

Test Report

Verified code: 672424

Report No.: E202309059135-01-7

Customer: Krämer Automotive Systems GmbH
Address: Obere Wässere 6-8 72764 Reutlingen Germany
Sample Name: Bentley Infotainment System(BIS)
Sample Model: KR-BIS
Receive Sample Date: Sep.22,2023
Test Date: Jan.10,2024 ~ May.06,2024
Reference Document: 47 CFR, FCC Part 15 Subpart C
RADIO FREQUENCY DEVICES:Subpart C—Intentional Radiators
Test Result: Pass

Prepared by: Chen Xiaocong
Chen Xiaocong

Reviewed by: Wu Haoting
Wu Haoting

Approved by: Xiao Liang
Xiao Liang



GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2024-07-23

GRG METROLOGY & TEST GROUP CO., LTD.

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TABLE OF CONTENTS

1.	TEST RESULT SUMMARY.....	6
2.	GENERAL DESCRIPTION OF EUT.....	7
2.1	APPLICANT.....	7
2.2	MANUFACTURER.....	7
2.3	FACTORY.....	7
2.4	BASIC DESCRIPTION OF EQUIPMENT UNDER TEST.....	7
2.5	TEST OPERATION MODE.....	8
2.6	LOCAL SUPPORTIVE.....	8
2.7	CONFIGURATION OF SYSTEM UNDER TEST.....	8
2.8	DUTY CYCLE.....	9
3.	LABORATORY AND ACCREDITATIONS.....	10
3.1	LABORATORY.....	10
3.2	ACCREDITATIONS.....	10
3.3	MEASUREMENT UNCERTAINTY.....	11
4.	LIST OF USED TEST EQUIPMENT AT GRGT.....	12
5.	TEST RESULTS.....	13
5.1	E.U.T. TEST CONDITIONS.....	13
6.	20dB BANDWIDTH.....	15
6.1	LIMITS.....	15
6.2	TEST PROCEDURES.....	15
6.3	TEST SETUP.....	15
6.4	TEST RESULTS.....	15
7.	CARRIER FREQUENCIES SEPARATED.....	21
7.1	LIMITS.....	21
7.2	TEST PROCEDURES.....	21
7.3	TEST SETUP.....	21
7.4	TEST RESULTS.....	21
8.	HOPPING CHANNEL NUMBER.....	24
8.1	LIMITS.....	24
8.2	TEST PROCEDURES.....	24
8.3	TEST SETUP.....	24
8.4	TEST RESULTS.....	24
9.	DWELL TIME.....	27
9.1	LIMITS.....	27
9.2	TEST PROCEDURES.....	27
9.3	TEST SETUP.....	27
9.4	TEST RESULTS.....	28
10.	MAXIMUM PEAK OUTPUT POWER.....	34
10.1	LIMITS.....	34
10.2	TEST PROCEDURES.....	34
10.3	TEST SETUP.....	34
10.4	TEST RESULTS.....	35

11.	CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS	36
11.1	LIMITS.....	36
11.2	TEST PROCEDURES	36
11.3	TEST SETUP	36
11.4	TEST RESULTS	37
12.	RADIATED SPURIOUS EMISSIONS	59
12.1	LIMITS.....	59
12.2	TEST PROCEDURES	59
12.3	TEST SETUP	63
12.4	DATA SAMPLE	64
12.5	TEST RESULTS	66
13.	RESTRICTED BANDS OF OPERATION.....	76
13.1	LIMITS.....	76
13.2	TEST PROCEDURES	77
13.3	TEST SETUP	77
13.4	TEST RESULTS	78
	APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM	86
	APPENDIX B. PHOTOGRAPH OF THE EUT	86

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202309059135-01-7	Original Issue	2024-05-21

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1. TEST RESULT SUMMARY

47 CFR, FCC Part 15 Subpart C 15.247, ANSI C63.10-2020 KDB 558074 D01 15.247 measurement guidance v05r02			
Standard	Item	Limit / Severity	Result
47 CFR, FCC Part 15 Subpart C (15.247)	Antenna Requirement	Section 15.203	PASS ¹⁾
	20dB Bandwidth	Section 15.247(a)(1)	PASS
	Carrier Frequencies Separated	Section 15.247(a)(1)	PASS
	Hopping Channel Number	Section 15.247(a)(1)(iii)	PASS
	Dwell Time	Section 15.247(a)(1)(iii)	PASS
	Maximum Peak Output Power	Section 15.247(b)(1)	PASS
	Conducted Emission	Section 15.207	N/A ²⁾
	Conducted band edges and Spurious Emission	Section 15.209 & 15.247(d)	PASS
	Radiated Spurious Emission	Section 15.209 & 15.247(d)	PASS
	Restricted bands of operation	Section 15.247 (d) & 15.205	PASS

Note:

- 1) The antenna is Ceramics antenna. The max gain of antenna is 2.47dBi, which accordance 15.203 is considered sufficient to comply with the provisions of this section.
- 2) Test is not applicable to this Equipment. This EUT is no AC mains power ports.

2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name: Kräemer Automotive Systems GmbH
Address: Obere Wässere 6-8 72764 Reutlingen Germany

2.2 MANUFACTURER

Name: Kräemer Automotive Systems GmbH
Address: Obere Wässere 6-8 72764 Reutlingen Germany

2.3 FACTORY

Name: Huizhou Foryou General Electronics Co., Ltd.
Address: No.2 District A, Foryou Industry Park, No. 1 North Shangxia Road, Dongjiang Hi tech Industry Park, 516005 Huizhou city, Guangdong Province, China(PROC)

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Bentley Infotainment System(BIS)
Model No.: KR-BIS
Trade Mark: BENTLEY
FCC ID: 2AD6S-KRBIS
Power Supply: DC 12V, 15A
Frequency Range: 2402MHz~2480MHz
Transmit Power: GFSK:4.10dBm
 $\pi/4$ -DQPSK:6.21dBm
8DPSK:6.65dBm
Type of Modulation: FHSS (GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps,8DPSK for 3Mbps)
Antenna Specification: Ceramics Antenna with 2.47dBi gain (Max)
Temperature Range: -20°C~60°C
Hardware Version: V0.1
Software Version: V00.00.01
Sample No: E202309059135-01-0001, E202309059135-01-0002

Note: The EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions.

2.5 TEST OPERATION MODE

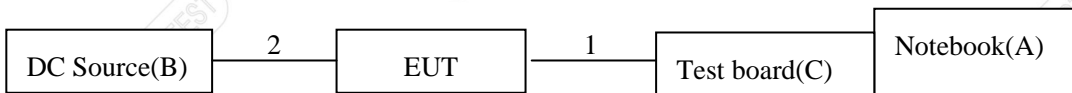
Mode No.	Description of the modes
1	Bluetooth(BT) fixed frequency transmitting

2.6 LOCAL SUPPORTIVE

No.	Name of Equipment	Manufacturer	Model	Serial Number
A	Notebook	DELL	Latitude3400	8RZFJW2
B	DC source	KEYSIGHT	E36131A	MY59001135
C	Test board	/	/	/

No.	Cable Type	Qty.	Shielded Type	Ferrite Core(Qty.)	Length
1	Serial cable	1	No	0	0.3m
2	DC cable	1	Yes	0	0.8m

2.7 CONFIGURATION OF SYSTEM UNDER TEST



Test software:

Software version	Test level
RTLBTAPP	default

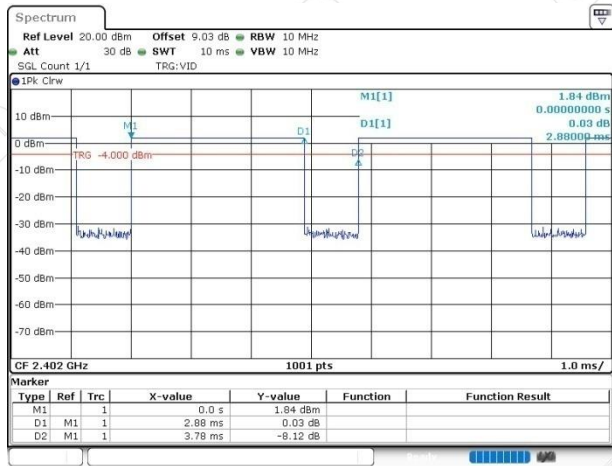
2.8 DUTY CYCLE

Environment: 20.1°C/68%RH/101.0kPa
 Tested By: Huang Tianmei

Voltage: DC 12V
 Date: 2024-01-10

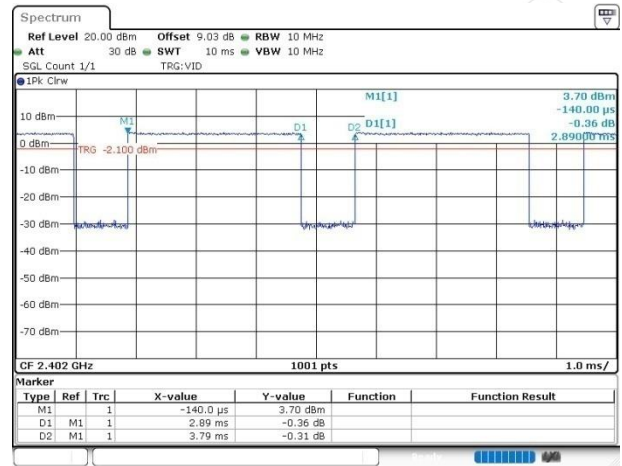
TestMode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	DC [%]	T [s]
DH5	Ant1	2402	2.88	3.78	76.19	0.00288
2DH5	Ant1	2402	2.89	3.79	76.25	0.00289
3DH5	Ant1	2402	2.89	3.79	76.25	0.00289

DH5_2402MHz



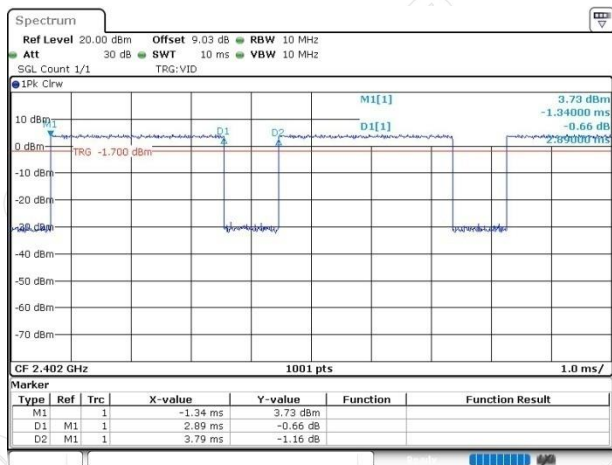
Date: 10, JAN, 2024 10:04:47

2DH5_2402MHz



Date: 10, JAN, 2024 10:20:56

3DH5_2402MHz



Date: 10, JAN, 2024 10:25:19

3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

Add : No.1301 Guangang Road Xinlan Community, Guanlan Street, Longhua District
Shenzhen, 518110, People's Republic of China

P.C. : 518110

Tel : 0755-61180008

Fax : 0755-61180008

3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to GB/T 27025(ISO/IEC 17025:2017)

USA A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada ISED (Company Number: 24897, CAB identifier:CN0069)

USA FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.grgtest.com>

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3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement		Frequency	Uncertainty	
Radiated Emission	X	9kHz~30MHz	4.4dB ¹⁾	
	Y	9kHz~30MHz	4.4dB ¹⁾	
	Z	9kHz~30MHz	4.4dB ¹⁾	
	Horizontal		30MHz~200MHz	4.6dB ¹⁾
			200MHz~1000MHz	4.8dB ¹⁾
			1GHz~18GHz	5.0dB ¹⁾
			18GHz~26.5GHz	5.2dB ¹⁾
	Vertical		30MHz~200MHz	4.7dB ¹⁾
			200MHz~1000MHz	4.7dB ¹⁾
			1GHz~18GHz	5.1dB ¹⁾
			18GHz~26.5GHz	5.4dB ¹⁾

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.78 dB
Occupied channel bandwidth	0.40 dB
Unwanted emission, conducted	0.68 dB
Humidity	6.00 %
Temperature	2.0°C

This uncertainty represents an expanded uncertainty factor of $k=2$.

4. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Hopping Channel Number & Dwell Time & 20 dB Bandwidth & Conducted band edges and Spurious Emission & Carrier Frequencies Separated				
Spectrum Analyzer	R&S	FSV30	1321.3008K30 -104381-rH	2024-10-13
Automatic control unit	TONSCEND	JS0806-2	2018060317	2024-08-04
BT/WIFI System	Tonscend	JS1120-3		
Radiated Spurious Emission&Restricted bands of operation				
Test S/W	EZ	CCS-03A1		
Loop Antenna	Schwarzbeck	FMZB 1513-60	1513-60-56	2024-07-15
Loop Antenna	Schwarzbeck	FMZB 1513-60	1513-60-56	2025-05-07
Preamplifier	SHIRONG ELECTRONIC	DLNA-30M1G- G40	20200928001	2025-01-30
Bi-log Antenna	Schwarzbeck	VULB9160	VULB9160-3402	2024-10-06
Horn Antenna	Schwarzbeck	BBHA 9120D	02143	2024-09-23
Test Receiver	R&S	ESR26	101758	2024-09-22
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2024-09-18
Amplifier	Tonscend	TAP01018048	AP20E8060075	2025-03-01
Amplifier	Tonscend	TAP184050	AP20E806071	2025-03-01
Amplifier	SHIRONG ELECTRONIC	DLNA-1G18G- G40	20200928005	2024-08-17
Test S/W	Tonscend	JS36-RSE/2.5.1.5		
Maximum Peak Output Power				
Pulse power sensor	Anristu	MA2411B	1126150	2024-02-12
Pulse power sensor	Anristu	MA2411B	1126150	2025-01-11
Power meter	Anristu	ML2495A	1204003	2024-02-12
Power meter	Anristu	ML2495A	1204003	2025-01-11

Note: The calibration interval of the above test instruments is 12 months.

5. TEST RESULTS

5.1 E.U.T. TEST CONDITIONS

Test frequencies:

According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top 1 near middle and 1 near bottom

EUT channels and frequencies list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2416	28	2430
1	2403	15	2417	29	2431
2	2404	16	2418	30	2432
3	2405	17	2419	31	2433
4	2406	18	2420	32	2434
5	2407	19	2421	33	2435
6	2408	20	2422	34	2436
7	2409	21	2423	35	2437
8	2410	22	2424	36	2438
9	2411	23	2425	37	2439
10	2412	24	2426	38	2440
11	2413	25	2427	39	2441
12	2414	26	2428	40	2442
13	2415	27	2429	41	2443

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	2444	55	2457	68	2470
43	2445	56	2458	69	2471
44	2446	57	2459	70	2472
45	2447	58	2460	71	2473
46	2448	59	2461	72	2474
47	2449	60	2462	73	2475
48	2450	61	2463	74	2476
49	2451	62	2464	75	2477
50	2452	63	2465	76	2478
51	2453	64	2466	77	2479
52	2454	65	2467	78	2480
53	2455	66	2468		
54	2456	67	2469		

Test frequency is the lowest channel: 0 frequency(2402MHz), middle channel: 39 frequency (2441MHz) and highest channel: 78 frequency(2480MHz)

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6. 20dB BANDWIDTH

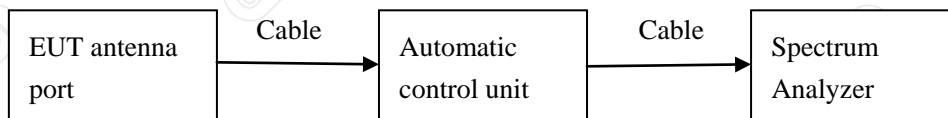
6.1 LIMITS

Frequency hopping systems operating in the 2400-2483.5 MHz band 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 the systems operate with an output power no greater than 125 mW.

6.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Set the spectrum analyzer as RBW=20kHz, VBW=50kHz, Span=3MHz, Sweep = auto. Allow the trace to stabilize, record 20dB bandwidth value
- 3) Repeat until all the test channels are investigated.

6.3 TEST SETUP



6.4 TEST RESULTS

Environment: 20.1 °C/67%RH/101.0kPa
 Tested By:Huang Tianmei

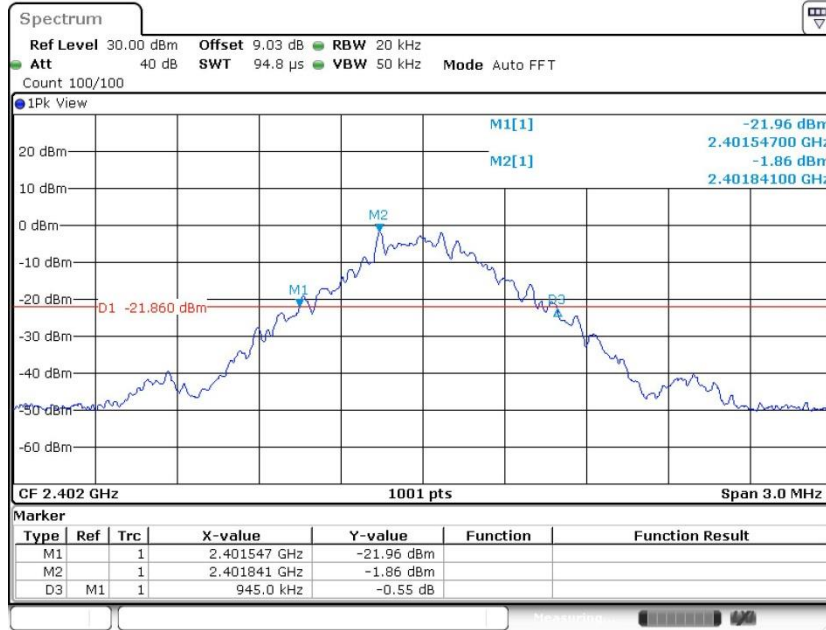
Voltage:DC 12V
 Date: 2024-01-10

Test mode	Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
DH5	Lowest	2402	945
	Middle	2441	942
	Highest	2480	942
Test mode	Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
2DH5	Lowest	2402	1239
	Middle	2441	1239
	Highest	2480	1239
Test mode	Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
3DH5	Lowest	2402	1245
	Middle	2441	1245
	Highest	2480	1245

Result plot as follows:

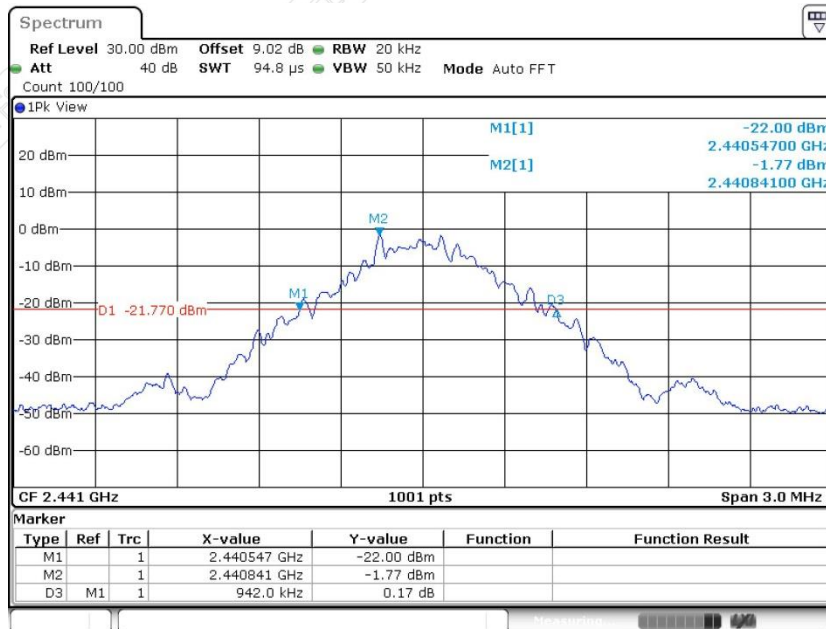
DH5

LowestChannel



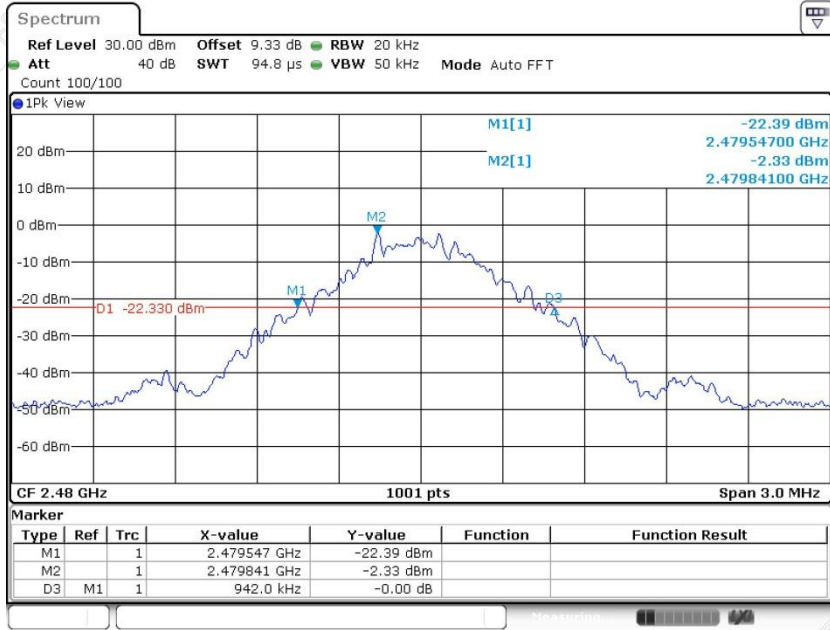
Date: 10.JAN.2024 10:04:55

Middle Channel



Date: 10.JAN.2024 10:16:18

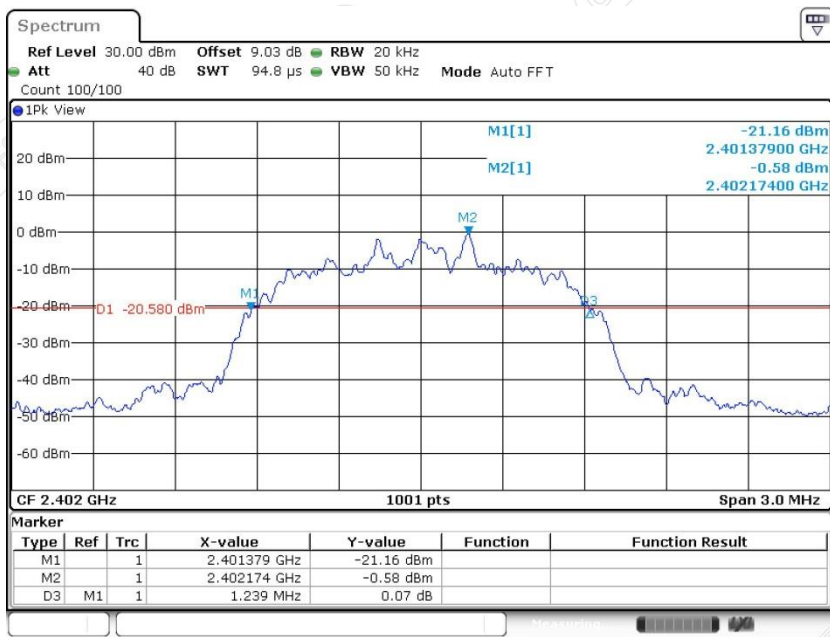
Highest Channel



Date: 10.JAN.2024 10:17:41

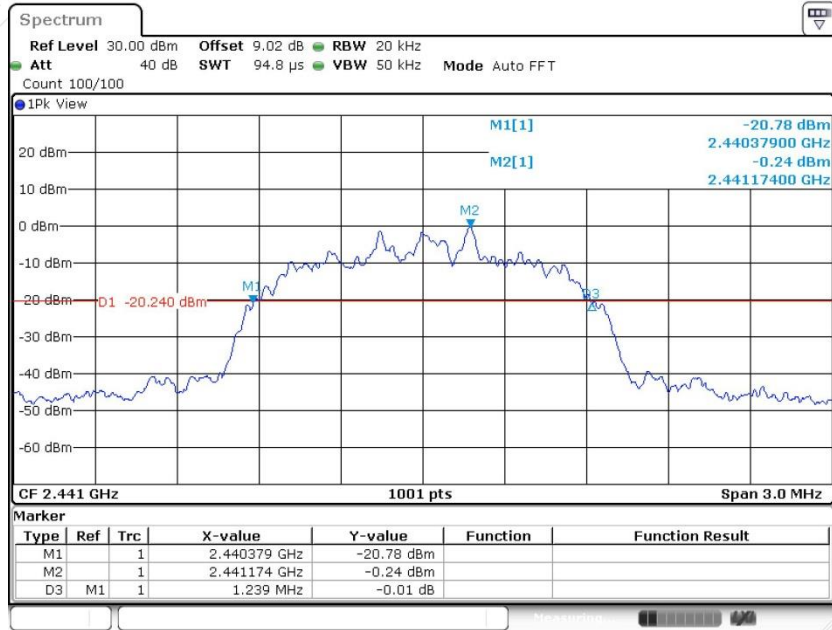
2DH5

LowestChannel



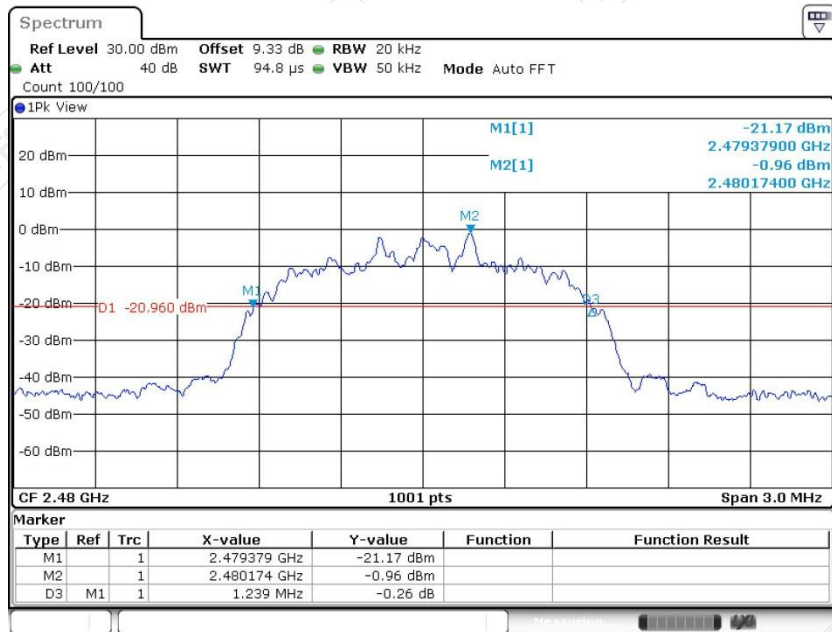
Date: 10.JAN.2024 10:21:05

Middle Channel



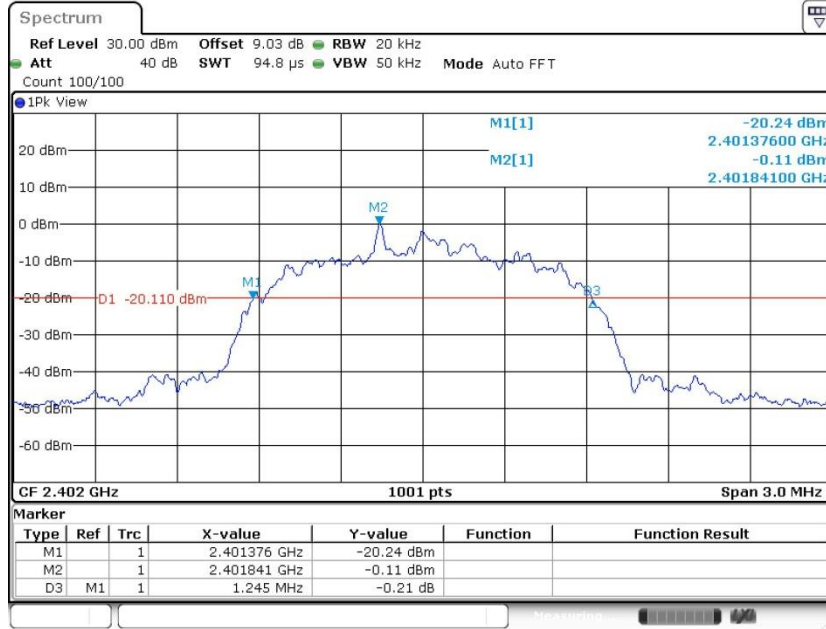
Date: 10. JAN. 2024 10:22:34

Highest Channel



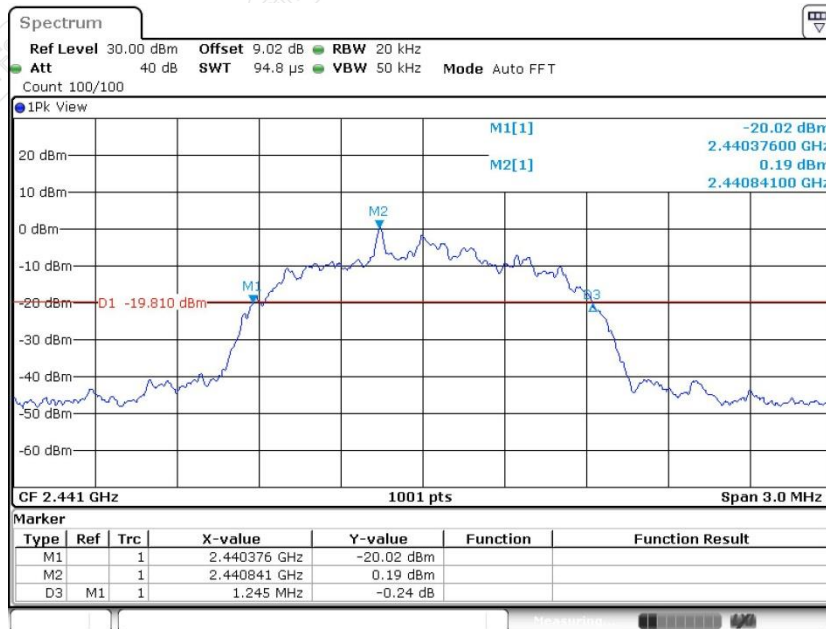
Date: 10. JAN. 2024 10:23:56

3DH5 LowestChannel



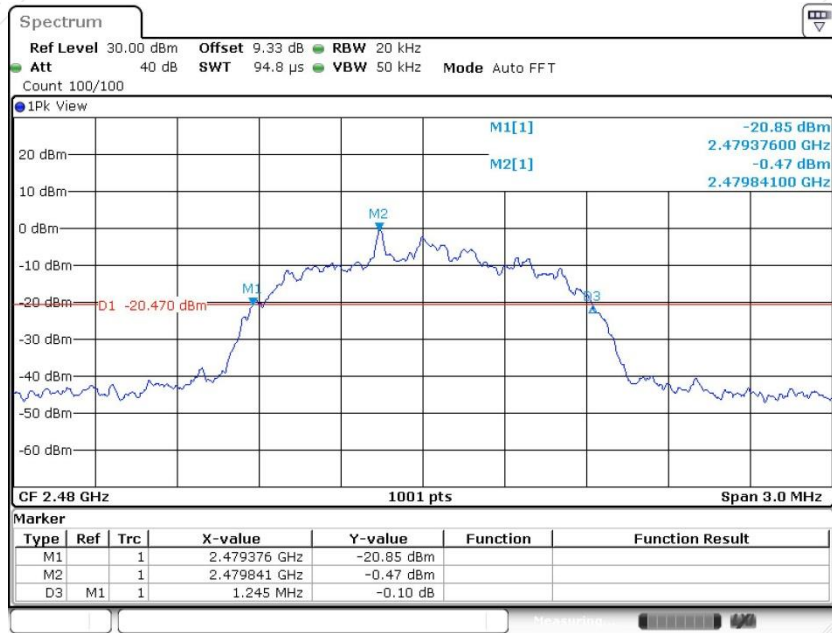
Date: 10.JAN.2024 10:25:47

Middle Channel



Date: 10.JAN.2024 10:27:21

Highest Channel



Date: 10.JAN.2024 10:28:36

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7. CARRIER FREQUENCIES SEPARATED

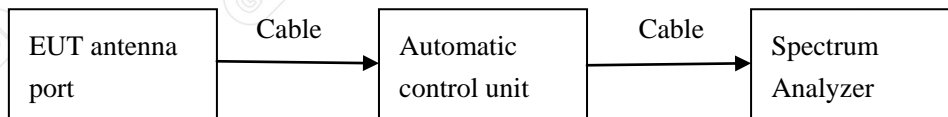
7.1 LIMITS

1) Frequency hopping systems operating in the 2400-2483.5 MHz band 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 the systems operate with an output power no greater than 125 mW.

7.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2) Set center frequency of spectrum analyzer = middle of hopping channel.
- 3) Set the spectrum analyzer as RBW=100kHz, VBW=300kHz, Adjust Span to 2MHz, Sweep = auto
- 4) Use the marker-delta function to mark hopping channel carrier frequencies and record the channel separation.

7.3 TEST SETUP



7.4 TEST RESULTS

Environment: 20.1°C/67%RH/101.0kPa
 Tested By: Huang Tianmei

Voltage: DC 12V
 Date: 2024-01-10

DH5

Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.003	628	> Two-thirds of the 20 dB Bandwidth	Pass

2DH5

Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.003	826	> Two-thirds of the 20 dB Bandwidth	Pass

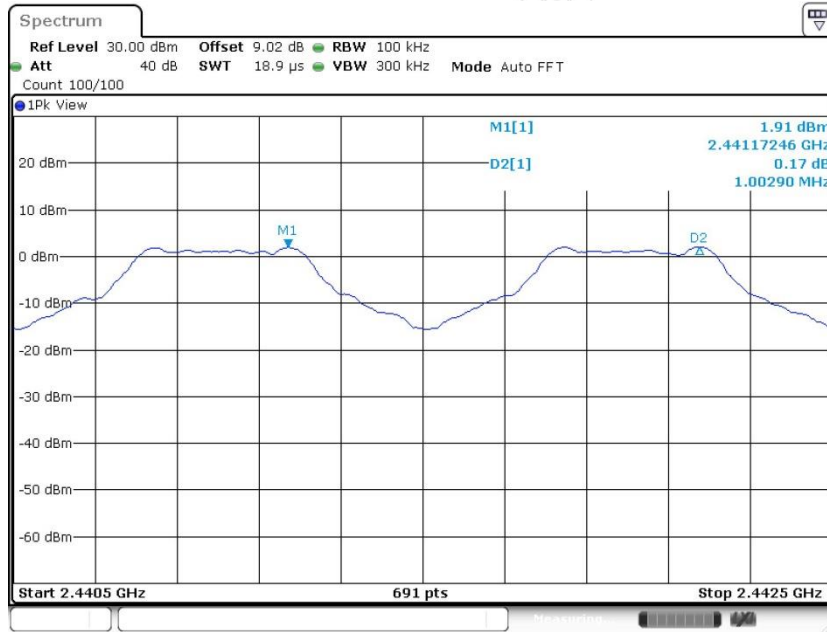
3DH5

Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.003	830	> Two-thirds of the 20 dB Bandwidth	Pass

Result plot as follows:

