

# Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC164376

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# **FCC Radio Test Report** FCC ID: 2AK4T-SS10TAB

## **Original Grant**

Report No. TB-FCC164376

Shenzhen Tideway Electronics Co., Ltd **Applicant** 

**Equipment Under Test (EUT)** 

**EUT Name** Tablet PC

Model No. SS10TAB Series Model No. V10 Octa

**Brand Name** Sunstone, Ployer

2019-02-25 **Receipt Date** 

2019-02-25 to 2019-03-05 **Test Date** 

**Issue Date** 2019-03-06

**Standards** FCC Part 15: 2018, Subpart C(15.247)

ANSI C63.10: 2013 **Test Method** 

Conclusions **PASS** 

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC and IC requirements

**Test/Witness** 

Jason Xu Engineer

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Ivan Su Supervisor

**Engineer Manager** 

Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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# **Revision History**

Report No.	Version	Description	Issued Date
TB-RF164376	Rev.01	Initial issue of report	2019-03-06
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# 1. General Information about EUT

#### 1.1 Client Information

**Applicant**: Shenzhen Tideway Electronics Co., Ltd

Address 5F,8#Building, Rundongsheng Industrial Park, Gushu, Bao'an District,

Shenzhen, Guangdong, China

Manufacturer : Shenzhen Tideway Electronics Co., Ltd

Address 5F,8#Building, Rundongsheng Industrial Park, Gushu, Bao'an District,

Shenzhen, Guangdong, China

### 1.2 General Description of EUT (Equipment Under Test)

EUT Name	1	Tablet PC					
Models No.	7	SS10TAB,V10 Octa	SS10TAB,V10 Octa				
Model Difference	1	All these models are identical in the same PCB layout and electrical circuit, The only difference is model name for commercial purpose.					
The same		Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz				
		Number of Channel:	802.11b/g/n(HT20):11 channels see note(3) 802.11n(HT40):7 channels see note(3)				
		Max Output Power:	802.11b: 16.60 dBm				
Product		Antenna Gain:	2dBi FPC Antenna				
Description	(324)	Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK,QPSK,16QAM, 64QAM)				
		Bit Rate of	802.11b:11/5.5/2/1 Mbps				
		Transmitter:	802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps				
Power Supply	•	DC power by USB cable. DC power by Li-ion Battery. DC 5V by USB cable. DC 3.7V by Li-ion Battery. Please refer to the User's Manual					
Power Rating	:						
Connecting I/O Port(S)	()						

- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01v05.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Channel List:

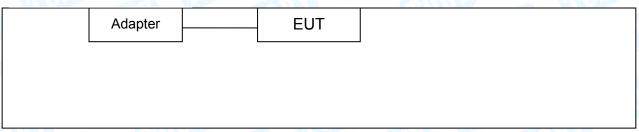


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Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		
Note:CH 01~CH 11 for 802.11b/g/n(HT20), CH 03~CH 09 for 802.11n(HT40)					

- (4) The Antenna information about the equipment is provided by the applicant.
- 1.3 Block Diagram Showing the Configuration of System Tested

#### Adapter + TX Mode



#### TX Mode



# 1.4 Description of Support Units

Equipment Information						
Name Model FCC ID/VOC Manufacturer Used "√"						
Adapter	TEKA012	THE STATE OF	- C	<b>V</b>		
		Cable Information				
Number	Number Shielded Type Ferrite Core Length Note					
<u> </u>				3 1		

# 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test



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system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test					
Final Test Mode Description					
Mode 1	Adapter + TX B Mode				

For Radiated Test					
Final Test Mode Description					
Mode 2 Adapter +TX Mode B Mode Channel 01/06/11					
Mode 3 Adapter +TX Mode G Mode Channel 01/06/11					
Mode 4 Adapter +TX Mode N(HT20) Mode Chann 01/06/11					
Mode 5 Adapter +TX Mode N(HT40) Mode C 03/06/09					

#### Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, Middle, lowest available channels, and the worst case data rate as follows:

802.11b Mode: CCK (1 Mbps) 802.11g Mode: OFDM (6 Mbps)

802.11n (HT20) Mode: MCS 0 (6.5 Mbps) 802.11n (HT40) Mode: MCS 0 (13 Mbps)

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.



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## 1.6 Description of Test Software Setting

During testing channel&Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN.

Test Software Version		CMD.exe	
Channel	CH 01	CH 06	CH 11
IEEE 802.11b DSSS	DEF	DEF	DEF
IEEE 802.11g OFDM	DEF	DEF	DEF
IEEE 802.11n (HT20)	DEF	DEF	DEF
Channel	CH 03	CH 06	CH 09
IEEE 802.11n (HT40)	DEF	DEF	DEF

# 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U <sub>Lab</sub> )
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dedicted Emission	Level Accuracy:	14 CO 4D
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	14 40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Dadiated Emission	Level Accuracy:	14 20 dD
Radiated Emission	Above 1000MHz	±4.20 dB



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### 1.8 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC Accredited Test Site Number: 854351.

#### A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.

#### IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



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# 2. Test Summary

	FCC Part	t 15 Subpart C(15.247)/ RSS 247	Issue 1	
Standa	rd Section	Test Item	lda.sa.a.at	Remark
FCC	IC	rest item	Judgment	
15.203	1	Antenna Requirement	PASS	N/A
15.207	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205	RSS-GEN 7.2.2	Restricted Bands	PASS	N/A
15.247(a)(2)	RSS 247	6dB Bandwidth	PASS	N/A
	5.2 (1)		N. Marie	
15.247(b)	RSS 247	Peak Output Power	PASS	N/A
10.2 17 (5)	5.4 (4)	Tour output Forton		
15.247(e)	RSS 247	Davier Created David.	PASS	N/A
15.247 (e)	5.2 (2)	Power Spectral Density		IN/A
45.047(1)	RSS 247		D4.00	
15.247(d)	5.5	Band Edge	PASS	N/A
15.247(d)&	RSS 247	Transmitter Radiated Spurious	DAGG	NI/A
15.209	5.5	Emission	PASS	N/A

**Note:** "/" for no requirement for this test item.

N/A is an abbreviation for Not Applicable.



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# 3. Test Equipment

Conducted Emiss	ion Test				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul.18, 2018	Jul. 17, 2019
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul.18, 2018	Jul. 17, 2019
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul.18, 2018	Jul. 17, 2019
LISN	Rohde & Schwarz	ENV216	101131	Jul.18, 2018	Jul. 17, 2019
Radiation Emission	on Test			<del>.</del>	
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul.18, 2018	Jul. 17, 2019
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul.18, 2018	Jul. 17, 2019
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.16, 2018	Mar. 15, 2019
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.16, 2018	Mar. 15, 2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 15, 2018	Jul. 14, 2019
Pre-amplifier	Sonoma	310N	185903	Mar.16, 2018	Mar. 15, 2019
Pre-amplifier	HP	8449B	3008A00849	Mar.16, 2018	Mar. 15, 2019
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.16, 2018	Mar. 15, 2019
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conduct	ed Emission				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul.18, 2018	Jul. 17, 2019
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul.18, 2018	Jul. 17, 2019
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 15, 2018	Sep. 14, 2019
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 15, 2018	Sep. 14, 2019
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 15, 2018	Sep. 14, 2019
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 15, 2018	Sep. 14, 2019
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 15, 2018	Sep. 14, 2019
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 15, 2018	Sep. 14, 2019
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 15, 2018	Sep. 14, 2019



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# 4. Conducted Emission Test

#### 4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

#### 4.1.2 Test Limit

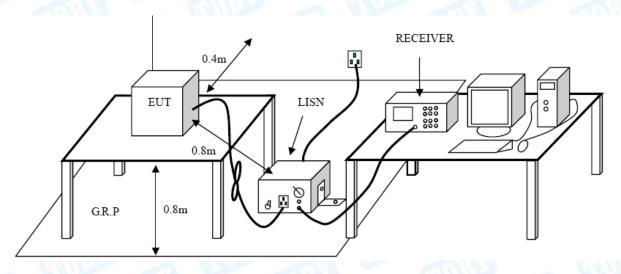
#### **Conducted Emission Test Limit**

-01333 Francis (011)32-	Maximum RF Line Voltage (dBμV)				
Frequency	Quasi-peak Level	Average Level			
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2 Test Setup



#### 4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

## 4.4 EUT Operating Mode

Please refer to the description of test mode.

