TEST REPORT

CT通测检测 TEBTING CENTRE TECHNOLOGY

> FCC ID: 2AP9X-K5 Product: Mini projector Model No.: K5 Additional Model No.: K4 Trade Mark: N/A Report No.: TCT180416E039 Issued Date: Jun. 22, 2018

> > Issued for:

Shenzhen kixin Electronics Co., Ltd 4/F, Maker Center, Hualian industrial zone, Huaning Road Dalang, Longhua, Shenzhen, China

Issued By:

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「CT通测检测 TESTING CENTRE TECHNOLOGY 1. Test Certification

Product:	Mini projector
Model No.:	K5
Additional Model No.:	К4
Trade Mark:	N/A
Applicant:	Shenzhen kixin Electronics Co., Ltd
Address:	4/F, Maker Center, Hualian industrial zone, Huaning Road Dalang, Longhua, Shenzhen, China
Manufacturer:	Shenzhen kixin Electronics Co., Ltd
Address:	4/F, Maker Center, Hualian industrial zone, Huaning Road Dalang, Longhua, Shenzhen, China
Date of Test:	Apr. 17, 2018 – Jun. 21, 2018
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 KDB 558074 D01 DTS Meas Guidance v04

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:	Ples	Date:	Jun. 21, 2018	
	Rleo	_	(\vec{c})	
Reviewed By:	Beny Than	Date:	Jun. 22, 2018	
(\mathcal{C})	Beryl Zhao			
Approved By:	Tomsin	Date:	Jun. 22, 2018	
	Tomsin			

Report No.: TCT180416E039 **Test Result Summary** 2. Requirement **CFR 47 Section** Result PASS Antenna requirement §15.203/§15.247 (c) AC Power Line Conducted §15.207 PASS Emission §15.247 (b)(3) **Conducted Peak Output** PASS Power §2.1046 §15.247 (a)(2) 6dB Emission Bandwidth PASS §2.1049 PASS **Power Spectral Density** §15.247 (e) 1§5.247(d) Band Edge PASS §2.1051, §2.1057

§15.205/§15.209

§2.1053, §2.1057

Note:

1. PASS: Test item meets the requirement.

Spurious Emission

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

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PASS



3. EUT Description

Product:	Mini projector
Model No.:	K5
Additional Model No.:	К4
Trade Mark:	N/A
Hardware Version:	KX-K5A-V1.2 2017.10.25
Software Version:	update-KA-EN-180316.7z
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20))
Channel Separation:	5MHz
Number of Channel:	11 for 802.11b/802.11g/802.11n(HT20)
Modulation Technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation Technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	Internal Antenna
Antenna Gain:	2dBi
Power Supply:	Rechargeable Li-ion battery DC 7.4V
AC adapter:	Adapter Information: Model: SAP050250CN-C Input: AC 100-240V, 50/60Hz, 0.6A Output: 5.0V, 2.5A
Remark:	All models above are identical in interior structure, electrical circuits and components, and just the shell is different for the marketing requirement.

nannel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		
te:							
In sect frequer below:		hest frequent					requency, the m selected channe
Chan			quency				
	lowest char		2MHz				
	middle char Highest cha		37MHz 52MHz				

