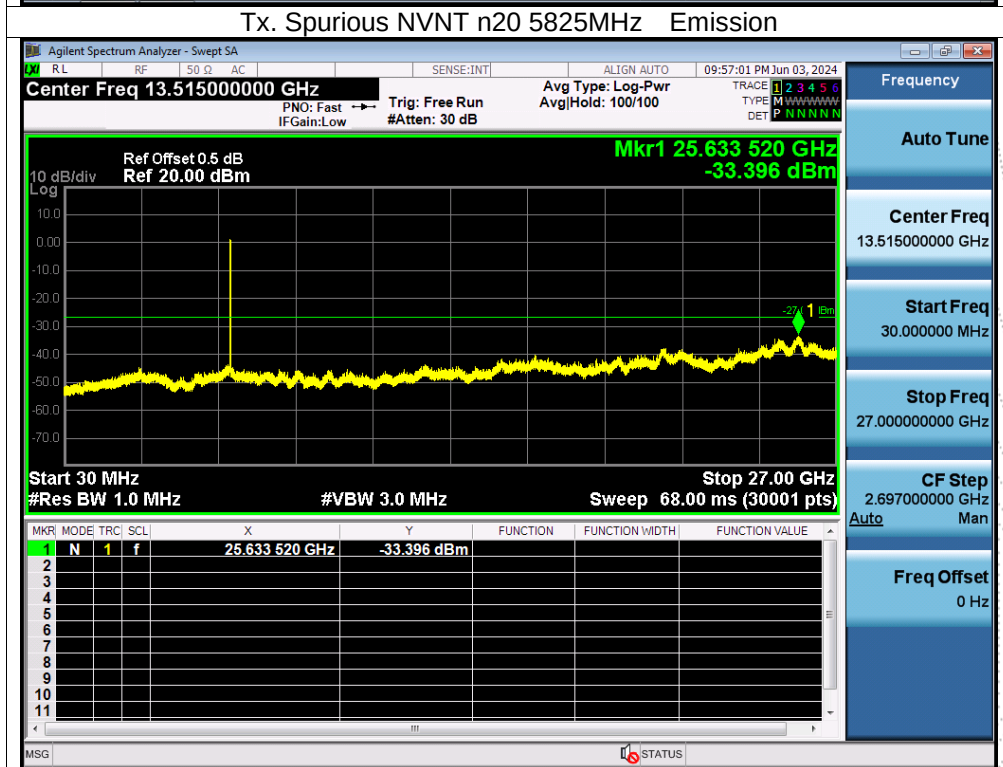
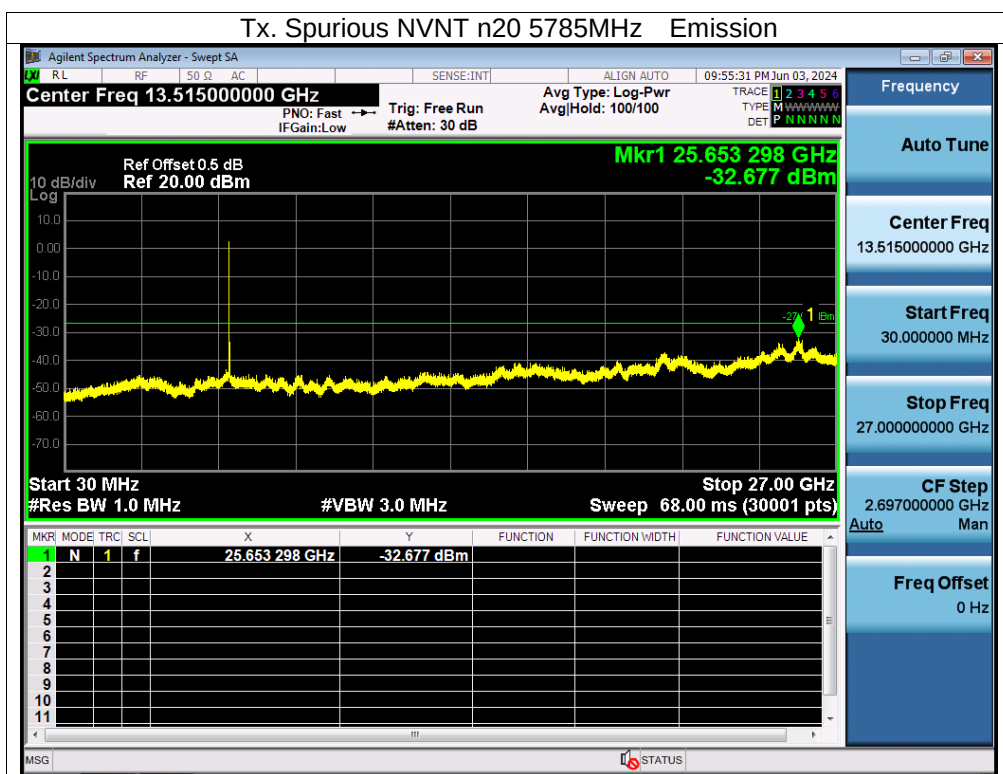
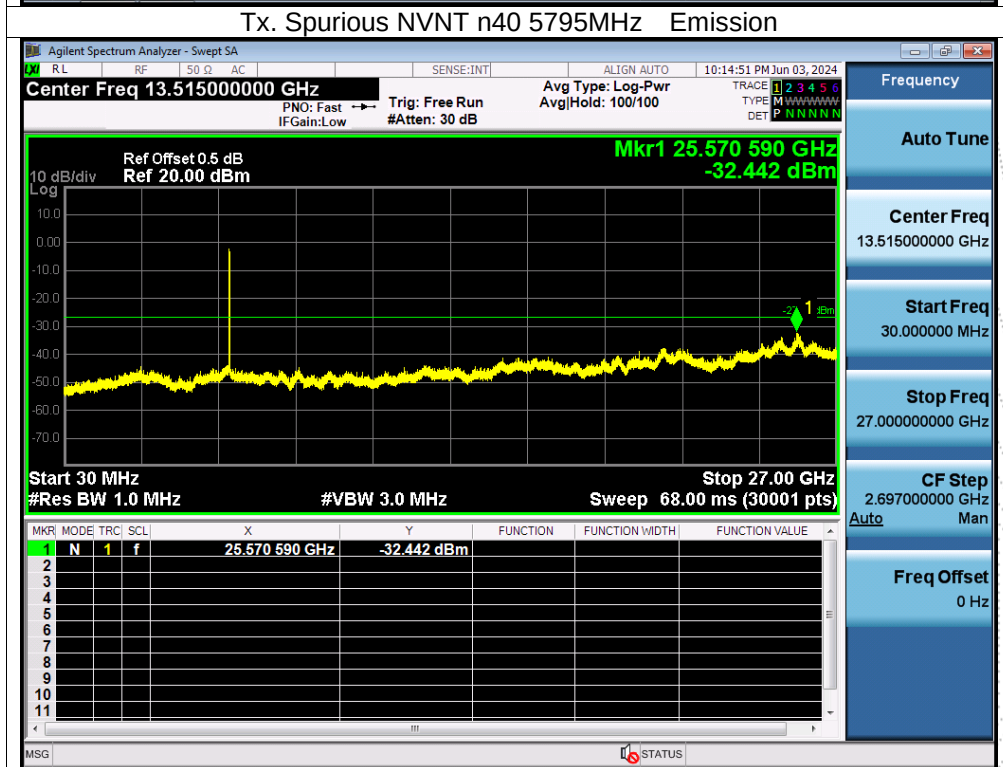
