



FCC TEST REPORT

FCC ID:2BLUW-RLM01

Date of Test.....: ZKT-260410L0620E-2

Date of Test.....: May.27, 2026 ~ May.30, 2026

Date of Test.....: May.30, 2026

Date of issue.....: 68

Test Result.....: PASS

Testing Laboratory: **Shenzhen ZKT Technology Co., Ltd.**

Address: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name: **FJ Dynamics Technology (Fujian) Co., Ltd.**

Address: Floor 23A, Unit 2, Huajian Building, No. 12, 16, and 18, East Keji Road, Shangjie Town, Minhou County, Fuzhou City, Fujian Province, China

Manufacturer's name: **FJ Dynamics Technology (Fujian) Co., Ltd.**

Address: Floor 23A, Unit 2, Huajian Building, No. 12, 16, and 18, East Keji Road, Shangjie Town, Minhou County, Fuzhou City, Fujian Province, China

Test specification:Standard: FCC CFR Title 47 Part 15 Subpart C Section 15.247
ANSI C63.10-2020+Cor 1-2023

Test procedure.....: /

Non-standard test method: N/A

Test Report Form No.: TRF-EL-110_V0**Test Report Form(s) Originator**: ZKT Testing**Master TRF**: Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Product name.....: **Robotic Line Marker**Trademark: 

Model/Type reference.....: RLM01

Ratings.....: DC 48V

**Testing procedure and testing location:****Testing Laboratory.....: Shenzhen ZKT Technology Co., Ltd.****Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, China****Tested by (name + signature).....: Jim.Liu****Reviewer (name + signature).....: Jackson.Fang****Approved (name + signature).....: Lake Xie**



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1. VERSION

Report No.	Version	Description	Approved
ZKT-260410L0620E-2	Rev.01	Initial issue of report	May. 30, 2026



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247), Subpart C			
Standard Section	Test Item	Result	Remark
FCC part 15.203/15.247 (c)	Antenna requirement	PASS	
FCC part 15.207	AC Power Line Conducted Emission	PASS	
FCC part 15.247 (b)(3)	Conducted Peak Output Power	PASS	
FCC part 15.247 (a)(2)	Channel Bandwidth& 99% OCB	PASS	
FCC part 15.247 (e)	Power Spectral Density	PASS	
FCC part 15.247(d)	RF conducted Band edge and Spurious Emission	PASS	
FCC part 15.205/15.209	Spurious Emission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report



2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add.: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 927491
Designation Number: CN1431
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$ · where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$ · providing a level of confidence of approximately 95 % .

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8KHz
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59℃



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Robotic Line Marker
Model No.:	RLM01
Model Different.:	N/A
Serial No.:	N/A
Sample ID	ZKT-260410L0620
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20)
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(HT20) Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	FPC Antenna, BT uses Ant 1, WiFi uses Ant 2
Antenna gain:	Max 2.48dBi
Power supply:	48V Via Battery Model: BP050014 50.4VDC,10Ah,504Wh
SWITCHING POWER ADAPTER:	Input:100-240V~,3.2A(Max.),50/60Hz Output:58.8V,4.2A
Note	802.11ax only support SU(full RU) mode.

Operation Frequency each of channel							
Channel	Frequency	Chann el	Frequency	Chann el	Frequency	Chann el	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)	
	802.11b/802.11g/802.11n(HT20) / 802.11ax (HT20)	/
Lowest channel	2412MHz	/



Middle channel	2437MHz	/
Highest channel	2462MHz	/



3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the duty cycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:				
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.				
Mode	802.11b	802.11g	802.11n(HT20)	802.11ax (HT20)
Data rate	1Mbps	6Mbps	6.5Mbps	6.5Mbps

Test Software	MobaXterm.exe
Power level setup	14

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission



Radiated Emission



Conducted Spurious



3.4 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
A-1	Adapter	Li-ion	LBC034588042	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
1	AC Cable	N/A	1.5m	
2	DC Cable	N/A	0.8m	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Conduction Emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Sep. 23, 2024	Sep. 22, 2025
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sep. 19, 2024	Sep. 18, 2025
3	Test Cable	N/A	C-01	N/A	N/A	May. 22, 2025	May. 21, 2026
4	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Oct. 24, 2024	Oct. 23, 2025
5	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiation Emissions & Radiation Spurious Emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2024	Sep. 19, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2024	Sep. 19, 2025
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Oct. 24, 2024	Oct. 23, 2025
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 20, 2024	Sep. 19, 2025
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 20, 2024	Sep. 19, 2025
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 30, 2024	Sep. 29, 2025
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Sep. 20, 2024	Sep. 19, 2025
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 19, 2024	Sep. 18, 2025
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 19, 2024	Sep. 18, 2025
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Oct. 24, 2024	Oct. 23, 2025
11	Test Cable	N/A	R-01	N/A	N/A	May. 25, 2025	May. 24, 2026
12	Test Cable	N/A	R-02	N/A	N/A	May. 25, 2025	May. 24, 2026
13	Test Cable	N/A	R-03	N/A	N/A	May. 25, 2025	May. 24, 2026



14	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

RF Conducted Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 20, 2024	Sep. 19, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 20, 2024	Sep. 19, 2025
3	Test Cable	N/A	RF-01	N/A	N/A	May. 25, 2025	May. 24, 2026
4	Test Cable	N/A	RF-02	N/A	N/A	May. 25, 2025	May. 24, 2026
5	Test Cable	N/A	RF-03	N/A	N/A	May. 25, 2025	May. 24, 2026
6	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sep. 19, 2024	Sep. 18, 2025
7	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sep. 20, 2024	Sep. 19, 2025
8	Magnetic Field Probe Tester	Narda	ELT-400	0-0344/M-1752	N/A	Sep. 25, 2024	Sep. 24, 2025
9	SHIELD BOX	TESCOM	TC-5970C	5970C015553	N/A	Dec. 18, 2024	Dec. 17, 2025
10	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sep. 28, 2024	Sep. 27, 2025
11	MWRF Power Meter Test system	MW	MW100-RFCB	N/A	N/A	Sep. 19, 2024	Sep. 18, 2025
12	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
13	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

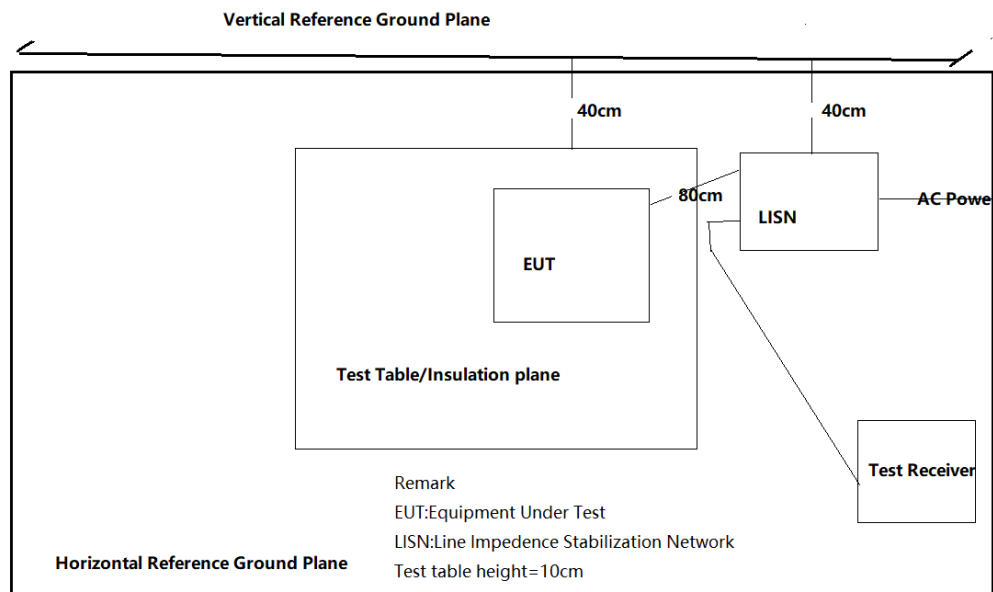
- The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

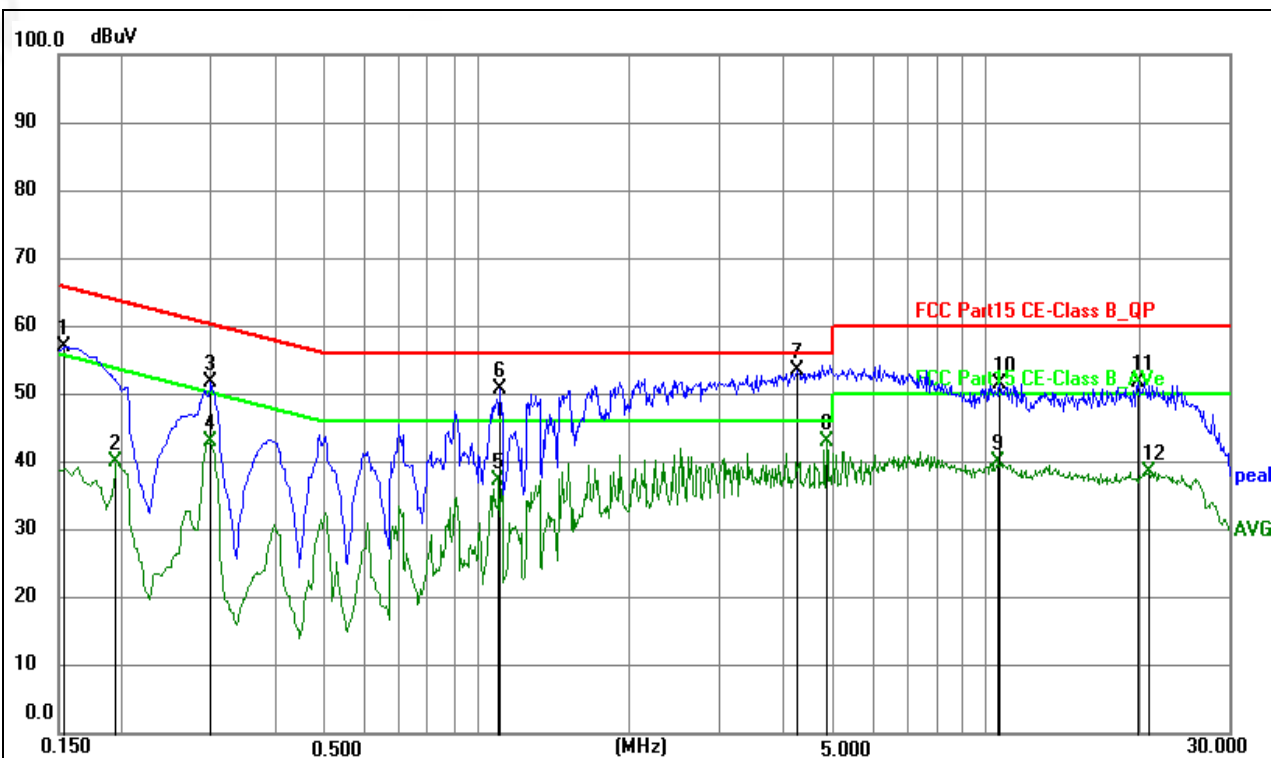
We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.



4.1.6 Test Result

All modes have been tested, only shows data from the worst-performing mode N20-2412MHz.

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz		



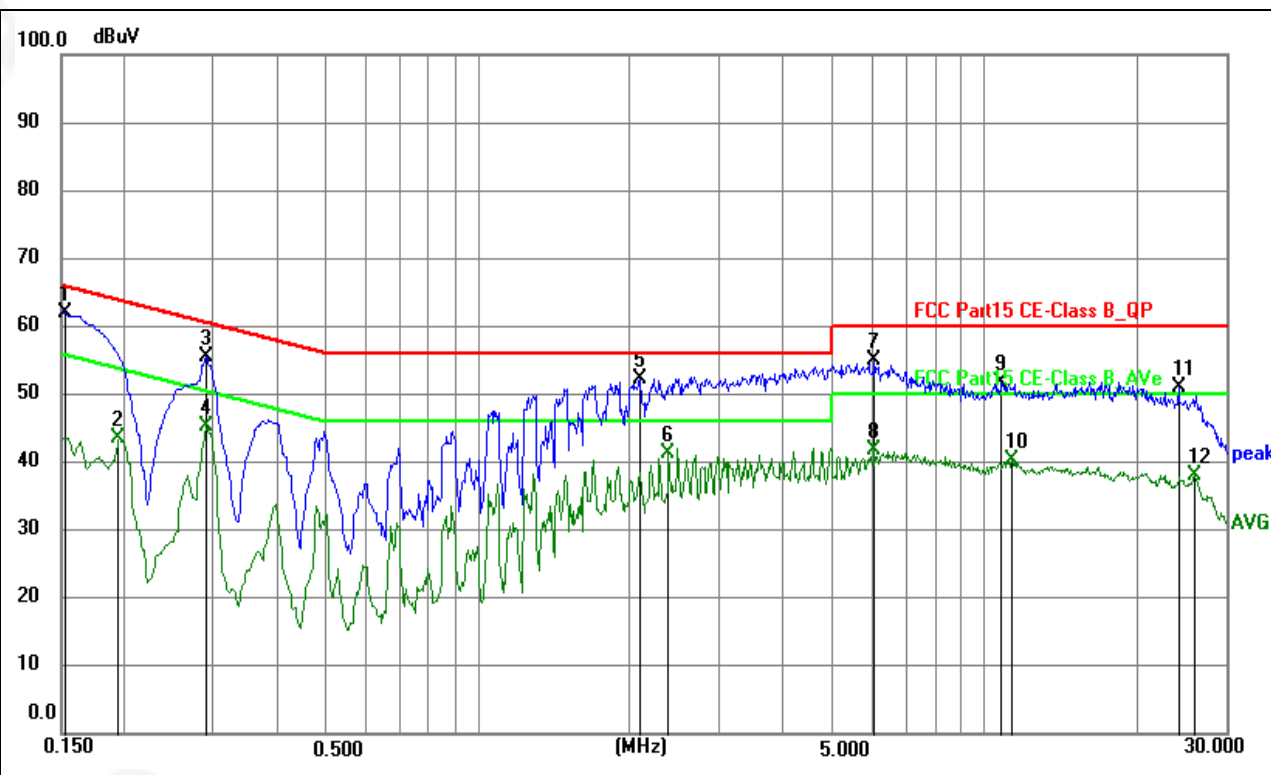
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1544	36.26	20.68	56.94	65.76	-8.82	QP
2	0.1949	19.82	20.25	40.07	53.83	-13.76	AVG
3	0.2983	31.21	20.45	51.66	60.29	-8.63	QP
4	0.2983	22.60	20.45	43.05	50.29	-7.24	AVG
5	1.1040	16.93	20.47	37.40	46.00	-8.60	AVG
6	1.1085	30.20	20.47	50.67	56.00	-5.33	QP
7	4.2584	33.29	20.26	53.55	56.00	-2.45	QP
8	4.8704	22.77	20.14	42.91	46.00	-3.09	AVG
9	10.5225	19.51	20.49	40.00	50.00	-10.00	AVG
10	10.6304	30.89	20.49	51.38	60.00	-8.62	QP
11	19.9185	30.82	20.96	51.78	60.00	-8.22	QP
12	20.9355	17.73	20.84	38.57	50.00	-11.43	AVG

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Measurement Level = Reading level + Correct Factor



Temperature :	26°C	Relative Humidity:	54%
Pressure :	101kPa	Phase:	N
Test Voltage :	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1524	41.20	20.70	61.90	65.87	-3.97	QP
2	0.1949	23.32	20.25	43.57	53.83	-10.26	AVG
3	0.2895	34.99	20.42	55.41	60.54	-5.13	QP
4	0.2895	24.74	20.42	45.16	50.54	-5.38	AVG
5	2.0895	31.96	20.19	52.15	56.00	-3.85	QP
6	2.3775	20.94	20.29	41.23	46.00	-4.77	AVG
7	6.0765	34.59	20.29	54.88	60.00	-5.12	QP
8	6.0765	21.43	20.29	41.72	50.00	-8.28	AVG
9	10.7970	31.27	20.50	51.77	60.00	-8.23	QP
10	11.3595	19.67	20.53	40.20	50.00	-9.80	AVG
11	24.1890	30.50	20.44	50.94	60.00	-9.06	QP
12	26.0250	17.78	20.36	38.14	50.00	-11.86	AVG

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Mesurement Level = Reading level + Correct Factor



4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

4.2.1 RADIATED EMISSION LIMITS

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m).



