

# **FCC Test Report**

Application No.:	DNT2408290340R1298-02391
Applicant:	MAXELL CORPORATION OF AMERICA
Address of Applicant:	3 Garret Mountain Plaza, Woodland Park, NJ, United States
EUT Description:	Wireless Speaker
Model No.:	WS2.4GHz
FCC ID:	WKA-A35RXTX
Power Supply:	DC 3.7V From Battery; DC 5V From Adapter
Charging Voltage:	DC 5V/1A
Trade Mark:	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	47 CFR FCC Part 2, Subpart J
Standards:	47 CFR Part 15, Subpart C
	ANSI C63.10: 2020
Date of Receipt:	2024/9/15
Date of Test:	2024/9/16 to 2024/9/20
Date of Issue:	2024/10/08
Test Result:	PASS
Prepared By:	Wayne Jin (Testing Engineer)

Prepared By: Reviewed By: Approved By:

envils chen feise chen (Project Engineer) (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

#### Dongguan DN Testing Co., Ltd.

 Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

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#### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		Otc.8, 2024	Valid	Original Report

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# Test Summary

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Test Item	Test Requirement	Test Method	Test Result	Result
Antenna Requirement	15.203/247(b)		Clause 3.1	PASS
20dB Emission Bandwidth	15.247 (a)(1)	ANSI C63.10: 2020	Clause 3.2	PASS
Conducted Peak Output Power	15.247 (b)(1)	ANSI C63.10: 2020	Clause 3.3	PASS
Carrier Frequencies Separation	15.247 (a)(1)	ANSI C63.10: 2020	Clause 3.4	PASS
Dwell Time	15.247 (a)(1)	ANSI C63.10: 2020	Clause 3.5	PASS
Hopping Channel Number	15.247 (a)(1)	ANSI C63.10: 2020	Clause 3.6	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10: 2020	Clause 3.7	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10: 2020	Clause 3.8	PASS
Radiated Spurious	15.247(d);	ANSI C63.10: 2020	Clause 3.9	PASS
emissions	15.205/15.209			
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d); 15.205/15.209	ANSI C63.10: 2020	Clause 3.10	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10: 2020	Clause 3.11	PASS

#### Note:

1. "N/A" denotes test is not applicable in this test report.



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## 2 General Information

### 2.1 Test Location

Company:	Dongguan DN Testing Co., Ltd		
Address:	No. 1, West Fourth Street, South Xinfa Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China		
Test engineer:	Wayne Lin		



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### 2.2 General Description of EUT

Manufacturer:	DONGGUAN LOYFUN INDUSTRIAL CO.,LTD		
Address of Manufacturer:	Room 101, Building 2, No 54,Xikeng road, Puxin village, Shipai town, Dongguan, Guangdong, China.		
Test EUT Description:	Wireless Speaker		
Model No.:	WS2.4GHz		
Additional Model(s):			
Chip Type:	AC6965A		
Serial number:	PR2408290340R1298		
Power Supply:	DC 3.7V From Battery; DC 5V From Adapter		
Charging Voltage:	DC 5V/1A		
Trade Mark:	1		
Hardware Version:	V1.0		
Software Version:	V1.0		
Operation Frequency:	2402 MHz to 2480 MHz		
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)		
Type of Modulation:	GFSK,π/4-DQPSK,8DPSK		
Sample Type:	Portable Device,  Module, Mobile Device		
Antenna Type:	□ External, ⊠ Integrated		
Antenna Ports:	Ant 1,  Ant 2,  Ant 3		
Antonno Cointi	Provided by applicant		
Antenna Gain*:	1.9dBi		
	Provided by applicant		
RF Cable*:	0.5dB(0.6~1GHz); 0.8dB(1.4~2GHz); 1.0dB(2.1~2.7GHz); 1.5dB(3~4GHz); 1.8dB(4.4~6GHz);		

#### Remark:

\*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



### 2.3 Channel List

	Operation Frequency of each channel						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
/ 12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz	)	$\sim$

#### Remark:

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:

Channel	Frequency
The Lowest channel	2402MHz
The Middle channel	2441MHz
The Highest channel	2480MHz



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### 2.4 5Test Environment and Mode

Operating Environment:			
Temperature:	20~25.0 °C		
Humidity:	45~56 % RH		
Atmospheric Pressure:	101.0~101.30 KPa		
Test mode:			
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.		



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### 2.5 Power Setting of Test Software

Software Name	$\bigcirc$ $\bigcirc$ $\bigcirc$	FCC_assist_1.0.2.2	$\bigcirc$ $\bigcirc$ $\bigcirc$ $\bigcirc$	
Frequency(MHz)	2402	2441	2480	
GFSK Setting	10	10	10	
π/4-DQPSK Setting	10	10	10	
8DPSK	10	10	10	

### 2.6 Description of Support Units

The EUT has been tested independent unit.

### 2.7 Test Facility

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

Lab A:

#### FCC, USA

**Designation Number: CN1348** 

#### A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

#### Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.



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# 2.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	20dB Emission Bandwidth	±0.0196%
2	Carrier Frequency Separation	±1.9%
3	Number of Hopping Channel	±1.9%
4	Time of Occupancy	±0.028%
5	Max Peak Conducted Output Power	±0.743 dB
6	Band-edge Spurious Emission	±1.328 dB
7	Conducted RF Spurious Emission	9KHz-1GHz:±0.746dB 1GHz-26GHz:±1.328dB

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
0,	O $O$ $O$ $O$ $O$ $O$ $O$	± 4.8dB (Below 1GHz)
0	Dedicted Emission	± 4.8dB (1GHz to 6GHz)
2	Radiated Emission	± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)



### 2.9 Equipment List

	For Conne	ct EUT Anten	na Terminal <sup>-</sup>	Test	
Description	Manufacturer	Model	Serial Number	Cal date	Due date
Signal Generator	Keysight	N5181A-6G	MY48180415	2023-10-25	2024-10-24
Signal Generator	Keysight	N5182B	MY57300617	2023-10-25	2024-10-24
Power supply	Keysight	E3640A	ZB2022656	2023-10-25	2024-10-24
Radio Communication Tester	R&S	CMW500	105082	2023-10-25	2024-10-24
Spectrum Analyzer	Aglient	N9010A	MY52221458	2023-10-25	2024-10-24
BT/WIFI Test Software	Tonscend	JS1120 V3.1.83	NA	NA	NA
RF Control Unit	Tonscend	JS0806-2	22F8060581	NA	NA
Power Sensor	Anritsu	ML2495A	2129005	2023-10-25	2024-10-24
Pulse Power Sensor	Anritsu	MA2411B	1911397	2023-10-25	2024-10-24
temperature and humidity box	SCOTEK	SCD-C40-80PRO	6866682020008	2023-10-25	2024-10-24

	Test Equipment for Conducted Emission						
Description	Description Manufacturer Model Serial Number Cal Date Due Date						
Receiver	R&S	ESCI3	101152	2023-10-24	2024-10-23		
LISN	R&S	ENV216	102874	2023-10-24	2024-10-23		
ISN	R&S	ENY81-CA6	1309.8590.03	2023-10-24	2024-10-23		

Test Ec	quipment for F	Radiated Emis	sion(30MHz	-1000MH	z)
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESR7	102497	2023-10-24	2024-10-23
Test Software	ETS-LINDGREN	TILE-FULL	NA	NA	NA
RF Cable	ETS-LINDGREN	RFC-NMS-100- NMS-350-IN	NA	2023-10-24	2024-10-23
Log periodic antenna	ETS-LINDGREN	VULB 9168	01475	2023-10-24	2024-10-23
Pre-amplifier	Schwarzbeck	BBV9743B	00423	2023-10-24	2024-10-23



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🕥 Test E	quipment for I	Radiated Emis	ssion(Above	1000MHz	<u>z)</u>
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Frequency analyser	Keysight	N9010A	MY52221458	2023-10-24	2024-10-23
RF Cable	ETS-LINDGREN	RFC-NMS-100- NMS-350-IN	NA	2023-10-24	2024-10-23
Horn Antenna	ETS-LINDGREN	3117	00252567	2023-10-24	2024-10-23
Double ridged waveguide antenna	ETS-LINDGREN	3116C	00251780	2023-10-24	2024-10-23
Test Software	ETS-LINDGREN	TiLE-FULL	NA	NA	NA
Pre-amplifier	ETS-LINDGREN	3117-PA	252567	2023-10-24	2024-10-23
Pre-amplifier	ETS-LINDGREN	3116C-PA	251780	2023-10-24	2024-10-23

# 2.10 Assistant equipment used for test

Code	Equipment	Manufacturer	Model No.	Equipment No.
1	Computer	acer	N22C8	EMC notebook01
2	Adapter	HUAWEI	HW-100225C00	NA



### **3** Test results and Measurement Data

### 3.1 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.

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.9dBi.



