RF TEST REPORT

Product Name: GP55MCS

Model Name: GP55M

FCC ID: 2BL96-GP55MCS

Issued For : Punt Gaming LLC

4265 SW 14TH ST. MIAMI, FL 33134, America

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number:	LGT24J175RF03
Sample Received Date:	Oct. 30, 2024
Date of Test:	Oct. 30, 2024 ~ Dec. 13, 2024
Date of Issue:	Dec. 13, 2024

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TEST REPORT CERTIFICATION

Applicant: Punt Gaming LLC

Address: 4265 SW 14TH ST. MIAMI, FL 33134, America

Manufacturer: SHENZHEN PRETECH INDUSTRIAL CO., LTD

Address: 808,QIANCHENG COMMERCIAL CENTER,5 HAICHENG ROAD,MABU COMMUNITY,XIXIANG STREET,BAO'AN DISTRICT SHENZHEN GUANGDONG CHINA

Product Name: GP55MCS

Trademark: Punt Gaming

Model Name: GP55M

Sample Status: Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part 15.247, Subpart C ANSI C63.10-2013	PASS

Prepared by:

Zane Shan

Zane Shan
Engineer

Approved by:

Vita Li
Technical Director

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Revision History

Rev.	Issue Date	Revisions
00	Dec. 13, 2024	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02.

FCC Part 15.247,Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	--
15.247 (a)(2)	6dB Bandwidth	PASS	--
15.247 (b)(3)	Output Power	PASS	--
15.209	Radiated Spurious Emission	PASS	--
15.247 (d)	Conducted Spurious & Band Edge Emission	PASS	(3)
15.247 (e)	Power Spectral Density	PASS	--
15.205	Restricted Band Edge Emission	PASS	--
Part 15.247(d)/ Part 15.209(a)	Band Edge Emission	PASS	--
15.203	Antenna Requirement	PASS	--

NOTE:

(1) ‘N/A’ denotes test is not applicable in this Test Report.

(2) All tests are according to ANSI C63.10-2013.

(3) The conduction Band edge limit is based on the conduction spurious limit.

1.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **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	RF Output Power, Conducted	±0.71dB
2	Power Spectral Density, Conducted	±1.57 dB
3	Unwanted Emission, Conducted	±0.63dB
4	Conducted emission	±2.80dB
5	All Emissions, Radiated (0.009-30MHz)	±2.16dB
6	All Emissions, Radiated (30MHz-1GHz)	±4.40dB
7	All Emissions, Radiated (1GHz-18GHz)	±5.49dB

Note: The measurement uncertainty is not included in the test result.

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Product Name:</td><td>GP55MCS</td></tr>
<tr><td>Trademark:</td><td>Punt Gaming</td></tr>
<tr><td>Model Name:</td><td>GP55M</td></tr>
<tr><td>Series Model:</td><td>N/A</td></tr>
<tr><td>Model Difference:</td><td>N/A</td></tr>
<tr><td>Product Description:</td><td>
<table>
<tr><td>Operation Frequency:</td><td>802.11b/g/n(20MHz): 2412~2462MHz</td></tr>
<tr><td>Modulation Type:</td><td>802.11b(DSSS):CCK,DQPSK,DBPSK
802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM
802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM</td></tr>
<tr><td>Number of Channel:</td><td>802.11b/g/n: 11CH</td></tr>
<tr><td>Antenna Designation:</td><td>FPC</td></tr>
<tr><td>Antenna Gain(dBi):</td><td>2.36</td></tr>
</table>
</td></tr>
<tr><td>Channel List:</td><td>Please refer to the Note 3.</td></tr>
<tr><td>Battery:</td><td>Capacity: 6000mAh
Rated Voltage: 3.8V</td></tr>
<tr><td>Hardware Version:</td><td>RC-F451 U2.0</td></tr>
<tr><td>Software Version:</td><td>N/A</td></tr>
<tr><td>Connecting I/O Port(s):</td><td>Please refer to the Note 1.</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. The antenna information refers to the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.

3.

Operation Frequency of channel	
802.11b/g/n(20MHz)	
Channel	Frequency
01	2412
02	2417
03	2422
04	2427
05	2432
06	2437
07	2442
08	2447
09	2452
10	2457
11	2462

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

2.4GHz Test Frequency:

For 802.11b/g/n(HT20)	
Channel	Freq.(MHz)
01	2412
06	2437
11	2462

2.2 DESCRIPTION OF THE TEST MODES

Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11b CH1	1 Mbps
Mode 2	TX IEEE 802.11b CH6	1 Mbps
Mode 3	TX IEEE 802.11 b CH11	1 Mbps
Mode 4	TX IEEE 802.11g CH1	6 Mbps
Mode 5	TX IEEE 802.11g CH6	6 Mbps
Mode 6	TX IEEE 802.11g CH11	6 Mbps
Mode 7	TX IEEE 802.11n HT20 CH1	MCS 0
Mode 8	TX IEEE 802.11n HT20 CH6	MCS 0
Mode 9	TX IEEE 802.11n HT20 CH11	MCS 0

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 10: Keeping TX + WLAN Link

2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

Test software Version	Test program: 2.4G WIFI	
DRTU	Mode Or Modulation type	Power setting
	b	Default
	g	Default
	n20	Default

2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

Accessories Equipment

Description	Manufacturer	Model	S/N	Rating

Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
LISN	COM-POWER	LI-115	02032	2024.03.09	2025.03.08
LISN	SCHWARZBECK	NNLK 8122	00160	2024.03.09	2025.03.08
Transient Limiter	CYBERTEK	EM5010A	E2250100049	2024.03.09	2025.03.08
Temperature & Humidity	KTJ	TA218B	N.A	2024.03.09	2025.03.08
Testing Software	EMC-I_V1.4.0.3_SKET				

Radiated Test equipment					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
Active loop Antenna	ETS	6502	00049544	2023.10.13	2025.10.12
Spectrum Analyzer	Keysight	N9010B	MY60242508	2024.08.05	2025.08.04
Bilog Antenna(30M-1G)	SCHWARZBECK	VULB 9168	2705	2022.12.12	2025.12.11
Horn Antenna(1-18G)	SCHWARZBECK	3115	10SL0060	2022.06.02	2025.06.01
Horn Antenna(18-40G)	A-INFO	LB-180400-KF	J211060273	2022.06.08	2025.06.07
Pre-amplifier(30M-1G)	EMtrace	RP01A	02019	2024.03.09	2025.03.08
Pre-amplifier(1-26.5G)	Agilent	8449B	3008A4722	2024.03.09	2025.03.08
Pre-amplifier(18-40G)	com-mw	LNPA_18-40-01	18050003	2024.03.09	2025.03.08
Wireless Communications Test Set	R&S	CMW 500	137737	2024.03.09	2025.03.08
Antenna Tower	SAEMC	BK-4AT-BS-D	SK2021093008	N.A	N.A
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Testing Software	EMC-I_V1.4.0.3_SKET				

RF Conducted Test equipment					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
Signal Analyzer	Keysight	N9010B	MY60242508	2024.08.05	2025.08.04
Signal Analyzer	Keysight	N9020A	MY50530994	2024.03.09	2025.03.08
RF Automatic Test system	MW	MW100-RFCB	MW220322LG-033	2024.03.09	2025.03.08
MXG Vector Signal Generator	Keysight	N5182B	MY59100717	2024.03.09	2025.03.08
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2024.03.09	2025.03.08
Attenuator	eastsheep	90db	N.A	2024.03.09	2025.03.08
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Digital multimeter	MASTECH	MS8261	MBGBC83053	2024.03.09	2025.03.08
Testing Software	MTS8310_V2.0.0.0_MW				

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

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

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

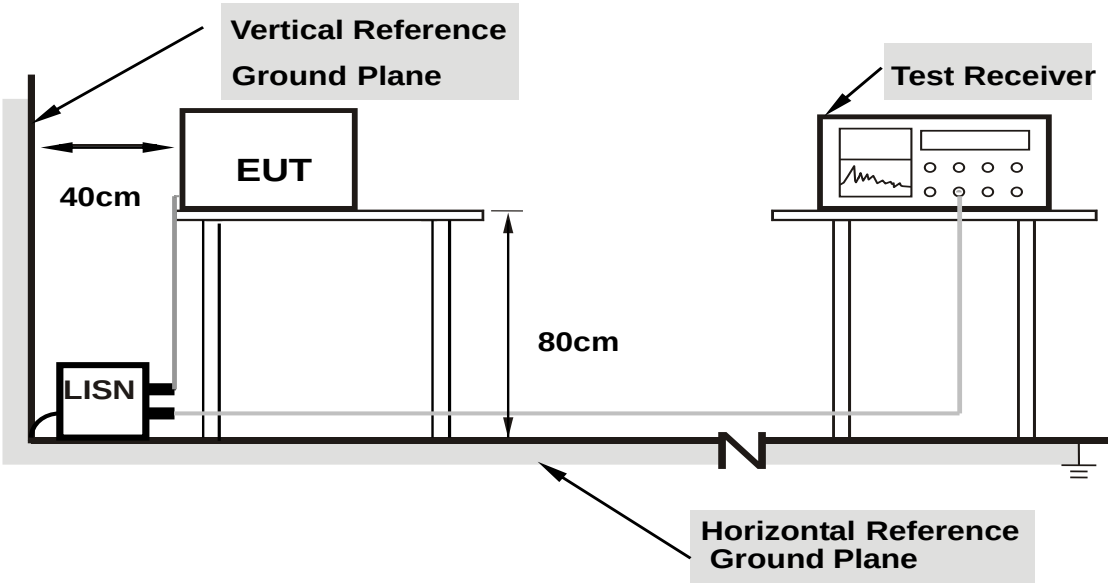
The following table is the setting of the receiver

Receiver Parameters	**Setting**
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. 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.
c. 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.
d. LISN is at least 80 cm from the nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1. Support units were connected to second LISN.

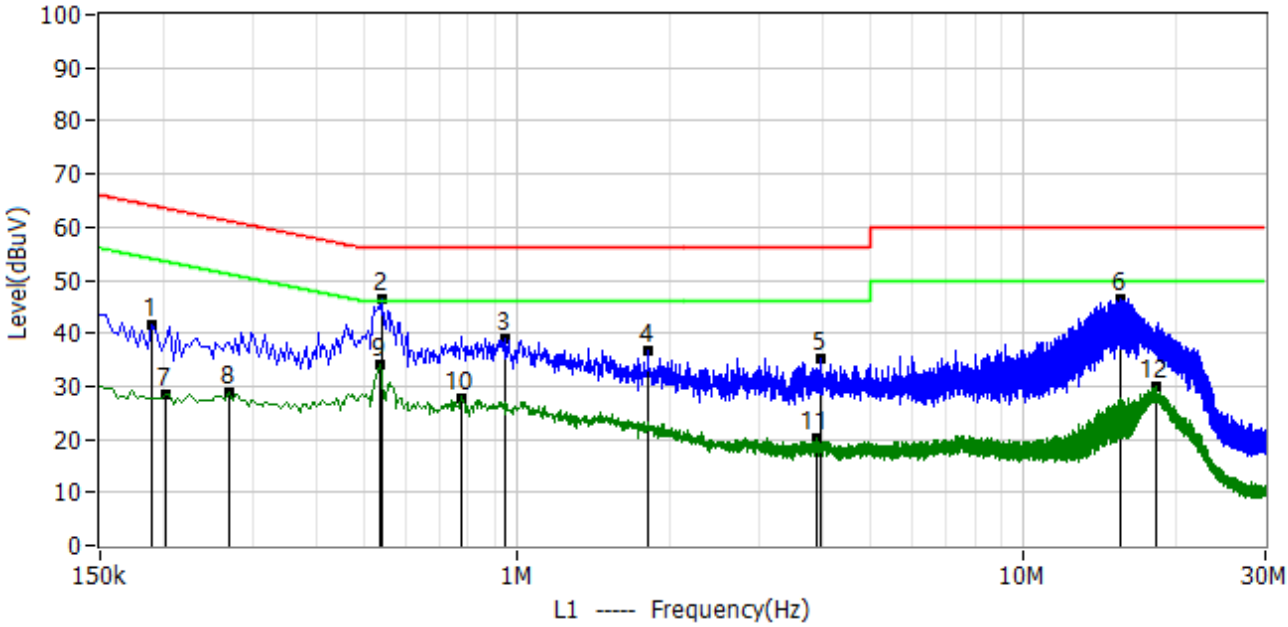
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

3.1.4 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.

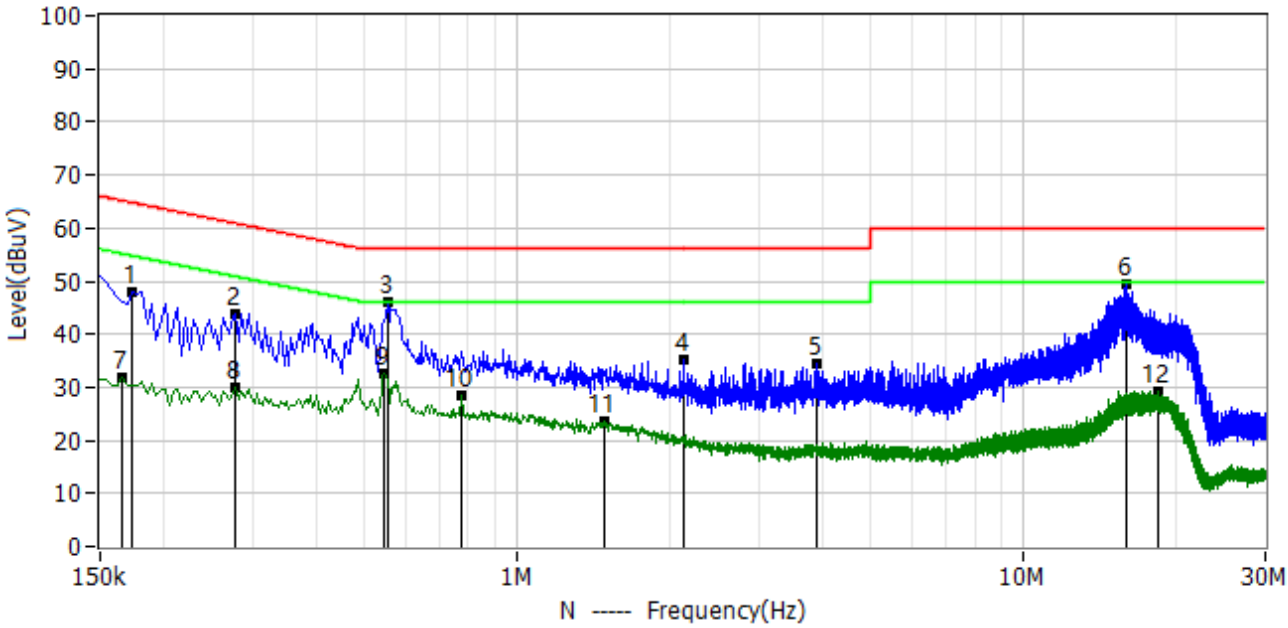
3.1.5 TEST RESULT

Project: LGT24J175	Test Engineer: LiuH
EUT: GP55MCS	Temperature: 25.2℃
M/N: GP55M	Humidity: 49%RH
Test Voltage: AC 120V/60Hz	Test Data: 2024-11-18
Test Mode: TX 802.11b 2412	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.190	30.86	10.61	41.47	64.04	-22.57	QP	L1
2*	0.542	35.95	10.57	46.52	56.00	-9.48	QP	L1
3*	0.942	28.44	10.67	39.11	56.00	-16.89	QP	L1
4*	1.814	25.84	10.93	36.77	56.00	-19.23	QP	L1
5*	3.970	24.06	11.14	35.20	56.00	-20.80	QP	L1
6*	15.502	35.19	11.41	46.60	60.00	-13.40	QP	L1
7*	0.202	17.74	10.62	28.36	53.53	-25.17	AV	L1
8*	0.270	18.11	10.59	28.70	51.12	-22.42	AV	L1
9*	0.534	23.39	10.57	33.96	46.00	-12.04	AV	L1
10*	0.778	17.29	10.60	27.89	46.00	-18.11	AV	L1
11*	3.918	8.94	11.14	20.08	46.00	-25.92	AV	L1
12*	18.214	18.25	11.54	29.79	50.00	-20.21	AV	L1

Project: LGT24J175	Test Engineer: LiuH
EUT: GP55MCS	Temperature: 25.2℃
M/N: GP55M	Humidity: 49%RH
Test Voltage: AC 120V/60Hz	Test Data: 2024-11-18
Test Mode: TX 802.11b 2412	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.174	37.38	10.56	47.94	64.77	-16.83	QP	N
2*	0.278	33.37	10.58	43.95	60.88	-16.93	QP	N
3*	0.554	35.66	10.55	46.21	56.00	-9.79	QP	N
4*	2.130	24.34	10.76	35.10	56.00	-20.90	QP	N
5*	3.918	23.53	10.81	34.34	56.00	-21.66	QP	N
6*	15.966	38.15	11.43	49.58	60.00	-10.42	QP	N
7*	0.166	21.34	10.56	31.90	55.16	-23.26	AV	N
8*	0.278	19.26	10.58	29.84	50.88	-21.04	AV	N
9*	0.546	22.12	10.54	32.66	46.00	-13.34	AV	N
10*	0.778	17.95	10.56	28.51	46.00	-17.49	AV	N
11*	1.486	12.94	10.65	23.59	46.00	-22.41	AV	N
12*	18.462	17.76	11.55	29.31	50.00	-20.69	AV	N

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

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 (1000MHz-25GHz)

FREQUENCY (MHz)	(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).

LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
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
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	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	Above 38.6
13.36-13.41			

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP/AV
Start Frequency	9 KHz/150KHz(Peak/QP/AV)
Stop Frequency	150KHz/30MHz(Peak/QP/AV)
RB / VB (emission in restricted band)	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz); 200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP
Start Frequency	30 MHz(Peak/QP)
Stop Frequency	1000 MHz (Peak/QP)
RB / VB (emission in restricted band)	120 KHz / 300 KHz

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG)

For Restricted band

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2310 to 2430 MHz Upper Band Edge: 2445 to 2500 MHz
RB / VB	1 MHz / 3 MHz(Peak) 1 MHz/1/T MHz(AVG)

Receiver Parameter	**Setting**
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

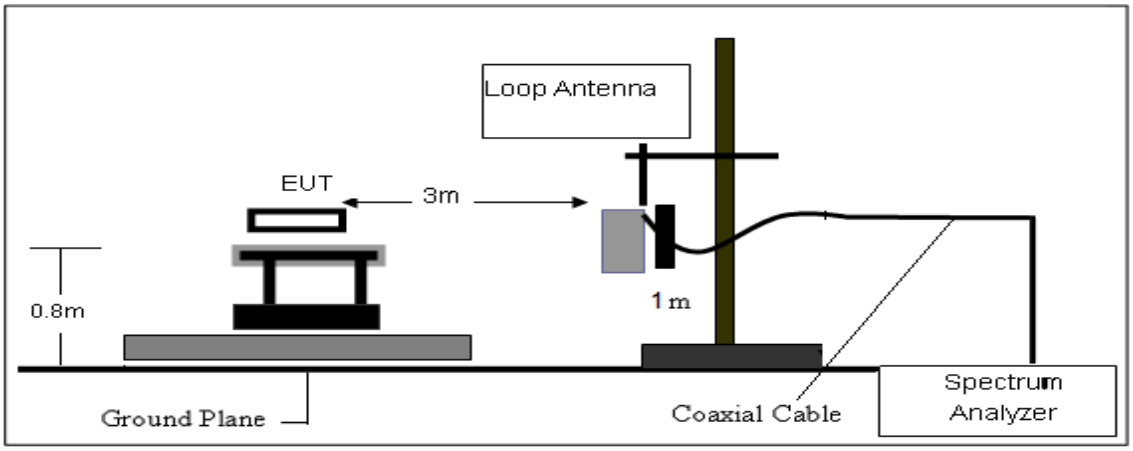
a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and QuasiPeak detector mode will be re-measured.
e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

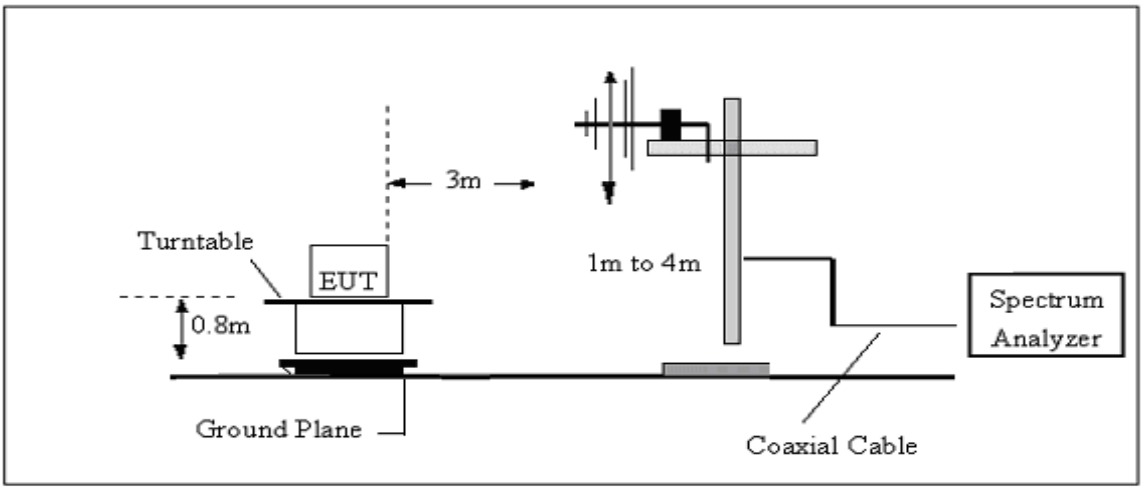
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 TEST SETUP

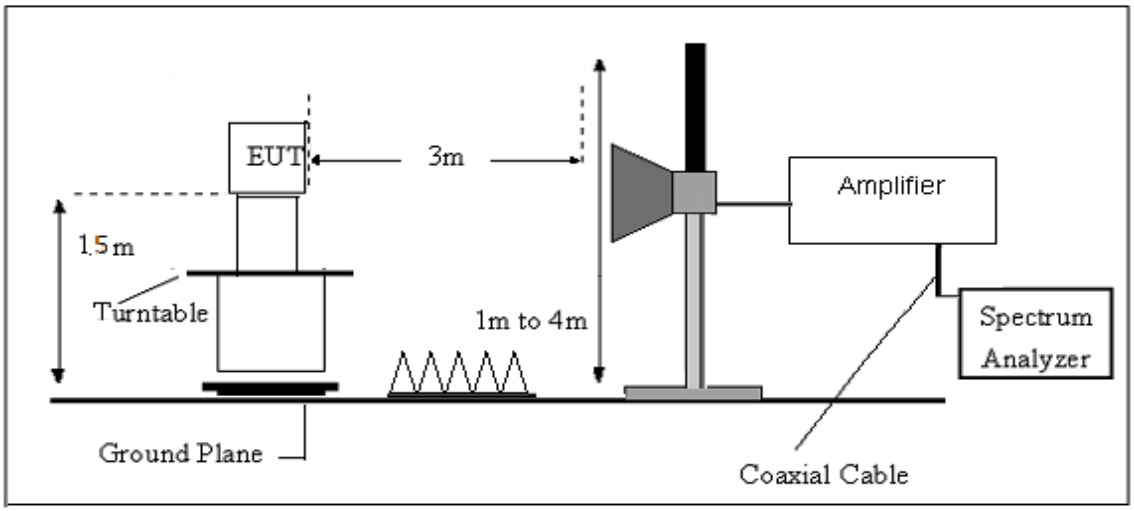
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.4 EUT OPERATING CONDITIONS

Please refer to section 3.1.4 of this report.

3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting theAmplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:
FS = RA + AF + CL - AG
Where
FS = Field Strength
CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude
AG = Amplifier Gain
AF = Antenna Factor
For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

3.2.6 TEST RESULT

Results of Radiated Emissions (9 KHz~30MHz)

No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Remark
1*	-	-	-	-	-	-	-	See Note

Note:

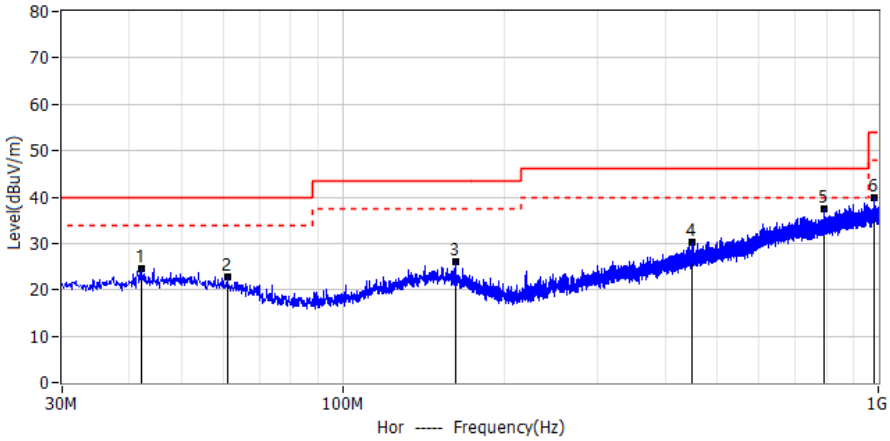
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

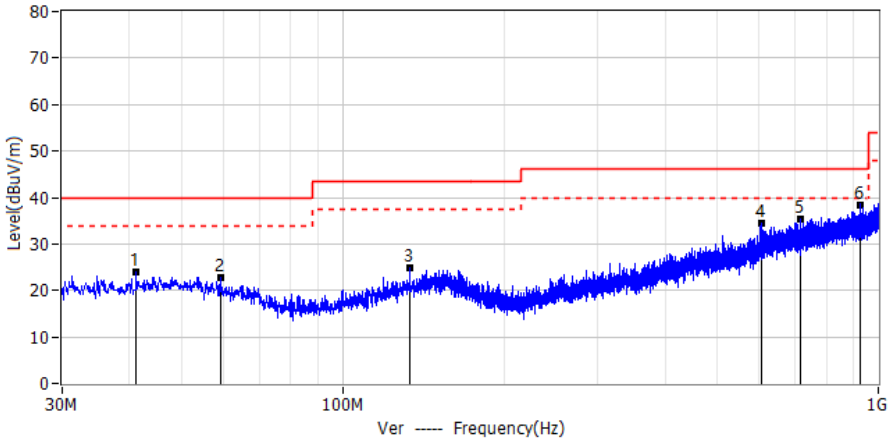
Limit line = specific limits (dBuV) + distance extrapolation factor.

Results of Radiated Emissions (30MHz~1000MHz)

Project: LGT24J175	Test Engineer: LiuH
EUT: GP55MCS	Temperature: 25℃
M/N: GP55M	Humidity: 54%RH
Test Voltage: Battery	Test Data: 2024-11-18
Test Mode: TX 802.11b 2412	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	42.246	4.07	20.57	24.64	40.00	-15.36	PK	Hor
2*	61.040	3.42	19.43	22.85	40.00	-17.15	PK	Hor
3*	162.648	4.97	21.19	26.16	43.50	-17.34	PK	Hor
4*	450.010	4.17	26.09	30.26	46.00	-15.74	PK	Hor
5*	793.269	5.66	31.68	37.34	46.00	-8.66	PK	Hor
6*	982.055	5.92	34.03	39.95	54.00	-14.05	PK	Hor



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	41.276	3.62	20.42	24.04	40.00	-15.96	PK	Ver
2*	59.100	3.36	19.51	22.87	40.00	-17.13	PK	Ver
3*	133.426	4.20	20.56	24.76	43.50	-18.74	PK	Ver
4*	606.423	5.65	28.75	34.40	46.00	-11.60	PK	Ver
5*	716.154	4.71	30.73	35.44	46.00	-10.56	PK	Ver
6*	926.886	5.40	33.10	38.50	46.00	-7.50	PK	Ver

Results of Radiated Emissions (Above 1000MHz)

Frequency (MHz)	Reading (dBμV)	Corrected Factor (dB)	Result (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector	Polarity
Low Channel (2412 MHz)							
3264.75	56.24	-8.45	47.79	74.00	-26.21	PK	Vertical
3264.75	46.42	-8.45	37.97	54.00	-16.03	AV	Vertical
3264.82	55.07	-8.45	46.62	74.00	-27.38	PK	Horizontal
3264.82	45.35	-8.45	36.90	54.00	-17.10	AV	Horizontal
4824.48	55.31	-6.09	49.22	74.00	-24.78	PK	Vertical
4824.48	45.33	-6.09	39.24	54.00	-14.76	AV	Vertical
4824.31	54.46	-6.09	48.37	74.00	-25.63	PK	Horizontal
4824.31	45.23	-6.09	39.14	54.00	-14.86	AV	Horizontal
5359.68	57.65	-6.68	50.97	74.00	-23.03	PK	Vertical
5359.68	48.18	-6.68	41.50	54.00	-12.50	AV	Vertical
5359.84	57.00	-6.68	50.32	74.00	-23.68	PK	Horizontal
5359.84	47.27	-6.68	40.59	54.00	-13.41	AV	Horizontal
7235.74	60.67	-8.13	52.54	74.00	-21.46	PK	Vertical
7235.74	50.18	-8.13	42.05	54.00	-11.95	AV	Vertical
7235.86	60.17	-8.13	52.04	74.00	-21.96	PK	Horizontal
7235.82	50.69	-8.13	42.56	54.00	-11.44	AV	Vertical
Middle Channel (2437 MHz)							
3264.62	55.06	-8.45	46.61	74.00	-27.39	PK	Vertical
3264.62	46.62	-8.45	38.17	54.00	-15.83	AV	Vertical
3264.69	55.58	-8.45	47.13	74.00	-26.87	PK	Horizontal
3264.69	45.55	-8.45	37.10	54.00	-16.90	AV	Horizontal
4874.51	55.01	-6.09	48.92	74.00	-25.08	PK	Vertical
4874.51	44.23	-6.09	38.14	54.00	-15.86	AV	Vertical
4874.46	54.14	-6.09	48.05	74.00	-25.95	PK	Horizontal
4874.46	45.20	-6.09	39.11	54.00	-14.89	AV	Horizontal
5359.64	56.95	-6.68	50.27	74.00	-23.73	PK	Vertical
5359.64	47.39	-6.68	40.71	54.00	-13.29	AV	Vertical
5359.77	57.00	-6.68	50.32	74.00	-23.68	PK	Horizontal
5359.77	48.40	-6.68	41.72	54.00	-12.28	AV	Horizontal
7310.97	59.76	-8.13	51.63	74.00	-22.37	PK	Vertical
7310.97	50.09	-8.13	41.96	54.00	-12.04	AV	Vertical
7310.77	60.90	-8.13	52.77	74.00	-21.23	PK	Horizontal
7310.77	49.96	-8.13	41.83	54.00	-12.17	AV	Horizontal
High Channel (2462 MHz)							
3264.71	55.43	-8.45	46.98	74.00	-27.02	PK	Vertical

3264.71	46.15	-8.45	37.70	54.00	-16.30	AV	Vertical
3264.62	55.29	-8.45	46.84	74.00	-27.16	PK	Horizontal
3264.62	45.04	-8.45	36.59	54.00	-17.41	AV	Horizontal
4924.31	54.25	-6.09	48.16	74.00	-25.84	PK	Vertical
4924.31	44.52	-6.09	38.43	54.00	-15.57	AV	Vertical
4924.46	54.70	-6.09	48.61	74.00	-25.39	PK	Horizontal
4924.46	45.30	-6.09	39.21	54.00	-14.79	AV	Horizontal
5359.60	57.20	-6.68	50.52	74.00	-23.48	PK	Vertical
5359.60	46.96	-6.68	40.28	54.00	-13.72	AV	Vertical
5359.81	56.67	-6.68	49.99	74.00	-24.01	PK	Horizontal
5359.81	46.98	-6.68	40.30	54.00	-13.70	AV	Horizontal
7385.75	59.64	-8.13	51.51	74.00	-22.49	PK	Vertical
7385.75	49.71	-8.13	41.58	54.00	-12.42	AV	Vertical
7385.79	60.61	-8.13	52.48	74.00	-21.52	PK	Horizontal
7385.79	50.48	-8.13	42.35	54.00	-11.65	AV	Horizontal

Remark:
In frequency ranges 18~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.

3.2.7 TEST RESULTS(Band edge Requirements)

Frequency (MHz)	Reading (dBμV)	Corrected Factor (dB)	Result (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector	Polarity
802.11b							
2390.00	12.84	34.10	46.94	74.00	-27.06	PK	Vertical
2390.00	0.65	34.10	34.75	54.00	-19.25	AV	Vertical
2390.00	12.34	34.10	46.44	74.00	-27.56	PK	Horizontal
2390.00	1.88	34.10	35.98	54.00	-18.02	AV	Horizontal
2483.50	14.59	34.44	49.03	74.00	-24.97	PK	Vertical
2483.50	2.13	34.44	36.57	54.00	-17.43	AV	Vertical
2483.50	14.93	34.44	49.37	74.00	-24.63	PK	Horizontal
2483.50	3.06	34.44	37.50	54.00	-16.50	AV	Horizontal
802.11g							
2390.00	13.20	34.10	47.30	74.00	-26.70	PK	Vertical
2390.00	1.13	34.10	35.23	54.00	-18.77	AV	Vertical
2390.00	12.90	34.10	47.00	74.00	-27.00	PK	Horizontal
2390.00	1.02	34.10	35.12	54.00	-18.88	AV	Horizontal
2483.50	15.07	34.44	49.51	74.00	-24.49	PK	Vertical
2483.50	2.61	34.44	37.05	54.00	-16.95	AV	Vertical
2483.50	15.57	34.44	50.01	74.00	-23.99	PK	Horizontal
2483.50	2.65	34.44	37.09	54.00	-16.91	AV	Horizontal
802.11n20							
2390.00	13.53	34.10	47.63	74.00	-26.37	PK	Vertical
2390.00	2.35	34.10	36.45	54.00	-17.55	AV	Vertical
2390.00	13.14	34.10	47.24	74.00	-26.76	PK	Horizontal
2390.00	2.12	34.10	36.22	54.00	-17.78	AV	Horizontal
2483.50	14.35	34.44	48.79	74.00	-25.21	PK	Vertical
2483.50	2.50	34.44	36.94	54.00	-17.06	AV	Vertical
2483.50	15.19	34.44	49.63	74.00	-24.37	PK	Horizontal
2483.50	3.14	34.44	37.58	54.00	-16.42	AV	Horizontal
Low measurement frequencies is range from 2310 to 2422 MHz, high measurement frequencies is range from 2452 to 2500 MHz.							

4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, based on either an RF conducted or a radiated measurement.

4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2300 to 2432 MHz Upper Band Edge: 2442 to 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP

The EUT is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.
Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

4.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

4.6 TEST RESULTS

For the measurement records, refer to the appendix I.

Note: Not recorded emission from 9 KHz to 30 MHz as emission level at least 20dBc lower than emission limit.

5. POWER SPECTRAL DENSITY TEST

5.1 LIMIT

FCC Part15.247 , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	≤8 dBm (RBW ≥3KHz)	2400-2483.5	PASS

5.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the 100 kHz ≥ RBW ≥3 kHz.
4. Set the VBW ≥ 3 x 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.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP

5.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

5.6 TEST RESULTS

For the measurement records, refer to the appendix I.

6. BANDWIDTH TEST

6.1 LIMIT

FCC Part15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	≥500KHz (6dB bandwidth)	2400-2483.5	PASS

6.2 TEST PROCEDURE

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW≥3RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be≥6 dB.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP

6.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

6.6 TEST RESULTS

For the measurement records, refer to the appendix I.

7. PEAK OUTPUT POWER TEST

7.1 LIMIT

FCC Part15.247,Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Output Power	1 watt or 30dBm	2400-2483.5	PASS

7.2 TEST PROCEDURE

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

RBW ≥ DTS bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ [3 × RBW].
c) Set span ≥ [3 × RBW].
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

Integrated band power method:

The following procedure can be used when the maximum available RBW of the instrument is less than the
DTS bandwidth:

a) Set the RBW = 1 MHz.
b) Set the VBW ≥ [3 × RBW].
c) Set the span ≥ [1.5 × DTS bandwidth].
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

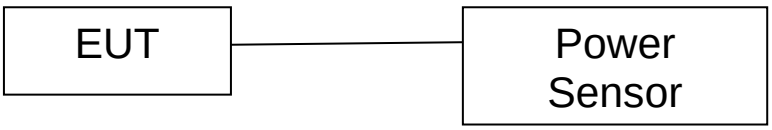
PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

7.6 TEST RESULTS

For the measurement records, refer to the appendix I.

