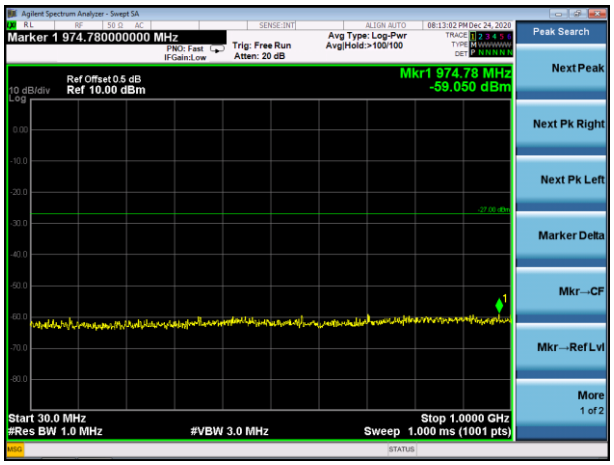
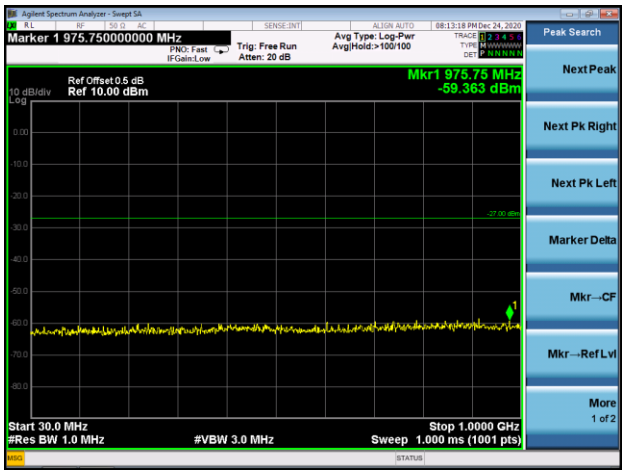
Test Plot

