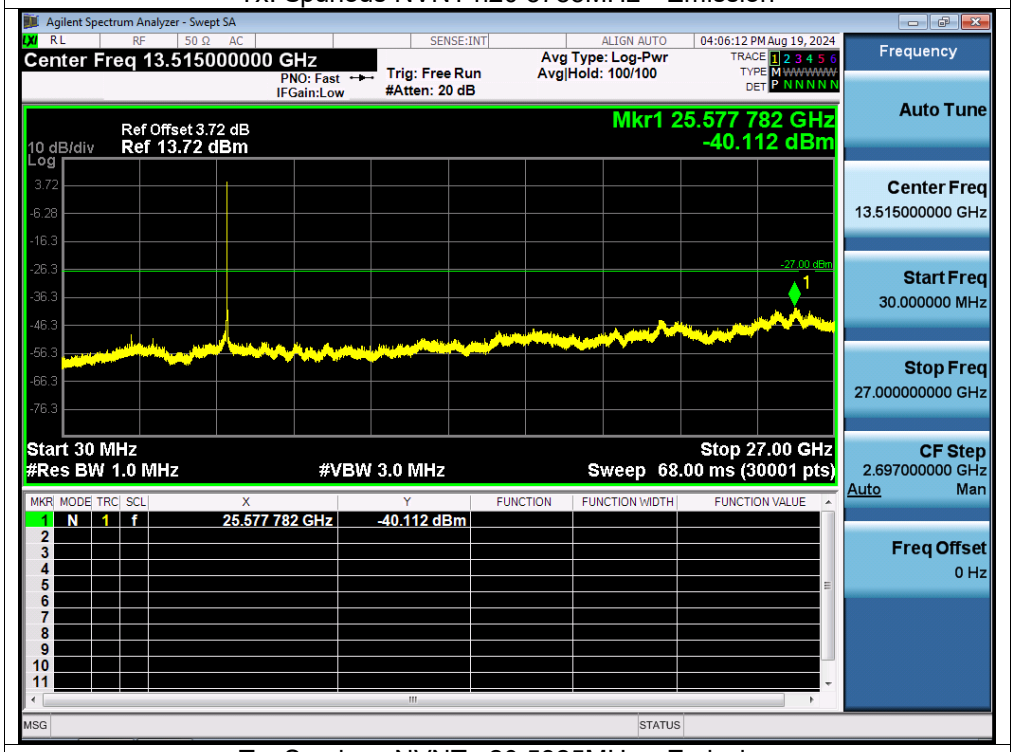
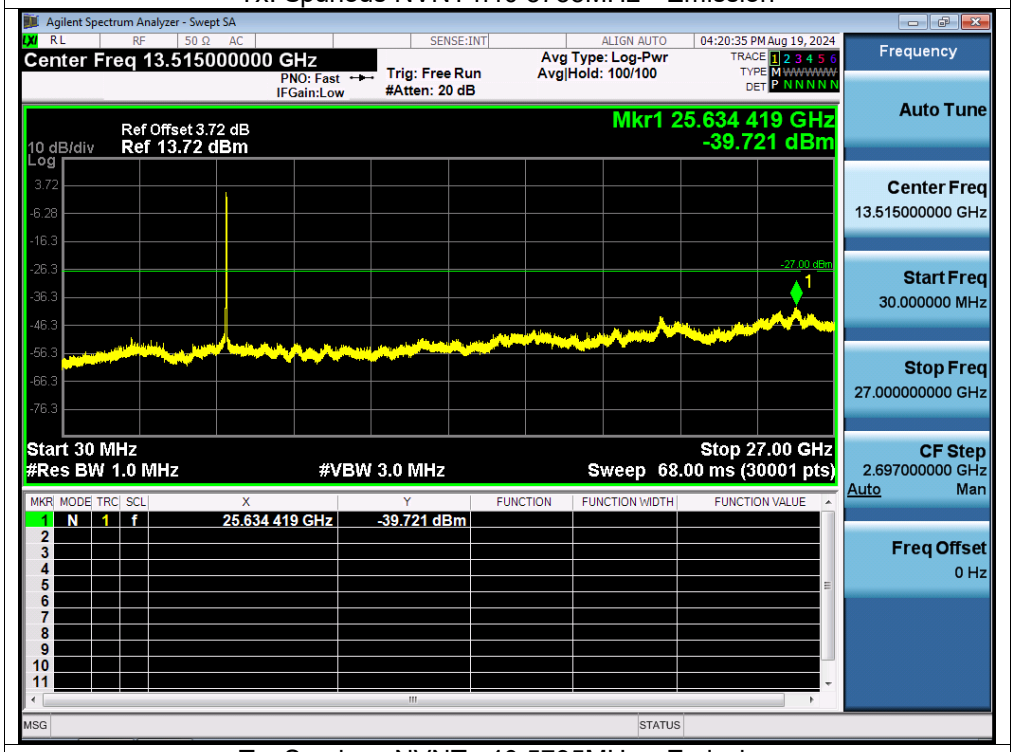
Tx. Spurious NVNT n20 5785MHz Emission

