

TEST REPORT

Report No.: BCTC2308789173-2E

Applicant: REOLINK INNOVATION LIMITED

Product Name: WiFi IP Camera

Model/Type
reference: Argus Eco Ultra

Tested Date: 2023-08-07 to 2023-08-23

Issued Date: 2023-08-23

Shenzhen BCTC Testing Co., Ltd.



FCC ID: 2AYHE-2305D

Product Name: WiFi IP Camera

Trademark: 

Model/Type Ref.: Argus Eco Ultra
Argus Eco Plus 4K

Prepared For: REOLINK INNOVATION LIMITED

Address: FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG

Manufacturer: REOLINK INNOVATION LIMITED

Address: FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG

Factory: Shenzhen Reolink Technology Co., Ltd.

Address: 2-4th Floor, Building 2, YuanLing Industrial Park, ShangWu, Shiyan Street, Bao'an District, Shenzhen, 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: 2023-08-07

Sample tested Date: 2023-08-07 to 2023-08-23

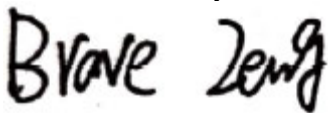
Issue Date: 2023-08-23

Report No.: BCTC2308789173-2E

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

Test Results: PASS

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

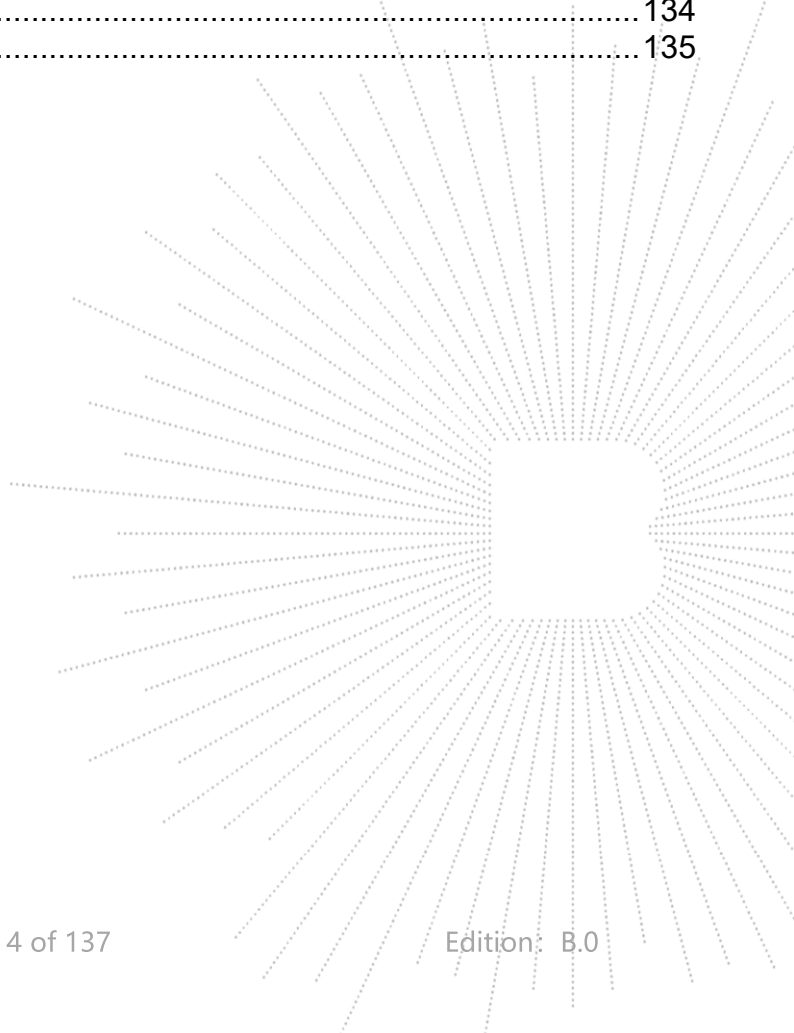
The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

Table Of Content

Test Report Declaration	Page
1. Version	5
2. Test Summary	6
3. Measurement Uncertainty	7
4. Product Information And Test Setup	8
4.1 Product Information	8
4.2 Test Setup Configuration	8
4.3 Support Equipment	9
4.4 Channel List	9
4.5 Test Mode	10
4.6 Table Of Parameters Of Text Software Setting	10
5. Test Facility And Test Instrument Used	11
5.1 Test Facility	11
5.2 Test Instrument Used	11
6. Conducted Emissions	13
6.1 Block Diagram Of Test Setup	13
6.2 Limit	13
6.3 Test Procedure	13
6.4 EUT Operating Conditions	13
6.5 Test Result	14
7. Radiated Emissions	16
7.1 Block Diagram Of Test Setup	16
7.2 Limit	17
7.3 Test Procedure	18
7.4 EUT Operating Conditions	19
7.5 Test Result	19
8. Power Spectral Density Test	30
8.1 Block Diagram Of Test Setup	30
8.2 Limit	30
8.3 Test Procedure	31
8.4 EUT Operating Conditions	31
8.5 Test Result	32
9. 26dB & 6dB & 99% Emission Bandwidth	48
9.1 Block Diagram Of Test Setup	48
9.2 Limit	48
9.3 Test Procedure	48
9.4 EUT Operating Conditions	49
9.5 Test Result	50
10. Maximum Conducted Output Power	78
10.1 Block Diagram Of Test Setup	78
10.2 Limit	78
10.3 Test Procedure	78
10.4 EUT Operating Conditions	79
10.5 Test Result	80

11. Out Of Band Emissions	82
11.1 Block Diagram Of Test Setup.....	82
11.2 Limit	82
11.3 Test Procedure	82
11.4 EUT Operating Conditions	82
11.5 Test Result.....	83
12. Spurious RF Conducted Emissions.....	91
12.1 Block Diagram Of Test Setup.....	91
12.2 Limit	91
12.3 Test Procedure	91
12.4 Test Result.....	91
13. Frequency Stability Measurement	104
13.1 Block Diagram Of Test Setup.....	104
13.2 Limit	104
13.3 Test Procedure	104
13.4 Test Result.....	105
14. Duty Cycle Of Test Signal	117
14.1 Standard Requirement	117
14.2 Formula.....	117
14.3 Test Procedure	117
14.4 Test Result.....	117
15. Antenna Requirement	133
15.1 Limit	133
15.2 Test Result.....	133
16. EUT Photographs.....	134
17. EUT Test Setup Photographs.....	135

(Note: N/A Means Not Applicable)



1. Version

Report No.	Issue Date	Description	Approved
BCTC2308789173-2E	2023-08-23	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

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

Note: The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure.

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(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
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	Bandwidth	U=2.38dB
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

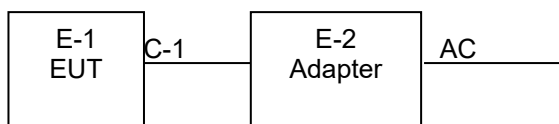
4.1 Product Information

Model/Type Ref.:	Argus Eco Ultra Argus Eco Plus 4K
Model differences:	All the model are the same circuit and RF module, except model names.
Hardware Version:	V1.0
Software Version:	V1.0
IEEE 802.11 WLAN Mode Supported	802.11a/n (20MHz channel bandwidth)
Operation Frequency:	5180-5240MHz for 802.11a/n (HT20); 5260-5320MHz for 802.11a/n (HT20); 5500-5700MHz for 802.11a/n (HT20); 5745-5825 MHz for 802.11a/n (HT20);
Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20):MCS0-MCS15;
Type of Modulation:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n
Antenna installation:	Internal antenna
Antenna Gain:	5.1G: 4.60 dBi 5.3G: 4.60 dBi 5.6G: 4.60 dBi 5.8G: 4.60 dBi
Ratings:	AC120V/60Hz

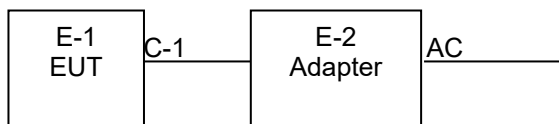
4.2 Test Setup Configuration

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	WiFi IP Camera		Argus Eco Ultra	N/A	EUT
E-2	Adpater 1	N/A	N18	N/A	Auxiliary
E-3	Adpater 2	N/A	HW-11060 0C02	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	N/A	N/A	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

(U-NII-1) 5180MHz-5240MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	36	5180	40	5200
	44	5220	48	5240
(U-NII-2A) 5260MHz-5320MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	52	5260	56	5280
	60	5300	64	5320
(U-NII-2C) 5500MHz-5700MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	100	5500	105	5520
	108	5540	112	5560
	116	5580	120	5600
	124	5620	128	5640
	132	5660	136	5680
	140	5700		
(U-NII-3) 5745MHz-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	149	5745	153	5765
	157	5785	161	5805
	165	5825		

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 20 CH36/ CH40/ CH 48 802.11a / n 20 CH52/ CH56/ CH 64 802.11a / n 20 CH100/ CH116/ CH 140 802.11a / n 20 CH149/ CH157/ CH 165
Mode 2	Link Mode

Note:

(1) 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

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

A2LA certificate registration number is: CN1212

ISED Registered No.: 23583

ISED CAB identifier: CN0017

5.2 Test Instrument Used

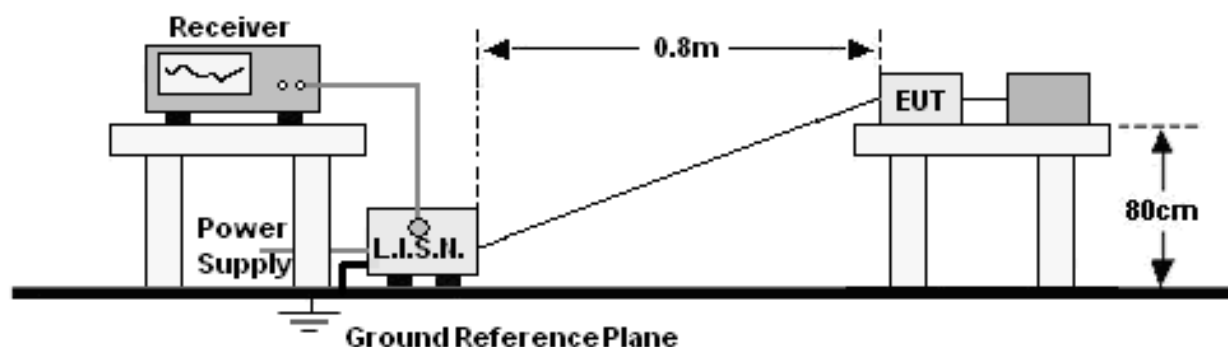
Conducted Emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 15, 2023	May 14, 2024
LISN	R&S	ENV216	101375	May 15, 2023	May 14, 2024
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB DC-6GHz	1650	May 15, 2023	May 14, 2024

RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Power Meter	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	Jun. 06. 2020	Jun. 05, 2023
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 15, 2023	May 14, 2024
Loop Antenna(9KHz -30MHz)	Schwarzbeck	FMZB1519B	00014	May 15, 2023	May 14, 2024
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 15, 2023	May 14, 2024
Horn Antenna	Schwarzbeck	BBHA9120D	1541	May 15, 2023	May 14, 2024
Amplifier(18G Hz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 15, 2023	May 14, 2024
Horn Antenna(18G Hz-40GHz)	Schwarzbeck	BBHA9170	00822	May 15, 2023	May 14, 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:

- *Decreasing linearly with logarithm of frequency.
- 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

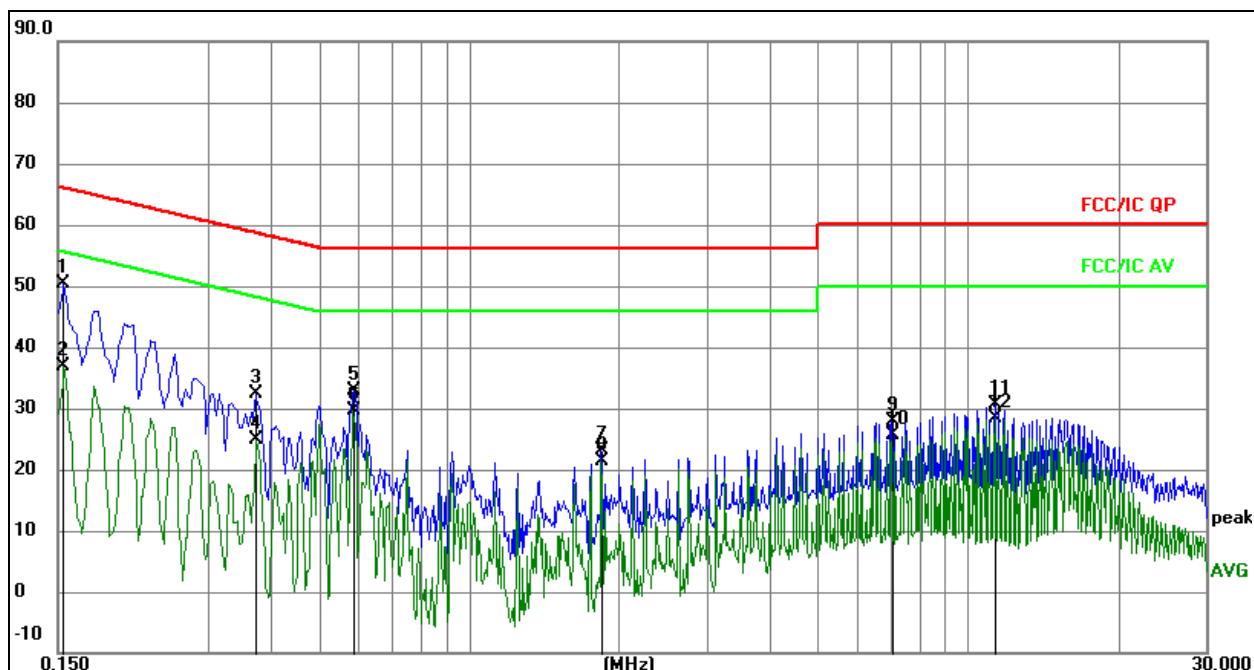
- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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.

6.5 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 2	Polarization :	L

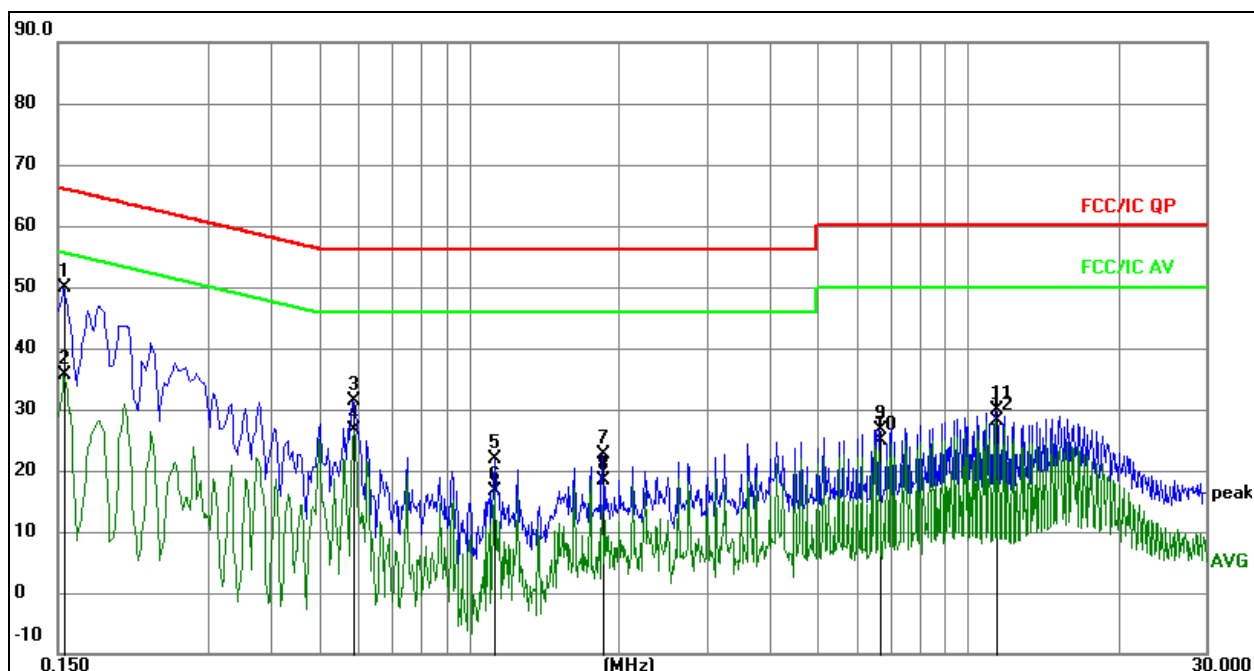


Remark:

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 dB	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1539	40.96	9.52	50.48	65.79	-15.31	QP
2		0.1539	27.35	9.52	36.87	55.79	-18.92	AVG
3		0.3731	22.85	9.62	32.47	58.43	-25.96	QP
4		0.3731	15.15	9.62	24.77	48.43	-23.66	AVG
5		0.5885	23.15	9.62	32.77	56.00	-23.23	QP
6		0.5885	20.12	9.62	29.74	46.00	-16.26	AVG
7		1.8386	13.40	9.73	23.13	56.00	-32.87	QP
8		1.8386	11.72	9.73	21.45	46.00	-24.55	AVG
9		7.0249	18.16	9.74	27.90	60.00	-32.10	QP
10		7.0249	15.92	9.74	25.66	50.00	-24.34	AVG
11		11.3771	21.02	9.66	30.68	60.00	-29.32	QP
12		11.3771	18.82	9.66	28.48	50.00	-21.52	AVG

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 2	Polarization :	N



Remark:

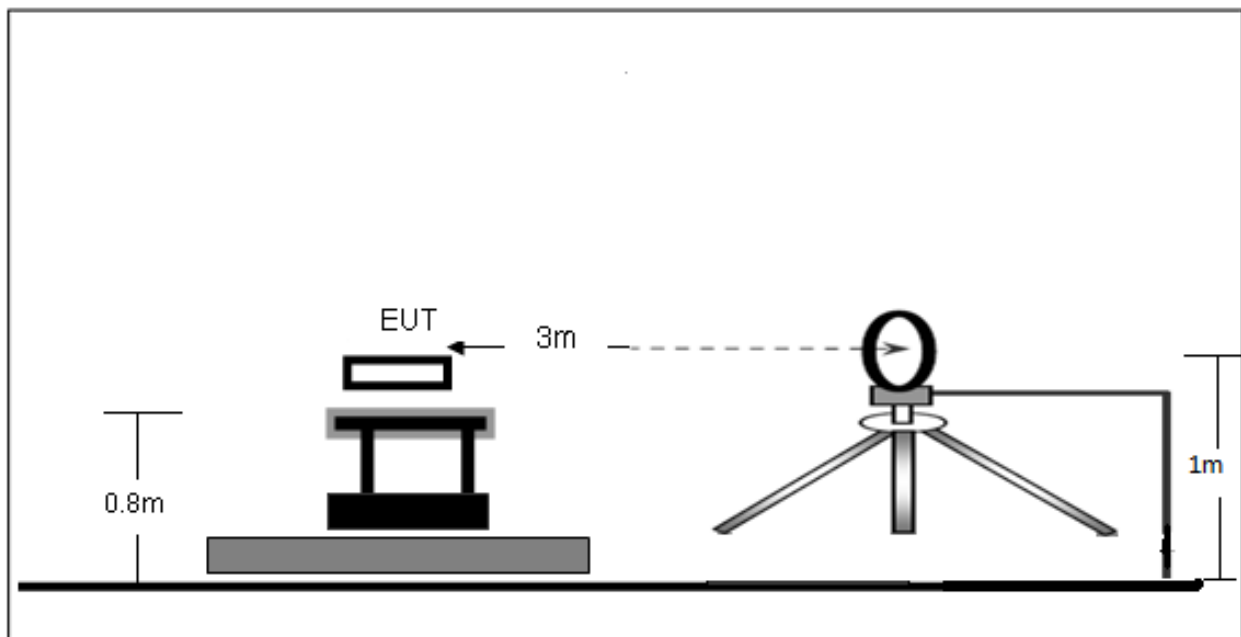
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	*	0.1545	40.36	9.52	49.88	65.75	-15.87	QP
2		0.1545	26.10	9.52	35.62	55.75	-20.13	AVG
3		0.5865	21.78	9.62	31.40	56.00	-24.60	QP
4		0.5865	17.11	9.62	26.73	46.00	-19.27	AVG
5		1.1265	12.03	9.73	21.76	56.00	-34.24	QP
6		1.1265	6.89	9.73	16.62	46.00	-29.38	AVG
7		1.8555	12.91	9.73	22.64	56.00	-33.36	QP
8		1.8555	8.64	9.73	18.37	46.00	-27.63	AVG
9		6.6480	16.97	9.75	26.72	60.00	-33.28	QP
10		6.6480	15.08	9.75	24.83	50.00	-25.17	AVG
11		11.4180	20.12	9.66	29.78	60.00	-30.22	QP
12		11.4180	18.57	9.66	28.23	50.00	-21.77	AVG

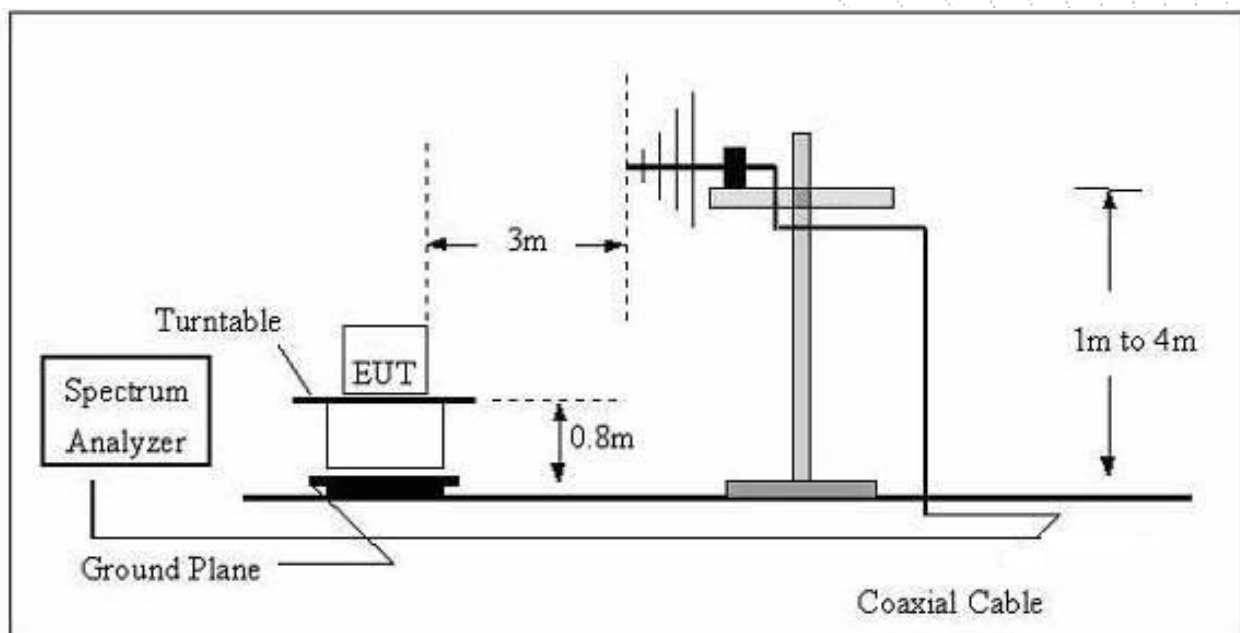
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

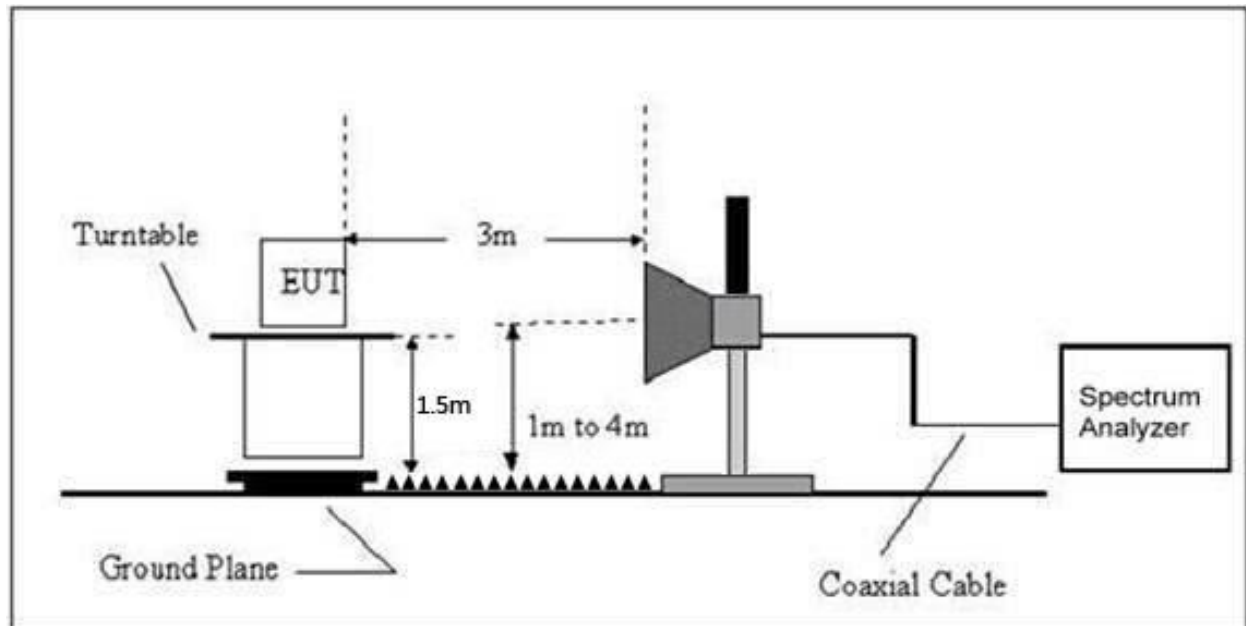
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	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:	24%
Pressure:	101 kPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 2	Polarization:	--

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

Note:

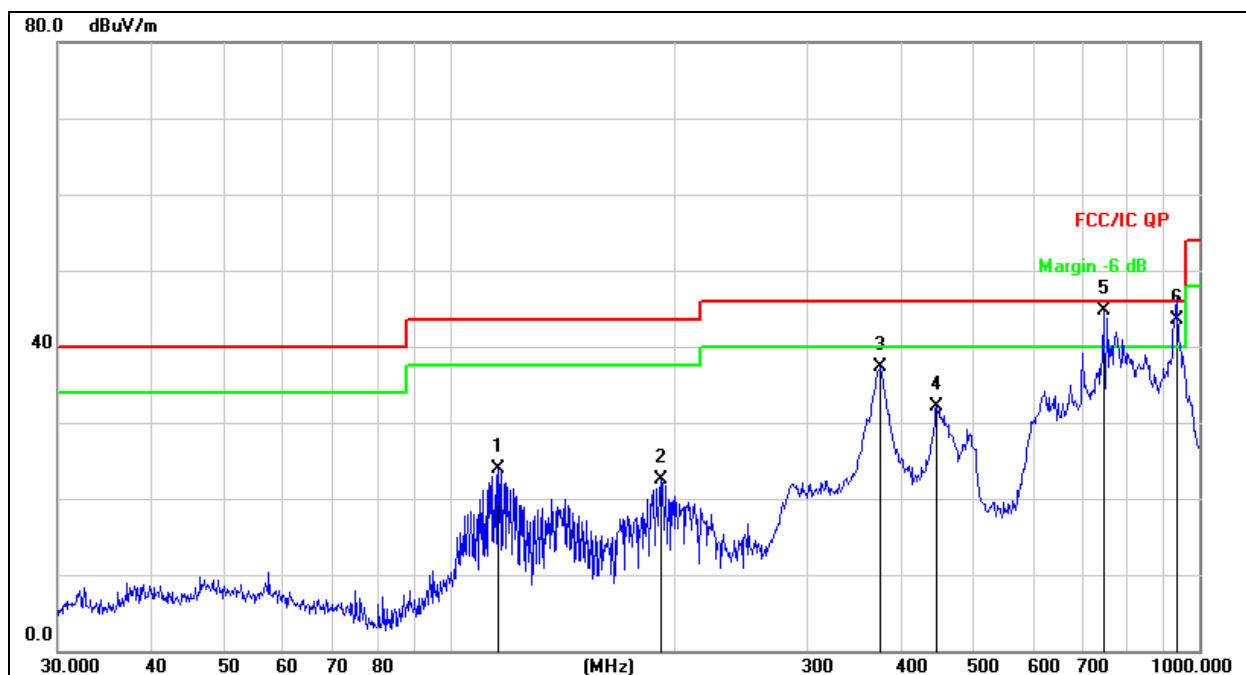
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

Between 30MHz – 1GHz

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 2	Polarization :	Horizontal

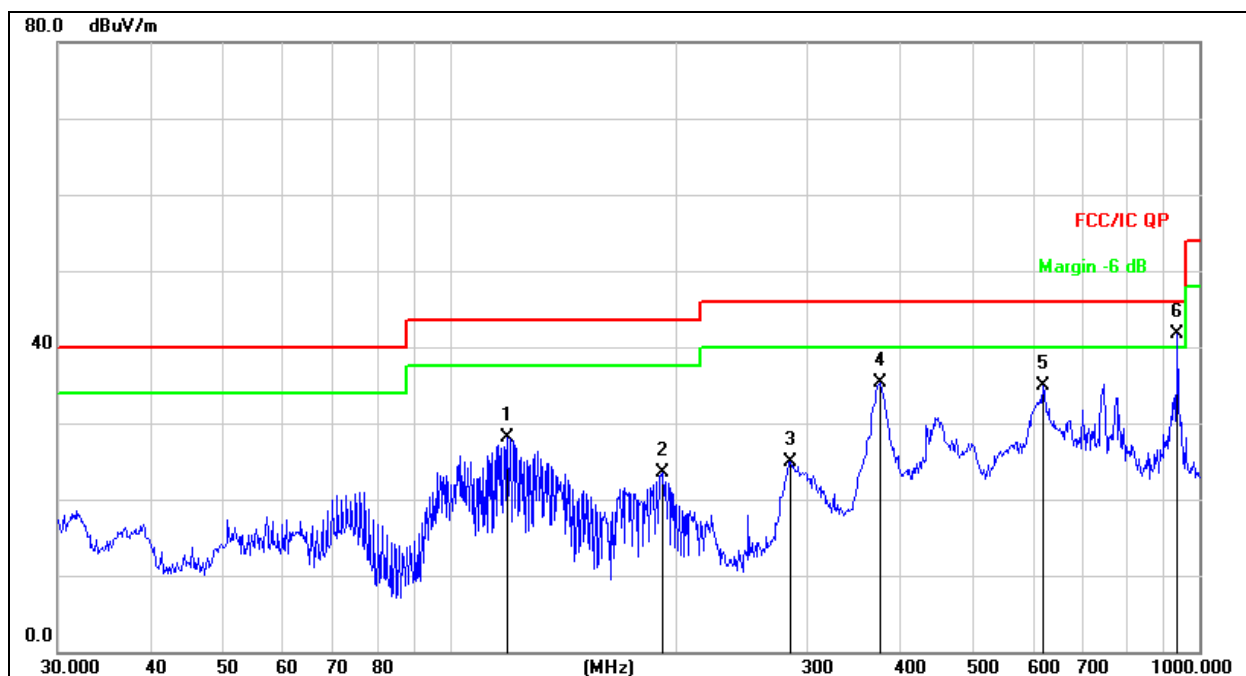


Remark:

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

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	116.1321	42.70	-18.82	23.88	43.50	-19.62	QP
2	191.7450	40.48	-17.98	22.50	43.50	-21.00	QP
3	375.9385	49.76	-12.49	37.27	46.00	-8.73	QP
4	446.4141	43.73	-11.54	32.19	46.00	-13.81	QP
5 *	744.8661	51.24	-6.45	44.79	46.00	-1.21	QP
6 !	932.2715	47.72	-4.24	43.48	46.00	-2.52	QP

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 2	Polarization :	Vertical



Remark:

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

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	119.4360	47.12	-19.04	28.08	43.50	-15.42	QP
2	192.4185	41.41	-17.93	23.48	43.50	-20.02	QP
3	284.9766	39.91	-14.96	24.95	46.00	-21.05	QP
4	375.9384	47.70	-12.49	35.21	46.00	-10.79	QP
5	618.5368	42.98	-8.14	34.84	46.00	-11.16	QP
6 *	935.5462	45.99	-4.21	41.78	46.00	-4.22	QP