DH5

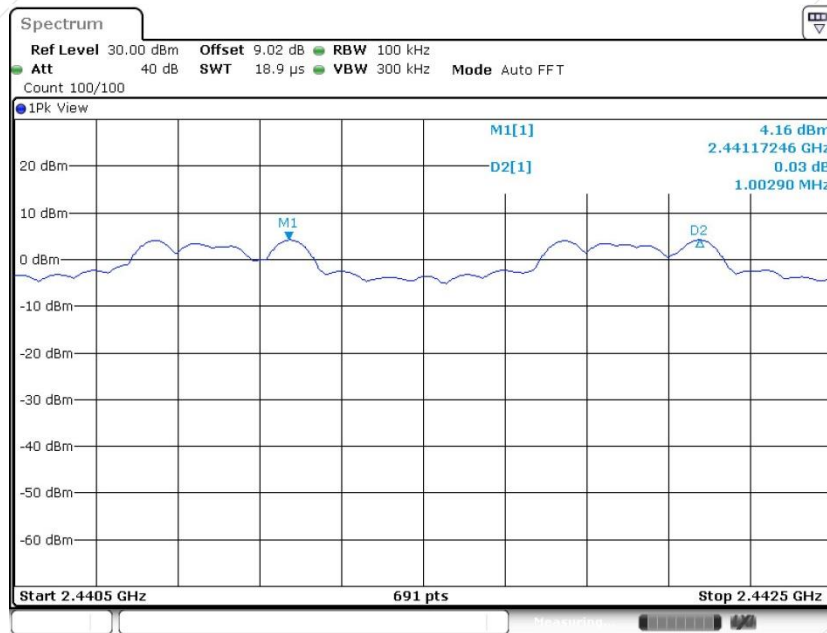
Measurement of Channel Separation



Date: 10.JAN.2024 09:46:23

2DH5

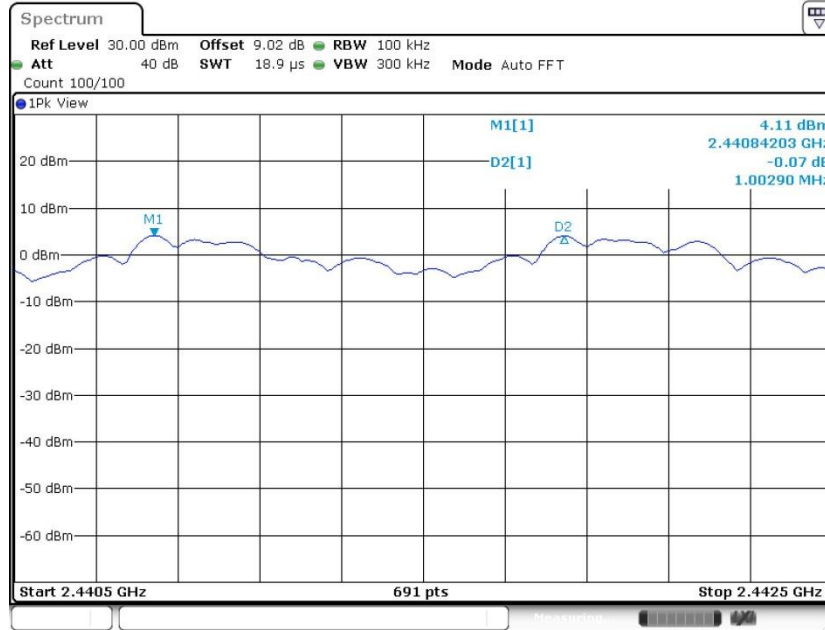
Measurement of Channel Separation



Date: 10.JAN.2024 09:53:30

3DH5

Measurement of Channel Separation



Test result: The unit does meet the FCC requirements.

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8. HOPPING CHANNEL NUMBER

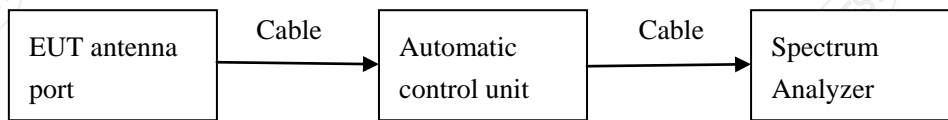
8.1 LIMITS

Regulation 15.247 (a) (1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

8.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2) Set the spectrum analyzer as RBW=100kHz, VBW=300kHz.
- 3) Set the spectrum analyzer: start frequency = 2400MHz. stop frequency = 2483.5MHz. Submit the test result graph.

8.3 TEST SETUP



8.4 TEST RESULTS

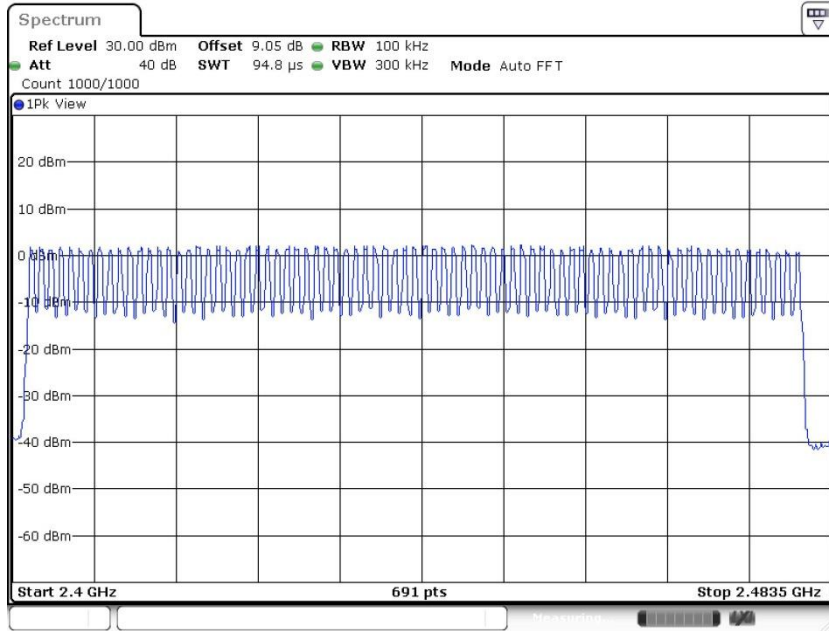
Environment: 20.1°C/67%RH/101.0kPa
 Tested By:Huang Tianmei

Voltage:DC 12V
 Date: 2024-01-10

Test mode	Result (No. of CH)	Limit (No. of CH)	Result
DH5	79	≥15	PASS
2DH5	79	≥15	PASS
3DH5	79	≥15	PASS

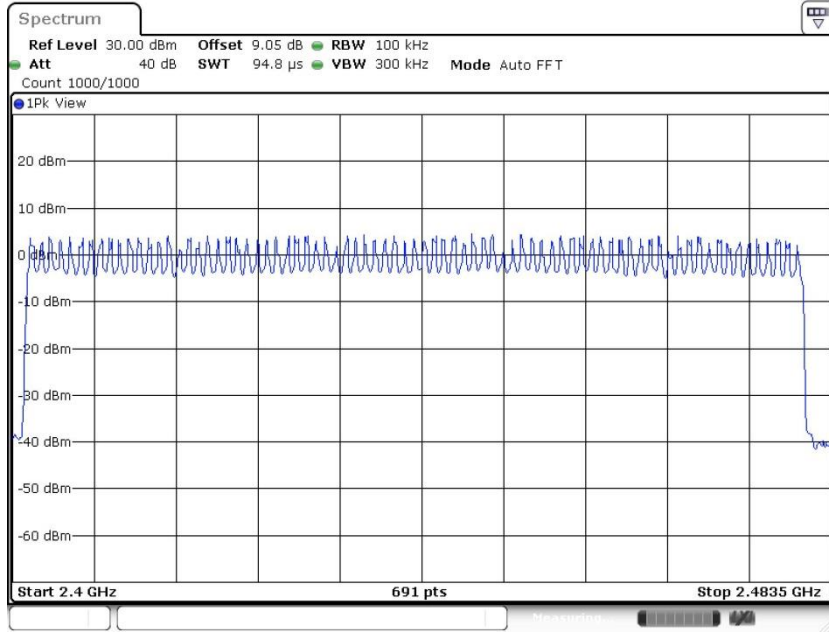
GFSK

2.400 GHz – 2.4835 GHz

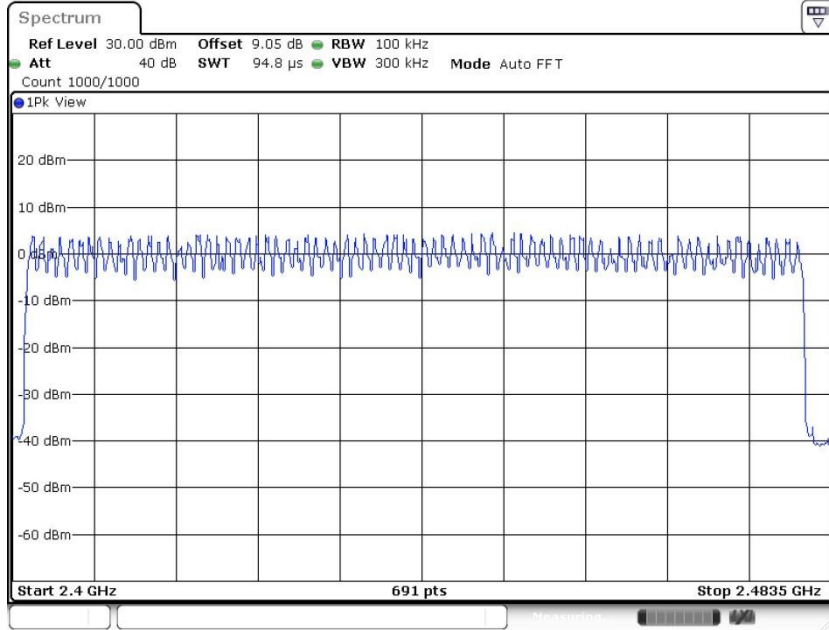


$\pi/4$ -DQPSK

2.400 GHz – 2.4835 GHz



8DPSK
2.400 GHz – 2.4835 GHz



Date: 10.JAN.2024 10:01:40

Test result: The unit does meet the FCC requirements.

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9. DWELL TIME

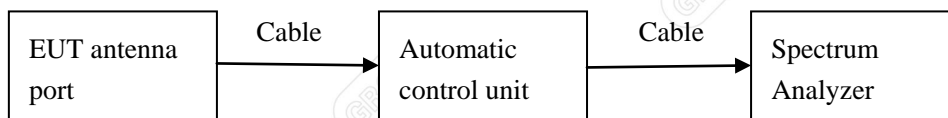
9.1 LIMITS

Regulation 15.247(a)(1)(iii) Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

9.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2) Set spectrum analyzer span = 0. centered on a hopping channel;
- 3) Set RBW = 1MHz and VBW = 3MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Detector Function = Peak. Trace = Max hold;
- 4) Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.). Repeat this test for each variation.
- 5) DH1 Packet permit maximum $1600 / 79 / 2 = 10.12$ hops per second in each channel (1 time slot TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $10.12 \times 31.6 = 320$ within 31.6 seconds
- 6) DH3 Packet permit maximum $1600 / 79 / 4 = 5.06$ hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds
- 7) DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times $3.37 \times 31.6 = 106.6$ within 31.6 seconds

9.3 TEST SETUP



9.4 TEST RESULTS

Environment: 20.1°C/67%RH/101.0kPa
Tested By:Huang Tianmei

Voltage:DC 12V
Date: 2024-01-10

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

GFSK: Middle Channel (2.441GHz)

DH1	time slot=	0.379	(ms)*	(1600/(2*79))	*	31.6	=	121.28	ms
DH3	time slot=	1.628	(ms)*	(1600/(4*79))	*	31.6	=	260.48	ms
DH5	time slot=	2.868	(ms)*	(1600/(6*79))	*	31.6	=	305.93	ms

π/4-DQPSK: Middle Channel (2.441GHz)

2DH1	time slot=	0.388	(ms)*	(1600/(2*79))	*	31.6	=	124.16	ms
2DH3	time slot=	1.631	(ms)*	(1600/(4*79))	*	31.6	=	260.96	ms
2DH5	time slot=	2.873	(ms)*	(1600/(6*79))	*	31.6	=	306.46	ms

8DPSK: Middle Channel (2.441GHz)