. Test env	Information		
	nonment and	mode	
Operating Er	nvironment:		
Temperatu	ure:	25.0 °C	
Humidity:	No.	56 % RH	(O)
Atmosphe	ric Pressure:	1010 mbar	
Fest Mode:			
Engineerir	ng mode:	by select chan	in continuous transmitting nel and modulations(The ycle is 98.46%)
performed. Decontinuously	uring the test, eac working, investiga	ements in both horizontal ar th emission was maximized ted all operating modes, ro	d by: having the EUT tated about all 3 axis (X, `
berformed. Decontinuously continuously Z) and consid nterconnectir both horizonta	uring the test, eac working, investiga lered typical config ng cables, rotating al and vertical pola e following pages.	ch emission was maximized	nd vertical polarities were d by: having the EUT tated about all 3 axis (X, ` sition, manipulating enna height from 1m to 4n vorst-case are shown in T
Derformed. Decontinuously continuously Z) and conside nterconnectine tooth horizonta Results of the maximum stan We have verified were carried of	uring the test, eac working, investiga lered typical config ng cables, rotating al and vertical pola following pages. te.	ch emission was maximized ted all operating modes, ro guration to obtain worst po- the turntable, varying ante arizations. The emissions v	nd vertical polarities were d by: having the EUT stated about all 3 axis (X, Y sition, manipulating enna height from 1m to 4m vorst-case are shown in T nd The output power to the operation. All the test mode
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Derformed. Decontinuously continuously Z) and conside nterconnectin both horizonta Results of the maximum sta We have verifivere carried of report and de	uring the test, eac working, investiga lered typical config ng cables, rotating al and vertical pola following pages. te. fied the construction out with the EUT in fined as follows: kind of data rate ase.	ch emission was maximized ted all operating modes, ro guration to obtain worst po- g the turntable, varying ante arizations. The emissions v For the full battery state ar on and function in typical o n transmitting operation, w	nd vertical polarities were d by: having the EUT stated about all 3 axis (X, Y sition, manipulating enna height from 1m to 4m vorst-case are shown in T nd The output power to the operation. All the test mode hich was shown in this test ound the follow list whic
plane of 3m c			

Operation mode:

Keep the EUT in continuous transmitting with modulation

1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

2.According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20). Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations.

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4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	1	/	1	1

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

 IC - Registration No.: 10668A-1 The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

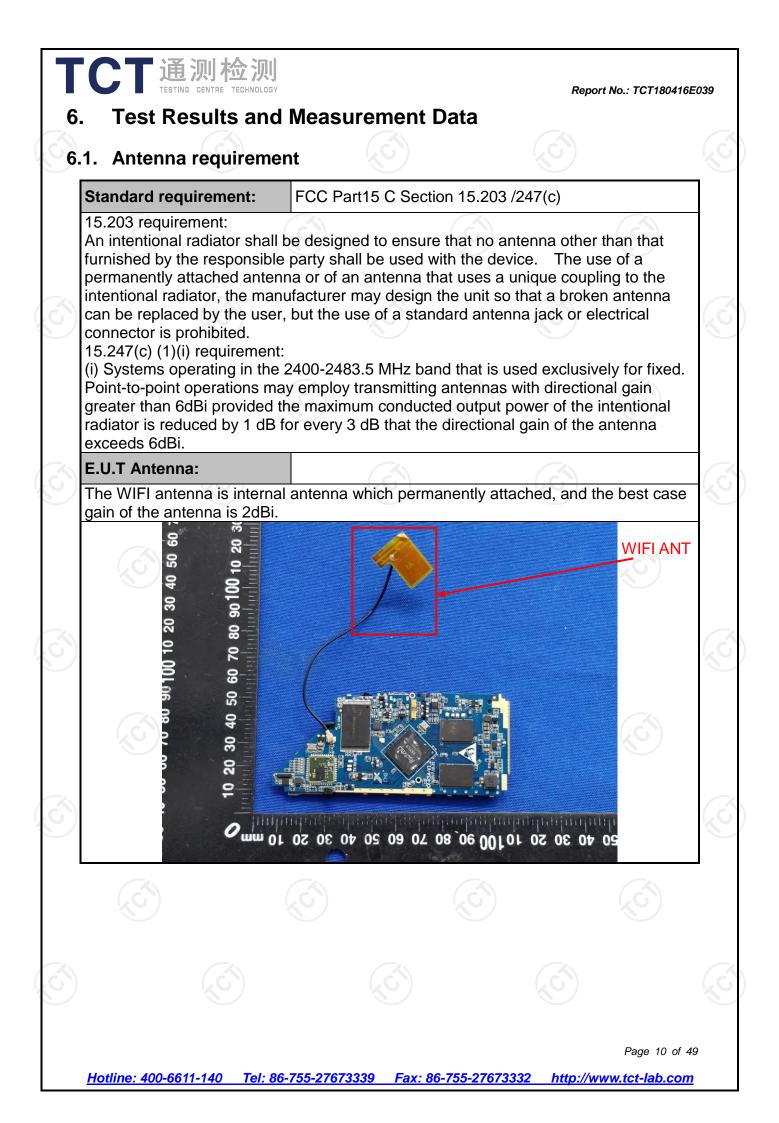
Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

5.3. 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 %.