Between 1GHz – 40GHz

Test Mode :	TX(5.1G) - 802.11a
-------------	--------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.028	61.05	5.94	35.40	44.00	58.39	68.2	-9.81	PK
V	4434.028	43.22	5.94	35.40	44.00	40.56	54	-13.44	AV
V	10360.123	61.25	8.46	39.75	44.50	64.96	68.2	-3.24	PK
V	10360.123	43.84	8.46	39.75	44.50	47.55	54	-6.45	AV
V	15540.045	64.10	10.12	38.80	44.10	68.92	74	-5.08	PK
V	15540.045	43.11	10.12	38.80	42.70	49.33	54	-4.67	AV
H	4434.119	63.17	5.94	35.18	44.00	60.29	68.2	-7.91	PK
H	4434.119	43.81	5.94	35.18	44.00	40.93	54	-13.07	AV
H	10360.066	51.45	8.46	38.71	44.50	54.12	68.2	-14.08	PK
H	10360.066	40.00	8.46	38.71	44.50	42.67	54	-11.33	AV
H	15540.149	54.52	10.12	38.38	44.10	58.92	74	-15.08	PK
H	15540.149	41.25	10.12	38.38	44.10	45.65	54	-8.35	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.064	61.01	6.48	36.35	44.05	59.79	74	-14.21	PK
V	4592.064	43.32	6.48	36.35	44.05	42.10	54	-11.90	AV
V	10400.159	63.16	8.47	37.88	44.51	65.00	68.2	-3.20	PK
V	10400.159	43.08	8.47	37.88	44.51	44.92	54	-9.08	AV
V	15600.092	62.83	10.12	38.80	44.10	67.65	74	-6.35	PK
V	15600.092	43.06	10.12	38.80	42.70	49.28	54	-4.72	AV
H	4592.088	62.05	6.48	36.37	44.05	60.85	74	-13.15	PK
H	4592.088	43.18	6.48	36.37	44.05	41.98	54	-12.02	AV
H	10400.135	50.67	8.47	38.64	44.50	53.28	68.2	-14.92	PK
H	10400.135	42.63	8.47	38.64	44.50	45.24	54	-8.76	AV
H	15600.050	50.07	10.12	38.38	44.10	54.47	74	-19.53	PK
H	15600.050	42.66	10.12	38.38	44.10	47.06	54	-6.94	AV
High Channel (5240 MHz)-Above 1G									
V	4739.173	64.75	7.10	37.24	43.50	65.59	74	-8.41	PK
V	4739.173	43.59	7.10	37.24	43.50	44.43	54	-9.57	AV
V	10480.189	62.37	8.46	37.68	44.50	64.01	68.2	-4.19	PK
V	10480.189	43.17	8.46	37.68	44.50	44.81	54	-9.19	AV
V	15720.182	64.12	10.12	38.80	44.10	68.94	74	-5.06	PK
V	15720.182	43.47	10.12	38.80	42.70	49.69	54	-4.31	AV
H	4739.149	60.35	7.10	37.24	43.50	61.19	74	-12.81	PK
H	4739.149	43.84	7.10	37.24	43.50	44.68	54	-9.32	AV
H	10480.175	54.68	8.46	38.57	44.50	57.21	68.2	-10.99	PK
H	10480.175	40.89	8.46	38.57	44.50	43.42	54	-10.58	AV
H	15720.176	54.42	10.12	38.38	44.10	58.82	74	-15.18	PK
H	15720.176	42.63	10.12	38.38	44.10	47.03	54	-6.97	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 :	TX(5.1G) - 802.11n-HT20
-------------	-------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5180 MHz)-Above 1G									
V	4434.057	63.86	5.94	35.40	44.00	61.20	68.2	-7.00	PK
V	4434.057	43.63	5.94	35.40	44.00	40.97	54	-13.03	AV
V	10360.070	62.32	8.46	39.75	44.50	66.03	68.2	-2.17	PK
V	10360.070	43.30	8.46	39.75	44.50	47.01	54	-6.99	AV
V	15540.169	61.01	10.12	38.80	44.10	65.83	74	-8.17	PK
V	15540.169	43.73	10.12	38.80	42.70	49.95	54	-4.05	AV
H	4434.125	60.14	5.94	35.18	44.00	57.26	68.2	-10.94	PK
H	4434.125	43.64	5.94	35.18	44.00	40.76	54	-13.24	AV
H	10360.112	52.26	8.46	38.71	44.50	54.93	68.2	-13.27	PK
H	10360.112	43.31	8.46	38.71	44.50	45.98	54	-8.02	AV
H	15540.148	52.18	10.12	38.38	44.10	56.58	74	-17.42	PK
H	15540.148	44.69	10.12	38.38	44.10	49.09	54	-4.91	AV
middle Channel (5200 MHz)-Above 1G									
V	4592.157	63.84	6.48	36.35	44.05	62.62	74	-11.38	PK
V	4592.157	43.60	6.48	36.35	44.05	42.38	54	-11.62	AV
V	10400.113	64.17	8.47	37.88	44.51	66.01	68.2	-2.19	PK
V	10400.113	43.92	8.47	37.88	44.51	45.76	54	-8.24	AV
V	15600.043	62.98	10.12	38.80	44.10	67.80	74	-6.20	PK
V	15600.043	43.67	10.12	38.80	42.70	49.89	54	-4.11	AV
H	4592.180	63.03	6.48	36.37	44.05	61.83	74	-12.17	PK
H	4592.180	43.18	6.48	36.37	44.05	41.98	54	-12.02	AV
H	10400.076	53.37	8.47	38.64	44.50	55.98	68.2	-12.22	PK
H	10400.076	43.87	8.47	38.64	44.50	46.48	54	-7.52	AV
H	15600.117	50.03	10.12	38.38	44.10	54.43	74	-19.57	PK
H	15600.117	41.89	10.12	38.38	44.10	46.29	54	-7.71	AV
High Channel (5240 MHz)-Above 1G									
V	4739.136	60.28	7.10	37.24	43.50	61.12	74	-12.88	PK
V	4739.136	43.60	7.10	37.24	43.50	44.44	54	-9.56	AV
V	10480.139	63.27	8.46	37.68	44.50	64.91	68.2	-3.29	PK
V	10480.139	43.83	8.46	37.68	44.50	45.47	54	-8.53	AV
V	15720.095	64.07	10.12	38.80	44.10	68.89	74	-5.11	PK
V	15720.095	43.53	10.12	38.80	42.70	49.75	54	-4.25	AV
H	4739.005	60.97	7.10	37.24	43.50	61.81	74	-12.19	PK
H	4739.005	43.25	7.10	37.24	43.50	44.09	54	-9.91	AV
H	10480.170	52.56	8.46	38.57	44.50	55.09	68.2	-13.11	PK
H	10480.170	41.02	8.46	38.57	44.50	43.55	54	-10.45	AV
H	15720.167	52.82	10.12	38.38	44.10	57.22	74	-16.78	PK
H	15720.167	40.78	10.12	38.38	44.10	45.18	54	-8.82	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:	TX(5.3G) - 802.11a
------------	--------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
Low Channel (5260 MHz)-Above 1G									
V	4434.175	61.56	5.94	35.40	44.00	58.90	68.2	-9.30	PK
V	4434.175	43.63	5.94	35.40	44.00	40.97	54	-13.03	AV
V	10520.054	60.88	8.46	39.75	44.50	64.59	68.2	-3.61	PK
V	10520.054	43.01	8.46	39.75	44.50	46.72	54	-7.28	AV
V	15780.001	61.84	10.12	38.80	44.10	66.66	74	-7.34	PK
V	15780.001	43.04	10.12	38.80	42.70	49.26	54	-4.74	AV
H	4434.086	60.46	5.94	35.18	44.00	57.58	68.2	-10.62	PK
H	4434.086	43.92	5.94	35.18	44.00	41.04	54	-12.96	AV
H	10520.057	53.15	8.46	38.71	44.50	55.82	68.2	-12.38	PK
H	10520.057	44.46	8.46	38.71	44.50	47.13	54	-6.87	AV
H	15780.094	50.19	10.12	38.38	44.10	54.59	74	-19.41	PK
H	15780.094	41.52	10.12	38.38	44.10	45.92	54	-8.08	AV
middle Channel (5280 MHz)-Above 1G									
V	4592.158	62.58	6.48	36.35	44.05	61.36	74	-12.64	PK
V	4592.158	43.68	6.48	36.35	44.05	42.46	54	-11.54	AV
V	10560.115	64.31	8.47	37.88	44.51	66.15	68.2	-2.05	PK
V	10560.115	43.19	8.47	37.88	44.51	45.03	54	-8.97	AV
V	15840.044	62.23	10.12	38.80	44.10	67.05	74	-6.95	PK
V	15840.044	43.06	10.12	38.80	42.70	49.28	54	-4.72	AV
H	4592.113	61.11	6.48	36.37	44.05	59.91	74	-14.09	PK
H	4592.113	43.46	6.48	36.37	44.05	42.26	54	-11.74	AV
H	10560.128	53.80	8.47	38.64	44.50	56.41	68.2	-11.79	PK
H	10560.128	42.06	8.47	38.64	44.50	44.67	54	-9.33	AV
H	15840.080	50.69	10.12	38.38	44.10	55.09	74	-18.91	PK
H	15840.080	40.25	10.12	38.38	44.10	44.65	54	-9.35	AV
High Channel (5320 MHz)-Above 1G									
V	4739.081	62.54	7.10	37.24	43.50	63.38	74	-10.62	PK
V	4739.081	43.13	7.10	37.24	43.50	43.97	54	-10.03	AV
V	10640.037	64.34	8.46	37.68	44.50	65.98	68.2	-2.22	PK
V	10640.037	43.21	8.46	37.68	44.50	44.85	54	-9.15	AV
V	15960.023	64.33	10.12	38.80	44.10	69.15	74	-4.85	PK
V	15960.023	43.88	10.12	38.80	42.70	50.10	54	-3.90	AV
H	4739.093	63.39	7.10	37.24	43.50	64.23	74	-9.77	PK
H	4739.093	43.03	7.10	37.24	43.50	43.87	54	-10.13	AV
H	10640.087	52.01	8.46	38.57	44.50	54.54	68.2	-13.66	PK
H	10640.087	42.23	8.46	38.57	44.50	44.76	54	-9.24	AV
H	15960.195	50.75	10.12	38.38	44.10	55.15	74	-18.85	PK
H	15960.195	44.60	10.12	38.38	44.10	49.00	54	-5.00	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.

Test Mode:	TX(5.3G) - 802.11n-HT20
------------	-------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/ m)	Margin (dB)	Detector Type
Low Channel (5260 MHz)-Above 1G									
V	4434.147	60.23	5.94	35.40	44.00	57.57	68.2	-10.63	PK
V	4434.147	43.54	5.94	35.40	44.00	40.88	54	-13.12	AV
V	10520.061	62.91	8.46	39.75	44.50	66.62	68.2	-1.58	PK
V	10520.061	43.36	8.46	39.75	44.50	47.07	54	-6.93	AV
V	15780.048	64.28	10.12	38.80	44.10	69.10	74	-4.90	PK
V	15780.048	43.59	10.12	38.80	42.70	49.81	54	-4.19	AV
H	4434.191	62.82	5.94	35.18	44.00	59.94	68.2	-8.26	PK
H	4434.191	43.45	5.94	35.18	44.00	40.57	54	-13.43	AV
H	10520.167	53.49	8.46	38.71	44.50	56.16	68.2	-12.04	PK
H	10520.167	41.54	8.46	38.71	44.50	44.21	54	-9.79	AV
H	15780.095	52.21	10.12	38.38	44.10	56.61	74	-17.39	PK
H	15780.095	43.03	10.12	38.38	44.10	47.43	54	-6.57	AV
middle Channel (5280 MHz)-Above 1G									
V	4592.071	64.45	6.48	36.35	44.05	63.23	74	-10.77	PK
V	4592.071	43.54	6.48	36.35	44.05	42.32	54	-11.68	AV
V	10560.087	60.42	8.47	37.88	44.51	62.26	68.2	-5.94	PK
V	10560.087	43.93	8.47	37.88	44.51	45.77	54	-8.23	AV
V	15840.098	60.38	10.12	38.80	44.10	65.20	74	-8.80	PK
V	15840.098	43.11	10.12	38.80	42.70	49.33	54	-4.67	AV
H	4592.126	60.38	6.48	36.37	44.05	59.18	74	-14.82	PK
H	4592.126	43.27	6.48	36.37	44.05	42.07	54	-11.93	AV
H	10560.058	52.40	8.47	38.64	44.50	55.01	68.2	-13.19	PK
H	10560.058	42.94	8.47	38.64	44.50	45.55	54	-8.45	AV
H	15840.107	51.42	10.12	38.38	44.10	55.82	74	-18.18	PK
H	15840.107	41.60	10.12	38.38	44.10	46.00	54	-8.00	AV
High Channel (5320 MHz)-Above 1G									
V	4739.058	61.89	7.10	37.24	43.50	62.73	74	-11.27	PK
V	4739.058	43.98	7.10	37.24	43.50	44.82	54	-9.18	AV
V	10640.077	61.35	8.46	37.68	44.50	62.99	68.2	-5.21	PK
V	10640.077	43.03	8.46	37.68	44.50	44.67	54	-9.33	AV
V	15960.155	64.57	10.12	38.80	44.10	69.39	74	-4.61	PK
V	15960.155	43.52	10.12	38.80	42.70	49.74	54	-4.26	AV
H	4739.110	61.28	7.10	37.24	43.50	62.12	74	-11.88	PK
H	4739.110	43.66	7.10	37.24	43.50	44.50	54	-9.50	AV
H	10640.149	51.10	8.46	38.57	44.50	53.63	68.2	-14.57	PK
H	10640.149	40.65	8.46	38.57	44.50	43.18	54	-10.82	AV
H	15960.128	53.62	10.12	38.38	44.10	58.02	74	-15.98	PK
H	15960.128	43.14	10.12	38.38	44.10	47.54	54	-6.46	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:	TX(5.6G) - 802.11a
------------	--------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5500 MHz)-Above 1G									
V	4434.157	62.12	5.94	35.40	44.00	59.46	68.2	-8.74	PK
V	4434.157	43.71	5.94	35.40	44.00	41.05	54	-12.95	AV
V	11000.089	60.19	8.46	39.75	44.50	63.90	68.2	-4.30	PK
V	11000.089	43.63	8.46	39.75	44.50	47.34	54	-6.66	AV
V	16500.038	60.58	10.12	38.80	44.10	65.40	74	-8.60	PK
V	16500.038	43.87	10.12	38.80	42.70	50.09	54	-3.91	AV
H	4434.083	62.19	5.94	35.18	44.00	59.31	68.2	-8.89	PK
H	4434.083	43.65	5.94	35.18	44.00	40.77	54	-13.23	AV
H	11000.112	50.39	8.46	38.71	44.50	53.06	68.2	-15.14	PK
H	11000.112	41.45	8.46	38.71	44.50	44.12	54	-9.88	AV
H	16500.084	51.19	10.12	38.38	44.10	55.59	74	-18.41	PK
H	16500.084	44.64	10.12	38.38	44.10	49.04	54	-4.96	AV
Middle Channel (5580 MHz)-Above 1G									
V	4592.199	61.23	6.48	36.35	44.05	60.01	74	-13.99	PK
V	4592.199	43.52	6.48	36.35	44.05	42.30	54	-11.70	AV
V	11160.082	60.74	8.47	37.88	44.51	62.58	68.2	-5.62	PK
V	11160.082	43.06	8.47	37.88	44.51	44.90	54	-9.10	AV
V	16740.119	61.03	10.12	38.80	44.10	65.85	74	-8.15	PK
V	16740.119	43.73	10.12	38.80	42.70	49.95	54	-4.05	AV
H	4592.156	64.23	6.48	36.37	44.05	63.03	74	-10.97	PK
H	4592.156	43.67	6.48	36.37	44.05	42.47	54	-11.53	AV
H	11160.059	52.61	8.47	38.64	44.50	55.22	68.2	-12.98	PK
H	11160.059	41.81	8.47	38.64	44.50	44.42	54	-9.58	AV
H	16740.169	51.80	10.12	38.38	44.10	56.20	74	-17.80	PK
H	16740.169	40.30	10.12	38.38	44.10	44.70	54	-9.30	AV
High Channel (5700 MHz)-Above 1G									
V	4739.046	64.07	7.10	37.24	43.50	64.91	74	-9.09	PK
V	4739.046	43.07	7.10	37.24	43.50	43.91	54	-10.09	AV
V	11400.164	64.97	8.46	37.68	44.50	66.61	68.2	-1.59	PK
V	11400.164	43.15	8.46	37.68	44.50	44.79	54	-9.21	AV
V	17100.044	62.30	10.12	38.80	44.10	67.12	74	-6.88	PK
V	17100.044	43.93	10.12	38.80	42.70	50.15	54	-3.85	AV
H	4739.188	61.56	7.10	37.24	43.50	62.40	74	-11.60	PK
H	4739.188	43.54	7.10	37.24	43.50	44.38	54	-9.62	AV
H	11400.074	54.74	8.46	38.57	44.50	57.27	68.2	-10.93	PK
H	11400.074	44.87	8.46	38.57	44.50	47.40	54	-6.60	AV
H	17100.122	52.27	10.12	38.38	44.10	56.67	74	-17.33	PK
H	17100.122	44.77	10.12	38.38	44.10	49.17	54	-4.83	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:	TX(5.6G) - 802.11n-HT20
------------	-------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5500 MHz)-Above 1G									
V	4434.054	60.55	5.94	35.40	44.00	57.89	68.2	-10.31	PK
V	4434.054	43.93	5.94	35.40	44.00	41.27	54	-12.73	AV
V	11000.006	62.50	8.46	39.75	44.50	66.21	68.2	-1.99	PK
V	11000.006	43.14	8.46	39.75	44.50	46.85	54	-7.15	AV
V	16500.130	60.96	10.12	38.80	44.10	65.78	74	-8.22	PK
V	16500.130	43.99	10.12	38.80	42.70	50.21	54	-3.79	AV
H	4434.091	60.73	5.94	35.18	44.00	57.85	68.2	-10.35	PK
H	4434.091	43.54	5.94	35.18	44.00	40.66	54	-13.34	AV
H	11000.096	50.83	8.46	38.71	44.50	53.50	68.2	-14.70	PK
H	11000.096	41.07	8.46	38.71	44.50	43.74	54	-10.26	AV
H	16500.161	53.57	10.12	38.38	44.10	57.97	74	-16.03	PK
H	16500.161	40.36	10.12	38.38	44.10	44.76	54	-9.24	AV
Middle Channel (5580 MHz)-Above 1G									
V	4592.160	60.89	6.48	36.35	44.05	59.67	74	-14.33	PK
V	4592.160	43.41	6.48	36.35	44.05	42.19	54	-11.81	AV
V	11160.104	60.20	8.47	37.88	44.51	62.04	68.2	-6.16	PK
V	11160.104	43.86	8.47	37.88	44.51	45.70	54	-8.30	AV
V	16740.107	60.91	10.12	38.80	44.10	65.73	74	-8.27	PK
V	16740.107	43.07	10.12	38.80	42.70	49.29	54	-4.71	AV
H	4592.064	61.01	6.48	36.37	44.05	59.81	74	-14.19	PK
H	4592.064	43.68	6.48	36.37	44.05	42.48	54	-11.52	AV
H	11160.111	50.40	8.47	38.64	44.50	53.01	68.2	-15.19	PK
H	11160.111	44.16	8.47	38.64	44.50	46.77	54	-7.23	AV
H	16740.172	50.04	10.12	38.38	44.10	54.44	74	-19.56	PK
H	16740.172	42.26	10.12	38.38	44.10	46.66	54	-7.34	AV
High Channel (5700 MHz)-Above 1G									
V	4739.059	64.56	7.10	37.24	43.50	65.40	74	-8.60	PK
V	4739.059	43.08	7.10	37.24	43.50	43.92	54	-10.08	AV
V	11400.102	60.44	8.46	37.68	44.50	62.08	68.2	-6.12	PK
V	11400.102	43.20	8.46	37.68	44.50	44.84	54	-9.16	AV
V	17100.059	62.71	10.12	38.80	44.10	67.53	74	-6.47	PK
V	17100.059	43.09	10.12	38.80	42.70	49.31	54	-4.69	AV
H	4739.010	63.37	7.10	37.24	43.50	64.21	74	-9.79	PK
H	4739.010	43.31	7.10	37.24	43.50	44.15	54	-9.85	AV
H	11400.167	53.69	8.46	38.57	44.50	56.22	68.2	-11.98	PK
H	11400.167	44.11	8.46	38.57	44.50	46.64	54	-7.36	AV
H	17100.114	52.21	10.12	38.38	44.10	56.61	74	-17.39	PK
H	17100.114	44.15	10.12	38.38	44.10	48.55	54	-5.45	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:	TX(5.8G) - 802.11a
------------	--------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.143	58.87	5.94	35.40	44.00	56.21	74	-17.79	PK
V	4679.143	43.33	5.94	35.40	44.00	40.67	54	-13.33	AV
V	11490.077	56.15	8.46	39.75	44.50	59.86	68.2	-8.34	PK
V	11490.077	43.48	8.46	39.75	44.50	47.19	54	-6.81	AV
V	17235.170	59.99	10.12	38.80	44.10	64.81	68.2	-3.39	PK
V	17235.170	43.80	10.12	38.80	42.70	50.02	54	-3.98	AV
H	4679.003	54.37	5.94	35.18	44.00	51.49	74	-22.51	PK
H	4679.003	43.79	5.94	35.18	44.00	40.91	54	-13.09	AV
H	11490.171	51.40	8.46	38.71	44.50	54.07	68.2	-14.13	PK
H	11490.171	43.53	8.46	38.71	44.50	46.20	54	-7.80	AV
H	17235.134	52.14	10.12	38.38	44.10	56.54	68.2	-11.66	PK
H	17235.134	43.75	10.12	38.38	44.10	48.15	54	-5.85	AV
Middle Channel (5785 MHz)-Above 1G									
V	4592.135	58.67	6.48	36.35	44.05	57.45	74	-16.55	PK
V	4592.135	43.99	6.48	36.35	44.05	42.77	54	-11.23	AV
V	11570.023	59.10	8.47	37.88	44.51	60.94	68.2	-7.26	PK
V	11570.023	43.19	8.47	37.88	44.51	45.03	54	-8.97	AV
V	17355.057	57.91	10.12	38.80	44.10	62.73	68.2	-5.47	PK
V	17355.057	39.37	10.12	38.80	42.70	45.59	54	-8.41	AV
H	4592.098	57.83	6.48	36.37	44.05	56.63	74	-17.37	PK
H	4592.098	43.37	6.48	36.37	44.05	42.17	54	-11.83	AV
H	11570.149	54.86	8.47	38.64	44.50	57.47	68.2	-10.73	PK
H	11570.149	41.11	8.47	38.64	44.50	43.72	54	-10.28	AV
H	17355.181	52.05	10.12	38.38	44.10	56.45	68.2	-11.75	PK
H	17355.181	42.11	10.12	38.38	44.10	46.51	54	-7.49	AV
High Channel (5825 MHz)-Above 1G									
V	6039.147	58.68	7.10	37.24	43.50	59.52	68.2	-8.68	PK
V	6039.147	43.22	7.10	37.24	43.50	44.06	54	-9.94	AV
V	11650.085	60.36	8.46	37.68	44.50	62.00	74	-12.00	PK
V	11650.085	43.40	8.46	37.68	44.50	45.04	54	-8.96	AV
V	17475.123	56.83	10.12	38.80	44.10	61.65	68.2	-6.55	PK
V	17475.123	43.11	10.12	38.80	42.70	49.33	54	-4.67	AV
H	6039.115	55.35	7.10	37.24	43.50	56.19	68.2	-12.01	PK
H	6039.115	43.92	7.10	37.24	43.50	44.76	54	-9.24	AV
H	11650.036	54.91	8.46	38.57	44.50	57.44	74	-16.56	PK
H	11650.036	44.87	8.46	38.57	44.50	47.40	54	-6.60	AV
H	17475.010	53.67	10.12	38.38	44.10	58.07	68.2	-10.13	PK
H	17475.010	42.98	10.12	38.38	44.10	47.38	54	-6.62	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:	TX(5.8G) - 802.11n-HT20
------------	-------------------------

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (5745 MHz)-Above 1G									
V	4679.149	58.28	5.94	35.40	44.00	55.62	74	-18.38	PK
V	4679.149	43.24	5.94	35.40	44.00	40.58	54	-13.42	AV
V	11490.105	56.78	8.46	39.75	44.50	60.49	68.2	-7.71	PK
V	11490.105	43.50	8.46	39.75	44.50	47.21	54	-6.79	AV
V	17235.128	60.01	10.12	38.80	44.10	64.83	68.2	-3.37	PK
V	17235.128	43.29	10.12	38.80	42.70	49.51	54	-4.49	AV
H	4679.195	59.49	5.94	35.18	44.00	56.61	74	-17.39	PK
H	4679.195	43.59	5.94	35.18	44.00	40.71	54	-13.29	AV
H	11490.094	50.32	8.46	38.71	44.50	52.99	68.2	-15.21	PK
H	11490.094	44.16	8.46	38.71	44.50	46.83	54	-7.17	AV
H	17235.148	50.63	10.12	38.38	44.10	55.03	68.2	-13.17	PK
H	17235.148	44.78	10.12	38.38	44.10	49.18	54	-4.82	AV
Middle Channel (5785 MHz)-Above 1G									
V	4592.048	58.93	6.48	36.35	44.05	57.71	74	-16.29	PK
V	4592.048	43.69	6.48	36.35	44.05	42.47	54	-11.53	AV
V	11570.158	56.11	8.47	37.88	44.51	57.95	68.2	-10.25	PK
V	11570.158	43.50	8.47	37.88	44.51	45.34	54	-8.66	AV
V	17355.027	61.47	10.12	38.80	44.10	66.29	68.2	-1.91	PK
V	17355.027	43.51	10.12	38.80	42.70	49.73	54	-4.27	AV
H	4592.080	59.60	6.48	36.37	44.05	58.40	74	-15.60	PK
H	4592.080	43.26	6.48	36.37	44.05	42.06	54	-11.94	AV
H	11570.036	50.59	8.47	38.64	44.50	53.20	68.2	-15.00	PK
H	11570.036	40.36	8.47	38.64	44.50	42.97	54	-11.03	AV
H	17355.070	54.91	10.12	38.38	44.10	59.31	68.2	-8.89	PK
H	17355.070	43.89	10.12	38.38	44.10	48.29	54	-5.71	AV
High Channel (5825 MHz)-Above 1G									
V	6039.136	58.74	7.10	37.24	43.50	59.58	68.2	-8.62	PK
V	6039.136	43.77	7.10	37.24	43.50	44.61	54	-9.39	AV
V	11650.142	59.51	8.46	37.68	44.50	61.15	74	-12.85	PK
V	11650.142	43.77	8.46	37.68	44.50	45.41	54	-8.59	AV
V	17475.087	57.49	10.12	38.80	44.10	62.31	68.2	-5.89	PK
V	17475.087	43.14	10.12	38.80	42.70	49.36	54	-4.64	AV
H	6039.174	56.00	7.10	37.24	43.50	56.84	68.2	-11.36	PK
H	6039.174	43.04	7.10	37.24	43.50	43.88	54	-10.12	AV
H	11650.107	50.71	8.46	38.57	44.50	53.24	74	-20.76	PK
H	11650.107	41.34	8.46	38.57	44.50	43.87	54	-10.13	AV
H	17475.070	52.17	10.12	38.38	44.10	56.57	68.2	-11.63	PK
H	17475.070	41.29	10.12	38.38	44.10	45.69	54	-8.31	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.

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 access point 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 access point 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 access points 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

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(b) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 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.

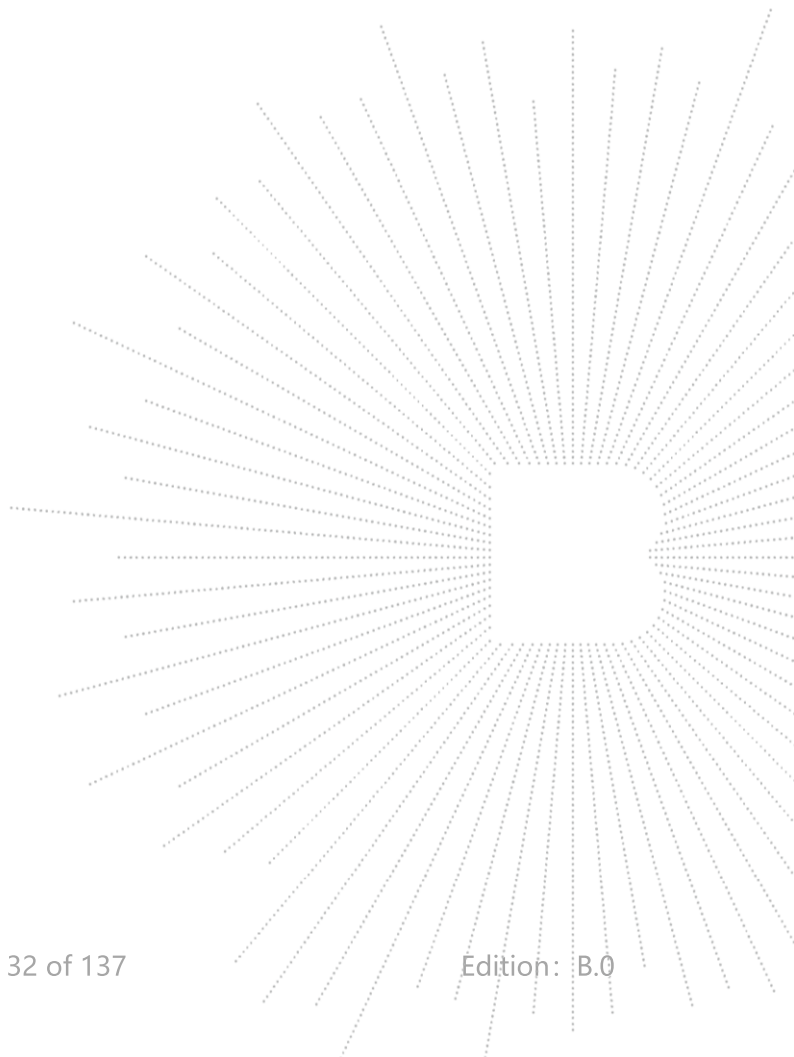
8.4 EUT Operating Conditions

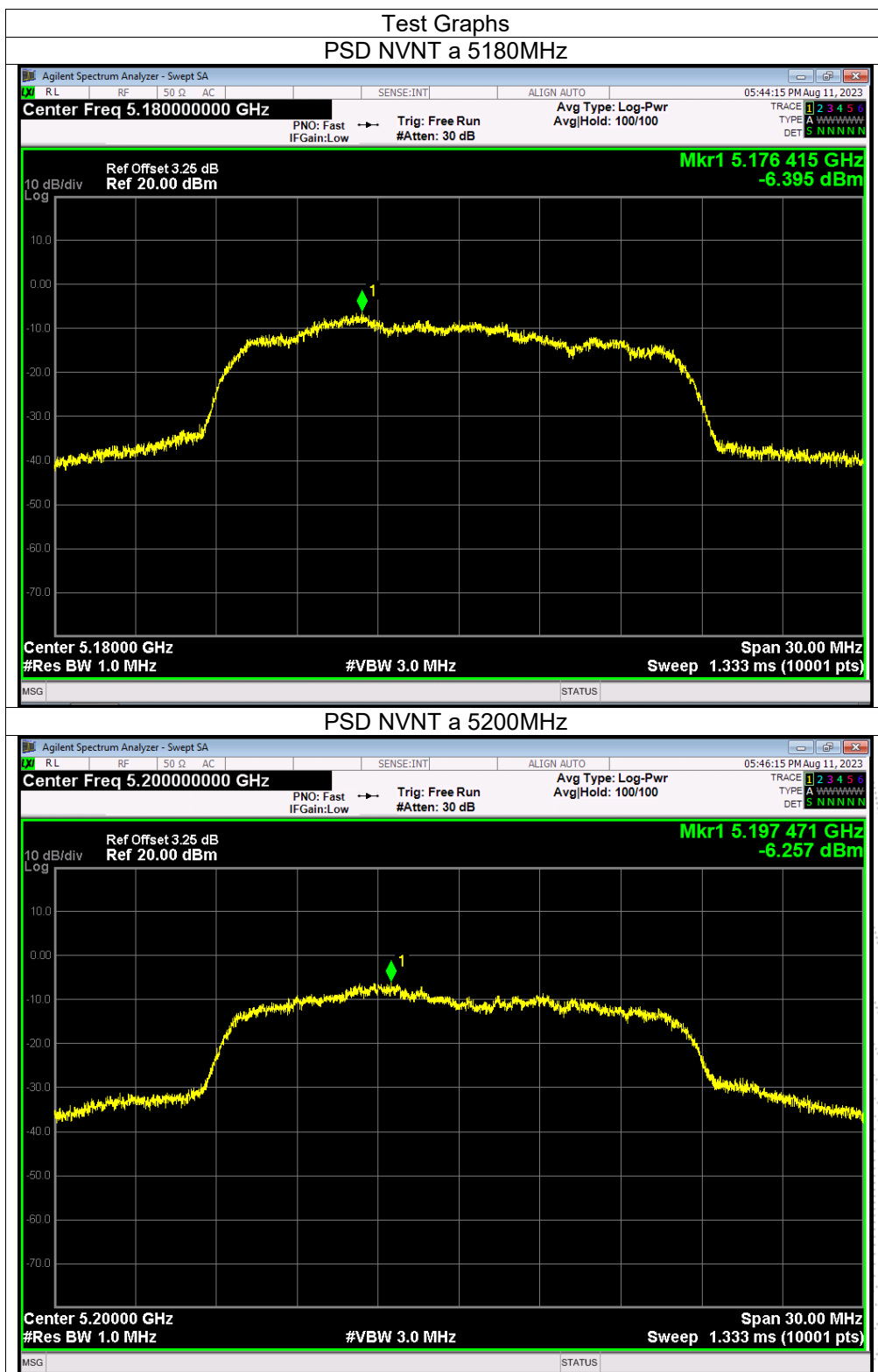
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

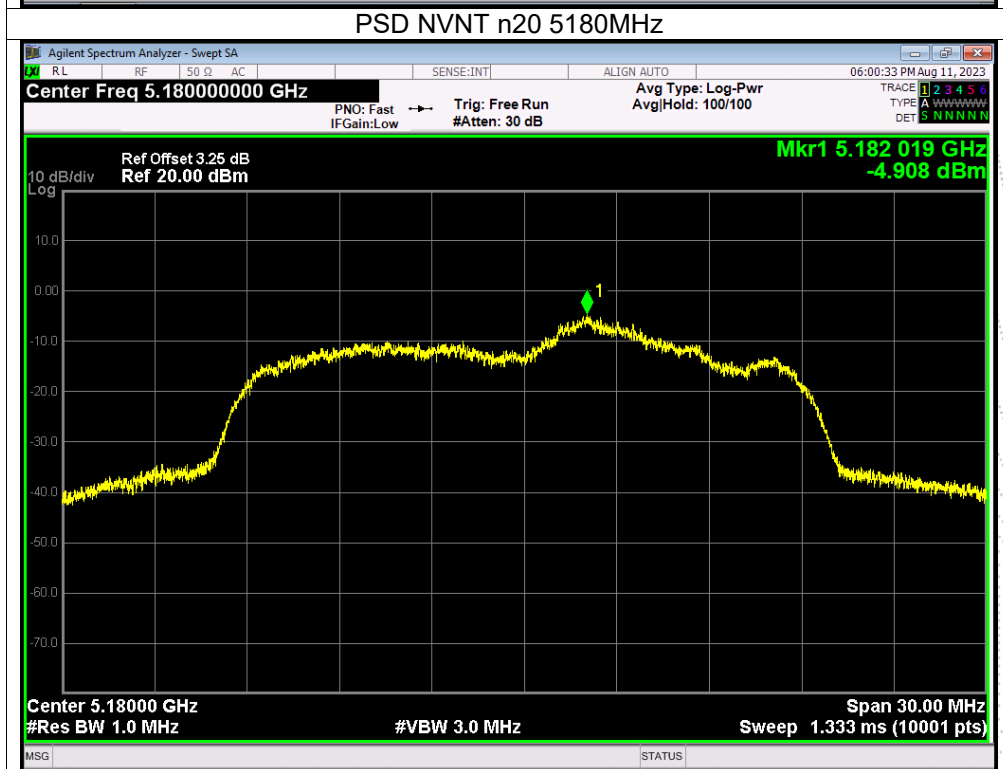
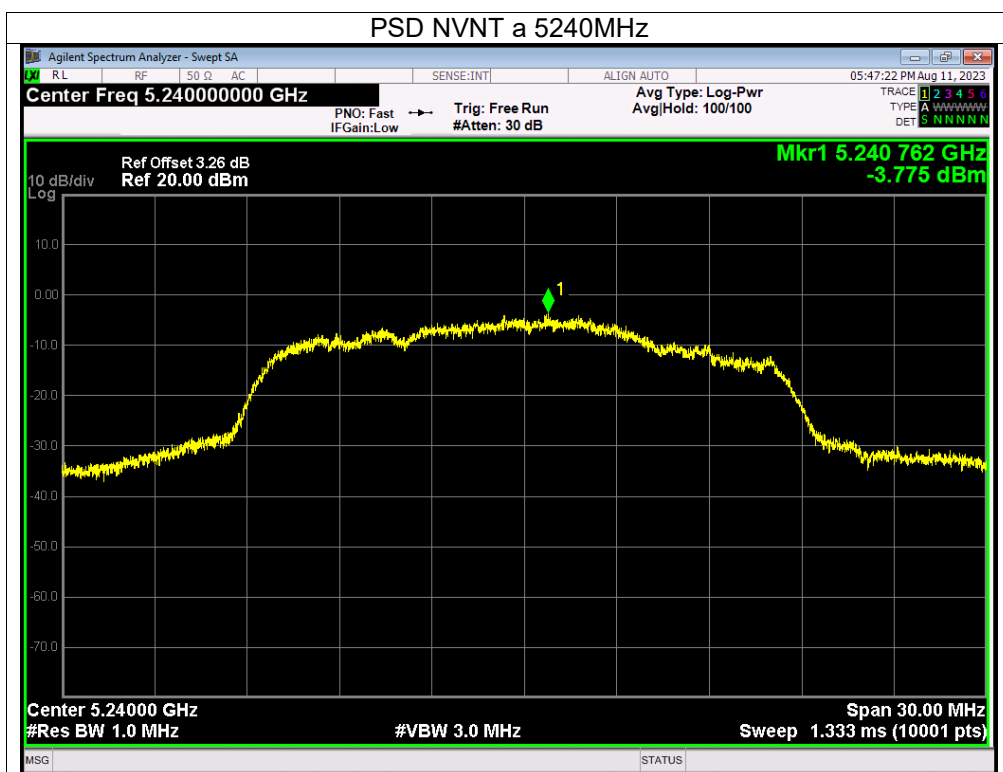
8.5 Test Result

