

TEST REPORT

Report No.: BCTC2311784373-4E

Applicant: NINGBO AUDITORYWORKS CO., LTD.

Product Name: OPS PC

Model/Type
Reference: AW-OPS11W-I7P

Tested Date: 2023-11-20 to 2023-11-24

Issued Date: 2023-11-24



Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2BAHR-OPS11W

Product Name: OPS PC

Trademark: N/A

Model/Type Reference: AW-OPS11W-I7P
AW-OPS11W-I7, AW-OPS11W-I7T, AW-OPS12W-I7P

Prepared For: NINGBO AUDITORYWORKS CO., LTD.

Address: 3-314 Lingqiao Road 229, Haishu District, Ningbo City, Zhejiang Province, China

Manufacturer: NINGBO AUDITORYWORKS CO., LTD.

Address: 3-314 Lingqiao Road 229, Haishu District, Ningbo City, Zhejiang Province, China

Prepared By: Shenzhen BCTC Testing Co., Ltd.

Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Sample Received Date: 2023-11-20

Sample Tested Date: 2023-11-20 to 2023-11-24

Issue Date: 2023-11-24

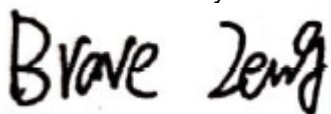
Report No.: BCTC2311784373-4E

Test Standards: FCC Part15 15.407
ANSI C63.10-2013
KDB 662911 D01 v02r01
KDB 789033 D02 v02r01

Test Results: PASS

Remark: This is WIFI-5GHz band radio test report.

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

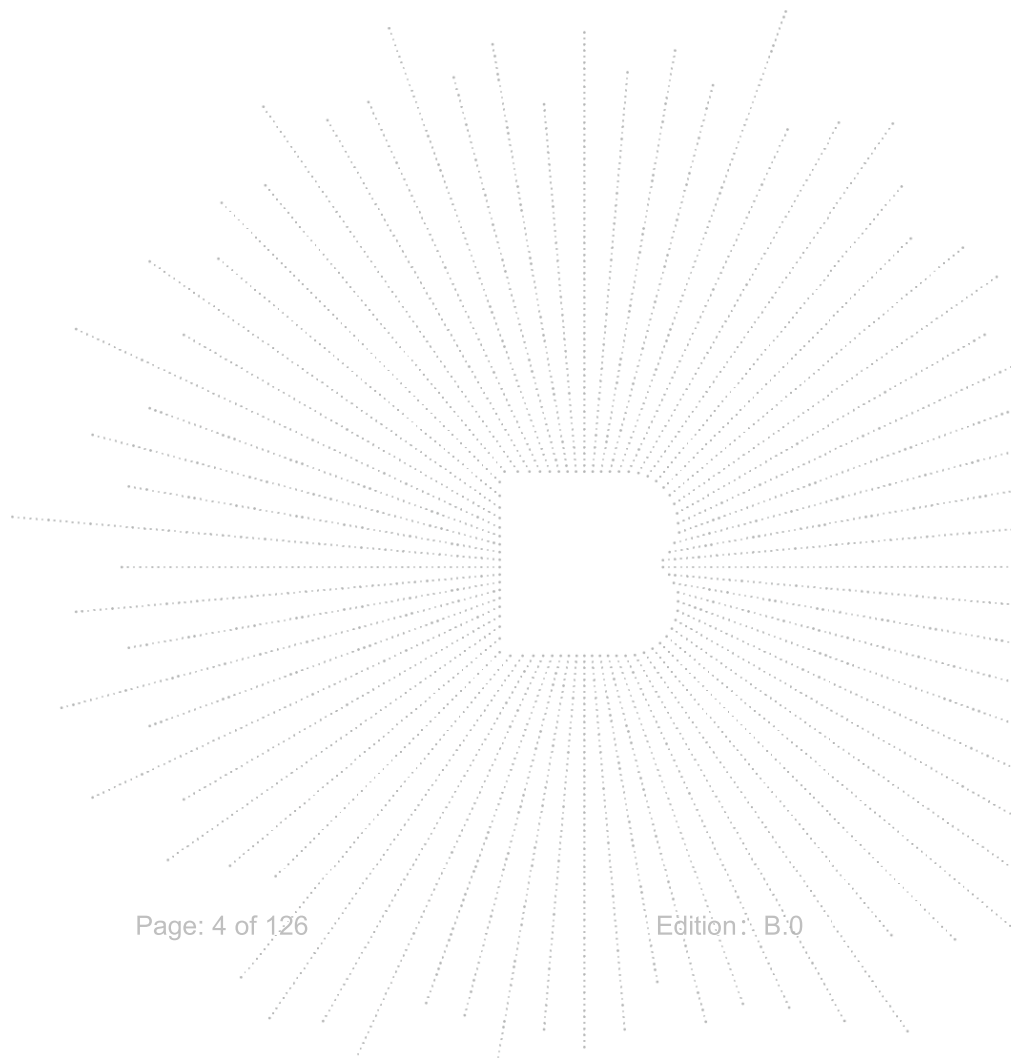
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(Note: N/A Means Not Applicable)



1. Version

Report No.	Issue Date	Description	Approved
BCTC2311784373-4E	2023-11-24	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

1	Test Parameter	Clause No.	Results
1	Spurious Radiated Emissions	15.209(a), 15.407 (b)(1) 15.407 (b)(4) 15.407 (b)(8)	PASS
2	Conducted Emission	15.207	PASS
3	26 dB and 99% Emission Bandwidth	15.407 (a)(12) 15.1049	PASS
4	Minimum 6 dB bandwidth	15.407(e)	PASS
5	Maximum Conducted Output Power	15.407 (a)(1) 15.407 (a)(3)	PASS
6	Band Edge	2.1051, 15.407(b)(1) 15.407(b)(4)	PASS
7	Power Spectral Density	15.407 (a)(1) 15.407 (a)(3)	PASS
8	Spurious Emissions at Antenna Terminals	2.1051, 15.407(b)	PASS
9	Antenna Requirement	15.203	PASS

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(9KHz-30MHz)	U=3.7dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission (150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59°C

4. Product Information And Test Setup

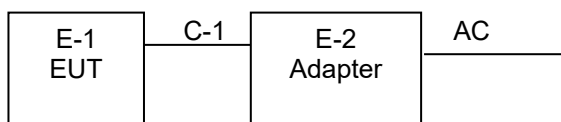
4.1 Product Information

Model/Type reference:	AW-OPS11W-I7P AW-OPS11W-I7, AW-OPS11W-I7T, AW-OPS12W-I7P
Model differences:	All models have the same circuit and RF module, but the memory storage size is different.
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN Mode Supported:	802.11a/n/ac(20MHz channel bandwidth) 802.11n/ac(40MHz channel bandwidth) 802.11ac(80MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n(HT20)/ac20; 5190-5230MHz for 802.11n(HT40)/ac40; 5210MHz for 802.11 ac80; 5745-5825 MHz for 802.11a/n(HT20)/ac20; 5755-5795 MHz for 802.11a/n(HT40)/ac40; 5775MHz for 802.11 ac80;
Data Rate:	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Number Of Channel:	4 channels for 802.11a/n20 in the 5180-5240MHz band ; 2 channels for 802.11 n40 in the 5190-5230MHz band ; 1 channels for 802.11 ac80 in the 5210MHz band ; 5 channels for 802.11a/n20 in the 5745-5825MHz band ; 2 channels for 802.11 n40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band ;
Antenna installation:	External antenna*2
Antenna Gain:	WiFi (5GHz): Antenna A&B: 5.71 dBi
Ratings:	DC 19V

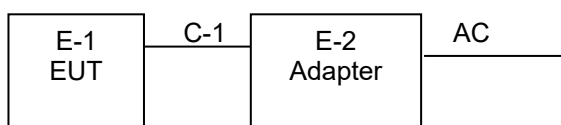
4.2 Test Setup Configuration

See test photographs attached in *EUT TEST SETUP PHOTOGRAPHS* for the actual connections between Product and support equipment.

Conducted Emission:



Radiated Spurious Emission



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	OPS PC	N/A	AW-OPS11W-I7P	AW-OPS11W-I7, AW-OPS11W-I7T, AW-OPS12W-I7P	EUT
E-2	Adapter	N/A	CD226	N/A	Auxiliary
E-3	Display	Xiaomi	L43M7-ES	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	N/A	N/A	0.3M	DC cable unshielded

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

Frequency and Channel list for 802.11a/n /ac (5180-5240MHz):

802.11a/n/ac(20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220	40	5200	48	5240

802.11n/ac(40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	-	-	-	-

802.11ac (80MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	-	-	-	-	-	-

Frequency and Channel list for 802.11a/n /ac (5745-5825MHz):

802.11a/n/ac(20MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n/ac(40MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-	-	-

802.11ac (80MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775	-	-	-	-	-	-

4.5 Test Mode

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.

Pretest Mode	Description
Mode 1	802.11a / n/ ac 20 CH36/ CH40/ CH 48 802.11a / n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH38/ CH 46 802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 42/CH 155
Mode 4	Link Mode

Note: The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

4.6 Table Of Parameters Of Text Software Setting

During testing channel & 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 power parameters

Test software Version	CMD		
Parameters	DEF	DEF	DEF

4.7 Antenna

Table for Internal antenna

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
A	N/A	N/A	External antenna	5.71	N/A
B	N/A	N/A	External antenna	5.71	N/A

EUT has two External antennas with Max antenna A gain GANT 5.71dBi and antenna B gain 5.71dBi on every antenna, CDD device with one spatial streams, also can operat with one spatial streams according to KDB662911 D01 v02r01,

Directional gain= GANT + Array Gain, where Array Gain is as follows.

1)For power spectral density(PSD) measurements,
 $\text{Array Gain} = 10\log(\text{NANT}/\text{NSS})\text{dB} = 10\log(2/1) = 3.01 \text{ dBi}$,
 So the directional gain for PSD is 8.72 dBi

2)For power measurements,
 The Array gain=0 for $\text{NANT} \leq 4$,
 So the directional gain for Power measurements is 5.71 dBi

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850

FCC Designation Number: CN1212

ISED Registered No.: 23583

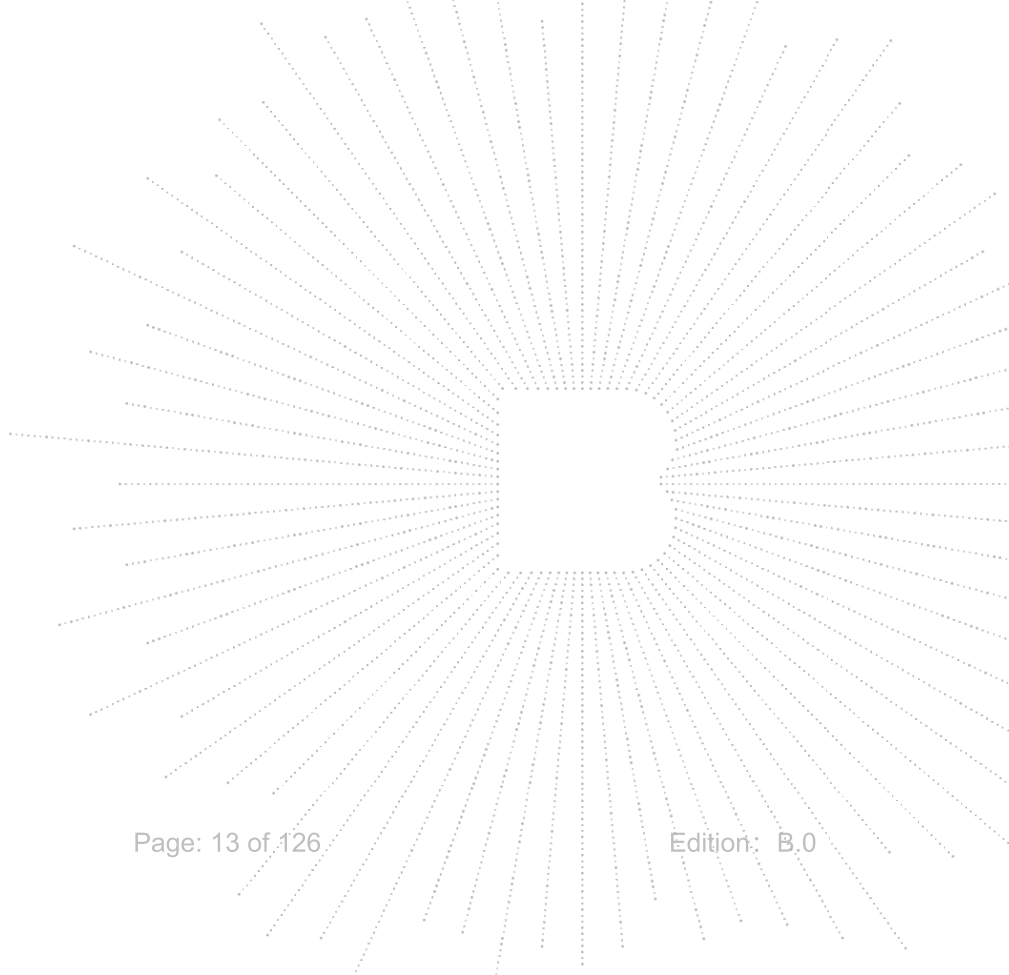
ISED CAB identifier: CN0017

5.2 Test Instrument Used

Conducted Emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
LISN	R&S	ENV216	101375	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Pulse limiter	Schwarzbeck	VTSD 9561-F	01323	Sept. 22, 2023	Sept. 21, 2024

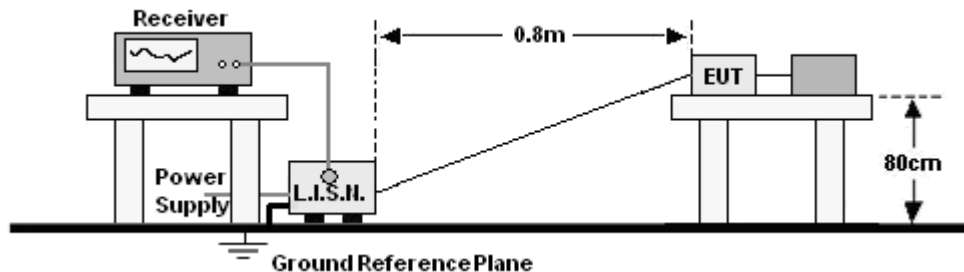
RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power Metter	Keysight	E4419	\	May 15, 2023	May 14, 2024
Power Sensor (AV)	Keysight	E9300A	\	May 15, 2023	May 14, 2024
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 15, 2023	May 14, 2024
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	100363	May 15, 2023	May 14, 2024
Radio frequency control box	MAIWEI	MW100-RFC B	\	\	\
Software	MAIWEI	MTS 8310	\	\	\

Radiated Emissions Test (966 Chamber01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	May 15, 2023	May 14, 2026
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
Receiver	R&S	ESRP	101154	May 15, 2023	May 14, 2024
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 15, 2023	May 14, 2024
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	May 29, 2023	May 28, 2024
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 31, 2023	May 30, 2024
Amplifier	SKET	LAPA_01G18 G-45dB	SK2021040901	May 15, 2023	May 14, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 31, 2023	May 30, 2024
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35- HG	2034381	May 15, 2023	May 14, 2024
Horn Antenn(18GH z-40GHz)	Schwarzbeck	BBHA9170	00822	May 31, 2023	May 30, 2024
Spectrum Analyzer9kHz- 40GHz	R&S	FSP40	100363	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	FA-03A2 RE	\	\



6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

Frequency (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Notes:
1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.3 Test procedure

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

- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

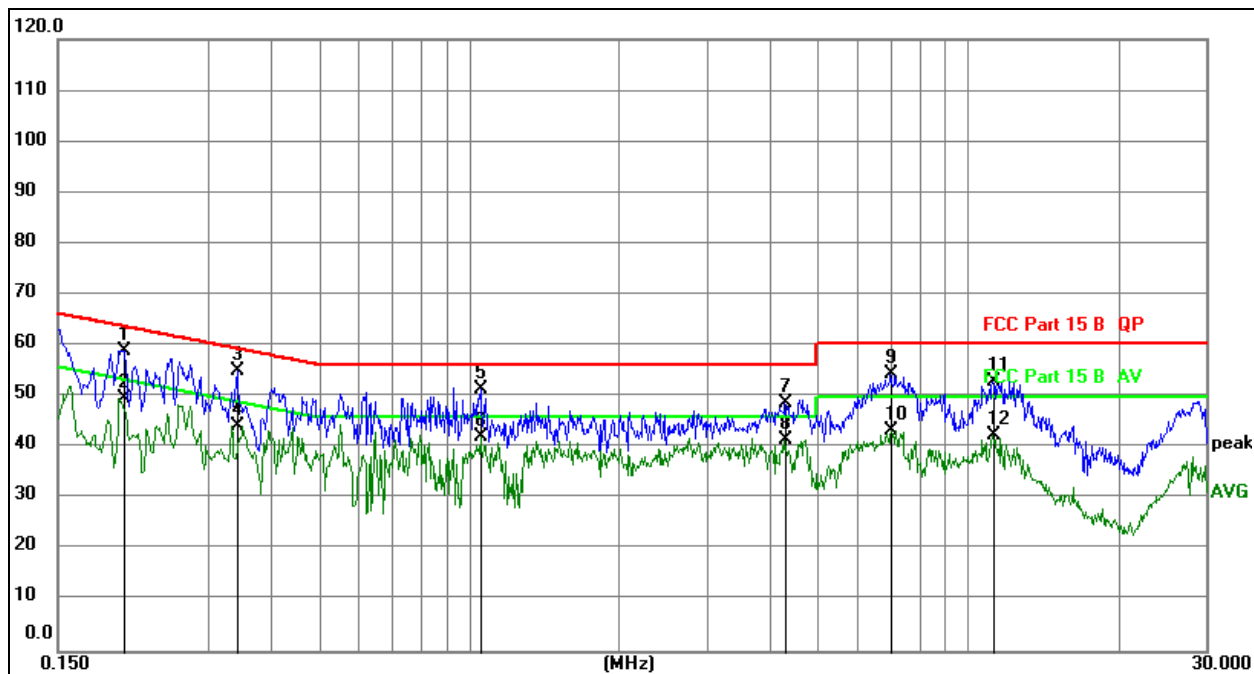
6.4 EUT operating Conditions

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

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

6.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	L
Test Mode:	Mode 4	Test Voltage :	AC 120V/60Hz

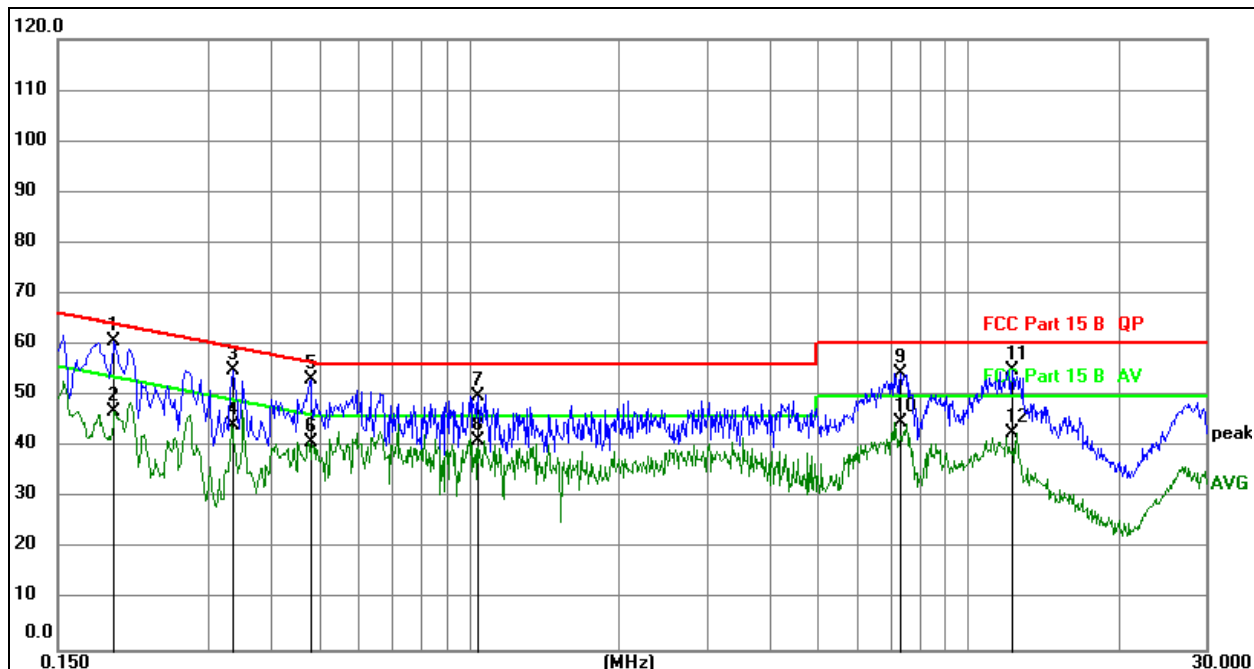


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz		dB	dBuV	dBuV	dB	
1		0.2038	39.12	19.83	58.95	63.45	-4.50	QP
2		0.2038	29.68	19.83	49.51	53.45	-3.94	AVG
3		0.3435	35.30	19.83	55.13	59.12	-3.99	QP
4		0.3435	24.30	19.83	44.13	49.12	-4.99	AVG
5		1.0544	31.42	19.95	51.37	56.00	-4.63	QP
6	*	1.0544	22.17	19.95	42.12	46.00	-3.88	AVG
7		4.3125	28.03	20.59	48.62	56.00	-7.38	QP
8		4.3125	20.92	20.59	41.51	46.00	-4.49	AVG
9		7.0213	34.63	19.96	54.59	60.00	-5.41	QP
10		7.0213	23.38	19.96	43.34	50.00	-6.66	AVG
11		11.2378	33.01	19.88	52.89	60.00	-7.11	QP
12		11.2378	22.47	19.88	42.35	50.00	-7.65	AVG

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	N
Test Mode:	Mode 4	Test Voltage :	AC 120V/60Hz


Remark:

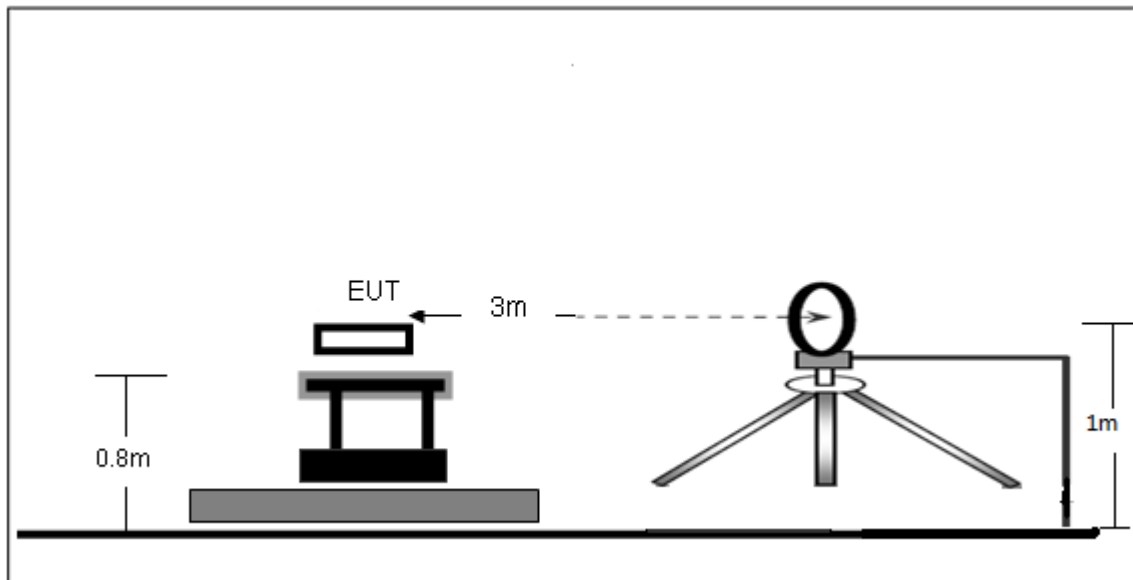
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1943	41.03	19.82	60.85	63.85	-3.00	QP
2		0.1943	27.02	19.82	46.84	53.85	-7.01	AVG
3		0.3372	35.17	19.83	55.00	59.27	-4.27	QP
4		0.3372	24.49	19.83	44.32	49.27	-4.95	AVG
5		0.4811	33.30	19.84	53.14	56.32	-3.18	QP
6		0.4811	20.98	19.84	40.82	46.32	-5.50	AVG
7		1.0427	30.05	19.95	50.00	56.00	-6.00	QP
8		1.0427	21.25	19.95	41.20	46.00	-4.80	AVG
9		7.3288	34.57	19.95	54.52	60.00	-5.48	QP
10		7.3288	24.80	19.95	44.75	50.00	-5.25	AVG
11		12.2530	35.29	19.88	55.17	60.00	-4.83	QP
12		12.2530	22.91	19.88	42.79	50.00	-7.21	AVG

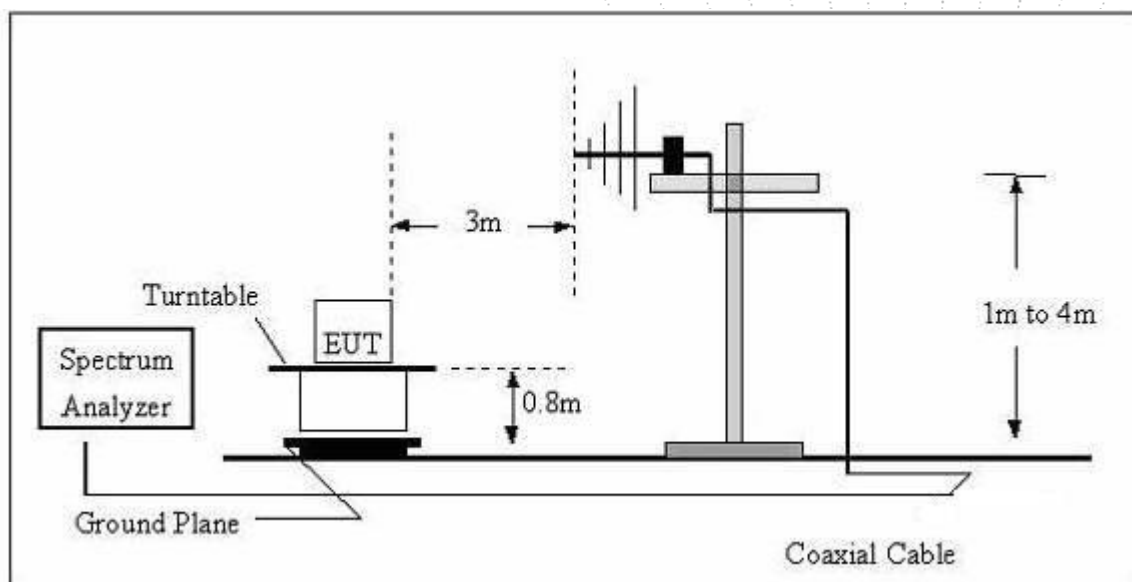
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

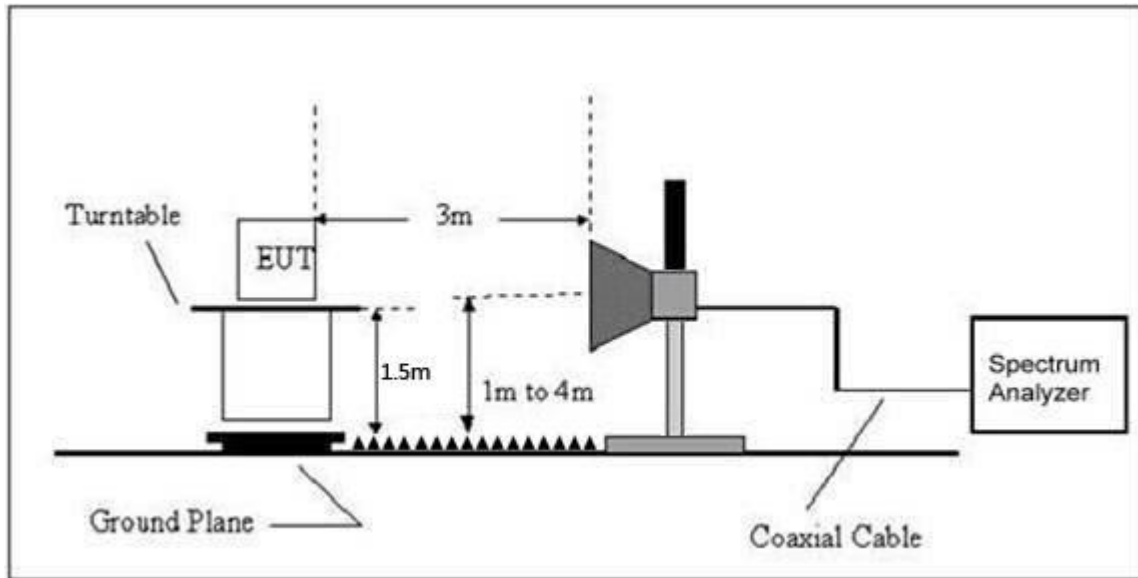
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



7.2 Limit

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.

Frequency (MHz)	Field Strength uV/m	Distance (m)	Field Strength Limit at 3m Distance	
			uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	$10000 * 2400/F(\text{kHz})$	$20\log(2400/F(\text{kHz})) + 80$
0.490 ~ 1.705	24000/F(kHz)	30	$100 * 24000/F(\text{kHz})$	$20\log(24000/F(\text{kHz})) + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

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).

7.3 Test procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205.

It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

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 / 10Hz 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

- 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.
- The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; 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.
- 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.
- 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.
- 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

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW} [kHz])$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

7.4 EUT operating Conditions

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

7.5 Test Result

Below 30MHz

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 4	Polarization :	---

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

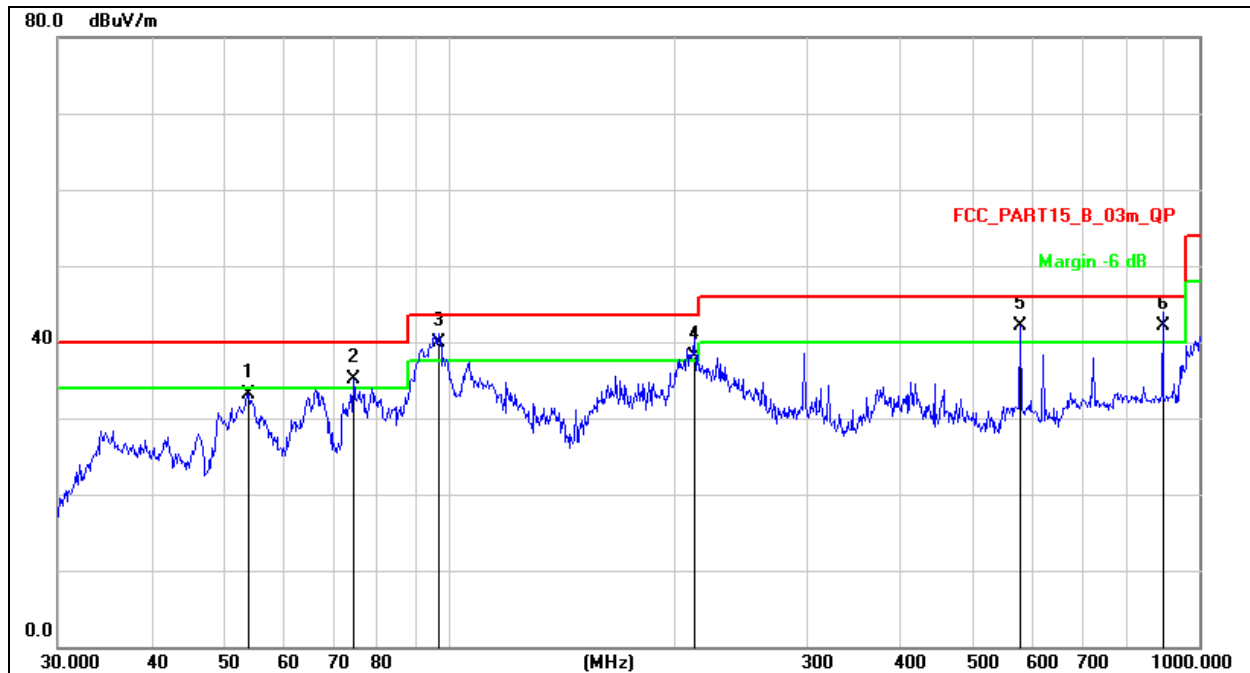
Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})(\text{dB})$;

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

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 4	Test Voltage :	AC 120V/60Hz

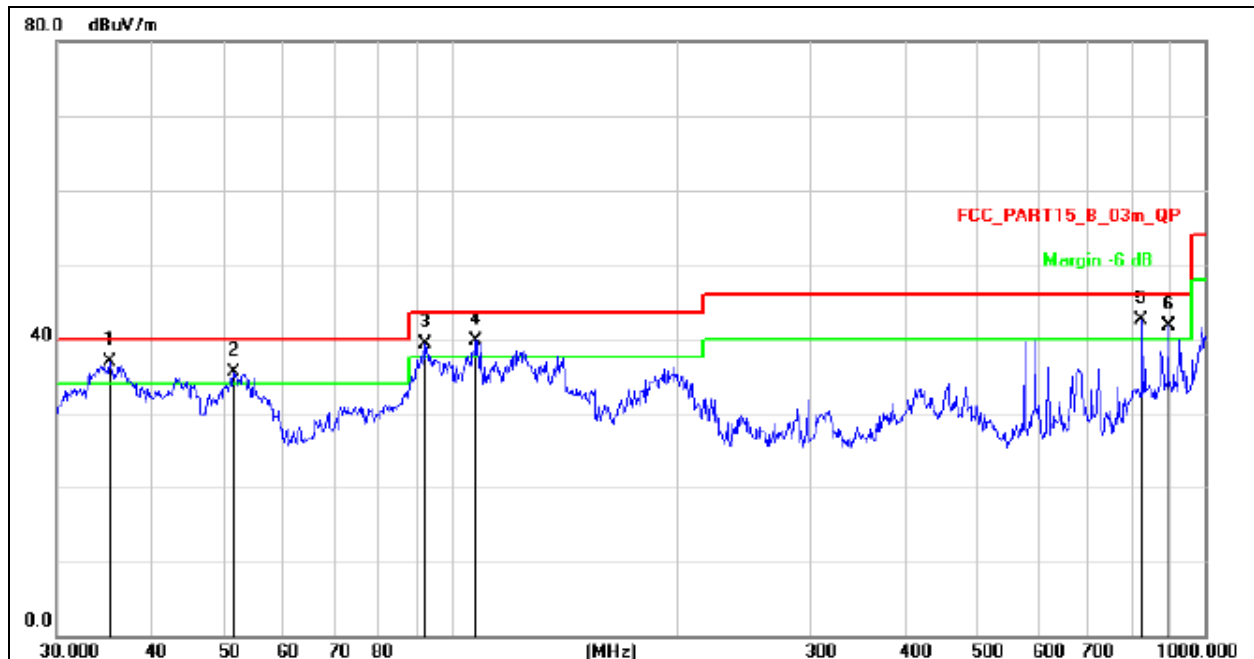


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement = Reading Level + Correct Factor
3. Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		53.8817	47.55	-14.42	33.13	40.00	-6.87	QP
2	!	74.3953	53.91	-18.77	35.14	40.00	-4.86	QP
3	*	96.7749	56.32	-16.40	39.92	43.50	-3.58	QP
4	!	212.2693	53.45	-15.37	38.08	43.50	-5.42	QP
5	!	576.6443	50.66	-8.59	42.07	46.00	-3.93	QP
6	!	893.8567	45.32	-3.23	42.09	46.00	-3.91	QP

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 4	Test Voltage :	AC 120V/60Hz



Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- Measurement = Reading Level + Correct Factor
- Over = Measurement - Limit

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	35.2511	52.48	-15.64	36.84	40.00	-3.16	QP
2	!	51.4806	49.59	-14.10	35.49	40.00	-4.51	QP
3	!	92.4624	56.30	-17.04	39.26	43.50	-4.24	QP
4	!	107.8876	56.19	-16.48	39.71	43.50	-3.79	QP
5	!	824.5968	46.60	-4.19	42.41	46.00	-3.59	QP
6	!	893.8567	45.02	-3.23	41.79	46.00	-4.21	QP

Test Mode:	TX(5.1G) - 802.11a
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Polar (H/V)	Frequency (MHz)	Reading Level (dBuV/m)	Correct Factor (dB)	Measurement (dBuV/m)	Limits (dBuV/m)	Over (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G							
V	4434.036	74.79	-20.73	54.06	68.2	-14.14	PK
V	4434.036	59.60	-20.73	38.86	54	-15.14	AV
V	10360.025	63.99	-9.36	54.63	68.2	-13.57	PK
V	10360.025	49.62	-9.36	40.26	54	-13.74	AV
V	15540.053	60.54	-7.84	52.70	74	-21.30	PK
V	15540.053	49.64	-7.84	41.80	54	-12.20	AV
H	4434.060	72.09	-20.73	51.36	68.2	-16.84	PK
H	4434.060	59.49	-20.73	38.76	54	-15.24	AV
H	10360.054	62.55	-9.36	53.19	68.2	-15.01	PK
H	10360.054	49.97	-9.36	40.61	54	-13.39	AV
H	15540.177	64.80	-7.84	56.96	74	-17.04	PK
H	15540.177	49.54	-7.84	41.70	54	-12.30	AV
Middle Channel (5200 MHz)-Above 1G							
V	4592.177	71.43	-20.42	51.02	74	-22.98	PK
V	4592.177	59.67	-20.42	39.25	54	-14.75	AV
V	10400.167	63.11	-9.30	53.81	68.2	-14.39	PK
V	10400.167	49.47	-9.30	40.17	54	-13.83	AV
V	15600.167	61.63	-7.82	53.81	74	-20.19	PK
V	15600.167	49.34	-7.82	41.52	54	-12.48	AV
H	4592.183	74.09	-20.42	53.67	74	-20.33	PK
H	4592.183	59.86	-20.42	39.44	54	-14.56	AV
H	10400.112	60.55	-9.30	51.25	68.2	-16.95	PK
H	10400.112	49.09	-9.30	39.79	54	-14.21	AV
H	15600.075	60.42	-7.82	52.60	74	-21.40	PK
H	15600.075	49.57	-7.82	41.75	54	-12.25	AV
High Channel (5240 MHz)-Above 1G							
V	4739.188	73.01	-20.12	52.89	74	-21.11	PK
V	4739.188	59.09	-20.12	38.97	54	-15.03	AV
V	10480.018	64.40	-9.18	55.22	68.2	-12.98	PK
V	10480.018	49.65	-9.18	40.47	54	-13.53	AV
V	15720.057	63.15	-7.78	55.37	74	-18.63	PK
V	15720.057	49.24	-7.78	41.46	54	-12.54	AV
H	4739.151	74.73	-20.12	54.60	74	-19.40	PK
H	4739.151	59.49	-20.12	39.37	54	-14.63	AV
H	10480.115	62.58	-9.18	53.40	68.2	-14.80	PK
H	10480.115	49.95	-9.18	40.77	54	-13.23	AV
H	15720.175	63.79	-7.78	56.01	74	-17.99	PK
H	15720.175	49.74	-7.78	41.96	54	-12.04	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The worst case is Antenna A.

