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om Report Template Revision Date: 2021-11-03

Report Template Version: V05

TEST REPORT

Report No.: CQASZ20250100058E-01

Applicant: Shenzhen IVY IoT Technology Co., Ltd.

Address of Applicant: 904, 9th Floor, Building B, Shenzhen International Innovation Valley Phase 1,

Xingke 1st Street, Xili Street, Nanshan District, Shenzhen, China

Equipment Under Test (EUT):

Product: WiFi Camera

Model No.: C5, C51-C5100, C5A-C5Z, C31A-C31Z

Test Model No.: C5
Brand Name: N/A

FCC ID: 2BHXE-C5

Standards: 47 CFR Part 15, Subpart C

KDB558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10:2013

Date of Receipt: 2025-1-8

Date of Test: 2025-1-8 to 2025-2-7

Date of Issue: 2025-2-10
Test Result: PASS*

*In the configuration tested, the EUT complied with the standards specified above

Tested By: (Lewis Zhou)

Reviewed By:

(Timo Lei)

Approved By: (Jack Ai)



The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.



Report No.: CQASZ20250100058E-01

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20250100058E-01	Rev.01	Initial report	2025-2-10



2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15.203	N/A	PASS
AC Power Line Conducted Emission	47 CFR Part 15.207	ANSI C63.10-2013	PASS
Conducted Peak & Average Output Power	47 CFR Part 15.247	ANSI C63.10-2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Power Spectral Density	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15.247	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Radiated Spurious Emissions	47 CFR Part 15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application



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4 General Information

4.1 Client Information

Applicant:	Shenzhen IVY IoT Technology Co., Ltd.
Address of Applicant:	904, 9th Floor, Building B, Shenzhen International Innovation Valley Phase 1, Xingke 1st Street, Xili Street, Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen IVY IoT Technology Co., Ltd.
Address of Manufacturer:	904, 9th Floor, Building B, Shenzhen International Innovation Valley Phase 1, Xingke 1st Street, Xili Street, Nanshan District, Shenzhen, China
Factory:	Shenzhen IVY IoT Technology Co., Ltd.
Address of Factory:	904, 9th Floor, Building B, Shenzhen International Innovation Valley Phase 1, Xingke 1st Street, Xili Street, Nanshan District, Shenzhen, China

4.2 General Description of EUT

Product Name:	WiFi Camera		
Model No.:	C5, C51-C5100, C5A-C5Z, C31A-C31Z		
Test Model No.:	C5		
Trade Mark:	N/A		
Software Version:	V1.0		
Hardware Version:	V1.0		
Power Supply:	Power supply DC 5V form adapter		
EUT Supports Radios	2.4GHz: Wi-Fi: 802.11b/g/n(HT20): 2412MHz~2462MHz;		
application:	802.11n(HT40): 2422MHz~2452MHz		
Simultaneous Transmission	☐ Simultaneous TX is supported and evaluated in this report.		
	⊠ Simultaneous TX is not supported.		

4.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz			
	IEEE 802.11n(HT40): 2422MHz to 2452MHz			
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels			
	IEEE 802.11n HT40: 7 Channels			
Channel Separation:	5MHz			
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)			
	IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK)			
	IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)			
Transfer Rate:	IEEE for 802.11b:			
	1Mbps/2Mbps/5.5Mbps/11Mbps			
	IEEE for 802.11g :			
	6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps			
	IEEE for 802.11n(HT20):			
	6.5Mbps/13Mbps/19.5Mbps/26Mbps/39Mbps/52Mbps/58.5Mbps/65Mbps			
	IEEE for 802.11n(HT40):			
	13.5Mbps/27Mbps/40.5Mbps/54Mbps/81Mbps/108Mbps/121.5Mbps/135Mbps			
Product Type:				



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Test Software of EUT:	serial-com3
Antenna Type:	FPC antenna
Antenna Gain:	2.5dBi

Note:

Model No.:C5, C51-C5100, C5A-C5Z, C31A-C31Z.

The circuit design, layout, components used and internal wiring are all the same, except for the appearance difference.



