Shenzhen Huaxia Testing Technology Co., Ltd.



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. : Applicant: Address of Applicant:	CQASZ20220701273E-01 Shenzhen RB-LINK Intelligent Technology Co., Ltd Room 401, building C, Runhe Industrial Zone Huangpu, Shajing Town, Bao'an District, Shenzhen, Guangdong Province
Equipment Under Test (E	UT):
Product:	IT510 bluetooth headset
Model No.:	IT510, IT510 Plus, IT511, IT511 Plus, A9, A9 Plus, A8
Test Model No.:	IT510
Brand Name:	N/A
FCC ID:	2AXI9-IT510
Standards:	47 CFR Part 15, Subpart C
Date of Receipt:	2022-07-25
Date of Test:	2022-07-25 to 2022-08-09
Date of Issue:	2022-08-11
Test Result :	PASS*
*In the configuration toot	ad the FUT compliant with the standards aposition above

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

Tested By: _____(Lewis Zhou) K. Liao Reviewed By: (KLiao) 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.



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20220701273E-01	Rev.01	Initial report	2022-08-11



2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 (2013)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(1)	ANSI C63.10 (2013)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	ANSI C63.10 (2013)	PASS
Carrier Frequencies Separation	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	ANSI C63.10 (2013)	PASS
Hopping Channel Number	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	ANSI C63.10 (2013)	PASS
Dwell Time	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	ANSI C63.10 (2013)	PASS
Pseudorandom Frequency Hopping Sequence	47 CFR Part 15, Subpart C Section 15.247(b)(4)	ANSI C63.10 (2013)	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 (2013)	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 (2013)	PASS
Radiated Spurious emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 (2013)	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 (2013)	PASS



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4 General Information

4.1 Client Information

Applicant:	Shenzhen RB-LINK Intelligent Technology Co., Ltd	
Address of Applicant:	Room 401, building C, Runhe Industrial Zone Huangpu, Shajing Town, Bao'an District, Shenzhen, Guangdong Province	
Manufacturer:	Shenzhen RB-LINK Intelligent Technology Co., Ltd	
Address of Manufacturer:	Room 401, building C, Runhe Industrial Zone Huangpu, Shajing Town, Bao'an District, Shenzhen, Guangdong Province	
Factory:	Shenzhen RB-LINK Intelligent Technology Co., Ltd	
Address of Factory:	Room 401, building C, Runhe Industrial Zone Huangpu, Shajing Town, Bao'an District, Shenzhen, Guangdong Province	

4.2 General Description of EUT

Product Name:	IT510 bluetooth headset	
Model No.:	IT510, IT510 Plus, IT511, IT511 Plus, A9, A9 Plus, A8	
Test Model No.:	IT510	
Trade Mark:	N/A	
Software Version:	RBZN-IT510-BT8926B2(IT510)-20220720-6E6C7BD2_6A74401F_C45_D	
Hardware Version:	IT510 Power Pack V1.1 20220602	
	IT510_Charger_V1.0_20220601	
	IT510_BT8926B_L_V1.4_20220616	
	IT510_BT8926B_R_V1.4_20220616	
Operation Frequency:	2402MHz~2480MHz	
Bluetooth Version:	V5.0	
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)	
Modulation Type:	GFSK, π/4DQPSK	
Transfer Rate:	1Mbps/2Mbps	
Number of Channel:	79	
Hopping Channel Type:	Adaptive Frequency Hopping systems	
Product Type:	☐ Mobile	
Test Software of EUT:	BT_Tool	
Antenna Type:	Chip antenna	
Antenna Gain:	2.67dBi	
Power Supply:	Charging Box: Li-ion battery: DC 3.7V 400mAh, Charge by DC 5V for adapter	
	Earphone: Li-ion battery: DC 3.7V 40mAh, Charge by DC 3.7V for Charging	
	box	

Certify the product: IT510 bluetooth headset

Model No.: IT510, IT510 Plus, IT511, IT511 Plus, A9, A9 Plus, A8

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



Operation F	- requency each	of 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		

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:

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



4.3 Additional Instructions

EUT Test Software Settings:			
Mode:	 Special software is used. Through engineering command into the engineering mode. engineering command: *#*#3646633#*#* 		
EUT Power level:	Class2 (Power level is built-in set parameters and cannot be changed and selected)		
Use test software to set the low	vest frequency, the middle frequency and	d the highest frequency keep	
transmitting of the EUT.	transmitting of the EUT.		
Mode	Channel	Frequency(MHz)	
	СН0	2402	
DH1/DH3/DH5	СН39	2441	
	CH78	2480	
	СН0	2402	
2DH1/2DH3/2DH5	СН39	2441	
	CH78	2480	

Run Software:

BT_Tool			- 0	×
OMx Baudrate				
Classic BLE				
Test Mode				
FCC Test	Remote BT	address	_	
CBT Test	55555555	555	Stop	
RF Control				
RF Mode	TX TEST \sim	Packet Type	DH5	~
Hopping	OFF \sim	TX Frequency	2402	~
TX Power	4 ~	RX Frequency	2402	-
Scenario	PRBS Pattern			~
LOG: FCC test LOG: [COM4] (LOG: BR/EDR 1	s mode open, 1500000bp	18		
COM4 is open	1.	00000bps		3



4.4 Test Environment

Operating Environment:		
Temperature:	25 °C	
Humidity:	54% RH	
Atmospheric Pressure:	1009mbar	
Test Mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.	

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Remark	Belong
Adapter	MI	/	/	CQA



4.6 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
1	Radiated Emission (Below 1GHz)	5.12dB
2	Radiated Emission (Above 1GHz)	4.60dB
3	Conducted Disturbance (0.15~30MHz)	3.34dB
4	Radio Frequency	3×10 ⁻⁸
5	Duty cycle	0.6 %
6	Occupied Bandwidth	1.1%
7	RF conducted power	0.86dB
8	RF power density	0.74
9	Conducted Spurious emissions	0.86dB
10	Temperature test	0.8°C
11	Humidity test	2.0%
12	Supply voltages	0.5 %
13	Frequency Error	5.5 Hz

Hereafter the best measurement capability for CQA laboratory is reported:



4.7 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 District, Shenzhen, China

4.8 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: **IC Registration No.: 22984-1**

The 3m Semi-anechoic chamber of Shenzhen Huaxia Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

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

CNAS (No. CNAS L5785)

CNAS has accredited Shenzhen Huaxia Testing Technology Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• 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

4.9 Abnormalities from Standard Conditions

None.

4.10 Other Information Requested by the Customer

None.



4.11 Equipment List

			Instrument	Calibration	Calibration
Test Equipment	Manufacturer	Model No.	No.	Date	Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2021/9/10	2022/9/9
Spectrum analyzer	R&S	FSU26	CQA-038	2021/9/10	2022/9/9
		AFS4-00010300-18-10P-			
Preamplifier	MITEQ	4	CQA-035	2021/9/10	2022/9/9
		AMF-6D-02001800-29-			
Preamplifier	MITEQ	20P	CQA-036	2021/9/10	2022/9/9
Loop antenna	Schwarzbeck	FMZB1516	CQA-087	2021/9/16	2024/9/15
Bilog Antenna	R&S	HL562	CQA-011	2021/9/16	2024/9/15
Horn Antenna	R&S	HF906	CQA-012	2021/9/16	2024/9/15
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2021/9/16	2024/9/15
Coaxial Cable					
(Above 1GHz)	CQA	N/A	C019	2021/9/10	2022/9/9
Coaxial Cable					
(Below 1GHz)	CQA	N/A	C020	2021/9/10	2022/9/9
Antenna Connector	CQA	RFC-01	CQA-080	2021/9/10	2022/9/9
RF					
cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2021/9/10	2022/9/9
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2021/9/10	2022/9/9
EMI Test Receiver	R&S	ESPI3	CQA-013	2021/9/10	2022/9/9
LISN	R&S	ENV216	CQA-003	2021/9/10	2022/9/9
Coaxial cable	CQA	N/A	CQA-C009	2021/9/10	2022/9/9

Note:

The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.



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	l be designed to ensure that no antenna other than that furnished by the
responsible party shall be u	used with the device. The use of a permanently attached antenna or of a
antenna that uses a unique	e coupling to the intentional radiator, the manufacturer may design the uni
so that a broken antenna ca	an be replaced by the user, but the use of a standard antenna jack or
electrical connector is prohi	ibited.
15.247(b) (4) requirement:	
The conducted output powe	er limit specified in paragraph (b) of this section is based on the use of
antennas with directional ga	ains that do not exceed 6 dBi. Except as shown in paragraph (c) of this
section, if transmitting anter	nnas of directional gain greater than 6 dBi are used, the conducted outpu
power from the intentional r	radiator shall be reduced below the stated values in paragraphs (b)(1),
(b)(2), and (b)(3) of this sec	ction, as appropriate, by the amount in dB that the directional gain of the
antenna exceeds 6 dBi.	
EUT Antenna:	
	Opening of the
	nna. The best case gain of the antenna is 2.67 dBi.





5.2 Conducted Emissions

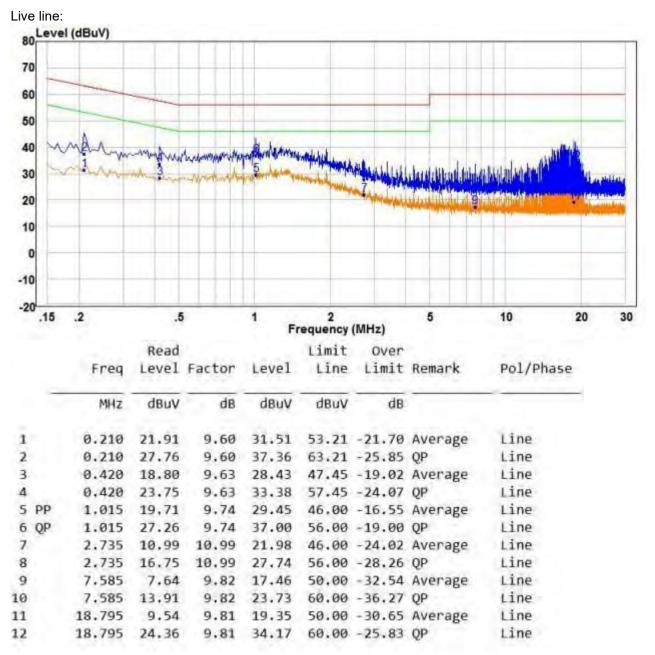
_	Conducted Linissio						
	Test Requirement:	47 CFR Part 15C Section 15.2	207				
	Test Method:	ANSI C63.10: 2013					
	Test Frequency Range:	150kHz to 30MHz					
	Limit:		Limit (c	lBuV)			
		Frequency range (MHz)	Quasi-peak	Average			
		0.15-0.5	66 to 56*	56 to 46*			
		0.5-5	56	46			
		5-30	60	50			
		* Decreases with the logarithm of the frequency.					
	Test Procedure:	 The mains terminal disturbution. The EUT was connected to Impedance Stabilization Nation impedance. The power calls connected to a second LIS reference plane in the same measured. A multiple sock power cables to a single LI exceeded. The tabletop EUT was place ground reference plane. An placed on the horizontal grade on the closest points the EUT shall be 0.4 m for the grade on the closest points the EUT and associated exception of the grade on the closest points the EUT and associated exception of the grade on the closest points the EUT and all of the im ANSI C63.10: 2013 on control on the closest points the closest point of the grade on the closest points the closest point	b AC power source thro etwork) which provides bles of all other units of SN 2, which was bonde he way as the LISN 1 for set outlet strip was used ISN provided the rating ced upon a non-metalling of floor-standing ar round reference plane, th a vertical ground ref from the vertical ground ref from the vertical ground ref from the vertical ground blane was bonded to th 1 was placed 0.8 m fro to a ground reference and reference plane. The s of the LISN 1 and the quipment was at least 0 im emission, the relative terface cables must be	bugh a LISN 1 (Line a $50\Omega/50\mu$ H + 5Ω line f the EUT were d to the ground or the unit being d to connect multiple g of the LISN was not c table 0.8m above the rangement, the EUT we derence plane. The read d reference plane. The read d reference plane. The read d reference plane. The read d reference plane for LISNs his distance was EUT. All other units of 0.8 m from the LISN 2 we positions of			
	Test Setup:	Shielding Room	AE 55 15 15 15 15 15 15 15 15 15	Test Receiver			



Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of
	data type at the lowest, middle, high channel.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation at the lowest channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC 120V/60Hz
Test Results:	Pass



Measurement Data



Remark:

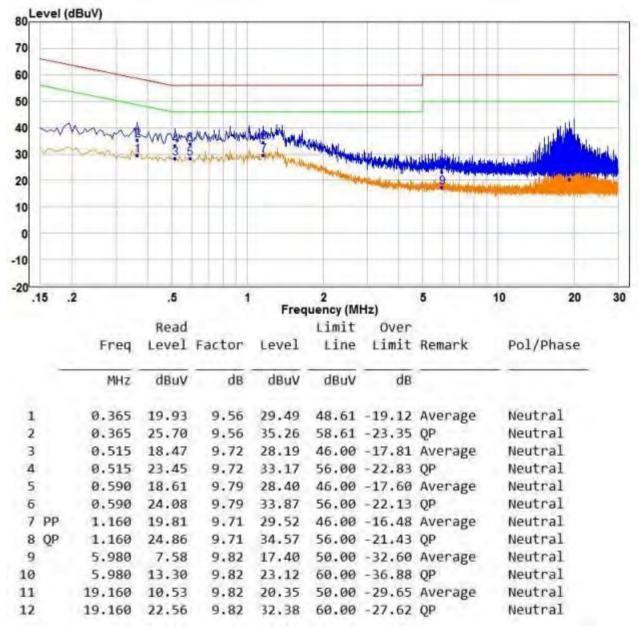
1. The following Quasi-Peak and Average measurements were performed on the EUT:

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.



