

## 7. PEAK OUTPUT POWER TEST

### 7.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

#### 7.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

#### 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP



#### 7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**7.1.5 TEST RESULTS**

Temperature :	26 °C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V

Note: Antenna A gain: 2dBi, Antenna B gain: 2dBi, Directional gain=[ Gain<sub>ANT</sub> + 10 log(N<sub>ANT</sub>) dBi] =5.01dbi

	Frequency	Maximum Conducted Output Power(PK) ANTA	Maximum Conducted Output Power(PK) ANTB	Total Power Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	(dBm)	(dBm)	dBm
802.11b	2412	14.396	14.371	/	30
	2437	14.140	14.801	/	30
	2462	14.643	14.413	/	30
802.11g	2412	13.985	13.793	/	30
	2437	13.979	13.368	/	30
	2462	13.746	13.139	/	30
802.11n 20	2412	12.372	12.438	15.42	30
	2437	12.247	12.415	15.34	30
	2462	12.658	12.313	15.50	30
802.11n 40	2422	11.948	11.558	14.77	30
	2437	11.754	11.673	14.72	30
	2452	11.841	11.723	14.79	30

## 8. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

### 8.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

### 8.2 TEST PROCEDURE

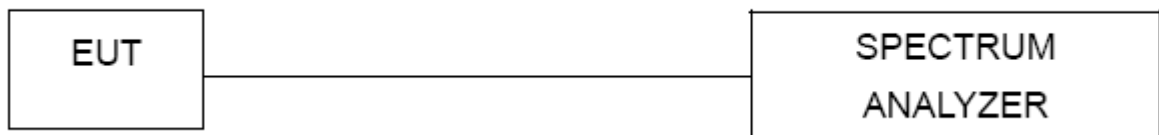
Using the following spectrum analyzer setting:

- a) Set the RBW = 100KHz.
- b) Set the VBW = 300KHz.
- c) Sweep time = auto couple.
- d) Detector function = peak.
- e) Trace mode = max hold.
- f) Allow trace to fully stabilize.

### 8.3 DEVIATION FROM STANDARD

No deviation.

### 8.4 TEST SETUP



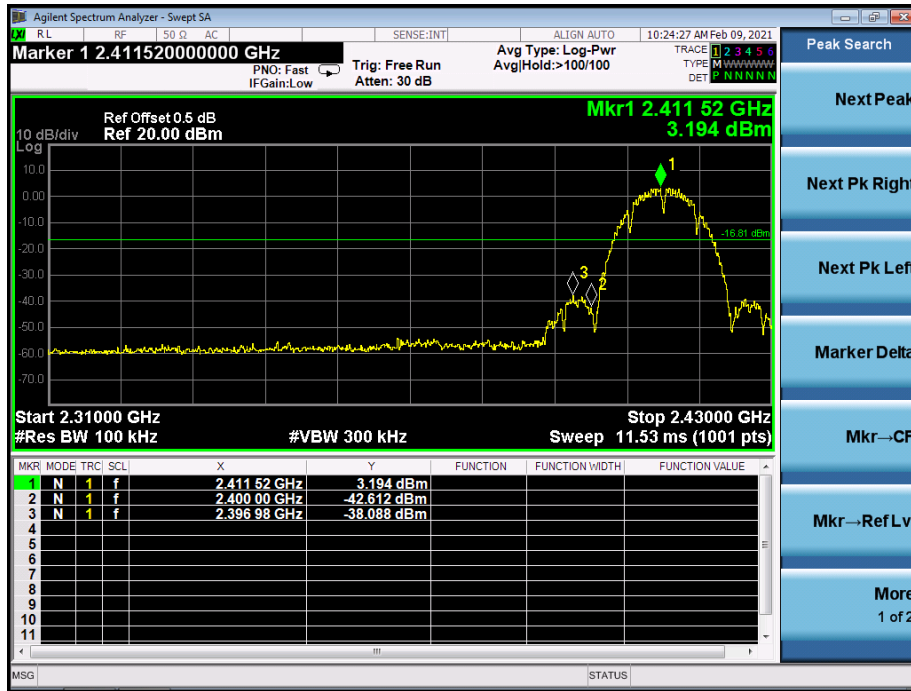
### 8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 8.6 TEST RESULTS

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A ,only shown Antenna A Plot.