802.11n40 on channel 151



802.11n40 on channel 159



802.11n40 on channel 151

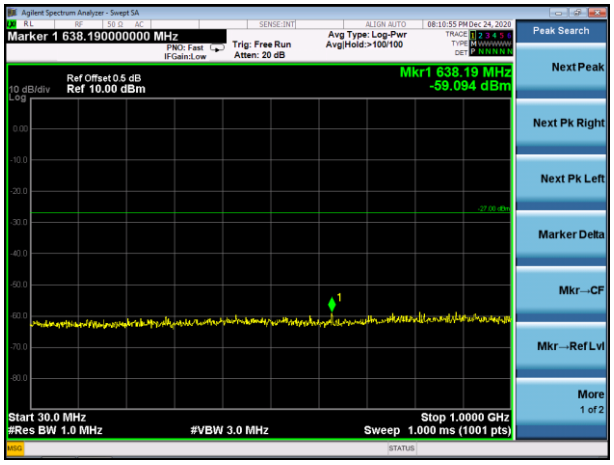
802.11n40 on channel 159

802.11n40 on channel 151

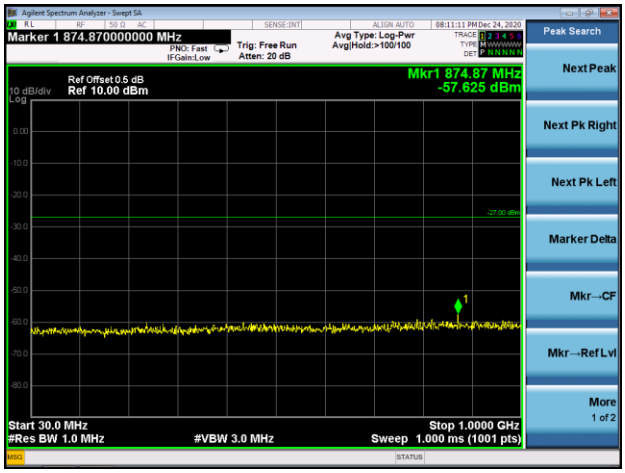
802.11n40 on channel 159

Test Plot

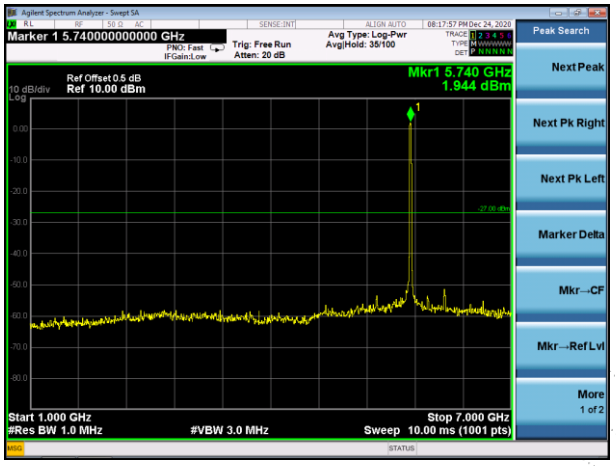
802.11ac20 on channel 149



802.11ac20 on channel 157



802.11ac20 on channel 149



802.11ac20 on channel 157

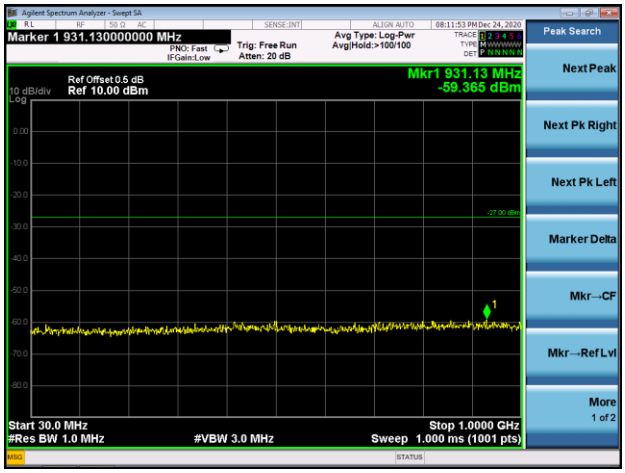
802.11ac20 on channel 149

802.11ac20 on channel 157

Test Plot

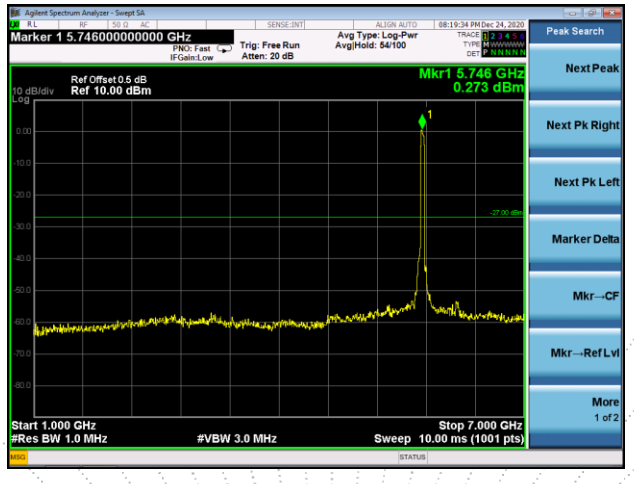
802.11ac20 on channel 165

802.11ac40 on channel 151



802.11ac20 on channel 165

802.11ac40 on channel 151

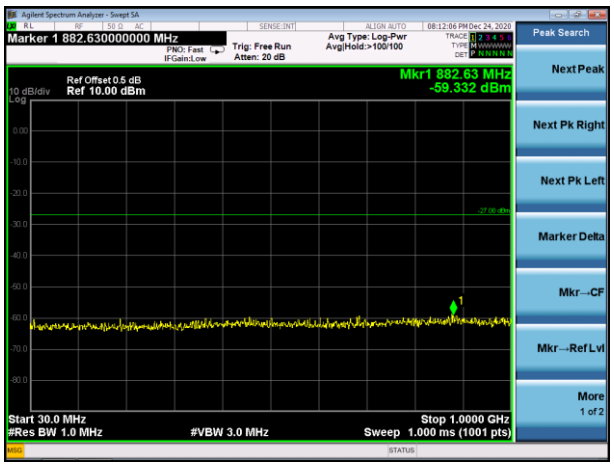


802.11ac20 on channel 165

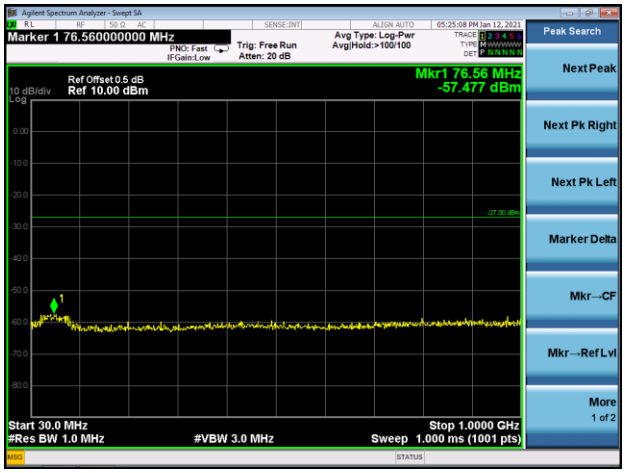
802.11ac40 on channel 151

Test Plot

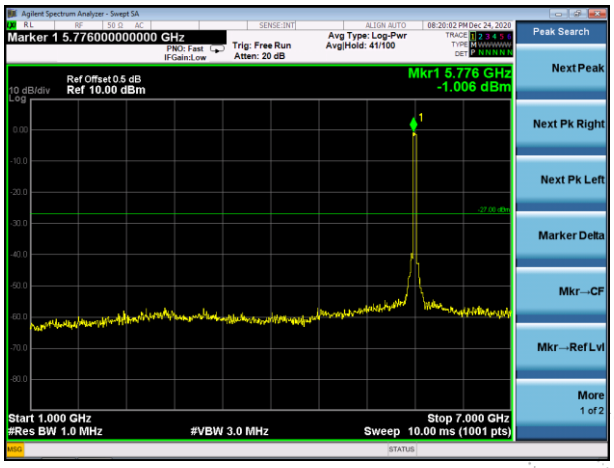
802.11ac40 on channel 159



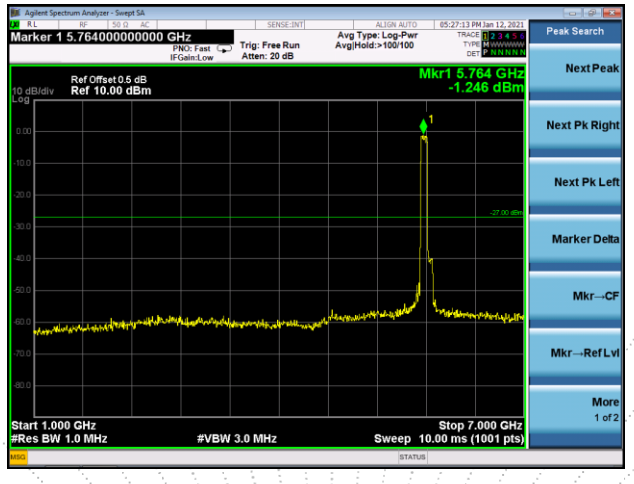
802.11ac80 on channel 155



802.11 ac40 on channel 159



802.11ac80 on channel 155



802.11 ac40 on channel 159

802.11ac80 on channel 155

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 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)	120.00	5180.0047	5180	0.0047	0.9079
		V max (V)	132.00	5180.0022	5180	0.0022	0.4166
		V min (V)	108.00	5180.0063	5180	0.0063	1.2250
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	5180.0083	5180	0.0083	1.6012
		T (°C)	-10	5180.0064	5180	0.0064	1.2339
		T (°C)	0	5180.0086	5180	0.0086	1.6618
		T (°C)	10	5180.0078	5180	0.0078	1.5056
		T (°C)	20	5180.0048	5180	0.0048	0.9271
