Radio Test Report

Report No.:STS2512528W01

Issued for

SHENZHEN ZHIBOTONG ELECTRONICS CO.,LTD.

Floor 4, Bldg. A2, Hedian Industrial Park, NO.9 Shijing Rd, Guanlan, Longhua District, Shenzhen, China

Product Name:	5G Wifi Router
Brand Name:	N/A
Model Name:	Z8105AX-M2-T
Series Model(s):	Z8113AX-B,Z8105AX-M2-H,Z8105AX-M2-C,Z8106AX-M2-T,Z8106AX-M2-H,Z8106AX-M2-S,ODU5001,ODU5201,WE2815,CPE5001,CPE2001,CPE7702,CPE2801,Z8802BE-T,Z8803BE-S,Z8803BE-T,Z8806BE-S,Z8806BE-T,Z8806BE-DS,Z8806BE-DS-T
FCC ID:	2AC47-Z8105AX
Test Standards:	FCC Part15.247

TEST REPORT

Applicant's Name ..... :	SHENZHEN ZHIBOTONG ELECTRONICS CO.,LTD.
Address ..... :	Floor 4, Bldg. A2, Hedian Industrial Park, NO.9 Shijing Rd, Guanlan, Longhua District, Shenzhen, China
Manufacturer's Name ..... :	SHENZHEN ZHIBOTONG ELECTRONICS CO.,LTD.
Address ..... :	Floor 4, Bldg. A2, Hedian Industrial Park, NO.9 Shijing Rd, Guanlan, Longhua District, Shenzhen, China

Product Description

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Brand Name ..... :	N/A
Model Name ..... :	Z8105AX-M2-T
Series Model(s) ..... :	Z8113AX-B,Z8105AX-M2-H,Z8105AX-M2-C,Z8106AX-M2-T,Z8106AX-M2-H,Z8106AX-M2-S,ODU5001,ODU5201,WE2815,CPE5001,CPE2001,CPE7702,CPE2801,Z8802BE-T,Z8803BE-S,Z8803BE-T,Z8806BE-S,Z8806BE-T,Z8806BE-DS,Z8806BE-DS-T
Standards ..... :	FCC Part 15.247
Test Procedure ..... :	ANSI C63.10-2020

This device described above has been tested by STS, 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.
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

Date of Test .....:

Date of receipt of test item ..... :	2025-12-15
Date (s) of performance of tests ..... :	2025-12-15 to 2025-12-27
Date of Issue ..... :	2025-12-27
Test Result ..... :	**Pass**

Testing Engineer : Aaron Bu

(Aaron Bu)

Technical Manager : Skylar Li

(Skylar Li)

Authorized Signatory : Bovey Yang

(Bovey Yang)

SHENZHEN STS TEST SERVICES CO.,LTD. TESTING APPROVAL

Table of Contents Page

Table of Contents Page

Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	2025-12-27	STS2512528W01	ALL	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	--
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 C63.10-2020.

1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

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	±0.751dB
2	Unwanted Emissions, conducted	±2.888dB
3	All emissions, radiated 9K-30MHz	±2.48dB
4	All emissions, radiated 30M-1GHz	±2.52dB
5	All emissions, radiated 1G-18GHz	±3.48dB
6	All emissions, radiated>18GHz	±4.18dB
7	Conducted Emission (9KHz-150KHz)	±2.48dB
8	Conducted Emission (150KHz-30MHz)	±2.52dB
9	Occupied Channel Bandwidth	±3.6%
10	Power Spectral Density, conducted	±1.214dB
11	Duty Cycle	±3.2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	5G Wifi Router
Brand Name	N/A
Model Name	Z8105AX-M2-T
Series Model(s)	Z8113AX-B,Z8105AX-M2-H,Z8105AX-M2-C,Z8106AX-M2-T,Z8106AX-M2-H,Z8106AX-M2-S,ODU5001,ODU5201,WE2815,CPE5001,CPE2001,CPE7702,CPE2801,Z8802BE-T,Z8803BE-S,Z8803BE-T,Z8806BE-S,Z8806BE-T,Z8806BE-DS,Z8806BE-DS-T
Model Difference	Only the model is different and appearance, the motherboard and the circuit are the same. This prototype is equipped with two types of shells for differential testing, one is a black metal shell and the other is a white plastic shell.
Product Description	The EUT is a 5G Wifi Router

Operation Frequency:	802.11b/g/n/ax 20: 2412~2462 MHz 802.11n/ax40:2422~2452MHz
Modulation Type:	802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11ax(OFDM, OFDMA): BPSK,QPSK,16-QAM,64-QAM,256-QAM, 1024QAM
Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz): 65/58.5/52/39/26/19.5/13/6.5Mbps 802.11n(40MHz): 135/121.5/108/81/54/40.5/37/13.5Mbps 802.11ax(HE20): 135/65/58.5/52/39/26/19.5/13/6.5Mbps 802.11ax(HE40): 270/135/121.5/108/81/54/40.5/37/13.5Mbps
Number of Channel:	802.11b/g/n/ax20: 11CH 802.11n/ax40: 7CH
Antenna Type:	External antenna*2
Antenna Gain (dBi):	Antenna 1&2: 3.98dBi

Channel List	Please refer to the Note 3.
Power Rating	DC 12V
Adapter	N/A
Battery	N/A
Hardware version number	N/A
Software version number	N/A
Connecting I/O Port(s)	Please refer to the Note 1.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.

2. The antenna details in this report are based on the manufacturer provided antenna specification documents and apply only to the tested sample identified herein.
   Any discrepancies in the antenna information may affect the accuracy of the test results, and the customer assumes responsibility for any related issues..

3.

Operation Frequency of channel			
802.11b/g/n/ax(20MHz)		Channel List for 802.11n/ax(40MHz)	
Channel	Frequency	Channel	Frequency
01	2412	03	2422
02	2417	04	2427
03	2422	05	2432
04	2427	06	2437
05	2432	07	2442
06	2437	08	2447
07	2442	09	2452
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/ax (HT20)		For 802.11n/ax (HT40)	
Channel	Freq.(MHz)	Channel	Freq.(MHz)
01	2412	03	2422
06	2437	06	2437
11	2462	09	2452

4. KDB 662911 D01 Multiple Transmitter Output v02r01
   2) Directional Gain Calculations for In-Band Measurements
   a) Basic methodology with NANT transmit antennas, each with the same directional gain GANT dB i, being driven by NANT transmitter outputs of equal power. Directional gain is to be computed as f ollows:
   (i) If any transmit signals are correlated with each other,
   Directional gain = GANT + 10 log(NANT) dBi
   (ii) If all transmit signals are completely uncorrelated with each other,
   Directional gain = GANT
   ANT 1: 3.98 dBi
   ANT 2: 3.98 dBi
   Directional gain = GANT + 10 log (NANT) dBi=3.98+10log (2) =6.99dBi

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 CH01	1 Mbps
Mode 2	TX IEEE 802.11b CH06	1 Mbps
Mode 3	TX IEEE 802.11 b CH11	1 Mbps
Mode 4	TX IEEE 802.11g CH01	6 Mbps
Mode 5	TX IEEE 802.11g CH06	6 Mbps
Mode 6	TX IEEE 802.11g CH11	6 Mbps
Mode 7	TX IEEE 802.11n HT20 CH01	MCS 0
Mode 8	TX IEEE 802.11n HT20 CH06	MCS 0
Mode 9	TX IEEE 802.11n HT20 CH11	MCS 0
Mode 10	TX IEEE 802.11n HT40 CH03	MCS 0
Mode 11	TX IEEE 802.11n HT40 CH06	MCS 0
Mode 12	TX IEEE 802.11n HT40 CH09	MCS 0
Mode 13	TX IEEE 802.11ax HE20 CH1	NSS1 MCS0
Mode 14	TX IEEE 802.11ax HE20 CH6	NSS1 MCS0
Mode 15	TX IEEE 802.11ax HE20 CH11	NSS1 MCS0
Mode 16	TX IEEE 802.11ax HE40 CH3	NSS1 MCS0
Mode 17	TX IEEE 802.11ax HE40 CH6	NSS1 MCS0
Mode 18	TX IEEE 802.11ax HE40 CH9	NSS1 MCS0

Note:

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

(2) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V /60Hz is shown in the report.

(3)The 802.11ax mode is investigated among different tones(26/52/106/242-tone RU channel), full resource units (RU), partial resourceunits. The partial RU has no higher power than full RU's, thus the full RU is chosen as main testconfiguration.

AC Conducted Emission

Test Case	
AC Conducted Emission	Mode19: Keeping TX + WLAN Link

2.3 TEST SOFTWARE AND POWER LEVEL

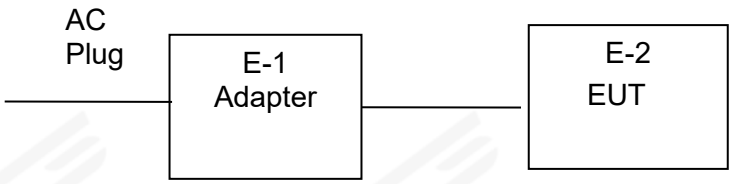
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	ANT 1 Power Class	ANT 2 Power Class	Software For Testing
WIFI(2.4G)	2.4G WIFI	802.11b	ANT 1:3.98 ANT 2:3.98	9	8	QATool_UIv2.78
		802.11g		7	7	
		802.11n(HT20)		8	8	
		802.11n(HT40)		6	5.5	
		802.11ax(HE20)		7	7	
		802.11ax(HE40)		6	5.5	

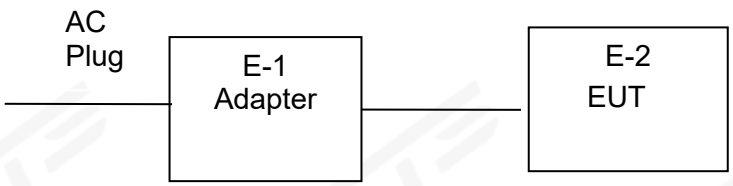
Note: The software cannot modify the power level; it can only use the default value.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



AC Conducted Emission Test



2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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

No.	Device Type	Brand	Model	Note
E-1	Adapter	N/A	N/A	N/A

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.
(2) “YES” is means “with core”; “NO” is means “without core”.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

RF Radiation Test Equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Pre-Amplifier(0.1 M-3GHz)	EM	EM330	060665	2025.02.22	2026.02.21
Pre-Amplifier(1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2025.09.25	2026.09.24
Pre-Amplifier(18G-40GHz)	SKET	LNPA_1840-50	SK2018101801	2025.02.22	2026.02.21
Active loop Antenna	ZHINAN	ZN30900C	16035	2025.02.25	2027.02.24
Bilog Antenna	TESEQ	CBL6111D	34678	2025.09.27	2027.09.26
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2025.09.27	2027.09.26
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2025.09.27	2027.09.26
Positioning Controller	MF	MF-7802	MF-780208587	N/A	N/A
Signal Analyzer	R&S	FSV 40-N	101823	2025.09.26	2026.09.25
Switch Control Box	N/A	N/A	N/A	N/A	N/A
Filter Box	BALUN Technology	SU319E	BL-SZ1530051	N/A	N/A
Antenna Mast	MF	MFA-440H	N/A	N/A	N/A
Turn Table	MF	SC100_1	60531	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
DC power supply	HONGSHENGFENG	DPS-305AF	17064939	2025.09.22	2026.09.21
Test SW	EZ-EMC	Ver.STSLAB-03A1 RE			

Conduction Test Equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2025.09.25	2026.09.24
Limiter	CYBERTEK	EM5010	N/A	2025.09.25	2026.09.24
LISN	R&S	ENV216	101242	2025.09.25	2026.09.24
LISN	EMCO	3810/2NM	23625	2025.09.25	2026.09.24
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Test SW	EZ-EMC	Ver.STSLAB-03A1 CE			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Analyzer	Agilent	N9020A	MY51510623	2025.02.22	2026.02.21
Power detector group	Keysight	NW2021031	N/A	2025.09.23	2026.09.22
Switch control box	MW	MW100-RFCB	N/A	N/A	N/A
Temperature& Humidity test chamber	Safety test	AG80L	171200018	2025.02.22	2026.02.21
Temperature & Humidity	SW-108	SuWei	N/A	2025.02.24	2026.02.23
Test SW	MW	MTS 8310_2.0.0.0			

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.

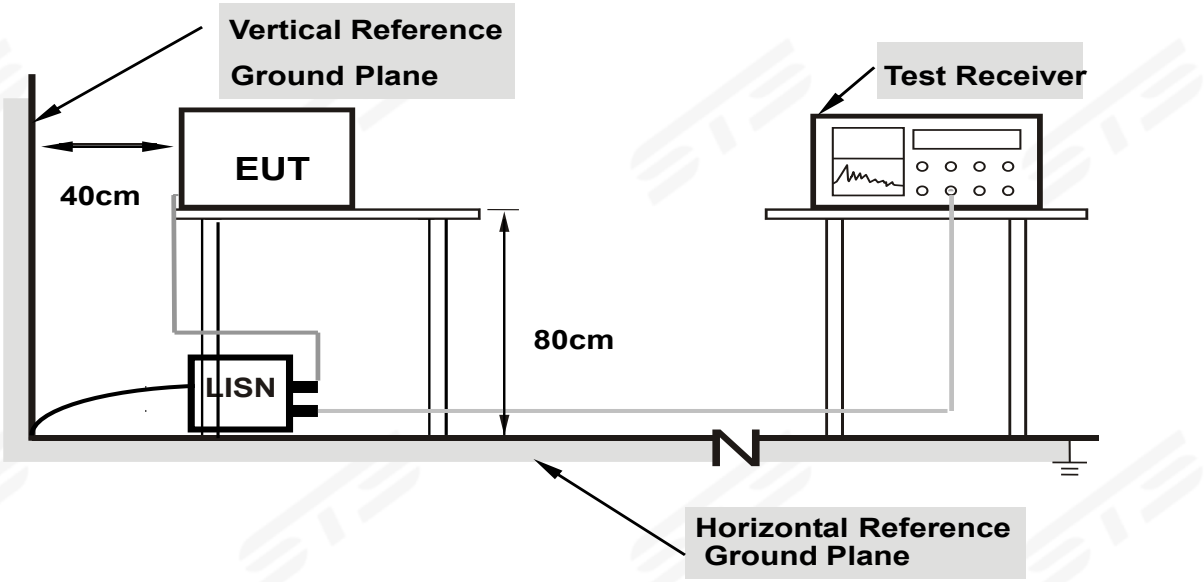
The following table is the setting of the receiver

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.

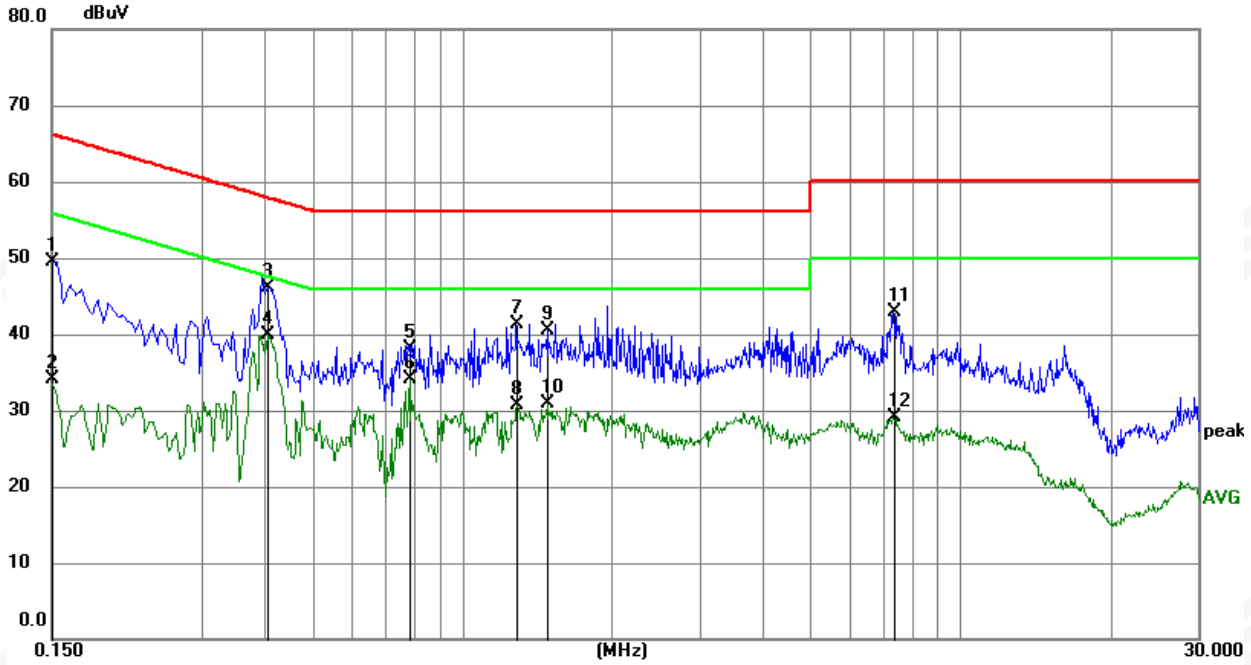
3.1.4EUT OPERATING CONDITIONS

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

black metal shell:

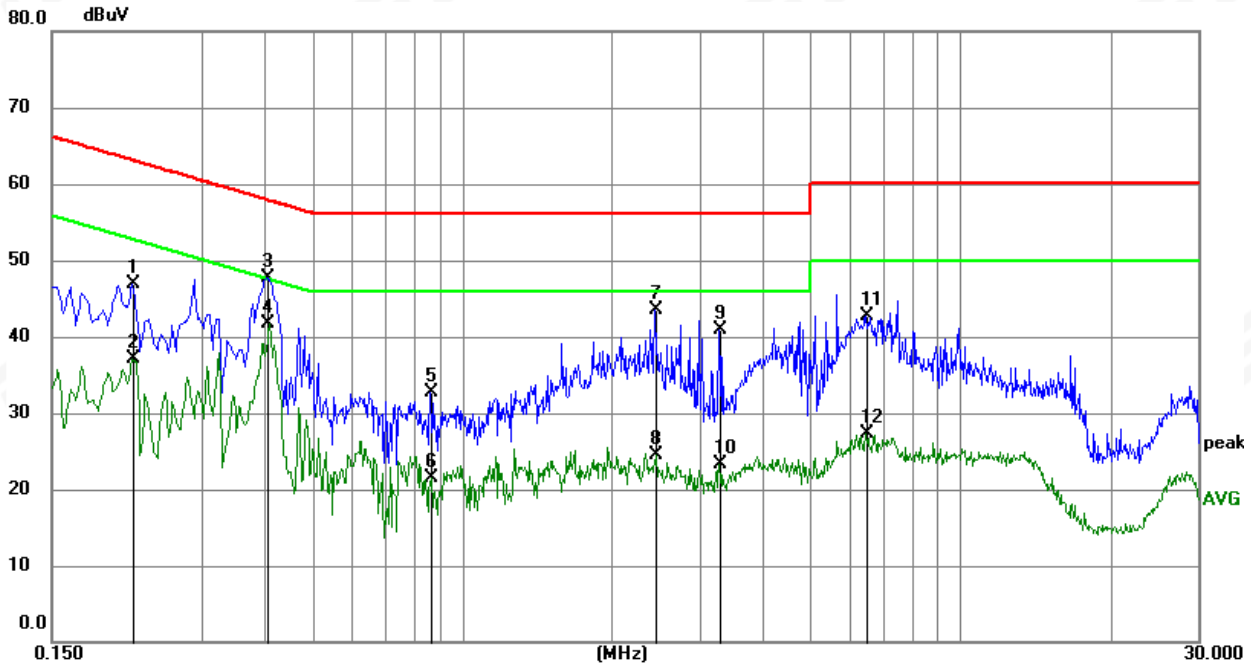
Temperature:	26 ℃	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 19		



Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	38.90	10.57	49.47	66.00	-16.53	QP
2	0.1500	23.53	10.57	34.10	56.00	-21.90	AVG
3	0.4065	35.53	10.61	46.14	57.72	-11.58	QP
4 *	0.4065	29.30	10.61	39.91	47.72	-7.81	AVG
5	0.7844	27.49	10.64	38.13	56.00	-17.87	QP
6	0.7844	23.38	10.64	34.02	46.00	-11.98	AVG
7	1.2884	30.72	10.64	41.36	56.00	-14.64	QP
8	1.2884	20.00	10.64	30.64	46.00	-15.36	AVG
9	1.4864	29.77	10.68	40.45	56.00	-15.55	QP
10	1.4864	20.21	10.68	30.89	46.00	-15.11	AVG
11	7.3410	31.65	11.26	42.91	60.00	-17.09	QP
12	7.3410	17.91	11.26	29.17	50.00	-20.83	AVG

Temperature:	26 ℃	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 19		

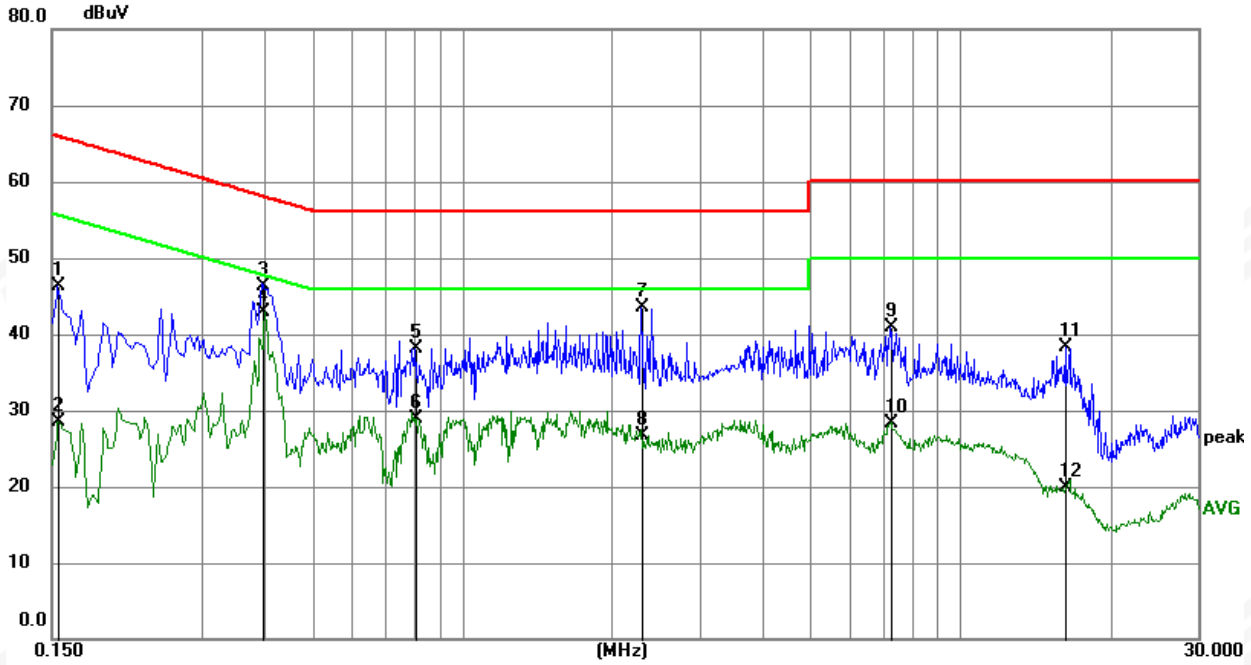


Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2175	36.26	10.59	46.85	62.91	-16.06	QP
2	0.2175	26.42	10.59	37.01	52.91	-15.90	AVG
3	0.4065	37.10	10.61	47.71	57.72	-10.01	QP
4 *	0.4065	31.08	10.61	41.69	47.72	-6.03	AVG
5	0.8655	22.08	10.62	32.70	56.00	-23.30	QP
6	0.8655	10.95	10.62	21.57	46.00	-24.43	AVG
7	2.4405	32.63	10.83	43.46	56.00	-12.54	QP
8	2.4405	13.59	10.83	24.42	46.00	-21.58	AVG
9	3.2820	29.98	10.93	40.91	56.00	-15.09	QP
10	3.2820	12.29	10.93	23.22	46.00	-22.78	AVG
11	6.4590	31.37	11.24	42.61	60.00	-17.39	QP
12	6.4590	16.07	11.24	27.31	50.00	-22.69	AVG

white plastic shell:

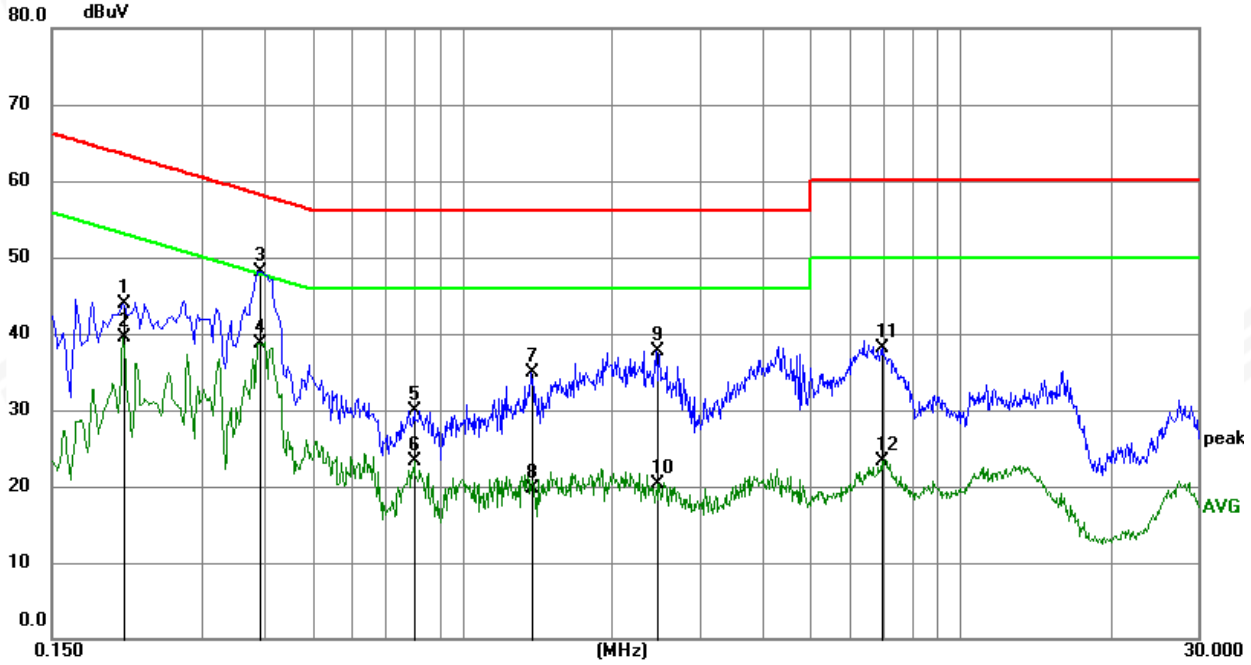
Temperature:	26 ℃	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 19		



Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1545	35.71	10.57	46.28	65.75	-19.47	QP
2	0.1545	17.99	10.57	28.56	55.75	-27.19	AVG
3	0.3997	35.60	10.61	46.21	57.86	-11.65	QP
4 *	0.3997	32.25	10.61	42.86	47.86	-5.00	AVG
5	0.8070	27.53	10.64	38.17	56.00	-17.83	QP
6	0.8070	18.18	10.64	28.82	46.00	-17.18	AVG
7	2.2875	32.73	10.81	43.54	56.00	-12.46	QP
8	2.2875	15.94	10.81	26.75	46.00	-19.25	AVG
9	7.2510	29.67	11.25	40.92	60.00	-19.08	QP
10	7.2510	17.05	11.25	28.30	50.00	-21.70	AVG
11	16.2690	26.11	12.24	38.35	60.00	-21.65	QP
12	16.2690	7.76	12.24	20.00	50.00	-30.00	AVG

Temperature:	26 ℃	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 19		



Remark:
1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result =Reading + Factor)–Limit
3. Factor=LISN factor+Cable loss+Limiter (10dB)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2085	33.38	10.59	43.97	63.26	-19.29	QP
2	0.2085	28.95	10.59	39.54	53.26	-13.72	AVG
3	0.3930	37.49	10.61	48.10	58.00	-9.90	QP
4 *	0.3930	28.07	10.61	38.68	48.00	-9.32	AVG
5	0.8025	19.34	10.64	29.98	56.00	-26.02	QP
6	0.8025	12.58	10.64	23.22	46.00	-22.78	AVG
7	1.3785	24.31	10.66	34.97	56.00	-21.03	QP
8	1.3785	8.97	10.66	19.63	46.00	-26.37	AVG
9	2.4495	26.88	10.83	37.71	56.00	-18.29	QP
10	2.4495	9.44	10.83	20.27	46.00	-25.73	AVG
11	6.9540	26.86	11.22	38.08	60.00	-21.92	QP
12	6.9540	12.03	11.22	23.25	50.00	-26.75	AVG

3.2 RADIATED EMISSION MEASUREMENT

3.2.1RADIATED 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 C63.10-2020 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/AV
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/AV
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

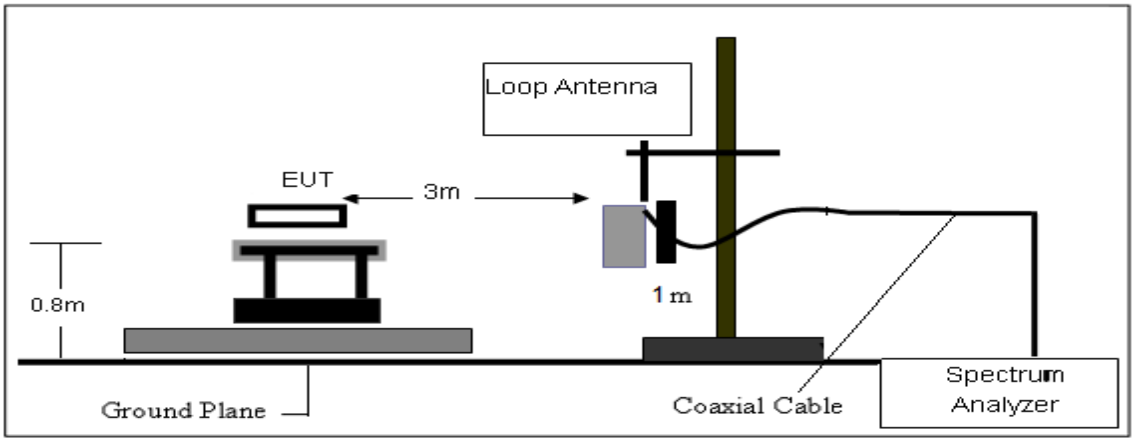
a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position 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:

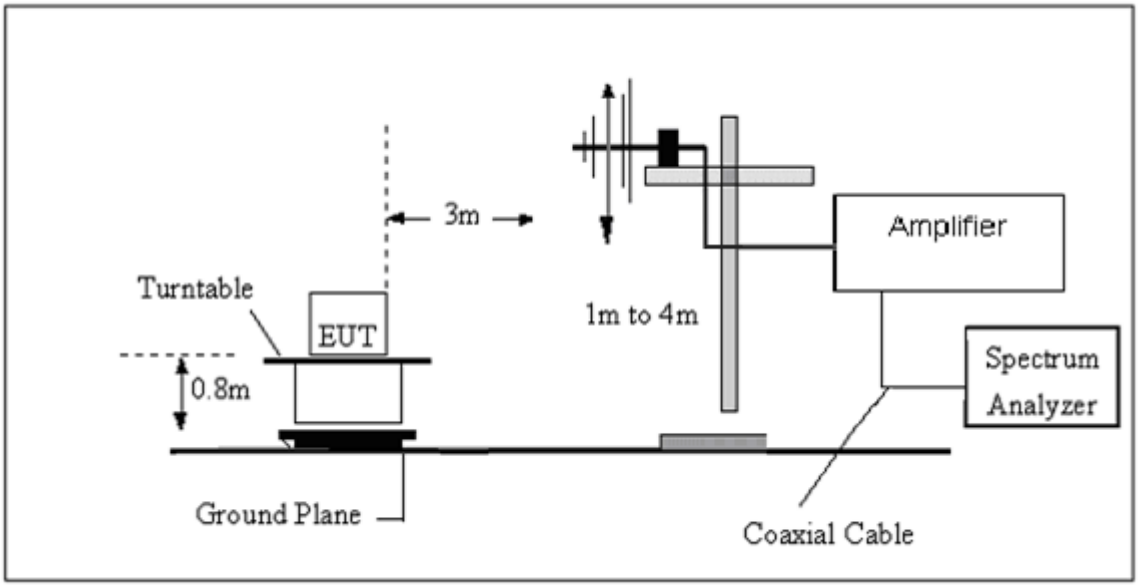
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 TEST SETUP

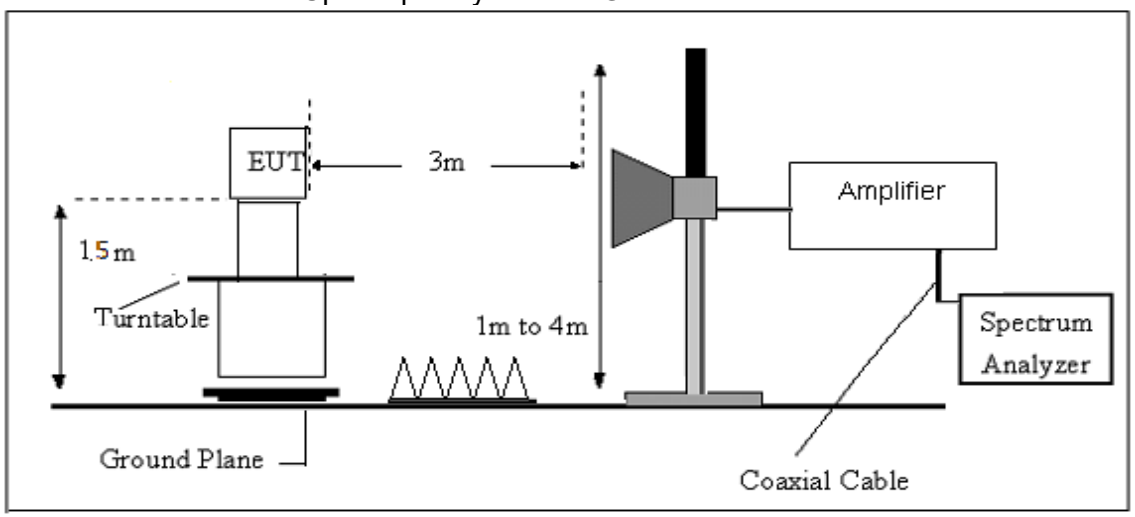
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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

9KHz-30MHz

Temperature:	26 ℃	Relative Humidtity:	54%RH
Test Voltage:	AC120V/60Hz	Polarization:	--
Test Mode:	TX Mode		

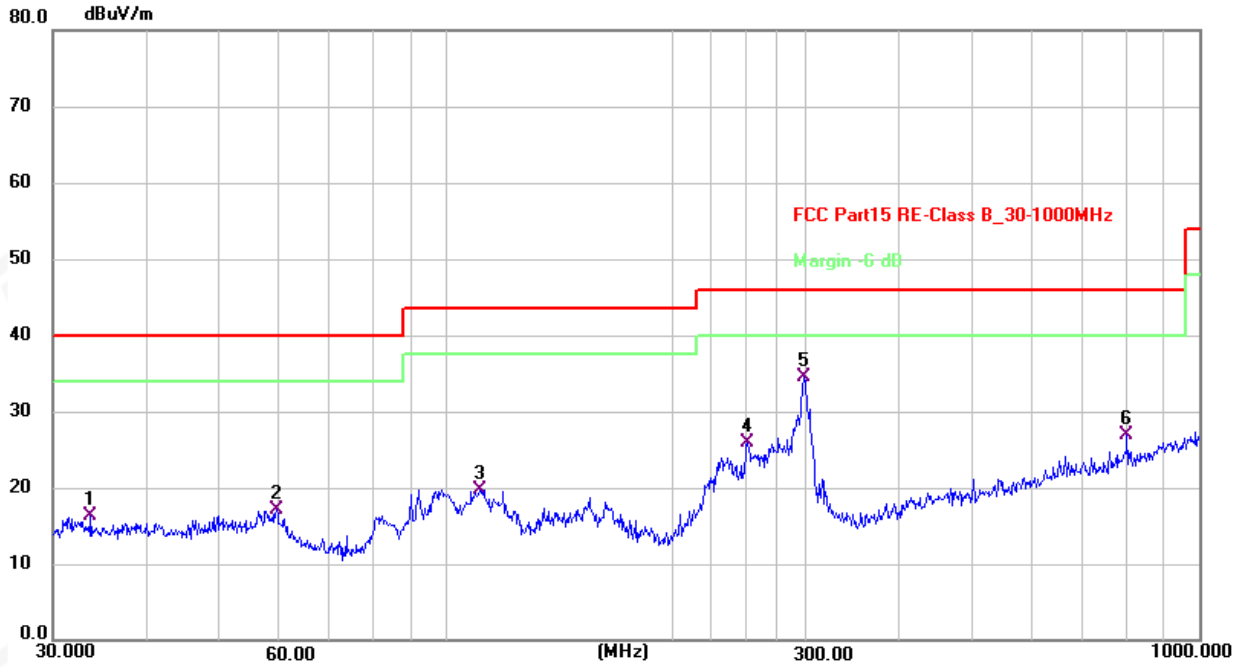
Freq.	Reading	Limit	Margin	State	Test Result
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	
--	--	--	--	--	PASS
--	--	--	--	--	PASS

Note:
The amplitude of spurious emissions which are attenuated by more than 20dB below 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.

(30MHz - 1000MHz)

black metal shell:

Temperature:	26 ℃	Relative Humidtity:	54%RH
Test Voltage:	AC120V/60Hz	Phase:	Horizontal
Test Mode:	Mode 1-18(Mode 11 worst mode)		

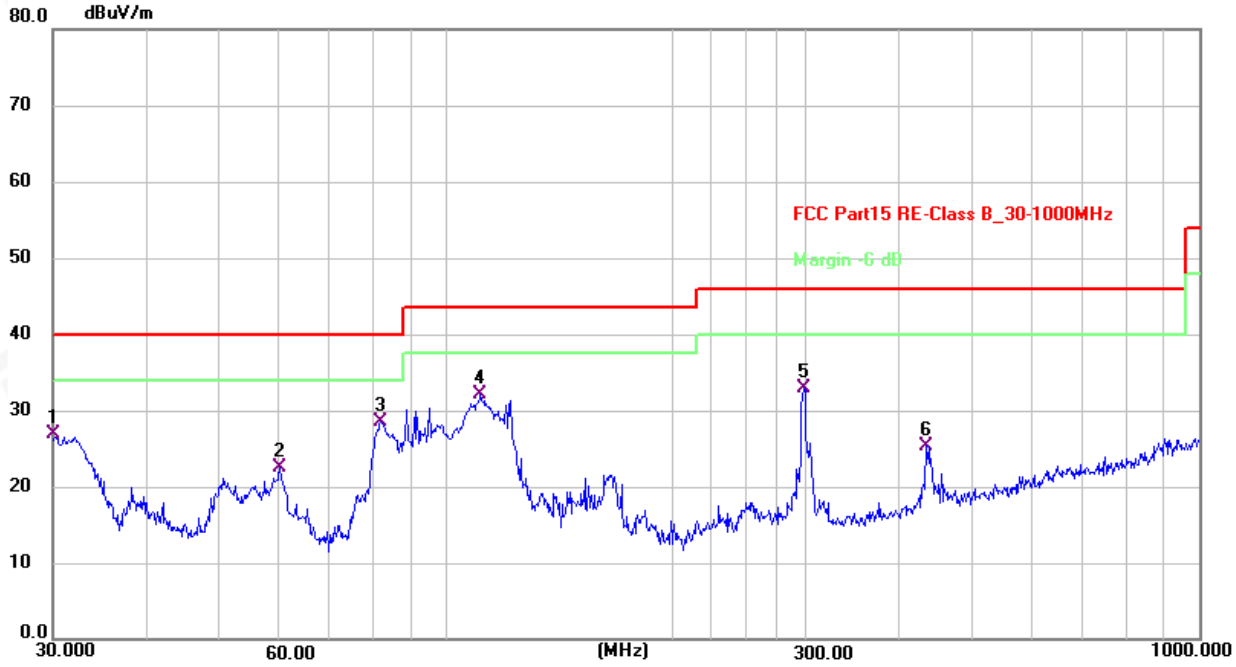


Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.6802	27.21	-10.95	16.26	40.00	-23.74	QP
2	59.4405	28.47	-11.43	17.04	40.00	-22.96	QP
3	110.9571	32.67	-12.96	19.71	43.50	-23.79	QP
4	251.1804	37.51	-11.58	25.93	46.00	-20.07	QP
5 *	298.2681	45.10	-10.52	34.58	46.00	-11.42	QP
6	801.7863	27.23	-0.31	26.92	46.00	-19.08	QP

Temperature:	26 ℃	Relative Humidtity:	54%RH
Test Voltage:	AC120V/60Hz	Phase:	Vertical
Test Mode:	Mode 1-18(Mode 11 worst mode)		



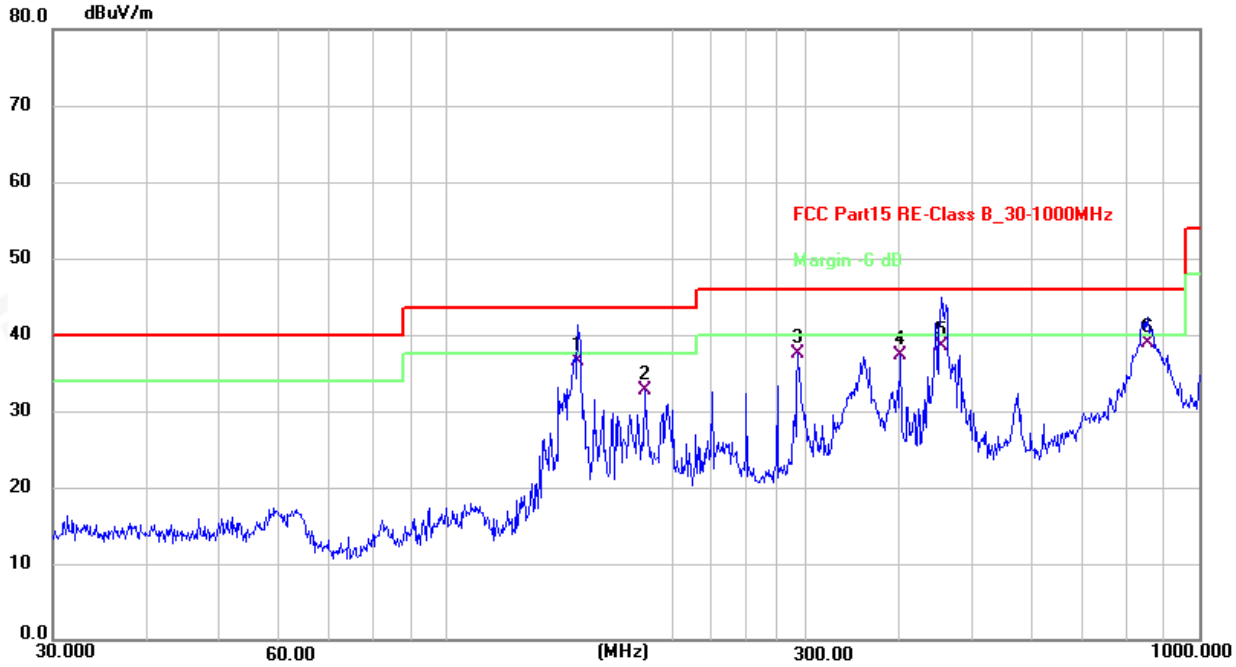
Remark:.

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. All modes have been tested,only show the worst case.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.0000	38.09	-11.20	26.89	40.00	-13.11	QP
2	60.0691	33.95	-11.50	22.45	40.00	-17.55	QP
3	81.7833	43.23	-14.70	28.53	40.00	-11.47	QP
4 *	110.9571	45.03	-12.96	32.07	43.50	-11.43	QP
5	298.2681	43.50	-10.52	32.98	46.00	-13.02	QP
6	434.0651	31.95	-6.70	25.25	46.00	-20.75	QP

white plastic shell:

Temperature:	26 ℃	Relative Humidtity:	54%RH
Test Voltage:	AC120V/60Hz	Phase:	Horizontal
Test Mode:	Mode 1-18(Mode 11 worst mode)		

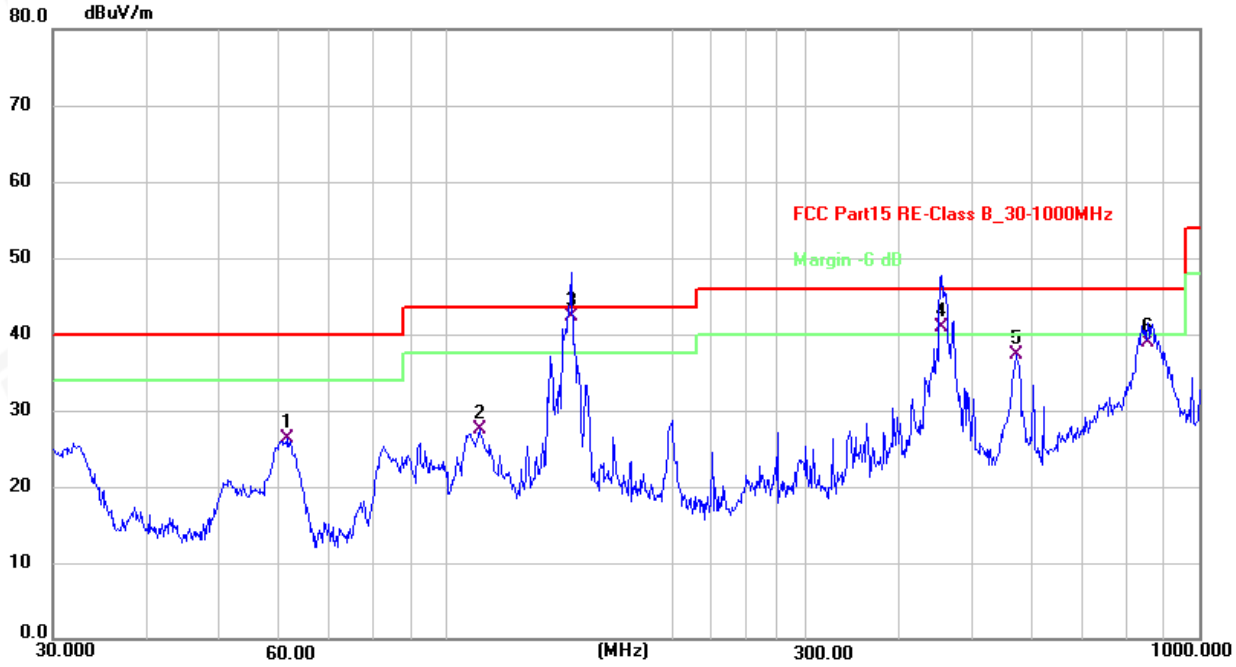


Remark:

4. Margin = Result (Result =Reading + Factor)–Limit
5. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
6. All modes have been tested,only show the worst case.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	149.4857	46.51	-9.91	36.60	43.50	-6.90	QP
2	183.2005	45.12	-12.36	32.76	43.50	-10.74	QP
3	293.0842	48.06	-10.64	37.42	46.00	-8.58	QP
4	400.4319	45.00	-7.74	37.26	46.00	-8.74	QP
5	454.3100	44.76	-6.16	38.60	46.00	-7.40	QP
6	854.0247	38.73	0.27	39.00	46.00	-7.00	QP

Temperature:	26 ℃	Relative Humidtity:	54%RH
Test Voltage:	AC120V/60Hz	Phase:	Vertical
Test Mode:	Mode 1-18(Mode 11 worst mode)		



Remark:.

4. Margin = Result (Result =Reading + Factor)–Limit
5. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
6. All modes have been tested,only show the worst case.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	61.5618	38.13	-11.73	26.40	40.00	-13.60	QP
2	110.5687	40.55	-12.99	27.56	43.50	-15.94	QP
3 *	146.3735	52.46	-10.16	42.30	43.50	-1.20	QP
4 !	454.3100	47.16	-6.16	41.00	46.00	-5.00	QP
5	572.6144	41.40	-4.00	37.40	46.00	-8.60	QP
6	854.0247	38.73	0.27	39.00	46.00	-7.00	QP

(1000MHz-25GHz) Spurious emission Requirements

black metal shell:

Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Detector Type
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
Low Channel (802.11b/2412 MHz)										
3264.65	61.64	44.70	6.70	28.20	-9.80	51.84	74.00	-22.16	PK	Vertical
3264.65	51.73	44.70	6.70	28.20	-9.80	41.93	54.00	-12.07	AV	Vertical
3264.58	61.48	44.70	6.70	28.20	-9.80	51.68	74.00	-22.32	PK	Horizontal
3264.58	51.02	44.70	6.70	28.20	-9.80	41.22	54.00	-12.78	AV	Horizontal
4824.46	59.40	44.20	9.04	31.60	-3.56	55.84	74.00	-18.16	PK	Vertical
4824.46	49.70	44.20	9.04	31.60	-3.56	46.14	54.00	-7.86	AV	Vertical
4824.49	59.40	44.20	9.04	31.60	-3.56	55.84	74.00	-18.16	PK	Horizontal
4824.49	49.95	44.20	9.04	31.60	-3.56	46.39	54.00	-7.61	AV	Horizontal
5359.79	48.91	44.20	9.86	32.00	-2.34	46.56	74.00	-27.44	PK	Vertical
5359.79	39.91	44.20	9.86	32.00	-2.34	37.56	54.00	-16.44	AV	Vertical
5359.77	48.28	44.20	9.86	32.00	-2.34	45.94	74.00	-28.06	PK	Horizontal
5359.77	38.57	44.20	9.86	32.00	-2.34	36.23	54.00	-17.77	AV	Horizontal
7235.72	54.18	43.50	11.40	35.50	3.40	57.58	74.00	-16.42	PK	Vertical
7235.72	44.66	43.50	11.40	35.50	3.40	48.06	54.00	-5.94	AV	Vertical
7235.79	54.03	43.50	11.40	35.50	3.40	57.43	74.00	-16.57	PK	Horizontal
7235.79	43.86	43.50	11.40	35.50	3.40	47.26	54.00	-6.74	AV	Horizontal
Low Channel (802.11b/2412 MHz)										
3264.81	62.29	44.70	6.70	28.20	-9.80	52.49	74.00	-21.51	PK	Vertical
3264.81	51.75	44.70	6.70	28.20	-9.80	41.95	54.00	-12.05	AV	Vertical
3264.75	61.93	44.70	6.70	28.20	-9.80	52.13	74.00	-21.87	PK	Horizontal
3264.75	50.44	44.70	6.70	28.20	-9.80	40.64	54.00	-13.36	AV	Horizontal
4874.55	59.03	44.20	9.04	31.60	-3.56	55.47	74.00	-18.53	PK	Vertical
4874.55	50.16	44.20	9.04	31.60	-3.56	46.60	54.00	-7.40	AV	Vertical
4874.60	59.41	44.20	9.04	31.60	-3.56	55.85	74.00	-18.15	PK	Horizontal
4874.60	49.27	44.20	9.04	31.60	-3.56	45.71	54.00	-8.29	AV	Horizontal
5359.79	48.63	44.20	9.86	32.00	-2.34	46.29	74.00	-27.71	PK	Vertical
5359.79	39.22	44.20	9.86	32.00	-2.34	36.88	54.00	-17.12	AV	Vertical
5359.84	47.43	44.20	9.86	32.00	-2.34	45.08	74.00	-28.92	PK	Horizontal
5359.84	39.39	44.20	9.86	32.00	-2.34	37.05	54.00	-16.95	AV	Horizontal
7310.84	54.48	43.50	11.40	35.50	3.40	57.88	74.00	-16.12	PK	Vertical
7310.84	44.11	43.50	11.40	35.50	3.40	47.51	54.00	-6.49	AV	Vertical
7310.74	54.43	43.50	11.40	35.50	3.40	57.83	74.00	-16.17	PK	Horizontal
7310.74	43.49	43.50	11.40	35.50	3.40	46.89	54.00	-7.11	AV	Horizontal

hannel (802.11b/2462 MHz)										
3264.68	61.14	44.70	6.70	28.20	-9.80	51.34	74.00	-22.66	PK	Vertical
3264.68	50.78	44.70	6.70	28.20	-9.80	40.98	54.00	-13.02	AV	Vertical
3264.79	60.81	44.70	6.70	28.20	-9.80	51.01	74.00	-22.99	PK	Horizontal
3264.79	50.75	44.70	6.70	28.20	-9.80	40.95	54.00	-13.05	AV	Horizontal
4924.49	58.92	44.20	9.04	31.60	-3.56	55.36	74.00	-18.64	PK	Vertical
4924.49	49.94	44.20	9.04	31.60	-3.56	46.38	54.00	-7.62	AV	Vertical
4924.39	58.46	44.20	9.04	31.60	-3.56	54.90	74.00	-19.10	PK	Horizontal
4924.39	50.25	44.20	9.04	31.60	-3.56	46.69	54.00	-7.31	AV	Horizontal
5359.84	48.40	44.20	9.86	32.00	-2.34	46.05	74.00	-27.95	PK	Vertical
5359.84	39.24	44.20	9.86	32.00	-2.34	36.90	54.00	-17.10	AV	Vertical
5359.65	48.57	44.20	9.86	32.00	-2.34	46.23	74.00	-27.77	PK	Horizontal
5359.65	38.38	44.20	9.86	32.00	-2.34	36.03	54.00	-17.97	AV	Horizontal
7385.71	54.62	43.50	11.40	35.50	3.40	58.02	74.00	-15.98	PK	Vertical
7385.71	44.19	43.50	11.40	35.50	3.40	47.59	54.00	-6.41	AV	Vertical
7385.84	54.56	43.50	11.40	35.50	3.40	57.96	74.00	-16.04	PK	Horizontal
7385.84	43.80	43.50	11.40	35.50	3.40	47.20	54.00	-6.80	AV	Horizontal