Test Mode:	TX(5.1G) - 802.11n-HT20
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
V	4434.132	71.96	-20.73	51.23	68.2	-16.97	PK
V	4434.132	59.60	-20.73	38.87	54	-15.13	AV
V	10360.097	60.75	-9.36	51.39	68.2	-16.81	PK
V	10360.097	49.36	-9.36	40.00	54	-14.00	AV
V	15540.168	61.57	-7.84	53.73	74	-20.27	PK
V	15540.168	49.37	-7.84	41.53	54	-12.47	AV
H	4434.106	74.24	-20.73	53.51	68.2	-14.69	PK
H	4434.106	59.49	-20.73	38.76	54	-15.24	AV
H	10360.069	60.40	-9.36	51.04	68.2	-17.16	PK
H	10360.069	49.35	-9.36	39.99	54	-14.01	AV
H	15540.018	60.85	-7.84	53.01	74	-20.99	PK
H	15540.018	49.96	-7.84	42.12	54	-11.88	AV
Middle Channel (5200 MHz)-Above 1G							
V	4592.157	72.41	-20.42	51.99	74	-22.01	PK
V	4592.157	59.38	-20.42	38.96	54	-15.04	AV
V	10400.027	63.22	-9.30	53.92	68.2	-14.28	PK
V	10400.027	49.18	-9.30	39.88	54	-14.12	AV
V	15600.170	60.35	-7.82	52.53	74	-21.47	PK
V	15600.170	49.54	-7.82	41.72	54	-12.28	AV
H	4592.093	72.55	-20.42	52.13	74	-21.87	PK
H	4592.093	59.95	-20.42	39.53	54	-14.47	AV
H	10400.155	63.97	-9.30	54.67	68.2	-13.53	PK
H	10400.155	49.13	-9.30	39.83	54	-14.17	AV
H	15600.006	60.42	-7.82	52.60	74	-21.40	PK
H	15600.006	49.60	-7.82	41.78	54	-12.22	AV
High Channel (5240 MHz)-Above 1G							
V	4739.022	74.06	-20.12	53.94	74	-20.06	PK
V	4739.022	59.43	-20.12	39.31	54	-14.69	AV
V	10480.073	61.51	-9.18	52.33	68.2	-15.87	PK
V	10480.073	49.28	-9.18	40.10	54	-13.90	AV
V	15720.129	62.12	-7.78	54.34	74	-19.66	PK
V	15720.129	49.04	-7.78	41.26	54	-12.74	AV
H	4739.169	70.26	-20.12	50.13	74	-23.87	PK
H	4739.169	59.97	-20.12	39.85	54	-14.15	AV
H	10480.119	64.16	-9.18	54.98	68.2	-13.22	PK
H	10480.119	49.31	-9.18	40.13	54	-13.87	AV
H	15720.193	64.47	-7.78	56.69	74	-17.31	PK
H	15720.193	49.48	-7.78	41.70	54	-12.30	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.1G) - 802.11n-HT40
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G							
V	4434.110	71.97	-20.73	51.24	68.2	-16.96	PK
V	4434.110	59.48	-20.73	38.75	54	-15.25	AV
V	10380.007	61.33	-9.33	52.00	68.2	-16.20	PK
V	10380.007	49.95	-9.33	40.62	54	-13.38	AV
V	15570.002	62.60	-7.83	54.77	74	-19.23	PK
V	15570.002	49.19	-7.83	41.36	54	-12.64	AV
H	4434.198	74.46	-20.73	53.73	74	-20.27	PK
H	4434.198	59.54	-20.73	38.81	54	-15.19	AV
H	10380.107	61.47	-9.33	52.14	68.2	-16.06	PK
H	10380.107	49.11	-9.33	39.78	54	-14.22	AV
H	15570.134	64.57	-7.83	56.74	74	-17.26	PK
H	15570.134	49.23	-7.83	41.40	54	-12.60	AV
High Channel (5230 MHz)-Above 1G							
V	4739.148	72.39	-20.12	52.27	68.2	-15.93	PK
V	4739.148	60.00	-20.12	39.87	54	-14.13	AV
V	10460.053	60.52	-9.21	51.31	68.2	-16.89	PK
V	10460.053	49.14	-9.21	39.93	54	-14.07	AV
V	15690.111	60.57	-7.79	52.78	74	-21.22	PK
V	15690.111	49.90	-7.79	42.11	54	-11.89	AV
H	4739.059	73.99	-20.12	53.87	68.2	-14.33	PK
H	4739.059	59.23	-20.12	39.11	54	-14.89	AV
H	10460.082	63.18	-9.21	53.97	68.2	-14.23	PK
H	10460.082	49.22	-9.21	40.01	54	-13.99	AV
H	15690.036	60.79	-7.79	53.00	74	-21.00	PK
H	15690.036	49.12	-7.79	41.33	54	-12.67	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.1G) - 802.11ac-HT20
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G							
V	4434.137	70.23	-20.73	49.50	68.2	-18.70	PK
V	4434.137	59.75	-20.73	39.02	54	-14.98	AV
V	10360.125	62.71	-9.36	53.35	68.2	-14.85	PK
V	10360.125	49.97	-9.36	40.61	54	-13.39	AV
V	15540.120	64.90	-7.84	57.06	74	-16.94	PK
V	15540.120	49.23	-7.84	41.39	54	-12.61	AV
H	4434.049	74.92	-20.73	54.19	68.2	-14.01	PK
H	4434.049	59.45	-20.73	38.72	54	-15.28	AV
H	10360.119	64.68	-9.36	55.32	68.2	-12.88	PK
H	10360.119	49.44	-9.36	40.08	54	-13.92	AV
H	15540.083	60.69	-7.84	52.85	74	-21.15	PK
H	15540.083	49.61	-7.84	41.77	54	-12.23	AV
Middle Channel (5200 MHz)-Above 1G							
V	4592.108	70.03	-20.42	49.62	74	-24.38	PK
V	4592.108	59.41	-20.42	38.99	54	-15.01	AV
V	10400.158	62.72	-9.30	53.42	68.2	-14.78	PK
V	10400.158	49.07	-9.30	39.77	54	-14.23	AV
V	15600.017	60.66	-7.82	52.84	74	-21.16	PK
V	15600.017	49.75	-7.82	41.93	54	-12.07	AV
H	4592.056	70.71	-20.42	50.29	74	-23.71	PK
H	4592.056	59.89	-20.42	39.48	54	-14.52	AV
H	10400.169	61.72	-9.30	52.42	68.2	-15.78	PK
H	10400.169	49.87	-9.30	40.57	54	-13.43	AV
H	15600.033	61.25	-7.82	53.43	74	-20.57	PK
H	15600.033	49.51	-7.82	41.69	54	-12.31	AV
High Channel (5240 MHz)-Above 1G							
V	4739.014	71.29	-20.12	51.17	74	-22.83	PK
V	4739.014	59.65	-20.12	39.53	54	-14.47	AV
V	10480.001	61.36	-9.18	52.18	68.2	-16.02	PK
V	10480.001	49.01	-9.18	39.83	54	-14.17	AV
V	15720.064	62.27	-7.78	54.49	74	-19.51	PK
V	15720.064	49.24	-7.78	41.46	54	-12.54	AV
H	4739.092	70.33	-20.12	50.20	74	-23.80	PK
H	4739.092	59.15	-20.12	39.03	54	-14.97	AV
H	10480.145	60.92	-9.18	51.74	68.2	-16.46	PK
H	10480.145	49.61	-9.18	40.43	54	-13.57	AV
H	15720.013	62.03	-7.78	54.25	74	-19.75	PK
H	15720.013	49.58	-7.78	41.80	54	-12.20	AV

Note: PK value is lower than the Average value limit, So average didn't record.
The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.
Test Mode is MIMO Mode.

Test Mode:	TX(5.1G) - 802.11ac-HT40
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5190 MHz)-Above 1G							
V	4434.181	74.00	-20.73	53.27	68.2	-14.93	PK
V	4434.181	59.14	-20.73	38.41	54	-15.59	AV
V	10380.063	61.04	-9.33	51.71	68.2	-16.49	PK
V	10380.063	49.31	-9.33	39.98	54	-14.02	AV
V	15570.150	62.04	-7.83	54.21	74	-19.79	PK
V	15570.150	49.91	-7.83	42.08	54	-11.92	AV
H	4434.187	70.26	-20.73	49.53	74	-24.47	PK
H	4434.187	59.88	-20.73	39.14	54	-14.86	AV
H	10380.139	60.78	-9.33	51.45	68.2	-16.75	PK
H	10380.139	49.35	-9.33	40.02	54	-13.98	AV
H	15570.031	62.69	-7.83	54.86	74	-19.14	PK
H	15570.031	49.17	-7.83	41.34	54	-12.66	AV
High Channel (5230 MHz)-Above 1G							
V	4739.056	73.23	-20.12	53.11	68.2	-15.09	PK
V	4739.056	59.57	-20.12	39.45	54	-14.55	AV
V	10460.185	62.48	-9.21	53.27	68.2	-14.93	PK
V	10460.185	49.67	-9.21	40.46	54	-13.54	AV
V	15690.051	63.83	-7.79	56.04	74	-17.96	PK
V	15690.051	49.55	-7.79	41.76	54	-12.24	AV
H	4739.125	72.22	-20.12	52.10	68.2	-16.10	PK
H	4739.125	59.16	-20.12	39.04	54	-14.96	AV
H	10460.092	62.32	-9.21	53.11	68.2	-15.09	PK
H	10460.092	49.48	-9.21	40.27	54	-13.73	AV
H	15690.168	63.64	-7.79	55.85	74	-18.15	PK
H	15690.168	49.74	-7.79	41.95	54	-12.05	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.1G) - 802.11ac-HT80
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5210 MHz)-Above 1G							
V	4434.156	71.65	-20.73	50.92	68.2	-17.28	PK
V	4434.156	59.75	-20.73	39.02	54	-14.98	AV
V	10420.021	61.58	-9.27	52.31	68.2	-15.89	PK
V	10420.021	49.18	-9.27	39.91	54	-14.09	AV
V	15630.125	63.27	-7.81	55.46	74	-18.54	PK
V	15630.125	49.03	-7.81	41.22	54	-12.78	AV
H	4434.023	71.83	-20.73	51.10	68.2	-17.10	PK
H	4434.023	59.07	-20.73	38.33	54	-15.67	AV
H	10420.067	43.95	9.27	53.22	68.2	-14.98	PK
H	10420.067	29.07	9.27	38.34	54	-15.66	AV
H	15630.149	63.23	-7.81	55.42	74	-18.58	PK
H	15630.149	49.49	-7.81	41.68	54	-12.32	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.8G) - 802.11a
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Polar (H/V)	Frequency (MHz)	Reading Level (dBuV/m)	Correct Factor (dB)	Measurement (dBuV/m)	Limits (dBuV/m)	Over (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G							
V	4679.061	74.81	-20.24	54.57	74	-19.43	PK
V	4679.061	59.84	-20.24	39.59	54	-14.41	AV
V	11490.169	64.24	-8.79	55.45	68.2	-12.75	PK
V	11490.169	49.80	-8.79	41.01	54	-12.99	AV
V	17235.137	58.21	-3.18	55.03	68.2	-13.17	PK
V	17235.137	44.25	-3.18	41.07	54	-12.93	AV
H	4679.002	73.93	-20.73	53.20	74	-20.80	PK
H	4679.002	59.68	-20.73	38.95	54	-15.05	AV
H	11490.177	63.59	-8.79	54.80	68.2	-13.40	PK
H	11490.177	49.65	-8.79	40.86	54	-13.14	AV
H	17235.195	55.47	-3.18	52.29	68.2	-15.91	PK
H	17235.195	44.53	-3.18	41.35	54	-12.65	AV
Middle Channel (5785 MHz)-Above 1G							
V	4592.195	73.76	-20.42	53.35	74	-20.65	PK
V	4592.195	59.31	-20.42	38.90	54	-15.10	AV
V	11570.192	62.45	-8.86	53.59	68.2	-14.61	PK
V	11570.192	49.44	-8.86	40.58	54	-13.42	AV
V	17355.076	59.59	-2.52	57.07	68.2	-11.13	PK
V	17355.076	44.56	-2.52	42.04	54	-11.96	AV
H	4592.098	73.92	-20.42	53.50	74	-20.50	PK
H	4592.098	59.97	-20.42	39.55	54	-14.45	AV
H	11570.148	64.18	-8.86	55.32	68.2	-12.88	PK
H	11570.148	49.60	-8.86	40.74	54	-13.26	AV
H	17355.026	57.65	-2.52	55.13	68.2	-13.07	PK
H	17355.026	44.02	-2.52	41.50	54	-12.50	AV
High Channel (5825 MHz)-Above 1G							
V	6039.174	70.99	-18.93	52.06	68.2	-16.14	PK
V	6039.174	59.38	-18.93	40.45	54	-13.55	AV
V	11650.039	61.27	-8.92	52.35	74	-21.65	PK
V	11650.039	49.05	-8.92	40.13	54	-13.87	AV
V	17475.009	59.60	-1.86	57.74	68.2	-10.46	PK
V	17475.009	44.31	-1.86	42.45	54	-11.55	AV
H	6039.043	71.99	-18.93	53.06	68.2	-15.14	PK
H	6039.043	59.26	-18.93	40.33	54	-13.67	AV
H	11650.038	64.64	-8.92	55.72	74	-18.28	PK
H	11650.038	49.47	-8.92	40.55	54	-13.45	AV
H	17475.054	56.15	-1.86	54.29	68.2	-13.91	PK
H	17475.054	44.86	-1.86	43.00	54	-11.00	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

The worst case is Antenna A.

Test Mode: TX(5.8G) - 802.11n-HT20

Polar (H/V)	Frequency (MHz)	Reading Level (dBuV/m)	Correct Factor (dB)	Measurement (dBuV/m)	Limits (dBuV/m)	Over (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G							
V	4679.008	73.80	-20.24	53.55	74	-20.45	PK
V	4679.008	59.10	-20.24	38.86	54	-15.14	AV
V	11490.079	63.52	-8.79	54.73	68.2	-13.47	PK
V	11490.079	49.25	-8.79	40.46	54	-13.54	AV
V	17235.027	57.46	-3.18	54.28	68.2	-13.92	PK
V	17235.027	44.97	-3.18	41.79	54	-12.21	AV
H	4679.083	73.26	-20.24	53.02	74	-20.98	PK
H	4679.083	59.03	-20.24	38.79	54	-15.21	AV
H	11490.199	62.58	-8.79	53.79	68.2	-14.41	PK
H	11490.199	49.05	-8.79	40.26	54	-13.74	AV
H	17235.074	56.52	-3.18	53.34	68.2	-14.86	PK
H	17235.074	44.34	-3.18	41.16	54	-12.84	AV
Middle Channel (5785 MHz)-Above 1G							
V	4592.109	74.70	-20.42	54.29	74	-19.71	PK
V	4592.109	59.57	-20.42	39.15	54	-14.85	AV
V	11570.170	61.54	-8.86	52.68	68.2	-15.52	PK
V	11570.170	49.29	-8.86	40.43	54	-13.57	AV
V	17355.149	56.89	-2.52	54.37	68.2	-13.83	PK
V	17355.149	44.54	-2.52	42.02	54	-11.98	AV
H	4592.039	72.02	-20.42	51.60	74	-22.40	PK
H	4592.039	59.38	-20.42	38.96	54	-15.04	AV
H	11570.087	62.04	-8.86	53.18	68.2	-15.02	PK
H	11570.087	49.70	-8.86	40.84	54	-13.16	AV
H	17355.104	58.80	-2.52	56.28	68.2	-11.92	PK
H	17355.104	44.35	-2.52	41.83	54	-12.17	AV
High Channel (5825 MHz)-Above 1G							
V	6039.088	73.24	-18.93	54.31	68.2	-13.89	PK
V	6039.088	59.42	-18.93	40.49	54	-13.51	AV
V	11650.194	60.73	-8.92	51.81	74	-22.19	PK
V	11650.194	49.75	-8.92	40.83	54	-13.17	AV
V	17475.067	57.04	-1.86	55.18	68.2	-13.02	PK
V	17475.067	44.96	-1.86	43.10	54	-10.90	AV
H	6039.153	70.60	-18.93	51.67	68.2	-16.53	PK
H	6039.153	59.81	-18.93	40.87	54	-13.13	AV
H	11650.146	63.27	-8.92	54.35	74	-19.65	PK
H	11650.146	49.97	-8.92	41.05	54	-12.95	AV
H	17475.006	59.12	-1.86	57.26	68.2	-10.94	PK
H	17475.006	44.06	-1.86	42.20	54	-11.80	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.8G) - 802.11n-HT40
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
V	4679.003	74.41	-20.24	54.17	74	-19.83	PK
V	4679.003	59.59	-20.24	39.35	54	-14.65	AV
V	11510.021	61.71	-8.81	52.90	74	-21.10	PK
V	11510.021	49.55	-8.81	40.74	54	-13.26	AV
V	17265.092	56.63	-3.01	53.62	68.2	-14.58	PK
V	17265.092	44.43	-3.01	41.42	54	-12.58	AV
H	4679.194	70.14	-20.24	49.90	74	-24.10	PK
H	4679.194	59.78	-20.24	39.54	54	-14.46	AV
H	11510.184	63.70	-8.81	54.89	74	-19.11	PK
H	11510.184	49.63	-8.81	40.82	54	-13.18	AV
H	17265.091	56.60	-3.01	53.59	68.2	-14.61	PK
H	17265.091	44.61	-3.01	41.60	54	-12.40	AV
High Channel (5795 MHz)-Above 1G							
V	6039.124	72.65	-18.93	53.71	68.2	-14.49	PK
V	6039.124	59.13	-18.93	40.20	54	-13.80	AV
V	11590.093	64.44	-8.87	55.57	74	-18.43	PK
V	11590.093	49.87	-8.87	41.00	54	-13.00	AV
V	17385.093	55.69	-2.35	53.34	68.2	-14.86	PK
V	17385.093	44.67	-2.35	42.32	54	-11.68	AV
H	6039.084	71.53	-18.93	52.60	68.2	-15.60	PK
H	6039.084	59.12	-18.93	40.19	54	-13.81	AV
H	11590.130	63.00	-8.87	54.13	74	-19.87	PK
H	11590.130	49.56	-8.87	40.69	54	-13.31	AV
H	17385.092	56.53	-2.35	54.18	68.2	-14.02	PK
H	17385.092	44.27	-2.35	41.92	54	-12.08	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.8G) - 802.11ac-HT20
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
V	4679.162	71.17	-20.24	50.93	74	-23.07	PK
V	4679.162	59.73	-20.24	39.49	54	-14.51	AV
V	11490.182	64.39	-8.79	55.60	68.2	-12.60	PK
V	11490.182	49.26	-8.79	40.47	54	-13.53	AV
V	17235.078	59.93	-3.18	56.75	68.2	-11.45	PK
V	17235.078	44.29	-3.18	41.11	54	-12.89	AV
H	4679.137	70.45	-20.24	50.21	74	-23.79	PK
H	4679.137	59.99	-20.24	39.75	54	-14.25	AV
H	11490.198	61.50	-8.79	52.71	68.2	-15.49	PK
H	11490.198	49.68	-8.79	40.89	54	-13.11	AV
H	17235.127	55.71	-3.18	52.53	68.2	-15.67	PK
H	17235.127	44.96	-3.18	41.78	54	-12.22	AV
Middle Channel (5785 MHz)-Above 1G							
V	4592.106	74.11	-20.42	53.69	74	-20.31	PK
V	4592.106	59.32	-20.42	38.90	54	-15.10	AV
V	11570.095	64.93	-8.86	56.07	68.2	-12.13	PK
V	11570.095	49.28	-8.86	40.42	54	-13.58	AV
V	17355.134	56.93	-2.52	54.41	68.2	-13.79	PK
V	17355.134	44.41	-2.52	41.89	54	-12.11	AV
H	4592.141	70.01	-20.42	49.59	74	-24.41	PK
H	4592.141	59.35	-20.42	38.93	54	-15.07	AV
H	11570.132	63.78	-8.86	54.92	68.2	-13.28	PK
H	11570.132	49.47	-8.86	40.61	54	-13.39	AV
H	17355.056	59.50	-2.52	56.98	68.2	-11.22	PK
H	17355.056	44.91	-2.52	42.39	54	-11.61	AV
High Channel (5825 MHz)-Above 1G							
V	6039.178	71.42	-18.93	52.49	68.2	-15.71	PK
V	6039.178	59.08	-18.93	40.15	54	-13.85	AV
V	11650.128	61.08	-8.92	52.16	74	-21.84	PK
V	11650.128	49.53	-8.92	40.61	54	-13.39	AV
V	17475.136	58.84	-1.86	56.98	68.2	-11.22	PK
V	17475.136	44.07	-1.86	42.21	54	-11.79	AV
H	6039.182	73.47	-18.93	54.54	68.2	-13.66	PK
H	6039.182	59.21	-18.93	40.27	54	-13.73	AV
H	11650.036	62.55	-8.92	53.63	74	-20.37	PK
H	11650.036	49.12	-8.92	40.20	54	-13.80	AV
H	17475.060	59.07	-1.86	57.21	68.2	-10.99	PK
H	17475.060	44.57	-1.86	42.71	54	-11.29	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.8G) - 802.11ac-HT40
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
V	4679.063	70.26	-20.24	50.02	74	-23.98	PK
V	4679.063	59.12	-20.24	38.88	54	-15.12	AV
V	11510.140	61.98	-8.81	53.17	74	-20.83	PK
V	11510.140	49.61	-8.81	40.80	54	-13.20	AV
V	17265.066	57.88	-3.01	54.87	68.2	-13.33	PK
V	17265.066	44.63	-3.01	41.62	54	-12.38	AV
H	4679.148	71.75	-20.24	51.51	74	-22.49	PK
H	4679.148	59.03	-20.24	38.79	54	-15.21	AV
H	11510.057	63.28	-8.81	54.47	74	-19.53	PK
H	11510.057	49.14	-8.81	40.33	54	-13.67	AV
H	17265.195	55.14	-3.01	52.13	68.2	-16.07	PK
H	17265.195	44.34	-3.01	41.33	54	-12.67	AV
High Channel (5795 MHz)-Above 1G							
V	6039.056	73.82	-18.93	54.89	68.2	-13.31	PK
V	6039.056	59.70	-18.93	40.77	54	-13.23	AV
V	11590.070	61.41	-8.87	52.54	74	-21.46	PK
V	11590.070	49.39	-8.87	40.52	54	-13.48	AV
V	17385.103	56.45	-2.35	54.10	68.2	-14.10	PK
V	17385.103	44.74	-2.35	42.39	54	-11.61	AV
H	6039.136	74.08	-18.93	55.15	68.2	-13.05	PK
H	6039.136	59.64	-18.93	40.70	54	-13.30	AV
H	11590.009	64.44	-8.87	55.57	74	-18.43	PK
H	11590.009	49.30	-8.87	40.43	54	-13.57	AV
H	17385.188	57.64	-2.35	55.29	68.2	-12.91	PK
H	17385.188	44.64	-2.35	42.29	54	-11.71	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

Test Mode:	TX(5.8G) - 802.11ac-HT80
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Polar (H/V)	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
(5775 MHz)-Above 1G							
V	4679.173	71.16	-20.24	50.92	74	-23.08	PK
V	4679.173	59.72	-20.24	39.48	54	-14.52	AV
V	11550.088	61.43	-8.84	52.59	74	-21.41	PK
V	11550.088	49.70	-8.84	40.86	54	-13.14	AV
V	17325.177	56.22	-2.68	53.54	68.2	-14.66	PK
V	17325.177	44.89	-2.68	42.21	54	-11.79	AV
H	4679.066	74.43	-20.24	54.19	74	-19.81	PK
H	4679.066	59.49	-20.24	39.25	54	-14.75	AV
H	11550.018	64.31	-8.84	55.47	74	-18.53	PK
H	11550.018	49.69	-8.84	40.85	54	-13.15	AV
H	17325.013	59.43	-2.68	56.75	68.2	-11.45	PK
H	17325.013	44.70	-2.68	42.02	54	-11.98	AV

Note: PK value is lower than the Average value limit, So average didn't record.

The 26.5-40G amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

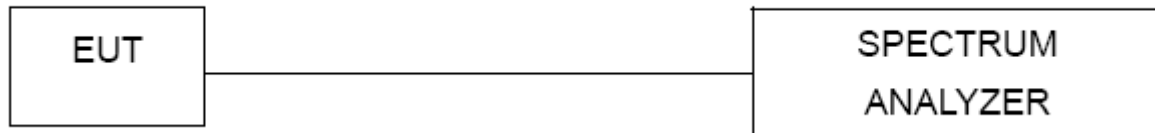
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Test Mode is MIMO Mode.

8. Power Spectral Density Test

8.1 Block Diagram Of Test Setup



8.2 Limit

For the band 5.15-5.25 GHz,

(i) For an outdoor Wifi Repeater operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 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. 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).

(ii) For an indoor Wifi Repeater operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 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.

(iii) For fixed point-to-point Wifi Repeaters operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. 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. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For 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.

For the band 5.725-5.85 GHz

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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.

8.3 Test procedure

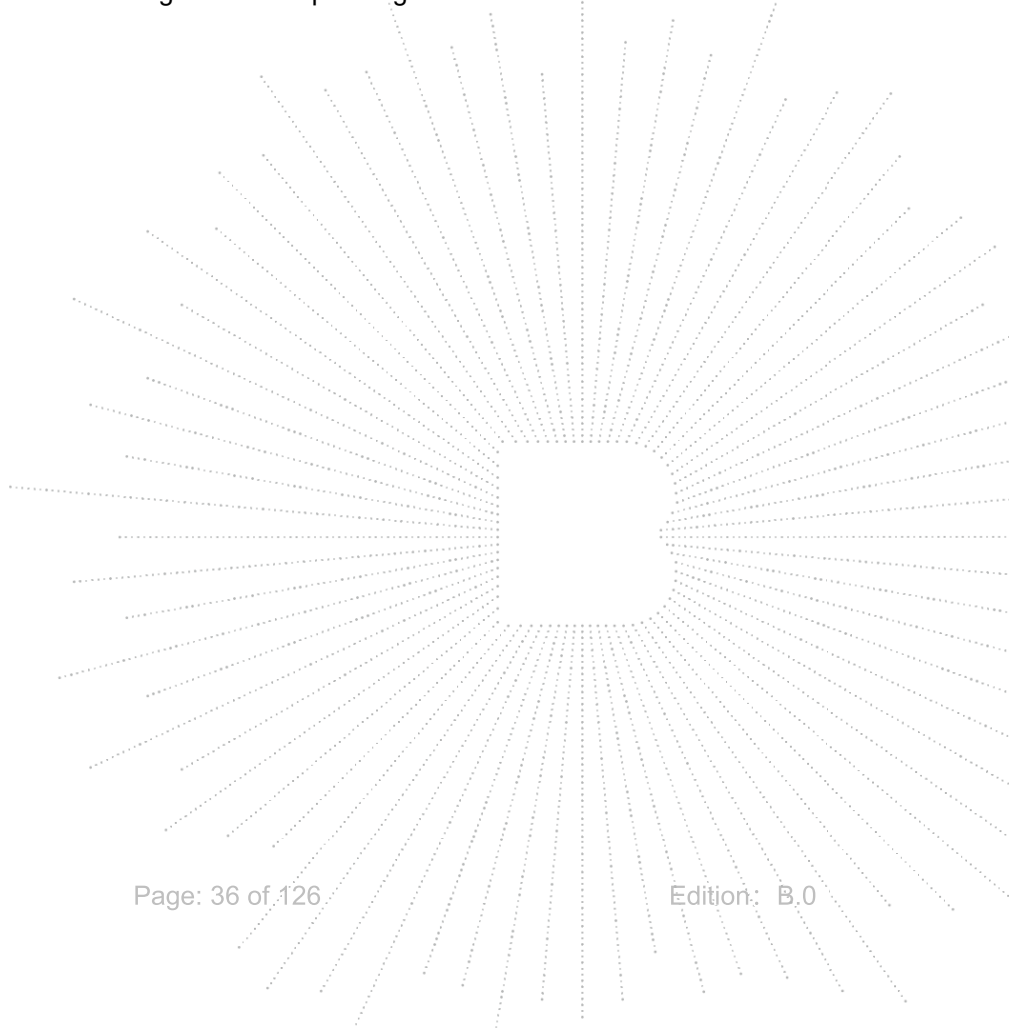
For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 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 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 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.

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 KHz is available on nearly all spectrum analyzers.

8.4 EUT operating Conditions

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



8.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5180-5240MHz); (5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/MHz)		EIRP PSD (dBm/MHz)		Total (dBm/MHz)	Limit (dBm/MHz)	Verdict
			Ant A	Ant B	Ant A	Ant B			
NVNT	a	5180	-0.02	-0.18	5.69	5.53	/	10	Pass
NVNT	a	5200	-0.33	-0.40	5.38	5.31	/	10	Pass
NVNT	a	5240	-0.89	-1.22	4.82	4.49	/	10	Pass
NVNT	n20	5180	-1.58	-1.26	4.13	4.45	7.30	8.28	Pass
NVNT	n20	5200	-2.13	-1.68	3.58	4.03	6.82	8.28	Pass
NVNT	n20	5240	-3.12	-3.14	2.59	2.57	5.59	8.28	Pass
NVNT	n40	5190	-6.13	-6.77	-0.42	-1.06	2.28	8.28	Pass
NVNT	n40	5230	-6.47	-7.16	-0.76	-1.45	1.92	8.28	Pass
NVNT	ac20	5180	-1.57	-2.23	4.14	3.48	6.83	8.28	Pass
NVNT	ac20	5200	-2.02	-2.71	3.69	3.00	6.37	8.28	Pass
NVNT	ac20	5240	-3.12	-3.89	2.59	1.82	5.23	8.28	Pass
NVNT	ac40	5190	-6.23	-6.47	-0.52	-0.76	2.37	8.28	Pass
NVNT	ac40	5230	-6.79	-7.09	-1.08	-1.38	1.78	8.28	Pass
NVNT	ac80	5210	-8.74	-8.86	-3.03	-3.15	-0.08	8.28	Pass

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/500KHz)		Total (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
			Ant A	Ant B			
NVNT	a	5745	-4.04	-4.45	/	28.28	Pass
NVNT	a	5785	-4.15	-4.26	/	28.28	Pass
NVNT	a	5825	-4.96	-5.86	/	28.28	Pass
NVNT	n20	5745	-5.03	-5.35	-2.18	28.28	Pass
NVNT	n20	5785	-5.00	-5.52	-2.24	28.28	Pass
NVNT	n20	5825	-6.58	-7.47	-3.99	28.28	Pass
NVNT	n40	5755	-8.97	-9.45	-6.19	28.28	Pass
NVNT	n40	5795	-9.24	-10.39	-6.77	28.28	Pass
NVNT	ac20	5745	-5.26	-5.70	-2.46	28.28	Pass
NVNT	ac20	5785	-5.32	-6.29	-2.77	28.28	Pass
NVNT	ac20	5825	-6.58	-7.89	-4.18	28.28	Pass
NVNT	ac40	5755	-8.94	-9.84	-6.36	28.28	Pass
NVNT	ac40	5795	-9.40	-10.37	-6.85	28.28	Pass
NVNT	ac80	5775	-11.70	-12.21	-8.94	28.28	Pass

Note:

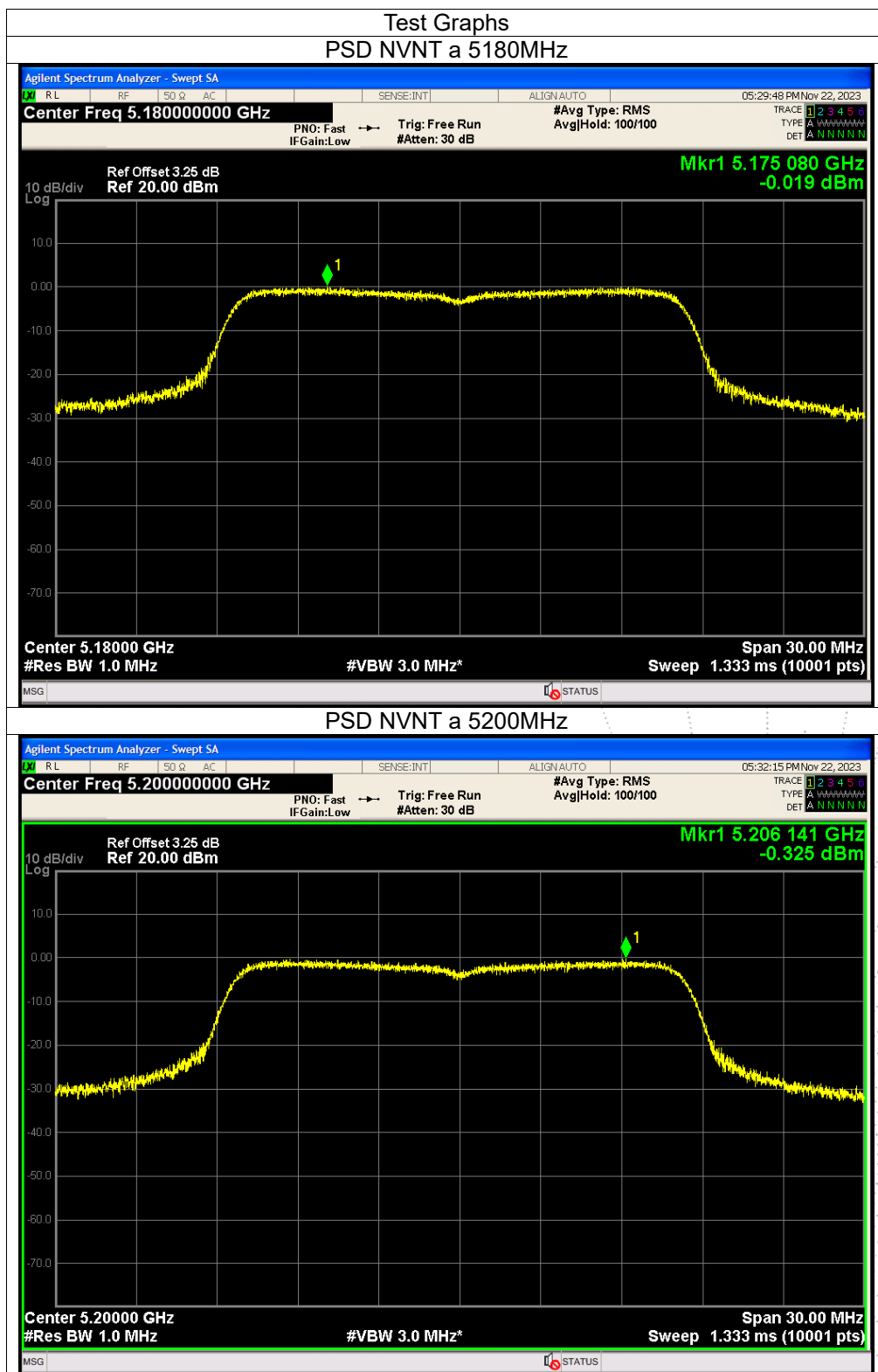
Antenna A gain:5.71 dBi, Antenna B gain: 5.71 dBi, Directional gain=[GainANT + 10 log(NANT/NSS) dBi]
=8.72 dBi>6dBi

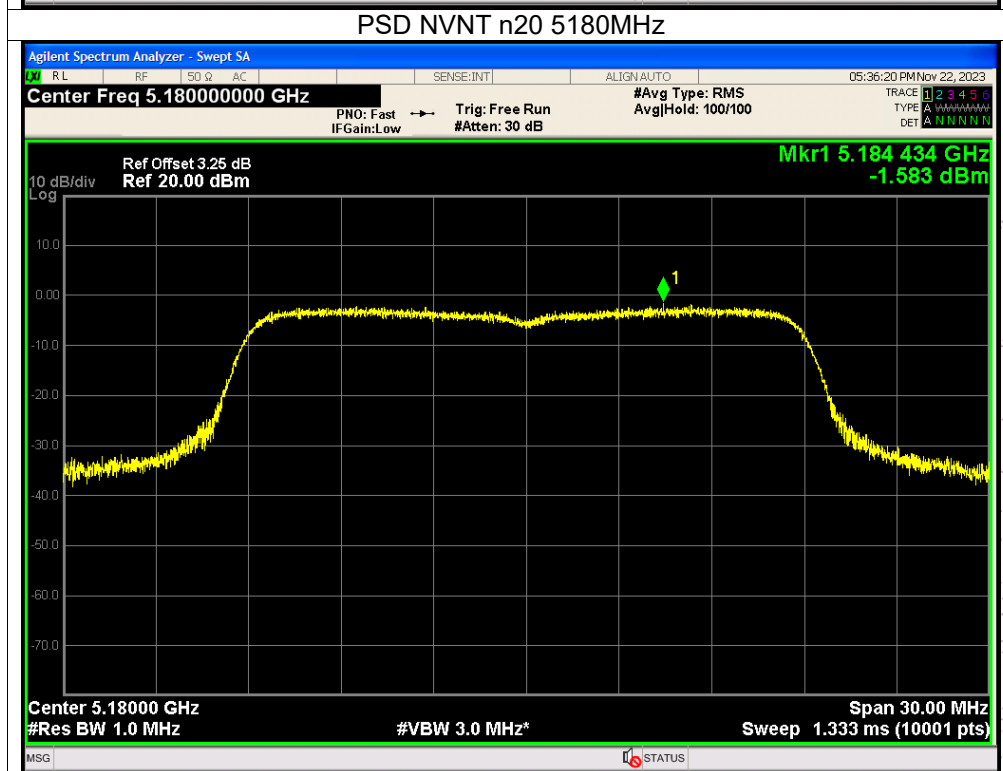
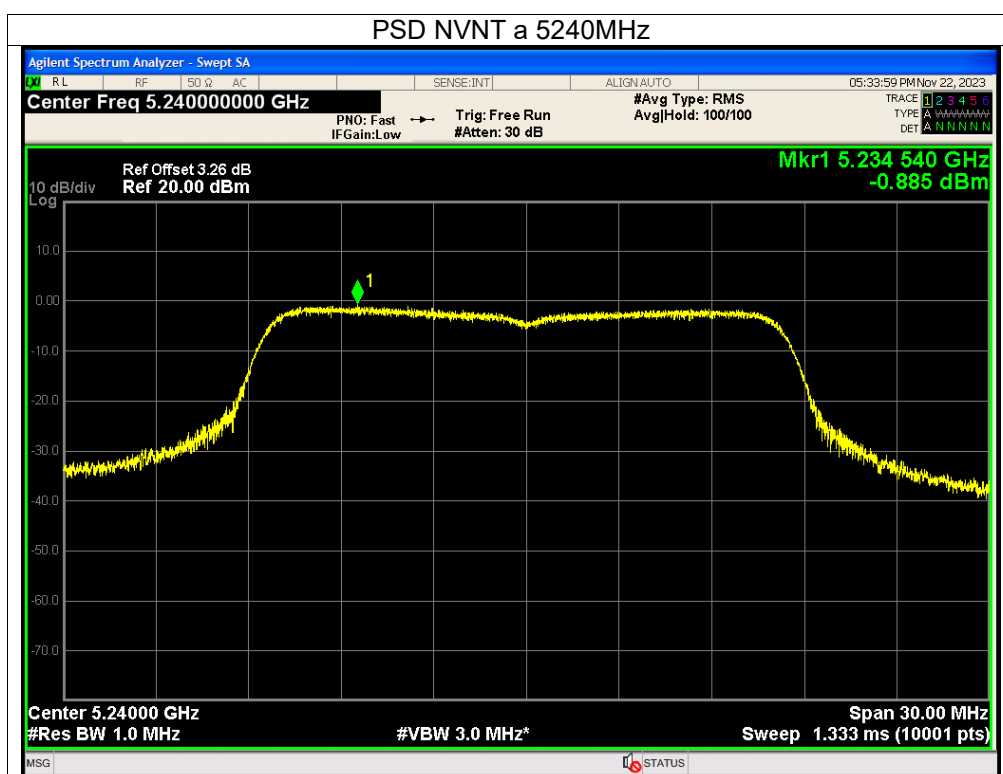
5.1G: Limit=10-(8.72-6)=8.28 dBi