		T (°C)	30	5180.0109	5180	0.0109	2.1110
		T (°C)	40	5180.0099	5180	0.0099	1.9167
		T (°C)	50	5180.0122	5180	0.0122	2.3507
		T (°C)	60	5180.0113	5180	0.0113	2.1904
		T (°C)	70	5180.0101	5180	0.0101	1.9408
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	5200.0033	5200	0.0033	0.6390
		V max (V)	132.00	5200.0007	5200	0.0007	0.1368
		V min (V)	108.00	5200.0121	5200	0.0121	2.3191
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	5200.01025	5200	0.01025	1.9718
		T (°C)	-10	5200.00240	5200	0.00240	0.4609
		T (°C)	0	5200.00512	5200	0.00512	0.9851
		T (°C)	10	5200.00667	5200	0.00667	1.2819
		T (°C)	20	5200.00736	5200	0.00736	1.4158
		T (°C)	30	5200.01019	5200	0.01019	1.9592
		T (°C)	40	5200.00683	5200	0.00683	1.3129
		T (°C)	50	5200.01010	5200	0.01010	1.9430
		T (°C)	60	5200.00704	5200	0.00704	1.3534
		T (°C)	70	5200.00021	5200	0.00021	0.0399
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	5240.0135	5240	0.0135	2.5729
		V max (V)	132.00	5240.0131	5240	0.0131	2.4945
		V min (V)	108.00	5240.0023	5240	0.0023	0.4347
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	5240.0088	5240	0.0088	1.6764
		T (°C)	-10	5240.0113	5240	0.0113	2.1527
		T (°C)	0	5240.0091	5240	0.0091	1.7272
		T (°C)	10	5240.0012	5240	0.0012	0.2219
		T (°C)	20	5240.0016	5240	0.0016	0.2992
		T (°C)	30	5240.0054	5240	0.0054	1.0324
		T (°C)	40	5240.0129	5240	0.0129	2.4636
		T (°C)	50	5240.0065	5240	0.0065	1.2496
		T (°C)	60	5240.0031	5240	0.0031	0.5954
		T (°C)	70	5240.0059	5240	0.0059	1.1165
Limits				5150-5250 MHz			
Result				Complies			