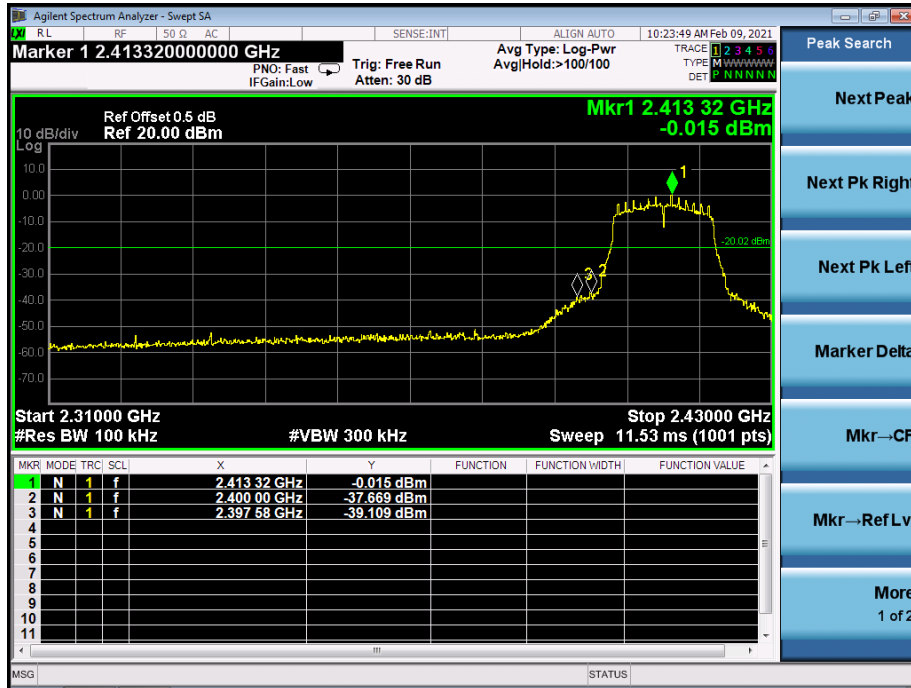
802.11b: Band Edge, Left Side



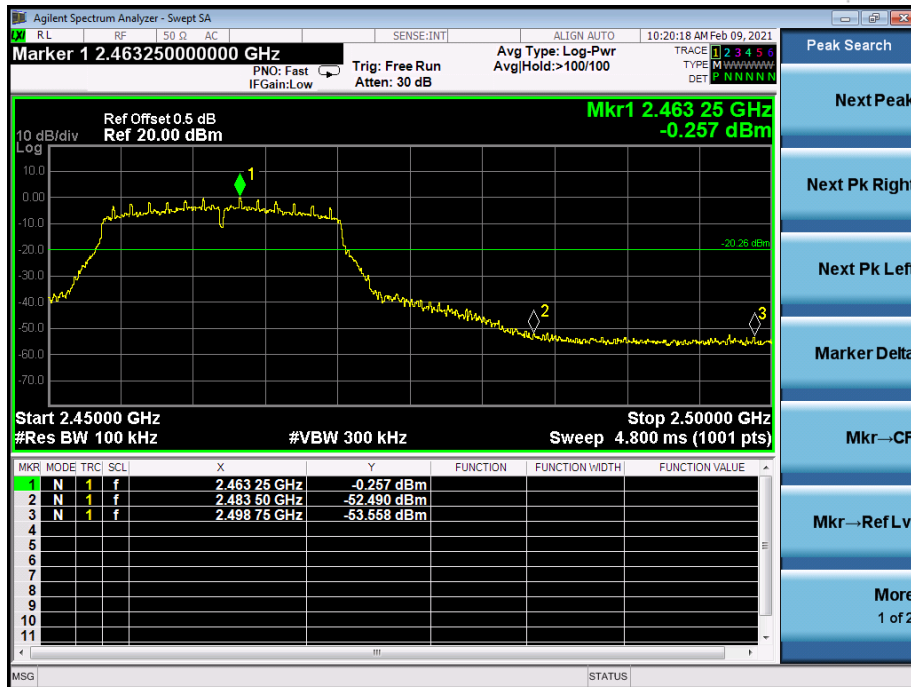
802.11b: Band Edge, Right Side



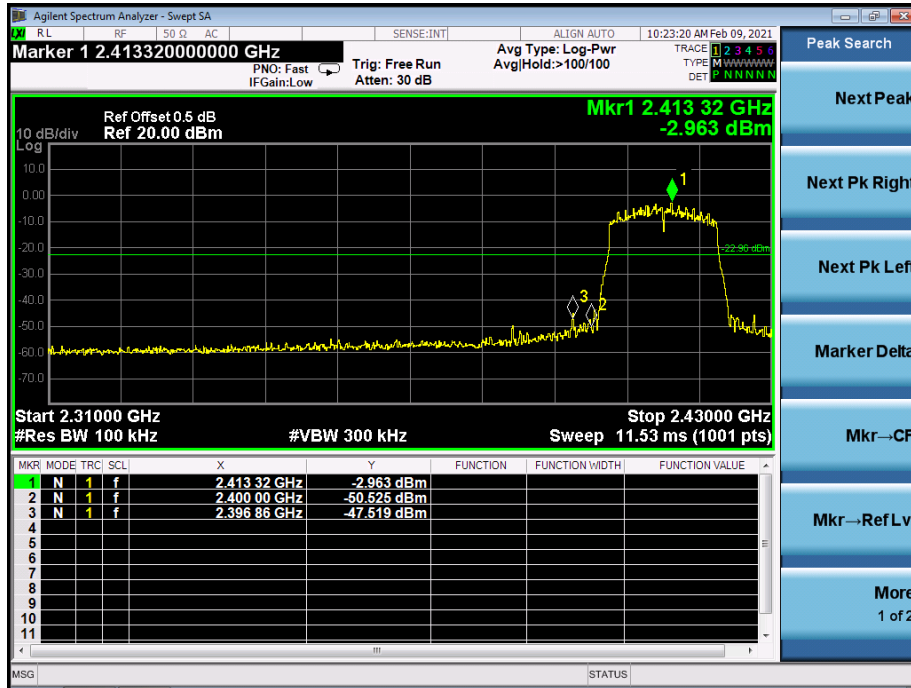
## 802.11g: Band Edge, Left Side



## 802.11g: Band Edge, Right Side



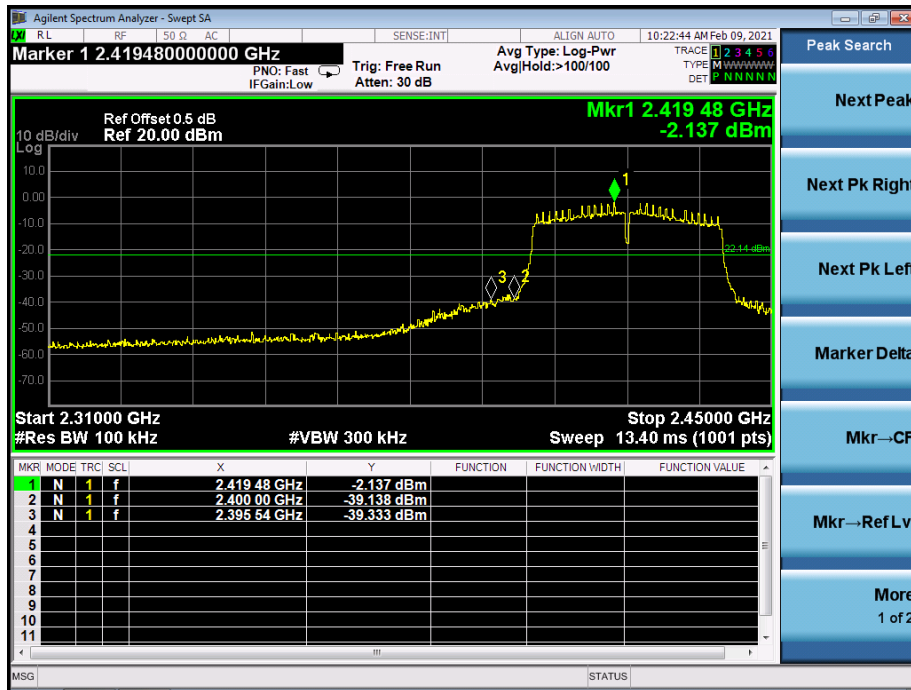
## 802.11n-HT20: Band Edge, Left Side



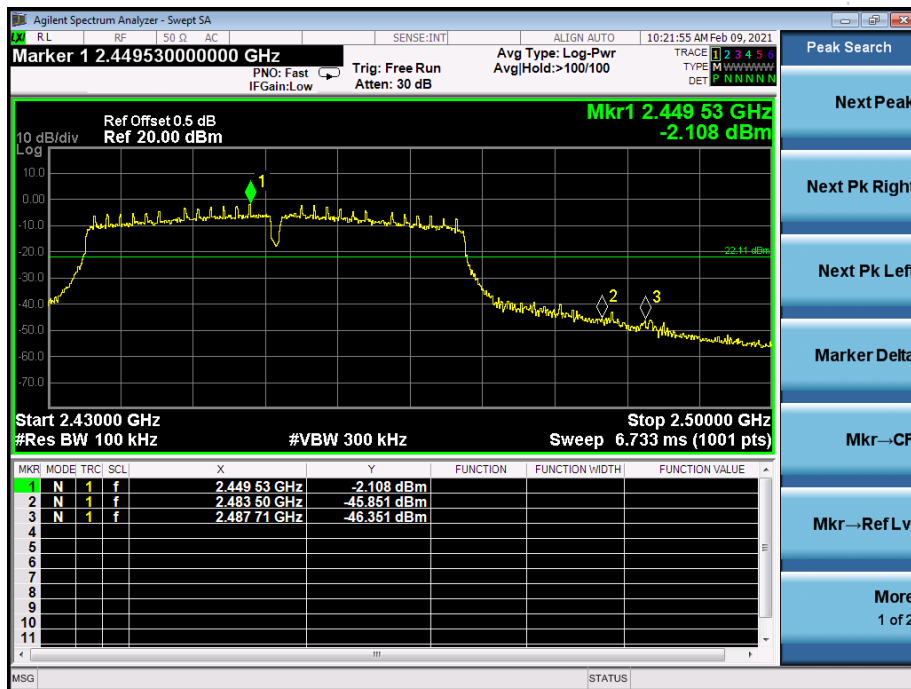
