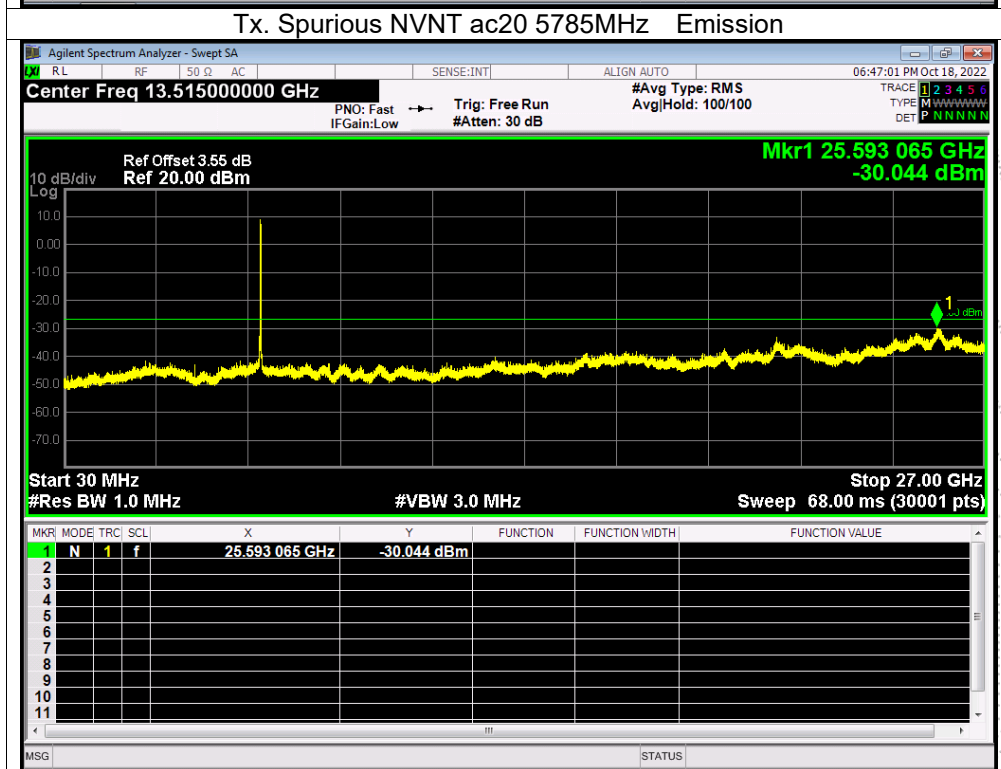
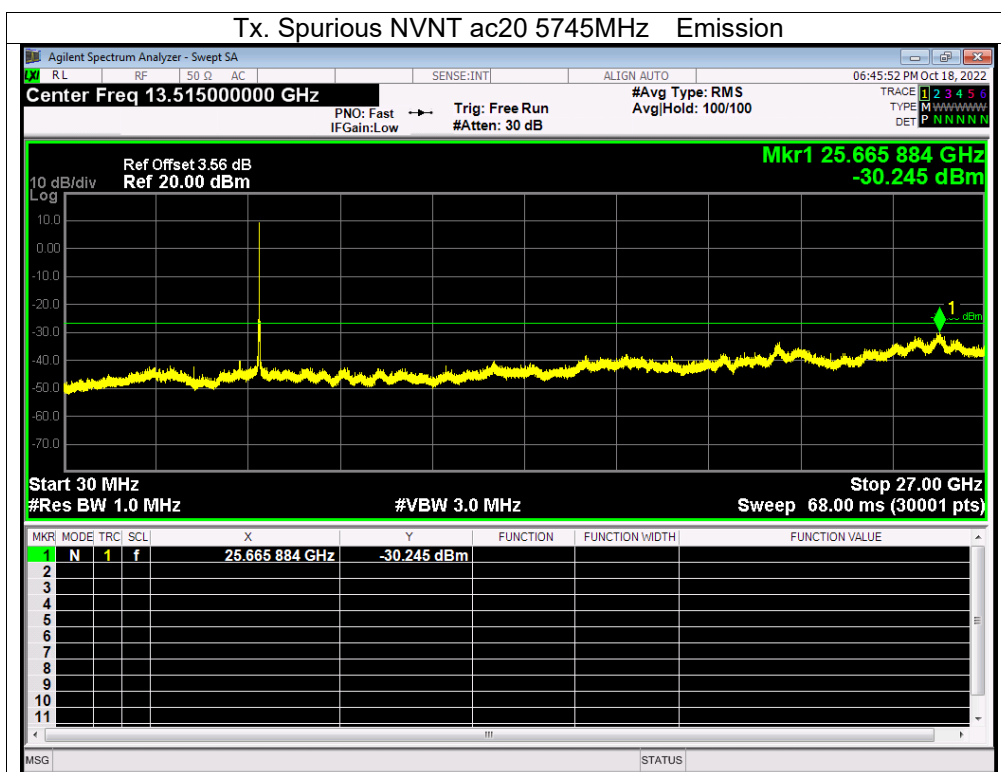
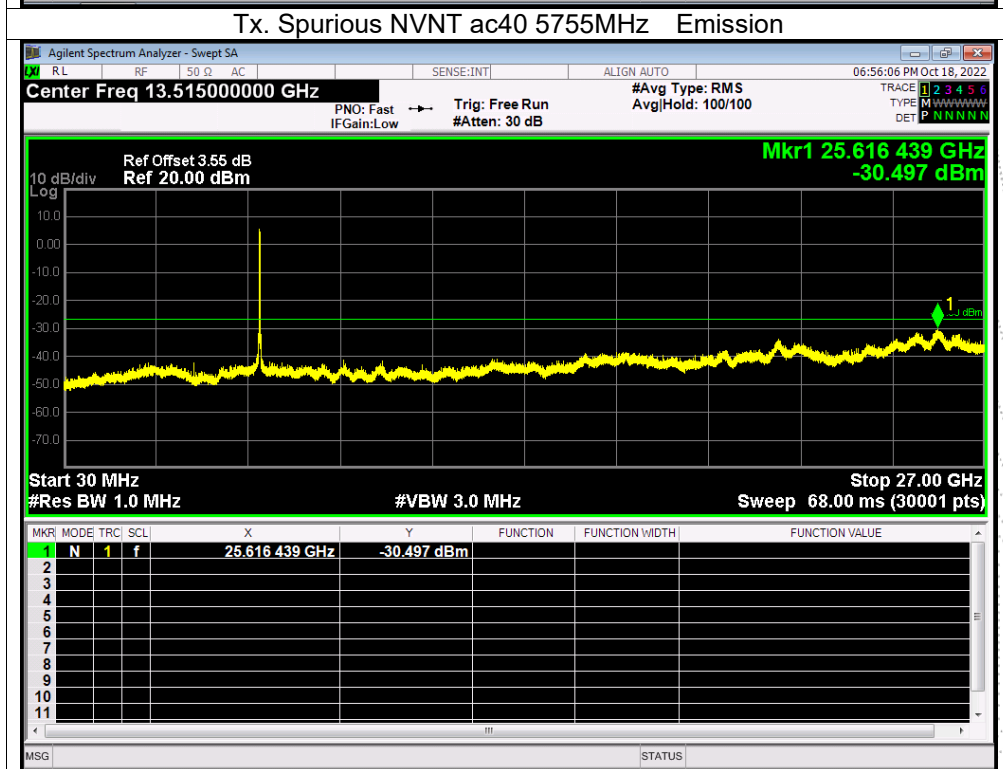
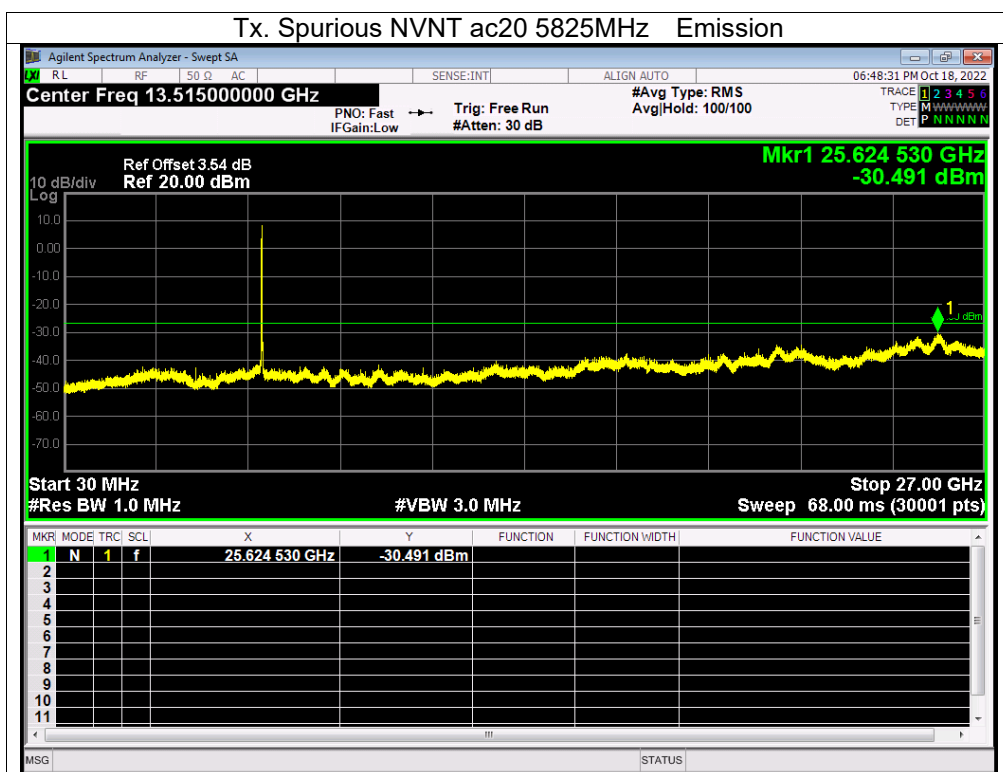
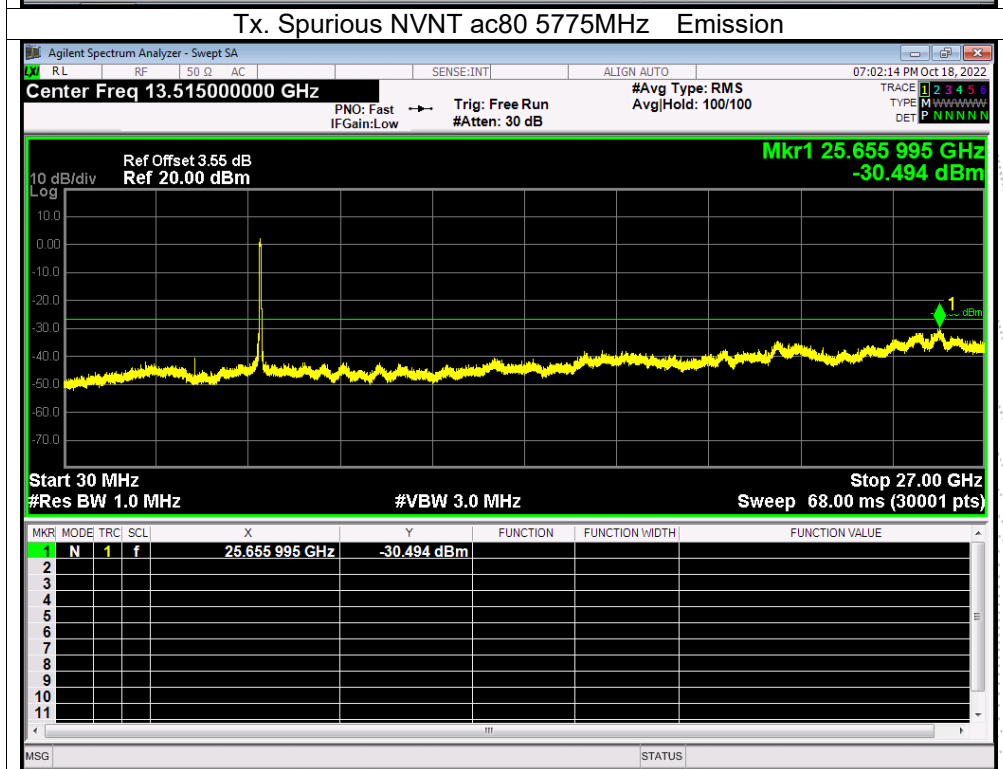
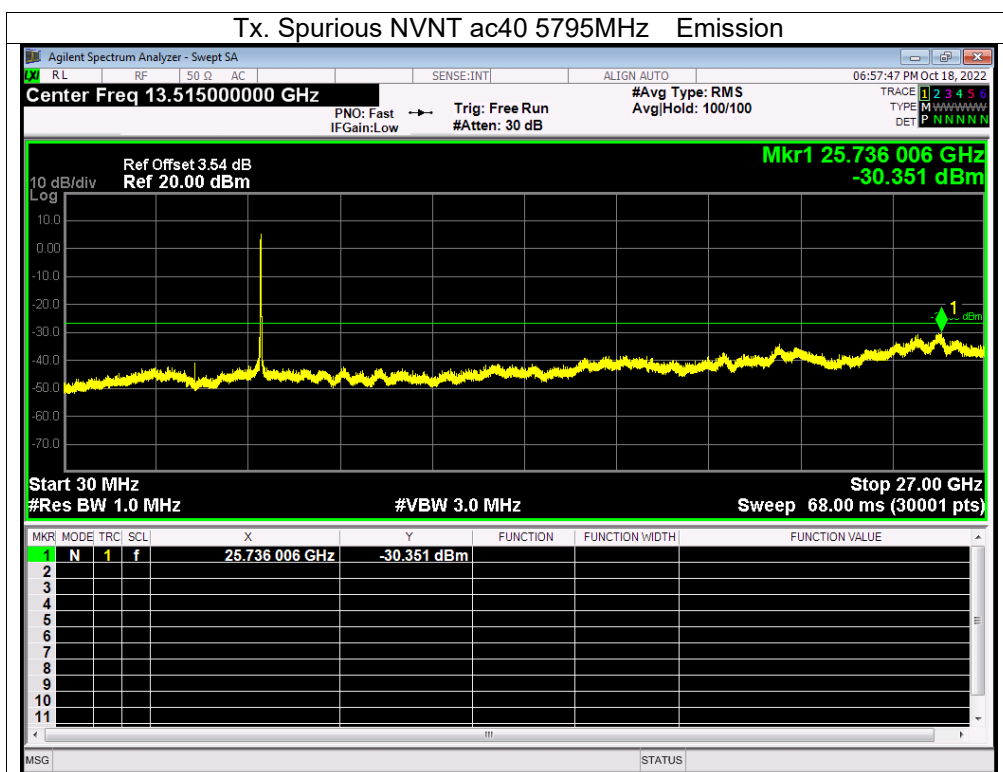








13. Frequency Stability Measurement

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 5V
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)	5.00	5180.0066	5180	0.0066	1.2683
		V max (V)	5.75	5180.0049	5180	0.0049	0.9493
		V min (V)	4.25	5180.0050	5180	0.0050	0.9735
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)	5	T (°C)	-20	5180.0134	5180	0.0134	2.5869
		T (°C)	-10	5180.0058	5180	0.0058	1.1201
		T (°C)	0	5180.0036	5180	0.0036	0.6907
		T (°C)	10	5180.0130	5180	0.0130	2.5090
		T (°C)	20	5180.0022	5180	0.0022	0.4292
