

Product Name: Smart Phone	Report No: ITEZA2-202400192RF2
Product Model: S118, V31, V31 GT, S110, S110 GT, V31 Plus, V31 Ultra, S118 Pro, S118 S, S118 E, S118 SE, S118 Plus, S118 Max, S118 Ultra	Security Classification: Open
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TIRT Testing Report

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RF TEST REPORT

FCC ID: 2AX4YS118

According to

47 CFR FCC Part 15, Subpart C(Section 15.247)

ANSI C63.10:2013

Applicant:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22, Longhua New District, Shenzhen, China
Manufacturer:	Shenzhen DOOGEE Hengtong Technology CO.,LTD
Address:	B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22, Longhua New District, Shenzhen, China
Sample No:	1000036597
Product Name:	Smart Phone
Brand Name:	DOOGEE
Model No.:	S118, V31, V31 GT, S110, S110 GT, V31 Plus, V31 Ultra, S118 Pro, S118 S, S118 E, S118 SE, S118 Plus, S118 Max, S118 Ultra
Test No.:	S118

Date of Receipt:	2024/06/13
Date of Test:	2024/06/13~2024/07/11
Issued Date:	2024/07/11
Testing Lab:	TIRT

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History of this test report

Original Report Issue Date: 2024.07.11

- No additional attachment
- Additional attachments were issued following record

Attachment No.	Issue Date	Description

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Standards Paragraph	Result
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) ANSI C63.10 :2013	P
Bandwidth	FCC Part 15: 15.215 ANSI C63.10 :2013	P
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) ANSI C63.10 :2013	P
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2013	P
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 :2013	P
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10 :2013	P
Band Edge Compliance	FCC Part 15: 15.247(d) ANSI C63.10 :2013	P
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.10 :2013	P
Antenna requirement	FCC Part 15: 15.203	P
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable. 4. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT Name : Smart Phone
Model No. : S118, V31, V31 GT, S110, S110 GT, V31 Plus, V31 Ultra, S118 Pro, S118 S, S118 E, S118 SE, S118 Plus, S118 Max, S118 Ultra
DIFF. : There is no difference except the name of the model. All tests are made with the S118 model.
Power supply : DC 3.85V from battery or DC 11V from adapter

Radio Technology : Bluetooth V5.0 EDR

Operation frequency : 2402-2480MHz

Channel No. : 79 Channels

Channel spacing : 1MHz

Modulation type : GFSK, $\pi/4$ DQPSK, 8DPSK

Antenna Type : PIFA antenna, Maximum Gain is -3.5dBi.
Antenna information is provided by applicant.

Software version : DOOGEE-S118-EEA-Android14.0-20240427

Hardware version : M116-MUB-V1

Intend use : Residential, commercial and light industrial environment
environment

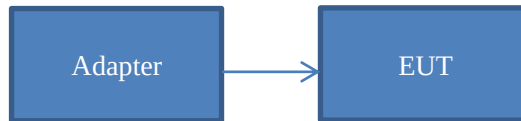
2.2. Accessories of Device (EUT)

Accessories	Adapter
Manufacturer	/
Model	TP303C-US
Ratings	Input: AC100-240V~ 50/60Hz 0.7A Max
	Output: USB-C: 5.0V=3.0A 15.0W; 9.0V=3.0A 27.0W; 12.0V=2.5A 30.0W; 15.0V=2.0A 30.0W, 20.0V=1.5A 30.0W
	PPS: 5.0V-11.0V=3.0A 33.0W
	Power: 33.0W

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDoC
1.	--	--	--	--	--

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

Tested mode, channel information		
Mode	Channel	Frequency (MHz)
GFSK	Low :CH1	2402
	Middle: CH40	2441
	High: CH79	2480
$\pi/4$ DQPSK	Low :CH1	2402
	Middle: CH40	2441
	High: CH79	2480
8DPSK	Low :CH1	2402
	Middle: CH40	2441
	High: CH79	2480

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	24℃
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	980kPa

2.7. Test Facility

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	104 Building C, Xinmingsheng Industrial Park No.132, Zhangge Old Village East Zone, Zhangge Community, Fucheng Street, Longhua District, Shenzhen, Guangdong, P. R. China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Accredited Lab.Designation Number:	CN1366
FCC Test Firm Registration Number:	820690
Telephone:	+86-0755-27087573

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (9KHz~30MHz)	±2.56dB
Spurious emissions, radiated (30MHz~1GHz)	±4.6dB
Spurious emissions, radiated (Above 1GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temperature	±0.7℃
Time	±1.25

2.9. Test Equipment List

Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Receiver	Rohde&Schwarz	ESIB 40	YH-TIRT-SAC-966-20220911	2024/01/05	2025/01/04
Integral Antenna	Schwarzbeck	VULB 9163	01314	2022.12.11	2024.12.10
Integral Antenna	Rohde&Schwarz	HF907	RSM2991424	2022.12.11	2024.12.10
Preamplifier	Emtrace	RP01A	'02017	2024/01/05	2025/01/04
Preamplifier	Schwarzbeck	BBV9744	00143	2024/01/05	2025/01/04
Loop Antenna	ZHINAN	ZN30900A	12024	2024/01/05	2025/01/04
Exposure Level Tester	narda	ELT-400	N-0925	2024/01/05	2025/01/04
Horn Antenna	Schwarzbeck	BBHA9170	00956	2024/01/05	2025/01/04
RF Cable	/	LMR400UF-NMNM-7.0M	/	2024/01/05	2025/01/04
RF Cable	/	SFT2050PUR-NMNM-7.0M	/	2024/01/05	2025/01/04
EMI Receiver	Rohde&Schwarz	ESR7	1316.3003K07-102611-mk	2023/11/02	2024/11/01
LISN	Rohde&Schwarz	ENV216	3560.655.12-102915-Bp	2023/11/02	2024/11/01
ISN	Schwarzbeck	ENY81	1309.8510.03	2024/01/05	2025/01/04
ISN	Schwarzbeck	ENY81-CAT6	1309.8526.03-101976-kh	2024/01/05	2025/01/04
RF Cable	\	SFT2050PUR-NMNM-2.0M	\	2024/01/05	2025/01/04
CMW500	ROHDE&SCHWARZ	CMW500	120434	2024/01/05	2025/01/04
Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2024/01/05	2025/01/04
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	101722	2024/01/05	2025/01/04
vector Signal Generator	KEYSIGHT	N5182B	MY56200458	2024/01/05	2025/01/04
vector Signal Generator	HEWLETT PACKARD	83752A	3610A02458	2024/01/05	2025/01/04

Filter	HEWLETT PACKARD	JS0806-F	19K8060209	2024/01/05	2025/01/04
Wireless comprehensive tester	ANRISTU	MT8821C	SN6262170409	2024/01/05	2025/01/04
Wireless comprehensive tester	ANRISTU	MT8000A	SN6262166782	2024/01/05	2025/01/04

3. MAXIMUM PEAK OUTPUT POWER

3.1. Limit

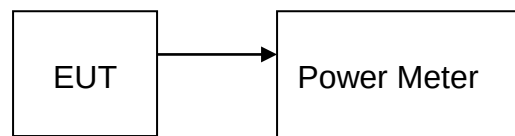
Please refer section15.247.

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

3.2. Test Procedure

The transmitter output is connected to the RF Power Meter. The RF Power Meter is set to the peak power detection.

3.3. Test Setup



3.4. Test Result

Mode	Freq(MHz)	PK Output Power(dBm)	Limit(dBm)	Result
GFSK	2402	9.82	30	Pass
	2441	8.43	30	Pass
	2480	6.47	30	Pass
$\pi/4$ DQPSK	2402	8.70	21	Pass
	2441	7.55	21	Pass
	2480	5.49	21	Pass
8DPSK	2402	8.63	21	Pass
	2441	7.29	21	Pass
	2480	5.36	21	Pass

4. BANDWIDTH

4.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2. Test Procedure

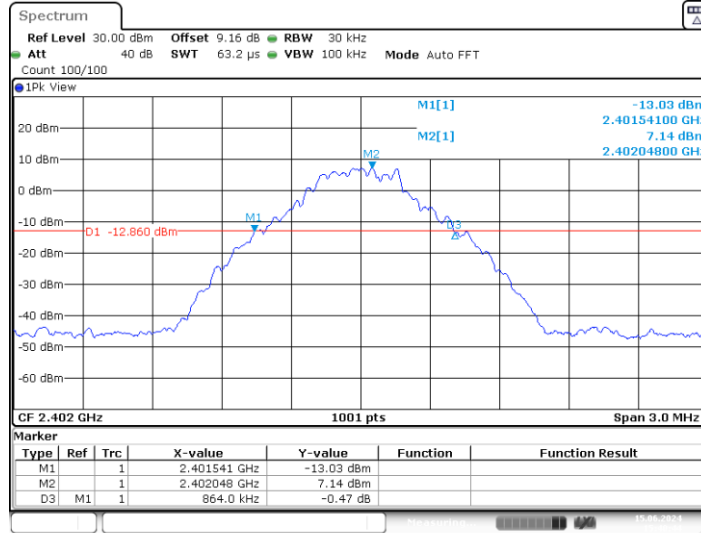
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.3. Test Result

