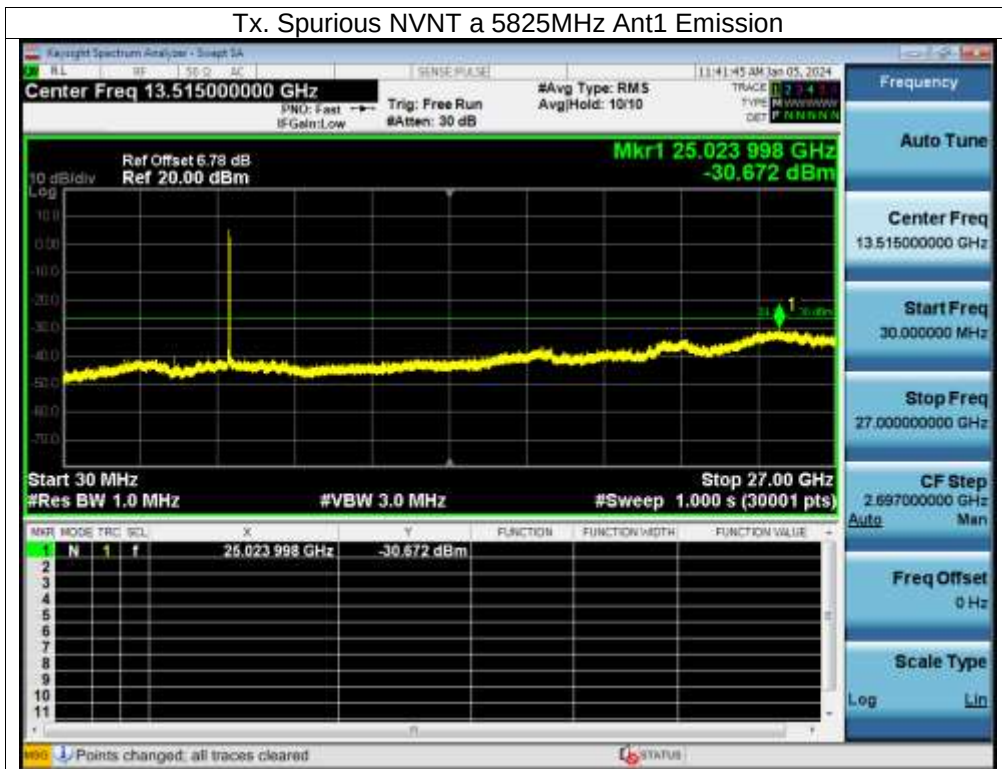


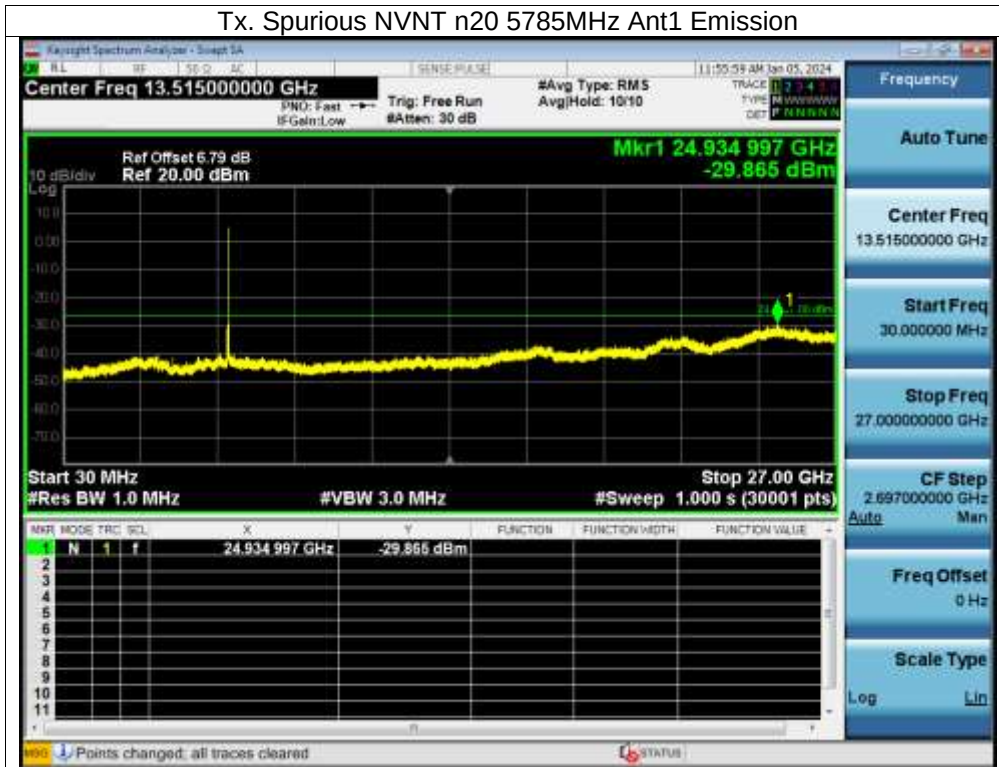
Tx. Spurious NVNT a 5825MHz Ant1 Emission



