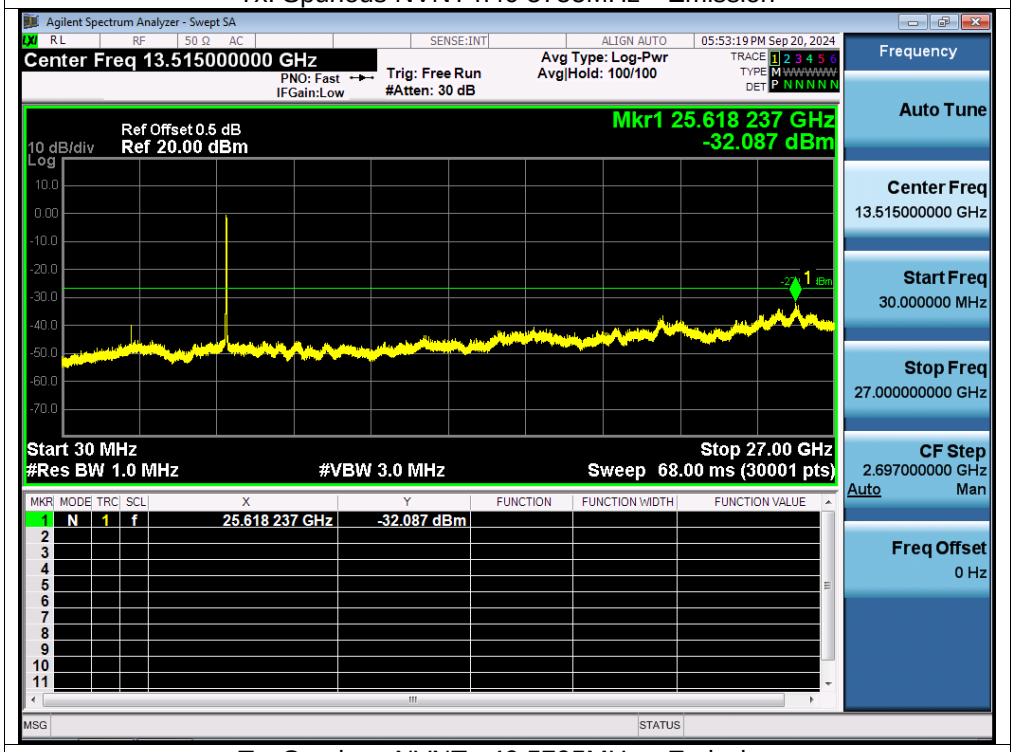
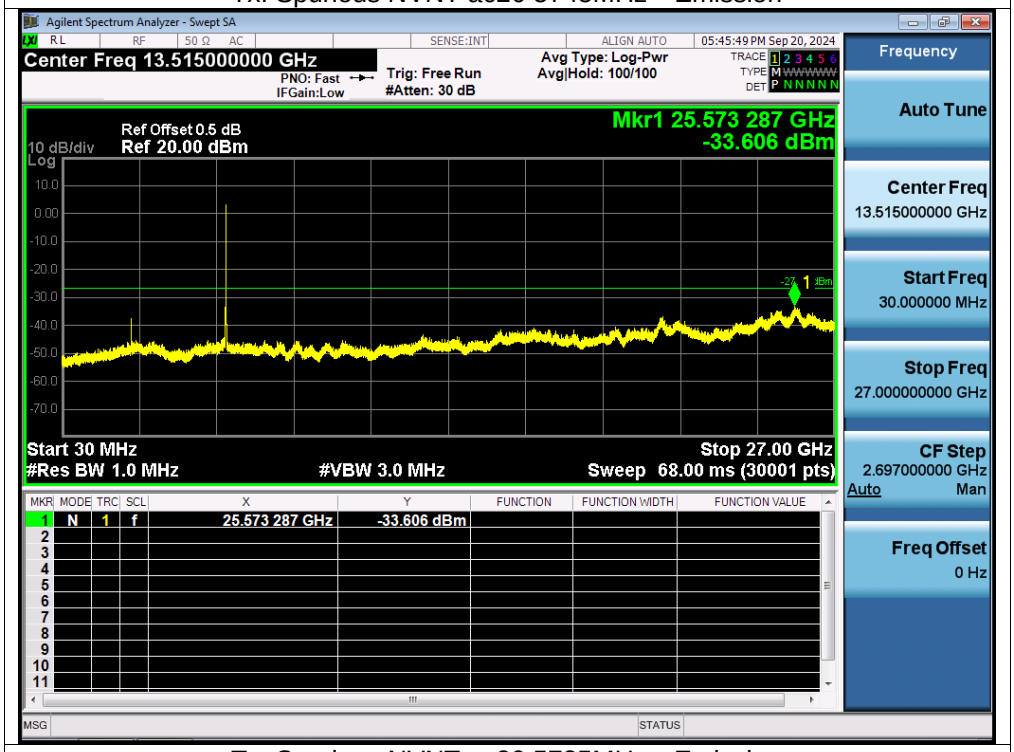
Tx. Spurious NVNT n40 5755MHz Emission