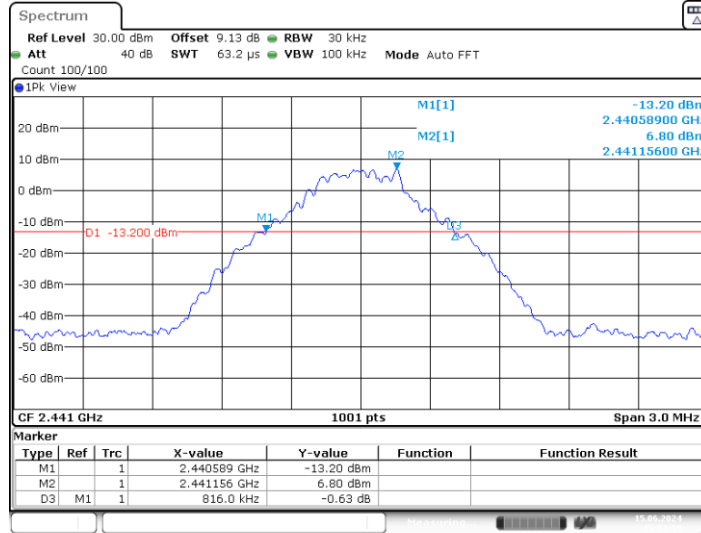
-20dB Bandwidth

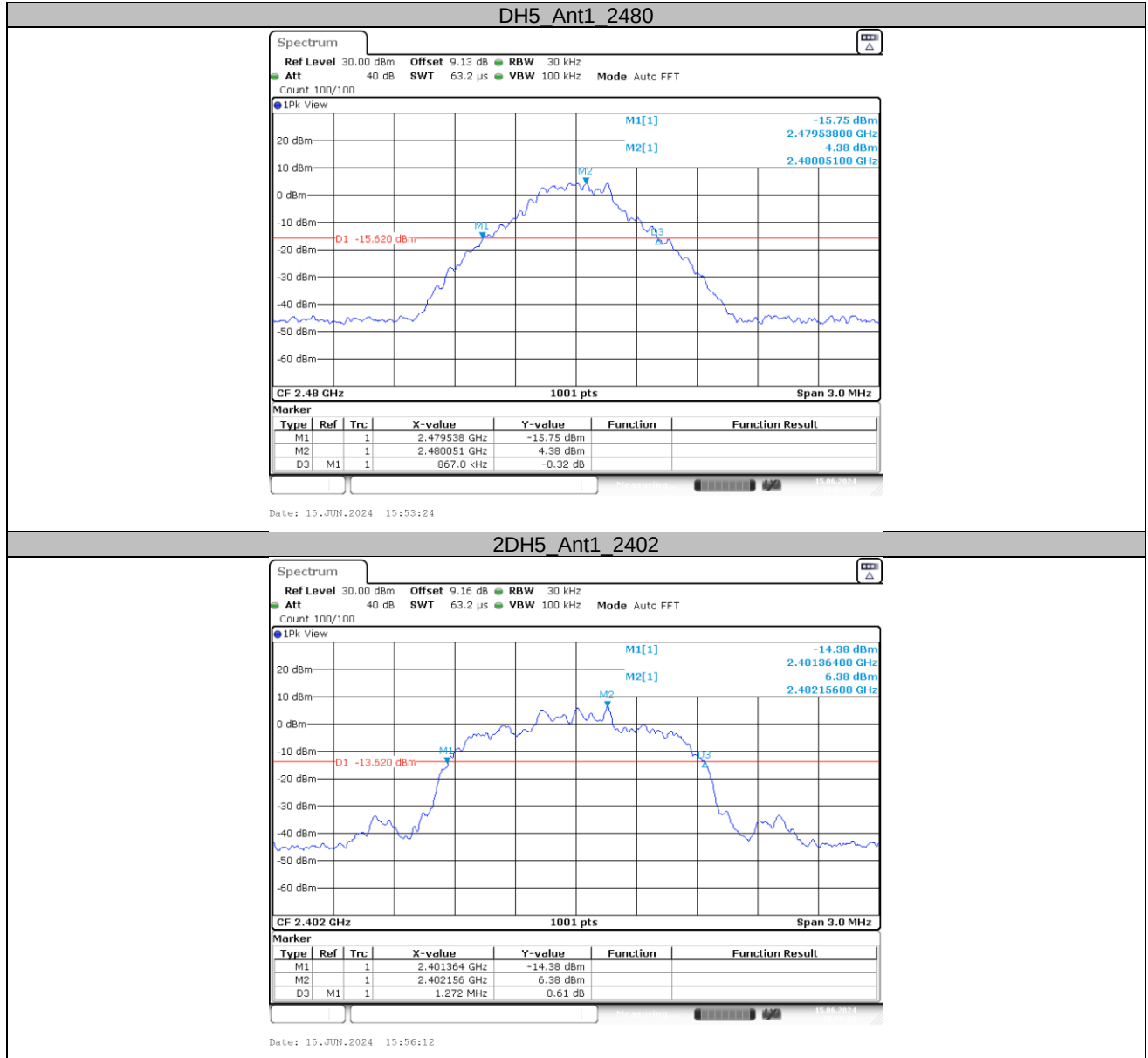
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.86	2401.54	2402.41	---	---
		2441	0.82	2440.59	2441.41	---	---
		2480	0.87	2479.54	2480.41	---	---
2DH5	Ant1	2402	1.27	2401.36	2402.64	---	---
		2441	1.27	2440.37	2441.64	---	---
		2480	1.26	2479.36	2480.62	---	---
3DH5	Ant1	2402	1.26	2401.36	2402.62	---	---
		2441	1.26	2440.36	2441.62	---	---
		2480	1.26	2479.36	2480.61	---	---