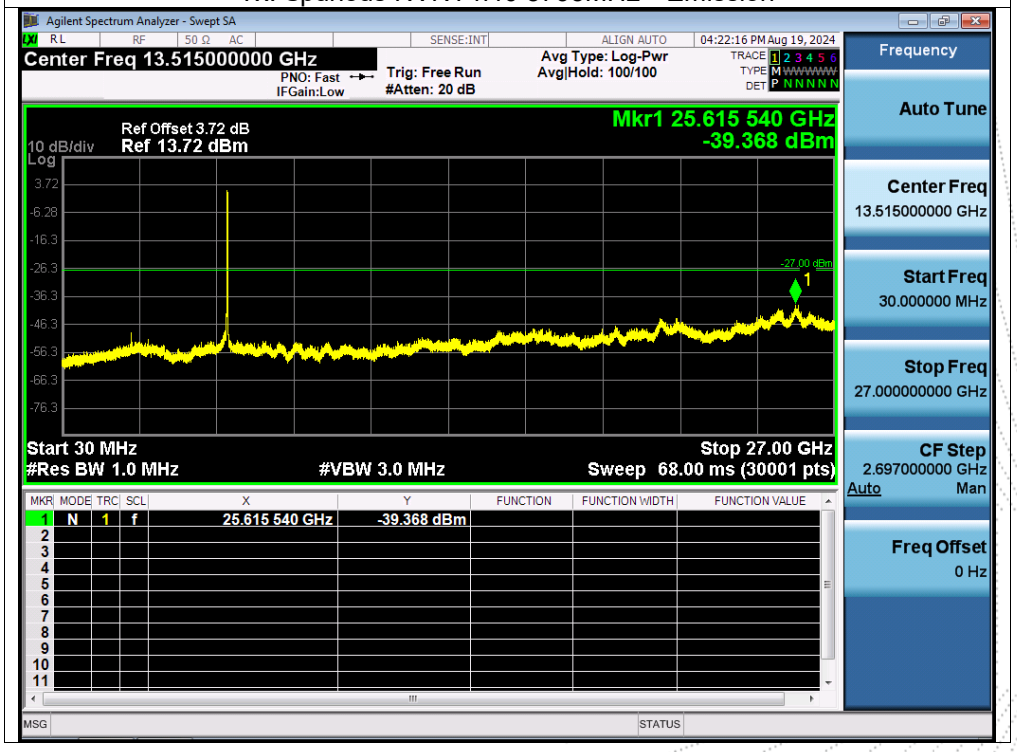


Tx. Spurious NVNT n20 5825MHz Emission

Tx. Spurious NVNT n40 5755MHz Emission



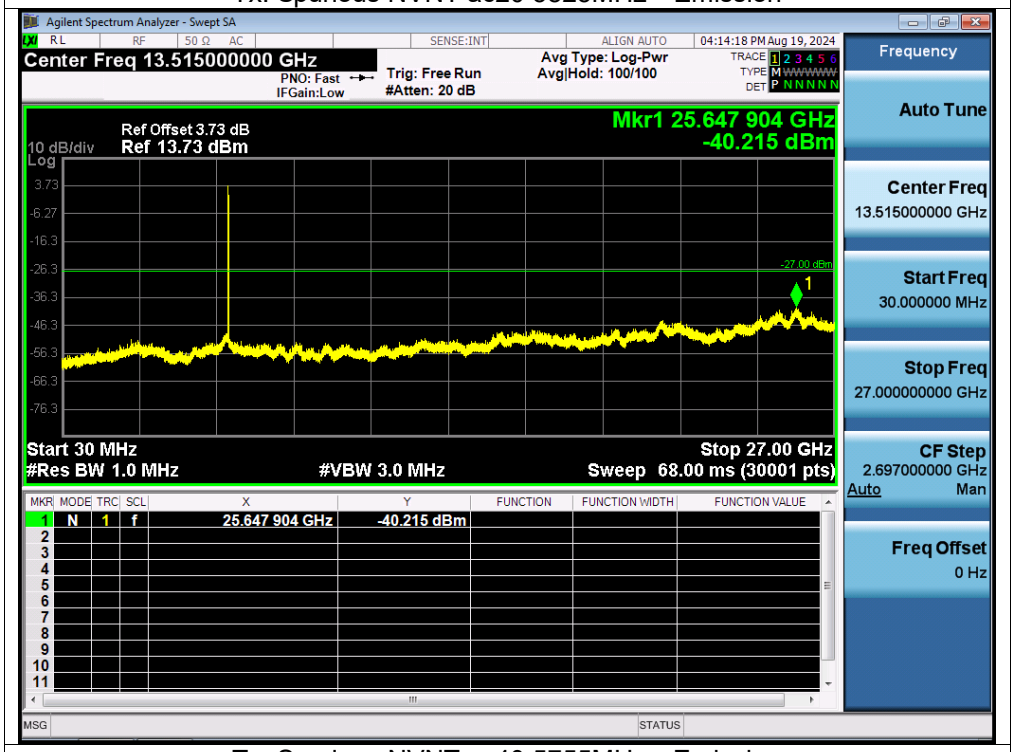
Tx. Spurious NVNT n40 5795MHz Emission



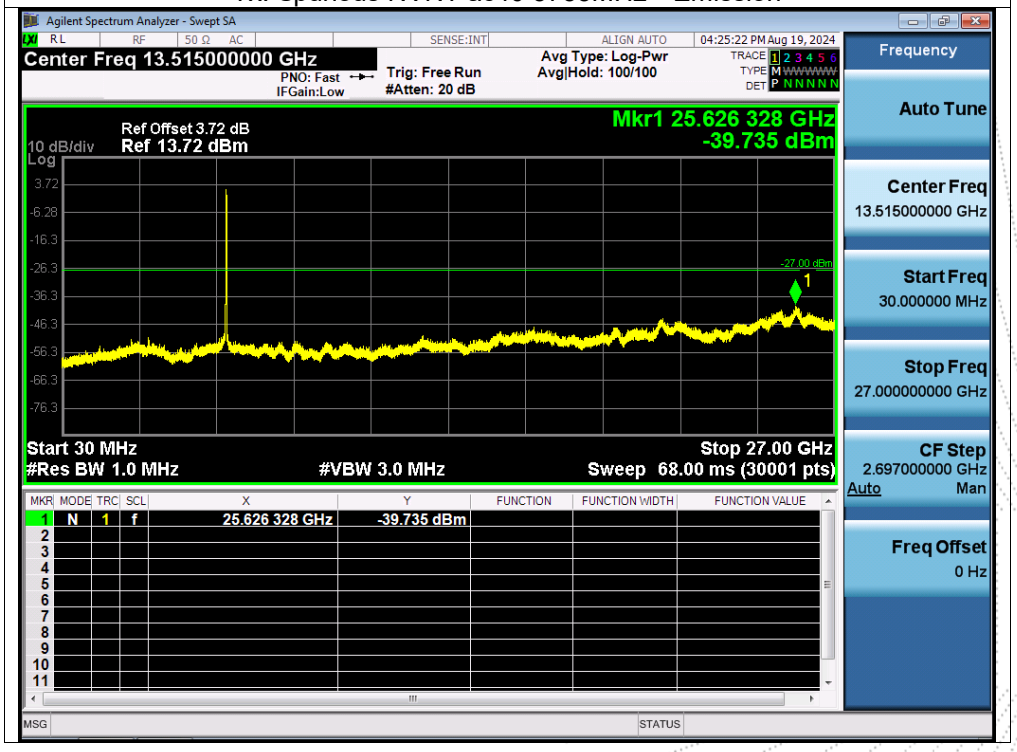
Tx. Spurious NVNT ac20 5745MHz Emission

Tx. Spurious NVNT ac20 5785MHz Emission

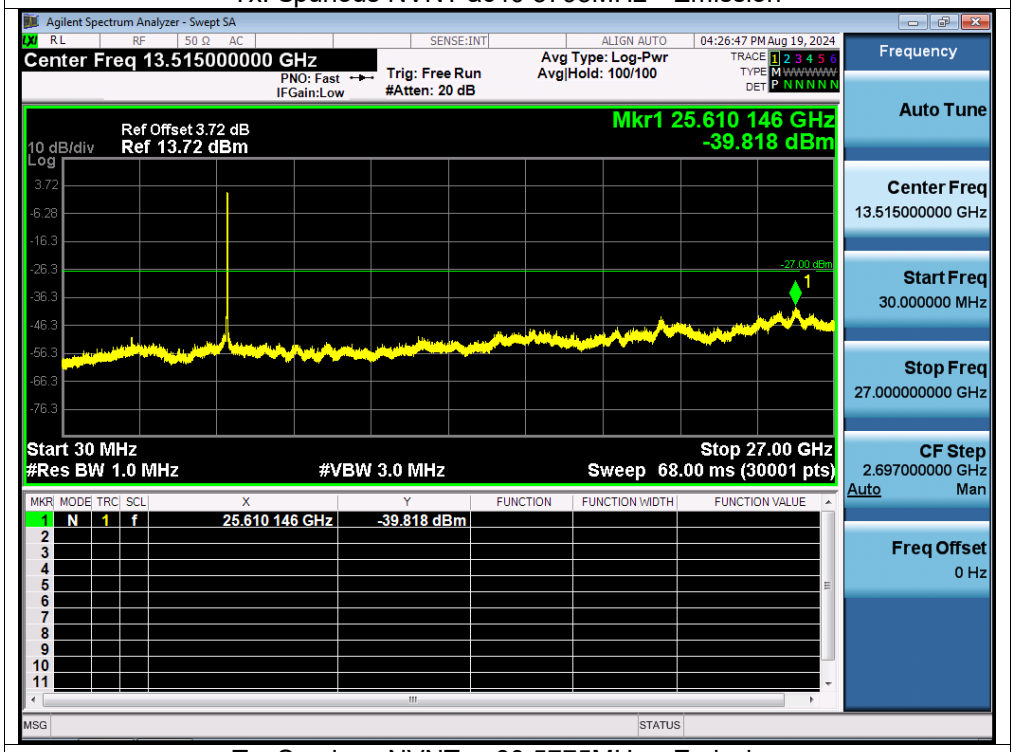
Tx. Spurious NVNT ac20 5825MHz Emission



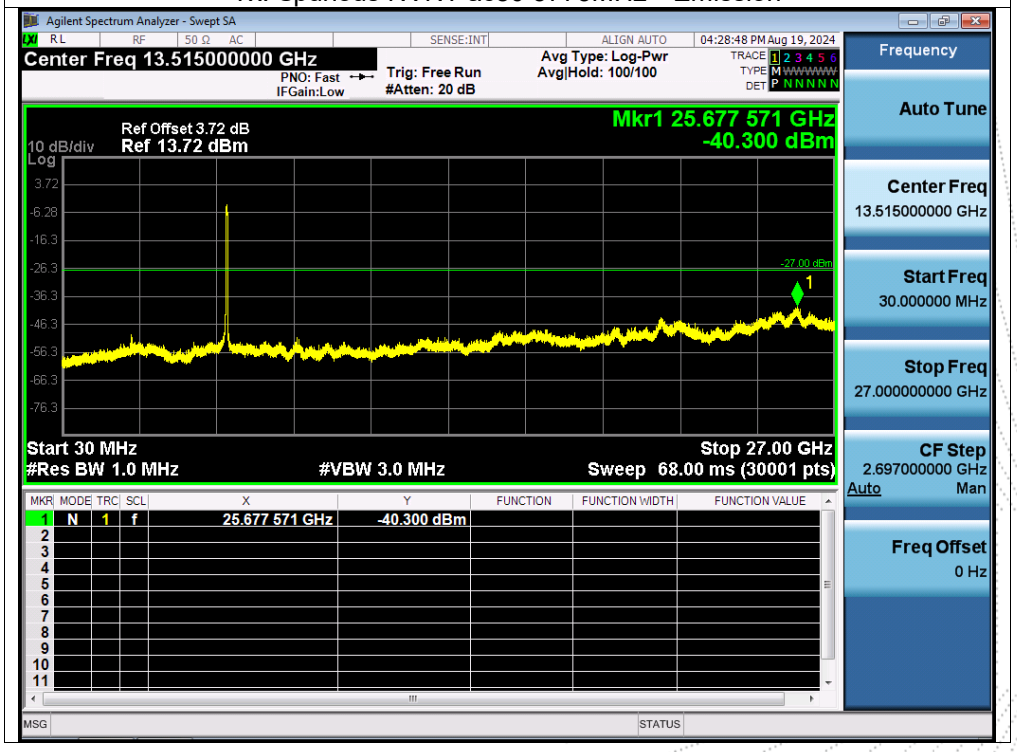
Tx. Spurious NVNT ac40 5755MHz Emission



Tx. Spurious NVNT ac40 5795MHz Emission

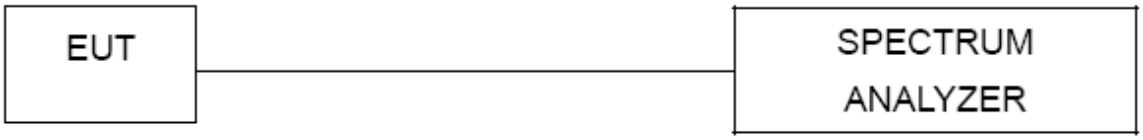


Tx. Spurious NVNT ac80 5775MHz Emission



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. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and he limit is less than ±20ppm (IEEE 802.11nspecification).
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°C~70°C.

13.4 Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 3.8V
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)	3.8	5180.0021	5180	0.0021	0.4054
		V max (V)	4.37	5180.0008	5180	0.0008	0.1544
		V min (V)	3.23	5180.0010	5180	0.0010	0.1931
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)	3.8	T (°C)	-20	5180.0115	5180	0.0115	2.2201
		T (°C)	-10	5180.0048	5180	0.0048	0.9266
		T (°C)	0	5180.0077	5180	0.0077	1.4865
		T (°C)	10	5180.0085	5180	0.0085	1.6409
		T (°C)	20	5180.0132	5180	0.0132	2.5483
		T (°C)	30	5180.0044	5180	0.0044	0.8494
		T (°C)	40	5180.0017	5180	0.0017	0.3282
		T (°C)	50	5180.0045	5180	0.0045	0.8687
		T (°C)	60	5180.0034	5180	0.0034	0.6564
		T (°C)	70	5180.0102	5180	0.0102	1.9691
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)	3.8	5200.0056	5200	0.0056	1.0769
		V max (V)	4.37	5200.0111	5200	0.0111	2.1346
		V min (V)	3.23	5200.0134	5200	0.0134	2.5769
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)	3.8	T (°C)	-20	5200.00690	5200	0.00690	1.3269
		T (°C)	-10	5200.00130	5200	0.00130	0.2500
		T (°C)	0	5200.01170	5200	0.01170	2.2500
		T (°C)	10	5200.00550	5200	0.00550	1.0577
		T (°C)	20	5200.01120	5200	0.01120	2.1538
		T (°C)	30	5200.00570	5200	0.00570	1.0962
		T (°C)	40	5200.00970	5200	0.00970	1.8654
		T (°C)	50	5200.00360	5200	0.00360	0.6923
		T (°C)	60	5200.01160	5200	0.01160	2.2308
		T (°C)	70	5200.01110	5200	0.01110	2.1346
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)	3.8	5240.0061	5240	0.0061	1.1641
		V max (V)	4.37	5240.0084	5240	0.0084	1.6031
		V min (V)	3.23	5240.0110	5240	0.0110	2.0992
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)	3.8	T (°C)	-20	5240.0083	5240	0.0083	1.5840
