

TEST REPORT

Report No.: BCTC2606711460-4E

Applicant: JAE ELECTRONICS COPT.LTD

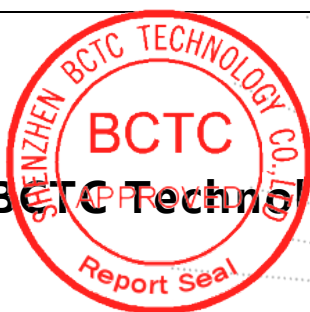
Product Name: 9 Inches Touchscreen Multimedia Player

Test Model: K2

Tested Date: 2026-08-12 to 2026-09-08

Issued Date: 2026-09-08

Shenzhen BCTC Technology Co., Ltd.



FCC ID: 2BVIB-K2

Product Name: 9 Inches Touchscreen Multimedia Player

Trademark: N/A

Model/Type Ref.: K2

Prepared For: JAE ELECTRONICS COPT.LTD

Address: Room 501, 4th and 5th Floor, Building A, No.4 Xingde East Road, Dongjiang High-Tech Industrial Park, Zhongkai High-Tech Zone, Huizhou City, China

Manufacturer: JAE ELECTRONICS COPT.LTD

Address: Room 501, 4th and 5th Floor, Building A, No.4 Xingde East Road, Dongjiang High-Tech Industrial Park, Zhongkai High-Tech Zone, Huizhou City, China

Prepared By: Shenzhen BCTC Technology Co., Ltd.

Address: Room 101M, Unit 1, Building1, Pengyuan, No.18, Lilang Road, Shanglilang, Nanwan Subdistrict, Longgang District, Shenzhen, Guangdong, China.

Sample Received Date: 2026-08-12

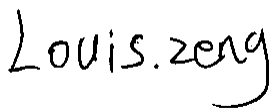
Sample tested Date: 2026-08-12 to 2026-09-08

Report No.: BCTC2606711460-4E

Test Standards: 47 CFR Part 15 Subpart E (clause 15.407)
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

Test Results: PASS

Prepared by :



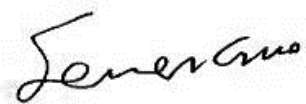
Louis Zeng

Reviewer by :



Mike Zheng

Approved by:



Sewen Guo

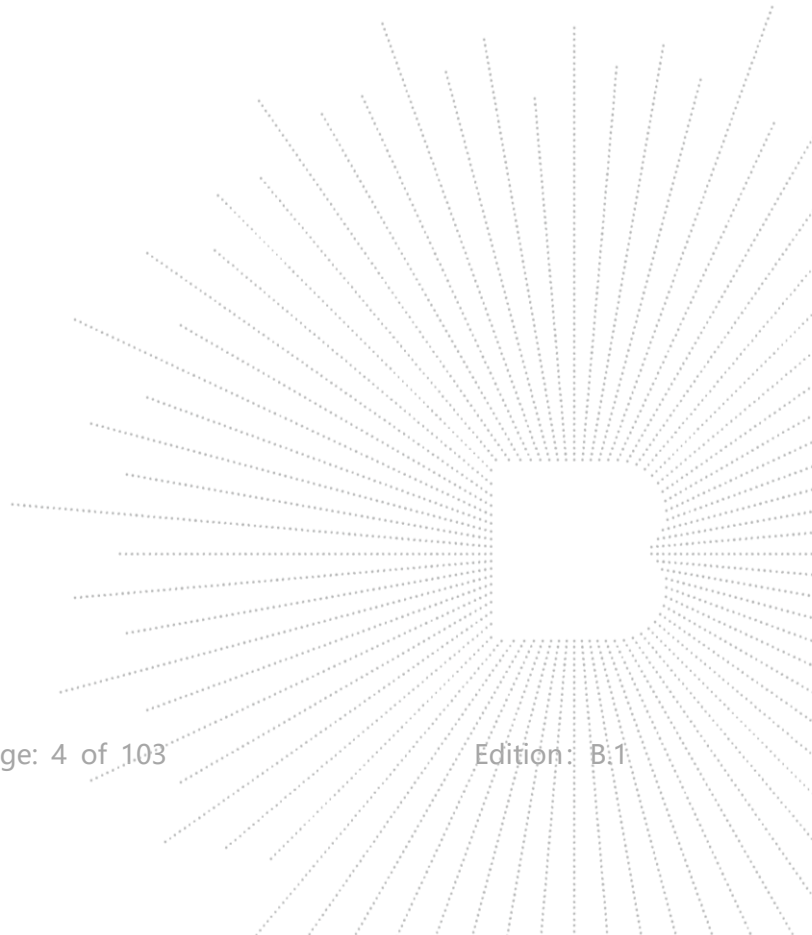
The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Technology Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information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

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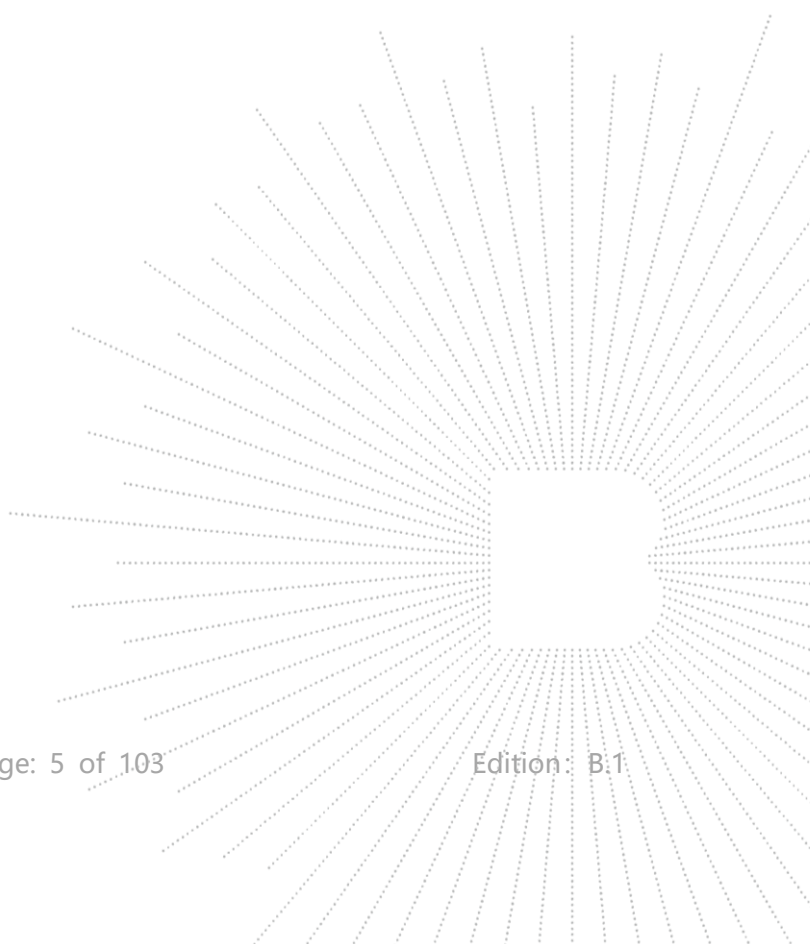
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1. Version

Report No.	Issue Date	Description	Approved
BCTC2606711460-4E	2026-09-08	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 (b)	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	15.407 b	PASS
7	Power Spectral Density	15.407 a	PASS
8	Spurious Emissions at Antenna Terminals	15.407 b	PASS
9	Antenna Requirement	15.203	PASS

NOTE1: N/A (Not Applicable)

NOTE2: According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.

Note 3: "*" indicates that the test results are determined base on 47 CFR Part 15 Subpart E (clause 15.407). And the test results are took into account measurement uncertainty(see section 3 for measurement uncertainty information)

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3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2:2011/AMD2:2018. 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=4.8dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=5.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=5.0dB
5	Conducted Emission(150kHz-30MHz)	U=3.0dB
6	Power Spectral Density	U=3.46dB
7	Peak Power	U=0.31dB
8	Occupied Bandwidth/Frequency Range	U=3.46%
9	Conducted output power uncertainty	U=0.55dB
10	Frequency Error	U= 53.50 Hz
11	Frequency Drift	U=0.64 KHz
12	Temperature	U= 0.59 °C
13	Humidity	U= 5.3 %

4. Product Information and Test Setup

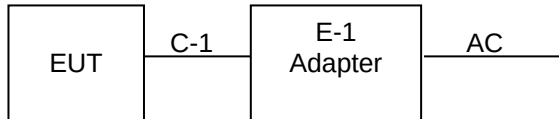
4.1 Product Information

Model/Type Ref.:	K2
Model differences:	N/A
Hardware Version:	N/A
Software Version:	N/A
IEEE 802.11 WLAN Mode Supported	☒ 802.11a ☒ 802.11n(20MHz channel bandwidth) ☒ 802.11n(40MHz channel bandwidth) ☒ 802.11ac(20MHz channel bandwidth) ☒ 802.11ac(40MHz channel bandwidth) ☒ 802.11ax(20MHz channel bandwidth) ☒ 802.11ax(40MHz channel bandwidth)
Operation Frequency:	5745-5825 MHz for 802.11a/n(HT20)/ac(VHT20) /ax(HE20); 5755-5795 MHz for 802.11n(HT40)/ac(VHT40) /ax(HE40)
Type of Modulation:	☒ OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n ☒ OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11ac ☒ OFDMA with 1024QAM for 802.11AX HE
Number Of Channel	5 channels for 802.11 a/n/ac/ax 20 in the 5745-5825MHz band ; 2 channels for 802.11 n/ac/ax 40 in the 5755-5795MHz band
Antenna installation:	FPC antenna
Antenna Gain:	1.39 dBi Remark: ☒ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. The laboratory assumes no responsibility for its authenticity. ☐ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information. The laboratory assumes no responsibility for its authenticity.
Ratings:	DC 5V from Car charger

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	Adapter	N/A	CD289	N/A	N/A

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

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 (5745-5825MHz):

5745MHz-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency
20MHz	149	5745	153	5765
	157	5785	161	5805
	165	5825		
40MHz	151	5755	159	5795

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/ ax 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac/ ax 40 CH 151 / CH 159
Mode 3	Linking mode

Notes:

1. The measurements are performed at the highest, middle, lowest available channels.
2. The measurements are performed at all Bit Rate of Transmitter, the worst data was reported
3. The 802.11ax mode is investigated among different tones(26/52/106/242-tone RU channel), full resource units (RU), partial resource units. The partial RU has no higher power than full RU's, thus the full RU is chosen as main test configuration.

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

RF Function	Mode Or Modulation type	Power Class	Software For Testing
WIFI 5.1G	802.11a	Default	CMD
	802.11n20	Default	
	802.11n40	Default	
	802.11ac20	Default	
	802.11ac40	Default	
	802.11ax20	Default	
	802.11ax40	Default	

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 Technology Co., Ltd.
Address: Room 101M, Unit 1, Building1, Pengyuan, No.18, Lilang Road, Shanglilang, Nanwan Subdistrict, Longgang District, Shenzhen, Guangdong, China.
The site and apparatus are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-1:2019 other equivalent standards.
FCC Test Firm Registration Number: 754702
ANAB certificate registration number is: CN3479

5.2 Test Instrument Used

Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESCI	101421	2025.08.30	2026.08.29
Receiver	R&S	ESCI	101421	2026.08.24	2027.08.23
AMN	SCHWHRZBECK	NSLK8128	05152	2026.01.22	2027.01.21
AMN	SCHWHRZBECK	NSLK8127	8127739	2025.09.16	2026.09.15
Pulse Limiter	SCHWHRZBECK	VTSD 9561-F-N	00547	2025.08.30	2026.08.29
Pulse Limiter	SCHWHRZBECK	VTSD 9561-F-N	00547	2026.08.24	2027.08.23
Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Temperature & Humidity	Wetest	HTC-1	/	2026.08.24	2027.08.23
Software	EZ-EMC	Ver.EMC-CON 3A1	/	/	/

Radiated disturbance 2#					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Shielded room	ChengYu	9*6*6	/	2023.09.25	2026.09.24
Loop Antenna	Schwarzbeck	FMZB1519B	00014	2026.01.05	2027.01.04
Broadband antenna	SCHWHRZBECK	VULB9168	01620	2025.08.29	2026.08.28
Broadband antenna	SCHWHRZBECK	VULB9168	01620	2026.08.22	2027.08.21
Horn antenna(1 GHz -18GHz)	SCHWARZBECK	BBHA 9120 D	2792	2025.08.29	2026.08.28
Horn antenna(1	SCHWARZBECK	BBHA 9120 D	2792	2026.08.22	2027.08.21

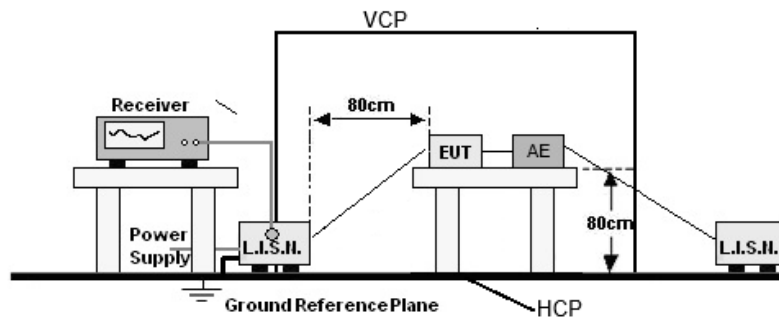
GHz -18GHz)					
Horn antenna (18 GHz -40GHz)	SCHWARZBECK	BBHA9170	00822	2025.12.29	2026.12.28
Receiver	R&S	ESR	1316	2025.08.30	2026.08.29
Receiver	R&S	ESR	1316	2026.08.24	2027.08.23
Spectrum Analyzer	R&S	FSV40	101328	2026.01.22	2027.01.21
Amplifier	SCHWHRZBECK	BBV9744	568	2025.08.30	2026.08.29
Amplifier	SCHWHRZBECK	BBV9744	568	2026.08.24	2027.08.23
Amplifier	EMC INSTRUMENTS CORPORATION	EMC0518A45SE E	EMT-SZ2 233	2025.08.30	2026.08.29
Amplifier	EMC INSTRUMENTS CORPORATION	EMC0518A45SE E	EMT-SZ2 233	2026.08.24	2027.08.23
Amplifier (18GHz-40GH z)	MITEQ	TTA1840-35-HG	2034381	2026.05.09	2027.05.08
RF cable 3# (9kHz-6GHz)	Yunyi	10M	/	2025.08.30	2026.08.29
RF cable 3# (9kHz-6GHz)	Yunyi	10M	/	2026.08.24	2027.08.23
RF cable 9# (9kHz-1GHz)	Yunyi	2M	/	2025.10.28	2026.10.27
RF cable 5# (1GHz -18GHz)	SKET	9M	18038626	2025.08.30	2026.08.29
RF cable 5# (1GHz -18GHz)	SKET	9M	18038626	2026.08.24	2027.08.23
RF cable 6# (1GHz -18GHz)	SKET	5M	#10	2025.09.05	2026.09.04
RF cable 6# (1GHz -18GHz)	SKET	5M	#10	2026.08.24	2027.08.23
RF cable 10# (18GHz-40GH z)	/	2M	2M	2026.05.09	2027.05.08
RF cable 11# (18GHz-40GH z)	/	2.5M	2.5M	2026.05.09	2027.05.08
Temperature & Humidity	Wetest	HTC-1	/	2025.09.05	2026.09.04
Temperature & Humidity	Wetest	HTC-1	/	2026.08.25	2027.08.24
Software	EZ-EMC	Ver.FA-03A2	/	/	/

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RF Conducted Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Spectrum Analyzer	Keysight	N9020A	MY51287403	2025.08.30	2026.08.29
Spectrum Analyzer	Keysight	N9020A	MY51287403	2026.08.24	2027.08.23
Signal Generator	Keysight	N5182A	MY50144088	2025.08.30	2026.08.29
Signal Generator	Keysight	N5182A	MY50144088	2026.08.24	2027.08.23
Power Sensor	Keysight	U2001	MY51250006	2025.10.28	2026.10.27
Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Temperature & Humidity	Wetest	HTC-1	/	2026.08.25	2027.08.24
Communication test set	R&S	CMW500	157483	2025.08.30	2026.08.29
Communication test set	R&S	CMW500	157483	2026.08.24	2027.08.23
Radio frequency control box	MWRFtest	MW100-RFCB	\	\	\
Software	MWRFtest	MTS 8310	V 3.0.0.0	\	\
Software	MWRFtest	MTS 8200	V 2.0.0.0	\	\
D.C. Power Supply	Elektro-Automatik GmbH & Co.KG	D-41747 Viersen	6230316	2025.09.30	2026.08.29
D.C. Power Supply	Elektro-Automatik GmbH & Co.KG	D-41747 Viersen	6230316	2026.08.24	2027.08.23
Temperature and humidity test chamber	Auchno	OJN-9606-408 L	19120183	2026.07.07	2027.07.06

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

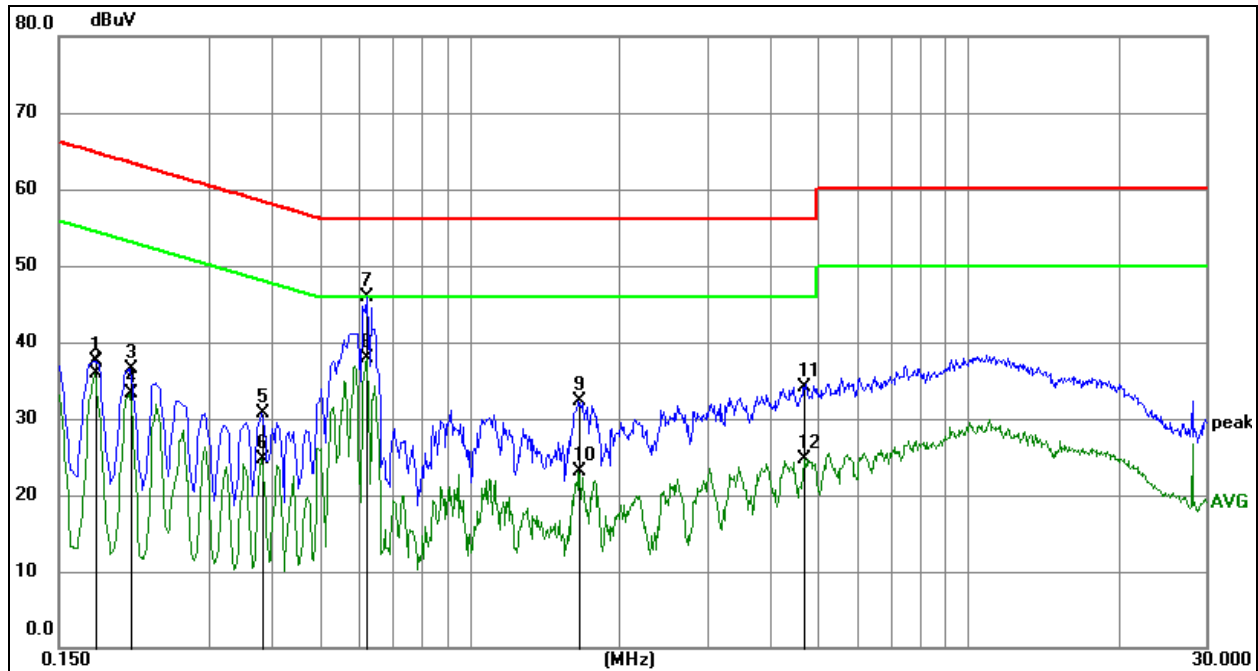
- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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:	20.4 °C	Relative Humidity:	56 %
Pressure:	101KPa	Test Voltage :	AC 120/60Hz
Test Mode:	Mode 3	Polarization :	L



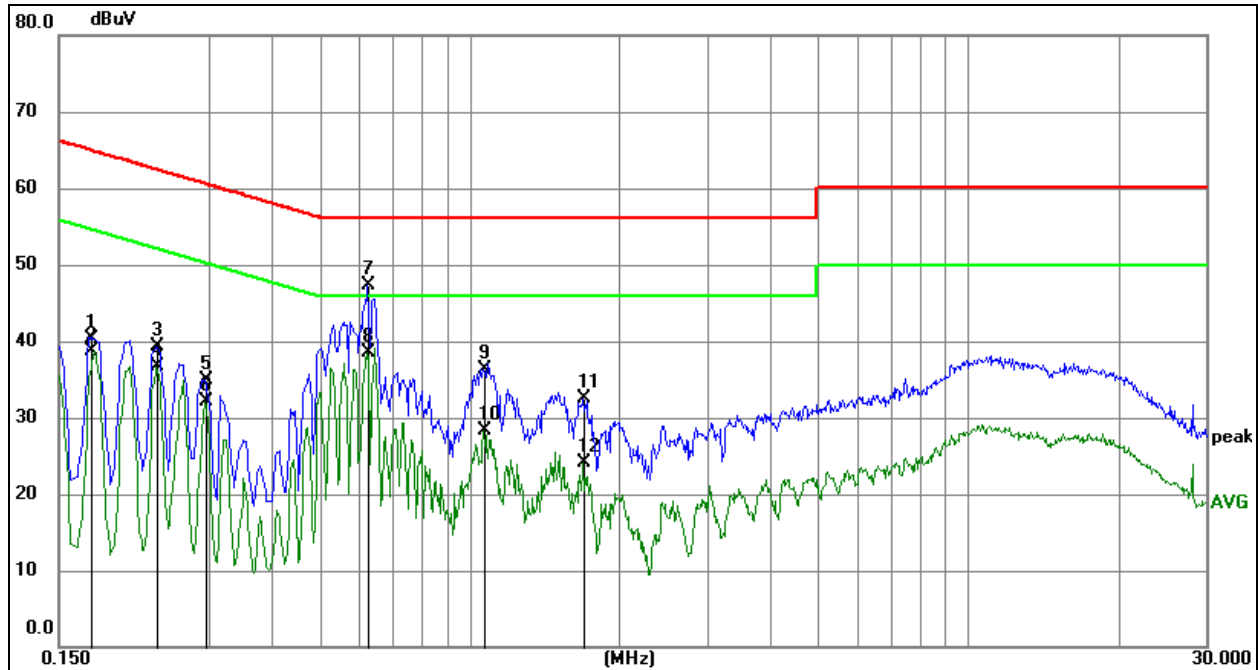
Remark:

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

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1770	26.87	10.70	37.57	64.63	-27.06	QP	P
2	0.1770	25.13	10.70	35.83	54.63	-18.80	AVG	P
3	0.2085	25.83	10.71	36.54	63.26	-26.72	QP	P
4	0.2085	22.62	10.71	33.33	53.26	-19.93	AVG	P
5	0.3840	20.03	10.71	30.74	58.19	-27.45	QP	P
6	0.3840	13.99	10.71	24.70	48.19	-23.49	AVG	P
7	0.6225	35.11	10.82	45.93	56.00	-10.07	QP	P
8 *	0.6225	26.99	10.82	37.81	46.00	-8.19	AVG	P
9	1.6620	21.17	11.15	32.32	56.00	-23.68	QP	P
10	1.6620	11.89	11.15	23.04	46.00	-22.96	AVG	P
11	4.6860	21.80	12.28	34.08	56.00	-21.92	QP	P
12	4.6860	12.50	12.28	24.78	46.00	-21.22	AVG	P

* Indicates the worst data.

