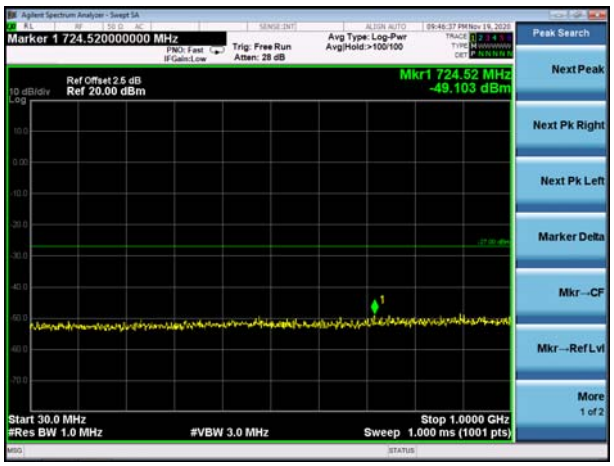
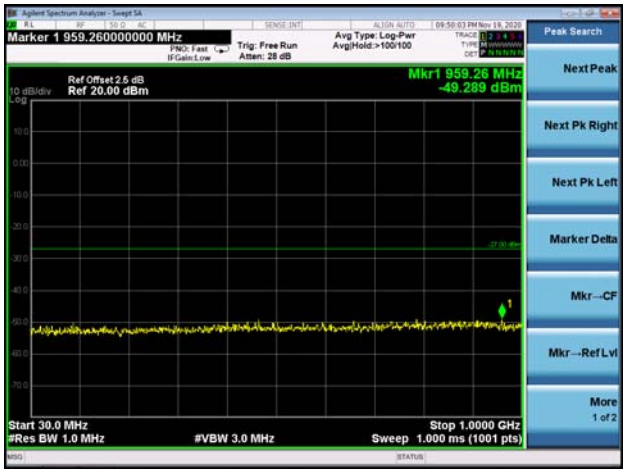
Test Plot

