Tx. Spurious NVNT ac20 5180MHz Emission

Tx. Spurious NVNT ac20 5200MHz Emission

Tx. Spurious NVNT ac20 5240MHz Emission

Tx. Spurious NVNT ac40 5190MHz Emission

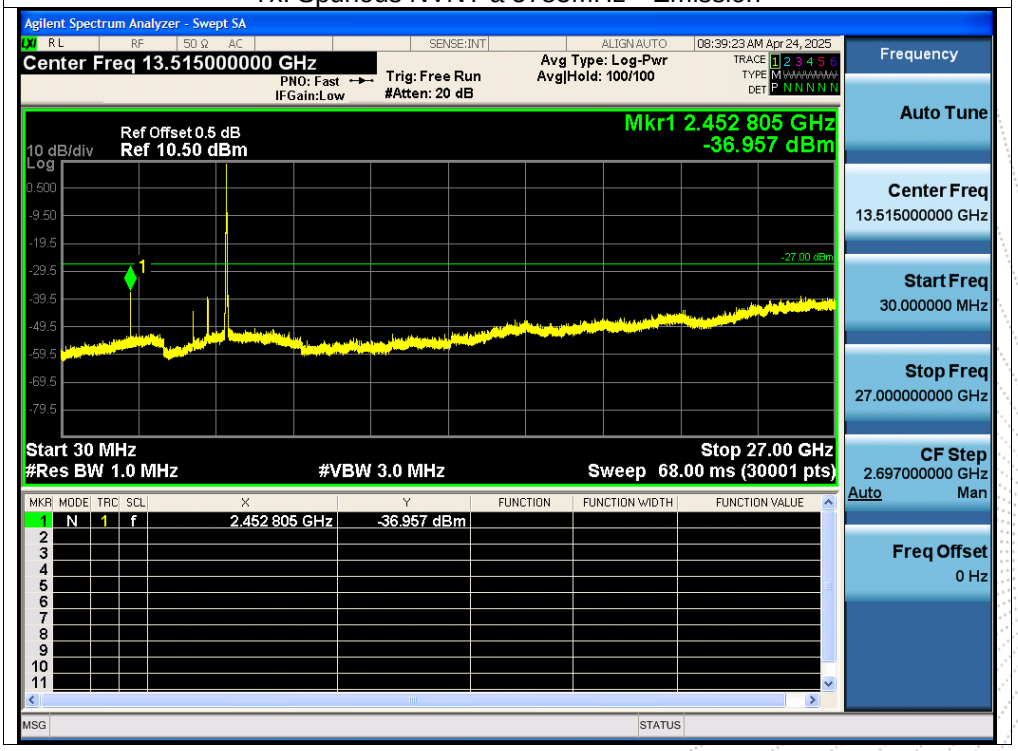
Tx. Spurious NVNT ac40 5230MHz Emission

Tx. Spurious NVNT ac80 5210MHz Emission

Test Graphs

Tx. Spurious NVNT a 5745MHz Emission

Tx. Spurious NVNT a 5785MHz Emission



Tx. Spurious NVNT a 5825MHz Emission

Tx. Spurious NVNT n20 5745MHz Emission

Tx. Spurious NVNT n20 5785MHz Emission

Tx. Spurious NVNT n20 5825MHz Emission

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

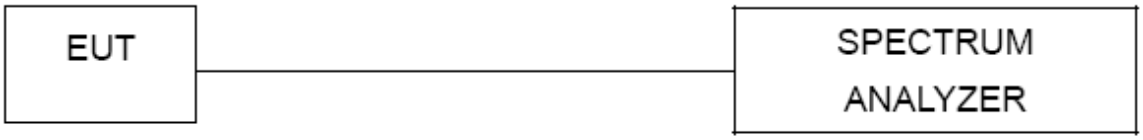
Tx. Spurious NVNT ac40 5755MHz Emission

Tx. Spurious NVNT ac40 5795MHz Emission

Tx. Spurious NVNT ac80 5775MHz Emission

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 3.87V
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)	3.87	5180.0030	5180	0.0030	0.5792
		V max (V)	4.45	5180.0026	5180	0.0026	0.5019
		V min (V)	3.29	5180.0064	5180	0.0064	1.2355
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)	3.87	T (°C)	-20	5180.0090	5180	0.0090	1.7375
		T (°C)	-10	5180.0066	5180	0.0066	1.2741
		T (°C)	0	5180.0096	5180	0.0096	1.8533
		T (°C)	10	5180.0091	5180	0.0091	1.7568
		T (°C)	20	5180.0005	5180	0.0005	0.0965
		T (°C)	30	5180.0054	5180	0.0054	1.0425
		T (°C)	40	5180.0108	5180	0.0108	2.0849
		T (°C)	50	5180.0016	5180	0.0016	0.3089
		T (°C)	60	5180.0005	5180	0.0005	0.0965
		T (°C)	70	5180.0031	5180	0.0031	0.5985
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)	3.87	5200.0128	5200	0.0128	2.4615
		V max (V)	4.45	5200.0113	5200	0.0113	2.1731
		V min (V)	3.29	5200.0113	5200	0.0113	2.1731
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)	3.87	T (°C)	-20	5200.00150	5200	0.00150	0.2885
		T (°C)	-10	5200.00000	5200	0.00000	0.0000
		T (°C)	0	5200.00560	5200	0.00560	1.0769
		T (°C)	10	5200.01230	5200	0.01230	2.3654
		T (°C)	20	5200.00510	5200	0.00510	0.9808
		T (°C)	30	5200.00070	5200	0.00070	0.1346
		T (°C)	40	5200.01080	5200	0.01080	2.0769
		T (°C)	50	5200.00810	5200	0.00810	1.5577
		T (°C)	60	5200.00860	5200	0.00860	1.6538
		T (°C)	70	5200.00610	5200	0.00610	1.1731
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)	3.87	5240.0037	5240	0.0037	0.7061
		V max (V)	4.45	5240.0055	5240	0.0055	1.0496
		V min (V)	3.29	5240.0043	5240	0.0043	0.8206
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)	3.87	T (°C)	-20	5240.0021	5240	0.0021	0.4008
		T (°C)	-10	5240.0075	5240	0.0075	1.4313
		T (°C)	0	5240.0008	5240	0.0008	0.1527
		T (°C)	10	5240.0013	5240	0.0013	0.2481
		T (°C)	20	5240.0009	5240	0.0009	0.1718
		T (°C)	30	5240.0103	5240	0.0103	1.9656
		T (°C)	40	5240.0006	5240	0.0006	0.1145
		T (°C)	50	5240.0078	5240	0.0078	1.4885
		T (°C)	60	5240.0071	5240	0.0071	1.3550
		T (°C)	70	5240.0072	5240	0.0072	1.3740
Limits				5150-5250 MHz			
Result				Complies			