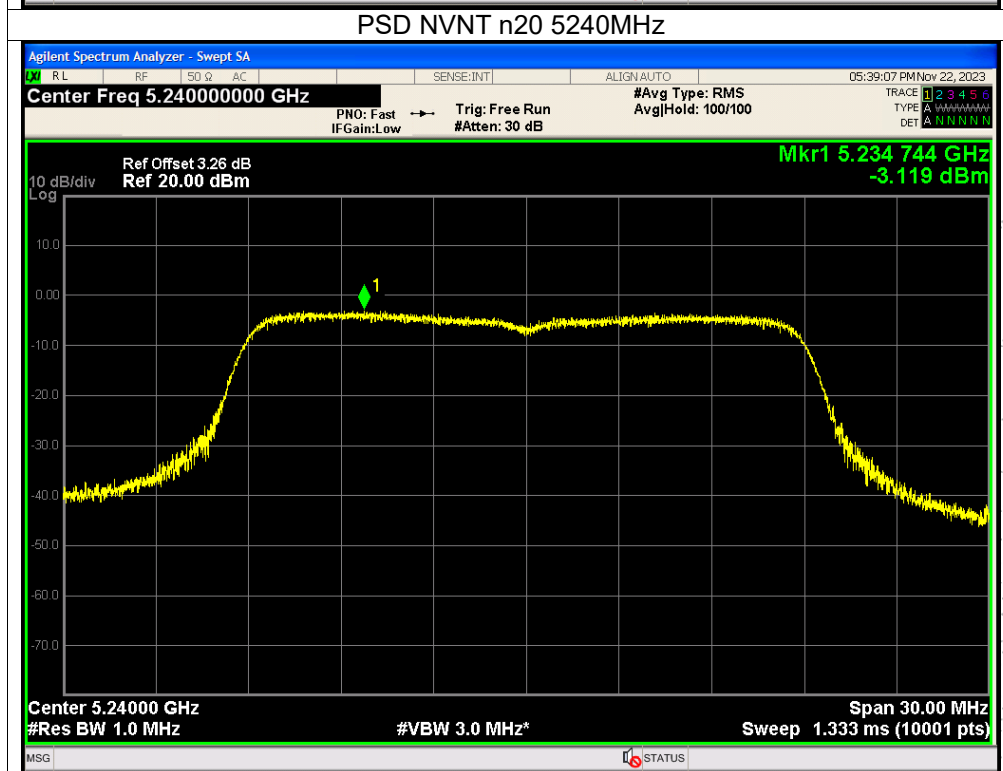
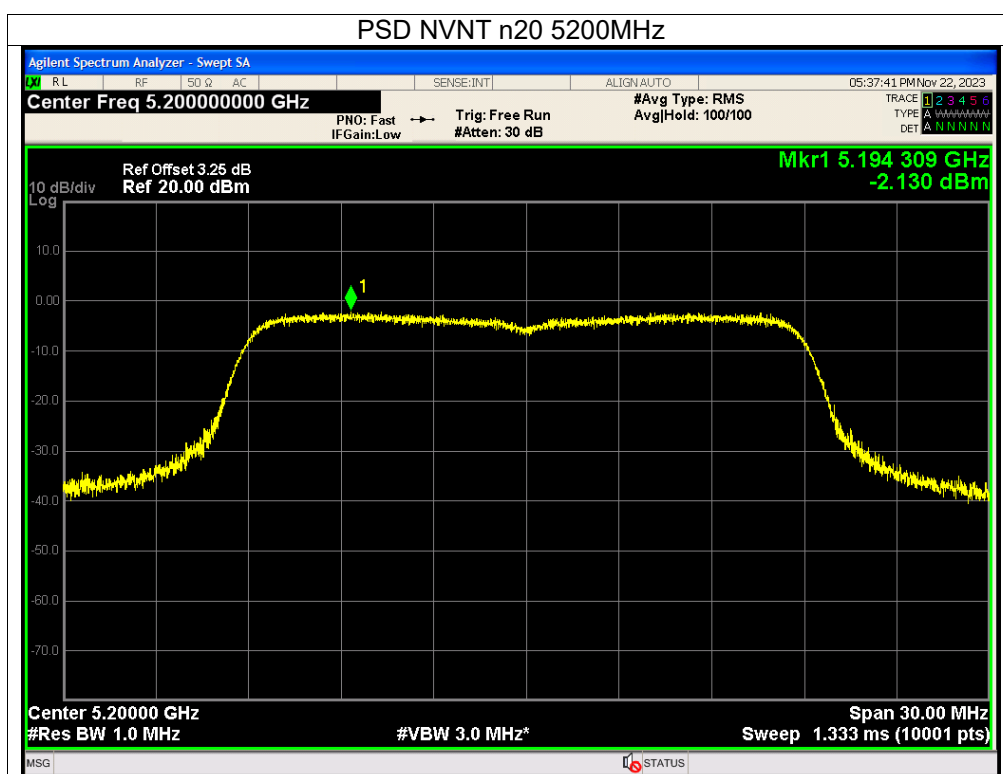
5.8G: Limit=30-(8.72-6)=28.28 dBi

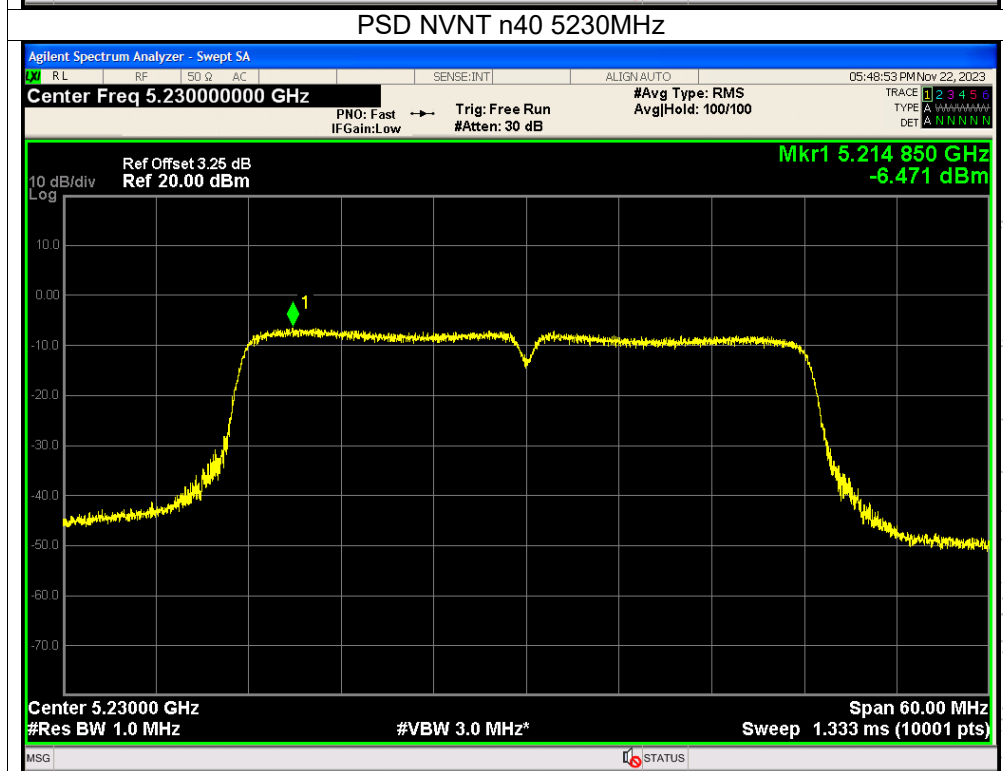
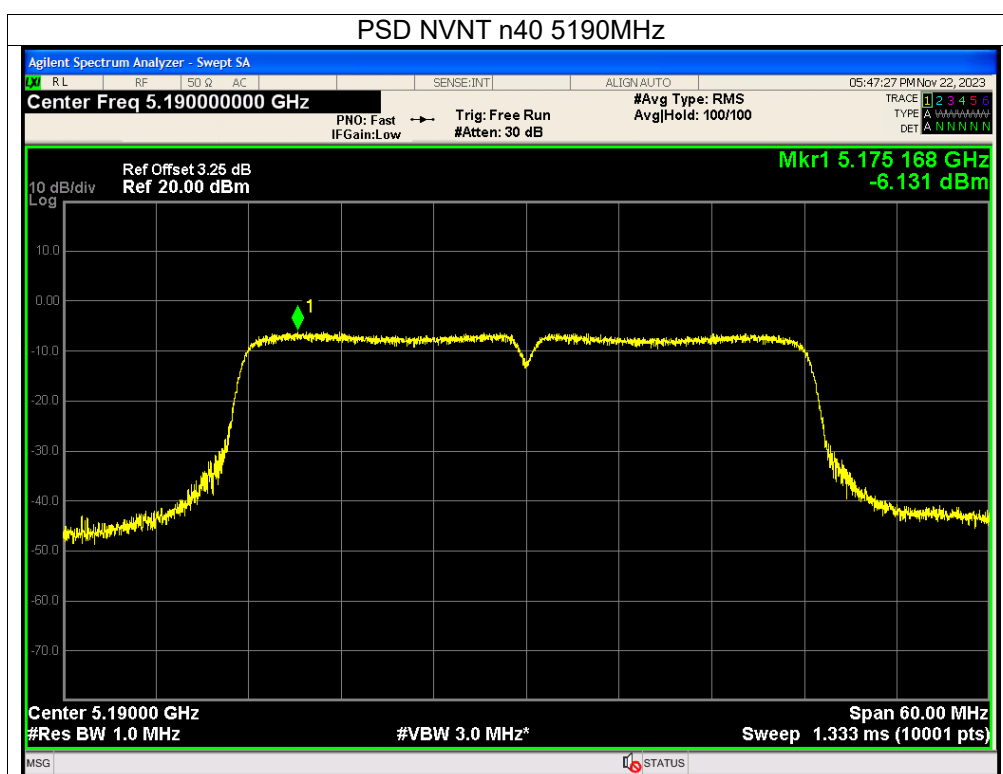
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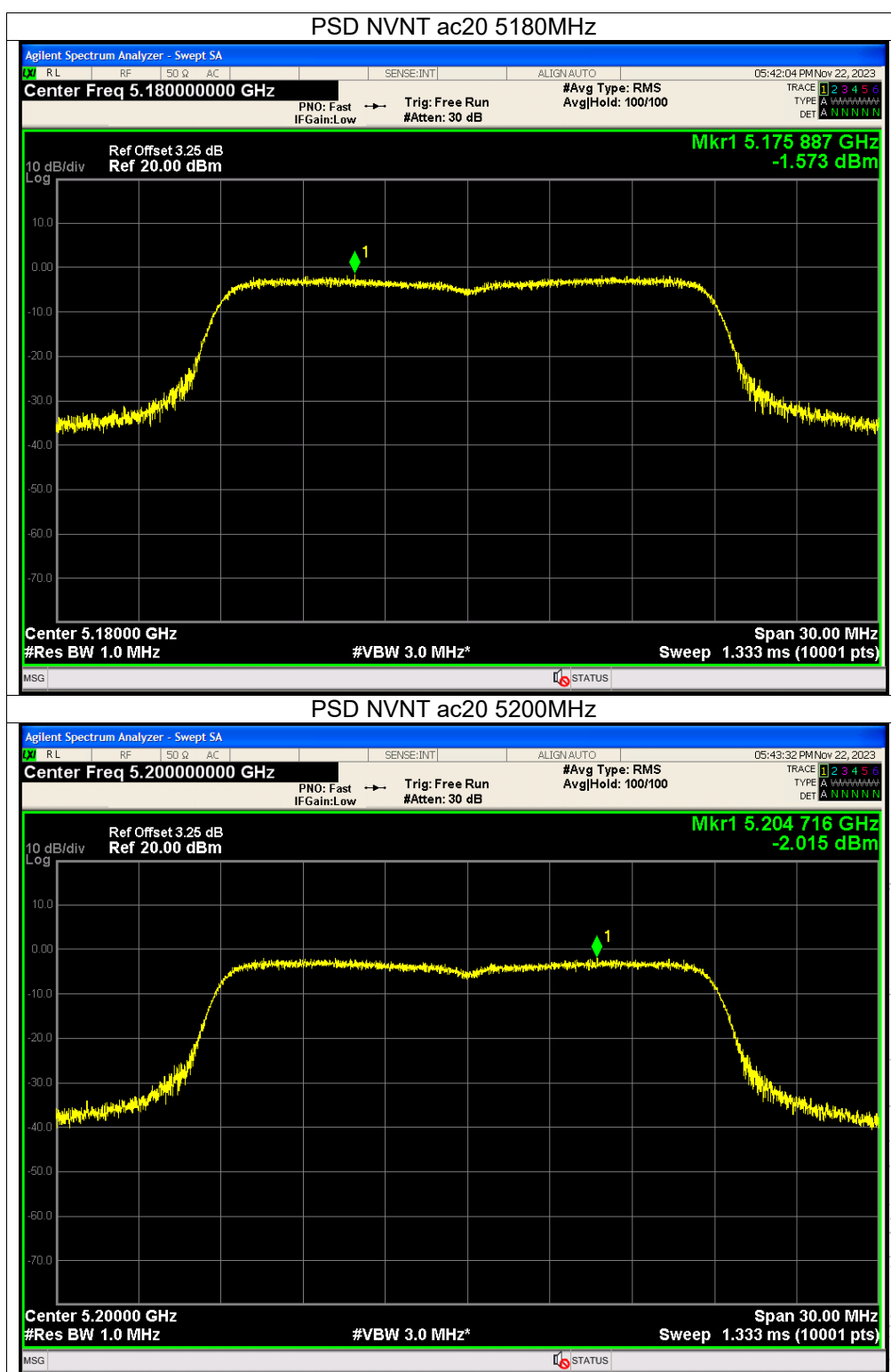
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

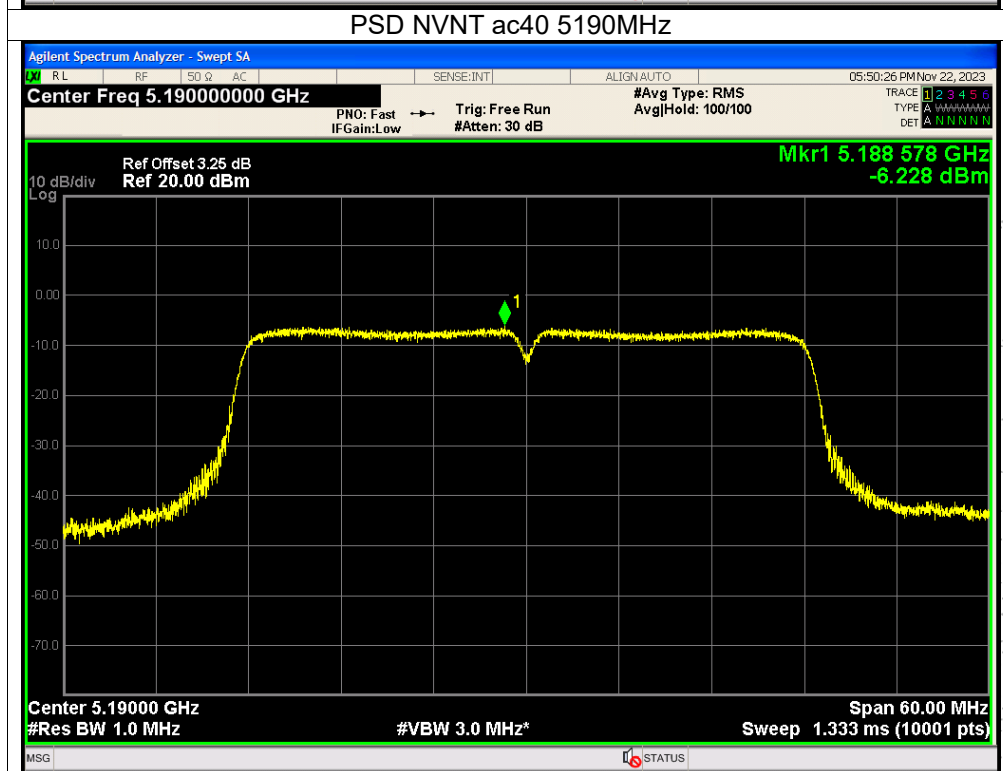
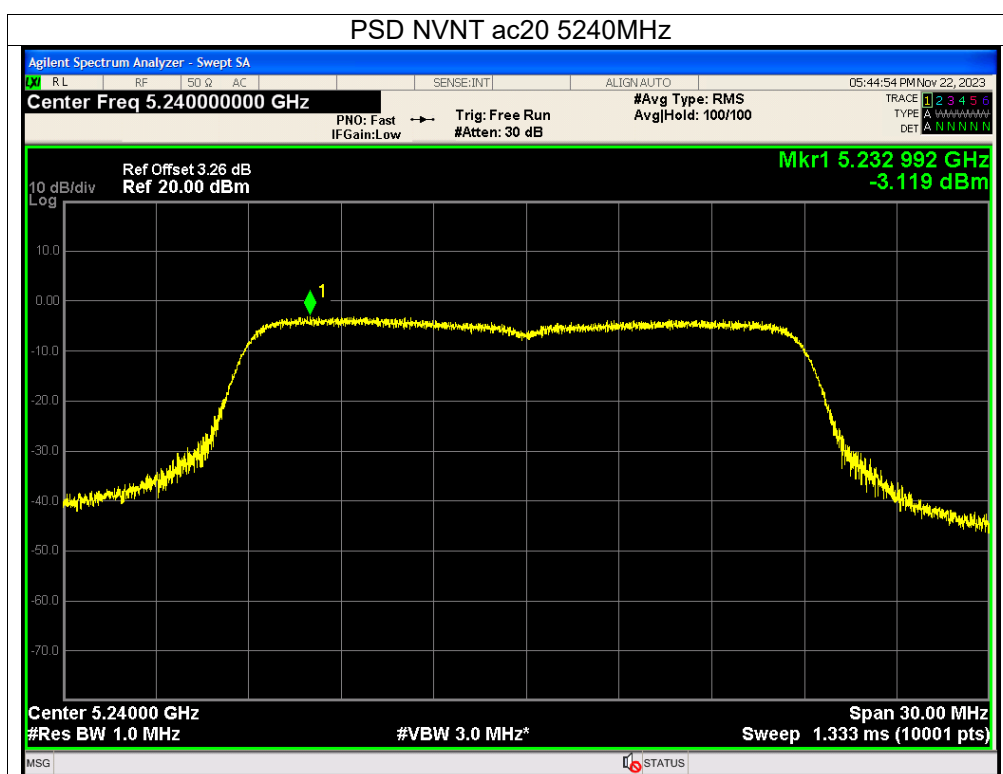


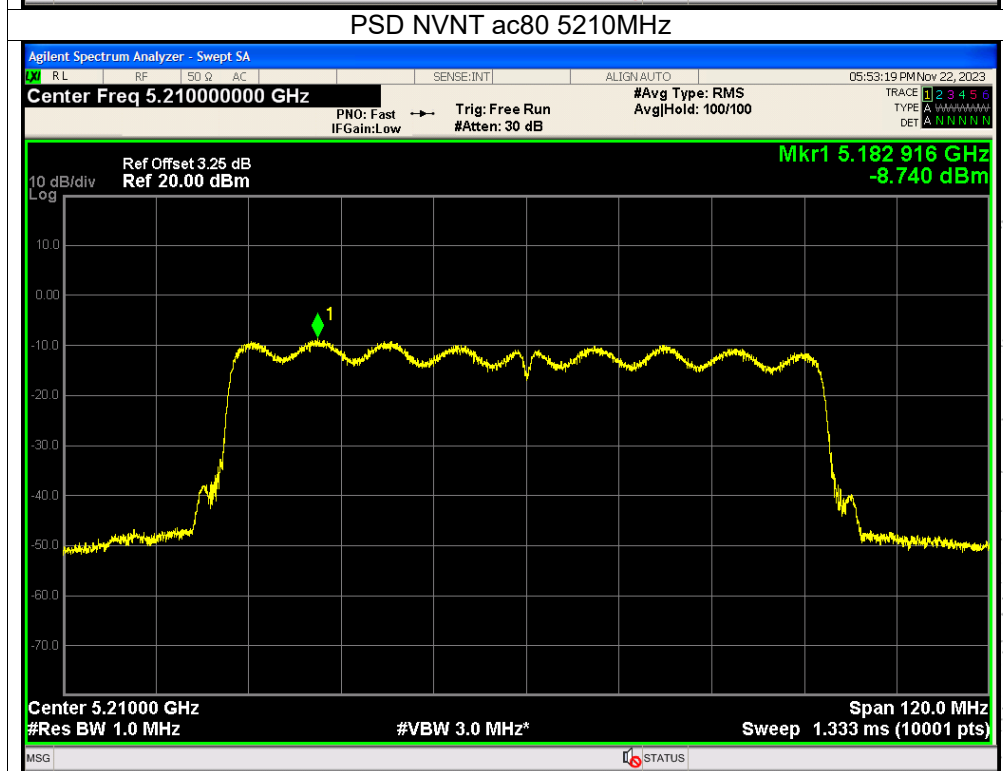
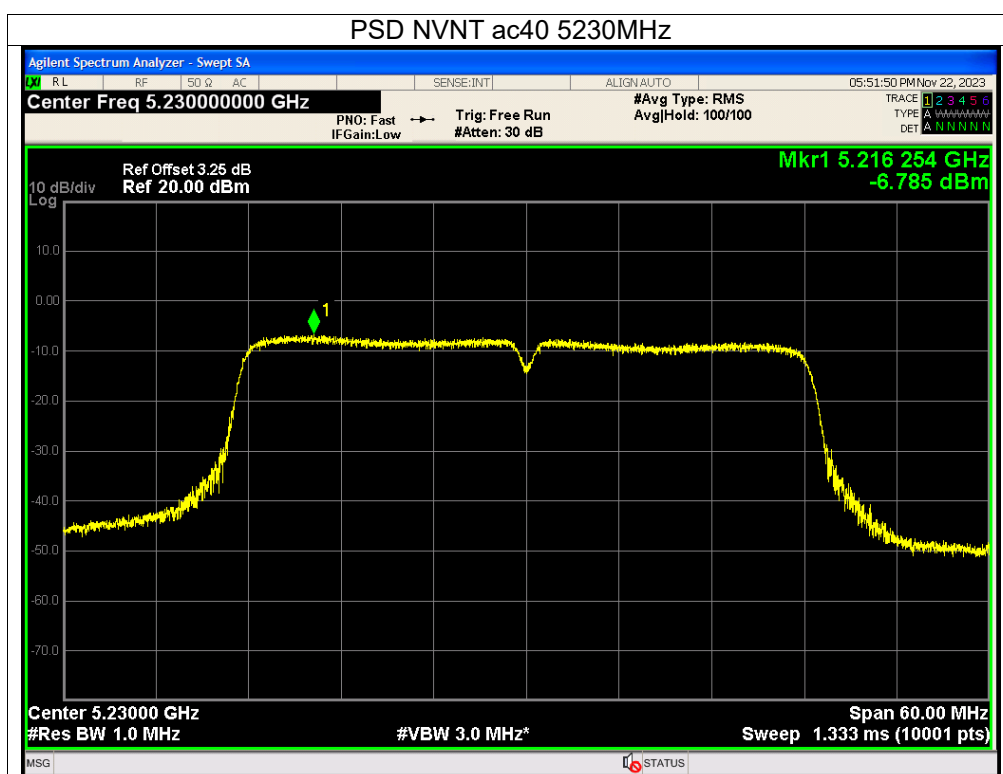






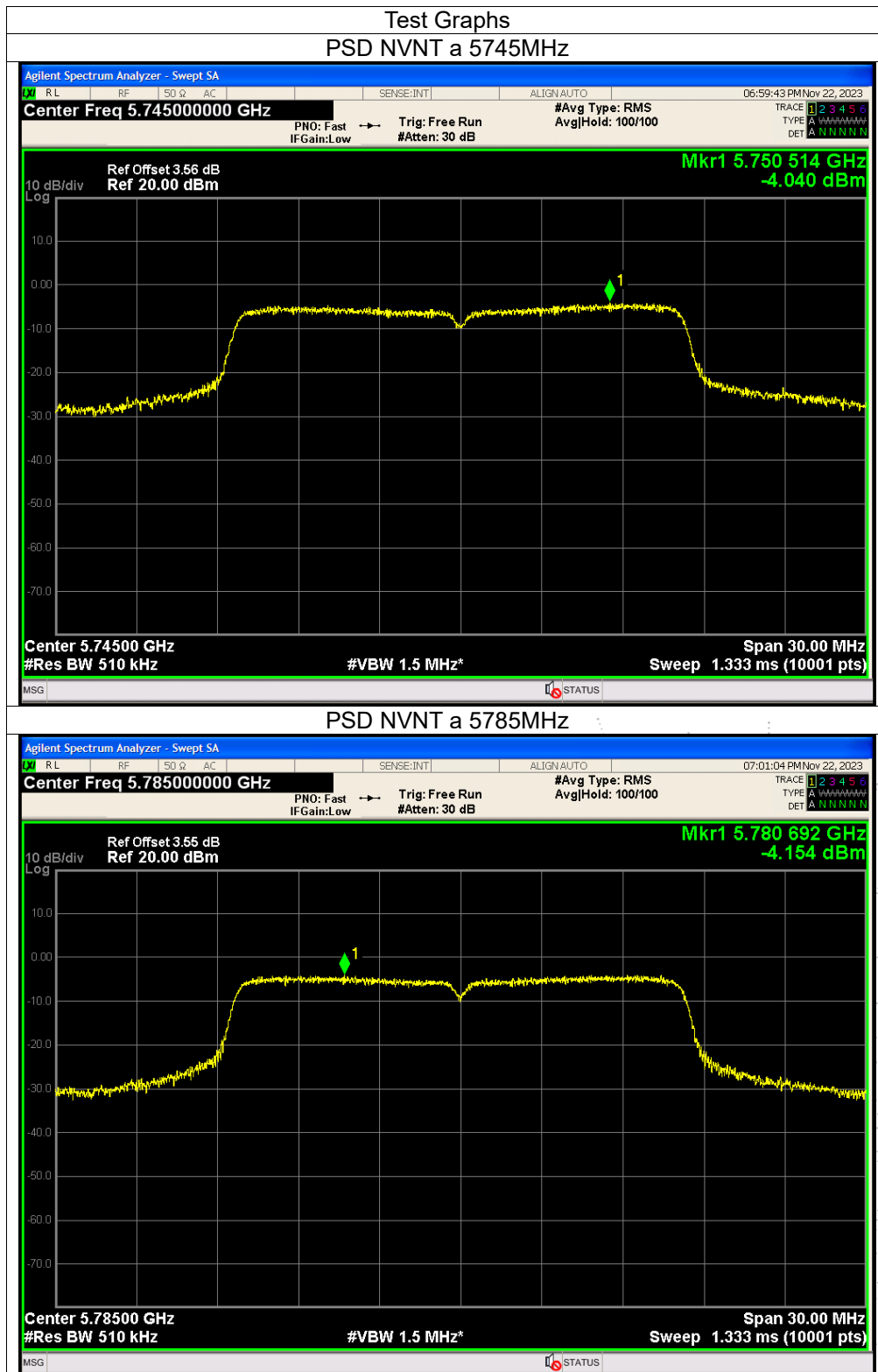


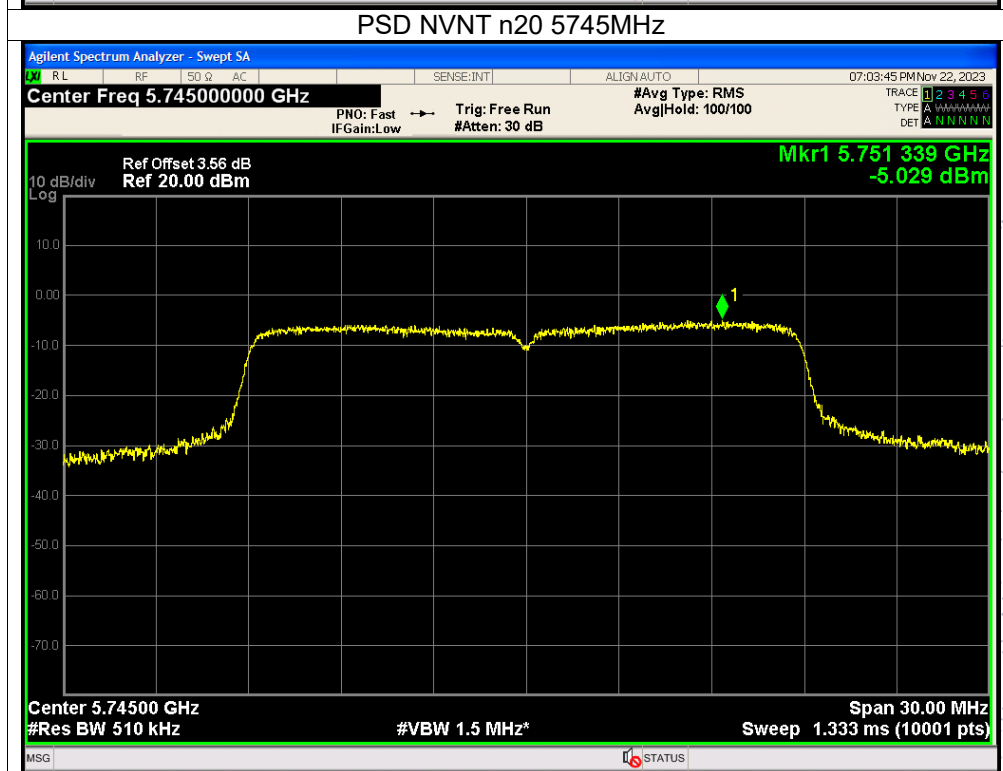
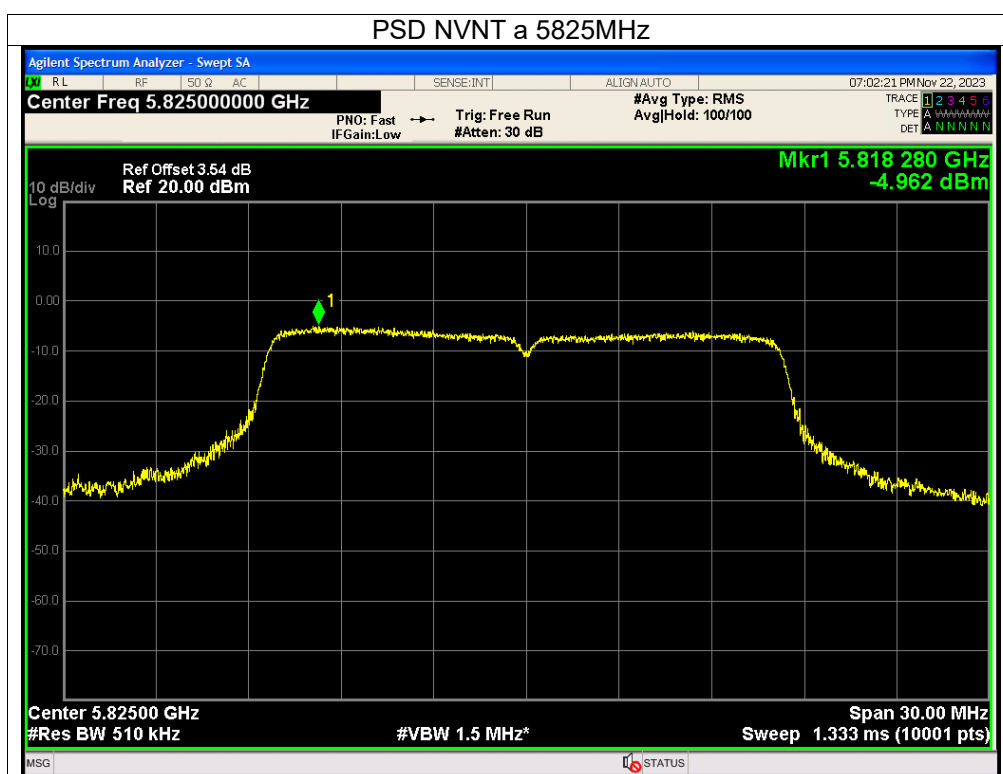


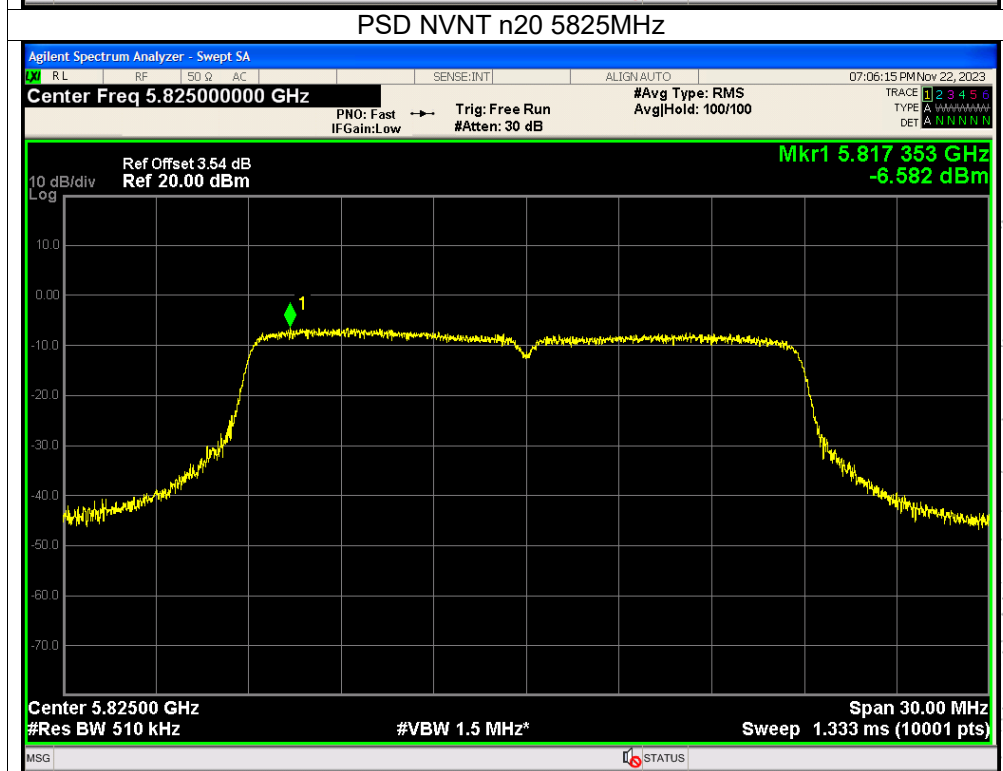
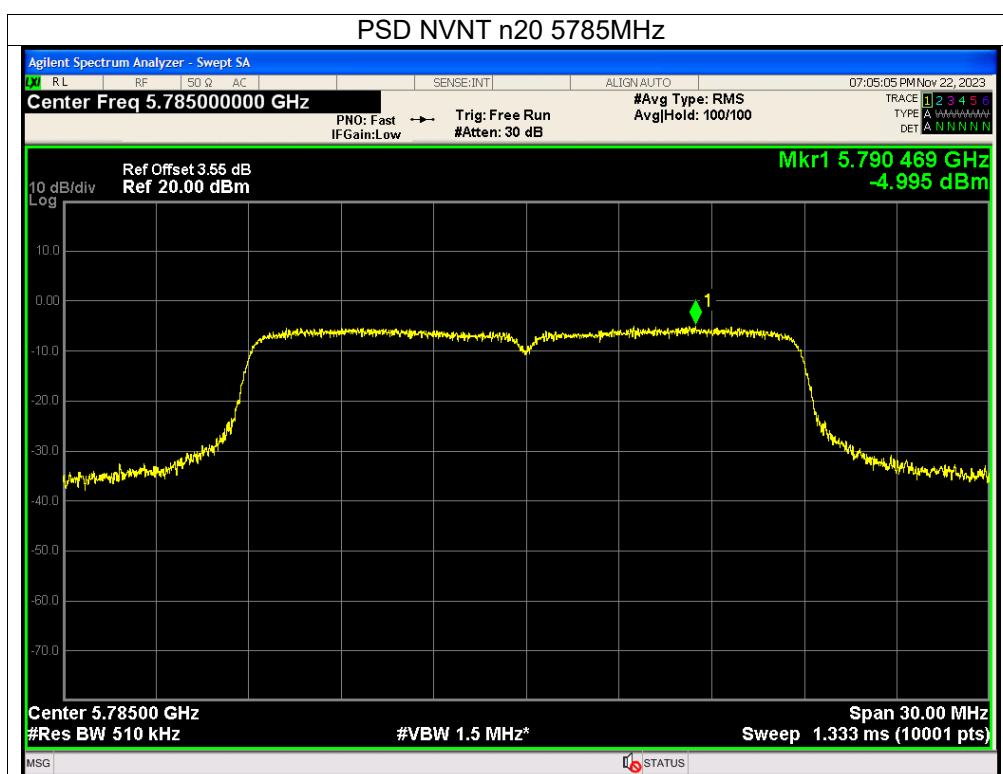