8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible partyshall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is FPC Antenna. It comply with the standard requirement.

APPENDIX I - TEST RESULTS

ANNEX A. PEAK POWER

1. 802.11B
1.1. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2412	20.000000	Peak	Both	-30	30	9.66	Pass

1.2. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2437	20.000000	Peak	Both	-30	30	9.19	Pass

1.3. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2462	20.000000	Peak	Both	-30	30	9.53	Pass

2. 802.11G

2.1. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2412	20.000000	Peak	Both	-30	30	9.64	Pass

2.2. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2437	20.000000	Peak	Both	-30	30	9.47	Pass

2.3. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2462	20.000000	Peak	Both	-30	30	9.54	Pass

3. 802.11N_BAND2.4G_BW20MHZ
3.1. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2412	20.000000	Peak	Both	-30	30	9.52	Pass

3.2. A.1-2-PEAK POWER(NTNV)

Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2437	20.000000	Peak	Both	-30	30	9.35	Pass

3.3. A.1-2-PEAK POWER(NTNV)

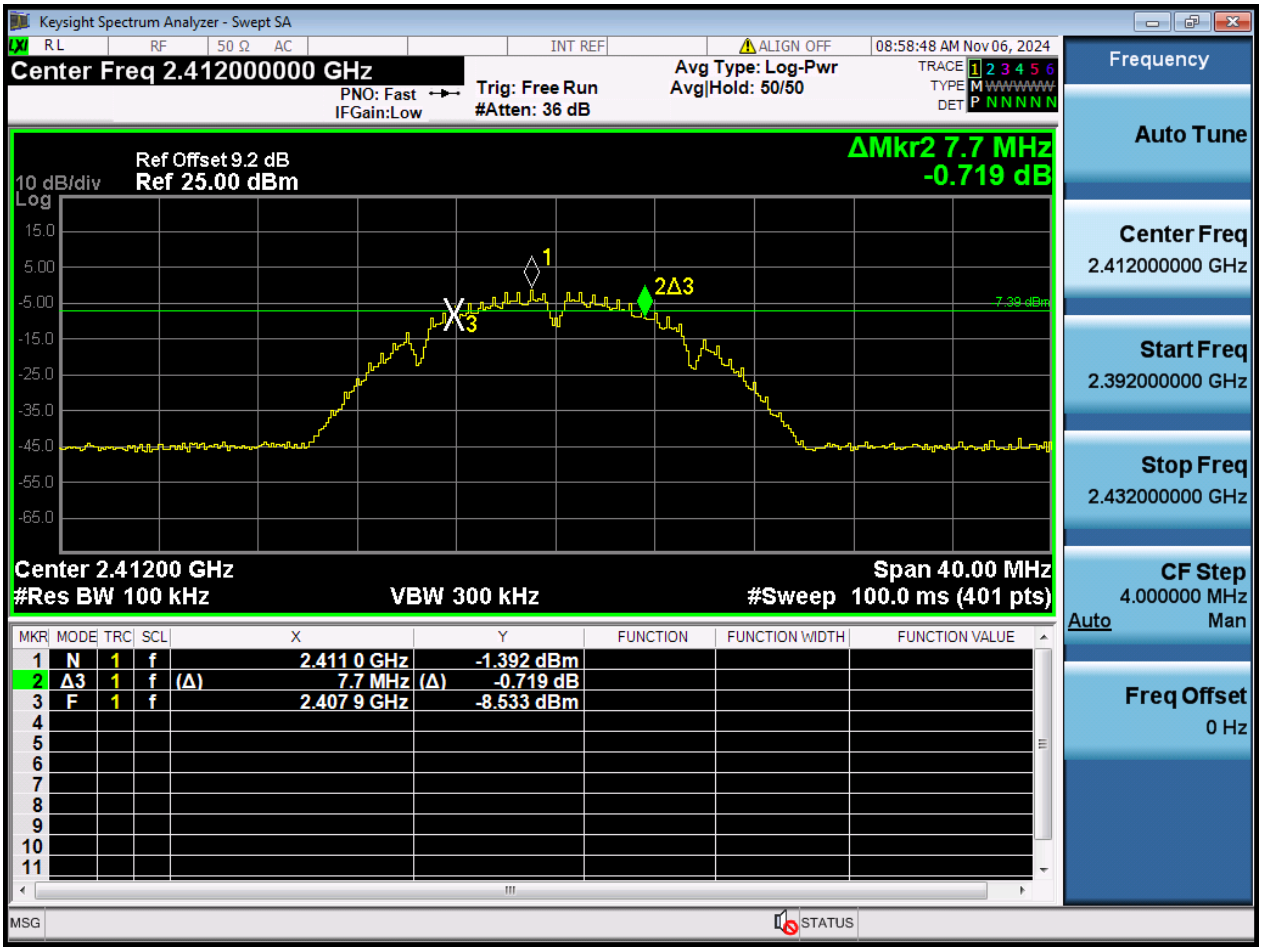
Test Environment	Center Frequency (MHz)	IBW (MHz)	Detector	Limit Check	Lower Limit (dBm)	Upper Limit (dBm)	Power (dBm)	Verdict
NTNV	2462	20.000000	Peak	Both	-30	30	9.38	Pass

ANNEX A. 6DB BANDWIDTH

1. 802.11B

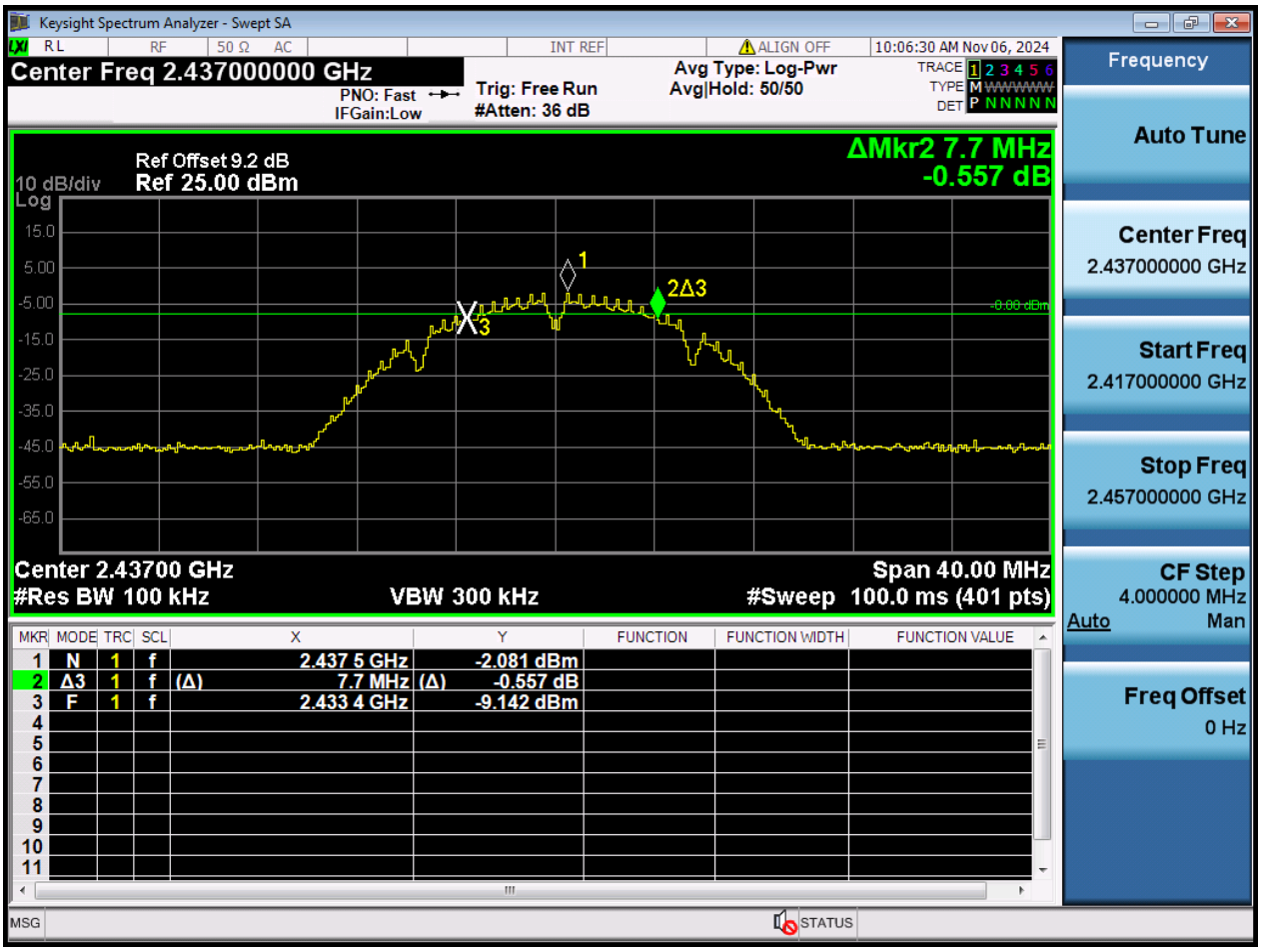
1.1. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2412	6	0.1	Peak	0.5	7.700195	Pass



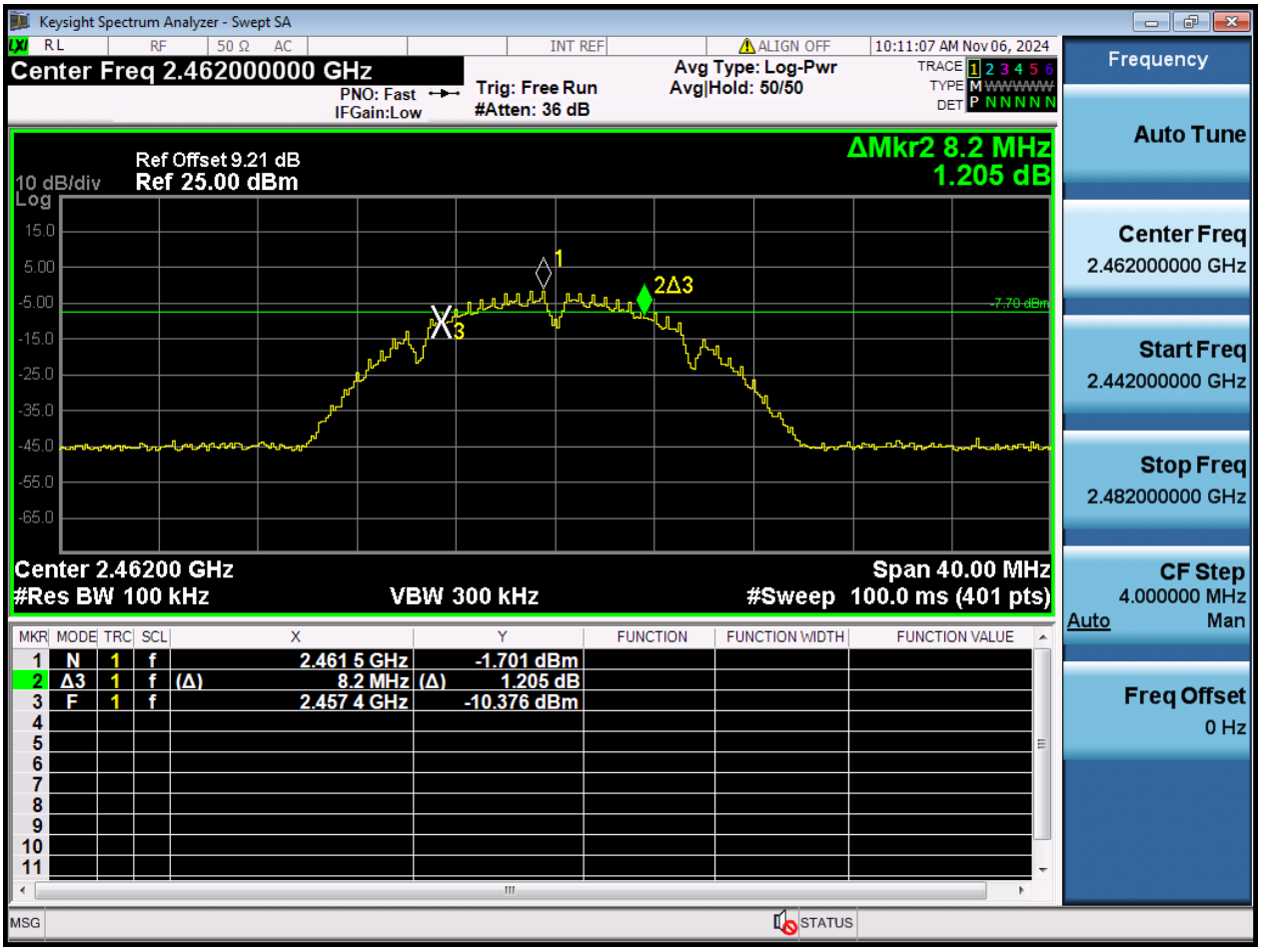
1.2. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2437	6	0.1	Peak	0.5	7.700195	Pass



1.3. A.2.1-6DB BANDWIDTH(NTNV)

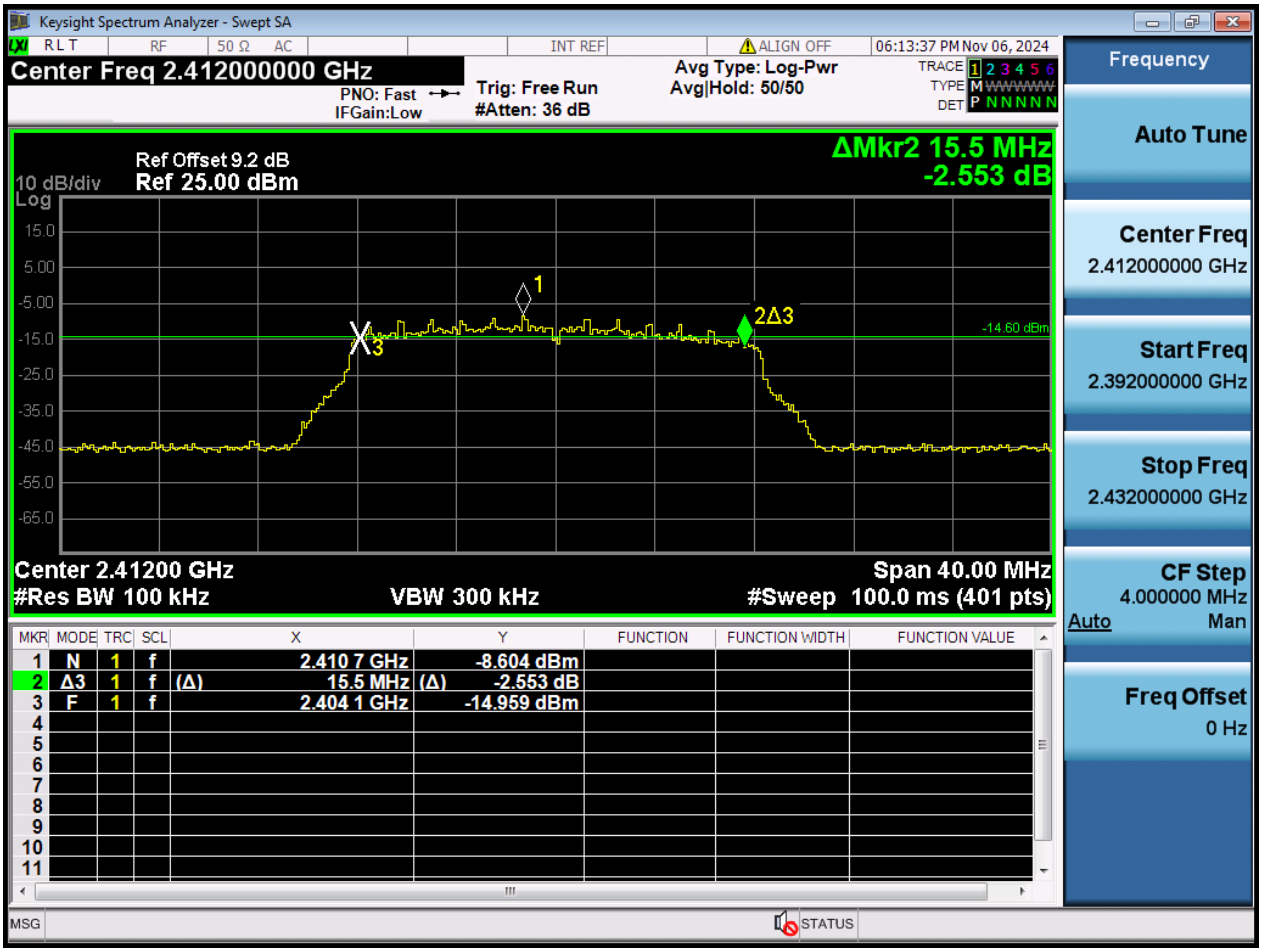
Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2462	6	0.1	Peak	0.5	8.200195	Pass



2. 802.11G

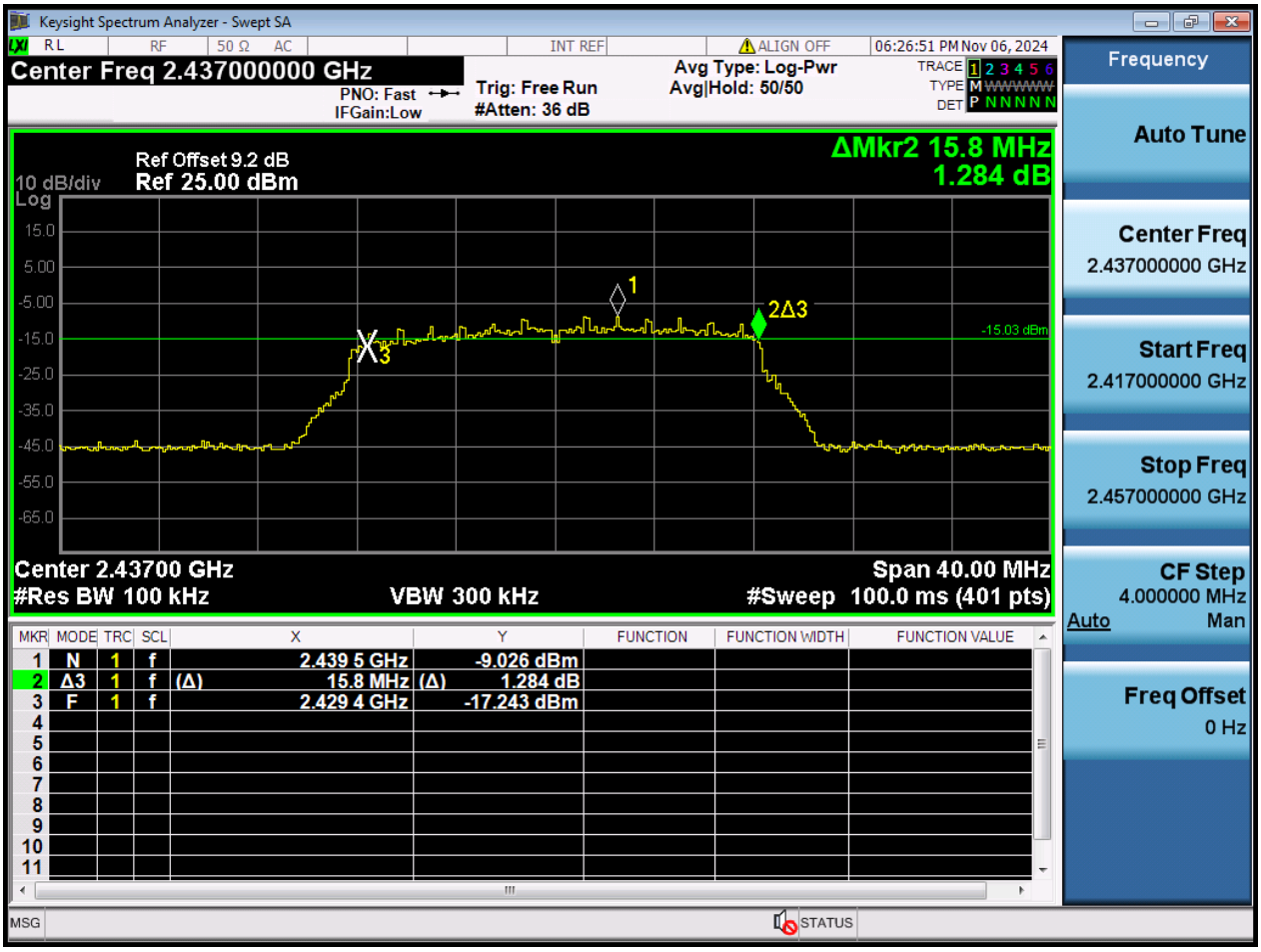
2.1. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2412	6	0.1	Peak	0.5	15.5	Pass



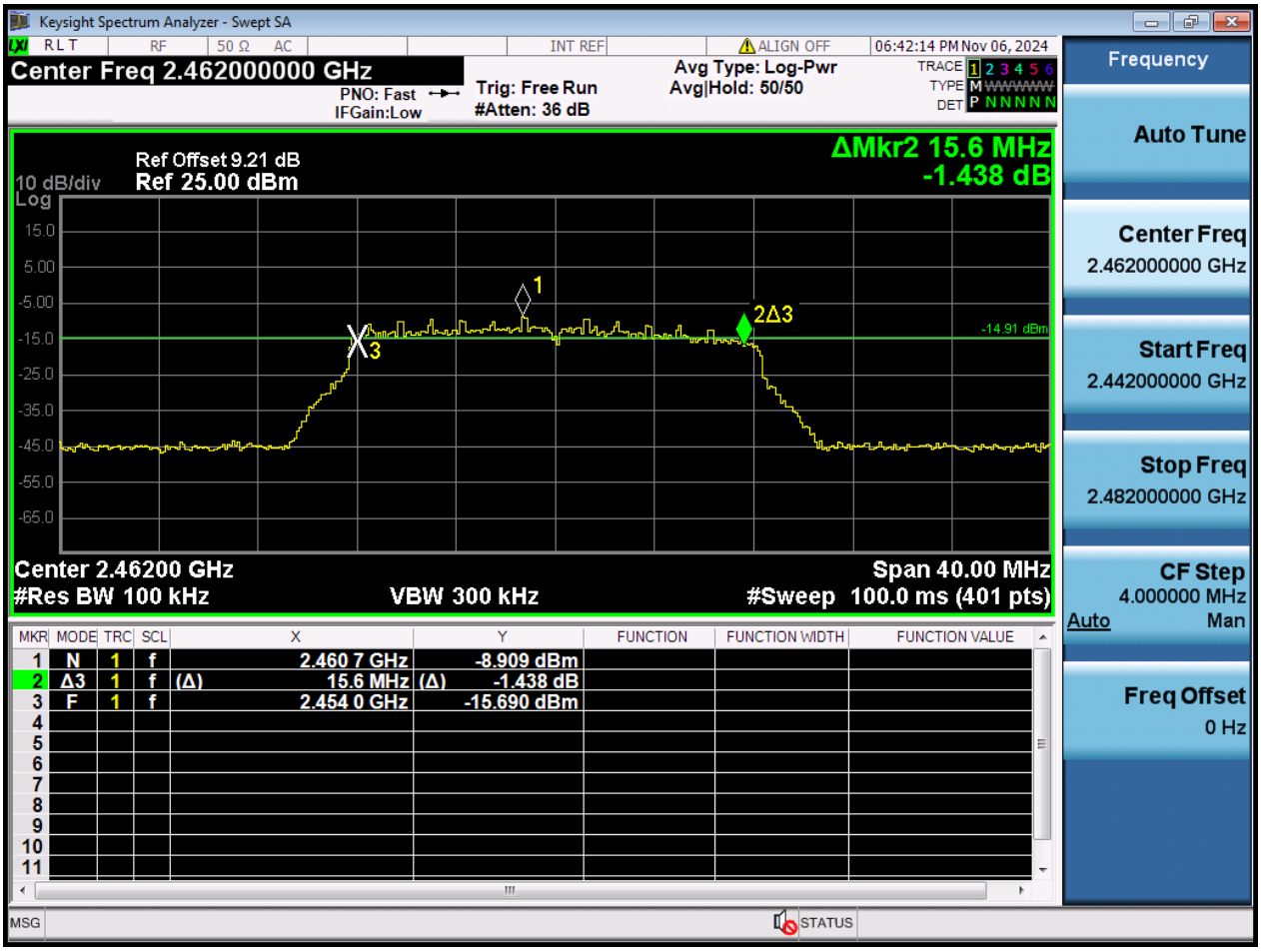
2.9. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2437	6	0.1	Peak	0.5	15.800049	Pass



2.10. A.2.1-6DB BANDWIDTH(NTNV)

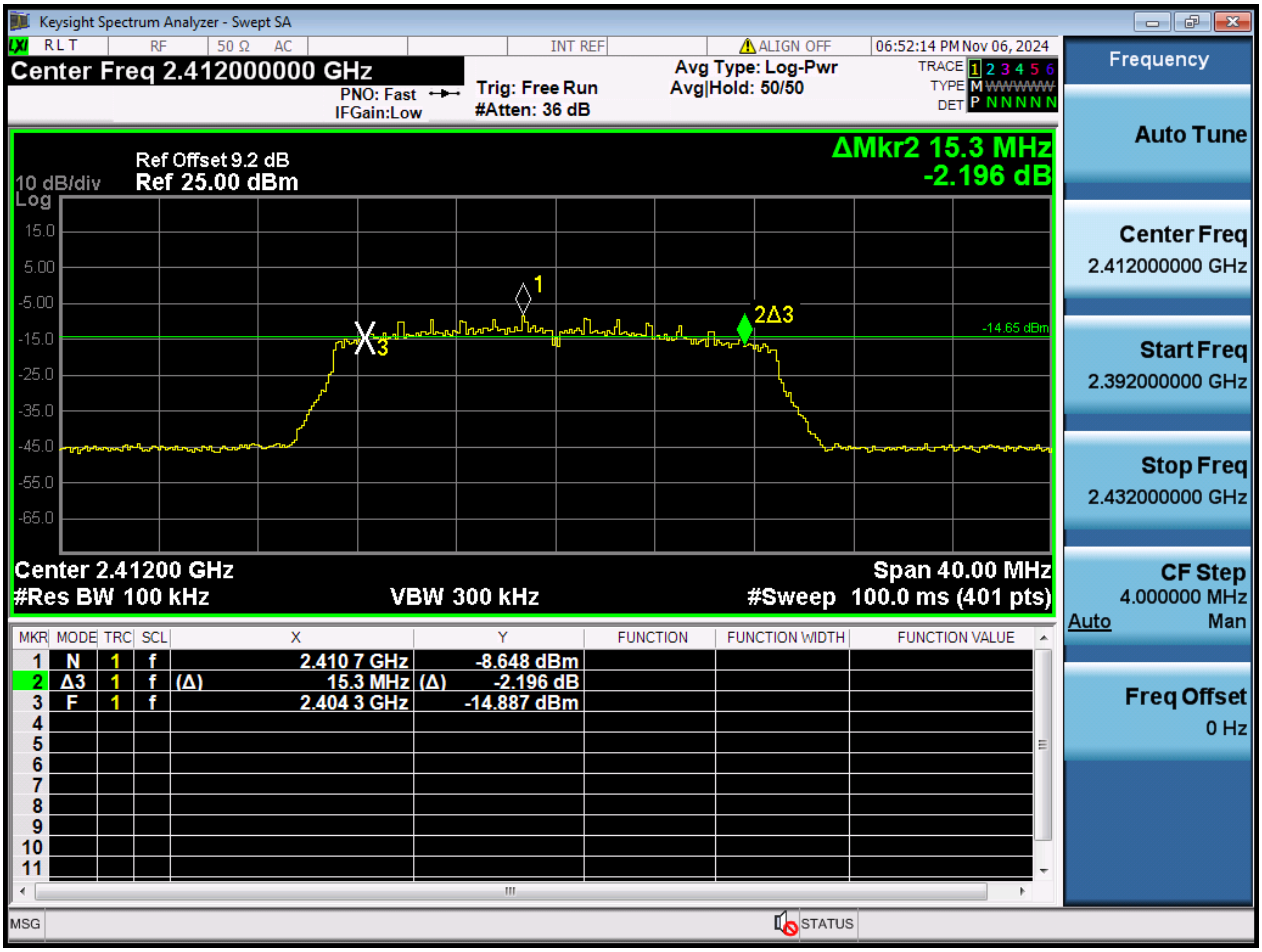
Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2462	6	0.1	Peak	0.5	15.600098	Pass



3. 802.11N_BAND2.4G_BW20MHZ

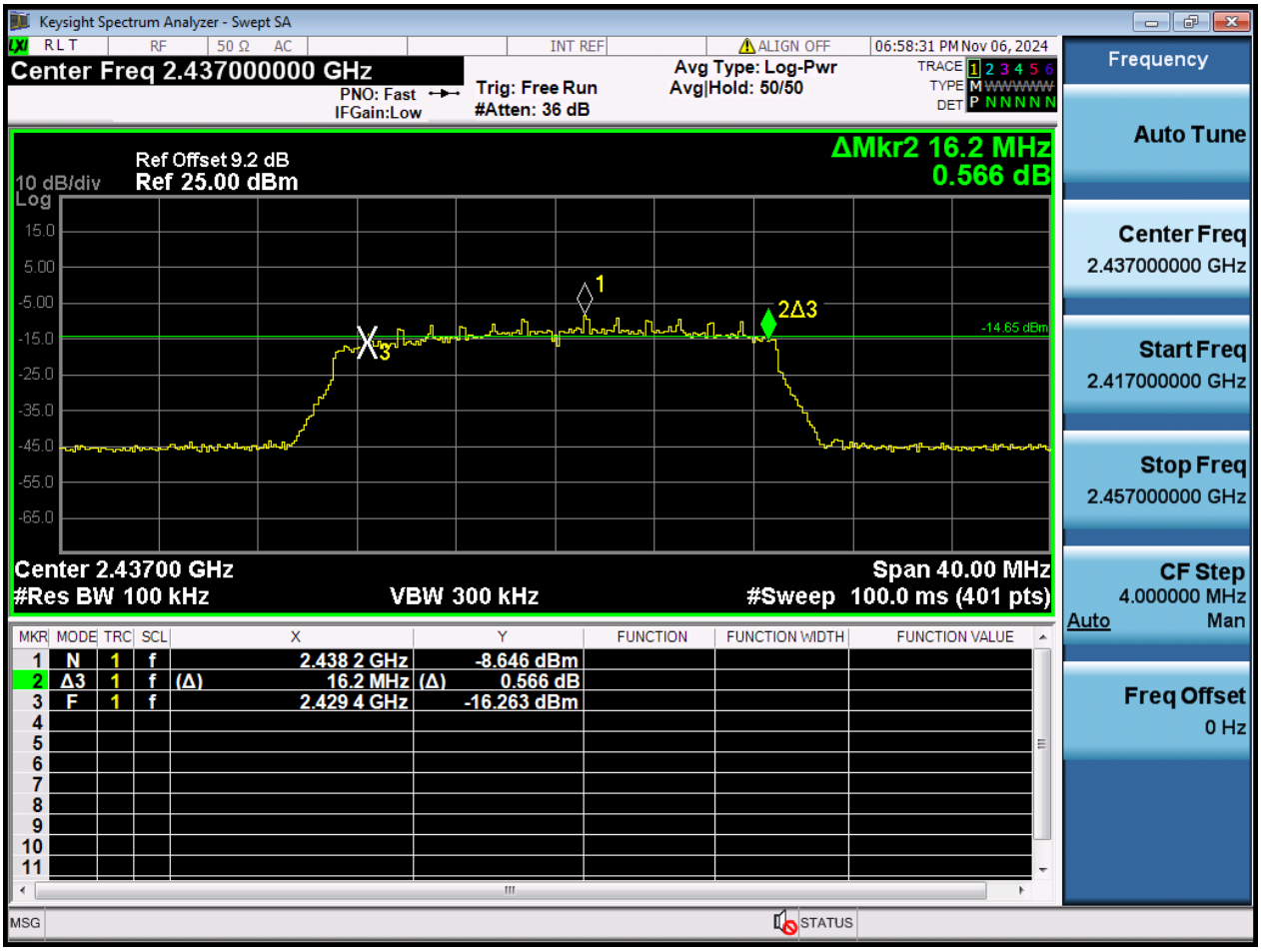
3.1. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2412	6	0.1	Peak	0.5	15.300049	Pass



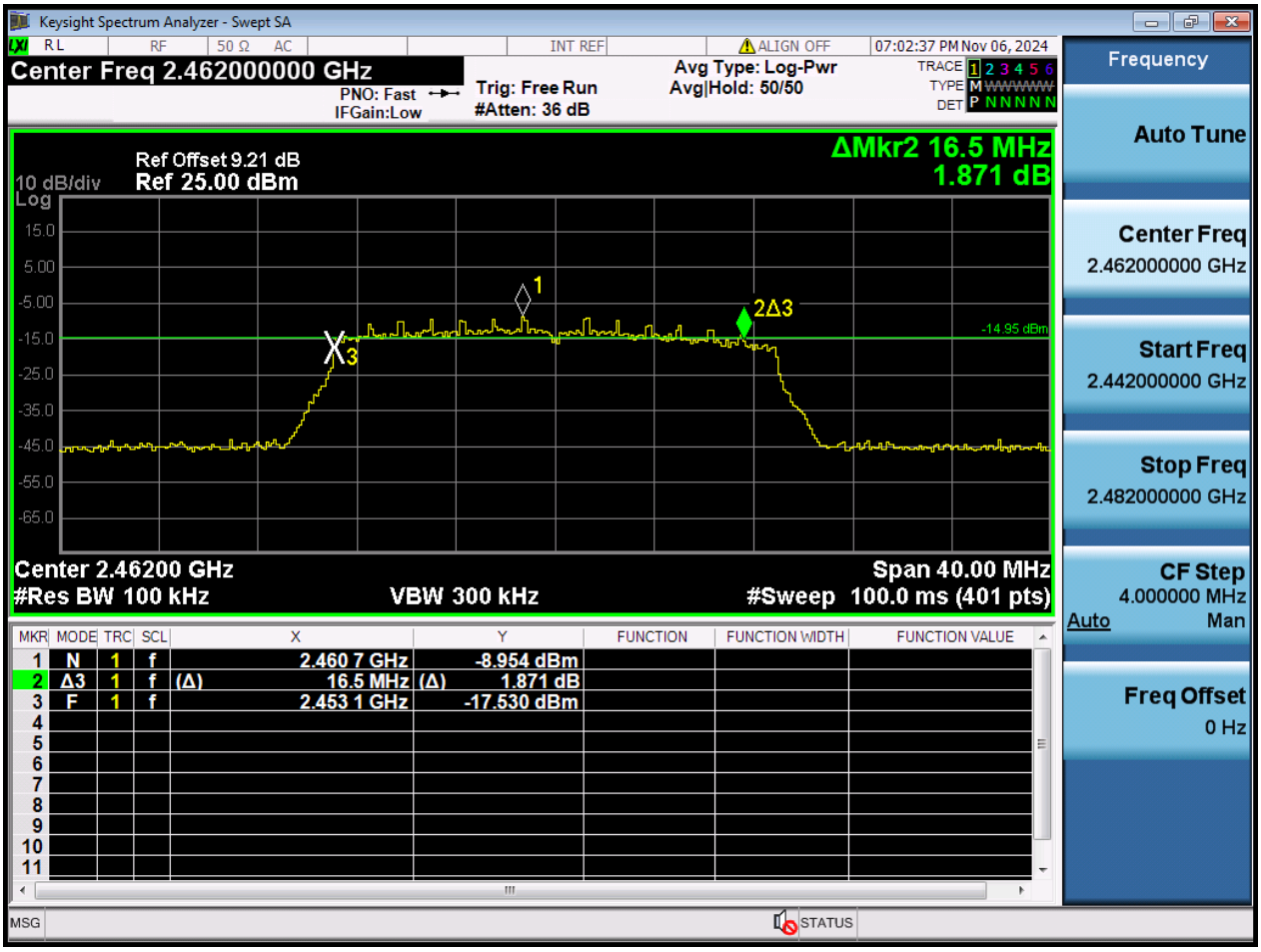
3.2. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2437	6	0.1	Peak	0.5	16.200195	Pass



