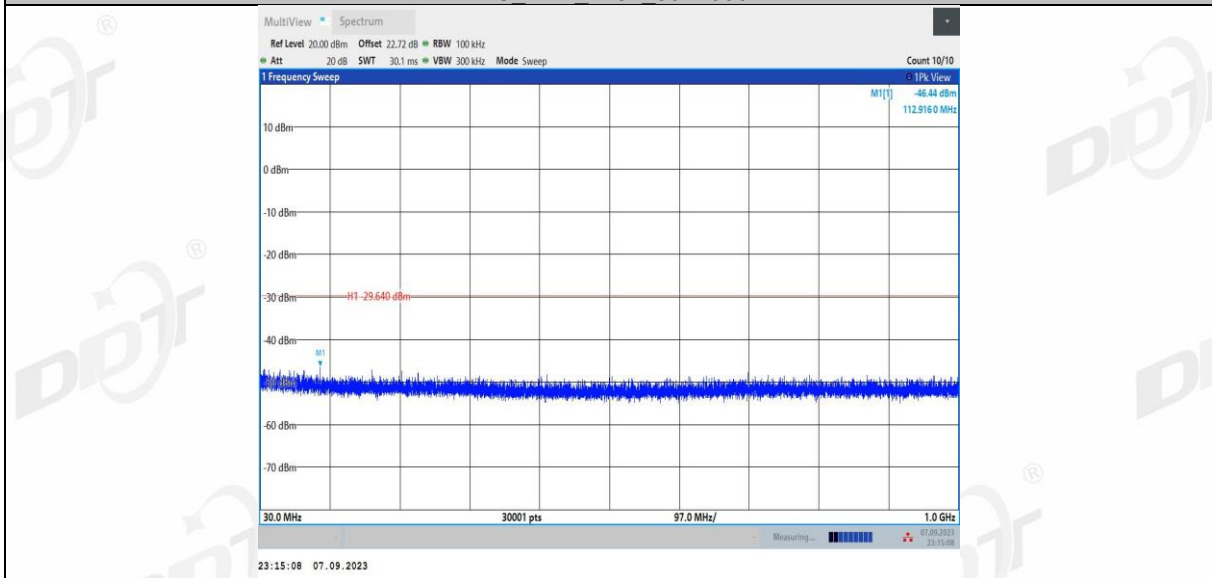


11G Ant1 2437 0~Reference

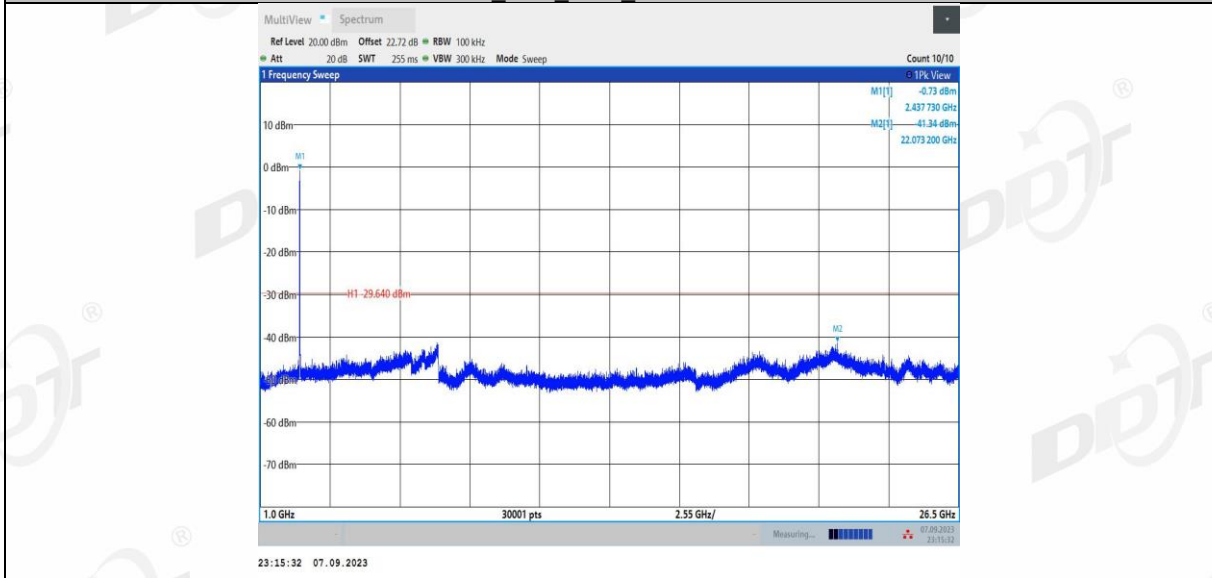




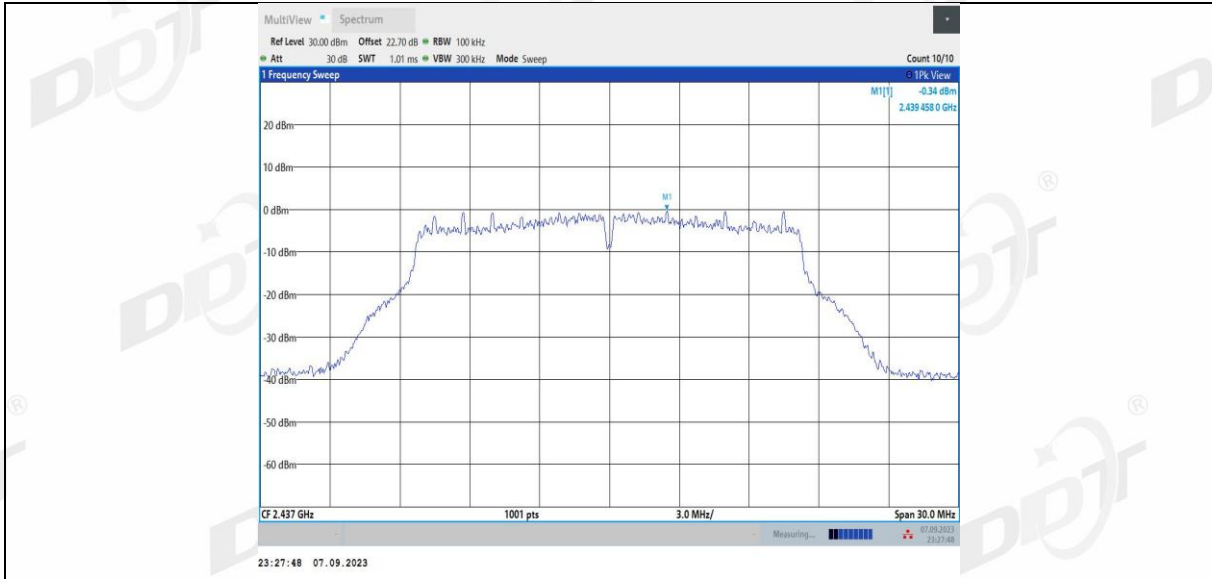
11G Ant1 2437 30~1000



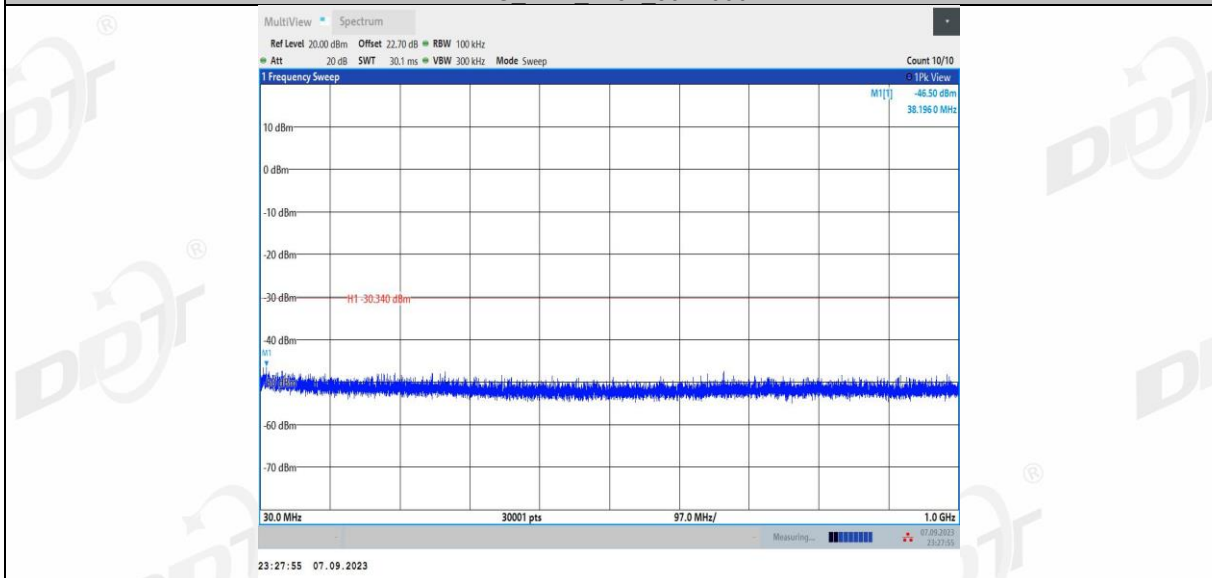
11G Ant1 2437 1000~26500



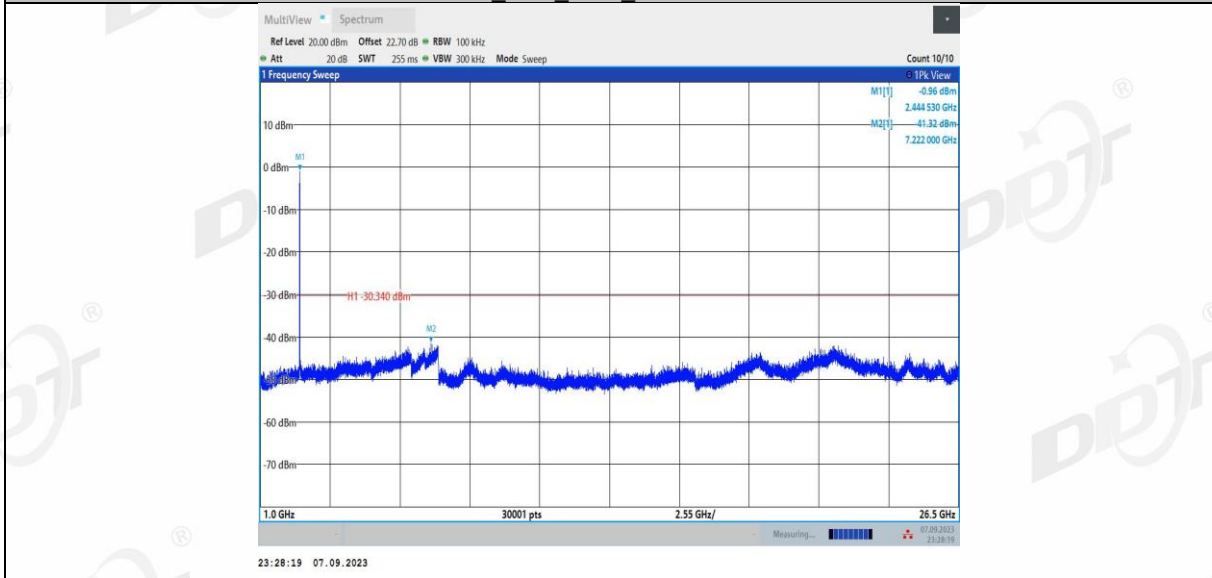
11G Ant2 2437 0~Reference



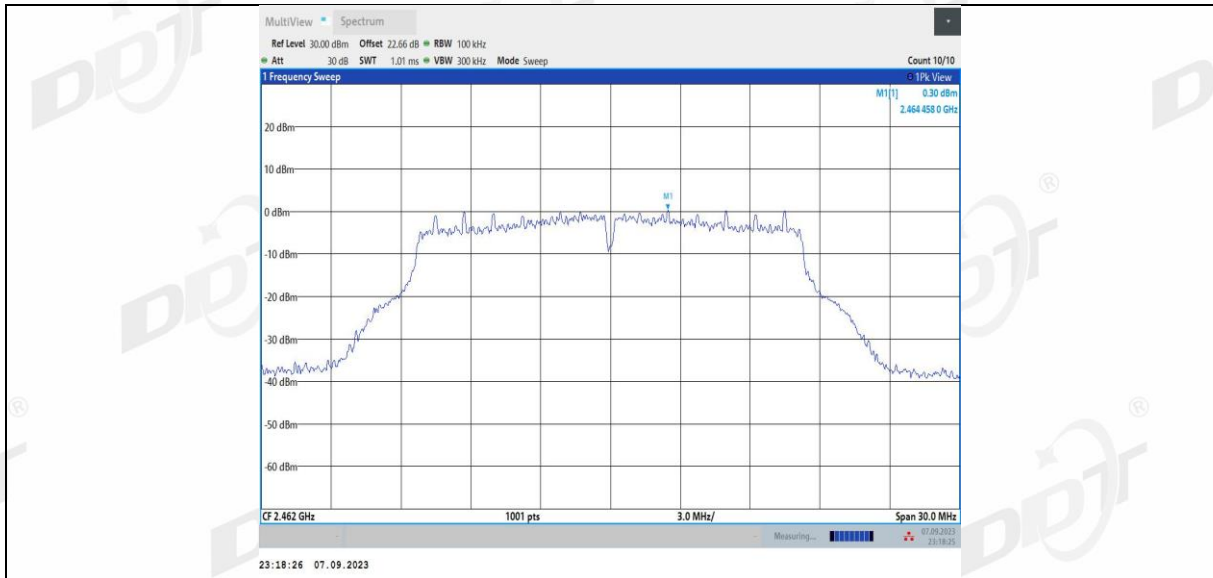
11G Ant2 2437 30~1000



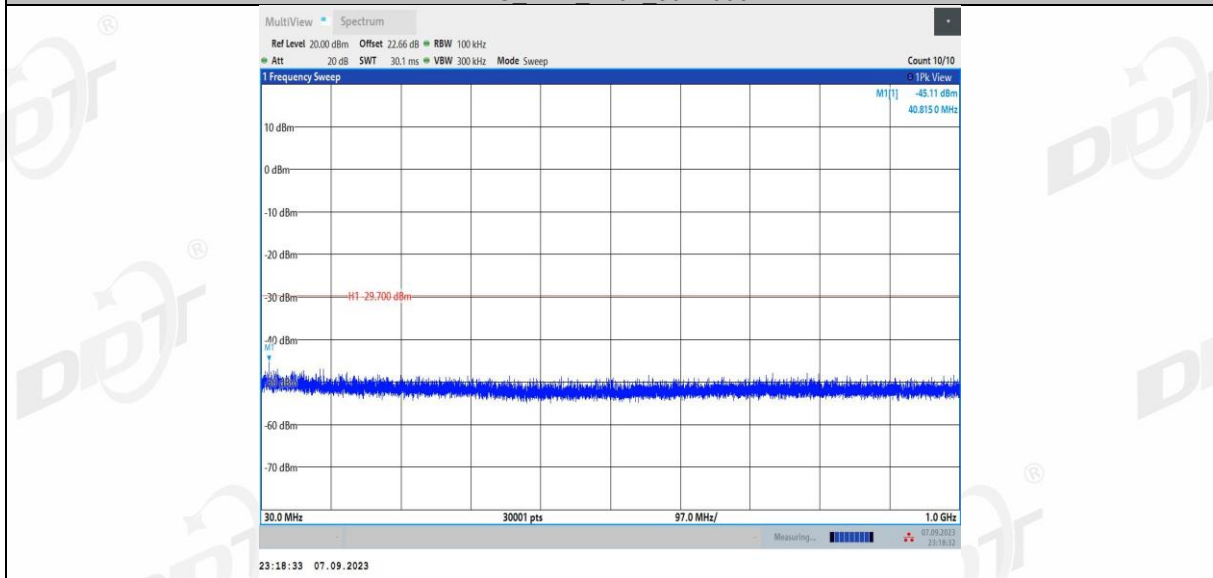
11G Ant2 2437 1000~26500



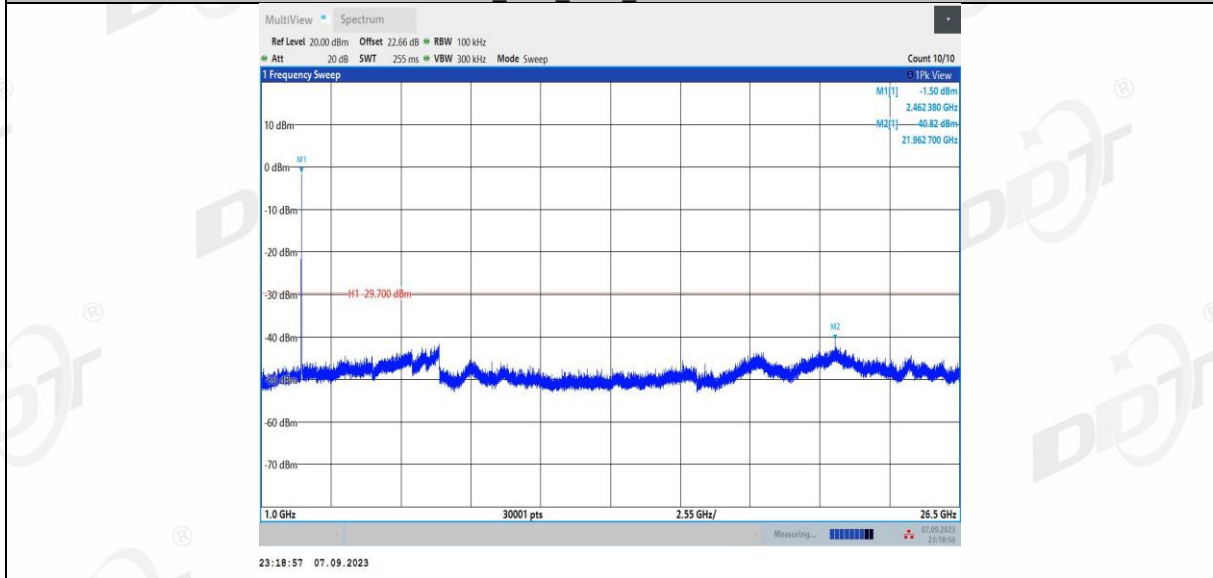
