

FCC Test Report

Test report
On Behalf of
Shenzhen Sonida Digital Technology Co.,Ltd
For
Digital Camera
Model No.: DC201, DC201S, DC201A, DC206, DC205, DC218

FCC ID: 2ATNX-DC201

Prepared For: Shenzhen Sonida Digital Technology Co.,Ltd

Zhengchangda Technopark, Jian'an Road, Zhancheng Community, Fuhai

Street, Bao'an District, Shenzhen, China

Prepared By: Shenzhen HUAK Testing Technology Co., Ltd.

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Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Date of Test: Sept. 12, 2024 ~ Sept. 29, 2024

Date of Report: Sept. 29, 2024

Report Number: HK2409125683-E



Test Result Certification

Shenzhen Sonida Digital Technology Co.,Ltd Applicant's name

Zhengchangda Technopark, Jian'an Road, Zhancheng

Community, Fuhai Street, Bao'an District, Shenzhen, China

Report No.: HK2409125683-E

Shenzhen Sonida Digital Technology Co.,Ltd Manufacturer's Name

Zhengchangda Technopark, Jian'an Road, Zhancheng

Community, Fuhai Street, Bao'an District, Shenzhen, China

Product description

N/A Trade Mark:

Product name...... Digital Camera

Model and/or type reference :: DC201, DC201S, DC201A, DC206, DC205, DC218

FCC Rules and Regulations Part 15 Subpart C Section 15.247 Standards

ANSI C63.10: 2013

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Date of Test

Date (s) of performance of tests Sept. 12, 2024 ~ Sept. 29, 2024

Date of Issue....: Sept. 29, 2024

Test Result.....

Len lian Testing Engineer

(Len Liao)

Technical Manager

(Sliver Wan)

Authorized Signatory:

(Jason Zhou)



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** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Sept. 29, 2024	Jason Zhou
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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.	ltem	MU
1	Conducted Emission	±2.71dB
2	RF power, conducted	±0.37dB
3 HUAKTE	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.90dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

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2. EUT Description

2.1. General Description of EUT

1015	Var. Plan Plan
Equipment:	Digital Camera
Model Name:	DC201
Series Model:	DC201S, DC201A, DC206, DC205, DC218
Model Difference:	All model's the function, software and electric circuit are the same, only with a product model named different. Test sample mode: DC201.
FCC ID:	2ATNX-DC201
Antenna Type:	Internal Antenna
Antenna Gain:	1.36dBi
Operation frequency:	802.11b/g/n 20:2412~2462 MHz 802.11n 40: 2422~2452MHz
Number of Channels:	802.11b/g/n20: 11CH 802.11n 40: 7CH
Modulation Type:	DSSS, OFDM
Power Source:	DC5V From Adapter with AC100-240V, 50/60Hz or DC3.7V From Battery
Power Rating:	DC5V From Adapter with AC100-240V, 50/60Hz or DC3.7V From Battery
Niata.	

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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2.2. Carrier Frequency of Channels

Channel List For 802.11b/802.11g/802.11n (HT20)							
							Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452	-STING	

Channel List For 802.11n (HT40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
STING	X TESTING	04	2427	07	2442	TESTIN	NTE
@ H		05	2432	08	2447	HILAK	A HOM
03	2422	06	2437	09	2452		

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

The mode is used: Transmitting mode for 802.11n (HT40)

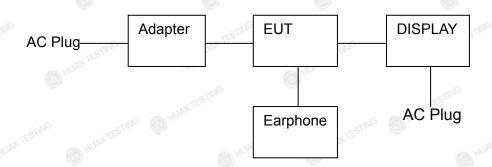
Low Channel: 2422MHz Middle Channel: 2437MHz High Channel: 2452MHz

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2.4. Description of Test Setup

Operation of EUT during conducted testing and below 1GHz radiation testing:



Operation of EUT during above 1GHz 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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2.5. 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
1	Digital Camera	N/A	DC201	N/A	EUT
2	USB cable	N/A	N/A	Length:1m	Accessory
3,415	Adapter	N/A	S531	Input: AC100-240V, 50/60Hz, 0.5A Output: DC5V/1A	Accessory
4	Earphone	N/A	N/A	N/A	Peripheral
5	DISPLAY	PHILIPS	279E1	N/A	Peripheral
HUAK	MUAK I	O HUP	MAKE	HUAK	HUAK

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 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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3. Genera Information

3.1. Test Environment and Mode

perating Environment:					
Temperature:	25.0 °C	WAY TEST	HUAKT		
Humidity:	56 % RH	9			
Atmospheric Pressure:	1010 mbar	AK TESTING	O		
est Mode:					
Engineering mode: Keep the EUT in continuous transmitting by select channel and modulations					

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. For the full battery state and The output power to the maximum state.

