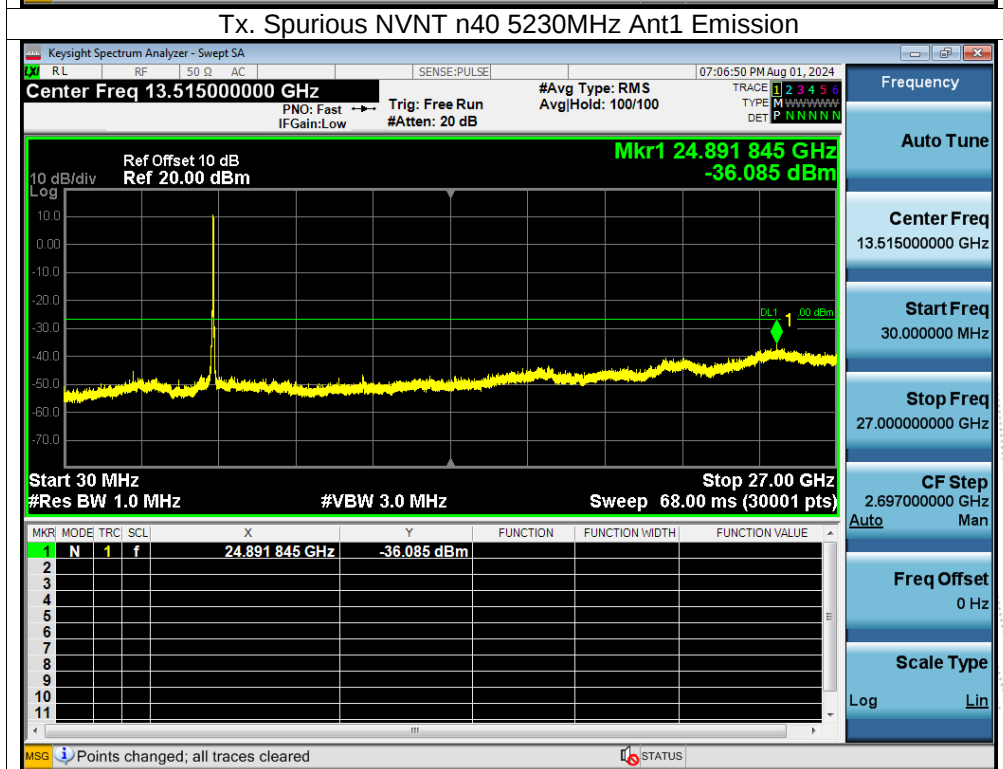
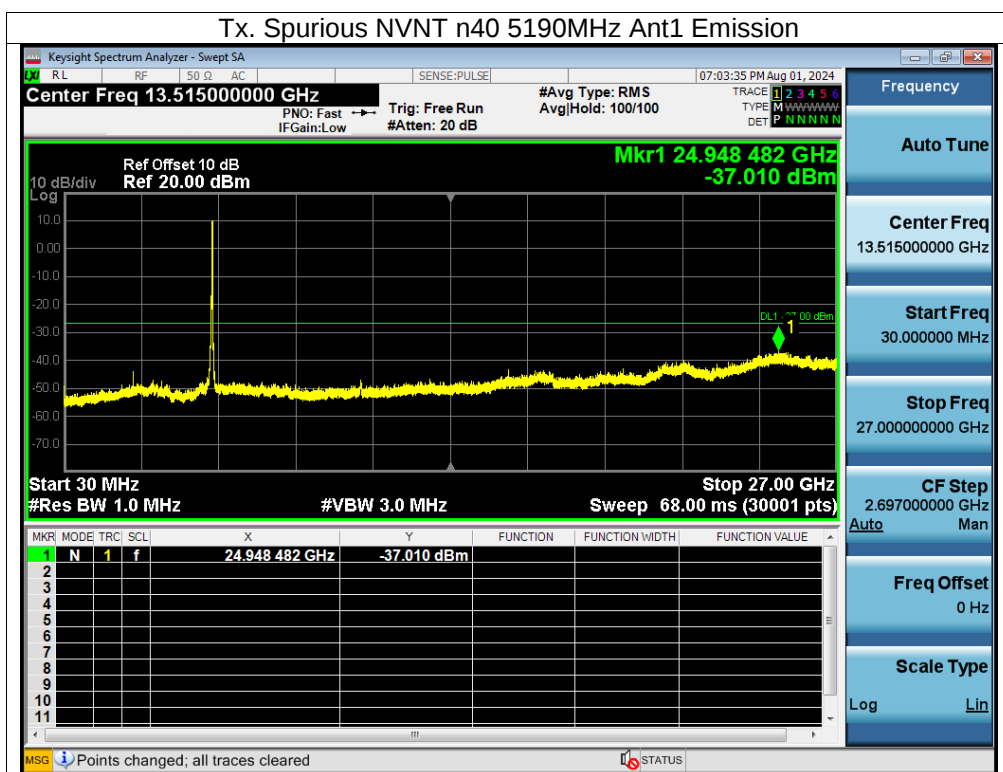
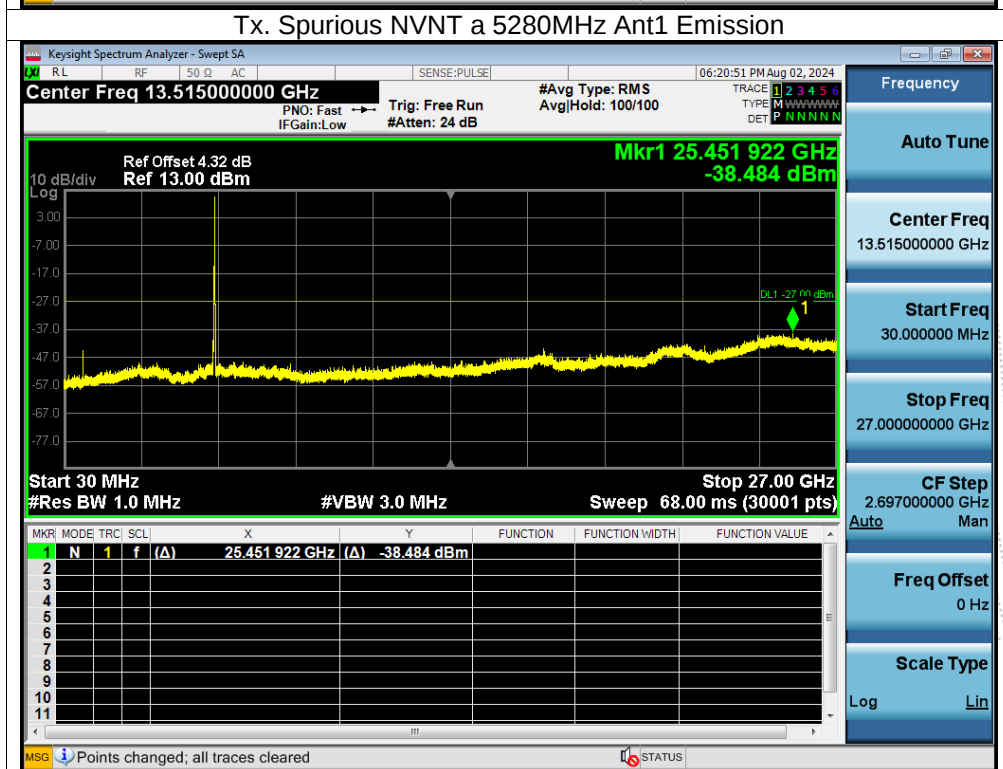
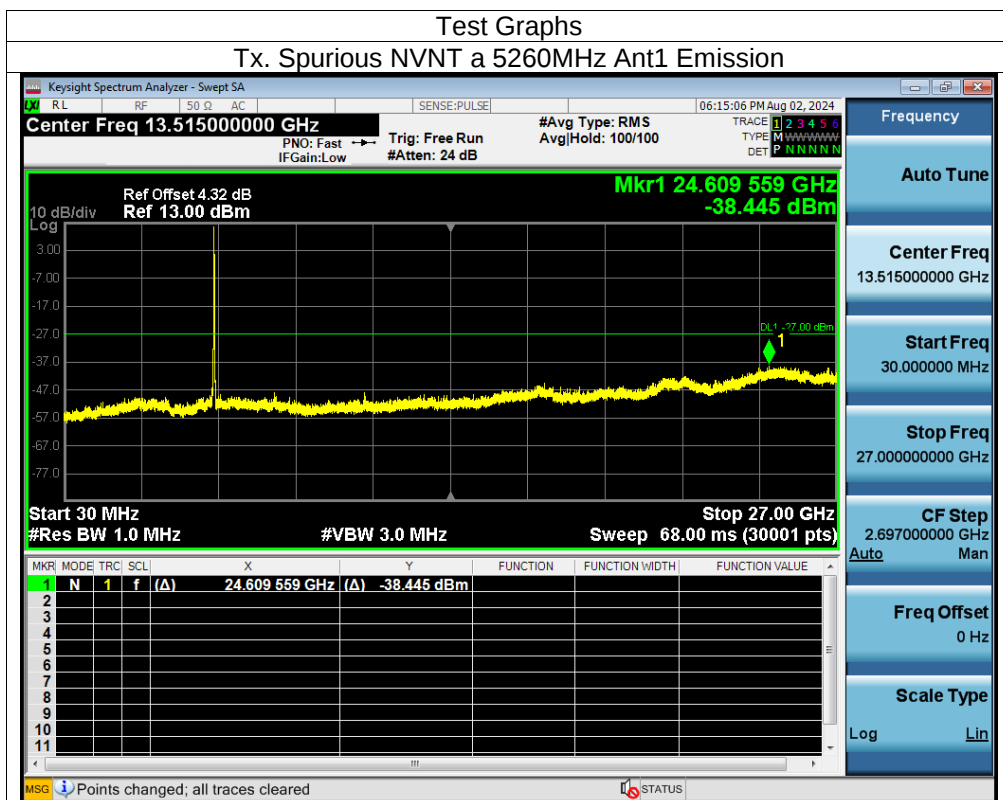
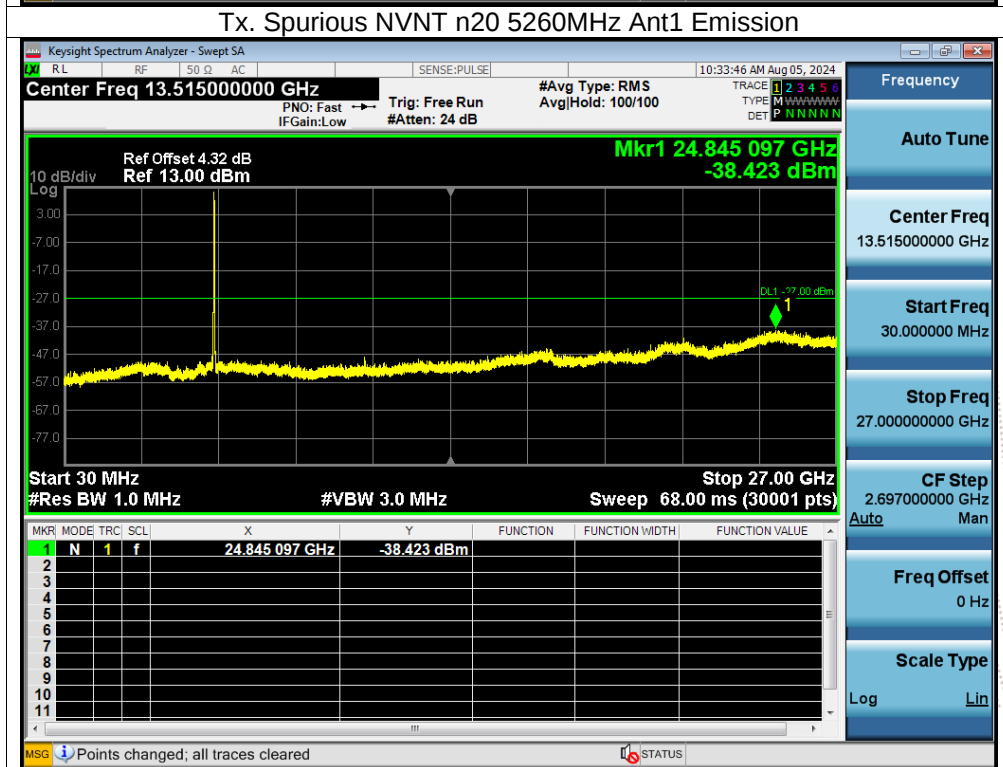
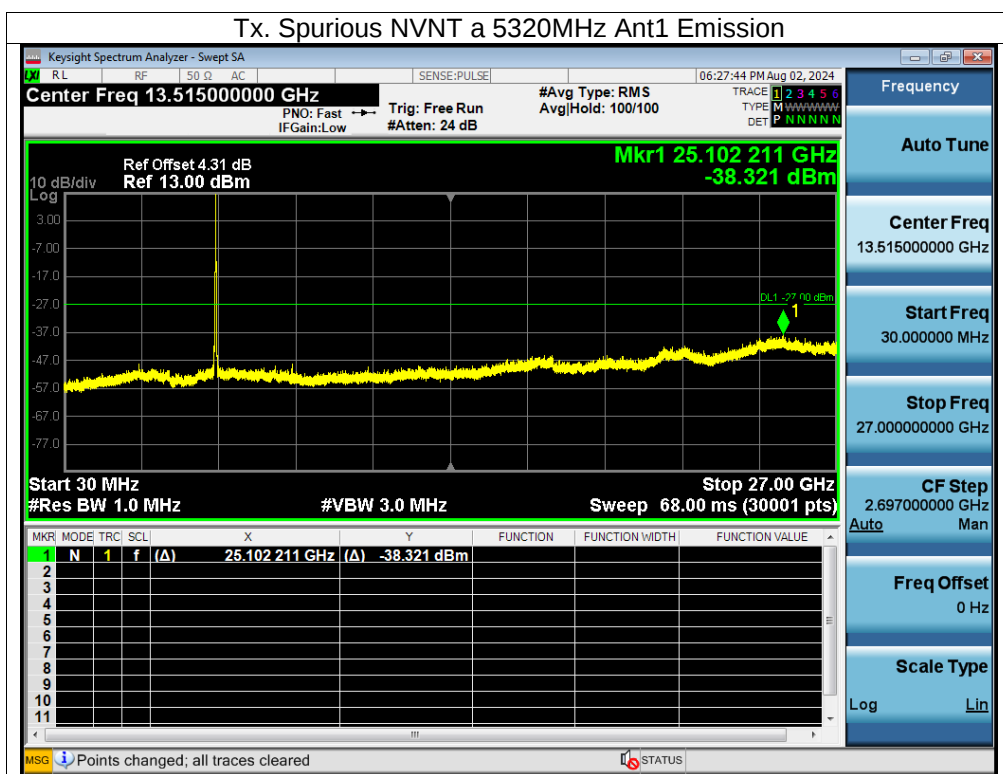
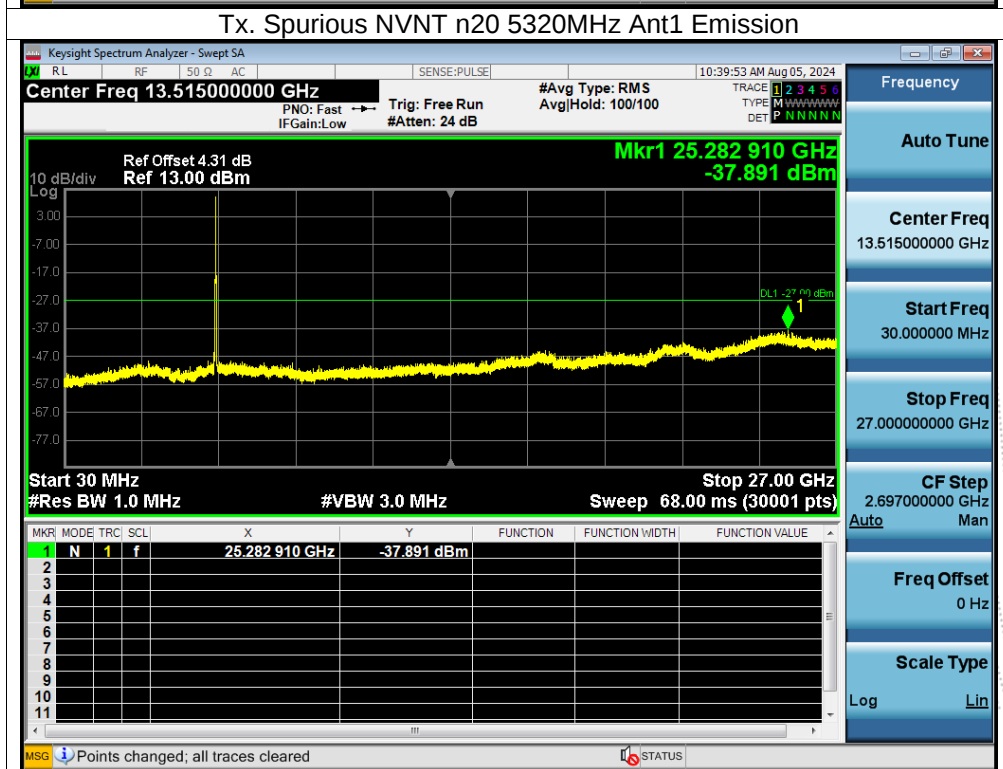
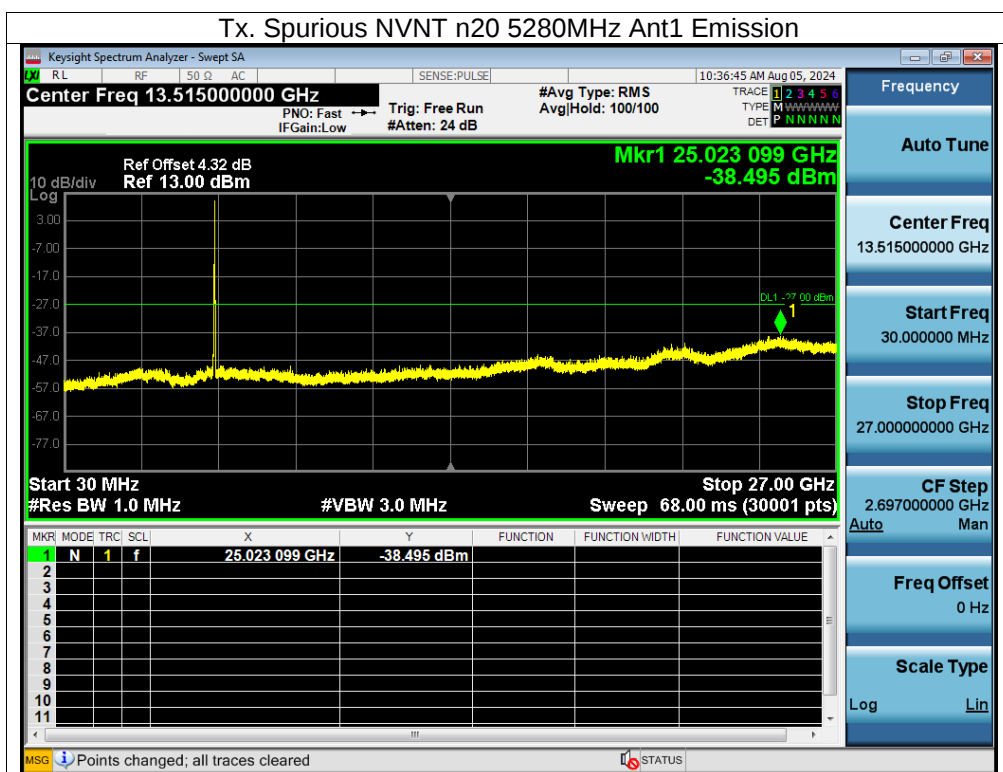