DH5_Ant1_2402

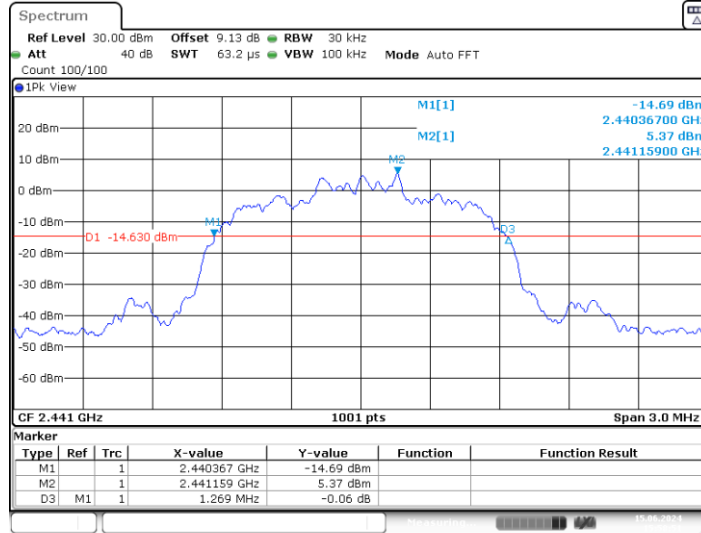


DH5_Ant1_2441



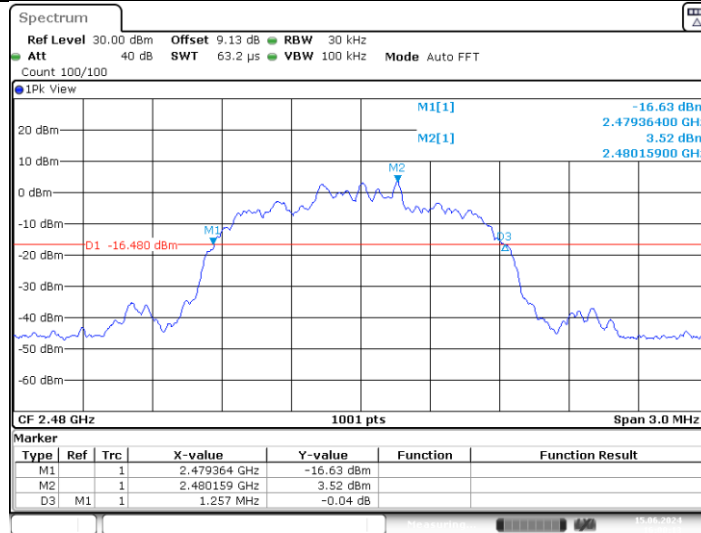


2DH5_Ant1_2441



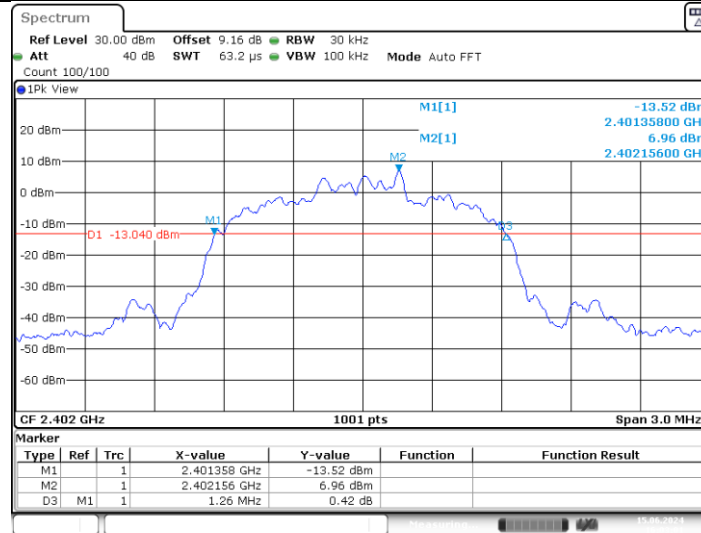
Date: 15 JUN 2024 15:58:50

2DH5_Ant1_2480



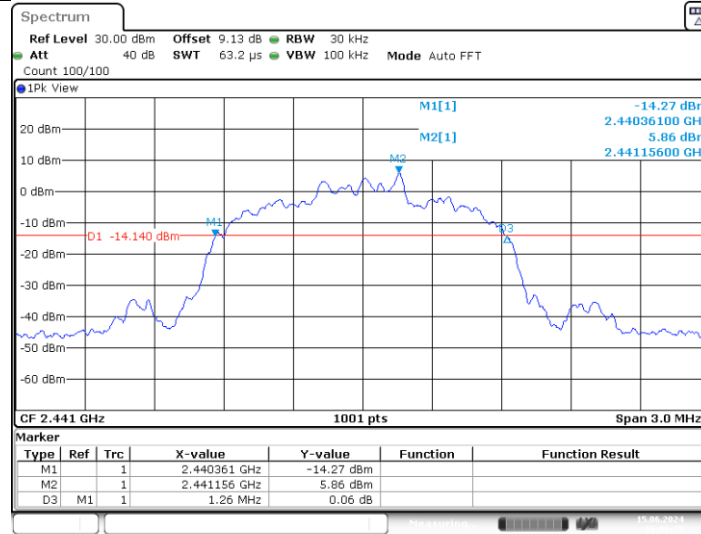
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3DH5_Ant1_2402



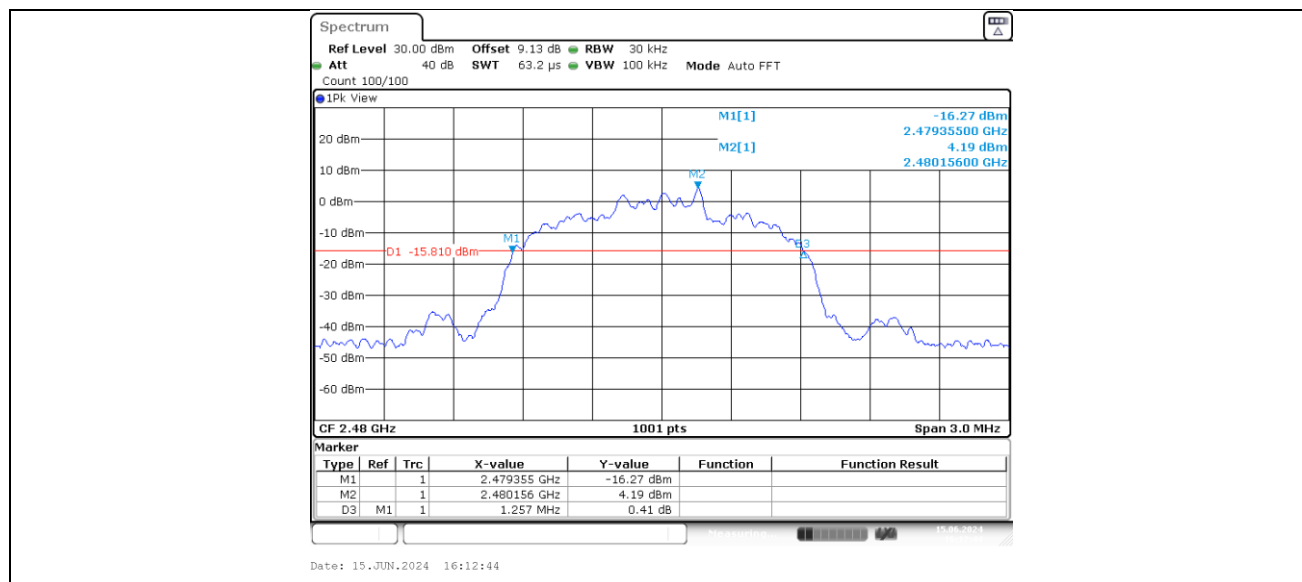
Date: 15.JUN.2024 16:03:01

3DH5_Ant1_2441



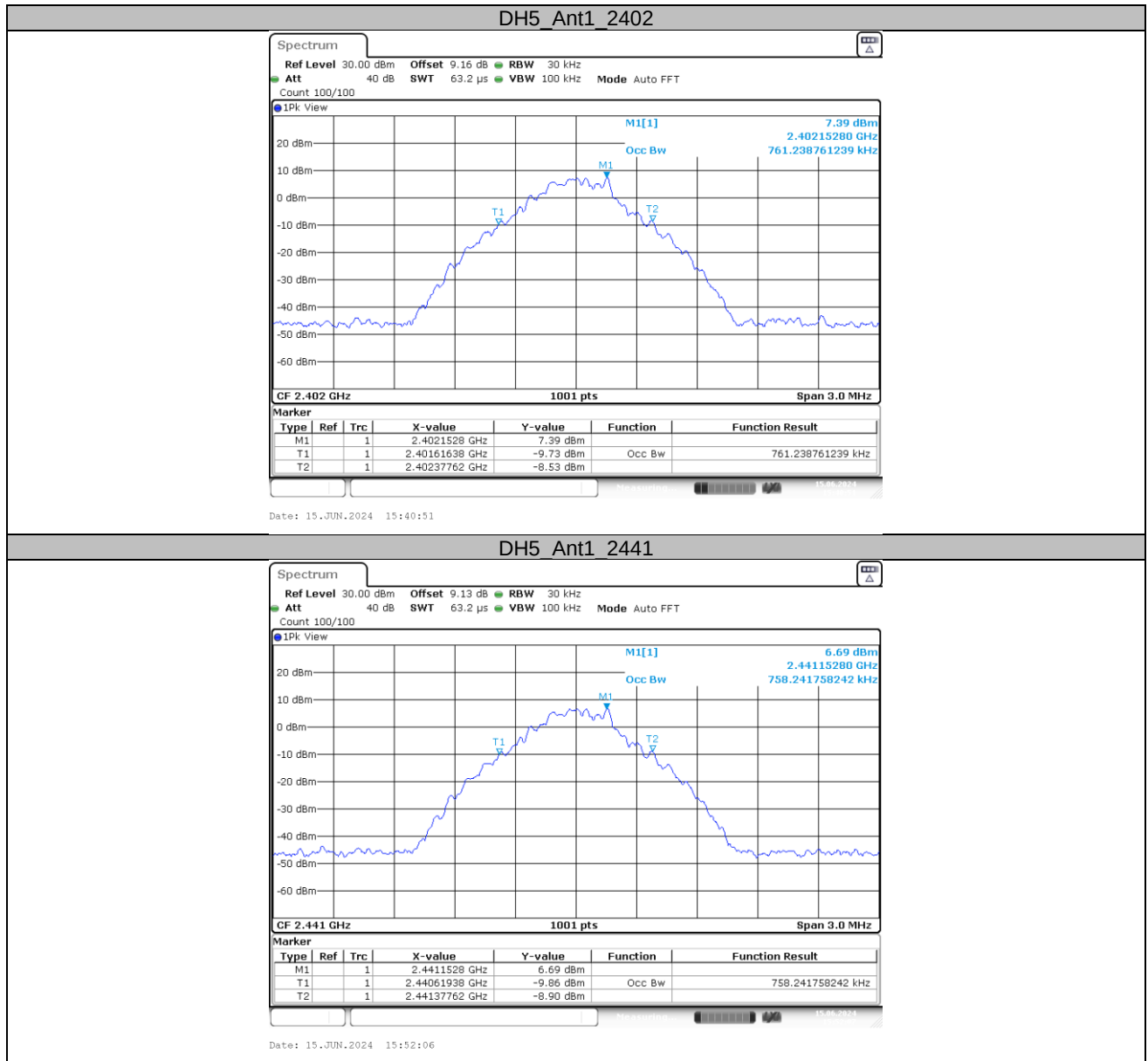
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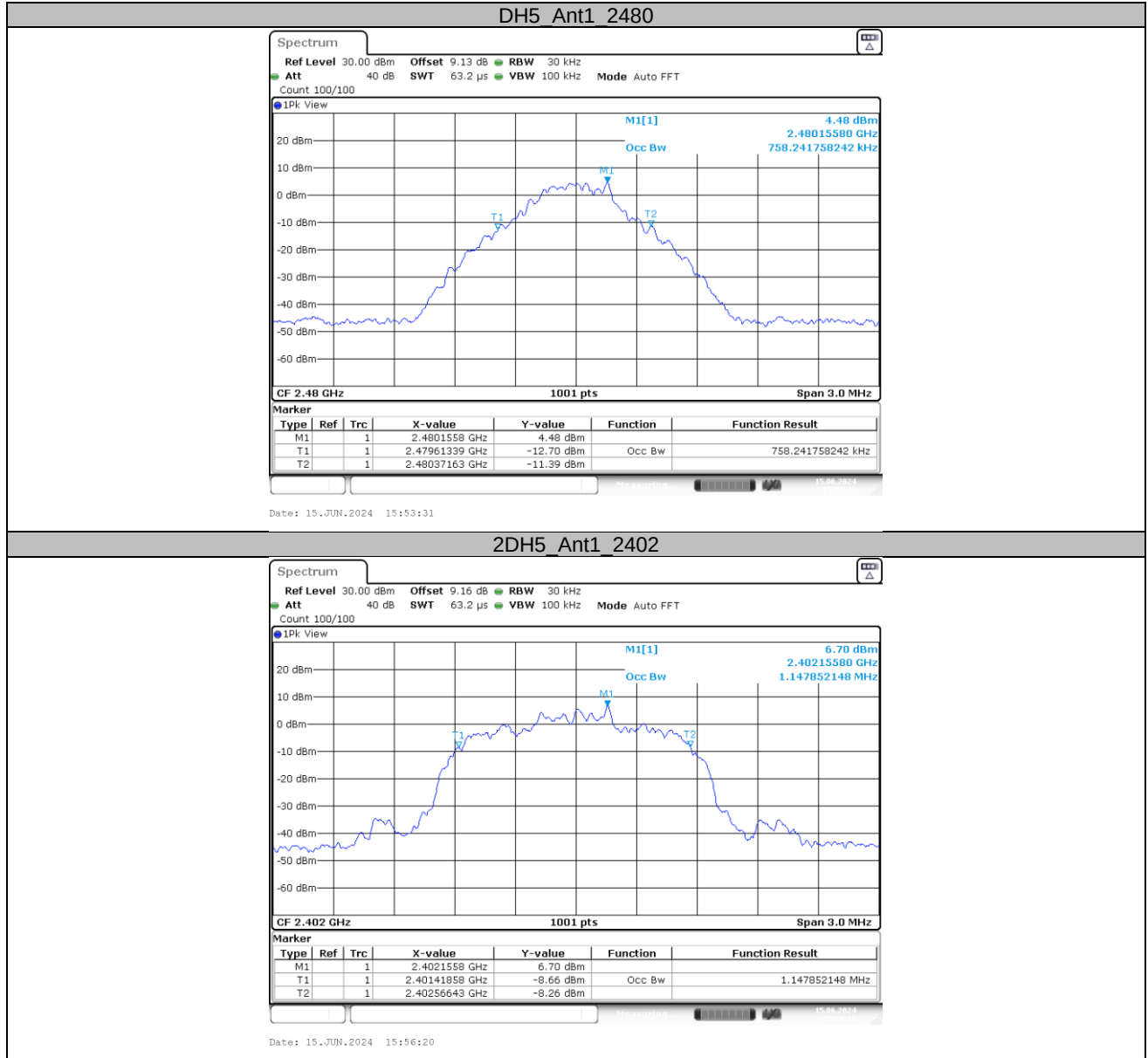
3DH5_Ant1_2480



