



FCC TEST REPORT

FCC ID: 2BQHE-R80

On Behalf of

Guangdong Gilong Technology Co., Ltd.

Thermal Printer

Model No.: See model list

Prepared for : Guangdong Gilong Technology Co., Ltd.
Address : 4-5F, Building A11, Haidi Fashion Meidu Industrial Park, Haifeng
County, Shanwei, Guangdong, China.

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

Report Number : A2506025-C01-R01
Date of Receipt : June 10, 2025
Date of Test : June 10, 2025 - August 25, 2025
Date of Report : August 25, 2025
Version Number : V0
Test Result : Pass

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TEST REPORT DECLARATION

Applicant : Guangdong Gilong Technology Co., Ltd.
Address : 4-5F, Building A11, Haidi Fashion Meidu Industrial Park, Haifeng County, Shanwei, Guangdong, China.
Manufacturer : Guangdong Gilong Technology Co., Ltd.
Address : 4-5F, Building A11, Haidi Fashion Meidu Industrial Park, Haifeng County, Shanwei, Guangdong, China.
EUT Description : Thermal Printer
(A) Model No. : See model list
(B) Trademark : **N/A**

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: Yanniss Wen
Project Engineer

Yanniss Wen

Approved by (name + signature).....: Jack Xu
Project Manager

Jack Xu

Date of issue.....: August 25, 2025

Revision History

Revision	Issue Date	Revisions	Revised By
V0	August 25, 2025	Initial released Issue	Yannis Wen

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
Conducted Emission	FCC Part 15: 15.207	P
6dB Bandwidth	FCC PART 15:15.247(a)(2) RSS-247(5.2 a), ANSI C63.10 :2013	P
Output Power	FCC Part 15: 15.247(b)(3)	P
Radiated Spurious Emission	FCC Part 15: 15.209, FCC Part 15: 15.247(d)	P
Conducted Spurious & Band Edge Emission	FCC Part 15: 15.247(d)	P
Power Spectral Density	FCC PART 15:15.247(e)	P
Radiated Band Edge Emission	FCC Part 15: 15.247(d)	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.		

1. Pass: The EUT complies with the essential requirements in the standard.
2. 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 : Thermal Printer

Model No. : See model list

DIFF. : There is no difference except the name of the model. All tests are made with the JP-R80F model.

Power supply : AC 120V from adapter.

2.4G WIFI :

Operation frequency : 2412MHz-2462MHz for IEEE 802.11 b, g, n/HT20
2422MHz~2452MHz for IEEE802.11n/HT40

Channel No. : 802.11b/802.11g /802.11n(HT20): 11CH
802.11n(HT40): 7CH

Modulation type : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)
IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)
IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK)

Antenna Type : FPC antenna, Maximum Gain is 2.08dBi
(Antenna information is provided by applicant.)

Software version : V1.0

Hardware version : V1.0

Intend use environment : Residential, commercial and light industrial environment

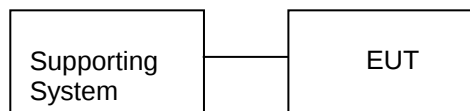
2.2. Accessories of Device (EUT)

Accessories	:	AC ADAPTER
Manufacturer	:	UPRITE ELECTRONIC Co., Ltd
Model	:	ZL-AD048WD2402000
INPUT	:	100-240V~50/60Hz 1.5A
OUTPUT	:	24.0V $\overline{\text{---}}$ 2.0A 48.0W
Accessories		AC ADAPTER
Manufacturer		UPRITE ELECTRONIC Co., Ltd
Model		ZL-D030WA2401250
INPUT		100-240V~50/60Hz 1.0A
OUTPUT		24.0V $\overline{\text{---}}$ 1250mA
Accessories		AC ADAPTER
Manufacturer		UPRITE ELECTRONIC Co., Ltd
Model		ZL-D048WE2402000
INPUT		100-240V~50/60Hz 1.0A
OUTPUT		24.0V $\overline{\text{---}}$ 2.0A 48.0W
Accessories		AC ADAPTER
Manufacturer		UPRITE ELECTRONIC Co., Ltd
Model		ZL-D060WA2402500
INPUT		100-240V~50/60Hz 1.5A
OUTPUT		24.0V $\overline{\text{---}}$ 2.5A 60.0W

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
1	Notebook PC	Lenovo	ThinkPad L14	/	/

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

Duty cycle :100%Keeping TX			
Mode	data rate (Mbps)(see Note)	Channel	Frequency (MHz)
IEEE 802.11b	1	Low :CH1	2412
	1	Middle: CH6	2437
	1	High: CH11	2462
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
IEEE 802.11 n/HT20	MCS0	Low :CH1	2412
	MCS0	Middle: CH6	2437
	MCS0	High: CH11	2462
IEEE 802.11 n/HT40	MCS0	Low :CH3	2422
	MCS0	Middle: CH6	2437
	MCS0	High: CH9	2452
Note: 1.According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test. 2. Using QRCT testing software to control EUT operation in continuous TX mode, the test software version is V4.0, and select test channel, wireless mode, The power level for the test is set to 15.			

Channel list:					
For IEEE 802.11b, g, n/HT20					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH1	2412	CH5	2432	CH9	2452
CH2	2417	CH6	2437	CH10	2457
CH3	2422	CH7	2442	CH11	2462
CH4	2427	CH8	2447		
For IEEE 802.11 n/HT40					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH3	2422	CH7	2442		
CH4	2427	CH8	2447		
CH5	2432	CH9	2452		
CH6	2437				

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	24℃
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	98kPa

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,
Shenzhen, Guangdong, China

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	1.63dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.74dB(Polarize: V)
	3.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	3.77dB(Polarize: V)
	3.80dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31 dB(Polarize: V)
	4.30 dB(Polarize: H)
Uncertainty for radio frequency	5.06×10^{-8} GHz
Uncertainty for conducted RF Power	0.40dB
Uncertainty for temperature	0.2°C
Uncertainty for humidity	1%
Uncertainty for DC and low frequency voltages	0.06%

2.9. Test Equipment List

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
9*6*6 anechoic chamber	CHENYU	9*6*6	/	N/A	2025.03.09	4Year
4*4*3 Shielded room	CHENYU	4*4*3	/	N/A	2025.03.09	4Year
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2024.08.08	1Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2024.08.08	1Year
Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-10 2082-Wa	2024.08.08	1Year
Receiver	R&S	ESCI	4.42 SP1	101165	2024.08.08	1Year
Bilog Antenna	Schwarzbeck	VULB 9168	/	VULB 9168#627	2023.08.28	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2023.08.19	2Year
Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00128	2023.08.19	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2024.08.08	1Year
RF Cable	Resenberger	Cable 2	/	RE2	2024.08.08	1Year
RF Cable	Resenberger	Cable 3	/	CE1	2024.08.08	1Year
Pre-amplifier	HP	HP8347A	/	2834A00455	2024.08.08	1Year
Pre-amplifier	Agilent	8449B	/	3008A02664	2024.08.08	1Year
L.I.S.N.#1	Schwarzbeck	NSLK8126	/	8126-466	2024.08.08	1Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2024.08.08	1Year
Horn Antenna	SCHWARZBECK	BBHA 9170	/	00946	2023.08.19	2Year
Preamplifier	SKET	LNPA_1840 -50	/	SK2018101801	2024.08.08	1 Year
Power Meter	Agilent	E9300A	/	MY41496628	2024.08.08	1 Year
Power Sensor	DARE	RPR3006W	/	15100041SNO91	2024.08.08	1 Year
Temp. & Humid. Chamber	Teelong	TL-HW408S	/	TL-20191205-01	2025.07.14	1 Year
Electronic Thermo-Hygrometer	S.H.Qixiang	HTC-1	/	N/A	2024.08.11	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2024.08.08	1 Year
Adjustable attenuator	MWRFTest	N/A	/	N/A	N/A	N/A
10dB Attenuator	Mini-Circuits	DC-6G	/	N/A	N/A	N/A

