

# 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					

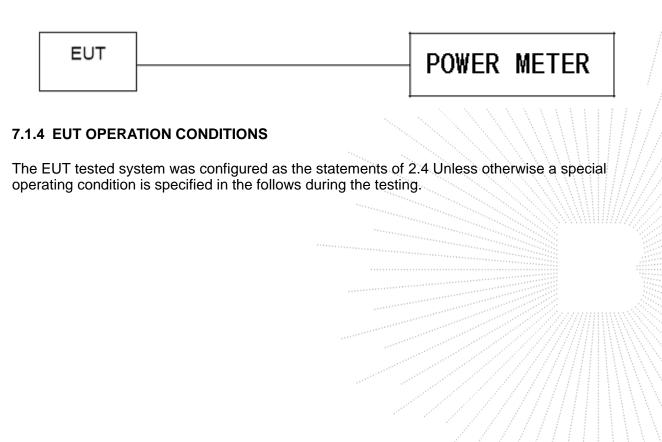
#### 7.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

#### 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP





# 7.1.5 TEST RESULTS

Temperature :	<b>26</b> ℃	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
	2412	14.396	14.371	/	30
802.11b	2437	14.140	14.801	/	30
	2462	14.643	14.413	/	30
	2412	13.985	13.793	/	30
802.11g	2437	13.979	13.368	X	30
	2462	13.746	13.139		30
	2412	12.372	12.438	15.42	30
802.11n 20	2437	12.247	12.415	15.34	30
	2462	12.658	12.313	15.50	30
	2422	11.948	11.558	14.77	30
802.11n 40	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

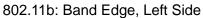
			- 1
EUT		SPECTRUM	
		ANALYZER	
8.5 EUT OPERAT	ION CONDITIONS		
The EUT tested sys operating condition	tem was configured as the statements of is specified in the follows during the testin	2.4 Unless otherwise a special g.	
	········		



# 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.







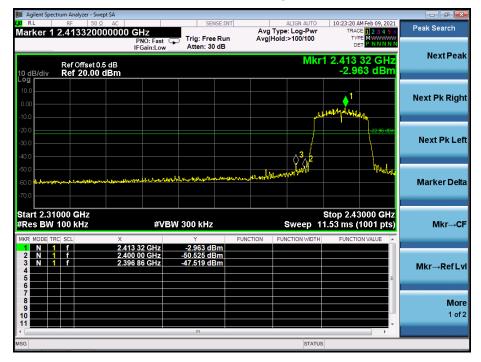


802.11g: Band Edge, Left Side

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.

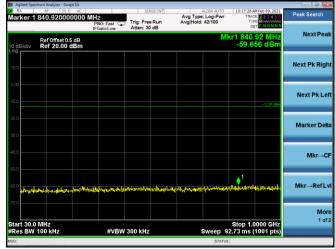


#### 802.11b

#### Agilent Spectrum Anlaryser RL RF 50 Ω AC Marker 1 674.080000000 MHz PN0: F IFGain: EGain: Peak Searcl Avg Type: Log-Pwr AvgIHold: 30/100 Trig: Free Run NextPea 1 674.08 MH -59.014 dB Ref Offset 0.5 dB Ref 20.00 dBm Next Pk Righ Next Pk Lef Marker Delt Mkr→CF ¢1 Mkr→RefLy Mor 1 of: t 30.0 MHz s BW 100 kHz Stop 1.0000 GHz Sweep 92.73 ms (1001 pts) #VBW 300 kHz