#### 4.5 Test Data

Please refer to the Attachment A.



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# 5. Radiated Emission Test

### 5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

### Radiated Emission Limits (9 kHz~1000 MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### Radiated Emission Limit (Above 1000MHz)

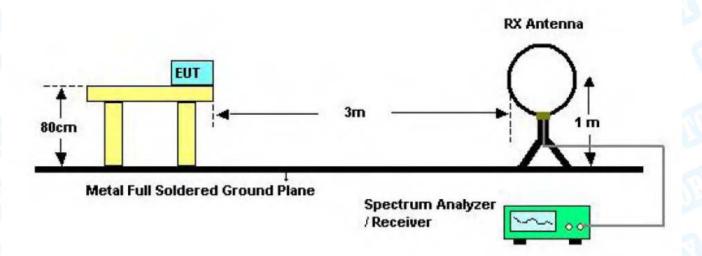
Frequency	Distance of 3m (dBuV/m)			
(MHz)	Peak	Average		
Above 1000	74	54		

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

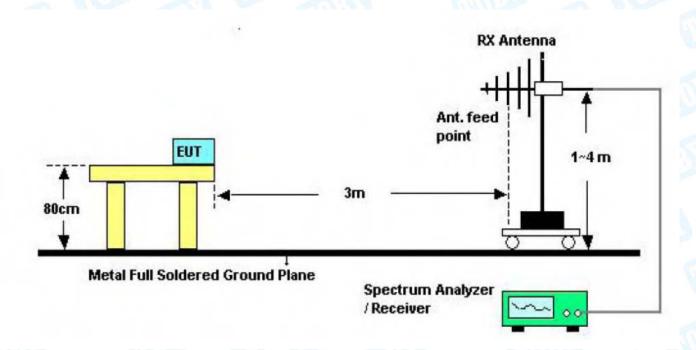


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# 5.2 Test Setup



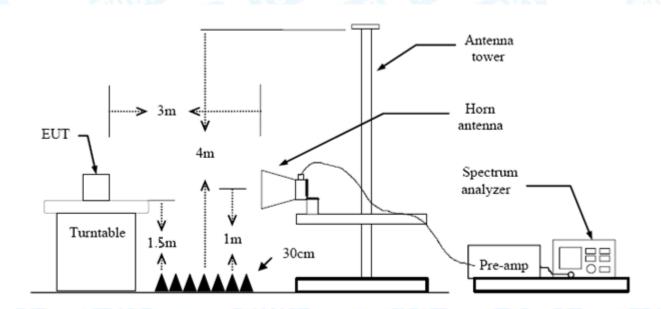
Below 30MHz Test Setup



Below 1000MHz Test Setup



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Above 1GHz Test Setup

#### 5.3 Test Procedure

- (1) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (3) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (4) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (5) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (6) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (7) For the actual test configuration, please see the test setup photo.

# 5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.



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### 5.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Please refer to the Attachment B.



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# 6. Restricted Bands Requirement

#### 6.1 Test Standard and Limit

6.1.1 Test Standard

FCC Part 15.247(d)

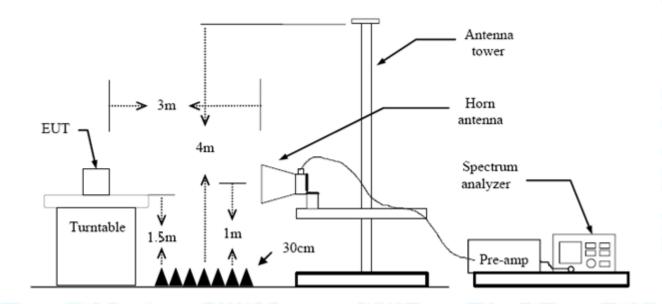
FCC Part 15.209

FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Distance of 3m (dBuV/m)				
Band (MHz)	Peak	Average			
2310 ~2390	74	54			
2483.5 ~2500	74	54			

#### 6.2 Test Setup



#### 6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.



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(3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

#### 6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

#### 6.5 Test Data

Please refer to the Attachment C.



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# 7. Bandwidth Test

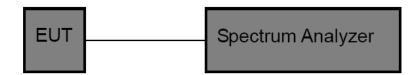
#### 7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210						
Test Item	Test Item Limit Frequency Range(MHz)					
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5				

## 7.2 Test Setup



#### 7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

## 7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Digital photo framesdle and high channel for the test.

#### 7.5 Test Data

Please refer to the Attachment D.



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# 8. Peak Output Power Test

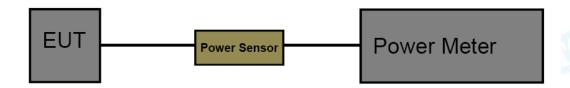
#### 8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-210						
Test Item Limit Frequency Range(MHz						
Peak Output Power	1 Watt or 30 dBm	2400~2483.5				

## 8.2 Test Setup



#### 8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 15.247 Meas Guidance v05. The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

# 8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.

#### 8.5 Test Data

Please refer to the Attachment E.



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# 9. Power Spectral Density Test

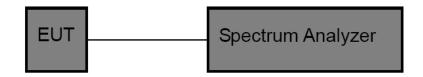
#### 9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)					
Test Item Limit Frequency Range(MHz)					
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5			

### 9.2 Test Setup



#### 9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 15.247 Meas Guidance v05.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequency.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz(5) Set the VBW to: 10 kHz
- (6) Detector: peak (7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

## 9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Digital photo framesdle and high channel for the test.

#### 9.5 Test Data

Please refer to the Attachment F.



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# 10. Antenna Requirement

## 10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

#### 10.1.2 Requirement

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

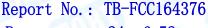
#### 10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 2dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

#### Result

The EUT antenna is a PIFA Antenna. It complies with the standard requirement.