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Voltage:	DC 3.87V
Test Mode:	TX Frequency(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)	3.87	5745.00080	5745	0.00080	0.1393
		V max (V)	4.45	5745.01020	5745	0.01020	1.7755
		V min (V)	3.29	5745.00320	5745	0.00320	0.5570
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)	3.87	T (°C)	-20	5745.00230	5745	0.00230	0.4003
		T (°C)	-10	5745.00670	5745	0.00670	1.1662
		T (°C)	0	5745.00310	5745	0.00310	0.5396
		T (°C)	10	5745.00390	5745	0.00390	0.6789
		T (°C)	20	5745.00490	5745	0.00490	0.8529
		T (°C)	30	5745.01160	5745	0.01160	2.0191
		T (°C)	40	5745.01130	5745	0.01130	1.9669
		T (°C)	50	5745.00490	5745	0.00490	0.8529
		T (°C)	60	5745.00020	5745	0.00020	0.0348
		T (°C)	70	5745.01050	5745	0.01050	1.8277
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)	3.87	5785.00490	5785	0.00490	0.8470
		V max (V)	4.45	5785.01110	5785	0.01110	1.9188
		V min (V)	3.29	5785.00320	5785	0.00320	0.5532
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)	3.87	T (°C)	-20	5785.00070	5785	0.00070	0.1210
		T (°C)	-10	5785.00910	5785	0.00910	1.5730
		T (°C)	0	5785.01200	5785	0.01200	2.0743
		T (°C)	10	5785.01120	5785	0.01120	1.9360
		T (°C)	20	5785.00520	5785	0.00520	0.8989
		T (°C)	30	5785.01340	5785	0.01340	2.3163
		T (°C)	40	5785.00830	5785	0.00830	1.4347
		T (°C)	50	5785.01320	5785	0.01320	2.2818
		T (°C)	60	5785.00060	5785	0.00060	0.1037
		T (°C)	70	5785.00810	5785	0.00810	1.4002
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)	3.87	5825.00400	5825	0.00400	0.6867
		V max (V)	4.45	5825.00560	5825	0.00560	0.9614
		V min (V)	3.29	5825.00120	5825	0.00120	0.2060
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)	3.87	T (°C)	-20	5825.00450	5825	0.00450	0.7725
		T (°C)	-10	5825.01090	5825	0.01090	1.8712
		T (°C)	0	5825.01180	5825	0.01180	2.0258
		T (°C)	10	5825.01150	5825	0.01150	1.9742
		T (°C)	20	5825.00090	5825	0.00090	0.1545
		T (°C)	30	5825.00550	5825	0.00550	0.9442
		T (°C)	40	5825.01180	5825	0.01180	2.0258
		T (°C)	50	5825.01120	5825	0.01120	1.9227
		T (°C)	60	5825.00540	5825	0.00540	0.9270
		T (°C)	70	5825.00920	5825	0.00920	1.5794
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 = Ton / (Ton+Toff)