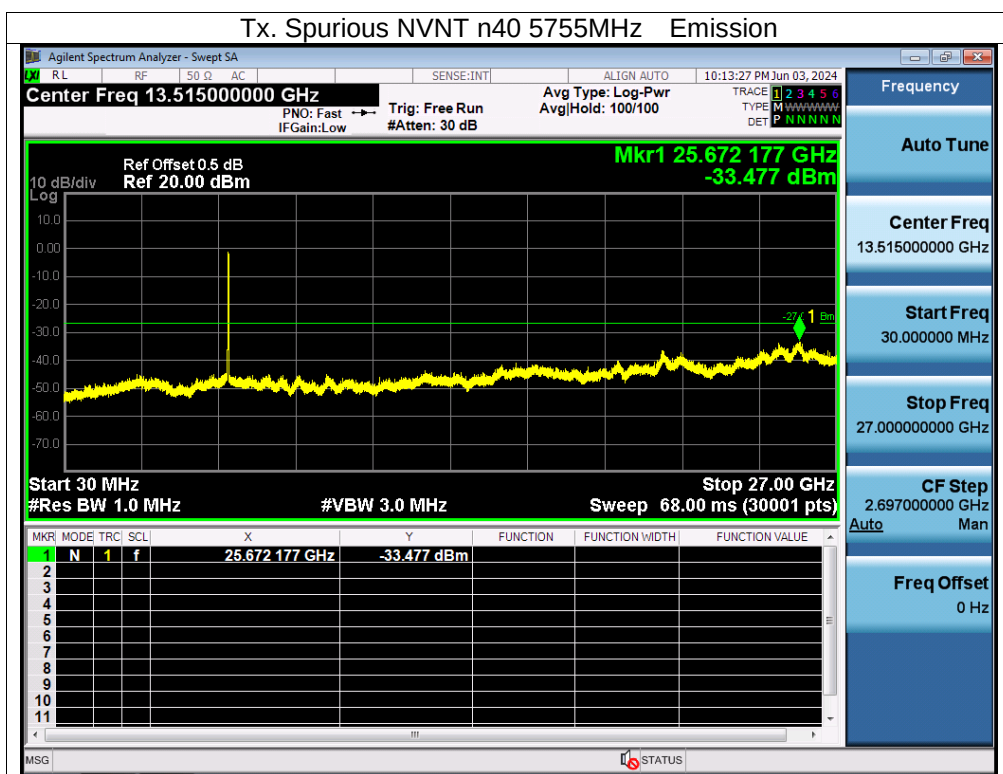
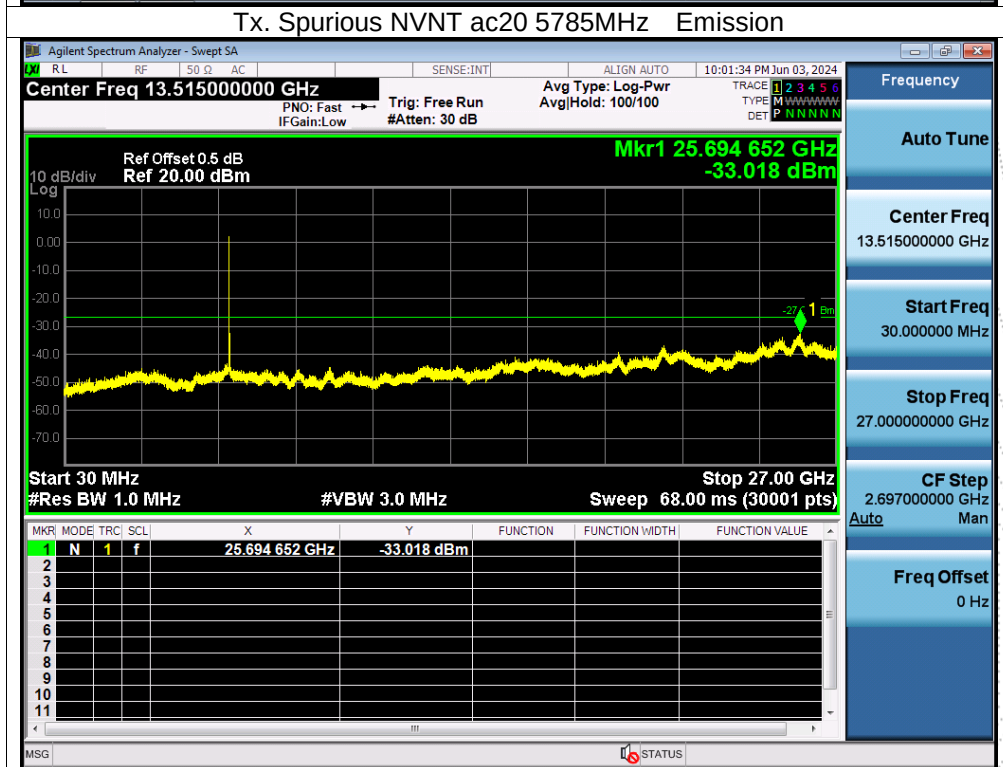
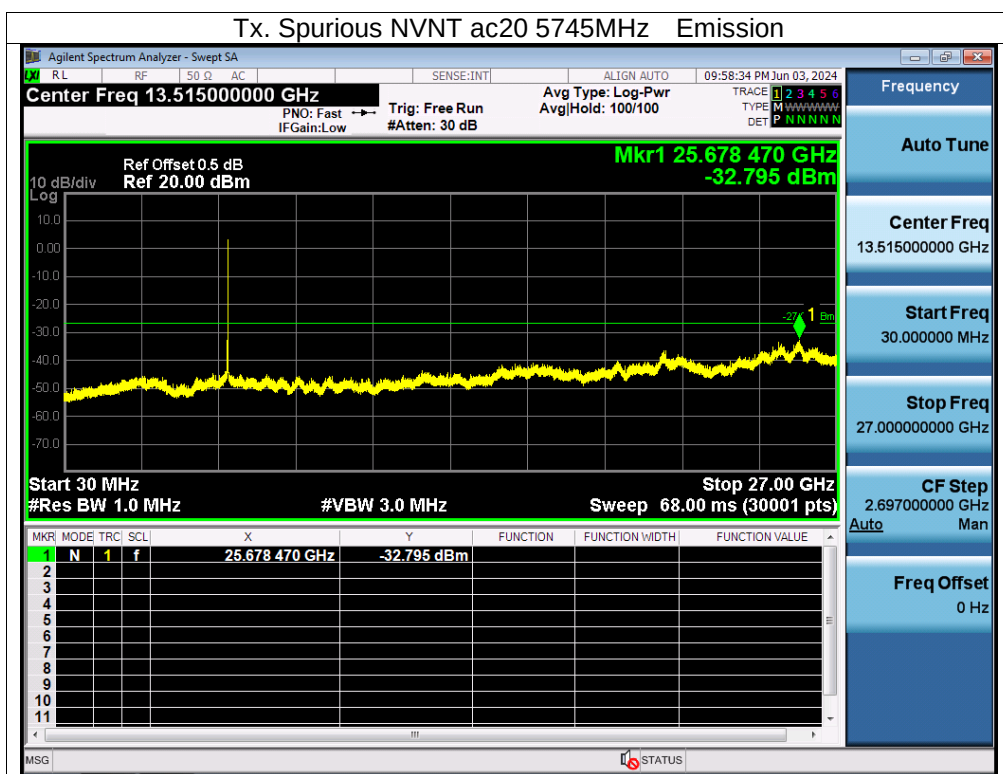
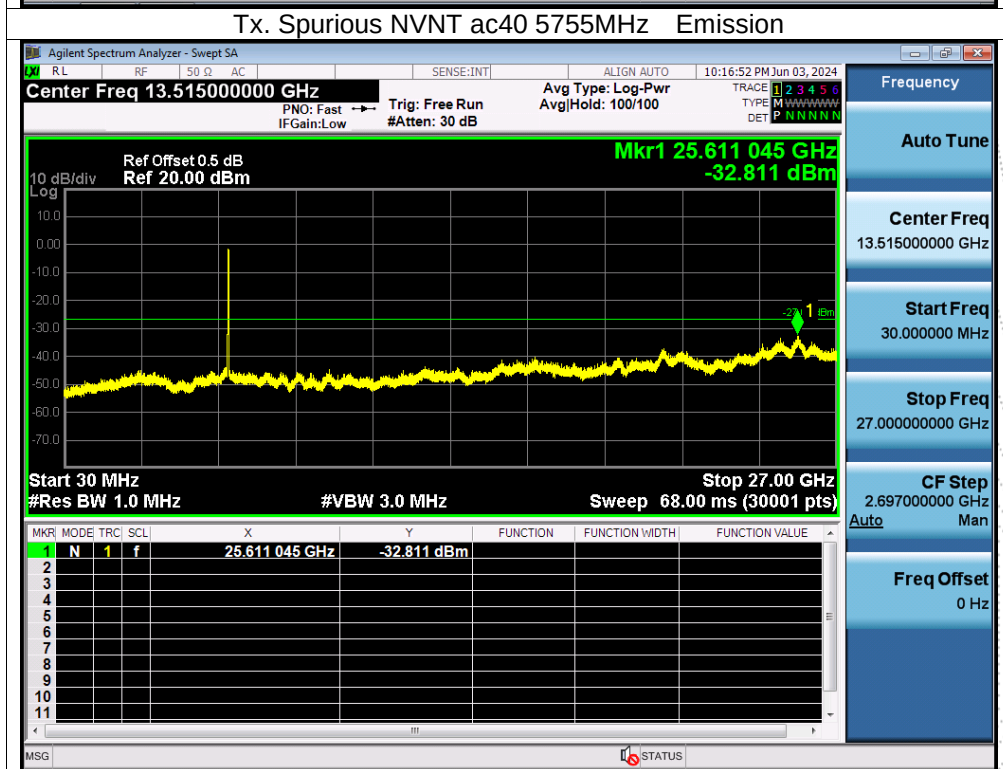