No.	Item	MU	
1	Conducted Emission	±2.56dB	
2	RF power, conducted	±0.12dB	
3	Spurious emissions, conducted	±0.11dB	
4	All emissions, radiated(<1G)	±3.92dB	
5	All emissions, radiated(>1G)	±4.28dB	
6	Temperature	±0.1°C	
7	Humidity	±1.0%	X



2. Conducted Emiss 2.1. Test Specification	C		
Test Requirement:	FCC Part15 C Section	15.207	
Test Method:	ANSI C63.10:2013		
Frequency Range:	150 kHz to 30 MHz		
Receiver setup:	RBW=9 kHz, VBW=30) kHz, Sweep time	=auto
Limits:	Frequency range (MHz) 0.15-0.5 0.5-5 5-30	Limit (o Quasi-peak 66 to 56* 56 60	dBuV) Average 56 to 46* 46 50
	Referenc	e Plane	
Test Setup:	E.U.T AC power Test table/Insulation plane Remarkc E.U.T: Equipment Under Test LISN: Line Impedence Stabilization No Test table height=0.8m	EMI Receiver	— AC power
Test Mode:	Charging + transmittin	g with modulation	
Test Procedure:	 The E.U.T is connelline impedance staprovides a 500hm/s measuring equipme The peripheral device power through a Licoupling impedance refer to the block photographs). Both sides of A.C. conducted interference mission, the relative the interface cables ANSI CS2 40: 2012 	bilization network 50uH coupling im nt. ces are also conne ISN that provides with 50ohm term diagram of the line are checke nce. In order to fir e positions of equ s must be chang	(L.I.S.N.). This pedance for the ected to the main a 500hm/50uH hination. (Please test setup and d for maximum d the maximum ipment and all of ed according to
	ANSI C63.10: 2013	on conducted mea	asurement.