## 802.11n-HT20: Band Edge, Right Side



## 802.11n-HT40: Band Edge, Left Side

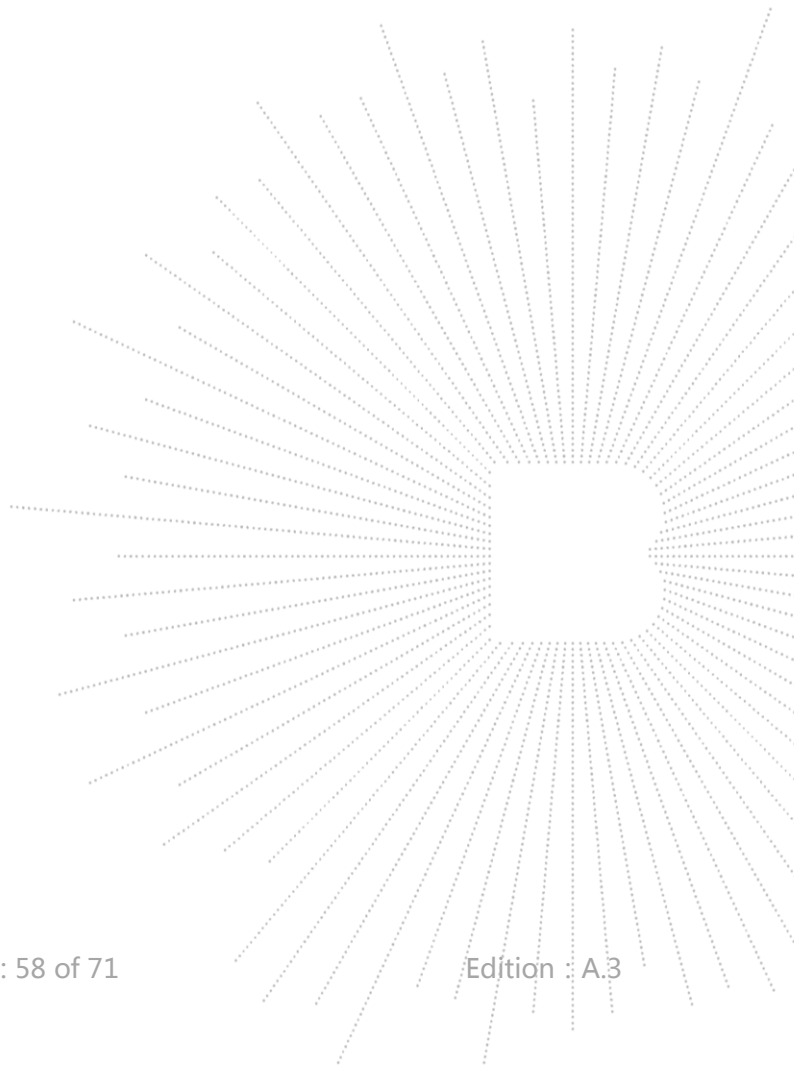


## 802.11n-HT40: Band Edge, Right Side



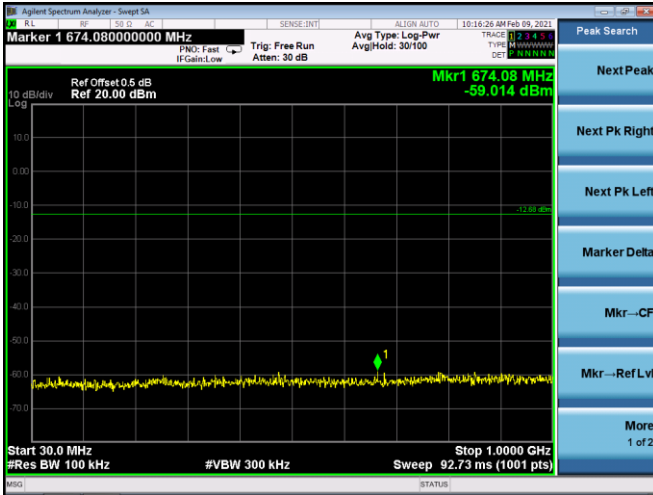
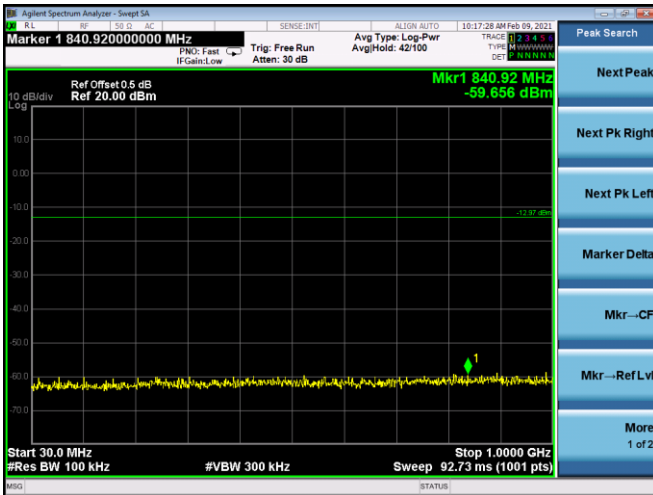
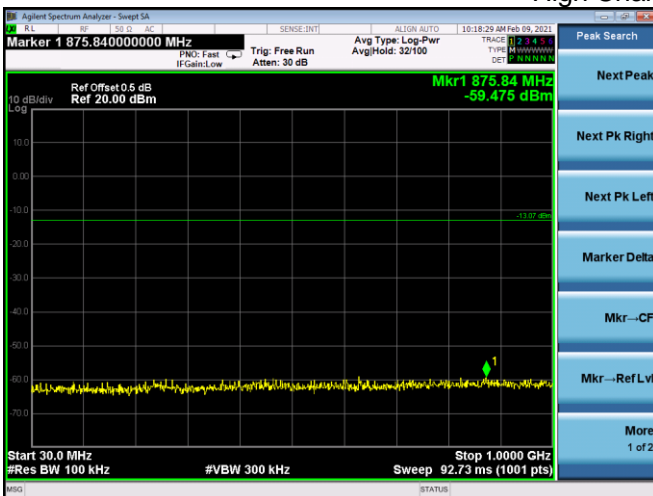
**CONDUCTED EMISSION MEASUREMENT**

Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A ,only shown Antenna A Plot.