11G Ant1 2462 0~Reference



11G Ant1 2462 30~1000

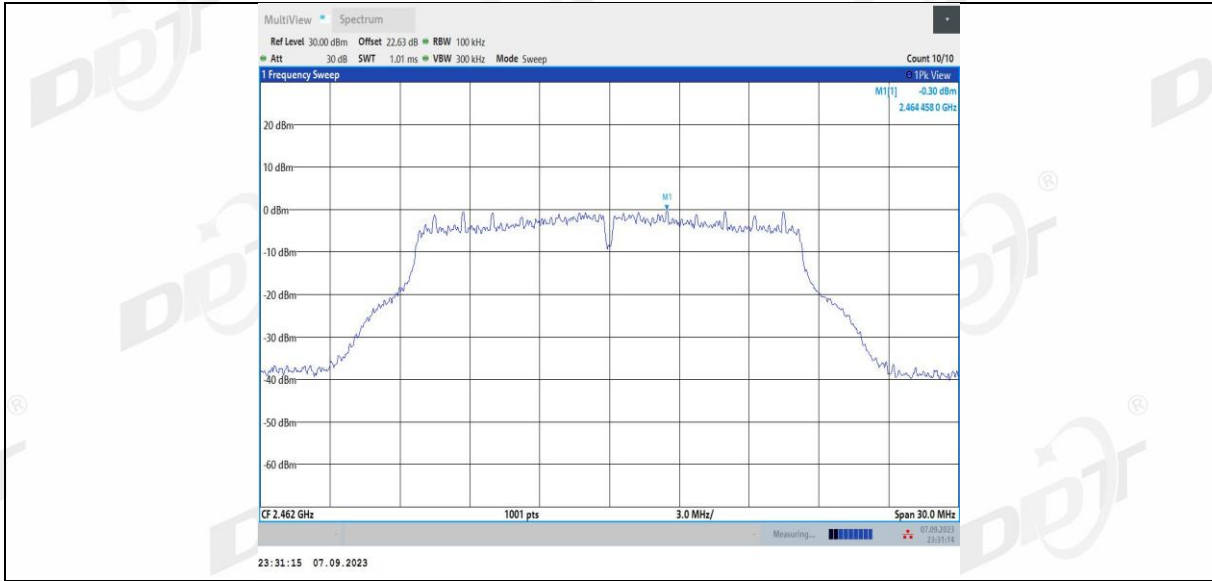


11G Ant1 2462 1000~26500

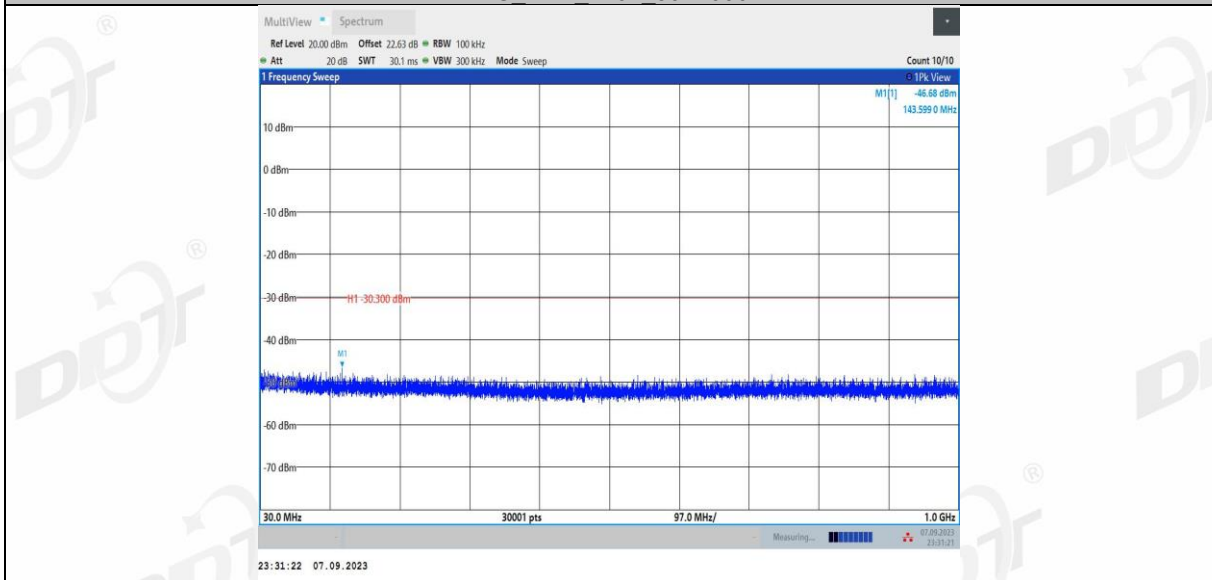


11G Ant2 2462 0~Reference

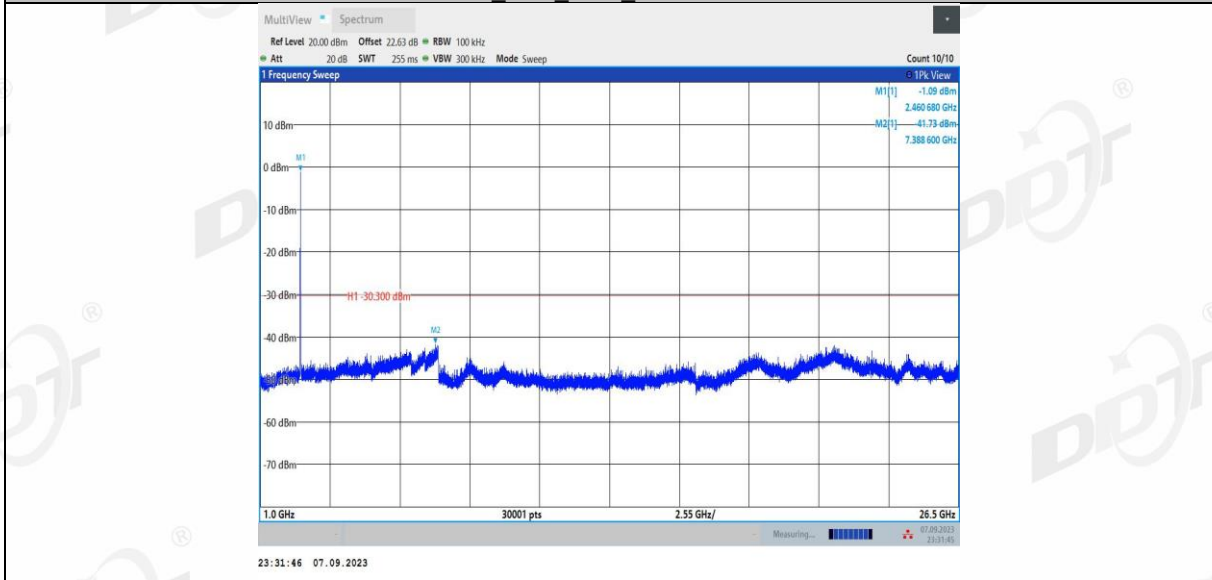




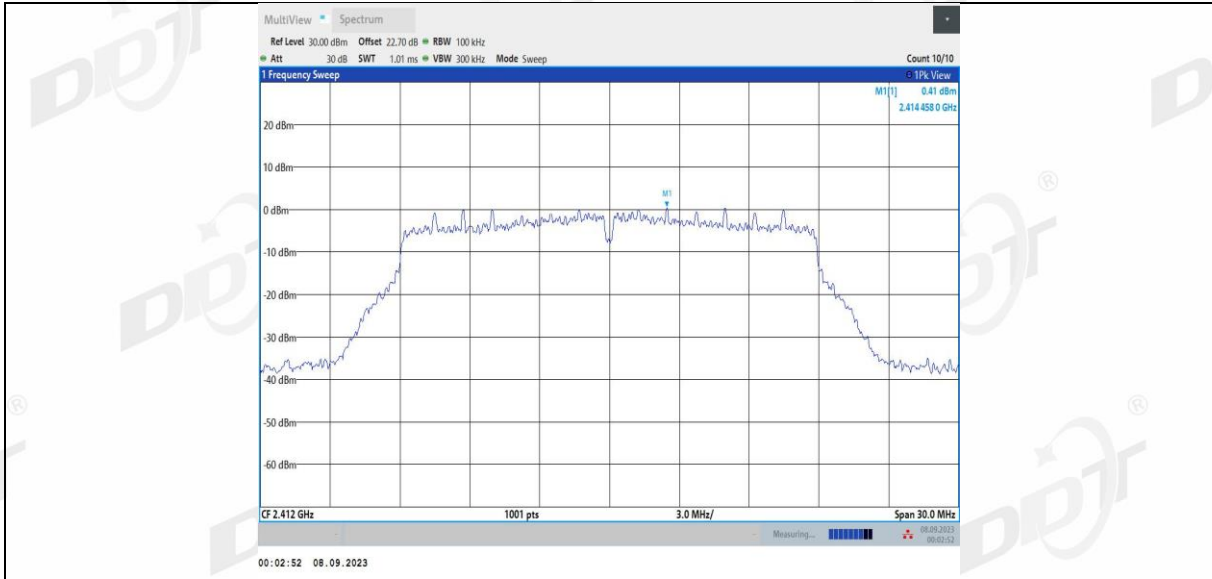
11G Ant2 2462 30~1000



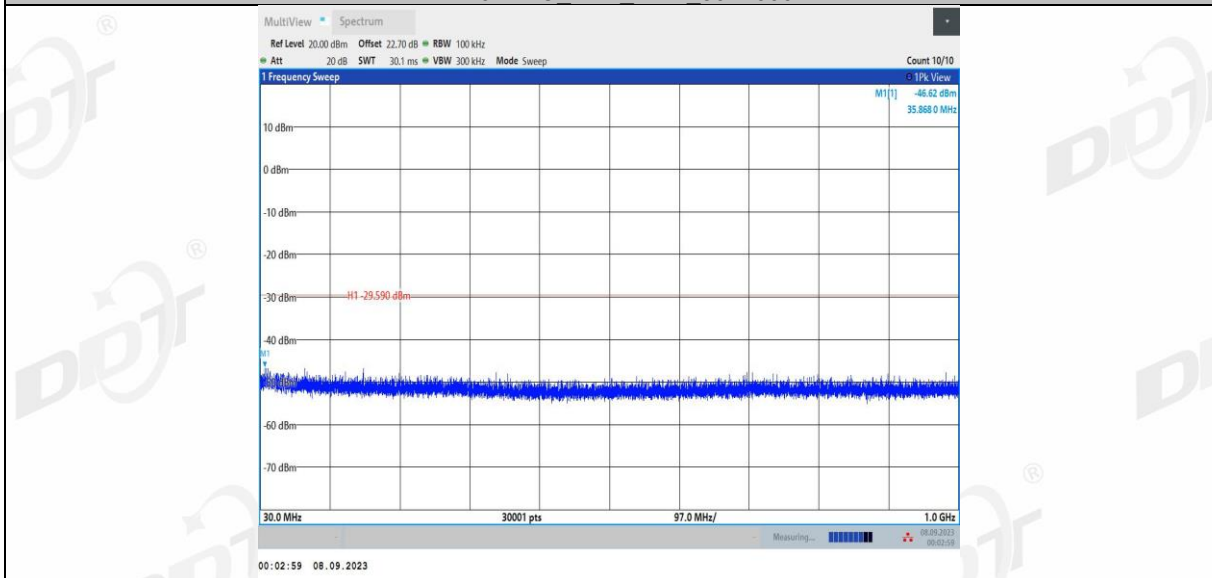
11G Ant2 2462 1000~26500



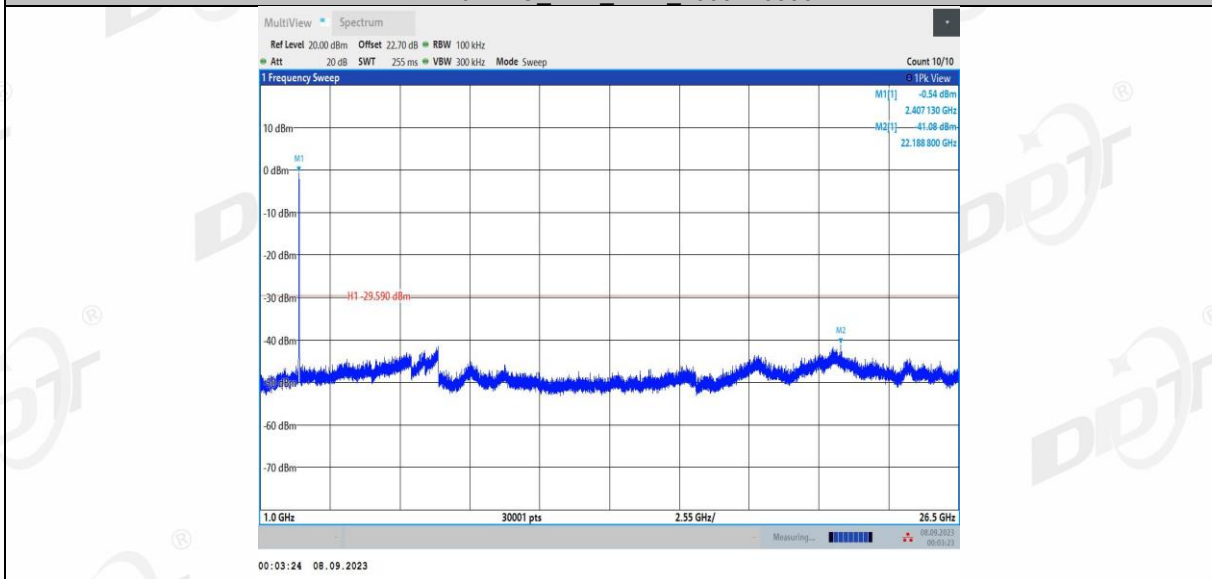
11N20MIMO Ant1 2412\_0~Reference



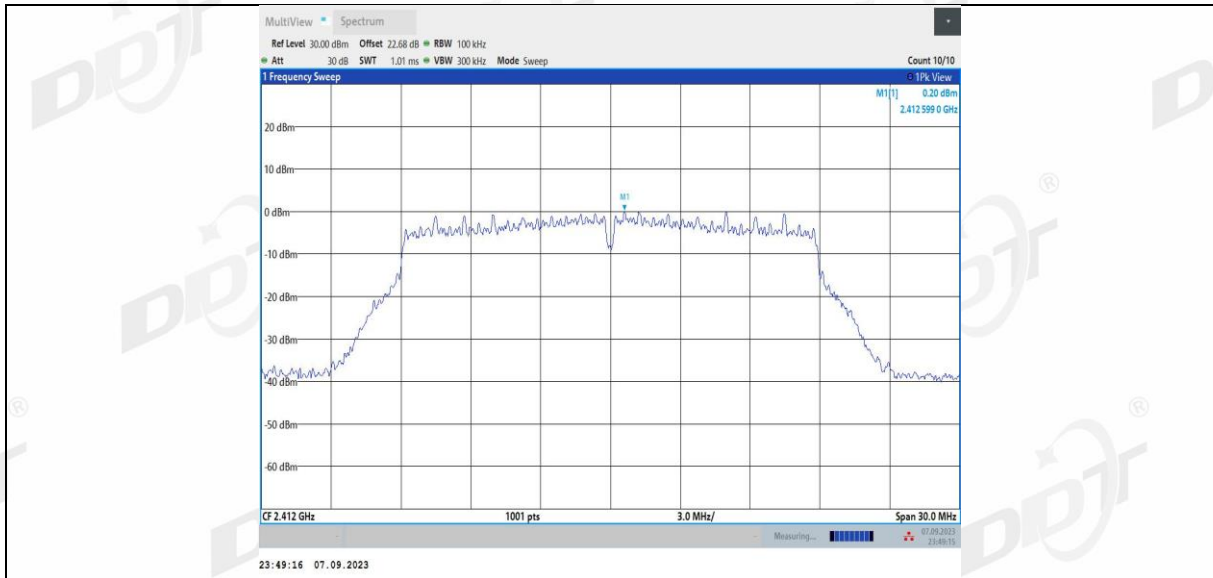