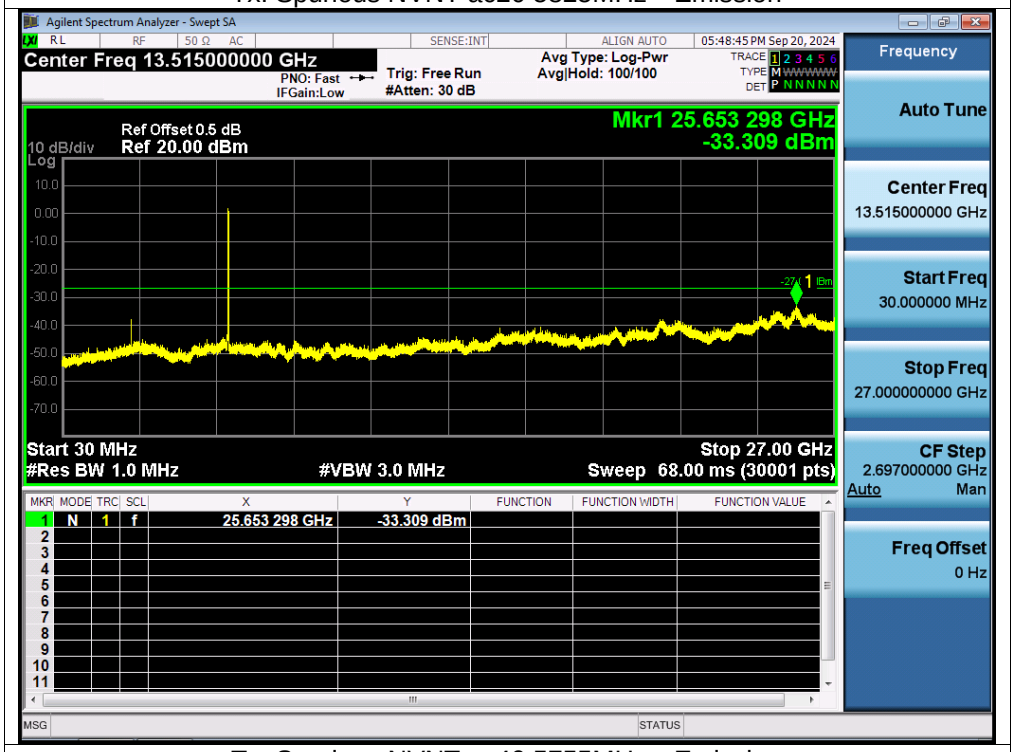
Tx. Spurious NVNT n40 5795MHz Emission

Tx. Spurious NVNT ac20 5745MHz Emission



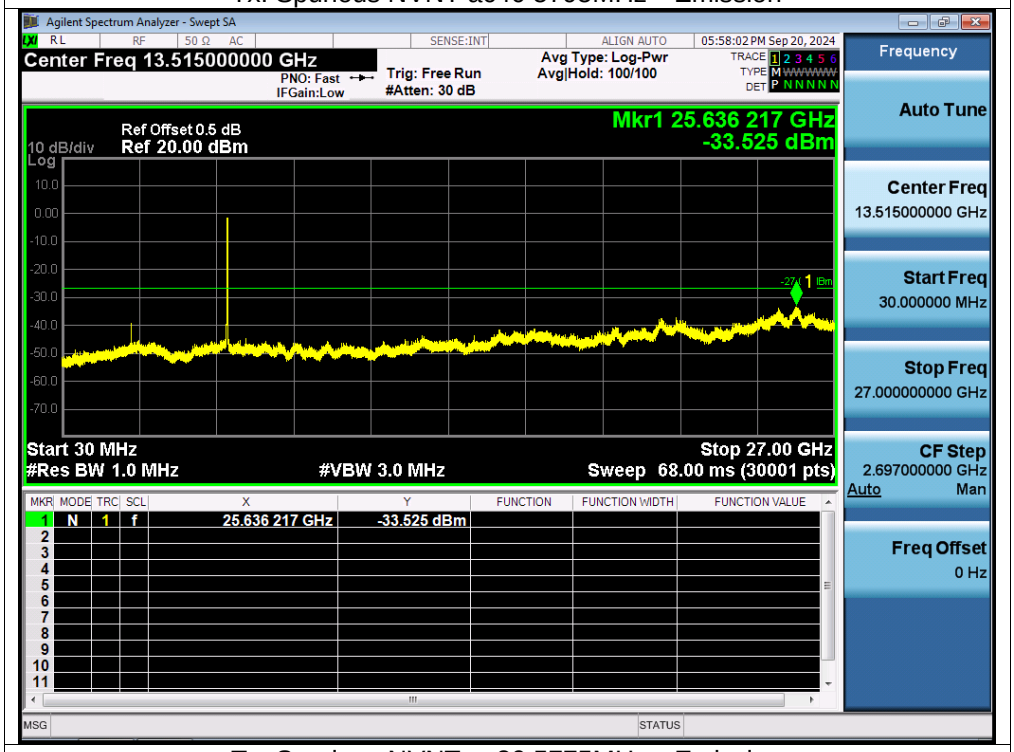
Tx. Spurious NVNT ac20 5785MHz Emission

Tx. Spurious NVNT ac20 5825MHz Emission



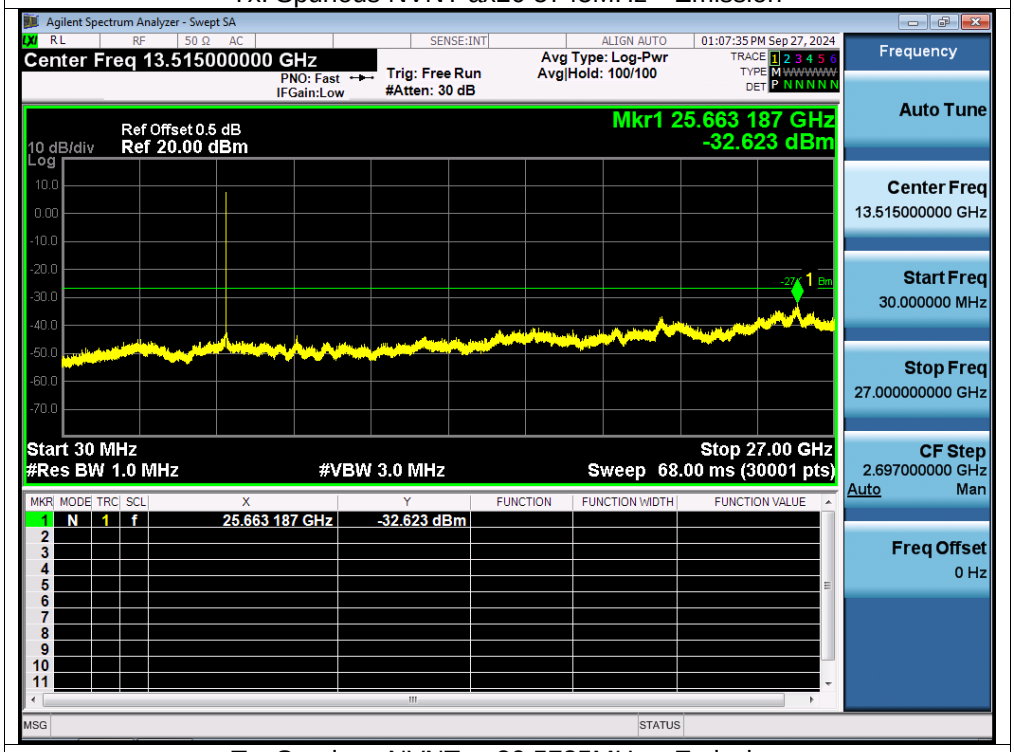
Tx. Spurious NVNT ac40 5755MHz Emission

Tx. Spurious NVNT ac40 5795MHz Emission



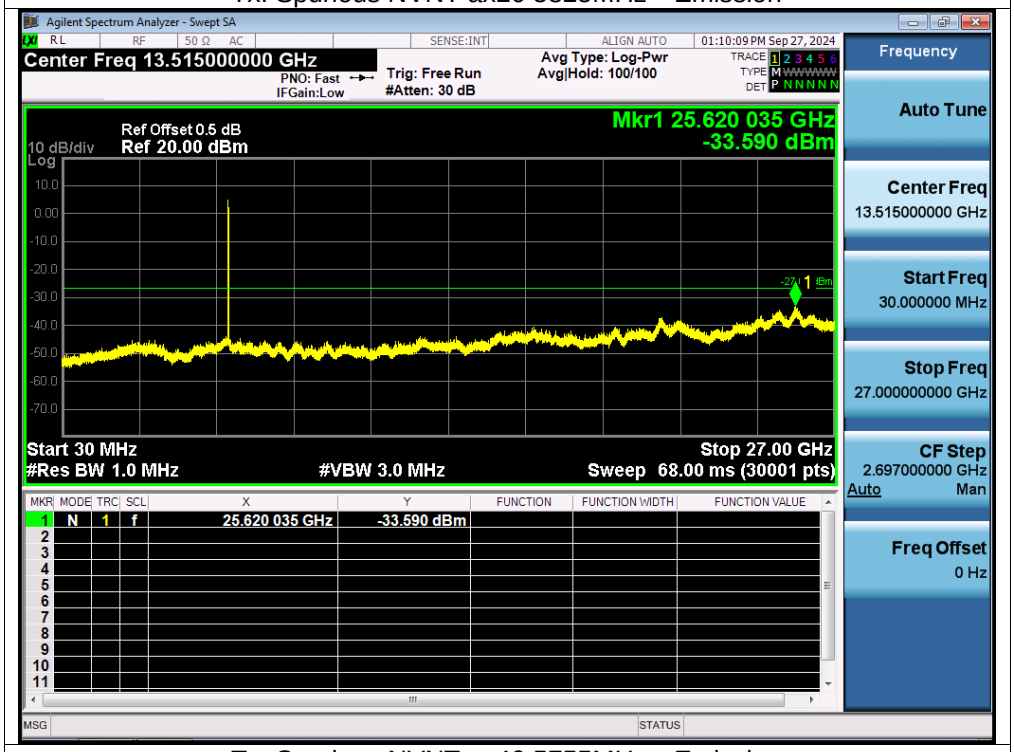
Tx. Spurious NVNT ac80 5775MHz Emission

Tx. Spurious NVNT ax20 5745MHz Emission



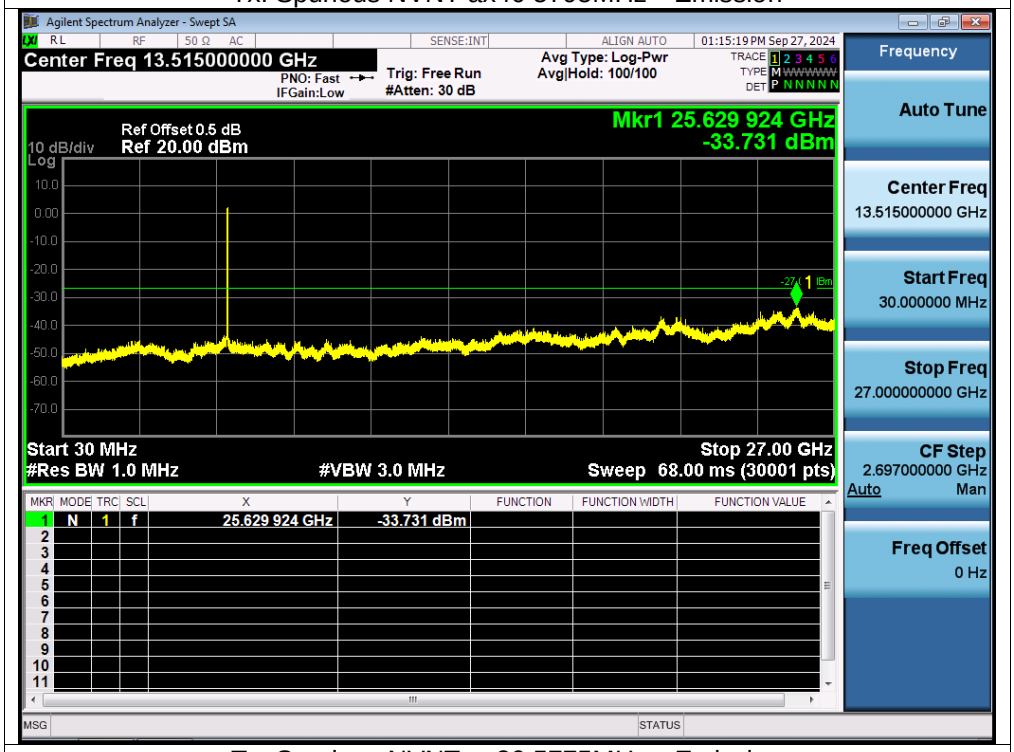
Tx. Spurious NVNT ax20 5785MHz Emission

Tx. Spurious NVNT ax20 5825MHz Emission



Tx. Spurious NVNT ax40 5755MHz Emission

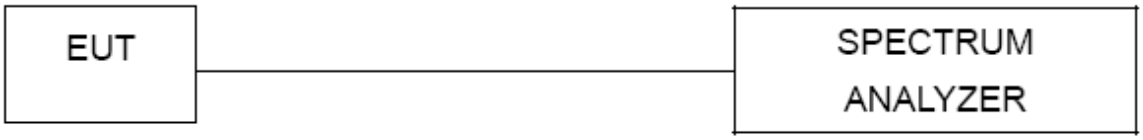
Tx. Spurious NVNT ax40 5795MHz Emission



Tx. Spurious NVNT ax80 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 19V
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)	19.00	5180.0078	5180	0.0078	1.5058
		V max (V)	21.85	5180.0046	5180	0.0046	0.8880