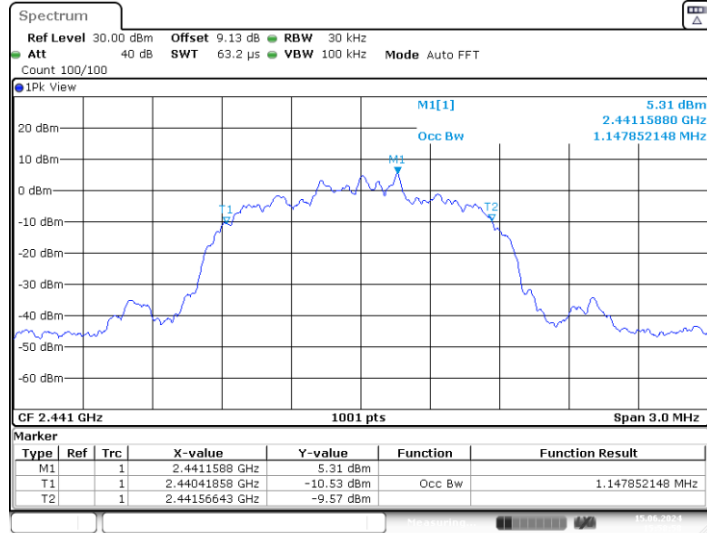
99% Occupied Bandwidth

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.761	2401.6164	2402.3776	---	---
		2441	0.758	2440.6194	2441.3776	---	---
		2480	0.758	2479.6134	2480.3716	---	---
2DH5	Ant1	2402	1.148	2401.4186	2402.5664	---	---
		2441	1.148	2440.4186	2441.5664	---	---
		2480	1.145	2479.4156	2480.5604	---	---
3DH5	Ant1	2402	1.145	2401.4276	2402.5724	---	---
		2441	1.151	2440.4246	2441.5754	---	---
		2480	1.151	2479.4186	2480.5694	---	---



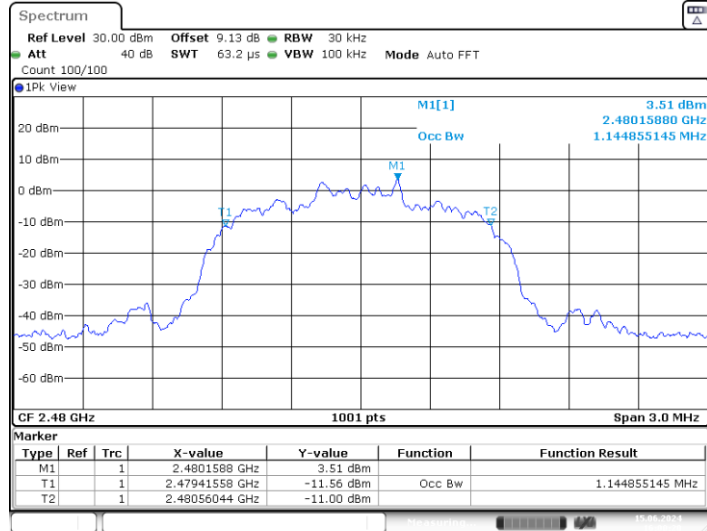


2DH5_Ant1_2441



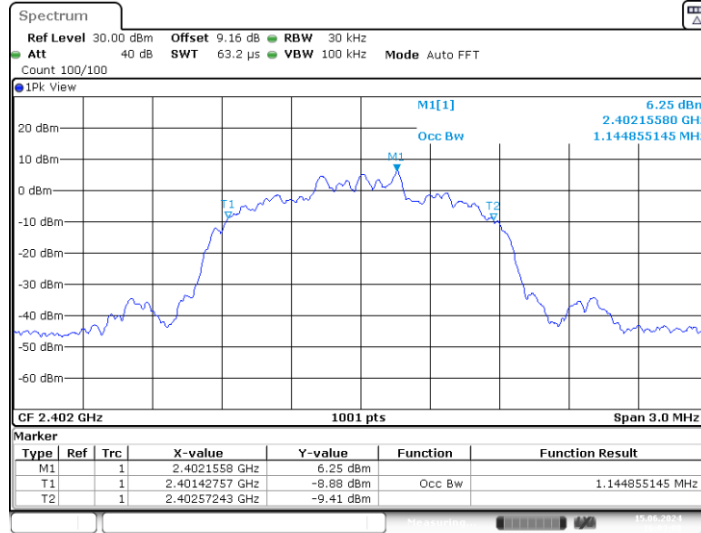
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2DH5_Ant1_2480



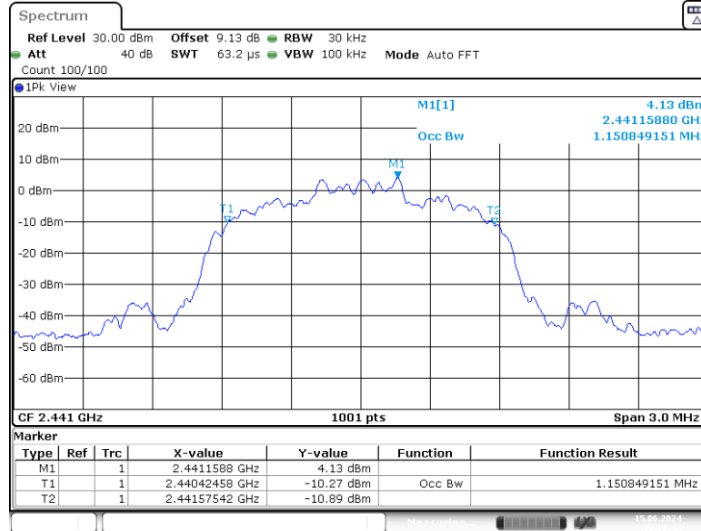
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3DH5_Ant1_2402