		T (°C)	-10	5240.0036	5240	0.0036	0.6870
		T (°C)	0	5240.0063	5240	0.0063	1.2023
		T (°C)	10	5240.0021	5240	0.0021	0.4008
		T (°C)	20	5240.0099	5240	0.0099	1.8893
		T (°C)	30	5240.0056	5240	0.0056	1.0687
		T (°C)	40	5240.0070	5240	0.0070	1.3359
		T (°C)	50	5240.0057	5240	0.0057	1.0878
		T (°C)	60	5240.0119	5240	0.0119	2.2710
		T (°C)	70	5240.0021	5240	0.0021	0.4008
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 3.8V
Test Mode:	TX Frequency(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)	3.8	5745.01090	5745	0.01090	1.8973
		V max (V)	4.37	5745.01170	5745	0.01170	2.0366
		V min (V)	3.23	5745.00500	5745	0.00500	0.8703
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)	3.8	T (°C)	-20	5745.00400	5745	0.00400	0.6963
		T (°C)	-10	5745.01170	5745	0.01170	2.0366
		T (°C)	0	5745.00400	5745	0.00400	0.6963
		T (°C)	10	5745.00720	5745	0.00720	1.2533
		T (°C)	20	5745.00980	5745	0.00980	1.7058
		T (°C)	30	5745.00460	5745	0.00460	0.8007
		T (°C)	40	5745.01150	5745	0.01150	2.0017
		T (°C)	50	5745.00700	5745	0.00700	1.2185
		T (°C)	60	5745.01300	5745	0.01300	2.2628
		T (°C)	70	5745.00430	5745	0.00430	0.7485
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)	3.8	5785.00160	5785	0.00160	0.2766
		V max (V)	4.37	5785.00360	5785	0.00360	0.6223
		V min (V)	3.23	5785.00590	5785	0.00590	1.0199
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)	3.8	T (°C)	-20	5785.00710	5785	0.00710	1.2273
		T (°C)	-10	5785.00310	5785	0.00310	0.5359
		T (°C)	0	5785.00040	5785	0.00040	0.0691
		T (°C)	10	5785.00600	5785	0.00600	1.0372
		T (°C)	20	5785.01070	5785	0.01070	1.8496
		T (°C)	30	5785.00100	5785	0.00100	0.1729
		T (°C)	40	5785.00930	5785	0.00930	1.6076
		T (°C)	50	5785.00700	5785	0.00700	1.2100
		T (°C)	60	5785.01170	5785	0.01170	2.0225
		T (°C)	70	5785.00700	5785	0.00700	1.2100
Limits				5725-5850 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	3.8	5825.00460	5825	0.00460	0.7897
		V max (V)	4.37	5825.01220	5825	0.01220	2.0944
		V min (V)	3.23	5825.01310	5825	0.01310	2.2489
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)	3.8	T (°C)	-20	5825.00630	5825	0.00630	1.0815
		T (°C)	-10	5825.01200	5825	0.01200	2.0601
		T (°C)	0	5825.01170	5825	0.01170	2.0086
		T (°C)	10	5825.01210	5825	0.01210	2.0773
		T (°C)	20	5825.00410	5825	0.00410	0.7039
		T (°C)	30	5825.01100	5825	0.01100	1.8884
		T (°C)	40	5825.00600	5825	0.00600	1.0300
		T (°C)	50	5825.00540	5825	0.00540	0.9270
		T (°C)	60	5825.01260	5825	0.01260	2.1631
		T (°C)	70	5825.00010	5825	0.00010	0.0172
Limits				5725-5850 MHz			
Result				Complies			

