



TEST REPORT

FCC ID: 2BDCX-BULUSE-M11

Product: Tablet

Model No.: M11

Trade Mark: BULUSE

Report No.: WSCT-A2LA-R&E231000017A-Wi-Fi2

Issued Date: 12 December 2023

Issued for:

RPTRADING S.A

HAITI Numero: 04-21 TRINIDAD Y TOBAGO

Issued By:

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Report No.: WSCT-A2LA-R&E231000017A-Wi-Fi2

Certificate Number 5768.01

1 Test Certification

Product: Tablet
Model No.: M11
Trade Mark: BULUSE
Applicant: RPTRADING S.A
Address: HAITI Numero: 04-21 TRINIDAD Y TOBAGO
Manufacturer: SHENZHEN GERUIBANG TECHNOLOGY CO.,LTD
Address: Sogood Technology Park Sanwei Village in Xixiang Baoan District
Shenzhen ,China
Factory: SHENZHEN GERUIBANG TECHNOLOGY CO.,LTD
Address: Sogood Technology Park Sanwei Village in Xixiang Baoan District
Shenzhen ,China
Date of Test: 26 October 2023 to 10 November 2023
Applicable Standards: FCC CFR Title 47 FCC Part 15 Subpart E

The above equipment has been tested by World Standardization Certification & Testing Group(Shenzhen)Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

Wang Xiang

(Wang Xiang)

Checked By:

Qin Shuiquan

(Qin Shuiquan)

Approved By:

Liu Fuxin

(Liu Fuxin)

Date:

12 December 2023



2 EUT Description

Product Name:	Tablet
Model :	M11
Trade Mark:	BULUSE
Software Version:	F866_WXGA_4+64_V1.0
Hardware Version:	F866T-Y_6762_BJJ_MB_V4.0
Operation Frequency:	Band 1: 5180-5240 MHz Band 2: 5260-5320 MHz Band 3: 5500-5700 MHz Band 4: 5745-5825 MHz
Modulation type:	IEEE 802.11a/n/ac: OFDM/OFDMA (BPSK/QPSK/16QAM/64QAM/256QAM)
Antenna Type:	PIFA Antenna
Antenna Gain	1.89 dBi
Rechargeable Li-Polymer Battery:	Li-ion Battery: JJY32100100 Rated Voltage: 3.8V Rated Capacity: 5000mAh/19Wh
Adapter:	Adapter: JHD-AP013U-050200BB-B Input: 100-240V~50/60Hz 0.35A Output: 5.0V---2000mA
Remark:	N/A.



3 TEST DESCRIPTION

3.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded 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	Conducted Emission Test	$\pm 3.2\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1GHz)	$\pm 4.7\text{dB}$
5	All emissions, radiated(>1GHz)	$\pm 4.7\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



3.2 TEST ENVIRONMENT AND MODE

Operating Environment:

Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar

Test Mode:

Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98.46%)
-------------------	--

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. For the full battery state and The output power to the maximum state.

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode	Description
Mode 1	802.11a
Mode 2	802.11n20
Mode 3	802.11n40
Mode 4	802.11ac20
Mode 5	802.11ac40
Mode 6	802.11ac80

Note:

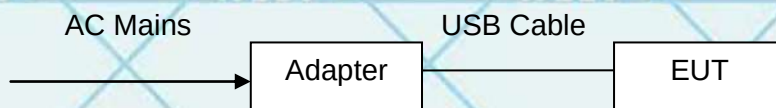
- (1) The measurements are performed at the highest, lowest available channels.
- (2) The EUT use new battery.
- (3) Record the worst case of each test item in this report.

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

Test program	***#3646633***									
Mode	Test Frequency (MHz)									
	NCB: 20MHz									
802.11a	5180 MHz	5240 MHz	5260 MHz	5320 MHz	5500 MHz	5700 MHz	5745 MHz	5825 MHz		
802.11n	5180 MHz	5240 MHz	5260 MHz	5320 MHz	5500 MHz	5700 MHz	5745 MHz	5825 MHz		
802.11ac	5180 MHz	5240 MHz	5260 MHz	5320 MHz	5500 MHz	5700 MHz	5745 MHz	5825 MHz		
Mode	NCB: 40MHz									
802.11n	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5670 MHz	5755 MHz	5795 MHz		
802.11ac	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5670 MHz	5755 MHz	5795 MHz		
Mode	NCB: 80MHz									
802.11ac	5210 MHz	5290 MHz	5530 MHz	5610 MHz	5775 MHz					
During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.										



3.4 CONFIGURATION OF SYSTEM UNDER TEST



(EUT: Tablet PC)

3.5 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

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

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1	Adapter	/	JHD-AP013U-050200BB-B	/	/
2	Earphone	/	N/A	/	/

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.
- (4) The adapter supply by the applicant.

4 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 Subpart C&E			
Standard Section	Test Item	Judgment	Remark
2.1049 15.403(i)	26dB & 99% Bandwidth	PASS	Complies
15.407(e)	6dB Spectrum Bandwidth	PASS	Complies
15.407(a)	Maximum Conducted Output Power	PASS	Complies
15.407(a)	Power Spectral Density	PASS	Complies
15.407(b)	Unwanted Emissions	PASS	Complies
15.207	AC Conducted Emission	PASS	Complies
15.407(g)	Frequency Stability	PASS	Complies
15.407(c)	Automatically Discontinue Transmission	PASS	Complies
15.203 & 15.407(a)	Antenna Requirement	PASS	Complies
15.407(h)	Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS)	PASS	Complies

NOTE:

(1)" N/A" denotes test is not applicable in this test report.



5 MEASUREMENT INSTRUMENTS

NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	Calibration Date	Calibration Due.
Test software	--	EZ-EMC	CON-03A	-	-
Test software	--	MTS8310	-	-	-
EMI Test Receiver	R&S	ESCI	100005	11/05/2023	11/04/2024
LISN	AFJ	LS16	16010222119	11/05/2023	11/04/2024
LISN(EUT)	Mestec	AN3016	04/10040	11/05/2023	11/04/2024
Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	11/05/2023	11/04/2024
Coaxial cable	Megalon	LMR400	N/A	11/05/2023	11/04/2024
GPIO cable	Megalon	GPIO	N/A	11/05/2023	11/04/2024
Spectrum Analyzer	R&S	FSU	100114	11/05/2023	11/04/2024
Pre Amplifier	H.P.	HP8447E	2945A02715	11/05/2023	11/04/2024
Pre-Amplifier	CDSI	PAP-1G18-38	--	11/05/2023	11/04/2024
Bi-log Antenna	SCHWARZBECK	VULB9168	01488	7/29/2023	7/28/2024
9*6*6 Anechoic	--	--	--	11/05/2023	11/04/2024
Horn Antenna	COMPLIANCE ENGINEERING	CE18000	--	11/05/2023	11/04/2024
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-631	11/05/2023	11/04/2024
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	11/05/2023	11/04/2024
System-Controller	CCS	N/A	N/A	N.C.R	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R	N.C.R
RF cable	Murata	MXHQ87WA3000	-	11/05/2023	11/04/2024
Loop Antenna	EMCO	6502	00042960	11/05/2023	11/04/2024
Horn Antenna	SCHWARZBECK	BBHA 9170	1123	11/05/2023	11/04/2024
Power meter	Anritsu	ML2487A	6K00003613	11/05/2023	11/04/2024
Power sensor	Anritsu	MX248XD	--	11/05/2023	11/04/2024
Spectrum Analyzer	Keysight	N9010B	MY60241089	11/05/2023	11/04/2024





6 Facilities and Accreditations

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at **Building A-B, Baoshi Science & Technology Park, Baoshi Road, Bao'an District, Shenzhen, Guangdong, China of the World Standardization Certification & Testing Group(Shenzhen) CO., LTD**

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2 ACCREDITATIONS

China National Accreditation Service for Conformity Assessment (CNAS)

Registration number NO: L3732

American Association for Laboratory Accreditation(A2LA)

Registration NO : 5768.01

Copies of granted accreditation certificates are available for downloading from our web site,
<http://www.wsct-cert.com>





7 Test Results and Measurement Data

7.1 CONDUCTED EMISSION MEASUREMENT

POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	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



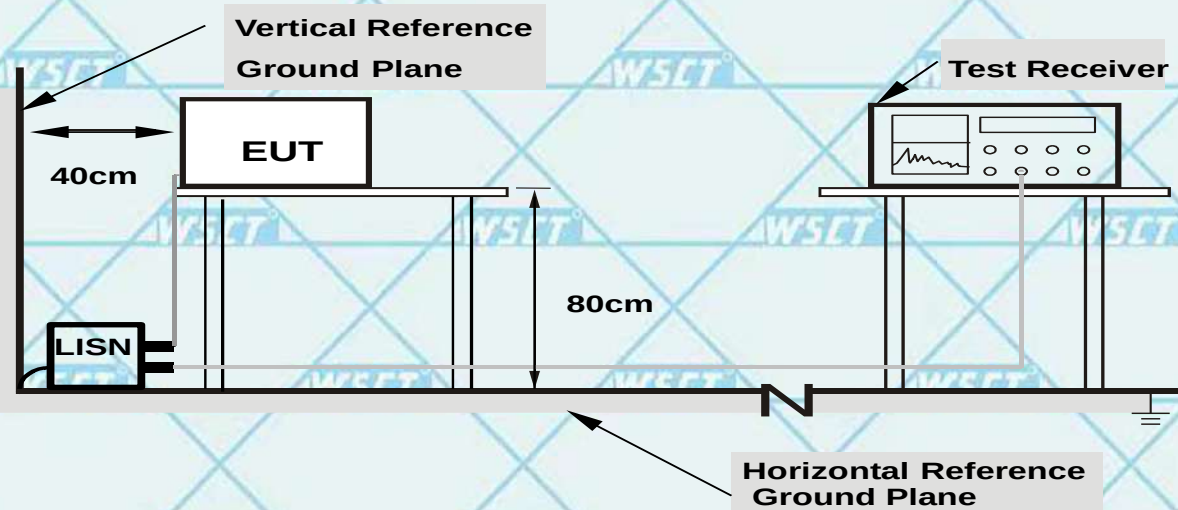
7.1.1 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

7.2 DEVIATION FROM TEST STANDARD

No deviation

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 from other units and other metal planes

7.2.1 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.



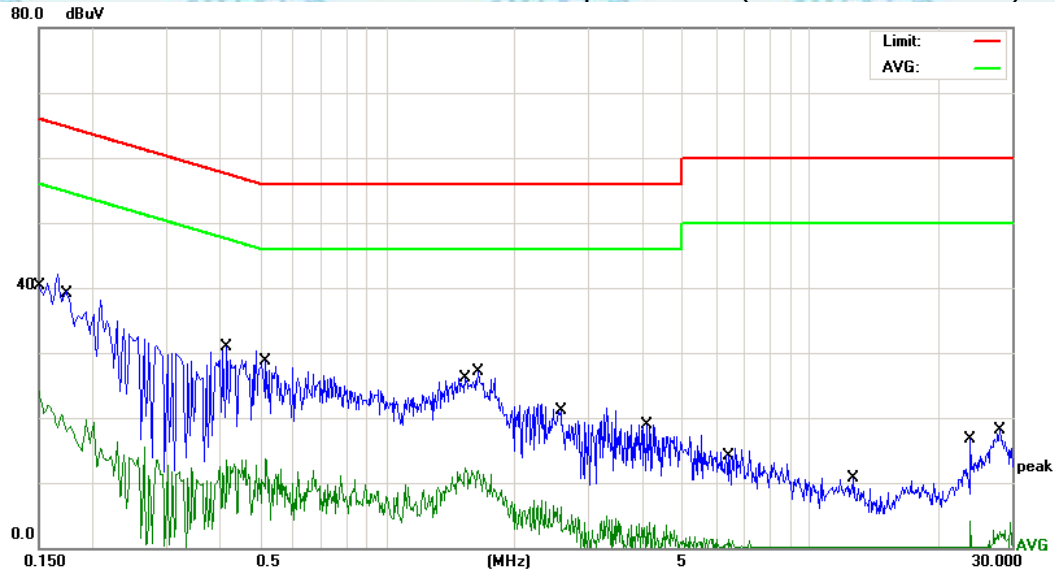
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7.2.2 TEST RESULTS

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)-worst



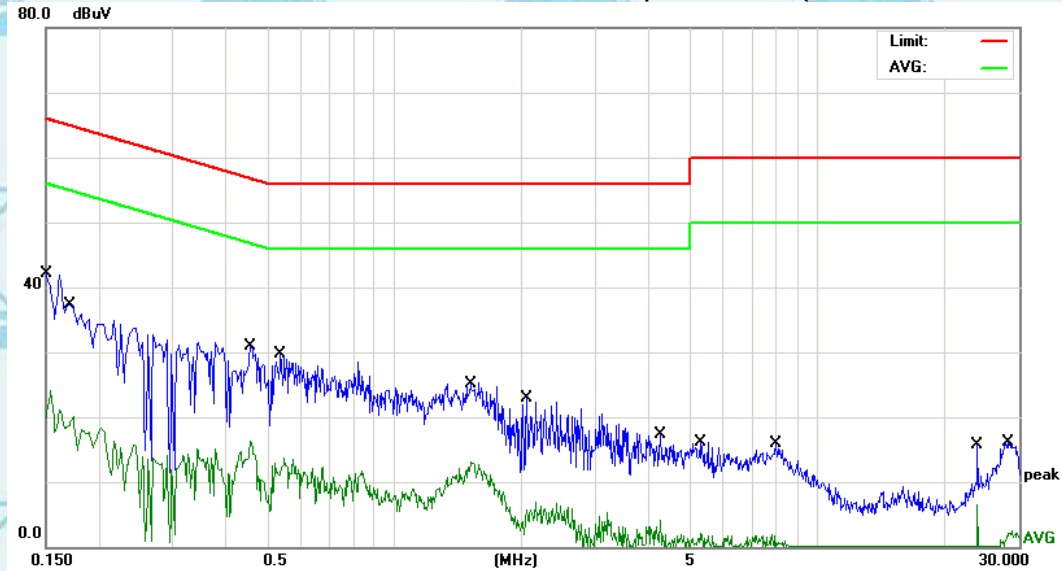
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1500	24.11	0.04	24.15	55.99	-31.84	AVG
2	*	0.1768	38.12	0.04	38.16	64.63	-26.47	QP
3		0.4180	30.86	0.05	30.91	57.49	-26.58	QP
4		0.5180	13.61	0.05	13.66	46.00	-32.34	AVG
5		1.5300	12.18	0.09	12.27	46.00	-33.73	AVG
6		1.6420	26.99	0.07	27.06	56.00	-28.94	QP
7		2.5700	6.31	0.03	6.34	46.00	-39.66	AVG
8		4.1060	18.93	0.04	18.97	56.00	-37.03	QP
9		6.4300	1.31	0.05	1.36	50.00	-48.64	AVG
10		12.6940	10.61	0.05	10.66	60.00	-49.34	QP
11		24.0020	3.99	0.05	4.04	50.00	-45.96	AVG
12		28.0940	18.11	0.05	18.16	60.00	-41.84	QP

Remark: All the modes have been investigated, and only worst mode is presented in this report.





Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1500	42.04	0.04	42.08	65.99	-23.91	QP
2		0.1740	20.05	0.04	20.09	54.76	-34.67	AVG
3		0.4580	16.28	0.05	16.33	46.73	-30.40	AVG
4		0.5380	29.71	0.05	29.76	56.00	-26.24	QP
5		1.5260	12.99	0.09	13.08	46.00	-32.92	AVG
6		2.0579	22.96	0.03	22.99	56.00	-33.01	QP
7		4.2619	4.11	0.05	4.16	46.00	-41.84	AVG
8		5.2940	16.09	0.05	16.14	60.00	-43.86	QP
9		7.9540	1.58	0.06	1.64	50.00	-48.36	AVG
10		7.9980	15.89	0.06	15.95	60.00	-44.05	QP
11		24.0020	6.42	0.05	6.47	50.00	-43.53	AVG
12		28.1940	16.10	0.05	16.15	60.00	-43.85	QP

Note1:

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = LISN Factor + Cable loss

Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)

Q.P. = Quasi-Peak AVG = average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.



7.3 RADIATED EMISSION MEASUREMENT

Radiated Emission Limits(Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/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)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 1Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



7.3.1 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations 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 then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement 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

7.3.2 DEVIATION FROM TEST STANDARD

No deviation





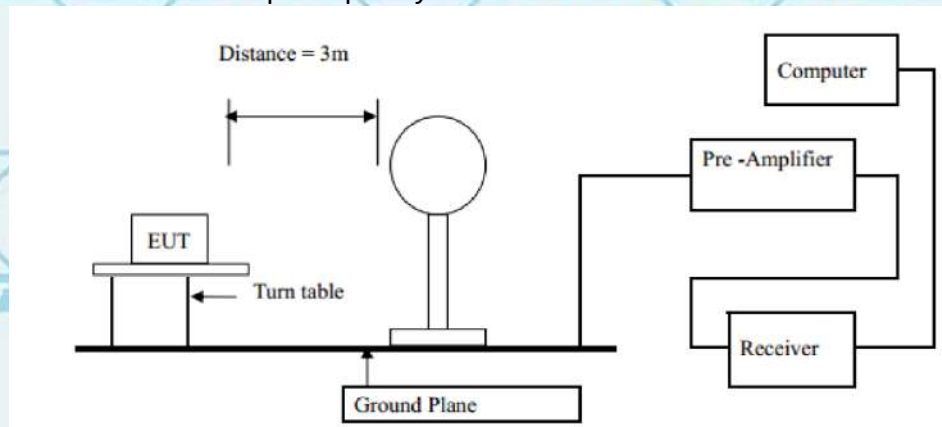
Report No.: WSCT-A2LA-R&E231000017A-Wi-Fi2

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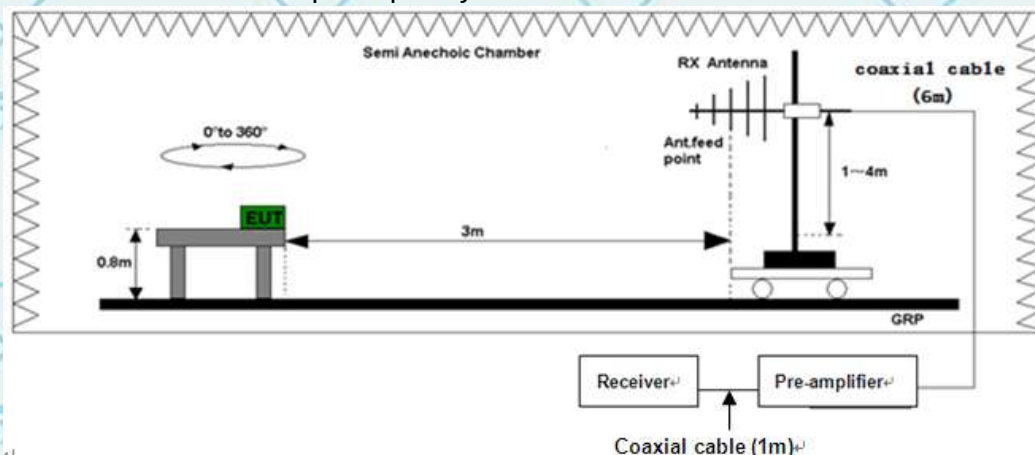
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7.3.3 TEST SETUP

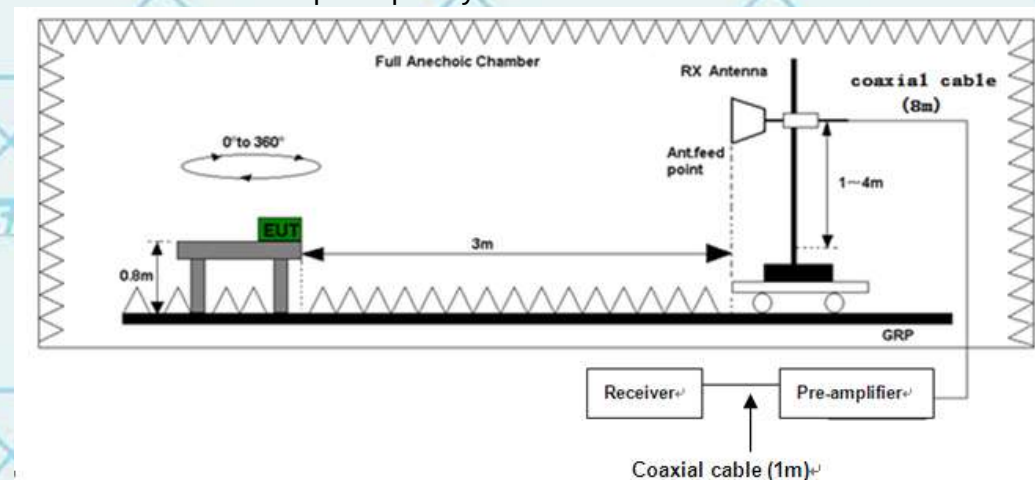
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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





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7.3.4 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.

7.3.5 RESULTS (BELOW 30 MHZ)

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

Note:

No result in this part for margin above 20dB.

Distance extrapolation factor = $20 \log (\text{specific distance/test distance})$ (dB);

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

All the x/y/z orientation has been investigated, and only worst case is presented in this report.





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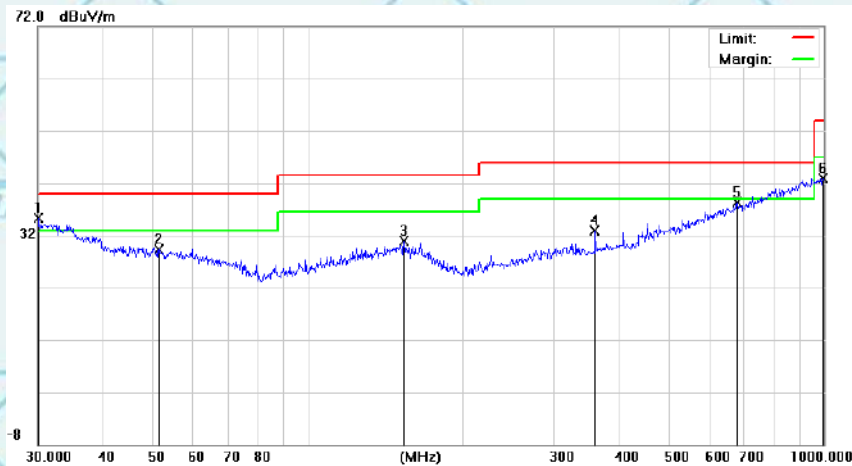
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7.3.6 TEST RESULTS (BETWEEN 30M – 1000 MHZ)

Please refer to following diagram for individual

Below 1GHz

Horizontal:



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1	*	30.0000	11.76	23.59	35.35	40.00	-4.65	QP
2		51.4807	5.14	24.15	29.29	40.00	-10.71	QP
3		153.7385	5.71	25.12	30.83	43.50	-12.67	QP
4		360.4476	7.72	25.26	32.98	46.00	-13.02	QP
5		679.9600	6.47	31.83	38.30	46.00	-7.70	QP
6		996.4996	5.90	37.03	42.93	54.00	-11.07	QP

Remark: All the modes have been investigated, and only worst mode is presented in this report.