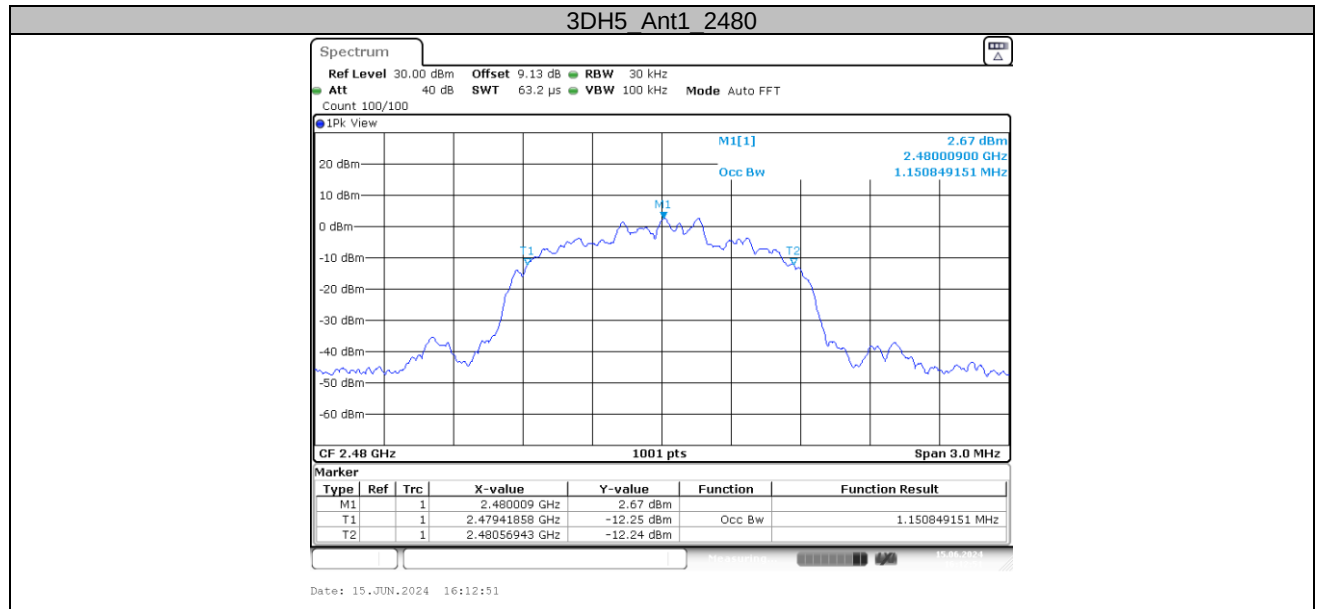


Date: 15 JUN 2024 16:03:08

3DH5_Ant1_2441



Date: 15 JUN 2024 16:06:42



5. CARRIER FREQUENCY SEPARATION

5.1. Limit

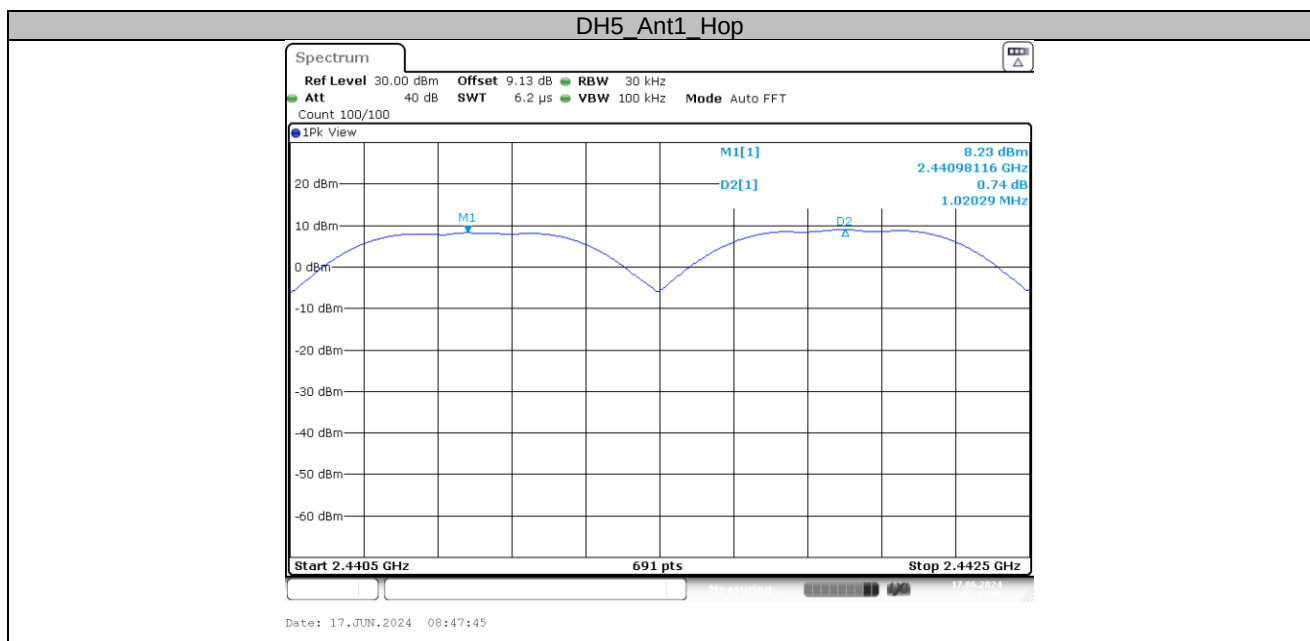
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that 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

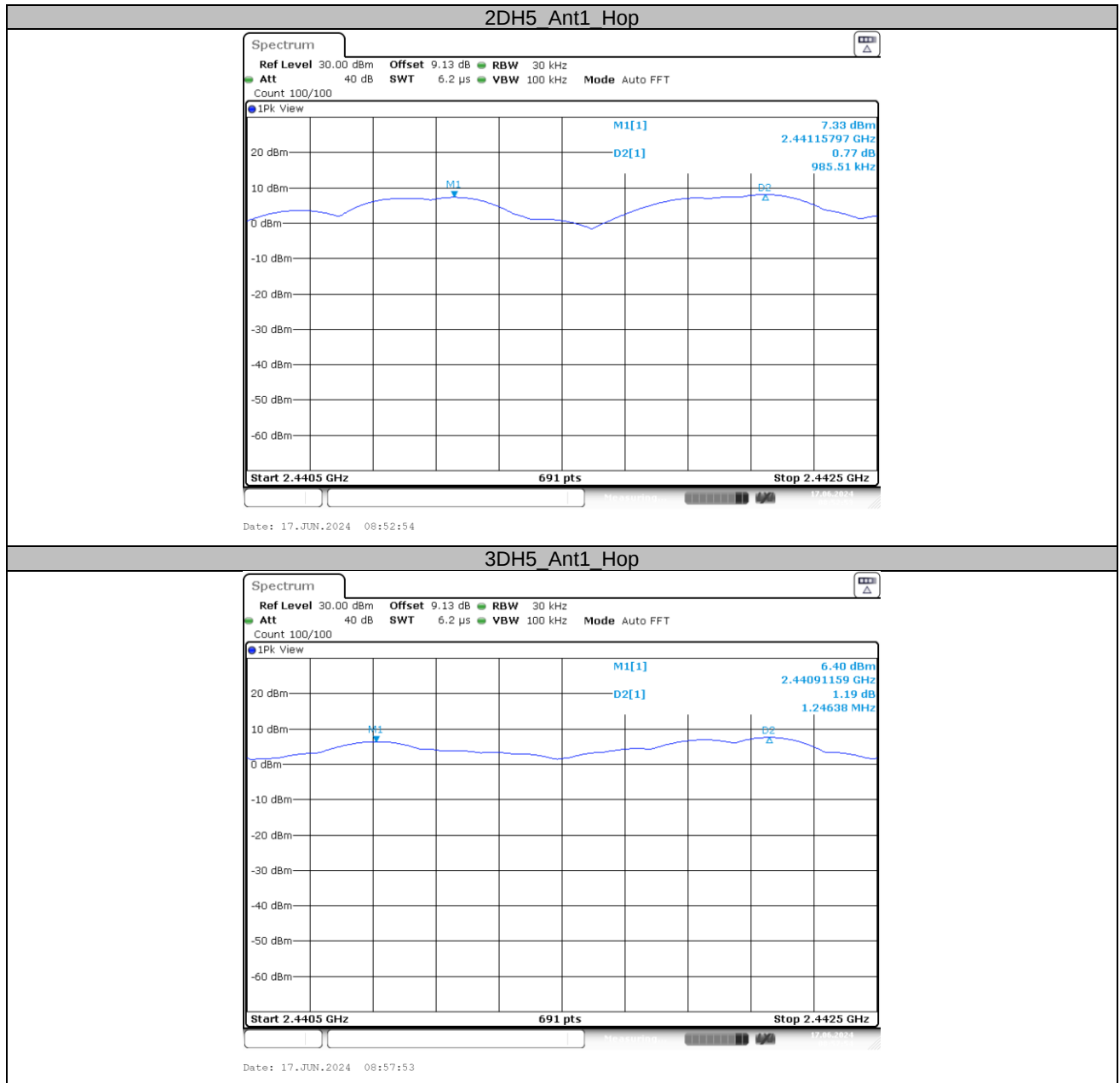
5.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The carrier frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW.

