



Radio Test Report

Report No.: STS2512104W04

Issued for

SWAGTEK

10205 NW 19th Street, STE 101, Miami, FL33172.USA

Product Name: 4G Smart Phone

Brand Name: LOGIC, UNONU, iSWAG

Model Name: L68M PLUS

Series Model(s): UL68M, Mega2

FCC ID: O55683725

Test Standards: FCC Part15.407

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.

**TEST REPORT****Applicant's Name** : SWAGTEK

Address : 10205 NW 19th Street, STE 101, Miami, FL33172.USA

Manufacturer's Name : SWAGTEK

Address : 10205 NW 19th Street, STE 101, Miami, FL33172.USA

Product Description

Product Name : 4G Smart Phone

Brand Name : LOGIC, UNONU, iSWAG

Model Name : L68M PLUS

Series Model(s) : UL68M, Mega2

Test Standards : FCC Part15.407

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 : 28 May, 2025

Date (s) of performance of tests : 29 May, to 06 Aug., 2025

Date of Issue : 07 Aug., 2025

Test Result : **Pass**

Testing Engineer : _____

Aaron Bu

(Aaron Bu)

Technical Manager : _____

Skylar Li

(Skylar Li)

Authorized Signatory : _____

Bovey Yang

(Bovey Yang)





Table of Contents	Page
1 . SUMMARY OF TEST RESULTS	6
1.1 TEST FACTORY	7
1.2 MEASUREMENT UNCERTAINTY	7
2. GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF THE EUT	8
2.2 DESCRIPTION OF TEST MODES	11
2.3 TEST SOFTWARE AND POWER LEVEL	11
2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	12
2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	13
2.6 EQUIPMENTS LIST	14
RF RADIATION TEST EQUIPMENT	14
3. EMC EMISSION TEST	15
3.1 CONDUCTED EMISSION MEASUREMENT	15
3.2 RADIATED EMISSION AND MEASUREMENT	19
4. POWER SPECTRAL DENSITY TEST	33
4.1 LIMIT	33
4.2 TEST PROCEDURE	33
4.3 DEVIATION FROM STANDARD	34
4.4 TEST SETUP	34
4.5 EUT OPERATION CONDITIONS	34
4.6 TEST RESULTS	34
5. DUTY CYCLE	35
5.1 TEST STANDARD	35
5.2 TEST PROCEDURE	35
5.3 DEVIATION FROM STANDARD	35
5.4 TEST SETUP	35
5.5 EUT OPERATION CONDITIONS	35
5.6 TEST RESULTS	35
6. BANDWIDTH MEASUREMENT	36
6.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT	36
6.2 OCCUPIED BANDWIDTH (99%) TEST APPLIED PROCEDURES / LIMIT	37
6.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT	38
7. MAXIMUM OUTPUT POWER	39
7.1 LIMIT	39
7.2 TEST PROCEDURE	39



Table of Contents	Page
7.3 DEVIATION FROM STANDARD	39
7.4 TEST SETUP	39
7.5 EUT OPERATION CONDITIONS	39
7.6 TEST RESULTS	39
8. AUTOMATICALLY DISCONTINUE TRANSMISSION	40
8.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION	40
8.2 TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION	40
9. ANTENNA REQUIREMENT	41
9.1 STANDARD REQUIREMENT	41
9.2 EUT ANTENNA	41
APPENDIX 1-TEST DATA	41
APPENDIX - PHOTOS OF TEST SETUP	83

**Revision History**

Rev.	Issue Date	Report No.	Effect Page	Contents
00	07 Aug., 2025	STS2512104W04	ALL	Initial Issue



1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

§ 15.407, KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

FCC Part 15.407		
FCC standard	Test Item	Results
15.207	AC Conducted Emission	PASS
15.407 (a) /15.407 (e)	26dB/6dB &99% Bandwidth	PASS
15.407(a)	Maximum Conducted Output Power	PASS
15.407(b)/15.209	Radiated Emission And (bandedge Emissions) Measurement	PASS
15.407(a)	Power Spectral Density	PASS
15.407(c)	Automatically Discontinue Transmission	PASS
15.203/15.204	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 $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.751\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.888\text{dB}$
3	All emissions, radiated 9K-30MHz	$\pm 2.48\text{dB}$
4	All emissions, radiated 30M-1GHz	$\pm 2.52\text{dB}$
5	All emissions, radiated 1G-18GHz	$\pm 3.48\text{dB}$
6	All emissions, radiated >18GHz	$\pm 4.18\text{dB}$
7	Conducted Emission (9KHz-150KHz)	$\pm 2.48\text{dB}$
8	Conducted Emission (150KHz-30MHz)	$\pm 2.52\text{dB}$
9	Occupied Channel Bandwidth	$\pm 3.6\%$
10	Power Spectral Density, conducted	$\pm 1.214\text{dB}$
11	Duty Cycle	$\pm 3.2\%$

**2. GENERAL INFORMATION****2.1 GENERAL DESCRIPTION OF THE EUT**

Product Name	4G Smart Phone		
Brand Name	LOGIC,UNONU, iSWAG		
Model Name	L68M PLUS		
Series Model(s)	UL68M, Mega2		
Model Difference	L68M PLUS, UL68M, Mega2 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name and trade mark.		
Product Description	The EUT is \${Product name}		
	Operation Frequency:	IEEE 802.11a/ n(HT20)/ac(VHT20): 5.180GHz-5.240GHz IEEE 802.11n(HT40)/ac(VHT40): 5.190GHz-5.230GHz IEEE 802.11ac(VHT80): 5.210GHz	
	Modulation Type:	802.11a(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11ac(OFDM): BPSK,QPSK,16-QAM,64-QAM,256-QAM	
		802.11a/n/ac/Support SISO	
	Antenna Type:	Internal Antenna	
	Antenna Gain:	1.6 dBi (declare by applicant)	
More details of EUT technical specification, please refer to the User Manual.			
Test Channel	Please refer to the Note 3.		
Adapter	Model: HAD-010U Input: AC100-240V, 50/60Hz, 0.35A Output: DC 5.0V, 2.0A, 10.0W		
Battery	Rechargeable Li-ion Polymer Battery DC3.87V, 4900mAh		
Hardware version number	N/A		
Software version number	N/A		
Connecting I/O Port(s)	Please refer to the Note 1.		

Note

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

Operation Frequency of channel			
5.180GHz-5.240GHz			
Channel	Frequency	Channel	Frequency
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	

Note:



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

Carrier Frequency Channel



5GHz:

For 802.11a/n(HT20)/ac(VHT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
36	5180	52	5260
40	5200	60	5300
48	5240	64	5320

For 802.11 n(HT40)/ac(VHT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
38	5190	46	5230

For 802.11ac (VHT80)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
42	5210	/	/



2.2 DESCRIPTION OF TEST MODES

Transmitting mode: Keep the EUT in continuous transmitting with modulation

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. 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 802.11a HT20 CH36&CH40&CH48	6 Mbps
Mode 2	TX IEEE 802.11n HT20 CH36&CH40&CH48	MCS 0
Mode 3	TX IEEE 802.11ac VHT20 CH36&CH40&CH48	NSS1 MCS0
Mode 4	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 5	TX IEEE 802.11ac VHT40 CH38&CH46	NSS1 MCS0
Mode 6	TX IEEE 802.11ac VHT80 CH42	NSS1 MCS0

- Note: (1) The measurements are performed at the highest, middle, lowest available channels.
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.
(3) We have been tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation.

AC Conducted Emission

Test Worst Case	
AC Conducted Emission	Mode 7: Keeping TX

For Radiated Spurious Emission

Test Worst Case	
Radiated Spurious Emission	Mode 7 : Keeping TX

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.

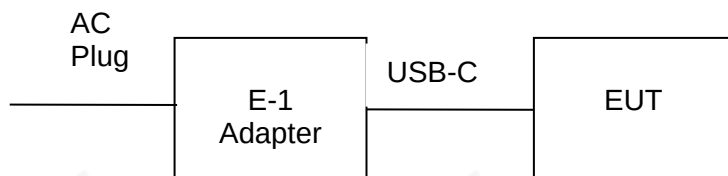
RF Function	Type	Data Rate	ANT Gain(dBi)	Power Class	Software for testing
5.2GHzWi-Fi	802.11a	6 Mbps	1.6	default	Engineering Mode
	802.11n	MCS 0		default	
	802.11ac	MCS 0		default	

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Emission Test



RF Conducted 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Note
1	Adapter	N/A	HAD-010U	N/A
2	USB Cable	N/A	N/A	N/A

Item	Equipment	Ferrite Core	Length	Note
1	Detached USB Cable	Shielding	0.8m	N/A

Note:

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



2.6 EQUIPMENTS LIST

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	2024.09.23	2025.09.22
				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	2024.09.30	2025.09.29
				2025.09.27	2027.09.26
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2023.09.24	2025.09.23
				2025.09.27	2027.09.26
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2023.10.10	2025.10.09
				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	2024.09.23	2025.09.22
				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	2024.09.23	2025.09.22
				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	2024.9.23	2025.9.22
				2025.09.25	2026.09.24
Limiter	CYBERTEK	EM5010	N/A	2024.9.23	2025.9.22
				2025.09.25	2026.09.24
LISN	R&S	ENV216	101242	2024.9.23	2025.9.22
				2025.09.25	2026.09.24
LISN	EMCO	3810/2NM	23625	2024.9.23	2025.9.22
				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	Keysight	N9020B	MY60240215	2024.09.10	2025.09.09
				2025.08.08	2026.08.07
Power detector group	Keysight	NW2021031	N/A	2024.09.24	2025.09.23
				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 (Frequency Range 150KHz-30MHz)

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

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) 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

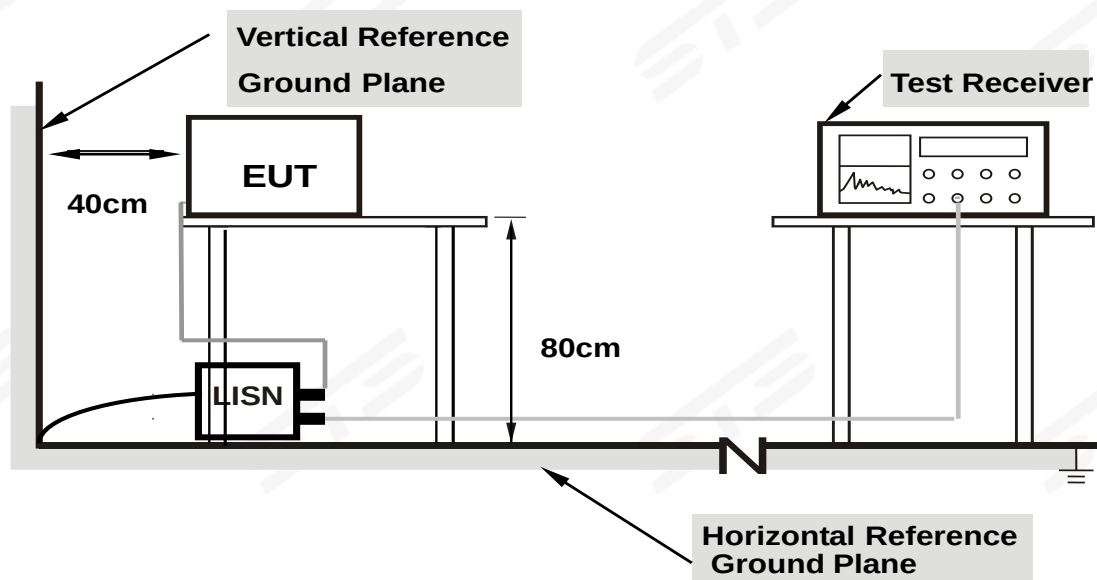
3.1.2 TEST PROCEDURE

- 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.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN is at least 80 cm from the nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 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.

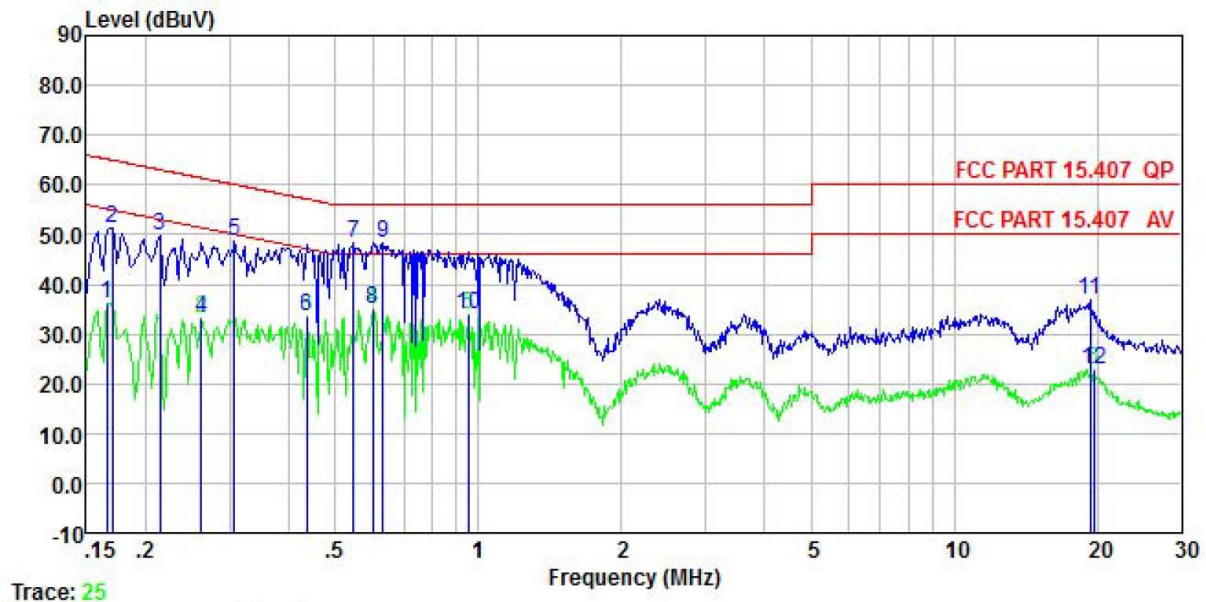
3.1.5 EUT OPERATING CONDITIONS

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



3.1.6 TEST RESULTS

Temperature:	23.9℃	Relative Humidity:	44%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode :	Mode 7		



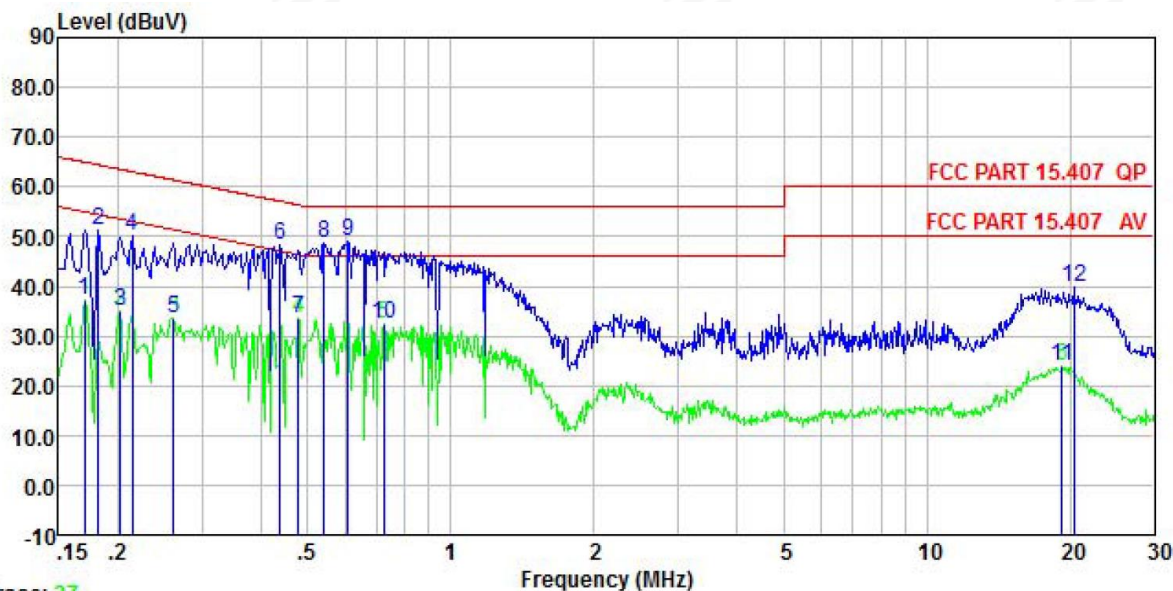
Remark:

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

	Freq	Read Level	LISN Factor	Aux Factor	Aux2 Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dB	dBuV	dBuV	dB	
1	0.166	16.15	10.17	0.00	9.88	0.01	36.21	55.16	-18.95	Average
2	0.170	31.23	10.15	0.00	9.88	0.01	51.27	64.94	-13.67	QP
3	0.214	29.63	10.10	0.00	9.88	0.03	49.64	63.05	-13.41	QP
4	0.262	13.30	10.10	0.00	9.88	0.01	33.29	51.38	-18.09	Average
5	0.307	28.52	10.10	0.00	9.88	0.03	48.53	60.06	-11.53	QP
6	0.435	13.35	10.12	0.00	9.88	0.03	33.38	47.15	-13.77	Average
7	0.546	28.36	10.18	0.00	9.88	0.03	48.45	56.00	-7.55	QP
8	0.601	14.97	10.20	0.00	9.88	0.02	35.07	46.00	-10.93	Average
9	0.630	28.38	10.18	0.00	9.88	0.02	48.46	56.00	-7.54	QP
10	0.953	13.85	10.18	0.00	9.88	0.05	33.96	46.00	-12.04	Average
11	19.326	16.20	10.45	0.00	9.96	0.15	36.76	60.00	-23.24	QP
12	19.635	2.40	10.42	0.00	9.96	0.15	22.93	50.00	-27.07	Average



Temperature:	23.9℃	Relative Humidity:	44%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode :	Mode 7		



Trace: 27

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

	Freq	Read Level	LISN Factor	Aux Factor	Aux2 Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dB	dBuV	dBuV	dB	
1	0.170	17.05	10.20	0.00	9.88	0.01	37.14	54.94	-17.80	Average
2	0.182	31.31	10.20	0.00	9.88	0.01	51.40	64.42	-13.02	QP
3	0.202	14.72	10.20	0.00	9.88	0.04	34.84	53.54	-18.70	Average
4	0.214	30.17	10.19	0.00	9.88	0.03	50.27	63.05	-12.78	QP
5	0.262	13.56	10.16	0.00	9.88	0.01	33.61	51.38	-17.77	Average
6	0.437	28.20	10.14	0.00	9.88	0.03	48.25	57.11	-8.86	QP
7	0.479	13.49	10.19	0.00	9.88	0.03	33.59	46.36	-12.77	Average
8	0.541	28.40	10.25	0.00	9.88	0.03	48.56	56.00	-7.44	QP
9	0.608	28.92	10.30	0.00	9.88	0.02	49.12	56.00	-6.88	QP
10	0.724	12.28	10.30	0.00	9.88	0.03	32.49	46.00	-13.51	Average
11	19.224	3.14	10.60	0.00	9.96	0.15	23.85	50.00	-26.15	Average
12	20.377	19.17	10.60	0.00	9.96	0.19	39.92	60.00	-20.08	QP



3.2 RADIATED EMISSION AND MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.407(b)7&209(a), then the limit in the table below has to be followed.

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 (Above 1000MHz)

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

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15E.
- (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			

LIMITS OF EMISSIONS OUTSIDE OF THE FREQUENCY BANDS

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note: dBuV/m(at 3M) = EIRP(dBm) + 95.2.

Peak Limit = -27dBm/MHz + 95.2 = 68.2 dBuV/m.

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

For Band edge



Spectrum Parameter	Setting
Detector	Peak
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz

Receiver Parameter	Setting
Attenuation	Auto
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:

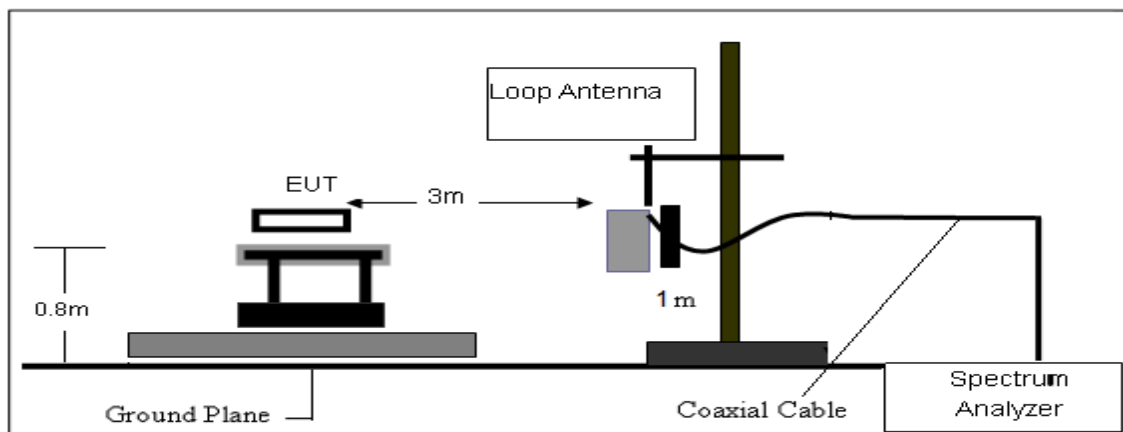
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 DEVIATION FROM TEST STANDARD

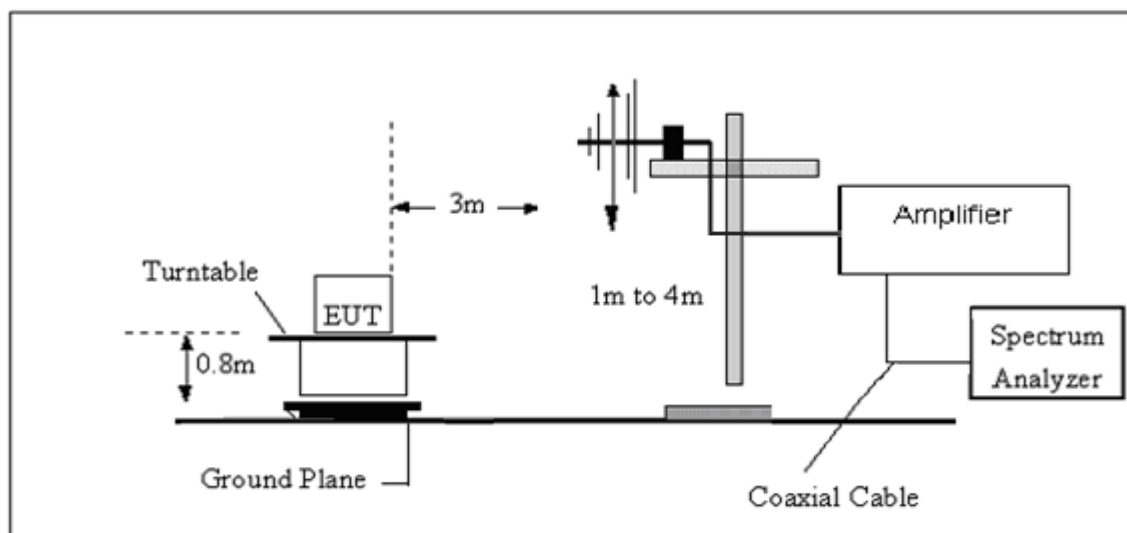
No deviation

3.2.4 TEST SETUP

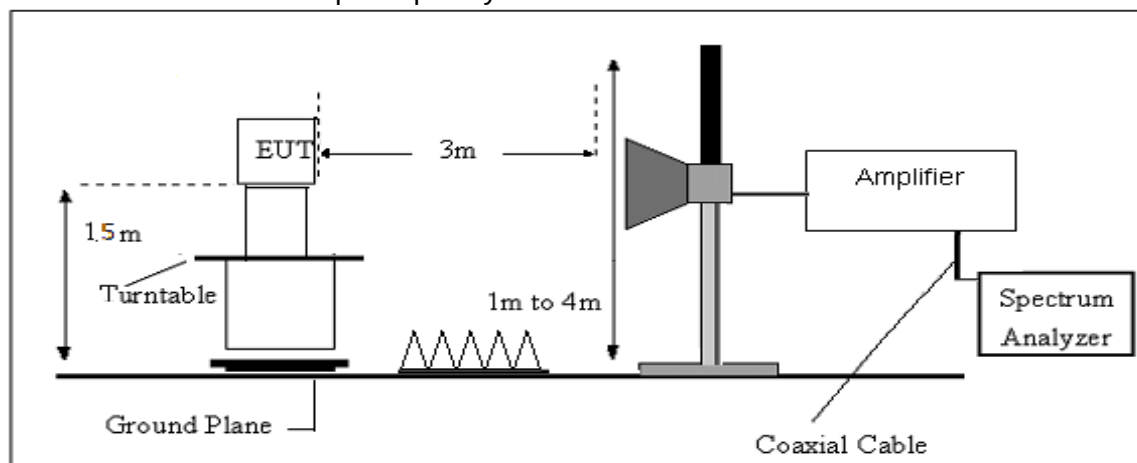
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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





3.2.5 EUT OPERATING CONDITIONS

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

3.2.6 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier 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

$$\text{Factor} = \text{AF} + \text{CL} - \text{AG}$$

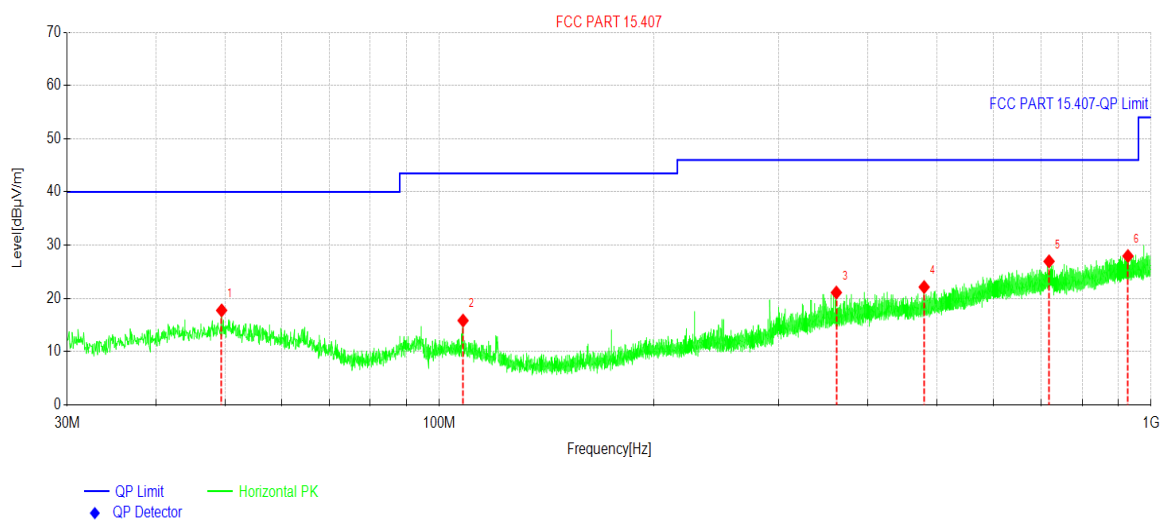


3.2.7 TEST RESULTS (Between 9KHz – 30 MHz)

Test Frequency from 9KHz to 30MHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.

3.2.8 TEST RESULTS (Between 30MHz – 1GHz)

Temperature	22℃	Relative Humidity:	54%
Test Voltage	AC120V/60Hz	Polarization:	Horizontal
Test Mode	Mode 7		



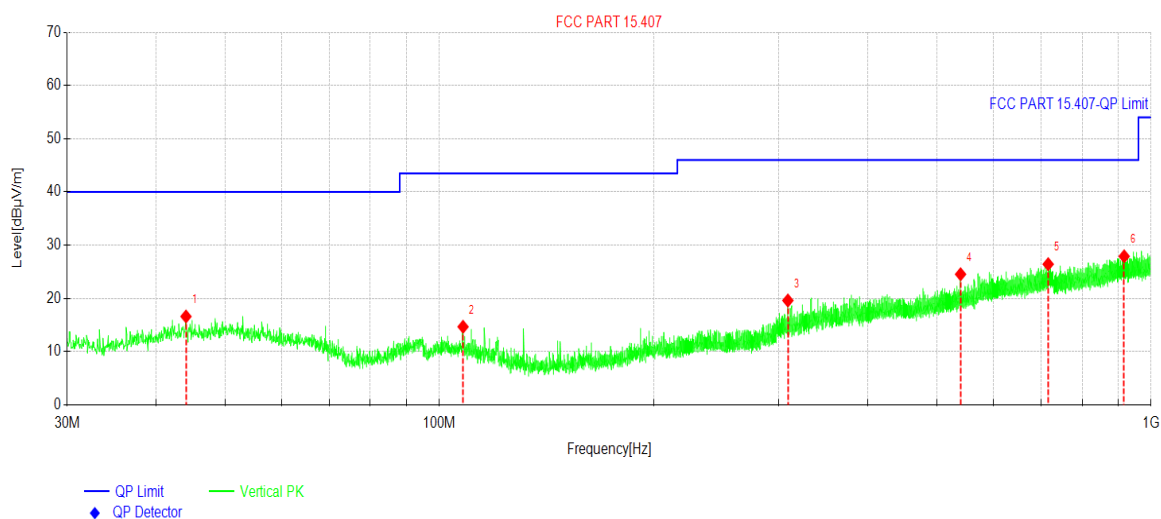
Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	49.4495	30.16	-12.41	17.75	40.00	22.25	PK	Horizontal
2	107.9919	30.06	-14.22	15.84	43.50	27.66	PK	Horizontal
3	361.3201	32.38	-11.28	21.10	46.00	24.90	PK	Horizontal
4	480.0055	31.20	-9.07	22.13	46.00	23.87	PK	Horizontal
5	718.9769	31.71	-4.75	26.96	46.00	19.04	PK	Horizontal
6	928.0224	30.10	-2.15	27.95	46.00	18.05	PK	Horizontal



Temperature	22℃	Relative Humidity:	54%
Test Voltage	AC120V/60Hz	Polarization:	Vertical
Test Mode	Mode 7		



Remark:

3. Margin = Result (Result = Reading + Factor) – Limit

4. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	44.0657	29.14	-12.53	16.61	40.00	23.39	PK	Vertical
2	107.9919	28.89	-14.22	14.67	43.50	28.83	PK	Vertical
3	308.8404	32.21	-12.60	19.61	46.00	26.39	PK	Vertical
4	539.9545	32.46	-7.92	24.54	46.00	21.46	PK	Vertical
5	716.9883	31.23	-4.80	26.43	46.00	19.57	PK	Vertical
6	916.7698	30.05	-2.15	27.90	46.00	18.10	PK	Vertical



3.2.8 TEST RESULTS (Above 1000 MHz)

U-NII-1 5150-5250MHz

Above 1GHz

Band 1: 5150 MHz - 5250 MHz, 802.11a						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	40.92	20.12	61.04	74.00	12.96	Vertical
10360.00	55.58	1.40	56.98	68.20	11.22	Vertical
5150.00	42.25	20.12	62.37	74.00	11.63	Horizontal
10360.00	55.02	1.40	56.42	68.20	11.78	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	28.24	20.12	48.36	54.00	5.64	Vertical
5150.00	29.16	20.12	49.28	54.00	4.72	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
10400.00	55.19	2.45	57.64	68.20	10.56	Vertical
10400.00	55.24	2.45	57.69	68.20	10.51	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	35.32	19.93	55.25	74.00	18.75	Vertical
10480.00	55.76	2.74	58.50	68.20	9.70	Vertical
5350.00	34.72	19.93	54.65	74.00	19.35	Horizontal
10480.00	55.29	2.74	58.03	68.20	10.17	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	23.82	19.93	43.75	54.00	10.25	Vertical
5350.00	23.76	19.93	43.69	54.00	10.31	Horizontal
Remark:						
1. Level = Reading + Factor.						
2. Test Frequency up to 40GHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.						