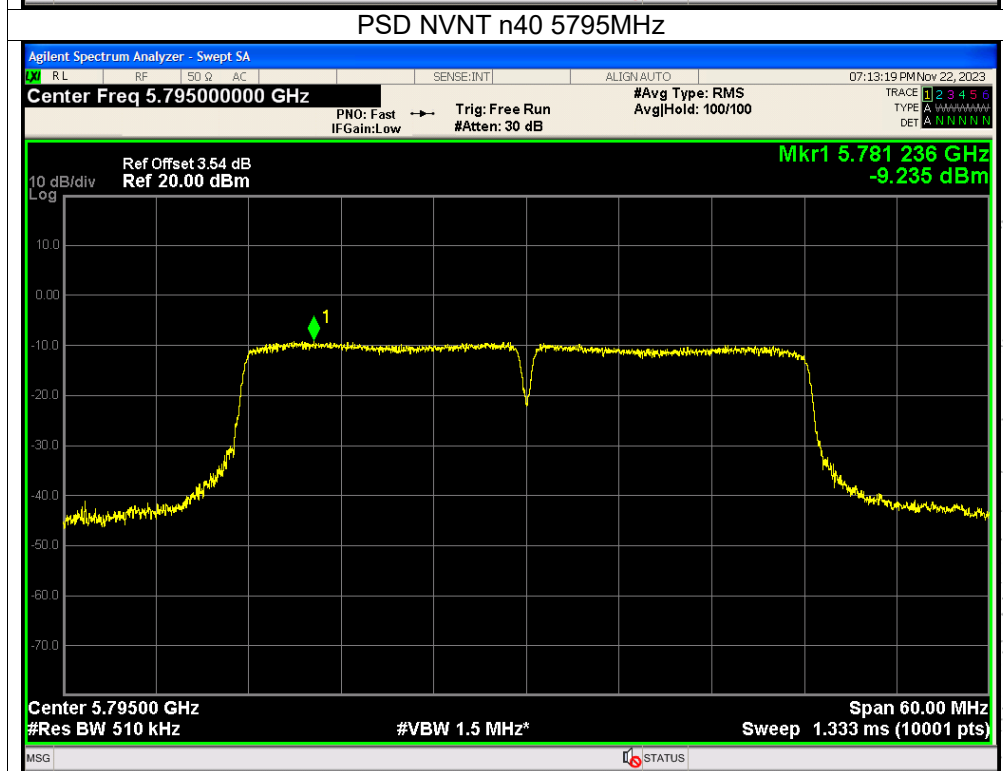
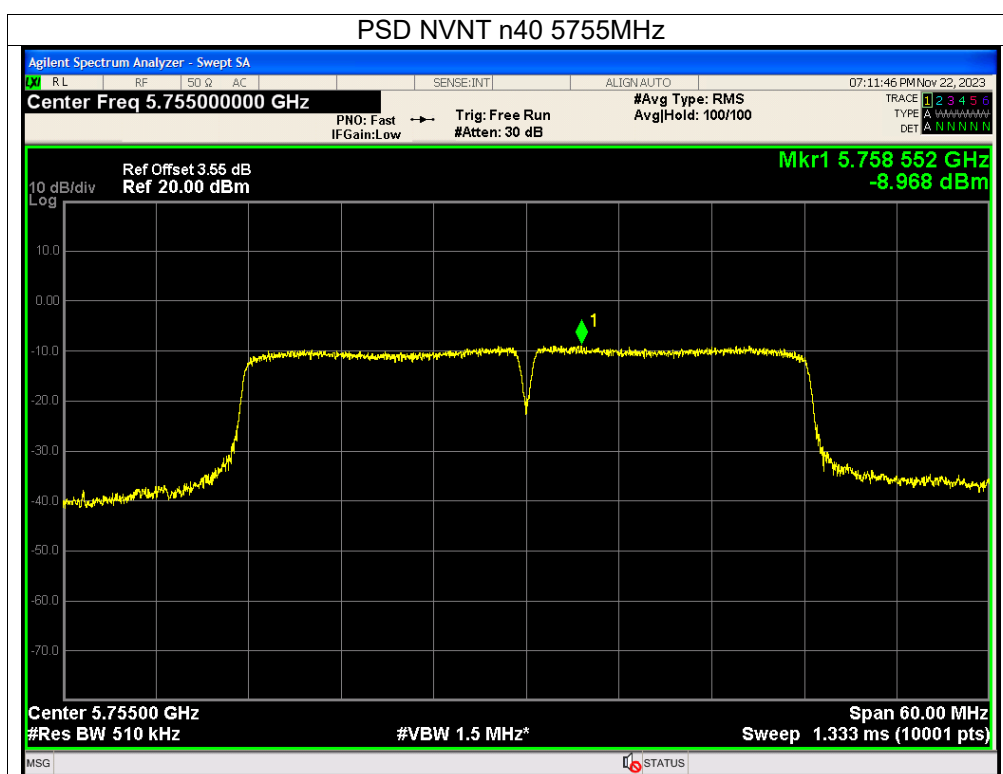
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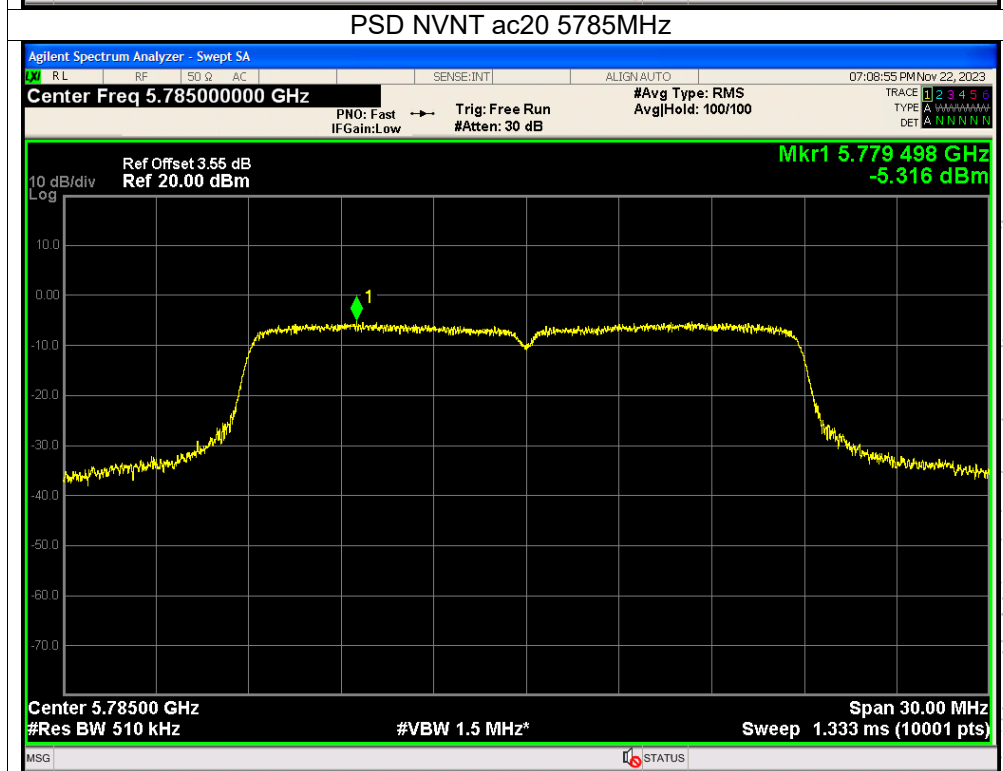
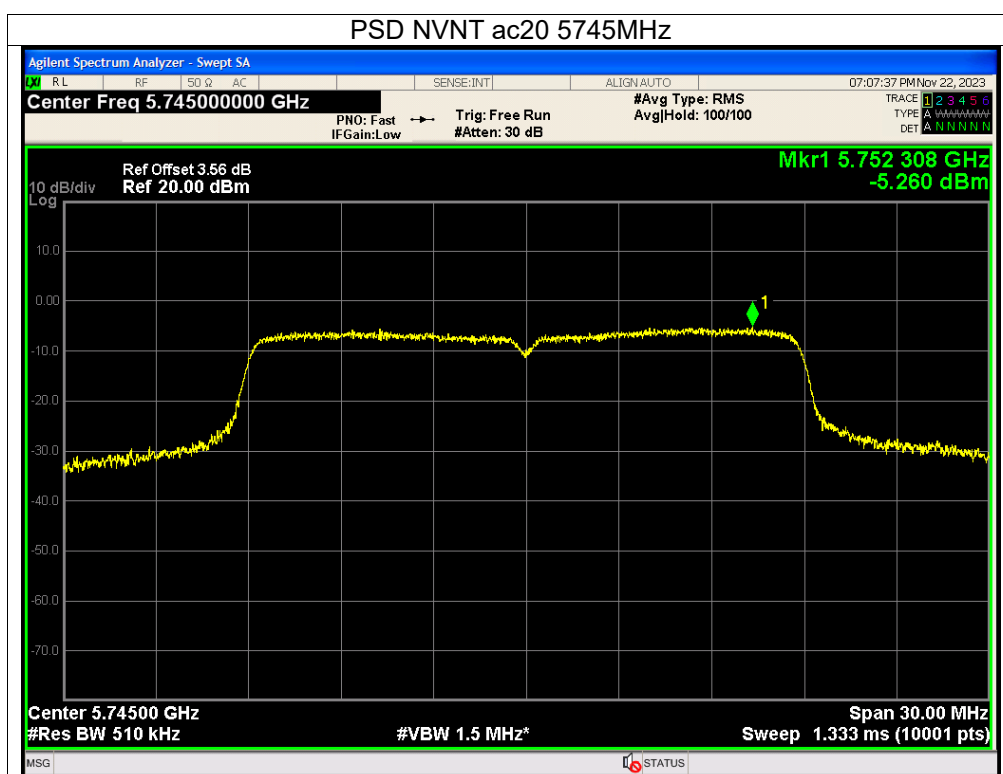
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

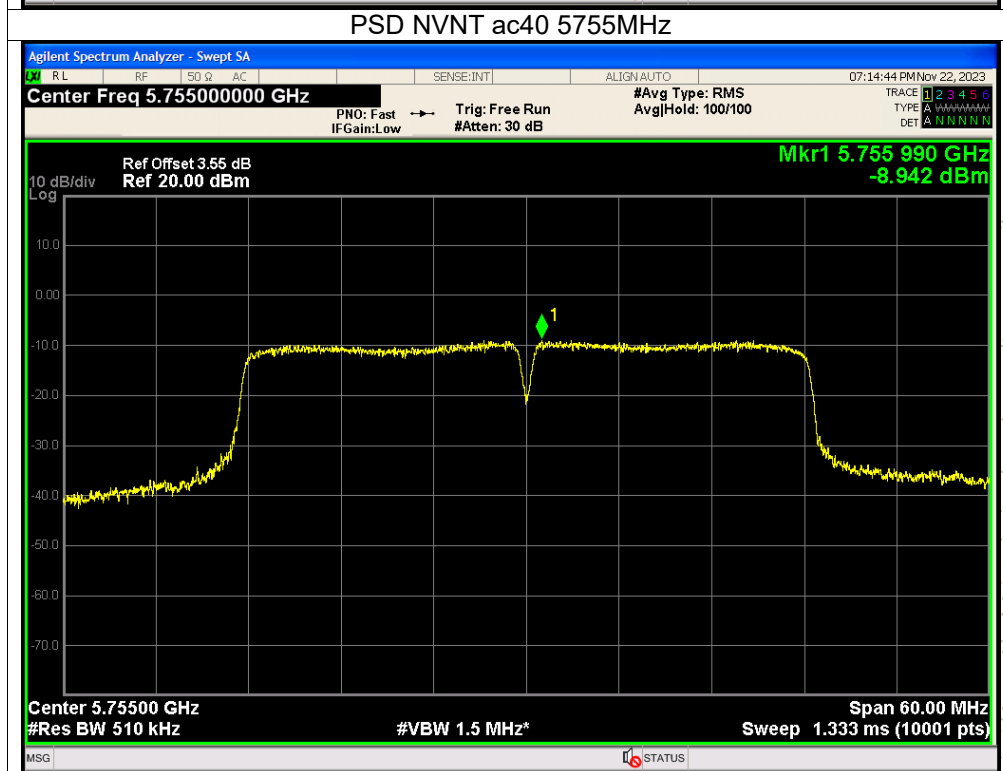
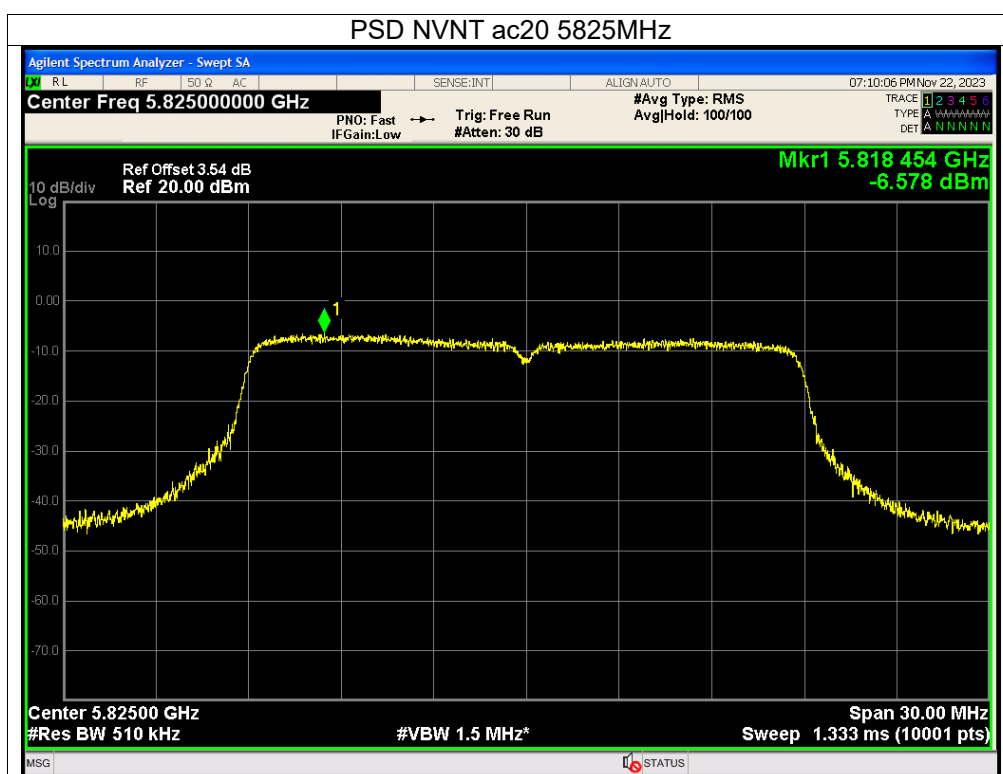


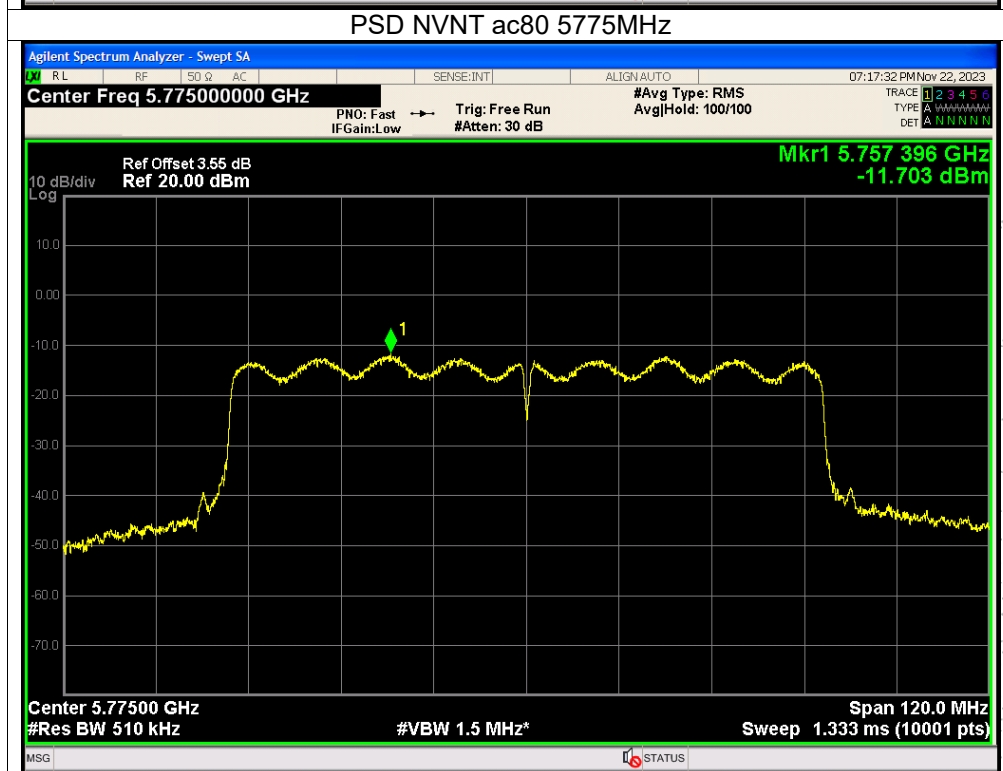
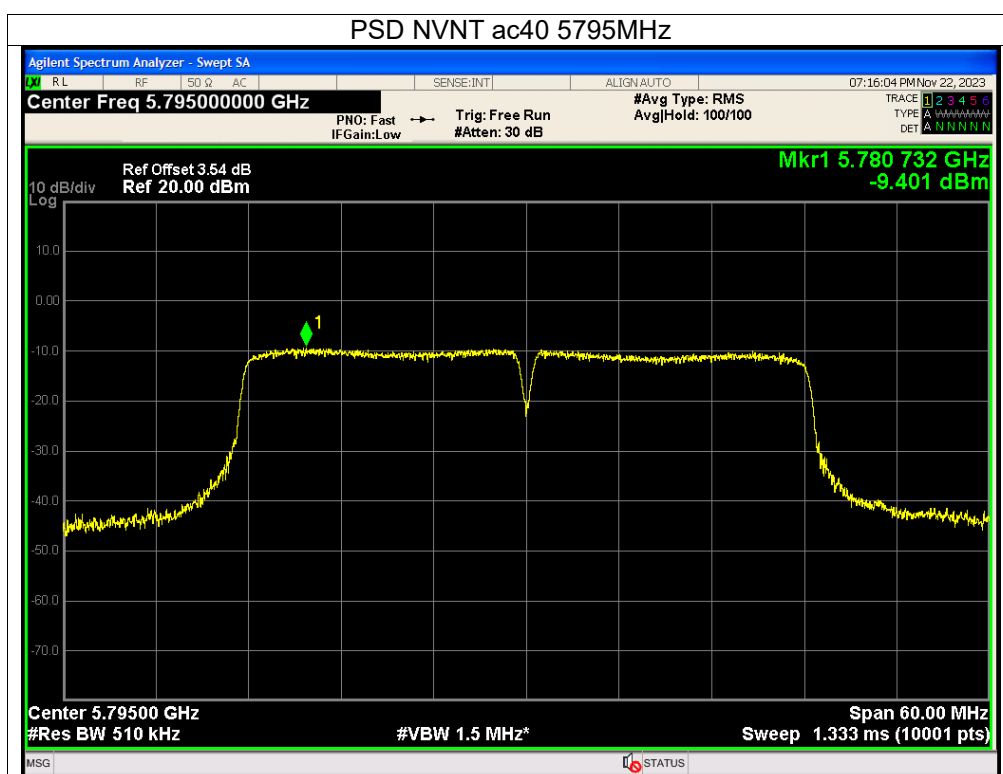






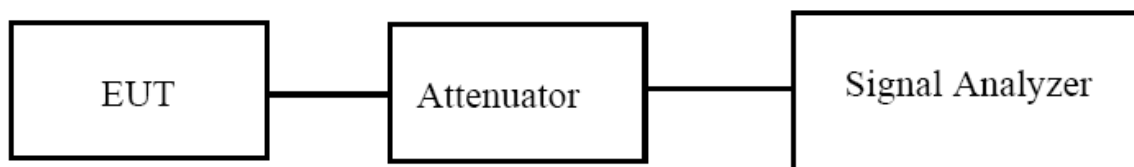






9. 26dB & 6dB & 99% Emission Bandwidth

9.1 Block Diagram Of Test Setup



9.2 Limit

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

9.3 Test procedure

a) Set RBW = approximately 1% of the emission bandwidth.

b) Set the VBW > RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

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.

9.4 EUT operating Conditions

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

9.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	-26 dB Bandwidth (MHz)	
			Ant A	Ant B
NVNT	a	5180	35.810	32.974
NVNT	a	5200	32.253	30.198
NVNT	a	5240	23.783	23.290
NVNT	n20	5180	28.565	23.286
NVNT	n20	5200	22.110	21.746
NVNT	n20	5240	21.697	22.174
NVNT	n40	5190	43.626	44.242
NVNT	n40	5230	43.162	43.210
NVNT	ac20	5180	24.807	22.500
NVNT	ac20	5200	22.101	22.135
NVNT	ac20	5240	21.484	22.027
NVNT	ac40	5190	43.978	43.404
NVNT	ac40	5230	43.960	43.197
NVNT	ac80	5210	82.146	81.958

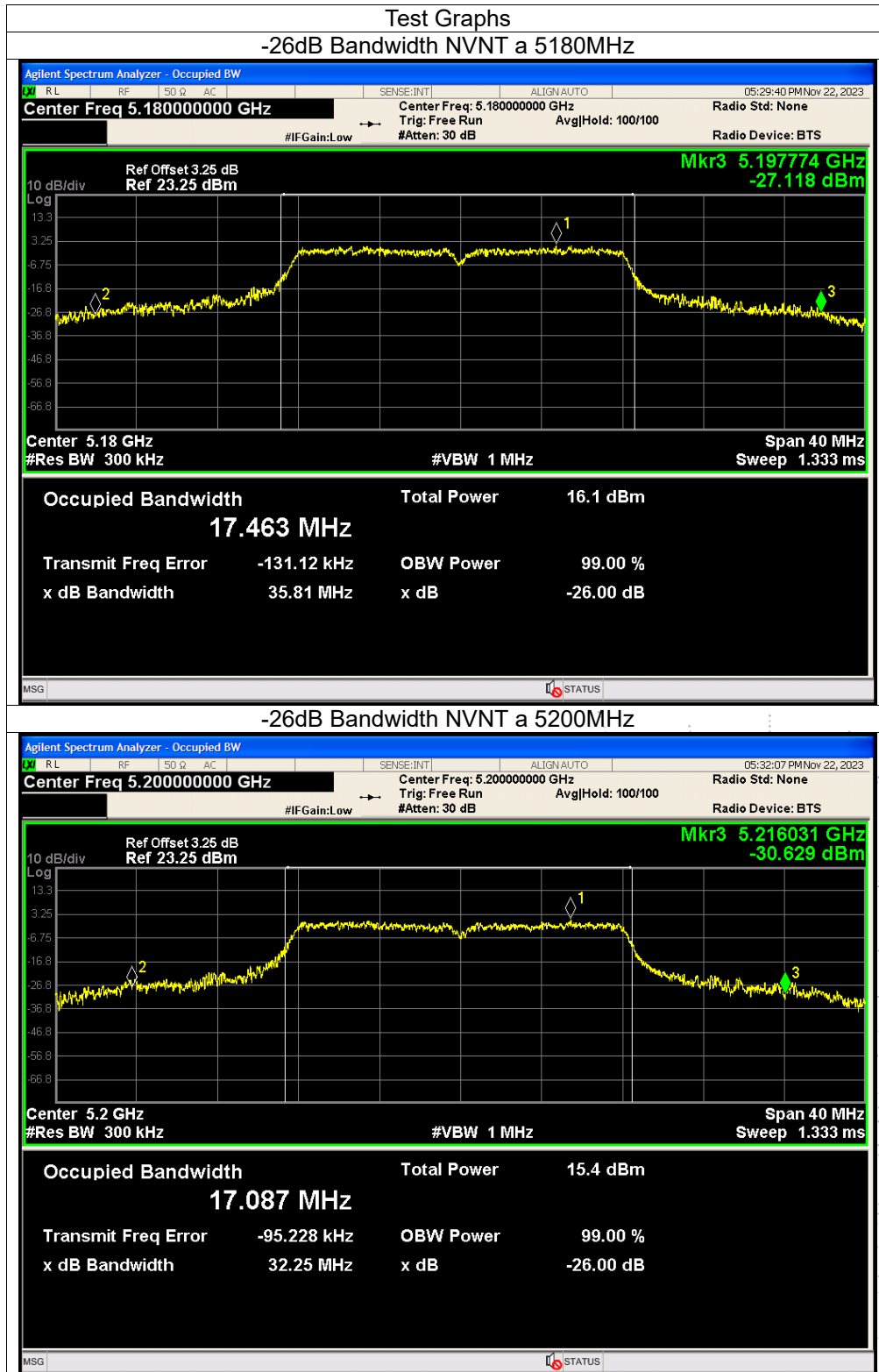
Condition	Mode	Frequency (MHz)	99% OBW (MHz)	
			Ant A	Ant B
NVNT	a	5180	17.241	17.074
NVNT	a	5200	16.791	16.770
NVNT	a	5240	16.646	16.649
NVNT	n20	5180	17.841	17.764
NVNT	n20	5200	17.760	17.753
NVNT	n20	5240	17.746	17.740
NVNT	n40	5190	36.260	36.267
NVNT	n40	5230	36.235	36.288
NVNT	ac20	5180	17.841	17.829
NVNT	ac20	5200	17.798	17.775
NVNT	ac20	5240	17.745	17.757
NVNT	ac40	5190	36.260	36.220
NVNT	ac40	5230	36.209	36.254
NVNT	ac80	5210	75.598	75.565

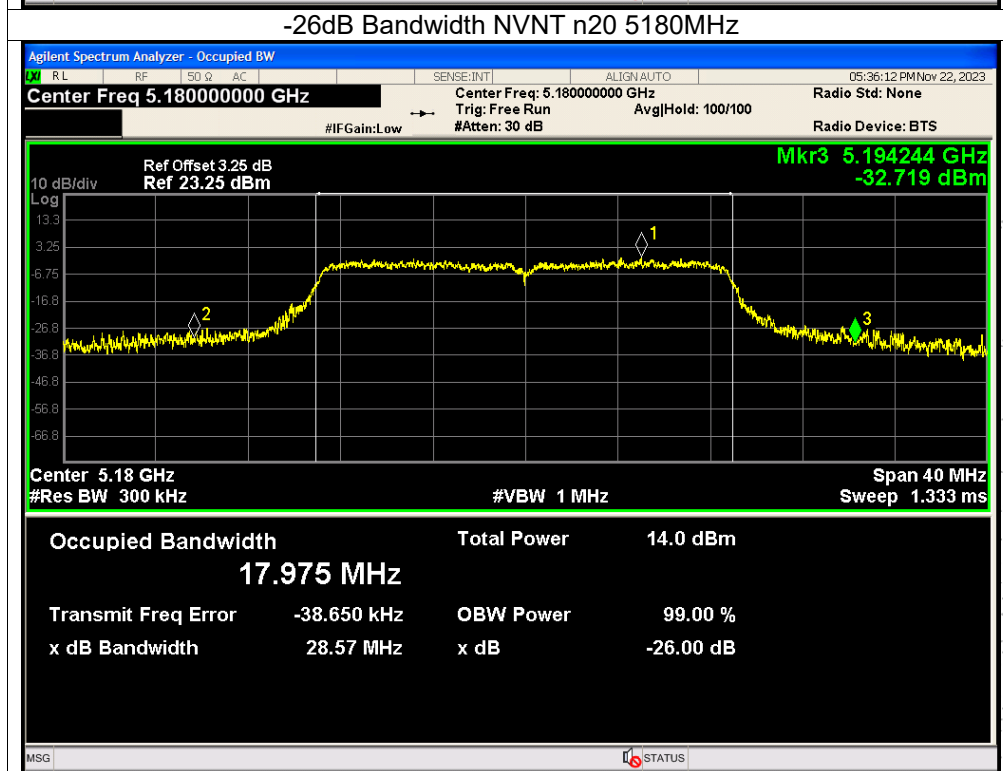
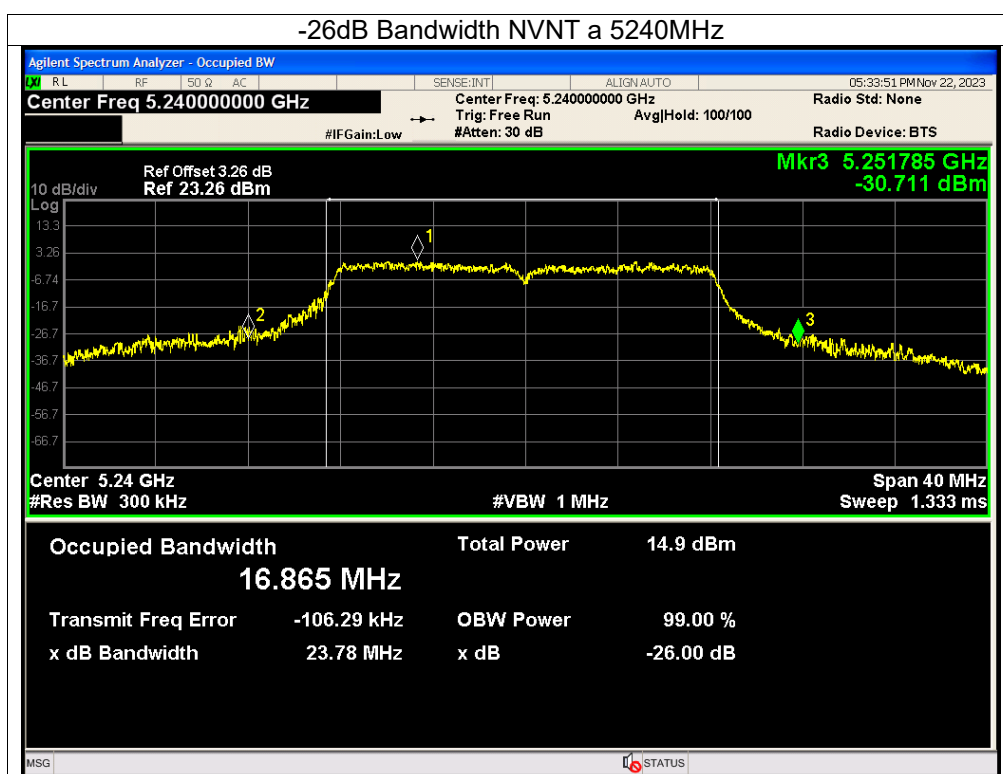
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5745-5825MHz)		

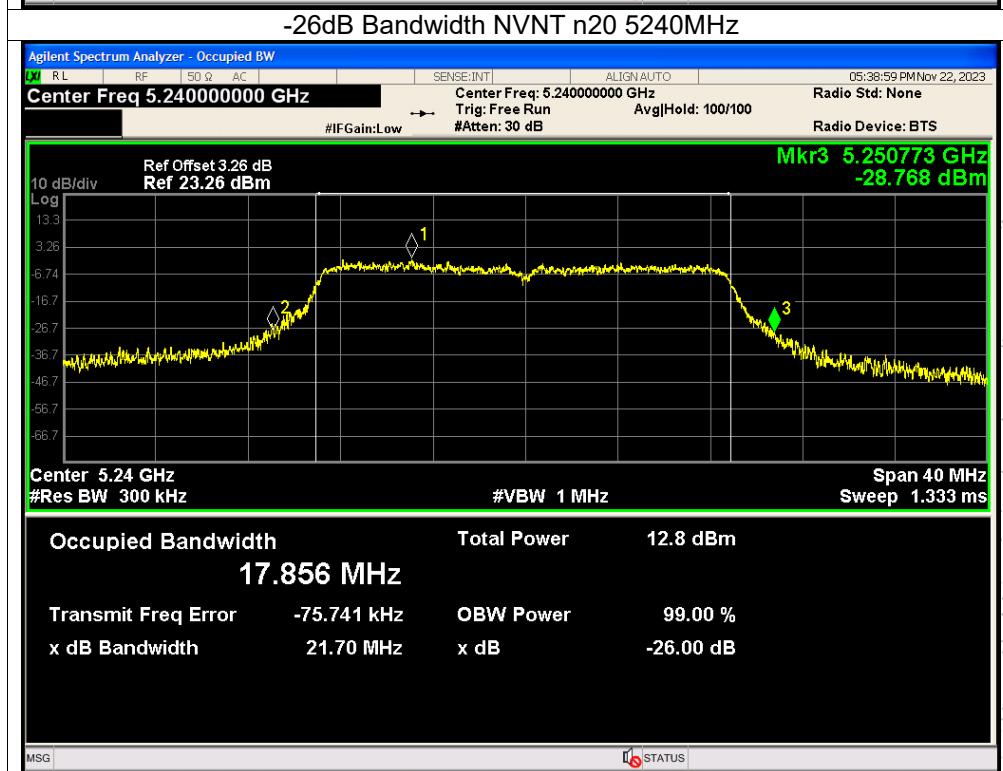
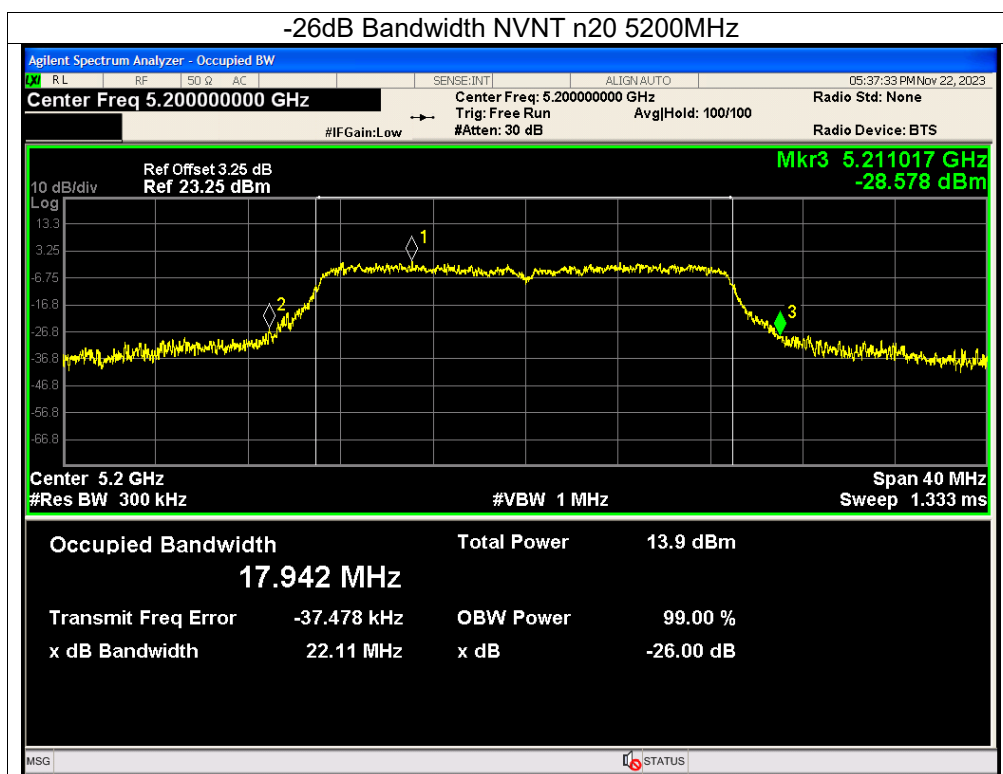
Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)		Limit -6 dB Bandwidth (MHz)	Verdict
			Ant A	Ant B		
NVNT	a	5745	16.527	16.493	0.5	Pass
NVNT	a	5785	16.539	16.521	0.5	Pass
NVNT	a	5825	16.472	16.483	0.5	Pass
NVNT	n20	5745	17.752	17.757	0.5	Pass
NVNT	n20	5785	17.720	17.724	0.5	Pass
NVNT	n20	5825	17.654	17.700	0.5	Pass
NVNT	n40	5755	36.437	36.435	0.5	Pass
NVNT	n40	5795	36.483	36.427	0.5	Pass
NVNT	ac20	5745	17.752	17.735	0.5	Pass
NVNT	ac20	5785	17.795	17.738	0.5	Pass
NVNT	ac20	5825	17.708	17.655	0.5	Pass
NVNT	ac40	5755	36.405	36.410	0.5	Pass
NVNT	ac40	5795	36.400	36.394	0.5	Pass
NVNT	ac80	5775	76.099	76.079	0.5	Pass

