

Test Report

Verified code: 997718

Report No.: E20240822625802-9

Customer: Faurecia Clarion Electronics (Xiamen) Co., Ltd.

Address: 6F, No.40, Guanri Road, Software Park Stage II, Xiamen, China

Sample Name: CAR AUDIO

Sample Model: P2402

Receive Sample Date: Sep.03,2024

Test Date: Sep.11,2024 ~ Nov.13,2024

Reference Document: 47 CFR Part 15 Subpart C Intentional Radiators

Test Result: Pass

Prepared by: Huang Lifang
Huang Lifang

Reviewed by: Wu Haoting
Wu Haoting

Approved by: Xiao Liang
Xiao Liang



GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2024-11-15

GRG METROLOGY & TEST GROUP CO., LTD.

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Statement

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4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.
5. This testing report is only for scientific research, teaching, internal quality control, etc.

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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	9
2.6	LOCAL SUPPORTIVE	9
2.7	CONFIGURATION OF SYSTEM UNDER TEST	9
2.8	DUTY CYCLE.....	10
3.	LABORATORY AND ACCREDITATIONS	11
3.1	LABORATORY	11
3.2	ACCREDITATIONS	11
4.	MEASUREMENT UNCERTAINTY	12
5.	LIST OF USED TEST EQUIPMENT AT GRGT	13
6.	E.U.T. TEST CONDITIONS	14
7.	20dB BANDWIDTH.....	16
7.1	LIMITS.....	16
7.2	TEST PROCEDURES	16
7.3	TEST SETUP	16
7.4	TEST RESULTS	17
8.	CARRIER FREQUENCIES SEPARATED.....	23
8.1	LIMITS.....	23
8.2	TEST PROCEDURES	23
8.3	TEST SETUP	23
8.4	TEST RESULTS	24
9.	HOPPING CHANNEL NUMBER	27
9.1	LIMITS.....	27
9.2	TEST PROCEDURES	27
9.3	TEST SETUP	27
9.4	TEST RESULTS	28
10.	DWELL TIME	31
10.1	LIMITS.....	31
10.2	TEST PROCEDURES	31
10.3	TEST SETUP	31
10.4	TEST RESULTS	32
11.	MAXIMUM PEAK OUTPUT POWER	38
11.1	LIMITS.....	38
11.2	TEST PROCEDURES	38
11.3	TEST SETUP	38
11.4	TEST RESULTS	39

12. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS 40

12.1 LIMITS..... 40

12.2 TEST PROCEDURES 40

12.3 TEST SETUP 40

12.4 TEST RESULTS 41

13. RADIATED SPURIOUS EMISSIONS 63

13.1 LIMITS..... 63

13.2 TEST PROCEDURES 63

13.3 TEST SETUP 67

13.4 DATA SAMPLE 68

13.5 TEST RESULTS 70

14. RESTRICTED BANDS OF OPERATION..... 85

14.1 LIMITS..... 85

14.2 TEST PROCEDURES 86

14.3 TEST SETUP 86

14.4 TEST RESULTS 87

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM 101

APPENDIX B. PHOTOGRAPH OF THE EUT 101

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E20240822625802-9	Original Issue	2024-11-13

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1. TEST RESULT SUMMARY

47 CFR Part 15 Subpart C 15.247, ANSI C63.10-2020 KDB 558074 D01 15.247 measurement guidance v05r02			
Standard	Item	Limit / Severity	Result
FCC 47 CFR Part 15 Subpart C (15.247)	Antenna Requirement	Section 15.203	PASS
	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 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: The EUT antenna is FPC antenna. Max Antenna gain is 4.4dBi .Which accordance 15.203.is considered sufficient to comply with the provisions of this section.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name: Faurecia Clarion Electronics (Xiamen) Co., Ltd.
Address: 6F,No.40,Guanri Road, Software Park Stage II, Xiamen, China

2.2 MANUFACTURER

Name: Faurecia Clarion Electronics Co., Ltd.
Address: 7-2 Shintoshin, Chuo-ku, Saitama-shi, Saitama, 330-0081, Japan

2.3 FACTORY

Name 1: Clarion Asia (Thailand) Co., Ltd.
Address 1: 500/39 Moo3, Hemaraj Eastern Seaboard Industrial Estate 1, Tambol Tasith, Amphur Pluakdaeng Rayong 21140,Thailand
Name 2: PT OPTIMA ELEKTRONIK MANUFAKTUR
Address 2: MANUFAKTUR Kawasan Industri JABABEKA II, JL. Industri Selatan 5 Blok FF1L, Kel. Pasirsari Cikarang Selatan, Kab. Bekasi, Prov. Jawa Barat

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: CAR AUDIO
Model No.: P2402
Adding Model: P2403

Model difference description: They are consistent with the schematic, block diagram, PCB layout, Hardware version, and Software version. The difference is the DAB board and mounting bracket as the following details, and it will not affecting the RF performance.

Function	Product name: CAR AUDIO		
	Model name: P2402		Model name: P2403
	Minimum configuration	Maximum configuration	/
WIFI 5G (B4)	√	√	√
BT	√	√	√
DAB	×	√	×
TCU	√	√	×
LHD	×	√	×
RHD	√	×	√
Note: The above products have the same wireless IC, radiation circuit, power circuit and other circuits, with same shell.			

Trade Name: Clarion

FCC ID: WY2P2402

Power supply: DC 13.2V,15A

Frequency Range: 2402MHz~2480MHz

Transmit Power: GFSK: -0.85dBm
 $\pi/4$ -DQPSK: 0.71dBm
8DPSK: 1.12dBm

Type of Modulation: GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps,8DPSK for 3Mbps

Antenna Specification: 4.4dBi

Temperature Range: -30°C~+70°C

Hardware Version: 2.0.0

Software Version: 02.00.00

Sample No: E20240822625802-0002,E20240822625802-0005

Note:

- 1.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. Based on the differences in models, the maximum configuration of the model P2402 was tested and recorded in this report.

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2.5 TEST OPERATION MODE

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

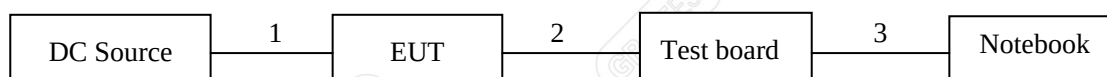
2.6 LOCAL SUPPORTIVE

Name of equipment	Manufacturer	Model	Serial number	Note
DC Source	LW	PS-305DM	180704515	/
Notebook	DELL	Latitude3490	2095LR2	/
Test board	/	/	/	/

No.	Cable Type	Qty.	Shielded Type	Ferrite Core(Qty.)	Length
1	DC cable	1	No	0	1.0m
2	Serial cable	1	No	0	0.2m
3	USB-Micro cable	1	No	0	0.5m

Note: ⁽¹⁾ The notebook is just used to produce fixed frequency transmitting.

2.7 CONFIGURATION OF SYSTEM UNDER TEST



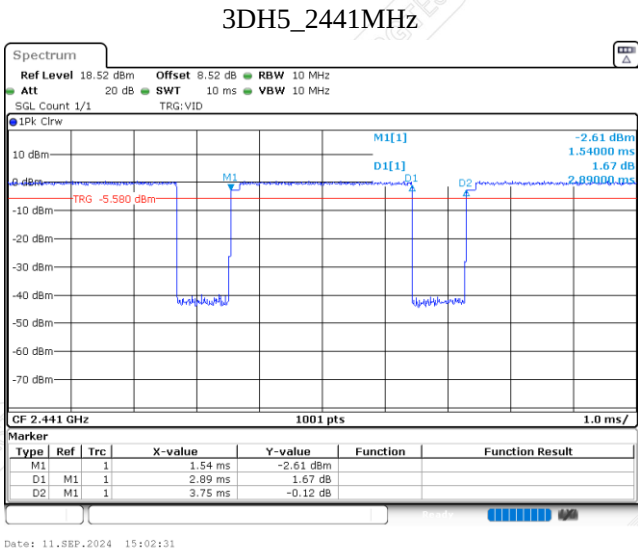
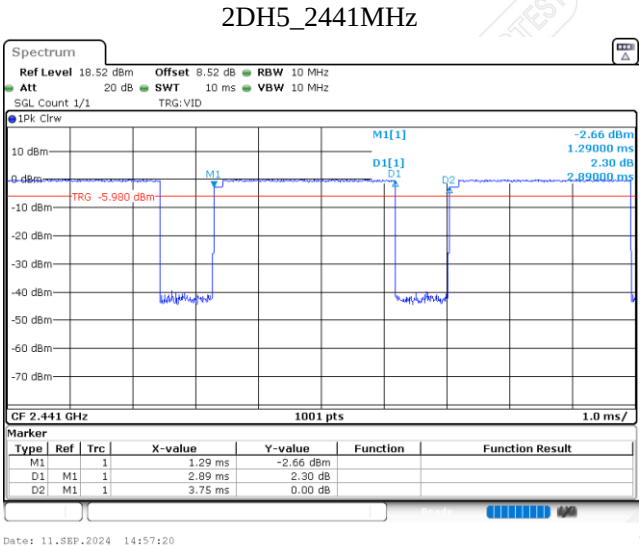
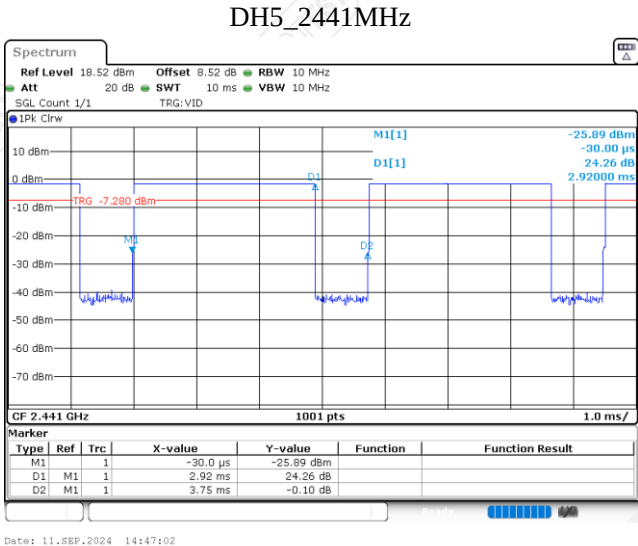
Test software:

Software version	Test level
Teraterm	Default

2.8 DUTY CYCLE

EUT Name	CAR AUDIO	Model	P2402
Environmental Conditions	25.1 °C/48%RH/101.0kPa	Test Voltage	DC 13.2V
Tested By	Qin Tingting	Tested Date	2024-09-11

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	DC [%]	T [s]
DH5	Ant1	2441	2.92	3.75	77.87	0.00292
2DH5	Ant1	2441	2.89	3.75	77.07	0.00289
3DH5	Ant1	2441	2.89	3.75	77.07	0.00289



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 Guanguang 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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4. 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	0.80dB
Power spectral density conducted	0.80dB
Occupied channel bandwidth	0.40dB
Unwanted emission, conducted	0.70dB
Humidity	6.0%
Temperature	2.0°C

Note:

¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95%.
This uncertainty represents an expanded uncertainty factor of $k=2$.

5. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Radiated Spurious Emission&Restricted bands of operation				
Test Receiver	R&S	ESR26	101758	2025-09-10
Spectrum Analyzer	R&S	FSV3044	101184	2025-07-19
Bi-log Antenna	Schwarzbeck	VULB9160	VULB9160-3402	2025-09-24
Loop Antenna	Schwarzbeck	FMZB 1513-60	1513-60-56	2025-05-07
Preamplifier	SHIRONG ELECTRONIC	DLNA-30M1G-G41	20200928002	2024-10-24
Horn Antenna	Schwarzbeck	BBHA9120D	02143	2025-09-07
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2025-08-30
Amplifier	Tonscend	TAP01018048	AP20E8060075	2025-03-01
Amplifier	Tonscend	TAP184050	AP20E806071	2025-03-01
Amplifier	SHIRONG ELECTRONIC	DLNA-1G18G-G40	20200928005	2025-07-19
Test S/W	Tonscend	JS32-RE/5.0.0		
20dB Bandwidth& Carrier Frequencies Separated & Hopping Channel Number & Dwell Time &Conducted band edges and Spurious Emission & Duty Cycle				
Spectrum Analyzer	R&S	FSV30	1321.3008K30-10 4381-rH	2024-10-13
Spectrum Analyzer	R&S	FSV30	1321.3008K30-10 4381-rH	2025-09-22
Automatic control unit	TONSCEND	JS0806-2	2018060317	2025-07-20
BT/WIFI System	Tonscend	JS1120-3		
Maximum Peak Output Power				
Pulse power sensor	Anritsu	MA2411B	1126150	2025-01-11
Power meter	Anritsu	ML2495A	1204003	2025-01-11

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

6. E.U.T. TEST CONDITIONS

Type of antenna: FPC

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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7. 20dB BANDWIDTH

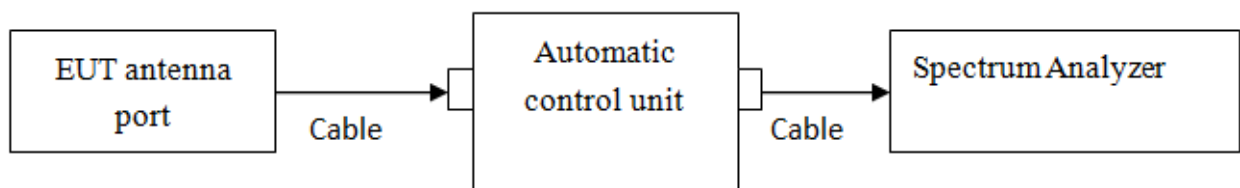
7.1 LIMITS

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.

7.2 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=30 kHz, VBW=100 kHz, Span=3MHz, Sweep = auto. Allow the trace to stabilize, record 20dB bandwidth value
- 3) Repeat until all the test channels are investigated.

7.3 TEST SETUP



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7.4 TEST RESULTS

Environment: 25.1℃/48%RH/101.0kPa
Tested By:Qin Tingting

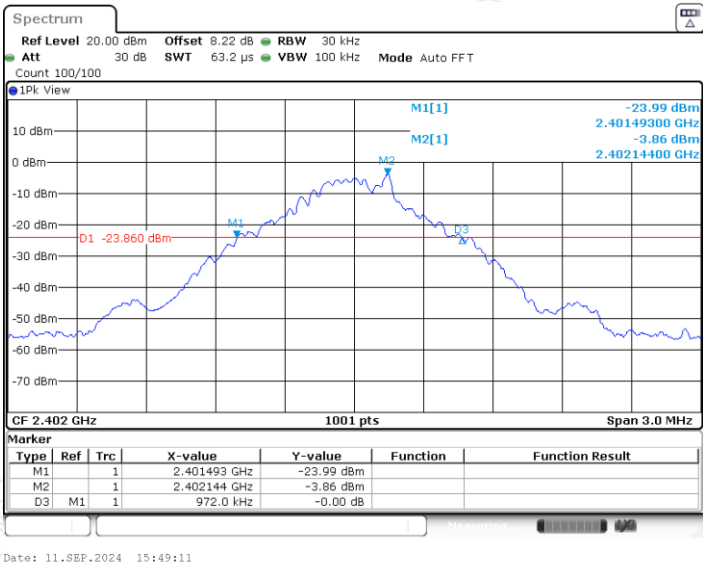
Voltage:DC 13.2V
Date: 2024-09-11

Test Mode	Antenna	Channel	Frequency [MHz]	20 dB Bandwidth [MHz]
DH5	Ant1	Lowest	2402	0.97
		Middle	2441	0.97
		Highest	2480	0.97
2DH5	Ant1	Lowest	2402	1.34
		Middle	2441	1.34
		Highest	2480	1.34
3DH5	Ant1	Lowest	2402	1.31
		Middle	2441	1.31
		Highest	2480	1.31

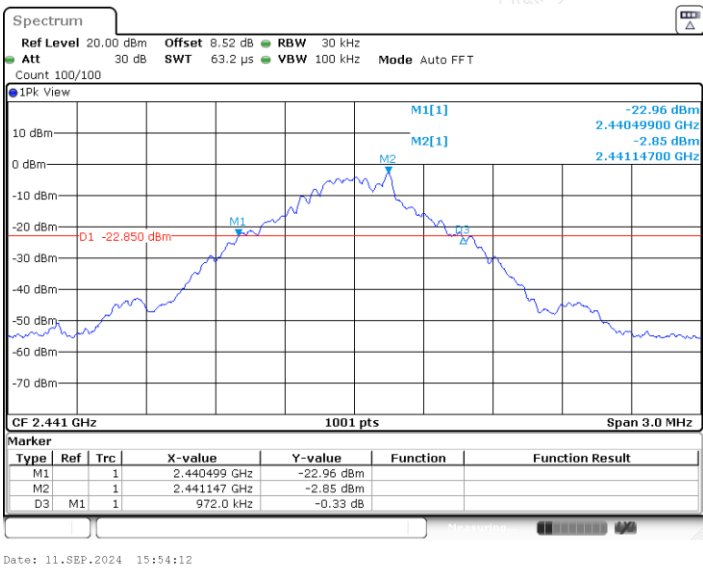
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Test Graphs

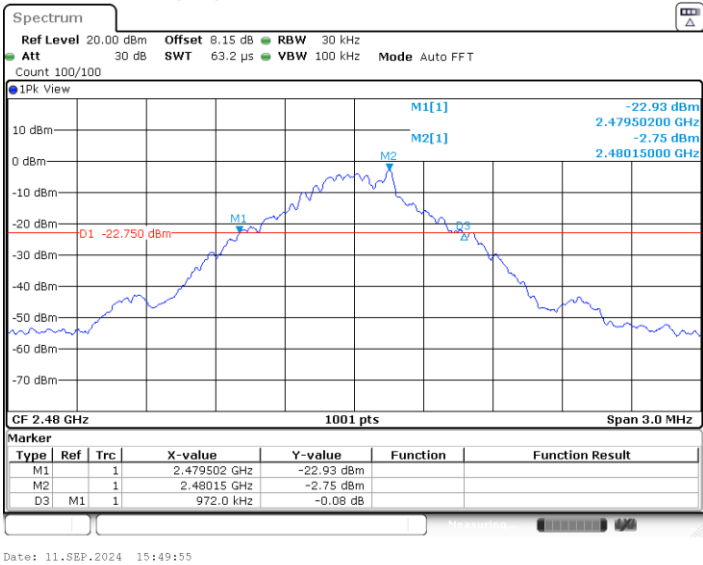
DH5
Lowest Channel



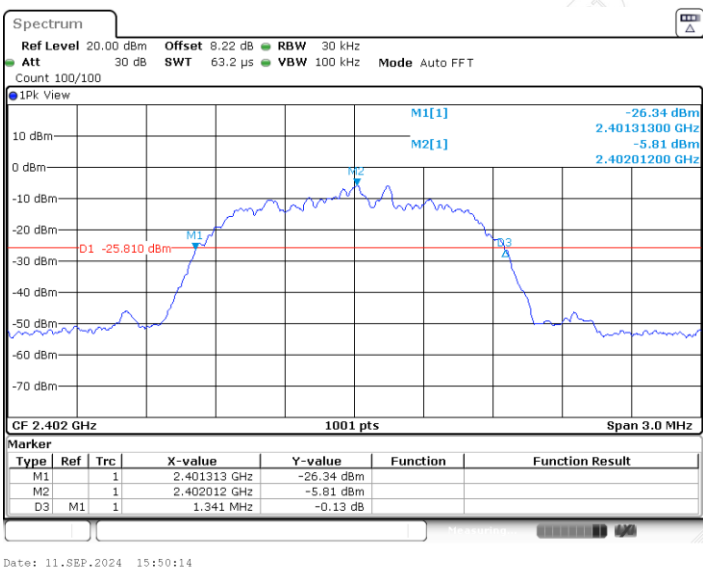
Middle Channel



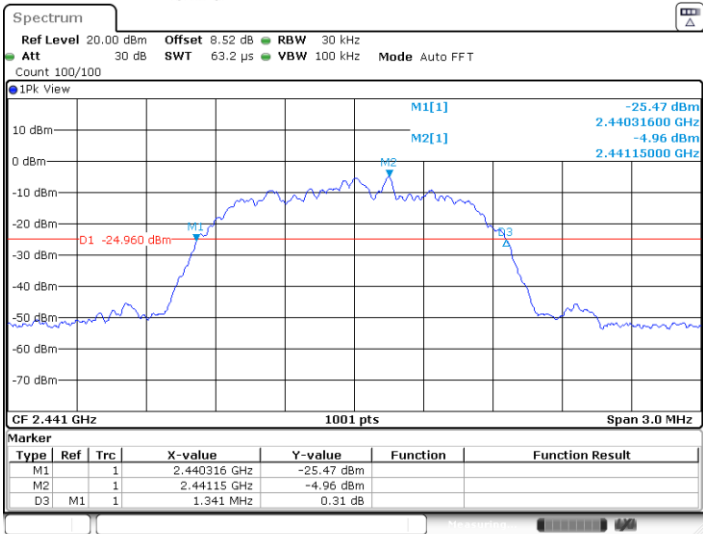
Highest Channel



2DH5
Lowest Channel

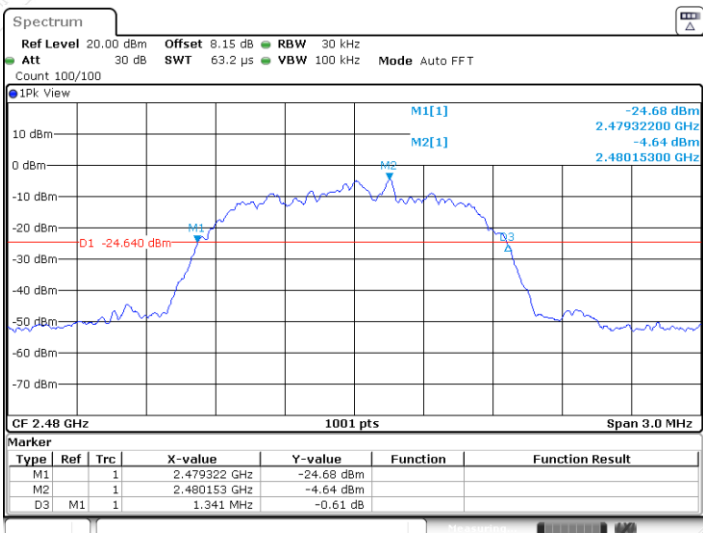


Middle Channel



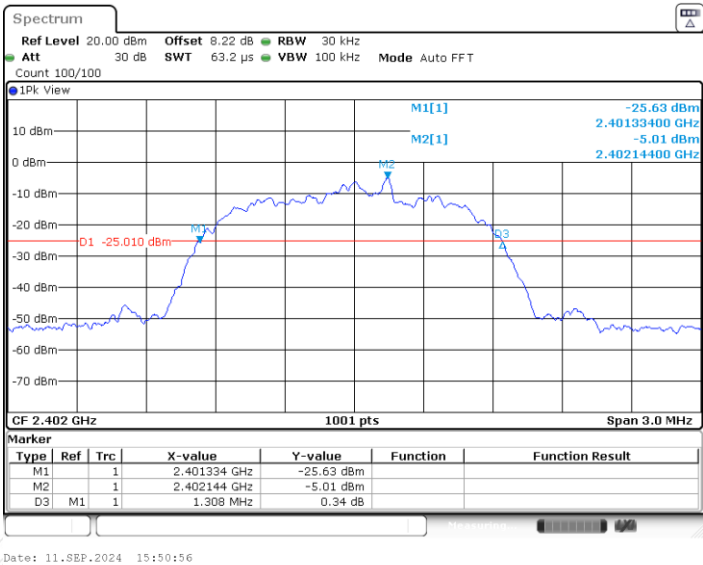
Date: 11.SEP.2024 15:50:29

Highest Channel

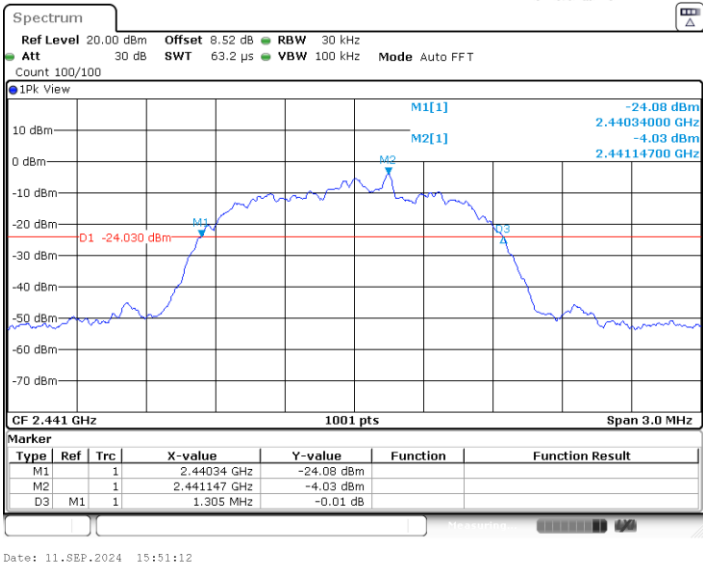


Date: 11.SEP.2024 15:50:40

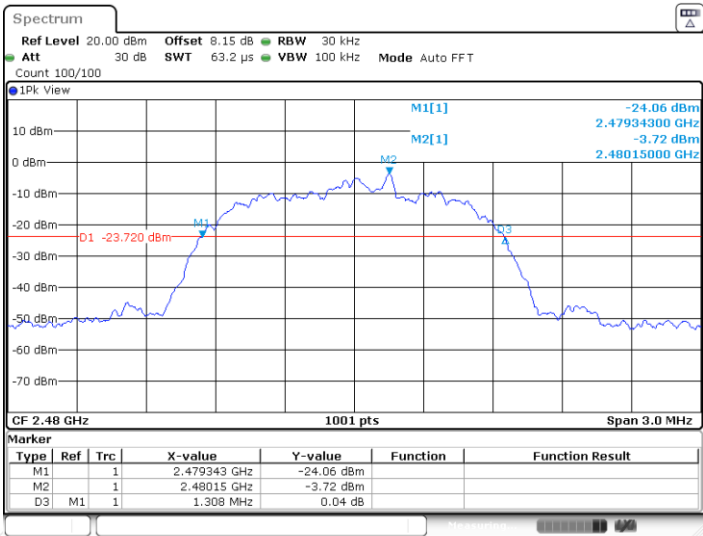
3DH5
Lowest Channel



Middle Channel



Highest Channel



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8. CARRIER FREQUENCIES SEPARATED

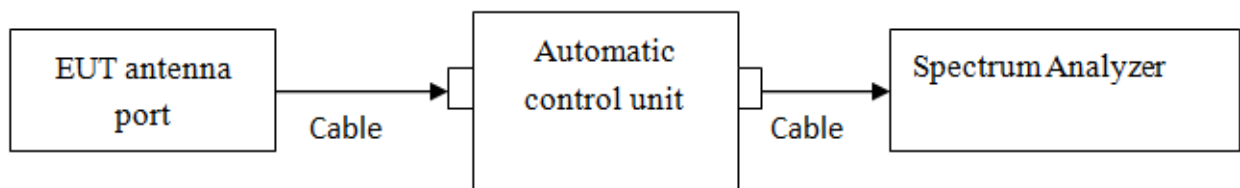
8.1 LIMITS

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.

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 center frequency of spectrum analyzer = middle of hopping channel.
- 3) Set the spectrum analyzer as RBW=300kHz, 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.