Band 1: 5150 MHz - 5250 MHz, 802.11n-HT20						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	44.49	20.12	64.61	74.00	9.39	Vertical
10360.00	55.88	1.40	57.28	68.20	10.92	Vertical
5150.00	45.48	20.12	65.60	74.00	8.40	Horizontal
10360.00	54.71	1.40	56.11	68.20	12.09	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	28.07	20.12	48.19	54.00	5.81	Vertical
5150.00	27.78	20.12	47.90	54.00	6.10	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
10400.00	54.93	2.45	57.38	68.20	10.82	Vertical
10400.00	54.97	2.45	57.42	68.20	10.78	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	34.89	19.93	54.82	74.00	19.18	Vertical
10480.00	55.87	2.74	58.61	68.20	9.59	Vertical
5350.00	35.08	19.93	55.01	74.00	18.99	Horizontal
10480.00	55.27	2.74	58.01	68.20	10.19	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	23.71	19.93	43.64	54.00	10.36	Vertical
5350.00	23.66	19.93	43.59	54.00	10.41	Horizontal
Remark:						
1. Level = Reading + Factor.						
2. Test Frequency up to 40GHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.						



Band 1: 5150 MHz - 5250 MHz, 802.11n-HT40						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	47.37	20.12	67.49	74.00	6.51	Vertical
10380.00	55.47	1.96	57.43	68.20	10.77	Vertical
5150.00	48.25	20.12	68.37	74.00	5.63	Horizontal
10380.00	55.08	1.96	57.04	68.20	11.16	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	27.94	20.12	48.06	54.00	5.94	Vertical
5150.00	28.15	20.12	48.27	54.00	5.73	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	34.52	19.93	54.45	74.00	19.55	Vertical
10460.00	55.98	1.64	57.62	68.20	10.58	Vertical
5350.00	34.97	19.93	54.90	74.00	19.10	Horizontal
10460.00	55.06	1.64	56.70	68.20	11.50	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	23.60	19.93	43.53	54.00	10.47	Vertical
5350.00	23.72	19.93	43.65	54.00	10.35	Horizontal
Remark:						
1. Level = Reading + Factor.						
2. Test Frequency up to 40GHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.						



Band 1: 5150 MHz - 5250 MHz, 802.11ac-VHT20						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	41.28	20.12	61.40	74.00	12.60	Vertical
10360.00	55.9	1.40	57.30	68.20	10.90	Vertical
5150.00	41.84	20.12	61.96	74.00	12.04	Horizontal
10360.00	54.72	1.40	56.12	68.20	12.08	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	28.29	20.12	48.41	54.00	5.59	Vertical
5150.00	29.42	20.12	49.54	54.00	4.46	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
10400.00	55.45	2.45	57.90	68.20	10.30	Vertical
10400.00	54.89	2.45	57.34	68.20	10.86	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	35.49	19.93	55.42	74.00	18.58	Vertical
10480.00	56.18	2.74	58.92	68.20	9.28	Vertical
5350.00	35.02	19.93	54.95	74.00	19.05	Horizontal
10480.00	55.43	2.74	58.17	68.20	10.03	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	23.87	19.93	43.80	54.00	10.20	Vertical
5350.00	23.8	19.93	43.73	54.00	10.27	Horizontal
Remark:						
1. Level = Reading + Factor.						
2. Test Frequency up to 40GHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.						



Band 1: 5150 MHz - 5250 MHz, 802.11ac-VHT40						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	47.84	20.12	67.96	74.00	6.04	Vertical
10380.00	55.9	1.96	57.86	68.20	10.34	Vertical
5150.00	48.38	20.12	68.50	74.00	5.50	Horizontal
10380.00	54.89	1.96	56.85	68.20	11.35	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	28.43	20.12	48.55	54.00	5.45	Vertical
5150.00	28.21	20.12	48.33	54.00	5.67	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	34.97	19.93	54.90	74.00	19.10	Vertical
10460.00	56.34	1.64	57.98	68.20	10.22	Vertical
5350.00	34.62	19.93	54.55	74.00	19.45	Horizontal
10460.00	55.2	1.64	56.84	68.20	11.36	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5350.00	23.27	19.93	43.20	54.00	10.80	Vertical
5350.00	23.65	19.93	43.58	54.00	10.42	Horizontal
Remark:						
1. Level = Reading + Factor.						
2. Test Frequency up to 40GHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.						



Band 1: 5150 MHz - 5250 MHz, 802.11ac-VHT80						
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	39.33	20.12	59.45	74.00	14.55	Vertical
5350.00	34.68	19.93	54.61	74.00	19.39	Vertical
10420.00	55.85	1.92	57.77	68.20	10.43	Vertical
5150.00	26.51	20.12	46.63	74.00	27.37	Horizontal
5350.00	35.51	19.93	55.44	74.00	18.56	Horizontal
10420.00	54.92	1.92	56.84	68.20	11.36	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
5150.00	26.01	20.12	46.13	54.00	7.87	Vertical
5350.00	23.73	19.93	43.66	54.00	10.34	Vertical
5150.00	26.51	20.12	46.63	54.00	7.37	Horizontal
5350.00	23.72	19.93	43.65	54.00	10.35	Horizontal
Remark:						
1. Level = Reading + Factor.						
2. Test Frequency up to 40GHz, and the emission levels of other frequencies are lower than the limit 20dB, not show in test report.						



4. POWER SPECTRAL DENSITY TEST

4.1 LIMIT

1. For mobile and portable client devices in the 5.15-5.25 GHz band, , the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2 TEST PROCEDURE

1. The setting follows Method SA-1 of FCC KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.
For devices operating in the band, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (*i.e.*, 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:
 - a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
 - b) Set $VBW \geq 3$ RBW.
 - c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log (500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ kHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
 - d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10 \log (1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
 - e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
 - f) Please refer to ANSI C63.10-2020 Section 12.6 Method SA-2.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ KHZ}$ is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

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

4.6 TEST RESULTS

Note: The test data please reference to attachment "APPENDIX 1".

For U-NII 3:

1. Total PSD(dBm/500KHz) = Total PSD(dBm/510KHz) + RBW Factor
2. RBW Factor = $10 * \log(500/510)$



5. DUTY CYCLE

5.1 TEST STANDARD

Please refer to ANSI C63.10-2020 Section 12.2

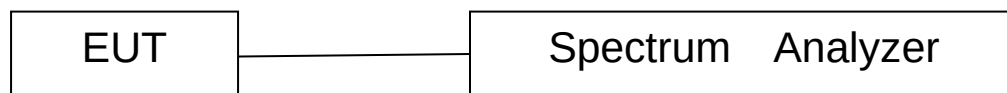
5.2 TEST PROCEDURE

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Zero
RB	set RBW to the largest available value
VB	$VBW \geq RBW$.
Detector	Peak
Trace	Clear Write
Sweep Time	Auto

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 5 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULTS

Note: The test data please reference to attachment "APPENDIX 1".

6. BANDWIDTH MEASUREMENT

6.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

The following procedure shall be used for measuring 26 bandwidth

6.1.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW $\geq$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

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

6.1.5 TEST RESULTS

Note: The test data please reference to attachment "APPENDIX 1".

6.2 OCCUPIED BANDWIDTH (99%) TEST APPLIED PROCEDURES / LIMIT

The following procedure shall be used for measuring (99 %) power bandwidth.

6.2.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW $\geq 3 \cdot$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

6.2.2 DEVIATION FROM STANDARD

No deviation.

6.2.3 TEST SETUP



6.2.4 EUT OPERATION CONDITIONS

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

6.2.5 TEST RESULTS

Note: The test data please reference to attachment “APPENDIX 1”.

6.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth.

6.3.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v02r01.
 - a) Set RBW = 100 kHz.
 - b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
 - c) Detector = Peak.
 - d) Trace mode = max hold.
 - e) Sweep = auto couple.
 - f) Allow the trace to stabilize.
 - g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3.2 DEVIATION FROM STANDARD

No deviation.

6.3.3 TEST SETUP



6.3.4 EUT OPERATION CONDITIONS

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

6.3.5 TEST RESULTS

Note: The test data please reference to attachment "APPENDIX 1".



7. MAXIMUM OUTPUT POWER

7.1 LIMIT

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz, If transmitting antennas of directional gain greater than 6 dBi are used.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used.

FCC Part15 (15.407) , Subpart E				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.407(a) (1) (iv)	Max Output Power	0.25 watt	5150-5250	PASS

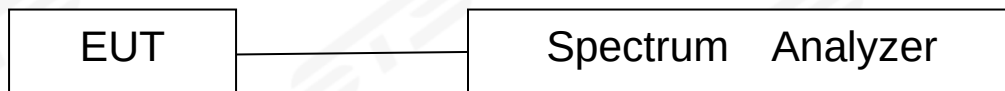
7.2 TEST PROCEDURE

Please refer to ANSI C63.10-2020 Section 12.4.2 Method SA-2.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 5 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULTS

Note: The test data please reference to attachment "APPENDIX 1".



8. AUTOMATICALLY DISCONTINUE TRANSMISSION

8.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

8.2 TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission



9. ANTENNA REQUIREMENT

9.1 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 party shall be used with the device.

9.2 EUT ANTENNA

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

APPENDIX 1-TEST DATA

Frequency Stability

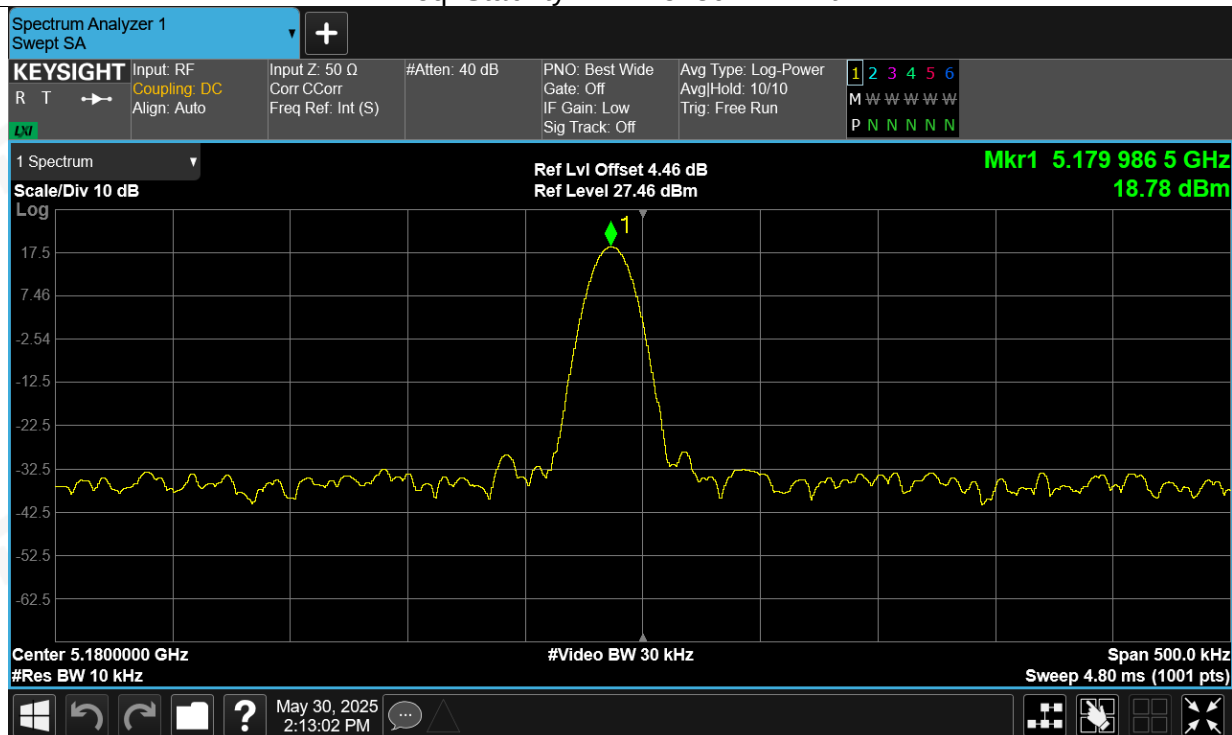
Condition	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Deviation (ppm)	Limit (ppm)	Verdict
HVNT	5180	Ant1	5179.9865	-2.61	Within authorized band	Pass
LVNT	5180	Ant1	5179.9865	-2.61		Pass
NVHT	5180	Ant1	5179.987	-2.51		Pass
NVLT	5180	Ant1	5179.987	-2.51		Pass
NVNT	5180	Ant1	5179.988	-2.32		Pass
HVNT	5210	Ant1	5209.9845	-2.98		Pass
LVNT	5210	Ant1	5209.9845	-2.98		Pass
NVHT	5210	Ant1	5209.985	-2.88		Pass
NVLT	5210	Ant1	5209.9845	-2.98		Pass
NVNT	5210	Ant1	5209.984795613	-2.92		Pass
HVNT	5190	Ant1	5189.9855	-2.79		Pass
LVNT	5190	Ant1	5189.9855	-2.79		Pass
NVHT	5190	Ant1	5189.9855	-2.79		Pass
NVLT	5190	Ant1	5189.986	-2.7		Pass
NVNT	5190	Ant1	5189.986	-2.7		Pass

Remark: "NTNV" means Normal Temperature Normal Voltage, "NVHT" means Normal Voltage High Temperature, "NVLT" means Normal Voltage Low Temperature, "LVNT" means Low Voltage Normal Temperature, "HVNT" means High Voltage Normal Temperature.