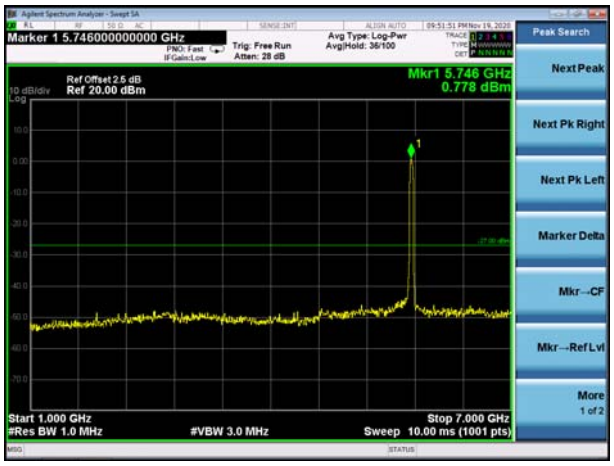
802.11n40 on channel 151



802.11n40 on channel 159



802.11n40 on channel 151



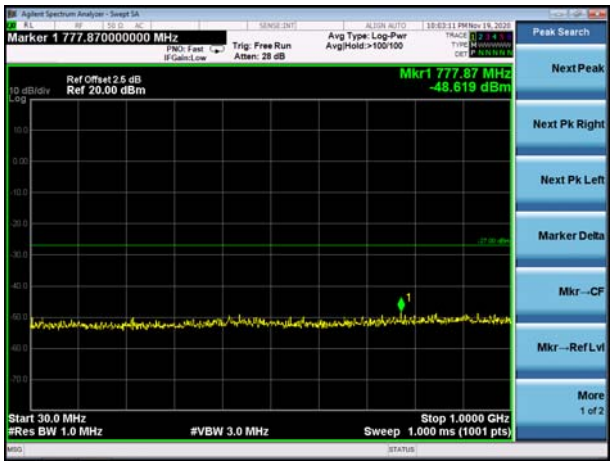
802.11n40 on channel 159

802.11n40 on channel 151

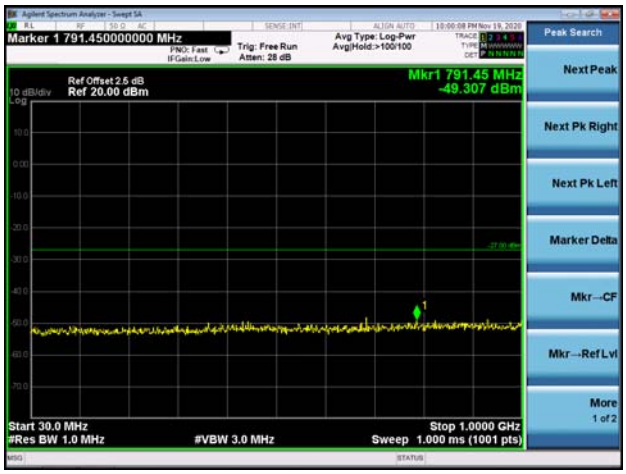
802.11n40 on channel 159

Test Plot

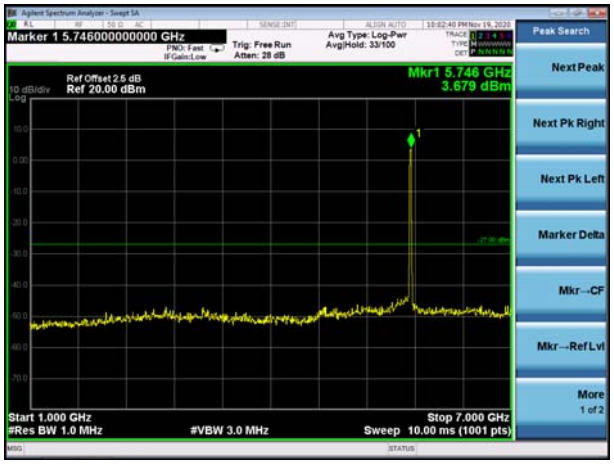
802.11ac20 on channel 149



802.11ac20 on channel 157



802.11ac20 on channel 149



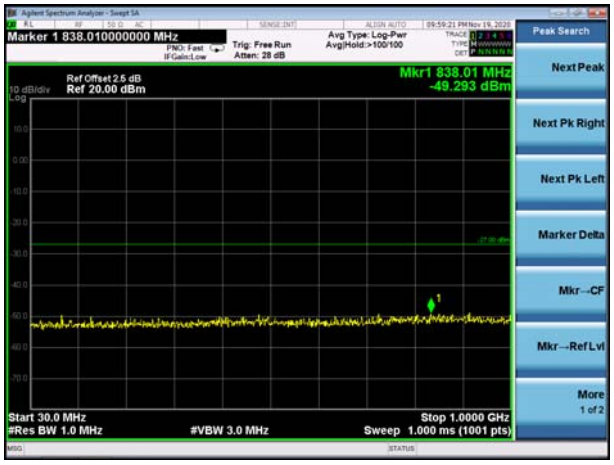
802.11ac20 on channel 157

802.11ac20 on channel 149

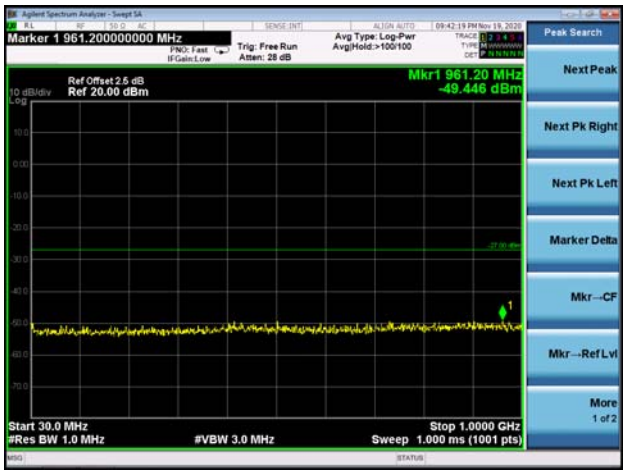
802.11ac20 on channel 157

Test Plot

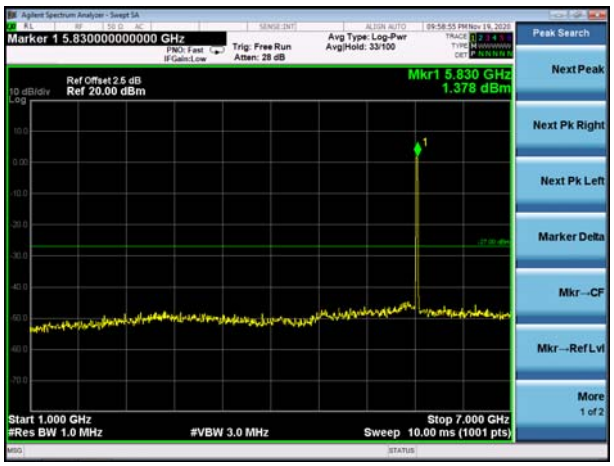
802.11ac20 on channel 165



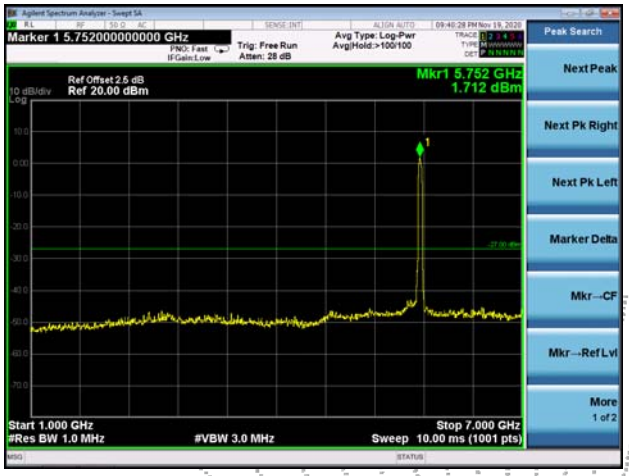
802.11ac40 on channel 151



802.11ac20 on channel 165



802.11ac40 on channel 151

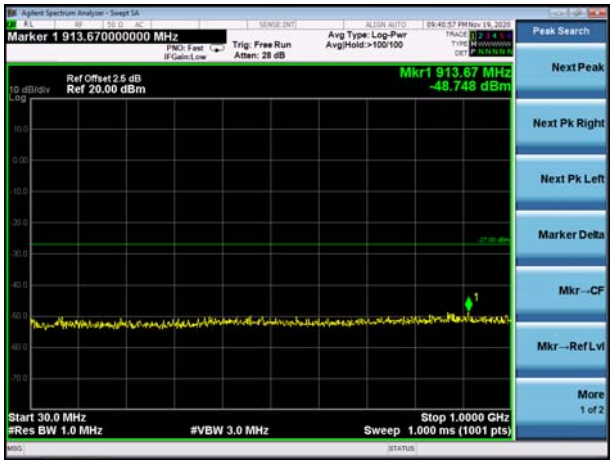


802.11ac20 on channel 165

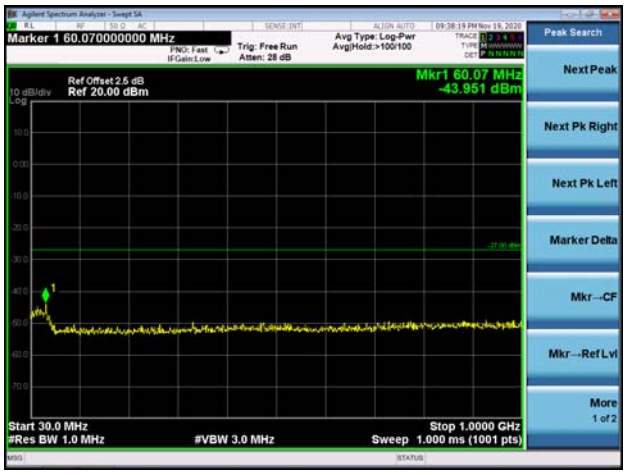
802.11ac40 on channel 151

Test Plot

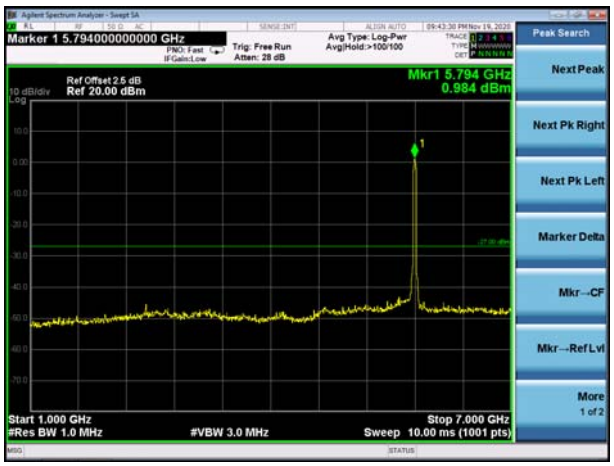
802.11ac40 on channel 159



802.11ac80 on channel 155



802.11 ac40 on channel 159



802.11 ac80 on channel 155

802.11 ac40 on channel 159

802.11 ac80 on channel 155

13. FREQUENCY STABILITY MEASUREMENT

13.1 LIMIT

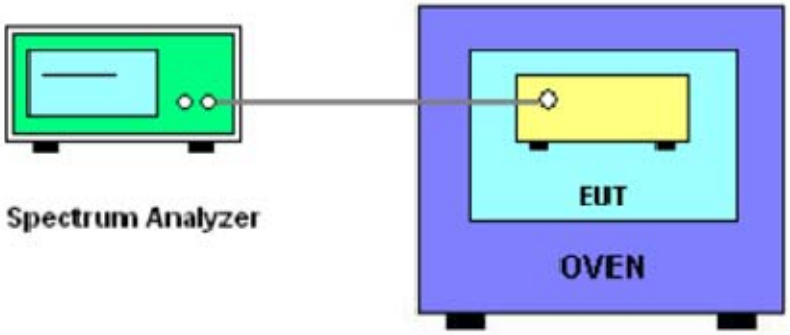
Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE802.11n specification).

13.2 TEST PROCEDURES

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
the 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.

13.3 TEST SETUP LAYOUT



13.4 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously un-modulation transmitting mode.

13.5 TEST RESULTS

Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
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)	#####	5180.0465	5180	0.0465	8.9768
		V max (V)	#####	5180.0323	5180	0.0323	6.2355
		V min (V)	#####	5180.0239	5180	0.0239	4.6139
Limits				±20ppm			
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	5180.0078	5180	0.0078	1.5058
		T (°C)	-10	5180.0102	5180	0.0102	1.9691
		T (°C)	0	5180.0224	5180	0.0224	4.3243
		T (°C)	10	5180.0314	5180	0.0314	6.0618
		T (°C)	20	5180.0269	5180	0.0269	5.1931
		T (°C)	30	5180.0212	5180	0.0212	4.0927
		T (°C)	40	5180.0137	5180	0.0137	2.6448
		T (°C)	50	5180.0101	5180	0.0101	1.9498
		T (°C)	60	5180.0214	5180	0.0214	4.1313
		T (°C)	70	5180.0305	5180	0.0305	5.8880
Limits				±20ppm			
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)	#####	5200.0258	5200	0.0258	4.9615
		V max (V)	#####	5200.0404	5200	0.0404	7.7692