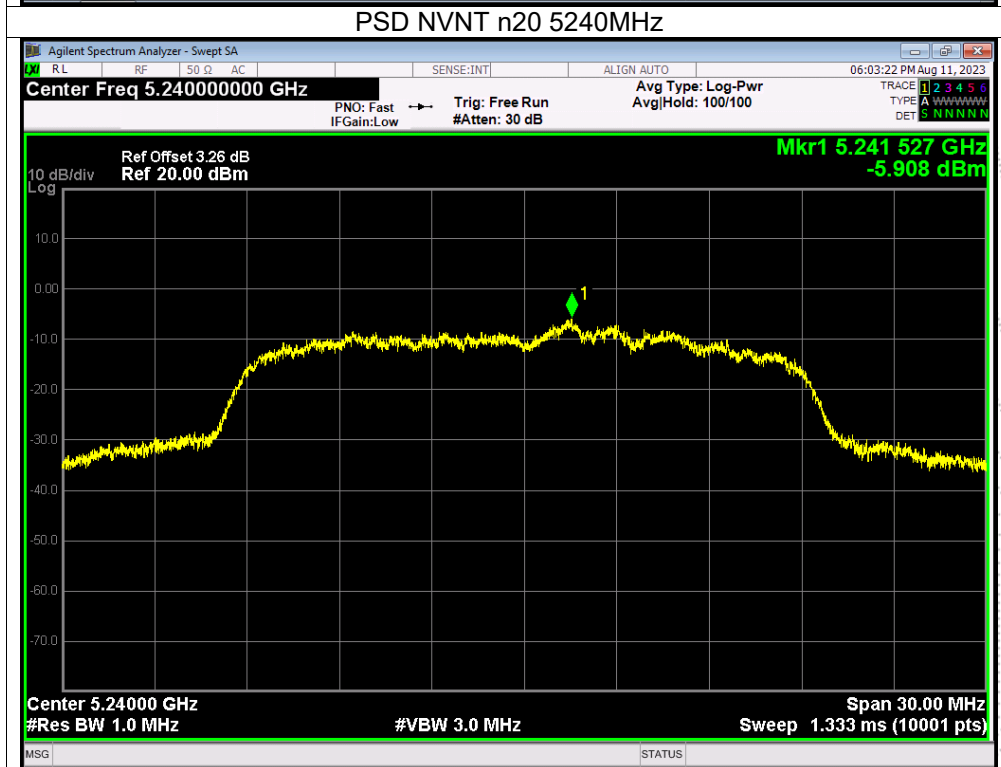
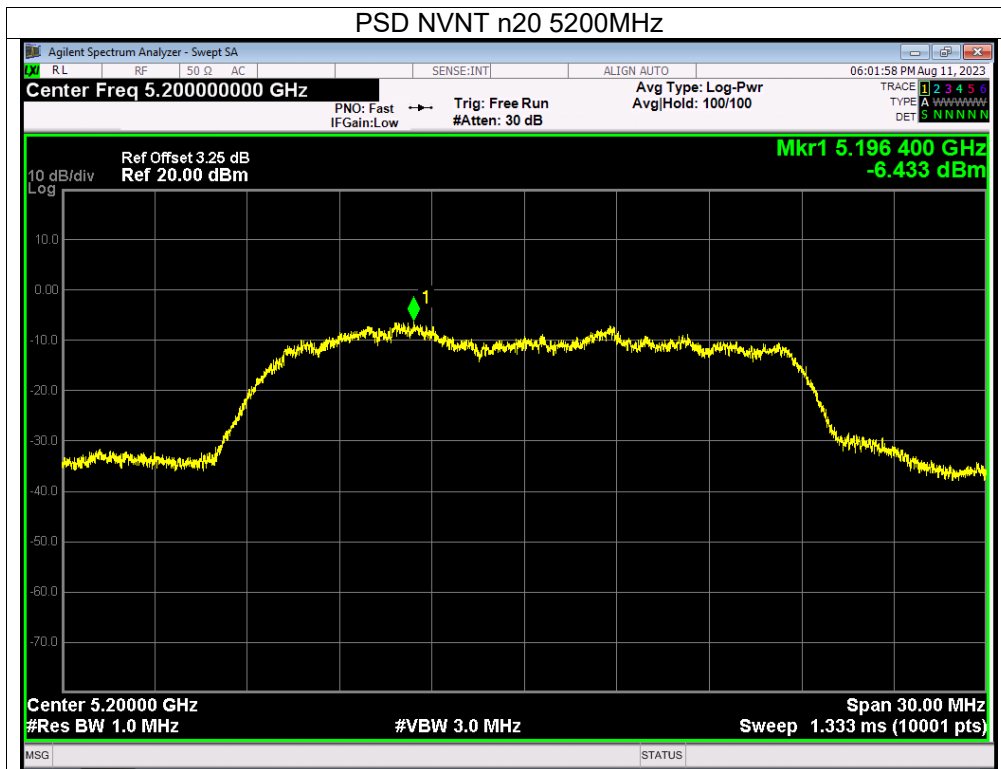
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5180-5240MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	-6.4	11	Pass
NVNT	a	5200	-6.26	11	Pass
NVNT	a	5240	-3.78	11	Pass
NVNT	n20	5180	-4.91	11	Pass
NVNT	n20	5200	-6.43	11	Pass
NVNT	n20	5240	-5.91	11	Pass



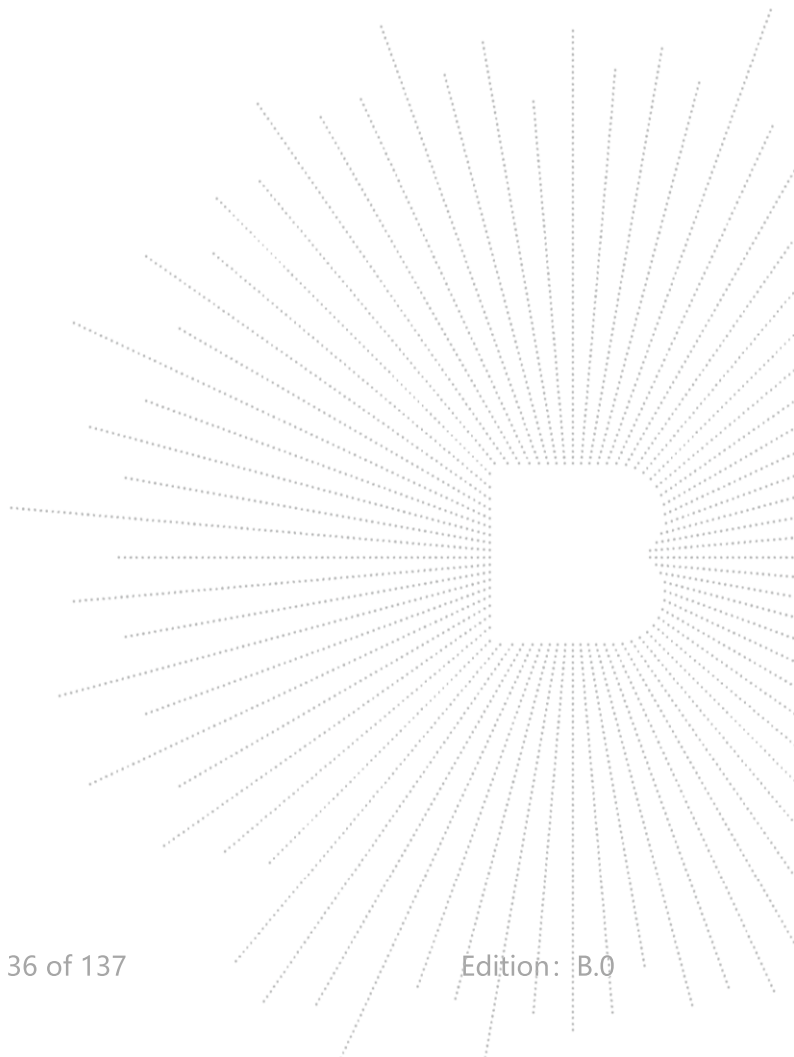


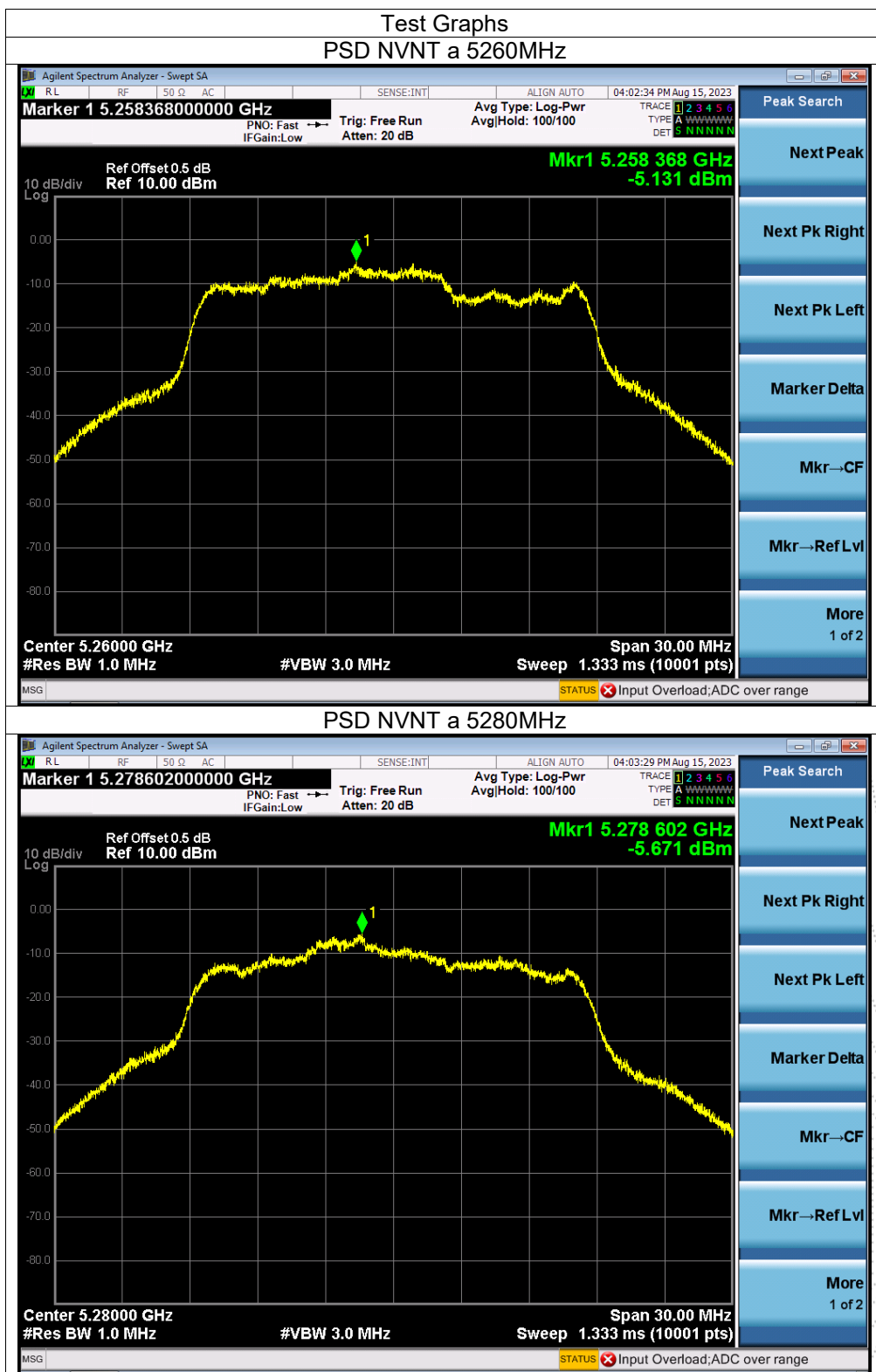


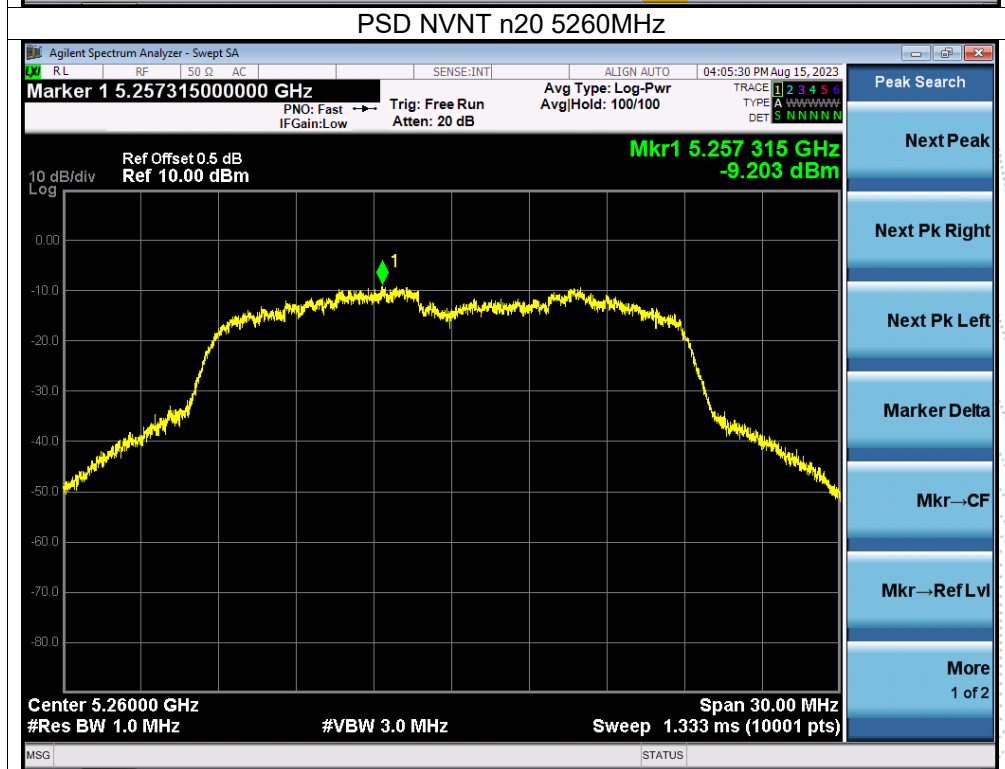
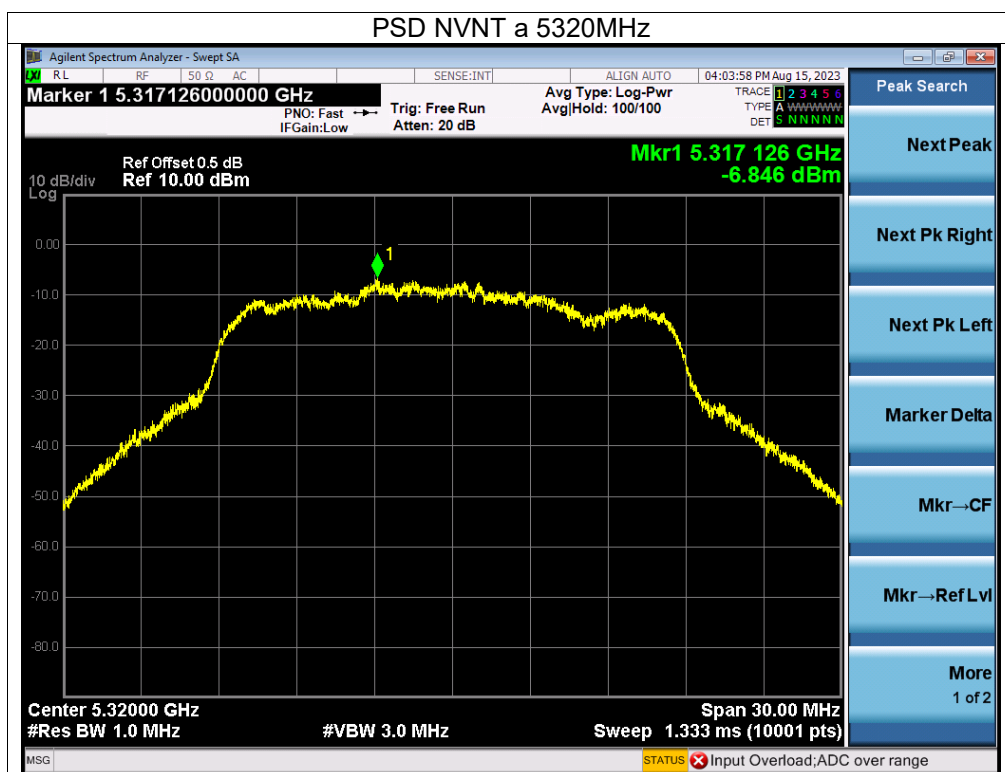


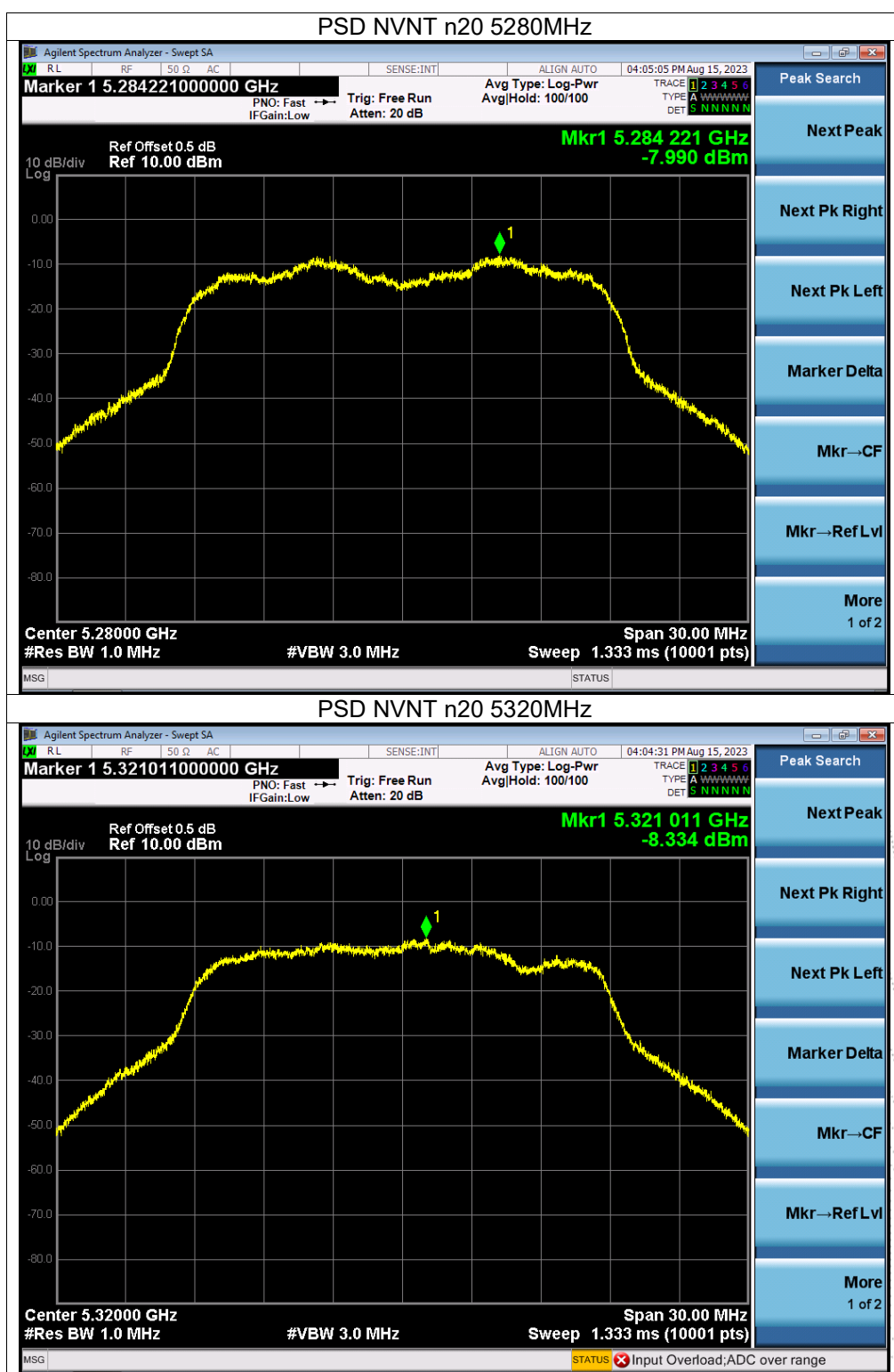
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5260-5320MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5260	-5.131	11	Pass
NVNT	a	5280	-5.671	11	Pass
NVNT	a	5320	-6.846	11	Pass
NVNT	n20	5260	-9.203	11	Pass
NVNT	n20	5280	-7.990	11	Pass
NVNT	n20	5320	-8.334	11	Pass



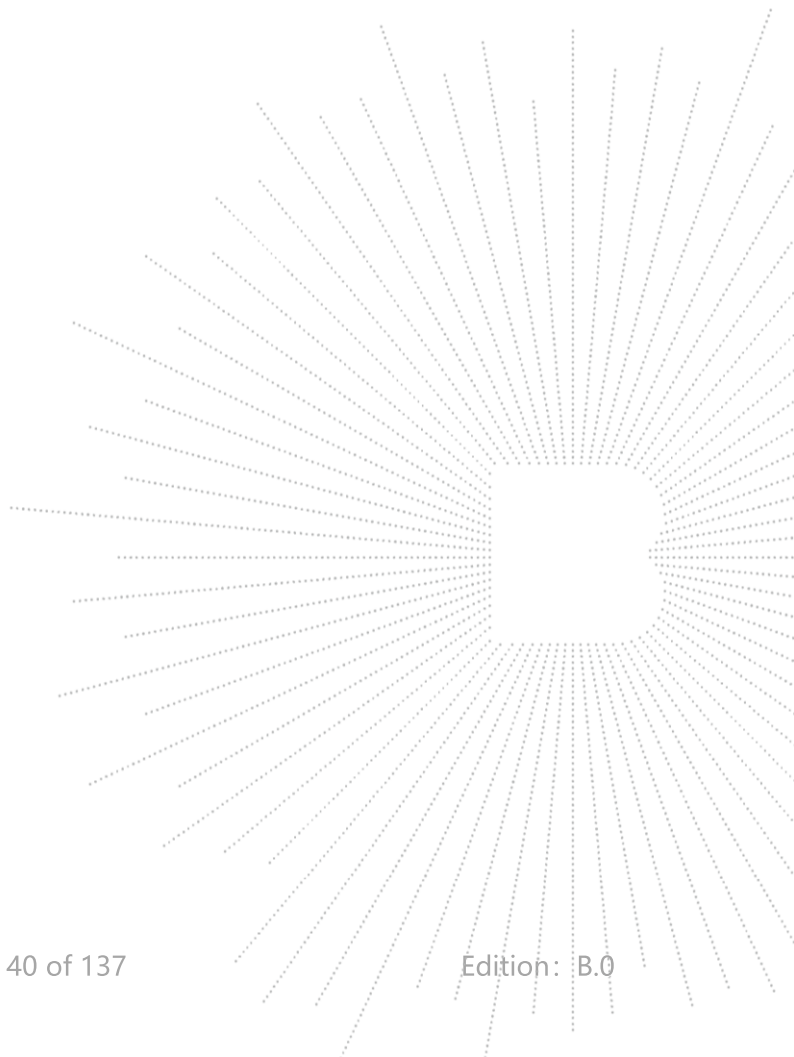


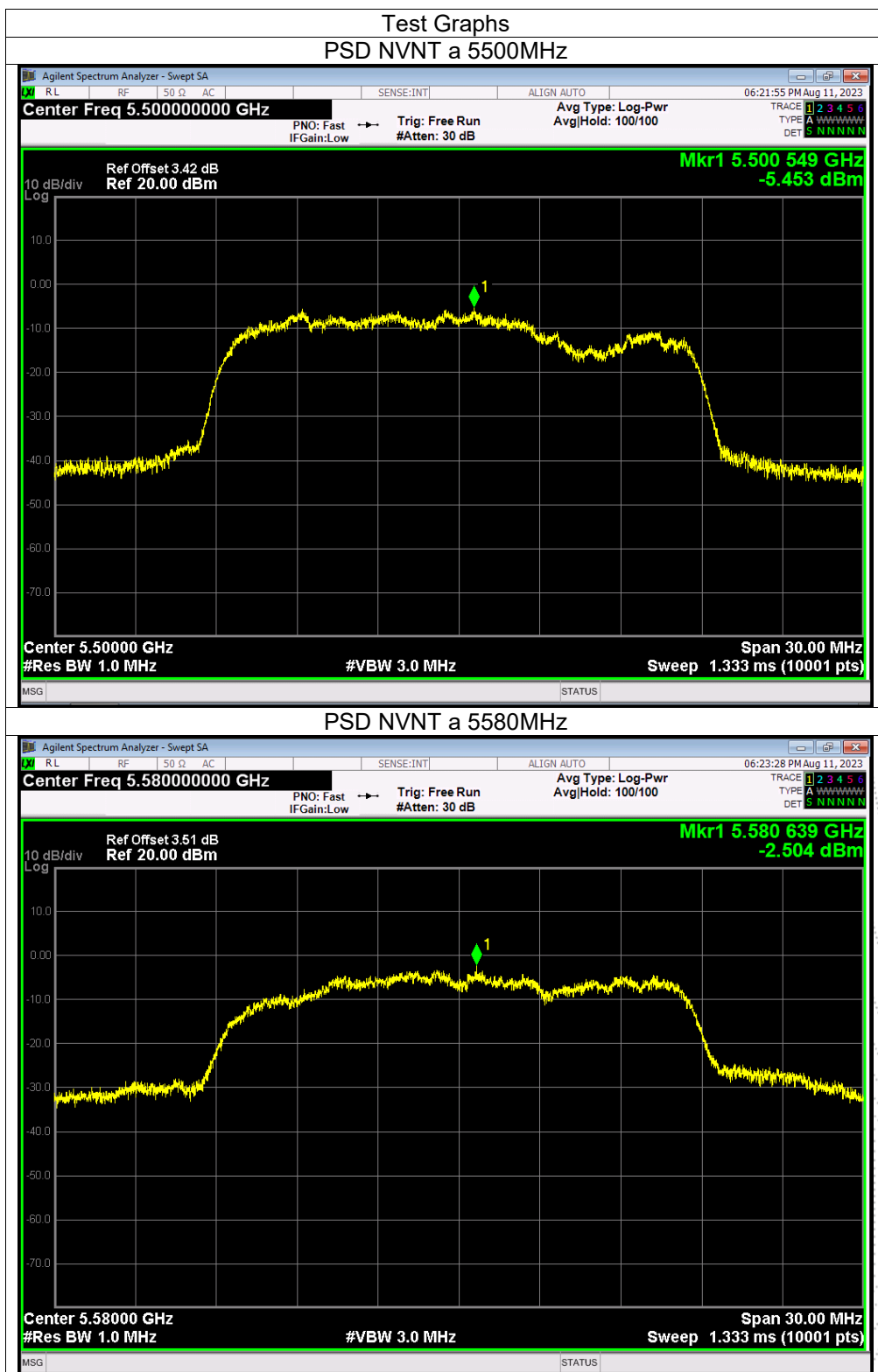


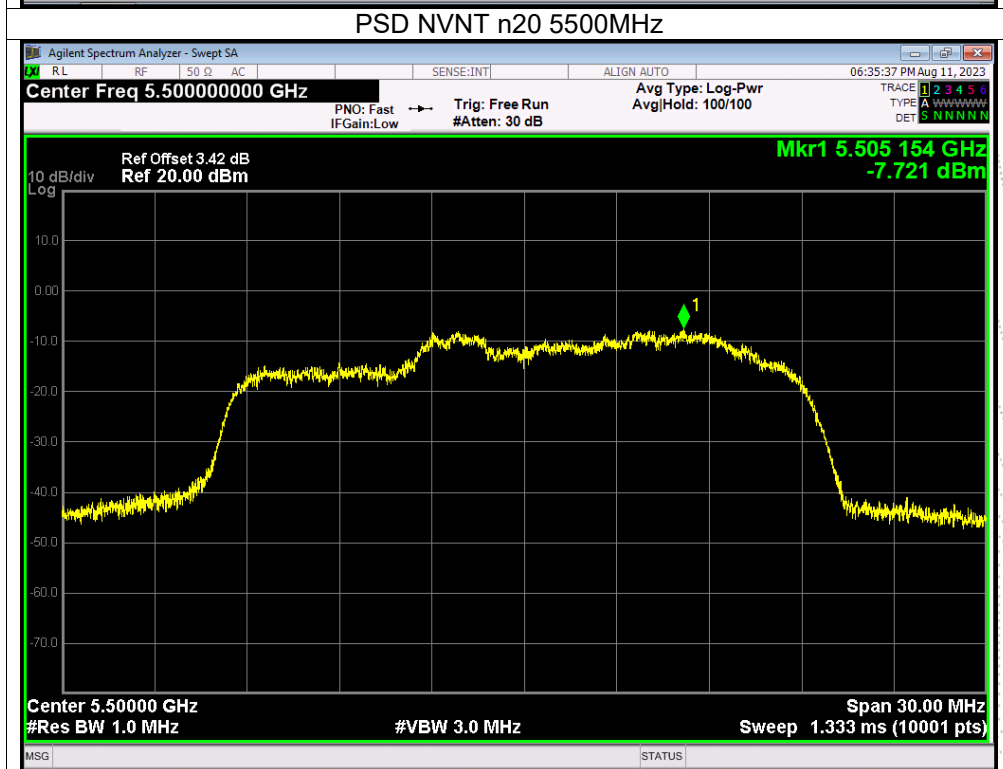
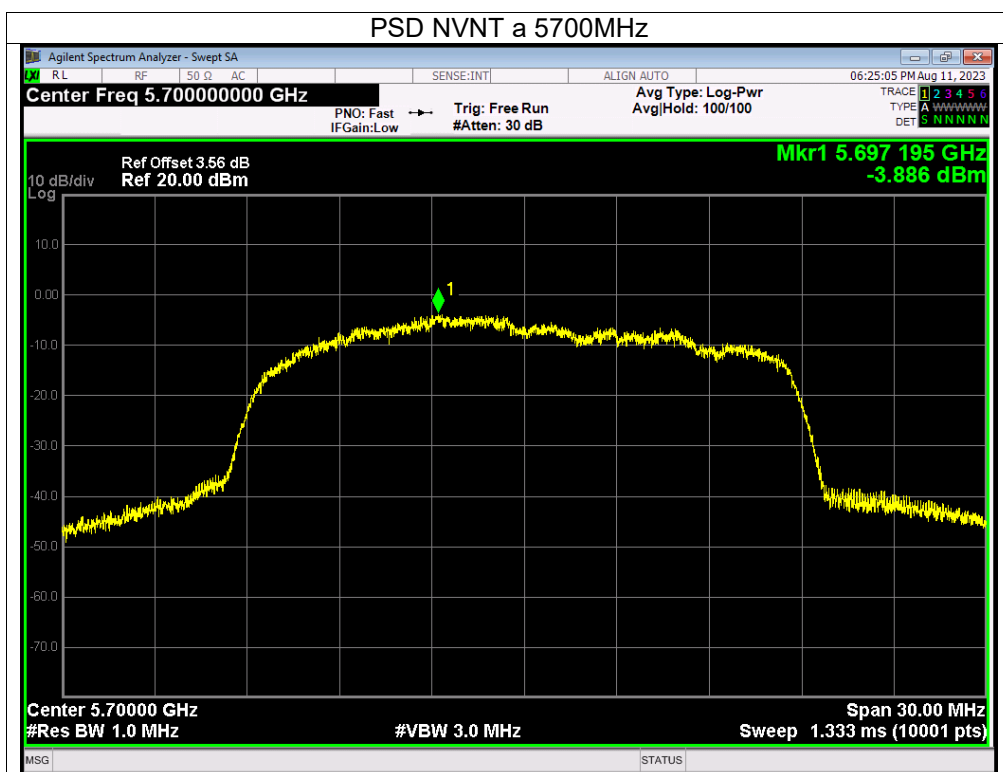


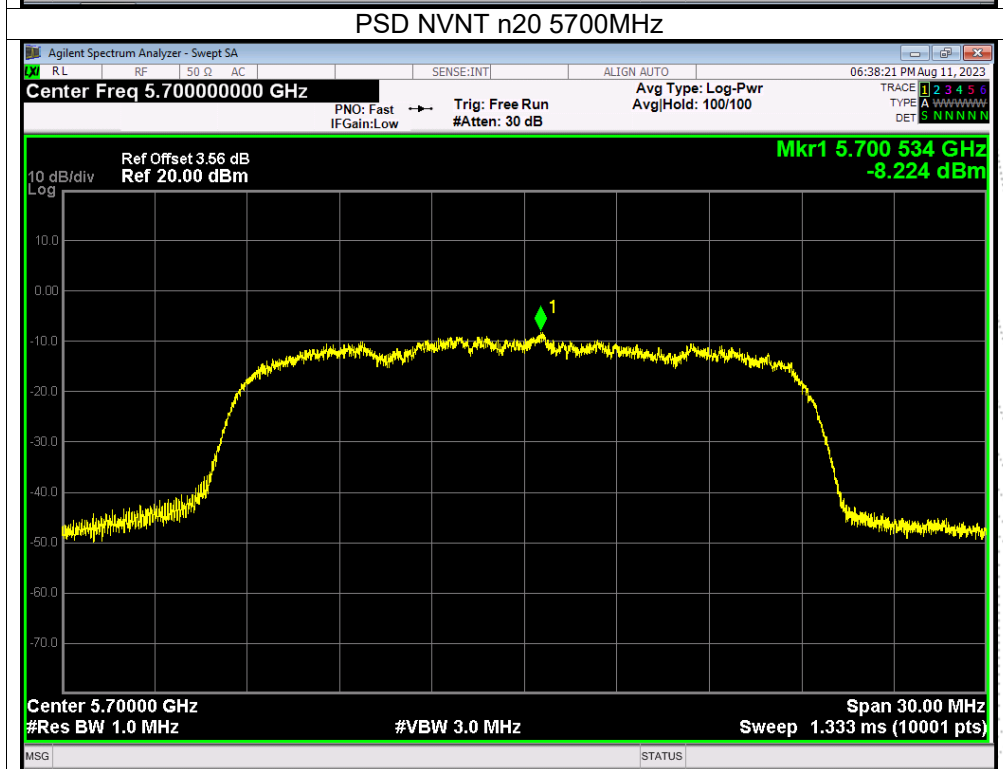
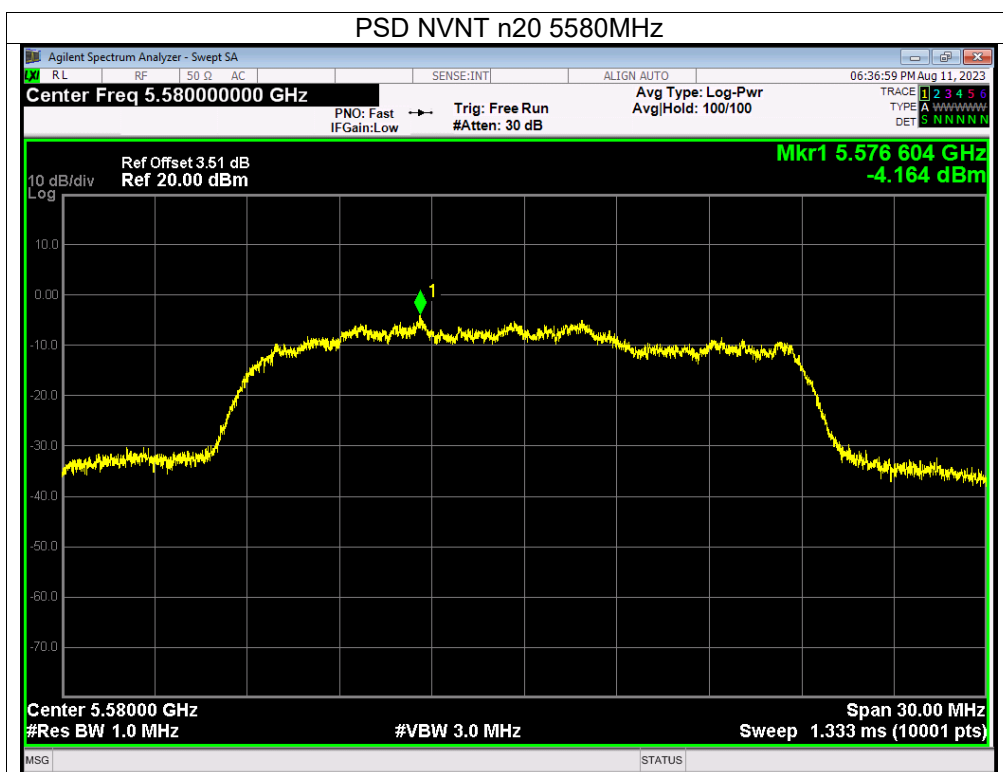
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5500-5700MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5500	-5.45	11	Pass
NVNT	a	5580	-2.5	11	Pass
NVNT	a	5700	-3.89	11	Pass
NVNT	n20	5500	-7.72	11	Pass
NVNT	n20	5580	-4.16	11	Pass
NVNT	n20	5700	-8.22	11	Pass



