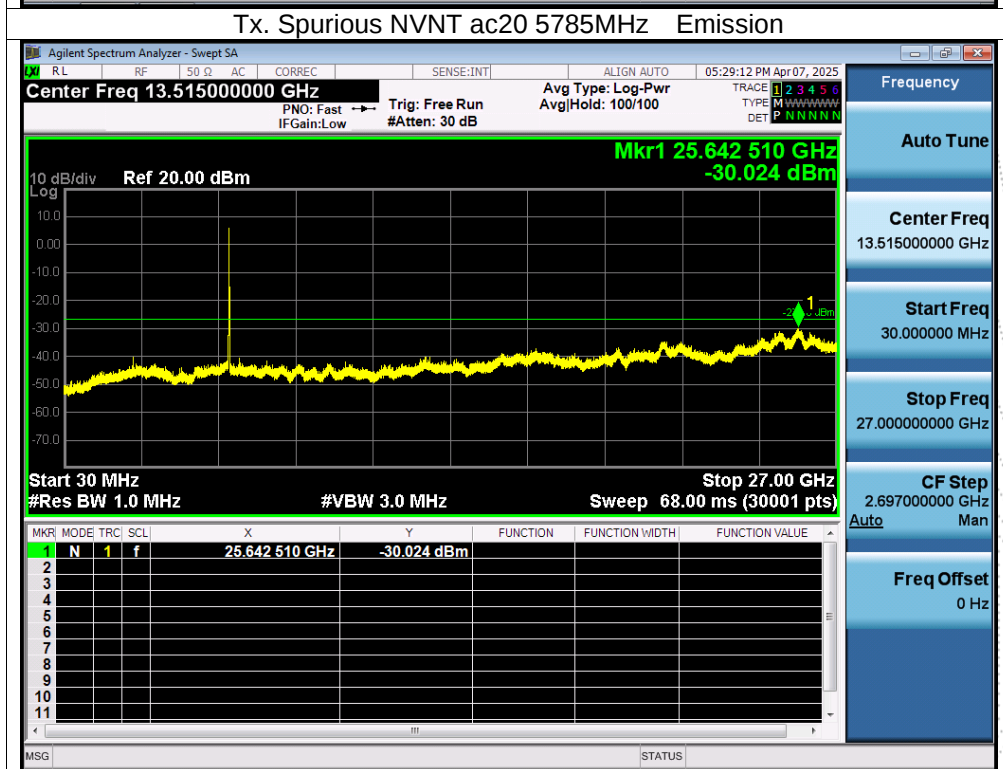
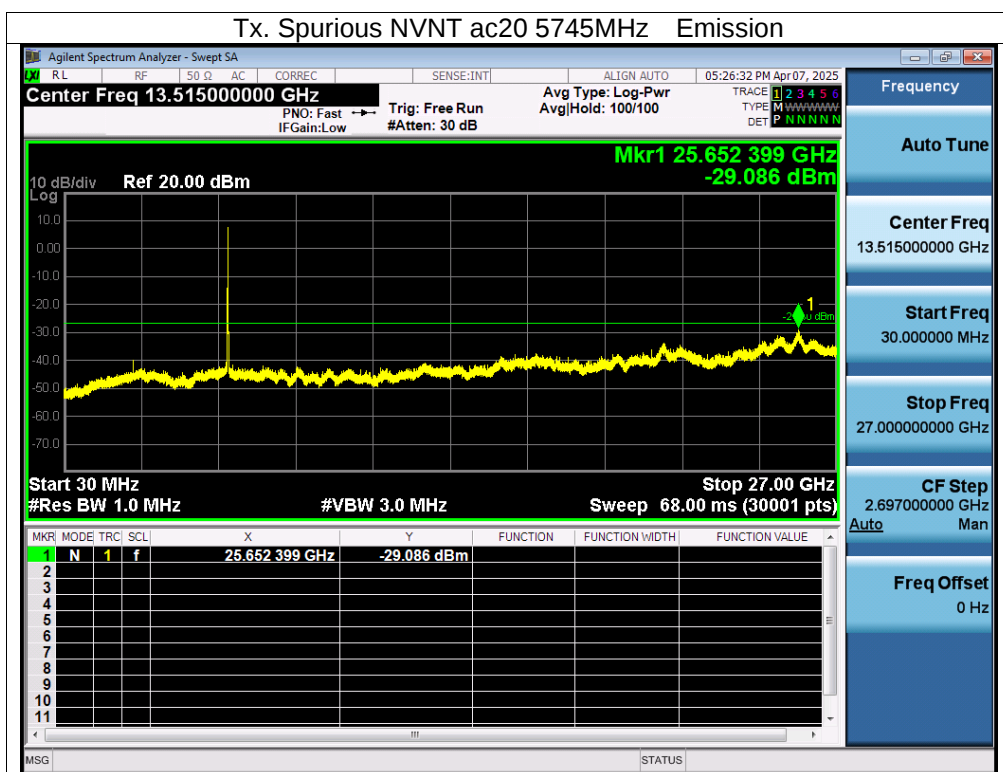
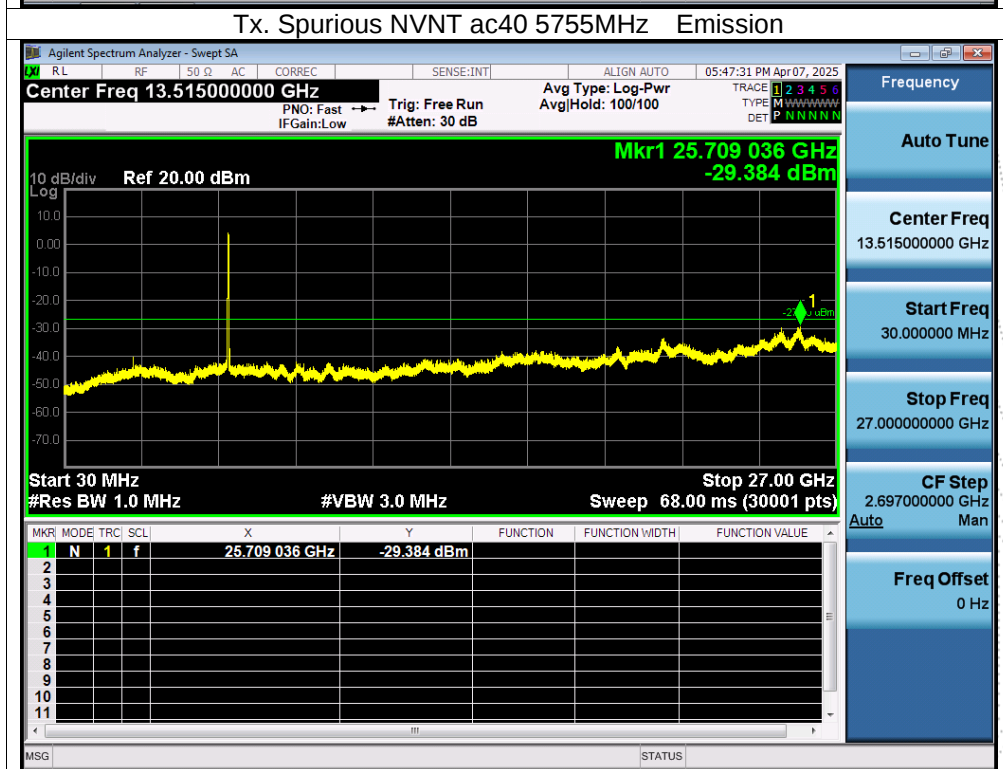