5.3 Conducted Peak Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table
	Ground Reference Plane
	Remark: Offset=Cable loss+ attenuation factor.
Limit:	21dBm
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 DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π /4DQPSK modulation type. Only the worst case is recorded in the report.
Test Results:	Pass



Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
		2402	-2.1	≤21	PASS
DH5	Ant1	2441	-1.42	≤21	PASS
		2480	-1.39	≤21	PASS
		2402	-1.69	≤21	PASS
2DH5	Ant1	2441	-1.07	≤21	PASS
		2480	-1.03	≤21	PASS



Test Graphs

	DH5_Ant1	2402	
Spectrum Ref Level 30,00 dBm Offse	t 9,84 dB 🝵 RBW 3 MHz		
Att 40 dB SWT SGL Count 100/100 PIPk View	1.3 µs 🖷 VBW 10 MHz	Mode Auto FFT	
		Mi[i]	-2.10 dBm 2.40160040 GHz
20 dBm-			
10 dBm	The		
0 dBm	MI		
-20 dBm			
-30 dBm-			
-40 dBm		_	
-50 dBm			
-60 dBm			
CF 2.402 GHz	1001 pts	5	Span 8.0 MHz
CF 2.402 GHz Date: 4 AUG.2022 11:39;16	1001 pts	5	Span 8.0 MHz
Date: 4 AUG 2022: 11:39;16	DH5_Ant1		
Date: 4 AUG.2022 11:39;16 Spectrum Ref Level 30:00 dBm Offse	DH5_Ant1 t 9.80 dB • RBW 3 MHz	_2441	
Date: 4 AUG.2022 11:39;16 Spectrum Ref Level 30:00 dBm Offse	DH5_Ant1	_2441 Mode Auto FFT	
Date: 4 AUG.2022 11:39;16 Spectrum Ref Level 30.00 dBm Offse Att +0 dB SWT SGL Count 100/100 9 1Pk View	DH5_Ant1 t 9.80 dB • RBW 3 MHz	_2441	
Date: 4 AUG.2022 11:39;16 Spectrum RefLevel 30.00 dBm Offse Att 40 dB SWT SGL Count 100/100	DH5_Ant1 t 9.80 dB • RBW 3 MHz	_2441 Mode Auto FFT	-1.42 dBm
Spectrum Ref Level 30.00 dBm Offse Att 40 db SWT SGL Count 100/100 FGL Count 100/100 It View 20 dBm 100/100	DH5_Ant1 t 9.80 dB • RBW 3 MHz	_2441 Mode Auto FFT	-1.42 dBm
Date: 4 AUG.2022: 11:39;16 Spectrum Ref Level 30:00 dBm Offse Att 40 dB SWT SGL Count 100/100 IPk View 20 dBm 10 dBm 10 dBm	DH5_Ant1 1.3 ps • VBW 10 MH2 	_2441 Mode Auto FFT	-1.42 dBm
Date: 4 AUG 2022 11:39;16 Spectrum Ref Level 30,00 dBm Offse Att 40 db SWT SGL Count 100/100 IDk View 20 dBm 0 dBm 0 dBm	DH5_Ant1 1.3 ps • VBW 10 MH2 	_2441 Mode Auto FFT	-1.42 dBm
Date: 4 AUG 2022 11:39;16 Spectrum Ref Level 30:00 dBm Offse Att 40 dB SWT SGL Count 100/100 ● 1Pk View 20 dBm 10 dBm -10 dBm -10 dBm	DH5_Ant1 1.3 ps • VBW 10 MH2 	_2441 Mode Auto FFT	-1.42 dBm
Date: 4 AUG 2022 11:33; 16 Spectrum Ref Level 30:00 dBm Offse Att 40 dB SWT SGL Count 100/100 ID dBm 10 dBm 10 dBm -10 dBm -10 dBm -10 dBm -10 dBm	DH5_Ant1 1.3 ps • VBW 10 MH2 	_2441 Mode Auto FFT	-1.42 dBm
Spectrum Ref Level 30.00 dBm Offse Att 40 dB SWT SGL Count 100/100 ID dBm ID dBm 10 dBm ID dBm ID dBm -30 dBm ID dBm ID dBm	DH5_Ant1 1.3 ps • VBW 10 MH2 	_2441 Mode Auto FFT	-1.42 dBm
Date: 4 AUG 2022 11:33; 16 Spectrum Ref Level 30:00 dBm Offse Att 40 dB SWT SGL Count 100/100 ID RView 20 dBm 10 dBm 10 dBm -10 dBm -30 dBm -40 dBm -4	DH5_Ant1 1.3 ps • VBW 10 MH2 	_2441 Mode Auto FFT	-1.42 dBm



					1_2480			(mmm
Spectr	um vel 30.00 d	offent		RBW 3 MHz				
🖬 Att	40	dB SWT	1.3 µs 🖷	VBW 10 MHz	Mode Auto	FFT		
SGL Col	unt 100/100 W	-						
	-				MI	1	2.4	- 1.39 dBm 7960040 GHz
20 dBm-		-						
10 dBm-								
TO ODU-								
0 dBm-				NI1	_			
-10 dBm		-						
-10 000								1
-20 dBm	-							
-30 dBm	-							
Se upin			-					
-40 dBm		-	-					
-50 dBm						_		
1.02			1					
-60 dBm								
05.0.40	011-			1001				
CF 2.48 Date: 4.AU	GHz G.2022 11:39	35	21	1001 r DH5 An		2	5	pan 8.0 MHz
1.	G.2022 11:39	35	21			2	S	
Spectr Ref Le	G.2022 11:39 um vel 30.00 d 40	Bm Offset	9.84 dB 👳		t1_2402		5	aon 8.0 MHz
Spectr Ref Le	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An	t1_240: Mode Auto) FFT	S	(m)
Date: 4.AL Spectr Ref Le Att SGL Cor IPK Vie	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An	t1_2402) FFT		
Date: 4.AL Spectr Ref Le Att SGL Col	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4.AL Spectr Ref Le Att SGL Cor IPK Vie	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4.AL Spectr Ref Le Att SGL Cor IPK Vie 20 dBm- 10 dBm-	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4.AL Spectr Ref Le Att SG. Co 1Pk Vie 20 dBm-	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MHz VBW 10 MHz	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4.AL Spectr Ref Le Att SGL Cor IPK Vie 20 dBm- 10 dBm-	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectr Refie Att SGL Co 9 1Pk Vie 20 dBm- 10 dBm- 0 dBm- -10 dBm	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectr Ref Le 4tt SGL Co 9 IPk Vie 20 dBm- 10 dBm- 0 dBm-	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectr Refie Att SGL Co 9 1Pk Vie 20 dBm- 10 dBm- 0 dBm- -10 dBm	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectrue Ref Le Att SGL Cor IPK Vie 20 dBm- 10 dBm- -10 dBm -20 dBm -30 dBm	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectr Ref Le Att SGL Col IPk Vie 20 dBm- 10 dBm- -10 dBm- 20 dBm-	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectrue Ref Le Att SGL Cor IPK Vie 20 dBm- 10 dBm- -10 dBm -20 dBm -30 dBm	G.2022 11:39 um vel 30,00 d 40 unt 100/100	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4 AL Spectr Ref Le Att BGL Co PIPK Vic 20 dBm- 10 dBm- 10 dBm- 20 dBm -30 dBm -30 dBm -50 dBm	G.2022 11:39	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm
Date: 4.AL Spectr Ref Le Att SGL Cai @ 1Pk Vie 20 dBm- 10 dBm- -10 dBm -30 dBm -30 dBm	G.2022 11:39	Bm Offset	9.84 dB 👳	DH5_An RBW 3 MH2 VBW 10 MH2 M1	t1_240: Mode Auto) FFT		-1.69 dBm



	_							
Spectrum								
SGL Count :	40 dB	Offset 9.80 SWT 1.3			Mode Auto FFT	-		
●1Pk View	-	-	1	1	Mi[1]			-1.07 dBm
					and a second		2.440	60840 GHz
20 dBm								
10 d8m-							_	
				MI				
0 dBm-								
-10 dBm	-					1	1	
to dom							1	1
-20 dBm-				-	-			1
-30 dBm								
-40 dBm								
n (* 11. j								
-50 dBm							-	-
-60 dBm								
ob ubin								
CF 2.441 G				1001 pts		4	Spa	n 8.0 MHz
Date: 4,AUG.20	22 11:39:56		2Dł	1001 pts			Spa	
Date: 4,AUG,20 Spectrum Ref Level Att SGL Count :	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1 w 3 MHz			Spa	n 8.0 MHz
Date: 4.AUG.20 Spectrum Ref Level Att	22: 11:39:56 30,00 dBm 40 dB	Offset 9,80 SWT 1,3) d8 🍙 RB1	H5_Ant1 w 3 MHz	_2480			
Spectrum Ref Level Att SGL Count : PIR View	22: 11:39:56 30,00 dBm 40 dB	Offset 9,88 SWT 1,3) d8 🍙 RB1	H5_Ant1 w 3 MHz	_2480			
Date: 4,AUG,20 Spectrum Ref Level Att SGL Count :	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1 w 3 MHz	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : 9 1Pk View 20 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.81 SWT 1.3) d8 🍙 RB1	H5_Ant1 w 3 MHz	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : • 1Pk: View 20 dBm 10 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1 w 3 MHz w 10 MHz M	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : 9 1Pk View 20 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1 w 3 MHz	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : GIPk View 20 dBm 10 dBm 0 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : • 1Pk: View 20 dBm 10 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : GIPk View 20 dBm 10 dBm 0 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level At SGL Count : D IPk View 20 dBm 10 dBm -10 dBm -20 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.1) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : 9 1Pk View 20 dBm 10 dBm 0 dBm -10 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count :: 9 1Pk View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.3) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : D IPk View 20 dBm 10 dBm -10 dBm -20 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80 SWT 1.1) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count :: 9 1Pk View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count :: P1Pk View 20 dBm 10 dBm -0 dBm -20 dBm -20 dBm -30 dBm -30 dBm -40 dBm -50 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.80) d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count : 9 IPk View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm	22: 11:39:56 30,00 dBm 40 dB	Offset 9.6() d8 🍙 RB1	H5_Ant1	_2480			-1.03.dBm
Date: 4 AUG.20 Spectrum Ref Level Att SGL Count :: P1Pk View 20 dBm 10 dBm -0 dBm -20 dBm -20 dBm -30 dBm -30 dBm -40 dBm -50 dBm	22 11:39:56	Offset 9.80) d8 🍙 RB1	H5_Ant1	_2480		2.479	-1.03.dBm



5.4 20dB Occupy Bandwidth

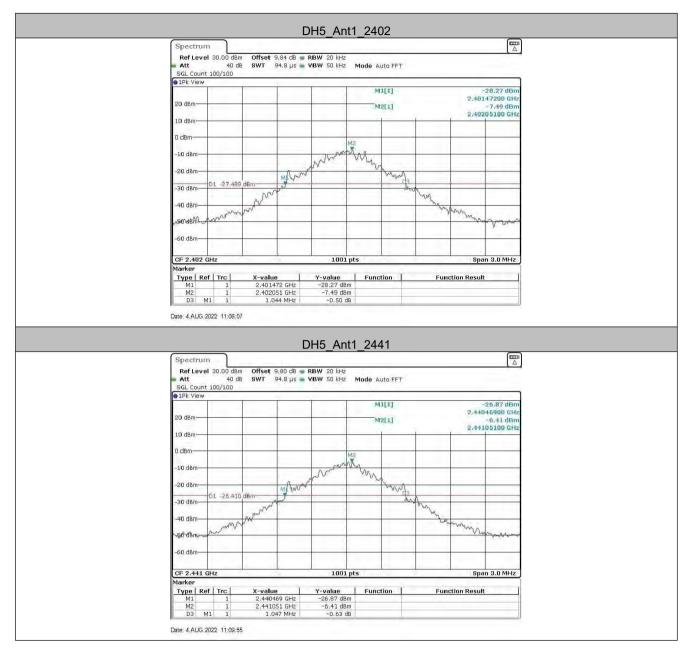
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)				
Test Method:	ANSI C63.10:2013				
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table				
	Ground Reference Plane				
	Remark: Offset=Cable loss+ attenuation factor.				
Limit:	NA				
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type				
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π /4DQPSK modulation type. Only the worst case is recorded in the report.				
Test Results:	Pass				

Test Result

TestMode	Antenna	Channel	20db EBW[мнz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2402	1.044	2401.472	2402.516		PASS
DH5	Ant1	2441	1.047	2440.469	2441.516		PASS
		2480	1.047	2479.469	2480.516		PASS
		2402	1.374	2401.307	2402.681		PASS
2DH5	Ant1	2441	1.341	2440.322	2441.663		PASS
		2480	1.353	2479.322	2480.675		PASS



Test Graphs







Spectrum	-		Ant1_2480				
Ref Level 30,00	dBm Offset 9	.80 dB 👳 RBW 20	kНz				LΔ
🖬 Att 4	OdB SWT 9	4.8 µs 💼 VBW 50		FFT			
SGL Count 100/10			-0				-
			M1[d	1]			-27.39 dBn
20 dBm	-		M2[]	11		2.47	-6.60 dBn
10 dBm	1			7		2,480	004200 GH
					1.1211		
0 dBm			M2				
-10 dBm-		apt	million				
		a more	why		1		
-20 dBm-	rog drag	Marrie		Marin B			
-30 dBm	596 dBm	P		ANN	wn.		
-40 d8m	annon				June	mun	
and the	when				6.20	un von.	1000
AB define and	_		-			· m	man
-60 dBm-							
32.000					10.021		
CF 2.48 GHz		1	001 pts			Spa	an 3.0 MHz
Marker		1			-	tion Resul	
Type Ref Trc M1 1	X-value 2.47946	9 GHz -27.3	e Functio 9 dBm	0	Func	tion Resul	t
M2 1 D3 M1 1	2,48004	2 GHz -6.6 7 MHz 0.	D dBm 09 dB				
D3 M1 1	1.04						
			0,5,00	4			
Date: 4.AUG.2022 11:1	1:45		0,5 40				
Date: 4,AUG.2022 11:1	1:45			_			
Date: 4,AUG.2022 11:1	1:45			2			
	1:45		Ant1_2402	2			Ē
Spectrum		2DH5_	Ant1_2402	2			(En A
Spectrum Ref Level 30,00 Att 4	dBm Offset 9 0 dB SWT 9		Ant1_2402				(m
Spectrum Ref Level 30.00 Att SGL Count 100/10	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB • RBW 20	Ant1_2402				(FT
Spectrum Ref Level 30,00 Att 4	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB • RBW 20	Ant1_2402	FFT			-27.77 dBn
Spectrum Ref Level 30.00 Att SGL Count 100/10	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB • RBW 20	Ant1_240:) FFT 1]		2.40	-27.77 dBn 130700 GH;
Spectrum Ref Level 30.00 Att 4 SGL count 100/101 @1Pk View 20 dBm	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB • RBW 20	Ant1_240: KHz KH2 Mode Auto) FFT 1]		2.40	-27.77 dBn
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 9 1Pk View	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB • RBW 20	Ant1_240:) FFT 1]		2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att 4 SGL count 100/101 @1Pk View 20 dBm	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB = RBW 20 4.8 µs = VBW 50	Ant1_240:) FFT 1]		2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att SGL Count 100/10/ IPk View 20 dBm 10 dBm 0 dBm	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	1] 1]		2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att 4 SGL Count 100/10 1Pk View 20 dBm- 10 dBm-	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	1] 1]		2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att SGL Count 100/10/ IPk View 20 dBm 10 dBm 0 dBm	dBm Offset 9 0 db SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_240:	1] 1]		2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att 4 SG.Count 100/101 @1Pk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm	dBm Offset 9 0 dB SWT 9	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	DI FFT	ňt2	2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 1 Pk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	DI FFT	4	2.40	-27.77 dBn 380700 GH -7.48 dBn 82900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 IPk View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	DI FFT	4	2.40	-27.77 dBn 380700 GH -7.48 dBn 82900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/101 ● 1Pk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	DI FFT	4	2.40	-27.77 dBn 380700 GH -7.48 dBn 82900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 IPk View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -40 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	DI FFT	4	2.40	-27.77 dBn 130700 GH; -7.48 dBn
Spectrum Ref Level 30.00 Att 4 SGL Count 100/101 ● 1Pk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50	Ant1_2400	DI FFT	4	2.40	-27.77 dBn 380700 GH -7.48 dBn 82900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 ● 1Pk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -30 dBm -60 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ 84 dB = RBW 20 4.8 µs = VBW 50	Ant1_2402	DI FFT	4	2.40: 2.40:	27.77 dBn 180700 GH -7.48 dBn 182900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 IPk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -60 dBm -60 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ 84 dB = RBW 20 4.8 µs = VBW 50	Ant1_2400	DI FFT	4	2.40: 2.40:	-27.77 dBn 380700 GH -7.48 dBn 82900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 IPk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm -60 dBm CF 2.402 GHz Marker	dBm Offset 9 0 dB SWT 9 0 481 dBm 481 481 dBm 9000000000000000000000000000000000000	2DH5_ .84 dB = RBW 20 4.8 µs = VBW 50	Ant1_2400	DIFFT	thy	2.40 2.40	-27.77 dBn 130700 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH
Spectrum Ref Level 30.00 Att 4 SGL Count 100/100 IPk View 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -60 dBm -60 dBm	dBm Offset 9 0 dB SWT 9 0	2DH5_ .84 dB RBW 20 4.8 µs VBW 50 M2 M2 M2 M2 M2 M2 M2 M2 M2 M2	Ant1_2400	DIFFT	thy	2.40: 2.40:	-27.77 dBn 130700 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH 182900 GH





