Shenzhen Huaxia Testing Technology Co., Ltd.

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

TEST REPORT

Report No.:	CQASZ20240901961E-01
Applicant:	Innovative Eyewear, Inc
Address of Applicant:	11900 Biscayne Bl, Suite 630, North Miami, FL 33181, United States
Equipment Under Test (EUT):	
EUT Name:	Smart Eyewear
Model No.:	LCD008-10, LCD010-10, LCD010-11, LCD010-20, LCD010-21, LCD010-30, LCD010-31, LCD010-40, LCD010-41
Test Model No.:	LCD008-10
Brand Name:	Lucyd Reebok
IC:	30961-LCD008
Standards:	RSS-247 Issue 3 August 2023
	RSS-GEN Issue 5 Amd 2 February 2021
Date of Receipt:	2024-09-10
Date of Test:	2024-09-10 to 2024-09-19
Date of Issue:	2024-09-27
Test Result:	**PASS***

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

Tested By: lewis zhou

(Lewis Zhou)

Reviewed By: Timo Lei

(Timo Lei)

Approved By: Alex

(Alex Wang)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20240901961E-01	Rev.01	Initial report	2024-09-27

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	RSS-Gen Issue 5	ANSI C63.10: 2013	PASS
Conducted Emission	RSS-Gen Issue 5	ANSI C63.10: 2013	PASS
Maximum Peak Output Power & EIRP	RSS 247 5.4(b)	RSS-Gen Issue 5 & ANSI C63.10: 2013	PASS
20dB Occupied Bandwidth	RSS 247 5.1(a)	RSS-Gen Issue 5	PASS
99% Occupied Bandwidth	RSS-Gen Issue 5	RSS-Gen Issue 5	PASS
Carrier Frequencies Separated	RSS 247 5.1(b)	ANSI C63.10: 2013	PASS
Hopping Channel Number	RSS 247 5.1(d)	ANSI C63.10: 2013	PASS
Dwell Time	RSS 247 5.1(d)	ANSI C63.10: 2013	PASS
Band-edge for RF Transmit Conducted Emissions	RSS 247 5.5	ANSI C63.10: 2013	PASS
Spurious RF Transmit Conducted Emissions	RSS 247 5.5	ANSI C63.10: 2013	PASS
Pseudorandom Frequency Hopping Sequence	RSS 247 5.1(b)	ANSI C63.10: 2013	PASS
Radiated Transmit Spurious Emissions	RSS-Gen Issue 5	RSS-Gen Issue 5 & ANSI C63.10: 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	RSS-Gen Issue 5	RSS-Gen Issue 5 & ANSI C63.10: 2013	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	Innovative Eyewear, Inc
Address of Applicant:	11900 Biscayne Bl, Suite 630, North Miami, FL 33181, United States
Manufacturer:	Shenzhen Gonbes Technology Co. Ltd
Address of Manufacturer:	RM501, Bldg 3, Mengliyuan Industrial Park, 124 Yousong Rd, Longhua Str, Longhua Dist, Shenzhen, Guangdong Province, 518000, CHINA
Factory:	Shenzhen Gonbes Technology Co. Ltd
Address of Factory:	RM501, Bldg 3, Mengliyuan Industrial Park, 124 Yousong Rd, Longhua Str, Longhua Dist, Shenzhen, Guangdong Province, 518000, CHINA

4.2 General Description of EUT

Product Name:	Smart Eyewear
Model No.:	LCD008-10, LCD010-10, LCD010-11, LCD010-20, LCD010-21, LCD010-30, LCD010-31, LCD010-40, LCD010-41
Test Model No.:	LCD008-10
Trade Mark:	Lucyd Reebok
Software Version:	GBS_ATS3025_GK28_V2.2_20240806.fw
Hardware Version:	GK28(ATS3025)-V1.1
Test sample SN:	41526668963
Power Supply:	Li-ion battery: DC 3.7V 180mAh, Charge by DC 5V for adapter

4.3 Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.3
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☒ Portable
Test Software of EUT:	FCC
Antenna Type:	Chip antenna
Antenna Gain:	1.24dBi
Simultaneous Transmission	☐ Simultaneous TX is supported and evaluated in this report. ☒ Simultaneous TX is not supported.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz
16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

Note:
In RSS-Gen, 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

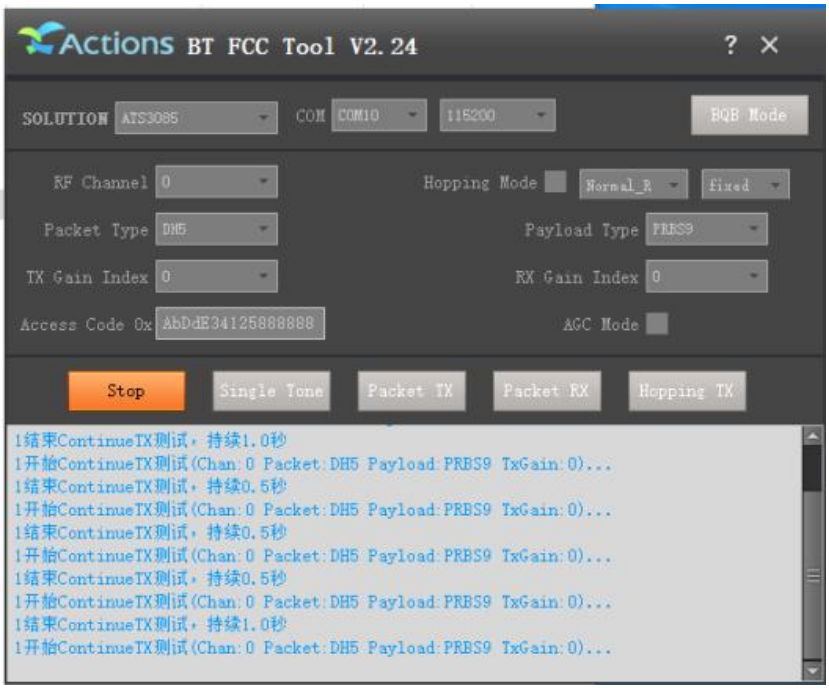
4.4 Additional Instructions

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 lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.

Mode	Channel	Frequency(MHz)
DH1/DH3/DH5	CH0	2402
	CH39	2441
	CH78	2480
2DH1/2DH3/2DH5	CH0	2402
	CH39	2441
	CH78	2480
3DH1/3DH3/3DH5	CH0	2402
	CH39	2441
	CH78	2480

Run Software:



4.5 Test Environment

Operating Environment:	
Radiated Emissions:	
Temperature:	25.3 °C
Humidity:	55 % RH
Atmospheric Pressure:	1009 mbar
Conducted Emissions:	
Temperature:	25.6 °C
Humidity:	60 % RH
Atmospheric Pressure:	1009 mbar
Radio conducted item test (RF Conducted test room):	
Temperature:	25.2 °C
Humidity:	50 % RH
Atmospheric Pressure:	1009 mbar
Test mode:	
Test Mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.

4.6 Description of Support Units

The EUT has been tested with associated equipment below.

1）Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Adapter	Mi	/	/	CQA

2) Cable

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

4.7 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.

Hereafter the best measurement capability for CQA laboratory is reported:

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

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

4.8 Test Location

Shenzhen Huaxia Testing Technology Co., Ltd.

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

4.9 Test Facility

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

ISED#: 22984

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements.

CAB identifier number: CN0055

- **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

- **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.

4.10 Equipment List

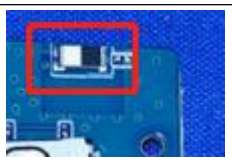
Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU26	CQA-038	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU40	CQA-075	2024/9/2	2025/9/1
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2024/9/2	2025/9/1
Preamplifier	EMCI	EMC184055SE	CQA-089	2024/9/2	2025/9/1
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2024/9/2	2025/9/1
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2024/9/2	2025/9/1
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2024/9/2	2025/9/1
Power meter	R&S	NRVD	CQA-029	2024/9/2	2025/9/1
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2024/9/2	2025/9/1
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
LISN	R&S	ENV216	CQA-003	2024/9/2	2025/9/1
Coaxial cable	CQA	N/A	CQA-C009	2024/9/2	2025/9/1
DC power	KEYSIGHT	E3631A	CQA-028	2024/9/2	2025/9/1

Test software:

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

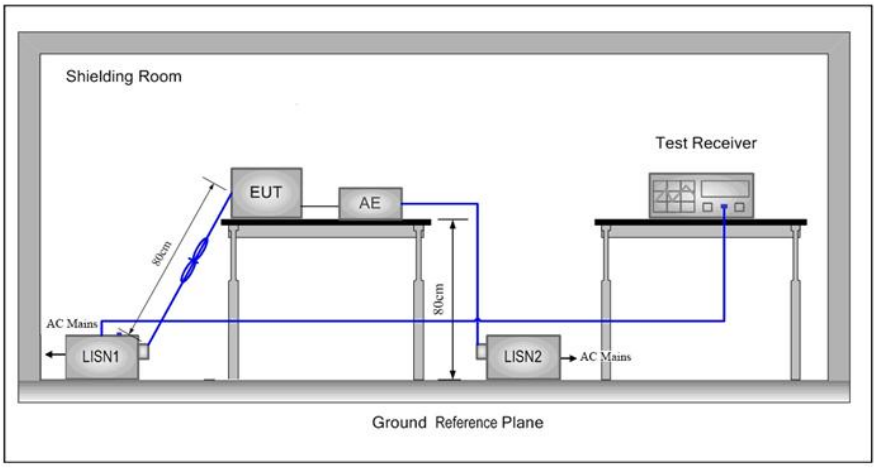
5 Test Results and Measurement Data

5.1 Antenna Requirement

Standard Requirement:	RSS-Gen Issue 5
EUT Antenna:	
The antenna is Chip antenna. The connection/connection type between the antenna to the EUT's antenna port is: permanently attachment. This is either permanently attachment or a unique coupling that satisfies the requirement.	

5.2 Conducted Emissions

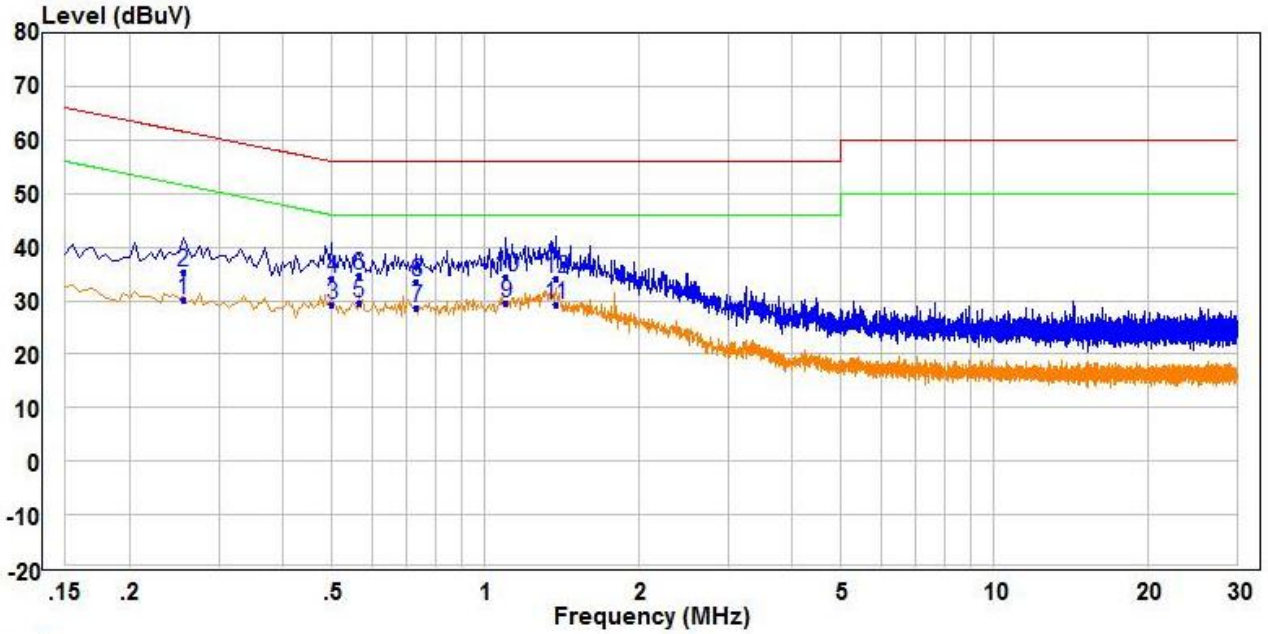
<table>
<tr><td>Test Requirement:</td><td>RSS-Gen Issue 5</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013 & RSS-Gen Issue 5</td></tr>
<tr><td>Test Frequency Range:</td><td>150kHz to 30MHz</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test Procedure:</td><td>1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</td></tr>
</table>

Test Setup:	

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

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.255	20.68	9.54	30.22	51.59	-21.37	Average	Line
2		0.255	25.72	9.54	35.26	61.59	-26.33	QP	Line
3		0.500	19.57	9.70	29.27	46.00	-16.73	Average	Line
4		0.500	24.39	9.70	34.09	56.00	-21.91	QP	Line
5	PP	0.565	19.74	9.77	29.51	46.00	-16.49	Average	Line
6	QP	0.565	25.01	9.77	34.78	56.00	-21.22	QP	Line
7		0.735	18.73	9.88	28.61	46.00	-17.39	Average	Line
8		0.735	23.53	9.88	33.41	56.00	-22.59	QP	Line
9		1.100	19.50	9.97	29.47	46.00	-16.53	Average	Line
10		1.100	24.54	9.97	34.51	56.00	-21.49	QP	Line
11		1.375	18.58	10.59	29.17	46.00	-16.83	Average	Line
12		1.375	23.66	10.59	34.25	56.00	-21.75	QP	Line

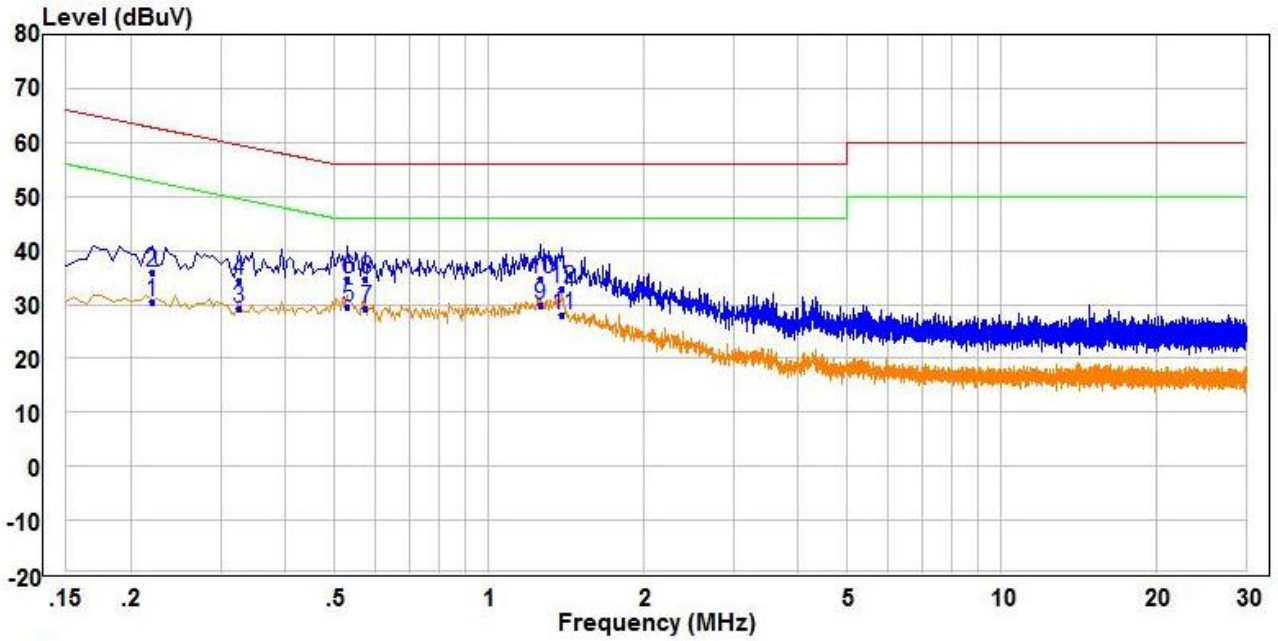
Remark:

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

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:



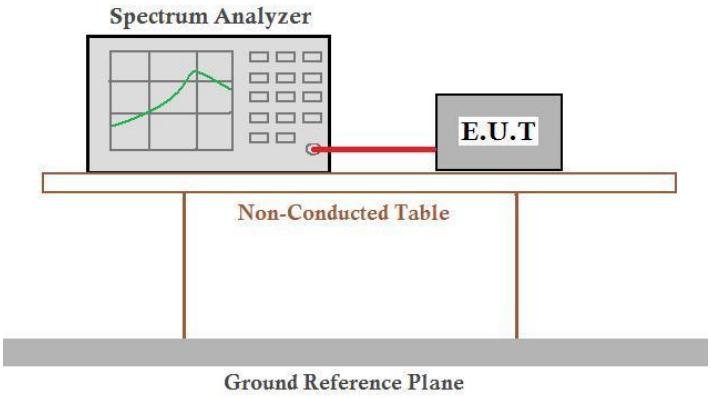
		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.220	20.87	9.58	30.45	52.82	-22.37	Average	Neutral
2		0.220	26.28	9.58	35.86	62.82	-26.96	QP	Neutral
3		0.325	19.83	9.51	29.34	49.58	-20.24	Average	Neutral
4		0.325	24.94	9.51	34.45	59.58	-25.13	QP	Neutral
5		0.530	19.85	9.73	29.58	46.00	-16.42	Average	Neutral
6		0.530	25.03	9.73	34.76	56.00	-21.24	QP	Neutral
7		0.575	19.48	9.78	29.26	46.00	-16.74	Average	Neutral
8		0.575	24.81	9.78	34.59	56.00	-21.41	QP	Neutral
9	PP	1.260	20.02	9.71	29.73	46.00	-16.27	Average	Neutral
10	QP	1.260	25.16	9.71	34.87	56.00	-21.13	QP	Neutral
11		1.390	18.34	9.72	28.06	46.00	-17.94	Average	Neutral
12		1.390	23.07	9.72	32.79	56.00	-23.21	QP	Neutral

Remark:

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

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Conducted Peak Output Power & EIRP

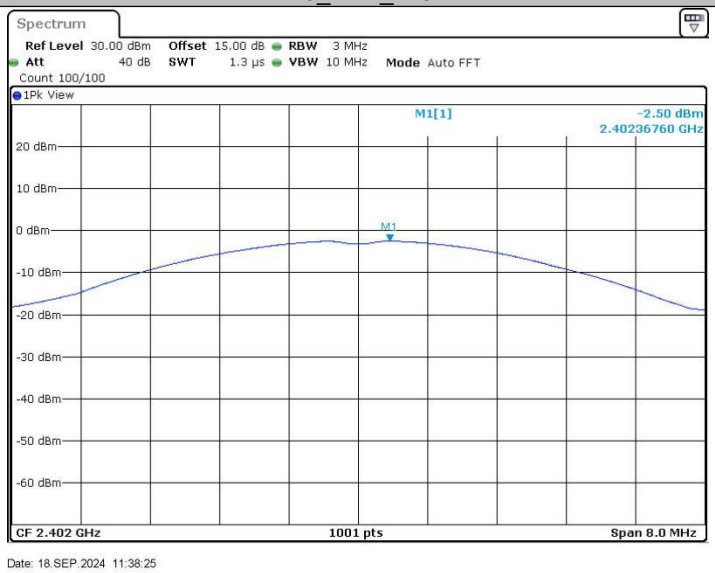
Test Requirement:	RSS 247 5.4(2)
Test Method:	RSS-Gen Issue 5 & ANSI C63.10: 2013
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Conducted Peak Output Power Limit:	0.125W/21dBm
EIRP	4W/36dBm
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

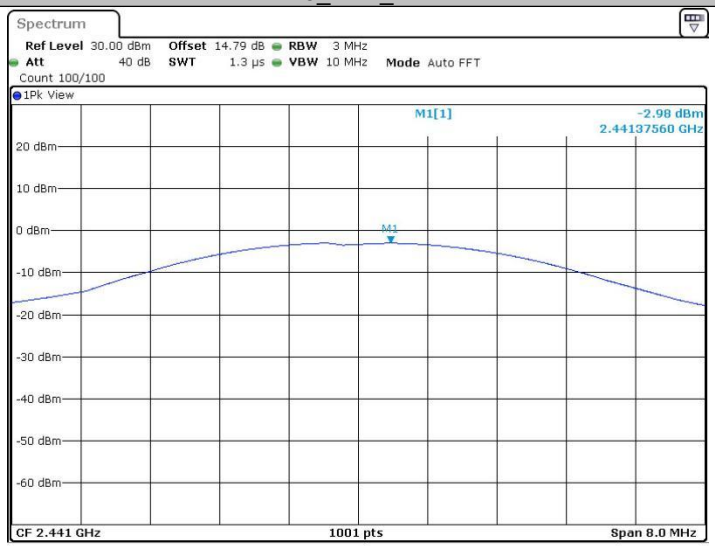
GFSK mode					
Test channel	Peak Output Power (dBm)	Limit (dBm)	EIRP (dBm)	Limit (dBm)	Result
Lowest	-2.5	21.00	-1.26	36.00	Pass
Middle	-2.98	21.00	-1.74	36.00	Pass
Highest	-1.19	21.00	0.05	36.00	Pass
π/4DQPSK mode					
Test channel	Peak Output Power (dBm)	Limit (dBm)	EIRP (dBm)	Limit (dBm)	Result
Lowest	-2.34	21.00	-1.1	36.00	Pass
Middle	-2.78	21.00	-1.54	36.00	Pass
Highest	-0.95	21.00	0.29	36.00	Pass
8DPSK mode					
Test channel	Peak Output Power (dBm)	Limit (dBm)	EIRP (dBm)	Limit (dBm)	Result
Lowest	-2.44	21.00	-1.2	36.00	Pass
Middle	-2.65	21.00	-1.41	36.00	Pass
Highest	-1.09	21.00	0.15	36.00	Pass