Temperature:	20.4 °C	Relative Humidity:	56 %
Pressure:	101KPa	Test Voltage :	AC 120V/60Hz
Test Mode:	Mode 3	Polarization :	N



Remark:

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

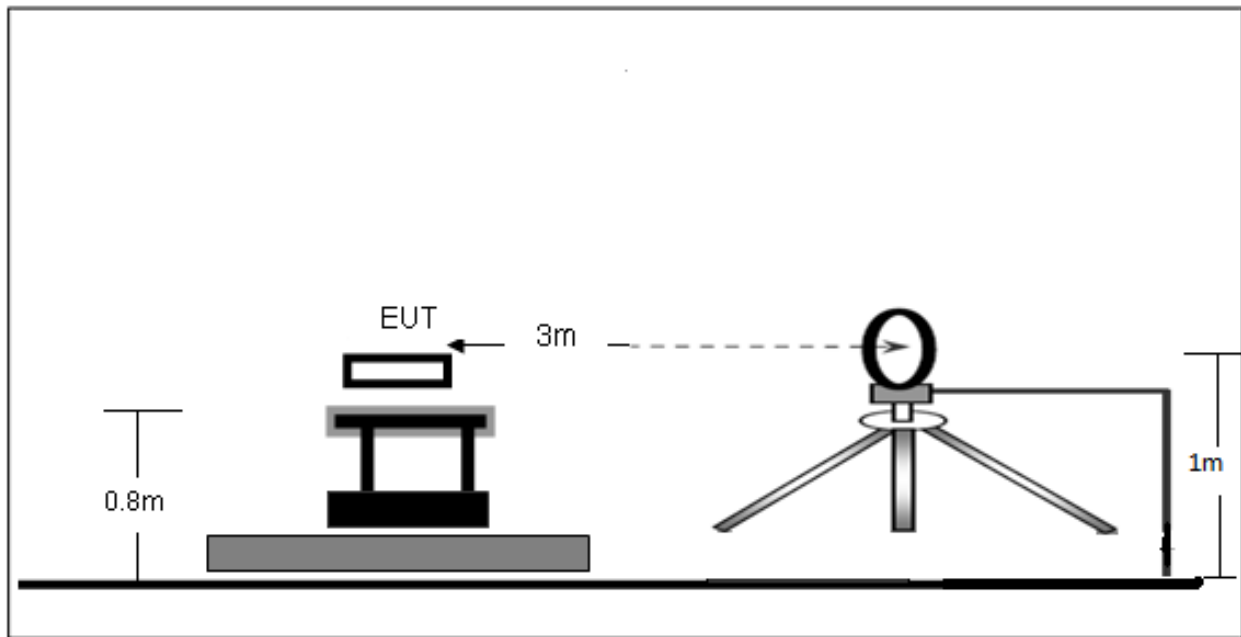
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1749	29.65	10.71	40.36	64.72	-24.36	QP	P
2	0.1749	28.09	10.71	38.80	54.72	-15.92	AVG	P
3	0.2355	28.69	10.71	39.40	62.25	-22.85	QP	P
4	0.2355	25.97	10.71	36.68	52.25	-15.57	AVG	P
5	0.2940	24.13	10.71	34.84	60.41	-25.57	QP	P
6	0.2940	21.42	10.71	32.13	50.41	-18.28	AVG	P
7	0.6270	36.46	10.83	47.29	56.00	-8.71	QP	P
8 *	0.6270	27.75	10.83	38.58	46.00	-7.42	AVG	P
9	1.0680	25.42	10.94	36.36	56.00	-19.64	QP	P
10	1.0680	17.43	10.94	28.37	46.00	-17.63	AVG	P
11	1.6935	21.35	11.09	32.44	56.00	-23.56	QP	P
12	1.6935	12.95	11.09	24.04	46.00	-21.96	AVG	P

* Indicates the worst data.

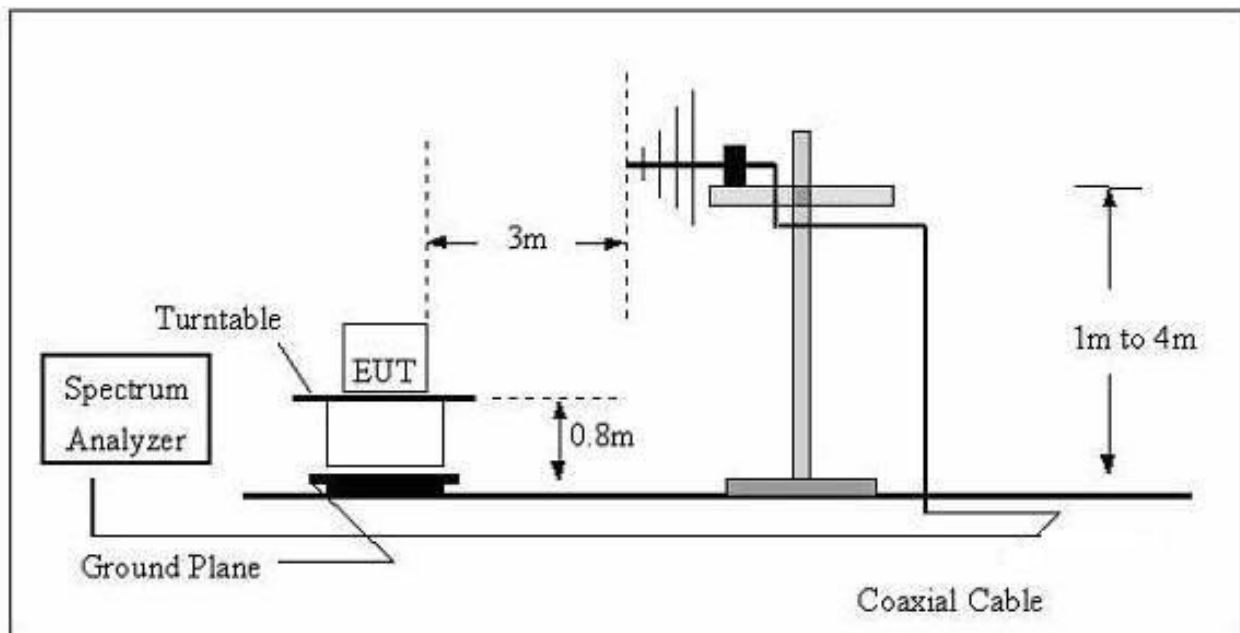
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

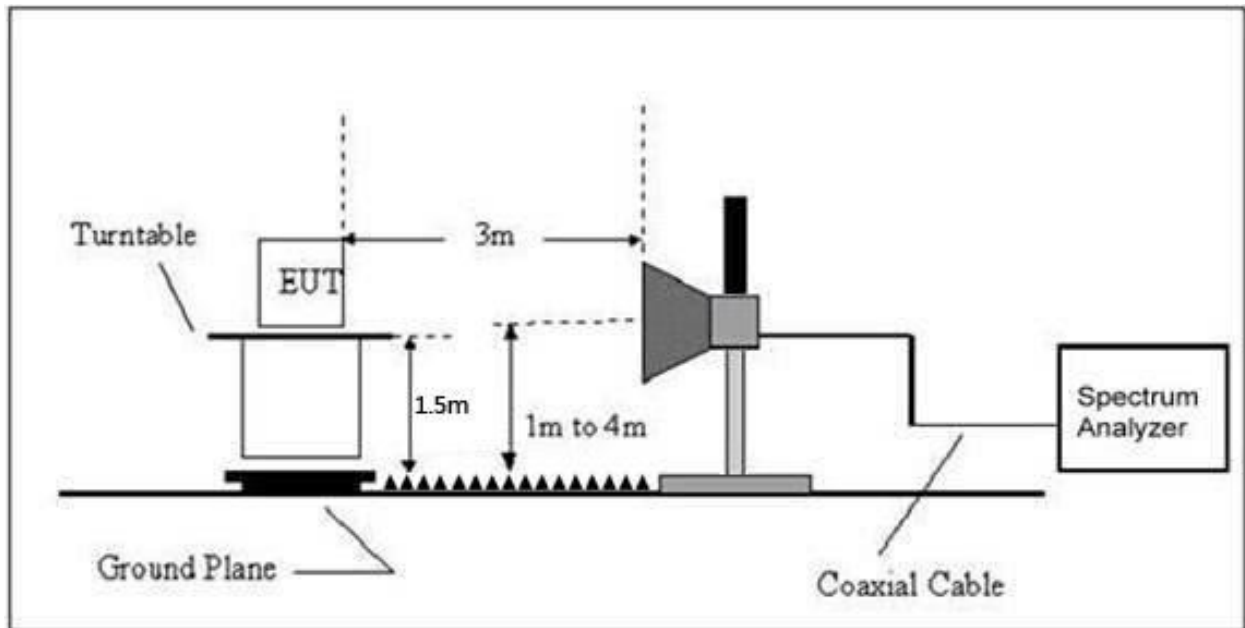
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 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.
- c. 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.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

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

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:	21 °C	Relative Humidity:	59 %
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 3	Polarization:	--

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

Note:

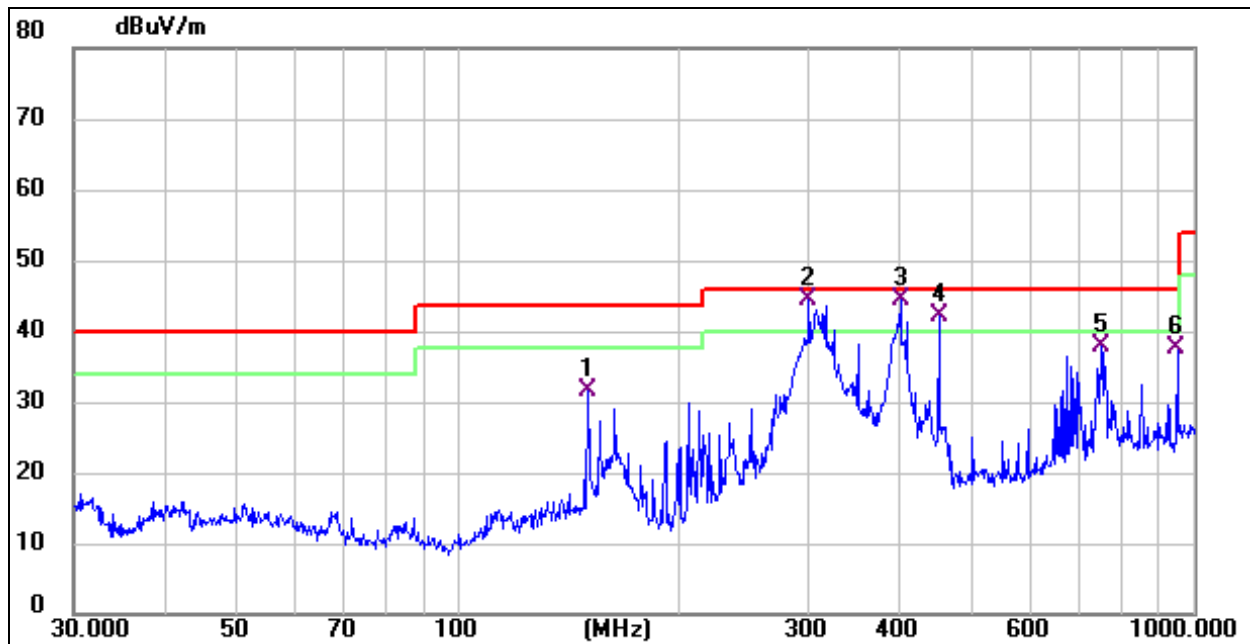
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

Between 30MHz – 1GHz

Temperature:	21 °C	Relative Humidity:	59 %
Pressure:	101 kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 3	Polarization :	Horizontal



Remark:

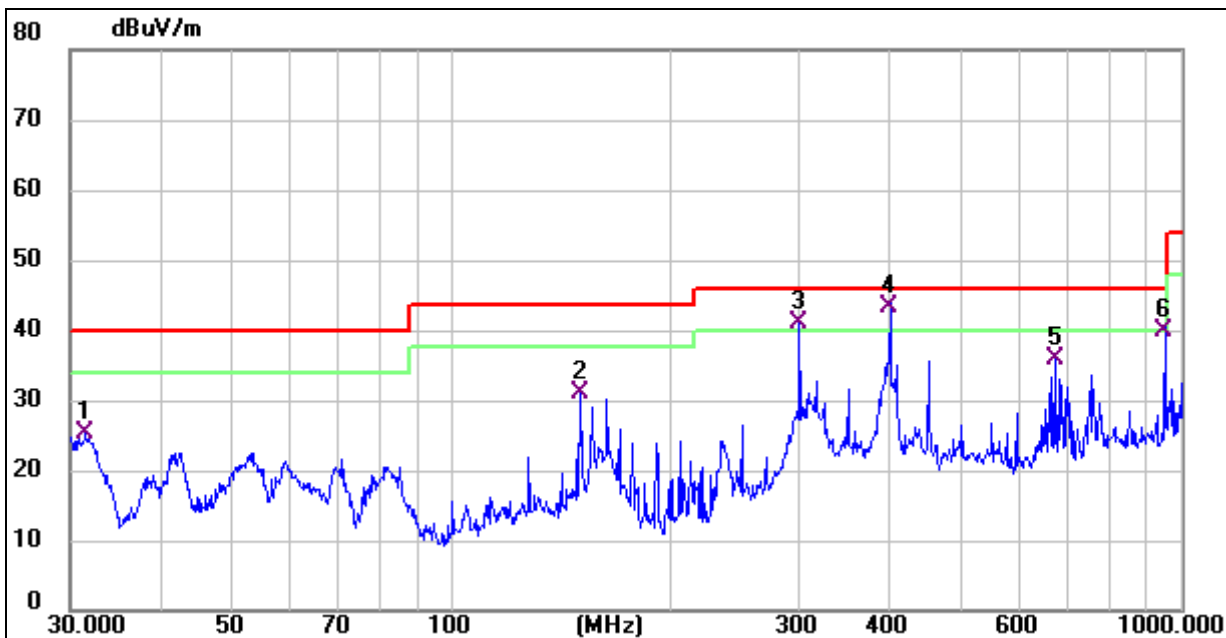
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	150.0108	41.61	-10.13	31.48	43.50	-12.02	QP
2 *	300.0163	55.97	-11.48	44.49	46.00	-1.51	QP
3 !	400.0575	53.16	-8.70	44.46	46.00	-1.54	QP
4 !	450.0290	48.82	-6.61	42.21	46.00	-3.79	QP
5	746.3476	40.52	-2.57	37.95	46.00	-8.05	QP
6	950.0927	36.83	0.80	37.63	46.00	-8.37	QP

* Indicates the worst data.

Temperature:	21 °C	Relative Humidity:	59 %
Pressure:	101 kPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 3	Polarization :	Vertical



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor) – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	31.4690	36.79	-11.56	25.23	40.00	-14.77	QP
2	150.0108	41.08	-10.13	30.95	43.50	-12.55	QP
3 !	299.9813	52.48	-11.48	41.00	46.00	-5.00	QP
4 *	400.0109	51.90	-8.70	43.20	46.00	-2.80	QP
5	671.9799	39.43	-3.48	35.95	46.00	-10.05	QP
6	950.0927	39.10	0.80	39.90	46.00	-6.10	QP

* Indicates the worst data.

Test Mode:	TX(5.8G) - 802.11a
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.182	71.05	-10.36	60.69	74	-13.31	Pk
Vertical	4679.182	59.67	-10.36	49.31	54	-4.69	AV
Vertical	11490.162	64.37	-0.19	64.18	68.2	-4.02	Pk
Vertical	11490.162	49.16	-0.19	48.97	54	-5.03	AV
Vertical	17235.044	57.43	4.28	61.71	68.2	-6.49	Pk
Vertical	17235.044	44.89	4.28	49.17	54	-4.83	AV
Horizontal	4679.083	72.60	-10.36	62.24	74	-11.76	Pk
Horizontal	4679.083	59.88	-10.36	49.52	54	-4.48	AV
Horizontal	11490.108	63.21	-0.19	63.02	68.2	-5.18	Pk
Horizontal	11490.108	49.54	-0.19	49.35	54	-4.65	AV
Horizontal	17235.098	59.64	4.28	63.92	68.2	-4.28	Pk
Horizontal	17235.098	44.74	4.28	49.02	54	-4.98	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.069	70.51	-10.20	60.31	74	-13.69	Pk
Vertical	4592.069	59.19	-10.20	48.99	54	-5.01	AV
Vertical	11570.040	61.52	-0.21	61.31	68.2	-6.89	Pk
Vertical	11570.040	49.41	-0.21	49.20	54	-4.80	AV
Vertical	17355.038	56.34	4.68	61.02	68.2	-7.18	Pk
Vertical	17355.038	44.60	4.68	49.28	54	-4.72	AV
Horizontal	4592.163	71.54	-10.20	61.34	74	-12.66	Pk
Horizontal	4592.163	59.20	-10.20	49.00	54	-5.00	AV
Horizontal	11570.077	63.78	-0.21	63.57	68.2	-4.63	Pk
Horizontal	11570.077	49.75	-0.21	49.54	54	-4.46	AV
Horizontal	17355.011	56.52	4.68	61.20	68.2	-7.00	Pk
Horizontal	17355.011	44.67	4.68	49.35	54	-4.65	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.142	74.42	-7.08	67.34	68.2	-0.86	Pk
Vertical	6039.142	59.08	-7.08	52.00	54	-2.00	AV
Vertical	11650.144	63.37	-0.50	62.87	74	-11.13	Pk
Vertical	11650.144	49.39	-0.50	48.89	54	-5.11	AV
Vertical	17475.161	55.96	4.77	60.73	68.2	-7.47	Pk
Vertical	17475.161	44.53	4.77	49.30	54	-4.70	AV
Horizontal	6039.158	71.57	-7.08	64.49	68.2	-3.71	Pk
Horizontal	6039.158	59.65	-7.08	52.57	54	-1.43	AV
Horizontal	11650.070	64.22	-0.50	63.72	74	-10.28	Pk
Horizontal	11650.070	49.48	-0.50	48.98	54	-5.02	AV
Horizontal	17475.192	55.87	4.77	60.64	68.2	-7.56	Pk
Horizontal	17475.192	44.47	4.77	49.24	54	-4.76	AV

Note: 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).

Correct Factor =Antenna Factor + Cable Loss - Preamp Factor

Over = Reading Level + Correct Factor - Limits.

Test Mode:	TX(5.8G) - 802.11n-HT20
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.034	73.04	-10.36	62.68	74	-11.32	Pk
Vertical	4679.034	59.97	-10.36	49.61	54	-4.39	AV
Vertical	11490.190	61.34	-0.19	61.15	68.2	-7.05	Pk
Vertical	11490.190	49.43	-0.19	49.24	54	-4.76	AV
Vertical	17235.139	55.65	4.28	59.93	68.2	-8.27	Pk
Vertical	17235.139	44.25	4.28	48.53	54	-5.47	AV
Horizontal	4679.126	70.63	-10.36	60.27	74	-13.73	Pk
Horizontal	4679.126	59.96	-10.36	49.60	54	-4.40	AV
Horizontal	11490.039	64.77	-0.19	64.58	68.2	-3.62	Pk
Horizontal	11490.039	49.28	-0.19	49.09	54	-4.91	AV
Horizontal	17235.078	57.34	4.28	61.62	68.2	-6.58	Pk
Horizontal	17235.078	44.79	4.28	49.07	54	-4.93	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.167	74.89	-10.20	64.69	74	-9.31	Pk
Vertical	4592.167	59.40	-10.20	49.20	54	-4.80	AV
Vertical	11570.170	61.48	-0.21	61.27	68.2	-6.93	Pk
Vertical	11570.170	49.81	-0.21	49.60	54	-4.40	AV
Vertical	17355.061	58.23	4.68	62.91	68.2	-5.29	Pk
Vertical	17355.061	44.22	4.68	48.90	54	-5.10	AV
Horizontal	4592.058	72.15	-10.20	61.95	74	-12.05	Pk
Horizontal	4592.058	59.07	-10.20	48.87	54	-5.13	AV
Horizontal	11570.159	63.79	-0.21	63.58	68.2	-4.62	Pk
Horizontal	11570.159	49.86	-0.21	49.65	54	-4.35	AV
Horizontal	17355.130	57.50	4.68	62.18	68.2	-6.02	Pk
Horizontal	17355.130	44.82	4.68	49.50	54	-4.50	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.133	72.41	-7.08	65.33	68.2	-2.87	Pk
Vertical	6039.133	59.89	-7.08	52.81	54	-1.19	AV
Vertical	11650.125	63.63	-0.50	63.13	74	-10.87	Pk
Vertical	11650.125	49.09	-0.50	48.59	54	-5.41	AV
Vertical	17475.149	56.26	4.77	61.03	68.2	-7.17	Pk
Vertical	17475.149	44.36	4.77	49.13	54	-4.87	AV
Horizontal	6039.133	70.70	-7.08	63.62	68.2	-4.58	Pk
Horizontal	6039.133	59.70	-7.08	52.62	54	-1.38	AV
Horizontal	11650.183	63.47	-0.50	62.97	74	-11.03	Pk
Horizontal	11650.183	49.03	-0.50	48.53	54	-5.47	AV
Horizontal	17475.047	58.12	4.77	62.89	68.2	-5.31	Pk
Horizontal	17475.047	44.51	4.77	49.28	54	-4.72	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).

Correct Factor =Antenna Factor + Cable Loss - Preamp Factor

Over = Reading Level + Correct Factor - Limits

Test Mode:	TX(5.8G) - 802.11n-HT40
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.045	73.38	-10.36	63.02	74	-10.98	AV
Vertical	4679.045	59.70	-10.36	49.34	54	-4.66	Pk
Vertical	11510.078	62.34	-0.26	62.08	74	-11.92	AV
Vertical	11510.078	49.07	-0.26	48.81	54	-5.19	Pk
Vertical	17265.089	58.91	4.35	63.26	68.2	-4.94	AV
Vertical	17265.089	44.36	4.35	48.71	54	-5.29	Pk
Horizontal	4679.086	72.89	-10.36	62.53	74	-11.47	AV
Horizontal	4679.086	59.04	-10.36	48.68	54	-5.32	Pk
Horizontal	11510.168	61.89	-0.26	61.63	74	-12.37	AV
Horizontal	11510.168	49.85	-0.26	49.59	54	-4.41	Pk
Horizontal	17265.147	56.98	4.35	61.33	68.2	-6.87	AV
Horizontal	17265.147	44.54	4.35	48.89	54	-5.11	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.160	73.89	-7.08	66.81	68.2	-1.39	Pk
Vertical	6039.160	59.64	-7.08	52.56	54	-1.44	AV
Vertical	11590.027	61.45	-0.20	61.25	74	-12.75	Pk
Vertical	11590.027	49.35	-0.20	49.15	54	-4.85	AV
Vertical	17385.144	57.66	4.81	62.47	68.2	-5.73	Pk
Vertical	17385.144	44.39	4.81	49.20	54	-4.80	AV
Horizontal	6039.108	71.08	-7.08	64.00	68.2	-4.20	Pk
Horizontal	6039.108	59.54	-7.08	52.46	54	-1.54	AV
Horizontal	11590.123	62.65	-0.20	62.45	74	-11.55	Pk
Horizontal	11590.123	49.77	-0.20	49.57	54	-4.43	AV
Horizontal	17385.093	57.02	4.81	61.83	68.2	-6.37	Pk
Horizontal	17385.093	44.89	4.81	49.70	54	-4.30	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).
Correct Factor =Antenna Factor + Cable Loss - Preamp Factor
Over = Reading Level + Correct Factor - Limits

Test Mode:	TX(5.8G) - 802.11ac-HT20
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.048	74.32	-10.36	63.96	74	-10.04	Pk
Vertical	4679.048	59.45	-10.36	49.09	54	-4.91	AV
Vertical	11490.024	64.48	-0.19	64.29	68.2	-3.91	Pk
Vertical	11490.024	49.64	-0.19	49.45	54	-4.55	AV
Vertical	17235.075	59.69	4.28	63.97	68.2	-4.23	Pk
Vertical	17235.075	44.56	4.28	48.84	54	-5.16	AV
Horizontal	4679.037	74.59	-10.36	64.23	74	-9.77	Pk
Horizontal	4679.037	59.07	-10.36	48.71	54	-5.29	AV
Horizontal	11490.194	61.17	-0.19	60.98	68.2	-7.22	Pk
Horizontal	11490.194	49.69	-0.19	49.50	54	-4.50	AV
Horizontal	17235.008	57.00	4.28	61.28	68.2	-6.92	Pk
Horizontal	17235.008	44.38	4.28	48.66	54	-5.34	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.126	73.87	-10.20	63.67	74	-10.33	Pk
Vertical	4592.126	59.19	-10.20	48.99	54	-5.01	AV
Vertical	11570.178	63.65	-0.21	63.44	68.2	-4.76	Pk
Vertical	11570.178	49.81	-0.21	49.60	54	-4.40	AV
Vertical	17355.187	58.68	4.68	63.36	68.2	-4.84	Pk
Vertical	17355.187	44.68	4.68	49.36	54	-4.64	AV
Horizontal	4592.048	73.39	-10.20	63.19	74	-10.81	Pk
Horizontal	4592.048	59.55	-10.20	49.35	54	-4.65	AV
Horizontal	11570.001	64.20	-0.21	63.99	68.2	-4.21	Pk
Horizontal	11570.001	49.83	-0.21	49.62	54	-4.38	AV
Horizontal	17355.109	59.10	4.68	63.78	68.2	-4.42	Pk
Horizontal	17355.109	44.22	4.68	48.90	54	-5.10	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.115	72.35	-7.08	65.27	68.2	-2.93	Pk
Vertical	6039.115	59.65	-7.08	52.57	54	-1.43	AV
Vertical	11650.031	60.13	-0.50	59.63	74	-14.37	Pk
Vertical	11650.031	49.59	-0.50	49.09	54	-4.91	AV
Vertical	17475.149	57.10	4.77	61.87	68.2	-6.33	Pk
Vertical	17475.149	44.29	4.77	49.06	54	-4.94	AV
Horizontal	6039.124	72.61	-7.08	65.53	68.2	-2.67	Pk
Horizontal	6039.124	59.28	-7.08	52.20	54	-1.80	AV
Horizontal	11650.079	62.28	-0.50	61.78	74	-12.22	Pk
Horizontal	11650.079	49.29	-0.50	48.79	54	-5.21	AV
Horizontal	17475.008	55.65	4.77	60.42	68.2	-7.78	Pk
Horizontal	17475.008	44.60	4.77	49.37	54	-4.63	AV

Note: 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).