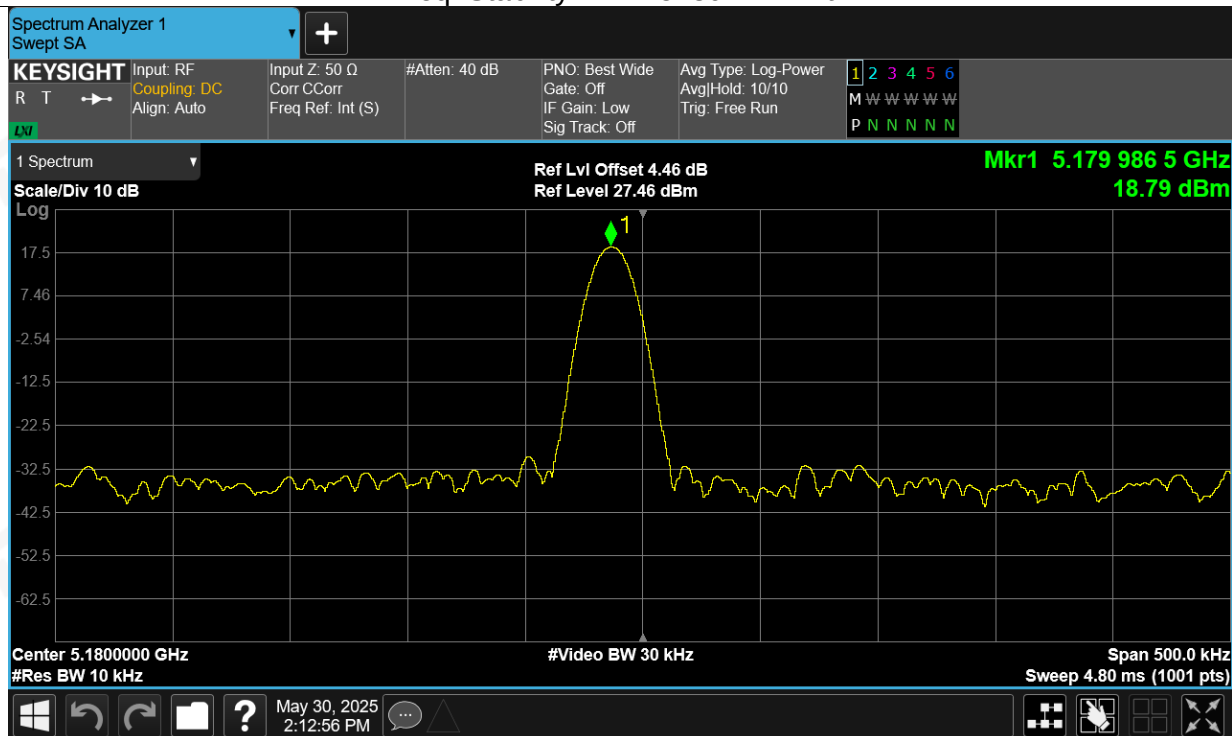


Test Graphs

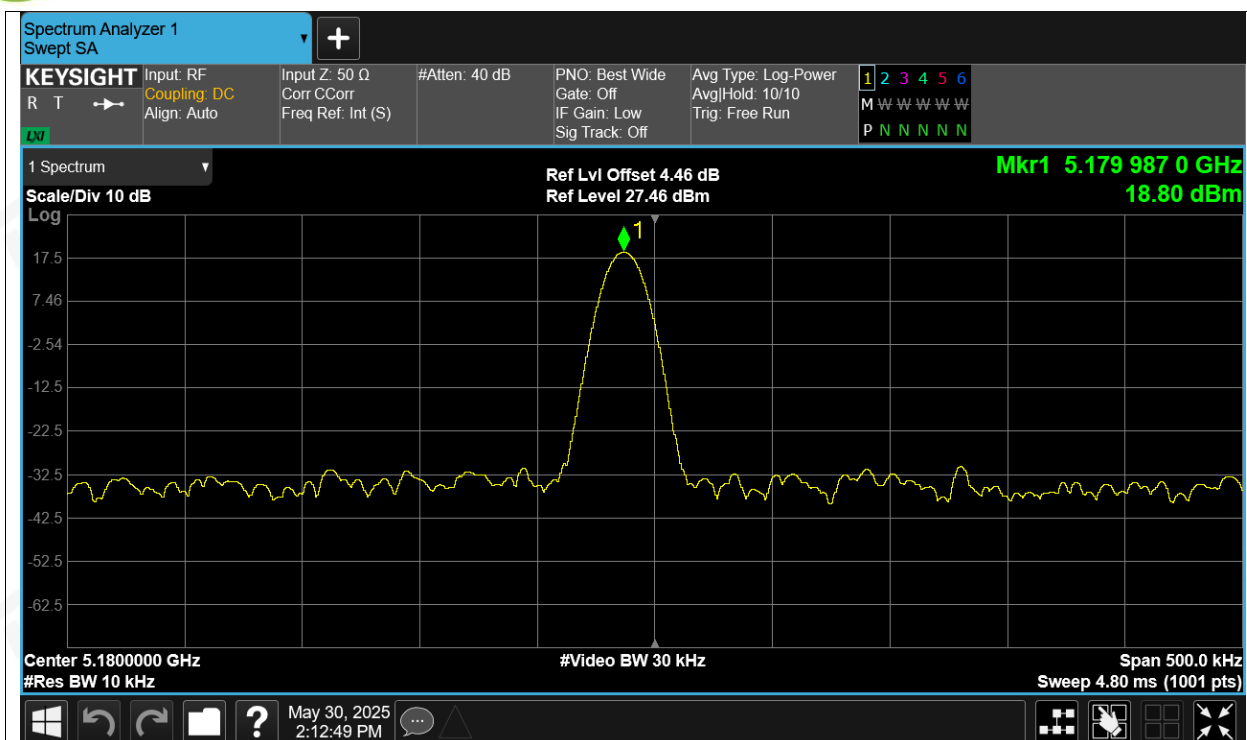
Freq. Stability HVNT 5180MHz Ant1



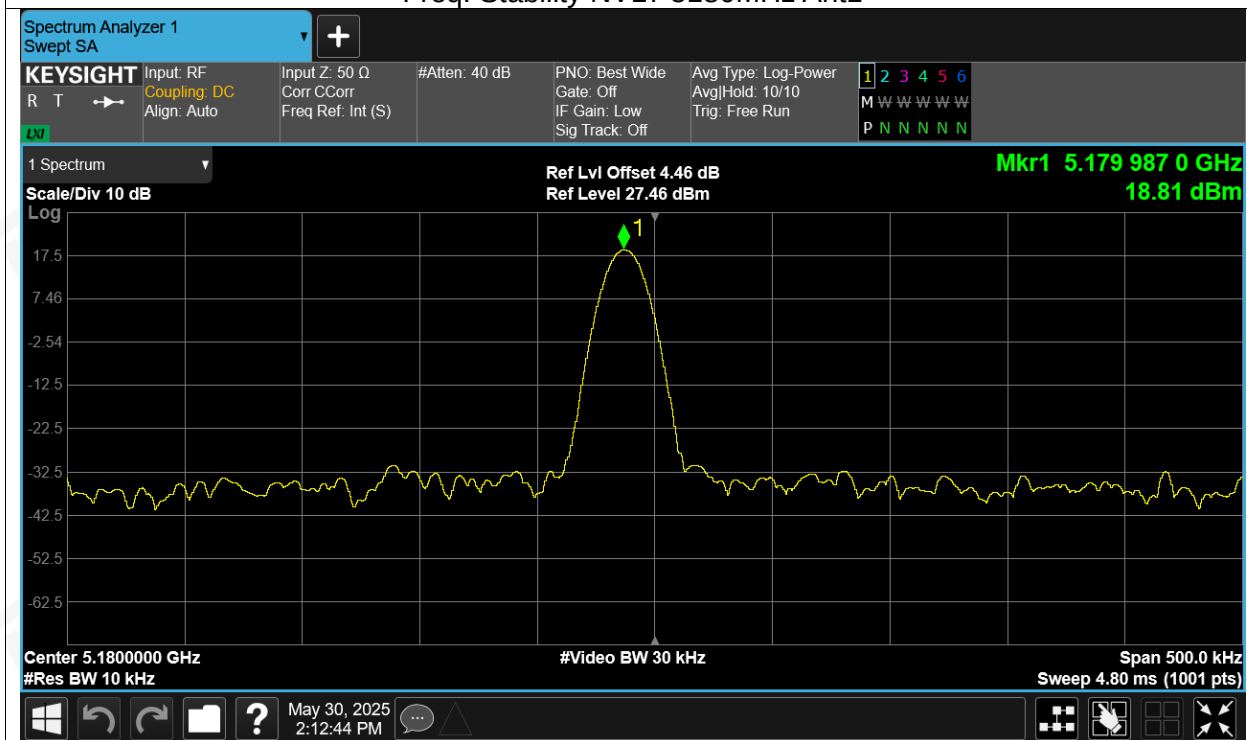
Freq. Stability LVNT 5180MHz Ant1



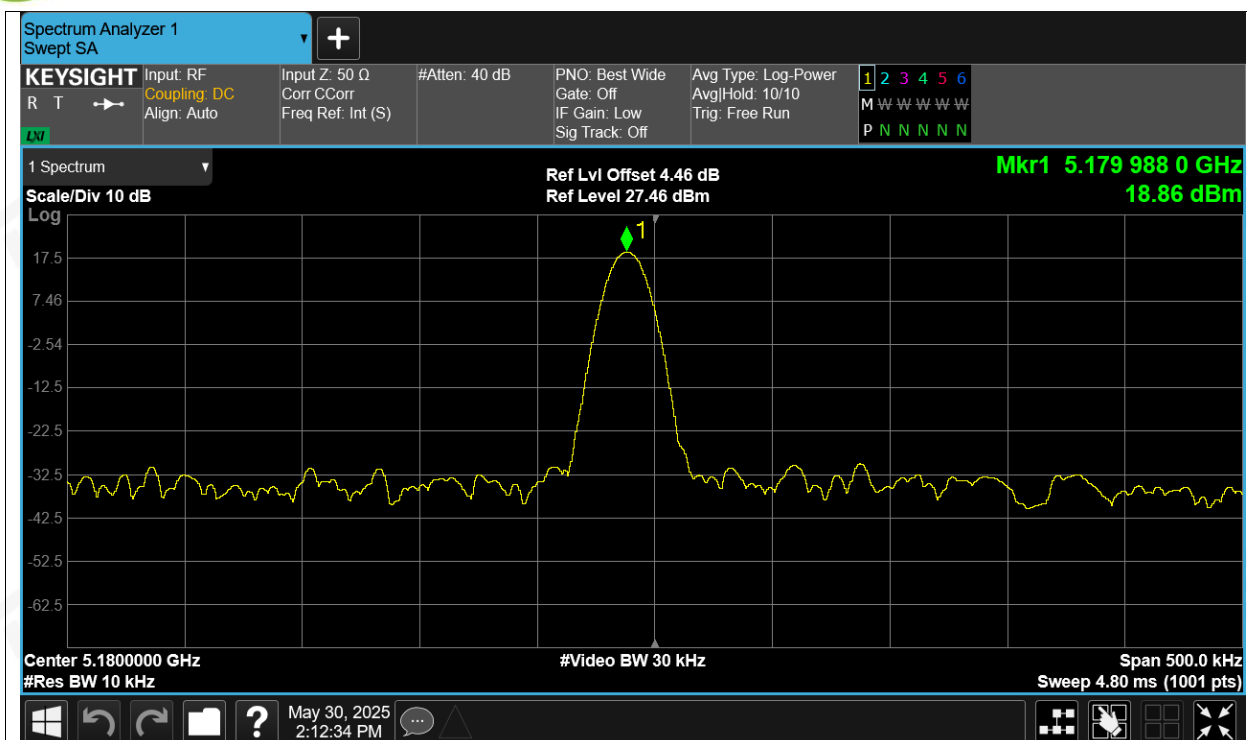
Freq. Stability NVHT 5180MHz Ant1



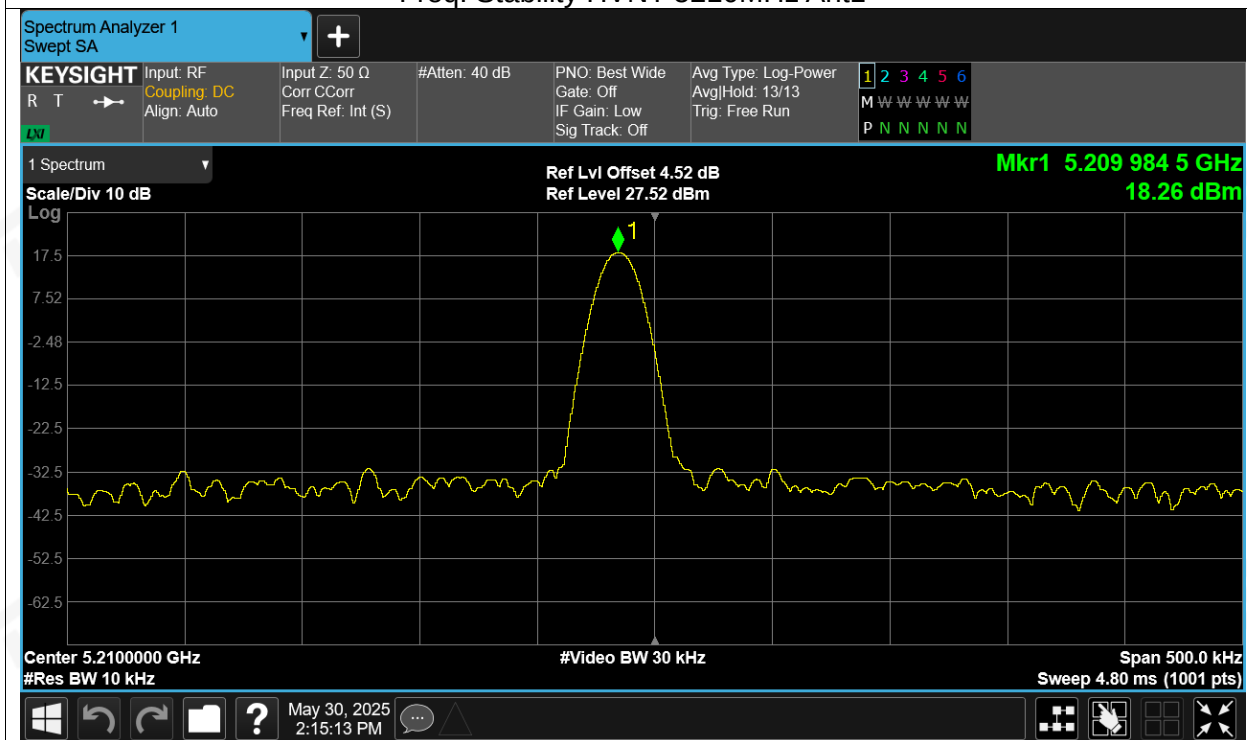
Freq. Stability NVLT 5180MHz Ant1



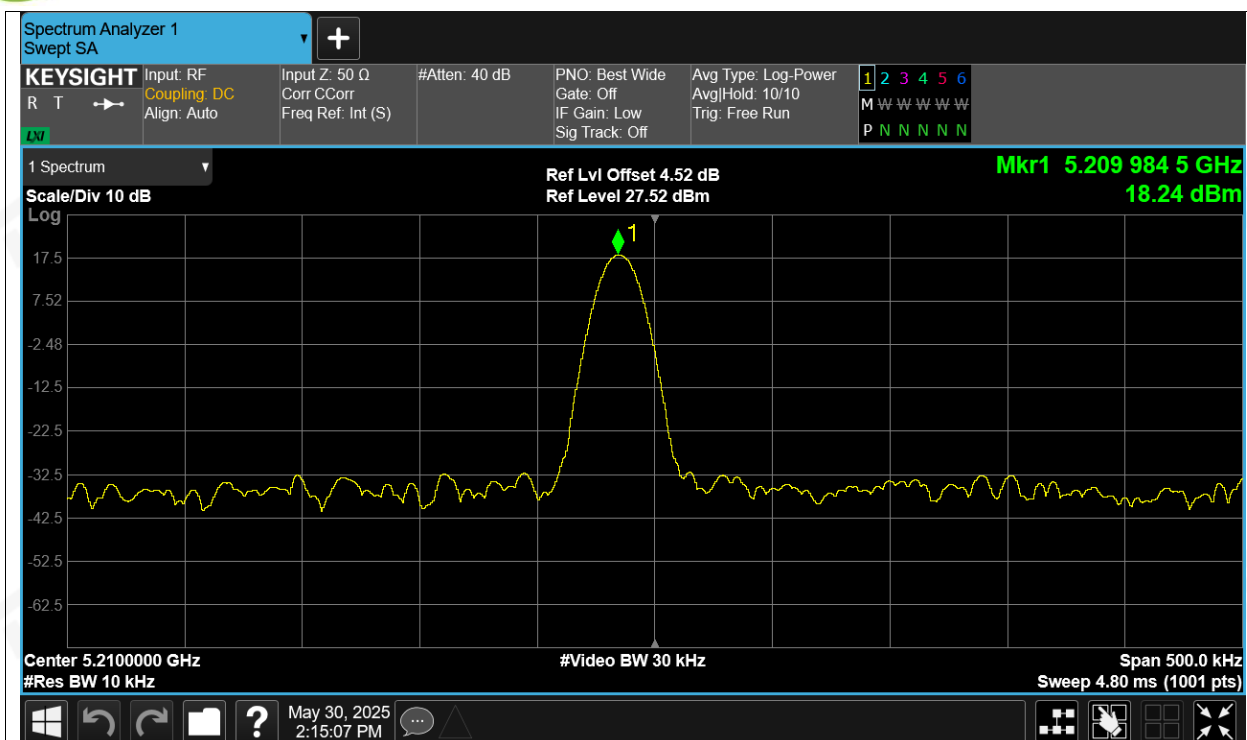
Freq. Stability NVNT 5180MHz Ant1



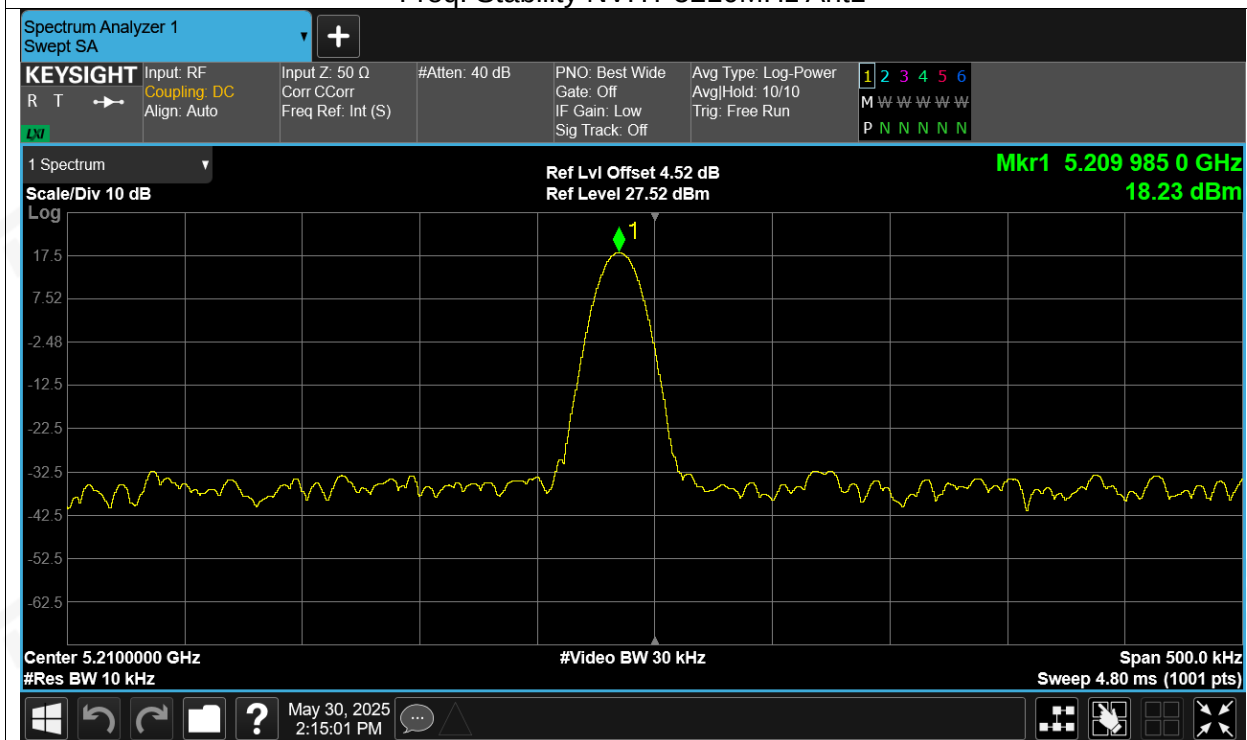
Freq. Stability HVNT 5210MHz Ant1



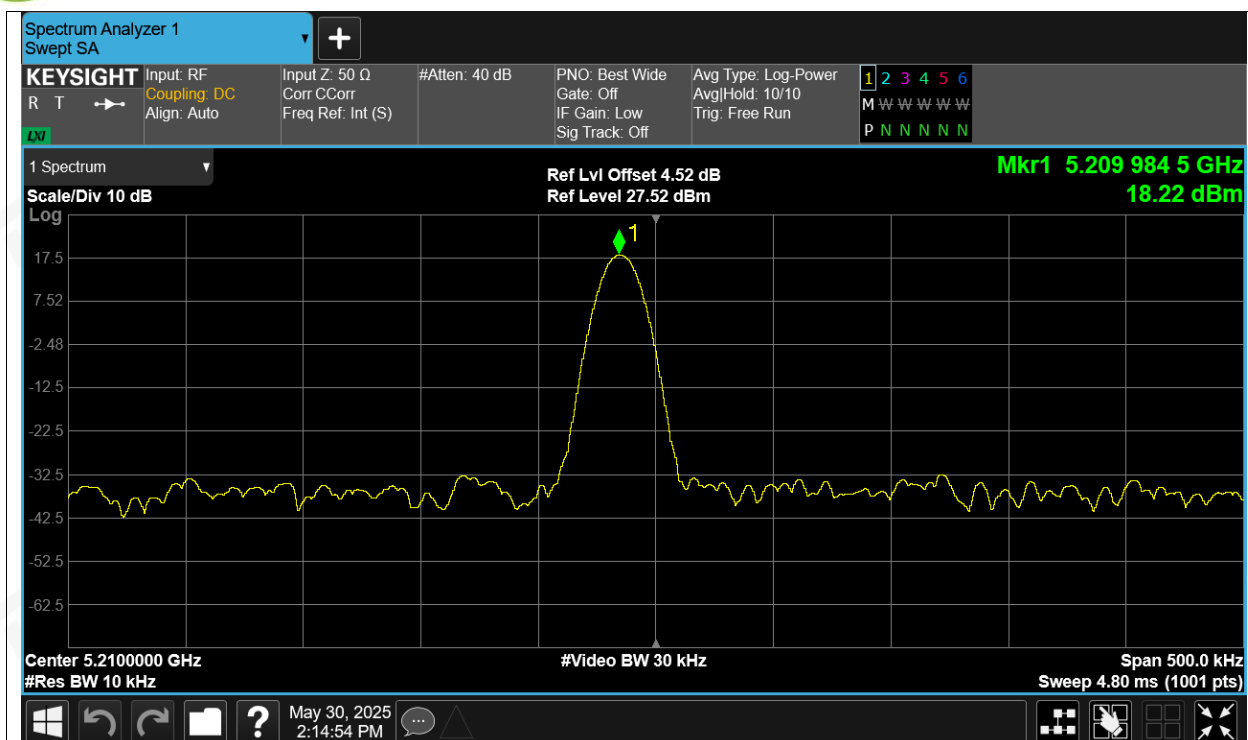
Freq. Stability LVNT 5210MHz Ant1



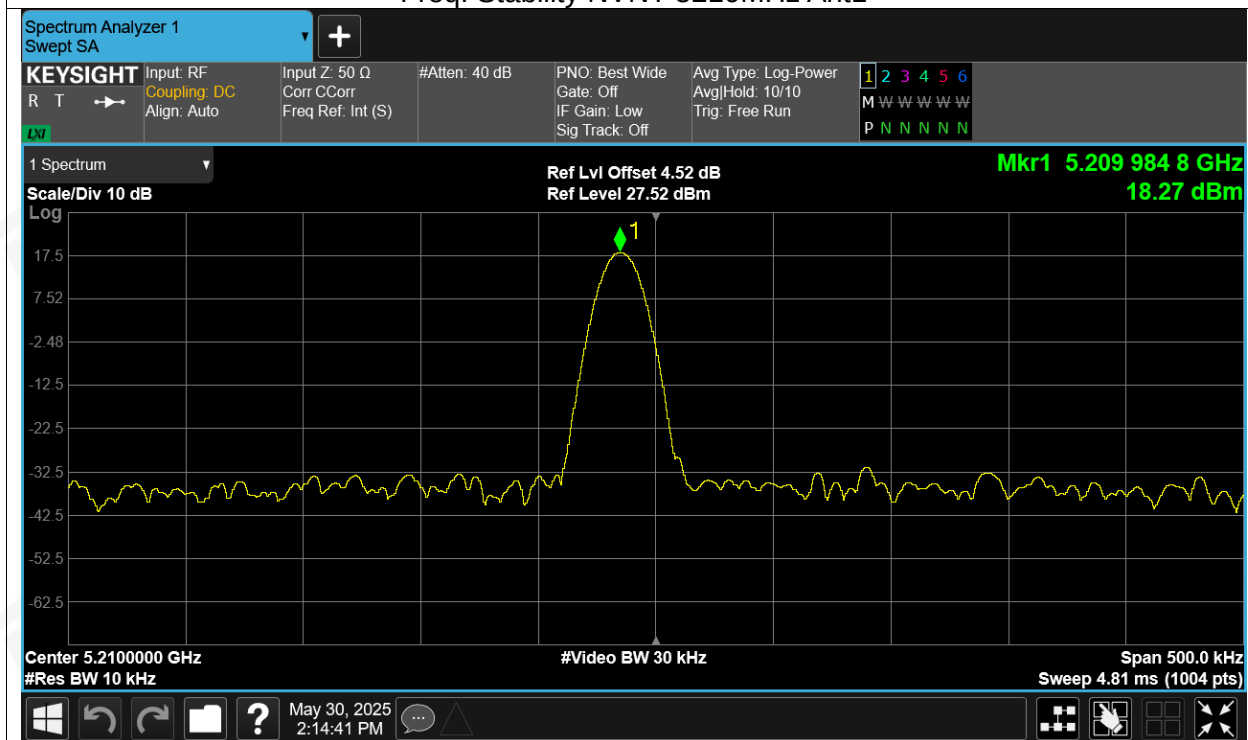
Freq. Stability NVHT 5210MHz Ant1



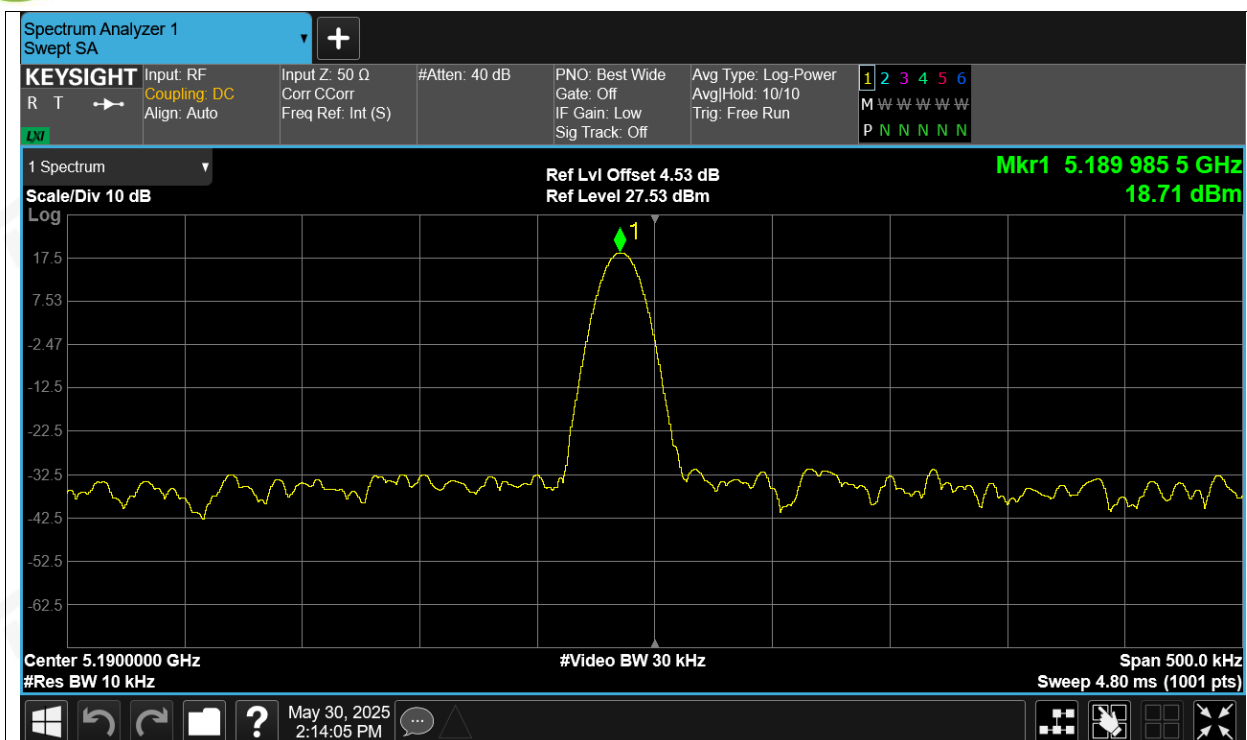
Freq. Stability NVLT 5210MHz Ant1



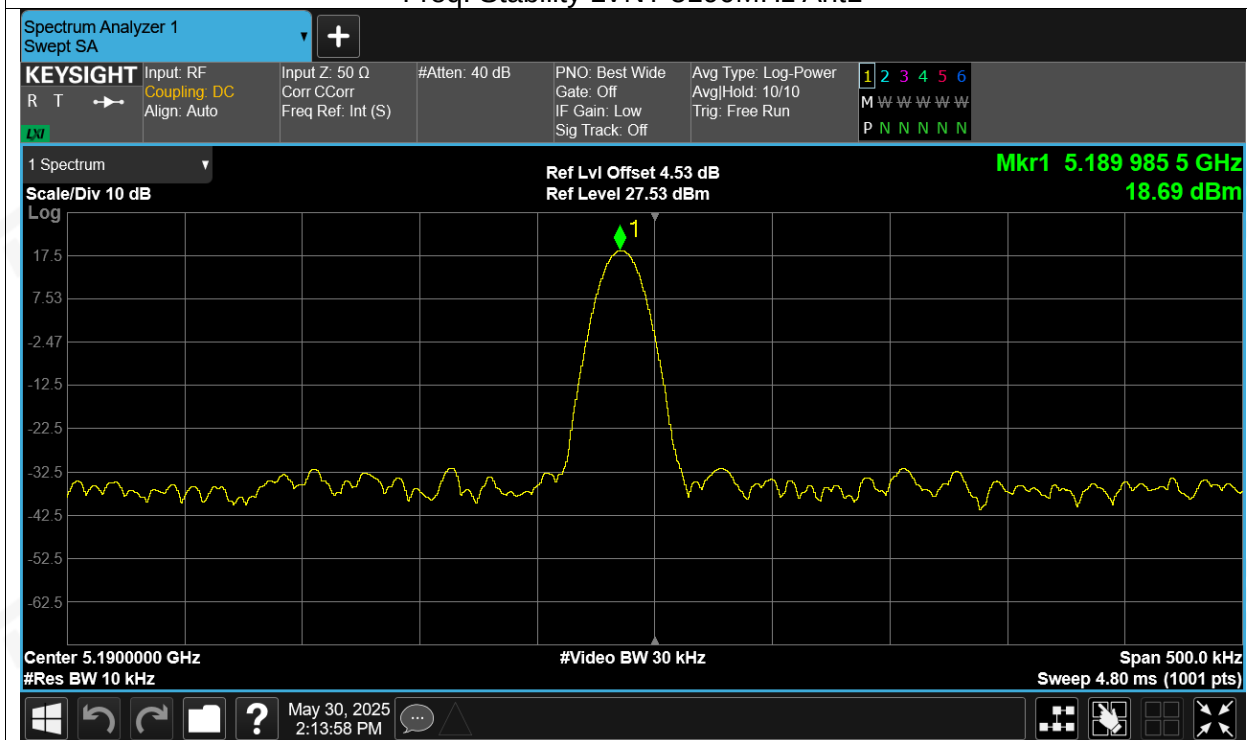
Freq. Stability NVNT 5210MHz Ant1



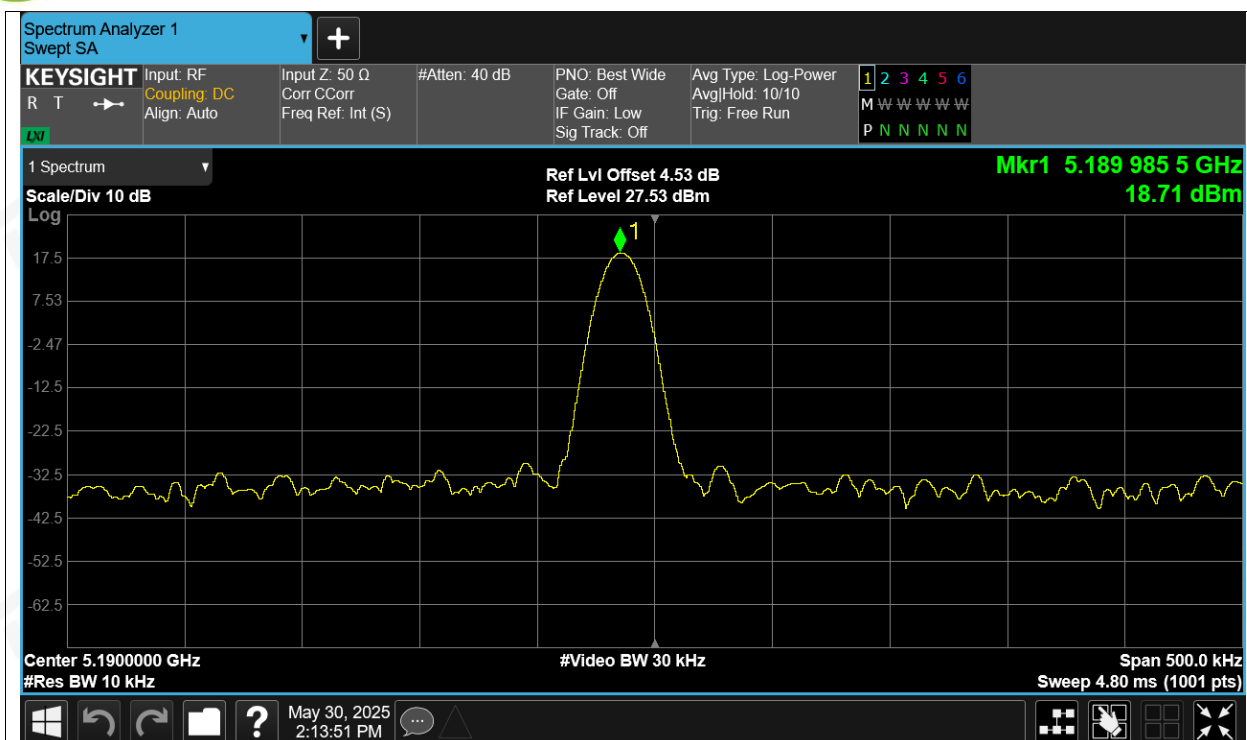
Freq. Stability HVNT 5190MHz Ant1



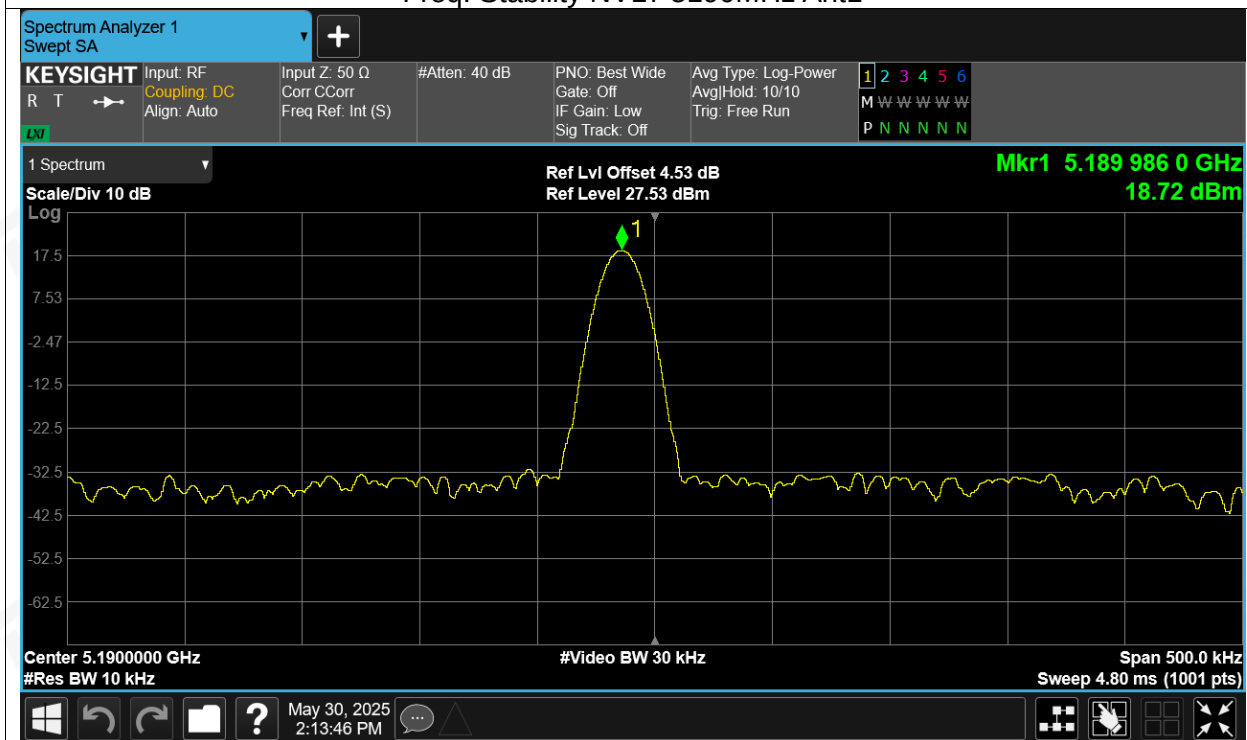
Freq. Stability LVNT 5190MHz Ant1



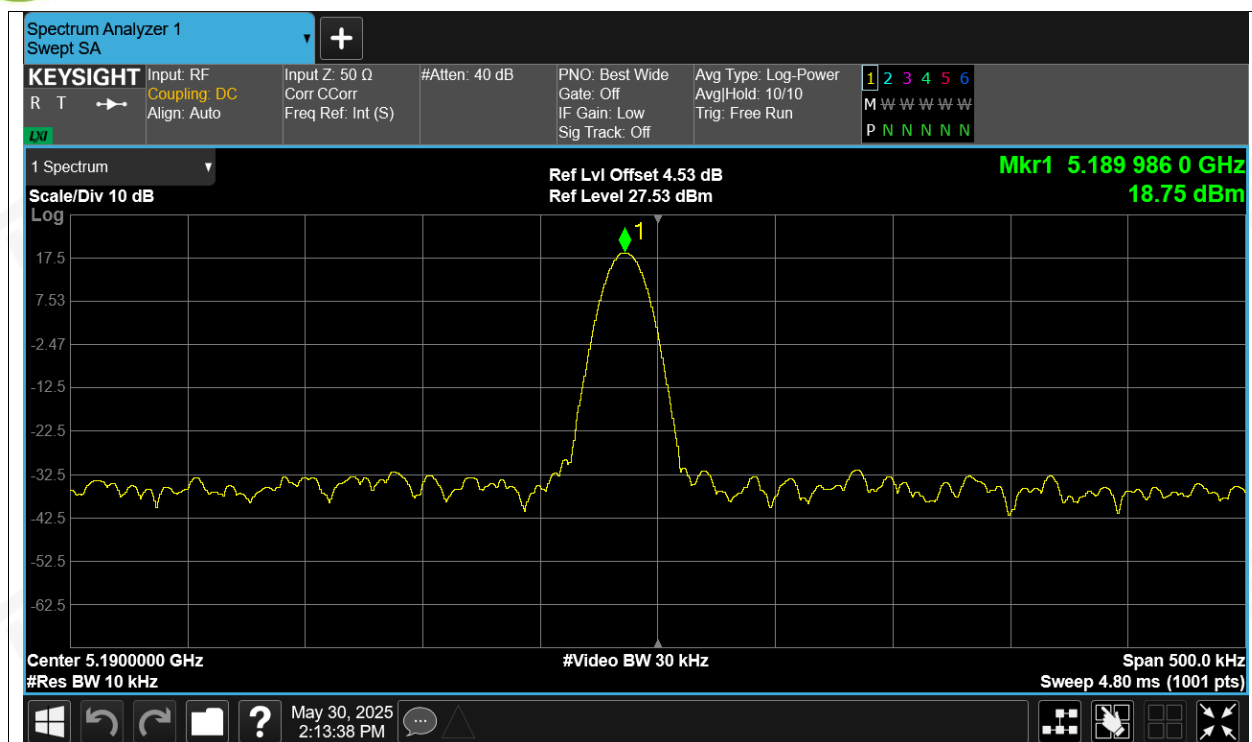
Freq. Stability NVHT 5190MHz Ant1



Freq. Stability NVLT 5190MHz Ant1



Freq. Stability NVNT 5190MHz Ant1





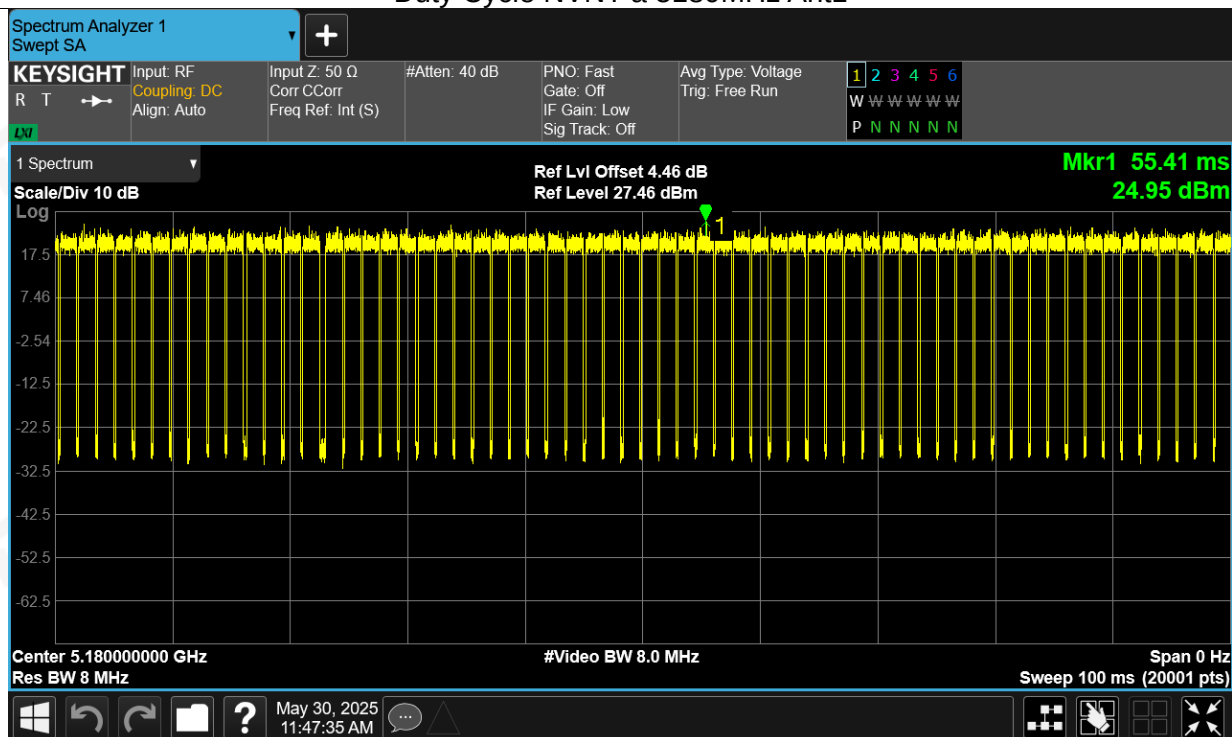
Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	Ant1	88.29	0.54
NVNT	a	5200	Ant1	88.22	0.54
NVNT	a	5240	Ant1	88.33	0.54
NVNT	ac20	5180	Ant1	85.66	0.67
NVNT	ac20	5200	Ant1	86.92	0.61
NVNT	ac20	5240	Ant1	86.55	0.63
NVNT	ac40	5190	Ant1	75.92	1.2
NVNT	ac40	5230	Ant1	76.28	1.18
NVNT	ac80	5210	Ant1	62.63	2.03
NVNT	n20	5180	Ant1	86.59	0.63
NVNT	n20	5200	Ant1	86.66	0.62
NVNT	n20	5240	Ant1	86.11	0.65
NVNT	n40	5190	Ant1	75.33	1.23
NVNT	n40	5230	Ant1	76.27	1.18