8.3 TEST SETUP



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8.4 TEST RESULTS

Environment: 24.7°C/52%RH/101.0kPa
Tested By:Qin Tingting

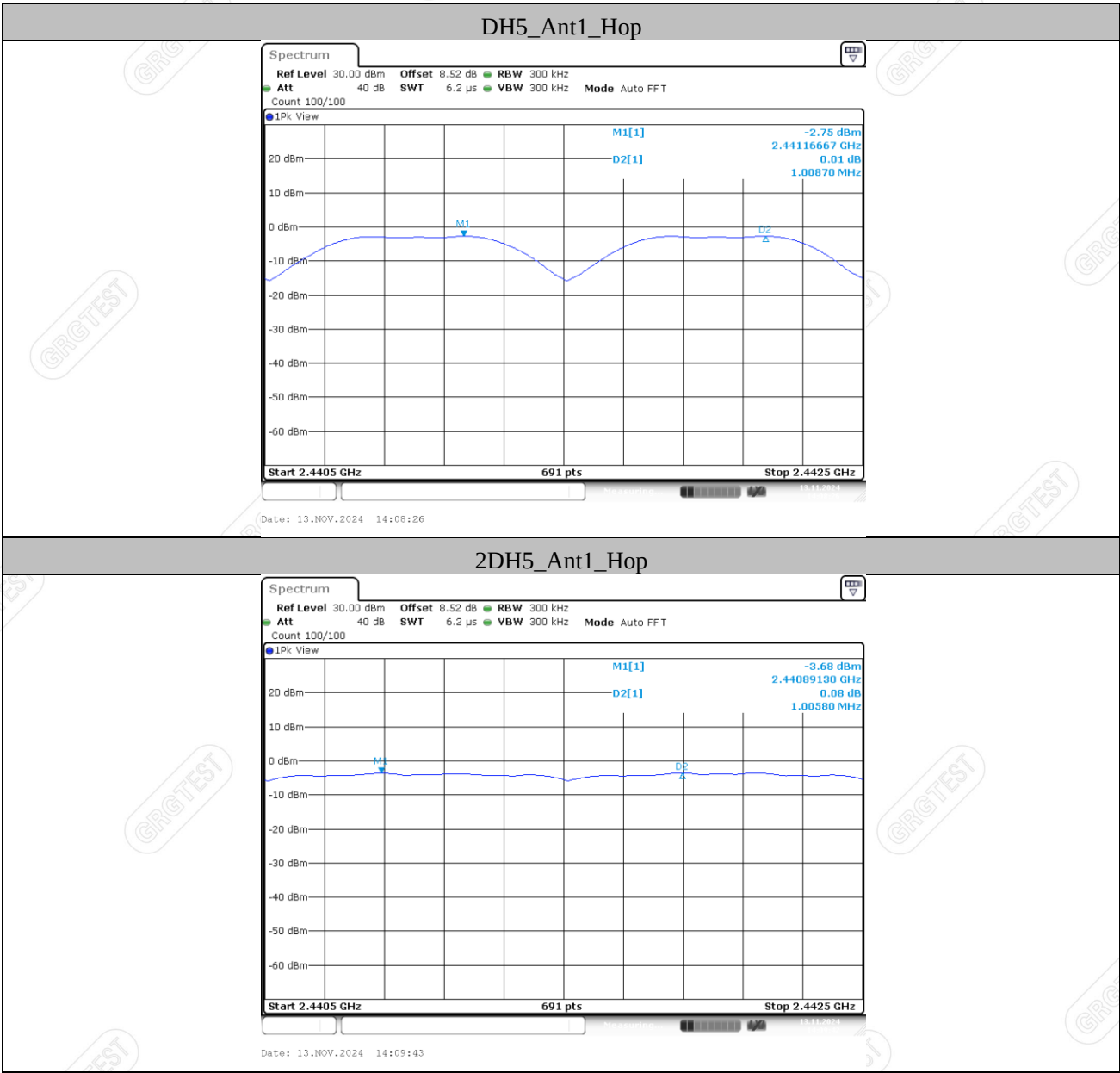
Voltage:DC 13.2V
Date: 2024-11-13

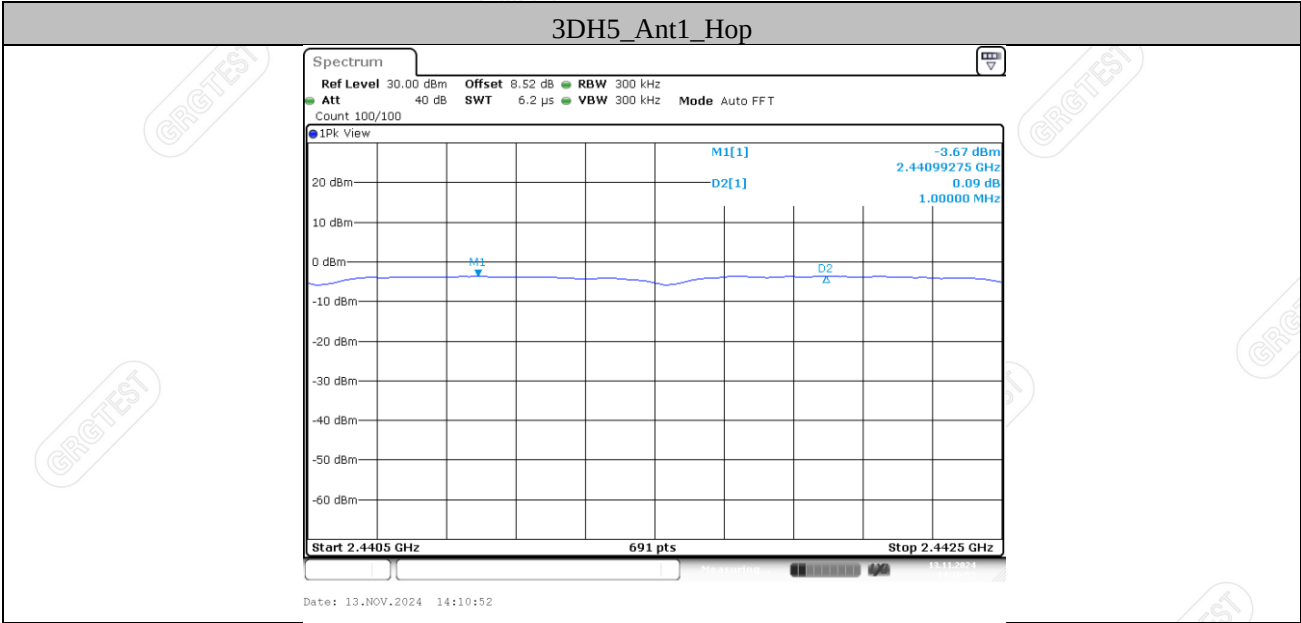
Test Mode	Antenna	Freq[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.009	≥0.647	PASS
2DH5	Ant1	Hop	1.006	≥0.893	PASS
3DH5	Ant1	Hop	1.000	≥0.873	PASS

NOTE: Limit[MHz]= 20 dB Bandwidth [MHz]*2/3.

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Test Graphs





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9. HOPPING CHANNEL NUMBER

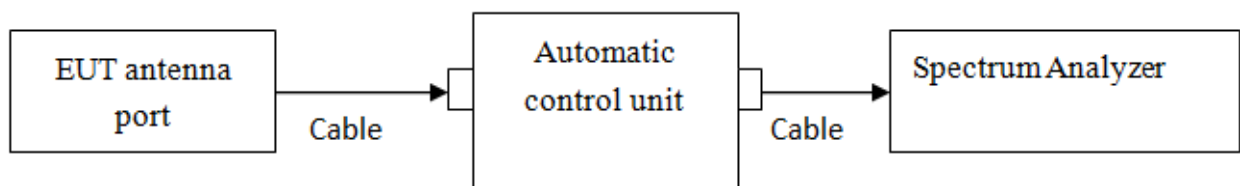
9.1 LIMITS

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

9.2 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.

9.3 TEST SETUP



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9.4 TEST RESULTS

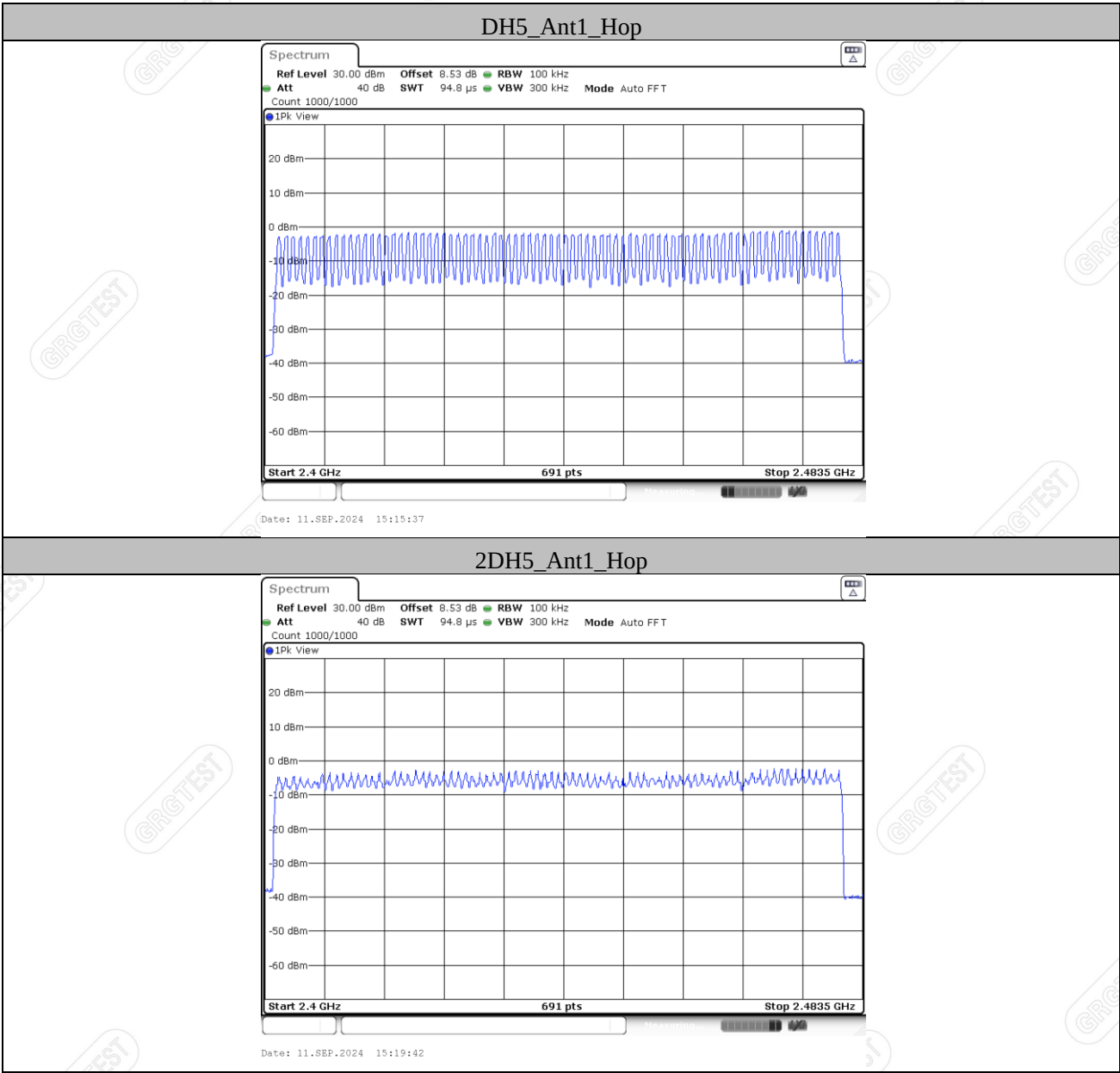
Environment: 25.1℃/48%RH/101.0kPa
Tested By:Qin Tingting

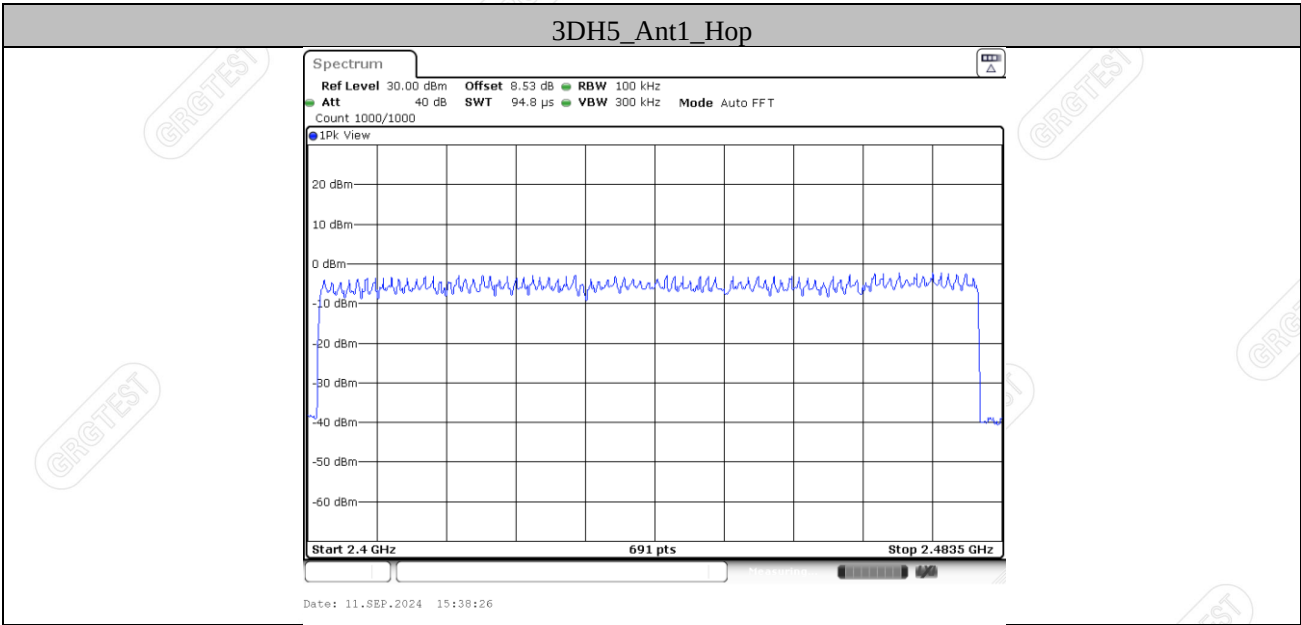
Voltage:DC 13.2V
Date: 2024-09-11

Test Mode	Antenna	Freq[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

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Test Graphs





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10. DWELL TIME

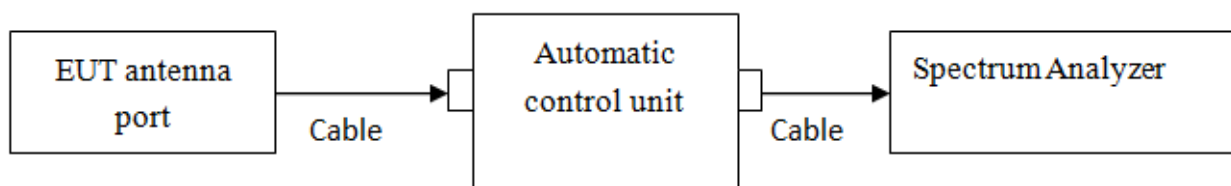
10.1 LIMITS

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.

10.2 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 = Clear Write;
- 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

10.3 TEST SETUP



10.4 TEST RESULTS

Environment: 25.1℃/48%RH/101.0kPa
Tested By:Qin Tingting

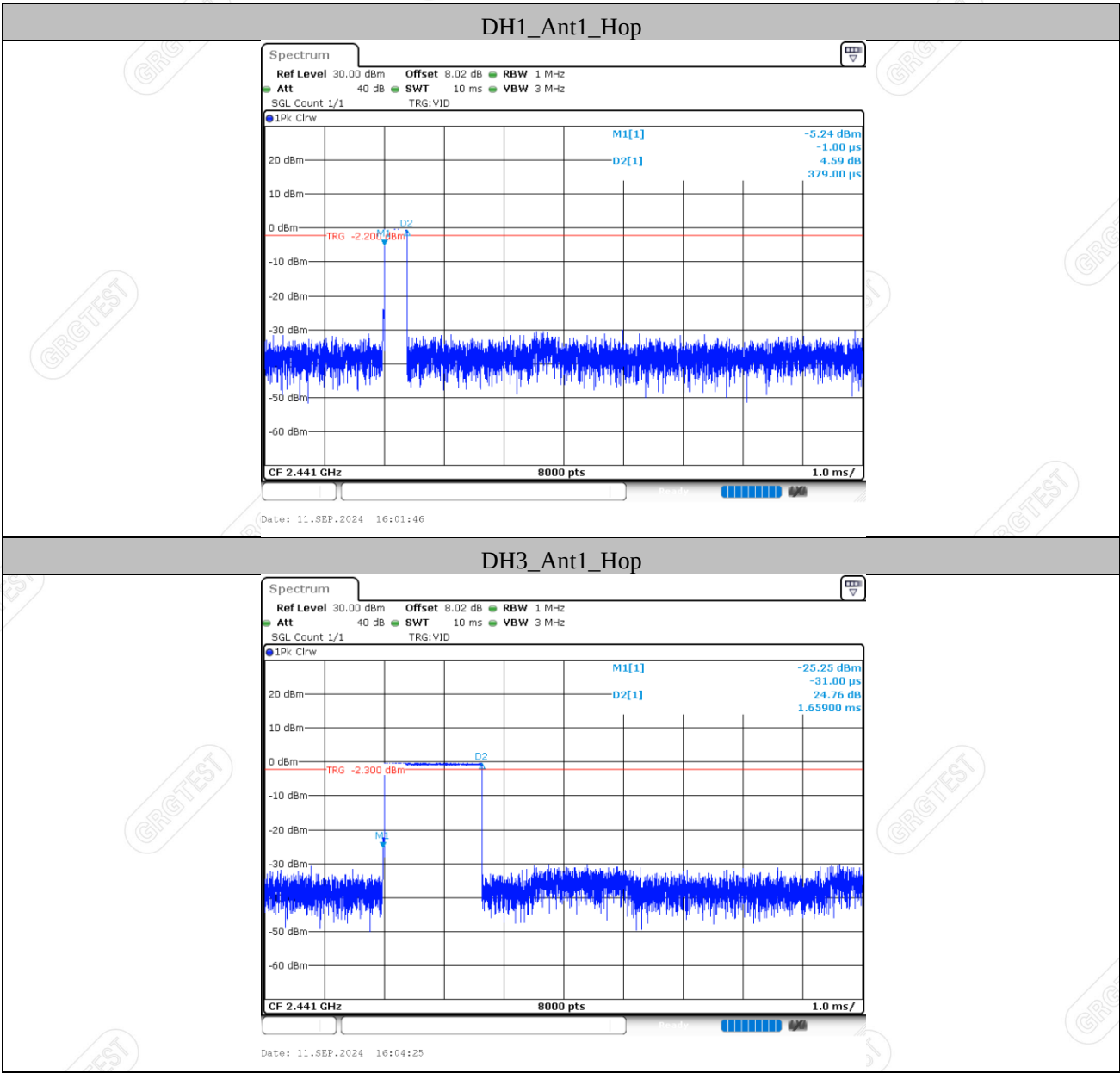
Voltage:DC 13.2V
Date: 2024-09-11

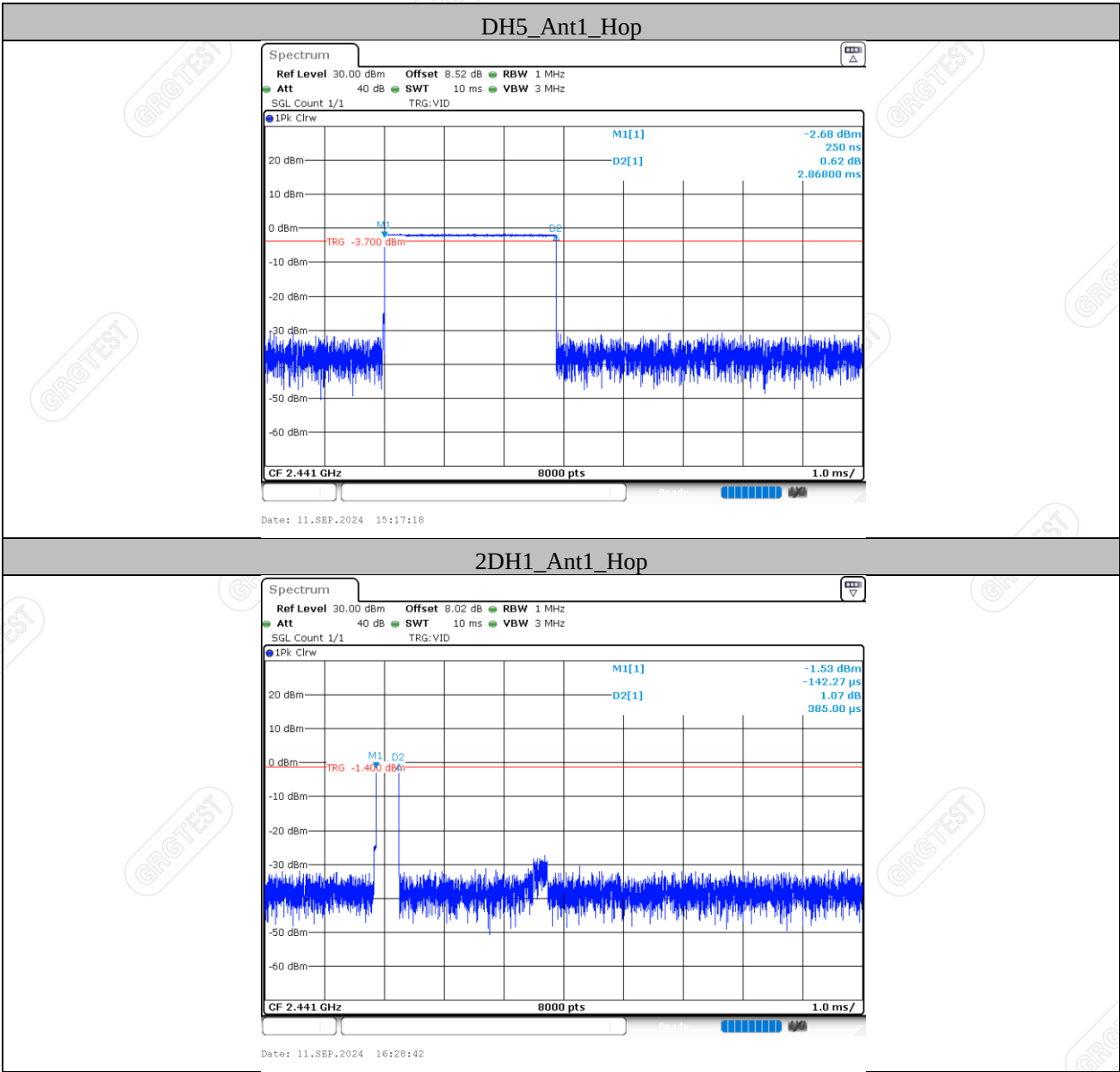
The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

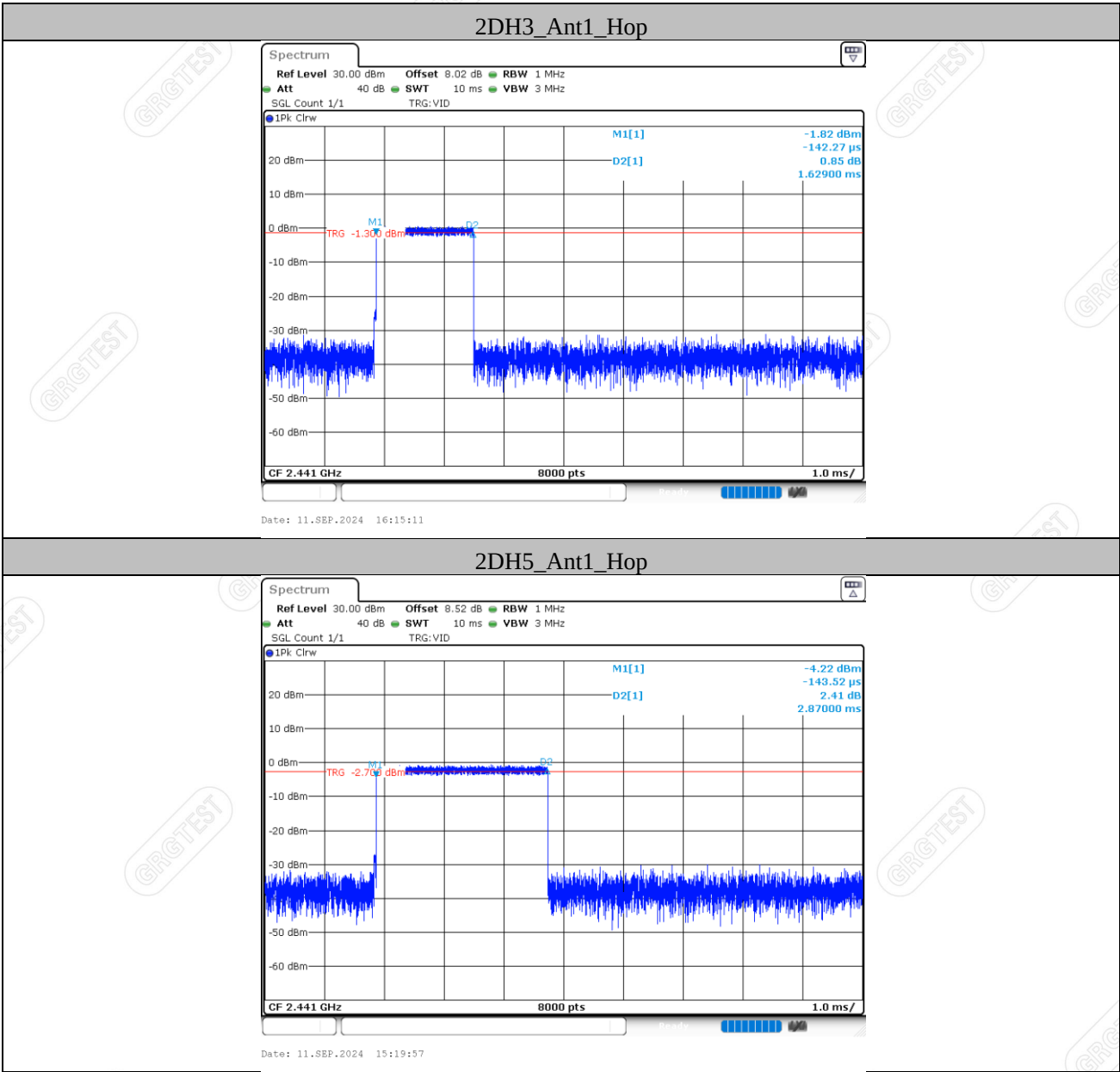
Test Mode	Antenna	Freq[MHz]	Burst Width [ms]	Total Hops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.379	320	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.659	200	0.332	≤0.4	PASS
DH5	Ant1	Hop	2.868	90	0.258	≤0.4	PASS
2DH1	Ant1	Hop	0.385	320	0.123	≤0.4	PASS
2DH3	Ant1	Hop	1.629	170	0.277	≤0.4	PASS
2DH5	Ant1	Hop	2.870	120	0.344	≤0.4	PASS
3DH1	Ant1	Hop	0.386	330	0.127	≤0.4	PASS
3DH3	Ant1	Hop	1.629	170	0.277	≤0.4	PASS
3DH5	Ant1	Hop	2.872	80	0.23	≤0.4	PASS