14.3 Test Procedure

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

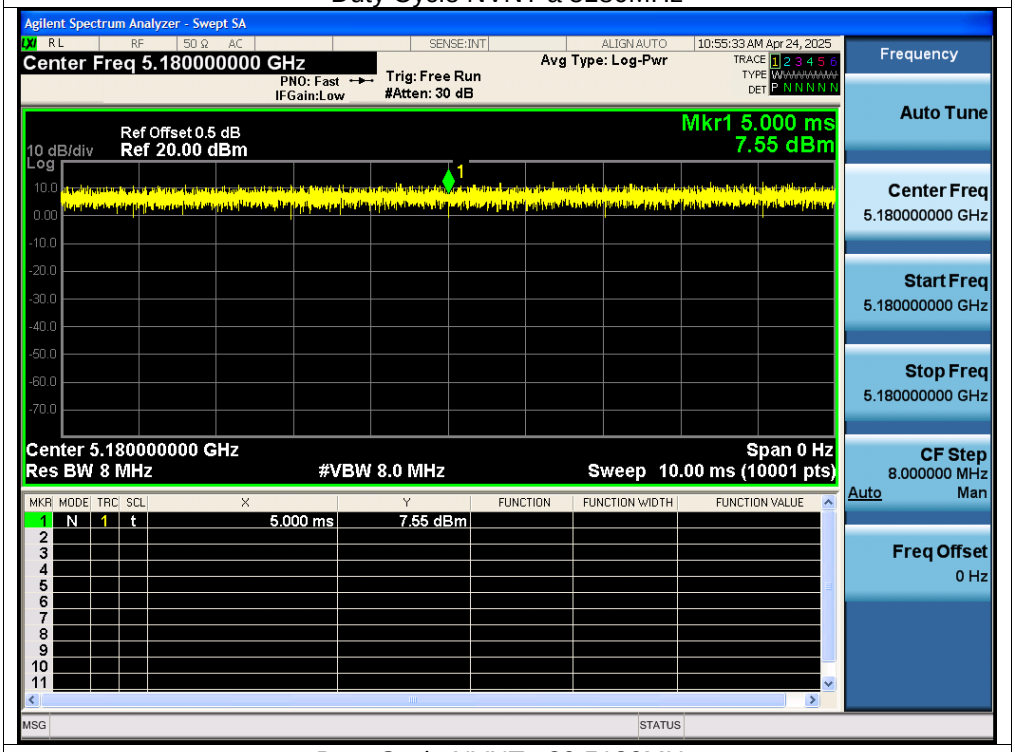
14.4 Test Result

5.1G

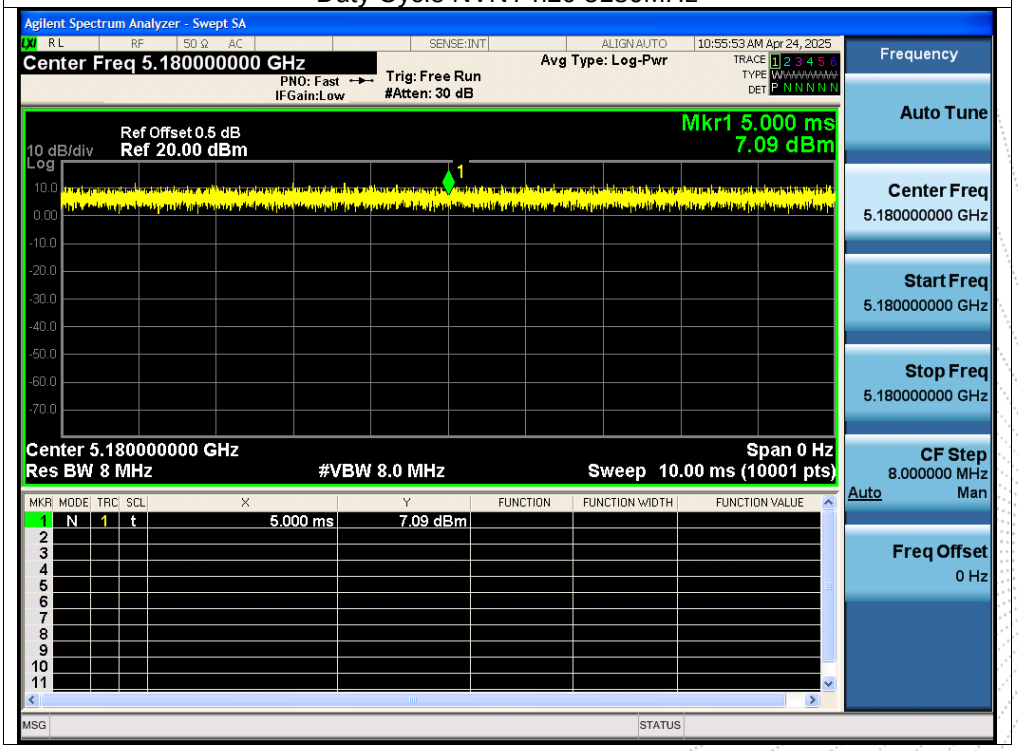
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5180	100	0
NVNT	n20	5180	100	0
NVNT	n40	5190	100	0
NVNT	ac20	5180	100	0
NVNT	ac40	5190	100	0
NVNT	ac80	5210	100	0