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 = Ton / (Ton+Toff)

14.3 Test Procedure

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

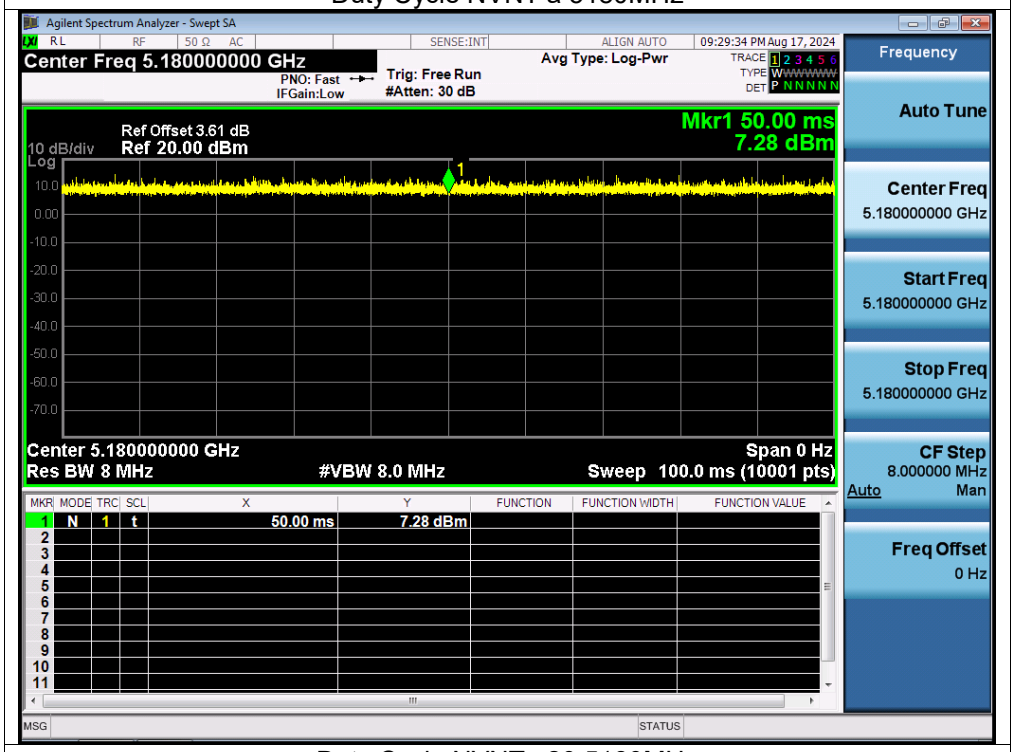
14.4 Test Result

5.1G

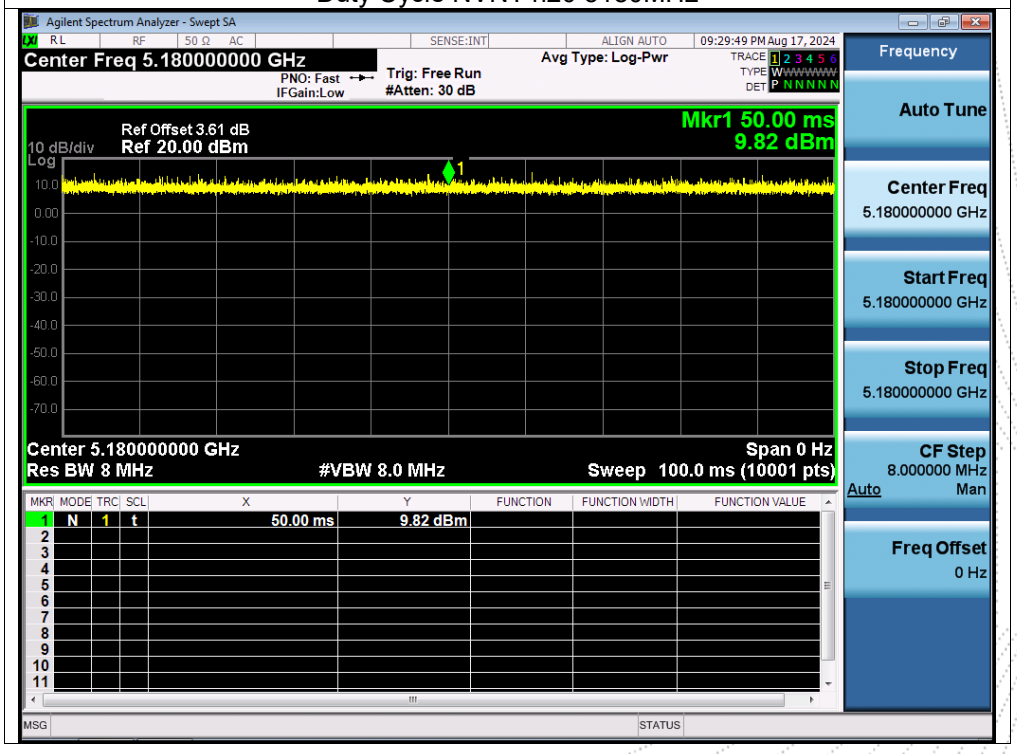
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	100	0	0
NVNT	n20	5180	100	0	0
NVNT	n40	5190	100	0	0
NVNT	ac20	5180	100	0	0
NVNT	ac40	5190	100	0	0
NVNT	ac80	5210	100	0	0

