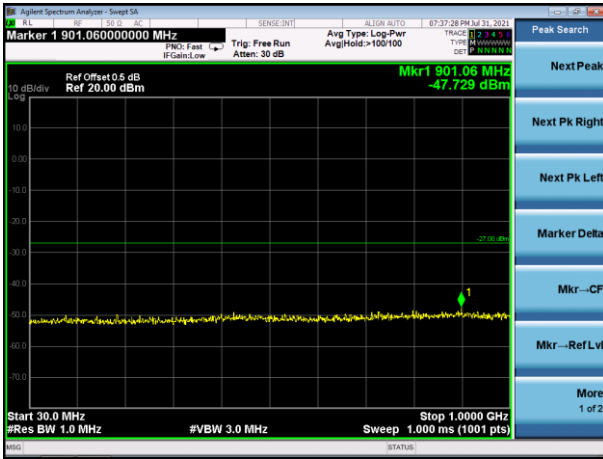
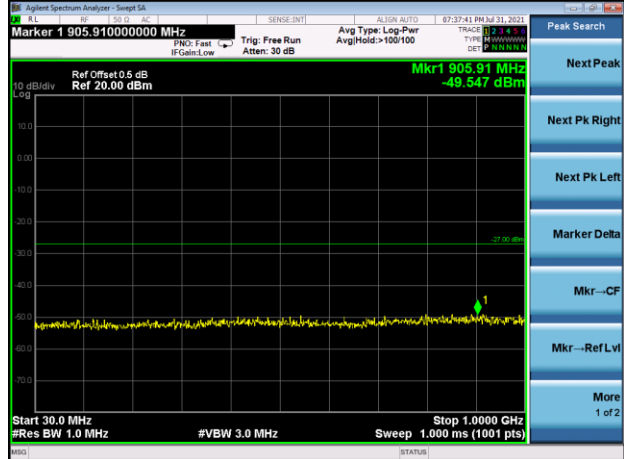