Spectrum					nt1_244				7
	30,00 dBm	Offset 9.	.80 dB 👳 F	RBW 20 kHz					
🖷 Att	40 dB			VBW 50 kHz	Mode Auto	o FFT			
SGL Count 1Pk View	100/100			-					
					M1[1]		0.01	-27.25 dB
20 dBm	_		_		M2[11		2.44	-6.77 dB
10 dBm								2,44	083200 GH
10 dBm-				1.1			1.000		
0 dBm				M2					-
-10 dBm-			0	I K a	1				_
			mont	hr mar	www.	rental			
-20 dBm-	a seaso	MIN	ρw			J.	Ala Ala		
-30 dBm-	D1 -26.775 d	1Bm					A C		m
-40 dBm	a more	ww	_				. ruh	m.	
non	1.0.	_						MAN	The
-50 dBm			_			-			
-60 dBm						_			
CF 2.441 G	Hz	-		1001	pts			Sp	an 3.0 MH;
Marker	Trol	X-value	1	Y-value	Functio			tion Resu	14
Type Ref M1	1	2,44032	2 GHz	-27.25 dBm	n	50 1	Fund	tion Resu	n
M2									
D2 M	1	2,44083	2 GHZ 1 MHz	-6.77 dBm	n				
D3 M	1 1	2,44083	2 GHZ 1 MHz	-6.77 dBm 0.29 dB	n B				
D3 M D3 M	1 1	2.44083 1.34:	2 GHZ 1 MHz	-6.77 dBn 0.29 dE	n B				
D3 M	1 1	2.44083 1.34:	1 MHz	0.29 dE	B			_	
D3 M	1 1	1.34	1 MHz	-6.77 dBr 0.29 dE DH5_An	B	60			
D3 M	1 1	1.34	1 MHz	0.29 dE	B	0			Ē
Date: 4,AUG.20	1 1 022 11:17:35	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An RBW 20 kHz	nt1_248				
D3 M Date: 4,AUG.20 Spectrum Ref Level	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An	nt1_248				(FI
Date: 4,AUG.20	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An RBW 20 kHz	nt1_248				(III)
D3 M Date: 4.AUG.20 Spectrum Ref Level Att SGL Count	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An RBW 20 kHz	nt1_248	o FFT			-28,14 dB
D3 M Date: 4.AUG.20 Spectrum Ref Level Att SGL Count	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An RBW 20 kHz	Mode Auto	o FFT 1]			-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4.AUG.20 Spectrum Ref Level Att SGL Count 9 IPk View 20 dBm	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An RBW 20 kHz	nt1_248 Mode Auto	o FFT 1]			-28.14 dB 932200 GF
D3 M Date: 4,AUG,20 Spectrum Ref Level Att SGL Count • 1Pk View	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	0.29 de DH5_An RBW 20 kHz	Mode Auto	o FFT 1]			-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4.AUG.20 Spectrum Ref Level Att SGL Count 9 IPk View 20 dBm	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	1 MHz 2C 80 dB # F	DH5_An	Mode Auto	o FFT 1]			-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4 AUG 20 Spectrum Ref Level Aft Level Aft 20 D dBm 0 dBm	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]			-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4,AUG.20 Spectrum Ref Level Att SGL Count 9 Dk View 20 dBm 10 dBm -10 dBm	1 1 122 11:17:35 30,00 dBm 40 dB	1.34: Offset 9,	20 80 dB • F	0.29 de DH5_An RBW 20 kHz VBW 50 kHz	Mode Auto	0 FFT 1] 1]			-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4 AUG 20 Spectrum Ref Level Aft Level Aft 20 D dBm 0 dBm	1 1 122 11:17:35 30,00 dBm 40 dB	1,34: Offset 9, SWT 9	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]			-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4 AUG 20 Spectrum Ref Level Att 5GL Count 9 IPk View 20 dBm 10 dBm -10 dBm -10 dBm	1 1 122 11:17:35 30,00 dBm 40 dB	1.34	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]	VQ3	2,47	-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4 AUG 20 Spectrum Ref Level Att SGL Count SGL Count I D dBm 10 dBm -10 dBm -20 dBm -30 dBm	1 1 222 11:17:35 30:00 dBm 40 dB 100/100	1.34	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]		2,47	-28.14 dB 932200 GF -7.20 dB
D3 M Date: 4.AUG.20 Spectrum Ref Level Att SGL Count 9 IPk View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm	1 1 222 11:17:35 30:00 dBm 40 dB 100/100	1.34	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]	10 -	2,47	-28.14 dB 933200 G -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Spectrum Ref Level Att SGL Count SGL Count I D dBm 10 dBm -10 dBm -20 dBm -30 dBm	1 1 222 11:17:35 30:00 dBm 40 dB 100/100	1.34	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]	10 -	2,47	-28.14 dB 932200 GF -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Ref Level Att SGL Count IN View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -30 dBm	1 1 222 11:17:35 30:00 dBm 40 dB 100/100	1.34	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]	10 -	2,47	-28.14 dB 933200 G -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Spectrum Ref Level Att SGL Count SGL Count I D dBm 10 dBm -10 dBm -10 dBm -20 dBm -30 dBm	1 1 222 11:17:35 30:00 dBm 40 dB 100/100	1.34: Offset 9, SWT 9-	20 80 dB • F	0.29 d8	Mode Auto Mil	0 FFT 1] 1]	10 -	2,47	-28.14 dB 933200 G -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Ref Level Att SGL Count I D dBm 20 dBm 20 dBm -10 dBm -20 dBm -20 dBm -30 dBm -60 dBm	1 1 22 11:17:35 30,00 dBm +0 dB 100/100 01 -27:195 c 	1.34: Offset 9, SWT 9-	20 80 dB • F	DH5_An	Mode Auto	0 FFT 1] 1]	10 -	2,47	-28.14 dB -7.20 dB -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Ref Level Att SGL Count IN View 20 dBm 10 dBm -10 dBm -20 dBm -30 dBm -30 dBm -30 dBm	1 1 22 11:17:35 30,00 dBm +0 dB 100/100 01 -27:195 c 	1.34: Offset 9, SWT 9-	20 80 dB • F	0.29 d8	Mode Auto	0 FFT 1] 1]	10 -	2,47	-28.14 dB 933200 G -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Spectrum Ref Level Att SGL Count SGL Count SGL Count O dBm 10 dBm 20 dBm -10 dBm -20 dBm -30 dBm -30 dBm -50 dBm	1 1 22 11:17:35 30.00 dBm 40 dB 100/100 01 -27:195 cc 	1.94: Offset 9, SWT 9 Bm Min JBm Min JBm X-value	2 20 80 dB • F 4.8 µs • Y	0.29 db	Mode Auto	o FFT	- total	2,47	-28.14 dB 932200 GF -7.20 dB 999100 GF
D3 M Date: 4 AUG 20 Spectrum Ref Level Att SGL Count SGL Count SGL Count Count O dBm 10 dBm 20 dBm -10 dBm -20 dBm -30 dBm -30 dBm -30 dBm -50 dBm -50 dBm -60 dBm -60 dBm	1 1 1 222 11:17:35 30:00 dBm 40 dB 100/100 01 -27:195 c 200 c 20	1.34: Offset 9. SWT 9.	2 [.80 dB = F 4.8 µ5 • `		Mode Auto Made Auto Mil M2L M2L M2L M2L M2L M2L M2L M2L M2L M2L	o FFT	- total	2,47	-28.14 dB 932200 GF -7.20 dB 999100 GF



5.5 Carrier Frequencies Separation

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)				
Test Method:	ANSI C63.10:2013				
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
1 ::	Remark: Offset=Cable loss+ attenuation factor.				
Limit:	2/3 of the 20dB bandwidth				
	Remark: the transmission power is less than 0.125W.				
Exploratory Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type				
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π /4DQPSK modulation type. Only the worst case is recorded in the report.				
Test Results:	Pass				
	r add				



Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Нор	1.014	≥0.698	PASS
2DH5	Ant1	Нор	1.003	≥0.916	PASS

Mode	20dB bandwidth (MHz)	Limit (MHz)
	(worse case)	(Carrier Frequencies Separation)
GFSK	1.047	0.698
π/4DQPSK	1.374	0.916



Test Graphs





5.6 Hopping Channel Number

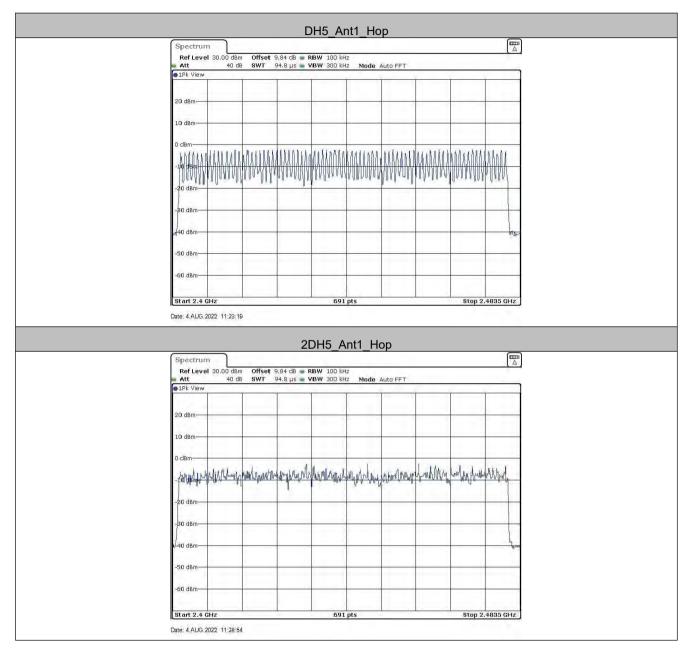
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)			
Test Method:	ANSI C63.10:2013			
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane Remark: Offset=Cable loss+ attenuation factor.			
Limit:	At least 15 channels			
Exploratory Test Mode:	hopping transmitting with all kind of modulation and all kind of data type			
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π /4DQPSK modulation type. Only the worst case is recorded in the report.			
Test Results:	Pass			

Test Result

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Нор	79	≥15	PASS
2DH5	Ant1	Нор	79	≥15	PASS



Test Graphs





5.7 Dwell Time

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)				
Test Method:	ANSI C63.10:2013				
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table				
	Ground Reference Plane				
	Remark: Offset=Cable loss+ attenuation factor.				
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.				
Limit:	0.4 Second				
Test Results:	Pass				



Test Result

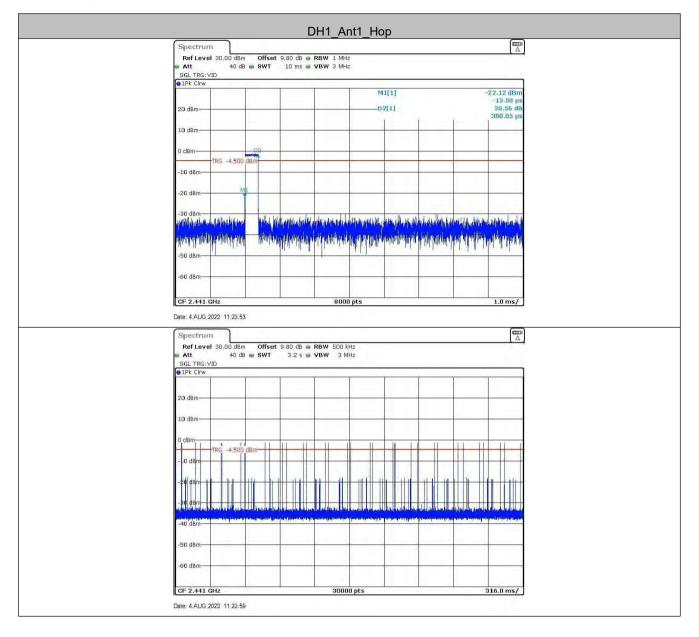
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.38	330	0.125	≤0.4	PASS
DH3	Ant1	Нор	1.63	170	0.277	≤0.4	PASS
DH5	Ant1	Нор	2.87	120	0.345	≤0.4	PASS
2DH1	Ant1	Нор	0.39	320	0.125	≤0.4	PASS
2DH3	Ant1	Нор	1.64	170	0.279	≤0.4	PASS
2DH5	Ant1	Нор	2.88	80	0.23	≤0.4	PASS

Remark:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s DH1/2DH1Dwell time = Burst Width(ms)*[1600/ (2*79)]*31.6 DH3/2DH3 Dwell time = Burst Width (ms)*[1600/ (4*79)]*31.6 DH5/2DH5Dwell time = Burst Width (ms)*[1600/ (6*79)]*31.6