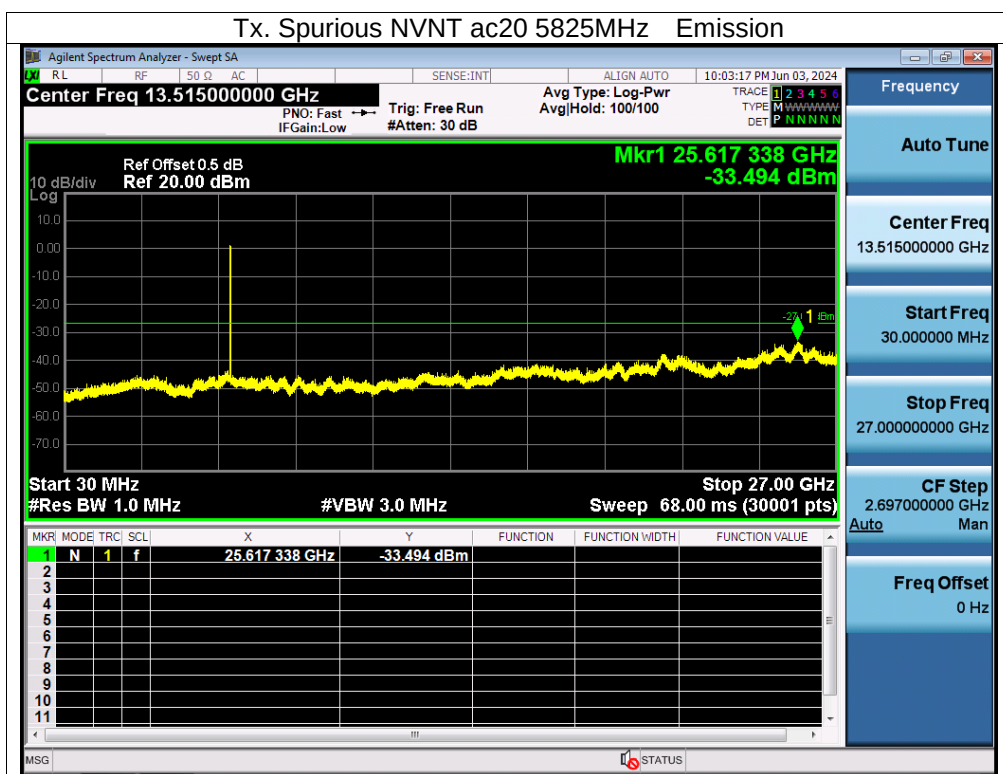
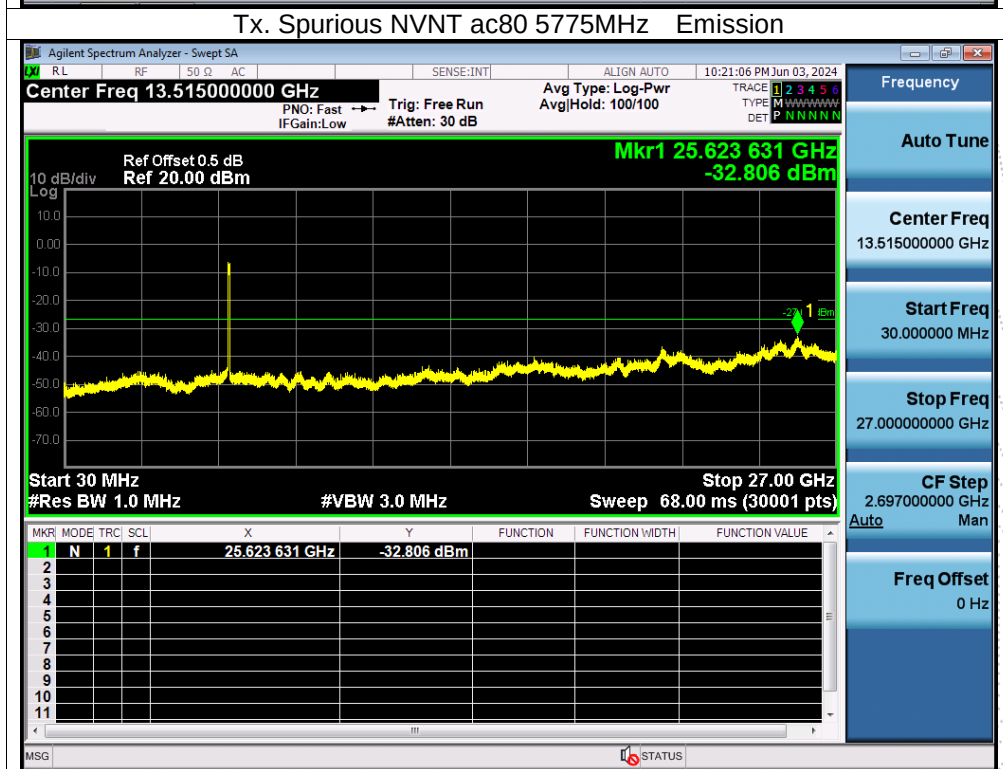
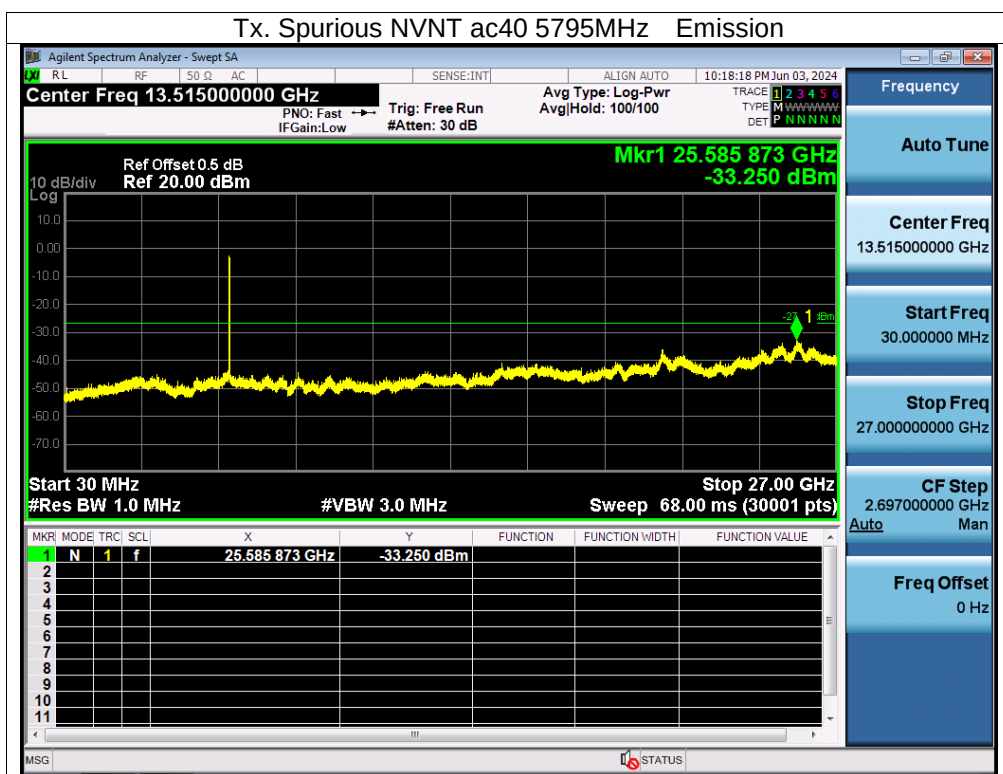