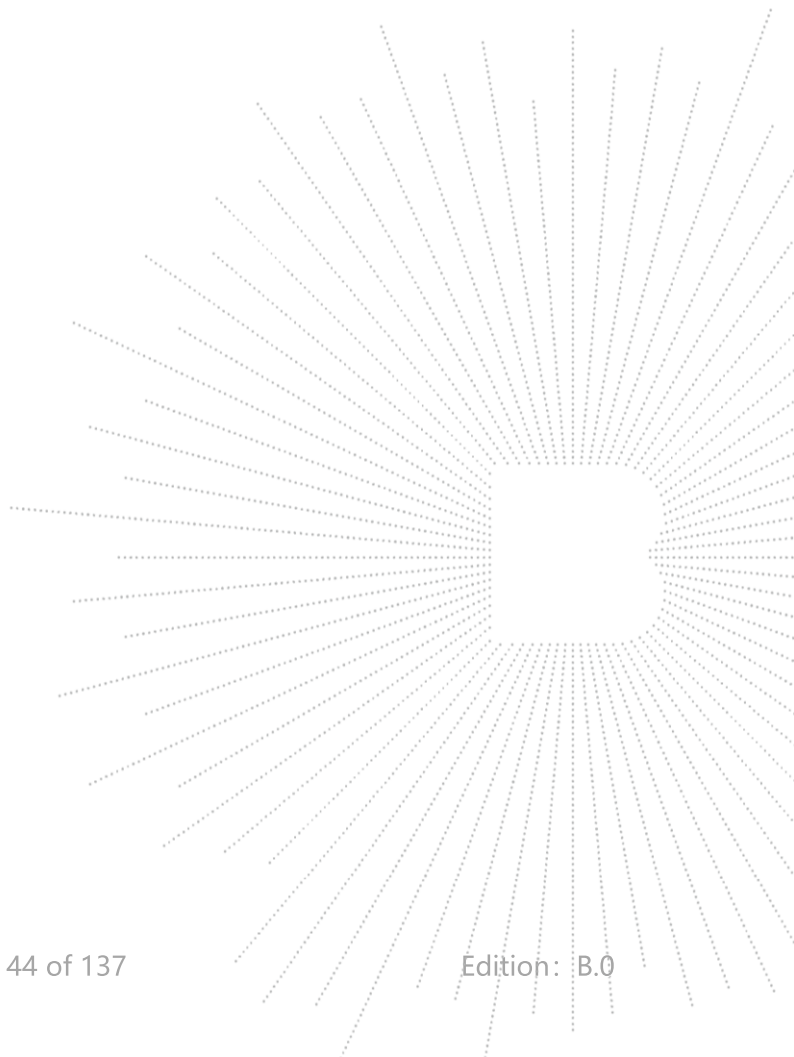


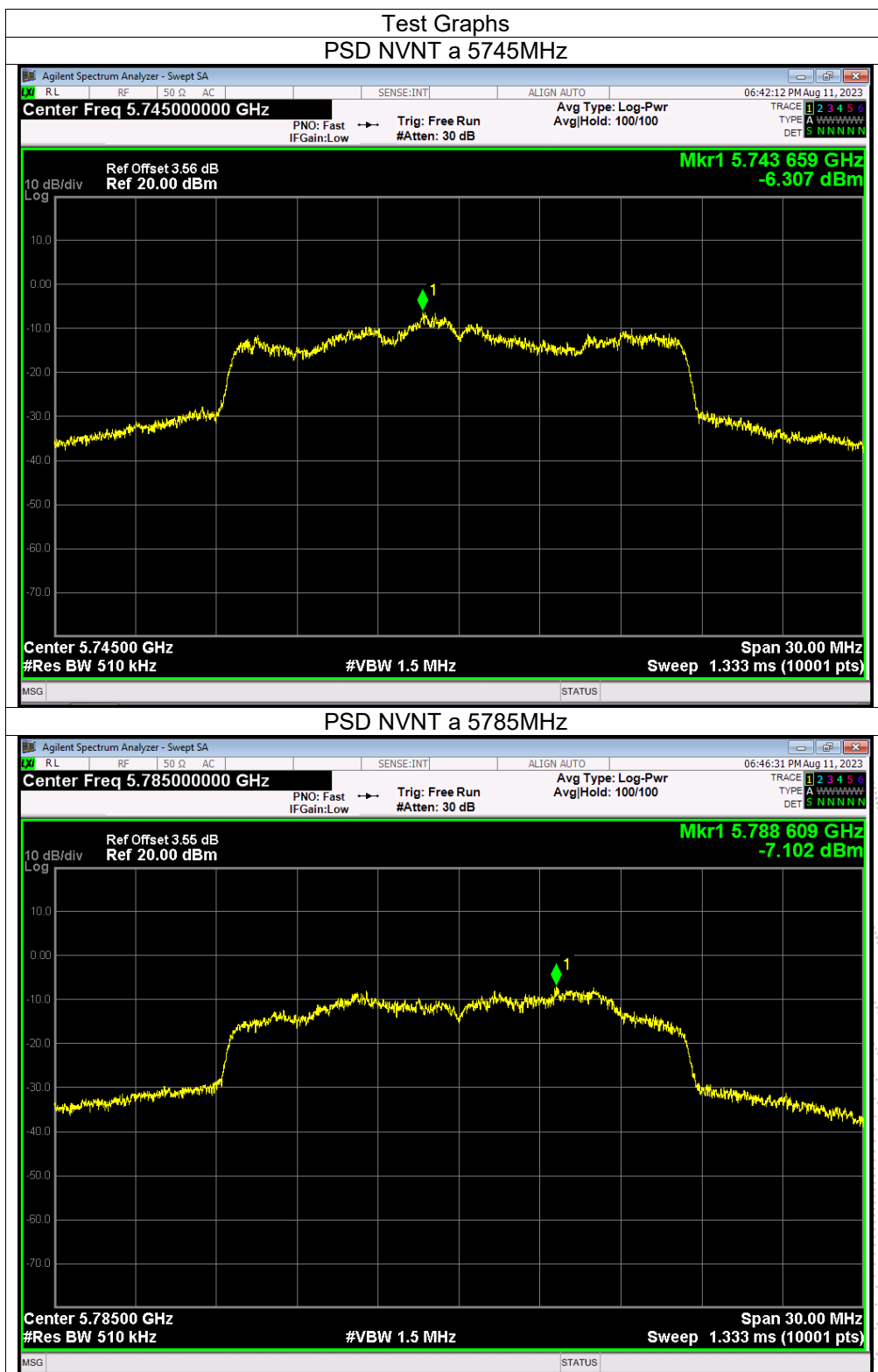


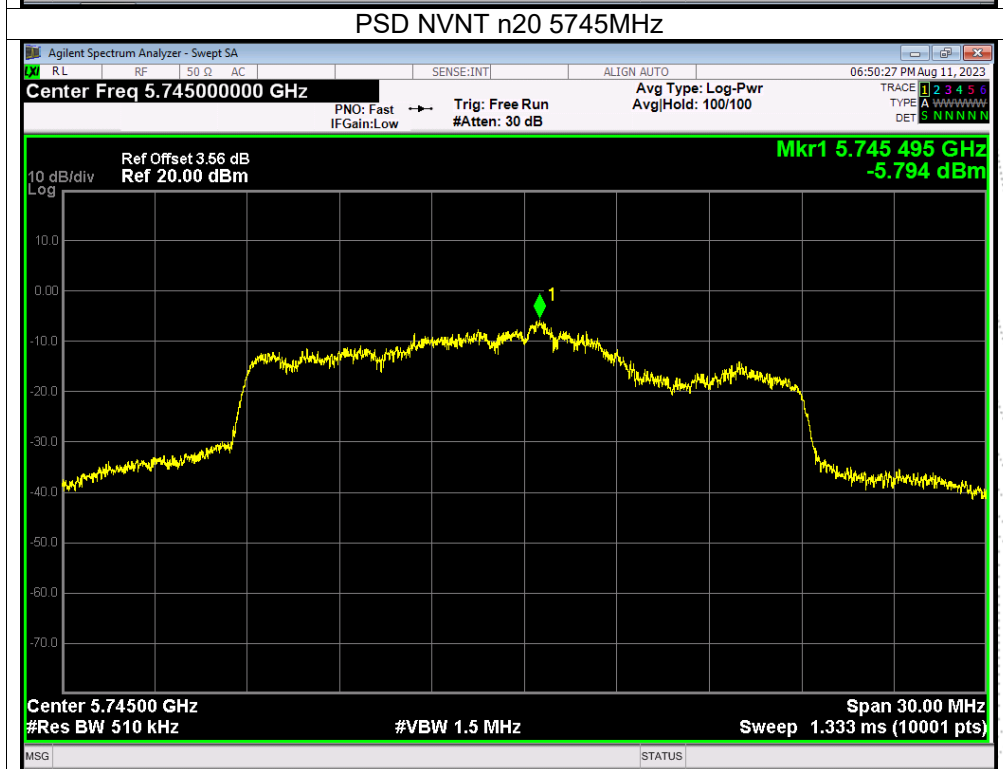
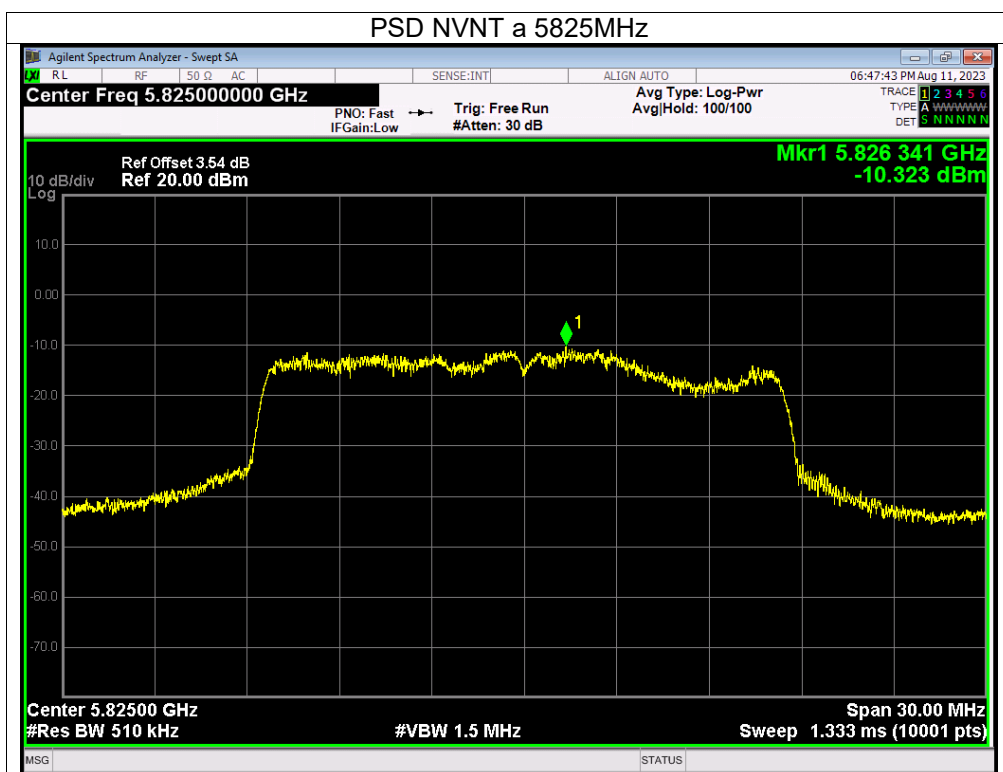


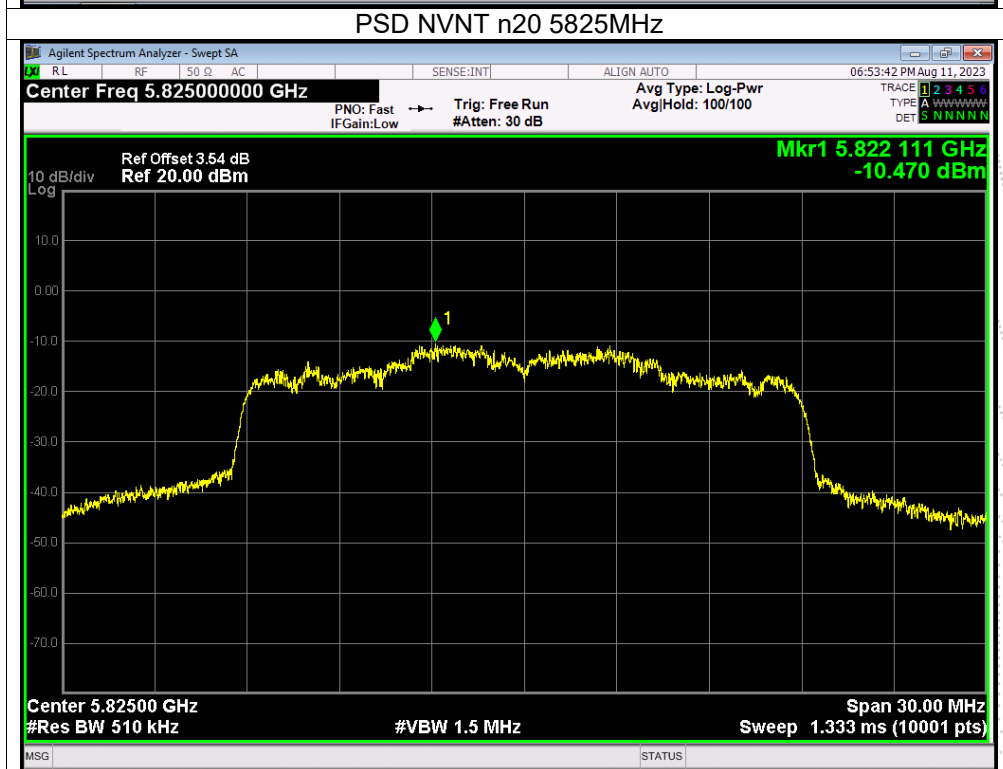
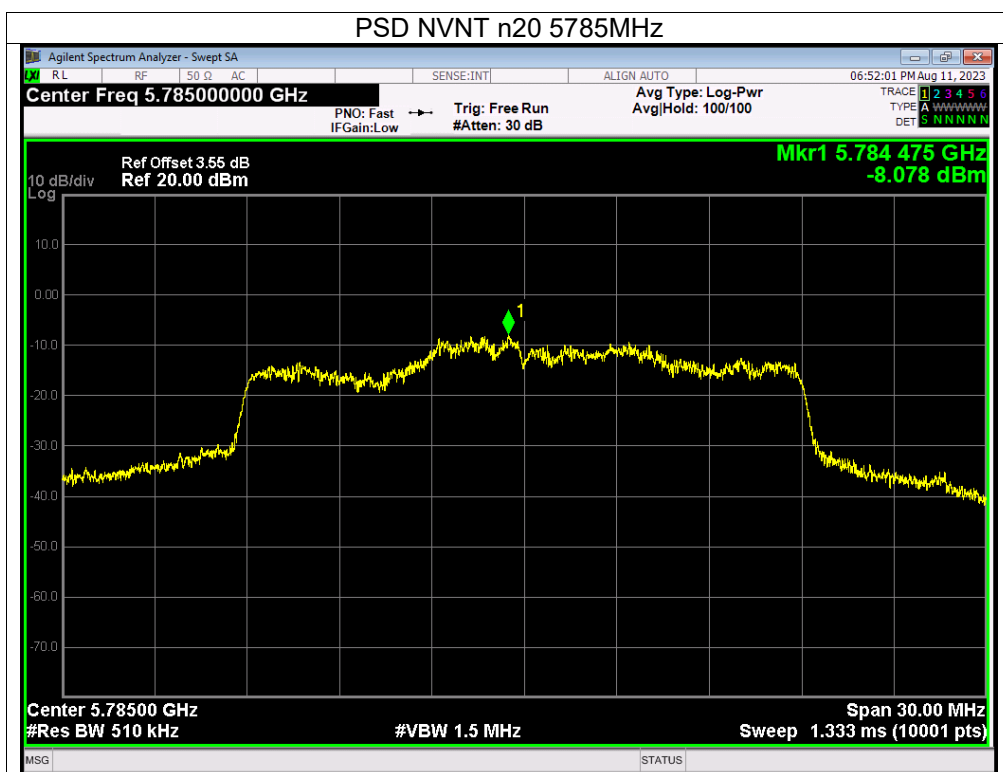
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	-6.31	30	Pass
NVNT	a	5785	-7.1	30	Pass
NVNT	a	5825	-10.32	30	Pass
NVNT	n20	5745	-5.79	30	Pass
NVNT	n20	5785	-8.08	30	Pass
NVNT	n20	5825	-10.47	30	Pass



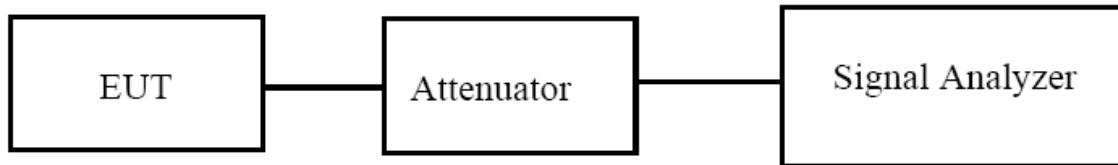






9. 26dB & 6dB & 99% Emission Bandwidth

9.1 Block Diagram Of Test Setup



9.2 Limit

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, 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. 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. 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.

9.3 Test Procedure

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- 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:

- Set center frequency to the nominal EUT channel center frequency.
- Set span = 1.5 times to 5.0 times the OBW.
- Set RBW = 1 % to 5 % of the OBW

4. Set VBW $\geq 3 \cdot$ RBW

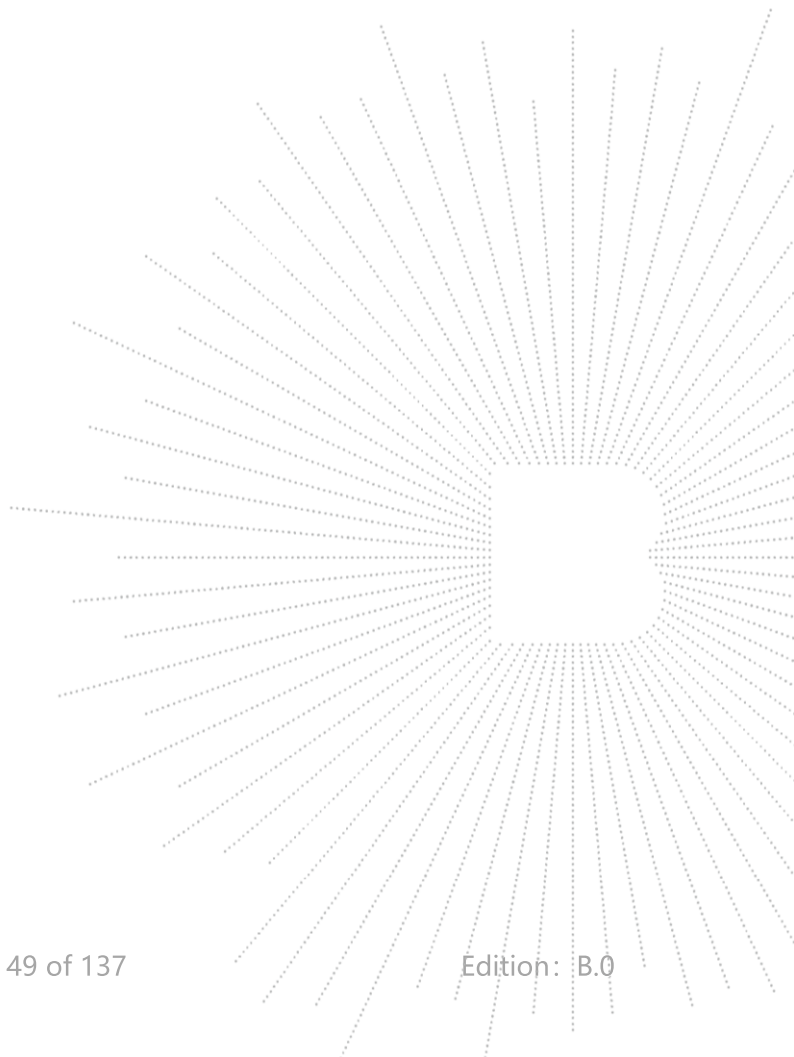
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

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

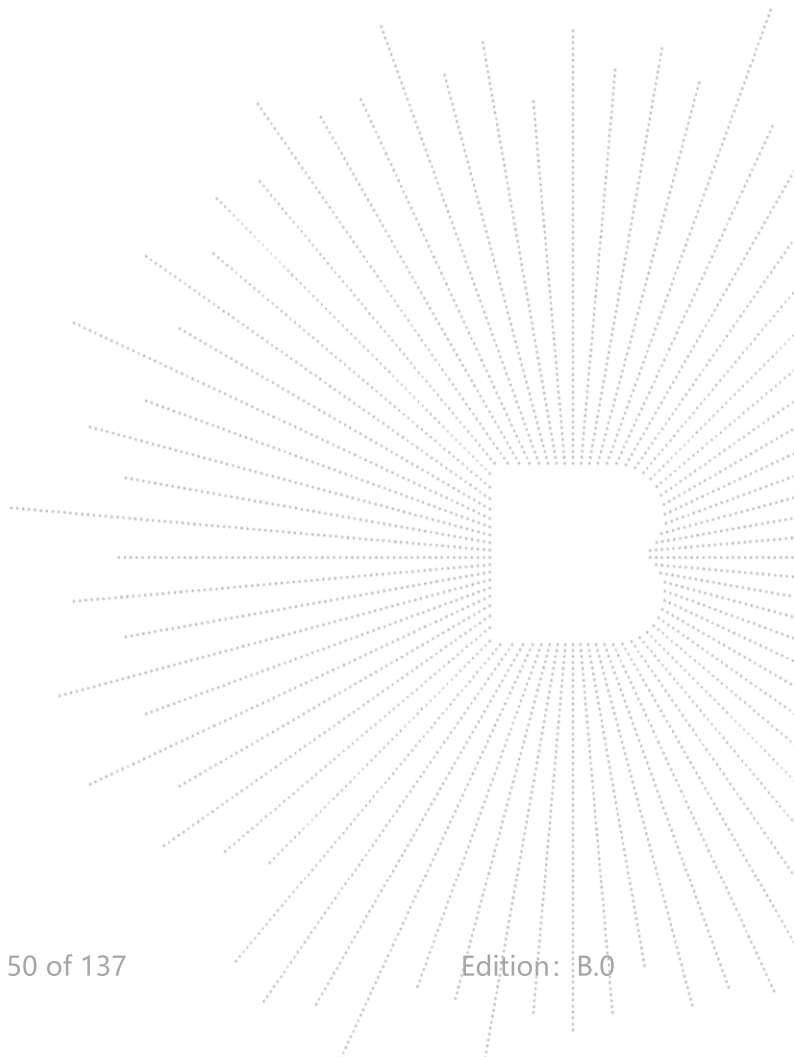
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

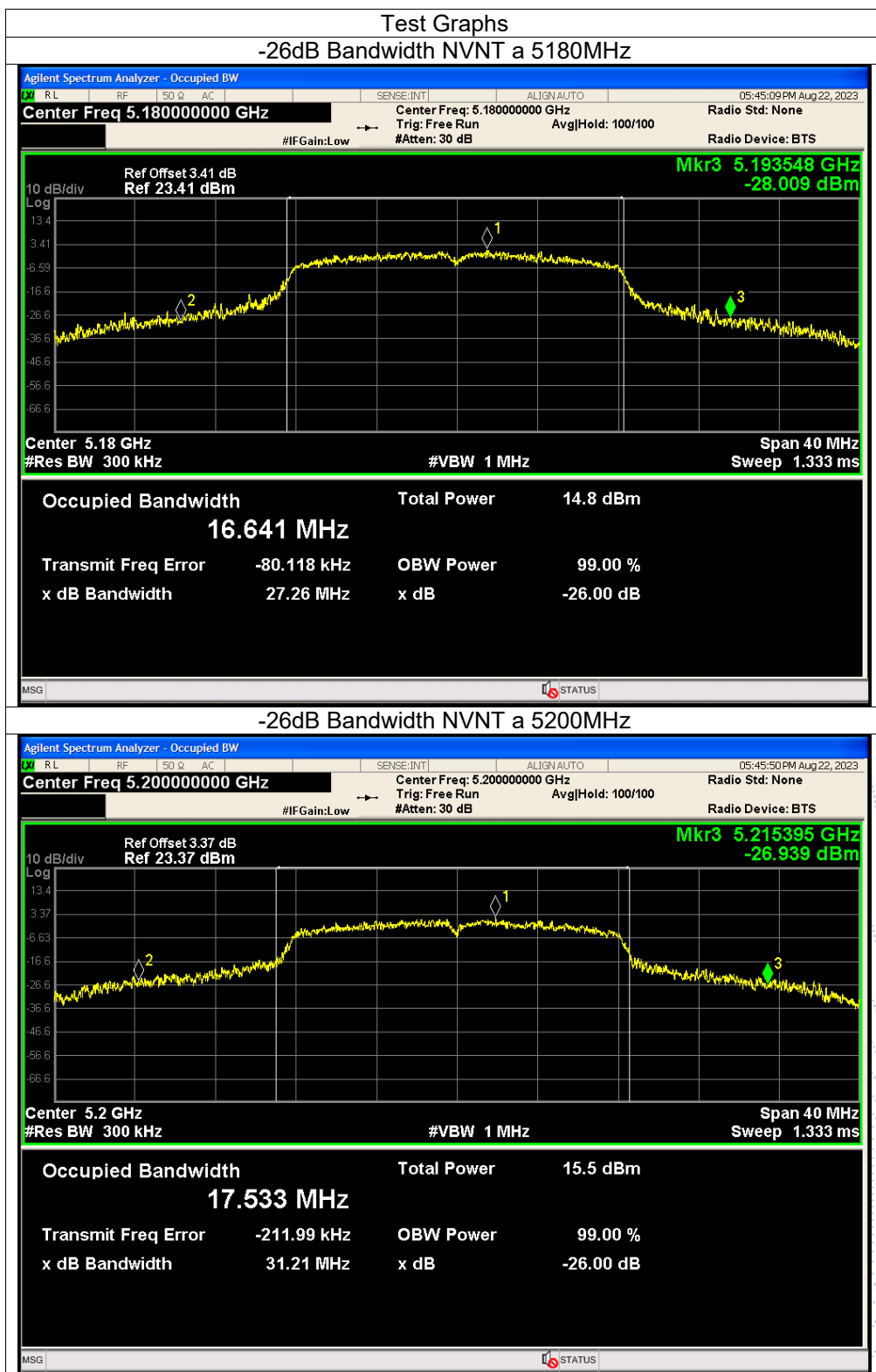


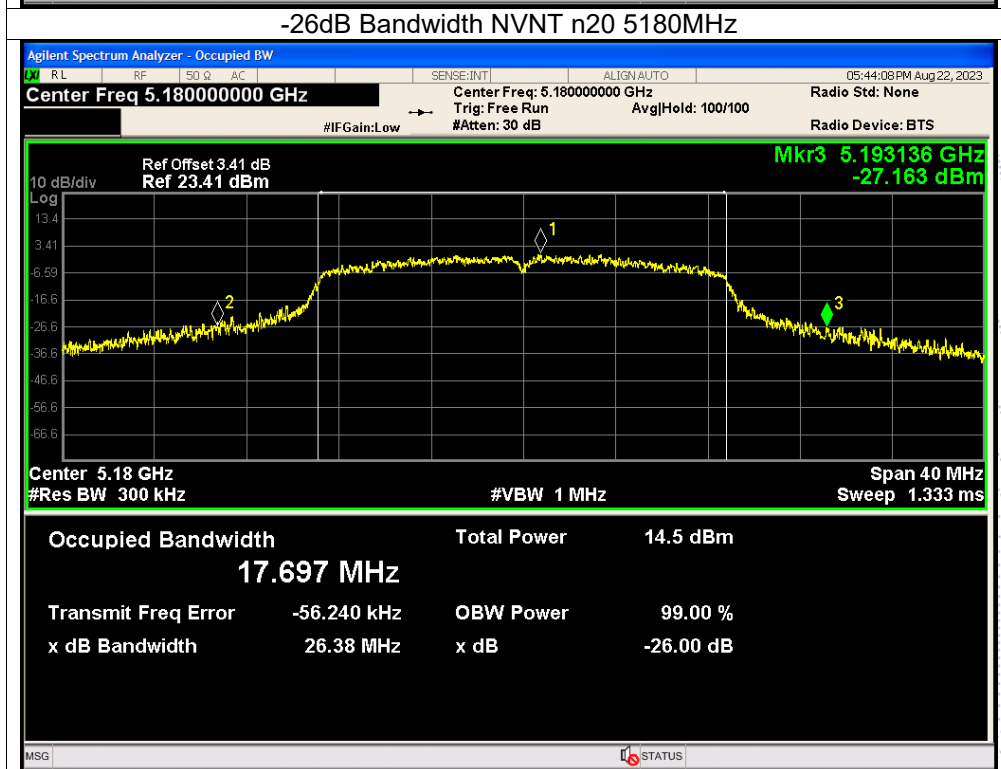
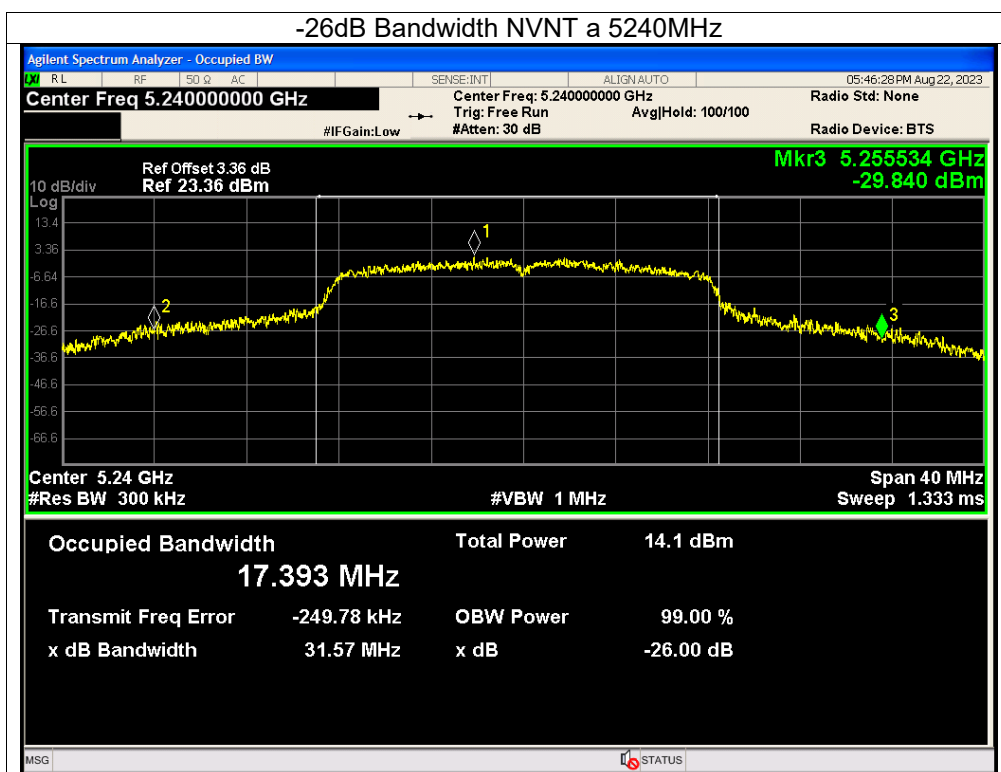
9.5 Test Result

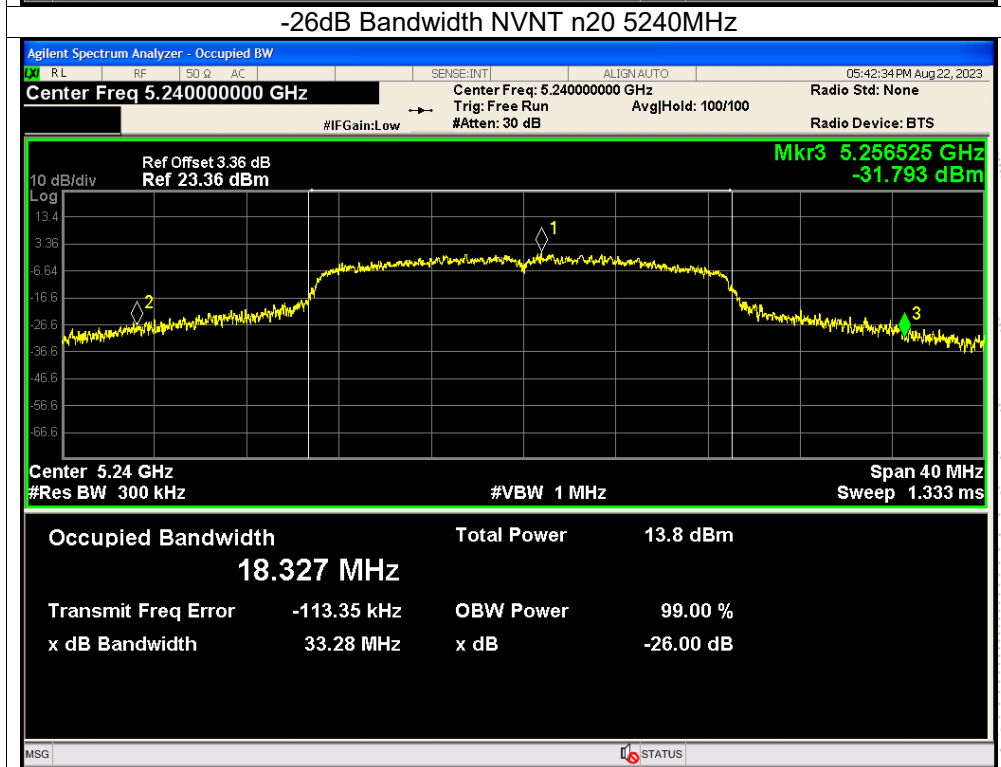
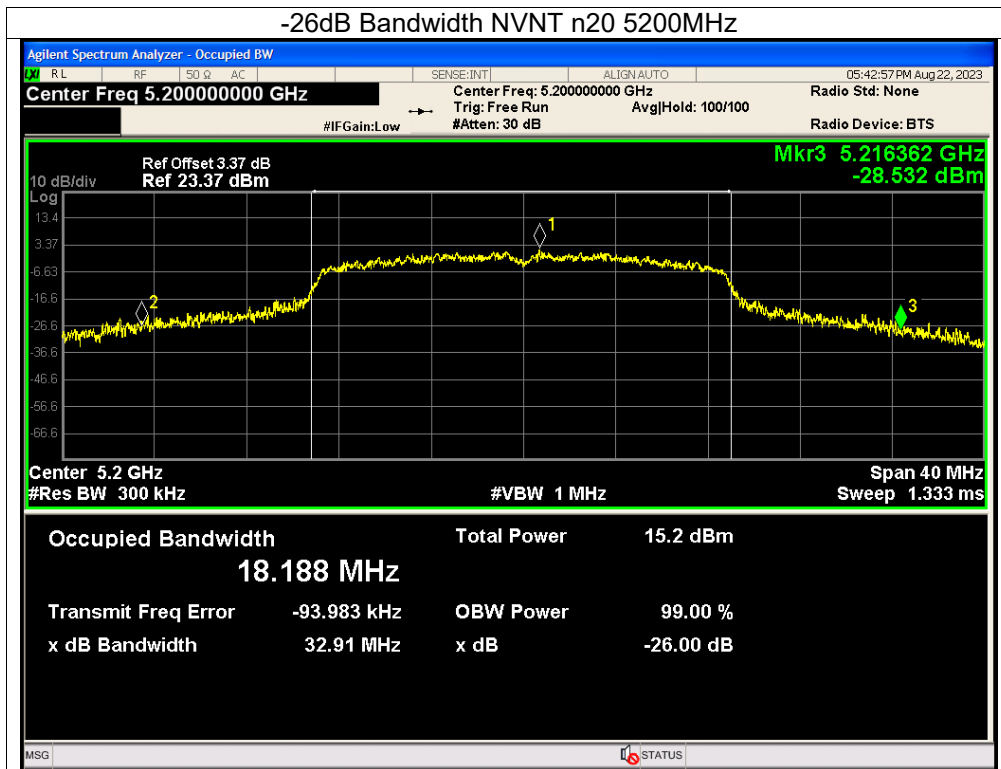
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5180-5240MHz)		