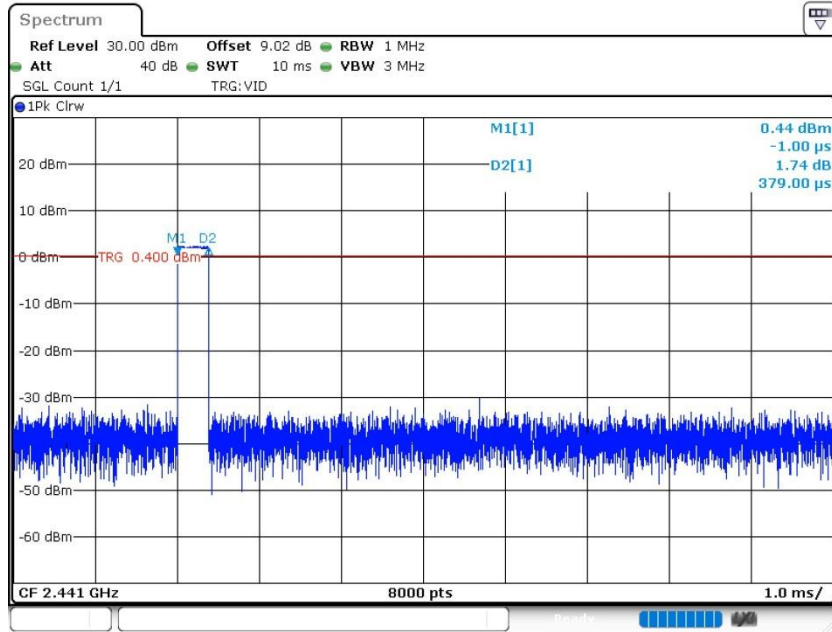
3DH1	time slot=	0.388	(ms)*	(1600/(2*79))	*	31.6	=	124.16	ms
3DH3	time slot=	1.631	(ms)*	(1600/(4*79))	*	31.6	=	260.96	ms
3DH5	time slot=	2.874	(ms)*	(1600/(6*79))	*	31.6	=	306.57	ms

**The results are not greater than 0.4 seconds.
The unit does meet the requirements.**

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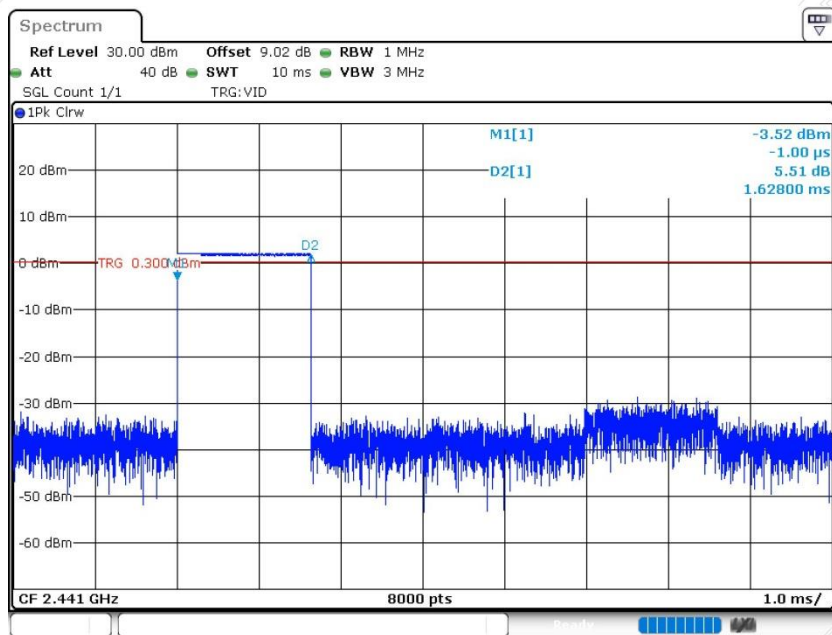
Please refer the graph as below:

GFSK
MiddleFrequency (2.441GHz)
DH1



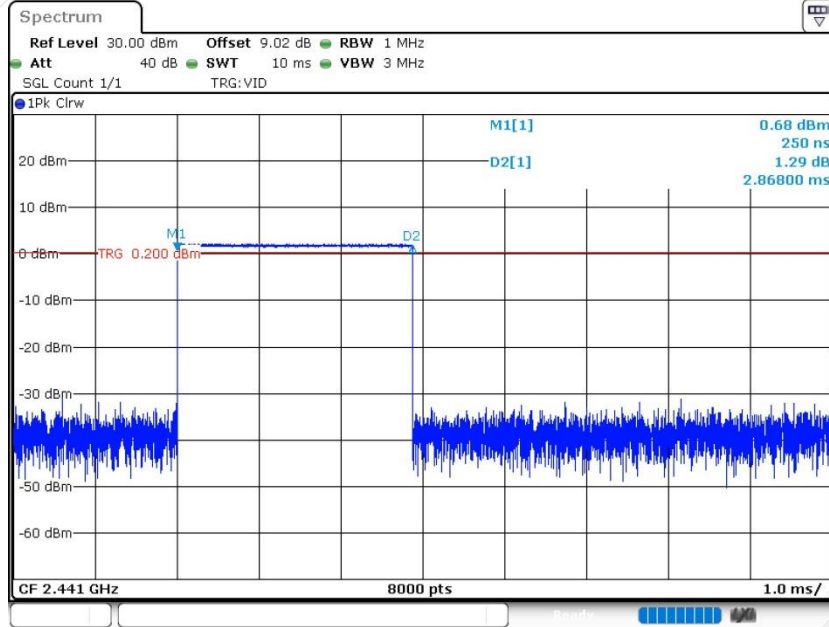
Date: 10.JAN.2024 09:49:59

DH3



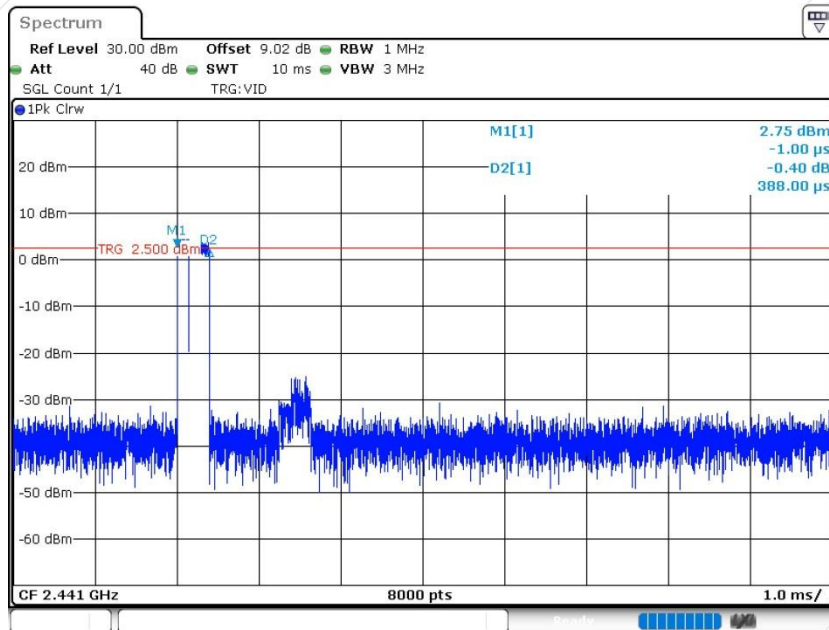
Date: 10.JAN.2024 09:50:40

DH5



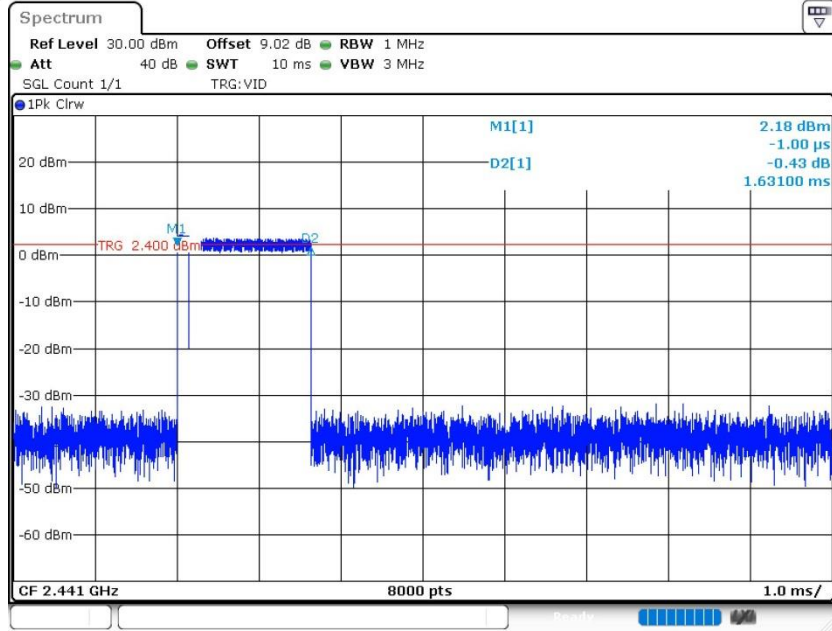
Date: 10.JAN.2024 09:49:13

$\pi/4$ -DQPSK MiddleFrequency (2.441GHz) 2DH1



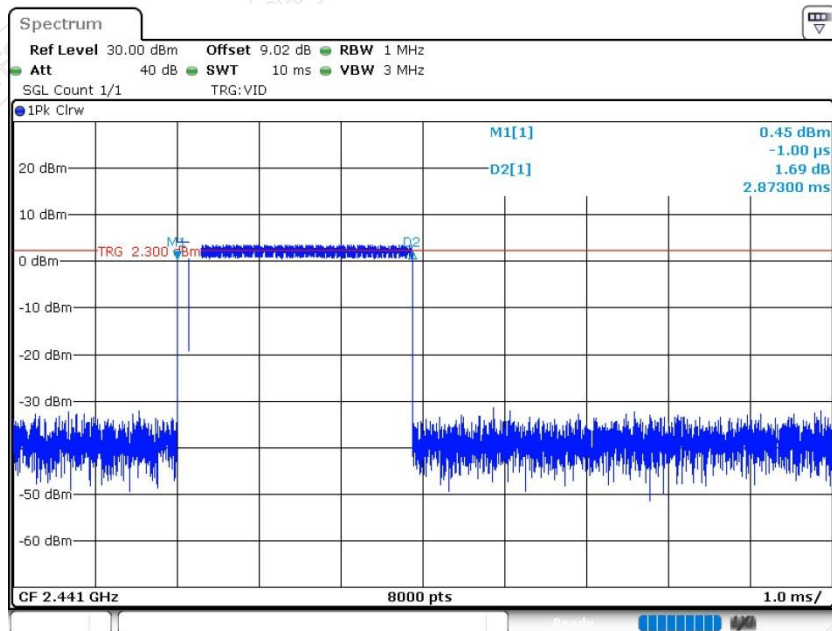
Date: 10.JAN.2024 09:56:00

Mid Frequency (2.441GHz) 2DH3



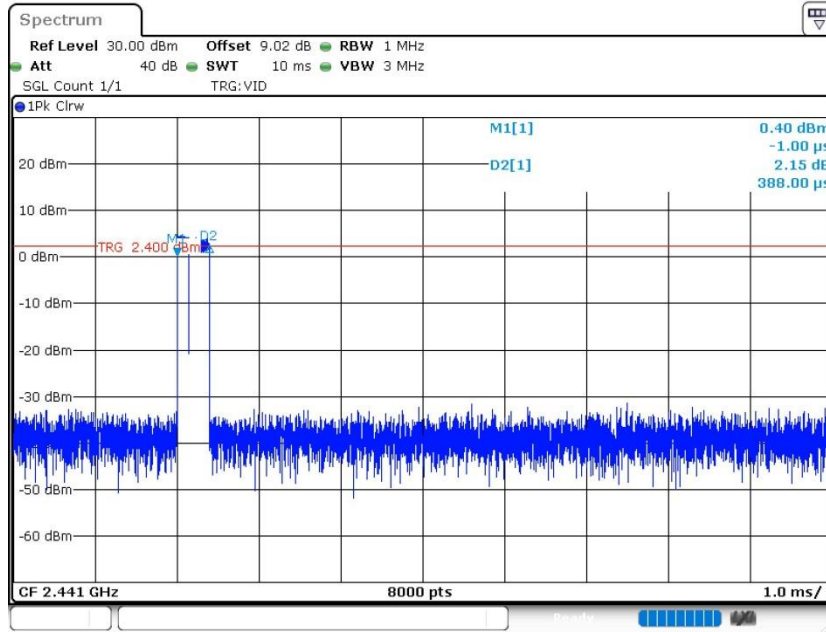
Date: 10.JAN.2024 09:56:38

2DH5



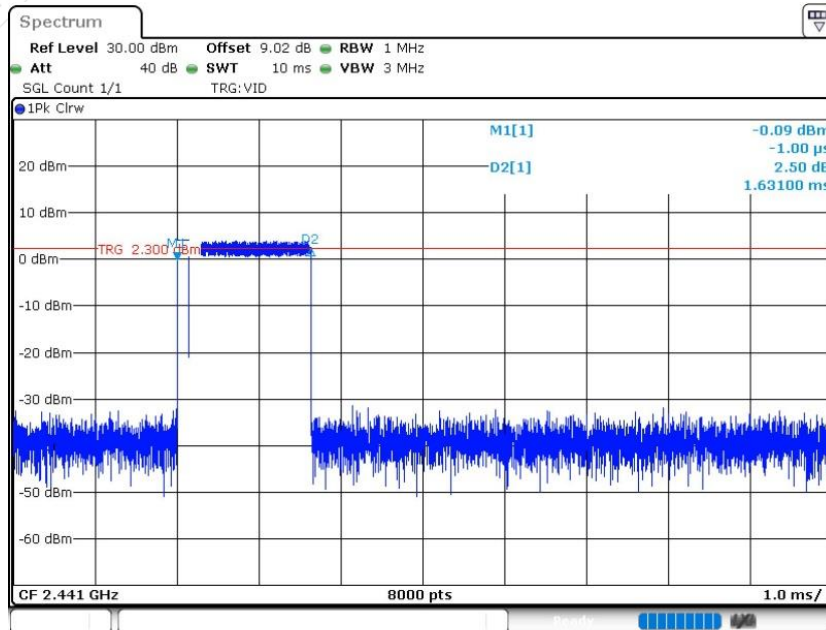
Date: 10.JAN.2024 09:55:23

8DPSK MiddleFrequency (2.441GHz) 3DH1



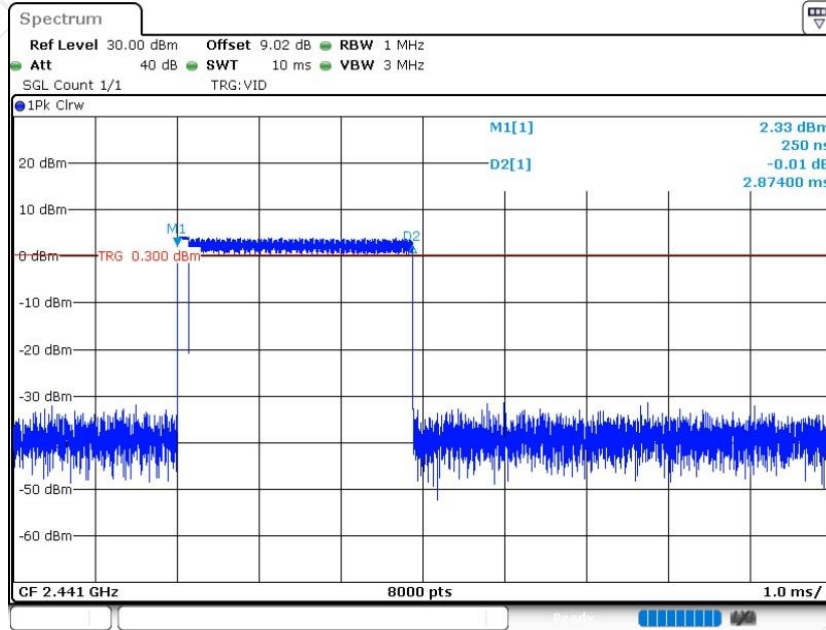
Date: 10.JAN.2024 10:02:37

3DH3



Date: 10.JAN.2024 10:03:12

3DH5



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10. MAXIMUM PEAK OUTPUT POWER

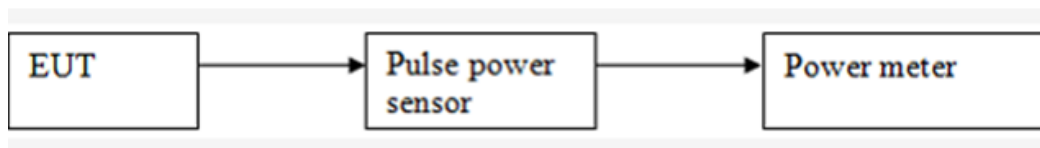
10.1 LIMITS

Regulation 15.247 (b)(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the power meter and enable the EUT transmit continuously.
- 2) Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.

10.3 TEST SETUP



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10.4 TEST RESULTS

Environment: 20.1°C/67%RH/101.0kPa
 Tested By:Huang Tianmei

Voltage:DC 12V
 Date: 2024-01-10

DH5

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/Average	Pass/Fail
Lowest	2.402	4.10	20.97	Peak	Pass
Middle	2.441	3.77			Pass
Highest	2.480	3.80			Pass

2DH5

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/Average	Pass/Fail
Lowest	2.402	6.21	20.97	Peak	Pass
Middle	2.441	6.00			Pass
Highest	2.480	5.93			Pass

3DH5

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/Average	Pass/Fail
Lowest	2.402	6.65	20.97	Peak	Pass
Middle	2.441	6.49			Pass
Highest	2.480	6.44			Pass

Test result: The unit does meet the FCC requirements.

11. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

11.1 LIMITS

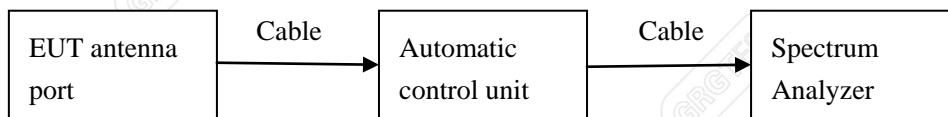
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB.

11.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 DTS Measurement Guidance v05r02.

- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100kHz; VBW =300kHz, Frequency range = 30MHz to 26.5GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

11.3 TEST SETUP



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11.4 TEST RESULTS

Environment: 20.1 °C/67%RH/101.0kPa
 Tested By:Huang Tianmei

Voltage:DC 12V
 Date: 2024-01-10

Band edge measurements

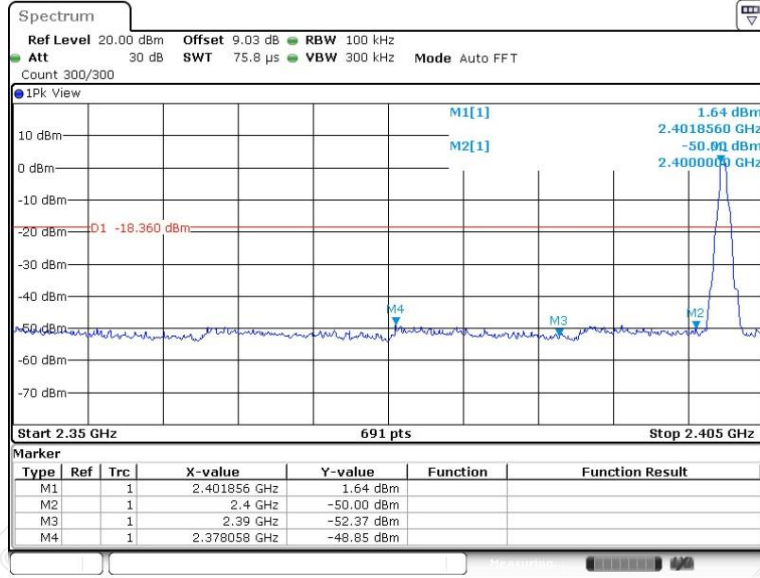
TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	Low	2402	1.64	-48.85	≤-18.36	PASS
		High	2480	1.12	-47.07	≤-18.88	PASS
		Low	Hop_2402	1.91	-48.22	≤-18.09	PASS
		High	Hop_2480	1.10	-47.66	≤-18.9	PASS
2DH5	Ant1	Low	2402	3.53	-48.79	≤-16.47	PASS
		High	2480	3.16	-47.81	≤-16.84	PASS
		Low	Hop_2402	0.78	-48.46	≤-19.22	PASS
		High	Hop_2480	1.86	-48.4	≤-18.14	PASS
3DH5	Ant1	Low	2402	3.49	-49.07	≤-16.51	PASS
		High	2480	3.11	-47.79	≤-16.89	PASS
		Low	Hop_2402	2.71	-48.39	≤-17.29	PASS
		High	Hop_2480	2.59	-47.97	≤-17.41	PASS

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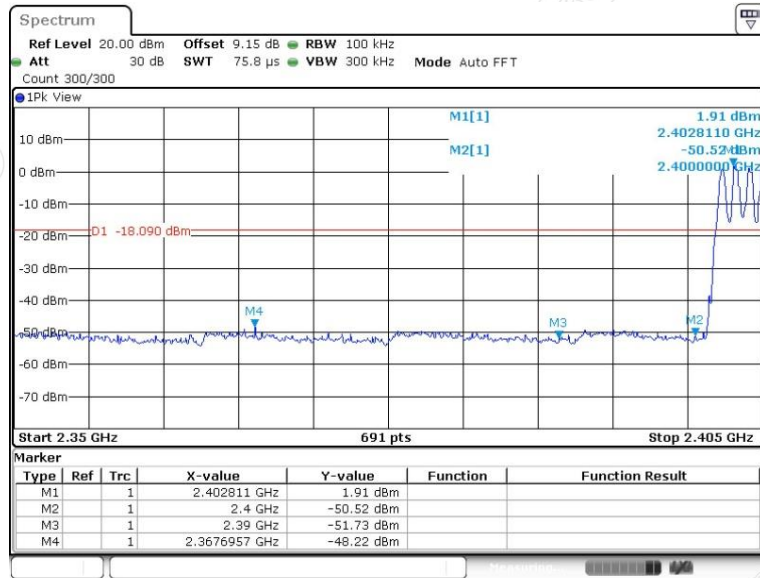
Test result plot as follows:

DH5

CH Low (2.35GHz ~2.405GHz)