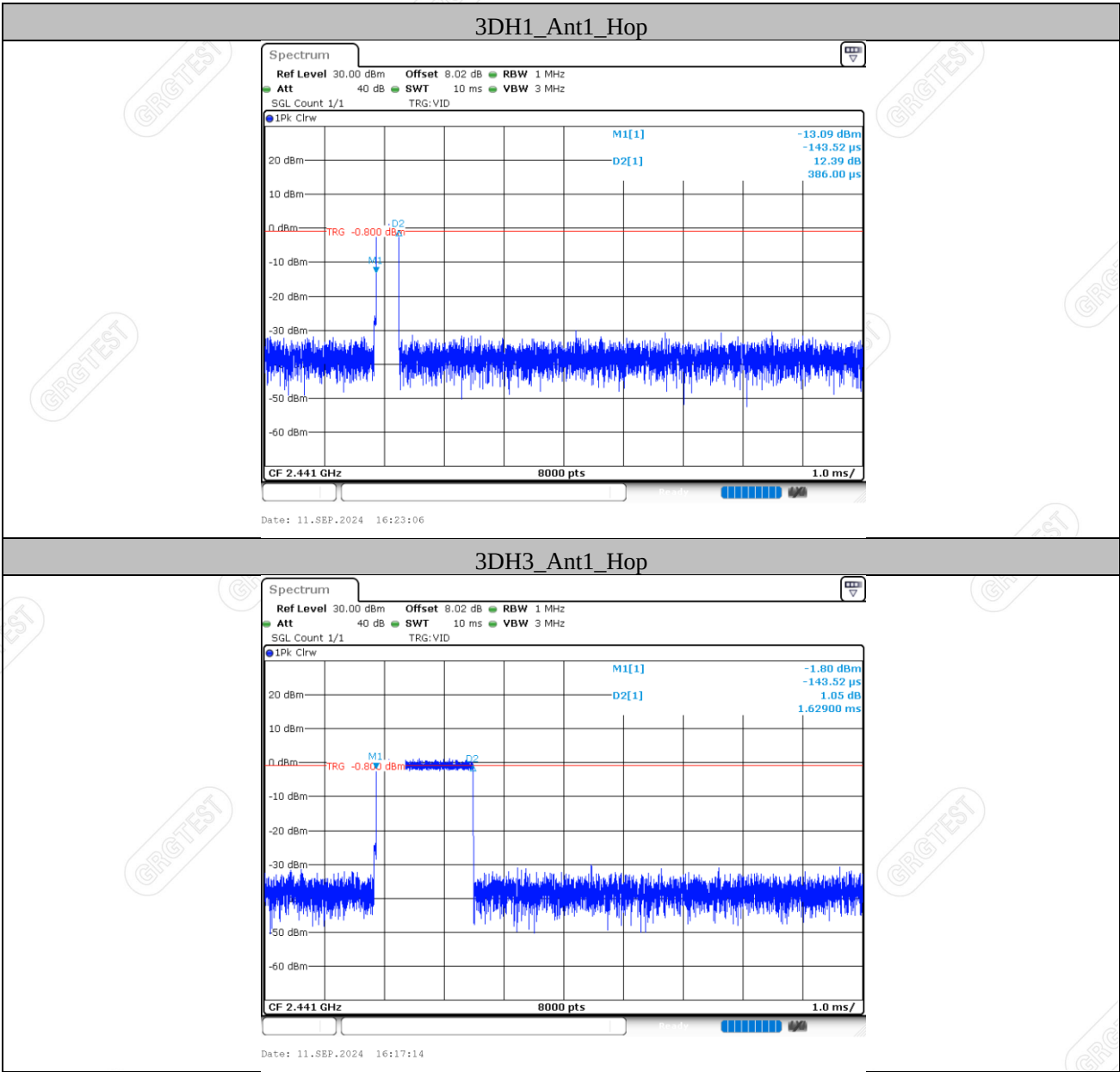
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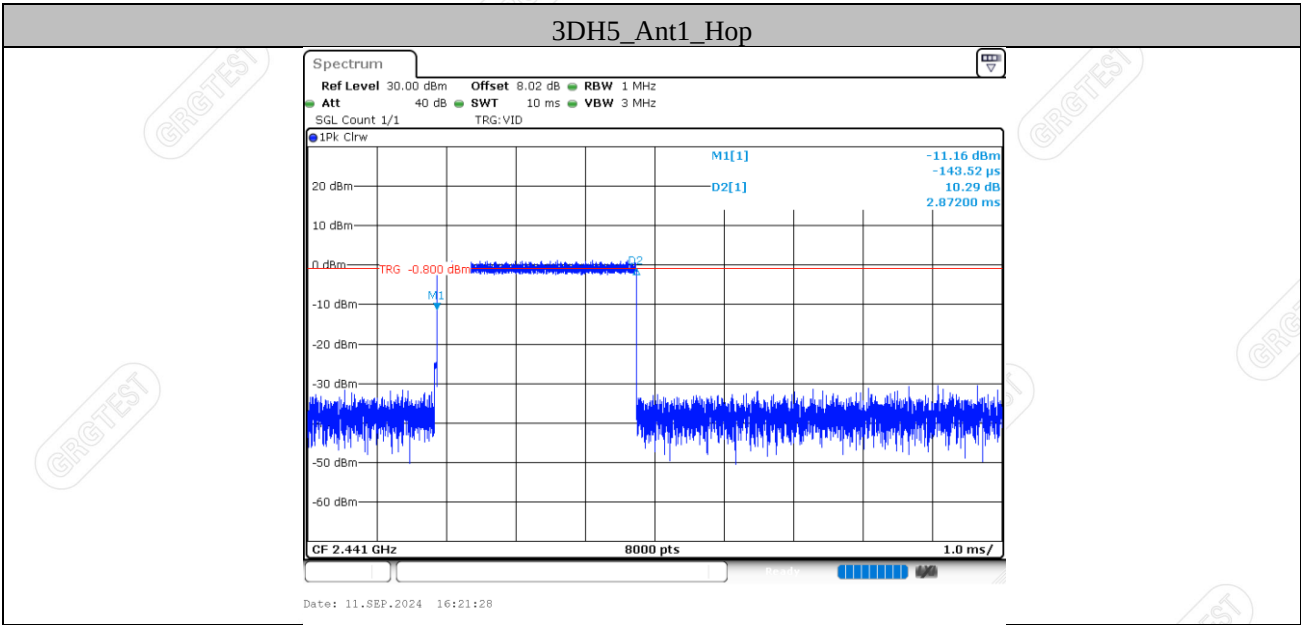
Test Graphs











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11. MAXIMUM PEAK OUTPUT POWER

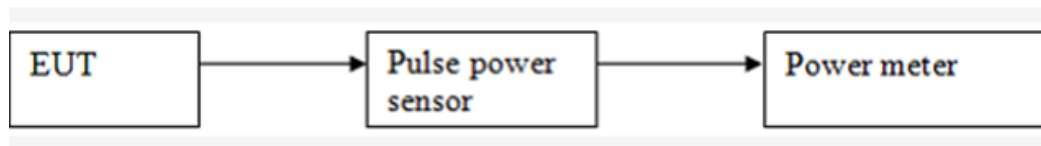
11.1 LIMITS

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.

11.2 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.

11.3 TEST SETUP



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11.4 TEST RESULTS

Environment: 25.1℃/48%RH/101.0kPa
Tested By:Qin Tingting

Voltage:DC 13.2V
Date: 2024-09-11

DH5

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/ Average	Pass/Fail
Lowest	2.402	-1.52	20.97	Peak	Pass
Middle	2.441	-1.12			Pass
Highest	2.480	-0.85			Pass

2DH5

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/ Average	Pass/Fail
Lowest	2.402	-0.09	20.97	Peak	Pass
Middle	2.441	0.32			Pass
Highest	2.480	0.71			Pass

3DH5

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/ Average	Pass/Fail
Lowest	2.402	0.30	20.97	Peak	Pass
Middle	2.441	0.74			Pass
Highest	2.480	1.12			Pass

12. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

12.1 LIMITS

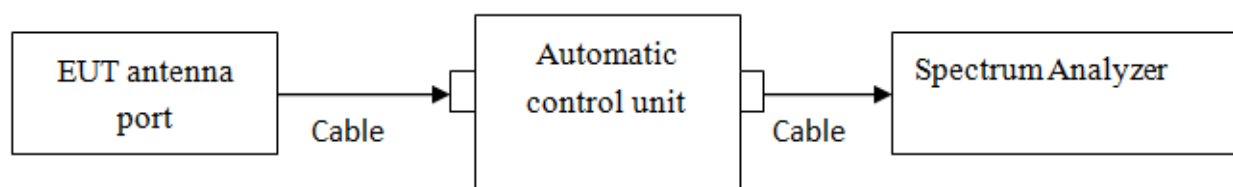
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the 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.

12.2 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.

12.3 TEST SETUP



12.4 TEST RESULTS

Environment: 25.1℃/48%RH/101.0kPa
Tested By:Qin Tingting

Voltage:DC 13.2V
Date: 2024-09-11

Band Edge

Test Mode	Antenna	Ch Name	Freq[MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-2.80	-48.13	≤-22.8	PASS
		High	2480	-1.54	-34.92	≤-21.54	PASS
		Low	Hop_2402	-3.14	-46.84	≤-23.14	PASS
		High	Hop_2480	-2.14	-41.86	≤-22.14	PASS
2DH5	Ant1	Low	2402	-4.00	-47.79	≤-24	PASS
		High	2480	-2.99	-47.47	≤-22.99	PASS
		Low	Hop_2402	-6.12	-47.45	≤-26.12	PASS
		High	Hop_2480	-3.67	-47.87	≤-23.67	PASS
3DH5	Ant1	Low	2402	-4.08	-48.35	≤-24.08	PASS
		High	2480	-2.82	-46.97	≤-22.82	PASS
		Low	Hop_2402	-5.51	-47.67	≤-25.51	PASS
		High	Hop_2480	-3.05	-47.71	≤-23.05	PASS

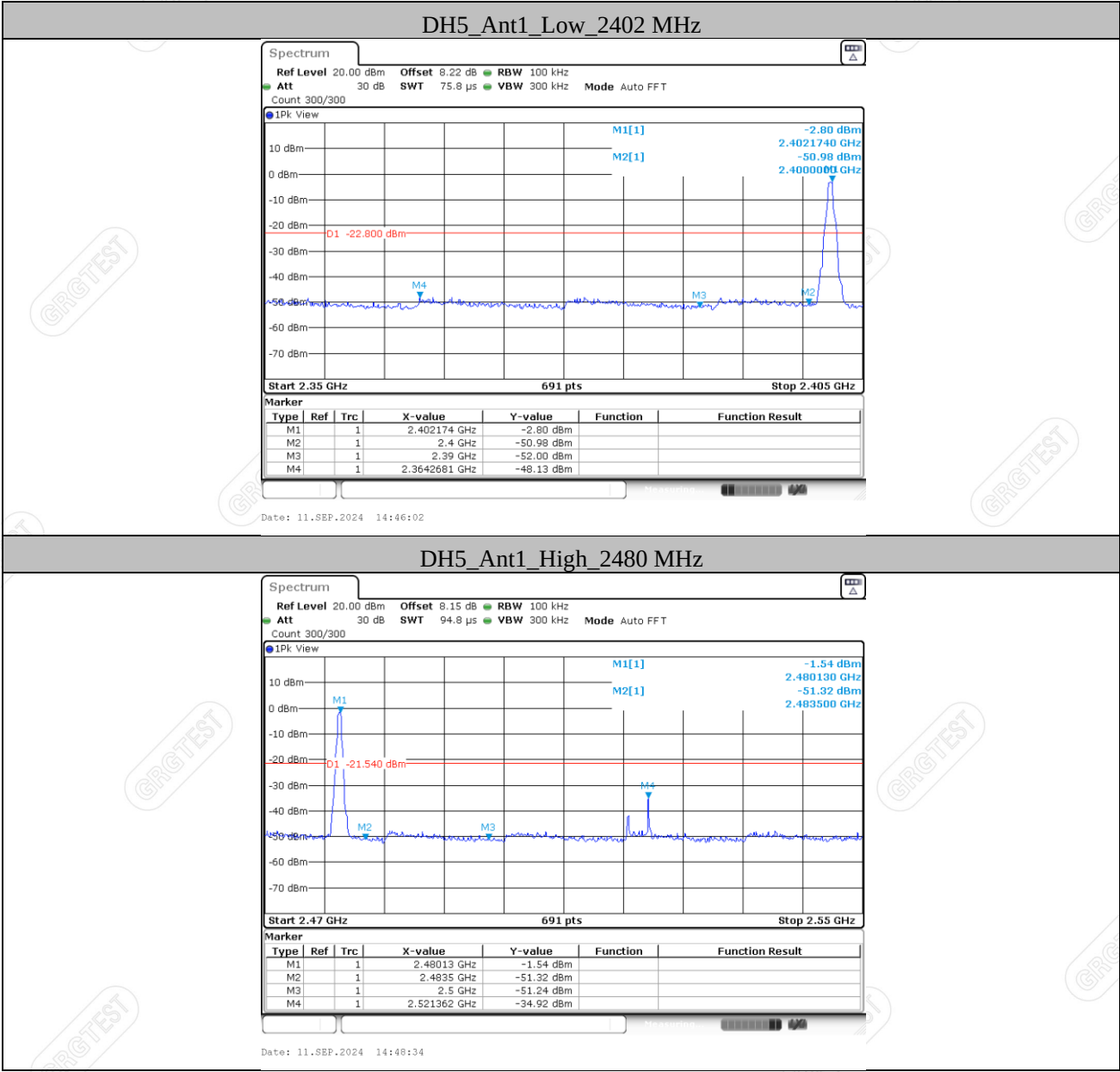
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Conducted Spurious Emission

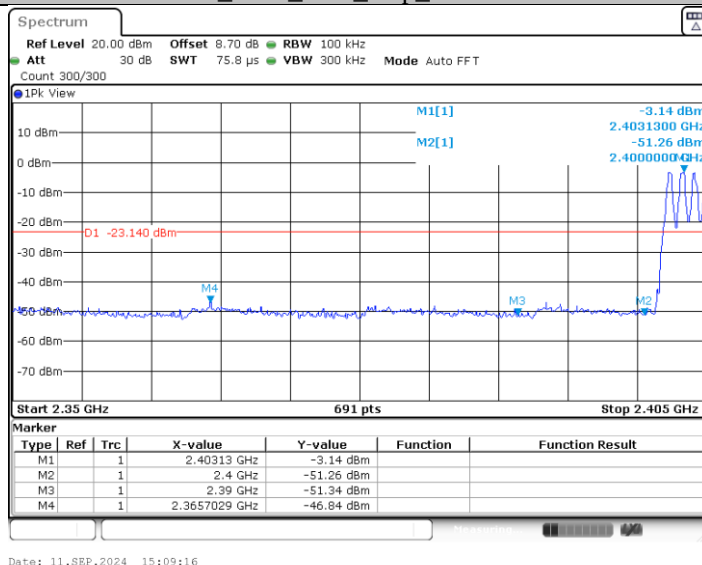
Test Mode	Antenna	Freq[MHz]	Freq Range [MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-2.71	-2.71	---	PASS
			30~1000	-2.71	-58.21	≤ -22.71	PASS
			1000~26500	-2.71	-42.86	≤ -22.71	PASS
		2441	Reference	-1.61	-1.61	---	PASS
			30~1000	-1.61	-57.92	≤ -21.61	PASS
			1000~26500	-1.61	-43.82	≤ -21.61	PASS
		2480	Reference	-1.54	-1.54	---	PASS
			30~1000	-1.54	-58.93	≤ -21.54	PASS
			1000~26500	-1.54	-43.28	≤ -21.54	PASS
2DH5	Ant1	2402	Reference	-3.90	-3.90	---	PASS
			30~1000	-3.90	-57.96	≤ -23.9	PASS
			1000~26500	-3.90	-44.33	≤ -23.9	PASS
		2441	Reference	-2.83	-2.83	---	PASS
			30~1000	-2.83	-58.09	≤ -22.83	PASS
			1000~26500	-2.83	-44.12	≤ -22.83	PASS
		2480	Reference	-2.80	-2.80	---	PASS
			30~1000	-2.80	-58.59	≤ -22.8	PASS
			1000~26500	-2.80	-42.05	≤ -22.8	PASS
3DH5	Ant1	2402	Reference	-4.42	-4.42	---	PASS
			30~1000	-4.42	-58.78	≤ -24.42	PASS
			1000~26500	-4.42	-44.26	≤ -24.42	PASS
		2441	Reference	-2.32	-2.32	---	PASS
			30~1000	-2.32	-57.41	≤ -22.32	PASS
			1000~26500	-2.32	-44.41	≤ -22.32	PASS
		2480	Reference	-2.83	-2.83	---	PASS
			30~1000	-2.83	-58.83	≤ -22.83	PASS
			1000~26500	-2.83	-39.2	≤ -22.83	PASS