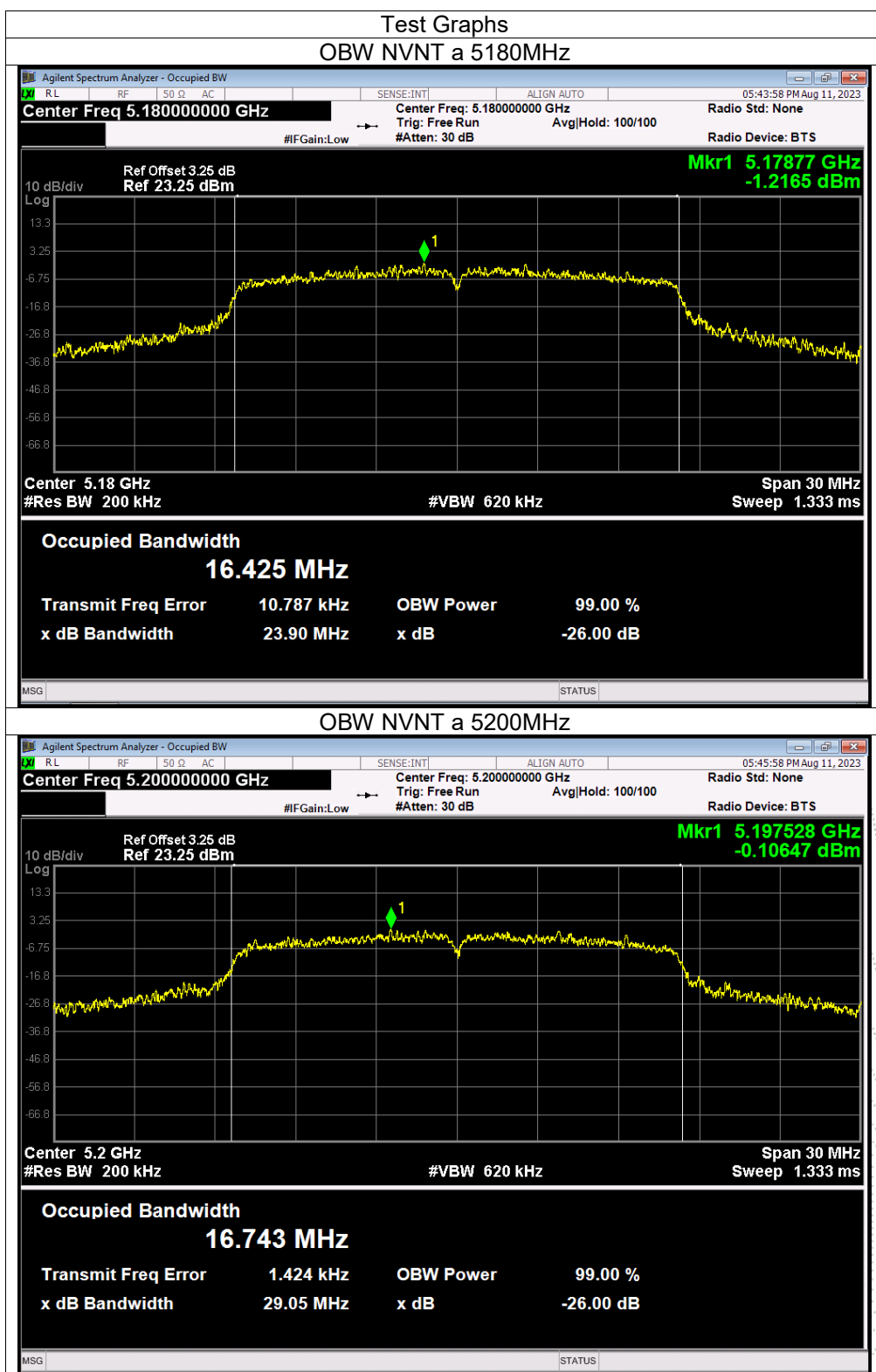
Condition	Mode	Frequency (MHz)	99% bandwidth (MHz)	-26dB bandwidth (MHz)	Result
NVNT	a	5180	16.425	27.256	Pass
NVNT	a	5200	16.743	31.215	Pass
NVNT	a	5240	16.914	31.567	Pass
NVNT	n20	5180	17.562	26.384	Pass
NVNT	n20	5200	17.844	32.911	Pass
NVNT	n20	5240	17.887	33.277	Pass

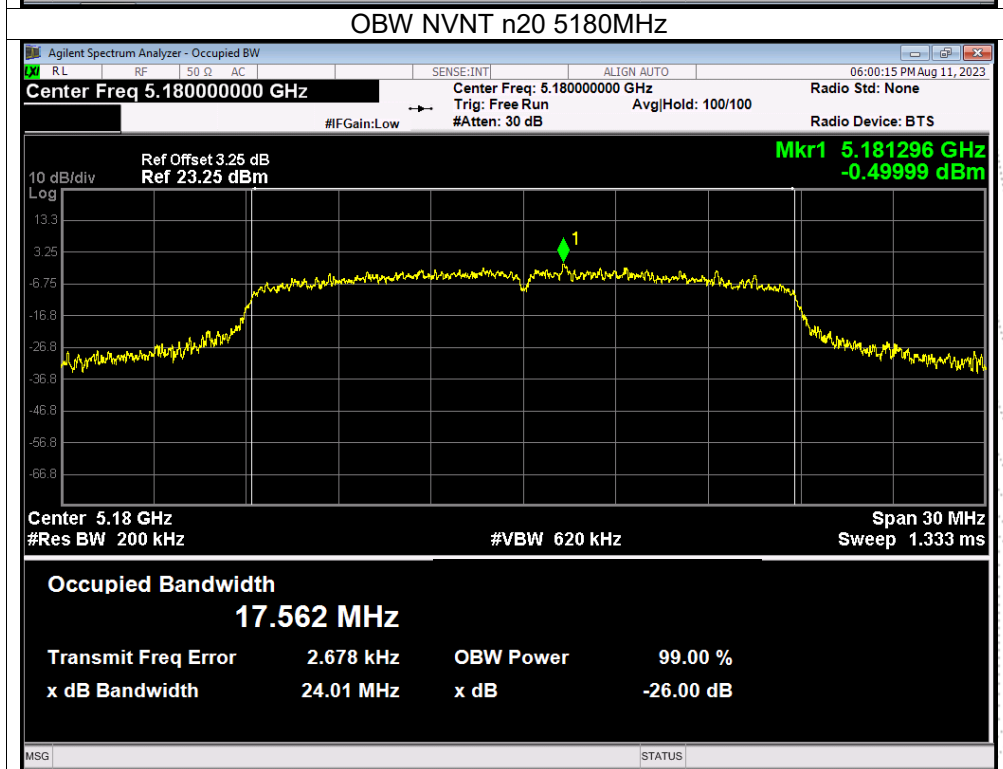
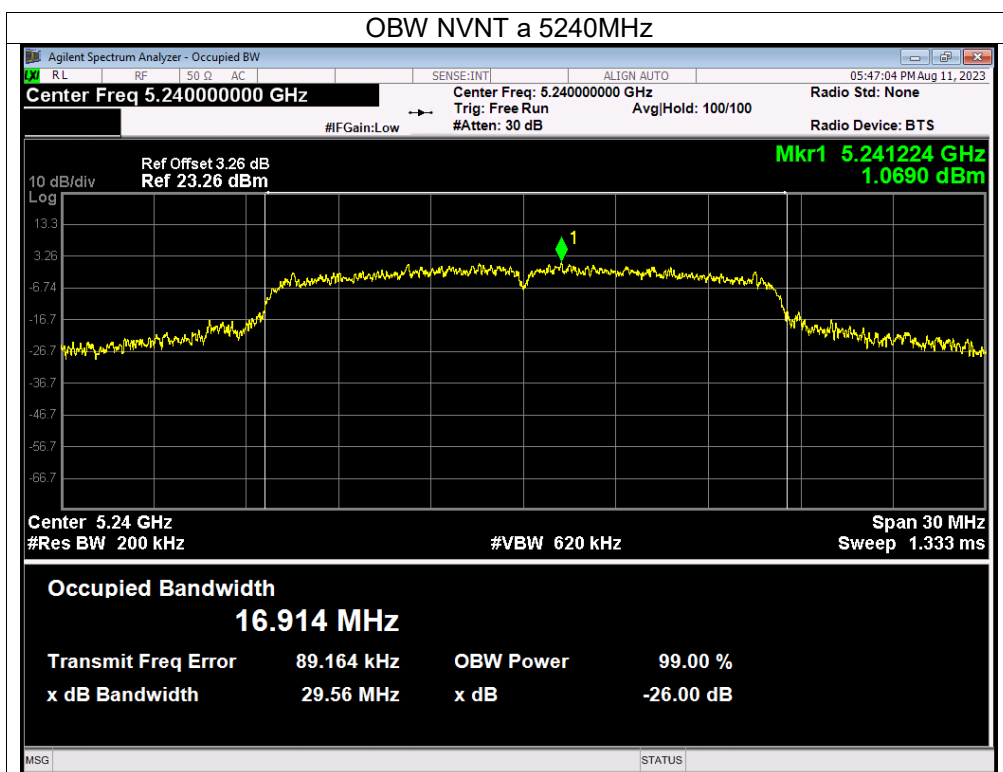


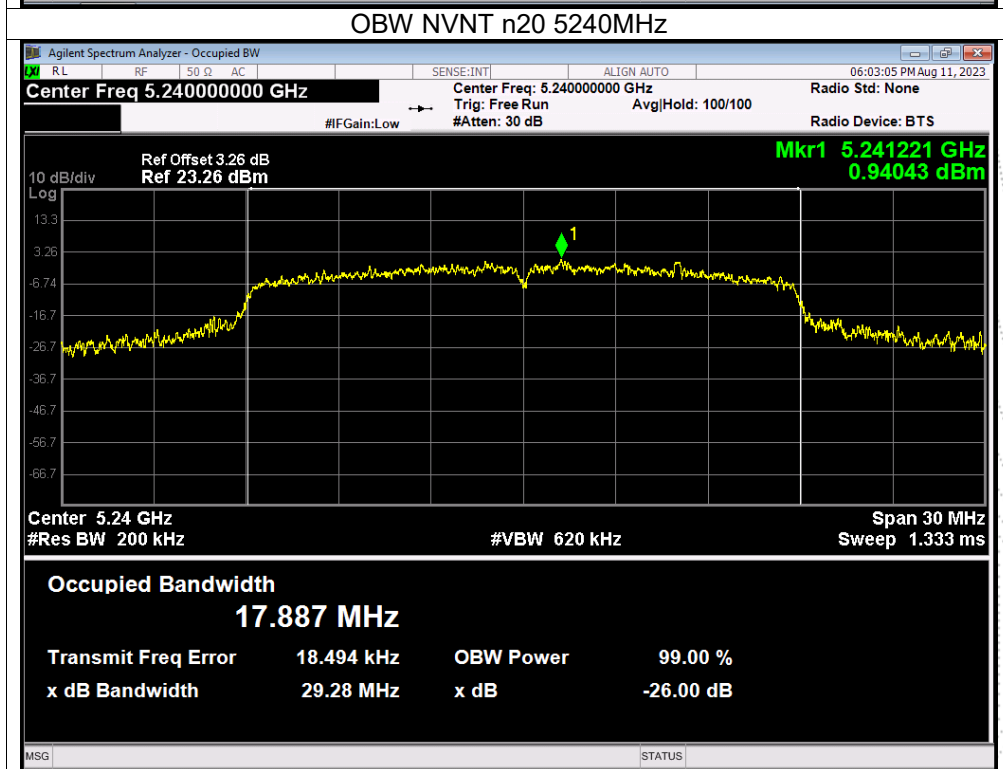
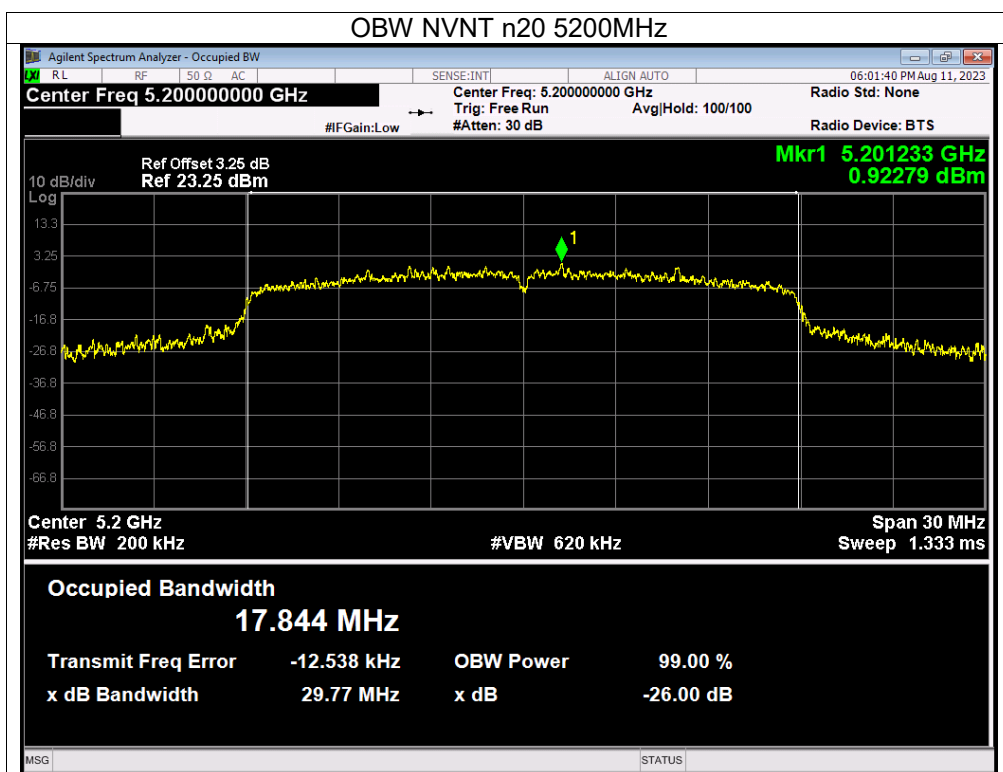






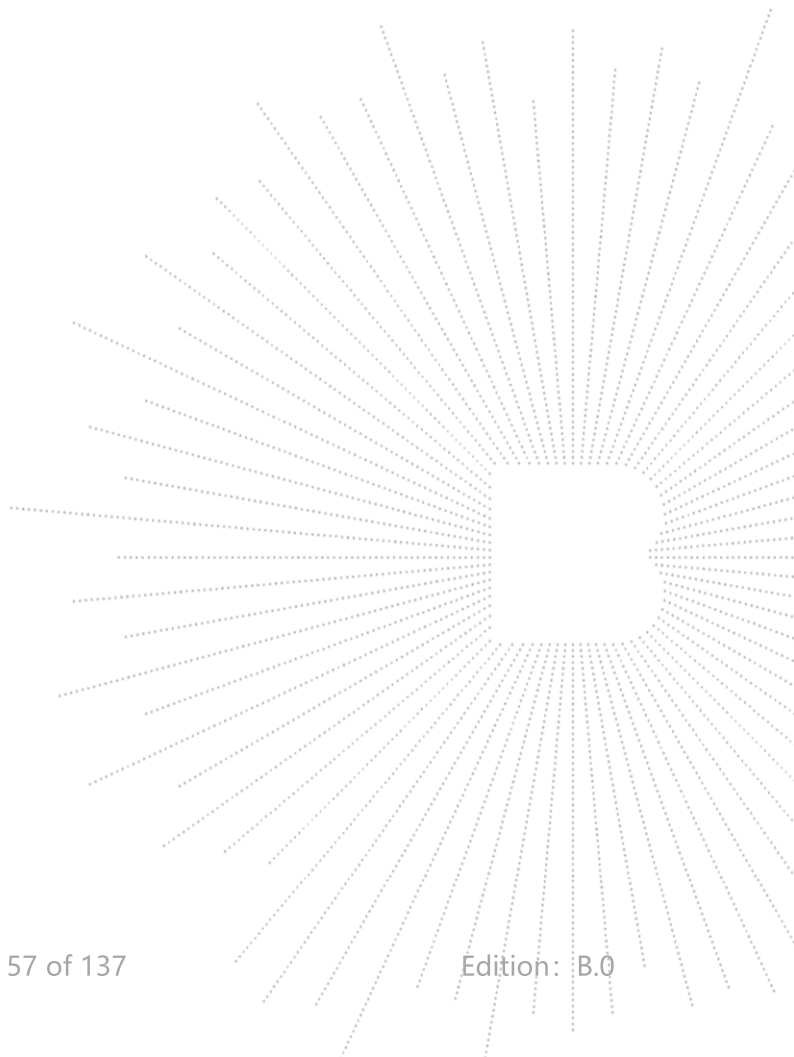


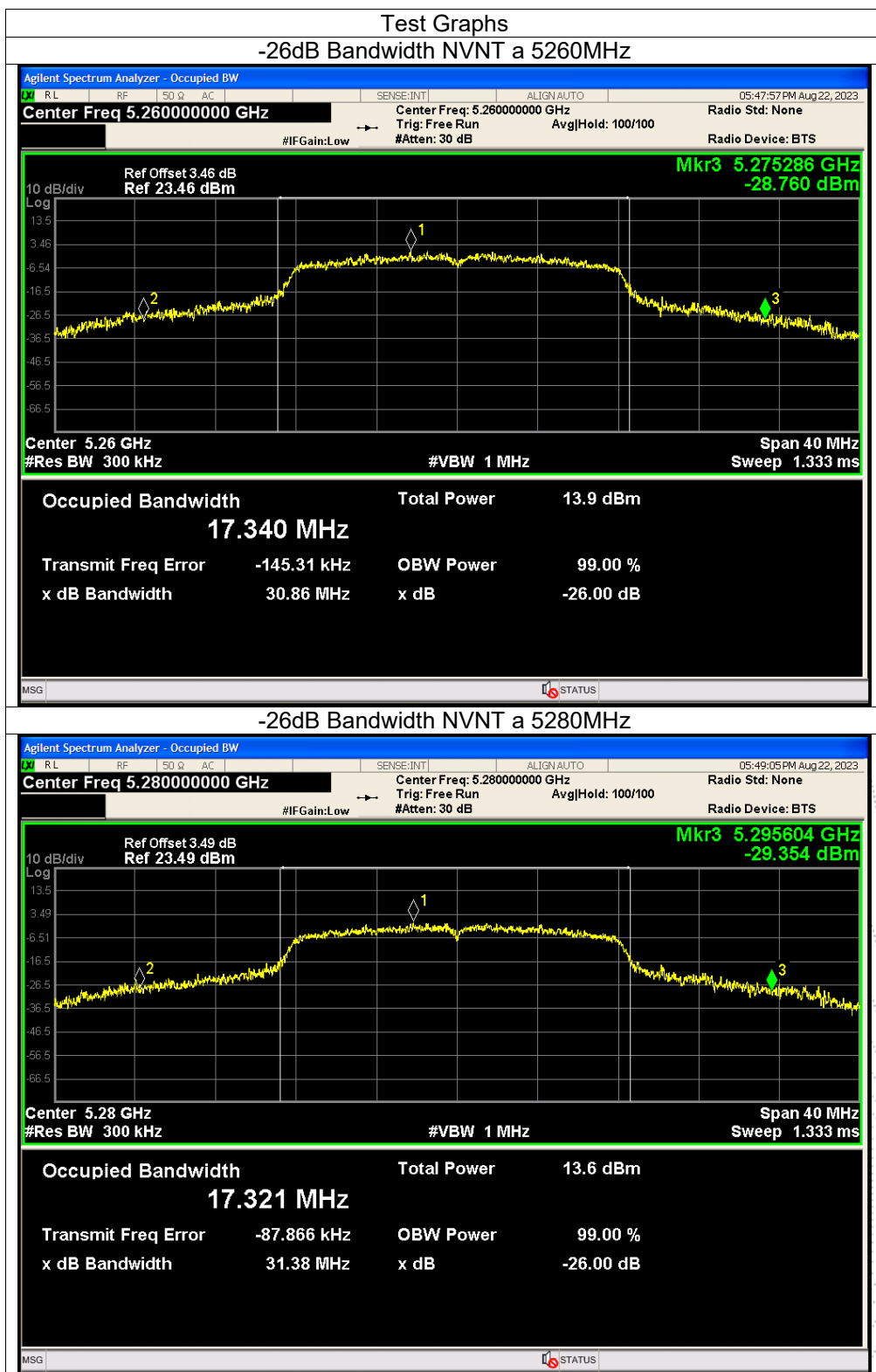


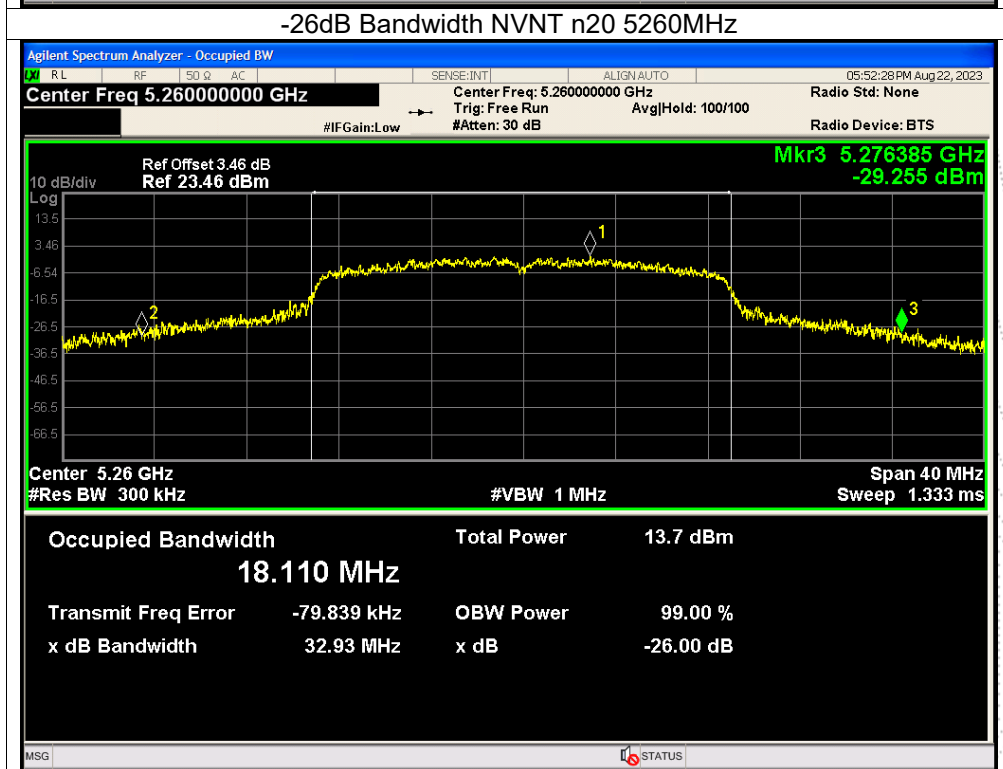
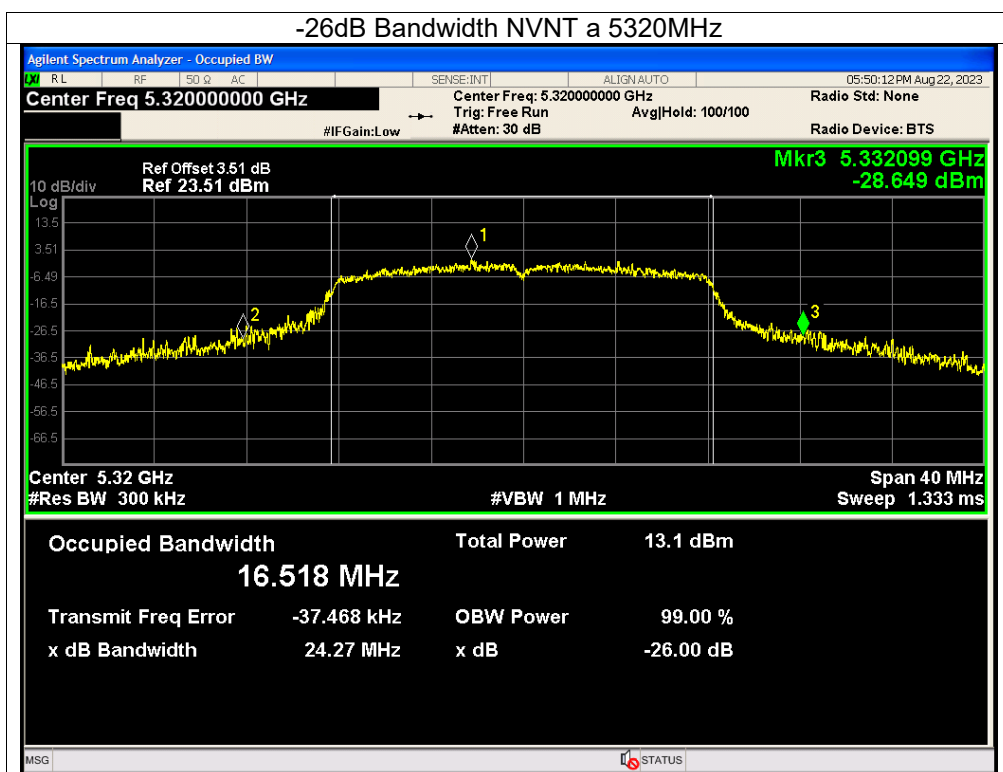


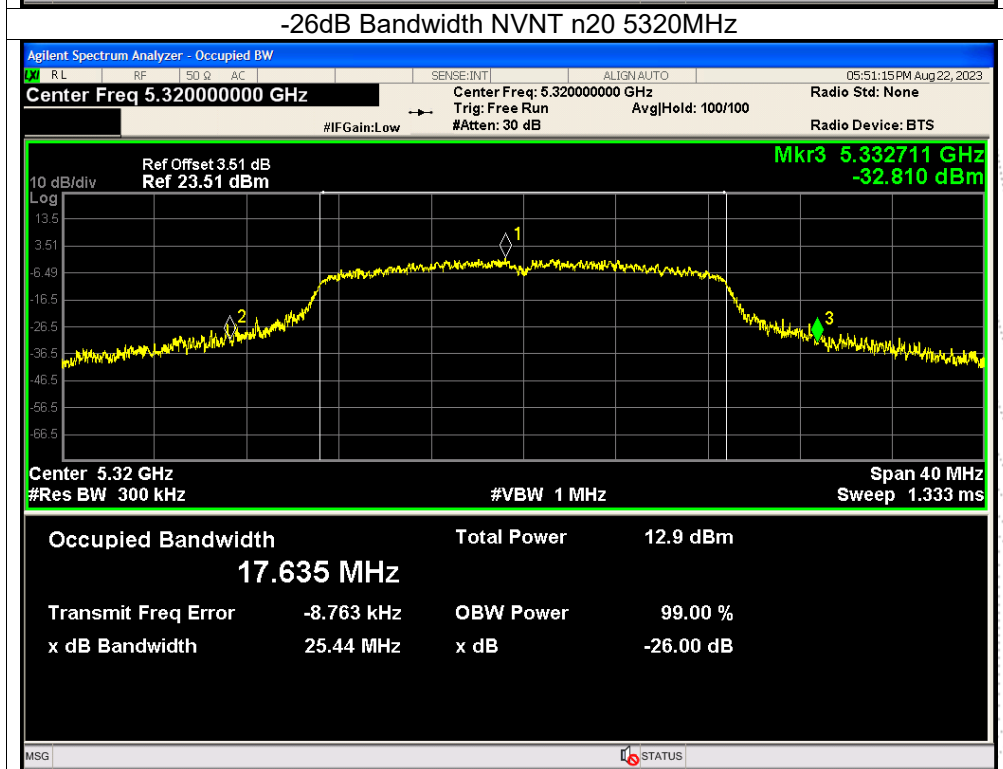
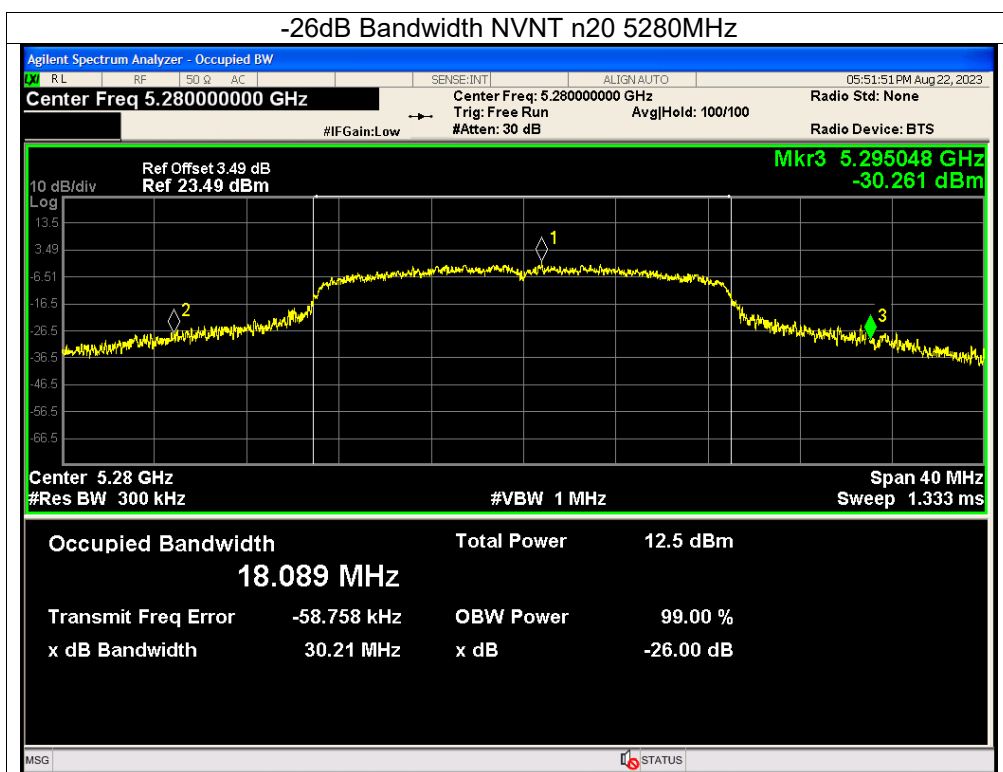
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5260-5320MHz)		

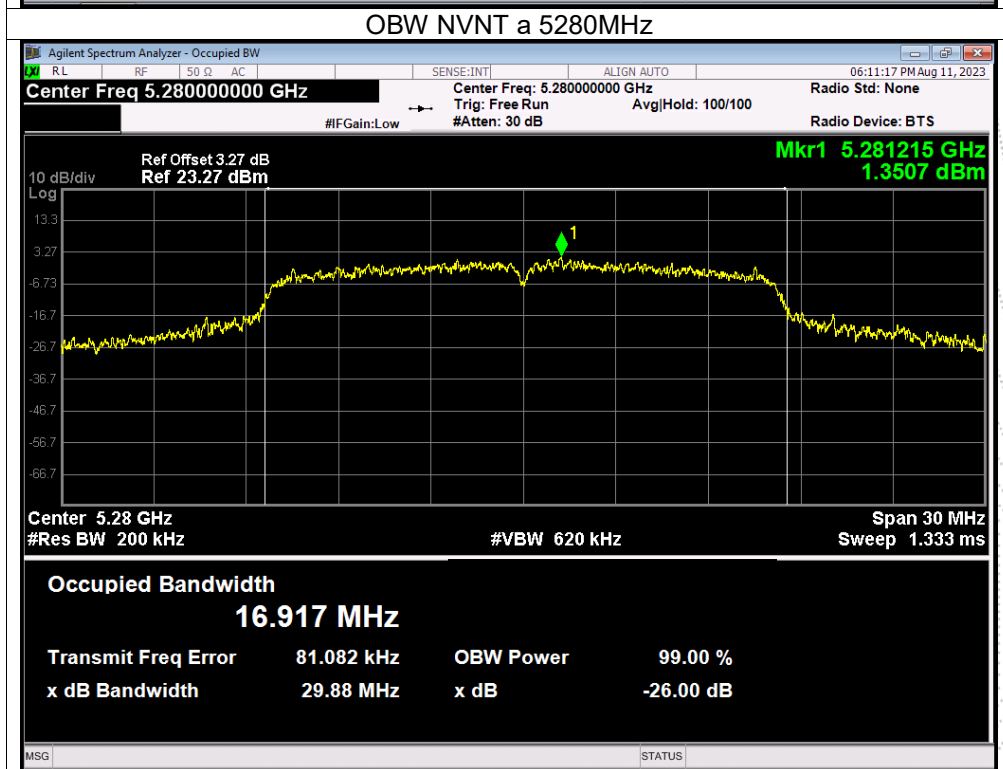
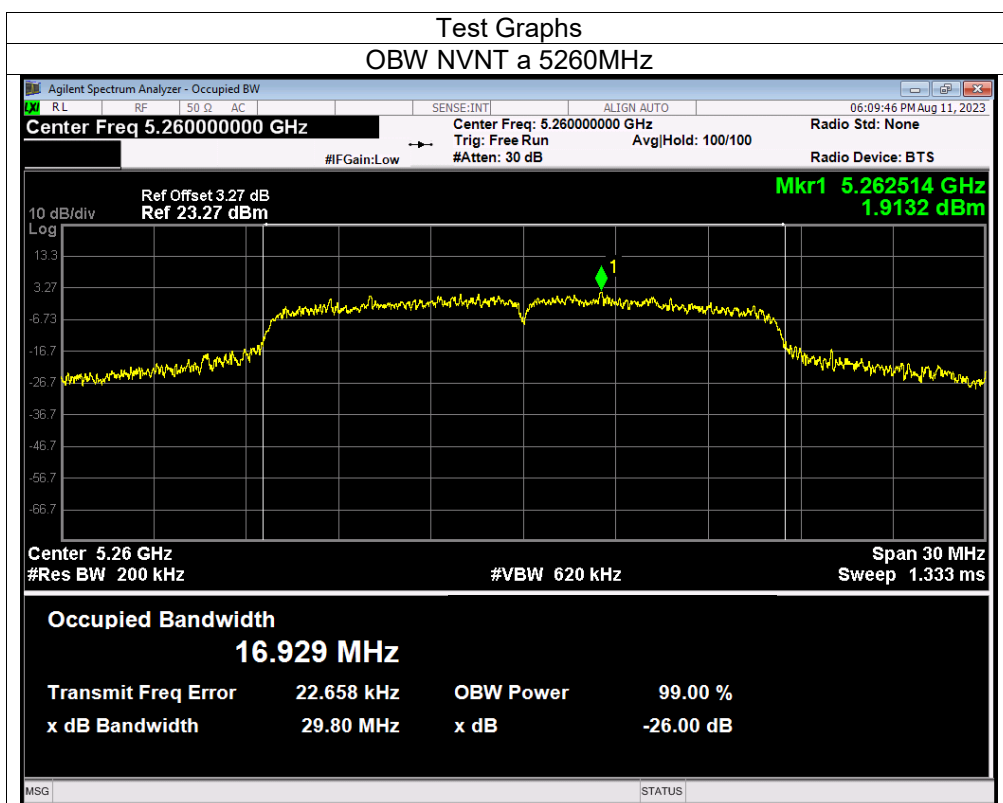
Condition	Mode	Frequency (MHz)	99% bandwidth (MHz)	-26dB bandwidth (MHz)	Result
NVNT	a	5260	16.929	30.863	Pass
NVNT	a	5280	16.917	31.384	Pass
NVNT	a	5320	16.382	24.274	Pass
NVNT	n20	5260	17.798	32.929	Pass
NVNT	n20	5280	17.861	30.213	Pass
NVNT	n20	5320	17.495	25.439	Pass