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. All modes have been measurement, only worst mode was reported.
   Emission Level = Reading + Factor
   Margin = Emission Level-Limit
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

white plastic shell:

Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Detector Type
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
Low Channel (802.11b/2412 MHz)										
3264.83	61.56	44.70	6.70	28.20	-9.80	51.76	74.00	-22.24	PK	Vertical
3264.83	51.33	44.70	6.70	28.20	-9.80	41.53	54.00	-12.47	AV	Vertical
3264.60	62.09	44.70	6.70	28.20	-9.80	52.29	74.00	-21.71	PK	Horizontal
3264.60	50.18	44.70	6.70	28.20	-9.80	40.38	54.00	-13.62	AV	Horizontal
4824.48	59.55	44.20	9.04	31.60	-3.56	55.99	74.00	-18.01	PK	Vertical
4824.48	50.08	44.20	9.04	31.60	-3.56	46.52	54.00	-7.48	AV	Vertical
4824.59	59.56	44.20	9.04	31.60	-3.56	56.00	74.00	-18.00	PK	Horizontal
4824.59	50.41	44.20	9.04	31.60	-3.56	46.85	54.00	-7.15	AV	Horizontal
5359.88	48.59	44.20	9.86	32.00	-2.34	46.25	74.00	-27.75	PK	Vertical
5359.88	40.16	44.20	9.86	32.00	-2.34	37.82	54.00	-16.18	AV	Vertical
5359.78	47.78	44.20	9.86	32.00	-2.34	45.44	74.00	-28.56	PK	Horizontal
5359.78	38.12	44.20	9.86	32.00	-2.34	35.77	54.00	-18.23	AV	Horizontal
7235.94	54.18	43.50	11.40	35.50	3.40	57.58	74.00	-16.42	PK	Vertical
7235.94	44.59	43.50	11.40	35.50	3.40	47.99	54.00	-6.01	AV	Vertical
7235.83	54.45	43.50	11.40	35.50	3.40	57.85	74.00	-16.15	PK	Horizontal
7235.83	44.94	43.50	11.40	35.50	3.40	48.34	54.00	-5.66	AV	Horizontal
Low Channel (802.11b/2412 MHz)										
3264.61	61.23	44.70	6.70	28.20	-9.80	51.43	74.00	-22.57	PK	Vertical
3264.61	50.13	44.70	6.70	28.20	-9.80	40.33	54.00	-13.67	AV	Vertical
3264.69	62.10	44.70	6.70	28.20	-9.80	52.30	74.00	-21.70	PK	Horizontal
3264.69	50.76	44.70	6.70	28.20	-9.80	40.96	54.00	-13.04	AV	Horizontal
4874.41	58.30	44.20	9.04	31.60	-3.56	54.74	74.00	-19.26	PK	Vertical
4874.41	49.21	44.20	9.04	31.60	-3.56	45.65	54.00	-8.35	AV	Vertical
4874.55	58.46	44.20	9.04	31.60	-3.56	54.90	74.00	-19.10	PK	Horizontal
4874.55	50.15	44.20	9.04	31.60	-3.56	46.59	54.00	-7.41	AV	Horizontal
5359.72	48.46	44.20	9.86	32.00	-2.34	46.12	74.00	-27.88	PK	Vertical
5359.72	39.65	44.20	9.86	32.00	-2.34	37.30	54.00	-16.70	AV	Vertical
5359.63	47.51	44.20	9.86	32.00	-2.34	45.16	74.00	-28.84	PK	Horizontal
5359.63	38.67	44.20	9.86	32.00	-2.34	36.33	54.00	-17.67	AV	Horizontal
7310.68	53.73	43.50	11.40	35.50	3.40	57.13	74.00	-16.87	PK	Vertical
7310.68	44.95	43.50	11.40	35.50	3.40	48.35	54.00	-5.65	AV	Vertical
7310.83	53.83	43.50	11.40	35.50	3.40	57.23	74.00	-16.77	PK	Horizontal
7310.83	44.51	43.50	11.40	35.50	3.40	47.91	54.00	-6.09	AV	Horizontal

hannel (802.11b/2462 MHz)										
3264.86	61.56	44.70	6.70	28.20	-9.80	51.76	74.00	-22.24	PK	Vertical
3264.86	51.58	44.70	6.70	28.20	-9.80	41.78	54.00	-12.22	AV	Vertical
3264.71	61.19	44.70	6.70	28.20	-9.80	51.39	74.00	-22.61	PK	Horizontal
3264.71	50.62	44.70	6.70	28.20	-9.80	40.82	54.00	-13.18	AV	Horizontal
4924.41	59.59	44.20	9.04	31.60	-3.56	56.03	74.00	-17.97	PK	Vertical
4924.41	50.00	44.20	9.04	31.60	-3.56	46.44	54.00	-7.56	AV	Vertical
4924.38	58.74	44.20	9.04	31.60	-3.56	55.18	74.00	-18.82	PK	Horizontal
4924.38	50.17	44.20	9.04	31.60	-3.56	46.61	54.00	-7.39	AV	Horizontal
5359.61	49.20	44.20	9.86	32.00	-2.34	46.86	74.00	-27.14	PK	Vertical
5359.61	39.12	44.20	9.86	32.00	-2.34	36.78	54.00	-17.22	AV	Vertical
5359.77	47.53	44.20	9.86	32.00	-2.34	45.19	74.00	-28.81	PK	Horizontal
5359.77	38.95	44.20	9.86	32.00	-2.34	36.60	54.00	-17.40	AV	Horizontal
7385.70	54.47	43.50	11.40	35.50	3.40	57.87	74.00	-16.13	PK	Vertical
7385.70	43.74	43.50	11.40	35.50	3.40	47.14	54.00	-6.86	AV	Vertical
7385.93	54.78	43.50	11.40	35.50	3.40	58.18	74.00	-15.82	PK	Horizontal
7385.93	44.09	43.50	11.40	35.50	3.40	47.49	54.00	-6.51	AV	Horizontal

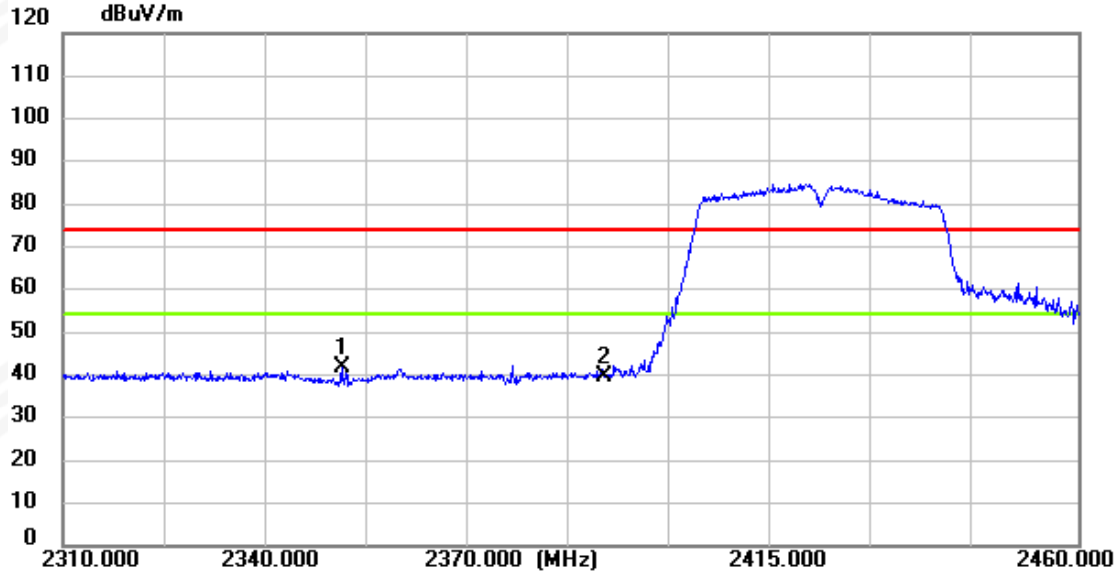
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. All modes have been measurement, only worst mode was reported.
   Emission Level = Reading + Factor
   Margin = Emission Level-Limit
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

3.2.6 TEST RESULTS(Band edge Requirements)

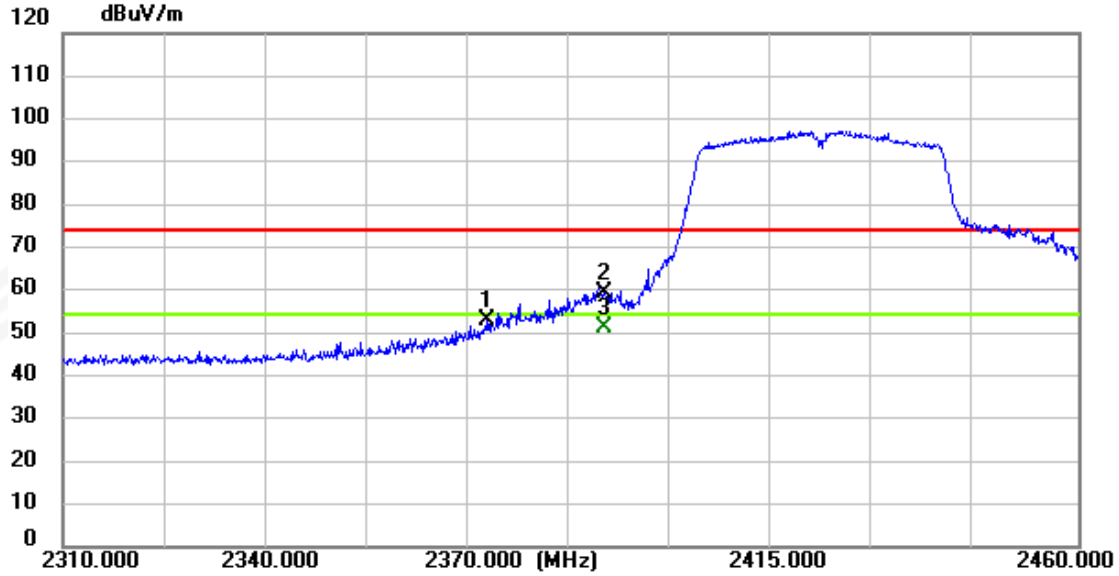
black metal shell: 802.11 n40-Low

Horizontal



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2351.2500	41.65	74.00	-32.35	peak
2390.000	39.82	74.00	-34.18	peak

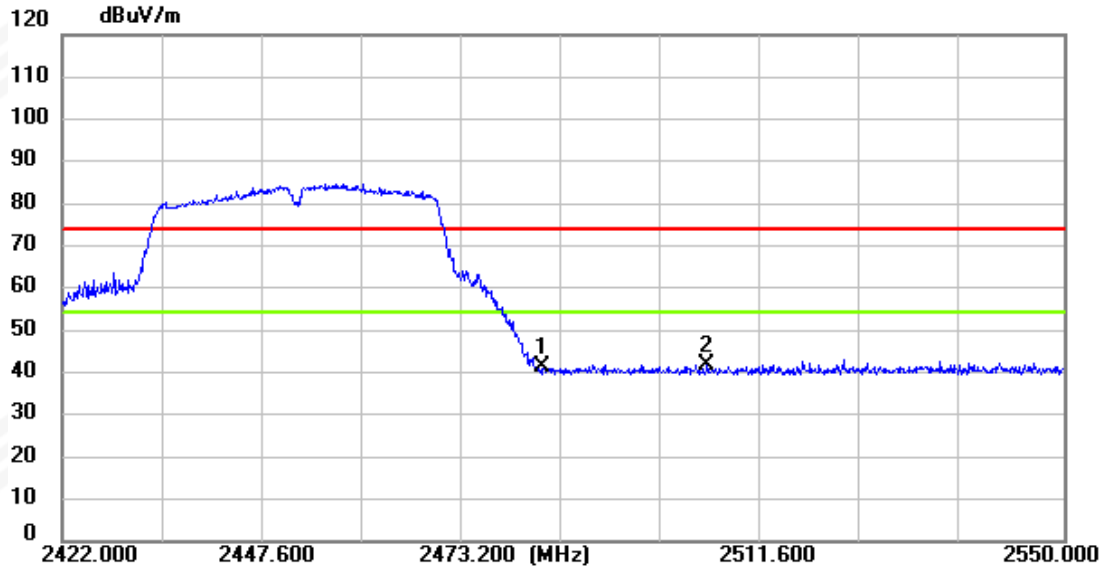
Vertical



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2372.5500	53.03	74.00	-20.97	peak
2390.000	59.19	74.00	-14.81	peak
2390.000	51.22	54.00	-2.78	AVG

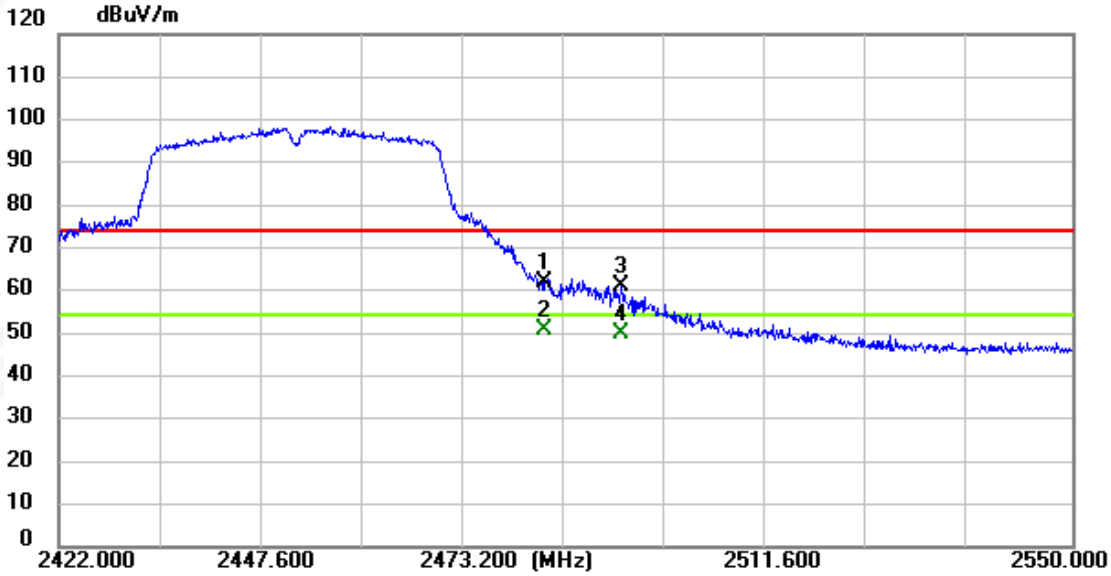
802.11 n40-High

Horizontal



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2483.5000	41.23	74.00	-32.77	peak
2504.4320	41.99	74.00	-32.01	peak

Vertical

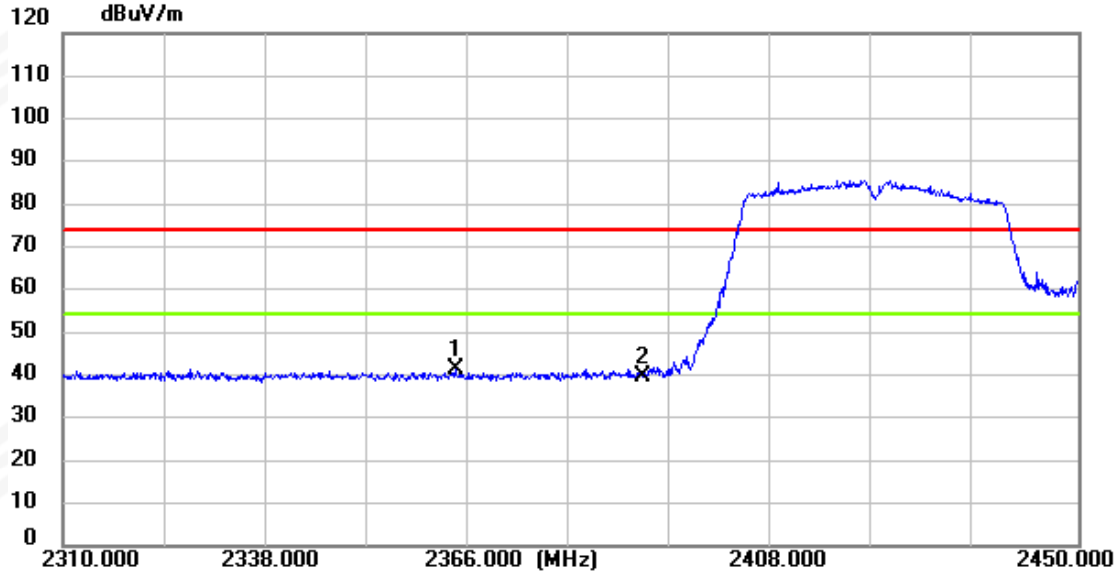


Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2483.5000	61.95	74.00	-12.05	peak
2483.5000	50.86	54.00	-3.14	AVG
2493.0400	61.10	74.00	-12.90	peak
2493.0400	49.92	54.00	-4.08	AVG

Note: All modes have been measurement, only worst mode was reported.

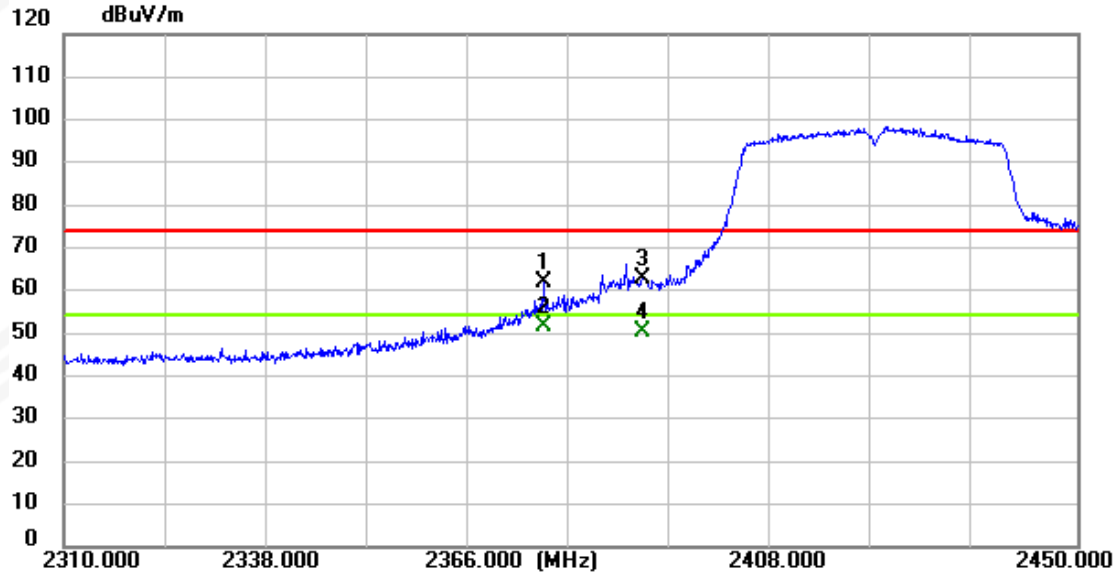
white plastic shell: 802.11 n40-Low

Horizontal



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2364.1800	41.15	74.00	-32.85	peak
2390.0000	39.81	74.00	-34.19	peak

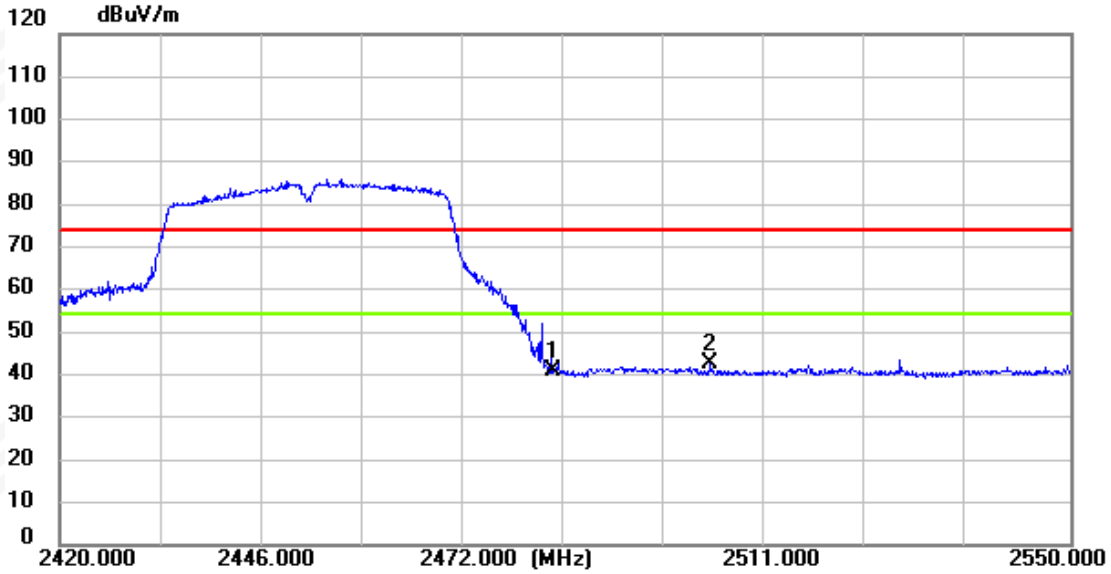
Vertical



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2376.2200	61.84	74.00	-12.16	peak
2376.2200	51.53	54.00	-2.47	AVG
2390.0000	62.79	74.00	-11.21	peak
2390.0000	50.47	54.00	-3.53	AVG

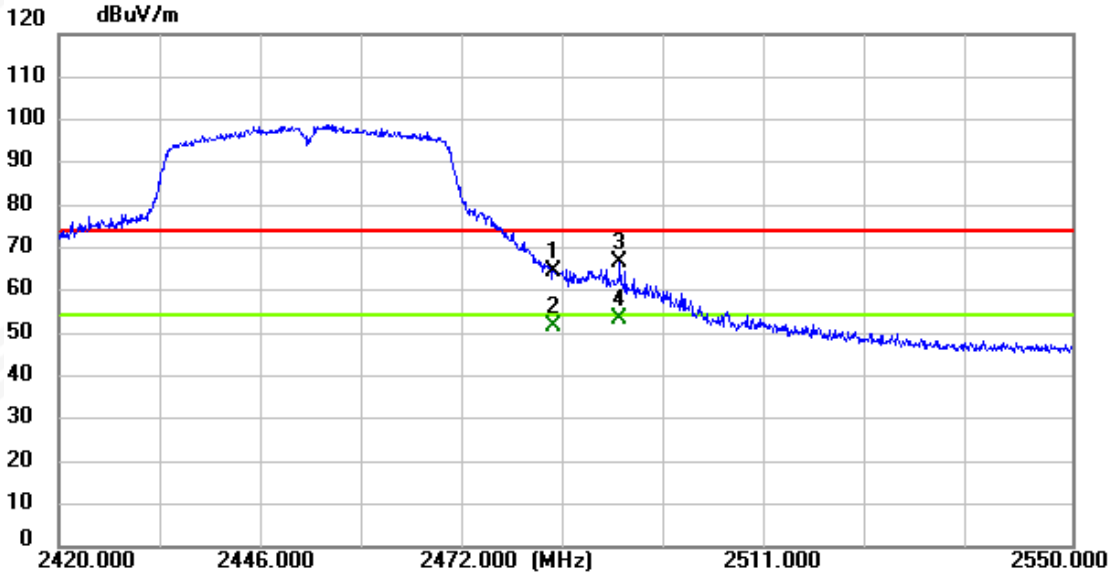
802.11 n40-High

Horizontal



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2483.5000	40.72	74.00	-33.28	peak
2503.7200	42.46	74.00	-31.54	peak

Vertical



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2483.5000	64.31	74.00	-9.69	peak
2483.5000	51.69	54.00	-2.31	AVG
2492.0200	66.47	74.00	-7.53	peak
2492.0200	53.24	54.00	-0.76	AVG

Note: All modes have been measurement, only worst mode was reported.

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
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

Note:

1. The test data please refer to APPENDIX 1.

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
Note: The test data please refer to APPENDIX 1.

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 = 1% to 5% of the OBW but not less than 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

Note: The test data please refer to APPENDIX 1.

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 averaging conducted output powe r of a DTS EUT.

Method AVGSA-2 uses trace averaging across ON and OFF times of the EUT transmissions, foll owed by duty cycle correction. The procedure for this method is as follows:

a) Measure the duty cycle D of the transmitter output signal as described in 11.6.

b) Set span to at least 1.5 times the OBW.

c) Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.

d) Set VBW ≥ [3 × RBW].

e) Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so th

at narrowband signals are not lost between frequency bins.)

f) Sweep time = auto.

g) Detector = RMS (i.e., power averaging), if available. Otherwise, use the sample detector mode . h) Do not use sweep triggering. Allow the sweep to “free run.”

i) Trace average at least 100 traces in power averaging (rms) mode; however, the number of trac es to be averaged shall be increased above 100 as needed such that the average accurately re presents the true average over the ON and OFF periods of the transmitter.

j) Compute power by integrating the spectrum across the OBW of the signal using the instrument ’ s band power measurement function with band limits set equal to the OBW band edges. If the in strument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

k) Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average o ver both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.