		V min (V)	16.15	5180.0002	5180	0.0002	0.0386
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)	19	T (°C)	-20	5180.0105	5180	0.0105	2.0270
		T (°C)	-10	5180.0125	5180	0.0125	2.4131
		T (°C)	0	5180.0081	5180	0.0081	1.5637
		T (°C)	10	5180.0048	5180	0.0048	0.9266
		T (°C)	20	5180.0015	5180	0.0015	0.2896
		T (°C)	30	5180.0001	5180	0.0001	0.0193
		T (°C)	40	5180.0083	5180	0.0083	1.6023
		T (°C)	50	5180.0004	5180	0.0004	0.0772
		T (°C)	60	5180.0027	5180	0.0027	0.5212
		T (°C)	70	5180.0041	5180	0.0041	0.7915
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)	19.00	5200.0110	5200	0.0110	2.1154
		V max (V)	21.85	5200.0075	5200	0.0075	1.4423
		V min (V)	16.15	5200.0098	5200	0.0098	1.8846
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)	19	T (°C)	-20	5200.00680	5200	0.00680	1.3077
		T (°C)	-10	5200.00110	5200	0.00110	0.2115
		T (°C)	0	5200.00510	5200	0.00510	0.9808
		T (°C)	10	5200.01220	5200	0.01220	2.3462
		T (°C)	20	5200.01270	5200	0.01270	2.4423
		T (°C)	30	5200.01140	5200	0.01140	2.1923
