

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

 Telephone:
 +86-755-26648640

 Fax:
 +86-755-26648637

 Website:
 www.cqa-cert.com

Report Template Version: V05 Report Template Revision Date: 2021-11-03

**TEST REPORT** 

Report No.:	CQASZ20250200227E-02
Applicant:	Hesung Innovation Limited
Address of Applicant:	Room 803, Chevalier House, 45-51 Chatham Road South, Tsim Sha Tsui, Kowloon, HongKong
Equipment Under Test	(EUT):
Product:	Humidifier
Model No.:	DR-HHM009S, DWHM09S
Test Model No.:	DR-HHM009S
Brand Name:	DREO, DREO HOME
FCC ID:	2A3SY-HHM009
Standards:	47 CFR Part 15, Subpart C
	KDB558074 D01 15.247 Meas Guidance v05r02
	ANSI C63.10:2013
Date of Receipt:	2025-2-12
Date of Test:	2025-2-12 to 2025-4-18
Date of Issue:	2025-4-18
Test Result :	PASS*
*In the configuration te	sted the FUT complied with the standards specified above

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

Tested By:	lewis zhou	TOTING
	( Lewis Zhou )	SIN TEST ING LEGIS
Reviewed By:	Timo Lej	
	( Timo Lei )	华夏准测人
Approved By:	Junos	#APPROVED #
	( 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.



## **Revision History Of Report**

Report No.	Version	Description	Issue Date	
CQASZ20250200227E-02	Rev.01	Initial report	2025-4-18	



# 1 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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# 3 General Information

## 3.1 Client Information

Applicant:	Hesung Innovation Limited	
Address of Applicant:	Room 803, Chevalier House, 45-51 Chatham Road South, Tsim Sha Tsui, Kowloon, HongKong	
Manufacturer:	Shenzhen Hesung Innovation Technology Co., LTD	
Address of Manufacturer:	er: 26th Floor, Building A7, Chuangzhiyuncheng, Liuxian Avenue, Nanshan District, Shenzhen	
Factory:	Huizhou Huimo Technology Co., Ltd	
Address of Factory:	Office building Tower four, Tower Five, Tower Six of Shuangjie Indsutrial Co., Ltd.,Yinshan Industrial Zone, Beilian Village, Liangjing Town, Huiyang District, HUIZHOU CITY, Guangdong Province	

## 3.2 General Description of EUT

Product Name:	Humidifier
Model No.:	DR-HHM009S, DWHM09S
Test Model No.:	DR-HHM009S
Trade Mark:	DREO, DREO HOME
Software Version:	1.1.25
Hardware Version:	V1.2
Power Supply:	Power supply AC120V
EUT Supports Radios	BLE: 2402-2480MHz
application:	2.4GHz: Wi-Fi: 802.11b/g/n(HT20): 2412MHz~2462MHz;
Simultaneous Transmission	☐ Simultaneous TX is supported and evaluated in this report.
	⊠ Simultaneous TX is not supported.

# **3.3 Product Specification subjective to this standard**

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 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): 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
Product Type:	⊠ Mobile  □ Portable
Test Software of EUT:	Beken Wi-Fi Test Tool V1.6.0
Antenna Type:	FPC antenna
Antenna Gain:	4.20dBi



Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

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

Note:

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



## 3.4 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 tes	t (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, bandwidth and data rate, etc.			
EUT Power level:	Class13			
Beken Wi-Fi Test Tool V1.6.0   Port Name: Not Port Connected  Set Port    Main				
RX Packet Counter Test Mode Continuous - View Window Interval 2 - Single Reset				



## 3.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
1	/	/	/	/

2) Cable

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

## 3.6 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

## 3.7 Test Facility

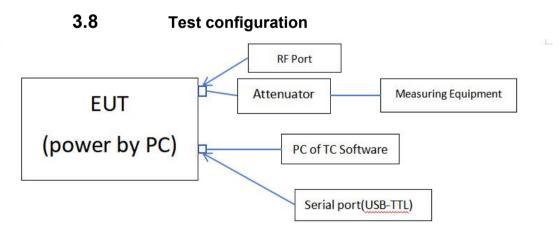
The test facility is recognized, certified, or accredited by the following organizations:

#### • 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





## 3.9 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.** quality 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.

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 <sup>-8</sup>	(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°C	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

Hereafter the best measurement capability for CQA laboratory is reported:

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

## 3.10 Deviation from Standards

None.