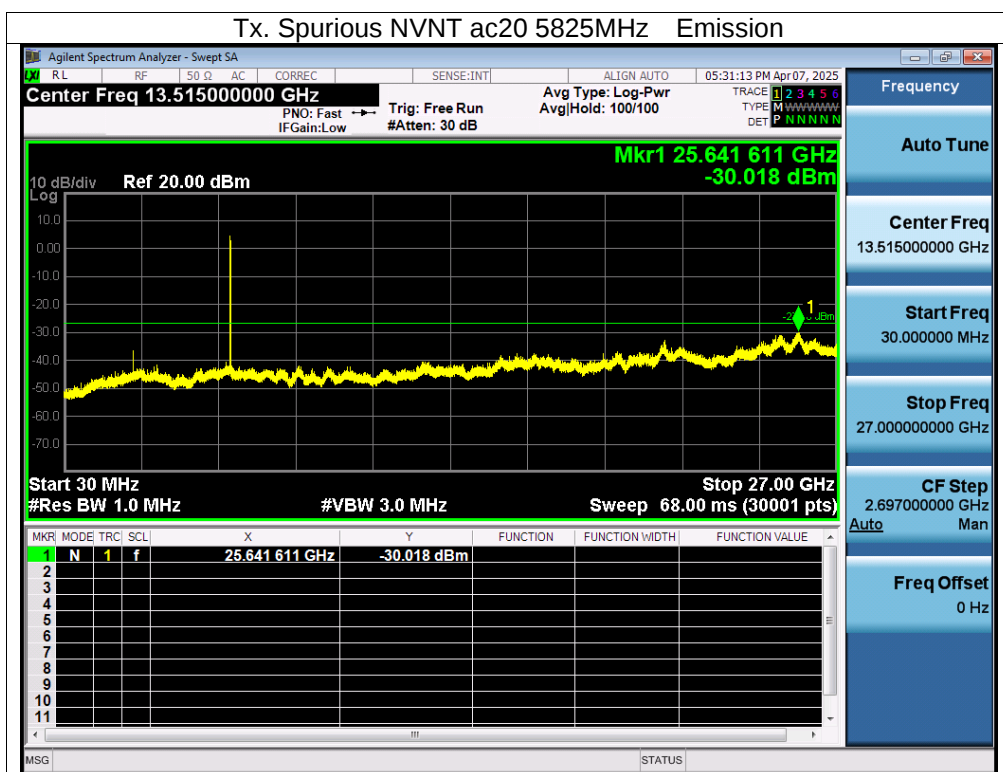
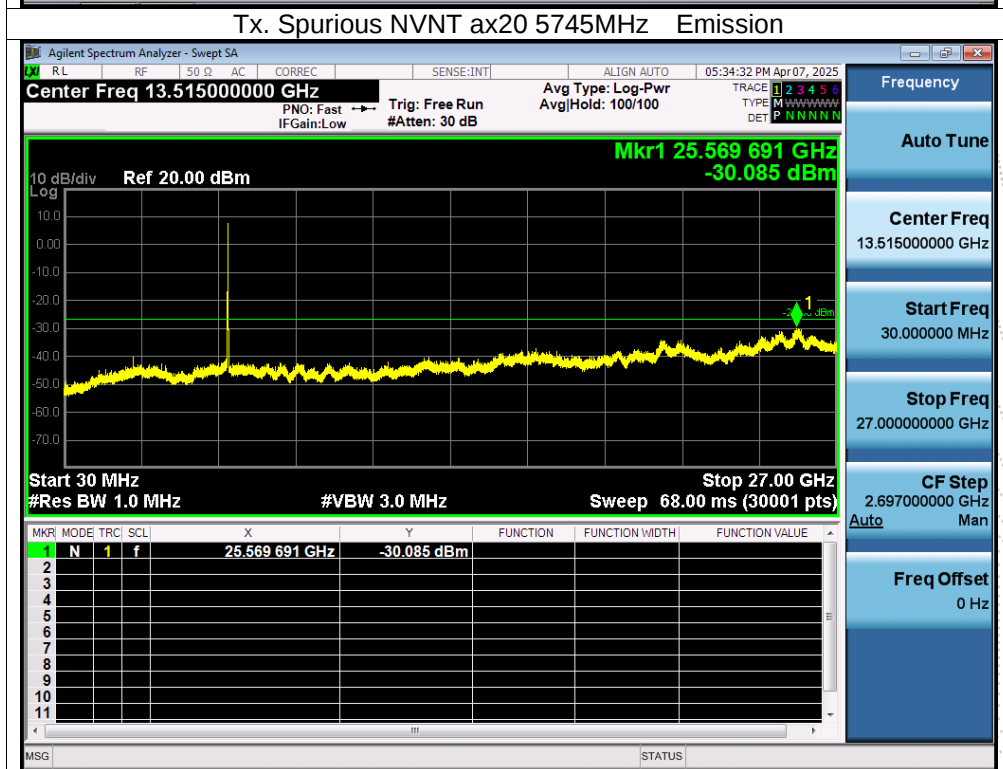
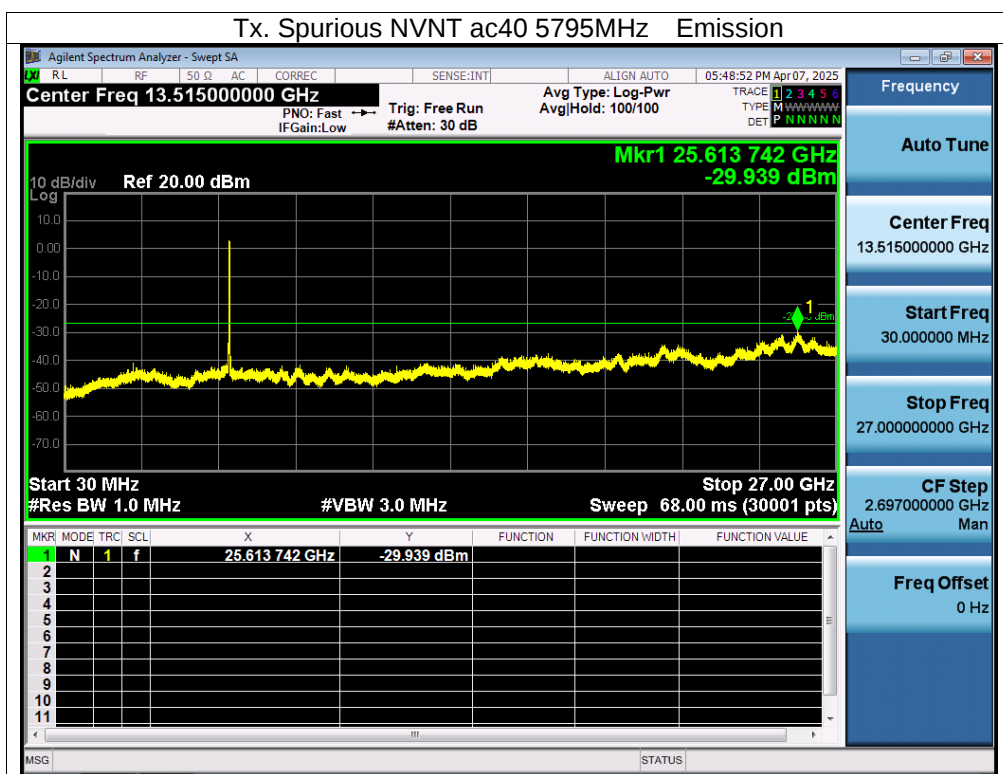
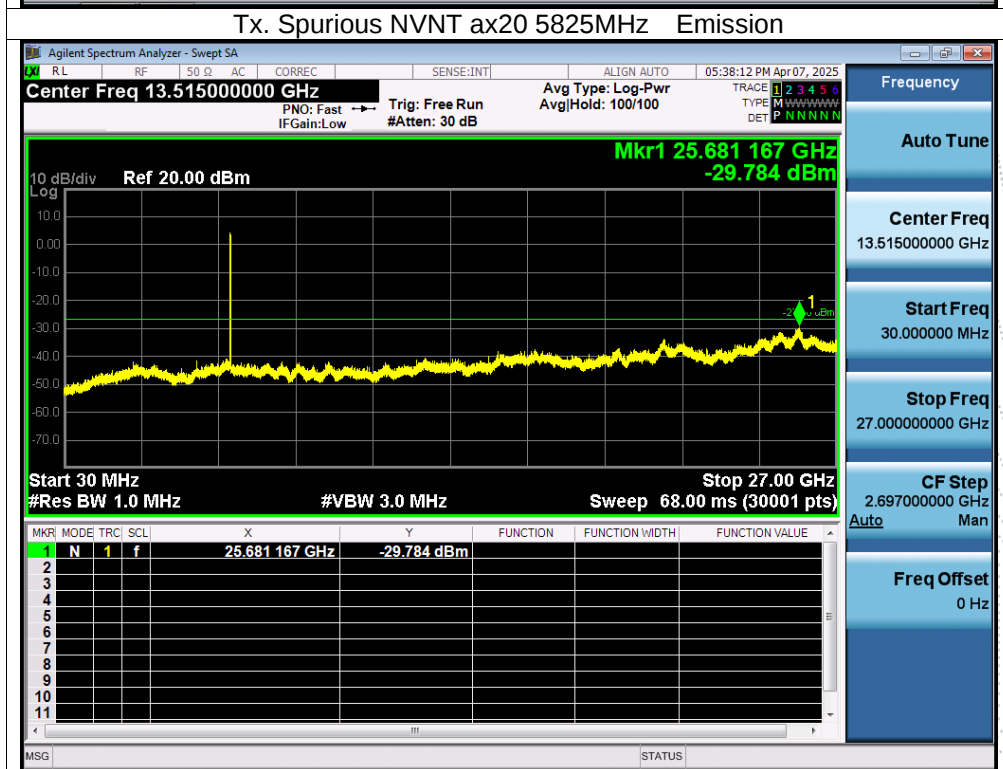