Equipment	Manufacture	Model No.	Firmware version	Serial No.	Last cal.	Cal Interval
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	2.3	102137	2025.08.04	1 Year
Spectrum analyzer	Agilent	N9020A	A.14.16	MY499100060	2025.08.04	1 Year
Test Receiver	ROHDE&SCHWARZ	ESR	2.28 SP1	1316.3003K03-10 2082-Wa	2025.08.04	1 Year
Test Receiver	ROHDE&SCHWARZ	ESCI	4.42 SP1	101165	2025.08.04	1 Year
Bilog Antenna	SCHWARZBECK	VULB 9168	/	VULB 9168#627	2025.08.11	2Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	/	2106	2025.08.11	2Year
Loop Antenna	SCHWARZBECK	FMZB 1519B	/	00128	2025.08.11	2Year
RF Cable	Resenberger	Cable 1	/	RE1	2025.08.04	1 Year
RF Cable	Resenberger	Cable 2	/	RE2	2025.08.04	1 Year
RF Cable	Resenberger	Cable 3	/	CE1	2025.08.04	1 Year
Amplifier	HP	HP8347A	/	2834A00455	2025.08.04	1 Year
Amplifier	Agilent	8449B	/	3008A02664	2025.08.04	1 Year
L.I.S.N.#1	SCHWARZBECK	NSLK8126	/	8126-466	2025.08.04	1 Year
L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	101043	2025.08.04	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9170	/	00946	2025.08.11	2Year
Preamplifier	SKET	LNPA_1840 -50	/	SK2018101801	2025.08.04	1 Year
Power Meter	Agilent	E4419B	/	GB40202122	2025.08.04	1 Year
Power Sensor	Agilent	E9300A	/	MY41496628	2025.08.04	1 Year
Power Sensor	Agilent	E9304A	/	MY41496815	2025.08.04	1 Year
Electronic Thermo-Hygrometer	S.H.Qixiang	HTC-1	/	N/A	2025.08.04	1 Year
Switching Mode Power Supply	JUNKE	JK12010S	/	20140927-6	2025.08.04	1 Year

Software Information			
Test Item	Software Name	Manufacturer	Version
RE	EZ-EMC	Farad	Alpha-3A1
CE	EZ-EMC	Farad	Alpha-3A1
RF-CE	MTS 8310	MWRFTtest	V2.0.0.0

3. SPURIOUS EMISSION

3.1. Test Limits

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)	
Note 1: The peak limit is 20 dB higher than the average limit			
Note 2: Peak limit applies (AVG limit + 20 dB) as well as RSS-247 Section 5.5			

3.2. Test Procedure

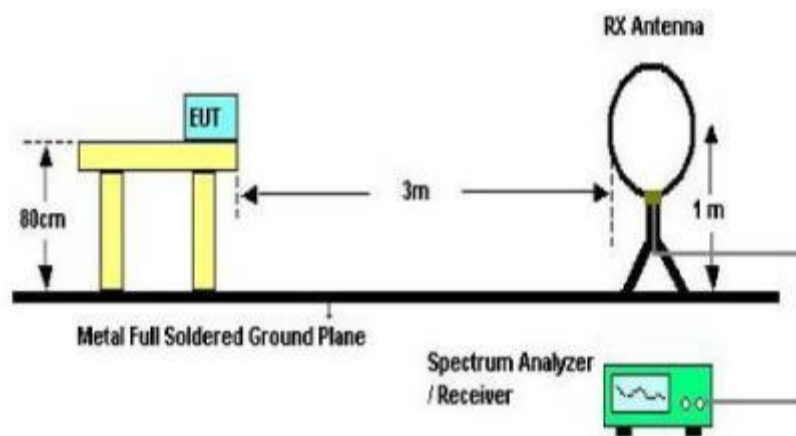
The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz. The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above 1GHz testing, the table was rotated 360 degrees to determine the position of the highest radiation. The Test antenna shall vary between 1m and 4m, both Horizontal and Vertical antenna are set of make measurement.

The initial step in collecting radiated emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Quasi Peak Detector mode premeasured

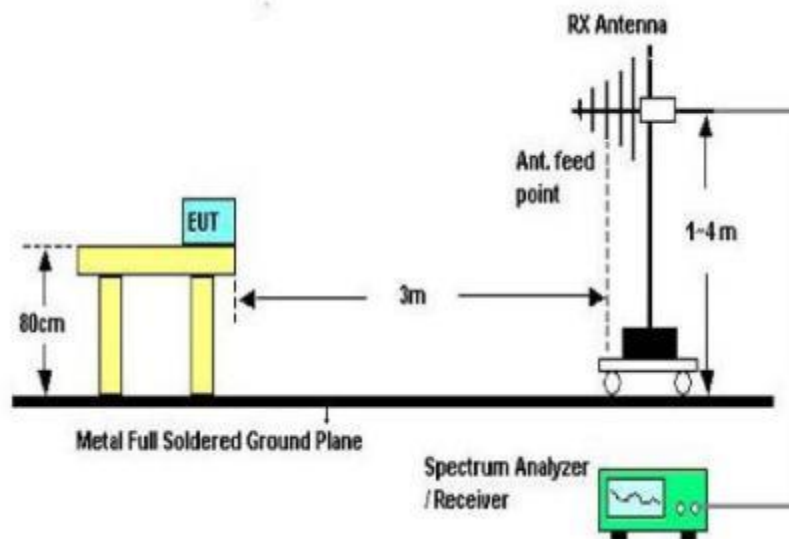
If Peak value comply with QP limit below 1GHz, the EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.

For the actual test configuration, please see the test setup photo.

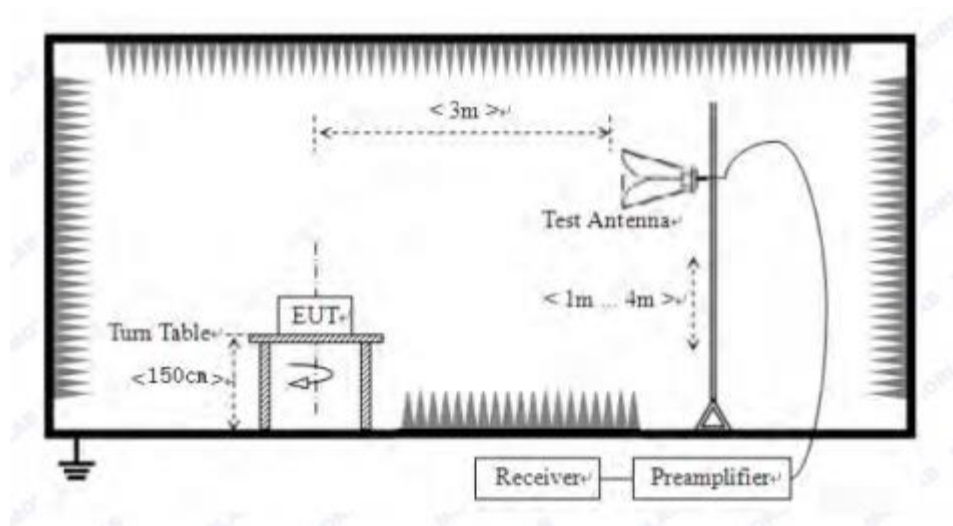
3.3. Test Setup



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

3.4. Test Results

Test Condition

Continual Transmitting in maximum power.

9KHz~150KHz	RBW200Hz	VBW1KHz
150KHz~30MHz	RBW9KHz	VBW 30KHz
30MHz~1GHz	RBW120KHz	VBW 300KHz
Above1GHz	RBW1MHz	VBW 3MHz

We have scanned the EUT from 9kHz up to the 10th harmonic of the fundamental.

Detailed information please see the following page.

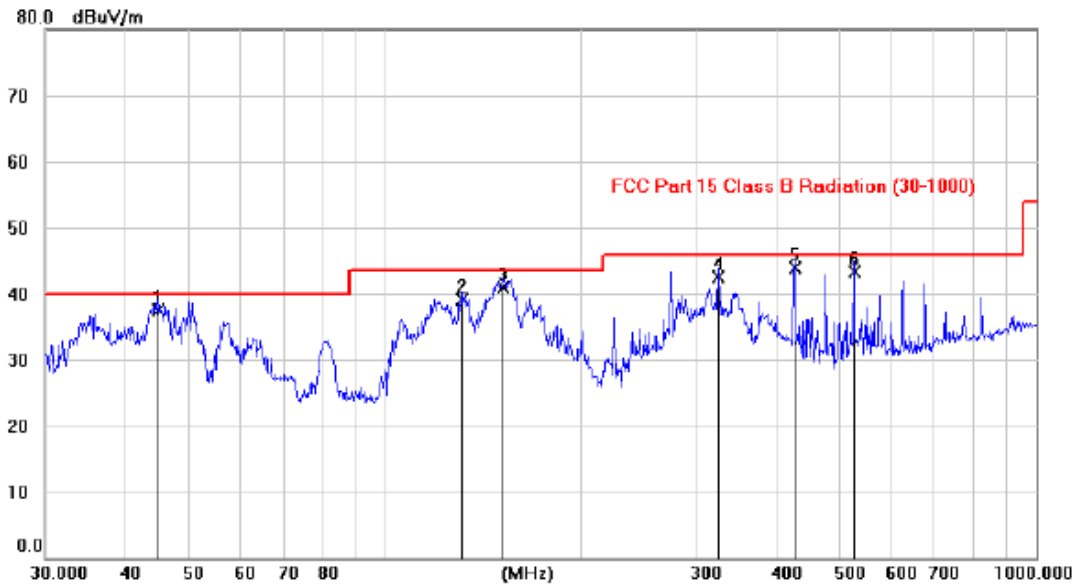
From 9KHz to 30MHz: Conclusion: PASS

Note: 1.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

2.Only show the test data of the worst Channel in this report.

