

Page 1 of 63

# **FCC Test Report**

### Test Report On Behalf of Shenzhen Ningyuanda Technology Co., Ltd For WIFI CAMERA Model No.: A9, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15, X16, XD, X6D, A1, A7, A8, A10, A11, A20

FCC ID: 2BEXJA9

Prepared For:

Shenzhen Ningyuanda Technology Co., Ltd 402 Kaiteng Building, Bantian Street, Longgang District, Shenzhen, China

Prepared By:

Shenzhen HUAK Testing Technology Co., Ltd. 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

 Date of Test:
 Mar. 14, 2025 ~ Mar. 21, 2025

 Date of Report:
 Mar. 21, 2025

 Report Number:
 HK2503141199-E

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## **Test Result Certification**

Applicant's Name::	Shenzhen Ningyuanda Technology Co., Ltd
Address	402 Kaiteng Building, Bantian Street, Longgang District, Shenzhen, China
Manufacturer's Name	Shenzhen Ningyuanda Technology Co., Ltd
Address	402 Kaiteng Building, Bantian Street, Longgang District, Shenzhen, China
Product Description	
Trade Mark	N/A
Product Name:	WIFI CAMERA
Model and/or Type Reference :	A9, X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X12, X13, X14, X15, X16, XD, X6D, A1, A7, A8, A10, A11, A20
Standards	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013

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Date of Test		
Date (s) of Performance of Tests:	Mar. 14, 2025 ~ Mar. 21, 2025	
Date of Issue	Mar. 21, 2025	
Test Result	Pass	

Testing Engineer

en lian

Len Liao

Technical Manager

Ubri VOV

Sliver Wan

Authorized Signatory

ason Mou

Jason Zhou

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Т 691

## \*\* Modified History \*\*

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Mar. 21, 2025	Jason Zhou
HUP	HUR	HUP	HUP
<u></u>			

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## 1. Test Result Summary

## 1.1 Test Procedures and Results

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247(b)(4)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247(b)(3)	PASS
6dB Emission Bandwidth	§15.247(a)(2)	PASS
Power Spectral Density	§15.247(e)	PASS
Band Edge	§15.247(d)	PASS
Spurious Emission	§15.205/§15.209	PASS

Note:

1. PASS: Test item meets the requirement.

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.

## **1.2 Information of the Test Laboratory**

Shenzhen HUAK Testing Technology Co., Ltd. Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization :

A2LA Accreditation Code is 4781.01. FCC Designation Number is CN1229. Canada IC CAB identifier is CN0045. CNAS Registration Number is L9589.

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## **1.3 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
<sup>NG</sup> 1	Conducted Emission	±2.71dB
2	RF Power, Conducted	±0.37dB
3	Spurious Emissions, Conducted ±	
4	All Emissions, Radiated(<1G)	±3.90dB
5	All Emissions, Radiated(>1G)	
6	6 Temperature	
TEST 7	Humidity	±1.0%

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# 2. EUT Description

## 2.1 General Description of EUT

Equipment:	WIFI CAMERA	
Model Name:	A9	0
Series Model:	X1, X2, X3, X4, X5, X6, X7, X8, X9, X10, X11, X1 X15, X16, XD, X6D, A1, A7, A8, A10, A11, A20	12, X13, X14,
Model Difference:	All model's the function, software and electric circ same, only with product model named different. Tomodel: A9.	
FCC ID:	2BEXJA9	HUAN TES I
Antenna Type:	PCB Antenna	
Antenna Gain:	3.85dBi	AK TESTING
Operation Frequency:	802.11b/g/n20: 2412~2462MHz	OHUM
Number of Channels:	802.11b/g/n20: 11CH	and
Modulation Type:	DSSS, OFDM	C HUNK TES.
Power Source:	DC5V from Type-C or DC3.7V from battery	
Power Rating:	DC5V from Type-C or DC3.7V from battery	HUAK TESTIN

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications

or the User's Manual.

- 2. Antenna gain Refer to the antenna specifications.
- 3. The cable loss data is obtained from the supplier.
- 4. The test results in the report only apply to the tested sample.