		T (°C)	40	5200.00130	5200	0.00130	0.2500
		T (°C)	50	5200.01050	5200	0.01050	2.0192
		T (°C)	60	5200.00840	5200	0.00840	1.6154
		T (°C)	70	5200.01000	5200	0.01000	1.9231
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)	19.00	5240.0052	5240	0.0052	0.9924
		V max (V)	21.85	5240.0104	5240	0.0104	1.9847
		V min (V)	16.15	5240.0063	5240	0.0063	1.2023
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)	19	T (°C)	-20	5240.0129	5240	0.0129	2.4618
		T (°C)	-10	5240.0002	5240	0.0002	0.0382
		T (°C)	0	5240.0072	5240	0.0072	1.3740
		T (°C)	10	5240.0057	5240	0.0057	1.0878
		T (°C)	20	5240.0130	5240	0.0130	2.4809
		T (°C)	30	5240.0068	5240	0.0068	1.2977
		T (°C)	40	5240.0114	5240	0.0114	2.1756
		T (°C)	50	5240.0096	5240	0.0096	1.8321
		T (°C)	60	5240.0063	5240	0.0063	1.2023
		T (°C)	70	5240.0127	5240	0.0127	2.4237
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 19V
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)	19.00	5745.00290	5745	0.00290	0.5048