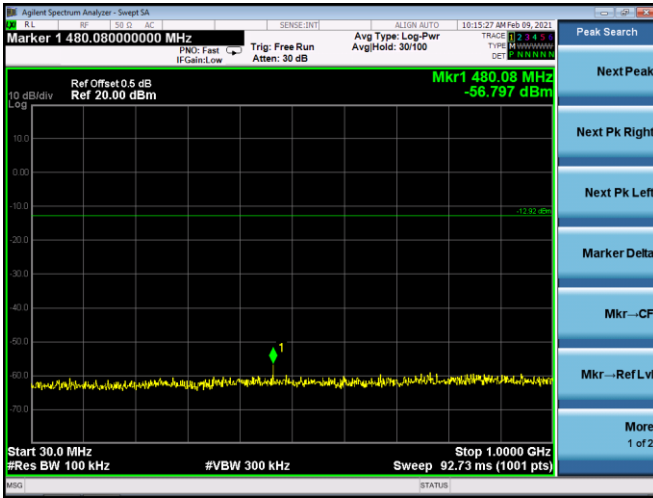
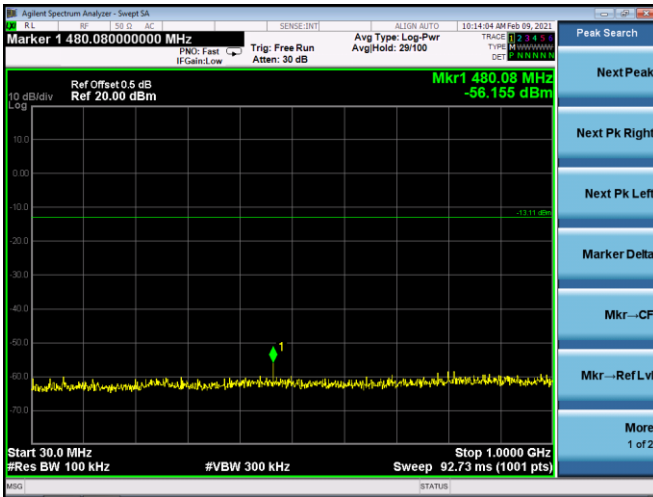
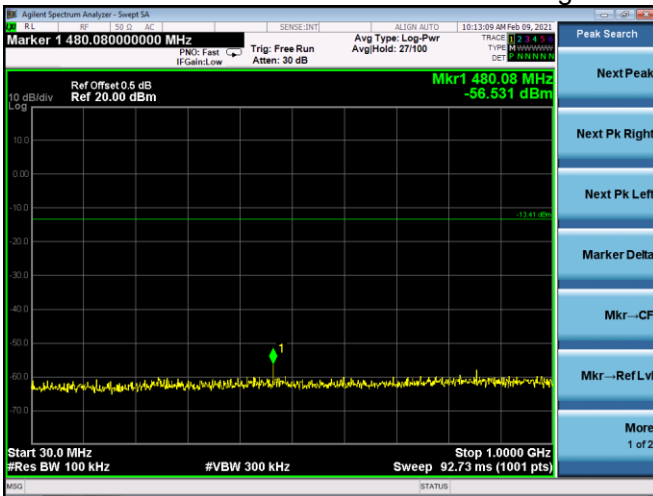




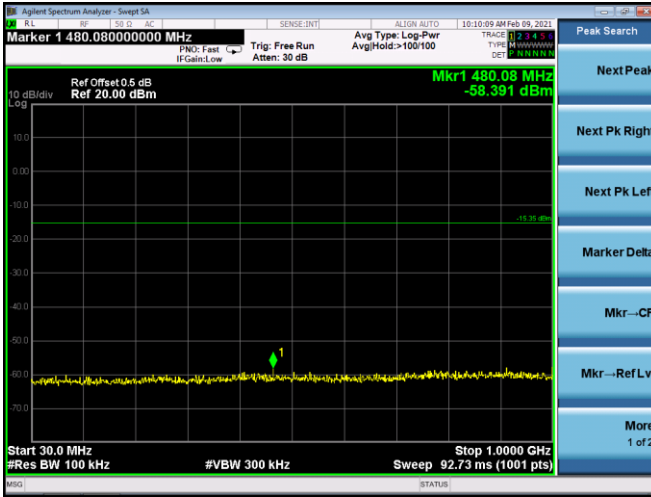
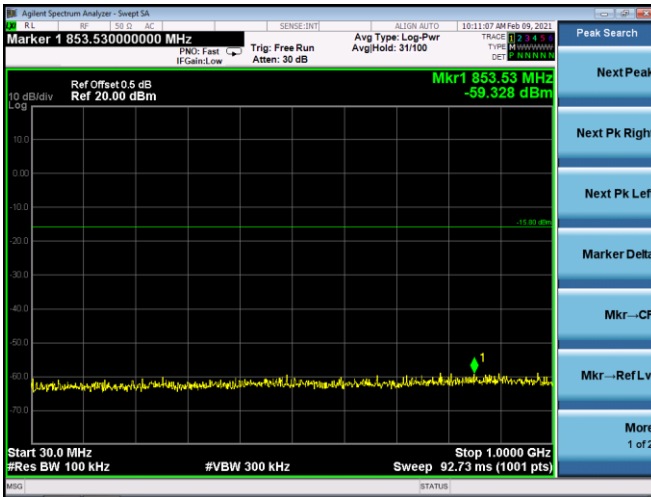
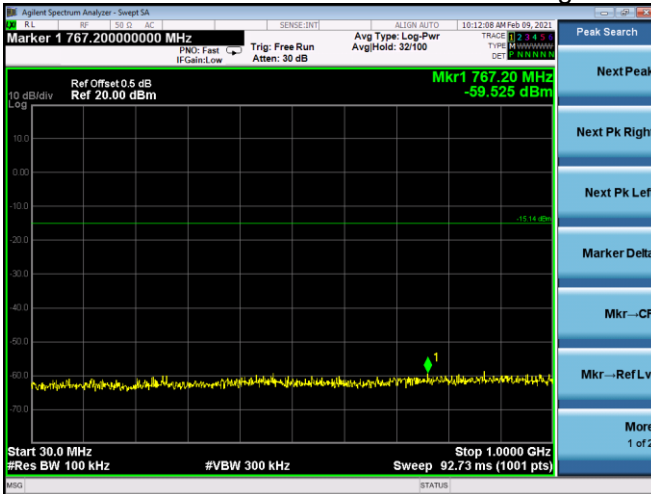
802.11b

**Low Channel 2412MHz**

**Middle Channel 2437MHz**

**High Channel 2462MHz**


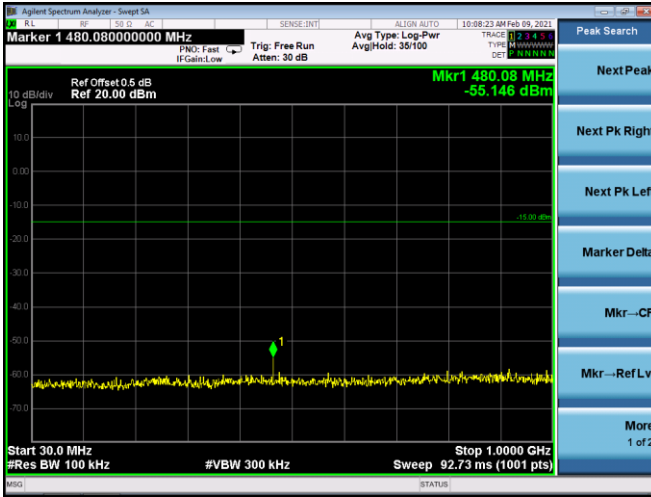
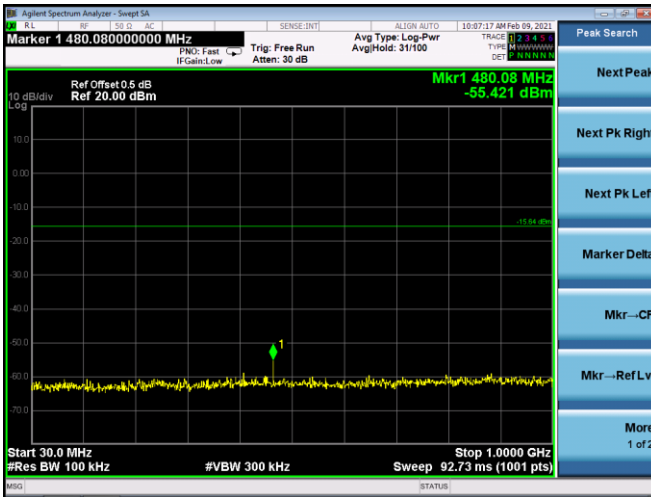
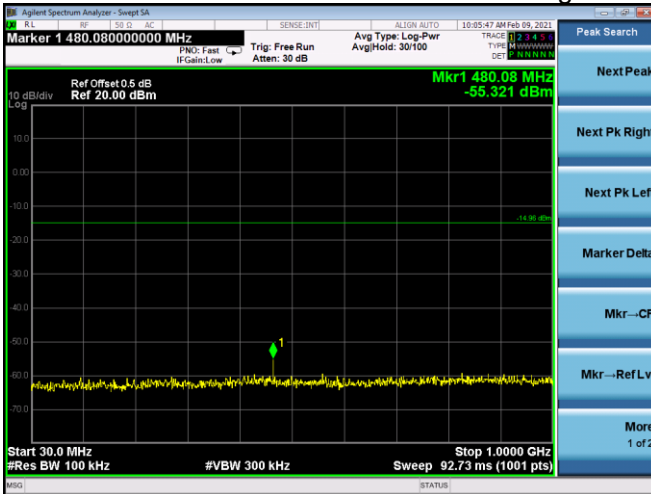
802.11g