## 3.11 Abnormalities from Standard Conditions

None.

## **3.12** Other Information Requested by the Customer

None.



# 3.13 Equipment List

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
		AFS4-00010300-18-			
Preamplifier	MITEQ	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
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2024/9/2	2025/9/1
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	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
10dB Attenuator	JLINK	SMA-AT27-10-5W	C022	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



# 4 Test results and Measurement Data

## 4.1 Antenna Requirement

	· · · · · · · · · · · · · · · · · · ·
Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
responsible party shall be us antenna that uses a unique so that a broken antenna ca electrical connector is prohit 15.247(b) (4) requirement: The conducted output power antennas with directional ga section, if transmitting anten power from the intentional ra	be designed to ensure that no antenna other than that furnished by the sed with the device. The use of a permanently attached antenna or of an coupling to the intentional radiator, the manufacturer may design the unit n be replaced by the user, but the use of a standard antenna jack or bited. r limit specified in paragraph (b) of this section is based on the use of ins that do not exceed 6 dBi. Except as shown in paragraph (c) of this nas of directional gain greater than 6 dBi are used, the conducted output adiator shall be reduced below the stated values in paragraphs (b)(1), ion, as appropriate, by the amount in dB that the directional gain of the
EUT Antenna:	SLK-HS-SZ10

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.



## 4.2 Conducted Emissions

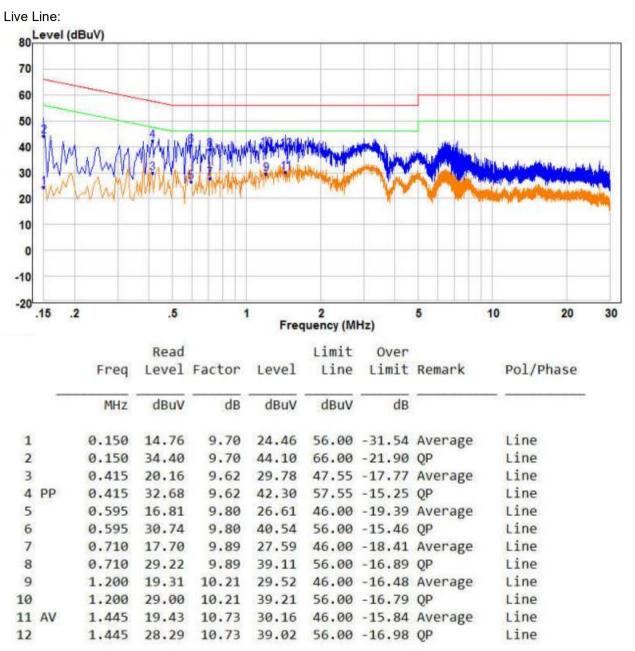
47 CFR Part 15C Section 15.2 ANSI C63.10: 2013 150kHz to 30MHz	207				
150kHz to 30MHz		ANSI C63.10: 2013			
150kHz to 30MHz					
	Limit (c	lBuV)			
Frequency range (MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			
* Decreases with the logarithn	n of the frequency.				
<ul> <li>Decreases with the logarithm of the frequency.</li> <li>1) The mains terminal disturbance voltage test was conducted in a shielde room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω lines impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the grour reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.</li> <li>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to</li> </ul>					
Shielding Room	AE E S Ground Reference Plane	Test Receiver			
	<ul> <li>5-30</li> <li>* Decreases with the logarithm</li> <li>1) The mains terminal disturbation.</li> <li>2) The EUT was connected to Impedance Stabilization N impedance. The power calconnected to a second reference plane in the same way as multiple socket outlet stript a single LISN provided the rasingle LISN provided the rasingle contend on the horizontal ground reference plane. A placed on the horizontal ground reference plane. The LISN unit under test and bonded mounted on top of the group between the closest points the EUT and associated eets</li> <li>5) In order to find the maximute equipment and all of the im ANSI C63.10: 2013 on cortain the stript of the s</li></ul>	<ul> <li>5-30 60</li> <li>* Decreases with the logarithm of the frequency.</li> <li>1) The mains terminal disturbance voltage test was room.</li> <li>2) The EUT was connected to AC power source through pedance. The power cables of all other units of connected to a second LISN 2, which was reference plane in the same way as the LISN 1 for the unit multiple socket outlet strip was used to connect a single LISN provided the rating of the LISN was reference plane. And for floor-standing ar placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. And for floor-standing ar placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. The LISN 1 was placed 0.8 m from the vertical ground reference plane. The LISN 1 and the the EUT and associated equipment was at least (5) In order to find the maximum emission, the relative equipment and all of the interface cables must be ANSI C63.10: 2013 on conducted measurement.</li> </ul>			