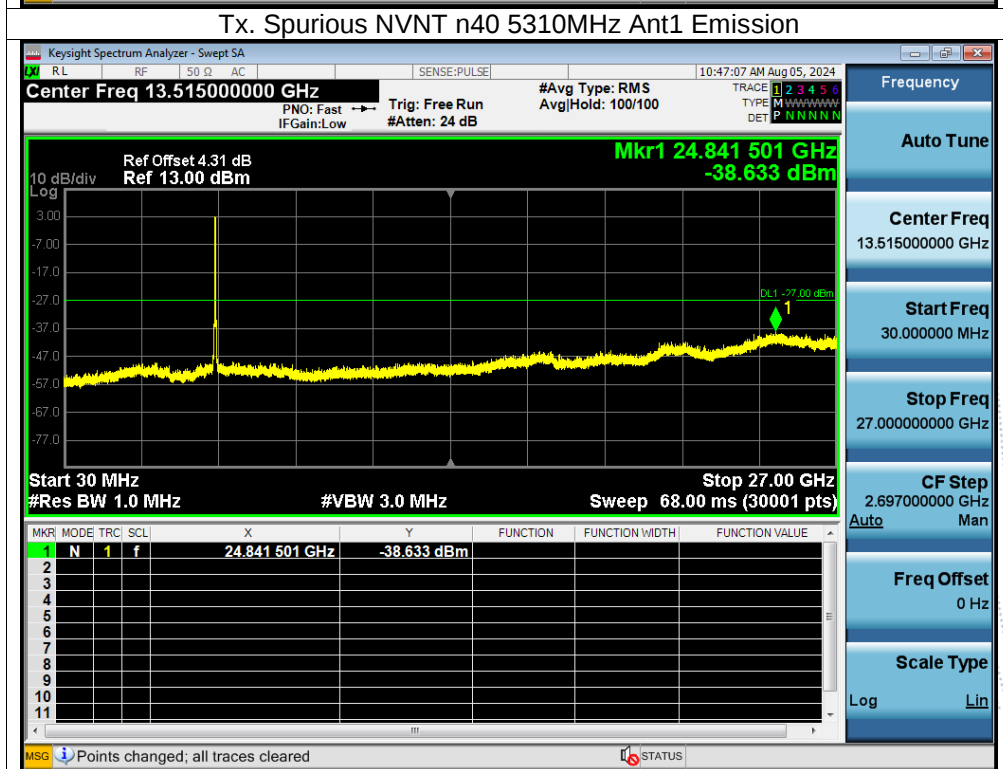
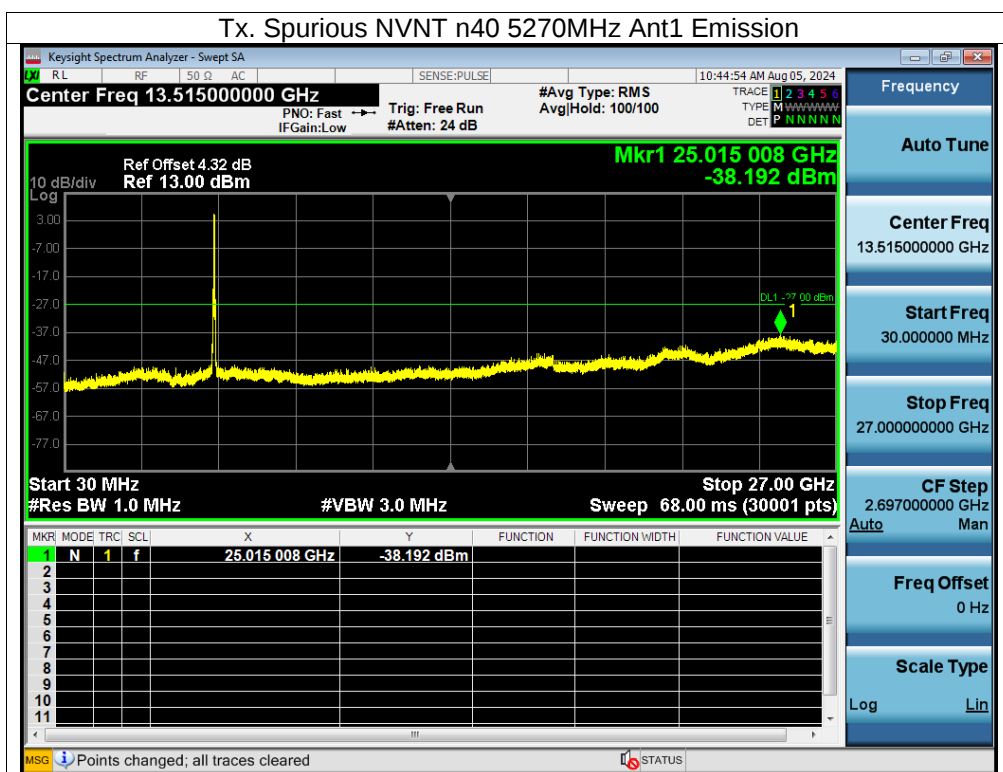