Tx. Spurious NVNT n20 5745MHz Ant1 Emission



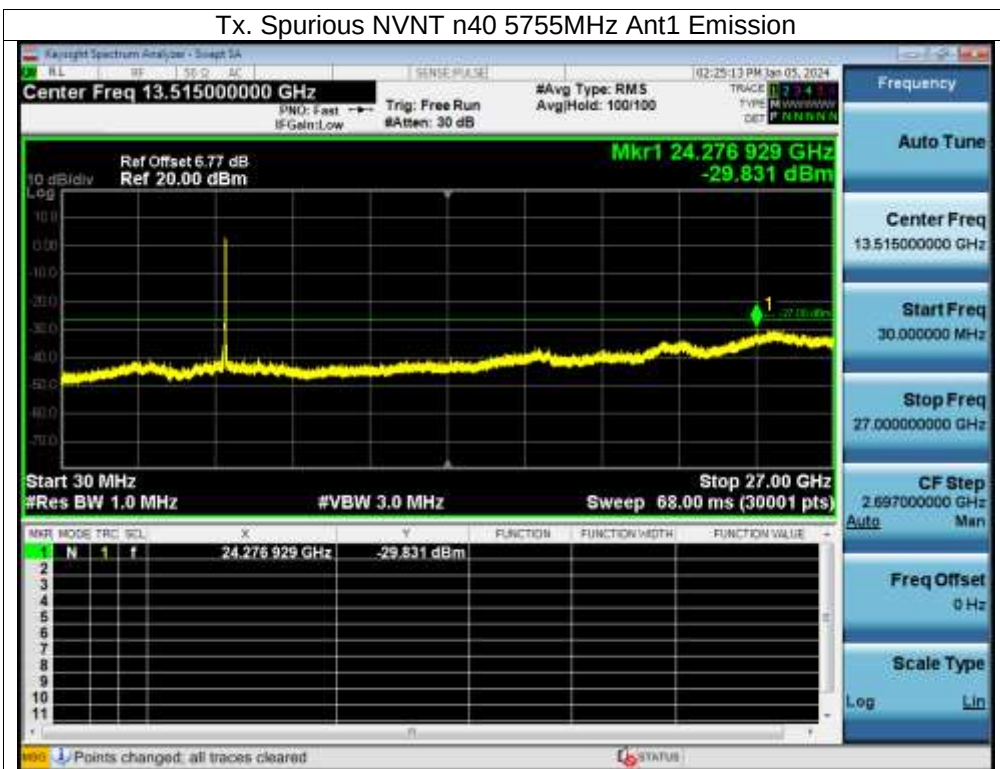
Tx. Spurious NVNT n20 5785MHz Ant1 Emission