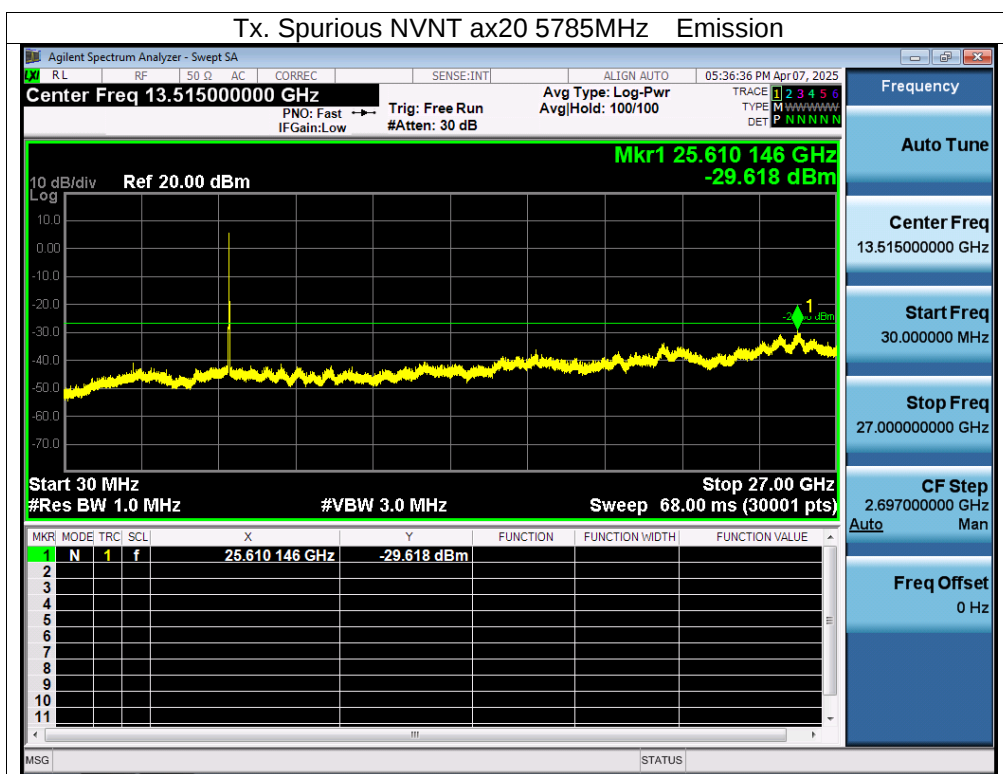
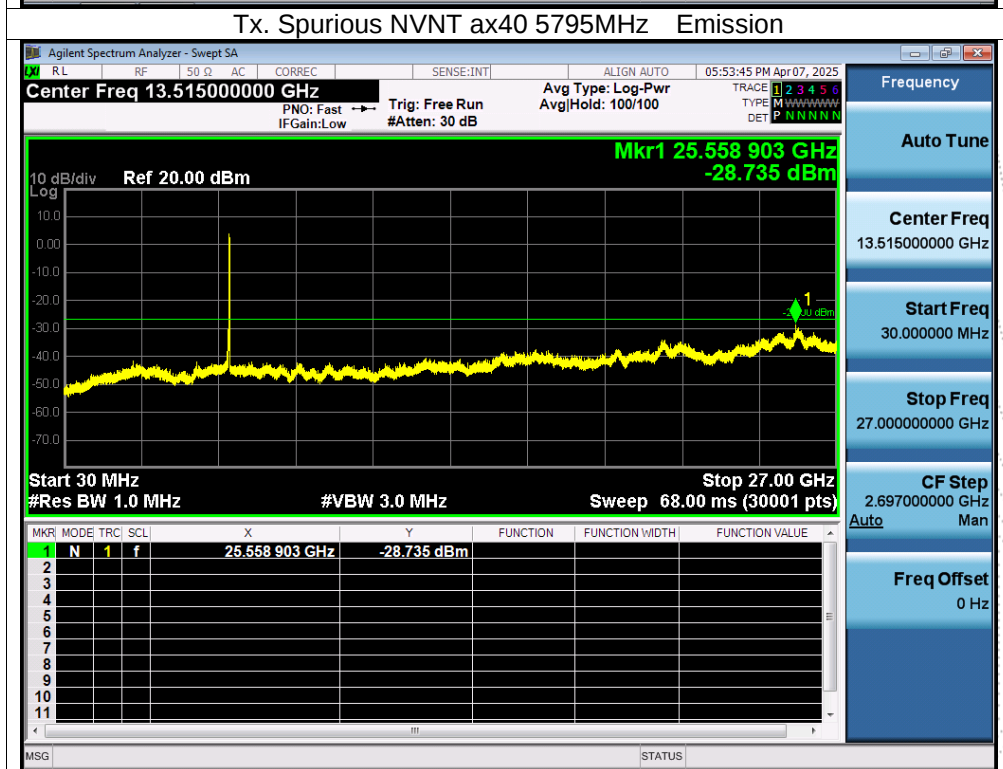
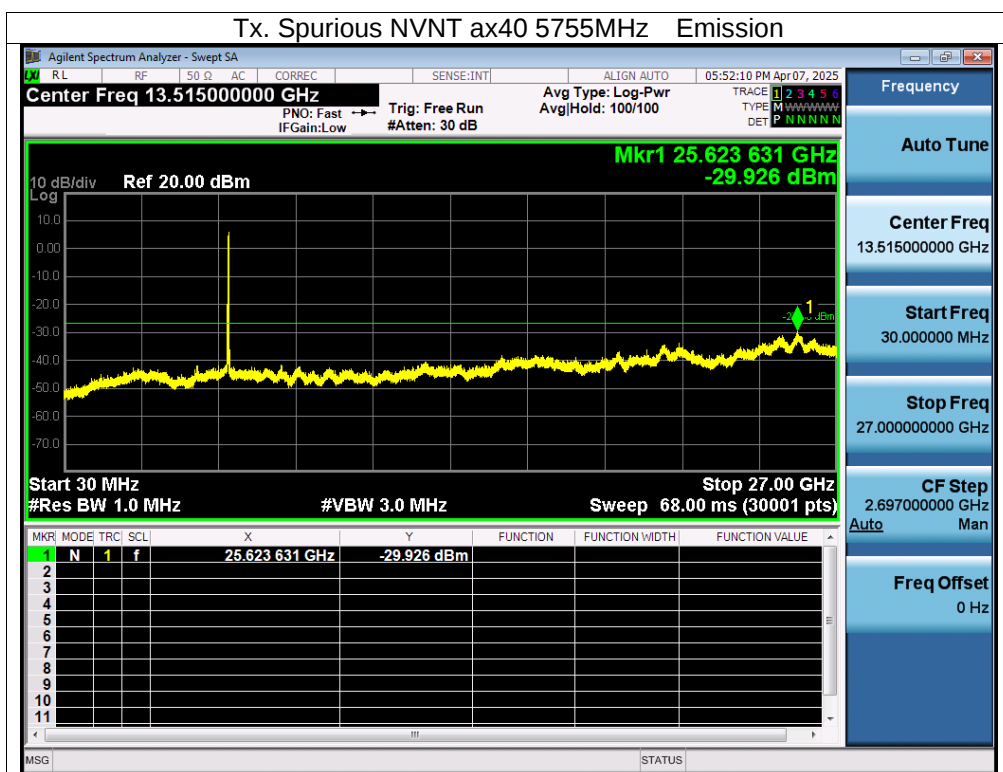