		T (°C)	30	5180.0123	5180	0.0123	2.3665
		T (°C)	40	5180.0122	5180	0.0122	2.3516
		T (°C)	50	5180.0097	5180	0.0097	1.8731
		T (°C)	60	5180.0077	5180	0.0077	1.4918
		T (°C)	70	5180.0132	5180	0.0132	2.5579
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)	5.00	5200.0046	5200	0.0046	0.8819
		V max (V)	5.75	5200.0044	5200	0.0044	0.8388
		V min (V)	4.25	5200.0132	5200	0.0132	2.5424
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)	5	T (°C)	-20	5200.00337	5200	0.00337	0.6477
		T (°C)	-10	5200.00119	5200	0.00119	0.2289
		T (°C)	0	5200.00437	5200	0.00437	0.8401
		T (°C)	10	5200.01028	5200	0.01028	1.9767
		T (°C)	20	5200.00579	5200	0.00579	1.1140
		T (°C)	30	5200.00300	5200	0.00300	0.5772
		T (°C)	40	5200.01221	5200	0.01221	2.3472
		T (°C)	50	5200.00867	5200	0.00867	1.6667
		T (°C)	60	5200.00111	5200	0.00111	0.2127
		T (°C)	70	5200.00838	5200	0.00838	1.6110
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)	5.00	5240.0067	5240	0.0067	1.2758
		V max (V)	5.75	5240.0128	5240	0.0128	2.4419
		V min (V)	4.25	5240.0050	5240	0.0050	0.9563
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)	5	T (°C)	-20	5240.0061	5240	0.0061	1.1688
		T (°C)	-10	5240.0123	5240	0.0123	2.3454
		T (°C)	0	5240.0057	5240	0.0057	1.0787
		T (°C)	10	5240.0108	5240	0.0108	2.0669
		T (°C)	20	5240.0042	5240	0.0042	0.8027
		T (°C)	30	5240.0002	5240	0.0002	0.0390
		T (°C)	40	5240.0059	5240	0.0059	1.1338
		T (°C)	50	5240.0125	5240	0.0125	2.3898
		T (°C)	60	5240.0095	5240	0.0095	1.8115
		T (°C)	70	5240.0004	5240	0.0004	0.0778
Limits				5150-5250 MHz			
Result				Complies			