**Low Channel 2412MHz**

**Middle Channel 2437MHz**

**High Channel 2462MHz**


802.11n20

**Low Channel 2412MHz**

**Middle Channel 2437MHz**

**High Channel 2462MHz**


802.11n40

**Low Channel 2422MHz**

**Middle Channel 2437MHz**

**High Channel 2452MHz**


## 9. DUTY CYCLE OF TEST SIGNAL

### 9.1 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.

### 9.2 FORMULA:

Duty Cycle =  $T_{on} / (T_{on} + T_{off})$

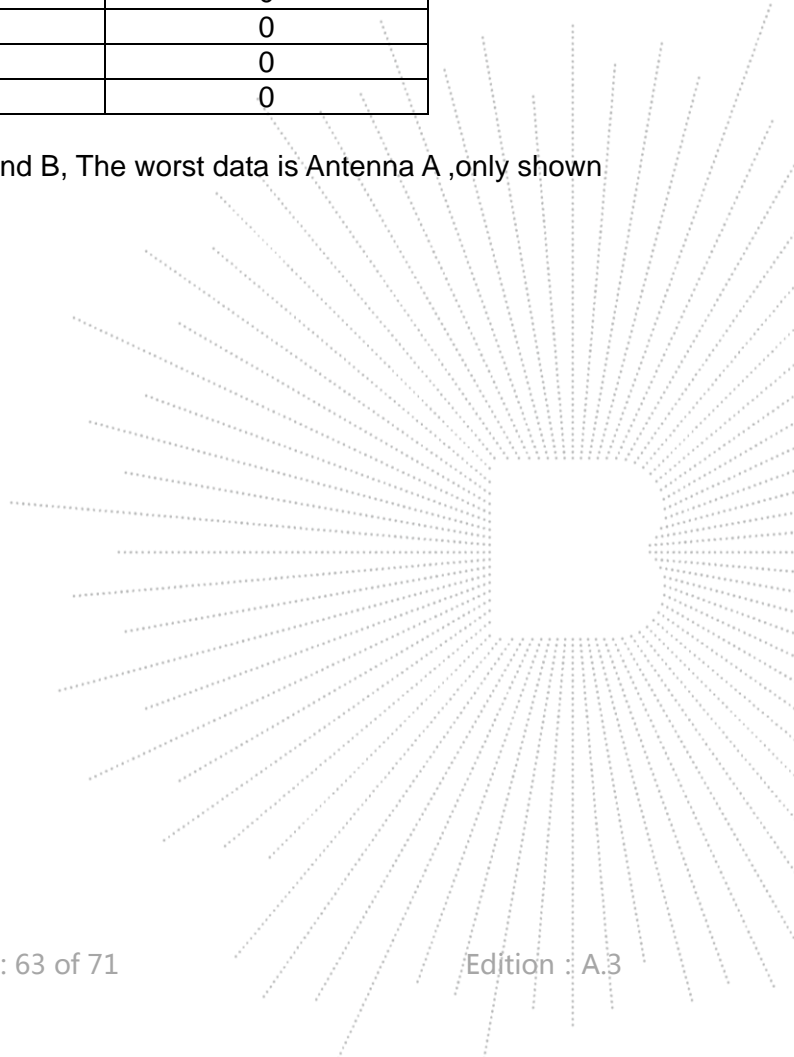
### Measurement Procedure:

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

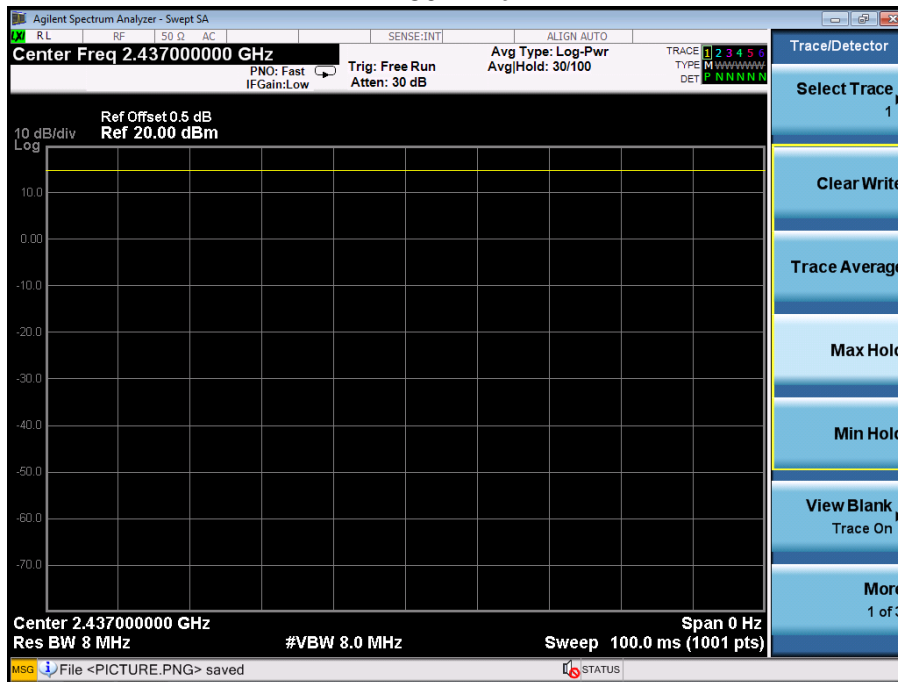
### Duty Cycle:

	Duty Cycle	Duty Fator (dB)
802.11b	1	0
802.11g	1	0
802.11n(HT20)	1	0
802.11n(HT40)	1	0