3.3. A.2.1-6DB BANDWIDTH(NTNV)

Center Frequency (MHz)	XdB Down	RBW (MHz)	Detector	Limit (MHz)	XdB BandWidth (MHz)	Verdict
2462	6	0.1	Peak	0.5	16.5	Pass

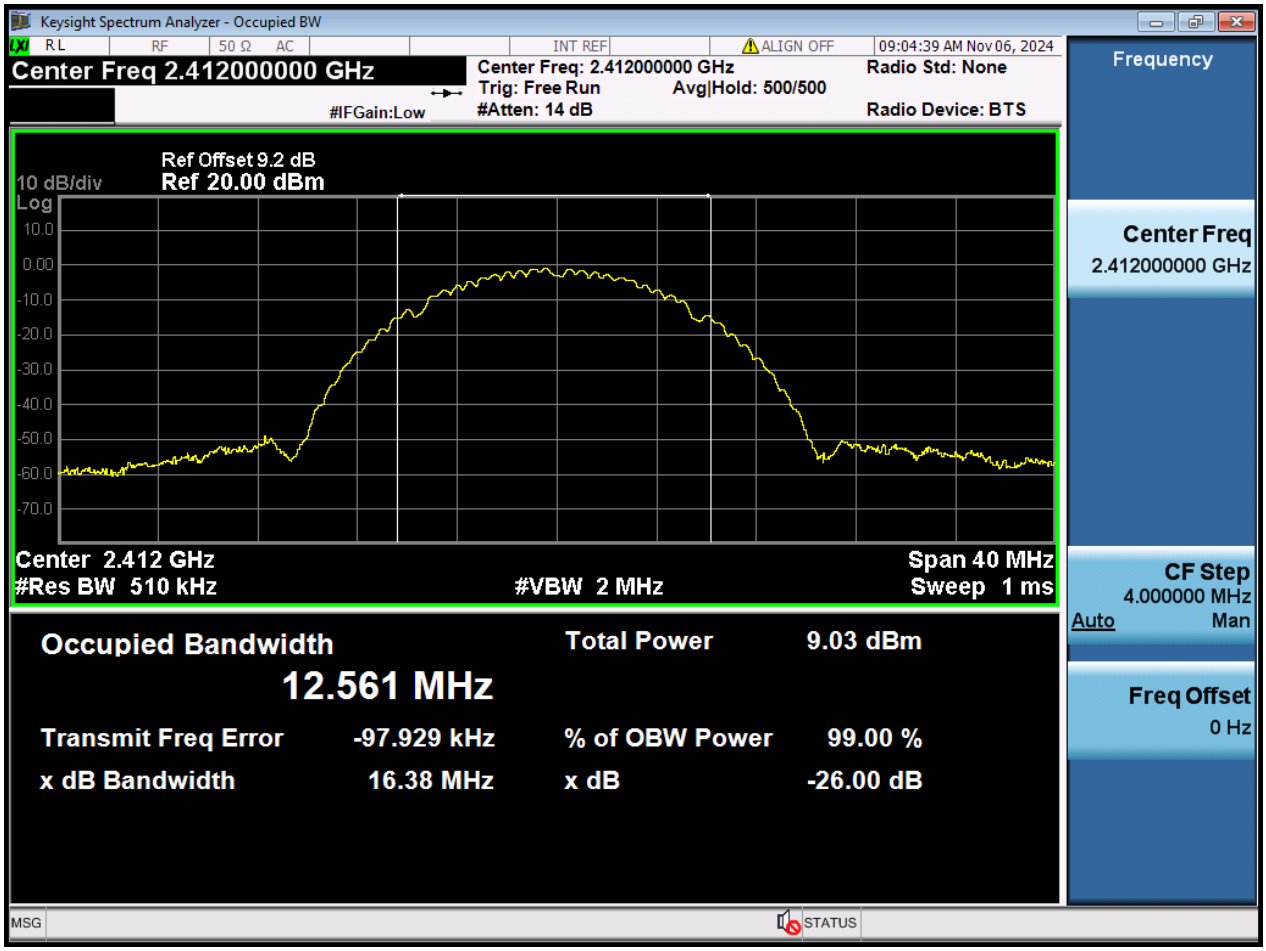


ANNEX A. 99% BANDWIDTH

1. 802.11B

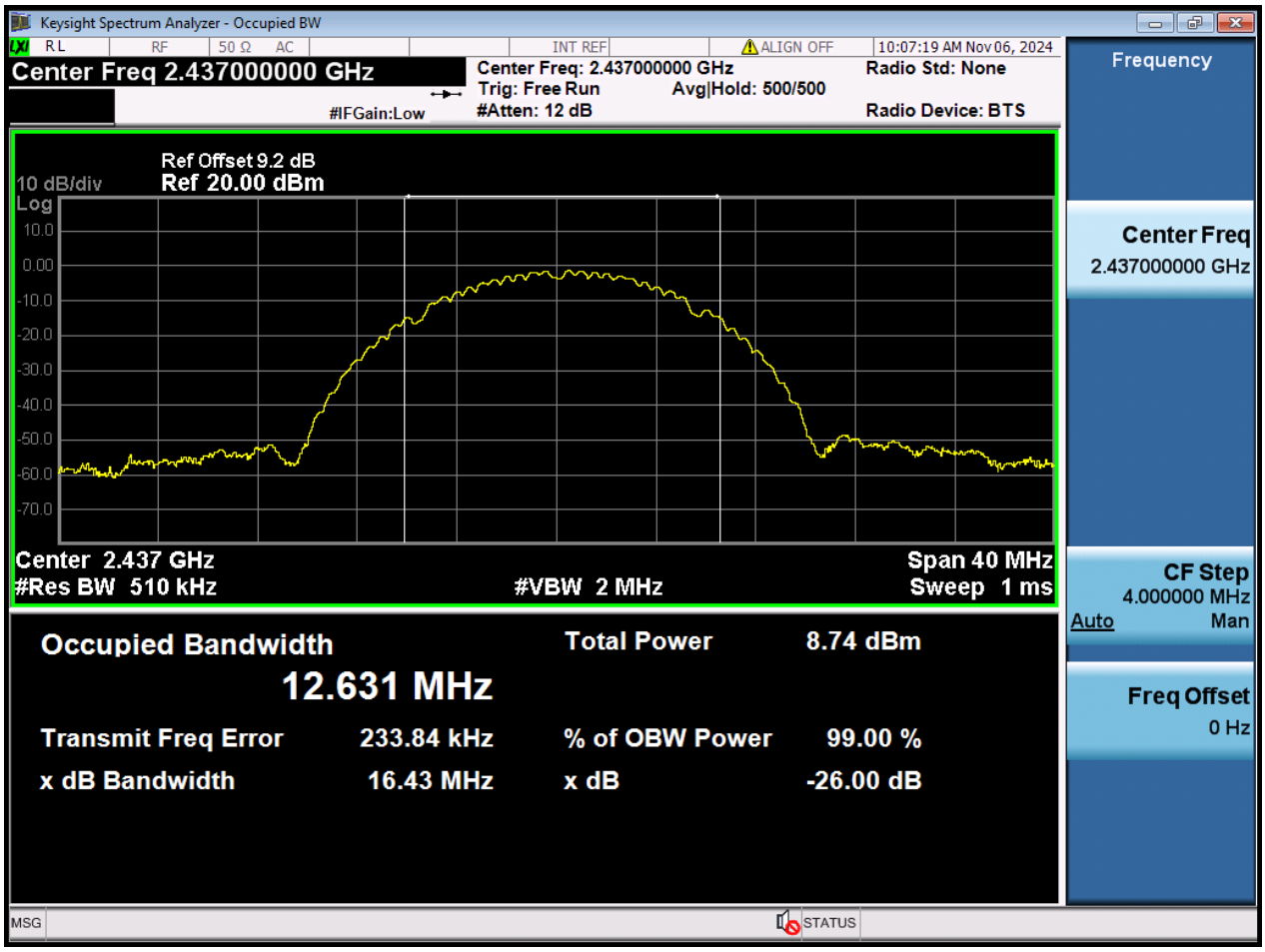
1.1. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2412	99	0.51	Peak	26	12.561382	Pass



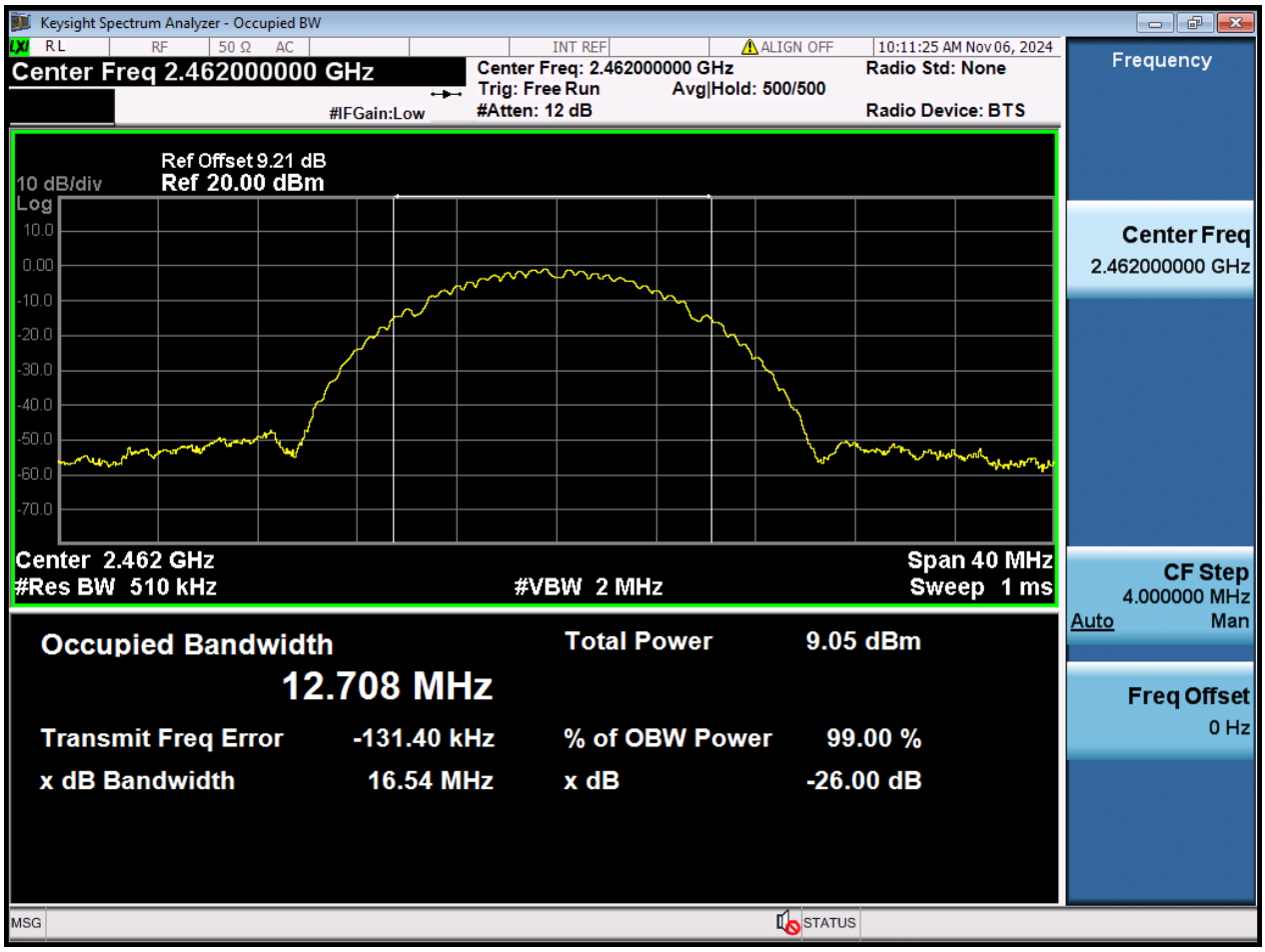
1.2. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2437	99	0.51	Peak	26	12.630528	Pass



1.3. A.2.2-99% BANDWIDTH(NTNV)

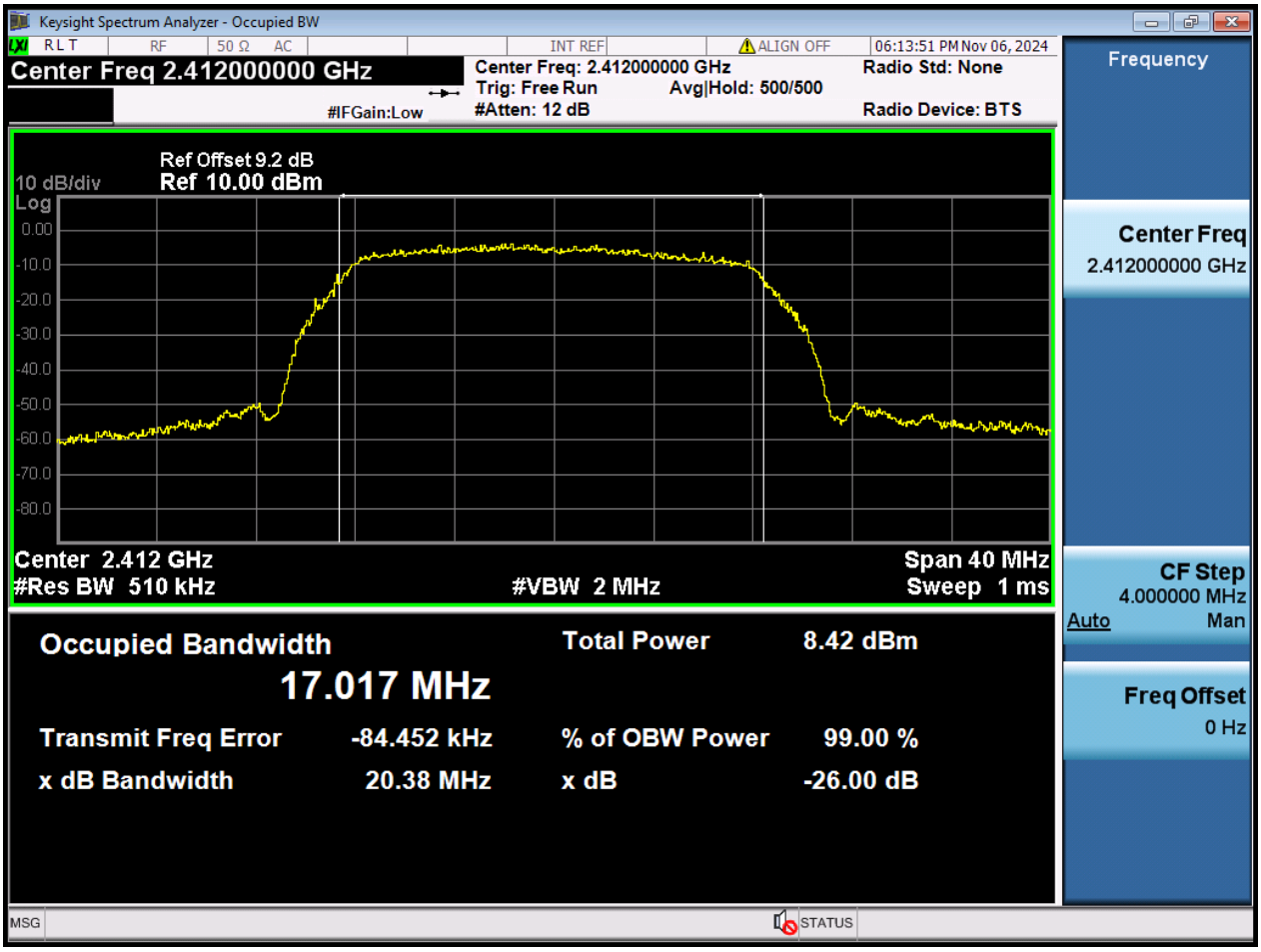
Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2437	99	0.51	Peak	26	12.708	Pass



2. 802.11G

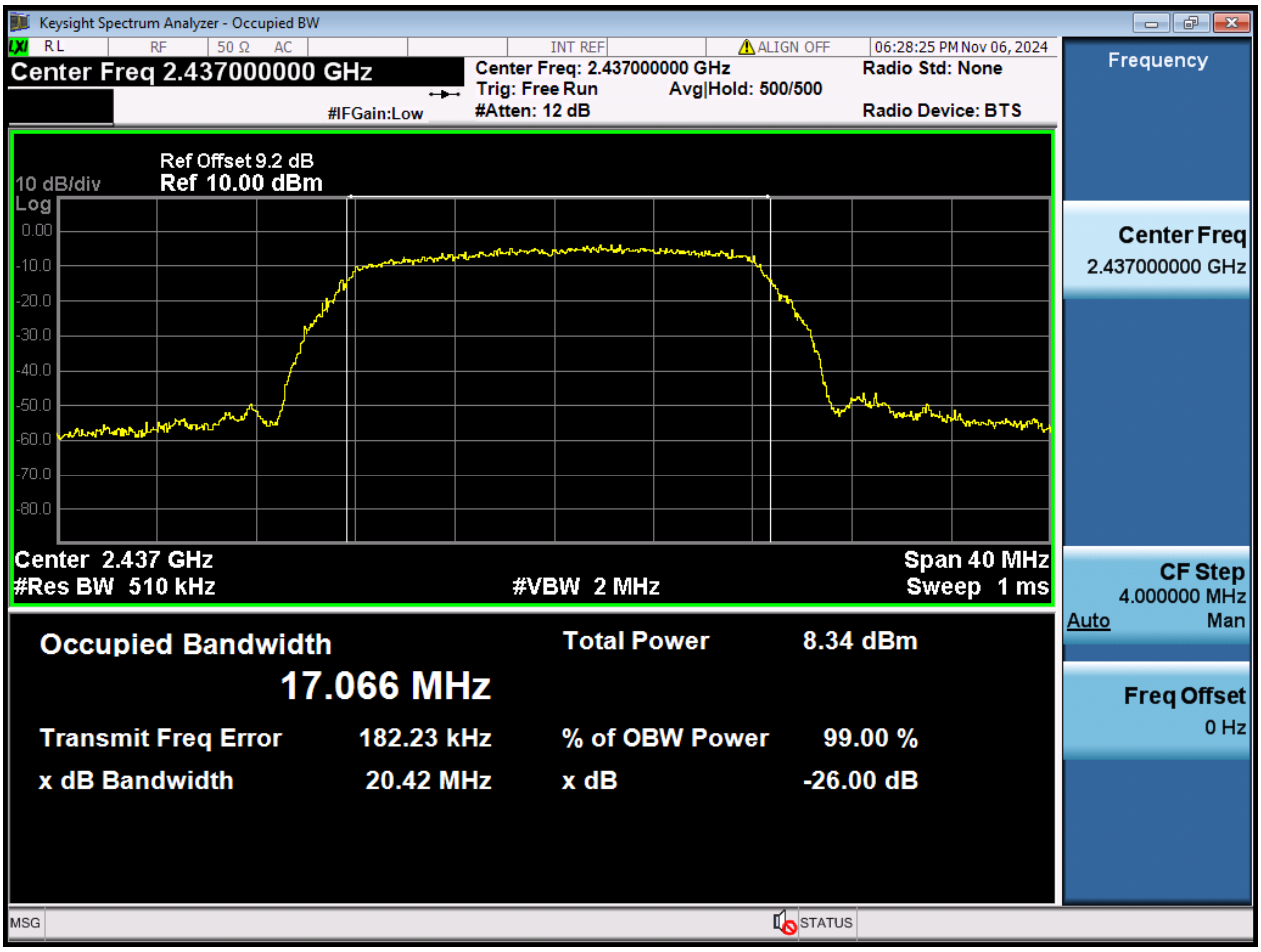
2.1. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2412	99	0.51	Peak	26	17.016526	Pass



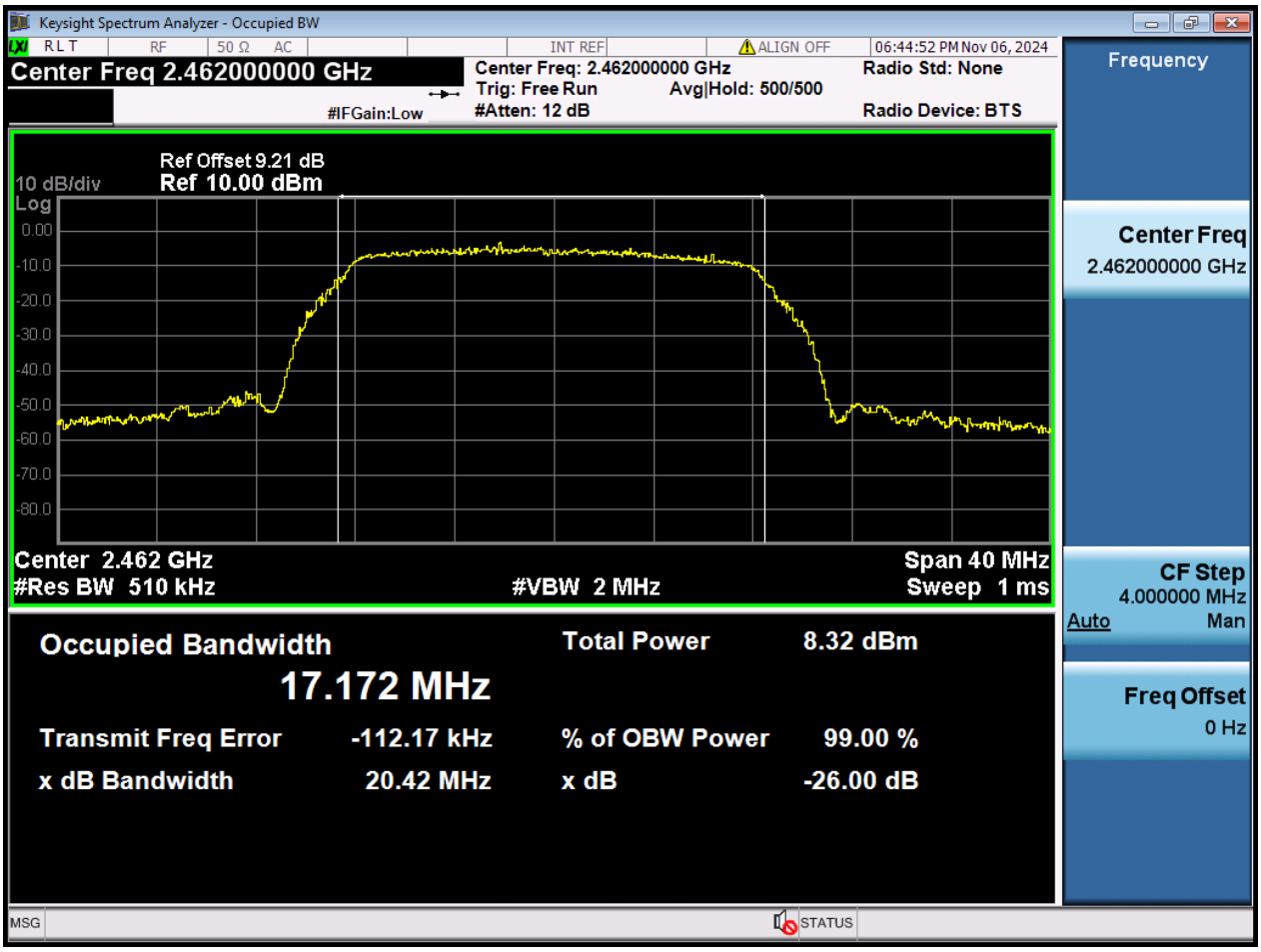
2.2. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2437	99	0.51	Peak	26	17.065708	Pass



2.3. A.2.2-99% BANDWIDTH(NTNV)

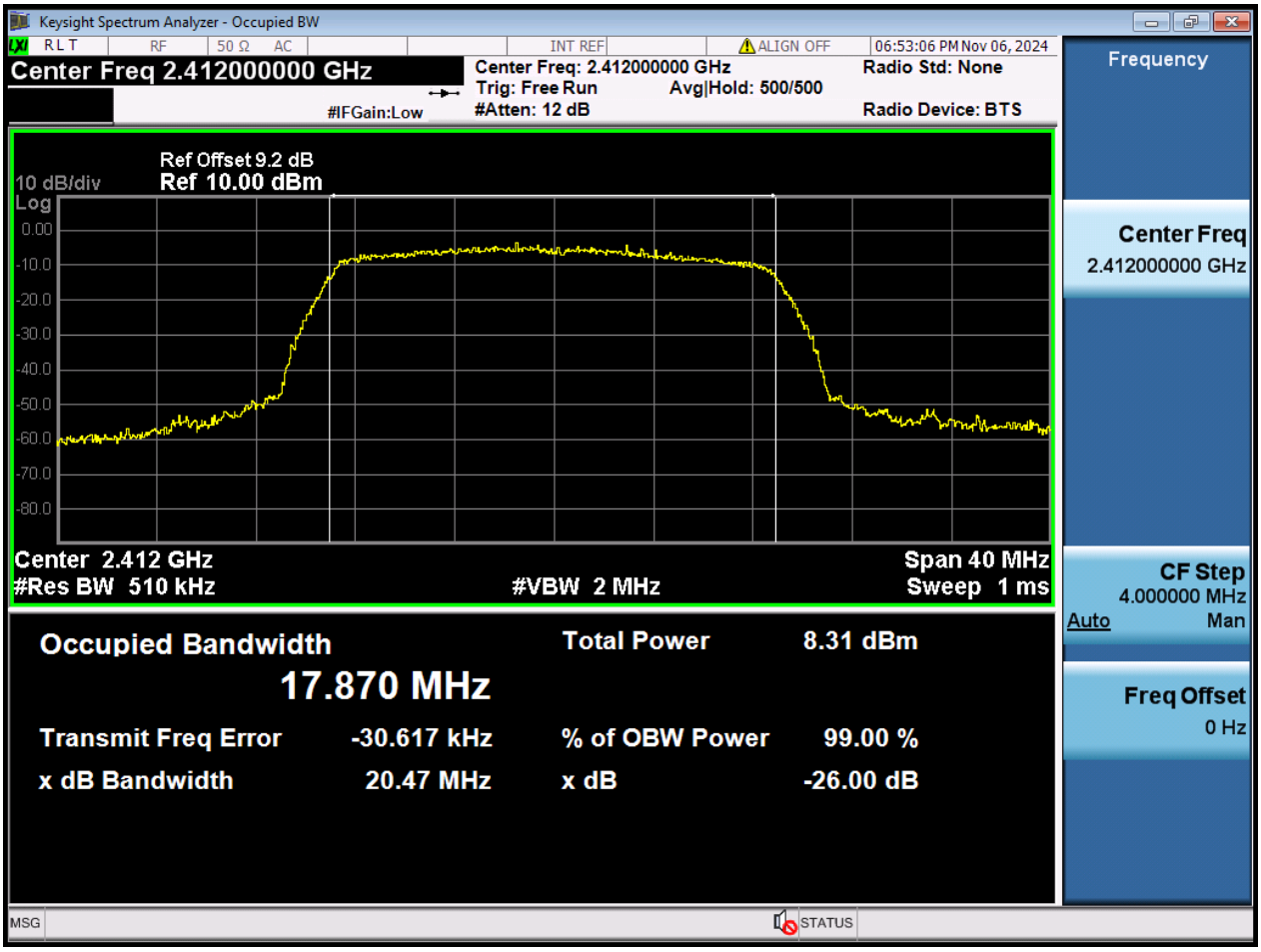
Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2462	99	0.51	Peak	26	17.171764	Pass



3. 802.11N_BAND2.4G_BW20MHZ

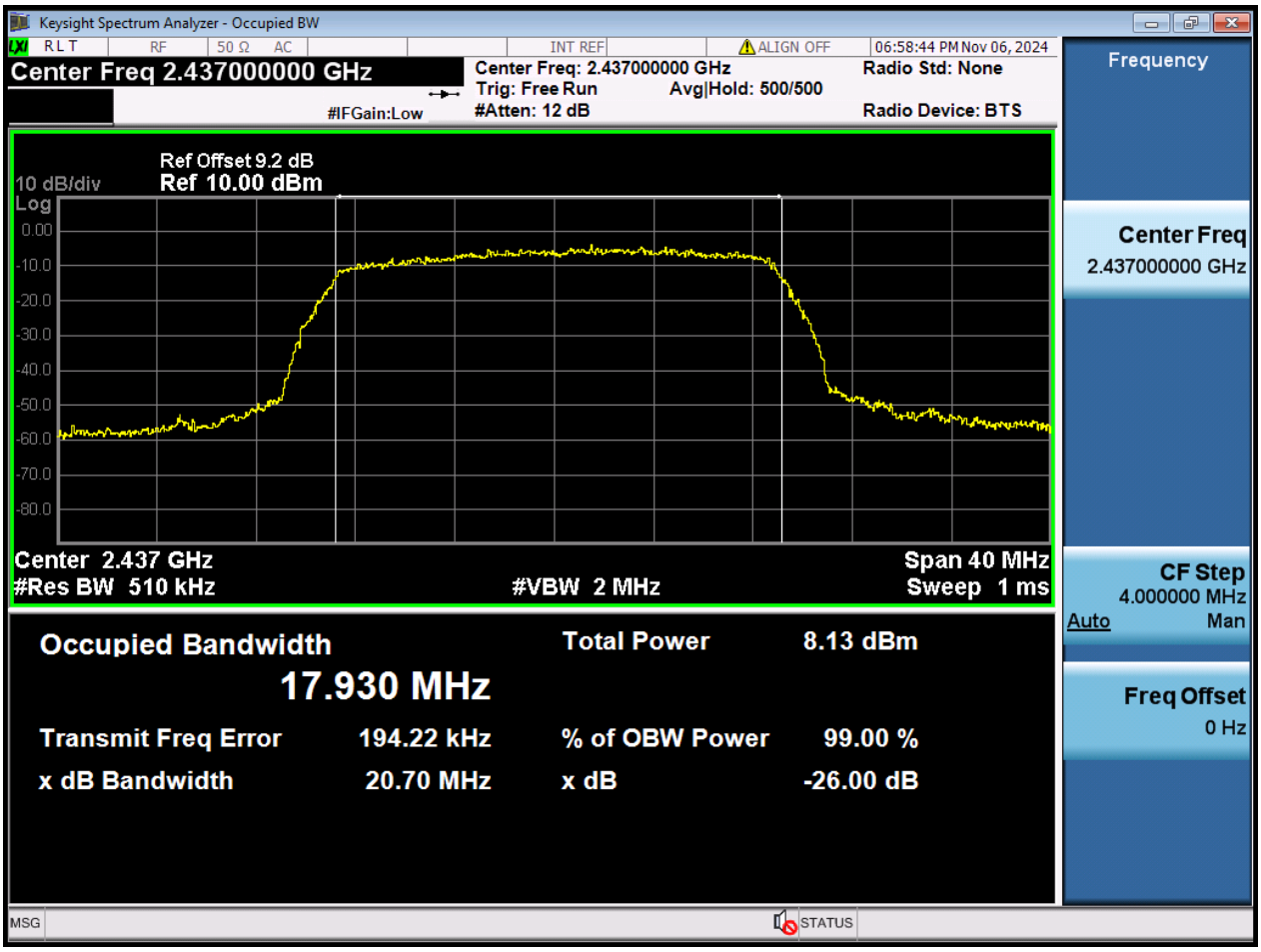
3.1. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2412	99	0.51	Peak	26	17.870053	Pass



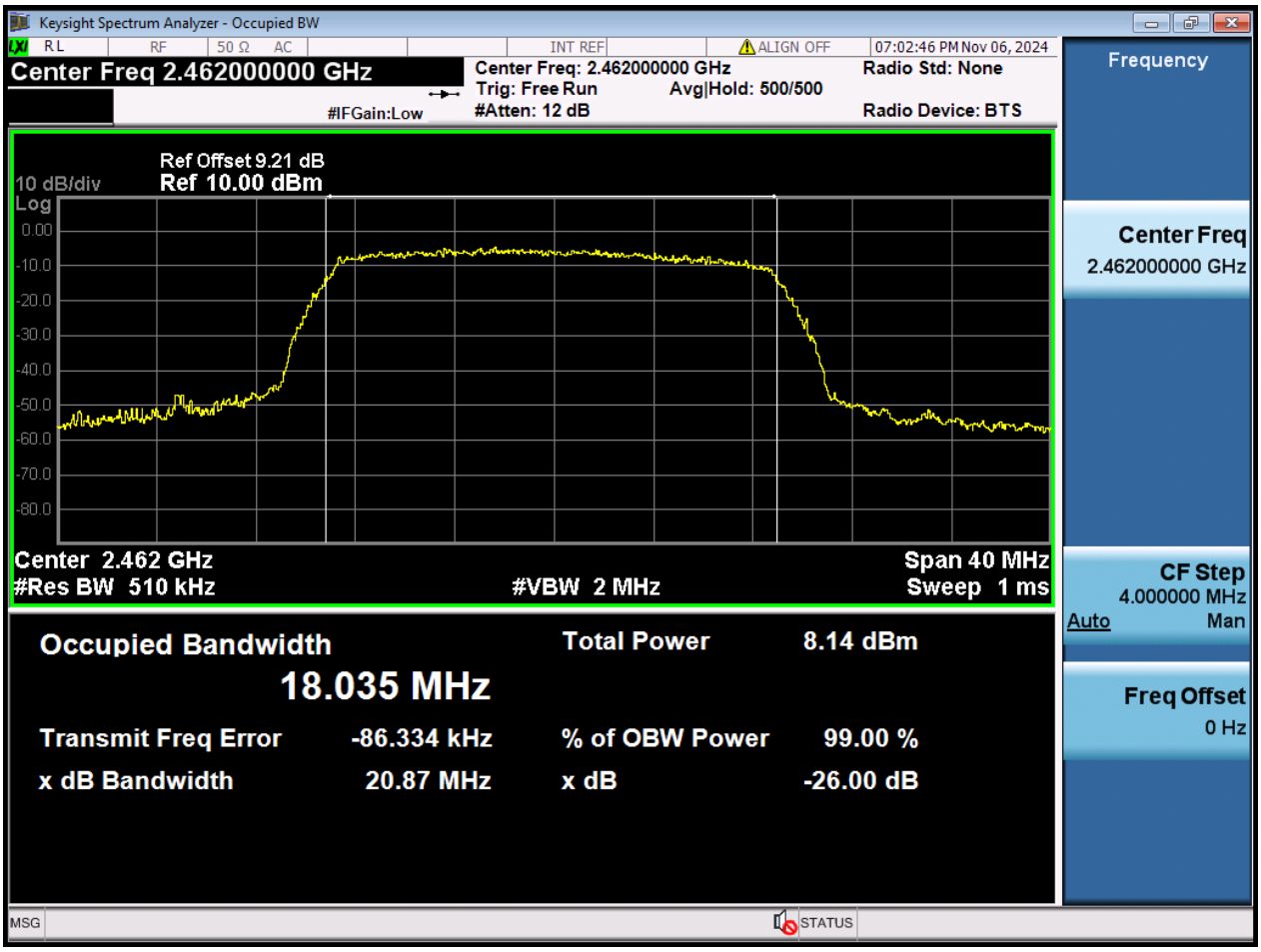
3.2. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2437	99	0.51	Peak	26	17.929533	Pass



3.3. A.2.2-99% BANDWIDTH(NTNV)

Center Frequency (MHz)	OBW Power (%)	RBW (MHz)	Detector	Limit (MHz)	OBW (MHz)	Verdict
2462	99	0.51	Peak	26	18.035032	Pass