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Operation F	Operation Frequency each of channel(802.11b/g/n HT20)									
Channel	Fr	equency	Channe	I Frequency	Channel	Fre	Frequency		nel	Frequency
1	24	412MHz	4	2427MHz	7	244	42MHz	10	١	2457MHz
2	24	417MHz	5	2432MHz	8	244	47MHz	11		2462MHz
3	24	422MHz	6	2437MHz	9	24	2452MHz			
Operation F	Operation Frequency each of channel(802.11n HT40)									
Channel Frequency Channel Freq					Frequen	су	Chan	nel	F	requency
3	3 2422MHz		ИНz	6	2437MH	lz	9			2452MHz
4		24271	ИНz	7	2442MH	lz				
5		24321	ИНz	8	2447MH	lz	1			

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:

For 802.11b/g/n (HT20):

Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

For 802.11n (HT40):

1 61 662:1111 (111 16):				
Channel	Frequency			
The Lowest channel	2422MHz			
The Middle channel	2437MHz			
The Highest channel	2452MHz			

Note:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



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4.4 Test Environment and Mode

Operating Environment:	
Radiated Emissions:	
Temperature:	25.3 °C
Humidity:	55 % RH
Atmospheric Pressure:	1009 mbar
Conducted Emissions:	
Temperature:	25.6 °C
Humidity:	60 % RH
Atmospheric Pressure:	1009 mbar
Radio conducted item te	st (RF Conducted test room):
Temperature:	25.5 °C
Humidity:	52 % RH
Atmospheric Pressure:	1009 mbar
Test mode:	
Transmitting mode:	EUT is set in RF test mode in all supported modulation types, bandwic and data rate, etc.
Run Software:	
(100:00:15,977] [HLUpgrade.cxx: 3 (md SX12805et DutMode 1 1 (100:01:42,013) [HLSX1280Com.cxx: 100:01:42,023] [HLSX1280Com.cxx: 100:01:42,033] [HLSX1280Com.cxx: 1100:01:42,034] [HLSX1280Com.cxx: 1100:01:42,034] [HLSX1280Com.cxx: 1100:01:42,036] [HLSX1280Com.cxx: 1100:01:42,036] [HLSX1280Com.cxx: 1100:01:46,354] [HLSX1280Com.cxx: 1100:01:46,354] [HLSX1280Com.cxx: 1100:01:46,354] [HLSX1280Com.cxx: 1100:01:50,646] [HLSX1280Com.cxx: 1100:01:50,646	日本 日本 日本 日本 日本 日本 日本 日本
Default •	^



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4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Adapter	MI	/	1	CQA
2) Cable				

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	1	/

4.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua New District, Shenzhen, Guangdong, China

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA (Certificate No. 4742.01)

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• FCC Registration No.: 522263

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263



4.8 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** guality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	3.34dB	(1)
4	Radio Frequency	3×10 ⁻⁸	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8℃	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

⁽¹⁾This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.9 Deviation from Standards

None.

4.10 Abnormalities from Standard Conditions

None.

4.11 Other Information Requested by the Customer

None.



4.12 Equipment List

				0	
Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU26	CQA-038	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU40	CQA-075	2024/9/2	2025/9/1
Preamplifier	MITEQ	AFS4-00010300-18- 10P-4	CQA-035	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800- 29-20P	CQA-036	2024/9/2	2025/9/1
Preamplifier	EMCI	EMC184055SE	CQA-089	2024/9/2	2025/9/1
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Power meter	R&S	NRVD	CQA-029	2024/9/2	2025/9/1
Power divider	MIDWEST	PWD-2533-02-SMA- 79	CQA-067	2024/9/2	2025/9/1
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
LISN	R&S	ENV216	CQA-003	2024/9/2	2025/9/1
Coaxial cable	CQA	N/A	CQA-C009	2024/9/2	2025/9/1
DC power	KEYSIGHT	E3631A	CQA-028	2024/9/2	2025/9/1

Test software:

	Manufacturer	Software brand
Radiated Emissions test software	Tonscend	JS1120-3
Conducted Emissions test software	Audix	e3
RF Conducted test software	Audix	e3





5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203 /247(c)

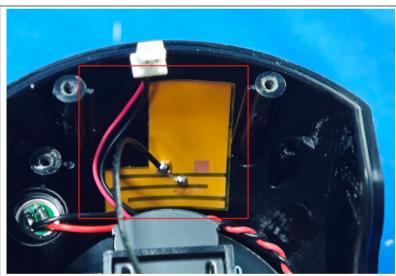
15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



The antenna is FPC antenna.

The connection/connection type between the antenna to the EUT's antenna port is: unique coupling This is either permanently attachment or a unique coupling that satisfies the requirement.



