

FCC Test Report

Test report
On Behalf of
Shenzhen Sonida Digital Technology Co.,Ltd
For
DIGITAL CAMCORDER
Model No.: HDV-514K Plus

FCC ID: 2ATNX-HDV-514KPLUS

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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Date of Test: Dec. 30, 2024 ~ Jan. 15, 2025

Date of Report: Jan. 15, 2025

Report Number: HK2412308170-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.: HK2412308170-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 CAMCORDER

Model and/or type reference .: HDV-514K Plus

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 Dec. 30, 2024 ~ Jan. 15, 2025

Date of Issue....: Jan. 15, 2025

Test Result.....

Testing Engineer

Len lian

(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	Jan. 15, 2025	Jason Zhou
TNG	mG mG	m/G	G ING



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
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

Equipment:	DIGITAL CAMCORDER
Model Name:	HDV-514K Plus
Series Model:	N/A HUMTES HUMTES
Model Difference:	N/A WITESTING
FCC ID:	2ATNX-HDV-514KPLUS
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

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 CAMCORDER	N/A	HDV-514K Plus	N/A (MA)	EUT
2	USB cable	N/A	N/A	Length: 90cm	Accessory
3	Adapter	N/A	S531	Input: AC100-240V, 50/60Hz, 0.5A Output: DC5V/1A	Accessory
4	Smart TV	PHILIPS	32PFF5893/T3	N/A	Peripheral
TESTIN	5 TESTINE		TESTING	TESTINE	TESTING
	O HUAN		HUAN		HUNN

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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3. Genera Information

3.1. Test Environment and Mode

perating Environment:			
Temperature:	25.0 °C	HUAKTESII	HUAK
Humidity:	56 % RH	(i)	
Atmospheric Pressure:	1010 mbar	AX TESTING	36
est Mode:		. 500	
Engineering mode:	Keep the EUT by select chann		

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.

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	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		Sign
Mode	Duty Cycle	Duty Cycle Factor (dB)
802.11b	0.962	-0.17
802.11g	0.955	-0.20
802.11n(H20)	0.955	-0.20
802.11n(H40)	0.955	-0.20

Test plots as follows:



802.11b 802.11g Ref Offset 8.64 dB Ref 30.00 dBm Ref Offset 8.64 dB Ref 30.00 dBm 1.250 ms 13.90 dBm 1.270 ms (Δ) -39.76 dB 1.320 ms (Δ) -0.43 dB 802.11n(H20) 802.11n(H40)



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=	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:	40cr	blane EMI Receiver] ter — AC power	ANTESTA.			
Test Mode:	transmitting with mo	dulation	AK TESTING	WAK TESTIN			
Test Procedure:	1. The E.U.T is conline impedance is provides a 50ohr measuring equipm 2. The peripheral depower through a coupling impedar refer to the bloophotographs). 3. Both sides of A conducted interfeemission, the relating the interface cab ANSI C63.10: 20	stabilization netwon/50uH couplingment. evices are also conceed LISN that province with 50ohm ock diagram of the coupling are chartive positions of oles must be chartive positions of the coupling are chartive positions of the coupling are chartive positions of the coupling are charting are	work (L.I.S.N g impedance onnected to the ides a 50ohr termination. (the test set to find the material anged according impediance)	ne main m/50uH (Please up and aximum aximum ad all of ding to			
Test Result:	PASS	, ax TE	STING .	-MG			
251	15 TO 15	NEW HILL		257			



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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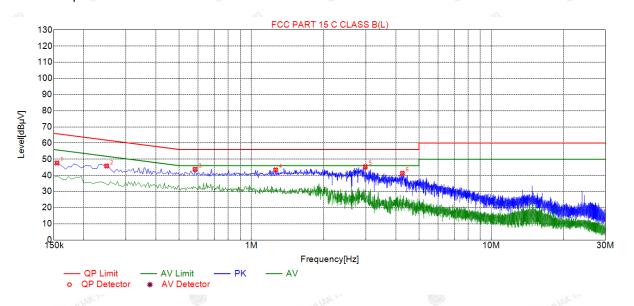
4.2. Test Result