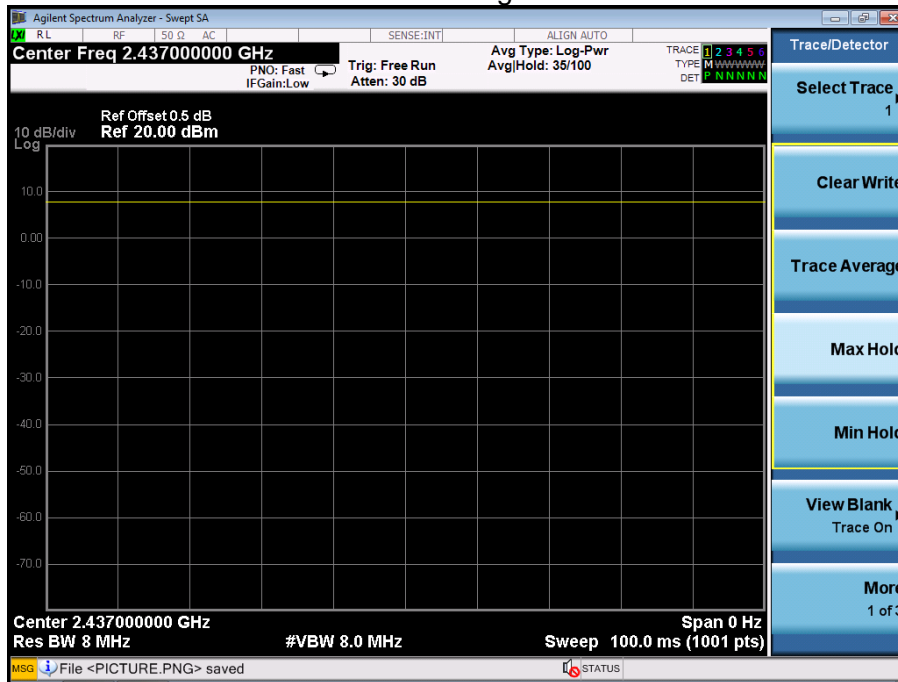
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A ,only shown Antenna A Plot.



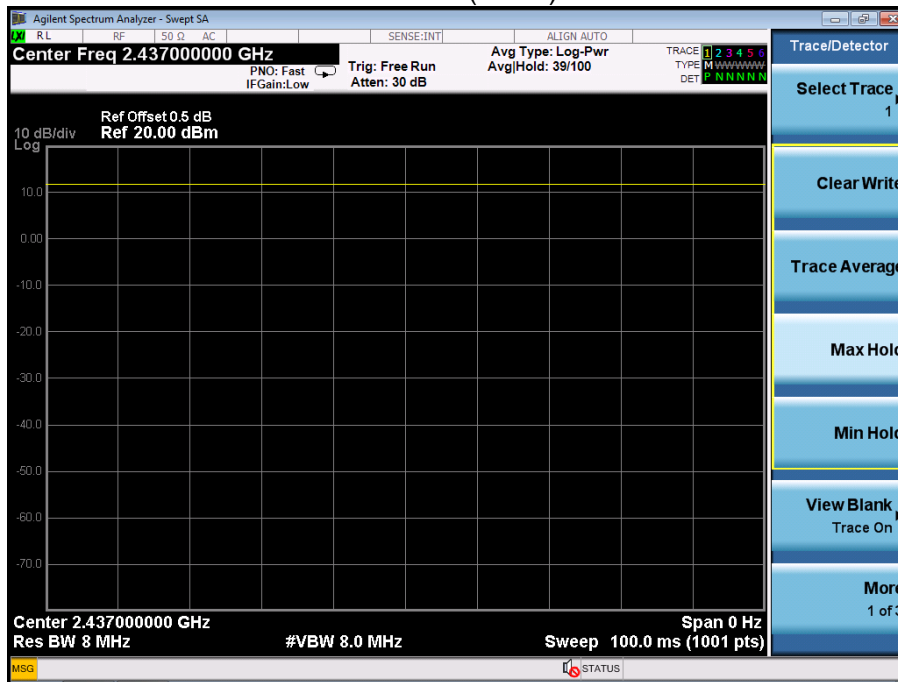
## 802.11b



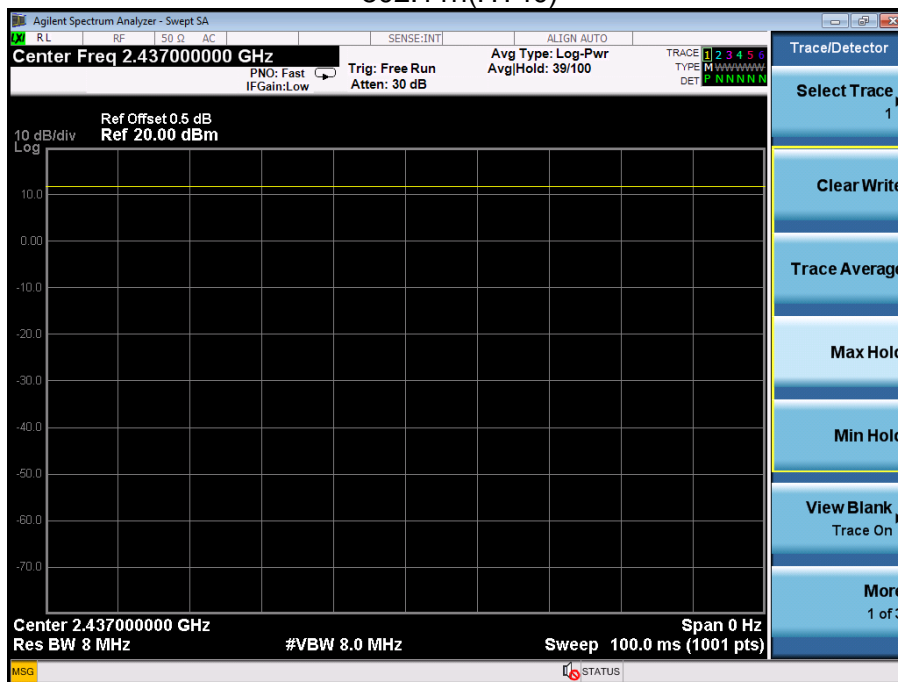
## 802.11g



## 802.11n(HT20)



## 802.11n(HT40)



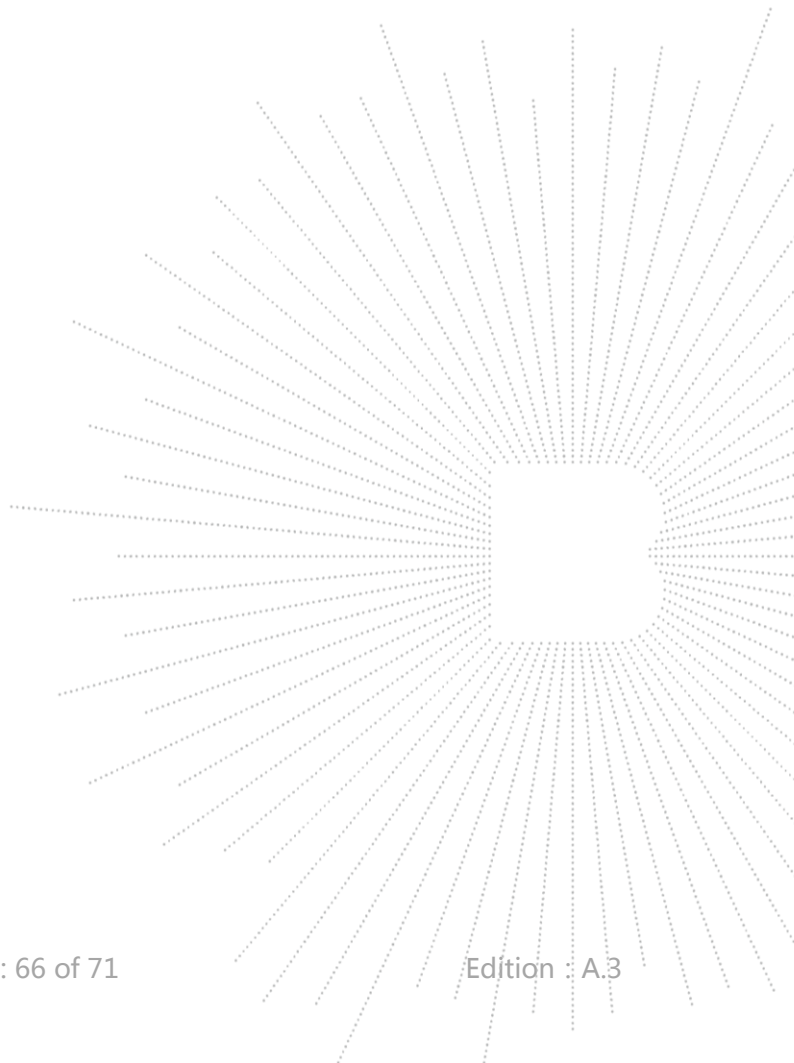
## 10. ANTENNA REQUIREMENT

### 10.1 STANDARD REQUIREMENT

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.