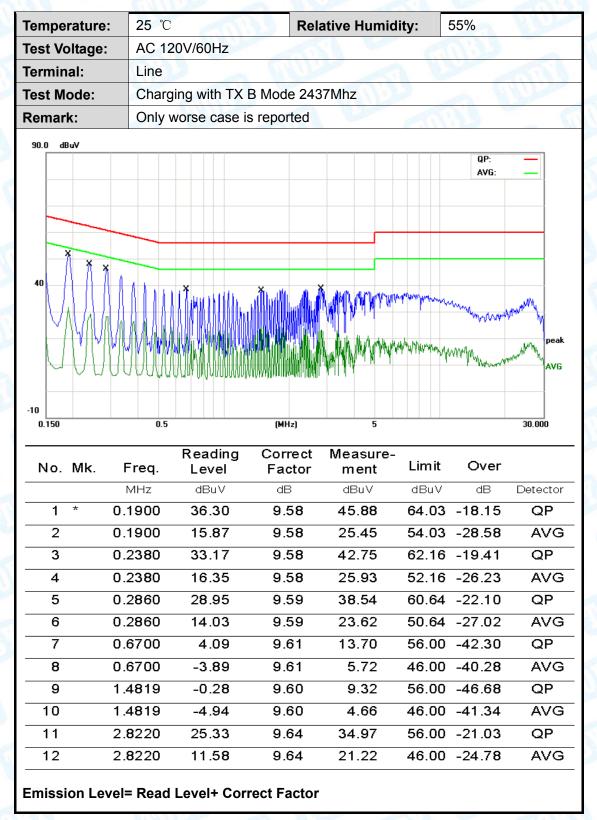
	Antenna Type							
Jin.	⊠Permanent attached antenna							
a -	Unique connector antenna	a						
33	☐Professional installation antenna							





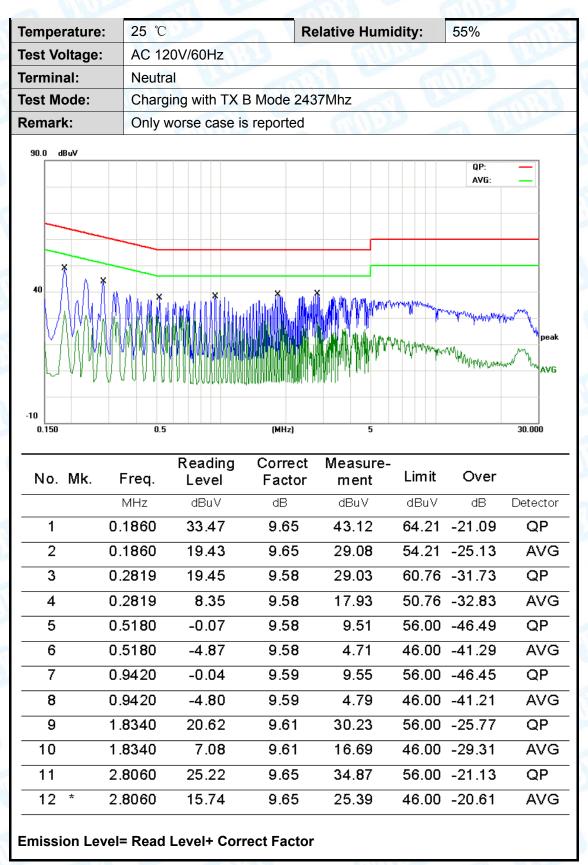
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# **Attachment A-- Conducted Emission Test Data**





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Remark: All modes and channels have been tested and only listed WiFi link mode that is worst data



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# Attachment B-- Radiated Emission and Restricted Bands **Requirement Test Data**

9KHz~30MHz

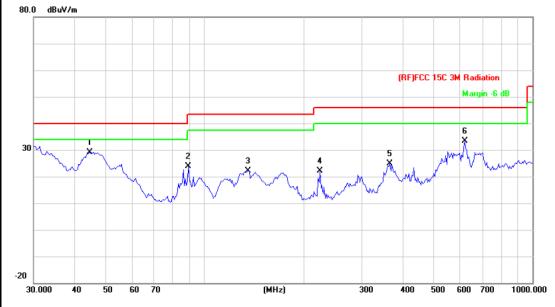
From 9KHz to 30MHz: Conclusion: PASS

Hz~1GHz						a w			
Temperature:	<b>25</b> ℃	Section 1		Relative H	umidity:	55%	a N		
Test Voltage:	AC 120/6	60Hz	F. Street	ALI I		CITE !			
Ant. Pol.	Horizont	Horizontal							
Test Mode:	TX B Mo	de 2462N	1Hz		THOSE		11.11.		
Remark:  Below 1GHz test data. This report only shall the worst case mode for TX IEEE 802.11b 2462MHz.									
80.0 dBuV/m									
-20 30.000 40 50	60 70 8		1 2 X	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	5	500 600 700			
No. Mk. F		eading Level	Correct Factor	Measure- ment	Limit	O∨er			
	1 <b>-64.</b> 1Hz	dBuV		dBuV/m	dBuV/m		Dotostor		
			dB/m				Detector		
		43.43	-22.43	21.00	43.50	-22.50	QP		
		41.78	-20.27	21.51	43.50	-21.99	QP		
3 224.	5193	46.24	-18.60	27.64	46.00	-18.36	QP		
4 361.	7139	50.68	-14.04	36.64	46.00	-9.36	QP		
5 428.	0193	42.21	-12.11	30.10	46.00	-15.90	QP		
6 * 570.	6100	48.24	-8.87	39.37	46.00	-6.63	QP		
*:Maximum data	x:Over limit	!:over marg	jin						



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Temperature:	25 ℃ Relative Humidity: 55%
Test Voltage:	AC 120/60Hz
Ant. Pol.	Vertical
Test Mode:	TX B Mode 2462MHz
Remark:	Below 1GHz test data. This report only shall the worst case mode for TX IEEE 802.11b 2462MHz.



No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	44.4308	50.55	-21.30	29.25	40.00	-10.75	QP
2		88.9639	45.90	-22.04	23.86	43.50	-19.64	QP
3		135.5062	44.65	-22.47	22.18	43.50	-21.32	QP
4		224.5193	40.84	-18.60	22.24	46.00	-23.76	QP
5		366.8231	38.66	-13.81	24.85	46.00	-21.15	QP
6		620.7096	41.70	-8.36	33.34	46.00	-12.66	QP

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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#### **Above 1GHz**

Test Mode: IEEE 802.11b

Low channe	el: 241	2 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin	AV Margin
		(		(- )					(dB)	(dB)
2390	Н	47.51	40.68	0.77	48.28	41.45	74	54	-25.72	-12.55
4824	Н	42.12	33.43	13.68	55.8	47.11	74	54	-18.2	-6.89
11:30	Н	£///	<u> </u>	N		1	2.2		3	V
1	100	1	6.00	1133	-	die		A STATE OF		8.1
2390	٧	46.41	38.96	0.77	47.18	39.73	74	54	-26.82	-14.27
4824	V	41.26	30.18	13.68	54.94	43.86	74	54	-19.06	-10.14
	V	10	-			112				

Middle chan	nel: 2	437 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
4874	Н	44.01	31.23	13.86	57.87	45.09	74	54	-16.13	-8.91
	Н	-630	173	- V	117		100		\$ ( <del></del> )	
1111	Н			(D)-4		(d-19)	9	77/11		
6	$M_{i}$		a WY	The same of		630	1	1	Tim	0
4874	V	42.85	30.6	13.86	56.71	44.46	74	54	-17.29	-9.54
1012	٧	MATE.		A		(C+1)		WHO.		
= 10	V		(=(1)	))	J HA	) <u></u>				<b>3</b>

High channe	el: 246	62 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak		Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
2483.5	Н	40.15	31.42	1.17	41.32	32.59	74	54	-32.68	-21.41
4924	Н	42.24	30.87	14.03	56.27	44.9	74	54	-17.73	-9.1
	Н	7.P-	6	$M_{\overline{M}}$		ATTI		1 -67		<u> </u>
- N	MA			A CONTRACTOR OF THE PARTY OF TH	(BB)				1 113	A STATE OF THE PARTY OF THE PAR
2483.5	Η	40.19	30.9	1.17	41.36	32.07	74	54	-32.64	-21.93
4924	V	41.12	31.01	14.03	55.15	45.04	74	54	-18.85	-8.96
	V	J	77/10/		(1) N	d	CHATT		(4 <del>-1</del> )	3/2

- 1. Emission Level= Read Level+ Correct Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 4. Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.