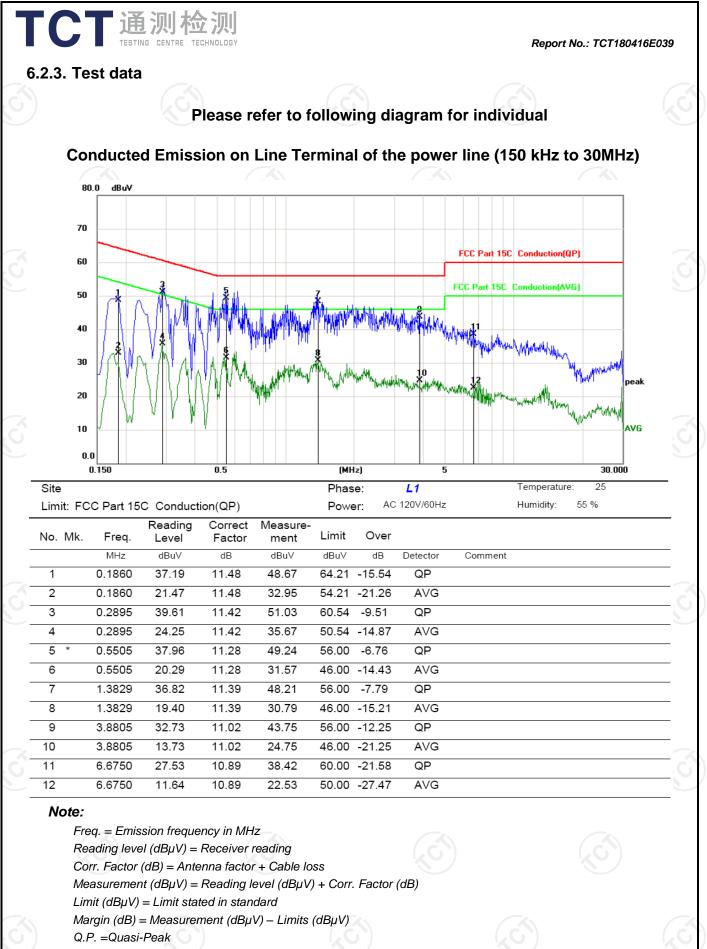
6.2.2. Test Instruments

TCT通测检测 TECT通测检测

Cond	lucted Emission	Shielding R	oom Test Site (8	43)
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESPI	101401	Sep. 27, 2018
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 27, 2018
Coax cable (9KHz-30MHz)	тст	CE-05	N/A	Sep. 27, 2018
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

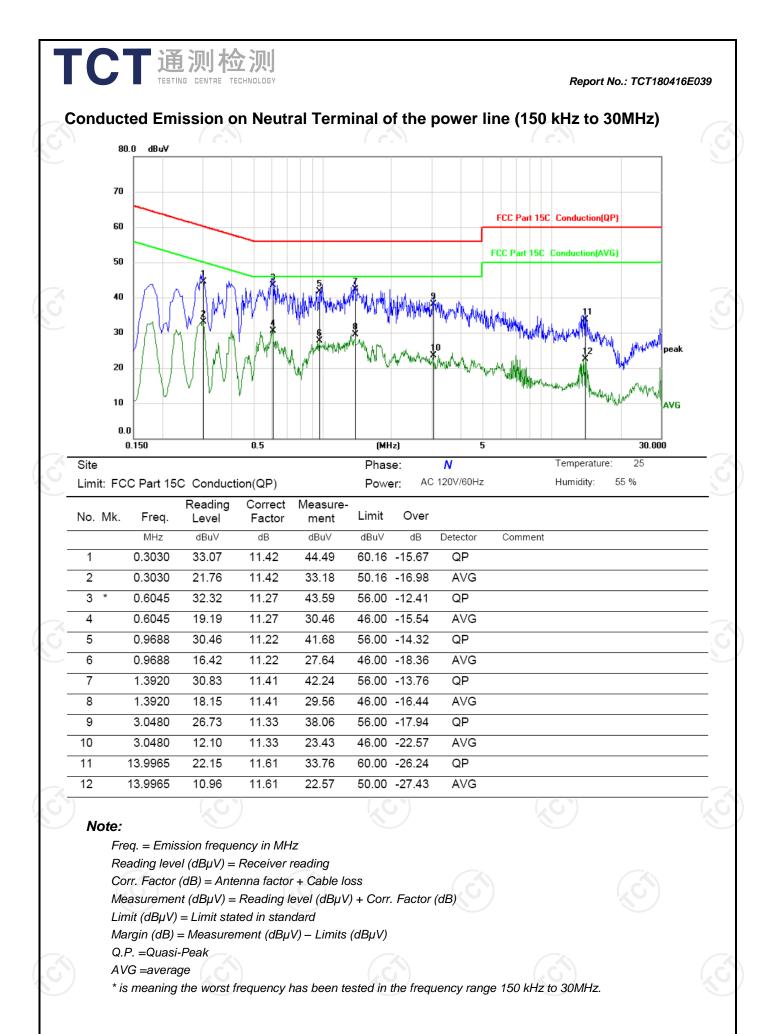
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

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AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.