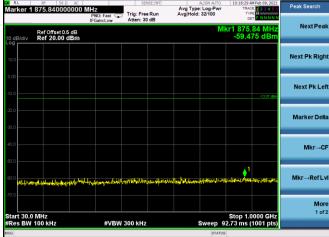
#### Middle Channel 2437MHz



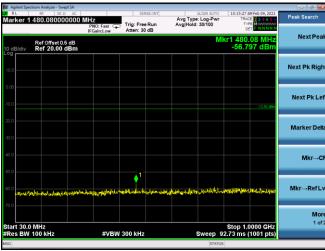


#### High Channel 2462MHz









#### Low Channel 2412MHz



Middle Channel 2437MHz





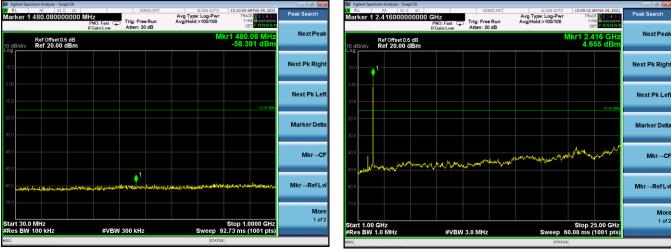


#### High Channel 2462MHz

NR.
NP
State
Stat



802.11n20



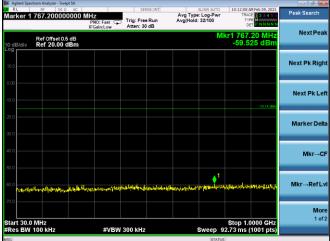
#### Low Channel 2412MHz







#### High Channel 2462MHz

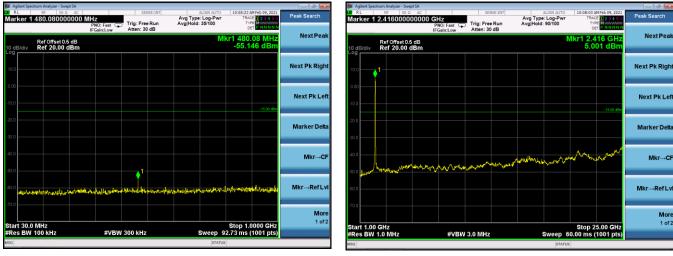




No. : BCTC/RF-EMC-005

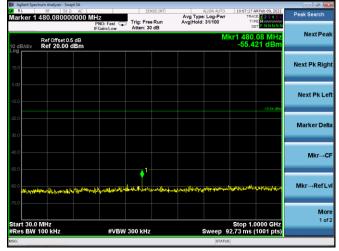


802.11n40



Low Channel 2422MHz

#### Middle Channel 2437MHz











Edition : A.3

No. : BCTC/RF-EMC-005



# 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 = Ton / (Ton+Toff)

#### **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	<u>(dB)</u> 0
802.11g	1	0
802.11n(HT20)	1	0
802.11n(HT40)	1	0

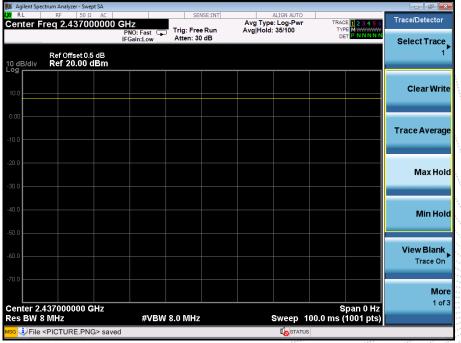
Note: A(B) Represent the value of antenna A and B, The worst data is Antenna A ,only shown Antenna A Plot.



802.11b

- 7 💌									um Analyzer - Sw		
Trace/Detector	CE 1 2 3 4 5 6	TRA	ALIGN AUTO	Avg	ENSE:INT		GHz		RF 50 9 €q 2.4370	nter F	
Select Trace	PEMWWWW ETPNNNNN	TY	d: 30/100	Avg l		Trig: Fre Atten: 3	PNO: Fast G		Ref Offset 0		
								dBm	Ref 20.00	B/div	10 d Log
Clear Write										<u> </u>	10.0
										) 	
Trace Average											
Max Hold											
Min Hold											
View Blank Trace On											
More 1 of 3											
	Span 0 Hz (1001 pts)	100.0 ms	Sweep		z	8.0 MHz	#VBW	GHz	37000000 · MHz	nter 2.4 BW 8	
			STATU					IG> saved	PICTURE.PN		