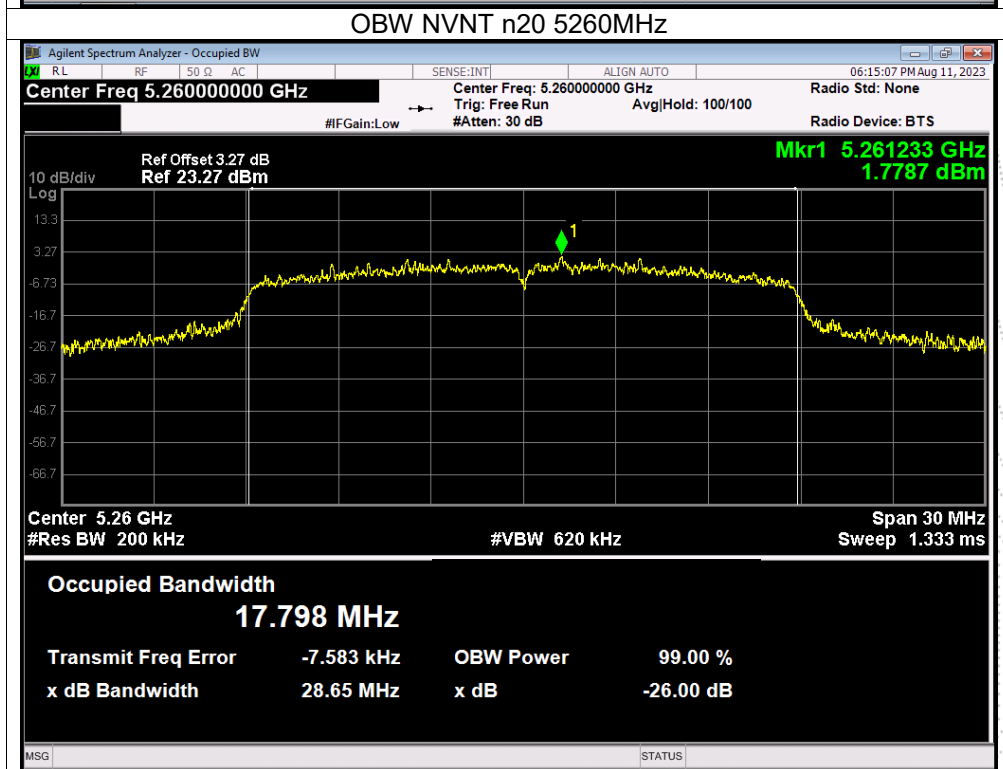
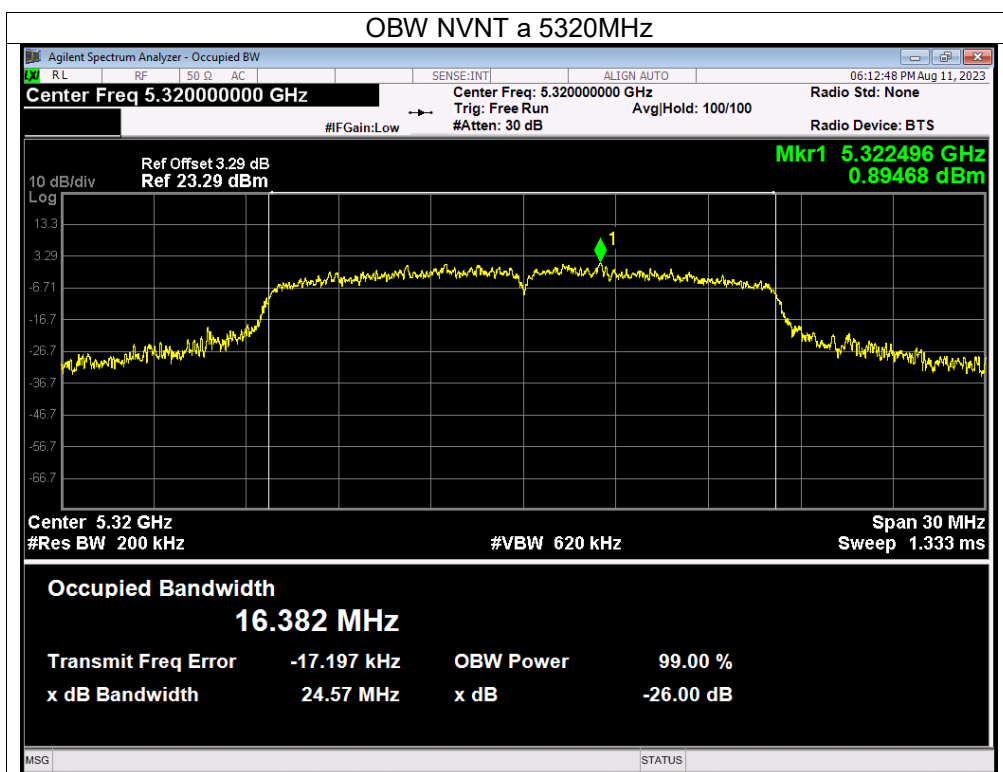


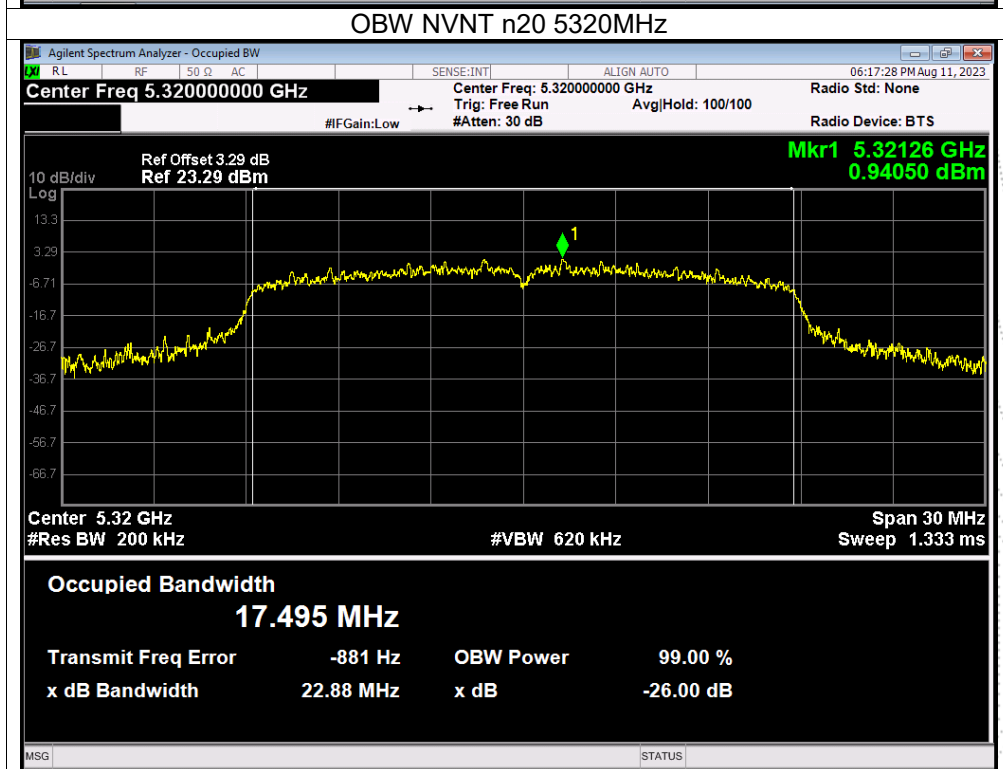
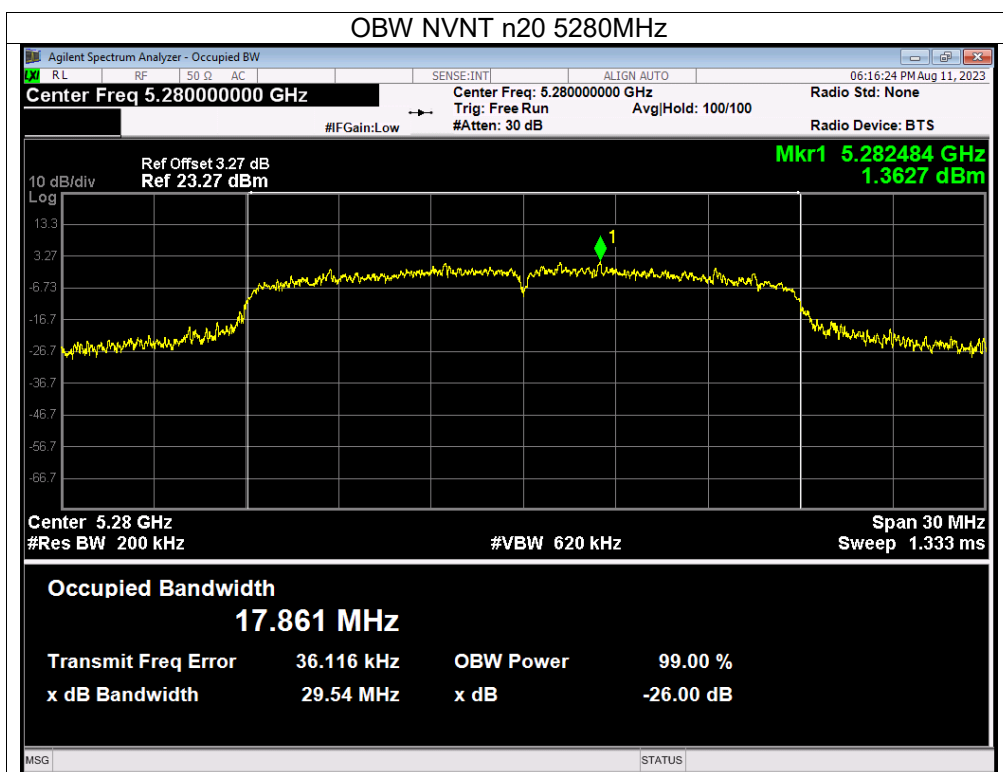






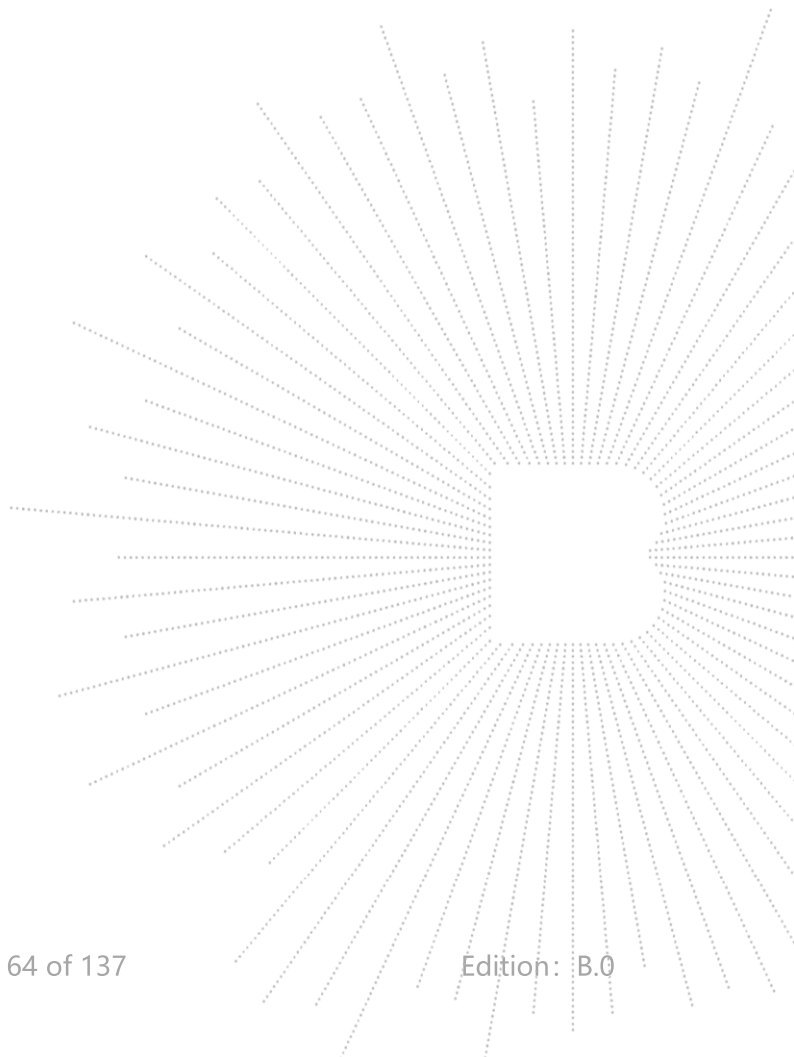


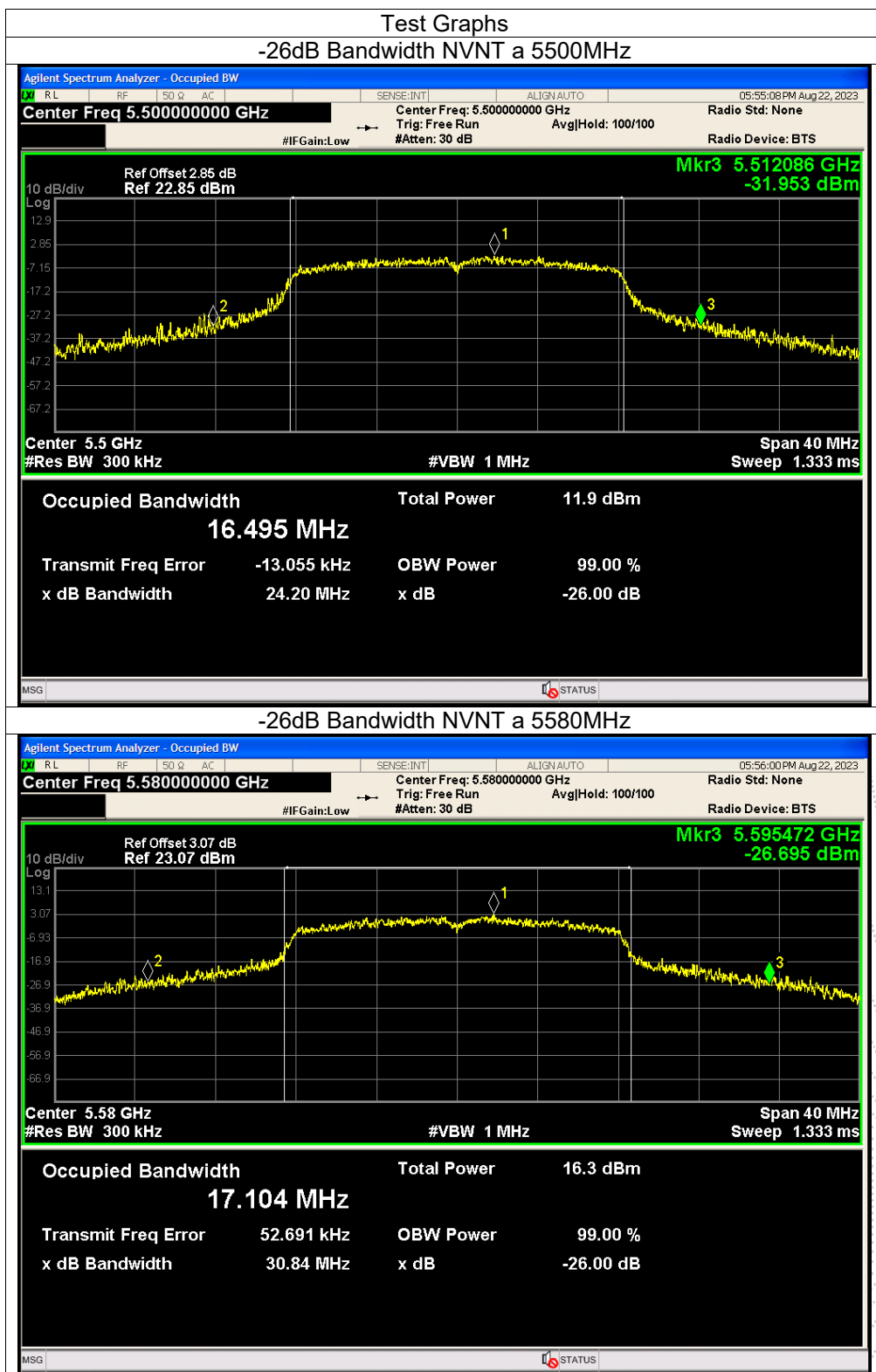


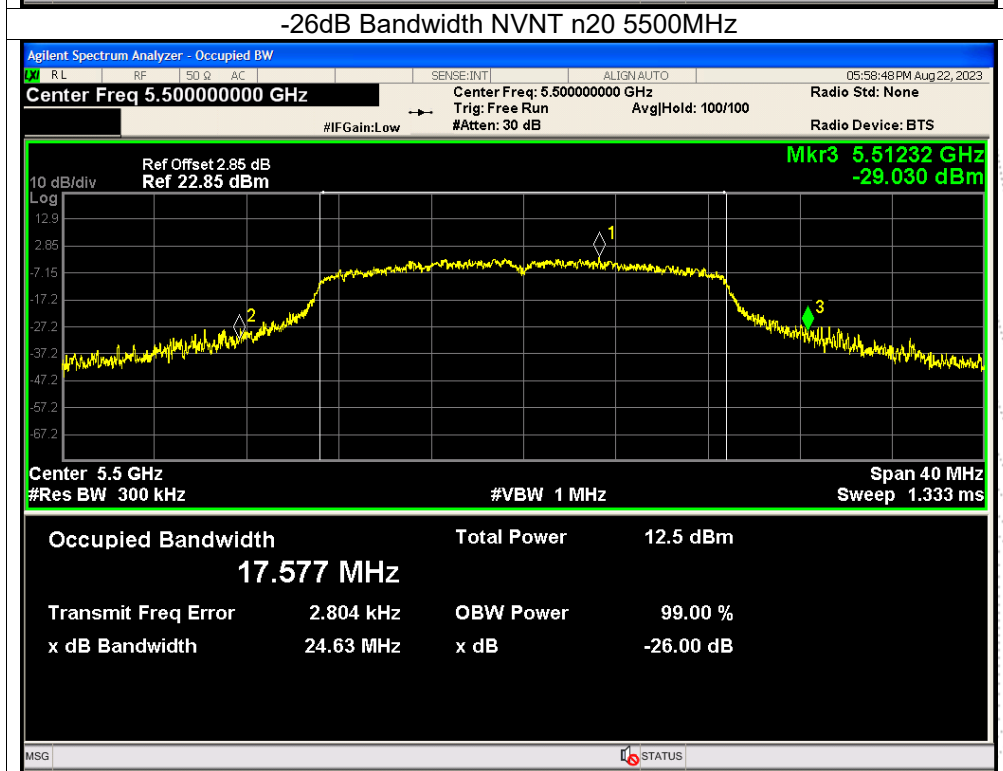
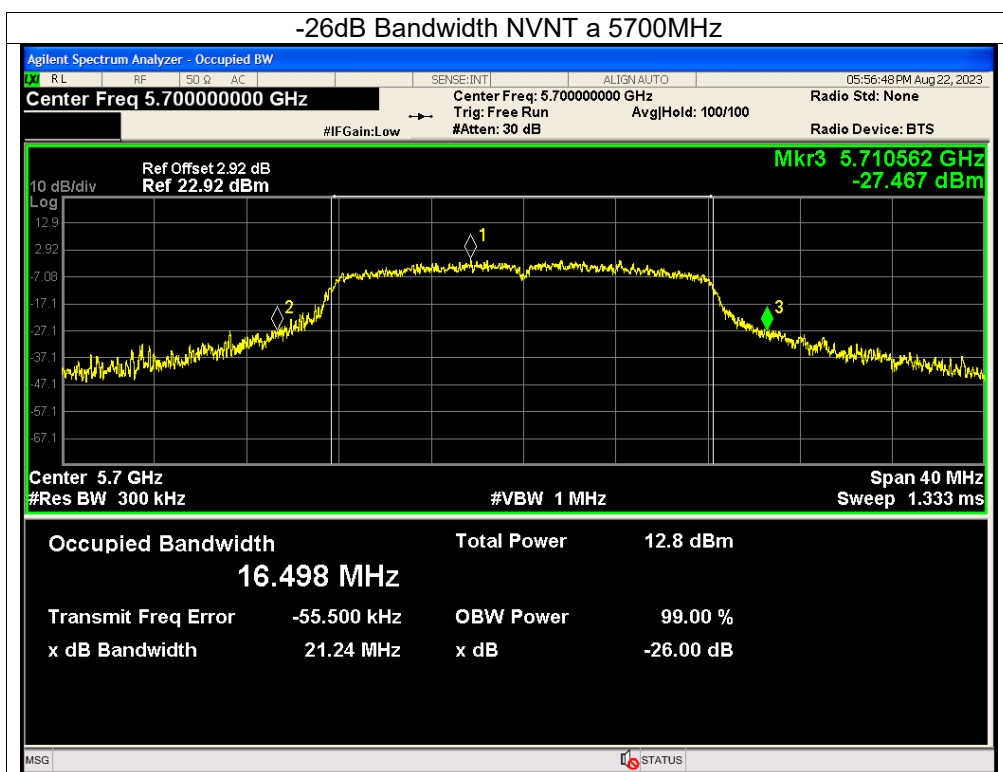


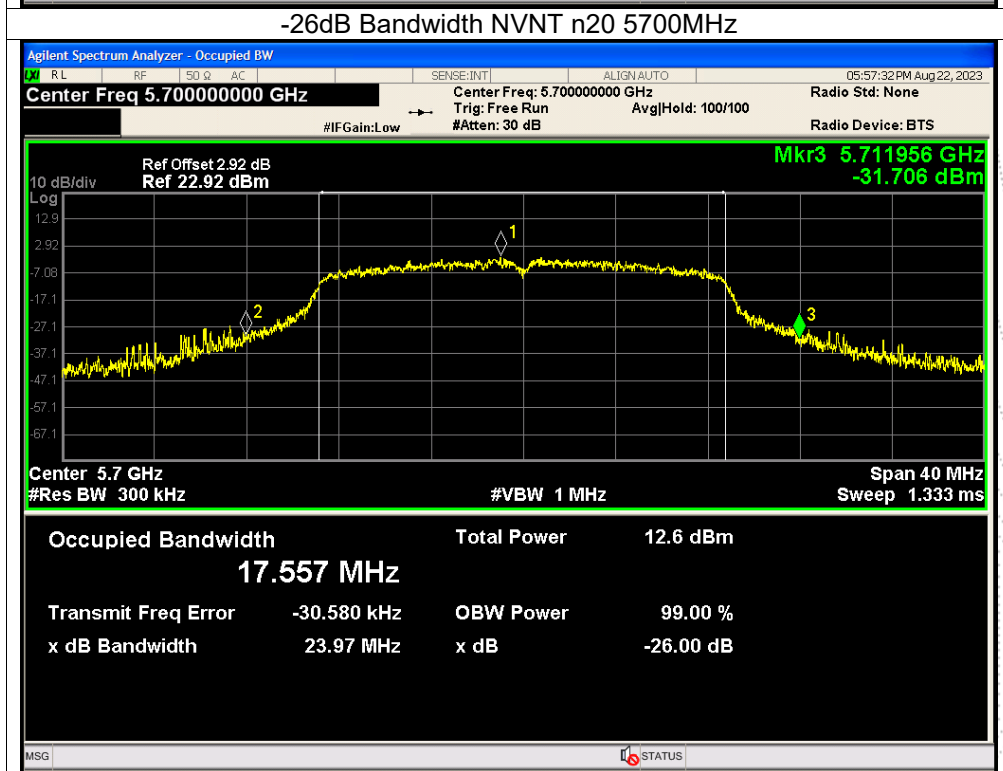
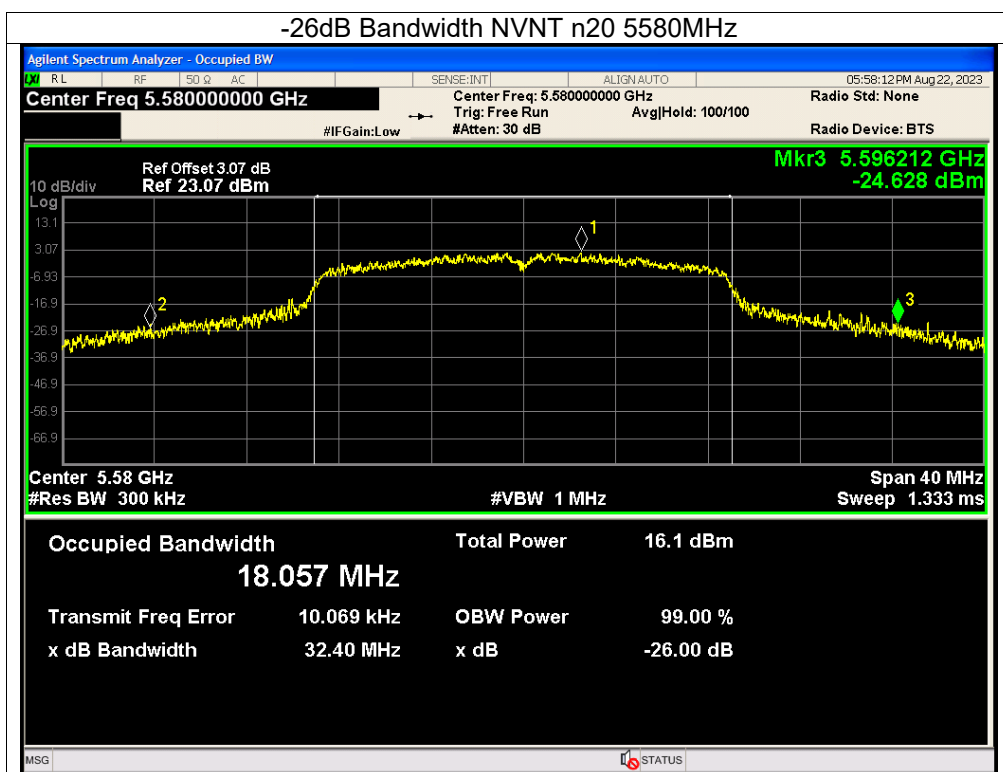
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5500-5700MHz)		

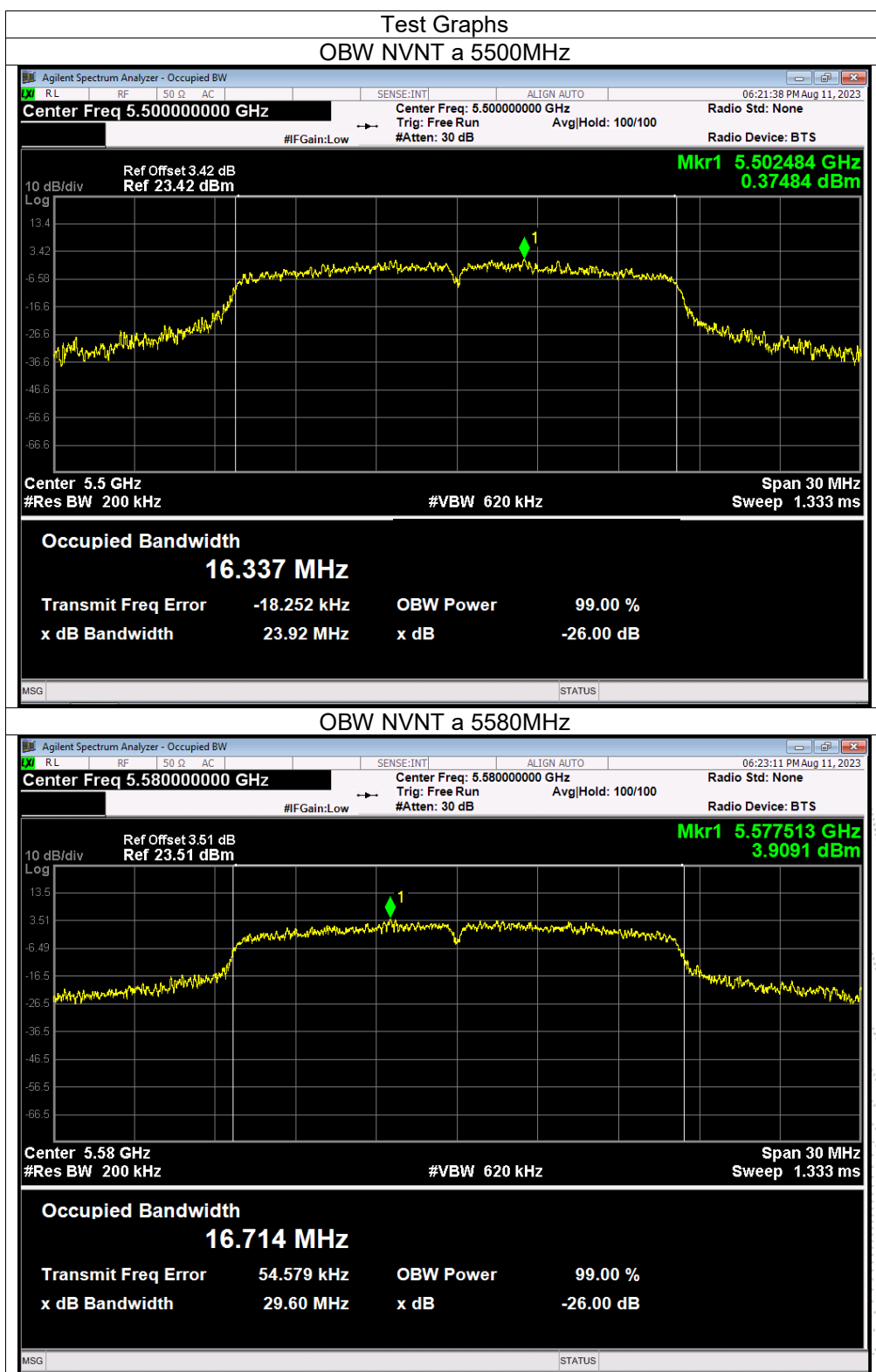
Condition	Mode	Frequency (MHz)	99% bandwidth (MHz)	-26dB bandwidth (MHz)	Result
NVNT	a	5500	16.337	24.198	Pass
NVNT	a	5580	16.714	30.838	Pass
NVNT	a	5700	16.302	21.236	Pass
NVNT	n20	5500	17.48	24.635	Pass
NVNT	n20	5580	17.749	32.405	Pass
NVNT	n20	5700	17.483	23.973	Pass

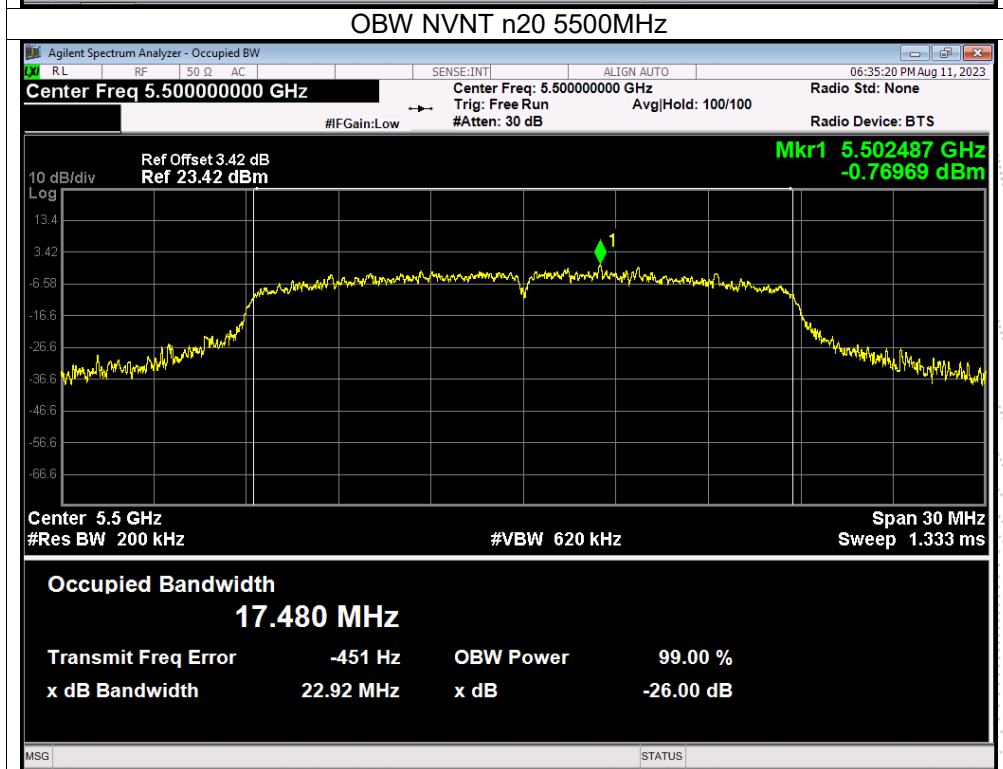
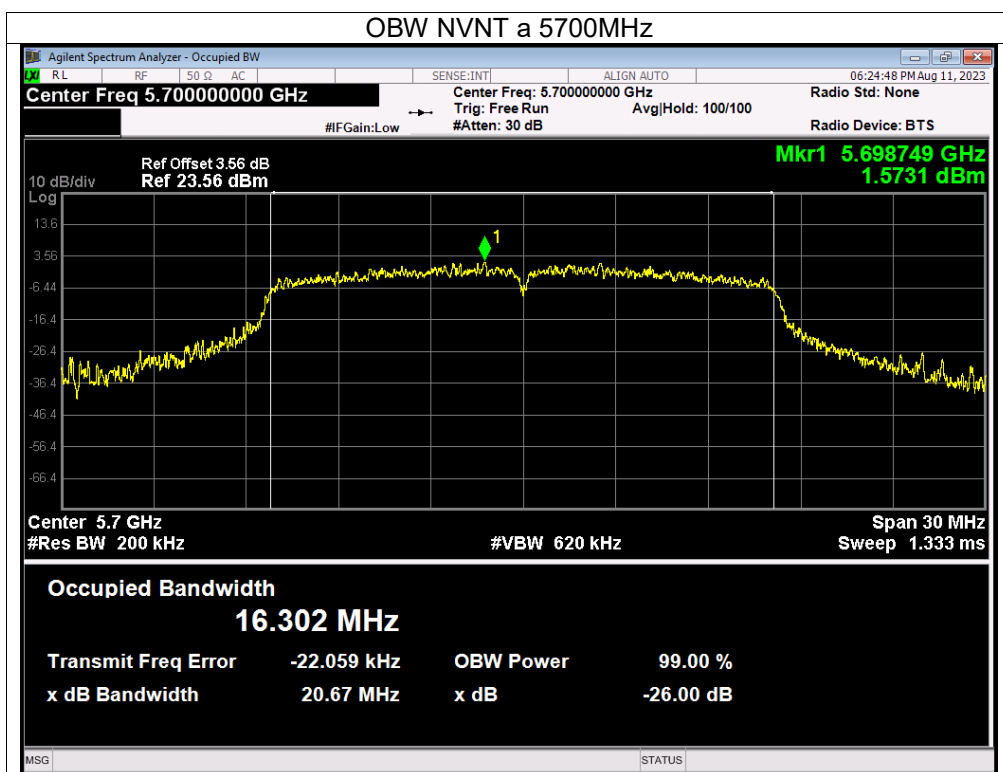