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5.2 Conducted Emissions

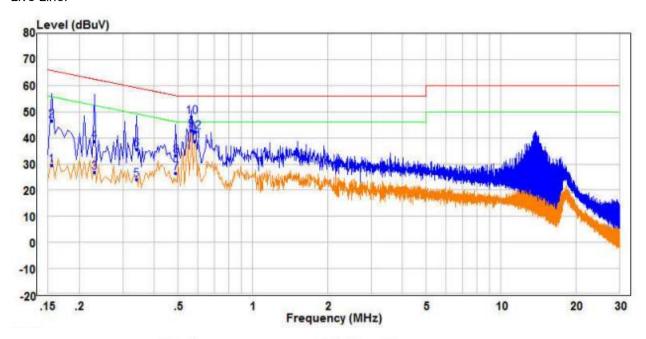
Test Requirement:	47 CFR Part 15C Section 15.2	207				
Test Method:	ANSI C63.10: 2013					
Test Frequency Range:	150kHz to 30MHz					
Limit:		Limit (c	lBuV)			
	Frequency range (MHz)	Quasi-peak	Average	l		
	0.15-0.5	66 to 56*	56 to 46*	l		
	0.5-5	56	46	l		
	5-30	60	50	l		
	* Decreases with the logarithm	n of the frequency.				
Test Procedure:	 The mains terminal disturb room. The EUT was connected to Impedance Stabilization Not impedance. The power call connected to a second reference plane in the same way as the multiple socket outlet strip a single LISN provided the reason of the tabletop EUT was placed on the horizontal ground reference plane. An placed on the horizontal ground reference plane. An evertical ground reference preference plane. The LISN unit under test and bonded mounted on top of the ground between the closest points the EUT and associated experience plane and all of the in ANSI C63.10: 2013 on contract. 	pance voltage test was pance voltage test was pance voltage test was pance voltage test was pance voltage to AC power source through the LISN 2, which was the LISN 1 for the unit was used to connect ating of the LISN was reced upon a non-metalling of floor-standing arround reference plane, the a vertical ground reference plane was bonded to the 1 was placed 0.8 m from the vertical ground reference plane. The to a ground reference plane. The coff the LISN 1 and the quipment was at least 0 terface cables must be the provided to the provided terface cables must be the provided to the provided terface cables must be the provided test was placed to the provided test to the prov	bugh a LISN 1 (Line is a 50Ω/50μH + 5Ω line is a 50Ω/50μH + 5Ω line is a 50Ω/50μH + 5Ω line is the EUT were bonded to the grobeing measured. A multiple power cable not exceeded. In the case of the	near bund es to ne was ar ne of 2.		
Test Setup:	Shielding Room EUT AC Mains LISN1	AE WOOM	Test Receiver			



Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate of 802.11b at middle channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC120V/60Hz
Test Results:	Pass

Measurement Data

Live Line:



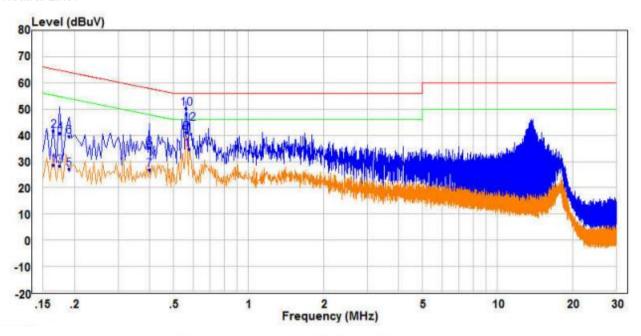
		Freq	Read Level	Factor	Level	Limit	Over	Remark	Pol/Phase
	_	MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.155	20.14	9.49	29.63	55.73	-26.10	Average	Line
2		0.155	37.02	9.49	46.51	65.73	-19.22	QP	Line
3		0.230	17.43	9.49	26.92	52.45	-25.53	Average	Line
4		0.230	29.04	9.49	38.53	62.45	-23.92	QP	Line
5		0.340	14.45	9.50	23.95	49.20	-25.25	Average	Line
6		0.340	26.15	9.50	35.65	59.20	-23.55	QP	Line
7		0.490	16.94	9.52	26.46	46.17	-19.71	Average	Line
8		0.490	23.83	9.52	33.35	56.17	-22.82	QP	Line
9	PP	0.565	33.20	9.64	42.84	46.00	-3.16	Average	Line
10	QP	0.565	38.45	9.64	48.09	56.00	-7.91	QP	Line
11		0.585	28.88	9.68	38.56	46.00	-7.44	Average	Line
12		0.585	32.71	9.68	42.39	56.00	-13.61	QP	Line

Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.



