

Report No.: XEWM2305000213RG02

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### **TEST REPORT**

Application No.: XEWM2305000213RG

Applicant: HONG KONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED

Address of Applicant: Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road,

Kowloon, Hong Kong

Manufacturer: HONG KONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED

Address of Manufacturer: Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road,

Kowloon, Hong Kong

**EUT Description:** Revolutionary Intelligent KeyChain

Model No.: GLMT23A01

Trade Mark: GlocalMe

FCC ID: 2AC88-GLMT23A01

Standards: FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart C

**Date of Receipt:** 2023/05/09

**Date of Test:** 2023/05/24 to 2023/06/05

**Date of Issue:** 2023/06/20

Test Result : PASS \*

Authorized Signature:

Peter Tan Regulatory Technical Manager



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0086 t (86-29) 6282 7885 0086 t (86-29) 6282 7885

<sup>\*</sup> In the configuration tested, the EUT detailed in this report complied with the standards specified above.



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### 1 Version

Revision Record							
Version Chapter Date Modifier Remark							
01		2023/06/20		Original			

Prepared By	Leah chen				
	(Leah Chen) / Test Engineer				
Checked By	(Andy Yao) /Reviewer				



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2 Test Summary

Test Item	FCC Rule No.	Test Method	Test Result	Result
Antenna Requirement	15.203/15.247(b)		Clause 4.1	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10-2020 Section 6.2	Clause 4.3	PASS
Conducted Peak Output Power	15.247 (b)(1)	ANSI C63.10-2020 Section 11.9.1.2	Clause 4.4	PASS
20dB Emission Bandwidth & 99% Occupied Bandwidth	15.247 (a)(1)	ANSI C63.10-2020 Section 6.9.2/6.9.3	Clause 4.5	For Report Purpose
Carrier Frequencies Separation	15.247 (a)(1)	ANSI C63.10-2020 Section 7.8.2	Clause 4.6	PASS
Hopping Channel Number	15.247 (a)(1)	ANSI C63.10-2020 Section 7.8.3	Clause 4.7	PASS
Dwell Time	15.247 (a)(1)	ANSI C63.10-2020 Section 7.8.4	Clause 4.8	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10-2020 Section 7.8.7.2	Clause 4.9	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10-2020 Section 7.8.7.1	Clause 4.10	PASS
Radiated Spurious emissions	15.247(d); 15.205/15.209	ANSI C63.10-2020 Section 6.4 / 6.5 / 6.6	Clause 4.11	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d); 15.205/15.209	ANSI C63.10-2020 Section 6.10.5	Clause 4.12	PASS



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#### 3 General Information

#### 3.1 Details of Client

Applicant:	HONG KONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address of Applicant:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, Hong Kong
Manufacturer:	HONG KONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED
Address of Manufacturer:	Suite 603, 6/F, Laws Commercial Plaza, 788 Cheung Sha Wan Road, Kowloon, Hong Kong

#### 3.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Xi'an) Co., Ltd.
Address:	1/F, Unit D, Building 1, Kanghong Orange Science Park, No.137, Keyuan 3rd Road, Fengdong New Town, Xi' an, Shaanxi China
Post code:	710086
Test engineer:	Qiang Zhang, Jacky Xue

### 3.3 Test Facility

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

#### •A2LA (Certificate No. 4854.01)

SGS-CSTC Standards Technical Services (Xi'an) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4854.01.

#### • Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services (Xi'an) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0095.

IC#: 25613.

#### • FCC -Designation Number: CN1337

SGS-CSTC Standards Technical Services (Xi'an) Co., Ltd. has been recognized as an accredited testing

laboratory.

Designation Number: CN1337.

Test Firm Registration Number: 917410



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### 3.4 General Description of EUT

EUT Description:	Revolutionary Intelligent Key	Revolutionary Intelligent KeyChain			
Model No.:	GLMT23A01				
Trade Mark:	GlocalMe				
Hardware Version:	P020_V3				
Software Version:	T10_HTSV1.0.001.002.2306	601			
IMEL.	RF Conducted	353682680003538			
IMEI:	RSE & AC power line	353682680004528			
Operation Frequency:	2400MHz~2483.5MHz fc = 2402 MHz + N * 1 MHz, where: -fc = "Operating Frequency" in MHz, -N = "Channel Number" with the range from 0 to 78.				
Bluetooth version:	Bluetooth V4.2				
Modulation Technique:	Frequency Hopping Spread	Spectrum(FHSS)			
Modulation Type:	GFSK, π/4DQPSK, 8DPSK				
Number of Channel:	79				
Hopping Channel Type:	Adaptive Frequency Hopping systems				
Antenna Type:	☐ External, ⊠ Integrated				
	1.22dBi				
Antenna Gain:	Note:  The antenna gain are derived from the gain information report provided by the manufacturer.				
RF Cable:	1.2dB				
Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.					



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	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			

#### 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(CH0)	2402MHz
The Middle channel(CH39)	2441MHz
The Highest channel(CH78)	2480MHz



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#### 3.5 Test Environment

Environment Parameter	96~101 kPa Selected Values During Tests				
Relative Humidity	40-60 % RH Ambient				
Value	Temperature(℃) Voltage(V)				
NTNV	22~25 3.85				

Remark:

NV: Normal Voltage NT: Normal Temperature

### 3.6 Description of Support Units

The EUT has been tested as an independent unit.



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### 4 Test results and Measurement Data

### 4.1 Antenna Requirement

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

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 Antenna and no consideration of replacement. The best case gain of the antenna is1.22dBi.\*

\*Note:

The antenna gain are derived from the gain information report provided by the manufacturer. Remark:

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# 4.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence

#### 4.2.1 Test Requirement:

47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)

#### 4.2.2 Conclusion

Standard Requirement:

The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals. Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

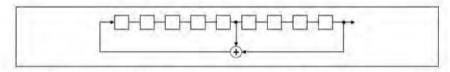
Compliance for section 15.247(a)(1):

According to Technical Specification, the pseudo random sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- > Number of shift register stages: 9
- > Length of pseudo-random sequence: 29 -1 = 511 bits
- > Longest sequence of zeros: 8 (non-inverted signal)

Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:

20 62 46 77 7 64 8 73 16.75 1



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Each frequency used equally on the average by each transmitter.

According to Technical Specification, the receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any transmitters and shift frequencies in synchronization with the transmitted signals.

Compliance for section 15.247(g):

According to Technical Specification, the system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short burst transmission from the RF system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system.

Compliance for section 15.247(h):
According to Technical specification, the 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. The 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.



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#### 4.3 AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207					
Test Method:	ANSI C63.10-2020 Section 6.2					
Test Frequency Range:	150kHz to 30MHz					
Receiver Setup:	RBW = 9kHz, VBW = 30	lkHz				
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 log	arithm of the frequency.				
Test Procedure:	1) The mains terminal di room.  2) The EUT was connec Impedance Stabilizat impedance. The pow connected to a secon plane in the same was multiple socket outlet single LISN provided  3) The tabletop EUT was ground reference planely placed on the horizor  4) The test was performed the EUT shall be 0.4 vertical ground reference plane. The unit under test and be mounted on top of the closest points of and associated equip  5) In order to find the mare	sturbance voltage test was contend to AC power source throughout Network) which provides were cables of all other units of and LISN 2, which was bonded by as the LISN 1 for the unit by a strip was used to connect must the rating of the LISN was not a placed upon a non-metallic ne. And for floor-standing arrantal ground reference plane. The placed with a vertical ground reference plane was bonded to the LISN 1 was placed 0.8 m from the LISN 1 and the EUT. All coment was at least 0.8 m from aximum emission, the relative ce cables must be changed a	igh a LISN 1 (Line a 50Ω/50μH + 5Ω linear the EUT were I to the ground reference leing measured. A ultiple power cables to a pot exceeded. It is table 0.8m above the angement, the EUT was rence plane. The rear of ference plane. The endizontal ground in the boundary of the plane for LISNs is distance was between other units of the EUT in the LISN 2.			



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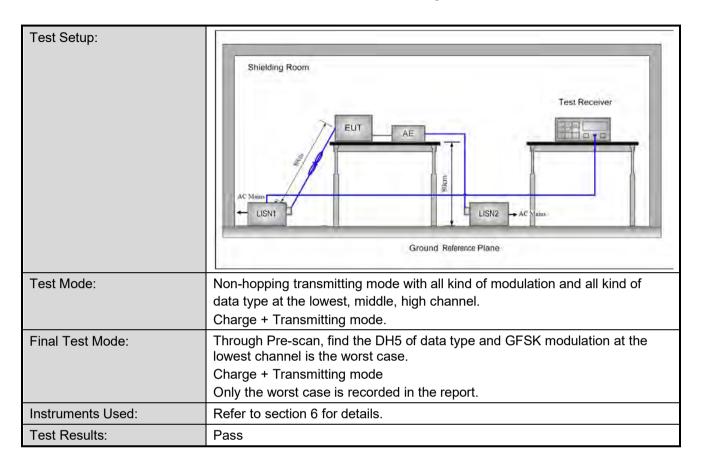
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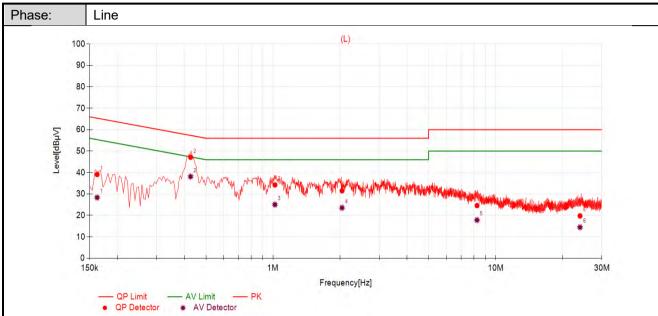
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#### Measurement Data

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.