Test Graphs

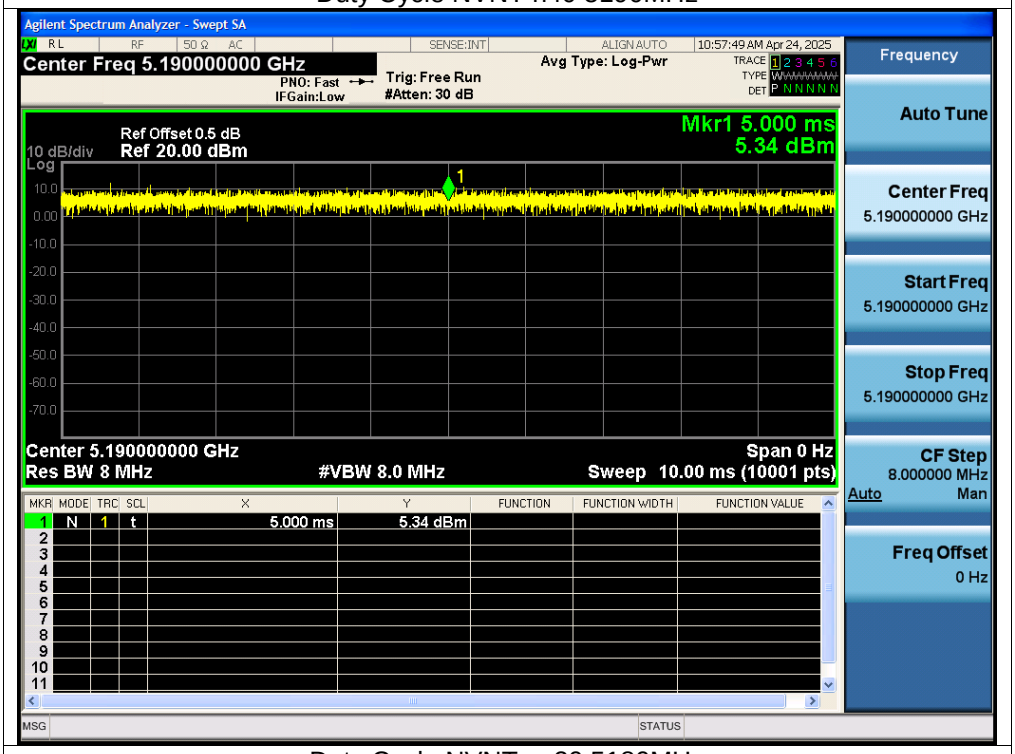
Duty Cycle NVNT a 5180MHz



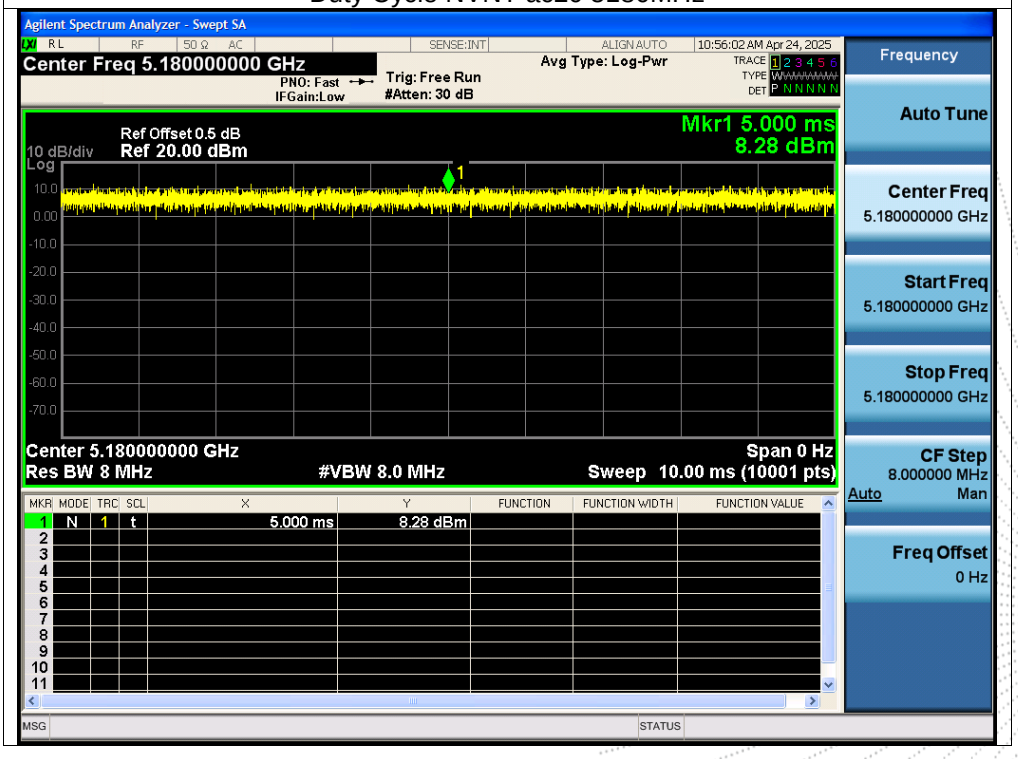
Duty Cycle NVNT n20 5180MHz



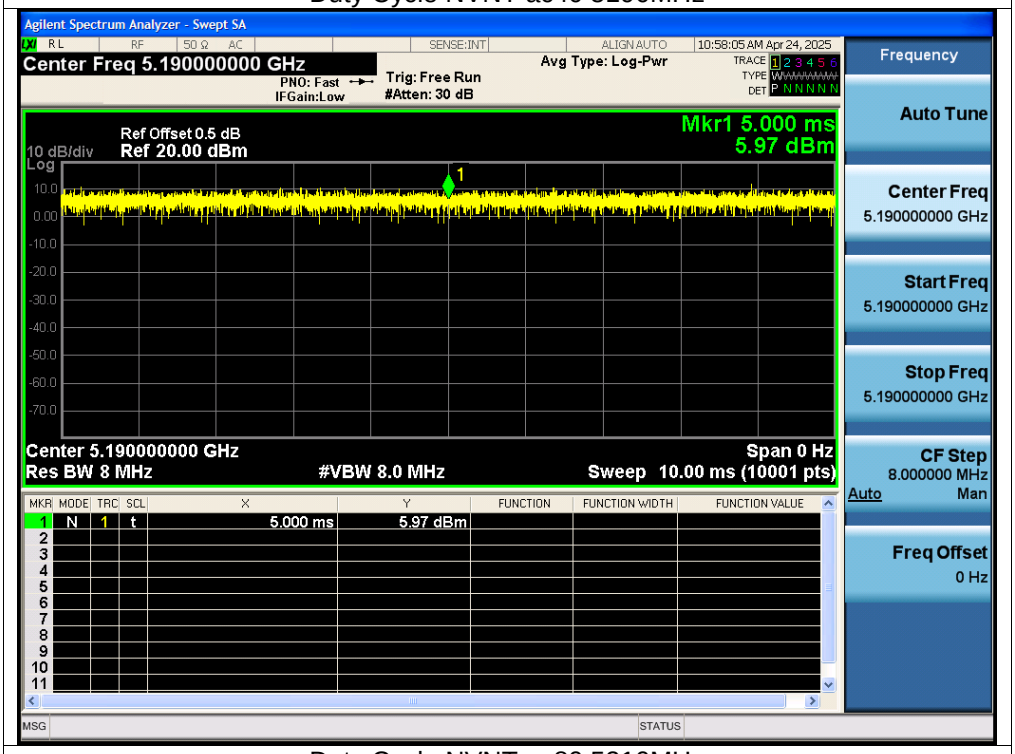
Duty Cycle NVNT n40 5190MHz



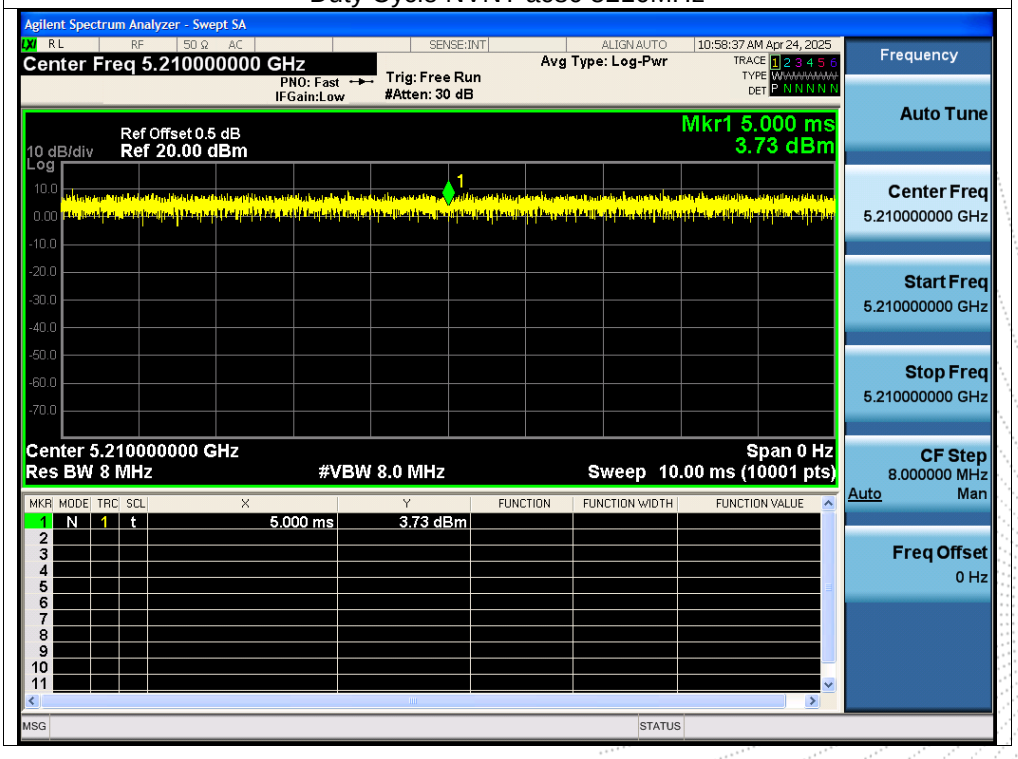
Duty Cycle NVNT ac20 5180MHz



