

FCC Test Report

Test report
On Behalf of
IG360 LIMITED
For
GRIP EXPRESS FILM CUTTER
Model No.: Grip-Express-Cut-G2

FCC ID: 2BNGN-GRIP-EXPRESS

Prepared For: IG360 LIMITED

Room 701, building no.1, Jiuhaoyuanguan, Fenghuang road, Pinghu, Longgang

district, Shenzhen, 518111, China

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

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Date of Test: Nov. 11, 2024 ~ Jan. 07, 2025

Date of Report: Jan. 07, 2025

Report Number: HK2411116637-2E



Test Result Certification

Applicant's name	IG360 LIMITED
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Address Room 701, building no.1, Jiuhaoyuanguan, Fenghuang road,

Pinghu, Longgang district, Shenzhen, 518111, China

Report No.: HK2411116637-2E

Manufacturer's Name IG360 LIMITED

Room 701, building no.1, Jiuhaoyuanguan, Fenghuang road,

Pinghu, Longgang district, Shenzhen, 518111, China

Product description

Trade Mark: GRIP EXPRESS

Product name.....: GRIP EXPRESS FILM CUTTER

Model and/or type reference .: Grip-Express-Cut-G2

FCC Rules and Regulations Part 15 Subpart C Section 15.247

.... ANSI C63.10: 2013

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Date of Test

Test Result : Pass

Testing Engineer :

(Len Liao)

Technical Manager

ex Wan

(Sliver Wan)

Authorized Signatory:

Jason Muu

(Jason Zhou)



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** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Jan. 07, 2025	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 ± 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:	GRIP EXPRESS FILM CUTTER		
Model Name:	Grip-Express-Cut-G2		
Series Model:	N/A HUMPTER		
Model Difference:	N/A WITESTING		
FCC ID:	2BNGN-GRIP-EXPRESS		
Antenna Type:	Internal Antenna		
Antenna Gain:	0.71dBi		
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:	DC24V From Adapter with AC100-240V, 50/60Hz		
Power Rating:	DC24V From Adapter with AC100-240V, 50/60Hz		

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)							
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
03	2422	06	2437	09	2452	-STING	

Channel List For 802.11n (HT40) Channel Frequency (MHz) Channel Frequency (MHz) Channel (MHz) Channel (MHz)							
TING	W.TESTAND	04	2427	07	2442	TESTIN	NTE
@ 'n		05	2432	08	2447	HI ALL	Alona 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 helow:

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 above1GHz 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	GRIP EXPRESS FILM CUTTER	GRIP EXPRESS	Grip-Express-Cut-G2	N/A	EUT
2	Adapter	N/A HUM TESTING	FJ-SW20172402700	Input: AC100-240V, 50/60Hz, 1.5A Max Output: DC24V, 2.7A	Accessory
HUAK TES	Laptop	Lenovo	TP00096A	Input: DC20V, 2.25~3.25A Output: DC5V, 0.5A	Peripheral
KTES	ESTI	G HUANTES.	-STING HUAKT	es. .es	NG
	WHITAK !	MINA MINA		MINAK !	
			LAKTESTING		

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

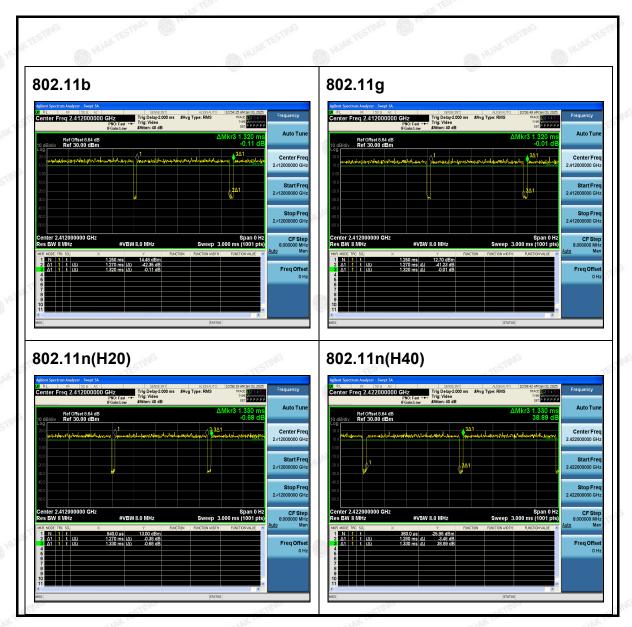
- 1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.
- 2.According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20), 13.5Mbps for 802.11n(H40).