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ſ		Ch	annel Lis	t For 802.11	b/802.11g/	802.11n (HT2	20)	
ES	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	01	2412	04	2427	07	2442	10	2457
_	02	2417	05	2432	08	2447	11	2462
3	03	2422	06	2437	09	2452	TESTING	

## 2.2 Carrier Frequency of Channels

#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

## 2.3 Operation of EUT during Testing

**Operating Mode** 

The mode is used: Transmitting mode for 802.11b/802.11g/802.11n (HT20)

Low Channel: 2412MHz Middle Channel: 2437MHz High Channel: 2462MHz

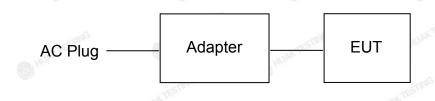
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## 2.4 Description of Test Setup

Operation of EUT during Conducted and Radiation testing:



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.

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## 3. General Information

## 3.1 Test Environment and Mode

Operating	Environment:
-----------	--------------

_				
5	Temperature:	25.0 °C	HUAKTESI	HUAKTES
	Humidity:	56 % RH	0	0
	Atmospheric Pressure:	1010 mbar	AK TESTING	G

### Test Mode:

Engineering Mode:	Keep the EUT in continuous transmitting
Engineering Mode.	by select channel and modulations

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

	Mode O	Data rate
à	802.11b	1Mbps
	802.11g	6Mbps
	802.11n(HT20)	6.5Mbps
	802.11n(H120)	6.5Mbps

#### **Final Test Mode:**

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(HT20).

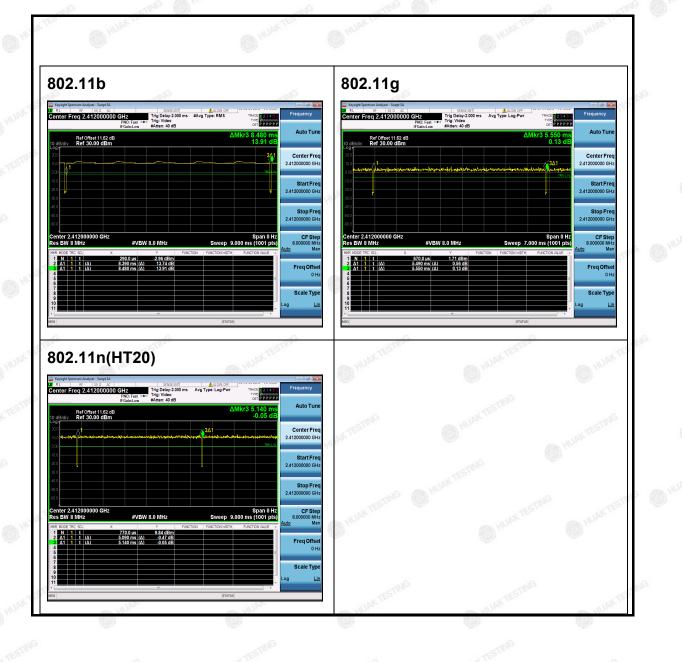
### 3. Mode Test Duty Cycle

	265 M	
Mode	Duty Cycle	
802.11b	0.989	-
802.11g	0.989	
802.11n(HT20)	0.990	

### Test plots as follows:

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## 3.2 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.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Remark
STAG	WIFI CAMERA	N/A	о A9	N/A	EUT
2	USB Cable	N/A	N/A	Length: 50cm	Accessory
3	Adapter	N/A	MDY-10-EH	Input: AC100-240V, 50/60Hz, 0.7A Output: DC5V/3A, 9V/3A, 12V/2.25A, 20V/1.35A	Peripheral
O HUM	0	0*	- O	0 *** 0	о
K TESTI	S	ç.	ESTING VERSIONS	- TEME	W TESTING

#### 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.

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# 4. Test Results and Measurement Data