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
Note: The test data please refer to APPENDIX 1.

8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

15.203 requirements:

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217,§15.219, or §15.221. Further, this requirement does not apply to intentionalradiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

8.2 EUT ANTENNA

The EUT antenna is external antenna, not using a standard antenna jack or electrical connector for antenna replacement, fulfill the requirement of this section.

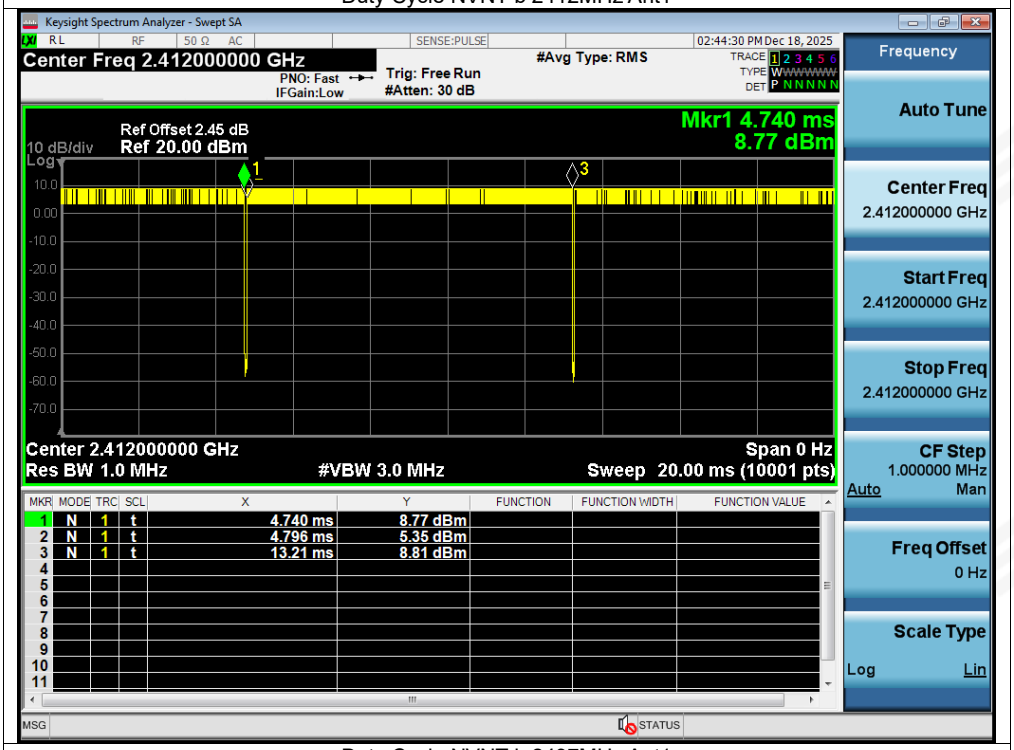
APPENDIX 1-TEST DATA

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.36	0	0.12
NVNT	b	2437	Ant1	99.34	0	0.12
NVNT	b	2462	Ant1	99.34	0	0.12
NVNT	g	2412	Ant1	96.15	0.17	0.72
NVNT	g	2437	Ant1	96.14	0.17	0.72
NVNT	g	2462	Ant1	96.15	0.17	0.72
NVNT	n20	2412	Ant1	95.74	0.19	0.77
NVNT	n20	2437	Ant1	95.88	0.18	0.77
NVNT	n20	2462	Ant1	95.89	0.18	0.77
NVNT	n40	2422	Ant1	92.86	0.32	1.54
NVNT	n40	2437	Ant1	92.86	0.32	1.54
NVNT	n40	2452	Ant1	92.86	0.32	1.54
NVNT	ax20	2412	Ant1	85.03	0.7	3.14
NVNT	ax20	2437	Ant1	85.03	0.7	3.14
NVNT	ax20	2462	Ant1	85.03	0.7	3.14
NVNT	ax40	2422	Ant1	86.49	0.63	3.13
NVNT	ax40	2437	Ant1	86.11	0.65	3.23
NVNT	ax40	2452	Ant1	83.78	0.77	3.23

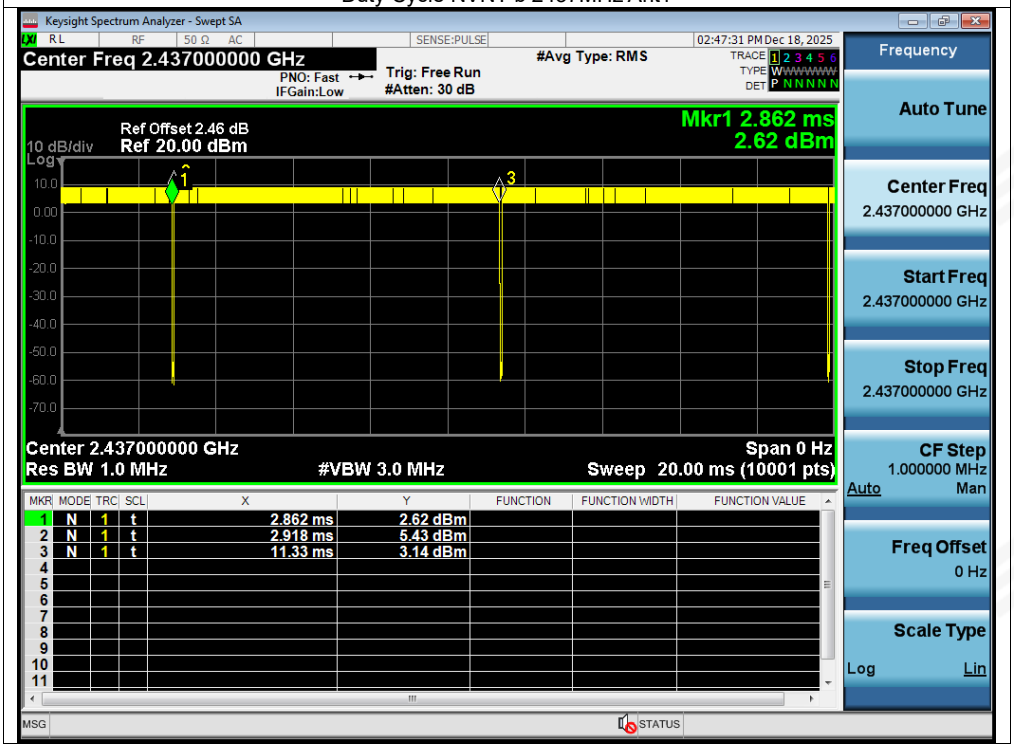
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant2	99.34	0	0.12
NVNT	b	2437	Ant2	99.34	0	0.12
NVNT	b	2462	Ant2	99.34	0	0.12
NVNT	g	2412	Ant2	96.14	0.17	0.72
NVNT	g	2437	Ant2	96.14	0.17	0.72
NVNT	g	2462	Ant2	96.14	0.17	0.72
NVNT	n20	2412	Ant2	95.9	0.18	0.76
NVNT	n20	2437	Ant2	95.9	0.18	0.76
NVNT	n20	2462	Ant2	95.89	0.18	0.76
NVNT	n40	2422	Ant2	92.86	0.32	1.54
NVNT	n40	2437	Ant2	92.86	0.32	1.54
NVNT	n40	2452	Ant2	91.43	0.39	1.56
NVNT	ax20	2412	Ant2	84.32	0.74	3.21
NVNT	ax20	2437	Ant2	95.89	0.18	0.77
NVNT	ax20	2462	Ant2	94.83	0.23	0.97
NVNT	ax40	2422	Ant2	91.43	0.39	1.56
NVNT	ax40	2437	Ant2	91.55	0.38	1.54
NVNT	ax40	2452	Ant2	92.86	0.32	1.54