13. Frequency Stability Measurement

13.1 Block Diagram Of Test Setup



13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification)..

13.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and he limit is less than ± 20 ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is $-20^\circ\text{C} \sim 70^\circ\text{C}$.

13.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX Frequency U-NII-1 (5180-5240MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5180.0035	5180	0.0035	0.6757
		V max (V)	138.00	5180.0040	5180	0.0040	0.7722
		V min (V)	102.00	5180.0124	5180	0.0124	2.3938
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

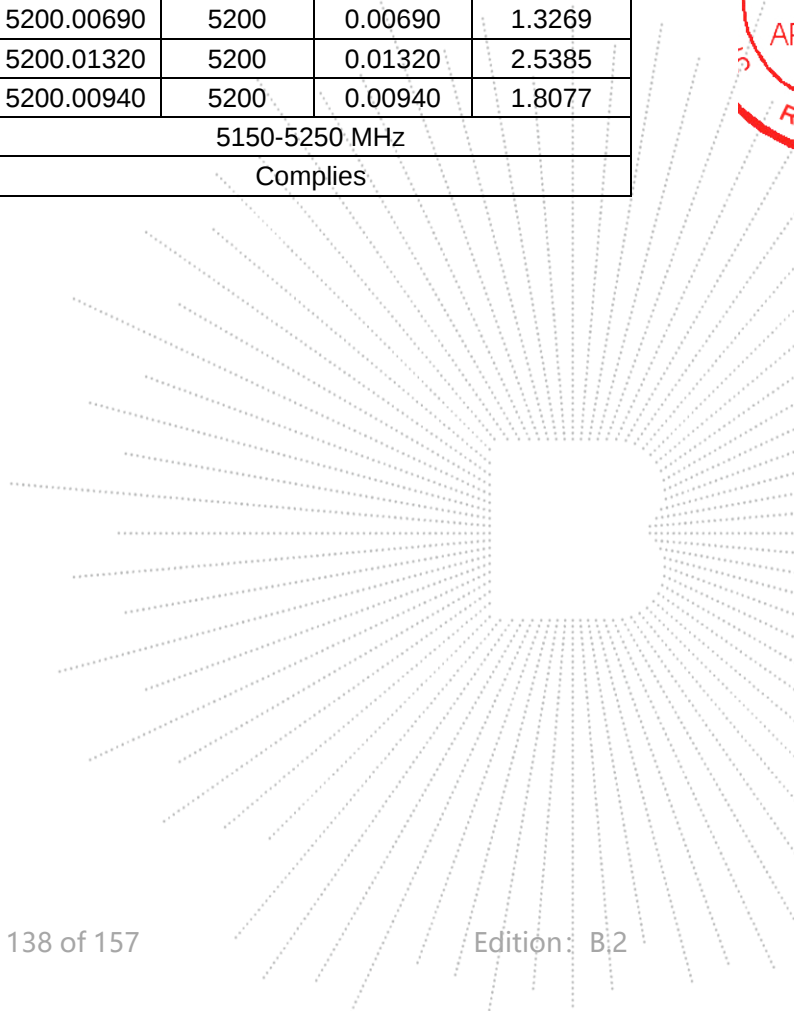
TEST CONDITIONS				Reference Frequency : 5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5180.0123	5180	0.0123	2.3745
		T (°C)	-10	5180.0043	5180	0.0043	0.8301
		T (°C)	0	5180.0035	5180	0.0035	0.6757
		T (°C)	10	5180.0105	5180	0.0105	2.0270
		T (°C)	20	5180.0099	5180	0.0099	1.9112
		T (°C)	30	5180.0048	5180	0.0048	0.9266
		T (°C)	40	5180.0085	5180	0.0085	1.6409
		T (°C)	50	5180.0046	5180	0.0046	0.8880
		T (°C)	60	5180.0052	5180	0.0052	1.0039
		T (°C)	70	5180.0012	5180	0.0012	0.2317
Limits				5150-5250 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5200.0004	5200	0.0004	0.0769
		V max (V)	138.00	5200.0039	5200	0.0039	0.7500
		V min (V)	102.00	5200.0113	5200	0.0113	2.1731
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5200.00650	5200	0.00650	1.2500
		T (°C)	-10	5200.00220	5200	0.00220	0.4231
		T (°C)	0	5200.01300	5200	0.01300	2.5000
		T (°C)	10	5200.00580	5200	0.00580	1.1154
		T (°C)	20	5200.01100	5200	0.01100	2.1154
		T (°C)	30	5200.00260	5200	0.00260	0.5000
		T (°C)	40	5200.01300	5200	0.01300	2.5000
		T (°C)	50	5200.00690	5200	0.00690	1.3269
		T (°C)	60	5200.01320	5200	0.01320	2.5385
		T (°C)	70	5200.00940	5200	0.00940	1.8077
Limits				5150-5250 MHz			
Result				Complies			



Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5240.0072	5240	0.0072	1.3740
		V max (V)	138.00	5240.0101	5240	0.0101	1.9275
		V min (V)	102.00	5240.0041	5240	0.0041	0.7824
Limits				5150-5250 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5240.0054	5240	0.0054	1.0305
		T (°C)	-10	5240.0004	5240	0.0004	0.0763
		T (°C)	0	5240.0108	5240	0.0108	2.0611
		T (°C)	10	5240.0052	5240	0.0052	0.9924
		T (°C)	20	5240.0027	5240	0.0027	0.5153
		T (°C)	30	5240.0113	5240	0.0113	2.1565
		T (°C)	40	5240.0101	5240	0.0101	1.9275
		T (°C)	50	5240.0071	5240	0.0071	1.3550
		T (°C)	60	5240.0057	5240	0.0057	1.0878
		T (°C)	70	5240.0023	5240	0.0023	0.4389
Limits				5150-5250 MHz			
Result				Complies			

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Report

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5745.01100	5745	0.01100	1.9147
		V max (V)	138.00	5745.00980	5745	0.00980	1.7058
		V min (V)	102.00	5745.00960	5745	0.00960	1.6710
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5745.01350	5745	0.01350	2.3499
		T (°C)	-10	5745.00670	5745	0.00670	1.1662
		T (°C)	0	5745.01280	5745	0.01280	2.2280
		T (°C)	10	5745.00700	5745	0.00700	1.2185
		T (°C)	20	5745.00600	5745	0.00600	1.0444
		T (°C)	30	5745.00410	5745	0.00410	0.7137
		T (°C)	40	5745.00490	5745	0.00490	0.8529
		T (°C)	50	5745.00650	5745	0.00650	1.1314
		T (°C)	60	5745.00940	5745	0.00940	1.6362
		T (°C)	70	5745.00360	5745	0.00360	0.6266
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5785.00580	5785	0.00580	1.0026
		V max (V)	138.00	5785.00670	5785	0.00670	1.1582
		V min (V)	102.00	5785.00130	5785	0.00130	0.2247
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5785.00550	5785	0.00550	0.9507
		T (°C)	-10	5785.00450	5785	0.00450	0.7779
		T (°C)	0	5785.00560	5785	0.00560	0.9680
		T (°C)	10	5785.00110	5785	0.00110	0.1901
		T (°C)	20	5785.01090	5785	0.01090	1.8842
		T (°C)	30	5785.00970	5785	0.00970	1.6768
		T (°C)	40	5785.00240	5785	0.00240	0.4149
		T (°C)	50	5785.00470	5785	0.00470	0.8124
		T (°C)	60	5785.01190	5785	0.01190	2.0570
		T (°C)	70	5785.00670	5785	0.00670	1.1582
Limits				5725-5850 MHz			
Result				Complies			

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Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120.00	5825.00910	5825	0.00910	1.5622
		V max (V)	138.00	5825.00650	5825	0.00650	1.1159
		V min (V)	102.00	5825.00140	5825	0.00140	0.2403
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5825.00370	5825	0.00370	0.6352
		T (°C)	-10	5825.01030	5825	0.01030	1.7682
		T (°C)	0	5825.00550	5825	0.00550	0.9442
		T (°C)	10	5825.00950	5825	0.00950	1.6309
		T (°C)	20	5825.01170	5825	0.01170	2.0086
		T (°C)	30	5825.00410	5825	0.00410	0.7039
		T (°C)	40	5825.00280	5825	0.00280	0.4807
		T (°C)	50	5825.00350	5825	0.00350	0.6009
		T (°C)	60	5825.00970	5825	0.00970	1.6652
		T (°C)	70	5825.00810	5825	0.00810	1.3906
Limits				5725-5850 MHz			
Result				Complies			

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14. Duty Cycle Of Test Signal