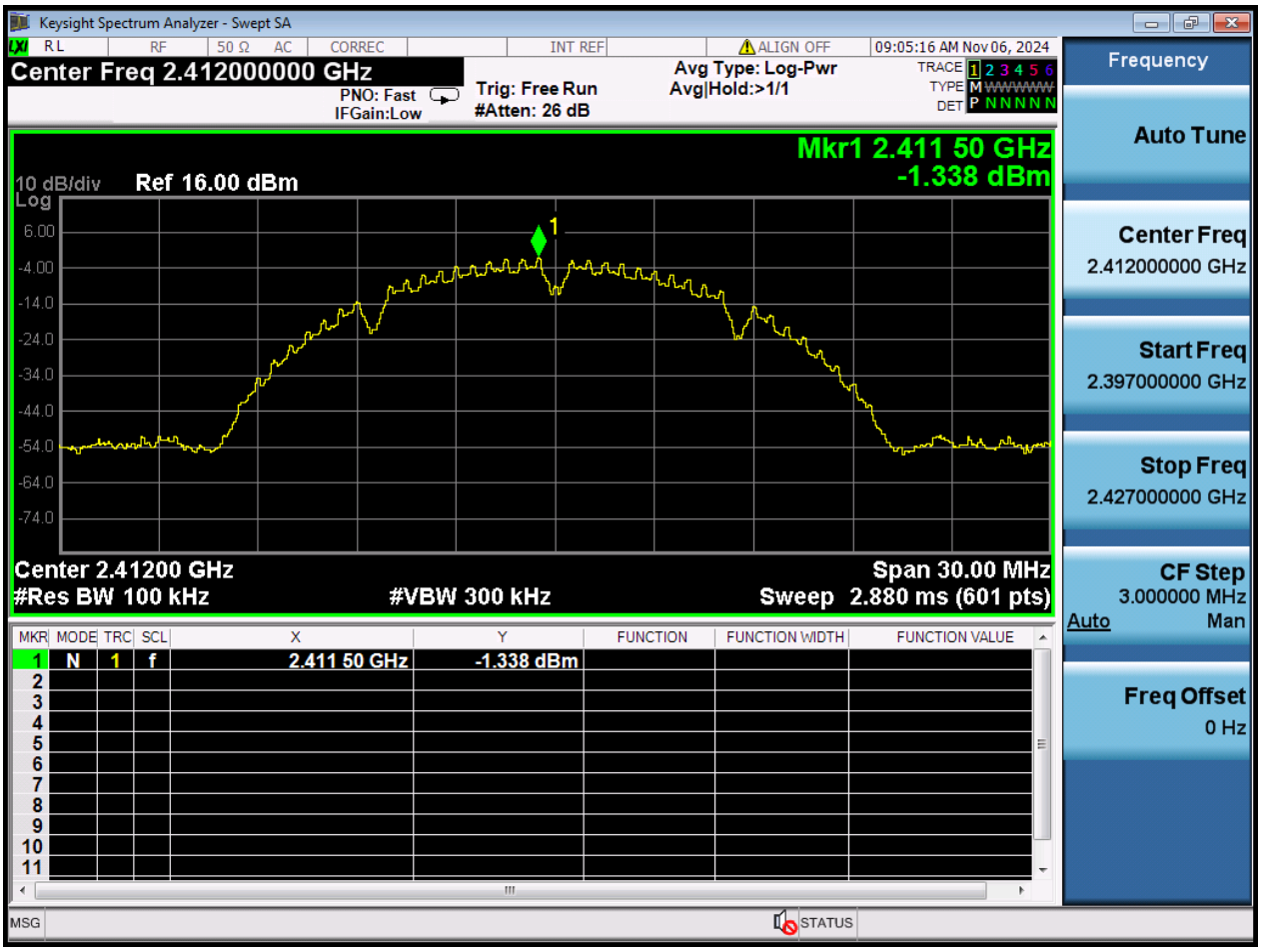


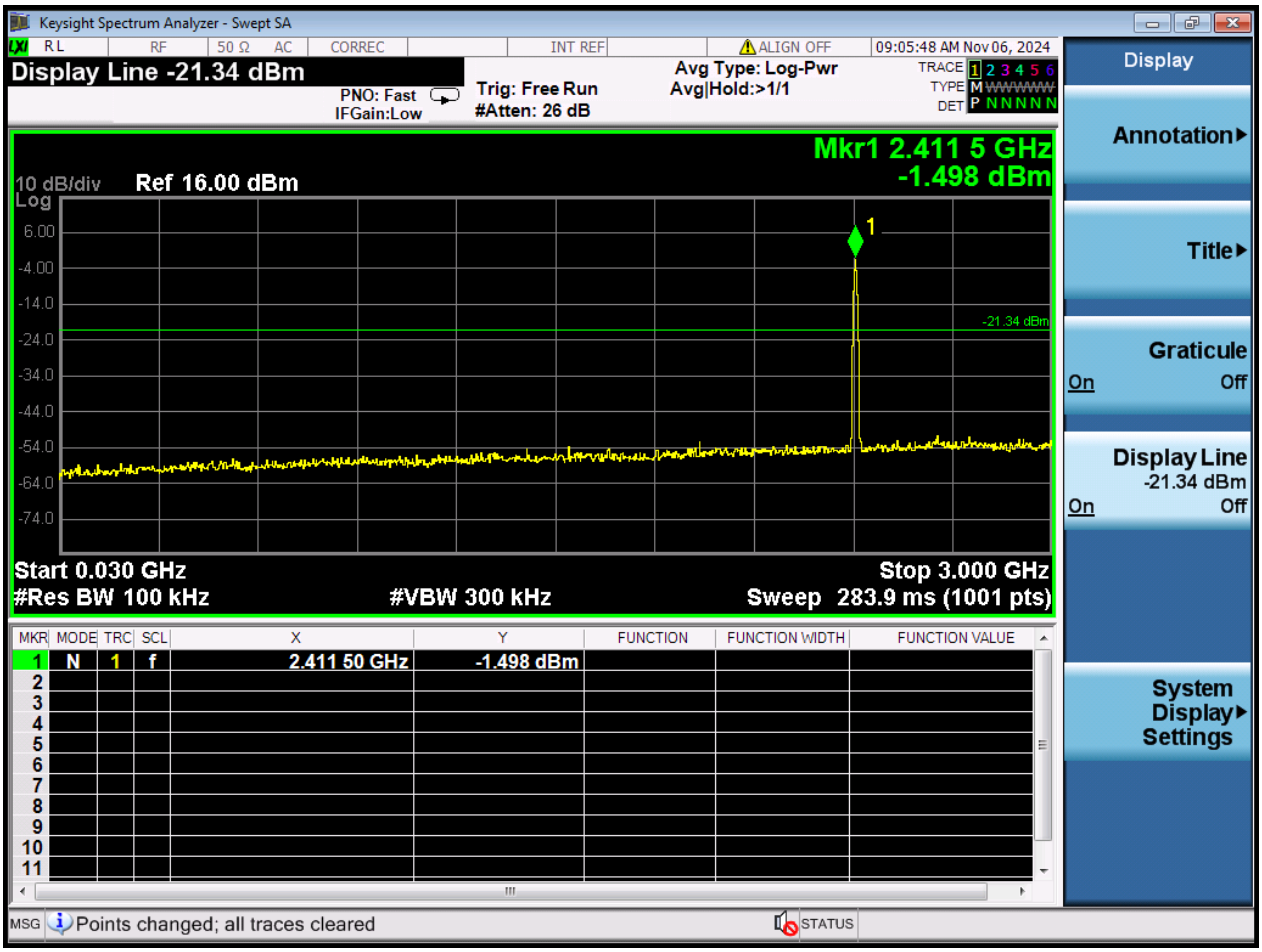
ANNEX A. CONDUCTED SPURIOUS EMISSIONS

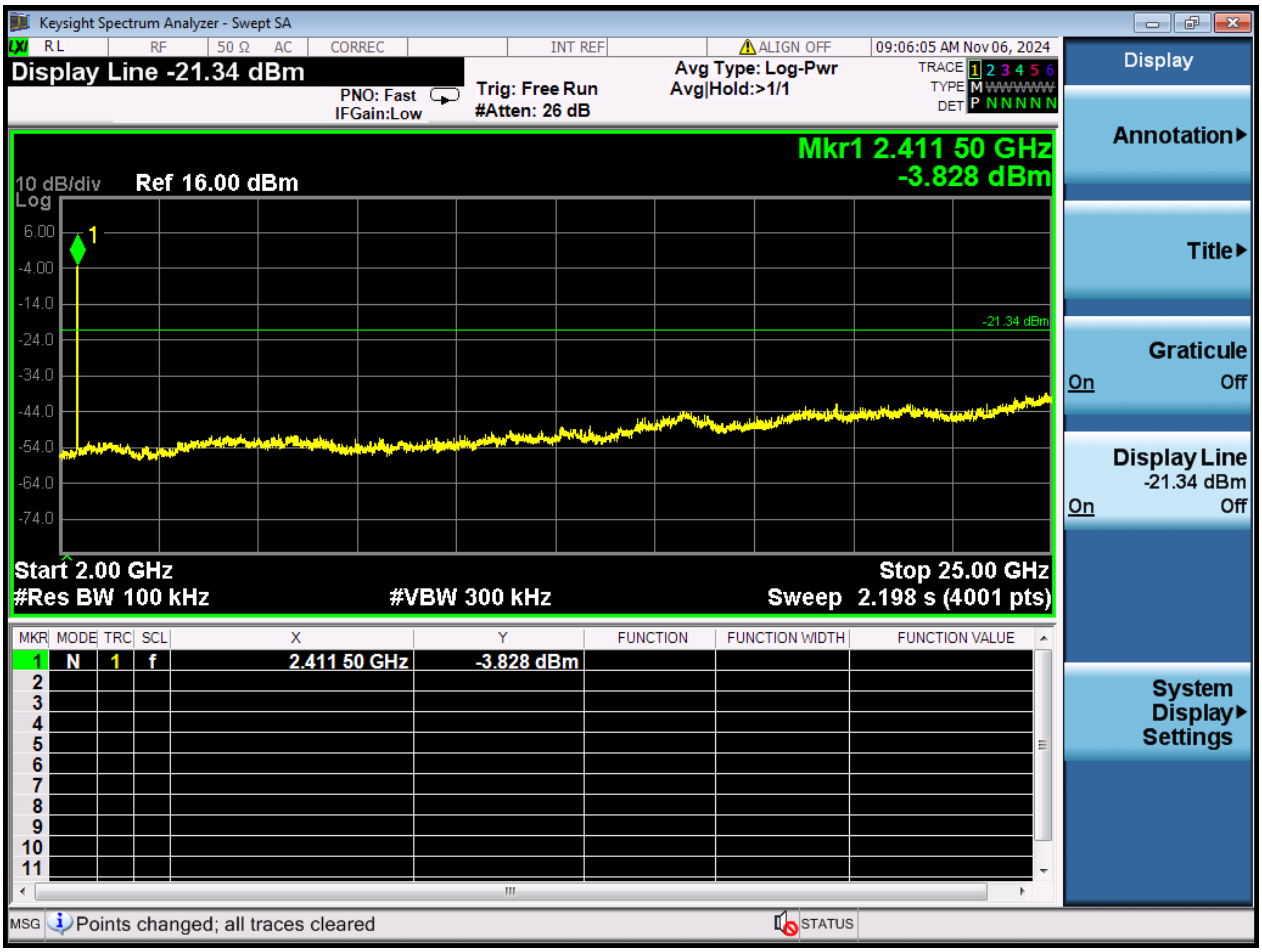
1. 802.11B

1.1. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2411.5	-1.498
2411.5	-3.828

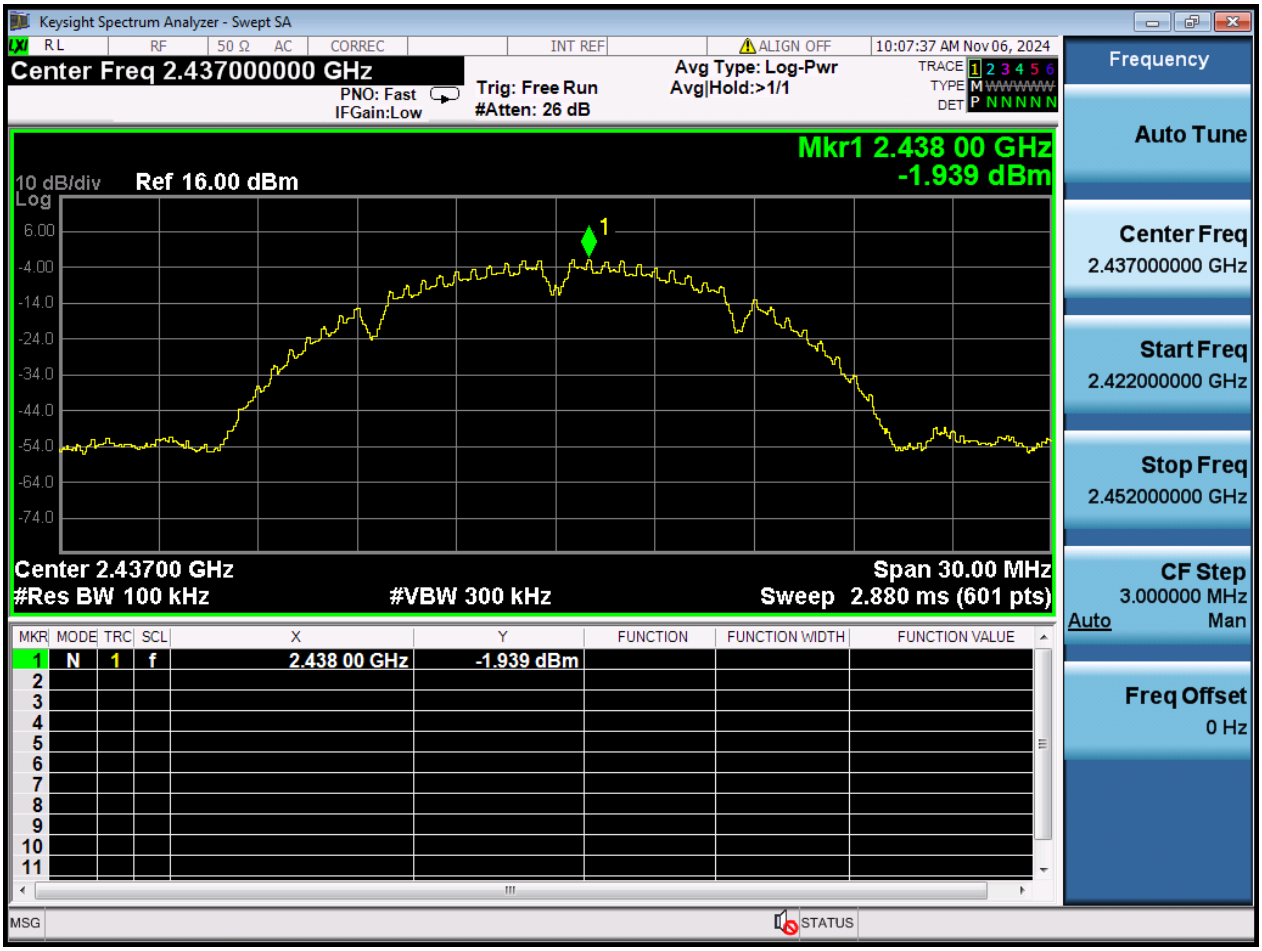


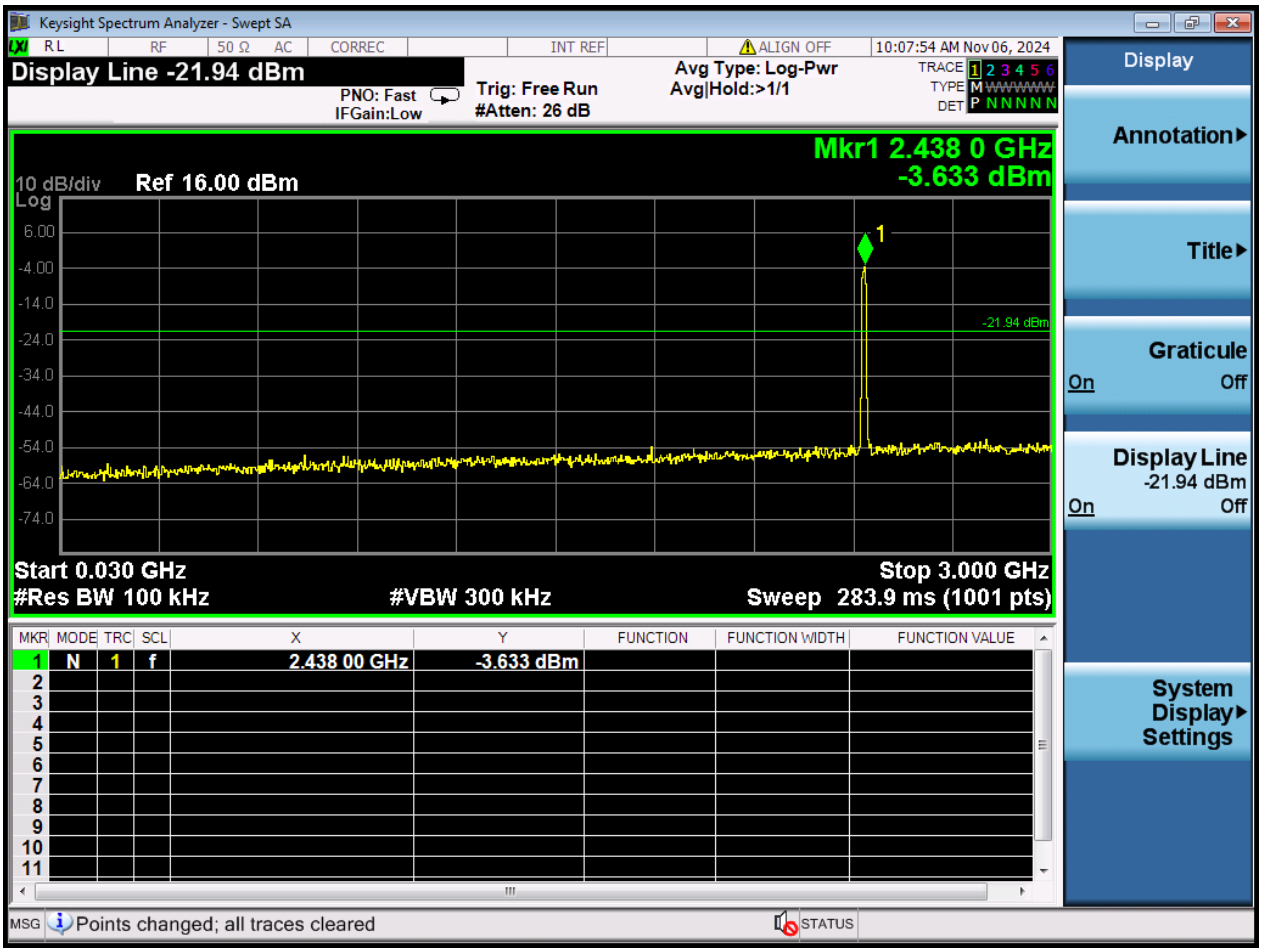

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
09:05:48 AM Nov 06, 2024
Display Line -21.34 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.411 5 GHz
-1.498 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-21.34 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.411 50 GHz -1.498 dBm
MSG
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-21.34 dBm
On Off
System Display Settings

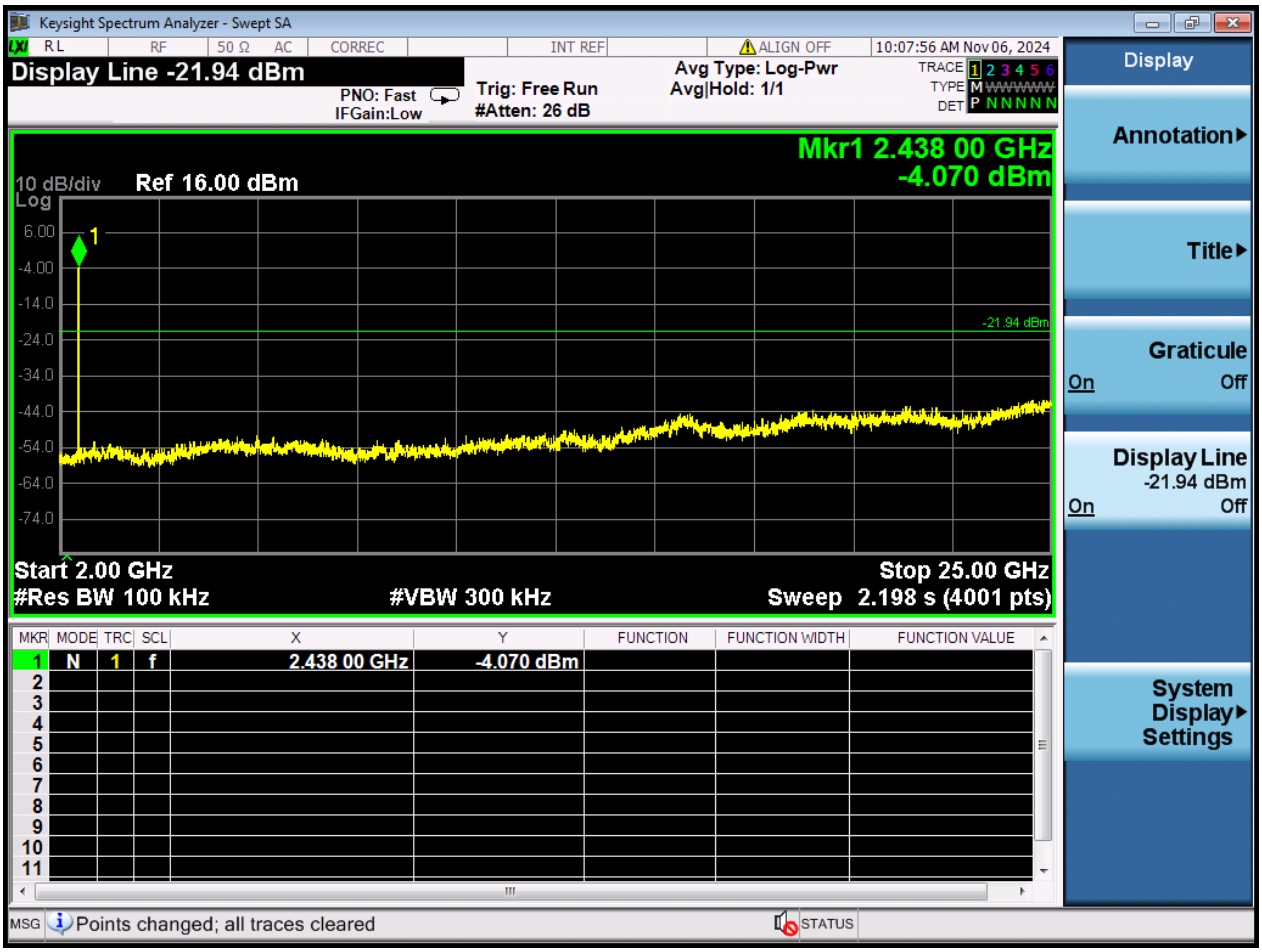

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
09:06:05 AM Nov 06, 2024
Display Line -21.34 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.411 50 GHz
-3.828 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-21.34 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.411 50 GHz -3.828 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-21.34 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

1.2. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2438	-3.633
2438	-4.07

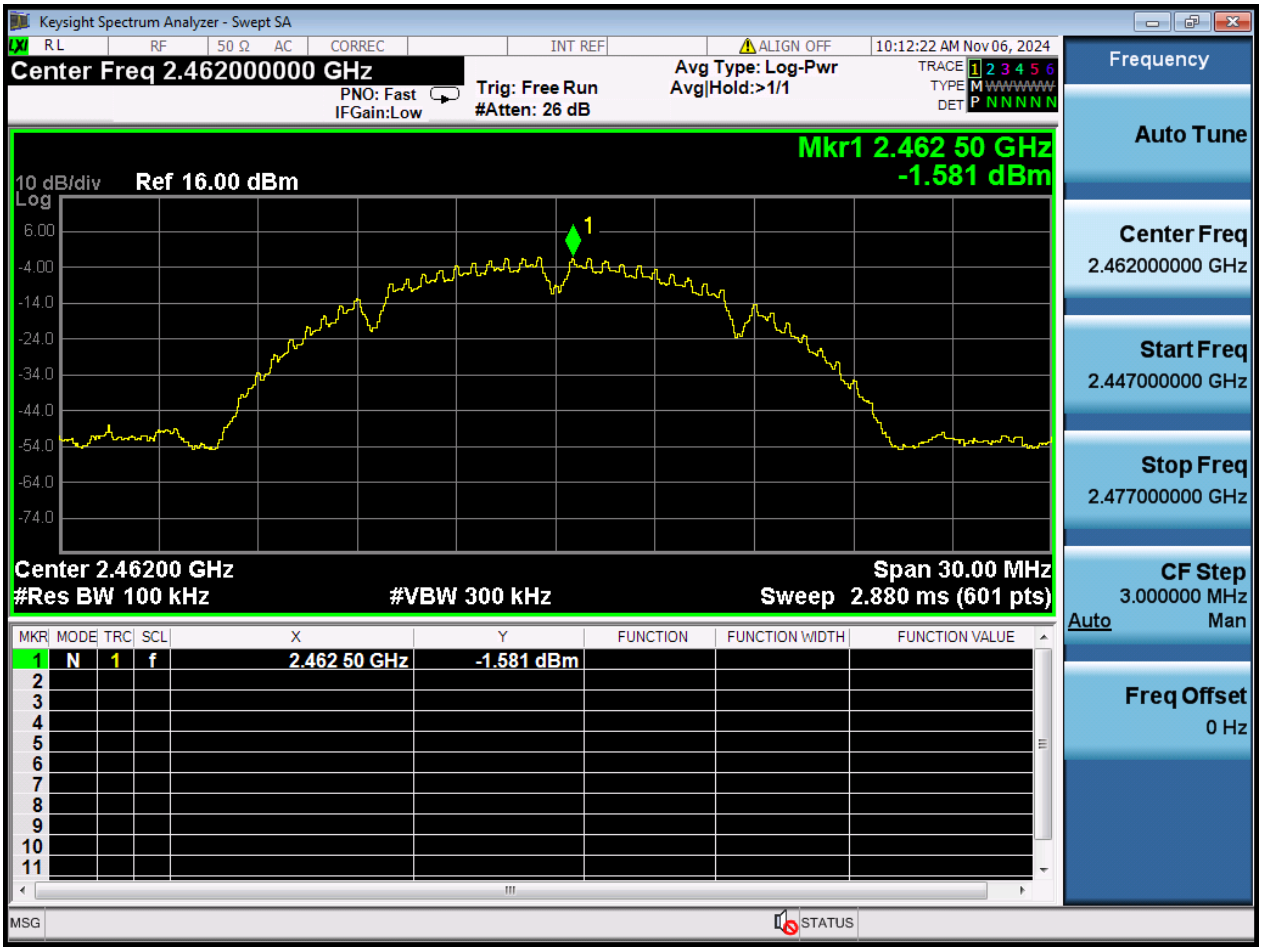


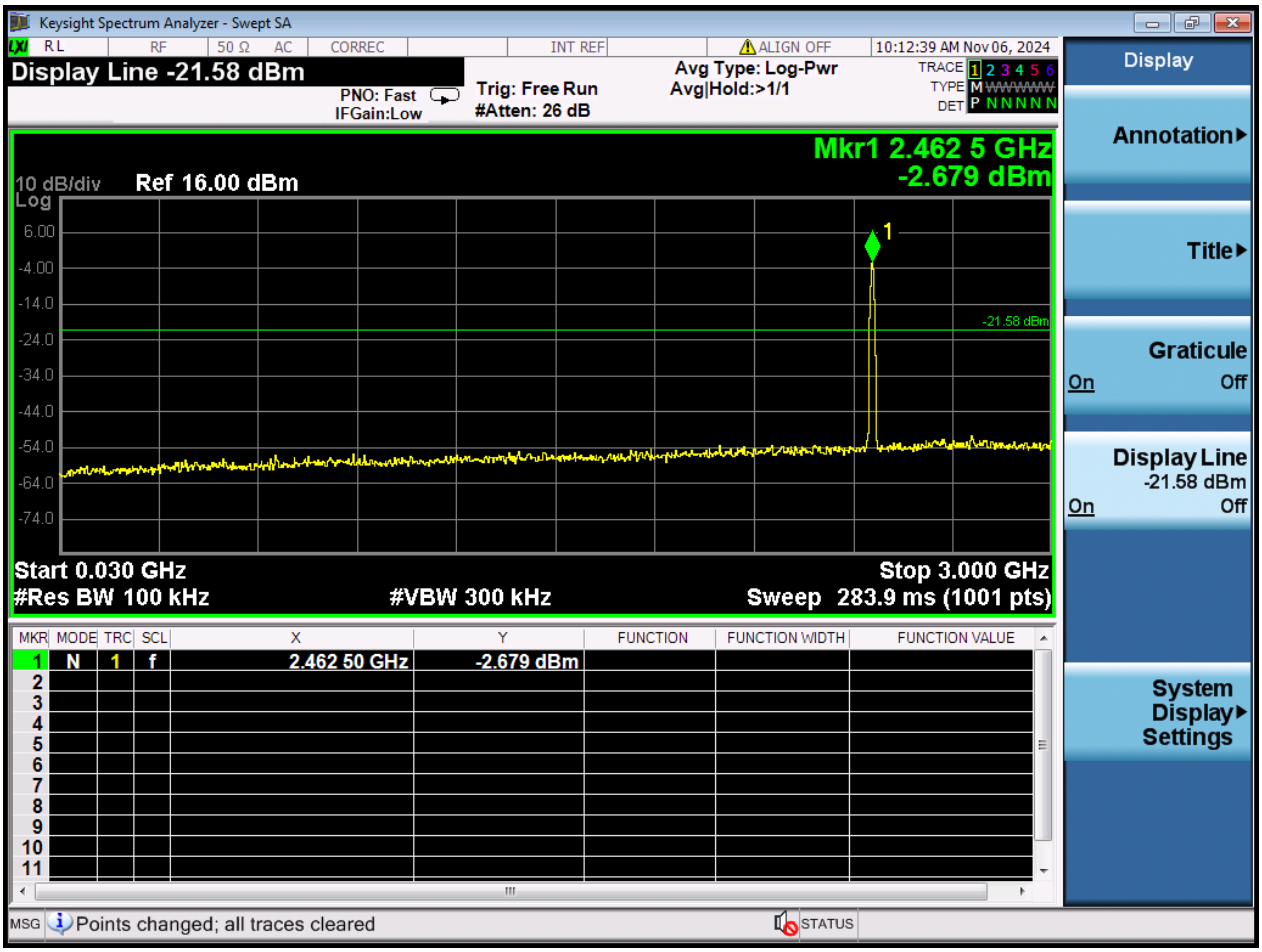

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
10:07:54 AM Nov 06, 2024
Display Line -21.94 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 0 GHz
-3.633 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-21.94 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.438 00 GHz -3.633 dBm
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-21.94 dBm
On Off
System Display Settings

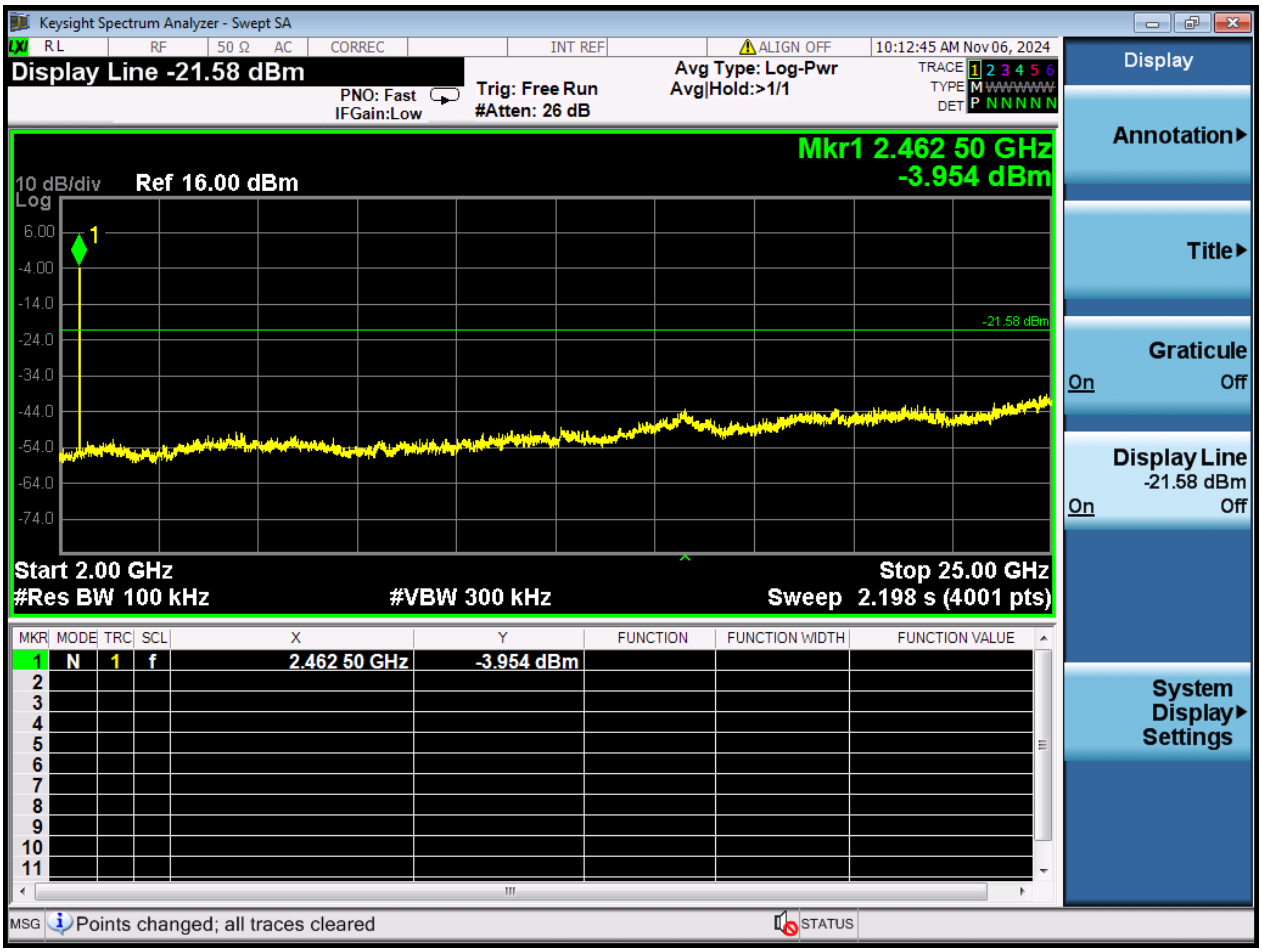

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
10:07:56 AM Nov 06, 2024
Display Line -21.94 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold: 1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 00 GHz
-4.070 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-21.94 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.438 00 GHz -4.070 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-21.94 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

1.3. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2462.5	-2.679
2462.5	-3.954



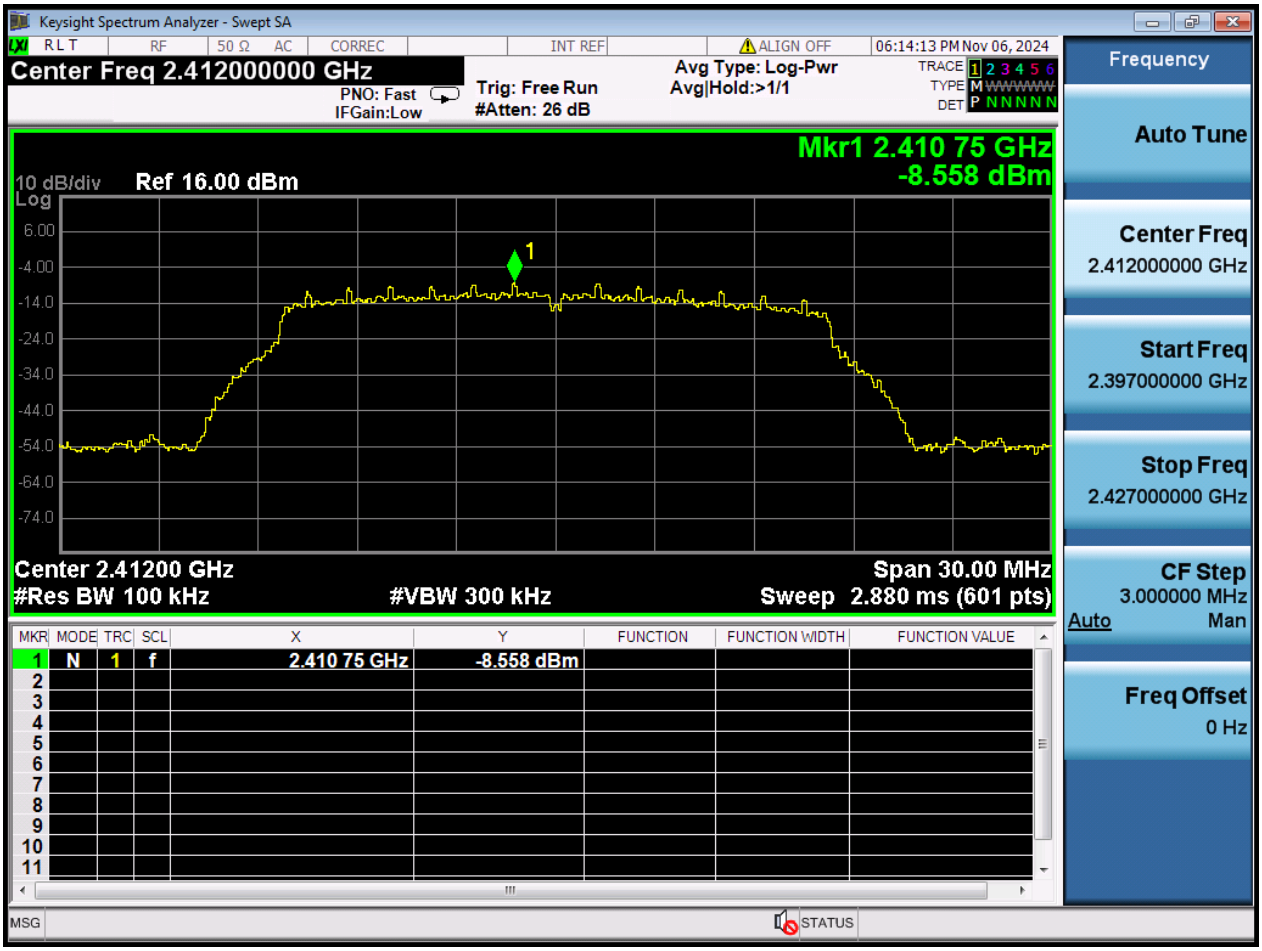

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
10:12:39 AM Nov 06, 2024
Display Line -21.58 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.462 5 GHz
-2.679 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-21.58 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.462 50 GHz -2.679 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-21.58 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