**Test Plot**

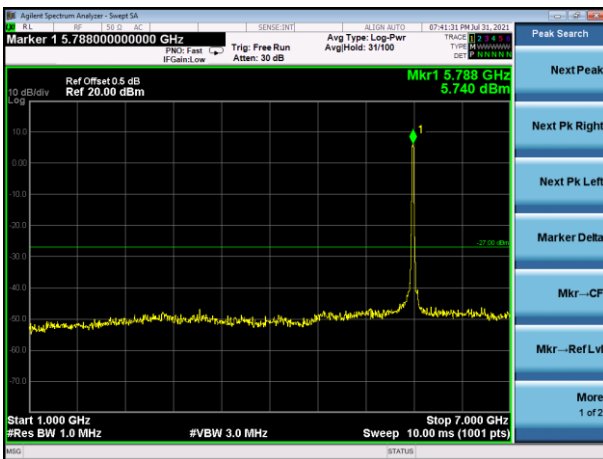
802.11n20 on channel 157



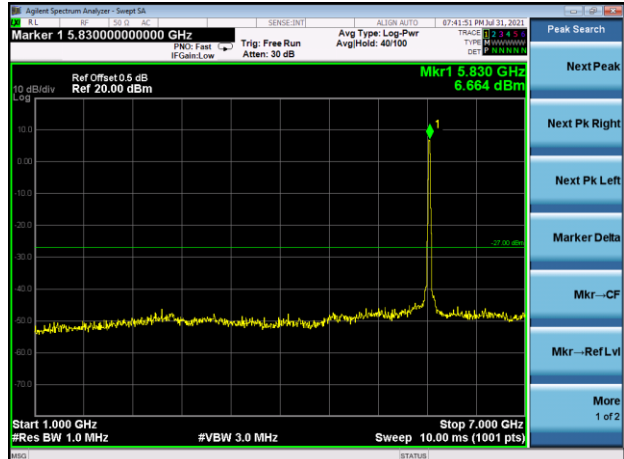
802.11n20 on channel 165



802.11n20 on channel 157



802.11n20 on channel 165



802.11n20 on channel 157

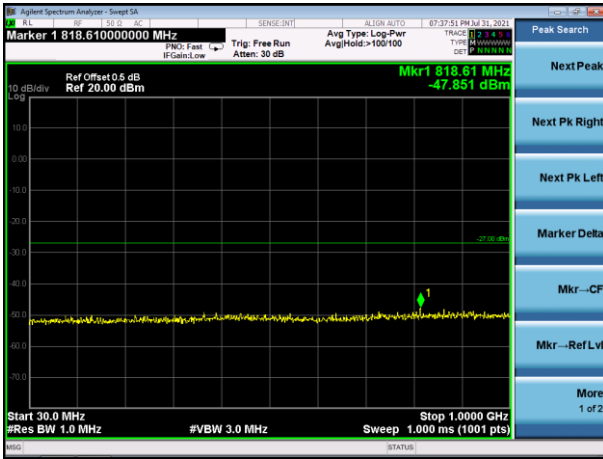


802.11n20 on channel 165

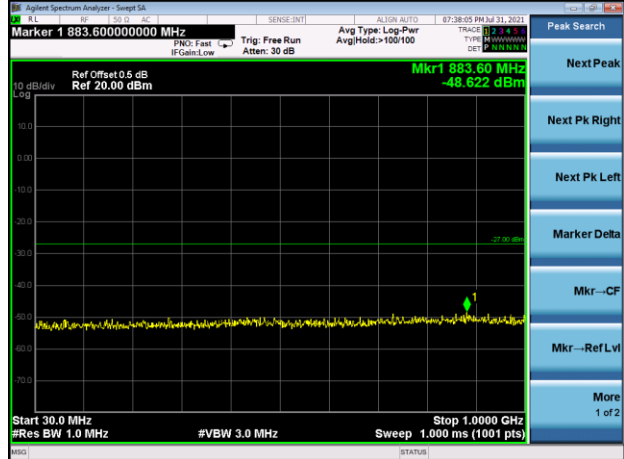


**Test Plot**

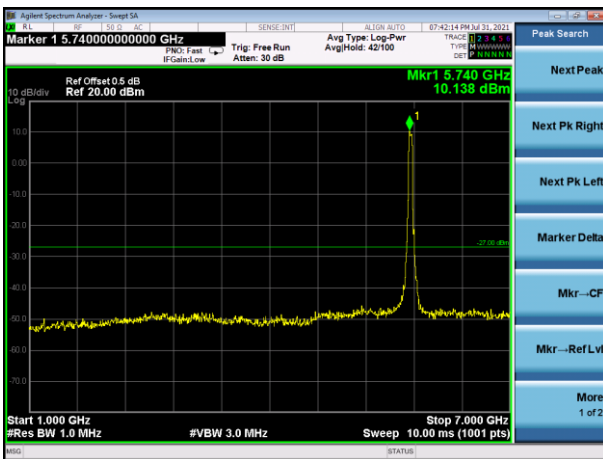
802.11n40 on channel 151



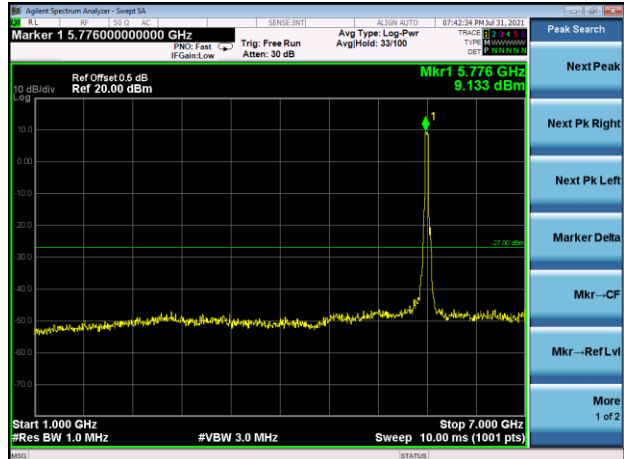
802.11n40 on channel 159



802.11n40 on channel 151



802.11n40 on channel 159



802.11n40 on channel 151

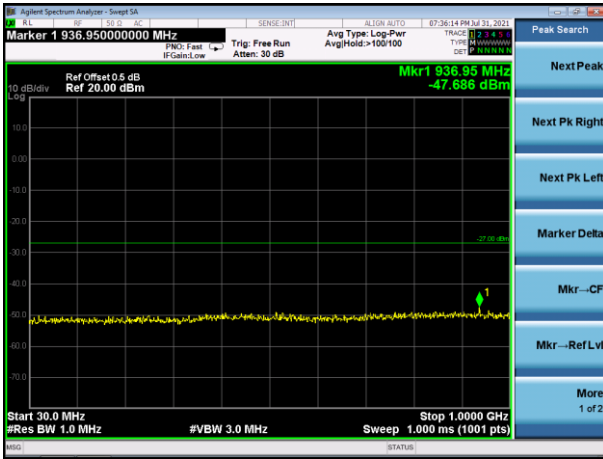


802.11n40 on channel 159

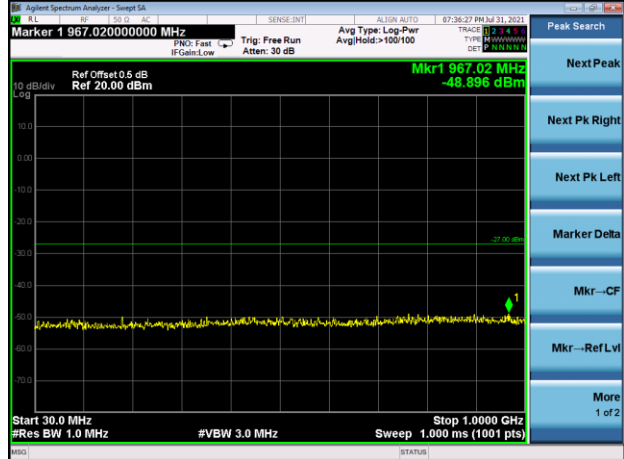


**Test Plot**

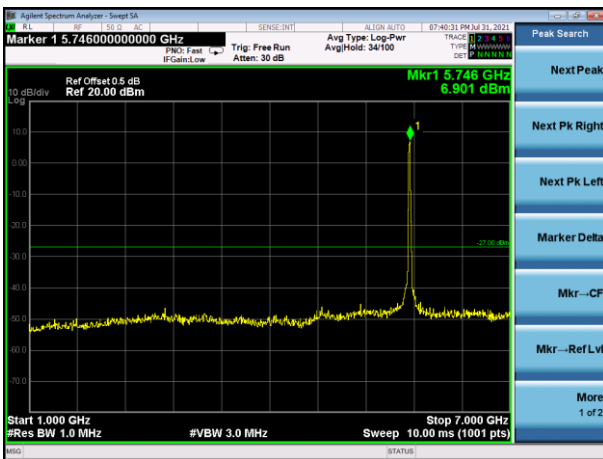
802.11ac20 on channel 149



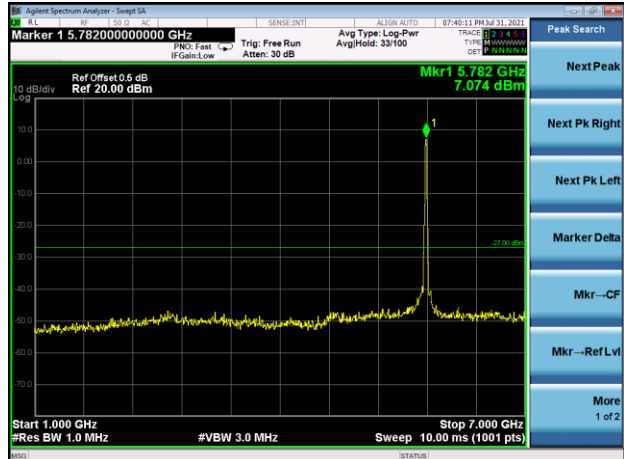
802.11ac20 on channel 157



802.11ac20 on channel 149



802.11ac20 on channel 157



802.11ac20 on channel 149

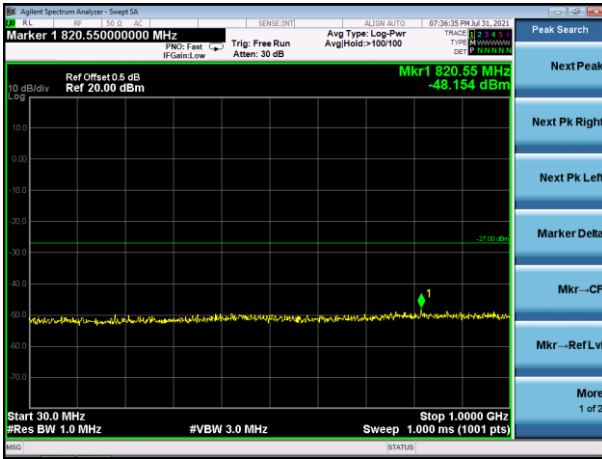