Test plot as follows:

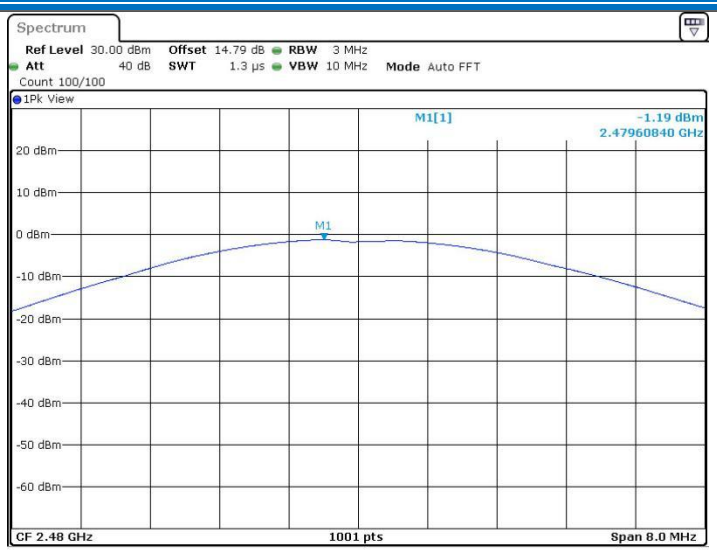
DH5_Ant1_2402



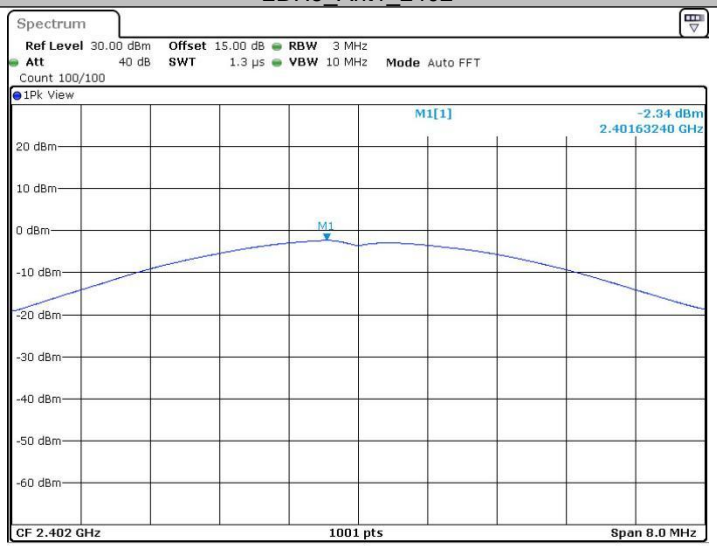
DH5_Ant1_2441



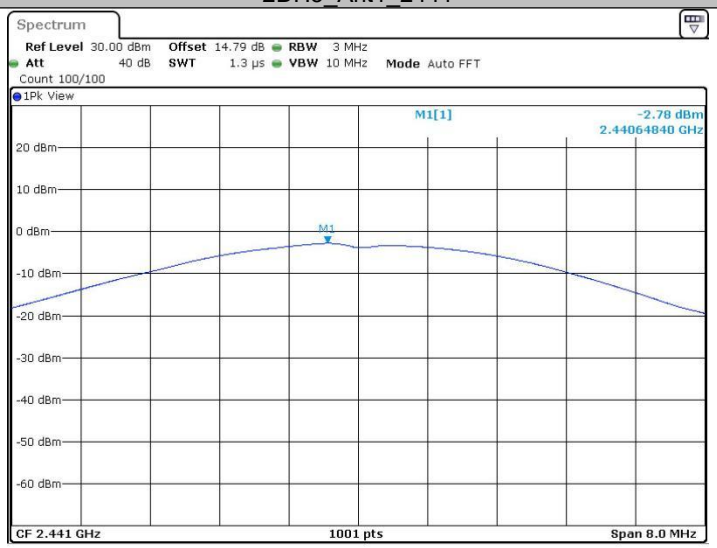
DH5_Ant1_2480



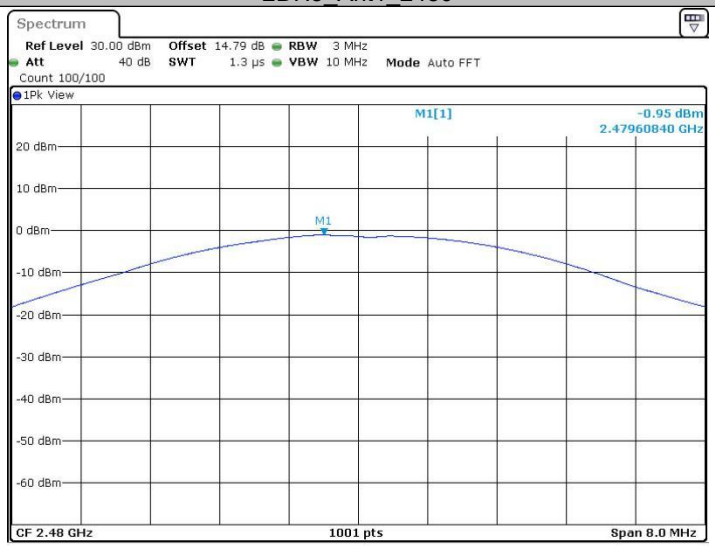
2DH5_Ant1_2402



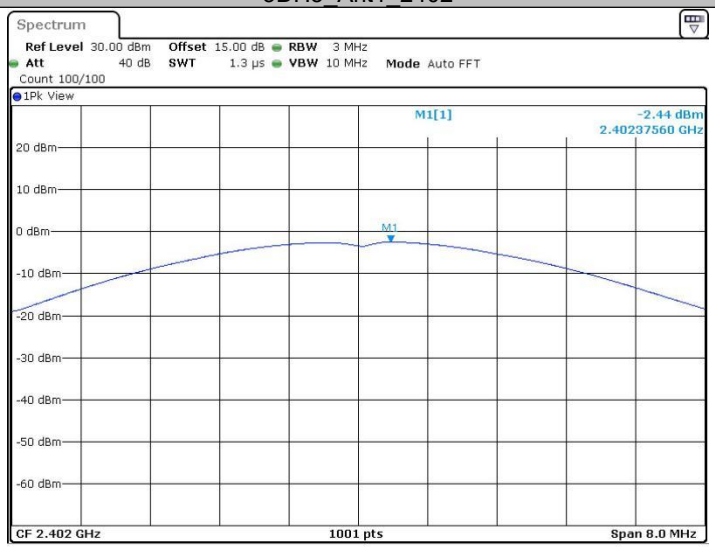
2DH5_Ant1_2441



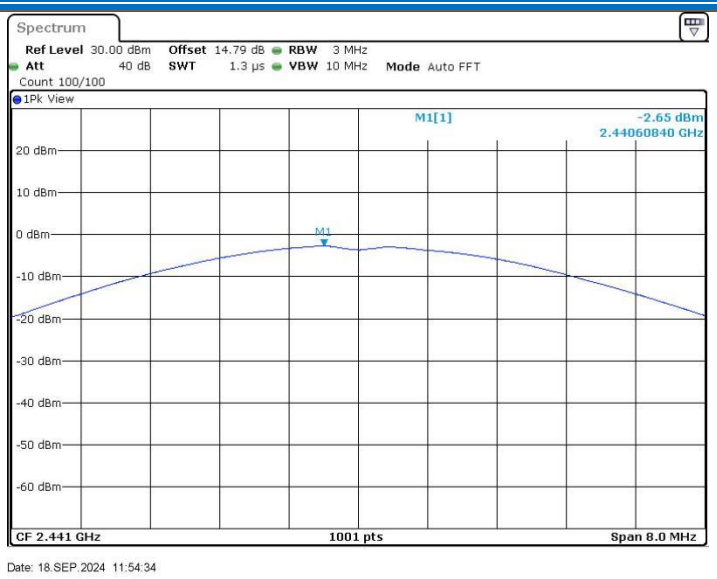
2DH5_Ant1_2480



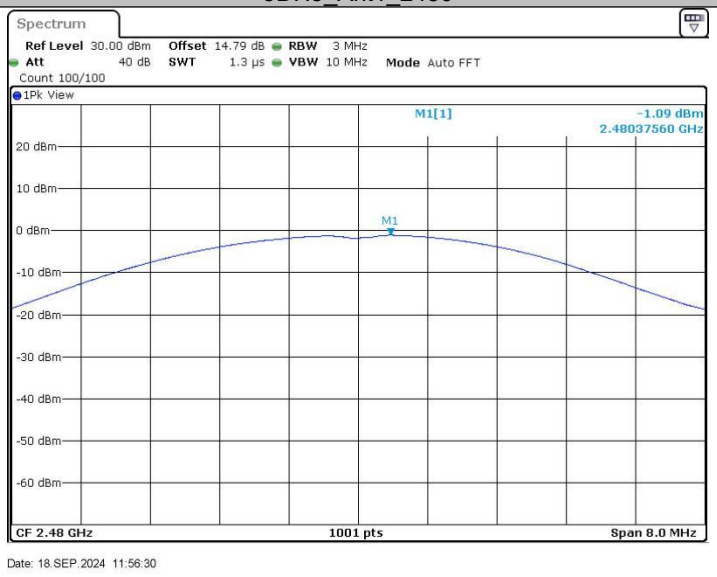
3DH5_Ant1_2402



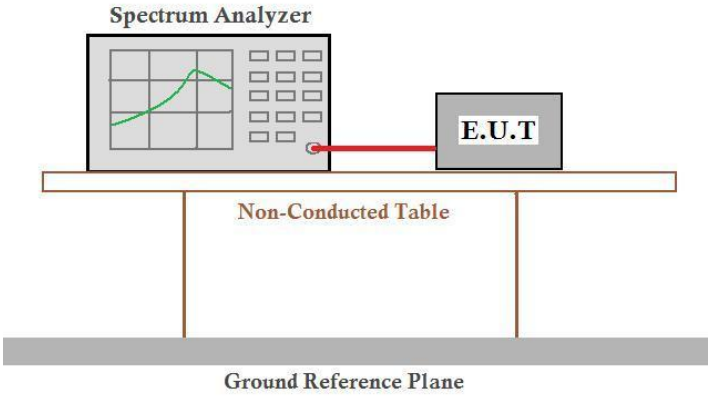
3DH5_Ant1_2441



3DH5_Ant1_2480



5.4 20dB Occupy Bandwidth

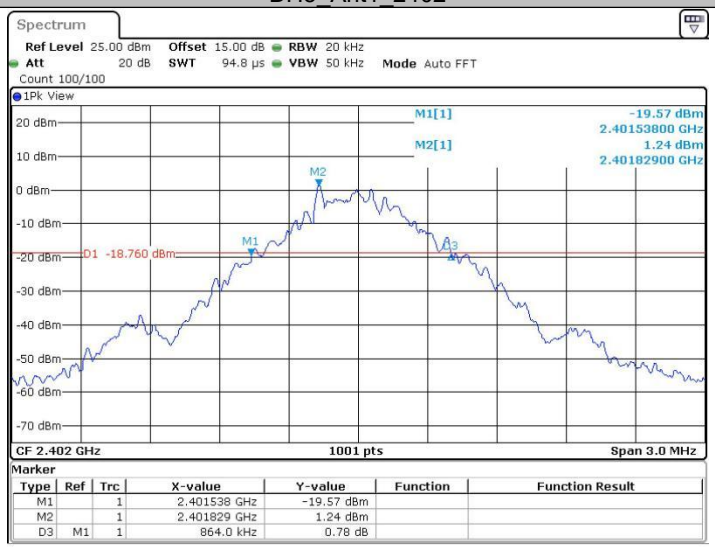
Test Requirement:	RSS 247 5.1(1)
Test Method:	RSS-Gen Issue 5
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Limit:	NA
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Test Results:	Pass

Measurement Data

Test channel	20dB Occupy Bandwidth (MHz)		
	GFSK	π/4DQPSK	8DPSK
Lowest	0.86	1.21	1.18
Middle	0.87	1.21	1.18
Highest	0.89	1.21	1.18

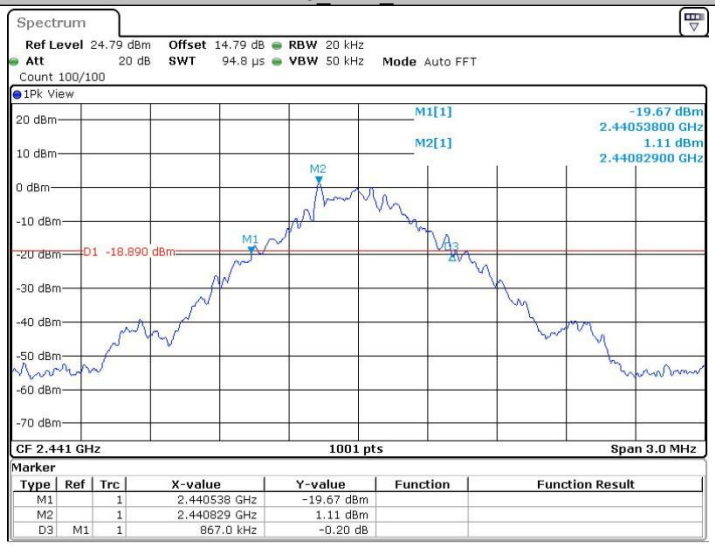
Test plot as follows:

DH5_Ant1_2402



Date: 18.SEP.2024 10:21:57

DH5_Ant1_2441

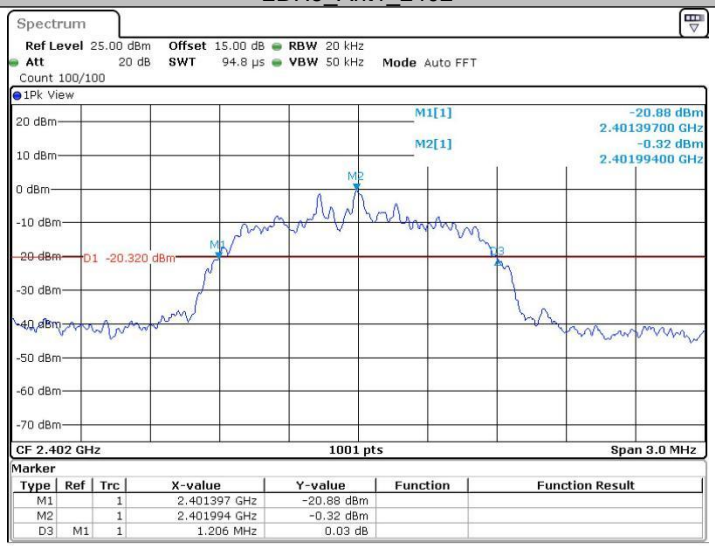


Date: 18.SEP.2024 10:24:48

DH5_Ant1_2480

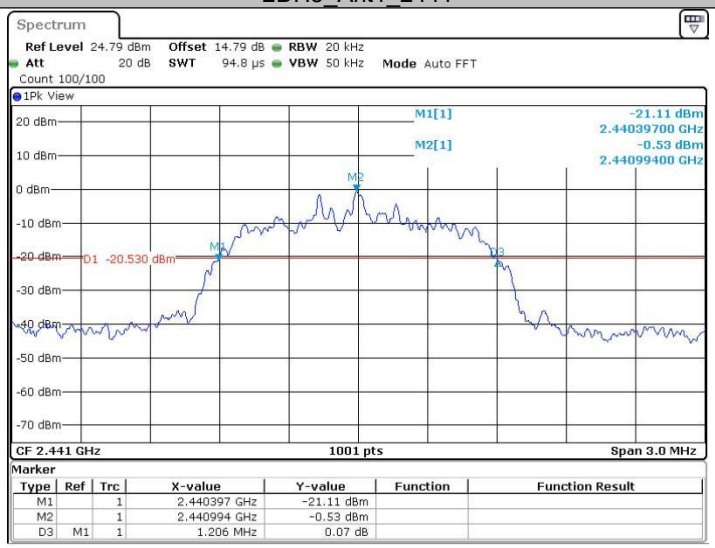
Date: 18.SEP.2024 10:27:24

2DH5_Ant1_2402



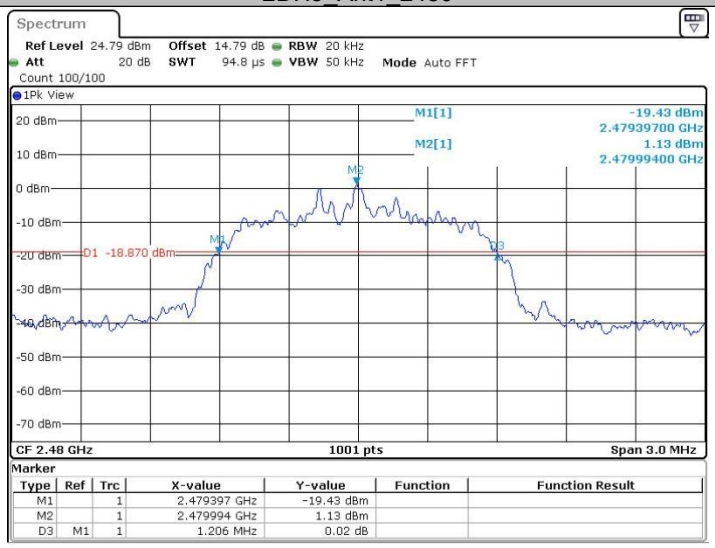
Date: 18.SEP.2024 10:29:56

2DH5_Ant1_2441

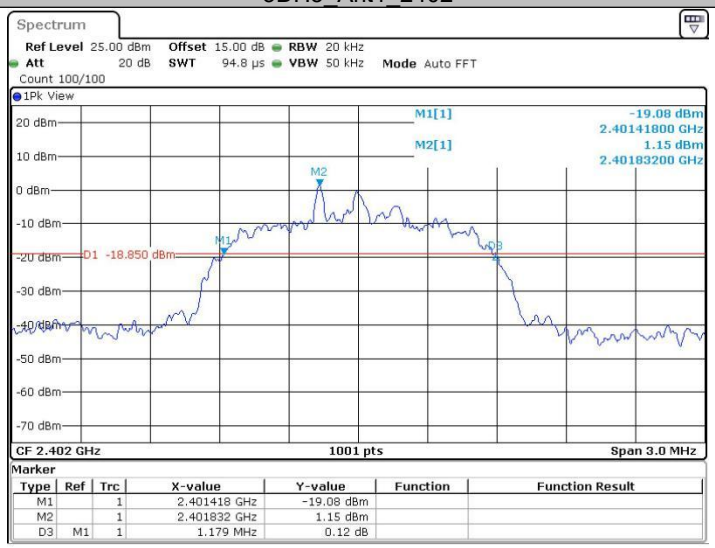


Date: 18.SEP.2024 10:32:39

2DH5_Ant1_2480

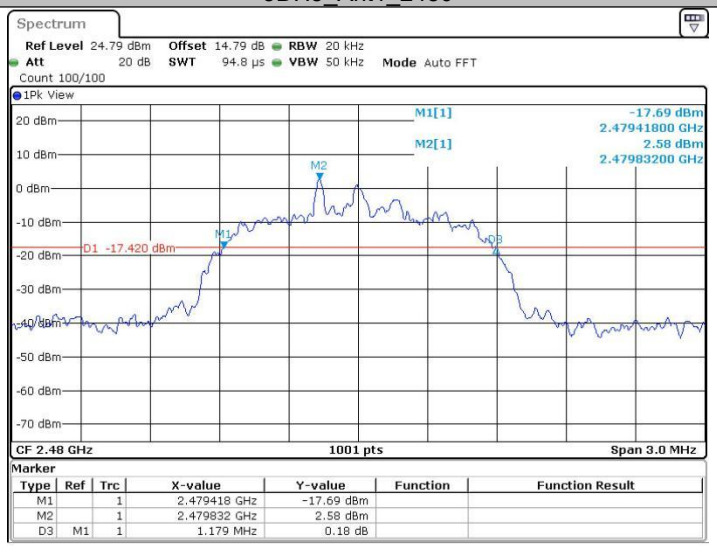


3DH5_Ant1_2402

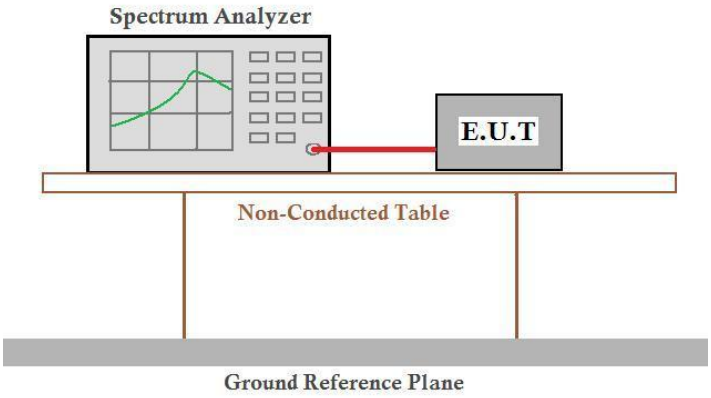


3DH5_Ant1_2441

3DH5_Ant1_2480



5.5 99% Occupy Bandwidth

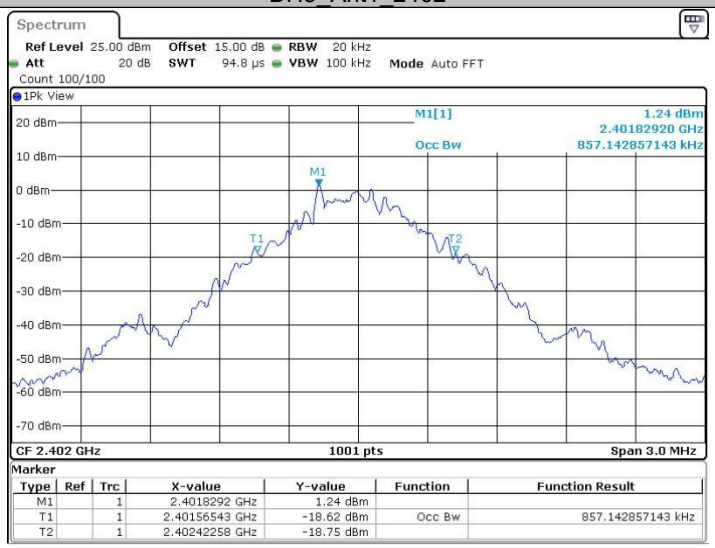
Test Requirement:	RSS-Gen Issue 5
Test Method:	RSS-Gen Issue 5
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Limit:	NA
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Test Results:	Pass