3. Mode Test Duty Cycle

Tool Buty Cycle		
Mode	Duty Cycle	Duty Cycle Factor (dB)
802.11b	0.962	-0.17
802.11g	0.962	-0.17
802.11n(H20)	0.955	-0.20
802.11n(H40)	0.962	-0.17

Test plots as follows:







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	HUAKIL	, ax	TESTING		
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:	Test table/Insulation p	Test table/Insulation plane Remark E.U.T. Equipment Under Test LISN: Line Impedence Statilization Network				
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

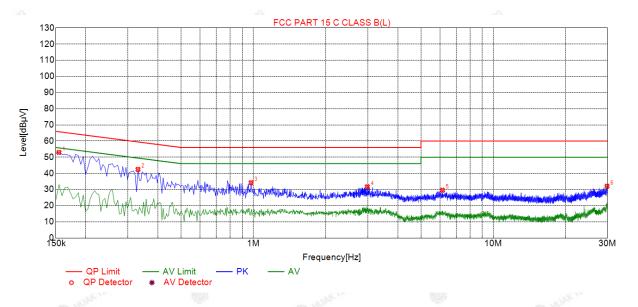
Remark: All the test modes completed for test. only the worst result

Report No.: HK2411116637-2E

Of was reported as below:

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)

Test Specification: Line



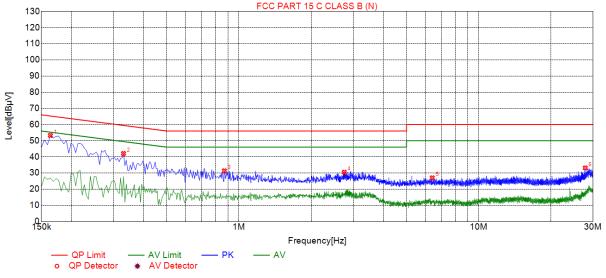
Su	Suspected List									
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре		
1	0.1545	52.96	19.83	65.75	12.79	33.13	PK	L		
2	0.3300	42.47	19.84	59.45	16.98	22.63	PK	L		
3	0.9780	34.21	19.87	56.00	21.79	14.34	PK	L		
4	2.9850	31.69	20.05	56.00	24.31	11.64	PK	L		
5	6.1485	29.55	20.09	60.00	30.45	9.46	PK	L		
6	29.8500	32.01	20.26	60.00	27.99	11.75	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



27.0	Sus	Suspected List									
7	NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре		
	1	0.1635	53.27	19.68	65.28	12.01	33.59	PK	N		
	2	0.3300	42.06	19.74	59.45	17.39	22.32	PK	N		
	3	0.8700	31.35	19.74	56.00	24.65	11.61	PK	N		
	4	2.7510	30.47	19.92	56.00	25.53	10.55	PK	N		
	5	6.4050	27.00	19.98	60.00	33.00	7.02	PK	N		
į,	6	27.8475	33.15	20.32	60.00	26.85	12.83	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 HUMPTES THE STREET
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
		(MHz)	(dBm)	dBm
802.11b	CH01	2412	14.59	30
802.11b	CH06	2437	14.79	30
802.11b	CH11	2462	14.89	30
802.11g	CH01	2412	13.04	30
802.11g	CH06	2437	13.43	30
802.11g	CH11	2462	13.57	30
802.11n(HT20)	CH01	2412	13.07	30
802.11n(HT20)	CH06	2437	13.45	30
802.11n(HT20)	CH11	2462	13.63	30
802.11n(HT40)	CH03	2422	12.99	30
802.11n(HT40)	CH06	2437	13.27	30
802.11n(HT40)	CH09	2452	13.27	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