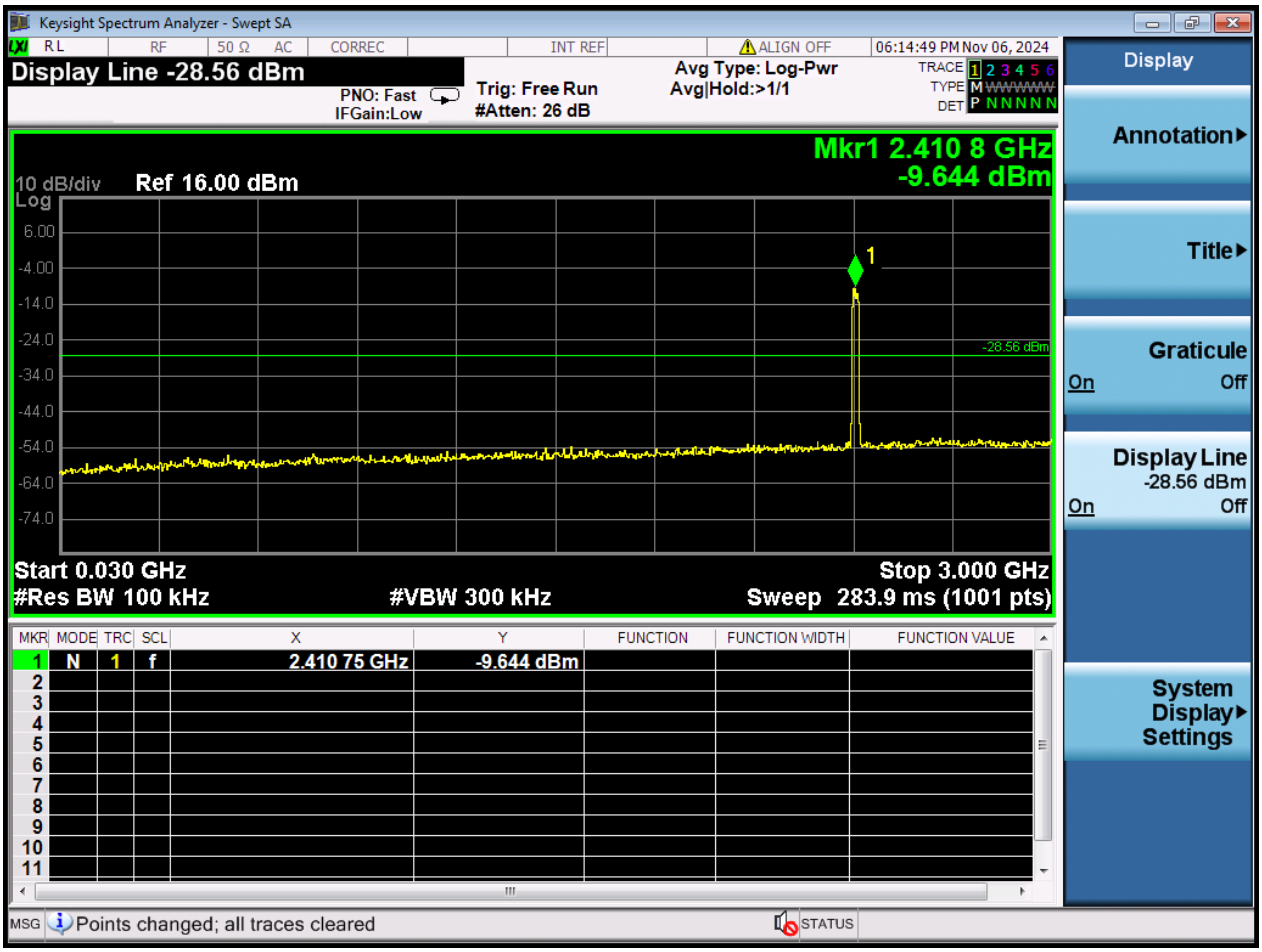

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
10:12:45 AM Nov 06, 2024
Display Line -21.58 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.462 50 GHz
-3.954 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-21.58 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.462 50 GHz -3.954 dBm
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-21.58 dBm
On Off
System Display Settings

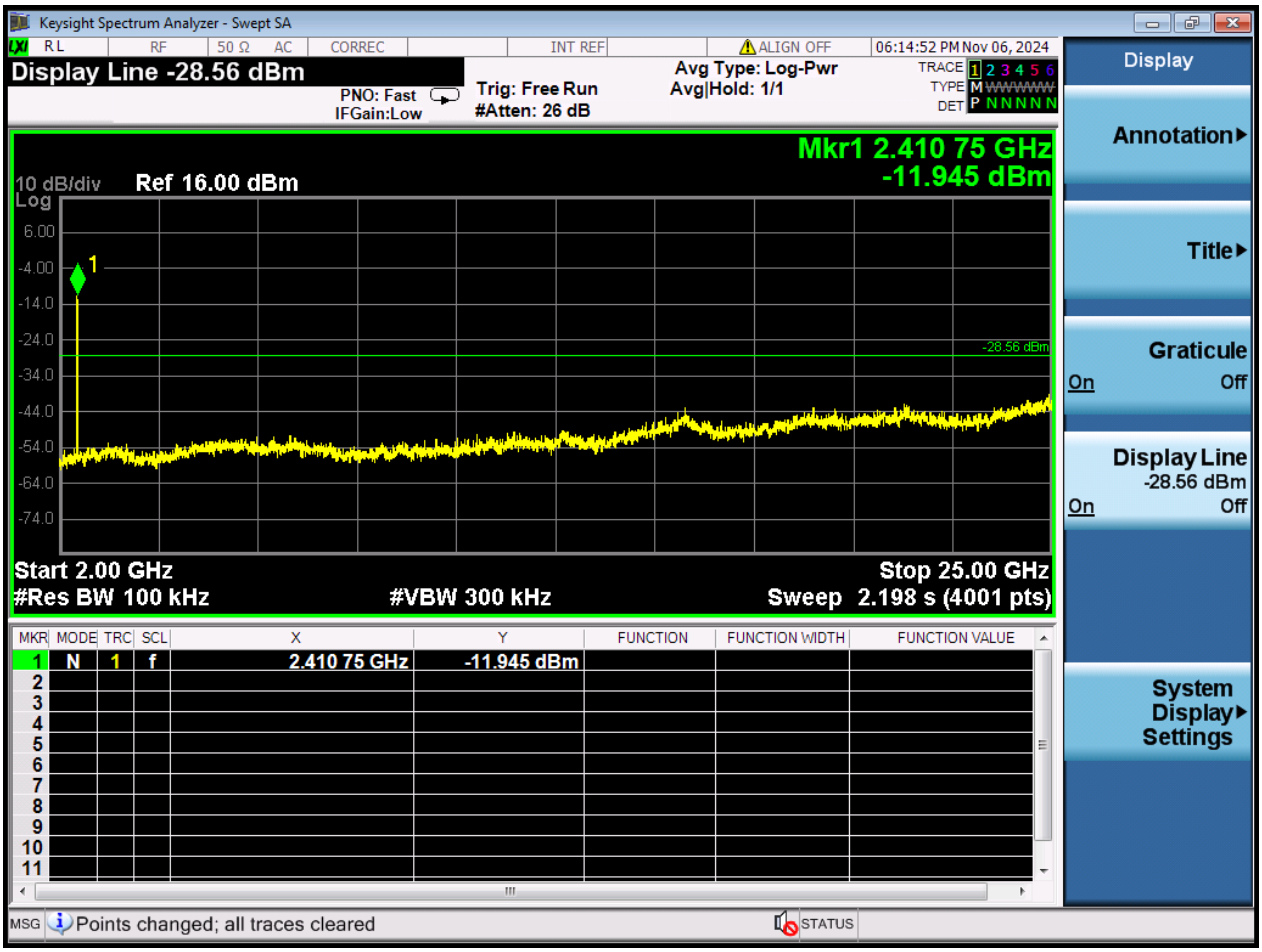
2. 802.11G

2.1. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2410.75	-9.644
2410.75	-11.945

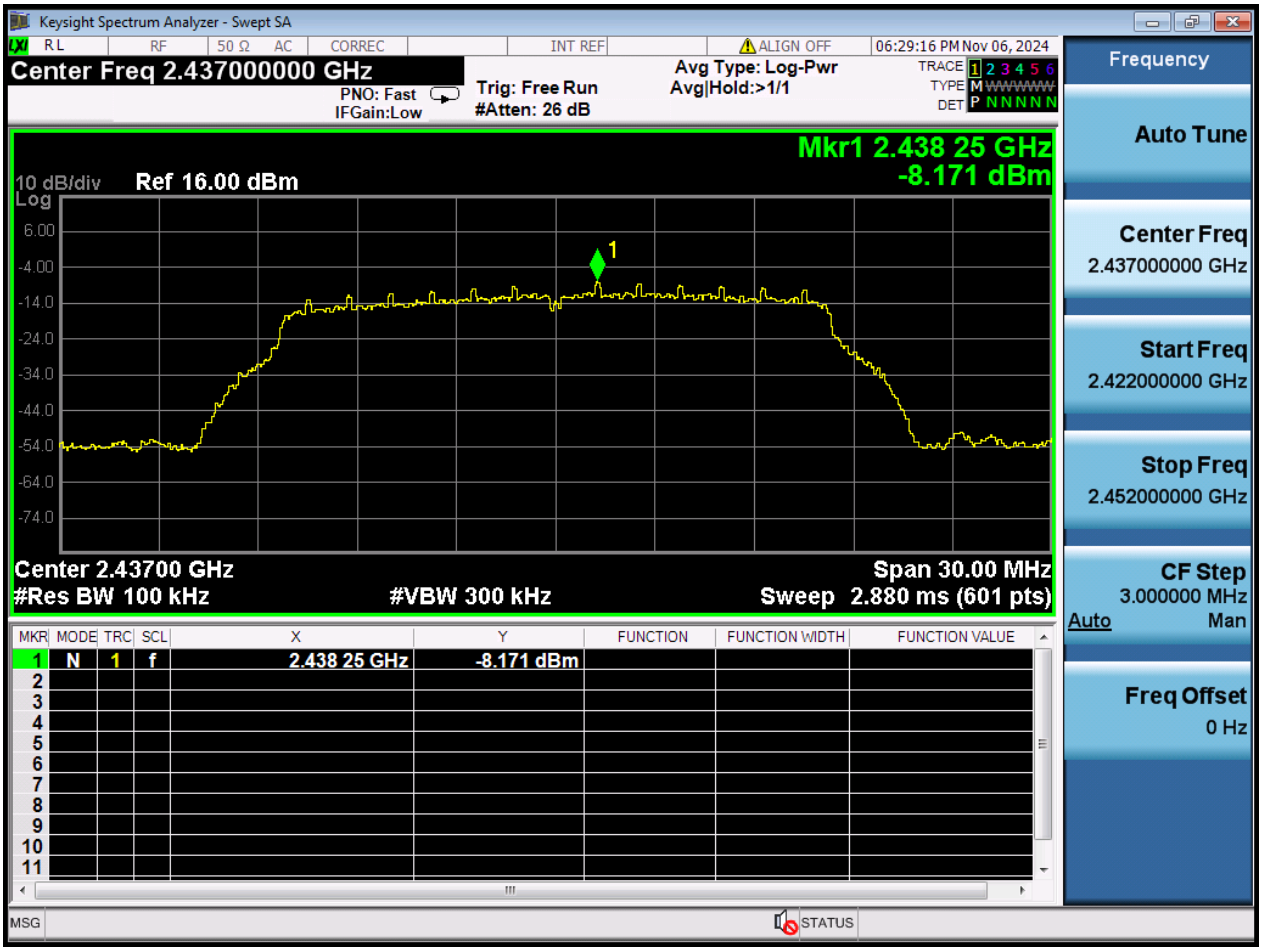


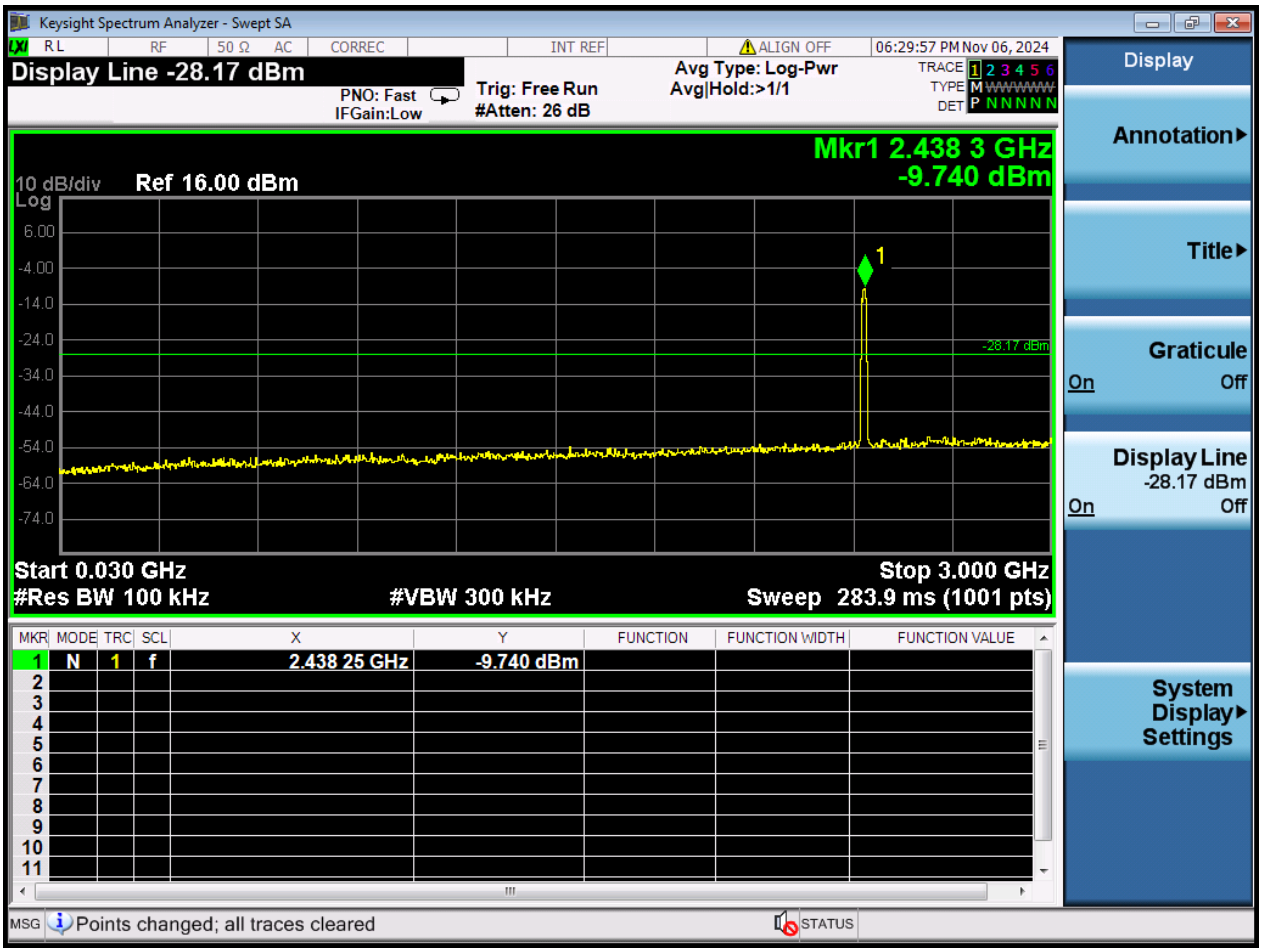

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:14:49 PM Nov 06, 2024
Display Line -28.56 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.410 8 GHz
-9.644 dBm
10 dB/div Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.56 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.410 75 GHz -9.644 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-28.56 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

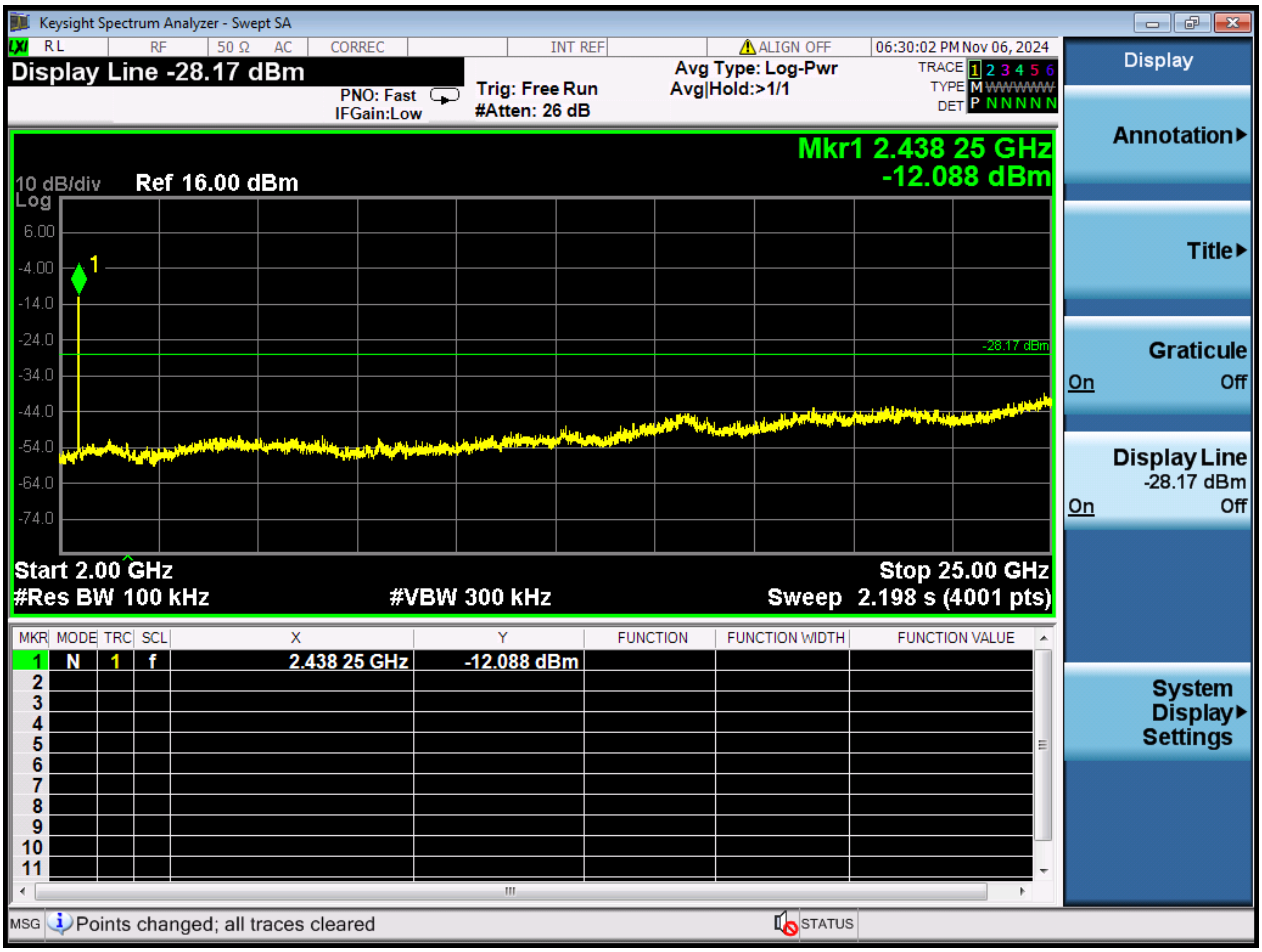

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:14:52 PM Nov 06, 2024
Display Line -28.56 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold: 1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.410 75 GHz
-11.945 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.56 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.410 75 GHz -11.945 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-28.56 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

2.2. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2438.25	-9.74
2438.25	-12.088

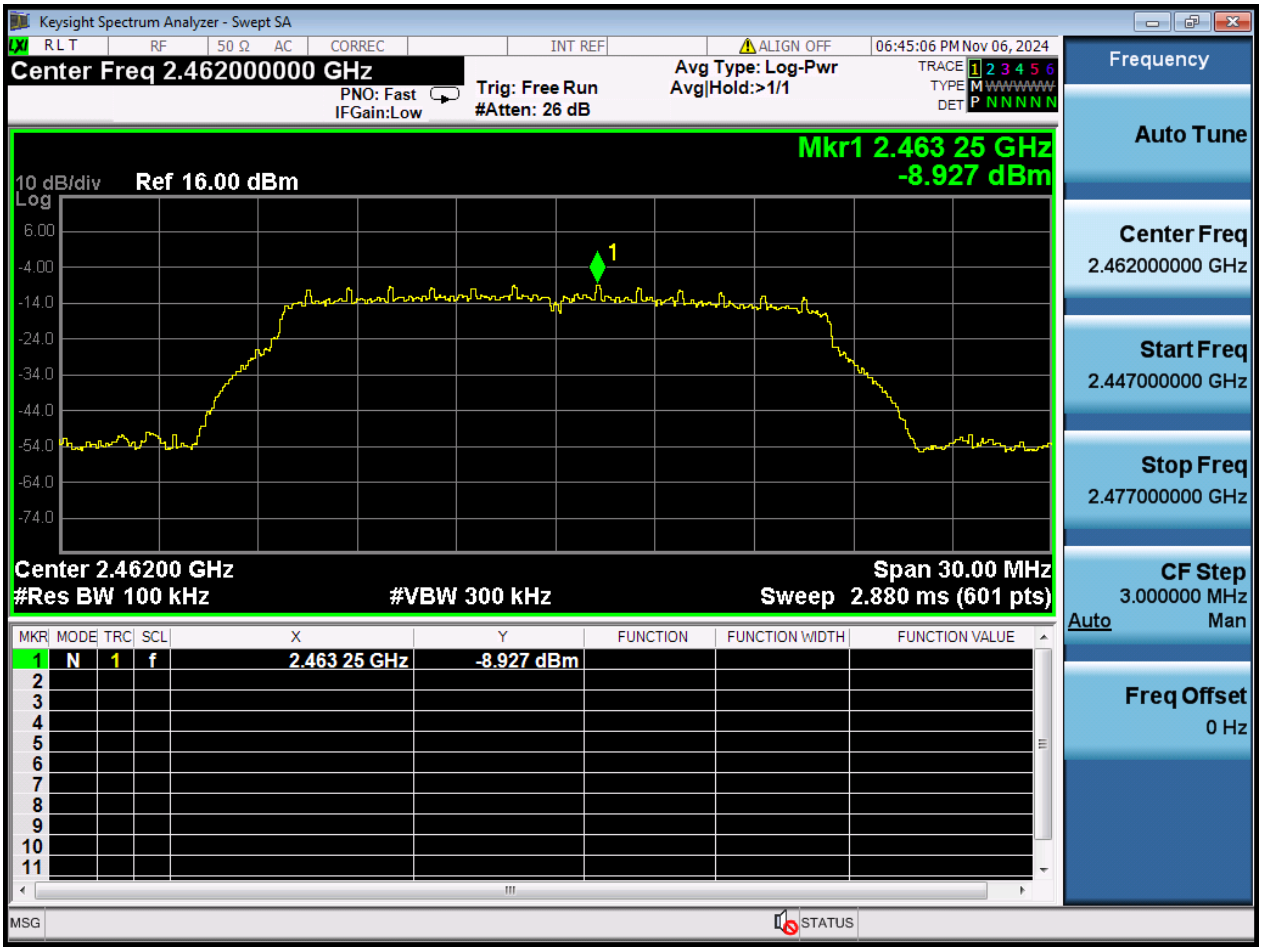


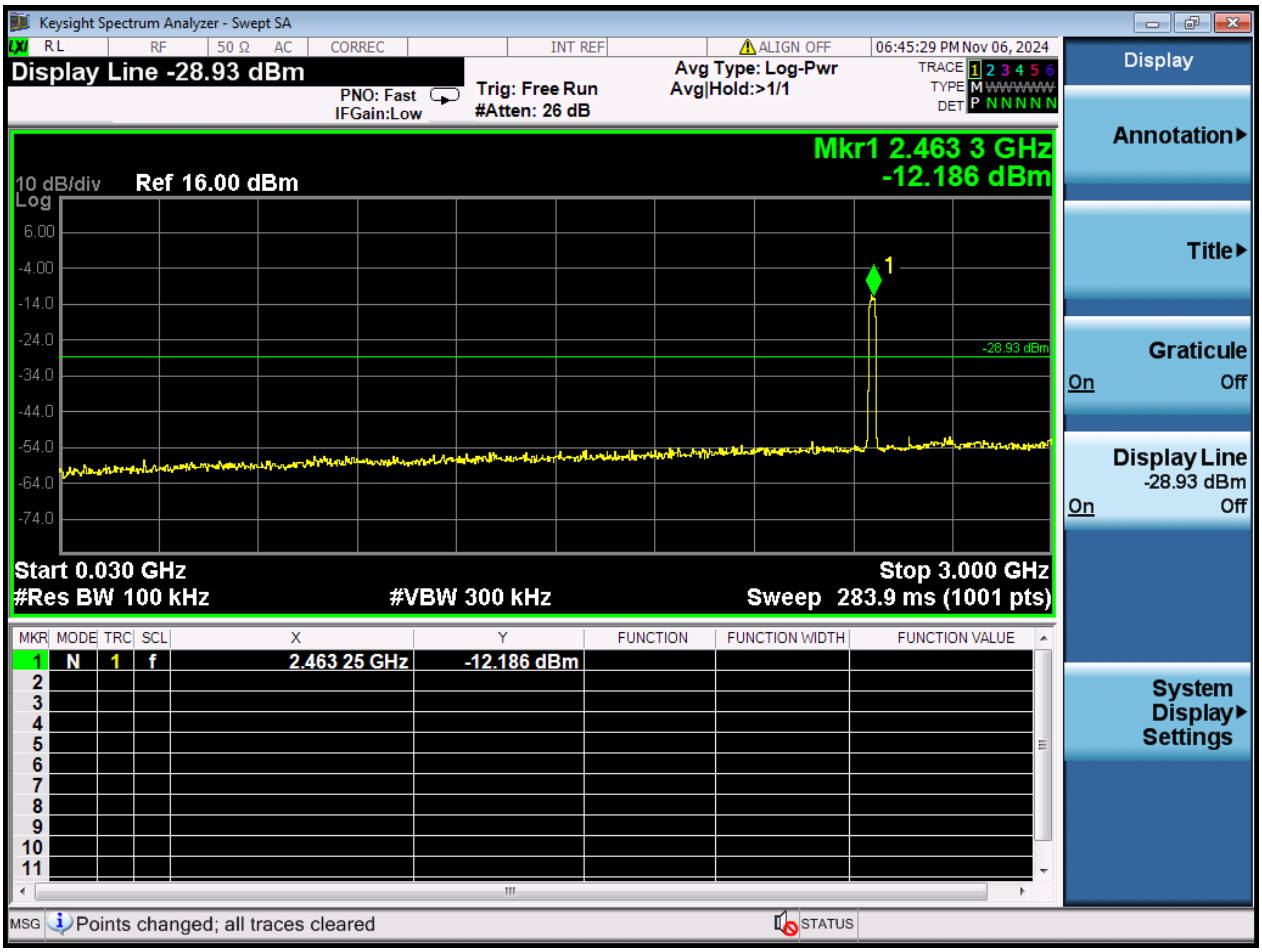

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:29:57 PM Nov 06, 2024
Display Line -28.17 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
Mkr1 2.438 3 GHz
-9.740 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.17 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.438 25 GHz -9.740 dBm
MSG
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-28.17 dBm
On Off
System Display Settings

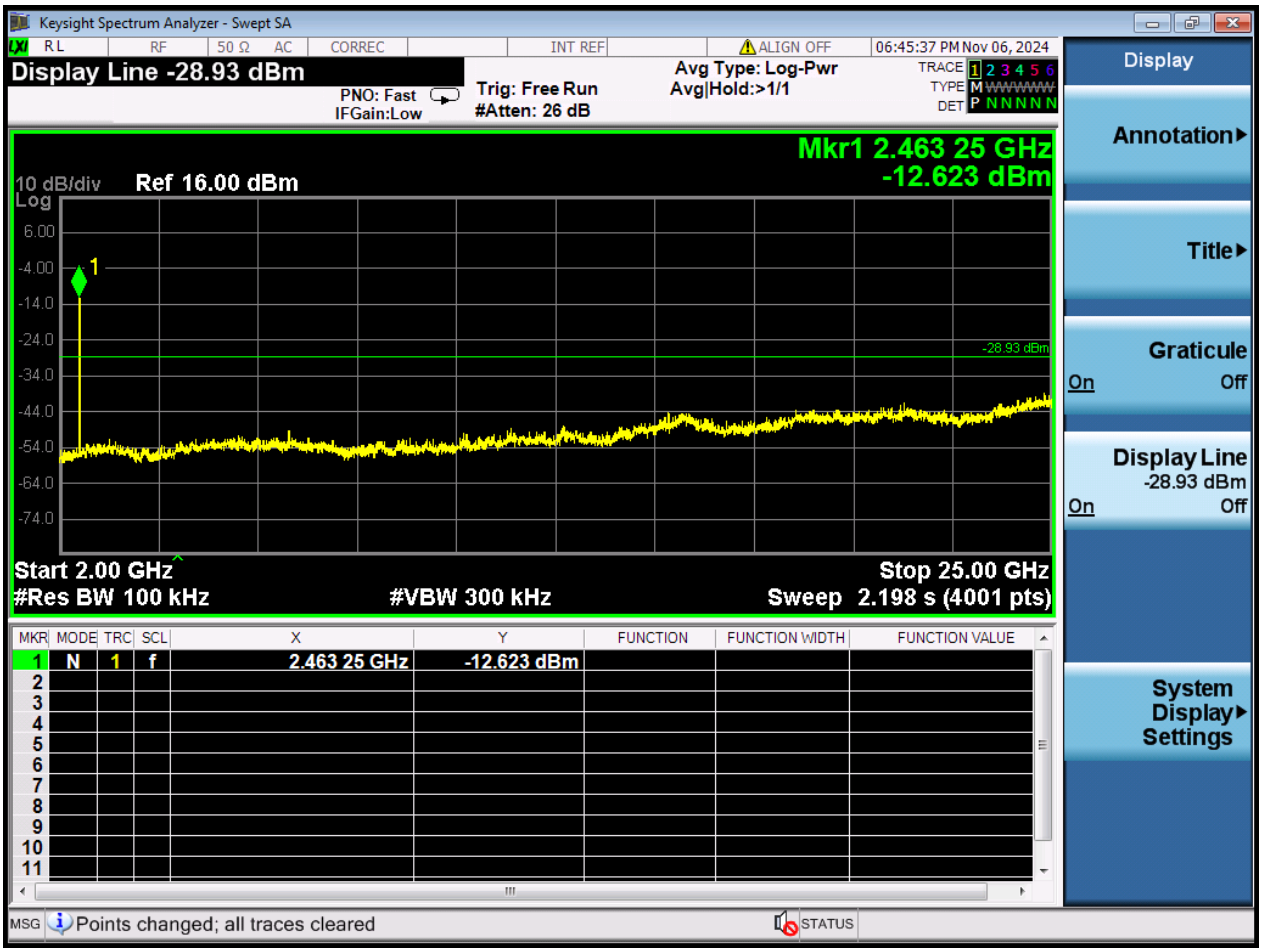

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:30:02 PM Nov 06, 2024
Display Line -28.17 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 25 GHz
-12.088 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.17 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.438 25 GHz -12.088 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-28.17 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

2.3. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2463.25	-12.186
2463.25	-12.623



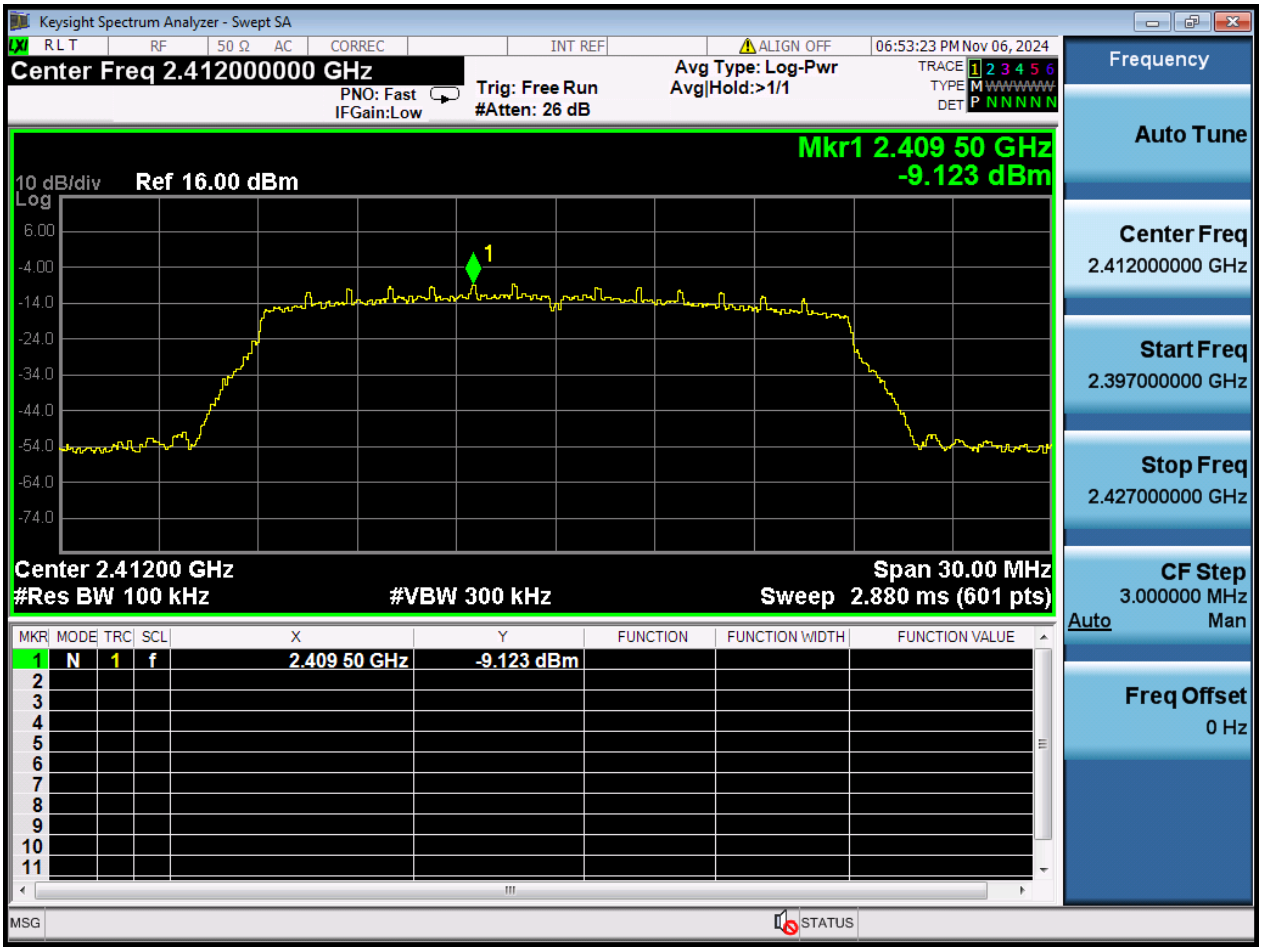

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:45:29 PM Nov 06, 2024
Display Line -28.93 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.463 3 GHz
-12.186 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.93 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.463 25 GHz -12.186 dBm
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-28.93 dBm
On Off
System Display Settings

