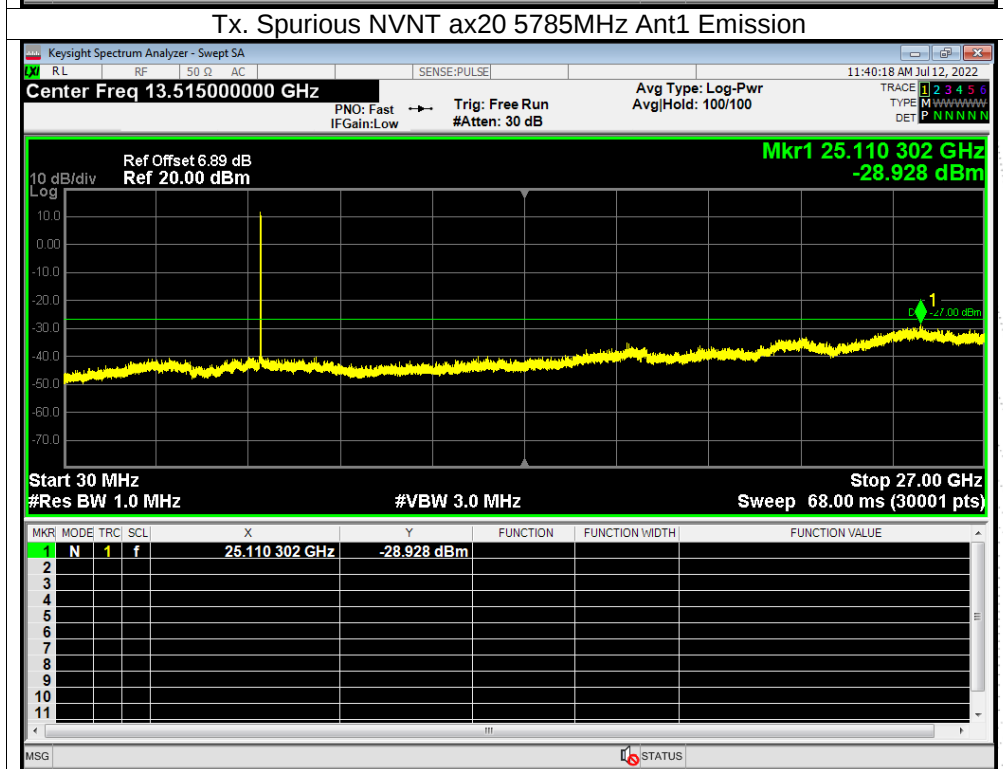
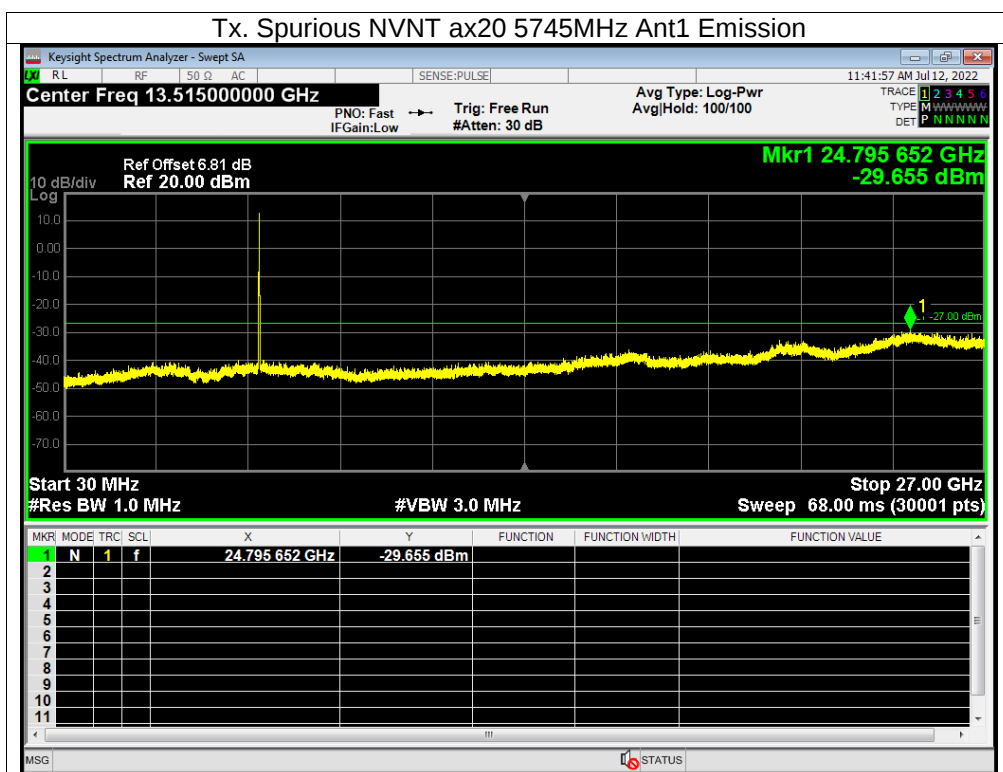