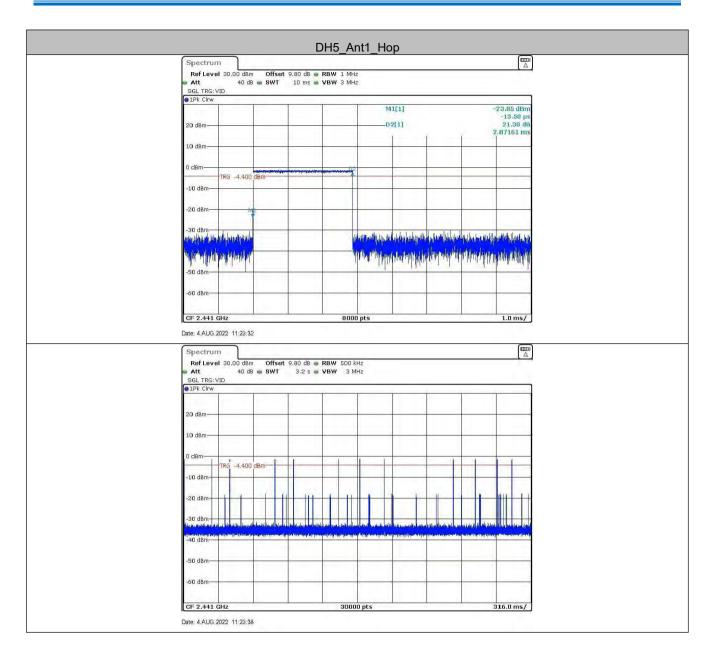
Test Graphs





	DH3_A	nt1_Hop			
Spectrum					
	9.80 dB RBW 1 MH 10 ms VBW 3 MH				
SGL TRG: VID					
	1	M1[1]		.90 dBm	
20 dBm-		D2[1]		13.50 µs 11.26 dB	
3 St	E	1 1	1.6	3145 ms	
10 dBm-					
0 dBm-					
TRG -4.400 dBm					
-10 dBm	4				
-20 dBmM1					
			· · · · · · · · · · · ·		
-30 dBm	the state of the state of the	Confraced & Martin Martin and an	الماليلة ومعالله علا المتألم عام والما	held also a strate	
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A she was a state and the set	a lut a talah.	rate and a share to have beind by	A 1. M. B. M. M. M. W. W. M. M.	and have been	
-50 dBm					
-60 dBm					
1 March 1 Marc					
CF 2.441 GHz	Carlor and				
	800) pts		1.0 ms/	
Date: 4.AUG,2022: 11:24:14	800) pts		1.0 ms/	
 Date: 4.AUG.2022 11:24:14	800) pts			
Date: 4.AUG,2022 11:24:14 Spectrum Ref Level 30,00 dbm Offset	9.80 dB 🖷 RBW 500 l	Hz		1.0 ms/	
 Date: 4 AUG, 2022: 11:24:14 Spectrum RefLevel: 30,00 dbm Offset 40 db SWT SGL TRG: VID		Hz			
 Date: 4.AUG,2022 11:24:14 Spectrum Ref Level 30,00 dbm Offset	9.80 dB 🖷 RBW 500 l	Hz	1 1		
 Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dbm Offset Att 40 db SWT SGL TRG: VID 1Pk Cirw	9.80 dB 🖷 RBW 500 l	Hz			
 Date: 4 AUG, 2022: 11:24:14 Spectrum RefLevel: 30,00 dbm Offset 40 db SWT SGL TRG: VID	9.80 dB 🖷 RBW 500 l	Hz			
 Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dbm Offset Att 40 db SWT SGL TRG: VID 1Pk Cirw	9.80 dB 🖷 RBW 500 l	Hz			
 Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dbm Offset Att 40 db SWT SGL TRG: VID IPk Clrw 20 dBm 10 dBm	9.80 dB 🖷 RBW 500 l	Hz			
 Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dBm Offset Att 40 dB SWT SGL TRG: VID 1Pk Cirw 20 dBm 10 dBm	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dbm Offset Att 40 db SWT SGL TRG: VID IPk Cirw 20 dBm 10 dBm	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30.00 dbm Offset Att 40 db SWT SGL TRG: VID 1Pk Clrw 20 dBm 0 dBm 0 dBm -10 d	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dBm Offset Att 40 dB SWT SGL TRG: VID IPk CIrw 20 dBm 0 dBm 0 dBm TRG -4,400 dBm	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30.00 dbm Offset Att 40 db SWT SGL TRG: VID 1Pk Clrw 20 dBm 0 dBm 0 dBm -10 d	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30.00 dbm Offset Att 40 db SWT SGL TRG: VID 10 dBm 0 dBm -10 dBm -20 dBm -20 dBm -20 dBm -10 db	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dBm Offset Att 40 dB SWT SGL TRG: VID IPk CIrw 20 dBm 0 dBm 0 dBm -10 dBm -20 dBm -2	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30.00 dbm Offset Att 40 db SWT SGL TRG: VID 10 dBm 0 dBm -10 dBm -20 dBm -20 dBm -20 dBm -10 db	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dBm Offset Att 40 dB SWT SGL TRG: VID IPk CIW 20 dBm 0 dBm 10 dBm -10 dBm -20 dBm -30 dB	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dBm Offset Att 40 dB SWT SGL TRG: VID IPk Cirw O dBm O dBm O dBm -10 dBm -20	9.80 dB 🖷 RBW 500 l	Hz			
Date: 4 AUG.2022 11:24:14 Spectrum Ref Level 30,00 dBm Offset Att 40 dB SWT SGL TRG: VID IPk CIW 20 dBm 0 dBm 10 dBm -10 dBm -20 dBm -30 dB	9.80 dB RBW 500 3 M	Hz			









2DH1_Ant1_Hop
Spectrum
■ Att 40 dB ■ SWT 10 ms ■ VBW 3 MHz SGL TRG: VID ● IPK CITW
20 dBm D2[1] 20.66 dB
10 dBm
0 dBm
-10 d8m
lanne san da ana ana ana ana ana ana ana ana an
-50 dBm
CF 2.441 GHz 8000 pts 1.0 ms/
Date: 4 AUG 2022 11:35:35
Spectrum Image: Constraint of the system Constand the system Constraint of the sys
● 1Pk Chw
20 dBm
-30 dBm
-40 dbm
-50 dBm
CF 2.441 GHz 30000 pts 316.0 ms/
Date: 4 AUG.2022 11:35:41

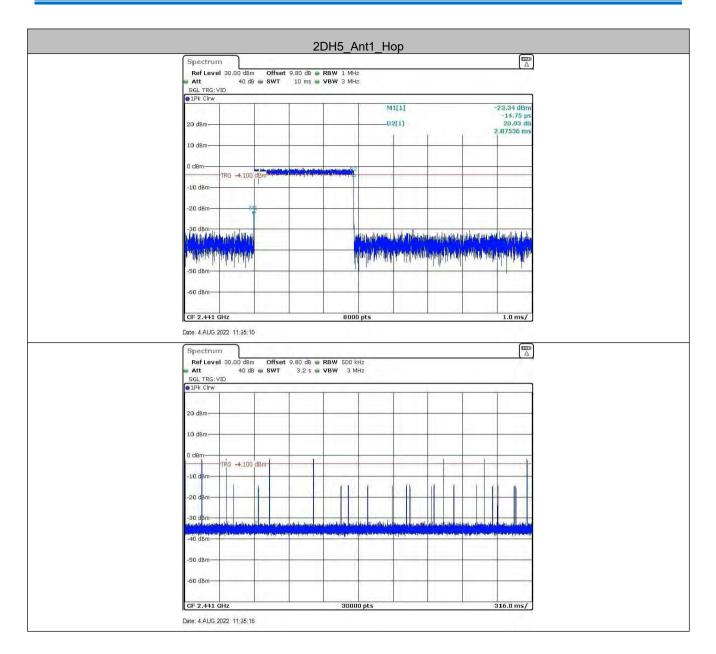




	2DH3_A	nt1_Hop	
Spectrum	Call of the second second		E A
	ffset 9.80 dB 🖷 RBW 1 MH: WT 10 ms 🖷 VBW 3 MH:		
SGL TRG: VID	TO HIS . FOW S MIN		
●1Pk Clrw		M1[1]	-22.35 dBr
		D2[1]	-13.50 μ -6.31 d
20 dBm-			1.64021 m
10 dBm			
0 dBm	(Additional character and it)		
0 dBm- TRG -4.100 dBm	A man and a		
-10 dBm			
-20 dBmM1			
	DP	1 1	
-30 dBm	Two soling it as a solither	and included and the state of the state of the state	House Had Included a late the second
the site with the second with	atti - tasika ka	n dille constitues de des relations	and administration of a military
di chaka na faratal da ta si a la ta	hand the a left with the	ad a liter of stell with the solution of	and all to be be determined at the case.
-50 dBm			
-60 dBm-			
CF 2.441 GHz	8000	pts	1.0 ms/
Date: 4.AUG.2022 11:38:04			
Spectrum			
	ffset 9.80 dB 🖷 RBW 500 k	Hz	
SGL TRG: VID	WT 3.2 s 🖝 VBW 3 М	Hz	
• 1Pk Cirw			
20 dBm			
10 dBm-			
TO OBIL			
0 dBm		1 1 11 11	1 1 1
TRG -4.100 dBm-			
-10 dBm	1 11 11		n a
-20 dBm			
-3D dBm		and a set of the second se	وروافه ومحمد المراجع والمقالة المرجع العودين والعادية
-40 dBm	and a substantia of the second s	an del milla se de la manife del mante de la manifestation de la manifestation de la manifestation de la manife	and the second
-50 dBm			
-50 dBm			
	3000	D pts	316.0 ms/









5.8 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane Remark: Offset=cable loss+ attenuation factor.
1.1	
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.
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 DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π /4DQPSK modulation type. Only the worst case is recorded in the report.
Test Results:	Pass



Test Result

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
	Low	2402	-2.71	-49.06	≤-22.71	PASS	
		High	2480	-2.29	-46.95	≤-22.29	PASS
DH5	Ant1	Low	Hop_2402	-2.70	-49.02	≤-22.7	PASS
		High	Hop_2480	-2.40	-47.24	≤-22.4	PASS
		Low	2402	-3.11	-49.05	≤-23.11	PASS
		High	2480	-3.39	-47.54	≤-23.39	PASS
2DH5	Ant1	Low	Hop_2402	-7.82	-49.46	≤-27.82	PASS
		High	Hop_2480	-5.90	-47.41	≤-25.9	PASS



Test Graphs

			011	5_Ant1_L	LUW_2	102			
Spectru									
Ref Lev Att				RBW 100 kHz VBW 300 kHz		to FET			
SGL Cour	it 300/300	10 3WT	1210 12 -	JUU KHZ	mode Au	NO FET			
●1Pk Viev		-		-					-
	1				M1[.x.)		2.40	-2.71 dBm 20150 GHz
10 dBm					M12[1]		7.40	50.32 dBm 00000 GHz
0 dBm			-		-	-	1	2.90	UUUMA GHZ
-10 dBm-				-					
								100 - I	Λ
-20 dBm-	D1 -22.71	0 dBm				_			
-30 dBm-	-		-					-	11
-40 dBm-									11
	1	M4		12, 2, 1			MB		12
.15.Q-dB,7.0	moundation	mounter	humanat	manna	an way to	anterest and	mound	yrtenetus	pile your
-60 dBm-		-	-						
-70 dBm-									
-70 ubm-									1
Start 2.3	5 GHz		-	691 pt	its			Stop 2	2.405 GHz
Marker					1				
Type F M1	ef Trc	X-valu 2.4020	e	Y-value -2.71 dBm	Functio	on	Func	tion Result	
M2	1	1	2.4 GHz	-50.32 dBm	1				
M3	1		.39 GHz 355 GHz	-51.38 dBm -49.06 dBm					
6	2022 11:06;			5_Ant1_H		480			Ē
Date: 4.AUG	2022 11:06;3	29 m Offset 1	DH:	5_Ant1_F	High_2				(The second seco
Spectru Ref Lev Att	2022 11:06; m el 20,00 dB 30 d it 300/300	29 m Offset 1	DH:	5_Ant1_H	High_2				(m) A
Spectru Ref Lev Att	2022 11:06; m el 20,00 dB 30 d it 300/300	29 m Offset 1	DH:	5_Ant1_F	High_2 Mode Au	Ito FFT			
Spectru Ref Lev Att	2022 11:06; m el 20,00 dB 30 d it 300/300	29 m Offset 1	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz
Date: 4.AUG Spectru Ref Lev Att SGL Cour IPk View 10 dBm-	2022 11:06; m el 20.00 dB st 300/300	29 m Offset 1	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz 51.67 dBm
Spectru Ref Lev Att SGL Cour IPk Viev	2022 11:06; m el 20,00 dB 30 d it 300/300	29 m Offset 1	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz
Date: 4.AUG Spectru Ref Lev Att SGL Cour IPk View 10 dBm-	2022 11:06; m el 20.00 dB st 300/300	29 m Offset 1	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz 51.67 dBm
Date: 4 AUC Spectru Ref Lev Att SGL Cour @ 1Pk View 10 dBm 0 dBm -10 dBm	2022 11:06; m et 20.00 dB 30 d 10 10 10 10 10 10 10 10 10 10	29 m Offset B SWT	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz 51.67 dBm
Spectru Ref Lev Att SGL Cour 10 dBm- -10 dBm- -20 dBm-	2022 11:06; m el 20.00 dB st 300/300	29 m Offset B SWT	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz 51.67 dBm
Date: 4 AUC Spectru Ref Lev Att SGL Cour @ 1Pk View 10 dBm 0 dBm -10 dBm	2022 11:06; m et 20.00 dB 30 d 10 10 10 10 10 10 10 10 10 10	29 m Offset B SWT	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz 51.67 dBm
Spectru Ref Lev Att SGL Courr 10 dBm- -10 dBm- -20 dBm-	2022 11:06; m et 20.00 dB 30 d 10 10 10 10 10 10 10 10 10 10	29 m Offset IB SWT	DH:	5_Ant1_F	High_2 Mode Au	ito FFT		2.4	-2.29 dBm 80010 GHz 51.67 dBm
Date: 4 AUG Spectru Ref Lev Att SGL Cour • IPk View 10 dBm- 0 dBm- -10 dBm- -30 dBm- -40 dBm-	2022 11:06; m el 20,00 dB m 00 dB m	29 m Offset iB SWT	DH5	5 Ant1 H	High 2 Mode Au M3[M2[1) 1]		2.4	-2.29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Leeven Att SGL Cour ID dBm 10 dBm -10 dBm -30 dBm -40 dBm	2022 11:06; el 20,00 dB 10 ct 300 c	29 m Offset 1 B SWT	DH5	5 Ant1 H	High 2 Mode Au M3[M2[1) 1]		2.4	-2.29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Lev Att SGL Cour • IPk View 10 dBm- 0 dBm- -10 dBm- -30 dBm- -40 dBm-	2022 11:06; el 20,00 dB 10 ct 300 c	29 m Offset iB SWT	DH5	5 Ant1 H	High 2 Mode Au M3[M2[1) 1]		2.4	-2.29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Leeven Att SGL Cour ID dBm 10 dBm -10 dBm -30 dBm -40 dBm	2022 11:06; el 20,00 dB 10 ct 300 c	29 m Offset iB SWT	DH5	5 Ant1 H	High 2 Mode Au M3[M2[1) 1]		2.4	-2.29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Lev Att SGL Court I D dBm- 0 dBm- 0 dBm- -30 dBm- -30 dBm- -40 dBm- -50 dBm- -70 dBm- -70 dBm-	2022 11:06; m	29 m Offset (B SWT	DH5	5_Ant1_F	High_2 Mode Au MI[M2[1) 1]		2.4 2.4	-2.29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Lev Att SGL Cource ID dBm D dBm 0 dBm -10 dBm -20 dBm -30 dBm -30 dBm -60 dBm -70 dBm -70 dBm 8tart 2.4	2022 11:06; m	29 m Offset (B SWT	DH5	5 Ant1 H	High_2 Mode Au MI[M2[1) 1]	tutute	2.4 2.4	-2.29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Lev Att Lev GL Cour • IPK View 10 dBm- • 0 dBm- <	2022 11:06; m	25 m Offset IB SWT	DH:	5 Ant1 F	High_2 Mode Au M3[M2[M2[M2]	1] 1]		2.4 2,4 100 100 100 100 100 100 100	-2,29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Lew Att SGL Cour ID dBm 10 dBm -10 dBm -30 dBm -40 dBm -50,dBm -60 dBm -70 dBm Start 2.4 Marker Type I F M1	2022 11:06; et 20.00 dB t 20.00 dB m1 m1 m1 m2 m2 m2 m2 m2 m2 m2 m2 m2 m2	29 m Offset 18 SWT 0 dBm 0 dBm M4 M4 X-valuu 2,480	001 GHz	5 Ant1_F	High_2	1] 1]		2.4 2.4	-2,29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Leeve Att BGL Cour ID dBm ID dBm ID dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm Right et al. Narker Type IF M1 M2 M3	2022 11:06; el 20.00 dB 30 c 10 00/300 M1 D1 -22.29 V V V V V V V V V V V V V	29 m Offset 18 SWT 0. dBm 0. dBm M4 M4 X-valuu 2.480 2.480 2.480	DH5 9.80 dB 94.8 µs 94.8	5 Ant1_F	High 2. Mode Au Mil M2[M2[M2]	1] 1]		2.4 2,4 100 100 100 100 100 100 100	-2,29 dBm 80010 GHz 51.67 dBm 83500 GHz
Date: 4 AUG Spectru Ref Lev Att SGL Cour 0 1Pk Viev 10 dBm- 0 dBm- -10 dBm- -20 dBm- -30 dBm- -30 dBm- -50 dBm- -50 dBm- -70 dBm- -70 dBm- Type I F M1 M2	2022 11:06:3 m	29 m Offset 18 SWT 0. dBm 0. dBm M4 M4 X-valuu 2.480 2.480 2.480	011 GHz	5_Ant1_F RBW 100 kHz VBW 300 kHz	High 2. Mode Au Mil M2[M2[M2]	1] 1]		2.4 2,4 100 100 100 100 100 100 100	-2,29 dBm 80010 GHz 51.67 dBm 83500 GHz