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V
Hrst Mode :	TX Frequency(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)	5.00	5745.00648	5745	0.00648	1.1275
		V max (V)	5.75	5745.00659	5745	0.00659	1.1474
		V min (V)	4.25	5745.00010	5745	0.00010	0.0181
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)	5	T (°C)	-20	5745.00939	5745	0.00939	1.6343
		T (°C)	-10	5745.00249	5745	0.00249	0.4337
		T (°C)	0	5745.00274	5745	0.00274	0.4764
		T (°C)	10	5745.00600	5745	0.00600	1.0450
		T (°C)	20	5745.01085	5745	0.01085	1.8886
		T (°C)	30	5745.00754	5745	0.00754	1.3116
		T (°C)	40	5745.00110	5745	0.00110	0.1918
		T (°C)	50	5745.01046	5745	0.01046	1.8211
		T (°C)	60	5745.01024	5745	0.01024	1.7817
		T (°C)	70	5745.00151	5745	0.00151	0.2630
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)	5.00	5785.00717	5785	0.00717	1.2396
		V max (V)	5.75	5785.00607	5785	0.00607	1.0495
		V min (V)	4.25	5785.00023	5785	0.00023	0.0396
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)	5	T (°C)	-20	5785.00262	5785	0.00262	0.4529
		T (°C)	-10	5785.01281	5785	0.01281	2.2152
		T (°C)	0	5785.00442	5785	0.00442	0.7634
		T (°C)	10	5785.00235	5785	0.00235	0.4065
		T (°C)	20	5785.00760	5785	0.00760	1.3140
		T (°C)	30	5785.00446	5785	0.00446	0.7715
		T (°C)	40	5785.00065	5785	0.00065	0.1122
		T (°C)	50	5785.01057	5785	0.01057	1.8266
		T (°C)	60	5785.00717	5785	0.00717	1.2392
		T (°C)	70	5785.01247	5785	0.01247	2.1552
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)	5.00	5825.00923	5825	0.00923	1.5848
		V max (V)	5.75	5825.00705	5825	0.00705	1.2111