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Test Mode: IEEE 802.11g

Low channel: 2412 MHz										
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
2390	Н	47.11	38.52	0.77	47.88	39.29	74	54	-26.12	-14.71
4824	Н	45.11	37.4	13.68	58.79	51.08	74	54	-15.21	-2.92
	Н		20. <del>a</del>	63	77-47		(277) E.		7 6	
11:50		UNI	11000				100			~ 1
2390	V	48.06	40.32	0.77	48.83	41.09	74	54	-25.17	-12.91
4824	V	44.3	36.05	13.68	57.98	49.73	74	54	-16.02	-4.27
33-	V	CHARD	<b>)</b>	2 AM		<b>A</b>				117

Middle chan	nnel: 2	437 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
4874	Н	43.48	33.01	13.86	57.34	46.87	74	54	-16.66	-7.13
	Н	1	T.		-			77-	N	112
	Н		1		1117				<u> </u>	
WILL STREET					Service of the servic	TIME				
4874	V	44.4	30.61	13.86	58.26	44.47	74	54	-15.74	-9.53
- 1	٧				16-		11/7/1		-	-
1335	٧			a-W		CITAL D		4 (H)	)	

High channe	el: 246	62 MHz								
Frequency	Ant. Pol.	Peak reading	AV reading (dBuV)	Correction Factor	Peak	on Level AV	Peak limit	AV limit	Peak	AV
(MHz)	H/V	(dBµV)	(ubuv)	(dB/m)	(ασμν/ιιι)	(ασμν/π)	(dBµV/m)	(dBµV/m)	Margin	Margin
		(αυμν)		(db/III)					(dB)	(dB)
2483.5	H	49.37	40.4	1.17	50.54	41.57	74	54	-23.46	-12.43
4924	Н	44.08	35.45	14.03	58.11	49.48	74	54	-15.89	-4.52
	Н		112						<u> </u>	
N. C.				66173		CALL T				
2483.5	H	49.51	40.64	1.17	50.68	41.81	74	54	-23.32	-12.19
4924	V	43.39	34.37	14.03	57.42	48.4	74	54	-16.58	-5.6
102	V	TINO.		- W		(44)		410	<u>-</u>	0-N

- 5. Emission Level= Read Level+ Correct Factor
- 6. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 7. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 8. Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.



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Test Mode: IEEE 802.11n TH20

Low channe	el: 241	2 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
2390	Н	60.6	40.85	0.77	61.37	41.62	74	54	-12.63	-12.38
4824	Н	44.08	30.24	13.56	57.64	43.80	74	54	-16.36	-10.2
	Н		2.7	63			077 115		1 6	
1130		UNI	L. Barrier				100			~ 1
2390	V	59.74	43.44	0.77	60.51	44.21	74	54	-13.49	-9.79
4824	V	44.32	30.14	13.56	57.88	43.70	74	54	-16.12	-10.30
23-	V	CHARD	<b>)</b>	2 THE		<b>A</b>				100

					15						
	Middle chan	inel: 2	437 MHz								
	Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dΒμV/m)	Peak Margin (dB)	AV Margin (dB)
	4874	Н	43.28	30.53	13.85	57.13	44.38	74	54	-16.87	-9.62
į,		Н	The same of	-	100 m		1		33	[1]	A Tree
	1	I		175		11 Tree		1		8.6- A	
Š	111					1	AND:		D.A.D.		
	4874	V	44.04	30.34	13.87	57.9	44.2	74	54	-16.1	-9.8
	- P	V	-	<b>SB</b>		10 =	-	RITTE	-	120	
	0 2	V	MAIN		7 6		( A)		が出り	·	

High channe	el: 246	62 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Peak (dBµV/m)	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
2483.5	Н	56.85	37.01	1.17	58.02	38.18	74	54	-15.98	-15.82
4924	Н	45.36	30.46	14.15	59.51	44.61	74	54	-14.49	-9.39
	Н	NY	<u> </u>				<b>N</b>	1117	37-22	
		33	6			MAG				6.8.0
2483.5	Н	58.14	39.36	1.17	59.31	40.53	74	54	-14.69	-13.47
4924	V	43.67	30.77	14.15	57.82	44.92	74	54	-16.18	-9.08
	V	A Aller	-	1913-		11/10/20		A Trans		(1) V

- 9. Emission Level= Read Level+ Correct Factor
- 10. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 11. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 12. Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.



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Test Mode: IEEE 802.11n TH40

						- · · · · · ·				
Low channe	el: 242	2 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading	AV reading (dBuV)	Correction Factor	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin	AV Margin
. ,		(dBµV)		(dB/m)			, , ,		(dB)	(dB)
2390	Н	47.3	38.6	0.77	48.07	39.37	74	54	-25.93	-14.63
4824	Н	42.47	34.22	13.68	56.15	47.9	74	54	-17.85	-6.1
	Н		2/ = 1	6			277.11		1 16	
11:30										~ \
2390	V	48.98	40.02	0.77	49.75	40.79	74	54	-24.25	-13.21
4824	V	42.36	33.71	13.68	56.04	47.39	74	54	-17.96	-6.61
7.7-	V	(1) P-1		- 7////		<del></del>				177

Middle char	nnel: 2	437 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
4874	Н	41.02	33.63	13.86	54.88	47.49	74	54	-19.12	-6.51
	Н	100		2.394	<del></del>		(A)	333	M	117
A STATE OF	Н		177	- 1	1117		100		8 P	
HIV.					1			MAD	and the same of	
4874	V	40.84	31.59	13.86	54.7	45.45	74	54	-19.3	-8.55
- T	V	TITLE	<b>3</b>		10 =		(1) TI	-		
0 2	V	THE PARTY		1-6		(1) A-1)		WHO I	/	///

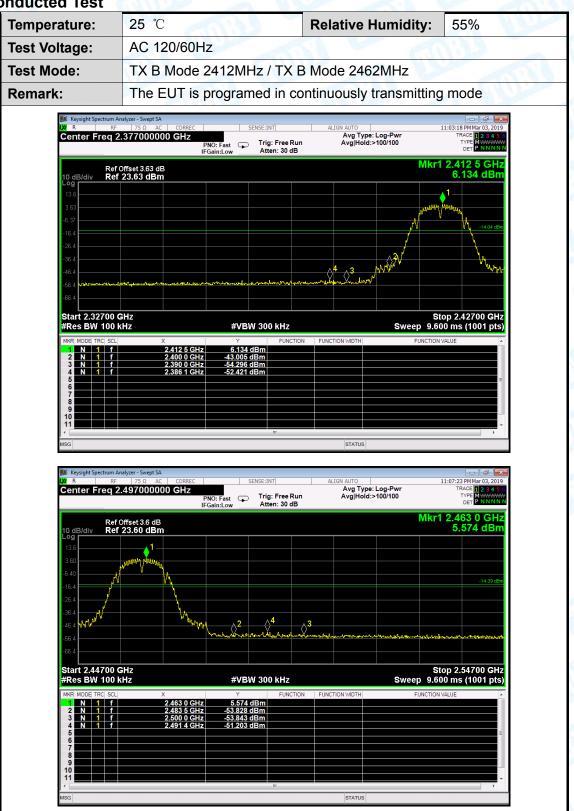
High channe	el: 245	52 MHz								
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBµV)	AV reading (dBuV)	Correction Factor (dB/m)	Peak	on Level AV (dBµV/m)	Peak limit (dBµV/m)	AV limit (dBµV/m)	Peak Margin (dB)	AV Margin (dB)
2483.5	Н	50.11	42.15	1.17	51.28	43.32	74	54	-22.72	-10.68
4924	Н	41.26	30.33	14.03	55.29	44.36	74	54	-18.71	-9.64
	Н	- W	U				<b></b>	nn-	27	-
	1	313	6	MILLER		MAIN		J Fr		
2483.5	Н	49.55	40.76	1.17	50.72	41.93	74	54	-23.28	-12.07
4924	V	40.29	31.17	14.03	54.32	45.2	74	54	-19.68	-8.8
	V	A Aller	- T	1973-		11/10/20		A Trans		- V

- 13. Emission Level= Read Level+ Correct Factor
- 14. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 15. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 16. Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.