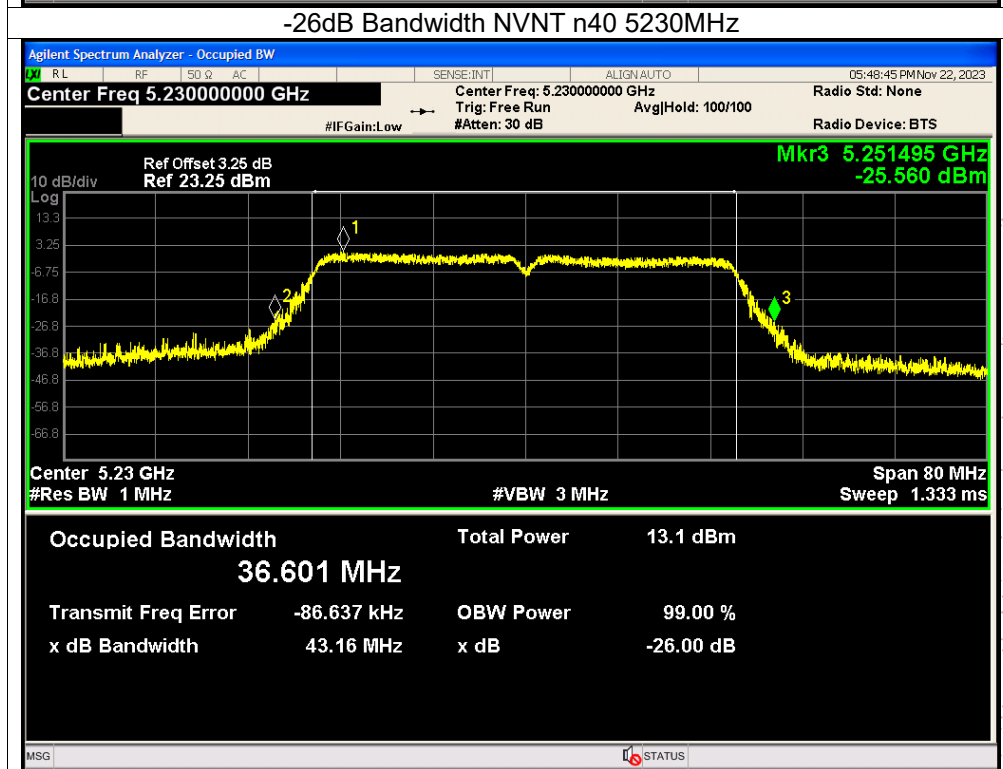
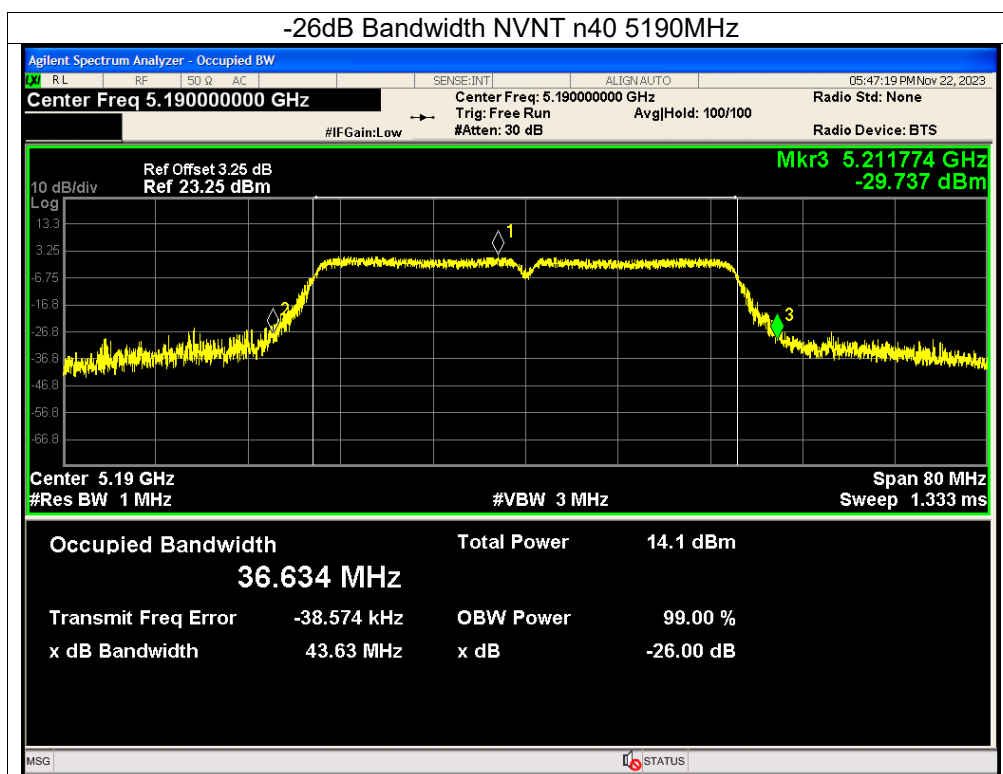
Condition	Mode	Frequency (MHz)	99% OBW (MHz)	
			Ant A	Ant B
NVNT	a	5745	17.251	17.433
NVNT	a	5785	17.613	17.246
NVNT	a	5825	16.697	16.690
NVNT	n20	5745	17.866	17.914
NVNT	n20	5785	17.942	17.857
NVNT	n20	5825	17.736	17.755
NVNT	n40	5755	36.605	36.452
NVNT	n40	5795	36.284	36.287
NVNT	ac20	5745	17.904	17.876
NVNT	ac20	5785	17.965	17.859
NVNT	ac20	5825	17.758	17.729
NVNT	ac40	5755	36.519	36.466
NVNT	ac40	5795	36.310	36.280
NVNT	ac80	5775	75.669	75.564

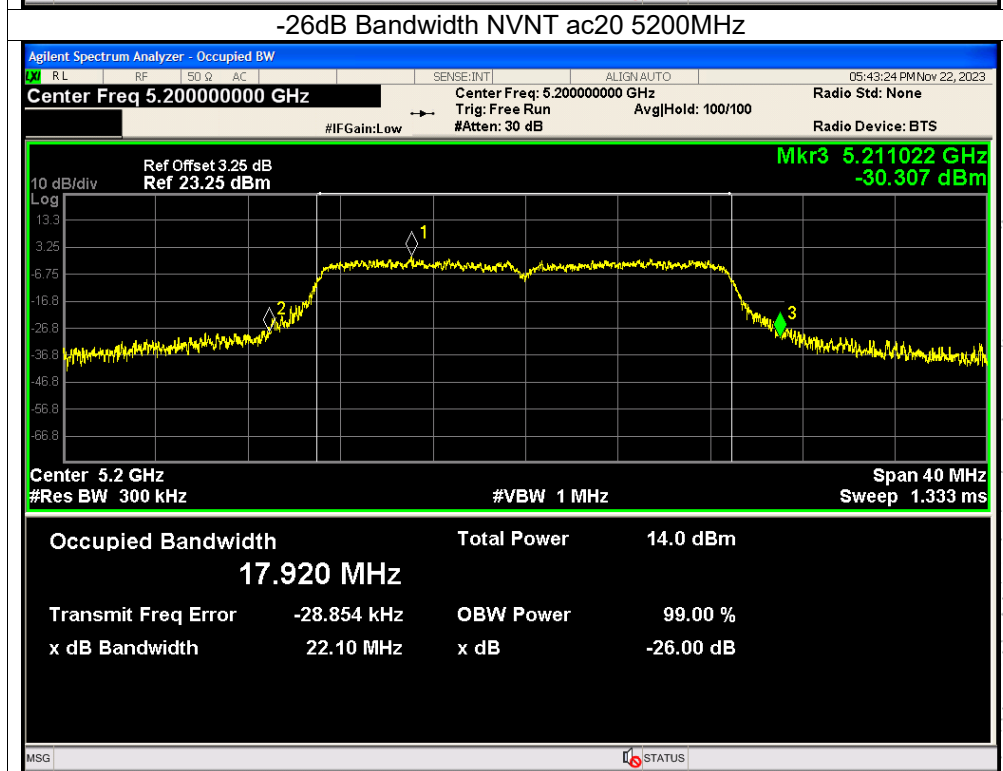
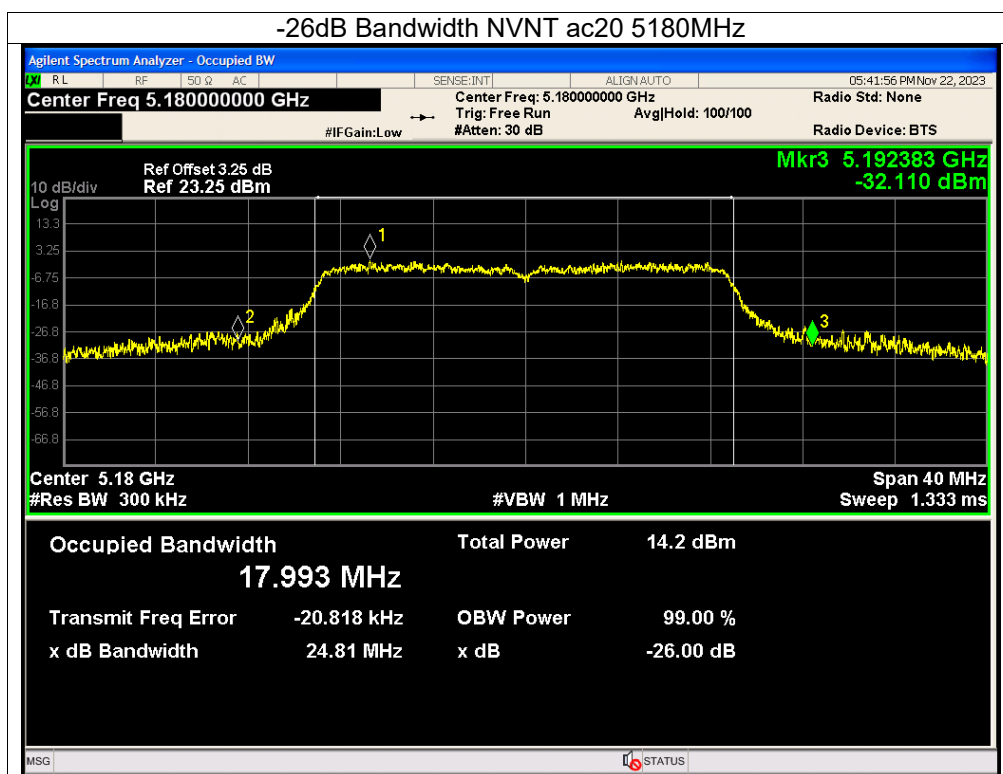
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

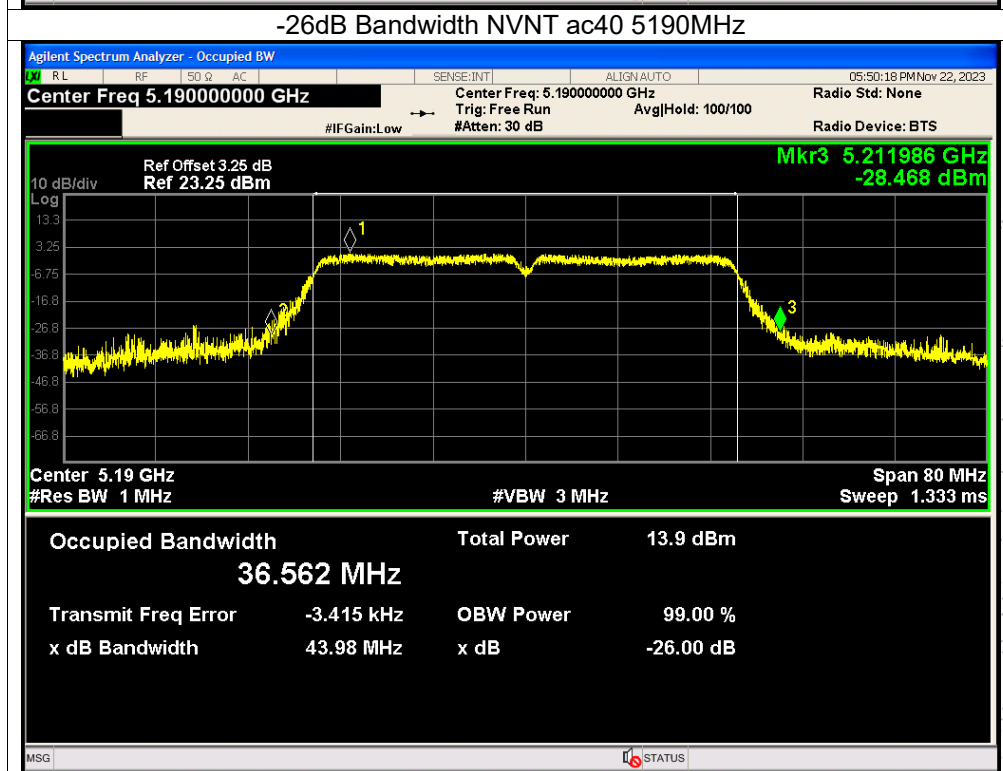
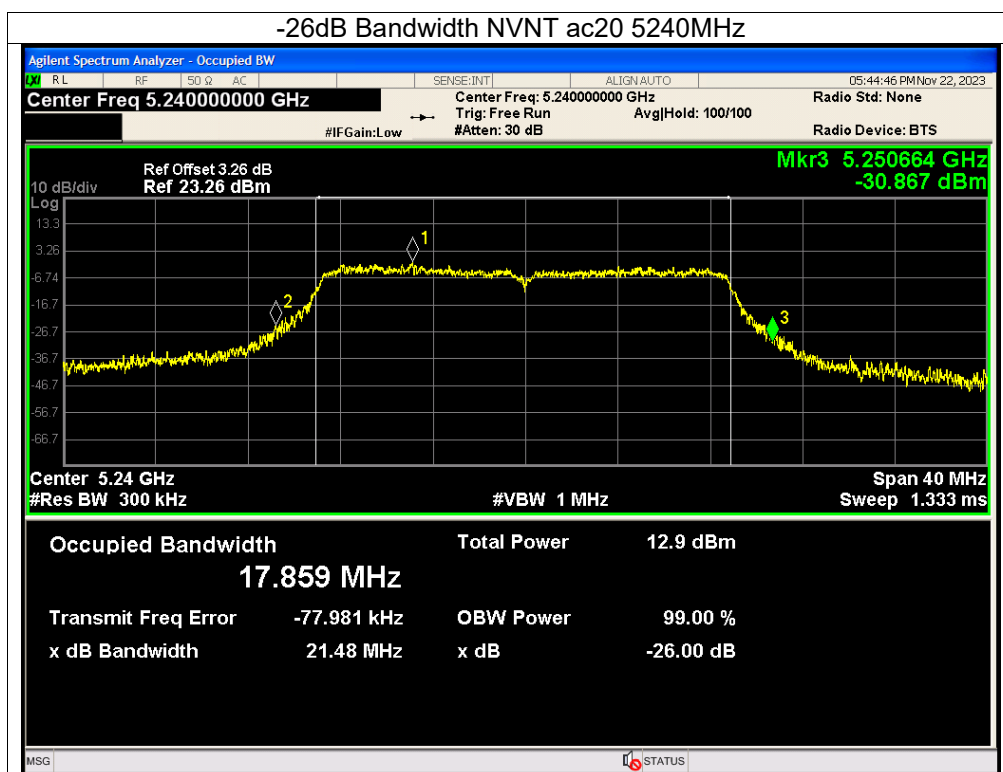


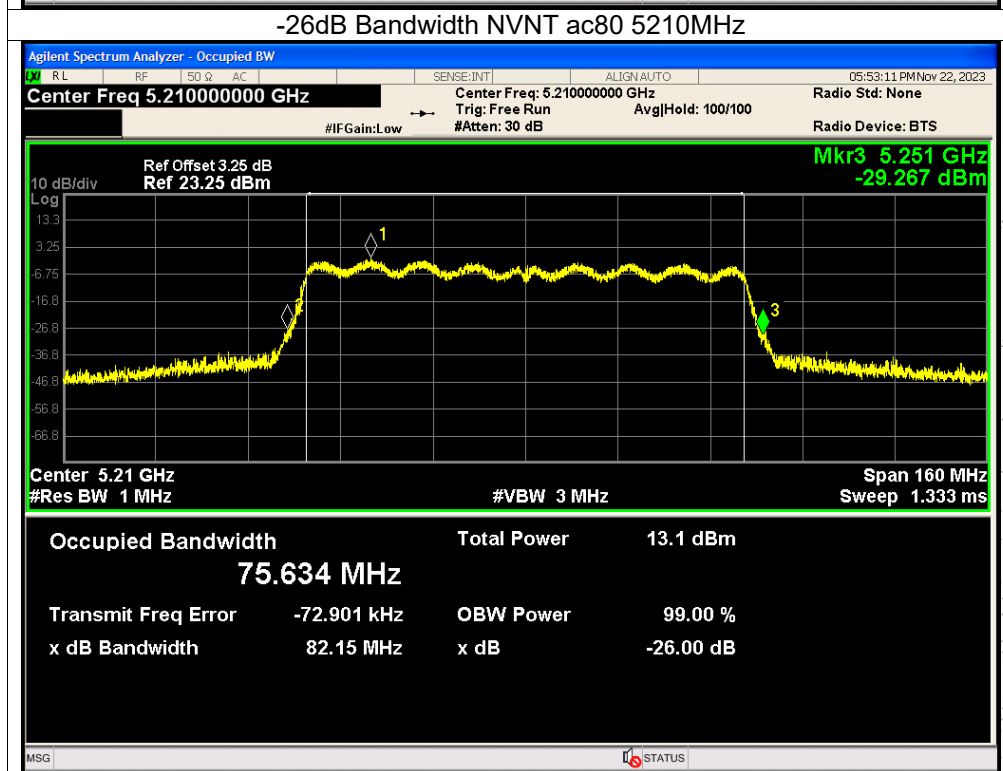
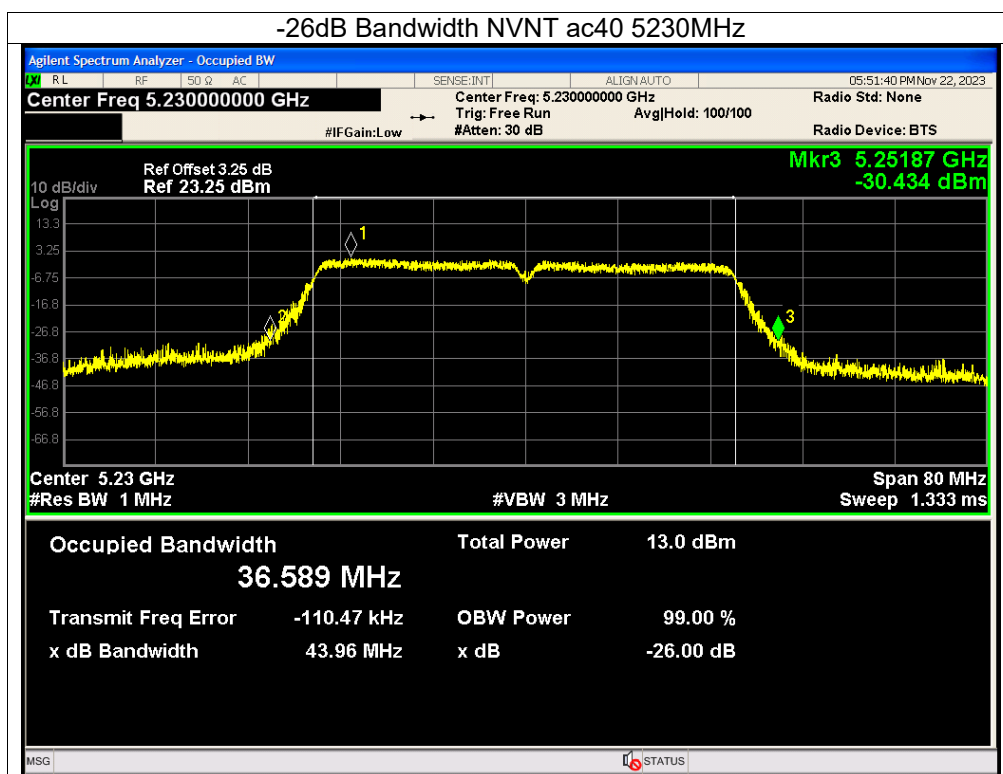


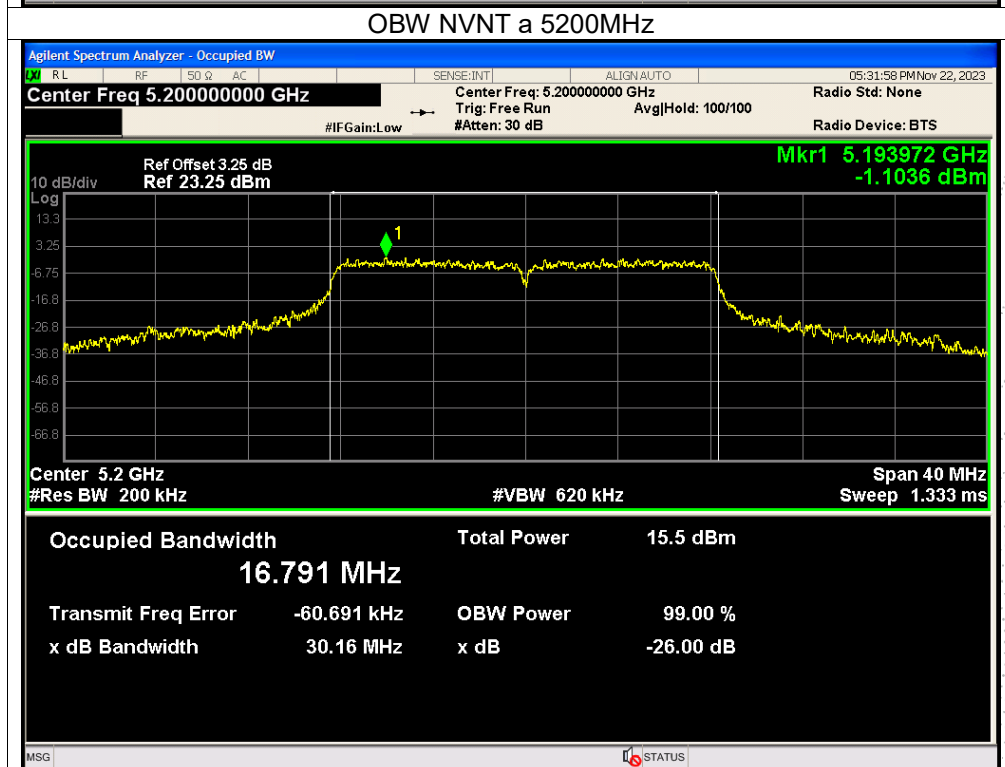
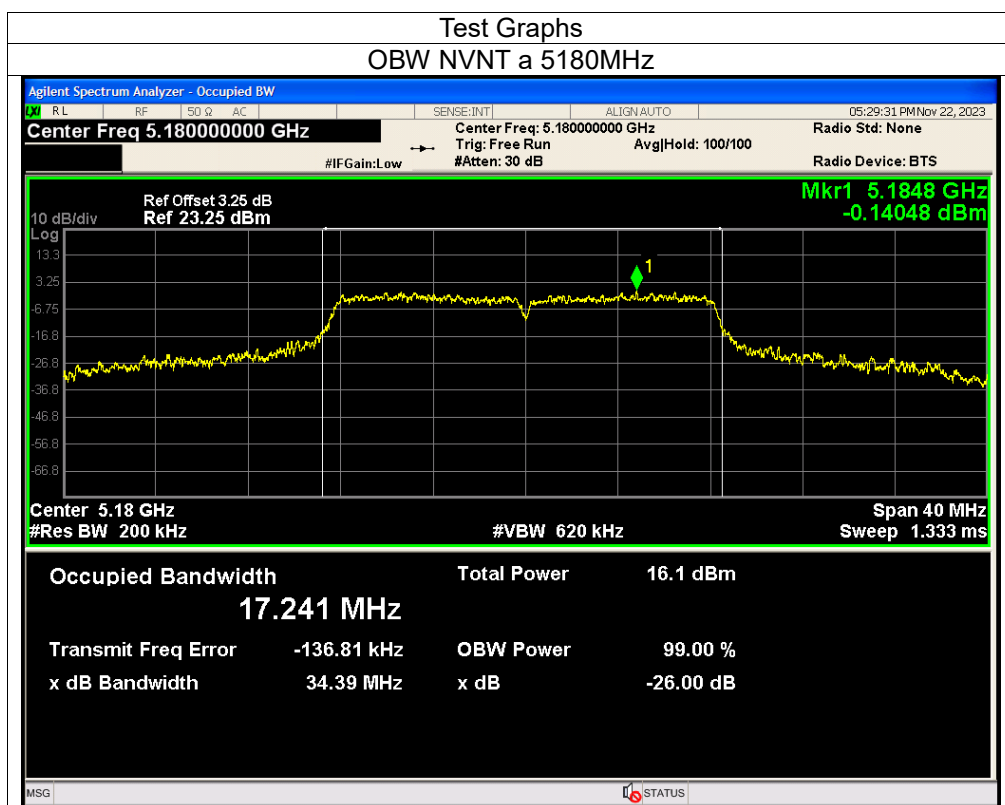


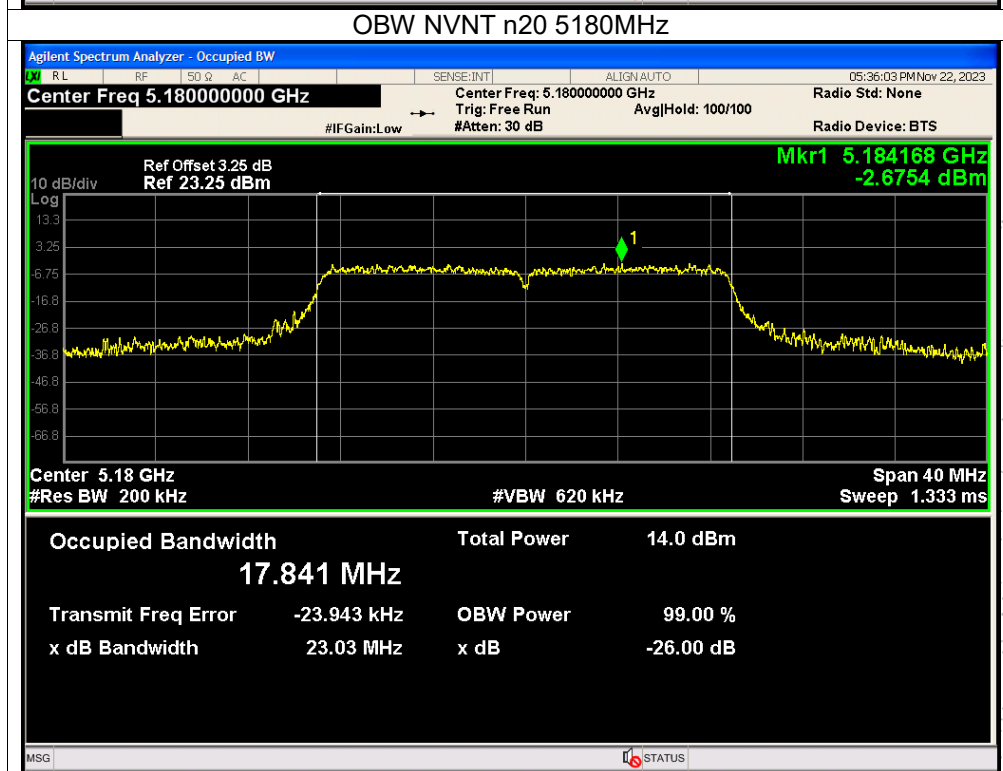
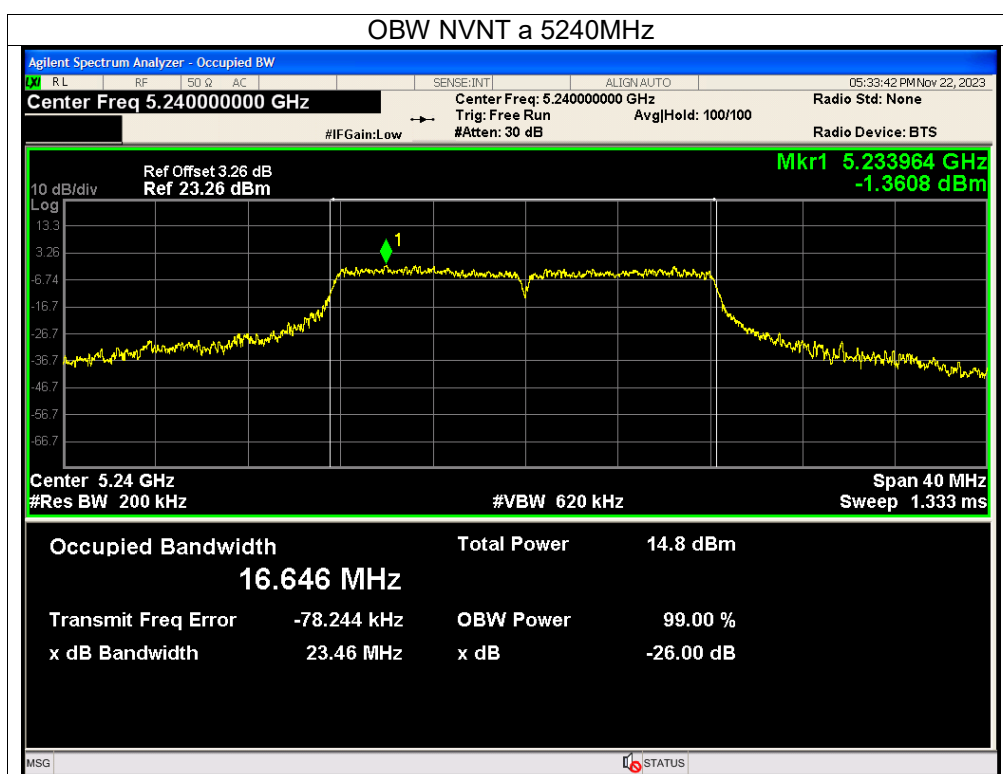


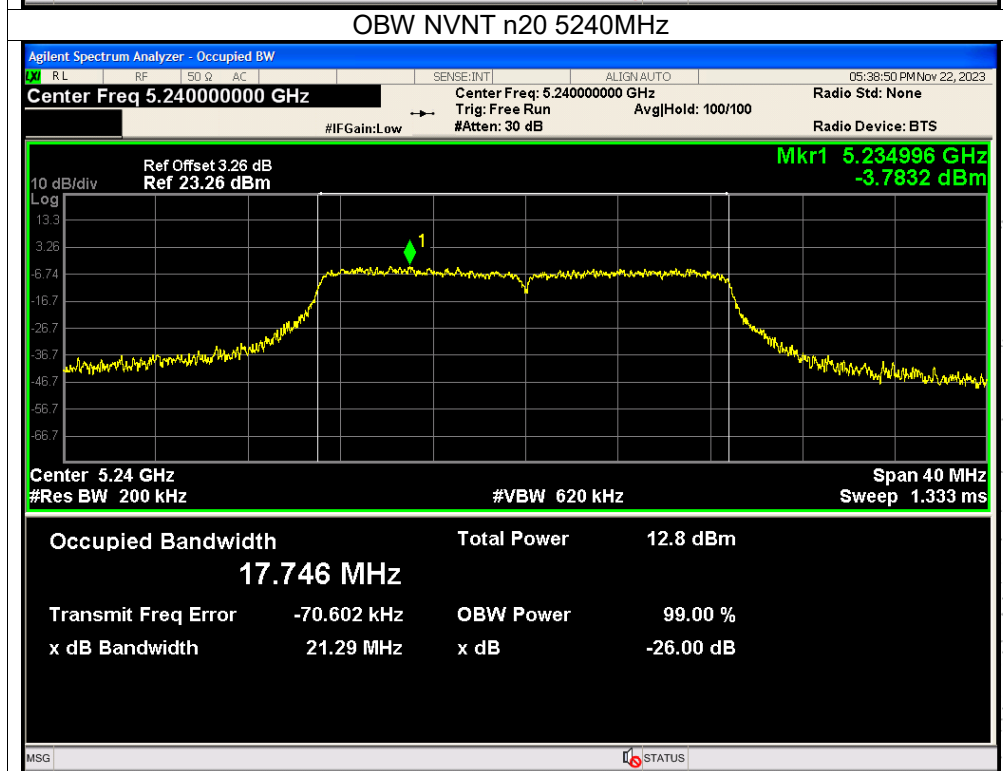
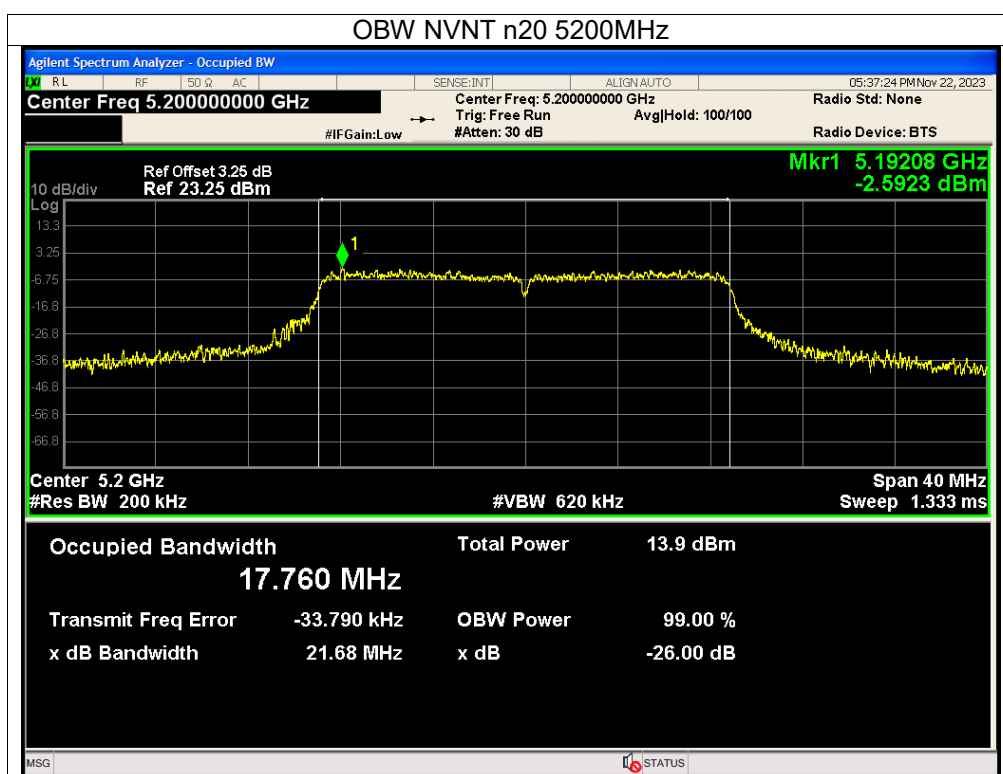