Data	Data List										
NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1623	9.86	29.24	39.10	65.34	26.24	18.49	28.35	55.34	26.99	PASS
2	0.4266	9.86	37.27	47.13	57.32	10.19	28.24	38.10	47.32	9.22	PASS
3	1.0204	9.84	24.39	34.23	56.00	21.77	15.20	25.04	46.00	20.96	PASS
4	2.0422	9.86	21.63	31.49	56.00	24.51	13.69	23.55	46.00	22.45	PASS
5	8.2501	9.94	14.66	24.60	60.00	35.40	7.87	17.81	50.00	32.19	PASS
6	23.9283	10.27	9.51	19.78	60.00	40.22	4.21	14.48	50.00	35.52	PASS

#### Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
- 3. Margin = Limit[dBµV] Value[dBµV]



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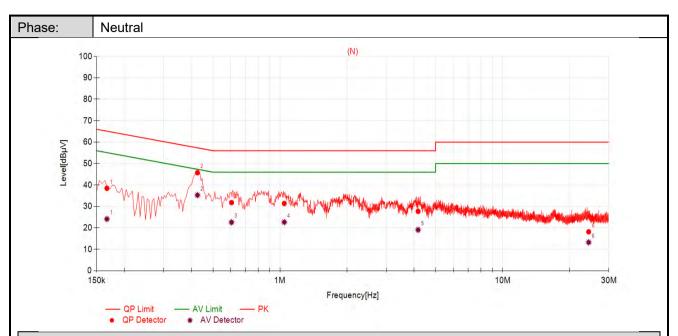
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Data	Data List										
NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1670	9.80	28.68	38.48	65.11	26.63	14.33	24.13	55.11	30.98	PASS
2	0.4261	9.83	35.89	45.72	57.33	11.61	25.45	35.28	47.33	12.05	PASS
3	0.6059	9.85	21.96	31.81	56.00	24.19	12.76	22.61	46.00	23.39	PASS
4	1.0454	9.81	21.60	31.41	56.00	24.59	12.86	22.67	46.00	23.33	PASS
5	4.1719	9.94	17.76	27.70	56.00	28.30	9.15	19.09	46.00	26.91	PASS
6	24.3417	10.30	7.87	18.17	60.00	41.83	2.96	13.26	50.00	36.74	PASS

#### Remark:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Value =Reading[dB $\mu$ V] + Factor(Lisn factor[dB] + cable loss[dB]). 3. Margin = Limit[dB $\mu$ V] Value[dB $\mu$ V]



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### 4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)&15.247 (b)(1)				
Test Method:	ANSI C63.10-2020 Section 11.9.1.2				
Test Setup:	Ground Reference Plane  * Test with power meter (Detector function: Peak)				
Test Instruments:	Refer to section 6 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  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,  3-DH5 of data type is the worst case of 8DPSK modulation type.				
Limit:	0.125 watts				
Test Results:	Pass				
The detailed test data see: A	ppendix				



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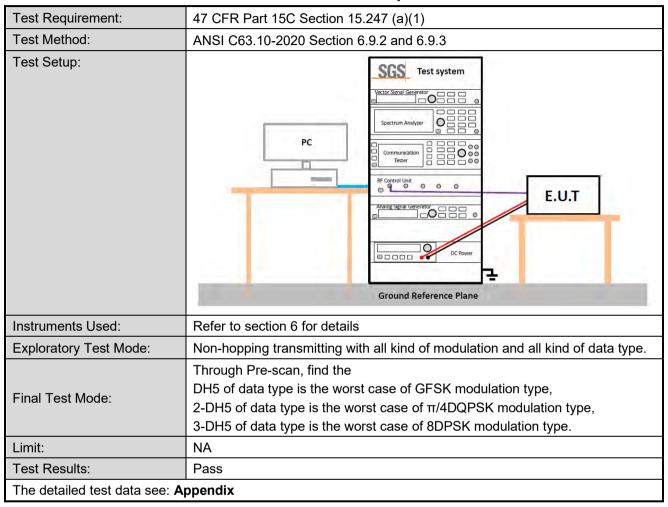


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### 4.5 20dB Emission Bandwidth & 99% Occupied Bandwidth





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### 4.6 Carrier Frequencies Separation

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)				
Test Method:	ANSI C63.10-2020 Section 7.8.2				
Test Setup:	SGS Test system  Vistor Signal Generator  Spectrum Analyzer  Communication  Tester  RF Control Unit  Control Unit				
Test Instruments:	Refer to section 6 for details				
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, 3-DH5 of data type is the worst case of 8DPSK modulation type.				
Limit:	2/3 of the 20dB bandwidth				
	Remark: the transmission power is less than 0.125W.				
Test Results:	Pass				
The detailed test data see: A	ppendix				



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### 4.7 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:	PC    Spectrum Analyzer   O   O   O   O   O   O   O   O   O				
Instruments Used:	Refer to section 6 for details				
Test Mode:	Hopping transmitting with all kind of modulation				
Limit:	At least 15 channels				
Test Results:	Pass				
The detailed test data see: A	The detailed test data see: Appendix				



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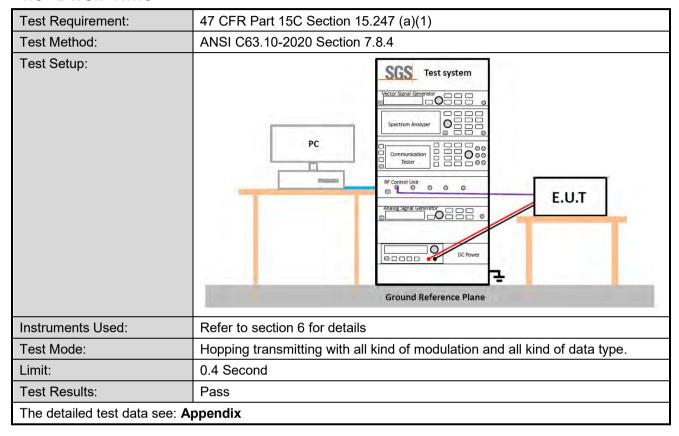


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#### 4.8 Dwell Time





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### 4.9 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)			
Test Method:	ANSI C63.10-2020 Section 7.8.7.2			
Test Setup:	PC  Spectrum Analyzer  Spectrum Analyzer  Communication  Feater  RF Control Unit:  DC Rower  Ground Reference Plane			
Instruments Used:	Refer to section 6 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 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, 3-DH5 of data type is the worst case of 8DPSK modulation type.			
Limit:  In any 100 kHz bandwidth outside the frequency band in which the spression spectrum intentional radiator is operating, the radio frequency power the produced by the intentional radiator shall be at least 20 dB below that in 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measure.				
Test Results:	Pass			
The detailed test data see:	Appendix			



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### 4.10 Spurious RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)			
Test Method:	ANSI C63.10-2020 Section 7.8.7.1			
Test Setup:	SGS Test system  Vextor Signal Generator  Spectrum Analyzer  Communication Tester  RF Control Unit  Communication Tester  DC Power  Ground Reference Plane			
Instruments Used:	Refer to section 6 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 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, 3-DH5 of data type is the worst case of 8DPSK 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: A	ppendix			



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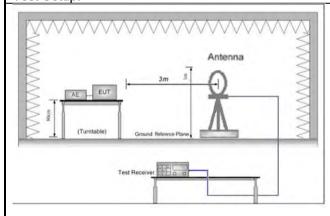
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### 4.11 Radiated Spurious Emissions

	•						
Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205						
Test Method:	ANSI C63.10-2020 Section 6.4 / 6.5 / 6.6						
Test Site:	Measurement Distance: 3	sm (Semi-Anechoic	Chamber)				
Test Frequency:	9kHz ~ 25GHz						
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)		
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300		
	30						
	1.705MHz-30MHz 30						
	30MHz-88MHz 100 40.0 Quasi-peak						
	88MHz-216MHz 150 43.5 Quasi-peak						
	216MHz-960MHz 200 46.0 Quasi-peak						
	960MHz-1GHz	500	54.0	Quasi-peak	3		
	Above 1GHz 500 54.0 Average 3						
	Remark: 15.35(b),Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak experiments are considered as a second considered considered as a second considered considered as a second considered as a second considered considered as a second considered consider						
	level radiated by the device.						

#### Test Setup:



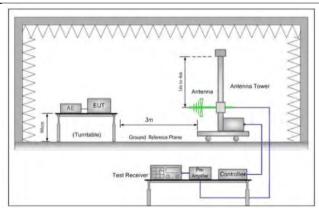


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz



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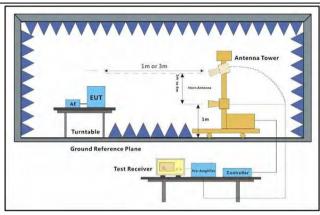


Figure 3. Above 1 GHz

#### Test Procedure:

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation (Distance from antenna to EUT is 1m for measurements >18GHz).
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. 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.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. Test the EUT in the lowest channel, the middle channel ,the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- i. Repeat above procedures until all frequencies measured was complete.
- j. The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported
- k. The disturbance above 18GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed.
- I. At a measurement distance of 1 meter the limit line was increased by 20\*LOG(3/1) = 9.54 dB.