11N20MIMO Ant1 2412 30~1000



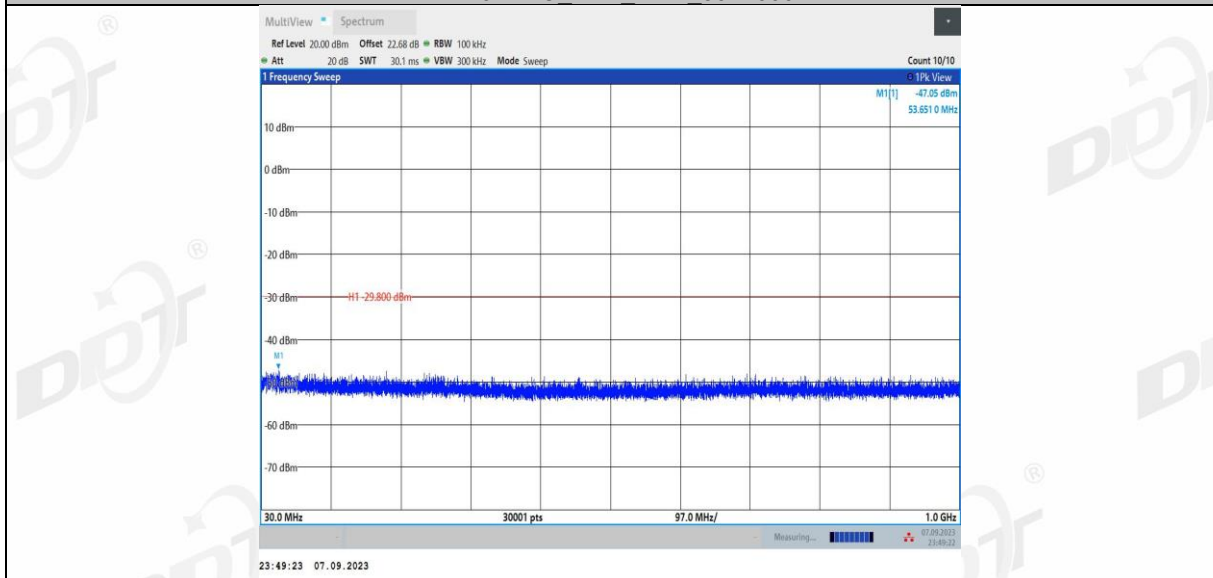
11N20MIMO Ant1 2412 1000~26500



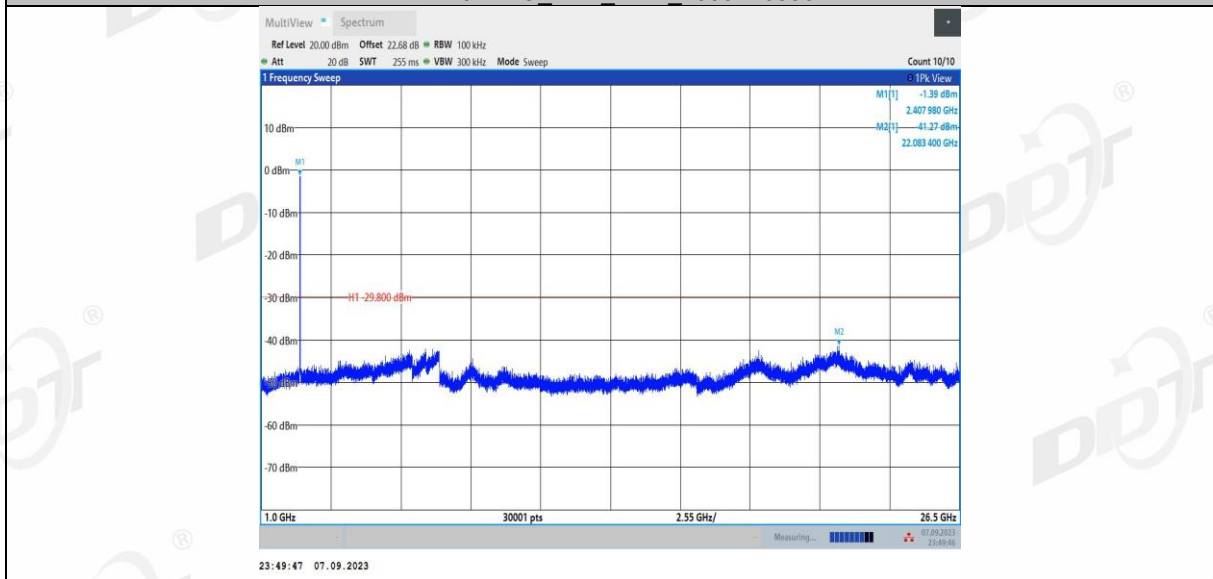
11N20MIMO Ant2 2412 0~Reference



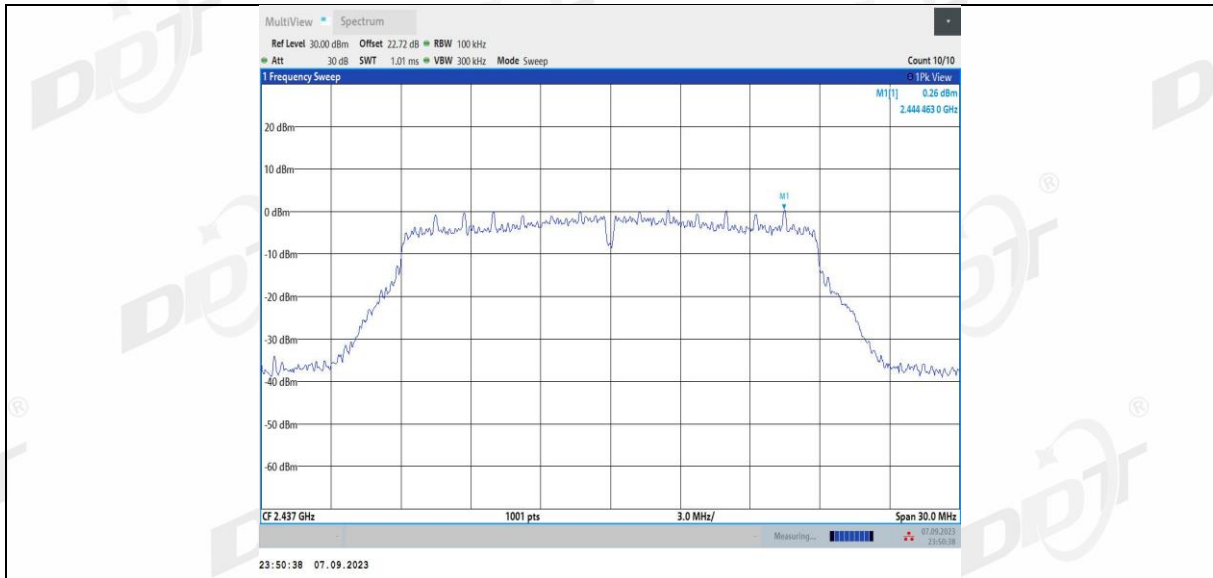
11N20MIMO Ant2 2412 30~1000



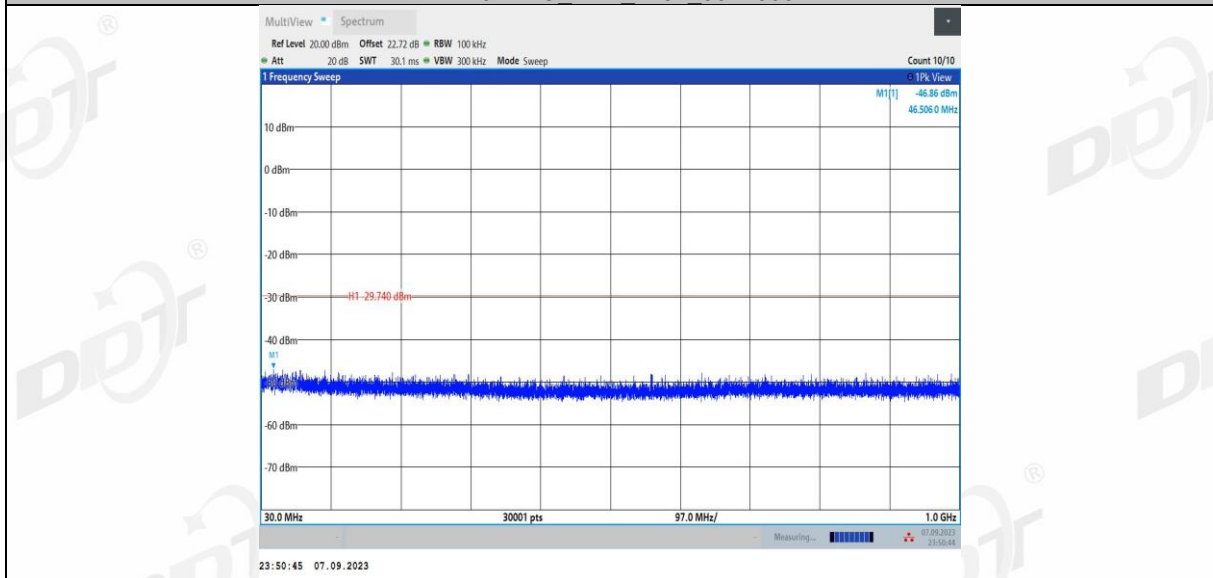
11N20MIMO Ant2 2412 1000~26500



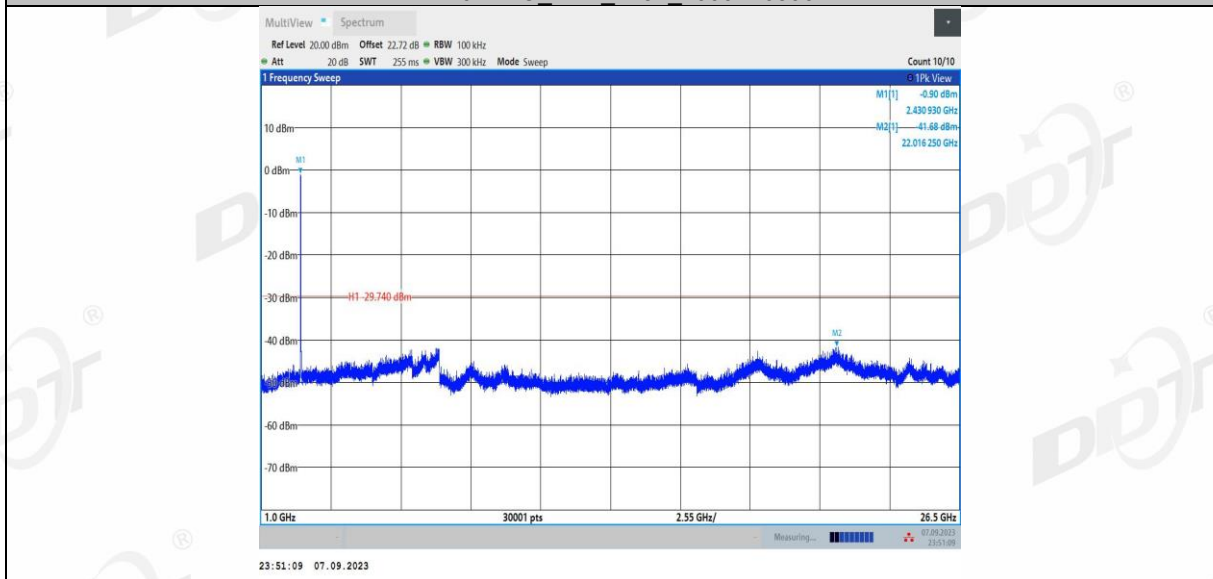
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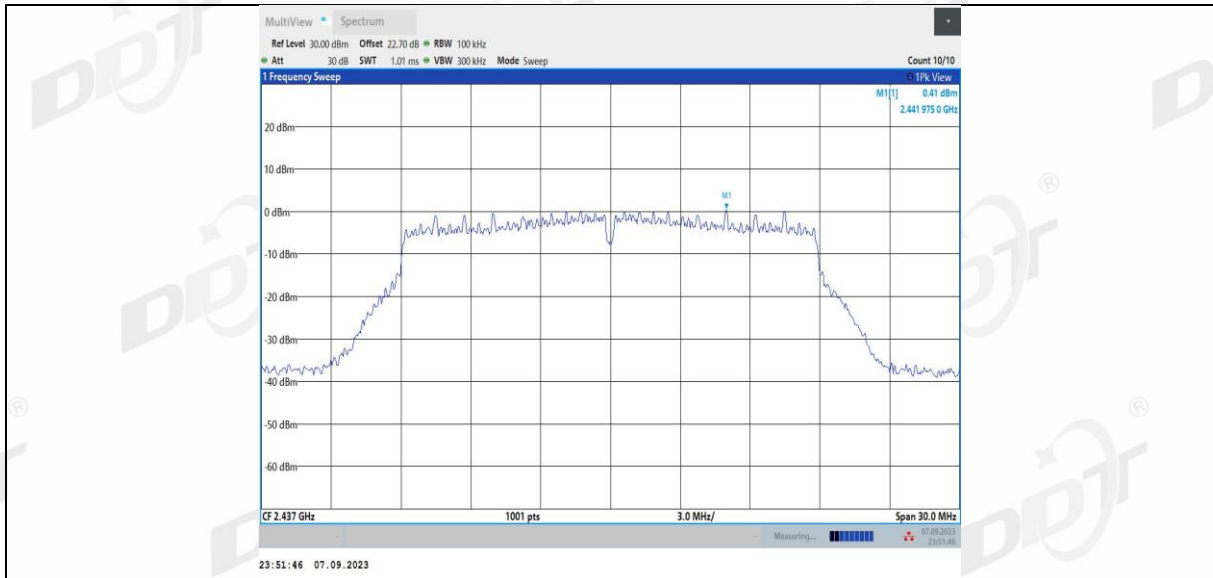
11N20MIMO Ant1 2437 30~1000