Neutral Line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	100	MHz	dBuV	dB	dBuV	dBuV	dB		-
1		0.165	18.93	9.67	28.60	55.21	-26.61	Average	Neutral
2		0.165	31.90	9.67	41.57	65.21	-23.64	QP	Neutral
3		0.175	18.64	9.65	28.29	54.72	-26.43	Average	Neutral
4		0.175	31.02	9.65	40.67	64.72	-24.05	QP	Neutral
5		0.190	17.56	9.62	27.18	54.04	-26.86	Average	Neutral
6		0.190	29.90	9.62	39.52	64.04	-24.52	QP	Neutral
7		0.400	17.29	9.60	26.89	47.85	-20.96	Average	Neutral
8		0.400	25.73	9.60	35.33	57.85	-22.52	QP	Neutral
9	PP	0.560	31.24	9.76	41.00	46.00	-5.00	Average	Neutral
10	QP	0.560	40.33	9.76	50.09	56.00	-5.91	QP	Neutral
11		0.580	24.87	9.78	34.65	46.00	-11.35	Average	Neutral
12		0.580	34.77	9.78	44.55	56.00	-11.45	QP	Neutral

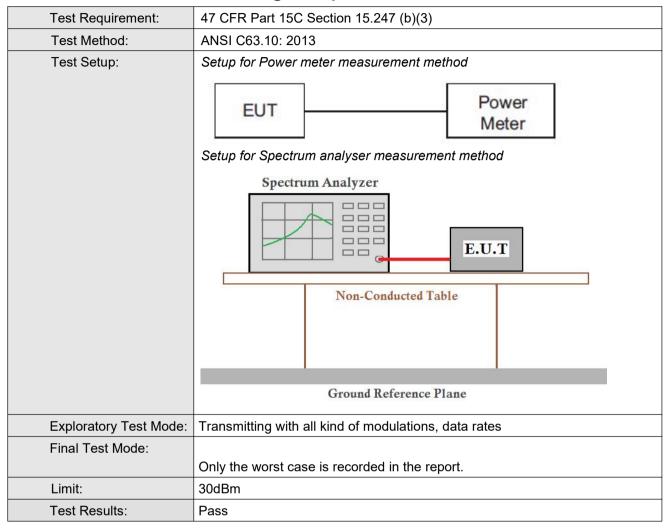
Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
- 3. If the Peak value under Average limit, the Average value is not recorded in the report.



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5.3 Conducted Peak & Average Output Power





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Test Result

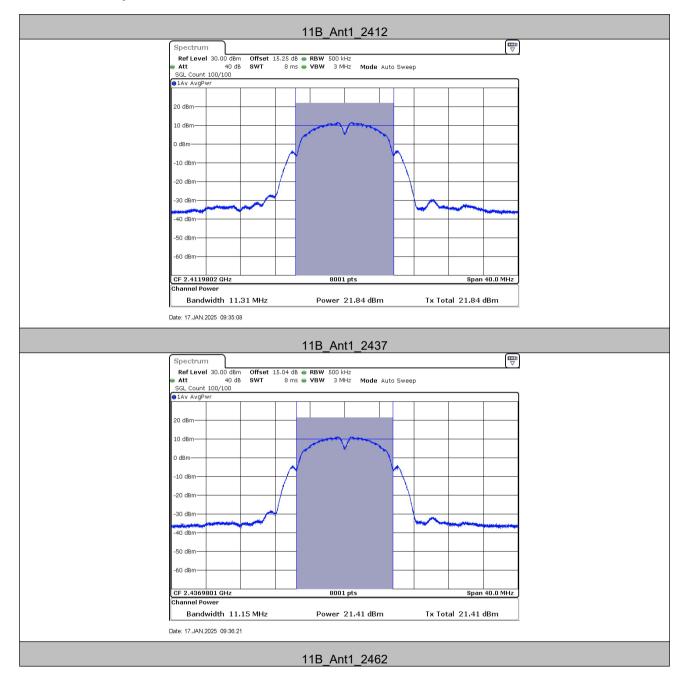
Test Mode	Frequency[MHz]	Result [dBm]	Limit [dBm]
	2412	21.84	≤30.00
11B	2437	21.41	≤30.00
	2462	21.13	≤30.00
	2412	21.37	≤30.00
11G	2437	20.72	≤30.00
	2462	20.59	≤30.00
	2412	21.14	≤30.00
11N20SISO	2437	20.61	≤30.00
	2462	20.45	≤30.00
	2422	12.71	≤30.00
11N40SISO	2437	13.58	≤30.00
	2452	13.80	≤30.00