		V max (V)	21.85	5745.00970	5745	0.00970	1.6884
		V min (V)	16.15	5745.00250	5745	0.00250	0.4352
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)	19	T (°C)	-20	5745.00920	5745	0.00920	1.6014
		T (°C)	-10	5745.00620	5745	0.00620	1.0792
		T (°C)	0	5745.00730	5745	0.00730	1.2707
		T (°C)	10	5745.01300	5745	0.01300	2.2628
		T (°C)	20	5745.00230	5745	0.00230	0.4003
		T (°C)	30	5745.00760	5745	0.00760	1.3229
		T (°C)	40	5745.00250	5745	0.00250	0.4352
		T (°C)	50	5745.01180	5745	0.01180	2.0540
		T (°C)	60	5745.00250	5745	0.00250	0.4352
		T (°C)	70	5745.01130	5745	0.01130	1.9669
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)	19.00	5785.00640	5785	0.00640	1.1063
		V max (V)	21.85	5785.00880	5785	0.00880	1.5212
		V min (V)	16.15	5785.01330	5785	0.01330	2.2990
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)	19	T (°C)	-20	5785.00310	5785	0.00310	0.5359
		T (°C)	-10	5785.00840	5785	0.00840	1.4520
		T (°C)	0	5785.00070	5785	0.00070	0.1210
		T (°C)	10	5785.00820	5785	0.00820	1.4175