802.11ac20 on channel 157

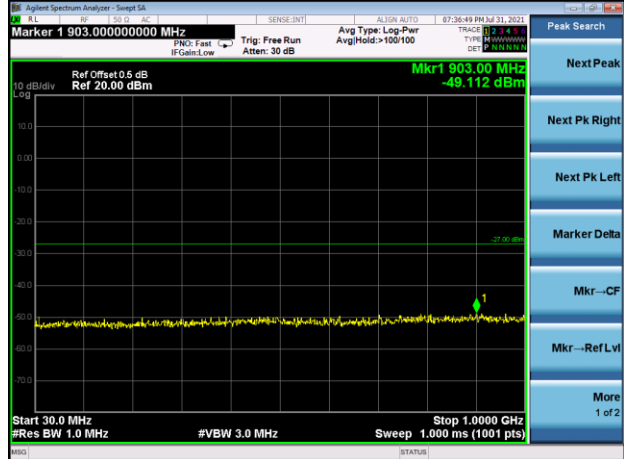


**Test Plot**

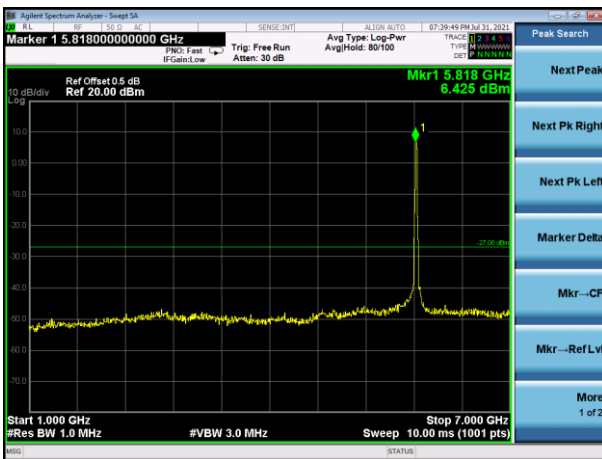
802.11ac20 on channel 165



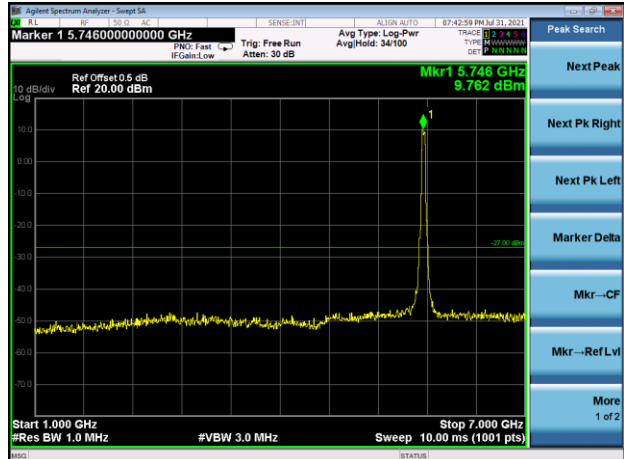
802.11ac40 on channel 151



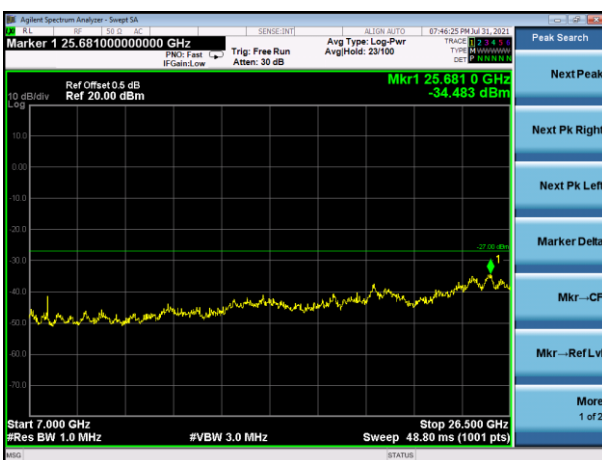
802.11ac20 on channel 165



802.11ac40 on channel 151



802.11ac20 on channel 165

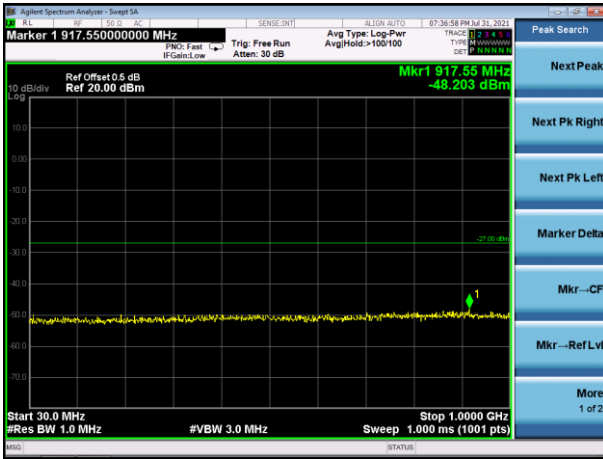


802.11ac40 on channel 151

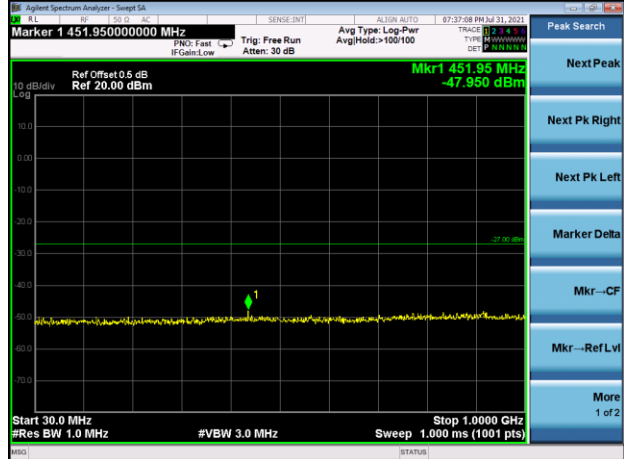


**Test Plot**

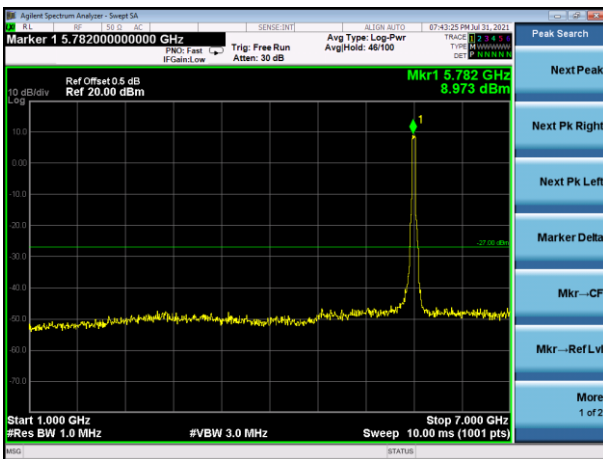
802.11ac40 on channel 159



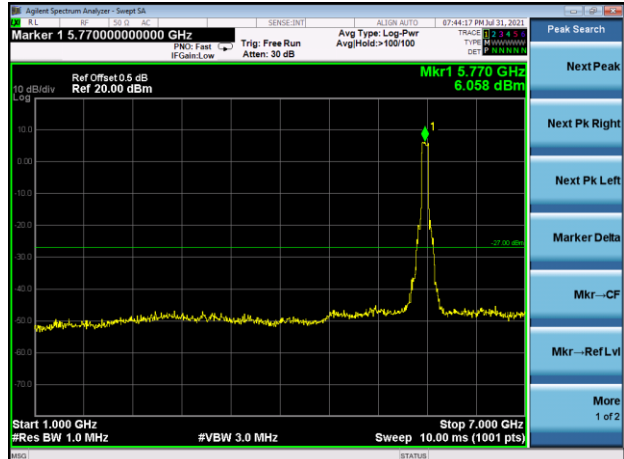
802.11ac80 on channel 155



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 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  $\pm 20$  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  $\pm 20$  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 :	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)	120.00	5180.0021	5180	0.0021	0.4078