Note:

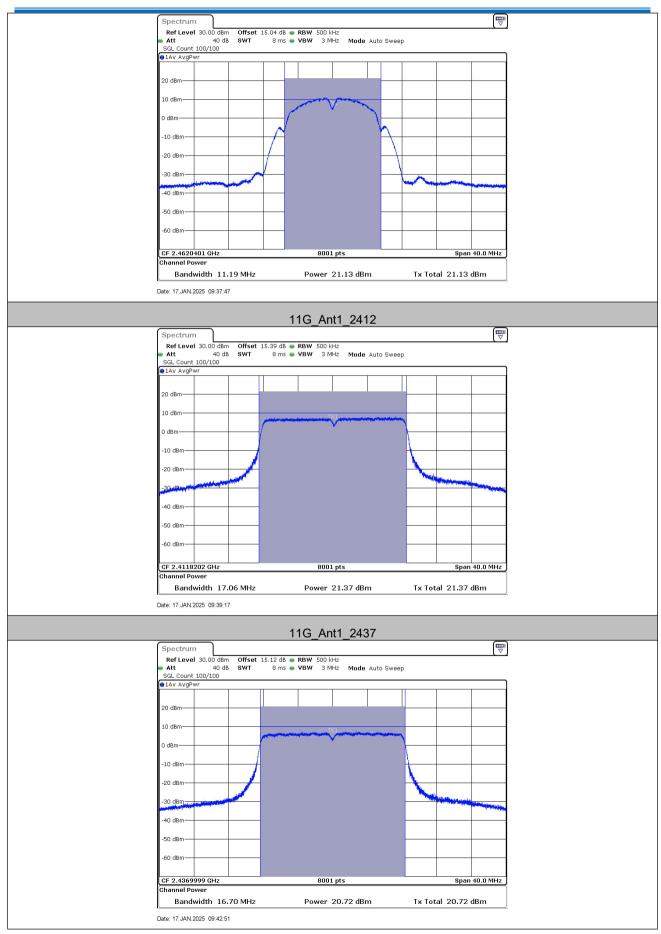
When Duty cycle >98%, D.C.F is not required.