Duty Cycle NVNT ac40 5190MHz



Duty Cycle NVNT ac80 5210MHz

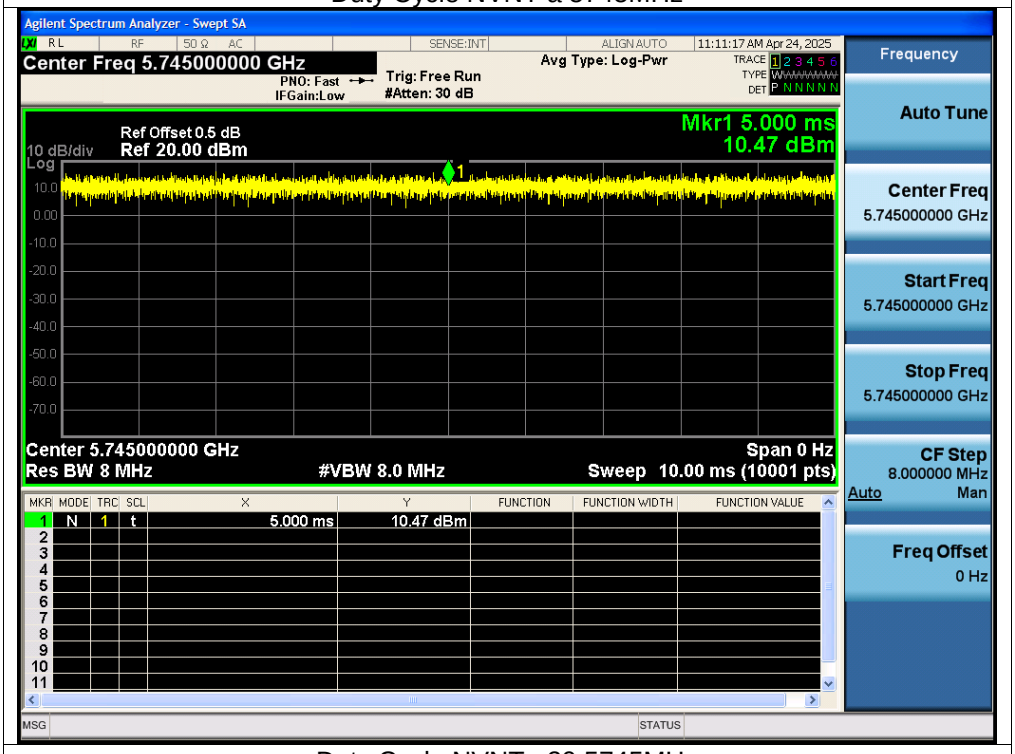


5.8G

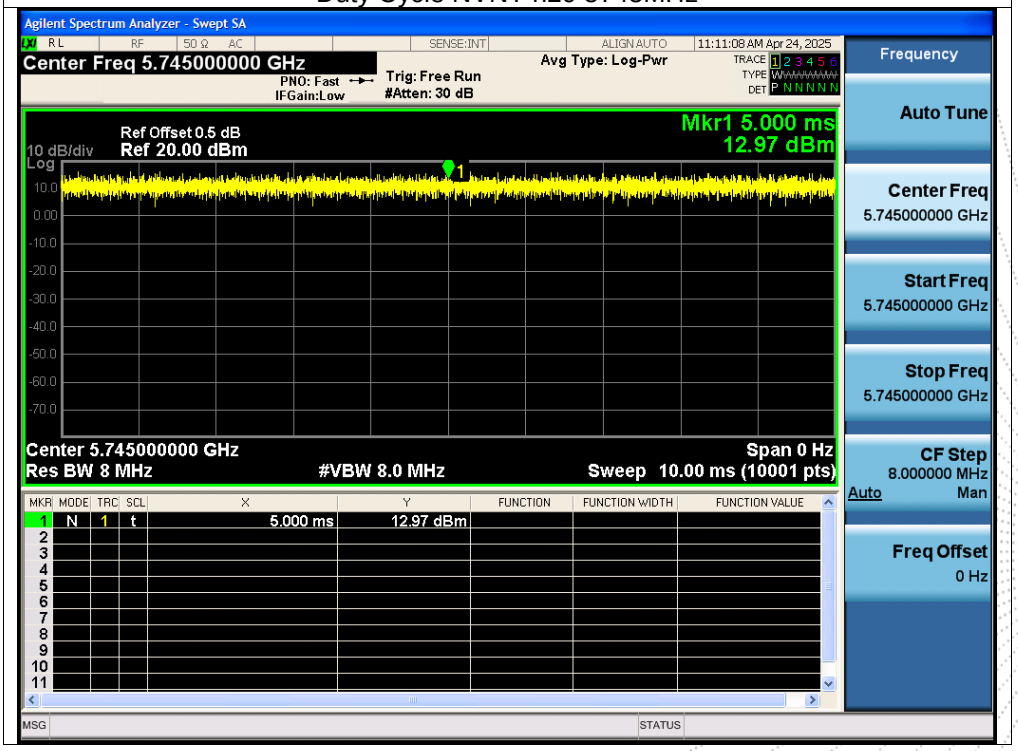
Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5745	100	0
NVNT	n20	5745	100	0
NVNT	n40	5755	100	0
NVNT	ac20	5745	100	0
NVNT	ac40	5755	100	0
NVNT	ac80	5775	100	0