Test Graphs

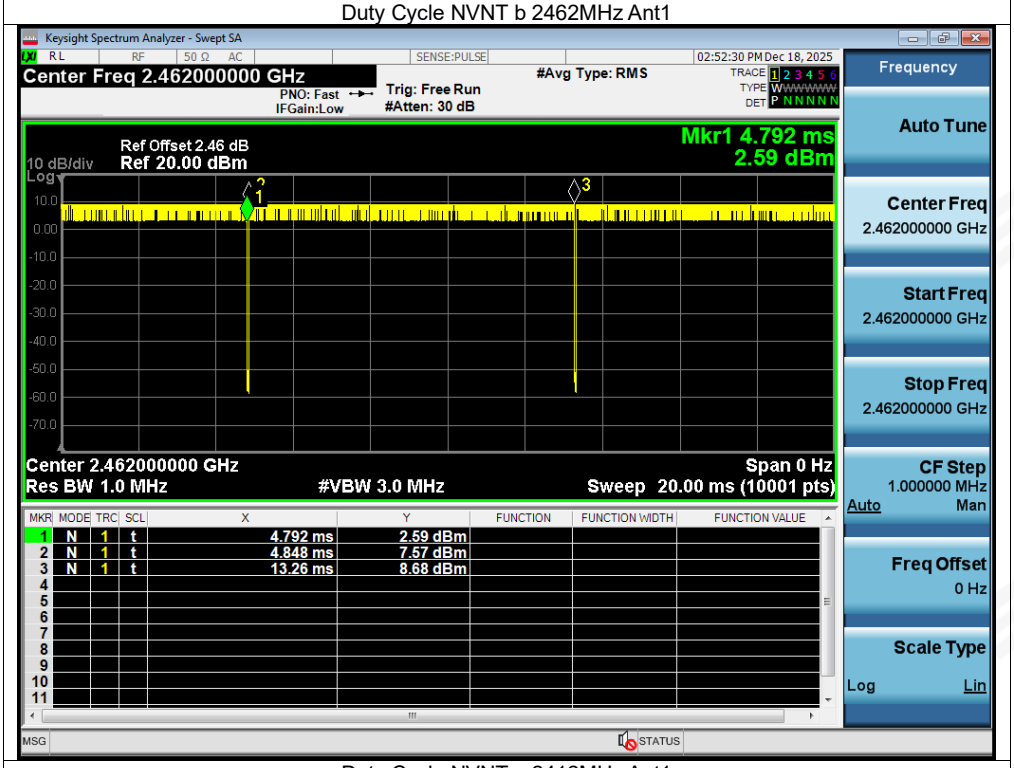
Duty Cycle NVNT b 2412MHz Ant1



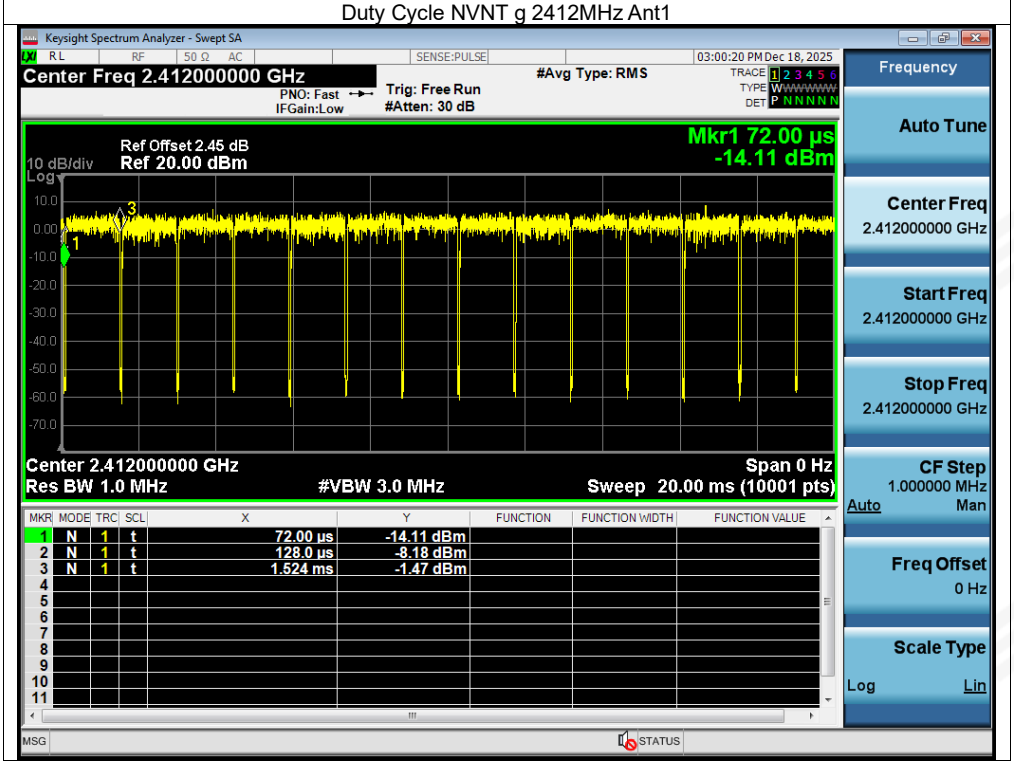
Duty Cycle NVNT b 2437MHz Ant1



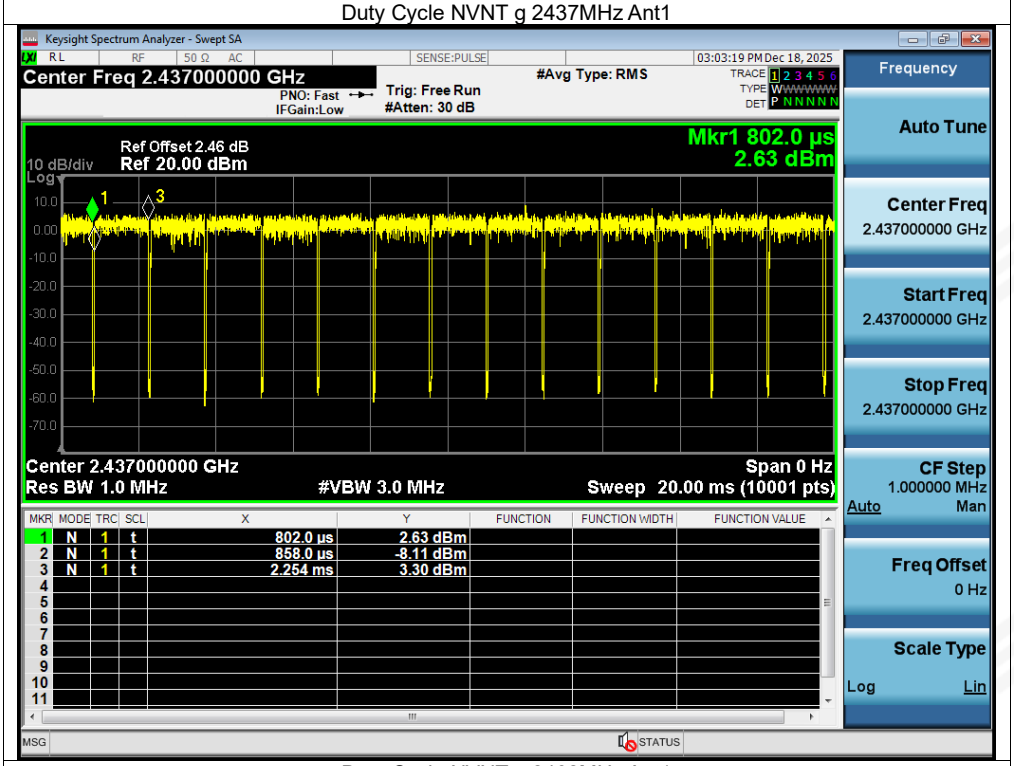
Duty Cycle NVNT b 2462MHz Ant1



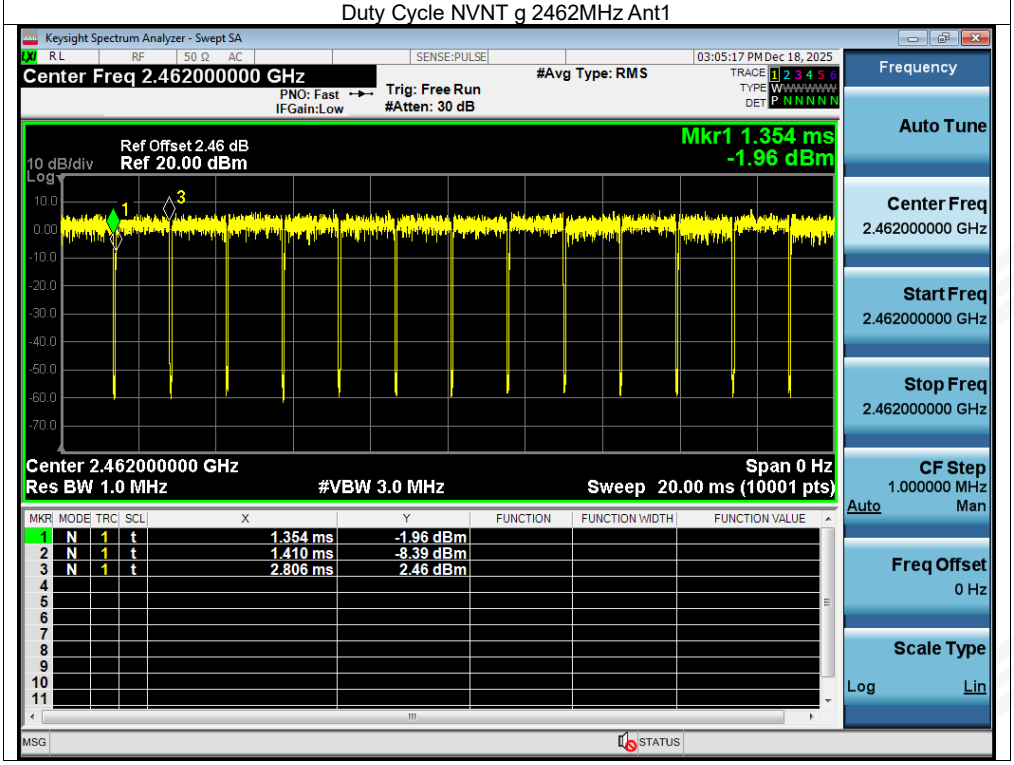
Duty Cycle NVNT g 2412MHz Ant1



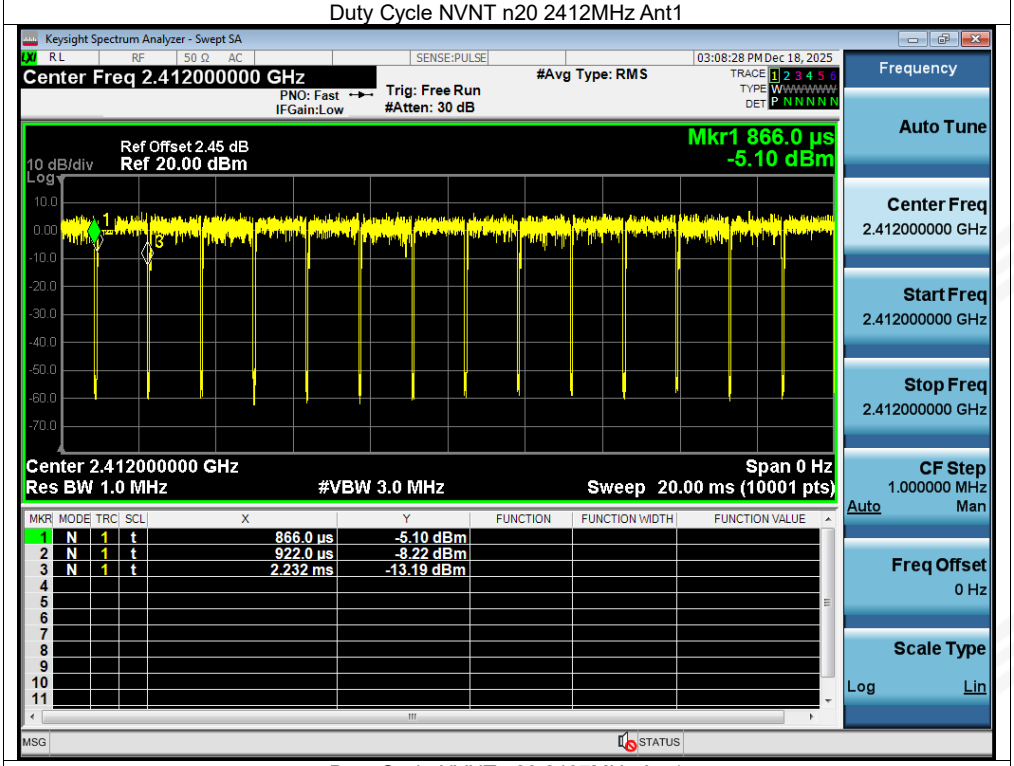
Duty Cycle NVNT g 2437MHz Ant1



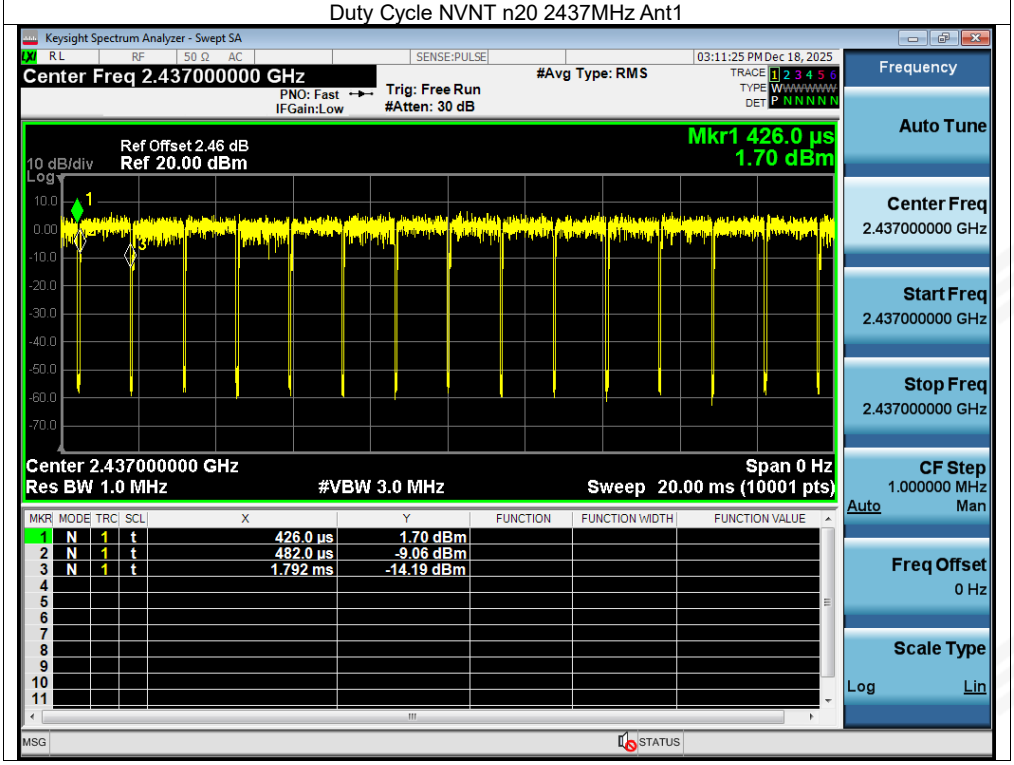
Duty Cycle NVNT g 2462MHz Ant1



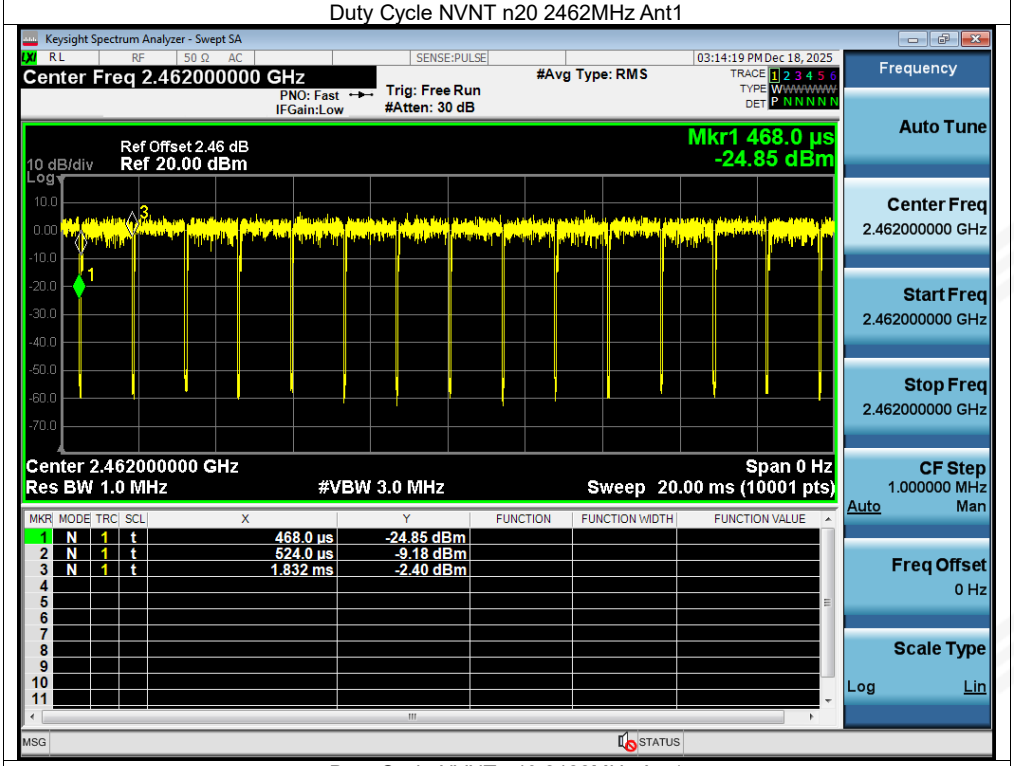
Duty Cycle NVNT n20 2412MHz Ant1



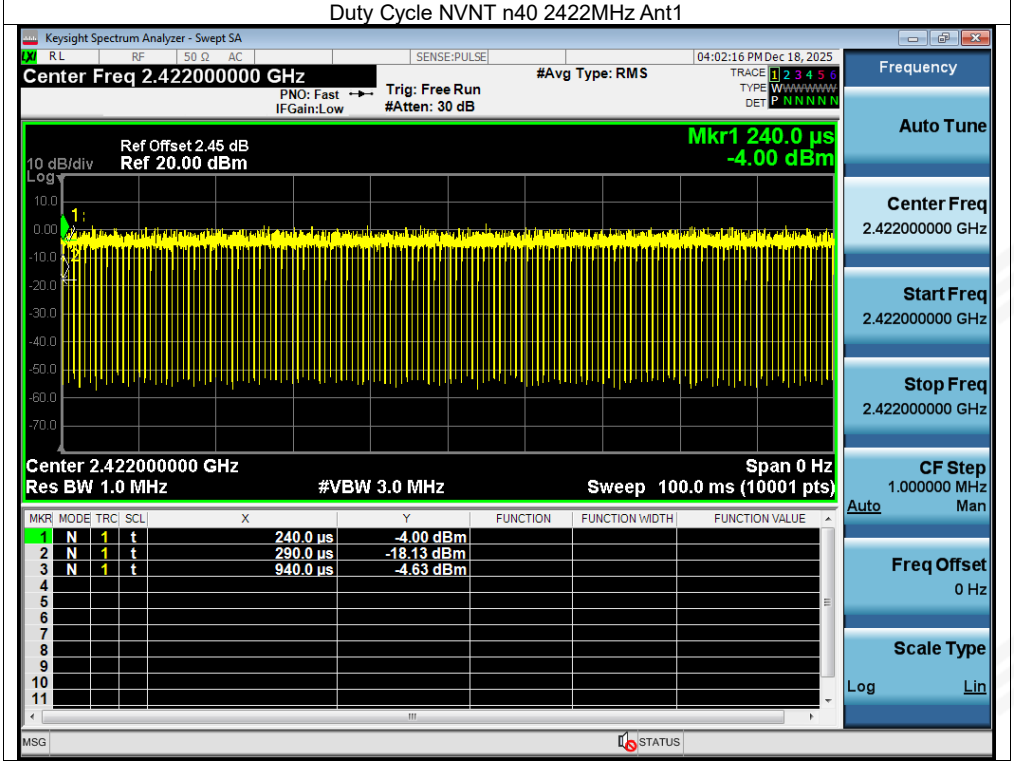
Duty Cycle NVNT n20 2437MHz Ant1



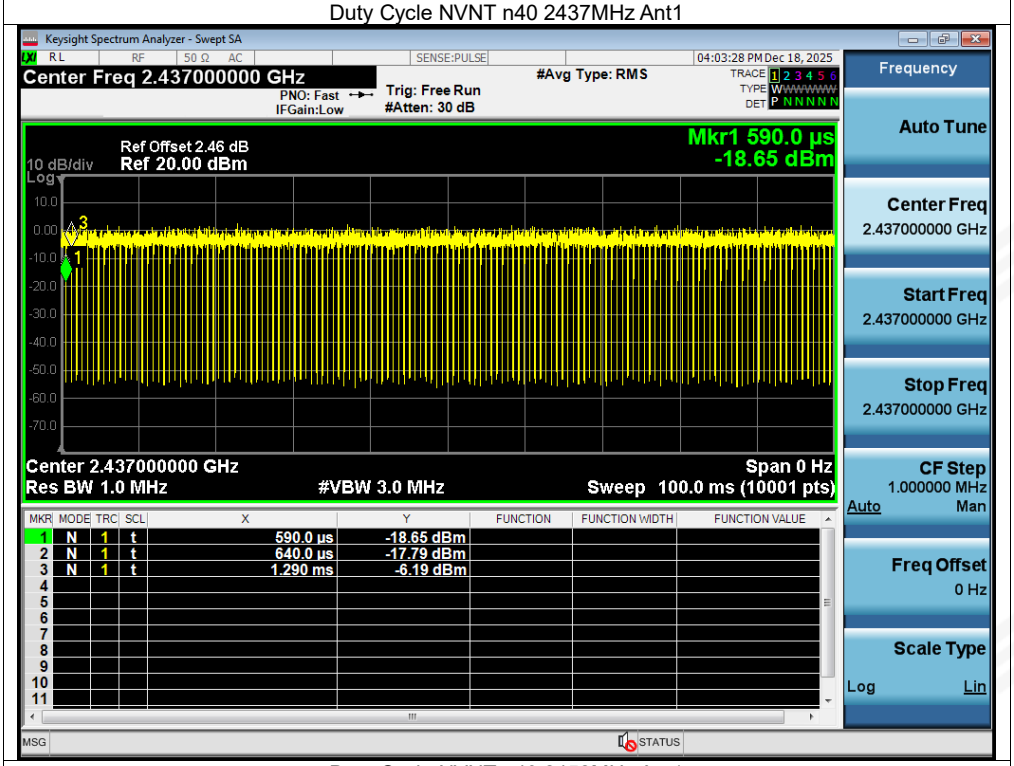
Duty Cycle NVNT n20 2462MHz Ant1



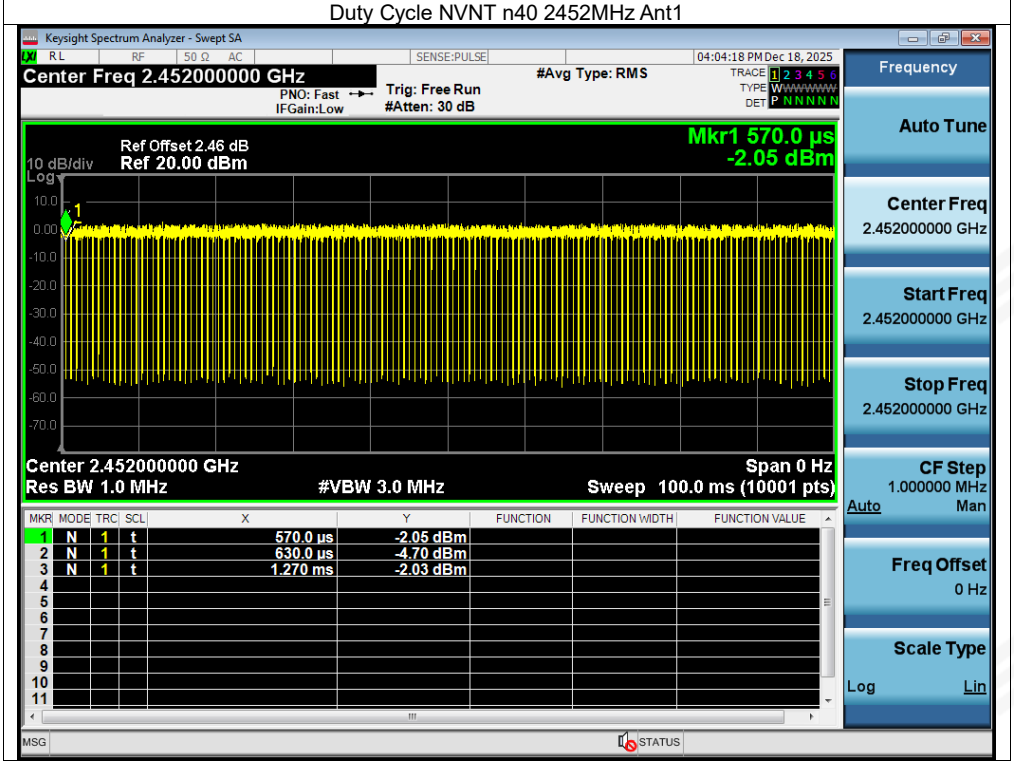
Duty Cycle NVNT n40 2422MHz Ant1



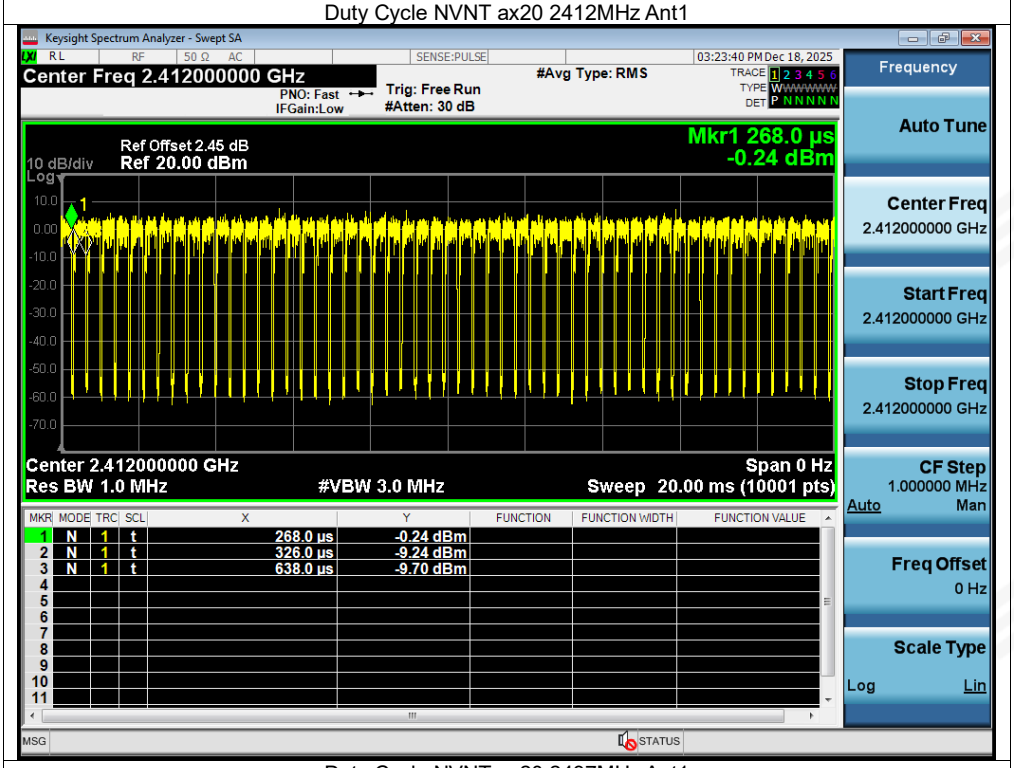
Duty Cycle NVNT n40 2437MHz Ant1



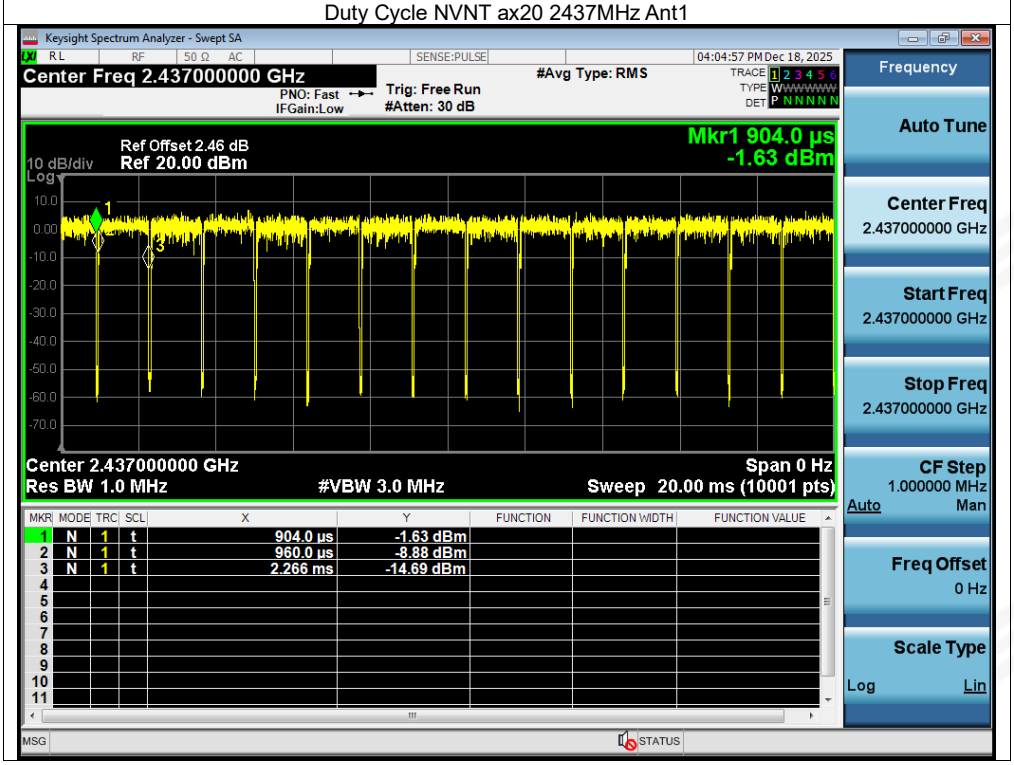
Duty Cycle NVNT n40 2452MHz Ant1



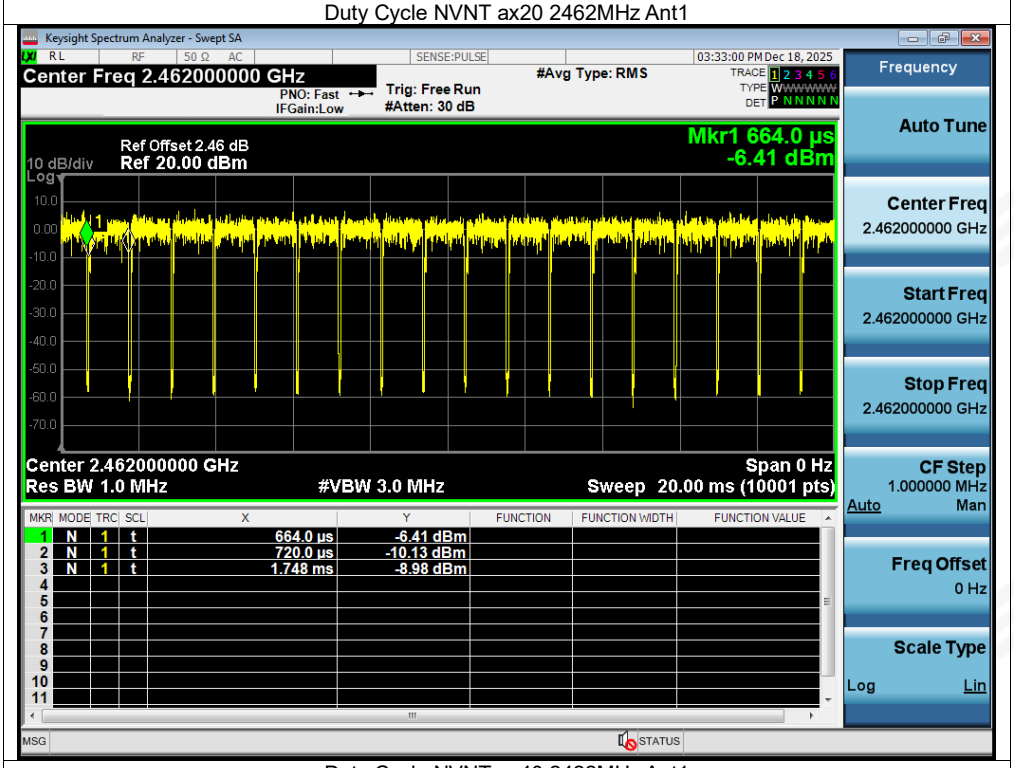
Duty Cycle NVNT ax20 2412MHz Ant1



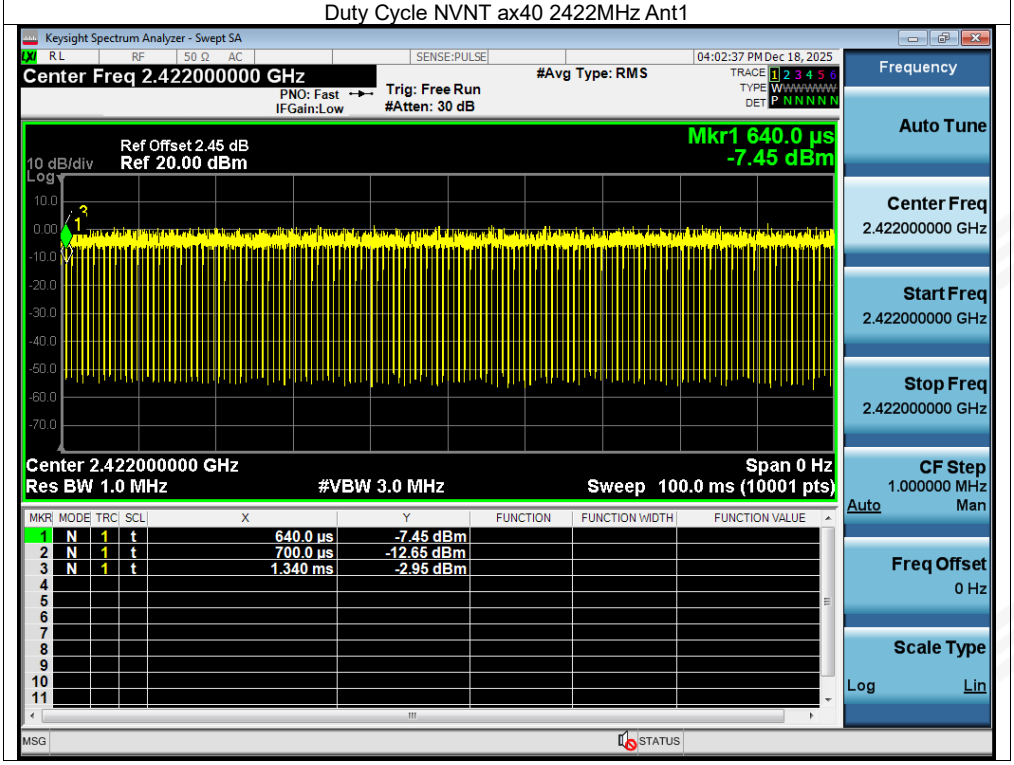
Duty Cycle NVNT ax20 2437MHz Ant1



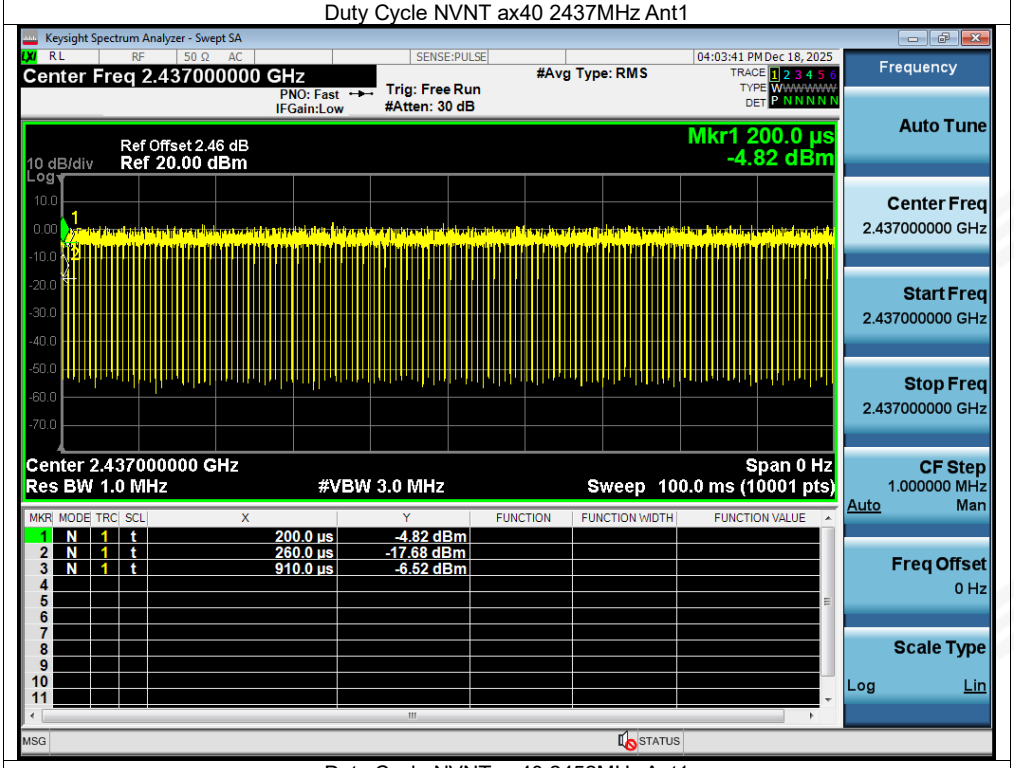
Duty Cycle NVNT ax20 2462MHz Ant1



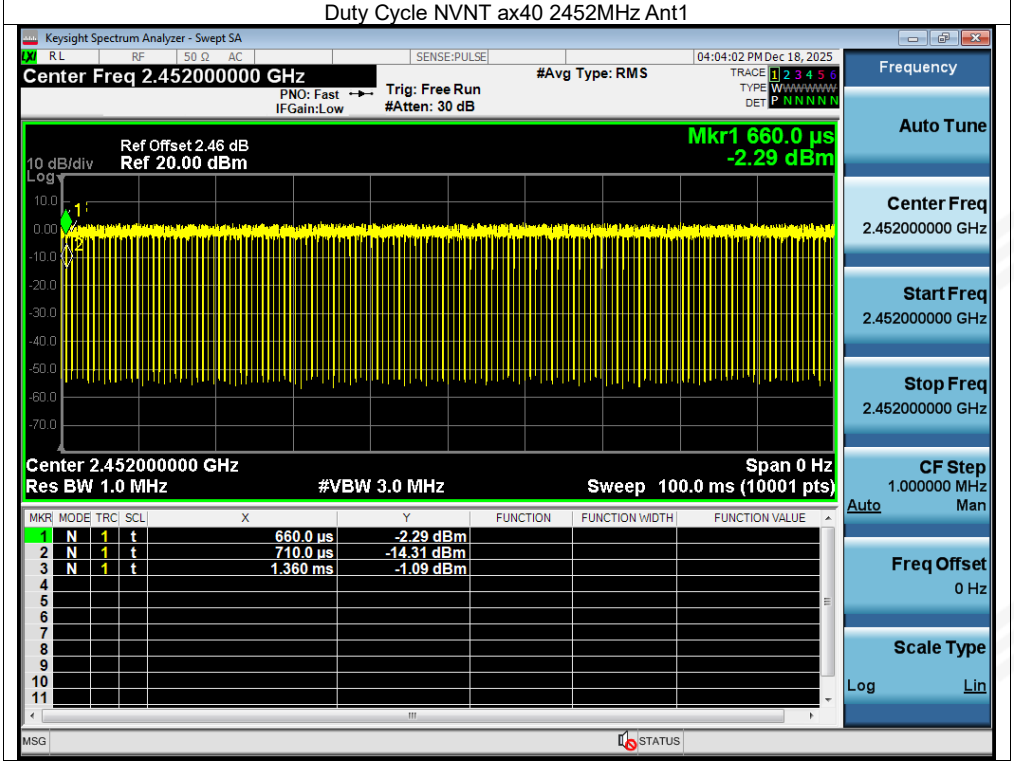
Duty Cycle NVNT ax40 2422MHz Ant1



Duty Cycle NVNT ax40 2437MHz Ant1

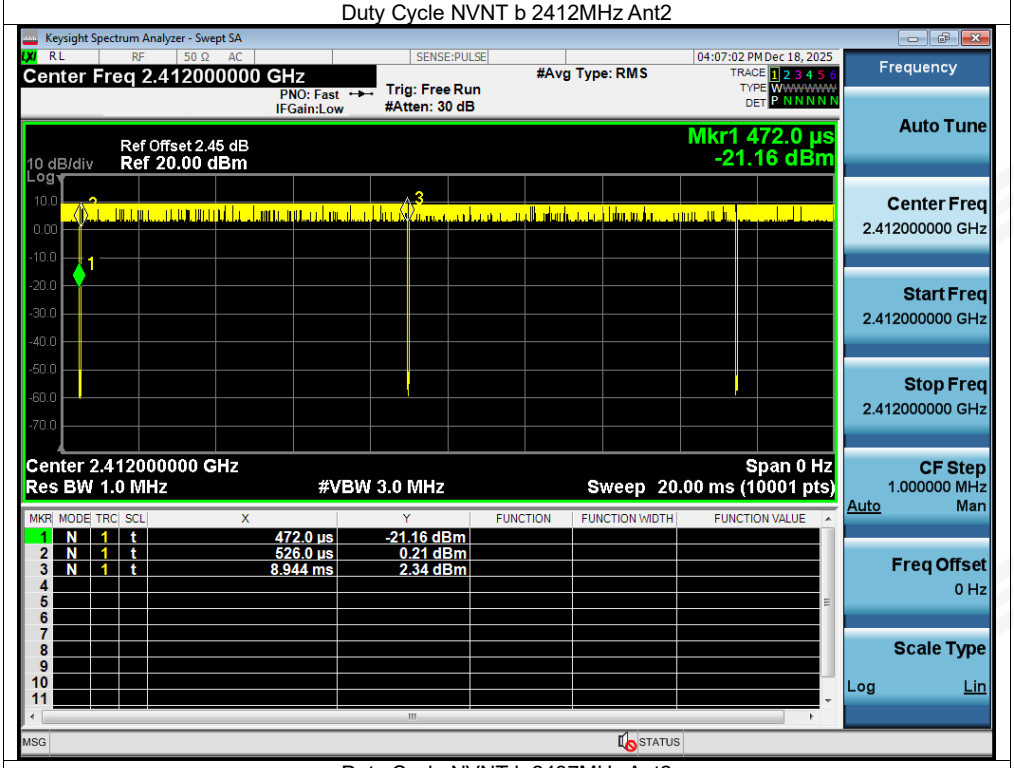


Duty Cycle NVNT ax40 2452MHz Ant1

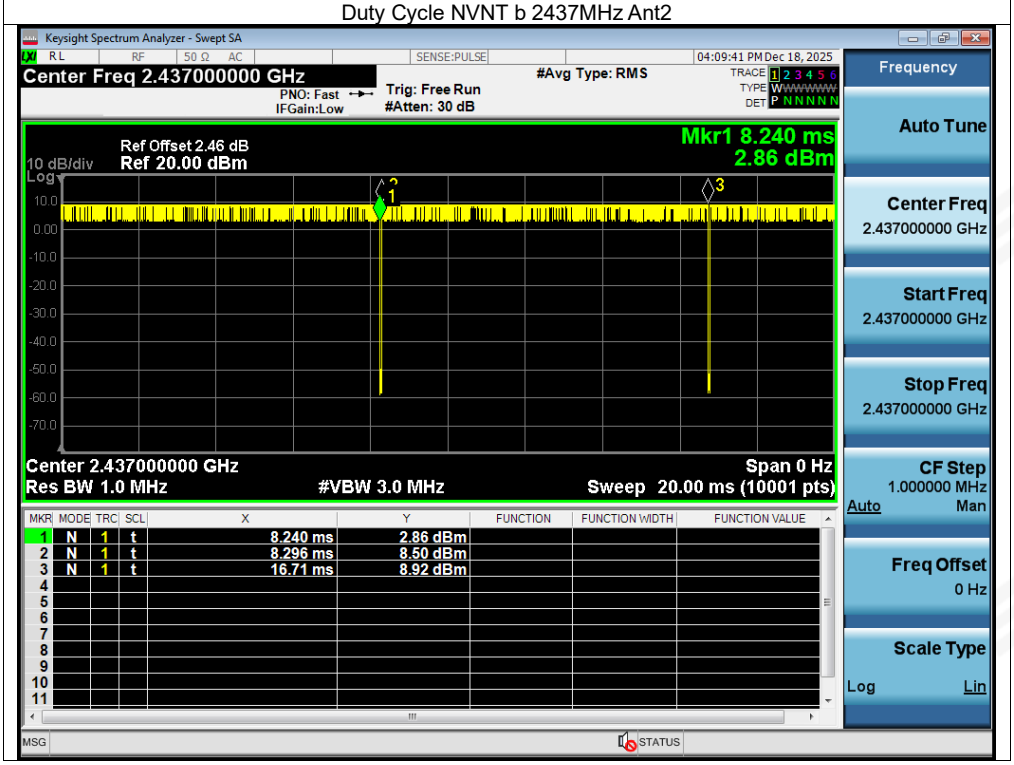


Test Graphs

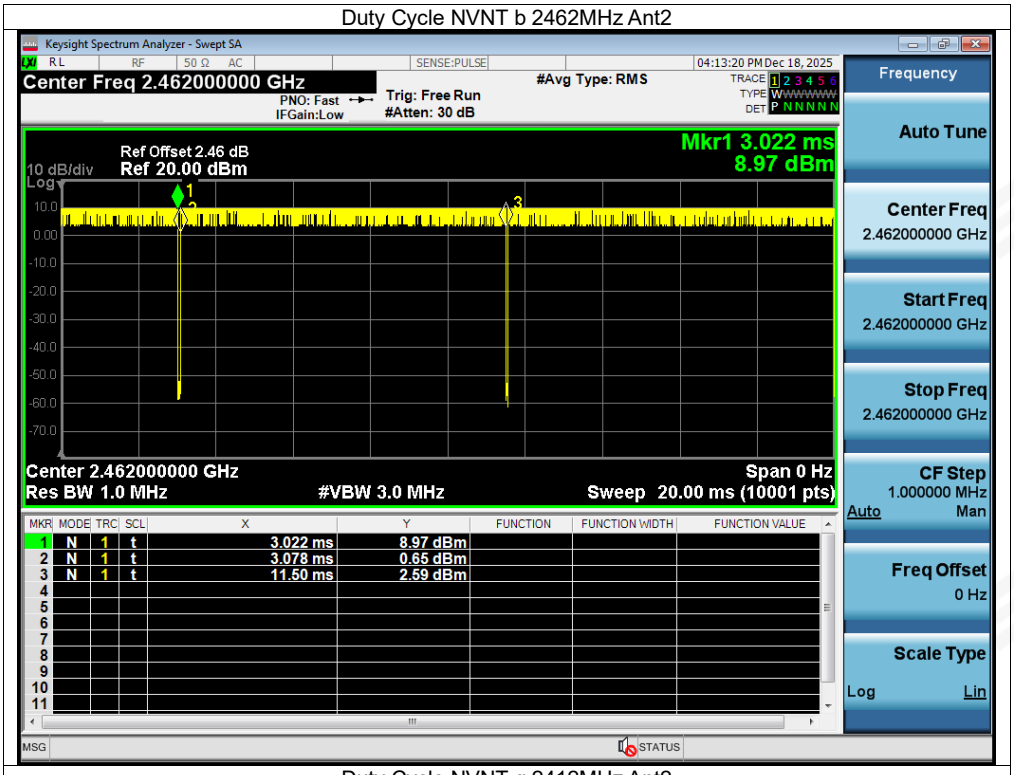
Duty Cycle NVNT b 2412MHz Ant2



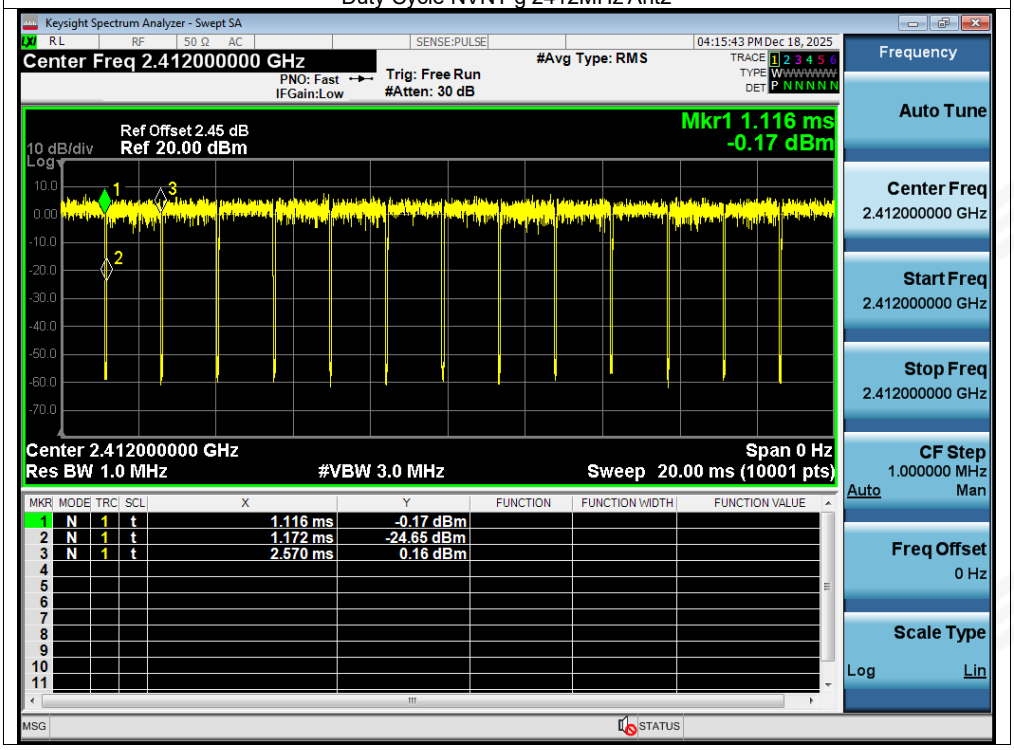
Duty Cycle NVNT b 2437MHz Ant2



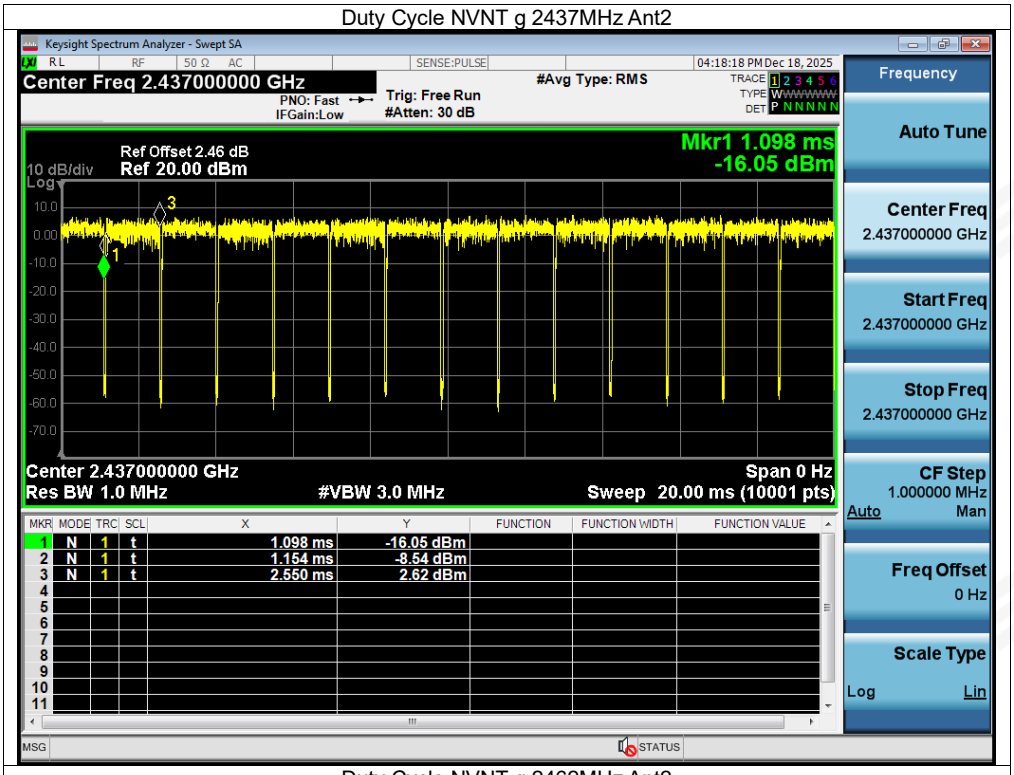
Duty Cycle NVNT b 2462MHz Ant2



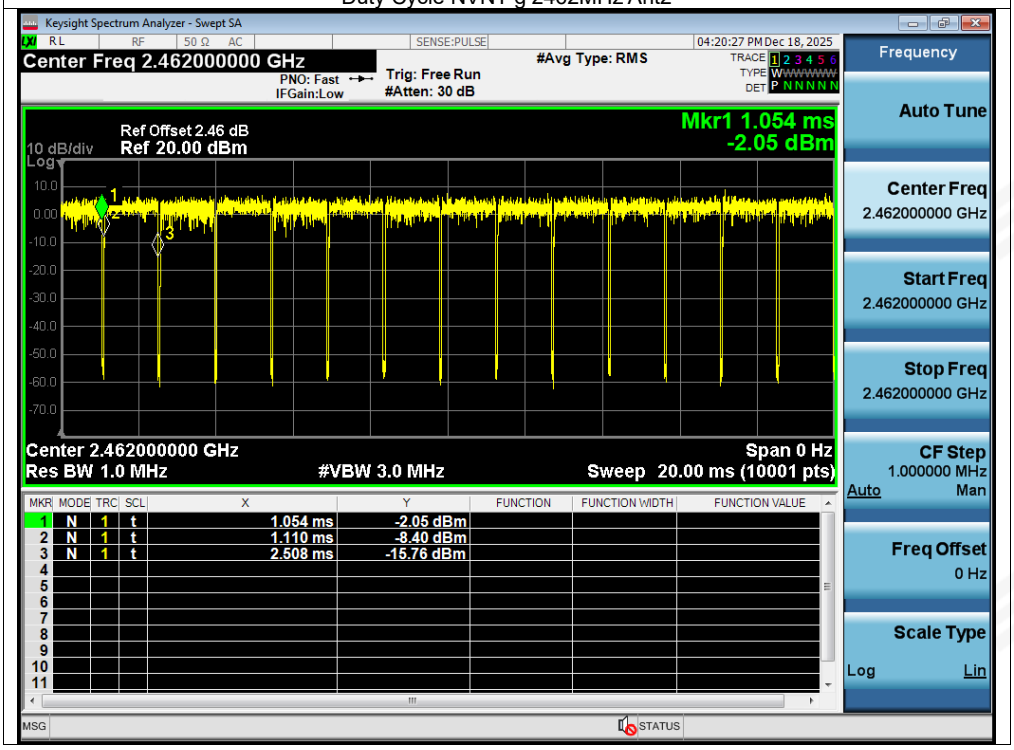
Duty Cycle NVNT g 2412MHz Ant2



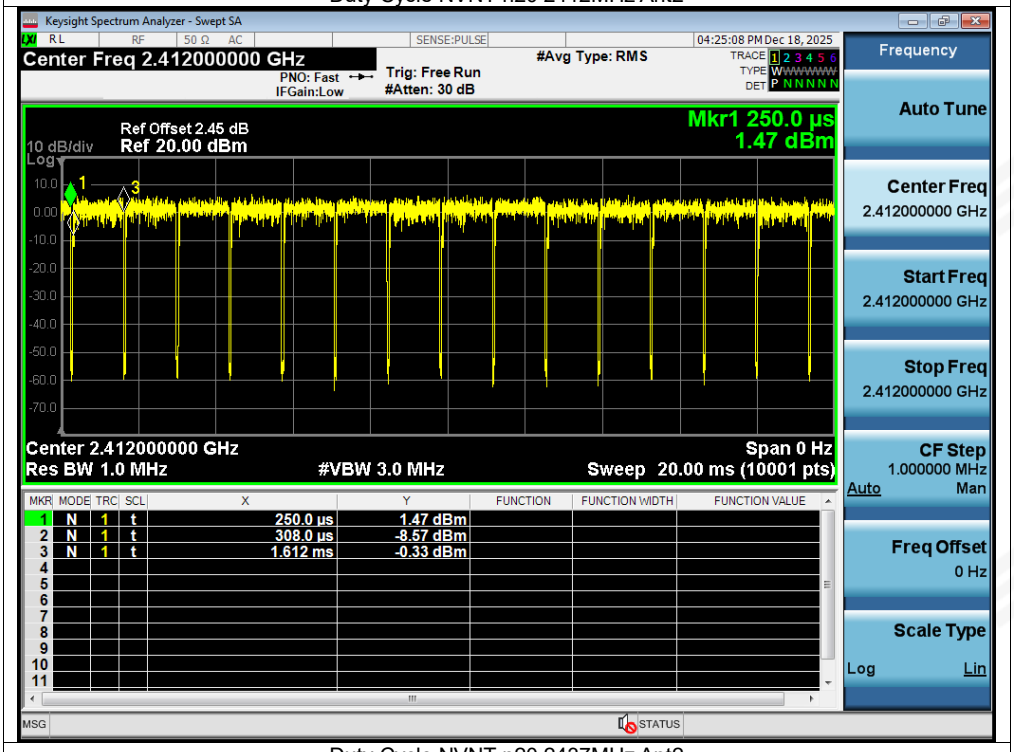
Duty Cycle NVNT g 2437MHz Ant2