Correct Factor =Antenna Factor + Cable Loss - Preamp Factor

Over = Reading Level + Correct Factor - Limits

Test Mode:	TX(5.8G) - 802.11ac-HT40
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.014	70.52	-10.36	60.16	74	-13.84	AV
Vertical	4679.014	59.67	-10.36	49.31	54	-4.69	Pk
Vertical	11510.003	63.80	-0.26	63.54	74	-10.46	AV
Vertical	11510.003	49.28	-0.26	49.02	54	-4.98	Pk
Vertical	17265.188	58.82	4.35	63.17	68.2	-5.03	AV
Vertical	17265.188	44.69	4.35	49.04	54	-4.96	Pk
Horizontal	4679.133	73.71	-10.36	63.35	74	-10.65	AV
Horizontal	4679.133	59.03	-10.36	48.67	54	-5.33	Pk
Horizontal	11510.127	60.84	-0.26	60.58	74	-13.42	AV
Horizontal	11510.127	49.09	-0.26	48.83	54	-5.17	Pk
Horizontal	17265.055	56.10	4.35	60.45	68.2	-7.75	AV
Horizontal	17265.055	44.44	4.35	48.79	54	-5.21	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.132	71.09	-7.08	64.01	68.2	-4.19	Pk
Vertical	6039.132	59.95	-7.08	52.87	54	-1.13	AV
Vertical	11590.131	63.10	-0.20	62.90	74	-11.10	Pk
Vertical	11590.131	49.71	-0.20	49.51	54	-4.49	AV
Vertical	17385.128	56.52	4.81	61.33	68.2	-6.87	Pk
Vertical	17385.128	44.73	4.81	49.54	54	-4.46	AV
Horizontal	6039.163	70.72	-7.08	63.64	68.2	-4.56	Pk
Horizontal	6039.163	59.32	-7.08	52.24	54	-1.76	AV
Horizontal	11590.075	62.05	-0.20	61.85	74	-12.15	Pk
Horizontal	11590.075	49.26	-0.20	49.06	54	-4.94	AV
Horizontal	17385.032	58.40	4.81	63.21	68.2	-4.99	Pk
Horizontal	17385.032	44.64	4.81	49.45	54	-4.55	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).
Correct Factor =Antenna Factor + Cable Loss - Preamp Factor
Over = Reading Level + Correct Factor - Limits

Test Mode:	TX(5.8G) - 802.11ax-HE20
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
Vertical	4679.083	73.52	-10.36	63.16	74	-10.84	Pk
Vertical	4679.083	59.66	-10.36	49.30	54	-4.70	AV
Vertical	11490.025	62.64	-0.19	62.45	68.2	-5.75	Pk
Vertical	11490.025	49.89	-0.19	49.70	54	-4.30	AV
Vertical	17235.025	57.44	4.28	61.72	68.2	-6.48	Pk
Vertical	17235.025	44.20	4.28	48.48	54	-5.52	AV
Horizontal	4679.171	73.77	-10.36	63.41	74	-10.59	Pk
Horizontal	4679.171	59.47	-10.36	49.11	54	-4.89	AV
Horizontal	11490.160	64.84	-0.19	64.65	68.2	-3.55	Pk
Horizontal	11490.160	49.22	-0.19	49.03	54	-4.97	AV
Horizontal	17235.008	55.24	4.28	59.52	68.2	-8.68	Pk
Horizontal	17235.008	44.71	4.28	48.99	54	-5.01	AV
middle Channel (5785 MHz)-Above 1G							
Vertical	4592.090	73.48	-10.20	63.28	74	-10.72	Pk
Vertical	4592.090	59.06	-10.20	48.86	54	-5.14	AV
Vertical	11570.148	61.56	-0.21	61.35	68.2	-6.85	Pk
Vertical	11570.148	49.87	-0.21	49.66	54	-4.34	AV
Vertical	17355.057	56.29	4.68	60.97	68.2	-7.23	Pk
Vertical	17355.057	44.74	4.68	49.42	54	-4.58	AV
Horizontal	4592.010	74.69	-10.20	64.49	74	-9.51	Pk
Horizontal	4592.010	59.29	-10.20	49.09	54	-4.91	AV
Horizontal	11570.140	64.92	-0.21	64.71	68.2	-3.49	Pk
Horizontal	11570.140	49.27	-0.21	49.06	54	-4.94	AV
Horizontal	17355.100	59.97	4.68	64.65	68.2	-3.55	Pk
Horizontal	17355.100	44.27	4.68	48.95	54	-5.05	AV
High Channel (5825 MHz)-Above 1G							
Vertical	6039.025	70.70	-7.08	63.62	68.2	-4.58	Pk
Vertical	6039.025	59.32	-7.08	52.24	54	-1.76	AV
Vertical	11650.056	61.89	-0.50	61.39	74	-12.61	Pk
Vertical	11650.056	49.98	-0.50	49.48	54	-4.52	AV
Vertical	17475.135	58.07	4.77	62.84	68.2	-5.36	Pk
Vertical	17475.135	44.15	4.77	48.92	54	-5.08	AV
Horizontal	6039.079	70.26	-7.08	63.18	68.2	-5.02	Pk
Horizontal	6039.079	59.78	-7.08	52.70	54	-1.30	AV
Horizontal	11650.029	61.41	-0.50	60.91	74	-13.09	Pk
Horizontal	11650.029	49.08	-0.50	48.58	54	-5.42	AV
Horizontal	17475.097	58.93	4.77	63.70	68.2	-4.50	Pk
Horizontal	17475.097	44.69	4.77	49.46	54	-4.54	AV

Note: 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).

Correct Factor =Antenna Factor + Cable Loss - Preamp Factor

Over = Reading Level + Correct Factor - Limits

Test Mode:	TX(5.8G) - 802.11ax-HE40
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Polar	Frequency	Reading Level	Correct Factor	Measurement	Limits	Over	Detector Type
(H/V)	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5755 MHz)-Above 1G							
Vertical	4679.167	74.94	-10.36	64.58	74	-9.42	AV
Vertical	4679.167	59.22	-10.36	48.86	54	-5.14	Pk
Vertical	11510.001	64.98	-0.26	64.72	74	-9.28	AV
Vertical	11510.001	49.96	-0.26	49.70	54	-4.30	Pk
Vertical	17265.055	57.51	4.35	61.86	68.2	-6.34	AV
Vertical	17265.055	44.26	4.35	48.61	54	-5.39	Pk
Horizontal	4679.119	74.19	-10.36	63.83	74	-10.17	AV
Horizontal	4679.119	59.74	-10.36	49.38	54	-4.62	Pk
Horizontal	11510.186	64.63	-0.26	64.37	74	-9.63	AV
Horizontal	11510.186	49.54	-0.26	49.28	54	-4.72	Pk
Horizontal	17265.147	55.51	4.35	59.86	68.2	-8.34	AV
Horizontal	17265.147	44.96	4.35	49.31	54	-4.69	AV
middle Channel (5795 MHz)-Above 1G							
Vertical	6039.066	70.58	-7.08	63.50	68.2	-4.70	Pk
Vertical	6039.066	59.69	-7.08	52.61	54	-1.39	AV
Vertical	11590.119	64.55	-0.20	64.35	74	-9.65	Pk
Vertical	11590.119	49.97	-0.20	49.77	54	-4.23	AV
Vertical	17385.178	55.84	4.81	60.65	68.2	-7.55	Pk
Vertical	17385.178	44.27	4.81	49.08	54	-4.92	AV
Horizontal	6039.022	72.21	-7.08	65.13	68.2	-3.07	Pk
Horizontal	6039.022	59.24	-7.08	52.16	54	-1.84	AV
Horizontal	11590.191	61.69	-0.20	61.49	74	-12.51	Pk
Horizontal	11590.191	49.87	-0.20	49.67	54	-4.33	AV
Horizontal	17385.098	59.95	4.81	64.76	68.2	-3.44	Pk
Horizontal	17385.098	44.78	4.81	49.59	54	-4.41	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).
Correct Factor =Antenna Factor + Cable Loss - Preamp Factor
Over = Reading Level + Correct Factor - Limits

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 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.

For the band 5.725-5.85 GHz

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 ≥ 3 RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/\text{RBW})$ 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

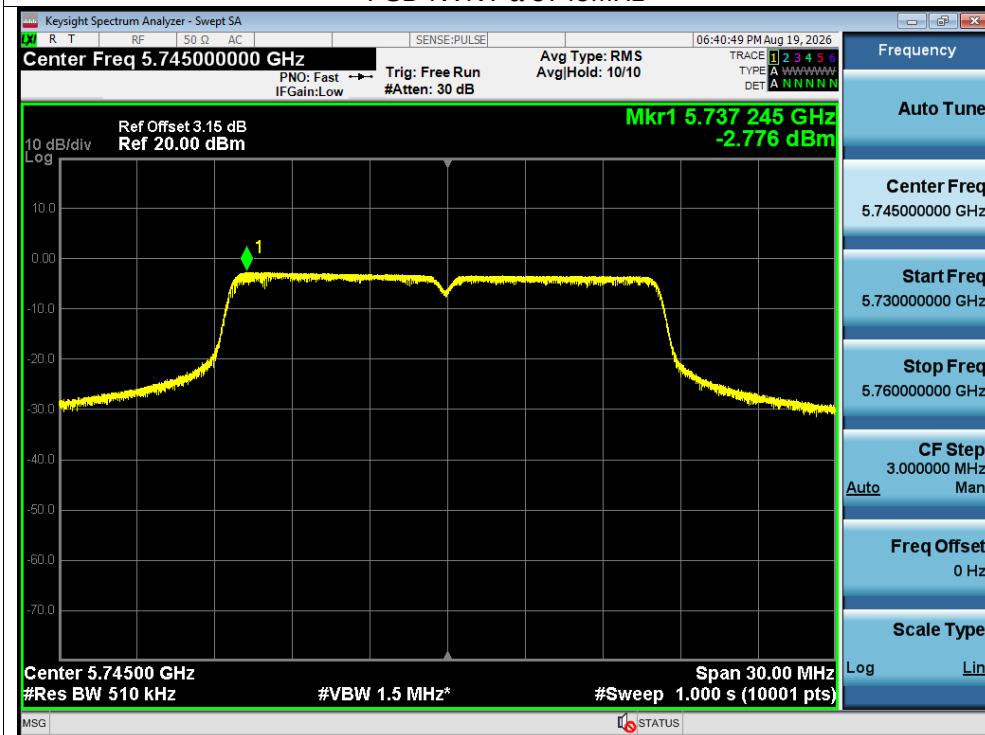
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	(5745-5825MHz)		

Condition	Mode	Frequency (MHz)	Conducted PSD (dBm/510kHz)	Conducted PSD (dBm/500kHz)	Limit (dBm/500kHz)	Verdict
NVNT	a	5745	-2.78	-2.866	30	Pass
NVNT	a	5785	-4.03	-4.116	30	Pass
NVNT	a	5825	-5.25	-5.336	30	Pass
NVNT	n20	5745	-3.45	-3.536	30	Pass
NVNT	n20	5785	-4.78	-4.866	30	Pass
NVNT	n20	5825	-6	-6.086	30	Pass
NVNT	n40	5755	-7.35	-7.436	30	Pass
NVNT	n40	5795	-8.83	-8.916	30	Pass
NVNT	ac20	5745	-2.72	-2.806	30	Pass
NVNT	ac20	5785	-4.82	-4.906	30	Pass
NVNT	ac20	5825	-5.62	-5.706	30	Pass
NVNT	ac40	5755	-5.67	-5.756	30	Pass
NVNT	ac40	5795	-8.8	-8.886	30	Pass
NVNT	ax20	5745	-3.53	-3.616	30	Pass
NVNT	ax20	5785	-4.44	-4.526	30	Pass
NVNT	ax20	5825	-5.62	-5.706	30	Pass
NVNT	ax40	5755	-7.88	-7.966	30	Pass
NVNT	ax40	5795	-8.78	-8.866	30	Pass

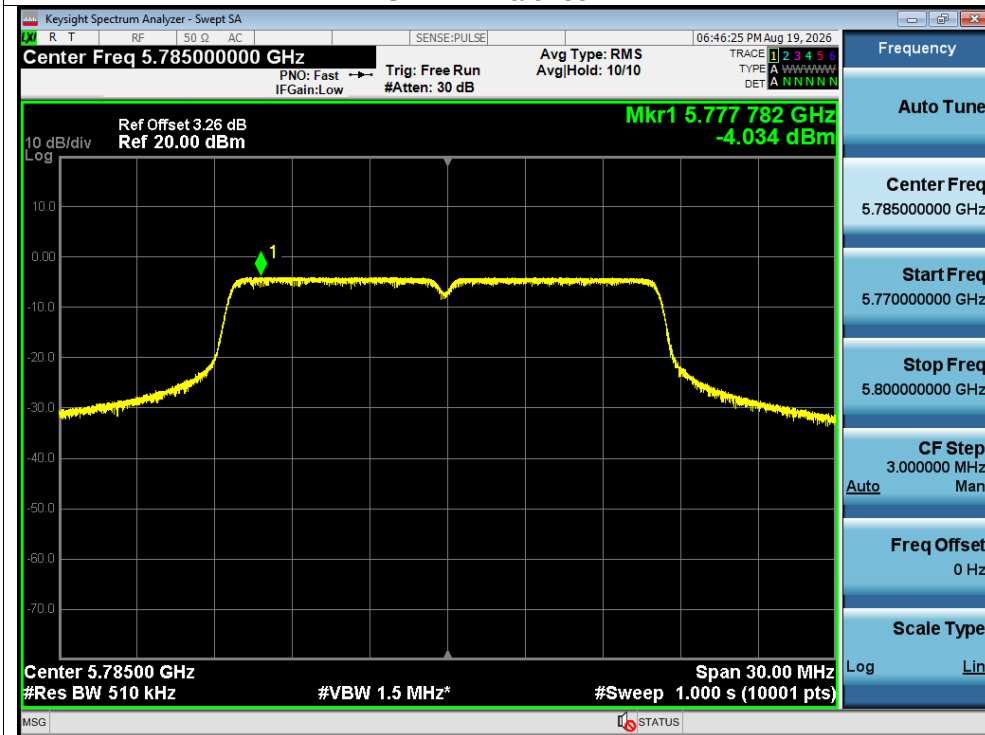
Note: Correction Factor = $10\log(500\text{KHz}/\text{RBW in measurement}) = -0.086$

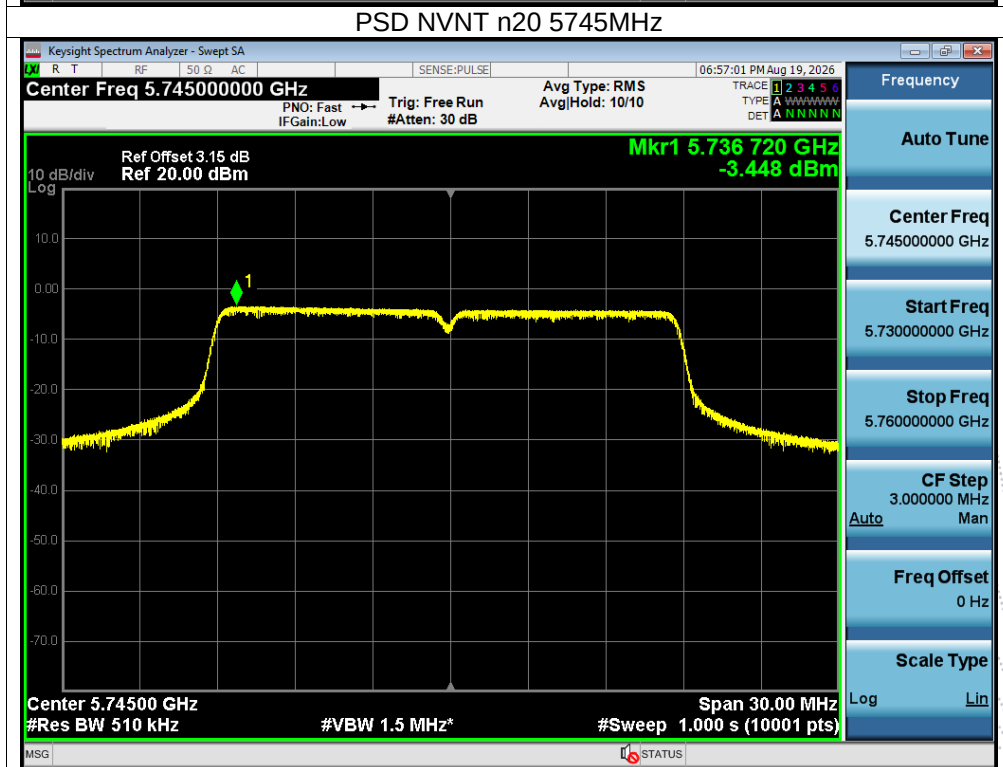
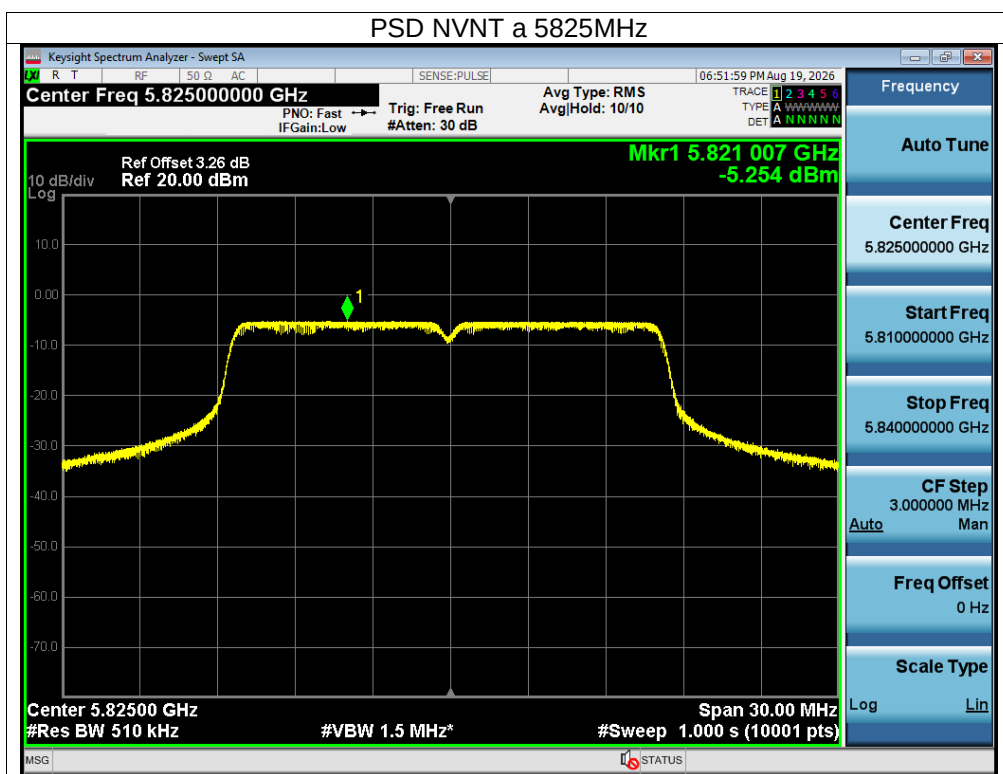
Test Graphs

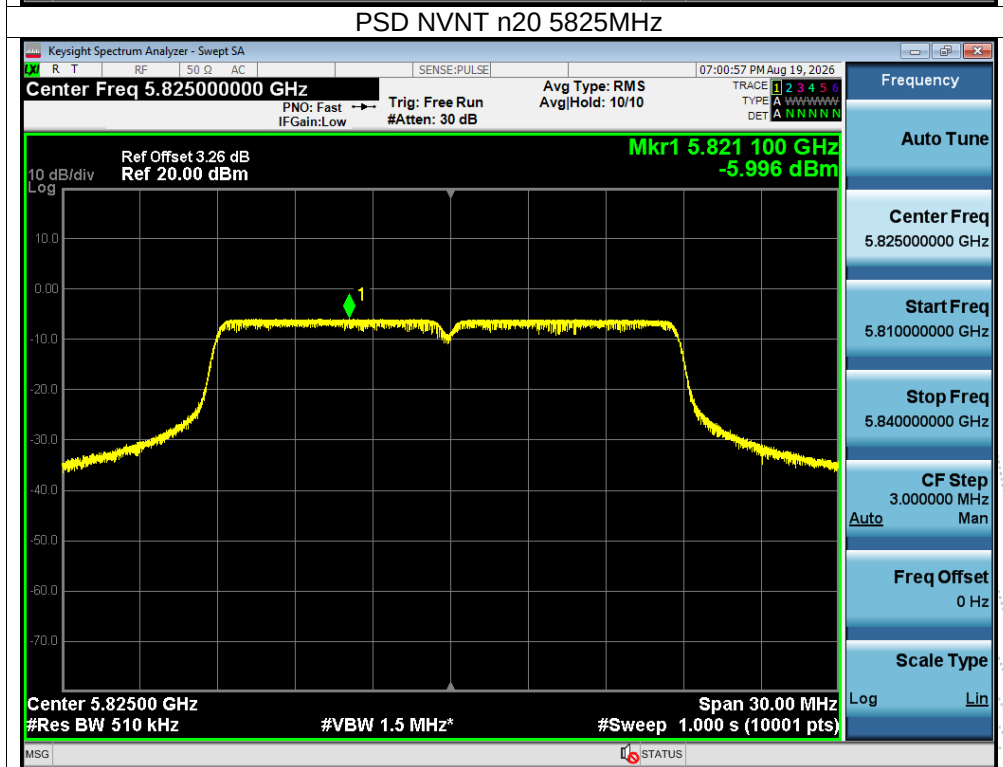
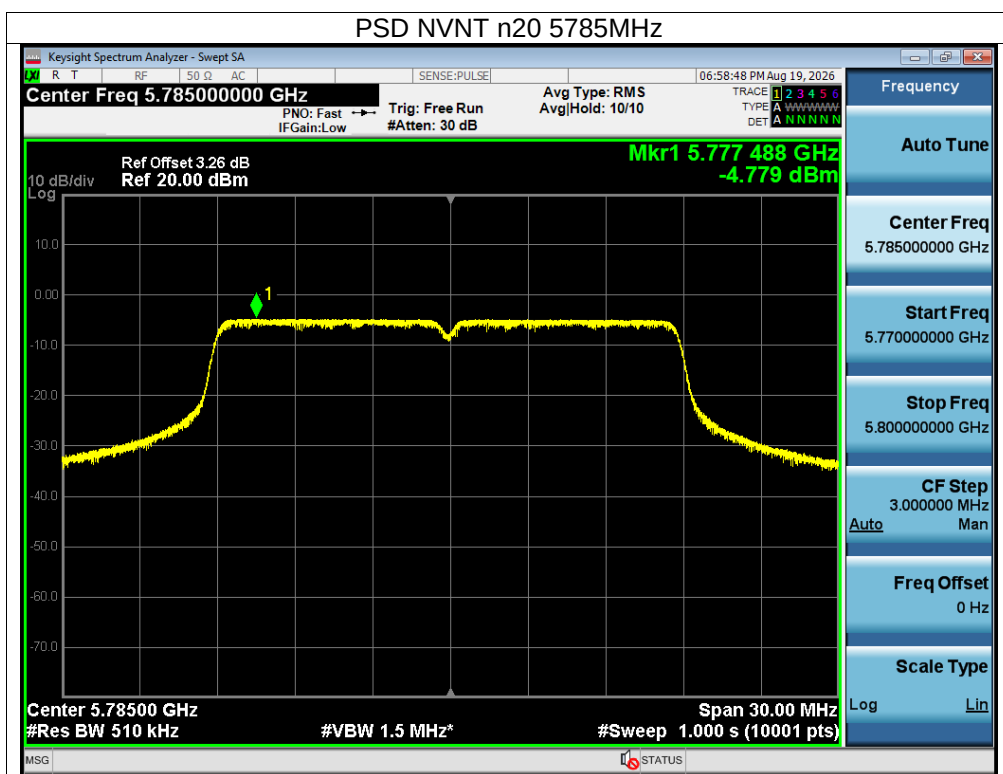
PSD NVNT a 5745MHz