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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.

Data rate
1Mbps
6Mbps
6.5Mbps
13.5Mbps

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(H20), 13.5Mbps for 802.11n(H40).

3. Mode Test Duty Cycle

Tool Buty Gyold		-0.0
Mode	Duty Cycle	Duty Cycle Factor (dB)
802.11b	0.909	-0.41
802.11g	0.918	-0.37
802.11n(H20)	0.918	-0.37
802.11n(H40)	0.918	-0.37

Test plots as follows:



802.11g

| Content Free 24 1000000 GHz | Training Trainin



4. Test Results and Measurement Data

4.1. Conducted Emission

Test Specification

-TING	TIME	TIME	TING	711				
Test Requirement:	FCC Part15 C Secti	on 15.207	AKTE	HUAKTES				
Test Method:	ANSI C63.10:2013		TING					
Frequency Range:	150 kHz to 30 MHz	150 kHz to 30 MHz						
Receiver setup:	RBW=9 kHz, VBW=	RBW=9 kHz, VBW=30 kHz, Sweep time=auto						
Limits:	Frequency range (MHz) 0.15-0.5 0.5-5 5-30	Limit (c Quasi-peak 66 to 56* 56 60	Average 56 to 46* 46 50	WTSTNS				
Test Setup:	Test table/Insulation p	Test table/Insulation plane Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network						
Test Mode:	transmitting with mo	dulation	AK TESTING	WAK TESTIN				
Test Procedure:	 The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 							
Test Result:	PASS	, ax TE	STING .	-MG				
251	15 TO 15	NEW HILL		257				

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Test Instruments

Conducted Emission Shielding Room Test Site (843)						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
Receiver	R&S	ESR-7	HKE-005	Feb. 20, 2024	Feb. 19, 2025	
LISN	R&S	ENV216	HKE-002	Feb. 20, 2024	Feb. 19, 2025	
Coax cable (9KHz-30MHz)	Times	381806-002	N/A	Feb. 20, 2024	Feb. 19, 2025	
10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	Feb. 20, 2024	Feb. 19, 2025	
Conducted test software	Tonscend	TS+ Rev 2.5.0.0	HKE-081	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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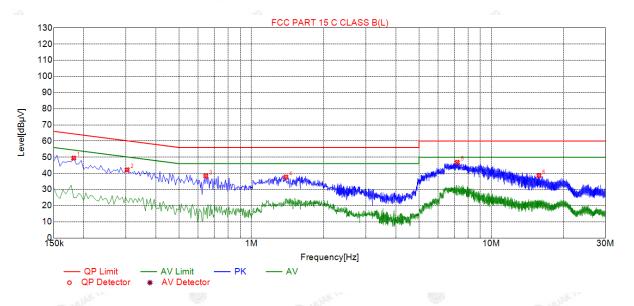
4.2. Test Result

Remark: All the test modes completed for test. only the worst result

Report No.: HK2409125683-E

Of was reported as below: Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)

Test Specification: Line



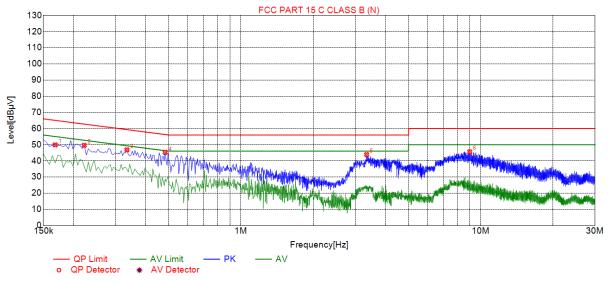
Su	Suspected List									
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре		
1	0.1815	49.41	19.86	64.42	15.01	29.55	PK	L		
2	0.3030	42.18	19.85	60.16	17.98	22.33	PK	L		
3	0.6450	38.34	19.86	56.00	17.66	18.48	PK	L		
4	1.3920	37.67	19.92	56.00	18.33	17.75	PK	L		
5	7.2195	46.81	20.06	60.00	13.19	26.75	PK	L		
6	15.8325	38.60	19.82	60.00	21.40	18.78	PK	L		