Test Mode: 5260-5320MHz

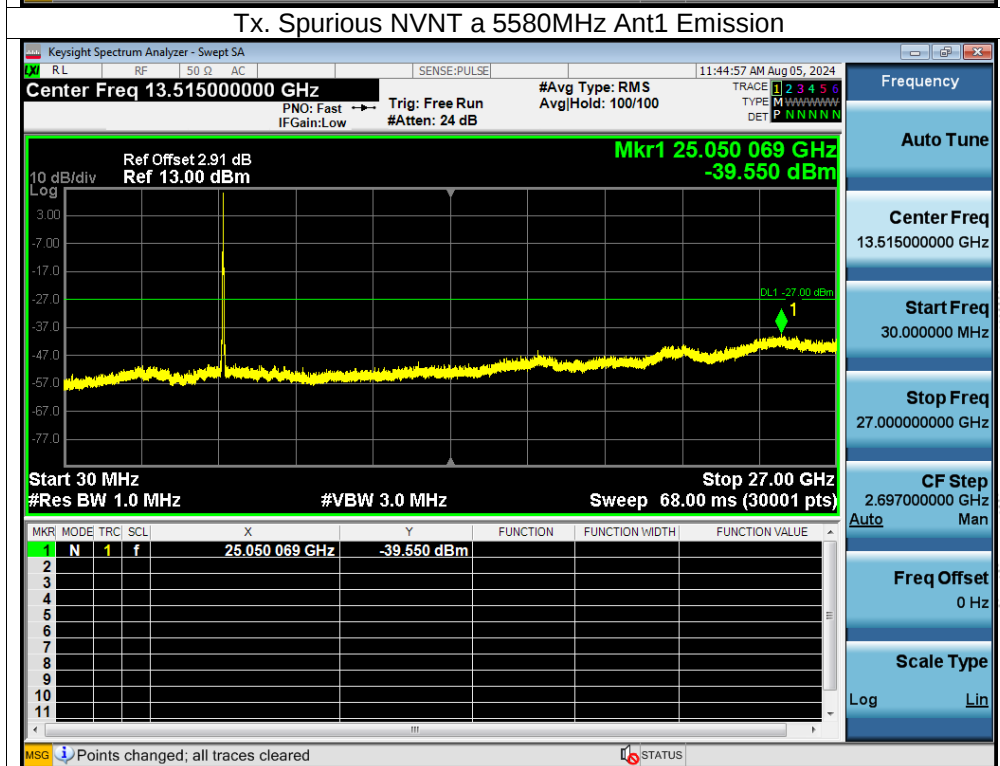
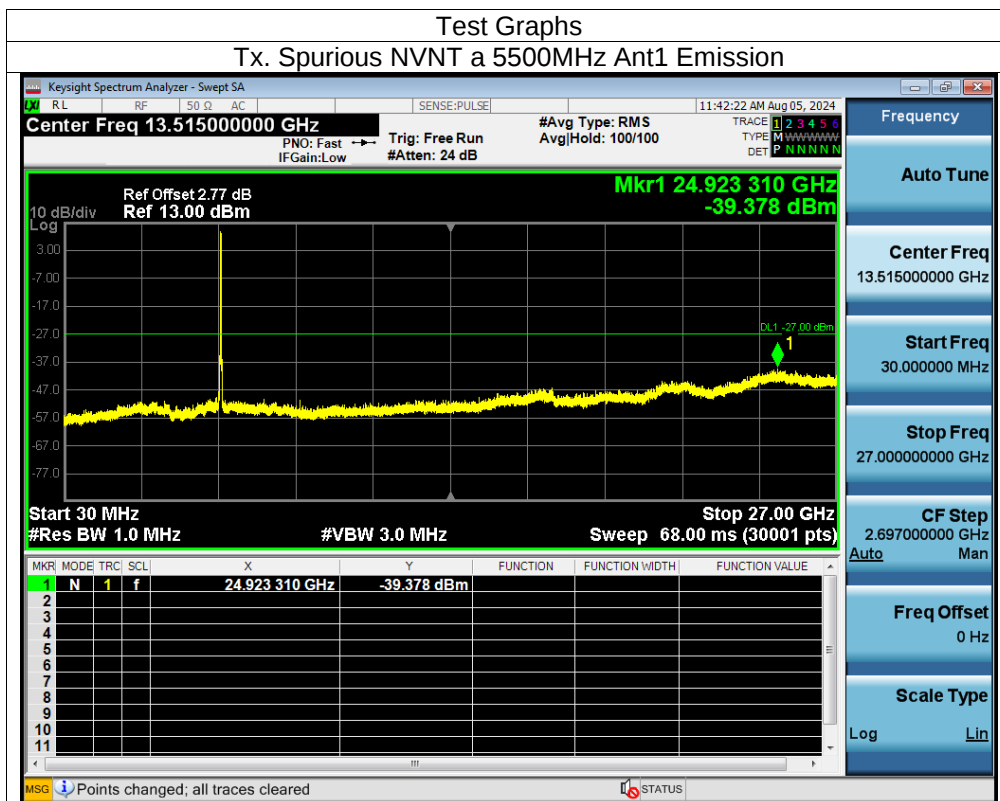