Tx. Spurious NVNT n20 5825MHz Ant1 Emission



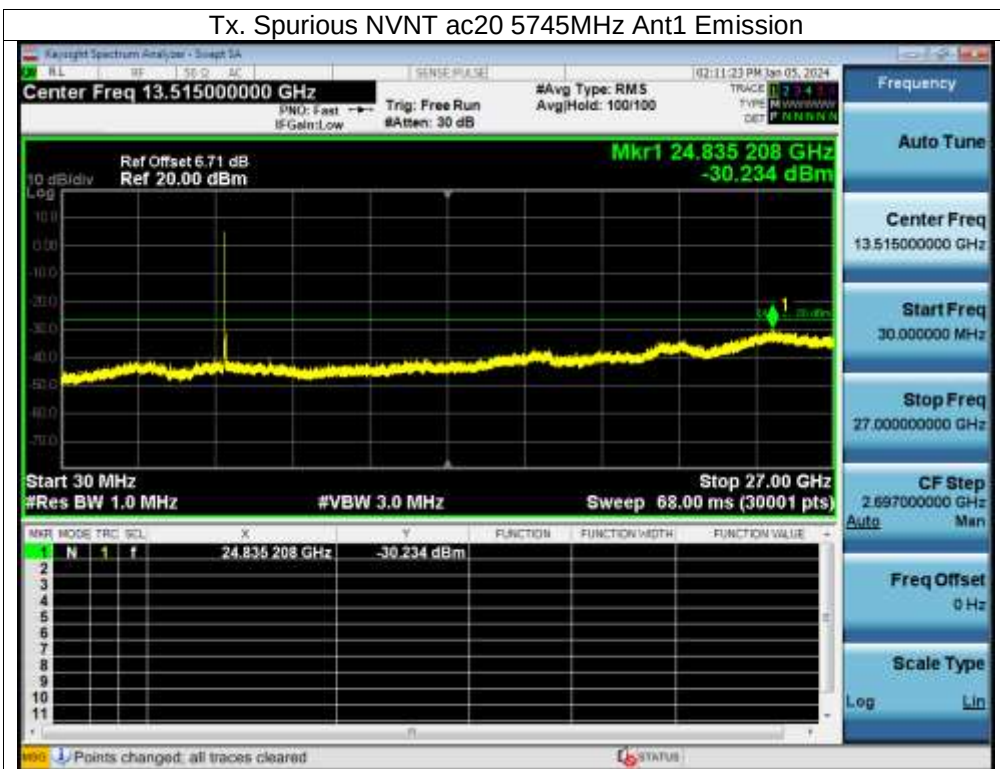
Tx. Spurious NVNT n40 5755MHz Ant1 Emission