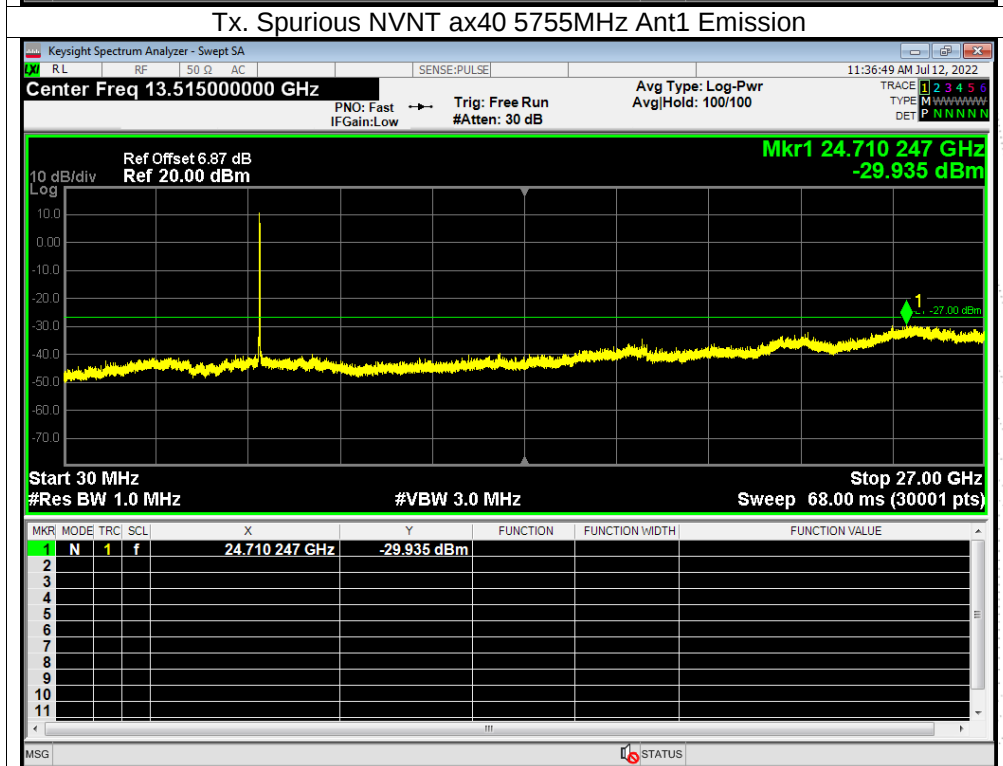
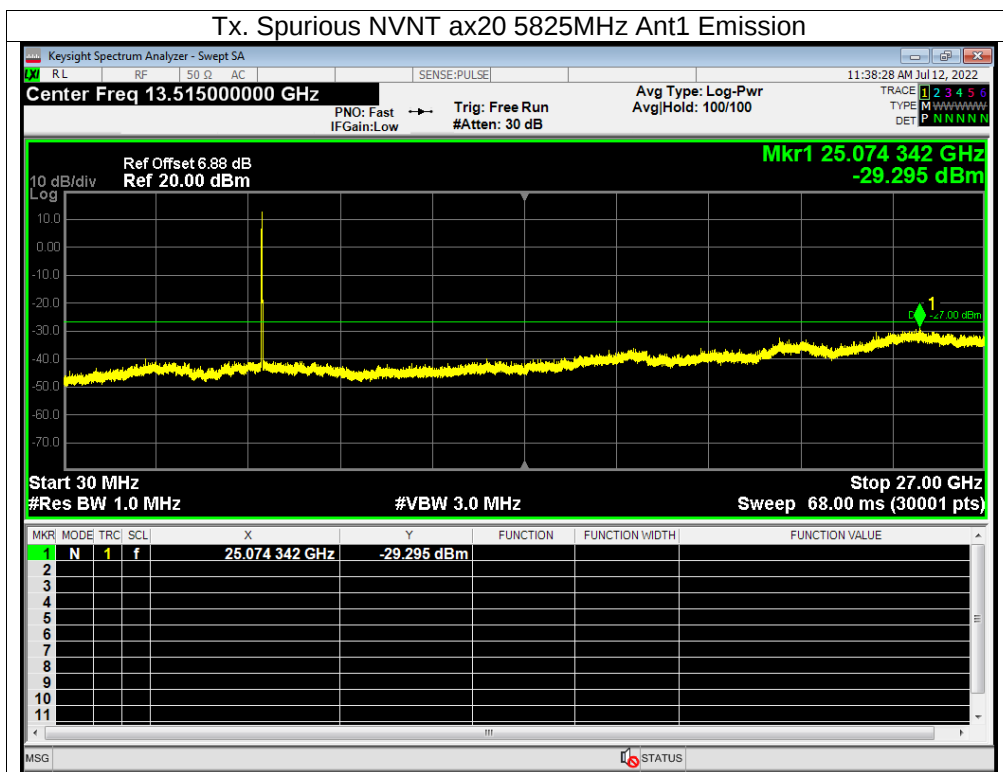
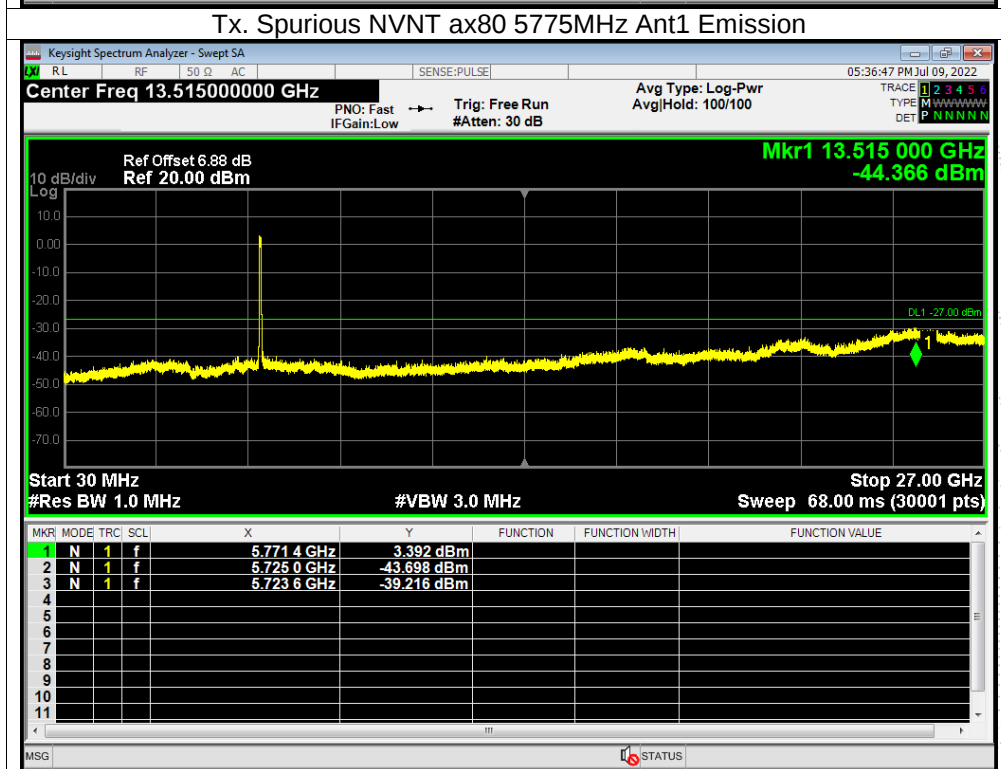