14.1 Standard Requirement

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

14.2 Formula

Duty Cycle = $T_{on} / (T_{on} + T_{off})$

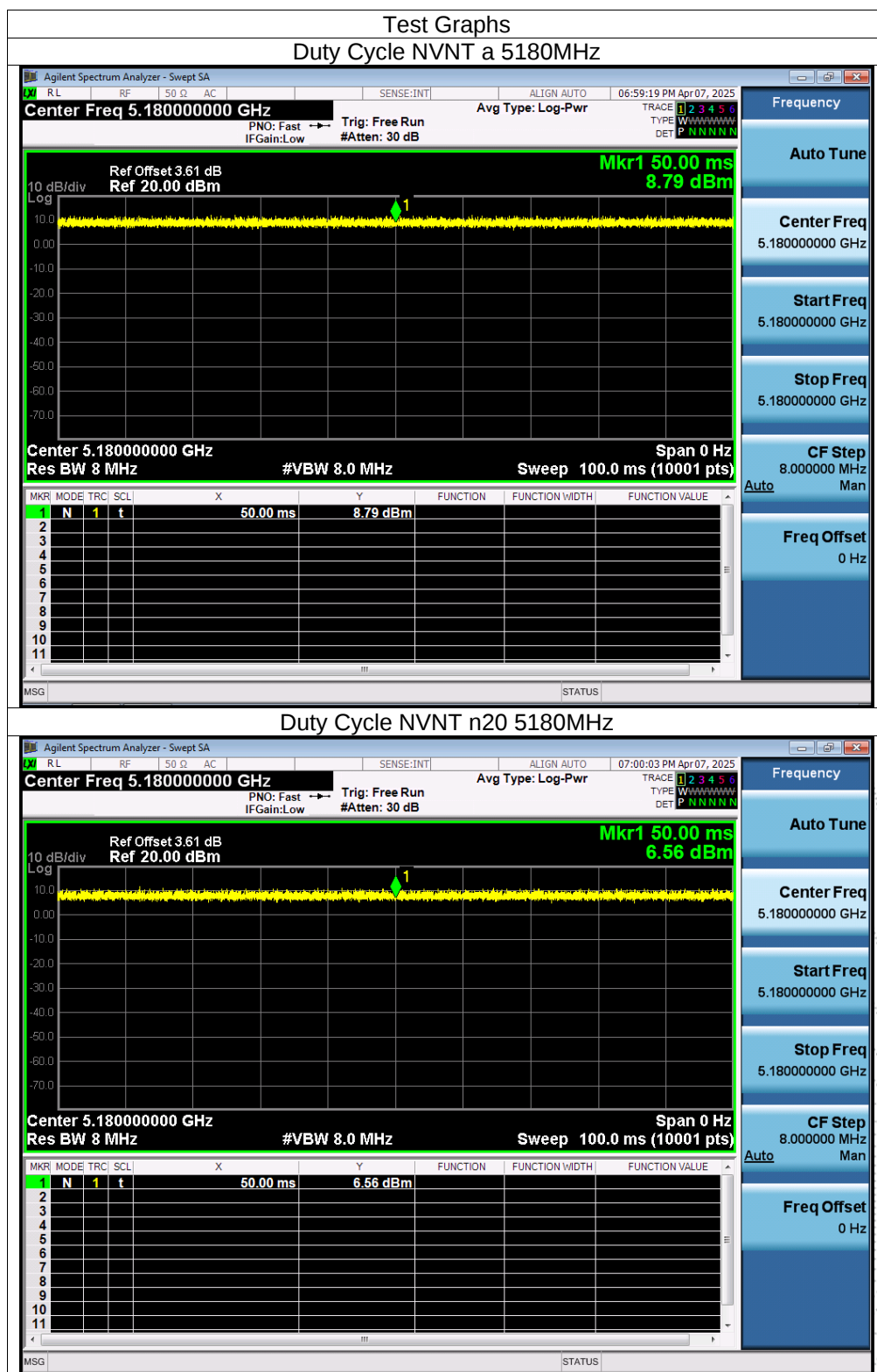
14.3 Test Procedure

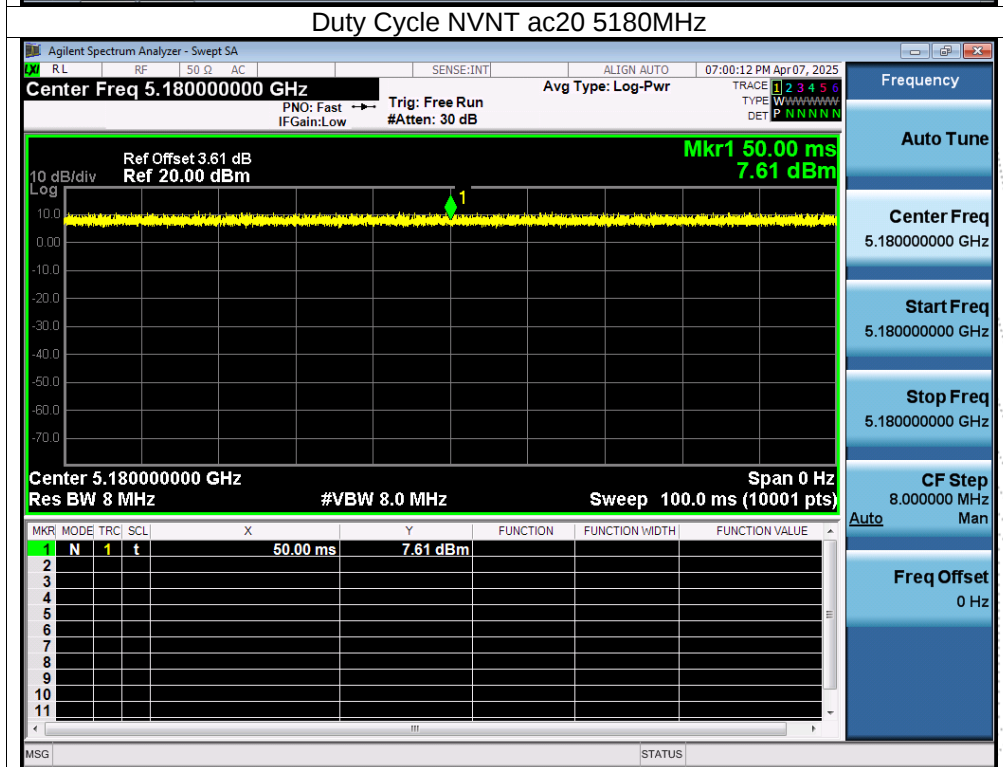
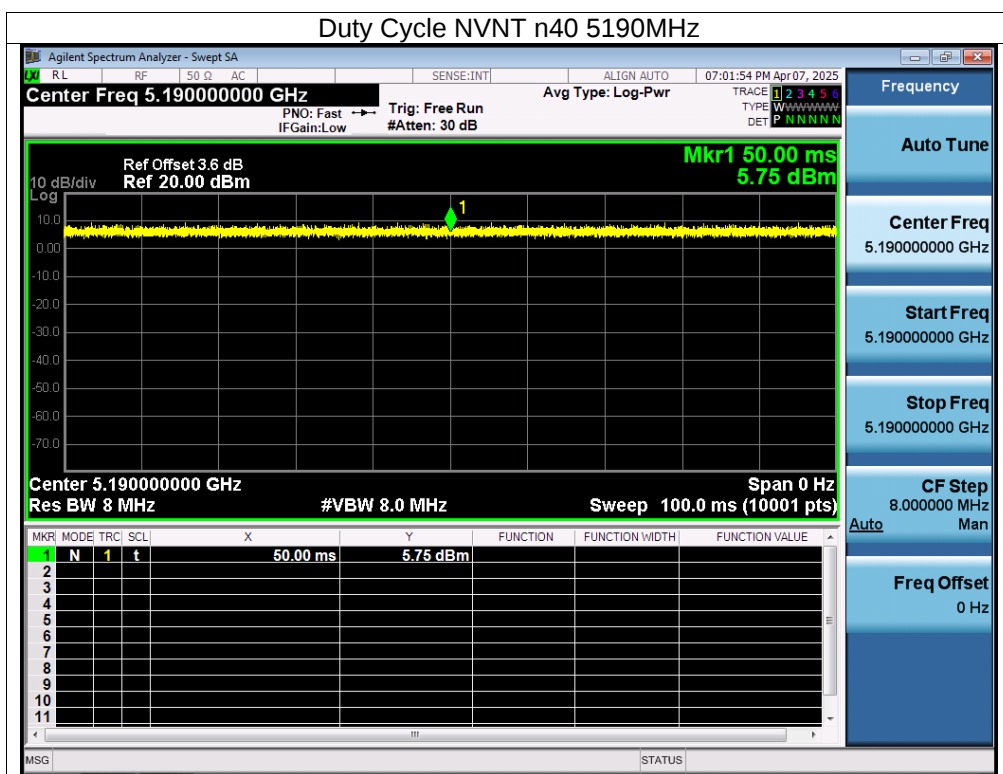
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