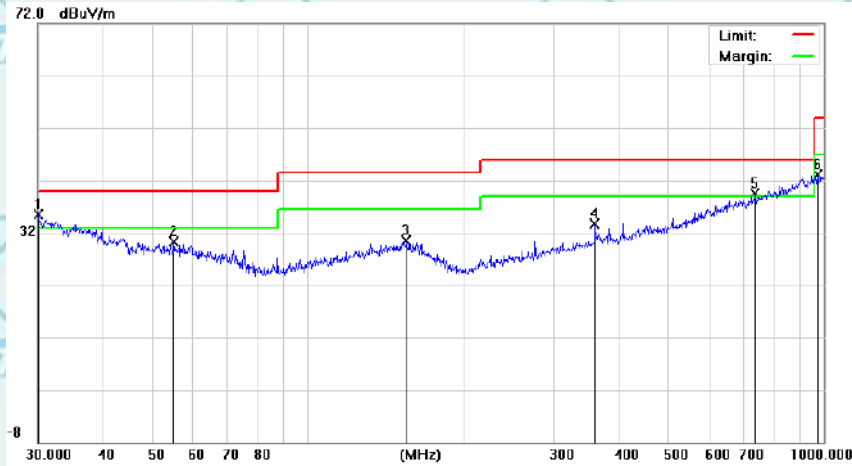


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Vertical:



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	30.0000	11.91	23.59	35.50	40.00	-4.50	QP
2		55.0274	6.43	23.88	30.31	40.00	-9.69	QP
3		155.3644	5.43	25.01	30.44	43.50	-13.06	QP
4		360.4476	8.53	25.26	33.79	46.00	-12.21	QP
5	!	737.0714	6.94	32.60	39.54	46.00	-6.46	QP
6		972.3374	6.53	36.65	43.18	54.00	-10.82	QP

Note1:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss - Amplifier factor.

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) - Limits (dBμV)





7.3.7 TEST RESULTS (ABOVE 1GHZ)

Above 1GHz

Freq. (MHz)	Low channel: 5180MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10360	V	58.95	39.59	74	54	-15.05	-14.41
15540	V	58.02	39.93	74	54	-15.98	-14.07
10360	H	58.04	39.12	74	54	-15.96	-14.88
15540	H	58.68	39.68	74	54	-15.32	-14.32

Freq. (MHz)	Low channel: 5180MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10360	V	58.87	41.89	74	54	-15.13	-12.11
15540	V	58.54	40.61	74	54	-15.46	-13.39
10360	H	59.73	39.01	74	54	-14.27	-14.99
15540	H	59.31	40.31	74	54	-14.69	-13.69

Freq. (MHz)	Low channel: 5180MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10360	V	60.96	40.98	74	54	-13.04	-13.02
15540	V	58.94	40.97	74	54	-15.06	-13.03
10360	H	58.69	39.58	74	54	-15.31	-14.42
15540	H	58.85	39.85	74	54	-15.15	-14.15

Freq. (MHz)	Low channel: 5180MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10360	V	60.20	41.75	74	54	-13.80	-12.25
15540	V	58.49	39.41	74	54	-15.51	-14.59
10360	H	59.89	40.52	74	54	-14.11	-13.48
15540	H	59.08	40.08	74	54	-14.92	-13.92



Freq. (MHz)	Middle channel: 5210MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10420	V	58.79	41.34	74	54	-15.21	-12.66
15630	V	59.98	40.92	74	54	-14.02	-13.08
10420	H	59.74	39.21	74	54	-14.26	-14.79
15630	H	58.67	39.67	74	54	-15.33	-14.33

Freq. (MHz)	Middle channel: 5210MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10420	V	60.23	41.93	74	54	-13.77	-12.07
15630	V	58.25	40.66	74	54	-15.75	-13.34
10420	H	58.86	40.07	74	54	-15.14	-13.93
15630	H	59.06	40.06	74	54	-14.94	-13.94

Freq. (MHz)	Middle channel: 5210MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10420	V	59.50	40.04	74	54	-14.50	-13.96
15630	V	58.92	39.71	74	54	-15.08	-14.29
10420	H	59.51	40.58	74	54	-14.49	-13.42
15630	H	59.77	40.77	74	54	-14.23	-13.23

Freq. (MHz)	Middle channel: 5210MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10420	V	60.08	41.00	74	54	-13.92	-13.00
15630	V	59.28	39.37	74	54	-14.72	-14.63
10420	H	58.09	39.56	74	54	-15.91	-14.44
15630	H	58.70	39.70	74	54	-15.30	-14.30



Freq. (MHz)	High channel: 5240MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10480	V	60.41	41.44	74	54	-13.59	-12.56
15720	V	59.36	40.91	74	54	-14.64	-13.09
10480	H	59.15	39.70	74	54	-14.85	-14.30
15720	H	59.31	40.31	74	54	-14.69	-13.69

Freq. (MHz)	High channel: 5240MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10480	V	58.47	41.33	74	54	-15.53	-12.67
15720	V	58.32	40.95	74	54	-15.68	-13.05
10480	H	59.72	39.88	74	54	-14.28	-14.12
15720	H	58.15	39.15	74	54	-15.85	-14.85

Freq. (MHz)	High channel: 5240MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10480	V	60.49	40.99	74	54	-13.51	-13.01
15720	V	58.41	39.69	74	54	-15.59	-14.31
10480	H	58.83	39.27	74	54	-15.17	-14.73
15720	H	59.65	40.65	74	54	-14.35	-13.35

Freq. (MHz)	High channel: 5240MHz						
	Ant.Pol	Emission Level(dBuV)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
10480	V	60.84	41.34	74	54	-13.16	-12.66
15720	V	59.54	39.24	74	54	-14.46	-14.76
10480	H	59.56	40.39	74	54	-14.44	-13.61
15720	H	59.11	40.11	74	54	-14.89	-13.89

Note:

1. All emissions not reported were more than 20dB below the specified limit or in the noise floor.
2. Emission Level= Reading Level+ Probe Factor +Cable Loss.
3. Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. All the mode have been tested, and only the worst case mode (802.11a) are in the report.



7.4 ANTENNA REQUIREMENT

Standard requirement:	The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and FCC part 15C section 15.407.
FCC part 15C section 15.203 and FCC part 15C section 15.407 requirements: Systems operating in the 5150~5850MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.	
E.U.T Antenna:	
The Wi-Fi antenna is a Integral Antenna. it meets the standards, and the best case gain of the antenna is1.89dBi.	



7.5 EMISSION BANDWIDTH

7.5.1 TEST EQUIPMENT

Please refer to Section 5 this report.

7.5.2 TEST PROCEDURE

-26dB Bandwidth and 99% Occupied Bandwidth:	
Test Method:	a)The transmitter was radiated to the spectrum analyzer in peak hold mode. b)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%.
Test Equipment Setting – 26dB Bandwidth:	Test Equipment Setting – 99%% Bandwidth:
a)Attenuation: Auto	a)Span: 1.5 times to 5.0 times the OBW
b)Span Frequency: > 26dB Bandwidth	b)RBW: 1 % to 5 % of the OBW
c)RBW: Approximately 1% of the emission bandwidth	c)VBW: $\geq 3 \times \text{RBW}$
d)VBW: VBW > RBW	d)Detector: Peak
e)Detector: Peak	e)Trace: Max Hold
f)Trace: Max Hold	
g)Sweep Time: Auto	
6 dB Bandwidth:	
Test Method:	a)The transmitter was radiated to the spectrum analyzer in peak hold mode. b)Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth. c)Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band. d)Measured the spectrum width with power higher than 6dB below carrier.
Test Equipment Setting:	e)Detector: Peak
a)Attenuation: Auto	f)Trace: Max Hold
b)Span Frequency: > 6dB Bandwidth	g)Sweep Time: Auto
c)RBW: 100kHz	
d)VBW: $\geq 3 \times \text{RBW}$	
Maximum Conducted Output Power Measurement:	
Test Method:	a)The transmitter output (antenna port) was connected to the power meter. b)Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter). c)Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band. d)When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.
Test Equipment Setting: Detector - Average	
Power Spectral Density:	
Test Method:	a)The transmitter output (antenna port) was connected RF switch to the spectrum analyzer. b)Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD). c)Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs. d)When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way. e)For 5.725~5.85 GHz, the measured result of PSD level must add $10\log(500\text{kHz}/\text{RBW})$



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www.wsct-cert.comand the final result should ≤ 30 dBm.**Test Equipment Setting:**

a) Attenuation: Auto

b) Span Frequency: Encompass the entire emissions bandwidth (EBW) of the signal

c) RBW: 1000 kHz

d) VBW: 3000 kHz

e) Detector: RMS

f) Trace: AVERAGE

g) Sweep Time: Auto

h) Trace Average: 100 times

Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

Frequency Stability Measurement:**Test Method:**

a) The transmitter output (antenna port) was connected to the spectrum analyzer.

b) EUT have transmitted absence of modulation signal and fixed channelize.

c) Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.

d) Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.

e) f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm andthe limit is less than ± 20 ppm (IEEE 802.11 specification).

f) The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value

g) Extreme temperature is $0^\circ\text{C} \sim 40^\circ\text{C}$ **Test Equipment Setting:**

a) Attenuation: Auto

b) Span Frequency: Entire absence of modulation emissions bandwidth

c) RBW: 10 kHz

d) VBW: 10 kHz

e) Sweep Time: Auto

7.5.3 CONFIGURATION OF THE EUT

Same as section 3.4 of this report

7.5.4 EUT OPERATING CONDITION

Same as section 3.5 of this report.





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-26dB Bandwidth and 99% Occupied Bandwidth:	
Limit:	No restriction limits.
-6 dB Bandwidth:	
Limit:	For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.
Test Equipment Setting:	
a)Attenuation: Auto	e)Detector: Peak
b)Span Frequency: > 6dB Bandwidth	f)Trace: Max Hold
c)RBW: 100kHz	g)Sweep Time: Auto
d)VBW: $\geq 3 \times \text{RBW}$	
Maximum Conducted Output Power Measurement:	
☒ 5.15~5.25 GHz	
☐ Limit of Outdoor access point: The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).	☐ Limit of Indoor access point: The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) 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.
☐ Limit of Fixed point-to-point access points: The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.	☒ Limit of Mobile and portable client devices: The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) 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.
☒ 5.25-5.35 GHz & ☒ 5.470-5.725 GHz	
The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 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, 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.	
☒ 5.725~5.85 GHz	
The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.	
Power Spectral Density	
☒ 5.15~5.25 GHz	
☐ Limit of Outdoor access point: 17 dBm/MHz	☐ Limit of Indoor access point: 17 dBm/MHz
☐ Limit of Fixed point-to-point access points: 17 dBm/MHz	☒ Limit of Mobile and portable client devices: 11 dBm/MHz
☐ 5.25-5.35 GHz	11 dBm/MHz
☐ 5.470-5.725 GHz	11 dBm/MHz
☒ 5.725~5.85 GHz	30 dBm/500kHz
Frequency Stability Measurement:	
Limit:	In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual. The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE)



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802.11n specification).

7.5.6 TEST RESULT**-26dB Bandwidth and 99% Occupied Bandwidth**

Product	: EUT-Sample	Test Mode	: See section 3.4
Test Item	: -26dB Bandwidth/-6dB Bandwidth and 99% Occupied Bandwidth	Temperature	: 25 °C
Test Voltage	: DC 3.8V	Humidity	: 56%RH
Test Result	: PASS		

-26dB Bandwidth

Mode	Frequency (MHz)	-26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
a	5180	20.27	16.596	0.5	Pass
a	5240	20.65	16.592	0.5	Pass
a	5260	21.27	16.601	0.5	Pass
a	5320	21.80	16.559	0.5	Pass
a	5500	22.03	16.600	0.5	Pass
a	5700	25.05	16.634	0.5	Pass
n20	5180	23.95	17.647	0.5	Pass
n20	5240	25.01	17.627	0.5	Pass
n20	5260	25.07	17.664	0.5	Pass
n20	5320	26.17	17.673	0.5	Pass
n20	5500	26.66	17.711	0.5	Pass
n20	5700	26.76	17.661	0.5	Pass
n40	5190	57.00	36.028	0.5	Pass
n40	5230	45.07	35.783	0.5	Pass
n40	5270	48.92	35.981	0.5	Pass
n40	5310	49.64	35.936	0.5	Pass
n40	5510	53.66	35.005	0.5	Pass
n40	5670	42.27	35.948	0.5	Pass
ac20	5180	22.91	17.652	0.5	Pass
ac20	5240	22.65	17.643	0.5	Pass
ac20	5260	22.40	17.365	0.5	Pass
ac20	5320	22.27	17.638	0.5	Pass
ac20	5500	22.01	17.640	0.5	Pass
ac20	5700	22.93	17.638	0.5	Pass
ac40	5190	40.56	35.943	0.5	Pass
ac40	5230	39.78	35.843	0.5	Pass
ac40	5270	39.85	35.921	0.5	Pass
ac40	5310	39.94	35.852	0.5	Pass
ac40	5510	40.26	35.990	0.5	Pass
ac40	5670	39.94	35.945	0.5	Pass
ac80	5210	89.88	75.321	0.5	Pass
ac80	5290	91.79	75.358	0.5	Pass
ac80	5530	79.91	75.298	0.5	Pass
ac80	5610	79.84	75.314	0.5	Pass

-6dB Bandwidth

Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
a	5745	15.08	16.388	0.5	Pass
a	5825	14.43	16.396	0.5	Pass
n20	5745	15.34	17.567	0.5	Pass
n20	5825	15.05	17.560	0.5	Pass
n40	5755	33.87	35.891	0.5	Pass
n40	5795	33.82	35.892	0.5	Pass
ac20	5745	15.67	17.568	0.5	Pass
ac20	5825	15.05	17.580	0.5	Pass
ac40	5755	35.07	35.248	0.5	Pass
ac40	5795	33.86	35.883	0.5	Pass
ac80	5775	75.06	75.294	0.5	Pass

Test plots as follows:



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Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1



-26dB Bandwidth NVNT a 5240MHz Ant1





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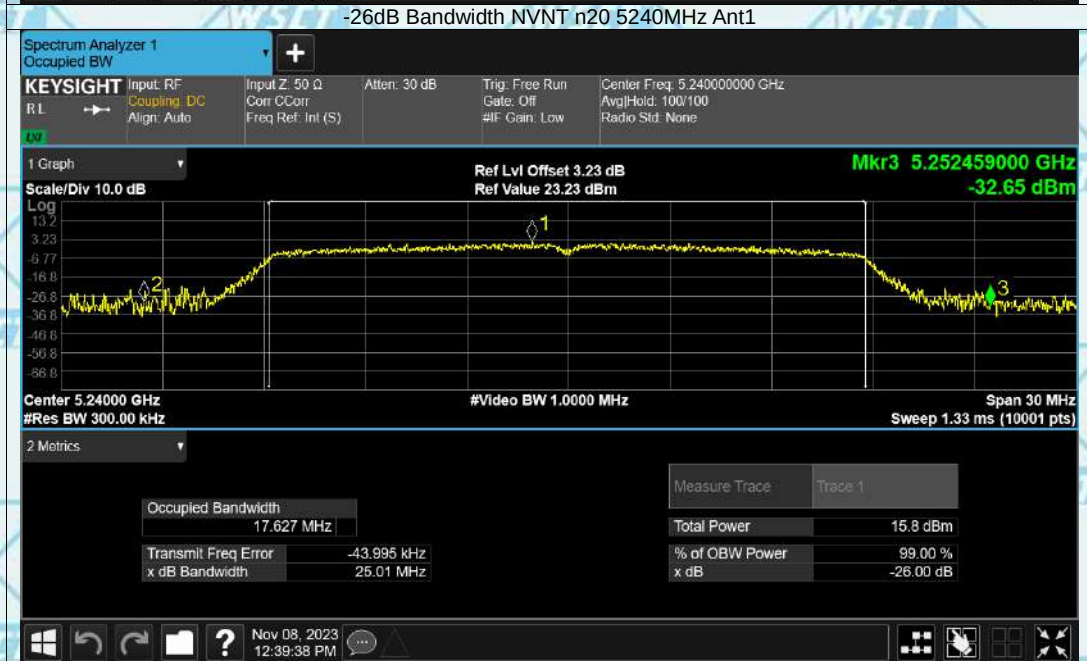
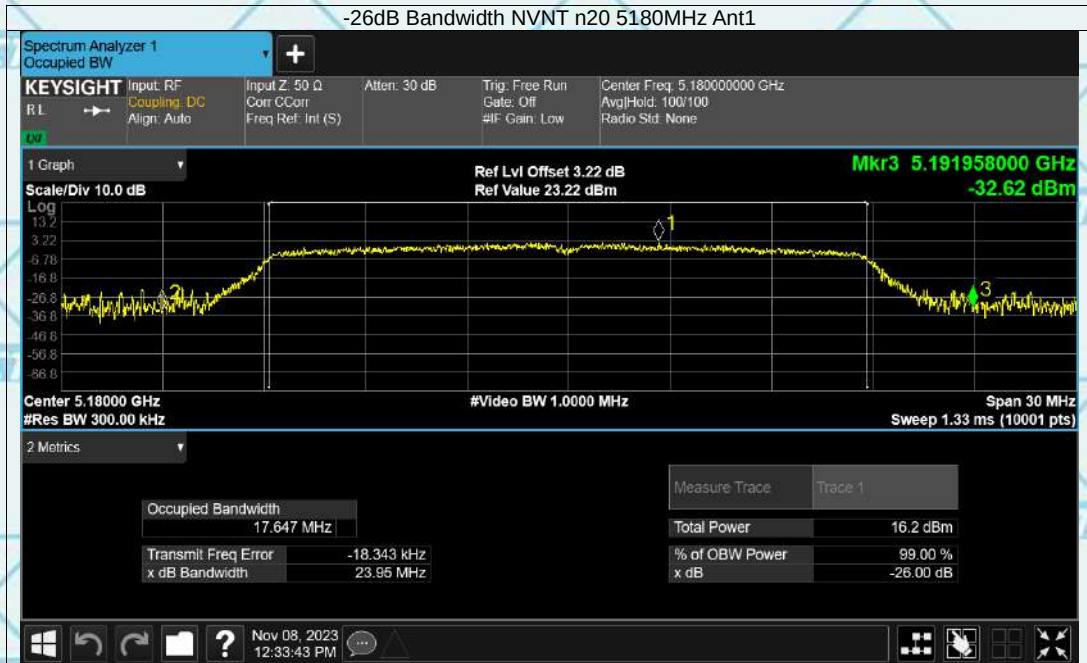




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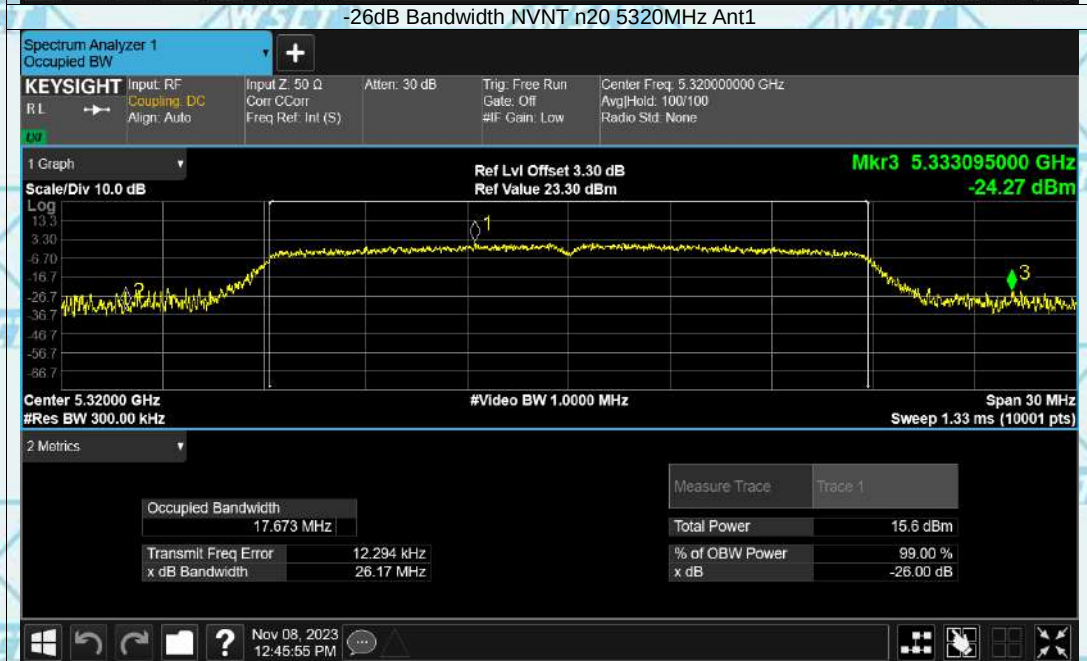
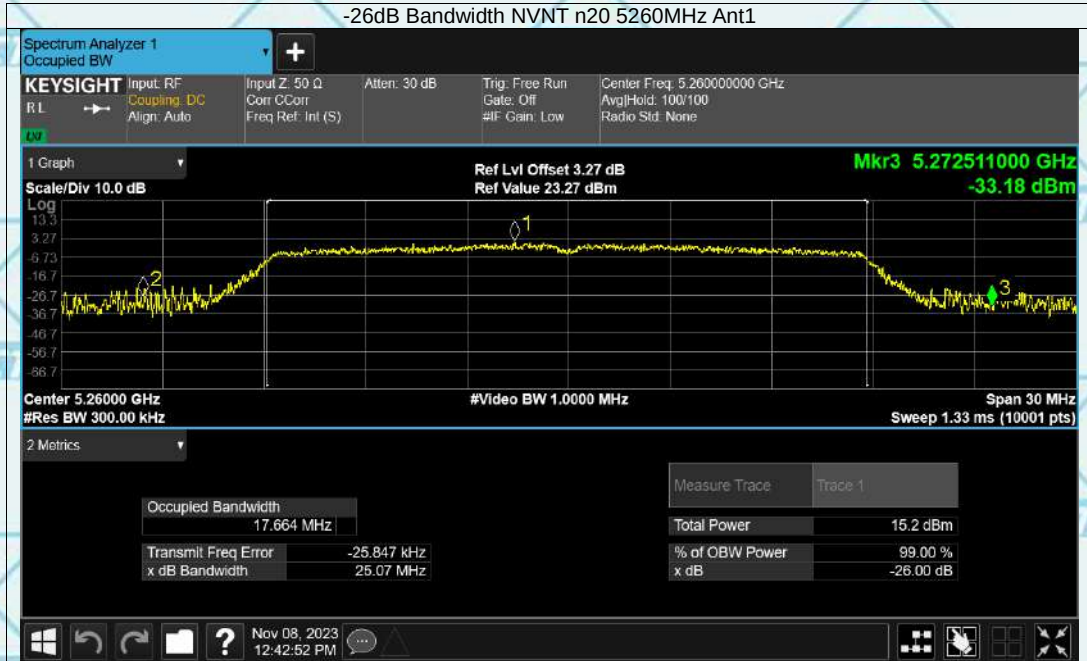