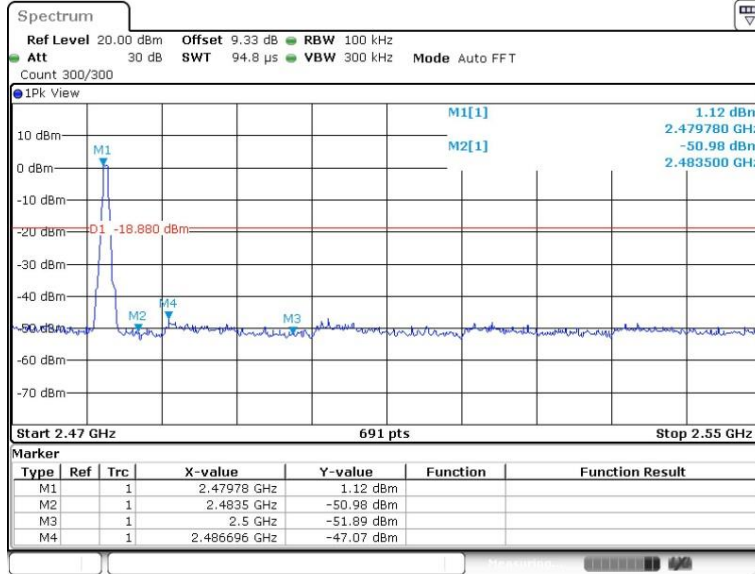


Date: 10.JAN.2024 10:12:52

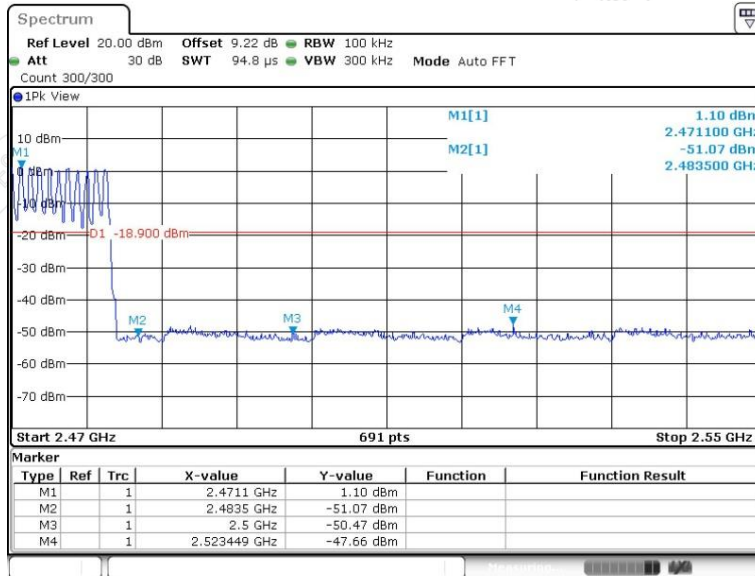


Date: 10.JAN.2024 09:45:51

CH High (2.47GHz ~ 2.55GHz)

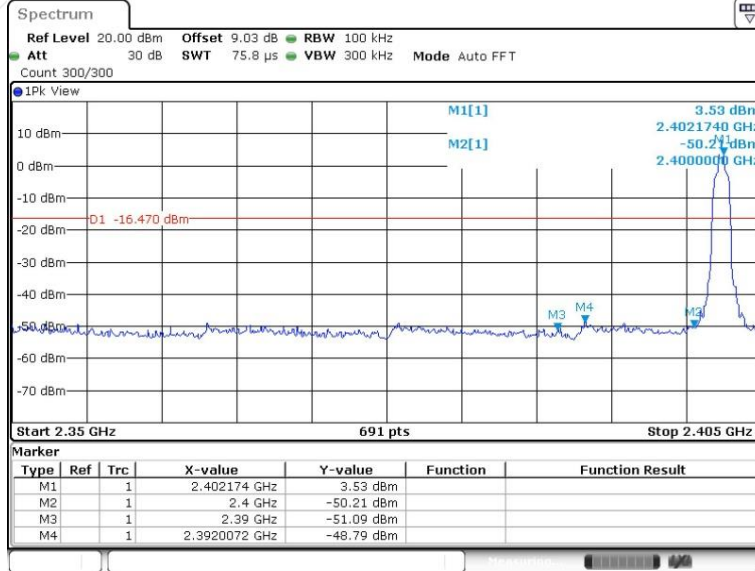


Date: 10.JAN.2024 10:17:56

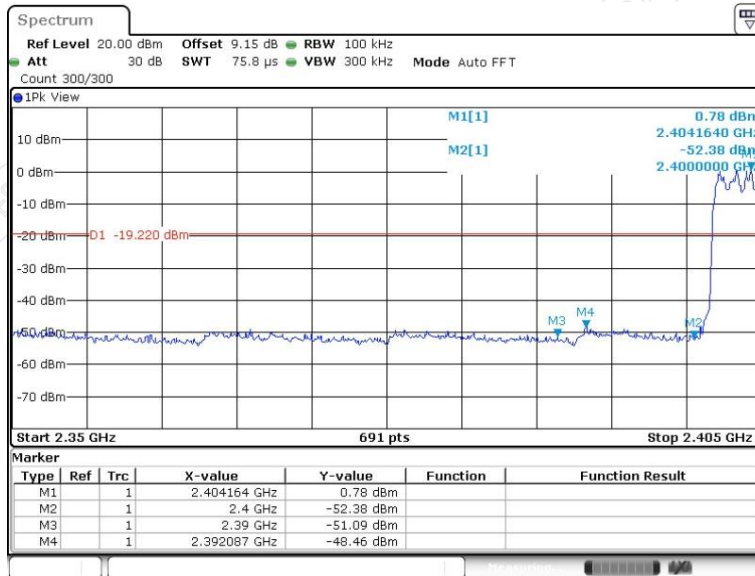


Date: 10.JAN.2024 09:51:10

2DH5
CH Low (2.35GHz ~2.405GHz)

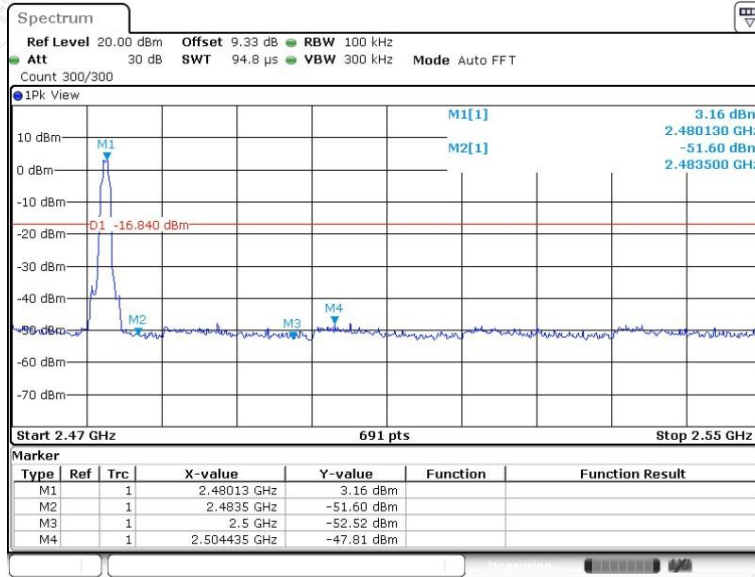


Date: 10.JAN.2024 10:21:20

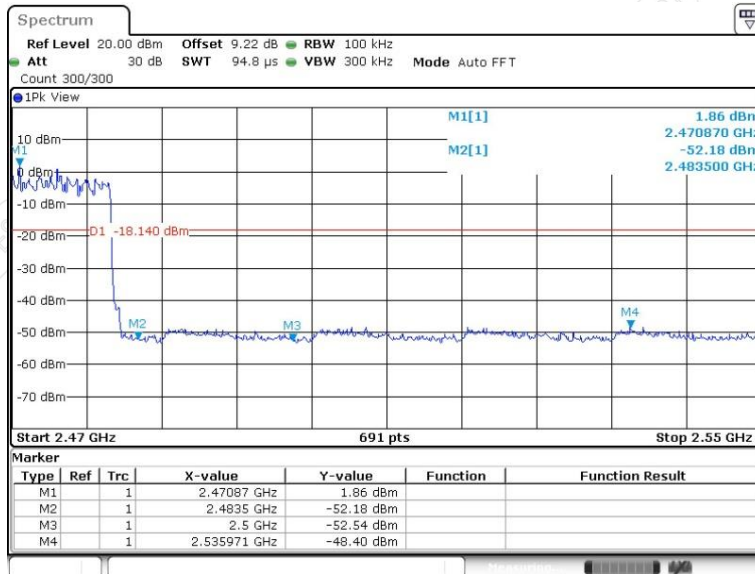


Date: 10.JAN.2024 09:51:30

CH High (2.47GHz ~ 2.55GHz)

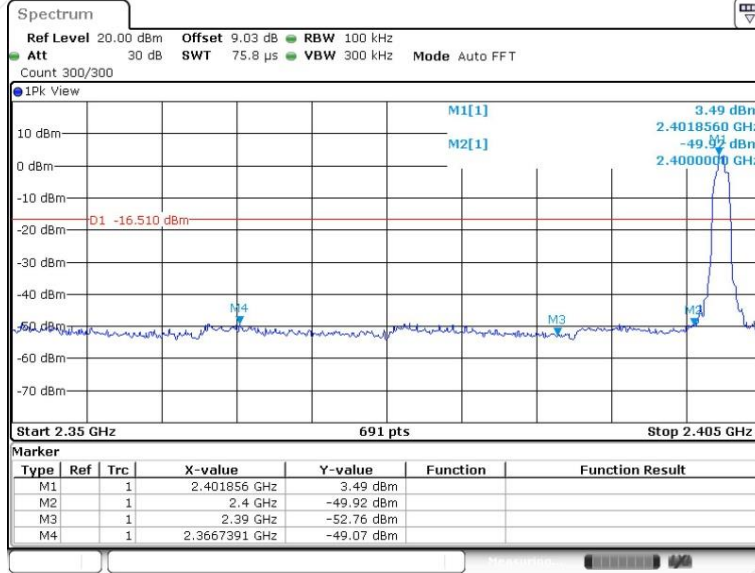


Date: 10.JAN.2024 10:24:12

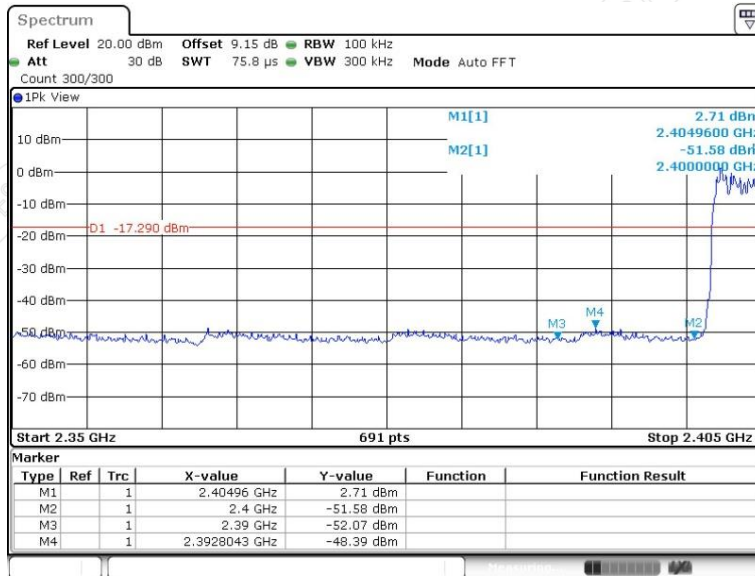


Date: 10.JAN.2024 09:57:11

3DH5
CH Low (2.35GHz ~2.405GHz)

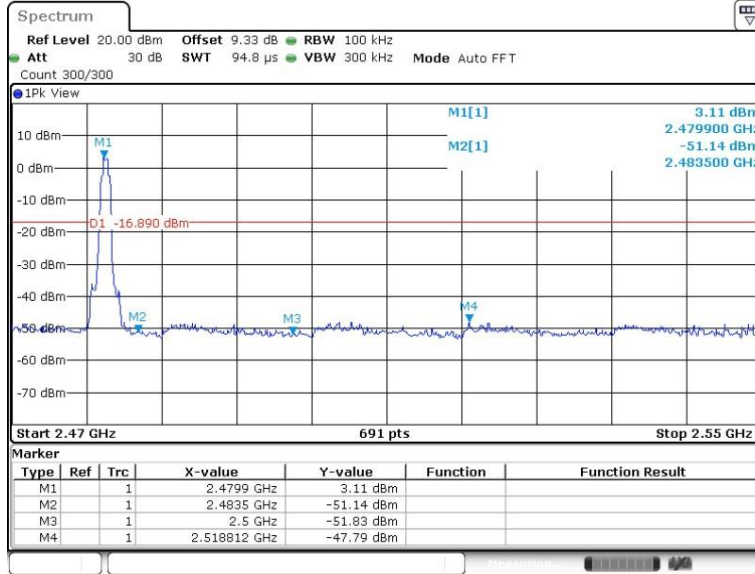


Date: 10.JAN.2024 10:26:03

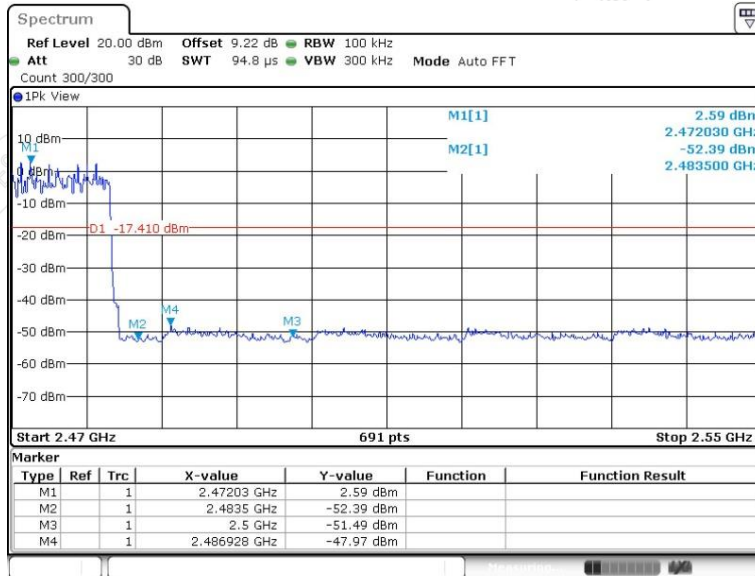


Date: 10.JAN.2024 09:57:34

CH High (2.47GHz ~ 2.55GHz)