4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change from table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter).
- Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

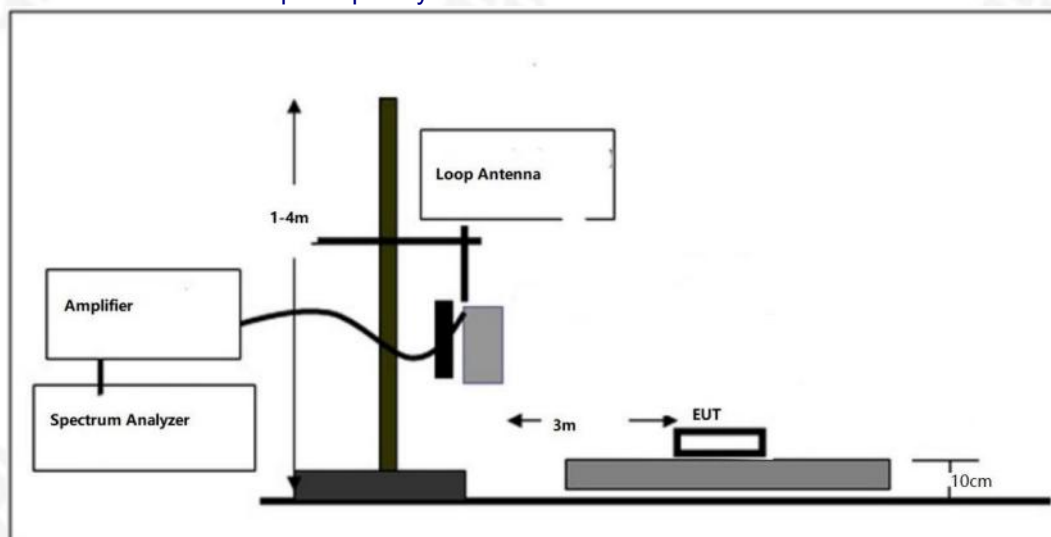
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

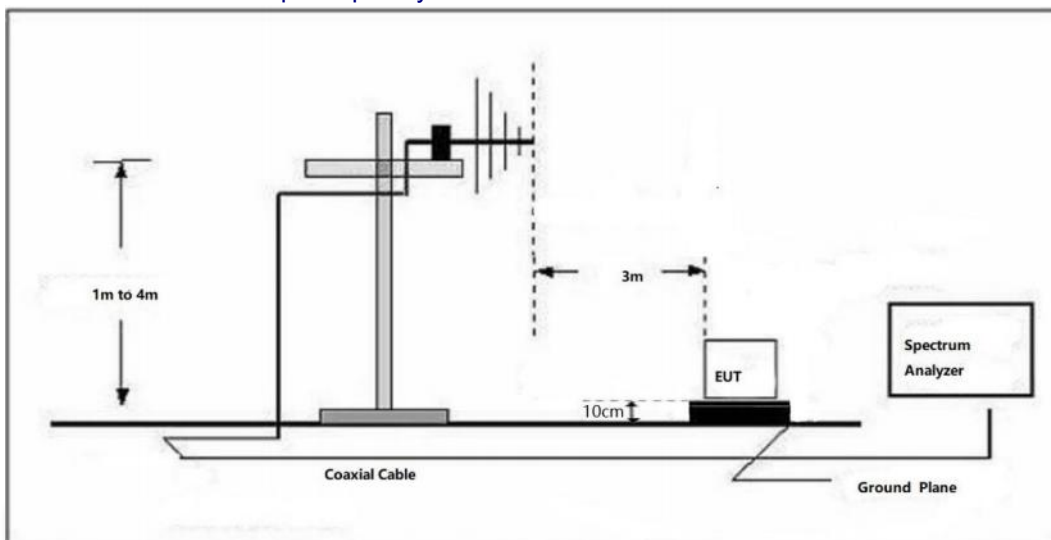
4.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

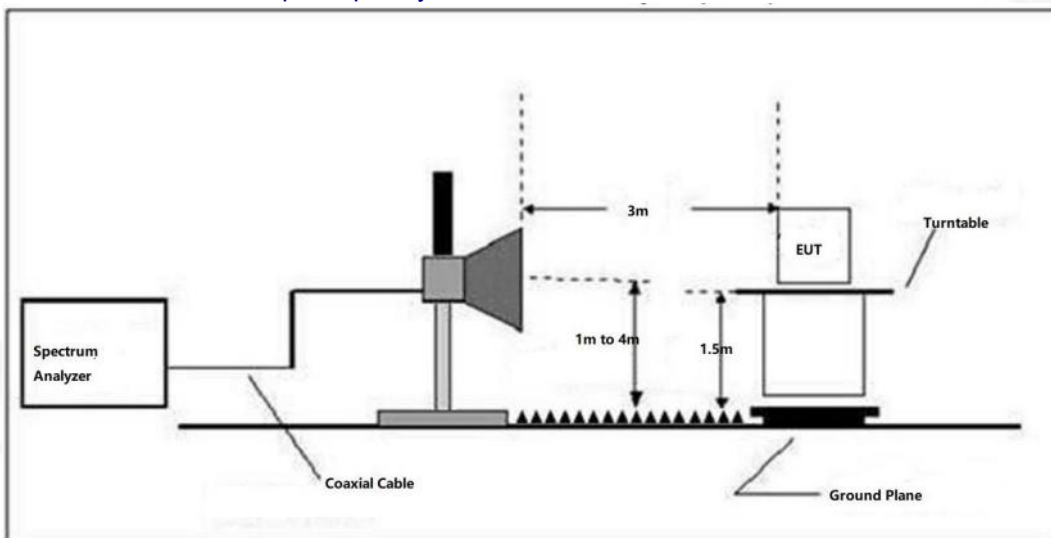




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.6 TEST RESULTS

Between 9KHz – 30MHz

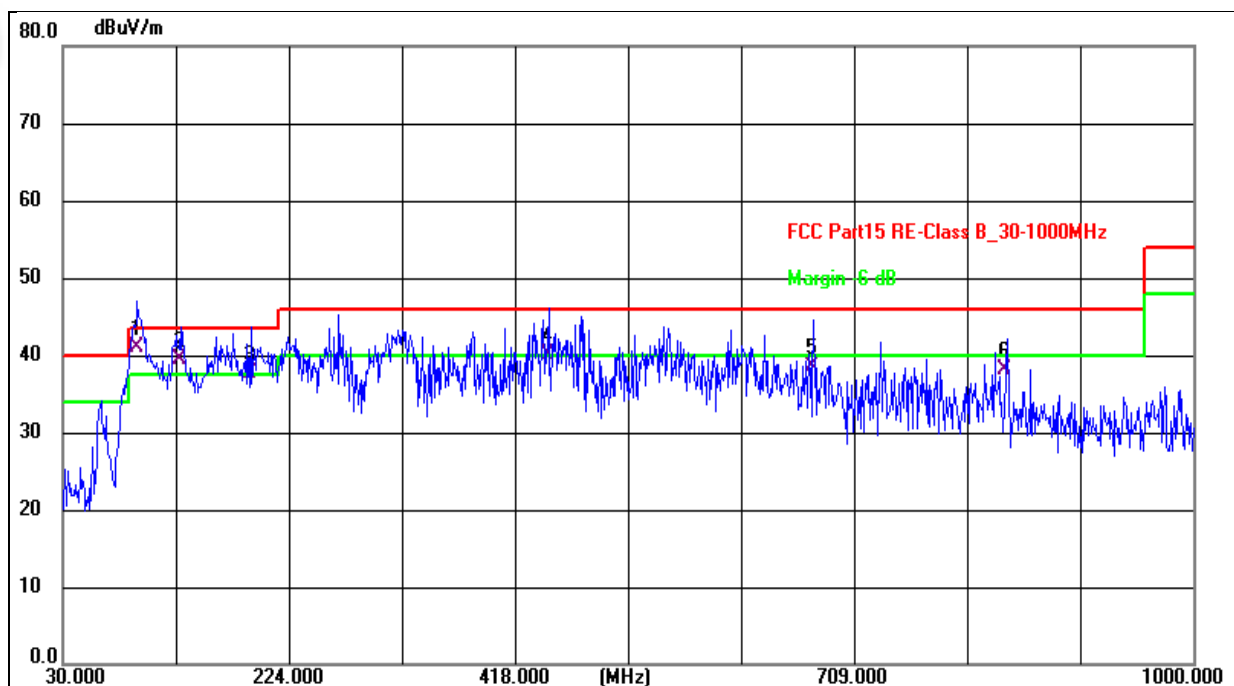
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.



Between 30MHz – 1GHz

All modes have been tested, only shows data from the worst-performing mode N20-2412MHz.

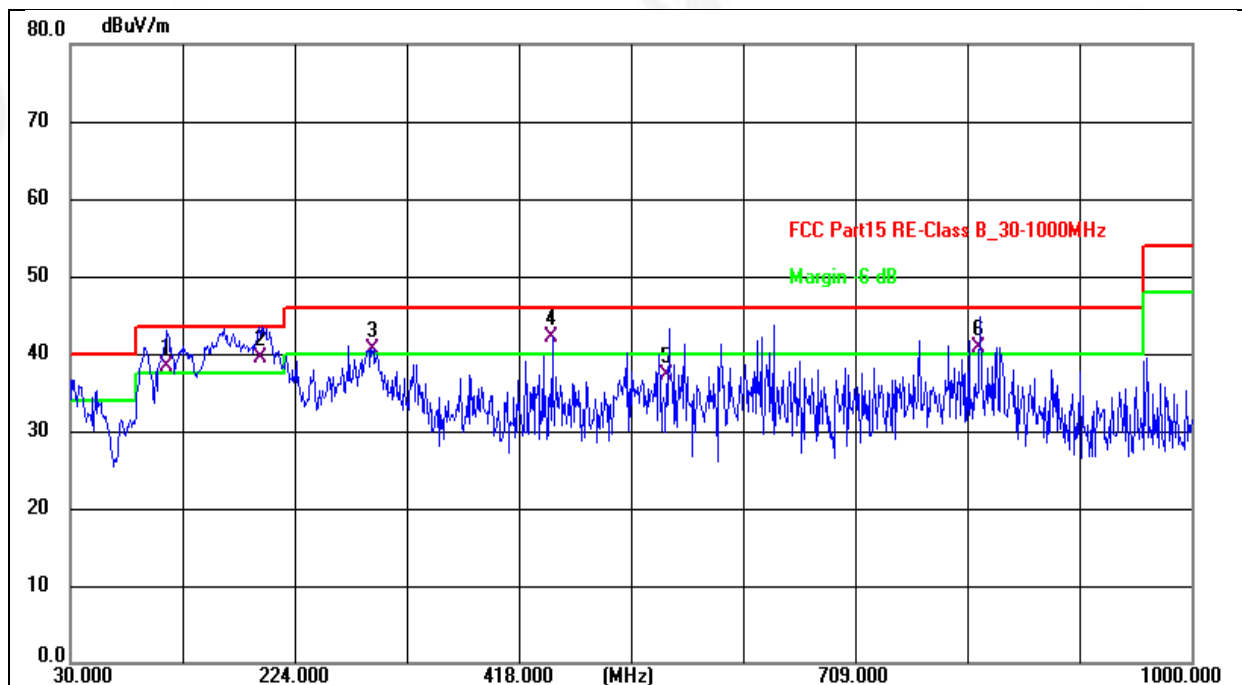
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 58.8V	Test Mode	802.11n20 2412



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 *	94.020	60.73	-19.63	41.10	43.50	-2.40	QP
2 !	130.880	56.11	-16.56	39.55	43.50	-3.95	QP
3 !	191.020	56.03	-18.39	37.64	43.50	-5.86	QP
4 !	446.130	52.38	-12.30	40.08	46.00	-5.92	QP
5	673.110	45.27	-6.80	38.47	46.00	-7.53	QP
6	838.980	42.22	-4.16	38.06	46.00	-7.94	QP



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 58.8V	Test Mode	802.11n20 2412



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1 !	113.420	56.24	-17.85	38.39	43.50	-5.11	QP
2 !	194.900	58.14	-18.62	39.52	43.50	-3.98	QP
3 !	291.900	57.14	-16.55	40.59	46.00	-5.41	QP
4 *	446.130	54.47	-12.30	42.17	46.00	-3.83	QP
5	547.010	46.91	-9.66	37.25	46.00	-8.75	QP
6 !	815.700	45.03	-4.18	40.85	46.00	-5.15	QP

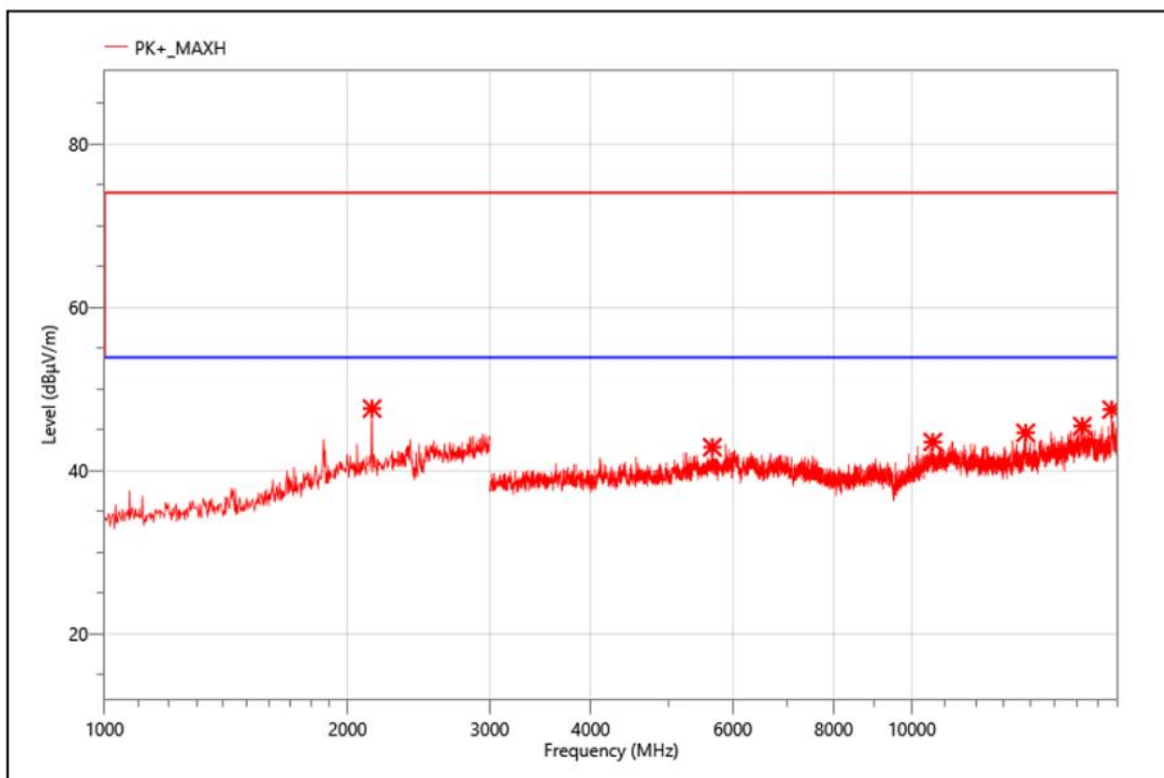
Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3.The test data shows only the worst case 802.11n20 2412.