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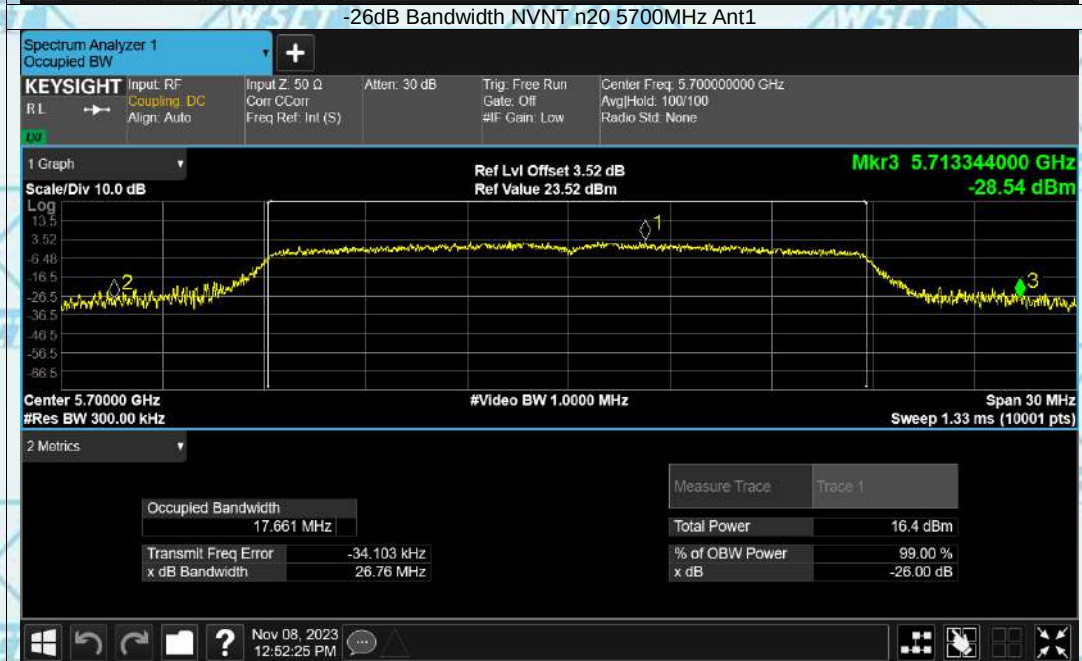




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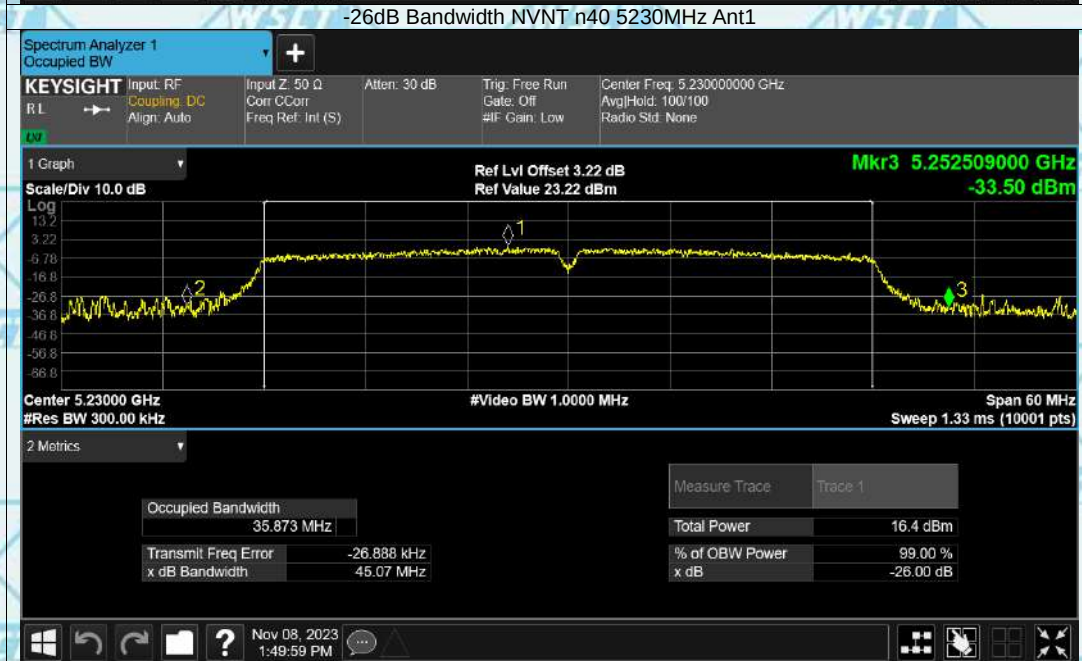
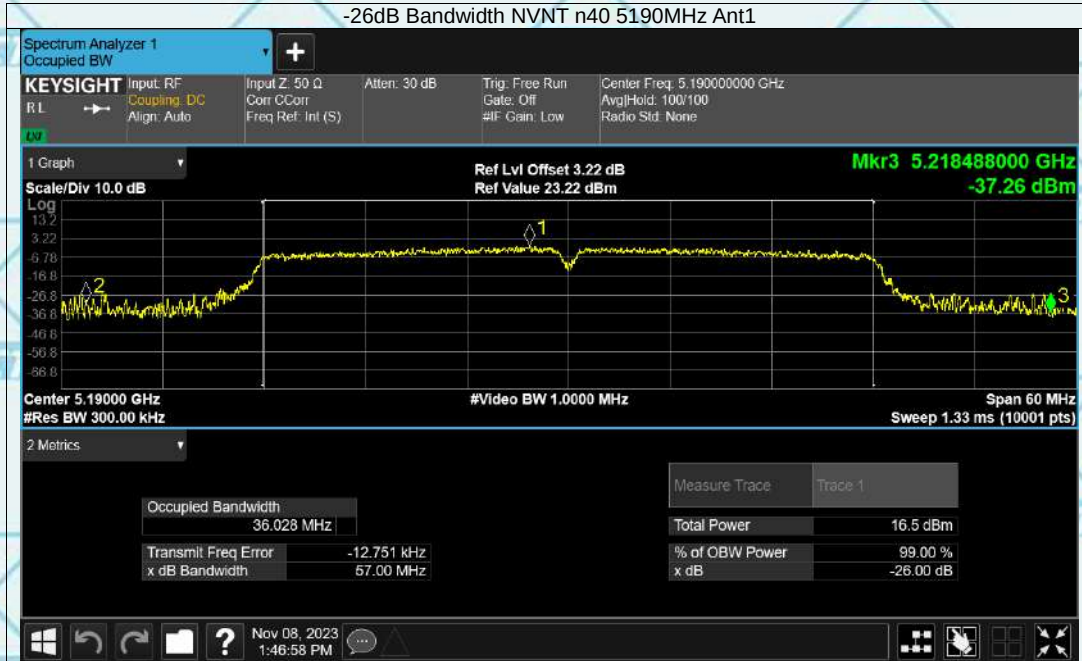




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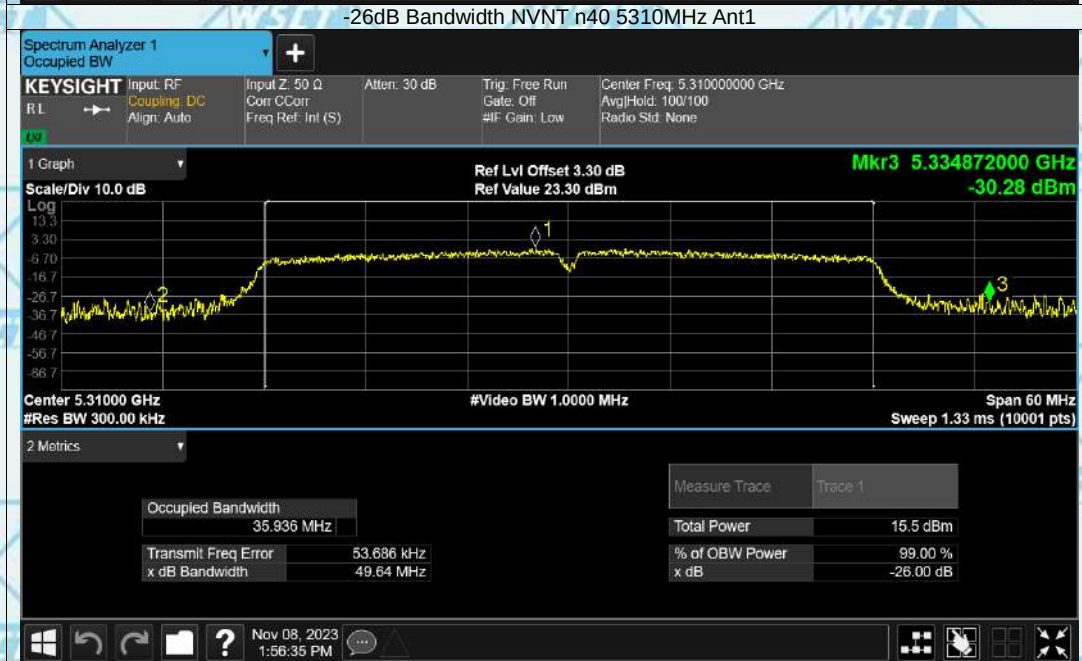
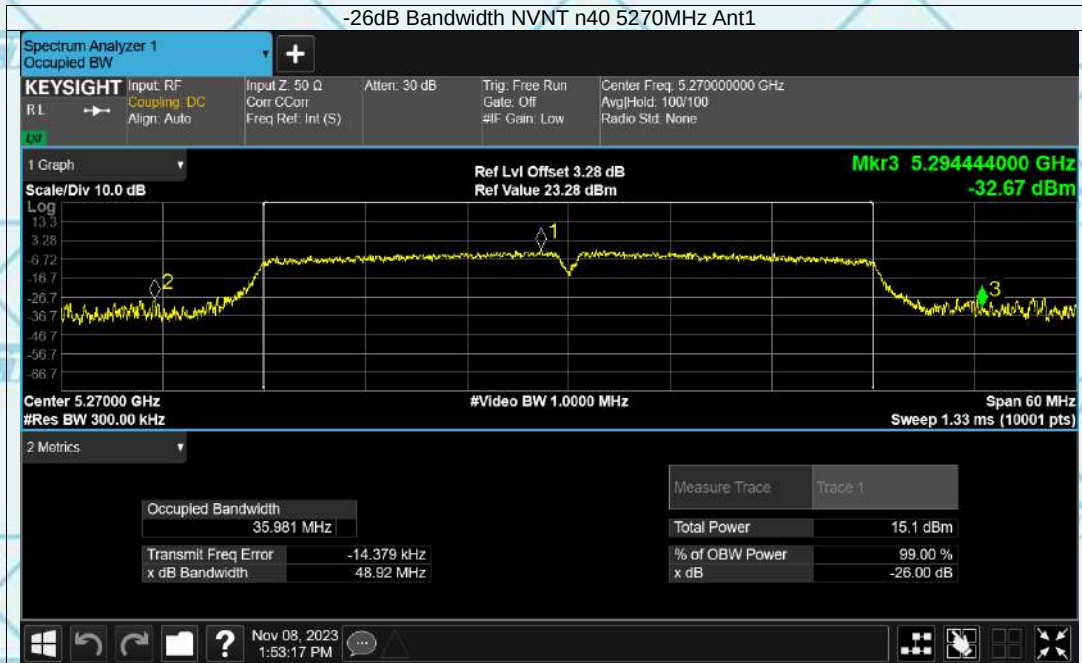




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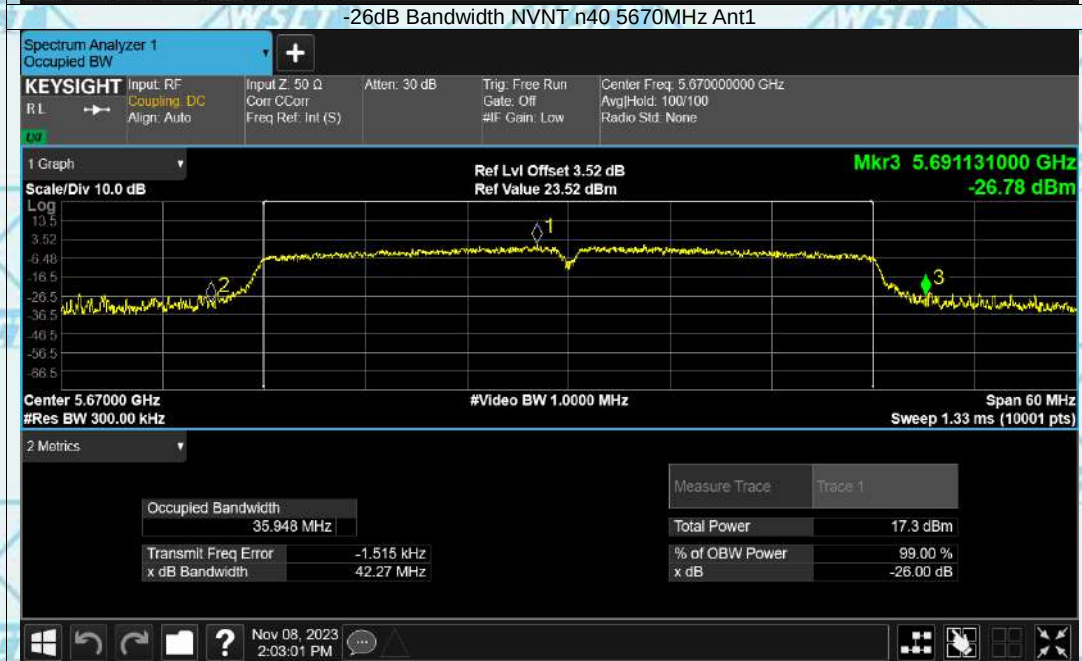




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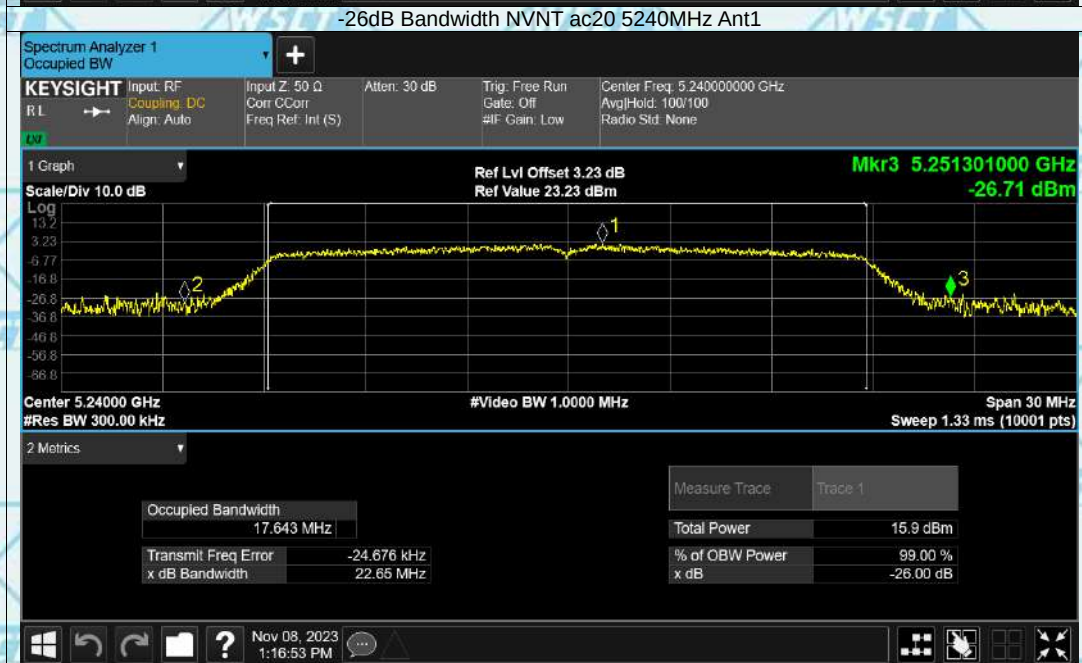




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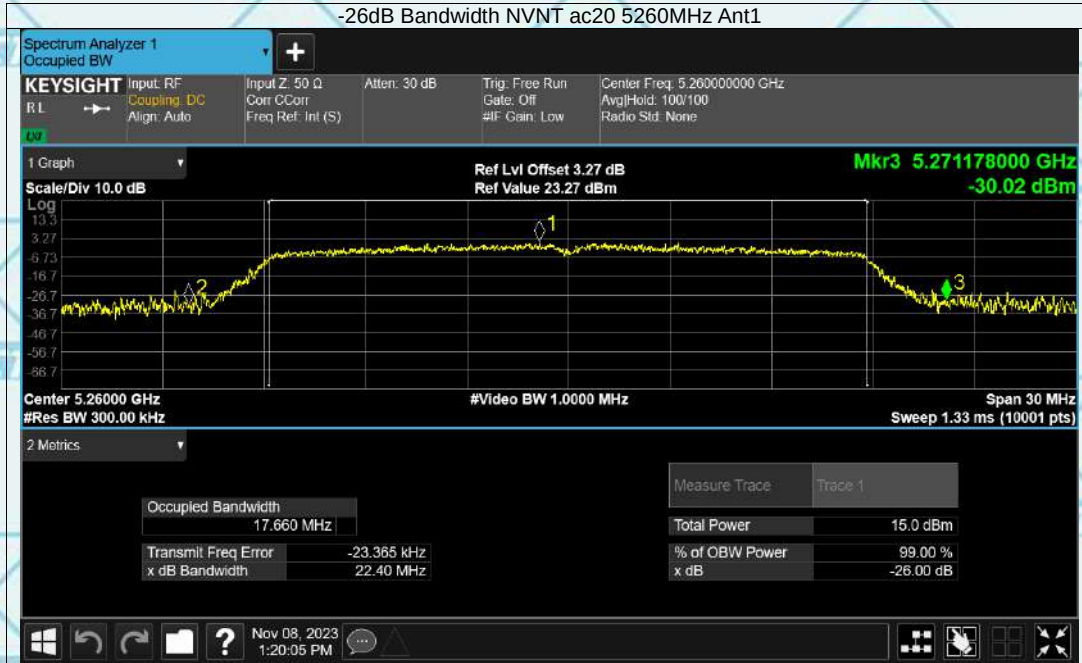




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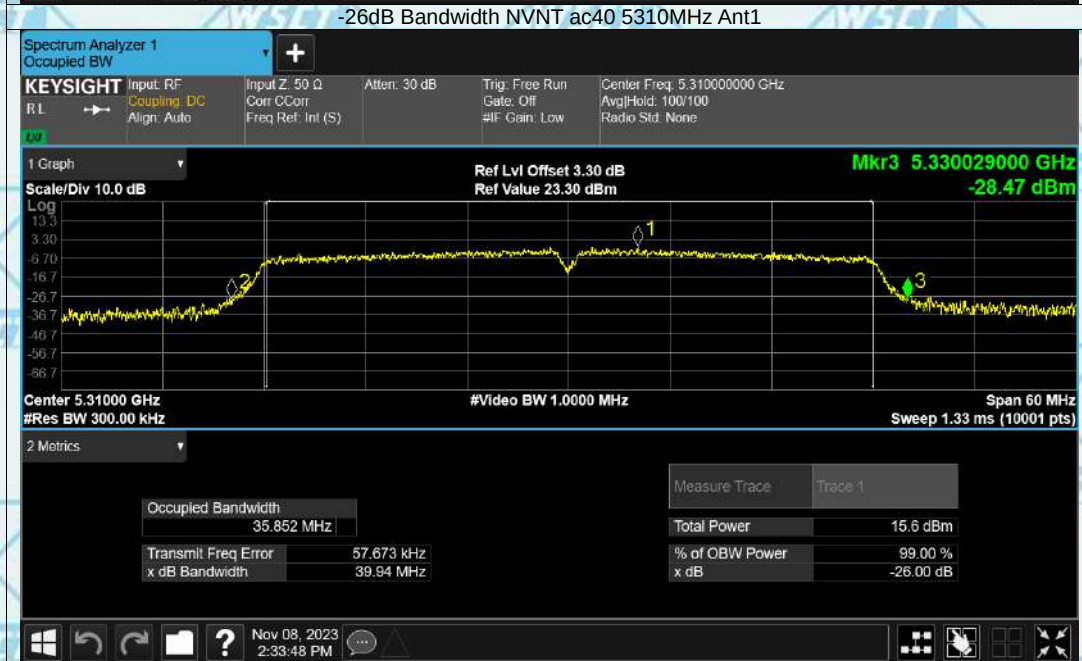
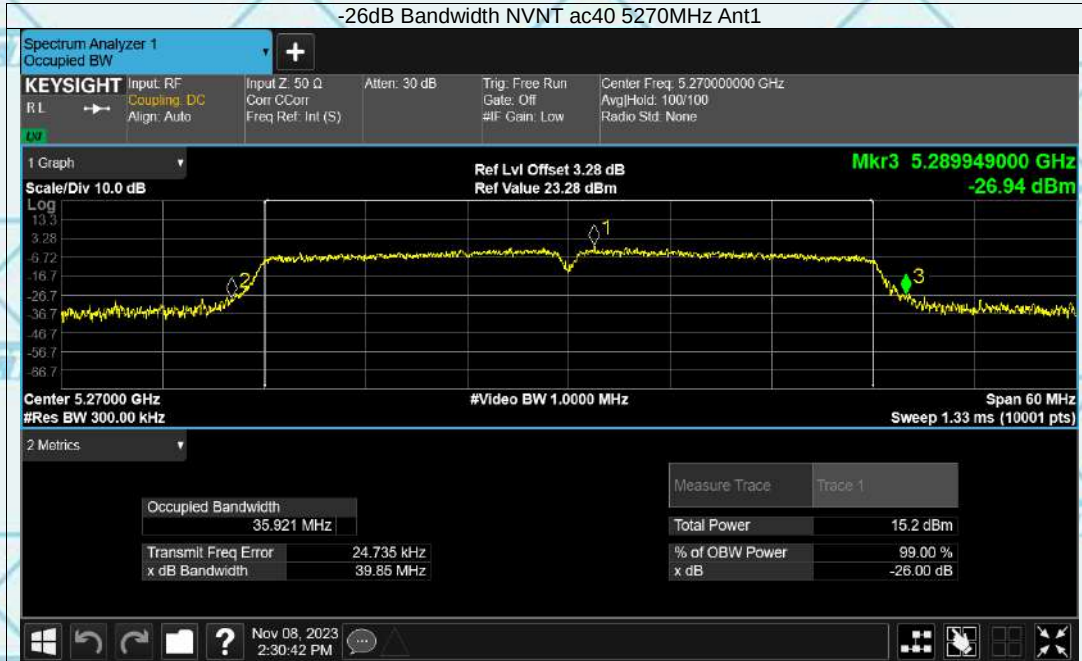