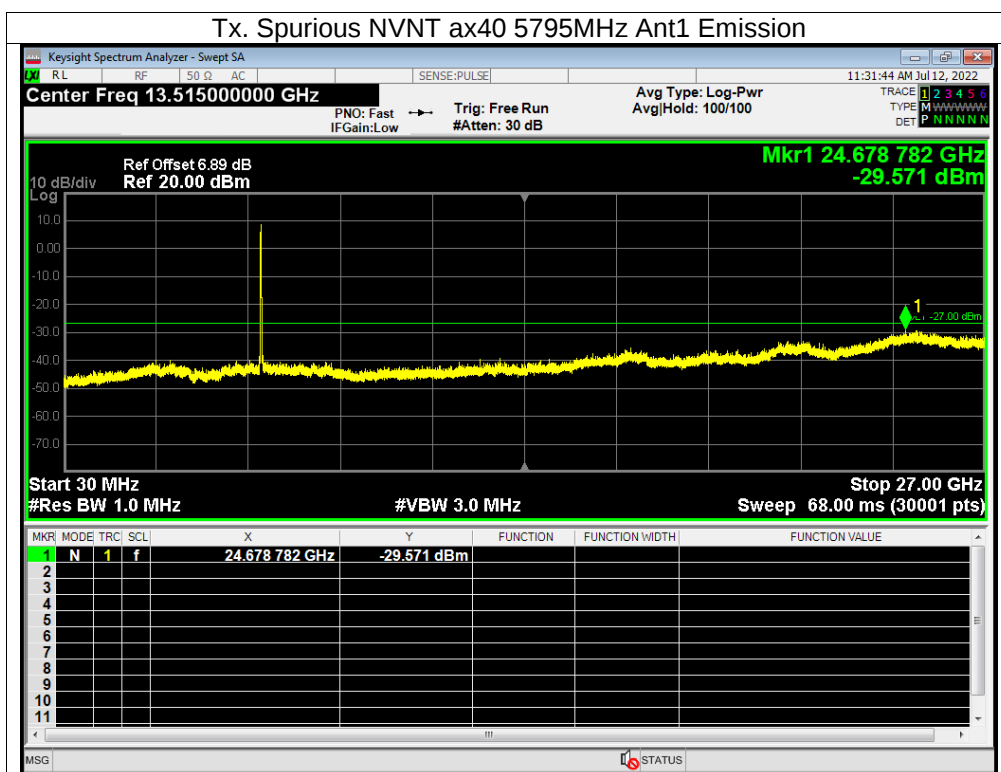


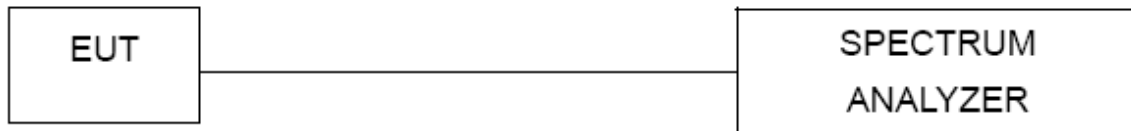






13. Frequency Stability Measurement

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 802.11nspecification).