All modes have been tested, N20 the worst result as below:

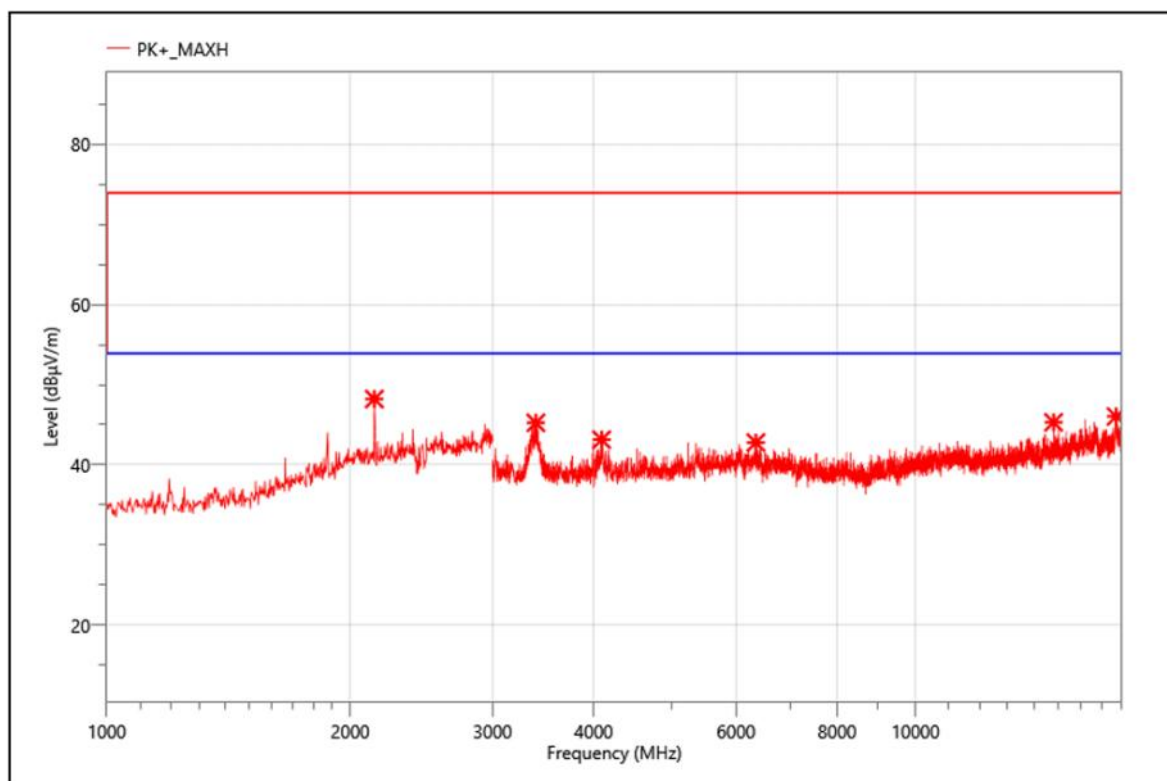
N20 2412



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2144.000	56.69	-9.05	47.64	74.00	26.36	PK+	H
2	5659.500	52.04	-9.14	42.90	74.00	31.10	PK+	H
3	10614.000	48.76	-5.21	43.55	74.00	30.45	PK+	H
4	13831.500	48.38	-3.71	44.67	74.00	29.33	PK+	H
5	16258.500	46.31	-0.81	45.50	74.00	28.50	PK+	H
6	17674.500	47.20	0.32	47.52	74.00	26.48	PK+	H



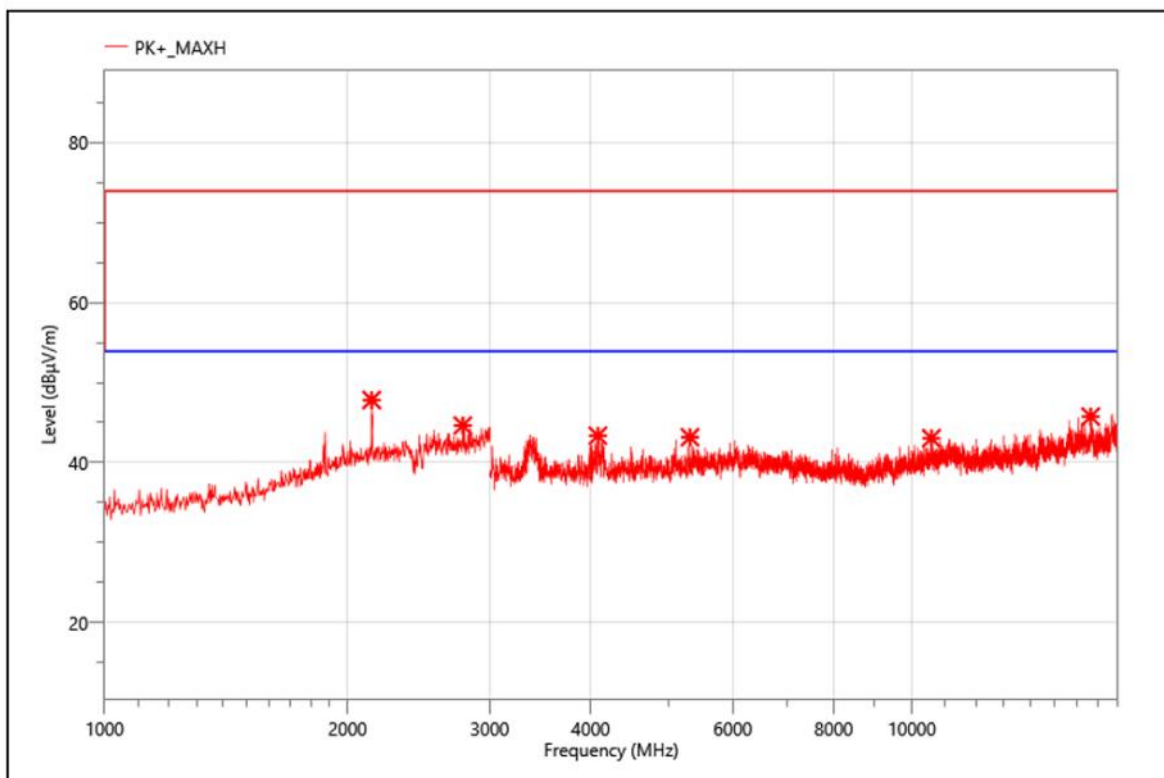
N20 2412



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2142.000	57.26	-9.05	48.21	74.00	25.79	PK+	V
2	3393.000	59.62	-14.38	45.24	74.00	28.76	PK+	V
3	4092.000	55.77	-12.63	43.14	74.00	30.86	PK+	V
4	6348.000	50.73	-7.96	42.77	74.00	31.23	PK+	V
5	14818.500	48.60	-3.3	45.30	74.00	28.70	PK+	V
6	17706.000	45.98	0.05	46.03	74.00	27.97	PK+	V



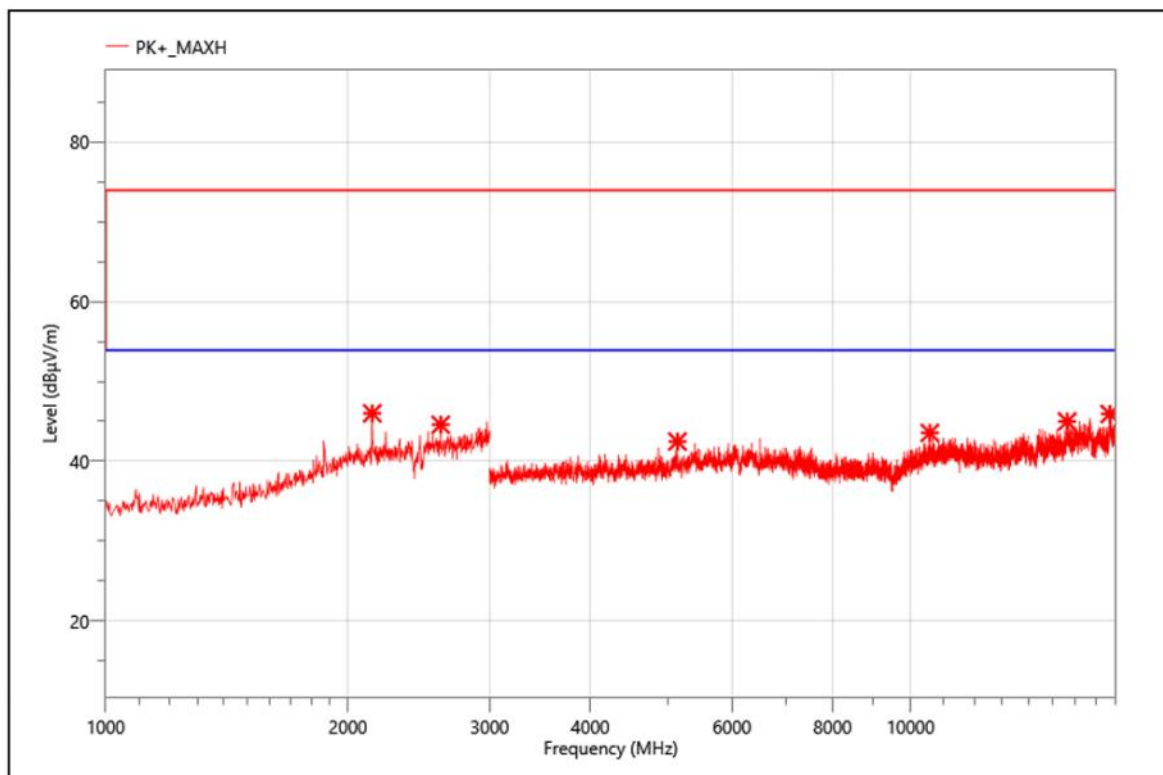
N20 2437



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2142.000	56.86	-9.05	47.81	74.00	26.19	PK+	V
2	2778.000	53.00	-8.38	44.62	74.00	29.38	PK+	V
3	4083.000	56.08	-12.73	43.35	74.00	30.65	PK+	V
4	5310.000	53.20	-10.04	43.16	74.00	30.84	PK+	V
5	10572.000	48.17	-5.14	43.03	74.00	30.97	PK+	V
6	16651.500	46.53	-0.79	45.74	74.00	28.26	PK+	V



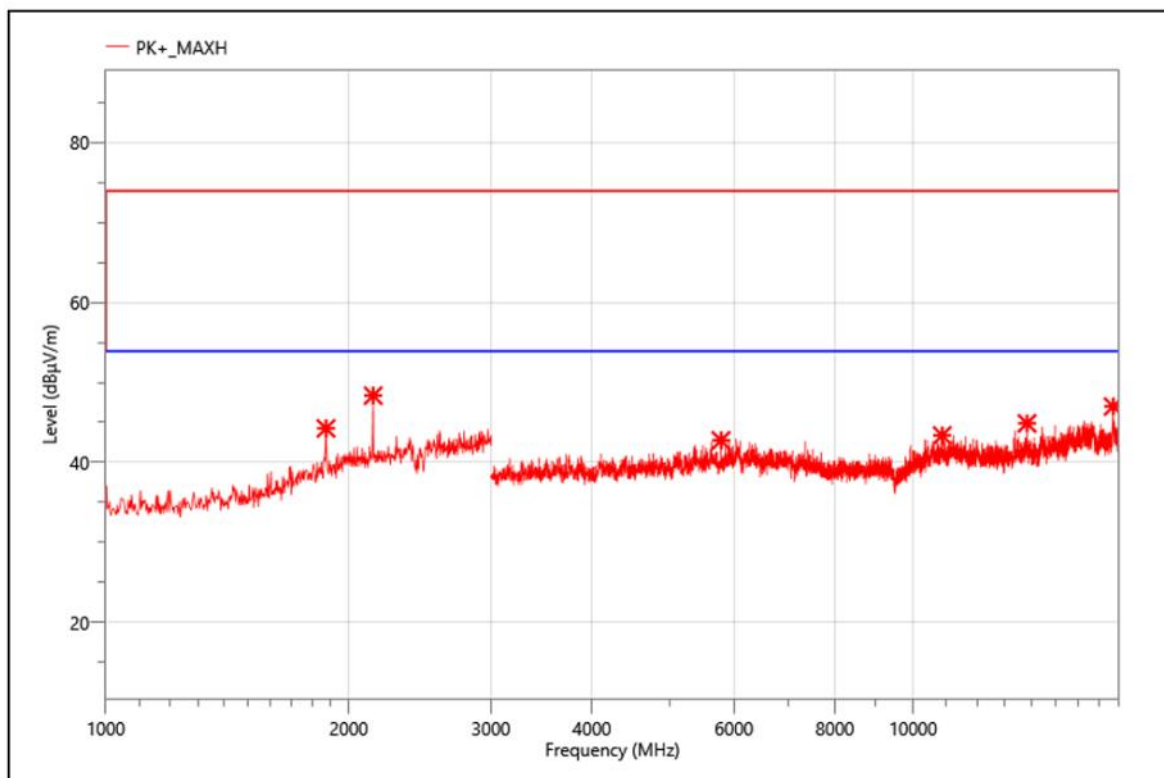
N20 2437



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	2144.000	55.05	-9.05	46.00	74.00	28.00	PK+	H
2	2608.000	52.80	-8.23	44.57	74.00	29.43	PK+	H
3	5133.000	52.75	-10.28	42.47	74.00	31.53	PK+	H
4	10569.000	48.66	-5.11	43.55	74.00	30.45	PK+	H
5	15654.000	47.04	-2.06	44.98	74.00	29.02	PK+	H
6	17682.000	45.64	0.28	45.92	74.00	28.08	PK+	H



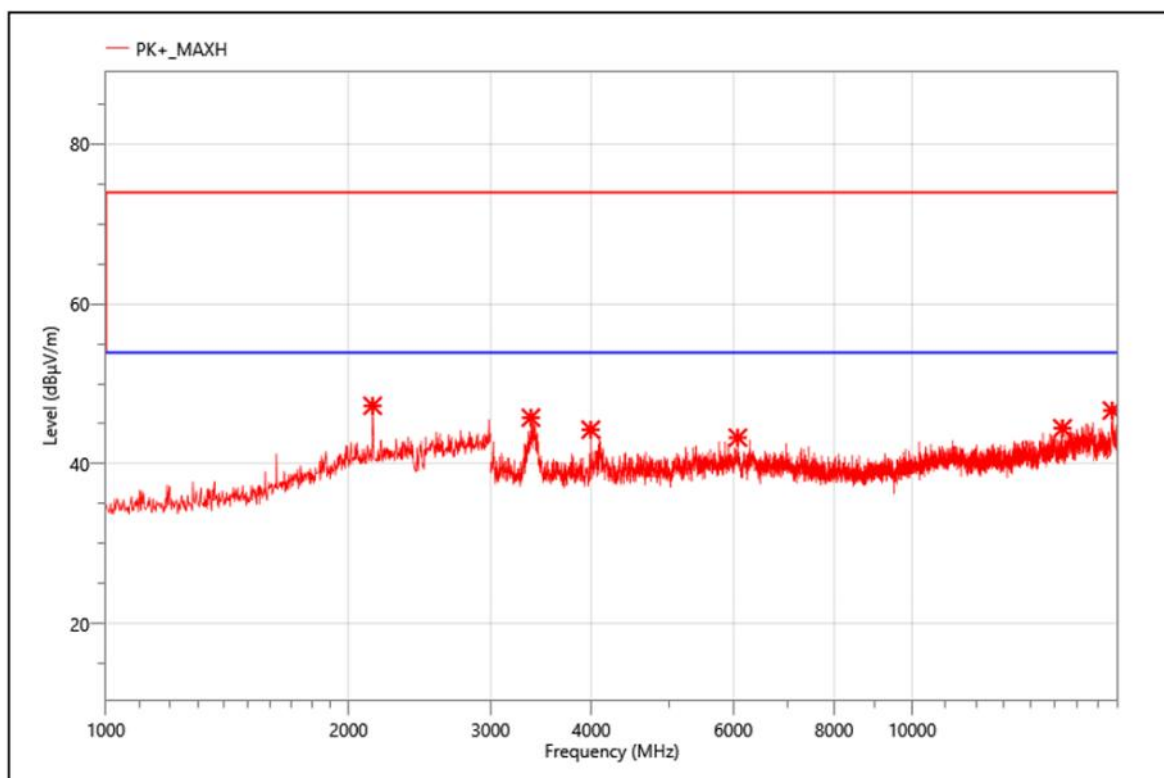
N20 2462



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	1874.000	54.59	-10.35	44.24	74.00	29.76	PK+	H
2	2144.000	57.40	-9.05	48.35	74.00	25.65	PK+	H
3	5782.500	51.81	-9.07	42.74	74.00	31.26	PK+	H
4	10864.500	48.49	-5.12	43.37	74.00	30.63	PK+	H
5	13837.500	48.57	-3.7	44.87	74.00	29.13	PK+	H
6	17694.000	46.77	0.21	46.98	74.00	27.02	PK+	H



N20 2462



Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The test data shows only the worst case.



5. RADIATED BAND EMISSION MEASUREMENT

5.1 TEST REQUIREMENT:

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above	Peak	1MHz	3MHz	Peak
	1GHz	Average	1MHz	3MHz	Average

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m).