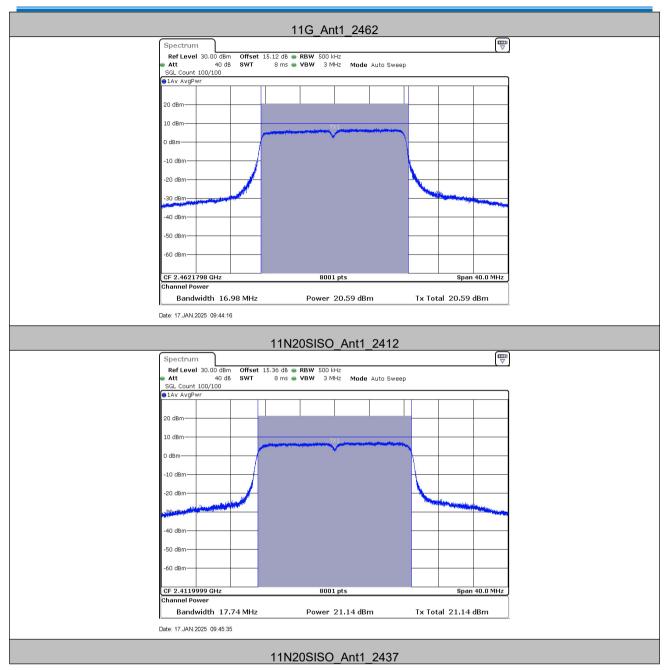
Test Graphs



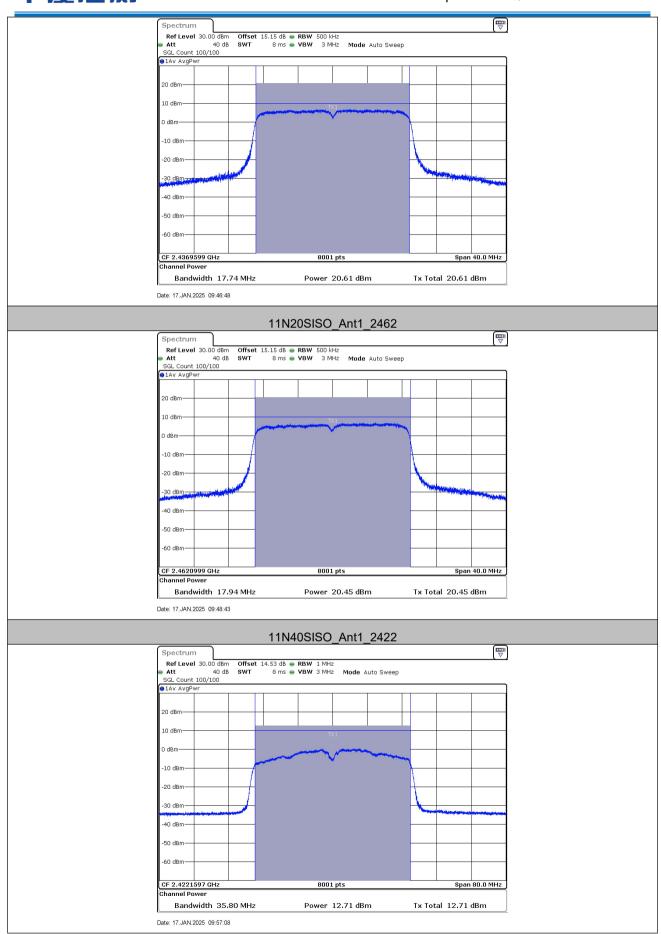




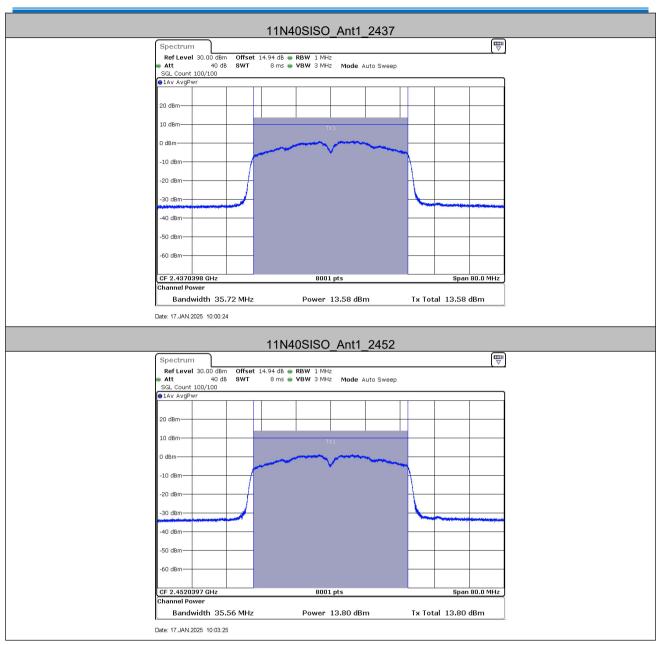








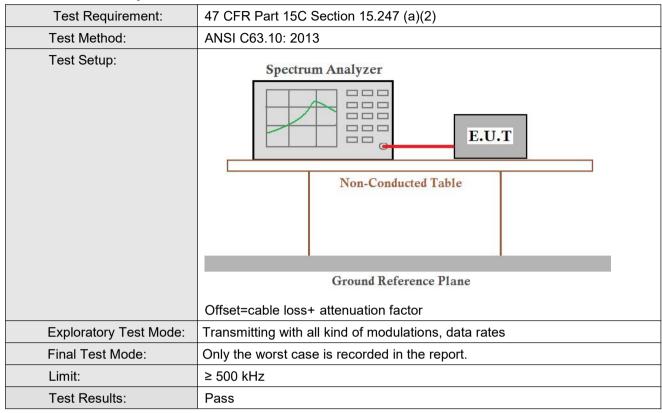








5.4 6dB Occupied Bandwidth





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Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	Limit[MHz]	Verdict
		2412	8.08	0.5	PASS
11B	Ant1	2437	8.12	0.5	PASS
		2462	7.12	0.5	PASS
		2412	16.32	0.5	PASS
11G	Ant1	2437	16.32	0.5	PASS
		2462	16.08	0.5	PASS
		2412	16.32	0.5	PASS
11N20SISO	Ant1	2437	16.60	0.5	PASS
		2462	17.20	0.5	PASS
		2422	32.56	0.5	PASS
11N40SISO	Ant1	2437	28.80	0.5	PASS
		2452	32.56	0.5	PASS



Test Graphs **5.4.1**