#### 8<u>02.11g</u>

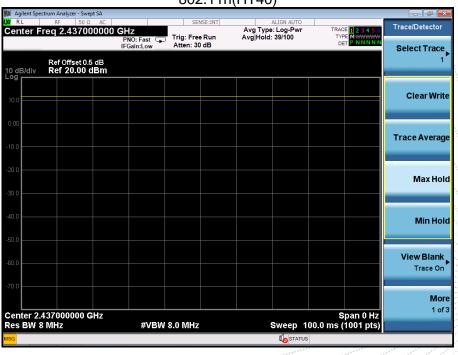




_						11120	/			
	nt Spectrum Analyzer - Swept									- 6 <b>-</b>
LXI RL	RF 50 Ω			SEN	ISE:INT		LIGN AUTO	TDA		Trace/Detector
Cente	er Freq 2.43700	PN	D:Fast 😱 ain:Low	Trig: Free Atten: 30		Avg Type Avg Hold:		T) E	CE 1 2 3 4 5 6 PE M PE P N N N N N	
10 dB/c Log	Ref Offset 0.5 div Ref 20.00 d	dB Bm								1
10.0										Clear Write
-10.0										Trace Average
-20.0 —										Max Hold
-30.0										Min Hold
50.0										View Blank
-60.0										Trace On
	r 2.437000000 G W 8 MHz	Hz	#VBM	8.0 MHz			Sween	100 0 ms	Span 0 Hz (1001 pts)	More 1 of 3
			# V D V V	0.0 10112			Sweep Statu		(100 r pis)	
MSG							STATU	15		

#### 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  $50\Omega$ . It comply with the standard requirement.

Edition : A.3



# **11. EUT TEST PHOTO**

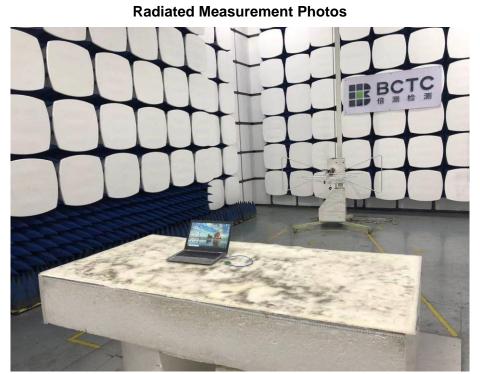


# **Conducted Measurement Photos**

No. : BCTC/RF-EMC-005

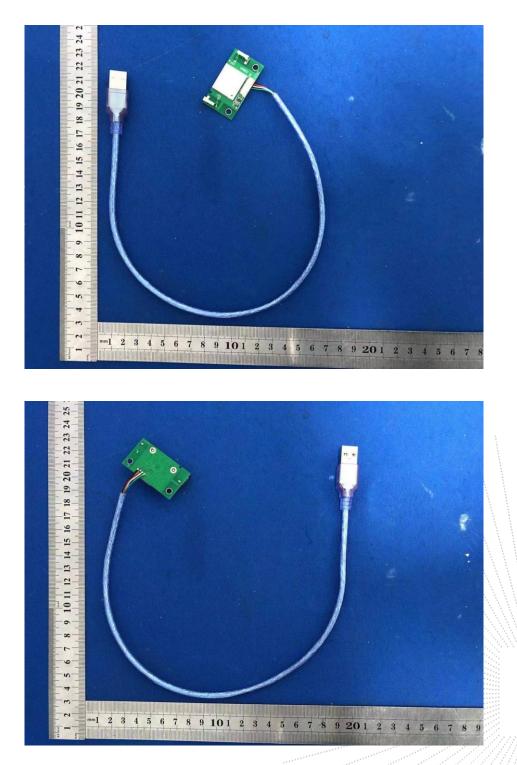


Report No.: BCTC2102419658E





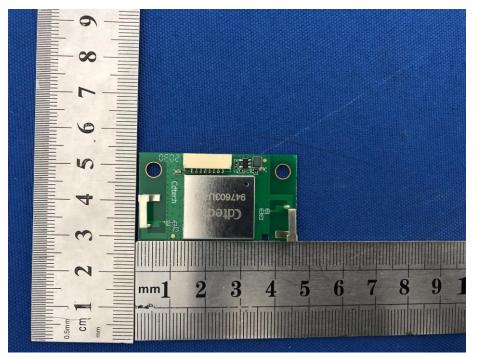




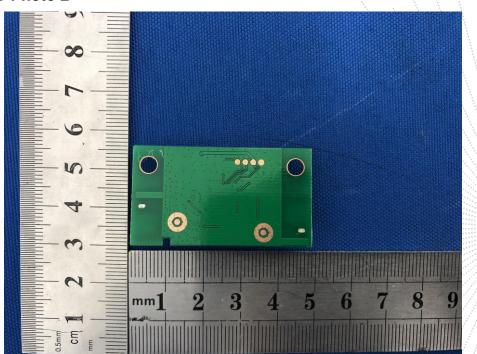


# **12. EUT PHOTO**

# EUT Photo 1









# 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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Website : http://www.bctc-lab.com

E-Mail : <u>bctc@bctc-lab.com.cn</u>

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

No. : BCTC/RF-EMC-005

Page: 71 of 71