

FCC Test Report

Test report
On Behalf of
AC Infinity Inc.
For
CONTROLLER 75 PRO
Model No.: CTR75P

FCC ID: 2AXMF-CTR75P

Prepared For: AC Infinity Inc.

21880 Baker Parkway, City of Industry, CA 91789 USA

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: Jun. 04, 2024 ~ Jun. 12, 2024

Date of Report: Jun. 12, 2024

Report Number: HK2406042927-1E

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Report No.: HK2406042927-1E

Test Result Certification

Applicant's name	AC	Infinity	Inc.
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Manufacturer's Name AC Infinity Inc.

Product description

Trade Mark: AC INFINITY

Product name...... CONTROLLER 75 PRO

Model and/or type reference .: CTR75P

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 Jun. 04, 2024 ~ Jun. 12, 2024

Test Result..... Pass

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	Jun. 12, 2024	Jason Zhou
_M G	-n/G	TING TING	G TNG

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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
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:	CONTROLLER 75 PRO
Model Name:	CTR75P
Series Model:	N/A THE THE THE
Model Difference:	N/A MAKTEST ON THE MAKTEST
FCC ID:	2AXMF-CTR75P
Antenna Type:	PCB Antenna
Antenna Gain:	3.16dBi
Operation frequency:	802.11b/g/n (HT20):2412~2462 MHz 802.11n (HT40): 2422~2452MHz
Number of Channels:	802.11b/g/n(HT20): 11CH 802.11n (HT40): 7CH
Modulation Type:	CCK/OFDM/DBPSK/DAPSK
Power Source:	100-240V AC, 50/60Hz
Power Rating:	100-240V AC, 50/60Hz
Hardware Version:	1.02 HUM TESTING HUM TESTING
Software Version:	1.02

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	Frequency (MHz)	Channel	Frequency (MHz)
STING_	XTESTING (04	2427	07	2442	- TESTIN	WTE
@ H		05	2432	08	2447	HILAK	Monage Home
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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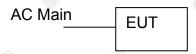


2.4. Description of Test Setup

Operation of EUT during Conducted 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.



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.

pi	ltem	Equipment	Trade Mark	Model/Type No.	Specification	Remark
J.G	1	CONTROLLER 75 PRO	AC INFINITY	CTR75P	N/A	EUT
11.	2	LED	N/A	N/A	N/A	Accessory
	,TE	TING ON TESTING	(iii)	TESTING	TESTING	W.TESTING (1)
6	HUAR	O HO.	0	Who.	Whither @	How

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	HUAKTESI	HUAKT
Humidity:	56 % RH	(ii)	0
Atmospheric Pressure:	1010 mbar	AKTESTING	.G
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.

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)	6.5Mbps
802.11n(HT40)	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(HT20), 13.5Mbps for 802.11n(HT40).

3. Mode Test Duty Cycle

Tool Buty Gyold		-000
Mode	Duty Cycle	Duty Cycle Factor (dB)
802.11b	0.918	-0.371
802.11g	0.925	-0.337
802.11n(HT20)	0.910	-0.407
802.11n(HT40)	0.910	-0.407

Test plots as follows:



802.11g

| Solid Control of the Cont



4. Test Results and Measurement Data

4.1. Conducted Emission

Test Specification

TING	TIME	TING	TING	Mr.		
Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013		TING			
Frequency Range:	150 kHz to 30 MHz	HUAKTE	, ax	TESTING		
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	WESTNE		
Test Setup:	Test table/Insulation parts table for the second se	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	NKTE	TING	nIG		
25"	1 TO	NEW AIRWAY		100		

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Test Instruments

Conducted Emission Shielding Room Test Site (843)					
Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Receiver	R&S	ESR	HKE-005	Feb. 19, 2025	
LISN	R&S	ENV216	HKE-002	Feb. 19, 2025	
LISN	R&S	ENV216	HKE-059	Feb. 19, 2025	
Coax cable (9KHz-30MHz)	Times	381806-002	N/A	Feb. 19, 2025	
EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	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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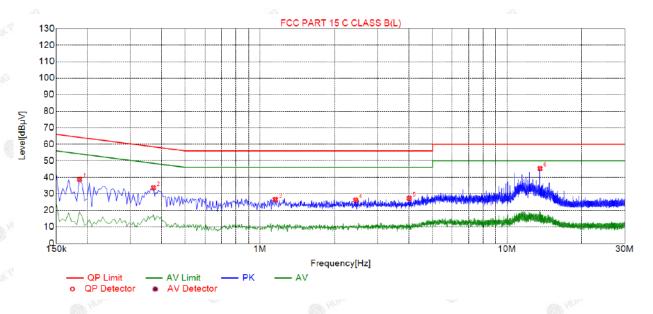
4.2. Test Result