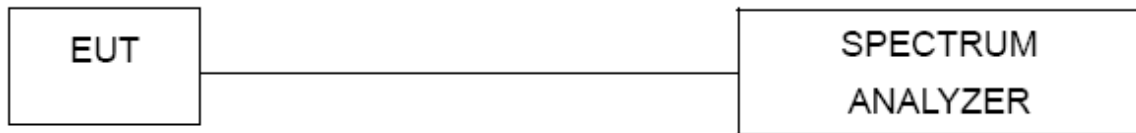






13. Frequency Stability Measurement

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	5180.0048	5180	0.0048	0.9266
		V max (V)	132	5180.0007	5180	0.0007	0.1351
		V min (V)	108	5180.0088	5180	0.0088	1.6988
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	5180.0008	5180	0.0008	0.1544
		T (°C)	-10	5180.0127	5180	0.0127	2.4517
		T (°C)	0	5180.0104	5180	0.0104	2.0077
		T (°C)	10	5180.0013	5180	0.0013	0.2510
		T (°C)	20	5180.0038	5180	0.0038	0.7336
		T (°C)	30	5180.0041	5180	0.0041	0.7915
		T (°C)	40	5180.0024	5180	0.0024	0.4633
		T (°C)	50	5180.0072	5180	0.0072	1.3900
		T (°C)	60	5180.0135	5180	0.0135	2.6062
		T (°C)	70	5180.0126	5180	0.0126	2.4324
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	5200.0081	5200	0.0081	1.5577
		V max (V)	132	5200.0076	5200	0.0076	1.4615
		V min (V)	108	5200.0045	5200	0.0045	0.8654
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	5200.00680	5200	0.00680	1.3077
		T (°C)	-10	5200.00140	5200	0.00140	0.2692
		T (°C)	0	5200.00580	5200	0.00580	1.1154
		T (°C)	10	5200.00910	5200	0.00910	1.7500
		T (°C)	20	5200.01180	5200	0.01180	2.2692
		T (°C)	30	5200.00230	5200	0.00230	0.4423
		T (°C)	40	5200.00510	5200	0.00510	0.9808
		T (°C)	50	5200.00620	5200	0.00620	1.1923
		T (°C)	60	5200.00090	5200	0.00090	0.1731
		T (°C)	70	5200.00280	5200	0.00280	0.5385
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	5240.0095	5240	0.0095	1.8130
		V max (V)	132	5240.0086	5240	0.0086	1.6412
		V min (V)	108	5240.0104	5240	0.0104	1.9847
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	5240.0034	5240	0.0034	0.6489
		T (°C)	0	5240.0070	5240	0.0070	1.3359
		T (°C)	10	5240.0126	5240	0.0126	2.4046
		T (°C)	20	5240.0017	5240	0.0017	0.3244
		T (°C)	30	5240.0023	5240	0.0023	0.4389
		T (°C)	40	5240.0111	5240	0.0111	2.1183
		T (°C)	50	5240.0020	5240	0.0020	0.3817
		T (°C)	60	5240.0064	5240	0.0064	1.2214
		T (°C)	70	5240.0080	5240	0.0080	1.5267
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	AC 120V/60HZ
Test Mode:	TX 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	5745.00860	5745	0.00860	1.4970
		V max (V)	132	5745.00140	5745	0.00140	0.2437
		V min (V)	108	5745.00330	5745	0.00330	0.5744
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	5745.01120	5745	0.01120	1.9495
		T (°C)	-10	5745.00990	5745	0.00990	1.7232
		T (°C)	0	5745.00120	5745	0.00120	0.2089
		T (°C)	10	5745.00850	5745	0.00850	1.4795
		T (°C)	20	5745.00240	5745	0.00240	0.4178
		T (°C)	30	5745.00540	5745	0.00540	0.9399
		T (°C)	40	5745.00890	5745	0.00890	1.5492
		T (°C)	50	5745.00610	5745	0.00610	1.0618
		T (°C)	60	5745.00250	5745	0.00250	0.4352
		T (°C)	70	5745.00750	5745	0.00750	1.3055
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	5785.01140	5785	0.01140	1.9706
		V max (V)	132	5785.00260	5785	0.00260	0.4494
		V min (V)	108	5785.00560	5785	0.00560	0.9680
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	5785.00420	5785	0.00420	0.7260
		T (°C)	-10	5785.00290	5785	0.00290	0.5013
		T (°C)	0	5785.00710	5785	0.00710	1.2273
		T (°C)	10	5785.00170	5785	0.00170	0.2939
		T (°C)	20	5785.00070	5785	0.00070	0.1210
		T (°C)	30	5785.00660	5785	0.00660	1.1409
		T (°C)	40	5785.00130	5785	0.00130	0.2247
		T (°C)	50	5785.00020	5785	0.00020	0.0346
		T (°C)	60	5785.00910	5785	0.00910	1.5730
		T (°C)	70	5785.00480	5785	0.00480	0.8297
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	5825.00690	5825	0.00690	1.1845
		V max (V)	132	5825.00320	5825	0.00320	0.5494
		V min (V)	108	5825.01150	5825	0.01150	1.9742
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	5825.01340	5825	0.01340	2.3004
		T (°C)	-10	5825.00920	5825	0.00920	1.5794
		T (°C)	0	5825.00050	5825	0.00050	0.0858
		T (°C)	10	5825.01260	5825	0.01260	2.1631
		T (°C)	20	5825.01100	5825	0.01100	1.8884
		T (°C)	30	5825.00510	5825	0.00510	0.8755
		T (°C)	40	5825.01120	5825	0.01120	1.9227
		T (°C)	50	5825.00670	5825	0.00670	1.1502
		T (°C)	60	5825.00660	5825	0.00660	1.1330
		T (°C)	70	5825.00250	5825	0.00250	0.4292
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

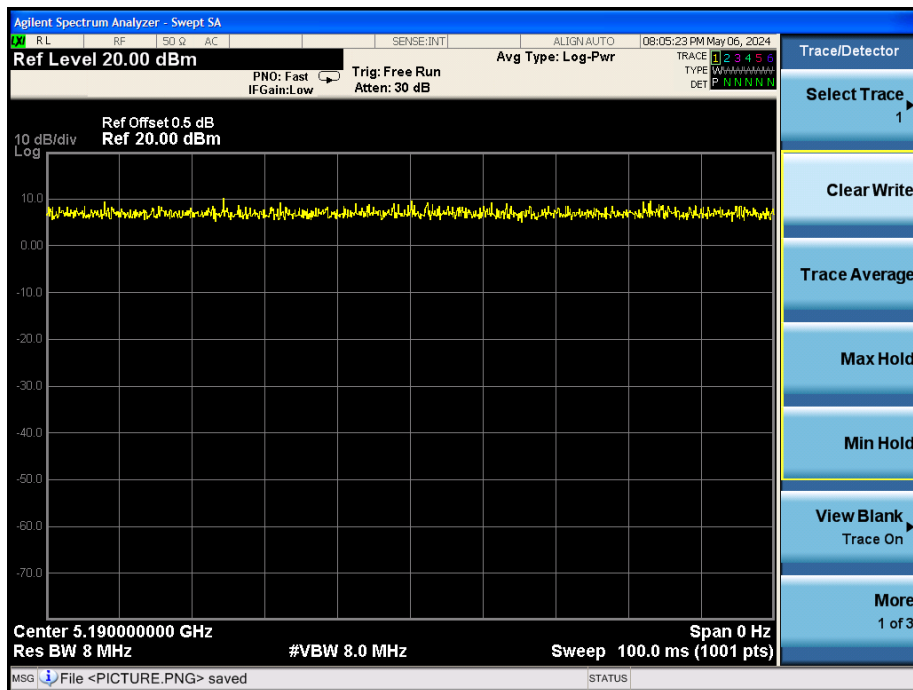
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