		V max (V)	138.00	5180.0129	5180	0.0129	2.4822
		V min (V)	102.00	5180.0118	5180	0.0118	2.2793
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)	120V/60Hz	T (°C)	-20	5180.0121	5180	0.0121	2.3451
		T (°C)	-10	5180.0066	5180	0.0066	1.2647
		T (°C)	0	5180.0054	5180	0.0054	1.0459
		T (°C)	10	5180.0123	5180	0.0123	2.3810
		T (°C)	20	5180.0092	5180	0.0092	1.7669
		T (°C)	30	5180.0029	5180	0.0029	0.5552
		T (°C)	40	5180.0119	5180	0.0119	2.2917
		T (°C)	50	5180.0013	5180	0.0013	0.2556
		T (°C)	60	5180.0004	5180	0.0004	0.0801
		T (°C)	70	5180.0062	5180	0.0062	1.1935
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	5200.0037	5200	0.0037	0.7035
		V max (V)	138.00	5200.0049	5200	0.0049	0.9470
		V min (V)	102.00	5200.0106	5200	0.0106	2.0459
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)	120V/60Hz	T (°C)	-20	5200.00262	5200	0.00262	0.5038
		T (°C)	-10	5200.00419	5200	0.00419	0.8050
		T (°C)	0	5200.01106	5200	0.01106	2.1268
		T (°C)	10	5200.00950	5200	0.00950	1.8267