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**

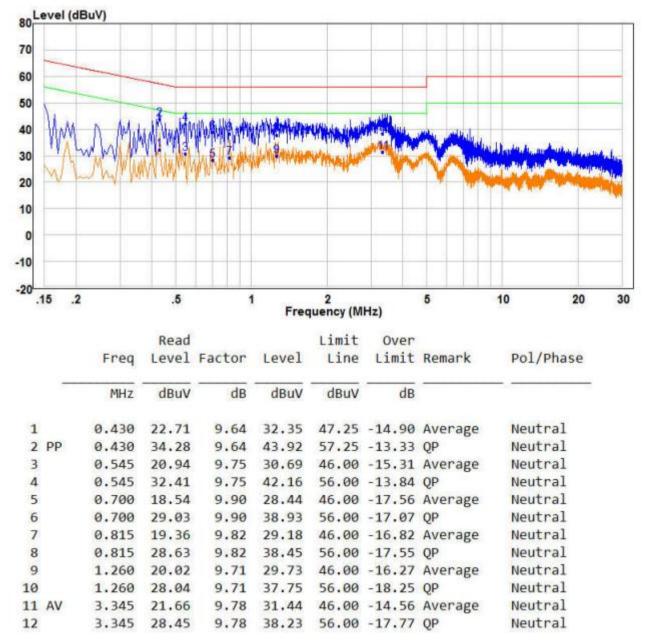


Remark:

- 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:



#### 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.



# 4.3 Conducted Peak & Average Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)		
Test Method:	ANSI C63.10: 2013		
Test Setup:	Setup for Power meter measurement method		
	EUT Power Meter		
	Setup for Spectrum analyser measurement method		
	EUT Attenuator Analyzer		
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates		
Final Test Mode:			
	Only the worst case is recorded in the report.		
Limit:	30dBm		
Test Results:	Pass		



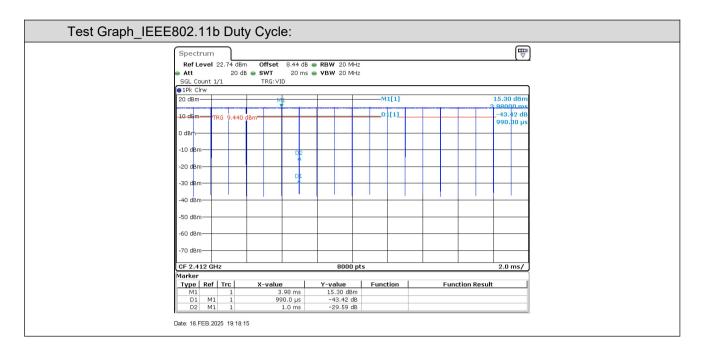
Operated Mode for Worst Duty Cycle:				
Test Mode	Duty Cycle(%)	Average correction factor(dB)		
IEEE802.11b	99.00	1		
IEEE802.11g	98.57	/		
IEEE802.11n (HT20)	98.51	1		

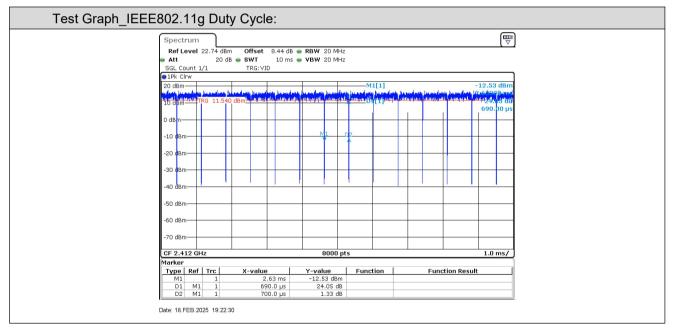
#### Remark:

1) Duty cycle= On Time/ Period;