		V min (V)	#####	5200.0397	5200	0.0397	7.6346
Limits				±20ppm			
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	5200.0605	5200	0.0605	11.6346
		T (°C)	-10	5200.0524	5200	0.0524	10.0769
		T (°C)	0	5200.0423	5200	0.0423	8.1346
		T (°C)	10	5200.0706	5200	0.0706	13.5769
		T (°C)	20	5200.0647	5200	0.0647	12.4423
		T (°C)	30	5200.0231	5200	0.0231	4.4423
		T (°C)	40	5200.0534	5200	0.0534	10.2692
		T (°C)	50	5200.0439	5200	0.0439	8.4423
		T (°C)	60	5200.0378	5200	0.0378	7.2692
		T (°C)	70	5200.0410	5200	0.0410	7.8846
Limits				±20ppm			
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)	#####	5240.0136	5240	0.0136	2.5954
		V max (V)	#####	5240.0415	5240	0.0415	7.9198
		V min (V)	#####	5240.0097	5240	0.0097	1.8511
Limits				±20ppm			
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	5240.0095	5240	0.0095	1.8130
		T (°C)	-10	5240.0038	5240	0.0038	0.7252
		T (°C)	0	5240.0141	5240	0.0141	2.6908
		T (°C)	10	5240.0857	5240	0.0857	16.3550
		T (°C)	20	5240.0116	5240	0.0116	2.2137
		T (°C)	30	5240.0123	5240	0.0123	2.3473
		T (°C)	40	5240.0062	5240	0.0062	1.1832
		T (°C)	50	5240.0078	5240	0.0078	1.4885
		T (°C)	60	5240.0084	5240	0.0084	1.6031
		T (°C)	70	5240.0107	5240	0.0107	2.0420
Limits				±20ppm			
Result				Complies			

Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
Hzst 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)	#####	5745.00287	5745	0.00287	0.5000
		V max (V)	#####	5745.00957	5745	0.00957	1.6657
		V min (V)	#####	5745.00823	5745	0.00823	1.4323
Limits				±20ppm			
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	5745.00130	5745	0.00130	0.2257
		T (°C)	-10	5745.00766	5745	0.00766	1.3339
		T (°C)	0	5745.00628	5745	0.00628	1.0934
		T (°C)	10	5745.00737	5745	0.00737	1.2831
		T (°C)	20	5745.00160	5745	0.00160	0.2779
		T (°C)	30	5745.00070	5745	0.00070	0.1220
		T (°C)	40	5745.00460	5745	0.00460	0.8013
		T (°C)	50	5745.00935	5745	0.00935	1.6275
		T (°C)	60	5745.00364	5745	0.00364	0.6333
		T (°C)	70	5745.00669	5745	0.00669	1.1638
Limits				±20ppm			
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)	#####	5785.01123	5785	0.01123	1.9416
		V max (V)	#####	5785.00763	5785	0.00763	1.3189
		V min (V)	#####	5785.01064	5785	0.01064	1.8391
Limits				±20ppm			
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	5785.00060	5785	0.00060	0.1037
		T (°C)	-10	5785.00601	5785	0.00601	1.0382
		T (°C)	0	5785.00980	5785	0.00980	1.6942
		T (°C)	10	5785.00361	5785	0.00361	0.6235
		T (°C)	20	5785.00497	5785	0.00497	0.8593
		T (°C)	30	5785.01217	5785	0.01217	2.1035
		T (°C)	40	5785.00421	5785	0.00421	0.7270
		T (°C)	50	5785.00755	5785	0.00755	1.3047
		T (°C)	60	5785.00743	5785	0.00743	1.2844
		T (°C)	70	5785.00304	5785	0.00304	0.5248
Limits				±20ppm			
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)	#####	5785.00504	5785	0.00504	0.8717
		V max (V)	#####	5785.00300	5785	0.00300	0.5188
		V min (V)	#####	5785.00024	5785	0.00024	0.0407
Limits				±20ppm			
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	5785.00110	5785	0.00110	0.1894
		T (°C)	-10	5785.00046	5785	0.00046	0.0788
		T (°C)	0	5785.00595	5785	0.00595	1.0293
		T (°C)	10	5785.00880	5785	0.00880	1.5206
		T (°C)	20	5785.00030	5785	0.00030	0.0514
		T (°C)	30	5785.00306	5785	0.00306	0.5281
		T (°C)	40	5785.00305	5785	0.00305	0.5267
		T (°C)	50	5785.00192	5785	0.00192	0.3317
		T (°C)	60	5785.00430	5785	0.00430	0.7431
		T (°C)	70	5785.00702	5785	0.00702	1.2129
Limits				±20ppm			
Result				Complies			