		T (°C)	20	5200.00704	5200	0.00704	1.3532
		T (°C)	30	5200.00444	5200	0.00444	0.8530
		T (°C)	40	5200.00223	5200	0.00223	0.4296
		T (°C)	50	5200.00093	5200	0.00093	0.1780
		T (°C)	60	5200.00319	5200	0.00319	0.6134
T (°C)	70	5200.00115	5200	0.00115	0.2207		
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	5240.0062	5240	0.0062	1.1912
		V max (V)	138.00	5240.0117	5240	0.0117	2.2339
		V min (V)	102.00	5240.0112	5240	0.0112	2.1423
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)	120V/60Hz	T (°C)	-20	5240.0025	5240	0.0025	0.4764
		T (°C)	-10	5240.0111	5240	0.0111	2.1137
		T (°C)	0	5240.0009	5240	0.0009	0.1667
		T (°C)	10	5240.0008	5240	0.0008	0.1562
		T (°C)	20	5240.0108	5240	0.0108	2.0669
		T (°C)	30	5240.0013	5240	0.0013	0.2395
		T (°C)	40	5240.0017	5240	0.0017	0.3159
		T (°C)	50	5240.0132	5240	0.0132	2.5199
		T (°C)	60	5240.0022	5240	0.0022	0.4147
T (°C)	70	5240.0124	5240	0.0124	2.3697		
Limits				5150-5250 MHz			
Result				Complies			