Spectr	am)	L	JI 13_A		/_Hop_240	52			
Ref Le	/el 20.00 dB 30 d	m Offset 9 18 SWT 7	9.84 dB 🥃 F 75.8 µs 🖷 N	RBW 100 kHz VBW 300 kHz	Mode Auto FFT			[Δ]	
SGL Cot	nt 300/300 W			4 x - y - w	The second second	-			
1.1					M1[1]			-2.70 dBm 49600 GHz	
10 dBm-		1			MI2[1]		+	52.10 dBm 00000 GHz	
0 dBm-							2.10	1.1	
-10 dBm								ANN	
-20 dBm-	D1 -22,70	0.dBm				_		140-	
-30 dBm			-			-			
-40 dBm	-	-				-		1	
559.480	manne	Mushing where	environm	an marging w	where you want	MB	mange	12	
-60 dBm	-	The second						-	
-70 dBm									
Start 2. Marker	35 GHz	-	_	691 pts			Stop 2	2.405 GHz	
M4	1	2.353260	81 GHZ	-49.02 dBm					
Date: 4.AU	5,2022 11:21:1	31			1_Hop_24	80			
Date: 4.AU Spectr Ref Le Att	5.2022 11:21:1 Jm /el 20.00 dB 30 d	31 m Offset 9	DH5_A	nt1_High	Hop_24	80			
Date: 4.AU Spectr Ref Le Att	5,2022 11:21:1 Jm vel 20,00 dB 30 d nt 300/300	31 m Offset 9	DH5_A	nt1_High	Mode Auto FFT	80			
Date: 4.AU Spectr Ref Le Att SGL Cor IPk Vie	5,2022 11:21:1 Jm vel 20,00 dB 30 d nt 300/300	31 m Offset 9	DH5_A	nt1_High	Mode Auto FFT M1[1]	80	2.4	-2,40 dBm 76190 GHz	
Date: 4.AU Spectr Ref Le Att SGL Cot IPR Vis 10 dBm-	5,2022 11:21; um vel 20,00 dB 30 c nt 300/300 w	31 m Offset 9	DH5_A	nt1_High	Mode Auto FFT	80	2.4	-2,40 dBm	
Date: 4.AU Spectr Ref Le Att SGL Cor IPk Vie	5,2022 11:21; um vel 20,00 dB 30 c nt 300/300 w	31 m Offset 9	DH5_A	nt1_High	Mode Auto FFT M1[1]	80	2.4	-2.40 dBm 76190 GHz 51.13 dBm	
Date: 4.AU Spectru Ref Le Att SGL Cor 0 1Pk Vie 10 dBm- 0 dBm- 0 dBm-	5,2022 11:21; um vel 20,00 dB 30 c nt 300/300 w	31 m Offset 9	DH5_A	nt1_High	Mode Auto FFT M1[1]	80	2.4	-2.40 dBm 76190 GHz 51.13 dBm	
Date: 4 AU Spectr Ref Le Att SGL Cot 0 TPk Vic 10 dBm- 0 dBm- 10 dBm- 20 tBm	5,2022 11:21; um vel 20,00 dB 30 c nt 300/300 w	a1	DH5_A	nt1_High	Mode Auto FFT M1[1]	80	2.4	-2.40 dBm 76190 GHz 51.13 dBm	
Date: 4 AU Spectr Ref Le Att SGL Col 0 IPk Vie 10 dBm- 0 dBm- 20 BBm -30 dBm	3.2022 11:21:1 yel 20:00 dB 30 c nt 300/300 #	a1	DH5_A	nt1_High	Mode Auto FFT M1[1]	80	2.4	-2.40 dBm 76190 GHz 51.13 dBm	
Date: 4 AU Spectr Ref Le Att SGL Cot 0 TPk Vic 10 dBm- 0 dBm- 10 dBm- 20 tBm	5.2022 11:21: vel 20.00 dB 30 c nt 300/300 //	a1	DH5_A	nt1_High	Mode Auto FFT M1[1]		2.4	-2.40 dBm 76190 GHz 51.13 dBm	
Date: 4 AU Spectr Ref Le Att SGL Col 0 IPk Vie 10 dBm- 0 dBm- 20 BBm -30 dBm	3.2022 11:21: 	a1	DH5_A	nt1_High	Mode Auto FFT M1[1]		2.4	-2.40 dBm 76190 GHz 51.13 dBm 83500 GHz	
Date: 4 AU Spectr Ref Le Att SGL Col I d Bm- 0 dBm- 0 dBm- 20 HBm -30 dBm -40 dBm	3.2022 11:21: 	a1	DH5_A	nt1_High	Mode Auto FFTM1[1]M2[1]M2[1]M2[1]M2[1]		2.4	-2.40 dBm 76190 GHz 51.13 dBm 83500 GHz	
Date: 4 AU Spectr Ref Le Att SGL Co I Dr k Vie 10 dBm- 0 dBm- 20 dBm -30 dBm -30 dBm -30 dBm -30 dBm	3.2022 11:21: 	a1	DH5_A	nt1_High	Mode Auto FFTM1[1]M2[1]M2[1]M2[1]M2[1]		2.4	-2.40 dBm 76190 GHz 51.13 dBm 83500 GHz	
Date: 4 AU Spectr Ref Le Att SGL Col 0 IPk Vie 10 dBm -0 dBm -20 HBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm	3.2022 11:21: 2010 20:00 dB 30 c nt 300/300 W 1 01 -22:40 01 -22:40 M2 N02RU	a1	DH5_A	nt1_High	Mode Auto FFT		2.4 	-2.40 dBm 76190 GHz 51.13 dBm 83500 GHz	
Date: 4 AU Spectr Ref Le Att SGL Col 9 1Pk Vis 10 dBm 0 dBm -0 dBm -20 HBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm -70 dBm -70 dBm	3.2022 11:21: 2010 20:00 dB 20:00 dB 30:0 10:00/200 20:00 dB 20:00 dB	a1	DH5_A	nt1_High	Mode Auto FFT		2.4 2.4 2.4 2.4 2.4 2 2.4 2 2 2.4 2 2.4 2 2.4 2 2.4 2.4	-2,40 dBm 76190 GHz 51,13 dBm 83500 GHz 44	
Date: 4 AU Spectr Ref Le Att SGL Col 9 1Pk Vis 10 dBm 0 dBm -0 dBm -20 HBm -30 dBm -40 dBm -50 dBm -50 dBm -50 dBm -70 dBm -70 dBm	3.2022 11:21: 2010 20:00 dB 30 c nt 300/300 W 1 01 -22:40 01 -22:40 M2 N02RU	m Offset 5 B SWT 5 0 dbm 0 dbm X-value 2.476 2.446	DH5_A 0,80 dB = F 24.8 µs = 1 24.8 µs = 1 14.8 µs = 1 15.6 Hz 19 GHz 19 GHz 19 GHz 19 GHz	nt1_High	Mode Auto FFT		2.4 	-2,40 dBm 76190 GHz 51,13 dBm 83500 GHz 44	



Spectru	ım	12								Ē
Att SGL Cou	int 300			9.84 dB 🥃 1 75.8 µs 🕳 1	RBW 100 kHz VBW 300 kHz	: Mode	Auto FFT			_
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10 dBm-					1					18560 G
			1			M	12[1]			51.64 de
0 dBm-								1		L
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	01	-23.110	dBm			-				11
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-70 dBm-				-					1	
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Date: 4.AUC	3.2022	11:15:10	2.36092							
		11;15;10			5_Ant1_	_High_	_2480			(E
Spectru Ref Lev Att SGL Cou	um vel 20),00 dBm 30 dB	Offset	2DH:	5_Ant1_ RBW 100 kHz VBW 300 kHz					[
Spectru Ref Lev Att	um vel 20),00 dBm 30 dB	Offset	2DH:	RBW 100 kHz	. Mode	Auto FFT			
Spectru Ref Lev Att SGL Cou @ 1Pk Viev	um vel 20),00 dBm 30 dB	Offset	2DH:	RBW 100 kHz	. Mode			2.4	-3.39 dE
Spectru Ref Lev Att SGL Cou	um vel 20),00 dBm 30 dB	Offset	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Lev Att SGL Cou @ 1Pk Viev	um vel 20),00 dBm 30 dB	Offset	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE
Spectru Ref Lev Att SGL Cou 10 dBm	um vel 20 mt 300),00 dBm 30 dB	Offset	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Lex Att SGL Cou ● 1Pk View 10 dBm 0 dBm	um vel 20 mt 300),00 dBm 30 dB	Offset	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Lev Att SGL Cou 10 dBm	um vel 20 w),00 dBm 30 dB	Offset SWT	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Lex Att SGL Cou ● 1Pk View 10 dBm 0 dBm	um vel 20 w	3,00 dBm 30 dB 0/300	Offset SWT	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Let SGL Cou ● IPk: View 10 dBm— 0 dBm— -10 dBm— -20 dBm-	um vel 20 w	3,00 dBm 30 dB 0/300	Offset SWT	2DH:	RBW 100 kHz	Mode M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Lev Att SGL Cou 0 BPR- View 10 dBm -10 dBm -20 dBm -30 dBm 40 dBm	um vel 20 mt 300 w	3,00 dBm 30 dB 3/300	Offset SWT	2DH:	RBW 100 kHz VBW 300 kHz	Mode M M	Auto FFT			-3.39 dE 80010 G 51.16 dE
Spectru Ref Let SGL Cou ● IPk: View 10 dBm— 0 dBm— -10 dBm— -20 dBm-	um vel 20 mt 300 w	-23,390	Offset SWT	2DH:	RBW 100 kHz VBW 300 kHz	Mode M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Lev Att SGL Cou 0 BPR- View 10 dBm -10 dBm -20 dBm -30 dBm 40 dBm	um vel 20 mt 300 w	-23,390	offset swr	2DH:	RBW 100 kHz VBW 300 kHz	Mode M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Let Att SGL cou 0 1Pk Viet 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -60 dBm	um vel 20 w Mi 01	-23,390	offset swr	2DH:	RBW 100 kHz VBW 300 kHz	Mode M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Lev Att SG. Conu 9 1Pk Viev 10 dBm 10 dBm -20 dBm -30 dBm -40 dBm-	um vel 20 w Mi 01	-23,390	offset swr	2DH:	RBW 100 kHz VBW 300 kHz	Mode M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Lev Att SGL Cou @ IPk View 10 dBm- -10 dBm- -20 dBm- -30 dBm- -40 dBm- -50 dBm- -50 dBm- -70 dBm-	Um vel 20 mt 300 W Mt D1	-23,390	offset swr	2DH:	RBW 100 kHz VBW 300 kHz	Mode M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Let Att SGL cou 0 1Pk Viet 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -60 dBm	Um vel 20 mt 300 W Mt D1	-23,390	offset swr	2DH:	RBW 100 kHz VBW 300 kHz	Mode M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Lev Att SGL Cou @ IPk View 10 dBm- -0 dBm- -20 dBm- -30 dBm- -30 dBm- -40 dBm- -50 dBm- -70 dBm- 50 dBm- -70 dBm- 770 dBm-	um vel 20 nt 3000 w// DI.	23,390	dBm phytheou	2DH: 9,80 dB • • • 94.8 µs • • 94.8 µs • • М3 митеобсаба	RBW 100 kHz VBW 300 kHz UBW 300 kHz Communication Communic	Mode M M M M M M M M M M M M M M M M M M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
Spectru Ref Let At SG. Coou ● 1Pk Viev 10 dBm- -10 dBm- -20 dBm- -30 dBm- -40 dBm- -40 dBm- -50 dBm- -50 dBm- -50 dBm- -50 dBm- -50 dBm- -50 dBm- -50 dBm-	um vel 20 nt 3000 // // DI.	23,390	dBm physhopoco X-valu 2.486	2DH: 9:80 dB • • • 94.8 µs • • 94.8 µs • • 94.8 µs • •	RBW 100 kHz VBW 300 kHz	Mode M M M M M M M M M M M M M M M M M M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G
4	um vel 20 nt 3000 // // DI.	23.390	dBm physhopoco X-valu 2.486	2DH: 9:80 dB = 94.8 µs = 9	RBW 100 kHz VBW 300 kHz vBW 300 kHz vBW 300 kHz solution vBW 300 kHz sol	Mode M M M M M M M M M M M M M M M M M M M	Auto FFT		2.4	-3.39 dE 80010 G 51.16 dE 83500 G