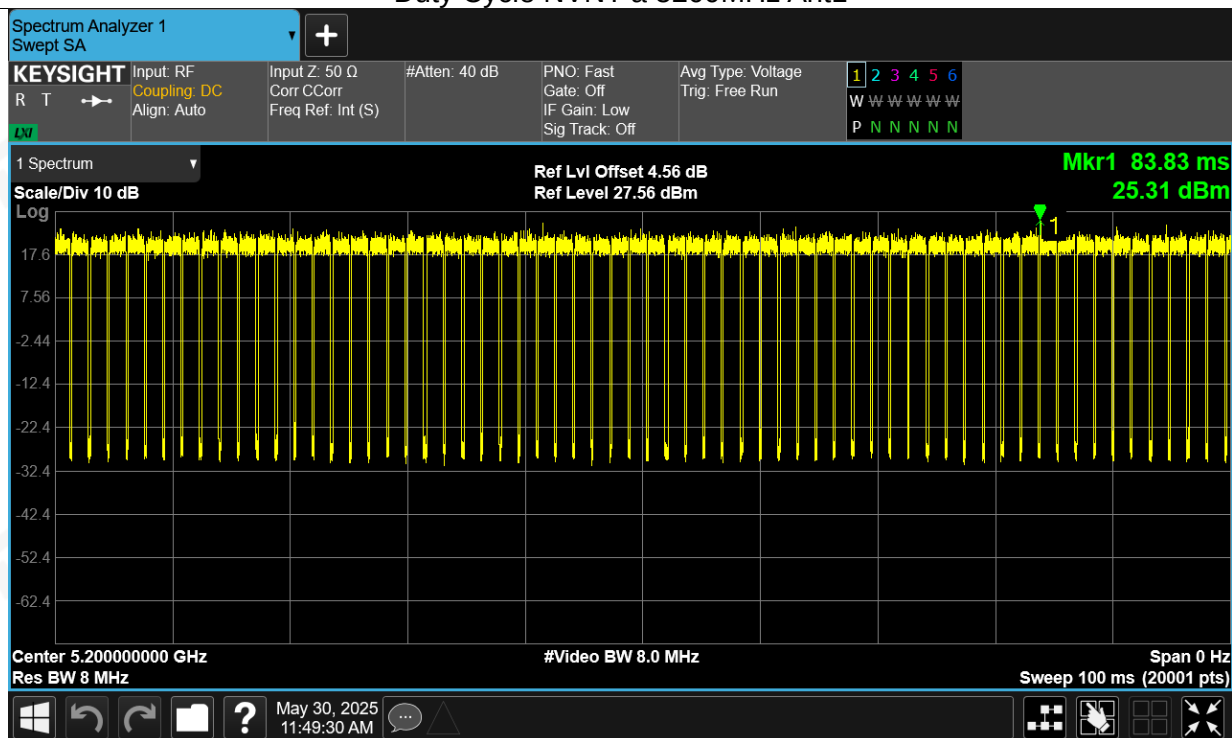


Test Graphs

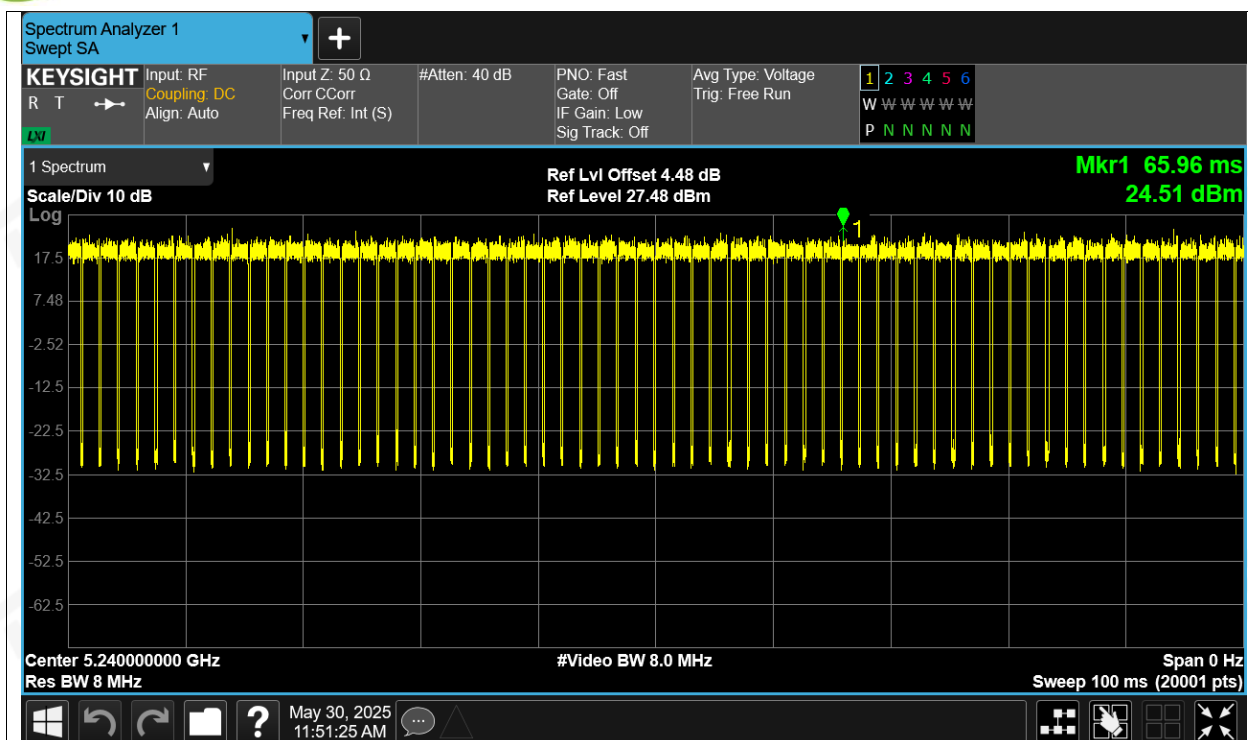
Duty Cycle NVNT a 5180MHz Ant1



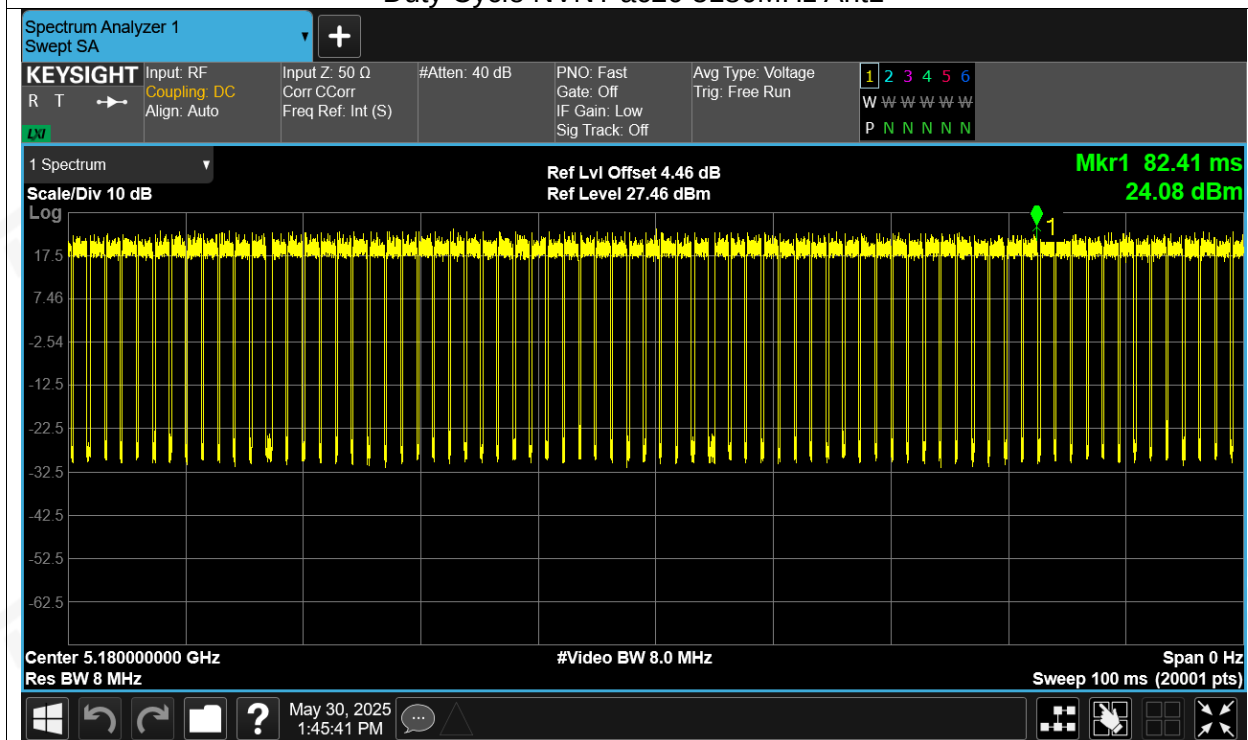
Duty Cycle NVNT a 5200MHz Ant1



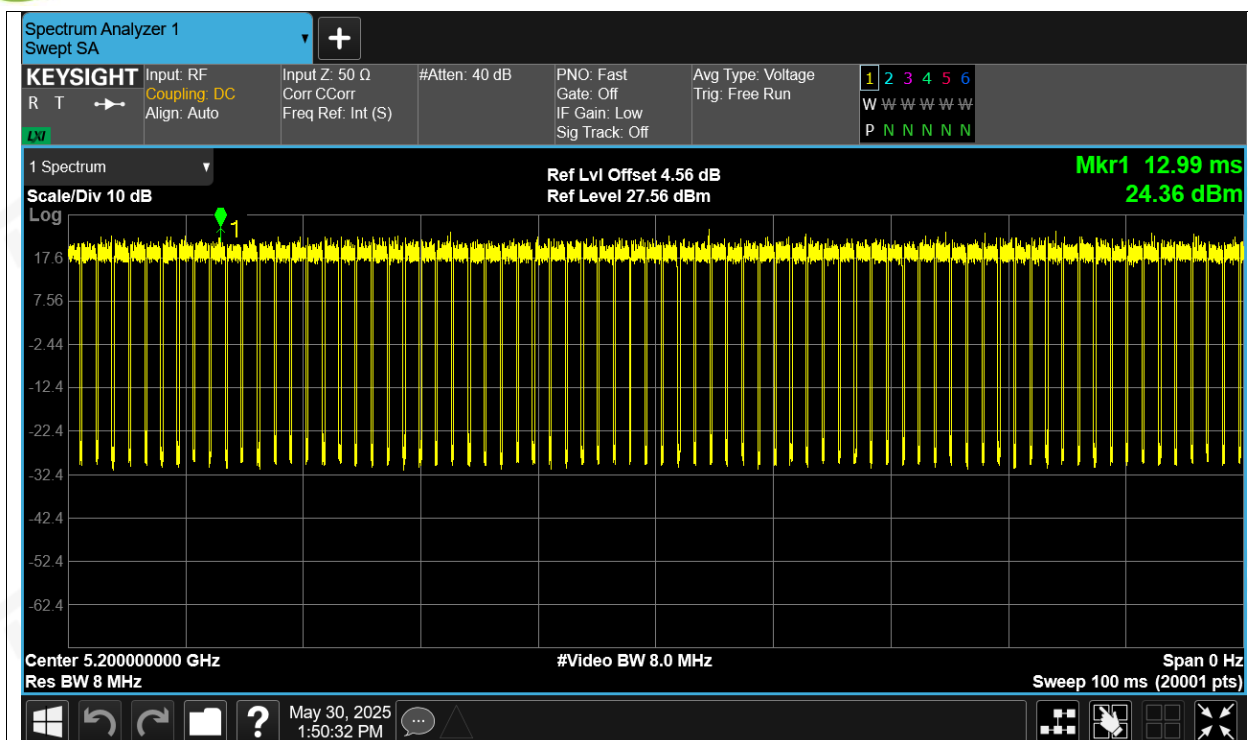
Duty Cycle NVNT a 5240MHz Ant1



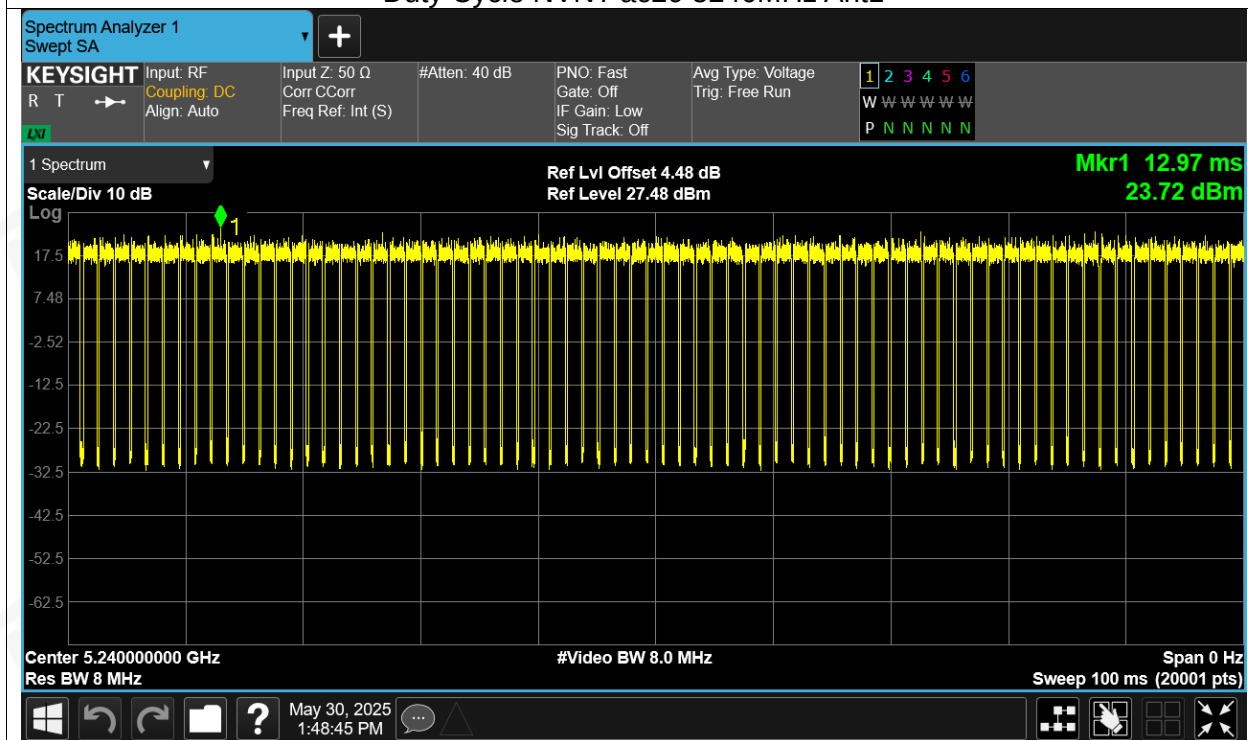
Duty Cycle NVNT ac20 5180MHz Ant1



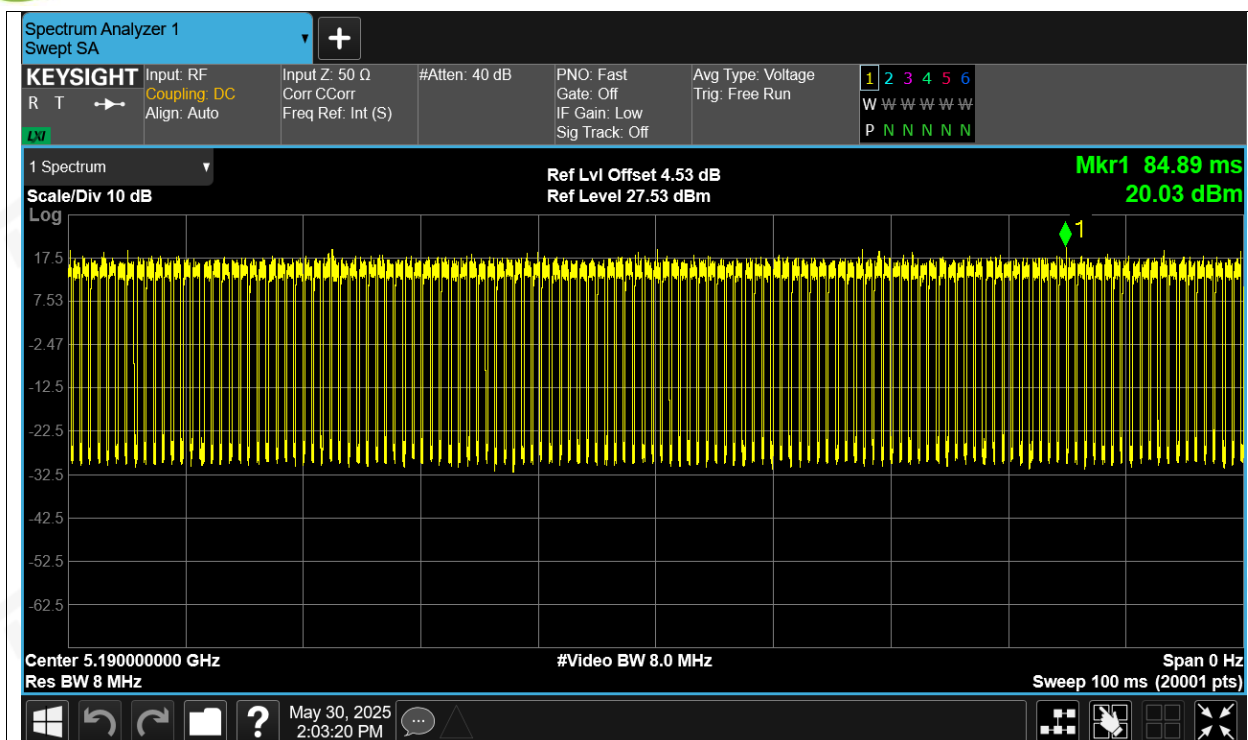
Duty Cycle NVNT ac20 5200MHz Ant1



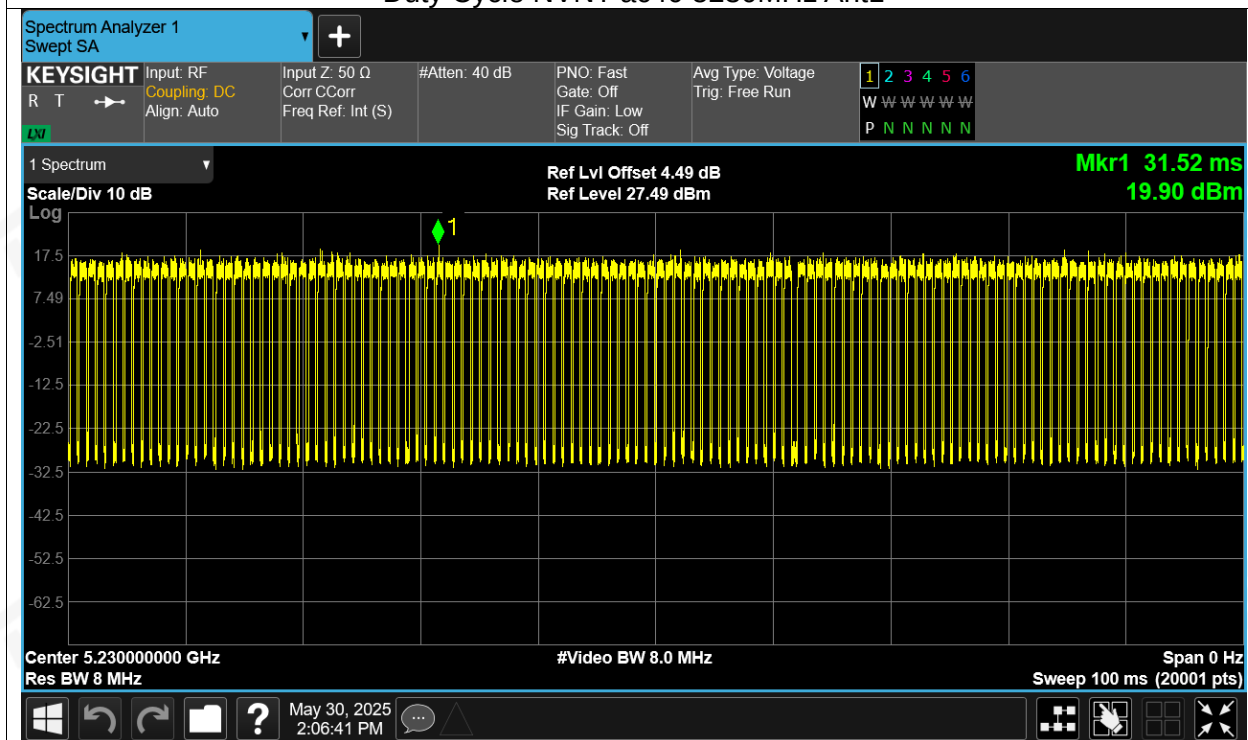
Duty Cycle NVNT ac20 5240MHz Ant1



Duty Cycle NVNT ac40 5190MHz Ant1



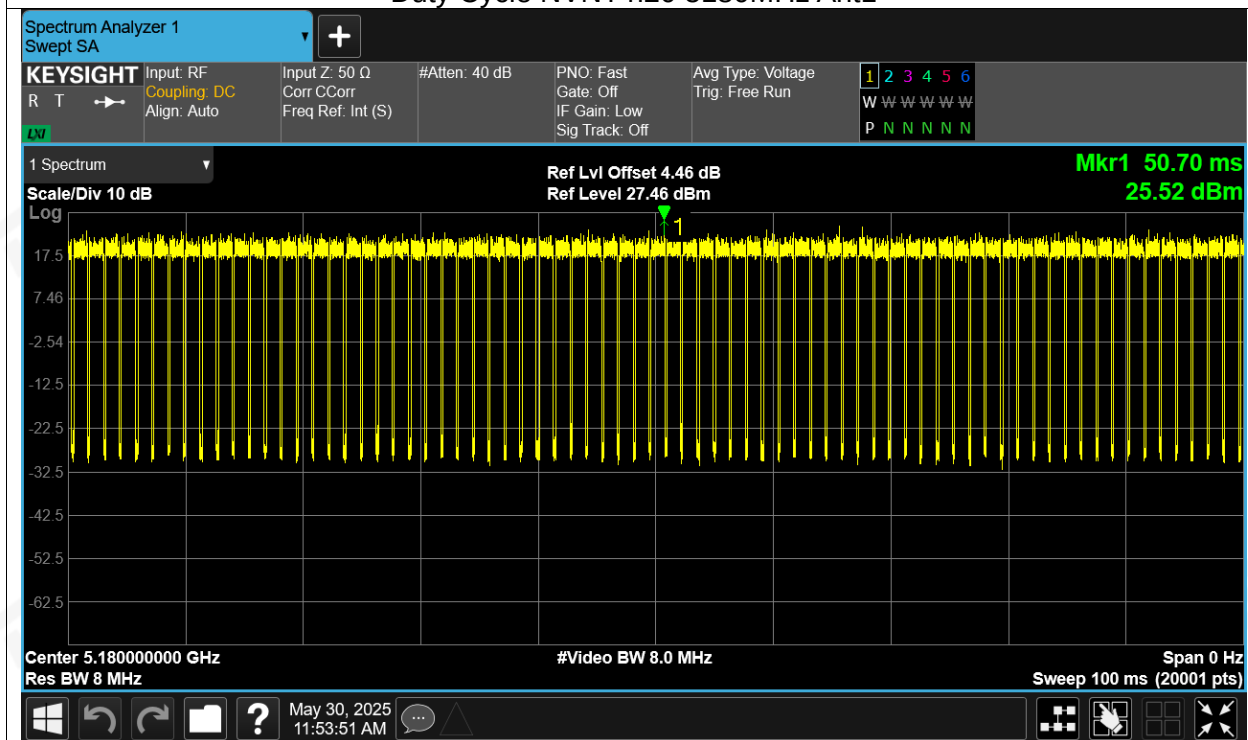
Duty Cycle NVNT ac40 5230MHz Ant1



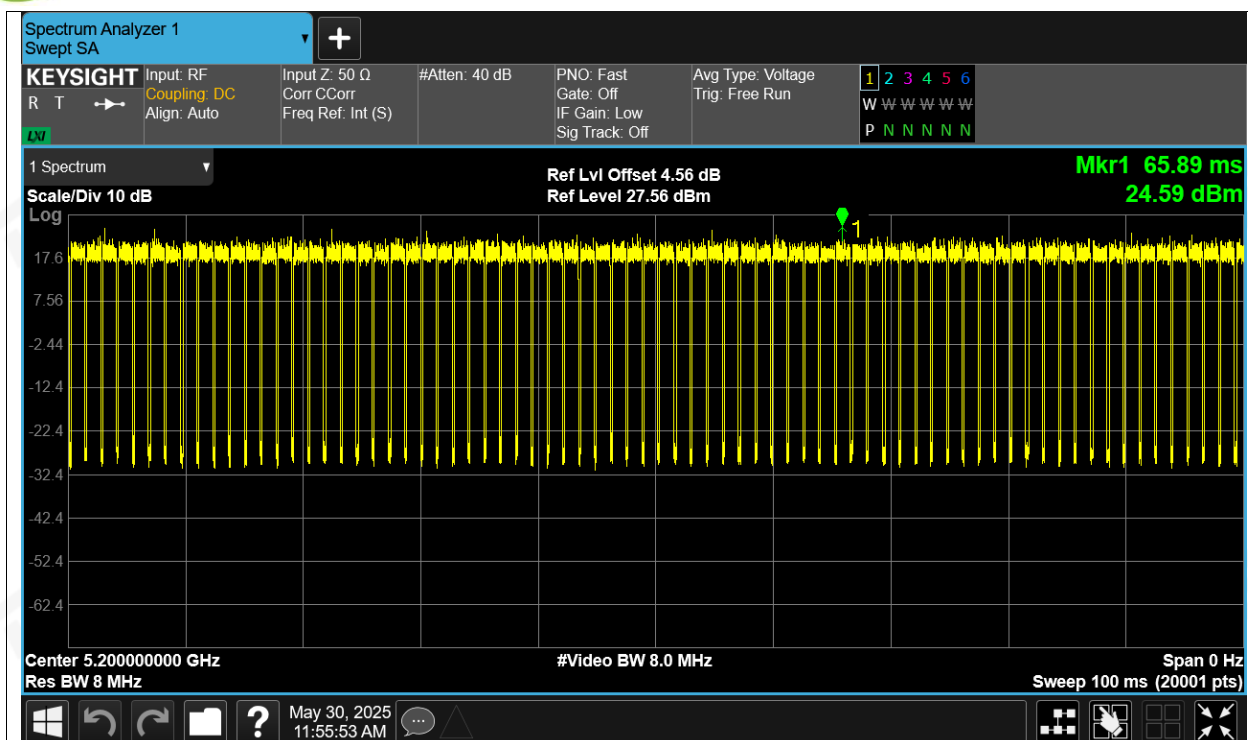
Duty Cycle NVNT ac80 5210MHz Ant1



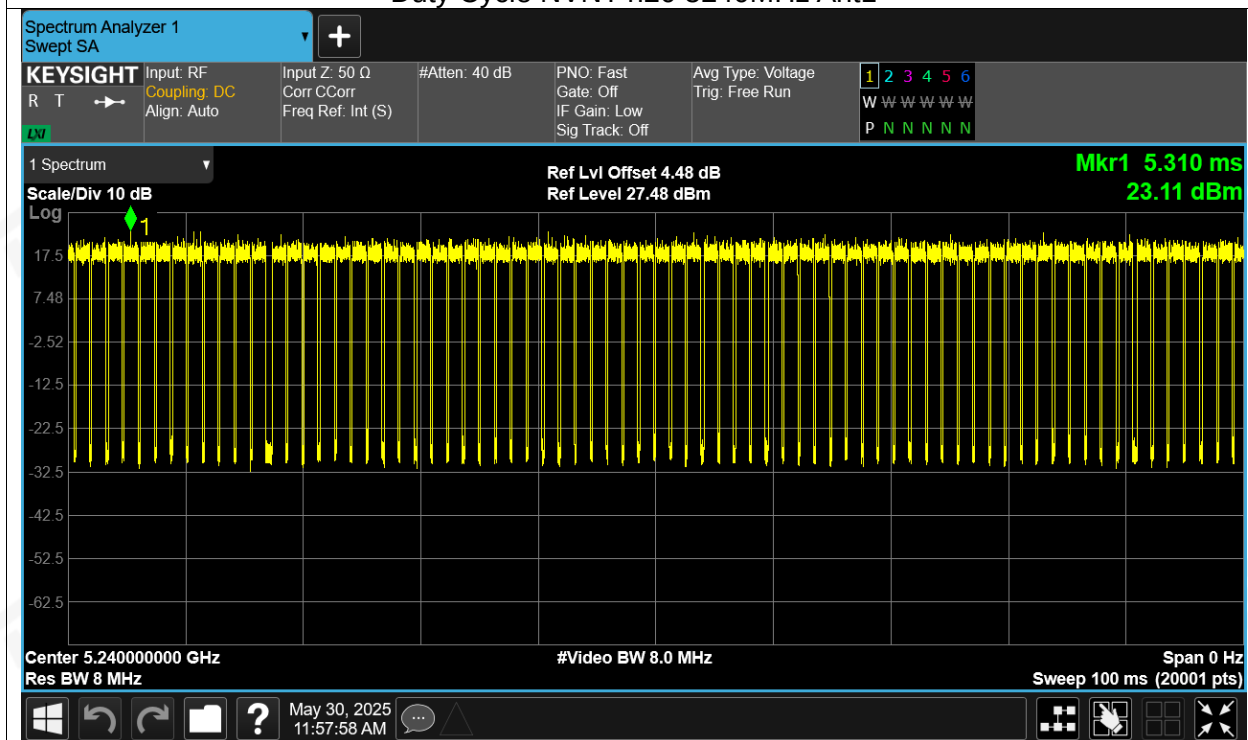
Duty Cycle NVNT n20 5180MHz Ant1



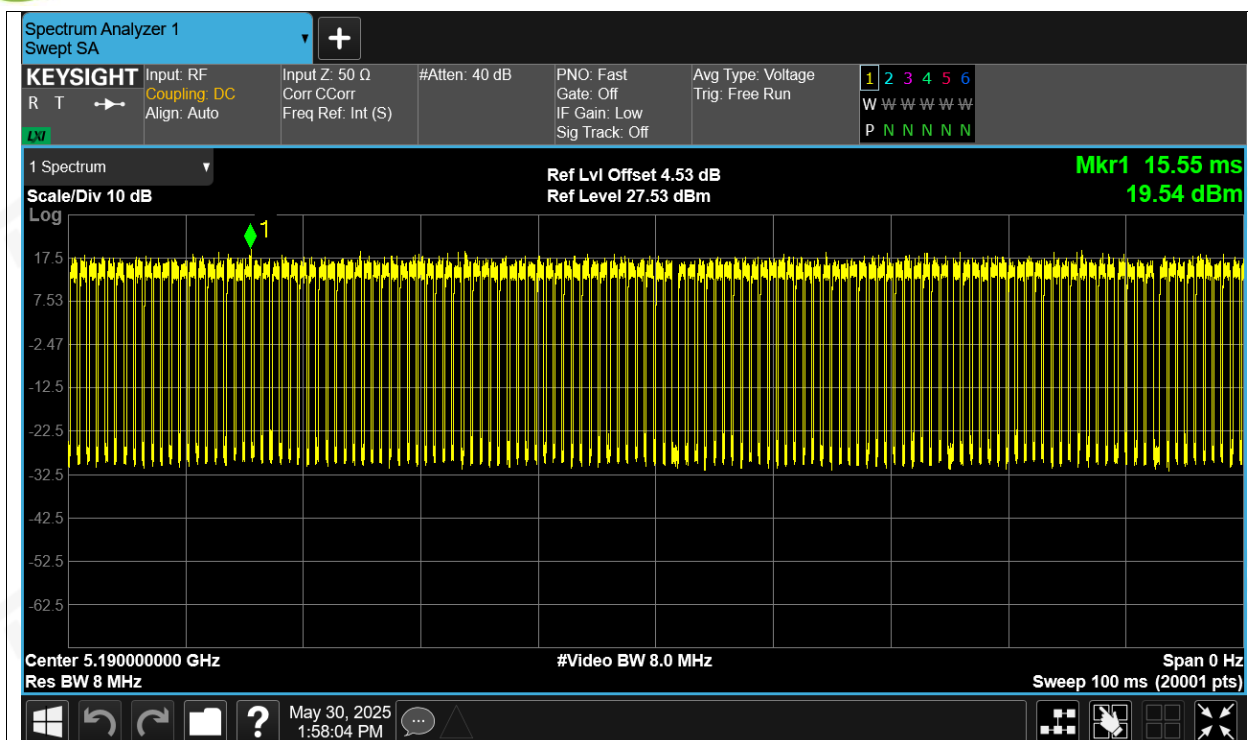
Duty Cycle NVNT n20 5200MHz Ant1



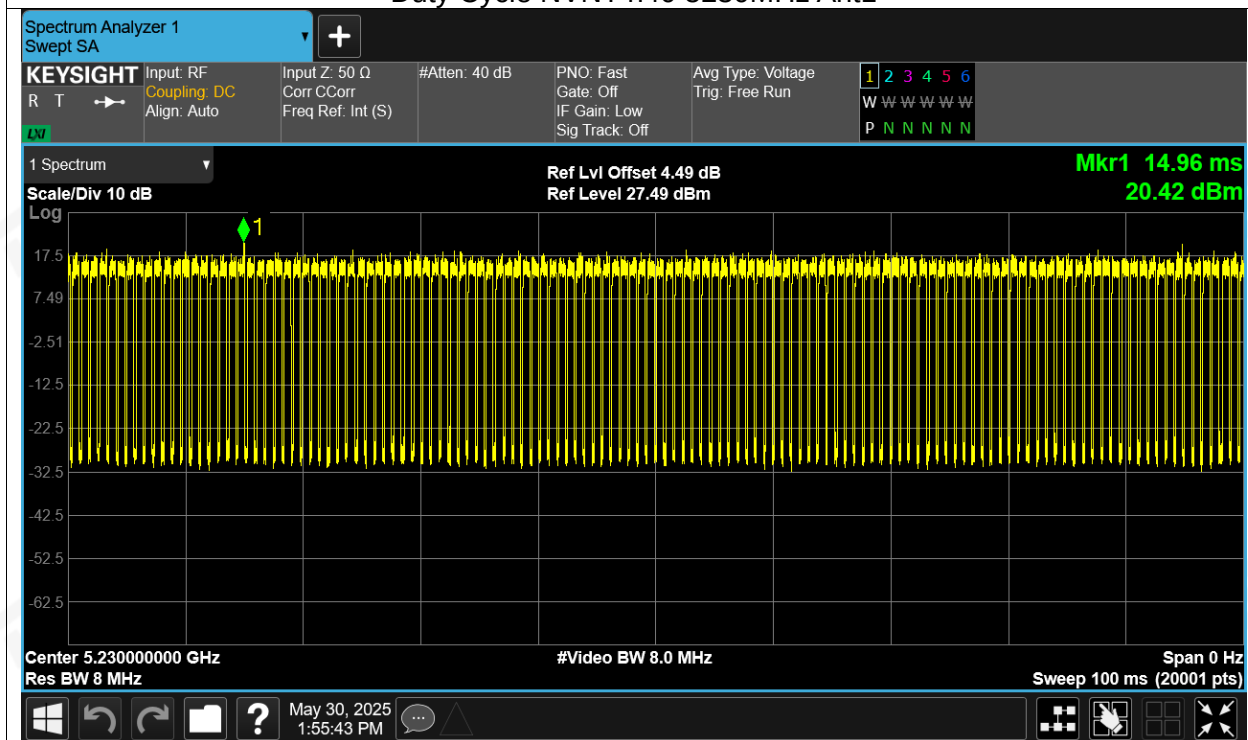
Duty Cycle NVNT n20 5240MHz Ant1



Duty Cycle NVNT n40 5190MHz Ant1



Duty Cycle NVNT n40 5230MHz Ant1





Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	16.76	0.54	17.3	24	Pass
NVNT	a	5200	Ant1	16.57	0.54	17.11	24	Pass
NVNT	a	5240	Ant1	16.05	0.54	16.59	24	Pass
NVNT	ac20	5180	Ant1	15.84	0.67	16.51	24	Pass
NVNT	ac20	5200	Ant1	15.97	0.61	16.58	24	Pass
NVNT	ac20	5240	Ant1	15.48	0.63	16.11	24	Pass
NVNT	ac40	5190	Ant1	15.62	1.2	16.82	23	Pass
NVNT	ac40	5230	Ant1	14.79	1.18	15.97	24	Pass
NVNT	ac80	5210	Ant1	13.84	2.03	15.87	24	Pass
NVNT	n20	5180	Ant1	15.94	0.63	16.57	24	Pass
NVNT	n20	5200	Ant1	15.7	0.62	16.32	24	Pass
NVNT	n20	5240	Ant1	15.18	0.65	15.83	24	Pass
NVNT	n40	5190	Ant1	15.64	1.23	16.87	24	Pass
NVNT	n40	5230	Ant1	14.83	1.18	16.01	24	Pass