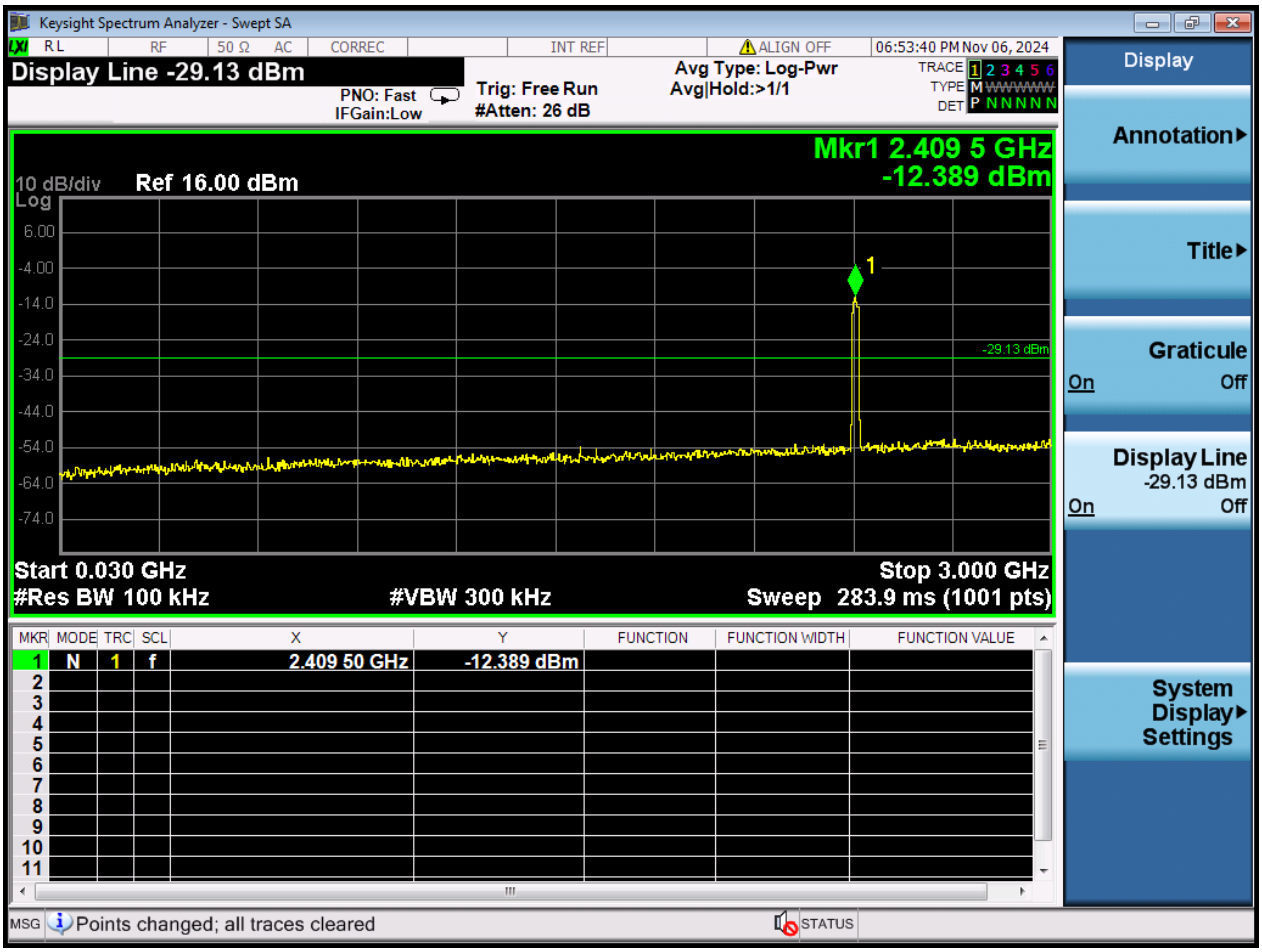

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:45:37 PM Nov 06, 2024
Display Line -28.93 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.463 25 GHz
-12.623 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.93 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.463 25 GHz -12.623 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-28.93 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

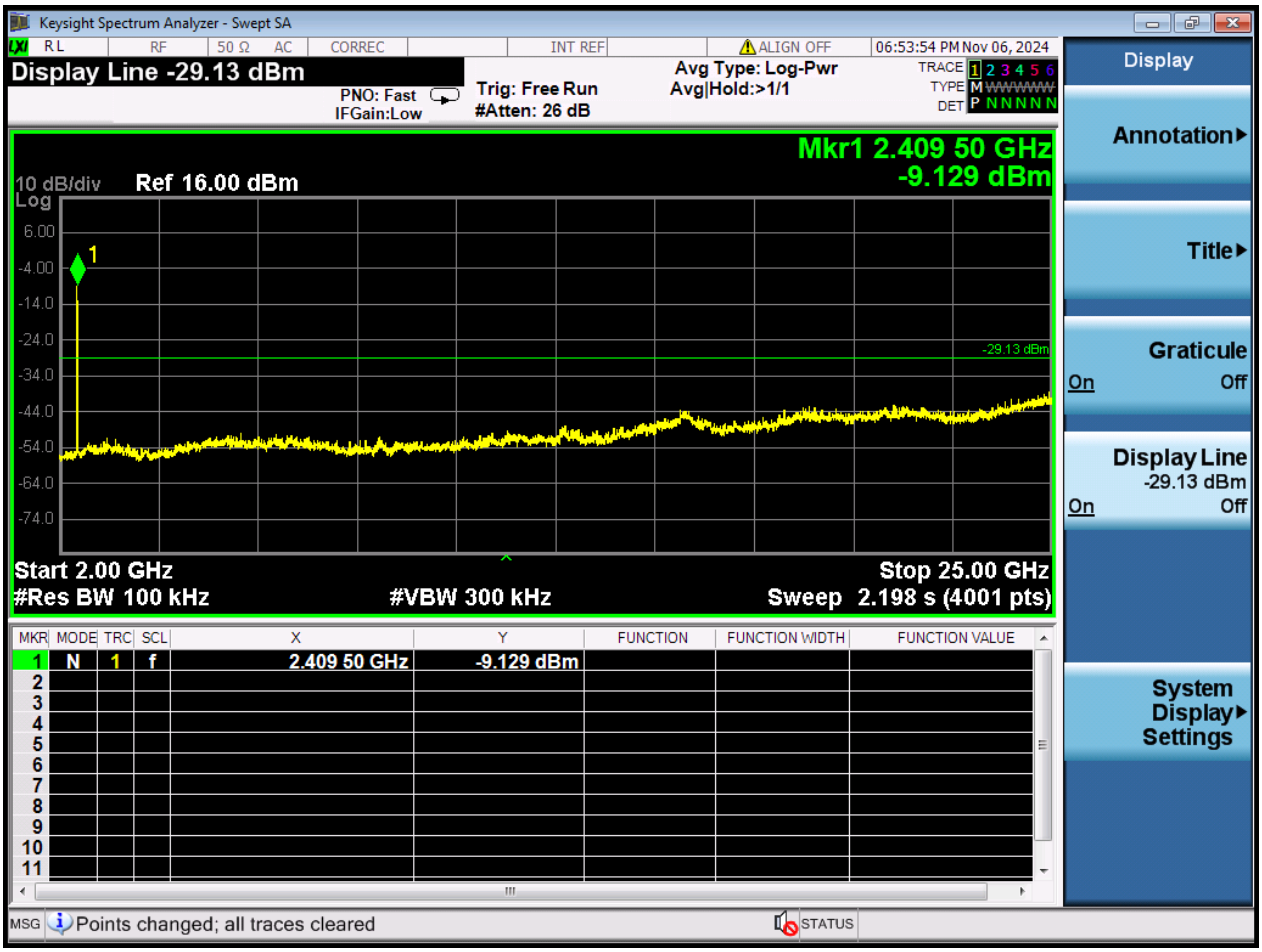
3. 802.11N_BAND2.4G_BW20MHZ

3.1. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2409.5	-12.389
2409.5	-9.129

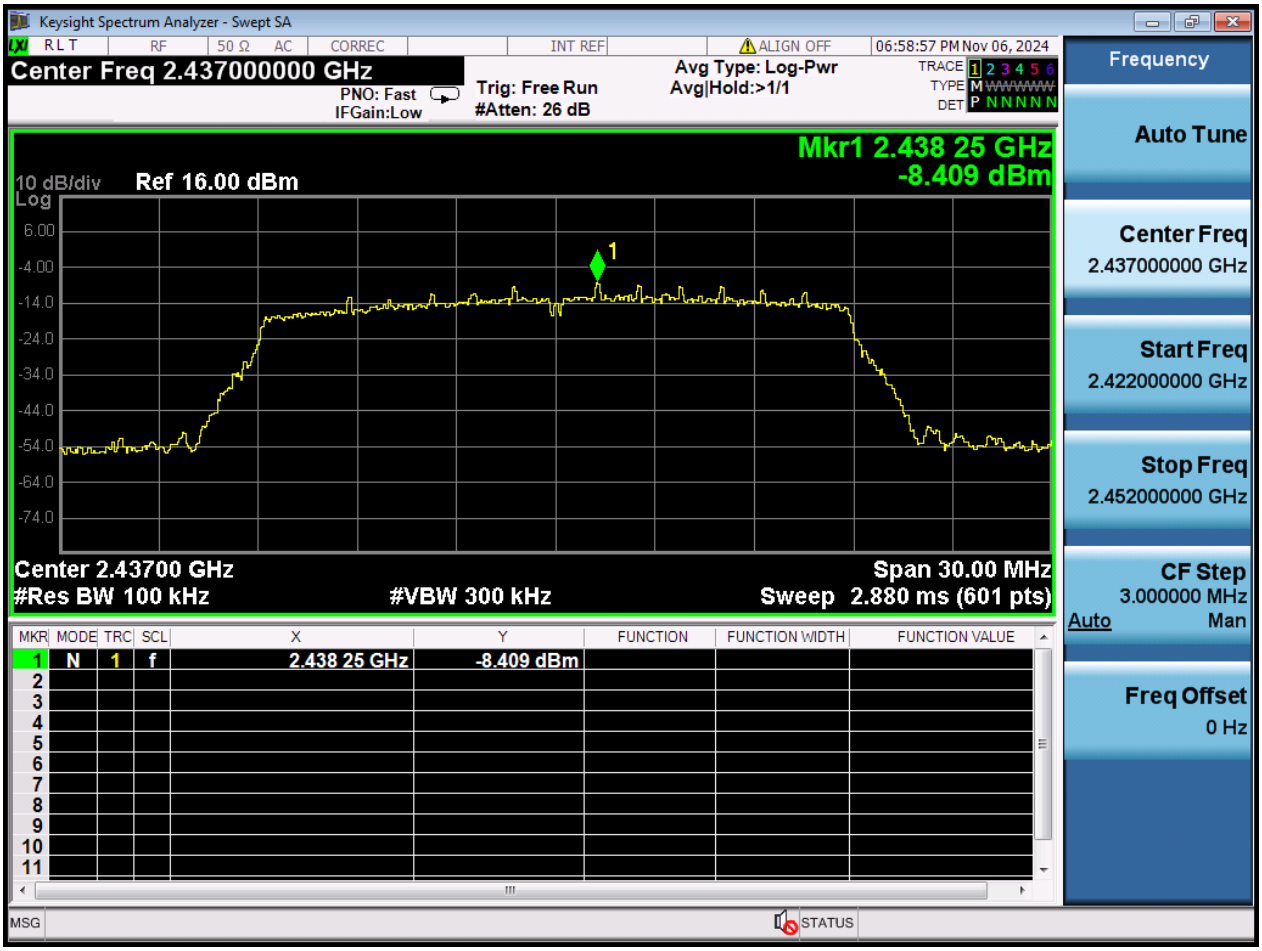


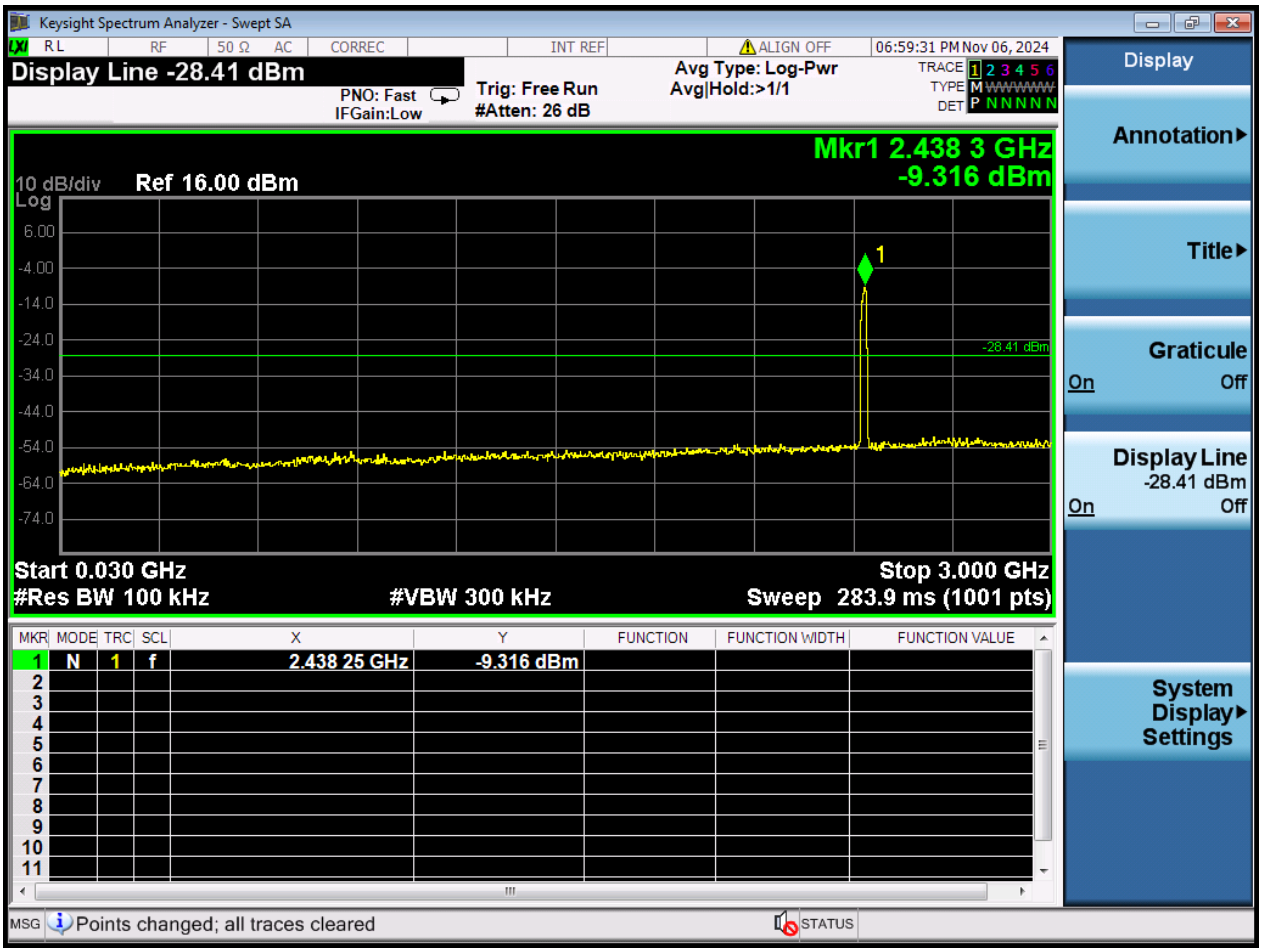

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:53:40 PM Nov 06, 2024
Display Line -29.13 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.409 5 GHz
-12.389 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-29.13 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.409 50 GHz -12.389 dBm
MSG
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-29.13 dBm
On Off
System Display Settings

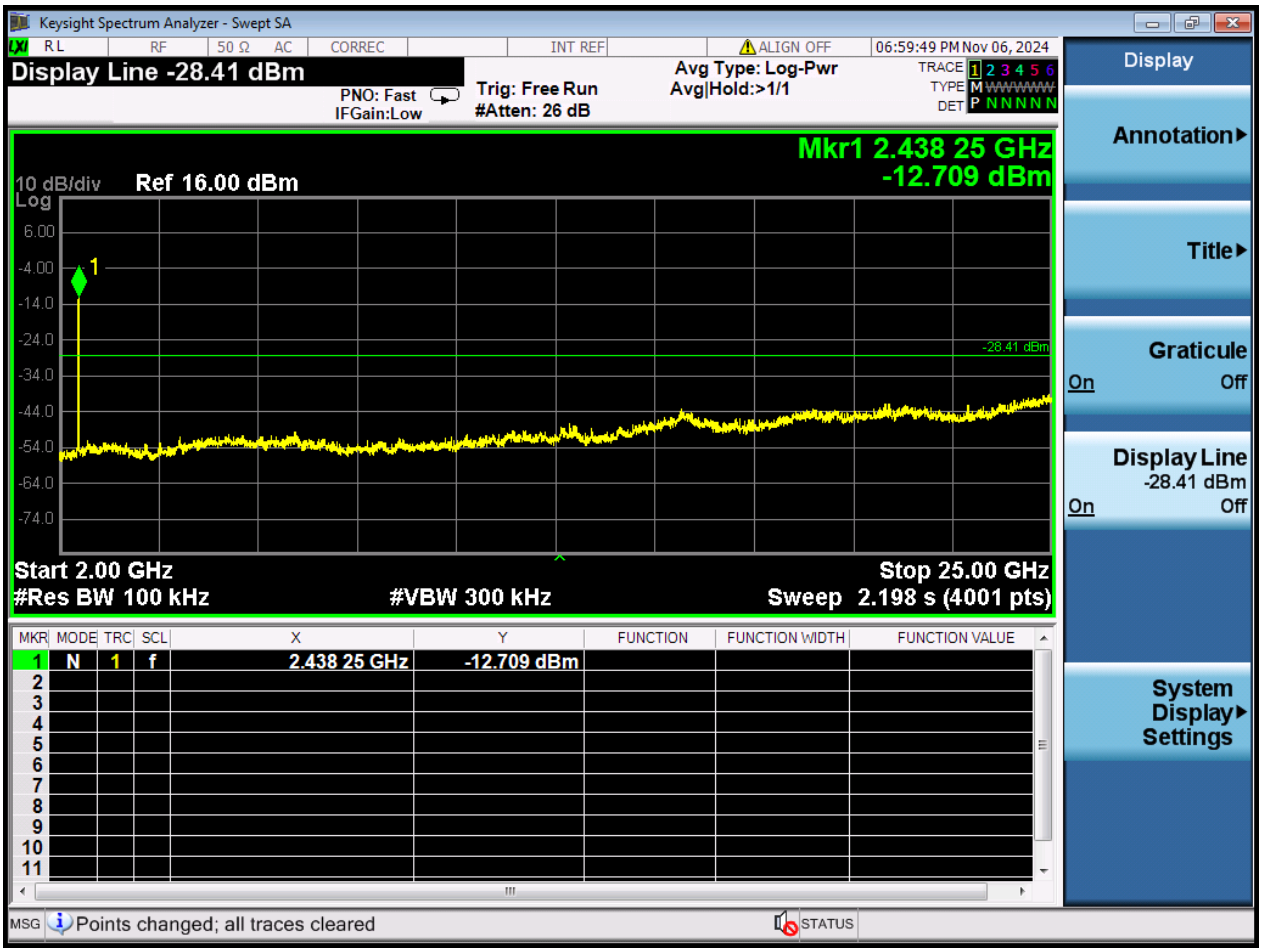

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:53:54 PM Nov 06, 2024
Display Line -29.13 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.409 50 GHz
-9.129 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-29.13 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.409 50 GHz -9.129 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-29.13 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

3.2. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2438.25	-9.316
2438.25	-12.709

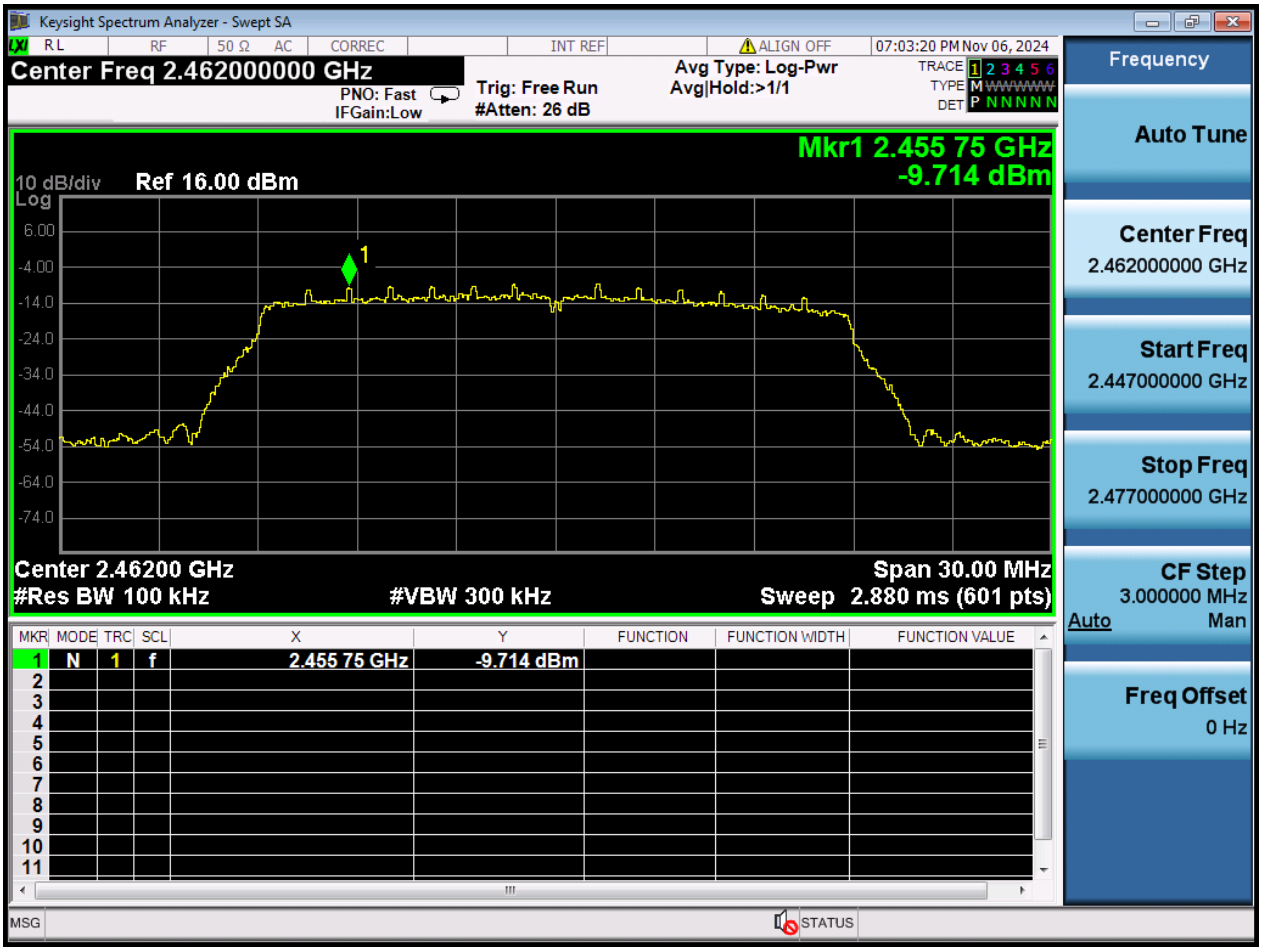


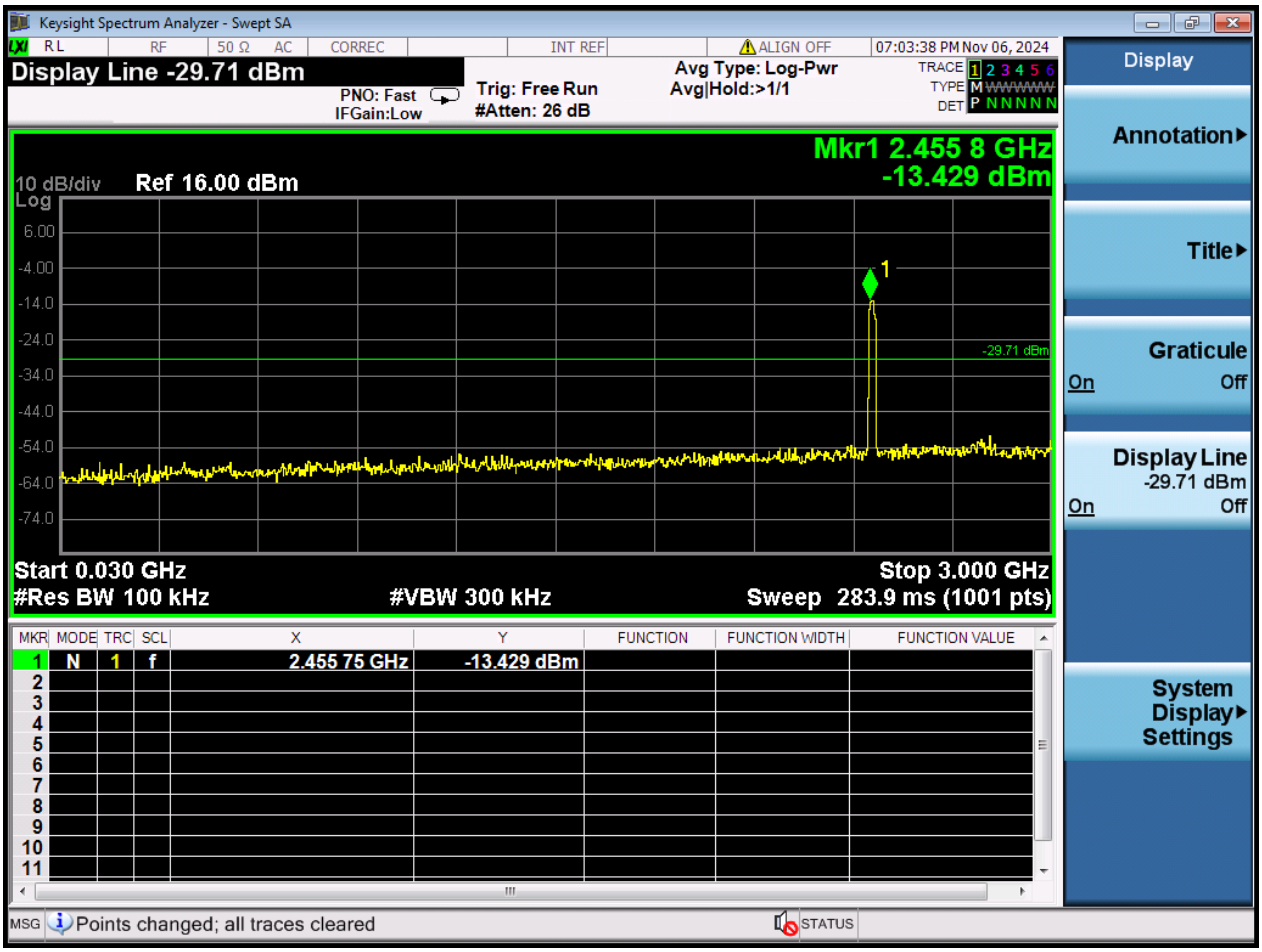

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:59:31 PM Nov 06, 2024
Display Line -28.41 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 3 GHz
-9.316 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.41 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.438 25 GHz -9.316 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-28.41 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

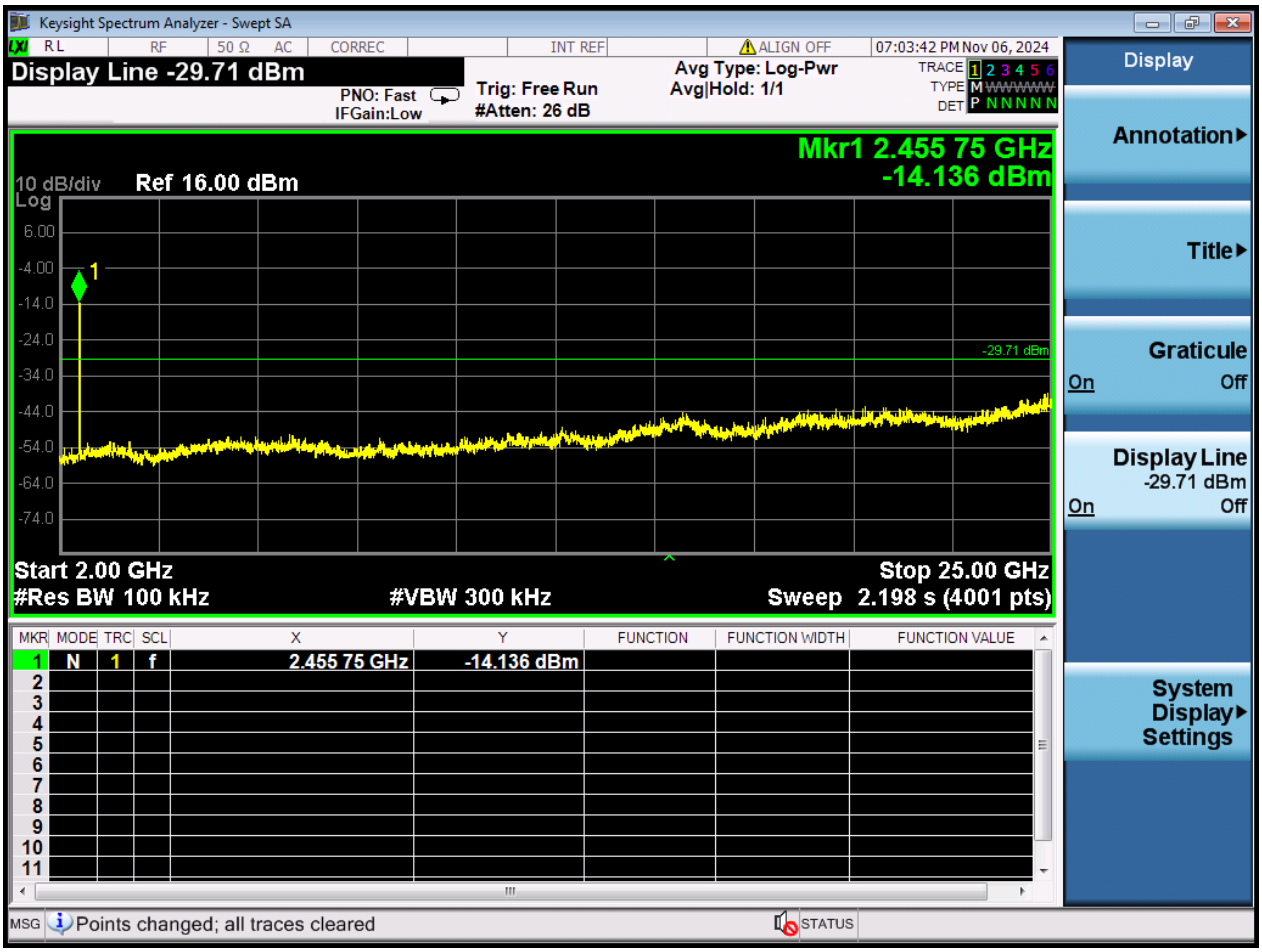

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
06:59:49 PM Nov 06, 2024
Display Line -28.41 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.438 25 GHz
-12.709 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-28.41 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.438 25 GHz -12.709 dBm
Points changed; all traces cleared
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-28.41 dBm
On Off
System Display Settings

3.3. A.3-CONDUCTED SPURIOUS EMISSIONS(NTNV)

Frequency(MHz)	Level(dBm)
2455.75	-13.429
2455.75	-14.136




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
07:03:38 PM Nov 06, 2024
Display Line -29.71 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.455 8 GHz
-13.429 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-29.71 dBm
Start 0.030 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3.000 GHz
Sweep 283.9 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.455 75 GHz -13.429 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-29.71 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

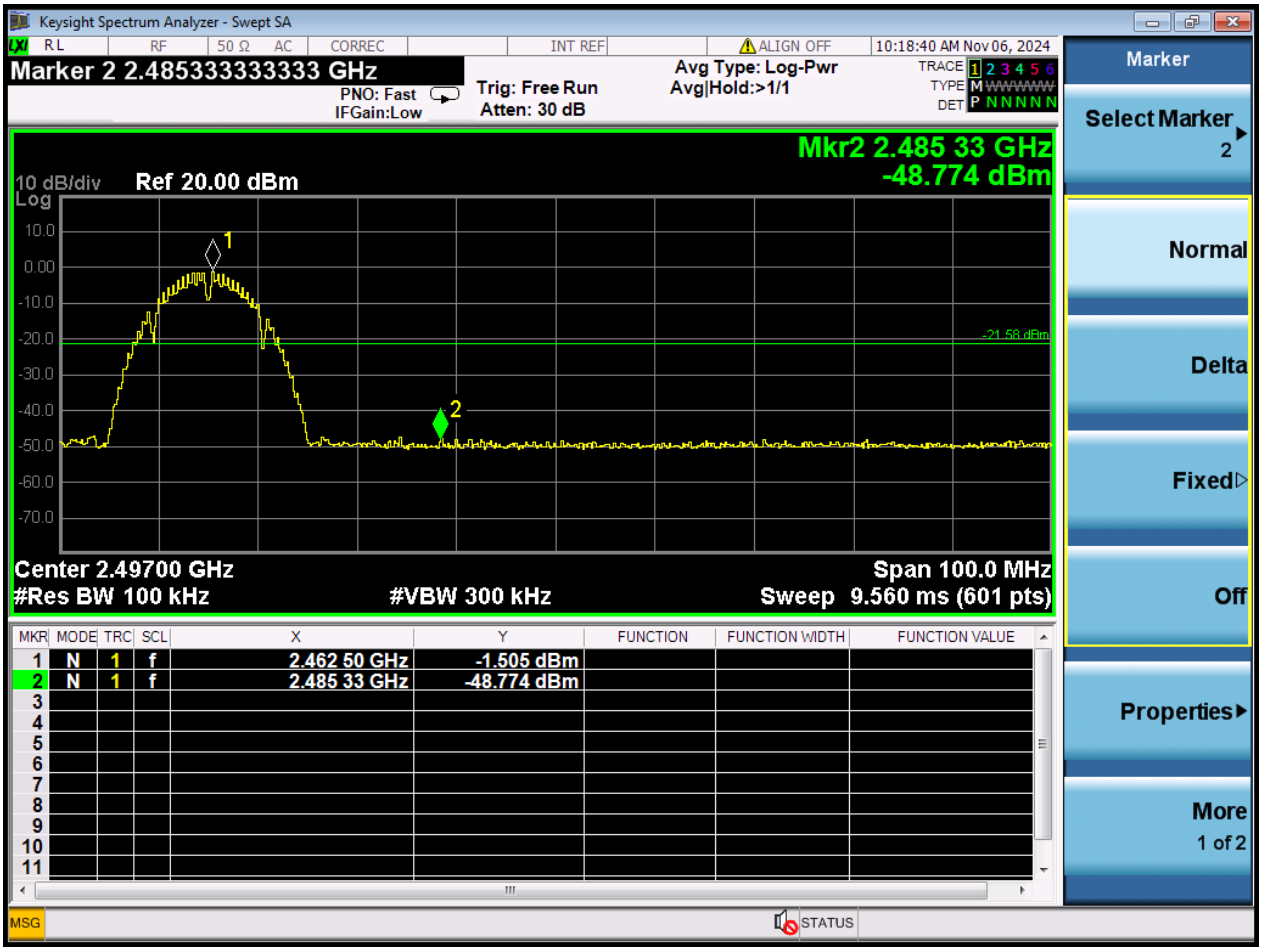

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
CORREC
INT REF
ALIGN OFF
07:03:42 PM Nov 06, 2024
Display Line -29.71 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold: 1/1
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.455 75 GHz
-14.136 dBm
10 dB/div
Ref 16.00 dBm
Log
6.00
-4.00
-14.0
-24.0
-34.0
-44.0
-54.0
-64.0
-74.0
-29.71 dBm
Start 2.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.198 s (4001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.455 75 GHz -14.136 dBm
Display
Annotation
Title
Graticule
On Off
Display Line
-29.71 dBm
On Off
System Display Settings
MSG
Points changed; all traces cleared
STATUS