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could bestopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reportedin a data sheet.
- Test the EUT in the lowest channel,the Highest channel

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

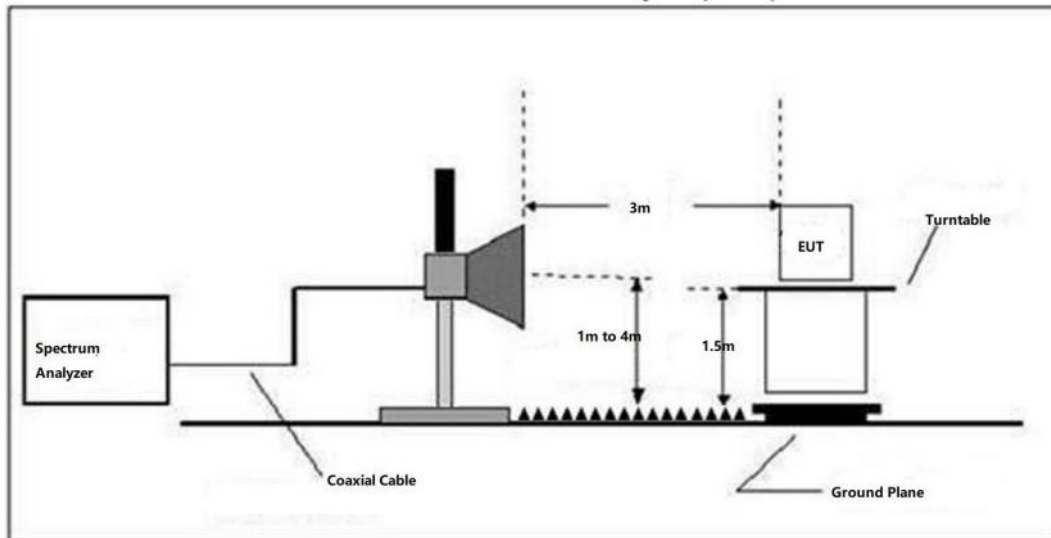
5.3 DEVIATION FROM TEST STANDARD

No deviation



5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



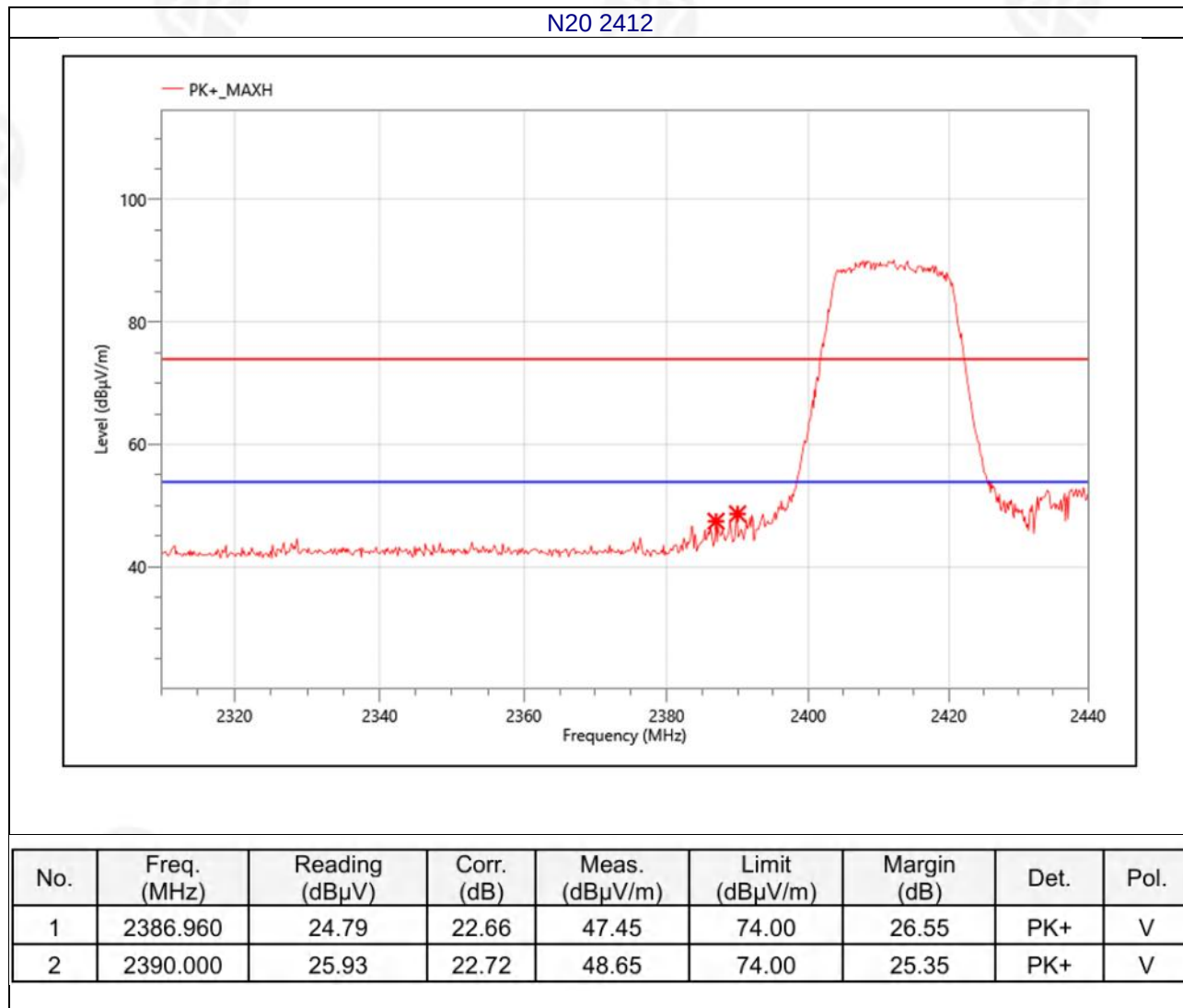
5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



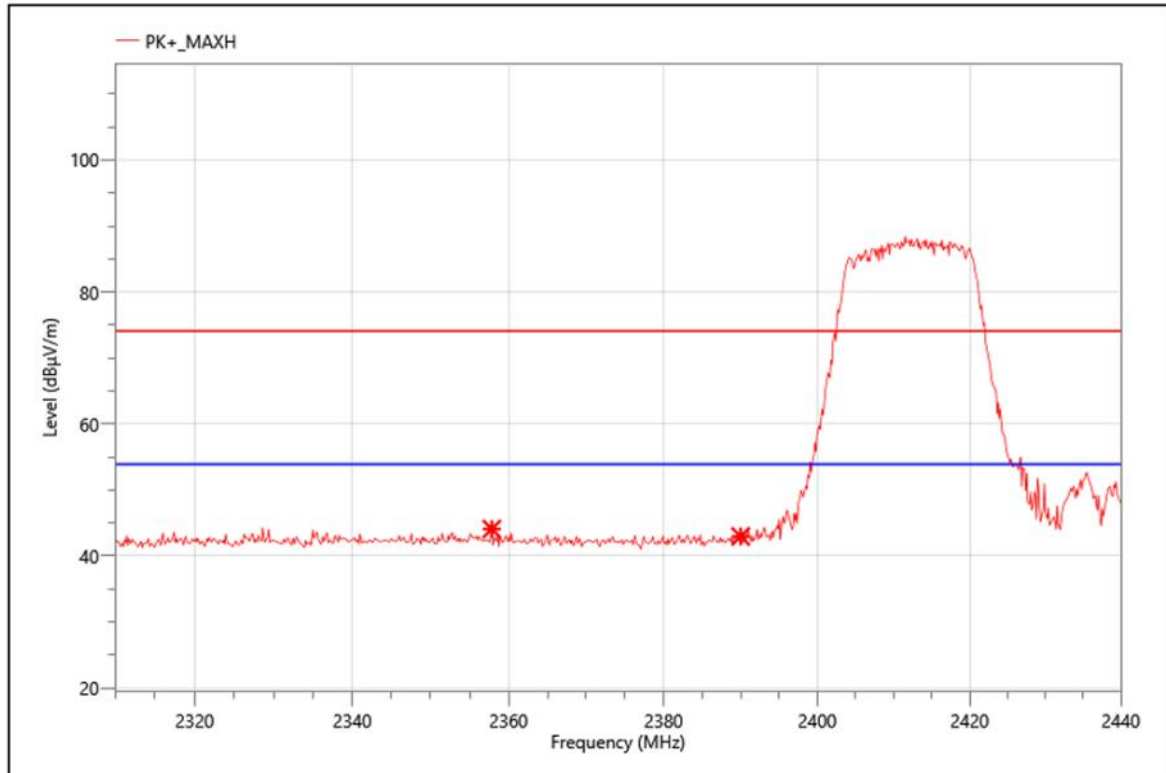
5.6 TEST RESULT

All modes have been tested, N20 the worst result as below:





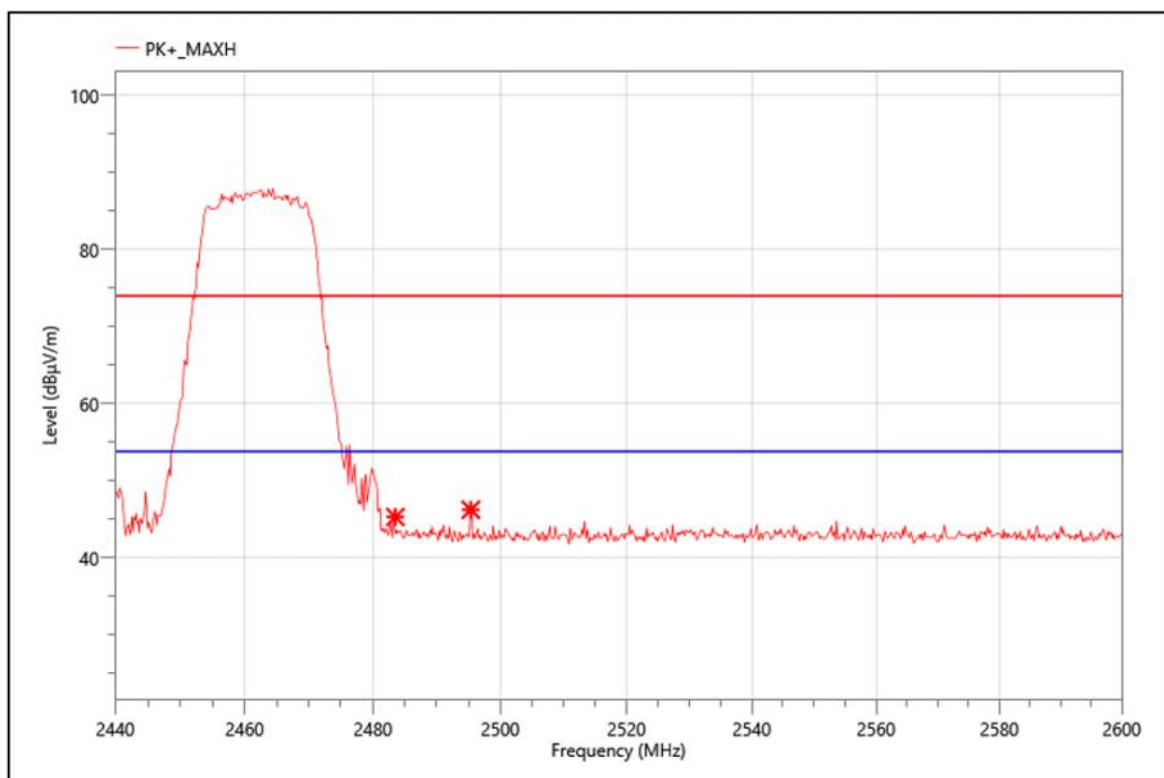
N20 2412



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2357.840	21.34	22.75	44.09	74.00	29.91	PK+	H
2	2390.000	20.25	22.72	42.97	74.00	31.03	PK+	H



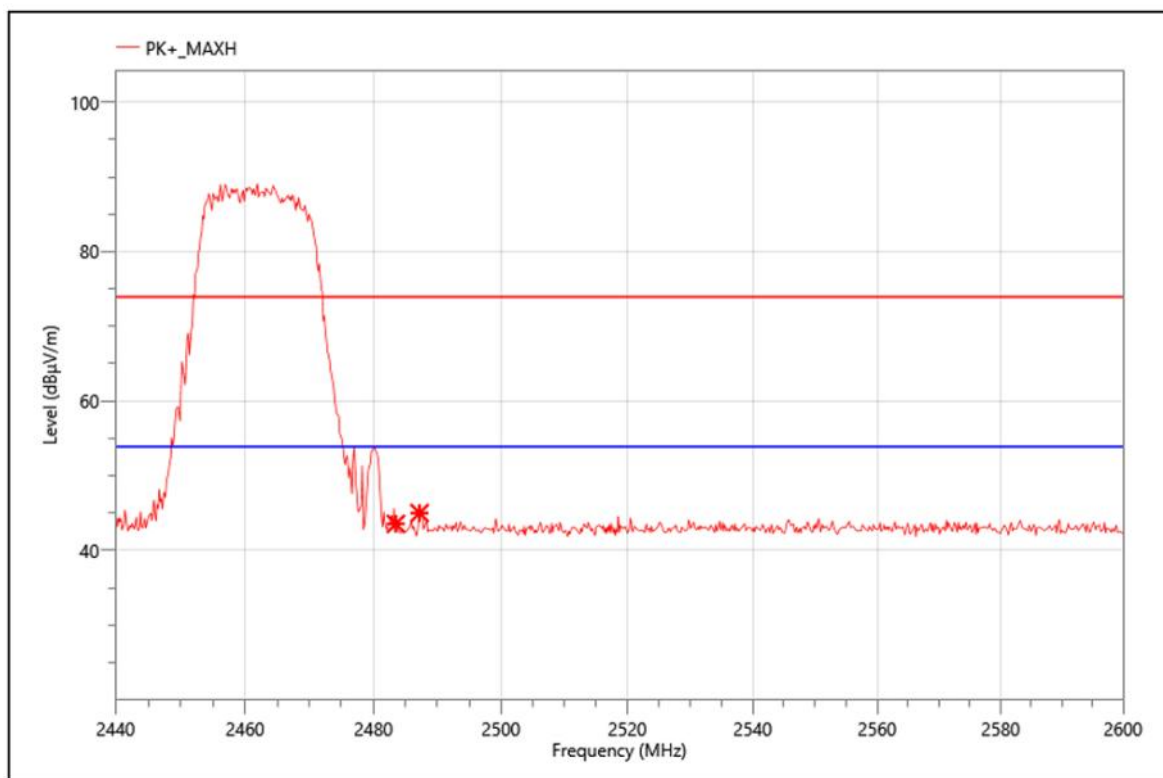
N20 2462



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2483.500	22.19	23.15	45.34	74.00	28.66	PK+	V
2	2495.360	23.15	23.12	46.27	74.00	27.73	PK+	V



N20 2462



No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Det.	Pol.
1	2483.500	20.42	23.15	43.57	74.00	30.43	PK+	H
2	2487.200	21.88	23.14	45.02	74.00	28.98	PK+	H

Remark:

- Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level – Limit

If peak below the average limit, the average emission was no test.



6. POWER SPECTRAL DENSITY TEST

Test Requirement:	FCC Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247), Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

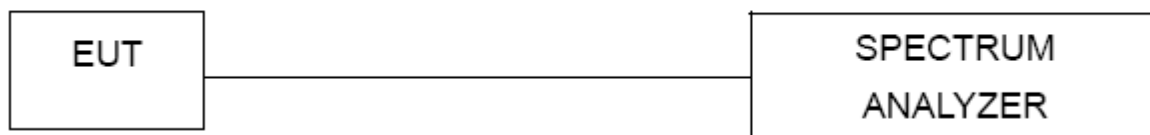
6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

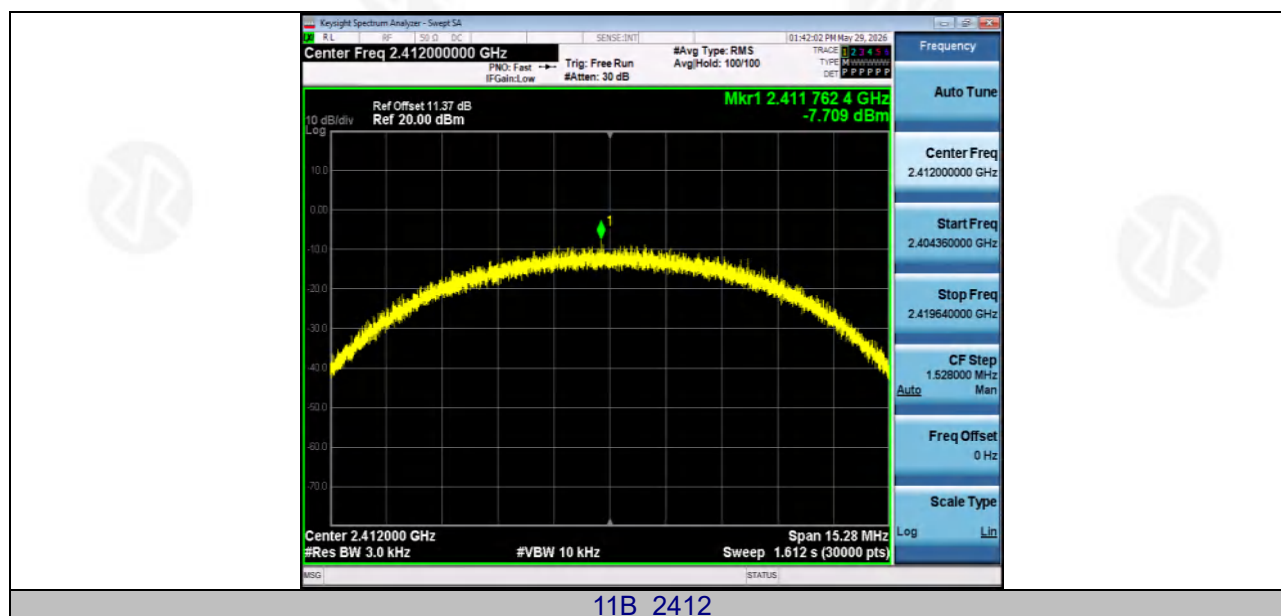
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