Test Graphs

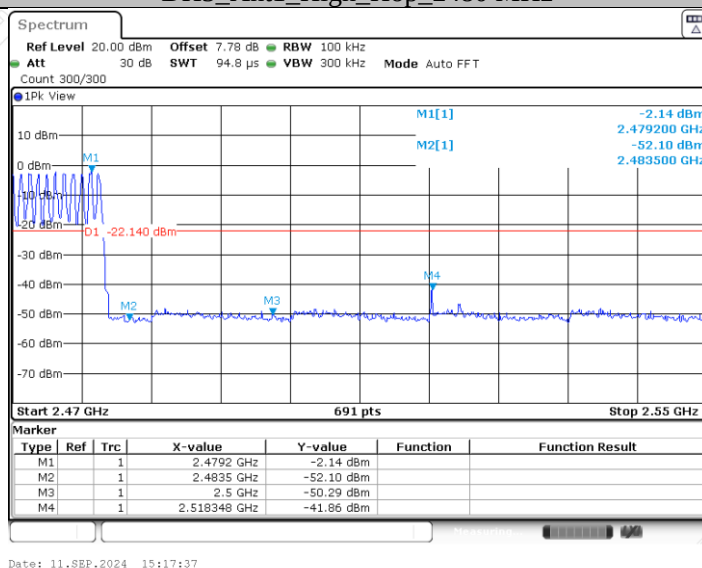
Band Edge

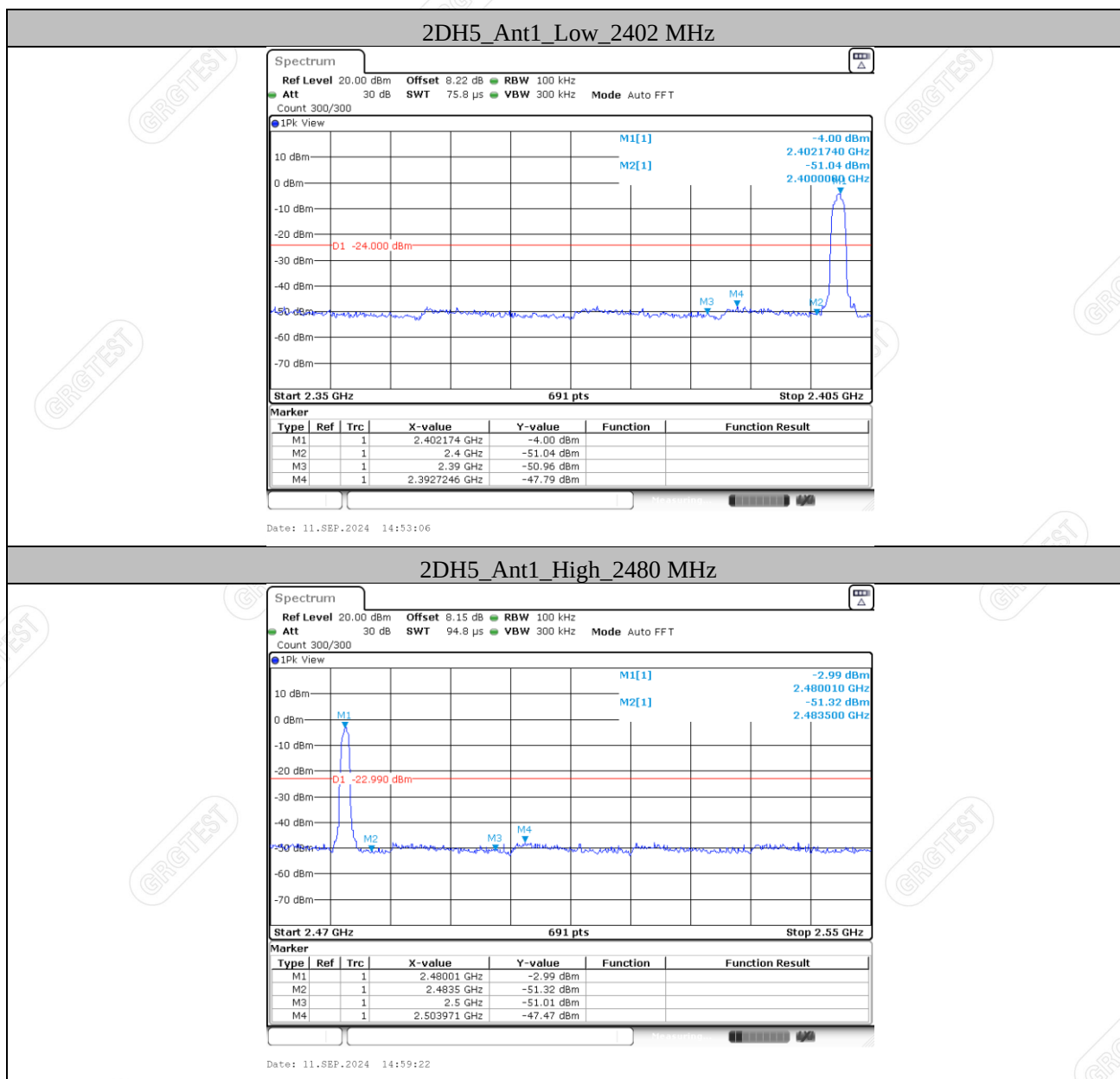


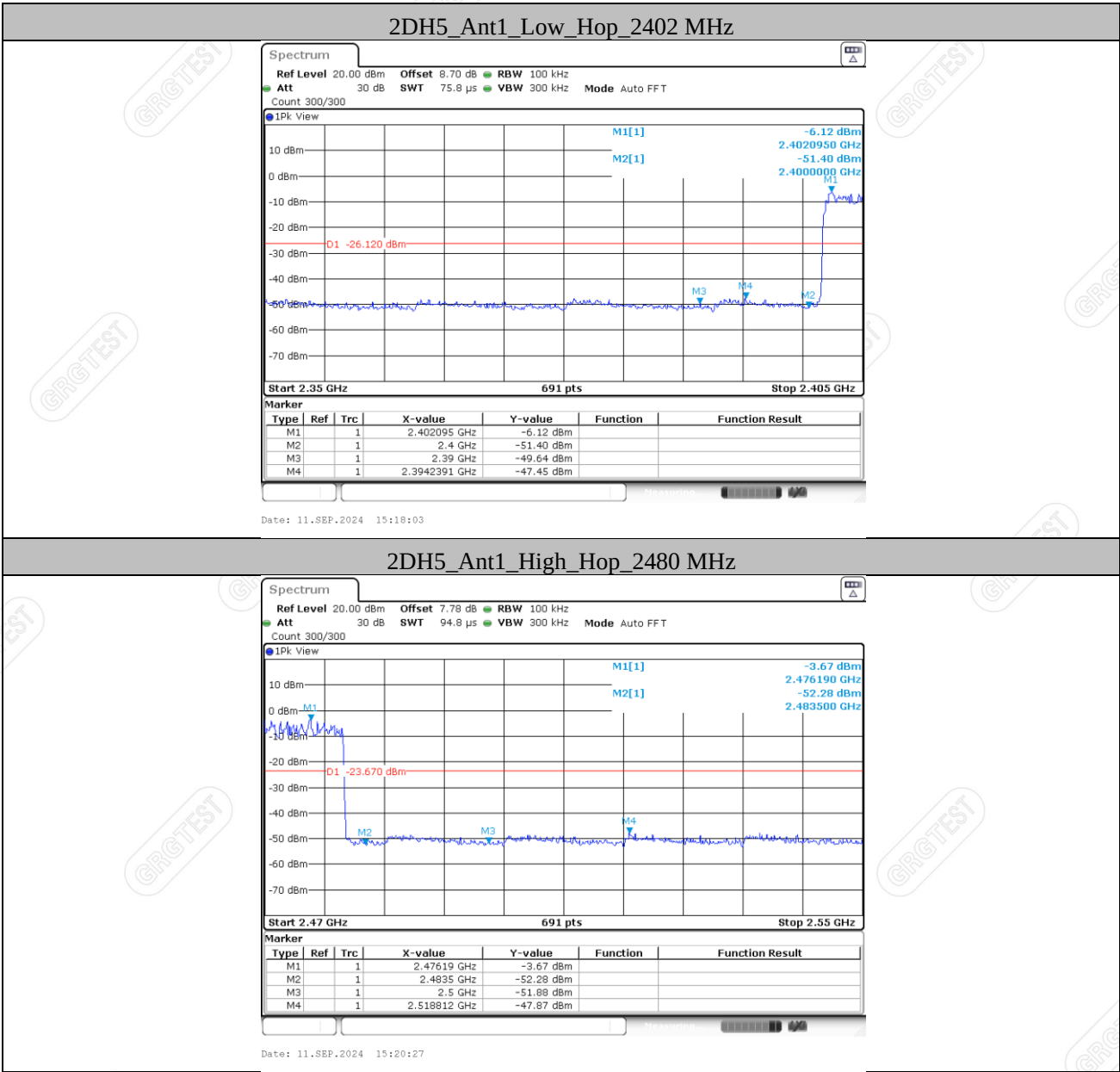
DH5_Ant1_Low_Hop_2402 MHz



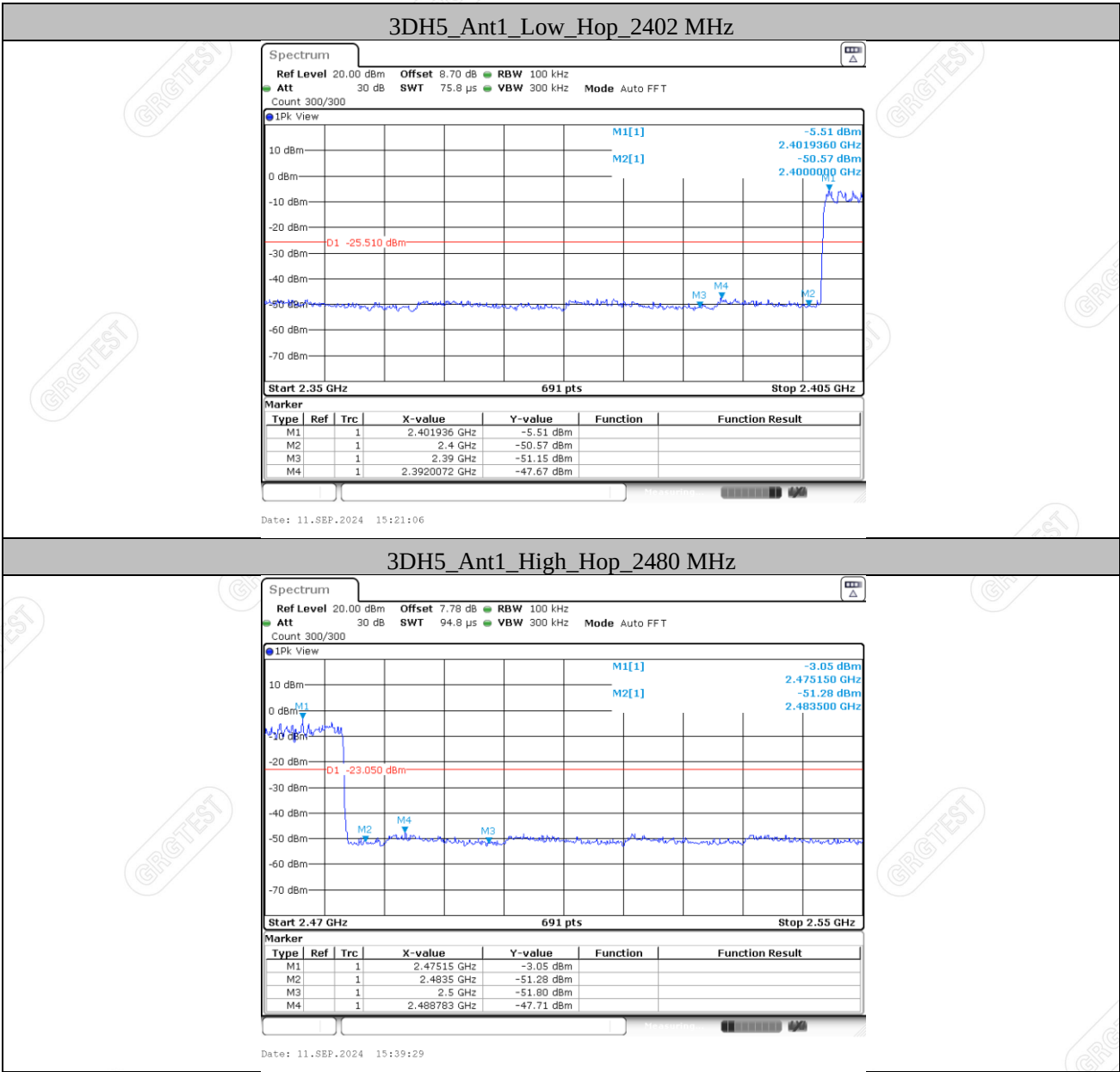
DH5_Ant1_High_Hop_2480 MHz



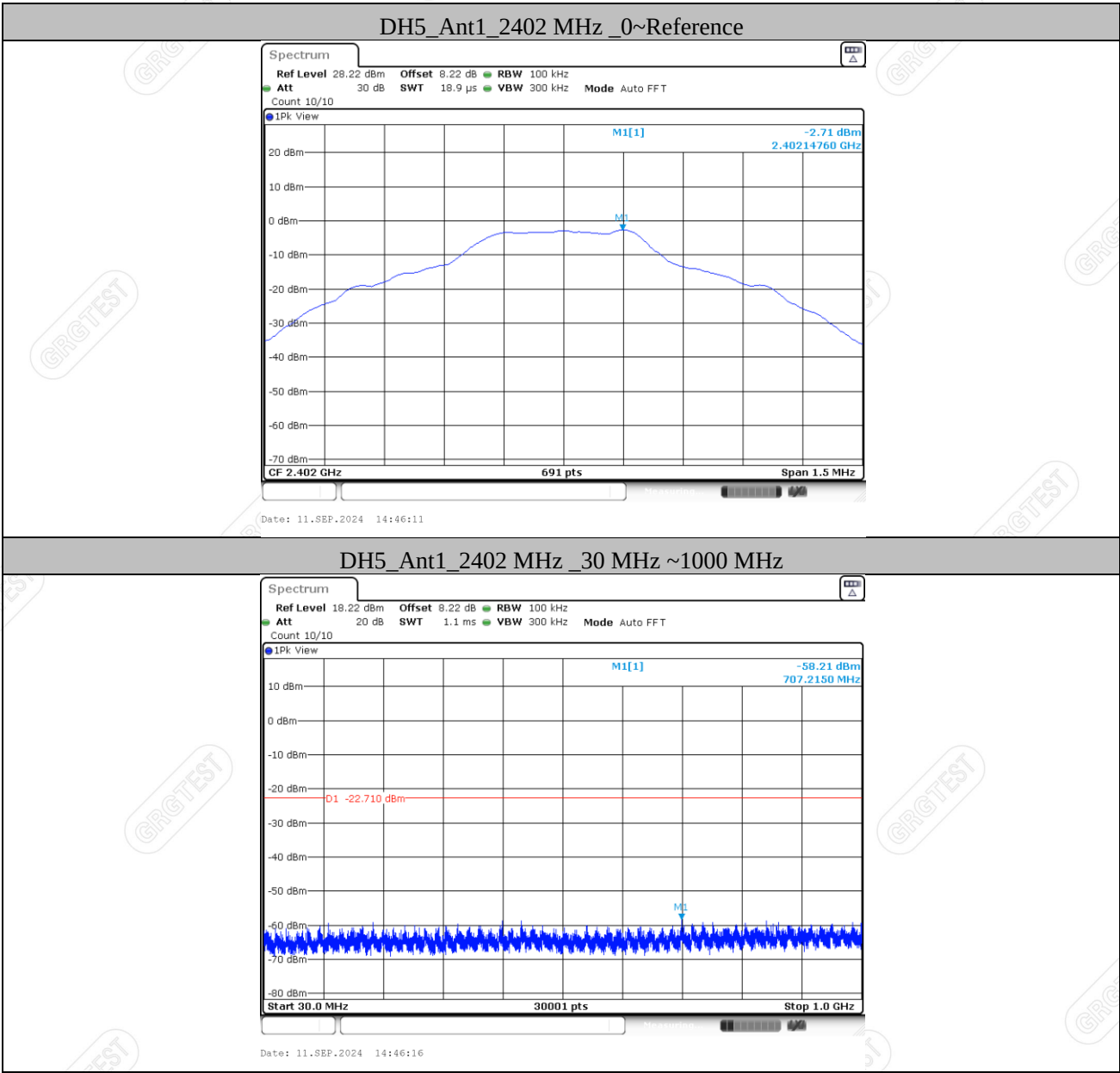


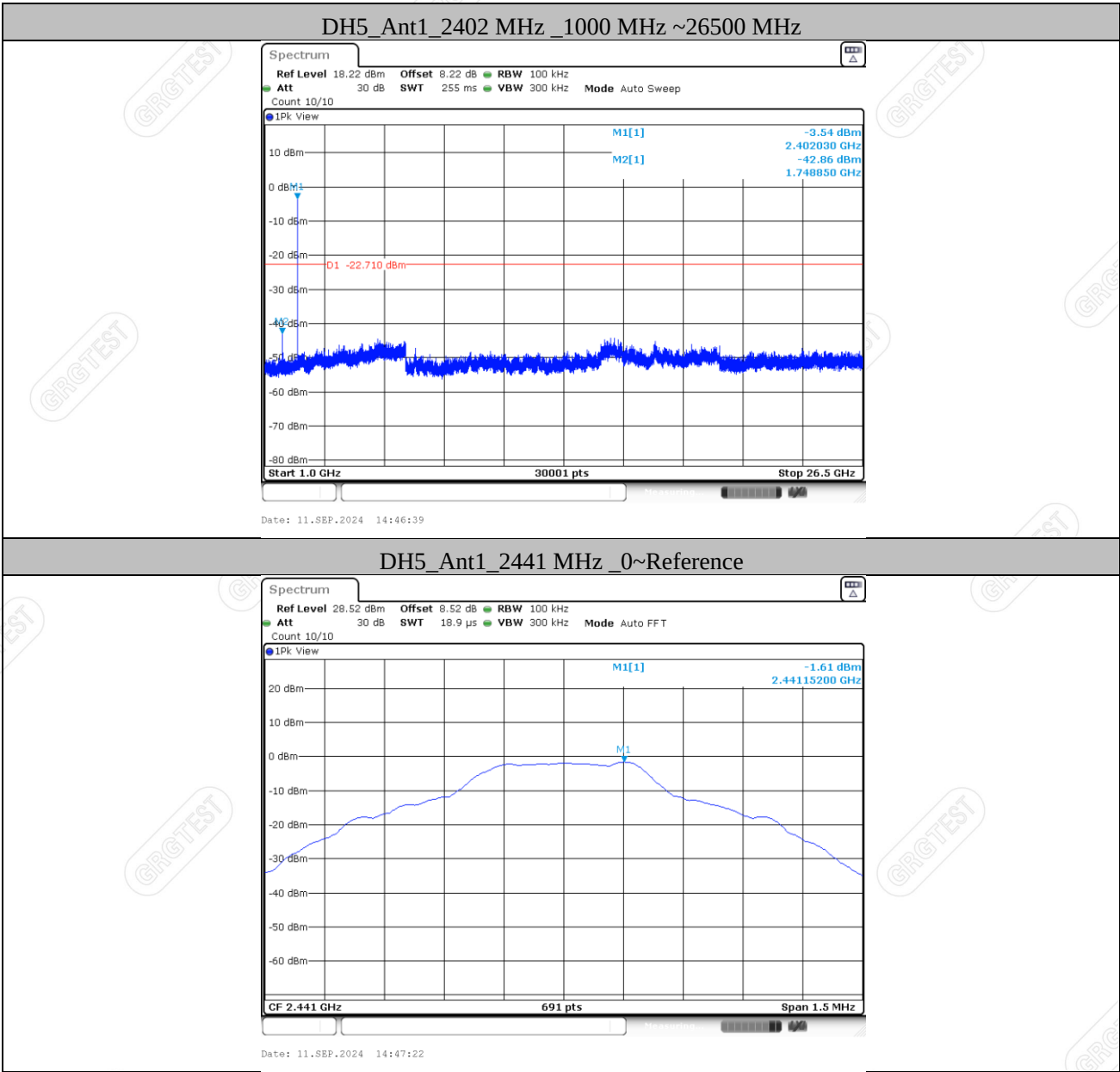


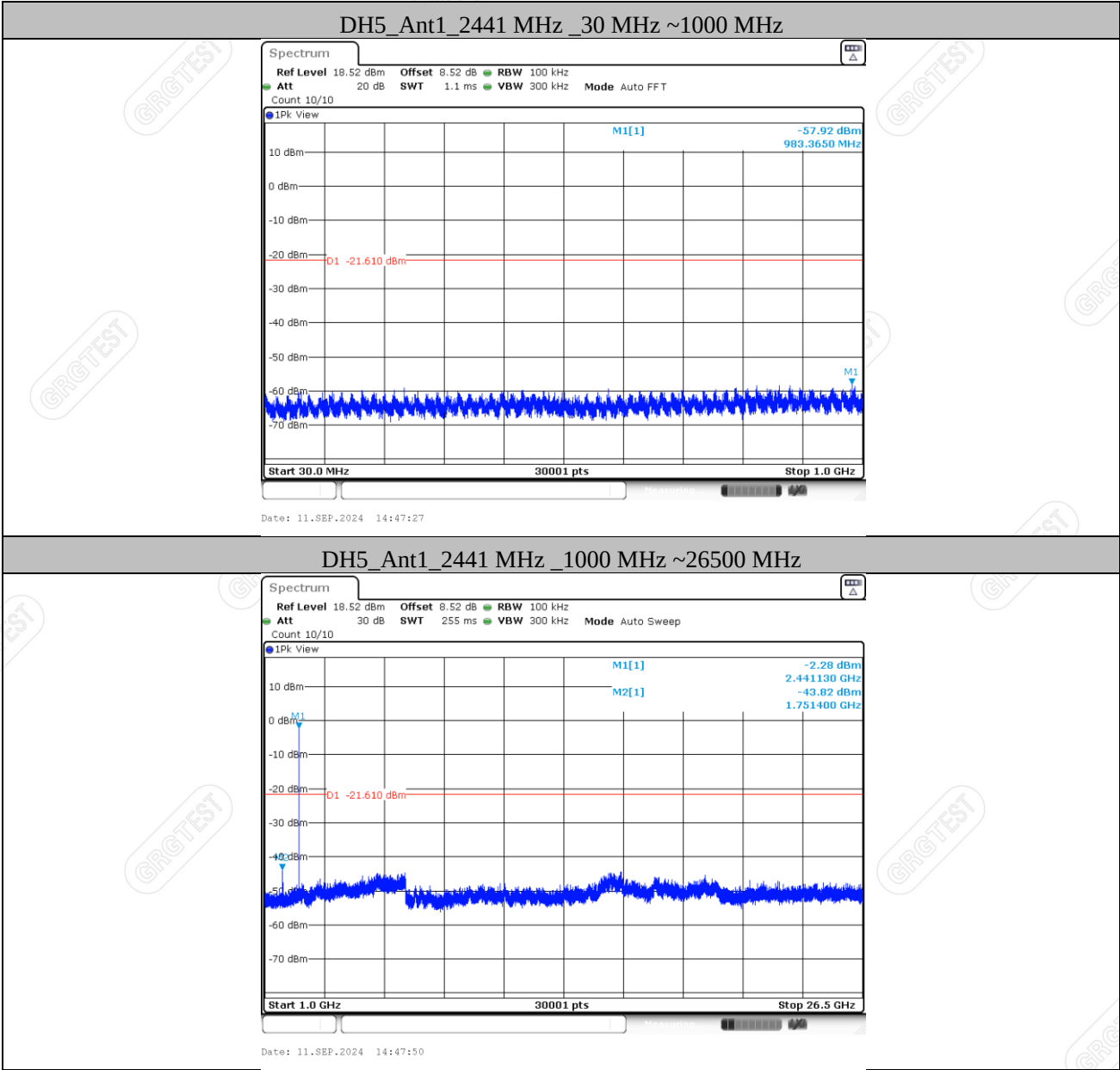


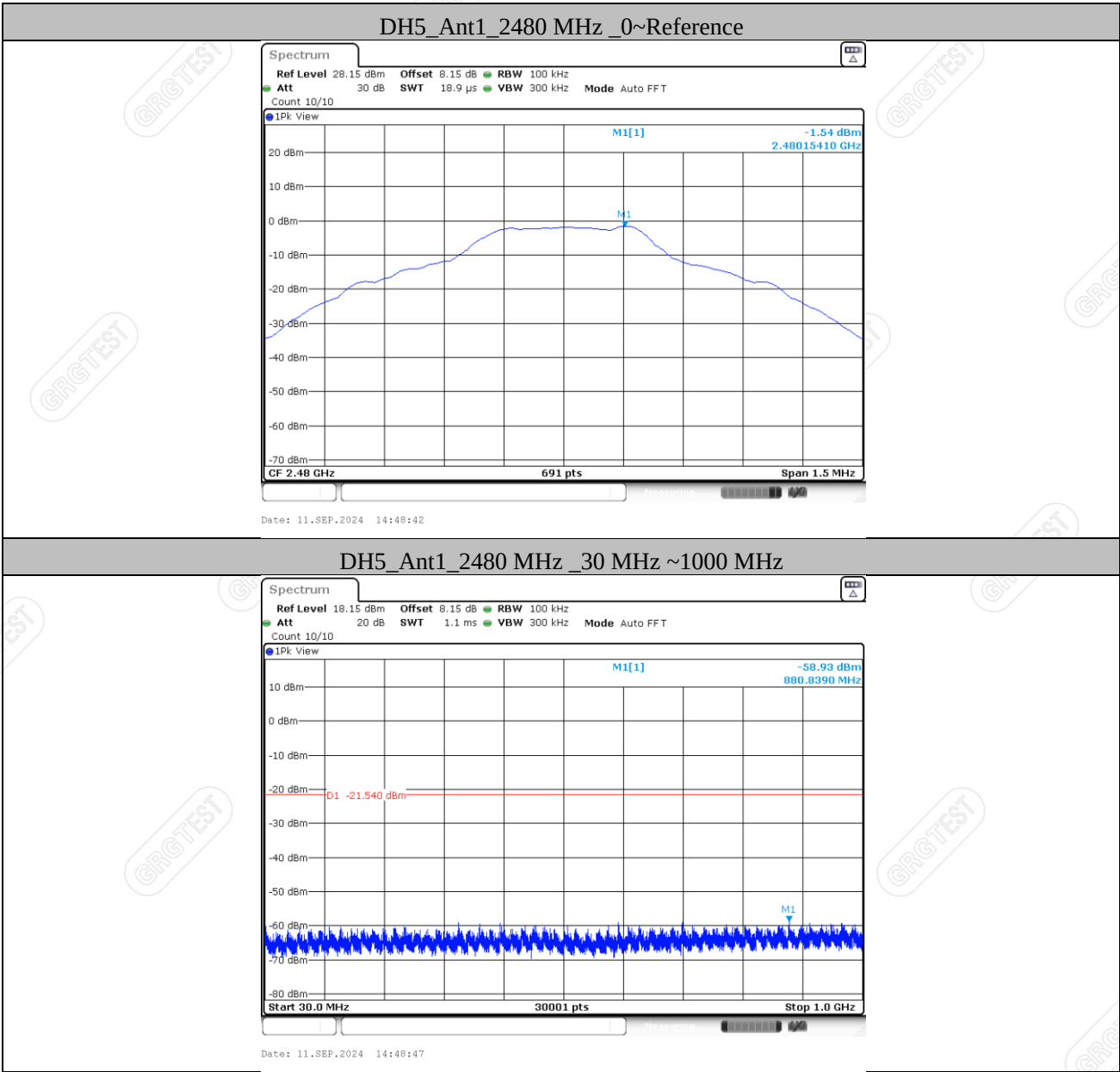


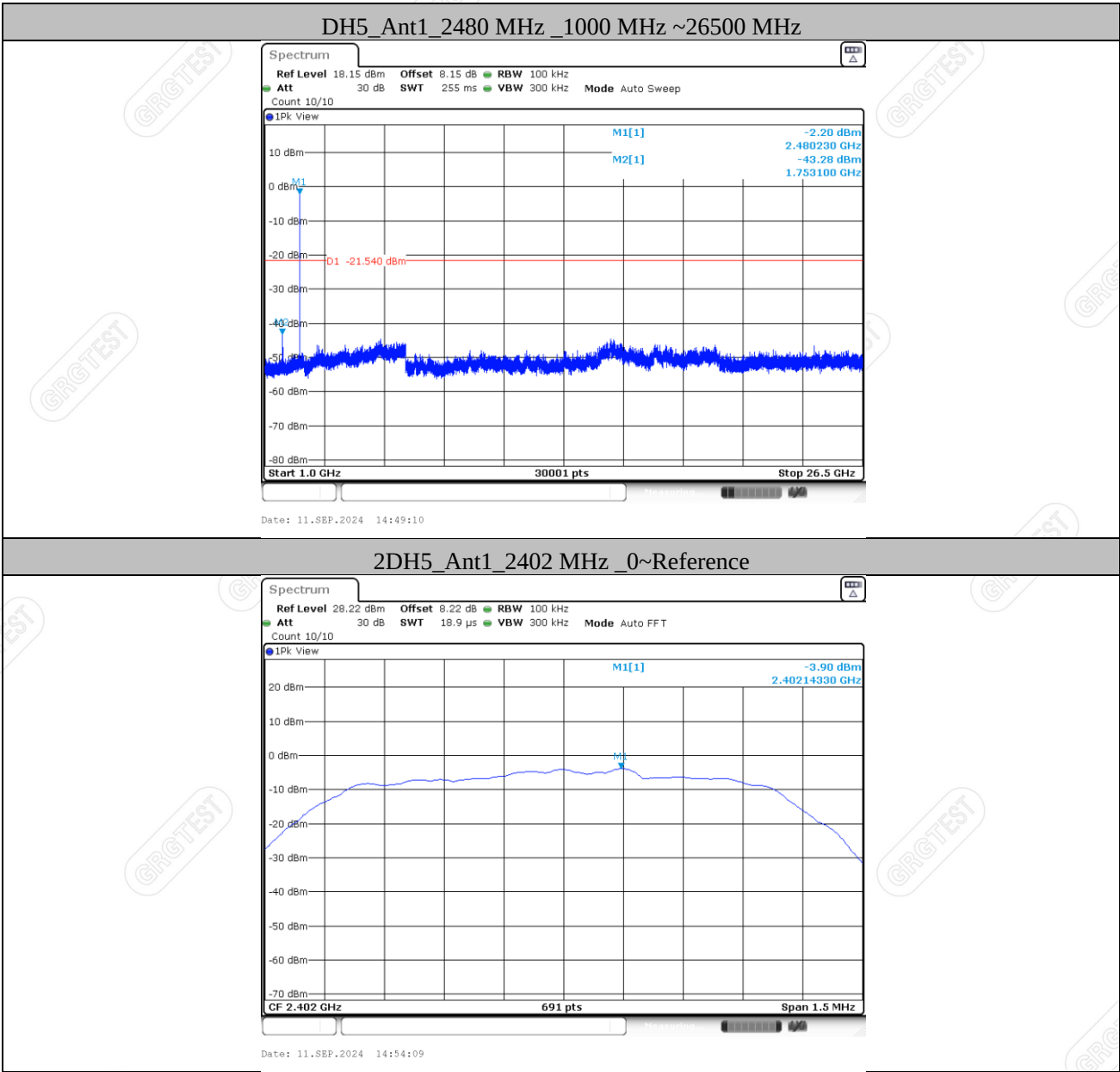
Conducted Spurious Emission

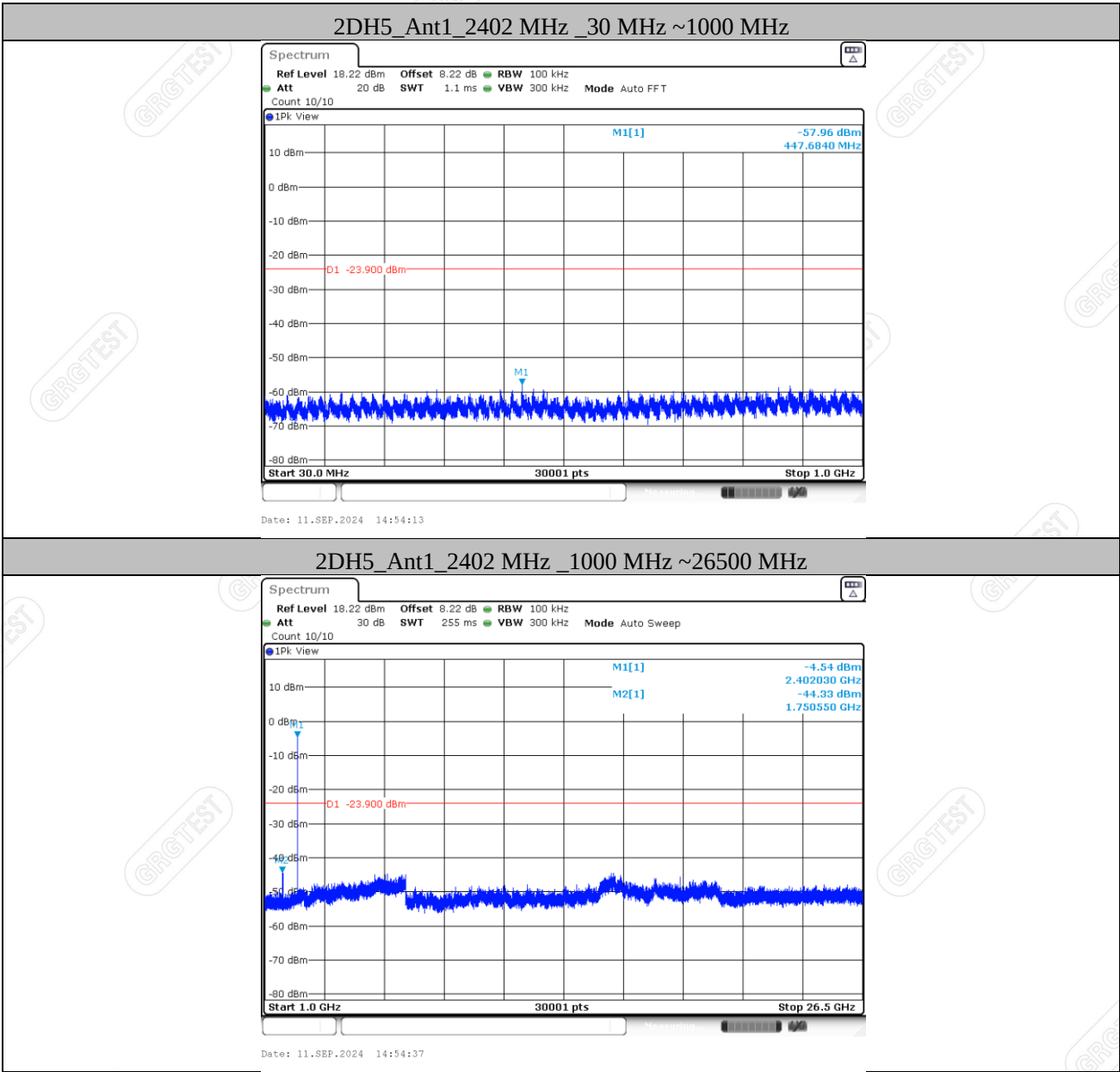


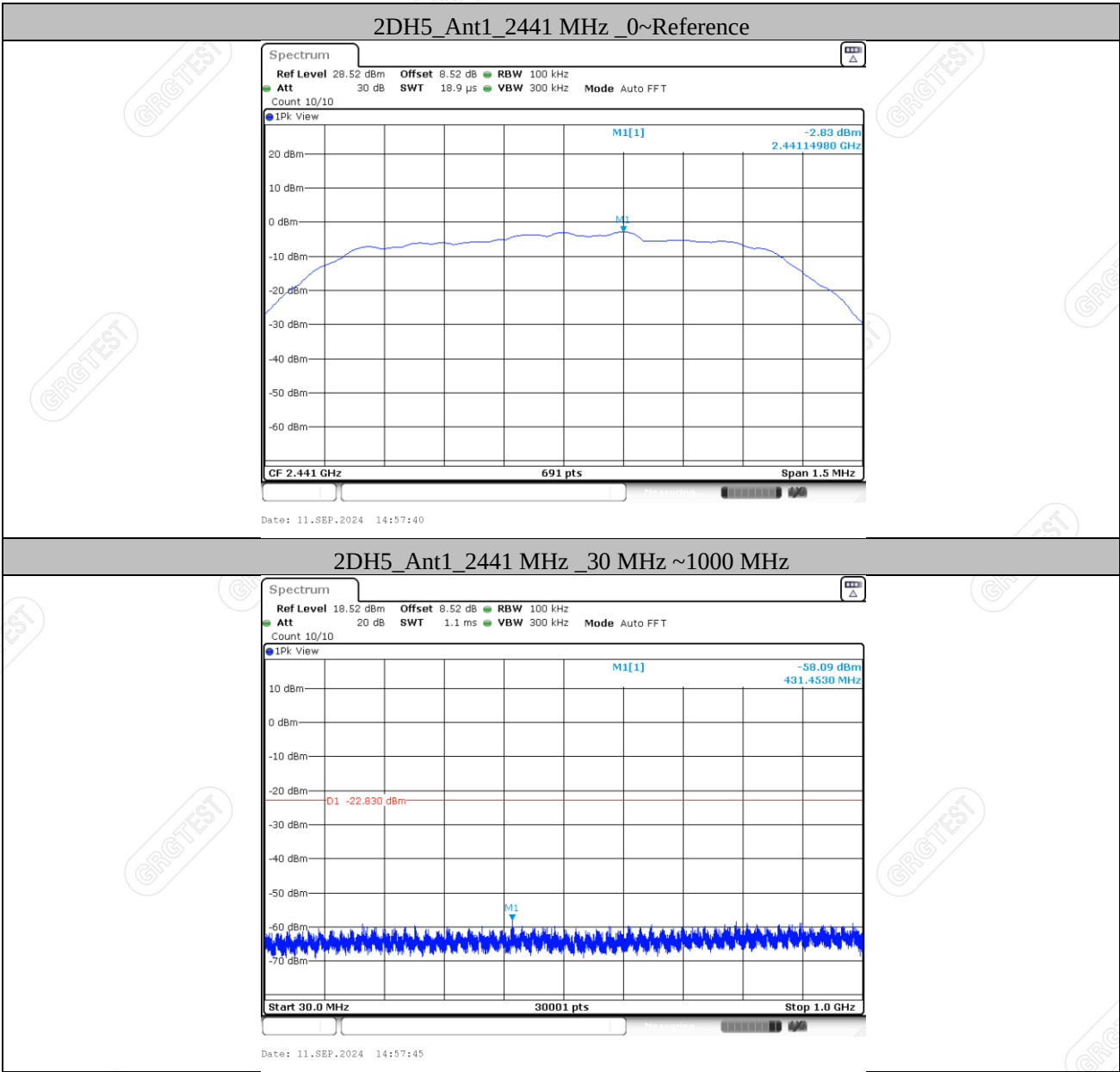


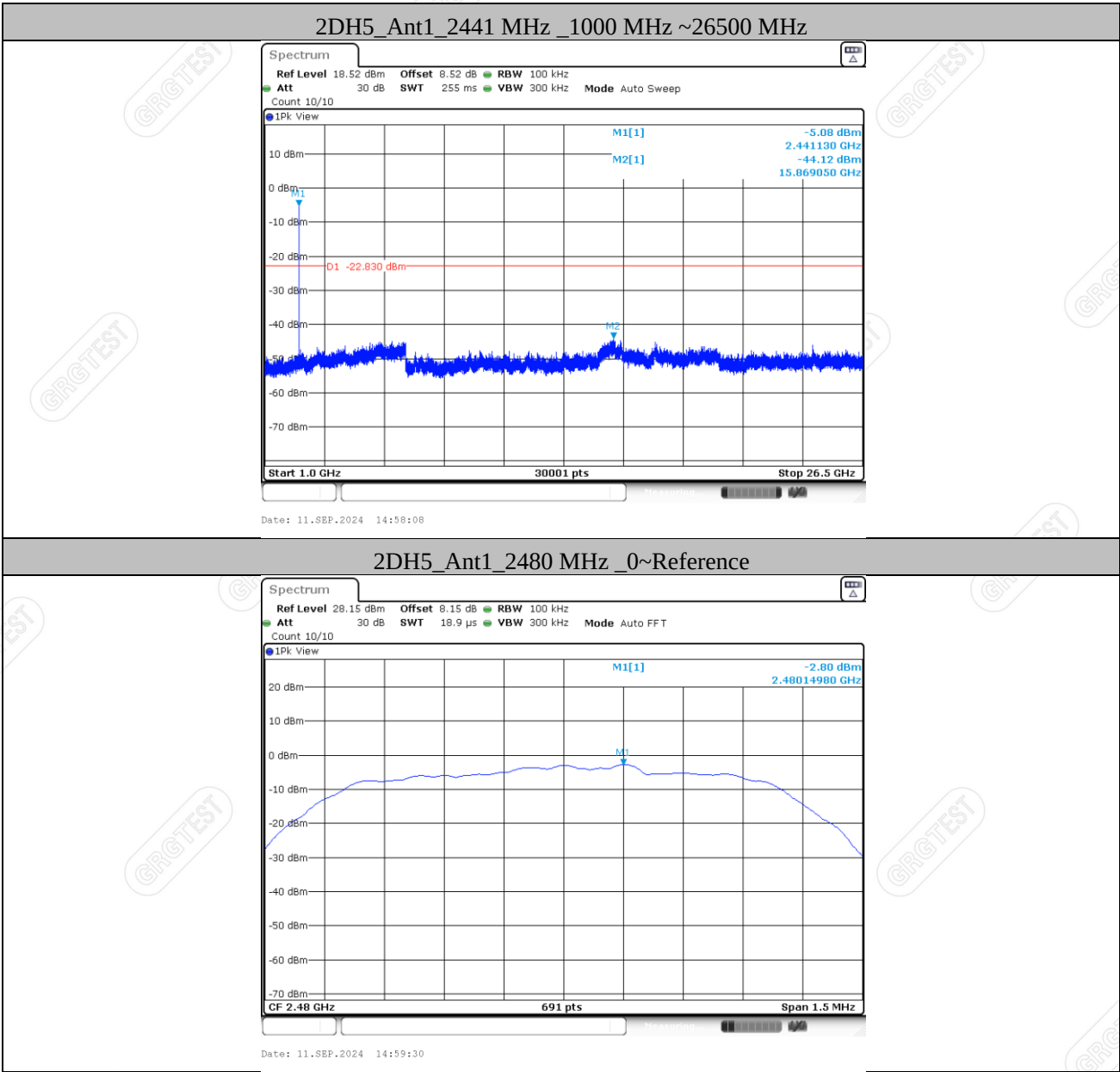


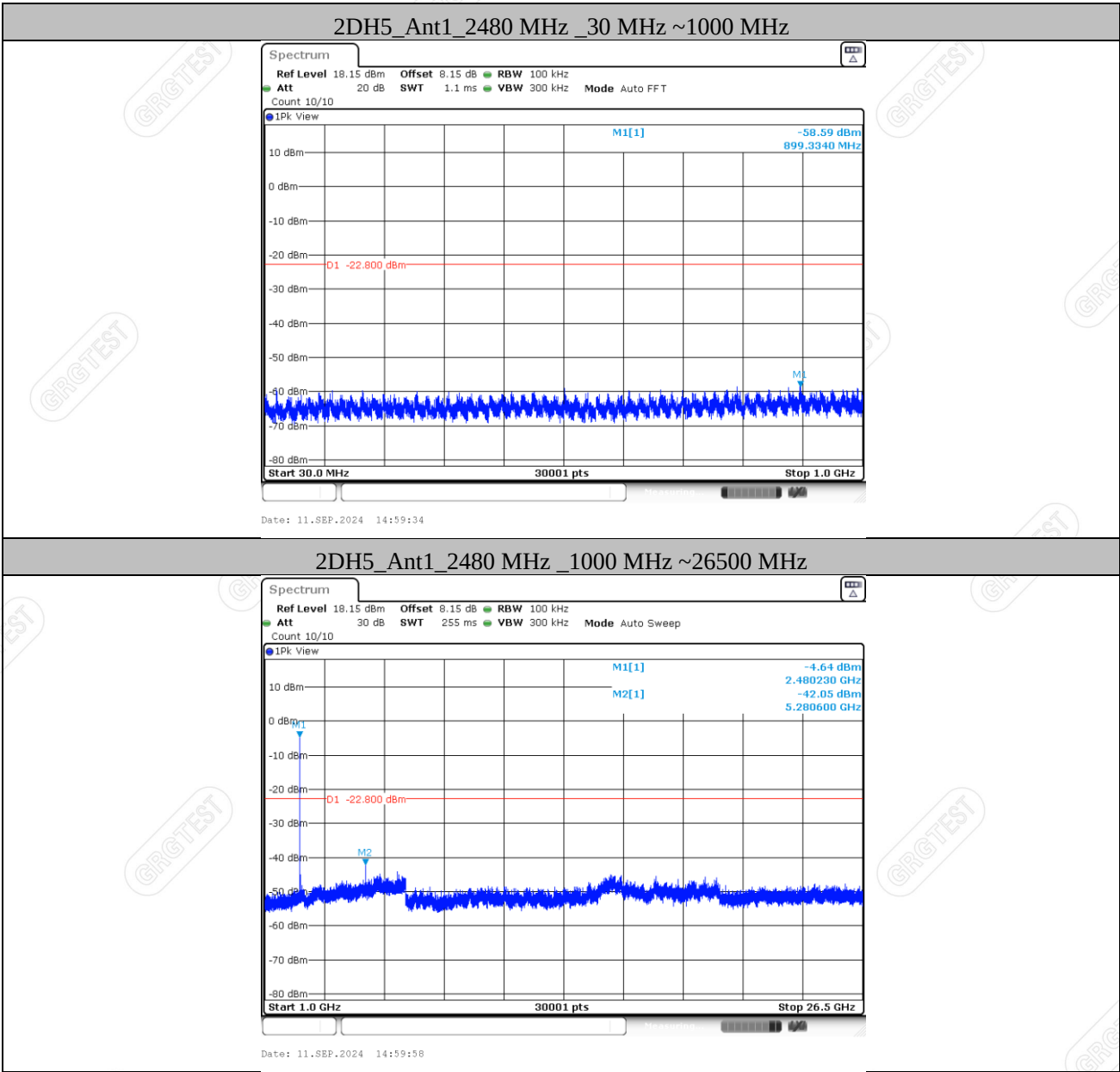


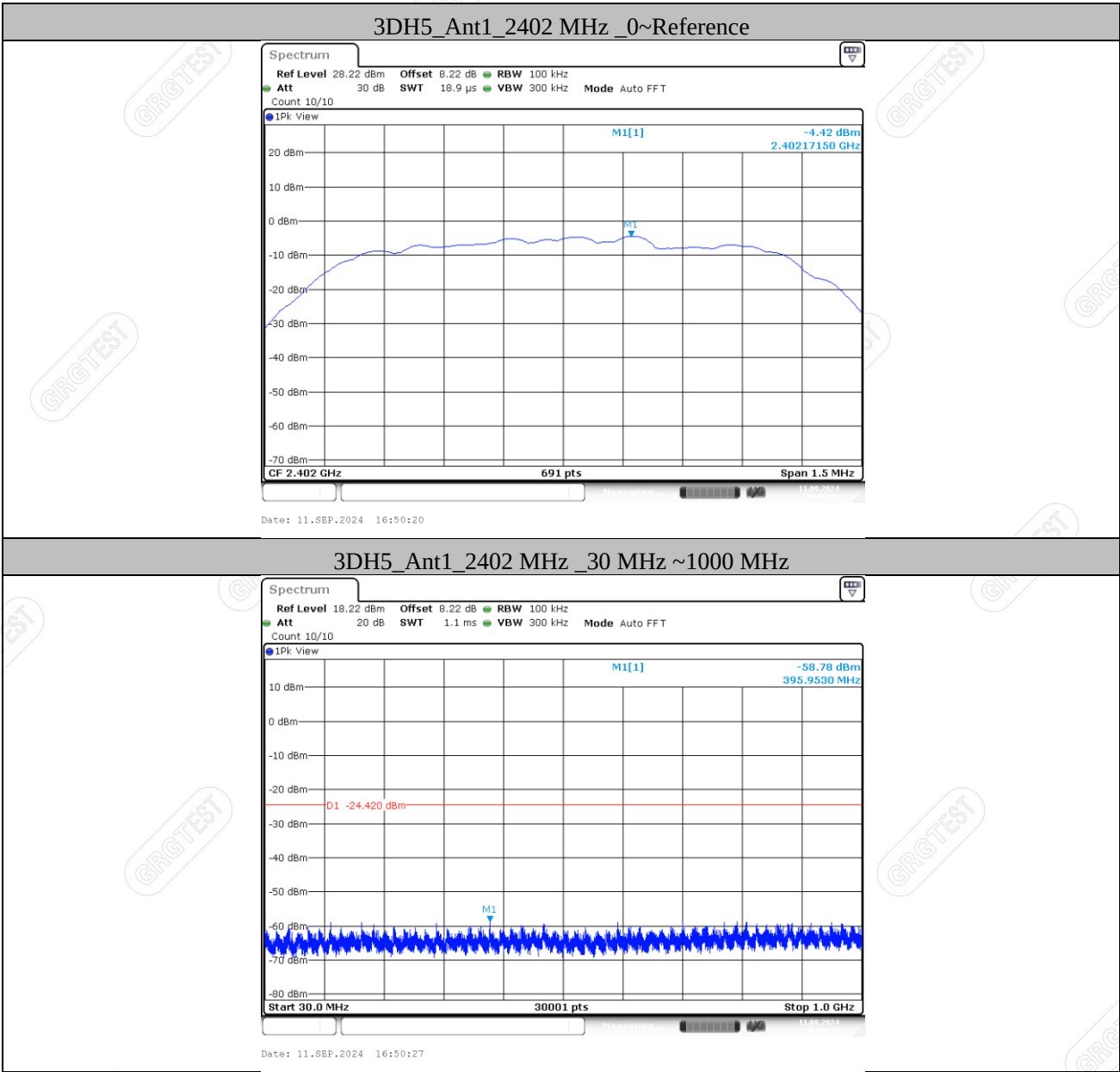


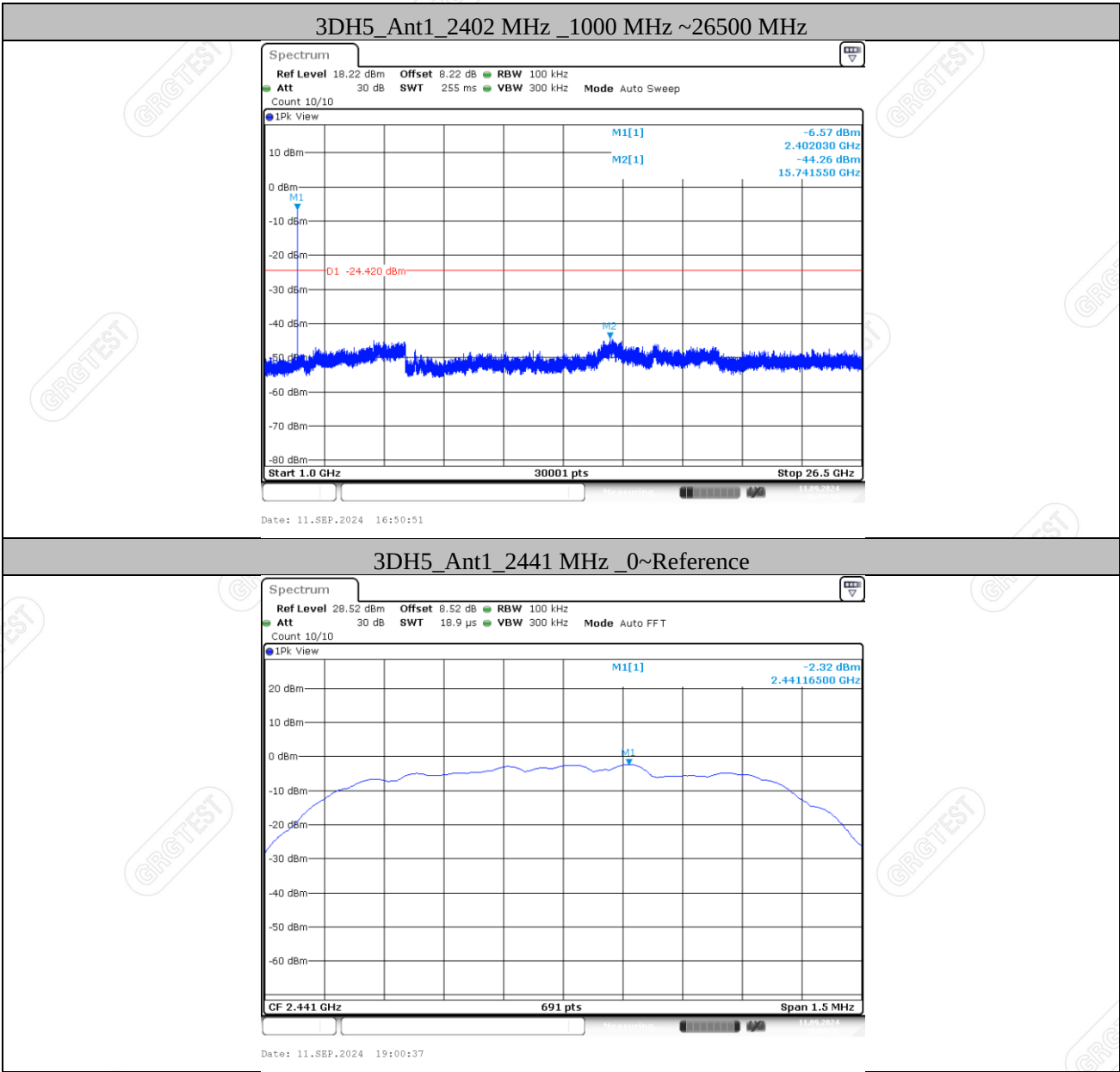


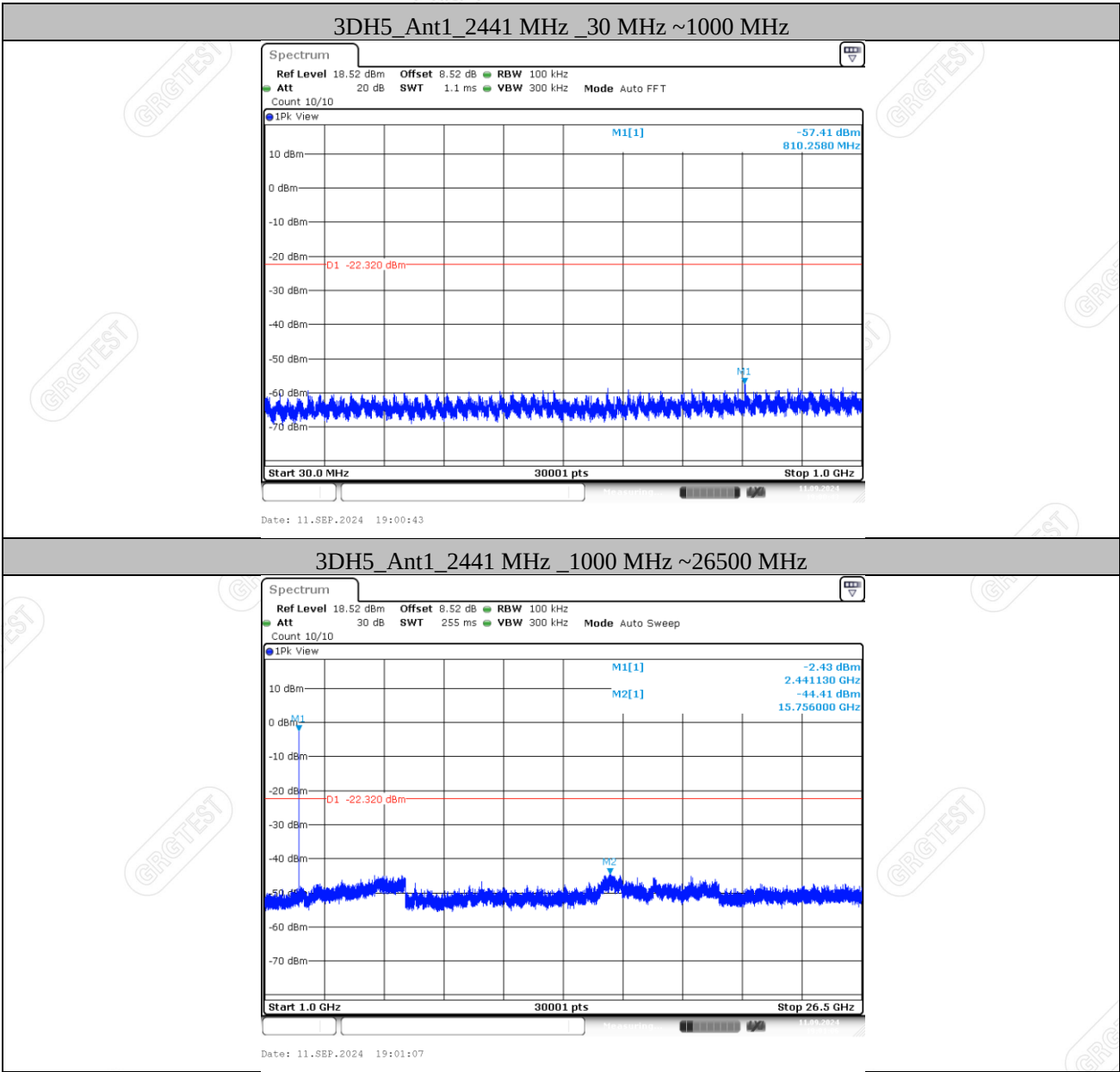


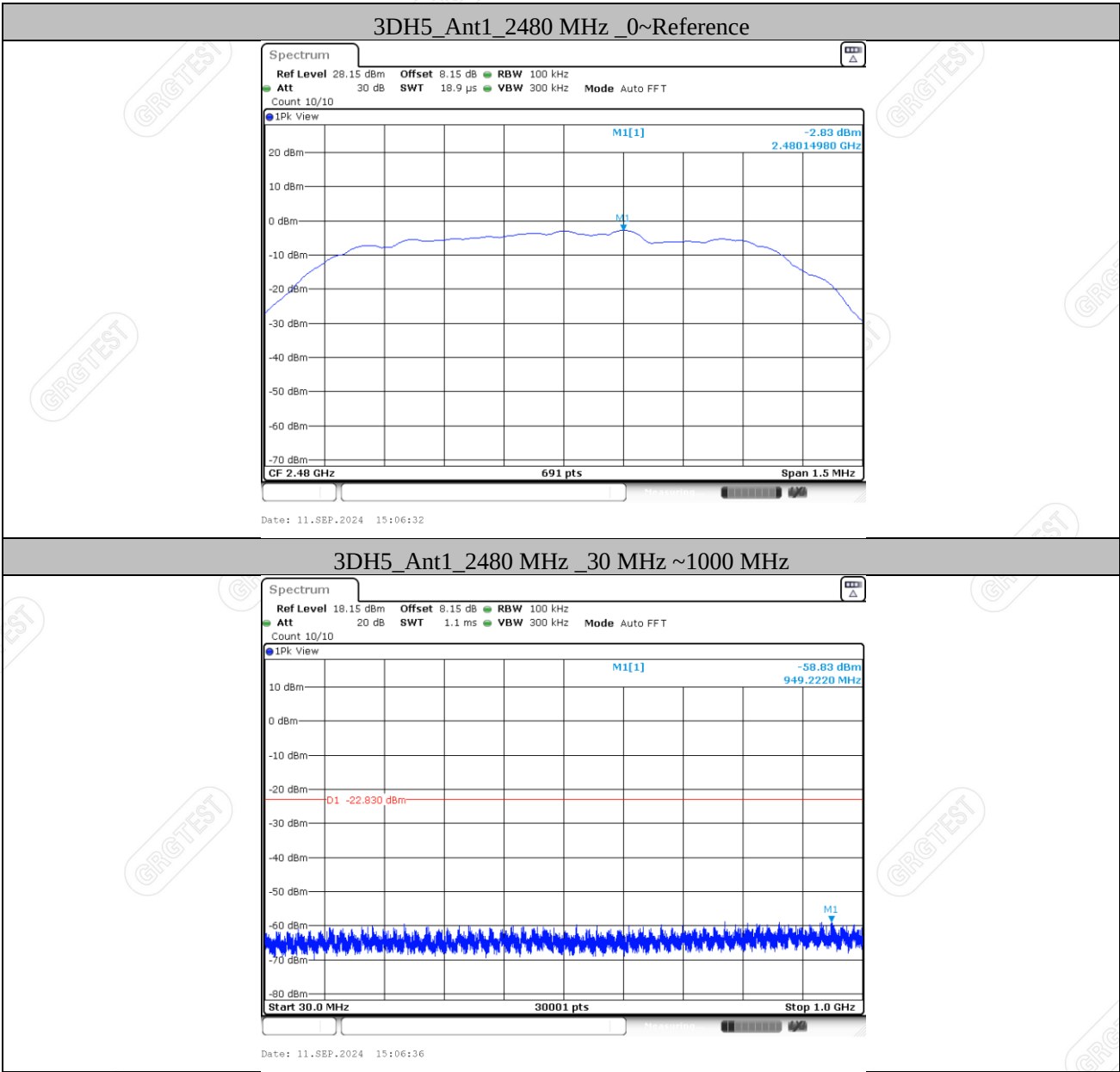


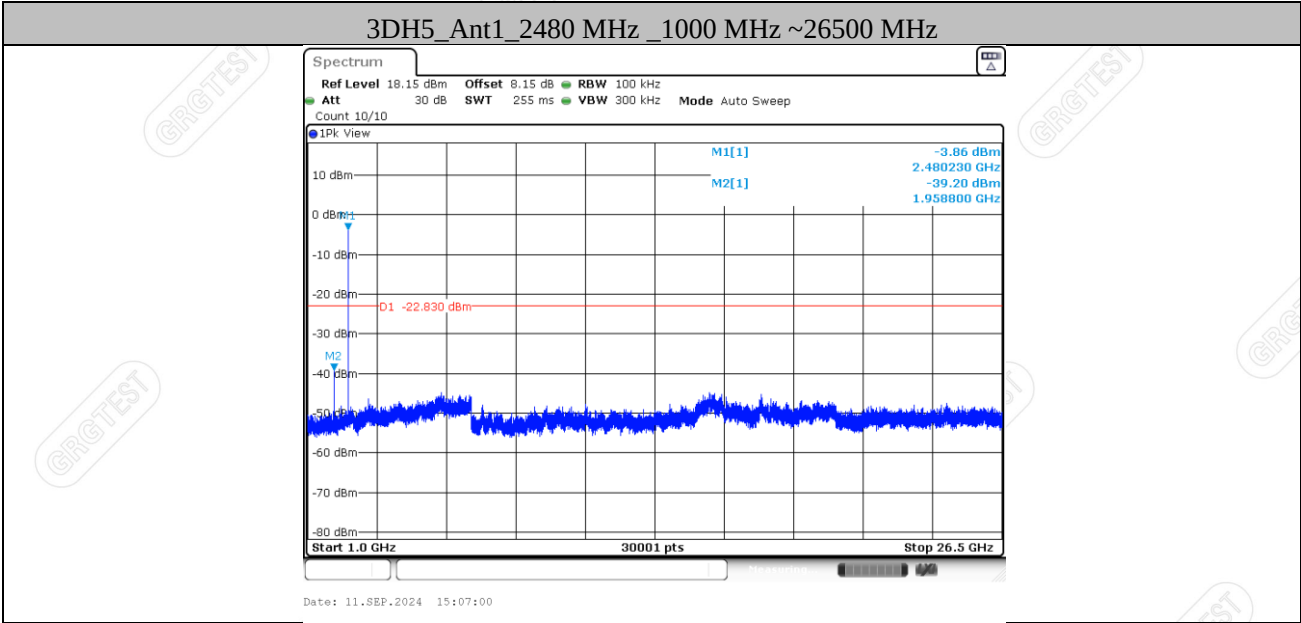












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13. RADIATED SPURIOUS EMISSIONS

13.1 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. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak($\mu\text{V/m}$)	Measurement distance(m)	Quasi-peak(dB $\mu\text{V/m}$)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

NOTE:

- (1) The emission limits for the ranges 9-90kHz and 110-490kHz are based on measurements employing a linear average detector.
- (2) The lower limit shall apply at the transition frequencies.
- (3) Above 18GHz test distance is 1m, so the Peak Limit=74+20*log(3/1)=83.54 (dB $\mu\text{V/m}$).
The Avg Limit=54+20*log(3/1)=63.54 (dB $\mu\text{V/m}$).

13.2 TEST PROCEDURES

1) Sequence of testing 9kHz to 30MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Set the EUT transmit continuously with maximum output power.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 ° to 360 °.
- The antenna height is 1.0 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QP detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

2) Sequence of testing 30MHz to 1GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Set the EUT transmit continuously with maximum output power.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0° to 360° .

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 4 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0° to 360° and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1GHz to 18GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Set the EUT transmit continuously with maximum output power.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 °to 360 °.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 4 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 °to 360 °and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18GHz**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Set the EUT transmit continuously with maximum output power.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

Pre measurement:

- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

NOTE:

- (a).The frequency from 9kHz to 150kHz, Set RBW=300Hz(for Peak&AVG), RBW=300Hz(for Peak&AVG). the frequency from 150kHz to 30MHz, Set RBW=9kHz, RBW=9kHz, (for QP Detector).

- (b).The frequency from 30MHz to 1GHz, Set RBW=120kHz, RBW=300kHz, (for QP Detector).
- (c).The frequency above 1GHz, for Peak detector: Set RBW=1MHz, RBW=3MHz.
- (d).The frequency above 1GHz, for Avg detector: Set RBW=1MHz, if the EUT is configured to transmit with duty cycle $\geq 98\%$, set $VBW \leq RBW/100$ (i.e., 10kHz) but not less than 10 Hz. if the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$, Where T is defined in section 2.8.