## 4.1 Conducted Emission

### **Test Specification**

stopecification	Tearnie	TEST IV	TEST			
Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Frequency Range:	150 kHz to 30 MHz	O HUAK IL	at a	<b>FESTING</b>		
Receiver Setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto					
	Frequency range	Limit (d	dBuV)			
Limits:	(MHz)	Quasi-peak	Average	AKTESI		
	0.15-0.5	66 to 56* 💿	56 to 46*	20		
	0.5-5	56	46			
	5-30	60	50			
	WAX TESTING	TESTIN <sup>KS</sup>	NK TESTING	NKTES		
	Refe	rence Plane				
	40cm	n				
	×~~ ↓		•			
	E.U.T	ower 80cm LISN				
Tost Satur:						
Test Setup:		 	ter — AC power			
Test Setup:		Diane	ter — AC power			
Test Setup:	Test table/Insulation p	Diane	ter — AC power			
Test Setup:	Test table/Insulation p	Diane EMI Receiver	ter – AC power			
Test Setup:	Test table/Insulation p	Diane EMI Receiver	ter AC power			
Test Setup:	Remarkc E U.T. Equipment Under Test LISN: Line Impedence Stabiliza	Diane EMI Receiver	ter AC power			
•	Test table/Insulation p Remarkc E.U.T. Equipment Under Test LISN Line Impedence Stabiliza Test table height=0.8m	blane EMI Receiver	ter AC power	577		
Test Setup: Test Mode:	Test table/Insulation p Remark E.U.T: Equipment Under Test LISN Line Impedence Stabiliza Test table height=0.8m	blane EMI Receiver	AKTESTING	STR SWAMTEE		
•	Test table/Insulation p         Remark:         EUT: Equipment Under Test         LISN: Line Impedence Stabiliza         Test table height=0.8m         Transmitting with me         1. The E.U.T is conr	blane EMI Receiver tion Network	in power through	•		
•	Remark         E.U.T. Equipment Under Test         LISN Line Impedence Stabilize         Test table height=0.8m         Transmitting with me         1. The E.U.T is conr         line impedance st	blane Fill EMI Receiver tion Network odulation nected to the ma tabilization network	in power throu prk (L.I.S.N.).	This		
•	Remark         EUT: Equipment Under Test         LISN: Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 500hm	blane EMI Receiver tion Network odulation nected to the mata tabilization network	in power throu prk (L.I.S.N.).	This		
•	Remark         E.U.T. Equipment Under Test         LISN Line Impedence Stabilize         Test table height=0.8m         Transmitting with me         1. The E.U.T is conr         line impedance st	blane EMI Receiver tion Network odulation nected to the mata tabilization network	in power throu prk (L.I.S.N.).	This		
•	Remark         EUT: Equipment Under Test         LISN: Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 500hm	odulation nected to the ma tabilization network	in power throu ork (L.I.S.N.). impedance fo	This or the		
•	Remark         EUT: Equipment Under Test         LISN Line Impedence Stabiliza         Test table height=0.8m         1. The E.U.T is conr         line impedance st         provides a 50ohm         measuring equipr	odulation nected to the ma tabilization network n/50uH coupling ment. evices are also co	in power throu ork (L.I.S.N.). impedance fo	This or the ne mai		
Test Mode:	Test table/Insulation p         Remark:         EUT: Equipment Under Test         LISN: Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 50ohm         measuring equipr         2. The peripheral de power through a l	ion Network	in power throu ork (L.I.S.N.). impedance fo onnected to th es a 500hm/5	This or the ne mai 0uH		
Test Mode:	Remark         EUT: Equipment Under Test         LISN Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 500hm         measuring equipr         2. The peripheral de         power through a l         coupling impedance	odulation nected to the ma tabilization network n/50uH coupling ment. evices are also co LISN that provide to with 50ohm t	in power throu ork (L.I.S.N.). impedance fo onnected to th es a 50ohm/5 ermination. (F	This or the ne mai 0uH Please		
•	Test table/Insulation p Remark E.U.T: Equipment Under Test LISN Line Impedence Stabilize Transmitting with me 1. The E.U.T is conr line impedance st provides a 500hm measuring equipr 2. The peripheral de power through a l coupling impedance st	odulation nected to the ma tabilization network n/50uH coupling ment. evices are also co LISN that provide to with 50ohm t	in power throu ork (L.I.S.N.). impedance fo onnected to th es a 50ohm/5 ermination. (F	This or the ne mai 0uH Please		
Test Mode:	Test table/Insulation p         Remark         EUT: Equipment Under Test         LISN Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 50ohm         measuring equipm         2. The peripheral de         power through a I         coupling impedance         potographs).	odulation mected to the matabilization network odulation mected to the matabilization network abilization network provides are also concerned LISN that provides accerned to the matabilization network abilization	in power throu ork (L.I.S.N.). impedance fo onnected to th es a 50ohm/5 ermination. (F est setup and	This or the ne mai 0uH Please		
Test Mode:	Remark         EUT: Equipment Under Test         LISN Line Impedence Stabilize         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 500hm         measuring equipr         2. The peripheral de         power through a I         coupling impedance         refer to the block         photographs).         3. Both sides of A.C	odulation mected to the matabilization network odulation mected to the matabilization network abilization network 150uH coupling ment. evices are also couplin	in power throu ork (L.I.S.N.). impedance for onnected to th es a 50ohm/5 ermination. (F est setup and	This or the ne mai 0uH Please m		
Test Mode:	Test table/Insulation p Remark EUT: Equipment Under Test LISN: Line Impedence Stabiliza Test table height=0.8m 1. The E.U.T is conr line impedance st provides a 500hm measuring equipr 2. The peripheral de power through a l coupling impedan refer to the block photographs). 3. Both sides of A.C conducted interfe	odulation mected to the mata abilization network evices are also co LISN that provide nected to 500hm to diagram of the te . line are checked rence. In order to	in power throu ork (L.I.S.N.). impedance for onnected to the es a 500hm/5 ermination. (F est setup and ed for maximu o find the max	This or the ne mai 0uH Please m kimum		
Test Mode:	Test table/Insulation p         Remark         EUT: Equipment Under Test         LISN Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 50ohm         measuring equipr         2. The peripheral de         power through a I         coupling impedance         refer to the block         photographs).         3. Both sides of A.C         conducted interfe         emission, the relation	odulation mected to the matabilization network evices are also conduction recited to the matabilization network abilization network sevices are also conducted LISN that provided and the termination of the termination to any the termination of termination of the termination of termin	in power throu ork (L.I.S.N.). impedance for onnected to th es a 50ohm/5 ermination. (F est setup and ed for maximu o find the max equipment ar	This or the ne mai OuH Please m kimum nd all o		
Test Mode:	Remark         EUT: Equipment Under Test         LISN Line Impedence Stabilize         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 500hm         measuring equipr         2. The peripheral de         power through a I         coupling impedance         refer to the block         photographs).         3. Both sides of A.C         conducted interfe         emission, the relation of the interface cable	odulation mected to the matabilization network odulation mected to the matabilization network abilization network N50uH coupling ment. evices are also couplin	in power throu ork (L.I.S.N.). impedance for onnected to the es a 50ohm/5 ermination. (F est setup and ed for maximu o find the max equipment ar uged according	This or the ne mai OuH Please m kimum nd all o g to		
Test Mode:	Test table/Insulation p         Remark         EUT: Equipment Under Test         LISN Line Impedence Stabiliza         Transmitting with me         1. The E.U.T is conr         line impedance st         provides a 50ohm         measuring equipr         2. The peripheral de         power through a I         coupling impedance         refer to the block         photographs).         3. Both sides of A.C         conducted interfe         emission, the relation	odulation mected to the matabilization network odulation mected to the matabilization network abilization network N50uH coupling ment. evices are also couplin	in power throu ork (L.I.S.N.). impedance for onnected to the es a 50ohm/5 ermination. (F est setup and ed for maximu o find the max equipment ar uged according	This or the ne mai OuH Please m kimum nd all o g to		