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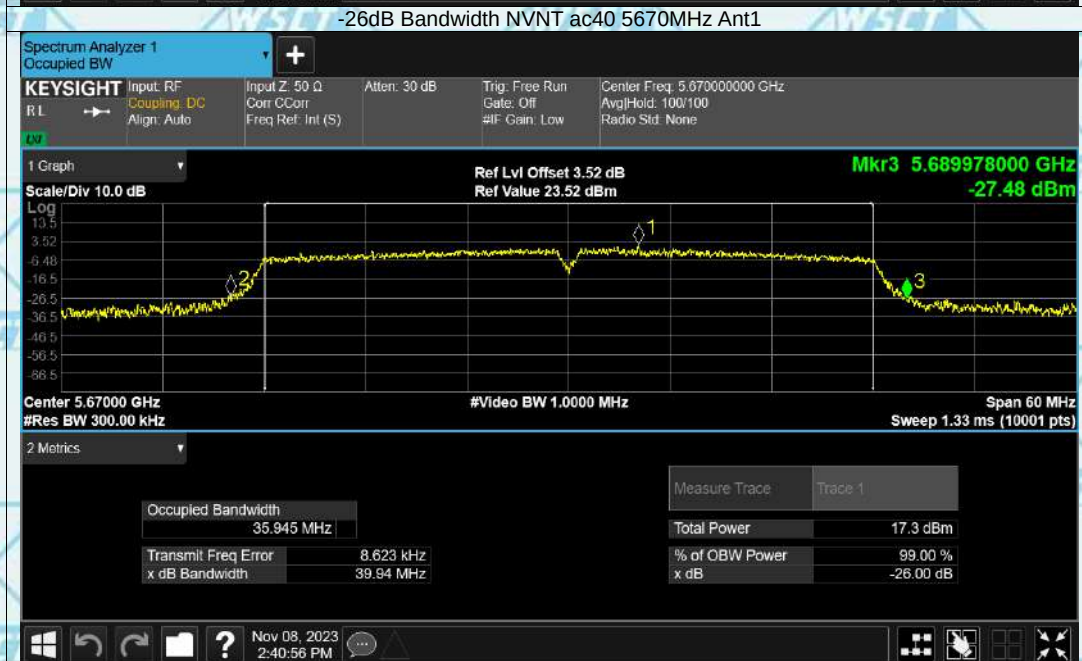
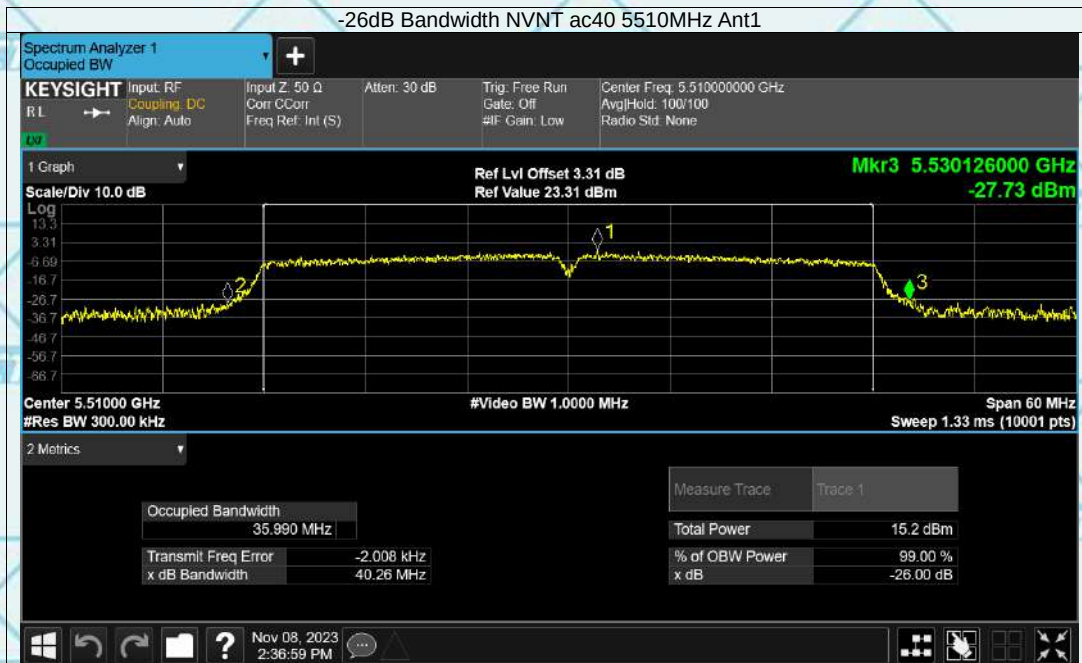




Report No.: WSCT-A2LA-R&E231000017A-Wi-Fi2

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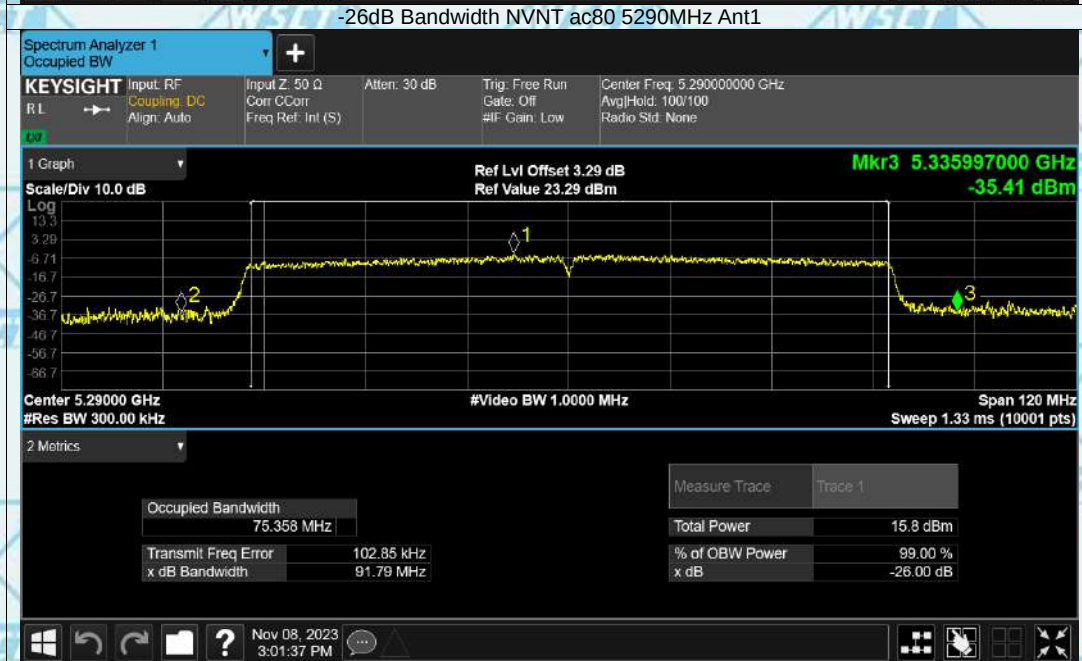
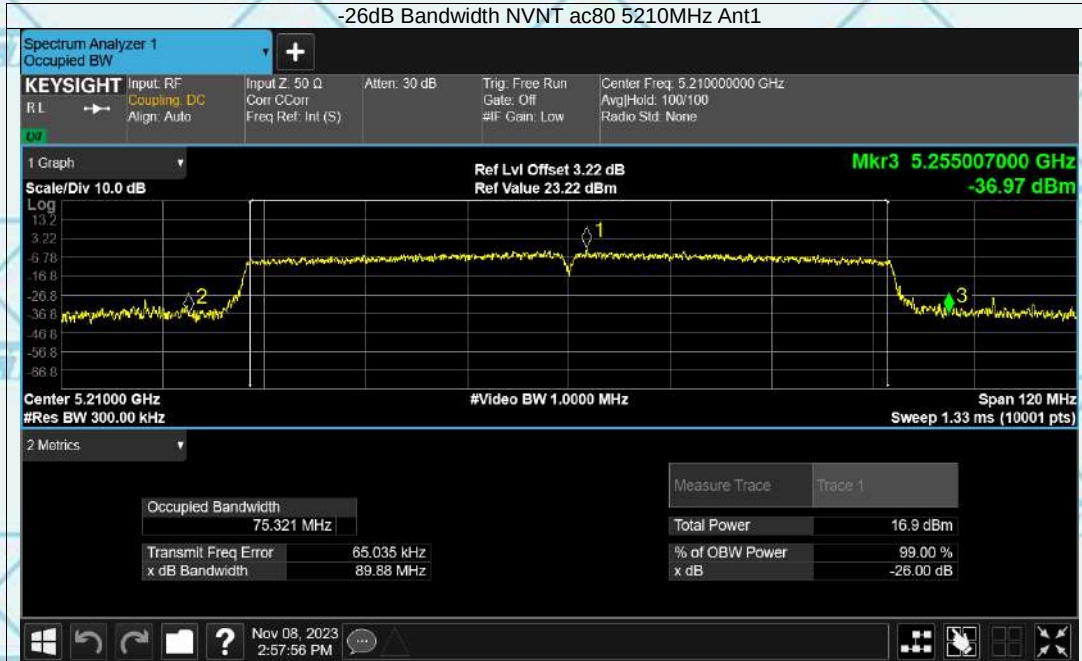




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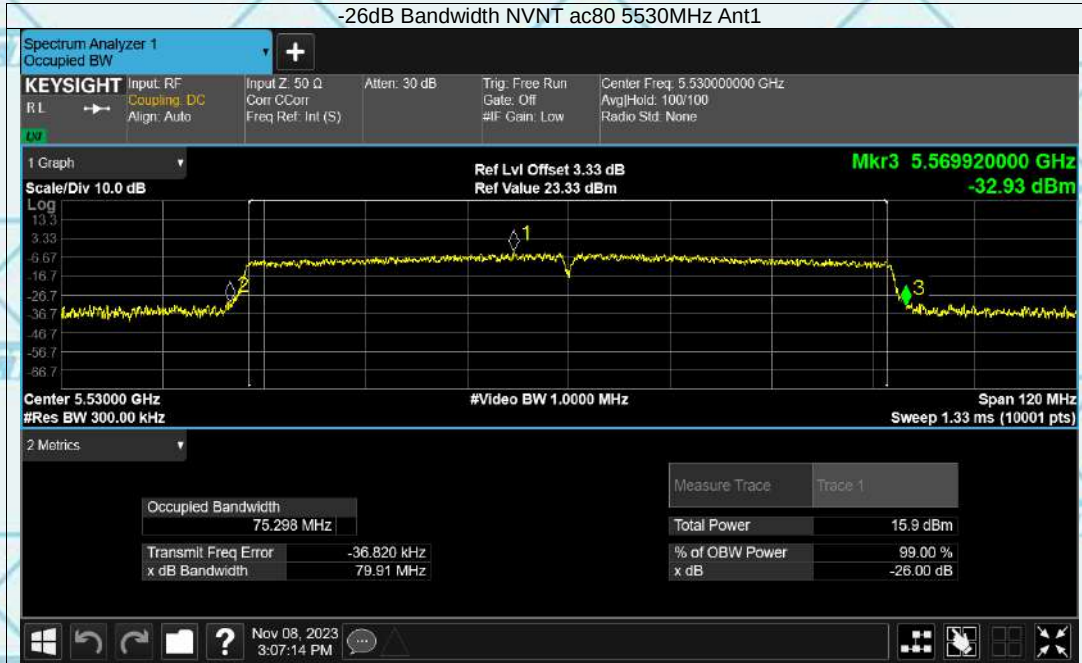




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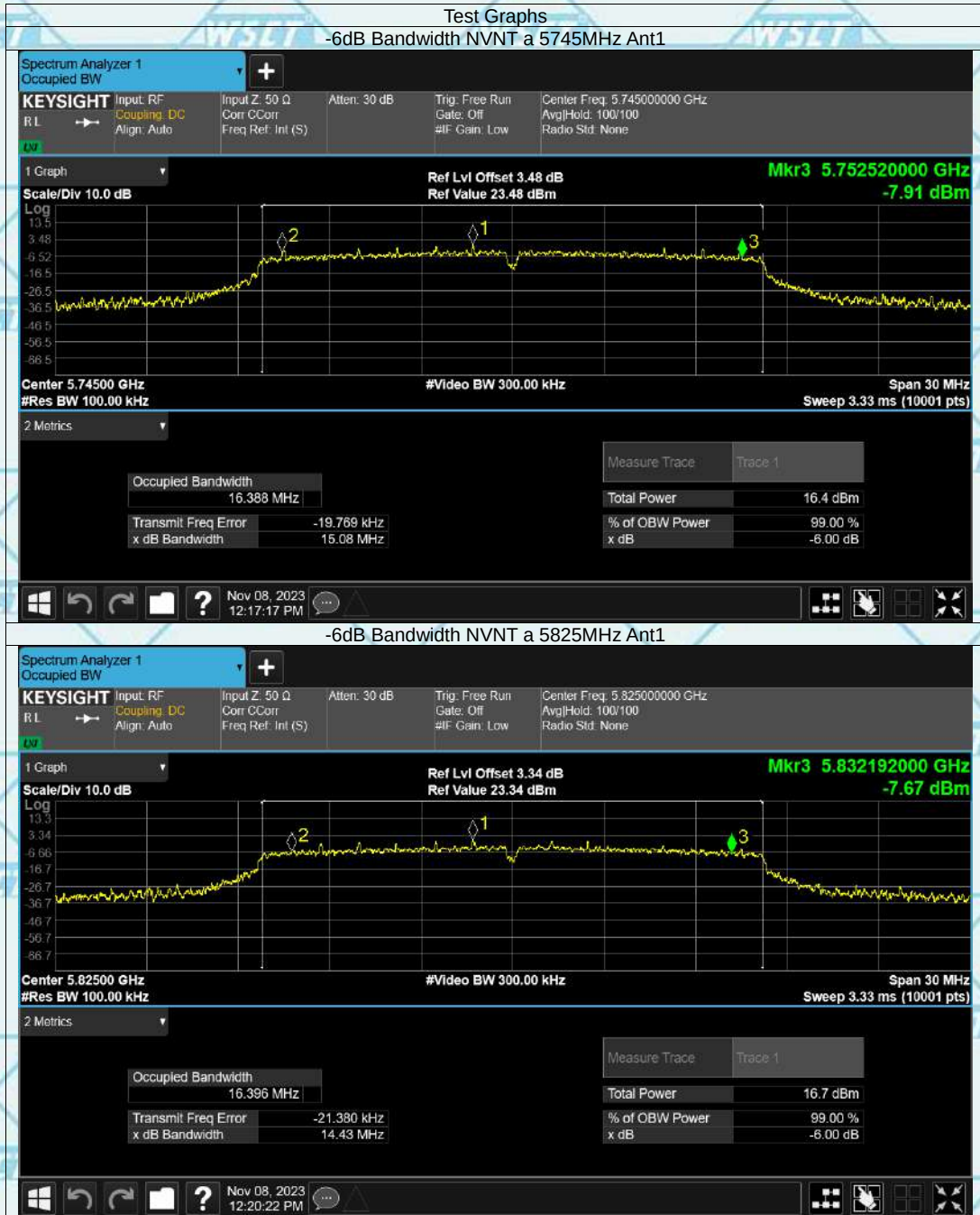




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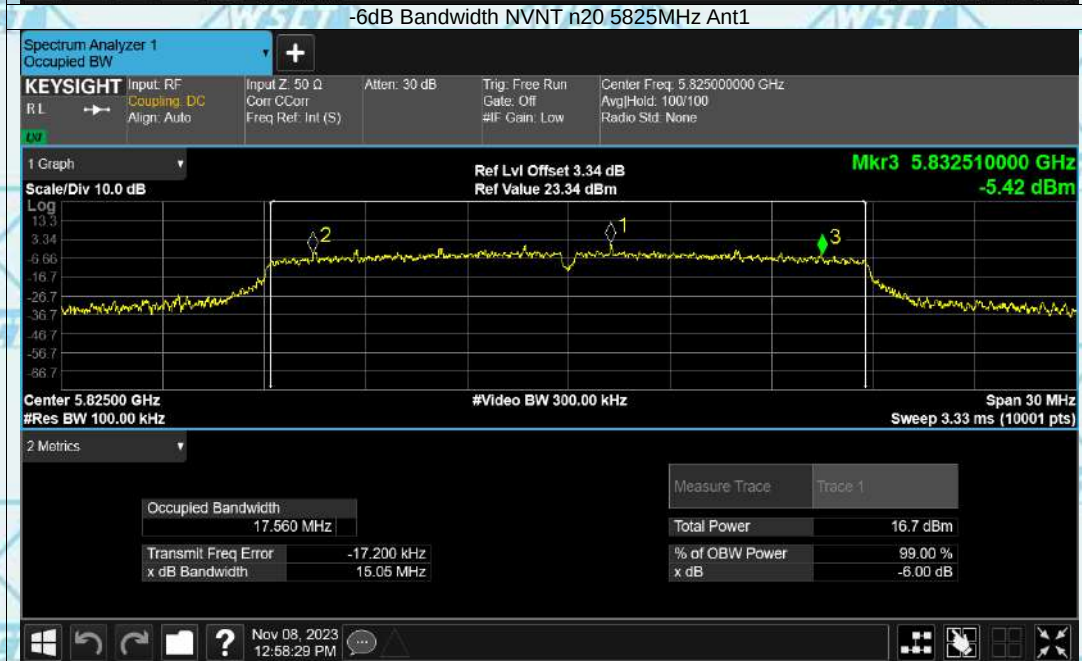
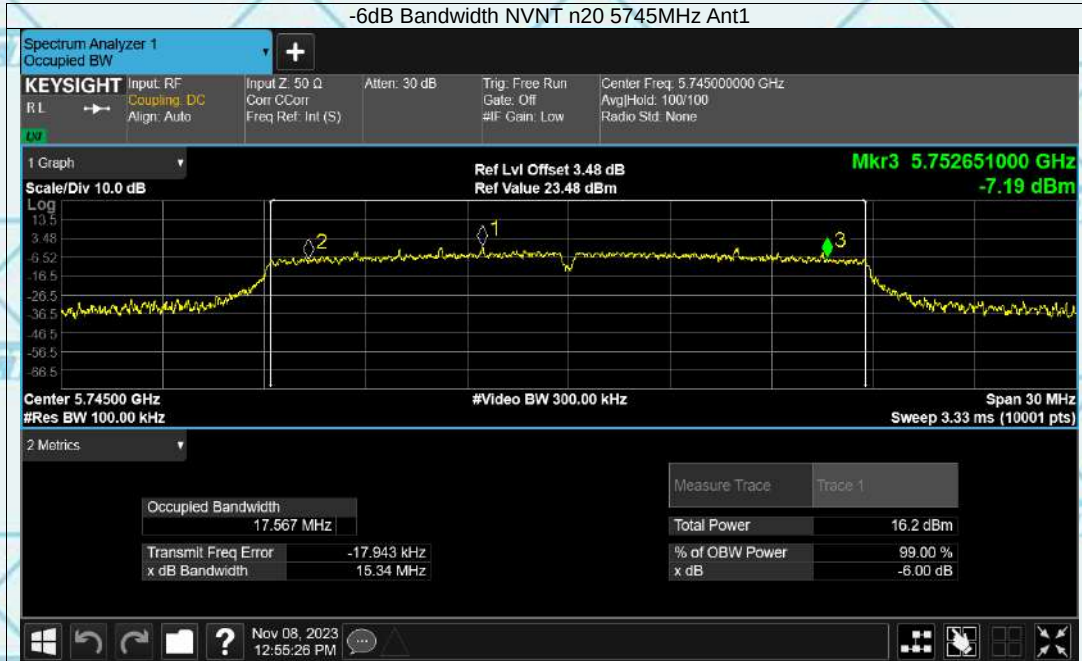




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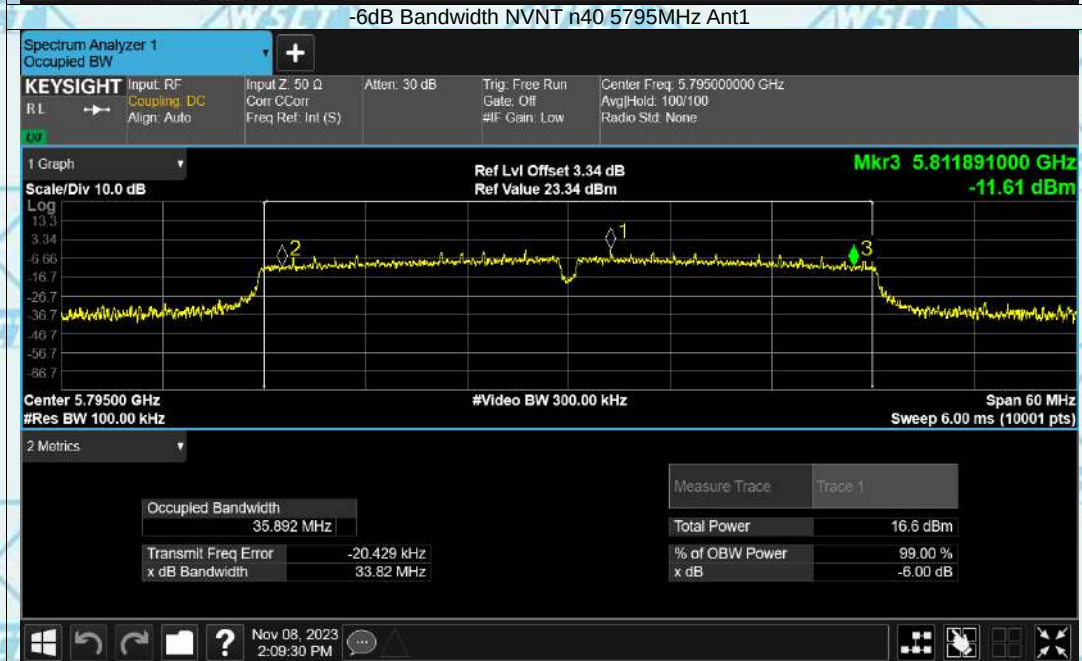
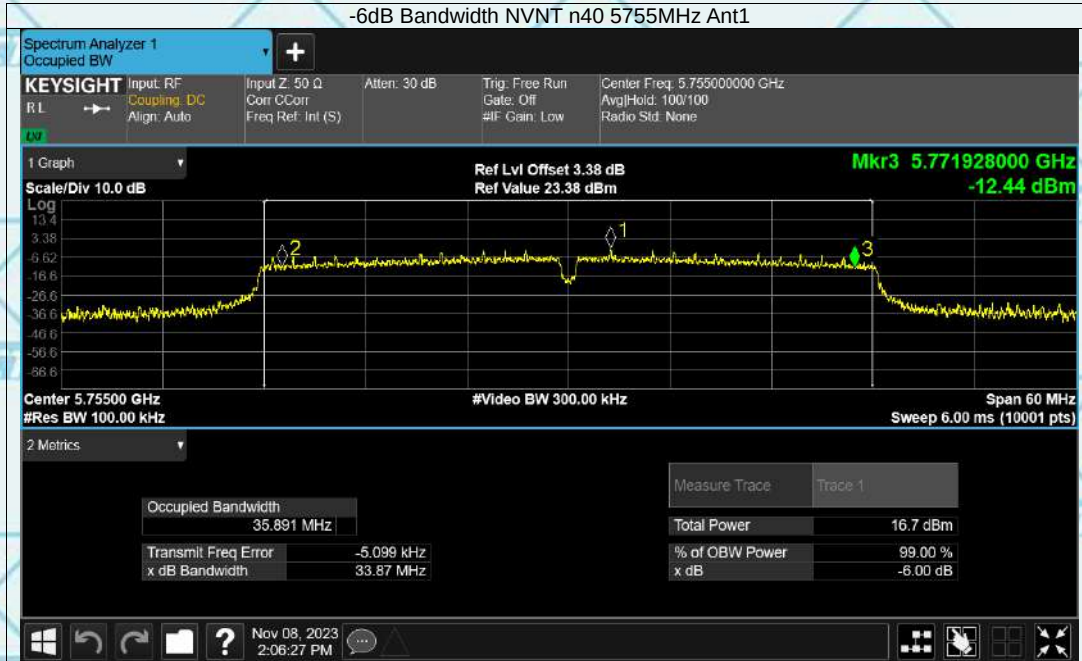