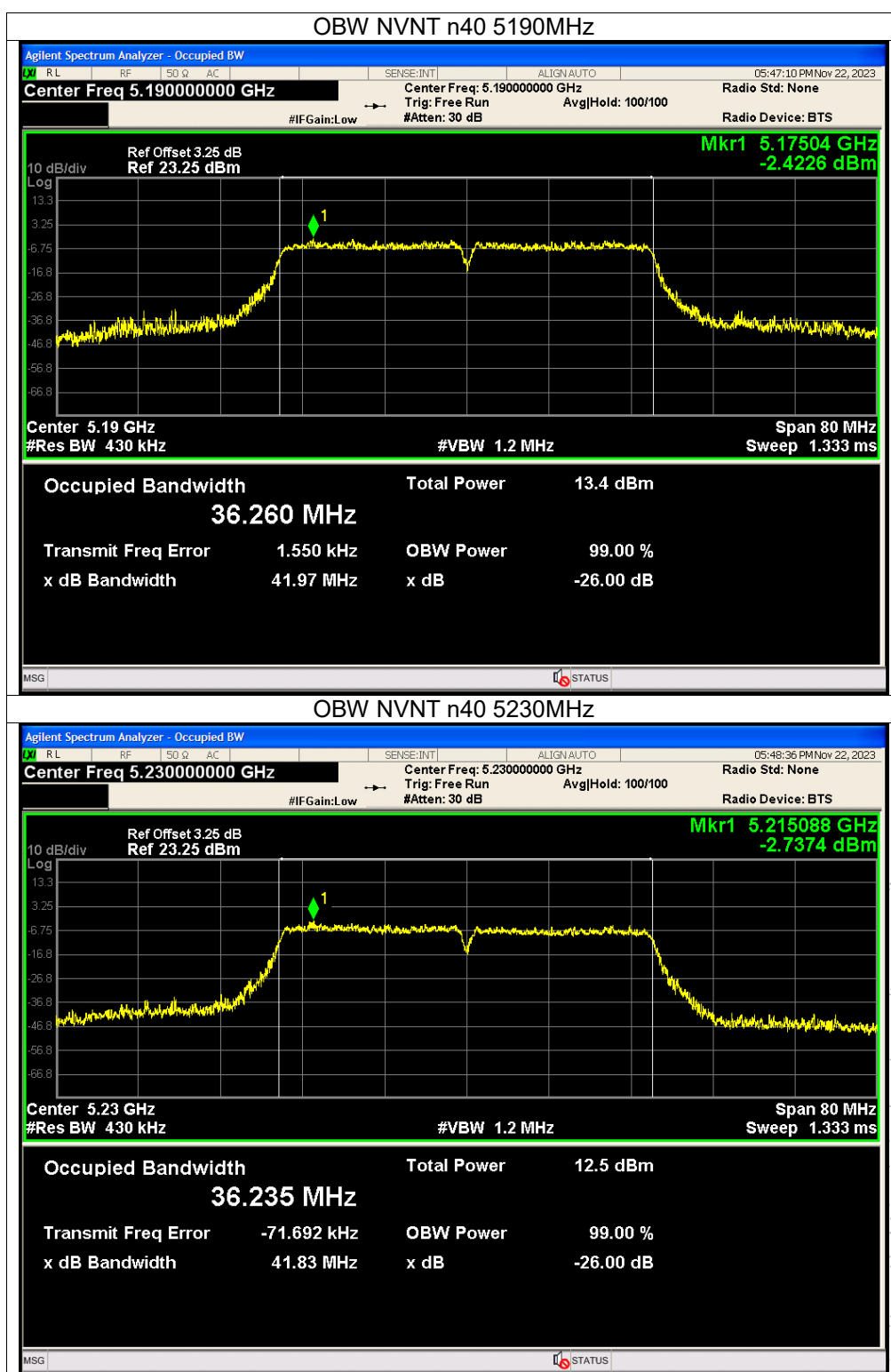


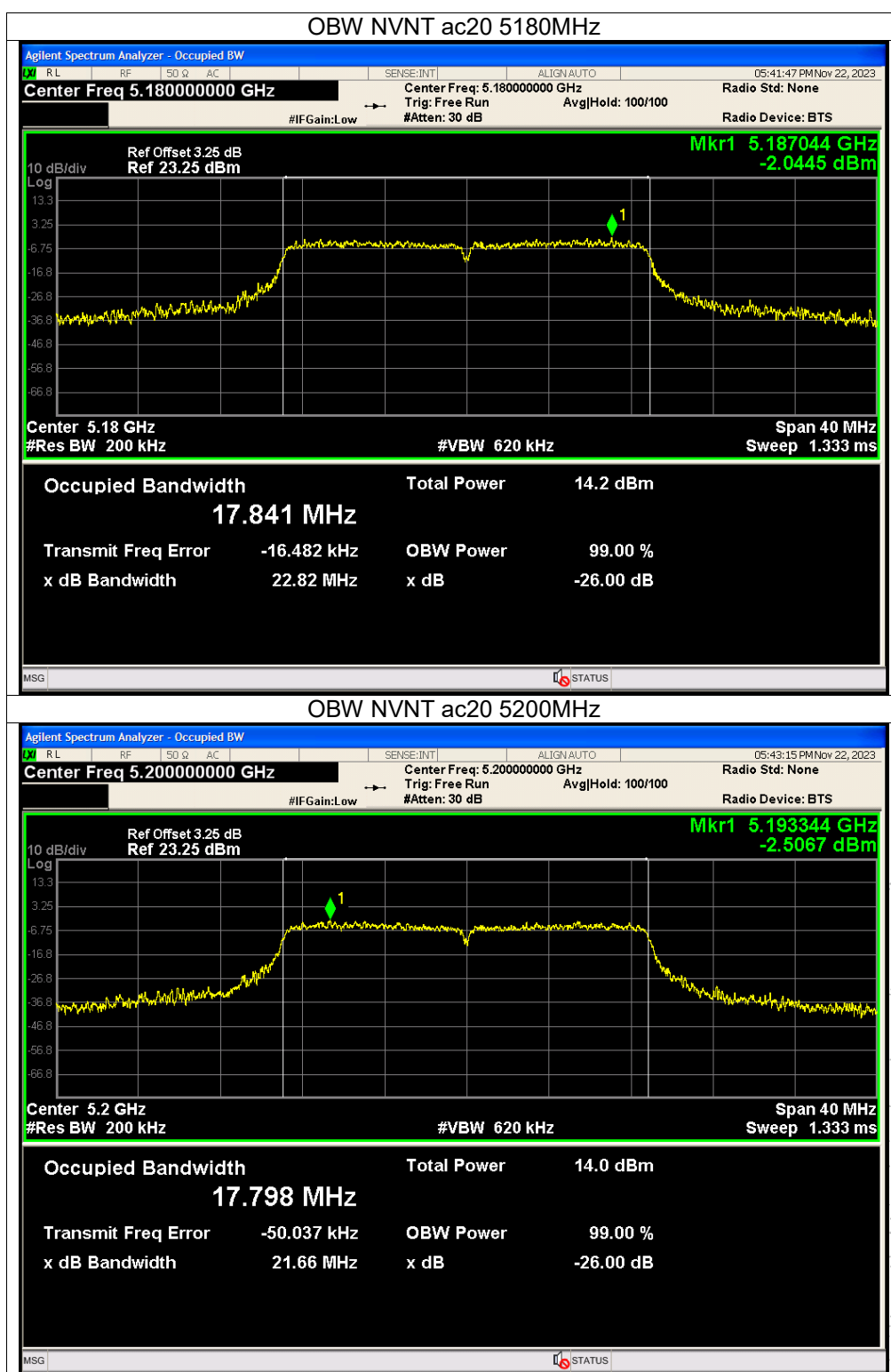


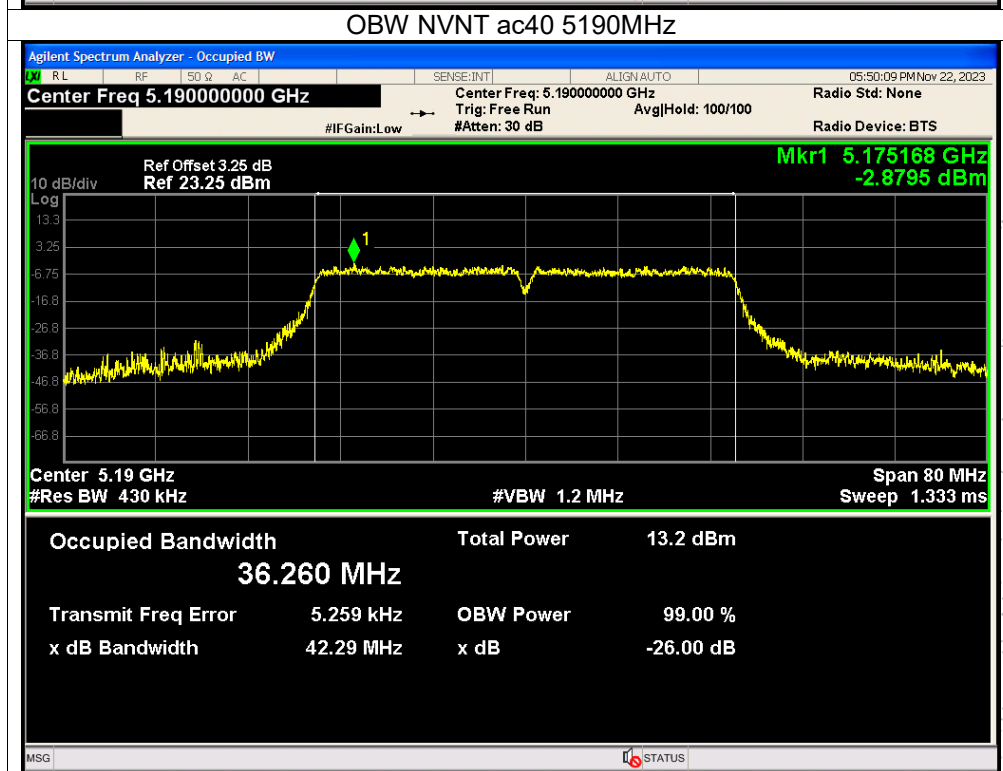
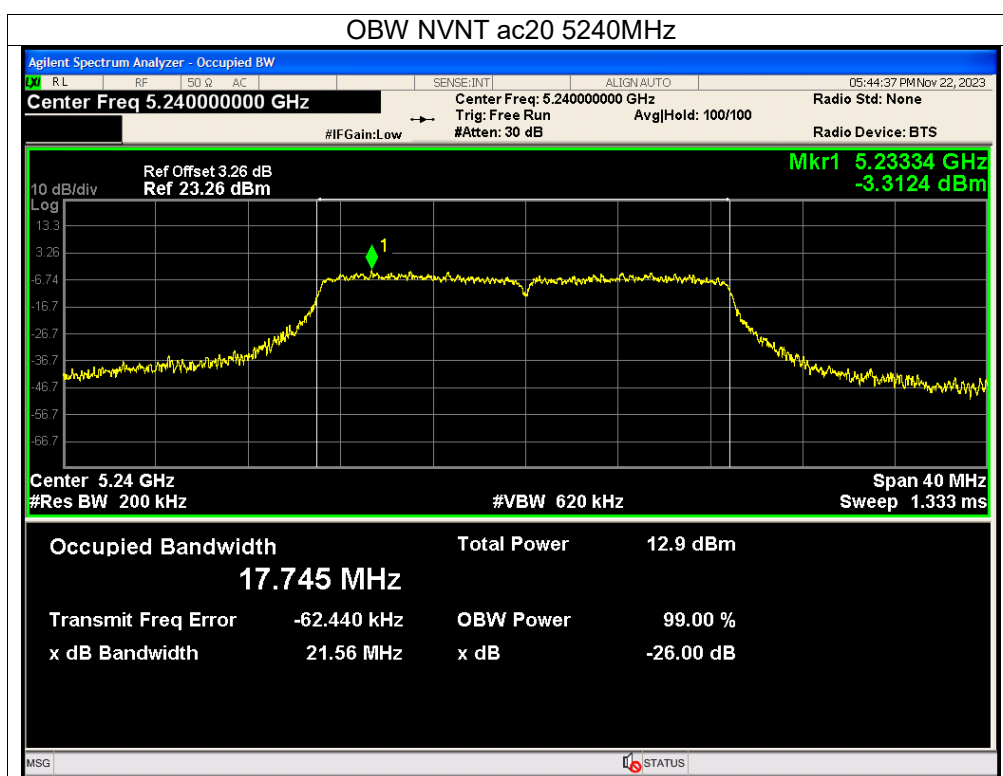


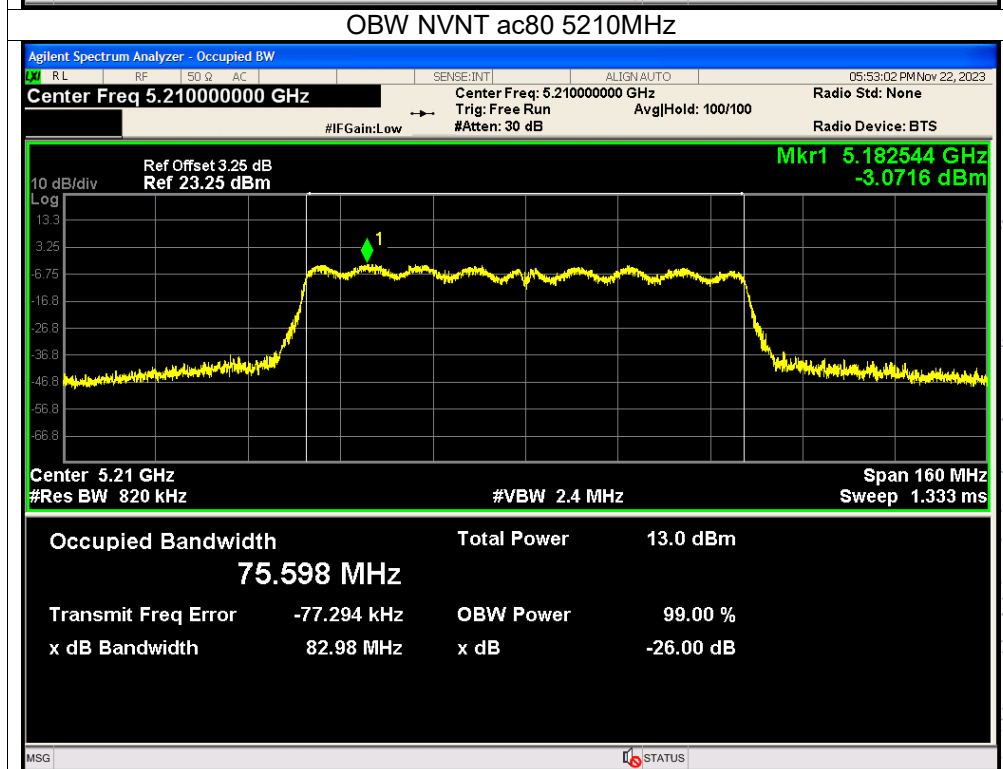
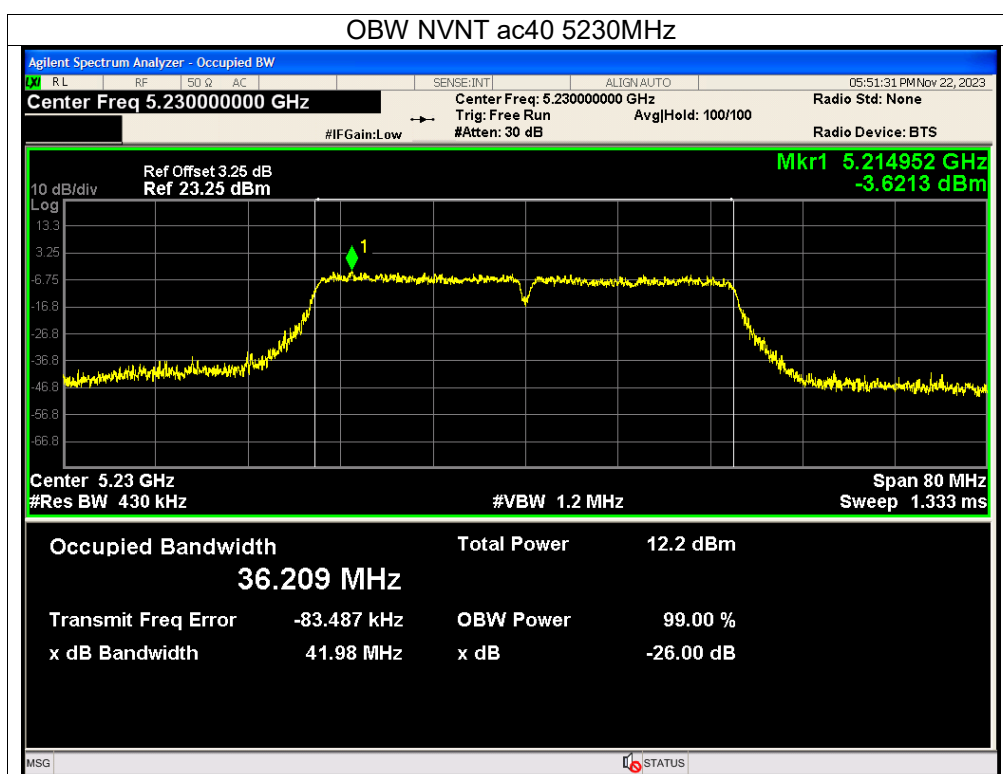






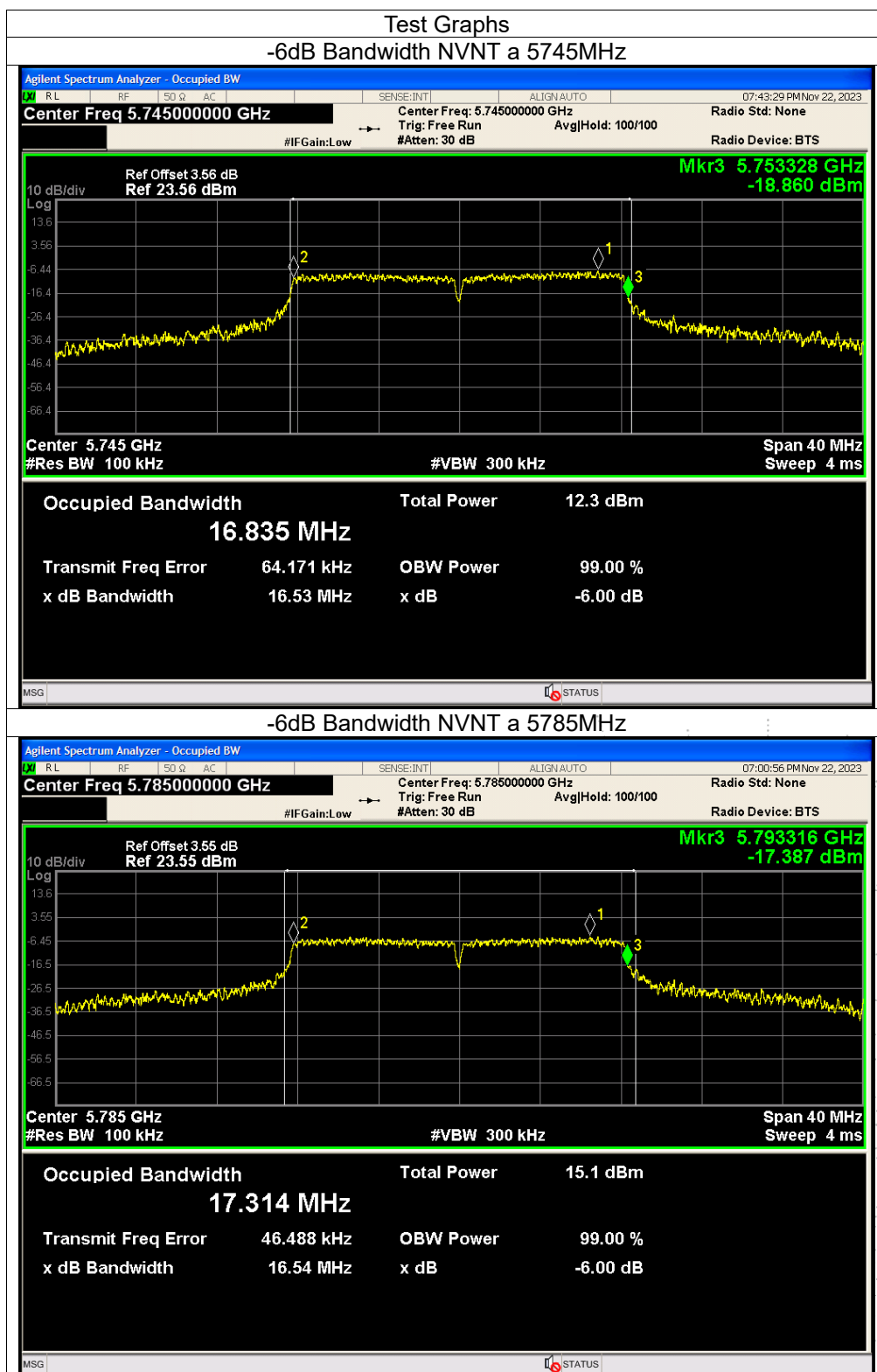


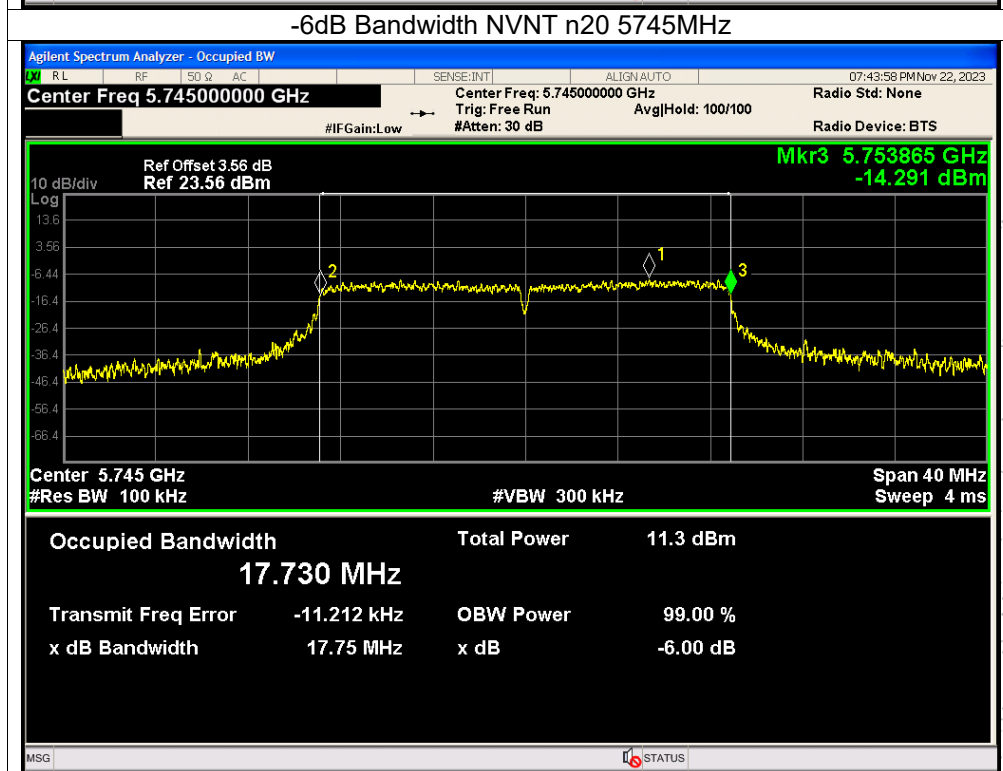
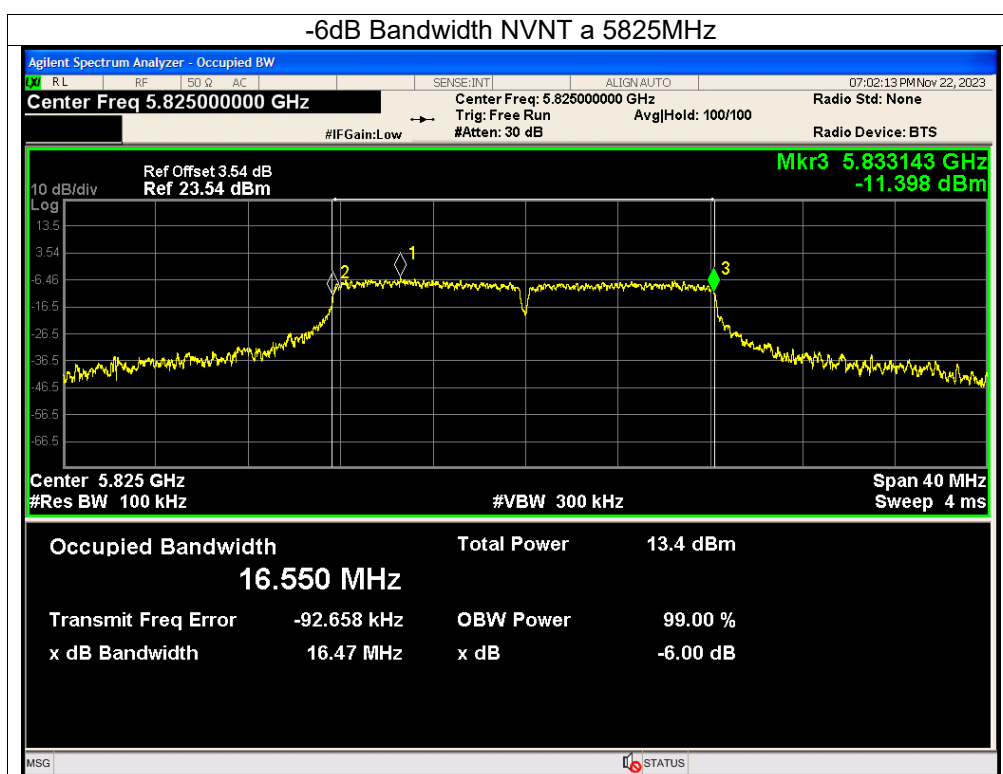


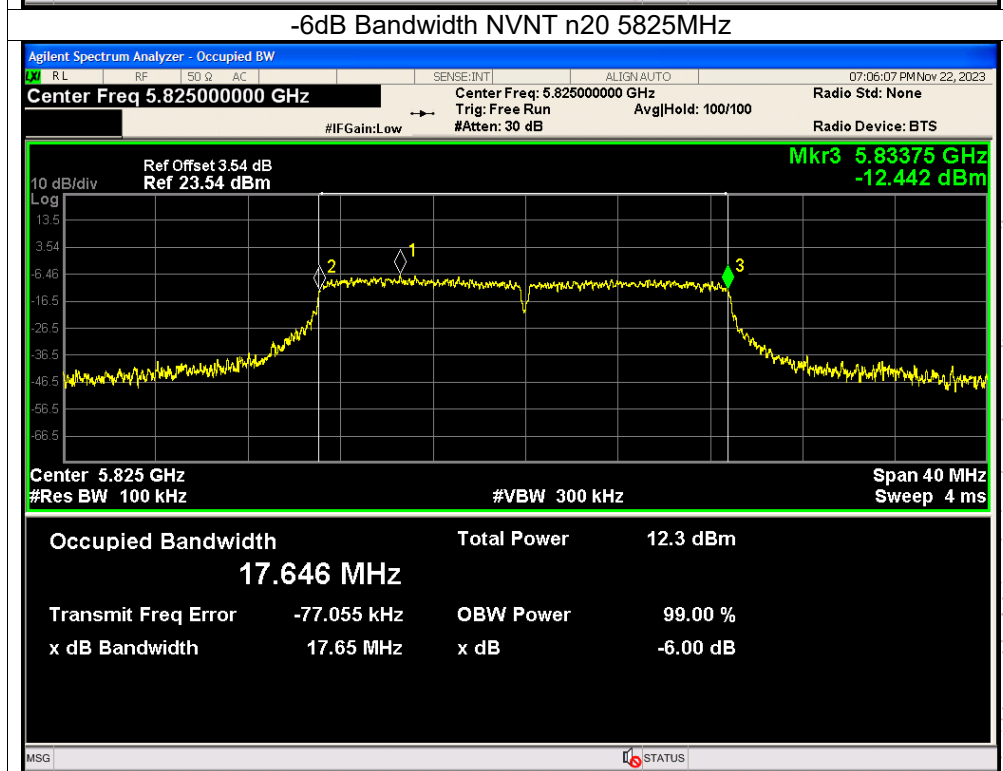
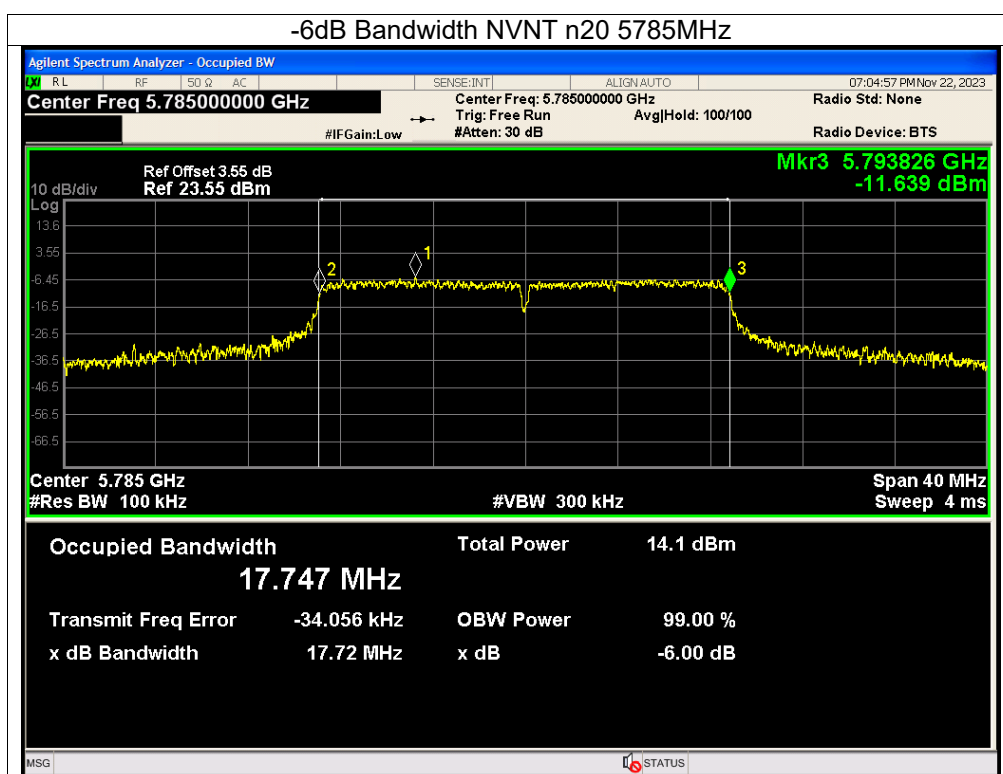


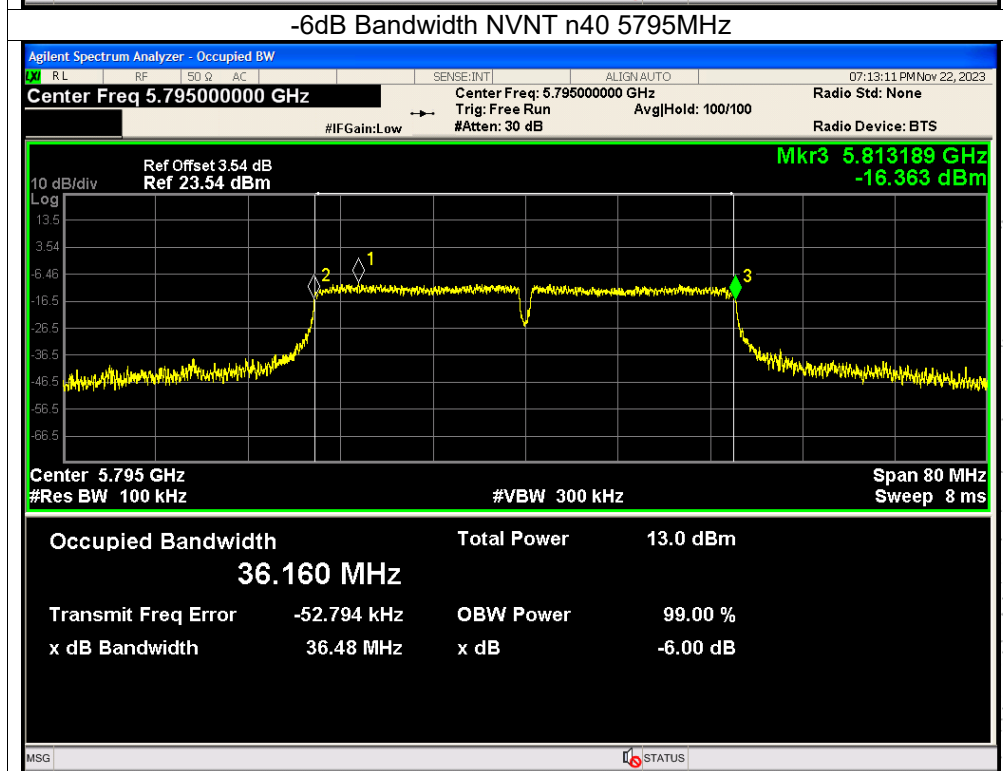
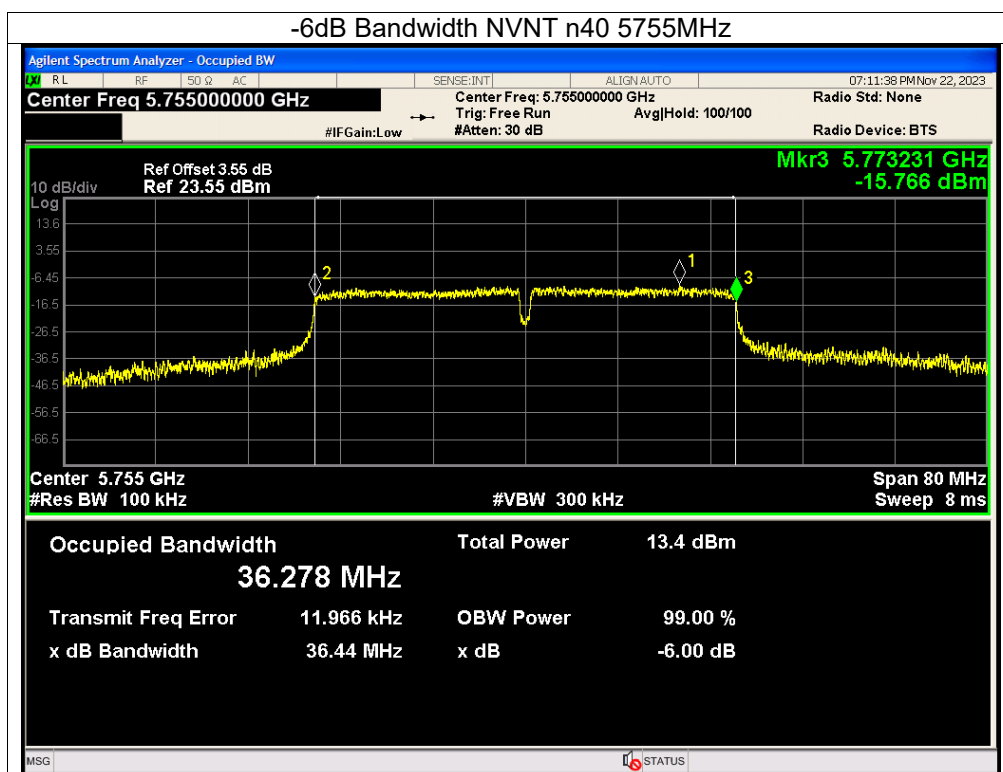
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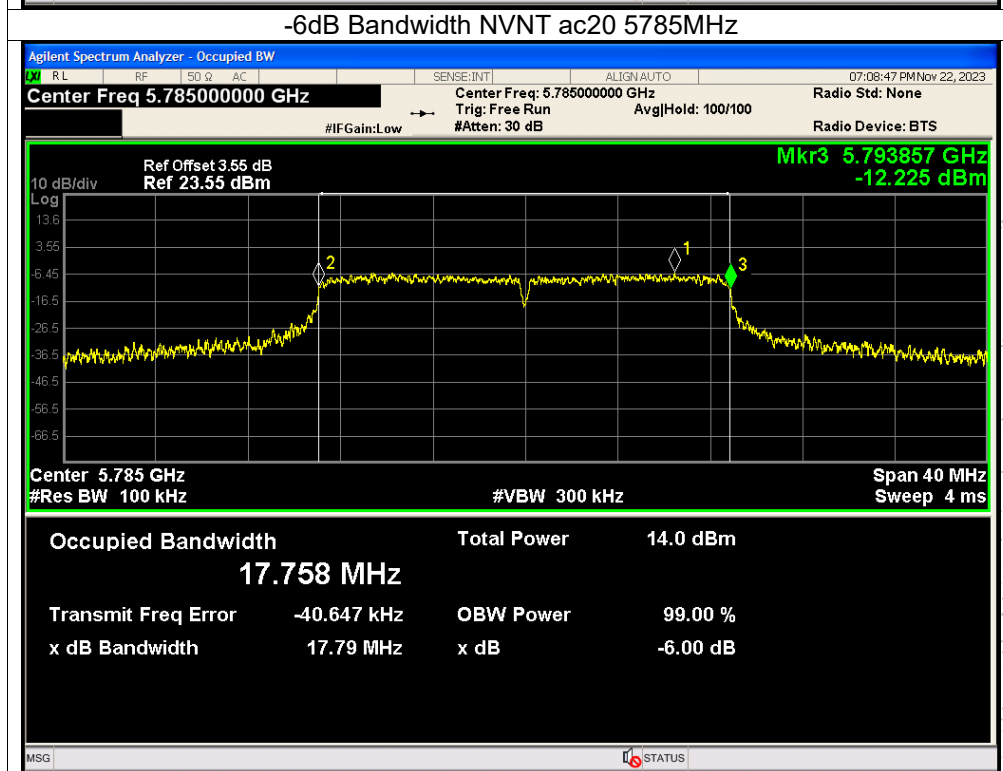
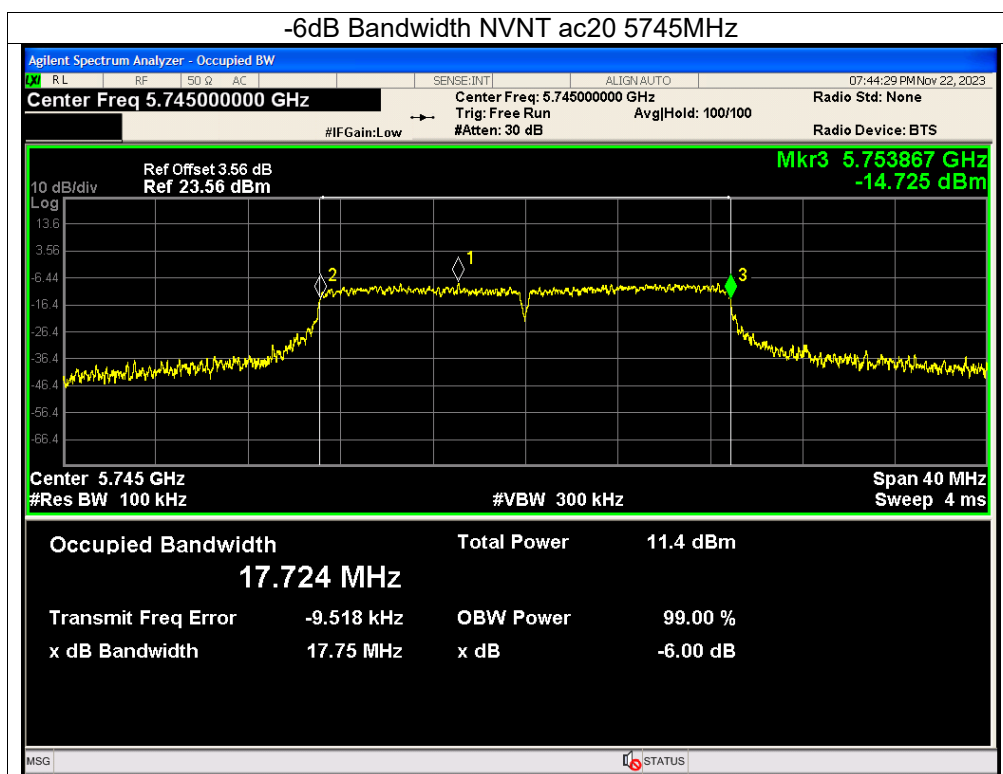
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

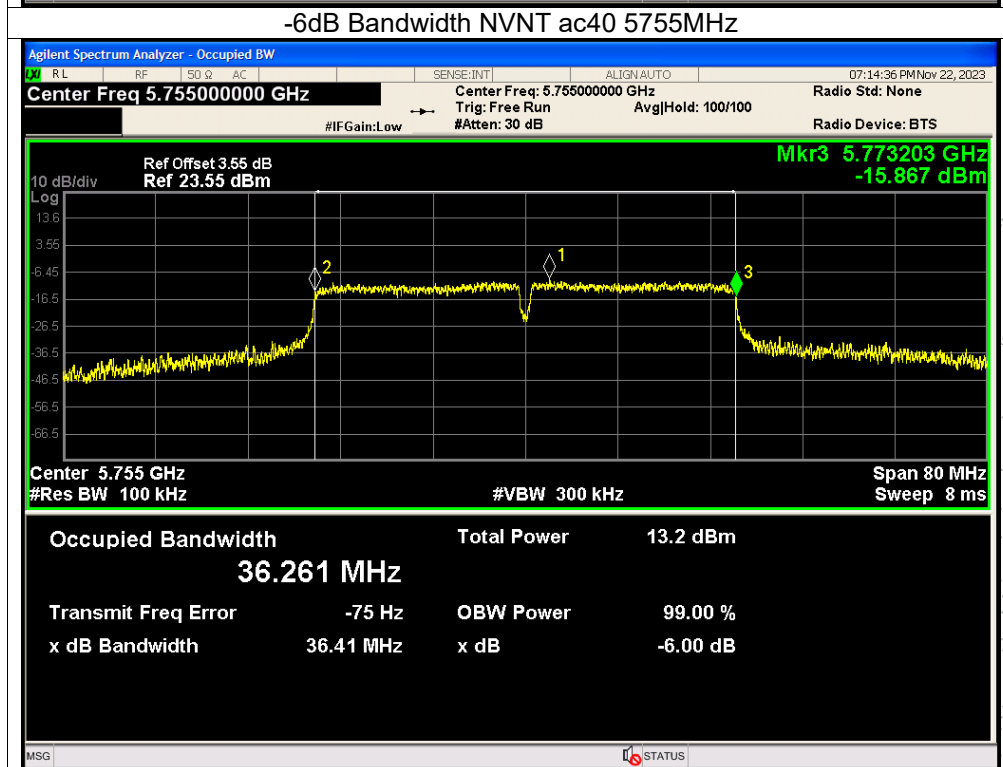
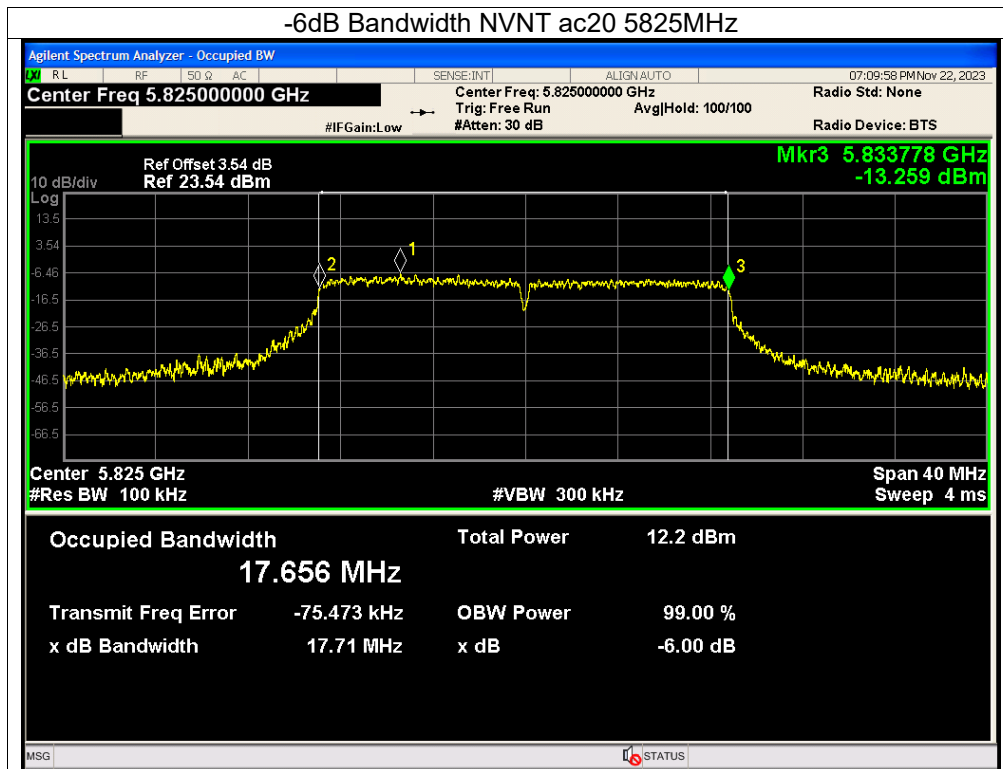