#### **Test Configuration:**

#### Measurements below 30MHz

- RBW = 10 kHz
- VBW = 30 kHz
- Detector = Peak & Average & Quasi-peak



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<ul> <li>Trace mode = max hold Measurements Below 1000MHz</li> <li>RBW = 120 kHz</li> <li>VBW = 300 kHz</li> <li>Detector = Quasi-peak</li> <li>Trace mode = max hold Peak Measurements Above 1000 MHz</li> </ul>				
<ul> <li>RBW = 120 kHz</li> <li>VBW = 300 kHz</li> <li>Detector = Quasi-peak</li> <li>Trace mode = max hold</li> <li>Peak Measurements Above 1000 MHz</li> </ul>				
<ul> <li>VBW = 300 kHz</li> <li>Detector = Quasi-peak</li> <li>Trace mode = max hold</li> <li>Peak Measurements Above 1000 MHz</li> </ul>				
<ul> <li>Detector = Quasi-peak</li> <li>Trace mode = max hold</li> <li>Peak Measurements Above 1000 MHz</li> </ul>				
Trace mode = max hold     Peak Measurements Above 1000 MHz				
Peak Measurements Above 1000 MHz				
DD14/ 4 A 41 A				
• RBW = 1 MHz				
• VBW ≥ 3 MHz				
Detector = Peak				
Sweep time = auto				
Trace mode = max hold				
Average Measurements Above 1000MHz				
Use duty cycle correction factor method per 15.35(c).	Use duty cycle correction factor method per 15.35(c).			
Duty cycle = On time / 100 milliseconds				
On time = $N_1*L_1 + N_2*L_2+N_{N-1}*L_{N-1} + N_N*L_N$				
Where N₁ is number of type 1 pulese, L₁ is length of type 1 pulses, etc.				
Average Value = Peak Value +20*log(Duty cycle).				
Non-hopping transmitting mode with all kind of modulation and all kind of				
Exploratory Test Mode:				
Charge + Transmitting mode.				
Through Pre-scan, find the				
DH5 of data type and GFSK modulation is the worst case.				
Final Test Mode: Pretest the EUT at Charge + Transmitting mode				
For below 1GHz part, through pre-scan, the worst case is the lowest channel.				
Only the worst case is recorded in the report.				
Instruments Used: Refer to section 6 for details				
Test Results: Pass				
The detailed test data see: Appendix				



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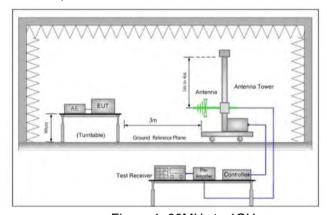
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### 4.12 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10-2020 Section 6.10.5				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Limit:	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		
	Above 1GHz	54.0	Average Value		
	Above IGHZ	74.0	Peak Value		

#### Test Setup:



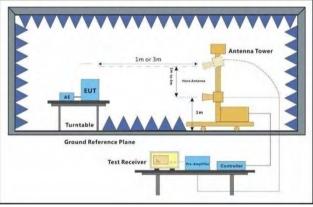


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz

#### Test Procedure:

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified



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	Bandwidth with Maximum Hold Mode.
	g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel
	h. Test the EUT in the lowest channel , the Highest channel
	<ol> <li>The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.</li> </ol>
	j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	<ul> <li>RBW = 120 kHz</li> <li>VBW = 300 kHz</li> <li>Detector = Quasi-peak</li> <li>Trace mode = max hold</li> <li>Peak Measurements Above 1000 MHz</li> <li>RBW = 1 MHz</li> <li>VBW ≥ 3 MHz</li> <li>Detector = Peak</li> <li>Sweep time = auto</li> <li>Trace mode = max hold</li> <li>Average Measurements Above 1000MHz</li> <li>Use duty cycle correction factor method per 15.35(c).</li> <li>Duty cycle = On time / 100 milliseconds</li> <li>On time = N₁*L₁ + N₂*L₂+N<sub>N-1</sub>*L<sub>N-1</sub> + N<sub>N</sub>*L<sub>N</sub></li> <li>Where N₁ is number of type 1 pulese, L₁ is length of type 1 pulses, etc.</li> <li>Average Value = Peak Value +20*log(Duty cycle).</li> </ul>
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type Charge + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case.  Pretest the EUT at Charge + Transmitting mode, Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details
Test Results:	Pass
The detailed test data see	: Appendix



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

No.	Item	Measurement Uncertainty		
1	Radio Frequency	± 7.25 x 10 <sup>-8</sup> GHz		
2	Duty cycle	± 0.37%		
3	Occupied Bandwidth	± 0.2%		
4	RF conducted power	± 0.21dB		
5	RF power density	± 2.84dB		
6	Conducted Spurious emissions	± 0.75dB		
7	Conduction Emission	± 3.0dB (150kHz to 30MHz)		
		± 4.6dB (9kHz to 30MHz)		
		± 4.9dB (30MHz to 1GHz)		
8	Radiated Emission	± 4.9dB (1GHz to 6GHz)		
		± 4.7dB (6GHz to 18GHz)		
		± 5.26dB (Above 18GHz)		

#### Remark:

The Ulab (lab Uncertainty) is less than Ucispr/ETSI (CISPR/ETSI Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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**6** Equipment List

RF Test System							
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)		
MXA signal analyzer	Agilent	N9020A	XAW01-06-07	2023/02/16	2024/02/15		
Measurement Software	Tonscend	JS1120-3 (3.2.22)	XAW02-14-01	NCR	NCR		
RF control unit	Tonscend	JS0806-2	XAW03-37-01	NCR	NCR		
Power Meter	Anritsu	ML2495A	XAW01-25-03	2023/02/16	2024/02/15		
Power Supply	Agilent	66311B	XAW01-17-01	2023/02/16	2024/02/15		
Temperature and humidity meter	MingGao	T809	XAW01-01-16	2022/09/18	2023/09/17		

CE Test System								
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)			
Shielding Room	Brilliant-emc	N/A	XAW04-03-01	N/A	N/A			
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2022/09/08	2023/09/07			
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2022/06/30	2023/06/29			
Temperature and humidity meter	MingGao	TH101B	XAW01-01-02	2022/09/18	2023/09/17			
Measurement Software	Tonscend	TS+ V4.0.0.0	XAW02-07-01	NCR	NCR			
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	XAW01-03-02	2023/02/16	2024/02/15			
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-02	2022/06/30	2023/06/29			



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RE Test System							
Test Equipment	Manufacturer	Model No. Inventory No.		Cal. date (yyyy/mm/dd)			
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2021/09/09	2024/09/08		
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2023/02/16	2024/02/15		
Spectrum Analyzer	ROHDE &SCHWARZ	FSV3044	XAW01-13-05	2023/05/15	2024/05/14		
Test receiver	ROHDE &SCHWARZ	ESR	XAW01-08-01	2022/09/08	2023/09/07		
Receiving antenna (30MHz-3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2022/07/28	2024/07/27		
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2022/07/28	2024/07/27		
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2022/07/23	2024/07/22		
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR		
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR		
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR		
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR		
Amplifier	Tonscend	TAP9K3G32	XAW01-41-01	2023/05/15	2024/05/14		
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2022/09/14	2023/09/13		
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2022/09/14	2023/09/13		
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2022/09/14	2023/09/13		
Temperature and humidity meter	MingGao	TH101B	XAW01-01-02	2022/09/18	2023/09/17		
Measurement Software	Tonscend	TS+ V4.0.0.0	XAW02-05-01	NCR	NCR		
Loop Antenna	Schwarzbeck	FMZB 1519B	XAW01-48-02	2022/05/26	2024/05/25		



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### 7 Photographs - Setup Photos

Refer to Appendix A.2 WLAN Setup Photos.



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# **Appendix**



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# 20dB Emission Bandwidth Test Result

TestMode	Antenna	Frequency[MHz]	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Verdict
DH5	Ant1	2402	0.996	2401.481	2402.477	
		2441	0.954	2440.523	2441.477	
		2480	0.963	2479.526	2480.489	
2DH5	Ant1	2402	1.356	2401.319	2402.675	For
		2441	1.263	2440.361	2441.624	Report
		2480	1.359	2479.316	2480.675	Purpose
3DH5	Ant1	2402	1.290	2401.337	2402.627	
		2441	1.293	2440.352	2441.645	
		2480	1.353	2479.310	2480.663	



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#### **Test Graphs**





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# Occupied Channel Bandwidth Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Verdict	
		2402	0.89407	2401.5498	2402.4439		
DH5	Ant1	2441	0.91401	2440.5450	2441.4590		
		2480	0.88198	2479.5465	2480.4285		
	Ant1		2402	1.2008	2401.3946	2402.5954	For
2DH5		2441	1.1816	2440.4053	2441.5869	Report	
		2480	1.1962	2479.3957	2480.5919	Purpose	
3DH5		2402	1.1967	2401.3988	2402.5955		
	Ant1	2441	1.1906	2440.3951	2441.5857		
		2480	1.2069	2479.3882	2480.5951		



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#### **Test Graphs**





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### Maximum conducted output power Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
	Ant1	2402	3.80	≤20.97	PASS
DH5	Ant1	2441	3.83	≤20.97	PASS
	Ant1	2480	3.68	≤20.97	PASS
	Ant1	2402	2.87	≤20.97	PASS
2DH5	Ant1	2441	2.64	≤20.97	PASS
	Ant1	2480	2.83	≤20.97	PASS
3DH5	Ant1	2402	3.21	≤20.97	PASS
	Ant1	2441	2.65	≤20.97	PASS
	Ant1	2480	3.17	≤20.97	PASS



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### Carrier frequency separation Test Result

TestMode	Antenna	Hop/No-Hop	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Нор	1.016	≥0.996	PASS
2DH5	Ant1	Нор	1.036	≥0.906	PASS
3DH5	Ant1	Hop	1.326	≥0.902	PASS



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#### **Test Graphs**





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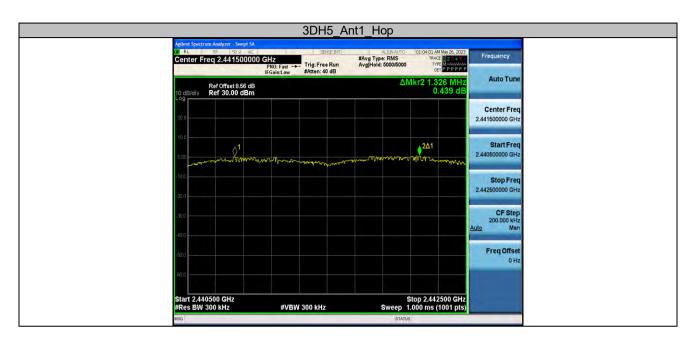
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### Time of occupancy Test Result

TestMode	Antenna	Hop/No- Hop	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Нор	2.897	106.67	0.309	≤0.4	PASS
2DH5	Ant1	Нор	2.903	106.67	0.310	≤0.4	PASS
3DH5	Ant1	Нор	2.904	106.67	0.310	≤0.4	PASS