From 30MHz to 1000MHz: Conclusion: PASS

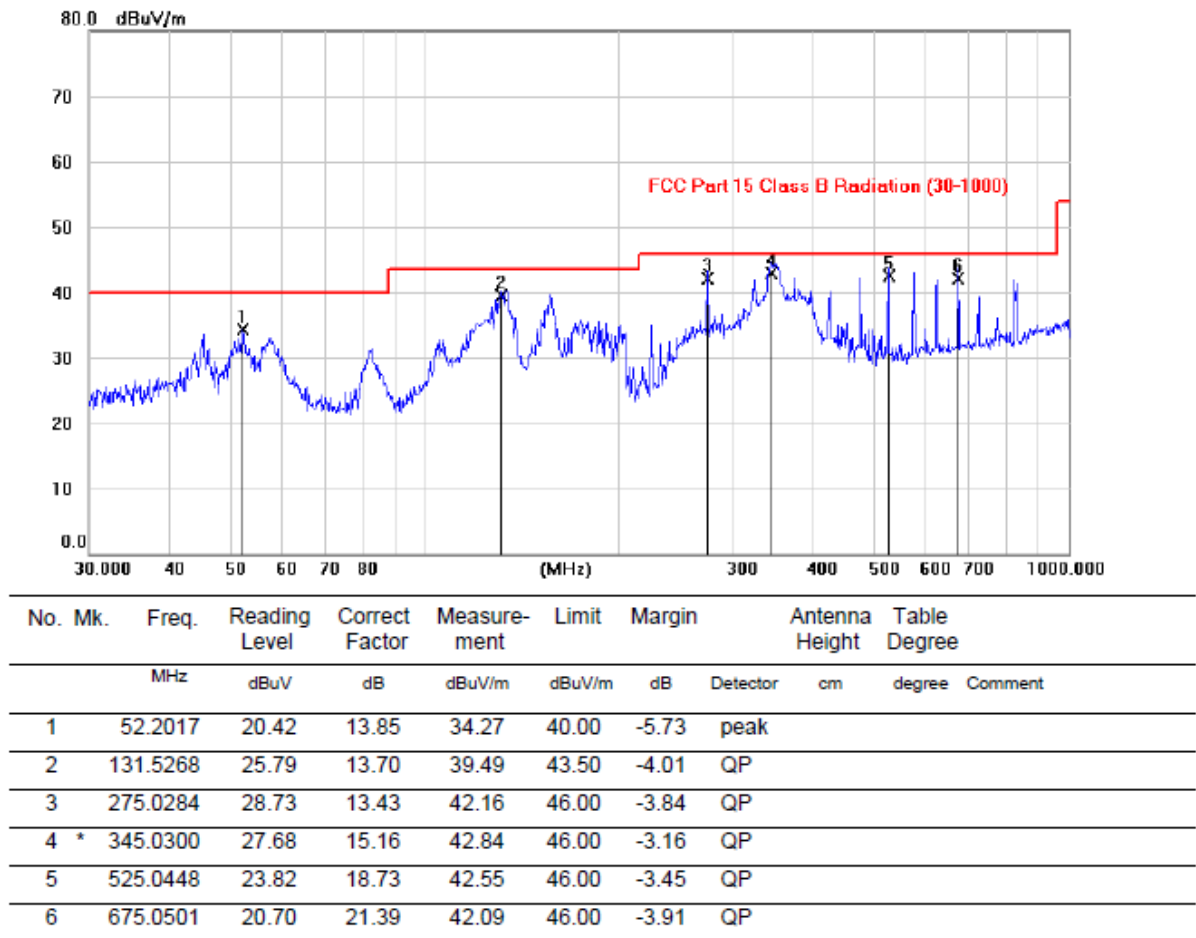
Vertical:



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		44.8218	23.41	14.12	37.53	40.00	-2.47	QP		
2		131.6500	25.33	13.71	39.04	43.50	-4.46	QP		
3		151.8632	25.79	15.06	40.85	43.50	-2.65	QP		
4		325.0253	27.82	14.73	42.55	46.00	-3.45	QP		
5	*	425.0280	26.90	16.91	43.81	46.00	-2.19	QP		
6		525.0448	24.55	18.73	43.28	46.00	-2.72	QP		

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Horizontal:

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Note: 1.All modes and channels have been tested and only the B mode 2412MHz mode with the worst data is listed.

2. All power supplies have been tested, and this report only reflects the worst power supply data (ZL-D060WA2402500)

From 1G-25GHz

Test Mode: IEEE 802.11b TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4824	45.04	V	33.95	10.18	34.26	54.91	74	-19.09	PK
4824	36.65	V	33.95	10.18	34.26	46.52	54	-7.48	AV
7236	/	/	/	/	/	/	/	/	/
9648	/	/	/	/	/	/	/	/	/
4824	43.64	H	33.95	10.18	34.26	53.51	74	-20.49	PK
4824	34.59	H	33.95	10.18	34.26	44.46	54	-9.54	AV
7236	/	/	/	/	/	/	/	/	/
9648	/	/	/	/	/	/	/	/	/
Test Mode: IEEE 802.11b TX Mid									
4874	43.22	V	33.93	10.2	34.29	53.06	74	-20.94	PK
4874	32.69	V	33.93	10.2	34.29	42.53	54	-11.47	AV
7311	/	/	/	/	/	/	/	/	/
9748	/	/	/	/	/	/	/	/	/
4874	46.32	H	33.93	10.2	34.29	56.16	74	-17.84	PK
4874	34.07	H	33.93	10.2	34.29	43.91	54	-10.09	AV
7311	/	/	/	/	/	/	/	/	/
9748	/	/	/	/	/	/	/	/	/
Test Mode: IEEE 802.11b TX High									
4924	46.07	V	33.98	10.22	34.25	56.02	74	-17.98	PK
4924	34.44	V	33.98	10.22	34.25	44.39	54	-9.61	AV
7386	/	/	/	/	/	/	/	/	/
9848	/	/	/	/	/	/	/	/	/
4924	47.88	H	33.98	10.22	34.25	57.83	74	-16.17	PK
4924	33.49	H	33.98	10.22	34.25	43.44	54	-10.56	AV
7386	/	/	/	/	/	/	/	/	/
9848	/	/	/	/	/	/	/	/	/

Note:

1, Result = Read level + Antenna factor + cable loss-Amp factor

2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

Note:

1. Result = Read level + Antenna factor + cable loss-Amp factor

2. All the other emissions not reported were too low to read and deemed to comply with FCC limit.

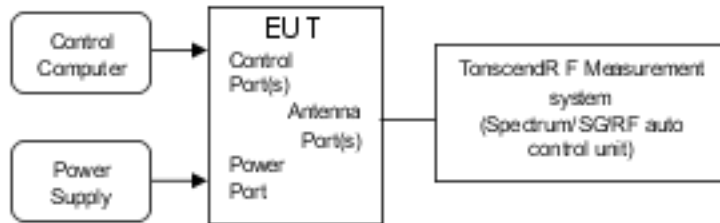
Note:

$$1. \text{ Result} = \text{Read level} + \text{Antenna factor} + \text{cable loss-Amp factor}$$

2. All the other emissions not reported were too low to read and deemed to comply with FCC limit.

4. RF CONDUCTED SPURIOUS EMISSIONS

4.1. Block diagram of test setup



4.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, 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 30 dB instead of 20dB.

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)).