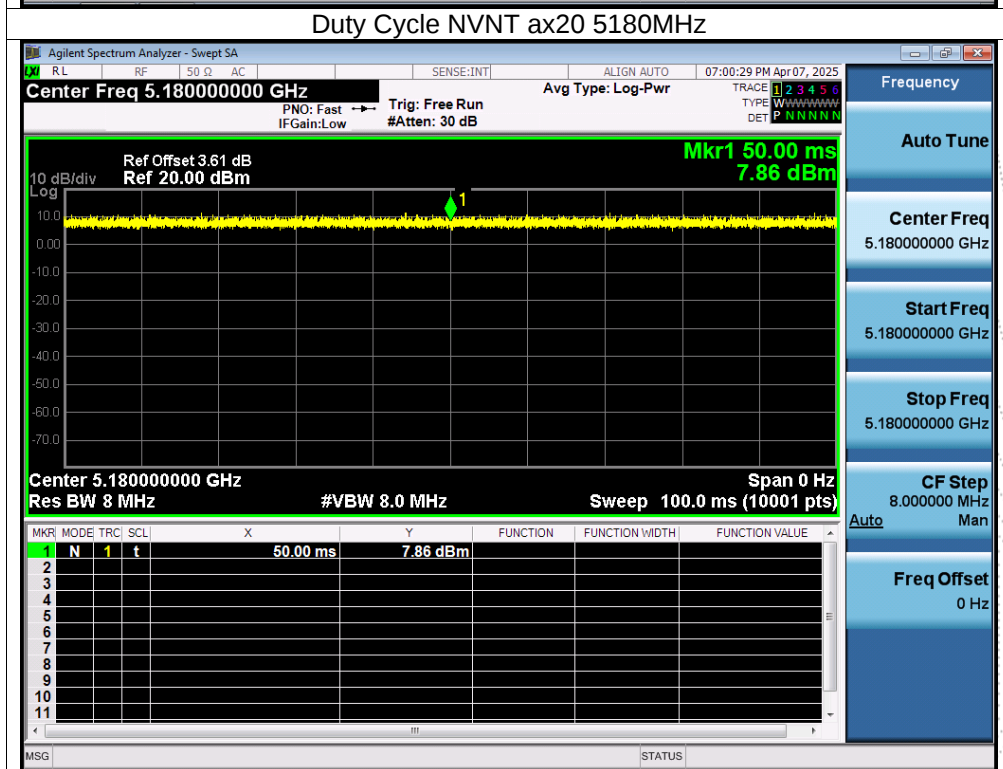
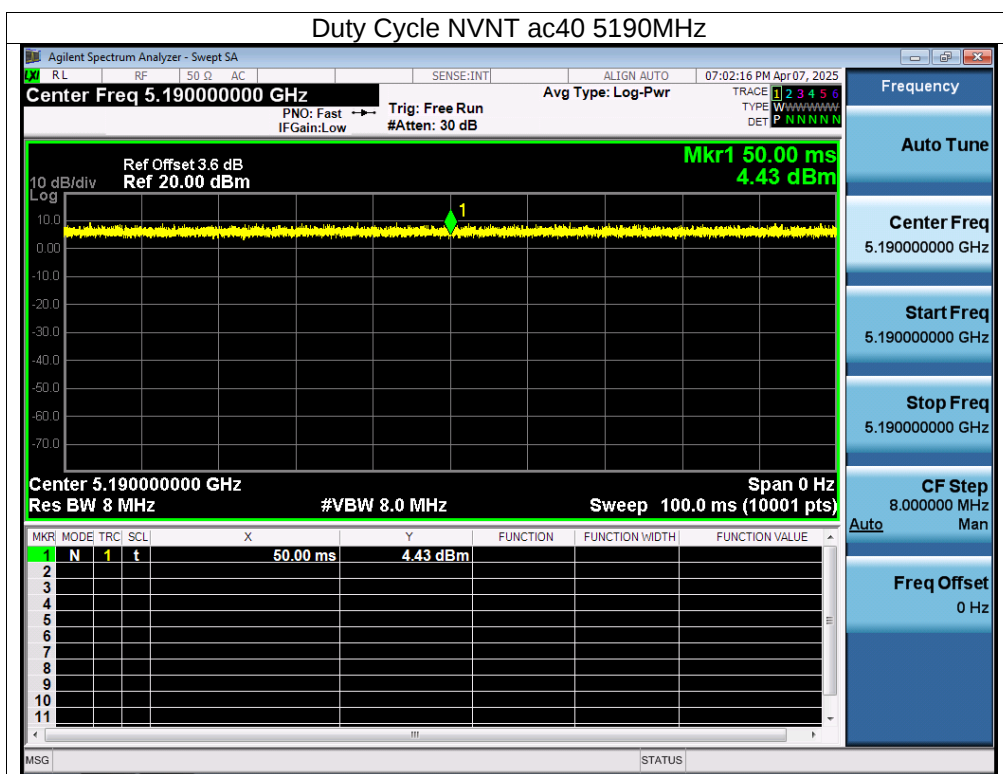
14.4 Test Result

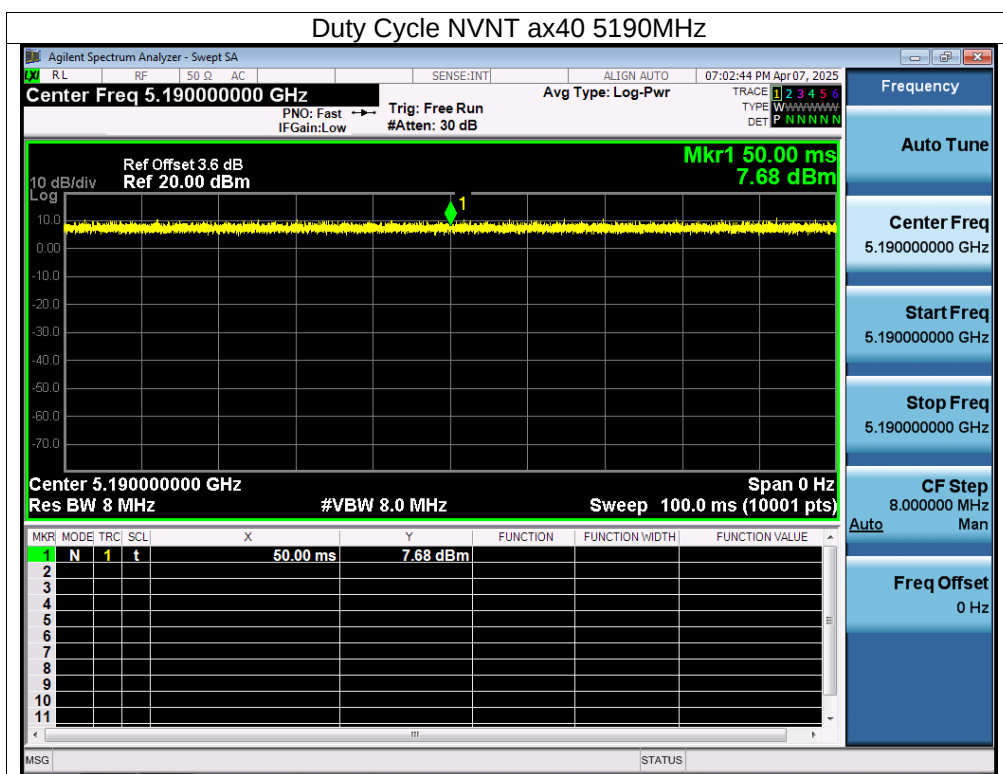
5.1G

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	100	0
NVNT	n20	5180	100	0
NVNT	n40	5190	100	0
NVNT	ac20	5180	100	0
NVNT	ac40	5190	100	0
NVNT	ax20	5180	100	0
NVNT	ax40	5190	100	0