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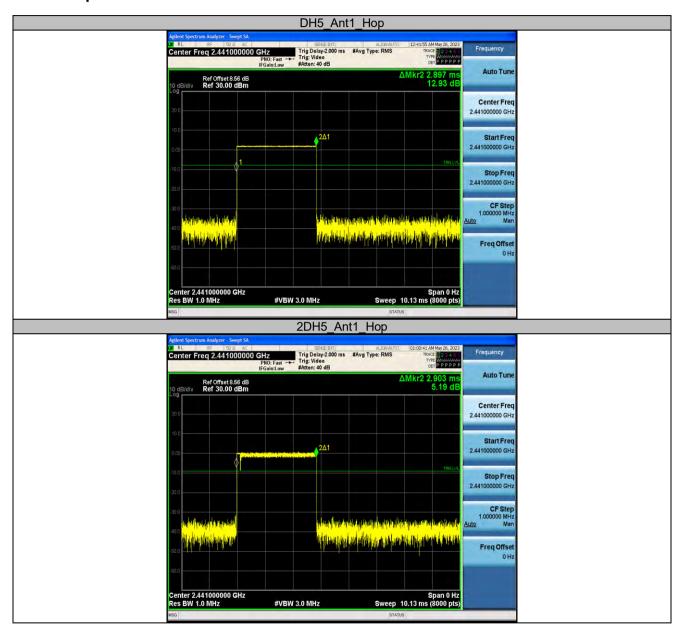


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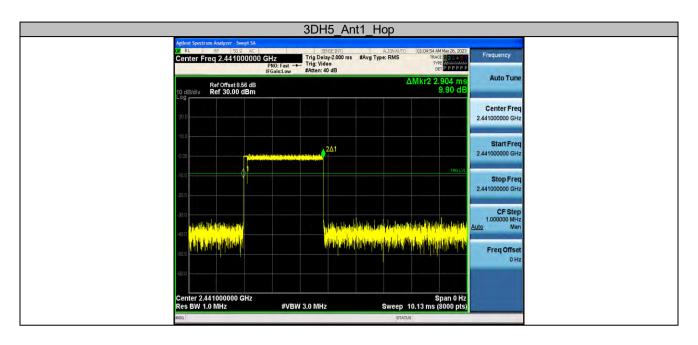
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### Number of hopping channels Test Result

TestMode	Antenna	Hop/No-Hop	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Нор	79	≥15	PASS
2DH5	Ant1	Нор	79	≥15	PASS
3DH5	Ant1	Нор	79	≥15	PASS



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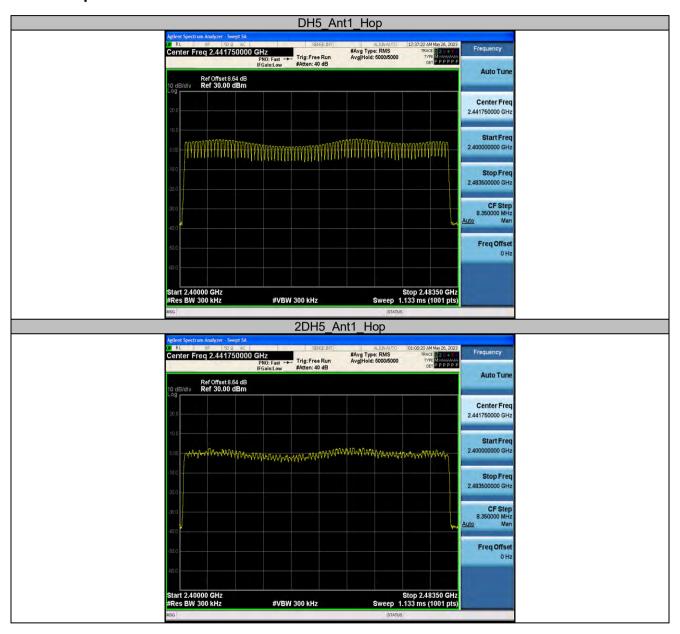


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#### **Test Graphs**





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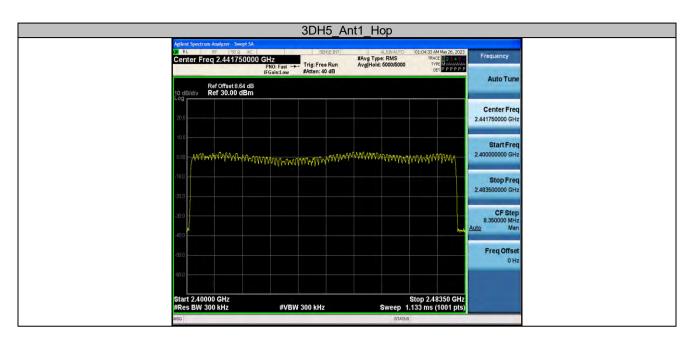
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### Band edge measurements Test Result

TestMode	Antenna	Channel	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
		Low	2402	2.67	-50.78	≤-17.33	PASS
DUE	A := 4.1	High	2480	3.85	-50.92	≤-16.15	PASS
DH5	Ant1	Low	Hop_2402	1.72	-50.77	≤-18.28	PASS
		High	Hop_2480	3.43	-49.91	≤-16.57	PASS
	Ant1	Low	2402	-2.20	-50.92	≤-22.2	PASS
2DH5		High	2480	0.48	-51.07	≤-19.52	PASS
2003		Low	Hop_2402	-3.02	-50.75	≤-23.02	PASS
		High	Hop_2480	-0.58	-50.62	≤-20.58	PASS
	Ant1	Low	2402	-1.25	-50.46	≤-21.25	PASS
3DH5		High	2480	-1.18	-50.12	≤-21.18	PASS
	AIILI	Low	Hop_2402	-2.52	-51.25	≤-22.52	PASS
		High	Hop 2480	-0.04	-50.32	≤-20.04	PASS



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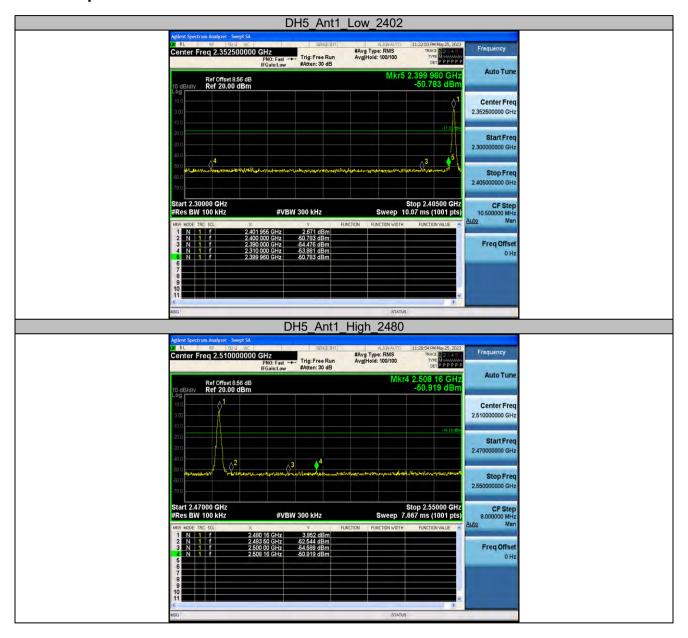