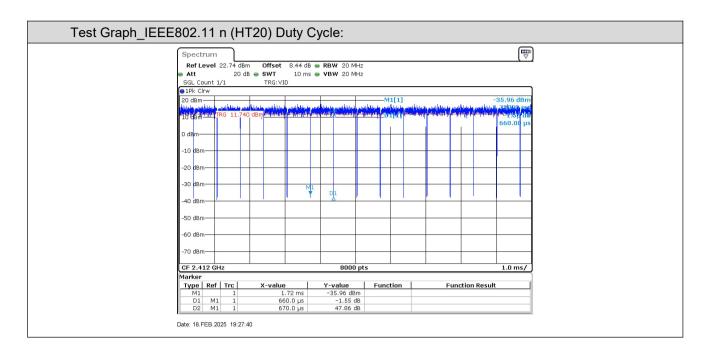
2) Duty Cycle factor = 10 \* log(1/ Duty cycle);













#### **Test Result**

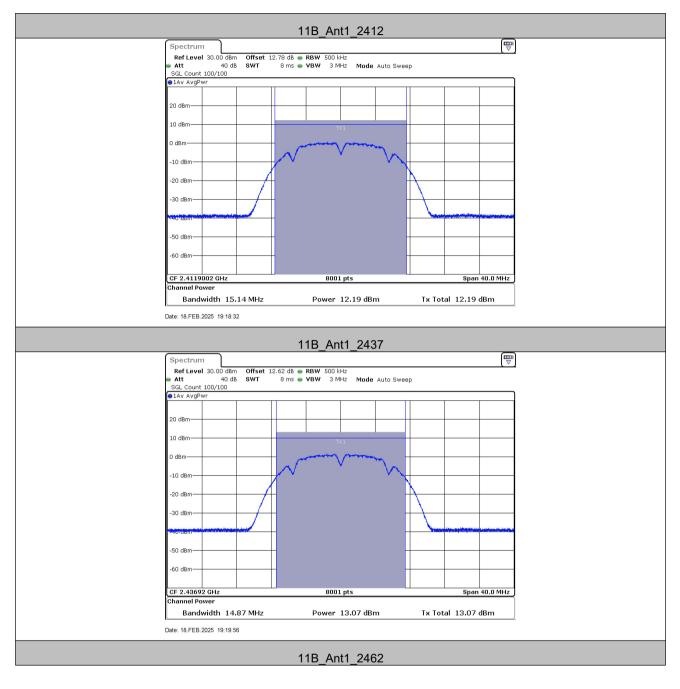
Test Mode	Frequency[MHz ]	Result [dBm]	Limit [dBm]	Verdict
	2412	12.19	≤30.00	PASS
11B	2437	13.07	≤30.00	PASS
	2462	10.87	≤30.00	PASS
	2412	8.56	≤30.00	PASS
11G	2437	9.15	≤30.00	PASS
	2462	7.10	≤30.00	PASS
	2412	8.31	≤30.00	PASS
11N20SISO	2437	8.90	≤30.00	PASS
	2462	6.84	≤30.00	PASS

Note:

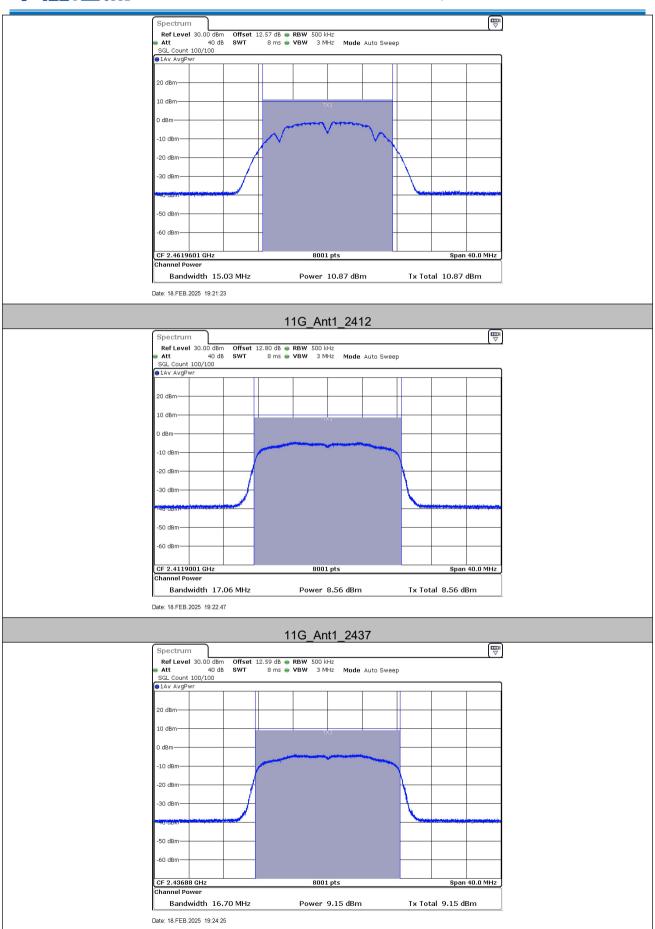
When Duty cycle >98%, D.C.F is not required.