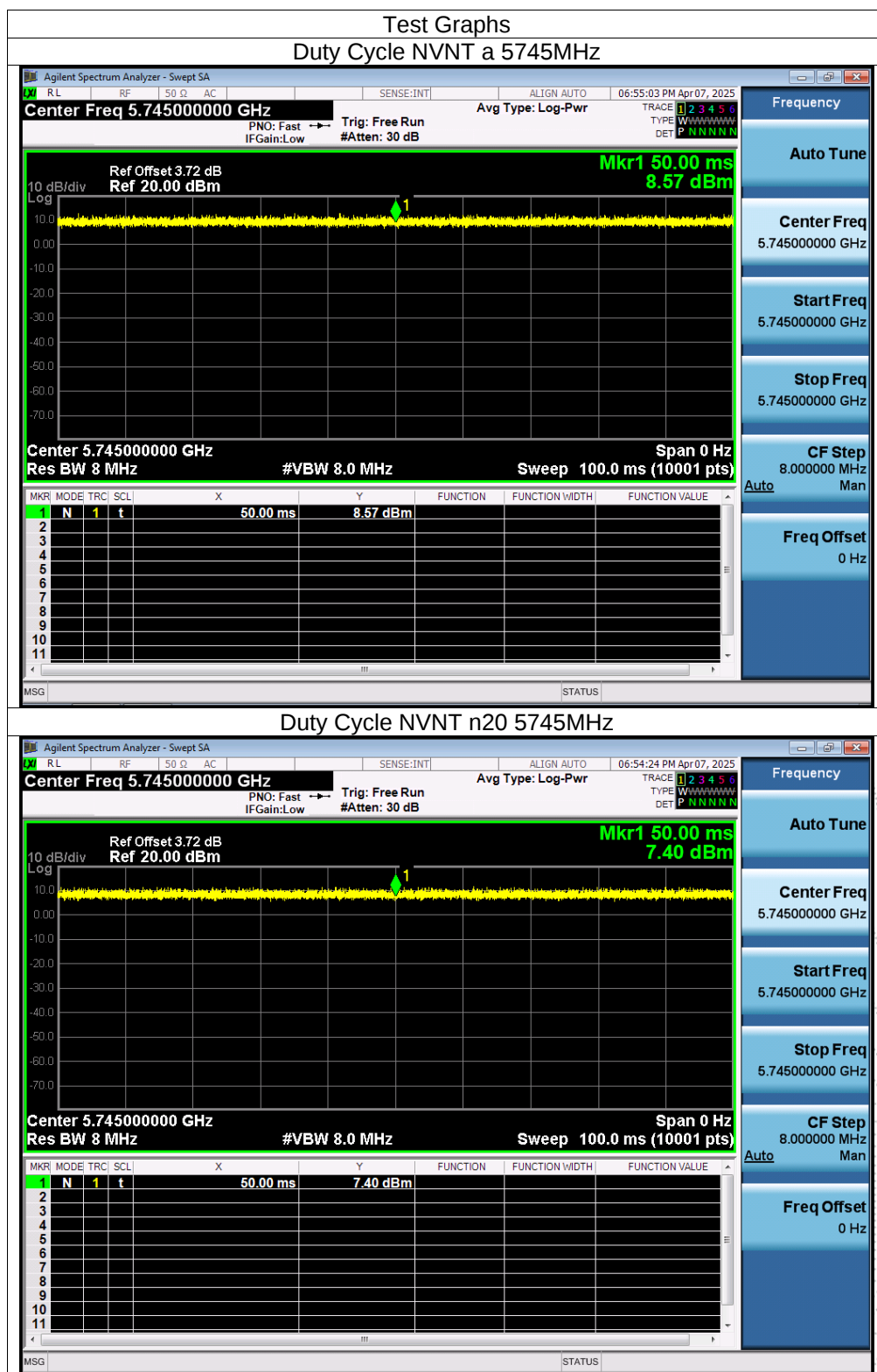


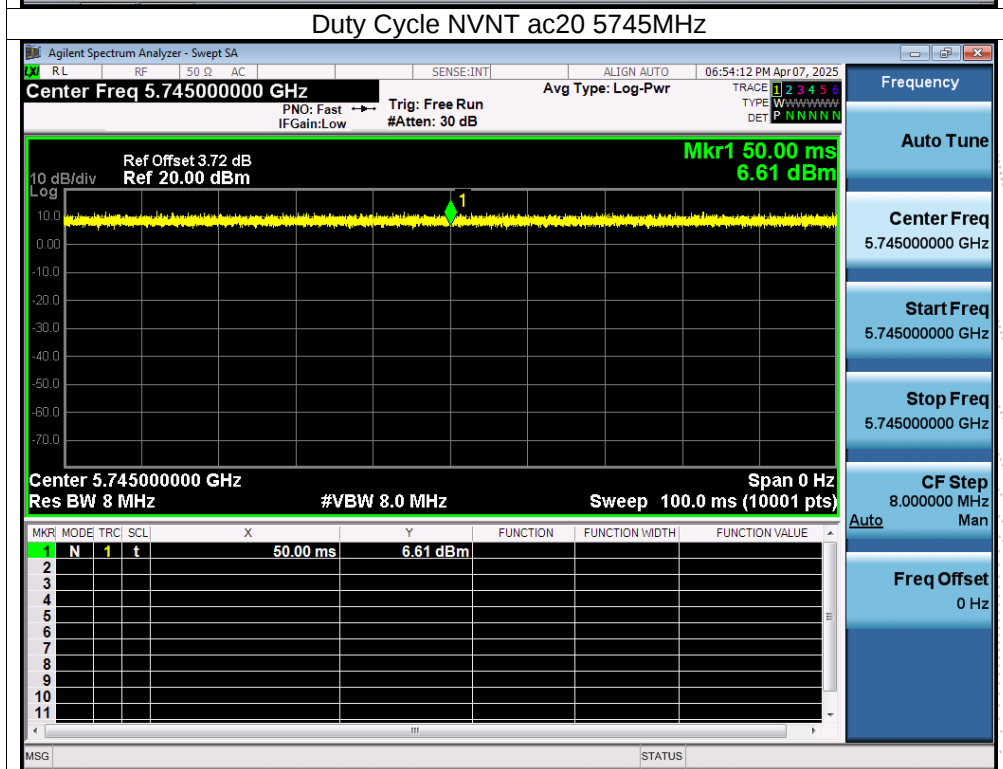
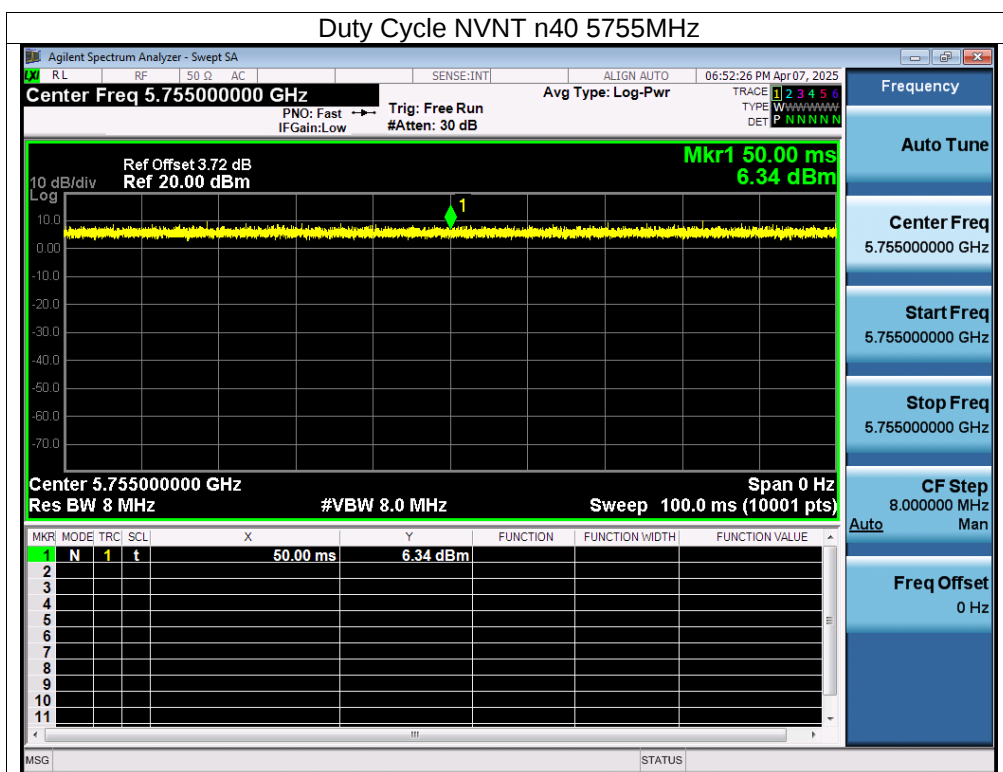


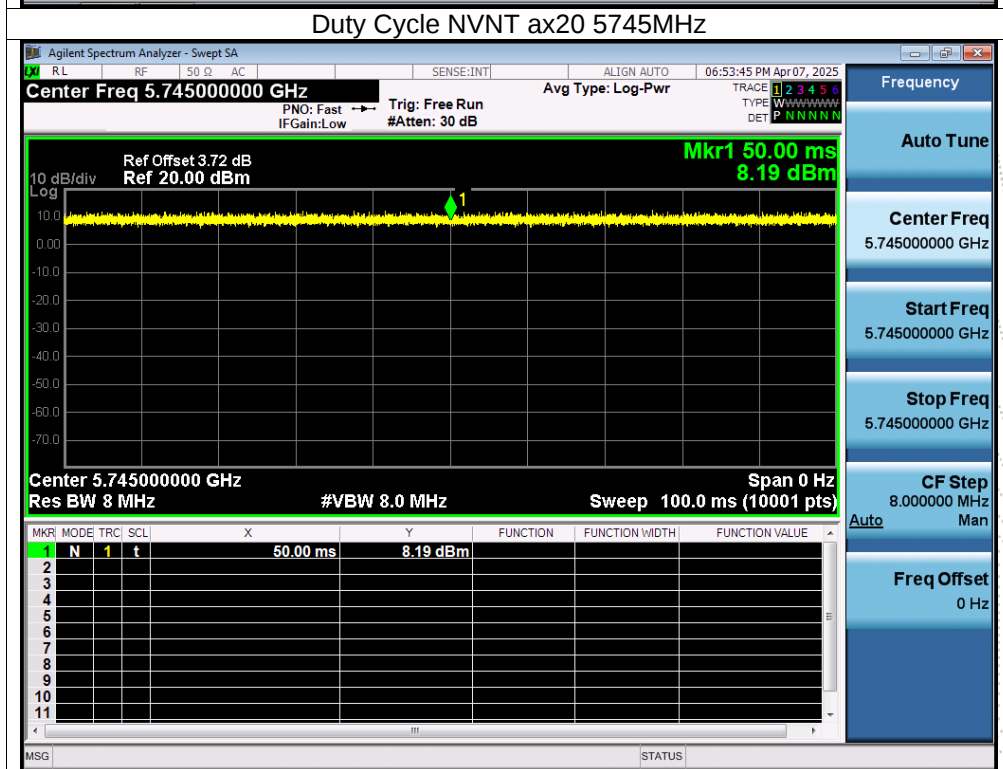
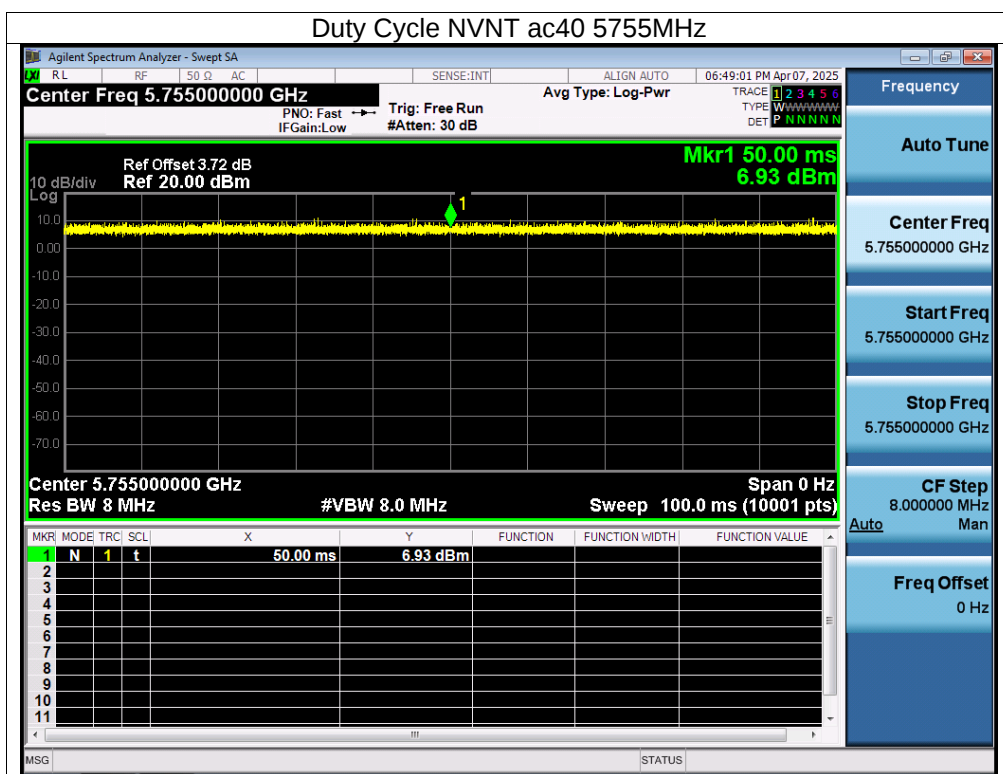