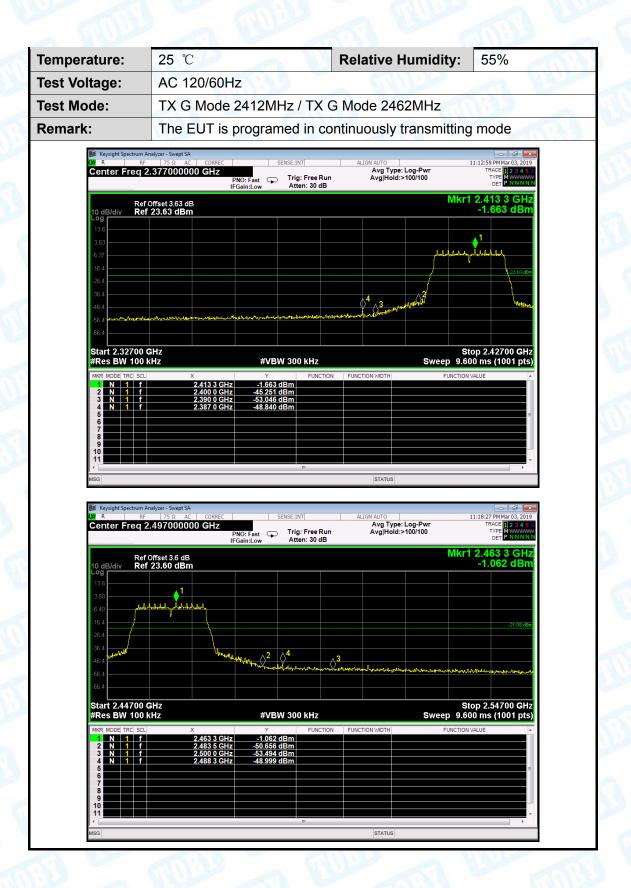
(1) Conducted Test

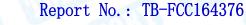






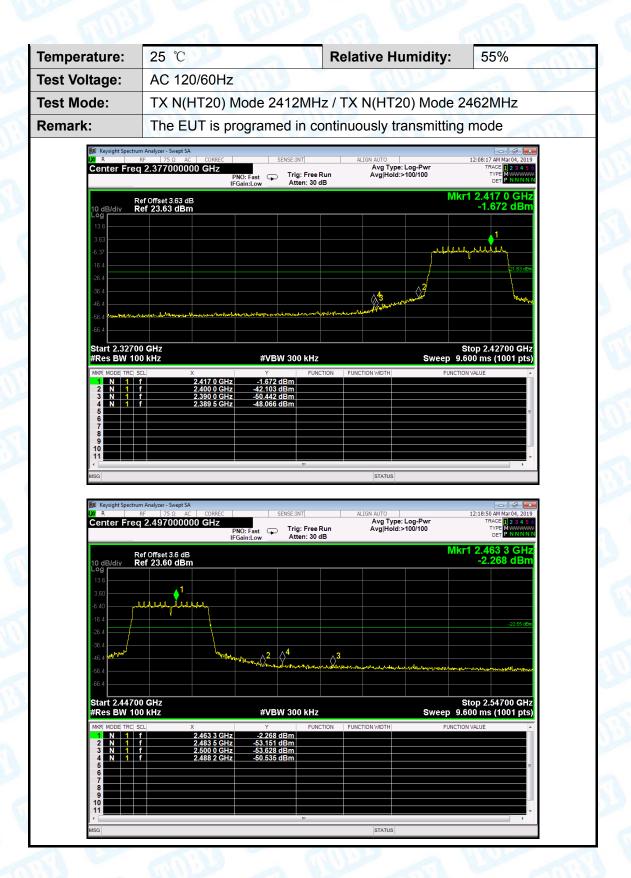
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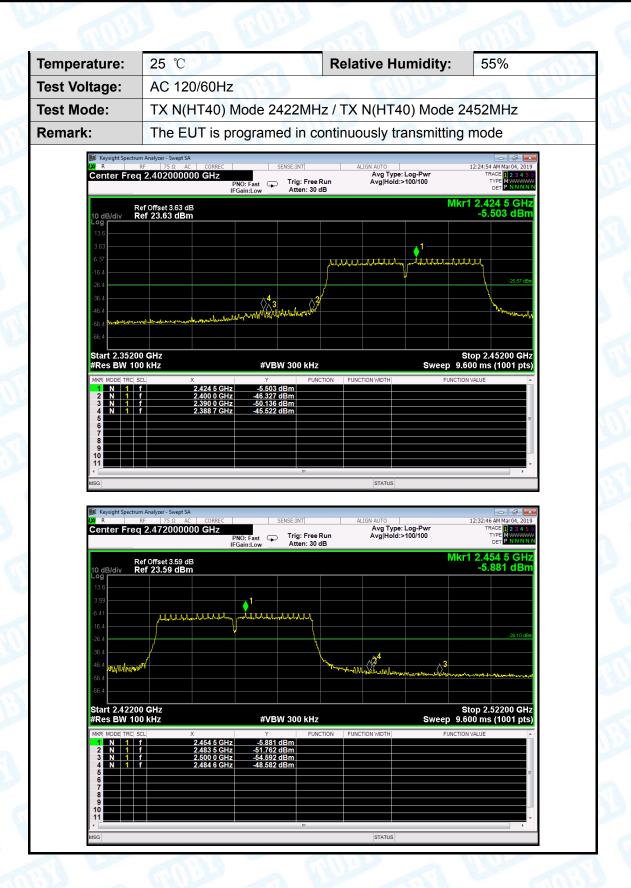
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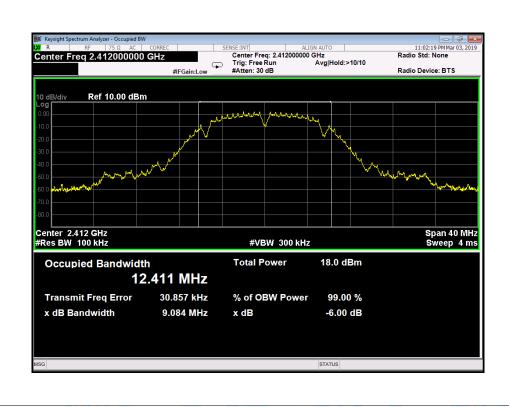
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# **Attachment D-- Bandwidth Test Data**

Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120/60Hz		17:33
Test Mode:	TX 802.11B Mode		
Channel frequence	y 6dB Bandwidth	99% Bandwidth	Limit
(MHz)	(MHz)	(MHz)	(MHz)
2412	9.084	12.411	
2437	10.03	12.391	>=0.5
2462	9.103	12.376	
	L.	1	1

#### 802.11B Mode

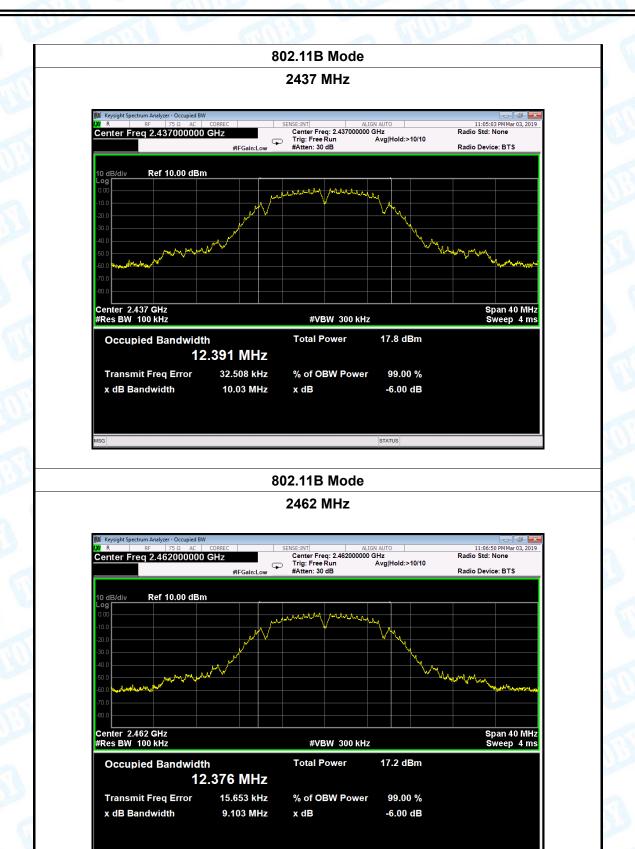
#### 2412 MHz







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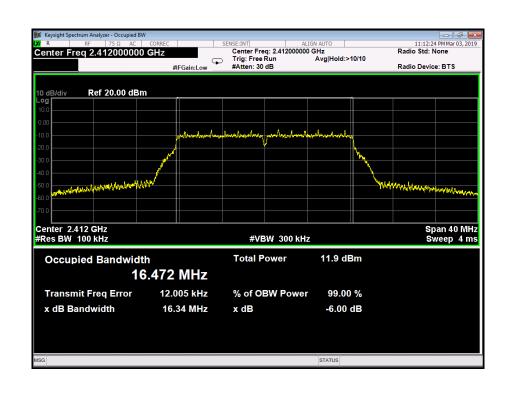




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			1111		
Temperature:	<b>25</b> ℃	Relative Humidity:	55%		
Test Voltage:	AC 120/60Hz				
Test Mode:	TX 802.11G Mode				
Channel frequen	cy 6dB Bandwidth	99% Bandwidth	Limit		
(MHz)	(MHz)	(MHz)	(MHz)		
2412	16.34	16.472			
2437 16.35		16.470	>=0.5		
2462	16.37	16.488			

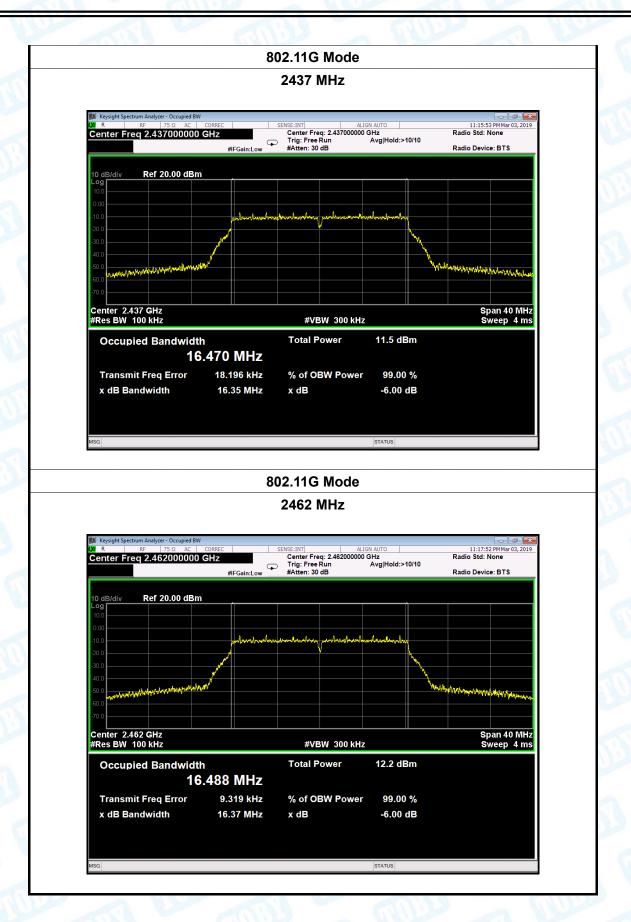
### 802.11G Mode





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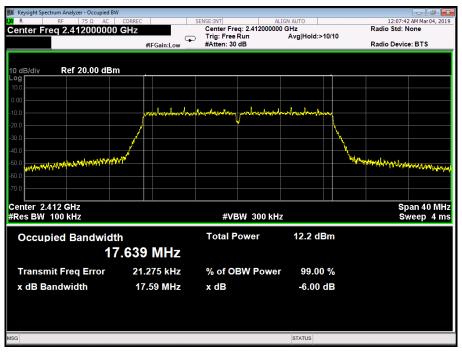






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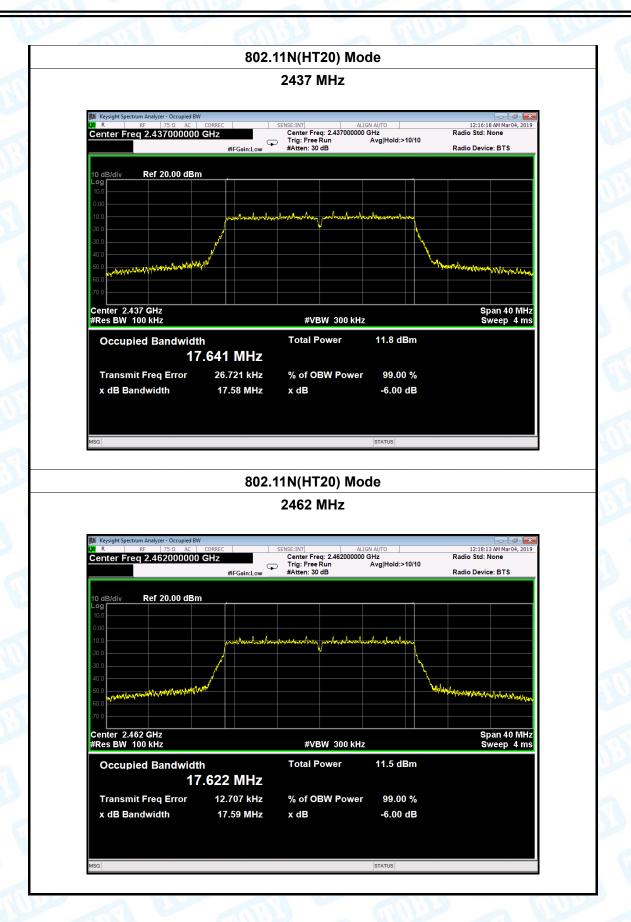
Temperature:	25 ℃		Relative Humidity:	55%		
Test Voltage:	AC	AC 120/60Hz				
Test Mode:	TX 802.11N(HT20) Mode					
Channel frequer	псу	6dB Bandwidth	99% Bandwidth	Limit		
(MHz)		(MHz)	(MHz)			
2412		17.59	17.639			
2437		17.58	17.641	>=0.5		
2462		17.59	17.622			
	11	802.11N(HT	20) Mode	•		
		2412 N	ЛНZ			