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#### **Test Graphs**





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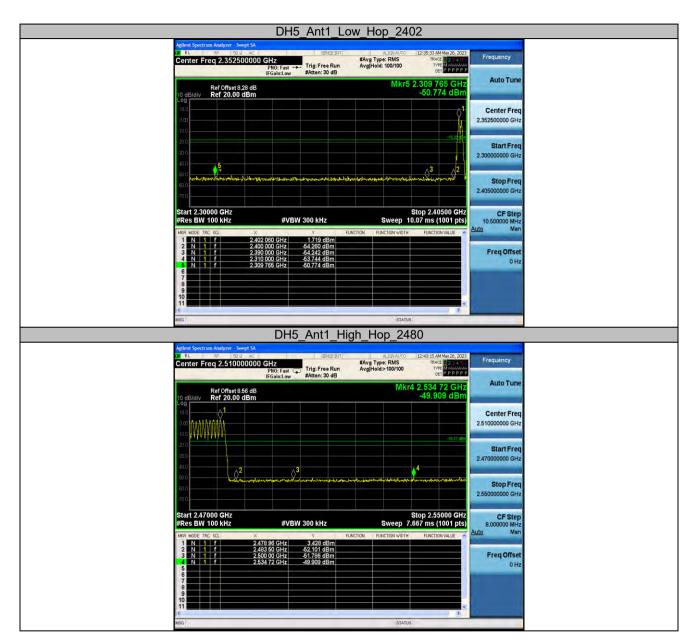
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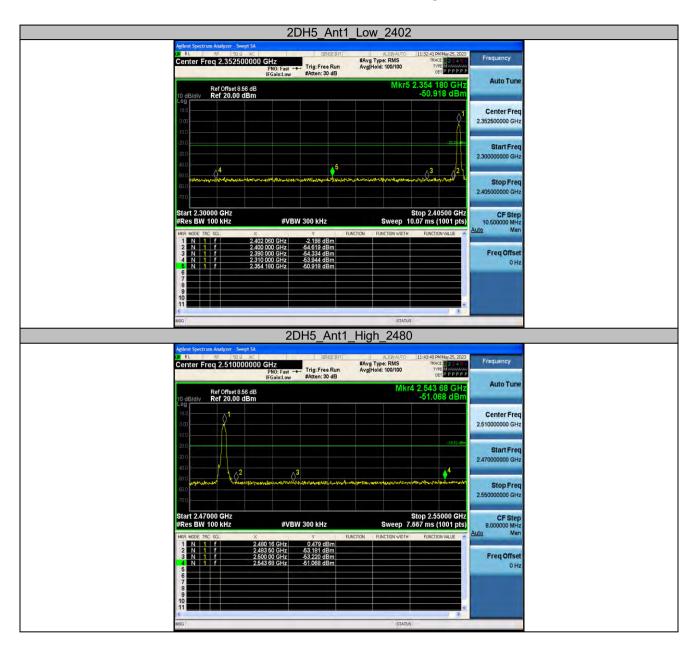
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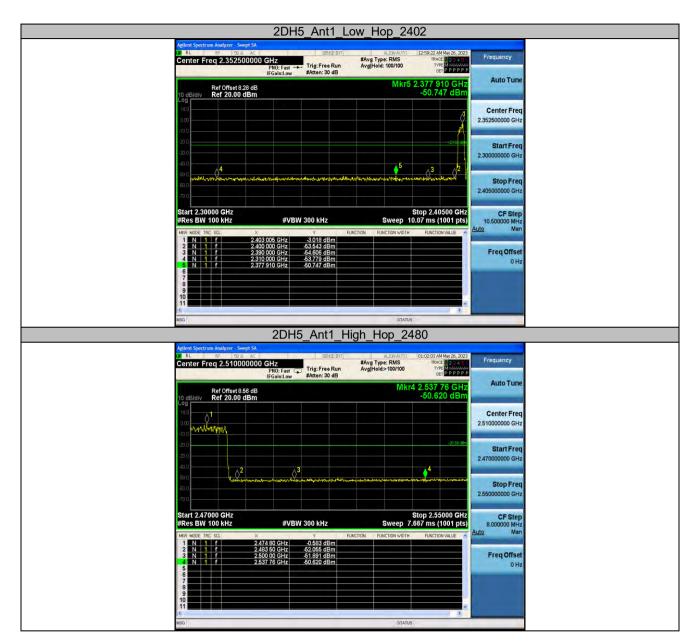
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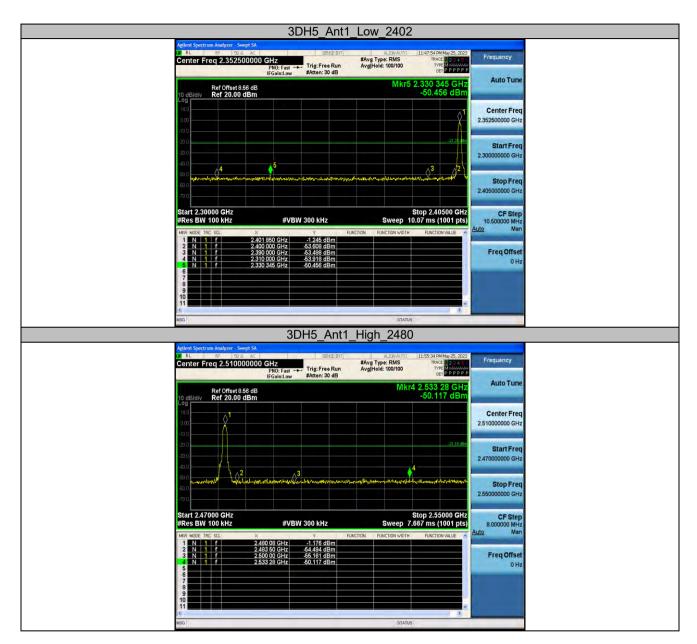
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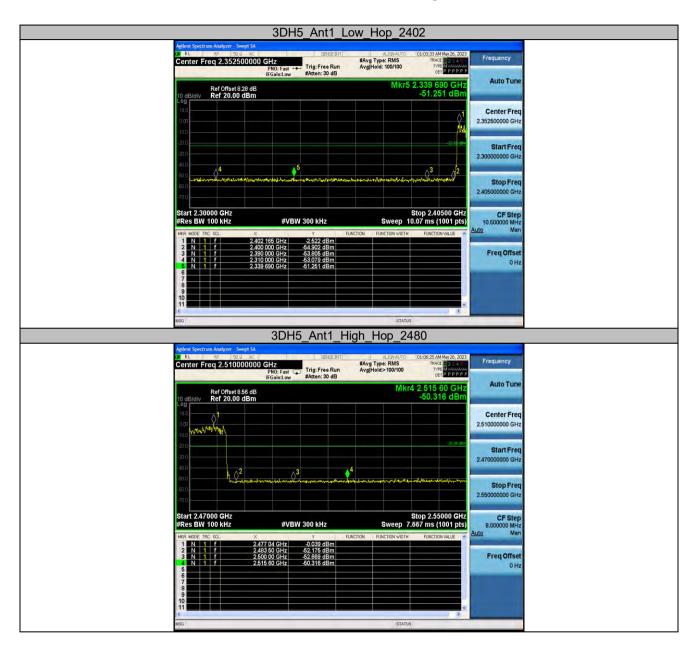
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### **Conducted Spurious Emission** Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
			Reference	2.25	2.25		PASS
		2402	30~1000	2.25	-61.34	≤-17.75	PASS
			1000~26500	2.25	-46.11	≤-17.75	PASS
			Reference	0.90	0.90		PASS
DH5	Ant1	2441	30~1000	0.90	-60.31	≤-19.1	PASS
			1000~26500	0.90	-45.82	≤-19.1	PASS
			Reference	3.01	3.01		PASS
		2480	30~1000	3.01	-60.55	≤-16.99	PASS
			1000~26500	3.01	-45.98	≤-16.99	PASS
	Ant1	2402	Reference	-3.69	-3.69		PASS
			30~1000	-3.69	-60.22	≤-23.69	PASS
			1000~26500	-3.69	-46.79	≤-23.69	PASS
		2441	Reference	-3.95	-3.95		PASS
2DH5			30~1000	-3.95	-60.99	≤-23.95	PASS
			1000~26500	-3.95	-46.32	≤-23.95	PASS
			Reference	-1.89	-1.89		PASS
			30~1000	-1.89	-61.65	≤-21.89	PASS
			1000~26500	-1.89	-45.52	≤-21.89	PASS
		2402	Reference	-0.03	-0.03		PASS
			30~1000	-0.03	-60.54	≤-20.03	PASS
			1000~26500	-0.03	-46.45	≤-20.03	PASS
3DH5		Ant1 2441 2480	Reference	-4.21	-4.21		PASS
	Ant1		30~1000	-4.21	-60.79	≤-24.21	PASS
			1000~26500	-4.21	-46.11	≤-24.21	PASS
			Reference	0.74	0.74		PASS
			30~1000	0.74	-59.86	≤-19.26	PASS
			1000~26500	0.74	-46.27	≤-19.26	PASS



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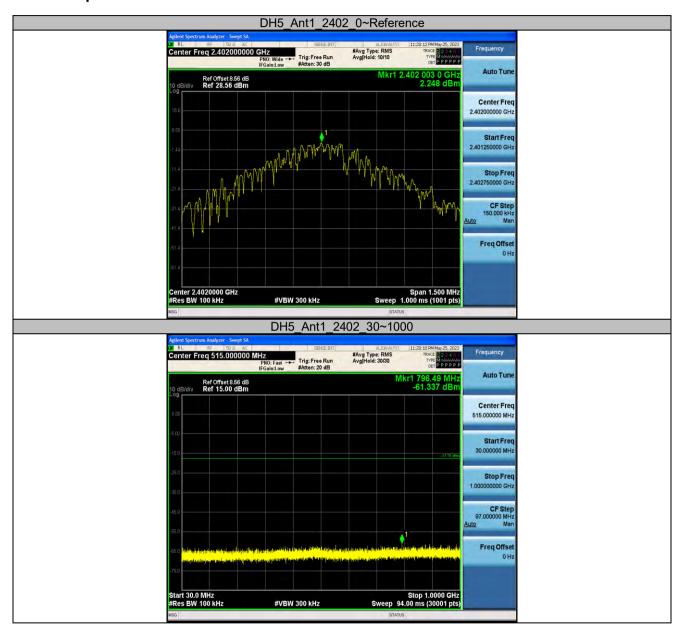