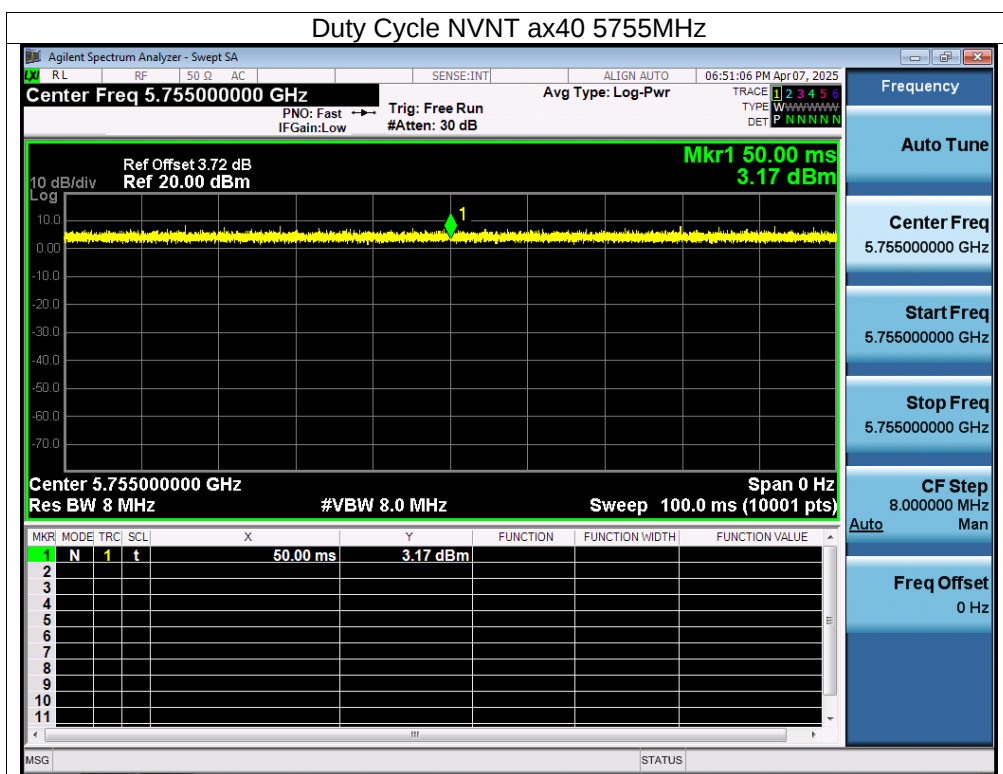
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5745	100	0
NVNT	n20	5745	100	0
NVNT	n40	5755	100	0
NVNT	ac20	5745	100	0
NVNT	ac40	5755	100	0
NVNT	ax20	5745	100	0
NVNT	ax40	5755	100	0

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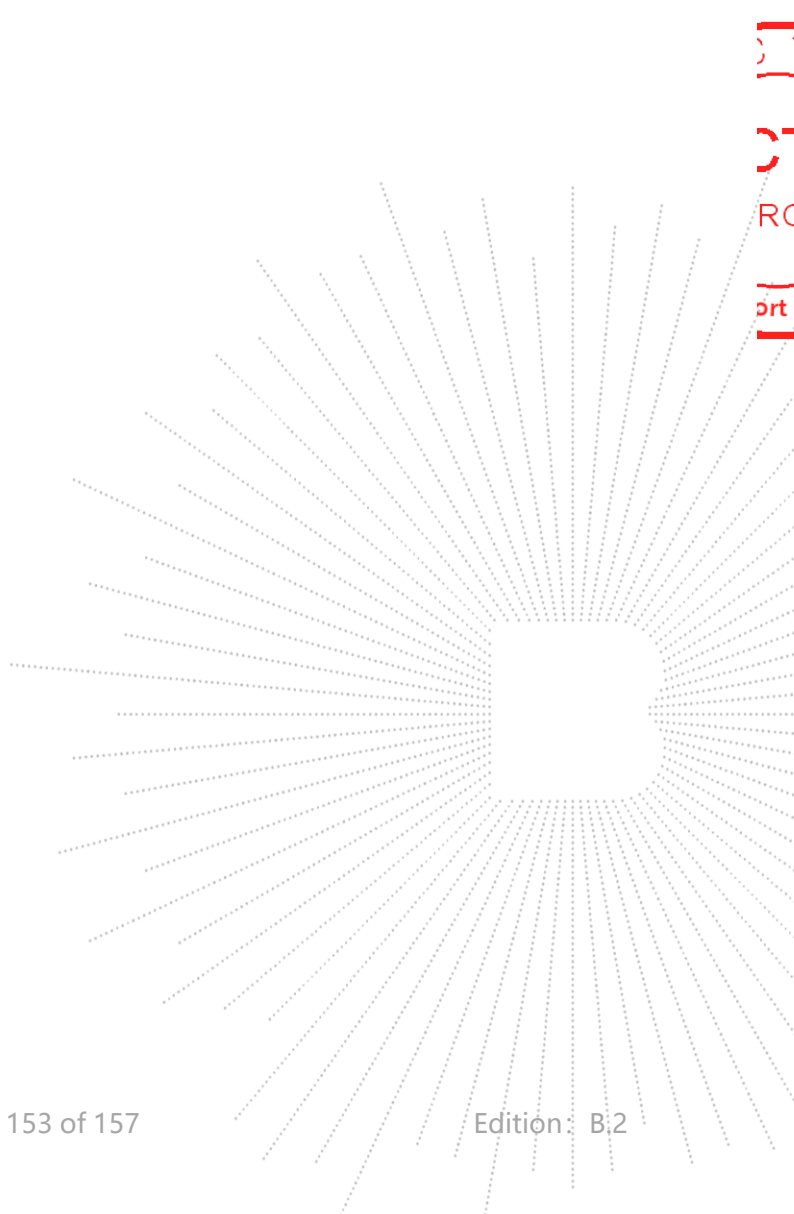
15. Antenna Requirement

15.1 Limit

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.2 Test Result

The EUT antenna is Internal antenna (5.1 Gantenna gain: -0.52 dBi,5.8G Gantenna gain: 1.25 dBi). It comply with the standard requirement.



16. EUT Photographs**EUT Photo 1****EUT Photo 2**

NOTE: Appendix-Photographs Of EUT Constructional Details.

17. EUT Test Setup Photographs

Conducted Emissions Photo



Radiated Measurement Photos





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STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****

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