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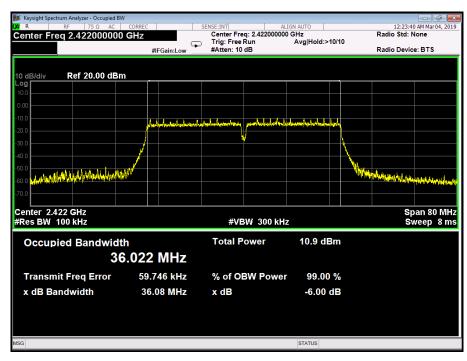






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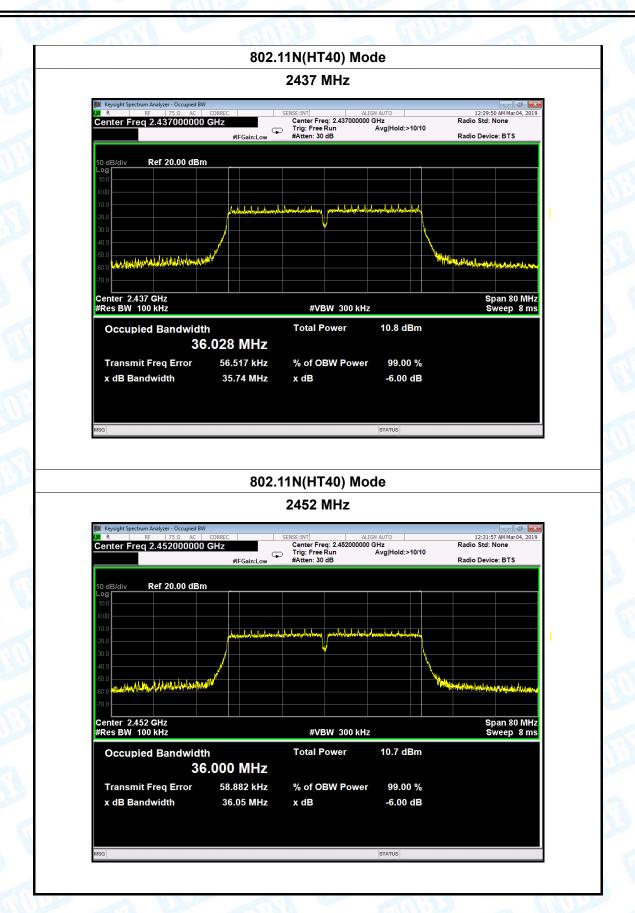
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120/60Hz	AC 120/60Hz				
Test Mode:	TX 802.11N(HT40) Mode					
Channel frequence	cy 6dB Bandwidth	99% Bandwidth	Limit			
(MHz)	(MHz)	(MHz)	(MHz)			
2422	36.08	36.022				
2437	35.74	36.028	>=0.5			
2452 36.05		36.000				
802.11N(HT40) Mode						







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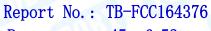


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# **Attachment E-- Peak Output Power Test Data**

Test Conditions	: Continuous transm	Continuous transmitting Mode				
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120/60Hz					
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)			
	2412	16.60				
802.11b	2437	15.94				
	2462	15.45				
802.11g	2412	14.55				
	2437	14.04				
	2462	14.89	30			
802.11n	2412	14.73	30			
(HT20)	2437	14.48				
(11120)	2462	14.10				
000 44	2422	13.78				
802.11n (HT40)	2437	13.40				
(11170)	2452	13.35				
	Resi	ult: PASS				

Duty Cycle					
Mode	Channel frequency (MHz)	Test Result			
	2412				
802.11b	2437				
	2462				
	2412				
802.11g	2437				
	2462	<b>&gt;000</b> /			
000 44	2412	>98%			
802.11n	2437				
(HT20)	2462				
000 44 =	2422				
802.11n (HT40)	2437				
	2452				





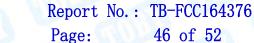
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## **Attachment F-- Power Spectral Density Test Data**

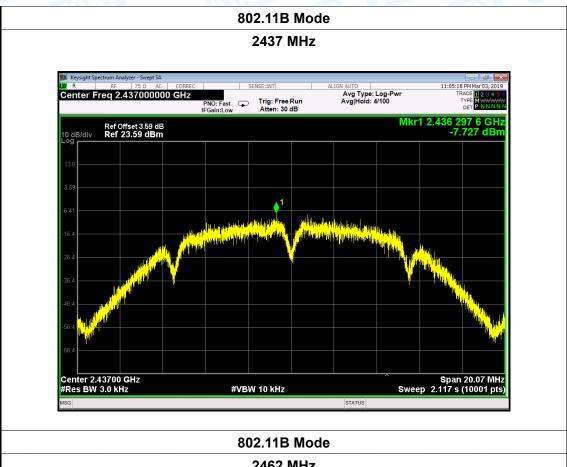
Temperature:	25 ℃		Relative Humidity:	55%		
Test Voltage:	AC 120/6	AC 120/60Hz				
Test Mode:	TX 802.1	TX 802.11B Mode				
Channel Frequency	uency Power Density Limit					
(MHz) (dBm/3		kHz)	(dBm)			
2412		-7.282				
2437		-7.72	-7.727			
2462		60				
		222 445				