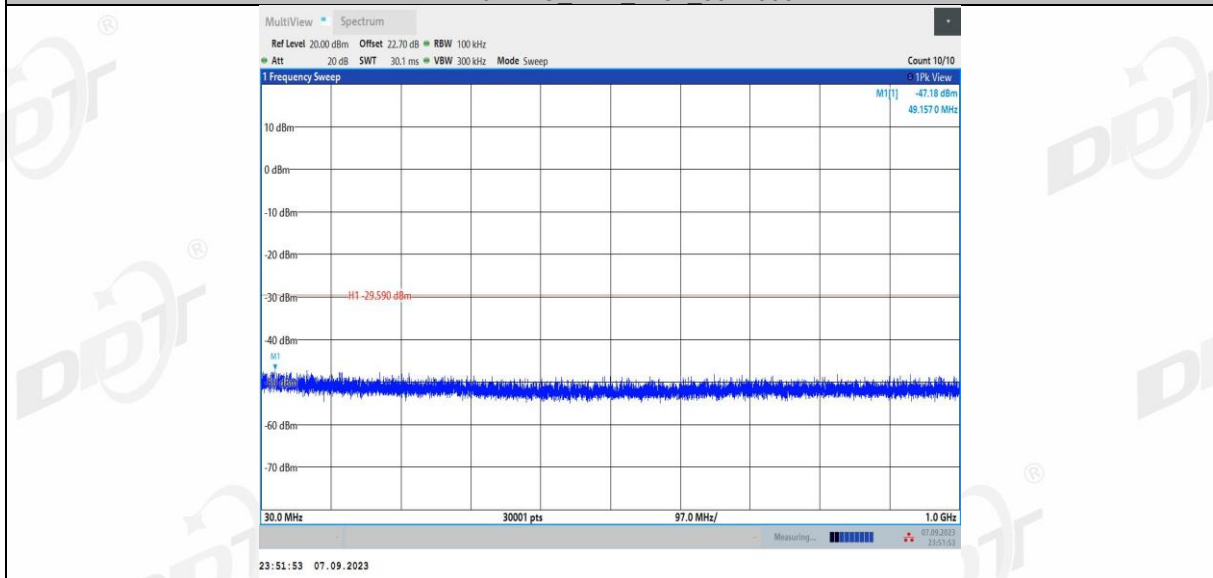
11N20MIMO Ant1 2437 1000~26500



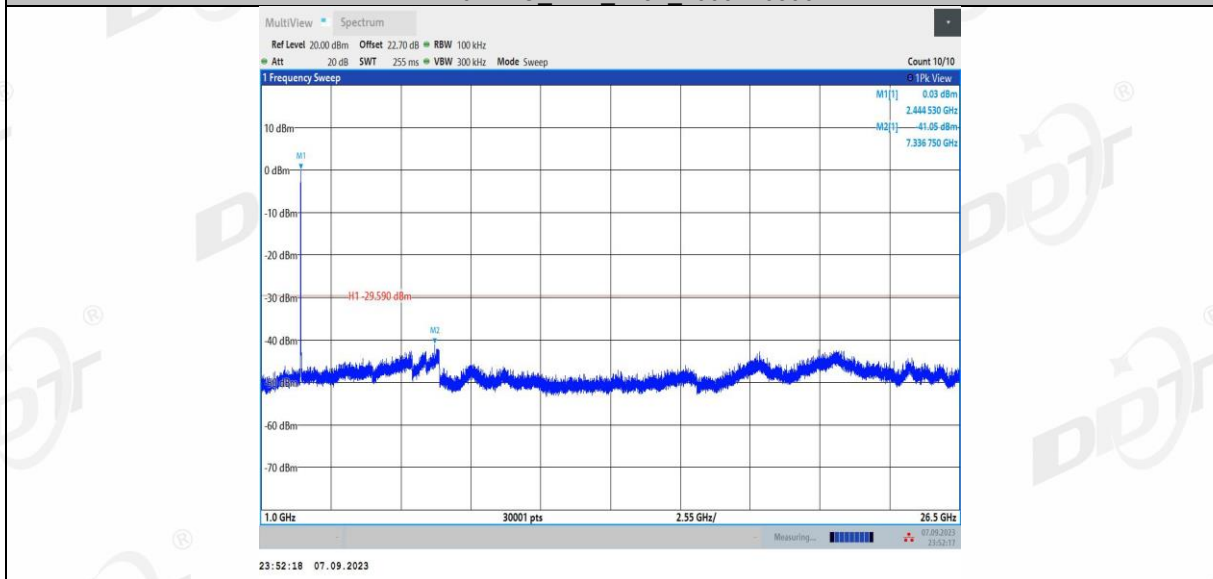
11N20MIMO Ant2 2437 0~Reference



11N20MIMO Ant2 2437 30~1000

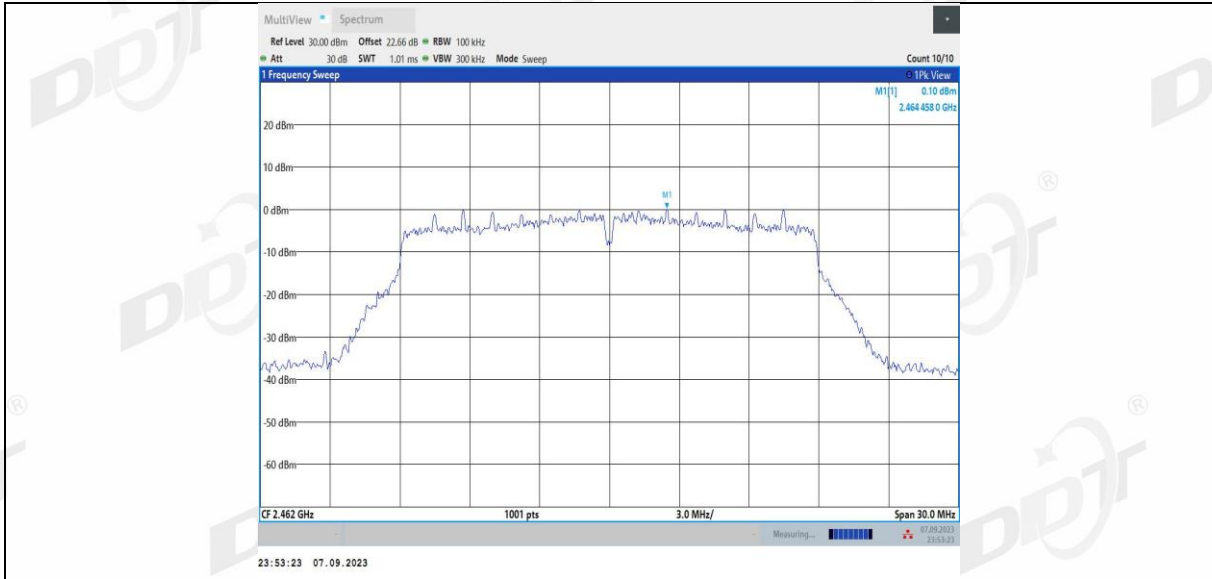


11N20MIMO Ant2 2437 1000~26500

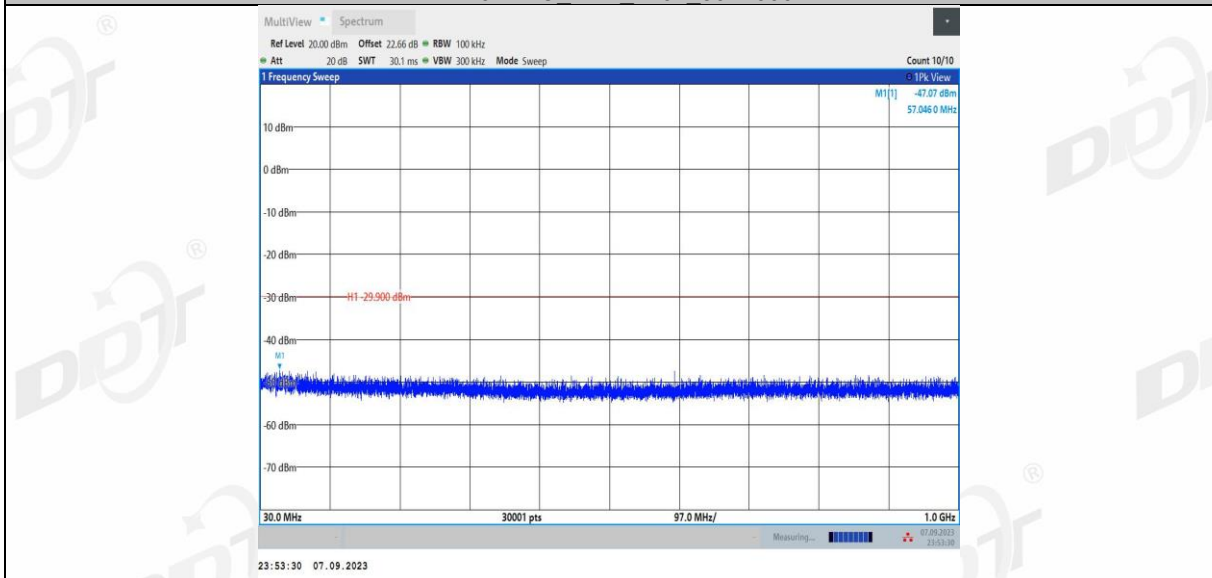


11N20MIMO Ant1 2462\_0~Reference

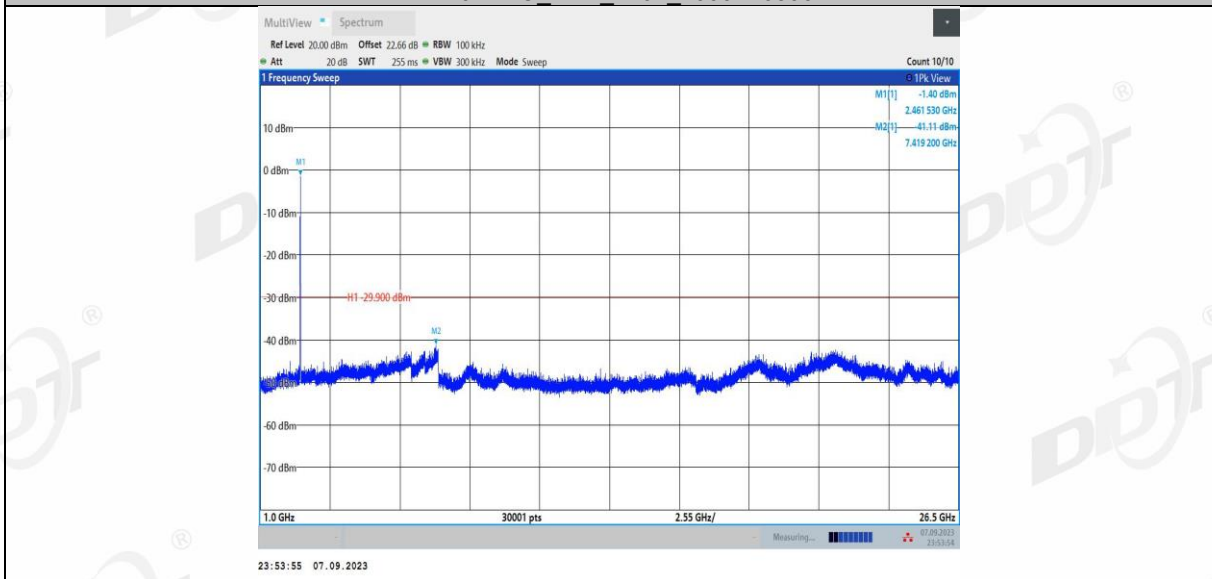




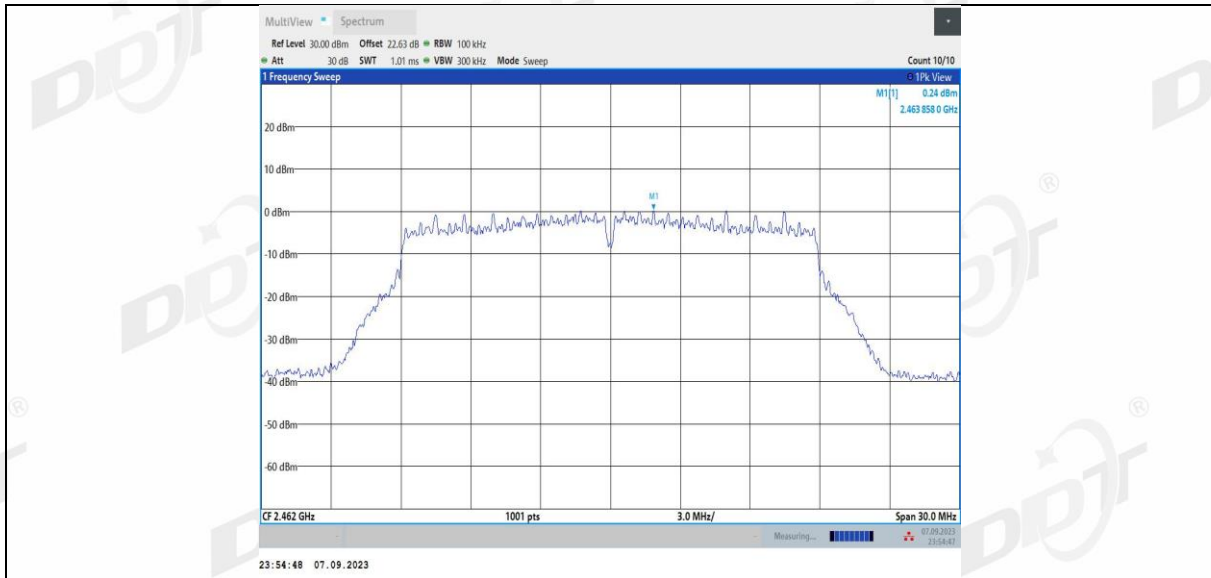
11N20MIMO Ant1 2462 30~1000



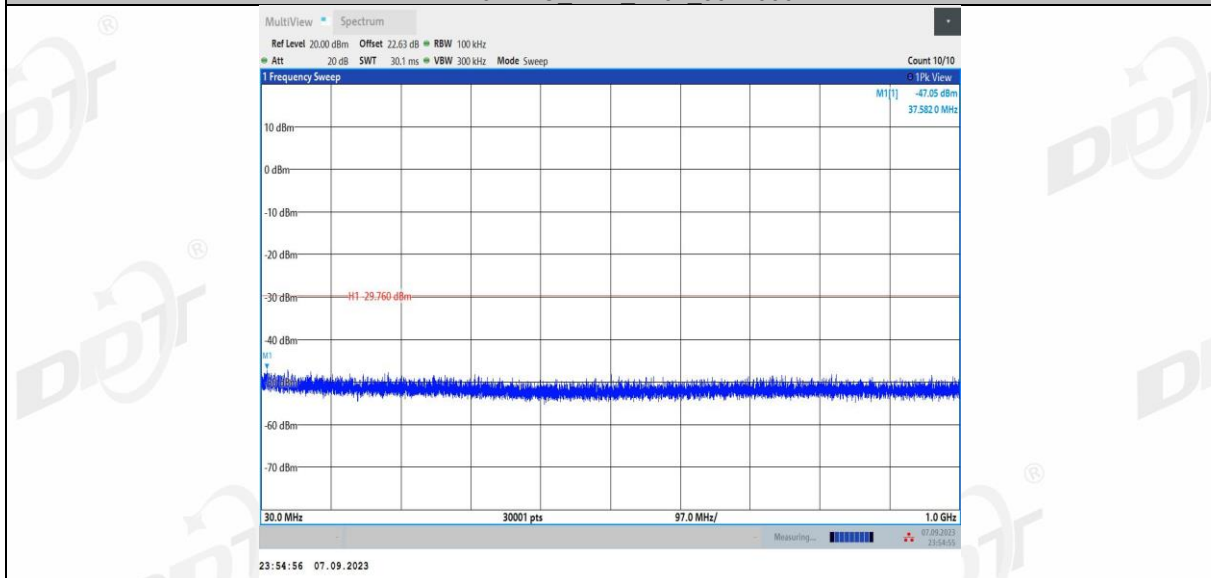
11N20MIMO Ant1 2462 1000~26500



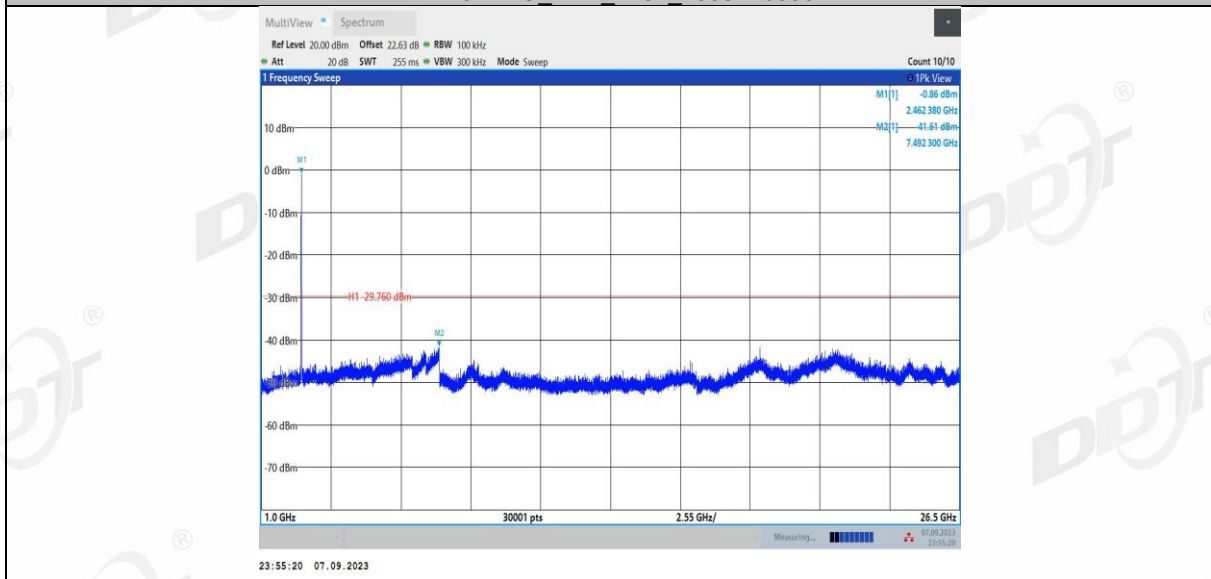
11N20MIMO Ant2 2462 0~Reference



11N20MIMO Ant2 2462 30~1000



11N20MIMO Ant2 2462 1000~26500



## 10. Duty Cycle

### 10.1. Block diagram of test setup



### 10.2. Limit

Just for Report.

### 10.3. Test procedure

- (1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, The cable loss and attenuator loss have been put into spectrum analyzer as amplitude offset.  
set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the middle hopping channel.

Resolution BW: 10 MHz.

Video BW: 10 MHz.

Span: Zero span.

Detector: Peak.

Trace Mode: Clear Write.

Sweep: Video Trigger

- (2) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 burst cycle.
- (3) Calculate dwell time follow below formula:

$$\text{Duty cycle} = \text{Pulse's on time} / \text{Burst cycle}$$

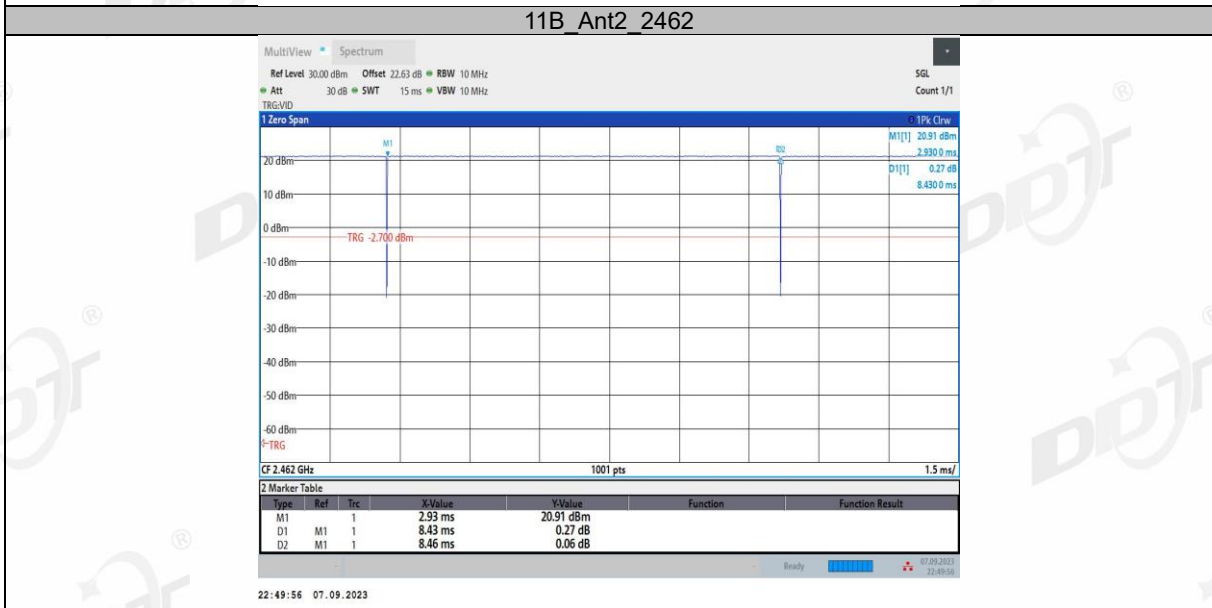
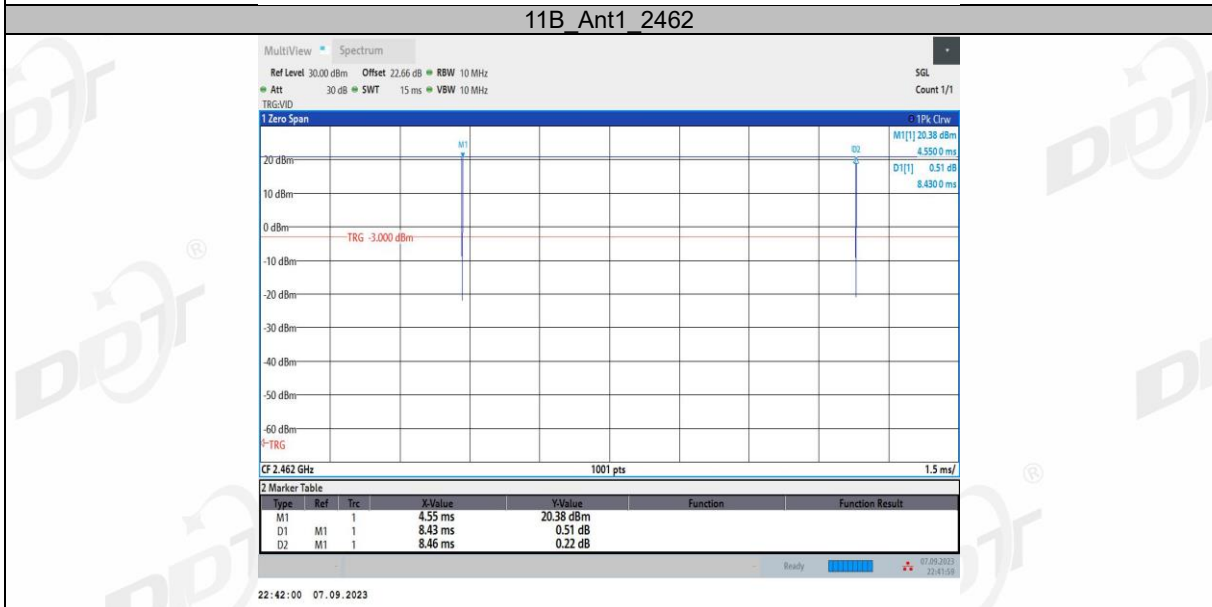
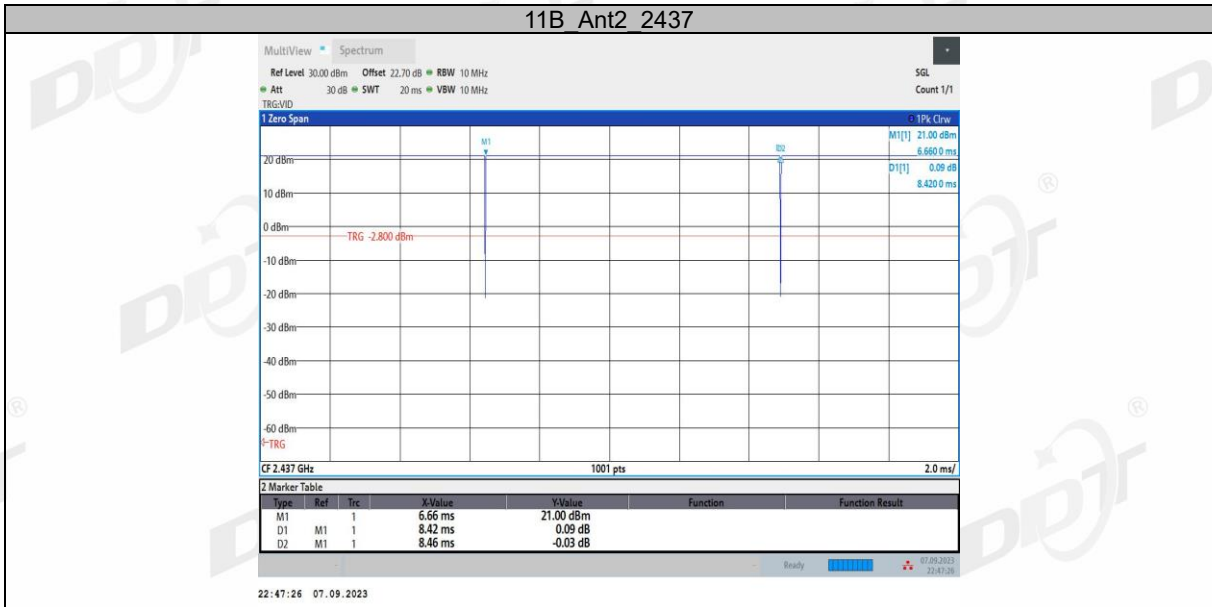
**10.4. Test result**