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6.3. Maximum Conducted (Average) Output Power

6.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)	
Test Method:	KDB 558074	
Limit:	30dBm	
Test Setup:	Spectrum Analyzer EUT	
Test Mode:	Transmitting mode with modulation	
Test Procedure:	 The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Measure the conducted output power and record the results in the test report. 	
Test Result:	PASS	

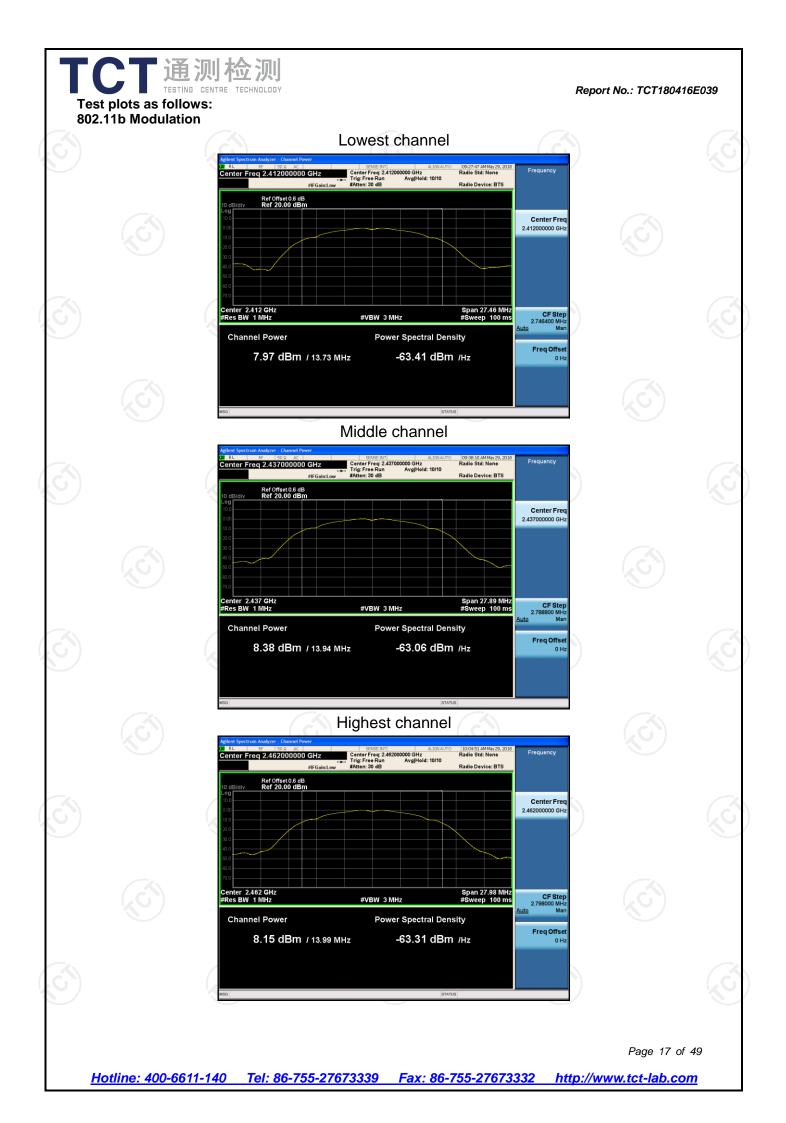
6.3.2. Test Instruments

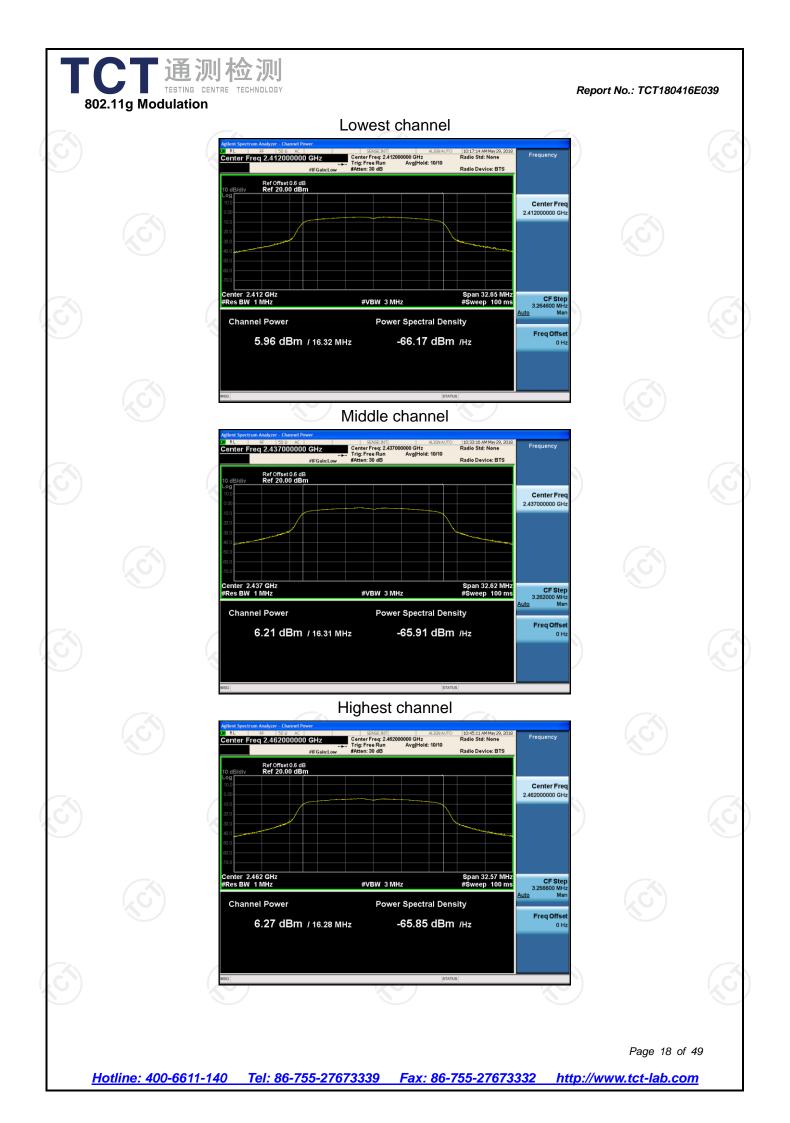
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018
RF Cable (9KHz-26.5GHz)	тст	RE-06	N/A	Sep. 27, 2018
Antenna Connector	тст	RFC-01	N/A	Sep. 27, 2018

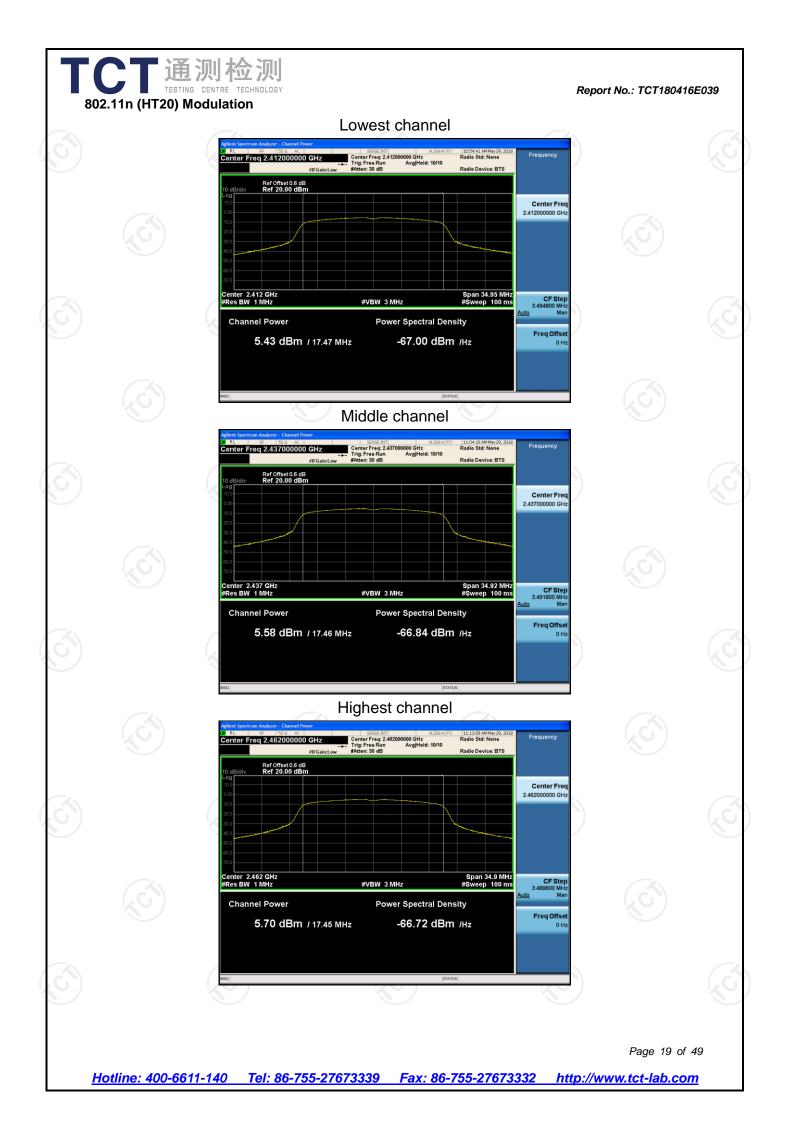
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