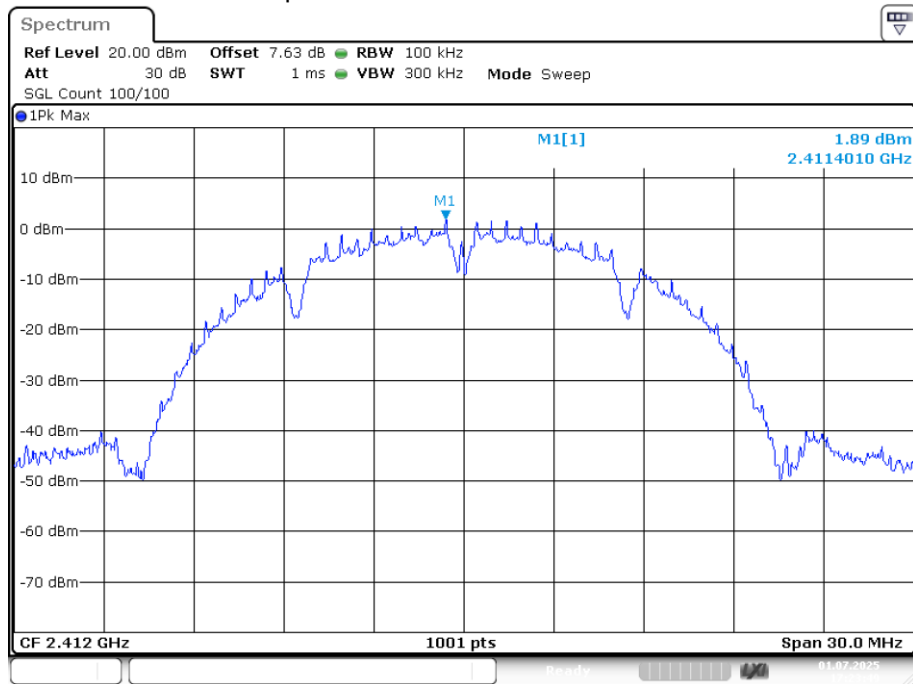
4.3. Test procedure

The test receiver set RBW = 100kHz, VBW ≥ 3*RBW = 300kHz, sweep time set auto

4.4. Test result

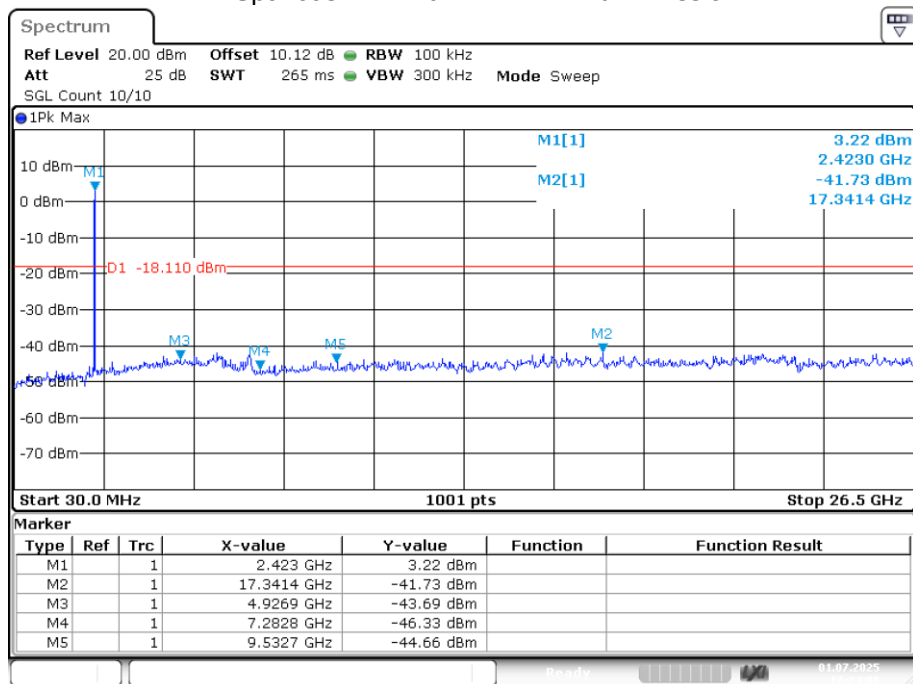
PASS

Tx. Spurious NVNT b 2412MHz Ant1 Ref



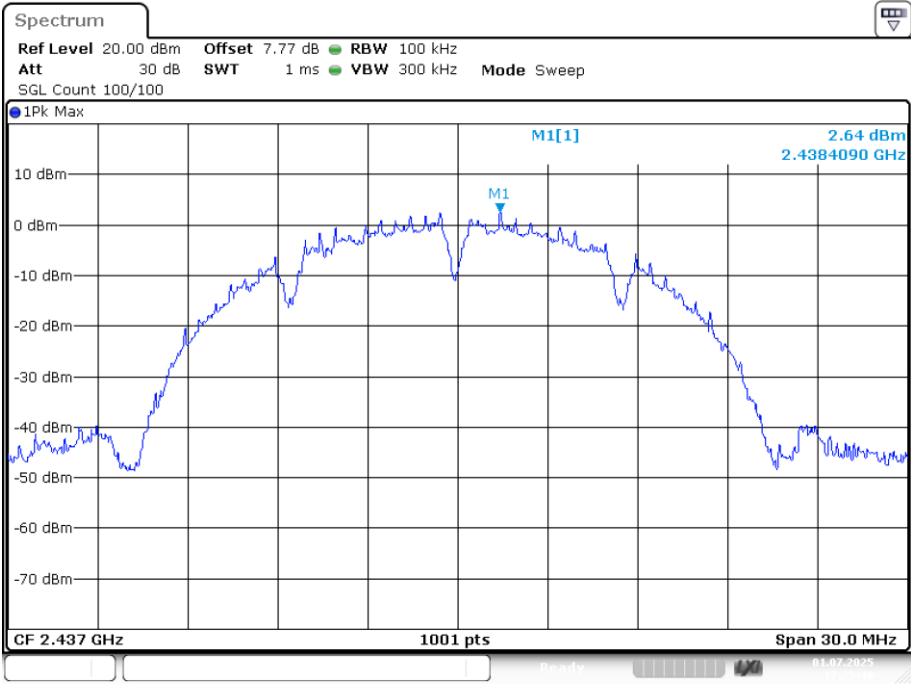
Date: 1.JUL.2025 17:23:49

Tx. Spurious NVNT b 2412MHz Ant1 Emission



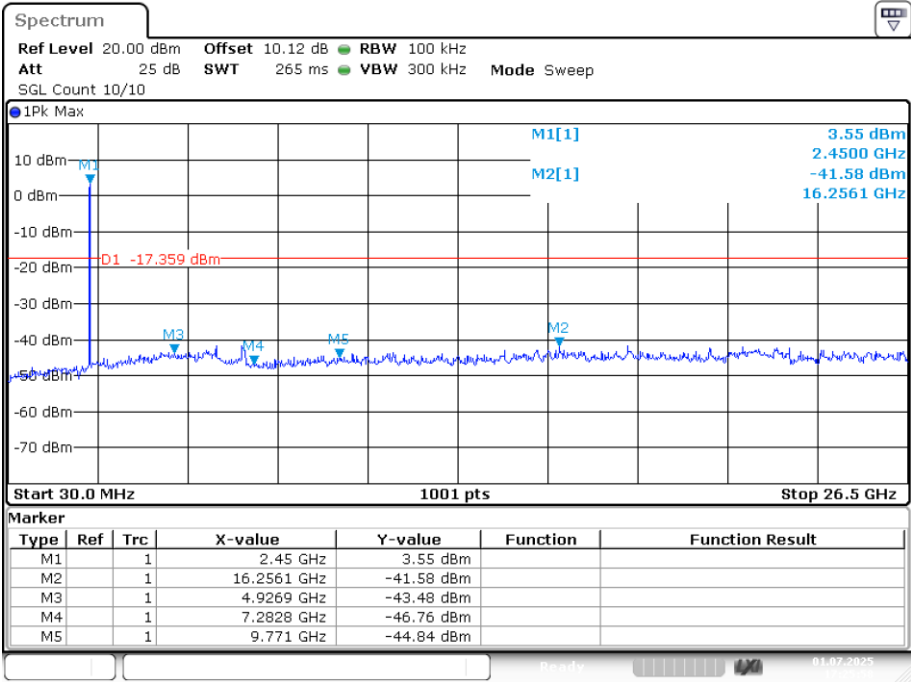
Date: 1.JUL.2025 17:24:07

Tx. Spurious NVNT b 2437MHz Ant1 Ref