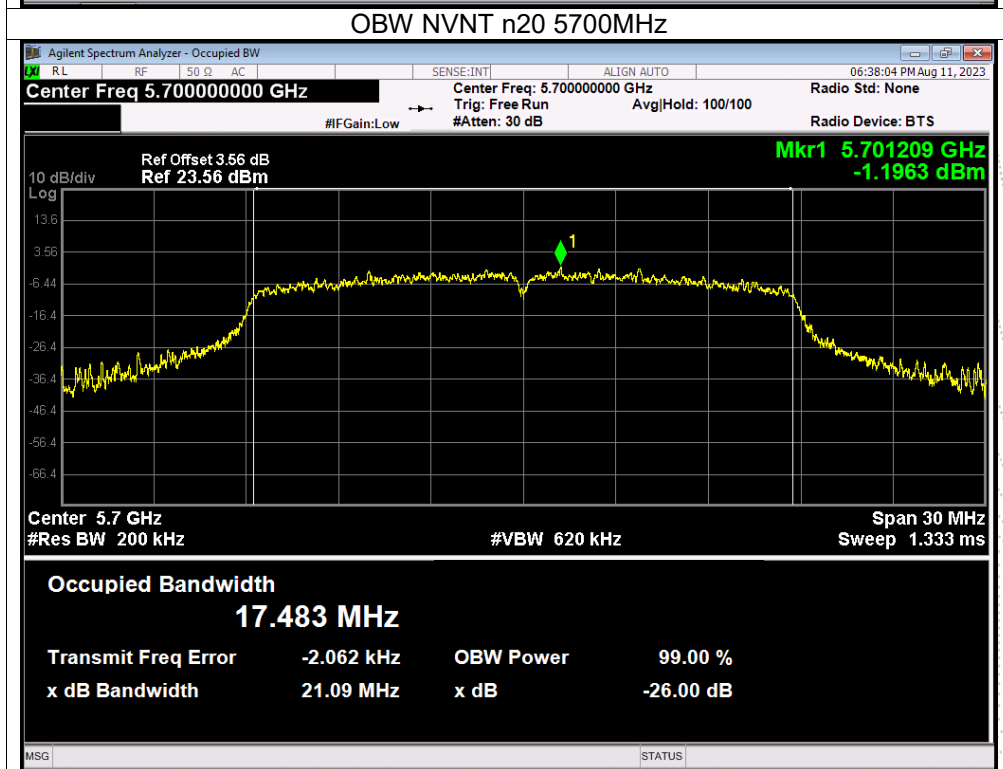
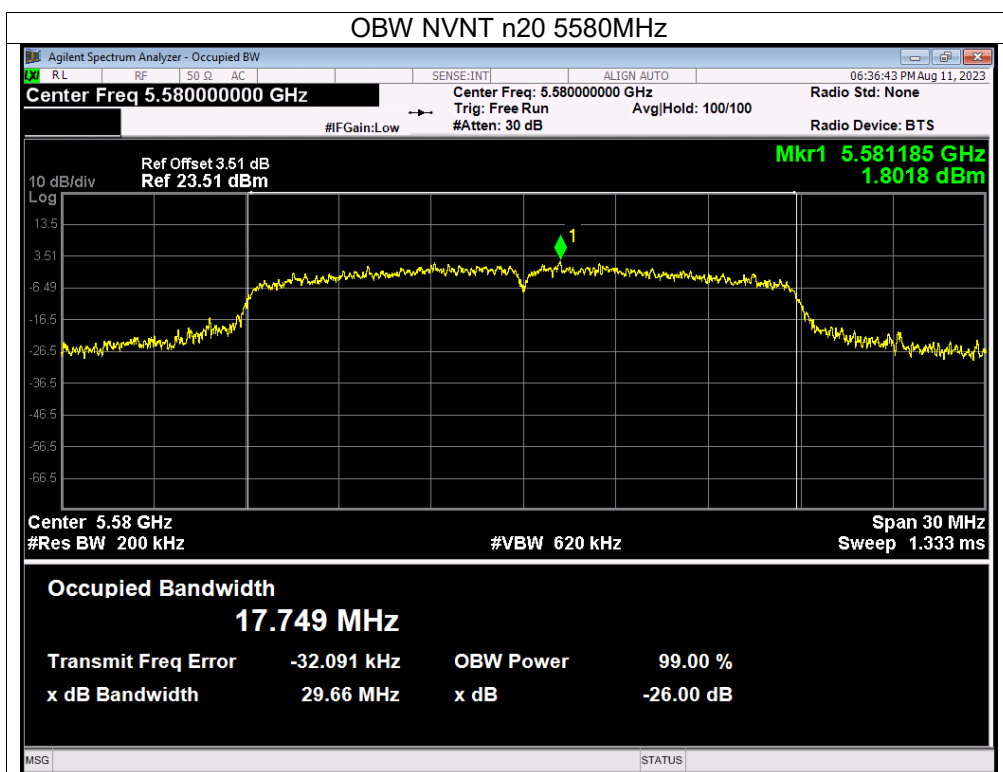






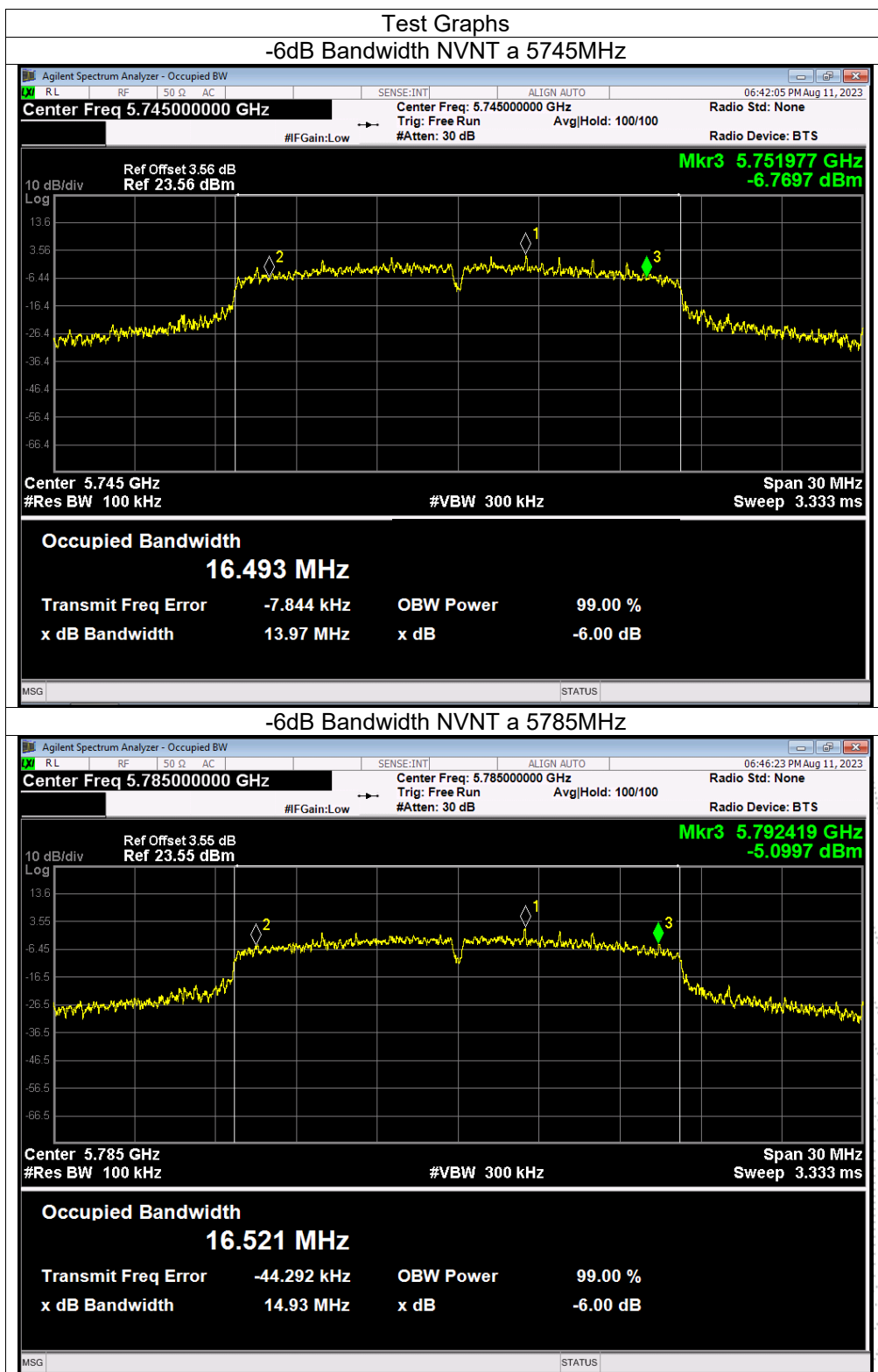


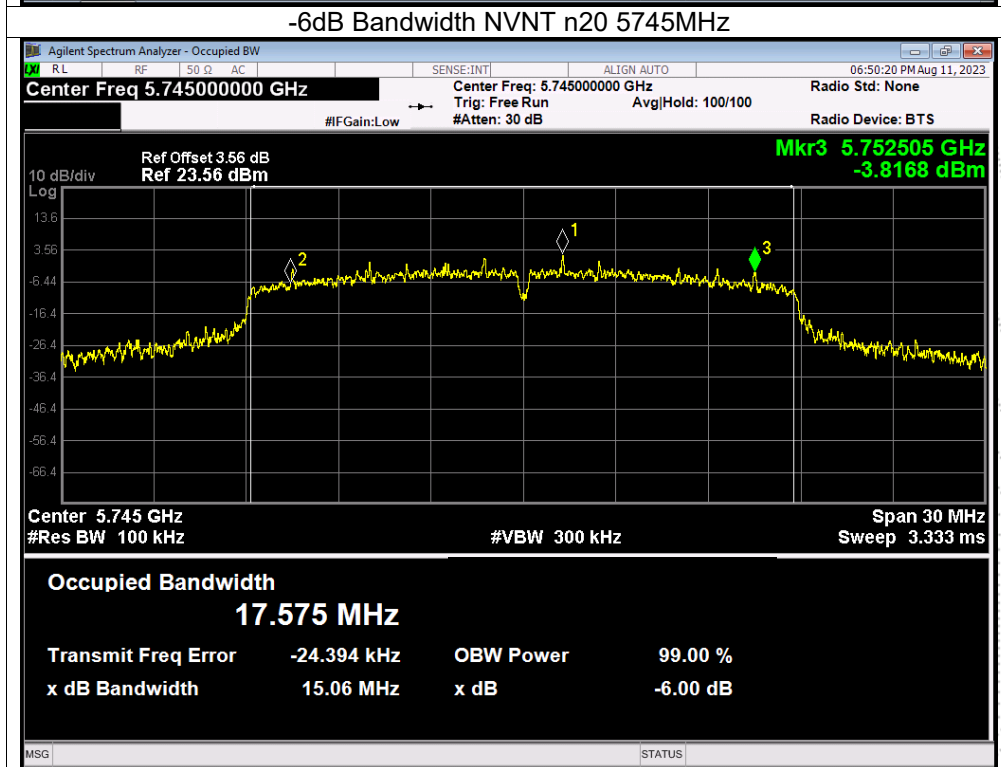
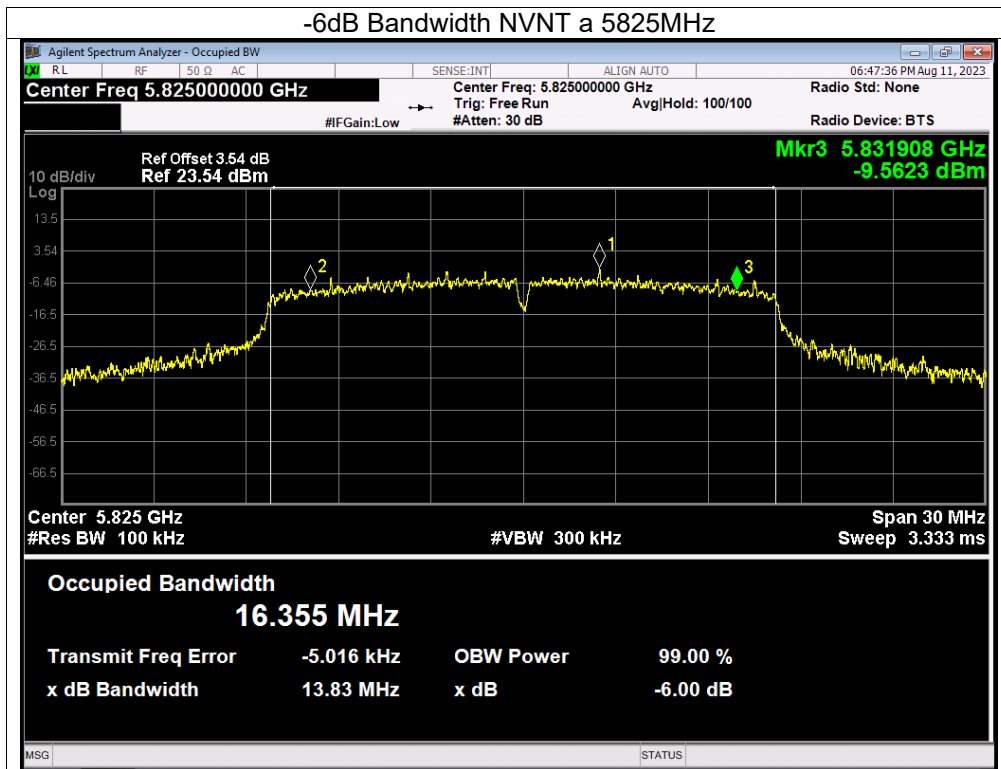


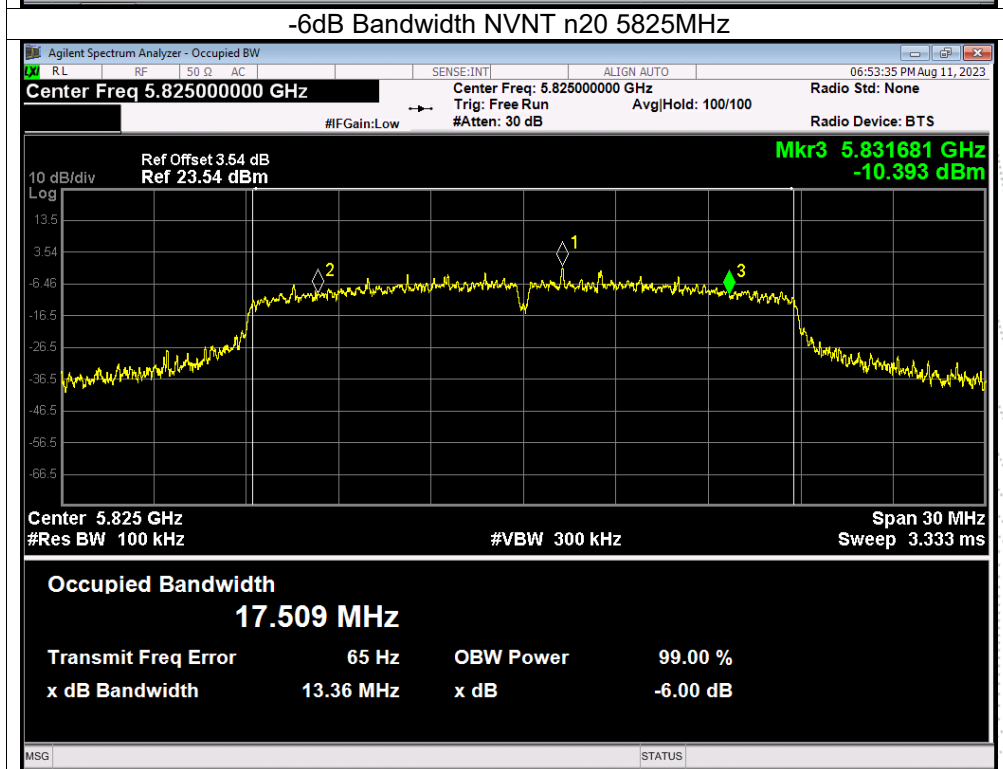
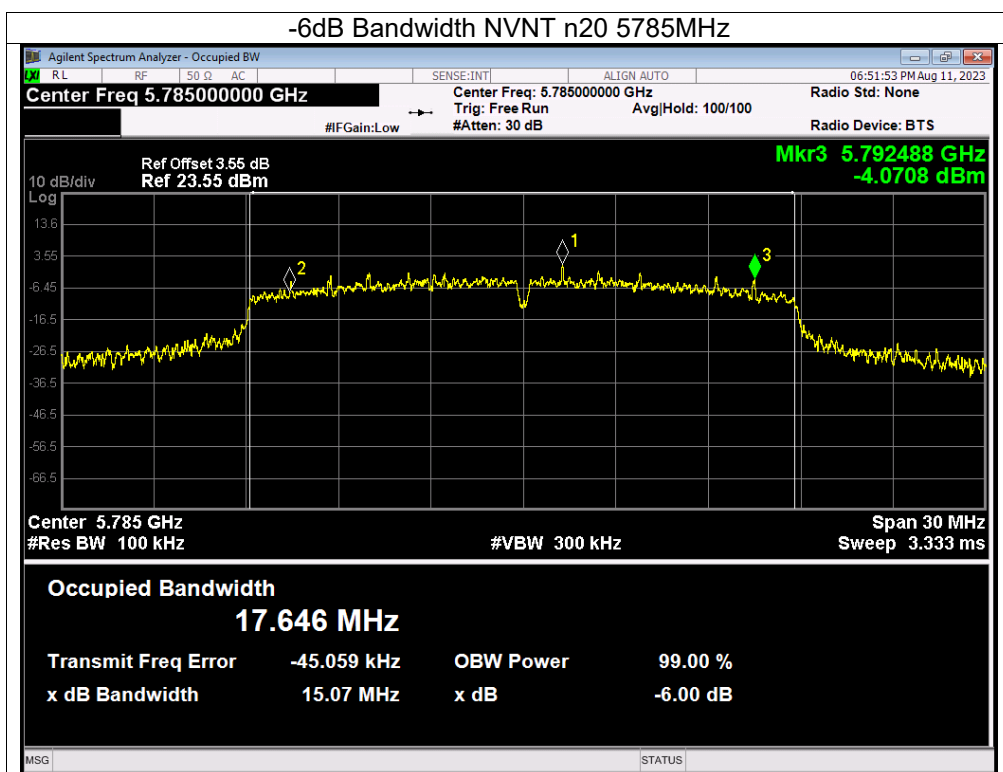


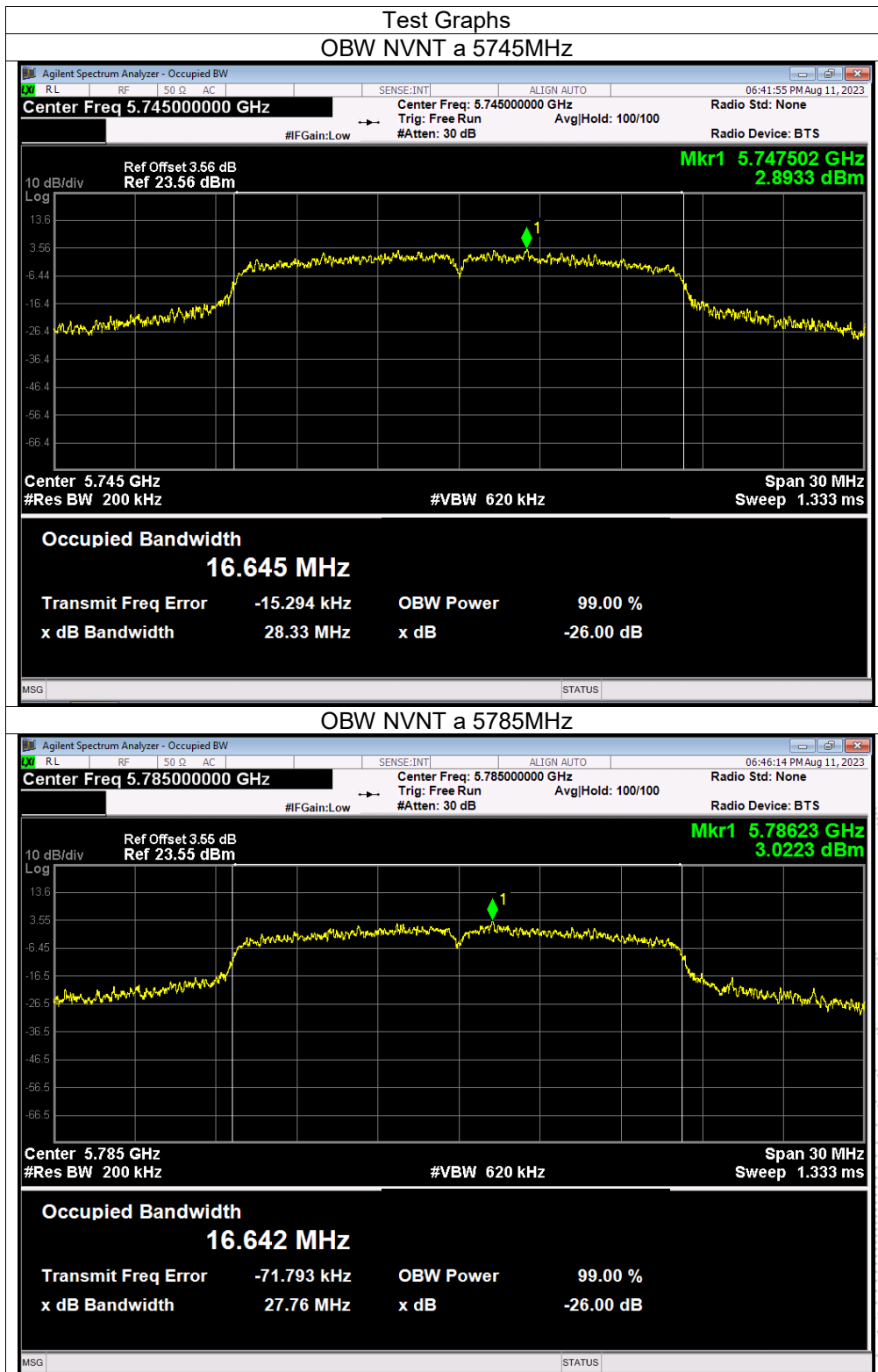
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	(5745-5825MHz)		

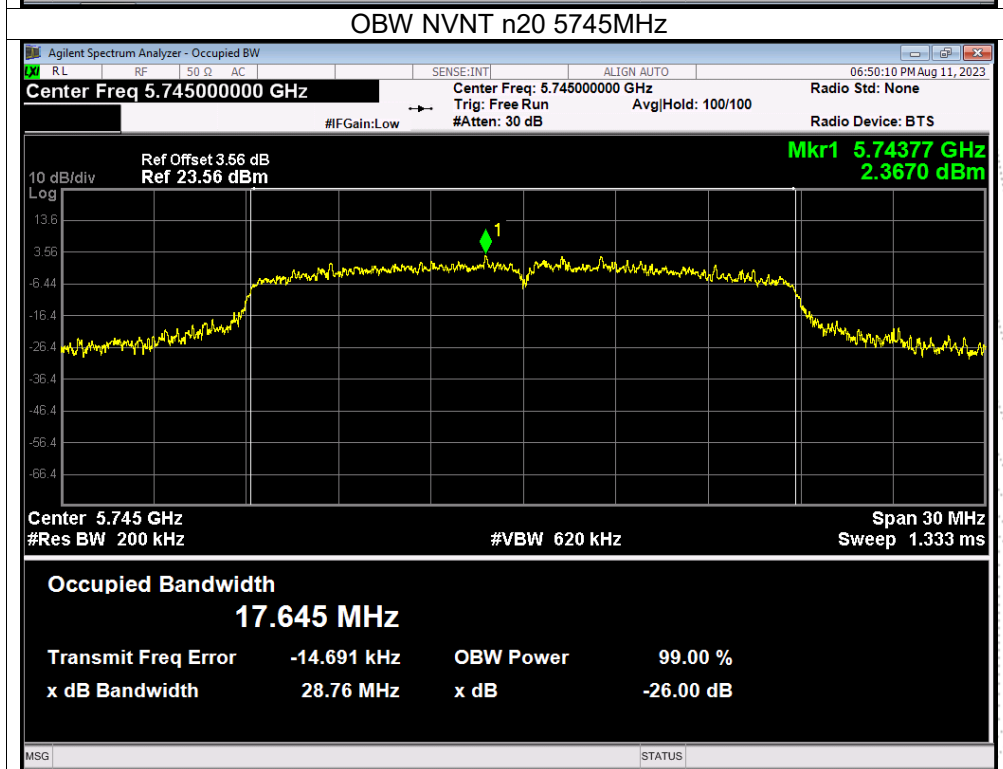
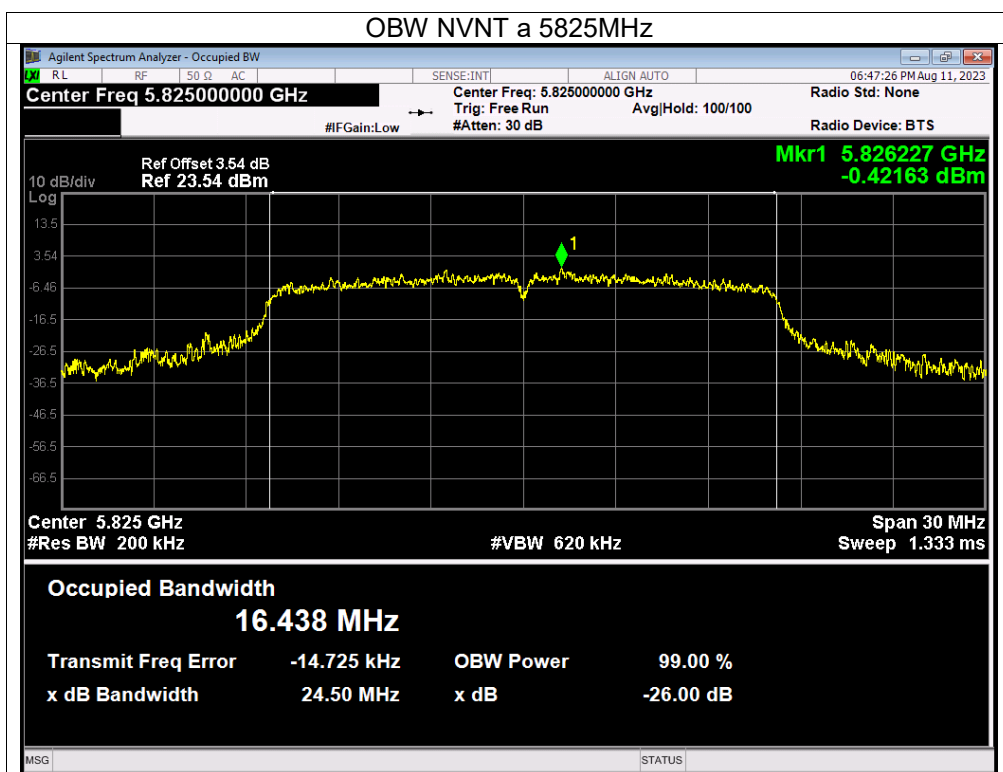
Condition	Mode	Frequency (MHz)	99% bandwidth (MHz)	-6dB bandwidth (MHz)	Limit -6dB bandwidth MHz	Result
NVNT	a	5745	16.645	13.971	≥500	Pass
NVNT	a	5785	16.642	14.926	≥500	Pass
NVNT	a	5825	16.438	13.827	≥500	Pass
NVNT	n20	5745	17.645	15.058	≥500	Pass
NVNT	n20	5785	17.752	15.067	≥500	Pass
NVNT	n20	5825	17.539	13.361	≥500	Pass

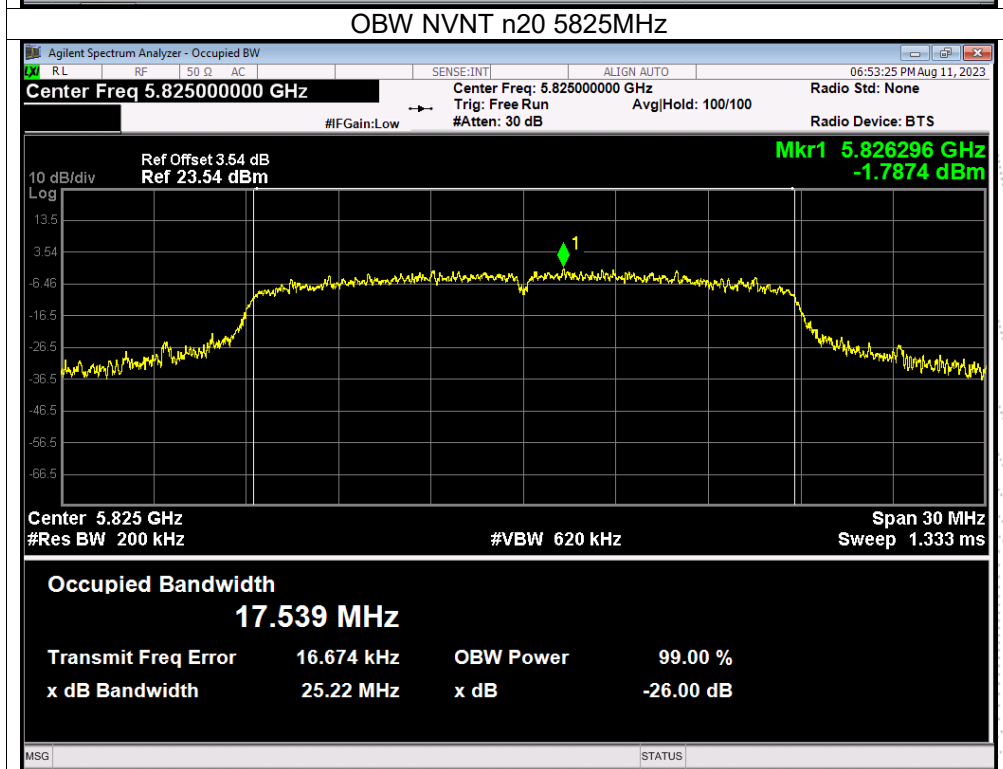
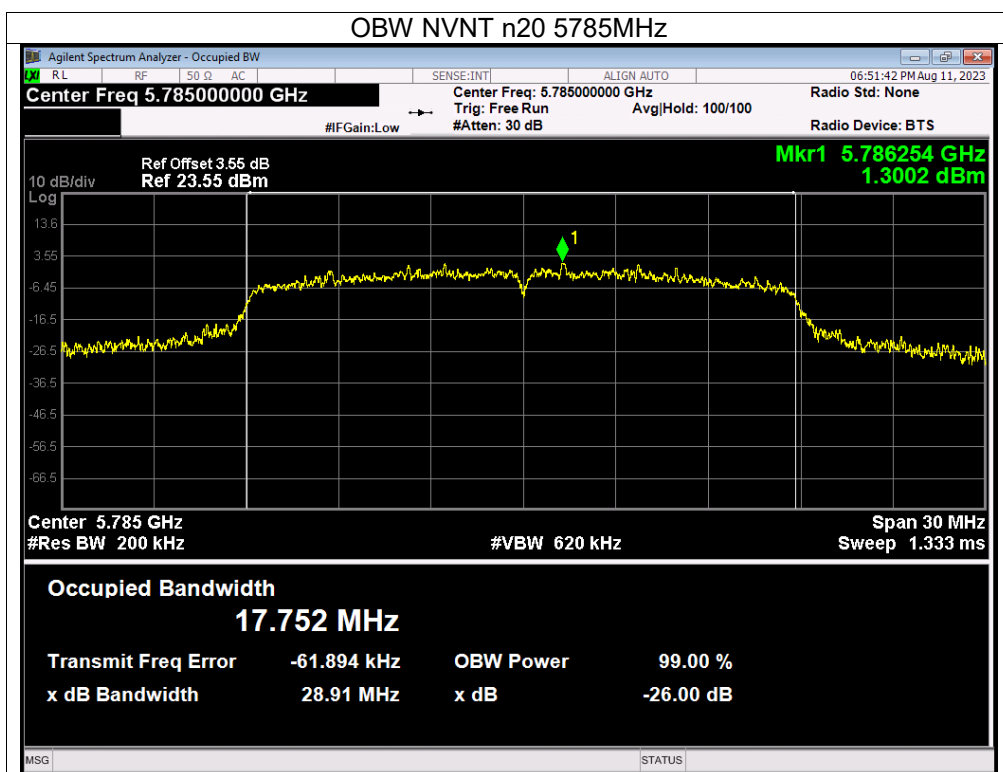












10. Maximum Conducted Output Power

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	0.25W
5250~5350	0.25W
5500~5700	0.25W
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)	Limit (dBm)	Verdict
NVNT	a	5180	8.46	24	Pass
NVNT	a	5200	9.8	24	Pass
NVNT	a	5240	10.22	24	Pass
NVNT	n20	5180	8.24	24	Pass
NVNT	n20	5200	9.59	24	Pass
NVNT	n20	5240	10.1	24	Pass

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	5260-5320MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5260	10.69	24	Pass
NVNT	a	5280	10.49	24	Pass
NVNT	a	5320	9.99	24	Pass
NVNT	n20	5260	10.26	24	Pass
NVNT	n20	5280	9.96	24	Pass
NVNT	n20	5320	9.87	24	Pass

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	5500-5700MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5500	9.59	24	Pass
NVNT	a	5580	12.93	24	Pass
NVNT	a	5700	10.67	24	Pass
NVNT	n20	5500	9.17	24	Pass
NVNT	n20	5580	11.15	24	Pass
NVNT	n20	5700	7.83	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)	Limit (dBm)	Verdict
NVNT	a	5745	11.92	30	Pass
NVNT	a	5785	11.3	30	Pass
NVNT	a	5825	8.38	30	Pass
NVNT	n20	5745	11.29	30	Pass
NVNT	n20	5785	10.11	30	Pass
NVNT	n20	5825	7.98	30	Pass

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.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing