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V
Hzst 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)	120.00	5745.00644	5745	0.00644	1.1214
		V max (V)	132.00	5745.00880	5745	0.00880	1.5314
		V min (V)	108.00	5745.00264	5745	0.00264	0.4597
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	5745.00640	5745	0.00640	1.1145
		T (°C)	-10	5745.00425	5745	0.00425	0.7396
		T (°C)	0	5745.01258	5745	0.01258	2.1905
		T (°C)	10	5745.00421	5745	0.00421	0.7330
		T (°C)	20	5745.00768	5745	0.00768	1.3369
		T (°C)	30	5745.01093	5745	0.01093	1.9025
		T (°C)	40	5745.00159	5745	0.00159	0.2771
		T (°C)	50	5745.00592	5745	0.00592	1.0310
		T (°C)	60	5745.01323	5745	0.01323	2.3029
		T (°C)	70	5745.01098	5745	0.01098	1.9118
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	5785.00259	5785	0.00259	0.4469
		V max (V)	132.00	5785.00727	5785	0.00727	1.2566
		V min (V)	108.00	5785.01061	5785	0.01061	1.8339
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	5785.00575	5785	0.00575	0.9940
		T (°C)	-10	5785.00140	5785	0.00140	0.2422
		T (°C)	0	5785.01118	5785	0.01118	1.9323
		T (°C)	10	5785.00320	5785	0.00320	0.5531
		T (°C)	20	5785.00249	5785	0.00249	0.4301
		T (°C)	30	5785.01207	5785	0.01207	2.0860
		T (°C)	40	5785.00026	5785	0.00026	0.0449
		T (°C)	50	5785.00871	5785	0.00871	1.5062
		T (°C)	60	5785.01068	5785	0.01068	1.8459
		T (°C)	70	5785.01001	5785	0.01001	1.7312
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	5825.01311	5825	0.01311	2.2507
		V max (V)	132.00	5825.00275	5825	0.00275	0.4721
		V min (V)	108.00	5825.00338	5825	0.00338	0.5794
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	5825.01196	5825	0.01196	2.0530
		T (°C)	-10	5825.00996	5825	0.00996	1.7092
		T (°C)	0	5825.00351	5825	0.00351	0.6025
		T (°C)	10	5825.01201	5825	0.01201	2.0609
		T (°C)	20	5825.01162	5825	0.01162	1.9941
		T (°C)	30	5825.00780	5825	0.00780	1.3386
		T (°C)	40	5825.00031	5825	0.00031	0.0538
		T (°C)	50	5825.00519	5825	0.00519	0.8915
		T (°C)	60	5825.00786	5825	0.00786	1.3490
		T (°C)	70	5825.00097	5825	0.00097	0.1667
Limits				5725-5850 MHz			
Result				Complies			