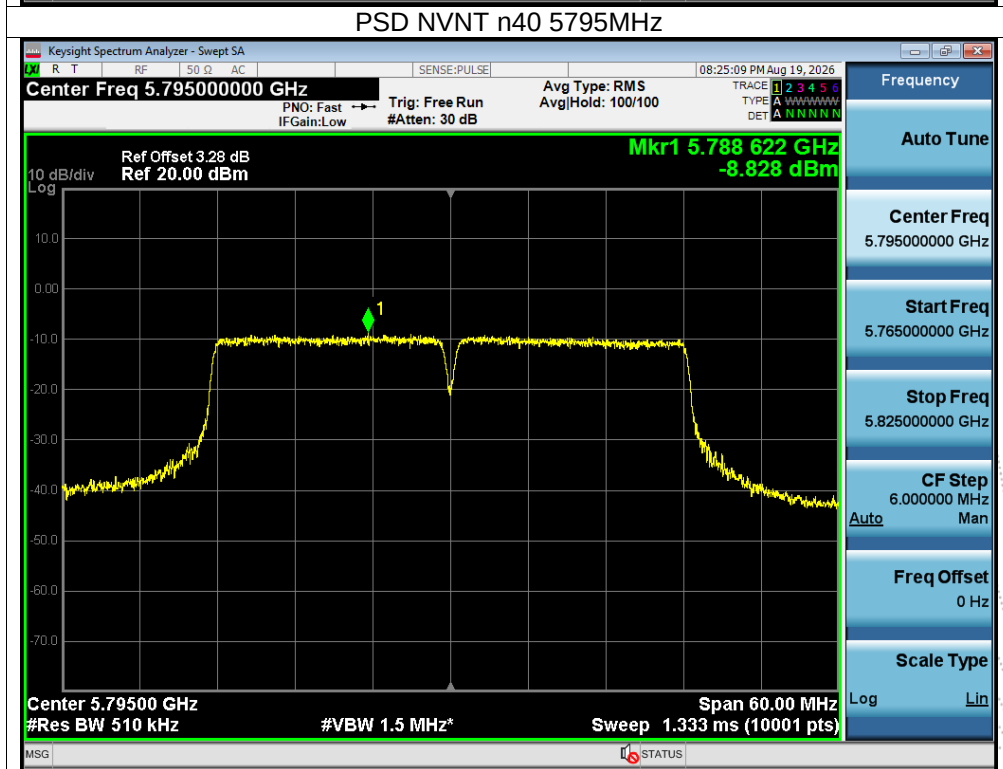
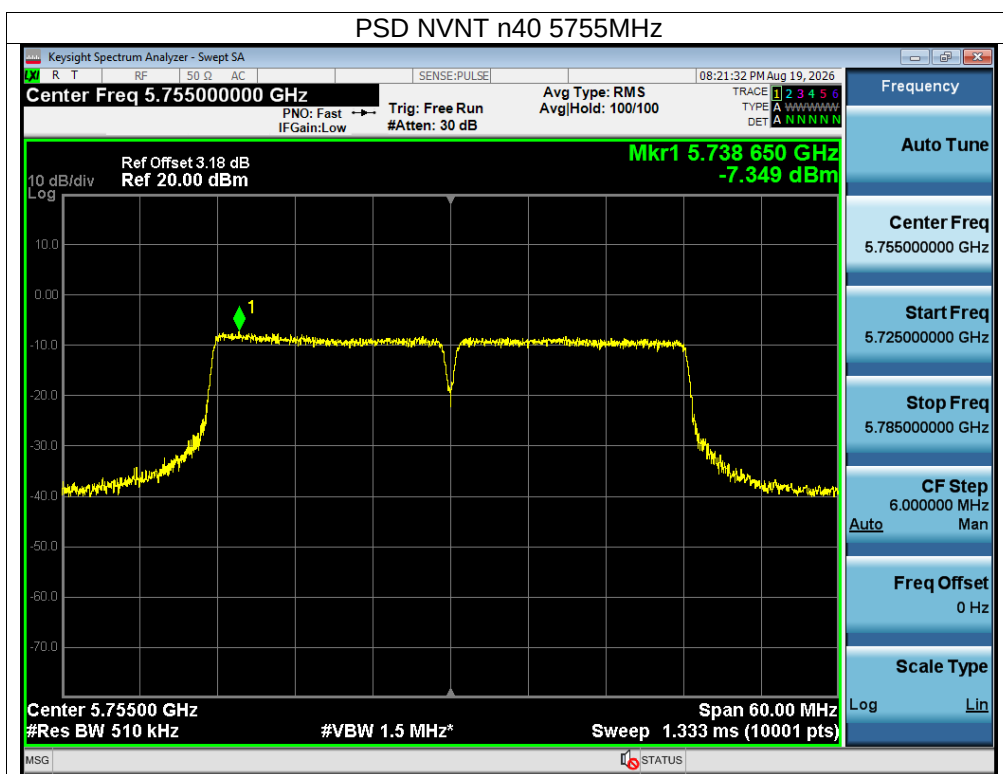


PSD NVNT a 5785MHz

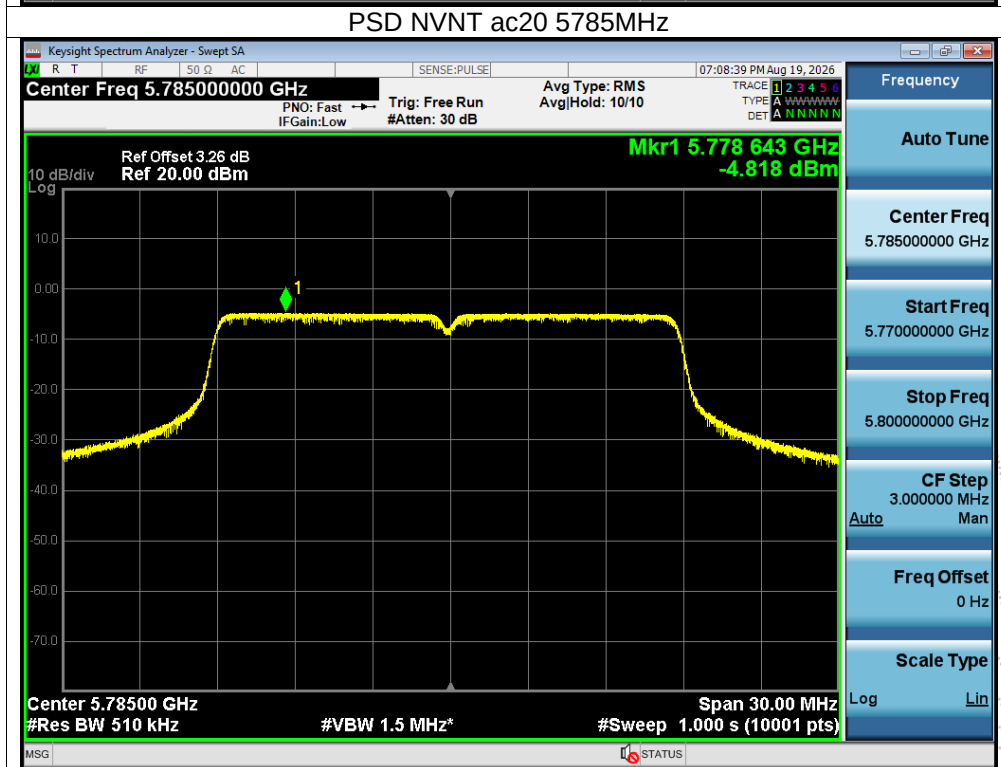
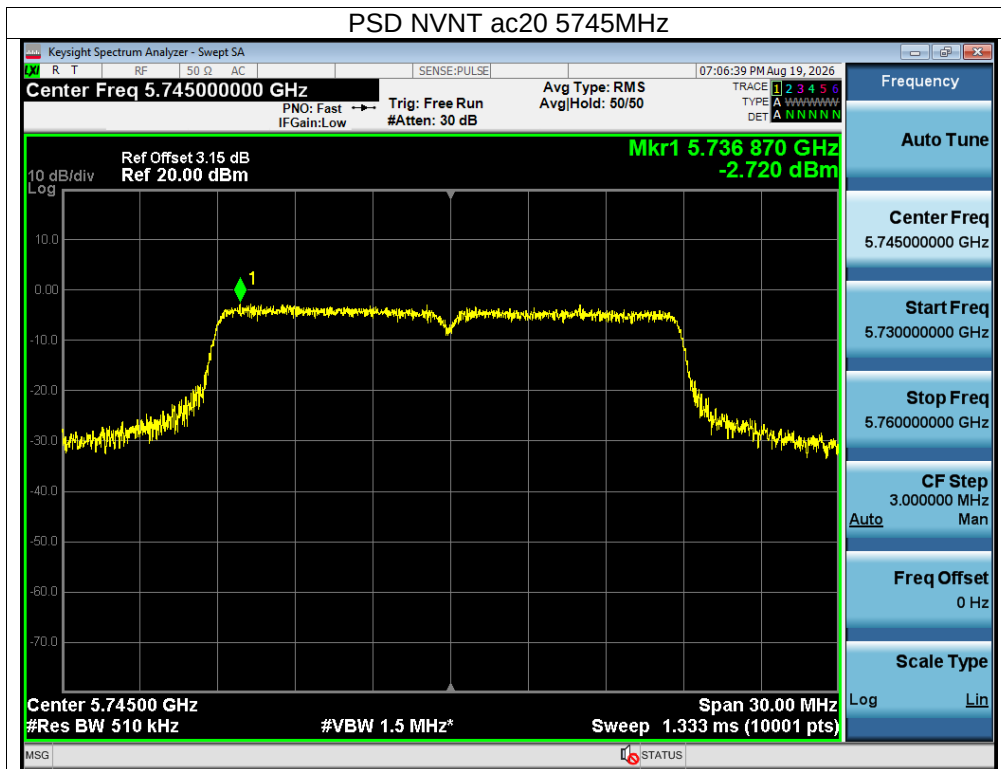


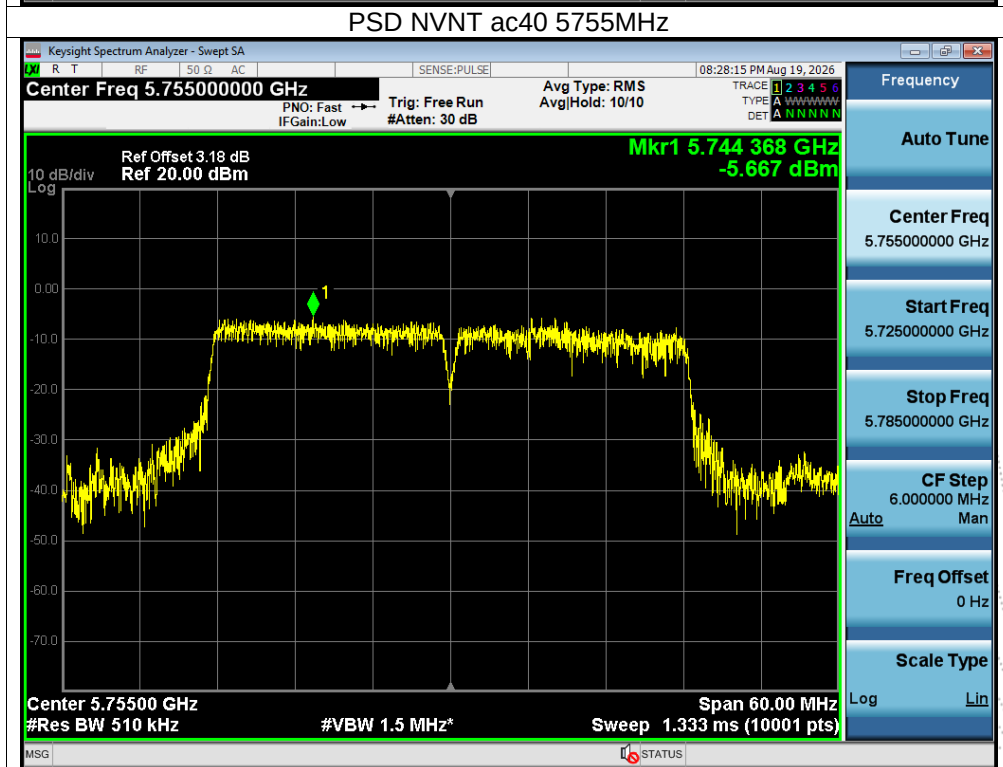
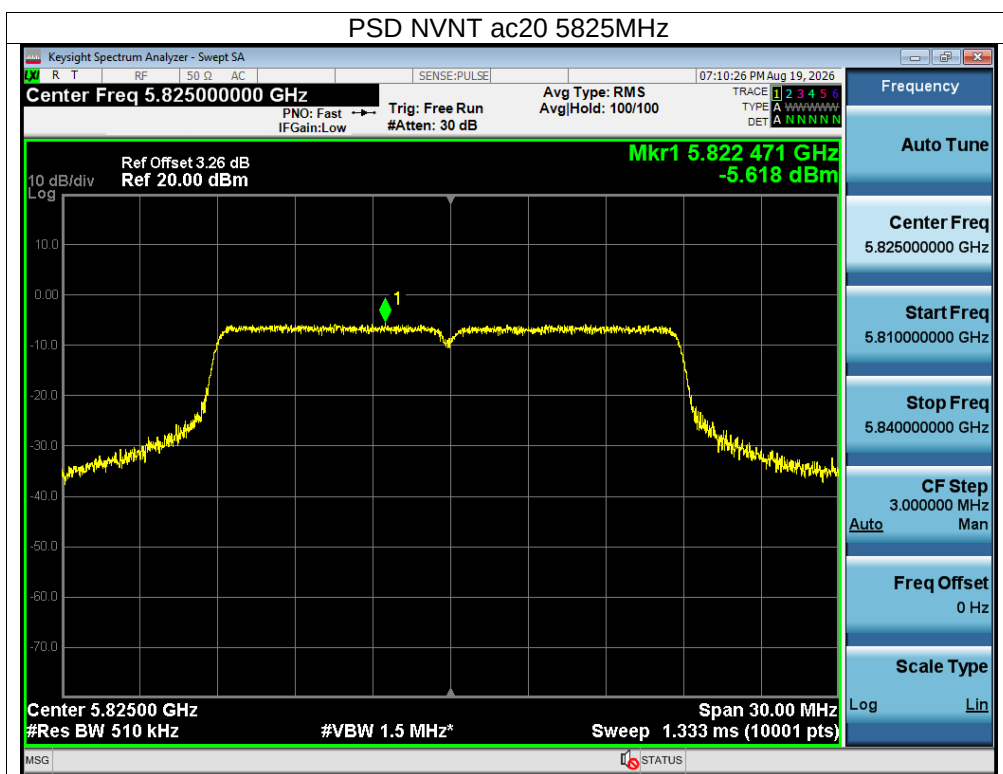


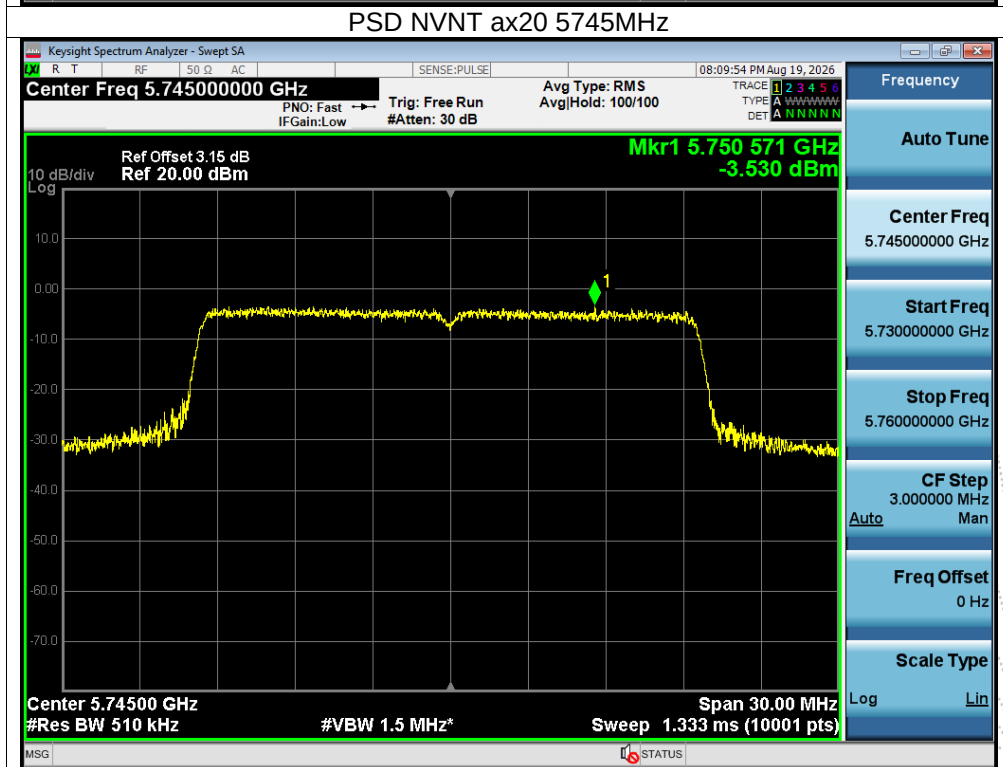
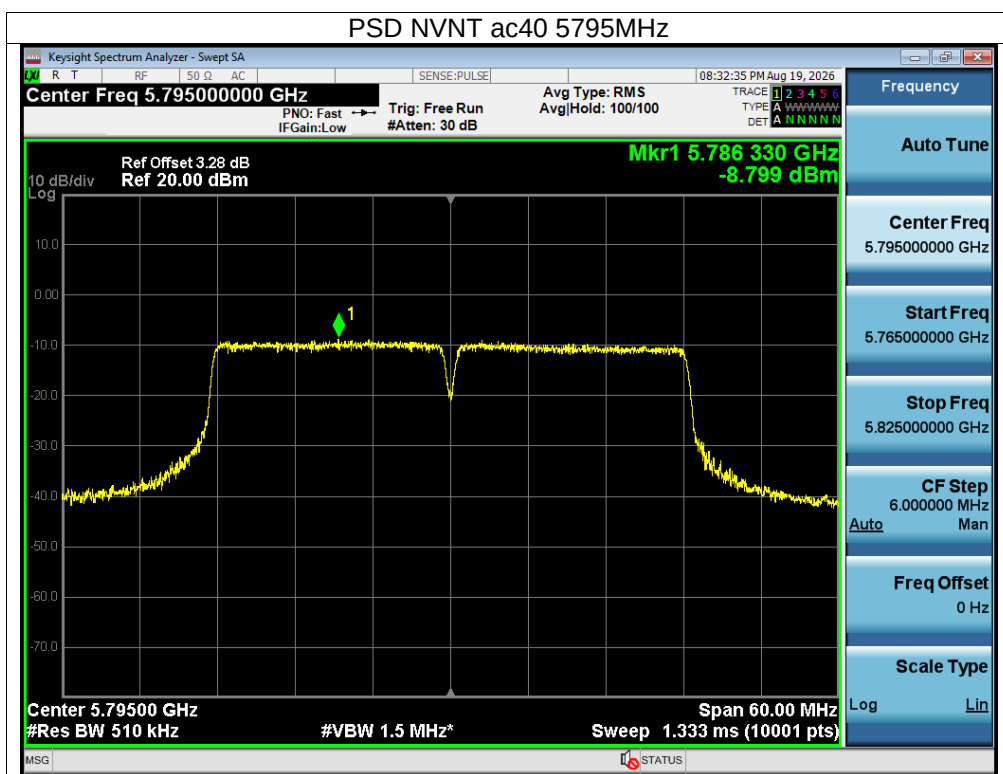


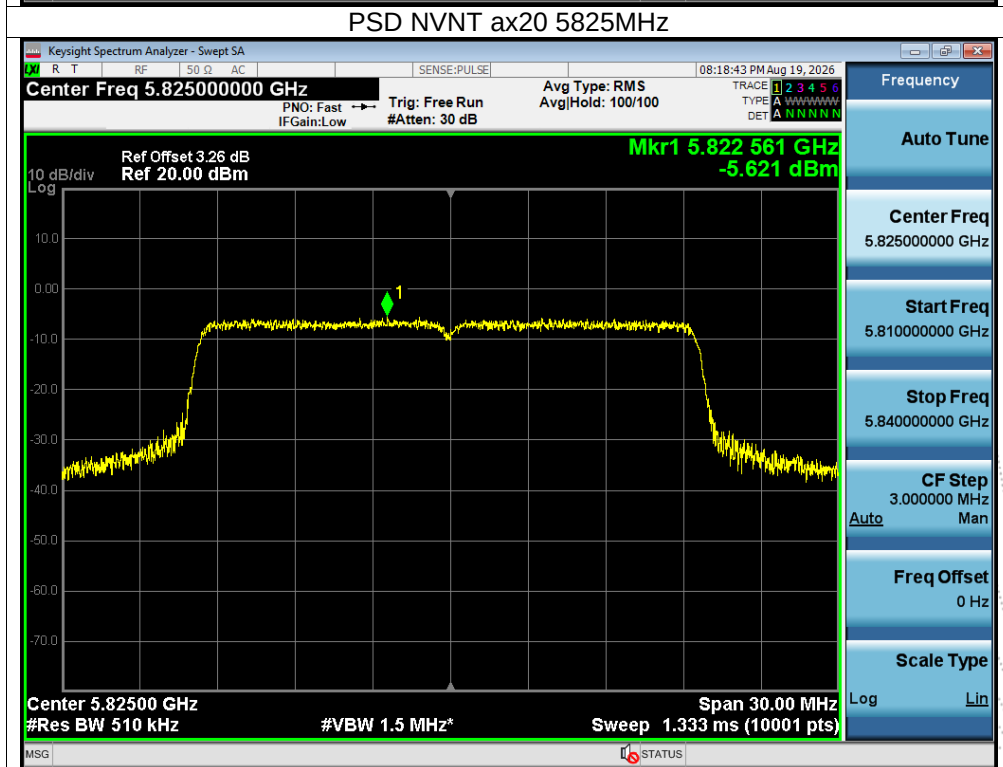
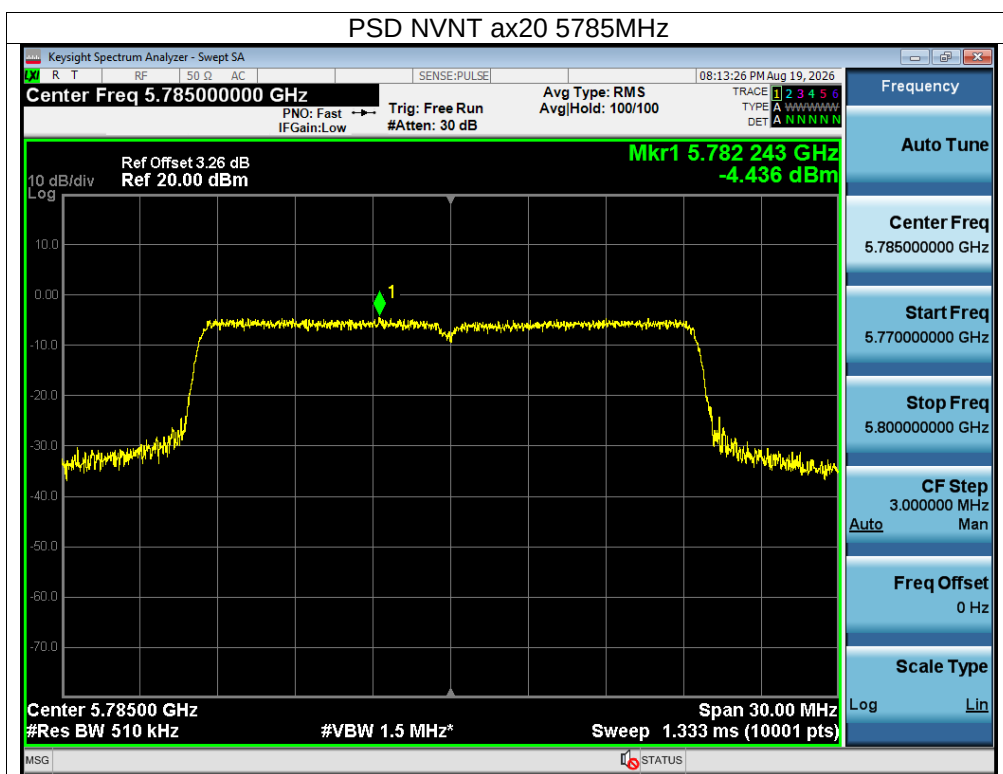