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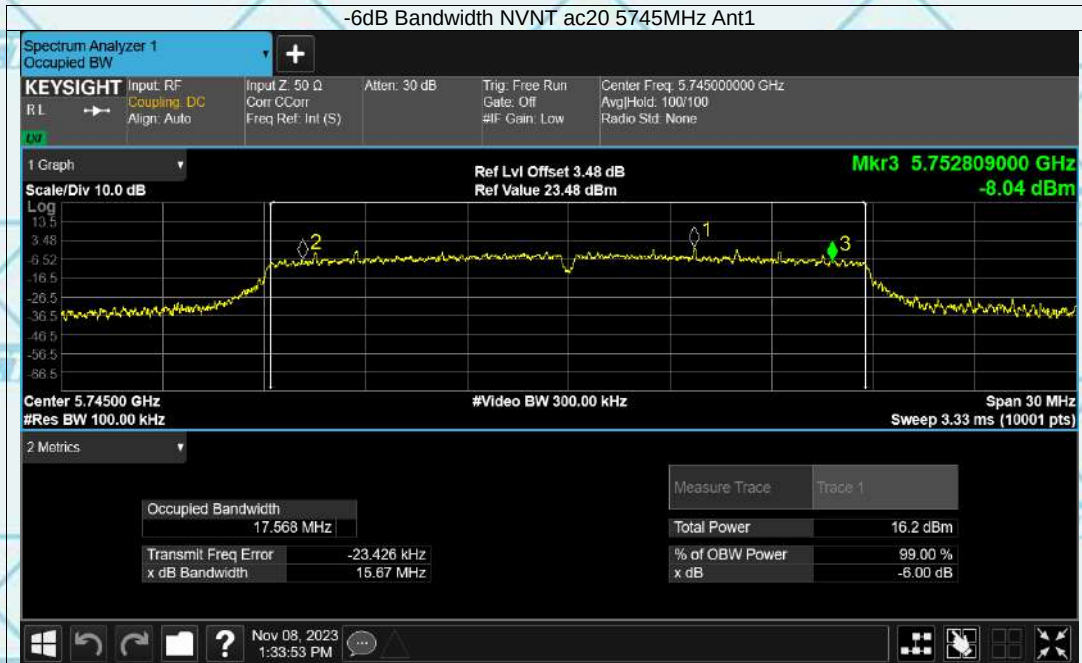




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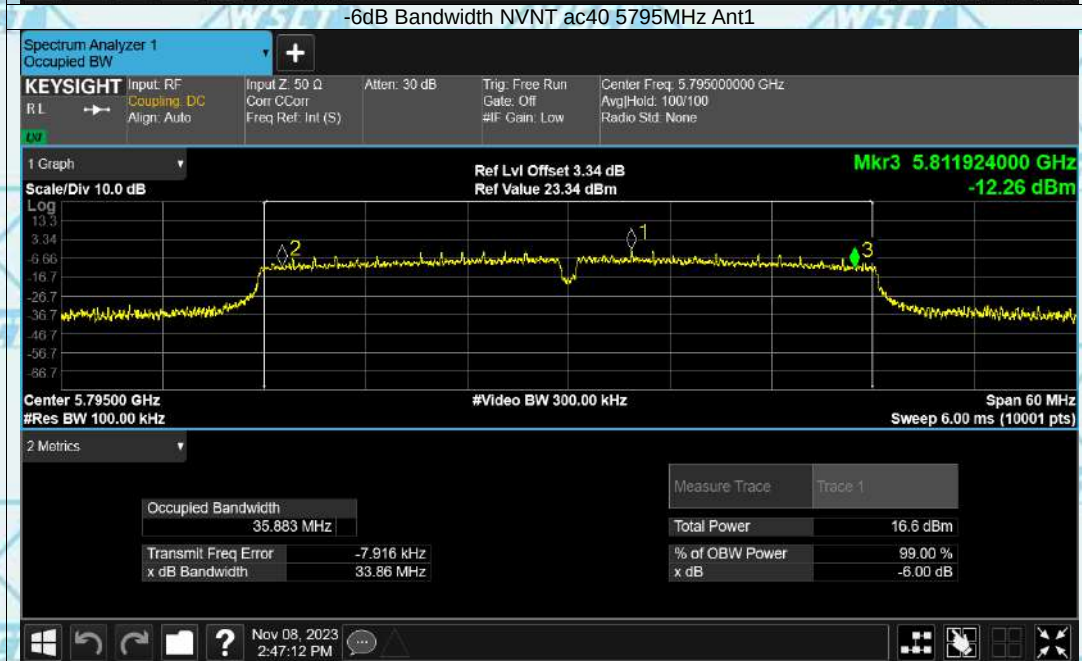
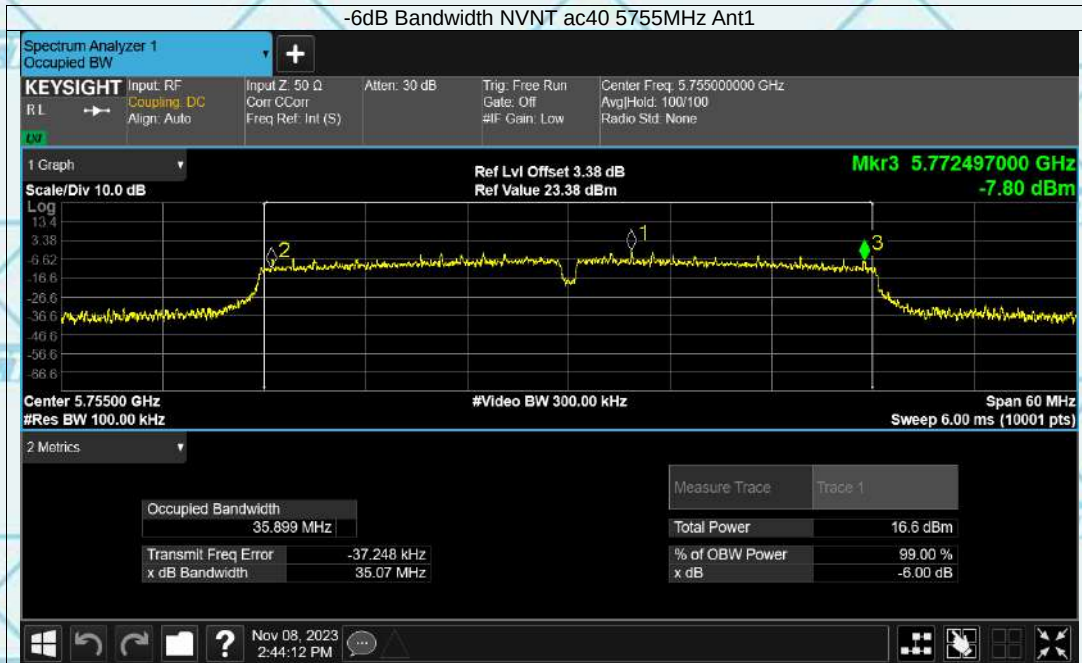




Report No.: WSCT-A2LA-R&E231000017A-Wi-Fi2

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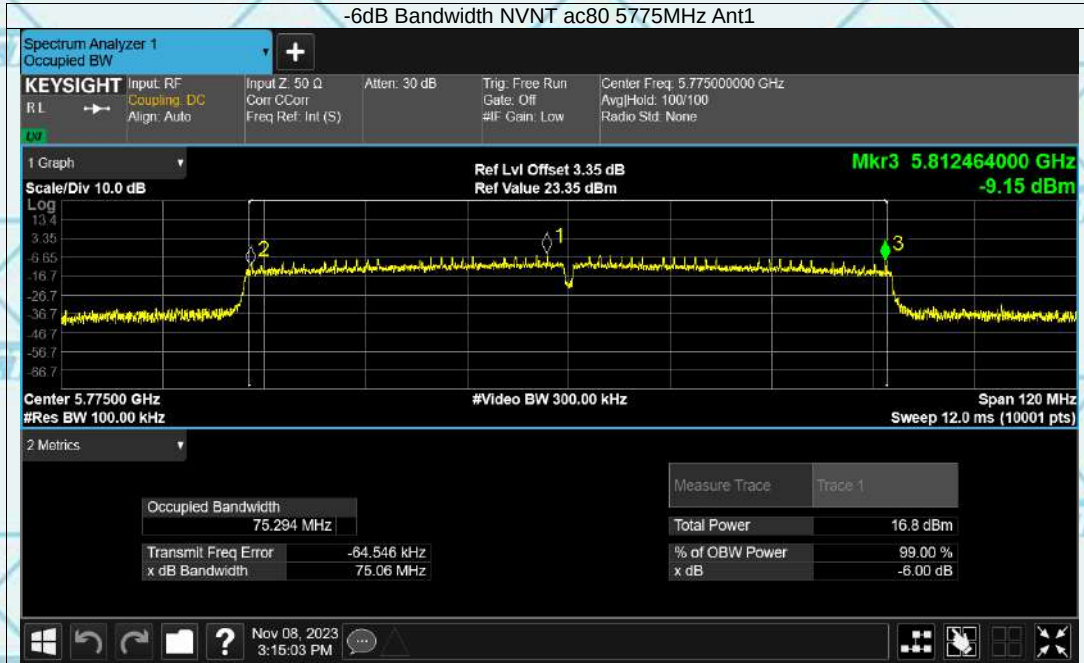




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7.6 PEAK POWER

Product	: EUT-Sample	Test Mode	: See section 3.4
Test Item	: Peak Power	Temperature	: 25 °C
Test Voltage	: DC 3.8V	Humidity	: 56%RH
Test Result	: PASS		

Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
a	5180	Ant1	10.96	24	Pass
a	5240	Ant1	10.51	24	Pass
a	5260	Ant1	9.61	24	Pass
a	5320	Ant1	10.09	24	Pass
a	5500	Ant1	9.74	24	Pass
a	5700	Ant1	11.23	24	Pass
a	5745	Ant1	11.11	30	Pass
a	5825	Ant1	11.22	30	Pass
n20	5180	Ant1	10.78	24	Pass
n20	5240	Ant1	10.08	24	Pass
n20	5260	Ant1	9.51	24	Pass
n20	5320	Ant1	9.89	24	Pass
n20	5500	Ant1	9.61	24	Pass
n20	5700	Ant1	11.19	24	Pass
n20	5745	Ant1	10.91	30	Pass
n20	5825	Ant1	11.02	30	Pass
n40	5190	Ant1	10.52	24	Pass
n40	5230	Ant1	10.28	24	Pass
n40	5270	Ant1	9.13	24	Pass
n40	5310	Ant1	9.62	24	Pass
n40	5510	Ant1	9.34	24	Pass
n40	5670	Ant1	11.19	24	Pass
n40	5755	Ant1	10.95	30	Pass
n40	5795	Ant1	10.85	30	Pass
ac20	5180	Ant1	10.82	24	Pass
ac20	5240	Ant1	10.29	24	Pass
ac20	5260	Ant1	9.43	24	Pass
ac20	5320	Ant1	10.08	24	Pass
ac20	5500	Ant1	9.53	24	Pass
ac20	5700	Ant1	11.17	24	Pass
ac20	5745	Ant1	10.91	30	Pass
ac20	5825	Ant1	11.1	30	Pass
ac40	5190	Ant1	10.45	24	Pass
ac40	5230	Ant1	10.16	24	Pass
ac40	5270	Ant1	9.2	24	Pass
ac40	5310	Ant1	9.62	24	Pass
ac40	5510	Ant1	9.32	24	Pass
ac40	5670	Ant1	11.38	24	Pass
ac40	5755	Ant1	10.91	30	Pass
ac40	5795	Ant1	10.86	30	Pass
ac80	5210	Ant1	10.13	24	Pass
ac80	5290	Ant1	9.24	24	Pass
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ac80	5610	Ant1	9.8	24	Pass
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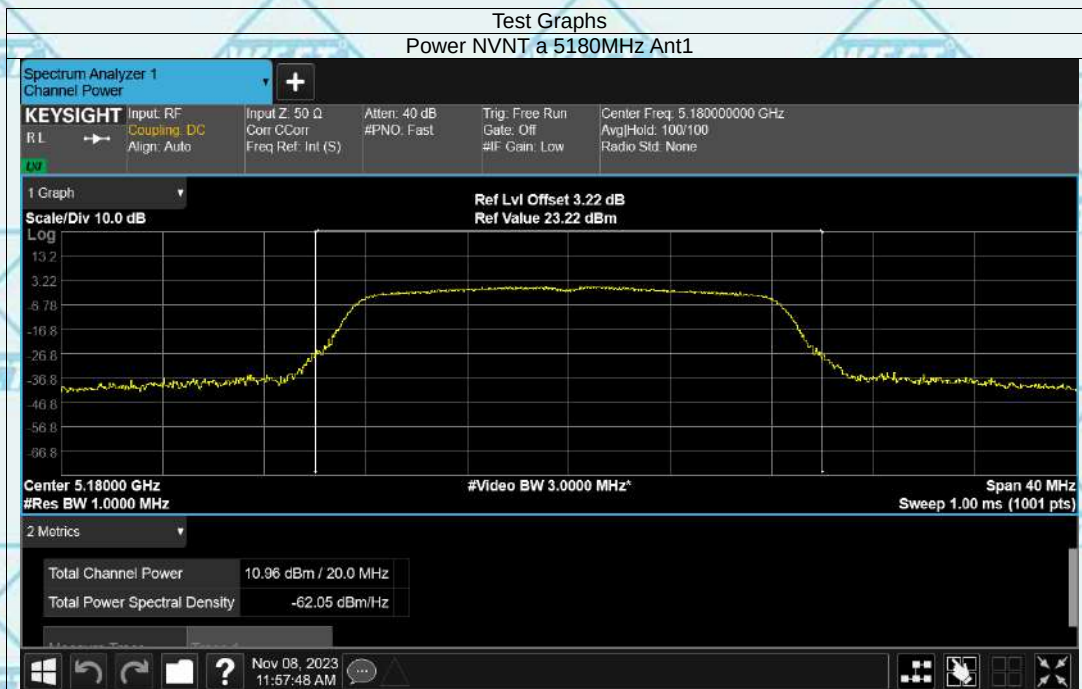
Test plots as follows:



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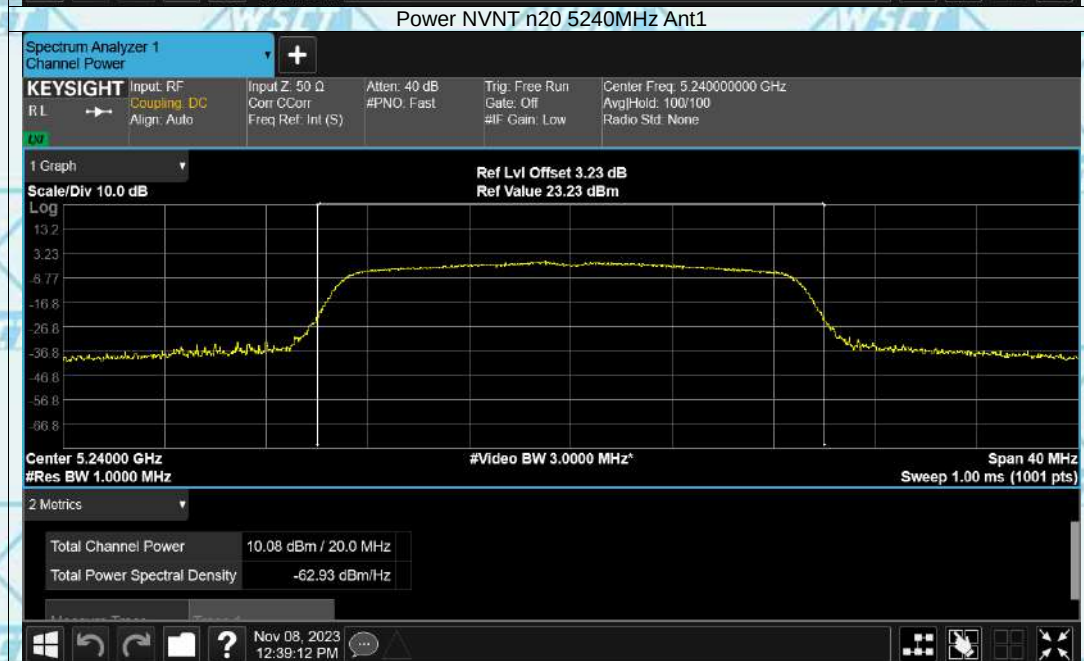
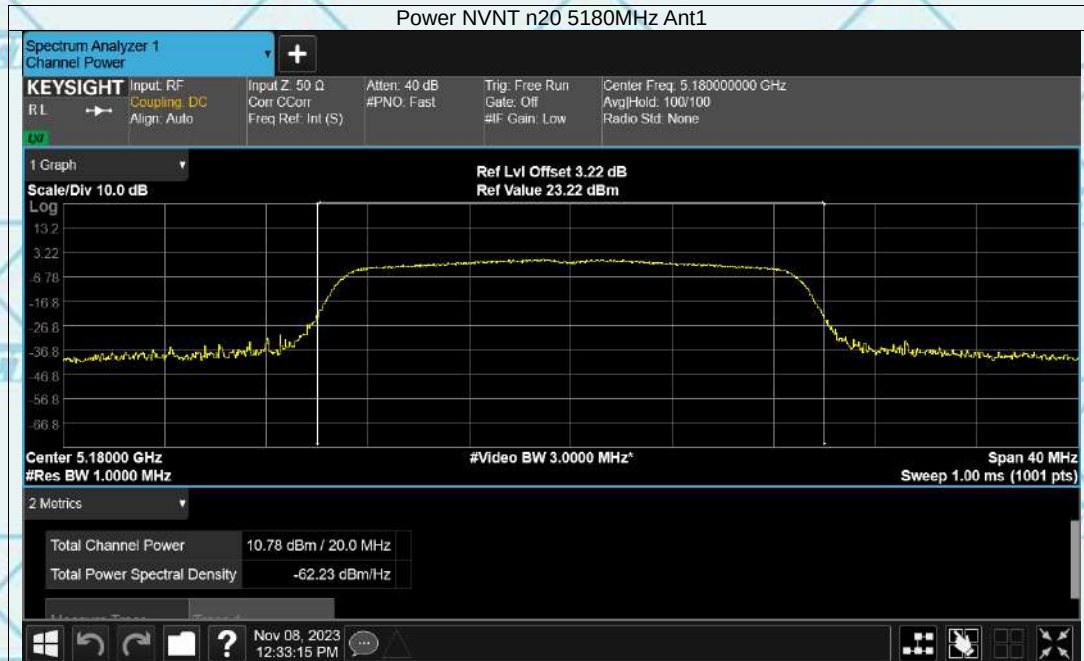