5.3. Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.02	≥ 0.870	PASS
2DH5	Ant1	Hop	0.986	≥ 0.847	PASS
3DH5	Ant1	Hop	1.246	≥ 0.840	PASS





6. NUMBER OF HOPPING CHANNEL

6.1. Limit

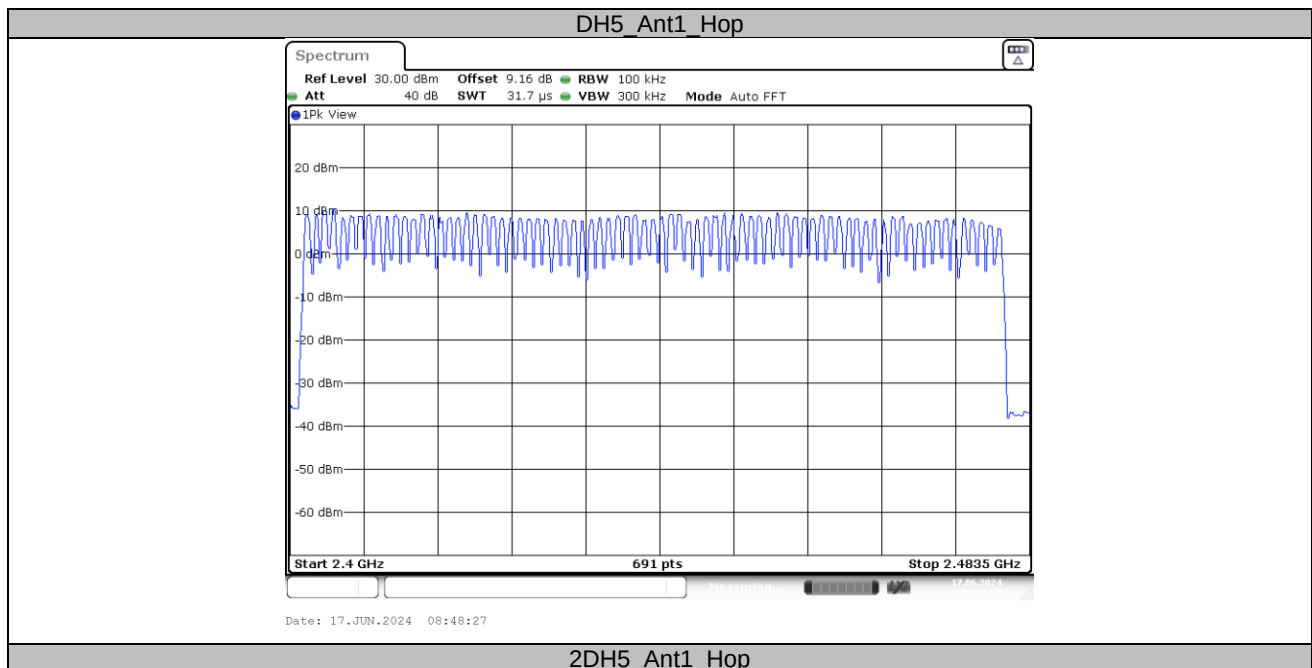
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

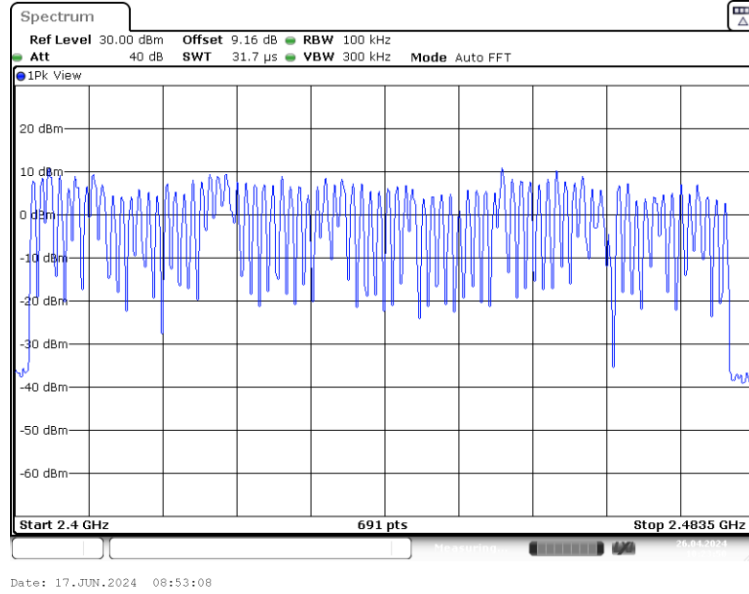
6.2. Test Procedure

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The number of hopping channel was measured by spectrum analyzer with 100kHz RBW and 300KHz VBW.

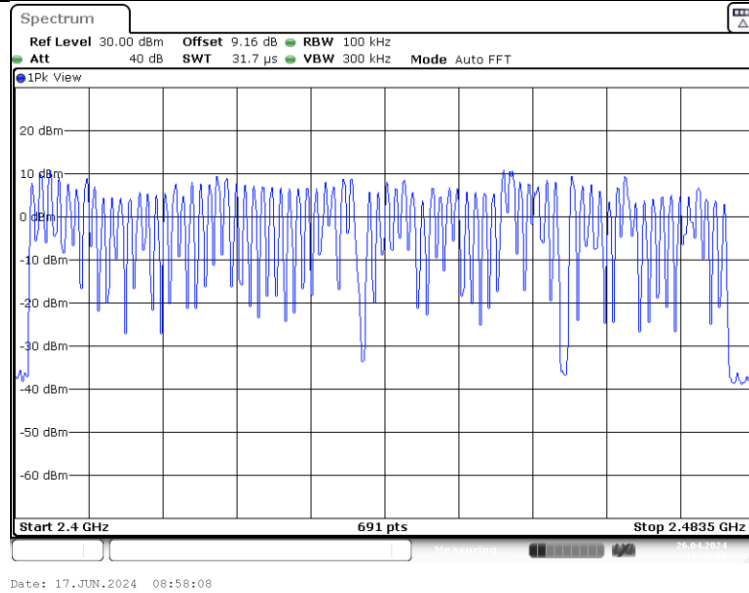
6.3. Test Result

TestMode	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





3DH5_Ant1_Hop



7. DWELL TIME

7.1. Test limit

Please refer section 15.247

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz.

The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 sec- onds multiplied by the number of hopping channel employed.

7.2. Test Procedure

7.2.1. Place the EUT on the table and set it in transmitting mode.

7.2.2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

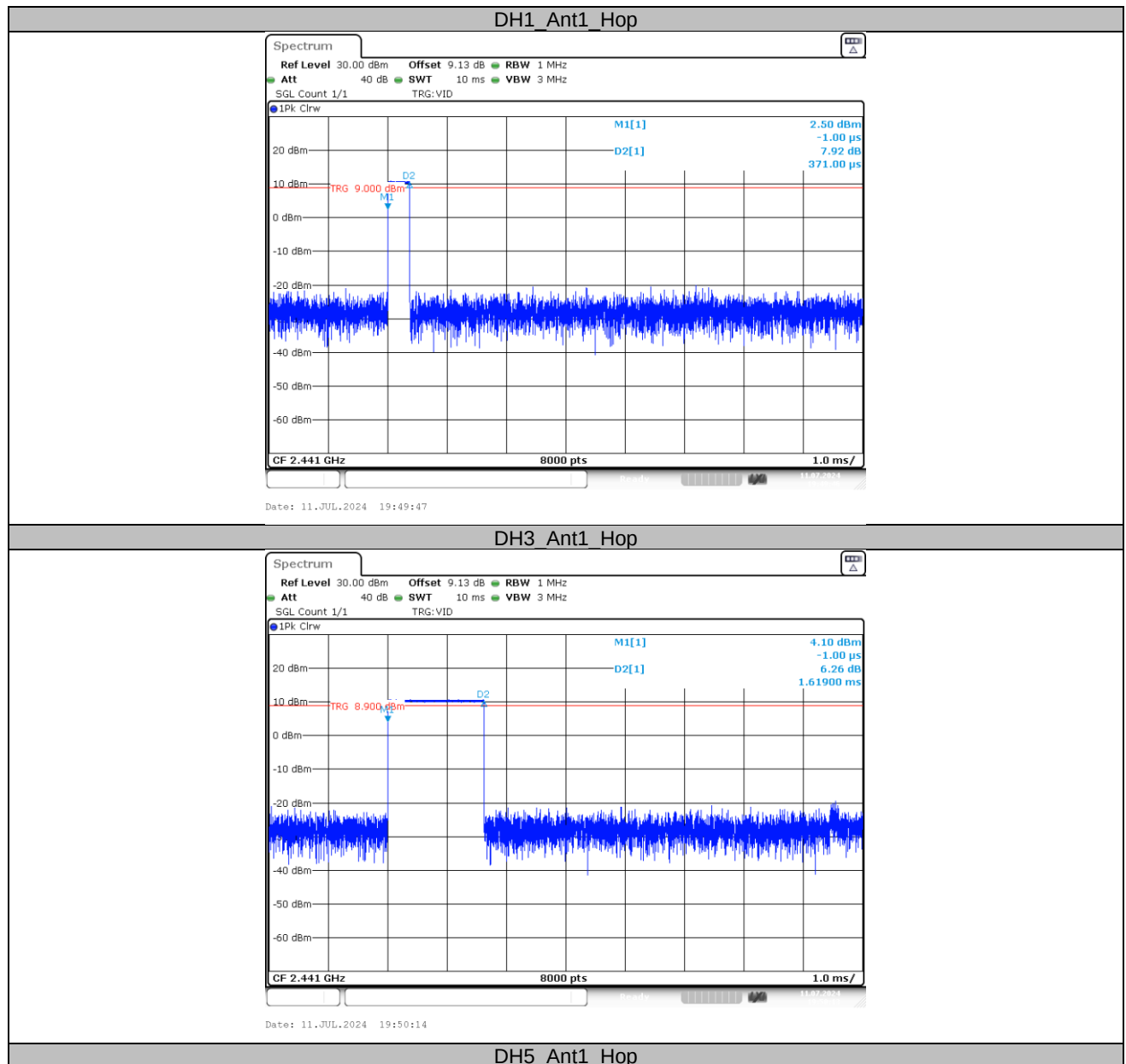
7.2.3. Set center frequency of spectrum analyzer = operating frequency.