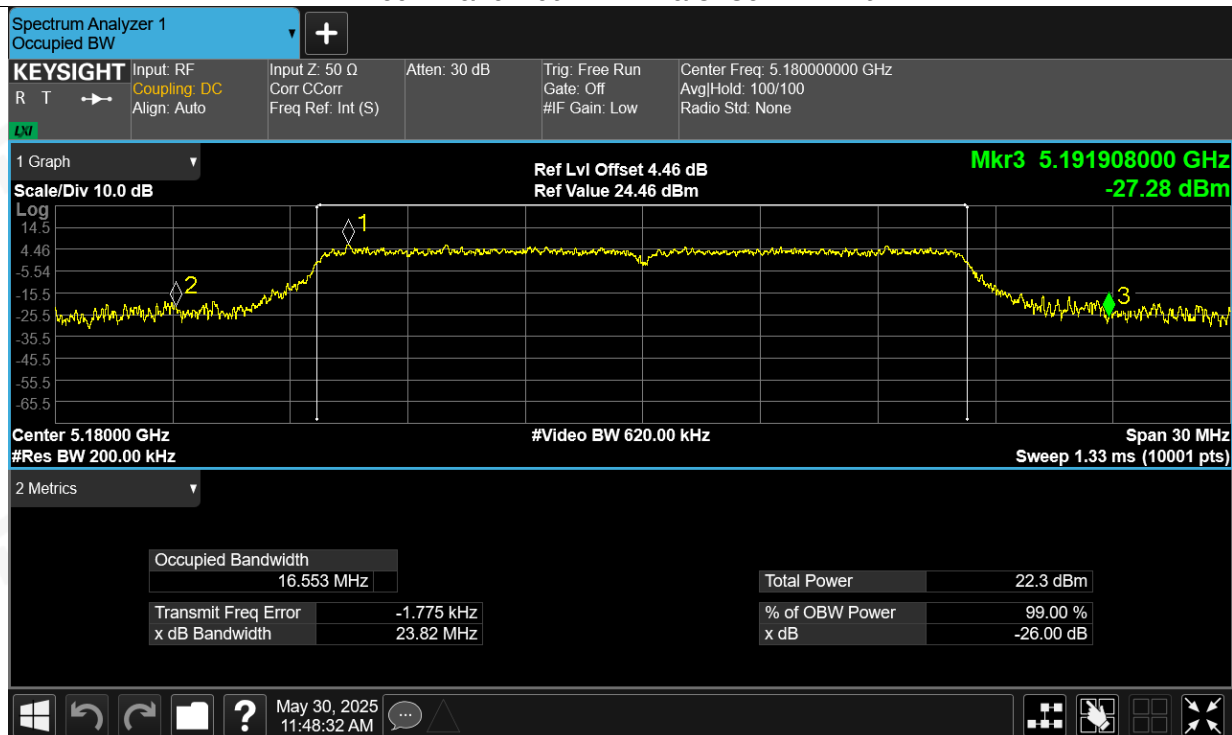
-26dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)
NVNT	a	5180	Ant1	23.819
NVNT	a	5200	Ant1	22.375
NVNT	a	5240	Ant1	23.21
NVNT	ac20	5180	Ant1	21.519
NVNT	ac20	5200	Ant1	23.654
NVNT	ac20	5240	Ant1	22.959
NVNT	ac40	5190	Ant1	55.009
NVNT	ac40	5230	Ant1	54.27
NVNT	ac80	5210	Ant1	82.276
NVNT	n20	5180	Ant1	28.068
NVNT	n20	5200	Ant1	27.232
NVNT	n20	5240	Ant1	27.254
NVNT	n40	5190	Ant1	59.403
NVNT	n40	5230	Ant1	54.961