Measurement Data

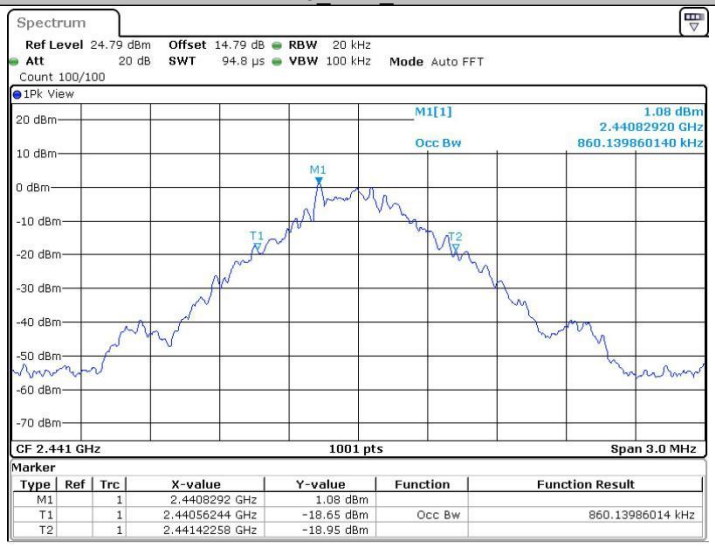
Test channel	99% Occupy Bandwidth (MHz)		
	GFSK	π/4DQPSK	8DPSK
Lowest	0.857	1.151	1.13
Middle	0.86	1.151	1.13
Highest	0.86	1.151	1.13

Test plot as follows:

DH5_Ant1_2402

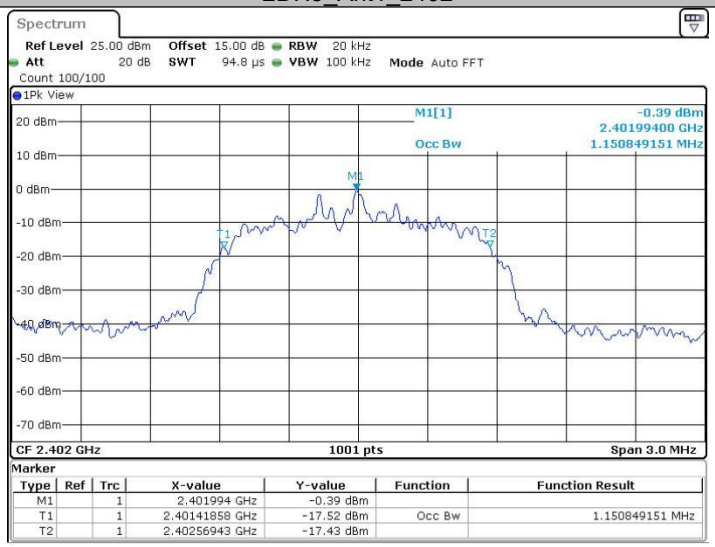


DH5_Ant1_2441

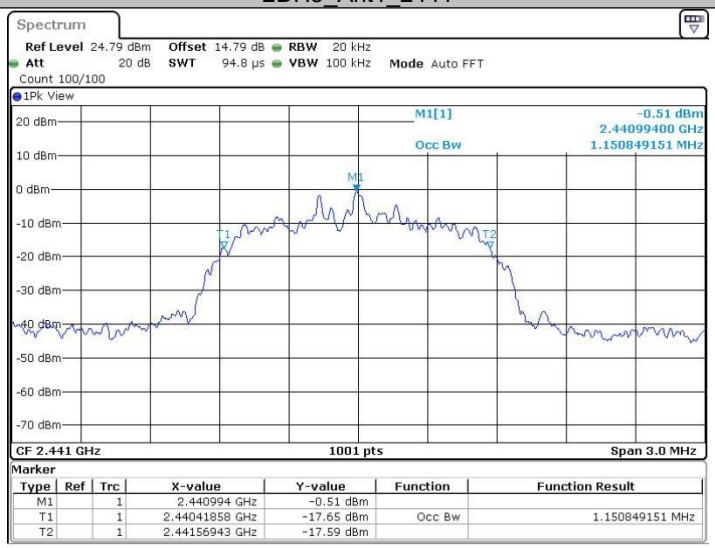


DH5_Ant1_2480

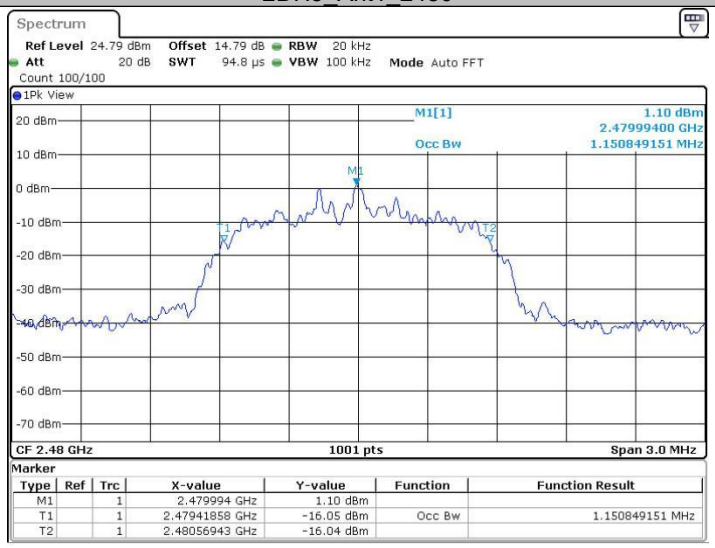
2DH5_Ant1_2402



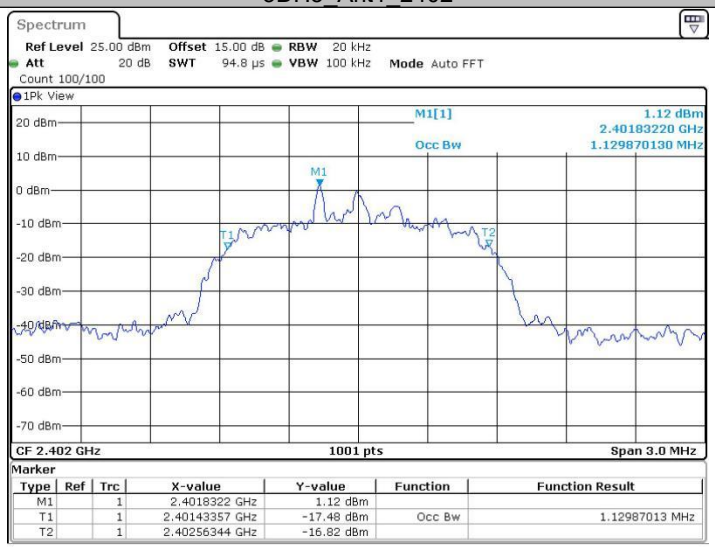
2DH5_Ant1_2441



2DH5_Ant1_2480

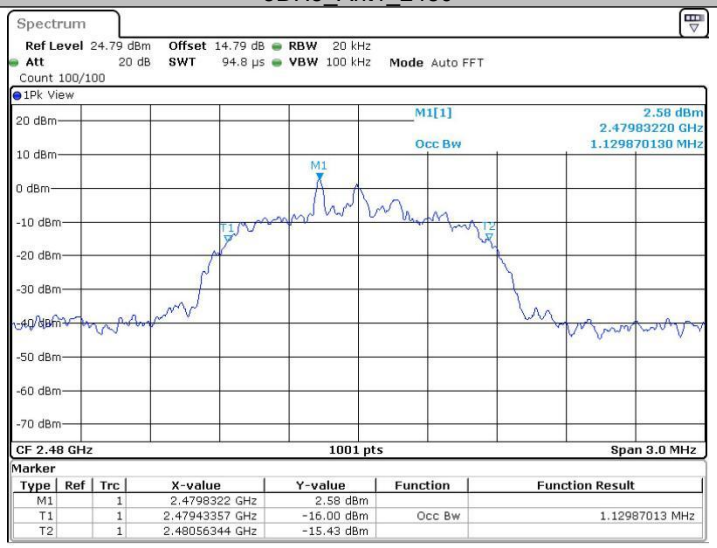


3DH5_Ant1_2402

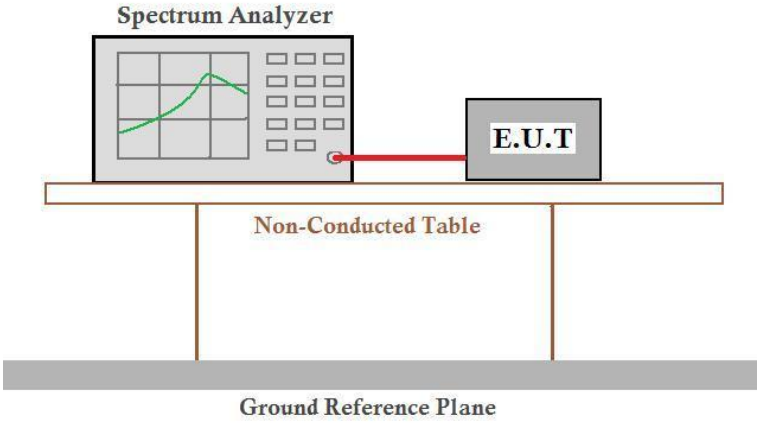


3DH5_Ant1_2441

3DH5_Ant1_2480



5.6 Carrier Frequencies Separation

Test Requirement:	RSS 247 5.1(2)
Test Method:	ANSI C63.10: 2013
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
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:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)
Test Results:	Pass

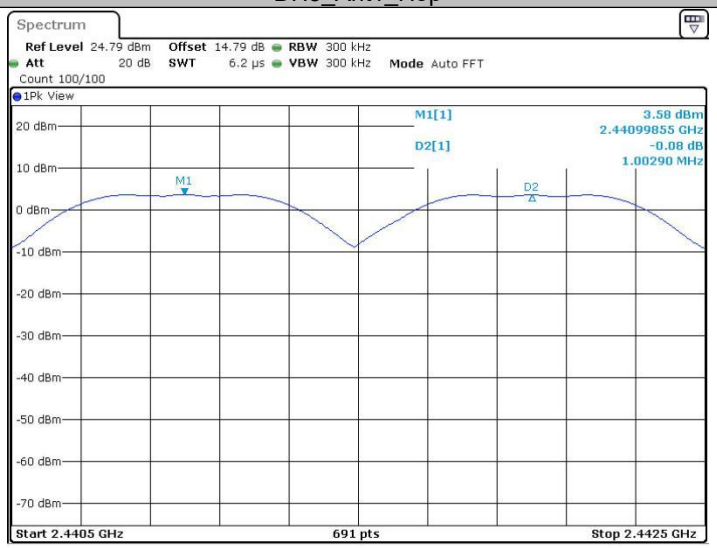
Measurement Data

TestMode	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Hop	1.003	≥0.593	PASS
2DH5	Hop	1	≥0.807	PASS
3DH5	Hop	1.003	≥0.787	PASS

Mode	20dB bandwidth (MHz) (worse case)	Limit (MHz) (Carrier Frequencies Separation)
GFSK	0.89	≥0.593
π/4DQPSK	1.21	≥0.807
8DPSK	1.18	≥0.787

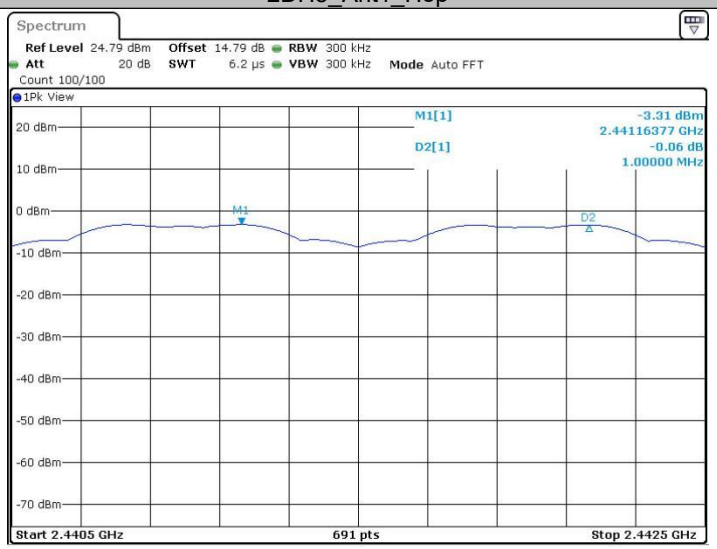
Test plot as follows:

DH5_Ant1_Hop



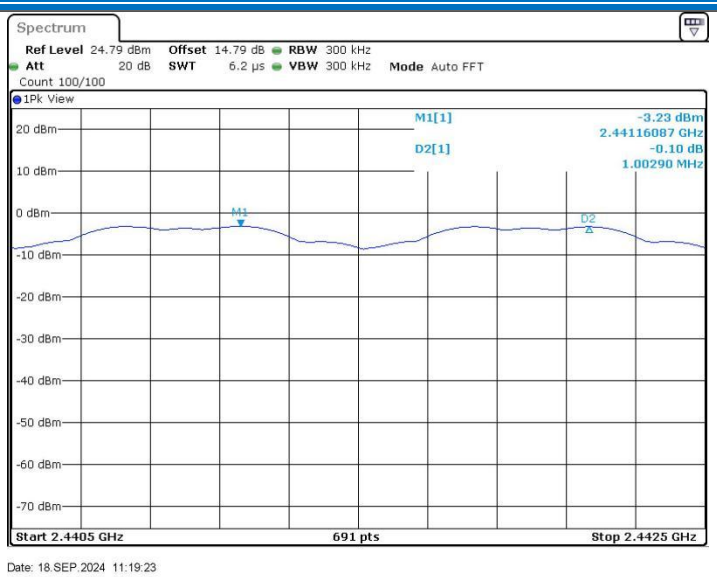
Date: 18.SEP.2024 10:47:36

2DH5_Ant1_Hop

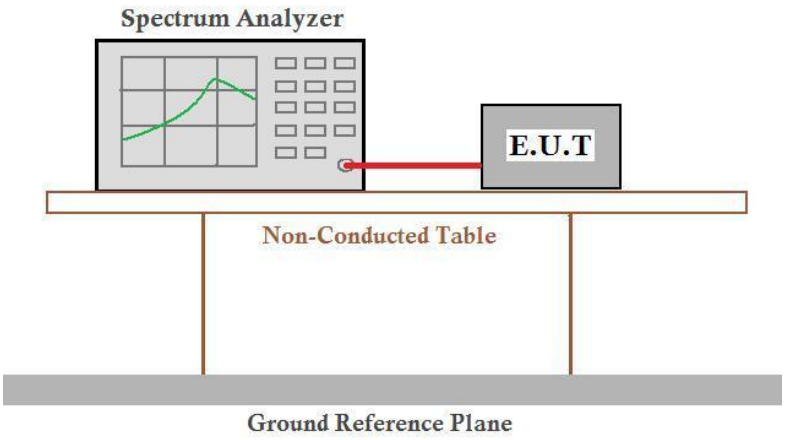


Date: 18.SEP.2024 10:58:26

3DH5_Ant1_Hop


Spectrum
Ref Level 24.79 dBm Offset 14.79 dB RBW 300 kHz
Att 20 dB SWT 6.2 µs VBW 300 kHz Mode Auto FFT
Count 100/100
1Pk View
M1[1] -3.23 dBm
2.44116087 GHz
D2[1] -0.10 dB
1.00290 MHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
D2
Start 2.4405 GHz
691 pts
Stop 2.4425 GHz
Date: 18.SEP.2024 11:19:23

5.7 Hopping Channel Number

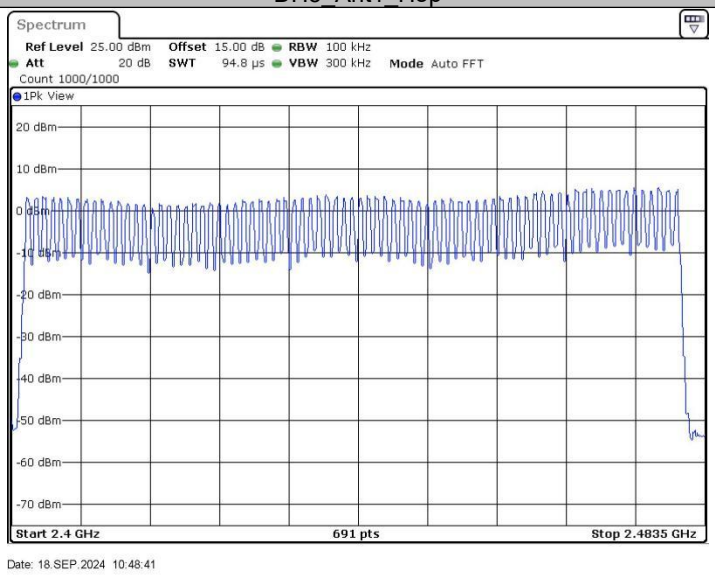
Test Requirement:	RSS 247 5.1(4)
Test Method:	ANSI C63.10: 2013
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Limit:	At least 15 channels
Test Mode:	Hopping transmitting with all kind of modulation.
Test Results:	Pass

Measurement Data

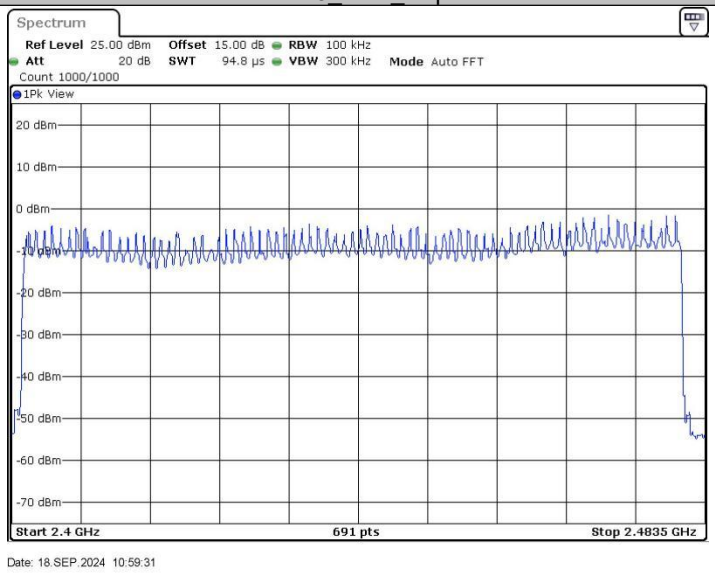
Test mode	Hopping channel numbers	Limit	Results
GFSK	79	15	Pass
π/4DQPSK	79	15	Pass
8DPSK	79	15	Pass

Test plot as follows:

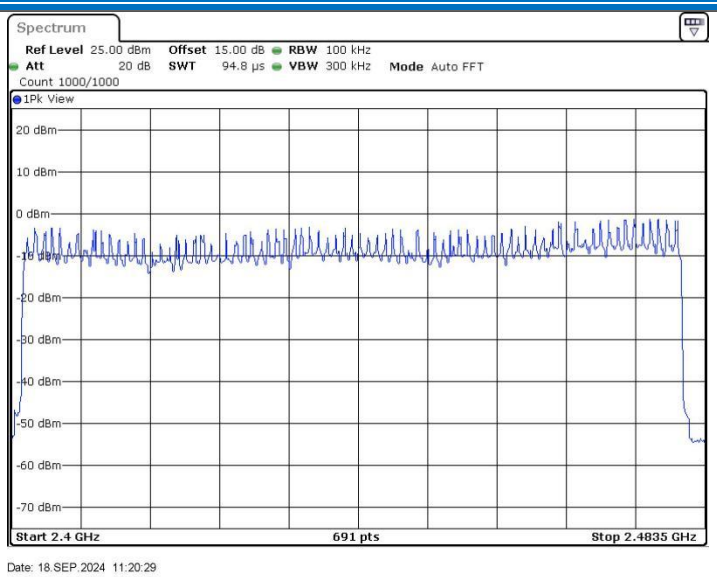
DH5_Ant1_Hop



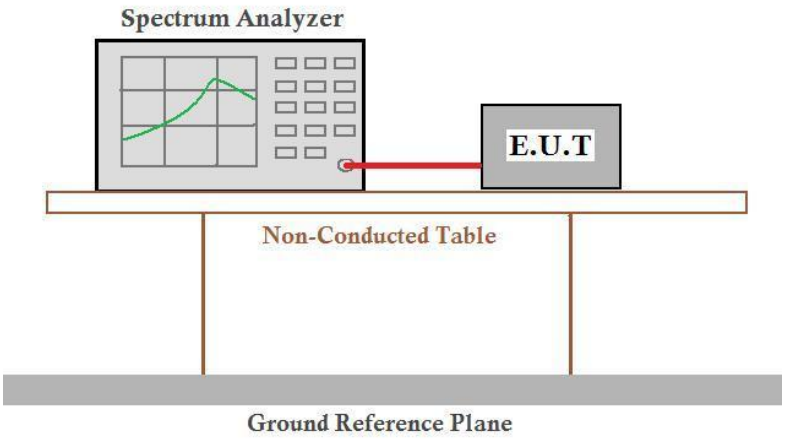
2DH5_Ant1_Hop



3DH5_Ant1_Hop


Spectrum
Ref Level 25.00 dBm Offset 15.00 dB RBW 100 kHz
Att 20 dB SWT 94.8 µs VBW 300 kHz Mode Auto FFT
Count 1000/1000
1Pk View
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz
691 pts
Stop 2.4835 GHz
Date: 18.SEP.2024 11:20:29

5.8 Dwell Time

Test Requirement:	RSS 247 5.1(4)
Test Method:	ANSI C63.10: 2013
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Limit:	⩽0.4 Second
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Test Results:	Pass