14.4 Test Result

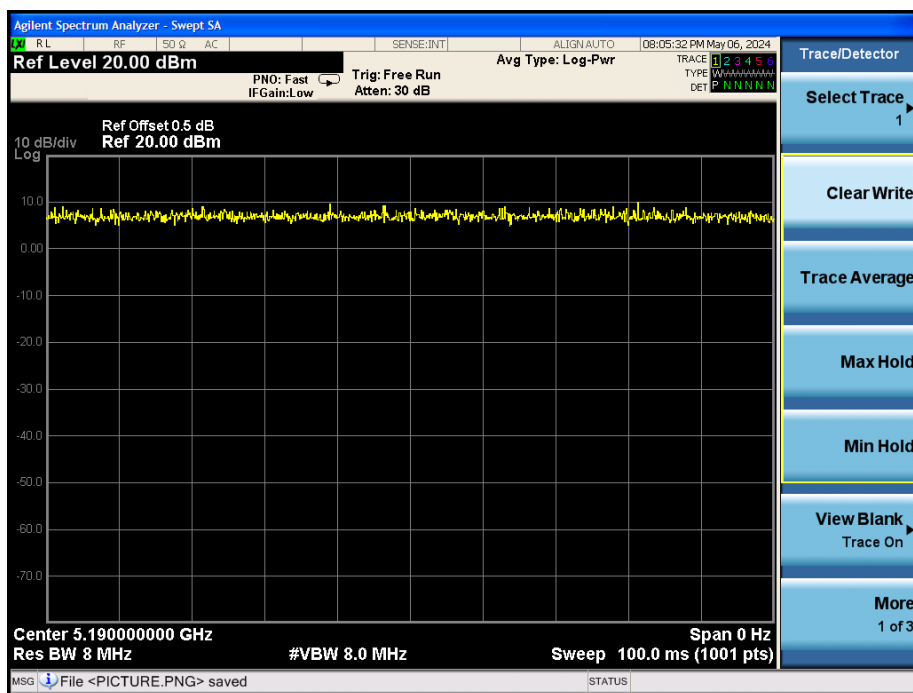
Condition	Mode	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	100	0	0
NVNT	n20	100	0	0
NVNT	n40	100	0	0
NVNT	ac20	100	0	0
NVNT	ac40	100	0	0
NVNT	ac80	100	0	0