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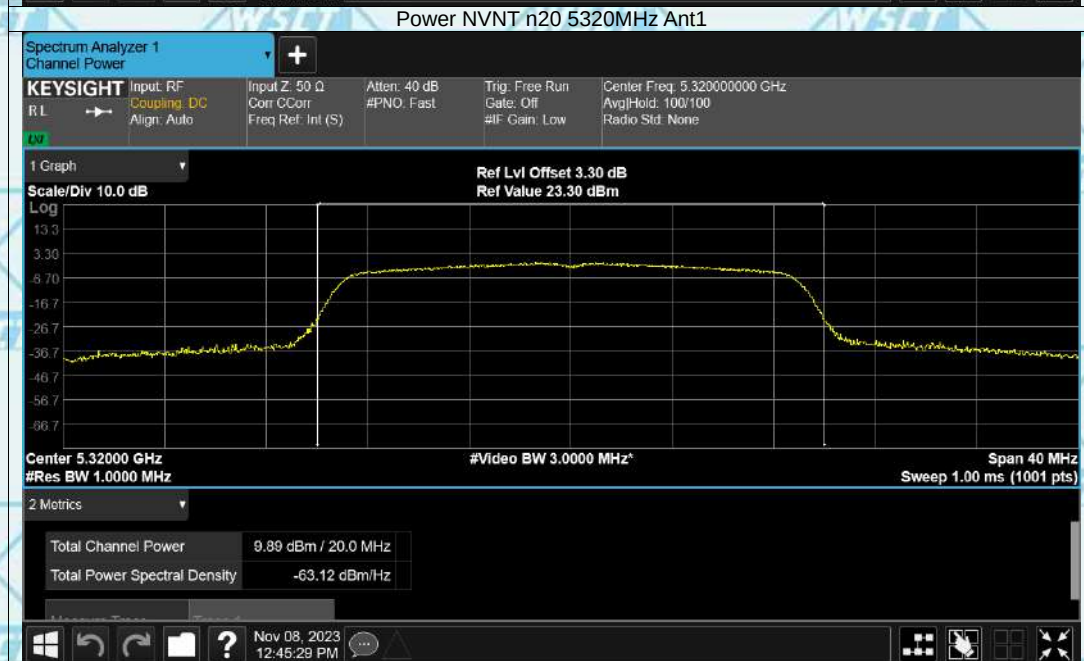
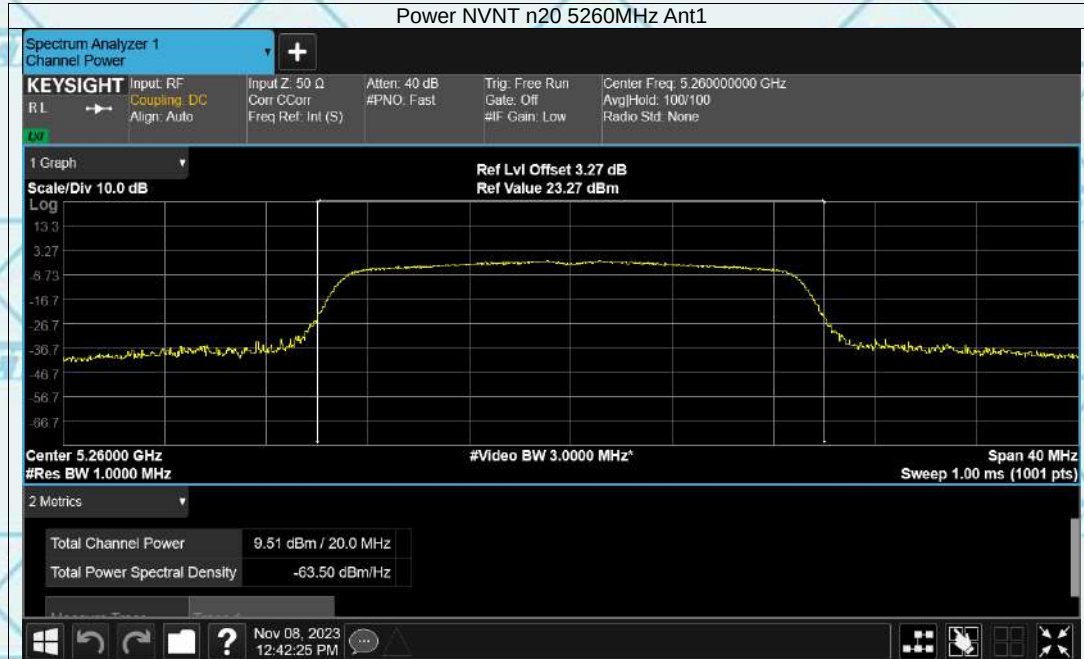
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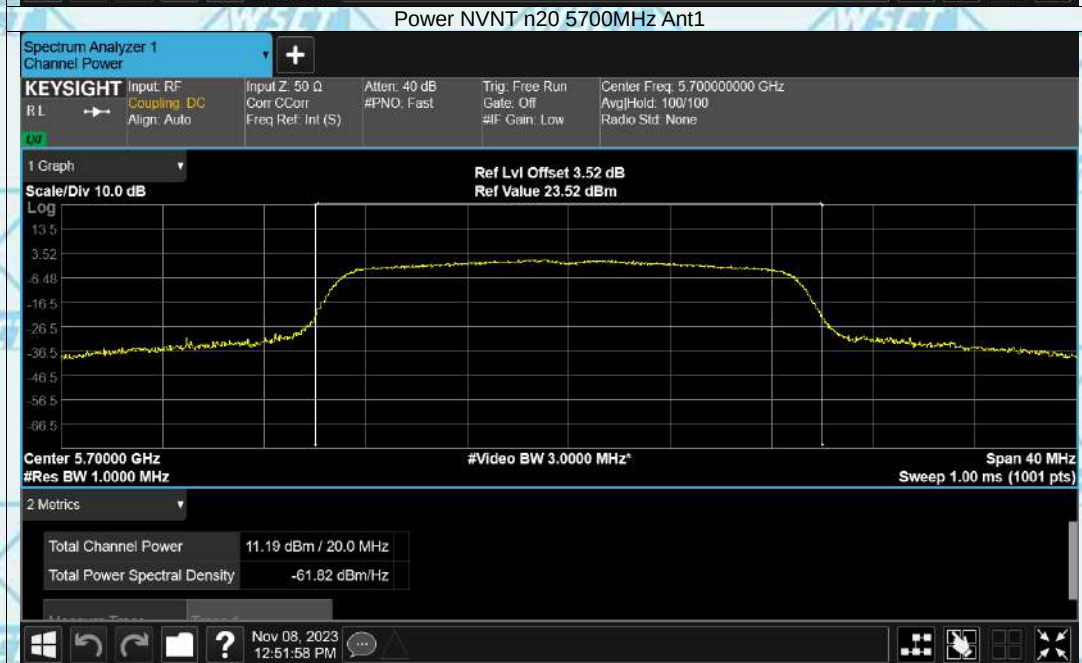
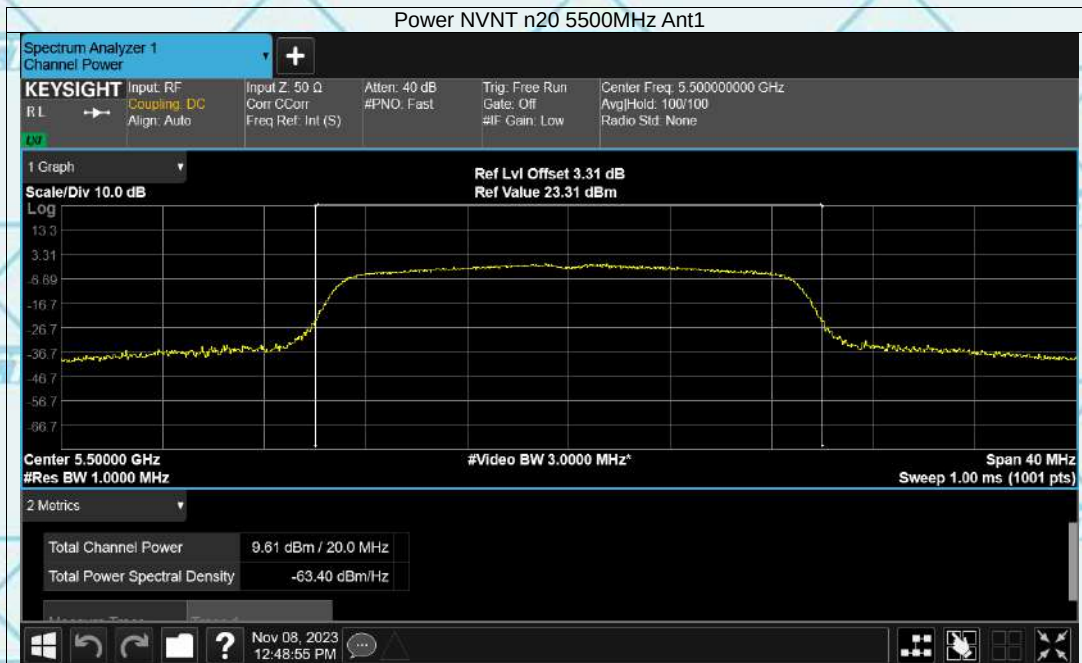
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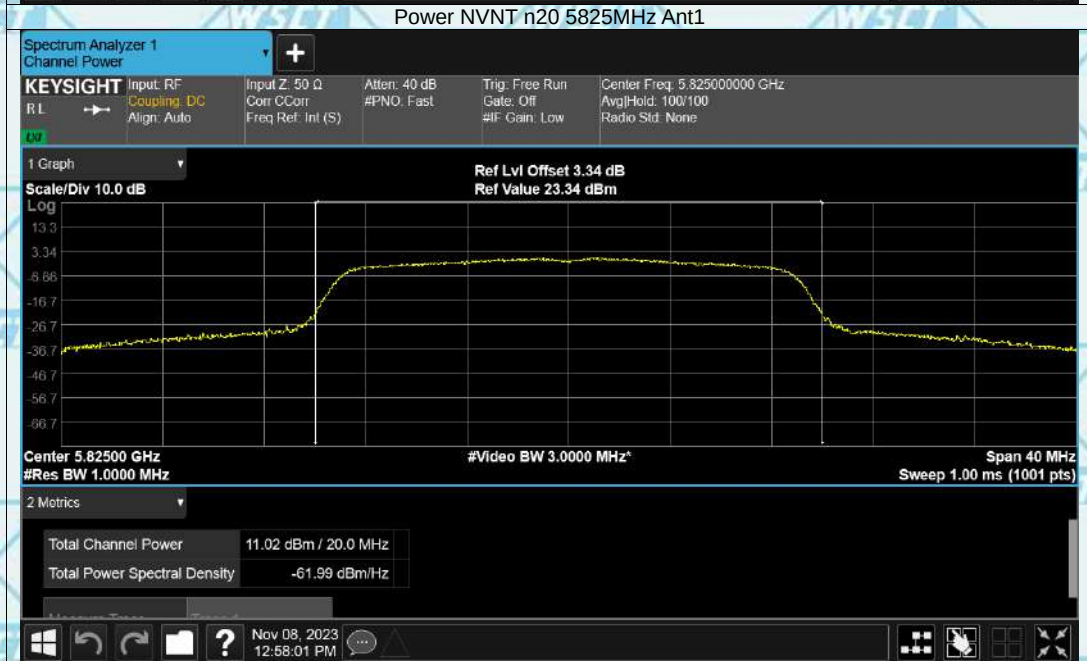
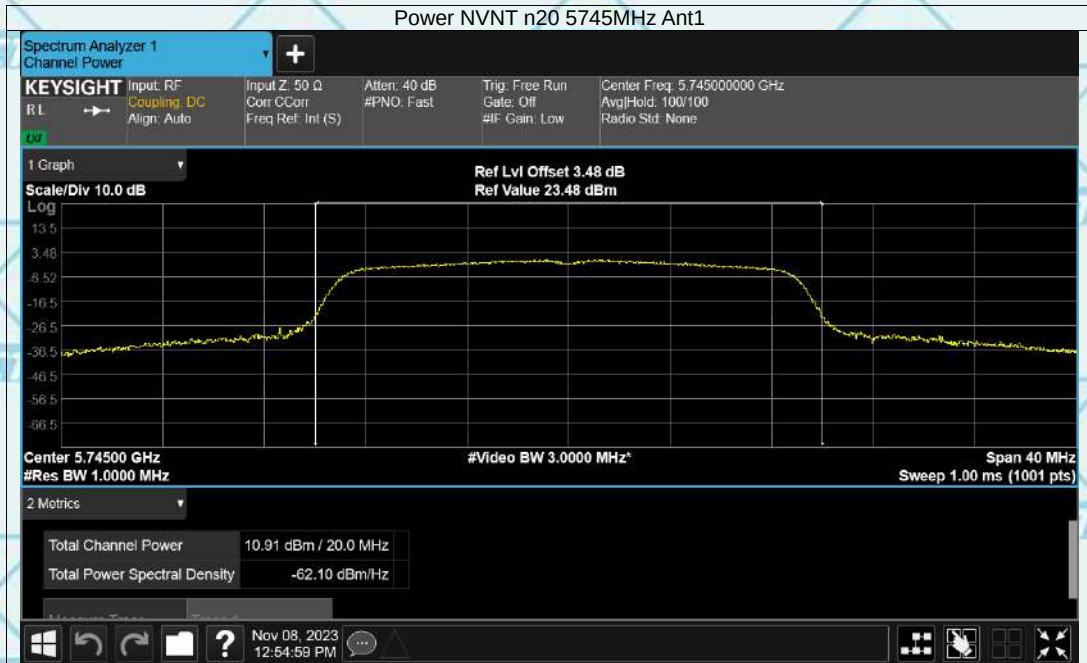




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Certificate #5768.01

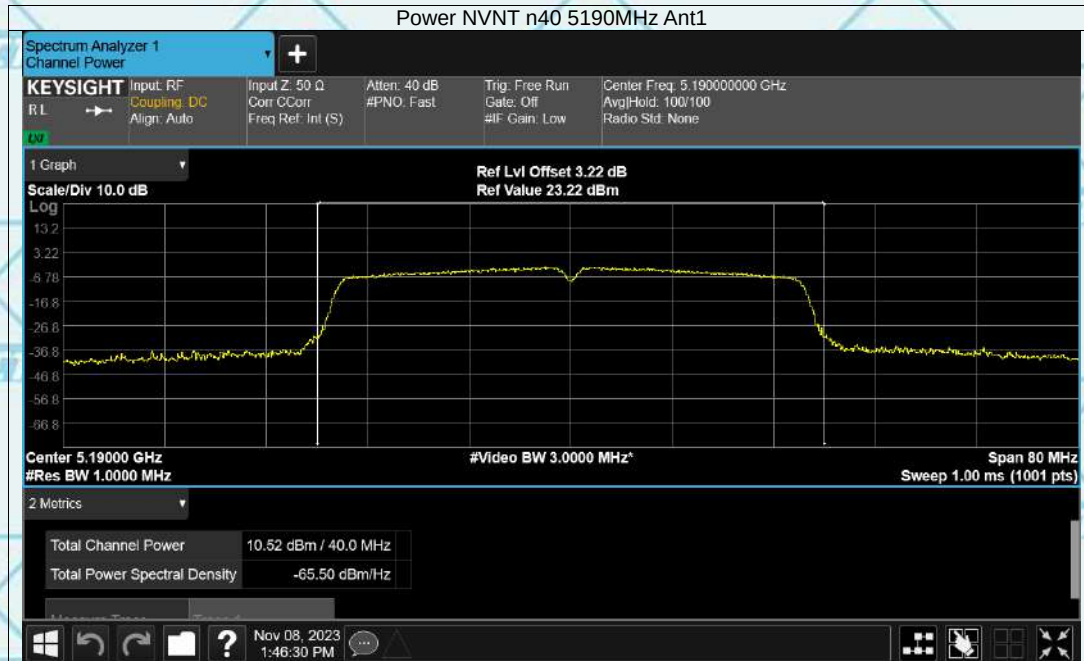
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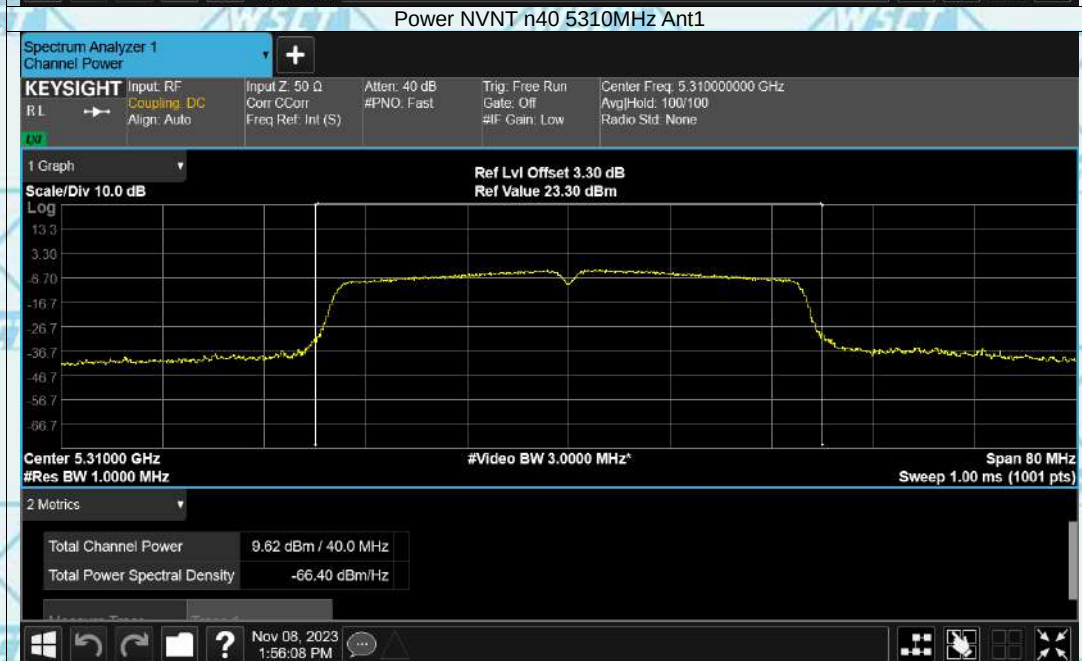
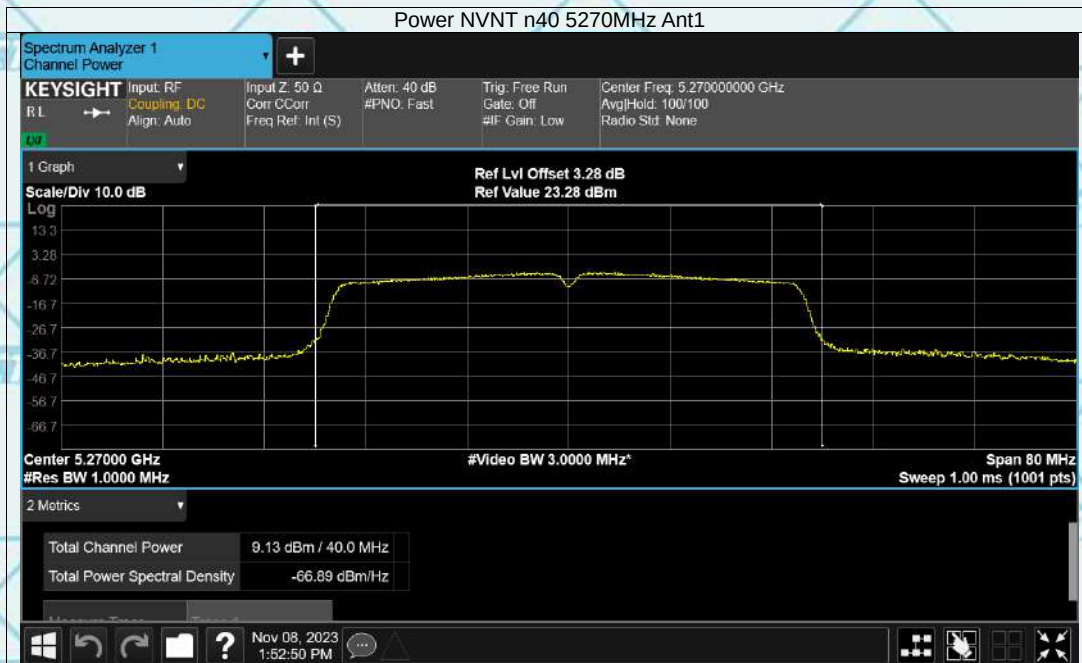
For Question,
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Certificate #5768.01

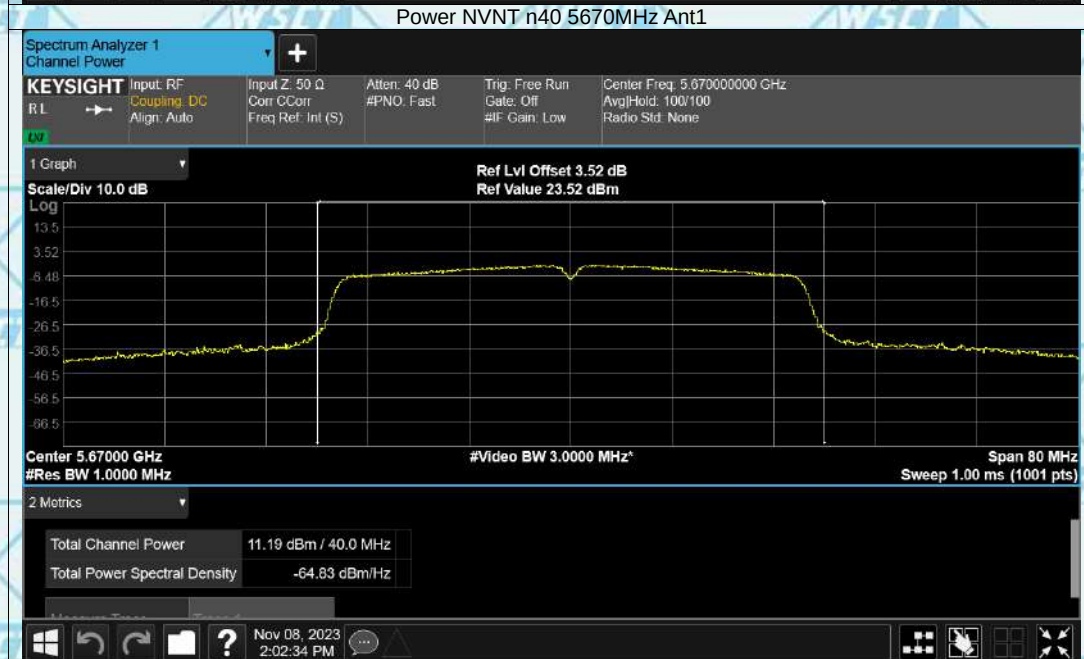
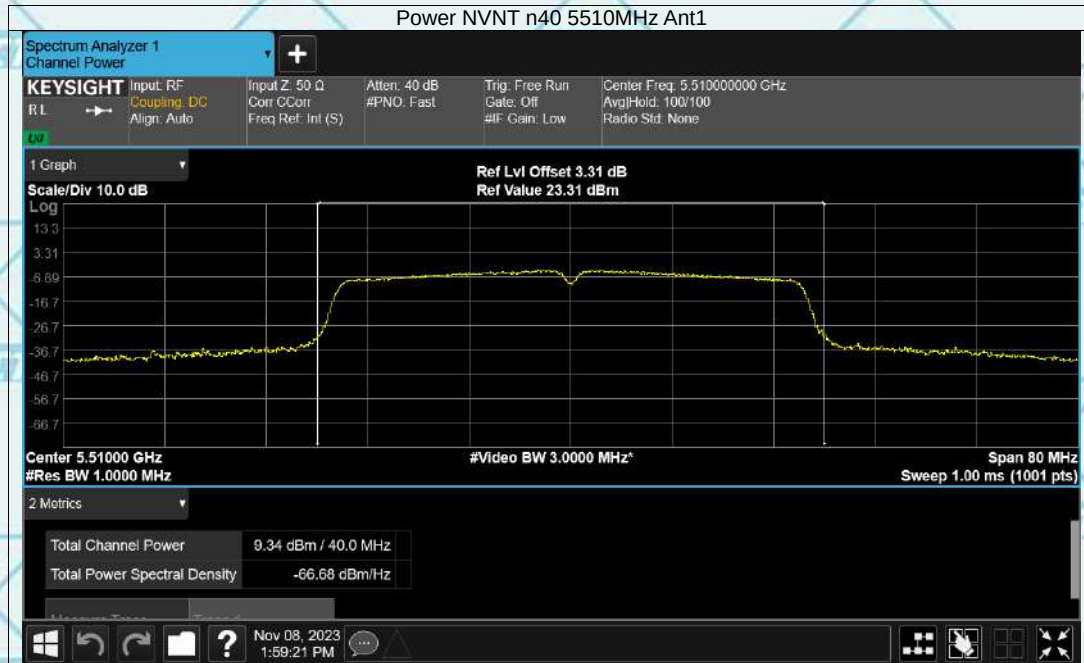
For Question,
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Certificate # 5768.01