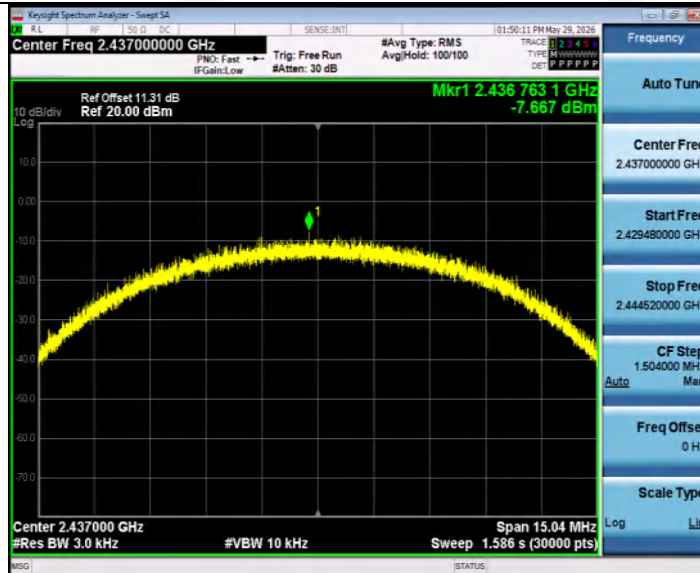


6.6 TEST RESULT

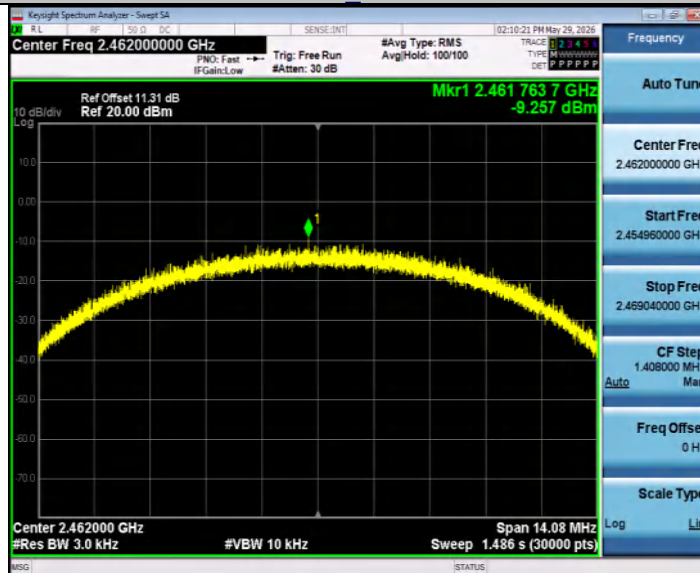
Temperature :	26□	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 58.8V
Test Mode :	TX Mode		

Test Mode	Frequency [MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	2412	-7.71	≤8.00	PASS
	2437	-7.67	≤8.00	PASS
	2462	-9.26	≤8.00	PASS
11G	2412	-11.45	≤8.00	PASS
	2437	-11.70	≤8.00	PASS
	2462	-12.16	≤8.00	PASS
11N20SISO	2412	-15.07	≤8.00	PASS
	2437	-15.35	≤8.00	PASS
	2462	-15.04	≤8.00	PASS

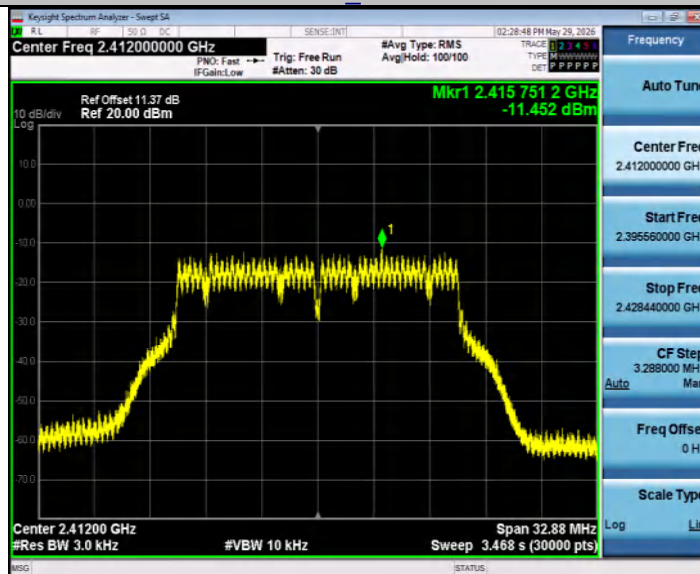




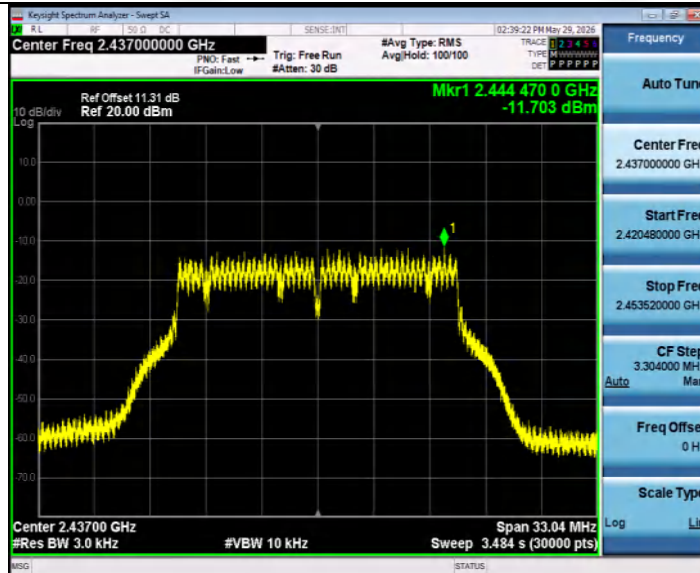
11B 2437



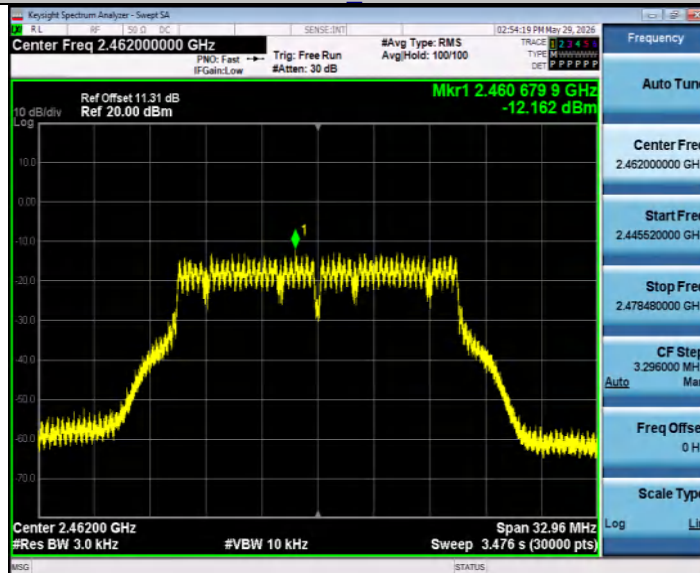
11B 2462



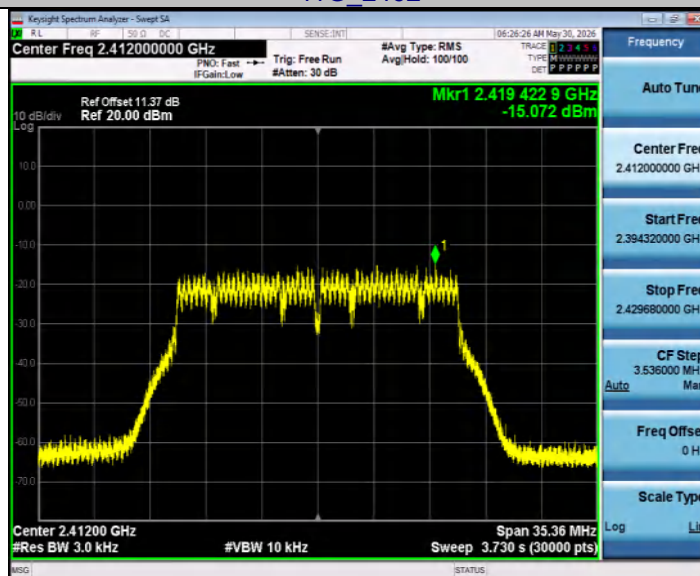
11G 2412



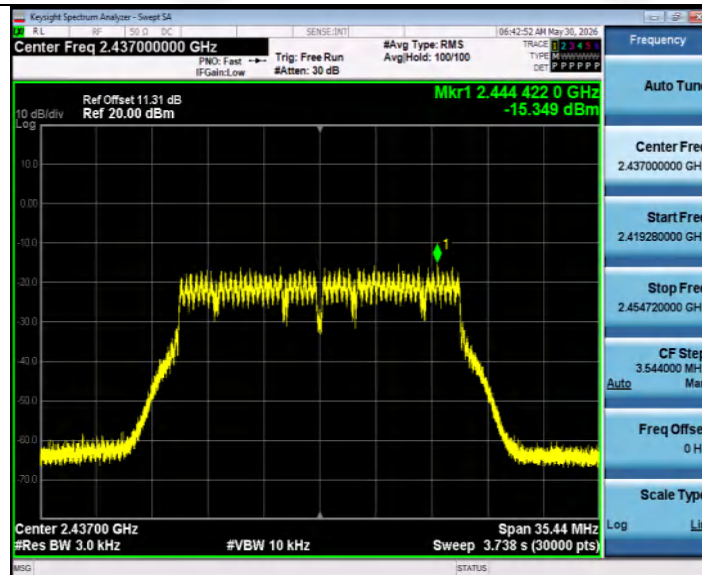
11G 2437



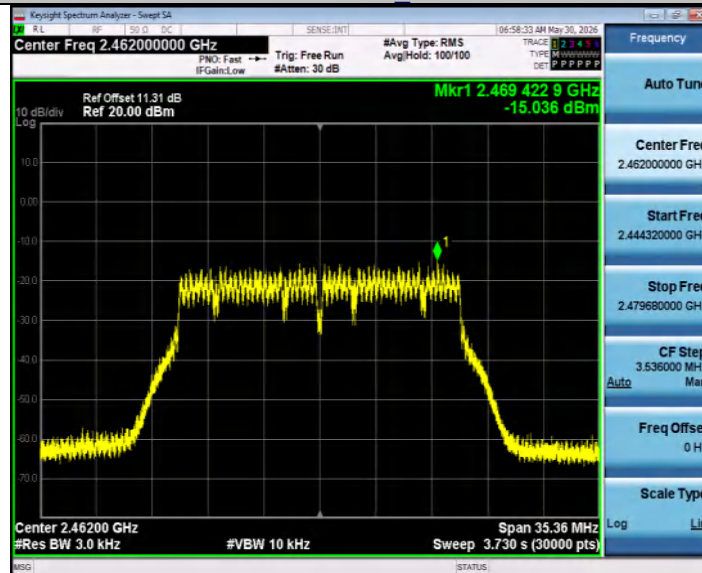
11G 2462



11N20SISO 2412



11N20SISO_2437



11N20SISO_2462



7. CHANNEL BANDWIDTH & 99% OCCUPY BANDWIDTH

Test Requirement:	FCC Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

7.1 APPLIED PROCEDURES / LIMIT

FCC Part 15 (15.247), Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

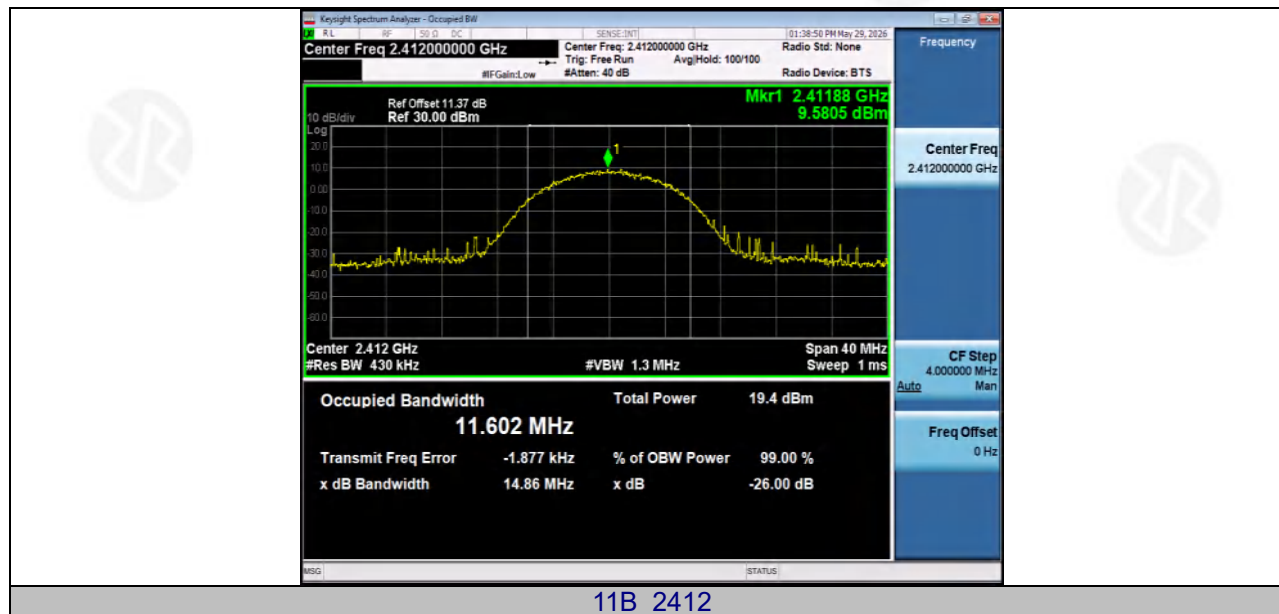


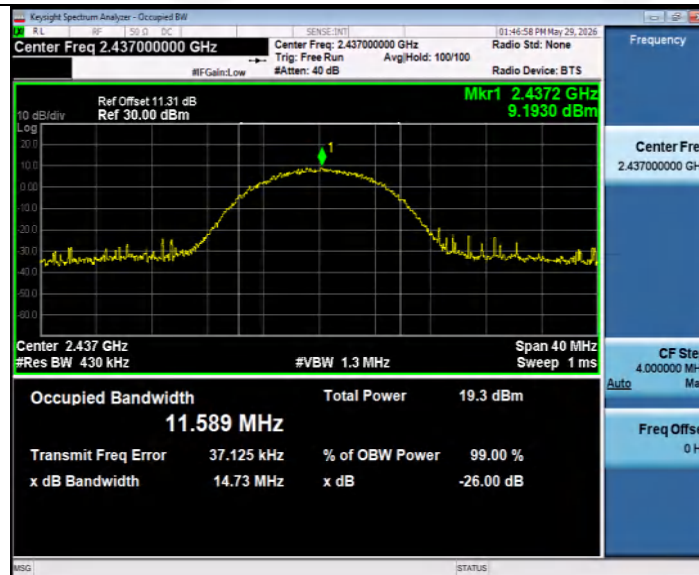
7.6 TEST RESULT

Temperature :	26□	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 58.8V
Test Mode :	TX Mode		

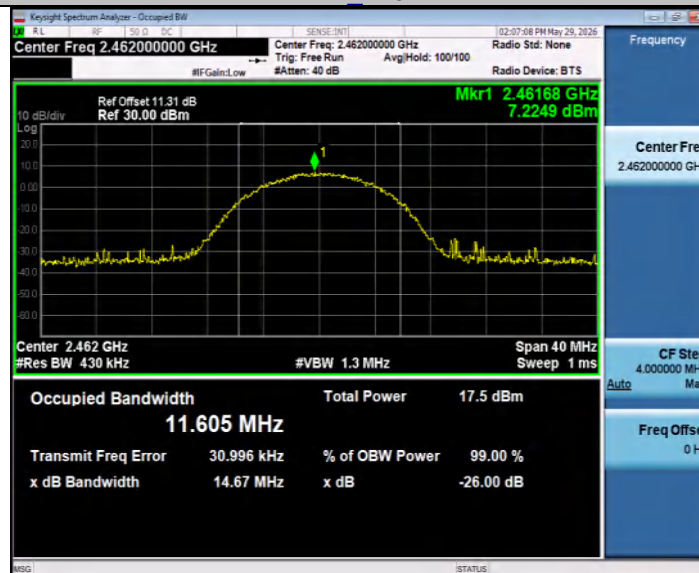
99%

Test Mode	Channel Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit [MHz]	Verdict
11B	2412	11.602	2406.1971	2417.7991	---	---
	2437	11.589	2431.2426	2442.8316	---	---
	2462	11.605	2456.2285	2467.8335	---	---
11G	2412	17.111	2403.4745	2420.5855	---	---
	2437	17.123	2428.5261	2445.6491	---	---
	2462	17.049	2453.5264	2470.5754	---	---
11N20SISO	2412	18.076	2402.9726	2421.0486	---	---
	2437	18.153	2427.9875	2446.1405	---	---
	2462	18.150	2452.9289	2471.0789	---	---