Test Graphs

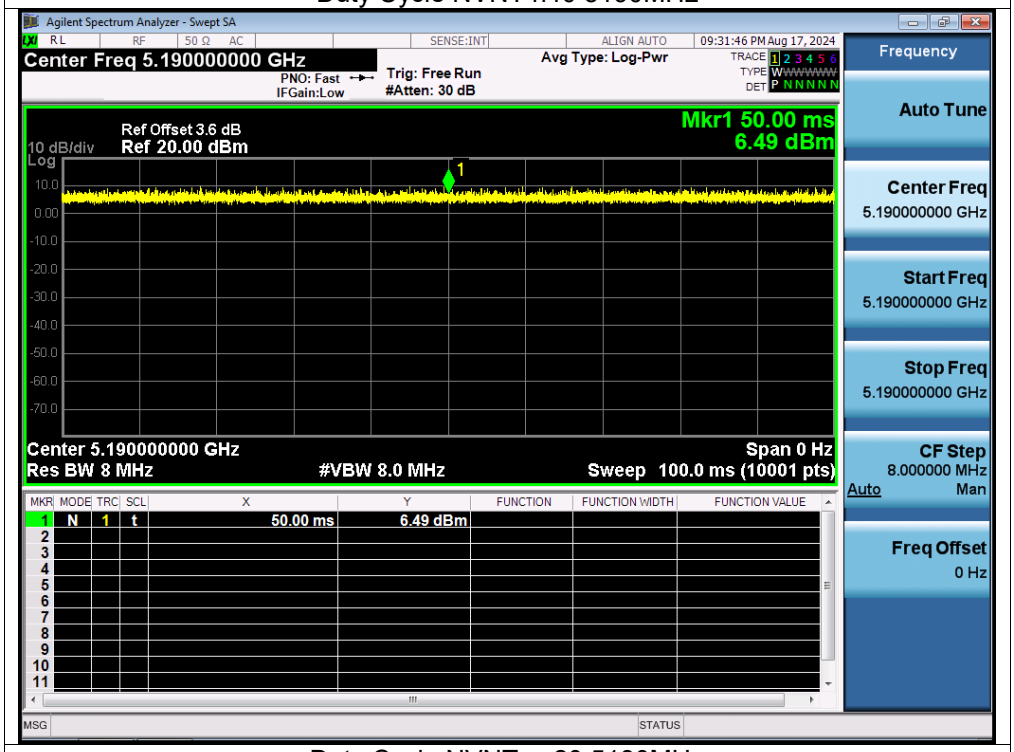
Duty Cycle NVNT a 5180MHz



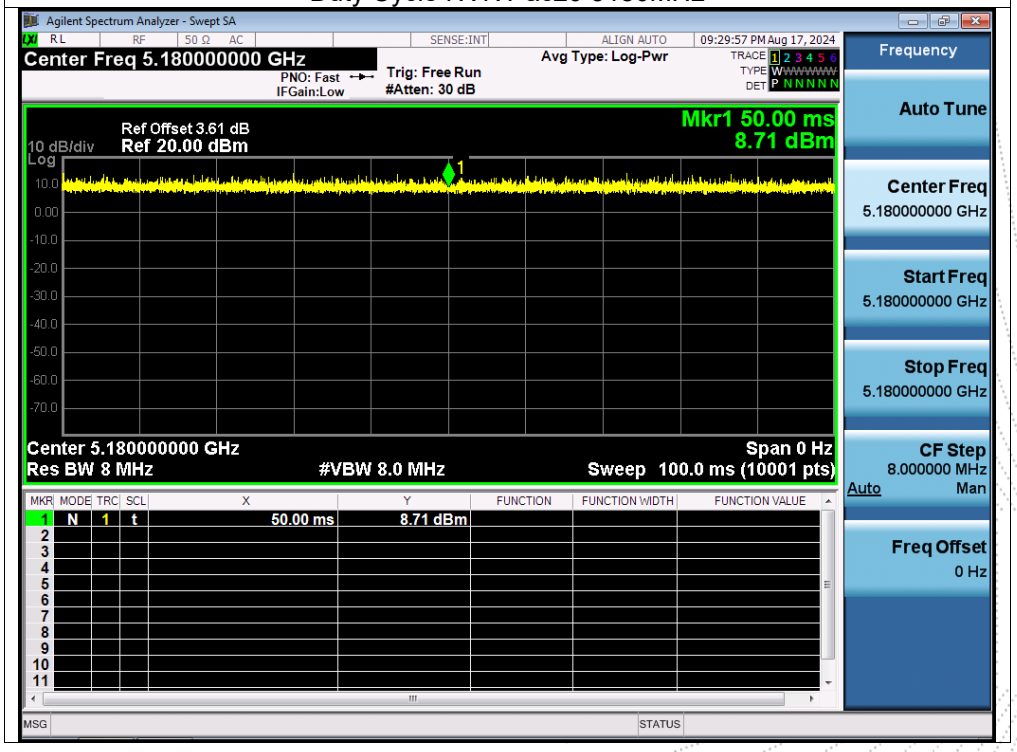
Duty Cycle NVNT n20 5180MHz



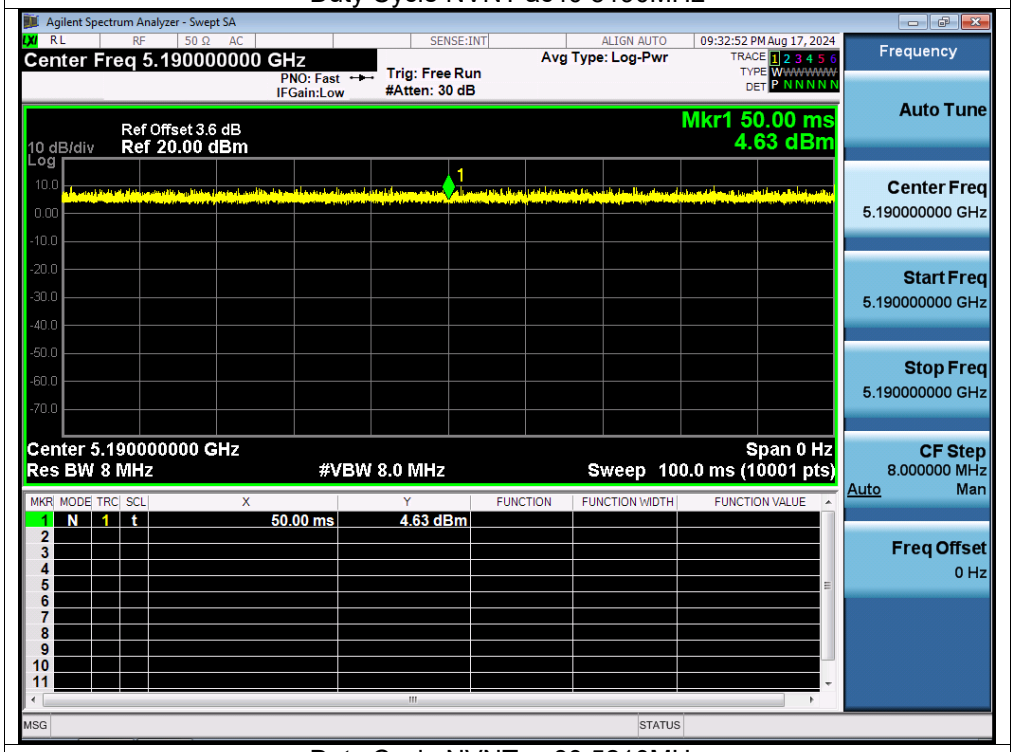
Duty Cycle NVNT n40 5190MHz



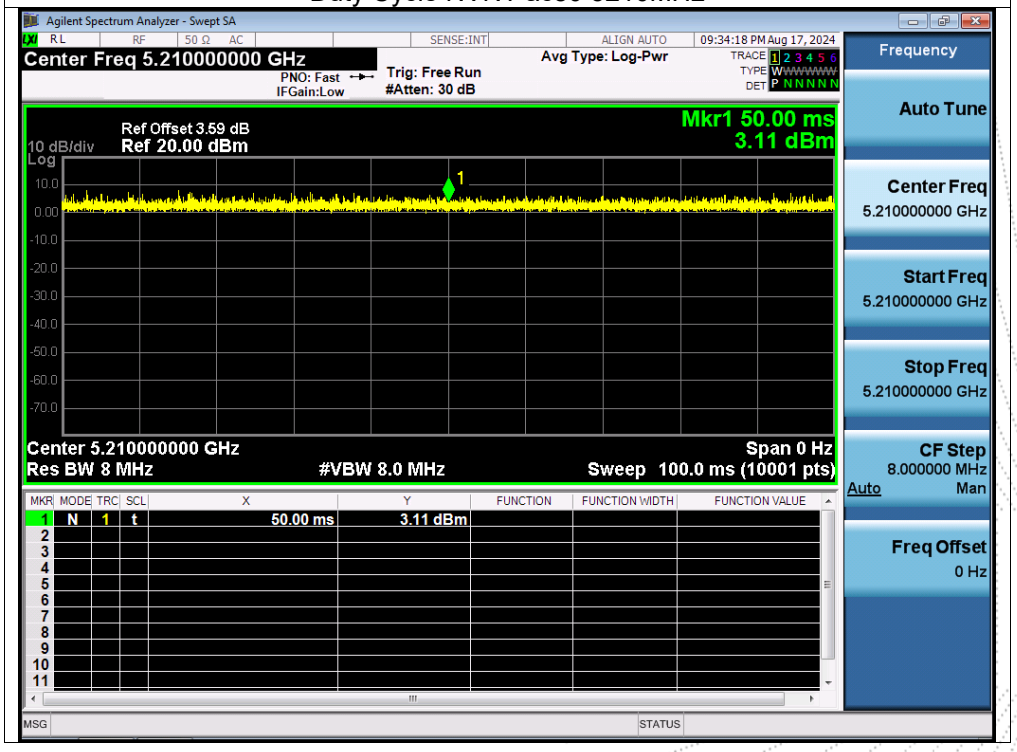
Duty Cycle NVNT ac20 5180MHz