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

Report No.: HK2406042927-1E

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

Test Specification: Line

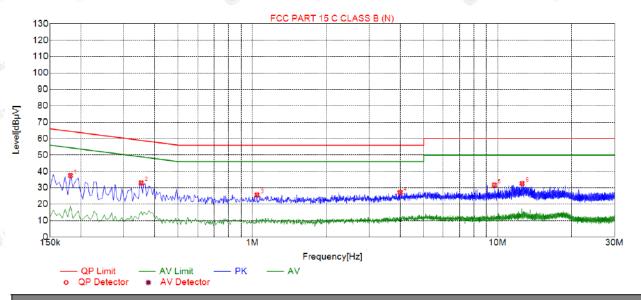


Sus	Suspected List							
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBμV]	Detector	Туре
1	0.1860	38.78	19.53	64.21	25.43	19.25	PK	L
2	0.3705	33.70	19.69	58.49	24.79	14.01	PK	L
3	1.1535	26.57	19.90	56.00	29.43	6.67	PK	L
4	2.4405	26.19	19.99	56.00	29.81	6.20	PK	L
5	4.0200	27.28	20.12	56.00	28.72	7.16	PK	L
6	13.6005	45.30	19.88	60.00	14.70	25.42	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	0.1815	37.50	19.70	64.42	26.92	17.80	PK	N	
2	0.3525	32.97	19.64	58.90	25.93	13.33	PK	N	
3	1.0455	25.72	19.86	56.00	30.28	5.86	PK	N	
4	4.0065	27.21	20.12	56.00	28.79	7.09	PK	N	
5	9.7080	31.74	20.02	60.00	28.26	11.72	PK	N	
6	12.5880	32.69	19.92	60.00	27.31	12.77	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 RETURN TEST TO THE PROPERTY OF					
Test Mode:	Transmitting mode with modulation					
Test Procedure:	 Transmitting mode with modulation 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 THE THE PASS THE					

Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	
Power meter	Agilent	E4419B	HKE-085	Feb. 19, 2025	
Power Sensor	Agilent	E9300A	HKE-086	Feb. 19, 2025	
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	
RF Test Software	Tonscend	JS1120-3 Version 3.3.23	HKE-083	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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AFICATIO,

Test Data

Mode	Test Channel	Frequency	Maximum Peak Conducted Output Power	LIMIT
	G.1.G.1	(MHz)	(dBm)	dBm
802.11b	CH01	2412	13.52	30
802.11b	CH06	2437	13.79	30
802.11b	CH11	2462	13.43	30
802.11g	CH01	2412	13.44	30
802.11g	CH06	2437	13.46	30
802.11g	CH11	2462	13.50	30
802.11n(HT20)	CH01	2412	12.33	30
802.11n(HT20)	CH06	2437	13.45	30
802.11n(HT20)	CH11	2462	13.40	30
802.11n(HT40)	CH03	2422	13.48	30
802.11n(HT40)	CH06	2437	13.17	30
802.11n(HT40)	CH09	2452	13.20	30

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

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	NY TESTING			
Test Setup:	Spectrum Analyzer	EUT ME HUMATES			
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	O HUM			

Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025		
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025		
RF Test Software	Tonscend	JS1120-3 Version 3.3.23	HKE-083	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

11/100	41/100	A Pro-	11 1/20	of Pro-	
Toot shannel	6dB Emission Bandwidth (MHz)				
Test channel	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	
Lowest	9.520	16.320	16.920	35.040	
Middle	9.560	16.320	17.560	35.440	
Highest	9.520	16.360	17.560	35.440	
Limit:	"JAK"	ESTING HUAY TEST	500kHz	THAN TESTING	
Test Result:	PASS				

Test plots as follows:

802.11b Modulation

Lowest channel



Middle channel







802.11g Modulation

Lowest channel



Middle channel



Highest channel



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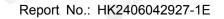
802.11n (HT20) Modulation

Lowest channel

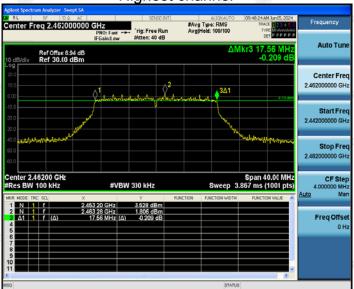


Middle channel









802.11n (HT40) Modulation

Lowest channel

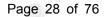


Middle channel



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 EU1					
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 (Market Market Mar					