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 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC120V/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)	120.00	5180.0028	5180	0.0028	0.5327
		V max (V)	138.00	5180.0135	5180	0.0135	2.6045
		V min (V)	102.00	5180.0043	5180	0.0043	0.8256
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	5180.0132	5180	0.0132	2.5472
		T (°C)	-10	5180.0016	5180	0.0016	0.3172
		T (°C)	0	5180.0048	5180	0.0048	0.9250
		T (°C)	10	5180.0016	5180	0.0016	0.3061
		T (°C)	20	5180.0029	5180	0.0029	0.5562
		T (°C)	30	5180.0100	5180	0.0100	1.9280
		T (°C)	40	5180.0026	5180	0.0026	0.4937
		T (°C)	50	5180.0127	5180	0.0127	2.4588
		T (°C)	60	5180.0105	5180	0.0105	2.0320
		T (°C)	70	5180.0064	5180	0.0064	1.2309
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)	120.00	5200.0040	5200	0.0040	0.7693
		V max (V)	138.00	5200.0013	5200	0.0013	0.2538
		V min (V)	102.00	5200.0068	5200	0.0068	1.3053
Limits				5725-5850 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	5200.01071	5200	0.01071	2.0594
		T (°C)	-10	5200.00405	5200	0.00405	0.7784
		T (°C)	0	5200.00545	5200	0.00545	1.0476
		T (°C)	10	5200.00406	5200	0.00406	0.7807
		T (°C)	20	5200.00526	5200	0.00526	1.0122
		T (°C)	30	5200.01092	5200	0.01092	2.1009
		T (°C)	40	5200.01170	5200	0.01170	2.2498
		T (°C)	50	5200.01174	5200	0.01174	2.2577
		T (°C)	60	5200.00285	5200	0.00285	0.5484
		T (°C)	70	5200.00815	5200	0.00815	1.5680
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)	120.00	5240.0111	5240	0.0111	2.1090
		V max (V)	138.00	5240.0018	5240	0.0018	0.3366
		V min (V)	102.00	5240.0099	5240	0.0099	1.8850
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	5240.0109	5240	0.0109	2.0841
		T (°C)	-10	5240.0096	5240	0.0096	1.8395
		T (°C)	0	5240.0049	5240	0.0049	0.9442
		T (°C)	10	5240.0030	5240	0.0030	0.5738
		T (°C)	20	5240.0028	5240	0.0028	0.5335
		T (°C)	30	5240.0032	5240	0.0032	0.6053
		T (°C)	40	5240.0066	5240	0.0066	1.2635
		T (°C)	50	5240.0038	5240	0.0038	0.7202
		T (°C)	60	5240.0117	5240	0.0117	2.2282
		T (°C)	70	5240.0024	5240	0.0024	0.4565
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage:	AC120V/60Hz
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)	120.00	5745.00190	5745	0.00190	0.3303
		V max (V)	138.00	5745.00149	5745	0.00149	0.2594
		V min (V)	102.00	5745.00080	5745	0.00080	0.1387
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	5745.00691	5745	0.00691	1.2029
		T (°C)	-10	5745.01128	5745	0.01128	1.9630
		T (°C)	0	5745.00802	5745	0.00802	1.3955
		T (°C)	10	5745.01266	5745	0.01266	2.2031
		T (°C)	20	5745.00730	5745	0.00730	1.2708