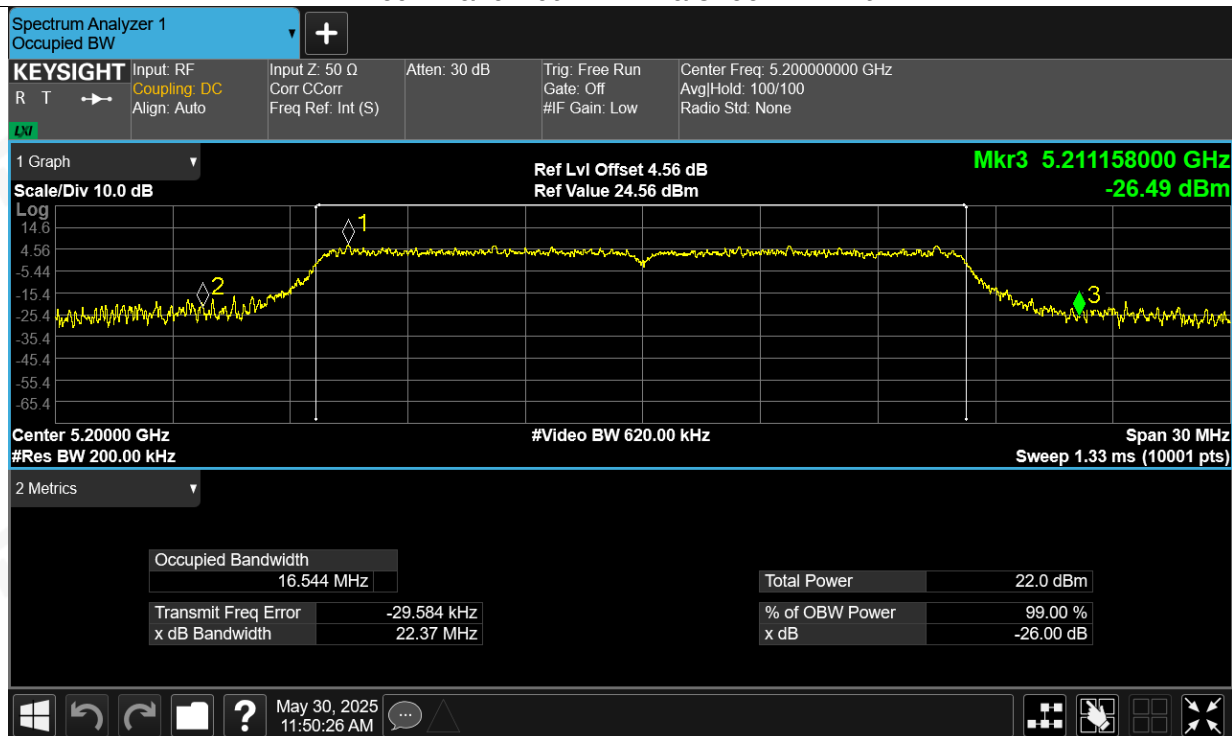


Test Graphs

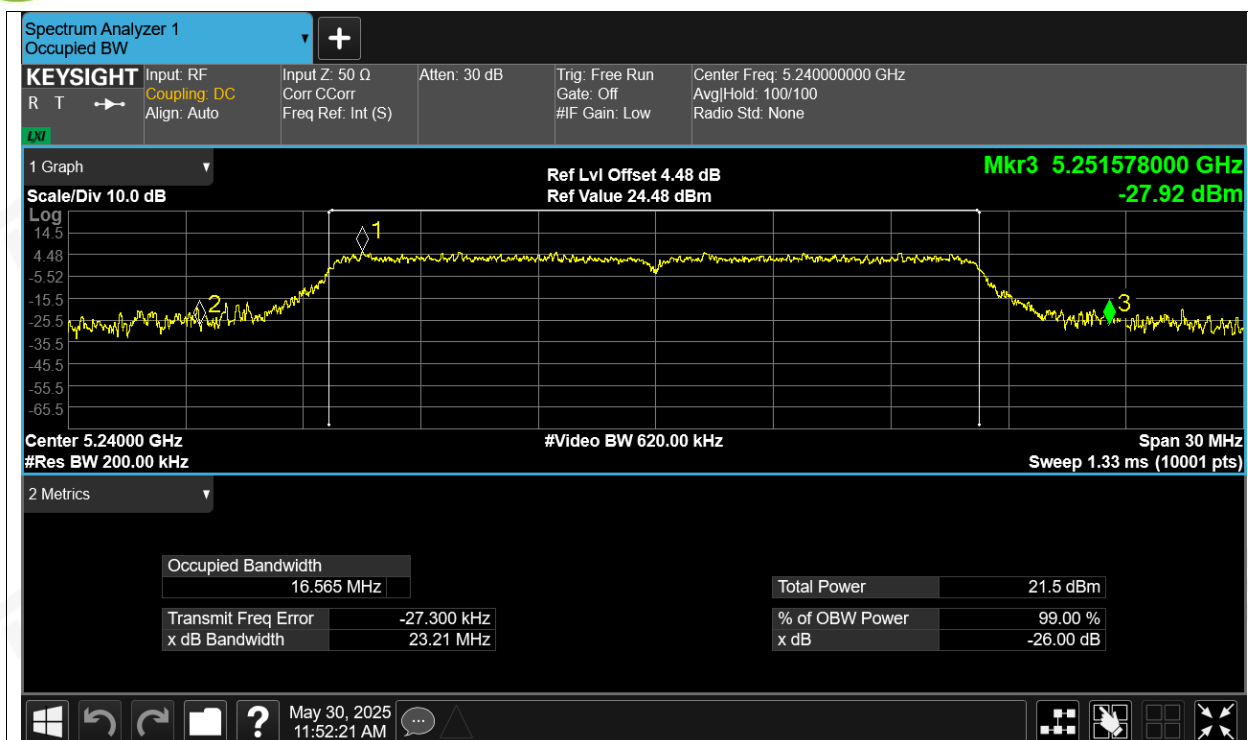
-26dB Bandwidth NVNT a 5180MHz Ant1



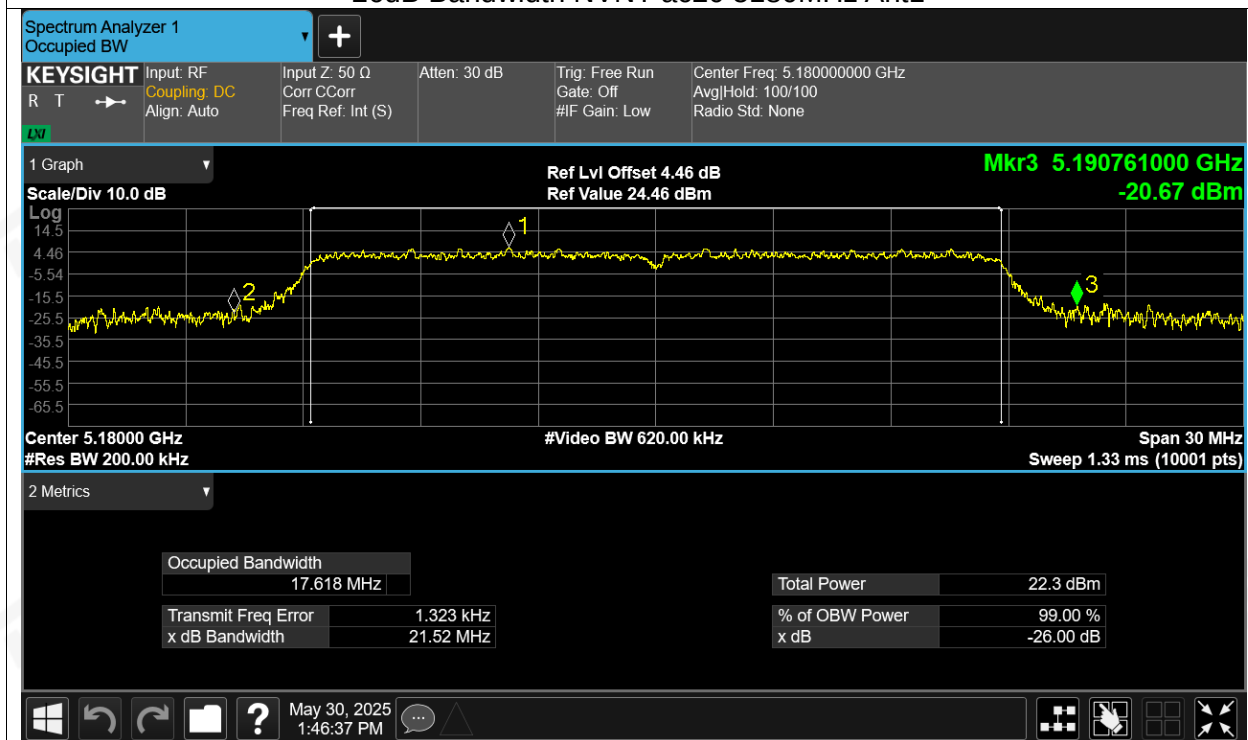
-26dB Bandwidth NVNT a 5200MHz Ant1



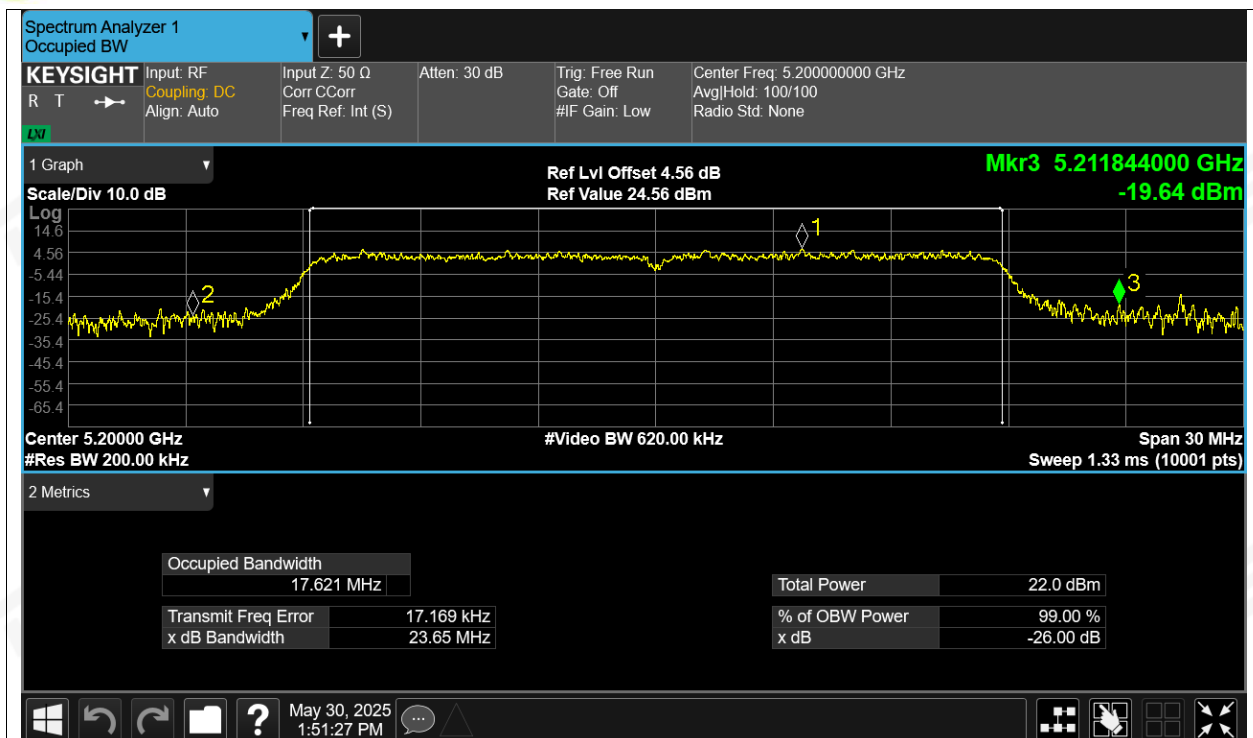
-26dB Bandwidth NVNT a 5240MHz Ant1



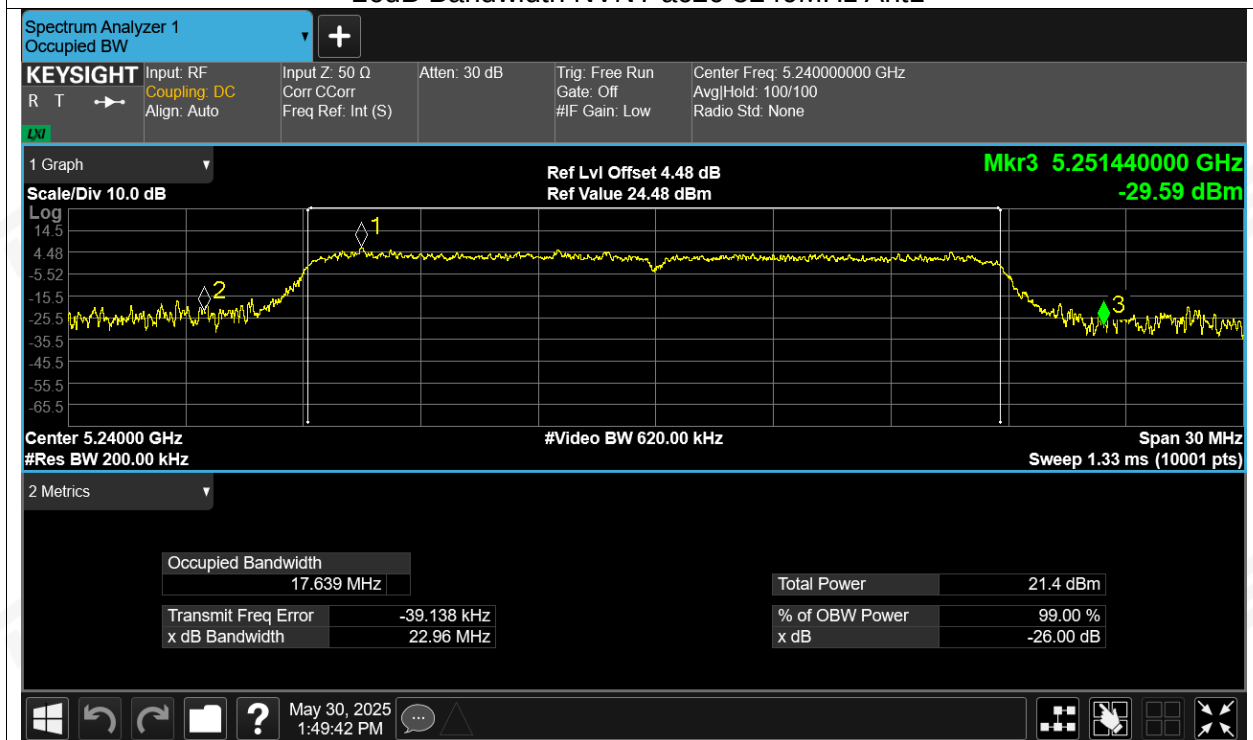
-26dB Bandwidth NVNT ac20 5180MHz Ant1



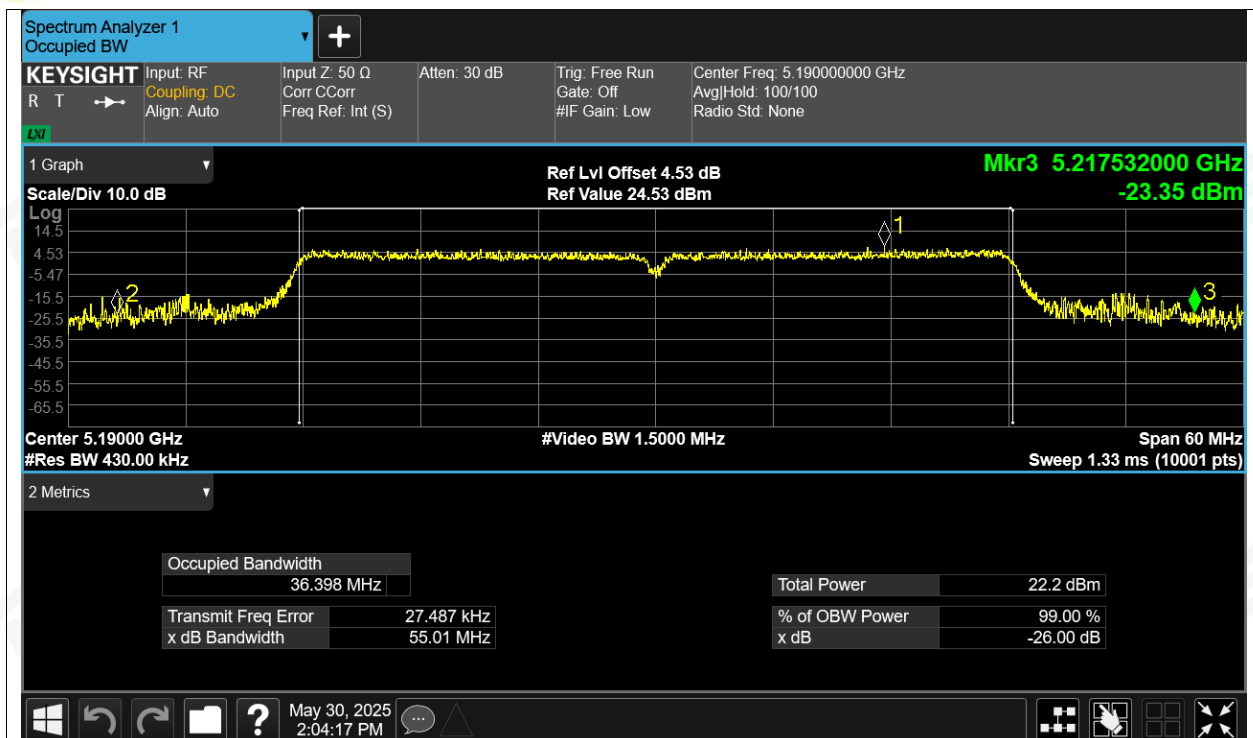
-26dB Bandwidth NVNT ac20 5200MHz Ant1



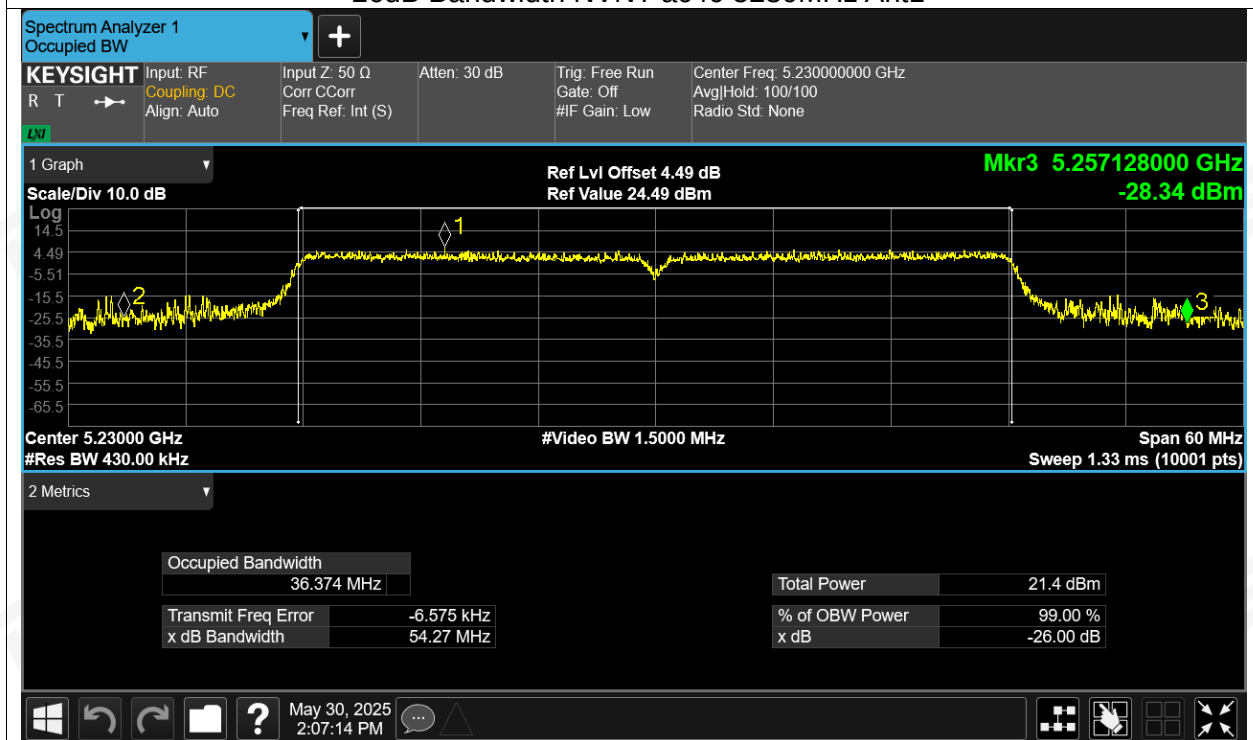
-26dB Bandwidth NVNT ac20 5240MHz Ant1



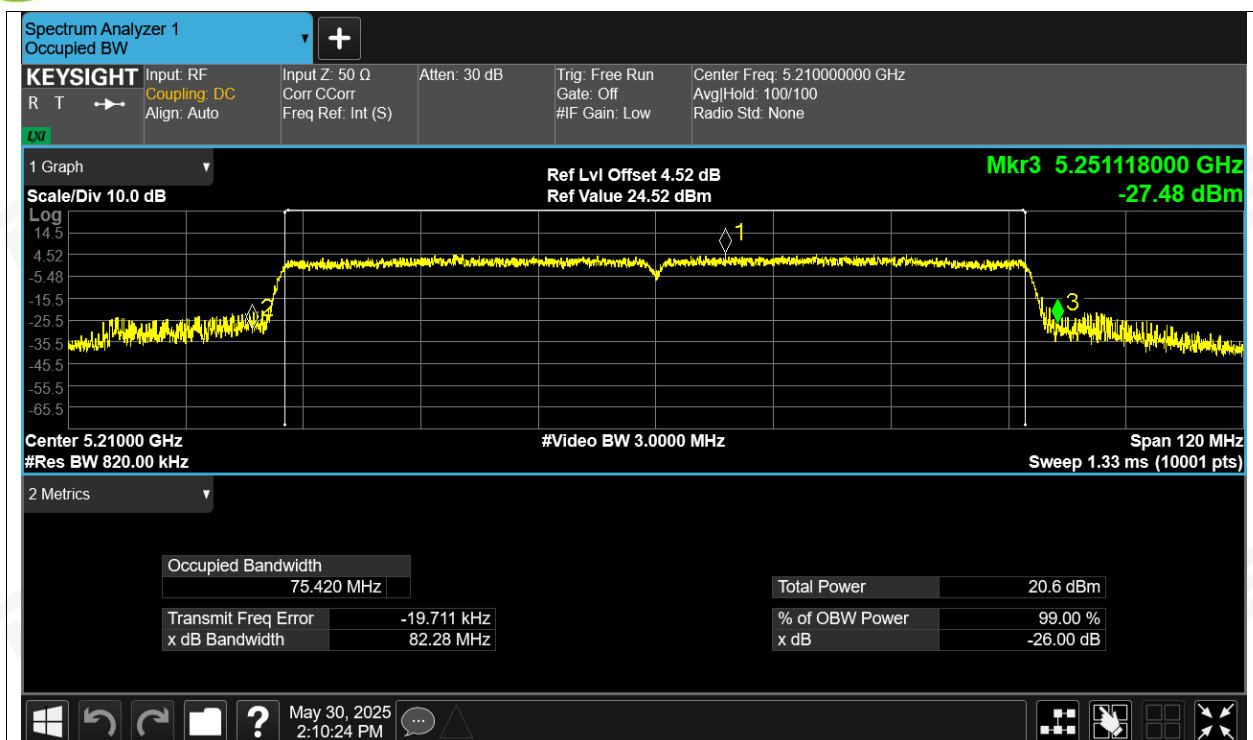
-26dB Bandwidth NVNT ac40 5190MHz Ant1



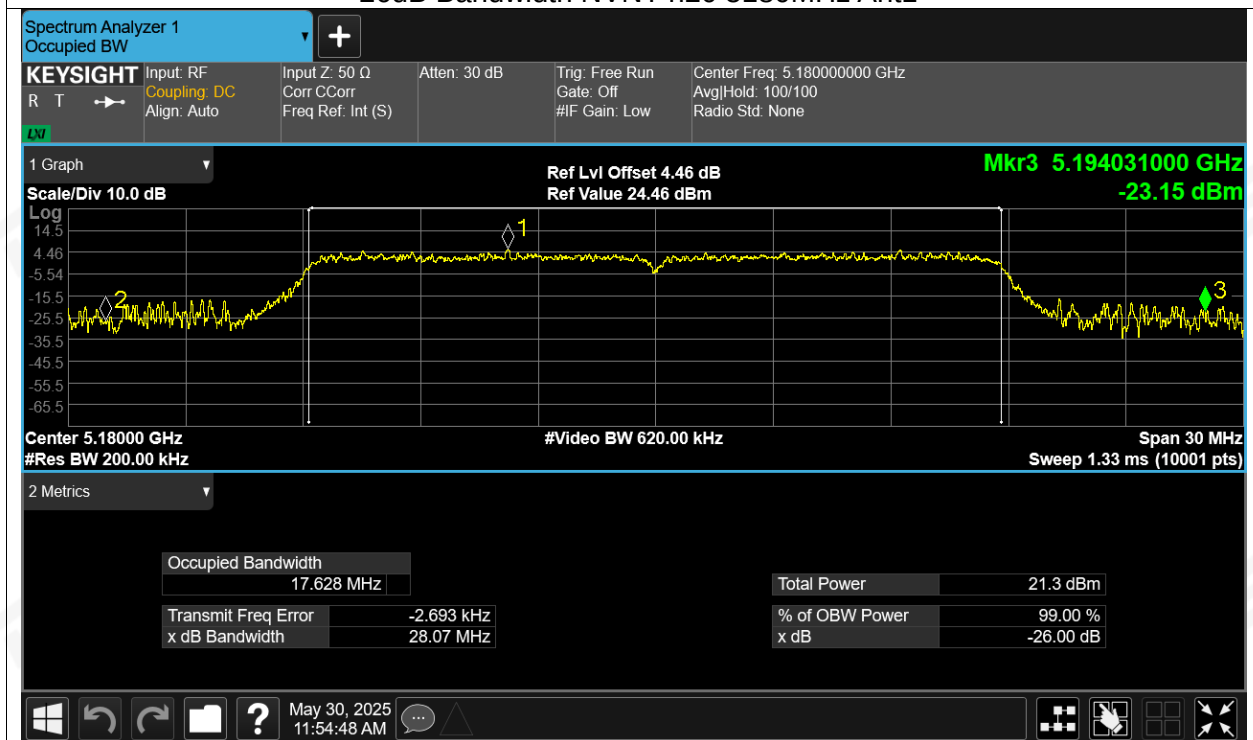
-26dB Bandwidth NVNT ac40 5230MHz Ant1



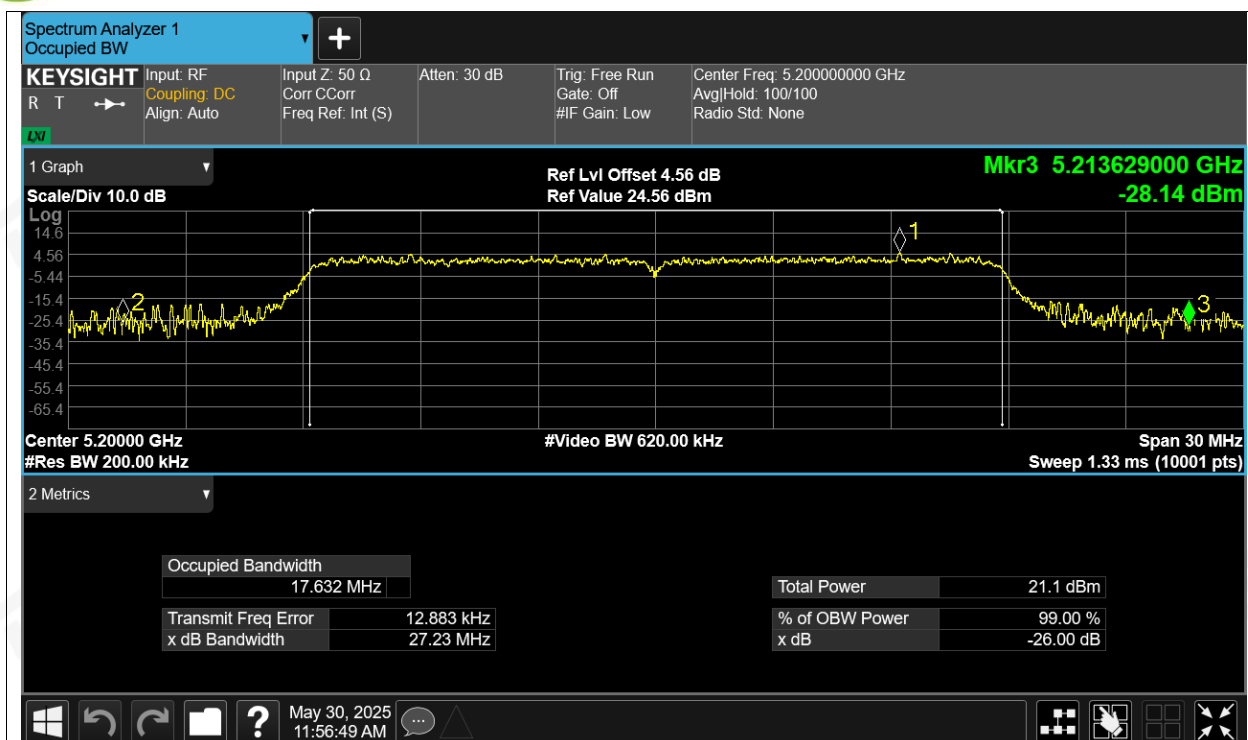
-26dB Bandwidth NVNT ac80 5210MHz Ant1



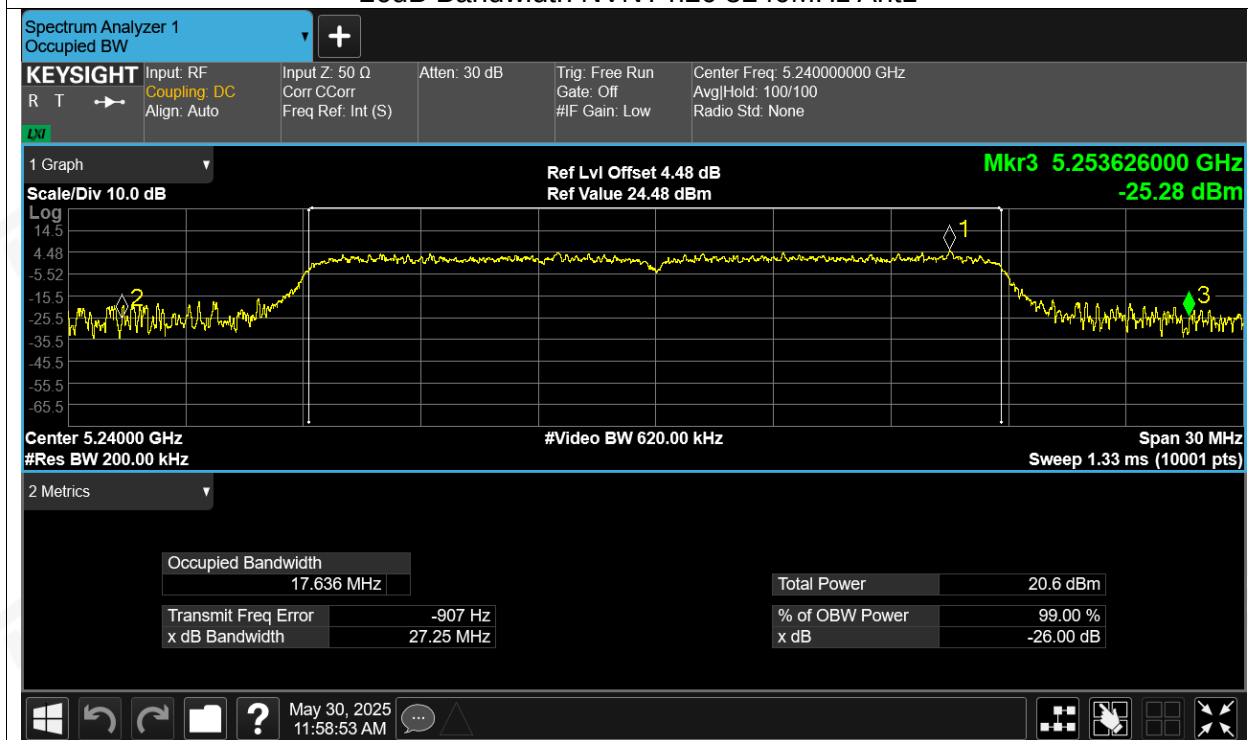
-26dB Bandwidth NVNT n20 5180MHz Ant1



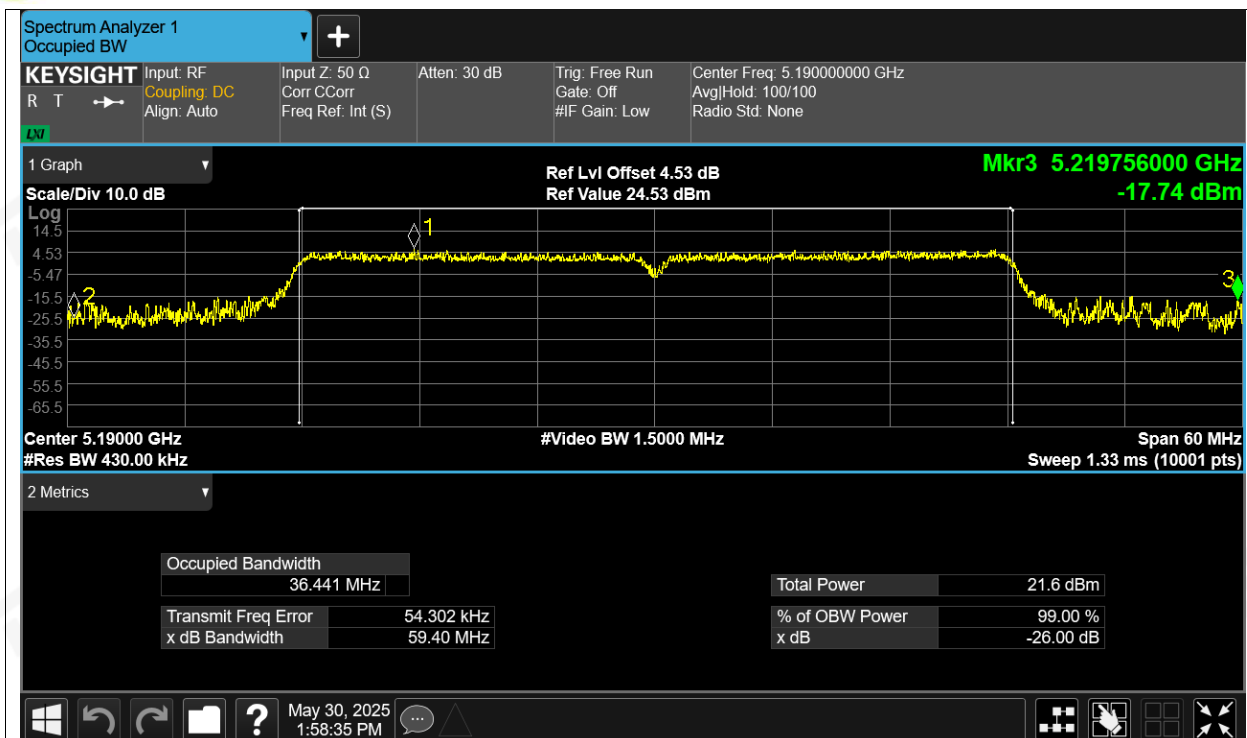
-26dB Bandwidth NVNT n20 5200MHz Ant1



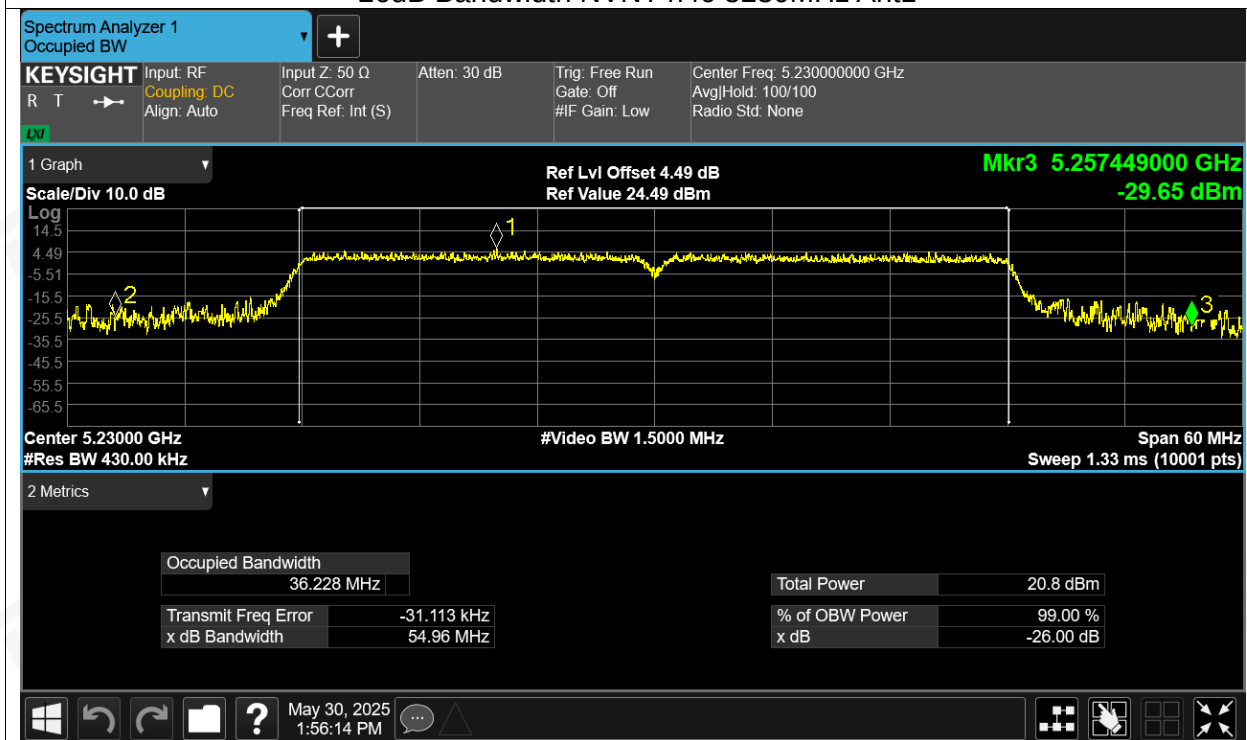
-26dB Bandwidth NVNT n20 5240MHz Ant1



-26dB Bandwidth NVNT n40 5190MHz Ant1



-26dB Bandwidth NVNT n40 5230MHz Ant1

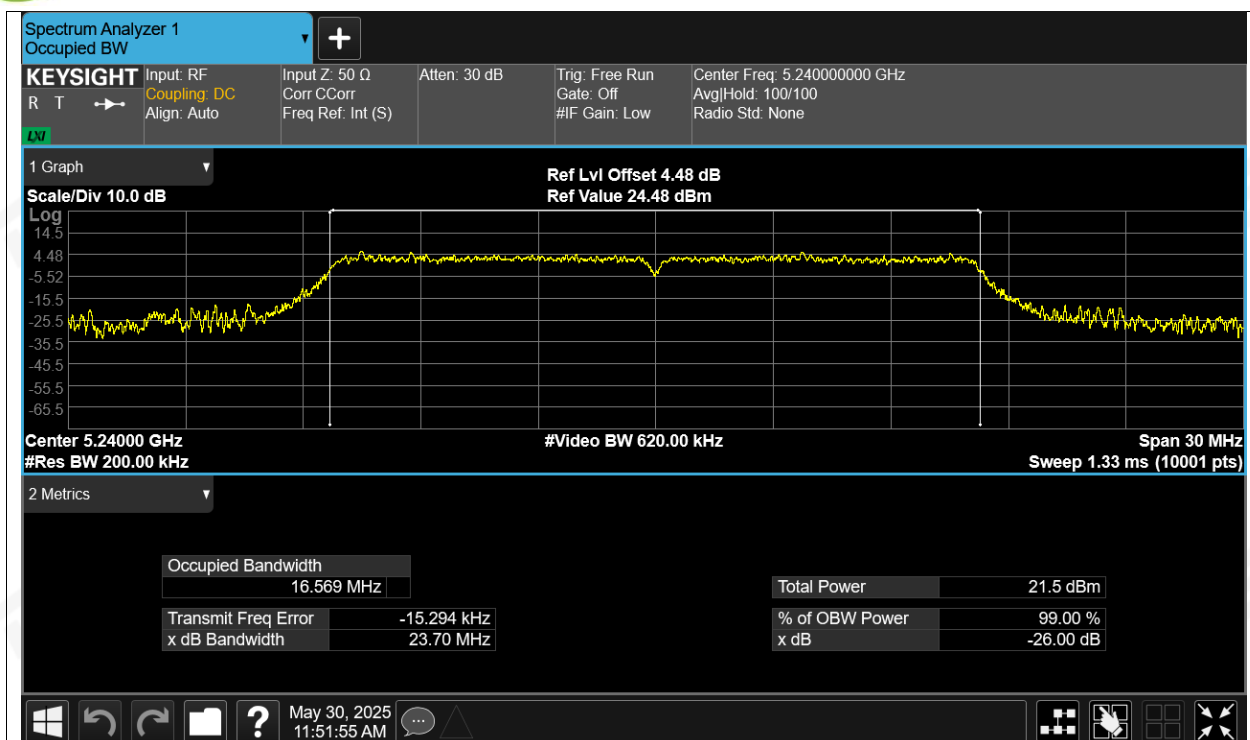




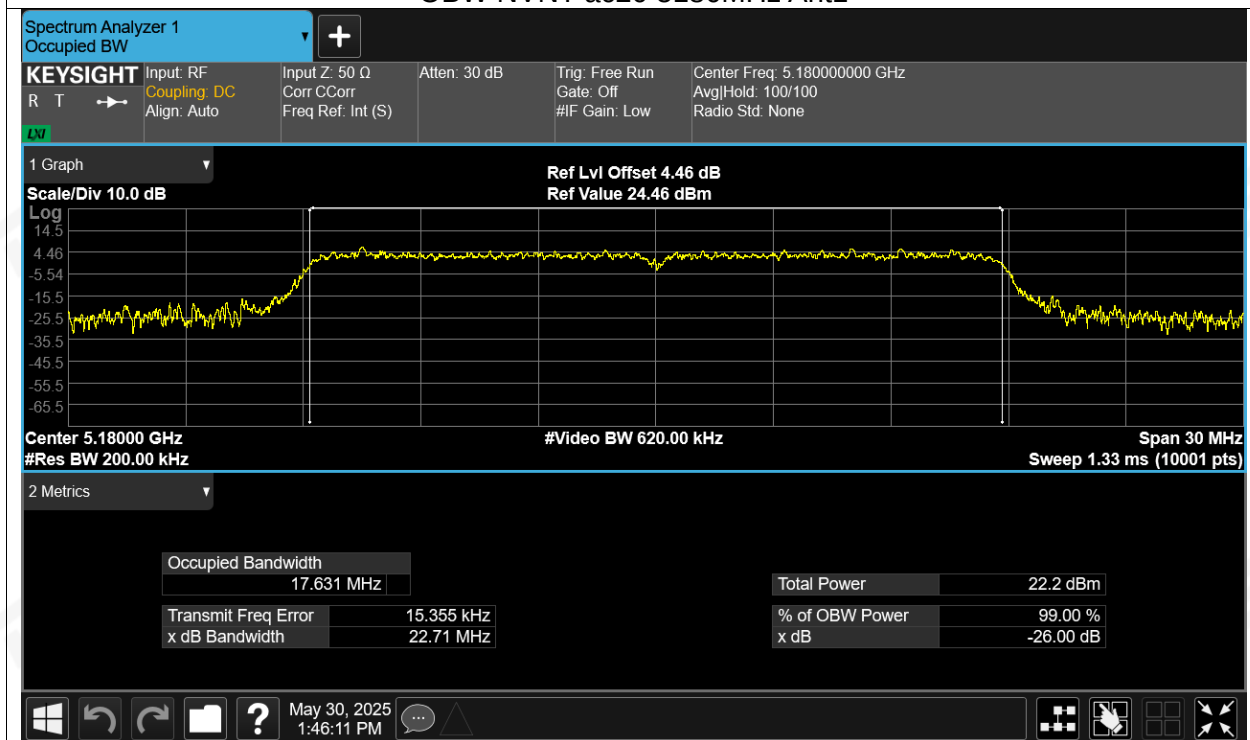
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5180	Ant1	16.553
NVNT	a	5200	Ant1	16.555
NVNT	a	5240	Ant1	16.569
NVNT	ac20	5180	Ant1	17.631
NVNT	ac20	5200	Ant1	17.604
NVNT	ac20	5240	Ant1	17.646
NVNT	ac40	5190	Ant1	36.368
NVNT	ac40	5230	Ant1	36.406
NVNT	ac80	5210	Ant1	75.405
NVNT	n20	5180	Ant1	17.628
NVNT	n20	5200	Ant1	17.653
NVNT	n20	5240	Ant1	17.671
NVNT	n40	5190	Ant1	36.418
NVNT	n40	5230	Ant1	36.252