Test Mode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	8.43	8.46	99.65
	Ant2	2412	8.43	8.46	99.65
	Ant1	2437	8.42	8.46	99.53
	Ant2	2437	8.42	8.46	99.53
	Ant1	2462	8.43	8.46	99.65
	Ant2	2462	8.43	8.46	99.65
11G	Ant1	2412	2.07	2.09	99.04
	Ant2	2412	2.07	2.09	99.04
	Ant1	2437	2.07	2.09	99.04
	Ant2	2437	2.07	2.09	99.04
	Ant1	2462	2.06	2.08	99.04
	Ant2	2462	2.06	2.08	99.04
11N20MIMO	Ant1	2412	1.92	1.94	98.97
	Ant2	2412	1.92	1.94	98.97
	Ant1	2437	1.92	1.94	98.97
	Ant2	2437	1.92	1.94	98.97
	Ant1	2462	1.93	1.95	98.97
	Ant2	2462	1.92	1.94	98.97

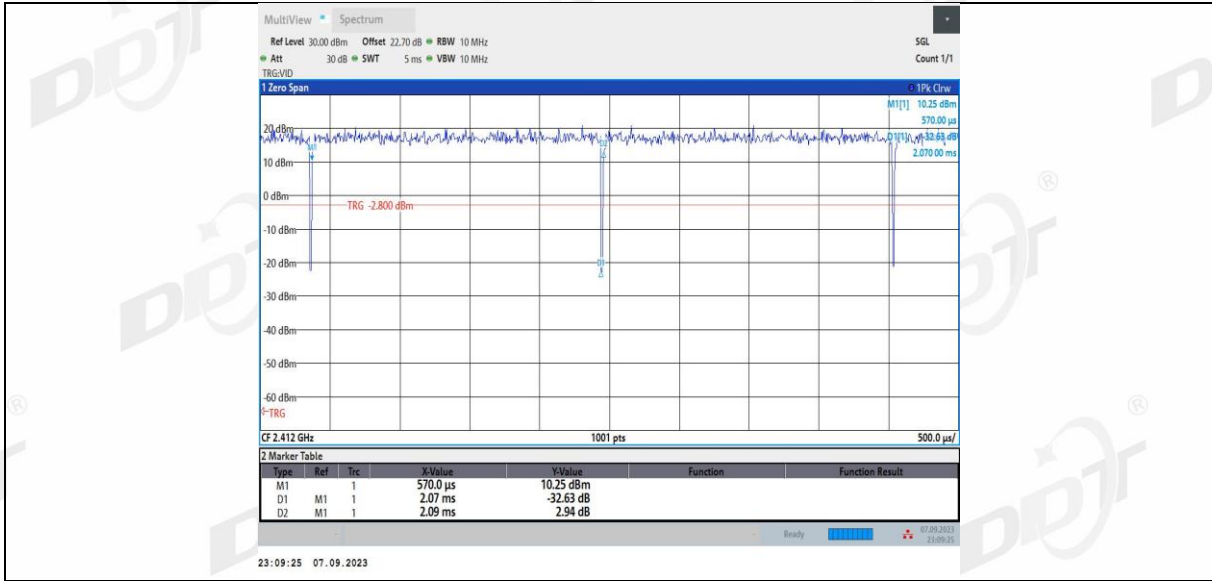
### 10.5. Test graphs



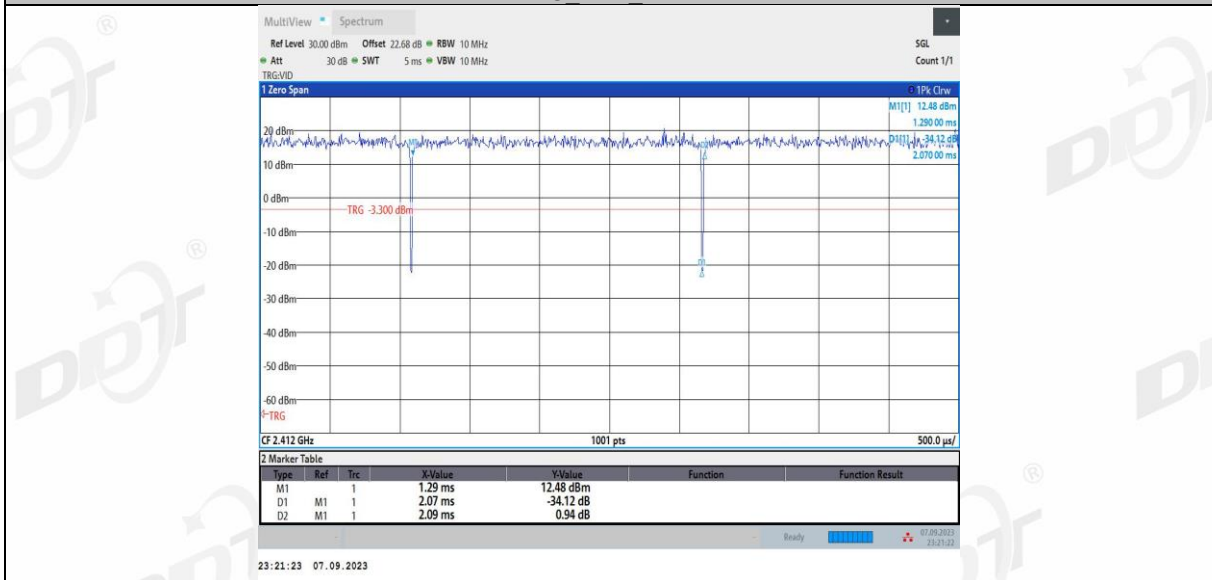




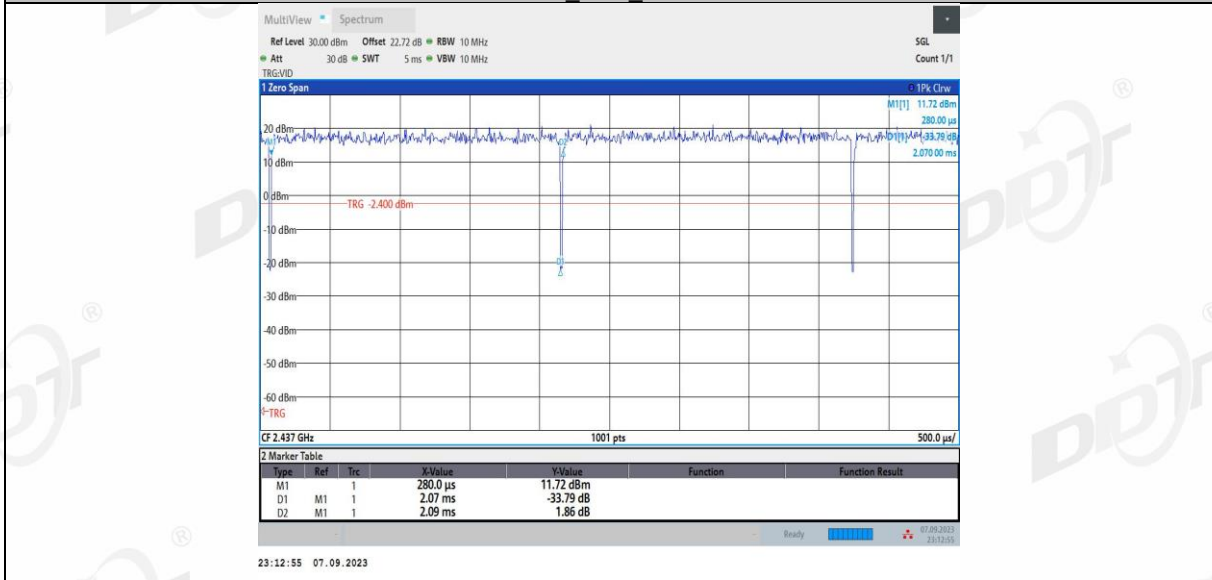
### 11G Ant1 2412



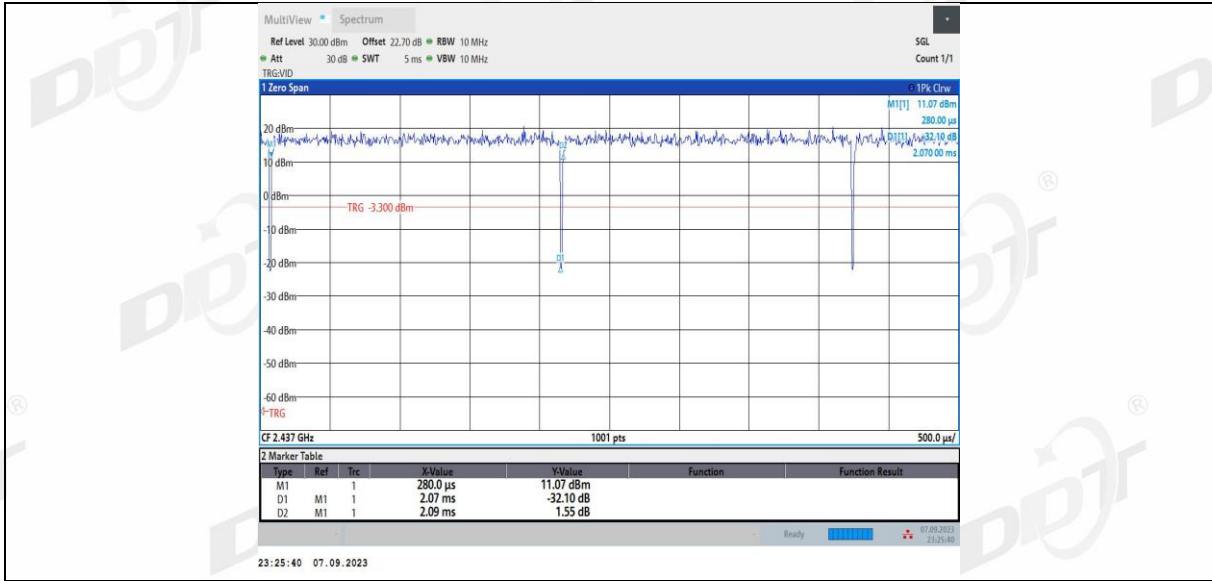
11G Ant2 2412



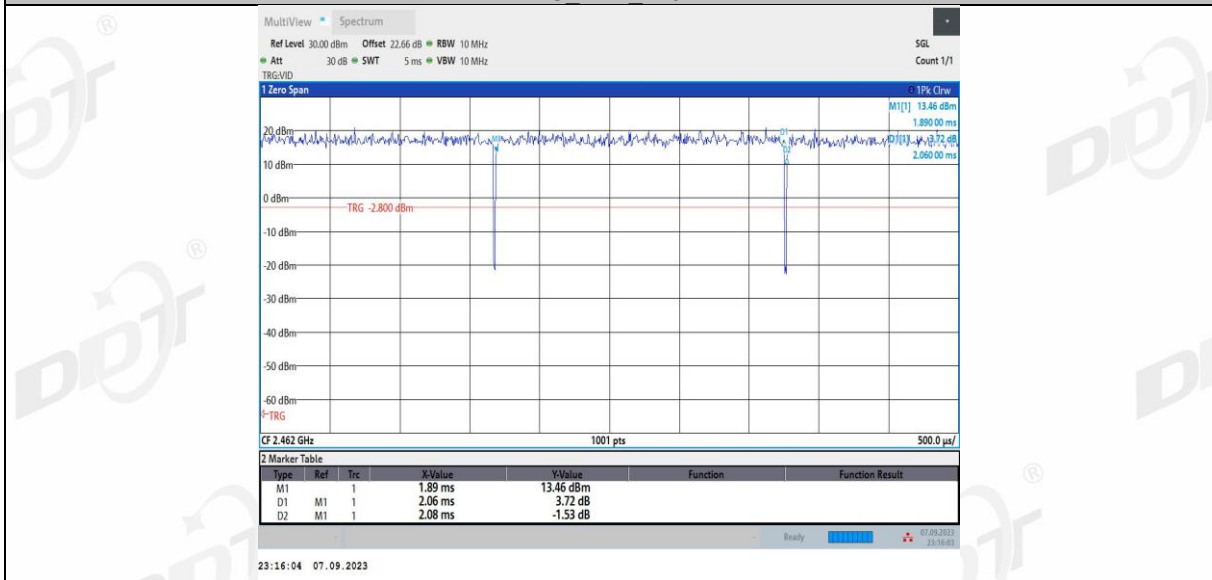