		T (°C)	20	5785.01180	5785	0.01180	2.0398
		T (°C)	30	5785.00300	5785	0.00300	0.5186
		T (°C)	40	5785.00490	5785	0.00490	0.8470
		T (°C)	50	5785.00770	5785	0.00770	1.3310
		T (°C)	60	5785.00970	5785	0.00970	1.6768
		T (°C)	70	5785.01350	5785	0.01350	2.3336
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)	19.00	5825.00620	5825	0.00620	1.0644
		V max (V)	21.85	5825.00370	5825	0.00370	0.6352
		V min (V)	16.15	5825.00150	5825	0.00150	0.2575
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)	19	T (°C)	-20	5825.00450	5825	0.00450	0.7725
		T (°C)	-10	5825.00150	5825	0.00150	0.2575
		T (°C)	0	5825.00780	5825	0.00780	1.3391
		T (°C)	10	5825.00910	5825	0.00910	1.5622
		T (°C)	20	5825.01040	5825	0.01040	1.7854
		T (°C)	30	5825.01150	5825	0.01150	1.9742
		T (°C)	40	5825.00480	5825	0.00480	0.8240
		T (°C)	50	5825.00330	5825	0.00330	0.5665
		T (°C)	60	5825.00740	5825	0.00740	1.2704
		T (°C)	70	5825.00920	5825	0.00920	1.5794
Limits				5725-5850 MHz			
Result				Complies			