Duty Cycle NVNT ac40 5190MHz



Duty Cycle NVNT ac80 5210MHz



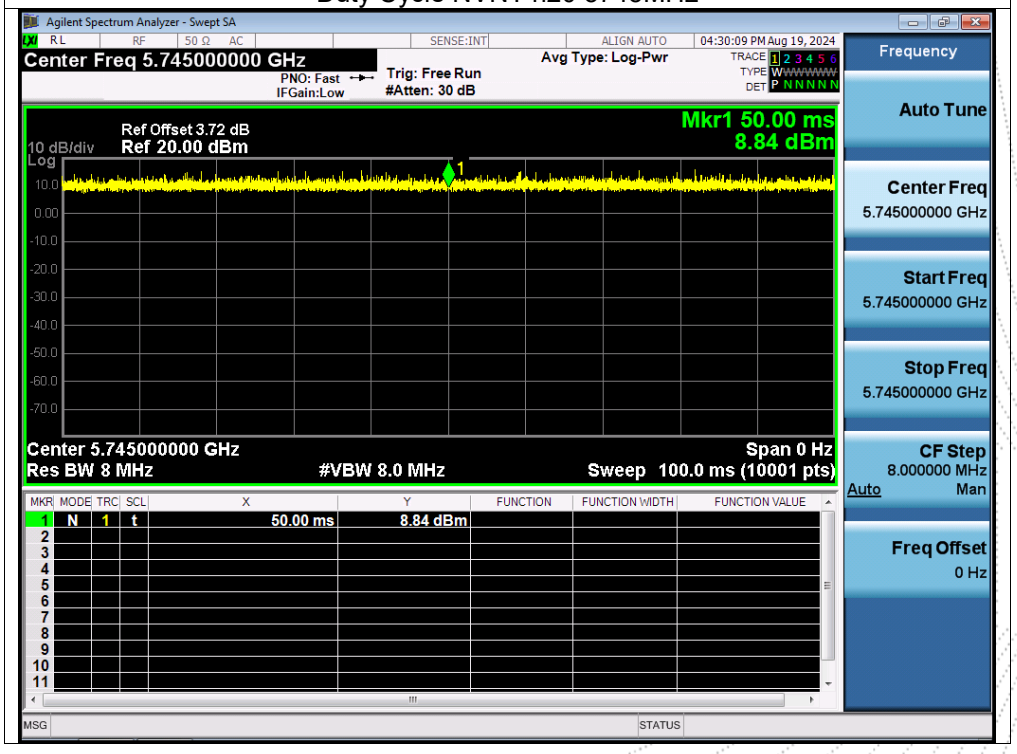
5.8G

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5745	100	0	0
NVNT	n20	5745	100	0	0
NVNT	n40	5755	100	0	0
NVNT	ac20	5745	100	0	0
NVNT	ac40	5755	100	0	0
NVNT	ac80	5775	100	0	0