Test Graphs

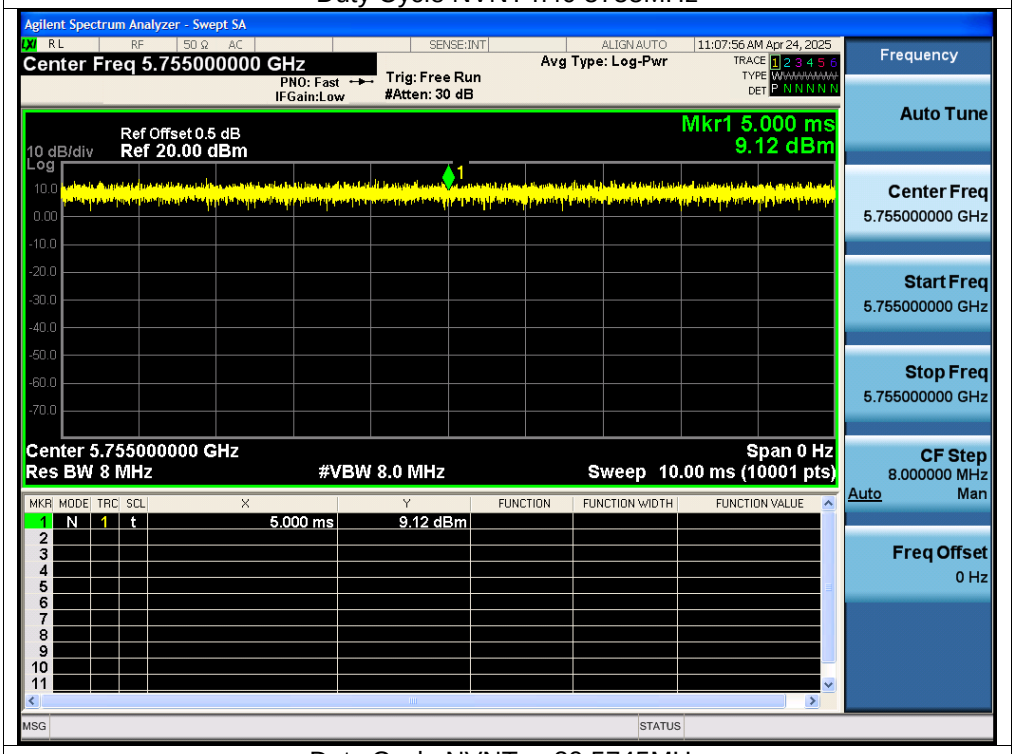
Duty Cycle NVNT a 5745MHz



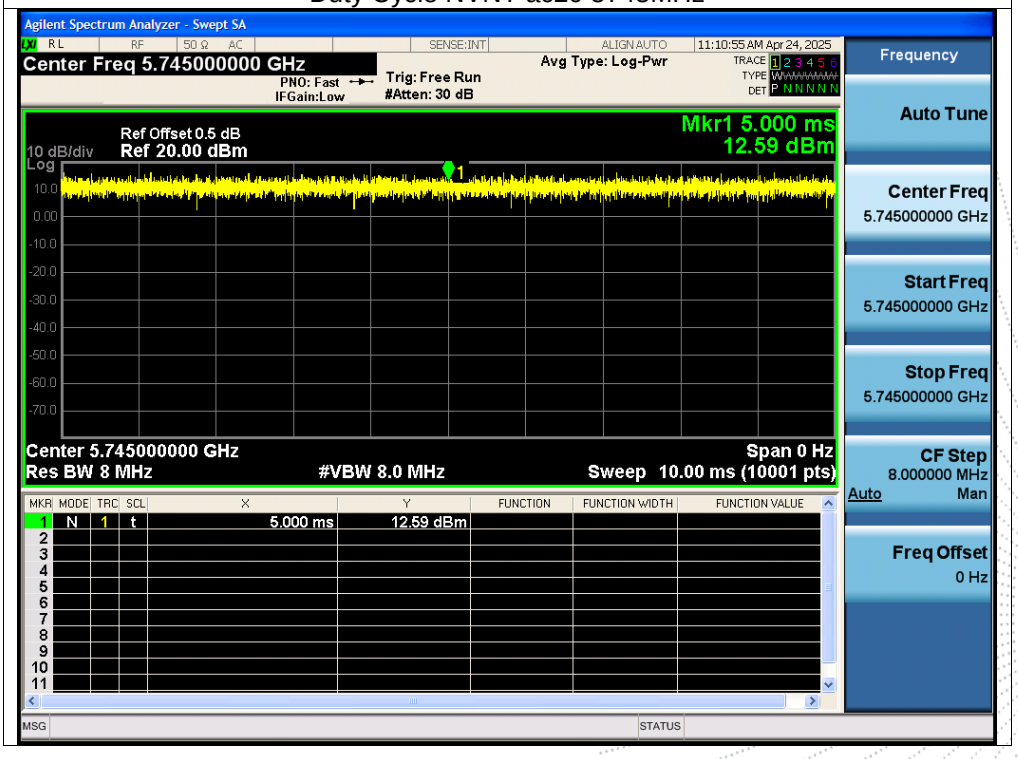
Duty Cycle NVNT n20 5745MHz



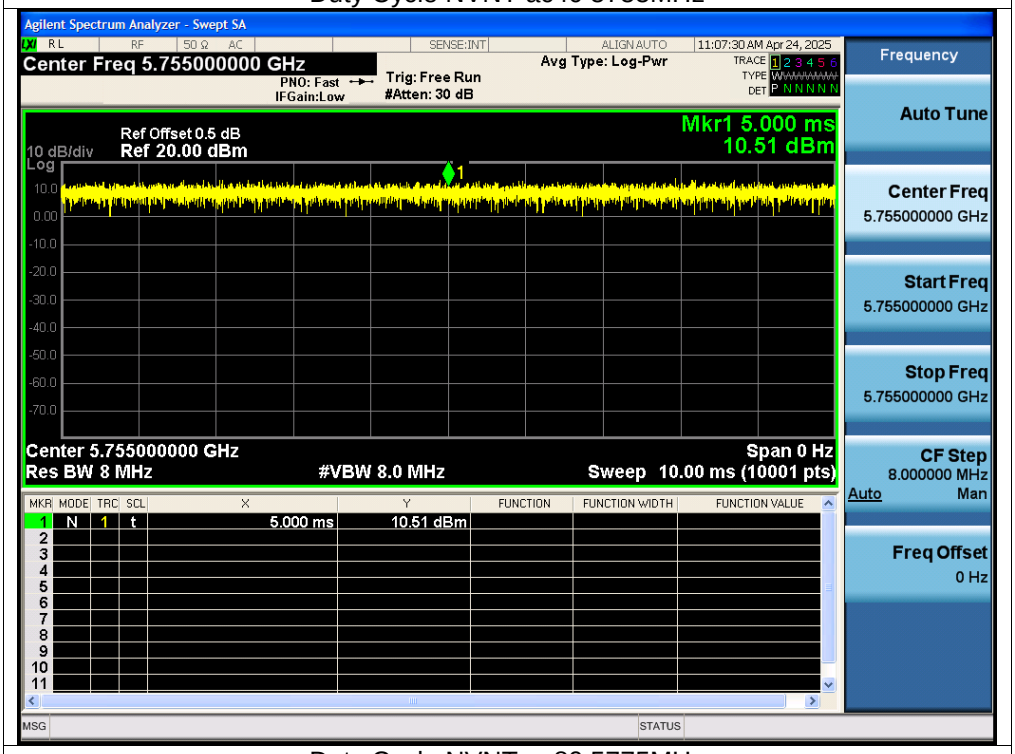