		V min (V)	4.25	5825.00691	5825	0.00691	1.1860
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)	5	T (°C)	-20	5825.00465	5825	0.00465	0.7986
		T (°C)	-10	5825.00369	5825	0.00369	0.6342
		T (°C)	0	5825.00119	5825	0.00119	0.2037
		T (°C)	10	5825.00182	5825	0.00182	0.3119
		T (°C)	20	5825.01140	5825	0.01140	1.9571
		T (°C)	30	5825.00086	5825	0.00086	0.1476
		T (°C)	40	5825.00950	5825	0.00950	1.6302
		T (°C)	50	5825.00382	5825	0.00382	0.6550
		T (°C)	60	5825.00015	5825	0.00015	0.0256
		T (°C)	70	5825.00877	5825	0.00877	1.5052
Limits				5725-5850 MHz			
Result				Complies			

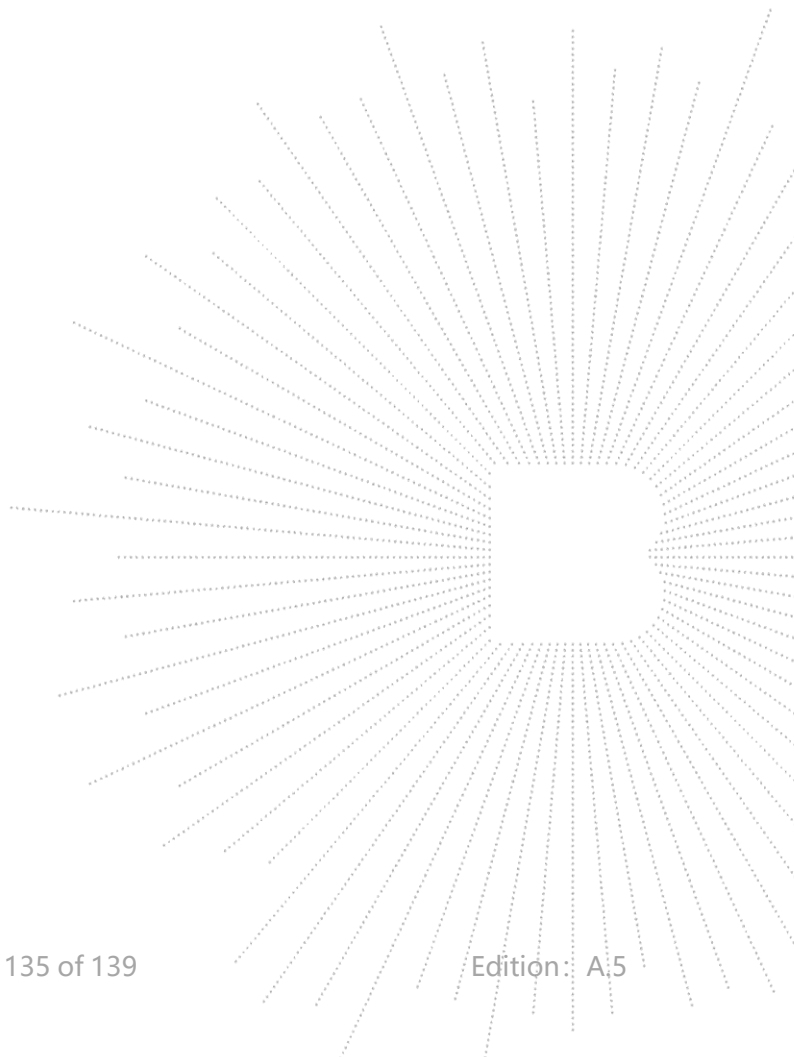
14. Antenna Requirement

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 Internal antenna (antenna gain: 2.9dBi). It comply with the standard requirement.