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	AC 120V/60Hz
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	5745.00460	5745	0.00460	0.8006
		V max (V)	138.00	5745.00696	5745	0.00696	1.2122
		V min (V)	102.00	5745.00045	5745	0.00045	0.0786
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)	120V/60Hz	T (°C)	-20	5745.00861	5745	0.00861	1.4993
		T (°C)	-10	5745.00667	5745	0.00667	1.1616
		T (°C)	0	5745.00213	5745	0.00213	0.3700
		T (°C)	10	5745.00000	5745	0.00000	0.0001
		T (°C)	20	5745.00700	5745	0.00700	1.2180
		T (°C)	30	5745.00222	5745	0.00222	0.3867
		T (°C)	40	5745.00633	5745	0.00633	1.1014
		T (°C)	50	5745.00325	5745	0.00325	0.5656
		T (°C)	60	5745.01304	5745	0.01304	2.2691
		T (°C)	70	5745.00012	5745	0.00012	0.0212
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	5785.00350	5785	0.00350	0.6053
		V max (V)	138.00	5785.01004	5785	0.01004	1.7352
		V min (V)	102.00	5785.00613	5785	0.00613	1.0601
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)	120V/60Hz	T (°C)	-20	5785.00572	5785	0.00572	0.9895
		T (°C)	-10	5785.00508	5785	0.00508	0.8777
		T (°C)	0	5785.00534	5785	0.00534	0.9239
		T (°C)	10	5785.00519	5785	0.00519	0.8963
		T (°C)	20	5785.01086	5785	0.01086	1.8781
		T (°C)	30	5785.00130	5785	0.00130	0.2244
		T (°C)	40	5785.01175	5785	0.01175	2.0309
		T (°C)	50	5785.00879	5785	0.00879	1.5186
		T (°C)	60	5785.00744	5785	0.00744	1.2863
T (°C)	70	5785.00577	5785	0.00577	0.9978		
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	5825.01074	5825	0.01074	1.8432
		V max (V)	138.00	5825.00854	5825	0.00854	1.4652
		V min (V)	102.00	5825.01169	5825	0.01169	2.0062
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)	120V/60Hz	T (°C)	-20	5825.00416	5825	0.00416	0.7143
		T (°C)	-10	5825.00467	5825	0.00467	0.8024
		T (°C)	0	5825.00496	5825	0.00496	0.8521
		T (°C)	10	5825.00202	5825	0.00202	0.3467
		T (°C)	20	5825.00526	5825	0.00526	0.9038
		T (°C)	30	5825.00370	5825	0.00370	0.6349
		T (°C)	40	5825.01002	5825	0.01002	1.7200
		T (°C)	50	5825.00978	5825	0.00978	1.6791
		T (°C)	60	5825.01284	5825	0.01284	2.2036
T (°C)	70	5825.00559	5825	0.00559	0.9601		
Limits				5725-5850 MHz			
Result				Complies			