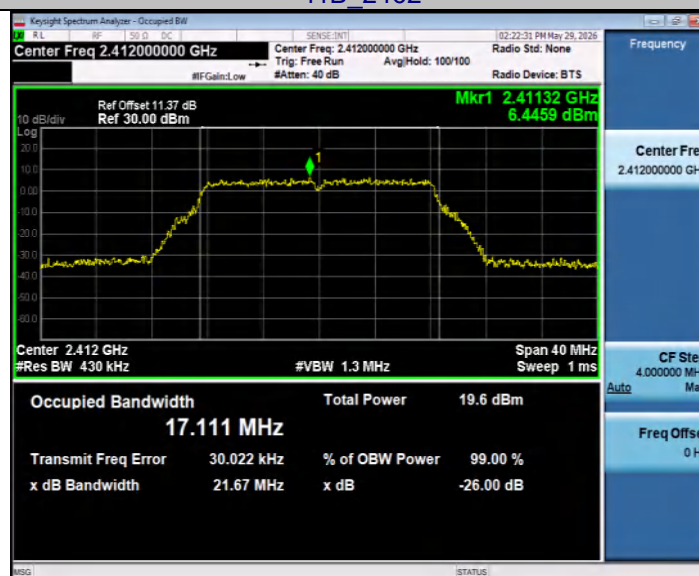




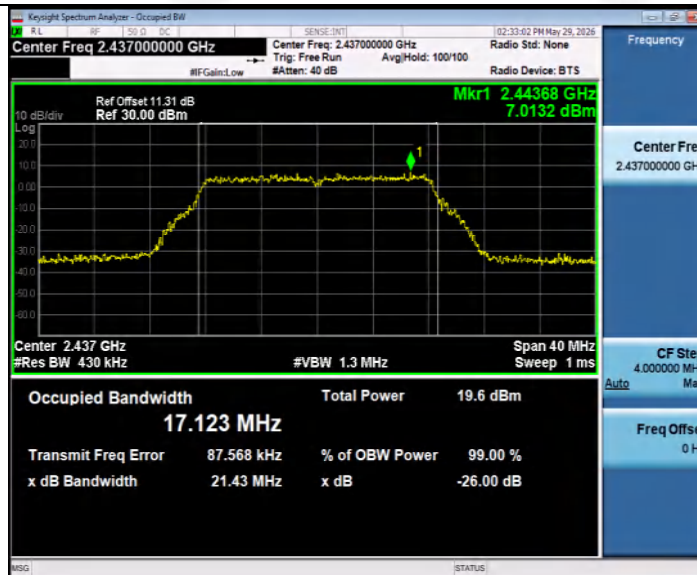
11B 2437



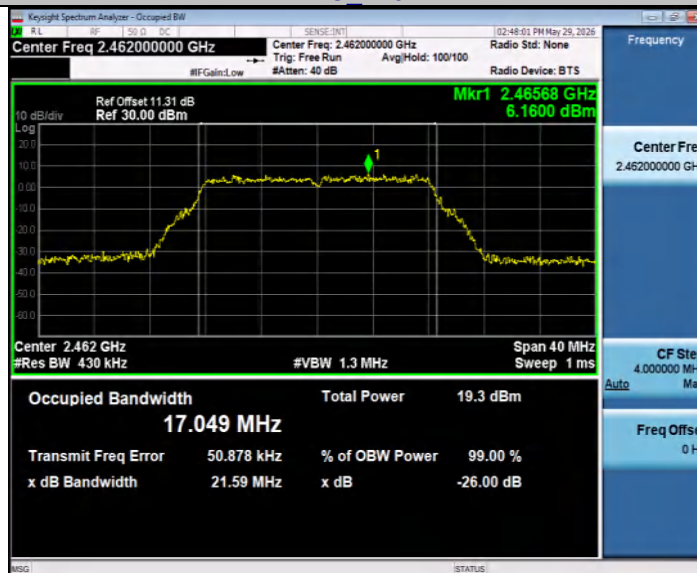
11B 2462



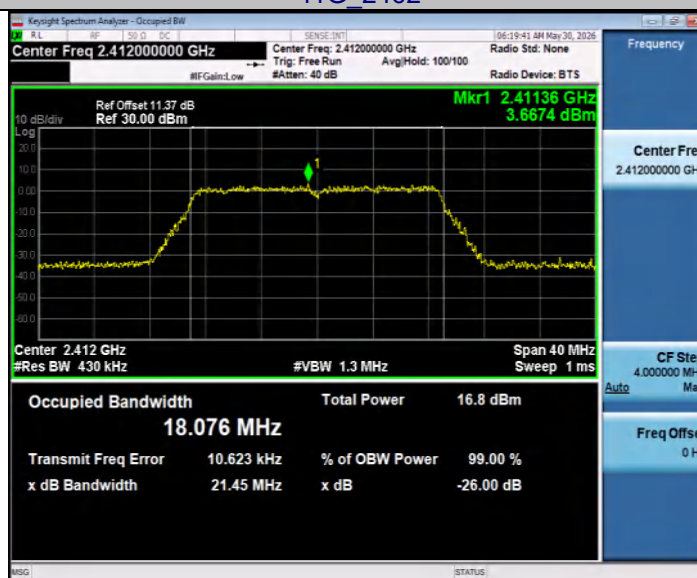
11G 2412



11G_2437



11G_2462



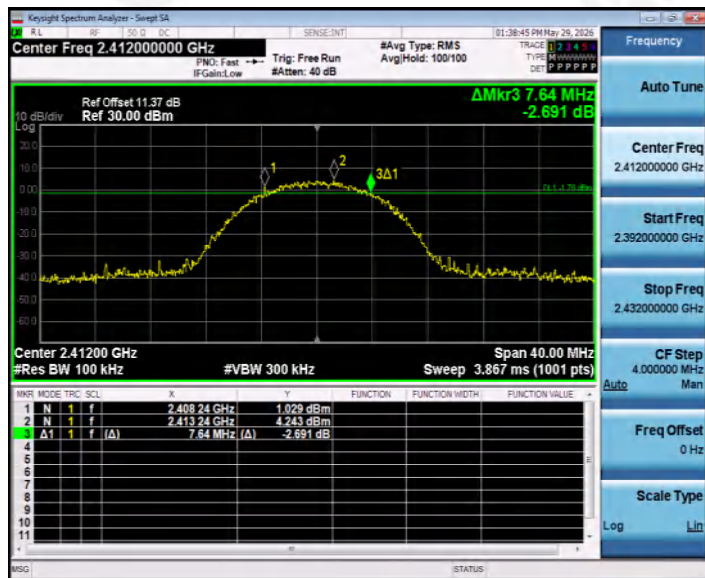
11N20SISO_2412





6DB

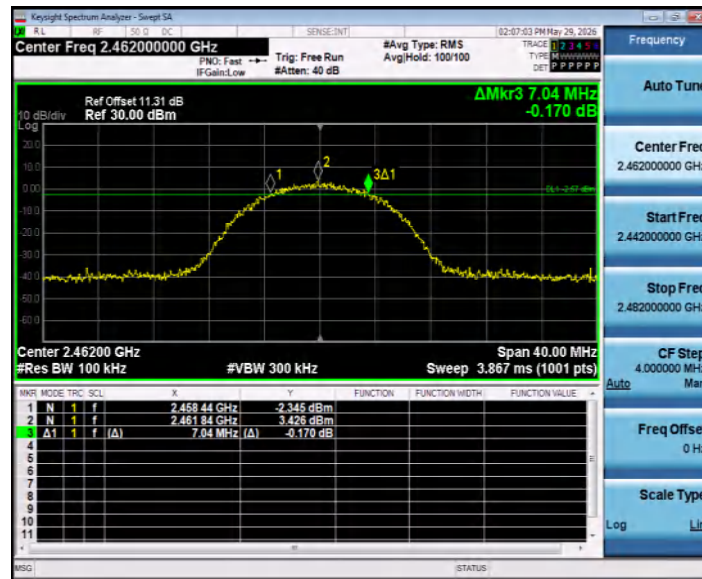
TestMode	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	2412	7.640	2408.240	2415.880	0.5	PASS
	2437	7.520	2433.280	2440.800	0.5	PASS
	2462	7.040	2458.440	2465.480	0.5	PASS
11G	2412	16.440	2403.800	2420.240	0.5	PASS
	2437	16.520	2428.760	2445.280	0.5	PASS
	2462	16.480	2453.760	2470.240	0.5	PASS
11N20SISO	2412	17.680	2403.160	2420.840	0.5	PASS
	2437	17.720	2428.120	2445.840	0.5	PASS
	2462	17.680	2453.160	2470.840	0.5	PASS



11B_2412



11B_2437



11B_2462



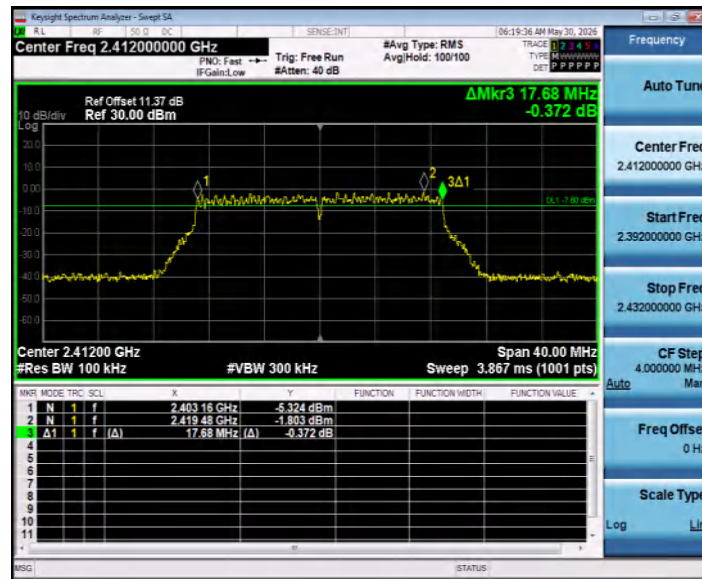
11G_2412



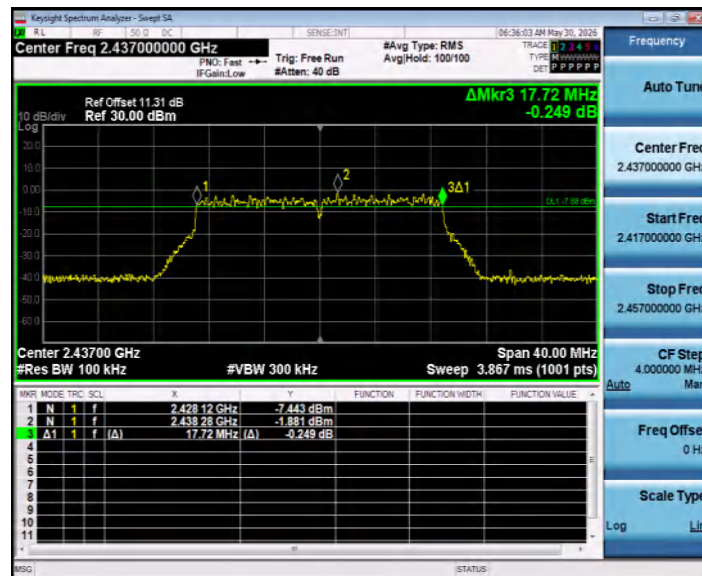
11G_2437



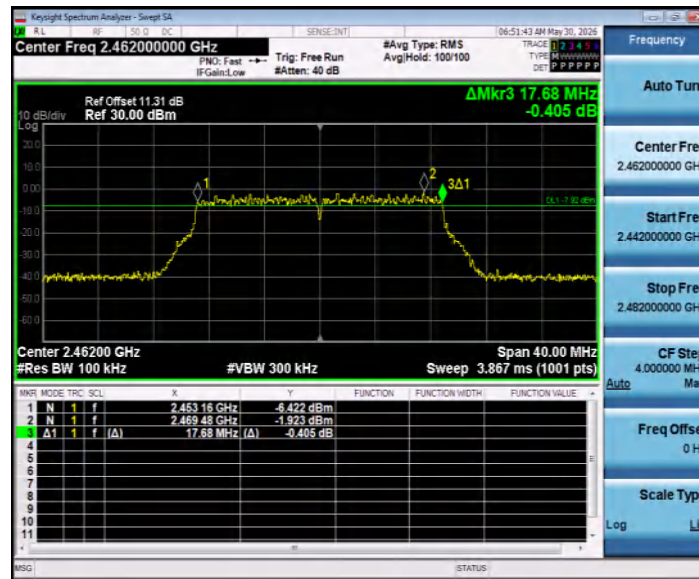
11G_2462



11N20SISO_2412



11N20SISO_2437



11N20SISO_2462



8. PEAK OUTPUT POWER TEST

Test Requirement:	FCC Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247), Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



8.6 TEST RESULT

Temperature :	26□	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 58.8V

Test Mode	Frequency [MHz]	Peak power [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	18.43	18.43	≤30.00	PASS
	2437	18.36	18.36	≤30.00	PASS
	2462	16.46	16.46	≤30.00	PASS
11G	2412	20.44	20.44	≤30.00	PASS
	2437	20.24	20.24	≤30.00	PASS
	2462	20.16	20.16	≤30.00	PASS
11N20SISO	2412	17.42	17.42	≤30.00	PASS
	2437	17.12	17.12	≤30.00	PASS
	2462	17.17	17.17	≤30.00	PASS



9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02

9.1 APPLICABLE STANDARD

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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

- A) Set the RBW = 100KHz.
- B) Set the VBW = 300KHz.
- C) Sweep time = auto couple.
- D) Detector function = peak.
- E) Trace mode = max hold.
- F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



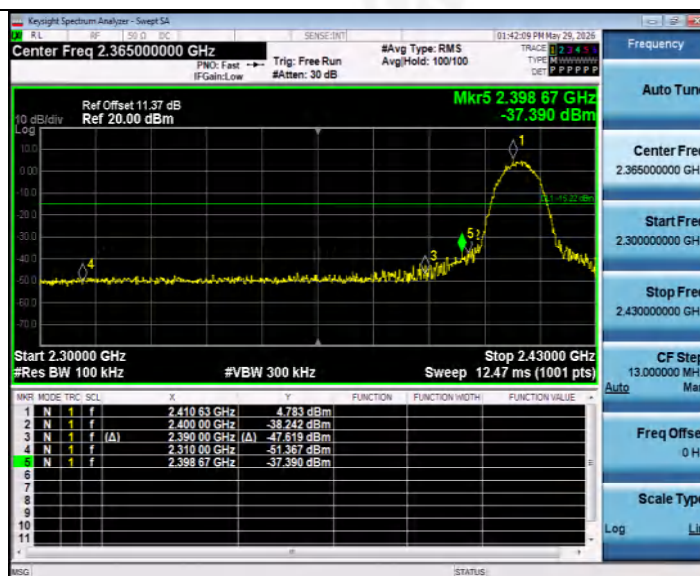
9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

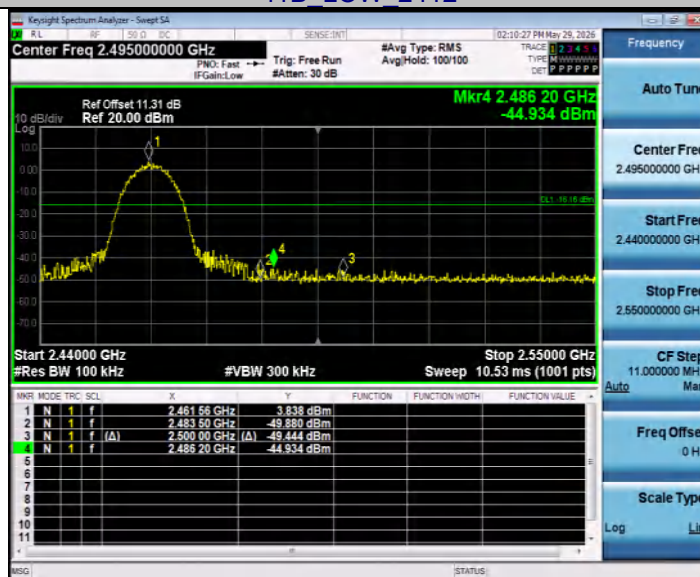
9.6 TEST RESULTS



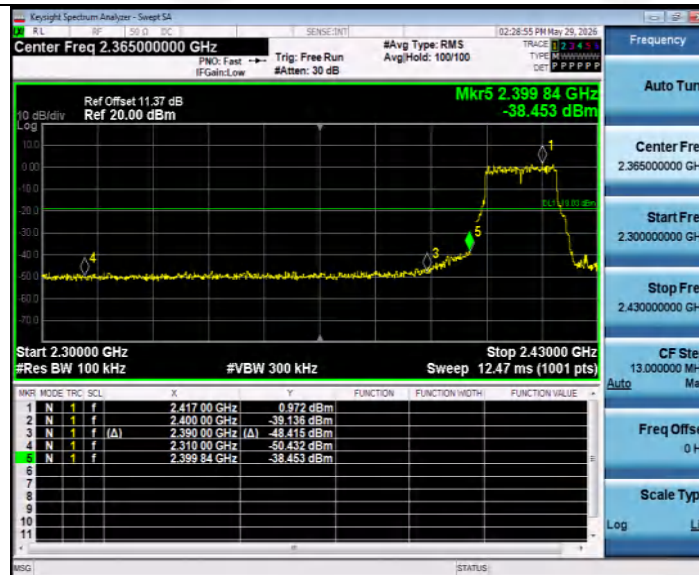
Temperature :	26□	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 58.8V