14. Antenna Requirement

14.1 Limit

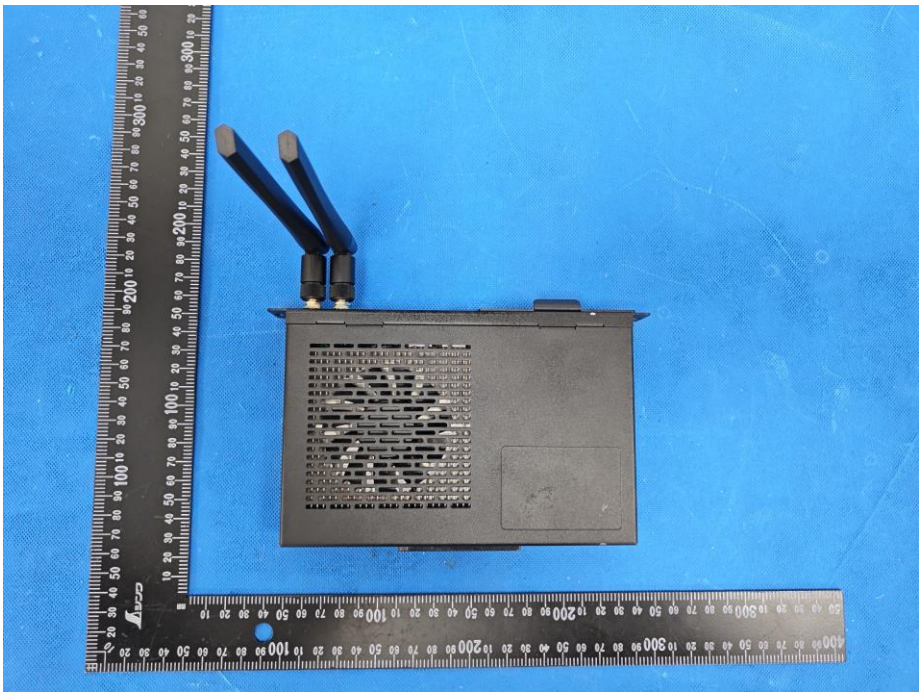
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

14.2 Test Result

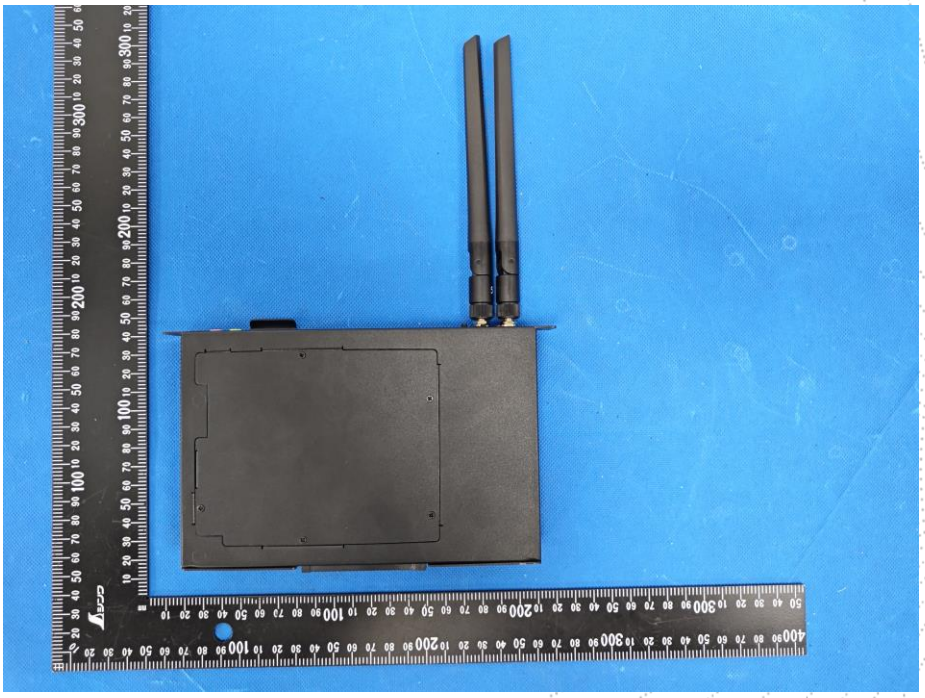
The EUT antenna is External antenna (5.1G gain:4.11 dBi, 5.8G gain: 3.87 dBi), antenna connector type is RP-SMA, fulfill the requirement of this section.