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13.3 TEST SETUP

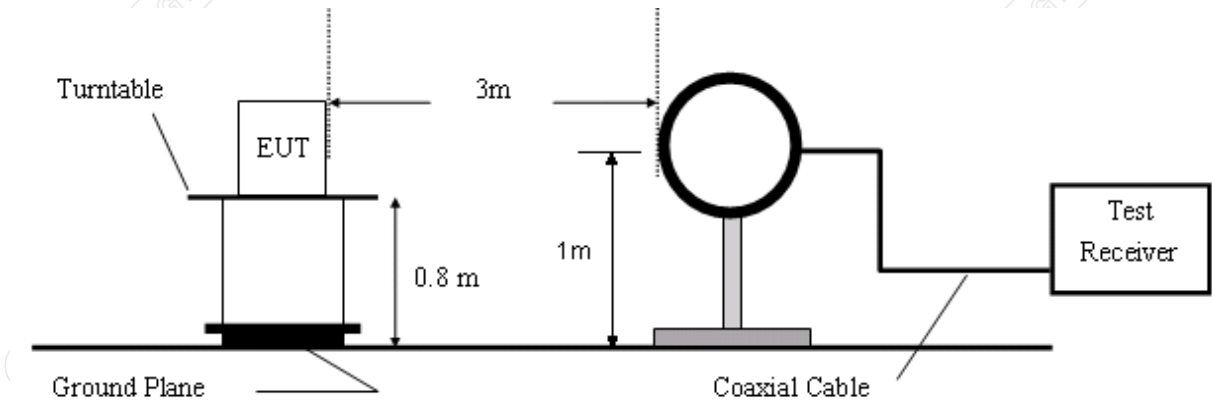


Figure 1. 9kHz to 30MHz radiated emissions test configuration

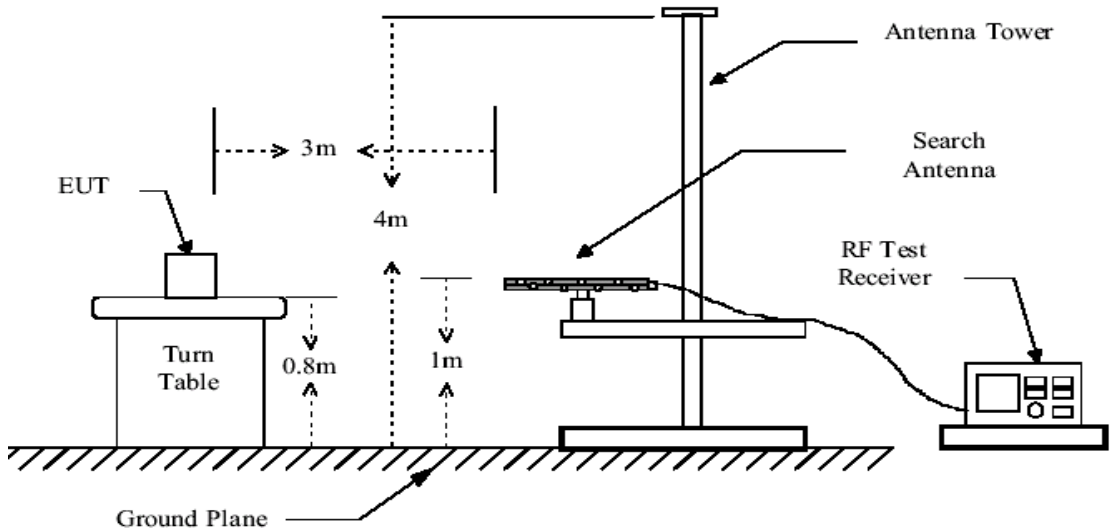


Figure 2. 30MHz to 1GHz radiated emissions test configuration

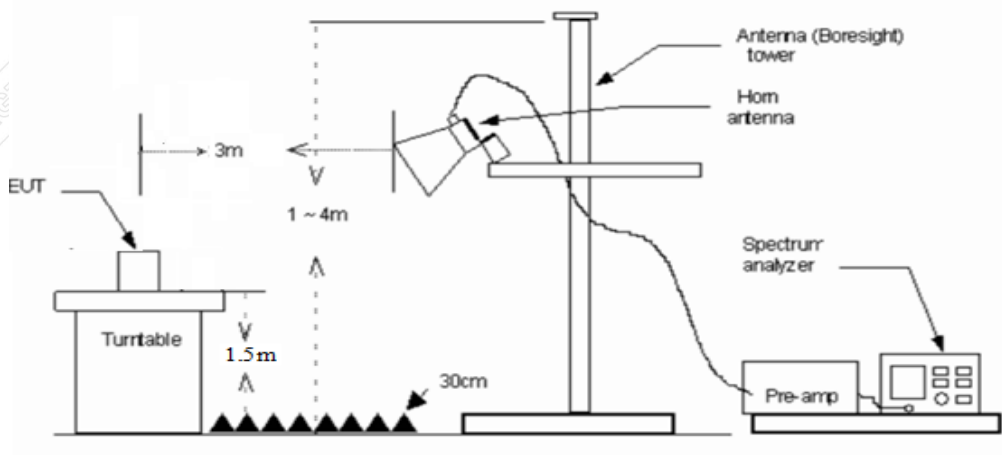


Figure 3. 1GHz to 18GHz radiated emissions test configuration

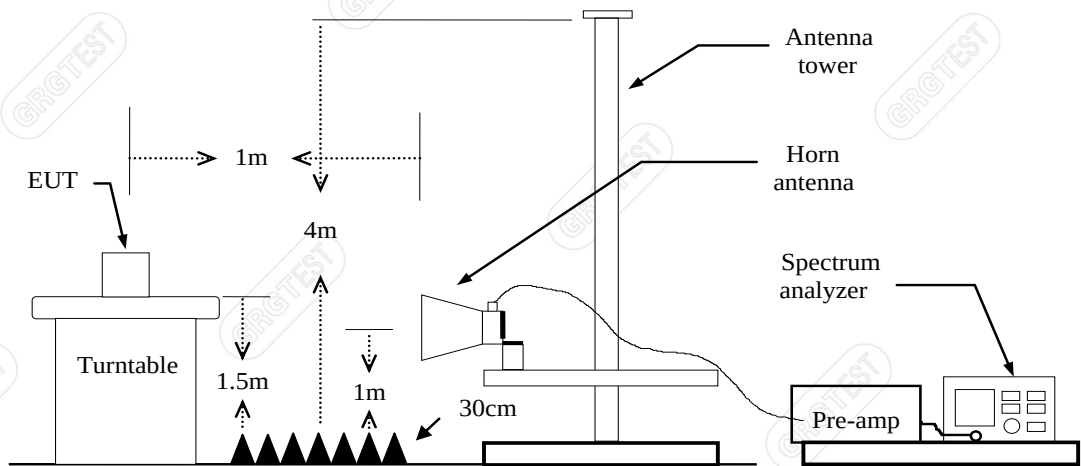


Figure 4. 18GHz to 26.5GHz radiated emissions test configuration

13.4 DATA SAMPLE

30MHz to 1GHz

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
xxxx	xxxx	66.85	31.09	-35.76	40.00	8.91	PK	200	351	Horizontal

Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	Level [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
xxxx	xxxx	-31.57	71.28	39.71	46.00	6.29	100	196	Horizontal

- Frequency (MHz)
- = Emission frequency in MHz
- Reading (dBμV/m)
- = Uncorrected Analyzer / Receiver reading
- Factor (dB)
- = Antenna factor + Cable loss – Amplifier gain
- Level (dBμV/m)
- = Reading (dBμV/m) + Factor (dB)
- Limit (dBμV/m)
- = Limit stated in standard
- Margin (dB)
- = Limit (dBμV/m) – Level (dBμV/m)
- Polarity
- = Antenna polarization
- Peak
- = Peak Reading
- QP
- = Quasi-peak Reading

1GHz-18GHz

No.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
xxx	xxxx	78.01	55.30	-22.71	74.00	18.70	100	50	Horizontal	Peak
xxx	xxxx	66.37	43.66	-22.71	54.00	10.34	100	50	Horizontal	AVG

Above 18GHz

No.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
xxx	xxxx	54.49	42.38	-12.11	83.54	41.16	100	211	Vertical	Peak
xxx	xxxx	43.99	31.88	-12.11	63.54	31.66	100	211	Vertical	AVG

Frequency (MHz)	= Emission frequency in MHz
Reading (dBμV/m)	= Uncorrected Analyzer / Receiver reading
Factor (dB)	= Antenna factor + Cable loss – Amplifier gain
Level (dBμV/m)	= Reading (dBμV/m) + Factor (dB)
Limit (dBμV/m)	= Limit stated in standard
Margin (dB)	= Limit (dBμV/m) – Level (dBμV/m)
Polarity	= Antenna polarization
Peak	= Peak Reading
AVG	= Average Reading

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13.5 TEST RESULTS

Below 1GHz

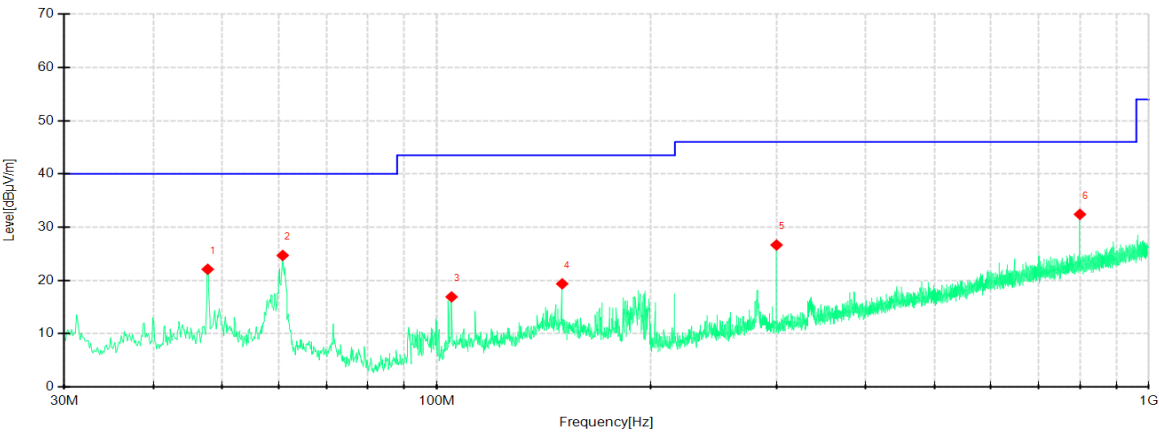
All models were pretested and only the worst modes and channels were recorded in this report (3DH5-2480MHz).

The chart below shows the highest readings taken from the final data.

Mode: 3DH5
Highest Frequency (2480MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V
Probe : Horizontal

Test Graph

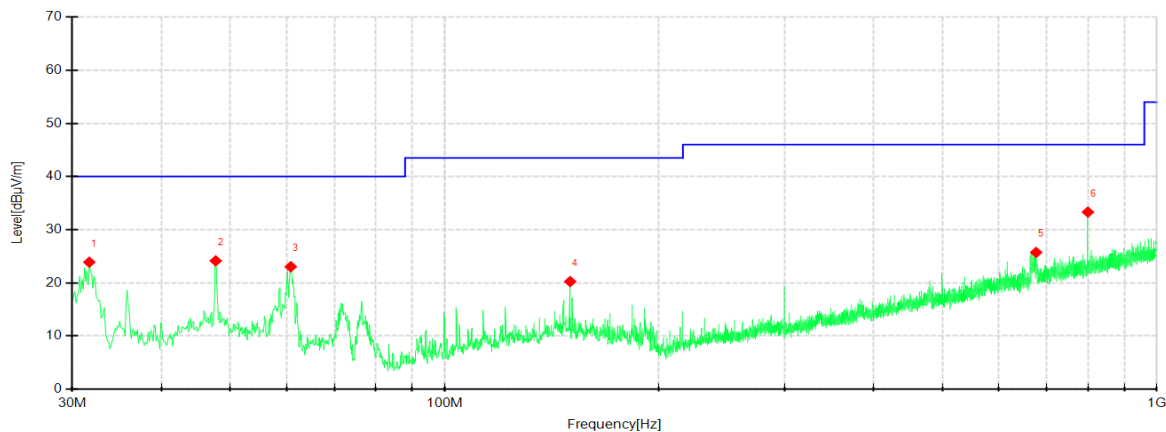


Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	47.7025	51.03	22.09	-28.94	40.00	17.91	PK	200	210	Horizontal
2	60.7975	54.33	24.69	-29.64	40.00	15.31	PK	200	121	Horizontal
3	104.9325	48.18	16.91	-31.27	43.50	26.59	PK	200	236	Horizontal
4	150.0375	47.52	19.36	-28.16	43.50	24.14	PK	200	121	Horizontal
5	300.0238	54.15	26.65	-27.50	46.00	19.35	PK	100	340	Horizontal
6	800.0588	49.10	32.41	-16.69	46.00	13.59	PK	100	111	Horizontal

Mode: 3DH5
Highest Frequency (2480MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V
Probe : Vertical

Test Graph



Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	31.6975	53.73	23.89	-29.84	40.00	16.11	PK	100	18	Vertical
2	47.7025	53.08	24.14	-28.94	40.00	15.86	PK	100	288	Vertical
3	60.7975	52.68	23.04	-29.64	40.00	16.96	PK	100	250	Vertical
4	150.0375	48.40	20.24	-28.16	43.50	23.26	PK	100	18	Vertical
5	676.6263	44.00	25.72	-18.28	46.00	20.28	PK	100	187	Vertical
6	800.0588	50.00	33.31	-16.69	46.00	12.69	PK	100	84	Vertical

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Pre-scan all mode and recorded the worst case results in this report (TX-Highest Channel(3DH5))
- 3 Measuring frequencies from 9kHz to the 1GHz.
- 4 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Peak/Quasi-peak detector mode.
- 5 Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 6 The IF bandwidth of SPA between 30MHz to 1GHz was 120kHz.

1GHz to 18GHz

Mode: DH5
Lowest Frequency (2402MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1115.8000	55.57	45.56	-10.01	74.00	28.44	100	73	Horizontal
2	1894.2000	47.93	44.19	-3.74	74.00	29.81	100	194	Horizontal
3	2514.2000	48.17	47.09	-1.08	74.00	26.91	200	194	Horizontal
4	6399.0000	48.98	46.92	-2.06	74.00	27.08	100	140	Horizontal
5	7938.0000	42.18	45.76	3.58	74.00	28.24	200	114	Horizontal
6	13810.5000	36.37	49.54	13.17	74.00	24.46	100	35	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13810.5000	13.17	27.61	40.78	54.00	13.22	100	35	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.2000	57.48	47.61	-9.87	74.00	26.39	200	153	Vertical
2	1600.2000	54.05	46.07	-7.98	74.00	27.93	200	153	Vertical
3	2502.6000	47.64	47.16	-0.48	74.00	26.84	200	20	Vertical
4	3198.0000	59.16	45.94	-13.22	74.00	28.06	100	46	Vertical
5	6387.0000	56.95	54.59	-2.36	74.00	19.41	100	165	Vertical
6	13264.5000	36.05	49.35	13.30	74.00	24.65	200	52	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6398.2770	-2.36	38.48	36.12	54.00	17.88	100	141.5	Vertical
2	13264.5000	13.30	26.92	40.22	54.00	13.78	200	52	Vertical

Mode: DH5
Middle Frequency (2441MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1115.0000	57.15	47.12	-10.03	74.00	26.88	100	59	Horizontal
2	2494.8000	47.87	47.45	-0.42	74.00	26.55	200	354	Horizontal
3	4798.5000	50.86	43.70	-7.16	74.00	30.30	200	168	Horizontal
4	6399.0000	49.02	46.96	-2.06	74.00	27.04	200	155	Horizontal
5	9373.5000	41.39	48.83	7.44	74.00	25.17	200	62	Horizontal
6	13282.5000	36.96	49.89	12.93	74.00	24.11	100	300	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	9373.5000	7.44	38.26	45.70	54.00	8.30	200	62	Horizontal
2	13282.5000	12.93	28.49	41.42	54.00	12.58	100	300	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121.2000	57.82	47.91	-9.91	74.00	26.09	200	150	Vertical
2	1677.2000	52.48	44.51	-7.97	74.00	29.49	100	114	Vertical
3	2502.8000	47.80	47.31	-0.49	74.00	26.69	100	180	Vertical
4	4798.5000	51.62	44.57	-7.05	74.00	29.43	200	209	Vertical
5	6385.5000	60.78	58.37	-2.41	74.00	15.63	100	166	Vertical
6	13507.5000	36.13	49.38	13.25	74.00	24.62	200	341	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6399.6385	-2.41	46.02	43.61	54.00	10.39	122	153.3	Vertical
2	13507.5000	13.25	28.24	41.49	54.00	12.51	200	341	Vertical

Mode: DH5
Highest Frequency (2480MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1114.8000	56.26	46.23	-10.03	74.00	27.77	100	60	Horizontal
2	2499.6000	47.58	47.20	-0.38	74.00	26.80	200	164	Horizontal
3	2798.0000	48.26	46.63	-1.63	74.00	27.37	200	87	Horizontal
4	4798.5000	50.30	43.14	-7.16	74.00	30.86	200	168	Horizontal
5	6385.5000	60.78	58.37	-2.41	74.00	15.63	100	166	Horizontal
6	11745.0000	37.50	49.05	11.55	74.00	24.95	100	49	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6385.5000	-2.41	41.63	39.22	54.00	14.78	100	49	Horizontal
2	11745.0000	11.55	29.13	40.68	54.00	13.32	100	49	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1118.8000	57.61	47.73	-9.88	74.00	26.27	200	152	Vertical
2	2499.6000	47.58	47.20	-0.38	74.00	26.80	200	164	Vertical
3	4258.5000	53.37	44.04	-9.33	74.00	29.96	100	76	Vertical
4	4798.5000	52.54	45.49	-7.05	74.00	28.51	200	208	Vertical
5	6399.0000	53.33	51.26	-2.07	74.00	22.74	100	49	Vertical
6	15049.5000	37.04	49.88	12.84	74.00	24.12	200	115	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6399.0000	-2.07	46.74	44.67	54.00	9.33	100	49	Vertical
2	15049.5000	12.84	26.95	39.79	54.00	14.21	200	115	Vertical

Mode: 2DH5
Lowest Frequency (2402MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.4000	56.42	46.43	-9.99	74.00	27.57	100	60	Horizontal
2	1669.0000	50.32	42.82	-7.50	74.00	31.18	200	188	Horizontal
3	2501.0000	48.09	47.67	-0.42	74.00	26.33	200	20	Horizontal
4	4261.5000	52.01	42.17	-9.84	74.00	31.83	100	141	Horizontal
5	6399.0000	48.67	46.61	-2.06	74.00	27.39	100	155	Horizontal
6	15688.5000	38.99	48.99	10.00	74.00	25.01	200	67	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	15688.5000	10.00	29.36	39.36	54.00	14.64	200	67	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1120.8000	57.70	47.80	-9.90	74.00	26.20	200	143	Vertical
2	2503.2000	47.52	47.01	-0.51	74.00	26.99	200	129	Vertical
3	4260.0000	54.94	45.61	-9.33	74.00	28.39	100	209	Vertical
4	4798.5000	54.01	46.96	-7.05	74.00	27.04	200	207	Vertical
5	6375.0000	50.40	47.73	-2.67	74.00	26.27	100	28	Vertical
6	15112.5000	37.39	49.68	12.29	74.00	24.32	200	326	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	15112.5000	12.29	27.88	40.17	54.00	13.83	200	326	Vertical

Mode: 2DH5
Middle Frequency (2441MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1120.6000	55.94	46.02	-9.92	74.00	27.98	100	58	Horizontal
2	1892.2000	48.52	44.73	-3.79	74.00	29.27	100	243	Horizontal
3	2472.6000	47.87	47.23	-0.64	74.00	26.77	100	230	Horizontal
4	4426.5000	50.49	41.75	-8.74	74.00	32.25	200	232	Horizontal
5	6399.0000	50.67	48.61	-2.06	74.00	25.39	100	166	Horizontal
6	11844.0000	38.64	49.61	10.97	74.00	24.39	100	33	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6399.0000	-2.06	43.79	41.73	54.00	12.27	100	166	Horizontal
2	11844.0000	10.97	29.26	40.23	54.00	13.77	100	33	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1115.4000	57.51	47.65	-9.86	74.00	26.35	200	151	Vertical
2	1247.4000	53.58	45.54	-8.04	74.00	28.46	100	145	Vertical
3	2498.0000	47.90	47.48	-0.42	74.00	26.52	200	244	Vertical
4	4800.0000	52.83	45.79	-7.04	74.00	28.21	200	206	Vertical
5	6405.0000	50.78	48.78	-2.00	74.00	25.22	100	152	Vertical
6	14703.0000	36.75	49.27	12.52	74.00	24.73	200	63	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6405.0000	-2.00	41.62	39.62	54.00	14.38	100	152	Vertical
2	14703.0000	12.52	27.59	40.11	54.00	13.89	200	63	Vertical

Mode: 2DH5
Highest Frequency (2480MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.2000	56.60	46.61	-9.99	74.00	27.39	100	62	Horizontal
2	1672.6000	50.20	42.71	-7.49	74.00	31.29	100	115	Horizontal
3	2470.0000	48.03	47.37	-0.66	74.00	26.63	100	21	Horizontal
4	3498.0000	54.60	41.58	-13.02	74.00	32.42	100	315	Horizontal
5	6399.0000	48.16	46.10	-2.06	74.00	27.90	100	143	Horizontal
6	13296.0000	36.07	49.00	12.93	74.00	25.00	100	103	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13296.0000	12.93	27.73	40.66	54.00	13.34	100	103	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1118.6000	57.56	47.68	-9.88	74.00	26.32	200	154	Vertical
2	1944.6000	49.74	45.70	-4.04	74.00	28.30	200	114	Vertical
3	2500.8000	47.96	47.55	-0.41	74.00	26.45	200	20	Vertical
4	4252.5000	53.99	44.67	-9.32	74.00	29.33	100	68	Vertical
5	6358.5000	50.88	47.80	-3.08	74.00	26.20	100	158	Vertical
6	13266.0000	36.75	50.04	13.29	74.00	23.96	100	263	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13266.0000	13.29	28.19	41.48	54.00	12.52	100	263	Vertical

Mode: 3DH5
Lowest Frequency (2402MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.0000	56.28	46.29	-9.99	74.00	27.71	100	62	Horizontal
2	2000.6000	48.79	44.90	-3.89	74.00	29.10	200	221	Horizontal
3	2503.8000	48.01	47.45	-0.56	74.00	26.55	200	128	Horizontal
4	5847.0000	47.79	43.48	-4.31	74.00	30.52	100	154	Horizontal
5	6399.0000	48.94	46.88	-2.06	74.00	27.12	200	153	Horizontal
6	11832.0000	38.32	49.28	10.96	74.00	24.72	100	75	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	11832.0000	10.96	28.69	39.65	54.00	14.35	100	75	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1115.8000	57.66	47.81	-9.85	74.00	26.19	200	153	Vertical
2	1599.6000	52.64	44.66	-7.98	74.00	29.34	100	137	Vertical
3	2472.6000	48.10	47.08	-1.02	74.00	26.92	100	295	Vertical
4	4798.5000	51.73	44.68	-7.05	74.00	29.32	200	190	Vertical
5	6378.0000	52.75	50.15	-2.60	74.00	23.85	100	42	Vertical
6	13816.5000	36.24	49.37	13.13	74.00	24.63	200	326	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6378.0000	-2.60	49.37	46.77	54.00	7.23	100	42	Vertical
2	13816.5000	13.13	28.29	41.42	54.00	12.58	200	326	Vertical

Mode: 3DH5
Middle Frequency (2441MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121.6000	57.22	47.31	-9.91	74.00	26.69	100	50	Horizontal
2	1898.6000	48.03	44.41	-3.62	74.00	29.59	100	95	Horizontal
3	2426.0000	49.08	47.47	-1.61	74.00	26.53	200	267	Horizontal
4	6399.0000	48.15	46.09	-2.06	74.00	27.91	100	145	Horizontal
5	8298.0000	42.72	46.30	3.58	74.00	27.70	200	303	Horizontal
6	14151.0000	35.73	49.17	13.44	74.00	24.83	100	276	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	14151.0000	13.44	28.16	41.60	54.00	12.40	100	276	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1114.6000	57.35	47.51	-9.84	74.00	26.49	200	138	Vertical
2	1807.8000	50.44	45.04	-5.40	74.00	28.96	100	158	Vertical
3	2498.2000	47.01	46.59	-0.42	74.00	27.41	200	74	Vertical
4	4798.5000	51.65	44.60	-7.05	74.00	29.40	200	208	Vertical
5	6387.0000	54.14	51.78	-2.36	74.00	22.22	100	159	Vertical
6	15058.5000	37.12	49.85	12.73	74.00	24.15	100	119	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6387.0000	-2.36	46.51	44.15	54.00	9.85	100	159	Vertical
2	15058.5000	12.73	28.26	40.99	54.00	13.01	100	119	Vertical

Mode: 3DH5
Highest Frequency (2480MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121.6000	56.64	46.73	-9.91	74.00	27.27	100	59	Horizontal
2	2503.4000	48.02	47.48	-0.54	74.00	26.52	200	124	Horizontal
3	4798.5000	50.52	43.36	-7.16	74.00	30.64	200	195	Horizontal
4	6399.0000	49.57	47.51	-2.06	74.00	26.49	100	150	Horizontal
5	7923.0000	42.93	46.14	3.21	74.00	27.86	100	192	Horizontal
6	11842.5000	38.36	49.33	10.97	74.00	24.67	100	275	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	11842.5000	10.97	29.06	40.03	54.00	13.97	100	275	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1114.8000	57.19	47.34	-9.85	74.00	26.66	200	142	Vertical
2	2659.0000	51.78	49.47	-2.31	74.00	24.53	100	46	Vertical
3	4252.5000	55.88	46.56	-9.32	74.00	27.44	100	234	Vertical
4	5038.5000	50.42	44.57	-5.85	74.00	29.43	100	174	Vertical
5	6180.0000	53.15	50.18	-2.97	74.00	23.82	100	174	Vertical
6	15012.0000	36.75	49.44	12.69	74.00	24.56	200	235	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2659.0000	-2.31	47.62	45.31	54.00	8.69	100	46	Vertical
2	6180.0000	-2.97	45.86	42.89	54.00	11.11	100	174	Vertical
3	15012.0000	12.69	28.49	41.18	54.00	12.82	200	235	Vertical

Remark:

- 1 Measuring frequencies from 1 GHz to 18GHz harmonic of highest fundamental frequency.
- 2 Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum setting:
 - a. Peak Setting 1GHz–26.5GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = auto.
 - b. AV Setting 1GHz–26.5GHz, Set RBW=1MHz, if the EUT is configured to transmit with duty cycle $\geq 98\%$, set $VBW \leq RBW/100$ (i.e., 10kHz) but not less than 10 Hz. if the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$, Where T is defined in section 2.8.

Test result: The unit does meet the requirements.

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18GHz to 26.5GHz

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

All models were pretested and only the worst modes were recorded in this report(3DH5).