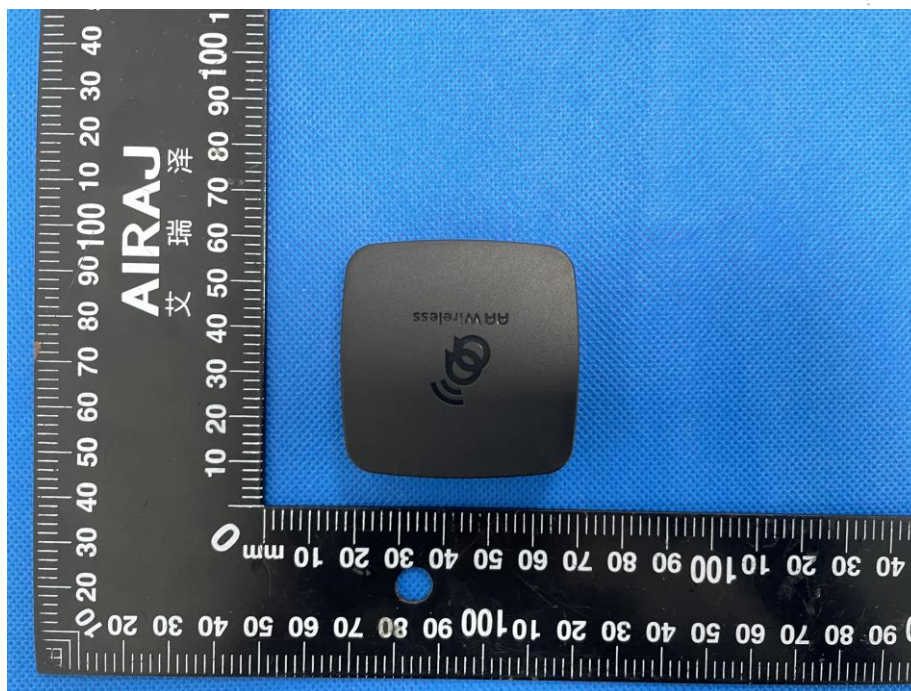


15. EUT Photographs

EUT Photo 1



EUT Photo 2

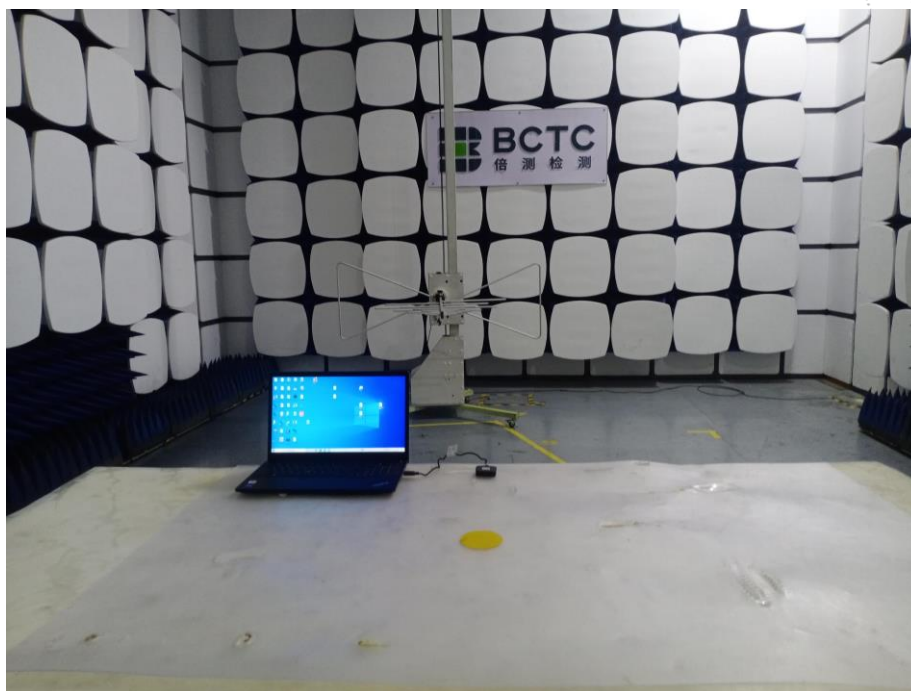


16. EUT Test Setup Photographs

Conducted Measurement 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 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 test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.
8. The quality system of our laboratory is in accordance with ISO/IEC17025.
9. 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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***** END *****