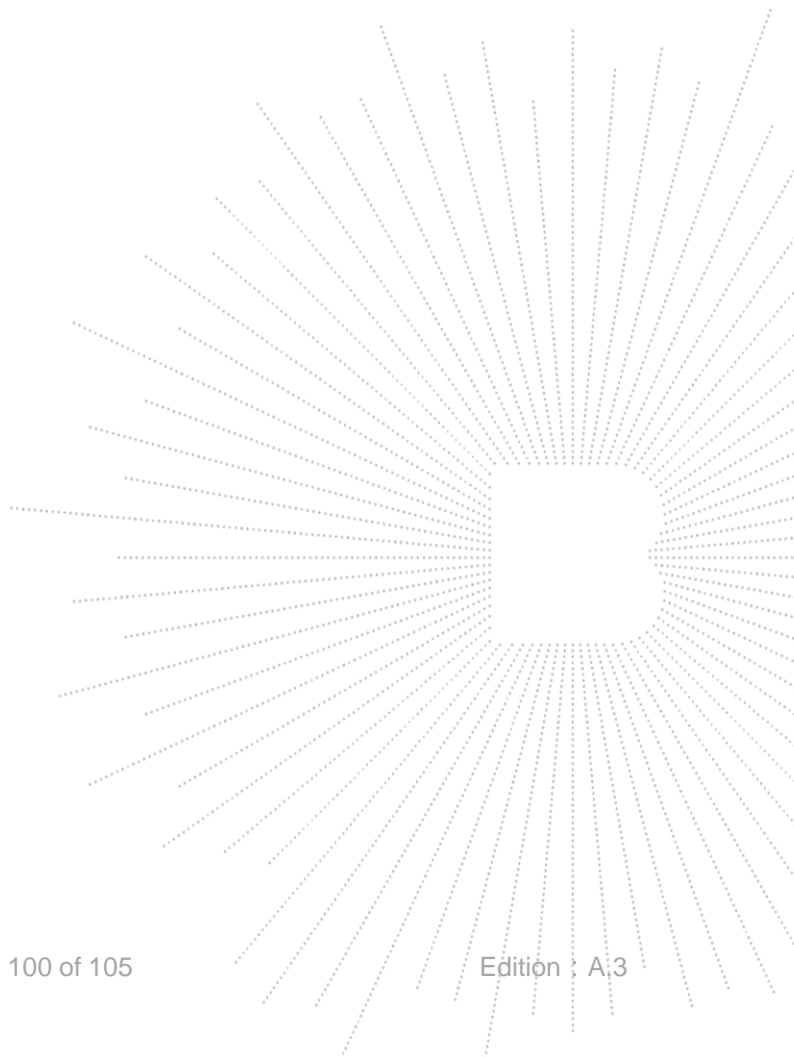
## 14. ANTENNA REQUIREMENT

### 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.

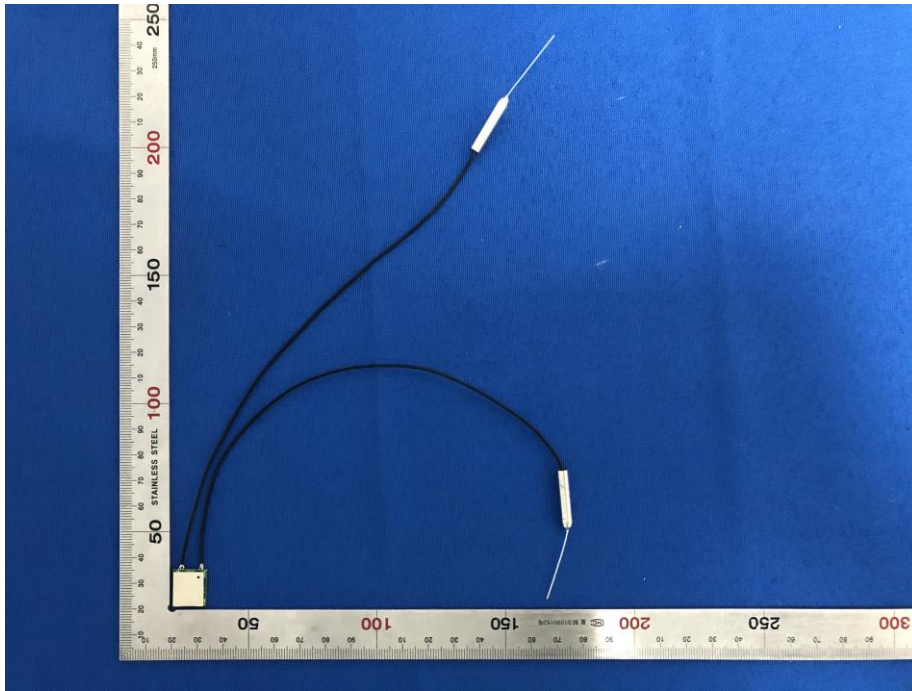
### 14.2 EUT ANTENNA

The EUT antenna is External antenna, The antenna gain is 2dBi, fulfill the requirement of this section.