Mode: 3DH5
Lowest Frequency (2402MHz)
Environment: 25.1℃/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19116.4750	49.49	33.46	23.92	-16.03	74.00	50.08	100	20	Horizontal
2	20043.8250	48.74	33.10	23.56	-15.64	74.00	50.44	100	319	Horizontal
3	21918.5000	48.73	33.73	24.19	-15.00	74.00	49.81	100	20	Horizontal
4	23316.7500	46.55	32.54	23.00	-14.01	74.00	51.00	100	179	Horizontal
5	25137.0250	45.90	32.19	22.65	-13.71	74.00	51.35	100	40	Horizontal
6	26172.7500	45.54	31.74	22.20	-13.80	74.00	51.80	100	40	Horizontal

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18549.1000	50.02	33.81	24.27	-16.21	74.00	49.73	100	58	Vertical
2	19393.1500	49.69	34.20	24.66	-15.49	74.00	49.34	100	239	Vertical
3	21476.9250	49.49	35.01	25.47	-14.48	74.00	48.53	100	78	Vertical
4	22156.9250	49.63	35.22	25.68	-14.41	74.00	48.32	100	239	Vertical
5	24576.8750	46.09	33.10	23.56	-12.99	74.00	50.44	100	78	Vertical
6	26003.1750	46.74	33.40	23.86	-13.34	74.00	50.14	100	140	Vertical

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Mode: 3DH5
Middle Frequency (2441MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19229.5250	49.58	33.57	24.03	-16.01	74.00	49.97	100	270	Horizontal
2	20929.1000	48.77	33.67	24.13	-15.10	74.00	49.87	100	181	Horizontal
3	21785.9000	48.90	34.00	24.46	-14.90	74.00	49.54	100	72	Horizontal
4	23532.6500	46.55	32.52	22.98	-14.03	74.00	51.02	100	341	Horizontal
5	24744.3250	45.57	32.08	22.54	-13.49	74.00	51.46	100	200	Horizontal
6	26148.5250	45.45	31.63	22.09	-13.82	74.00	51.91	100	0	Horizontal

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18558.0250	50.00	33.80	24.26	-16.20	74.00	49.74	100	20	Vertical
2	19969.0250	48.73	33.61	24.07	-15.12	74.00	49.93	100	60	Vertical
3	21357.5000	49.02	34.49	24.95	-14.53	74.00	49.05	100	160	Vertical
4	23097.0250	46.92	33.31	23.77	-13.61	74.00	50.23	100	300	Vertical
5	23880.3000	46.33	32.87	23.33	-13.46	74.00	50.67	100	101	Vertical
6	25291.7250	45.40	32.39	22.85	-13.01	74.00	51.15	100	358	Vertical

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Mode: 3DH5
Highest Frequency (2480MHz)
Environment: 25.1°C/63%RH/101.0kPa
Test Engineer: Zhu Rongting

Date: 2024-10-20
Test Voltage: DC 13.2V

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18310.2500	49.81	33.07	23.53	-16.74	74.00	50.47	100	19	Horizontal
2	19240.1500	50.96	34.95	25.41	-16.01	74.00	48.59	100	200	Horizontal
3	20820.7250	48.33	33.18	23.64	-15.15	74.00	50.36	100	179	Horizontal
4	22012.0000	48.97	33.90	24.36	-15.07	74.00	49.64	100	140	Horizontal
5	23318.0250	47.77	33.76	24.22	-14.01	74.00	49.78	100	358	Horizontal
6	25961.1000	45.95	32.00	22.46	-13.95	74.00	51.54	100	200	Horizontal

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18919.2750	49.24	33.38	23.84	-15.86	74.00	50.16	100	281	Vertical
2	20108.8500	48.73	33.65	24.11	-15.08	74.00	49.89	100	339	Vertical
3	21883.6500	48.41	33.84	24.30	-14.57	74.00	49.70	100	83	Vertical
4	22743.0000	47.07	33.25	23.71	-13.82	74.00	50.29	100	160	Vertical
5	24767.7000	45.55	32.65	23.11	-12.90	74.00	50.89	100	339	Vertical
6	25819.5750	45.25	32.02	22.48	-13.23	74.00	51.52	100	339	Vertical

Remark:

- 1 Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2 Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Above 18G test distance is 1m, so the Level for 3m= Level for 1m + 20*log(1/3)

14. RESTRICTED BANDS OF OPERATION

14.1 LIMITS

Section 15.247(d) In addition, Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

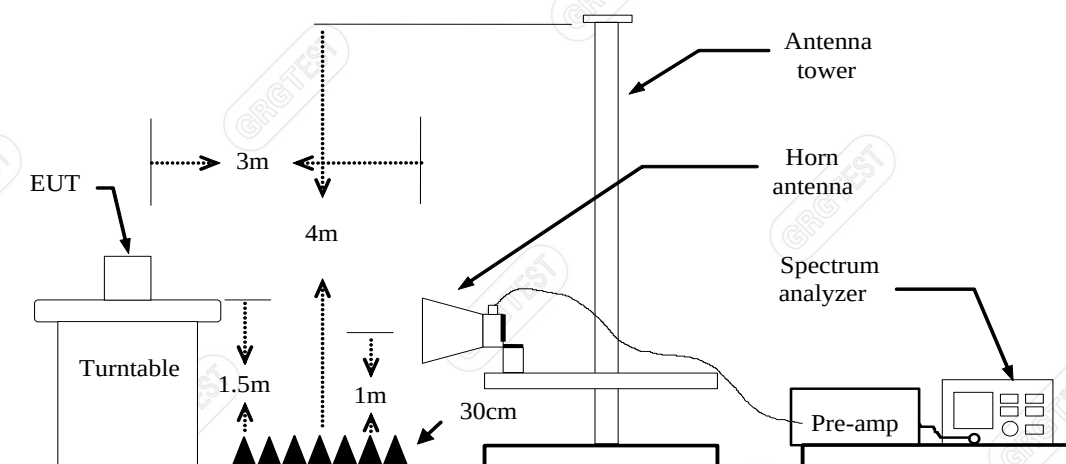
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

Frequency (MHz)	Quasi-peak($\mu\text{V/m}$)	Measurement distance(m)	Quasi-peak(dB $\mu\text{V/m}$)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

14.2 TEST PROCEDURES

- 1) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO.
 - b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO. Where T is defined in section 2.8.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

14.3 TEST SETUP



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14.4 TEST RESULTS

DH5

Lowest Channel

Frequency 2402MHz

Environment: 24.6°C/58%RH/101.0kPa

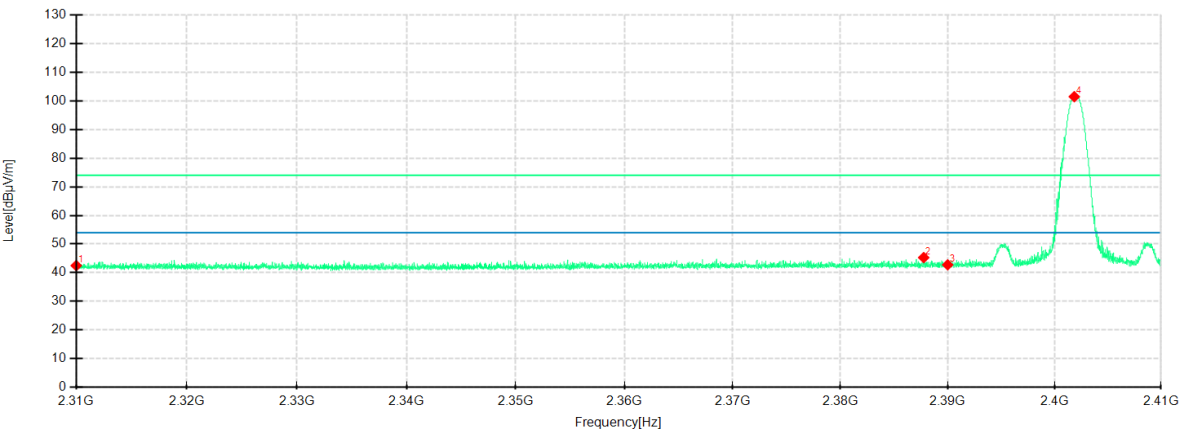
Tested By: Qin Tingting

Detector mode: Peak

Test Voltage: DC 13.2V

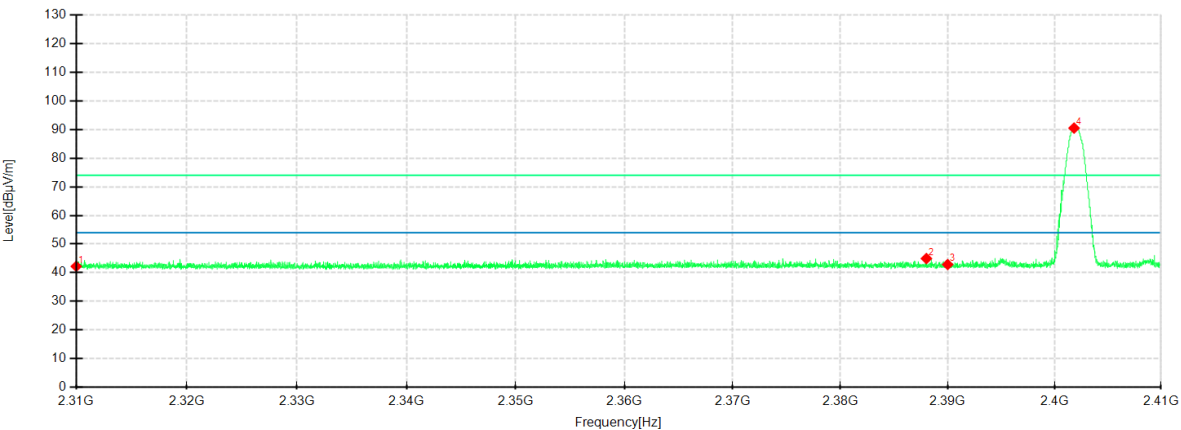
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	47.95	42.47	-5.48	74.00	31.53	100	72	Horizontal	/
2	2387.7625	50.69	45.27	-5.42	74.00	28.73	100	214	Horizontal	/
3	2390.0000	48.14	42.75	-5.39	74.00	31.25	200	11	Horizontal	/
4	2401.8500	106.73	101.49	-5.24	74.00	-27.49	200	0	Horizontal	No limit
1	2310.0000	47.53	42.21	-5.32	74.00	31.79	200	98	Vertical	/
2	2388.0125	50.40	44.93	-5.47	74.00	29.07	100	201	Vertical	/
3	2390.0000	48.31	42.84	-5.47	74.00	31.16	100	276	Vertical	/
4	2401.8250	95.98	90.52	-5.46	74.00	-16.52	200	328	Vertical	No limit

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Lowest Channel

Frequency 2402MHz

Environment: 24.6°C/58%RH/101.0kPa

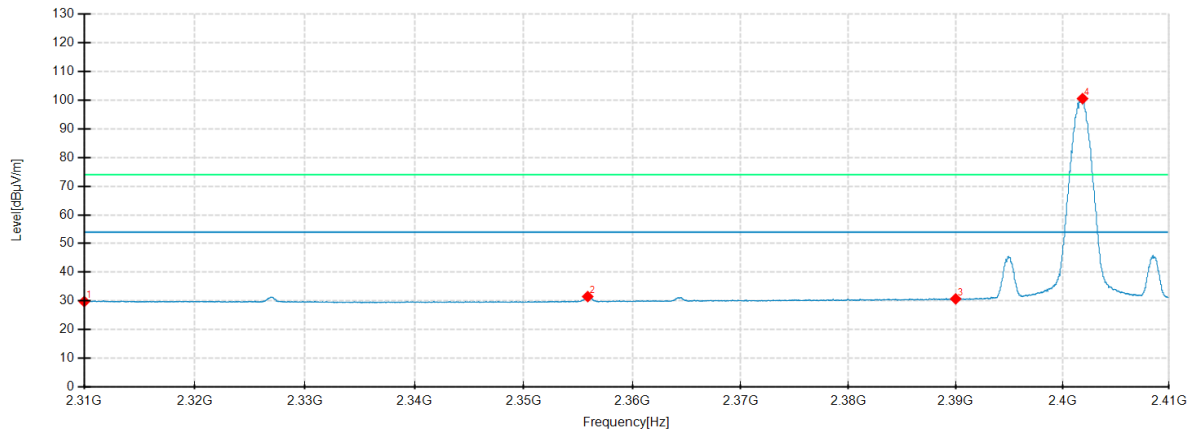
Tested By: Qin Tingting

Detector mode: Average

Test Voltage: DC 13.2V

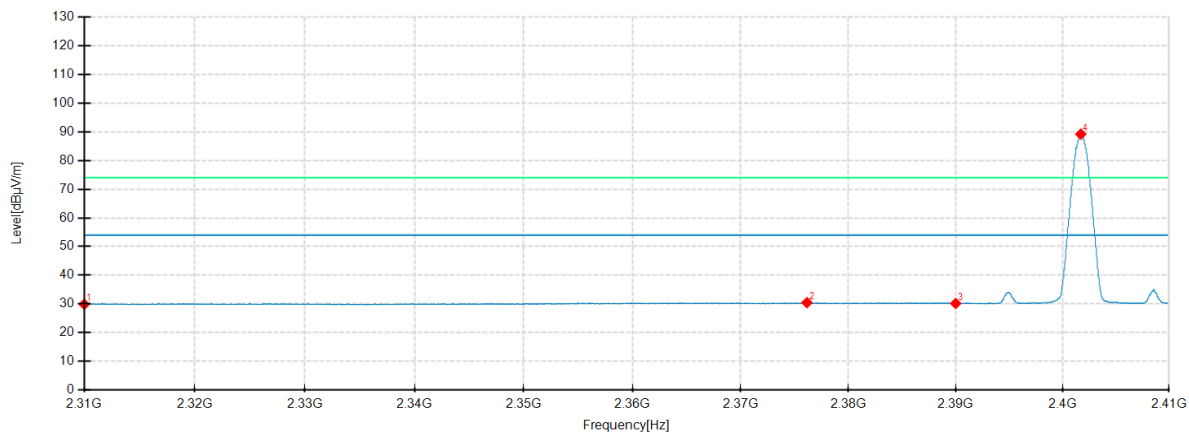
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	35.24	29.76	-5.48	54.00	24.24	200	316	Horizontal	/
2	2355.8875	37.30	31.50	-5.80	54.00	22.50	200	0	Horizontal	/
3	2390.0000	36.09	30.70	-5.39	54.00	23.30	200	2	Horizontal	/
4	2401.8750	105.79	100.55	-5.24	54.00	-46.55	200	341	Horizontal	No limit
1	2310.0000	35.16	29.84	-5.32	54.00	24.16	200	107	Vertical	/
2	2376.1500	35.91	30.44	-5.47	54.00	23.56	200	45	Vertical	/
3	2390.0000	35.61	30.14	-5.47	54.00	23.86	100	1	Vertical	/
4	2401.7125	94.68	89.21	-5.47	54.00	-35.21	100	328	Vertical	No limit

Highest Channel

Frequency 2480MHz

Environment: 24.6℃/58%RH/101.0kPa

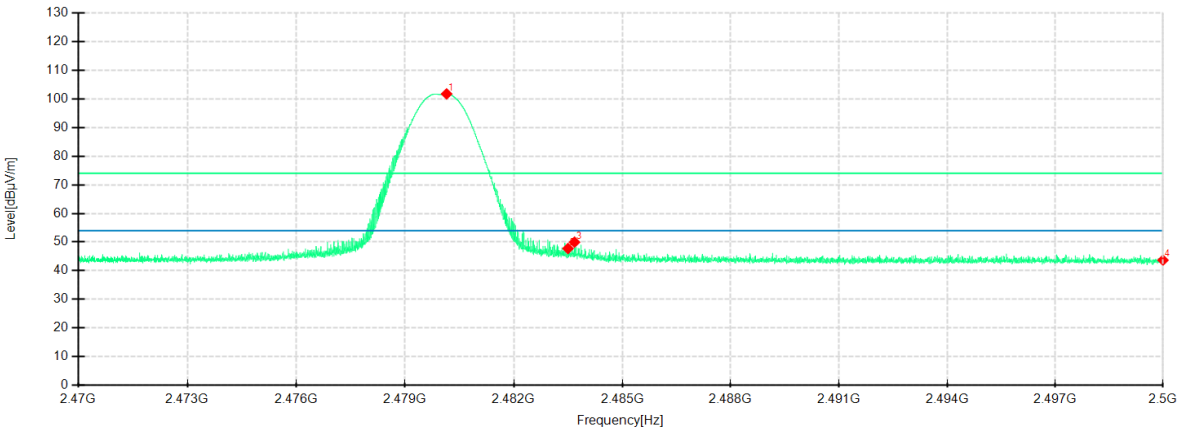
Tested By: Qin Tingting

Detector mode: Peak

Test Voltage: DC 13.2V

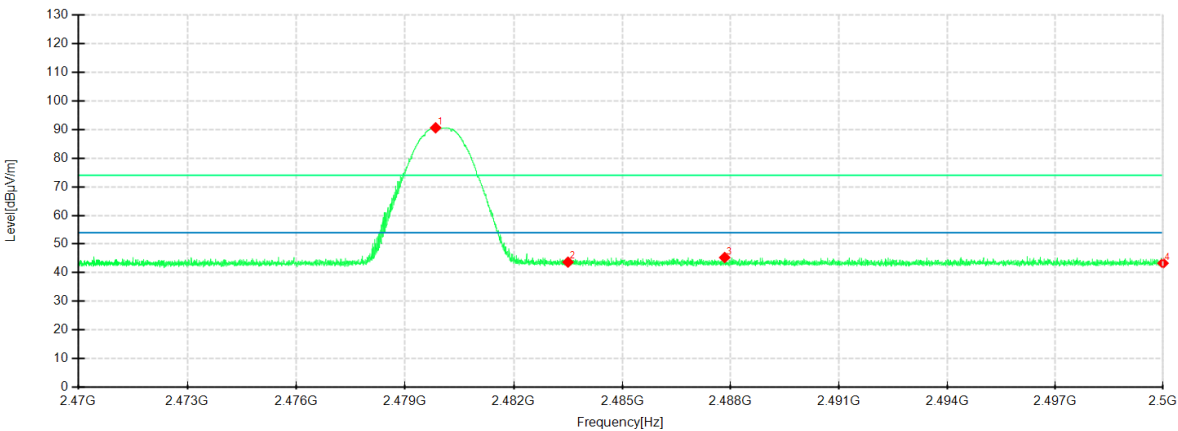
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.1475	106.57	101.76	-4.81	74.00	-27.76	200	0	Horizontal	No limit
2	2483.5000	52.57	47.74	-4.83	74.00	26.26	200	23	Horizontal	/
3	2483.6800	54.81	49.97	-4.84	74.00	24.03	200	0	Horizontal	/
4	2500.0000	48.66	43.67	-4.99	74.00	30.33	100	311	Horizontal	/
1	2479.8438	95.71	90.62	-5.09	74.00	-16.62	100	314	Vertical	No limit
2	2483.5000	48.76	43.69	-5.07	74.00	30.31	200	199	Vertical	/
3	2487.8350	50.35	45.30	-5.05	74.00	28.70	200	22	Vertical	/
4	2500.0000	48.29	43.30	-4.99	74.00	30.70	100	148	Vertical	/

Highest Channel

Frequency 2480MHz

Environment: 24.6°C/58%RH/101.0kPa

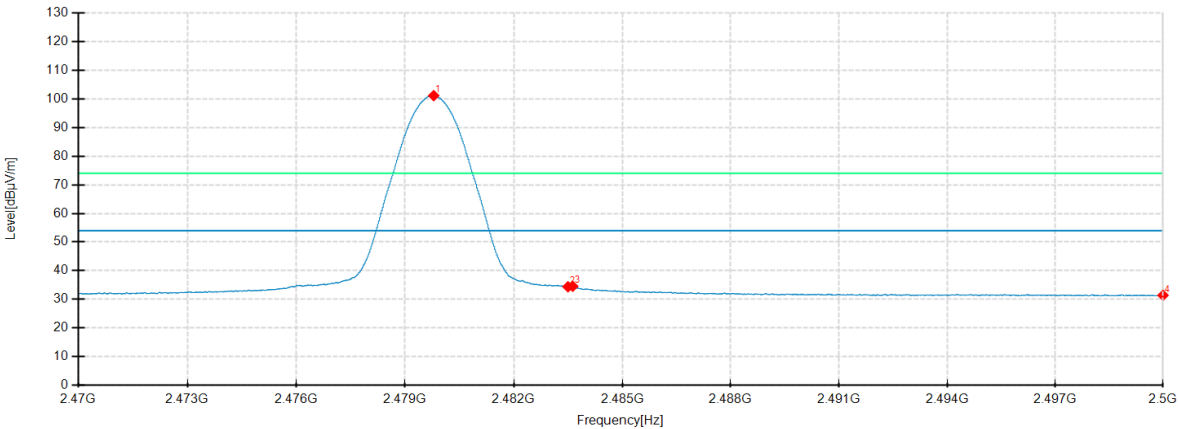
Tested By: Qin Tingting

Detector mode: Average

Test Voltage: DC 13.2V

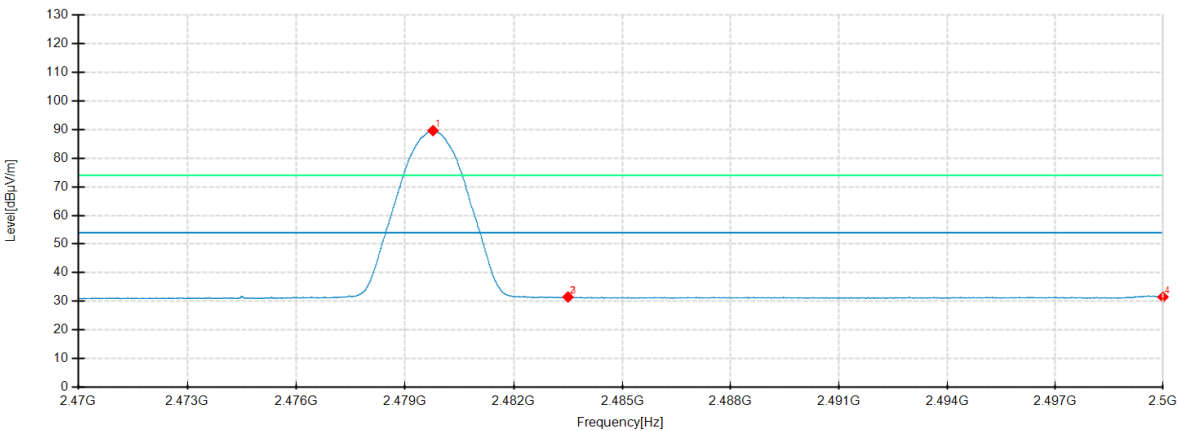
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.7913	105.96	101.15	-4.81	54.00	-47.15	200	3	Horizontal	No limit
2	2483.5000	39.21	34.38	-4.83	54.00	19.62	200	3	Horizontal	/
3	2483.6313	39.38	34.54	-4.84	54.00	19.46	200	14	Horizontal	/
4	2500.0000	36.38	31.39	-4.99	54.00	22.61	200	0	Horizontal	/
1	2479.7725	94.72	89.63	-5.09	54.00	-35.63	200	359	Vertical	No limit
2	2483.5000	36.57	31.50	-5.07	54.00	22.50	200	20	Vertical	/
3	2483.5300	36.62	31.55	-5.07	54.00	22.45	100	339	Vertical	/
4	2500.0000	36.47	31.48	-4.99	54.00	22.52	100	134	Vertical	/

2DH5

Lowest Channel

Frequency 2402MHz

Environment: 24.6°C/58%RH/101.0kPa

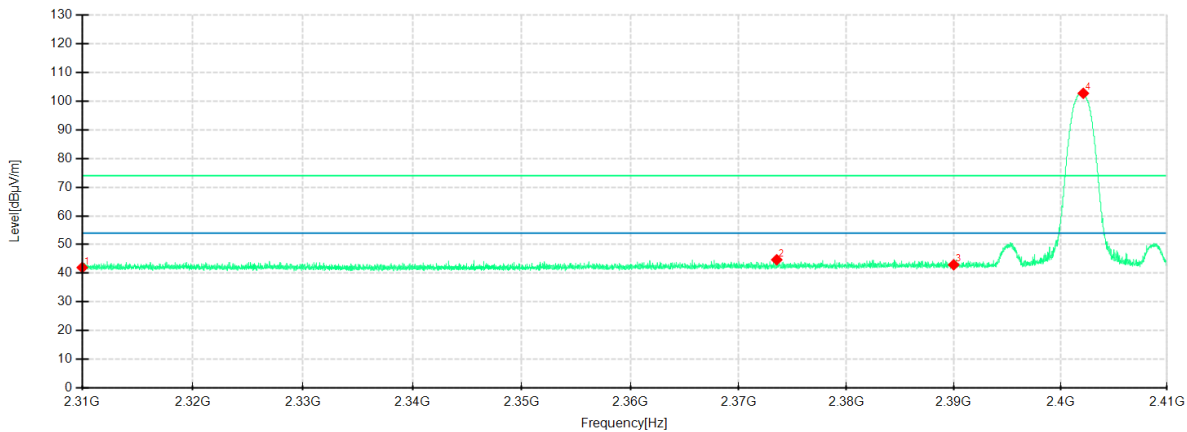
Tested By: Qin Tingting

Detector mode: Peak

Test Voltage: DC 13.2V

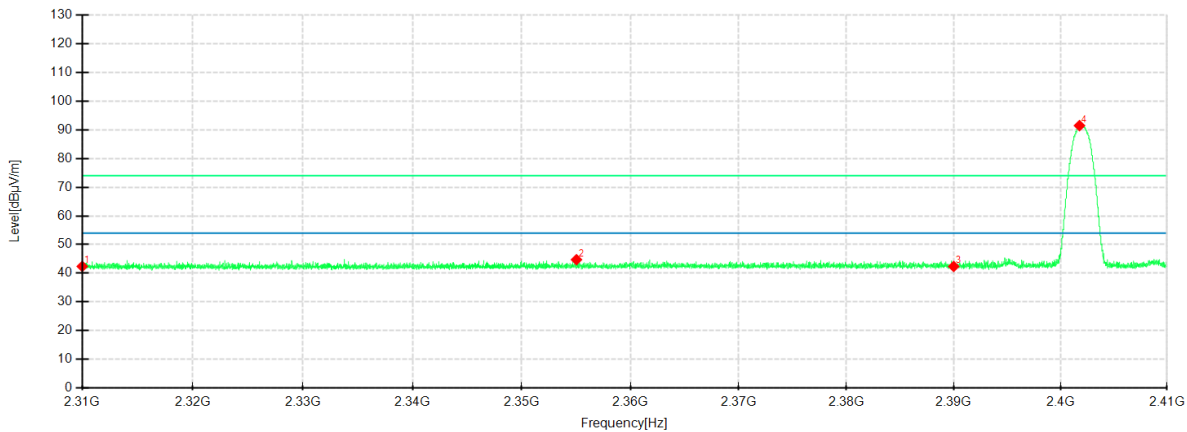
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	47.45	41.97	-5.48	74.00	32.03	200	202	Horizontal	/
2	2373.5375	50.29	44.70	-5.59	74.00	29.30	200	50	Horizontal	/
3	2390.0000	48.33	42.94	-5.39	74.00	31.06	100	19	Horizontal	/
4	2402.1375	107.97	102.74	-5.23	74.00	-28.74	200	339	Horizontal	No limit
1	2310.0000	47.70	42.38	-5.32	74.00	31.62	100	0	Vertical	/
2	2355.0375	50.20	44.73	-5.47	74.00	29.27	200	271	Vertical	/
3	2390.0000	47.83	42.36	-5.47	74.00	31.64	200	121	Vertical	/
4	2401.7750	96.95	91.48	-5.47	74.00	-17.48	200	334	Vertical	No limit

Lowest Channel

Frequency 2402MHz

Environment: 24.6°C/58%RH/101.0kPa

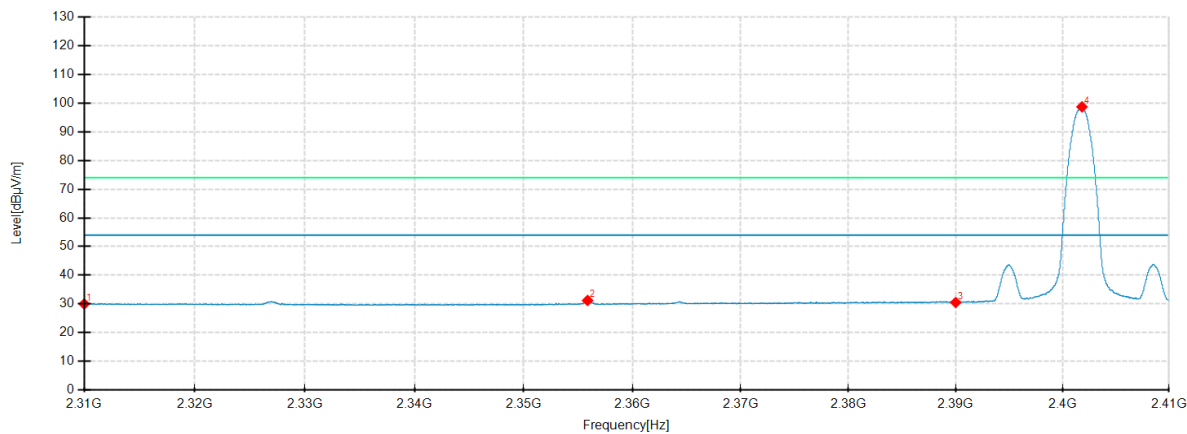
Tested By: Qin Tingting

Detector mode: Average

Test Voltage: DC 13.2V

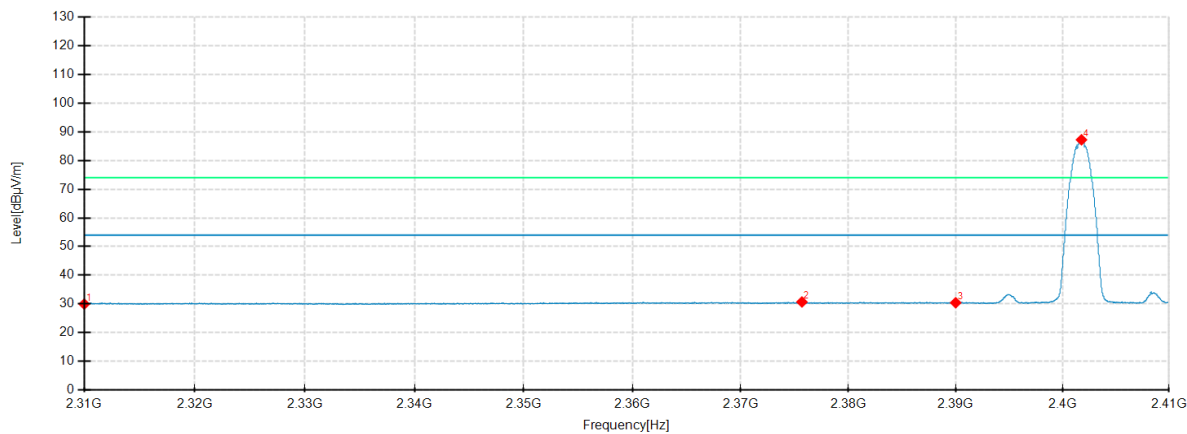
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	35.44	29.96	-5.48	54.00	24.04	100	46	Horizontal	/
2	2355.8750	37.00	31.20	-5.80	54.00	22.80	200	341	Horizontal	/
3	2390.0000	35.88	30.49	-5.39	54.00	23.51	200	341	Horizontal	/
4	2401.8250	103.96	98.72	-5.24	54.00	-44.72	200	0	Horizontal	No limit
1	2310.0000	35.26	29.94	-5.32	54.00	24.06	200	182	Vertical	/
2	2375.6875	36.14	30.67	-5.47	54.00	23.33	200	359	Vertical	/
3	2390.0000	35.88	30.41	-5.47	54.00	23.59	200	83	Vertical	/
4	2401.7750	92.70	87.23	-5.47	54.00	-33.23	200	325	Vertical	No limit