Tx. Spurious NVNT n40 5795MHz Ant1 Emission

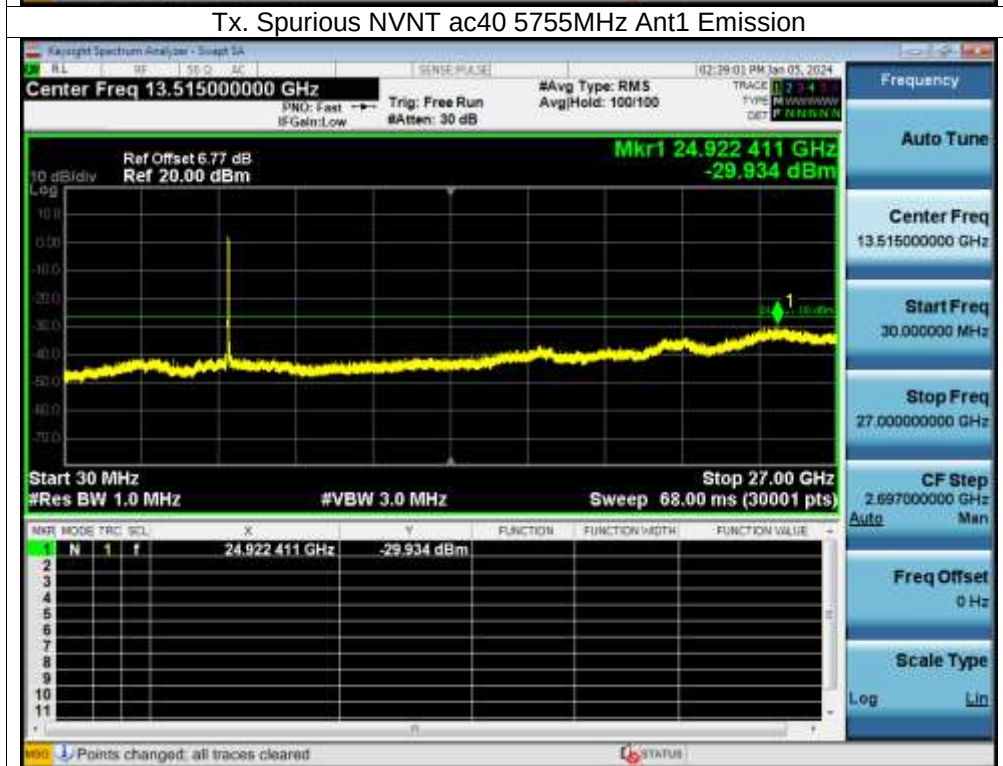
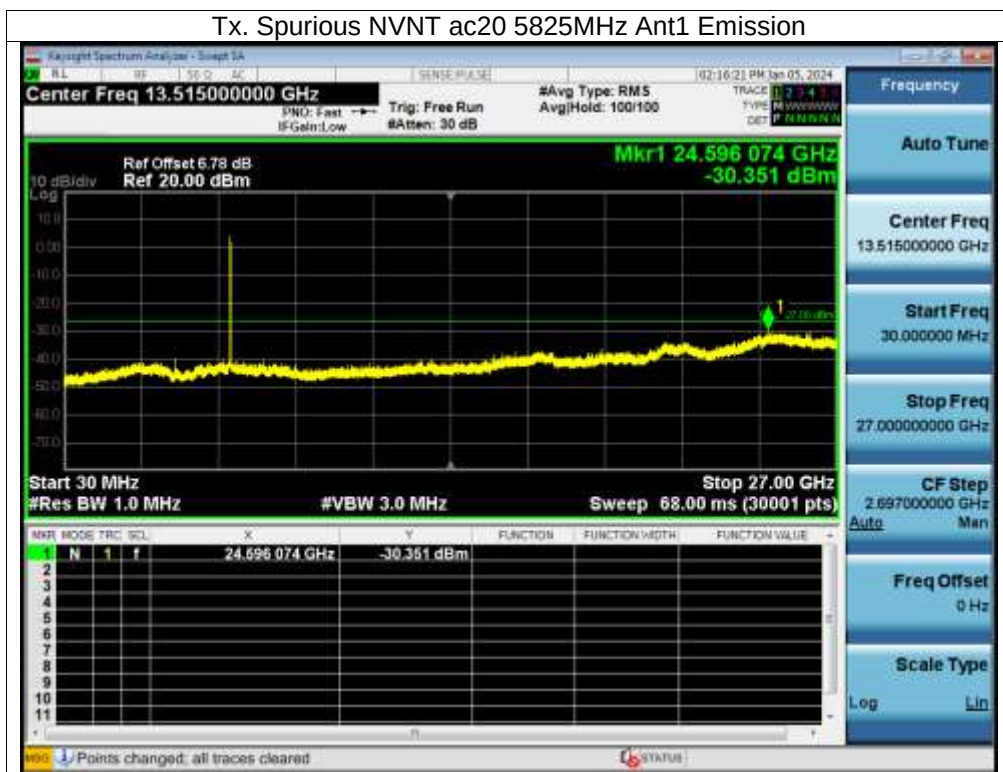