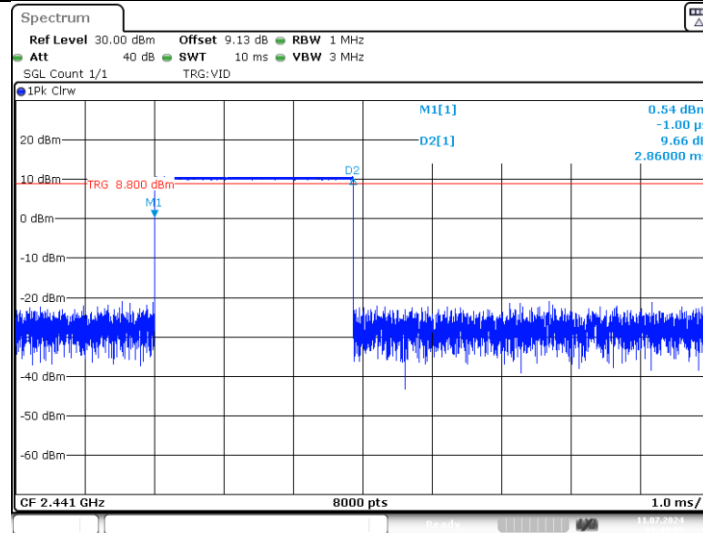
7.2.4. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span = 0Hz, Sweep = auto.

7.2.5. Repeat above procedures until all frequency measured were complete.

7.3. Test Result

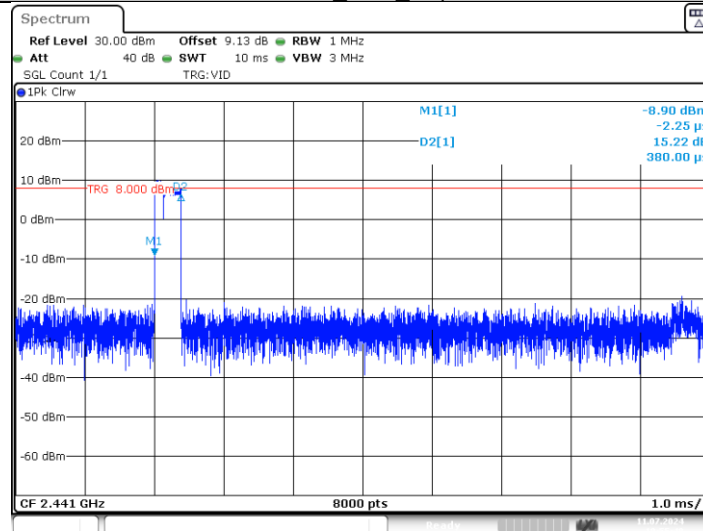
TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.371	320	0.119	≤0.4	PASS
DH3	Ant1	Hop	1.619	160	0.259	≤0.4	PASS
DH5	Ant1	Hop	2.860	106.67	0.305	≤0.4	PASS
2DH1	Ant1	Hop	0.380	320	0.122	≤0.4	PASS
2DH3	Ant1	Hop	1.624	160	0.26	≤0.4	PASS
2DH5	Ant1	Hop	2.864	106.67	0.306	≤0.4	PASS
3DH1	Ant1	Hop	0.380	320	0.122	≤0.4	PASS
3DH3	Ant1	Hop	1.623	160	0.26	≤0.4	PASS
3DH5	Ant1	Hop	2.867	106.67	0.306	≤0.4	PASS