# 3.2 20dB Emission Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2020 Section 7.8.7
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table
	Ground Reference Plane
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	NA
Test Results:	Pass

The detailed test data see: Appendix A



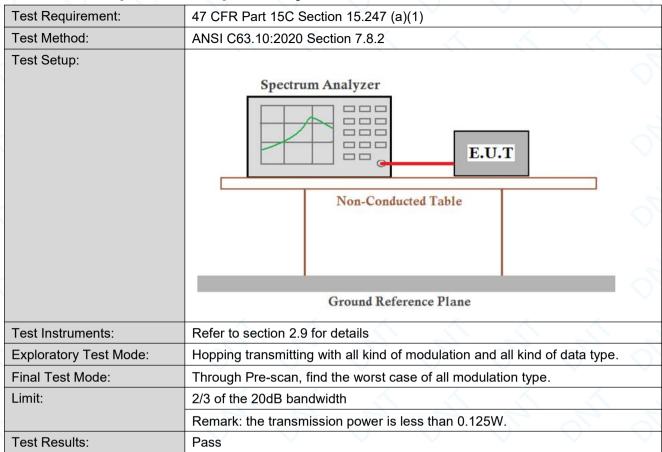
### 3.3 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2020 Section 7.8.5
Test Setup:	Spectrum Analyzer E.U.T
	Non-Conducted Table
	Ground Reference Plane
Test Instruments:	Refer to section 2.9 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	(20.97dBm) 125mW
Test Results:	Pass

The detailed test data see: Appendix B



### 3.4 Carrier Frequencies Separationy



The detailed test data see: Appendix C



# 3.5 Dwell Time

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2020 Section 7.8.4
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table
	Ground Reference Plane
Instruments Used:	Refer to section 2.9 for details
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Limit:	0.4 Second
Test Results:	Pass

The detailed test data see: Appendix D



### 3.6 Hopping Channel Number

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)	
Test Method:	ANSI C63.10:2020 Section 7.8.3	
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table	0, 0, 0,
	Ground Reference Plane	
Instruments Used:	Refer to section 2.9 for details	5
Test Mode:	Hopping transmitting with all kind of modulation	
Limit:	At least 15 channels	
Test Results:	Pass	

The detailed test data see: Appendix E



# 3.7 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2020 Section 7.8.6
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Hopping and Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Results:	Pass

The detailed test data see: Appendix F



# 3.8 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2020 Section 11.11
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test Results:	Pass

The detailed test data see: Appendix G



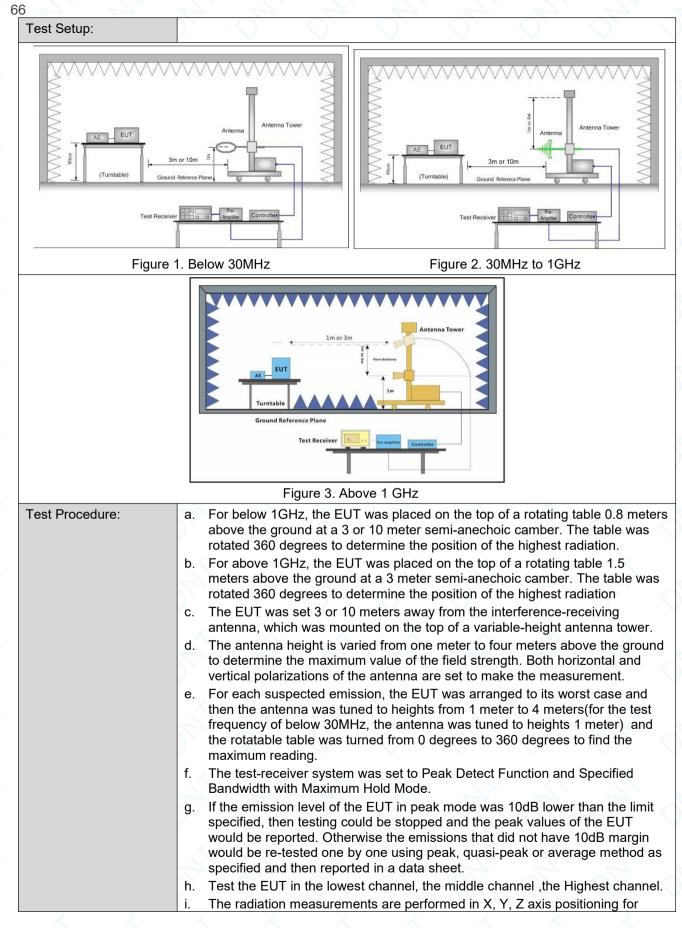
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# 3.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Sectio	n 15.209 and 15.20	)5	$\sim$	$\sim$	
Test Method:	ANSI C63.10: 2020 Section 11.12					
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)					
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark	
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak	
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average	
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak	
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average	
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	
		Peak	1MHz	3MHz	Peak	
	Above 1GHz	Peak	1MHz	10Hz (DC≥0.98)	Average	
	A &	5 5		≥1/T (DC<0.98)		
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)	
	0.009MHz-0.490MHz	2400/F(kHz)	- 🔨	~	300	
	0.490MHz-1.705MHz	24000/F(kHz)	-		30	
	1.705MHz-30MHz	30	$\sim$	$\sim$	30	
	30MHz-88MHz	100	40.0	Quasi-peak	3	
	88MHz-216MHz	150	43.5	Quasi-peak	3	
	216MHz-960MHz	200	46.0	Quasi-peak	3	
	960MHz-1GHz	500	54.0	Quasi-peak	3	
	Above 1GHz	500	54.0	Average	3	
	Remark: 15.35(b),Unless emissions is 20dB above applicable to the equipm emission level radiated b	e the maximum per ent under test. This	mitted avera	ge emission lir	nit	







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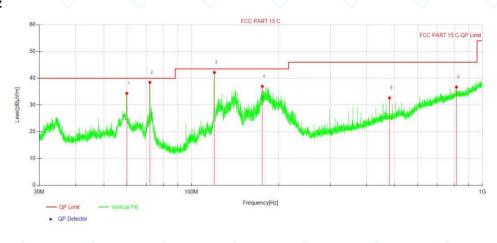
	Transmitting mode, And found the X axis positioning which it is worse case.
	j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz
0	• RBW = 120 kHz
	• VBW = 300 kHz
	Detector = Peak
	Trace mode = max hold
	Peak Measurements Above 1000 MHz
	• RBW = 1 MHz
	VBW ≥ 3 MHz
	Detector = Peak
	Sweep time = auto
	Trace mode = max hold
	Average Measurements Above 1000MHz
	• RBW = 1 MHz
	VBW = 10 Hz, when duty cycle is no less than 98 percent.
	• VBW $\ge$ 1/T, when duty cycle is less than 98 percent where T is the minimum
	transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
	Charge+Transmitting mode.
Final Test Mode:	Pretest the EUT at Transmitting mode.
	Through Pre-scan, find the DH5 of data type is the worst case of All modulation type.
Instruments Used:	Refer to section 2.9 for details
Test Results:	Pass A A A A