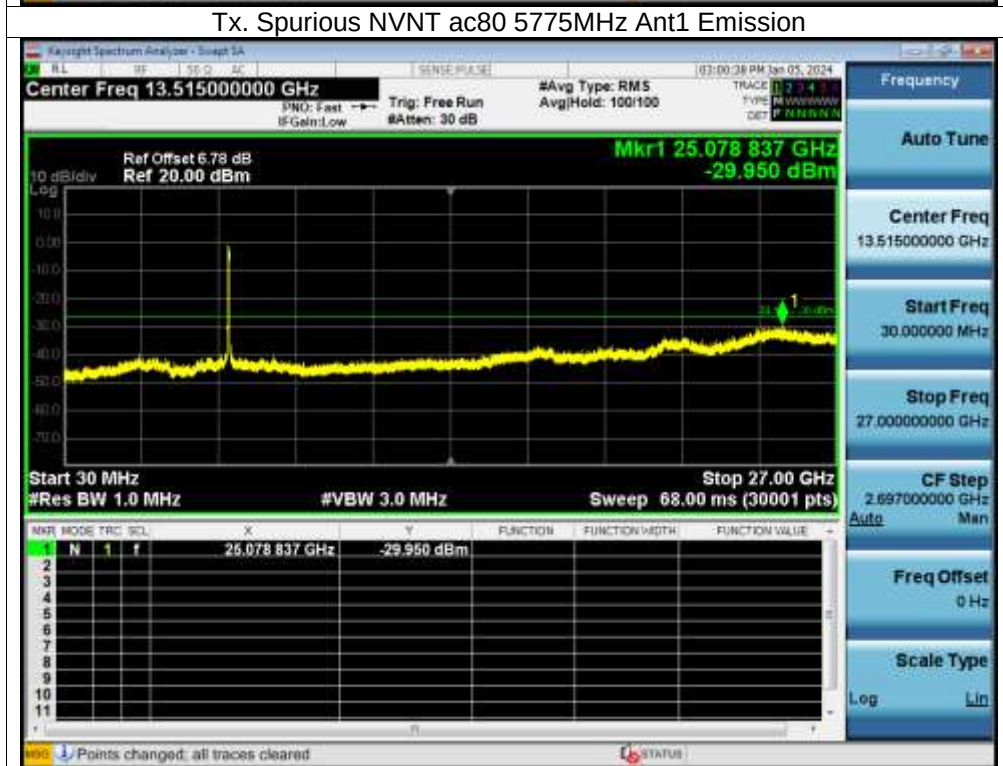
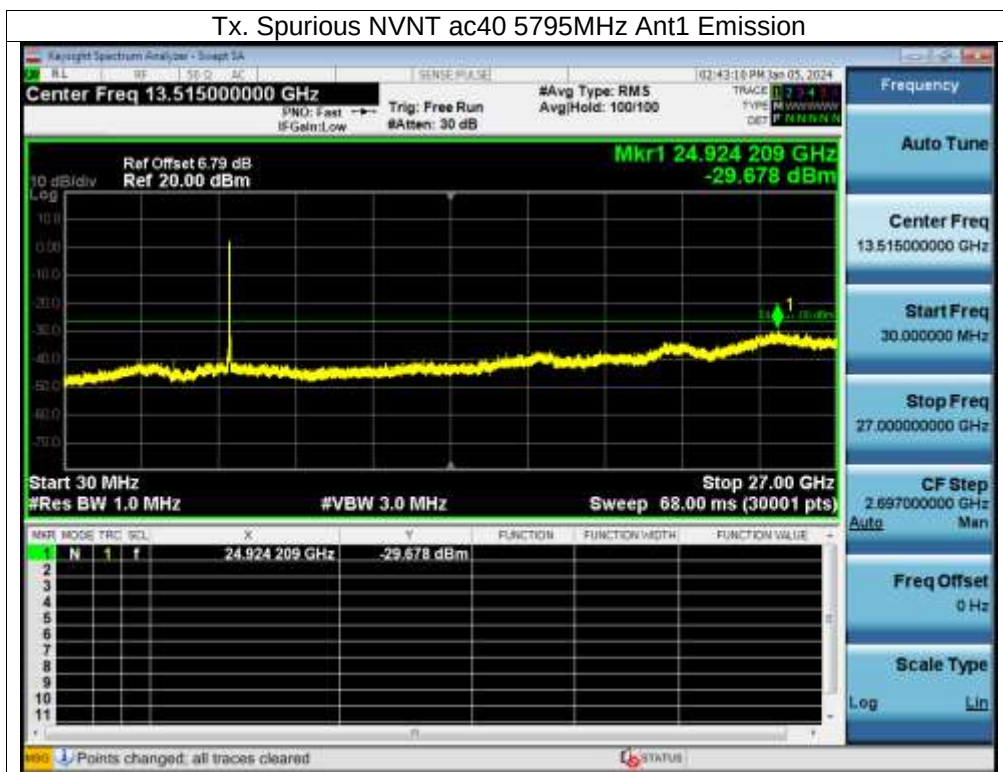
Tx. Spurious NVNT ac20 5745MHz Ant1 Emission