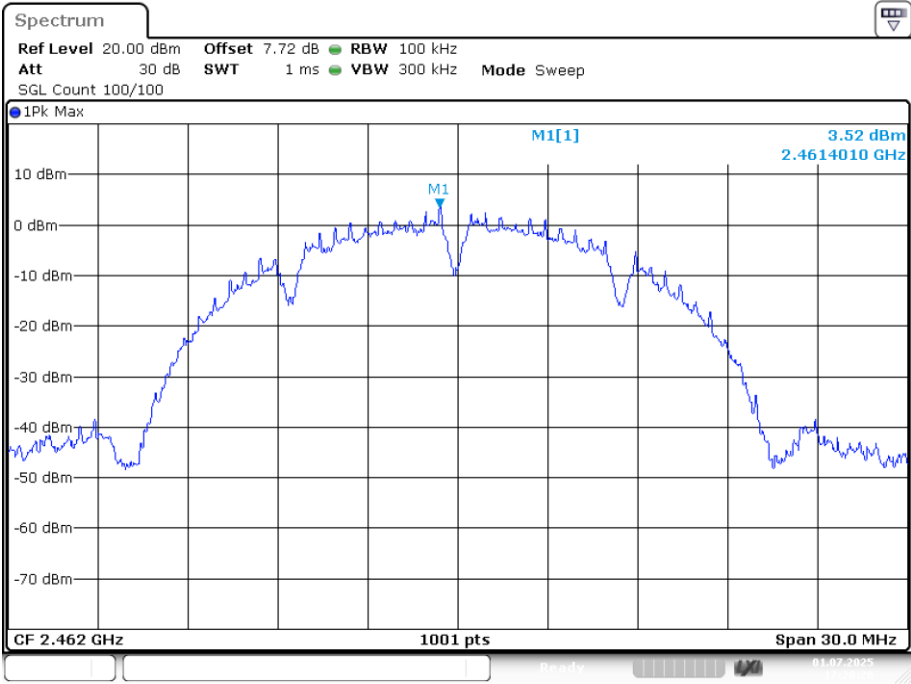
Date: 1.JUL.2025 17:25:40

Tx. Spurious NVNT b 2437MHz Ant1 Emission



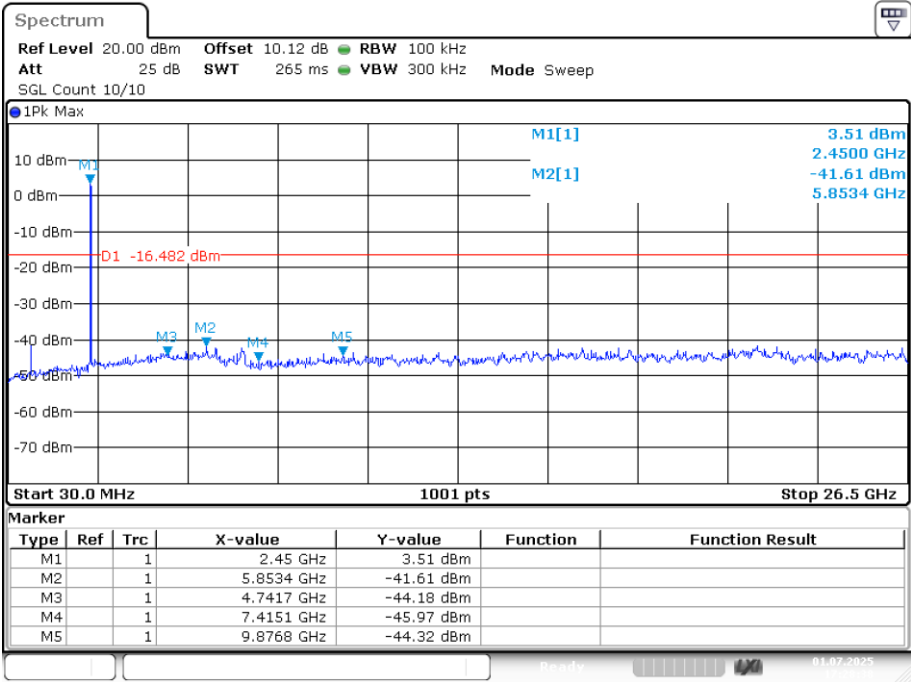
Date: 1.JUL.2025 17:25:58

Tx. Spurious NVNT b 2462MHz Ant1 Ref



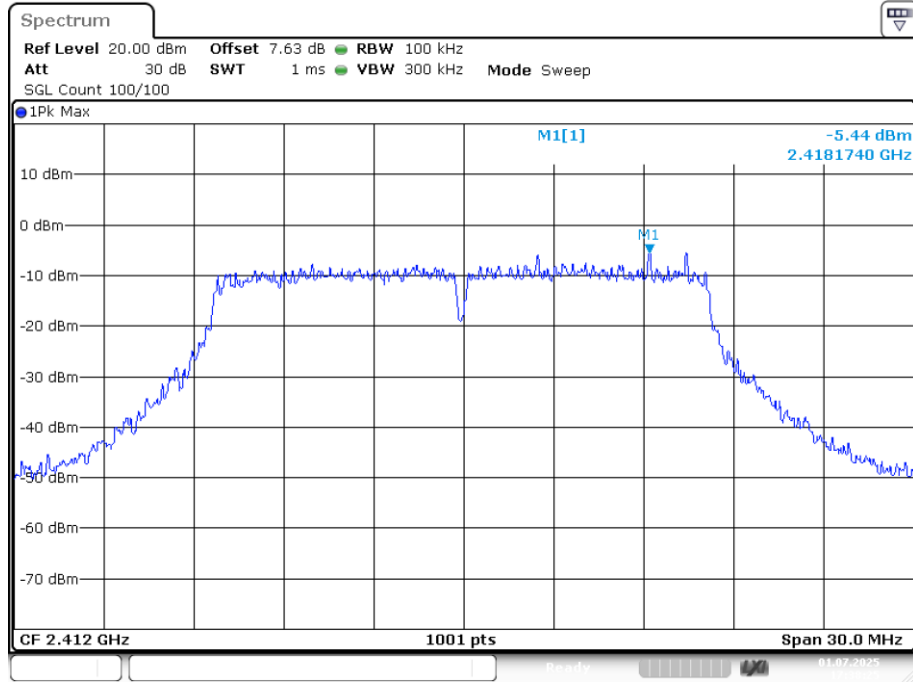
Date: 1.JUL.2025 17:28:20

Tx. Spurious NVNT b 2462MHz Ant1 Emission



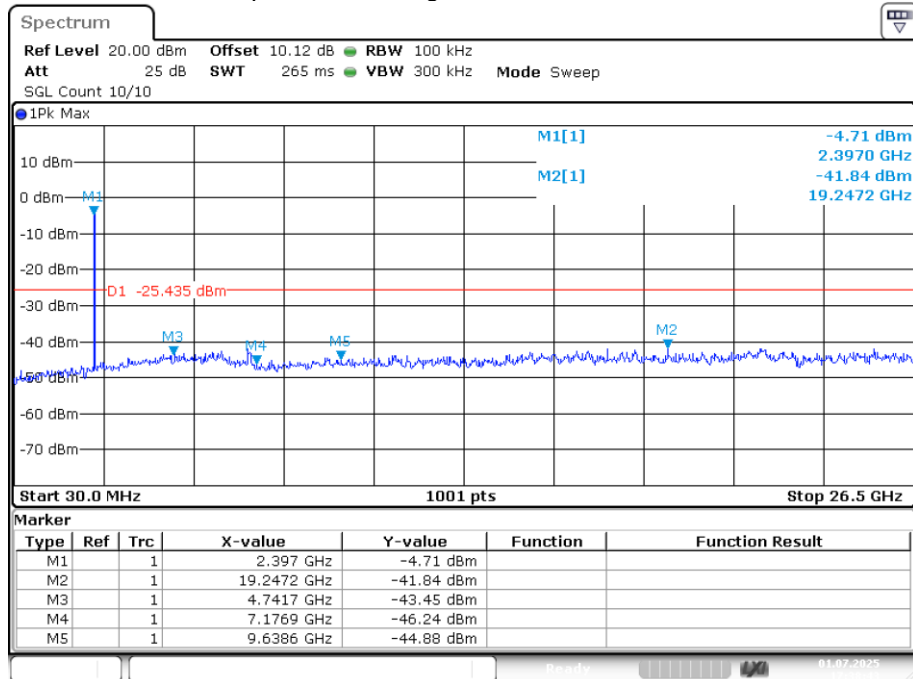
Date: 1.JUL.2025 17:28:38

Tx. Spurious NVNT g 2412MHz Ant1 Ref



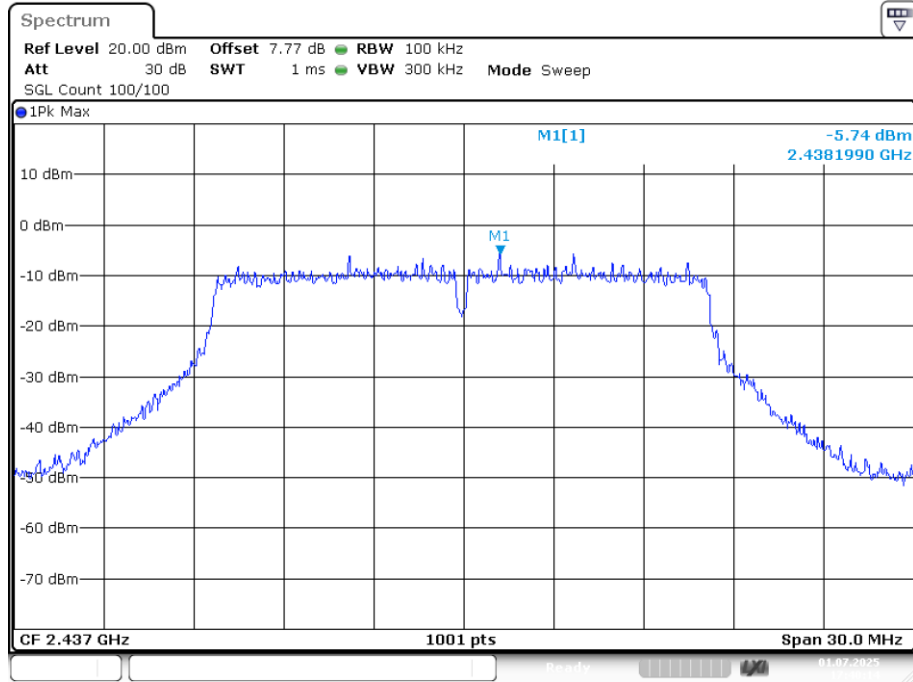