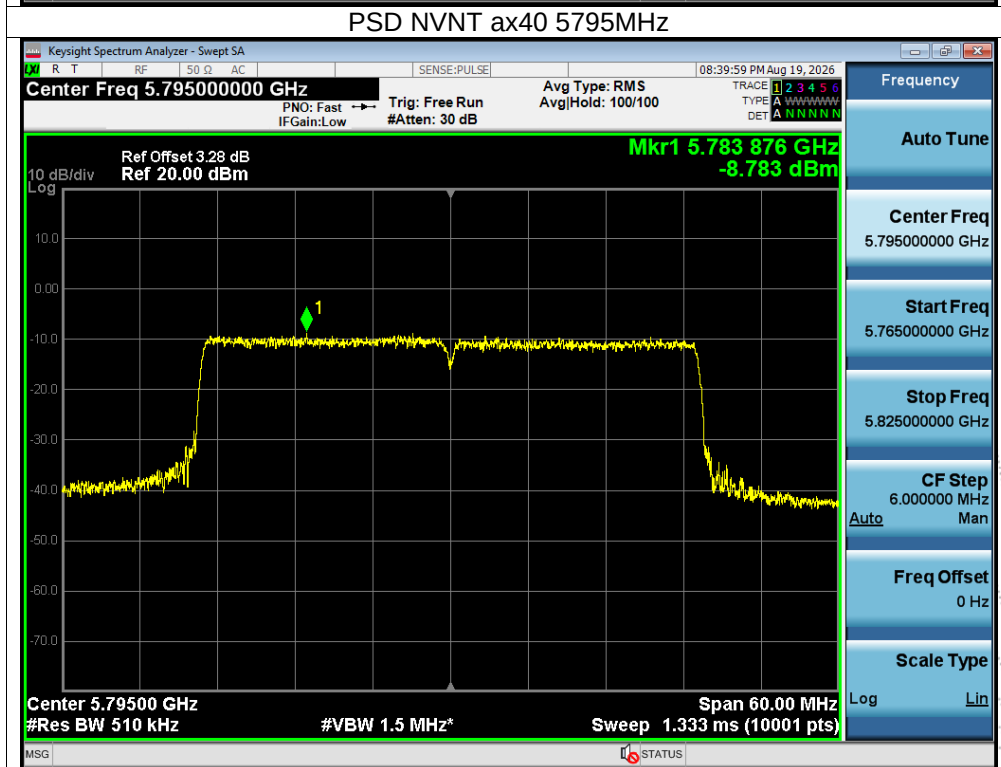
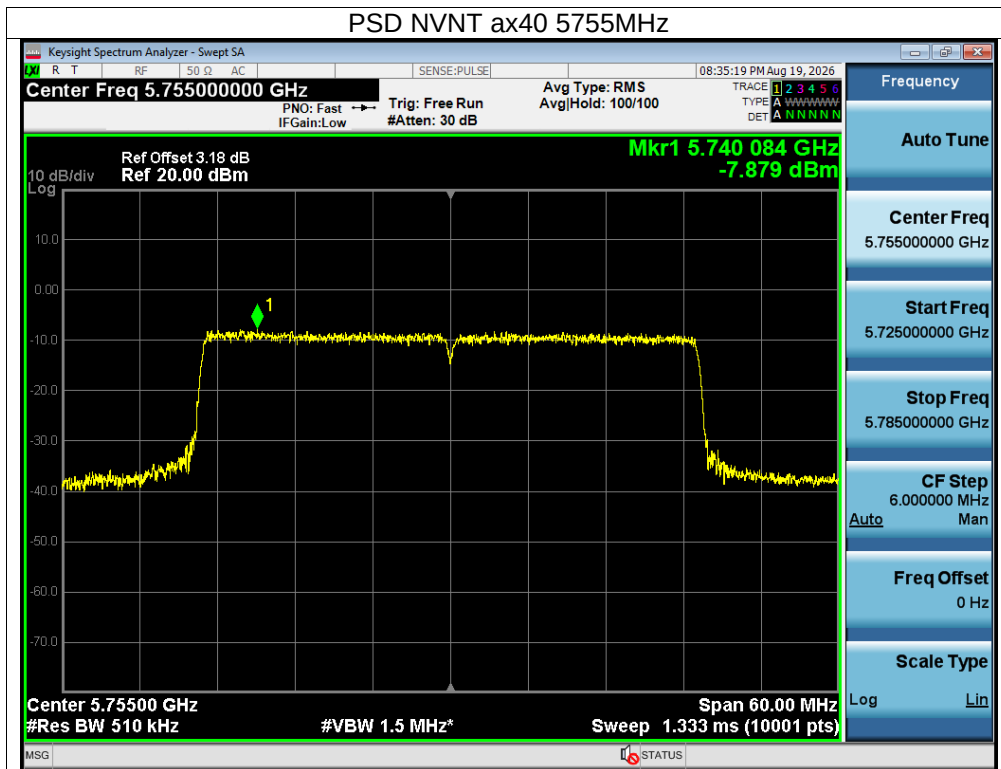
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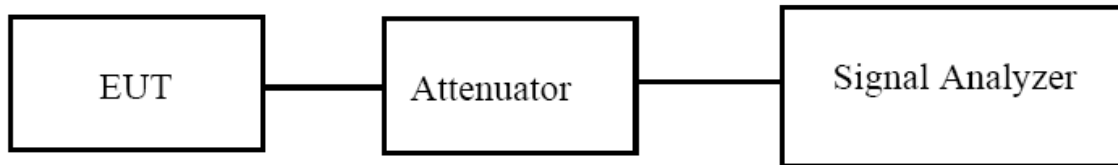






9. 26dB & 6dB & 99% Emission Bandwidth

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 peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

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.

Emission bandwidth for the band 5.725 GHz to 5.85 GHz

The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max-hold.
- e) Sweep = No faster than coupled (auto) time.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

9.4 EUT Operating Conditions

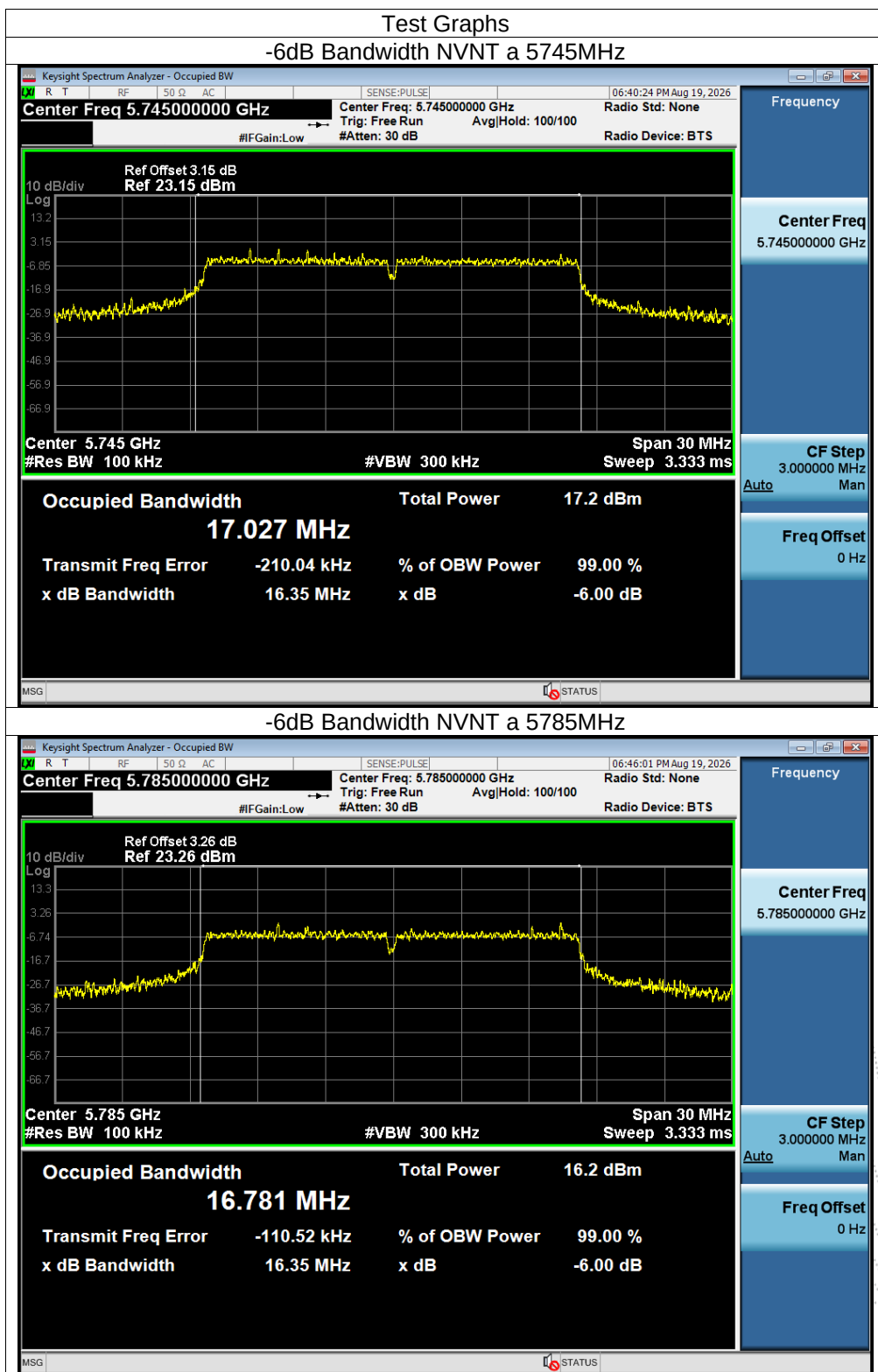
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

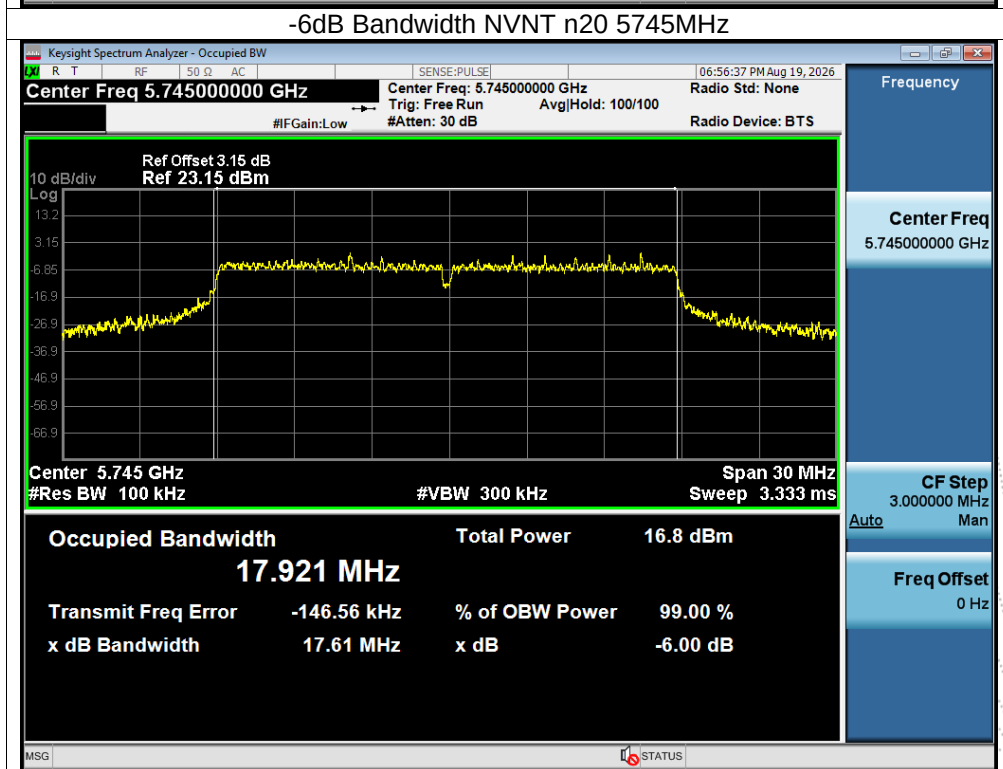
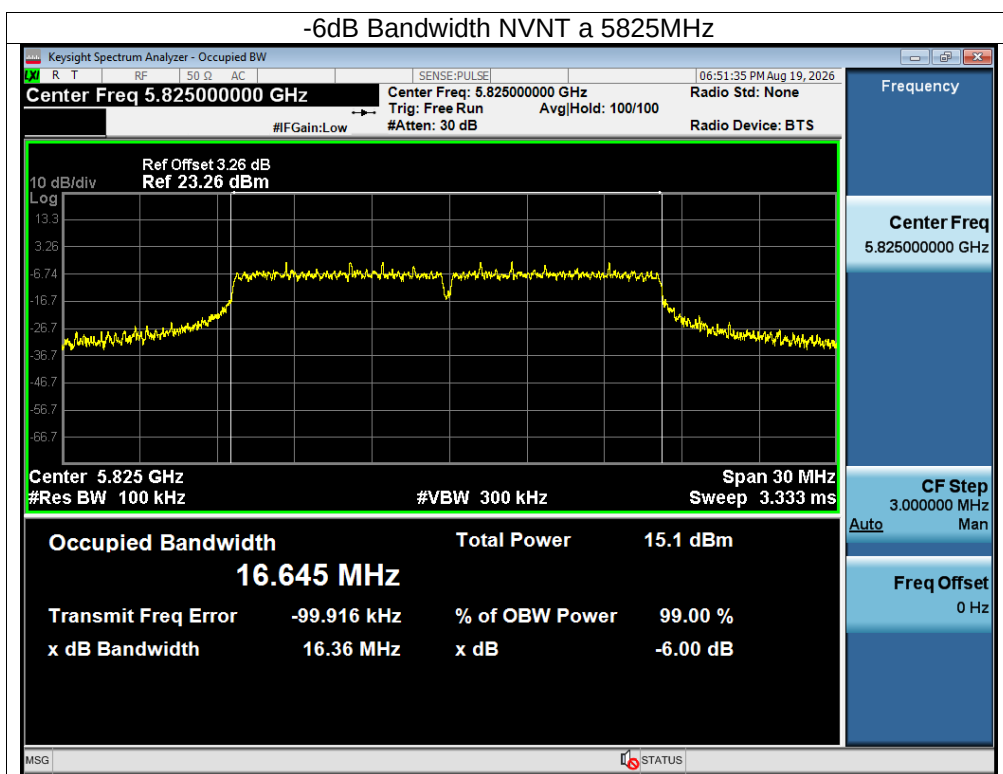
9.5 Test Result

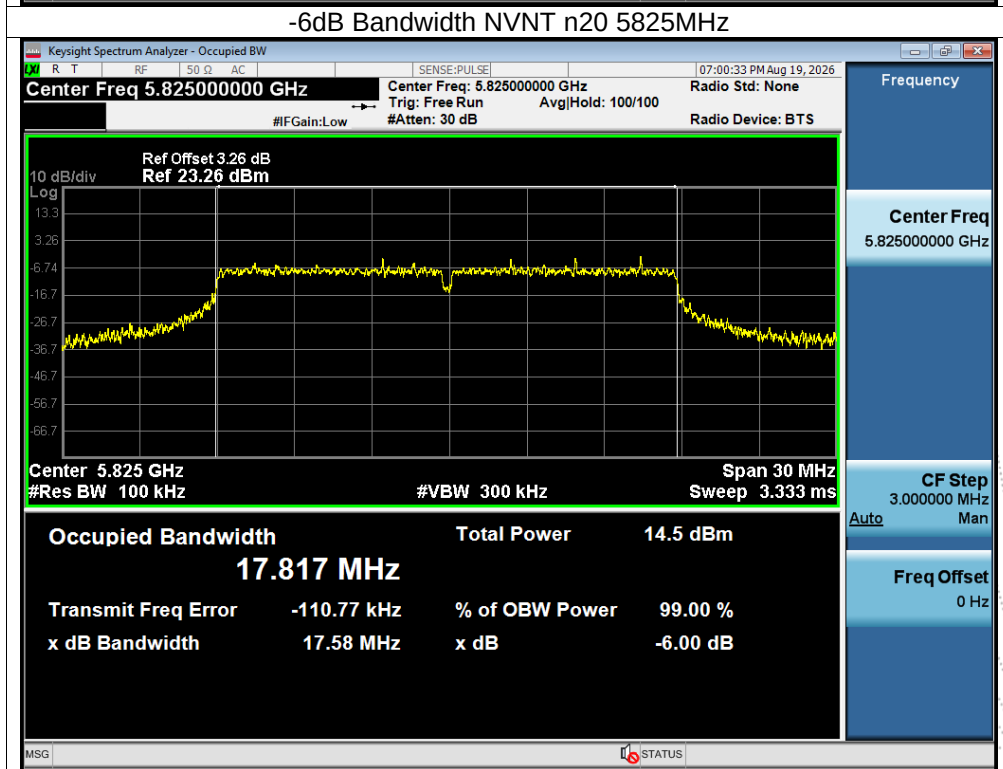
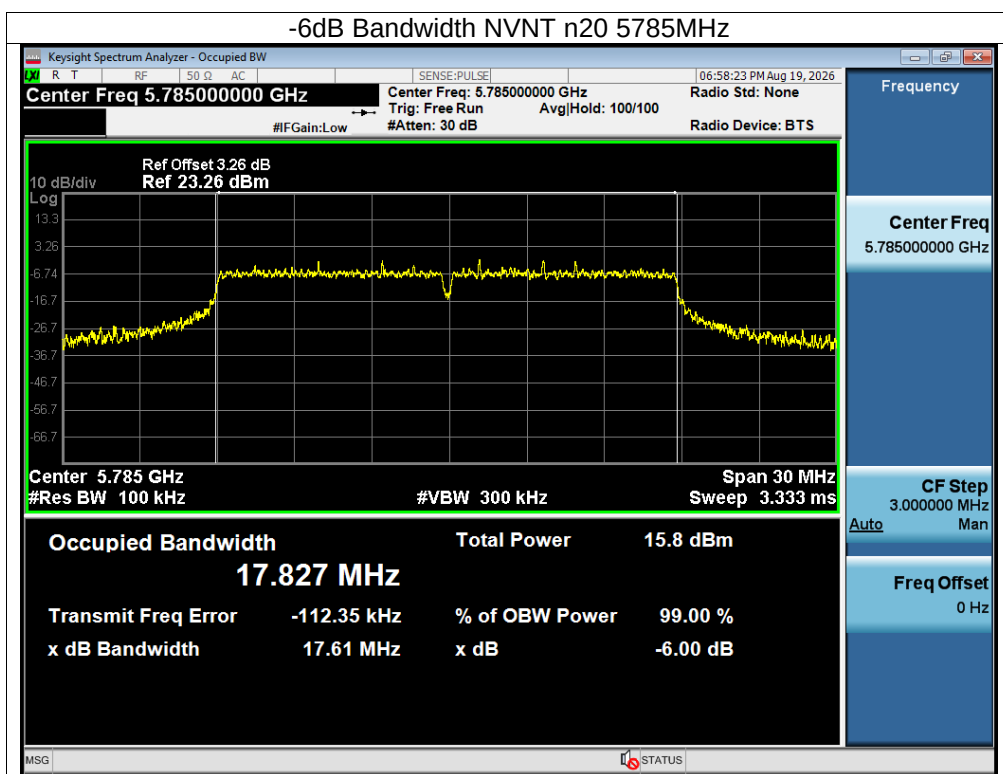
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 5V
Test Mode:	(5745-5825MHz)		

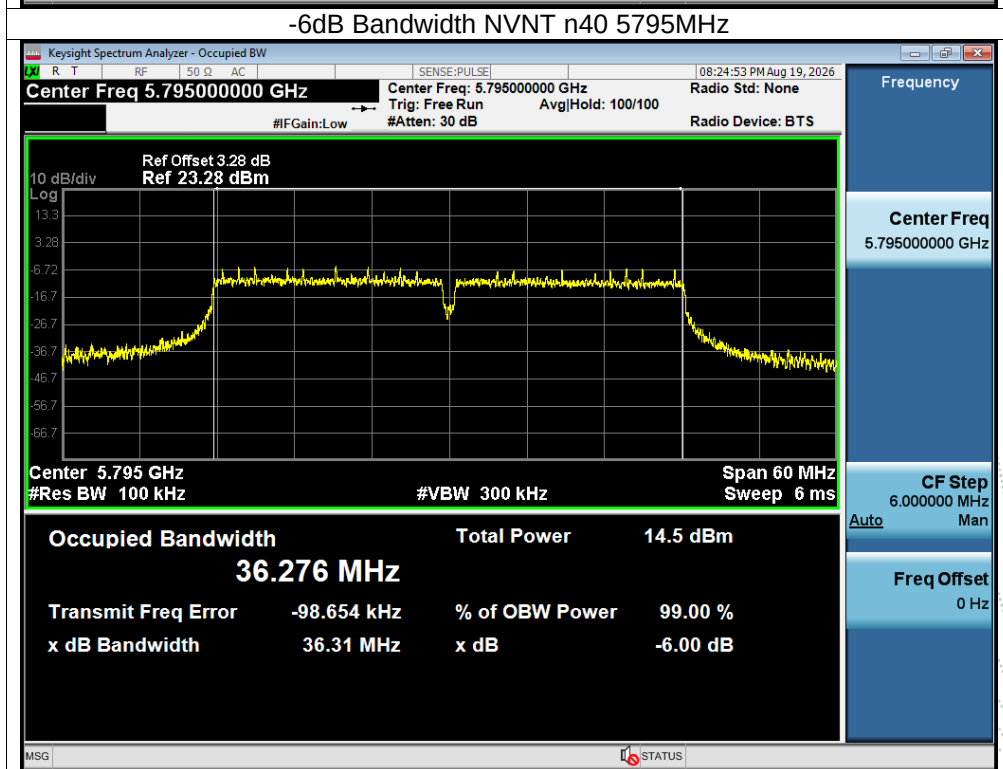
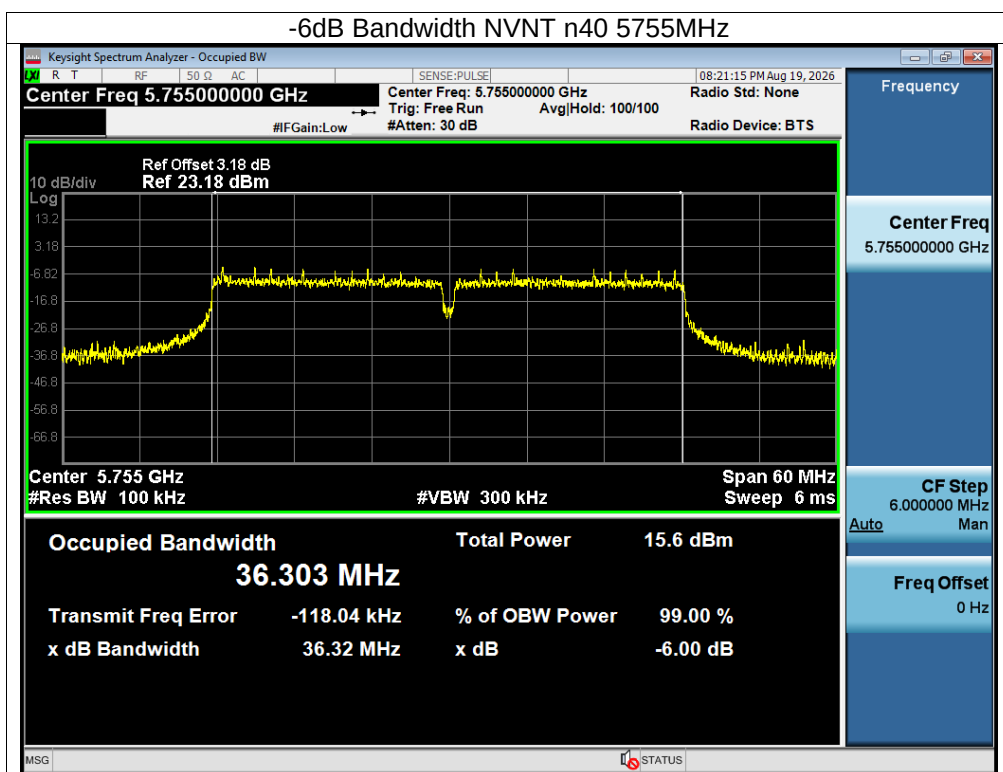
Condition	Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	16.348	0.5	Pass
NVNT	a	5785	16.35	0.5	Pass
NVNT	a	5825	16.362	0.5	Pass
NVNT	n20	5745	17.605	0.5	Pass
NVNT	n20	5785	17.609	0.5	Pass
NVNT	n20	5825	17.578	0.5	Pass
NVNT	n40	5755	36.319	0.5	Pass
NVNT	n40	5795	36.314	0.5	Pass
NVNT	ac20	5745	17.573	0.5	Pass
NVNT	ac20	5785	17.595	0.5	Pass
NVNT	ac20	5825	17.604	0.5	Pass
NVNT	ac40	5755	36.313	0.5	Pass
NVNT	ac40	5795	36.33	0.5	Pass
NVNT	ax20	5745	18.886	0.5	Pass
NVNT	ax20	5785	18.841	0.5	Pass
NVNT	ax20	5825	18.954	0.5	Pass
NVNT	ax40	5755	38.059	0.5	Pass
NVNT	ax40	5795	37.967	0.5	Pass