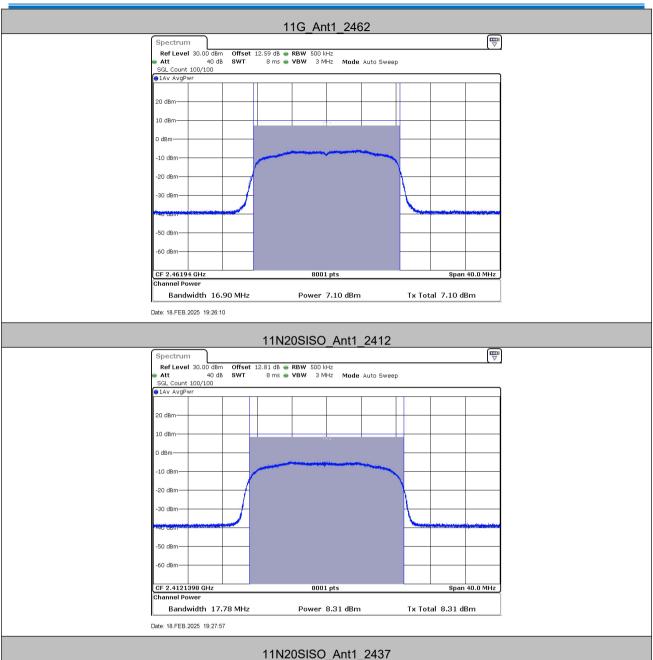
#### **Test Graphs**



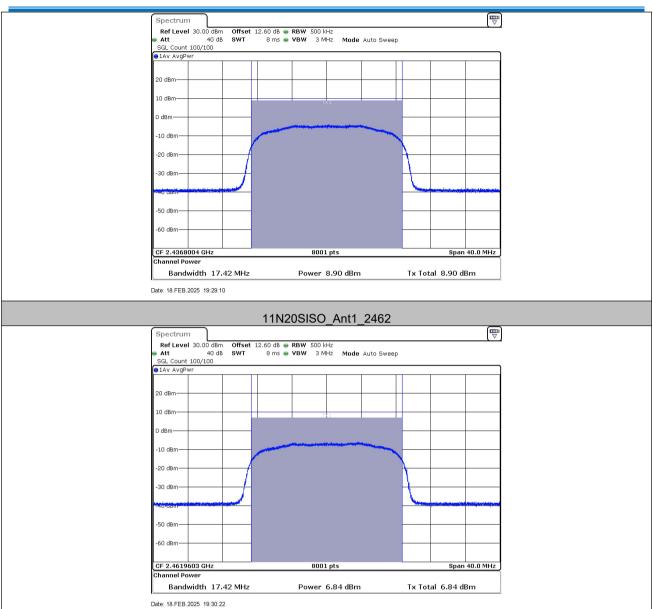














## 4.4 6dB Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)		
Test Method:	ANSI C63.10: 2013		
Test Setup:	EUT     Attenuator     Spectrum       Analyzer   Offset=cable loss+ attenuation factor		
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates		
Final Test Mode:	Only the worst case is recorded in the report.		
Limit:	≥ 500 kHz		
Test Results:	Pass		



## Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	Limit[MHz]	Verdict
		2412	11.12	0.5	PASS
11B	Ant1	2437	11.12	0.5	PASS
		2462	11.12	0.5	PASS
	Ant1	2412	15.64	0.5	PASS
11G		2437	13.88	0.5	PASS
		2462	12.64	0.5	PASS
		2412	13.88	0.5	PASS
11N20SISO	Ant1	2437	13.80	0.5	PASS
		2462	15.12	0.5	PASS



#### **Test Graphs**