Remark: Margin = Limit - Level

Correction factor = Cable lose + LISN insertion loss Level=Test receiver reading + correction factor

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Test Specification: Neutral



Sus	Suspected List									
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре		
1	0.1680	49.90	19.71	65.06	15.16	35.69	PK	N		
2	0.2220	49.64	19.74	62.74	13.10	29.90	PK	N		
3	0.3345	46.84	19.73	59.34	12.50	27.11	PK	N		
4	0.4830	45.28	19.73	56.29	11.01	25.55	PK	N		
5	3.3450	43.90	19.95	56.00	12.10	23.95	PK	N		
6	9.0015	45.61	19.90	60.00	14.39	25.71	PK	N		

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 1	FCC Part15 C Section 15.247 (b)(3)					
Test Method:	KDB 558074 D01 15.24	KDB 558074 D01 15.247 Meas Guidance v05r02					
Limit:	30dBm	OK TESTING					
Test Setup:	RF automatic control unit	EUT HANTESTING HANK TESTING					
Test Mode:	Transmitting mode with modulation						
Test Procedure:	FCC KDB 558074 DO v05r02. 2. The RF output of EUT automatic control union The path loss was control measurement. 3. Set to the maximum path to the continuous continuous continuous path continuous	 The RF output of EUT was connected to the RF automatic control unit 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 Peak output power and record the results 					
Test Result:	PASS						

Test Instruments

RF Test Room							
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 20, 2024	Feb. 19, 2025		
Power meter	Agilent	E4419B	HKE-085	Feb. 20, 2024	Feb. 19, 2025		
Power Sensor	Agilent	E9300A	HKE-086	Feb. 20, 2024	Feb. 19, 2025		
RF cable	Times	1-40G	HKE-034	Feb. 20, 2024	Feb. 19, 2025		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 20, 2024	Feb. 19, 2025		

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	Frequency	Maximum Peak Conducted Output Power	LIMIT	
	(MHz)	(dBm)	dBm	
CH01	2412	8.09	30	
CH06	2437	7.01	30	
CH11	2462	6.55	30	
CH01	2412	7.21	30	
CH06	2437	7.87	30	
CH11	2462	6.94	30	
CH01	2412	7.52	30	
CH06	2437	7.11	30	
CH11	2462	6.54	30	
CH03	2422	7.93	30	
CH06	2437	7.58	30	
CH09	2452	7.23	30	
	Channel CH01 CH06 CH11 CH06 CH11 CH01 CH06 CH11 CH06 CH11 CH06 CH11 CH06	Channel (MHz) CH01 2412 CH06 2437 CH11 2462 CH06 2437 CH11 2462 CH07 2412	Test ChannelFrequency (MHz)Conducted Output Power(MHz)(dBm)CH0124128.09CH0624377.01CH1124626.55CH0124127.21CH0624377.87CH1124626.94CH0124127.52CH0624377.11CH1124626.54CH0324227.93CH0624377.58	

Note: 1.The test results including the cable lose.

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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 EUT					
Test Mode:	Transmitting mode with modulation					
Test Procedure:	 The testing follows FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02. 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					

Test Instruments

ATTAL HOUSE	NO.	or Mr.	ALL HO.	ALL HOUSE	ALL HO.		
RF Test Room							
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 20, 2024	Feb. 19, 2025		
RF cable	Times	1-40G	HKE-034	Feb. 20, 2024	Feb. 19, 2025		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 20, 2024	Feb. 19, 2025		

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

Took ob annol	6dB Emission Bandwidth (MHz)						
Test channel	802.11b	802.11g	802.11n(H20)	802.11n(H40)			
Lowest	9.040	16.560	17.760	36.480			
Middle	9.000	16.560	17.720	36.400			
Highest	8.960	16.560	17.800	36.480			
Limit:	3 MILANTES.	>!	500kHz				
Test Result:	TOK.	TESTING WUAKTESTI	PASS	TIME WANTESTING			

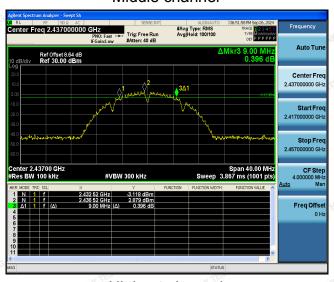
Test plots as follows:

802.11b Modulation

Lowest channel



Middle channel



Highest channel



802.11g Modulation

Lowest channel



Middle channel



Highest channel



802.11n (HT20) Modulation

Lowest channel



Middle channel



Highest channel



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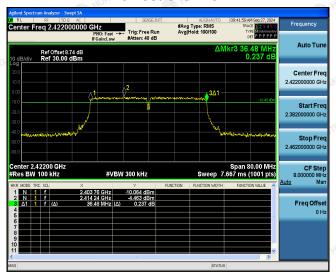




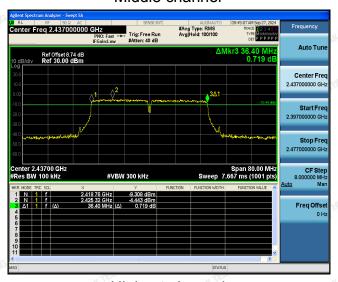


802.11n (HT40) Modulation

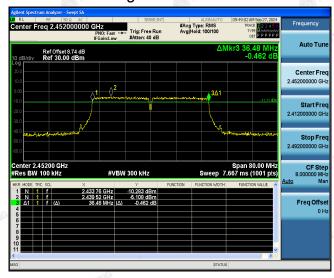
Lowest channel



Middle channel



Highest channel







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 EUI					
Test Mode:	Transmitting mode with modulation					
Test Procedure:	 The testing follows Measurement procedure 10.2 method PKPSD of FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02. 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 = Peak, Sweep time = auto couple. Employ trace averaging (Peak) 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					

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.



Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 20, 2024	Feb. 19, 2025	
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Feb. 20, 2024	Feb. 19, 2025	
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 20, 2024	Feb. 19, 2025	
RF test software	Tonscend	JS1120-B Version 2.6	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	Test Result (dBm/30kHz)	Result (dBm/3kHz)
	Lowest	-2.28	-12.28
802.11b	Middle	-2.56	-12.56
	Highest	-2.85	-12.85
	Lowest	-3.47	-13.47
802.11g	Middle	-3.97	-13.97
	Highest	-4.78	-14.78
802.11n(H20)	Lowest	-3.73	-13.73
	Middle	-4.16	-14.16
	Highest	-4.81	-14.81
	Lowest	-5.47	-15.47
802.11n(H40)	Middle	-5.64	-15.64
	Highest	-6.20	-16.20
PSD test result (dB	sm/3kHz)= PSD	test result (dBm/30k	Hz)-10
Limit: 8dBm/3kHz			
Test Result:	STIN	PASS	STING

Test plots as follows:

802.11b Modulation

Lowest channel



Middle channel

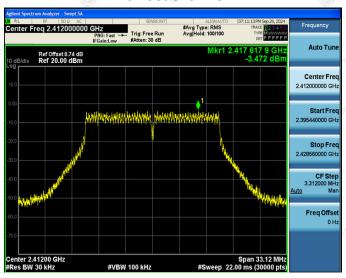


Highest channel



802.11g Modulation

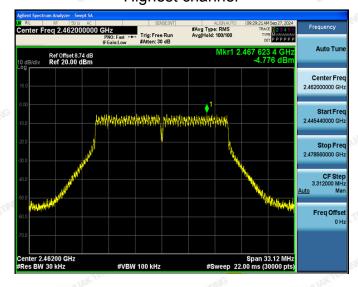
Lowest channel



Middle channel

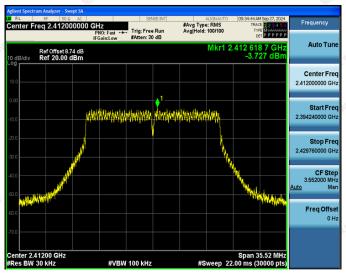


Highest channel

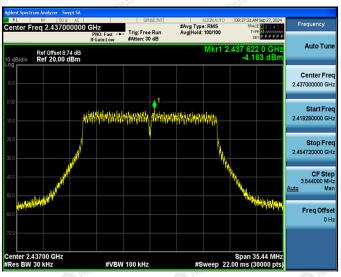


802.11n (HT20) Modulation

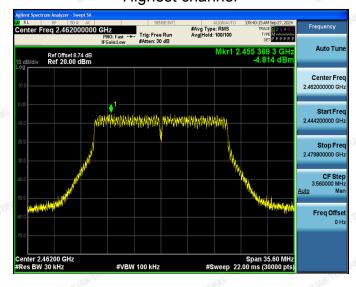
Lowest channel



Middle channel



Highest channel



802.11n (HT40) Modulation

Lowest channel



Middle channel



Highest channel