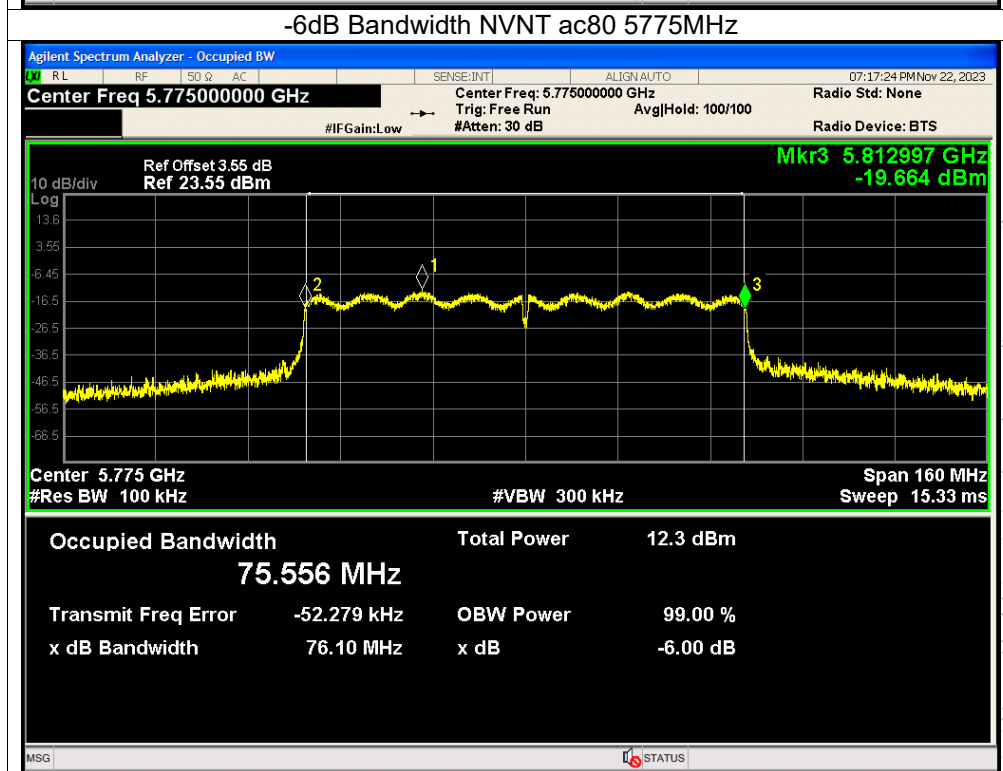
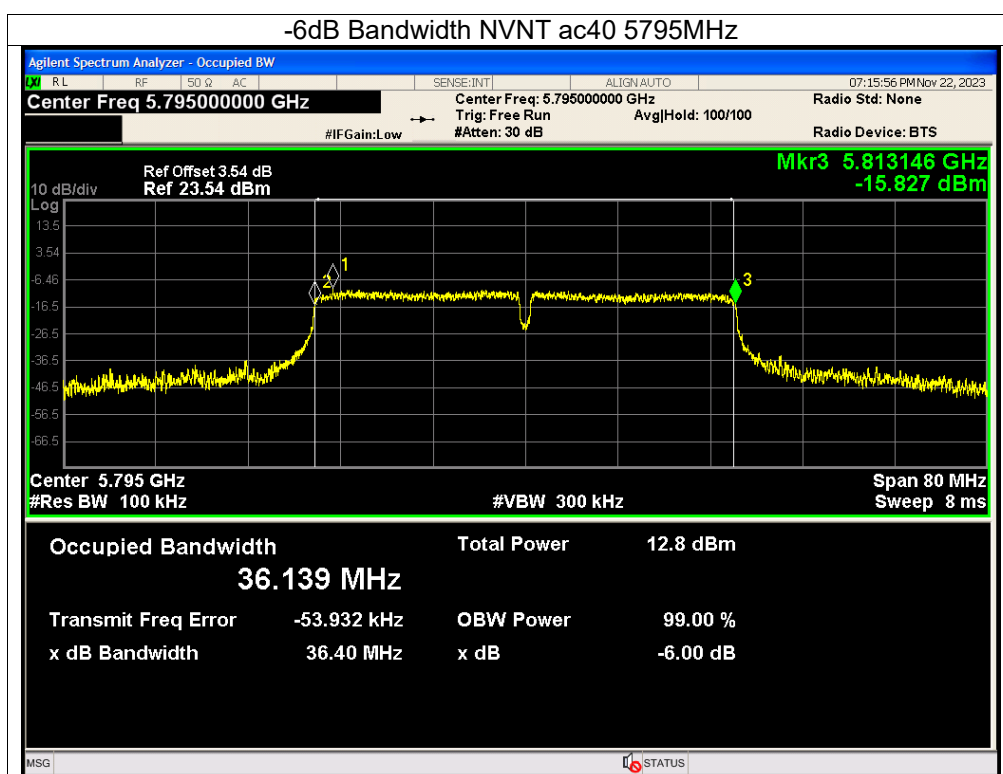


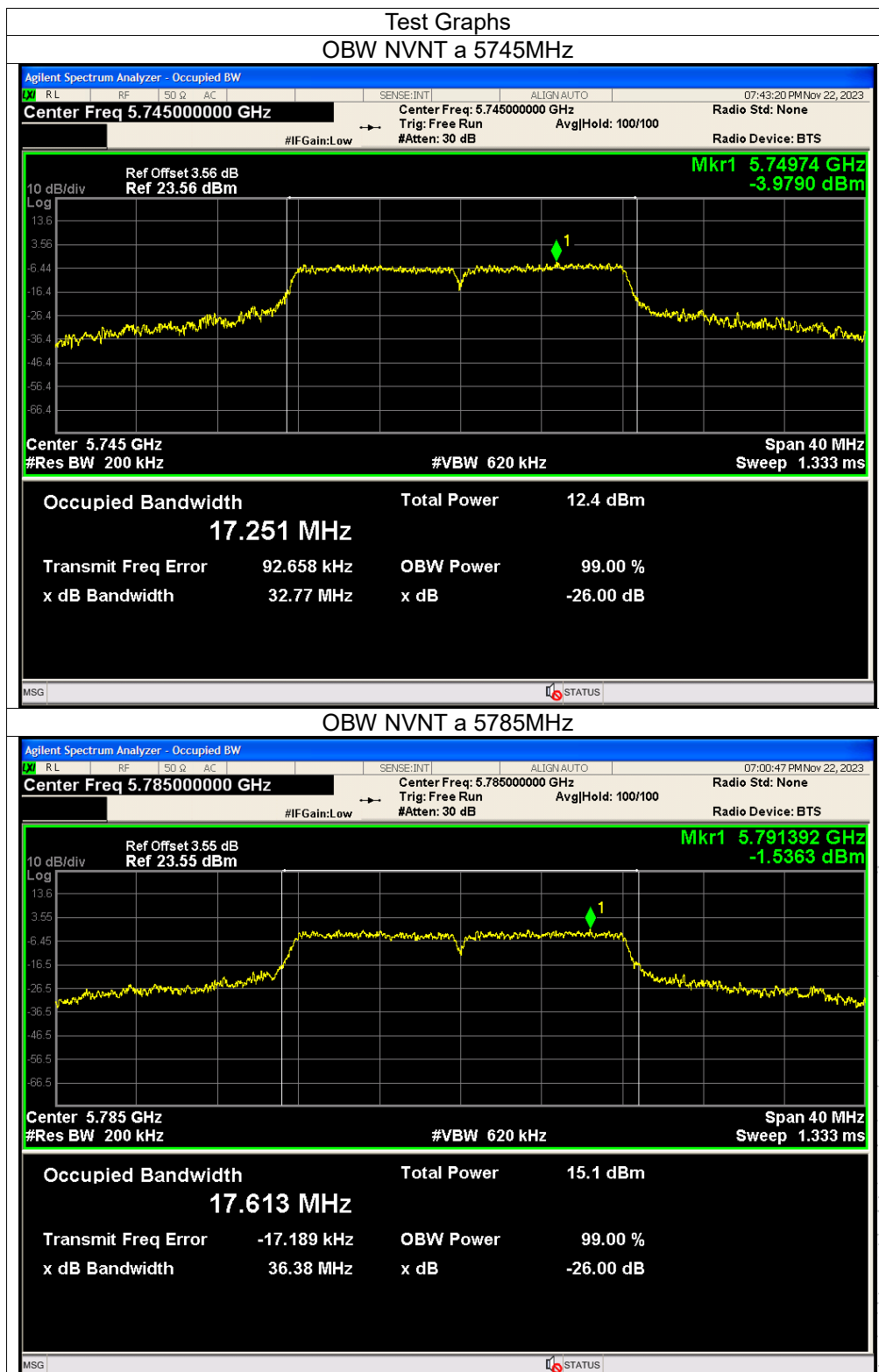


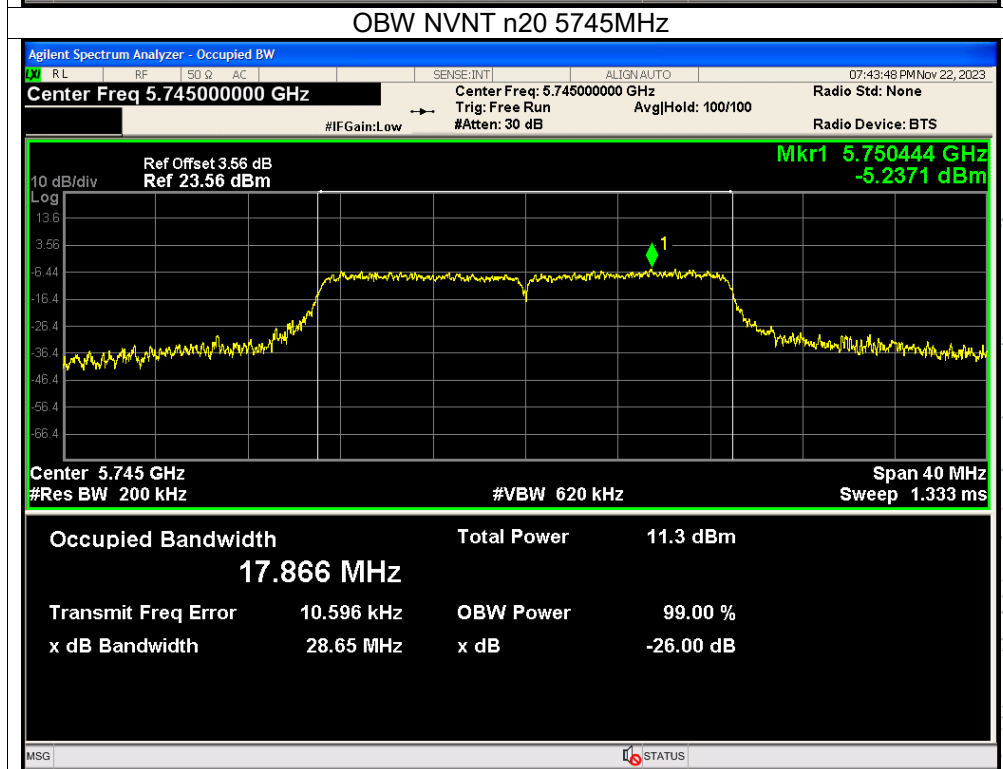
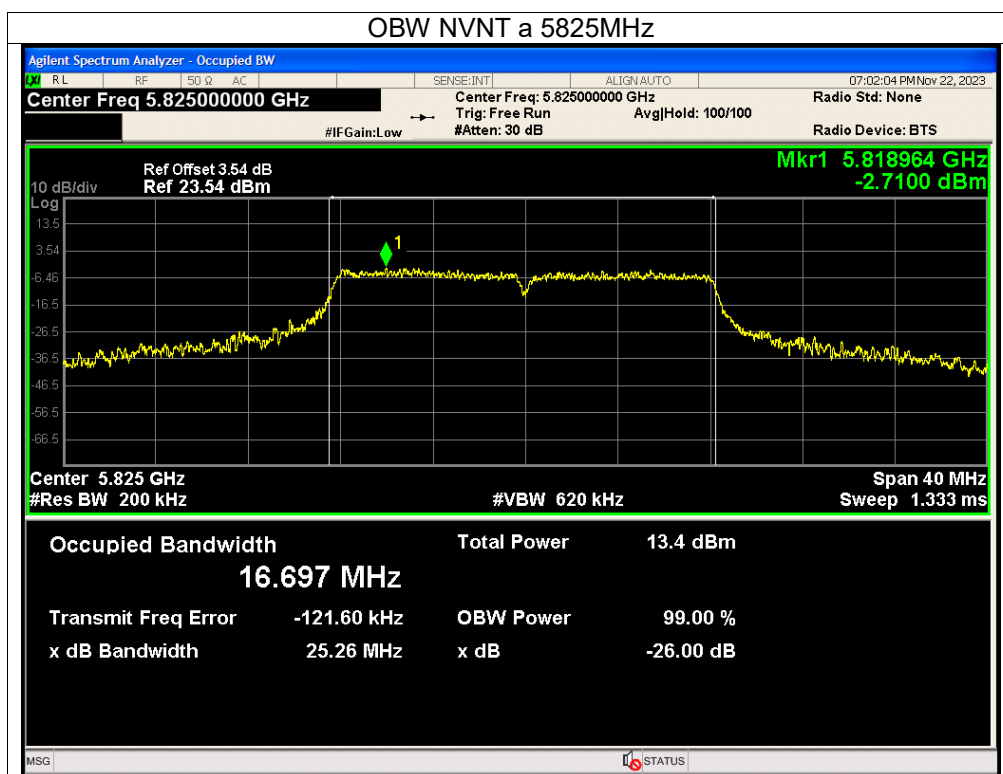


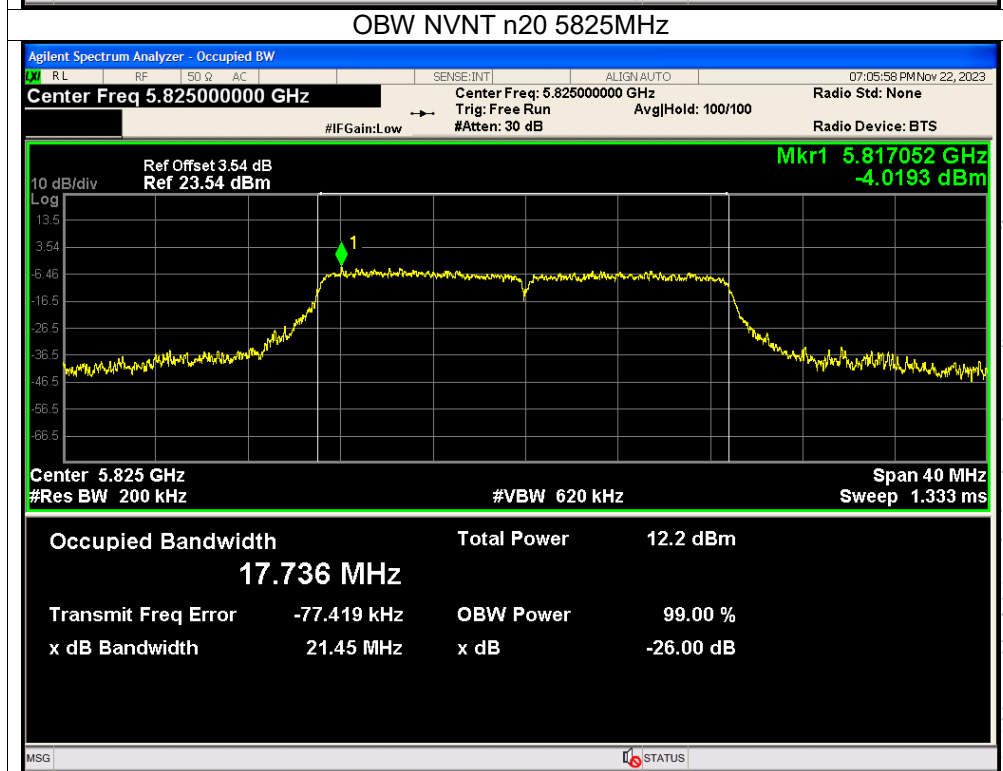
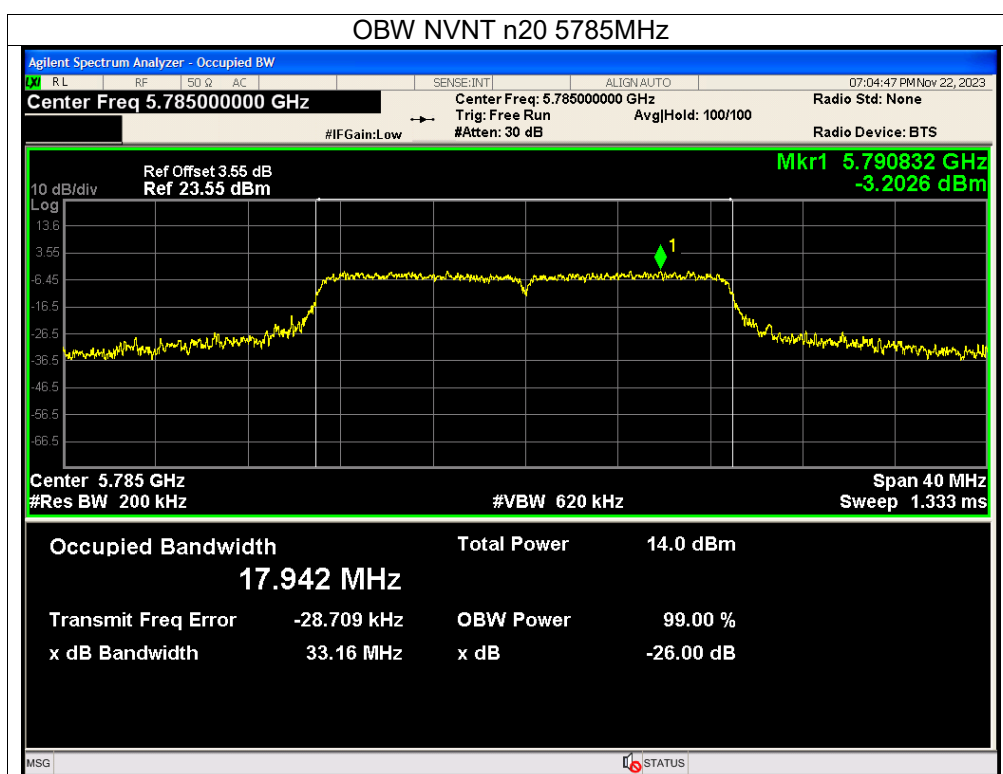


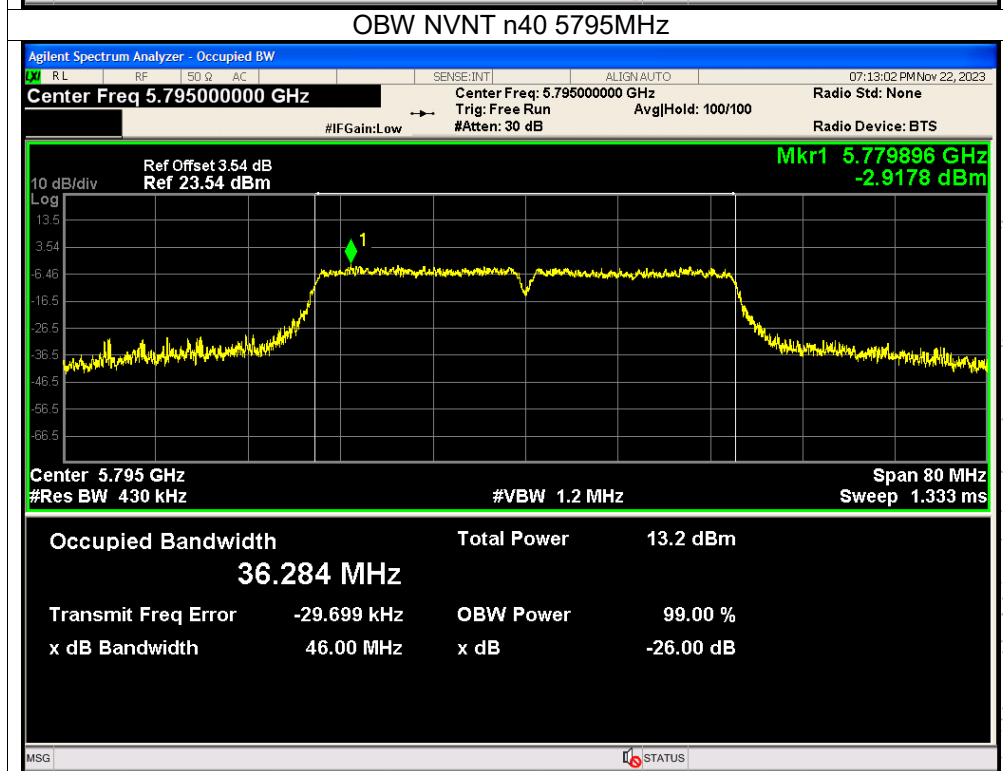
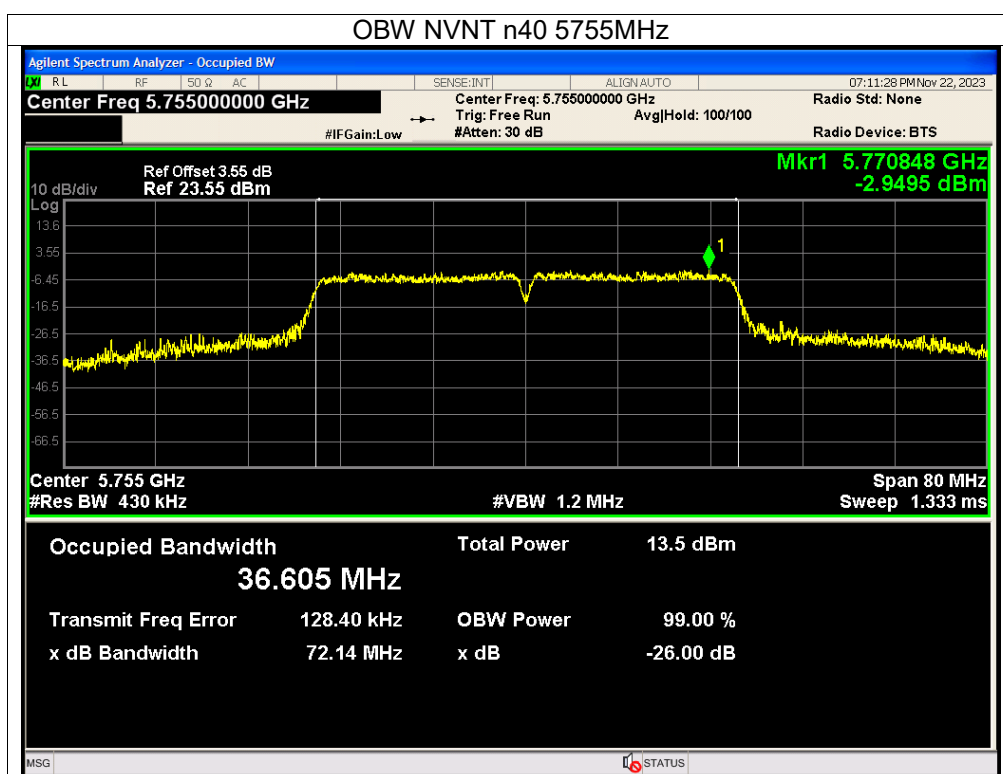


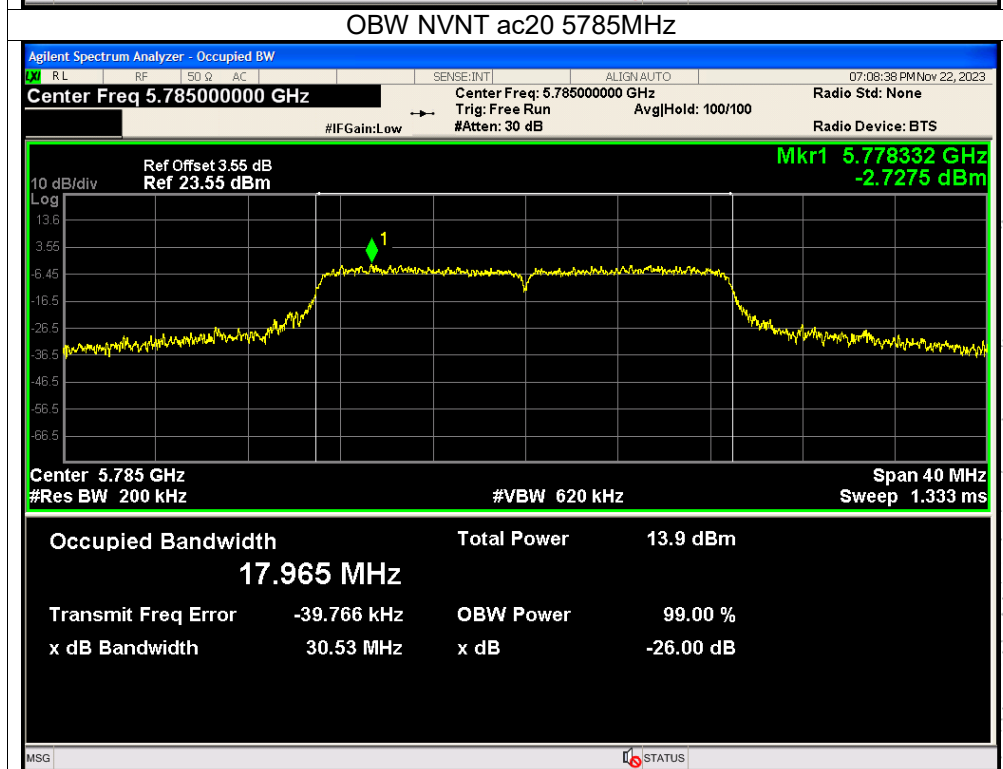
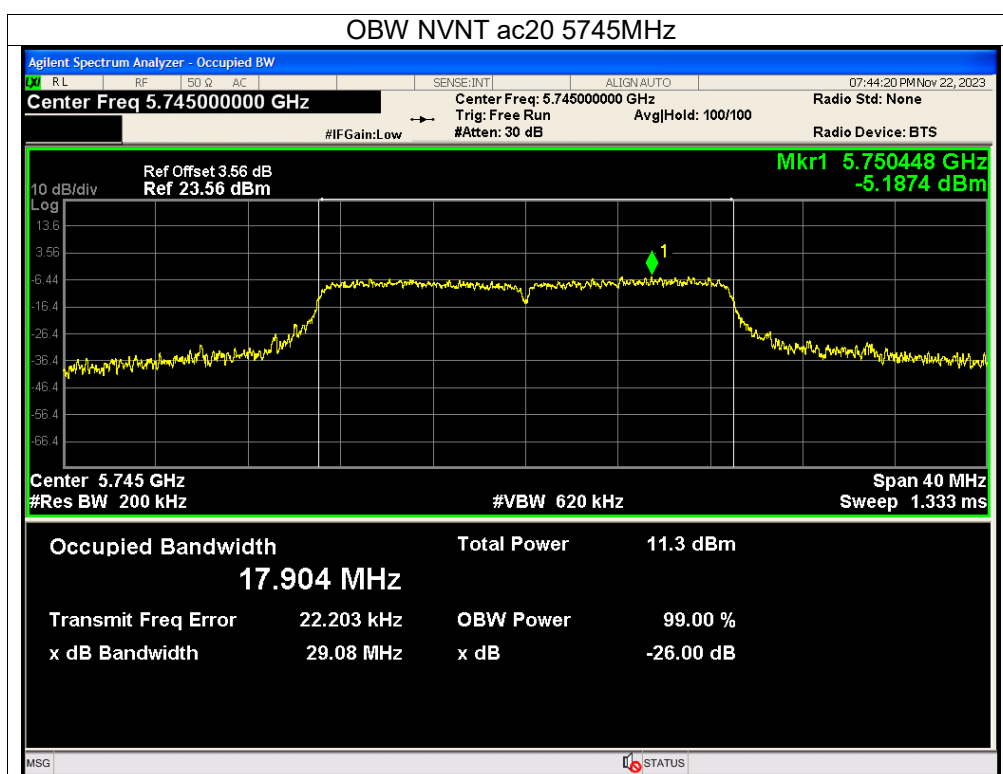


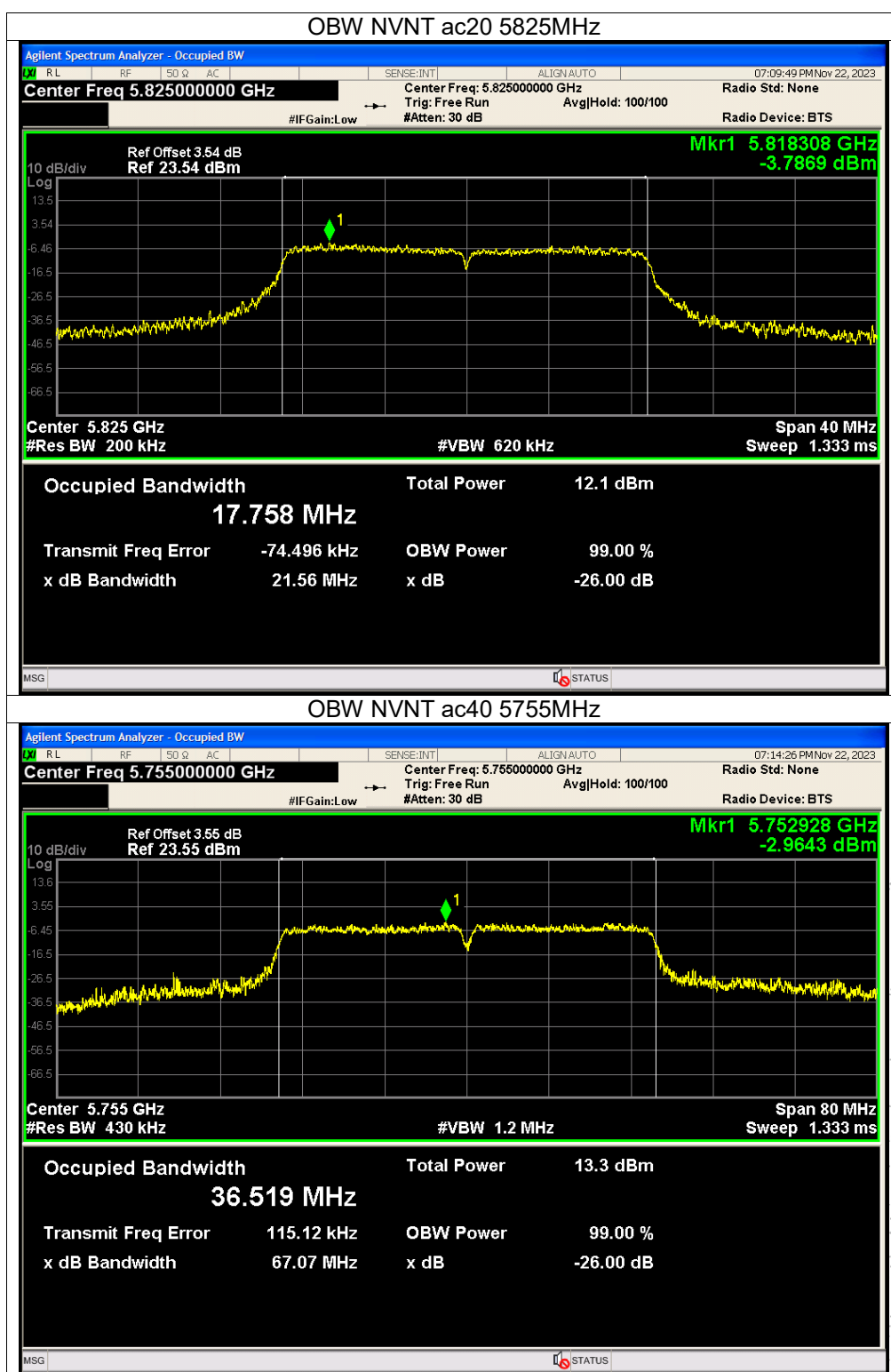


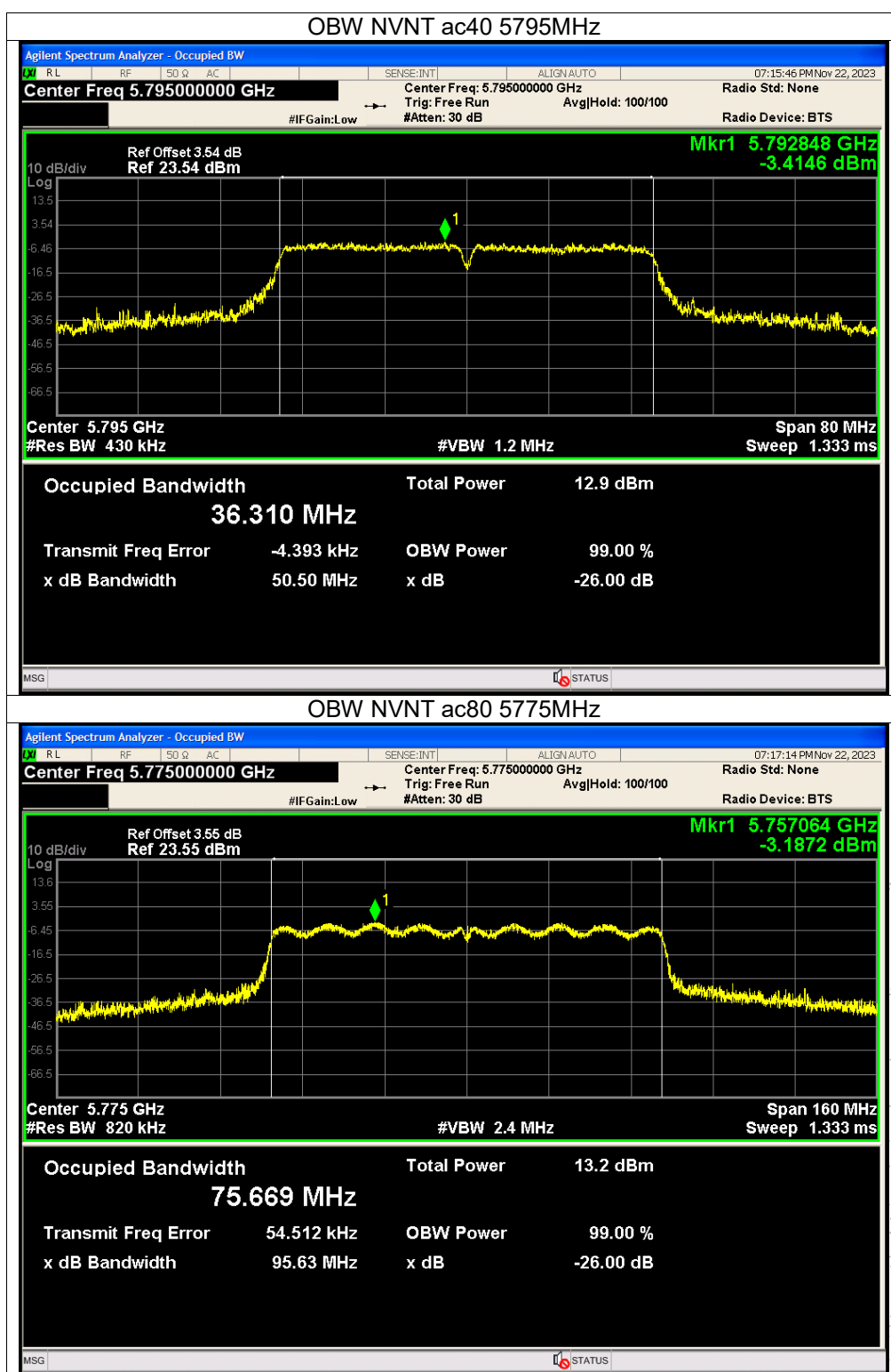












10. Maximum Conducted Output Power

10.1 Block Diagram Of Test Setup



10.2 Limit

According to FCC §15.407

The maximum conducted output power should not exceed:

Frequency Band(MHz)	Limit
5150~5250	250mW
5725~5850	1W

10.3 Test procedure

Maximum conducted output power may be measured using a spectrum analyzer/EMI receiver or an RF power meter.