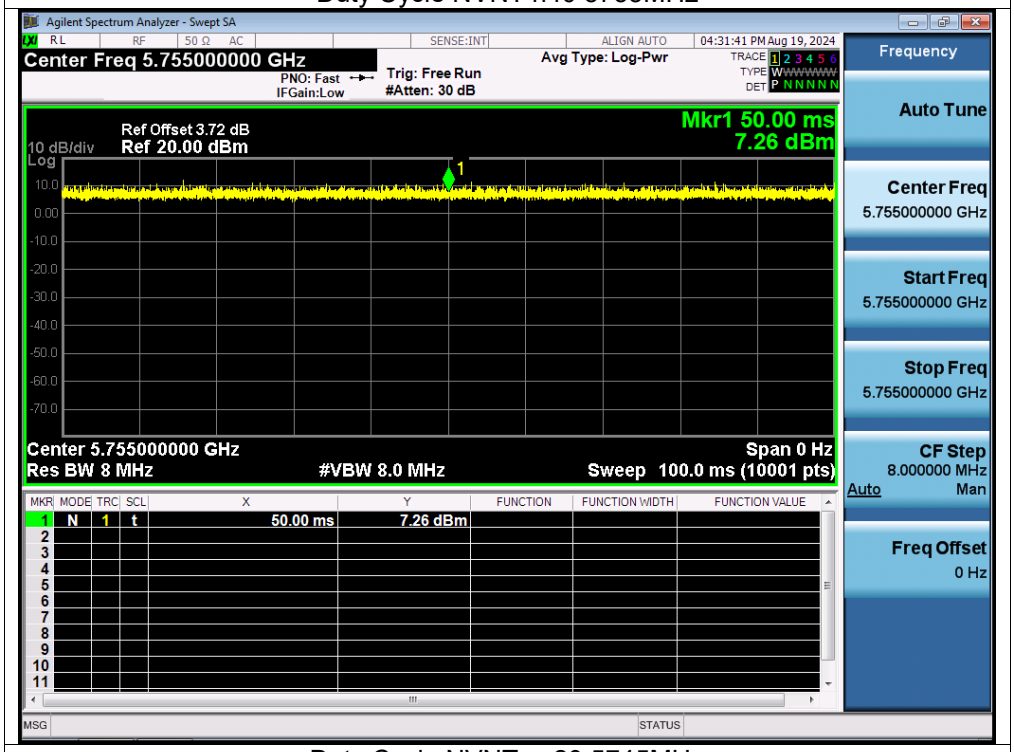
Test Graphs

Duty Cycle NVNT a 5745MHz

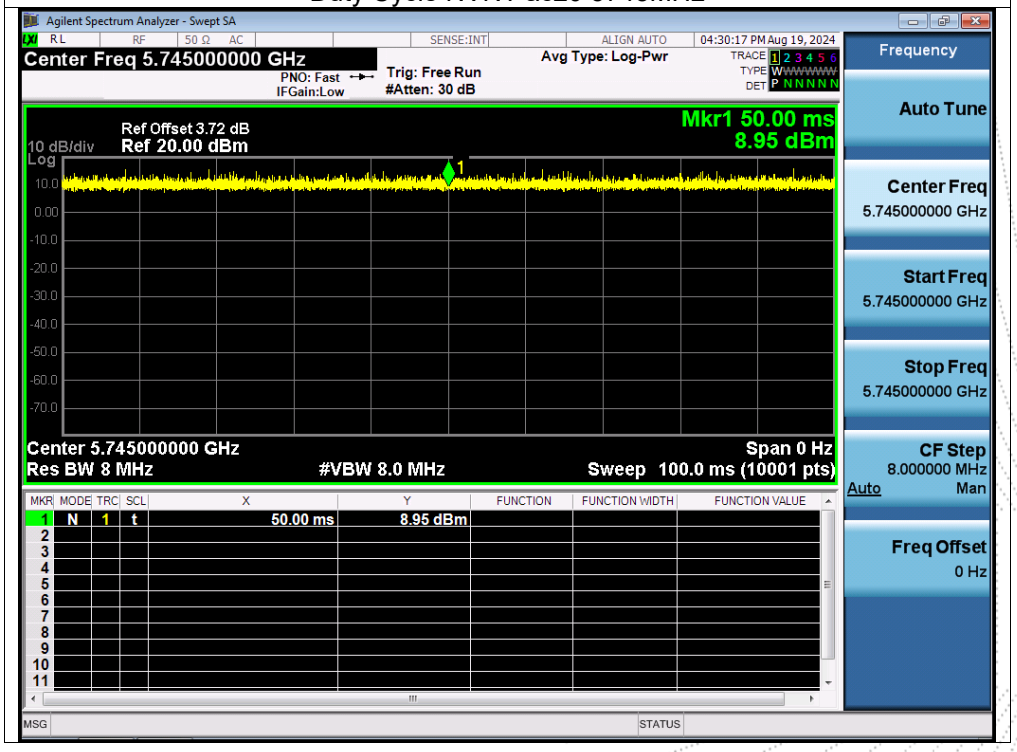
Duty Cycle NVNT n20 5745MHz



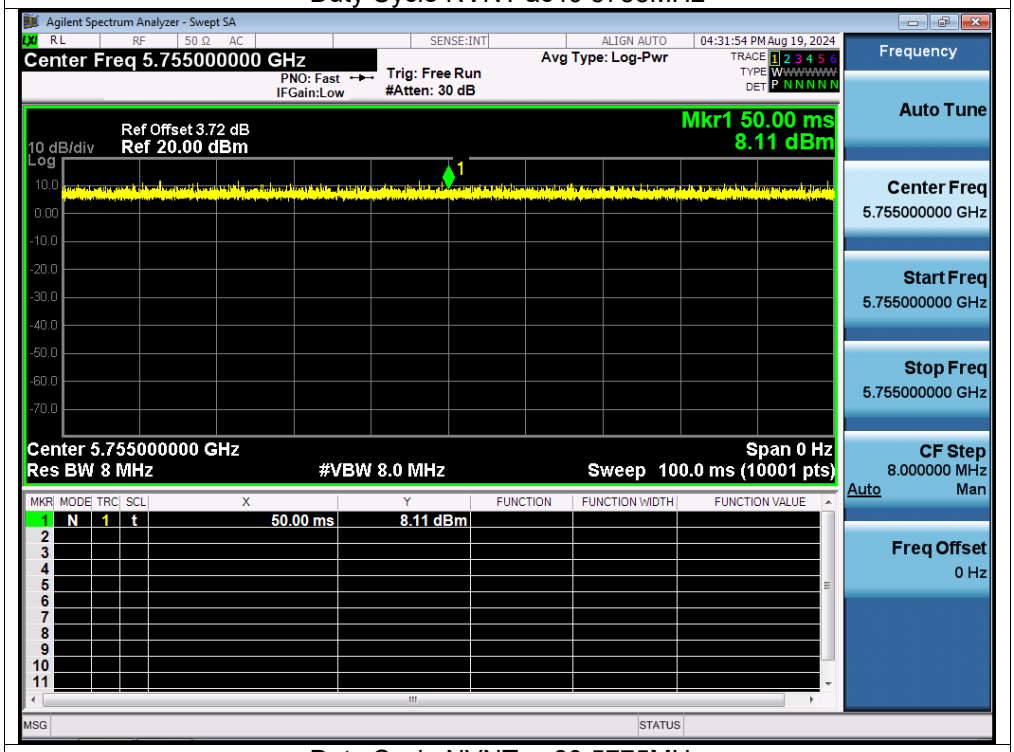
Duty Cycle NVNT n40 5755MHz



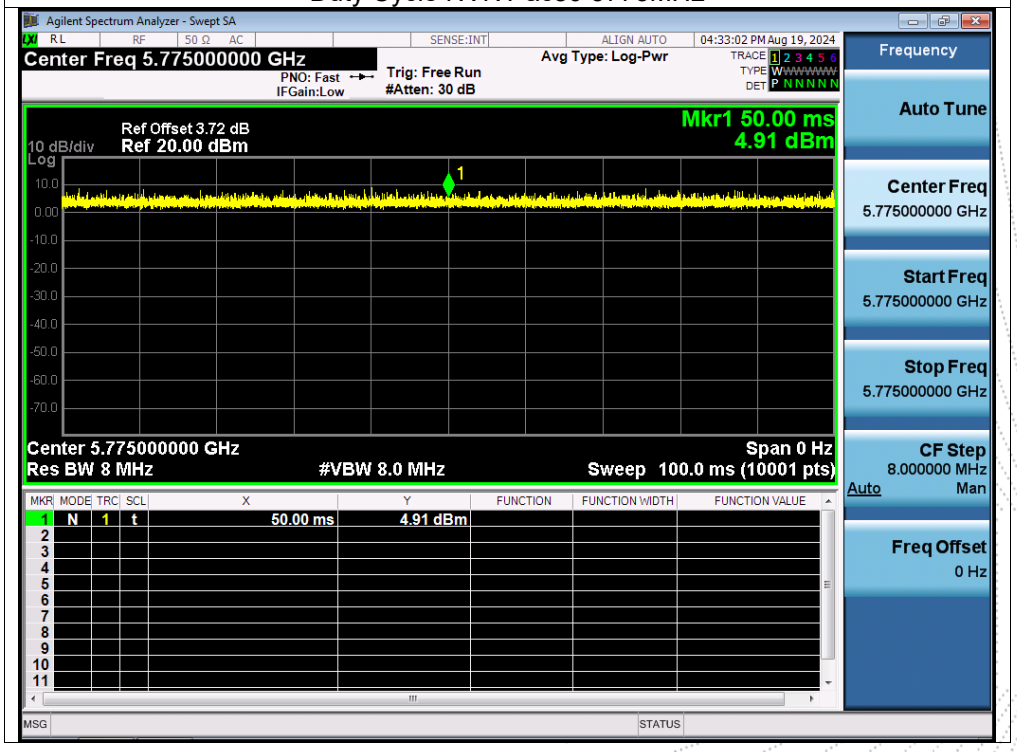
Duty Cycle NVNT ac20 5745MHz



Duty Cycle NVNT ac40 5755MHz



Duty Cycle NVNT ac80 5775MHz



15. Antenna Requirement

15.1 Limit

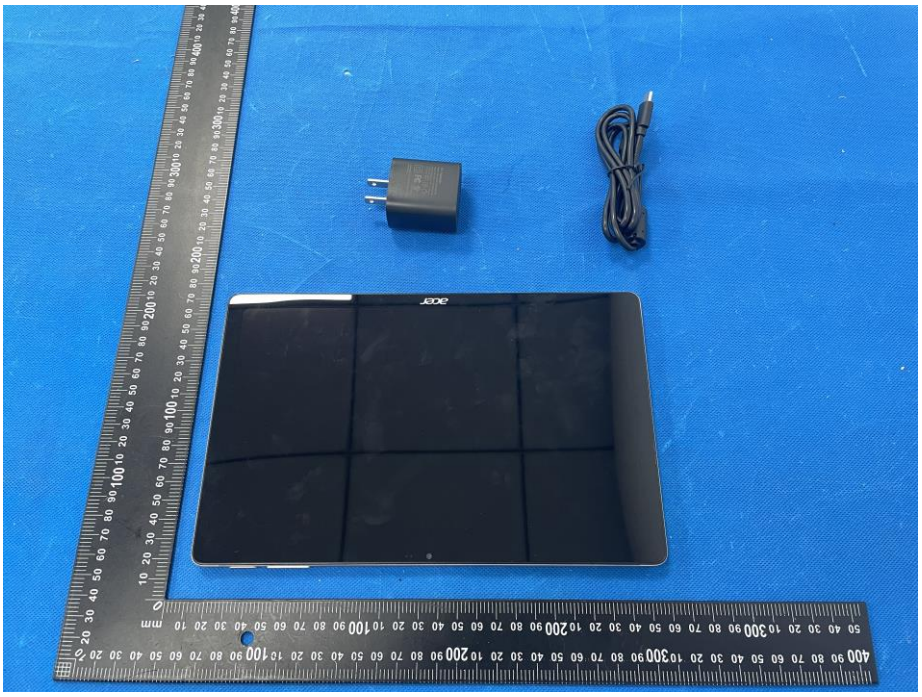
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.2 Test Result

The EUT antenna is Internal antenna (antenna gain: 2.06dBi). It comply with the standard requirement.