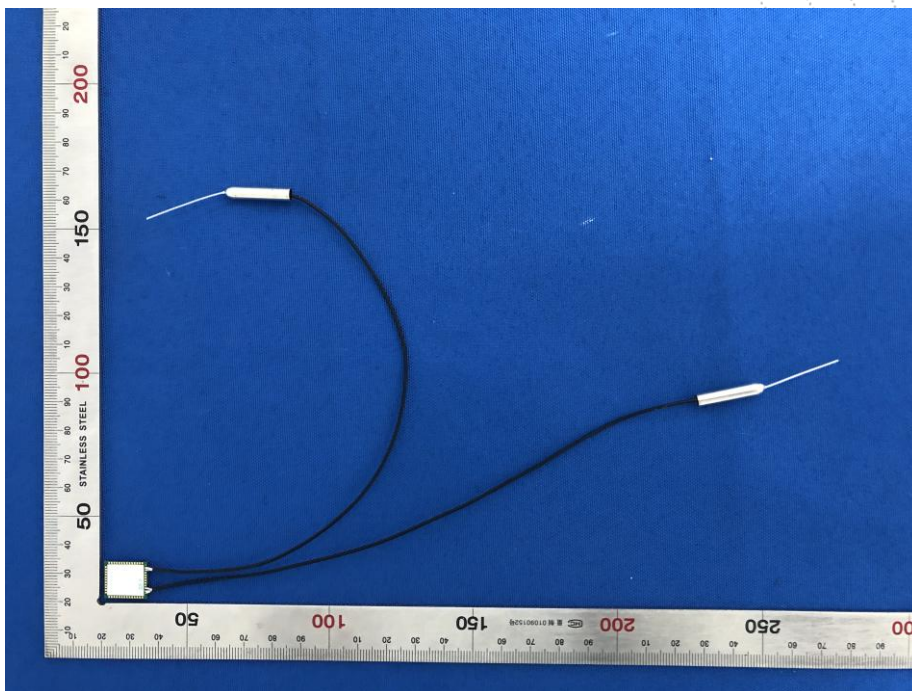


## 15. EUT PHOTOGRAPHS

EUT Photo 1



EUT Photo 2



## 16. EUT TEST SETUP PHOTOGRAPHS

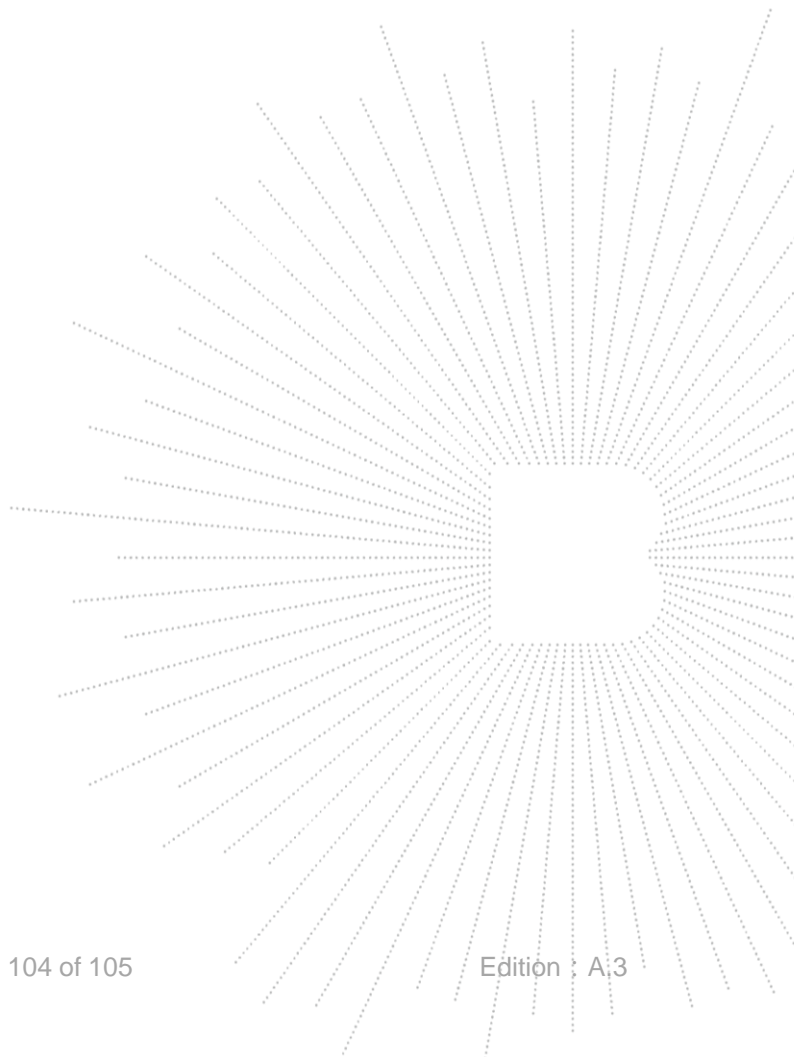
### Conducted emissions



## 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:

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.chnbctc.com>

E-Mail : [bctc@bctc-lab.com.cn](mailto:bctc@bctc-lab.com.cn)

\*\*\*\*\* END \*\*\*\*\*