The House I	HO.	a HO.	ALL HO.	ALC:	ALC: 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

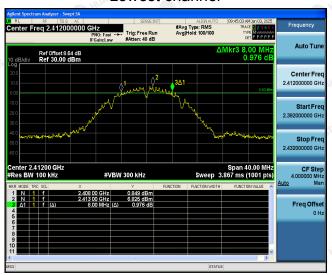
Toot shannel	6dB Emission Bandwidth (MHz)					
Test channel	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	8.000	16.360	17.600	36.400		
Middle	6.600	16.360	17.640	36.320		
Highest	6.560	16.400	17.560	36.320		
Limit:	3 HUANTES!	>5	00kHz	0.0		
Test Result:	, lak	TESTING WORK TESTING	PASS	THE HURK TESTING		

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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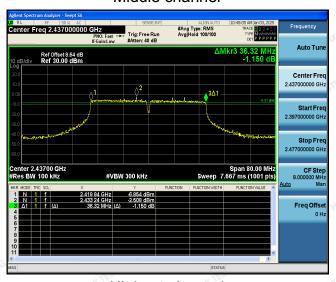


802.11n (HT40) Modulation

Lowest channel

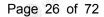


Middle channel



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 greated than 8dBm in any 3kHz band at any time interval 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 UNITED THE 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).



Test data

EUT Set Mode	Channel	Test Result (dBm/30kHz)	Result (dBm/3kHz)
802.11b	Lowest	6.81	-3.19
	Middle	7.00	-3.00
	Highest	6.92	-3.08
802.11g	Lowest	-3.14	-13.14
	Middle	-3.18	-13.18
	Highest	-2.41	-12.41
802.11n(H20)	Lowest	-2.90	-12.90
	Middle	-2.97	-12.97
	Highest	-3.16	-13.16
802.11n(H40)	Lowest	-6.41	-16.41
	Middle	-5.09	-15.09
	Highest	-6.23	-16.23
PSD test result (dE	3m/3kHz)= PSD	test result (dBm/30k	Hz)-10
Limit: 8dBm/3kHz			
Test Result:	PASS		
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Test plots as follows:

802.11b Modulation

Lowest channel



Middle channel



Highest channel



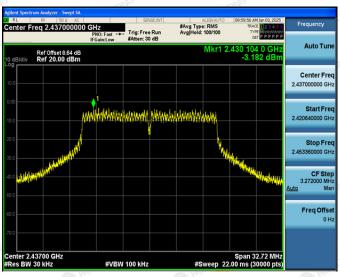


802.11g Modulation

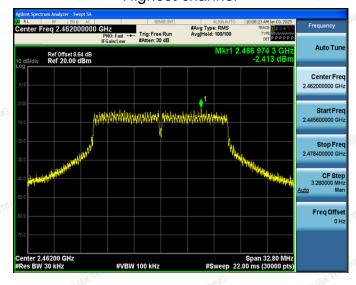
Lowest channel



Middle channel



Highest channel



802.11n (HT20) Modulation

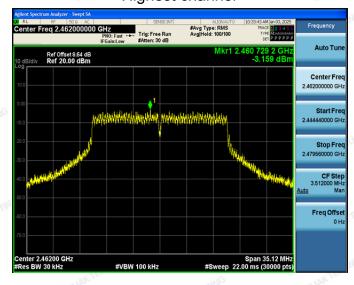
Lowest channel



Middle channel



Highest channel



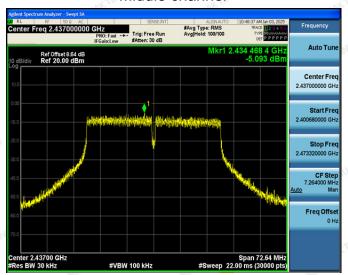
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802.11n (HT40) Modulation

Lowest channel



Middle channel



Highest channel