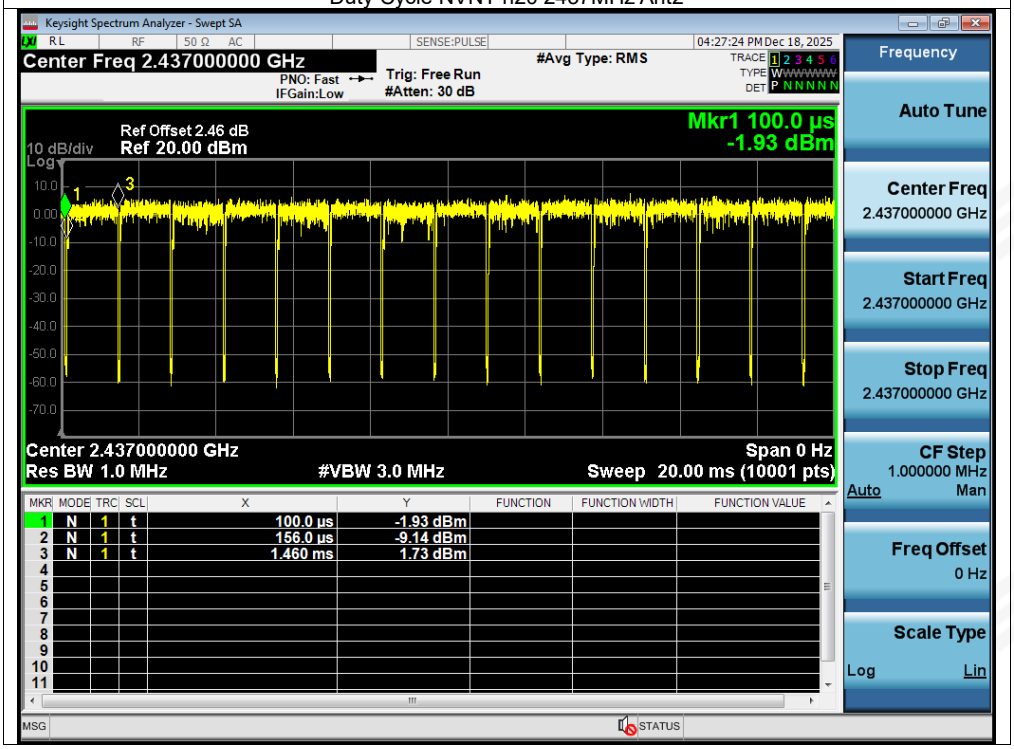
Duty Cycle NVNT g 2462MHz Ant2



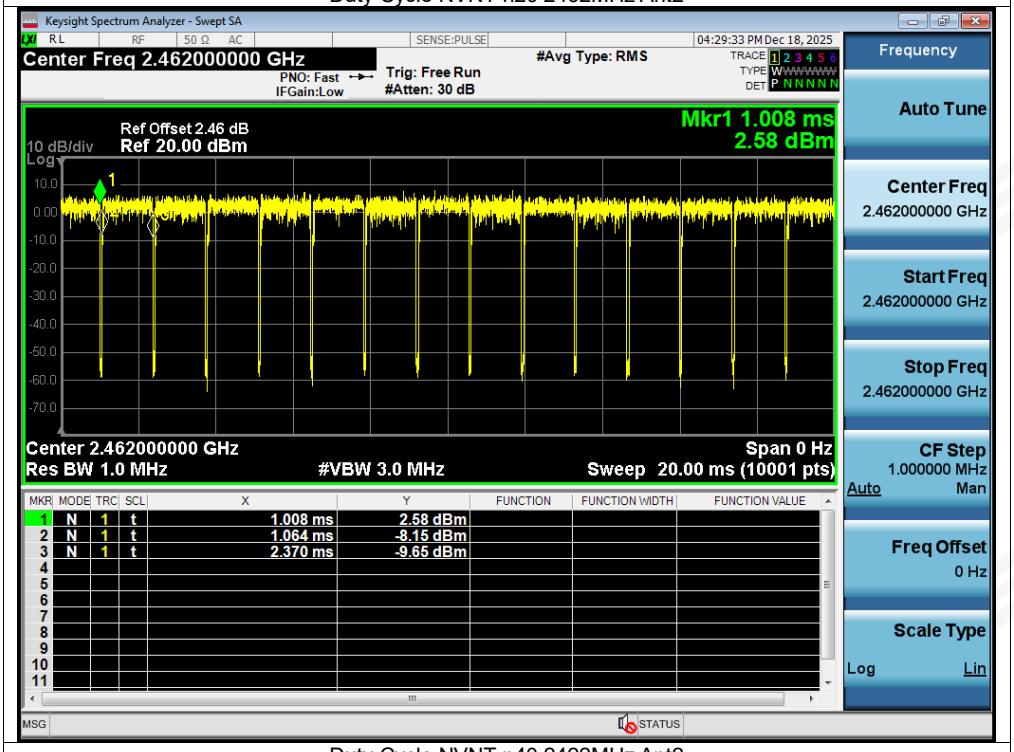
Duty Cycle NVNT n20 2412MHz Ant2



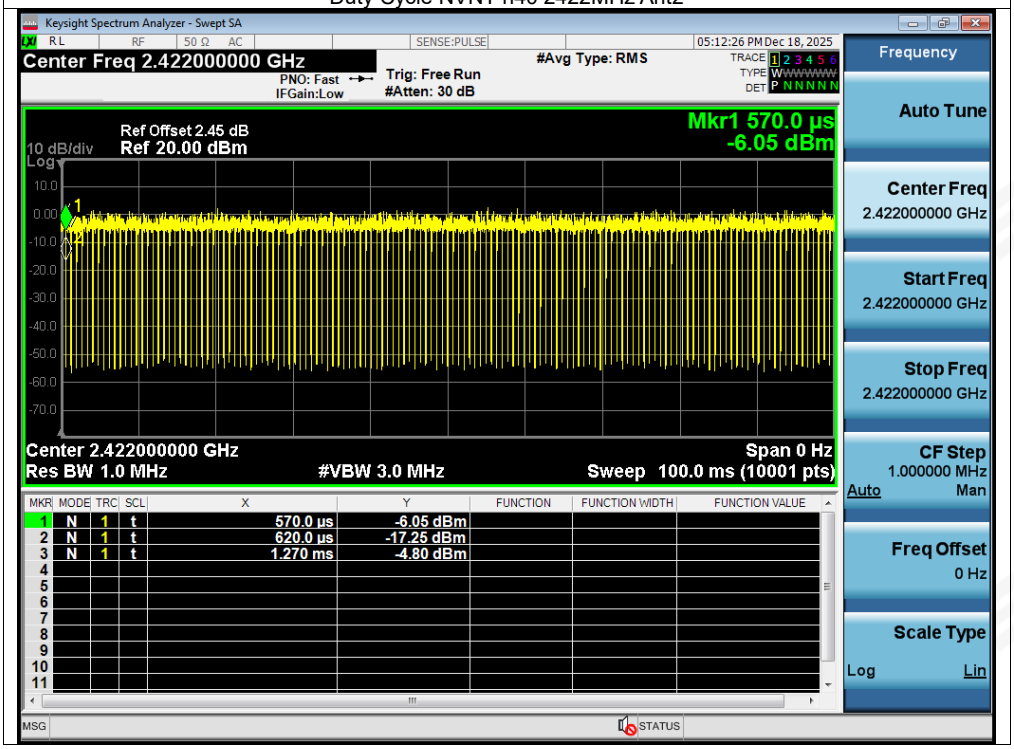
Duty Cycle NVNT n20 2437MHz Ant2



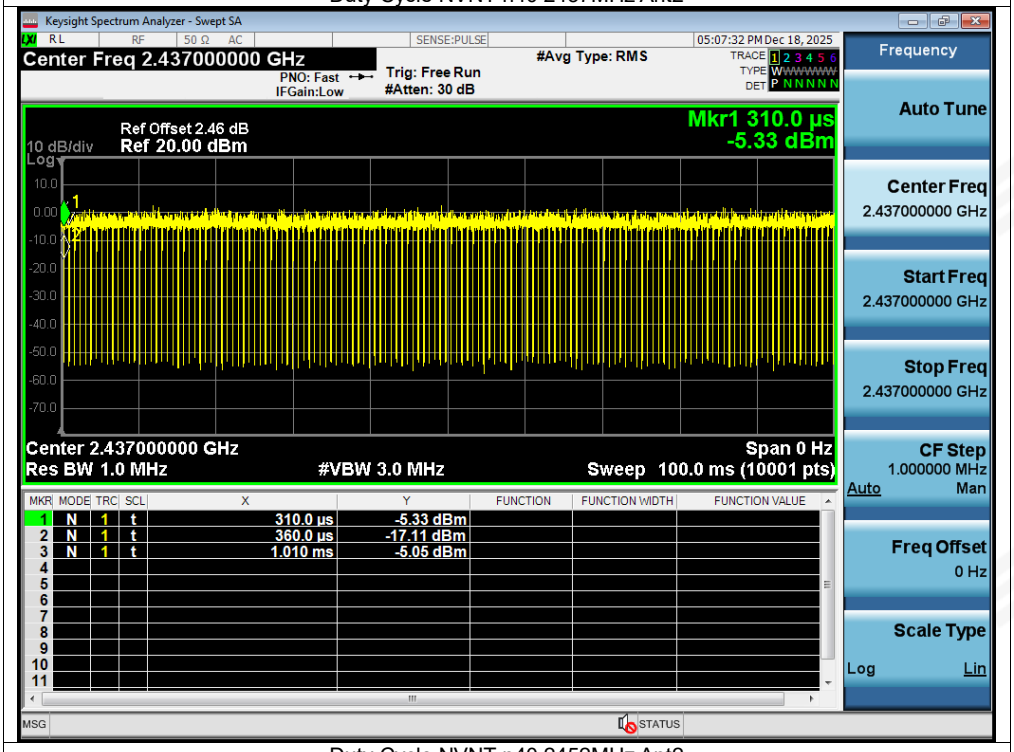
Duty Cycle NVNT n20 2462MHz Ant2



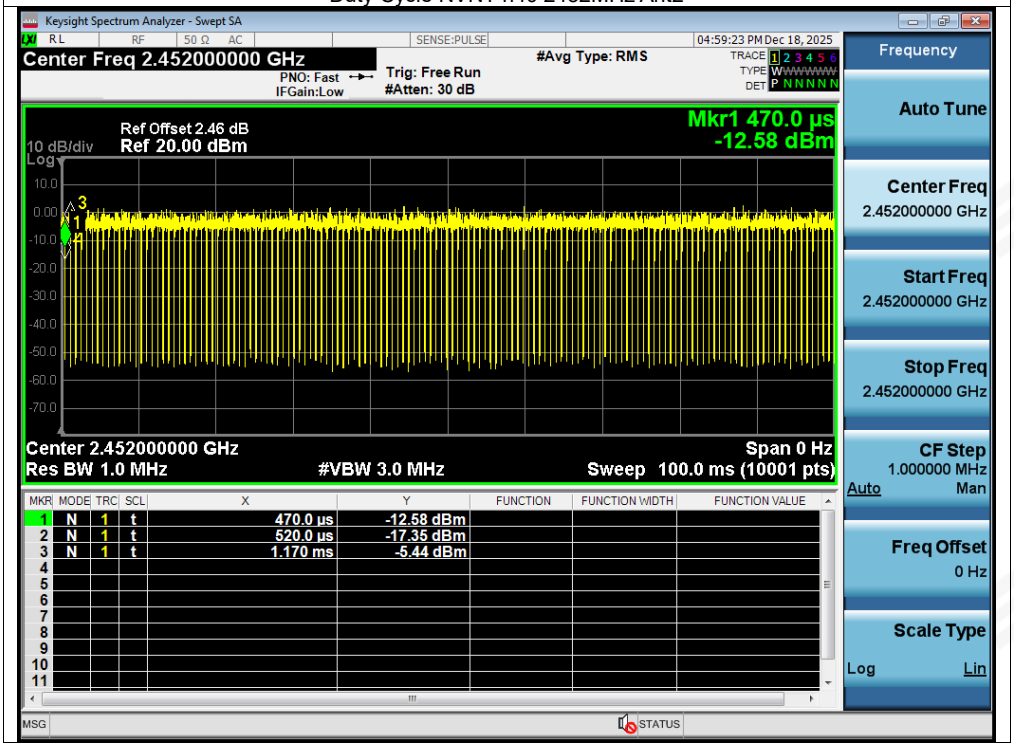
Duty Cycle NVNT n40 2422MHz Ant2



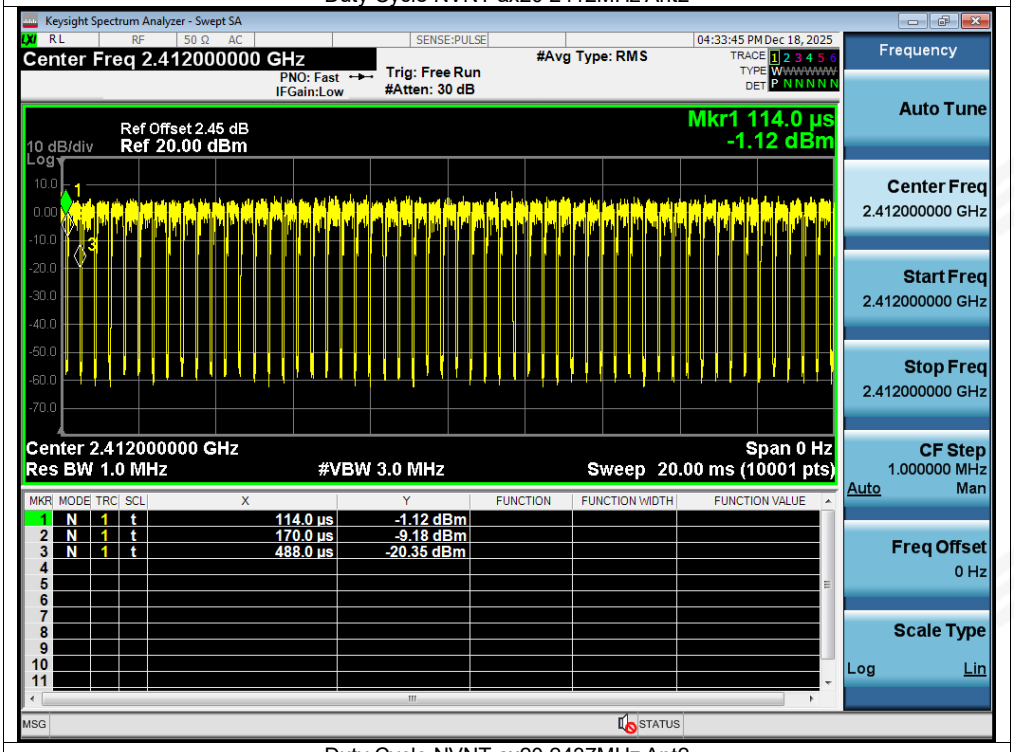
Duty Cycle NVNT n40 2437MHz Ant2



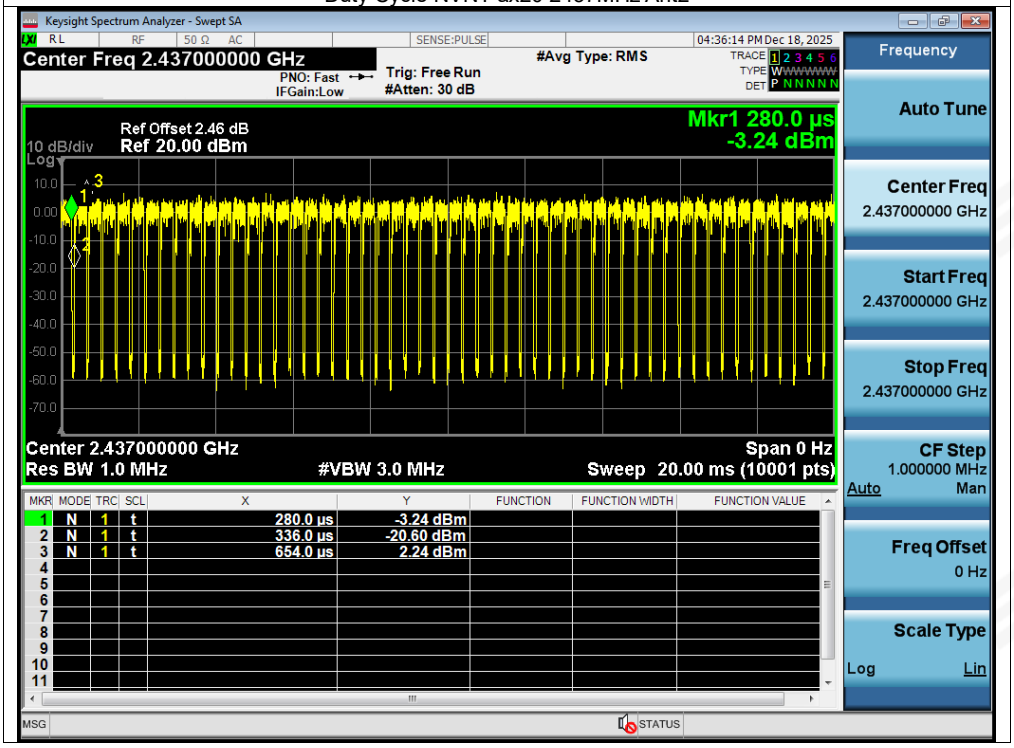
Duty Cycle NVNT n40 2452MHz Ant2



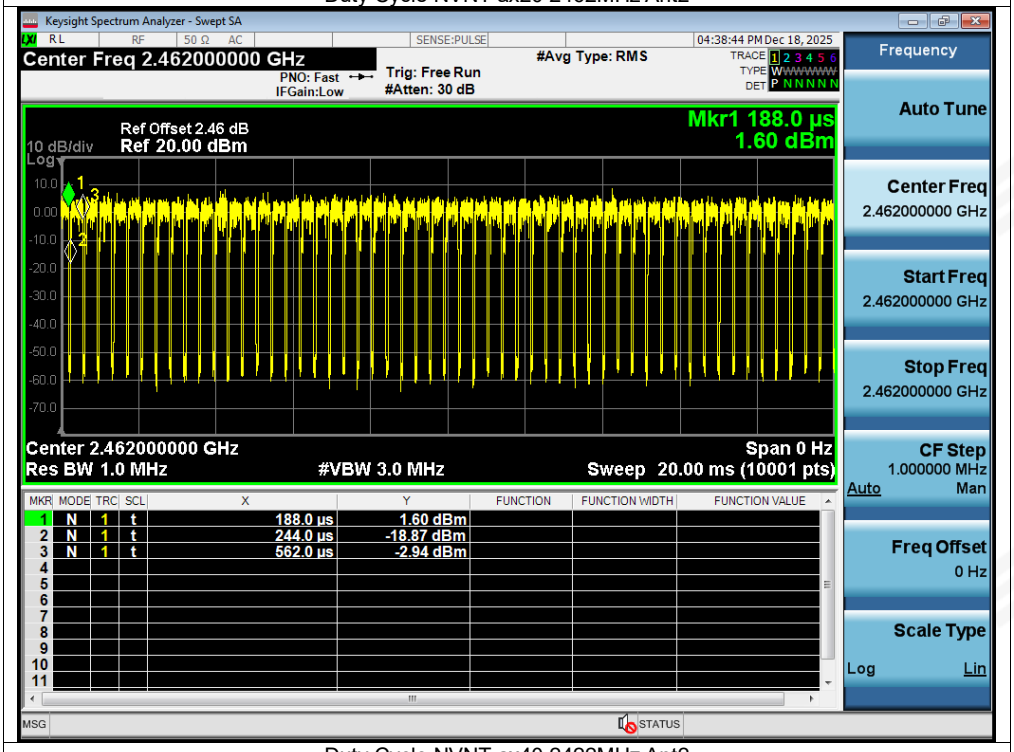
Duty Cycle NVNT ax20 2412MHz Ant2



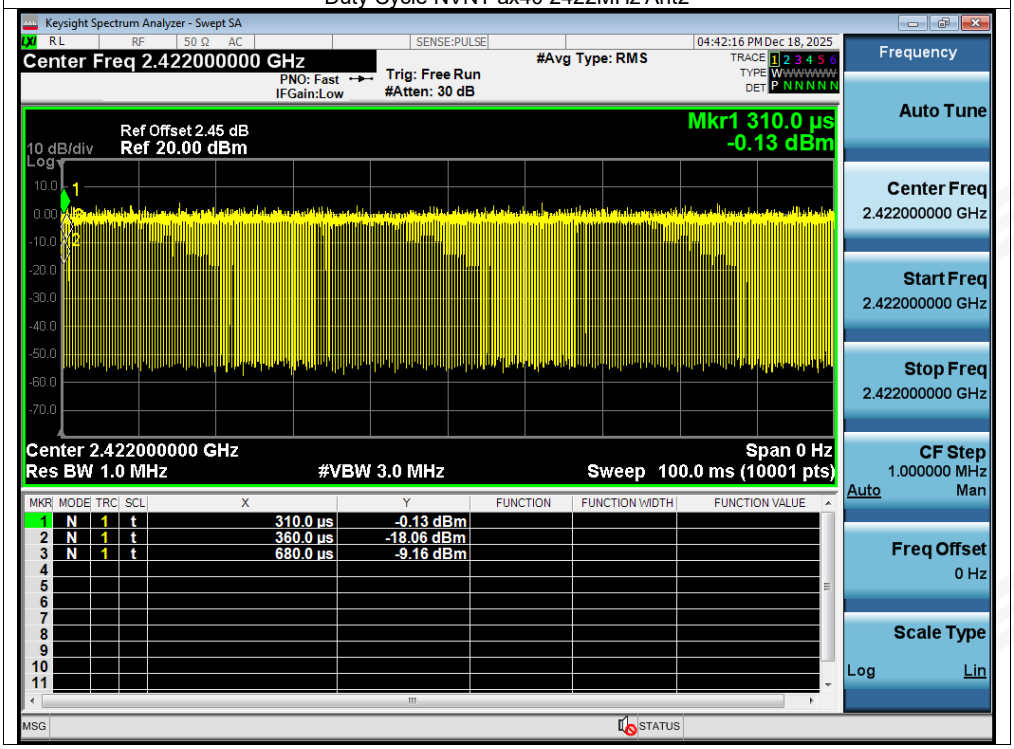
Duty Cycle NVNT ax20 2437MHz Ant2



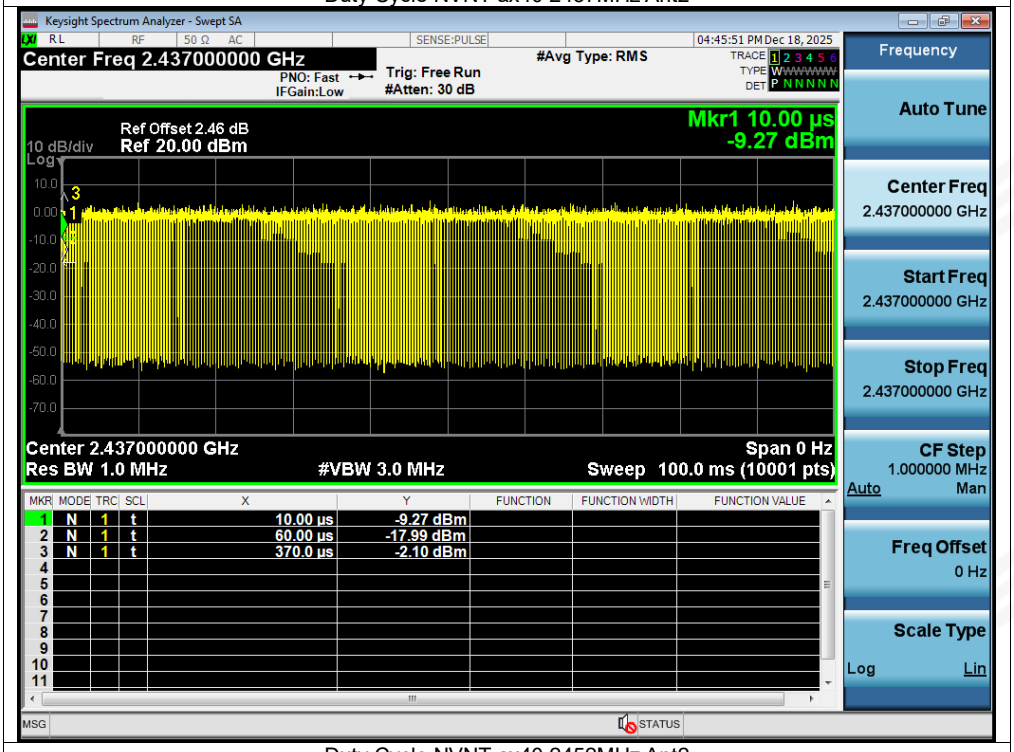
Duty Cycle NVNT ax20 2462MHz Ant2



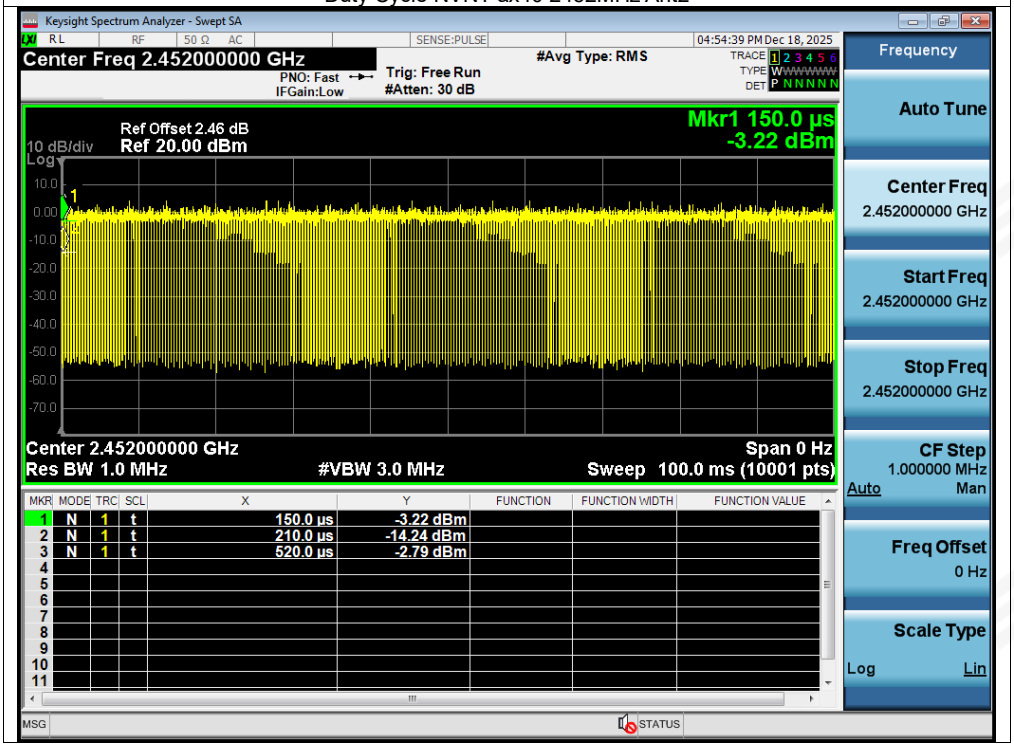
Duty Cycle NVNT ax40 2422MHz Ant2



Duty Cycle NVNT ax40 2437MHz Ant2



Duty Cycle NVNT ax40 2452MHz Ant2



Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Ant 1 Conducted Power (dBm)	Ant 2 Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	15.34	15.33	30	Pass
NVNT	b	2437	15.52	15.46	30	Pass
NVNT	b	2462	15.73	15.22	30	Pass
NVNT	g	2412	14.62	14.77	30	Pass
NVNT	g	2437	14.69	14.75	30	Pass
NVNT	g	2462	14.96	14.61	30	Pass
NVNT	n20	2412	14.51	14.72	30	Pass
NVNT	n20	2437	14.63	14.1	30	Pass
NVNT	n20	2462	14.97	13.9	30	Pass
NVNT	n40	2422	13.77	13.51	30	Pass
NVNT	n40	2437	13.92	13.56	30	Pass
NVNT	n40	2452	13.58	13.55	30	Pass
NVNT	ax20	2412	14.65	14.46	30	Pass
NVNT	ax20	2437	14.71	14.6	30	Pass
NVNT	ax20	2462	14.86	14.23	30	Pass
NVNT	ax40	2422	13.68	13.88	30	Pass
NVNT	ax40	2437	13.67	13.32	30	Pass
NVNT	ax40	2452	13.51	13.32	30	Pass

Condition	Mode	Frequency (MHz)	MIMO Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	n20	2412	17.63	29.01	Pass
NVNT	n20	2437	17.38	29.01	Pass