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ATTAL YOU AND		Allow HU	10799A	Allow HU	SICES 1	
Conducted Emission Shielding Room Test Site (843)						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
Receiver	R&S	ESR	HKE-005	Feb. 19, 2025	Feb. 18, 2026	
LISN	R&S	ENV216	HKE-002	Feb. 19, 2025	Feb. 18, 2026	
LISN	R&S 🌑	ENV216	HKE-059	Feb. 19, 2025	Feb. 18, 2026	
Coax cable (9KHz-30MHz)	Times	381806-002	N/A	Feb. 19, 2025	Feb. 18, 2026	
EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	N/A	N/A	
10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	Feb. 19, 2025	Feb. 18, 2026	

### **Test Instruments**

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

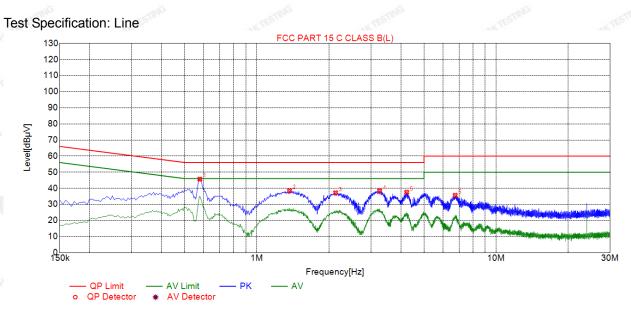
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## 4.2 Test Result

All modes have been tested. Only the worst result was reported as below:



Sus	pected	List

61	NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре
	1	0.5775	<mark>45.6</mark> 5	19.86	56.00	10.35	25.79	PK	L
8	2	1.3695	38.42	19.92	56.00	17.58	18.50	PK	L
	3	2.1345	37.17	19.98	56.00	18.83	17.19	PK	L
3	4	3.2595	38.38	20.07	56.00	17.62	18.31	PK	L
l'	5	4.2315	37.54	20.09	56.00	18.46	17.45	PK	L
3	6	6.7470	35.62	20.07	60.00	24.38	15.55	PK	L