802.11b mode			
Test channel	Maximum Conducted Output Power (dBm)	Limit (dBm)	Result
Lowest	7.97	30.00	PASS
Middle	8.38	30.00	PASS
Highest	8.15	30.00	PASS
802.11g mode		(.6)	
Test channel	Maximum Conducted Output Power (dBm)	Limit (dBm)	Result
Lowest	5.96	30.00	PASS
Middle	6.21	30.00	PASS
Highest	6.27	30.00	PASS
802.11n(H20) mode		(*)
Test channel	Maximum Conducted Output Power (dBm)	Limit (dBm)	Result
Lowest	5.43	30.00	PASS
Middle	5.58	30.00	PASS
Highest	5.70	30.00	PASS

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6.	CT通测检测 4. Emission Bandwidtl 4.1. Test Specification	Report No.: TCT180416E03	39			
	Test Requirement:	FCC Part15 C Section 15.247 (a)(2)				
	Test Method:	KDB 558074				
	Limit:	>500kHz				
	Test Setup:	Spectrum Analyzer EUT				
	Test Mode:	Transmitting mode with modulation				
	Test Procedure:	 The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04. Set to the maximum power setting and enable the EUT transmit continuously. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. Measure and record the results in the test report. 				
	Test Result:	PASS				

6.4.2. Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018	
RF Cable (9KHz-26.5GHz)	тст	RE-06	N/A	Sep. 27, 2018	
Antenna Connector	тст	RFC-01	N/A	Sep. 27, 2018	

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

Report No.: TCT180416E039 6.4.3. Test data 6dB Emission Bandwidth (MHz) Test channel 802.11b 802.11g 802.11n(H20) Lowest 9.14 9.63 16.39 Middle 10.01 9.63 16.39 Highest 10.02 9.63 16.41 >500k Limit: Test Result: PASS Test plots as follows:

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CT通测检测 TESTING CENTRE TECHNOLOGY	Report No.: TCT180416E
5. Power Spectral De 5.1. Test Specification	nsity
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB 558074
Limit:	The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test Setup:	
	Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	 The testing follows Measurement Procedure 10.3 Method AVGPSD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v04 The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): 3 kHz ≤ RBW ≤ 100 kHz. Video bandwidth VBW ≥ 3 x RBW. Set the span to at least 1.5 times the OBW. Detector = RMS, Sweep time = auto couple. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. Measure and record the results in the test report.
Test Result:	PASS

6.5.2. Test Instruments

	RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due			
Spectrum Analyzer	Agilent	N9020A	MY49100060	Sep. 27, 2018			
RF Cable (9KHz-26.5GHz)	тст	RE-06	N/A	Sep. 27, 2018			
Antenna Connector	тст	RFC-01	N/A	Sep. 27, 2018			

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

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