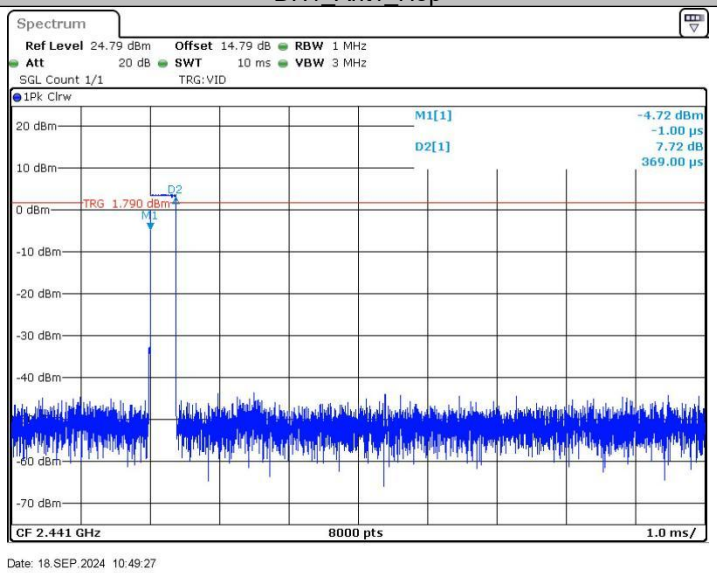
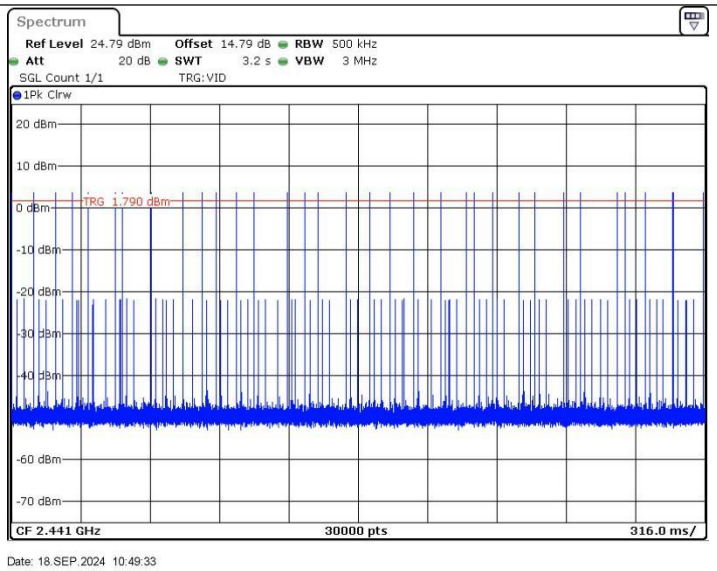
Measurement Data

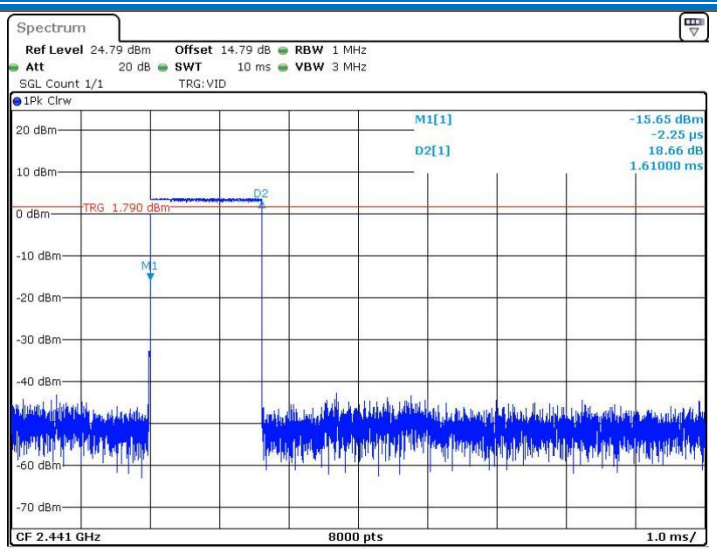
TestMode	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Hop	0.369	330	0.122	≤0.4	PASS
DH3	Hop	1.610	160	0.258	≤0.4	PASS
DH5	Hop	2.850	110	0.314	≤0.4	PASS
2DH1	Hop	0.376	330	0.124	≤0.4	PASS
2DH3	Hop	1.621	160	0.259	≤0.4	PASS
2DH5	Hop	2.862	120	0.343	≤0.4	PASS
3DH1	Hop	0.378	330	0.125	≤0.4	PASS
3DH3	Hop	1.619	170	0.275	≤0.4	PASS
3DH5	Hop	2.863	110	0.315	≤0.4	PASS

Remark:

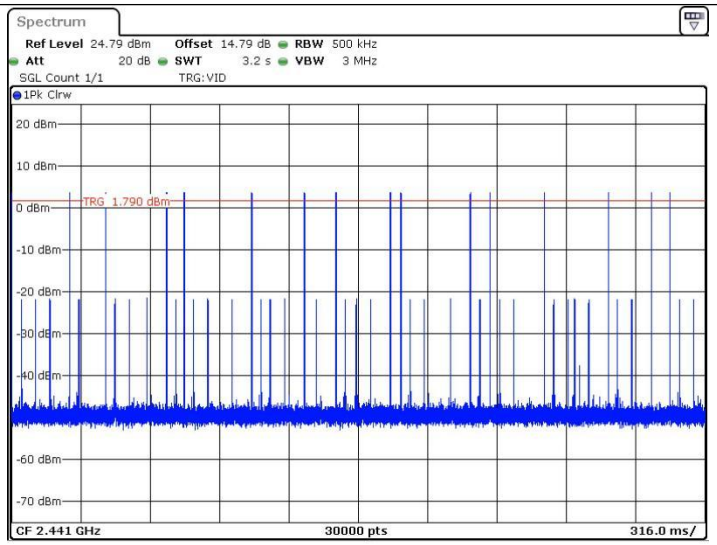
The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

Test plot as follows:

DH1_Ant1_Hop


DH3_Ant1_Hop

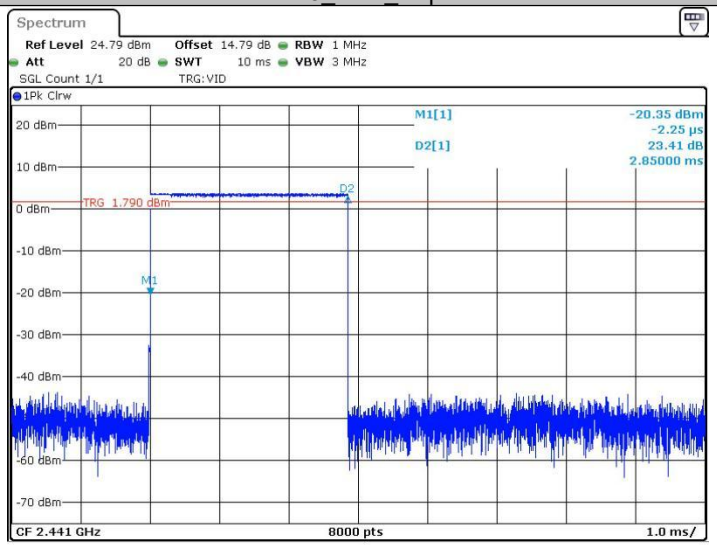


Date: 18.SEP.2024 10:49:57

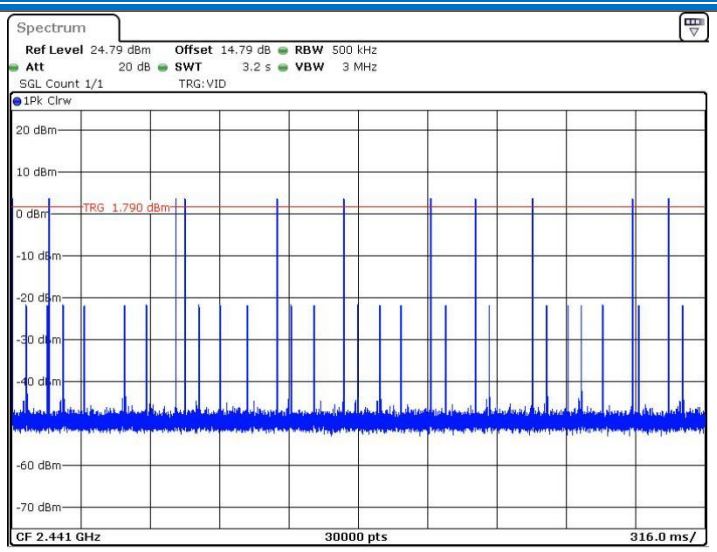


Date: 18.SEP.2024 10:50:03

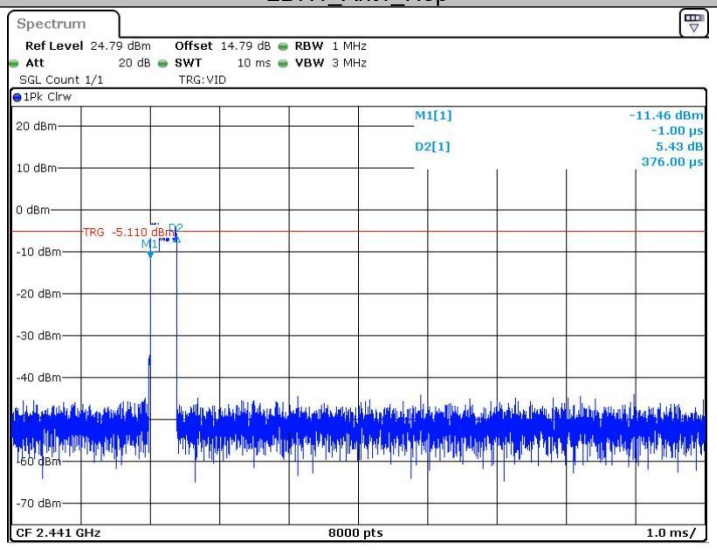
DH5_Ant1_Hop

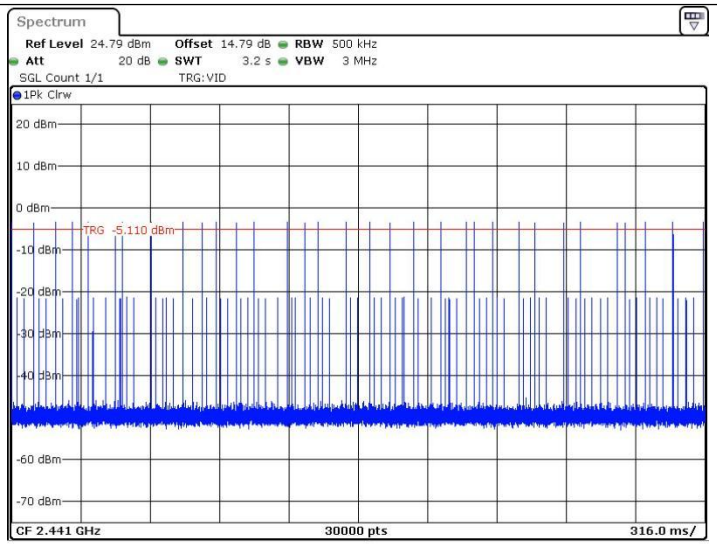


Date: 18.SEP.2024 10:48:57

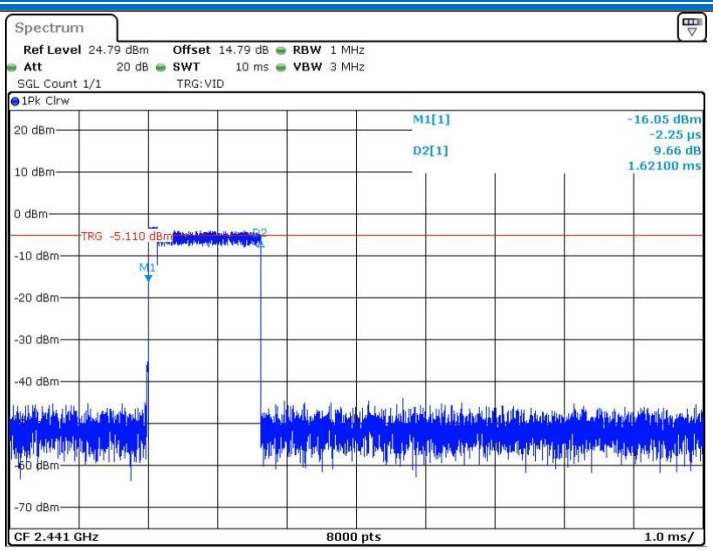


2DH1_Ant1_Hop

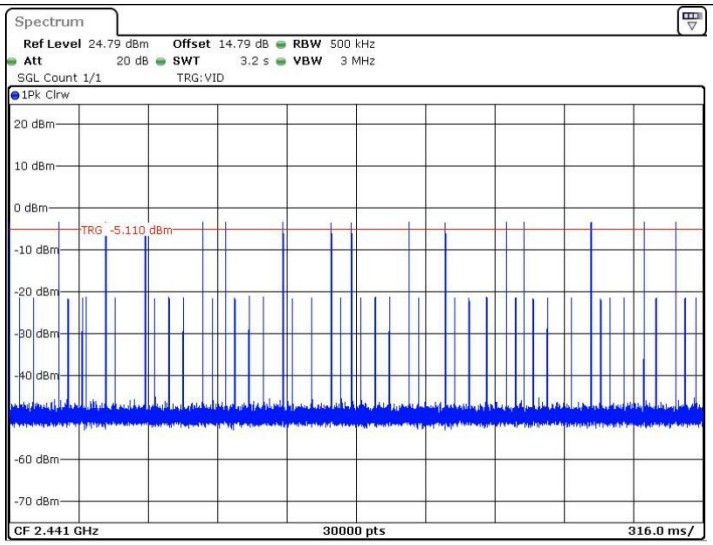




2DH3_Ant1_Hop

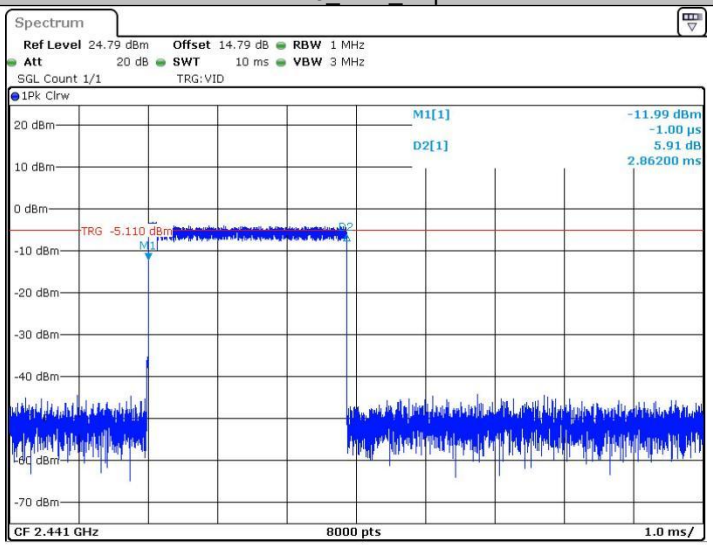


Date: 18.SEP.2024 11:09:14

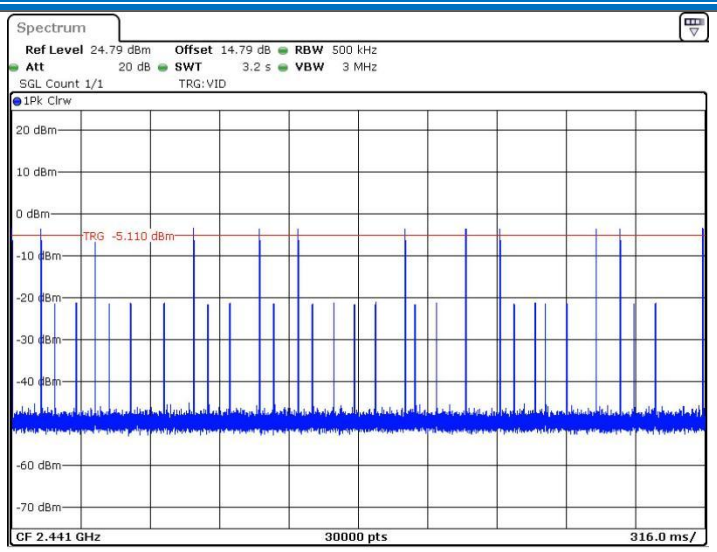


Date: 18.SEP.2024 11:09:20

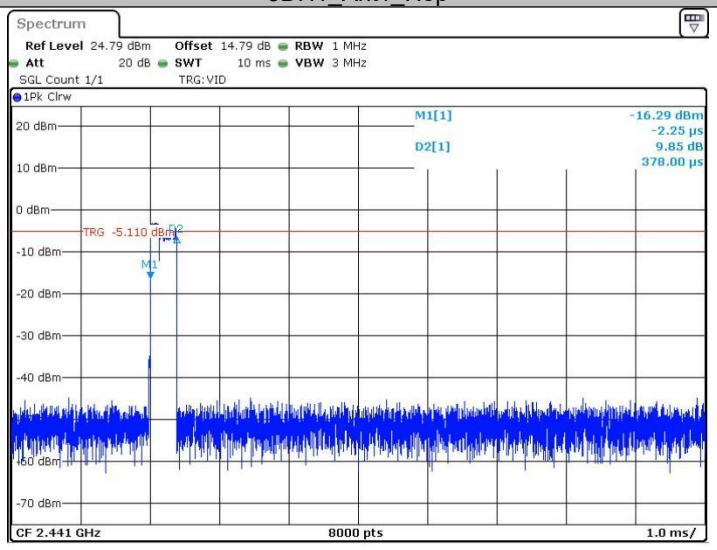
2DH5_Ant1_Hop

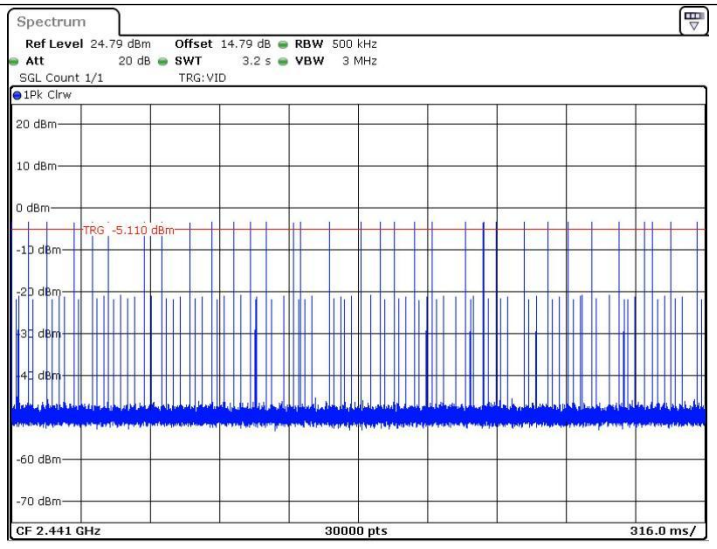


Date: 18.SEP.2024 10:59:46

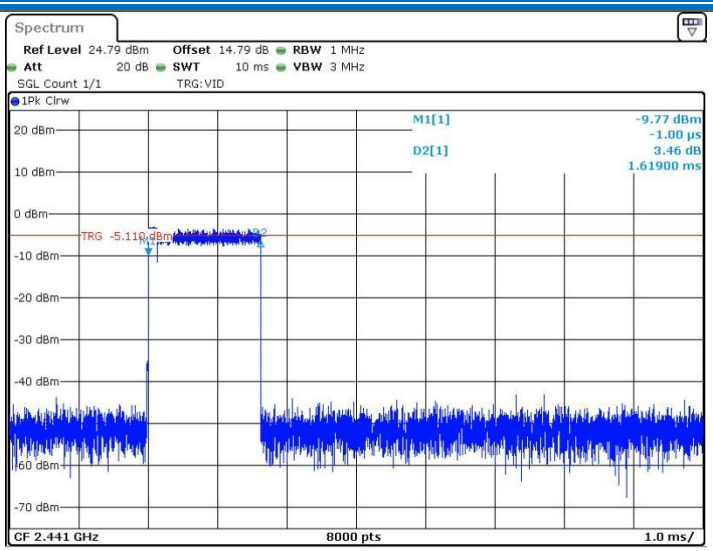


3DH1_Ant1_Hop

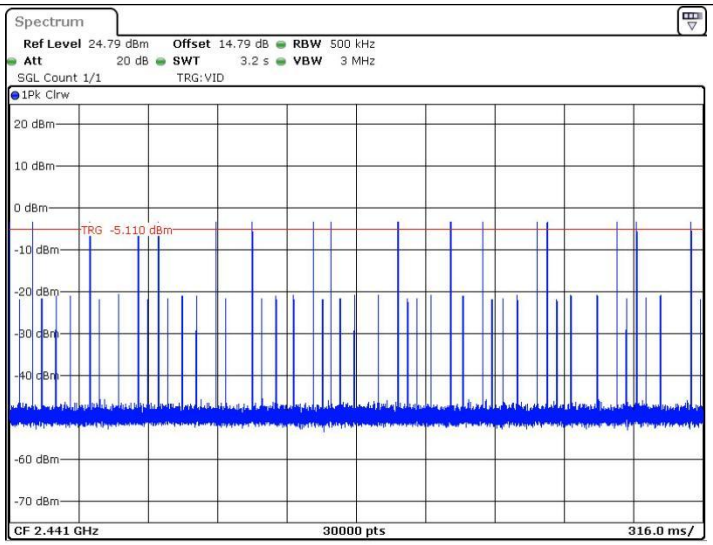




3DH3_Ant1_Hop

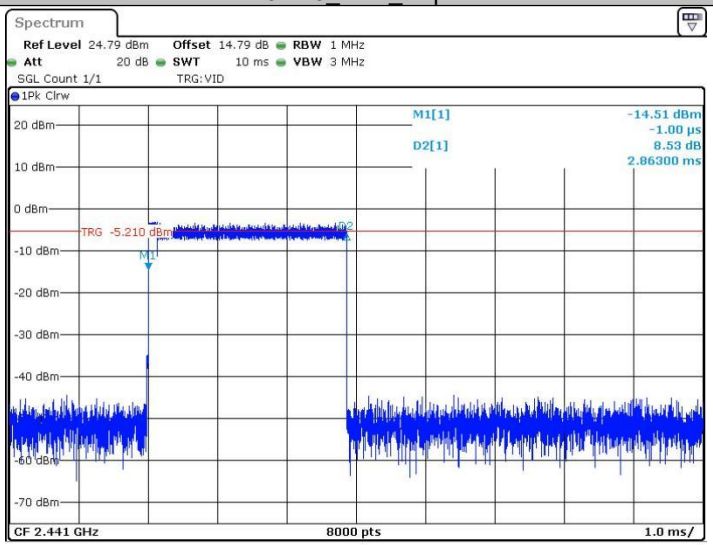


Date: 18.SEP.2024 11:29:00

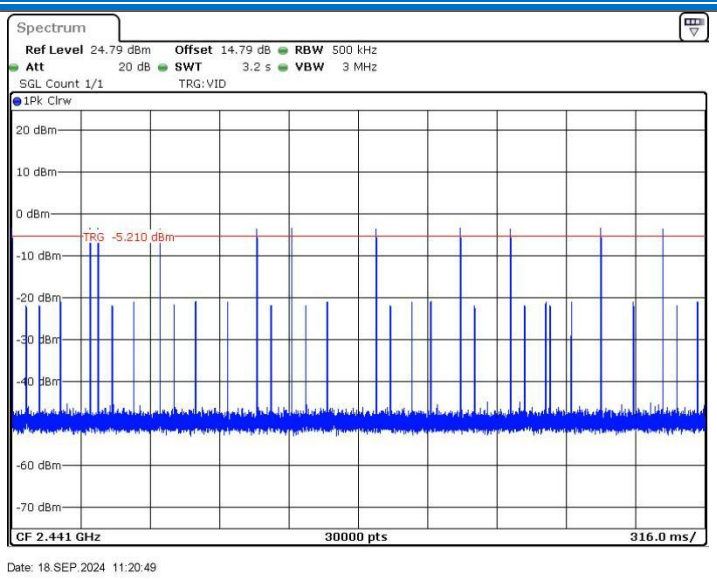


Date: 18.SEP.2024 11:29:06

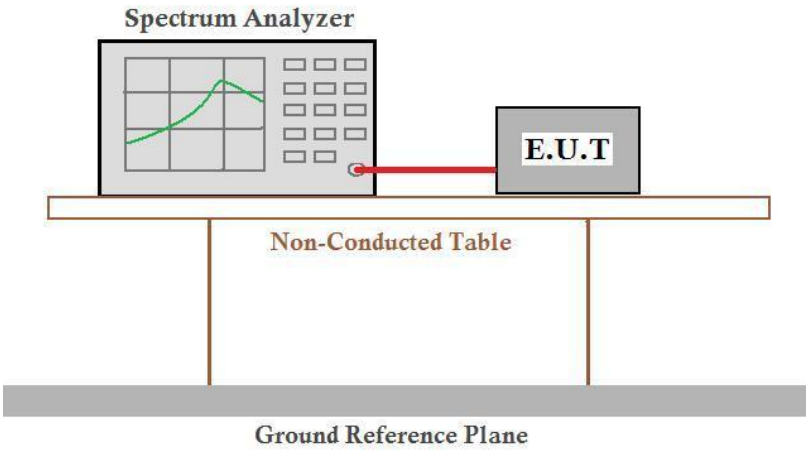
3DH5_Ant1_Hop



Date: 18.SEP.2024 11:20:44


Spectrum
Ref Level 24.79 dBm Offset 14.79 dB RBW 500 kHz
Att 20 dB SWT 3.2 s VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
20 dBm
10 dBm
0 dBm
TRG -5.210 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-60 dBm
-70 dBm
CF 2.441 GHz
30000 pts
316.0 ms/
Date: 18.SEP.2024 11:20:49

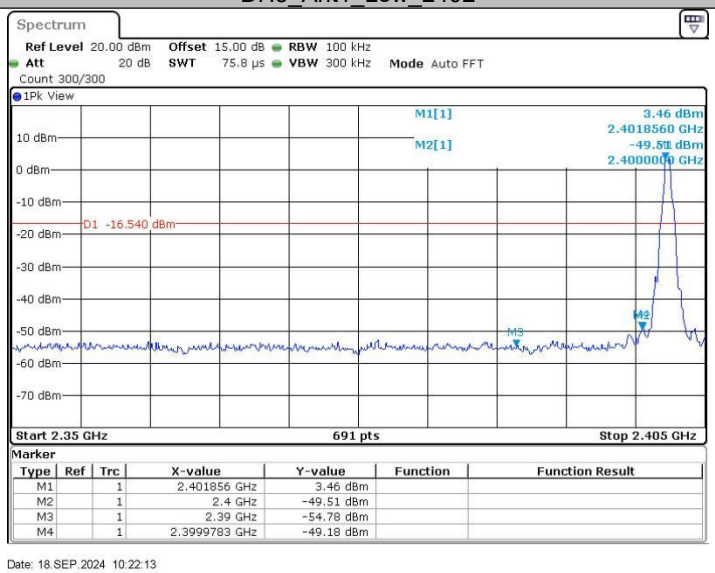
5.9 Band Edge for RF Conducted Emissions

Test Requirement:	RSS 247 5.5
Test Method:	ANSI C63.10: 2013
Test Setup:	 *Remark: Offset=cable loss+ attenuation factor.*
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Test Results:	Pass

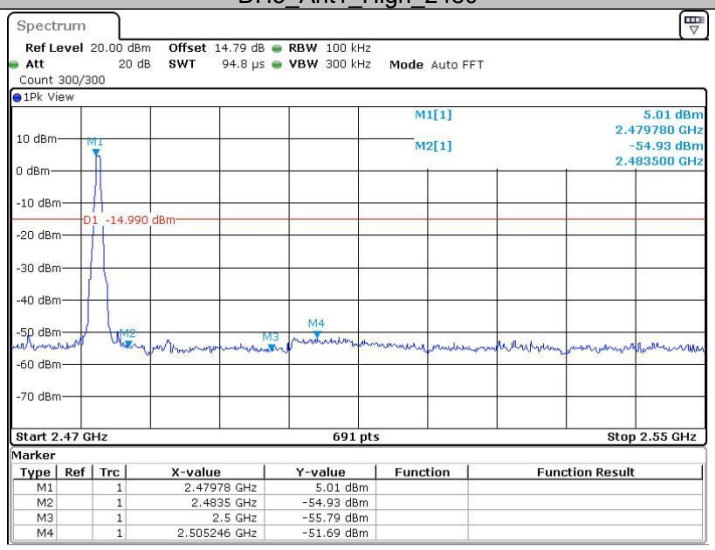
TestMode	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Low	2402	3.46	-49.18	≤-16.54	PASS
	High	2480	5.01	-51.69	≤-14.99	PASS
	Low	Hop_2402	3.20	-52.42	≤-16.8	PASS
	High	Hop_2480	-2.28	-51.05	≤-22.28	PASS
2DH5	Low	2402	3.43	-50.17	≤-16.57	PASS
	High	2480	4.17	-50.69	≤-15.83	PASS
	Low	Hop_2402	-9.75	-53.08	≤-29.75	PASS
	High	Hop_2480	-3.39	-51.31	≤-23.39	PASS
3DH5	Low	2402	3.66	-51.1	≤-16.34	PASS
	High	2480	5.04	-51.35	≤-14.96	PASS
	Low	Hop_2402	-9.23	-52	≤-29.23	PASS
	High	Hop_2480	-3.00	-51.4	≤-23	PASS

Test plot as follows:

DH5_Ant1_Low_2402



DH5_Ant1_High_2480



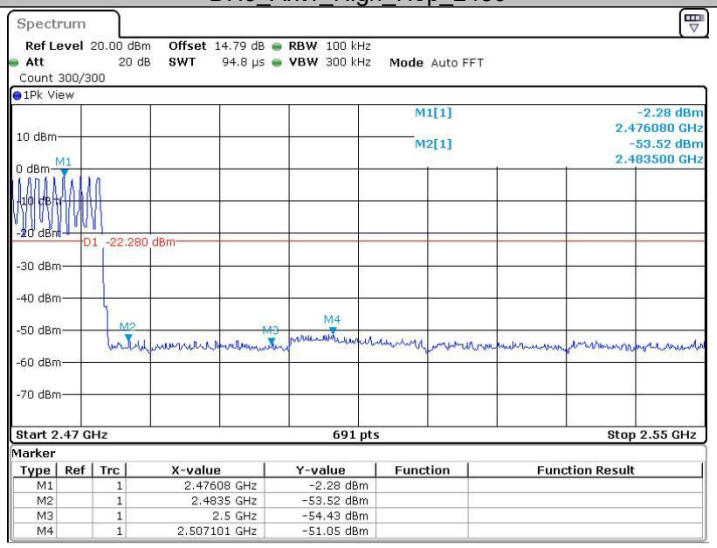
DH5_Ant1_Low_Hop_2402

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402015 GHz	3.20 dBm		
M2		1	2.4 GHz	-52.79 dBm		
M3		1	2.39 GHz	-55.00 dBm		
M4		1	2.3848333 GHz	-52.42 dBm		

Date: 18.SEP.2024 10:45:20

DH5_Ant1_High_Hop_2480

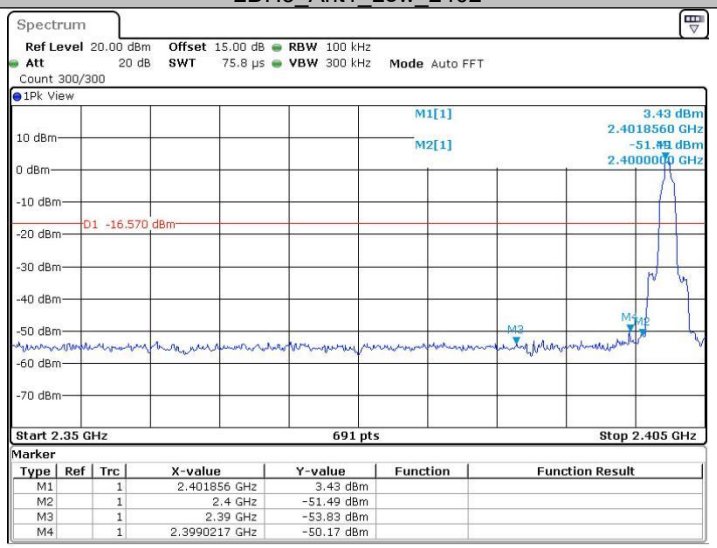


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47608 GHz	-2.28 dBm		
M2		1	2.4835 GHz	-53.52 dBm		
M3		1	2.5 GHz	-54.43 dBm		
M4		1	2.507101 GHz	-51.05 dBm		

Date: 18.SEP.2024 10:50:31

2DH5_Ant1_Low_2402

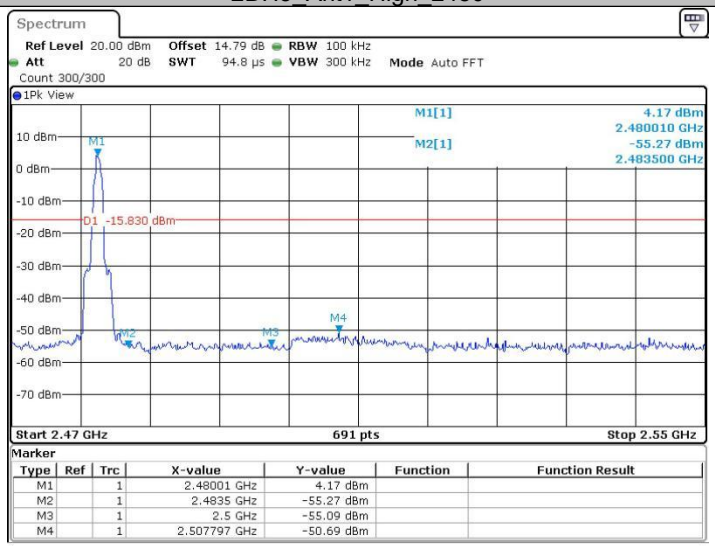


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.401856 GHz	3.43 dBm		
M2		1	2.4 GHz	-51.49 dBm		
M3		1	2.39 GHz	-53.83 dBm		
M4		1	2.3990217 GHz	-50.17 dBm		

Date: 18.SEP.2024 10:30:12

2DH5_Ant1_High_2480

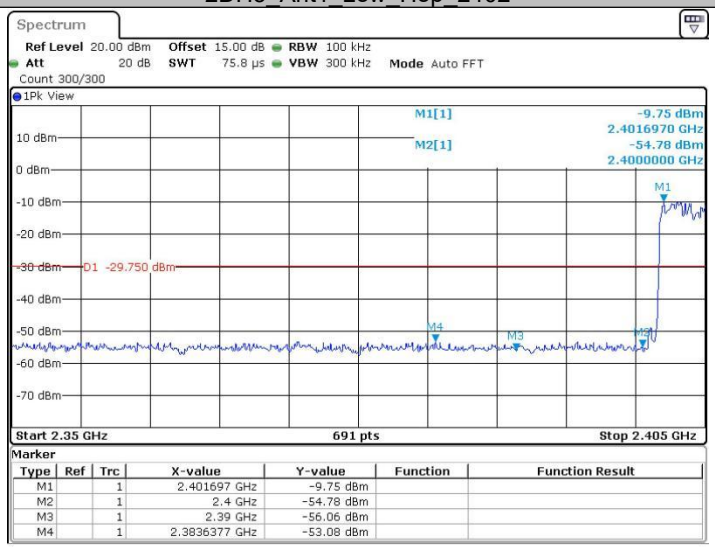


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48001 GHz	4.17 dBm		
M2		1	2.4835 GHz	-55.27 dBm		
M3		1	2.5 GHz	-55.09 dBm		
M4		1	2.507797 GHz	-50.69 dBm		

Date: 18.SEP.2024 10:34:01

2DH5_Ant1_Low_Hop_2402

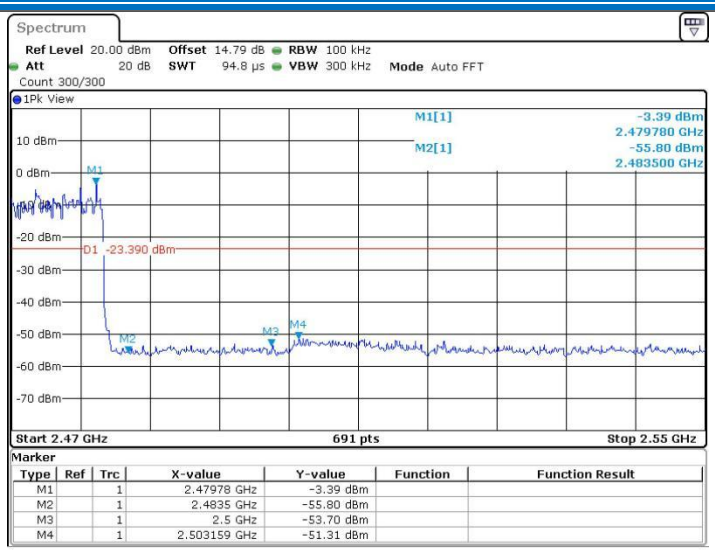


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.401697 GHz	-9.75 dBm		
M2		1	2.4 GHz	-54.78 dBm		
M3		1	2.39 GHz	-56.06 dBm		
M4		1	2.3836377 GHz	-53.08 dBm		

Date: 18.SEP.2024 10:54:24

2DH5_Ant1_High_Hop_2480

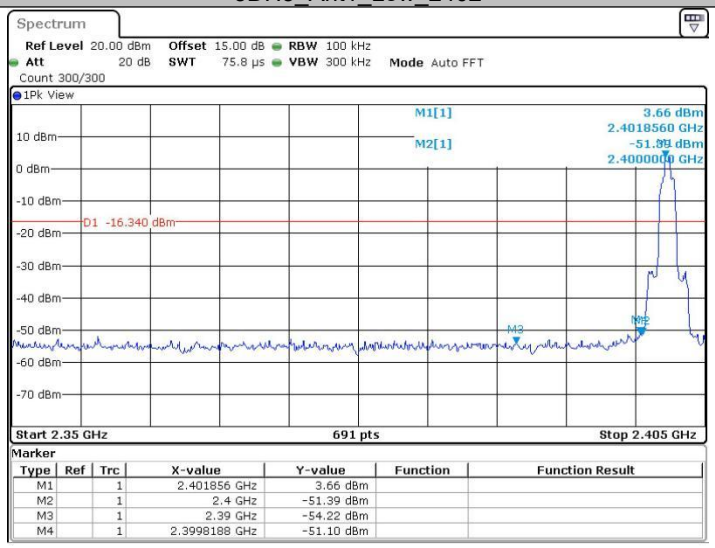


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47978 GHz	-3.39 dBm		
M2		1	2.4835 GHz	-55.80 dBm		
M3		1	2.5 GHz	-53.70 dBm		
M4		1	2.503159 GHz	-51.31 dBm		

Date: 18.SEP.2024 11:12:14

3DH5_Ant1_Low_2402

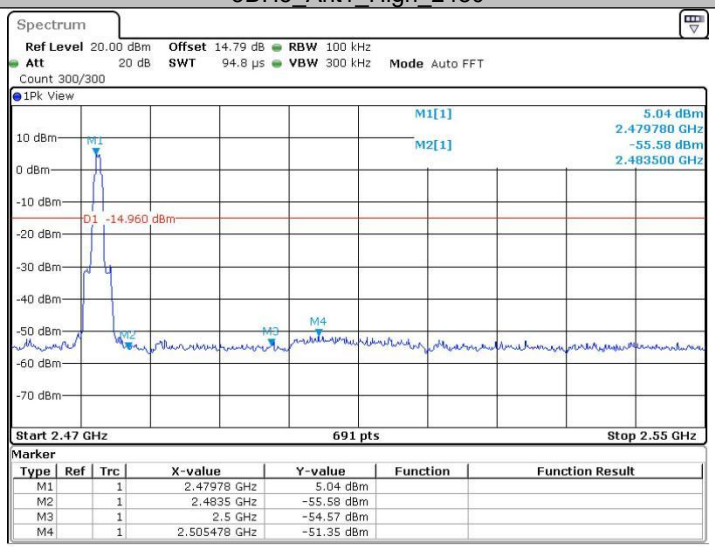


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.401856 GHz	3.66 dBm		
M2		1	2.4 GHz	-51.39 dBm		
M3		1	2.39 GHz	-54.22 dBm		
M4		1	2.3998188 GHz	-51.10 dBm		

Date: 18.SEP.2024 10:38:59

3DH5_Ant1_High_2480

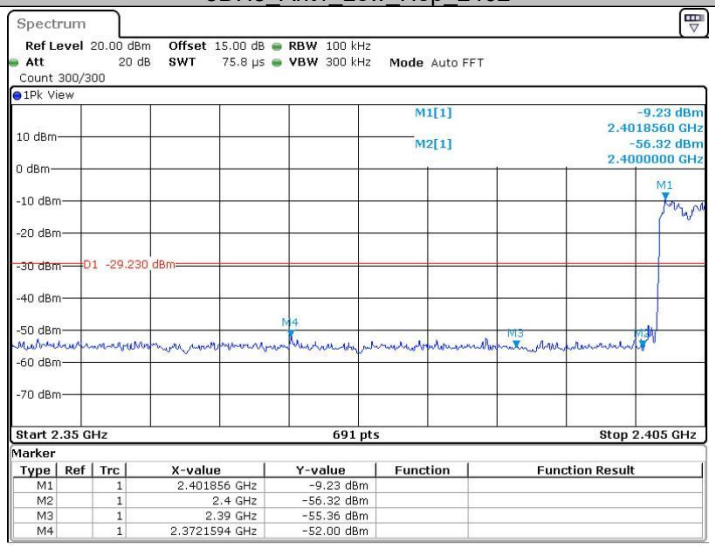


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47978 GHz	5.04 dBm		
M2		1	2.4835 GHz	-55.58 dBm		
M3		1	2.5 GHz	-54.57 dBm		
M4		1	2.505478 GHz	-51.35 dBm		

Date: 18.SEP.2024 10:42:45

3DH5_Ant1_Low_Hop_2402

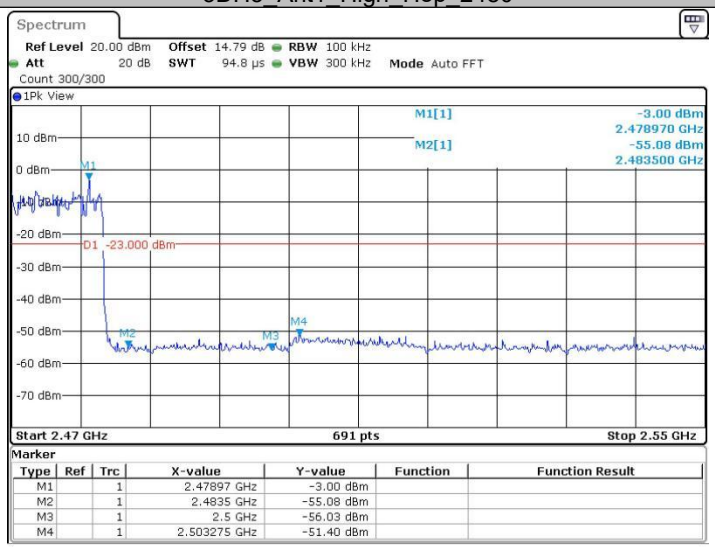


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.401856 GHz	-9.23 dBm		
M2		1	2.4 GHz	-56.32 dBm		
M3		1	2.39 GHz	-55.36 dBm		
M4		1	2.3721594 GHz	-52.00 dBm		