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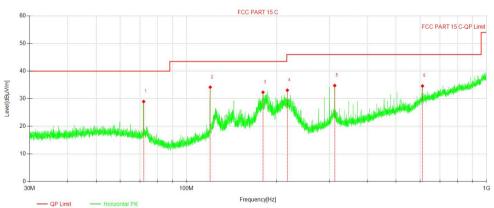
66



#### Test data For 30-1000MHz



NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/ m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	60.00	43.11	-8.76	34.35	40.00	5.65	100	174	QP	Vertical
2	71.98	48.93	-10.47	38.46	40.00	1.40	100	246	QP	Vertical
3	119.98	52.46	-10.29	42.17	43.50	1.33	100	341	QP	Vertical
4	175.34	45.73	-8.78	36.95	43.50	6.55	100	144	QP	Vertical
5	479.85	34.89	-2.24	32.65	46.00	13.35	100	28	QP	Vertical
6	815.10	32.06	4.65	36.71	46.00	9.29	100	357	QP	Vertical



QP Detector

Result Reading Correct Freq. Limit Margin Height Angle NO. Level Factor Level Remark Polarity [MHz] [dBµV/m] [dB] [cm] [°] [dBµV] [dB/m] [dBµV/m] 1 71.95 40.00 11.04 100 203 Horizontal 39.42 -10.46 28.96 QP Horizontal 2 119.98 44.47 -10.29 34.18 100 267 43.50 9.32 QP 3 179.95 41.65 -9.32 32.33 43.50 11.17 100 208 QP Horizontal 4 216.85 44.14 -11.06 33.08 46.00 12.92 100 8 QP Horizontal -6.57 100 Horizontal 5 311.96 41.33 34.76 46.00 11.24 5 QP 6 611.84 33.65 0.95 34.60 46.00 11.40 100 61 QP Horizontal

Dongguan DN Testing Co., Ltd.

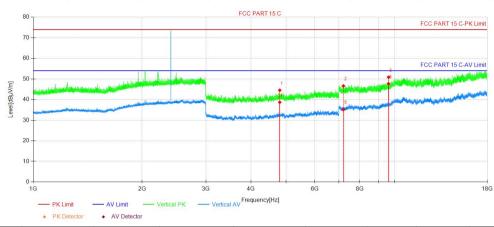
 Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

 Web: www.dn-testing.com
 Tel:+86-769-88087383

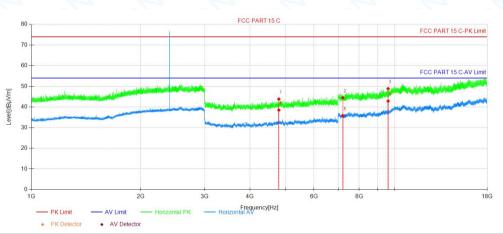
 E-mail: <a href="mailto:service@dn-testing.com">service@dn-testing.com</a>



### For above 1GHz DH5 2402MHz



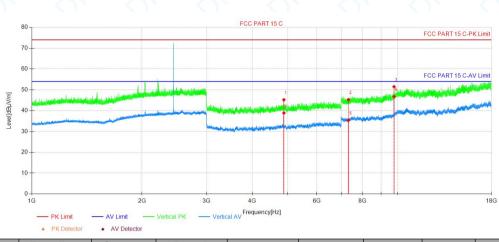
NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Heigh t [cm]	Angle [°]	Remark	Polarity
1	4803.84	49.14	-4.61	44.53	74.00	29.47	150	265	Peak	Vertical
2	7206.21	48.38	-1.76	46.62	74.00	27.38	150	353	Peak	Vertical
3	9607.83	49.98	0.87	50.85	74.00	23.15	150	231	Peak	Vertical
4	4803.84	43.31	-4.61	38.70	54.00	15.30	150	265	AV	Vertical
5	7206.21	36.91	-1.76	35.15	54.00	18.85	150	231	AV	Vertical
6	9607.83	46.83	0.87	47.70	54.00	6.30	150	186	AV	Vertical



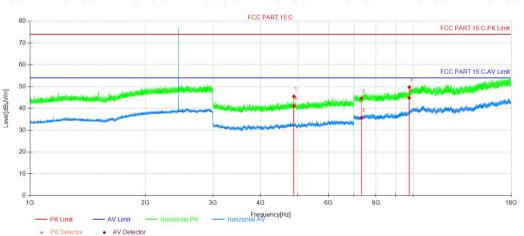
NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	4803.84	48.44	-4.61	43.83	74.00	30.17	150	67	Peak	Horizon
2	7206.21	46.23	-1.76	44.47	74.00	29.53	150	322	Peak	Horizon
3	9607.83	47.98	0.87	48.85	74.00	25.15	150	350	Peak	Horizon
4	4803.84	43.11	-4.61	38.50	54.00	15.50	150	67	AV	Horizon
5	7206.21	37.56	-1.76	35.80	54.00	18.20	150	287	AV	Horizon
6	9607.83	41.99	0.87	42.86	54.00	11.14	150	194	AV	Horizon



#### DH5 2441MHz



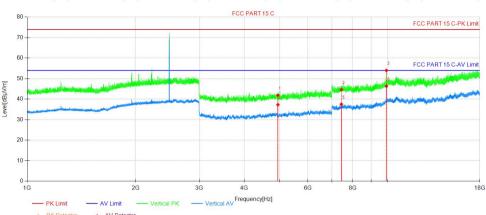
NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	4881.84	49.94	-4.72	45.22	74.00	28.78	150	18	Peak	Vertical
2	7323.21	46.75	-1.49	45.26	74.00	28.74	150	160	Peak	Vertical
3	9763.83	49.85	1.64	51.49	74.00	22.51	150	194	Peak	Vertical
4	4881.84	43.59	-4.72	38.87	54.00	15.13	150	18	AV	Vertical
5	7323.21	36.85	-1.49	35.36	54.00	18.64	150	133	AV	Vertical
6	9763.83	45.11	1.64	46.75	54.00	7.25	150	185	AV	Vertical



_							-	-	-		-
	NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
	1	4881.84	50.26	-4.72	45.54	74.00	28.46	150	325	Peak	Horizon
	2	7323.21	46.09	-1.49	44.60	74.00	29.40	150	92	Peak	Horizon
	3	9763.83	48.12	1.64	49.76	74.00	24.24	150	294	Peak	Horizon
	4	4881.84	45.85	-4.72	41.13	54.00	12.87	150	334	AV	Horizon
	5	7323.21	37.23	-1.49	35.74	54.00	18.26	150	350	AV	Horizon
	6	9763.83	43.21	1.64	44.85	54.00	9.15	150	300	AV	Horizon

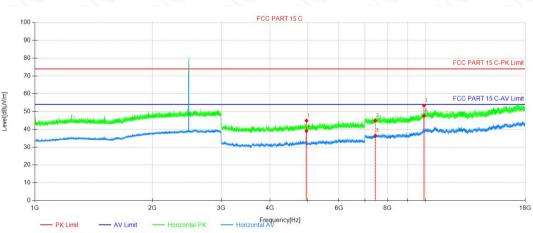


#### DH5 2480MHz



PK Detector
 AV Detector

NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	4960.59	46.76	-4.86	41.90	74.00	32.10	150	15	Peak	Vertical
2	7440.22	45.92	-1.34	44.58	74.00	29.42	150	95	Peak	Vertical
3	9919.84	51.73	2.26	53.99	74.00	20.01	150	0	Peak	Vertical
4	4959.84	42.13	-4.86	37.27	54.00	16.73	150	15	AV	Vertical
5	7440.22	38.86	-1.34	37.52	54.00	16.48	150	162	AV	Vertical
6	9919.84	44.04	2.26	46.30	54.00	7.70	150	0	AV	Vertical



PK Detector
 AV Detector

NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	4959.84	49.78	-4.86	44.92	74.00	29.08	150	324	Peak	Horizon
2	7440.22	46.32	-1.34	44.98	74.00	29.02	150	334	Peak	Horizon
3	9920.59	51.11	2.27	53.38	74.00	20.62	150	341	Peak	Horizon
4	4959.84	43.99	-4.86	39.13	54.00	14.87	150	324	AV	Horizon
5	7440.22	37.75	-1.34	36.41	54.00	17.59	150	54	AV	Horizon
6	9919.84	45.32	2.26	47.58	54.00	6.42	150	341	AV	Horizon



#### Note:

1. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

Result Level= Reading Level + Correct Factor(including Ant.Factor, Cable Factor etc.)