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#### **Test Graphs**





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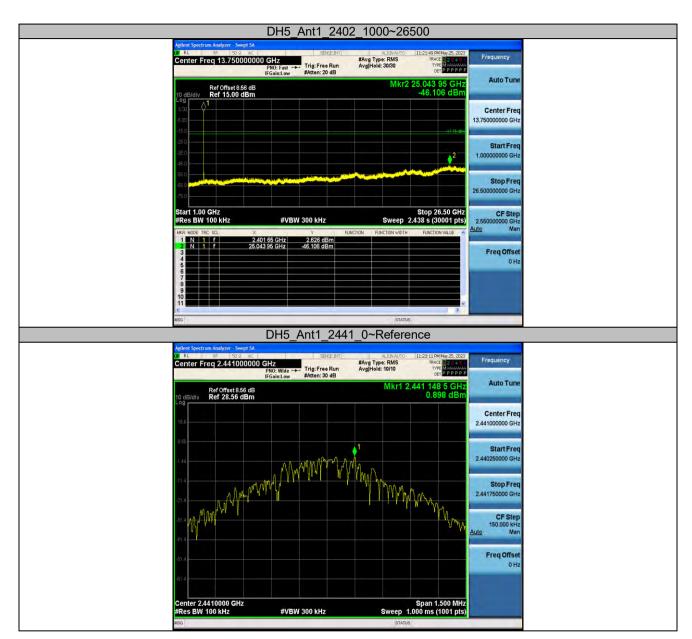
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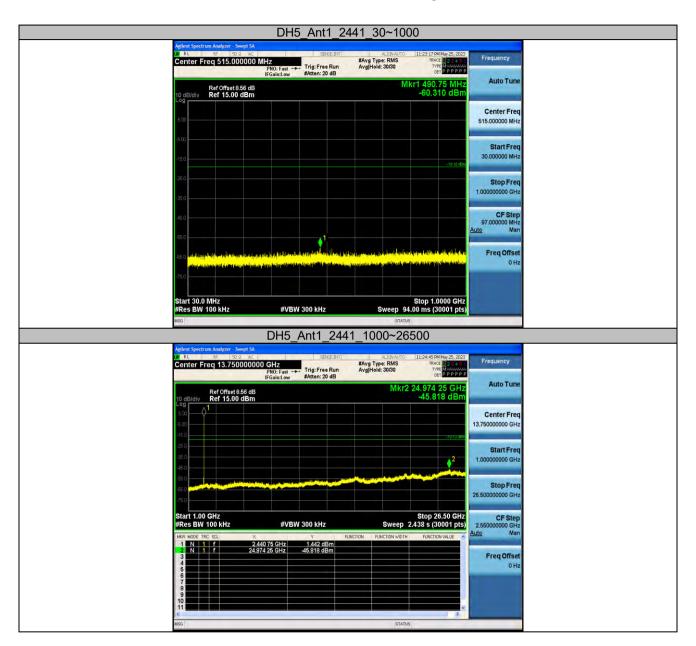
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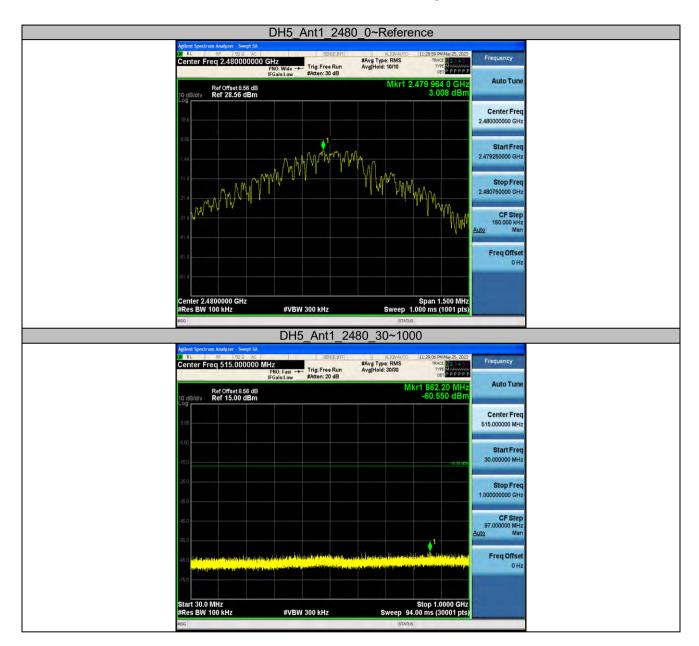
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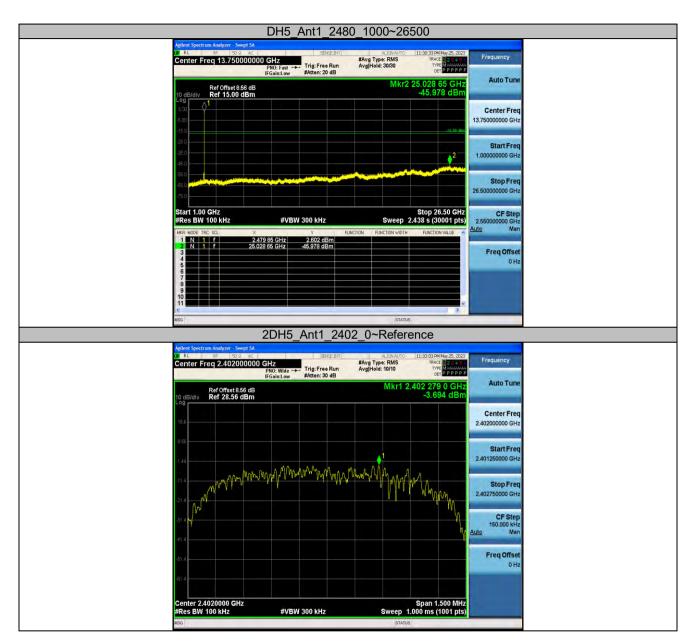
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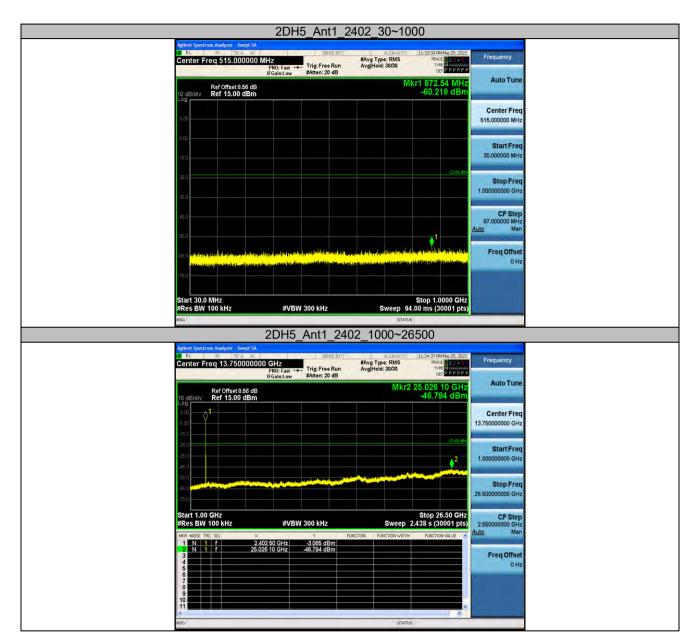
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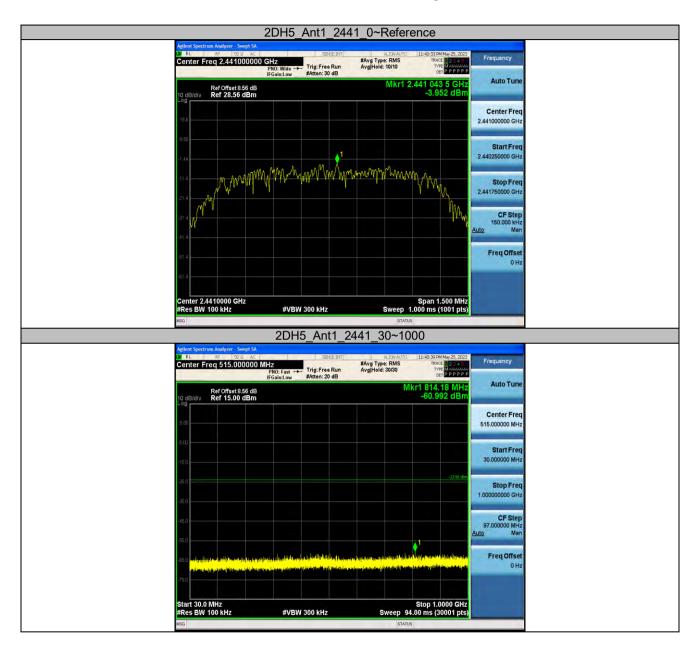
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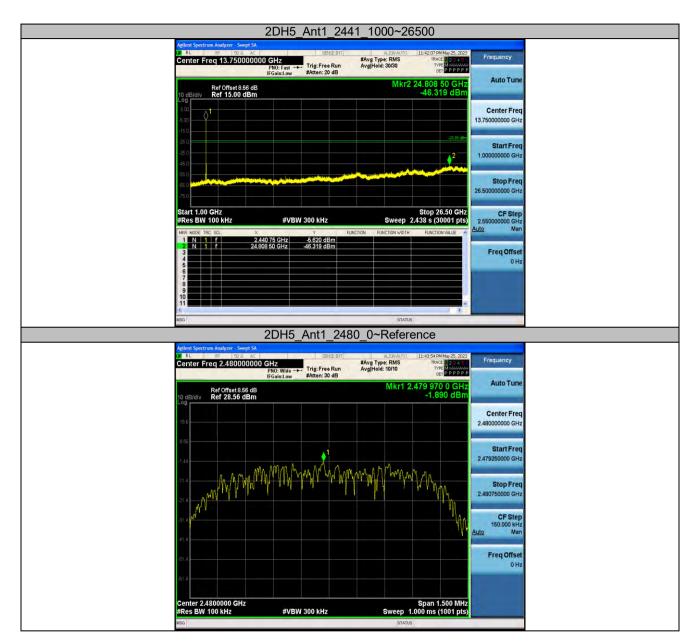
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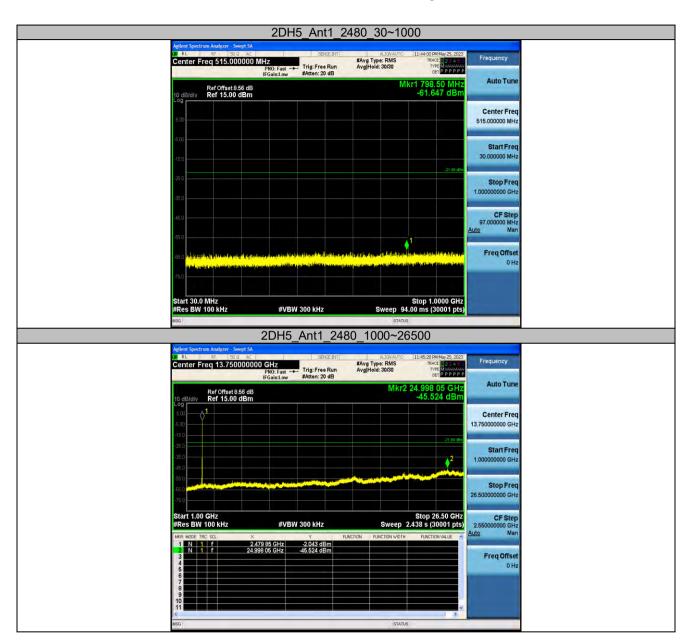
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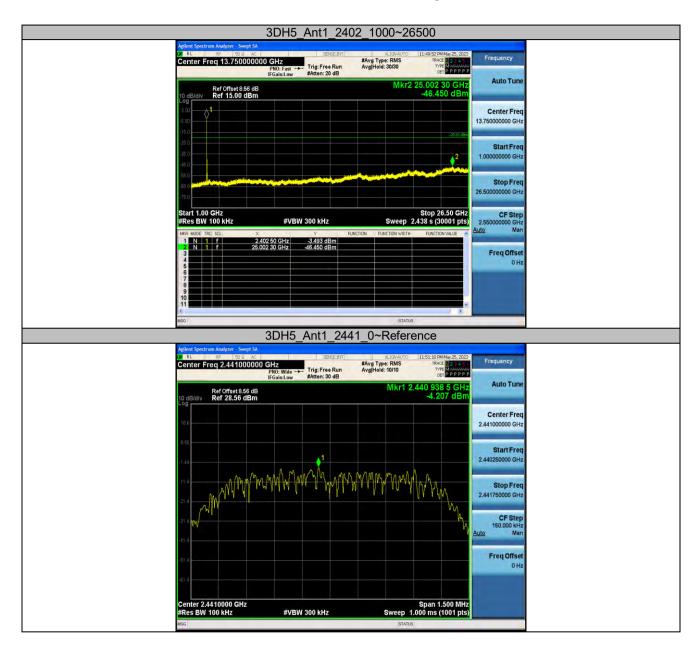
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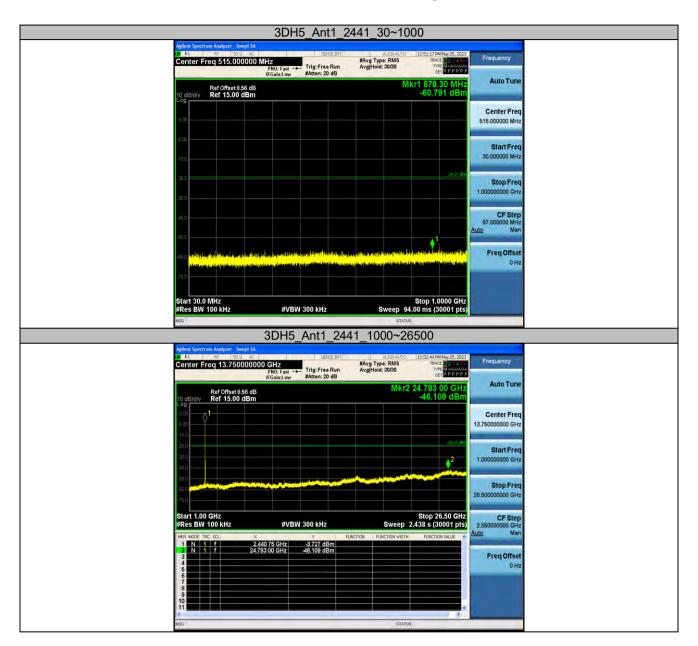
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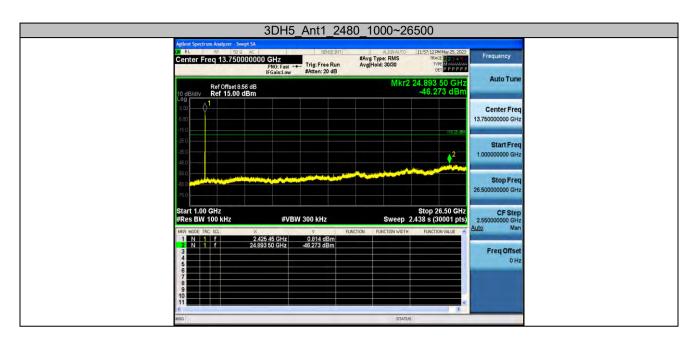
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#### **Duty Cycle** Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
		2402	2.90	9.99	29.03	5.37
DH5	Ant1	2441	2.90	10.00	29.00	5.38
		2480	2.90	10.00	29.00	5.38
		2402	2.81	10.00	28.10	5.51
2DH5	Ant1	2441	2.82	9.99	28.23	5.49
		2480	2.82	10.01	28.17	5.50
		2402	2.81	10.00	28.10	5.51
3DH5	Ant1	2441	2.81	10.00	28.10	5.51
		2480	2.81	10.00	28.10	5.51