Date: 18.SEP.2024 11:16:47

3DH5_Ant1_High_Hop_2480

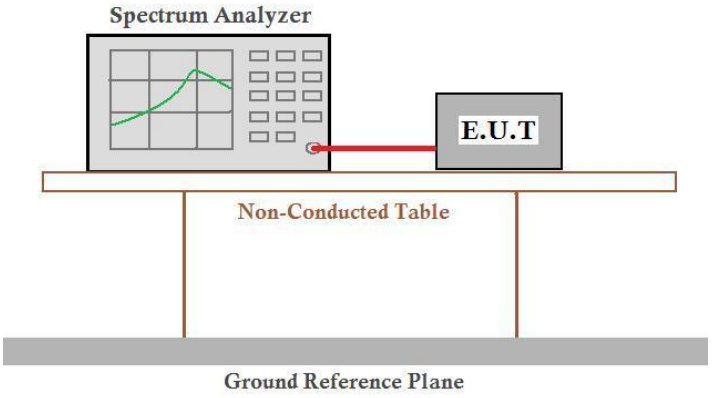


Marker

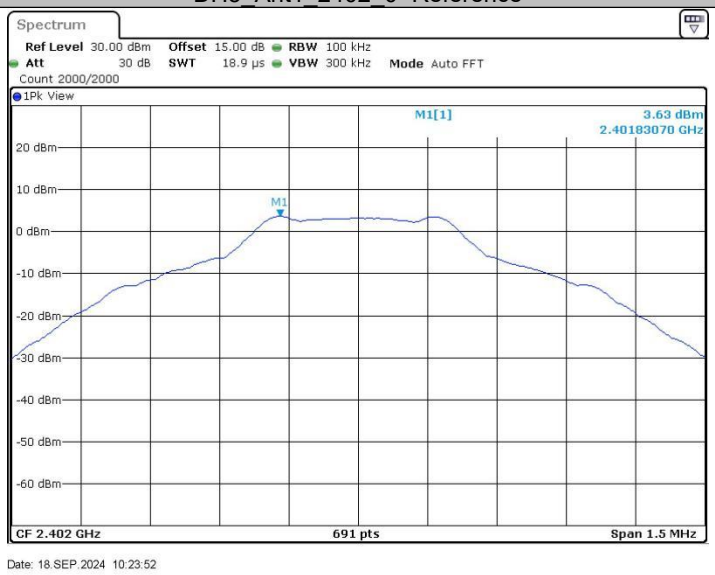
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47897 GHz	-3.00 dBm		
M2		1	2.4835 GHz	-55.08 dBm		
M3		1	2.5 GHz	-56.03 dBm		
M4		1	2.503275 GHz	-51.40 dBm		

Date: 18.SEP.2024 11:29:30

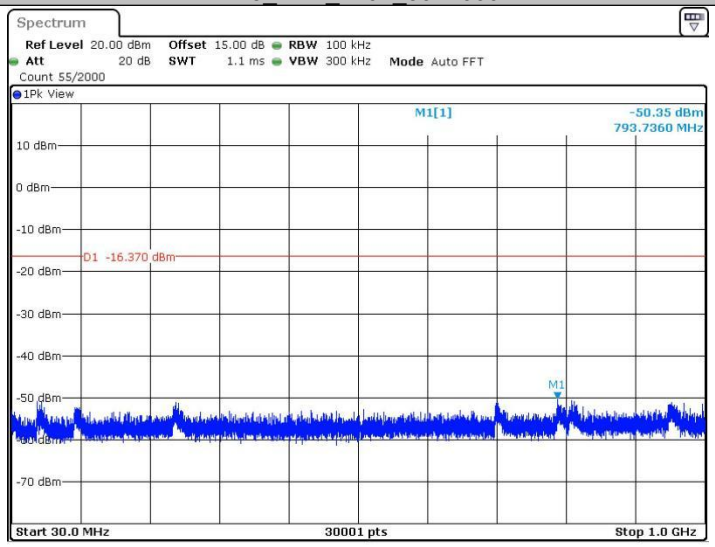
5.10 RF Antenna Conducted Spurious Emissions

Test Requirement:	RSS 247 5.5
Test Method:	ANSI C63.10: 2013
Test Setup:	 *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, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Test Results:	Pass