Date: 1.JUL.2025 17:38:25

Tx. Spurious NVNT g 2412MHz Ant1 Emission



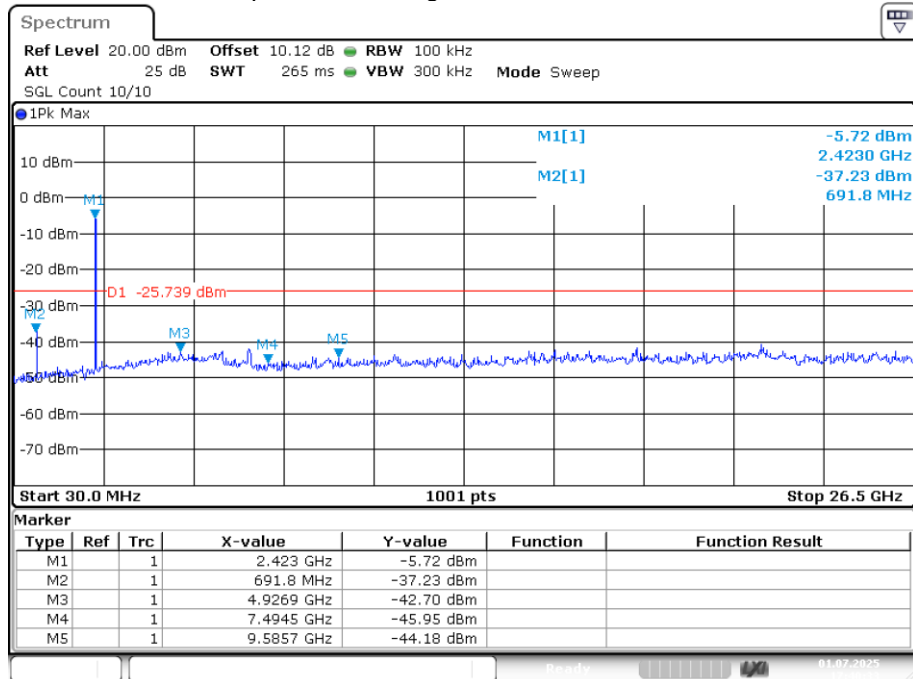
Date: 1.JUL.2025 17:38:43

Tx. Spurious NVNT g 2437MHz Ant1 Ref



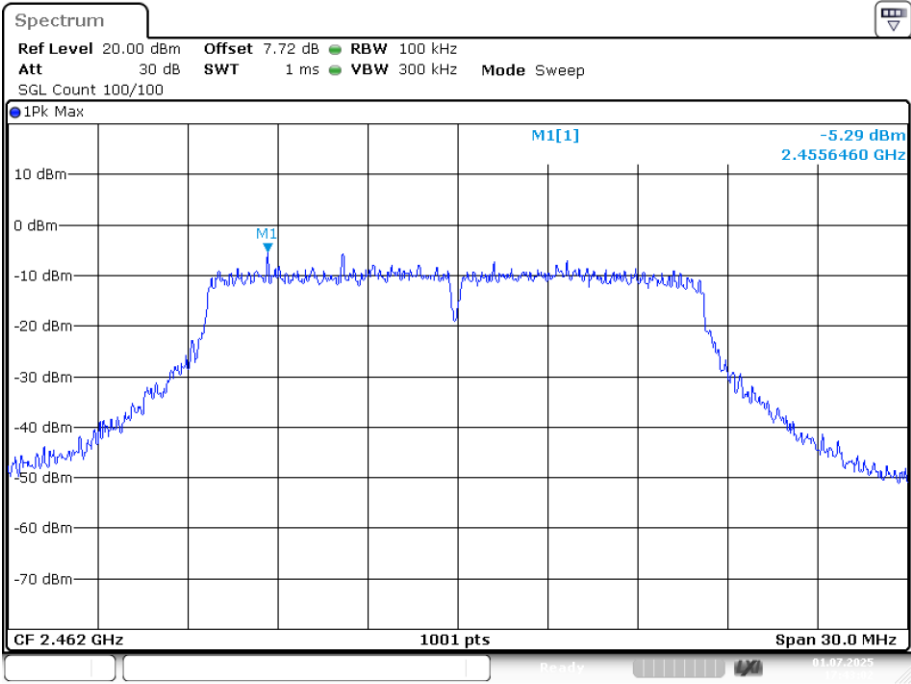
Date: 1.JUL.2025 17:40:15

Tx. Spurious NVNT g 2437MHz Ant1 Emission



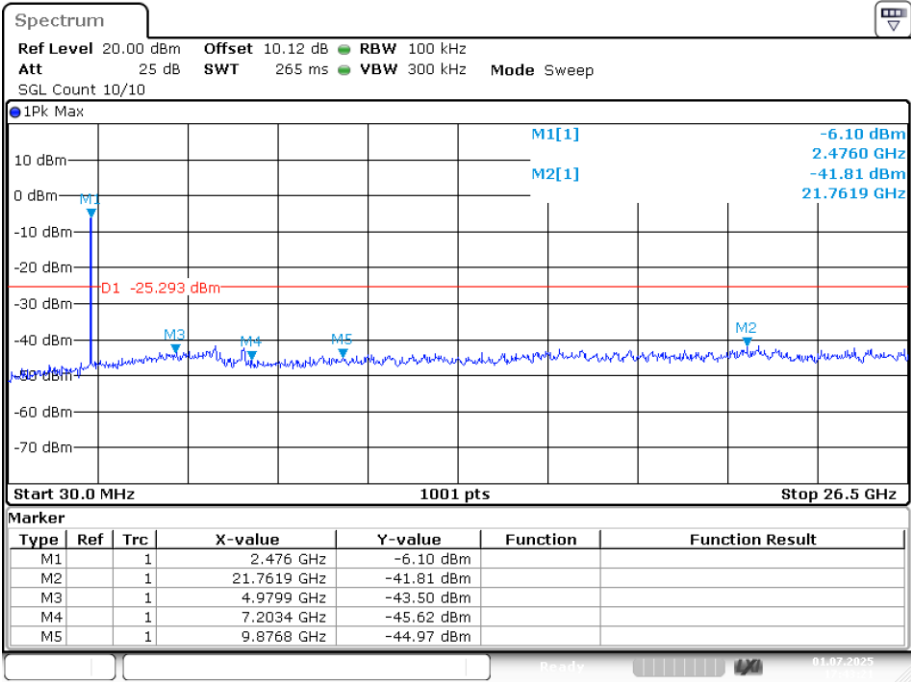
Date: 1.JUL.2025 17:40:33

Tx. Spurious NVNT g 2462MHz Ant1 Ref



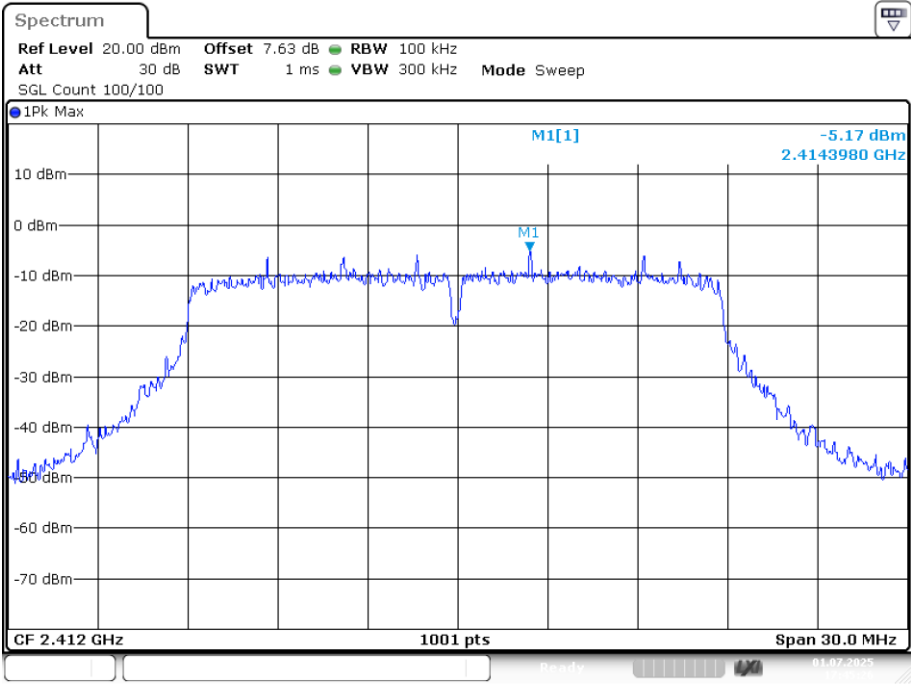
Date: 1.JUL.2025 17:43:02