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

Report No.: HK2412308170-E

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

Test Specification: Line



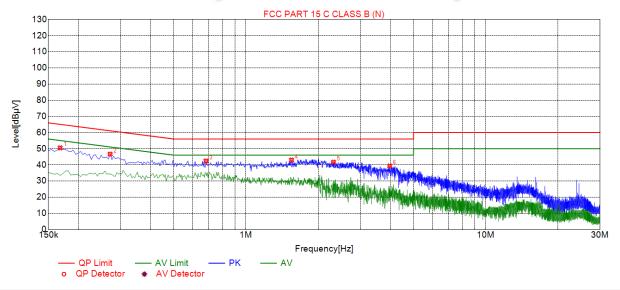
Sus	Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре	
1	0.1545	47.64	19.83	65.75	18.11	27.81	PK	L	
2	0.2490	45.81	19.84	61.79	15.98	25.97	PK	L	
3	0.5820	43.77	19.86	56.00	12.23	23.91	PK	L	
4	1.2615	43.35	19.90	56.00	12.65	23.45	PK	L	
5	2.9850	45.31	20.05	56.00	10.69	25.26	PK	L	
6	4.2630	41.31	20.09	56.00	14.69	21.22	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	50.51	19.71	65.06	14.55	30.80	PK	N	
2	0.2715	46.62	19.73	61.07	14.45	26.89	PK	N	
3	0.6810	42.40	19.74	56.00	13.60	22.66	PK	N	
4	1.5495	42.98	19.80	56.00	13.02	23.18	PK	N	
5	2.3190	41.65	19.88	56.00	14.35	21.77	PK	N	
6	3.9795	39.31	19.97	56.00	16.69	19.34	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 15.247 (b)(3)					
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02					
Limit:	30dBm					
Test Setup:	RF automatic control unit EUT HUMETER THE					
Test Mode:	Transmitting mode with modulation					
Test Procedure:	 The testing follows the Measurement Procedure of FCC KDB 558074 D01 15.247 Meas Guidance v05r02. 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 in the test report. 					
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

Mode	Test Channel	Frequency	Maximum Peak Conducted Output Power	LIMIT
	0.10.11101	(MHz)	(dBm)	dBm
802.11b	CH01	2412	7.85	30
802.11b	CH06	2437	7.61	30
802.11b	CH11	2462	8.50	30
802.11g	CH01	2412	6.42	30
802.11g	CH06	2437	7.30	30
802.11g	CH11	2462	6.92	30
802.11n(HT20)	CH01	2412	7.98	30
802.11n(HT20)	CH06	2437	6.73	30
802.11n(HT20)	CH11	2462	7.87	30
802.11n(HT40)	CH03	2422	7.26	30
802.11n(HT40)	CH06	2437	7.70	30
802.11n(HT40)	CH09	2452	6.52	30

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

Toot shannel	6dB Emission Bandwidth (MHz)						
Test channel	802.11b	802.11g	802.11n(H20)	802.11n(H40)			
Lowest	8.560	16.520	17.760	36.320			
Middle	9.000	16.560	17.760	36.320			
Highest	9.040	16.600	17.760	36.480			
Limit:	3 HUAKTES!	>5	00kHz	0.0			
Test Result:	, law	TESTING HUAK TESTING	PASS	THE HURK TESTING			

Test plots as follows:

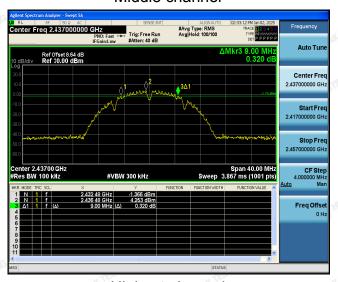
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802.11b Modulation