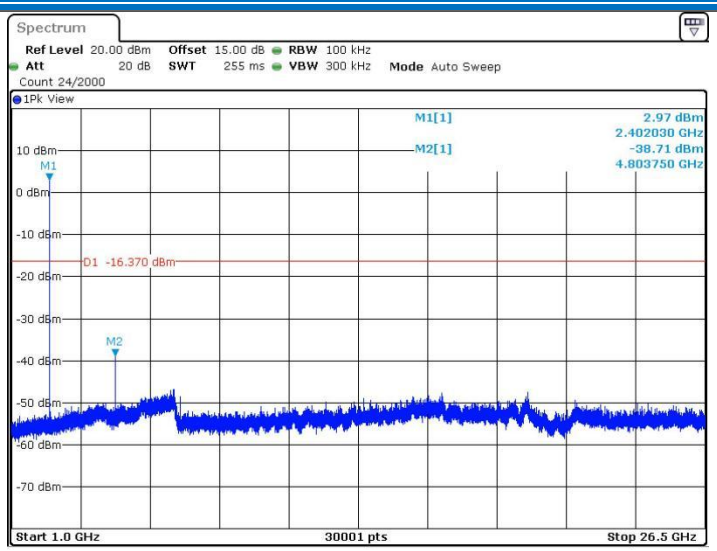
DH5_Ant1_2402_0~Reference



DH5_Ant1_2402_30~1000

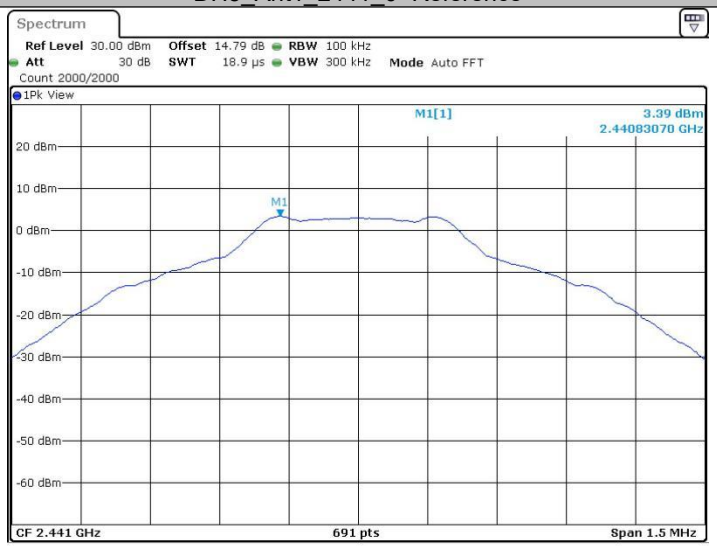


DH5_Ant1_2402_1000~26500



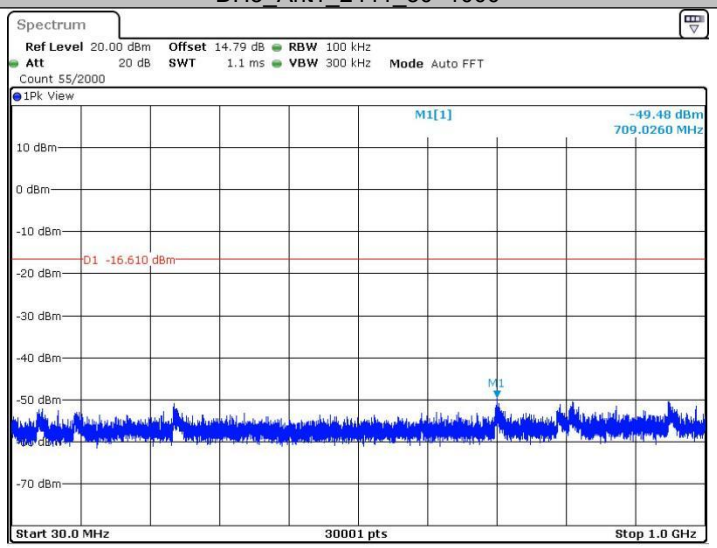
Date: 18.SEP.2024 10:24:20

DH5_Ant1_2441_0~Reference



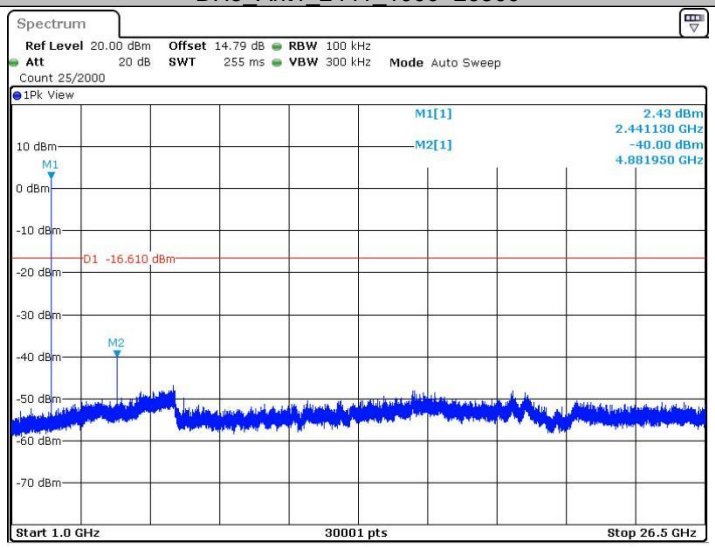
Date: 18.SEP.2024 10:25:03

DH5_Ant1_2441_30~1000



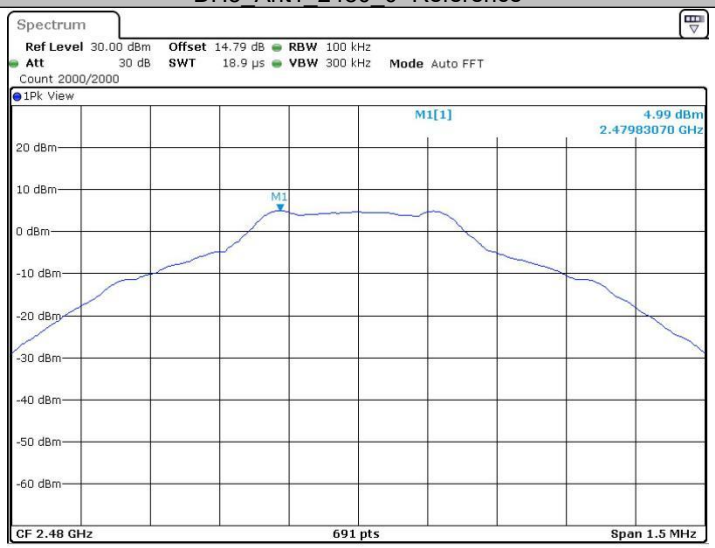
Date: 18.SEP.2024 10:25:10

DH5_Ant1_2441_1000~26500



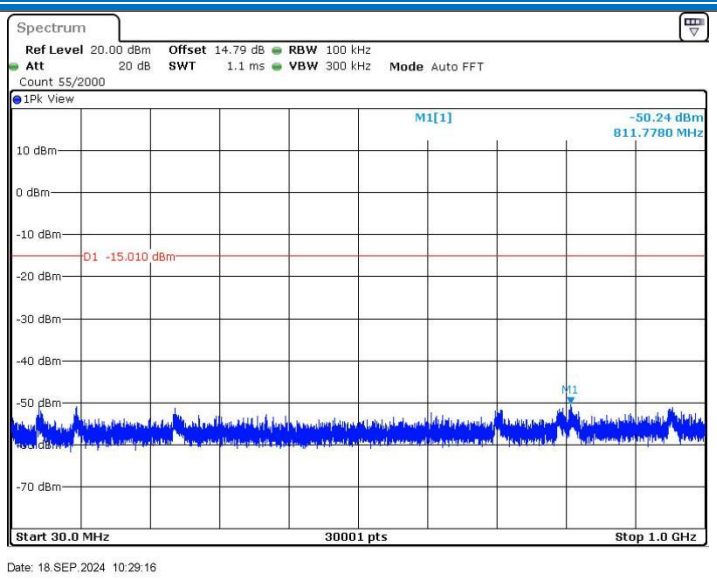
Date: 18.SEP.2024 10:25:32

DH5_Ant1_2480_0~Reference

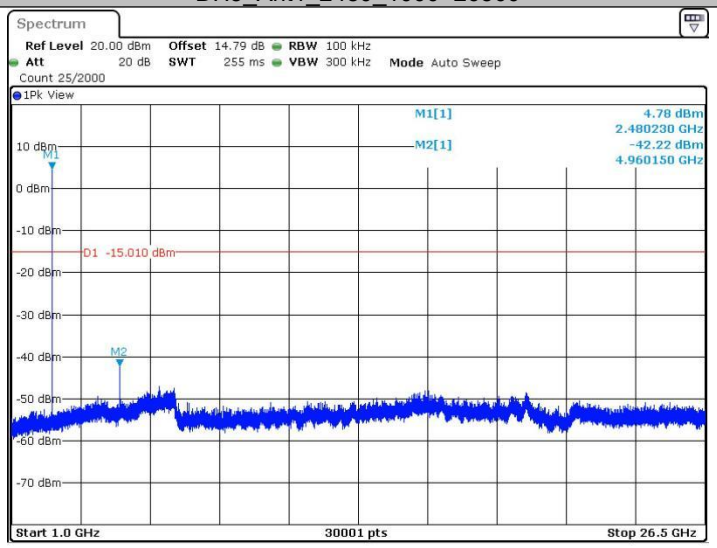


Date: 18.SEP.2024 10:29:10

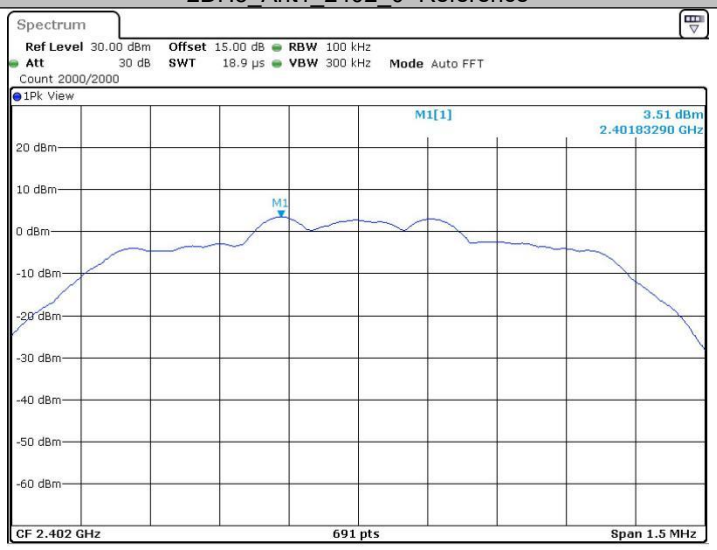
DH5_Ant1_2480_30~1000



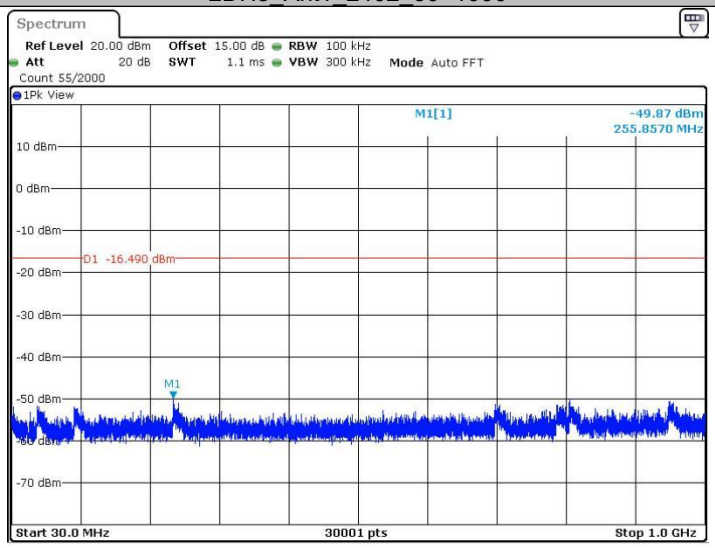
DH5_Ant1_2480_1000~26500



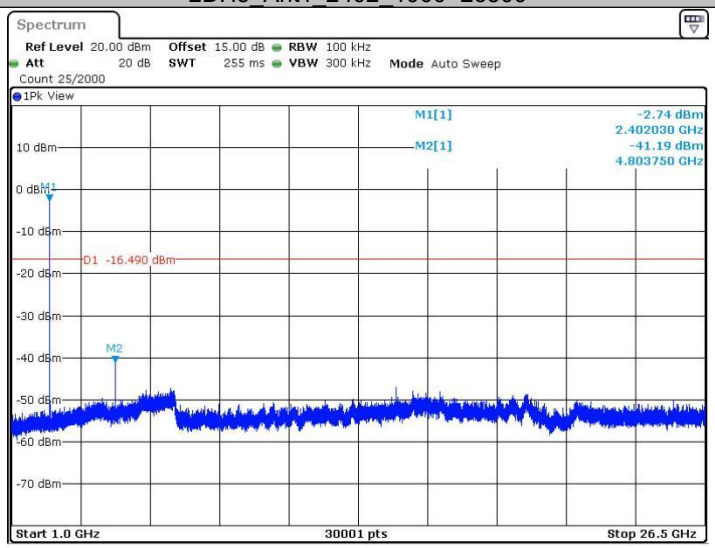
2DH5_Ant1_2402_0~Reference



2DH5_Ant1_2402_30~1000

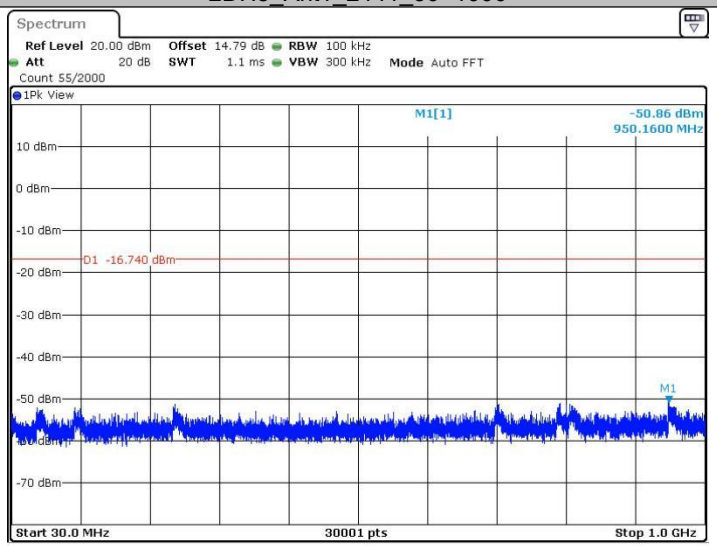


2DH5_Ant1_2402_1000~26500

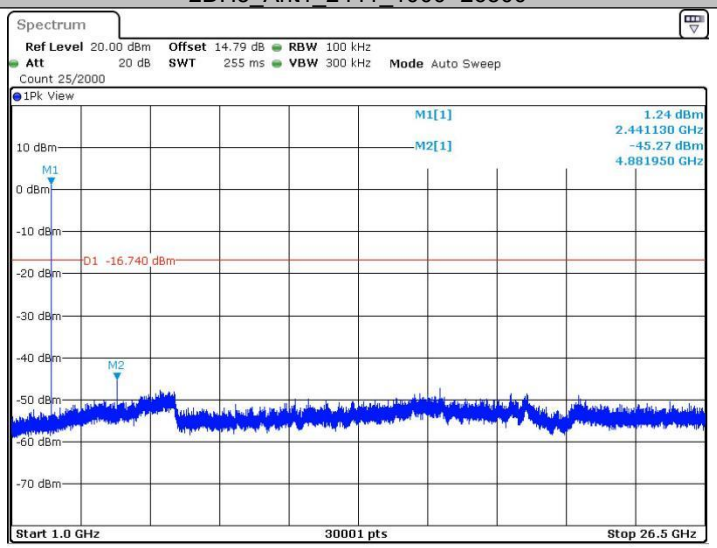


2DH5_Ant1_2441_0~Reference

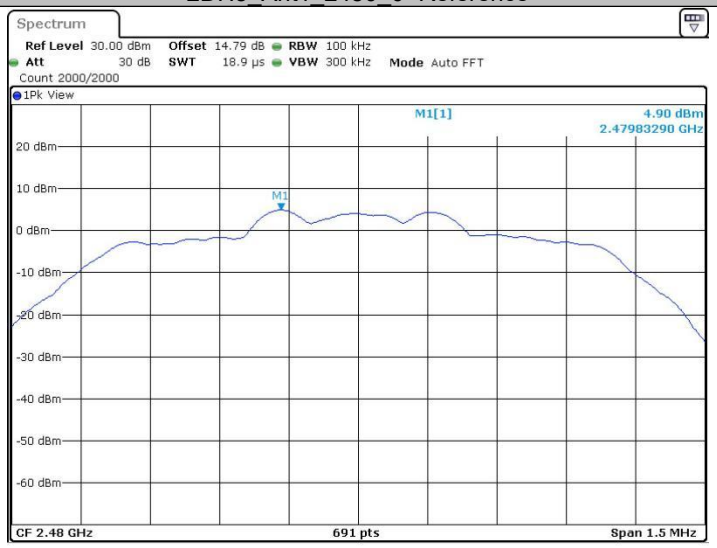
2DH5_Ant1_2441_30~1000



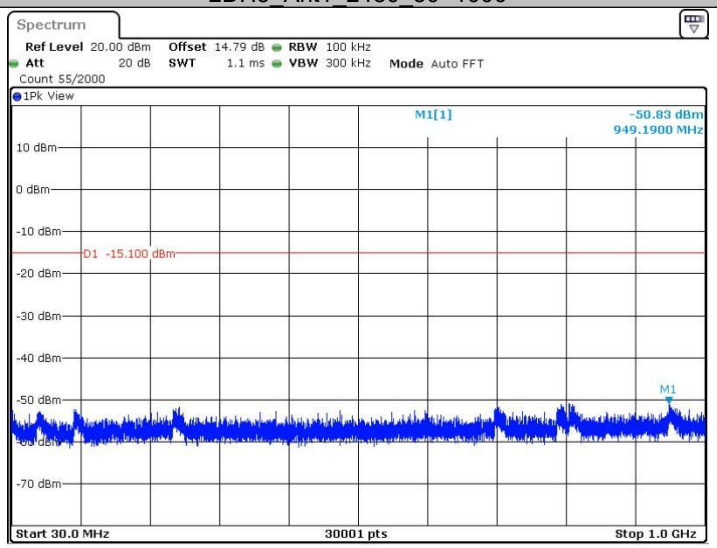
2DH5_Ant1_2441_1000~26500



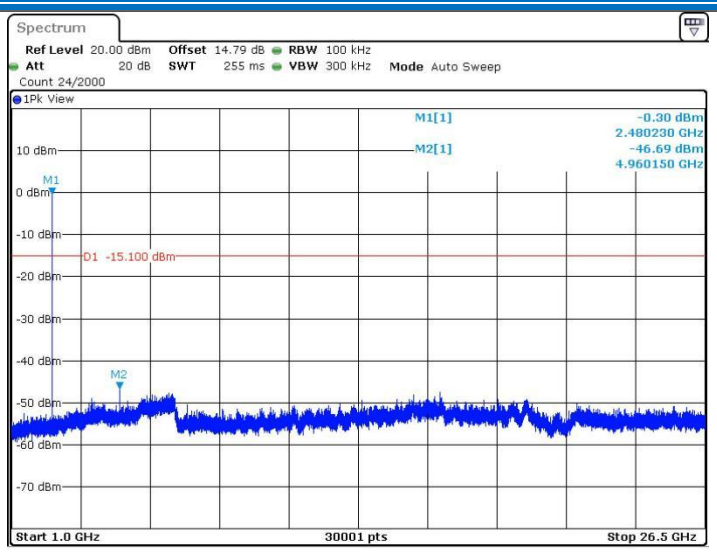
2DH5_Ant1_2480_0~Reference



2DH5_Ant1_2480_30~1000

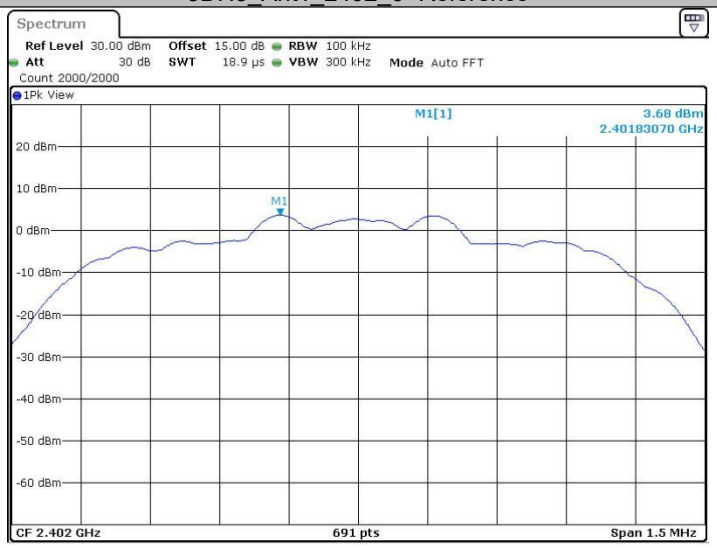


2DH5_Ant1_2480_1000~26500



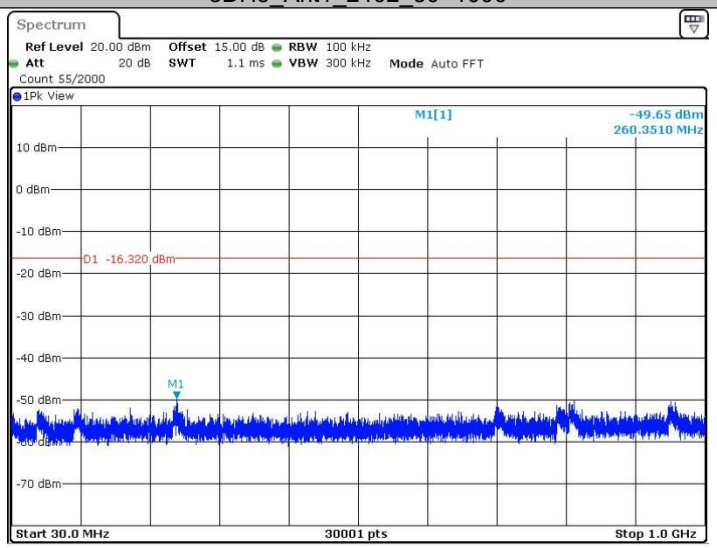
Date: 18.SEP.2024 10:36:00

3DH5_Ant1_2402_0~Reference



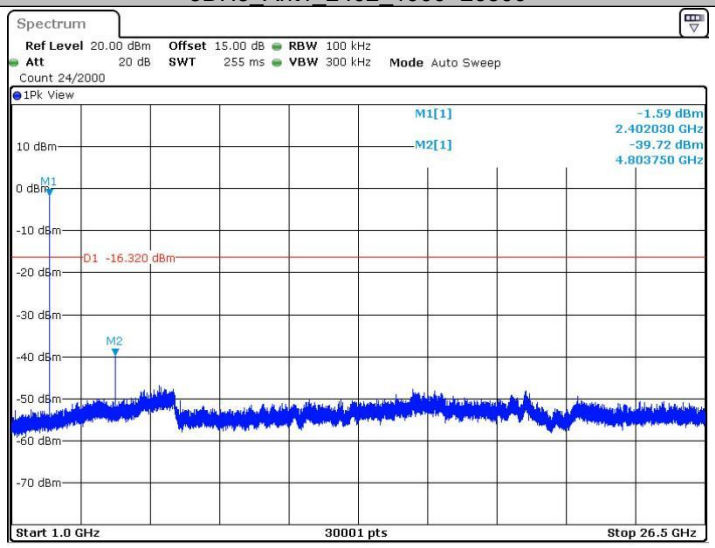
Date: 18.SEP.2024 10:40:38

3DH5_Ant1_2402_30~1000



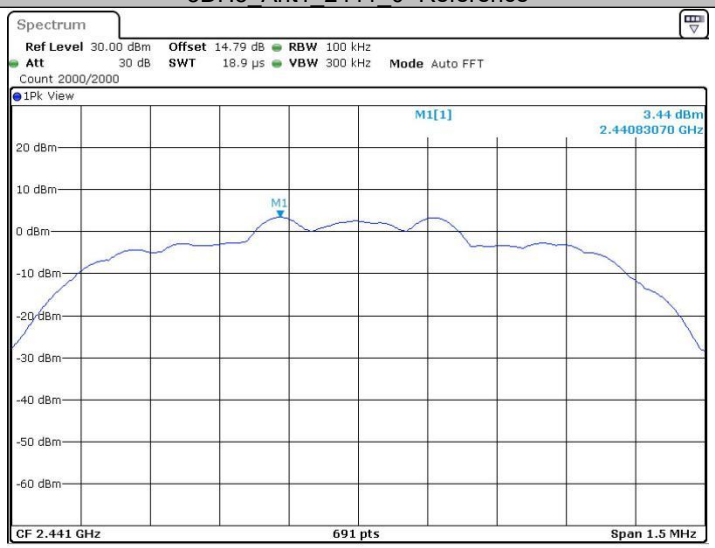
Date: 18.SEP.2024 10:40:44

3DH5_Ant1_2402_1000~26500



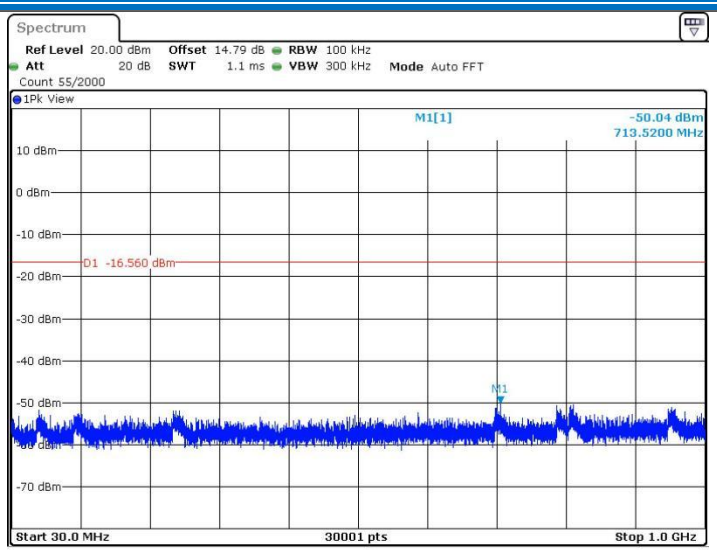
Date: 18.SEP.2024 10:41:06

3DH5_Ant1_2441_0~Reference



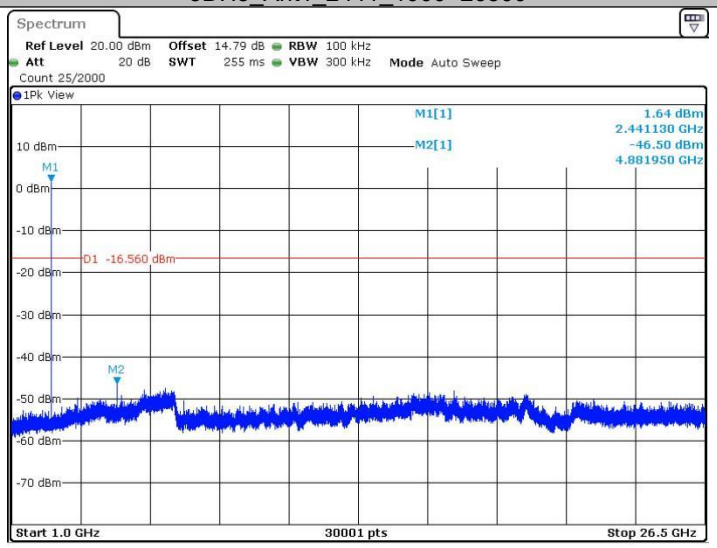
Date: 18.SEP.2024 10:41:40

3DH5_Ant1_2441_30~1000



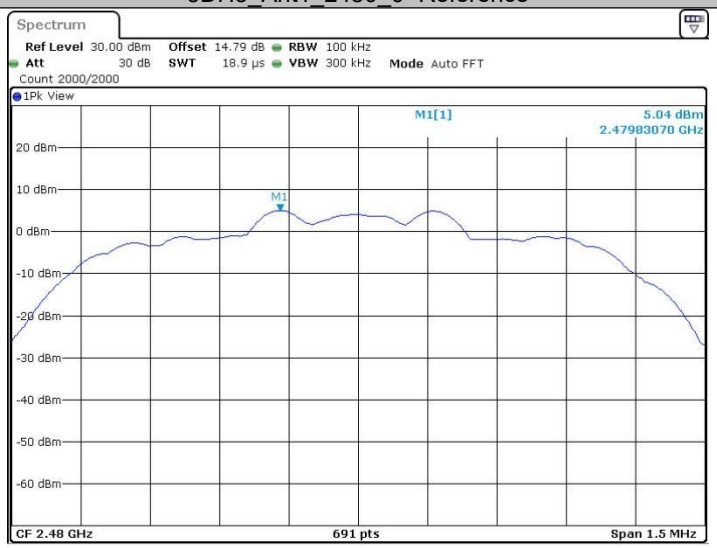
Date: 18.SEP.2024 10:41:46

3DH5_Ant1_2441_1000~26500



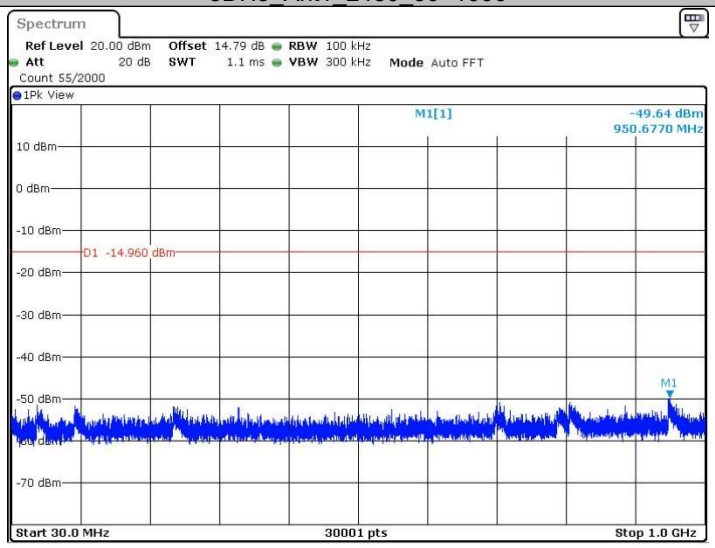
Date: 18.SEP.2024 10:42:08

3DH5_Ant1_2480_0~Reference

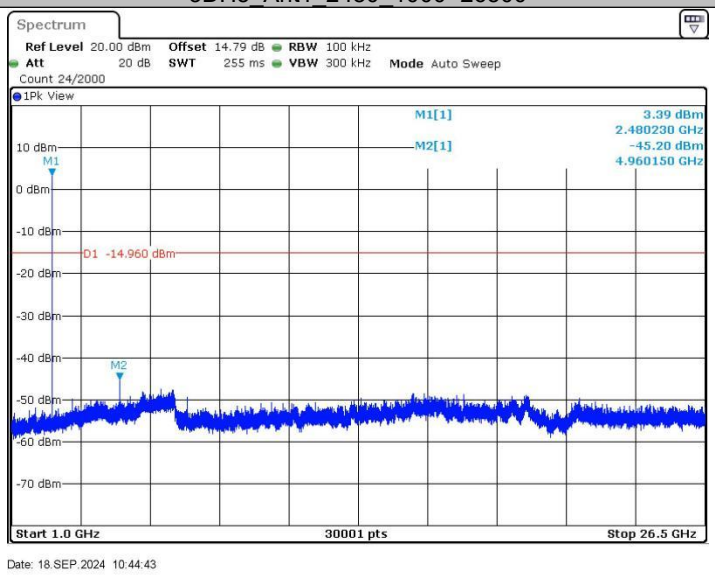


Date: 18.SEP.2024 10:44:15

3DH5_Ant1_2480_30~1000



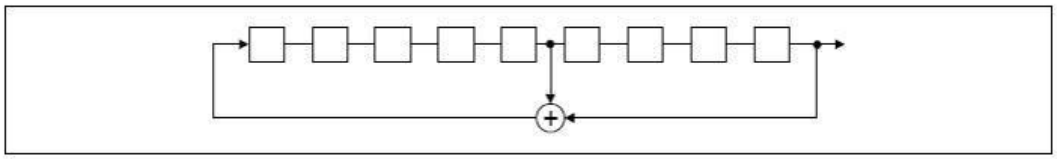
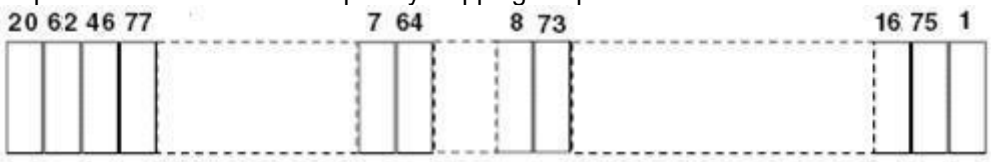
3DH5_Ant1_2480_1000~26500



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.

5.11 Pseudorandom Frequency Hopping Sequence

Test Requirement:	RSS247 5.1(2) requirement:
FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSs operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the -20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W. 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.	
EUT Pseudorandom Frequency Hopping Sequence	
The pseudorandom 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: 2^9-1 = 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:  Each frequency used equally on the average by each transmitter. The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.	
The device does not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.	

5.12 Radiated Spurious Emission & Restricted bands

Test Requirement:	RSS-Gen Issue 5
Test Method:	ANSI C63.10: 2013 & RSS-Gen Issue 5
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.015MHz	Quasi-peak	200Hz	1kHz	Quasi-peak
0.015MHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120 kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	Quasi-peak	300
0.490MHz-1.705MHz	24000/F(kHz)	-	Quasi-peak	30
1.705MHz-30MHz	30	-	Quasi-peak	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
		74.0	Peak	3

Test Setup:

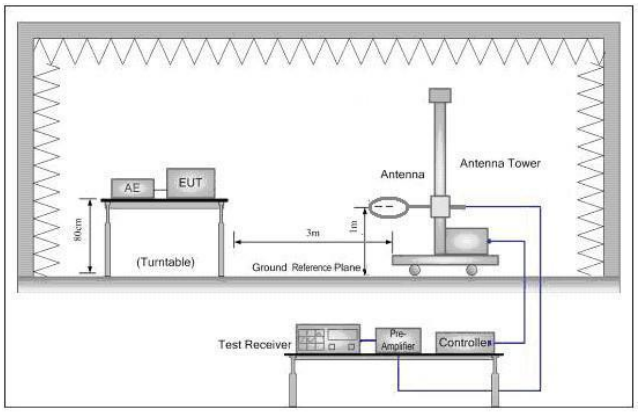


Figure 1. Below 30MHz

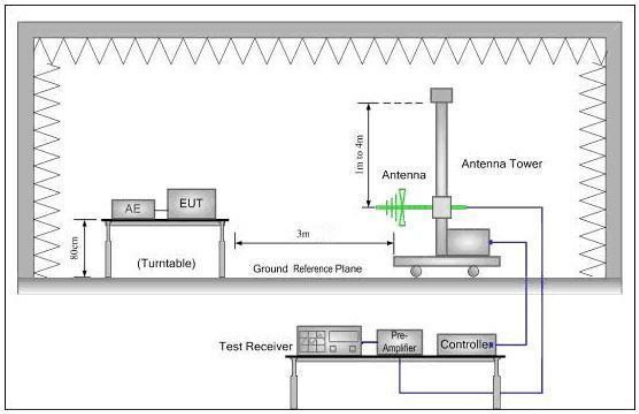


Figure 2. 30MHz to 1GHz

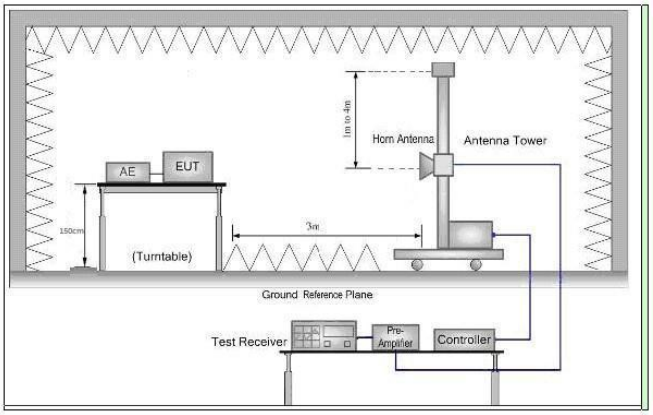


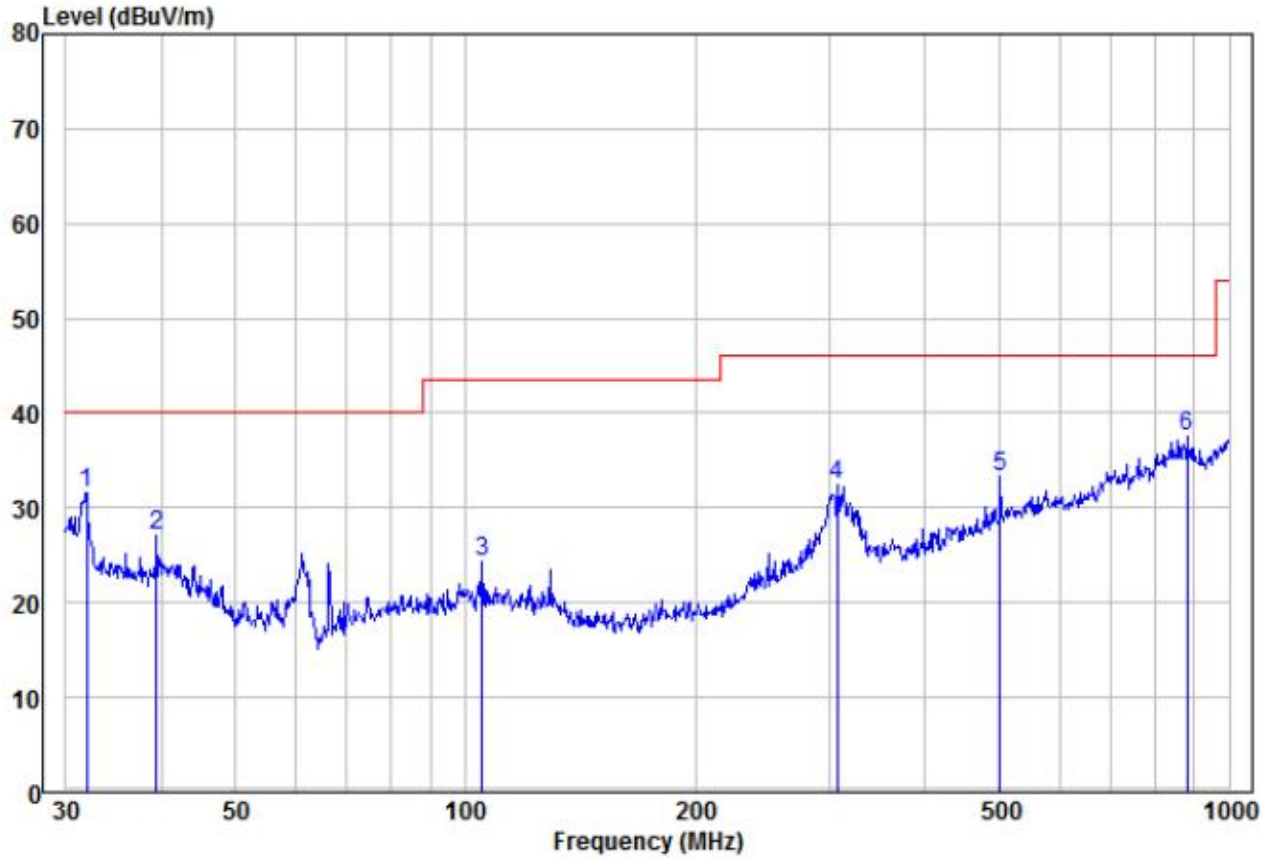
Figure 3. Above 1 GHz

Test Procedure:	a. For below 1GHz test, the EUT was placed on the top of a rotating table 0.8 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. b. For above 1GHz test, 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 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 height 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. 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. h. Test the EUT in the lowest channel (2402MHz),the middle channel (2441MHz),the Highest channel (2480MHz) i. 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. j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Non-hopping transmitting mode or receiving mode with all kind of modulation and all kind of data type Transmitting mode Receiving mode

Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. Pretest the EUT at Transmitting mode, Charge + Transmitting mode, Receiving mode and Charge + Receiving mode, found the Charge + Transmitting mode which it is worse case For below 1GHz part, through pre-scan, the worst case is the highest channel. Only the worst case is recorded in the report.
Test Results:	Pass

5.12.1 Radiated Emission below 1GHz

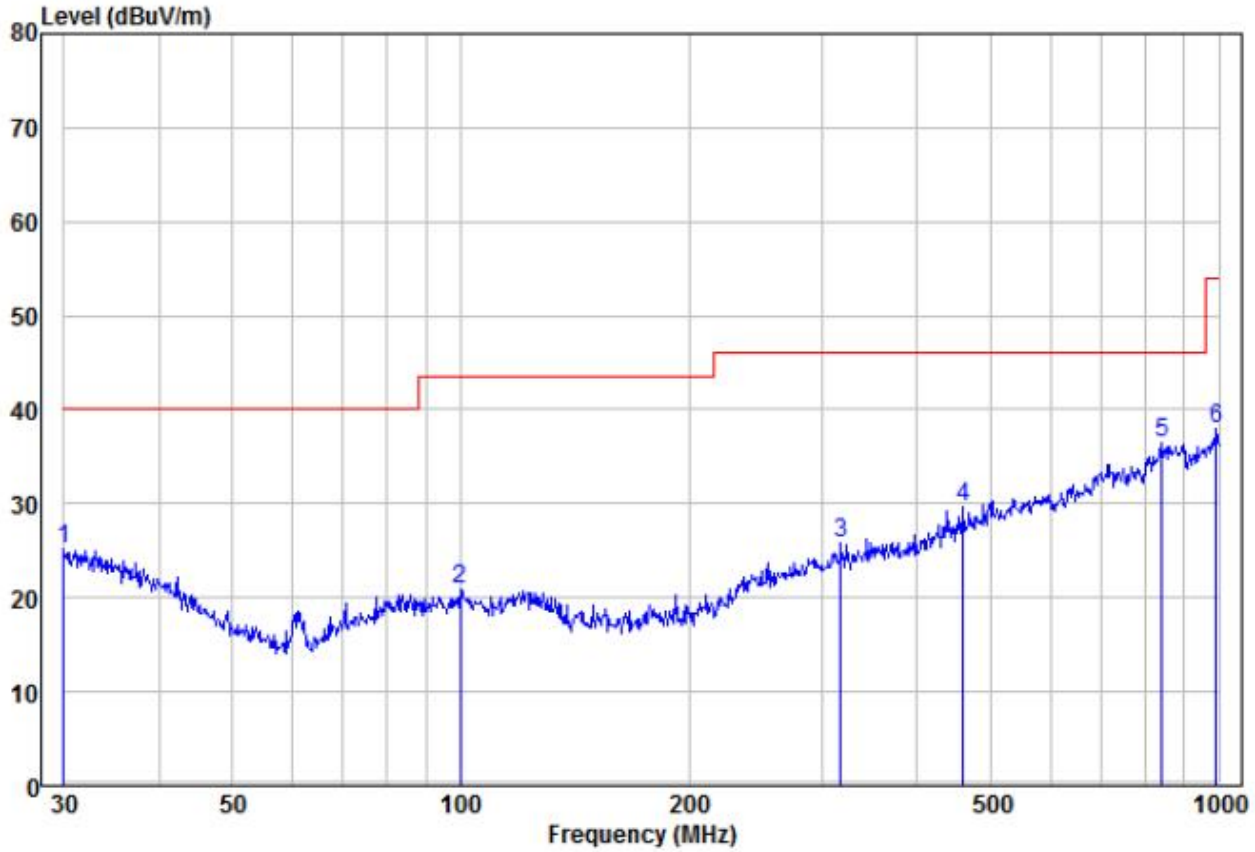
Vertical



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1 pp	31.95	15.98	15.68	31.66	40.00	-8.34	Peak	VERTICAL
2	39.44	13.37	13.64	27.01	40.00	-12.99	Peak	VERTICAL
3	105.27	12.86	11.53	24.39	43.50	-19.11	Peak	VERTICAL
4	306.75	16.83	15.50	32.33	46.00	-13.67	Peak	VERTICAL
5	501.18	13.04	20.31	33.35	46.00	-12.65	Peak	VERTICAL
6	881.41	10.70	26.75	37.45	46.00	-8.55	Peak	VERTICAL

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.

Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	30.00	9.09	16.08	25.17	40.00	-14.83	Peak	HORIZONTAL
2	99.88	9.20	11.75	20.95	43.50	-22.55	Peak	HORIZONTAL
3	317.70	9.99	15.78	25.77	46.00	-20.23	Peak	HORIZONTAL
4	460.73	10.76	18.95	29.71	46.00	-16.29	Peak	HORIZONTAL
5 pp	842.13	9.59	26.82	36.41	46.00	-9.59	Peak	HORIZONTAL
6	993.01	10.39	27.52	37.91	54.00	-16.09	Peak	HORIZONTAL

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.

5.12.2 Transmitter Emission above 1GHz

Worse case mode:		GFSK(DH5)		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	54.67	-9.2	45.47	74	-28.53	**Peak**	**H**
2400	55.34	-9.39	45.95	74	-28.05	Peak	H
4804	51.94	-4.33	47.61	74	-26.39	Peak	H
7206	48.70	1.01	49.71	74	-24.29	Peak	H
2390	53.55	-9.2	44.35	74	-29.65	**Peak**	**V**
2400	56.10	-9.39	46.71	74	-27.29	Peak	V
4804	53.98	-4.33	49.65	74	-24.35	Peak	V
7206	50.99	1.01	52.00	74	-22.00	Peak	V

Worse case mode:		GFSK(DH5)		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	51.45	-4.11	47.34	74	-26.66	peak	H
7323	51.15	1.51	52.66	74	-21.34	peak	H
4882	51.86	-4.11	47.75	74	-26.25	peak	V
7323	50.38	1.51	51.89	74	-22.11	peak	V

Worse case mode:		GFSK(DH5)		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	54.97	-9.29	45.68	74	-28.32	**Peak**	**H**
4960	50.74	-4.04	46.70	74	-27.30	Peak	H
7440	50.22	1.57	51.79	74	-22.21	Peak	H
2483.5	54.81	-9.29	45.52	74	-28.48	**Peak**	**V**
4960	49.00	-4.04	44.96	74	-29.04	Peak	V
7440	49.80	1.57	51.37	74	-22.63	Peak	V

Worse case mode:		π /4DQPSK (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	55.87	-9.2	46.67	74	-27.33	**Peak**	**H**
2400	55.51	-9.39	46.12	74	-27.88	Peak	H
4804	51.82	-4.33	47.49	74	-26.51	Peak	H
7206	50.09	1.01	51.10	74	-22.90	Peak	H
2390	55.60	-9.2	46.40	74	-27.60	**Peak**	**V**
2400	54.67	-9.39	45.28	74	-28.72	Peak	V
4804	54.12	-4.33	49.79	74	-24.21	Peak	V
7206	48.77	1.01	49.78	74	-24.22	Peak	V

Worse case mode:		π /4DQPSK (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	51.51	-4.11	47.40	74	-26.60	peak	H
7323	51.04	1.51	52.55	74	-21.45	peak	H
4882	53.53	-4.11	49.42	74	-24.58	peak	V
7323	50.72	1.51	52.23	74	-21.77	peak	V

Worse case mode:		π /4DQPSK (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	55.38	-9.29	46.09	74	-27.91	**Peak**	**H**
4960	52.40	-4.04	48.36	74	-25.64	Peak	H
7440	49.23	1.57	50.80	74	-23.20	Peak	H
2483.5	55.60	-9.29	46.31	74	-27.69	**Peak**	**V**
4960	50.33	-4.04	46.29	74	-27.71	Peak	V
7440	50.14	1.57	51.71	74	-22.29	Peak	V

Worse case mode:	8DPSK (3DH5)		Test channel:		Lowest	
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
2390	54.94	-9.2	45.74	74	-28.26	**Peak**	**H**
2400	54.35	-9.39	44.96	74	-29.04	Peak	H
4804	54.11	-4.33	49.78	74	-24.22	Peak	H
7206	51.06	1.01	52.07	74	-21.93	Peak	H
2390	53.72	-9.2	44.52	74	-29.48	**Peak**	**V**
2400	55.76	-9.39	46.37	74	-27.63	Peak	V
4804	52.43	-4.33	48.10	74	-25.90	Peak	V
7206	50.21	1.01	51.22	74	-22.78	Peak	V

Worse case mode:	8DPSK (3DH5)		Test channel:		Middle	
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
4882	50.43	-4.11	46.32	74	-27.68	peak	H
7323	50.61	1.51	52.12	74	-21.88	peak	H
4882	51.64	-4.11	47.53	74	-26.47	peak	V
7323	48.80	1.51	50.31	74	-23.69	peak	V

Worse case mode:	8DPSK (3DH5)		Test channel:		Highest	
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detector Type	Ant. Pol. H/V
2483.5	54.94	-9.29	45.65	74	-28.35	**Peak**	**H**
4960	51.31	-4.04	47.27	74	-26.73	Peak	H
7440	49.91	1.57	51.48	74	-22.52	Peak	H
2483.5	56.07	-9.29	46.78	74	-27.22	**Peak**	**V**
4960	49.24	-4.04	45.20	74	-28.80	Peak	V
7440	49.48	1.57	51.05	74	-22.95	Peak	V

Remark:

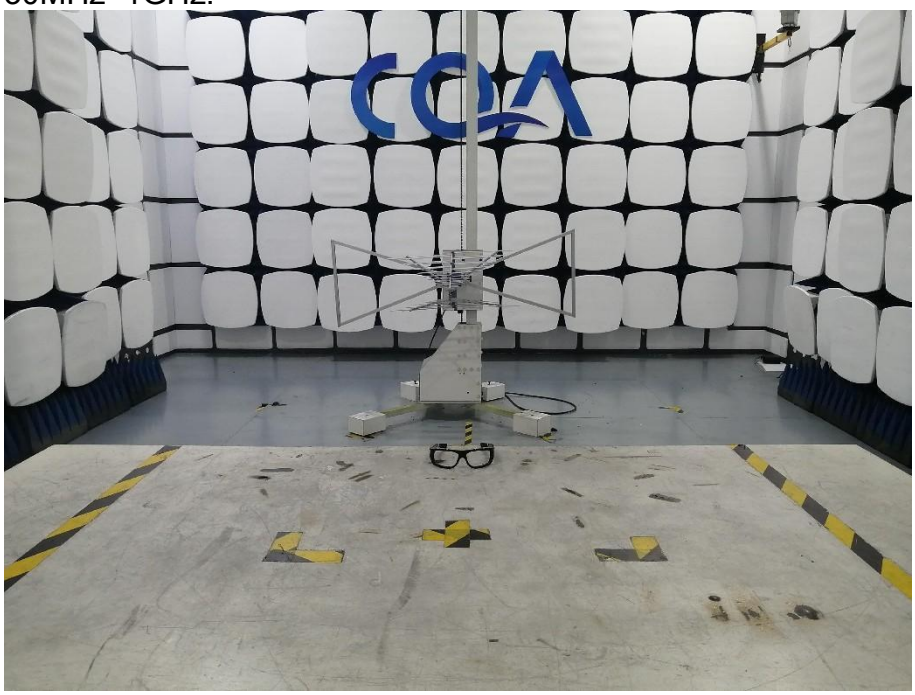
1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
2) Scan from 9kHz to 25GHz, the disturbance above 10GHz 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 Spurious Emission Test Setup

9kHz~30MHz:

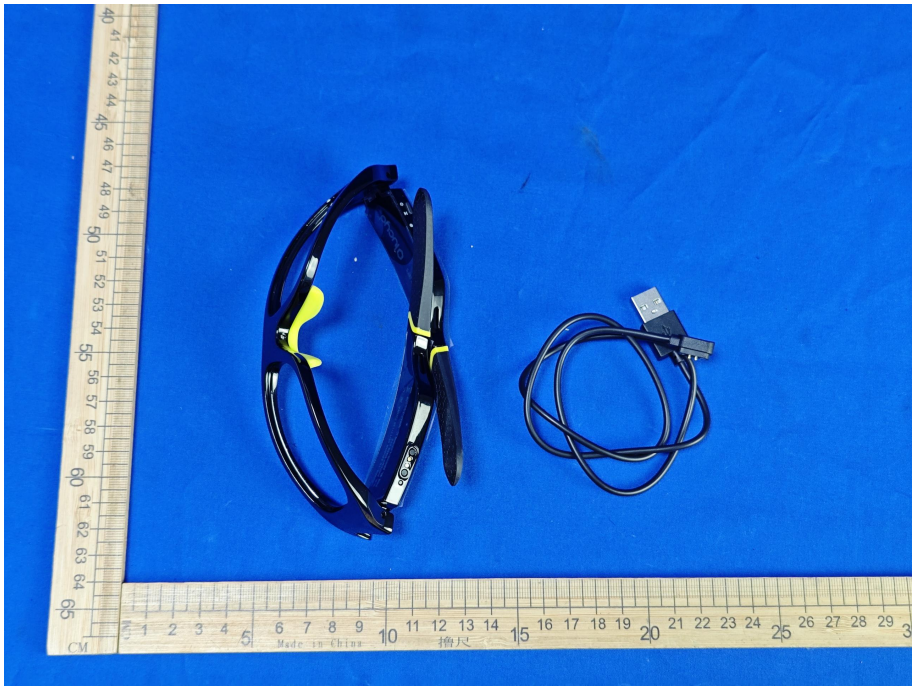
30MHz~1GHz:



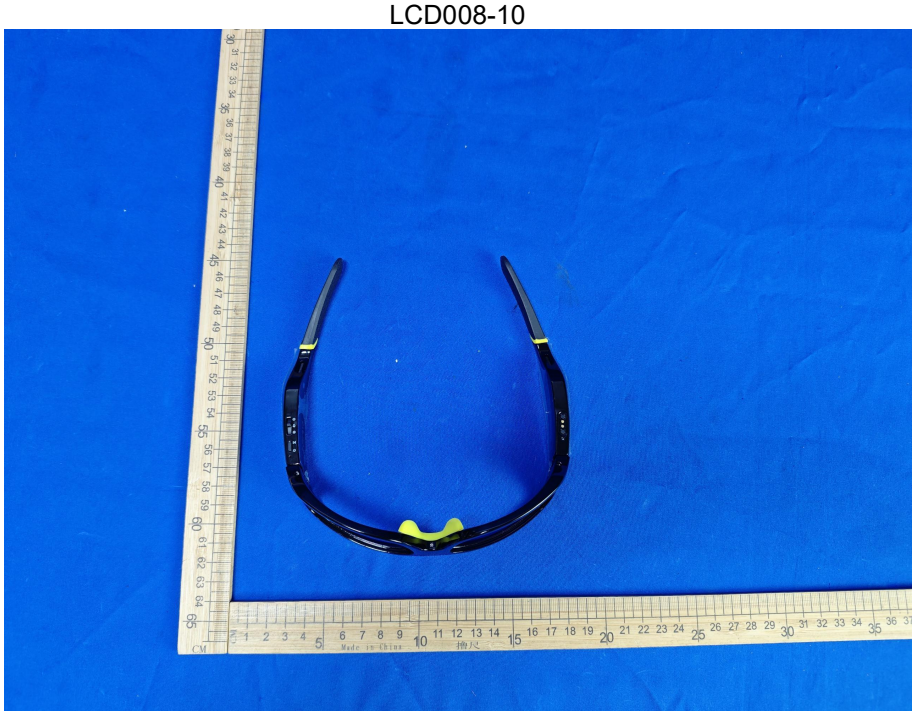
Above 1GHz:

6.2 Conducted Emission

7 Photographs - EUT Constructional Details

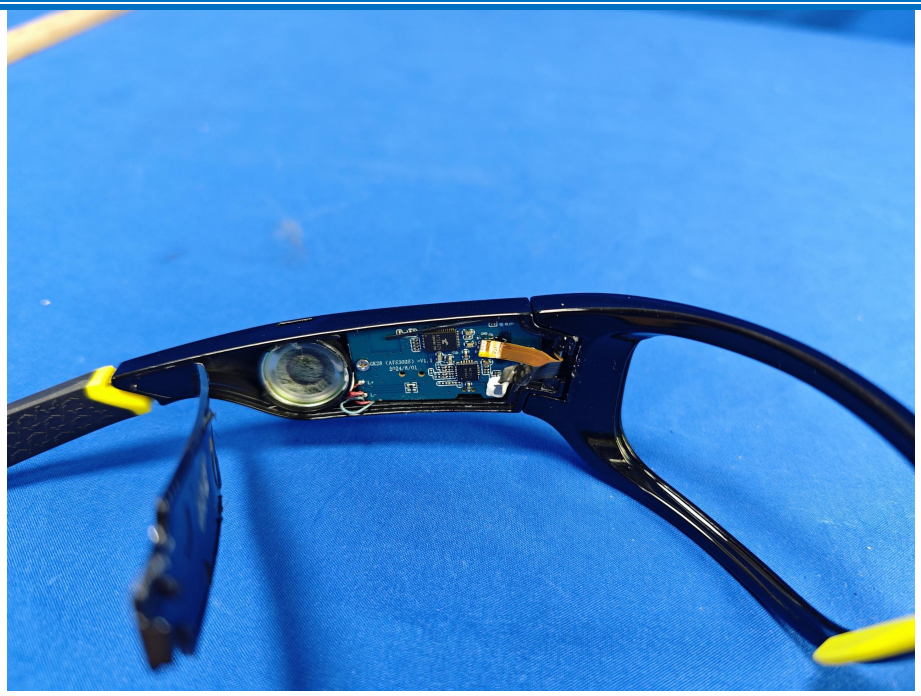


LCD008-10




CM
Made in China


CM
Made in China

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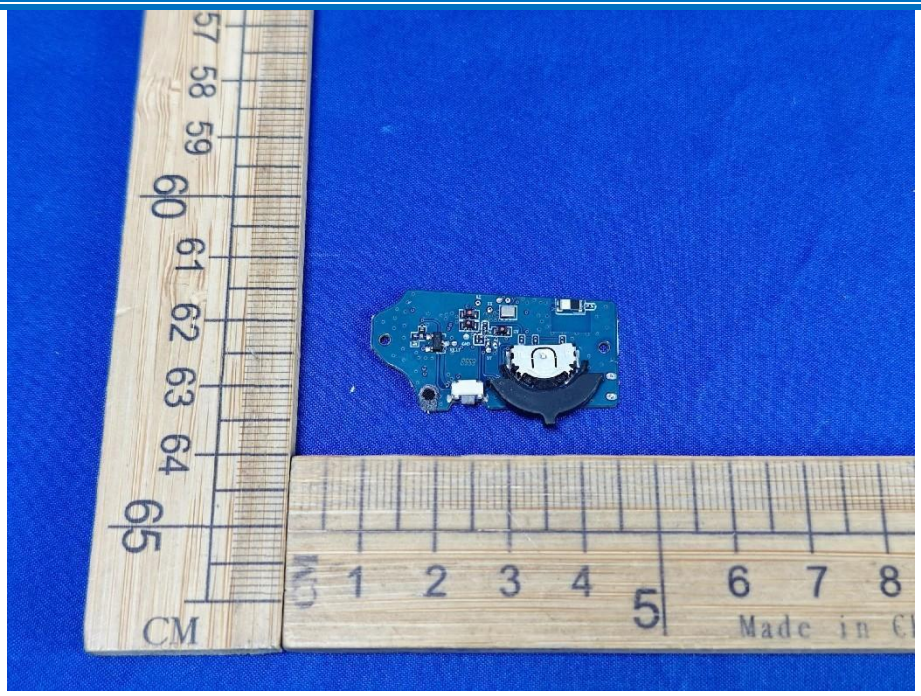
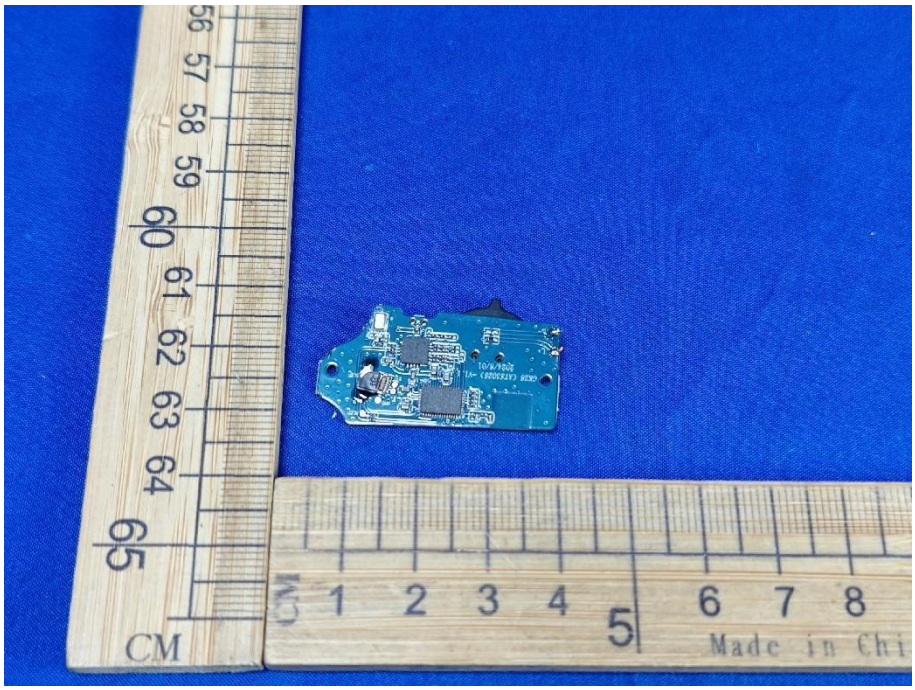
180mAh 0.67Wh
+240823468


CM
Made in C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Made in Chi

LCD010-10