Duty Cycle NVNT n40 5755MHz



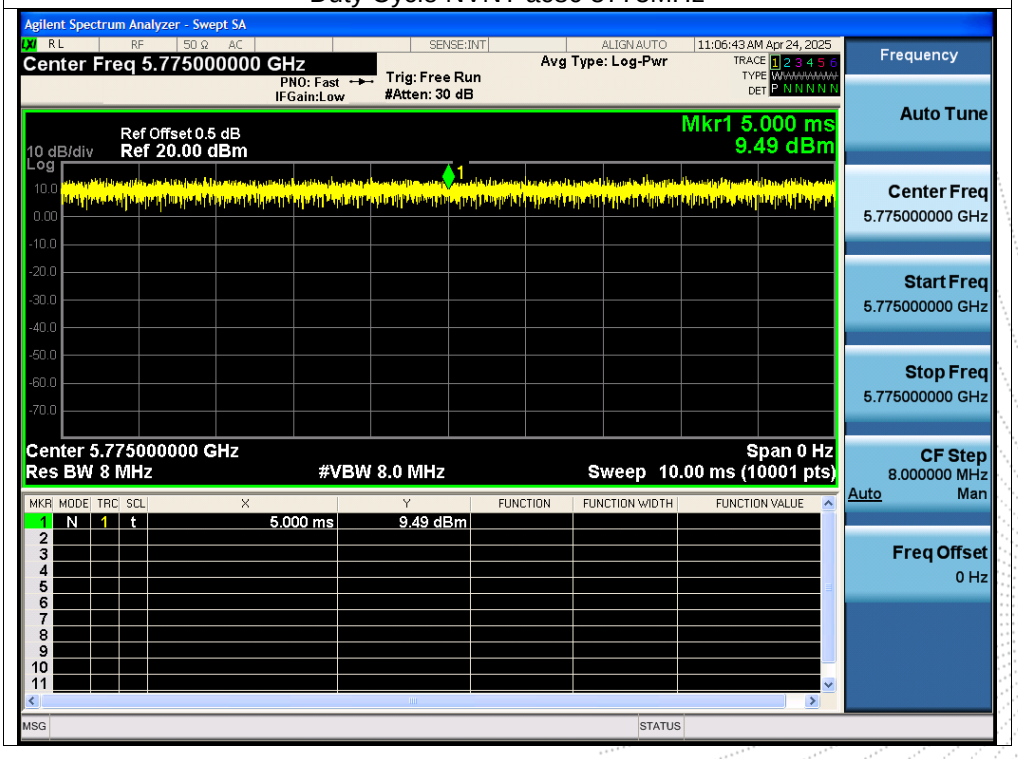
Duty Cycle NVNT ac20 5745MHz



Duty Cycle NVNT ac40 5755MHz



Duty Cycle NVNT ac80 5775MHz



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.