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

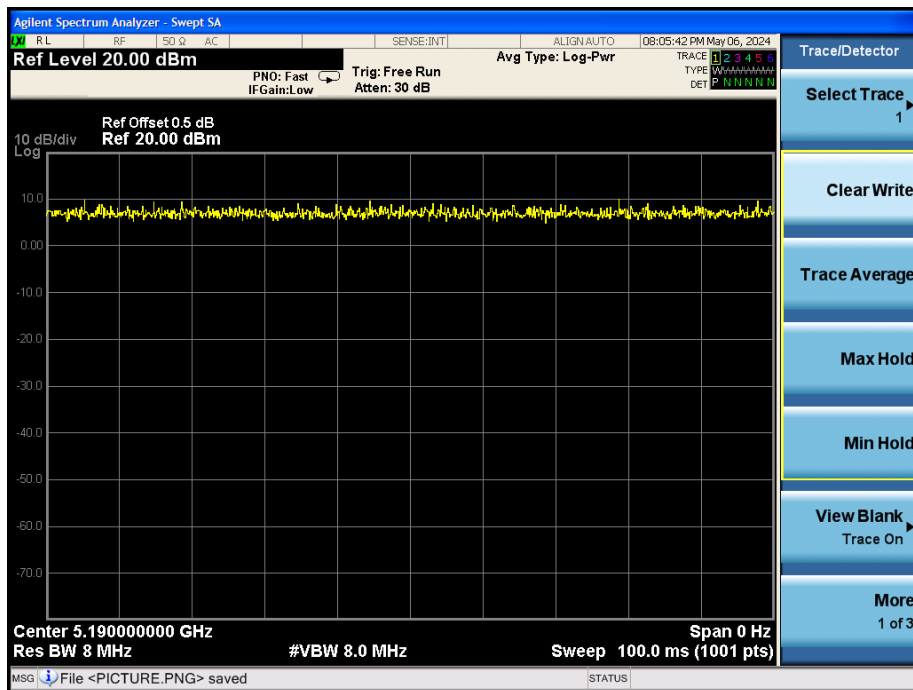
a



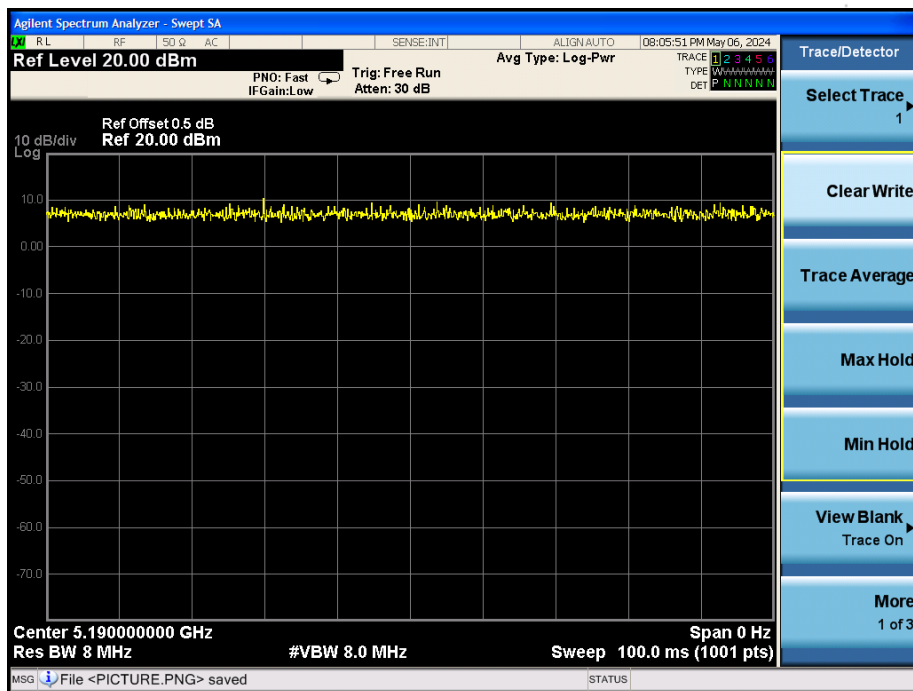
n20



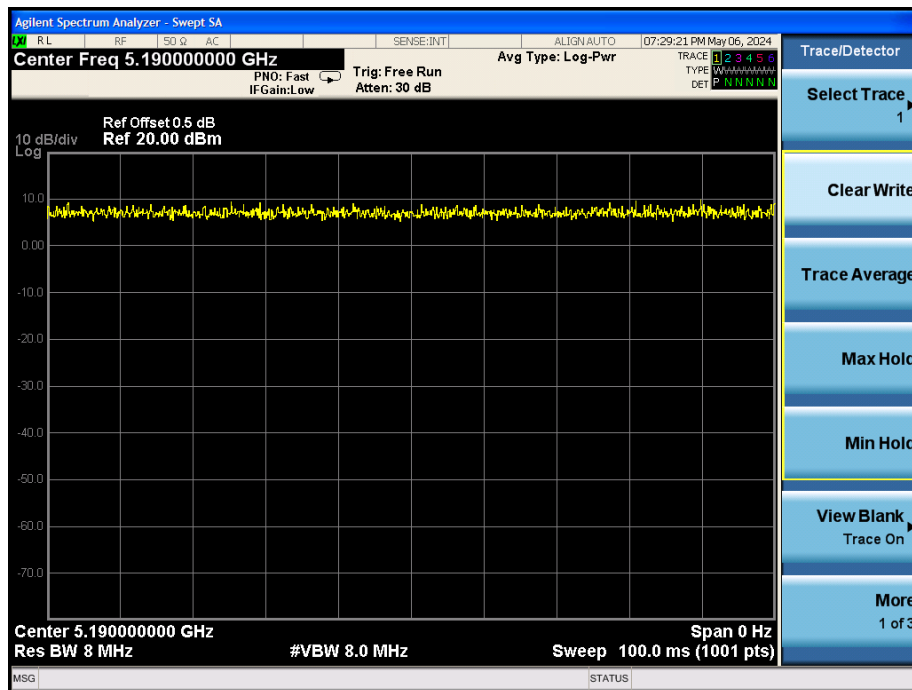
n40



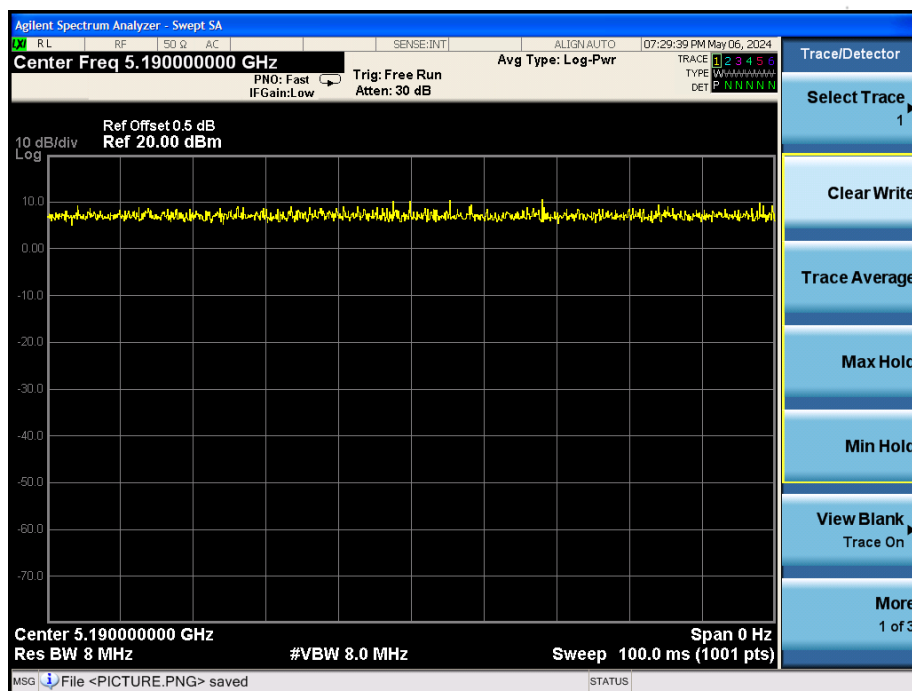
ac20



ac40



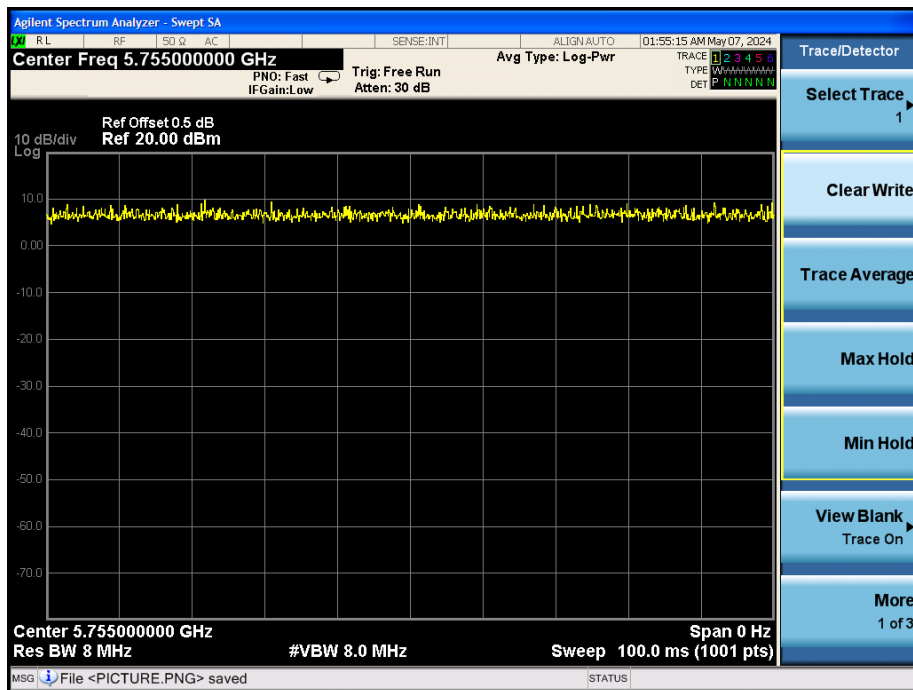
ac80



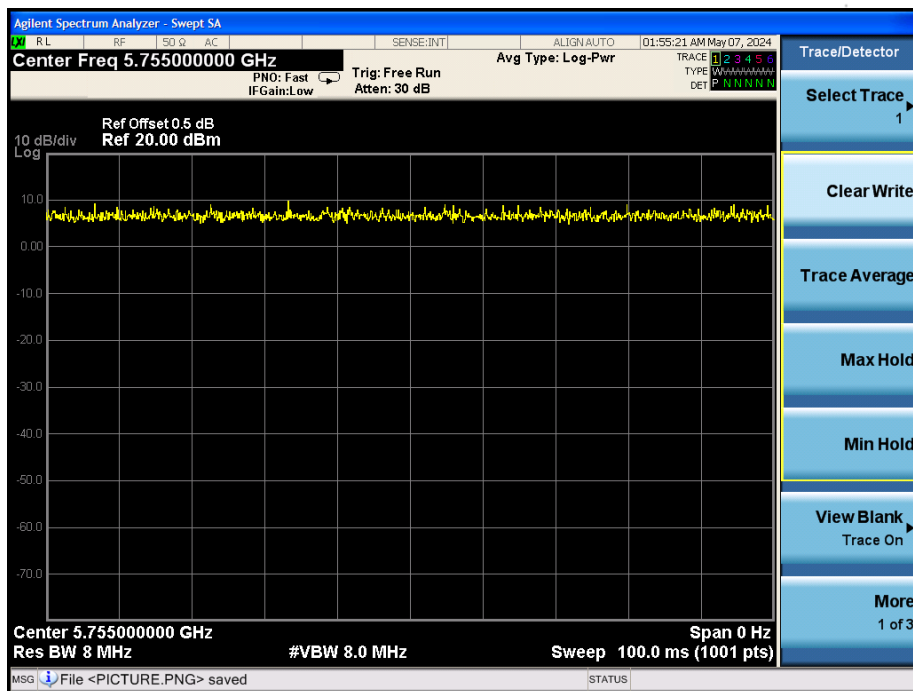
Condition	Mode	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	100	0	0
NVNT	n20	100	0	0
NVNT	n40	100	0	0
NVNT	ac20	100	0	0
NVNT	ac40	100	0	0
NVNT	ac80	100	0	0