2. The amplitude of 9KHz to 30MHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

3. The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be report.

4. All channels had been pre-test,DH5 is the worst case, only the worst case was reported.

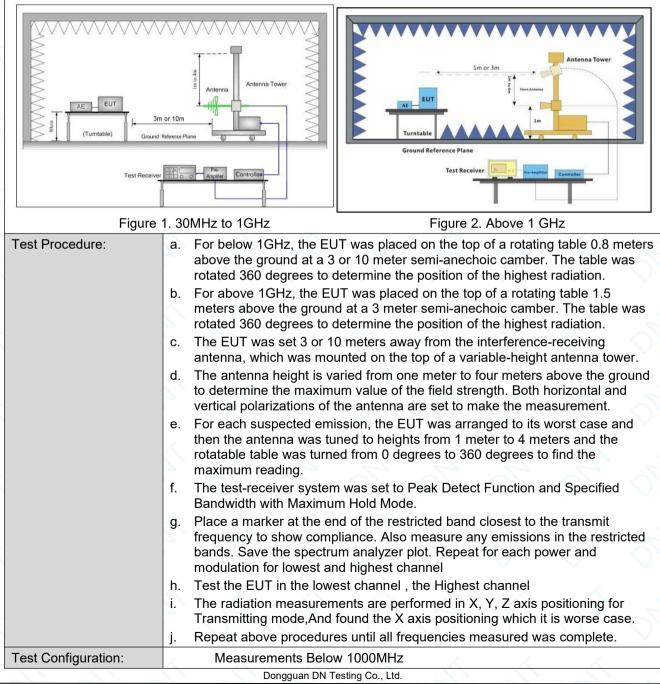


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#### Report No.: DNT2408290340R1298-02391 Date: October 8, 2024 **3.10 Restricted bands around fundamental frequency**

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205						
Test Method:	ANSI C63.10: 2020 Section	11.12					
Test Site:	Measurement Distance: 3m	or 10m (Semi-Anechoic C	Chamber)				
_imit:	Frequency	Limit (dBuV/m)	Remark				
	30MHz-88MHz	40.0	Quasi-peak				
	88MHz-216MHz	43.5	Quasi-peak				
	216MHz-960MHz	46.0	Quasi-peak				
	960MHz-1GHz	54.0	Quasi-peak				
		54.0	Average Value				
	Above 1GHz	74.0	Peak Value				

#### Test Setup:



 Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

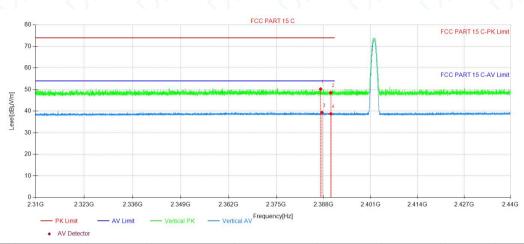
 Web: www.dn-testing.com
 Tel:+86-769-88087383
 E-mail: service@dn-testing.com

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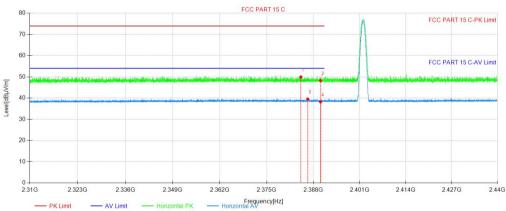
and the	Report No.: DN	T2408290340R1298-02391	Date: Octobe	r 8, 2024 🧹	Page: 3	80 / 66
		• RBW = 120 kHz	$\Delta \Delta$		1	~
		• VBW = 300 kHz				$\sim$
		<ul> <li>Detector = Peak</li> </ul>				
		• Trace mode = max hold				
		Peak Measurements Abov	e 1000 MHz			2
		• RBW = 1 MHz				$\sim$
		• VBW ≥ 3 MHz				
		<ul> <li>Detector = Peak</li> </ul>				
		<ul> <li>Sweep time = auto</li> </ul>				
		• Trace mode = max hold				$\sim$
		Average Measurements Al	ove 1000MHz			
		• RBW = 1 MHz				
		<ul> <li>VBW = 10 Hz, when duty</li> </ul>	cycle is no less	than 98 percen	nt.	-
		<ul> <li>VBW ≥ 1/T, when duty of minimum</li> </ul>	cycle is less than	98 percent who	ere T is the	
		transmission duration over which t maximum power control level for t			mitting at it	ts
Explorate	ory Test Mode:	Transmitting with all kind of modul Transmitting mode.	ations, data rate	s.	$\mathcal{O}_{\mathcal{F}}$	$\bigcirc$
Final Tes	st Mode <sup>.</sup>	Pretest the EUT Transmitting mod		<u>k</u>	6	
T indi To	n mode.	Through Pre-scan, find the DH5 c type.		e worst case of a	all modulat	ion
		Only the worst case is recorded ir	the report.			
Instrume	nts Used:	Refer to section 2.9 for details	<u> </u>		<u> </u>	
Test Res	sults:	Pass	7 7	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~	~



### Test Date DH5 2402MHz



	NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	AV Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
	1	2387.20	51.03	-0.80	50.23	74.00	23.77	150	358	Peak	Vertical
<	2	2390.01	49.31	-0.80	48.51	74.00	25.49	150	319	Peak	Vertical
	3	2387.57	40.18	-0.80	39.38	54.00	14.62	150	330	AV	Vertical
	4	2390.01	39.56	-0.80	38.76	54.00	15.24	150	90	AV	Vertical

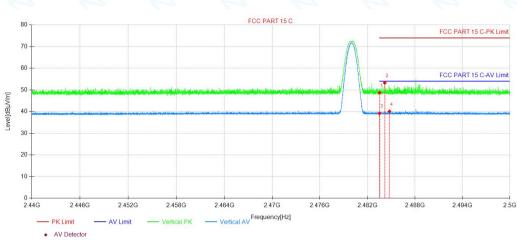


AV Detector

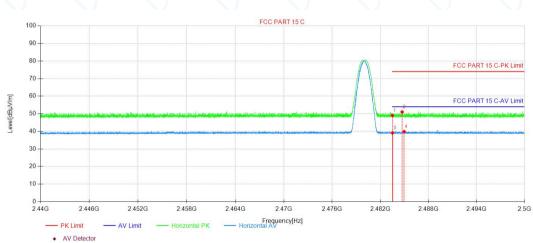
NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	AV Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	2384.51	50.76	-0.82	49.94	74.00	24.06	150	316	Peak	Horizon
2	2390.01	49.06	-0.80	48.26	74.00	25.74	150	104	Peak	Horizon
3	2386.43	40.30	-0.81	39.49	54.00	14.51	150	144	AV	Horizon
4	2390.01	39.01	-0.80	38.21	54.00	15.79	150	274	AV	Horizon



DH5 2480MHz



NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	2483.51	48.96	-0.29	48.67	74.00	25.33	150	235	Peak	Vertical
2	2484.17	53.54	-0.28	53.26	74.00	20.74	150	168	Peak	Vertical
3	2483.51	39.45	-0.29	39.16	54.00	14.84	150	284	AV	Vertical
4	2484.77	40.35	-0.27	40.08	54.00	13.92	150	181	AV	Vertical



NO.	Freq. [MHz]	Reading Level [dBµV]	Correct Factor [dB/m]	Result Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark	Polarity
1	2483.50	49.27	-0.29	48.98	74.00	25.02	150	148	Peak	Horizon
2	2484.71	51.27	-0.27	51.00	74.00	23.00	150	291	Peak	Horizon
3	2483.50	39.36	-0.29	39.07	54.00	14.93	150	34	AV	Horizon
4	2484.96	40.13	-0.27	39.86	54.00	14.14	150	107	AV	Horizon

#### Note:

1. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe

including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

Result Level= Reading Level + Correct Factor(including Ant.Factor ,Cable Factor etc.