Date: 10.JAN.2024 10:28:51

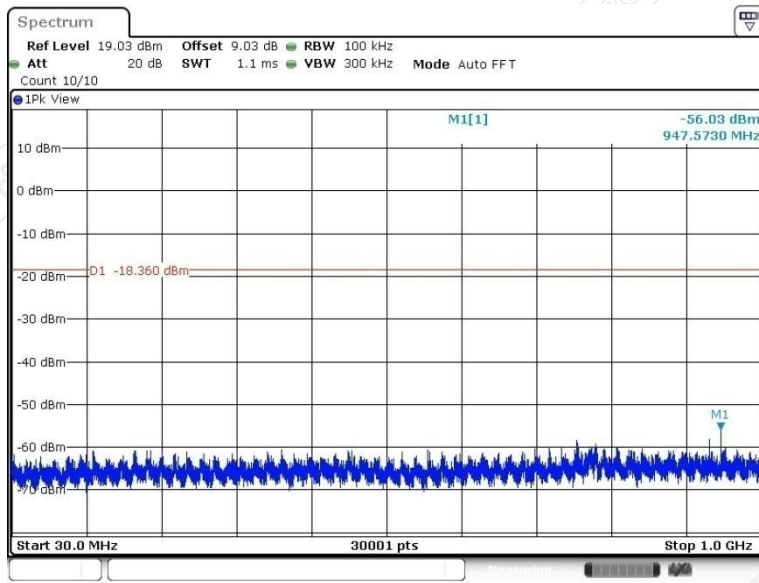
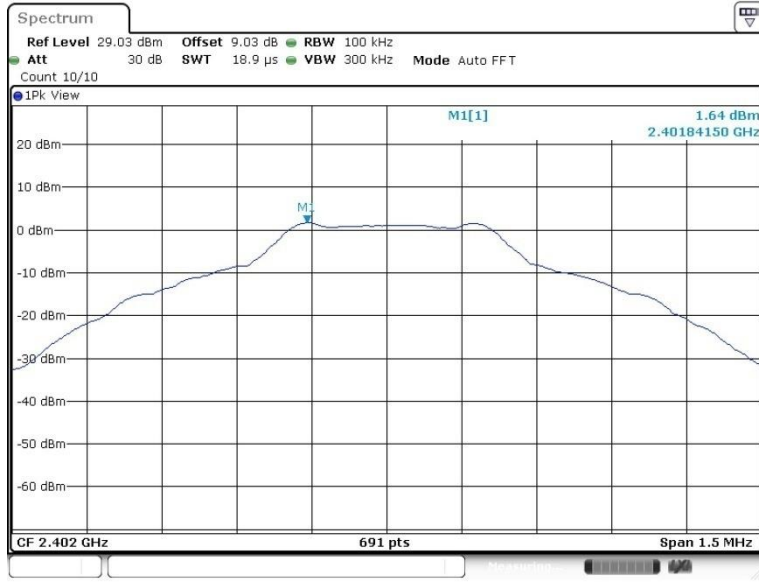


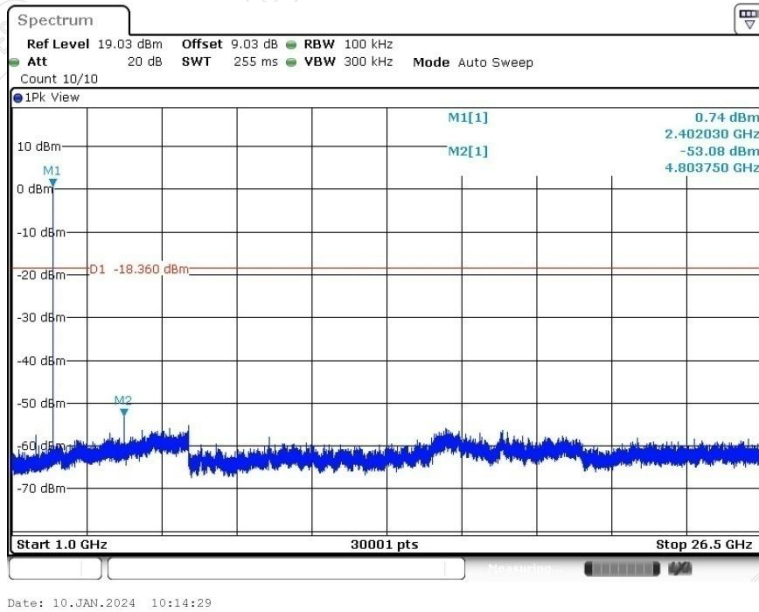
Date: 10.JAN.2024 10:03:43

Conducted Spurious Emission

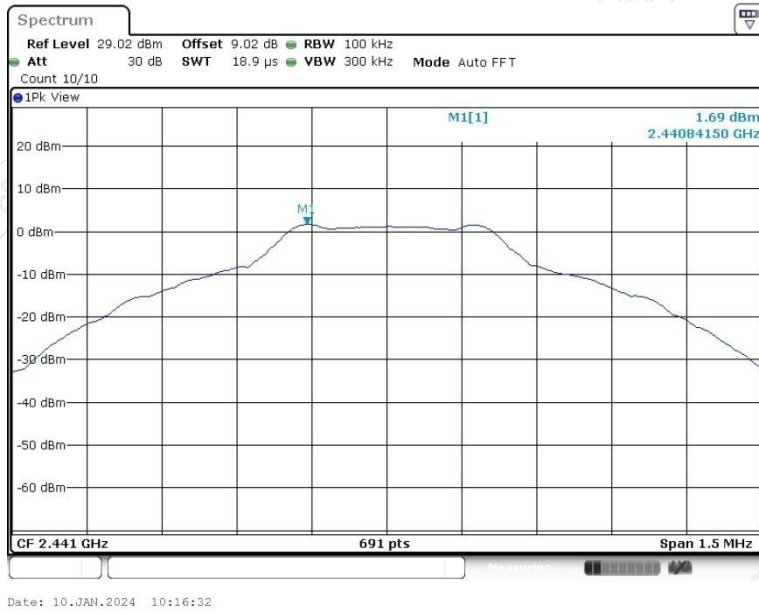
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	Reference	1.64	1.64	---	PASS
			30~1000	1.64	-56.03	≤-18.36	PASS
			1000~26500	1.64	-53.08	≤-18.36	PASS
		2441	Reference	1.69	1.69	---	PASS
			30~1000	1.69	-55.93	≤-18.31	PASS
			1000~26500	1.69	-49.97	≤-18.31	PASS
		2480	Reference	1.08	1.08	---	PASS
			30~1000	1.08	-58.47	≤-18.92	PASS
			1000~26500	1.08	-51.08	≤-18.92	PASS
2DH5	Ant1	2402	Reference	3.58	3.58	---	PASS
			30~1000	3.58	-56.46	≤-16.42	PASS
			1000~26500	3.58	-55.44	≤-16.42	PASS
		2441	Reference	3.86	3.86	---	PASS
			30~1000	3.86	-53.79	≤-16.14	PASS
			1000~26500	3.86	-53.24	≤-16.14	PASS
		2480	Reference	3.09	3.09	---	PASS
			30~1000	3.09	-54.37	≤-16.91	PASS
			1000~26500	3.09	-55.47	≤-16.91	PASS
3DH5	Ant1	2402	Reference	3.53	3.53	---	PASS
			30~1000	3.53	-53.52	≤-16.47	PASS
			1000~26500	3.53	-55.3	≤-16.47	PASS
		2441	Reference	3.79	3.79	---	PASS
			30~1000	3.79	-55.57	≤-16.21	PASS
			1000~26500	3.79	-55.06	≤-16.21	PASS
		2480	Reference	3.09	3.09	---	PASS
			30~1000	3.09	-56.29	≤-16.91	PASS
			1000~26500	3.09	-54.71	≤-16.91	PASS

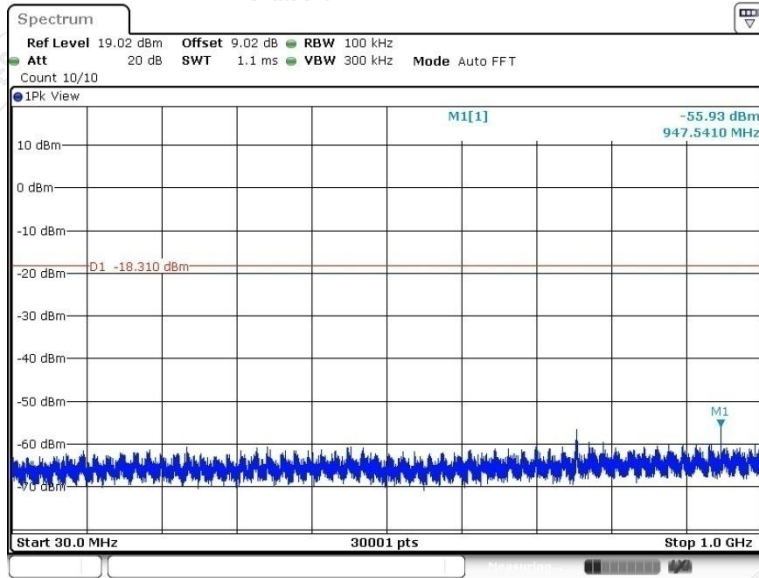
DH5
CH Low



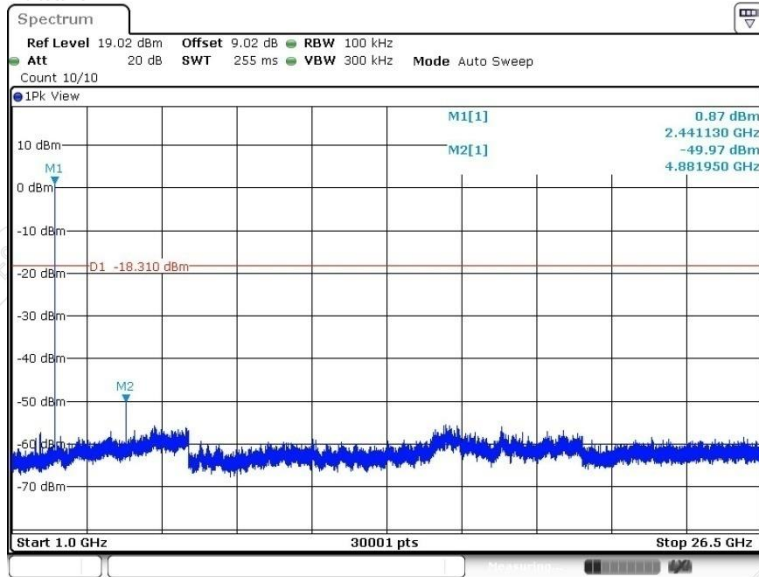


CH Mid





Date: 10.JAN.2024 10:16:37



Date: 10.JAN.2024 10:17:01

CH High