11G Ant1 2437



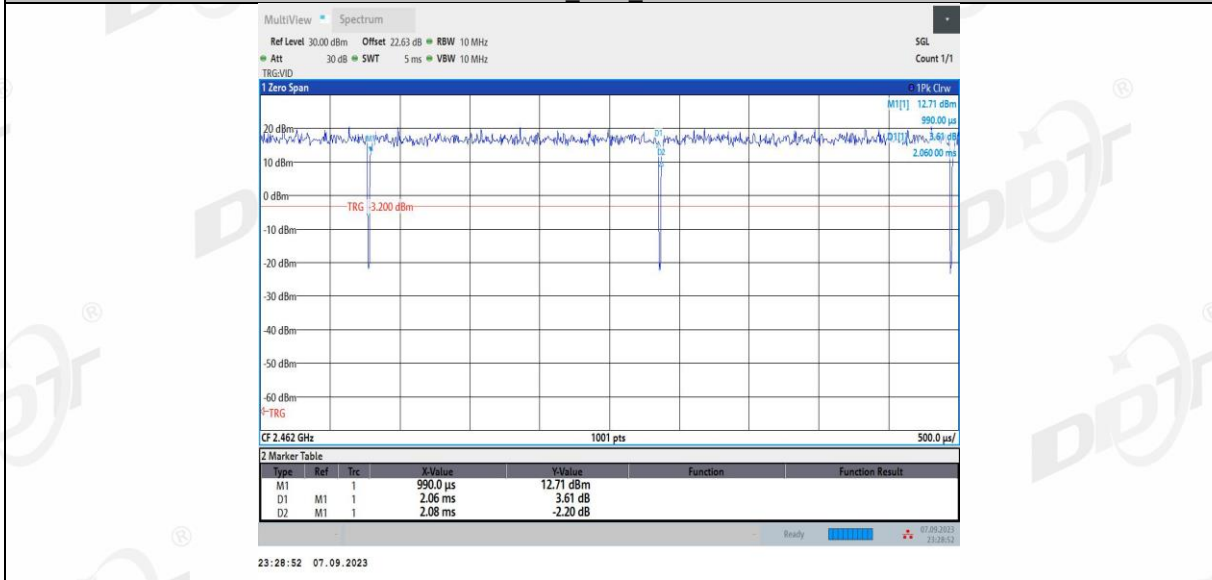
11G Ant2 2437



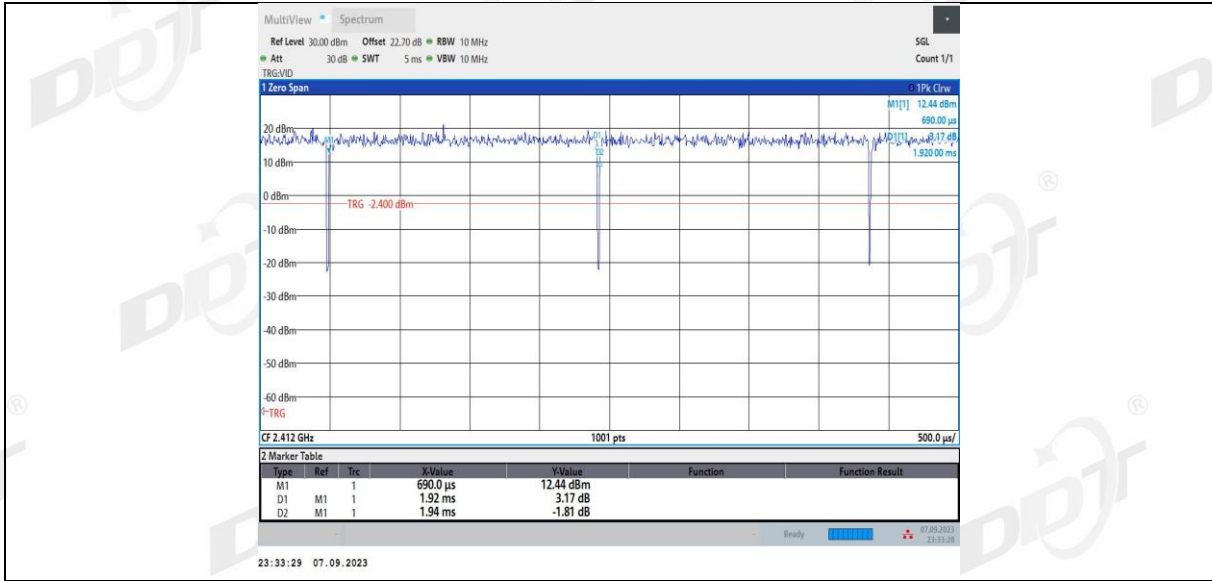
11G Ant1 2462



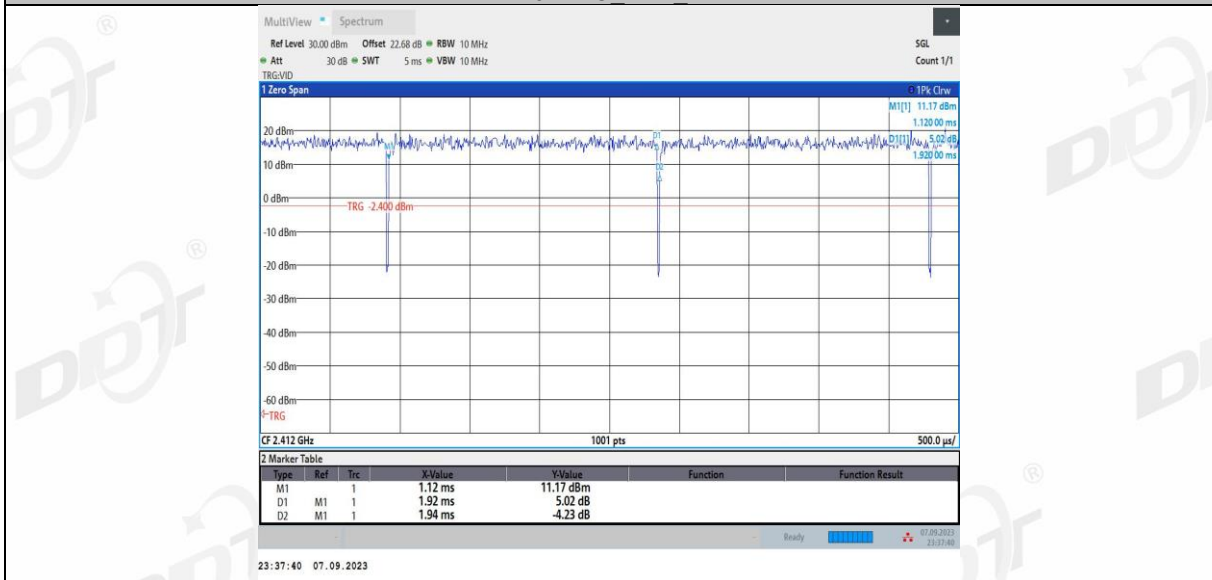
11G Ant2 2462



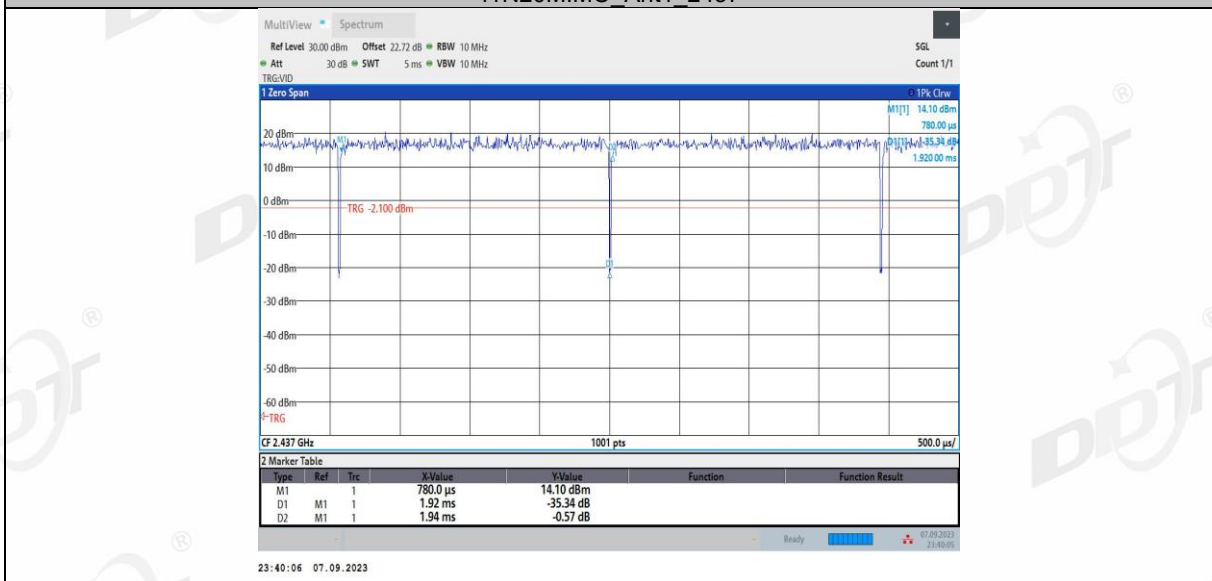
11N20MIMO Ant1 2412



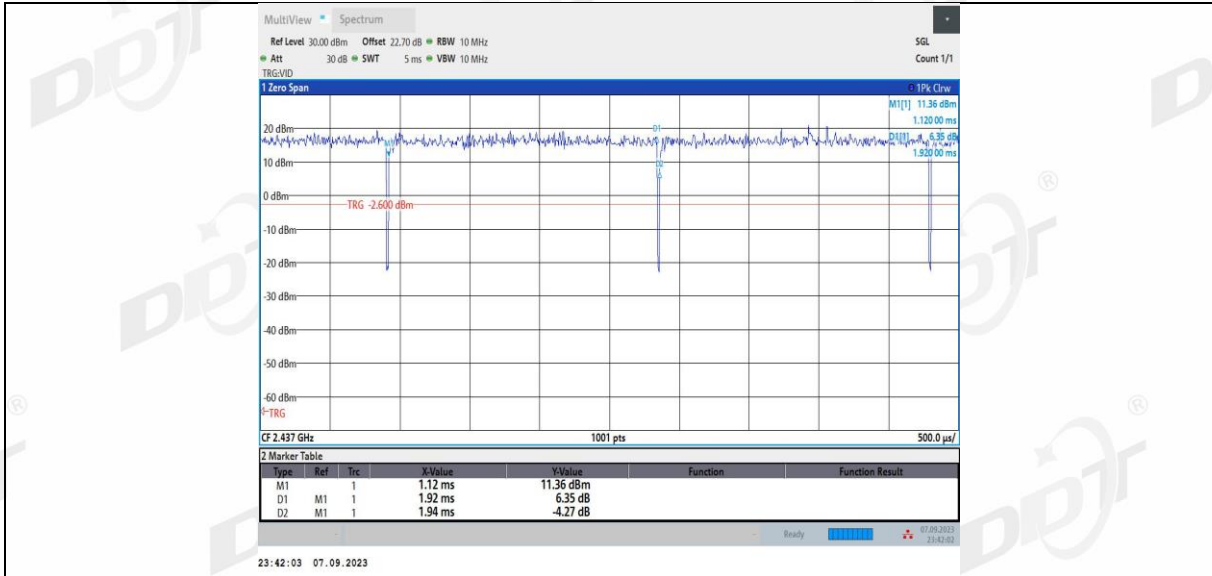
11N20MIMO Ant2 2412



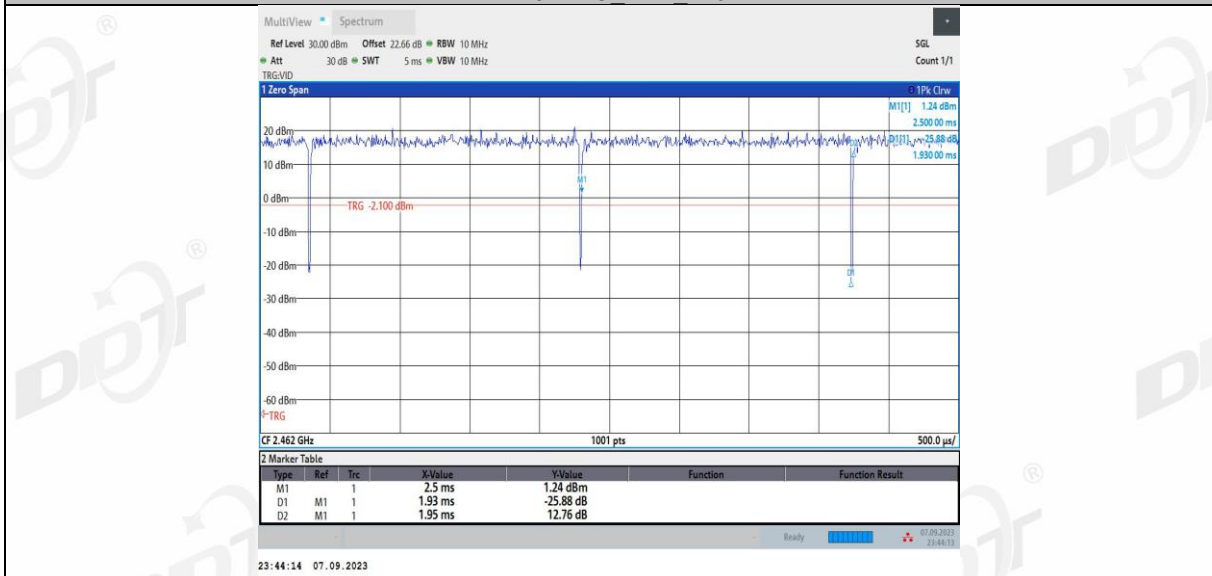
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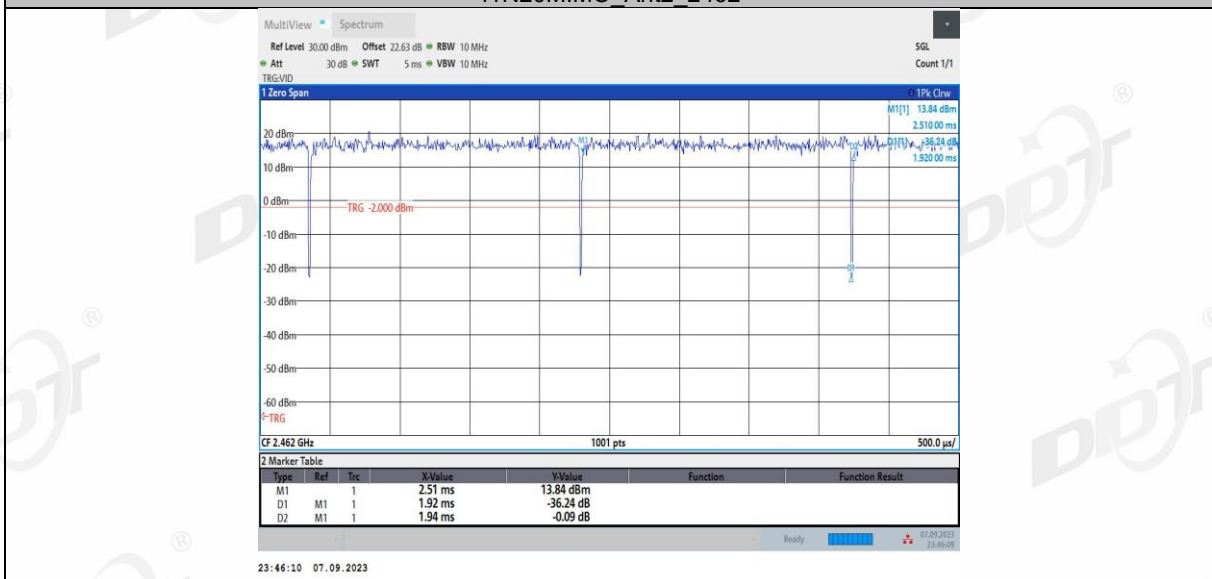
11N20MIMO Ant2 2437



11N20MIMO Ant1 2462



11N20MIMO Ant2 2462

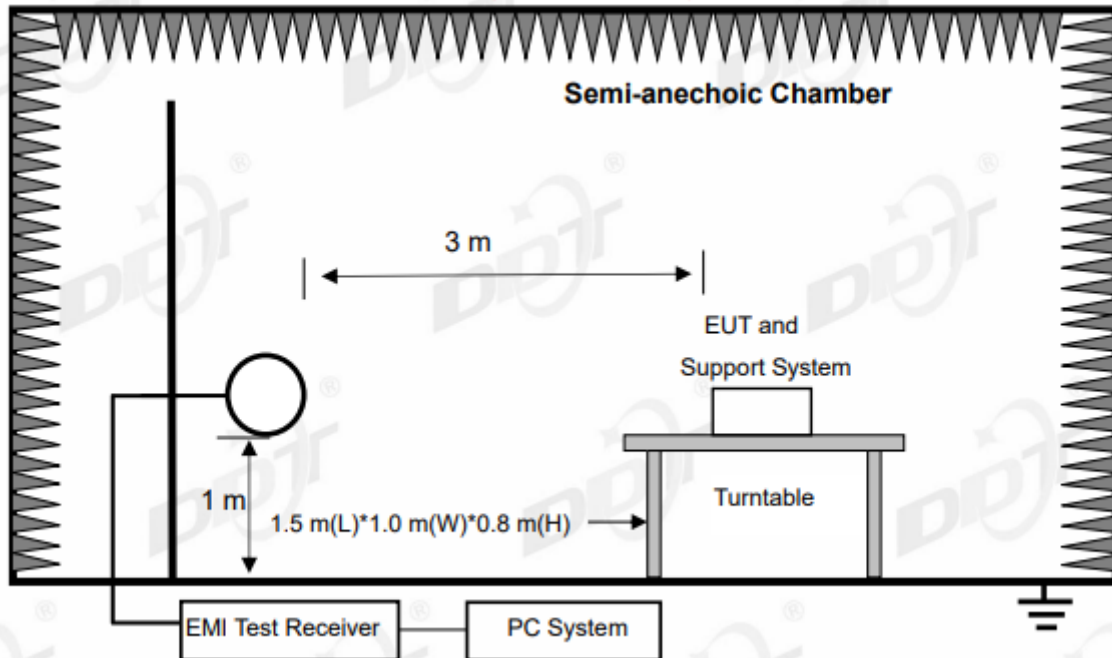




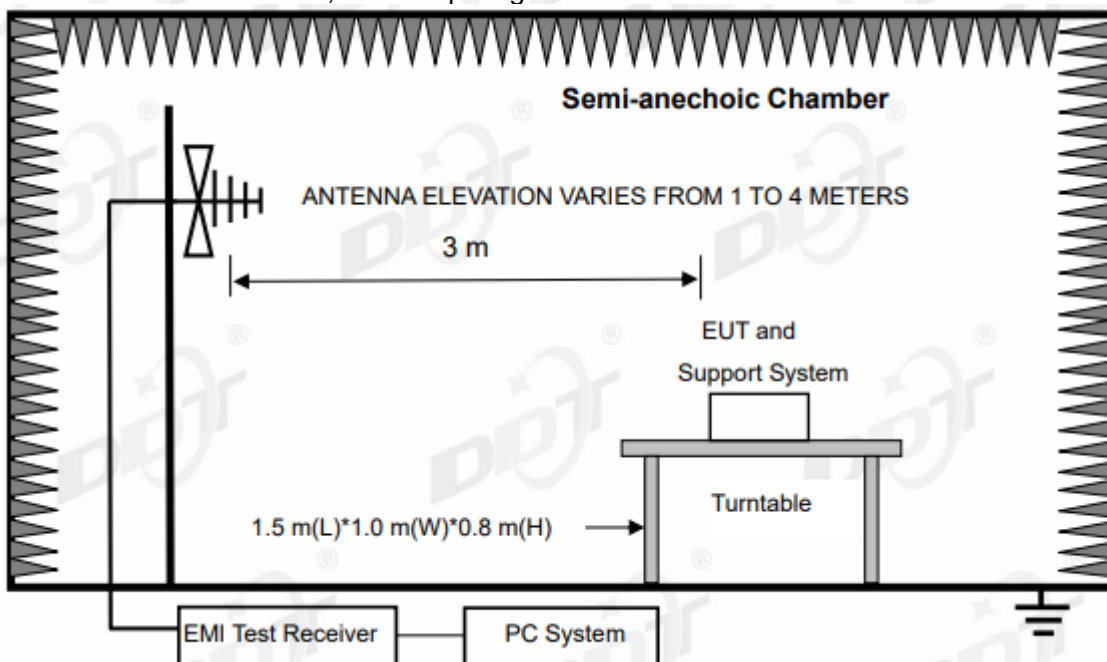
## 11. Radiated Spurious Emissions

### 11.1. Block diagram of test setup

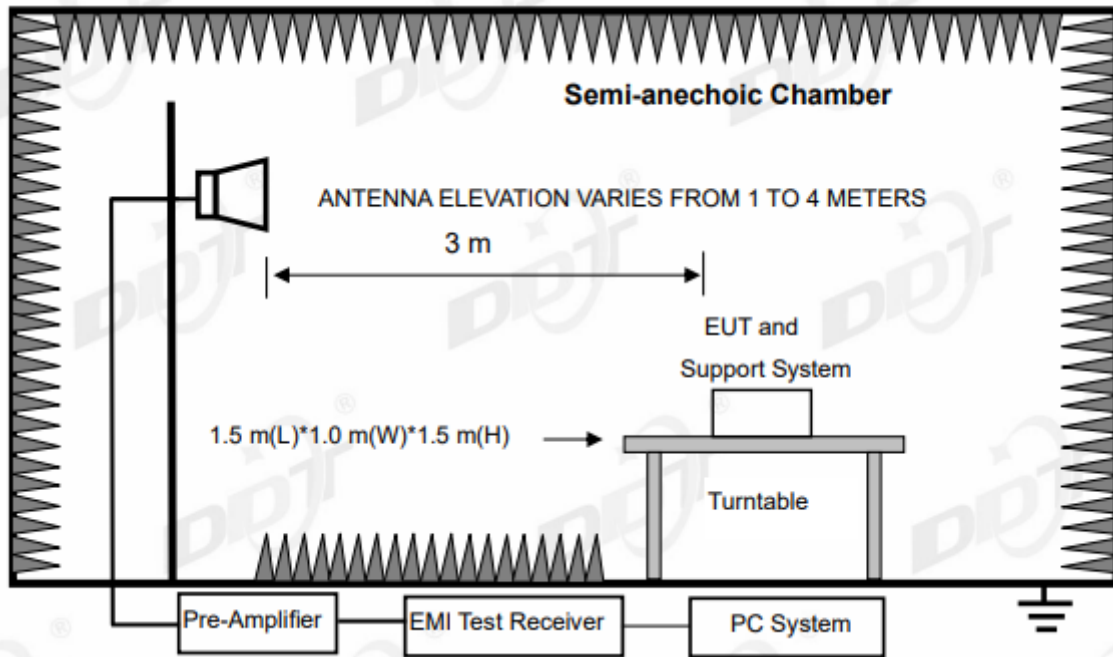
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



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.