Highest Channel

Frequency 2480MHz

Environment: 24.6℃/58%RH/101.0kPa

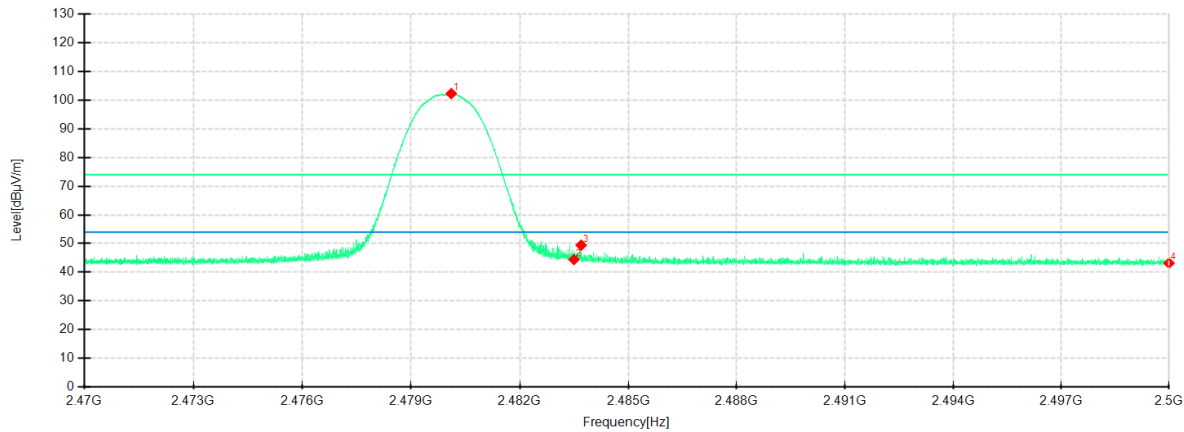
Tested By: Qin Tingting

Detector mode: Peak

Test Voltage: DC 13.2V

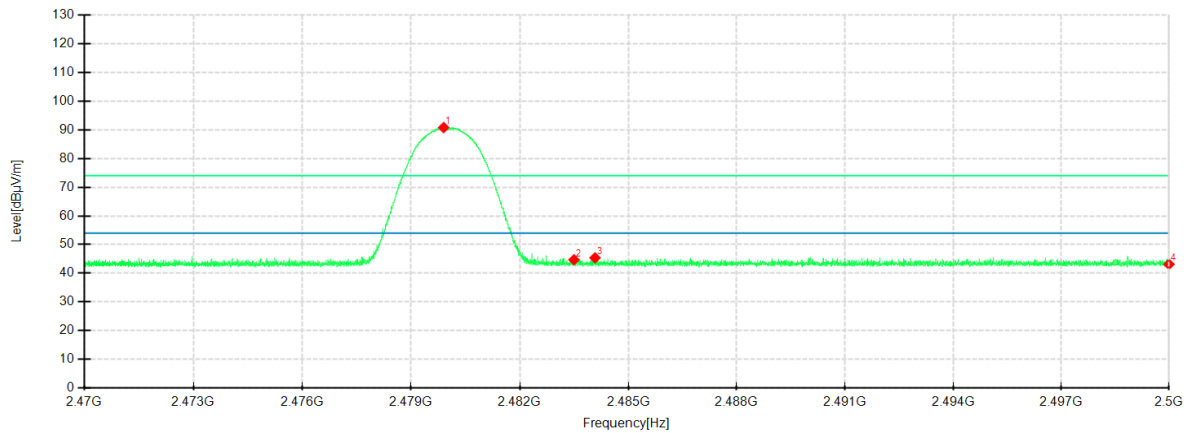
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.1100	107.10	102.29	-4.81	74.00	-28.29	200	23	Horizontal	No limit
2	2483.5000	49.24	44.41	-4.83	74.00	29.59	200	23	Horizontal	/
3	2483.6988	54.27	49.43	-4.84	74.00	24.57	200	1	Horizontal	/
4	2500.0000	48.16	43.17	-4.99	74.00	30.83	200	23	Horizontal	/
1	2479.9000	95.88	90.79	-5.09	74.00	-16.79	100	341	Vertical	No limit
2	2483.5000	49.76	44.69	-5.07	74.00	29.31	100	10	Vertical	/
3	2484.0813	50.43	45.37	-5.06	74.00	28.63	100	341	Vertical	/
4	2500.0000	48.10	43.11	-4.99	74.00	30.89	100	302	Vertical	/

Highest Channel

Frequency 2480MHz

Environment: 24.6°C/58%RH/101.0kPa

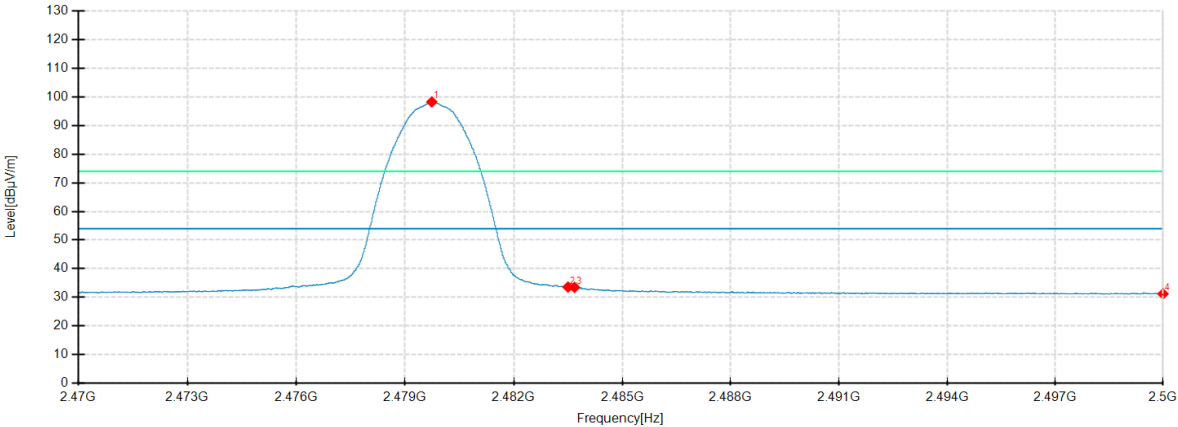
Tested By: Qin Tingting

Detector mode: Average

Test Voltage: DC 13.2V

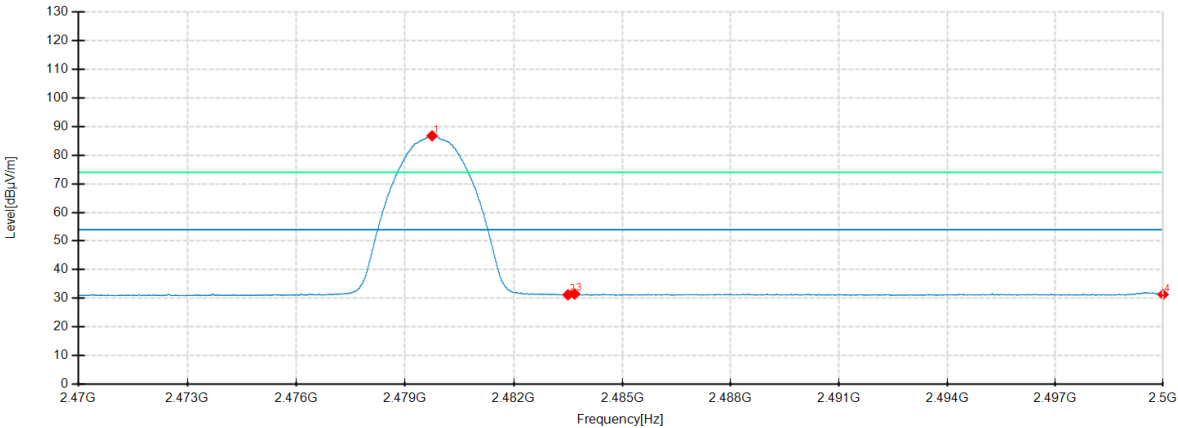
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.7388	103.07	98.26	-4.81	54.00	-44.26	200	12	Horizontal	No limit
2	2483.5000	38.41	33.58	-4.83	54.00	20.42	200	1	Horizontal	/
3	2483.6800	38.31	33.47	-4.84	54.00	20.53	200	1	Horizontal	/
4	2500.0000	36.17	31.18	-4.99	54.00	22.82	200	314	Horizontal	/
1	2479.7463	91.85	86.76	-5.09	54.00	-32.76	100	341	Vertical	No limit
2	2483.5000	36.27	31.20	-5.07	54.00	22.80	100	341	Vertical	/
3	2483.6800	36.59	31.52	-5.07	54.00	22.48	200	338	Vertical	/
4	2500.0000	36.32	31.33	-4.99	54.00	22.67	100	341	Vertical	/

3DH5

Lowest Channel

Frequency 2402MHz

Environment: 24.6°C/58%RH/101.0kPa

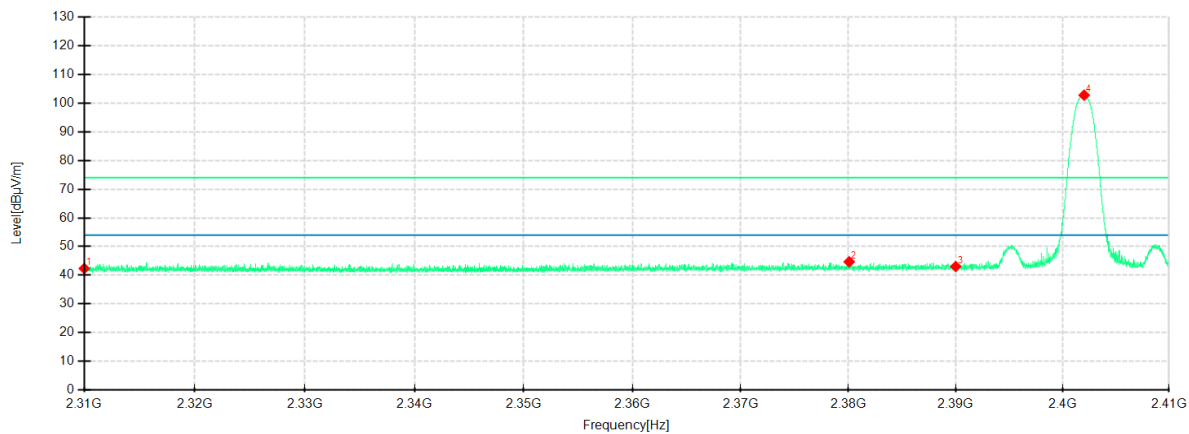
Tested By: Qin Tingting

Detector mode: Peak

Test Voltage: DC 13.2V

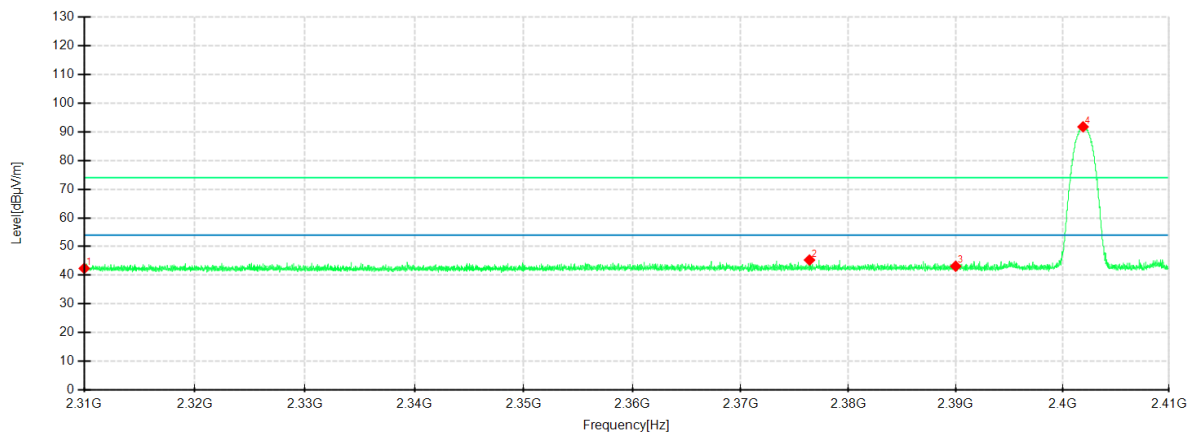
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	47.82	42.34	-5.48	74.00	31.66	200	214	Horizontal	/
2	2380.0750	50.19	44.68	-5.51	74.00	29.32	100	84	Horizontal	/
3	2390.0000	48.42	43.03	-5.39	74.00	30.97	100	336	Horizontal	/
4	2402.0250	108.03	102.79	-5.24	74.00	-28.79	200	0	Horizontal	No limit
1	2310.0000	47.70	42.38	-5.32	74.00	31.62	100	15	Vertical	/
2	2376.3875	50.77	45.30	-5.47	74.00	28.70	100	65	Vertical	/
3	2390.0000	48.60	43.13	-5.47	74.00	30.87	200	246	Vertical	/
4	2401.9250	97.21	91.75	-5.46	74.00	-17.75	200	332	Vertical	No limit

Lowest Channel

Frequency 2402MHz

Environment: 24.6°C/58%RH/101.0kPa

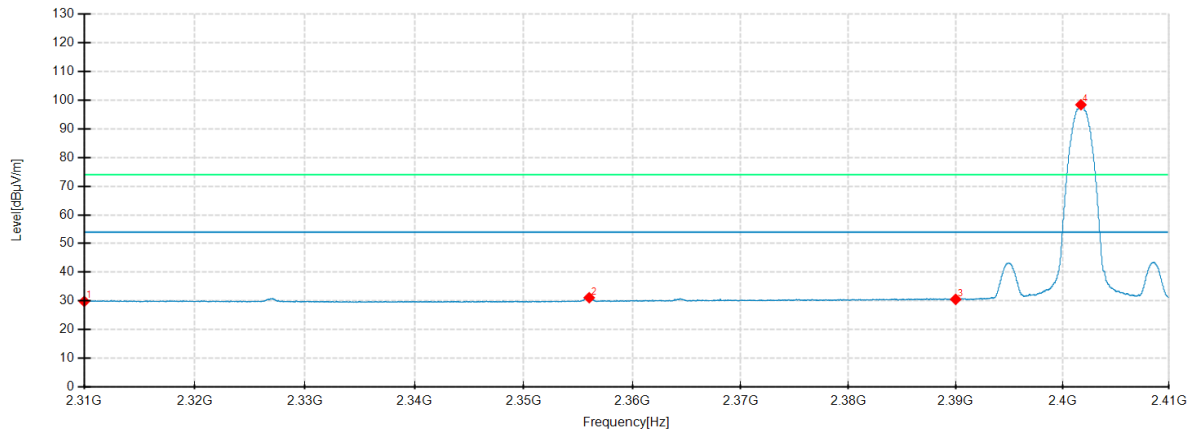
Tested By: Qin Tingting

Detector mode: Average

Test Voltage: DC 13.2V

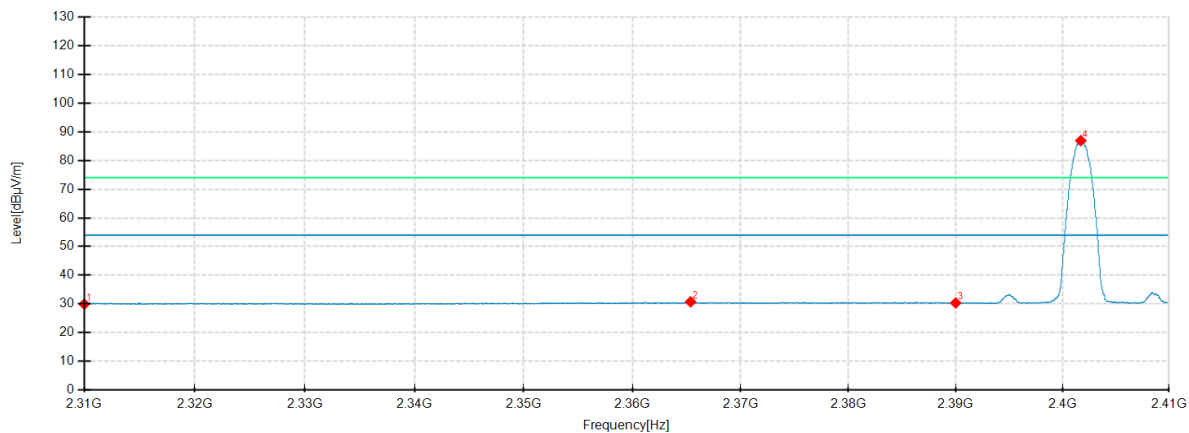
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	35.29	29.81	-5.48	54.00	24.19	200	25	Horizontal	/
2	2356.0250	36.91	31.11	-5.80	54.00	22.89	200	342	Horizontal	/
3	2390.0000	35.94	30.55	-5.39	54.00	23.45	200	37	Horizontal	/
4	2401.7250	103.65	98.40	-5.25	54.00	-44.40	200	1	Horizontal	No limit
1	2310.0000	35.22	29.90	-5.32	54.00	24.10	200	57	Vertical	/
2	2365.3750	36.19	30.72	-5.47	54.00	23.28	100	313	Vertical	/
3	2390.0000	35.79	30.32	-5.47	54.00	23.68	200	98	Vertical	/
4	2401.7125	92.41	86.94	-5.47	54.00	-32.94	200	338	Vertical	No limit

Highest Channel

Frequency 2480MHz

Environment: 24.6℃/58%RH/101.0kPa

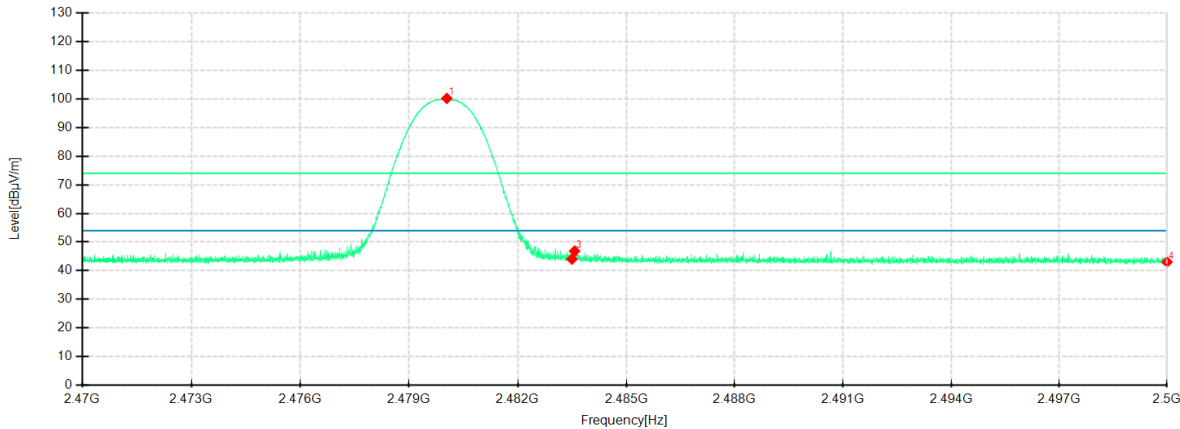
Tested By: Qin Tingting

Detector mode: Peak

Test Voltage: DC 13.2V

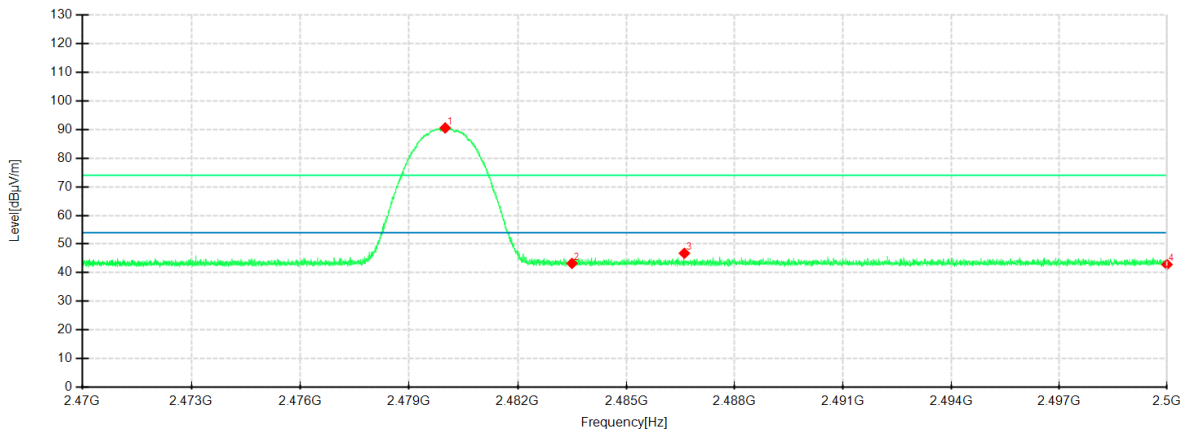
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.0425	105.01	100.20	-4.81	74.00	-26.20	200	0	Horizontal	No limit
2	2483.5000	48.85	44.02	-4.83	74.00	29.98	200	251	Horizontal	/
3	2483.5713	51.69	46.85	-4.84	74.00	27.15	200	35	Horizontal	/
4	2500.0000	48.02	43.03	-4.99	74.00	30.97	100	21	Horizontal	/
1	2479.9975	95.65	90.56	-5.09	74.00	-16.56	200	351	Vertical	No limit
2	2483.5000	48.31	43.24	-5.07	74.00	30.76	200	300	Vertical	/
3	2486.6088	51.83	46.78	-5.05	74.00	27.22	200	82	Vertical	/
4	2500.0000	47.83	42.84	-4.99	74.00	31.16	200	338	Vertical	/

Highest Channel

Frequency 2480MHz

Environment: 24.6°C/58%RH/101.0kPa

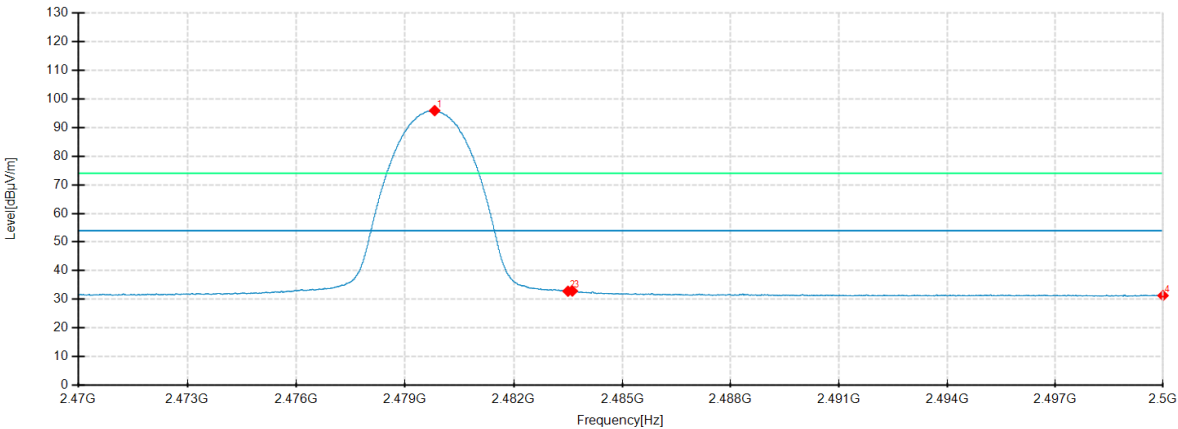
Tested By: Qin Tingting

Detector mode: Average

Test Voltage: DC 13.2V

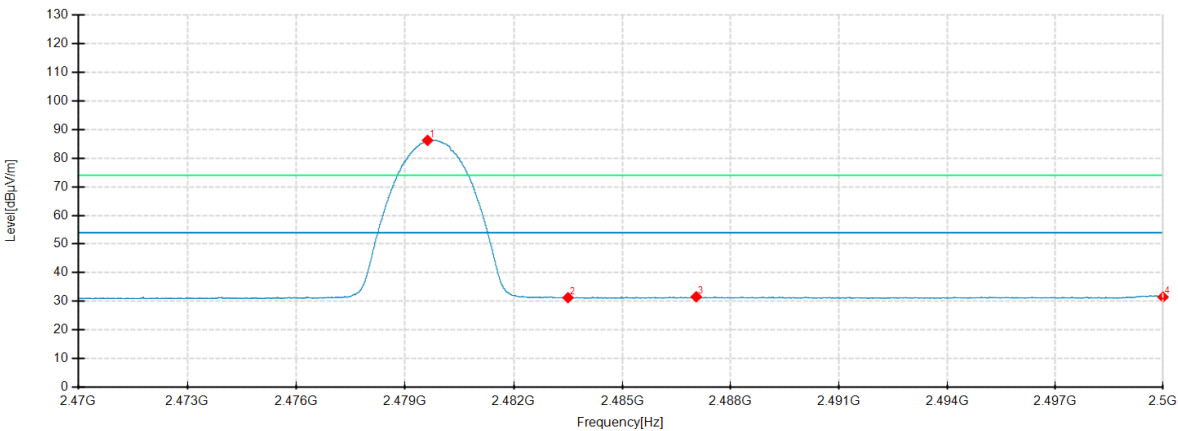
Date: 2024-10-14

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dB μ V/m	Level dB μ V/m	Factor dB	Limit dB μ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.8175	100.73	95.92	-4.81	54.00	-41.92	200	2	Horizontal	No limit
2	2483.5000	37.65	32.82	-4.83	54.00	21.18	200	13	Horizontal	/
3	2483.6200	37.74	32.90	-4.84	54.00	21.10	200	2	Horizontal	/
4	2500.0000	36.28	31.29	-4.99	54.00	22.71	200	327	Horizontal	/
1	2479.6225	91.32	86.23	-5.09	54.00	-32.23	200	357	Vertical	No limit
2	2483.5000	36.33	31.26	-5.07	54.00	22.74	100	2	Vertical	/
3	2487.0475	36.62	31.57	-5.05	54.00	22.43	200	60	Vertical	/
4	2500.0000	36.45	31.46	-4.99	54.00	22.54	200	21	Vertical	/

Remark:

- 1) Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

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APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E20240822625802-Test photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E20240822625802-EUT photo.

----- End of Report -----