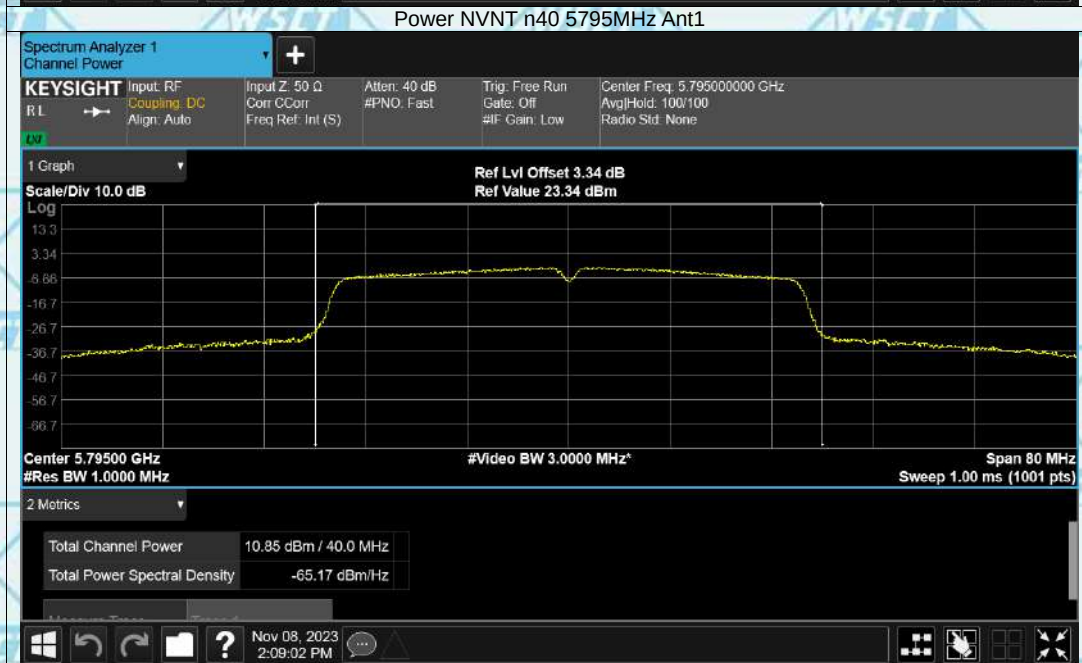
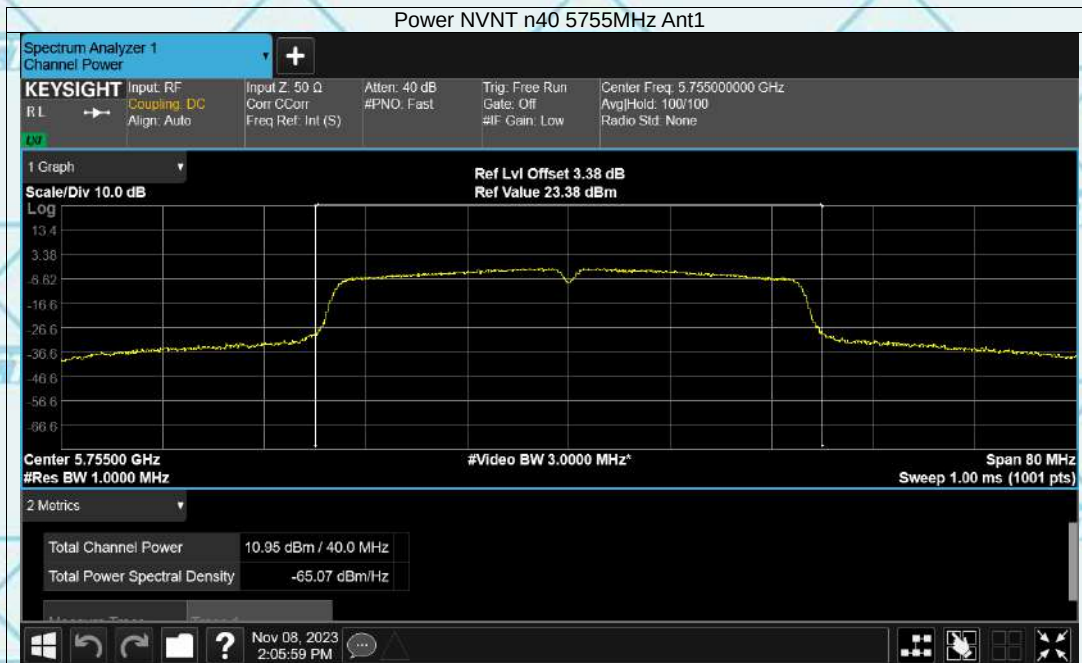
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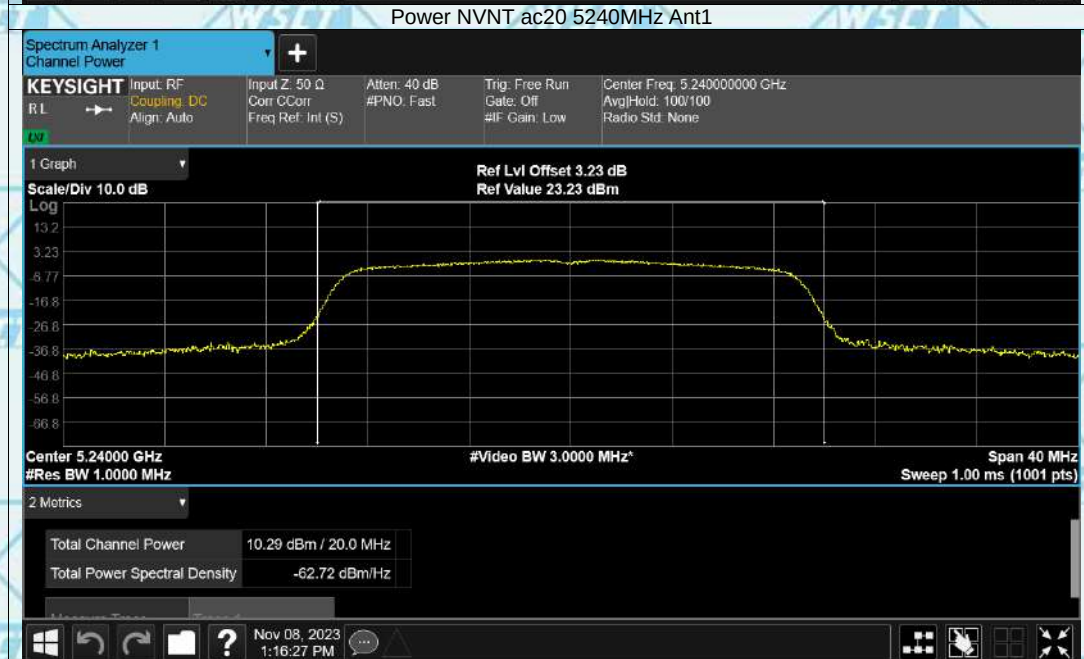
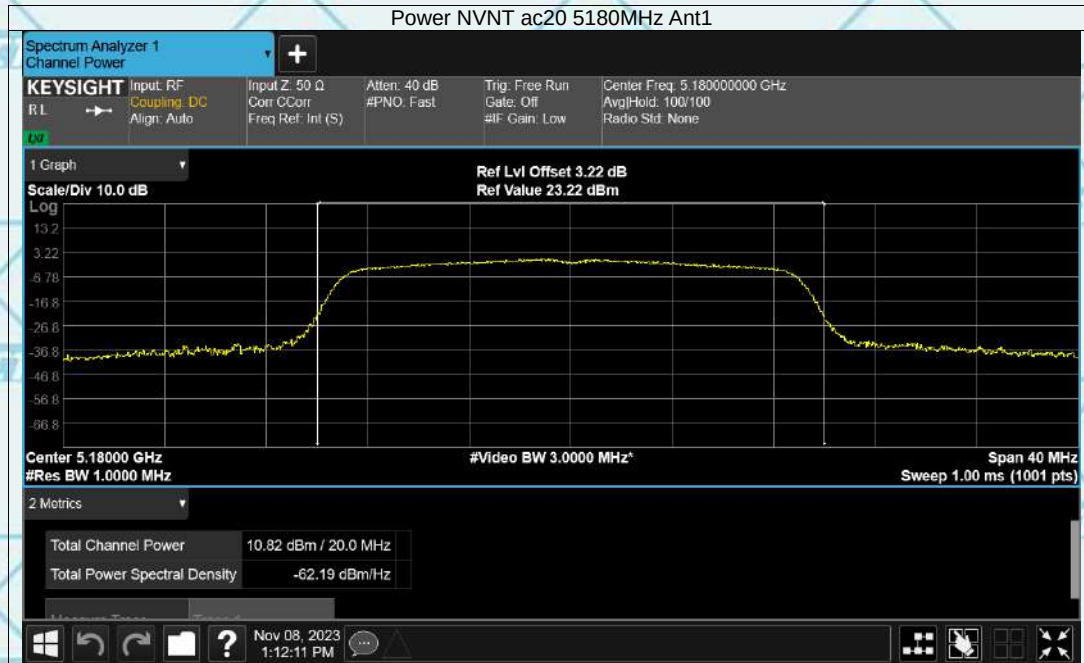
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Certificate # 5768.01

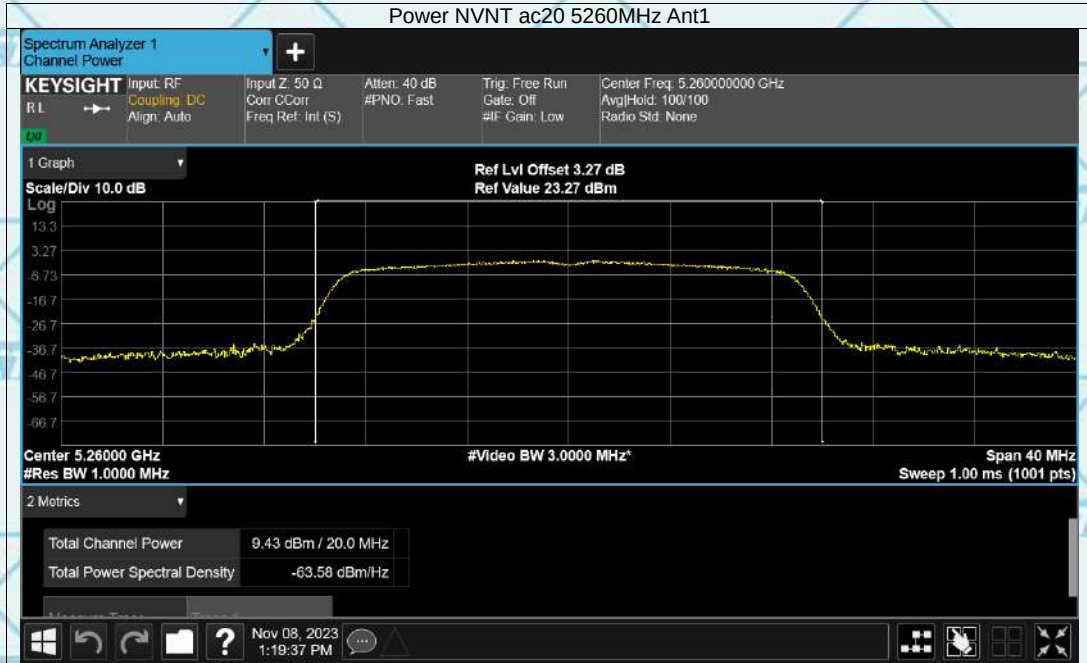
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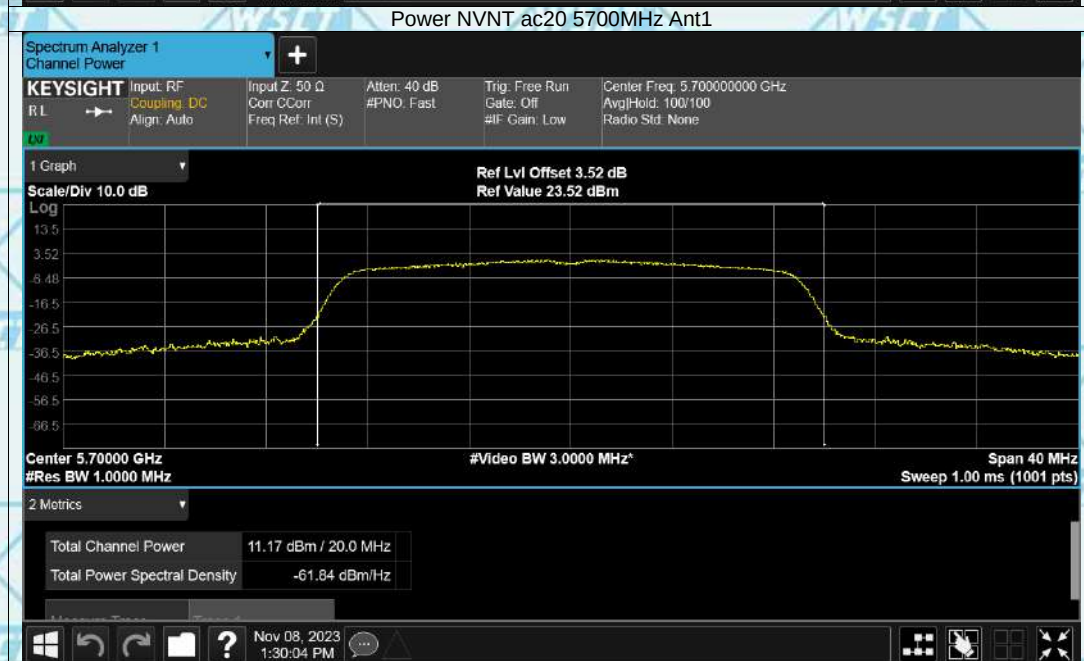
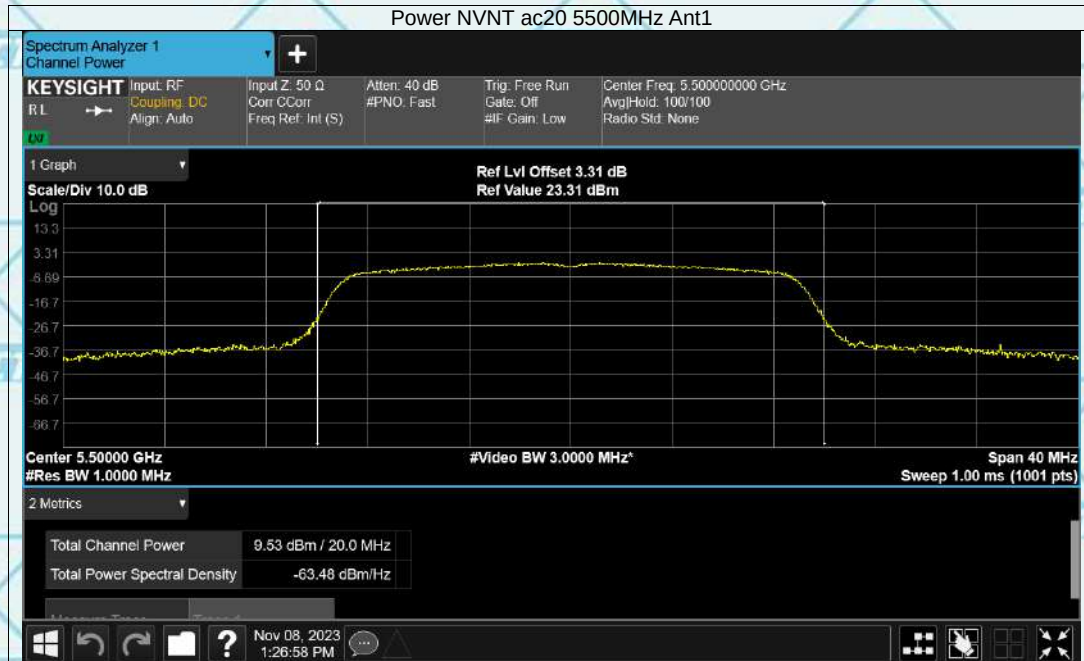
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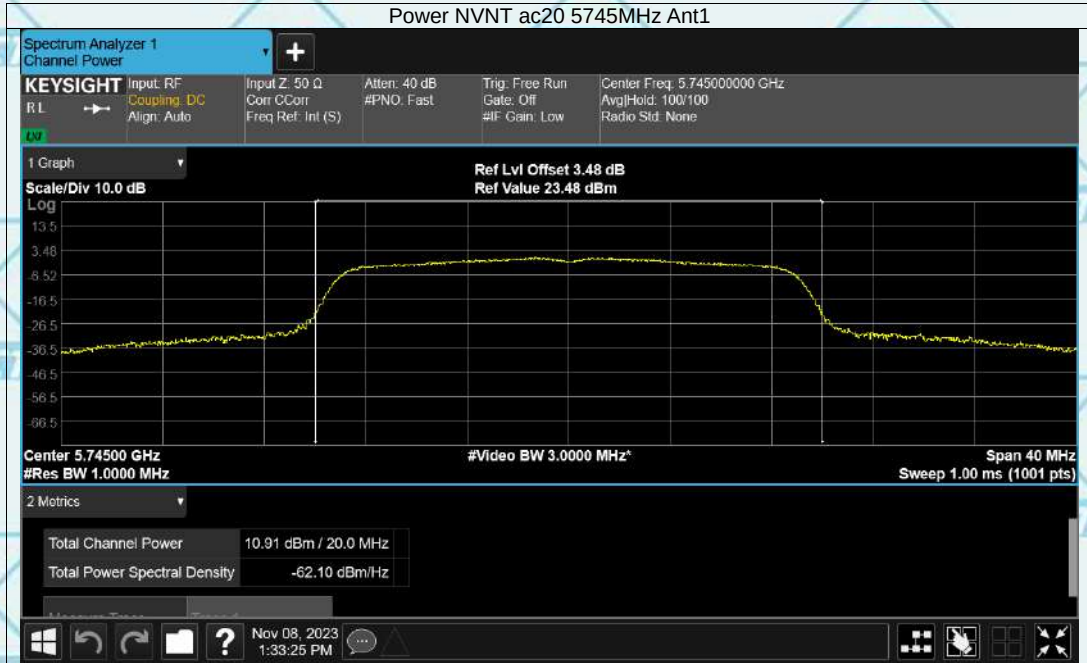
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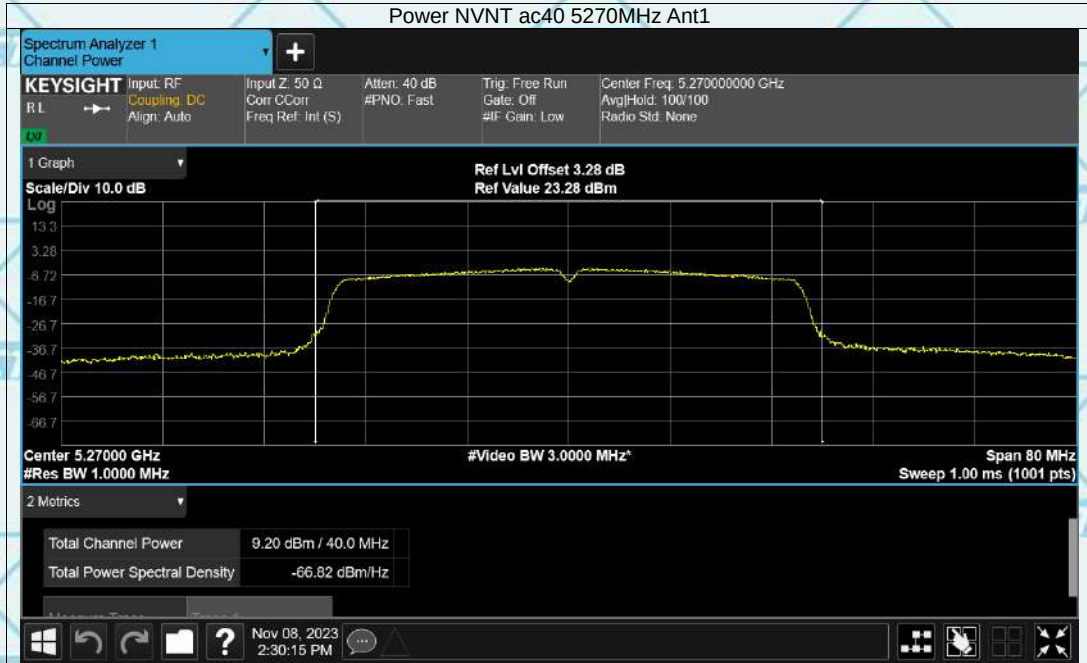




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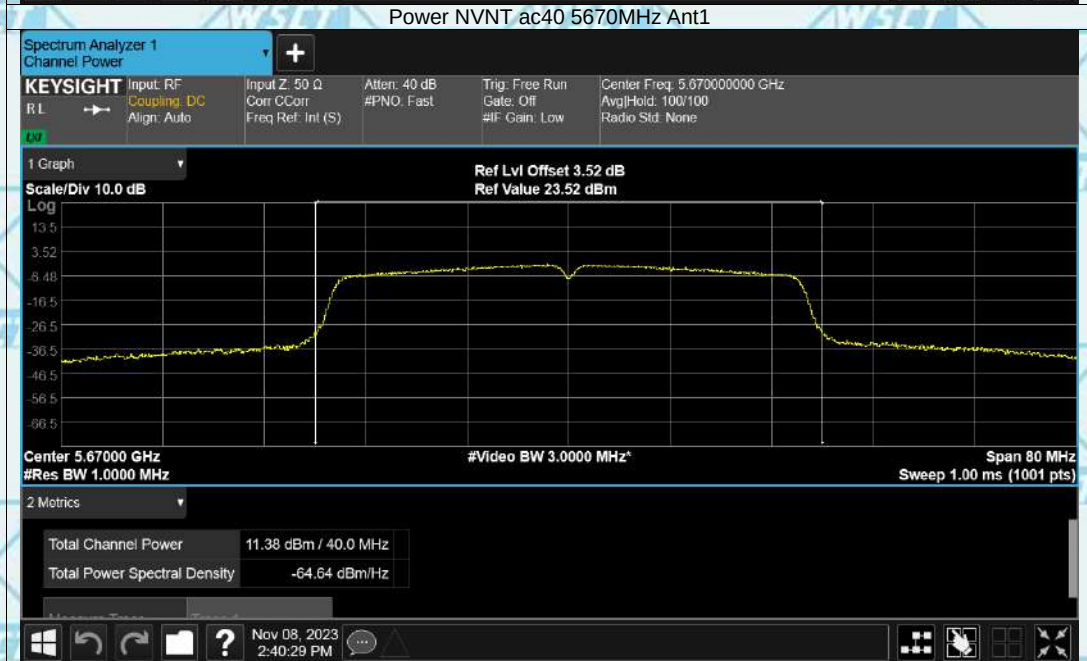
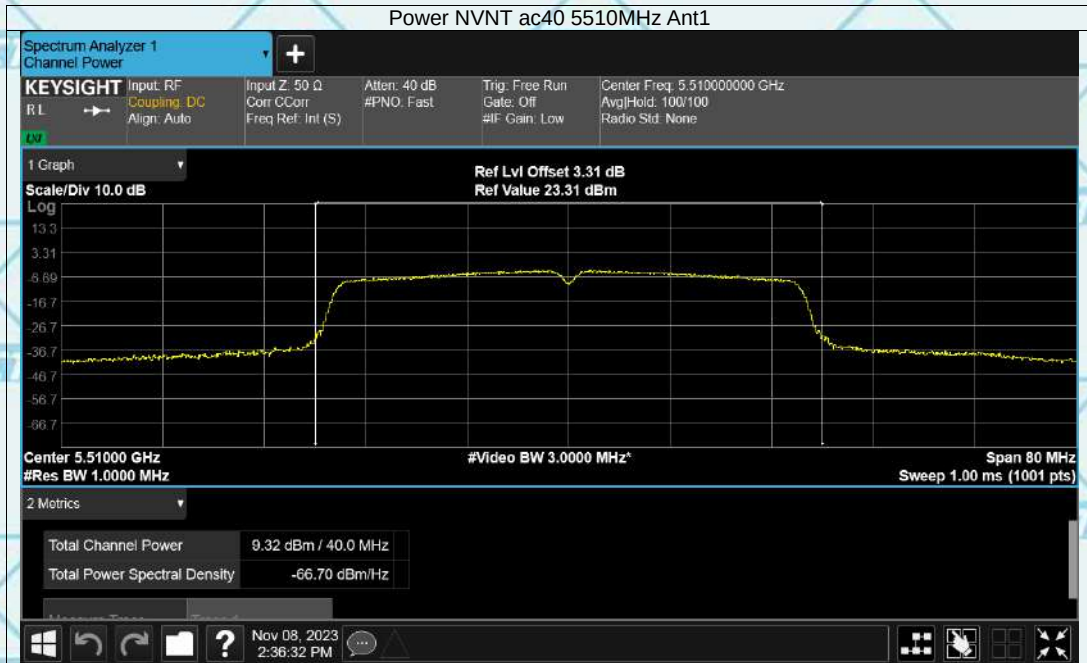




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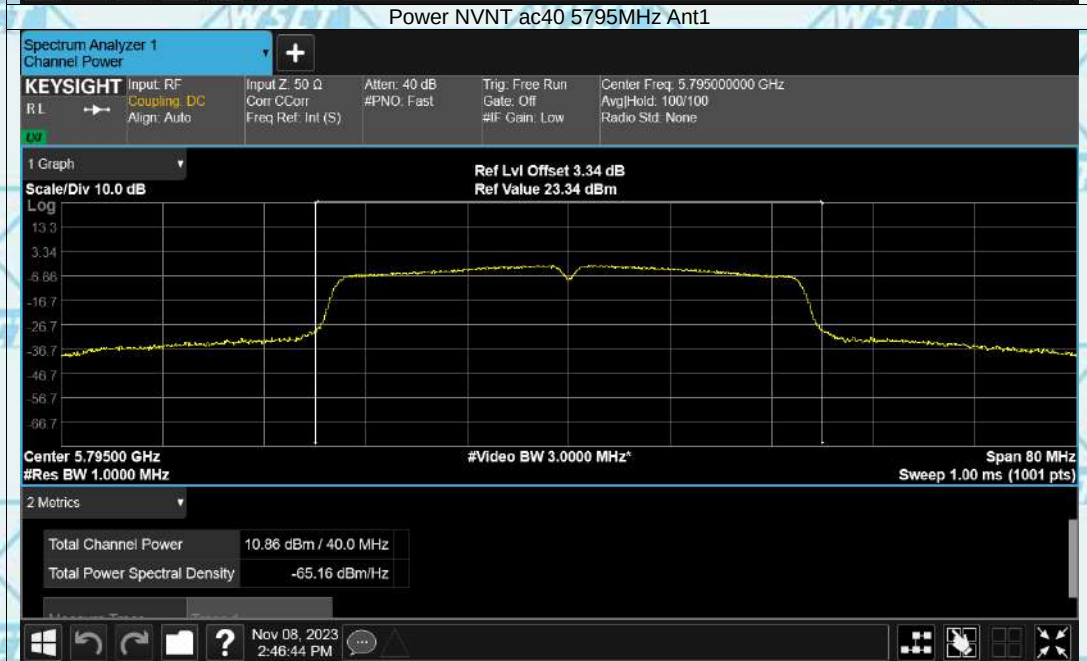