Note:

Duty cycle = on time / 100ms = 2 \* 2.90 / 100 = 5.80%

Duty cycle Correction factor = 20\*log(Duty cycle) = -24.73dB



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#### **Test Graphs**





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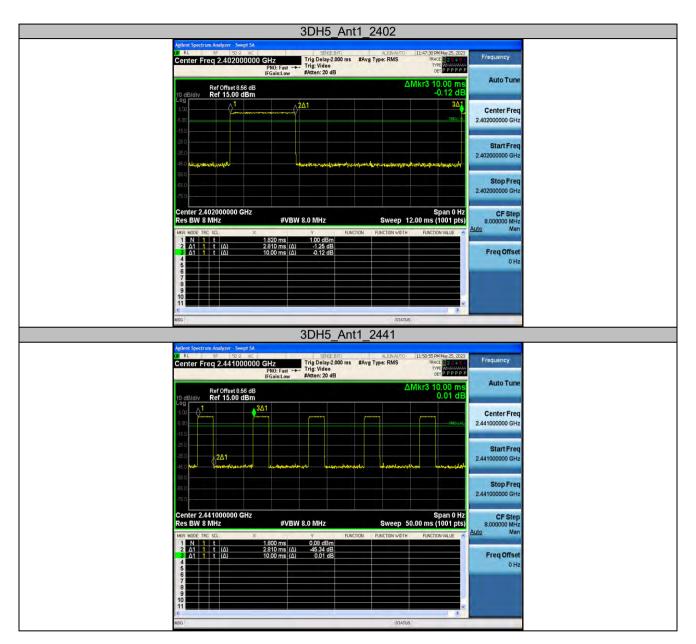
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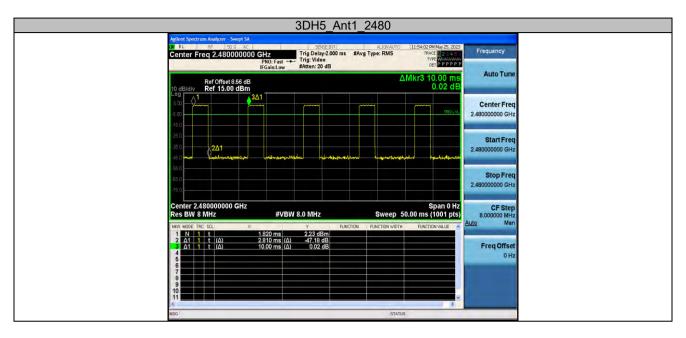
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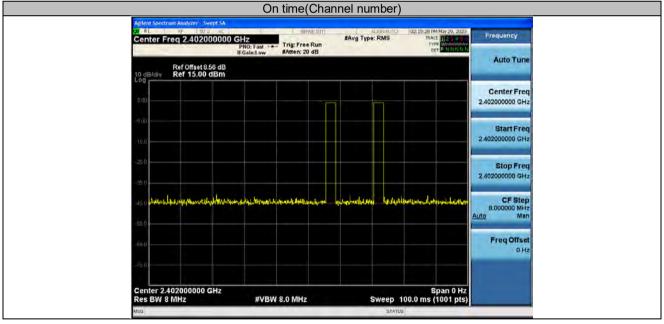


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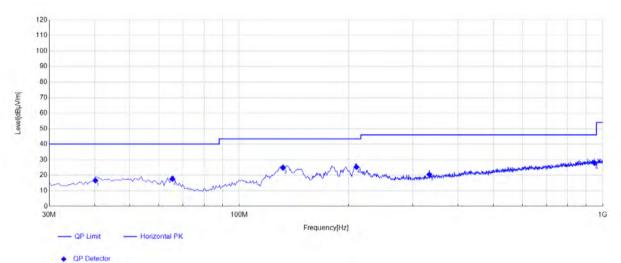
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# Radiated Spurious Emissions Radiated emission below 1GHz

Worst case Mode: GFSK \_ Channel 0



Data L	ist									
NO.	Freq. [MHz]	AF[dB/m]	Factor [dB]	QP Reading [dBµV]	QP Value [dBμV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.1901	13.16	-27.96	31.46	16.66	40.00	23.34	336	212	Horizontal
2	65.4227	12.02	-27.63	33.26	17.65	40.00	22.35	258	284	Horizontal
3	131.901	8.17	-26.65	43.28	24.80	43.50	18.70	148	264	Horizontal
4	210.025	11.20	-26.89	40.98	25.29	43.50	18.21	226	156	Horizontal
5	333.2766	14.17	-25.81	32.12	20.48	46.00	25.52	332	254	Horizontal
6	948.079	21.74	-23.56	29.82	28.00	46.00	18.00	201	197	Horizontal



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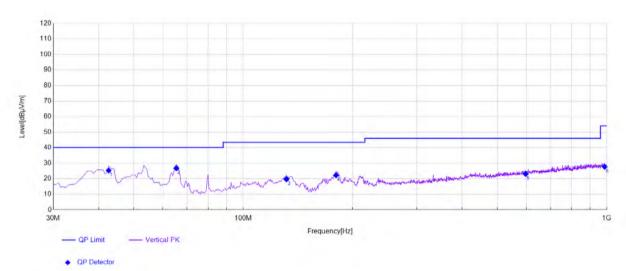
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Data L	ist									
NO.	Freq. [MHz]	AF[dB/m]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	42.6163	13.62	-27.90	39.59	25.31	40.00	14.69	163	285	Vertical
2	65.4227	12.02	-27.63	42.38	26.77	40.00	13.23	367	202	Vertical
3	131.4157	8.02	-26.66	38.32	19.68	43.50	23.82	196	279	Vertical
4	179.94	9.19	-26.45	39.47	22.21	43.50	21.29	332	300	Vertical
5	597.7339	18.65	-24.78	29.25	23.12	46.00	22.88	259	4	Vertical
6	986.4132	22.54	-23.60	28.77	27.71	54.00	26.29	179	13	Vertical

#### Remark:

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

Value = Reading(dB $\mu$ V) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit( $dB\mu V/m$ ) – Value( $dB\mu V/m$ )

2) All channels have been tested, but only the worst case data displayed in this report.