Remark: Margin = Limit – Level

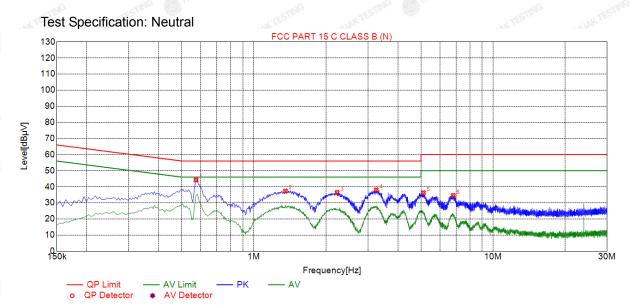
Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

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Su	Suspected List							
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре
1	0.5730	44.28	19.74	56.00	11.72	24.54	PK	N
2	1.3560	37.34	19.79	56.00	18.66	17.55	PK	Ν
3	2.2290	36.50	19.87	56.00	19.50	16.63	PK	Ν
4	3.2505	38.07	19.95	56.00	17.93	18.12	PK	N
5	5. <mark>1</mark> 135	36.26	20.00	60.00	23.74	16.26	PK	Ν
6	6.8145	34.59	19.97	60.00	25.41	14.62	PK	Ν

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

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## 4.3 Maximum Conducted Output Power

## Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)				
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02				
Limit:	30dBm				
Test Setup:	RF automatic control unit				
Test Mode:	Transmitting mode with modulation				
Test Procedure:	<ol> <li>The testing follows the Measurement Procedure of FCC KDB 558074 D01 15.247 Meas Guidance v05r02.</li> <li>The RF output of EUT was connected to the RF automatic control unit by RF cable. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Measure the Peak output power and record the results in the test report.</li> </ol>				
Test Result:	PASS				

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### **Test Instruments**

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026	
Power meter	Agilent	E4419B	HKE-085	Feb. 19, 2025	Feb. 18, 2026	
Power Sensor	Agilent	E9300A	HKE-086	Feb. 19, 2025	Feb. 18, 2026	
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026	
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026	
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	Feb. 19, 2025	Feb. 18, 2026	

**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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### Test Data

Mode	Test Channel	Frequency	Maximum Peak Conducted Output Power	LIMIT
		(MHz)	(dBm)	dBm
802.11b	CH01	2412	7.61	30
802.11b	CH06	2437	8.26	30
802.11b	CH11	2462	8.73	30
802.11g	CH01	2412	7.12	30
802.11g	CH06	2437	7.74	30
802.11g	CH11	2462	8.14	30
802.11n(HT20)	CH01	2412	6.84	30
802.11n(HT20)	CH06	2437	7.67	30
802.11n(HT20)	CH11	2462	8.04	30

Note: The test results including the cable loss.

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## 4.4 Emission Bandwidth

### **Test Specification**

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)			
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02			
Limit:	>500kHz			
Test Setup:	Spectrum Analyzer			
Test Mode:	Transmitting mode with modulation			
Test Procedure:	<ol> <li>The testing follows FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>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.</li> <li>Measure and record the results in the test report.</li> </ol>			
Test Result:	PASS			

## **Test Instruments**

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	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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### Test Data

Test channel	6dB Emission Bandwidth (MHz)			
Test channel	802.11b	802.11g	802.11n(H20)	
Lowest	8.520	16.000	13.760	
Middle	8.520	16.200	17.520	
Highest	8.480	14.760	14.760	
Limit:	>500kHz			
Test Result:	PASS			

Test plots as follows:

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#### 802.11b Modulation

Lowest channel



Middle channel



#### Highest channel



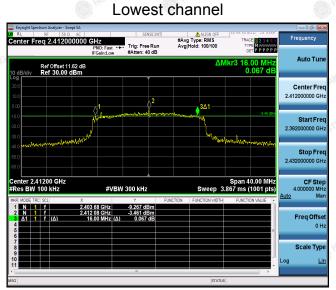
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#### 802.11g Modulation



#### Middle channel



#### Highest channel



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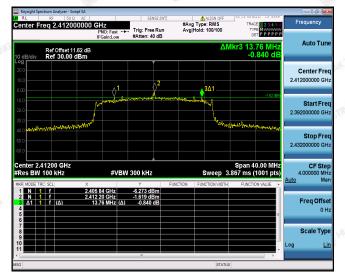