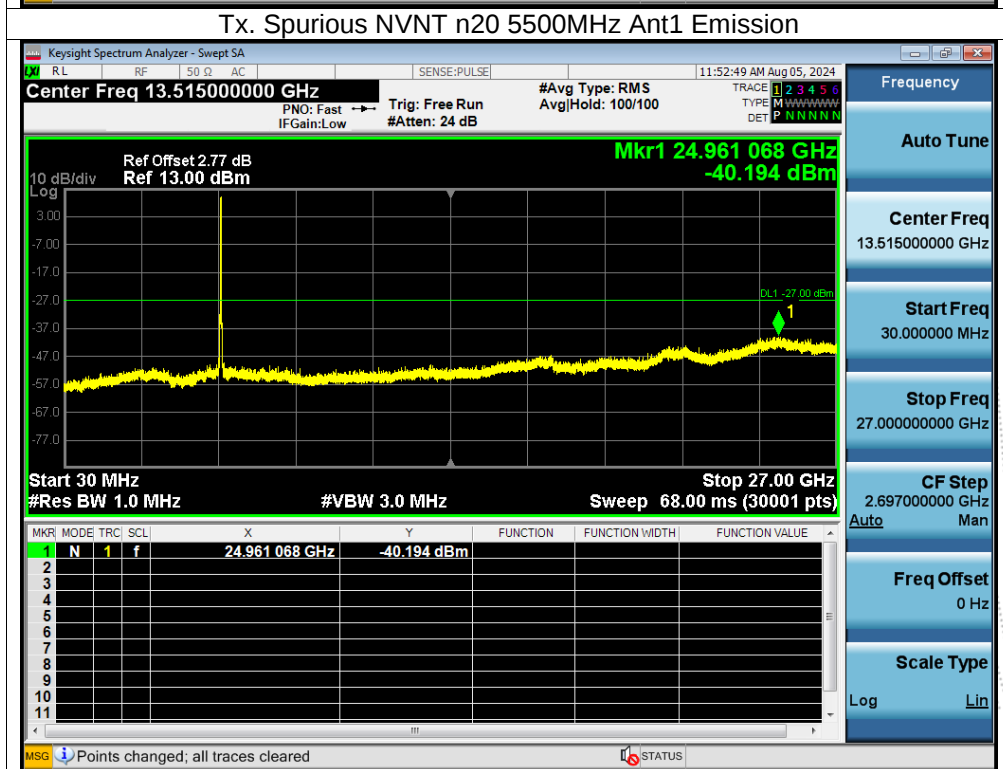
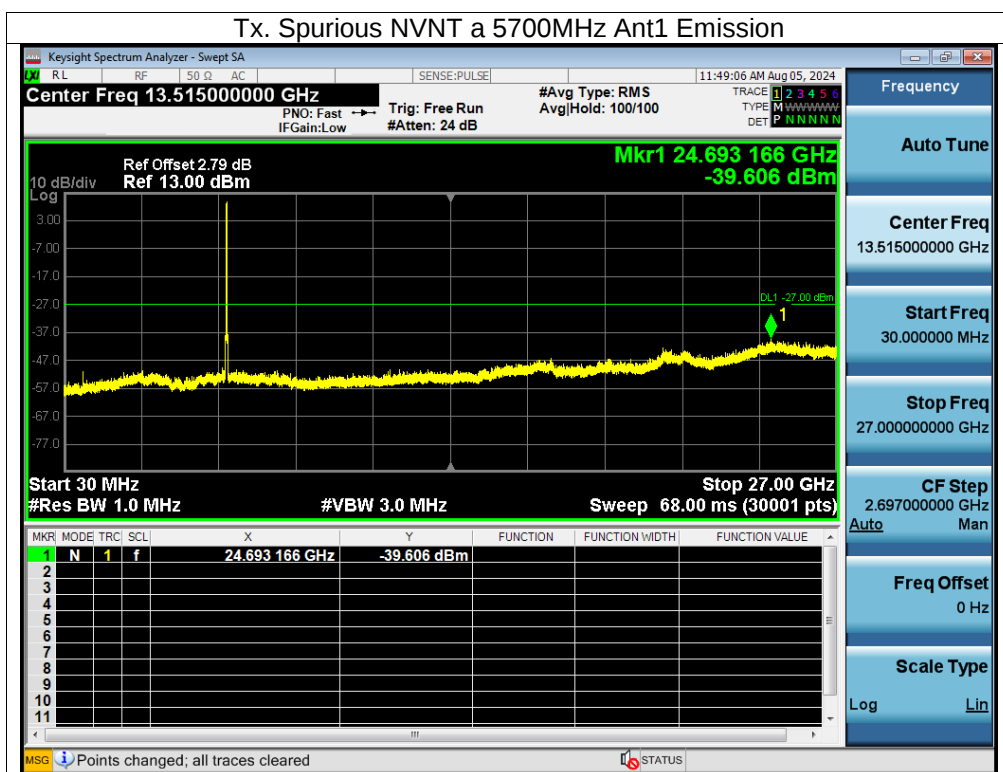


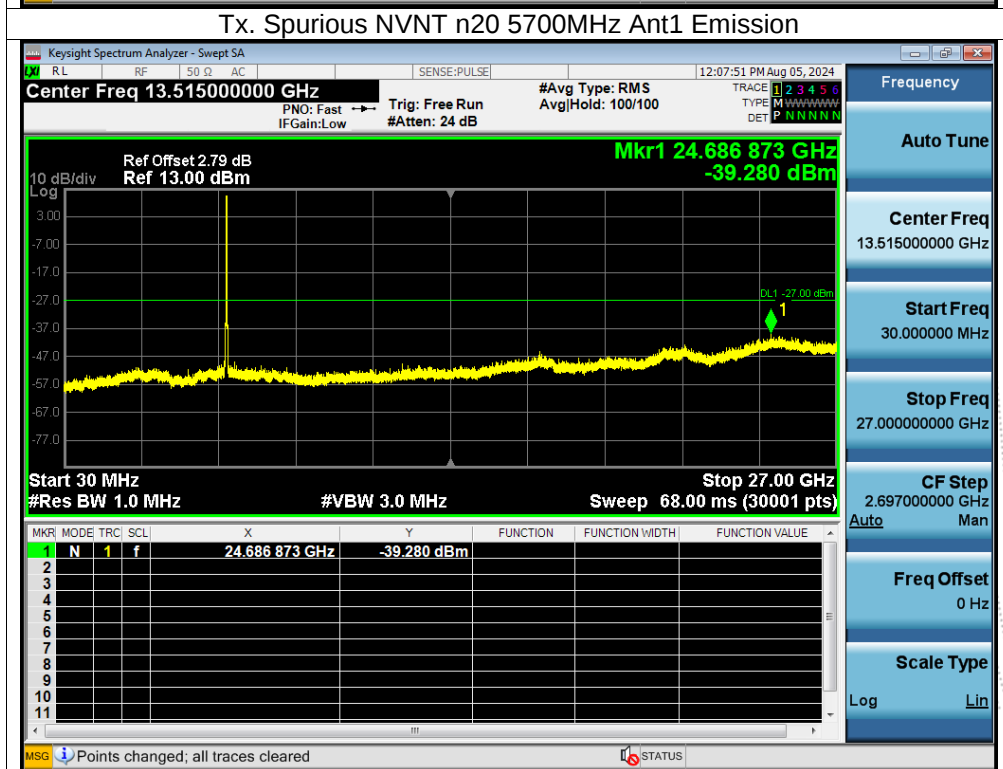
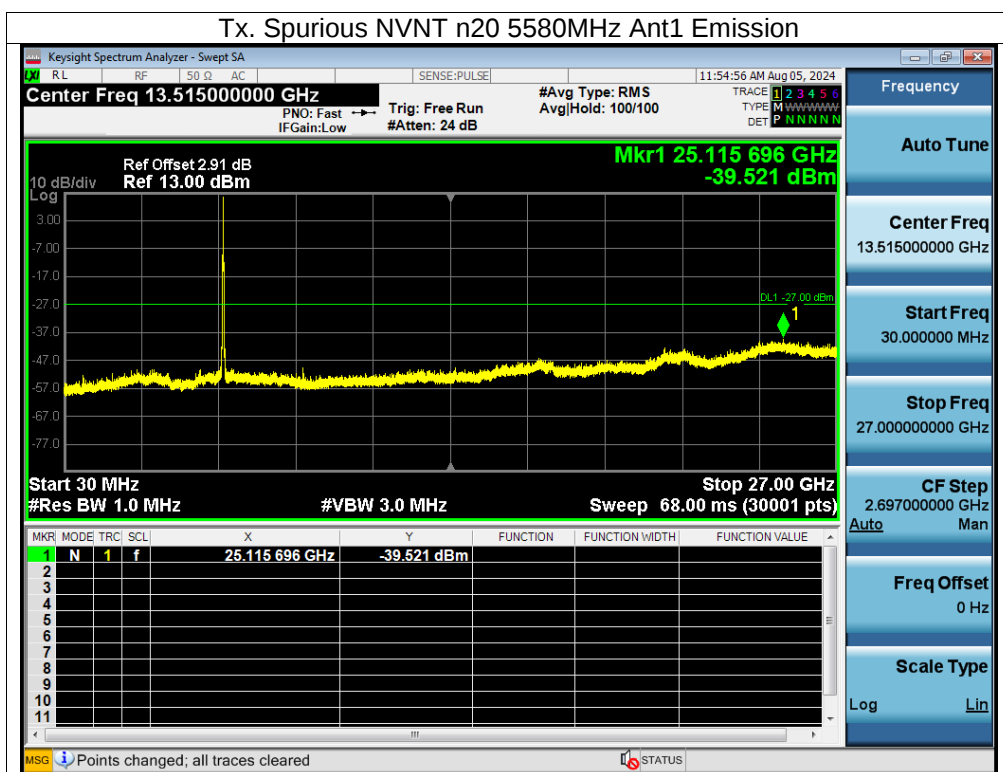


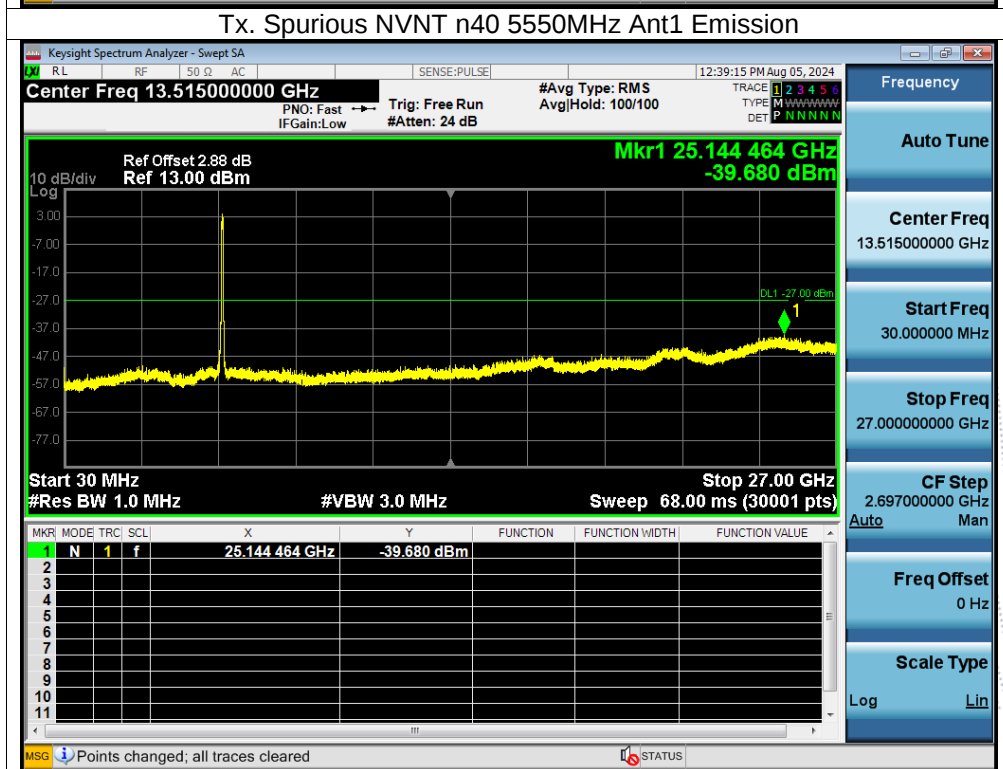
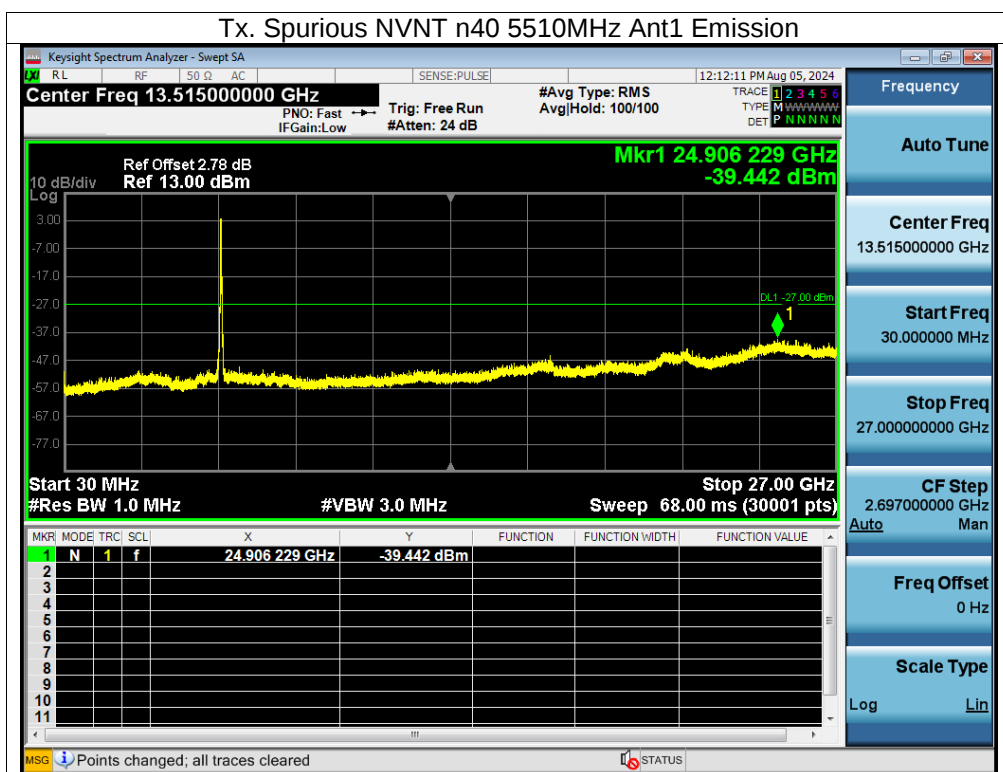