### 10.2 EUT ANTENNA

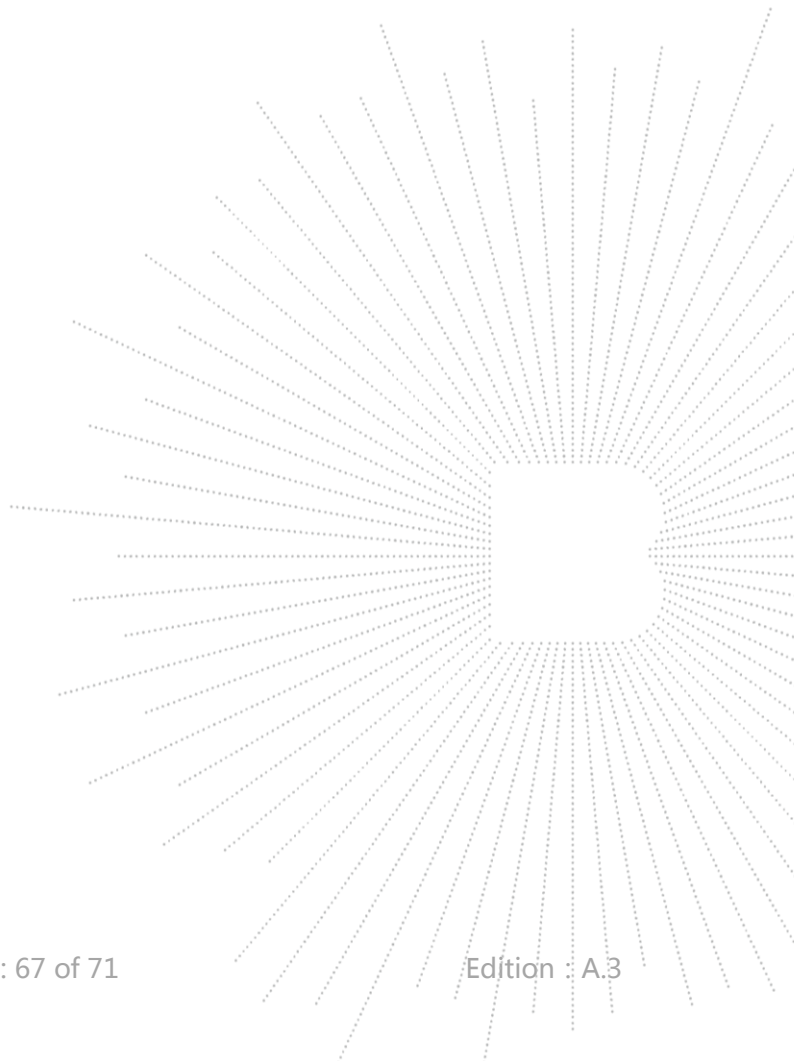
The EUT antenna is External antenna, antenna(A) Gain 2dBi, antenna(B) Gain 2dBi, impedance 50Ω. It comply with the standard requirement.





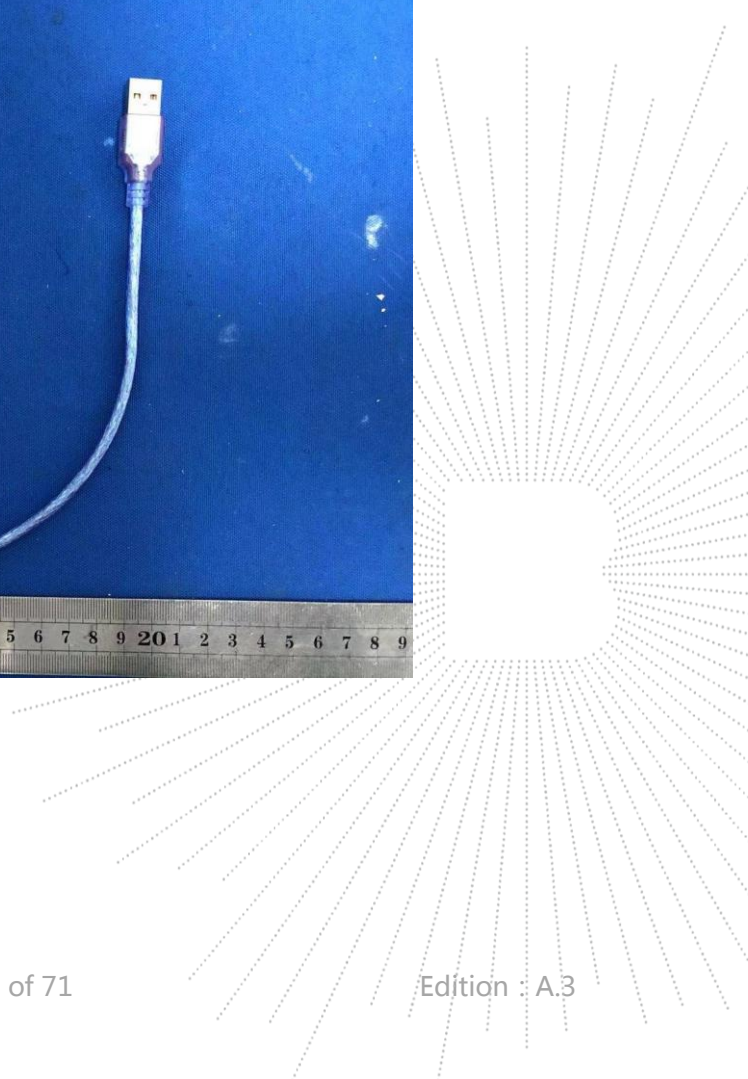
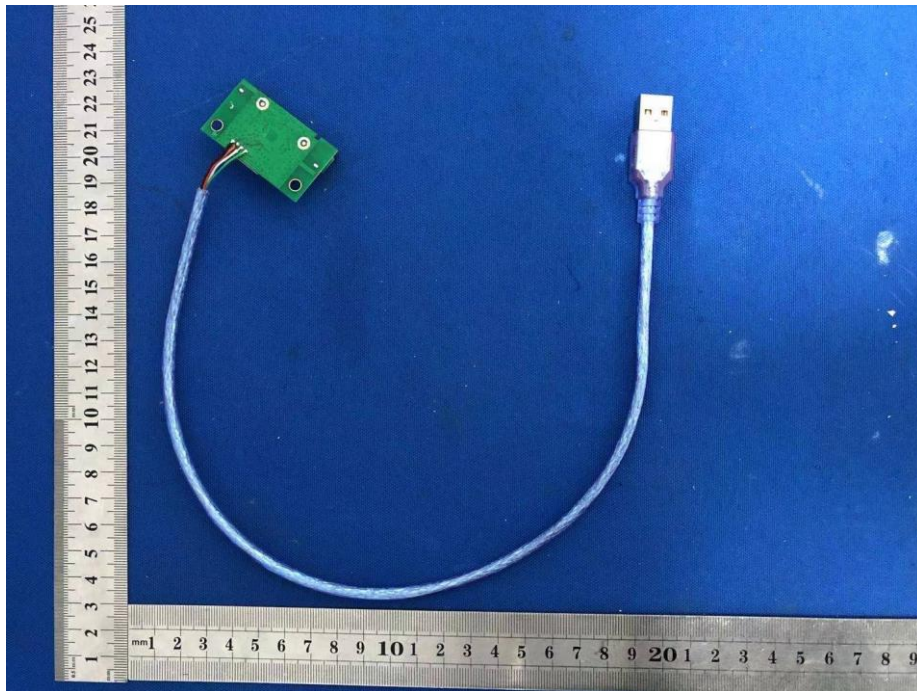
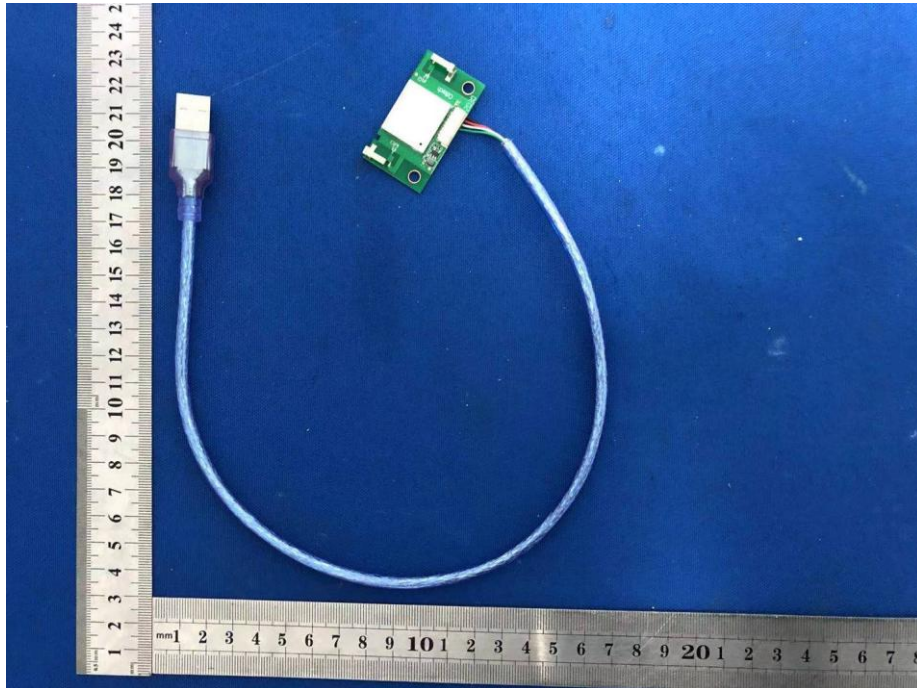
**11. EUT TEST PHOTO**