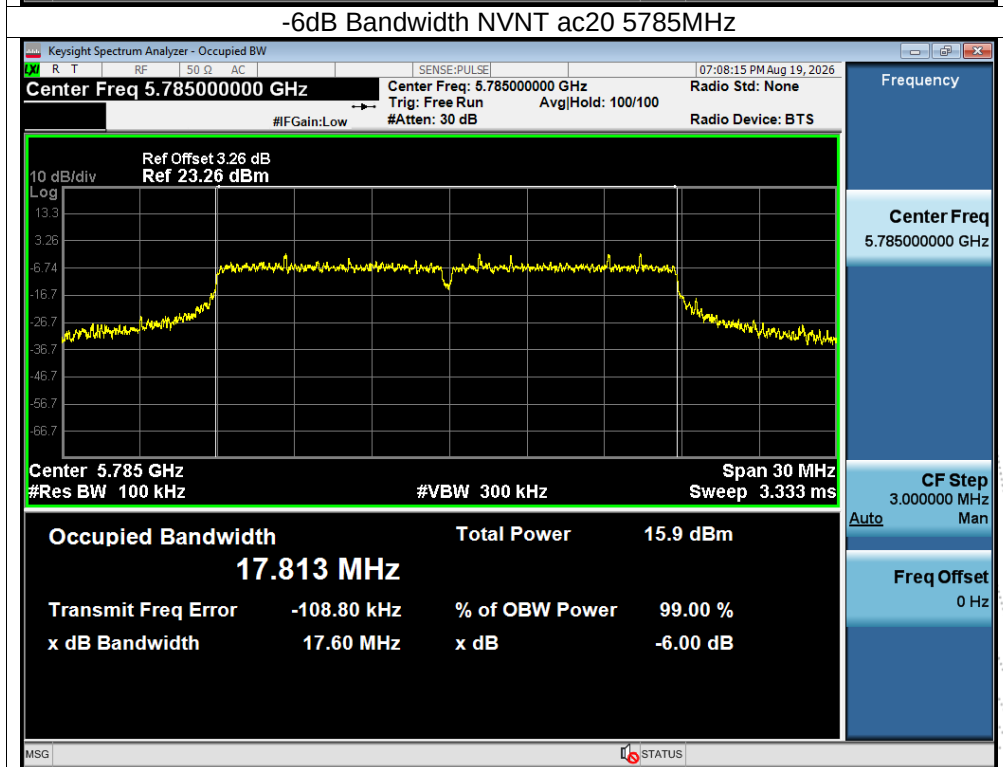
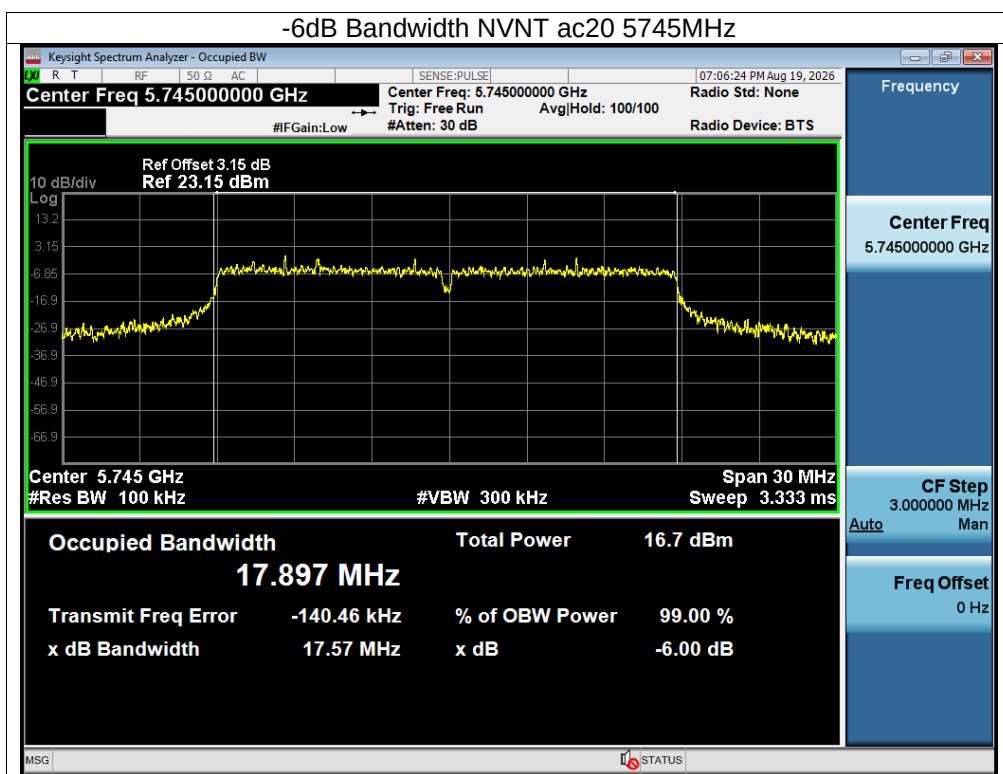


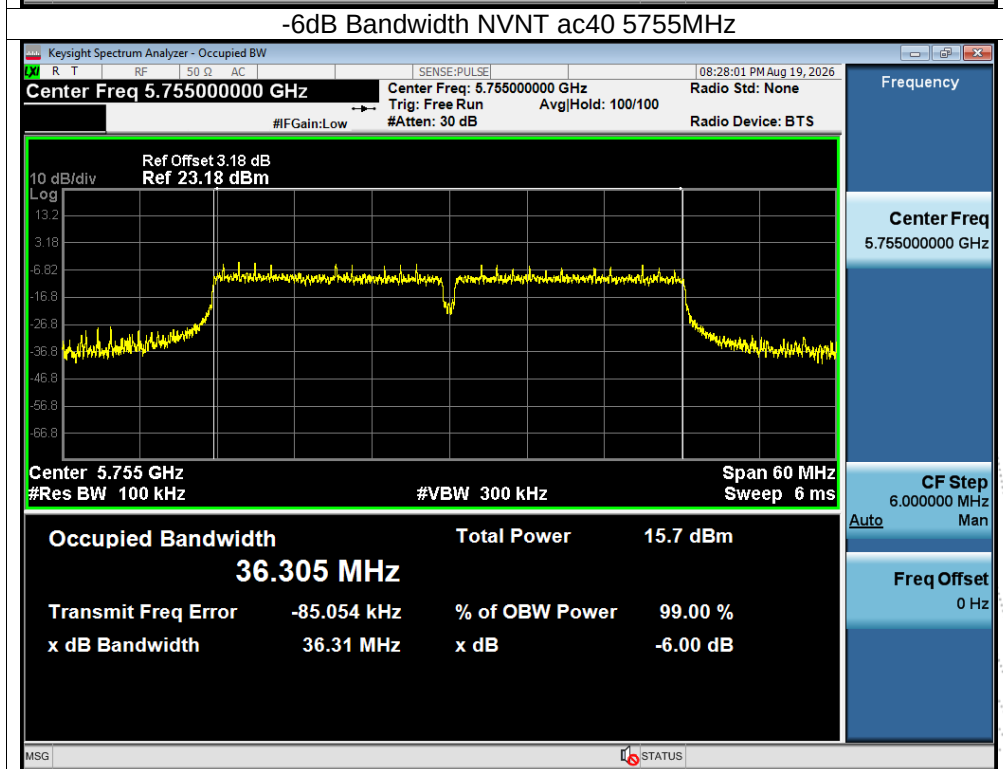
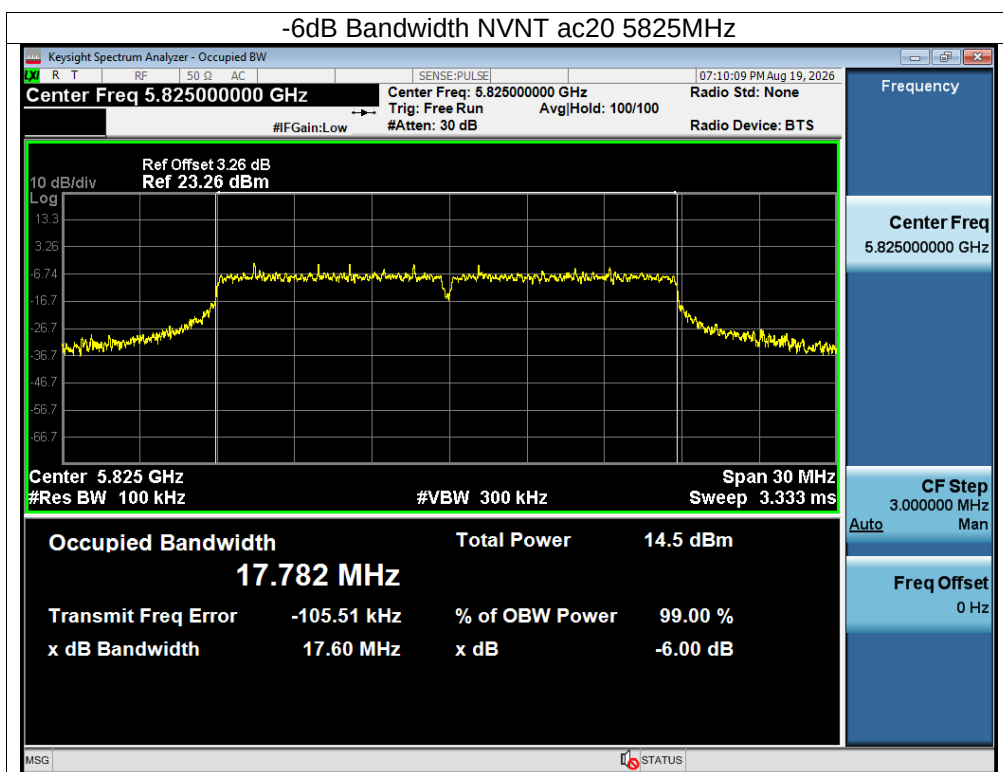


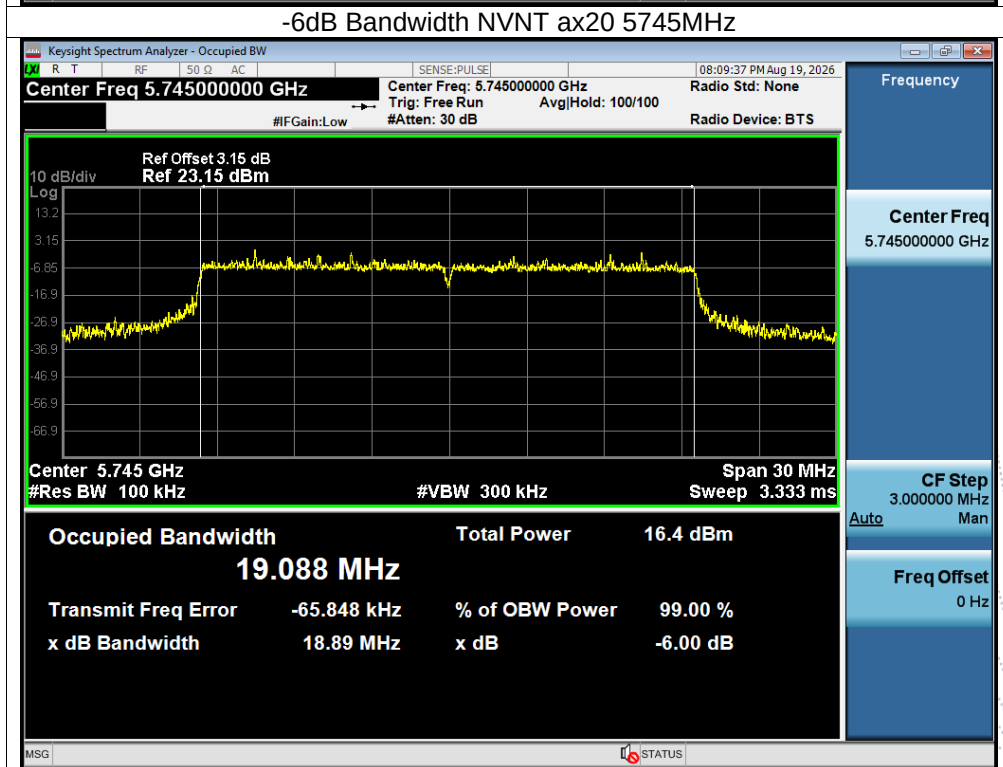
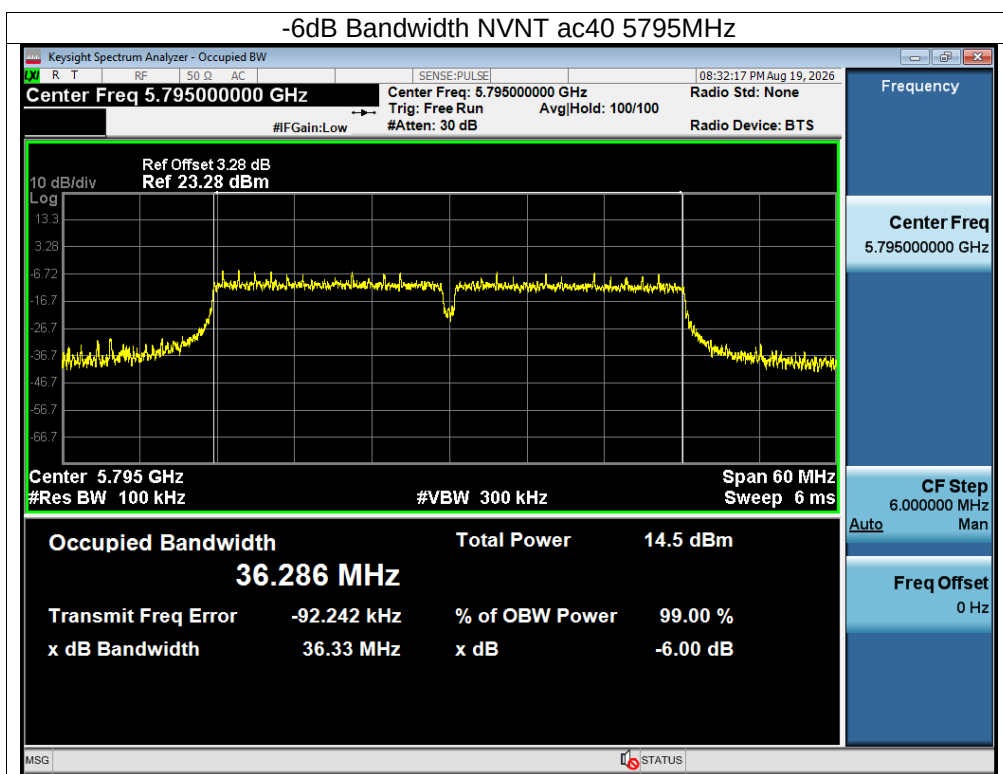


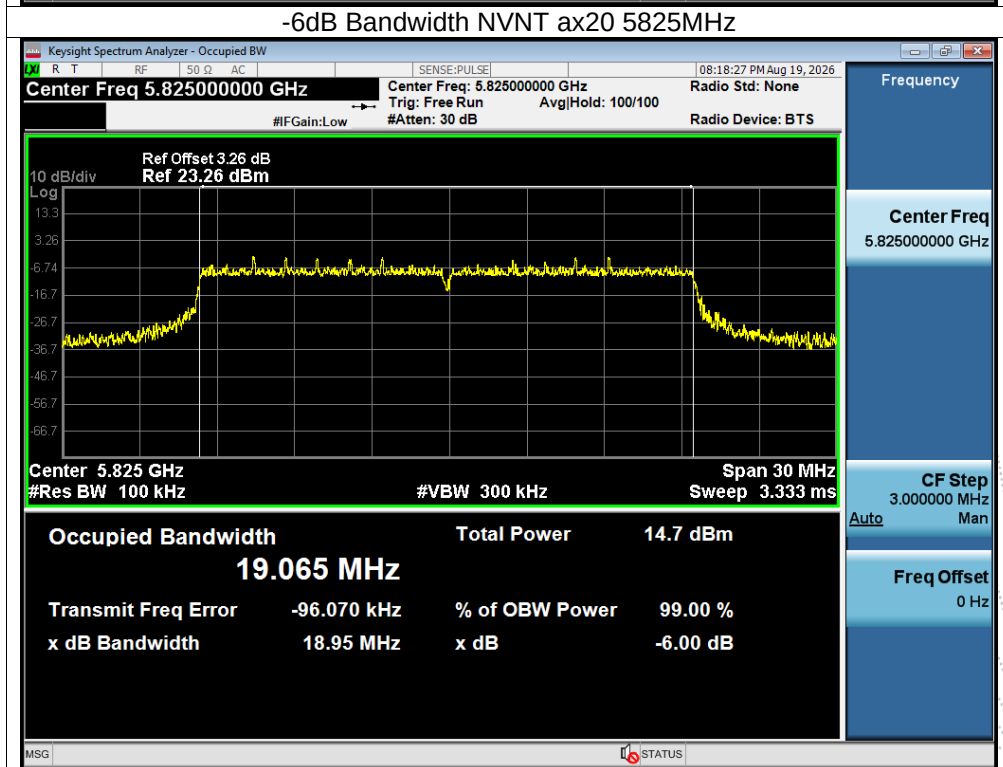
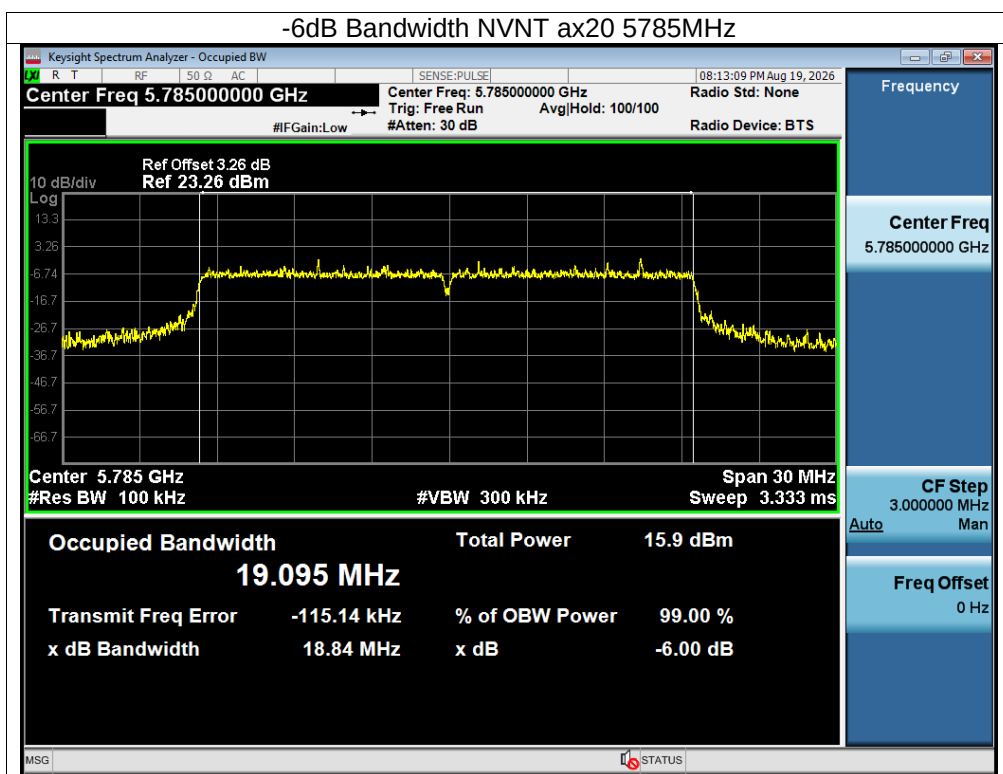


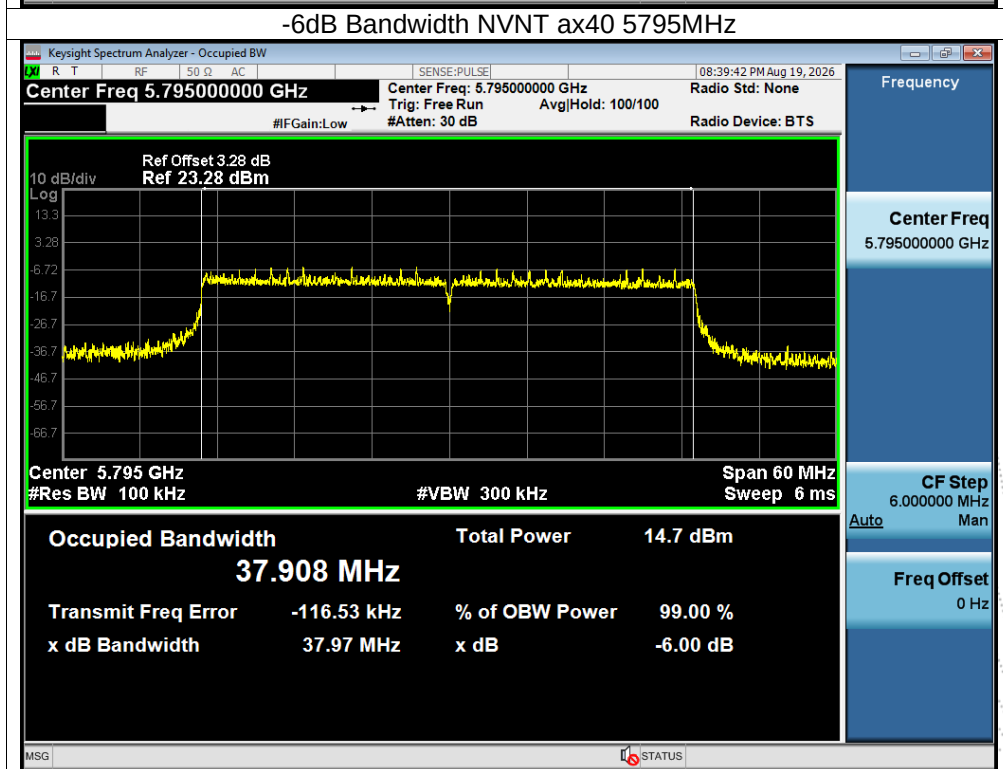
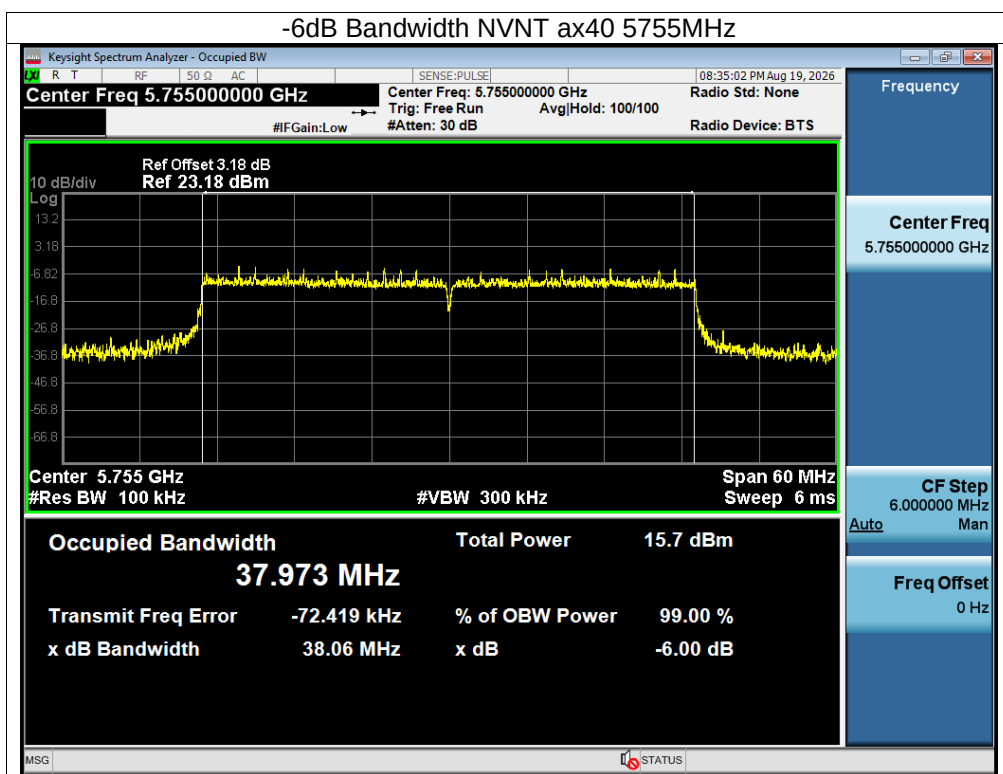
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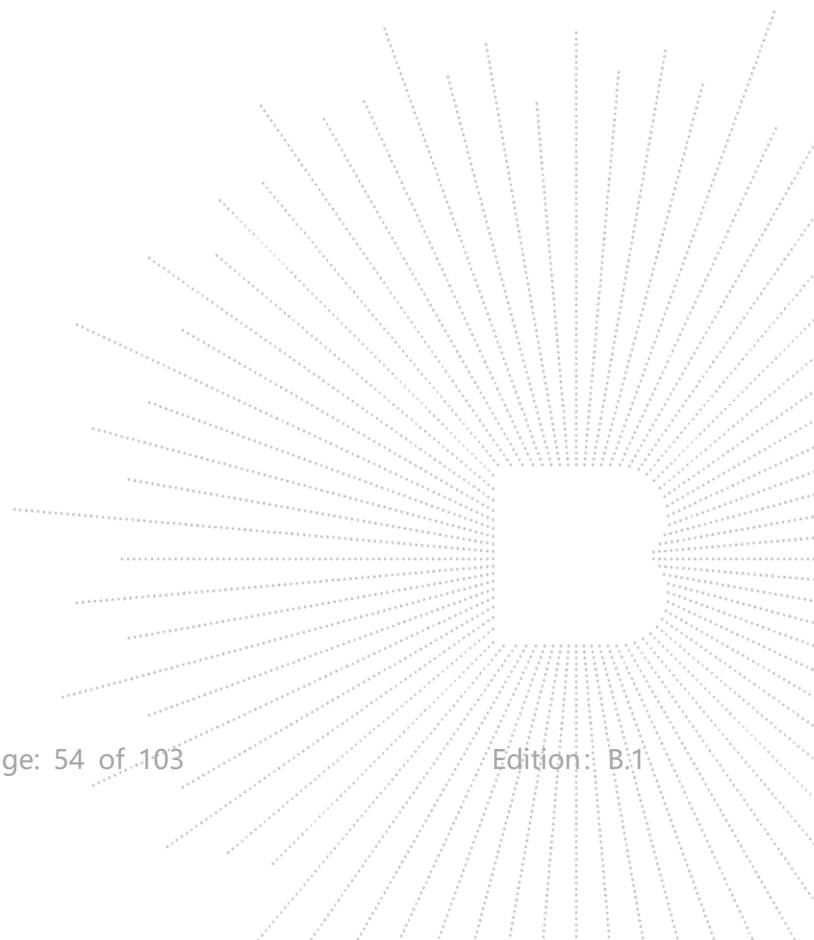