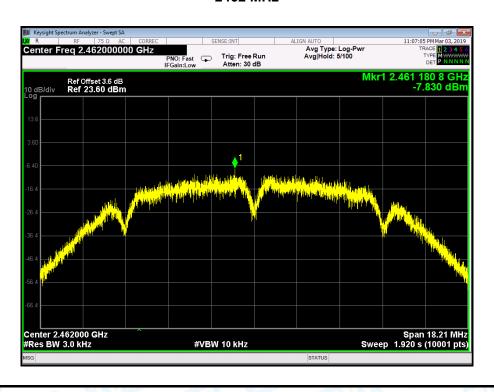
### 802.11B Mode





**TOBY** Page:

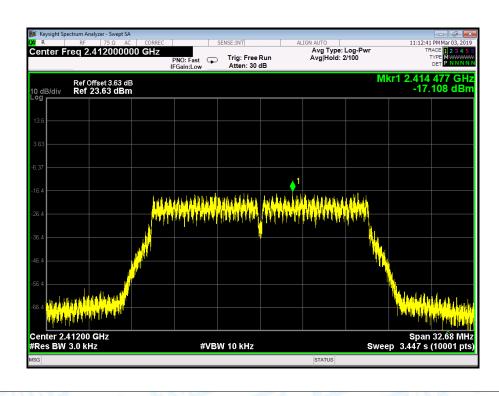






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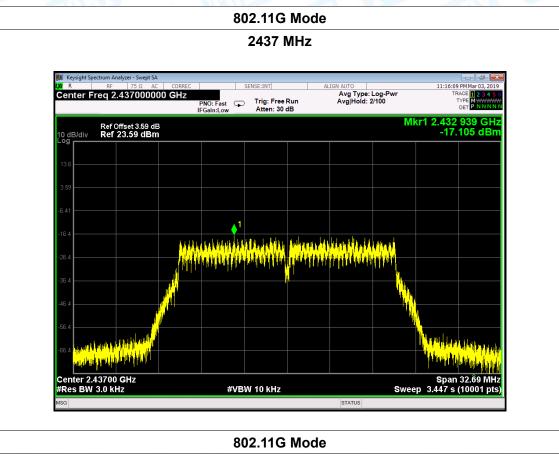
Temperature:	25 ℃	25 $^{\circ}$ C Temperature: 25 $^{\circ}$ C				
Test Voltage:	AC 120/6	AC 120/60Hz				
Test Mode:	TX 802.1	TX 802.11G Mode				
Channel Freq	uency Power Density Limit					
(MHz)		(dBm/3 kHz)			(dBm)	
2412		-17.	108			
2437		-17.	105	8		
2462		-14.850				
802.11G Mode						

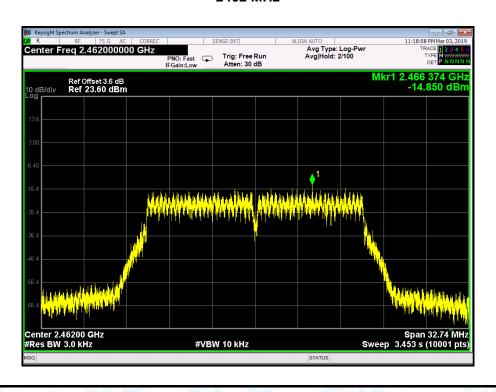




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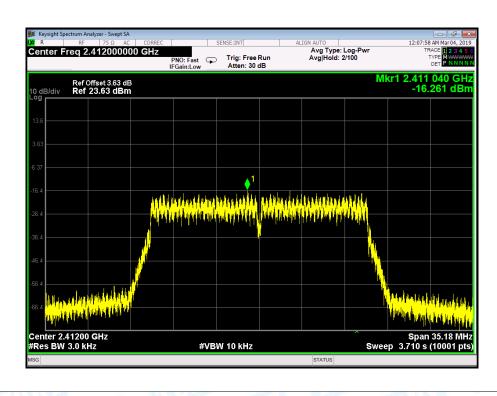






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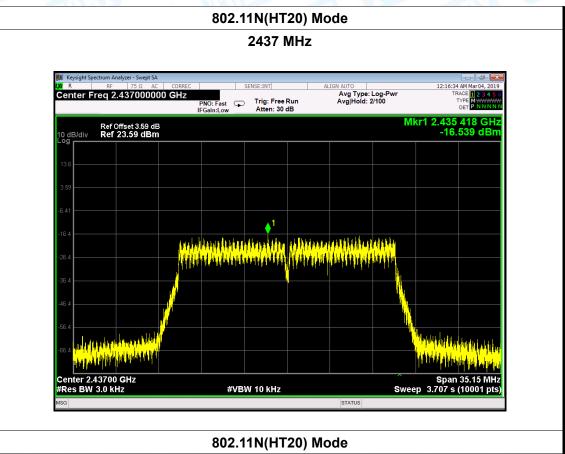
Temperature:	25 ℃ Temperatu		Temperature:	<b>25</b> ℃		
Test Voltage:	AC 120/6	AC 120/60Hz				
Test Mode:	TX 802.1	TX 802.11N(HT20) Mode				
Channel Freq	uency Power Density Limit					
(MHz)		(dBm/3 k	Hz)	(dBm)		
2412		-16.26	1			
2437		-16.53	9	8		
2462 -16.812						
802.11N(HT20) Mode						



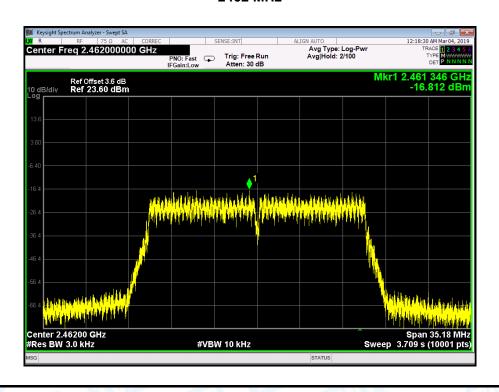


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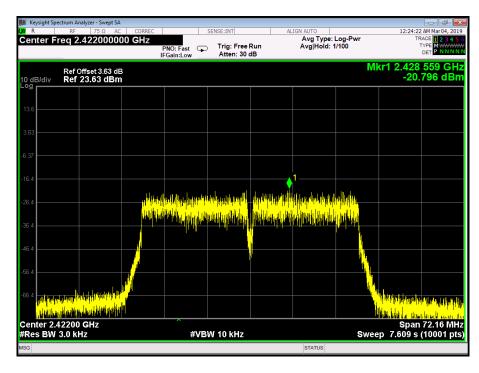






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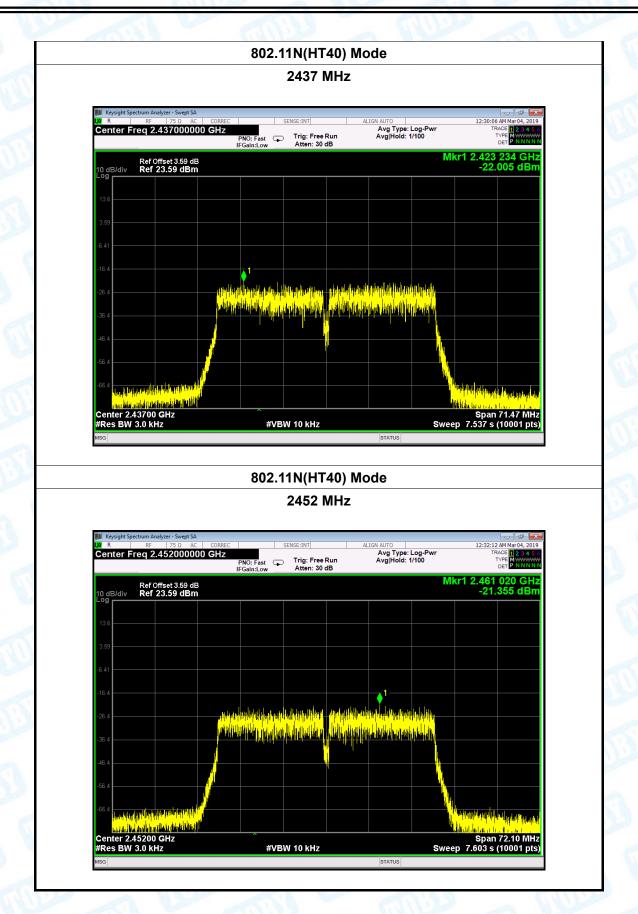
Temperature:	25 ℃		Temper	ature:	25 ℃	
Test Voltage:	AC 120/6	AC 120/60Hz				
Test Mode:	TX 802.1	TX 802.11N(HT40) Mode				
Channel Freq	uency	uency Power Density Limit			Limit	
(MHz)		(dBm/3 kHz)		(dBm)		
2422		-20.7	96			
2437		-22.005			8	
2452		-21.3	21.355			
		802.11N(HT	40) Mode	·		
		2422 N	ИHz			





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