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

a) The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99-percent occupied bandwidth of the signal.¹ However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

- The EUT transmits continuously (or with a duty cycle ≥ 98 percent).
- Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep): (i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

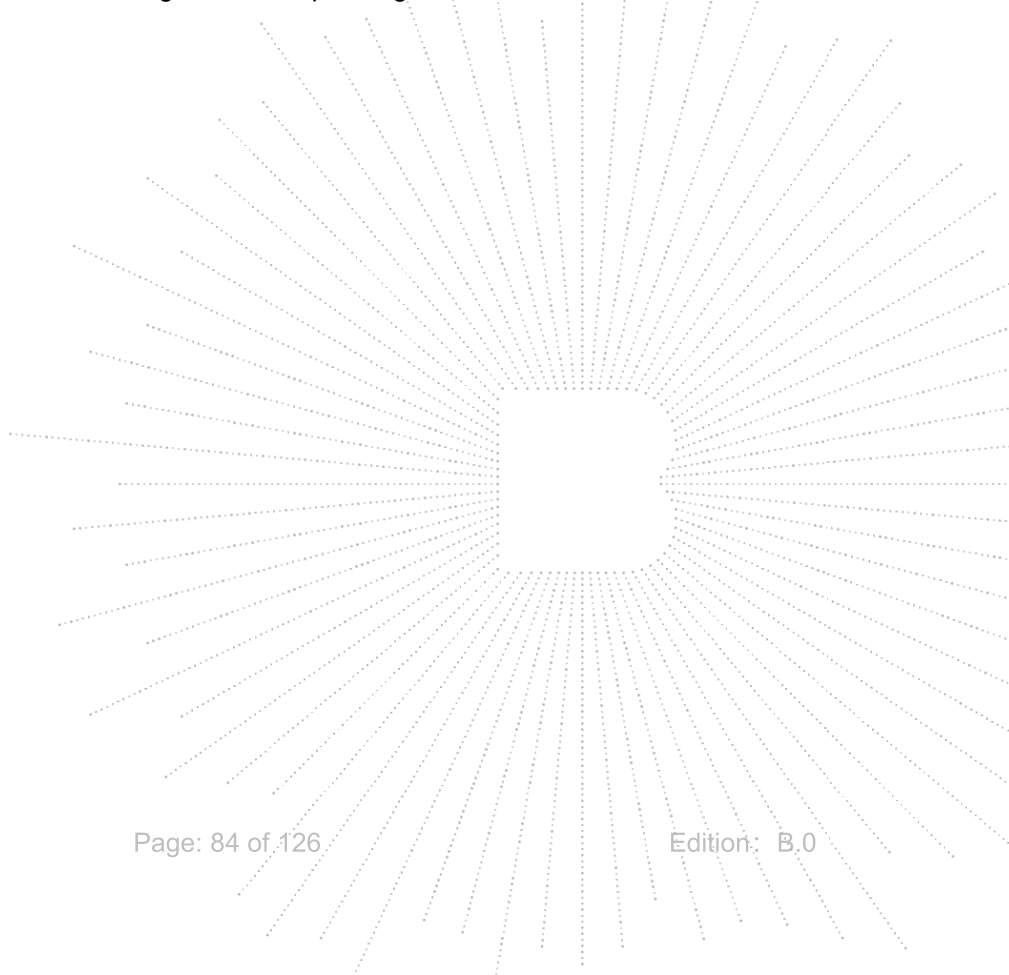
(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

10.4 EUT operating Conditions

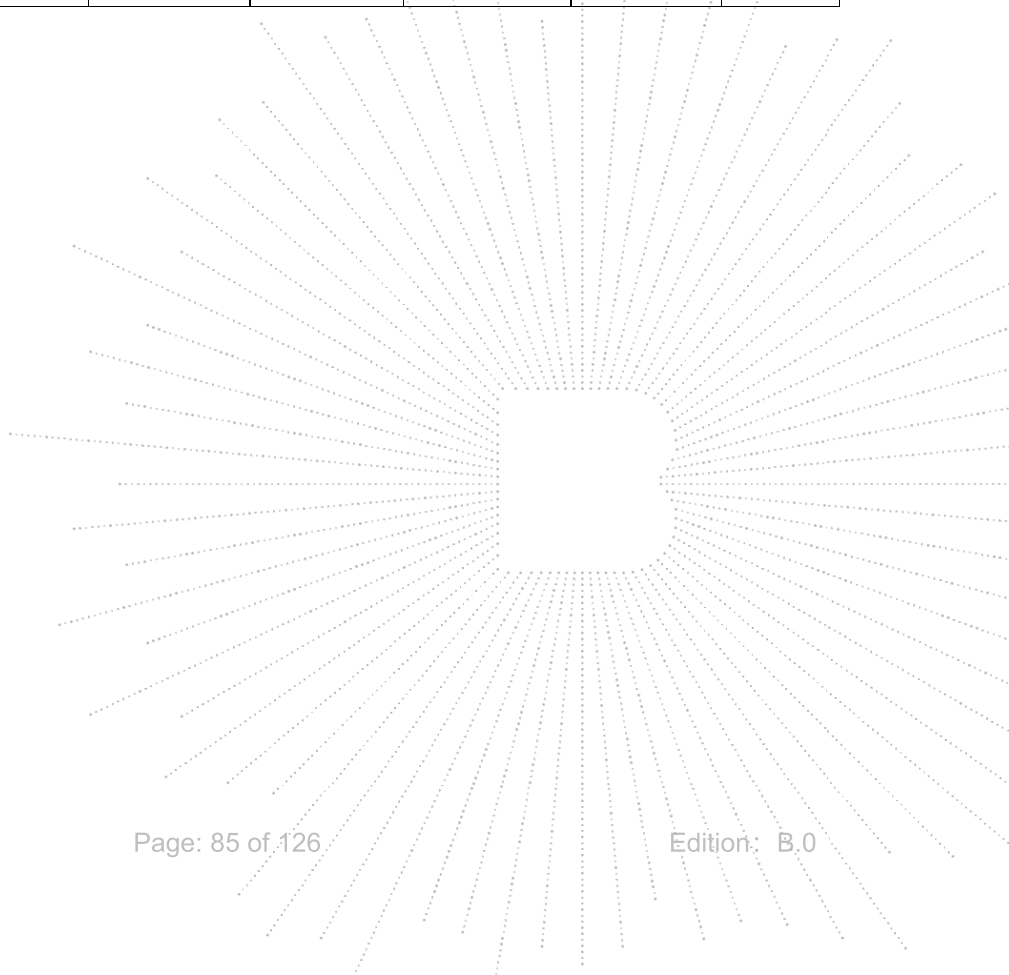
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



10.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	5180-5240MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)		Total(dBm)	Limit (dBm)	Verdict
			Ant A	Ant B			
NVNT	a	5180	10.69	10.51	/	24	Pass
NVNT	a	5200	10.09	10.16	/	24	Pass
NVNT	a	5240	9.56	9.23	/	24	Pass
NVNT	n20	5180	8.81	9.20	12.02	24	Pass
NVNT	n20	5200	8.62	8.96	11.80	24	Pass
NVNT	n20	5240	7.62	7.57	10.61	24	Pass
NVNT	n40	5190	8.28	7.50	10.92	24	Pass
NVNT	n40	5230	7.15	6.38	9.79	24	Pass
NVNT	ac20	5180	9.13	9.87	12.53	24	Pass
NVNT	ac20	5200	8.72	8.14	11.45	24	Pass
NVNT	ac20	5240	7.63	6.96	10.32	24	Pass
NVNT	ac40	5190	8.00	7.53	10.78	24	Pass
NVNT	ac40	5230	6.94	6.51	9.74	24	Pass
NVNT	ac80	5210	7.02	6.58	9.82	24	Pass



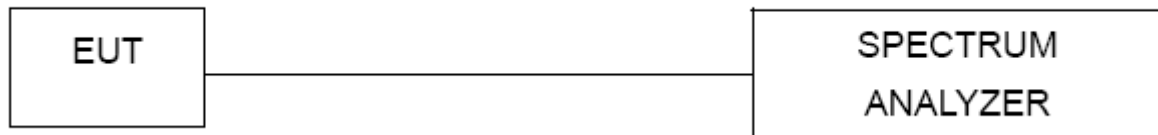
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	5745-5825MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)		Total(dBm)	Limit (dBm)	Verdict
			Ant A	Ant B			
NVNT	a	5745	9.22	9.12	/	30	Pass
NVNT	a	5785	9.63	9.17	/	30	Pass
NVNT	a	5825	8.05	7.10	/	30	Pass
NVNT	n20	5745	8.53	8.27	11.41	30	Pass
NVNT	n20	5785	8.76	8.28	11.54	30	Pass
NVNT	n20	5825	6.89	6.02	9.49	30	Pass
NVNT	n40	5755	8.16	7.54	10.87	30	Pass
NVNT	n40	5795	7.81	6.54	10.23	30	Pass
NVNT	ac20	5745	8.41	8.12	11.28	30	Pass
NVNT	ac20	5785	8.58	7.87	11.25	30	Pass
NVNT	ac20	5825	6.78	5.47	9.18	30	Pass
NVNT	ac40	5755	8.02	7.31	10.69	30	Pass
NVNT	ac40	5795	7.64	6.46	10.10	30	Pass
NVNT	ac80	5775	7.18	6.63	9.92	30	Pass

Note: For power measurements,
The Array gain=0 for NANT ≤ 4 ,
So the directional gain for Power measurements is 5.71 dBi

11. Out Of Band Emissions

11.1 Block Diagram Of Test Setup



11.2 Limit

According to FCC §15.407(b)

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) 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.

11.3 Test procedure

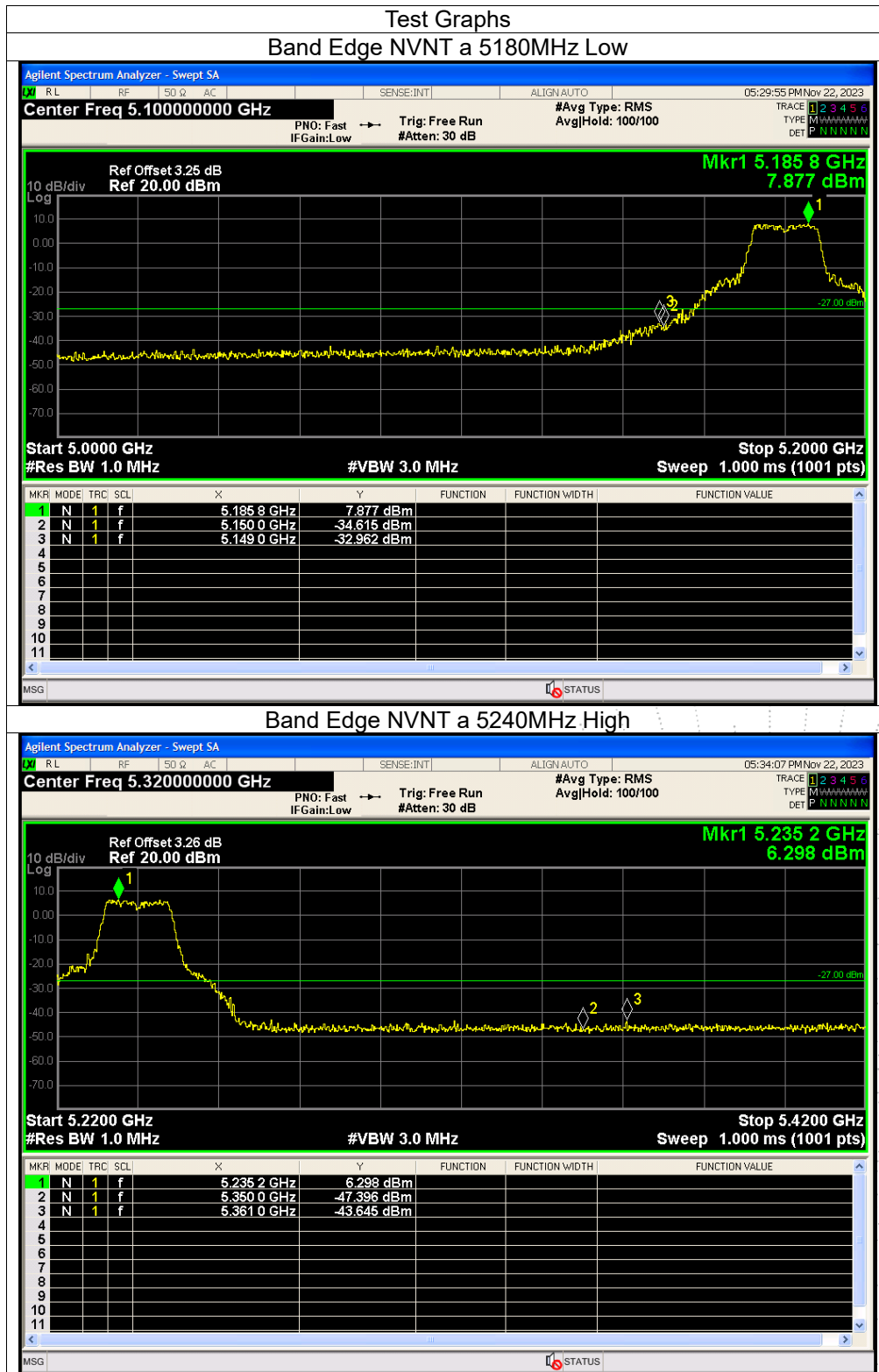
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

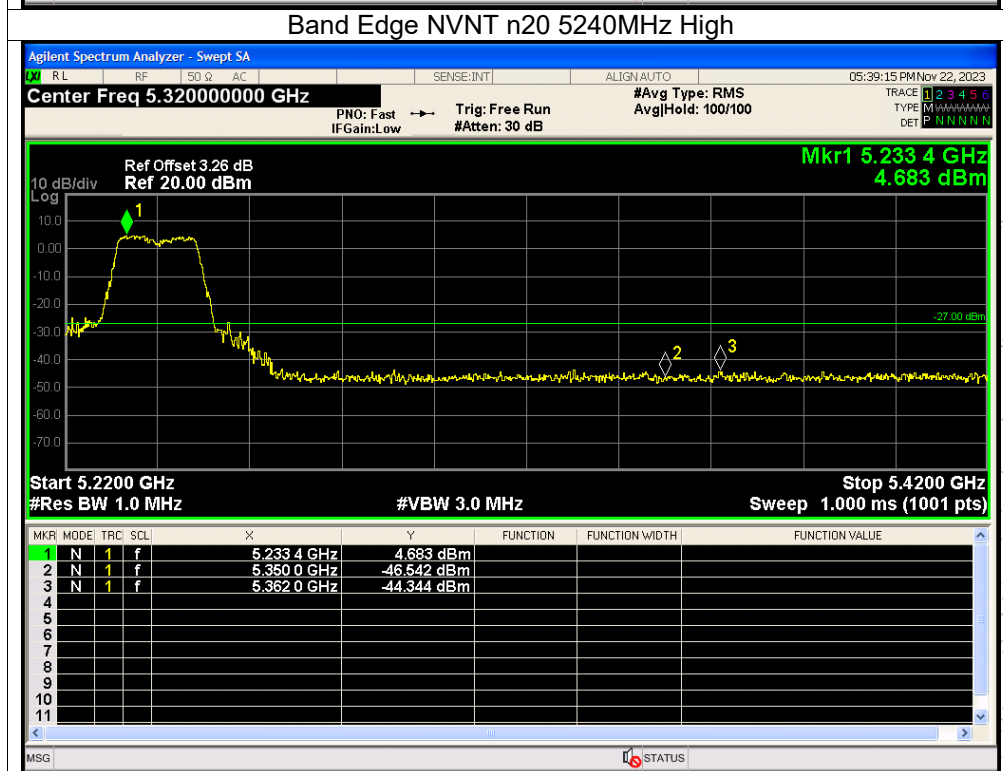
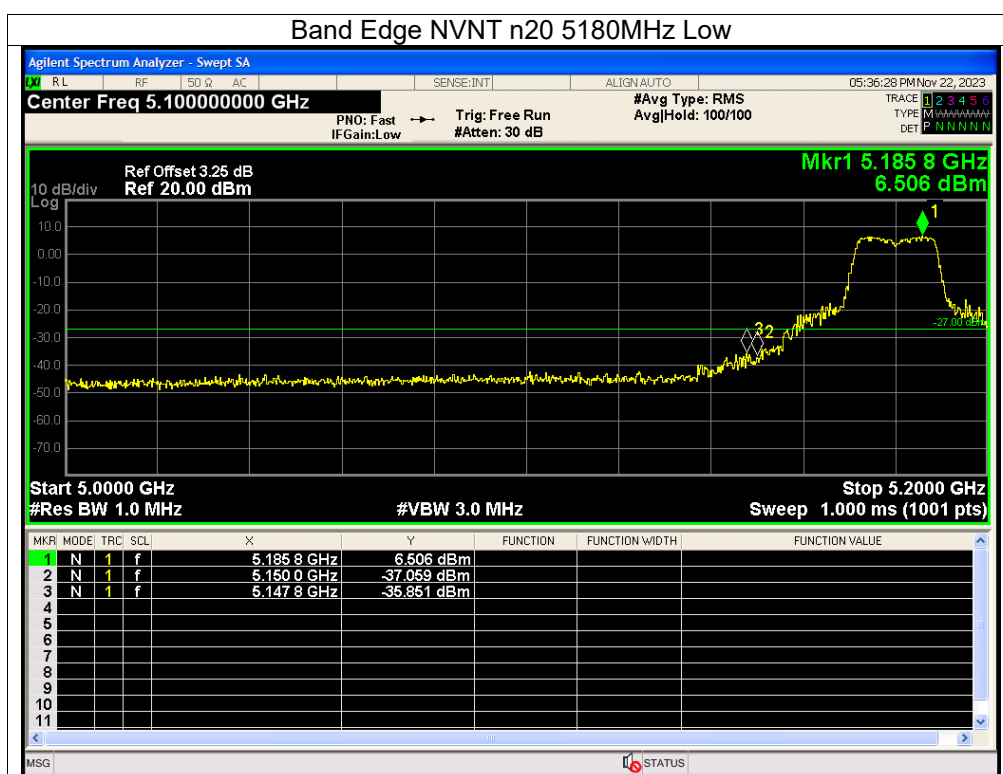
11.4 EUT operating Conditions

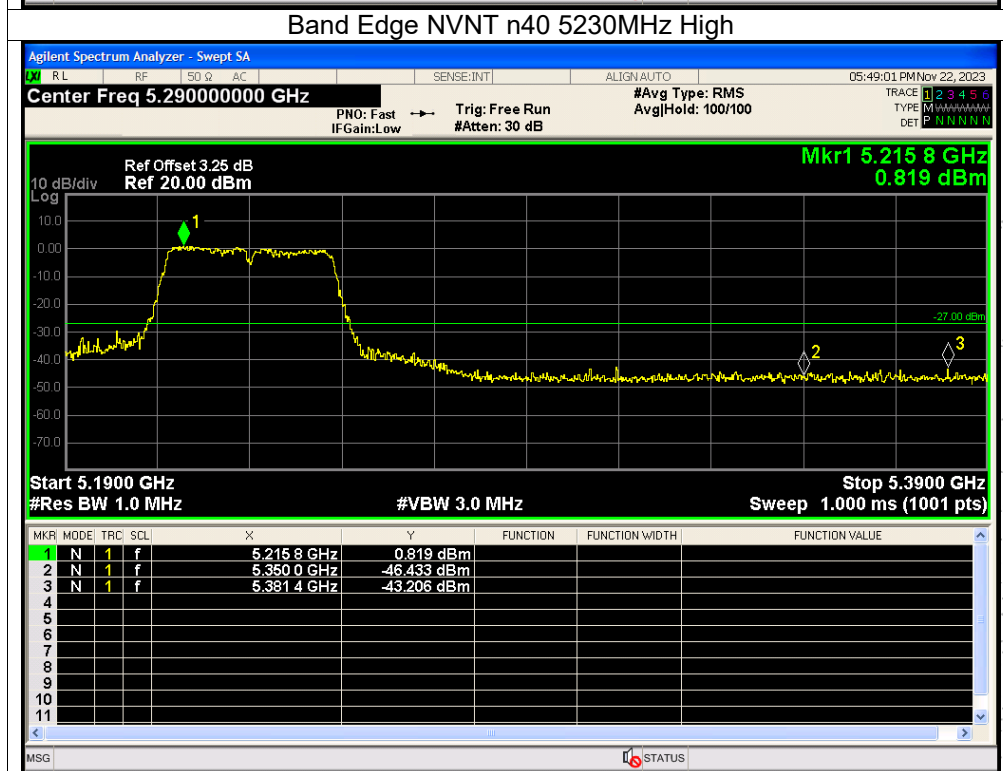
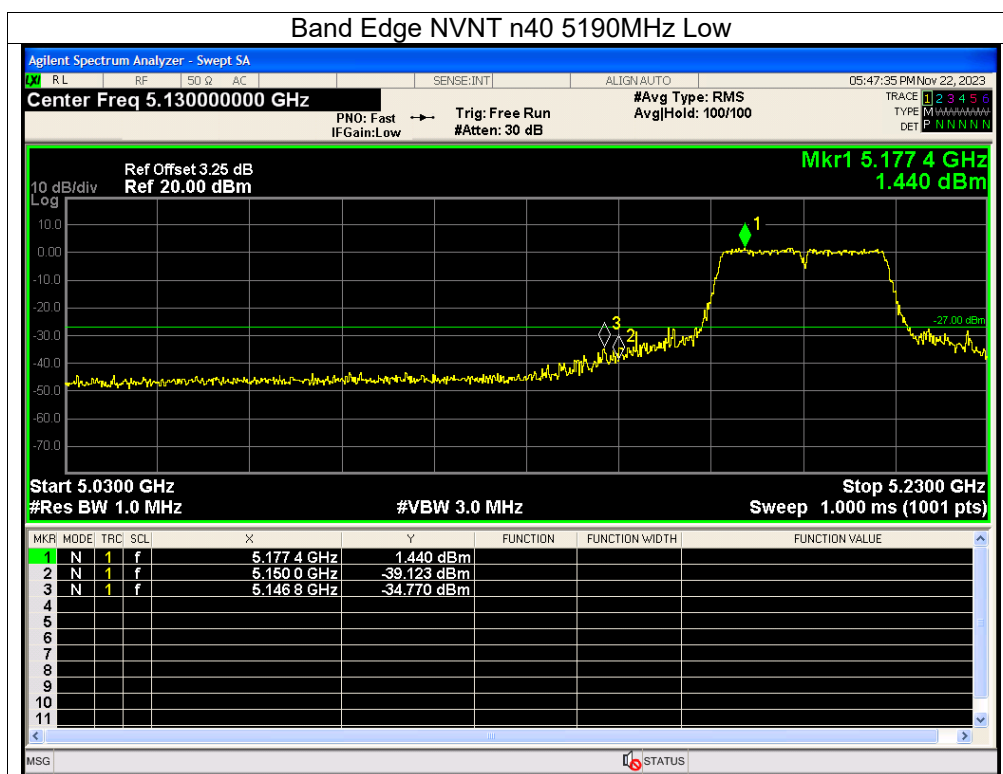
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data

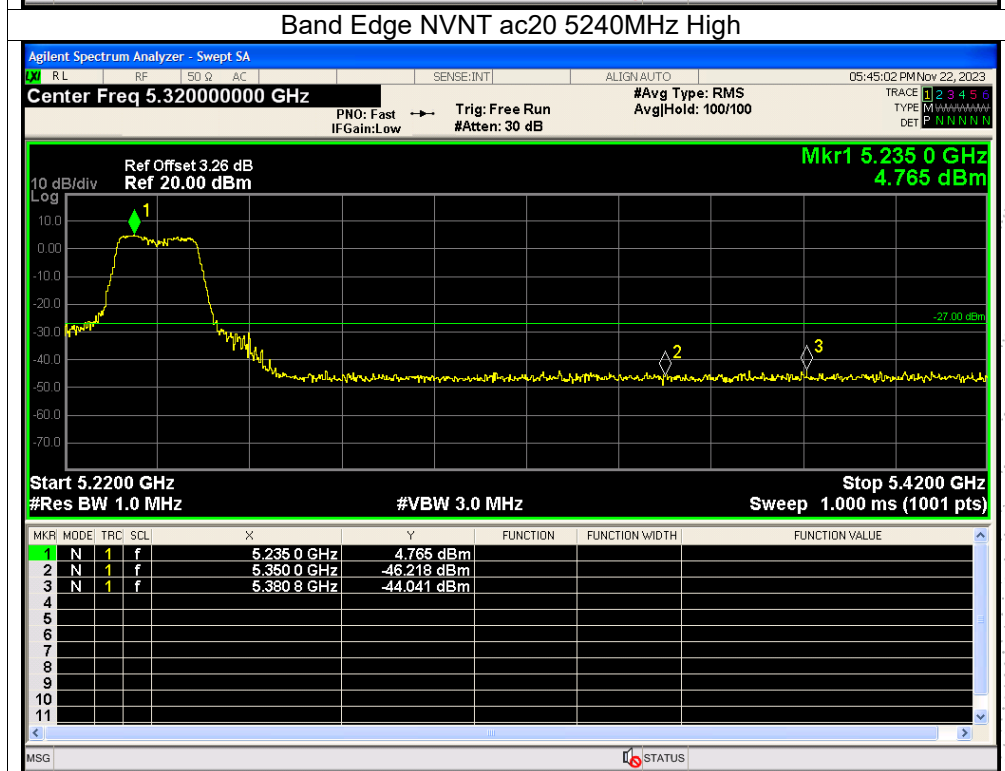
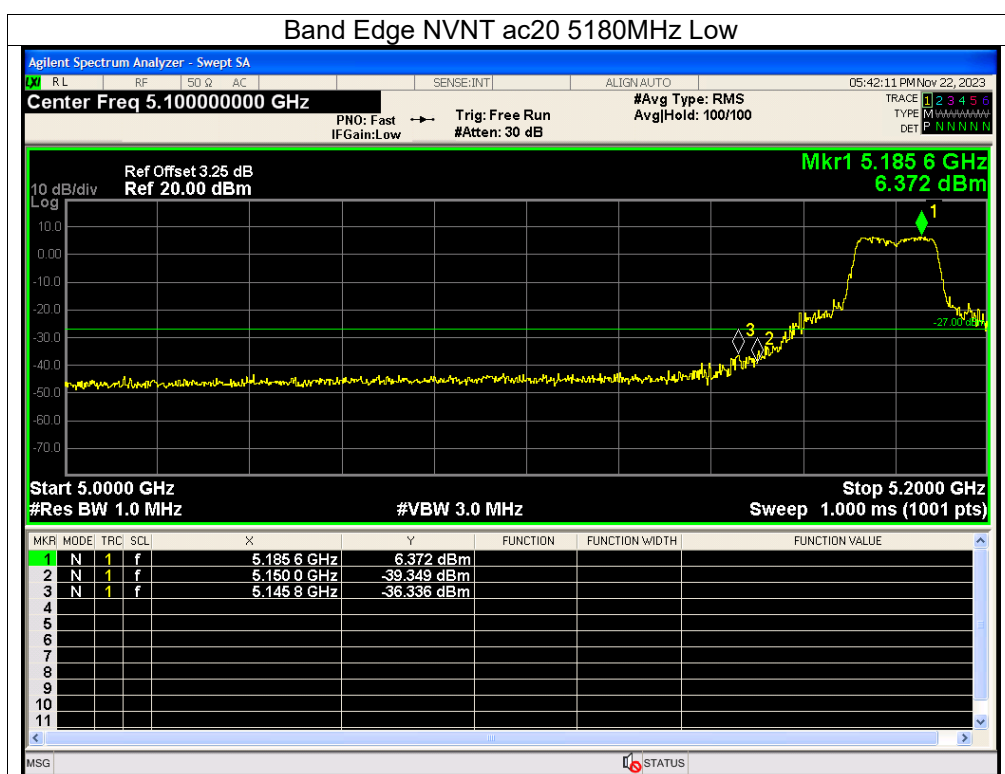
11.5 Test Result

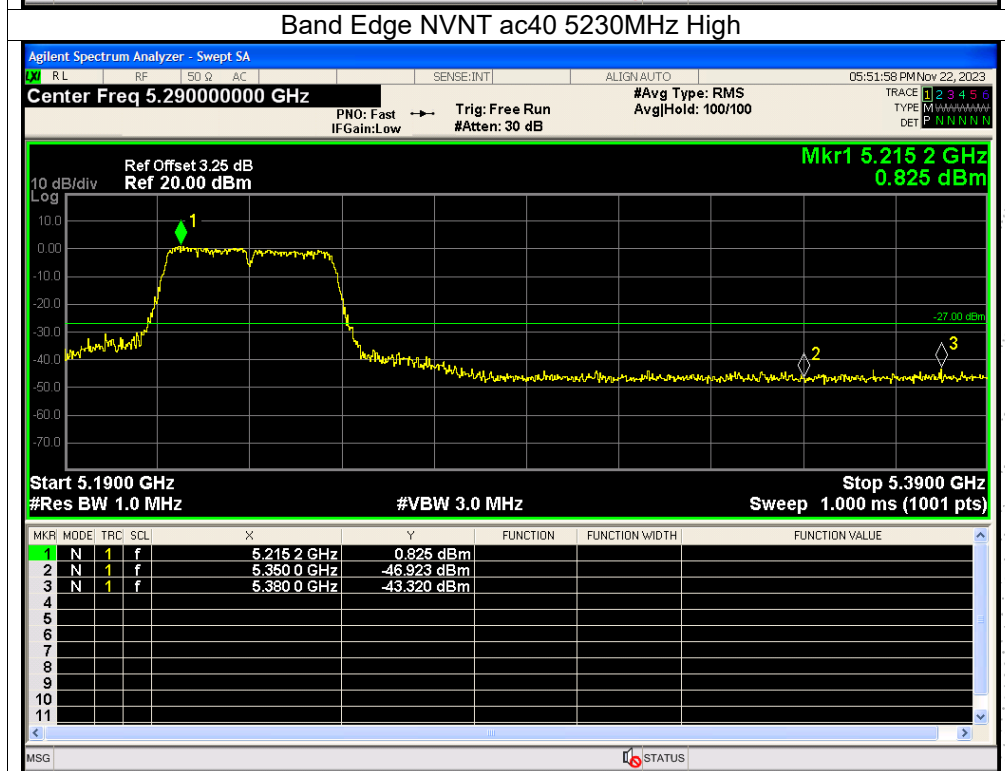
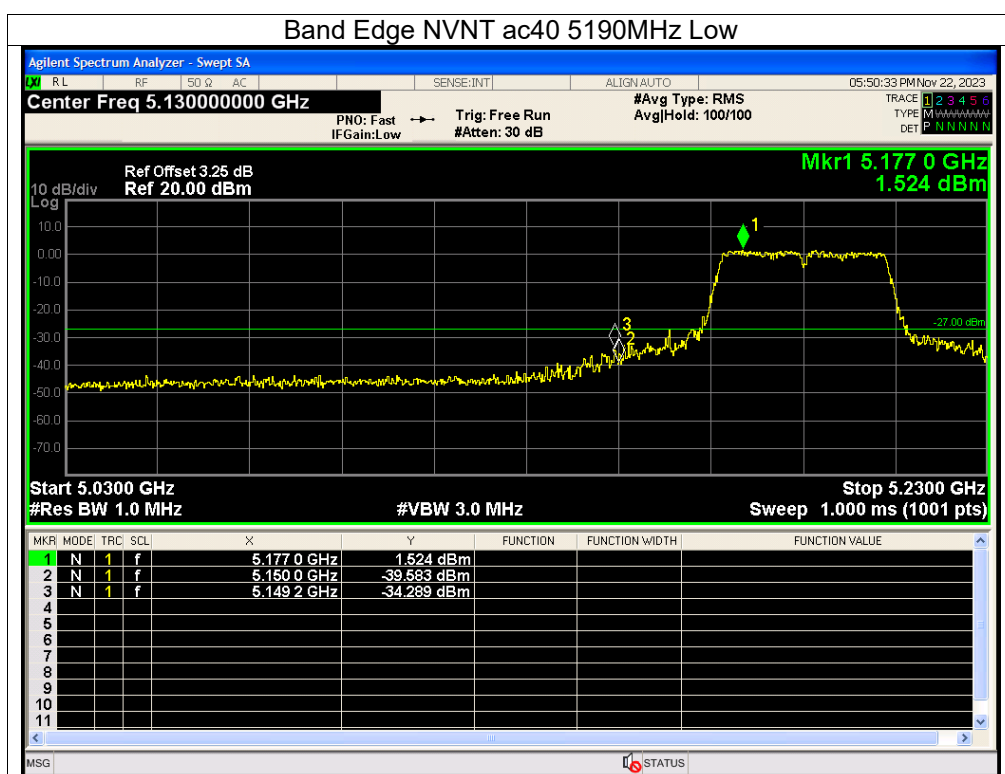
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A, only shown Antenna A Plot.

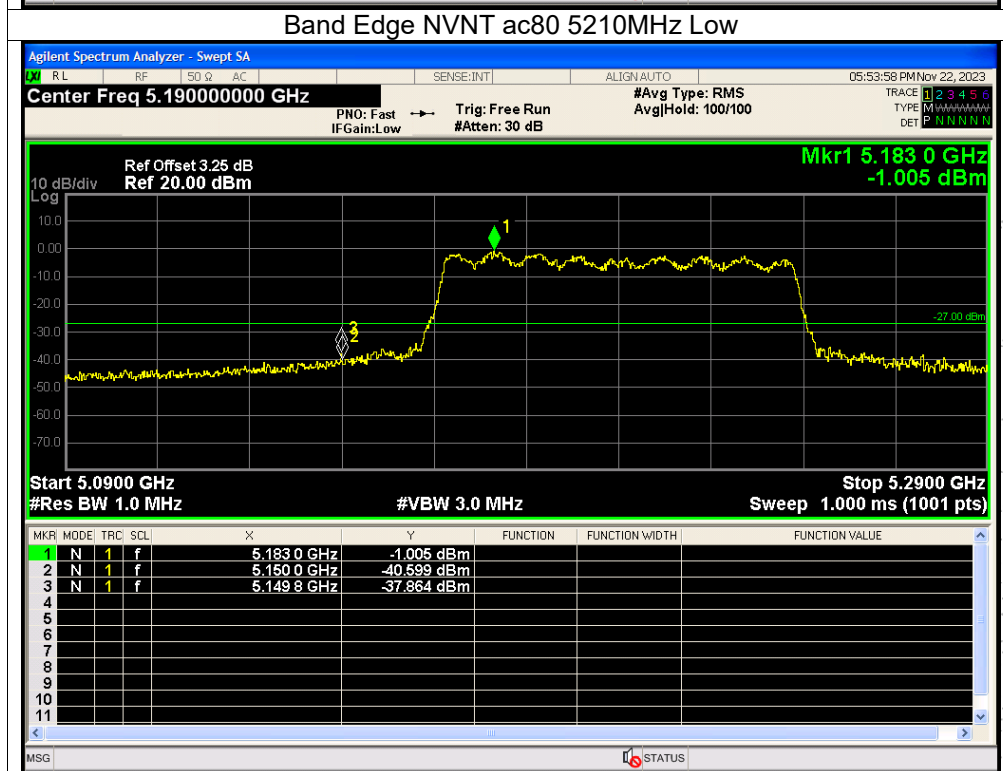
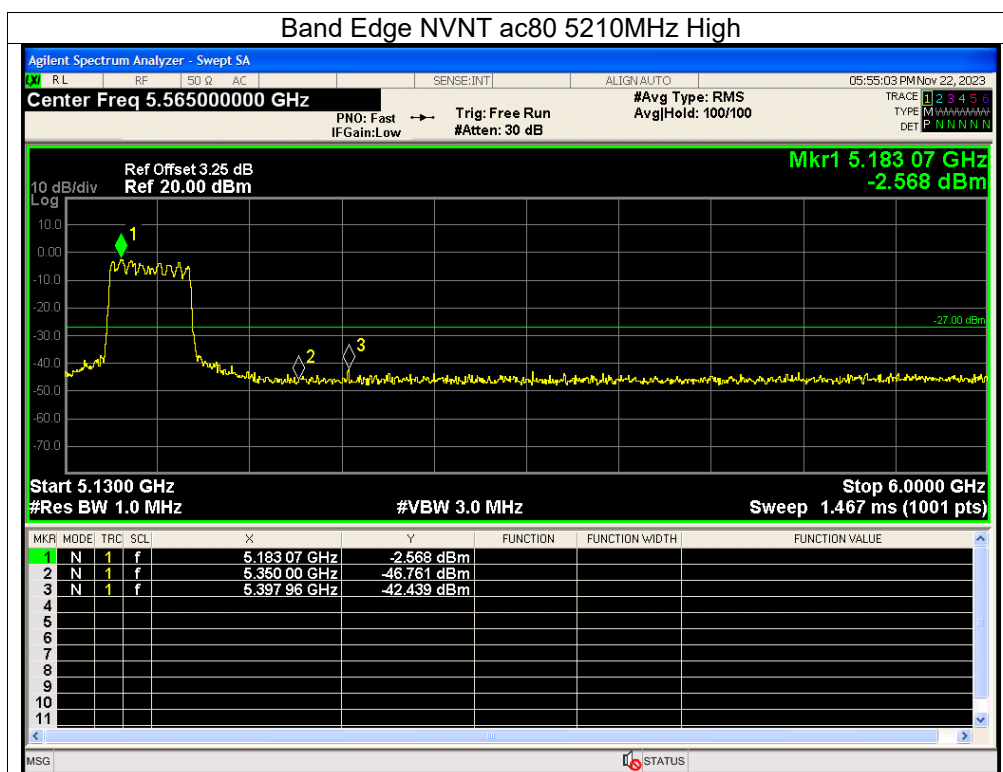






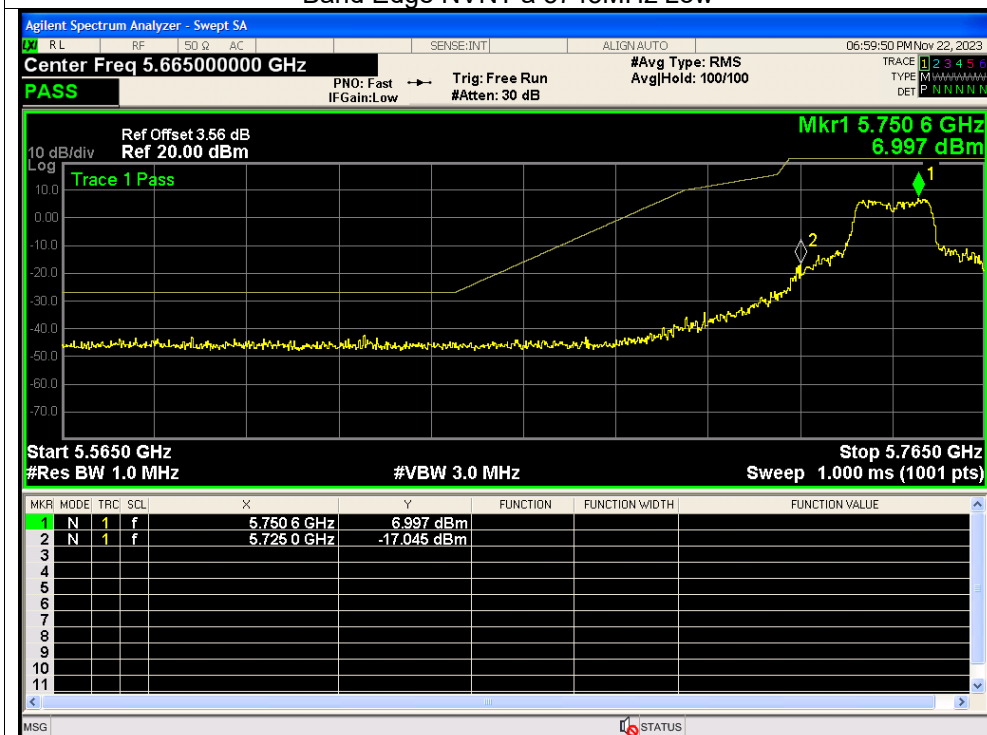






Test Graphs

Band Edge NVNT a 5745MHz Low



Band Edge NVNT a 5825MHz High