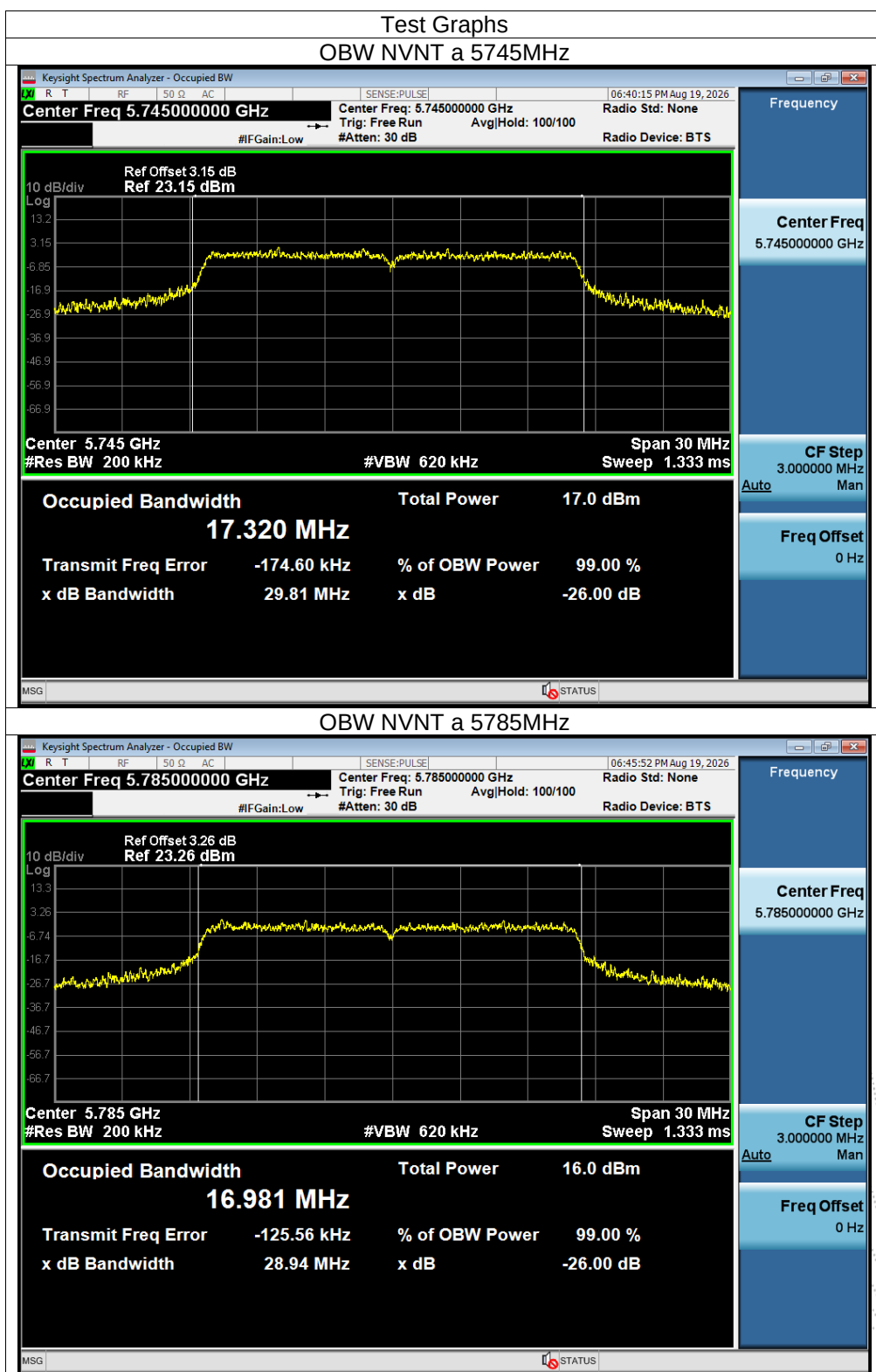


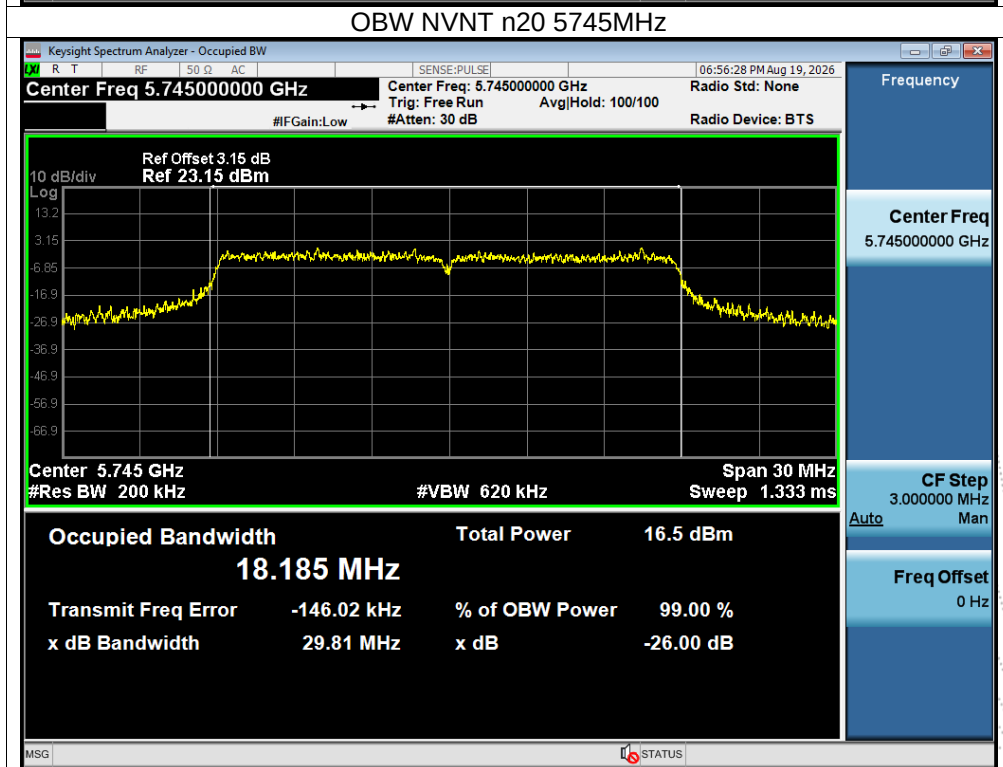
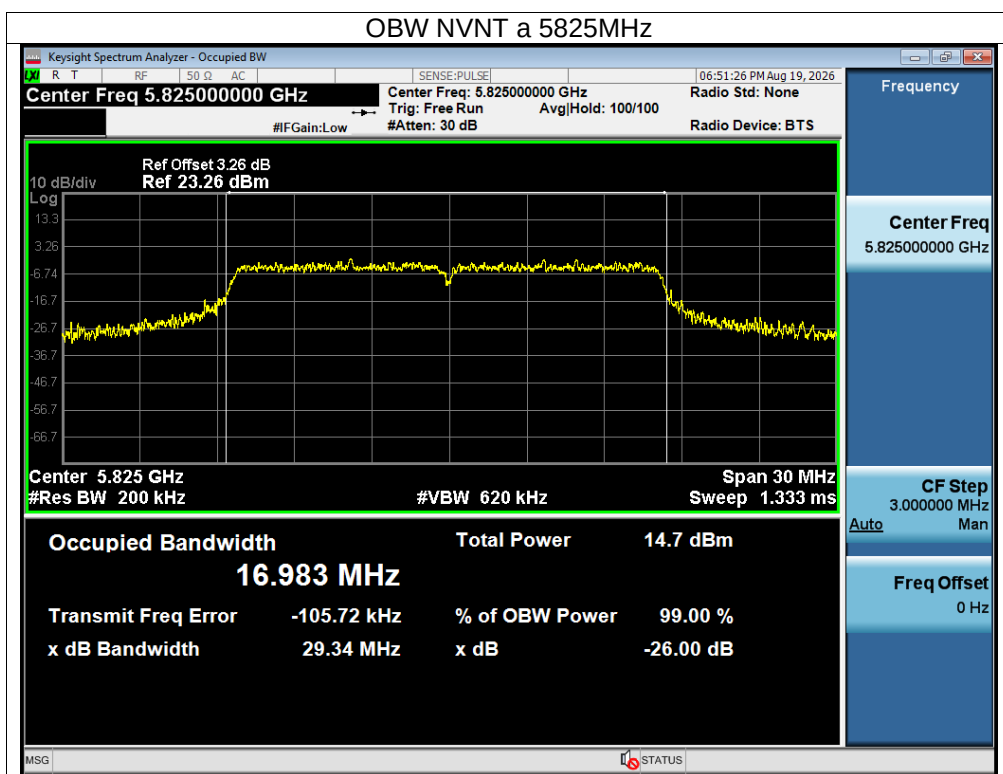


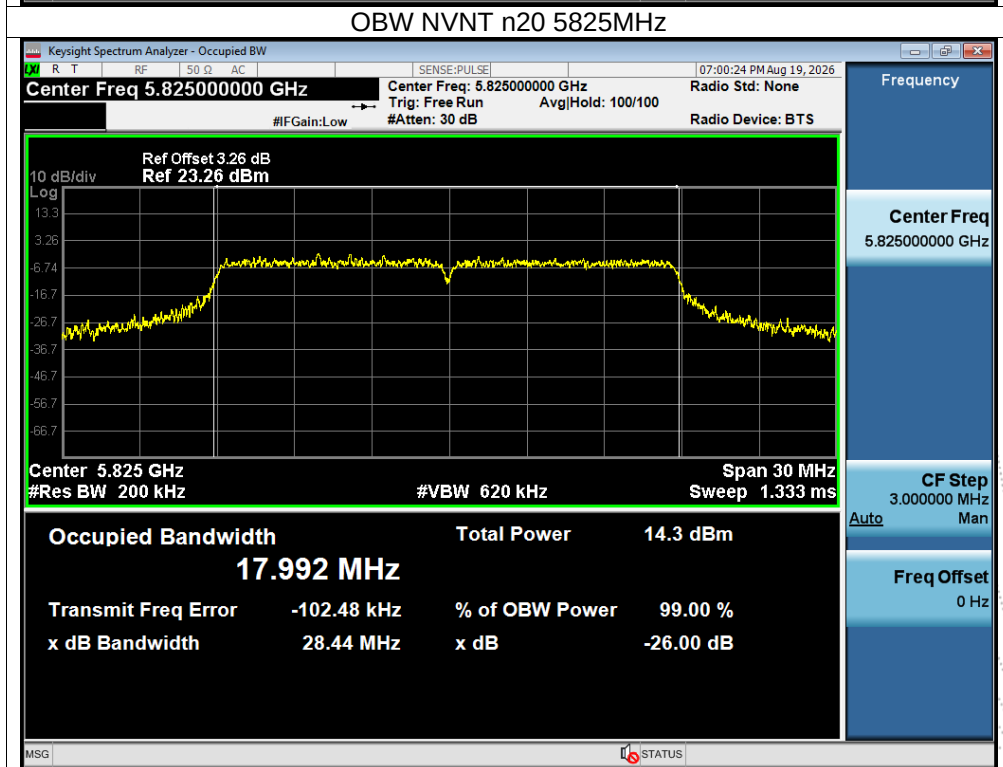
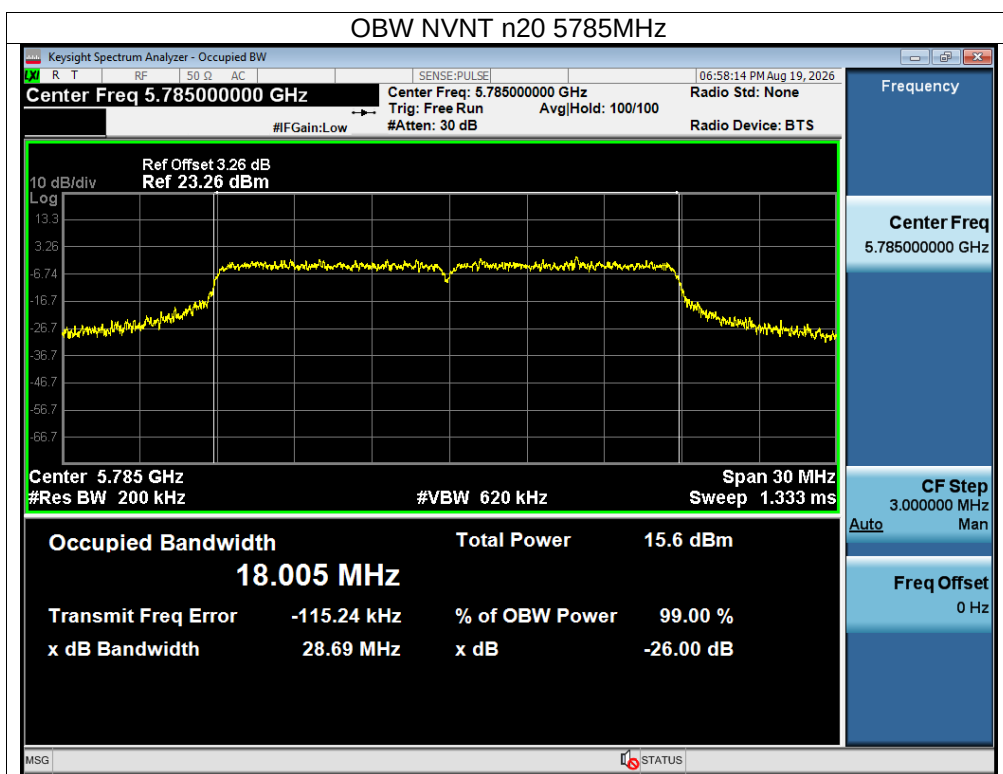


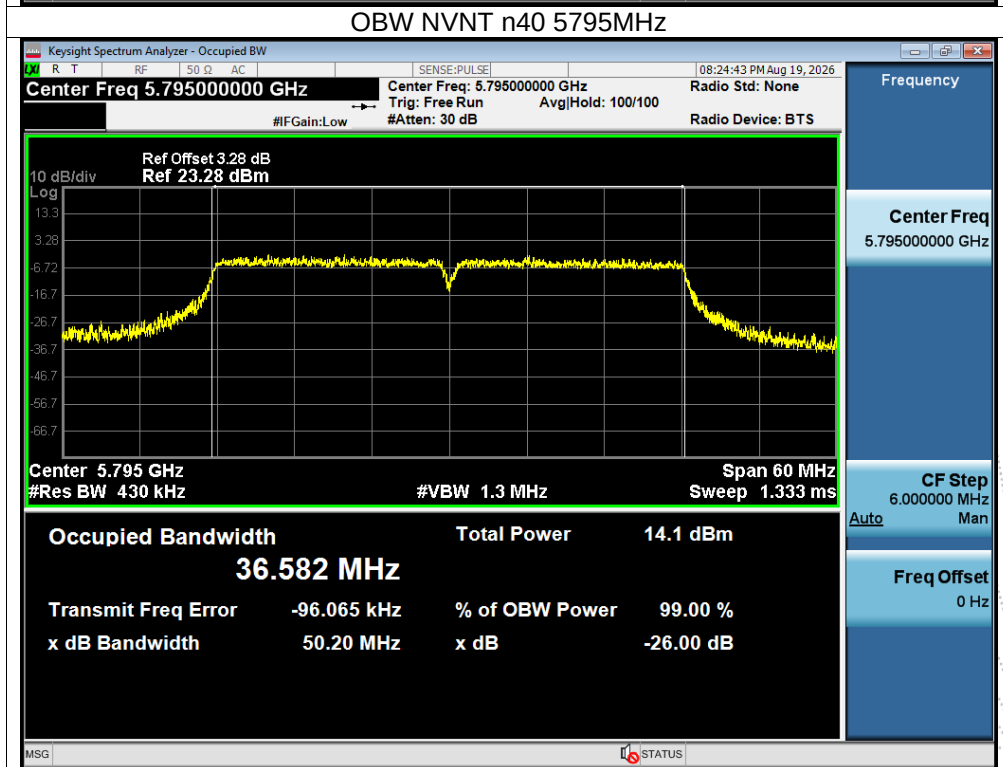
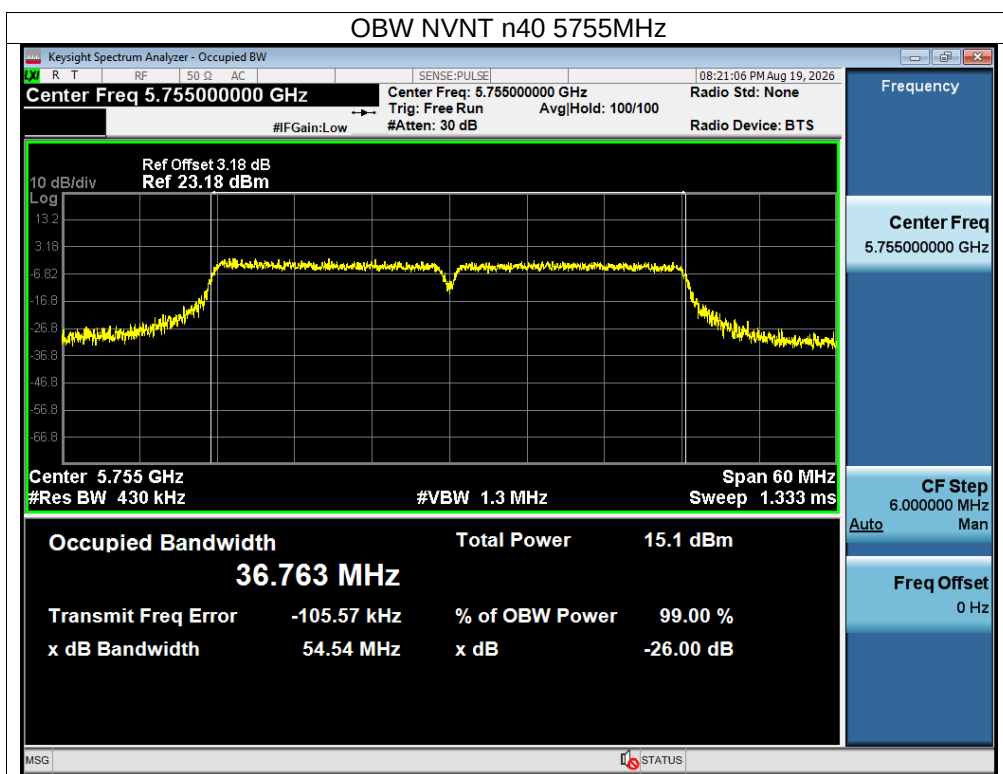
Condition	Mode	Frequency (MHz)	99% OBW (MHz)
NVNT	a	5745	17.32
NVNT	a	5785	16.981
NVNT	a	5825	16.983
NVNT	n20	5745	18.185
NVNT	n20	5785	18.005
NVNT	n20	5825	17.992
NVNT	n40	5755	36.763
NVNT	n40	5795	36.582
NVNT	ac20	5745	18.151
NVNT	ac20	5785	18.046
NVNT	ac20	5825	18.007
NVNT	ac40	5755	36.756
NVNT	ac40	5795	36.636
NVNT	ax20	5745	19.189
NVNT	ax20	5785	19.189
NVNT	ax20	5825	19.144
NVNT	ax40	5755	38.15
NVNT	ax40	5795	38.034

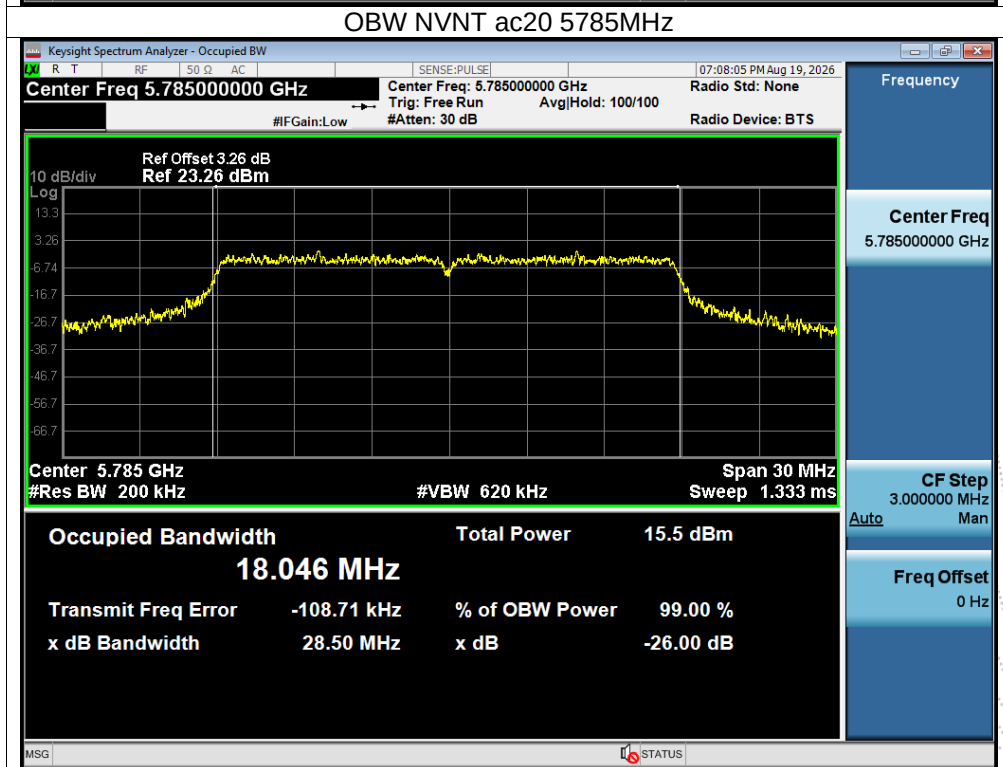
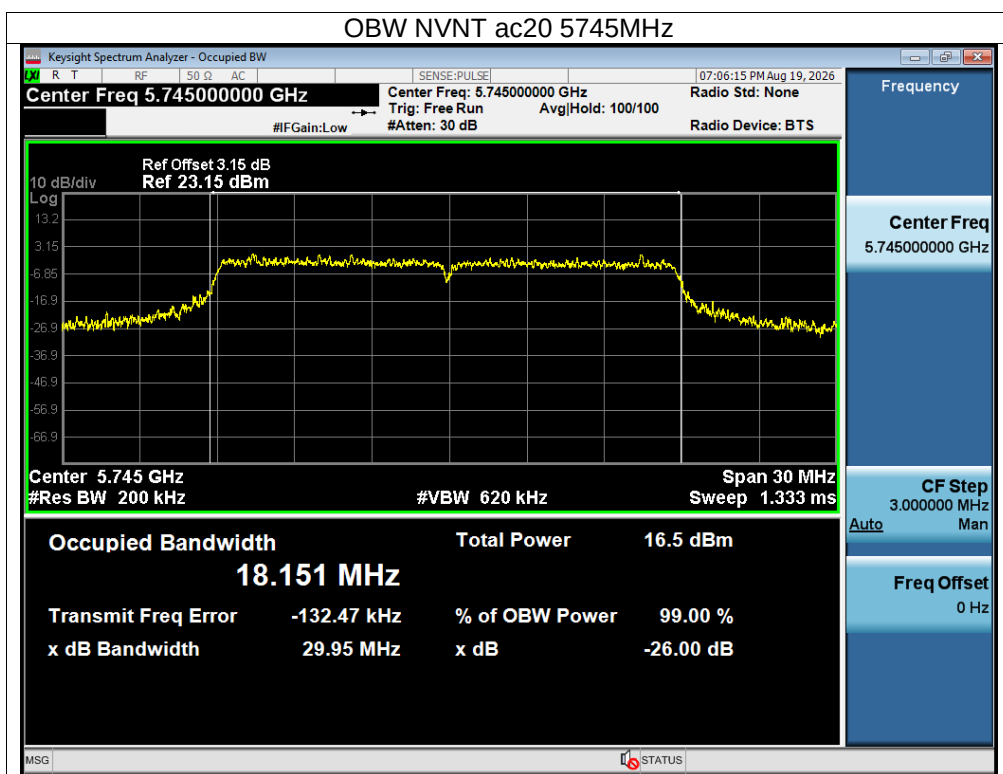