NVNT	n20	2462	17.48	29.01	Pass
NVNT	n40	2422	16.65	29.01	Pass
NVNT	n40	2437	16.75	29.01	Pass
NVNT	n40	2452	16.58	29.01	Pass
NVNT	ax20	2412	17.57	29.01	Pass
NVNT	ax20	2437	17.67	29.01	Pass
NVNT	ax20	2462	17.57	29.01	Pass
NVNT	ax40	2422	16.79	29.01	Pass
NVNT	ax40	2437	16.51	29.01	Pass
NVNT	ax40	2452	16.43	29.01	Pass

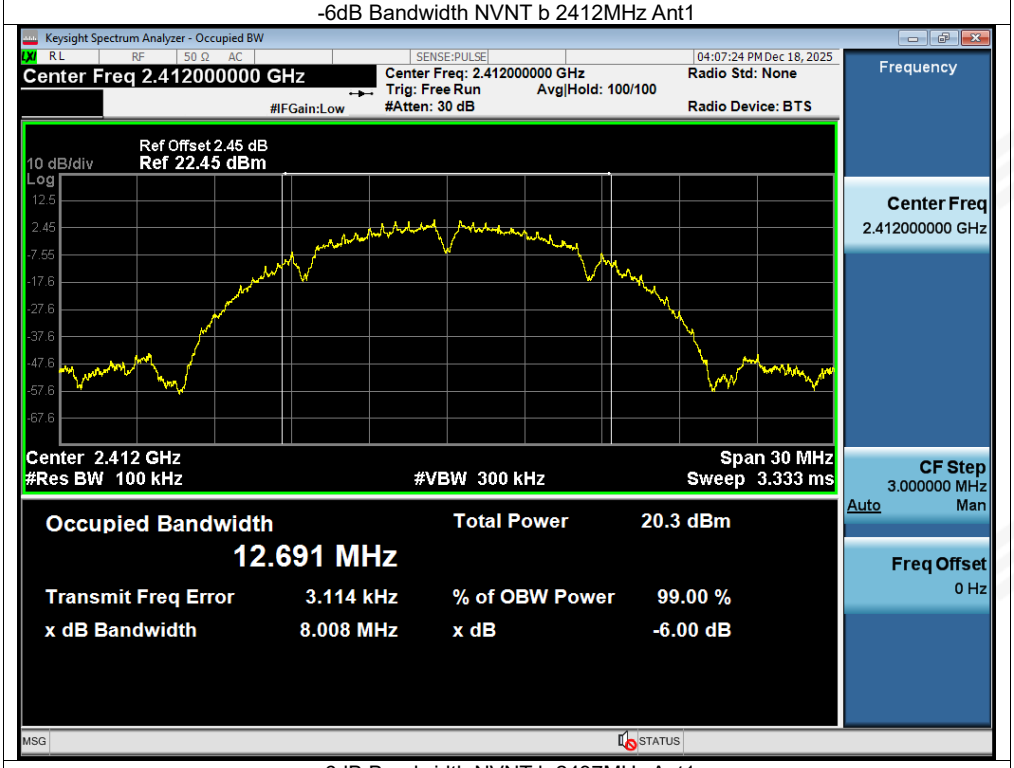
-6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	8.008	0.5	Pass
NVNT	b	2437	Ant1	8.029	0.5	Pass
NVNT	b	2462	Ant1	8.004	0.5	Pass
NVNT	g	2412	Ant1	15.914	0.5	Pass
NVNT	g	2437	Ant1	16.311	0.5	Pass
NVNT	g	2462	Ant1	13.854	0.5	Pass
NVNT	n20	2412	Ant1	16.886	0.5	Pass
NVNT	n20	2437	Ant1	15.44	0.5	Pass
NVNT	n20	2462	Ant1	15.133	0.5	Pass
NVNT	n40	2422	Ant1	35.074	0.5	Pass
NVNT	n40	2437	Ant1	35.035	0.5	Pass
NVNT	n40	2452	Ant1	35.09	0.5	Pass
NVNT	ax20	2412	Ant1	18.317	0.5	Pass
NVNT	ax20	2437	Ant1	18.392	0.5	Pass
NVNT	ax20	2462	Ant1	16.861	0.5	Pass
NVNT	ax40	2422	Ant1	37.12	0.5	Pass
NVNT	ax40	2437	Ant1	35.239	0.5	Pass
NVNT	ax40	2452	Ant1	35.071	0.5	Pass

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant2	8.553	0.5	Pass
NVNT	b	2437	Ant2	8.038	0.5	Pass
NVNT	b	2462	Ant2	7.57	0.5	Pass
NVNT	g	2412	Ant2	15.684	0.5	Pass
NVNT	g	2437	Ant2	15.058	0.5	Pass
NVNT	g	2462	Ant2	16.306	0.5	Pass
NVNT	n20	2412	Ant2	17.538	0.5	Pass
NVNT	n20	2437	Ant2	17.041	0.5	Pass
NVNT	n20	2462	Ant2	16.636	0.5	Pass
NVNT	n40	2422	Ant2	35.08	0.5	Pass
NVNT	n40	2437	Ant2	35.122	0.5	Pass
NVNT	n40	2452	Ant2	35.083	0.5	Pass
NVNT	ax20	2412	Ant2	18.091	0.5	Pass
NVNT	ax20	2437	Ant2	17.706	0.5	Pass
NVNT	ax20	2462	Ant2	18.398	0.5	Pass
NVNT	ax40	2422	Ant2	35.922	0.5	Pass
NVNT	ax40	2437	Ant2	35.114	0.5	Pass
NVNT	ax40	2452	Ant2	35.079	0.5	Pass

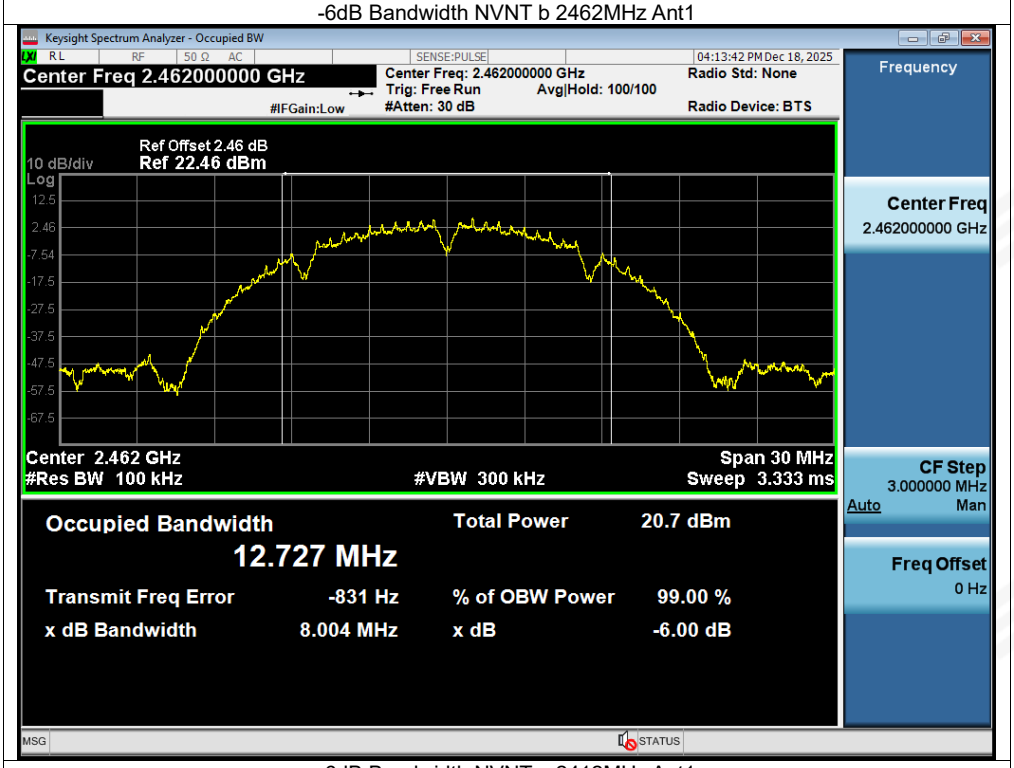
Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant1