Spectru	S							
Att SGL Cour	el 20.00 dBm 30 dB t 300/300		18 🗩 RBW 100 kHz Js 🖶 VBW 300 kHz	Mode Auto FFT	1			
• 1Pk View	1	T.		M1[1]			-7.82 dBm	
10 dBm				M2[1]		2.40	18010 GHz 50.97 dBm	
0 dBm				(MACL)	1 1	2,400	00000 GHz	
-10 dBm—							ALL A	
	1-200-01						MULIN	
-20 dBm—	al ideas	4						
-30 dBm-	D1 -27.820	dBm					1	
-40 dBm—							f	
~5.9.,dBm.7	mounding	and share	Man Marine	un on top with with	MB	monun	19	
-60 dBm								
-70 dBm—								
-/0 050				a. 1. 1. 1.			_	
Start 2.3 Marker	5 GHz		691 pt	ts		Stop 2	.405 GHz	
M2 M3 M4 Date: 4 AUG	1 1 1 2022 11:26:18	2.4 GH 2.39 GH 2.3723986 GH	lz -52.27 dBm					
M3 M4 Date: 4 AU3 Spectru Ref Lev At	1 2022: 11:26:18 m el 20.00 dBm 30 dB	2.39 GF 2.3723986 GF 2DH 0ffset 9,80 c	lz -52.27 dBm	gh_Hop_24	80			
M3 M4 Date: 4 AU3 Spectru Ref Lev At	1 2022 11:26:18 m el 20,00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH 0ffset 9,80 c	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24	80			
M3 M4 Date: 4 AU3 Spectru Ref Lev Att SGL Cour I PFk View	1 2022 11:26:18 m el 20,00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH 0ffset 9,80 c	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24	80	2.4	-5.90 dBm	
M3 M4 Date: 4 AUG Spectro Ref Lev Att SGL Cour I D dBm-	1 2022 11:26:18 m el 20,00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH 0ffset 9,80 c	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24	80	2.4	-5.90 dBm 72950 GHz +9.71 dBm	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour @1Pk View 10 dBm- 0 dBm-	1 2022 11:26:18 m el 20,00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH 0ffset 9,80 c	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24 Mode Auto FFT M1[1]	80	2.4	-5.90 dBm 72950 GHz	
M3 M4 Date: 4 AUG Spectro Ref Lev Att SGL Cour I D dBm-	1 2022 11:26:18 m el 20,00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH 0ffset 9,80 c	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24 Mode Auto FFT M1[1]	80	2.4	-5.90 dBm 72950 GHz +9.71 dBm	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour @1Pk View 10 dBm- 0 dBm-	1 2022 11 26 18 2022 11 26 18 m el 20.00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH Offset 9.80 c SWT 94.8 p	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24 Mode Auto FFT M1[1]	80	2.4	-5.90 dBm 72950 GHz +9.71 dBm	
M3 M4 Date: 4 AUS Spectru Ref Lev Att SGL Cour I D dbm- D dbm- D dbm- Urd under	1 2022 11:26:18 m el 20,00 dBm 30 dB t 300/300	2.39 GF 2.3723986 GF 2DH Offset 9.80 c SWT 94.8 p	12 -52.27 dBm -49.46 dBm 5_Ant1_Hig 18 RBW 100 kHz	gh_Hop_24 Mode Auto FFT M1[1]	80	2.4	-5.90 dBm 72950 GHz +9.71 dBm	
M3 M4 Date: 4 AU3 Spectru Ref Lev At SGL Cour IPk View 10 dBm- 0 dBm- 0 dBm- 0 dBm- 0 dBm-	1 1 2022 11 26 18 m el 20.00 dBm 30 dB t 300/300 -01 -25.900	2.39 GF 2.3723986 GF 2DH Offset 9.80 c SWT 94.8 p	12 -52.27 dbm -49.46 dbm	gh_Hop_24 Mode Auto FFT M1[1]	80	2.4	-5.90 dBm 72950 GHz +9.71 dBm	
M3 M4 Date: 4 AU3 Spectru Ref Lev Att SGL Cour I D dBm- 0 dBm- 0 dBm- 0 dBm- -30 dBm- -30 dBm-	1 1 2022 11:26:18 m el 20.00 dBm 30 dB t 300/300 -01 -25.900 -01 -25.900	2.39 GF 2.3723996 GF 2.3723996 GF 0ffset 9.80 G SwT 94.8 J	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 19 NBW 300 kHz	gh_Hop_24		2.4	-5.90 dBm 72950 GHz H9.71 dBm 33500 GHz	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour © 1Pk View 10 dBm- 0 dBm- 0 dBm- -20 dBm- -30 dBm- -50 dBm-	1 1 2022 11:26:18 m el 20.00 dBm 30 dB t 300/300 -01 -25.900 -01 -25.900	2.39 GF 2.3723996 GF 2.3723996 GF 0ffset 9.80 G SwT 94.8 J	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 19 NBW 300 kHz	gh_Hop_24 Mode Auto FFT M1[1]		2.4	-5.90 dBm 72950 GHz H9.71 dBm 33500 GHz	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour I D dBm- 0 dBm- 0 dBm- -30 dBm- -50 dBm- -60 dBm-	1 1 2022 11:26:18 m el 20.00 dBm 30 dB t 300/300 -01 -25.900 -01 -25.900	2.39 GF 2.3723996 GF 2.3723996 GF 0ffset 9.80 G SwT 94.8 J	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 19 NBW 300 kHz	gh_Hop_24		2.4	-5.90 dBm 72950 GHz H9.71 dBm 33500 GHz	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour ● 1Pk View 10 dBm- 0 dBm- 0 dBm- 20 dBm- -30 dBm- -50 dBm-	1 1 2022 11:26:18 m el 20.00 dBm 30 dB t 300/300 -01 -25.900 -01 -25.900	2.39 GF 2.3723996 GF 2.3723996 GF 0ffset 9.80 G SwT 94.8 J	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 19 NBW 300 kHz	gh_Hop_24		2.4	-5.90 dBm 72950 GHz H9.71 dBm 33500 GHz	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour 0 IPk View 10 dBm 0 dBm- 0 dBm- -30 dBm- -50 dBm- -50 dBm- -70 dBm- -50 dBm-	1 1 2022 11:26:18 pl 20.00 dBm 30 dB t 300/300	2.39 GF 2.3723996 GF 2.3723996 GF 0ffset 9.80 G SwT 94.8 J	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 19 NBW 300 kHz	h_Hop_24		2.4 	-5.90 dBm 72950 GHz H9.71 dBm 33500 GHz	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour ● IPK View 10 dBm- 0 dBm- 0 dBm- - 0 dBm- - 30 dBm- - 30 dBm- - 50 dBm- - 50 dBm- - 50 dBm- - 70 dBm-	1 1 2022 11:26:18 m el 20.00 dBm 30 dB t 300/300 0	2.39 GF 2.3723986 GF 2.3723986 GF 0ffset 9.80 c SWT 94.8 p 0 dBm dBm	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 19 VBW 300 kHz 19 VBW 300 kHz 10 k	yh_Hop_24		2.4 	-5.90 dBm 72950 GHz 9.71 dBm 33500 GHz	
M3 M4 Date: 4 AUG Spectru Ref Lev Att SGL Cour ● IPk View 10 dBm- 0 gBm- VV up/44 -20 dBm- -30 dBm- -50 dBm-	1 1 2022 11:26:18 m el 20.00 dBm 30 dB t 300/300 0	2.39 GF 2.3723996 GF 2.3723996 GF 0ffset 9.80 G SWT 94.8 F	12 -52.27 dbm -49.46 dbm 15 Ant1_Hig 18 RBW 100 kHz 18 VBW 300 kHz 19 Anthony Ant	The second secon		2.4 2.4	-5.90 dBm 72950 GHz 9.71 dBm 33500 GHz	



5.9 Spurious RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane Remark: Offset=cable loss+ attenuation factor.
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.
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 DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π /4DQPSK modulation type.
Test Results:	Pass

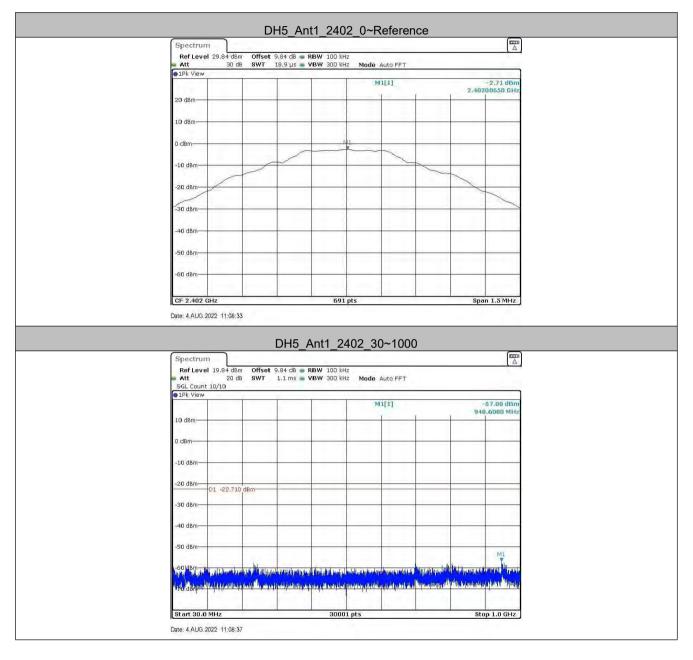


Test Result

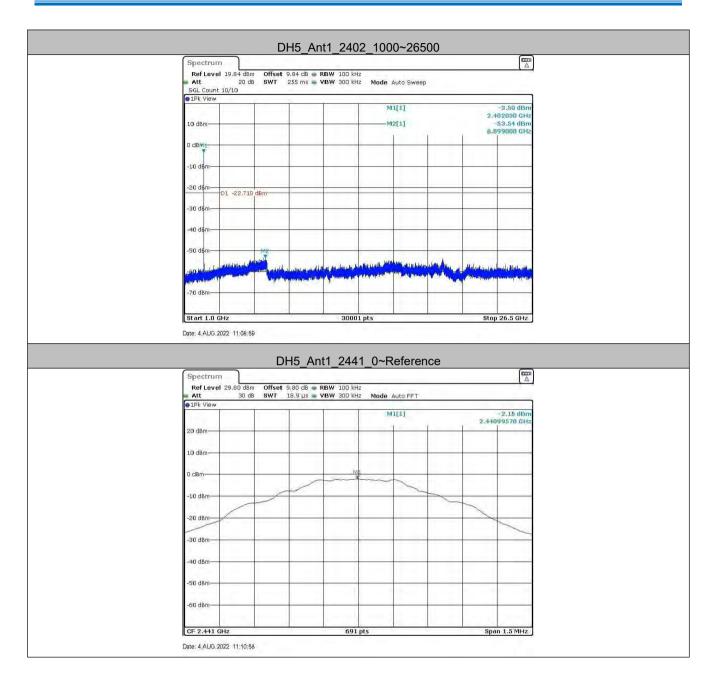
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
			Reference	-2.71	-2.71		PASS
		2402	30~1000	-2.71	-57.08	≤-22.71	PASS
			1000~26500	-2.71	-53.54	≤-22.71	PASS
			Reference	-2.15	-2.15		PASS
DH5		2441	30~1000	-2.15	-57.48	≤-22.15	PASS
			1000~26500	-2.15	-53.08	≤-22.15	PASS
			Reference	-2.09	-2.09		PASS
		2480	30~1000	-2.09	-57.61	≤-22.09	PASS
			1000~26500	-2.09	-53.59	≤-22.09	PASS
			Reference	-3.02	-3.02		PASS
		2402	30~1000	-3.02	-57.63	≤-23.02	PASS
			1000~26500	-3.02	-53.2	≤-23.02	PASS
			Reference	-2.40	-2.40		PASS
2DH5	Ant1	2441	30~1000	-2.40	-58.24	≤-22.4	PASS
			1000~26500	-2.40	-53.57	≤-22.4	PASS
			Reference	-2.50	-2.50		PASS
		2480	30~1000	-2.50	-56.15	≤-22.5	PASS
			1000~26500	-2.50	-54.16	≤-22.5	PASS