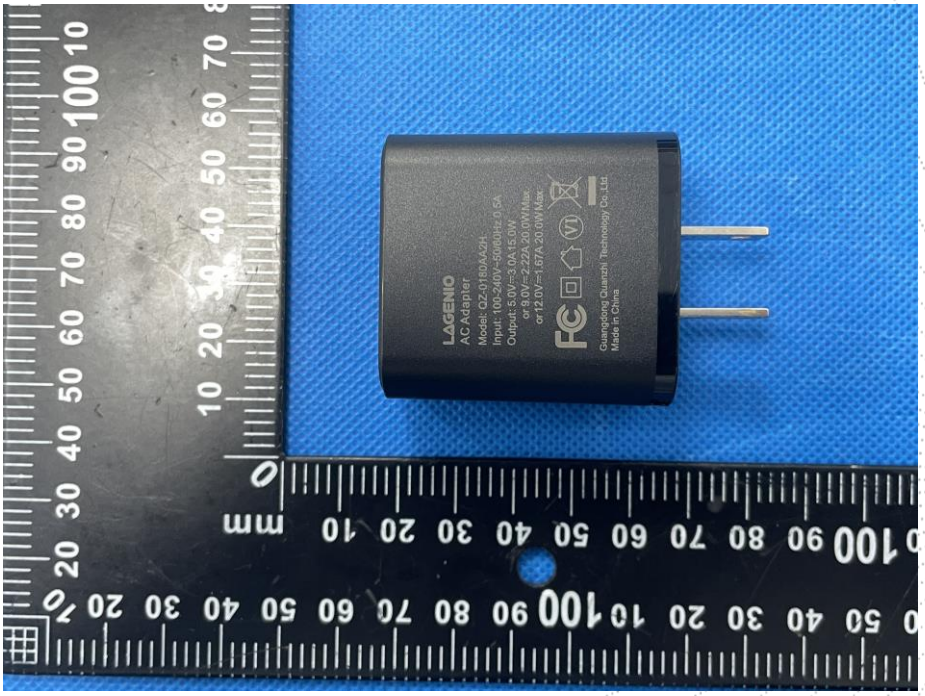
15.2 Test Result

The EUT antenna is Internal antenna (antenna gain: -0.36 dBi). It comply with the standard requirement.

16. EUT Photographs

EUT Photo 1

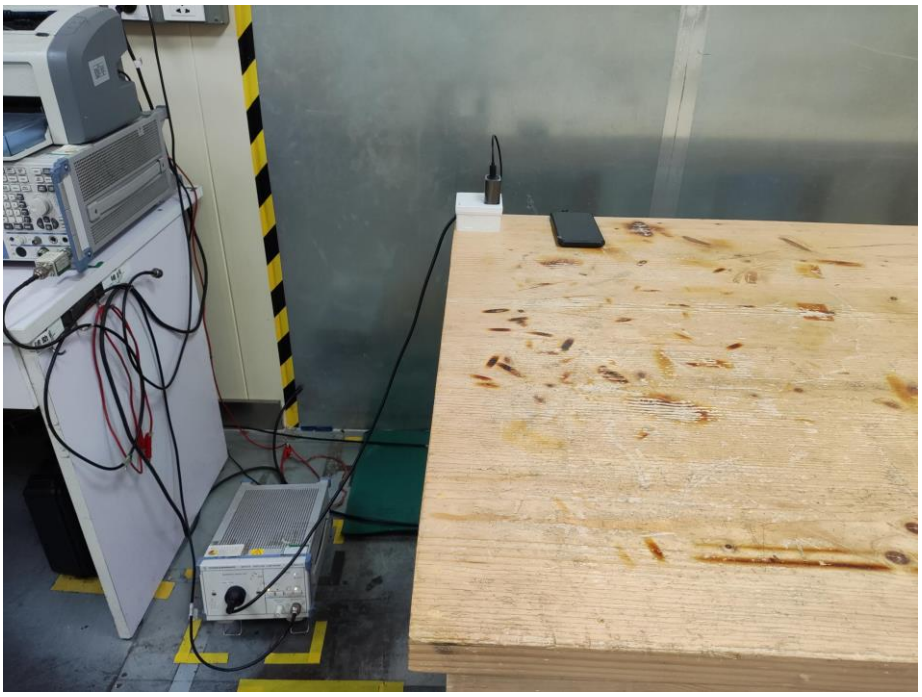
EUT Photo 2



NOTE: Appendix-Photographs Of EUT Constructional Details.

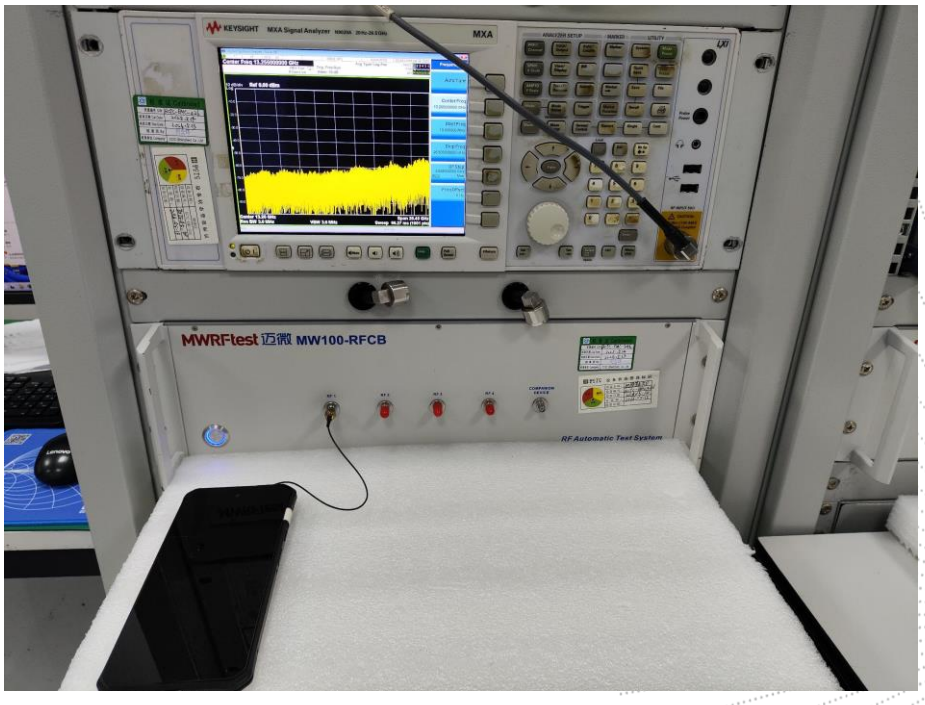
17. EUT Test Setup Photographs

Conducted Measurement Photos



Radiated Measurement Photos

BCTC
倍 测 检 测


KEYSIGHT
MXA
MWRFtest 迈微 MW100-RFCB
RF Automatic Test System

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:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

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P.C.: 518103

FAX: 0755-33229357

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