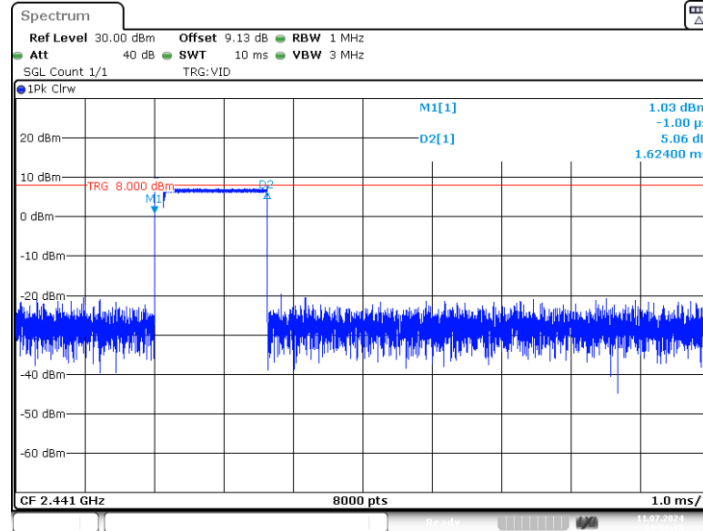
Date: 11.JUL.2024 19:49:09

2DH1_Ant1_Hop



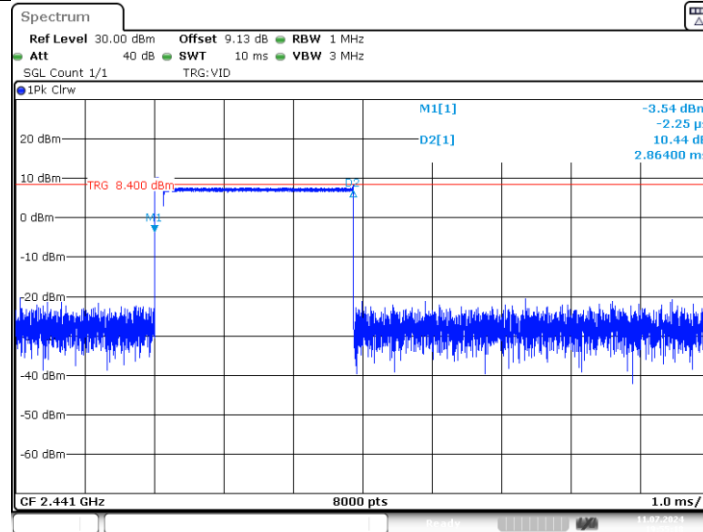
Date: 11.JUL.2024 19:55:48

2DH3_Ant1_Hop



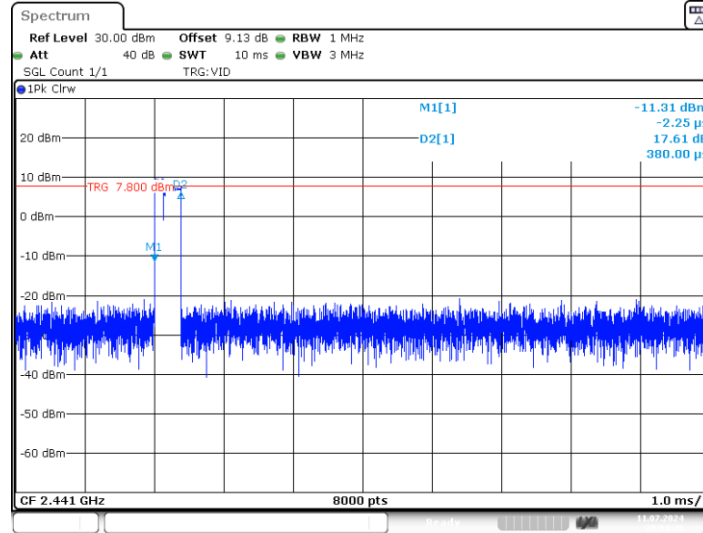
Date: 11.JUL.2024 19:56:16

2DH5_Ant1_Hop



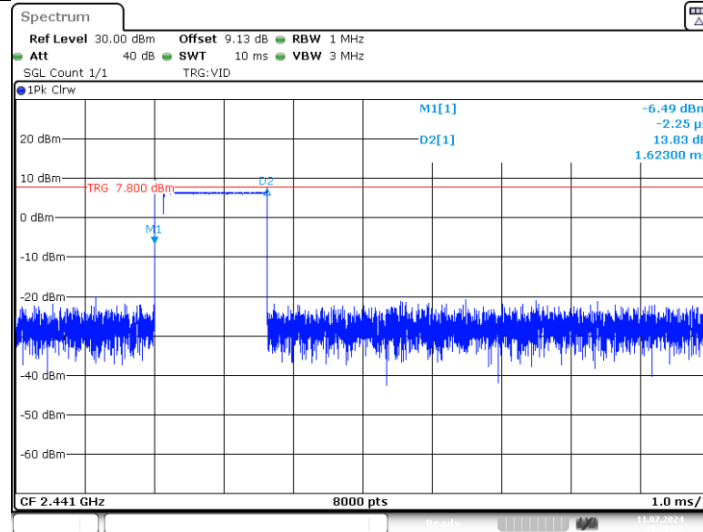
Date: 11.JUL.2024 19:55:18

3DH1_Ant1_Hop



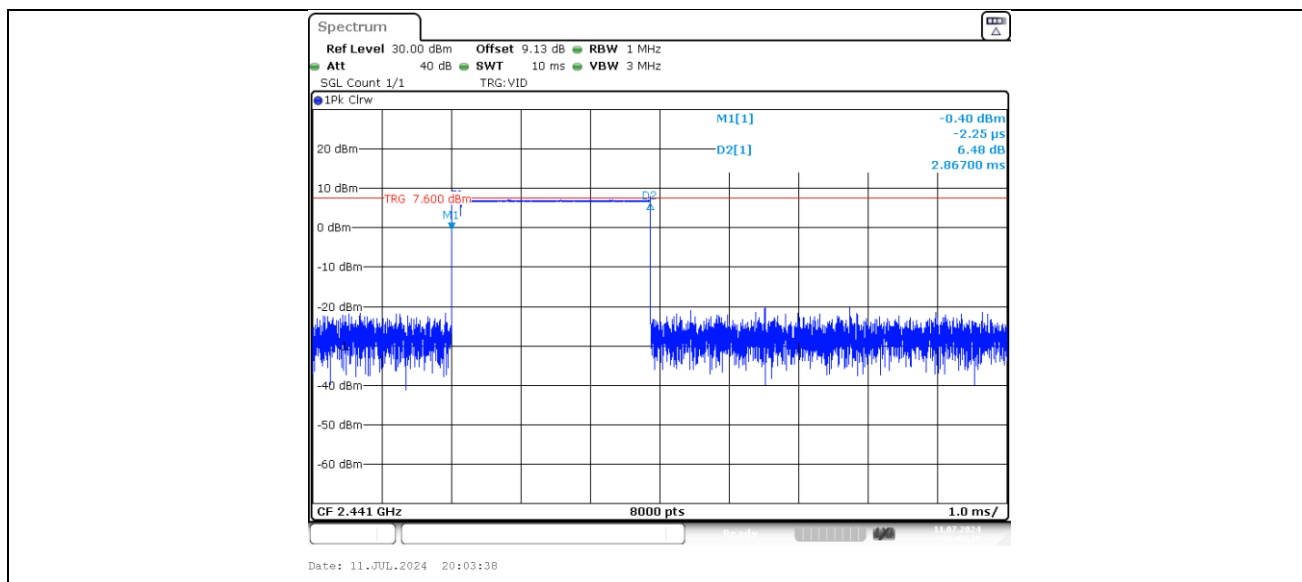
Date: 11.JUL.2024 20:04:48

3DH3_Ant1_Hop



Date: 11.JUL.2024 20:05:14

3DH5_Ant1_Hop



8. RADIATED EMISSIONS

8.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

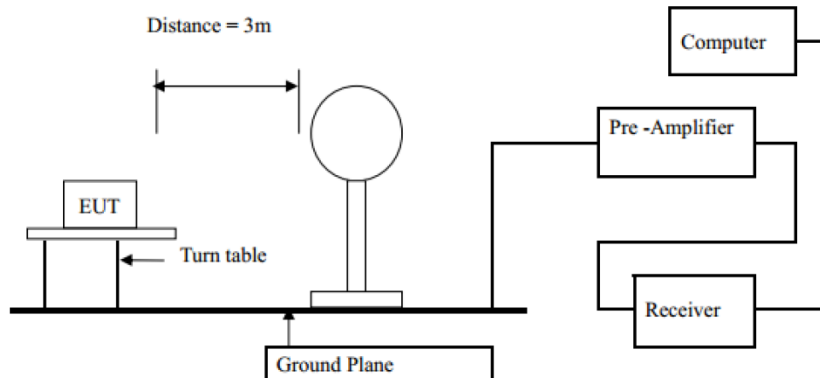
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 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	2690 - 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	(²)

15.209 Limit

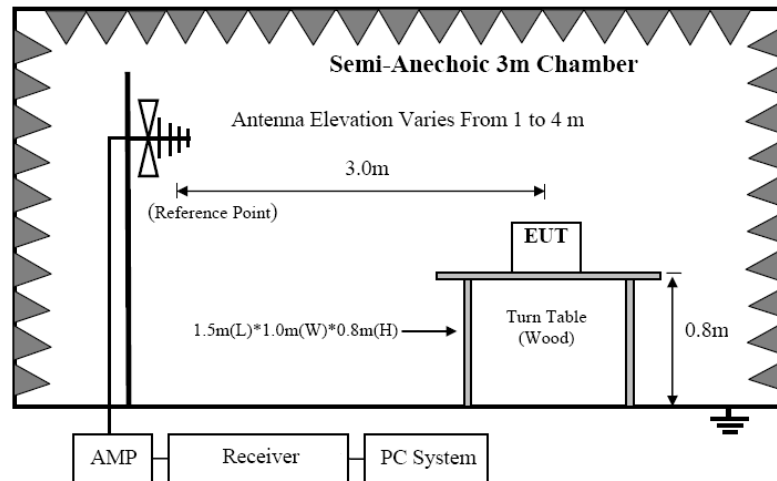
FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009-0.490	300	2400/F(KHz)	/
0.490-1.705	30	24000/F(KHz)	/
1.705-30	30	30	29.5
30 88	3	100	40.0
88 216	3	150	43.5
216 960	3	200	46.0
960 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

8.2. Block Diagram of Test setup

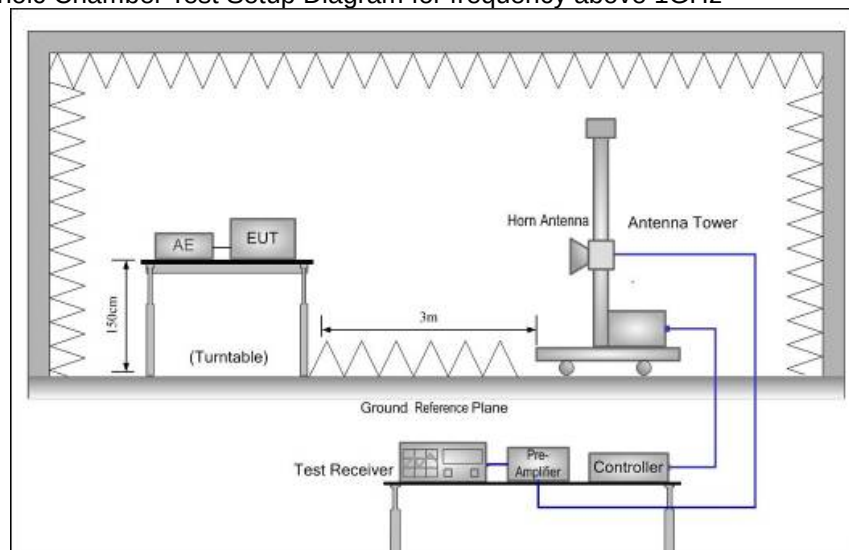
8.2.1 In 3m Anechoic Chamber Test Setup Diagram for below 30MHz



8.2.1 In 3m Anechoic Chamber Test Setup Diagram for below 1GHz



8.2.2 In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

8.3. Test Procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Setup EUT and simulator as shown in section 1.4 and 6.1
- (3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
 - (a) Change work frequency or channel of device if practicable.
 - (b) Change modulation type of device if practicable.
 - (c) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013on Radiated Emission test.
- (6) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure.

8.4. Test Result

We have scanned the 10th harmonic from 9KHz to the EUT's highest frequency.
Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.