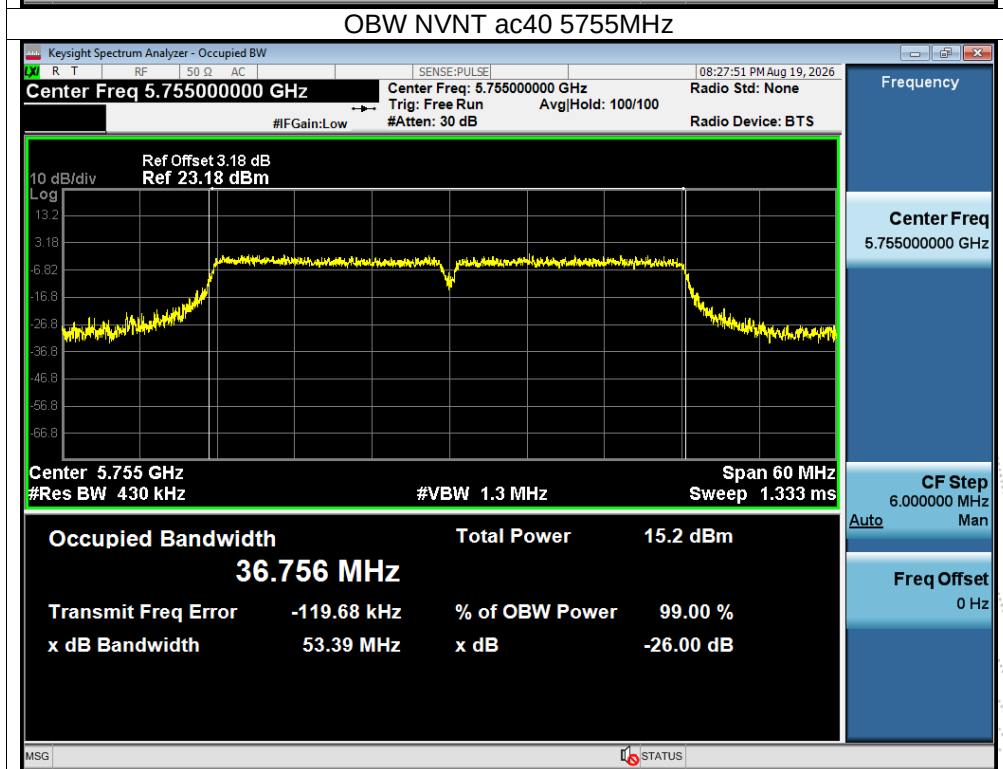
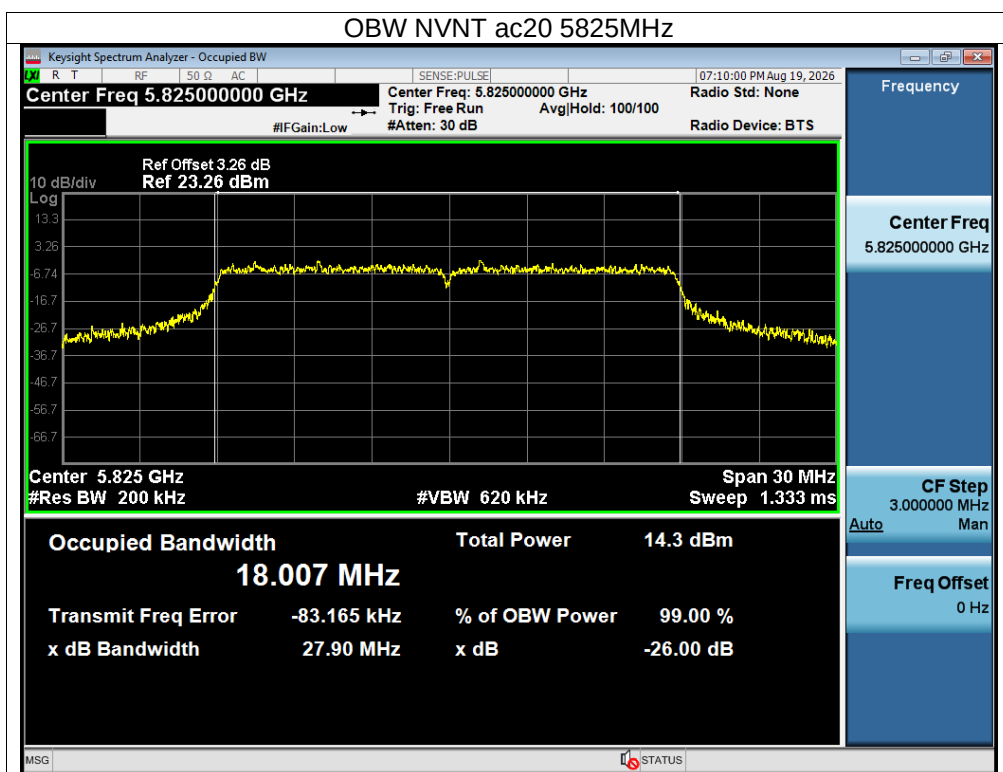




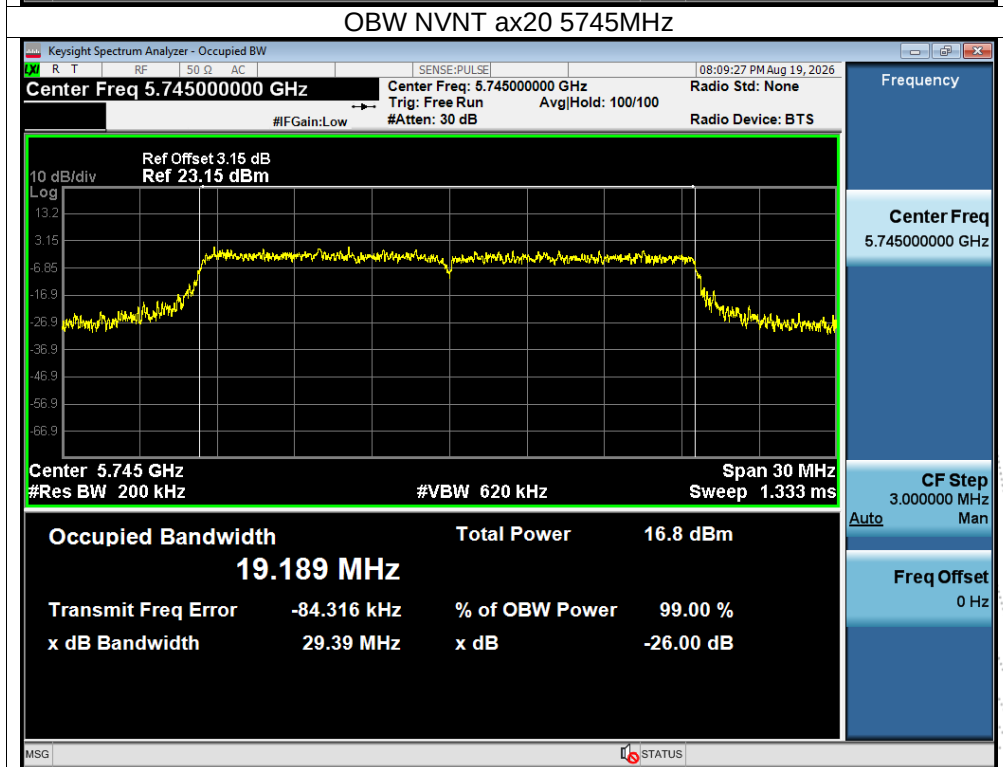
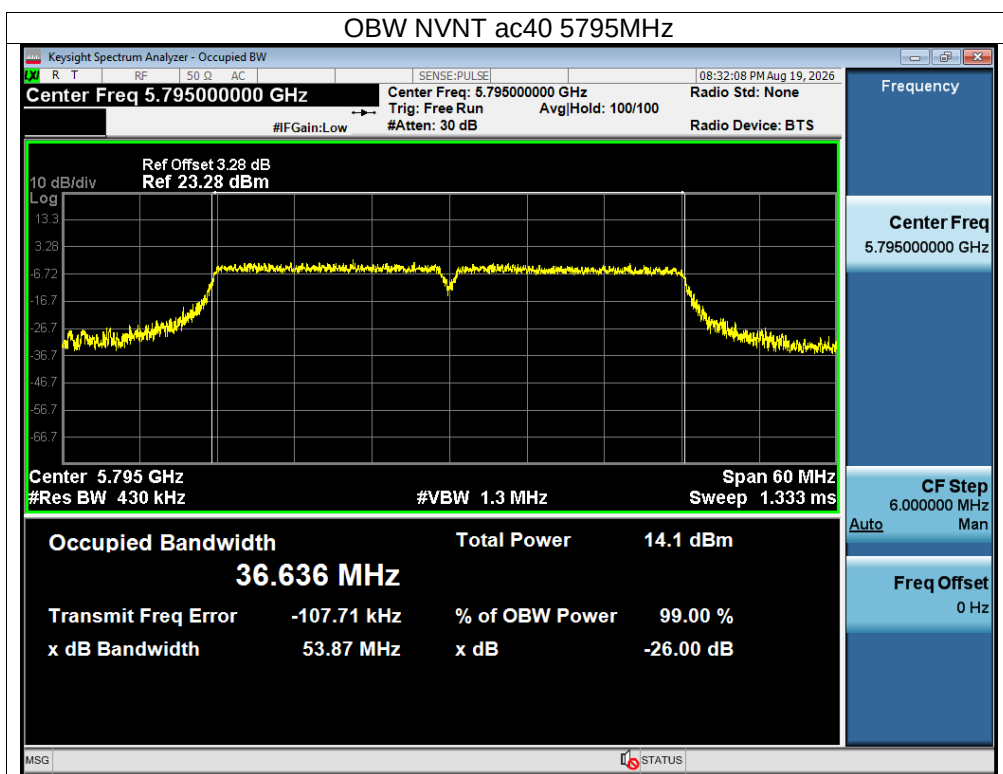


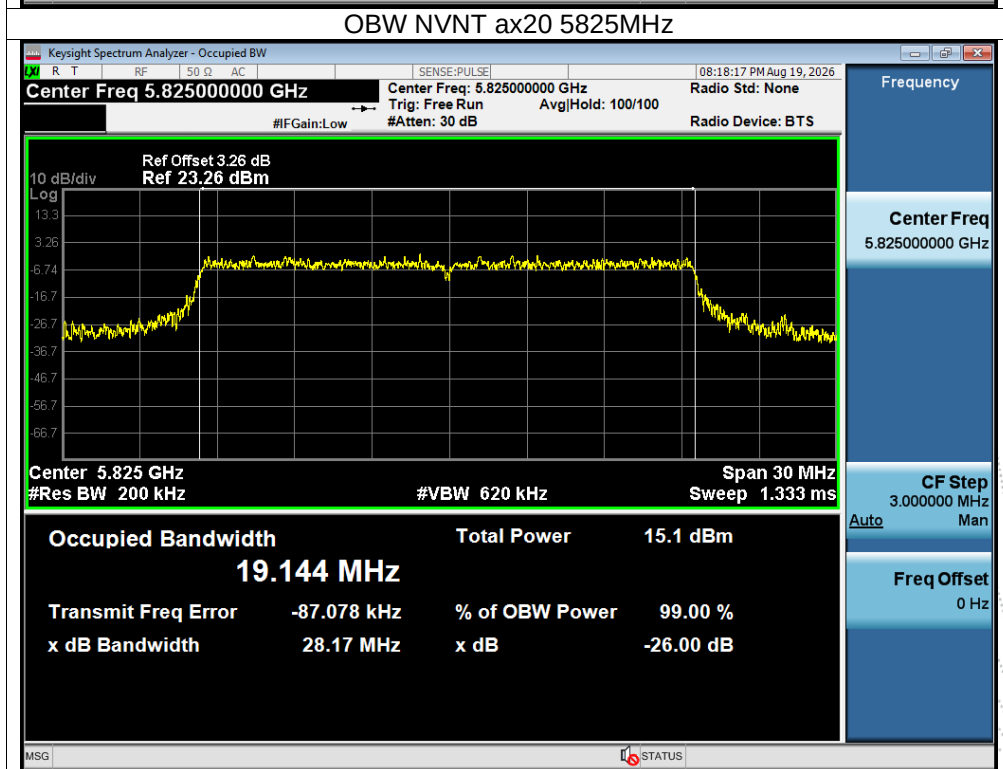
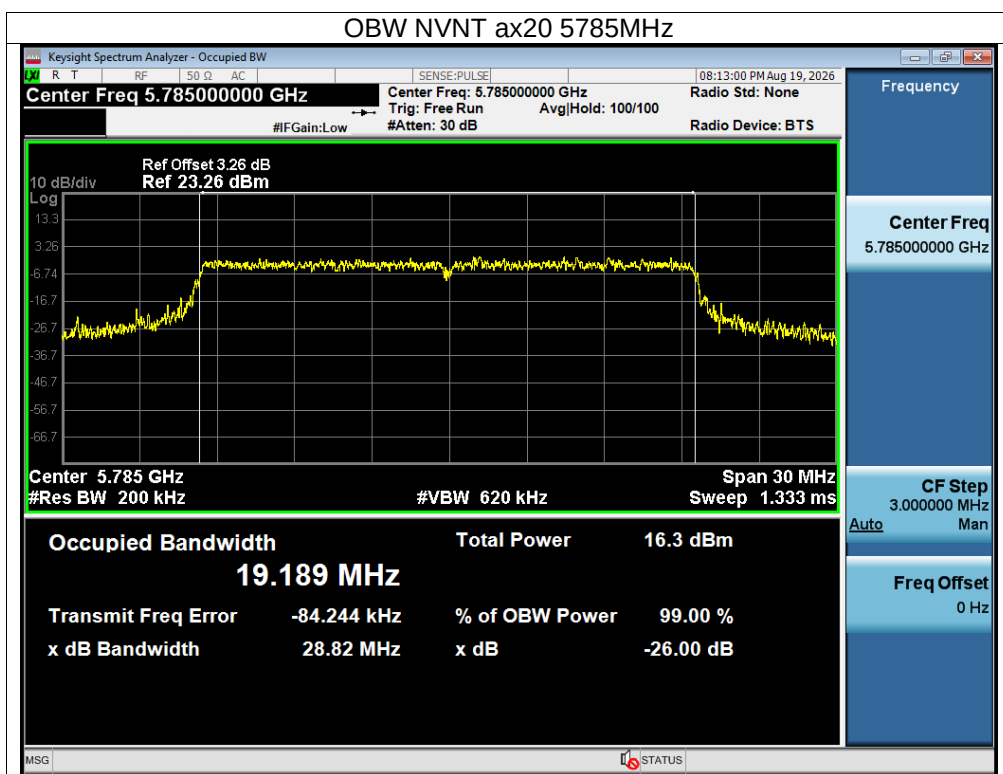


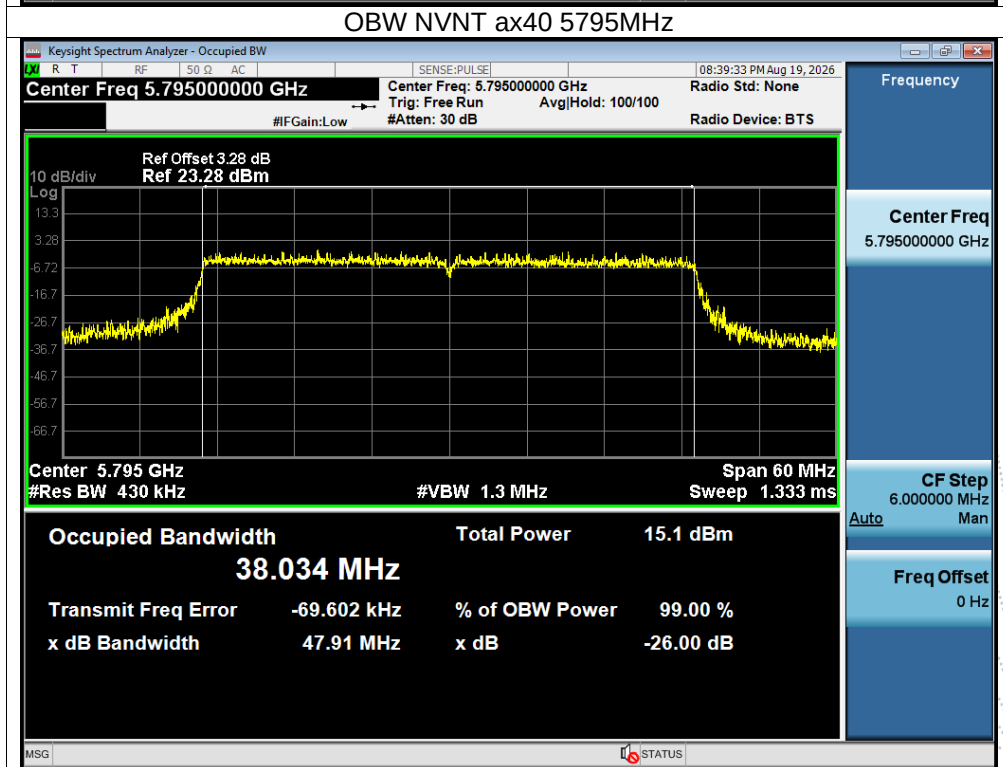
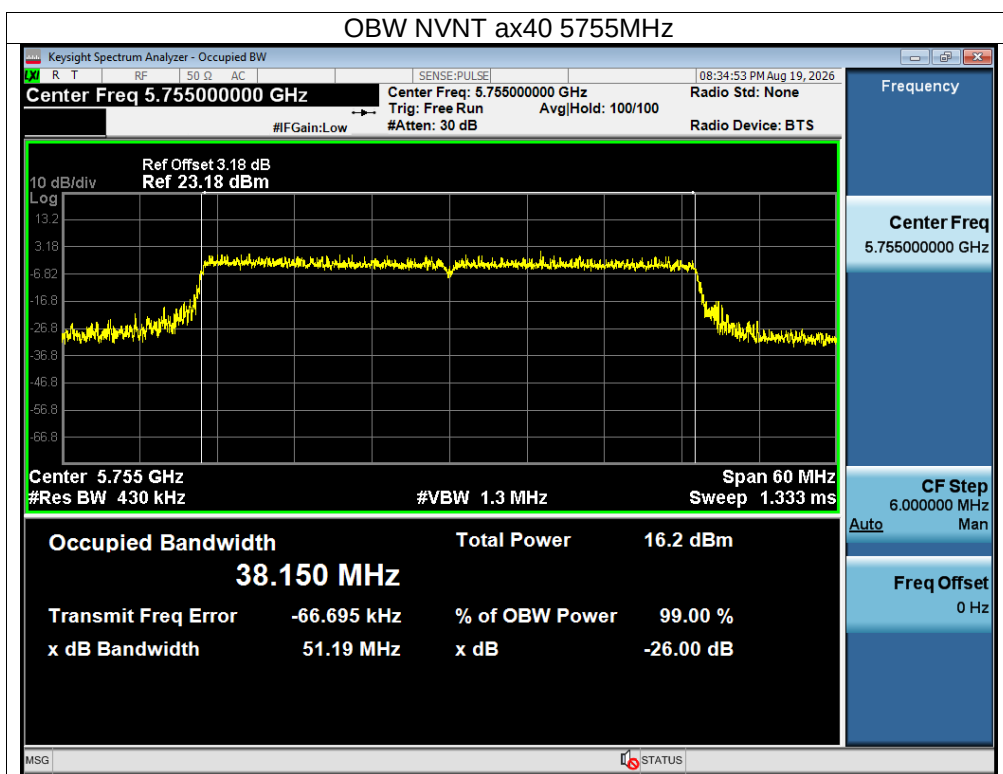




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10. Maximum Conducted Output Power

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	250 mW or 11 dBm + 10log B, whichever is less.
5470~5725	250 mW or 11 dBm + 10log B, whichever is less.
5725~5850	1W
Note: Where "B" is the 26 dB emissions bandwidth in MHz.	

10.3 Test Procedure

Method SA-1 or method SA-1A (alternative) shall be applied if either of the following conditions can be satisfied:

- 1) The EUT transmits continuously (or with a $D \geq 98\%$).

Method SA-1 uses trace averaging with the EUT transmitting at full power throughout each sweep. The procedure for this method is as follows:

- a) Set span to encompass the entire 99% OBW of the signal.
- b) Set RBW = 1 MHz.
- c) Set VBW ≥ 3 MHz.
- d) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = Power averaging (rms), if available. Otherwise, use sample detector mode.
- g) If transmit duty cycle $< 98\%$, use a video trigger with the trigger level set to enable triggering only on full power pulses. The transmitter shall 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 $\geq 98\%$, and if each transmission is entirely at the maximum power control level, then the

trigger shall be set to “free run.”

- h) Trace average at least 100 traces in power averaging (rms) mode.
- i) Compute power by integrating the spectrum across the 99% OBW of the signal using the instrument's band-power measurement function, with band limits set equal to the OBW band-edges. If the instrument does not have a band-power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 99% OBW of the spectrum.

Method SA-2 or method SA-2A (alternative) shall be applied if the conditions of the preceding item a) 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 $\pm 2\%$. Method SA-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction. The procedure for this method is as follows:

- a) Measure the duty cycle D of the transmitter output signal as described in 12.2.
- b) Set span to encompass the entire 99% OBW of the signal.
- c) Set RBW = 1 MHz.
- d) Set VBW ≥ 3 MHz.
- e) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- f) Sweep time = auto.
- g) Detector = Power averaging (rms), if available. Otherwise, use sample detector mode.
- h) Do not use sweep triggering. Allow the sweep to “free run.”
- i) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
- j) Compute power by integrating the spectrum across the 99% OBW of the signal using the instrument's band-power measurement function with band limits set equal to the EBW or OBW band-edges. If the instrument does not have a band-power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 99% OBW of the spectrum.
- k) Add $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add $[10 \log (1 / 0.25)] = 6$ dB if the duty cycle is 25%.

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:	DC 5V
Test Mode:	5745-5825MHz		

Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	11.08	30	Pass
NVNT	a	5785	10.06	30	Pass
NVNT	a	5825	8.8	30	Pass
NVNT	n20	5745	10.47	30	Pass
NVNT	n20	5785	9.64	30	Pass
NVNT	n20	5825	8.36	30	Pass
NVNT	n40	5755	9.02	30	Pass
NVNT	n40	5795	7.7	30	Pass
NVNT	ac20	5745	10.54	30	Pass
NVNT	ac20	5785	9.75	30	Pass
NVNT	ac20	5825	8.37	30	Pass
NVNT	ac40	5755	9.04	30	Pass
NVNT	ac40	5795	7.87	30	Pass
NVNT	ax20	5745	10.45	30	Pass
NVNT	ax20	5785	9.61	30	Pass
NVNT	ax20	5825	8.33	30	Pass
NVNT	ax40	5755	8.84	30	Pass
NVNT	ax40	5795	8	30	Pass

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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)(10) 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 (68.2 dBuV/m@3m).

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz (68.2 dBuV/m@3m).

(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 (68.2 dBuV/m@3m).

(4) For transmitters operating solely in the 5.725-5.850 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.

11.3 Test Procedure

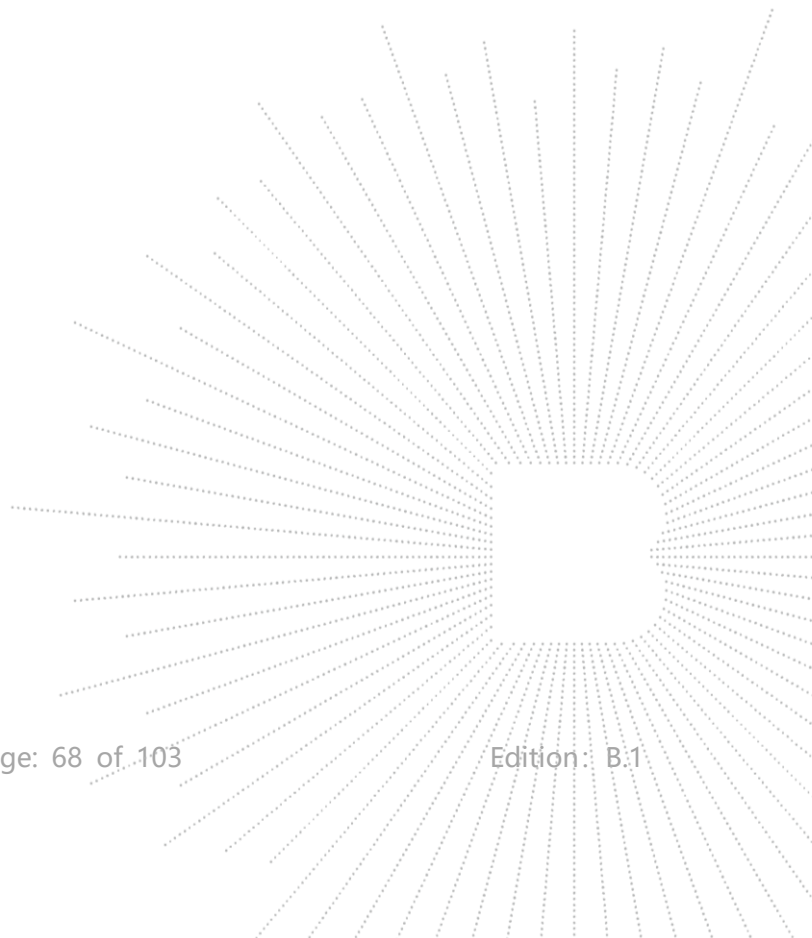
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then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

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 5V



Test Graphs

Band Edge NVNT a 5745MHz Low



Band Edge NVNT a 5825MHz High