		T (°C)	30	5745.00995	5745	0.00995	1.7316
		T (°C)	40	5745.00931	5745	0.00931	1.6207
		T (°C)	50	5745.00711	5745	0.00711	1.2374
		T (°C)	60	5745.00958	5745	0.00958	1.6669
		T (°C)	70	5745.01126	5745	0.01126	1.9602
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)	120.00	5785.00701	5785	0.00701	1.2124
		V max (V)	138.00	5785.00298	5785	0.00298	0.5147
		V min (V)	102.00	5785.01260	5785	0.01260	2.1783
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	5785.00550	5785	0.00550	0.9509
		T (°C)	-10	5785.00509	5785	0.00509	0.8798
		T (°C)	0	5785.00409	5785	0.00409	0.7071
		T (°C)	10	5785.00495	5785	0.00495	0.8559
		T (°C)	20	5785.01154	5785	0.01154	1.9943
		T (°C)	30	5785.01061	5785	0.01061	1.8336
		T (°C)	40	5785.00926	5785	0.00926	1.6002
		T (°C)	50	5785.00679	5785	0.00679	1.1738
		T (°C)	60	5785.00226	5785	0.00226	0.3902
		T (°C)	70	5785.01271	5785	0.01271	2.1971
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)	120.00	5825.00656	5825	0.00656	1.1263
		V max (V)	138.00	5825.00588	5825	0.00588	1.0089
		V min (V)	102.00	5825.00982	5825	0.00982	1.6866
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	5825.00605	5825	0.00605	1.0393
		T (°C)	-10	5825.00606	5825	0.00606	1.0395
		T (°C)	0	5825.00150	5825	0.00150	0.2583
		T (°C)	10	5825.00407	5825	0.00407	0.6980
		T (°C)	20	5825.01168	5825	0.01168	2.0057
		T (°C)	30	5825.00926	5825	0.00926	1.5896
		T (°C)	40	5825.00999	5825	0.00999	1.7143
		T (°C)	50	5825.00616	5825	0.00616	1.0575
		T (°C)	60	5825.00966	5825	0.00966	1.6576
		T (°C)	70	5825.00323	5825	0.00323	0.5538
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)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	AntA	100	0	0
NVNT	a	5200	AntA	100	0	0
NVNT	a	5240	AntA	100	0	0
NVNT	n20	5180	AntA	100	0	0
NVNT	n20	5200	AntA	100	0	0
NVNT	n20	5240	AntA	100	0	0
NVNT	n40	5190	AntA	100	0	0
NVNT	n40	5230	AntA	100	0	0
NVNT	ac20	5180	AntA	100	0	0
NVNT	ac20	5200	AntA	100	0	0
NVNT	ac20	5240	AntA	100	0	0
NVNT	ac40	5190	AntA	100	0	0
NVNT	ac40	5230	AntA	100	0	0
NVNT	ac80	5210	AntA	100	0	0
NVNT	ax20	5180	AntA	100	0	0
NVNT	ax20	5200	AntA	100	0	0
NVNT	ax20	5240	AntA	100	0	0
NVNT	ax40	5190	AntA	100	0	0
NVNT	ax40	5230	AntA	100	0	0
NVNT	ax80	5210	AntA	100	0	0

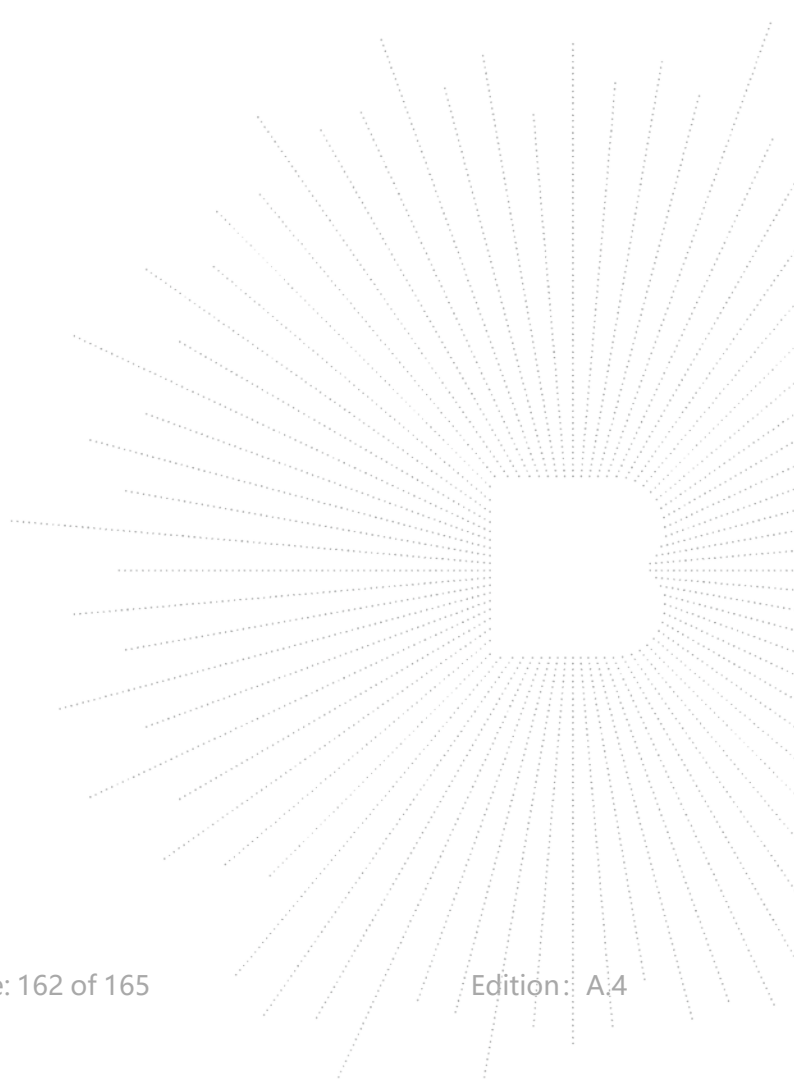
15. Antenna Requirement

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 External antenna (antenna gain (A): 4.0dBi; antenna gain (B) :4.0dBi). It comply with the standard requirement.



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 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.

Address:

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***** END *****