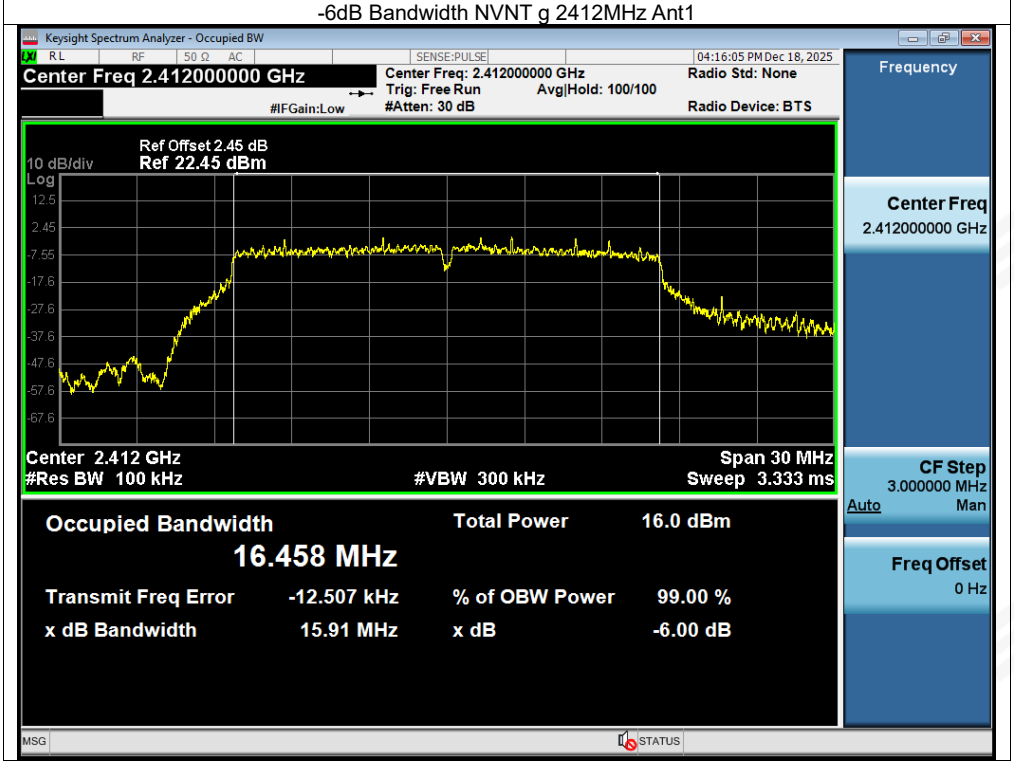


-6dB Bandwidth NVNT b 2437MHz Ant1

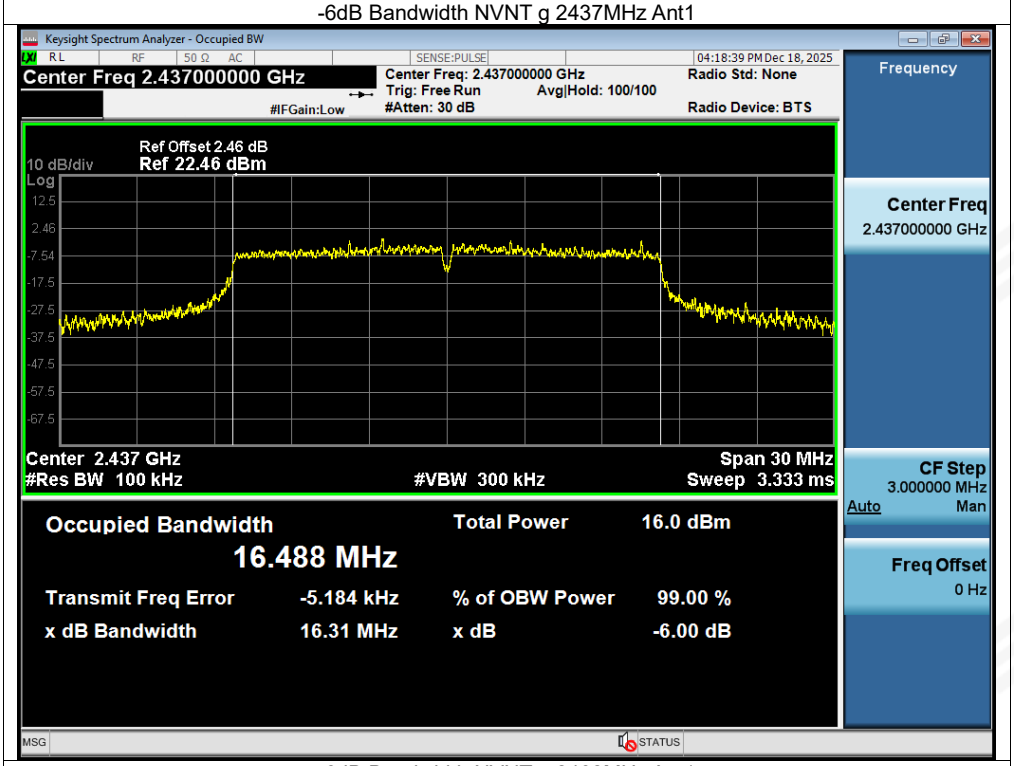
-6dB Bandwidth NVNT b 2462MHz Ant1



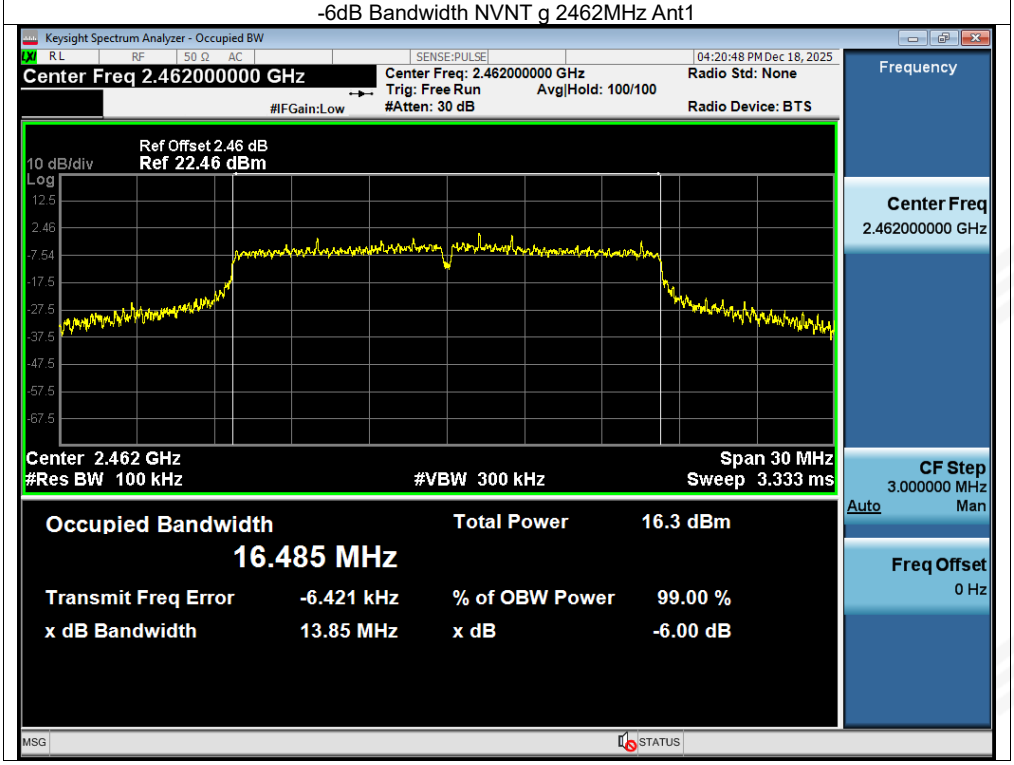
-6dB Bandwidth NVNT g 2412MHz Ant1



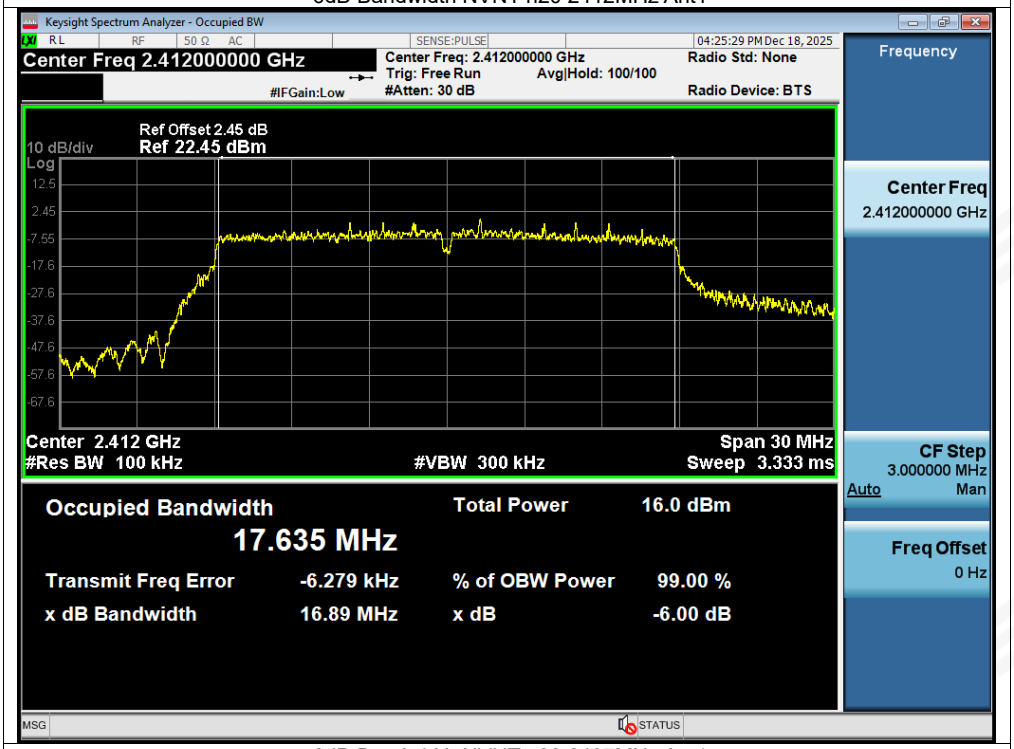
-6dB Bandwidth NVNT g 2437MHz Ant1



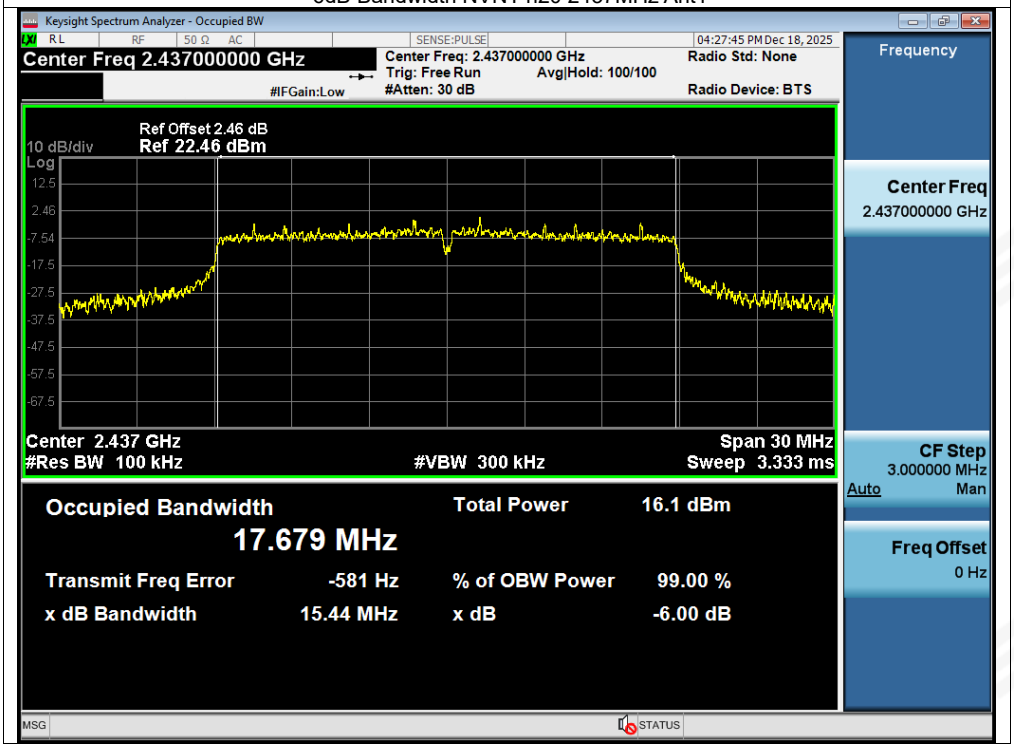
-6dB Bandwidth NVNT g 2462MHz Ant1



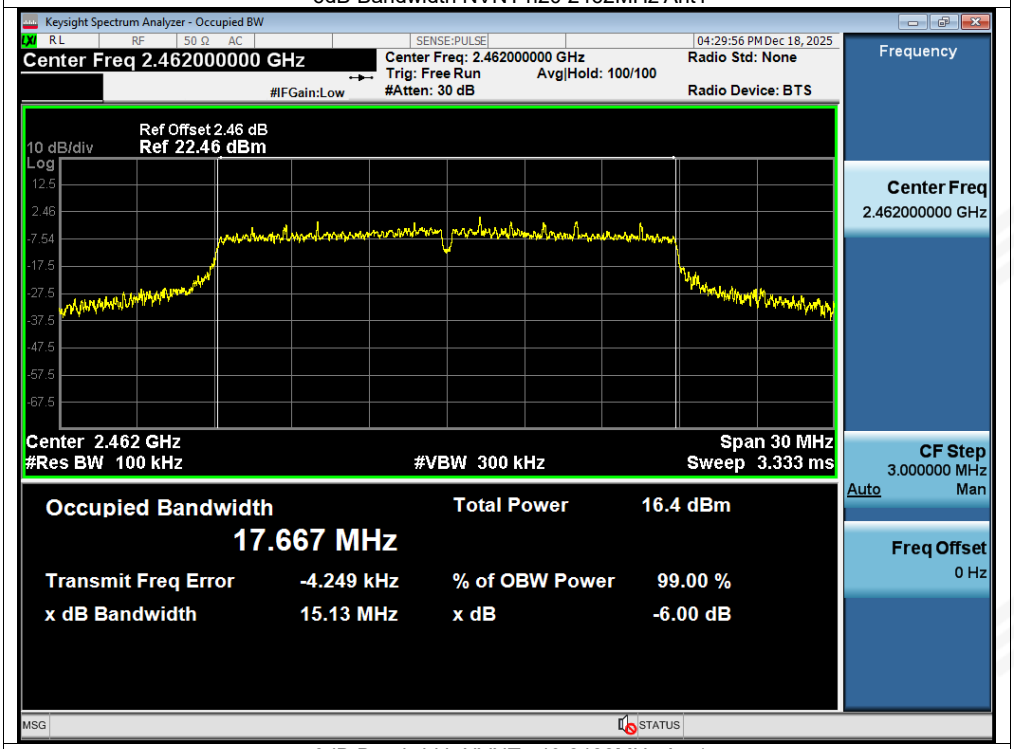
-6dB Bandwidth NVNT n20 2412MHz Ant1



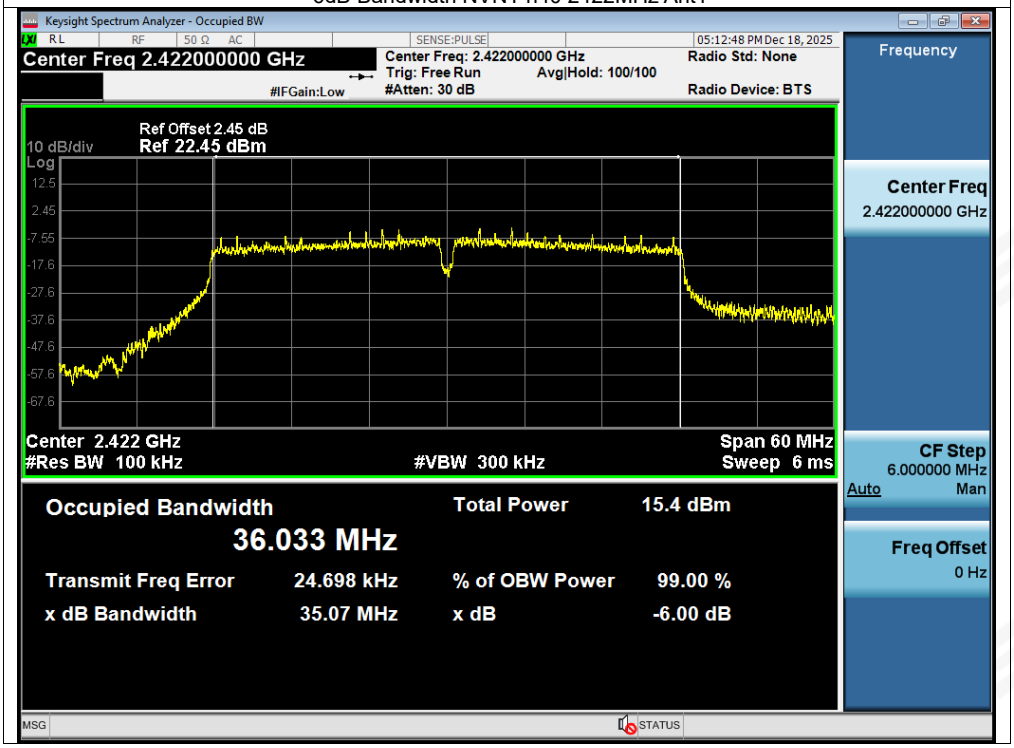
-6dB Bandwidth NVNT n20 2437MHz Ant1



-6dB Bandwidth NVNT n20 2462MHz Ant1

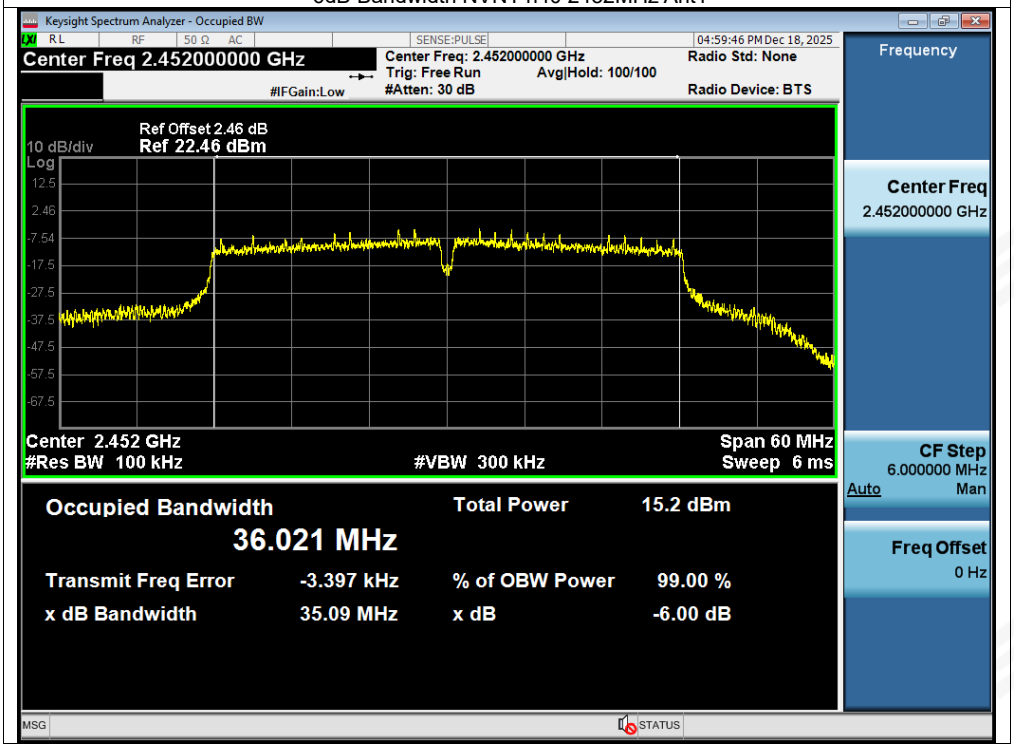


-6dB Bandwidth NVNT n40 2422MHz Ant1

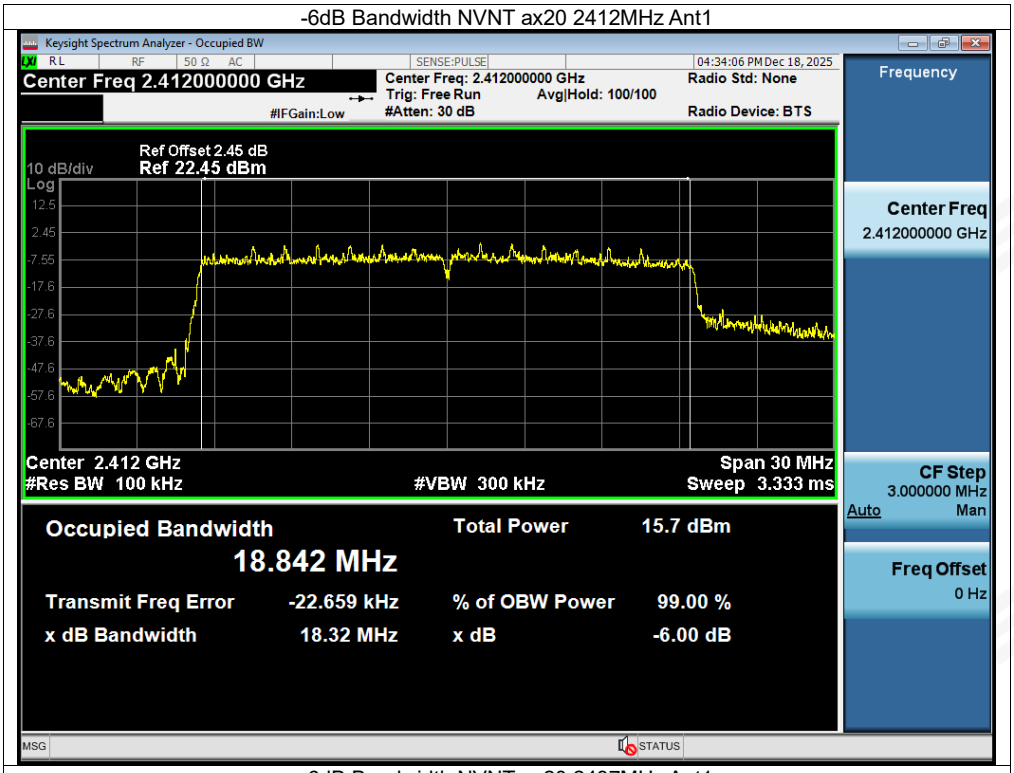


-6dB Bandwidth NVNT n40 2437MHz Ant1

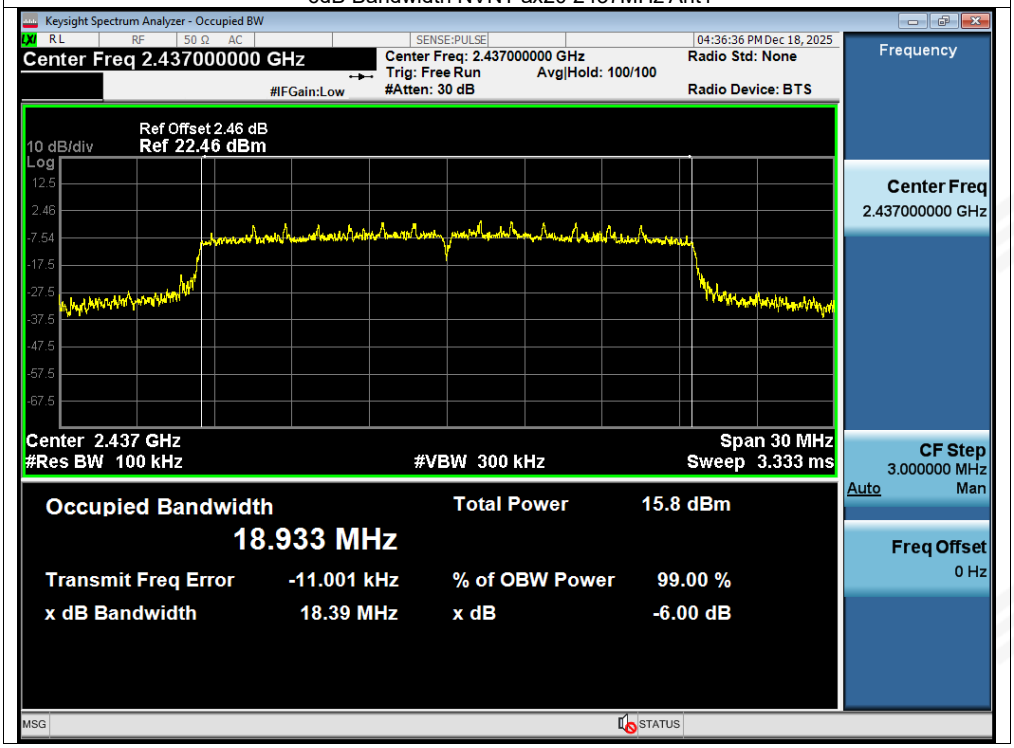
-6dB Bandwidth NVNT n40 2452MHz Ant1



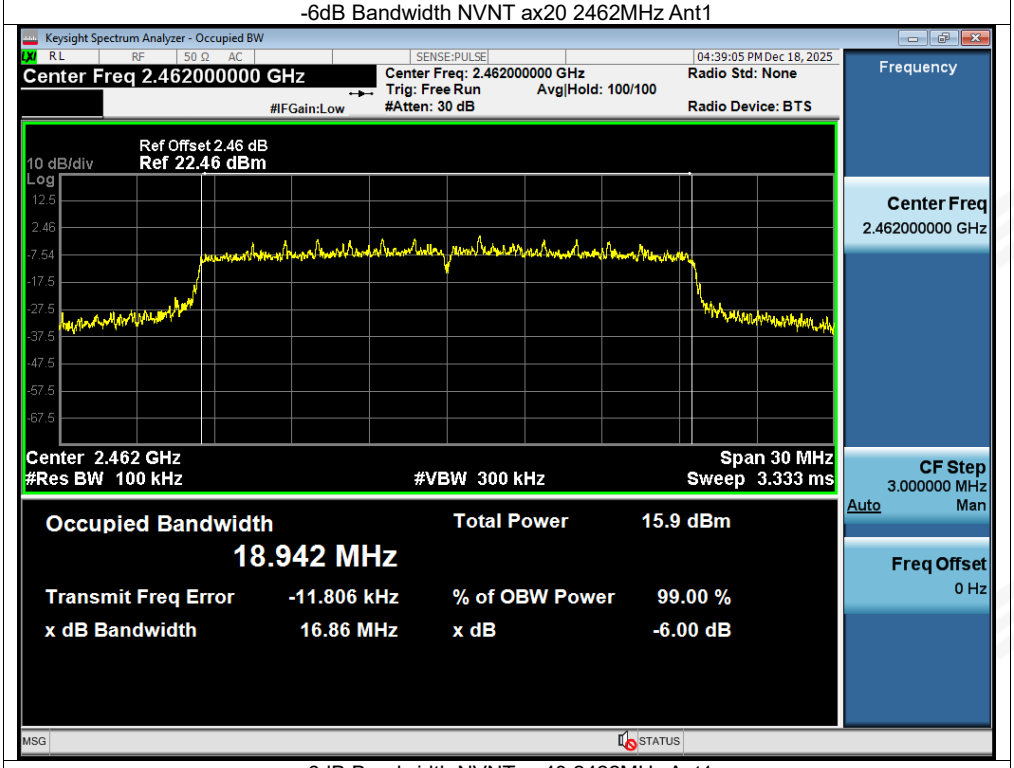
-6dB Bandwidth NVNT ax20 2412MHz Ant1



-6dB Bandwidth NVNT ax20 2437MHz Ant1



-6dB Bandwidth NVNT ax20 2462MHz Ant1



-6dB Bandwidth NVNT ax40 2422MHz Ant1