2.All channels had been pre-test, DH5 is the worst case, only the worst case was reported.



Test Requirement:	47 CFR Part 15C Section 1	5.207	
Test Method:	ANSI C63.10: 2020		
Test Frequency Range:	150kHz to 30MHz		
Limit:		🗶 🛛 📈 Limit (d	BuV)
	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 logari		
Test Procedure:	<ol> <li>The mains terminal dist room.</li> <li>The EUT was connected Impedance Stabilization Net impedance. The power cat a second LISN 2, which was plane in the same way as to multiple socket outlet strip single LISN provided the rat 3) The tabletop EUT was p ground reference plane. And placed on the horizontal ground of the EUT shall be 0.4 m ff vertical ground reference p reference plane. The LISN unit under test and bonded mounted on top of the ground between the closest points the EUT and associated external placed on the strip of the ground between the closest points</li> </ol>	d to AC power source throu etwork) which provides a 50 bles of all other units of the is bonded to the ground ref he LISN 1 for the unit being was used to connect multip thing of the LISN was not ex- blaced upon a non-metallic of for floor-standing arrang bund reference plane, with a vertical ground refe rom the vertical ground refe lane was bonded to the ho 1 was placed 0.8 m from the to a ground reference plane. This d of the LISN 1 and the EUT puipment was at least 0.8 m	ugh a LISN 1 (Line DΩ/50µH + 5Ω linear EUT were connected ference g measured. A ble power cables to a xceeded. table 0.8m above the ement, the EUT was erence plane. The rear erence plane. The rear erence plane. The rizontal ground he boundary of the he for LISNs istance was T. All other units of h from the LISN 2.
Test Setup:	In order to find the maximulequipment and all of the international ANSI C63.10 2013 on cond	m emission, the relative po rerface cables must be cha	sitions of
	Shielding Room		Test Receiver
		Ground Reference Plane	
Exploratory Test Mode:	Transmitting with all kind of highest channel. Charge + Transmitting mod		t lowest, middle and

### 3.11 AC Power Line Conducted Emissions

Dongguan DN Testing Co., Ltd.

 Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

 Web: www.dn-testing.com
 Tel:+86-769-88087383
 E-mail: <a href="mailto:service@dn-testing.com">service@dn-testing.com</a>

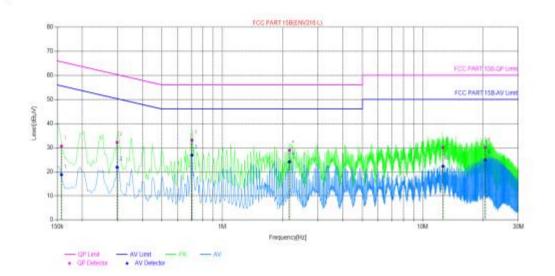


Final Test Mode:	Through Pre-scan, find the the worst case.
Instruments Used:	Refer to section 2.9 for details
Test Results:	PASS

#### Measurement Data

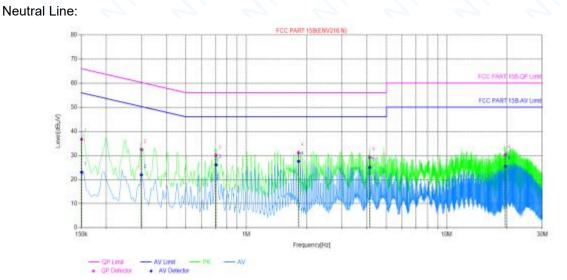
An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



NO.	Freq. [MHz]	Factor [dB]	QP Value [dBuV]	QP Limit [dBuV]	QP Margin [dB]	AV Value [dBuV]	AV Limit [dBµV]	AV Margin [dB]	Verdici
1	0.1575	9.90	30.60	65.59	34.99	18.75	55.59	36.84	PASS
2	0.2985	9.89	32.20	60.28	28.08	21.83	50.28	28.45	PASS
3	0.7053	9.76	33.10	56.00	22.90	26.85	46.00	19.15	PASS
4	2.1609	9.74	28.93	56.00	27.07	24.12	46.00	21.88	PASS
5	12.6224	9.92	30.04	60.00	29.96	22.24	50.00	27.76	PASS
6	20.5450	10.13	30.03	60.00	29.97	24.81	50.00	25.19	PASS





NO.	Freq. [MHz]	Factor [dB]	QP Value [dBuV]	QP Limit [dBuV]	QP Margin [dB]	AV Value [dBuV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1507	9.79	36.67	65.96	29.29	23.02	55.96	32.94	PASS
2	0.2995	9.88	32.45	60.26	27.81	21.88	50.26	28.38	PASS
3	0.7059	9.86	29.99	56.00	26.01	26.02	46.00	19.98	PASS
4	1.8241	9.76	31.06	56.00	24.94	27.54	46.00	18.46	PASS
5	4.1297	9.96	29.17	56.00	26.83	25.00	46.00	21.00	PASS
6	19.6317	10.06	30.20	60.00	29.80	25.50	50.00	24.50	PASS

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe

including LISN Factor and the Cable Factor etc.), The basic equation is as follows:

Result Level= Reading Level + Correct Factor(including LISN Factor, Cable Factor etc



# 4 Appendix

### Appendix A: 20dB Emission Bandwidth

<b>Test Result</b>	$\mathbf{O}$	$\bigcirc$		$\cap$			
Test Mode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	1.362	2401.373	2402.735	🔨	
DH5	Ant1	2441	1.050	2440.463	2441.513		
		2480	1.026	2479.484	2480.510		
	$\sim$	2402	1.326	2401.337	2402.663		
2DH5	Ant1	2441	1.356	2440.331	2441.687		
		2480	1.341	2479.328	2480.669	🔨	
	$\sim$	2402	1.374	2401.295	2402.669		
3DH5	Ant1	2441	1.323	2440.340	2441.663	<u></u>	
	$\sim$	2480	1.317	2479.322	2480.639		



### Test Graphs

Frequency	04:29:43 AM Sep 18, 2024 TRACE 1 2 3 4 5 6 TYPE M WWWWWW	ALIGN OFF pe: RMS d: 100/100	#Avg T	NSE:PULSE		000 GHz	50 Q 1 2.402000	RF req 2		er
Auto Tun	DETPPPPP	a: 100/100	Avgino			PNO: Wide IFGain:Lov				
Auto Tun	r3 1.362 MHz 0.344 dB	ΔM					Offset 13.31 f 30.00 dB		B/div	
Center Fre										.og
2.402000000 GH			-	-				-		10.0
Start Fre				A2					1	0.00
2.400500000 GH				ha	m				1	20.0
04 E	42.38 Gen	\$3∆1	man	_	m	1	mont		1	40.0
Stop Fre 2.403500000 GH	and a north a star	- man						were		50.0 60.0
CF Ste 300.000 kH	Span 3.000 MHz )0 ms (1001 pts)	Sweep 3.		łz	/BW 100 kH	#\	00 GHz Hz	.4020 / 30 k		
Auto Ma		UNCTION WIDTH	UNCTION		-42.821	× 2.401 373 GHz		TAC SCU	NODE	1
Freq Offse 0 H					-22.380	2.401 373 GHz 2.402 024 GHz 1.362 MHz		f	Ν Δ1	2
										678
				-				-		9 10