ANNEX A. BANDEDGE(H)--CSE

1. 802.11B

1.1. A.6-BANDEDGE(H)--CSE(NTNV)

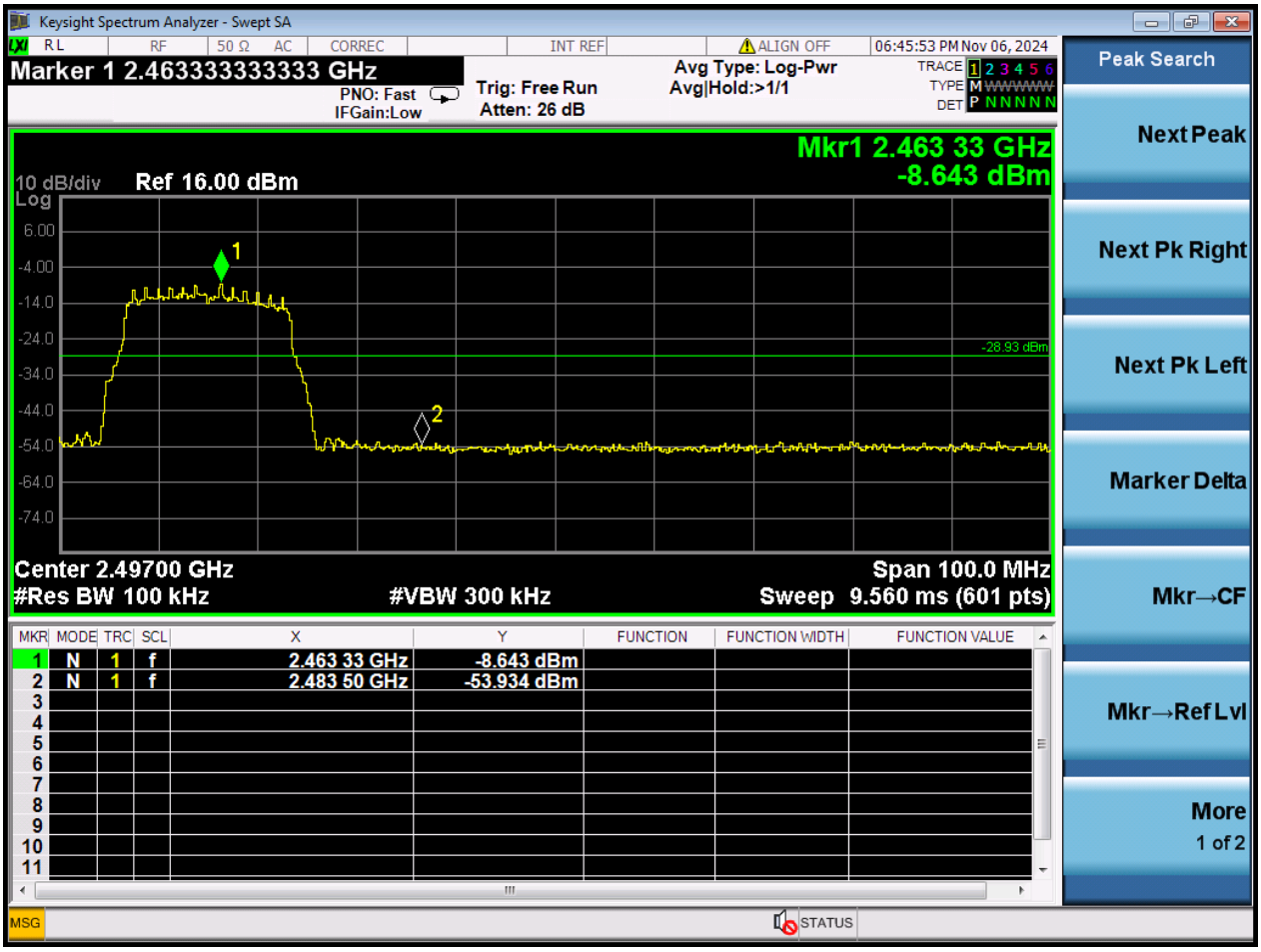
Frequency(MHz)	Level(dBm)



2. 802.11G

2.1. A.6-BANDEDGE(H)--CSE(NTNV)

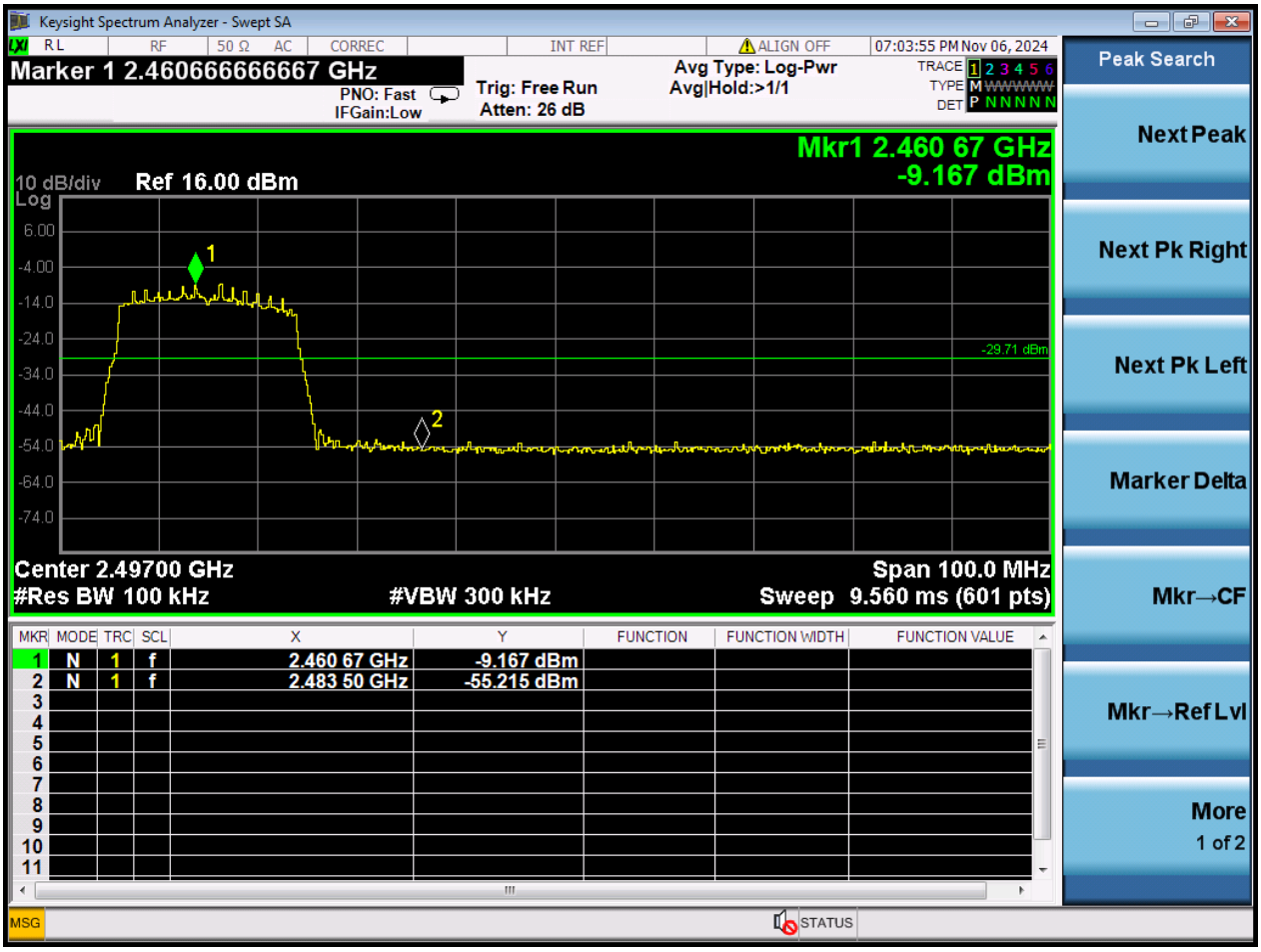
Frequency(MHz)	Level(dBm)



3. 802.11N_BAND2.4G_BW20MHZ

3.1. A.6-BANDEDGE(H)--CSE(NTNV)

Frequency(MHz)	Level(dBm)

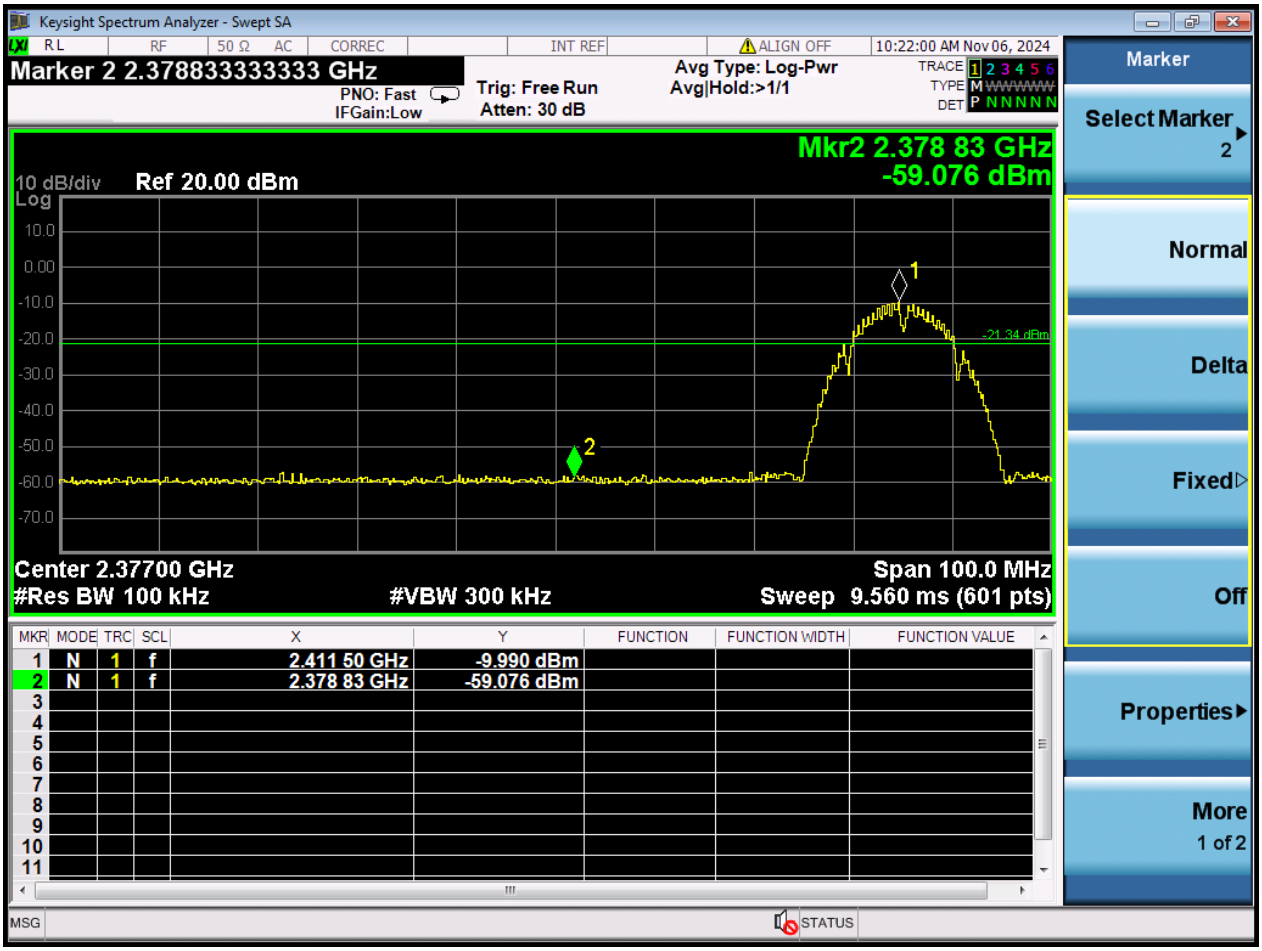


ANNEX A. BANDEDGE(L)--CSE

1. 802.11B

1.1. A.6-BANDEDGE(L)--CSE(NTNV)

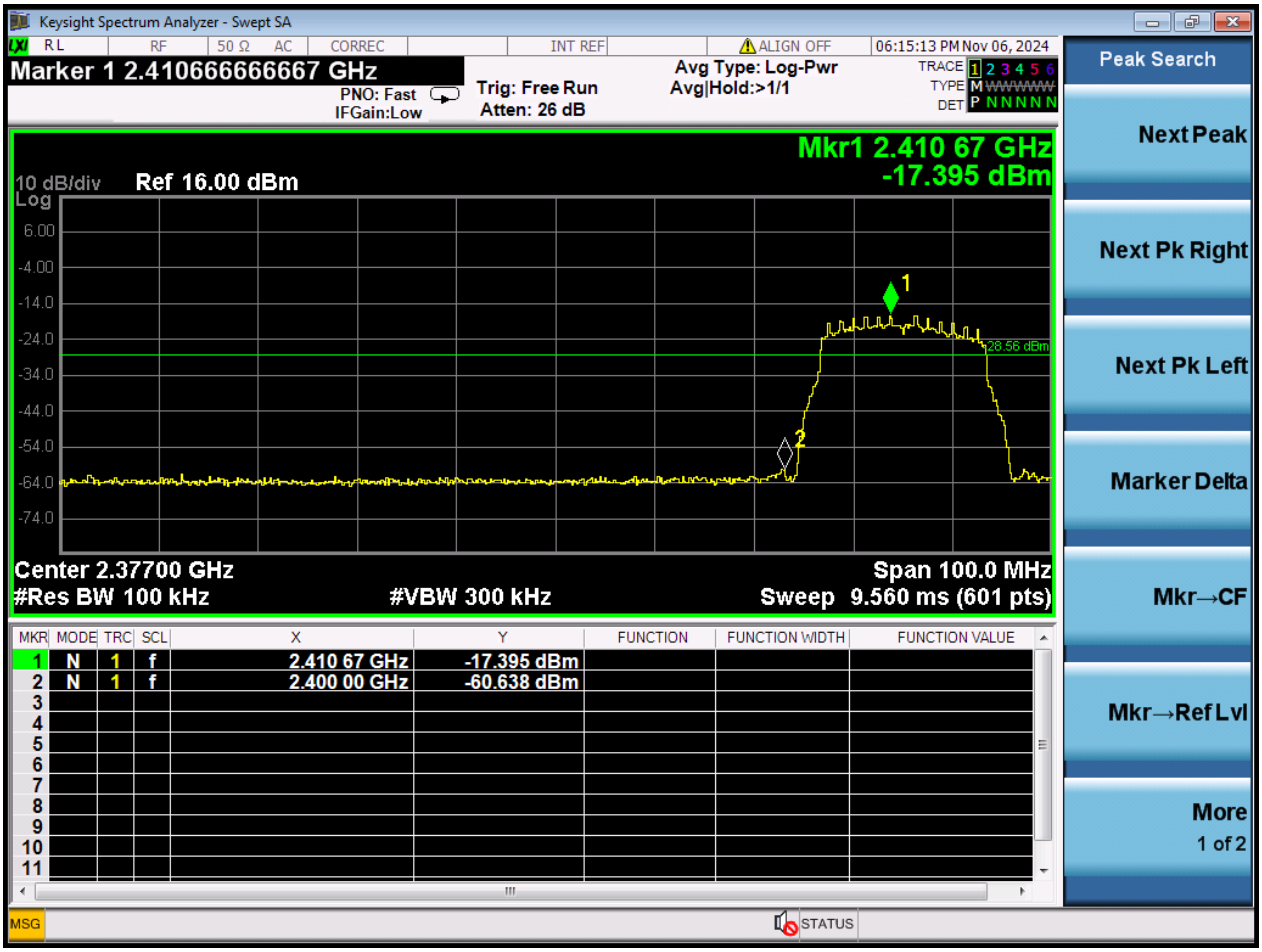
Frequency(MHz)	Level(dBm)



2. 802.11G

2.1. A.6-BANDEDGE(L)--CSE(NTNV)

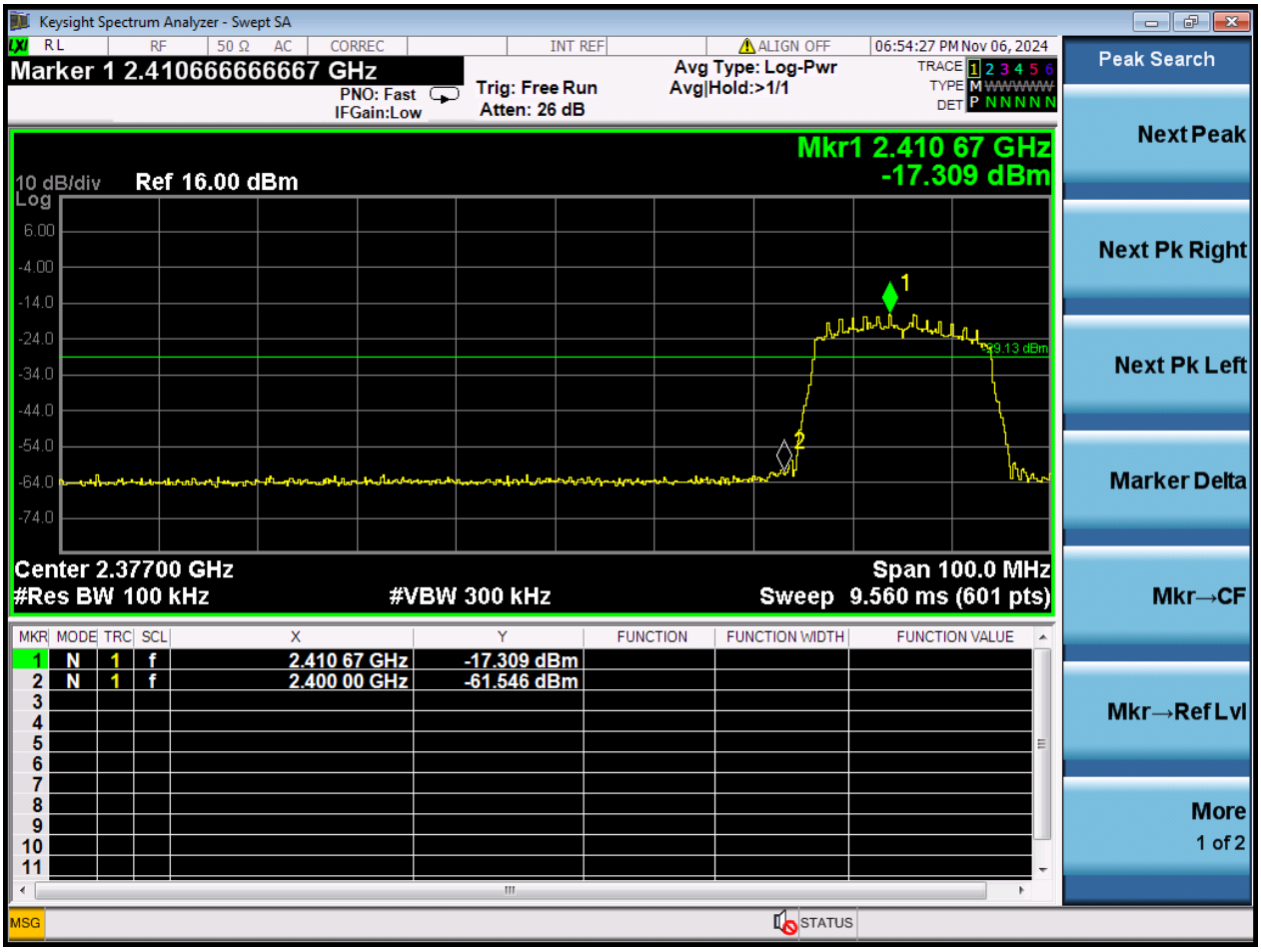
Frequency(MHz)	Level(dBm)



3. 802.11N_BAND2.4G_BW20MHZ

3.1. A.6-BANDEDGE(L)--CSE(NTNV)

Frequency(MHz)	Level(dBm)



ANNEX A. POWER SPECTRAL DENSITY (PSD)-PEAK

1. 802.11B

1.1. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

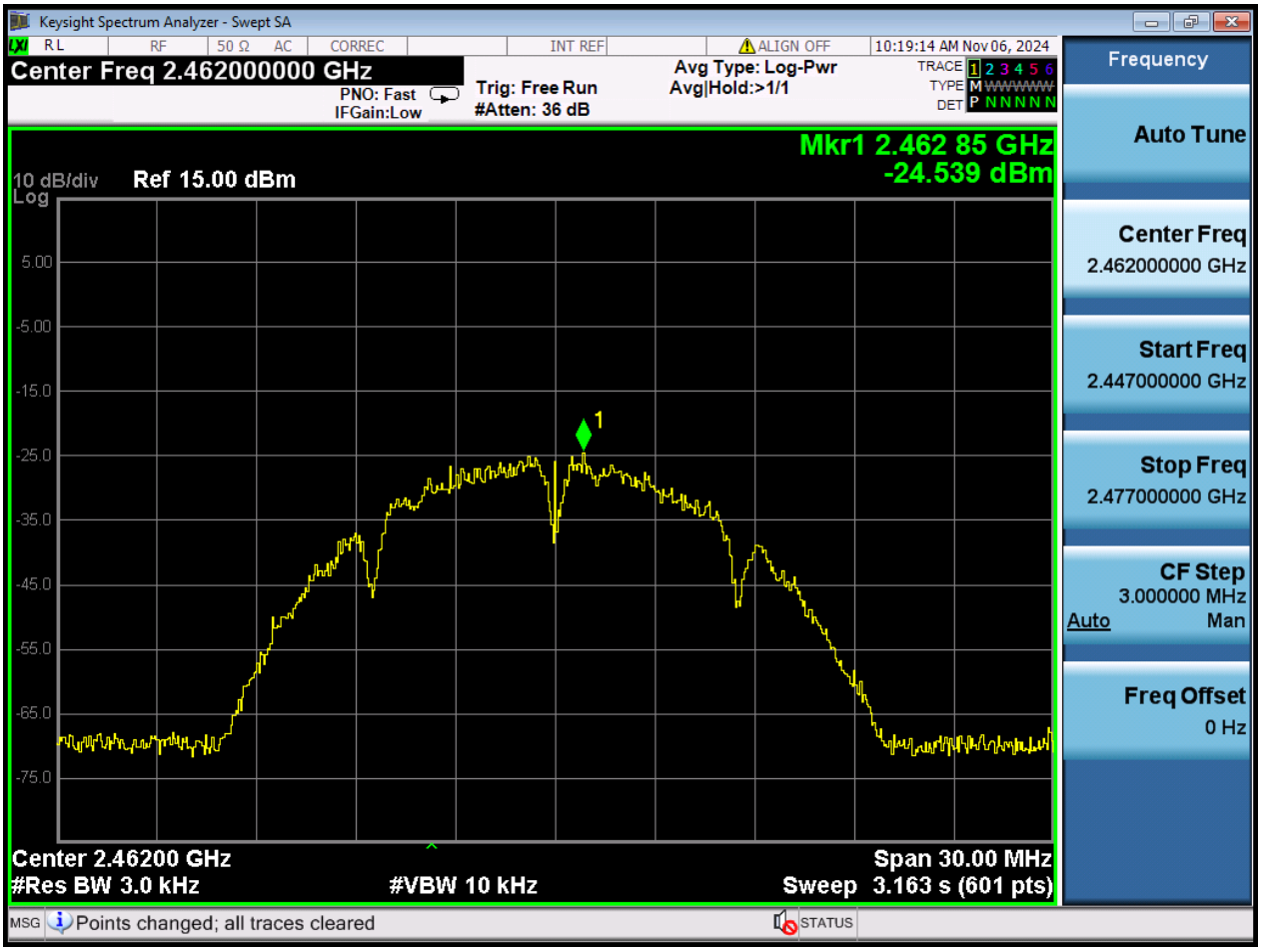
Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2411.4	-25.322	8	Pass

1.2. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2437.55	-25.694	8	Pass

1.3. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

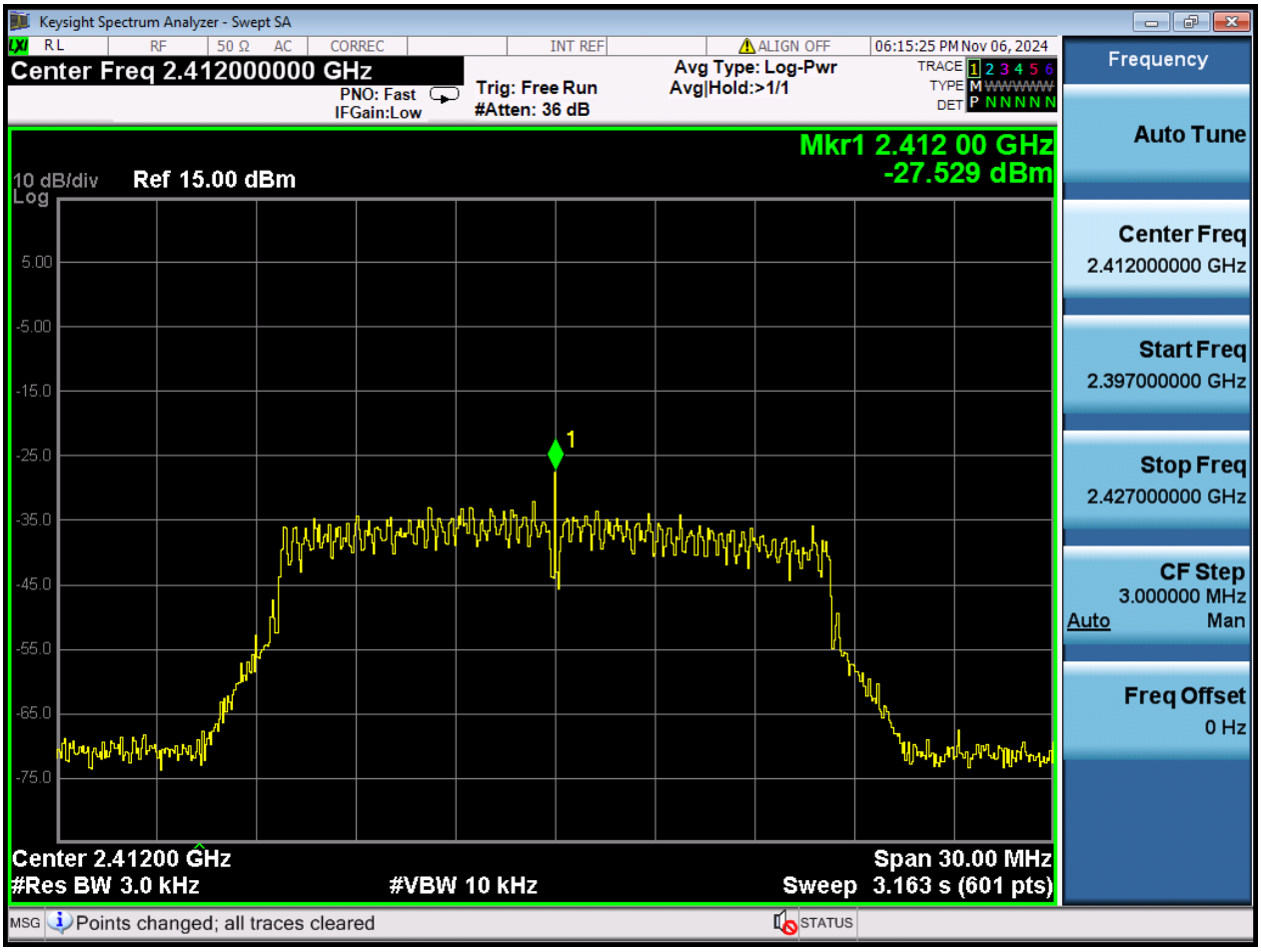
Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2462.85	-24.539	8	Pass



2. 802.11G

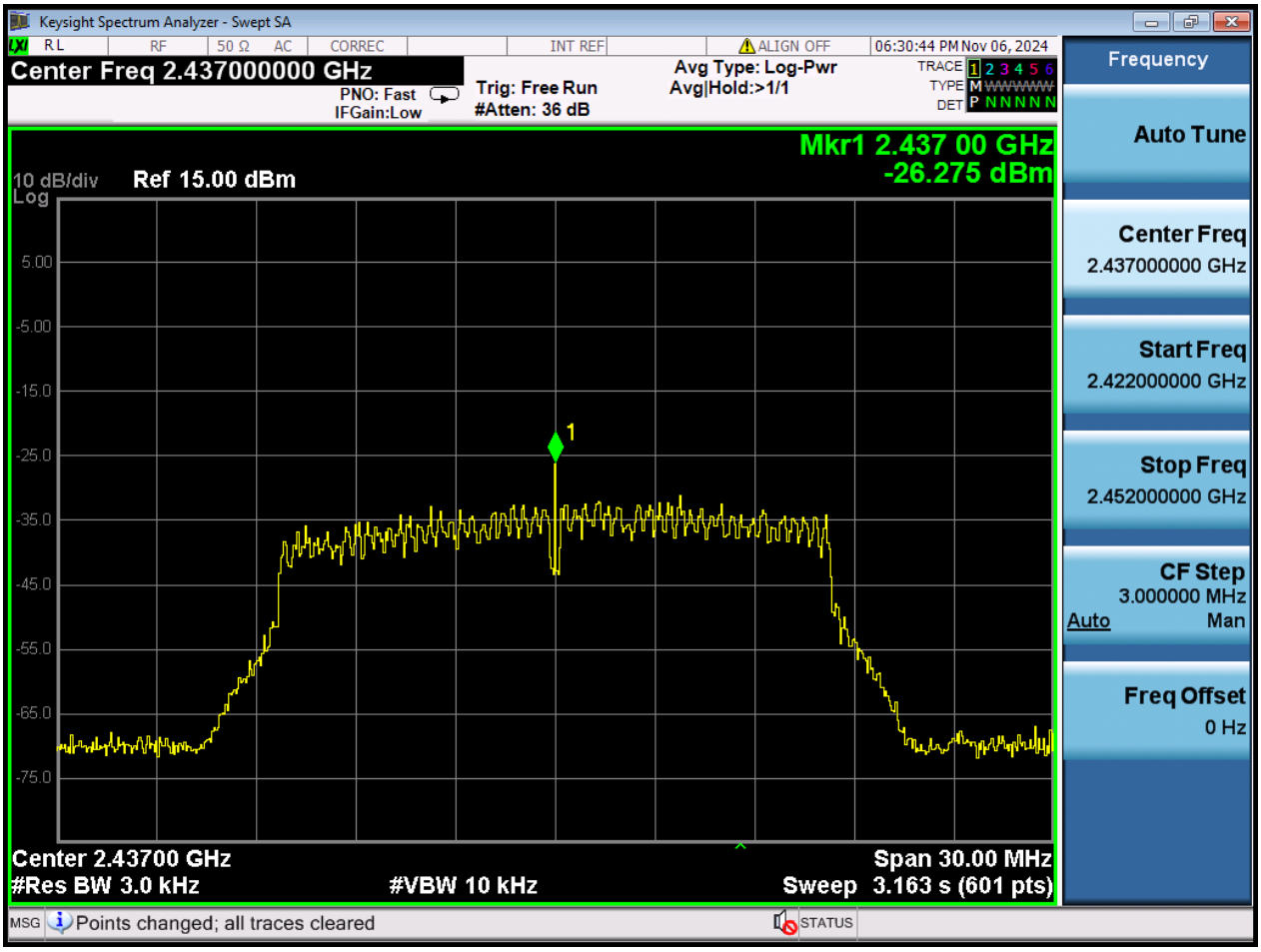
2.1. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2412	-27.529	8	Pass



2.2. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2437	-26.275	8	Pass



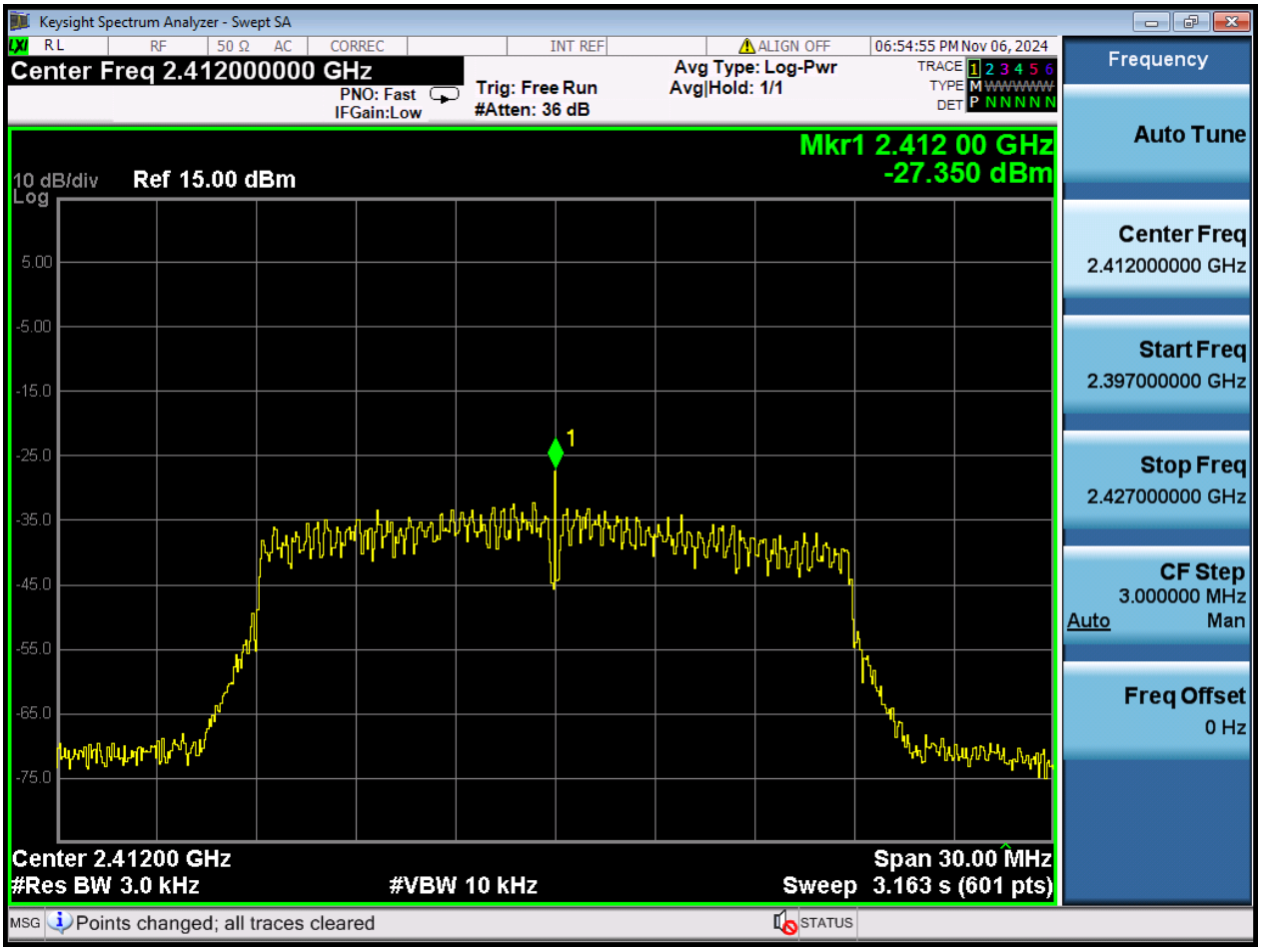
2.3. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2462	-27.13	8	Pass