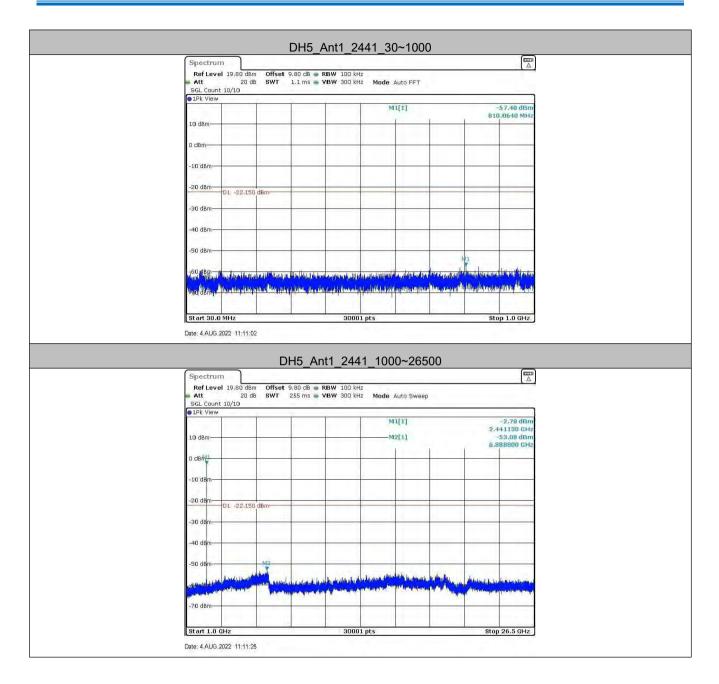
Test Graphs







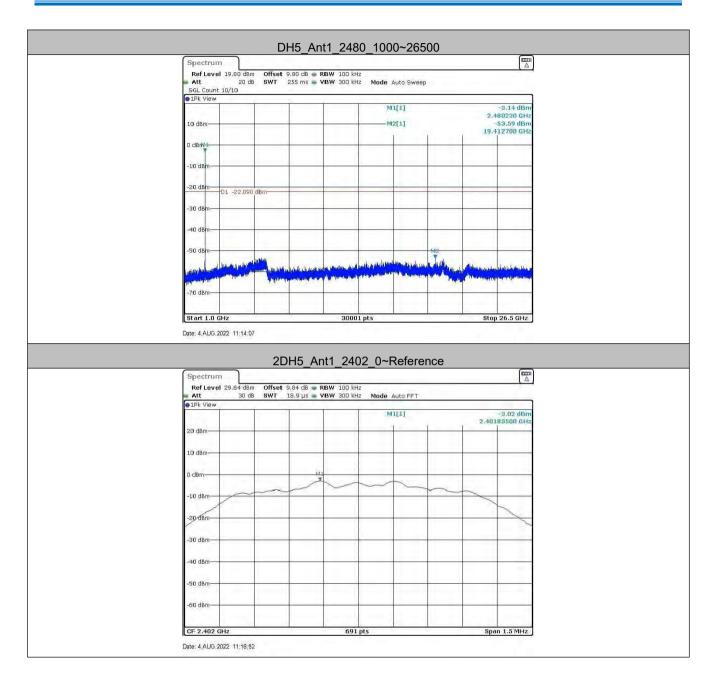




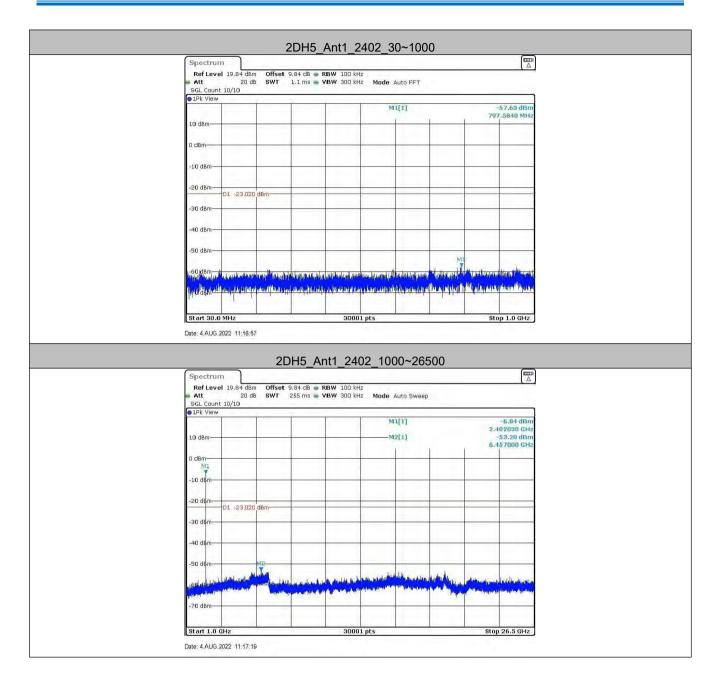


Spectr										
Ref Le	vel 29	,80 dBm 30 dB	Offset 9	9.80 dB 🥃 18.9 us 🚔	RBW 100 kH VBW 300 kH	z Z Mode	Auto FET			
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110						N	11(1)		2.479	-2.09 dBn 999570 GH:
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		-								
10 dBm-										
0 dBm-					M	1				
				1			1			
-10 dBm	-	-	-		-		~		-	-
-20 dBm	1		- 1						1	
-20 060	_									1
-30 dBm	_				-		-			
-40 dBm										
-50 dBm					_					
Se dom							10			
-60 dBm	_	-	-				-			
10 Th		1 I								
							· · · · · · · · · · · · · · · · · · ·			
CF 2.48 Date: 4.AL	1.0	11;13;41			691 Ant1 2		0~100	0	Spa	an 1.5 MHz
Date: 4.AL	IG.2022	11:13:41		DH5_/	691 Ant1_2		0~100	0	Spa	
Date: 4.AL	G.2022 um	<u>ר</u>			Ant1_2	480_3	0~100	0	Spe	an 1.5 MHz
Spectr Ref Le	G.2022 um vel 19	9.80 dBm 20 dB	Offset 9	9.80 dB 👜		480_3		0	Spe	
Date: 4,AL Spectr Ref Le	G.2022 um vel 19 unt 10/	9.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		(m
Spectr Ref Le SGL Cou	G.2022 um vel 19 unt 10/	0.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode		0		
Spectr Ref Le SGL Cou	G.2022 um vel 19 unt 10/	0.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL Spectr Ref Le Att SG. Coi 1Pk Vie 10 dBm-	G.2022 um vel 19 unt 10/	0.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL Spectr Ref Le Att SGL Cor IPk Vie	G.2022 um vel 19 unt 10/	0.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL Spectr Ref Le Att SG. Coi 1Pk Vie 10 dBm-	IG.2022 Turm Ivel 19 unt 10/	0.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4 AL Spectr Ref Le Att SGL Cor IPK Vie 10 dBm- 0 dBm- -10 dBm	um vel 19 w	0.80 dBm 20 dB	Offset 9	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL Spectr Ref Le Att SGL Cor I D dBm- 0 dBm-	um avel 19 avel 19	0.80 dBm 20 dB	Offset SWT	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL. Spectr Ref Le Att SGL Cor 10 dBm- 0 dBm- -10 dBm -20 dBm	Uum vvel 19 unt 10/	20 dBm 20 dB /10	Offset SWT	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4 AL Spectr Ref Le Att SGL Cor I D dBm- U dBm- -10 dBm -20 dBm -30 dBm	G 2022	20 dBm 20 dB /10	Offset SWT	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL. Spectr Ref Le Att SGL Cor 10 dBm- 0 dBm- -10 dBm -20 dBm	G 2022	20 dBm 20 dB /10	Offset SWT	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4.AL. Spectr Ref Le Att SGL Cor 10 dBm- -10 dBm- -20 dBm -30 dBm -40 dBm	Um vel 19 ww	20 dBm 20 dB /10	Offset SWT	9.80 dB 👜	Ant1_2	480_3 z Z Mode	Auto FFT	0		-57.61 dBn
Date: 4 AL Spectr Ref Le Att SGL Cor I D dBm- U dBm- -10 dBm -20 dBm -30 dBm	Um vel 19 ww	20 dBm 20 dB /10	Offset S SWT	9.80 dB • 1.1 ms •	Ant1_2	480_3 ¹² 2 Mode	Auto FFT		71	-57.61 dBn 7.4970 MH
Date: 4.AL. Spectr Ref Le Att SGL Cor 10 dBm- -10 dBm- -20 dBm -30 dBm -40 dBm	0,2022	20 dBm 20 dB /10	Offset S SWT	9.80 dB • 1.1 ms •	Ant1_2	480_3 ¹² ¹² Mode [™]	Auto FFT			57.61 dBn 7.4970 MH3
Date: 4 AL. Spectr Ref Le Att SGL CO I D dBm- 10 dBm- -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm	Um vel 19 unt 10/ 01	-22.090 dB -22.090 dB	Offset S SWT	9.80 dB • 1.1 ms •	Ant1_2	480_3 ¹² ¹² Mode [™]	Auto FFT			57.61 dBn 7.4970 MH3
Date: 4 AL. Spectr Ref Le Att SGL CO I PK Vie I D dBm- 0 dBm- -10 dBm -20 dBm -30 dBm -30 dBm -40 dBm -50 dBm	Um vel 19 unt 10/ 01	20 dB 20 dB 10	Offset S SWT	9.80 dB • 1.1 ms •	Ant1_2	480_3 ¹² ¹² Mode [™]	Auto FFT			57.61 dBn 7.4970 MH3

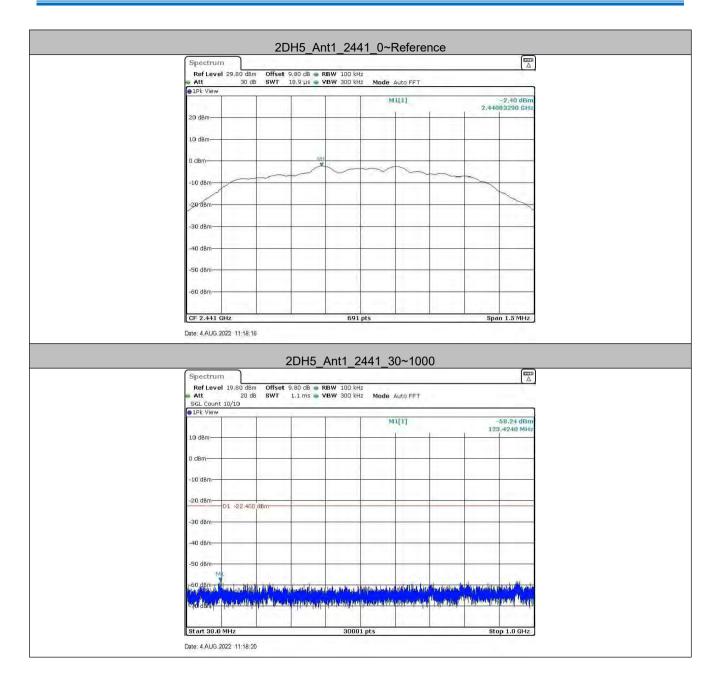




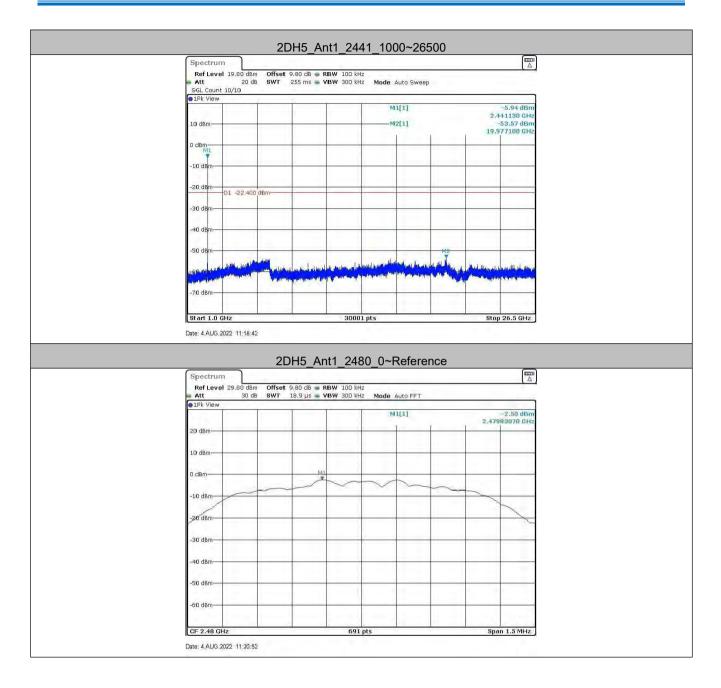




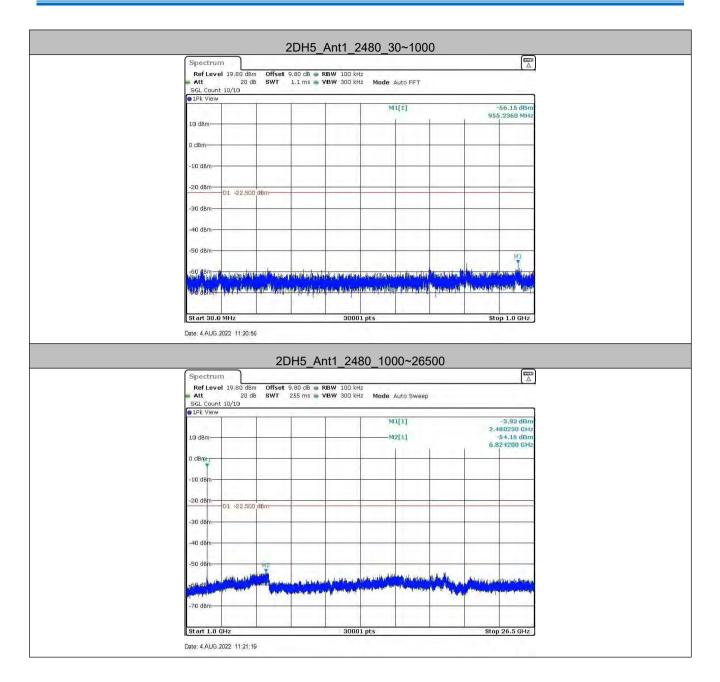












Remark:

Pre test 9kHz to 25GHz, find the highest point when testing, so only the worst data were shown in the test report. Per FCC Part 15.33 (a) and 15.31 (o) ,The amplitude of spurious emissions from intentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.



5.10Other requirements Frequency Hopping Spread Spectrum System

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1), (h) requirement:
rate from a Pseudorandom o on the average by each trans	nnel frequencies that are selected at the system hopping rdered list of hopping frequencies. Each frequency must be used equally smitter. The system receivers shall have input bandwidths that match the of their corresponding transmitters and shall shift frequencies in smitted signals.
channels during each transm receiver, must be designed to transmitter be presented with employing short transmission	pectrum systems are not required to employ all available hopping hission. However, the system, consisting of both the transmitter and the o comply with all of the regulations in this section should the n a continuous data (or information) stream. In addition, a system n bursts must comply with the definition of a frequency hopping system nissions over the minimum number of hopping channels specified in
the system to recognize othe independently chooses and a The coordination of frequence	nce within a frequency hopping spread spectrum system that permits er users within the spectrum band so that it individually and adapts its hopsets to avoid hopping on occupied channels is permitted. by hopping systems in any other manner for the express purpose of ccupancy of individual hopping frequencies by multiple transmitters is
Compliance for section 15.	247(a)(1)
stage shift register whose 5th outputs are added in a modu	lo-two addition stage. And the result is fed back to the input of the first with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized ges: 9 sequence: 2 ⁹ -1 = 511 bits
An example of Pseudorandor	hift Register for Generation of the PRBS sequence m Frequency Hopping Sequence as follow:
20 62 46 77	7 64 8 73 16 75 1
According to Bluetooth Core bandwidths that match the	on the average by each transmitter. Specification, Bluetooth receivers are designed to have input and IF hopping channel bandwidths of any Bluetooth transmitters and shift on with the transmitted signals.
Compliance for section 15.	247(g)
pseudorandom hopping frequencies	re Specification, the Bluetooth system transmits the packet with the uency with a continuous data and the short burst transmission from the nsmitted under the frequency hopping system with the pseudorandom



Compliance for section 15.247(h)

According to Bluetooth Core specification, the Bluetooth system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels.