#### DH5\_Ant1\_2441

Frequency	04:32:57 AM Sep 18, 2024 TRACE 1 2 3 4 5 6	ALIGN OFF Type: RMS	#Avg	SENSE:PULS	łz	000000 GH		RL enter
A	DET P P P P P	told: 100/100	Avg	Trig: Free Run #Atten: 40 dB	10: Wide ↔ Gain:Low			
Auto Tun	kr3 1.050 MHz -0.312 dB	ΔM				13.31 dB 0 dBm	Ref Offse Ref 30.	dB/div
Center Fre 2.441000000 GH								
Start Fre 2.439500000 GH		<b>∡</b> 3∆1	m	www.				1.0 1.0
Stop Fre 2.442500000 GH	-39.15 dBn ^^	• T	- Mr		Jim	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0.0 0.0 0.0
CF Ste 300.000 kF Auto Ma	Span 3.000 MHz 200 ms (1001 pts)	Sweep 3.		100 kHz	#VBW	Hz	441000 G 30 kHz	
Freq Offse 0 H		FUNCTION WIDTH	FUNCTION	39.467 dBm -19.150 dBm -0.312 dB		2,440,46 2,441,01 1,05	10 <b>360</b> f f f (Δ)	6 2000 1 N 2 N 3 Δ1 4 5 5 6 6 7 8 9 9 0 1

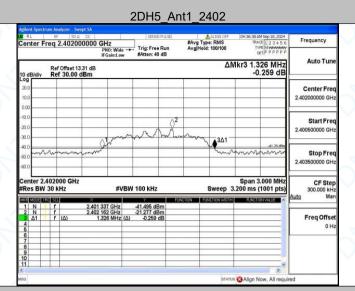
#### DH5\_Ant1\_2480

RL	RF	50 Q			SEA	SE:PULSE		ALIGN OFF		1 Sep 18, 2024	Frequency
enter F	req 2	.48000	0000 GH	Z O: Wide	Trig: Fr		#Avg Type Avg Hold:	100/100	TYP	E 1 2 3 4 5 6 E M	riequency
			IFG	ain:Lov	#Atten:	40 dB	15104155555			TPPPPPP	Auto Tune
odB/div		Offset 13. 30.00 c						ΔN	Akr3 1.02 0.	26 MHZ 460 dB	
20.0	-				_	-	_				Center Fre
0.0	-		-		-	-					2.480000000 GH
0.00		Č.				2					-
10.0		_			. m	mm	-				Start Fre 2.478500000 GH
0.0	-		_	0m	~~~~	~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1		-36.65 dBn	2.47800000 01
0.0	in	m	man	V			- Th	mong	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Stop Fre
0.0					_						2.481500000 GH
enter 2. Res BW				#\/	BW 100 kH	7		Sween 3	Span 3. .200 ms (1	000 MHz	CF Ste 300.000 kH
		12	×		Date 100 Kil	_		иноммоти			Auto Ma
1 N 2 N	1		2.479 484		-37.281						
3 A1	f	(Δ)		5 MHz							Freq Offse
4 5 6											01
7											
9											
1				-	4	_				~	
G								STATU	s 🕄 Align No	ow, All requi	red

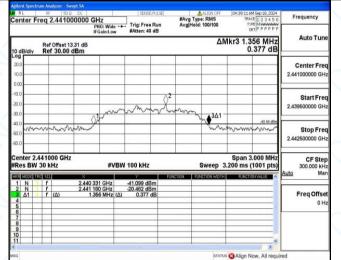


Date: October 8, 2024

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#### 2DH5\_Ant1\_2441



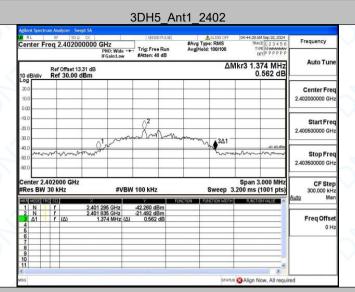
#### 2DH5\_Ant1\_2480

Frequency	22 AM Sep 18, 2024	F 04:4	ALIGN OFF		PULSE	SENSE			50 Q	RF	L
riequency	TRACE 1 2 3 4 5 6 TVPE MWWWWW DET P P P P P		/pe: RMS ld: 100/100	#Avg Avg H		Trig: Free	): Wide -+-		2.48000	Freq	nter
Auto Tur	1.341 MHz	Mkr3	٨		dB	#Atten: 40	ain:Low				_
	0.794 dB								Offset 13 30.00		B/div
Center Fre		-								_	-
2.480000000 GH		+	-								$\vdash$
04					A2						
Start Fre 2.478500000 GH		-		m	ant	m				_	⊢
///////////////////////////////////////	-36.35 dBm	-	3∆1				m	Q1		_	E
Stop Fre	manne	m	hon					in	m	nm	~
2.481500000 GH		_								_	⊢
CF Ste 300.000 ki	n 3.000 MHz ns (1001 pts)		Sween			100 kHz	#\/B\M		00 GHz	2.4800 V 30 k	
Auto Ma			UNCTION WIDT	CTION		Y		X		TRC  SCL	MODE
-					n	-37.189 dE -16.347 dE	GHz	2.479 328 2.480 165		f	NN
Freq Offs		-			В	0.794	MHz (∆)	1.34	(Δ)	1 f	Δ1
80		-		_	-						-
		-		-	-		-			-	-
	~										
	n Now, All require										



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#### 3DH5\_Ant1\_2441

RL RF SDQ		ALIGN OFF	04:47:17 AM Sep 18, 2024	Freedown
Center Freq 2.44100	PNO: Wide Trig: Free Run IFGain:Low #Atten: 40 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P P	Frequency
Ref Offset 13	Akr3 1.323 MHz 0.192 dB	Auto Tune		
200 100 000				Center Free 2.441000000 GH:
20.0	1 mm	~~~~~3∆1-		Start Free 2.439500000 GH
40.0 60.0 60.0	how		-38.87 dBm	Stop Free 2.442500000 GH
Center 2.441000 GHz Res BW 30 kHz	#VBW 100 kHz		Span 3.000 MHz 200 ms (1001 pts)	CF Step 300.000 kH Auto Mar
IN <b>F</b>	2.440 340 GHz -39.090 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N f 3 Δ1 f (Δ) 4 5	2.440 994 GHz -18.867 dBm 1.323 MHz (Δ) 0.192 dB			Freq Offse 0 Hi
6 7 8				

#### 3DH5\_Ant1\_2480

Center F	RF 50 g req 2.4800	00000 GHz PNO: Wide -	Trig: Free Run #Atten: 40 dB	ALIGN OFF #Avg Type: RMS Avg Held: 100/100	D4:48:29 AM Sep 18, 2024 TRACE 1 2 3 4 5 6 TYPE M WWWWWW DET P P P P P	Frequency			
10 dB/div	Ref Offset 13.31 dB ΔMkr3 1.317 MHz 0 dB/div Ref 30.00 dBm 0.226 dB								
20.0 10.0						Center Free 2.480000000 GH			
20.0		01	manne	v <sup>_</sup> ~~v <sub>v</sub> 3∆1_	-36.43 dBn	Start Fre 2.478500000 GH			
40.0 50.0	mawa	um		×	-30 43 0000 An ann - Marine	Stop Fre 2.481500000 GH			
enter 2. Res BW			W 100 kHz	Sweep 3	Span 3.000 MHz 3.200 ms (1001 pts)	CF Ste 300.000 kH <u>Auto</u> Ma			
1 N 2 N 3 Δ1 4 5 6 7	f f f (Δ)	2.479 322 GHz 2.479 838 GHz 1.317 MHz (Δ	-36.971 dBm -16.428 dBm ) 0.226 dB			Freq Offse 0 H			
7 8 9 10 11									
50				STATU	s 🕄 Align Now, All requir	red			