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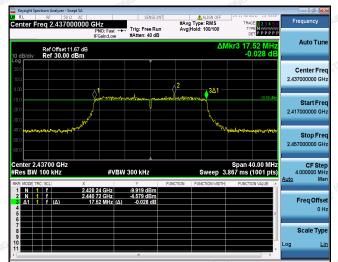
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#### 802.11n (HT20) Modulation

Lowest channel



Middle channel



### Highest channel

ALIGN OF #Avg Type: RMS Avg|Hold: 100/100 ter Freg 2.46 Freq 1 2 3 4 5 MWWWW P P P P P Trig: Free Ru Auto Tu 14.76 Ref Offset 11.77 dB Ref 30.00 dBm Center Fre 00000 Gł Start Fre Stop Fr ter 2.46200 GHz s BW 100 kHz Span 40.00 Mi 3.867 ms (1001 pt CF Ste #VBW 300 kHz 2.454 60 GHz -5.412 dBm 2.462 20 GHz -2.410 dBm 14.76 MHz (Δ) -2.799 dB Freq Offs Scale Typ

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# 4.5 Power Spectral Density

## **Test Specification**

Test Requirement:	FCC Part15 C Section 15.247 (e)		
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02		
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		
Test Mode:	Transmitting mode with modulation		
Test Procedure:	<ol> <li>The testing follows Measurement procedure 10.2 method PKPSD of FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02.</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>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.</li> <li>Detector = Peak, Sweep time = auto couple.</li> <li>Employ trace averaging (Peak) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level.</li> <li>Measure and record the results in the test report.</li> </ol>		
Test Result:	PASS		

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### **Test Instruments**

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	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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### Test data

EUT Set Mode	Channel	Result (dBm/30KHz)	Result (dBm/3kHz)
802.11b	Lowest	-5.84	-15.84
	Middle	-4.92	-14.92
	Highest	-4.19	-14.19
802.11g	Lowest	-7.77	-17.77
	Middle	-7.42	-17.42
	Highest	-6.80	-16.8
802.11n(H20)	Lowest	-6.72	-16.72
	Middle	-6.02	-16.02
	Highest	-4.82	-14.82
PSD Test Resu	lt (dBm/3kHz)= P\$	SD Test Result (dBm/30kH	lz)-10
Limit: 8dBm/3kl	Hz		
Test Result:	STAN	PASS	STAG

Test plots as follows:

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#### 802.11b Modulation



Middle channel



#### Highest channel

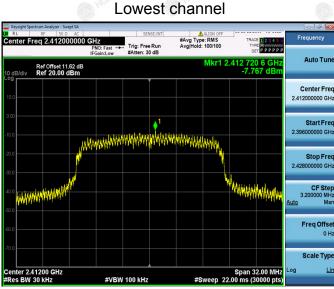
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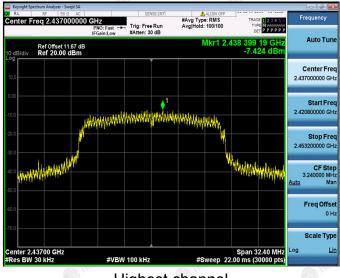
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#### 802.11g Modulation



#### Middle channel



#### Highest channel

ALIGN OF #Avg Type: RMS Avg|Hold: 100/100 Center Freq 2.462000000 GHz Frequ Trig: Free Rur TYPE MWWWW DET P P P P P Auto Tun 8 977 5 G -6.799 dl Ref Offset 11.77 dB Ref 20.00 dBm Center Fred 2.462000000 GH Start Fre 2.447240000 G Stop Free 2.476760000 GH CF Ste 2.952000 Mi Freq Offs Scale Typ er 2.46200 GHz BW 30 kHz Span 29.52 MH #VBW 100 kHz

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Lowest channel

FICATION

### 802.11n (HT20) Modulation



#### Middle channel



Highest channel

#Avg Type: RMS Avg|Hold: 100/100 Center Freq 2.462000000 GHz Frequency TYPE MWWWWW Trig: Free Run Auto Tu 62 111 7 0 -4.824 d Ref Offset 11.77 dB Ref 20.00 dBm Center Fre 2.46200000 GH Start Fr 2.447240000 0 Stop Fre 2.476760000 GH CF SI 2.95200 Freq Offs Scale Typ Span 29.52 MH #Sweep 22.00 ms (30000 pt ter 2.46200 GHz s BW 30 kHz #VBW 100 kHz

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