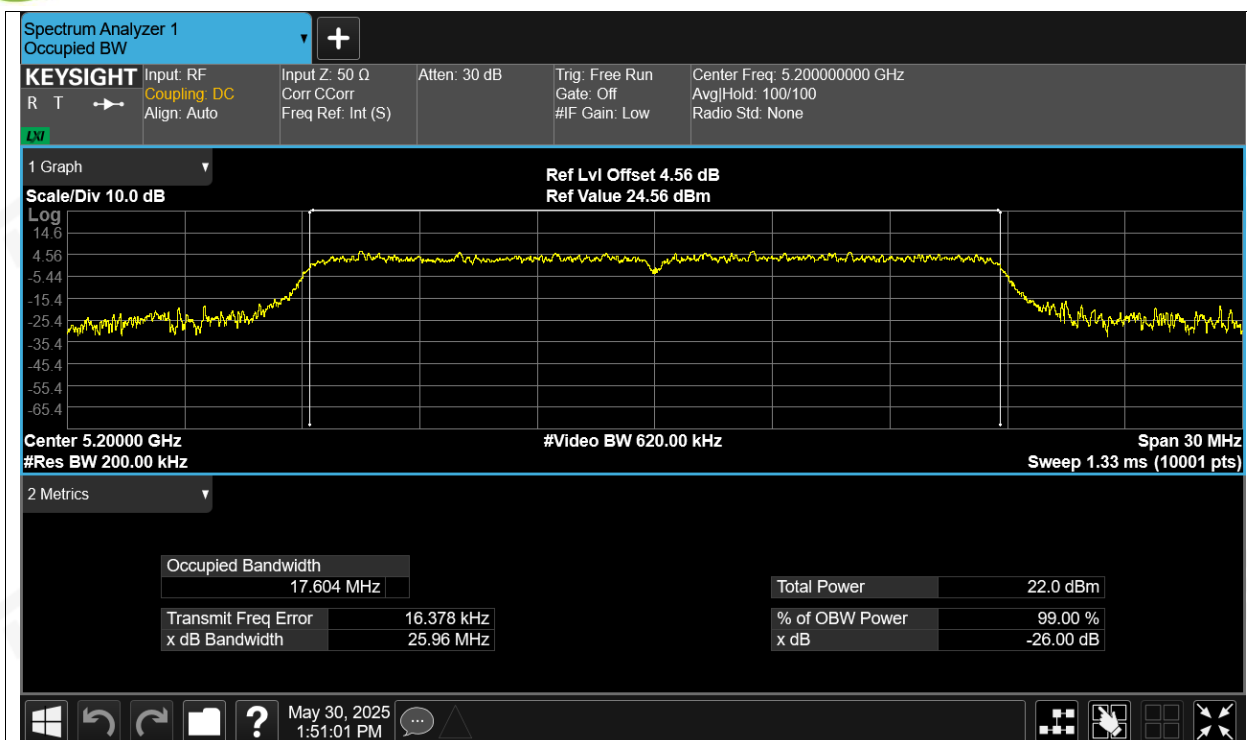




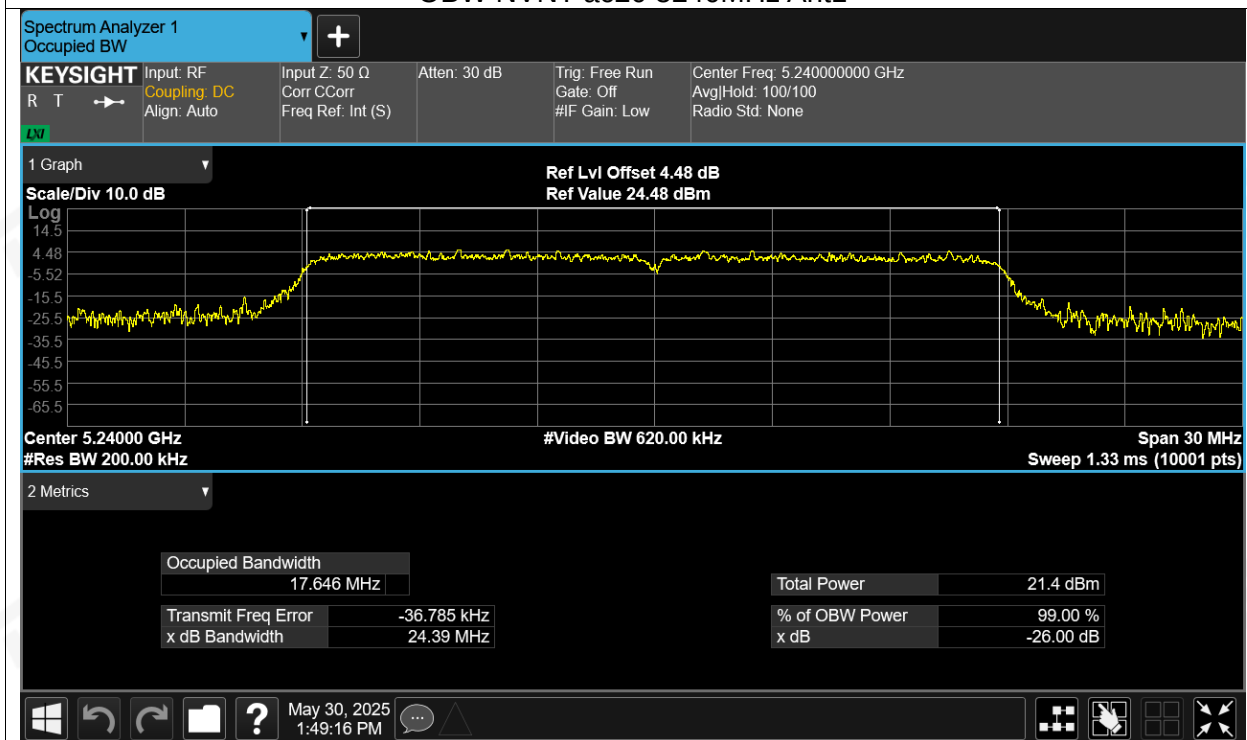
OBW NVNT ac20 5180MHz Ant1



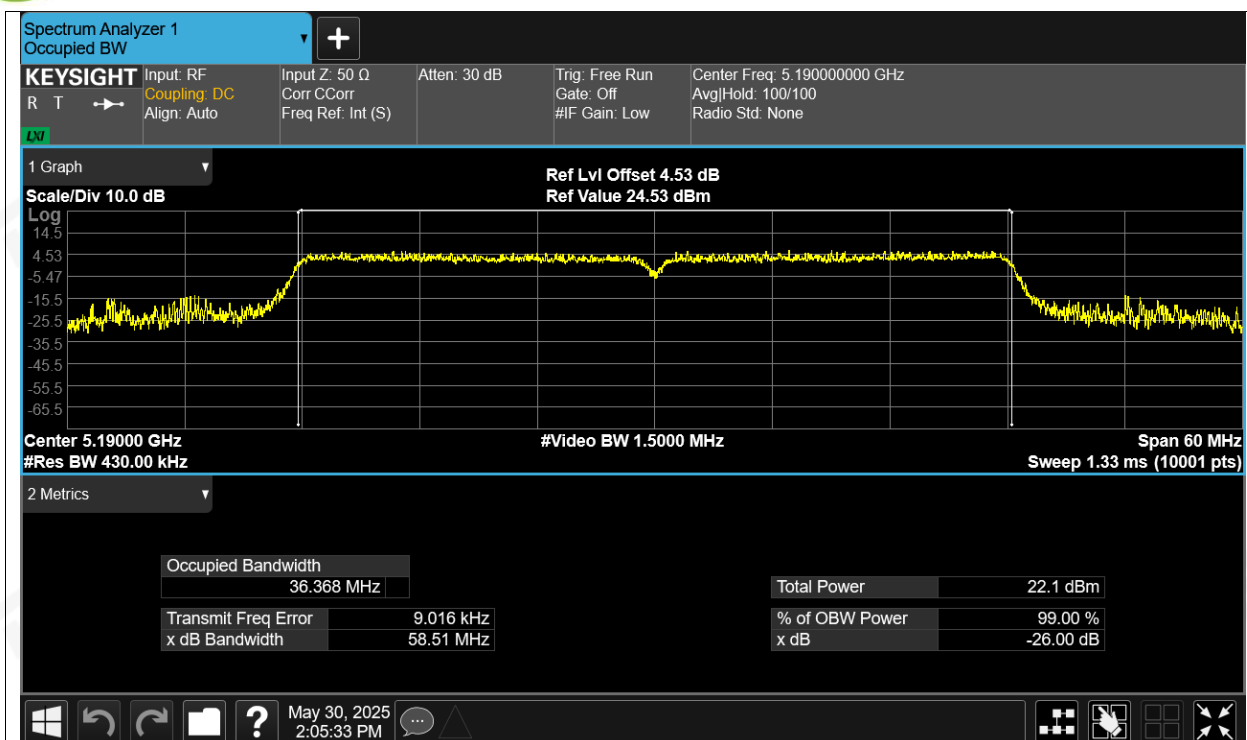
OBW NVNT ac20 5200MHz Ant1



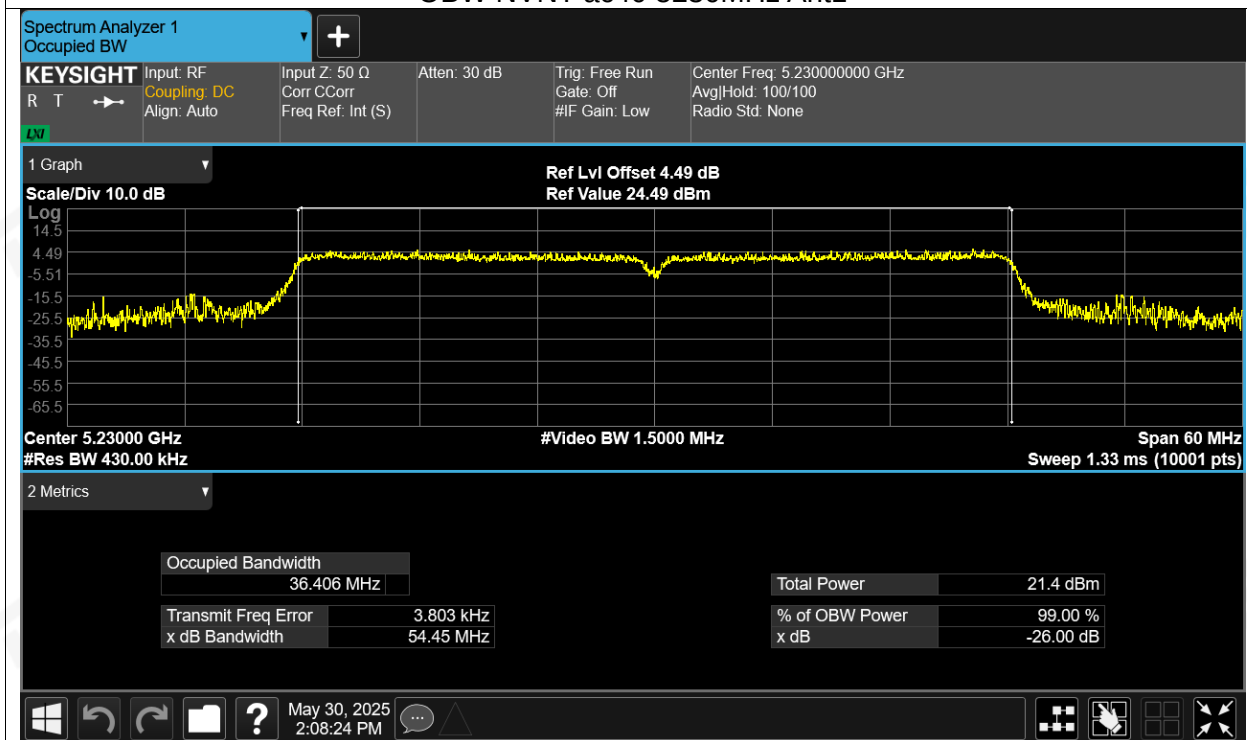
OBW NVNT ac20 5240MHz Ant1



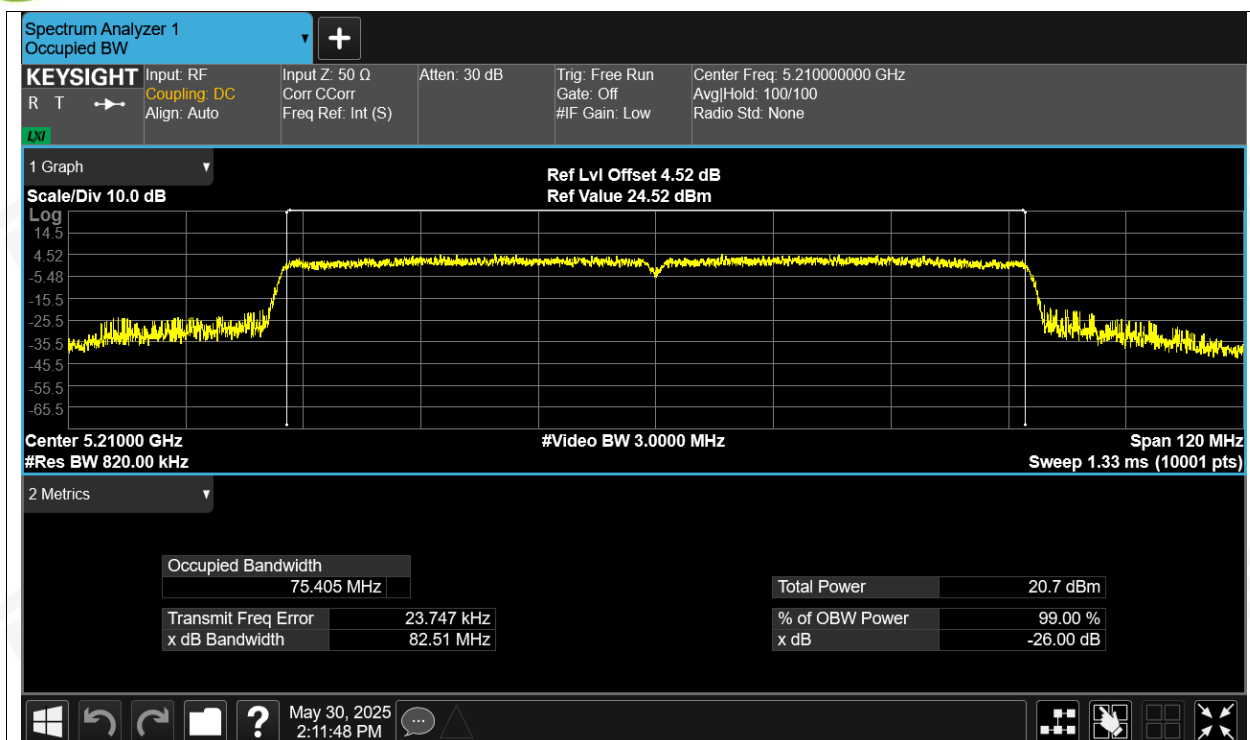
OBW NVNT ac40 5190MHz Ant1



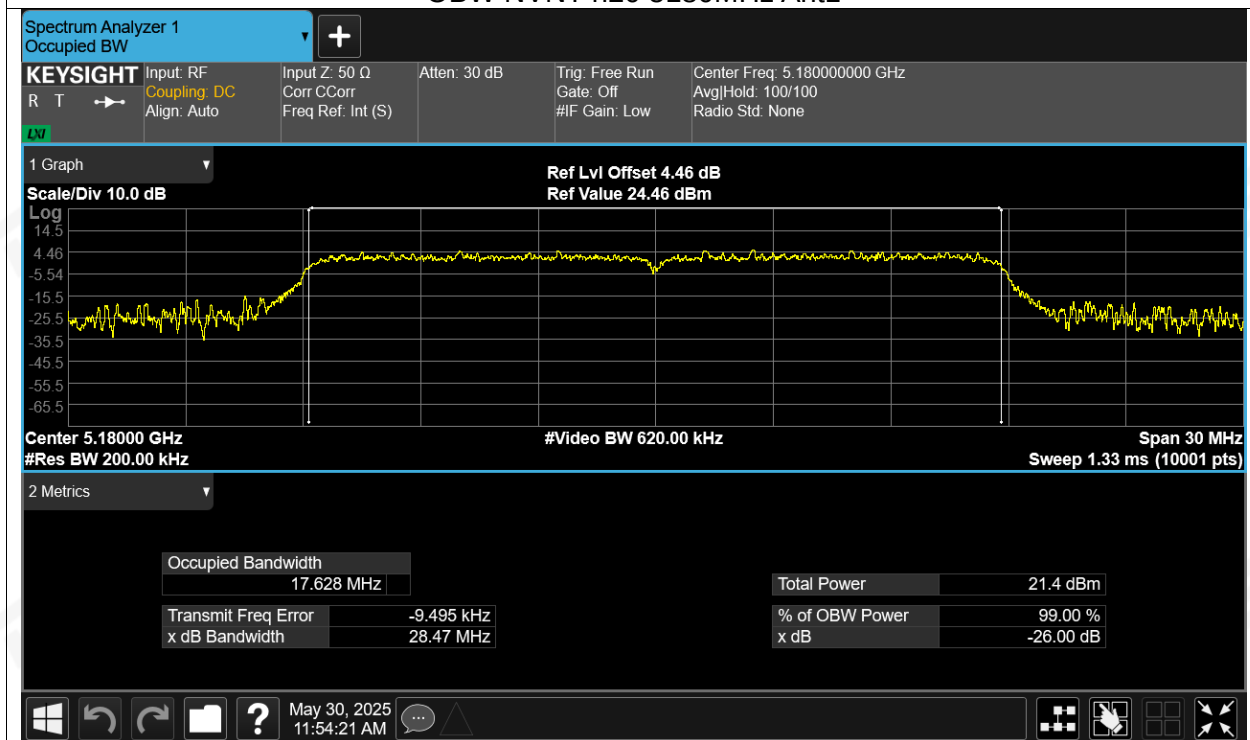
OBW NVNT ac40 5230MHz Ant1



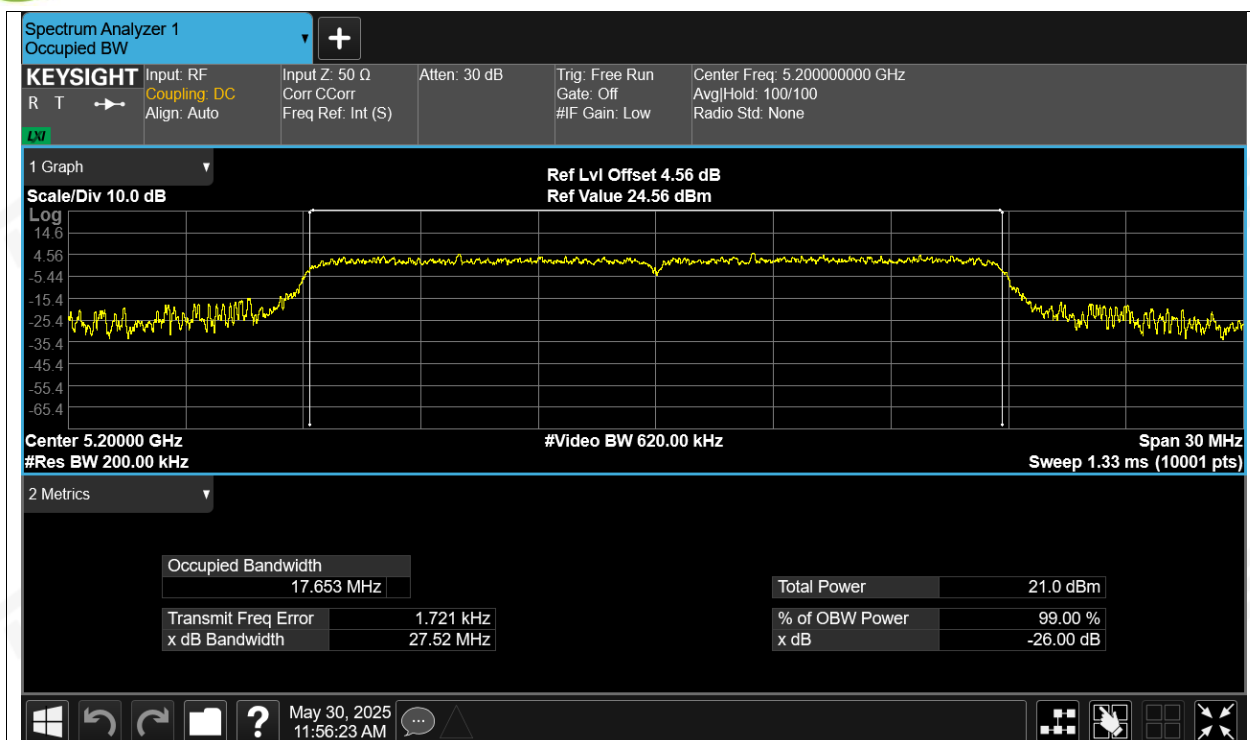
OBW NVNT ac80 5210MHz Ant1



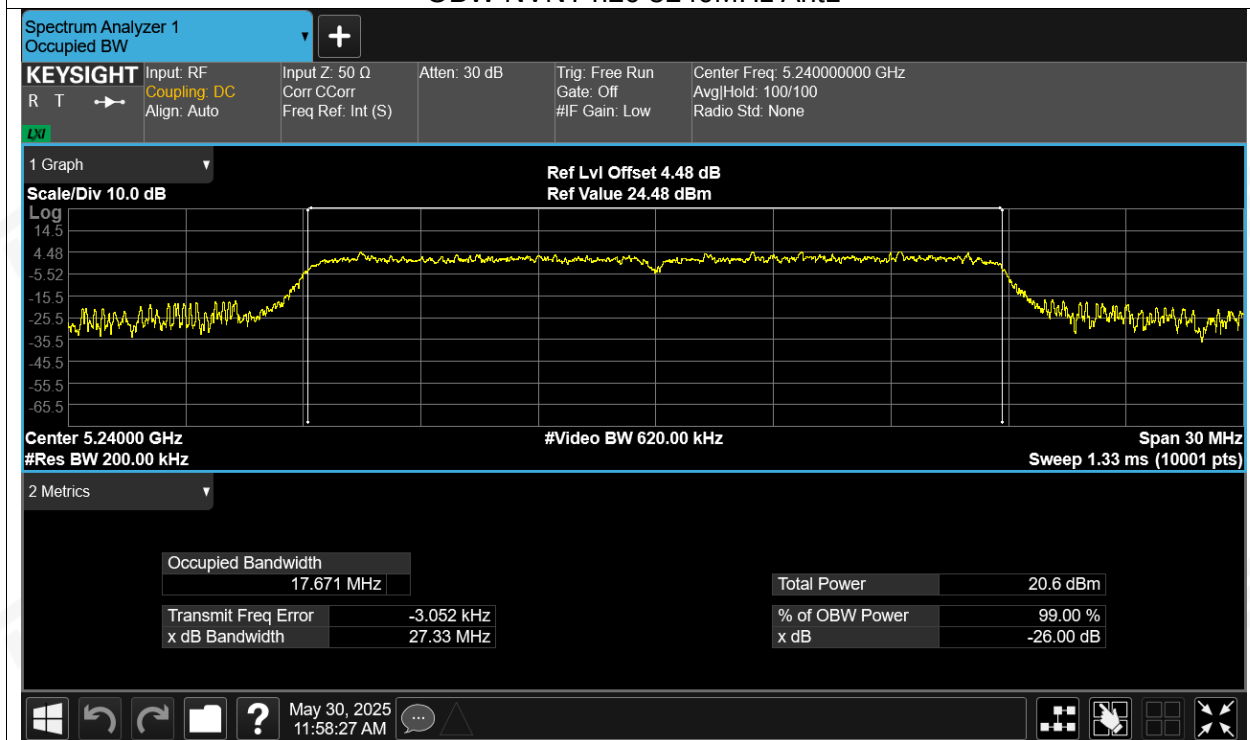
OBW NVNT n20 5180MHz Ant1



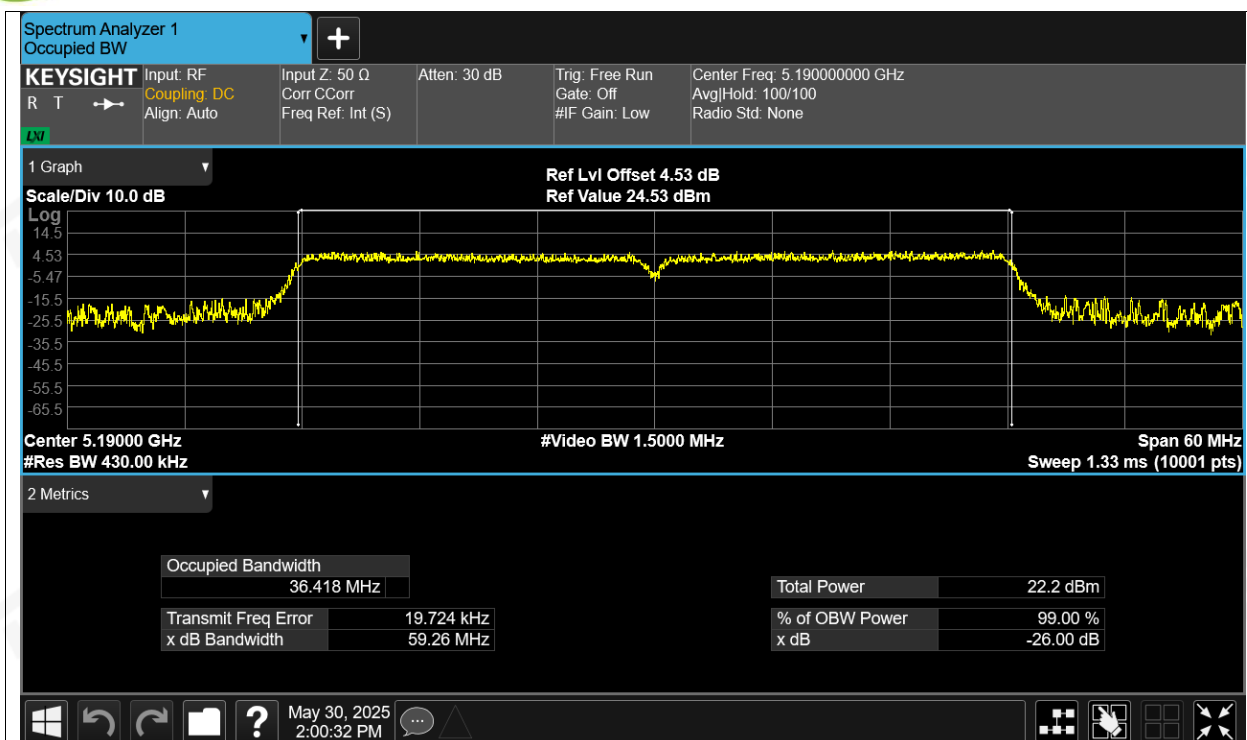
OBW NVNT n20 5200MHz Ant1



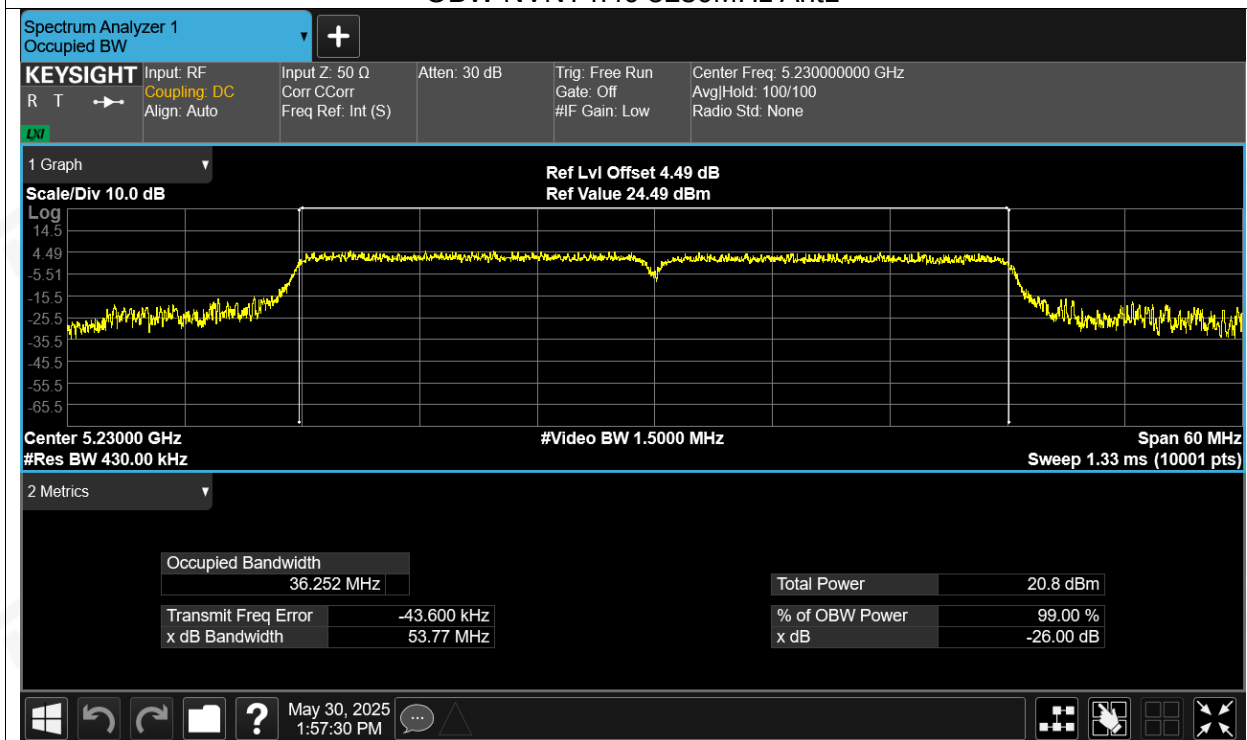
OBW NVNT n20 5240MHz Ant1



OBW NVNT n40 5190MHz Ant1



OBW NVNT n40 5230MHz Ant1





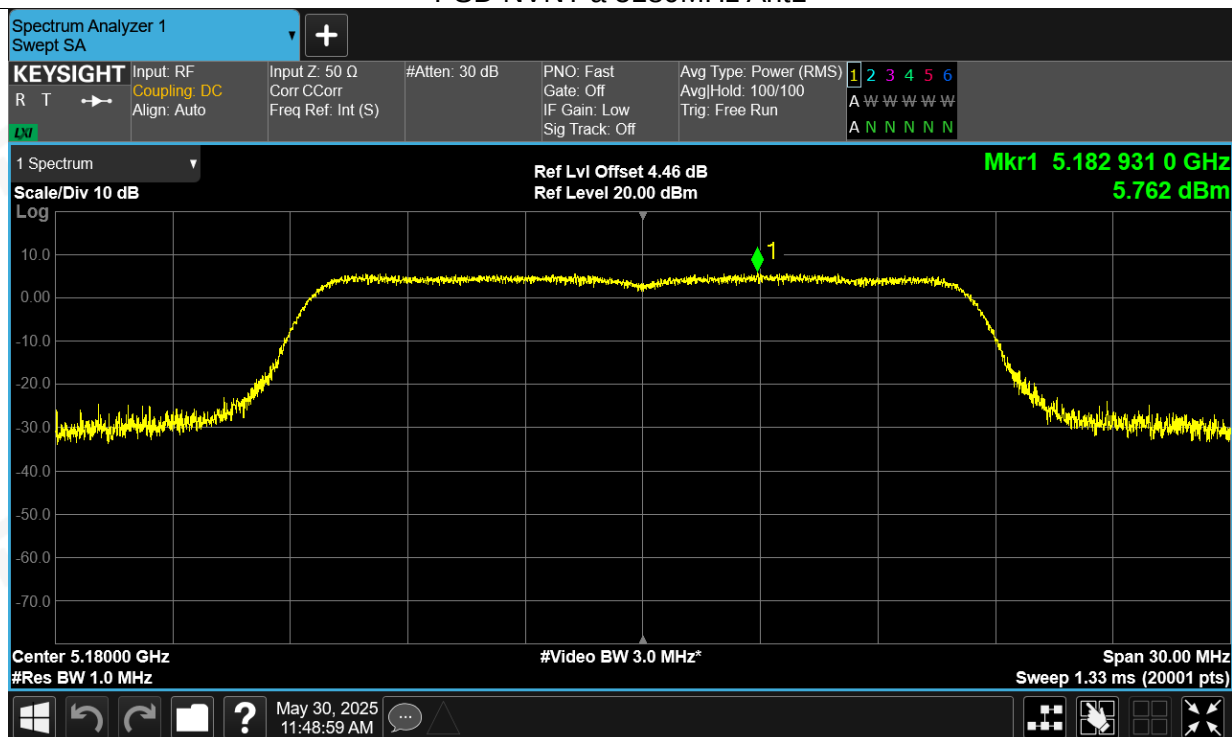
Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	Ant1	5.762	0.54	6.302	11	Pass
NVNT	a	5200	Ant1	5.583	0.54	6.123	11	Pass
NVNT	a	5240	Ant1	4.93	0.54	5.47	11	Pass
NVNT	ac20	5180	Ant1	5.534	0.67	6.204	11	Pass
NVNT	ac20	5200	Ant1	5.185	0.61	5.795	11	Pass
NVNT	ac20	5240	Ant1	5.125	0.63	5.755	11	Pass
NVNT	ac40	5190	Ant1	2.08	1.2	3.28	11	Pass
NVNT	ac40	5230	Ant1	1.313	1.18	2.493	11	Pass
NVNT	ac80	5210	Ant1	-3.312	2.03	-1.282	11	Pass
NVNT	n20	5180	Ant1	4.596	0.63	5.226	11	Pass
NVNT	n20	5200	Ant1	3.995	0.62	4.615	11	Pass
NVNT	n20	5240	Ant1	3.764	0.65	4.414	11	Pass
NVNT	n40	5190	Ant1	2.279	1.23	3.509	11	Pass
NVNT	n40	5230	Ant1	1.031	1.18	2.211	11	Pass