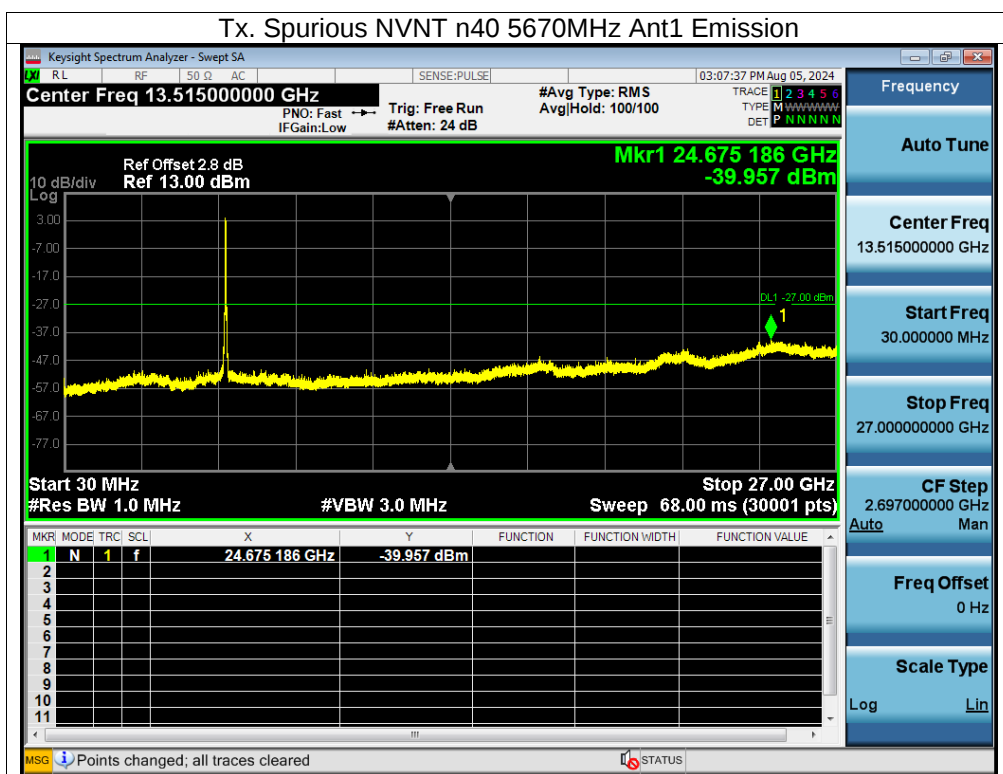
Test Mode:	5500-5700MHz
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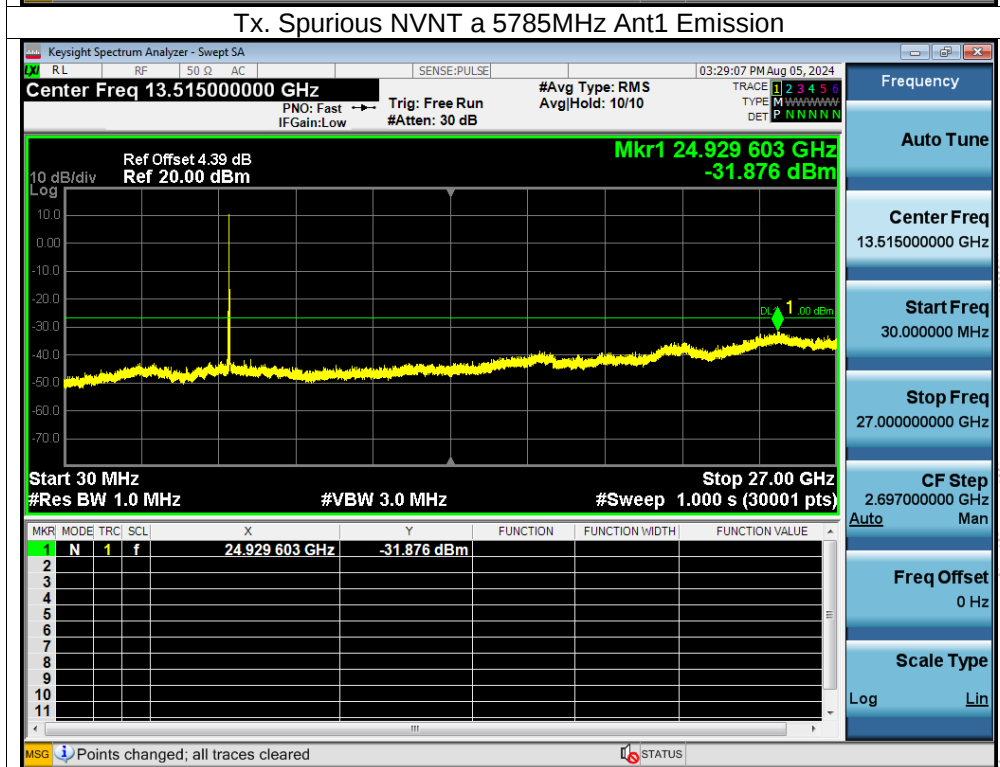
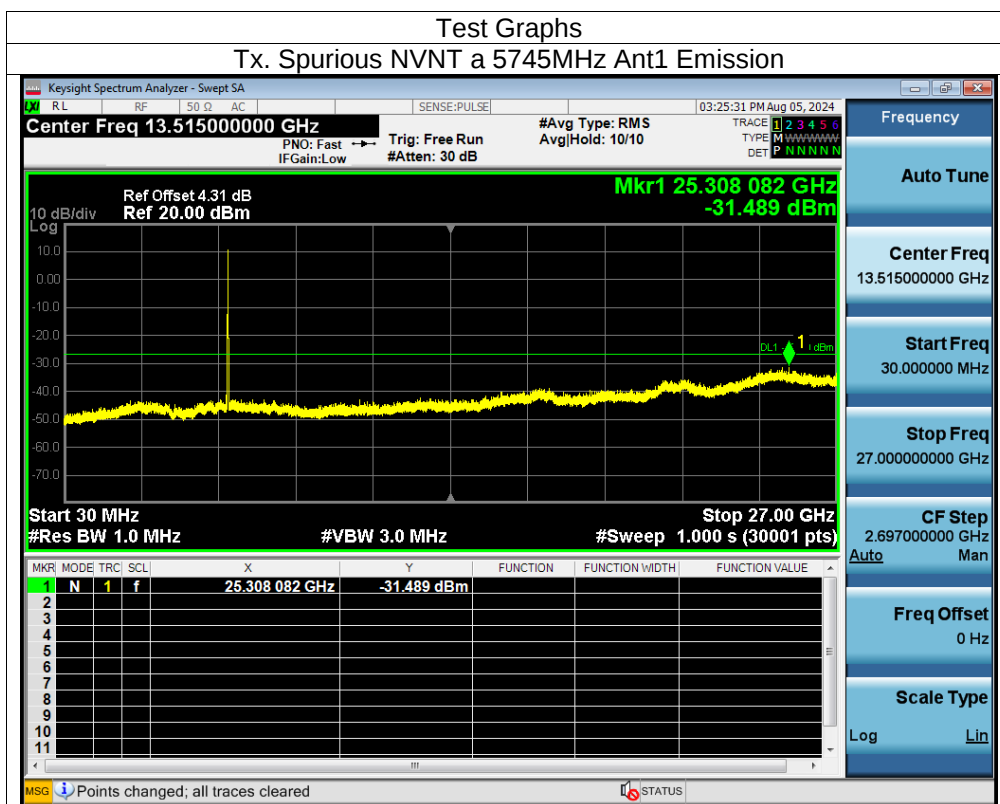