Tx. Spurious NVNT g 2462MHz Ant1 Emission



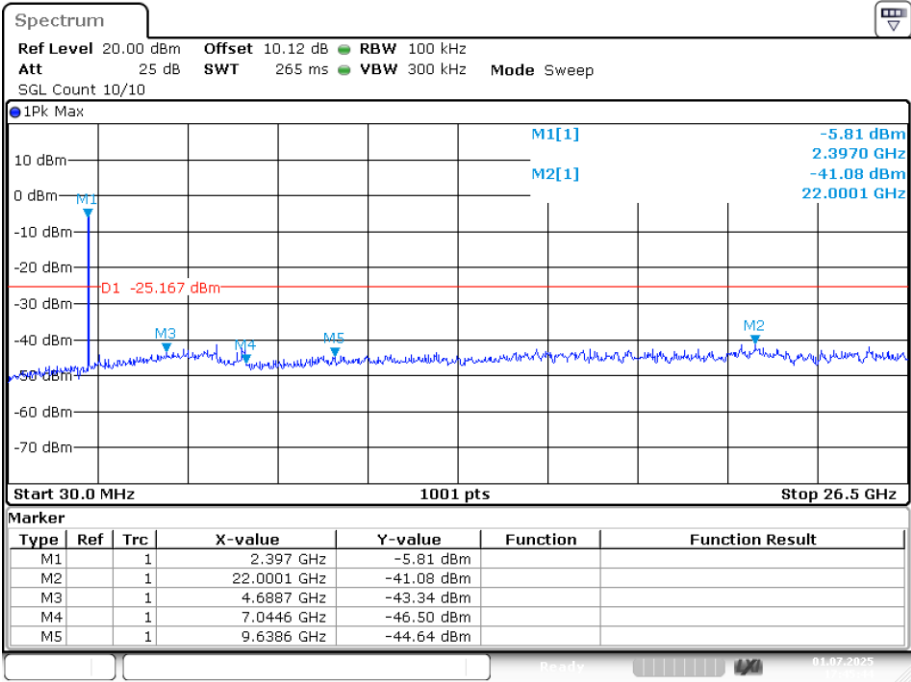
Date: 1.JUL.2025 17:43:20

Tx. Spurious NVNT n20 2412MHz Ant1 Ref



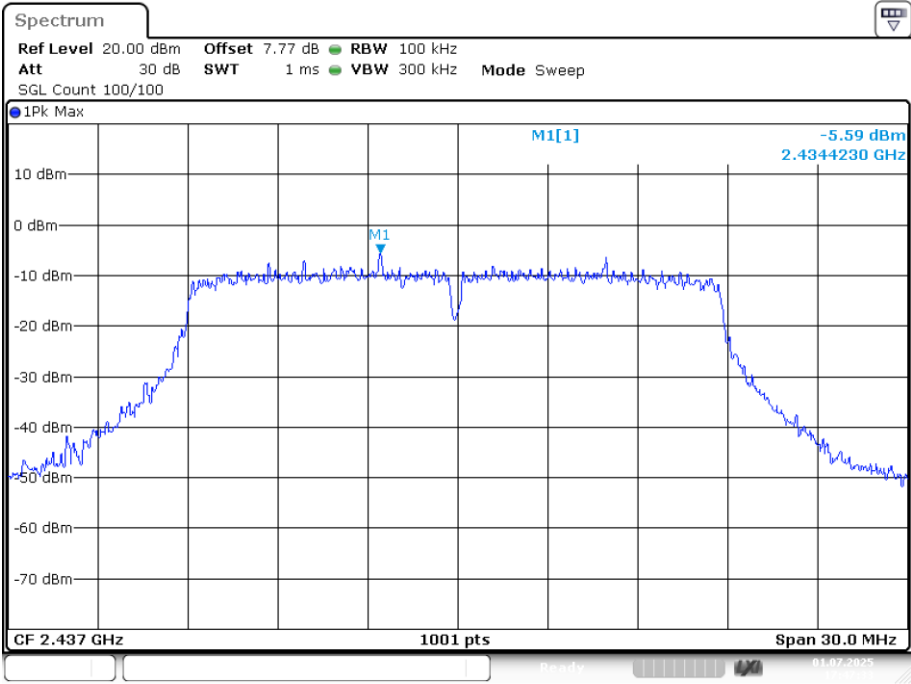
Date: 1.JUL.2025 17:45:25

Tx. Spurious NVNT n20 2412MHz Ant1 Emission



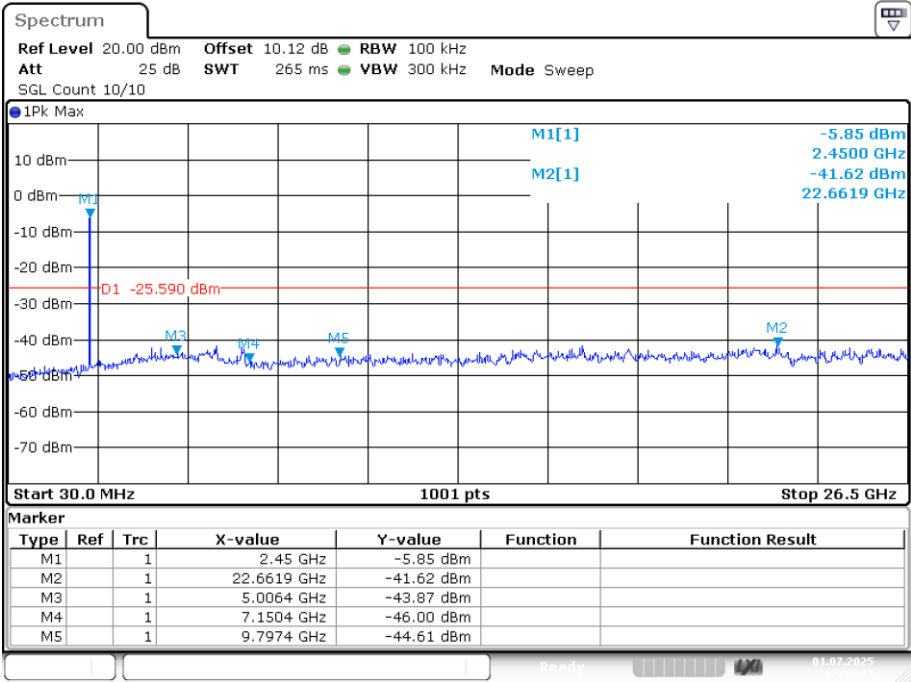
Date: 1.JUL.2025 17:45:43

Tx. Spurious NVNT n20 2437MHz Ant1 Ref



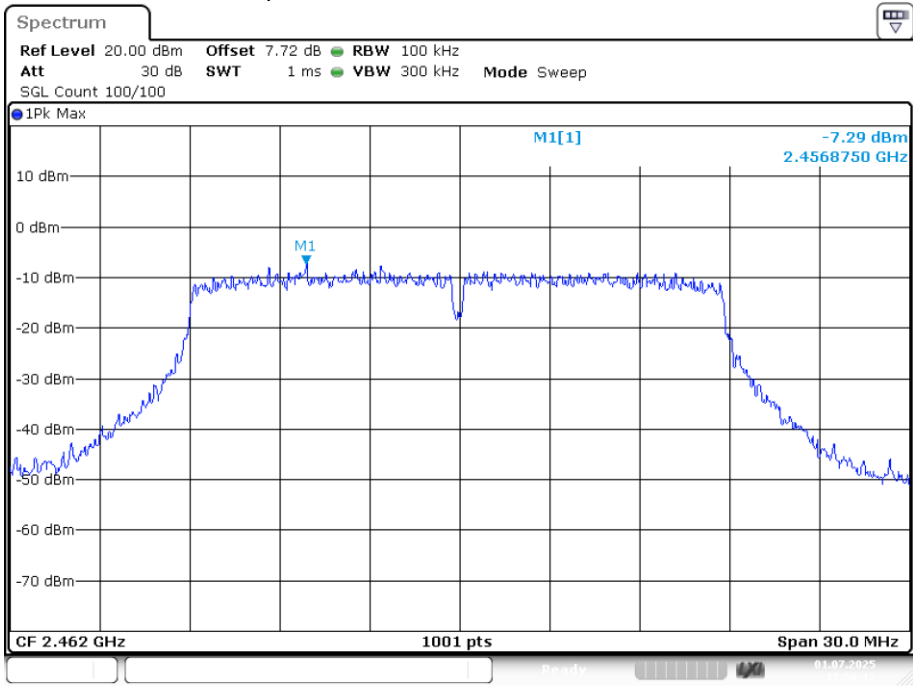
Date: 1.JUL.2025 17:47:34

Tx. Spurious NVNT n20 2437MHz Ant1 Emission