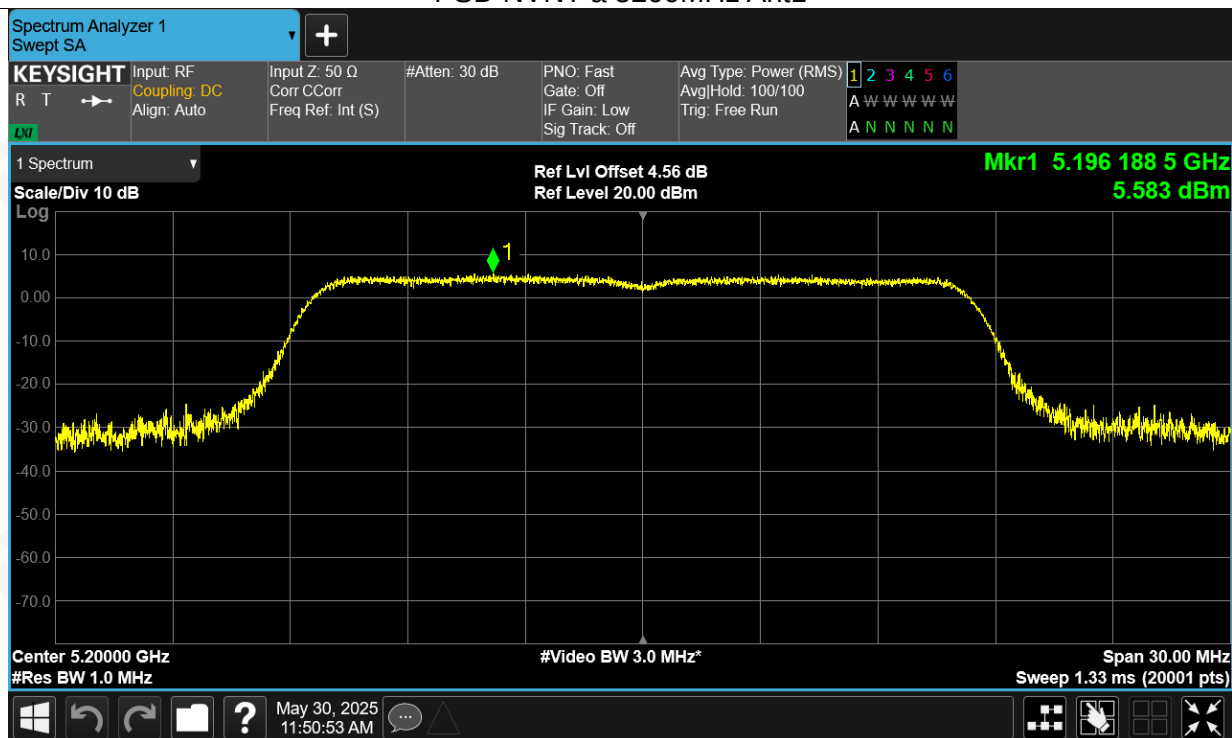


Test Graphs

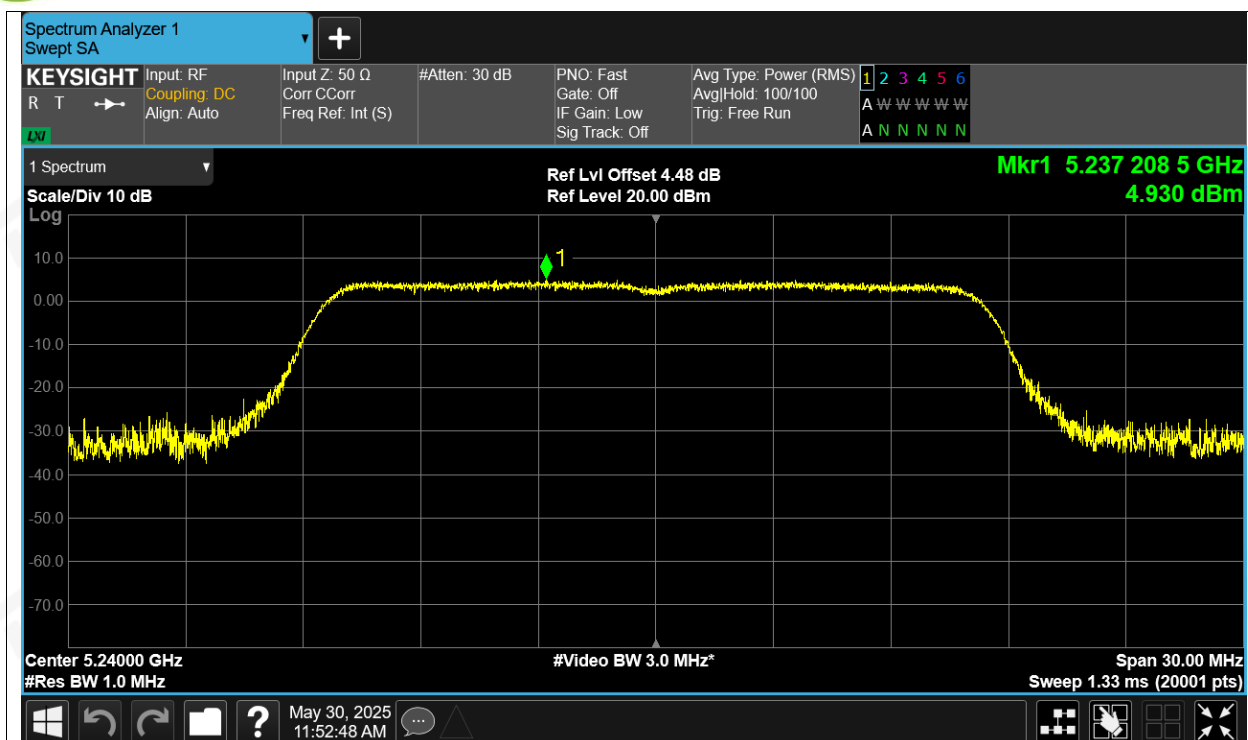
PSD NVNT a 5180MHz Ant1



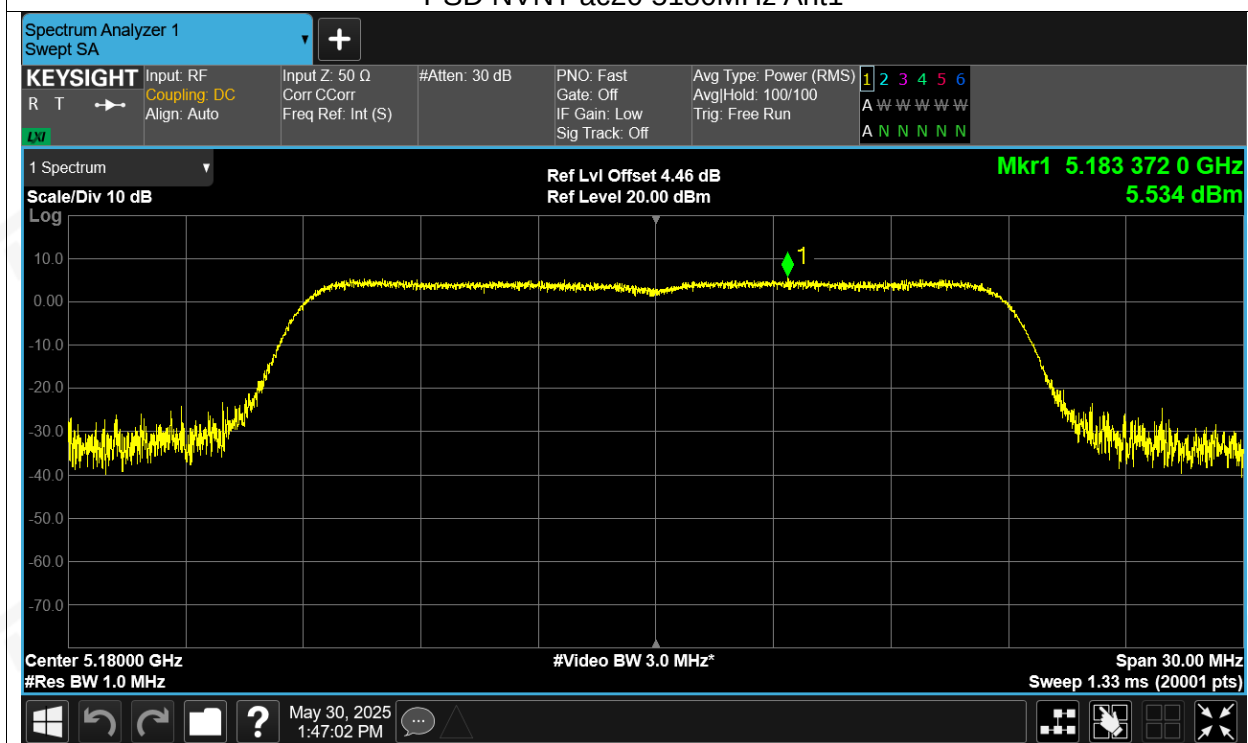
PSD NVNT a 5200MHz Ant1



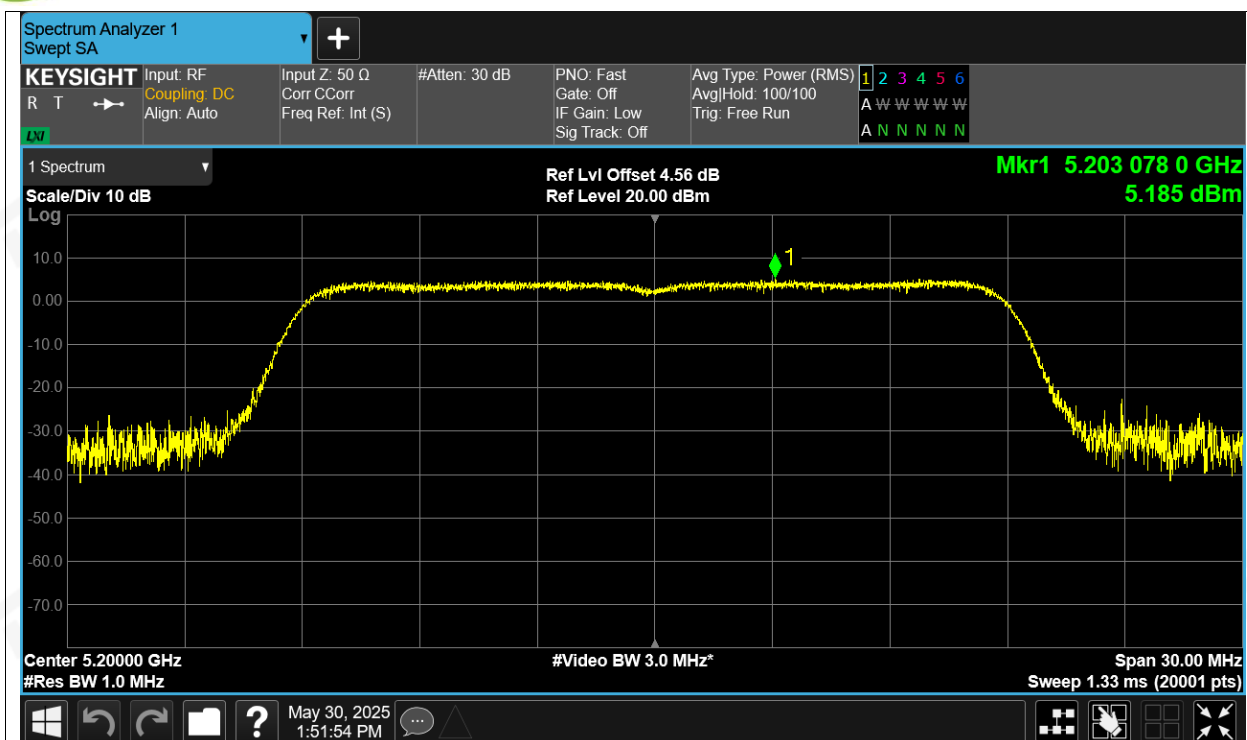
PSD NVNT a 5240MHz Ant1



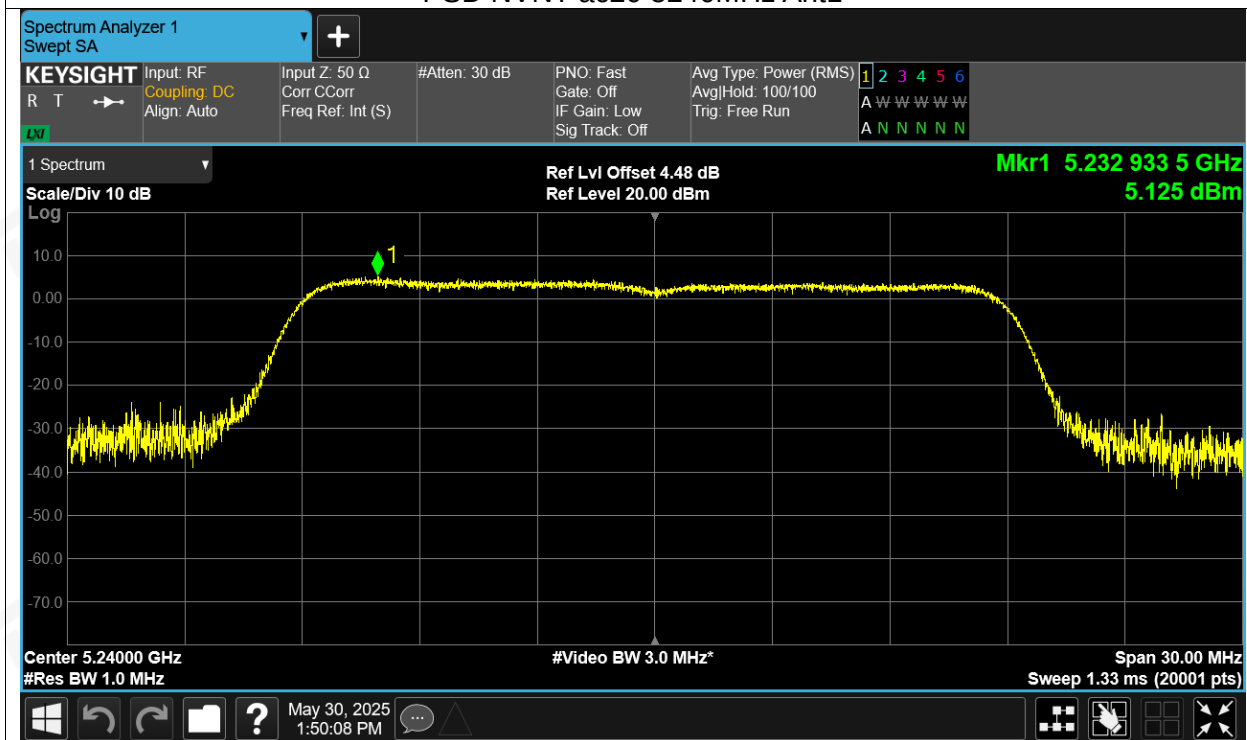
PSD NVNT ac20 5180MHz Ant1



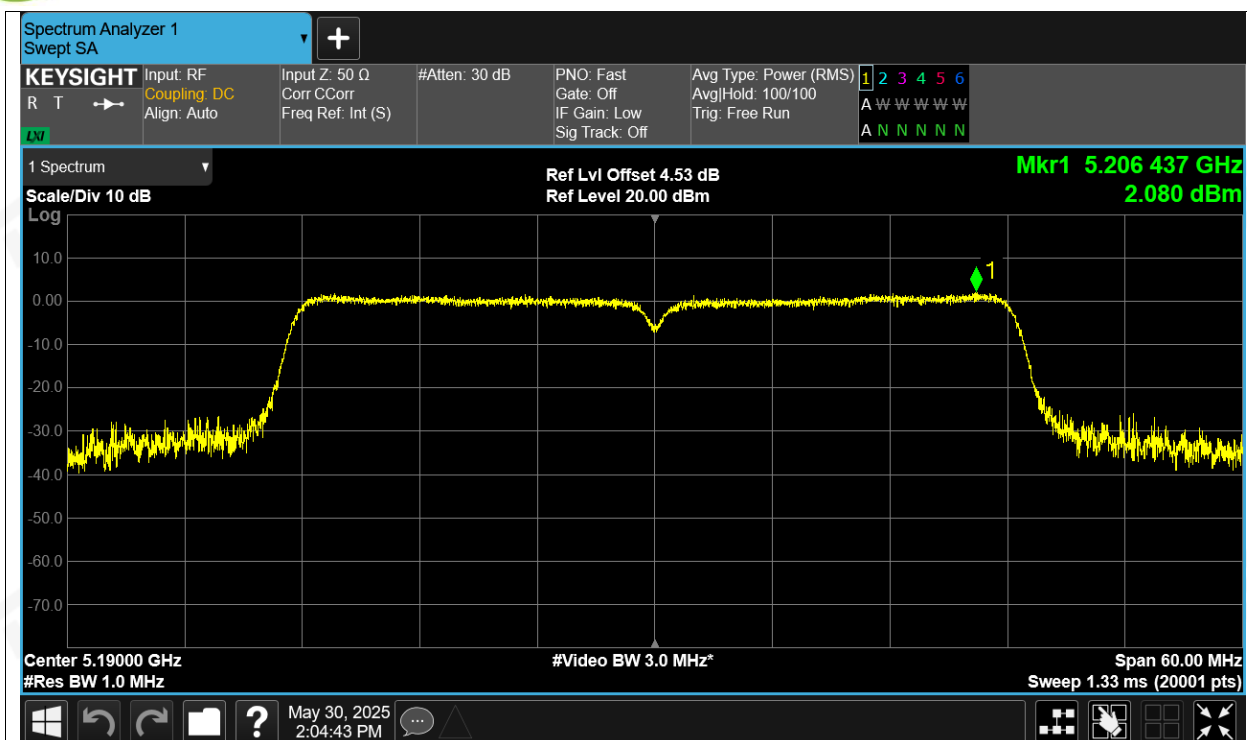
PSD NVNT ac20 5200MHz Ant1



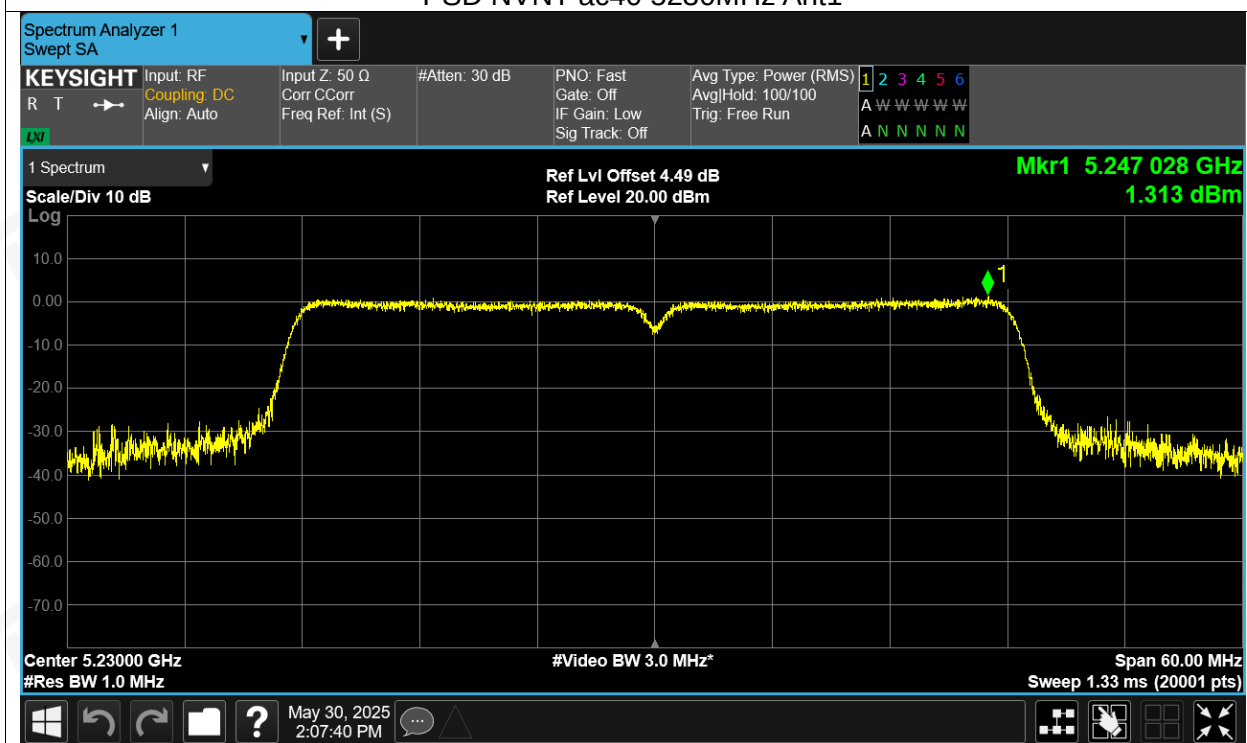
PSD NVNT ac20 5240MHz Ant1



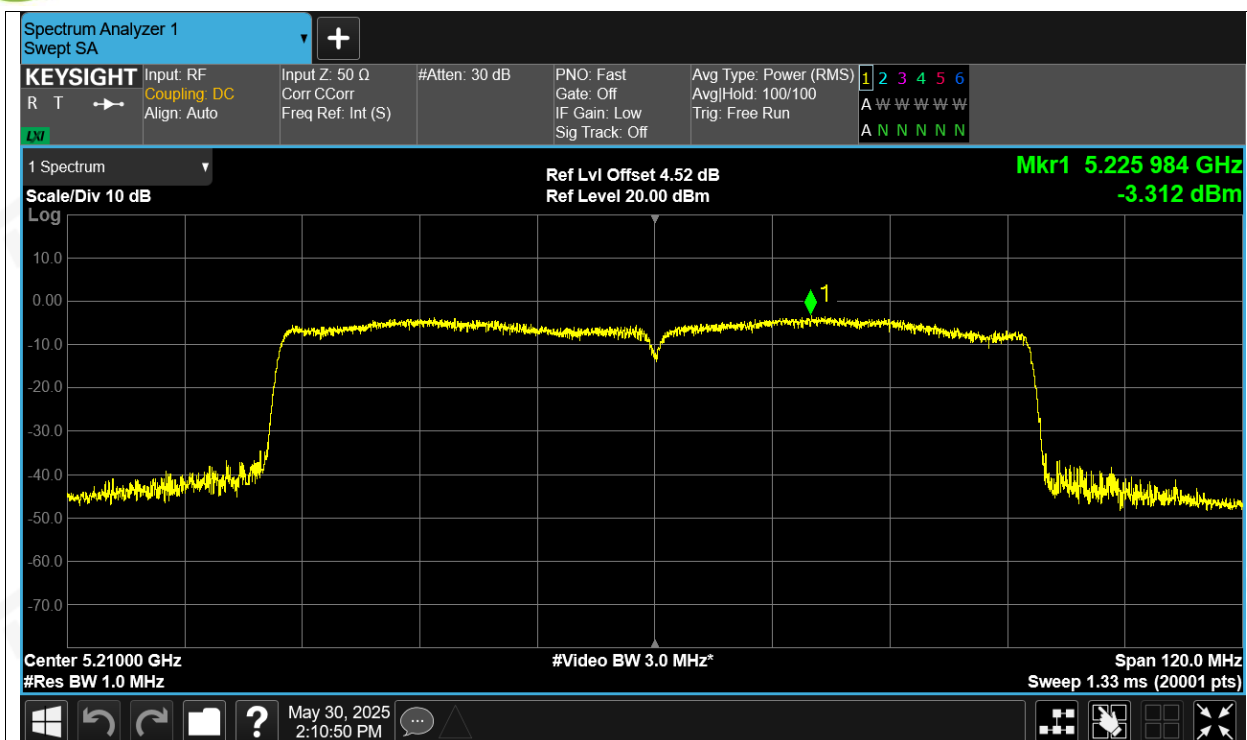
PSD NVNT ac40 5190MHz Ant1



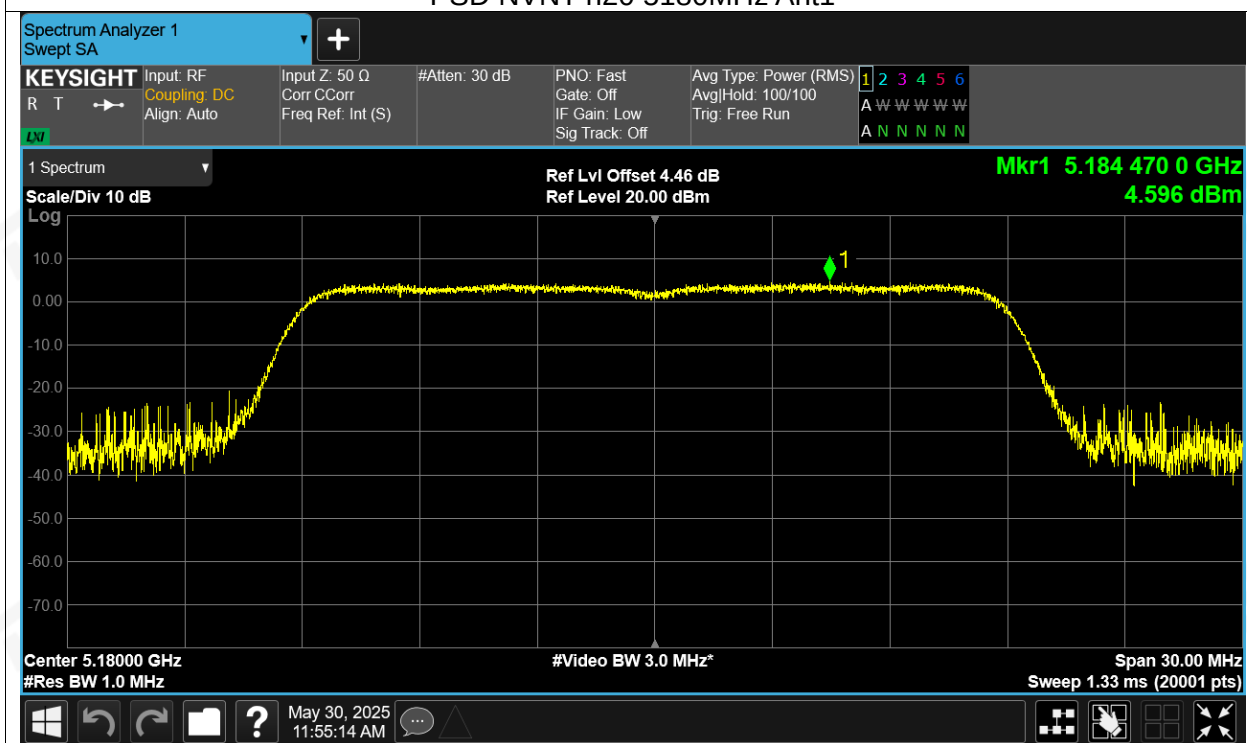
PSD NVNT ac40 5230MHz Ant1



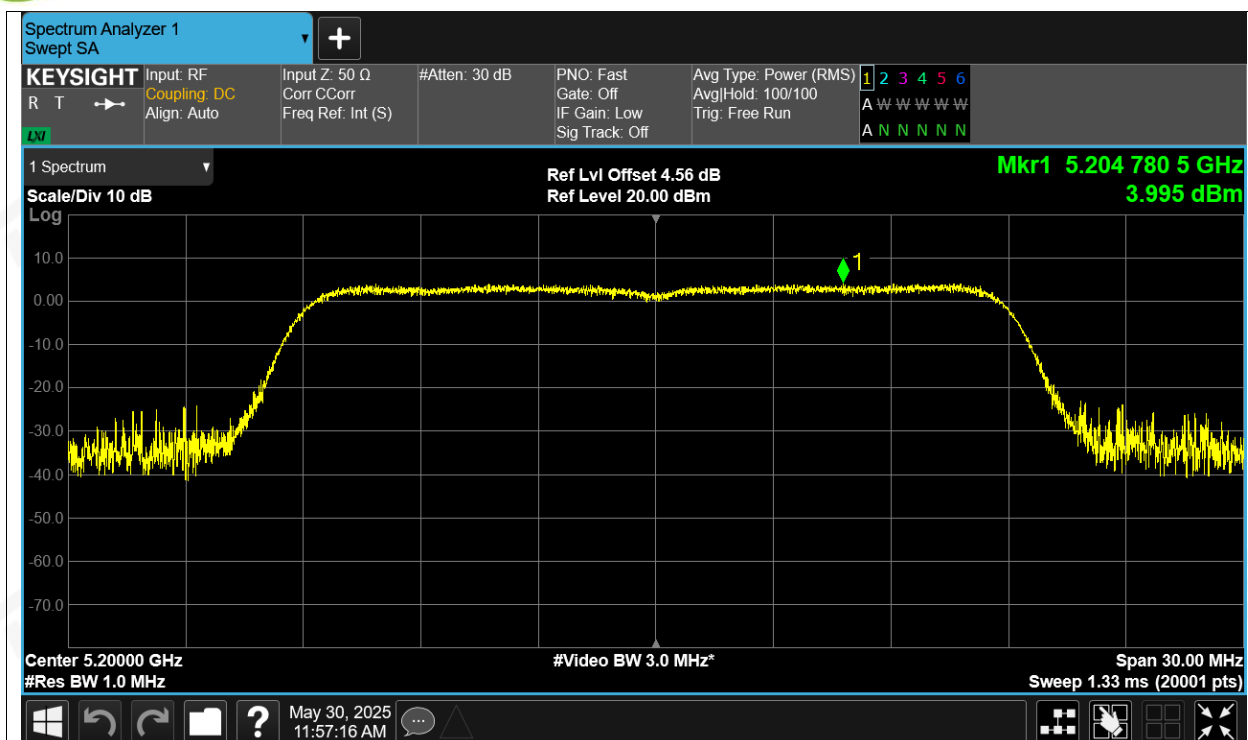
PSD NVNT ac80 5210MHz Ant1



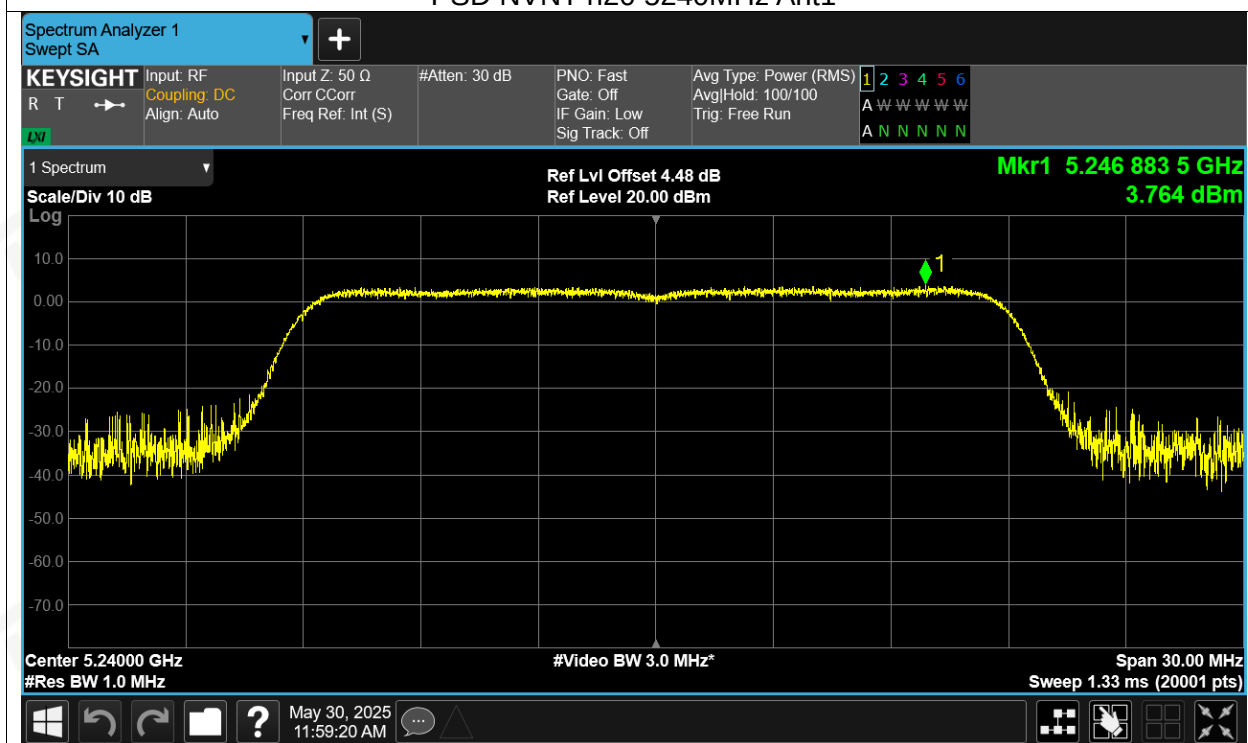
PSD NVNT n20 5180MHz Ant1



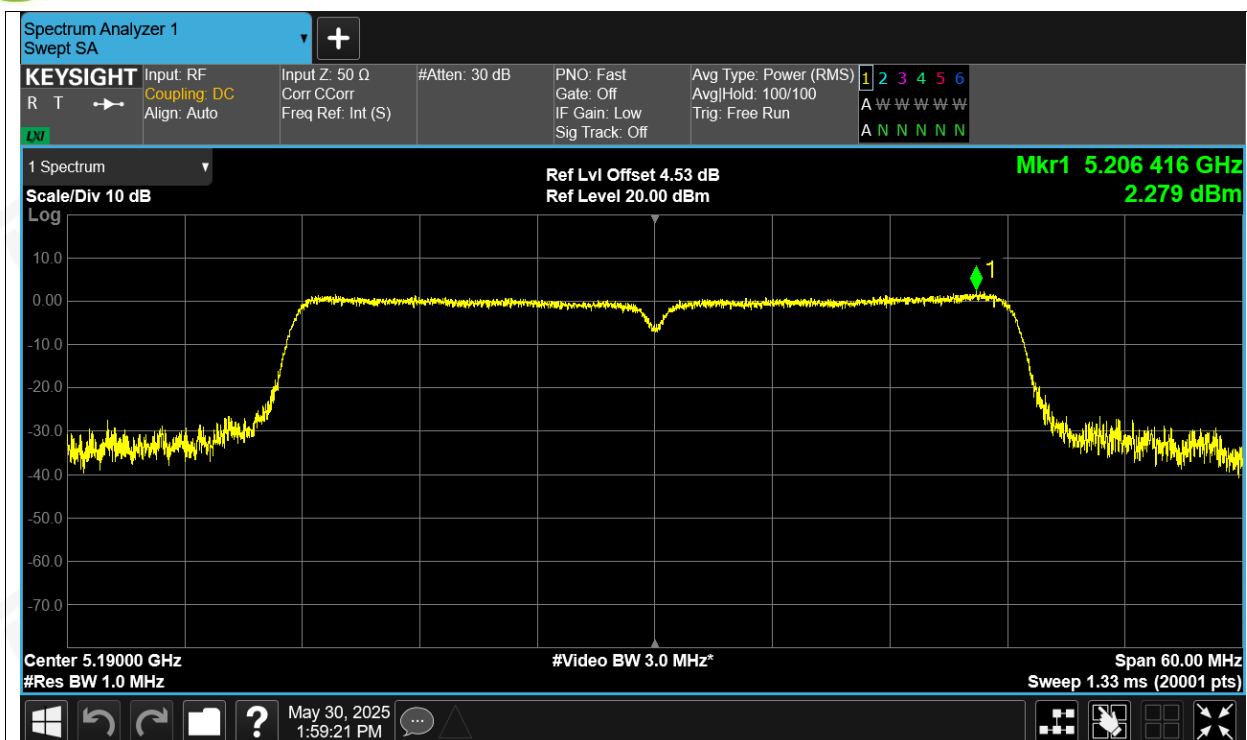
PSD NVNT n20 5200MHz Ant1



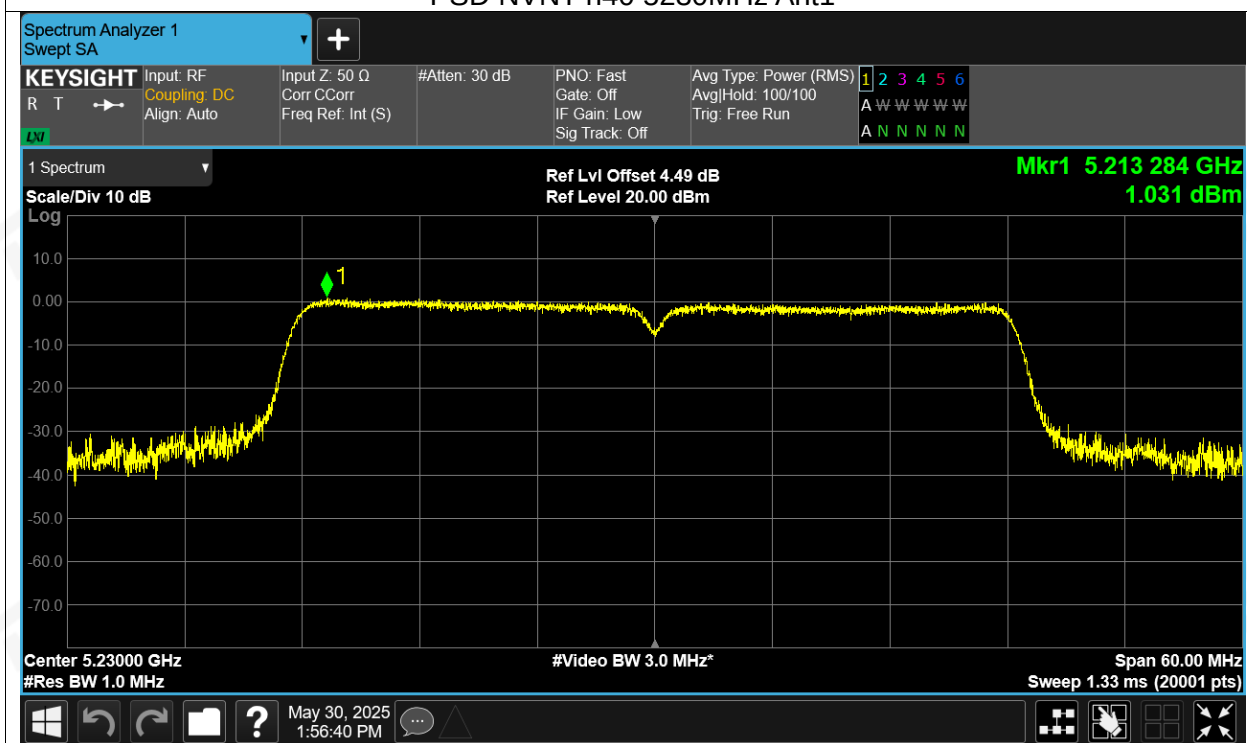
PSD NVNT n20 5240MHz Ant1



PSD NVNT n40 5190MHz Ant1



PSD NVNT n40 5230MHz Ant1





APPENDIX - PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※