Lowest channel



Middle channel



Highest channel

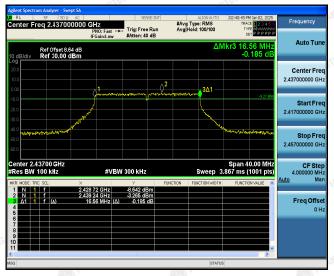


802.11g Modulation

Lowest channel



Middle channel



Highest channel



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802.11n (HT20) Modulation

Lowest channel



Middle channel



Highest channel



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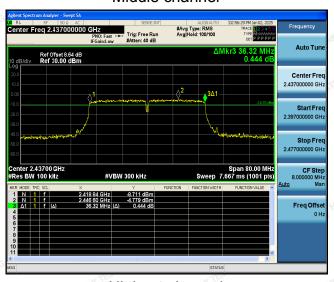


802.11n (HT40) Modulation

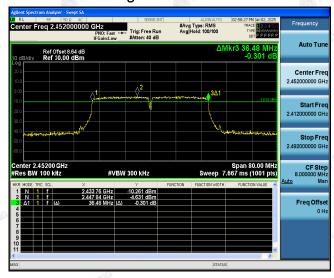
Lowest channel



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 greate than 8dBm in any 3kHz band at any time interval o continuous transmission.					
Test Setup:	Spectrum Analyzer EUI					
Test Mode:	Transmitting mode with modulation					
Test Procedure:	 Transmitting mode with modulation The testing follows Measurement procedure 10.2 method PKPSD of FCC KDB Publication 558074 D0 15.247 Meas Guidance v05r02. The RF output of EUT was connected to the spectrur 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 spar 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. 					
Test Result:	7. Measure and record the results in the test report. 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 cannon 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).



Test data

EUT Set Mode	Channel	Test Result (dBm/30kHz)	Result (dBm/3kHz)				
	Lowest	-2.12	-12.12				
802.11b	Middle	-1.25	-11.25				
	Highest	-0.91	-10.91				
	Lowest	-6.49	-16.49				
802.11g	Middle	-5.47	-15.47				
	Highest	-5.32	-15.32				
	Lowest	-4.54	-14.54				
802.11n(H20)	Middle	-3.86	-13.86				
	Highest	-3.40	-13.40				
	Lowest	-6.33	-16.33				
802.11n(H40)	Middle	-6.05	-16.05				
	Highest	-5.43	-15.43				
PSD test result (dE	3m/3kHz)= PSD	test result (dBm/30k	Hz)-10				
Limit: 8dBm/3kHz							
Test Result:	PASS						
11/10	OKTS" WALTE WAS MEDICAL WAS MADE						

Test plots as follows:

802.11b Modulation

Lowest channel



Middle channel



Highest channel

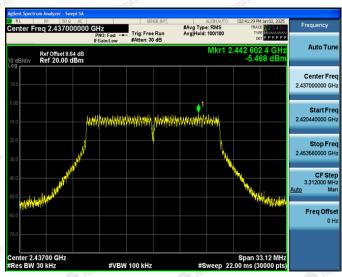


802.11g Modulation

Lowest channel



Middle channel



Highest channel



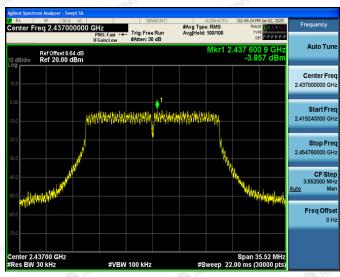


802.11n (HT20) Modulation

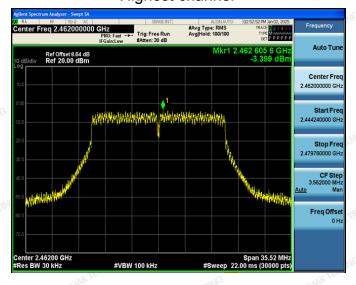
Lowest channel



Middle channel



Highest channel





802.11n (HT40) Modulation

Lowest channel



Middle channel



Highest channel