### 11.2. 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
<sup>1</sup> 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	( <sup>2</sup> )
13.36-13.41			

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

<sup>2</sup>Above 38.6

## (2) FCC 15.209 Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
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( $\mu\text{V}$ )/m (Peak) 54.0 dB( $\mu\text{V}$ )/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.

**11.3. Test Procedure**

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1G and 150 cm above the ground plane inside a fully-anechoic chamber for above 1G.
- (2) Test antenna was located 3 m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test antenna 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 (1 GHz - 18 GHz)	3 m
18 GHz - 40 GHz	Horn Antenna (18 GHz - 40 GHz)	1 m

According ANSI C63.10:2013 clause 6.4.6 and 6.5.3, for measurements below 30 MHz, Antenna was located 3 m from EUT, the loop antenna was positioned in three antenna orientations (parallel, perpendicular, and round-parallel), for each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable, and the lowest height of the magnetic

antenna shall be 1 m above the ground. For measurement above 30MHz, the trilog Broadband Antenna or Horn Antenna was located 3m 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 1 m 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 18 GHz to 25 GHz, so below final test was performed with frequency range from 9 kHz to 18 GHz.

(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 equipment 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; According ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.

(8) For portable device, X axis, Y axis, Z axis are tested, and worse setup is reported.

#### 11.4. 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.

Note 1: 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.

Note 2: 30 MHz ~ 25 GHz: (Scan with all mode, the worst case is 802.11n HT20 mode)

Note 3: 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 802.11n HT20, Tx 2462 MHz mode.

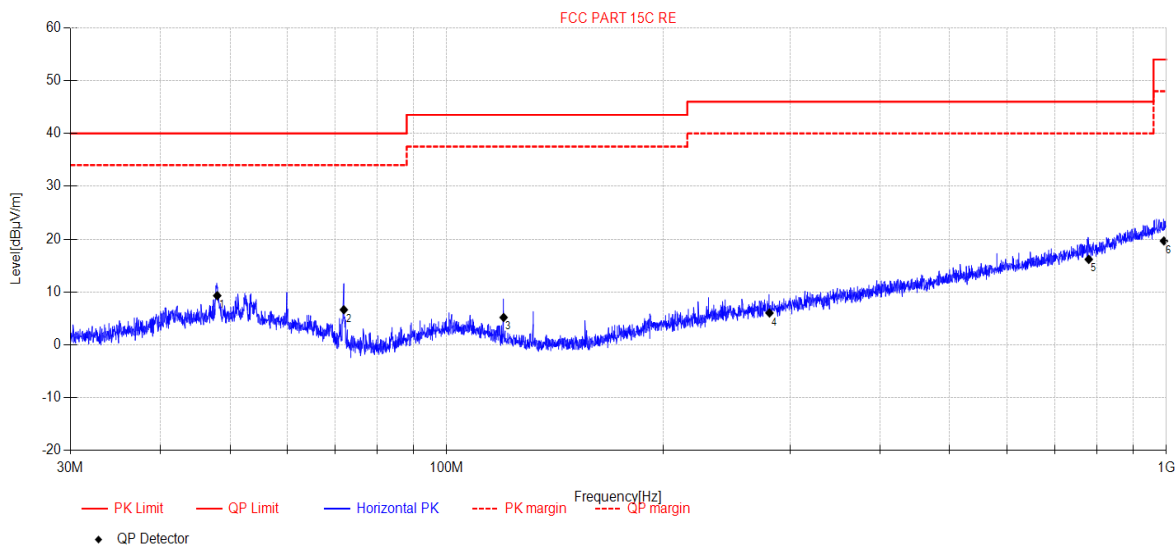
Note 4: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit, only recorded the worst case in this report.



Radiated Emission test (below 1GHz)

# TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2023-09-08      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC BELOW 1G\20230908-013741\_H  
**Memo:** 2.4GWIFI



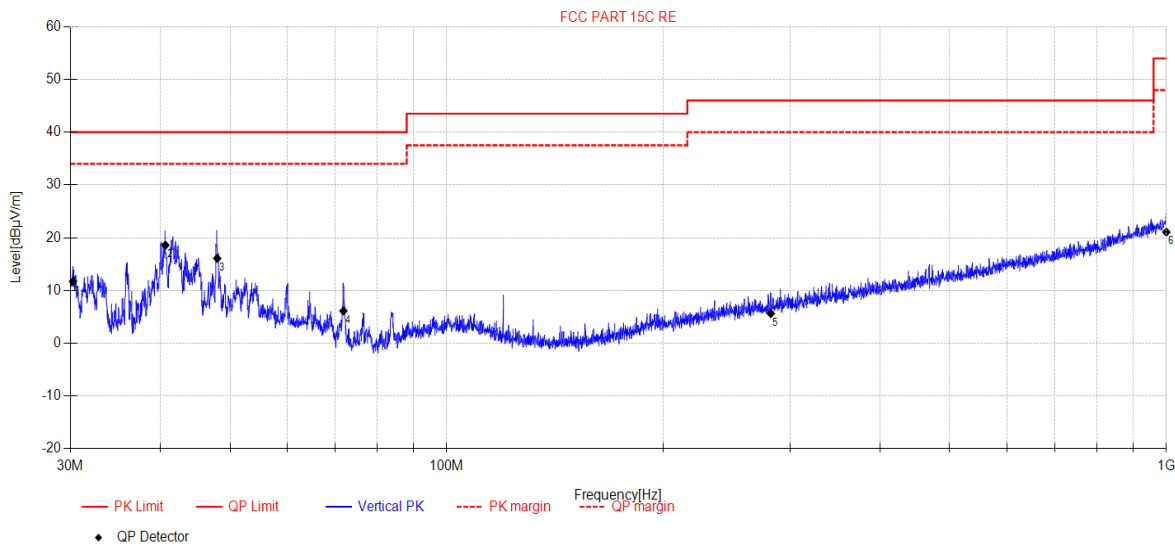
Final Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Antenna Factor [dB]	Cable Loss [dB]	AMP [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	47.99	22.14	13.20	4.70	-30.73	9.31	40.00	30.69	QP	Horizontal
2	71.97	24.48	7.91	4.80	-30.55	6.64	40.00	33.36	QP	Horizontal
3	119.99	22.16	8.70	5.17	-30.84	5.19	43.50	38.31	QP	Horizontal
4	280.88	17.42	12.90	6.07	-30.36	6.03	46.00	39.97	QP	Horizontal
5	780.19	17.13	21.00	7.94	-29.90	16.17	46.00	29.83	QP	Horizontal
6	992.32	16.17	23.00	8.66	-28.17	19.66	54.00	34.34	QP	Horizontal

Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP
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 Date:** 2023-09-08 **Tested By:** Bairong  
**EUT:** Wireless Speaker **Model Number:** CITATION 500  
**Test Mode:** TX Mode **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5% **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC BELOW 1G\20230908-013823\_V  
**Memo:** 2.4GWIFI



Final Data List										
NO.	Freq. [MHz]	Reading [dBµV/m]	Antenna Factor [dB]	Cable Loss [dB]	AMP [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	30.25	28.03	10.23	4.47	-31.00	11.73	40.00	28.27	QP	Vertical
2	40.67	32.57	12.23	4.61	-30.84	18.57	40.00	21.43	QP	Vertical
3	47.99	28.91	13.20	4.70	-30.73	16.08	40.00	23.92	QP	Vertical
4	71.87	23.94	7.94	4.80	-30.55	6.13	40.00	33.87	QP	Vertical
5	282.07	17.02	12.90	6.07	-30.35	5.64	46.00	40.36	QP	Vertical
6	1000.00	17.38	23.10	8.69	-28.10	21.07	54.00	32.93	QP	Vertical

**Note:**

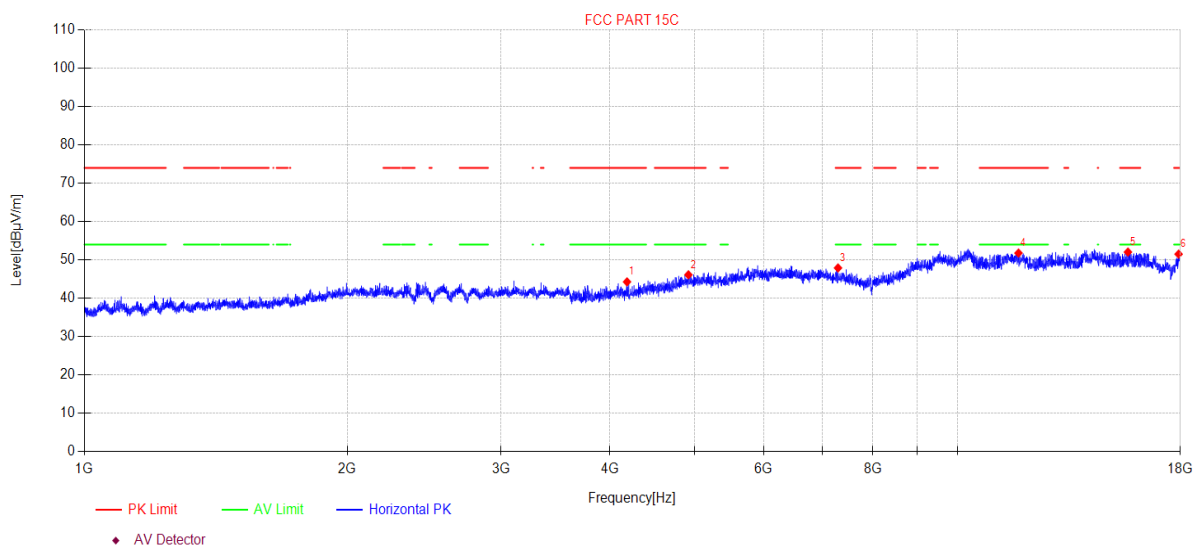
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

**Radiated Emission test (above 1GHz)**

**TR-4-E-009 Radiated Emission Test Result**

**Test Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\1  
**Memo:** 11N20MIMO 2412

**Test Graph**



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	4183.59	47.38	6.22	31.07	-40.38	44.29	74.00	29.71	PK	Horizontal
2	4918.55	45.85	7.71	32.67	-40.11	46.12	74.00	27.88	PK	Horizontal
3	7297.34	45.22	7.63	36.50	-41.44	47.91	74.00	26.09	PK	Horizontal
4	11745.93	42.12	10.31	38.80	-39.44	51.79	74.00	22.21	PK	Horizontal
5	15677.49	38.48	14.42	38.32	-39.17	52.05	74.00	21.95	PK	Horizontal
6	17916.96	39.39	13.03	41.30	-42.21	51.51	74.00	22.49	PK	Horizontal

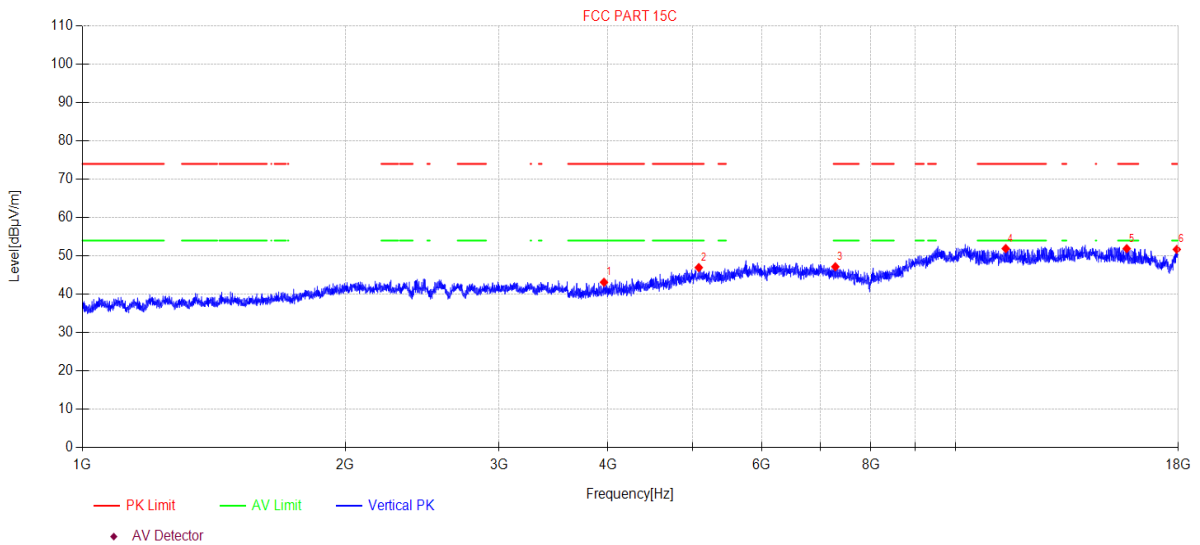
**Note:**

- Level = Reading + Cable loss + Antenna Factor + AMP
- If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

# TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\2  
**Memo:** 11N20MIMO 2412

## Test Graph



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	3957.76	47.10	5.84	30.62	-40.42	43.14	74.00	30.86	PK	Vertical
2	5081.83	46.14	7.99	32.90	-40.07	46.96	74.00	27.04	PK	Vertical
3	7284.70	44.46	7.63	36.50	-41.41	47.18	74.00	26.82	PK	Vertical
4	11417.92	42.10	10.02	39.08	-39.29	51.91	74.00	22.09	PK	Vertical
5	15709.24	38.24	14.56	38.29	-39.19	51.90	74.00	22.10	PK	Vertical
6	17927.32	39.54	13.04	41.36	-42.24	51.70	74.00	22.30	PK	Vertical

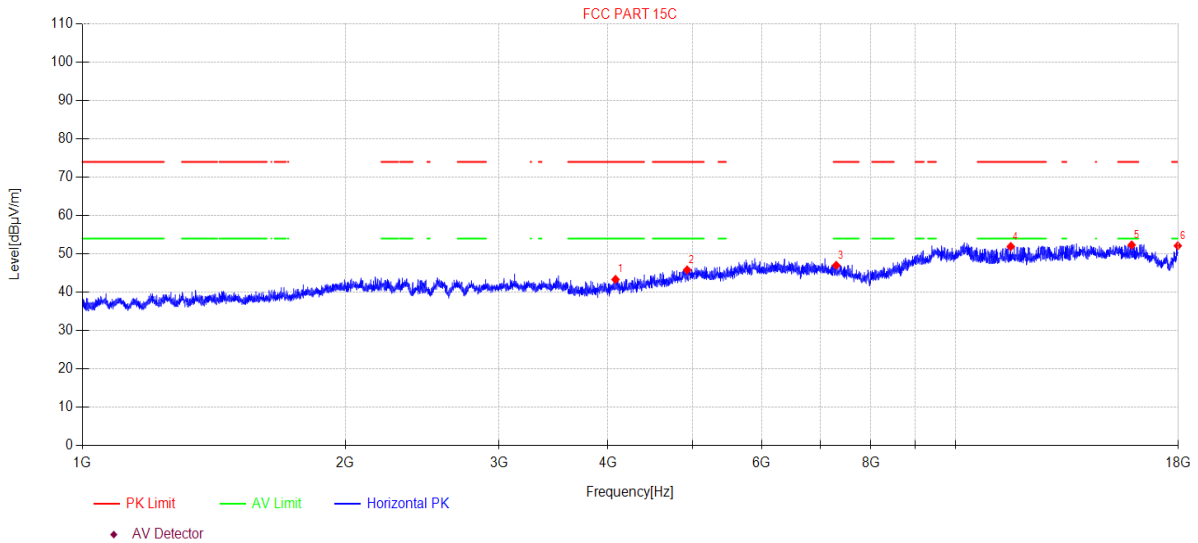
**Note:**

1. Level = Reading + Cable loss + Antenna Factor + AMP
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 Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\3  
**Memo:** 11N20MIMO 2437