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Test Instruments

10%	101	- "II)b.		10%		
RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025		
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025		
RF Test Software	Tonscend	JS1120-3 Version 3.3.23	HKE-083	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	Result (dBm/3kHz)		
	1	(dBm/30kHz)	10.00		
802.11b	Lowest	-0.89	-10.89		
	Middle	-0.52	-10.52		
	Highest	-0.87	-10.87		
802.11g	Lowest	-2.26	-12.26		
	Middle	-1.48	-11.48		
	Highest	-1.42	-11.42		
802.11n(H20)	Lowest	-2.43	-12.43		
	Middle	-1.75	-11.75		
	Highest	-1.90	-11.9		
802.11n(H40)	Lowest	-3.44	-13.44		
	Middle	-4.38	-14.38		
	Highest	-3.68	-13.68		
PSD test result (dE	3m/3kHz)= PSD	test result (dBm/30kl	Hz)-10		
Limit: 8dBm/3kHz					
Test Result:	PASS				
ak to	TES IN TES				

Test plots as follows:





802.11b Modulation

Lowest channel



Middle channel

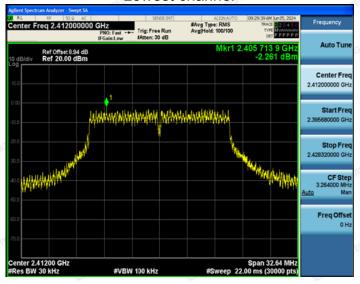






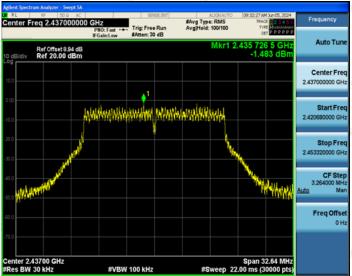
802.11g Modulation

Lowest channel

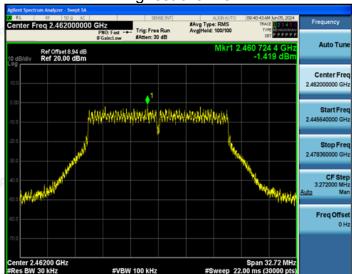




Middle channel



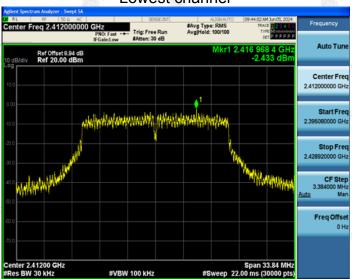
Highest channel



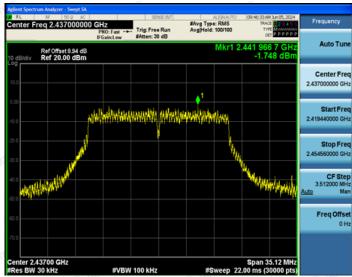


802.11n (HT20) Modulation

Lowest channel



Middle channel



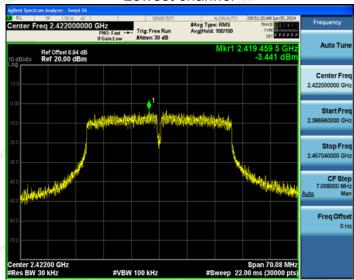


Highest channel



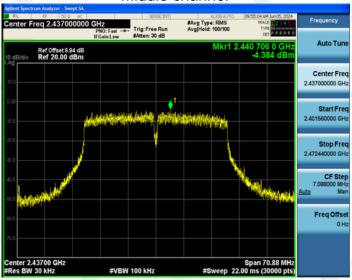
802.11n (HT40) Modulation

Lowest channel

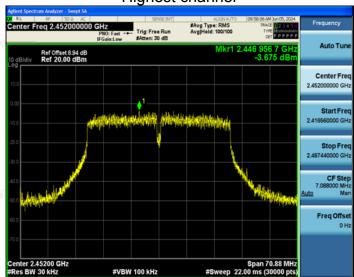




Middle channel



Highest channel







4.6. Conducted Band Edge and Spurious Emission Measurement

Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)				
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02				
Limit:	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).				
Test Setup:	Spectrum Analyzer EUT				
Test Mode:	Transmitting mode with modulation				
Test Procedure:	 Transmitting mode with modulation The testing follows 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. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d). Measure and record the results in the test report. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 				
Test Result:	PASS				



Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025		
High pass filter unit	Tonscend	JS0806-F	HKE-055	Feb. 19, 2025		
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Feb. 19, 2025		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025		
RF test software	Tonscend	JS1120-B Version 2.6	HKE-083	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 802.11b Modulation