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

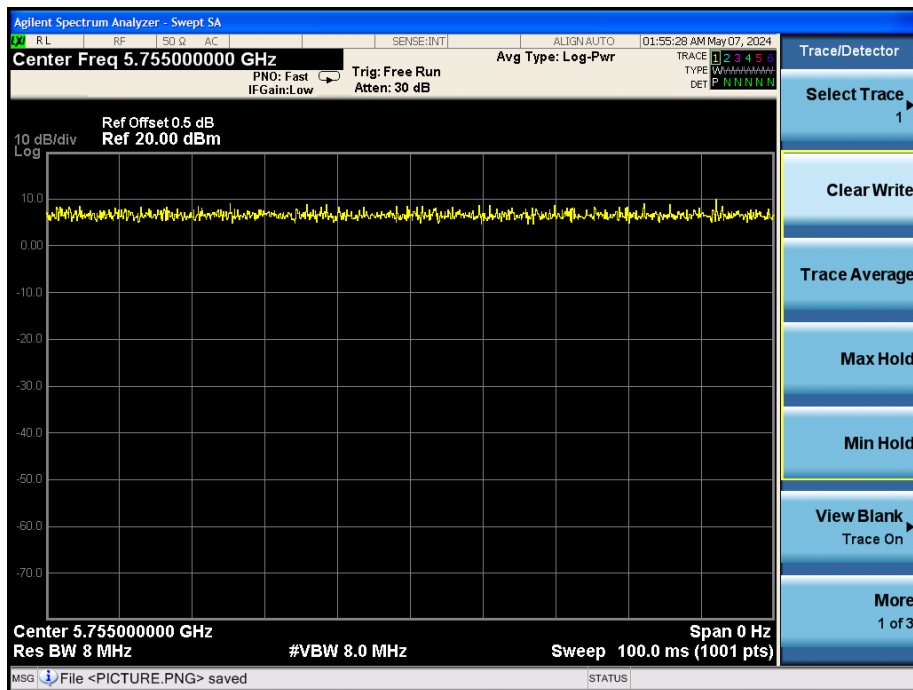
a



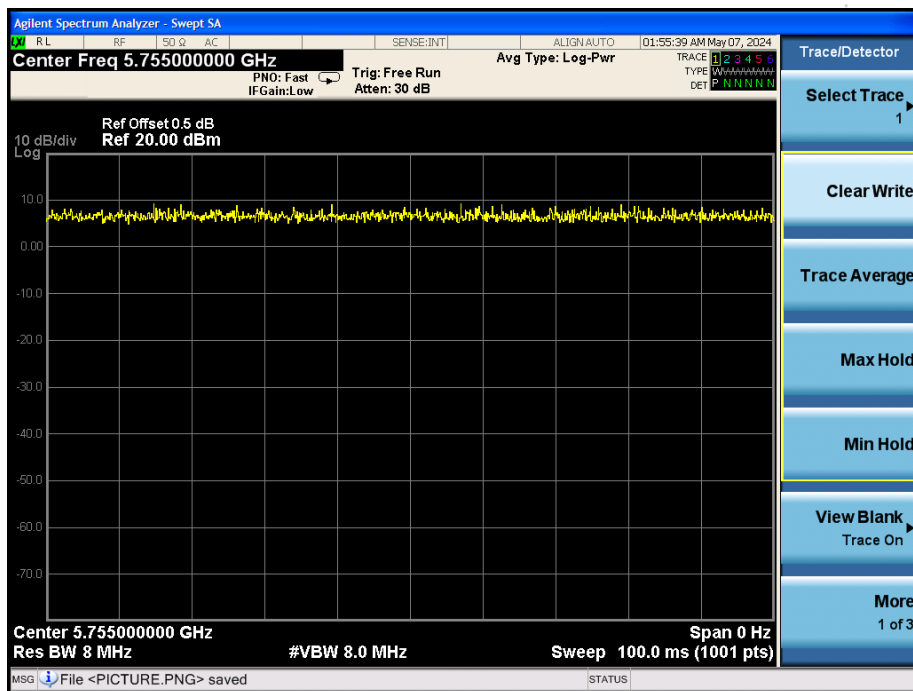
n20



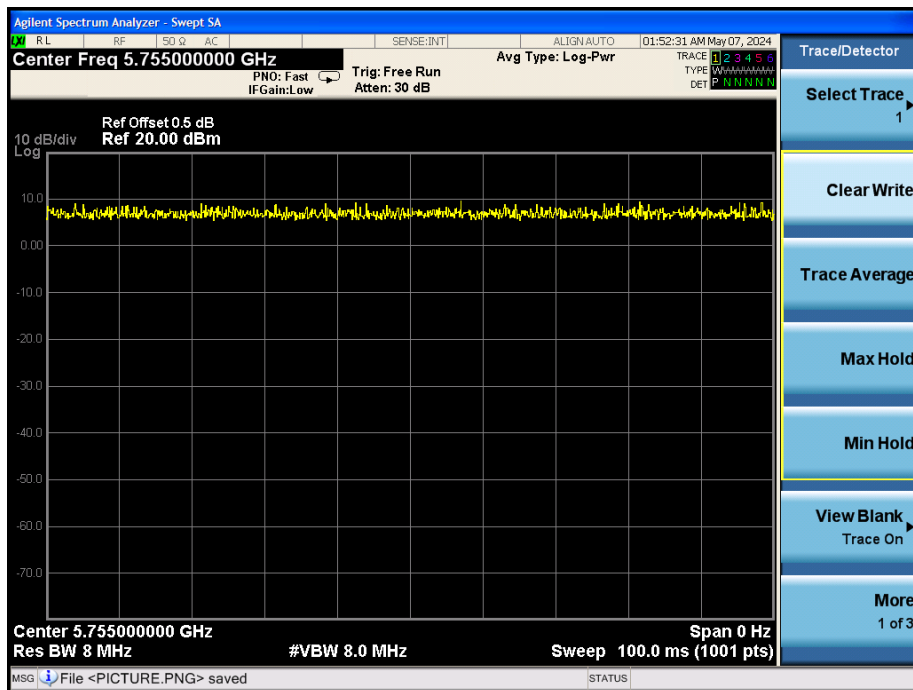
n40



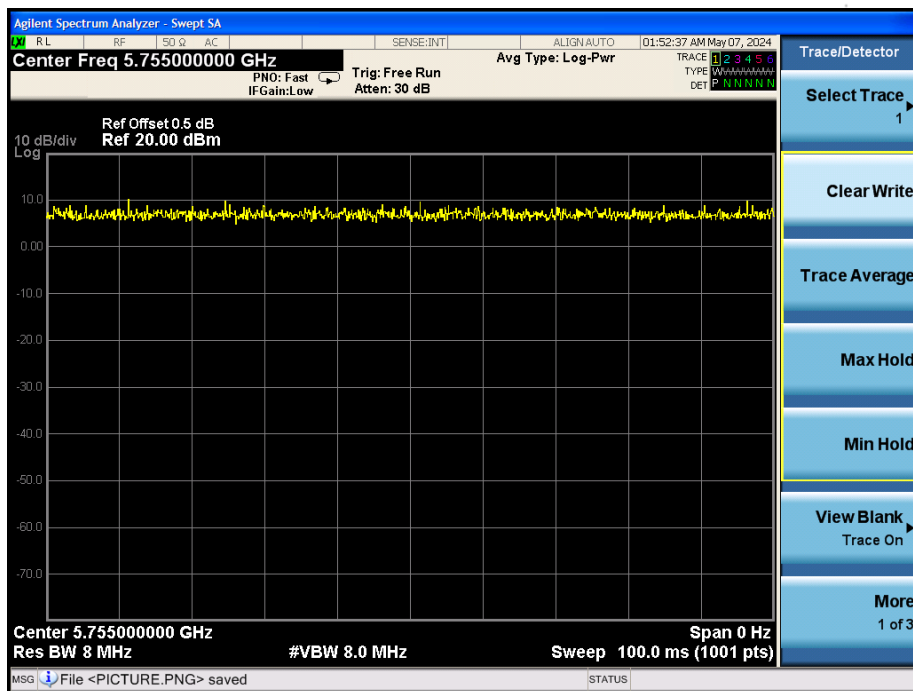
ac20



ac40



ac80



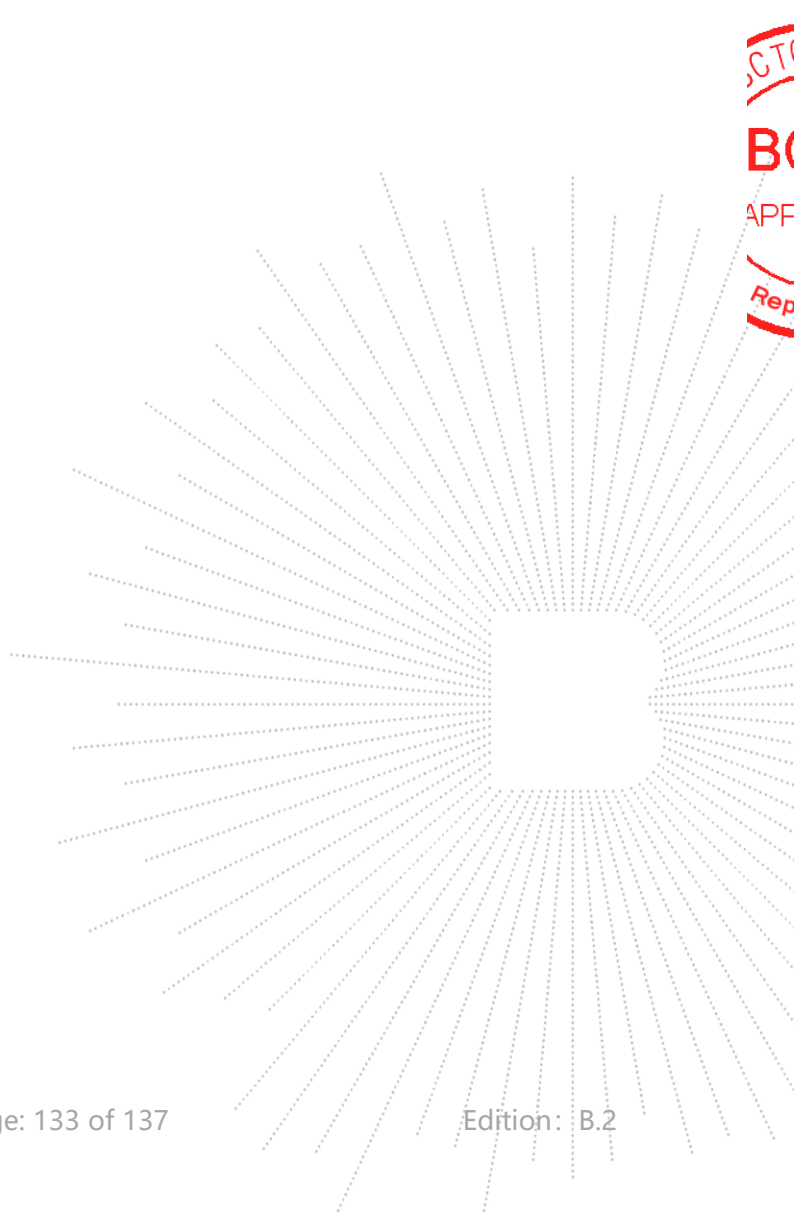
15. Antenna Requirement

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, fulfill the requirement of this section.