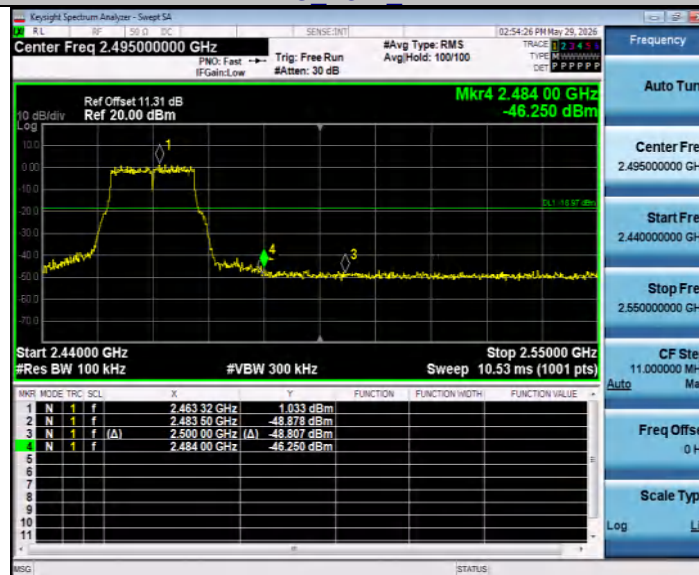
11B LOW 2412



11B HIGH 2462



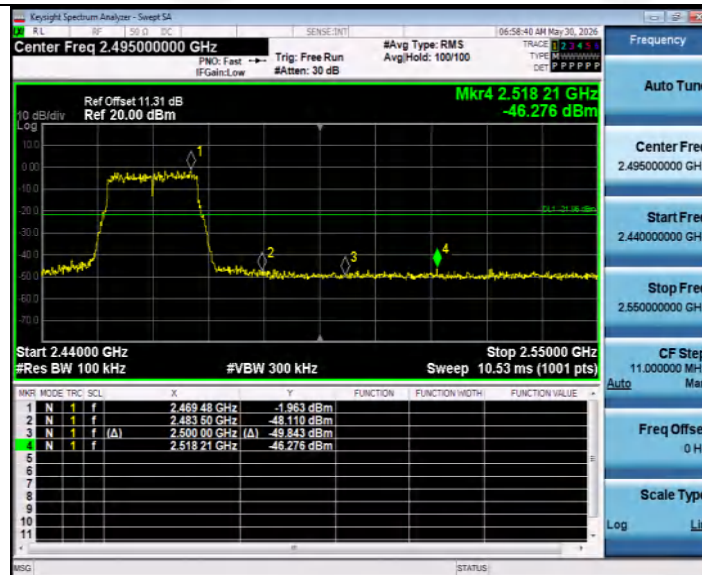
11G LOW 2412



11G HIGH 2462



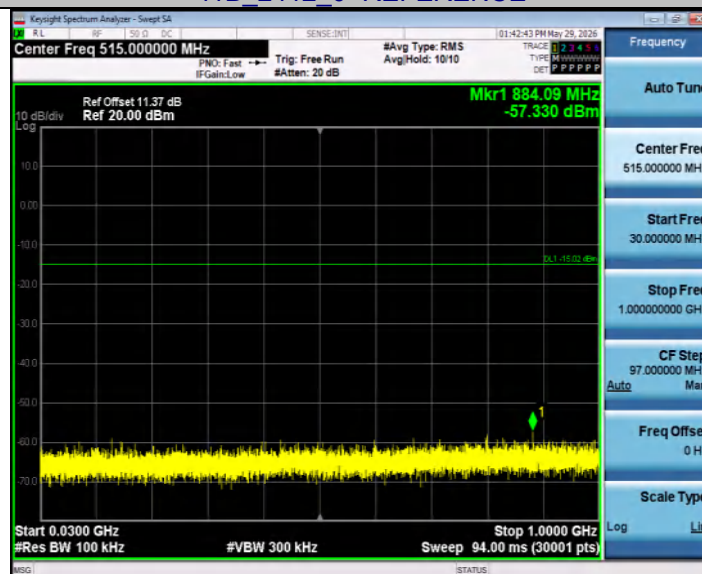
11N20SISO LOW 2412



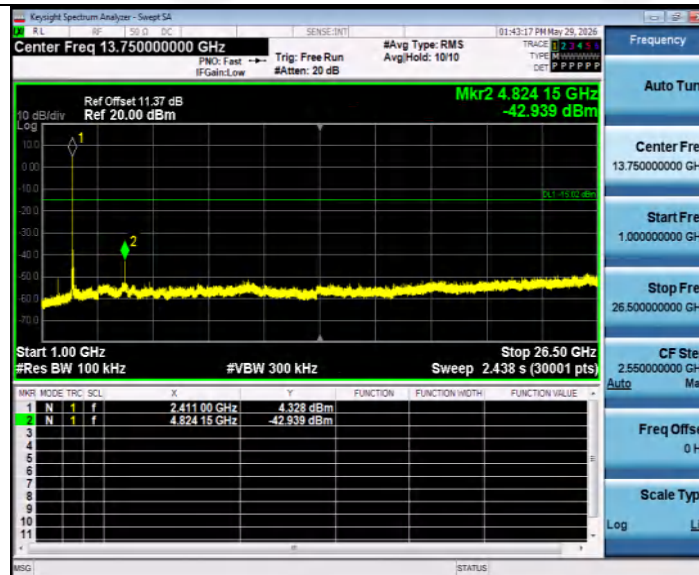
11N20ISO HIGH 2462



11B_2412_0~REFERENCE



11B_2412_30~1000



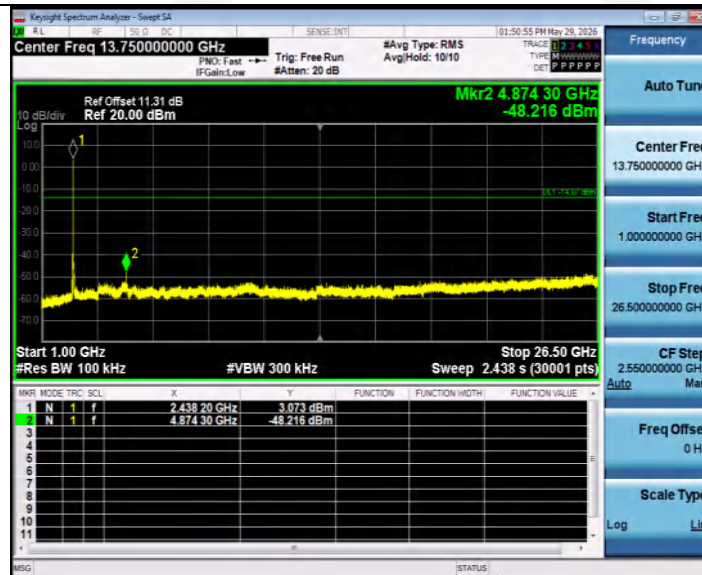
11B_2412_1000~26500



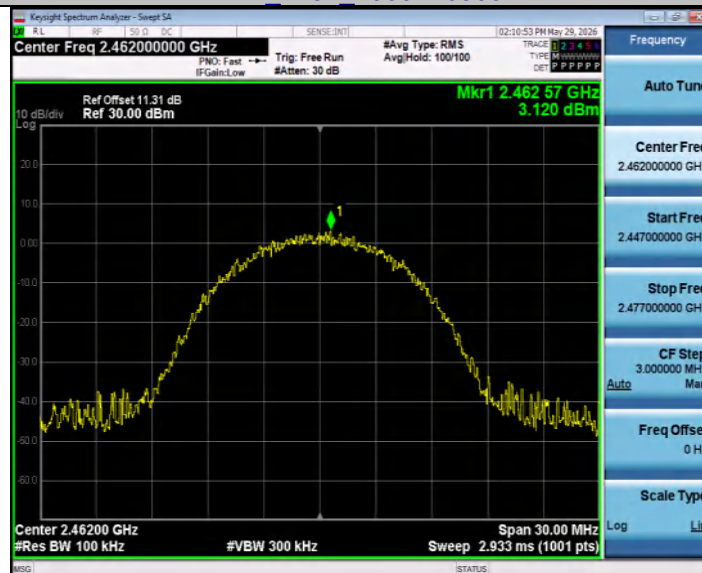
11B_2437_0~REFERENCE



11B_2437_30~1000



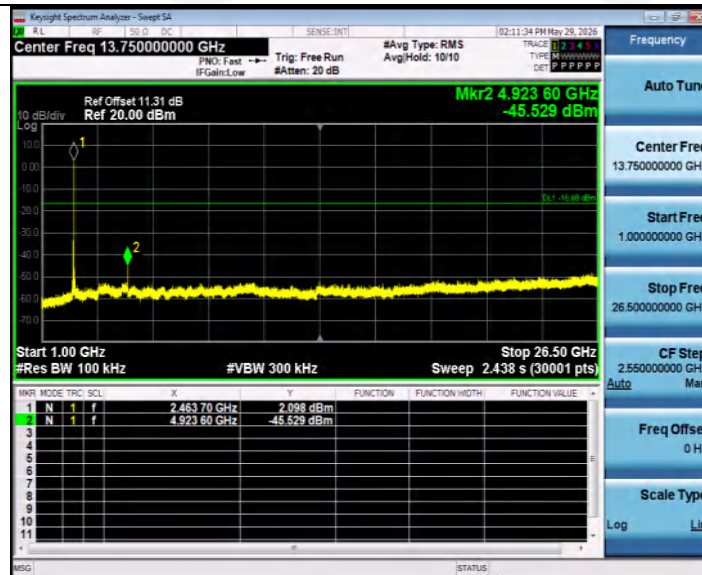
11B_2437_1000~26500



11B_2462_0~REFERENCE



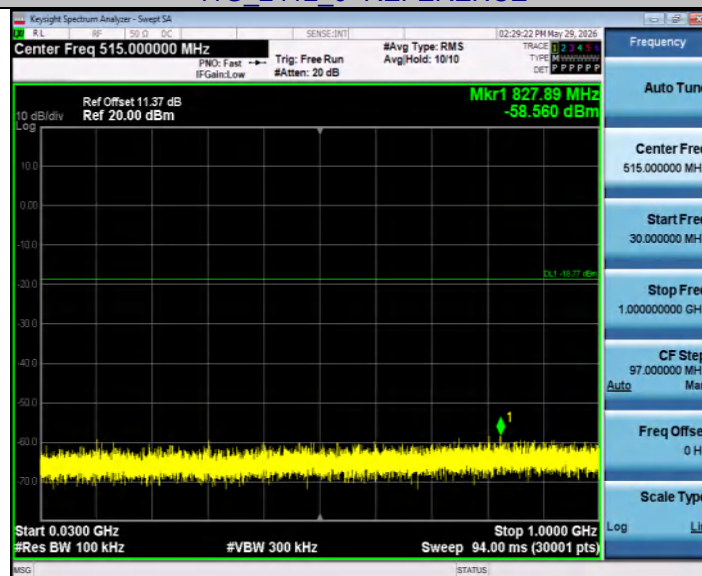
11B_2462_30~1000



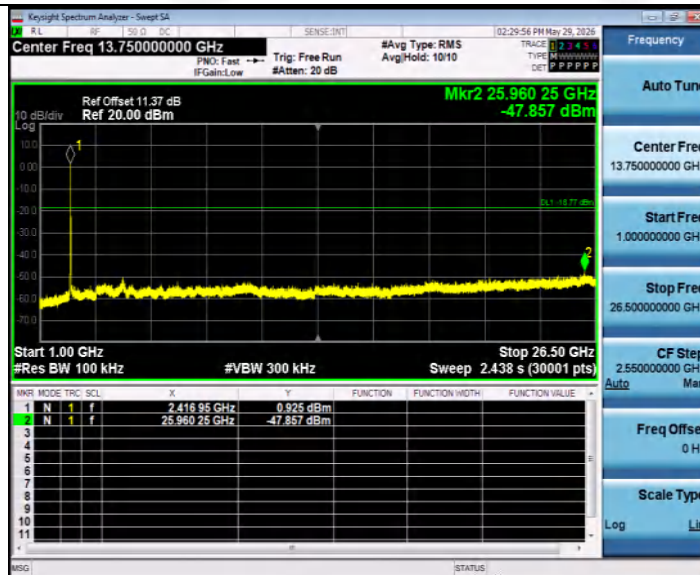
11B 2462 1000~26500



11G 2412 0~REFERENCE



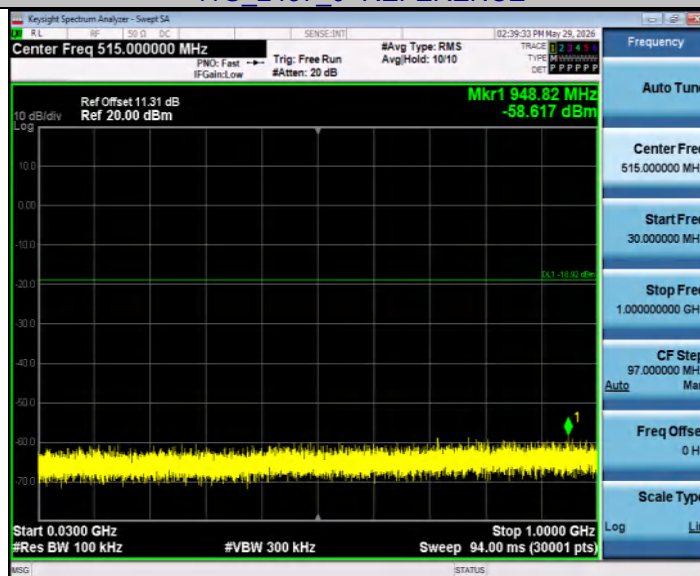
11G 2412 30~1000



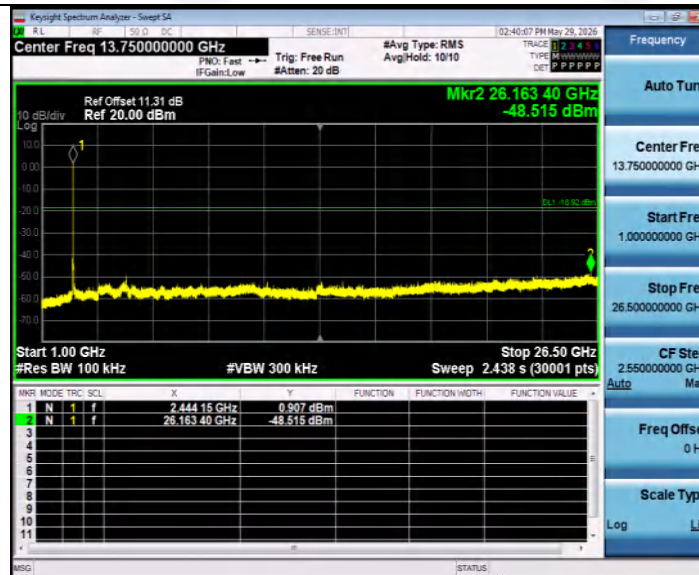
11G_2412_1000~26500



11G_2437_0~REFERENCE



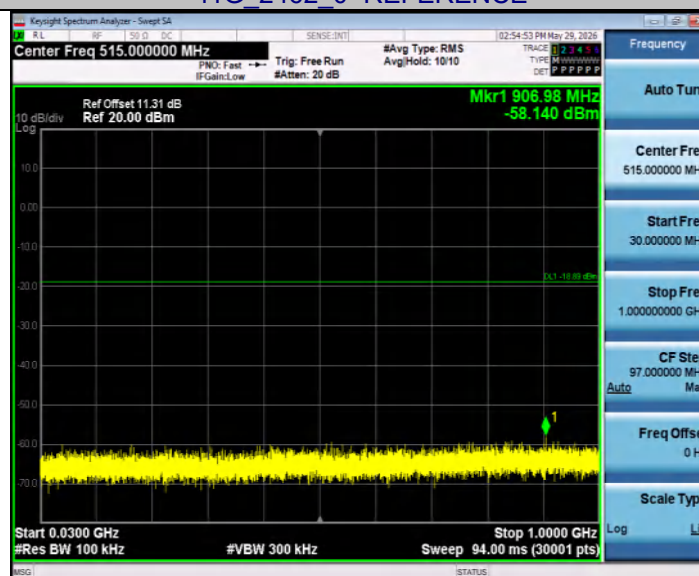
11G_2437_30~1000



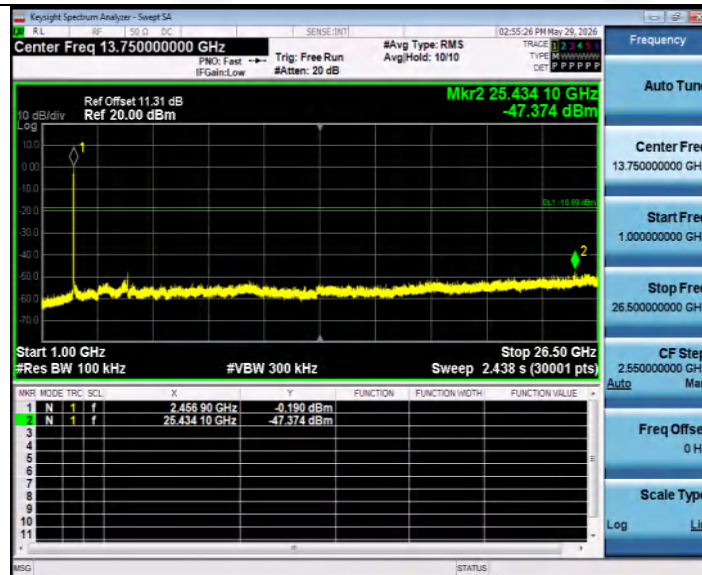
11G_2437_1000~26500



11G_2462_0~REFERENCE



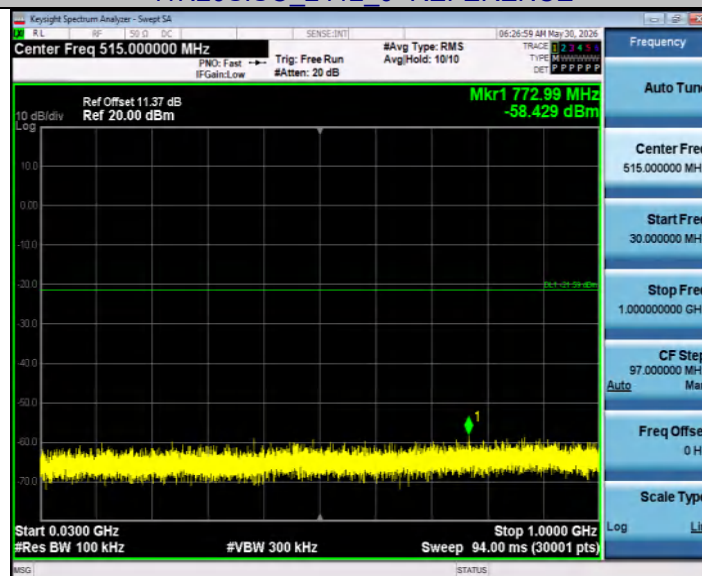
11G_2462_30~1000



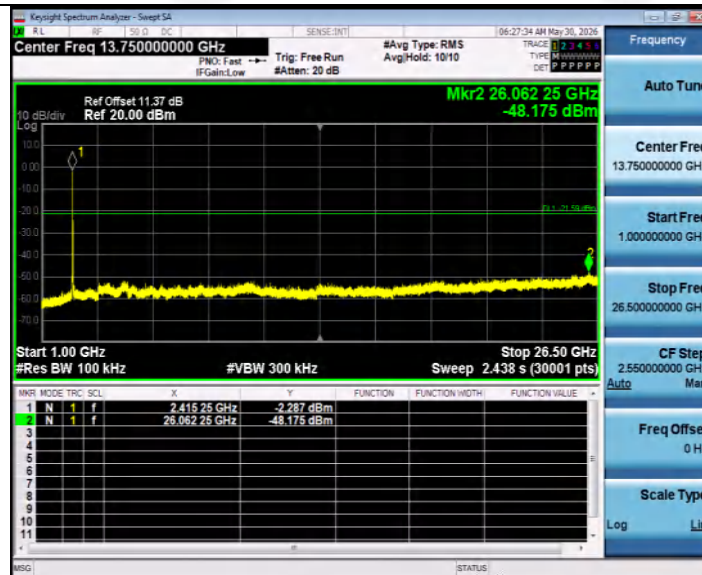
11G 2462 1000~26500



11N20SISO_2412_0~REFERENCE



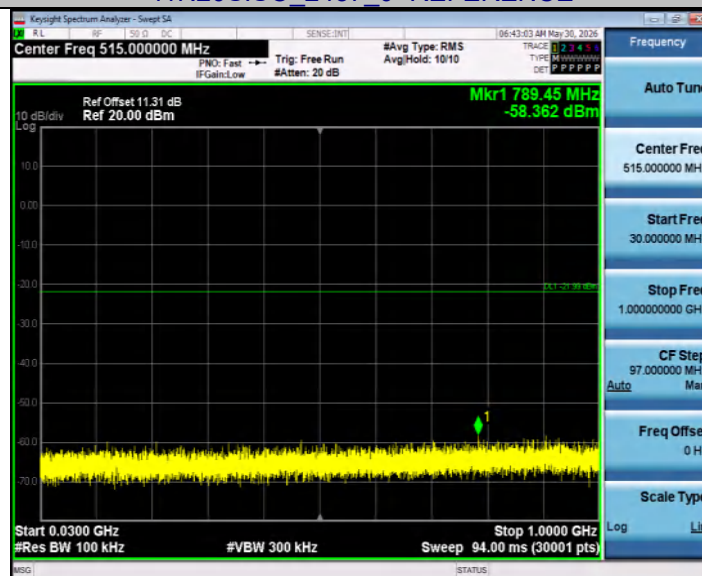
11N20SISO_2412_30~1000



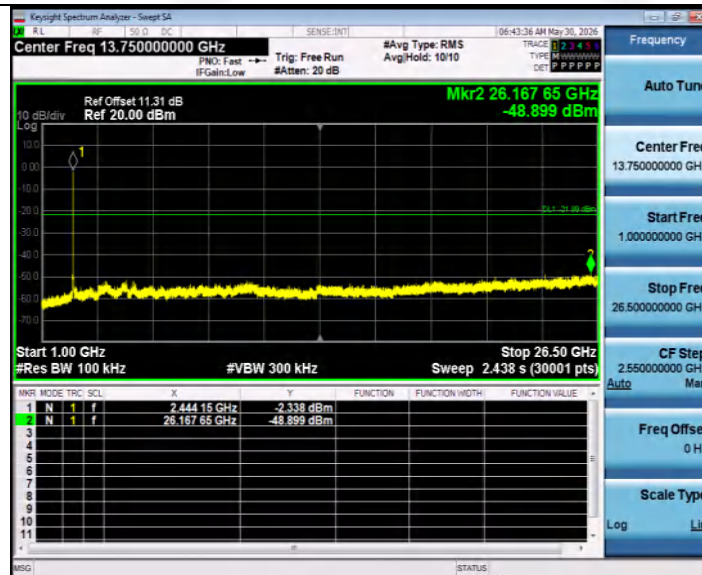
11N20SISO_2412_1000~26500



11N20SISO_2437_0~REFERENCE



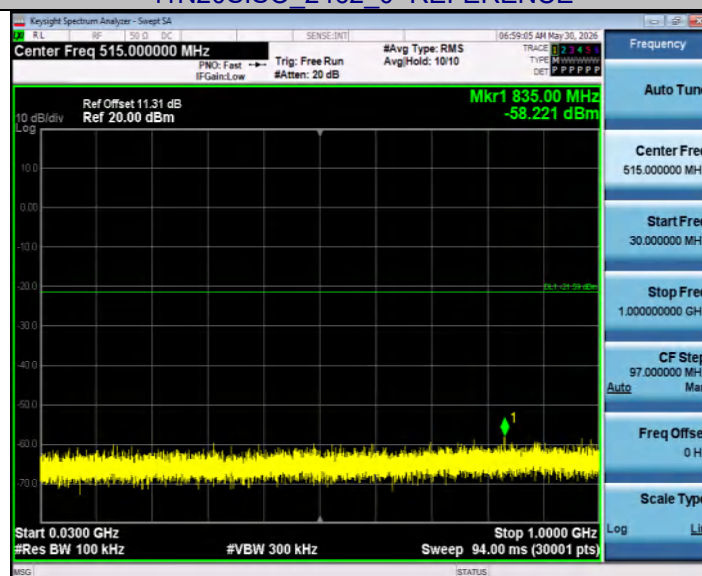
11N20SISO_2437_30~1000



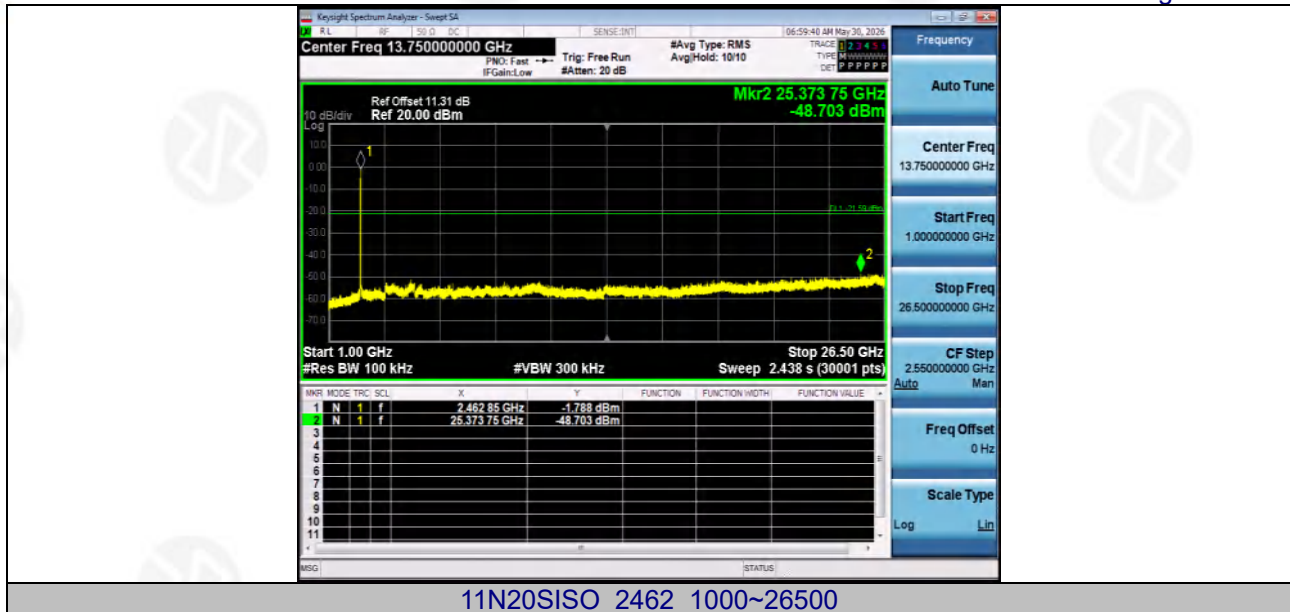
11N20SISO_2437_1000~26500



11N20SISO_2462_0~REFERENCE



11N20SISO_2462_30~1000