Tx. Spurious NVNT ac20 5785MHz Ant1 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. 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:	DC 7.7V
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)	7.70	5180.0062	5180	0.0062	1.1990
		V max (V)	8.86	5180.0155	5180	0.0155	2.9895
		V min (V)	6.55	5180.0075	5180	0.0075	1.4392
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)	7.70	T (°C)	-20	5180.0026	5180	0.0026	0.4943
		T (°C)	-10	5180.0124	5180	0.0124	2.3916
		T (°C)	0	5180.0011	5180	0.0011	0.2211
		T (°C)	10	5180.0094	5180	0.0094	1.8239
		T (°C)	20	5180.0090	5180	0.0090	1.7393
		T (°C)	30	5180.0051	5180	0.0051	0.9799
		T (°C)	40	5180.0044	5180	0.0044	0.8568
		T (°C)	50	5180.0006	5180	0.0006	0.1126
		T (°C)	60	5180.0097	5180	0.0097	1.8658
		T (°C)	70	5180.0005	5180	0.0005	0.0899
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)	7.70	5200.0019	5200	0.0019	0.3647
		V max (V)	8.86	5200.0115	5200	0.0115	2.2079
		V min (V)	6.55	5200.0075	5200	0.0075	1.4476
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)	7.7	T (°C)	-20	5200.00719	5200	0.00719	1.3820
		T (°C)	-10	5200.00159	5200	0.00159	0.3056
		T (°C)	0	5200.00923	5200	0.00923	1.7755
		T (°C)	10	5200.00224	5200	0.00224	0.4310
		T (°C)	20	5200.00251	5200	0.00251	0.4830
		T (°C)	30	5200.01294	5200	0.01294	2.4893
		T (°C)	40	5200.00744	5200	0.00744	1.4301
		T (°C)	50	5200.00615	5200	0.00615	1.1833
		T (°C)	60	5200.00838	5200	0.00838	1.6117
		T (°C)	70	5200.01355	5200	0.01355	2.6056
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)	7.70	5240.0060	5240	0.0060	1.1437
		V max (V)	8.86	5240.0010	5240	0.0010	0.1875
		V min (V)	6.55	5240.0135	5240	0.0135	2.5772
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)	7.7	T (°C)	-20	5240.0084	5240	0.0084	1.6043
		T (°C)	-10	5240.0069	5240	0.0069	1.3108
		T (°C)	0	5240.0064	5240	0.0064	1.2176
		T (°C)	10	5240.0021	5240	0.0021	0.3951
		T (°C)	20	5240.0019	5240	0.0019	0.3678
		T (°C)	30	5240.0046	5240	0.0046	0.8684
		T (°C)	40	5240.0086	5240	0.0086	1.6424
		T (°C)	50	5240.0014	5240	0.0014	0.2751
		T (°C)	60	5240.0084	5240	0.0084	1.6039
		T (°C)	70	5240.0017	5240	0.0017	0.3280
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	DC 7.7V
Test Mode:	TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz)		