14. ANTENNA REQUIREMENT

14.1 Limit

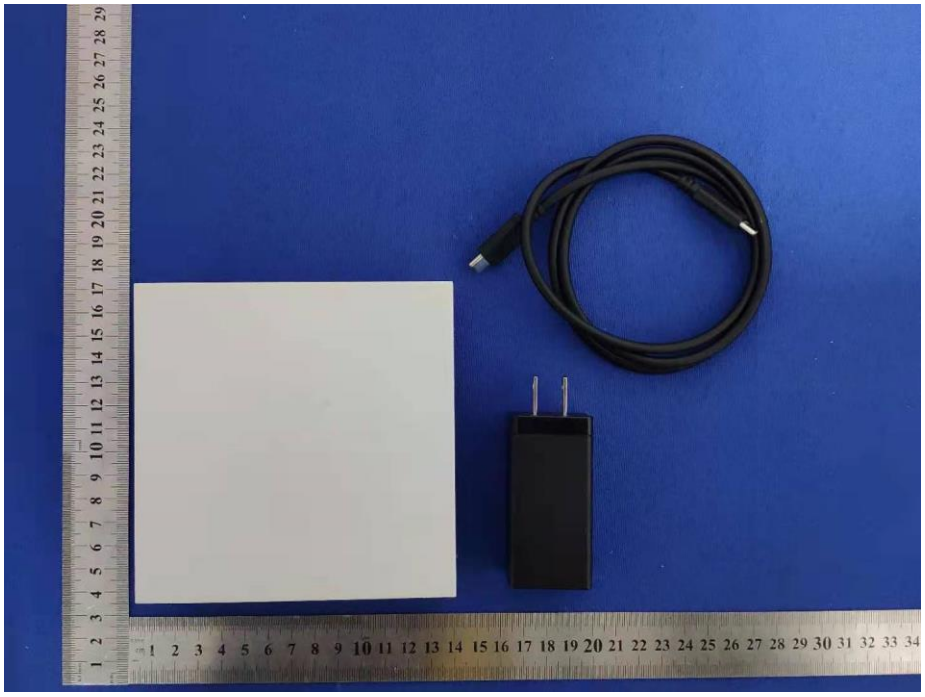
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

14.2 Test Result

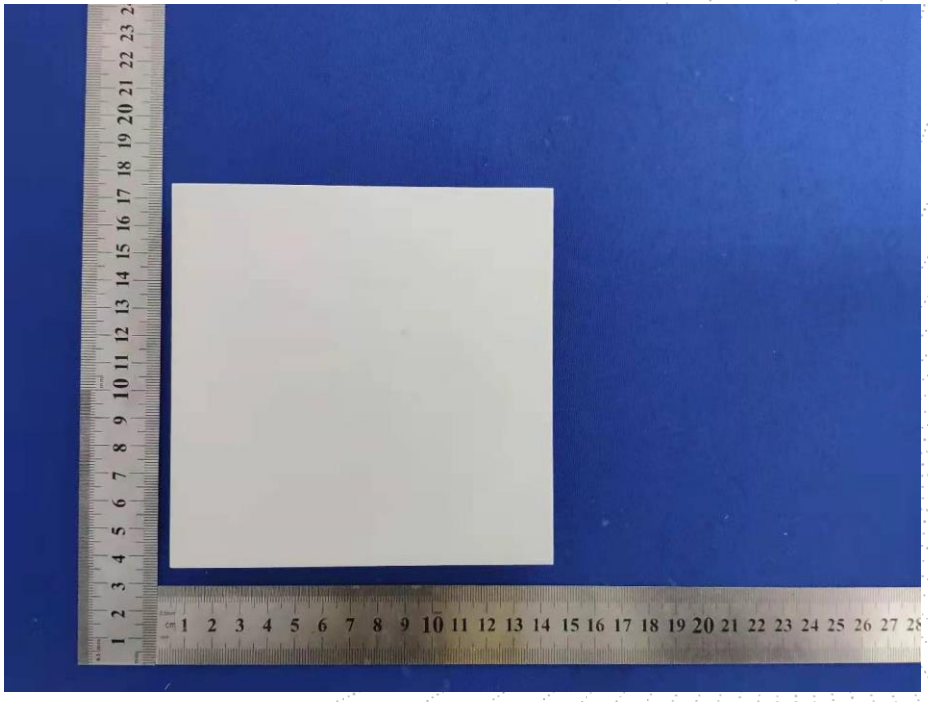
The EUT antenna is Chip antenna (antenna gain (A): 1dBi; antenna gain (B) : 1dBi). It comply with the standard requirement.

15. EUT PHOTOGRAPHS

EUT Photo 1



EUT Photo 2



16. EUT TEST SETUP PHOTOGRAPHS

Conducted Measurement Photos

Radiated Measurement Photos


BCTC
倍 测 检 测

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:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, 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** ※※※※※