## Test Graph



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	4079.71	46.89	6.01	30.86	-40.42	43.34	74.00	30.66	PK	Horizontal
2	4928.51	45.48	7.73	32.71	-40.11	45.81	74.00	28.19	PK	Horizontal
3	7301.56	44.34	7.63	36.50	-41.45	47.02	74.00	26.98	PK	Horizontal
4	11570.72	42.19	10.16	38.93	-39.36	51.92	74.00	22.08	PK	Horizontal
5	15914.88	38.07	15.49	38.07	-39.31	52.32	74.00	21.68	PK	Horizontal
6	17974.01	39.71	13.10	41.64	-42.34	52.11	74.00	21.89	PK	Horizontal

**Note:**

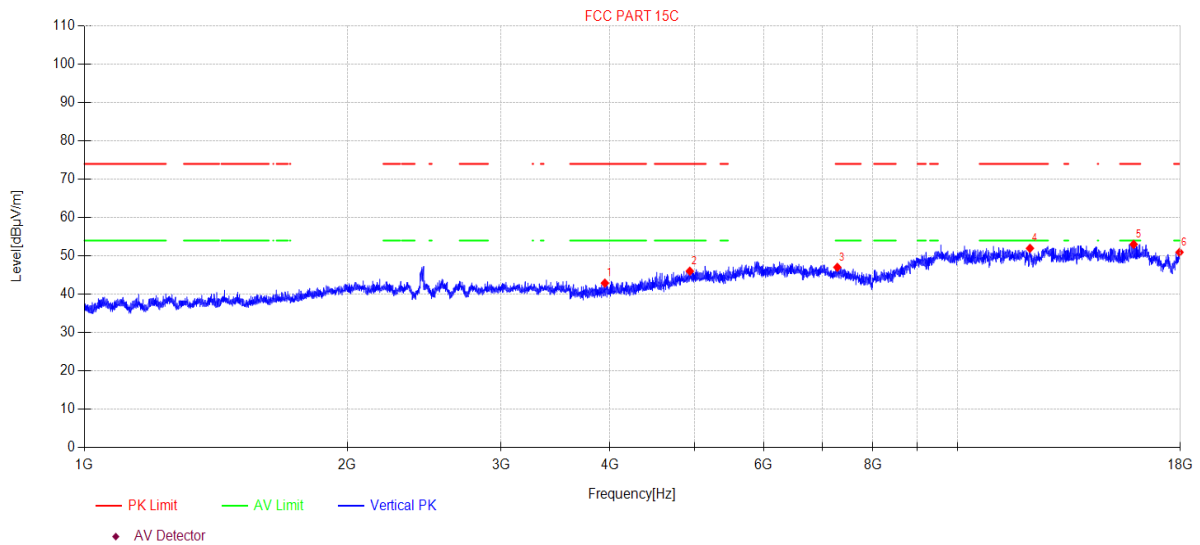
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



# TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\4  
**Memo:** 11N20MIMO 2437

## Test Graph



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	3946.34	46.90	5.84	30.59	-40.42	42.91	74.00	31.09	PK	Vertical
2	4937.06	45.64	7.74	32.75	-40.10	46.03	74.00	27.97	PK	Vertical
3	7284.70	44.32	7.63	36.50	-41.41	47.04	74.00	26.96	PK	Vertical
4	12107.83	41.94	10.54	39.10	-39.60	51.98	74.00	22.02	PK	Vertical
5	15914.88	38.77	15.49	38.07	-39.31	53.02	74.00	20.98	PK	Vertical
6	17963.62	38.60	13.09	41.58	-42.32	50.95	74.00	23.05	PK	Vertical

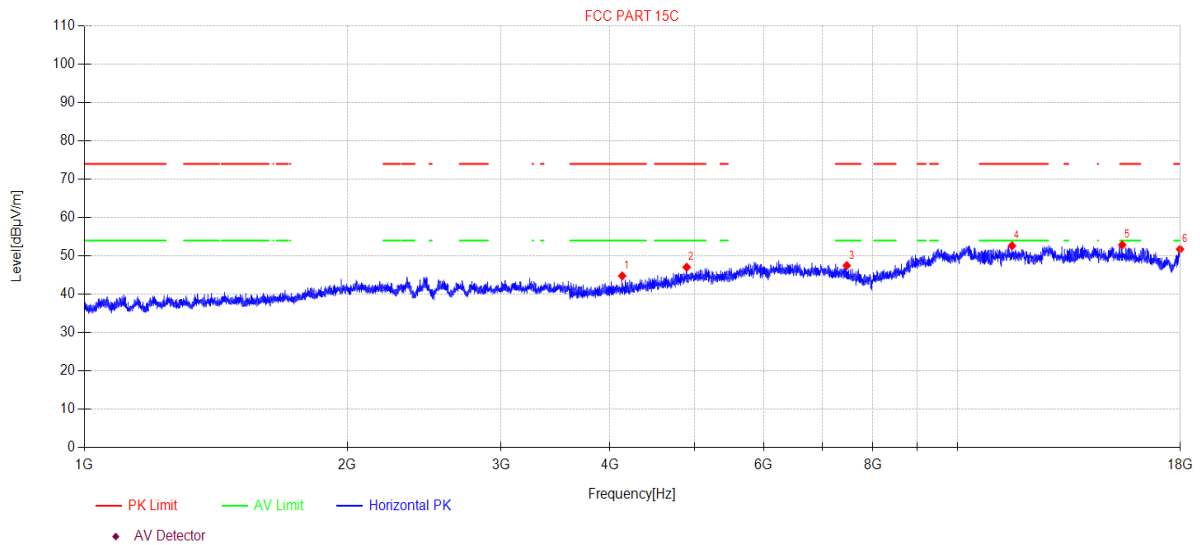
**Note:**

1. Level = Reading + Cable loss + Antenna Factor + AMP
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 Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\5  
**Memo:** 11N20MIMO 2462

## Test Graph



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	4130.72	48.11	6.11	30.96	-40.40	44.78	74.00	29.22	PK	Horizontal
2	4895.86	46.93	7.66	32.59	-40.12	47.06	74.00	26.94	PK	Horizontal
3	7468.02	45.25	7.64	36.46	-41.87	47.48	74.00	26.52	PK	Horizontal
4	11547.34	42.90	10.14	38.95	-39.35	52.64	74.00	21.36	PK	Horizontal
5	15443.64	39.89	13.36	38.66	-39.03	52.88	74.00	21.12	PK	Horizontal
6	17984.40	39.29	13.11	41.71	-42.37	51.74	74.00	22.26	PK	Horizontal

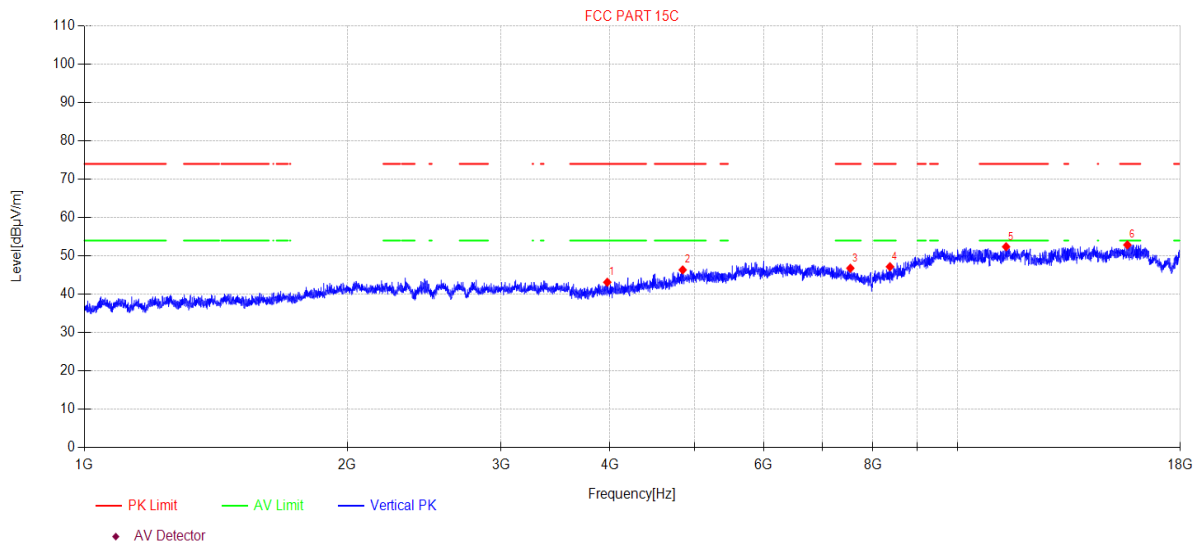
**Note:**

1. Level = Reading + Cable loss + Antenna Factor + AMP
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 Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\6  
**Memo:** 11N20MIMO 2462

## Test Graph



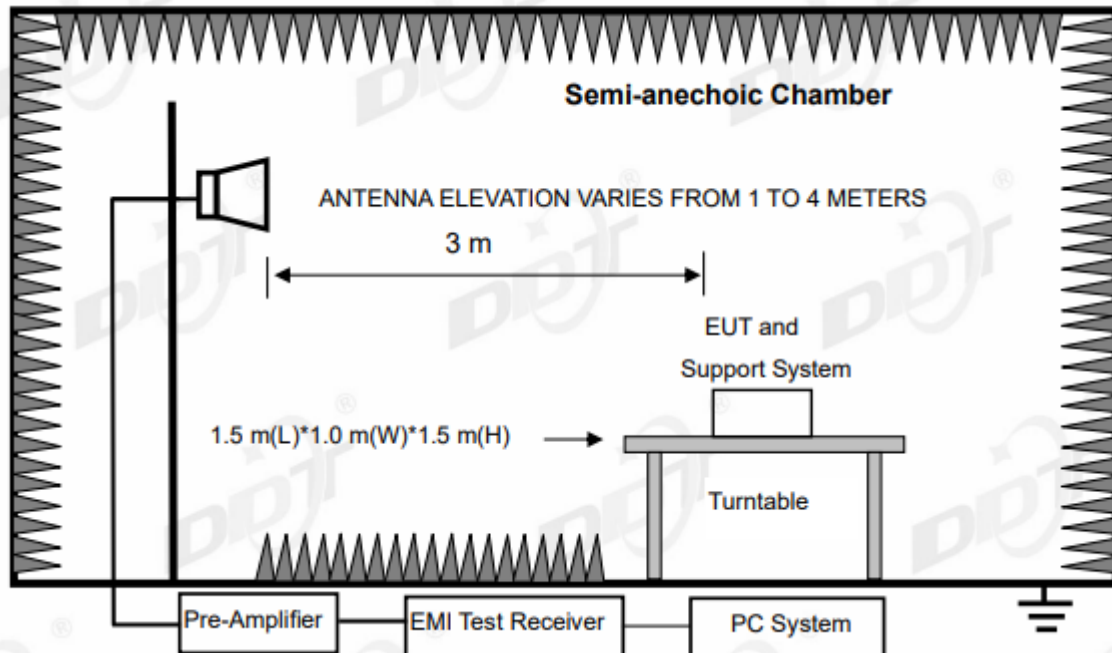
Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	3971.51	47.09	5.84	30.64	-40.43	43.14	74.00	30.86	PK	Vertical
2	4845.18	46.46	7.56	32.48	-40.14	46.36	74.00	27.64	PK	Vertical
3	7539.59	44.79	7.65	36.40	-42.05	46.79	74.00	27.21	PK	Vertical
4	8368.71	43.44	8.07	37.24	-41.57	47.18	74.00	26.82	PK	Vertical
5	11368.53	42.57	9.98	39.10	-39.26	52.39	74.00	21.61	PK	Vertical
6	15654.85	39.35	14.32	38.35	-39.15	52.87	74.00	21.13	PK	Vertical

**Note:**

1. Level = Reading + Cable loss + Antenna Factor + AMP
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.

## 12. Radiated Band Edge Compliance

### 12.1. Block diagram of test setup



### 12.2. 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.

### 12.3. Test procedure

Same with Radiated Spurious Emissions except change investigated frequency range from 2310 MHz to 2430 MHz and 2445 MHz to 2500 MHz.

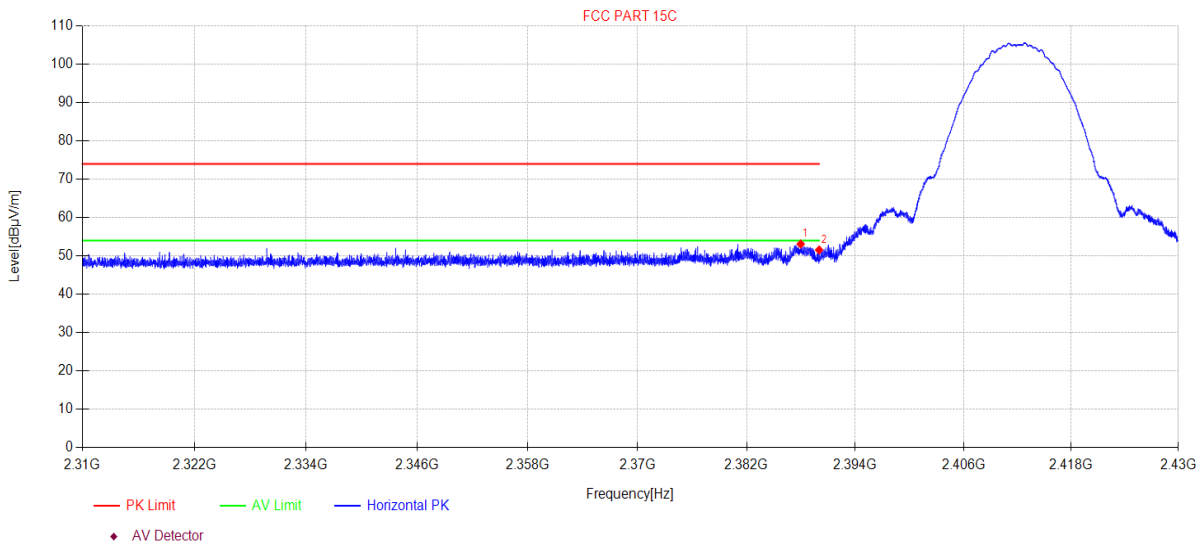
### 12.4. Test result

**Pass. (See below detailed test result)**

# TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\7  
**Memo:** 11B 2412 ANT1

## Test Graph



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBμV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	2387.96	49.87	3.86	27.48	-28.11	53.10	74.00	20.90	PK	Horizontal
2	2390.00	48.32	3.87	27.48	-28.11	51.56	74.00	22.44	PK	Horizontal

**Note:**

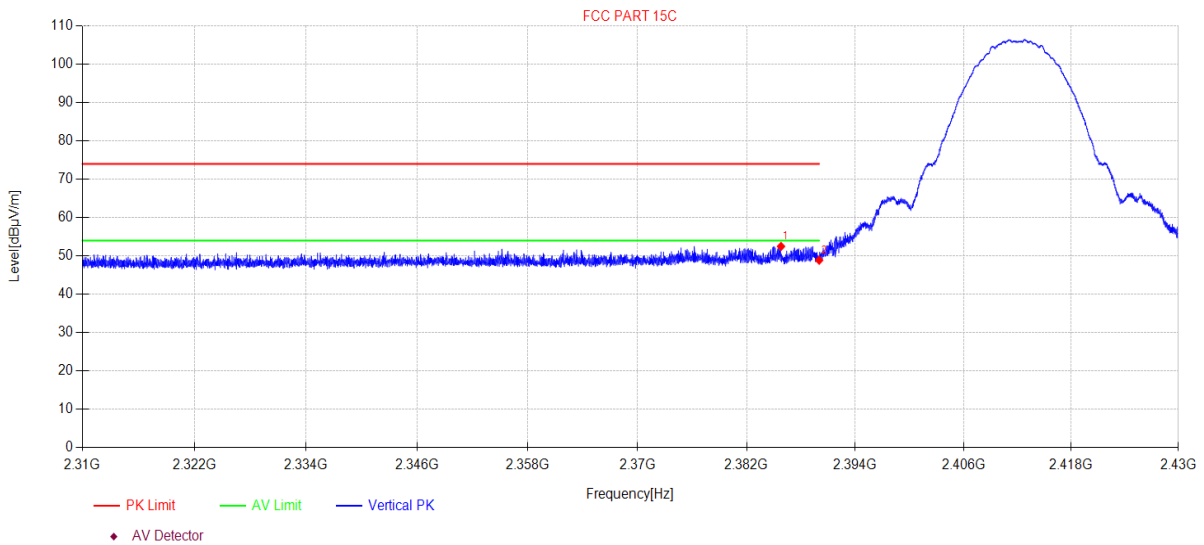
1. Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



# TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2023-09-07      **Tested By:** Bairong  
**EUT:** Wireless Speaker      **Model Number:** CITATION 500  
**Test Mode:** TX Mode      **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:21.1°C;Humi:68.5%      **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2023 report data\Q23082222-2E CITATION 500\FCC ABOVE 1G 2.4GWIFI\8  
**Memo:** 11B 2412 ANT1

## Test Graph



Suspected Data List										
N O.	Freq. [MHz]	Reading [dBµV/m]	Cable loss [dB]	Antenna Factor [dB]	AMP [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	2385.79	49.25	3.86	27.47	-28.10	52.48	74.00	21.52	PK	Vertical
2	2390.00	45.63	3.87	27.48	-28.11	48.87	74.00	25.13	PK	Vertical

**Note:**

1. Level = Reading + Cable loss + Antenna Factor + AMP
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.