**Conducted Measurement Photos**



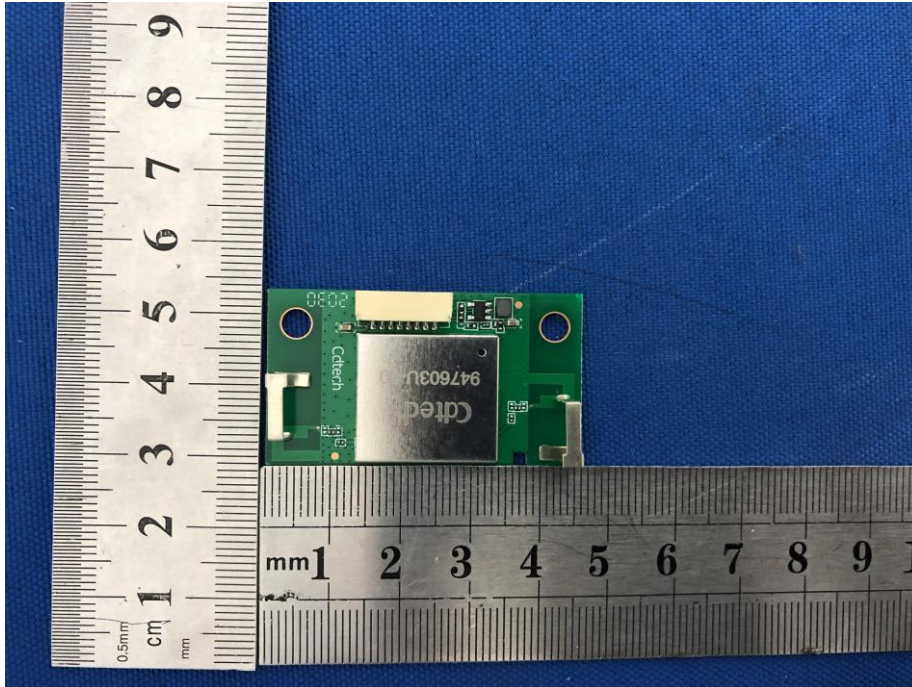
**Radiated Measurement Photos**



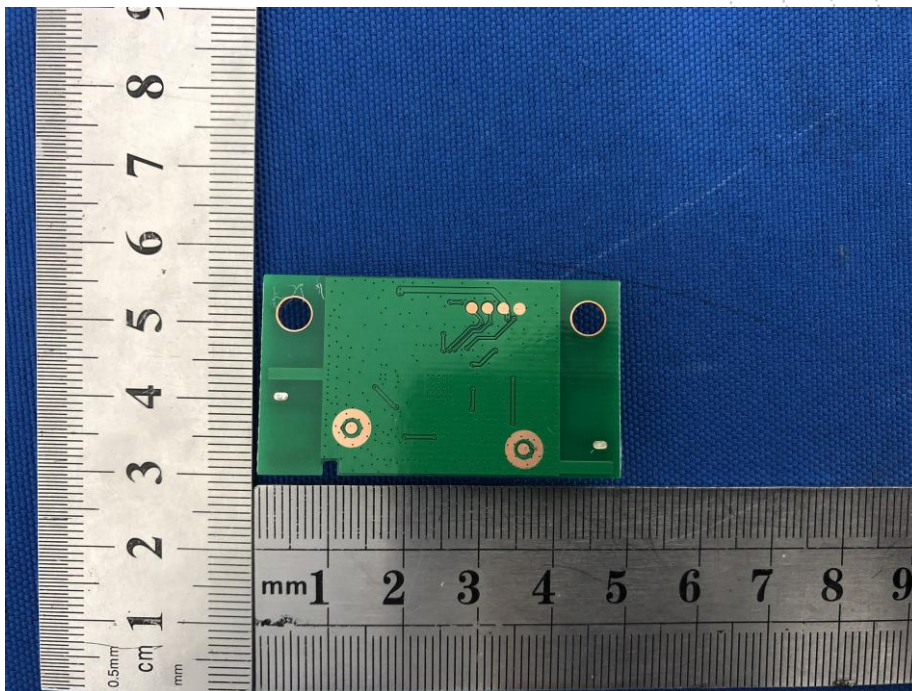


**12. EUT PHOTO**

**EUT Photo 1**



**EUT Photo 2**



## 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.

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