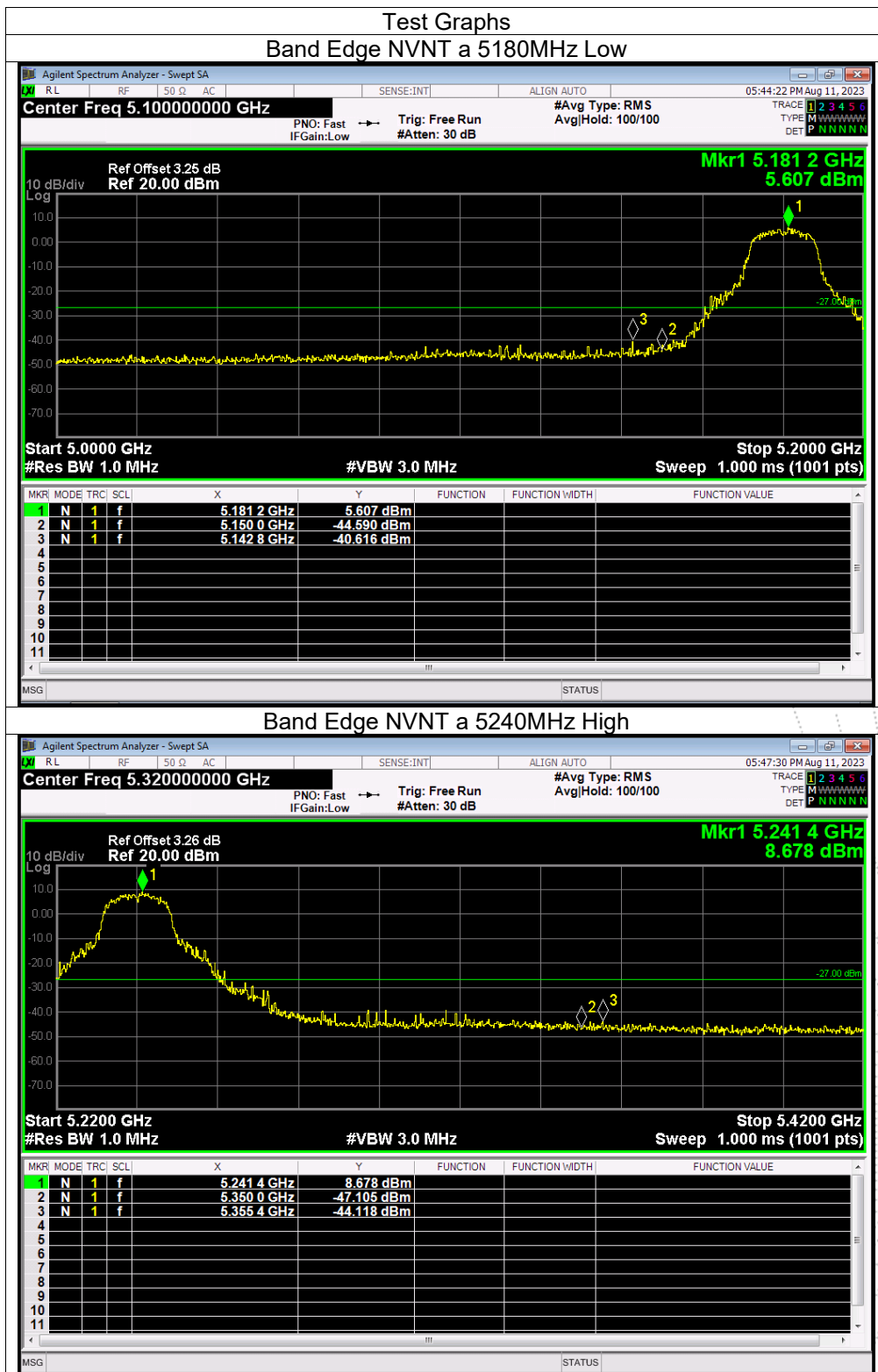
11.3 Test Procedure

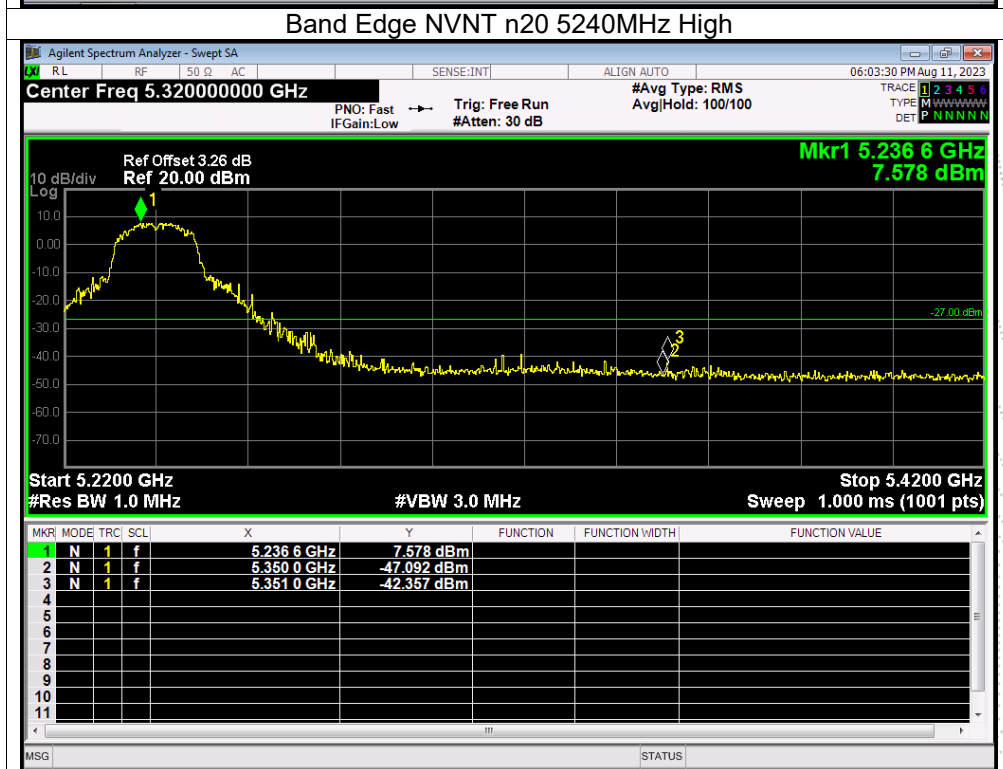
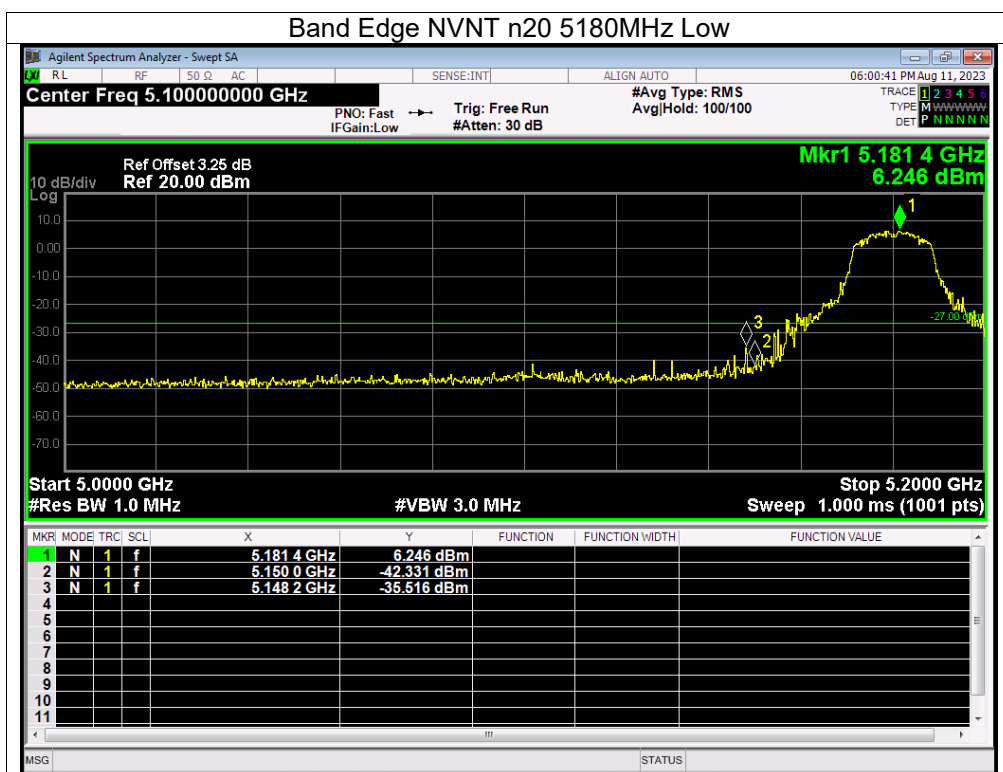
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then 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

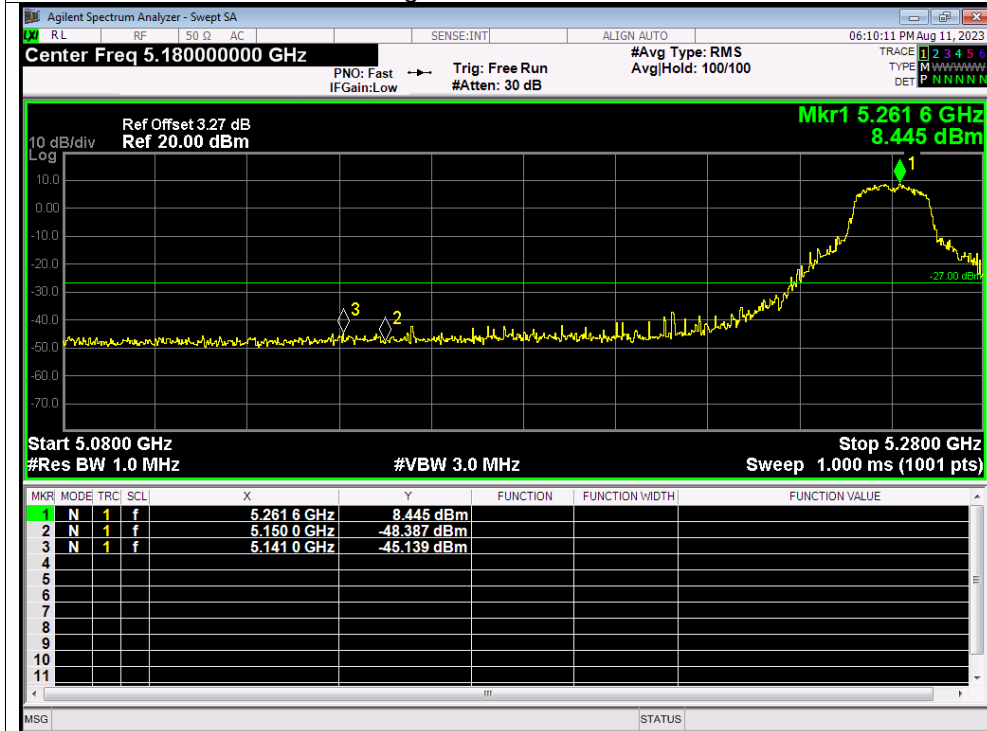
11.5 Test Result



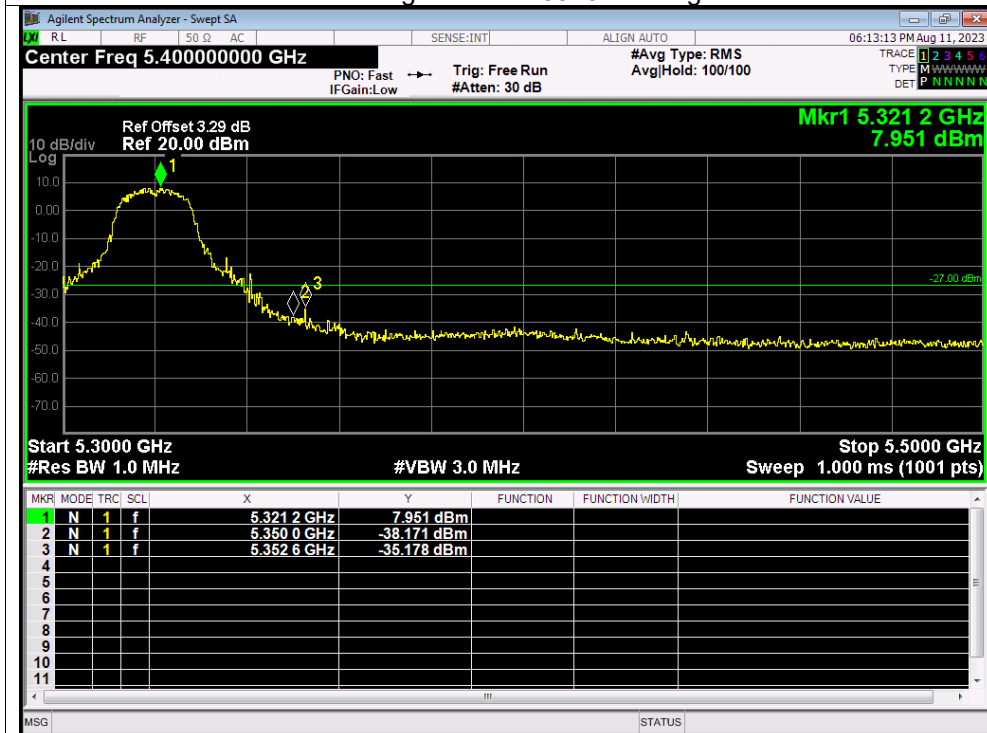


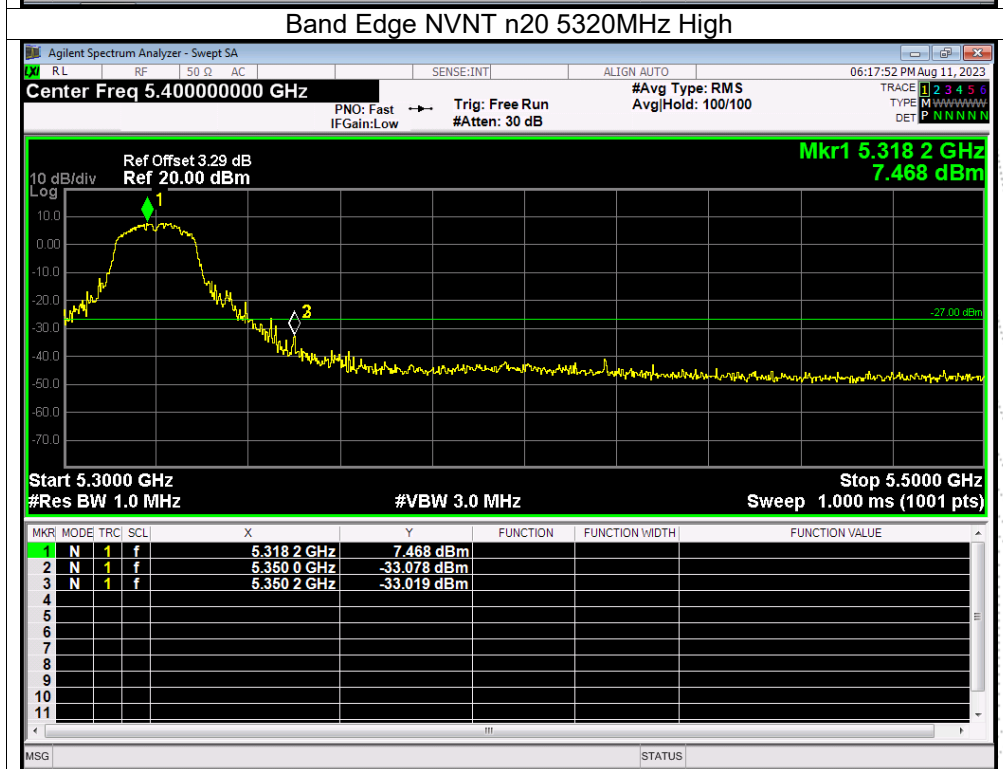
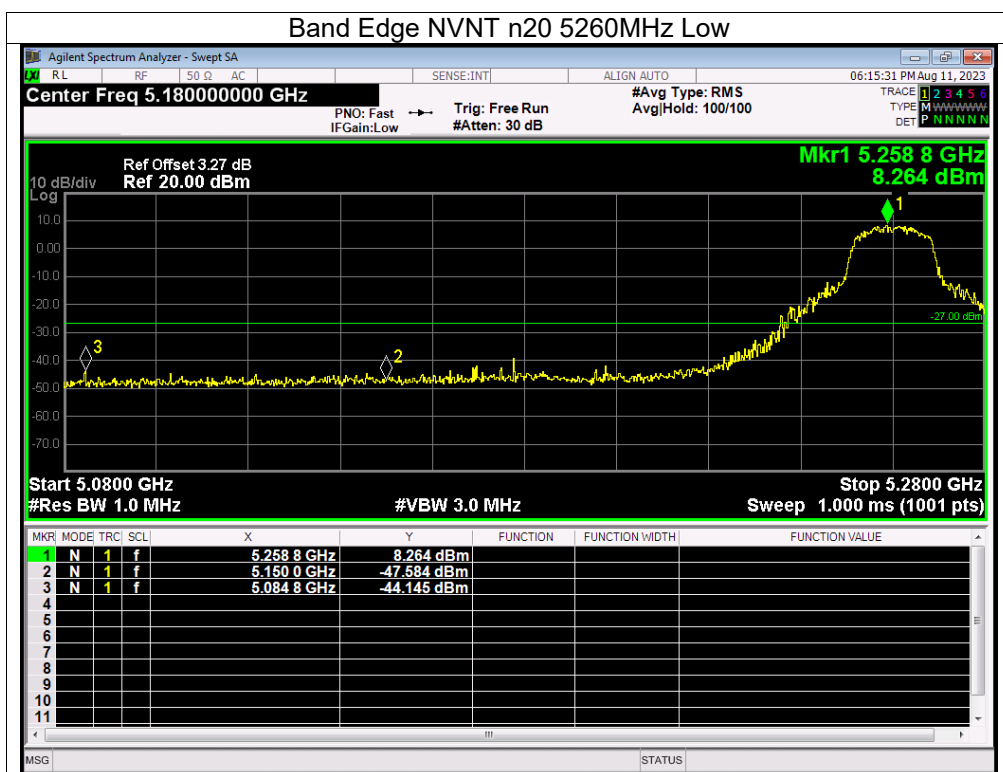
Test Graphs

Band Edge NVNT a 5260MHz Low



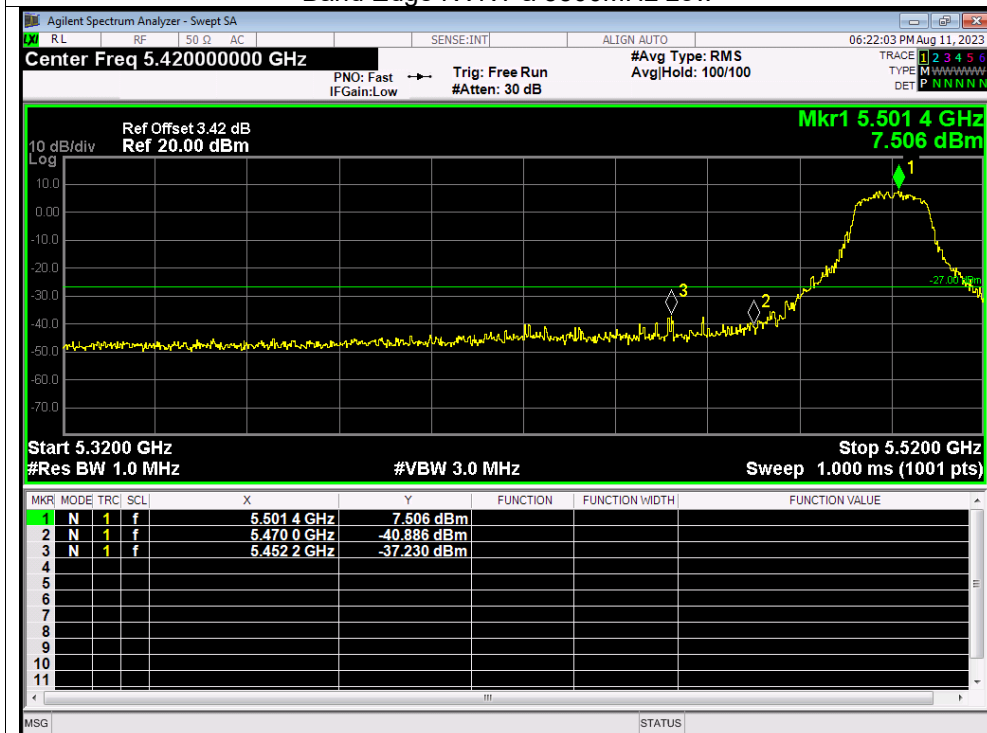
Band Edge NVNT a 5320MHz High



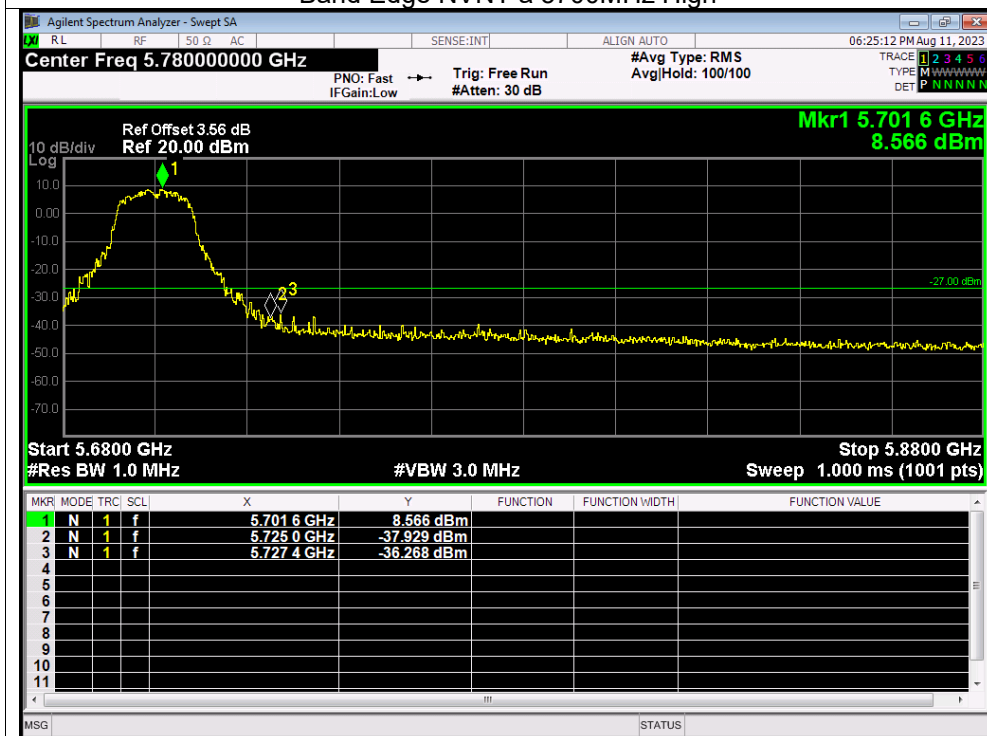


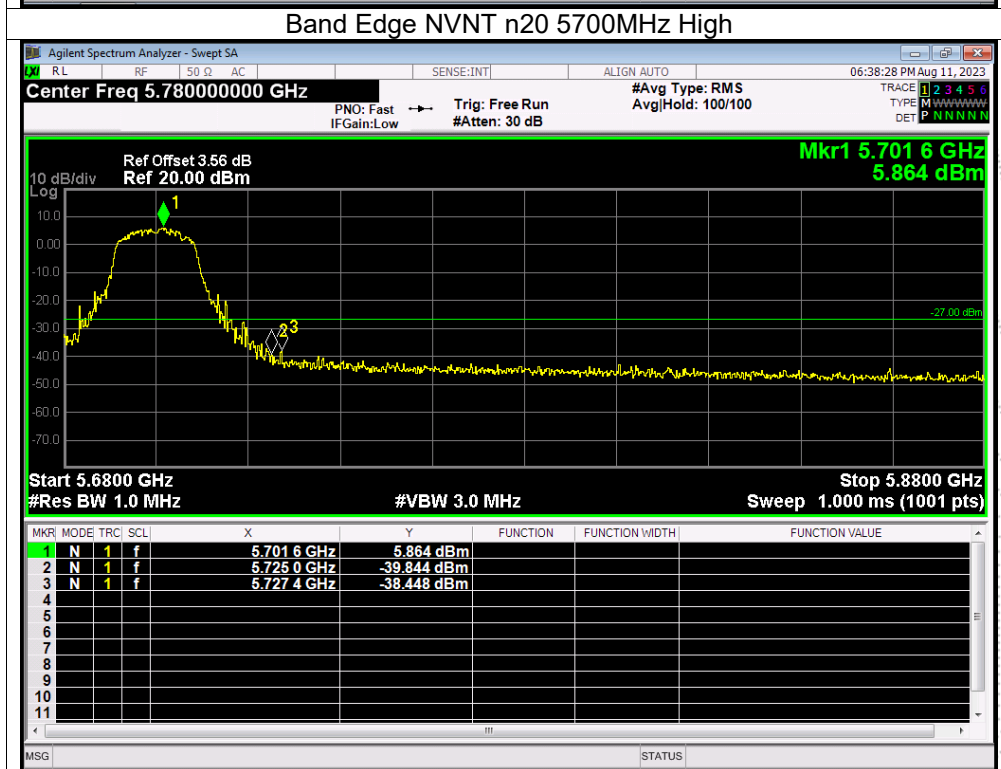
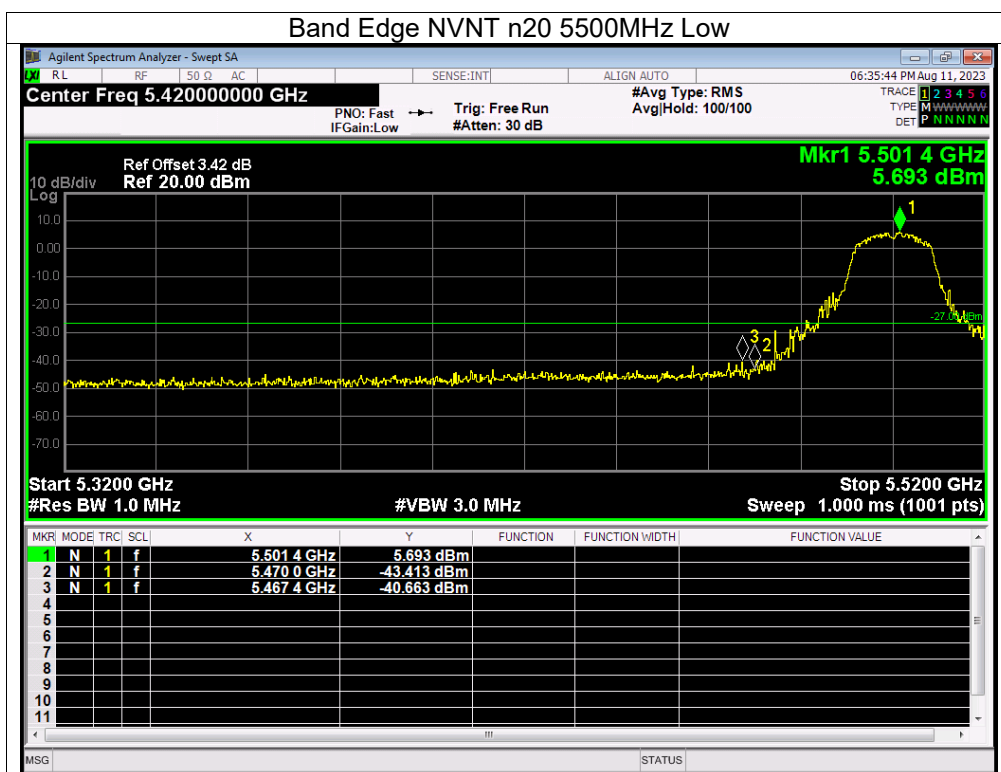
Test Graphs

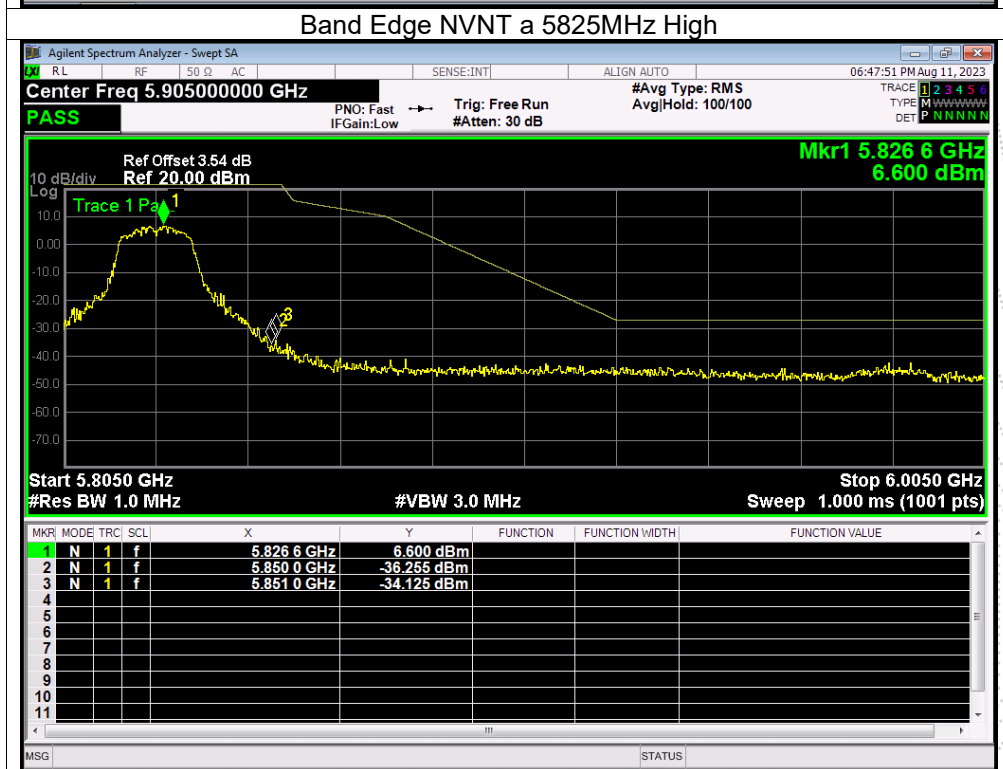
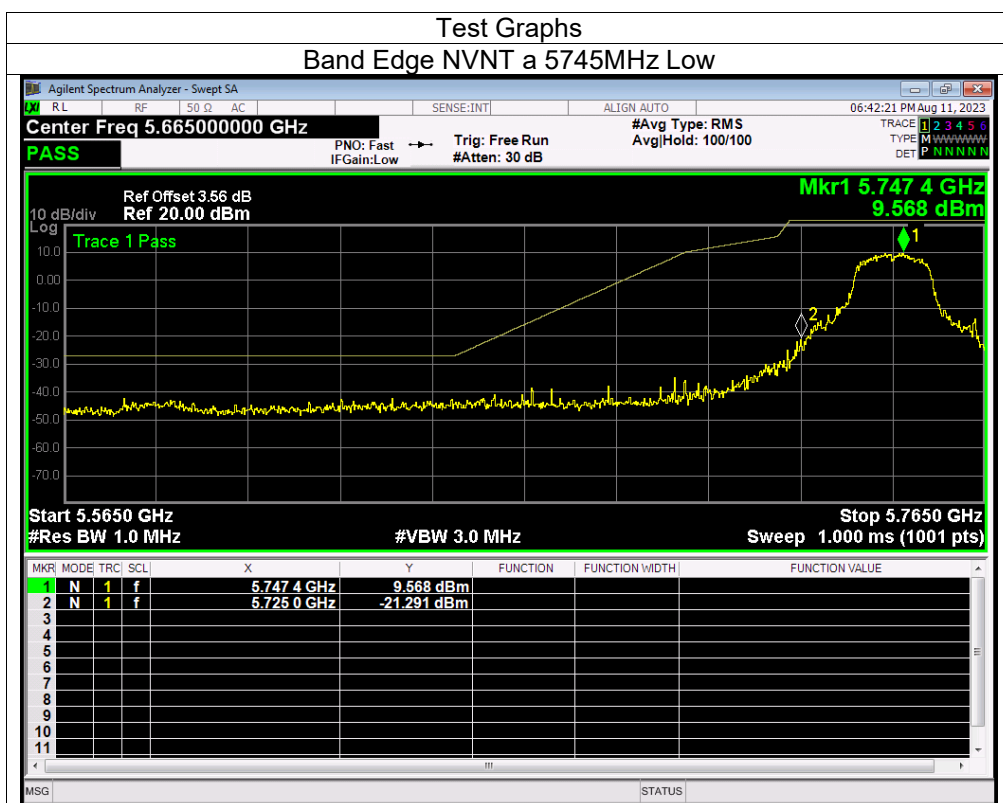
Band Edge NVNT a 5500MHz Low

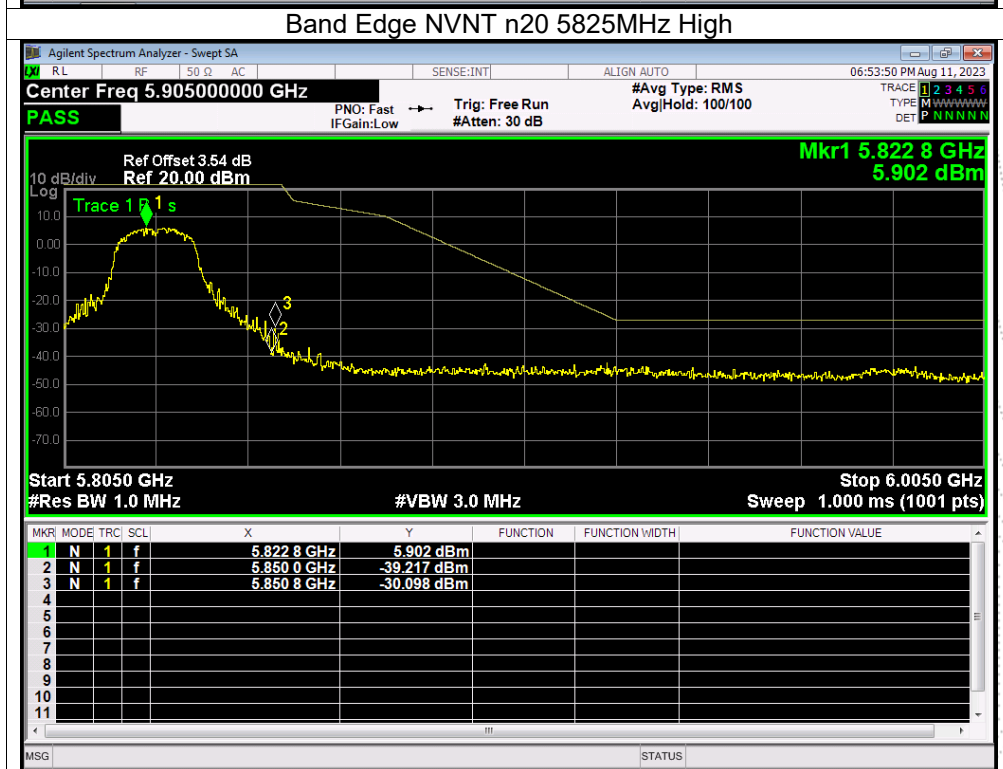
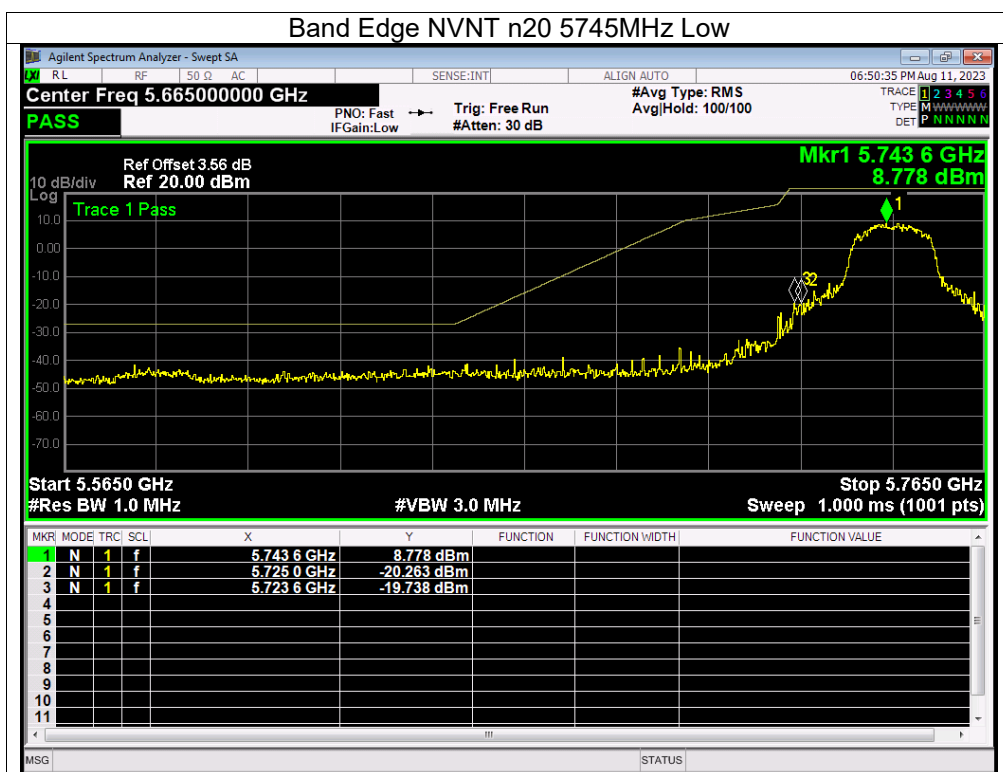


Band Edge NVNT a 5700MHz High









12. Spurious RF Conducted Emissions

12.1 Block Diagram Of Test Setup



12.2 Limit

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

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

12.3 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.

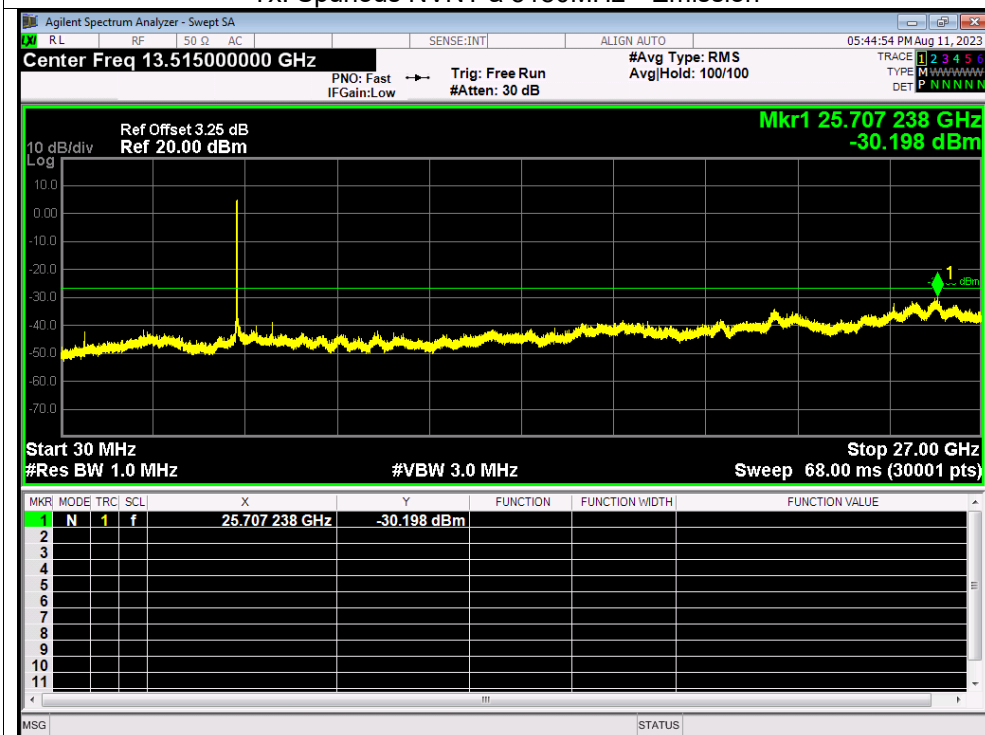
12.4 Test Result

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandedge measurement data.

About: 26.5GHz-40GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Test Graphs

Tx. Spurious NVNT a 5180MHz Emission



Tx. Spurious NVNT a 5200MHz Emission