10. DUTY CYCLE

Test Method:	ANSI C63.10:2013
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10.1 APPLIED PROCEDURES / LIMIT

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

- a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.
- b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
 - 1) Set the center frequency of the instrument to the center frequency of the transmission.
 - 2) Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
 - 3) Set $VBW \geq RBW$. Set detector = peak or average.
 - 4) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7 \mu s$.)

10.2 DEVIATION FROM STANDARD

No deviation.

10.3 TEST SETUP

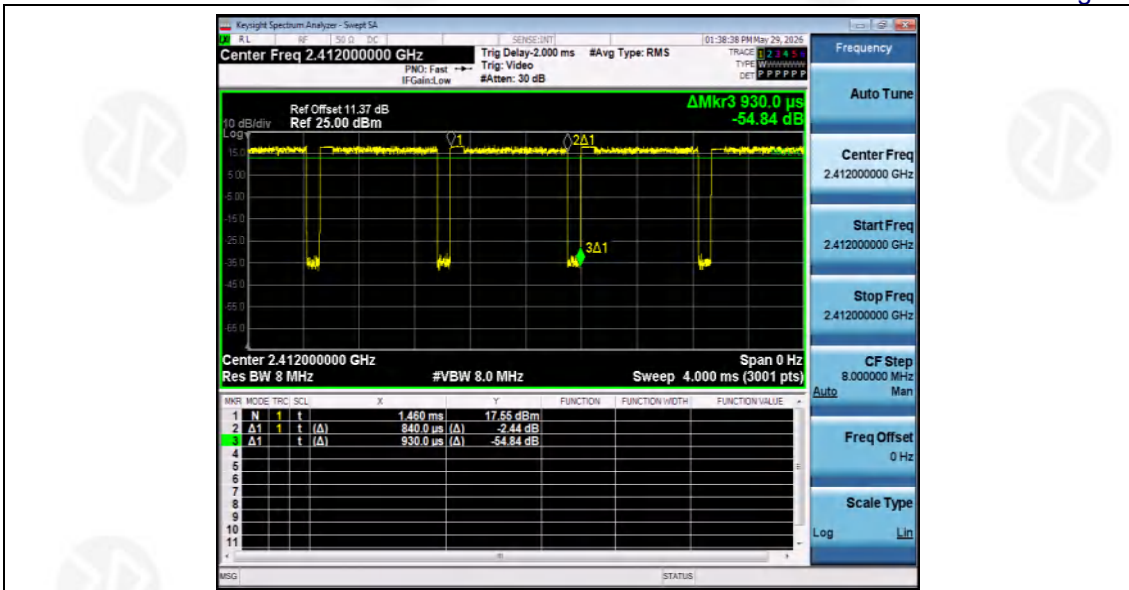




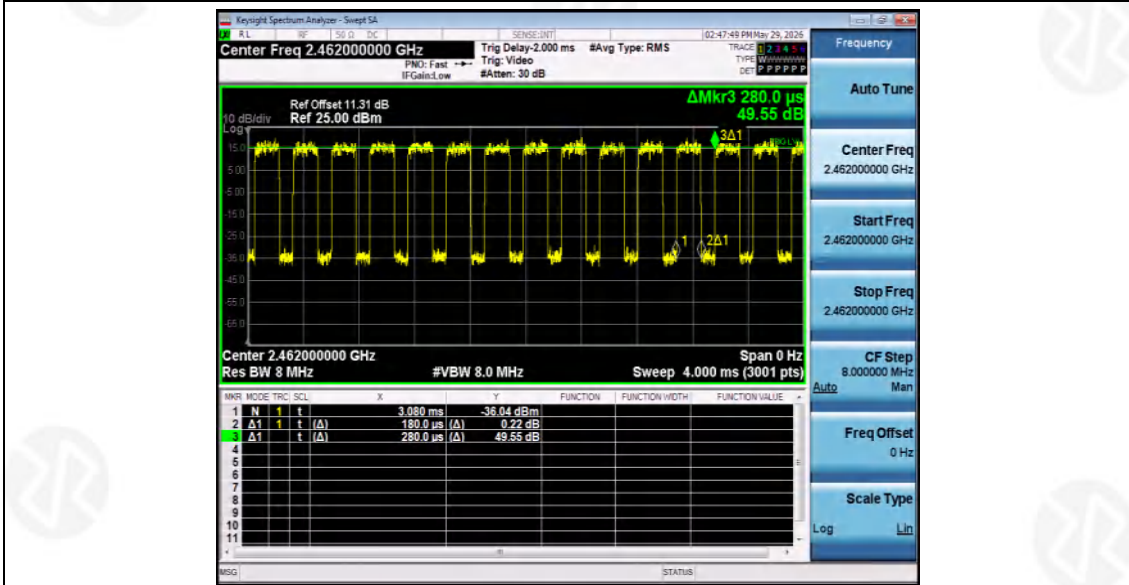
10.4 TEST RESULTS

Test Mode	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	2412	0.84	0.93	90.32
11G	2462	0.18	0.28	64.29
11N20SISO	2412	0.17	0.27	62.96

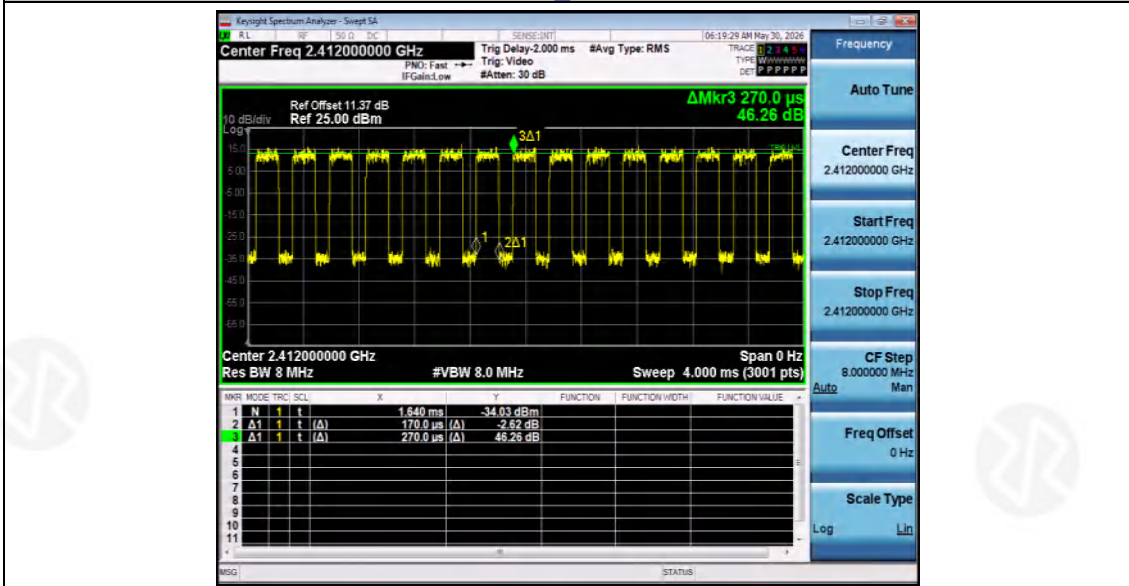
Note:
Duty Cycle = Ton / Total * 100%;
Duty Cycle Correction Factor = 10log (1/Duty Cycle).



11B_2412



11G_2462



11N20SISO_2412

Note: All channel have been tested, and the report only reflects the worst case data.



11. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi. A transmitter can only be sold or operated with antennas with which it was approved.	
EUT Antenna:	
The antenna is FPC Antenna, the best case gain of the antennas is 2.48dBi, reference to the appendix II for details	



12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

□□□□ **END OF REPORT** □□□□