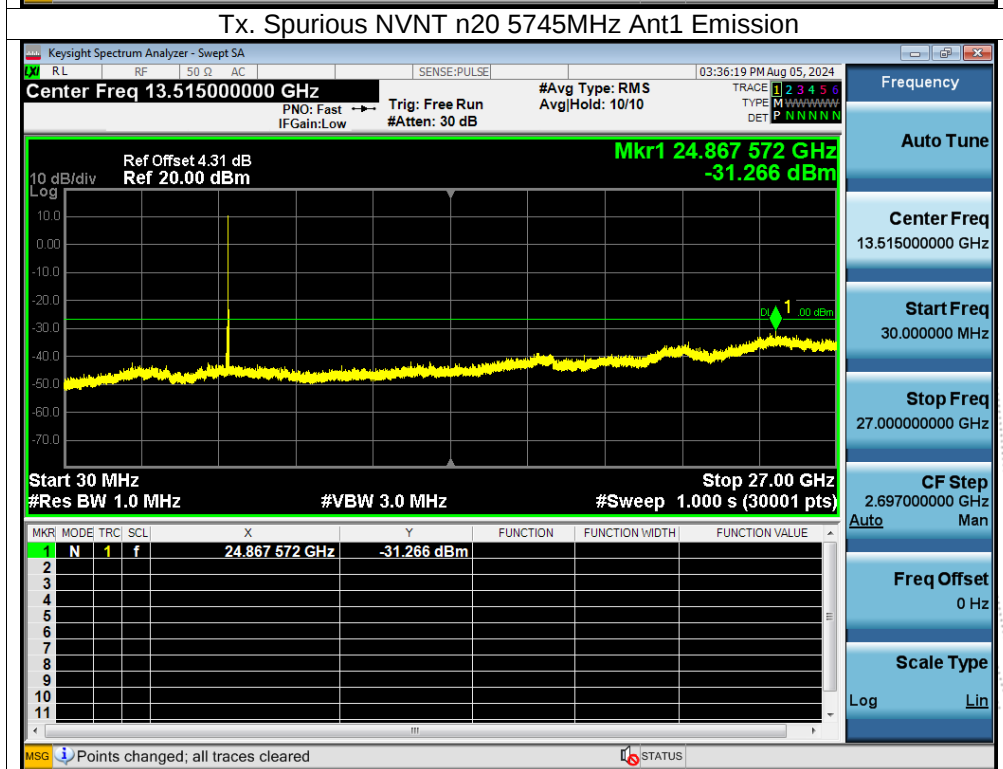
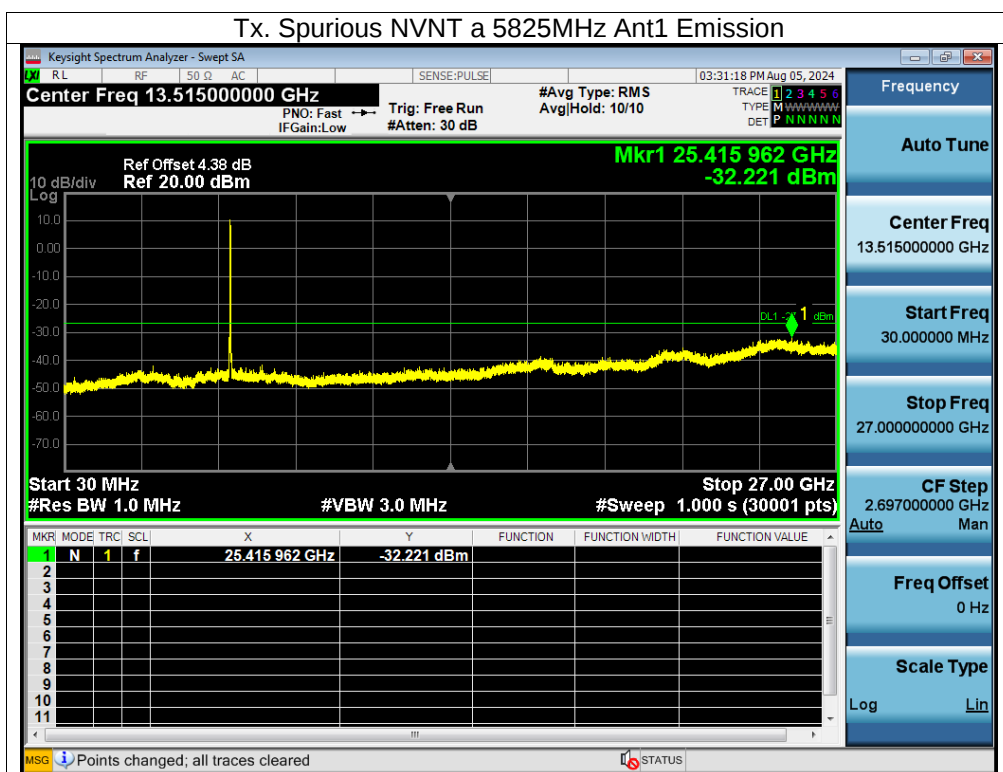


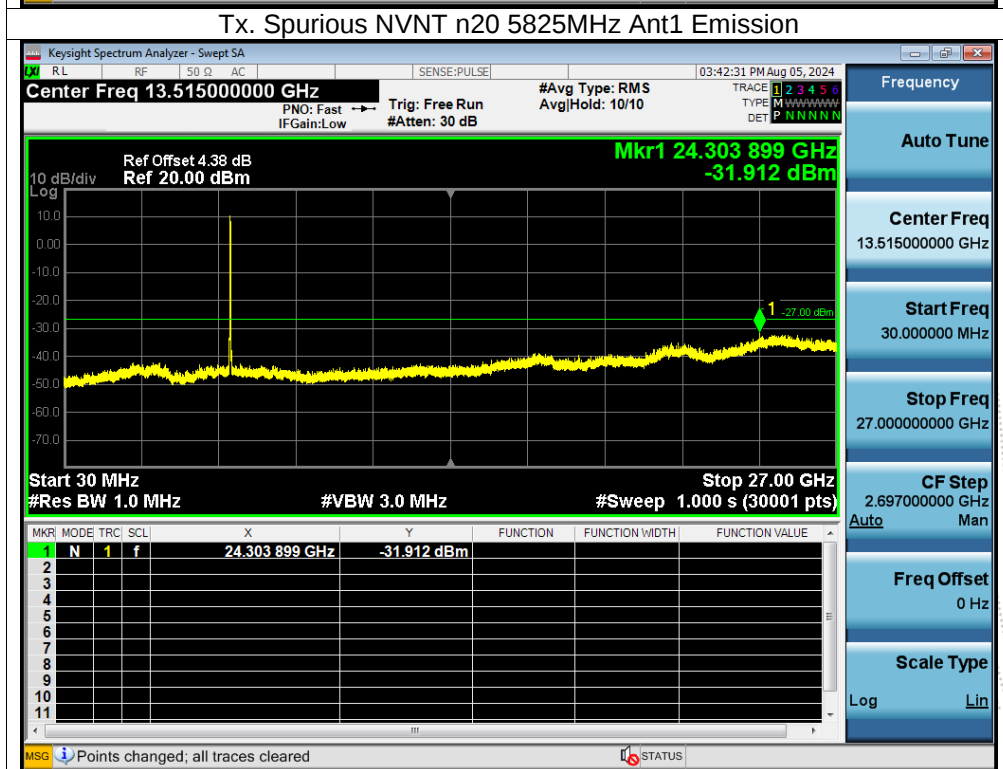
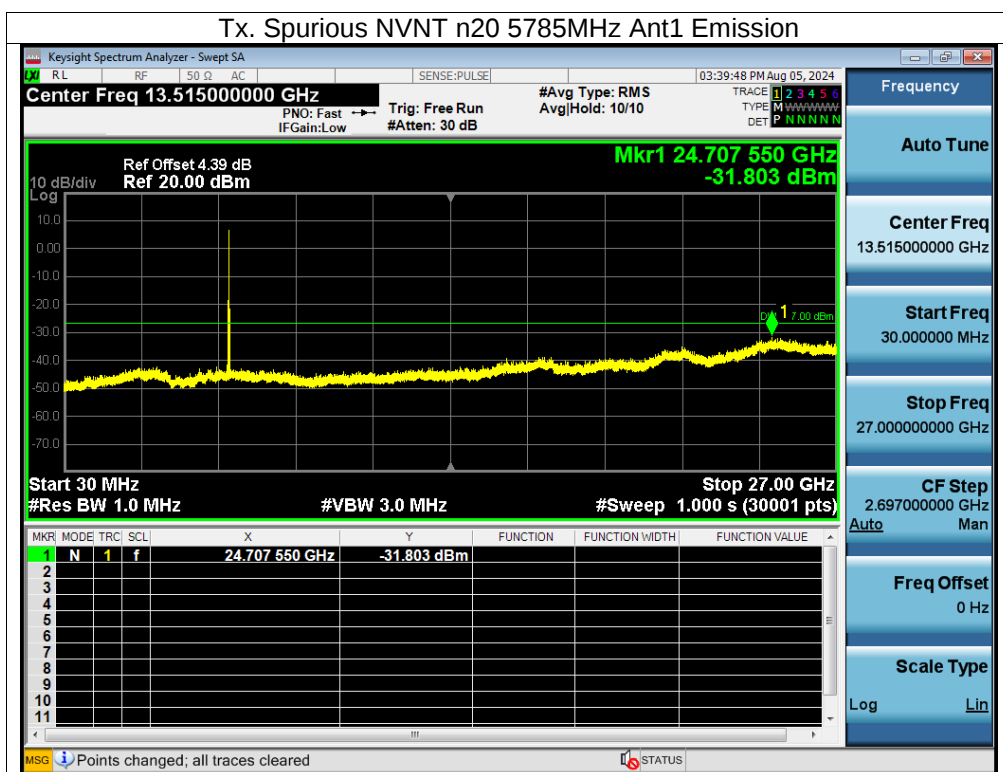