3. 802.11N_BAND2.4G_BW20MHZ

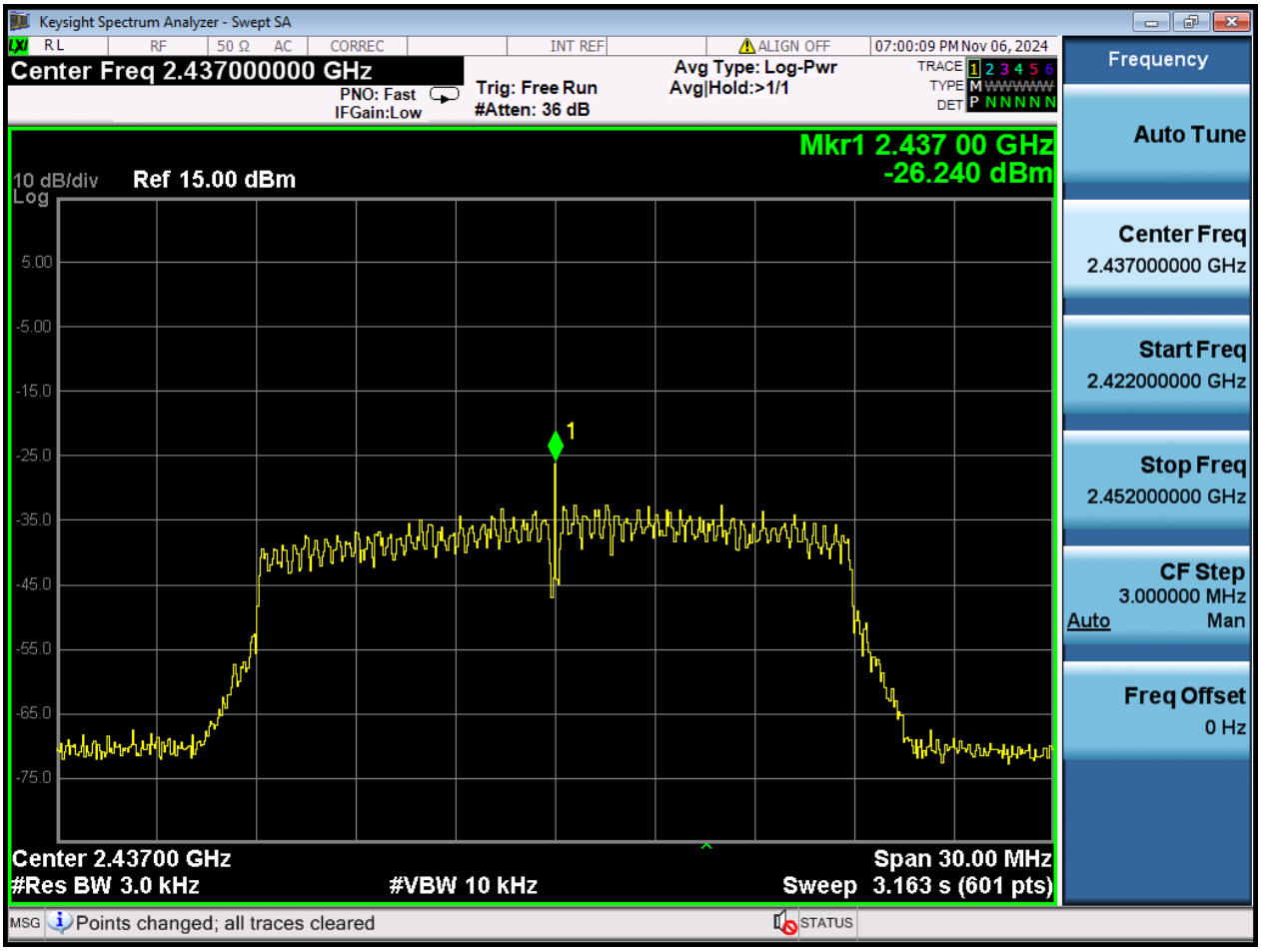
3.1. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2412	-27.35	8	Pass



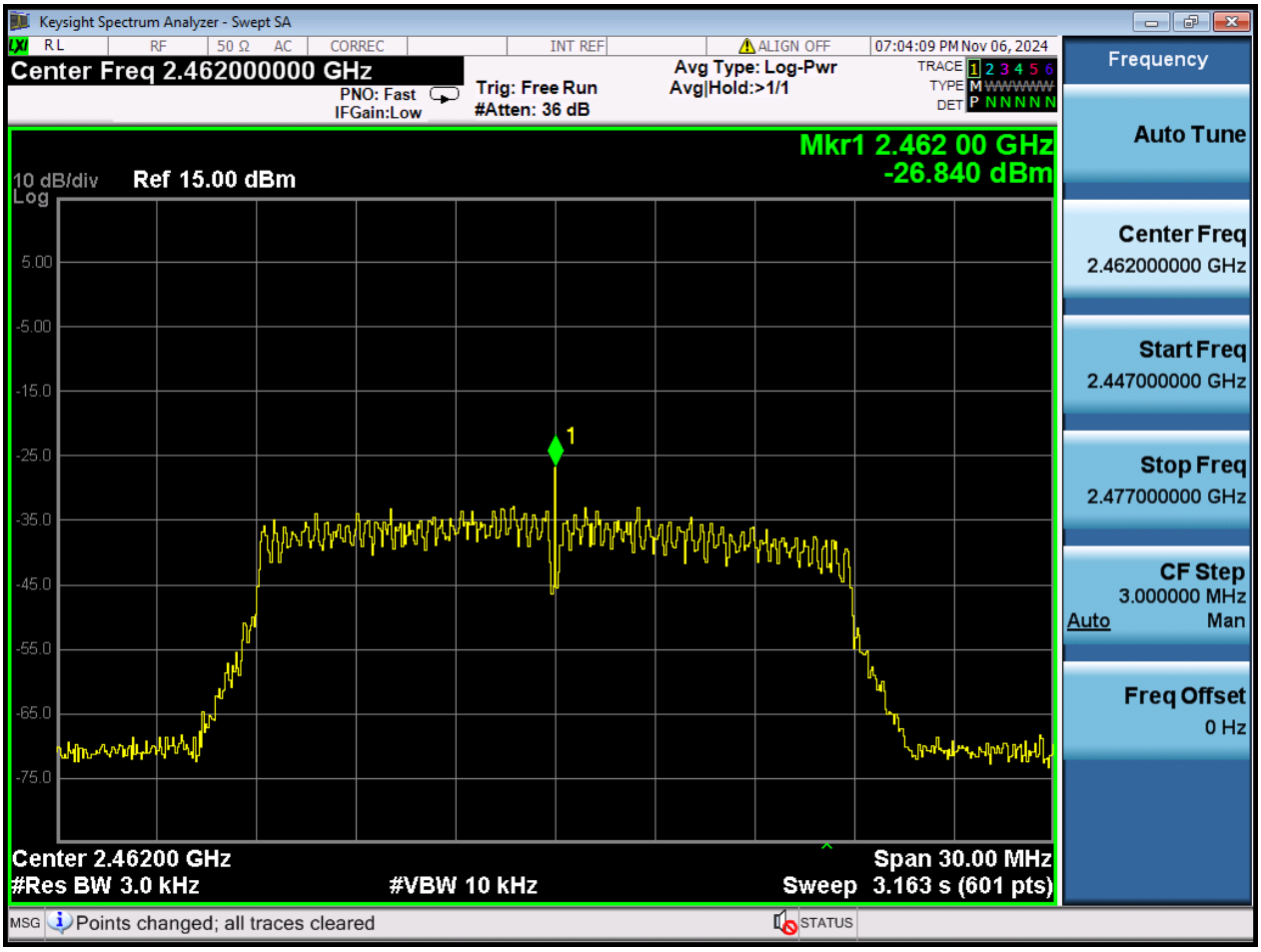
3.2. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2437	-26.24	8	Pass



3.3. A.7-POWER SPECTRAL DENSITY (PSD)-PEAK(NTNV)

Frequency(MHz)	Level(dBm/3kHz)	Limit (dBm/3kHz)	Verdict
2462	-26.84	8	Pass

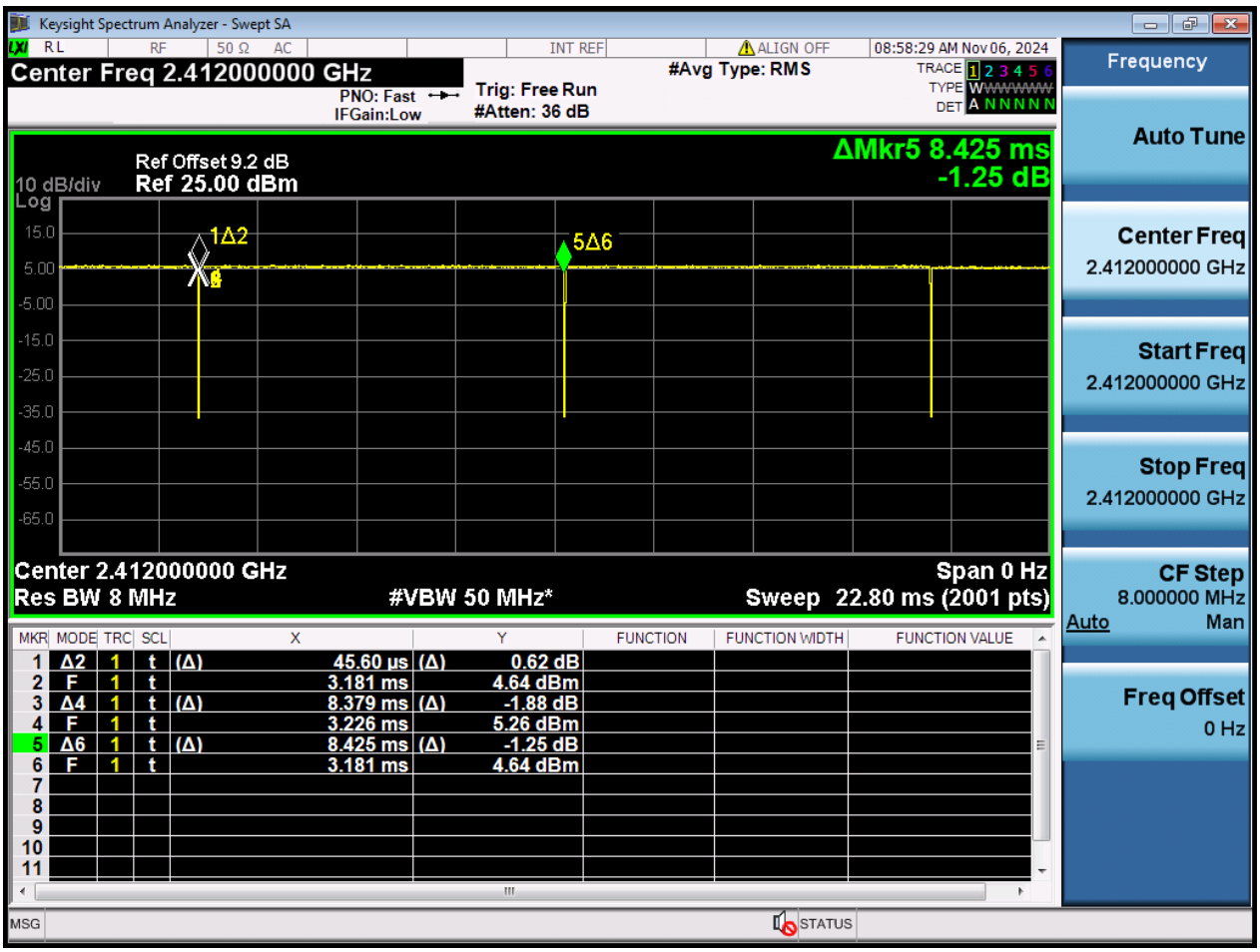


ANNEX A. DUTY CYCLE

1. 802.11B

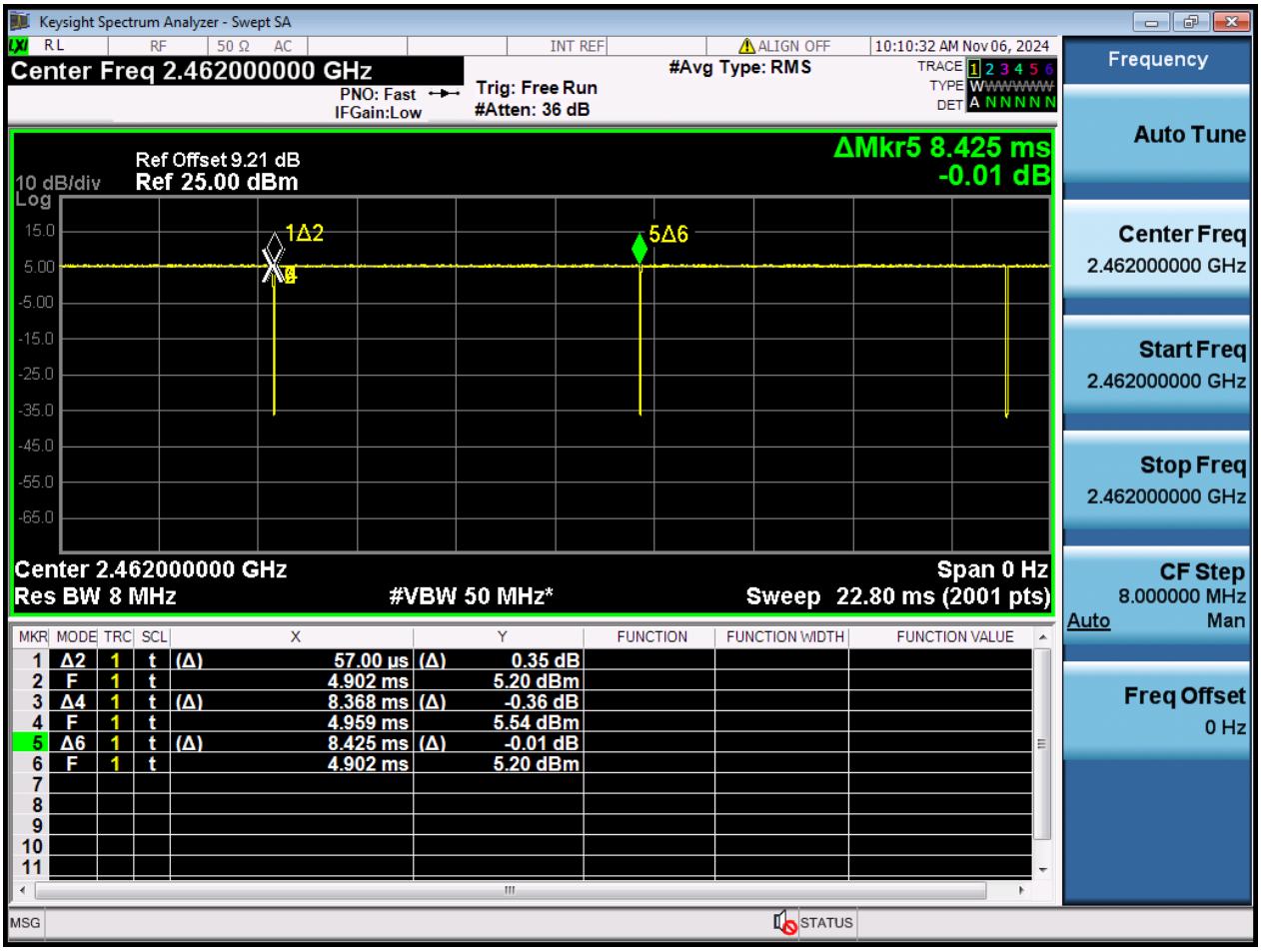
1.1. DUTY CYCLE(NTNV)

Center Frequency(MHz)	RBW (MHz)	Detector	Tx On (s)	Tx Off (s)	Period (s)	Duty Cycle	Limit	Verdict
2412	8	RMS	0.008379	0.000046	0.008425	0.9946	0.1	Pass



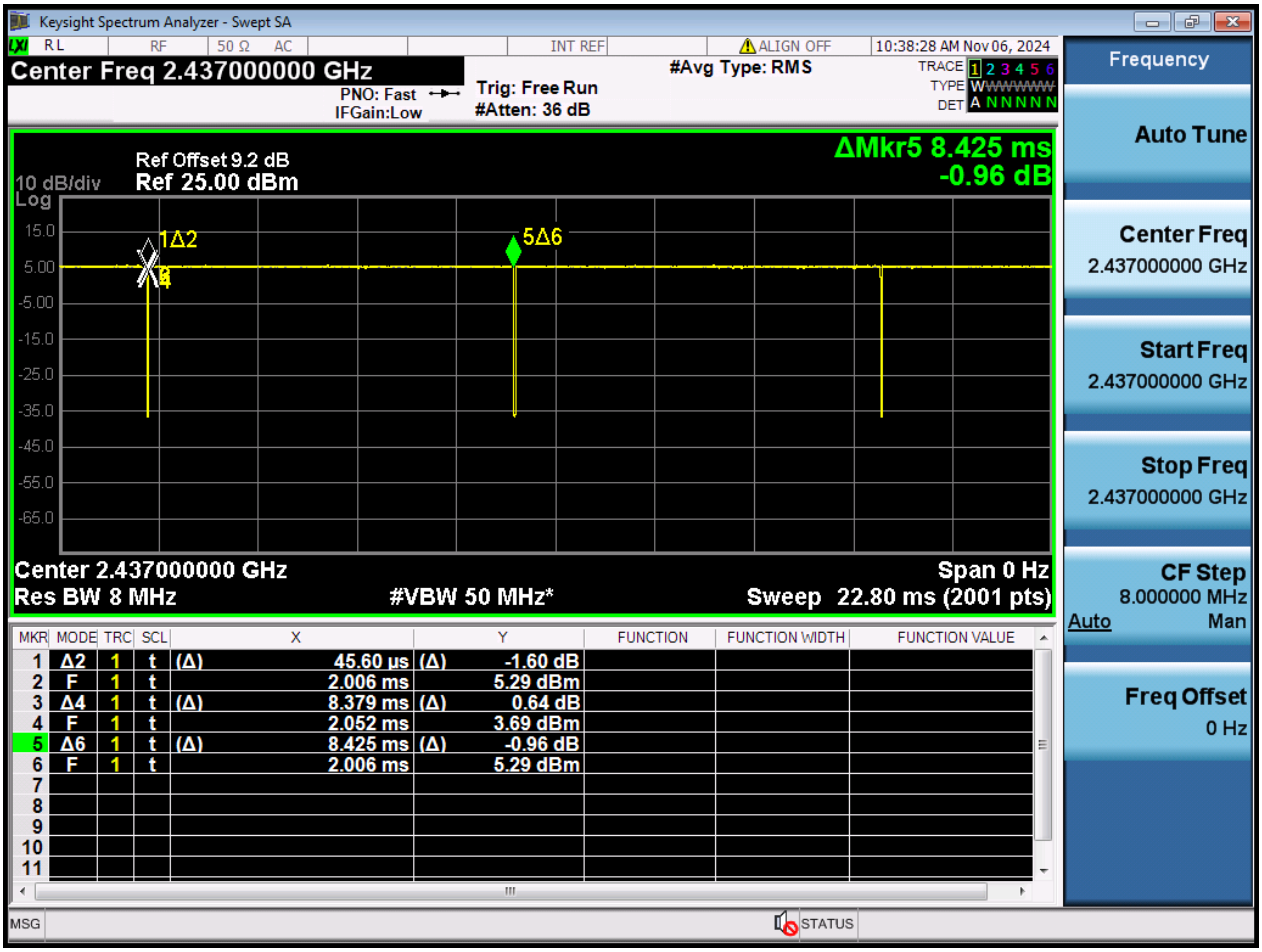
1.2. DUTY CYCLE(NTNV)

Center Frequency(MHz)	RBW (MHz)	Detector	Tx On (s)	Tx Off (s)	Period (s)	Duty Cycle	Limit	Verdict
2462	8	RMS	0.008368	0.000057	0.008425	0.9932	0.1	Pass



1.3. DUTY CYCLE(NTNV)

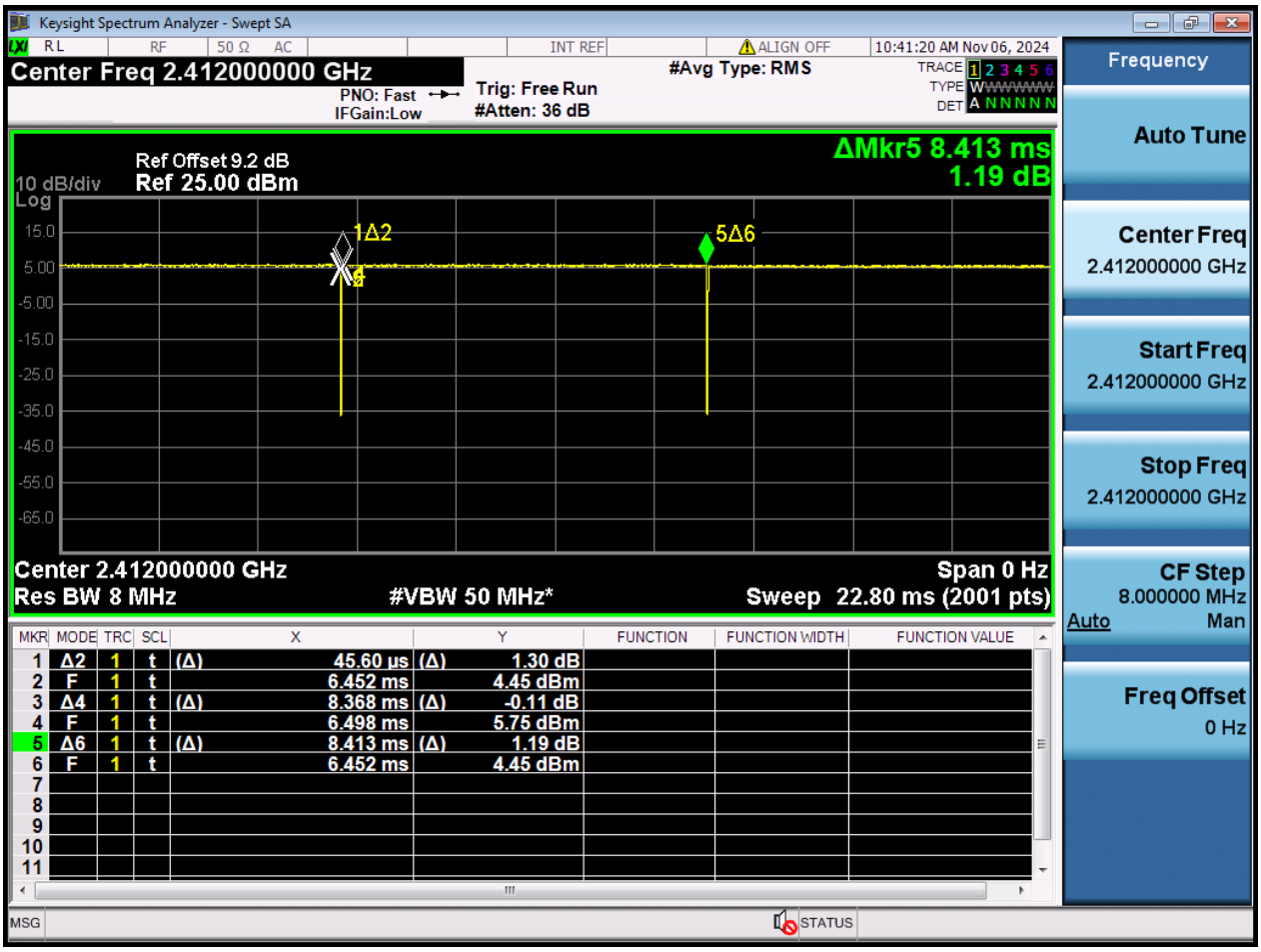
Center Frequency(MHz)	RBW (MHz)	Detector	Tx On (s)	Tx Off (s)	Period (s)	Duty Cycle	Limit	Verdict
2437	8	RMS	0.008379	0.000046	0.008425	0.9946	0.1	Pass



2. 802.11G

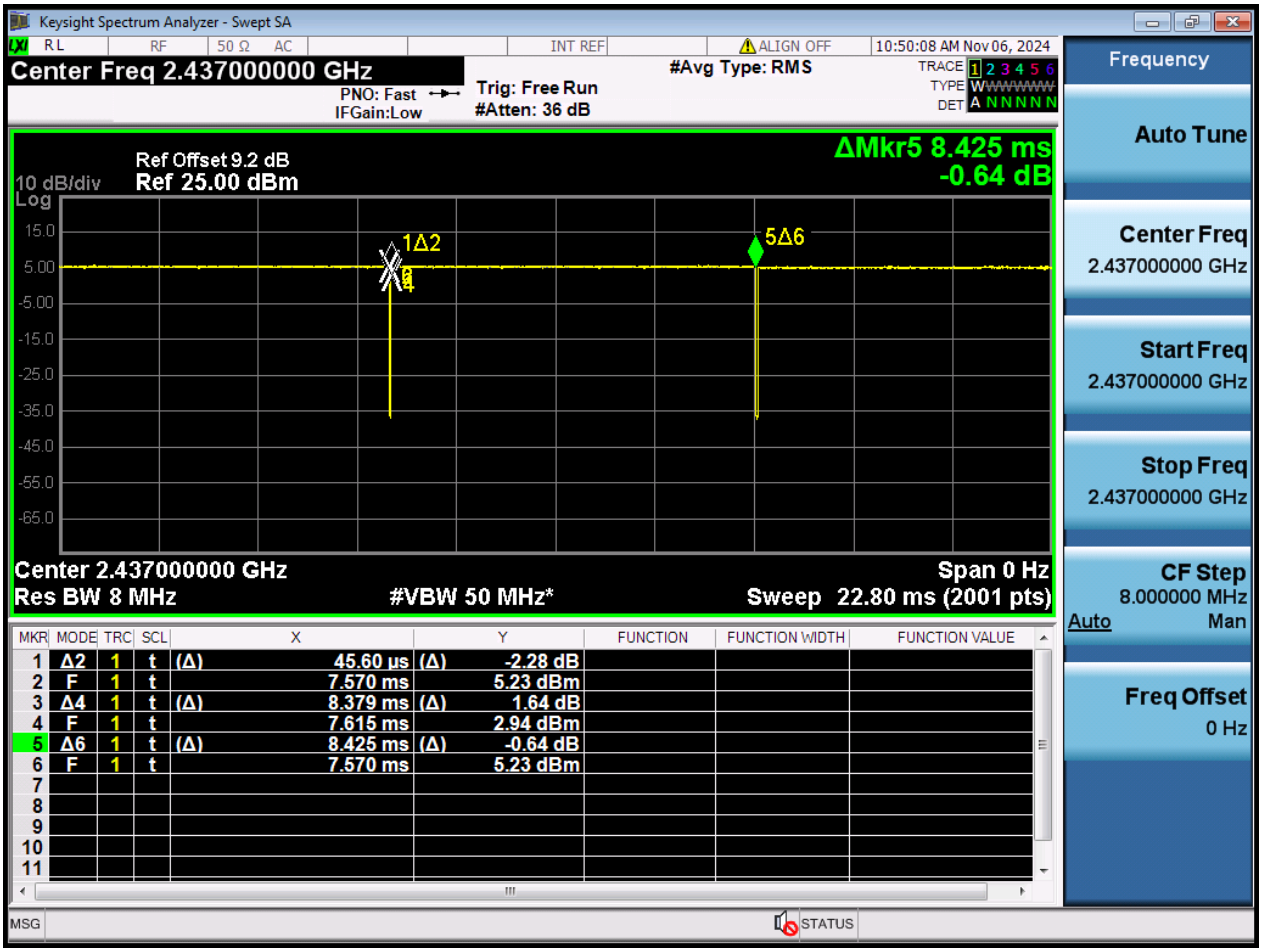
2.1. DUTY CYCLE(NTNV)

Center Frequency(MHz)	RBW (MHz)	Detector	Tx On (s)	Tx Off (s)	Period (s)	Duty Cycle	Limit	Verdict
2412	8	RMS	0.008368	0.000046	0.008413	0.9946	0.1	Pass



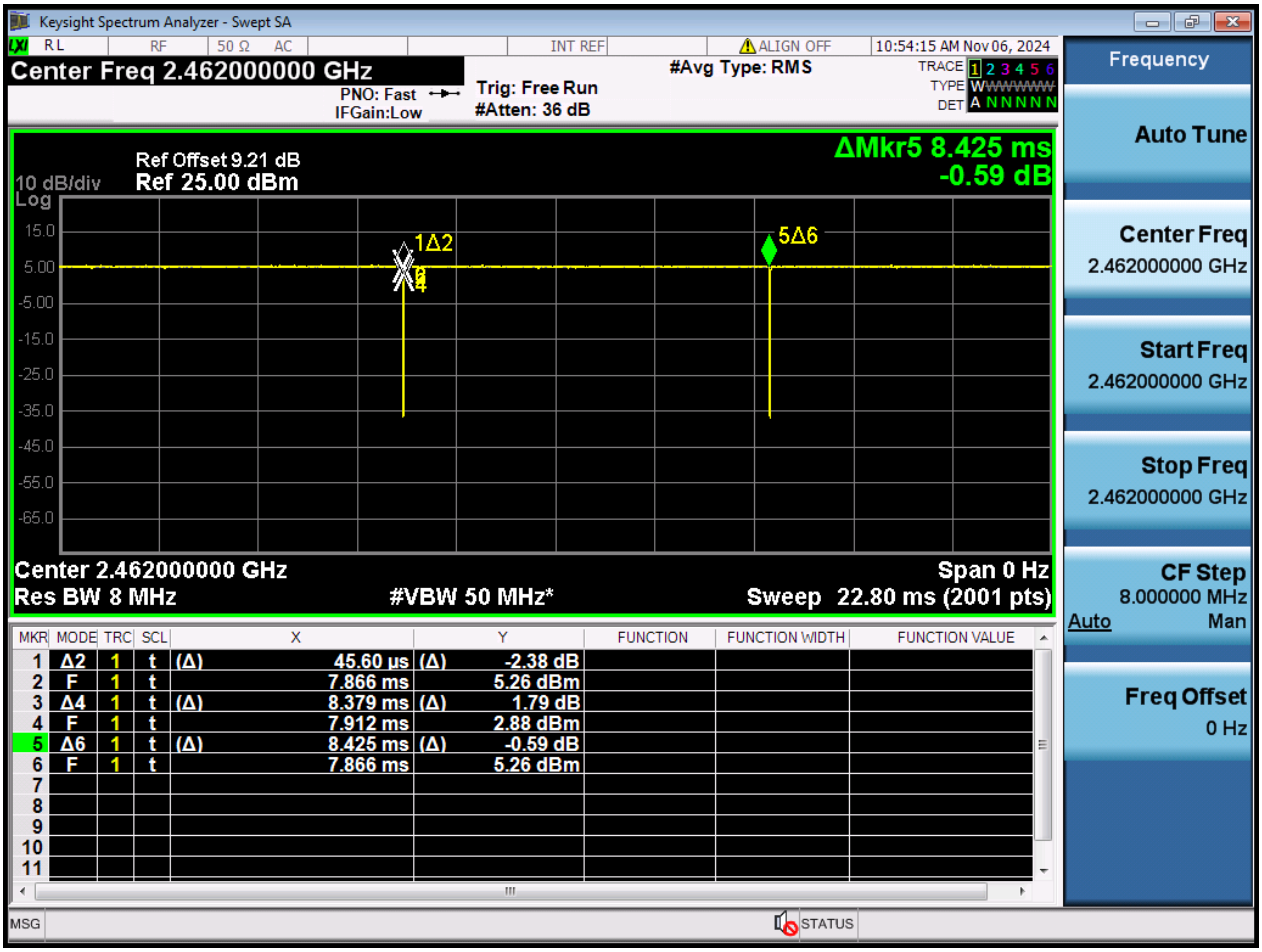
2.2. DUTY CYCLE(NTNV)

Center Frequency(MHz)	RBW (MHz)	Detector	Tx On (s)	Tx Off (s)	Period (s)	Duty Cycle	Limit	Verdict
2437	8	RMS	0.008379	0.000046	0.008425	0.9946	0.1	Pass



2.3. DUTY CYCLE(NTNV)

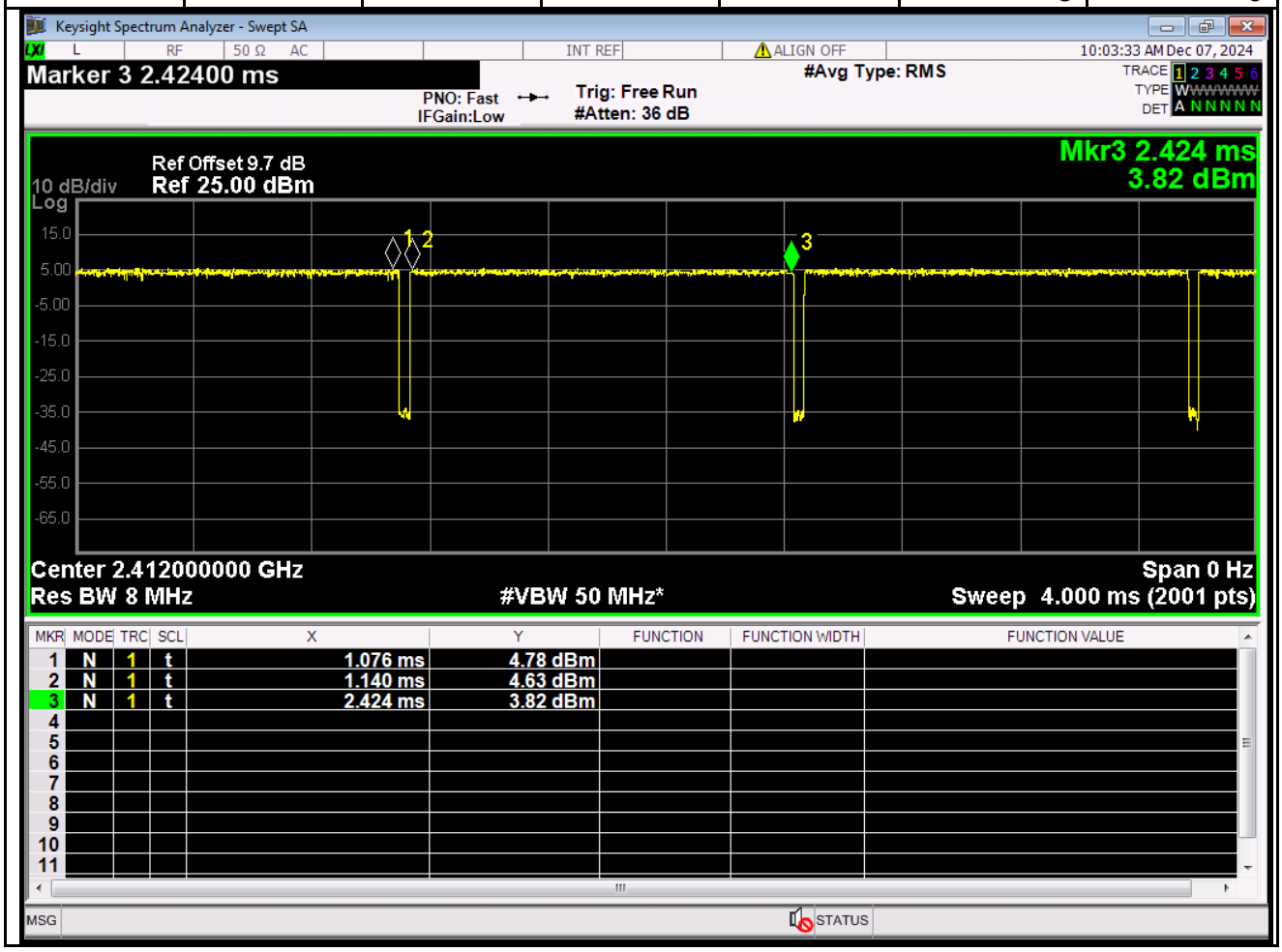
Center Frequency(MHz)	RBW (MHz)	Detector	Tx On (s)	Tx Off (s)	Period (s)	Duty Cycle	Limit	Verdict
2462	8	RMS	0.008379	0.000046	0.008425	0.9946	0.1	Pass



3. 802.11N_BAND2.4G_BW20MHZ

3.1. DUTY CYCLE(NTNV)

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	n20	2412	Ant1	0.95	0.211248685	0.778816199



APPENDIX II - MEASUREMENT PHOTOS

Note: Please see the attached RF_Test Setup photos for FCC ID.

※※※※※END OF THE REPORT※※※※※