16. EUT Photographs

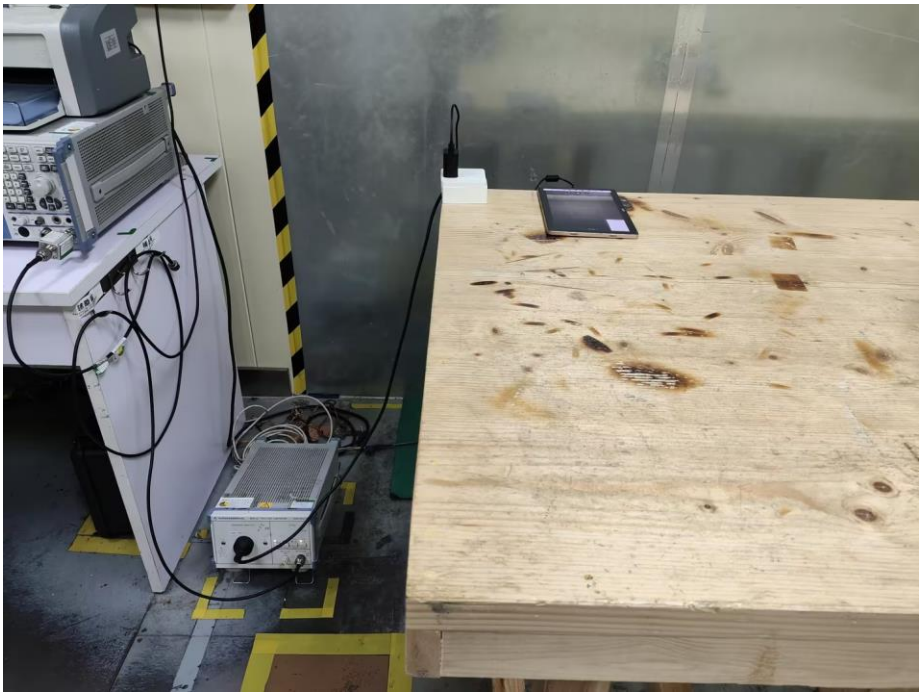
EUT Photo



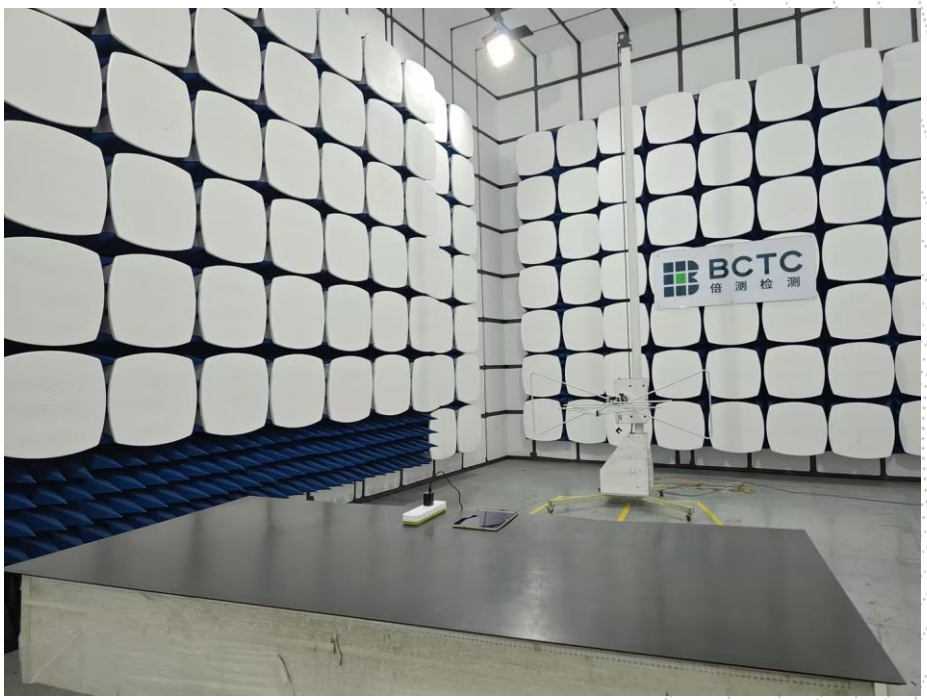
NOTE: Appendix-Photographs Of EUT Constructional Details.

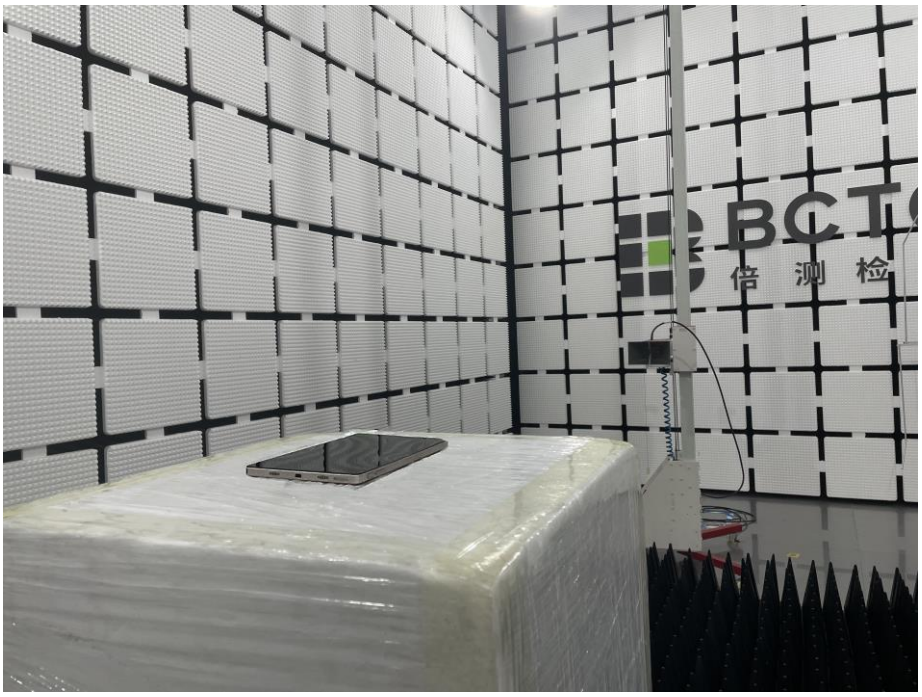
17. EUT Test Setup Photographs

Conducted Emissions Photo



Radiated Measurement Photos




BCTC
倍 测 检

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.

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

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: http://www.chnbctc.com

Consultation E-mail: bctc@bctc-lab.com.cn

Complaint/Advice E-mail: advice@bctc-lab.com.cn

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