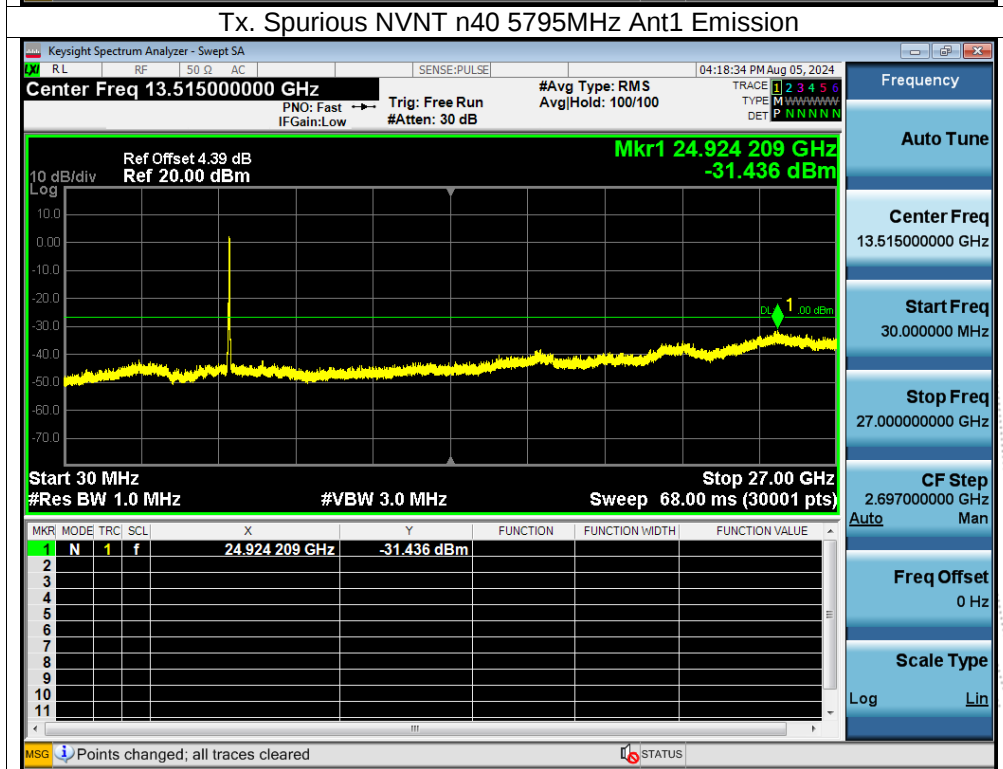
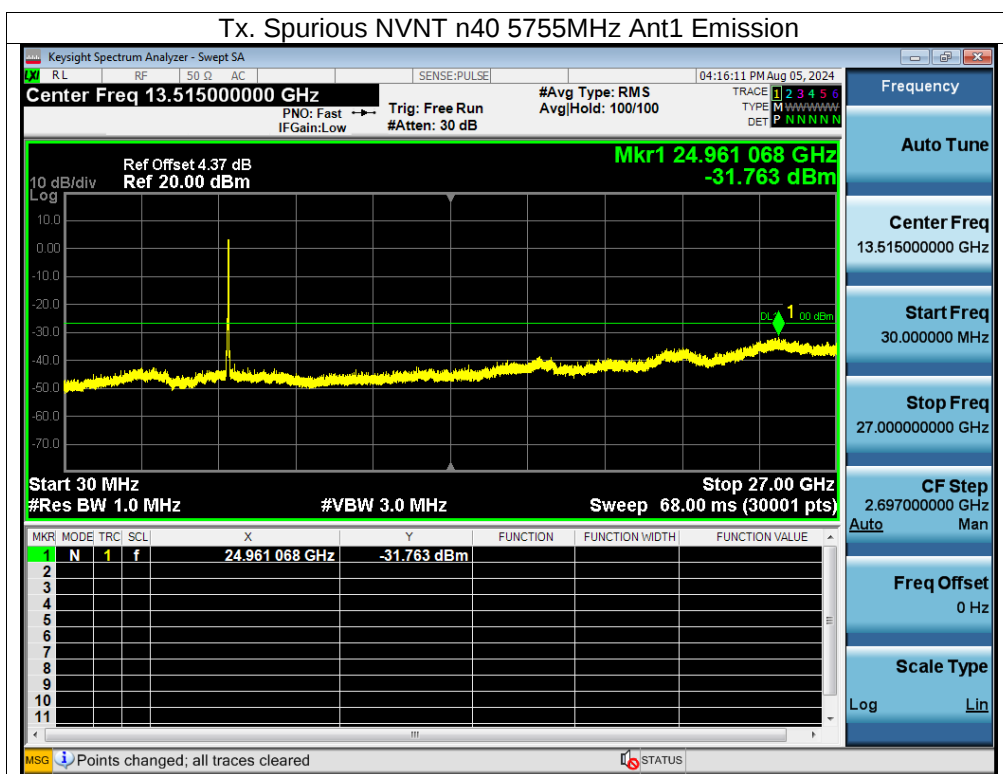


Test Mode:	5745-5825MHz
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13. Frequency Stability Measurement

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 (5.1G) Mode 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	5180.0005	5180	0.0005	0.1059
		V max (V)	132	5180.0045	5180	0.0045	0.8635
		V min (V)	108	5180.0134	5180	0.0134	2.5829
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	5180.0101	5180	0.0101	1.9557
		T (°C)	-10	5180.0027	5180	0.0027	0.5245
		T (°C)	0	5180.0051	5180	0.0051	0.9914
		T (°C)	10	5180.0058	5180	0.0058	1.1290
		T (°C)	20	5180.0072	5180	0.0072	1.3911
		T (°C)	30	5180.0068	5180	0.0068	1.3129
		T (°C)	40	5180.0125	5180	0.0125	2.4141
		T (°C)	50	5180.0019	5180	0.0019	0.3647
		T (°C)	60	5180.0129	5180	0.0129	2.4893
		T (°C)	70	5180.0090	5180	0.0090	1.7336
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	5200.0026	5200	0.0026	0.4919
		V max (V)	132	5200.0082	5200	0.0082	1.5717
		V min (V)	108	5200.0131	5200	0.0131	2.5180
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	5200.00642	5200	0.00642	1.2337
		T (°C)	-10	5200.00695	5200	0.00695	1.3371
		T (°C)	0	5200.01239	5200	0.01239	2.3822
		T (°C)	10	5200.00667	5200	0.00667	1.2824
		T (°C)	20	5200.01042	5200	0.01042	2.0036
		T (°C)	30	5200.00255	5200	0.00255	0.4897
		T (°C)	40	5200.00895	5200	0.00895	1.7207
		T (°C)	50	5200.01087	5200	0.01087	2.0895
		T (°C)	60	5200.00852	5200	0.00852	1.6380
		T (°C)	70	5200.01112	5200	0.01112	2.1386
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	5240.0113	5240	0.0113	2.1504
		V max (V)	132	5240.0108	5240	0.0108	2.0517
		V min (V)	108	5240.0082	5240	0.0082	1.5674
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	5240.0035	5240	0.0035	0.6700
		T (°C)	-10	5240.0088	5240	0.0088	1.6841
		T (°C)	0	5240.0103	5240	0.0103	1.9578
		T (°C)	10	5240.0023	5240	0.0023	0.4350
		T (°C)	20	5240.0029	5240	0.0029	0.5623
		T (°C)	30	5240.0121	5240	0.0121	2.3009
		T (°C)	40	5240.0068	5240	0.0068	1.3058
		T (°C)	50	5240.0093	5240	0.0093	1.7771
		T (°C)	60	5240.0135	5240	0.0135	2.5683
		T (°C)	70	5240.0100	5240	0.0100	1.9176
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX (5.3G) Mode Frequency U-NII-2A (5260-5320MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5260.0131	5260	0.0131	2.4911
		V max (V)	132	5260.0181	5260	0.0181	3.4376
		V min (V)	108	5260.0134	5260	0.0134	2.5496
Limits				5250-5350 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5260.0118	5260	0.0118	2.2390
		T (°C)	-10	5260.0122	5260	0.0122	2.3286
		T (°C)	0	5260.0015	5260	0.0015	0.2855
		T (°C)	10	5260.0022	5260	0.0022	0.4276
		T (°C)	20	5260.0101	5260	0.0101	1.9239
		T (°C)	30	5260.0083	5260	0.0083	1.5833
		T (°C)	40	5260.0050	5260	0.0050	0.9439
		T (°C)	50	5260.0014	5260	0.0014	0.2662
		T (°C)	60	5260.0018	5260	0.0018	0.3513
		T (°C)	70	5260.0042	5260	0.0042	0.7922
Limits				5250-5350 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5280.0046	5280	0.0046	0.8795
		V max (V)	132	5280.0084	5280	0.0084	1.5889
		V min (V)	108	5280.0031	5280	0.0031	0.5861
Limits				5250-5350 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5280.01274	5280	0.01274	2.4135
		T (°C)	-10	5280.00422	5280	0.00422	0.7986
		T (°C)	0	5280.00566	5280	0.00566	1.0717
		T (°C)	10	5280.00706	5280	0.00706	1.3371
		T (°C)	20	5280.00859	5280	0.00859	1.6264
		T (°C)	30	5280.00592	5280	0.00592	1.1213
		T (°C)	40	5280.00255	5280	0.00255	0.4832
		T (°C)	50	5280.00542	5280	0.00542	1.0258
		T (°C)	60	5280.00454	5280	0.00454	0.8593
		T (°C)	70	5280.00348	5280	0.00348	0.6597
Limits				5250-5350 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5320.0064	5320	0.0064	1.1993
		V max (V)	132	5320.0089	5320	0.0089	1.6800
		V min (V)	108	5320.0095	5320	0.0095	1.7905
Limits				5250-5350 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5320.0104	5320	0.0104	1.9600
		T (°C)	-10	5320.0068	5320	0.0068	1.2813
		T (°C)	0	5320.0021	5320	0.0021	0.3946
		T (°C)	10	5320.0060	5320	0.0060	1.1268
		T (°C)	20	5320.0000	5320	0.0000	0.0076
		T (°C)	30	5320.0081	5320	0.0081	1.5310
		T (°C)	40	5320.0078	5320	0.0078	1.4645
		T (°C)	50	5320.0066	5320	0.0066	1.2400
		T (°C)	60	5320.0127	5320	0.0127	2.3846
		T (°C)	70	5320.0050	5320	0.0050	0.9377
Limits				5250-5350 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC 120V/60Hz
Test Mode:	TX (5.6G) Mode Frequency U-NII-2C (5500-5700MHz)		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5500.0063	5500	0.0063	1.1501
		V max (V)	132	5500.0123	5500	0.0123	2.2451
		V min (V)	108	5500.0090	5500	0.0090	1.6403
Limits				5470-5720 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5500.0109	5500	0.0109	1.9799
		T (°C)	-10	5500.0038	5500	0.0038	0.6993
		T (°C)	0	5500.0119	5500	0.0119	2.1554
		T (°C)	10	5500.0129	5500	0.0129	2.3510
		T (°C)	20	5500.0013	5500	0.0013	0.2316
		T (°C)	30	5500.0121	5500	0.0121	2.1958
		T (°C)	40	5500.0093	5500	0.0093	1.6837
		T (°C)	50	5500.0035	5500	0.0035	0.6356
		T (°C)	60	5500.0051	5500	0.0051	0.9183
		T (°C)	70	5500.0052	5500	0.0052	0.9509
Limits				5470-5720 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5580.0047	5580	0.0047	0.8471
		V max (V)	132	5580.0126	5580	0.0126	2.2589
		V min (V)	108	5580.0128	5580	0.0128	2.3018
Limits				5470-5720 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency : 5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5580.00170	5580	0.00170	0.3052
		T (°C)	-10	5580.00547	5580	0.00547	0.9795
		T (°C)	0	5580.01299	5580	0.01299	2.3275
		T (°C)	10	5580.00348	5580	0.00348	0.6232
		T (°C)	20	5580.01339	5580	0.01339	2.4005
		T (°C)	30	5580.00920	5580	0.00920	1.6486
		T (°C)	40	5580.00217	5580	0.00217	0.3890
		T (°C)	50	5580.01047	5580	0.01047	1.8763
		T (°C)	60	5580.00251	5580	0.00251	0.4498
		T (°C)	70	5580.00728	5580	0.00728	1.3044
Limits				5470-5720 MHz			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5700.0028	5700	0.0028	0.4896
		V max (V)	132	5700.0006	5700	0.0006	0.1137
		V min (V)	108	5700.0038	5700	0.0038	0.6732
Limits				5470-5720 MHz			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency: 5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5700.0021	5700	0.0021	0.3621
		T (°C)	-10	5700.0112	5700	0.0112	1.9682
		T (°C)	0	5700.0027	5700	0.0027	0.4805
		T (°C)	10	5700.0057	5700	0.0057	1.0039
		T (°C)	20	5700.0002	5700	0.0002	0.0303
		T (°C)	30	5700.0037	5700	0.0037	0.6436
		T (°C)	40	5700.0073	5700	0.0073	1.2721
		T (°C)	50	5700.0071	5700	0.0071	1.2416
		T (°C)	60	5700.0032	5700	0.0032	0.5655
		T (°C)	70	5700.0028	5700	0.0028	0.4908
Limits				5470-5720 MHz			
Result				Complies			