16. EUT Photographs

EUT Photo 1



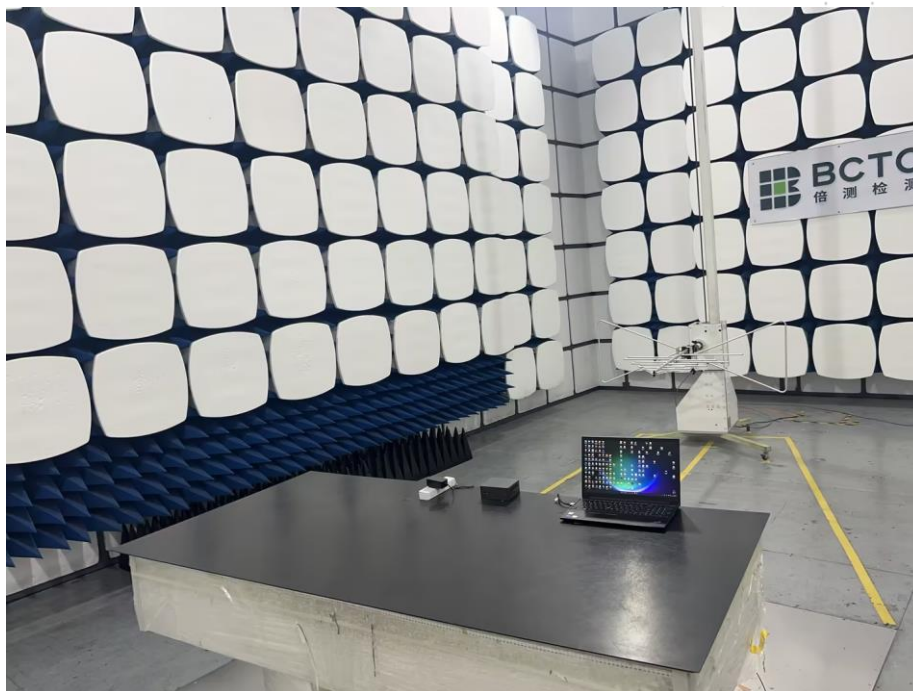
NOTE: Appendix-Photographs Of EUT Constructional Details.

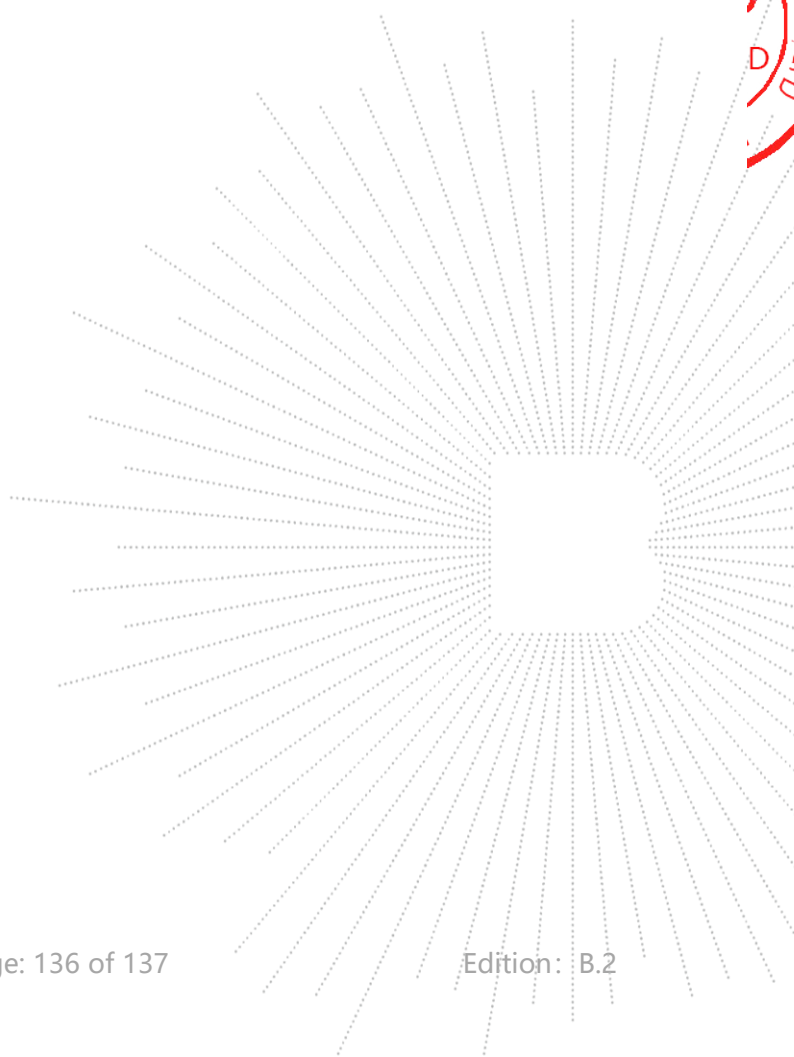
17. EUT Test Setup Photographs

Conducted Measurement Photo



Radiated Measurement Photos





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:

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

***** END *****