Date: October 8, 2024

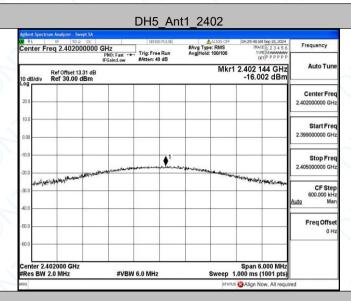
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# Appendix B: Maximum conducted output power

Test Result					
Test Mode	Antenna	Freq(MHz)	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
		2402	-16.00	≤20.97	PASS
DH5	Ant1	2441	-13.97	≤20.97	PASS
		2480	-12.27	≤20.97	PASS
		2402	-15.21	≤20.97	PASS
2DH5	Ant1	2441	-13.68	≤20.97	PASS
		2480	-12.00	≤20.97	PASS
		2402	-15.52	≤20.97	PASS
3DH5 🔍	Ant1	2441	-13.42	≤20.97	PASS
		2480	-11.72	≤20.97	PASS



#### **Test Graphs**



#### DH5\_Ant1\_2441

	SENSE:PULSE	ALIGN OFF	04:33:02 AM Sep 18, 2024	Frequency	
PNO: Fast IFGain:Low	Trig: Free Run #Atten: 40 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P P		
		Mkr1	2.441 000 GHz -13.971 dBm	Auto Tur	
				Center Fre 2.441000000 GH	
				Start Fre 2.438000000 GH	
- too de troman a ser	1	mental providents		Stop Fre 2.444000000 GH	
				CF Ste 600.000 kF Auto Ma	
				Freq Offs 0 H	
			Span 6.000 MHz		
	D0000 GHz PRO: Feat -+ IFGaind.ow 31 dB Bm	D0000 GHZ PROSENT - Trig: Free Run IFGain:Low BBM IBM IBM IAM IAM IGGAIN:Low IGGAIN IGGAIN IGGAIN IGGAIN IGGAIN:Low IGGAIN IGGAIN IGGA	00000 CHZ     #Avg Type: RMs       Trig: Free Run     #Avg Type: RMs       IFGainLow     Trig: Free Run       J dB       Mkr1	OD000 CHZ     PMCC Trac - Fill     PMCC Trac - Fi	

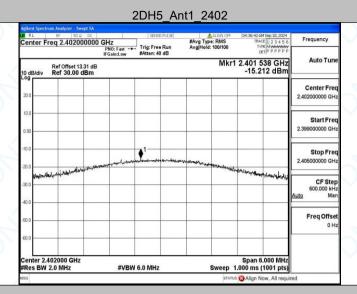
#### DH5\_Ant1\_2480

RL	RF 50 Q	DC		SENSE	PULSE	4	ALIGN OFF		4 Sep 18, 2024	-
Center Fr	eq 2.48000	P	IZ NO: Fast ↔ Gain:Low	Trig: Free #Atten: 40		#Avg Type Avg Hold:	: RMS 100/100	TRAC TVI DI	TYPE MWWWWWW	
10 dB/div				Mkr1	2.479 9	22 GHz 68 dBm	Auto Tuni			
.og										Center Fre 2.480000000 GH
0.00										Start Fre 2.477000000 GH
20.0	alfred graph way be det	melanan			1 		up a winner a way	athe years	Analy Market	Stop Fre 2.483000000 GH
0.0	balfand per								ALL AND ALL AND ALL	CF Ste 600.000 kH Auto Ma
50.0										Freq Offso 0 H
60.0										
Center 2.4 #Res BW 2	80000 GHz 2.0 MHz		#VBW	6.0 MHz		1	Sweep 1.		.000 MHz 1001 pts)	
150							STATUS	Alian N	ow, All requi	red



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#### 2DH5\_Ant1\_2441

RF 5D Q	DC		SENSE:PULSE	ALIGN OFF		Frequency
eq 2.44100	-	PNO: Fast -	Trig: Free Run #Atten: 40 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE MWWWWWW DET P P P P P	
				Mkr1	1 2.441 354 GHz -13.678 dBm	Auto Tune
						Center Fred 2.441000000 GH:
		-				Start Free 2.438000000 GH:
	- Marriel	wandstow	<b>↓</b> <sup>1</sup>			Stop Free 2.444000000 GH:
Inder Constantion		1			- marine provide the stand of t	CF Step 600.000 kH: Auto Mar
						Freq Offse 0 H
41000 GHz					Span 6 000 MHz	
2.0 MHz		#VBW	6.0 MHz	Sweep		
	85 1000 eq 2.44100 Ref Offset 13.300 d	eq 2.44100000 G	85 200 00 00 eq 2.44100000 GHz PR0:Fast	89         000         C         INSPECTAT           eq.2.441000000 GHz         PROD Fait	B90         CC         Image: Participant state         Image: Participant         Image: Partici	Byog         Col         Indext Processing         Applied         Indext Processing         Applied         Indext Processing         Index Processing         Indext

#### 2DH5\_Ant1\_2480

RL	RF 50 Q DC		SENSE:PULSE	4	ALIGN OFF	04:40:27 AM Sep	18,2024	-
Center	Freq 2.48000000	PNO: Fast	Trig: Free Run #Atten: 40 dB	#Avg Type Avg Hold:		TRACE 1 TYPE MY DET P	23456	Frequency
10 dB/div	Ref Offset 13.31 dB Ref 30.00 dBm				Mkr1	2.479 856 -12.002		Auto Tuni
20.0								Center Free 2.480000000 GH
0.00								Start Free 2.477000000 GH
-10.0	n or gallen and street all all and street and		1 	mentioneen	ananyasarkany	Na_23354, decay		Stop Free 2.483000000 GH
-30.0	and the second							CF Ste 600.000 kH Auto Ma
50.0		_						Freq Offse 0 H
60.0								
	2.480000 GHz N 2.0 MHz	#VBW	6.0 MHz	1	Sweep 1	Span 6.00 .000 ms (100		
150					STATUS	Align Now,	All requir	ed

Dongguan DN Testing Co., Ltd.