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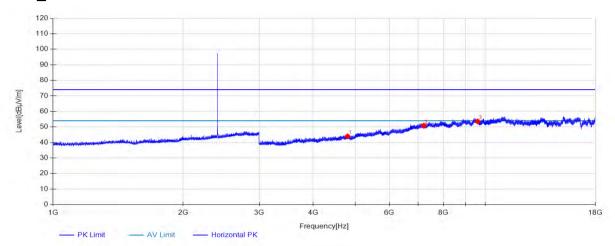


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## **Transmitter emission Above 1GHz GFSK Channel 0**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	4804	56.13	30.78	-42.95	43.96	74.00	30.04	384	228	Horizontal		
2	4804	-	-		19.23	54.00	34.77	1	-	-		
3	7206	52.97	36.56	-38.71	50.82	74.00	23.18	263	239	Horizontal		
4	7206	-	-	-	26.09	54.00	27.91	-	-	-		
5	9608	51.41	37.85	-35.70	53.56	74.00	20.44	214	142	Horizontal		
6	9608	-	-	-	28.83	54.00	25.17	-	-	-		



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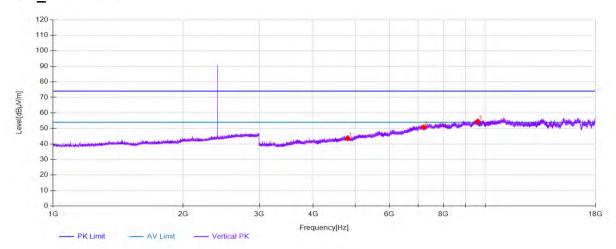


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#### **GFSK\_Channel 0**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	4804	55.82	30.78	-42.95	43.65	74.00	30.35	178	338	Vertical		
2	4804	-	-	-	18.92	54.00	35.08	-	-	-		
3	7206	52.87	36.56	-38.71	50.72	74.00	23.28	226	327	Vertical		
4	7206	-	-	-	25.99	54.00	28.01	-	-	-		
5	9608	52.36	37.85	-35.70	54.51	74.00	19.49	354	112	Vertical		
6	9608	-	-	-	29.78	54.00	24.22	-	-	-		



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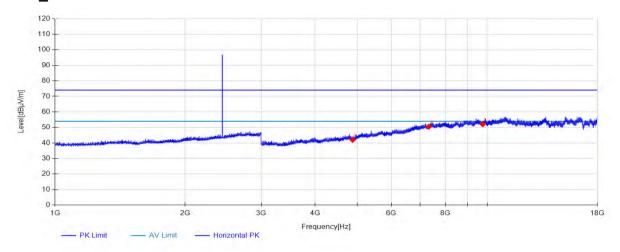


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#### **GFSK\_Channel 39**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	4882	54.11	30.79	-42.89	42.01	74.00	31.99	101	320	Horizontal		
2	4882	-	-	-	17.28	54.00	36.72	-	-	-		
3	7323	52.76	36.45	-38.74	50.47	74.00	23.53	245	100	Horizontal		
4	7323	-	-	-	25.74	54.00	28.26	-	-	-		
5	9764	49.68	38.36	-35.94	52.10	74.00	21.90	136	54	Horizontal		
6	9764	-	-	-	27.37	54.00	26.63	-	-	-		



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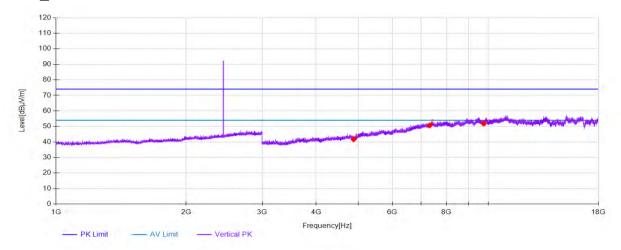


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#### **GFSK\_Channel 39**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	4882	53.83	30.79	-42.89	41.73	74.00	32.27	399	317	Vertical		
2	4882	-	-	-	17.00	54.00	37.00	-	-	-		
3	7323	53.02	36.45	-38.74	50.73	74.00	23.27	378	56	Vertical		
4	7323	-	-	-	26.00	54.00	28.00	-	-	-		
5	9764	49.39	38.36	-35.94	51.81	74.00	22.19	233	22	Vertical		
6	9764	-	-	-	27.08	54.00	26.92	-	-	-		



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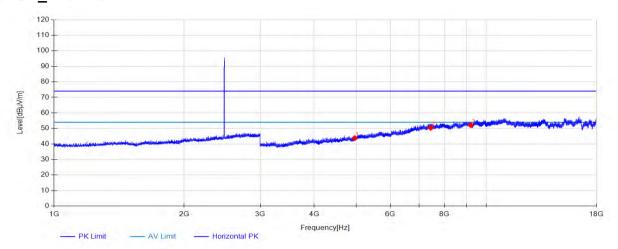


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#### **GFSK\_Channel 78**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	4960	55.49	31.04	-42.78	43.75	74.00	30.25	102	284	Horizontal		
2	4960	-	-	-	19.02	54.00	34.98	-	-	-		
3	7440	51.90	36.78	-38.28	50.40	74.00	23.60	277	12	Horizontal		
4	7440	-	-	-	25.67	54.00	28.33	-	-	-		
5	9220	50.61	37.50	-36.04	52.07	74.00	21.93	274	358	Horizontal		
6	9220	-	-	-	27.34	54.00	26.66	-	-	-		



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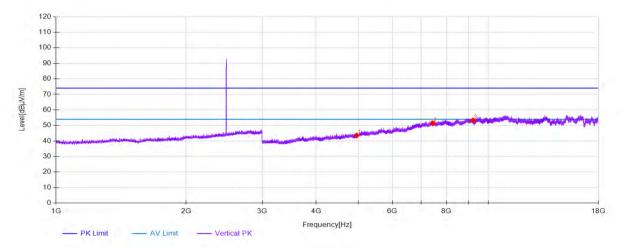


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#### **GFSK\_Channel 78**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	4960	55.30	31.04	-42.78	43.56	74.00	30.44	398	325	Vertical		
2	4960	-	-	-	18.83	54.00	35.17	-	-	-		
3	7440	52.87	36.78	-38.28	51.37	74.00	22.63	333	12	Vertical		
4	7440	-	-	-	26.64	54.00	27.36	-	-	-		
5	9220	51.75	37.50	-36.04	53.21	74.00	20.79	246	206	Vertical		
6	9220	-	-	-	28.48	54.00	25.52	-	-	-		

#### Remark:

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

Level = Reading( $dB\mu V$ ) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit( $dB\mu V/m$ ) – Level( $dB\mu V/m$ )

2) All channels have been tested, but only the worst case data displayed in this report.



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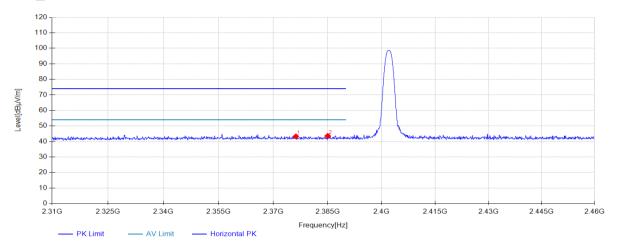


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## Restricted bands around fundamental frequency GFSK\_Channel 0



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	2376.2581	38.83	27.49	-23.04	43.28	74.00	30.72	132	218	Horizontal		
2	2376.2581	-	-	-	18.55	54.00	35.45	-	-	-		
3	2385.0375	39.15	27.46	-23.02	43.59	74.00	30.41	132	218	Horizontal		
4	2385.0375	-	-	-	18.86	54.00	35.14	-	-	-		



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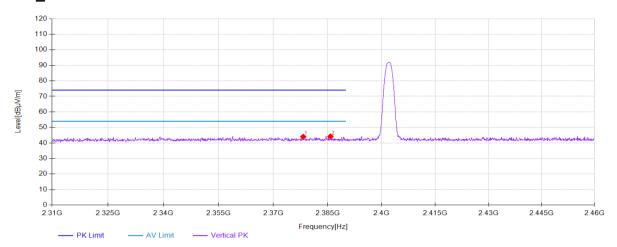


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#### **GFSK\_Channel 0**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	2378.2841	39.57	27.49	-23.03	44.03	74.00	29.97	389	212	Vertical		
2	2378.2841	-	-	-	19.30	54.00	34.70	-	-	-		
3	2385.7879	39.73	27.46	-23.02	44.17	74.00	29.83	389	212	Vertical		
4	2385.7879	-	-	-	19.44	54.00	34.56	-	-	-		



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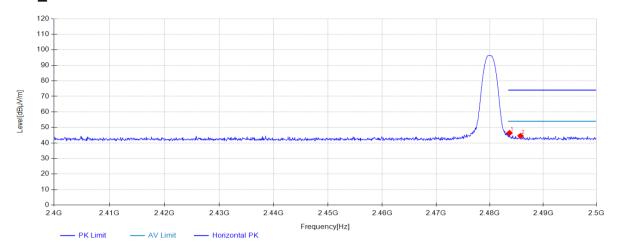


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#### **GFSK\_Channel 78**



Data	Data List											
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity		
1	2483.6918	41.83	27.73	-23.12	46.44	74.00	27.56	128	215	Horizontal		
2	2483.6918	-	-	-	21.71	54.00	32.29	-	-	-		
3	2485.7429	39.99	27.74	-23.12	44.61	74.00	29.39	128	215	Horizontal		
4	2485.7429	-	-	-	19.88	54.00	34.12	-	-	-		



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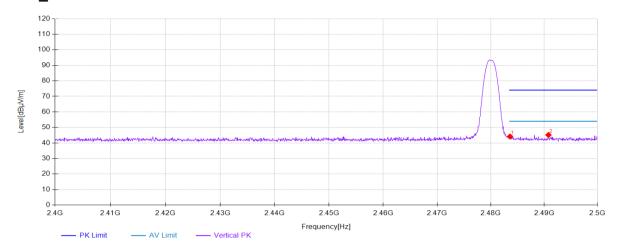


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#### **GFSK\_Channel 78**



Data List										
NO.	Frequency [MHz]	Reading [dBµV]	AF[dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2483.5918	39.57	27.73	-23.12	44.18	74.00	29.82	392	150	Vertical
2	2483.5918	-	-	-	19.45	54.00	34.55	-	-	-
3	2490.7954	40.53	27.76	-23.13	45.16	74.00	28.84	392	150	Vertical
4	2490.7954	-	-	-	20.43	54.00	33.57	1	-	-

#### Remark:

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

Level = Reading( $dB\mu V$ ) + AF(dB/m) + Factor(dB):

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit( $dB\mu V/m$ ) – Level( $dB\mu V/m$ )

---End of Report---



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