Voltage vs. Frequency Stabilit

TEST CONDITIONS				Reference Frequency: 5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	7.70	5745.01074	5745	0.01074	1.8692
		V max (V)	8.86	5745.00898	5745	0.00898	1.5633
		V min (V)	6.55	5745.00797	5745	0.00797	1.3868
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)	7.7	T (°C)	-20	5745.00266	5745	0.00266	0.4631
		T (°C)	-10	5745.01348	5745	0.01348	2.3465
		T (°C)	0	5745.01071	5745	0.01071	1.8648
		T (°C)	10	5745.00529	5745	0.00529	0.9200
		T (°C)	20	5745.00649	5745	0.00649	1.1297
		T (°C)	30	5745.00450	5745	0.00450	0.7828
		T (°C)	40	5745.00665	5745	0.00665	1.1577
		T (°C)	50	5745.00922	5745	0.00922	1.6042
		T (°C)	60	5745.00363	5745	0.00363	0.6313
		T (°C)	70	5745.01177	5745	0.01177	2.0484
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)	7.70	5785.00830	5785	0.00830	1.4351
		V max (V)	8.86	5785.00420	5785	0.00420	0.7263
		V min (V)	6.55	5785.00599	5785	0.00599	1.0362
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)	7.7	T (°C)	-20	5785.01179	5785	0.01179	2.0387
		T (°C)	-10	5785.00682	5785	0.00682	1.1797
		T (°C)	0	5785.00448	5785	0.00448	0.7751
		T (°C)	10	5785.00015	5785	0.00015	0.0266
		T (°C)	20	5785.00956	5785	0.00956	1.6522
		T (°C)	30	5785.01134	5785	0.01134	1.9604
		T (°C)	40	5785.01016	5785	0.01016	1.7566
		T (°C)	50	5785.00731	5785	0.00731	1.2644
		T (°C)	60	5785.00849	5785	0.00849	1.4677
		T (°C)	70	5785.00035	5785	0.00035	0.0605
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)	7.70	5825.00104	5825	0.00104	0.1784
		V max (V)	8.86	5825.01332	5825	0.01332	2.2866
		V min (V)	6.55	5825.00506	5825	0.00506	0.8684
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)	7.7	T (°C)	-20	5825.01060	5825	0.01060	1.8190
		T (°C)	-10	5825.00946	5825	0.00946	1.6237
		T (°C)	0	5825.00347	5825	0.00347	0.5958
		T (°C)	10	5825.00287	5825	0.00287	0.4925
		T (°C)	20	5825.00537	5825	0.00537	0.9225
		T (°C)	30	5825.01120	5825	0.01120	1.9232
		T (°C)	40	5825.01006	5825	0.01006	1.7268
		T (°C)	50	5825.00514	5825	0.00514	0.8823
		T (°C)	60	5825.00420	5825	0.00420	0.7204
		T (°C)	70	5825.00677	5825	0.00677	1.1623
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
NVNT	ac20	5180	100	0	0
NVNT	ac20	5200	100	0	0
NVNT	ac20	5240	100	0	0
NVNT	ac40	5190	100	0	0
NVNT	ac40	5230	100	0	0
NVNT	ac80	5210	100	0	0

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 Test Setup Photographs

Conducted emissions



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.

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***** **END** *****