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 E-mail: <a href="mailto:service@dn-testing.com">service@dn-testing.com</a>



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CE 1 2 3 4 5 6	TRAC	vg Type: RMS	e Run	Trig: Fre	PNO: Fast ->			Center F
586 GHz	1 2.401 5	Mkr	0 40	solden. 4	IF-Gain:Low			10 dB/div
								20.0
								0.00
		March States	ended service and	1	manan	Unafering		-10.0
						pudine	ing alge fright gold and	-30.0
								-50.0
								60.0
A	86 GHz 15 dBm	-15.515 dBm	#Avg Type: RMS         Two:E[12:4:5:6           Avg[Hold: 100/100         Tvreft[Mexmun]           Type: RMS         Type: RMS           Mkr1 2:401 586 GHz         -15:515 dBm	Bung Type: RMS         TMCE [12:3:4:5           0:80         Microsoft (12:3:4:5)           0:80         Microsoft (12:3:4:5)           Microsoft (12:3:4:5)         Microsoft (12:3:5)	Trig: Free Run #Artgire: 40 dB         IMACE [2:34:56 Avgireid: 100/100         IMACE [2:34:56 VIEWERNAME CERT PPPPP           Mkr1 2.401 586 GHz -15.515 dBm         IMACE [2:34:56 VIEWERNAME CERT PPPPP         IMACE [2:34:56 VIEWERNAME CERT PPPPP	GHZ Trig: Free Run IFGalh.Low FAtten: 40 dB Mark Type: RMS Mary Held: 100100 Trig: 12 a 4 5 0 Mkr1 2: 401 586 GHZ -15:515 dBm -15:515 dBm -15:515 dBm	BANG Type: RHS IFGaint.ow         Trig: Free Run Autor: 40 dB         BANG Type: RHS AvgHold: 100100         Trice [1:2:4:4:5:0           IFGaint.ow         Atten: 40 dB         Mkr1 2.401 586 GHz dBm         -15.515 dBm	Ref Offset 13.31 dB         Trig: Free Run IFGaint.ow         May Type: RMS Avg/Heid: 100100         Max: El 2.34.5 G Avg/Heid: 100100         Max: El 2.34.5 G Trig: Free Run Avg/Heid: 100100         Max: El 2.34.5 G Trig: Free Run Avg/Heid: 100100         Max: El 2.34.5 G Trig: Free Run Avg/Heid: 100100         Max: El 2.34.5 G Trig: Free Run Trig: Free Run Avg/Heid: 100100         Max: El 2.34.5 G Trig: Free Run Trig: Free Run Trig Free Run Trig

#### 3DH5\_Ant1\_2441

X RL RF SDΩ DI		SENSE:PULSE	ALIGN OFF	04:47:22 AM Sep 18, 2024	Farmerer
Center Freq 2.4410000	00 GHz PNO: Fast ↔ IFGain:Low	Trig: Free Run #Atten: 40 dB	#Avg Type: RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE M WWWWWWW DET P P P P P P	Frequency
Ref Offset 13.31 10 dB/div Ref 30.00 dBr			Mkr1	2.440 952 GHz -13.418 dBm	Auto Tune
20.0					Center Free 2.441000000 GH:
0.00					Start Fred 2.438000000 GH:
-10.0	g Waland Strangerstram Strange		account of the second states	Here an on the sector of the	Stop Free 2.444000000 GH:
-30.0					CF Step 600.000 kH: Auto Mar
-50.0					Freq Offse 0 H:
-60.0 Center 2.441000 GHz #Res BW 2.0 MHz	#UDW	6.0 MHz		Span 6.000 MHz .000 ms (1001 pts)	

#### 3DH5\_Ant1\_2480

uency		04:48:34 AM	ALIGN OFF		SE:PULSE			DC	RF 50 Q	RL
	123456 MWWWWW TPPPPPP	TYP	e: RMS	#Avg Typ Avg Hold	e Run 40 dB	Trig: Fre #Atten: 4	Z 10: Fast ↔ Gain:Low	PI	q 2.48000	enter Fre
uto Tuni		Ref Offset 13.31 dB Mkr1 2.480 264 GHz 10 dB/dk Ref 30.00 dBm -11.724 dBm -11.724 dBm								
nter Fre 00000 GH										50
Start Fre										
Stop Fre 00000 GH		- Carbon of the opposite		. are we have a feature of the second descent descent descent descent descent descent descent descent descent d	• • • • • • • • • • • • • • • • • • •	و ياد الاين <sup>و</sup> مريد م	aller an anna	-	Marildenautr	0.0
CF Ste 00.000 kH Ma	444-Jurdagen								-	0.0
eqOffso 0⊦					-					0.0
	000 MHz	Chan 6							20000 CH7	0.0
		1.000 ms (	Sweep 1		z	6.0 MHz	#VBW			Res BW 2
	000 MHz	1.000 ms (	10.000 OK 100		2	6.0 MH2	#VBW		00000 GHz 0 MHz	0.0 0.0 enter 2.48



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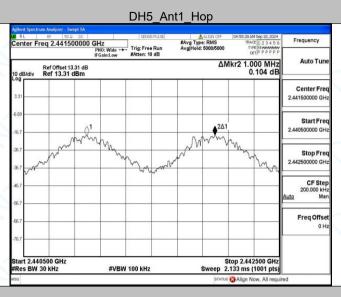
# Appendix C: Carrier frequency separation

#### Test Result

Test Mode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Нор		≥0.908	PASS
2DH5	Ant1	Нор	1.018	≥0.904	PASS
3DH5	Ant1	💙 Нор 💙	1.13	≥0.916	PASS



#### **Test Graphs**



#### 2DH5\_Ant1\_Hop

RL RF 50 2 DC Center Freq 2.44150000		SENSE:PULSE	#Avg Type: RMS	05:02:25 AM Sep 18, 2024 TRACE 1 2 3 4 5 6	Frequency
•	PNO: Wide +++ IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg[Hold: 5000/5000	DET P P P P P	
Ref Offset 13.31 d 0 dB/div Ref 13.31 dBm			ΔM	kr2 1.018 MHz -0.209 dB	Auto Tun
3.31					Center Fre 2.441500000 GH
6.69	<u>_1</u>		\$2∆1		Start Fre 2.440500000 GH
267 www.my.Mhy.M	Jamos	Mande	how he	Mar Mar	Stop Fre 2.442500000 GH
46.7					CF Ste 200.000 kF Auto Ma
66.7					Freq Offso 0 H
76.7				top 2.442500 GHz	
Res BW 30 kHz	#VBW	100 kHz		133 ms (1001 pts)	

#### 3DH5\_Ant1\_Hop

SENSE:PULSE	ALIGN OFF	05:18:11 AM Sep 18, 2024				
Nide Trig: Free Run	#Avg Type: RMS Avg Hold: 5000/5000	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P	Frequency			
Ref Offset1331 dBm         ΔMkr2 1.130 MHz           10 dB/div         Ref 13.31 dBm						
			Center Free 2.441500000 GH			
			Start Free 2.440500000 GH			
manyayaya	manne	Munim	Stop Fre 2.442500000 GH			
			CF Ste 200.000 kH Auto Ma			
			Freq Offse			
#VBW 100 kHz	Sweep 2	.133 ms (1001 pts)				
	Trig: Free Run Low FAtten: 10 dB	Image: https://www.second.com/second.	Avg Type: FMS         March 1/2 2 4 5 6           March 1/2 4 5 6         March 1/2 2 4 5 6           Jow         Avg/Hold: 5000/5000         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         March 1/2 2 4 5 6         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         March 1/2 2 4 5 6         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         March 1/2 2 4 5 6         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         Avg/Hold: 5000/5000         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         Avg/Hold: 5000/5000         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         Avg/Hold: 5000/5000         March 1/2 2 4 5 6           Avg/Hold: 5000/5000         Avg/Hold: 5000/5000         Avg/Hold: 5000/5000           Avg/Hold: 5000/5000         Avg/Hold: 5000/5000			



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# Appendix D: Dwell Time

#### **Test Result**

rootritoount							
Test Mode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Иор 🗸	0.375	320	0.12	≤0.4	PASS
DH3	Ant1	Нор	1.631	160	0.261	≤0.4	PASS
DH5	Ant1	Нор	2.879	106.67	0.307	≤0.4	PASS
2DH1	Ant1	Нор	0.385	320	0.123	≤0.4	PASS
2DH3	Ant1	Нор	1.637	160	0.262	≤0.4	PASS
2DH5	Ant1	🗸 Нор 🗸	2.884	106.67	0.308	≤0.4	PASS
3DH1	Ant1	Нор	0.386	320	0.124	≤0.4	PASS
3DH3	Ant1	Нор	1.635	160	0.262	≤0.4	PASS
3DH5	Ant1	Нор	2.885	106.67	0.308	≤0.4	PASS