15. EUT Photographs

EUT Photo 1



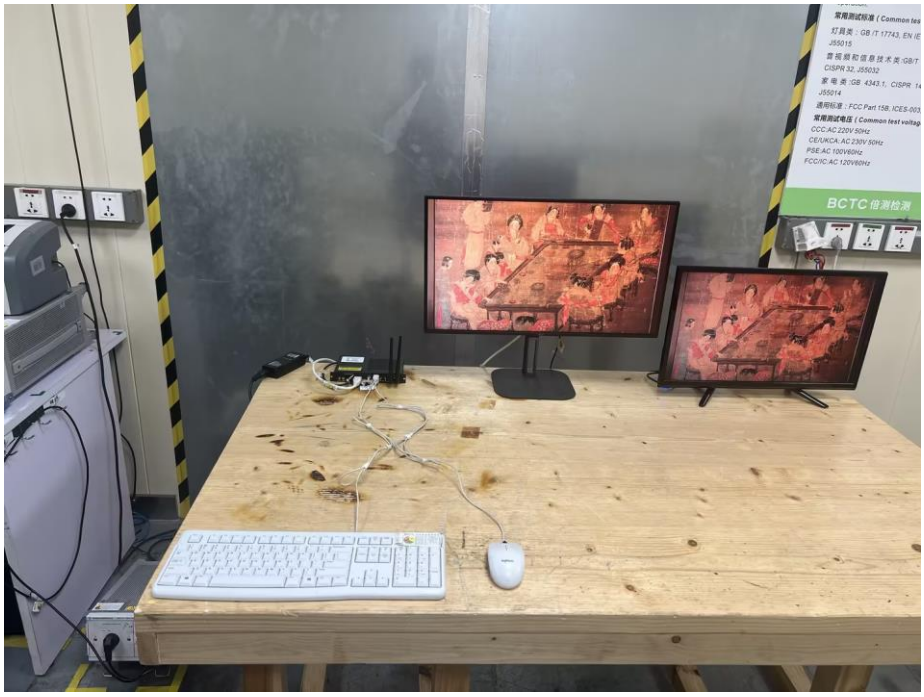
EUT Photo 2



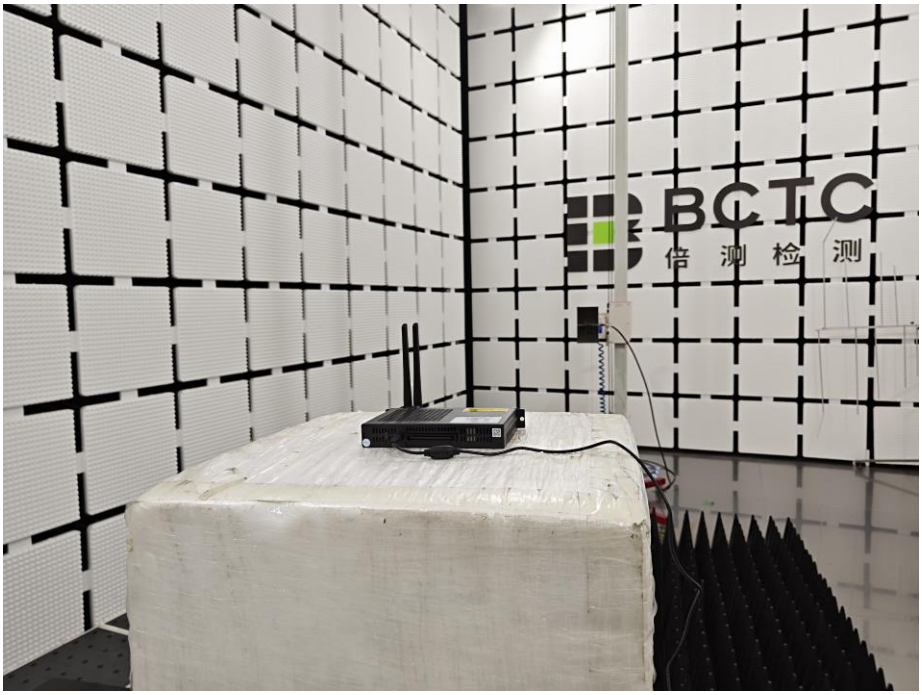
NOTE: Appendix-Photographs Of EUT Constructional Details.

16. EUT Test Setup Photographs

Conducted Measurement 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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