14. ANTENNA REQUIREMENT

14.1 Limit

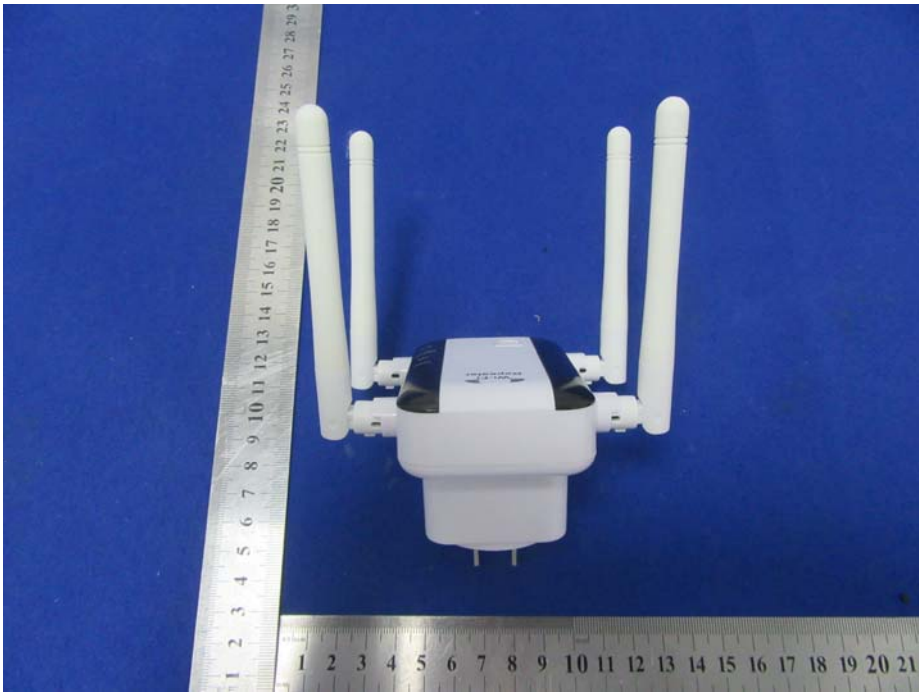
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

14.2 Test Result

The EUT antenna is External antenna (antenna gain (A): 2dBi; antenna gain (B): 2dBi). It comply with the standard requirement.

15. EUT PHOTOGRAPHS

EUT Photo 1

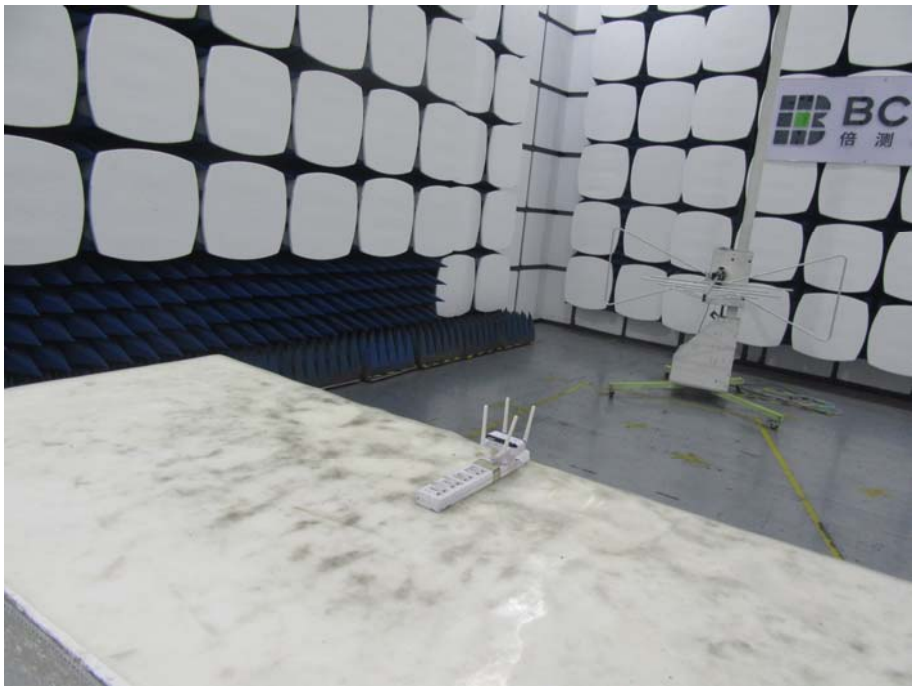


EUT Photo 2

16. EUT TEST SETUP PHOTOGRAPHS

Conducted Measurement Photos

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:
1-2F, East of B Building, Pengzhou Industrial Park, Fuyuan 1st Road, Qiaotou, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

TEL：400-788-9558

P.C.: 518103

FAX：0755-33229357

Website：http://www.bctc-lab.com

E-Mail：bctc@bctc-lab.com.cn

※※※※※ **END** ※※※※※