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	5745.00599	5745	0.00599	1.0433
		V max (V)	132	5745.00552	5745	0.00552	0.9614
		V min (V)	108	5745.00171	5745	0.00171	0.2969
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	5745.00079	5745	0.00079	0.1376
		T (°C)	-10	5745.01179	5745	0.01179	2.0515
		T (°C)	0	5745.00734	5745	0.00734	1.2768
		T (°C)	10	5745.00500	5745	0.00500	0.8702
		T (°C)	20	5745.00348	5745	0.00348	0.6050
		T (°C)	30	5745.00483	5745	0.00483	0.8401
		T (°C)	40	5745.00017	5745	0.00017	0.0303
		T (°C)	50	5745.00725	5745	0.00725	1.2628
		T (°C)	60	5745.01145	5745	0.01145	1.9936
		T (°C)	70	5745.00444	5745	0.00444	0.7733
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	5785.00945	5785	0.00945	1.6327
		V max (V)	132	5785.01045	5785	0.01045	1.8069
		V min (V)	108	5785.00319	5785	0.00319	0.5519
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	5785.01191	5785	0.01191	2.0592
		T (°C)	-10	5785.01142	5785	0.01142	1.9734
		T (°C)	0	5785.00424	5785	0.00424	0.7328
		T (°C)	10	5785.00807	5785	0.00807	1.3949
		T (°C)	20	5785.00259	5785	0.00259	0.4474
		T (°C)	30	5785.00887	5785	0.00887	1.5336
		T (°C)	40	5785.00919	5785	0.00919	1.5887
		T (°C)	50	5785.00713	5785	0.00713	1.2324
		T (°C)	60	5785.00656	5785	0.00656	1.1338
		T (°C)	70	5785.00205	5785	0.00205	0.3551
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)	120	5825.00974	5825	0.00974	1.6725
		V max (V)	132	5825.01098	5825	0.01098	1.8852
		V min (V)	108	5825.00512	5825	0.00512	0.8788
Limits				5725-5850 MHz			
Result				Complies			

Temperature vs. Frequency Stability

Temperature vs. Frequency Stability							
TEST CONDITIONS				Reference Frequency: 5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5825.00121	5825	0.00121	0.2074
		T (°C)	-10	5825.00463	5825	0.00463	0.7940
		T (°C)	0	5825.00869	5825	0.00869	1.4918
		T (°C)	10	5825.00993	5825	0.00993	1.7046
		T (°C)	20	5825.01026	5825	0.01026	1.7617
		T (°C)	30	5825.01011	5825	0.01011	1.7357
		T (°C)	40	5825.01275	5825	0.01275	2.1890
		T (°C)	50	5825.01102	5825	0.01102	1.8916
		T (°C)	60	5825.00820	5825	0.00820	1.4078
		T (°C)	70	5825.00208	5825	0.00208	0.3567
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 = $T_{on} / (T_{on} + T_{off})$

14.3 Test Procedure

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

14.4 Test Result

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	100	0	0
NVNT	a	5200	100	0	0
NVNT	a	5240	100	0	0
NVNT	n20	5180	100	0	0
NVNT	n20	5200	100	0	0
NVNT	n20	5240	100	0	0
NVNT	n40	5190	100	0	0
NVNT	n40	5230	100	0	0

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5260	100	0	0
NVNT	a	5280	100	0	0
NVNT	a	5320	100	0	0
NVNT	n20	5260	100	0	0
NVNT	n20	5280	100	0	0
NVNT	n20	5320	100	0	0
NVNT	n40	5270	100	0	0
NVNT	n40	5310	100	0	0

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5500	100	0	0
NVNT	a	5580	100	0	0
NVNT	a	5700	100	0	0
NVNT	n20	5500	100	0	0
NVNT	n20	5580	100	0	0
NVNT	n20	5700	100	0	0
NVNT	n40	5510	100	0	0
NVNT	n40	5550	100	0	0
NVNT	n40	5670	100	0	0

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5745	100	0	0
NVNT	a	5785	100	0	0
NVNT	a	5825	100	0	0
NVNT	n20	5745	100	0	0
NVNT	n20	5785	100	0	0
NVNT	n20	5825	100	0	0
NVNT	n40	5755	100	0	0
NVNT	n40	5795	100	0	0

15. Antenna Requirement

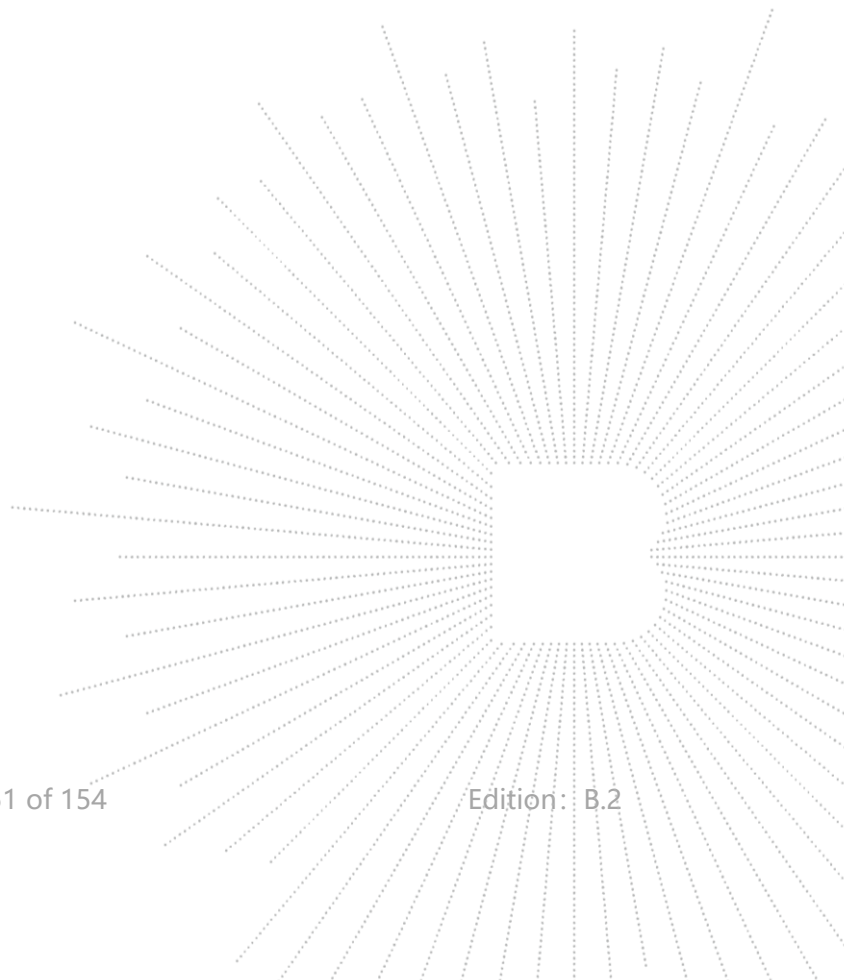
15.1 Limit

15.203 requirements:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

15.2 Test Result

The EUT antenna is internal antenna, not using a standard antenna jack or electrical connector for antenna replacement, fulfill the requirement of this section.

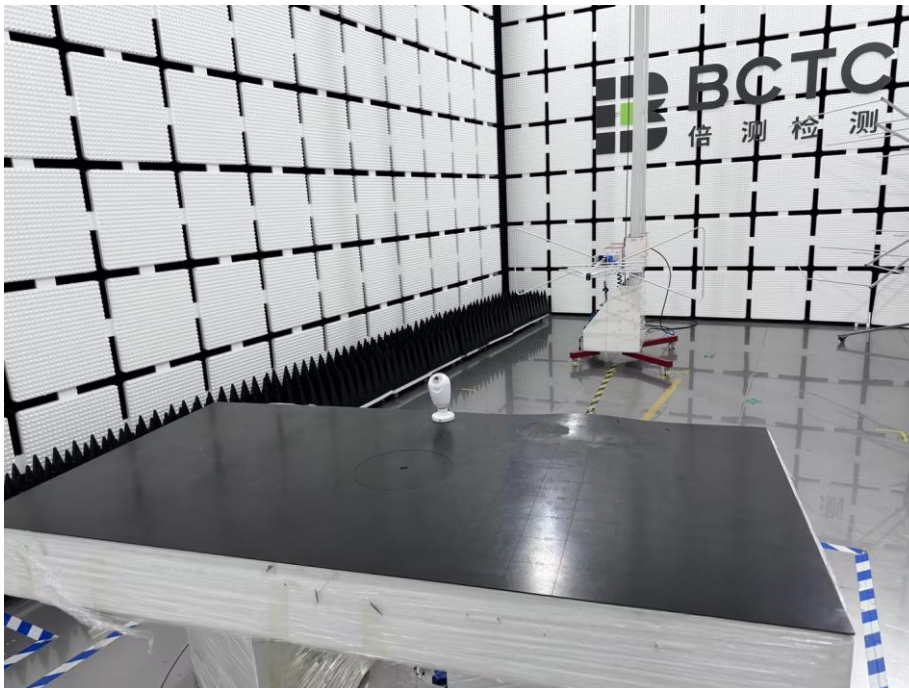


16. EUT Test Setup Photographs

Conducted Emissions 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 stamp of laboratory.
- 4.The test report is invalid without signature of person(s) testing and authorizing.
- 5.The test process and test result is only related to the Unit Under Test.
- 6.The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****