According to the Bluetooth Core specification, the Bluetooth system is designed not have the ability to coordinated with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

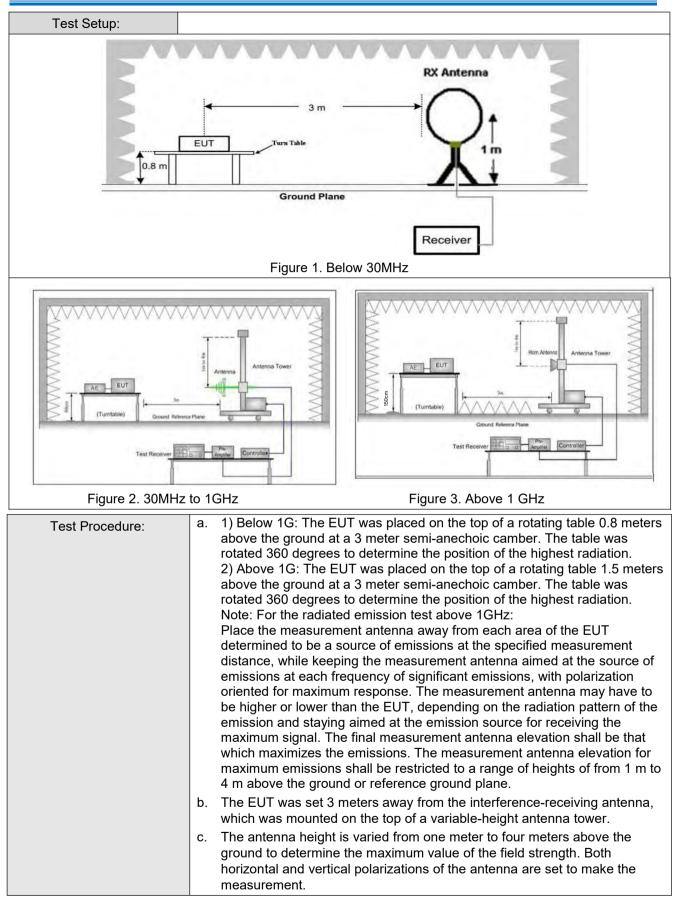


5.11 Radiated Spurious Emission & Restricted bands

Test Requirement:	47 CFR Part 15C Section	on 1	5.209 and 15.	205			
Test Method:	ANSI C63.10: 2013						
Test Site:	Measurement Distance	: 3m	n (Semi-Anech	oic Cham	ber)		-
Receiver Setup:	Frequency		Detector	RBW	VBW	Remark]
	0.009MHz-0.090MH	z	Peak	10kHz	z 30kHz	Peak	1
	0.009MHz-0.090MH	z	Average	10kHz	z 30kHz	Average	1
	0.090MHz-0.110MH	z	Quasi-peak	10kHz	z 30kHz	Quasi-peak	1
	0.110MHz-0.490MH	z	Peak	10kHz	z 30kHz	Peak]
	0.110MHz-0.490MH	z	Average	10kHz	z 30kHz	Average]
	0.490MHz -30MHz		Quasi-peak	10kHz	z 30kHz	Quasi-peak]
	30MHz-1GHz		Peak	100 kH	z 300kHz	Peak]
	Above 1GHz		Peak	1MHz	3MHz	Peak	
			Peak	1MHz	10Hz	Average	
Limit:	Frequency		eld strength crovolt/meter)	Limit (dBuV/m)	Remark	Measureme distance (n	
	0.009MHz-0.490MHz	2	400/F(kHz)	-	-	300	
	0.490MHz-1.705MHz	24	1000/F(kHz)	-	-	30	
	1.705MHz-30MHz		30	-	-	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	
	Note: 15.35(b), Unless emissions is 20dE applicable to the e peak emission lev	3 ab equi	ove the maxim pment under t	num permi est. This p	itted average	emission limit	





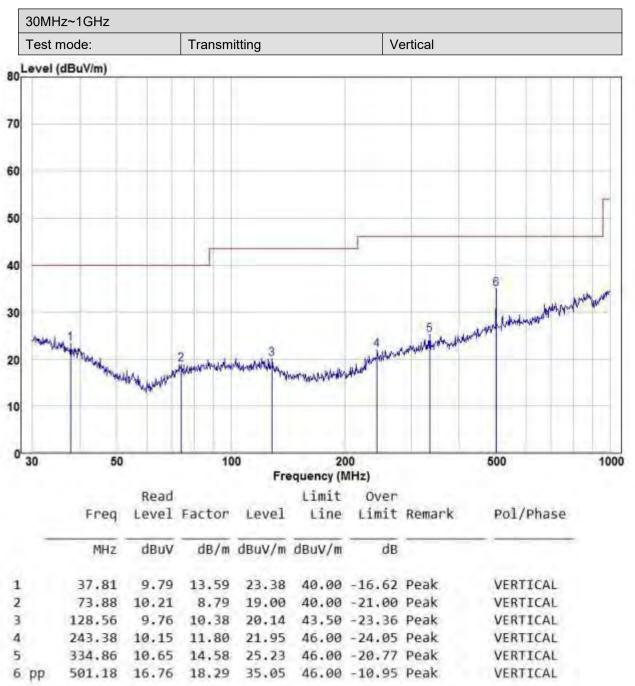




	 d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test receiver evolution was part to Pack Datest Function and Specified
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	 f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel (2402MHz),the middle channel (2441MHz),the Highest channel (2480MHz)
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
	i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type Transmitting mode
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. For below 1GHz part, through pre-scan, the worst case is the lowest channel.
	Only the worst case is recorded in the report.
Test Results:	Pass



5.11.1 Radiated Emission below 1GHz



Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

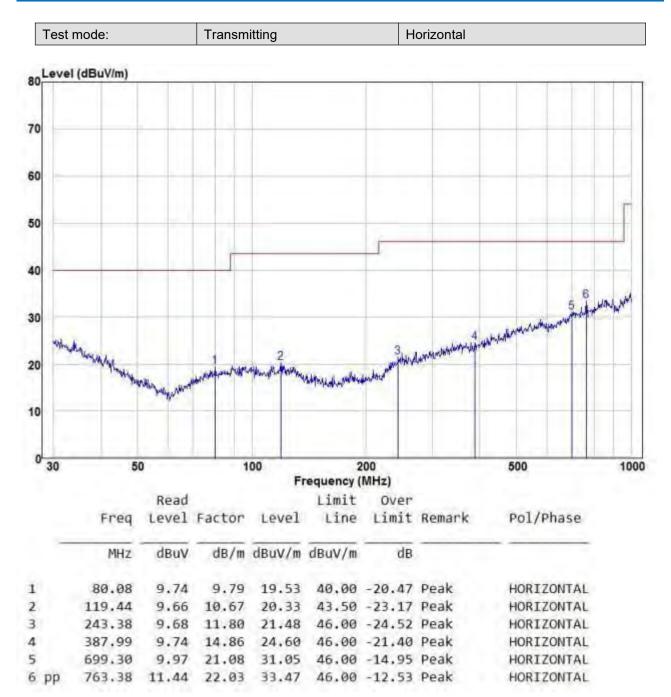
Factor= Antenna Factor + Cable Factor - Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.







Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor - Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.



5.11.2 Transmitter Emission above 1GHz

Worse case mode:		GFSK(DH	5)	Test channel:		Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2390	55.67	-9.2	46.47	74	-27.53	Peak	н
2400	56.20	-9.39	46.81	74	-27.19	Peak	Н
4804	52.17	-4.33	47.84	74	-26.16	Peak	Н
7206	50.50	1.01	51.51	74	-22.49	Peak	Н
2390	54.98	-9.2	45.78	74	-28.22	Peak	v
2400	55.42	-9.39	46.03	74	-27.97	Peak	V
4804	53.86	-4.33	49.53	74	-24.47	Peak	V
7206	49.28	1.01	50.29	74	-23.71	Peak	V

Worse case mode:		GFSK(DH	5)	Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
4882	51.05	-4.11	46.94	74	-27.06	peak	н
7323	48.26	1.51	49.77	74	-24.23	peak	н
4882	51.44	-4.11	47.33	74	-26.67	peak	V
7323	50.26	1.51	51.77	74	-22.23	peak	V

Worse case mode:		GFSK(DH	5)	Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2483.5	53.09	-9.29	43.80	74	-30.20	Peak	н
4960	52.32	-4.04	48.28	74	-25.72	Peak	н
7440	50.67	1.57	52.24	74	-21.76	Peak	н
2483.5	53.81	-9.29	44.52	74	-29.48	Peak	v
4960	48.29	-4.04	44.25	74	-29.75	Peak	V
7440	48.89	1.57	50.46	74	-23.54	Peak	V



Worse case mode:		π /4DQPS	K (2DH5)	Test channel:		Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2390	54.11	-9.2	44.91	74	-29.09	Peak	н
2400	54.34	-9.39	44.95	74	-29.05	Peak	Н
4804	53.57	-4.33	49.24	74	-24.76	Peak	Н
7206	50.49	1.01	51.50	74	-22.50	Peak	Н
2390	55.93	-9.2	46.73	74	-27.27	Peak	v
2400	56.58	-9.39	47.19	74	-26.81	Peak	V
4804	52.40	-4.33	48.07	74	-25.93	Peak	V
7206	49.67	1.01	50.68	74	-23.32	Peak	V

Worse case mode:		π /4DQPS	K (2DH5)	Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
4882	50.70	-4.11	46.59	74	-27.41	peak	н
7323	50.52	1.51	52.03	74	-21.97	peak	Н
4882	51.43	-4.11	47.32	74	-26.68	peak	V
7323	50.73	1.51	52.24	74	-21.76	peak	V

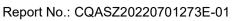
Worse case mode:		π /4DQPS	K (2DH5)	Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		H/V
2483.5	54.88	-9.29	45.59	74	-28.41	Peak	н
4960	51.75	-4.04	47.71	74	-26.29	Peak	н
7440	48.87	1.57	50.44	74	-23.56	Peak	Н
2483.5	55.19	-9.29	45.90	74	-28.10	Peak	v
4960	49.50	-4.04	45.46	74	-28.54	Peak	V
7440	50.70	1.57	52.27	74	-21.73	Peak	V

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz, the disturbance above 10GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.



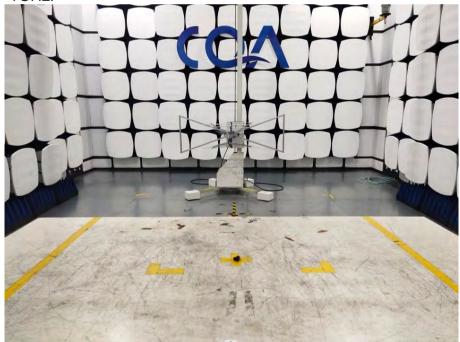


6 Photographs - EUT Test Setup

6.1 Radiated Emission



30MHz~1GHz:





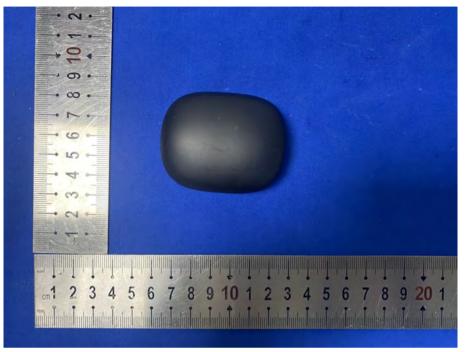


6.2 Conducted Emission



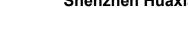


7 Photographs - EUT Constructional Details





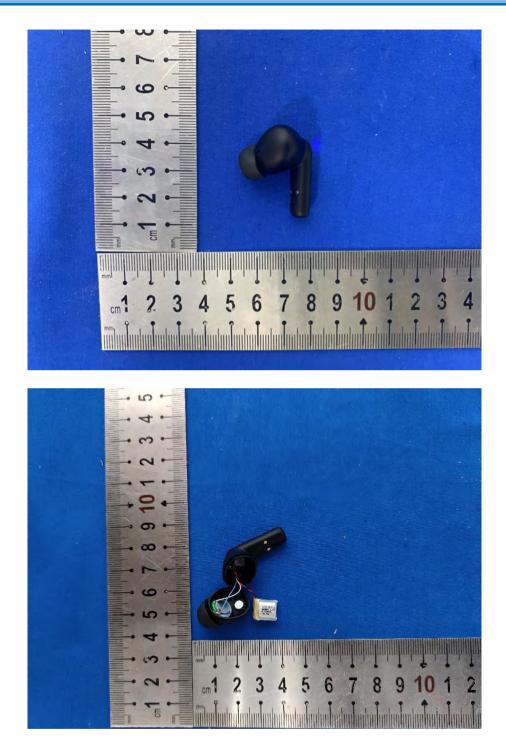




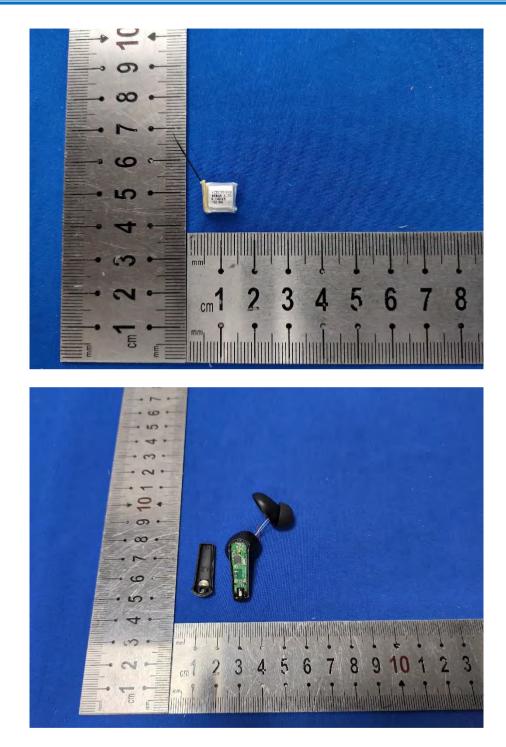




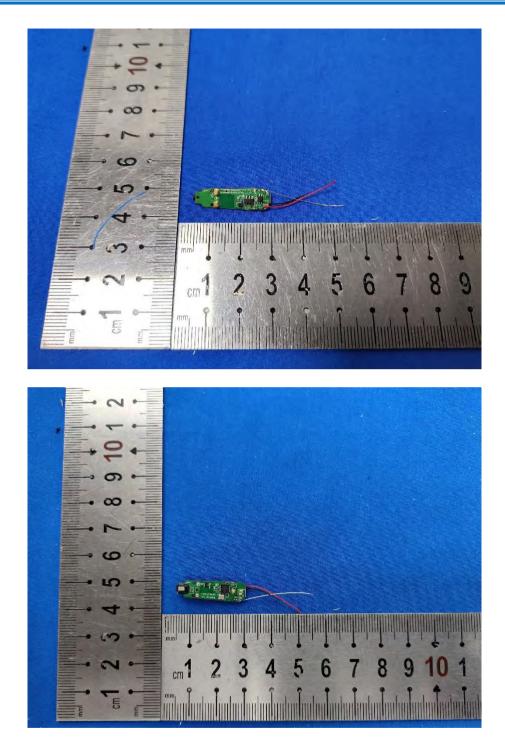












*** END OF REPORT ***