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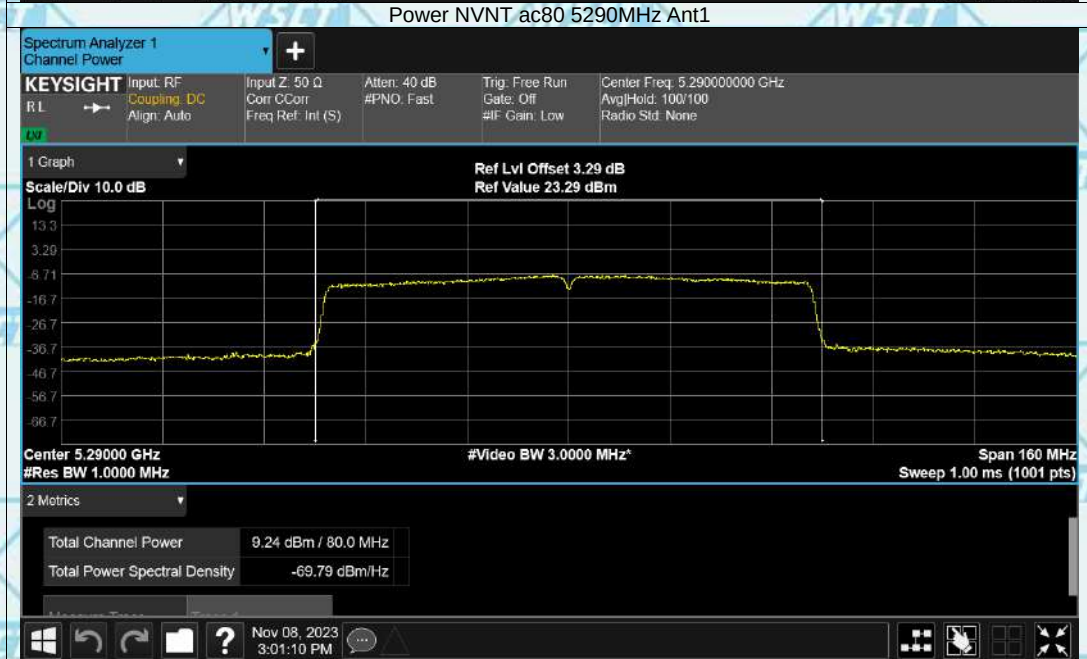
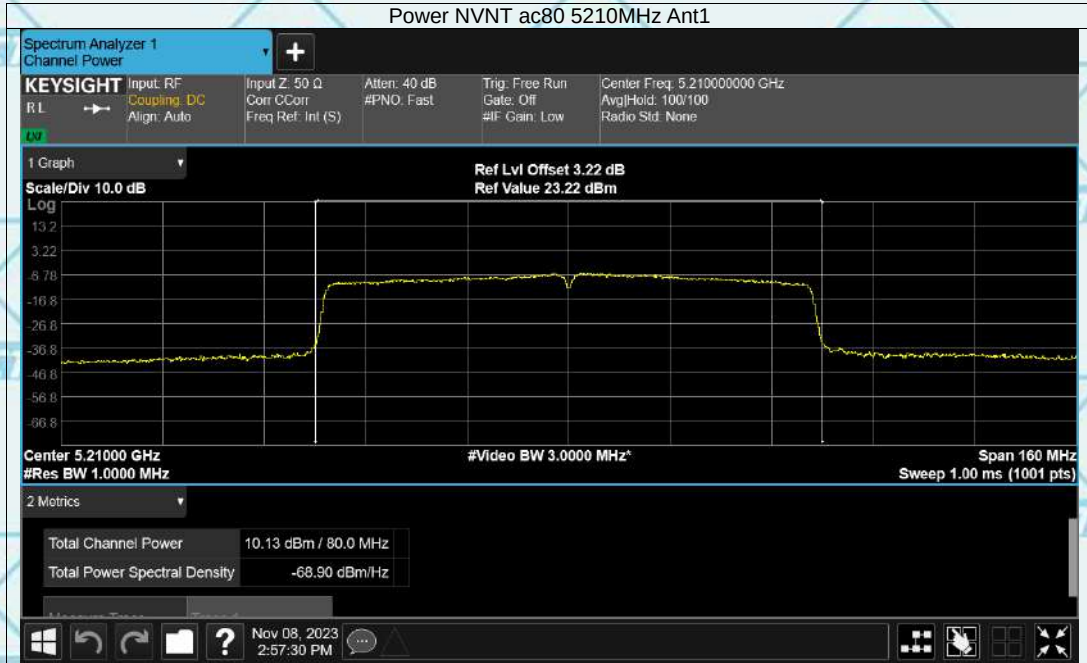




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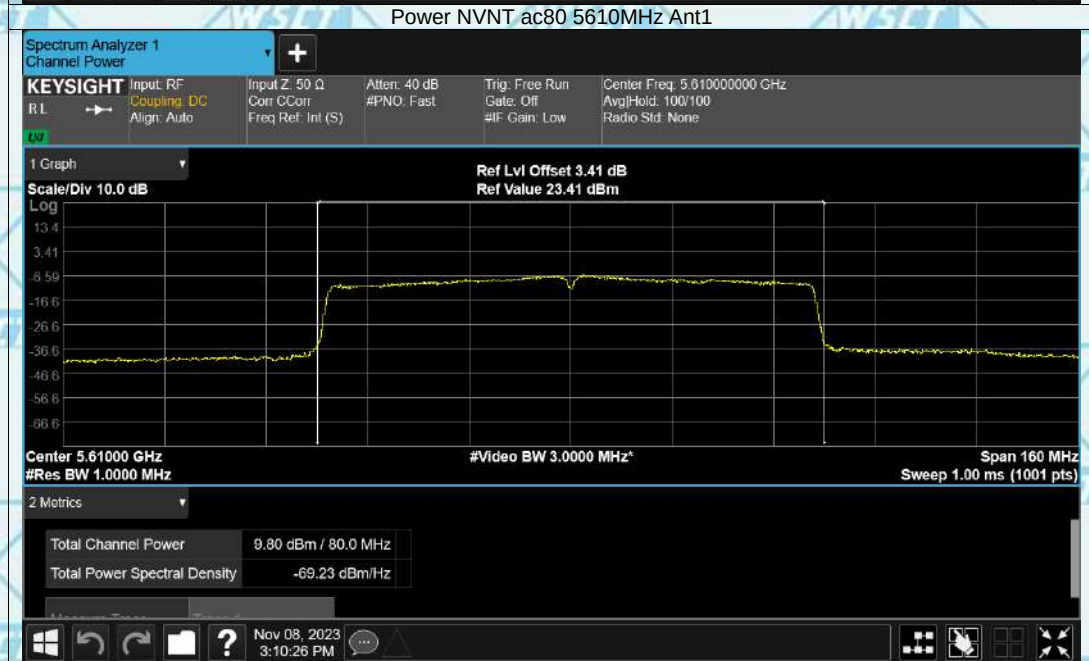
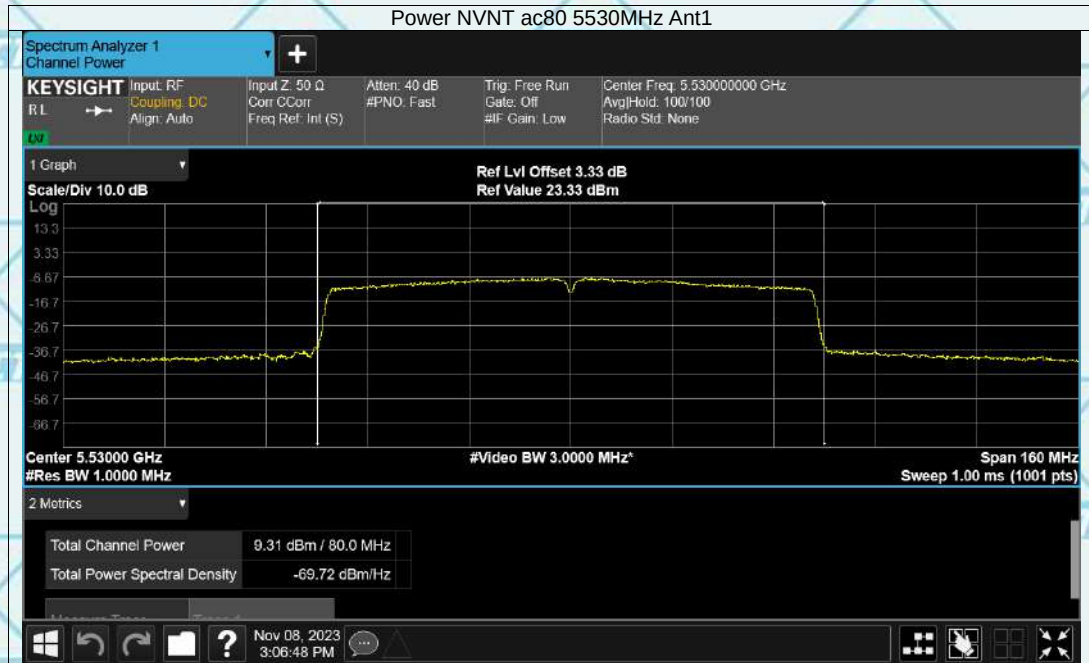
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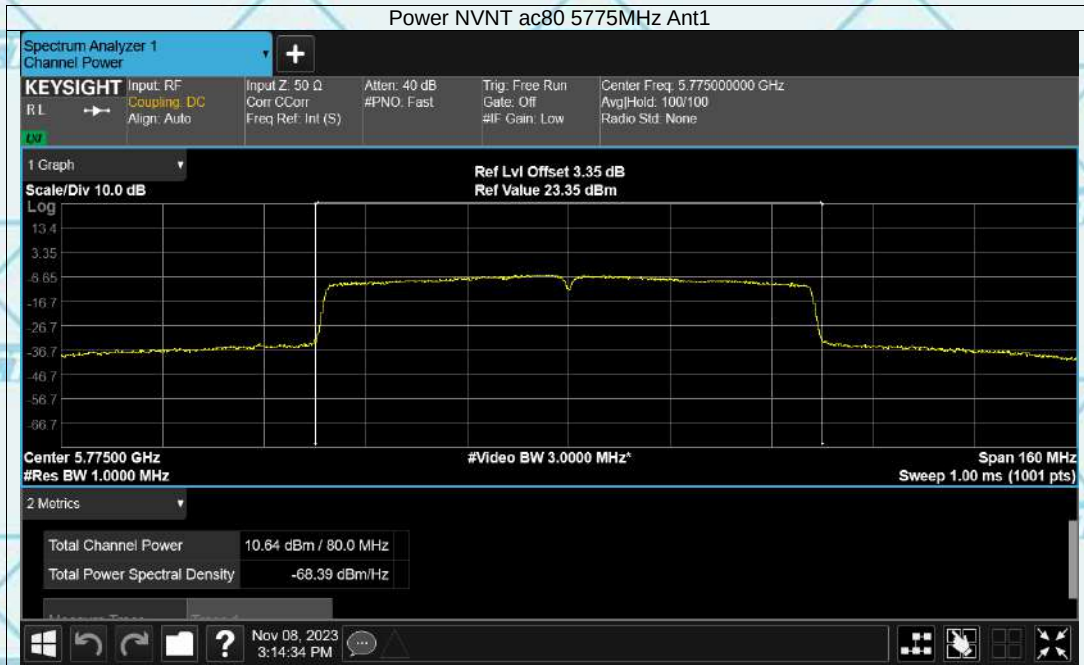
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7.7 PEAK POWER SPECTRAL DENSITY

Product	: EUT-Sample	Test Mode	: See section 3.4
Test Item	: Peak Power Spectral Density	Temperature	: 25 °C
Test Voltage	: DC 3.8V	Humidity	: 56%RH
Test Result	: PASS		

Mode	Frequency (MHz)	Antenna	Total PSD (dBm)	Limit (dBm)	Verdict
a	5180	Ant1	0.9	11	Pass
a	5240	Ant1	0.88	11	Pass
a	5260	Ant1	-0.12	11	Pass
a	5320	Ant1	0.45	11	Pass
a	5500	Ant1	0.09	11	Pass
a	5700	Ant1	1.01	11	Pass
a	5745	Ant1	-1.68	30	Pass
a	5825	Ant1	-1.64	30	Pass
n20	5180	Ant1	0.54	11	Pass
n20	5240	Ant1	0.2	11	Pass
n20	5260	Ant1	-0.4	11	Pass
n20	5320	Ant1	0.29	11	Pass
n20	5500	Ant1	-0.23	11	Pass
n20	5700	Ant1	0.72	11	Pass
n20	5745	Ant1	-2.33	30	Pass
n20	5825	Ant1	-2.03	30	Pass
n40	5190	Ant1	-2.18	11	Pass
n40	5230	Ant1	-2.29	11	Pass
n40	5270	Ant1	-3.56	11	Pass
n40	5310	Ant1	-2.99	11	Pass
n40	5510	Ant1	-3.32	11	Pass
n40	5670	Ant1	-1.05	11	Pass
n40	5755	Ant1	-4.89	30	Pass
n40	5795	Ant1	-4.96	30	Pass
ac20	5180	Ant1	0.9	11	Pass
ac20	5240	Ant1	0.44	11	Pass
ac20	5260	Ant1	-0.33	11	Pass
ac20	5320	Ant1	0.3	11	Pass
ac20	5500	Ant1	0.04	11	Pass
ac20	5700	Ant1	1.02	11	Pass
ac20	5745	Ant1	-2.4	30	Pass
ac20	5825	Ant1	-1.97	30	Pass
ac40	5190	Ant1	-2.23	11	Pass
ac40	5230	Ant1	-2.61	11	Pass
ac40	5270	Ant1	-3.65	11	Pass
ac40	5310	Ant1	-2.93	11	Pass
ac40	5510	Ant1	-3.26	11	Pass
ac40	5670	Ant1	-1.38	11	Pass
ac40	5755	Ant1	-4.93	30	Pass
ac40	5795	Ant1	-5.29	30	Pass
ac80	5210	Ant1	-5.57	11	Pass
ac80	5290	Ant1	-6.61	11	Pass
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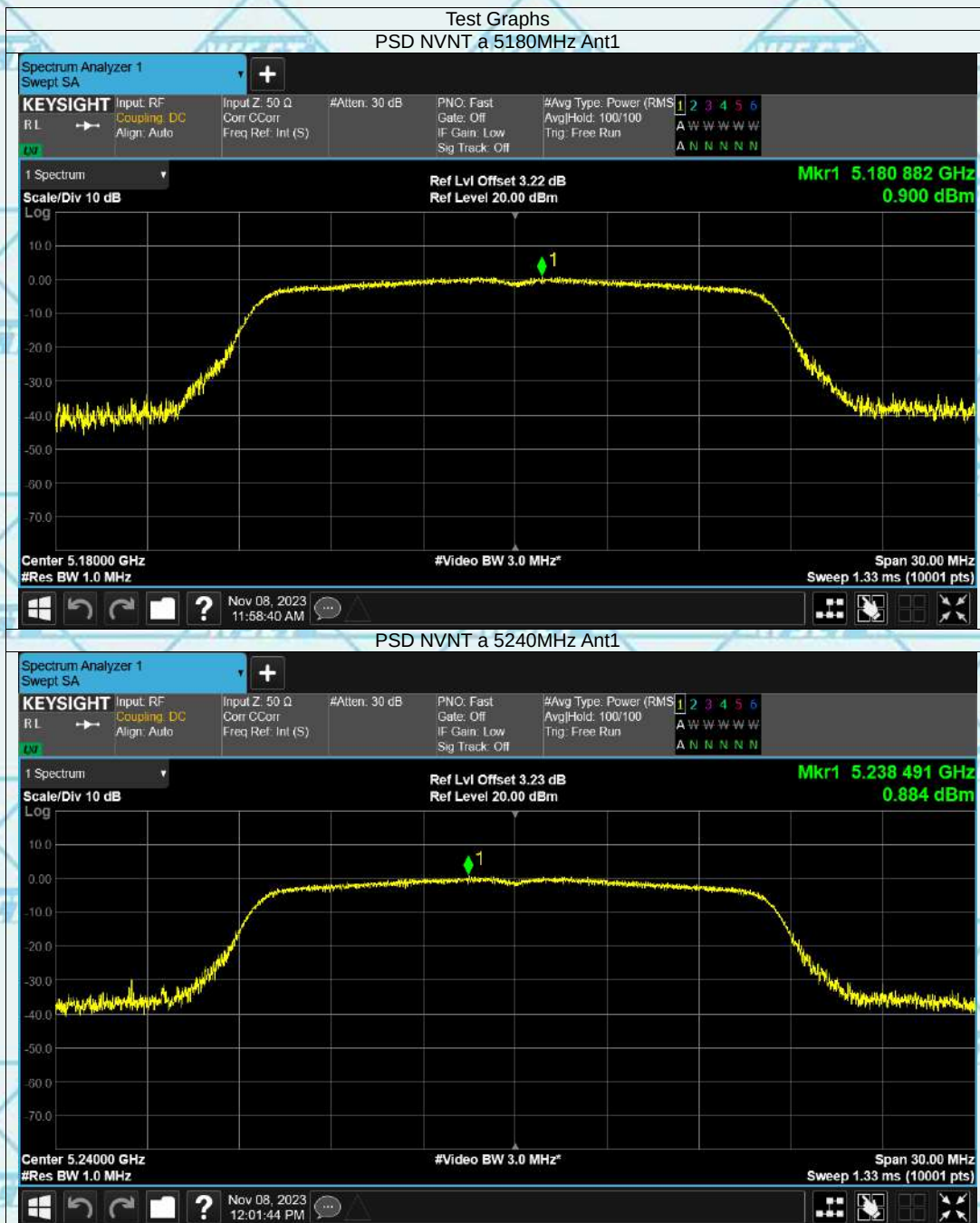
Test plots as follows:



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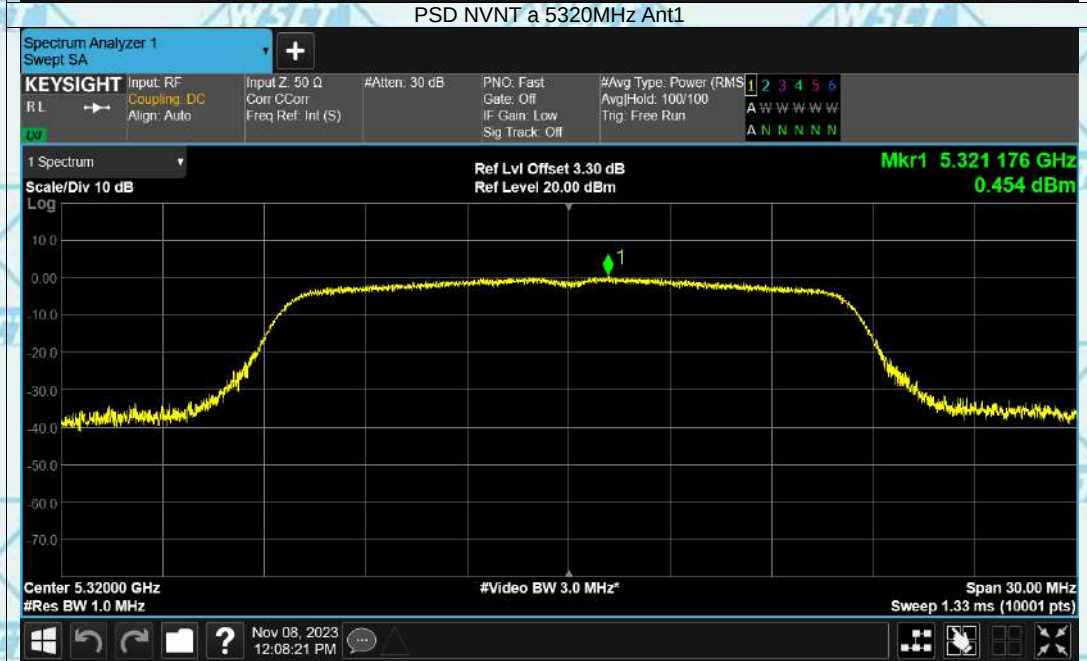
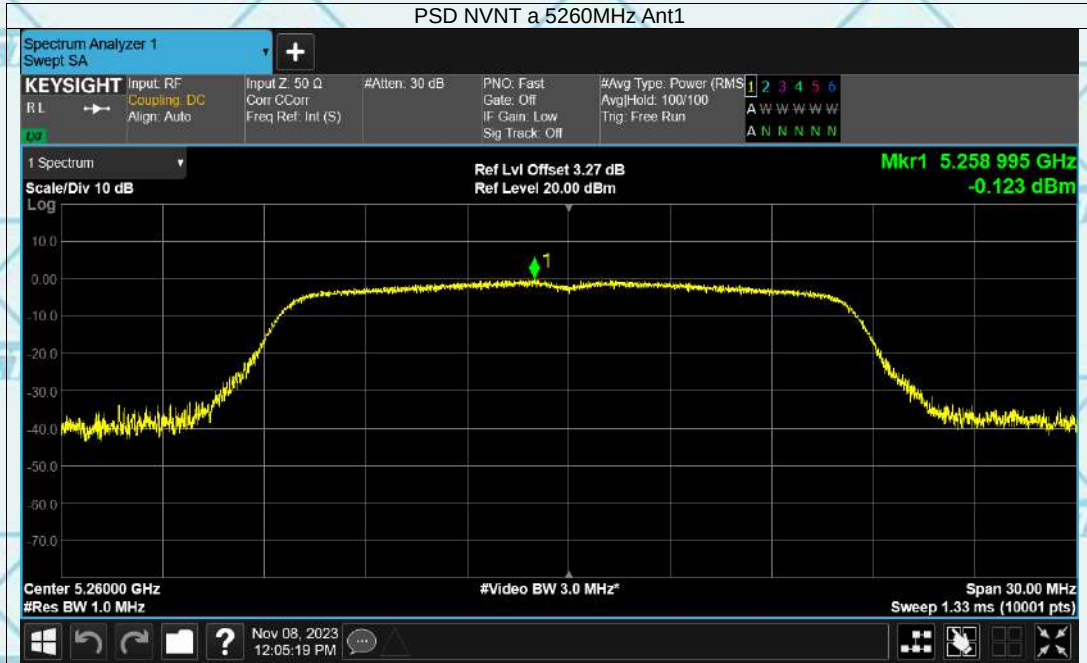




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