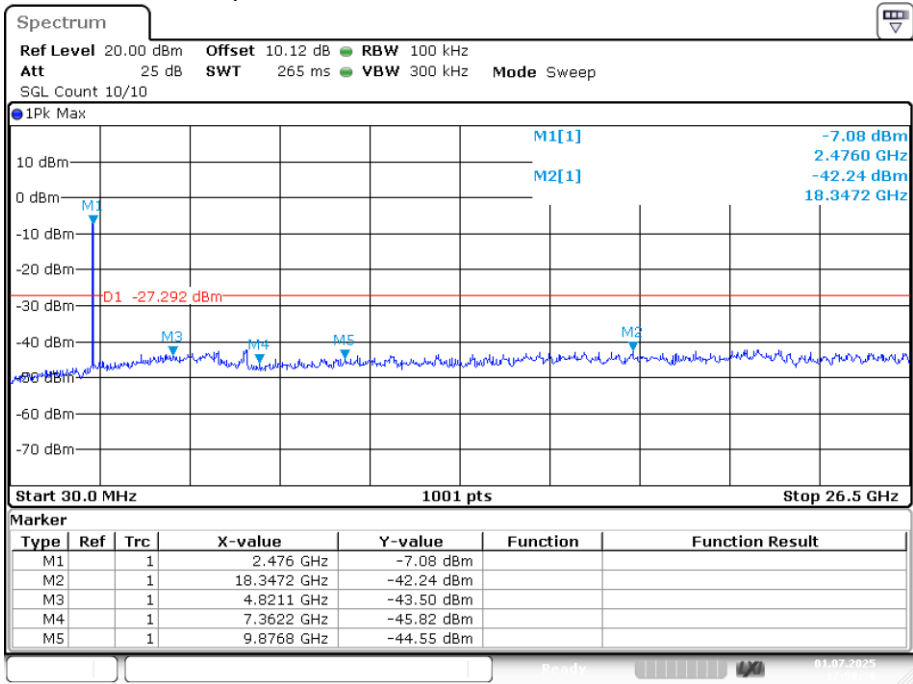
Date: 1.JUL.2025 17:47:51

Tx. Spurious NVNT n20 2462MHz Ant1 Ref



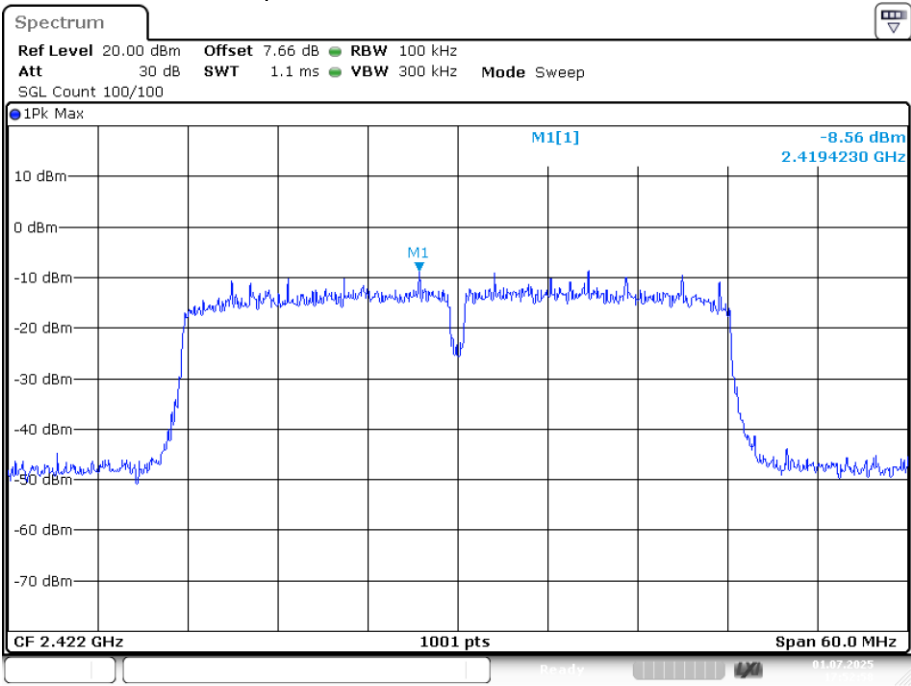
Date: 1.JUL.2025 17:50:12

Tx. Spurious NVNT n20 2462MHz Ant1 Emission



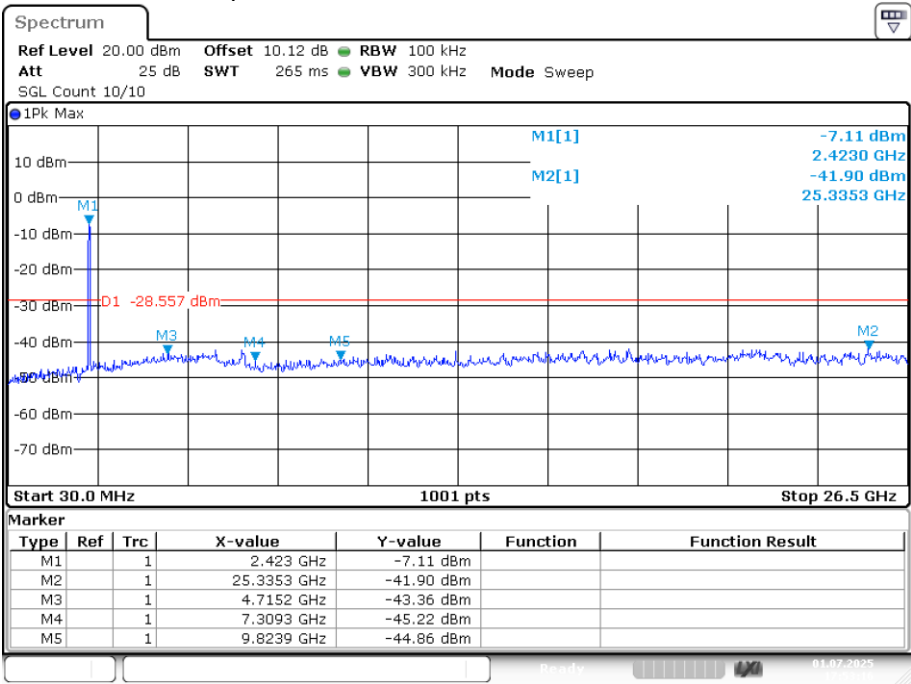
Date: 1.JUL.2025 17:50:30

Tx. Spurious NVNT n40 2422MHz Ant1 Ref



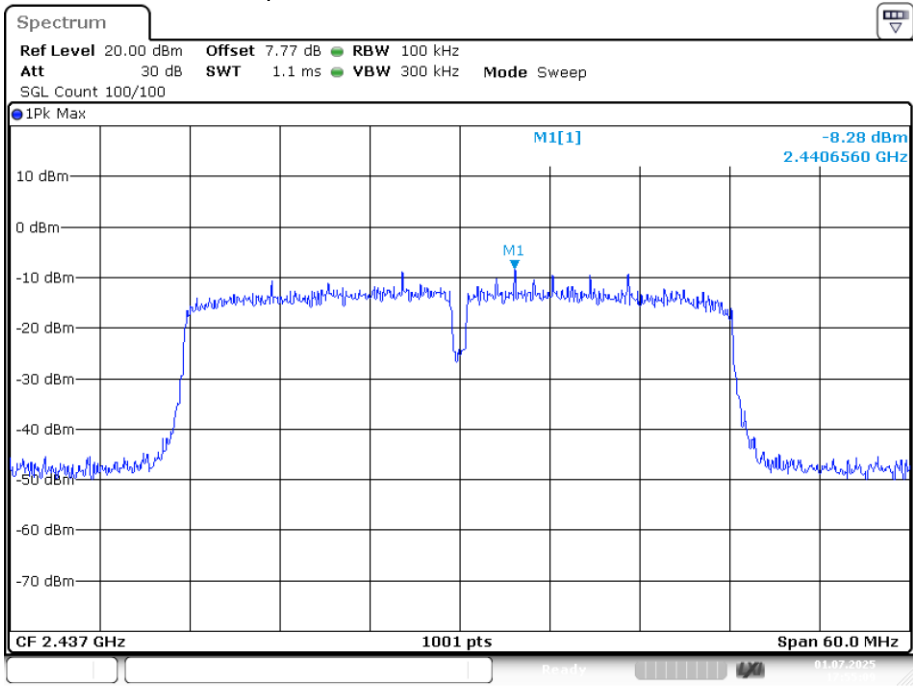
Date: 1.JUL.2025 17:52:58

Tx. Spurious NVNT n40 2422MHz Ant1 Emission



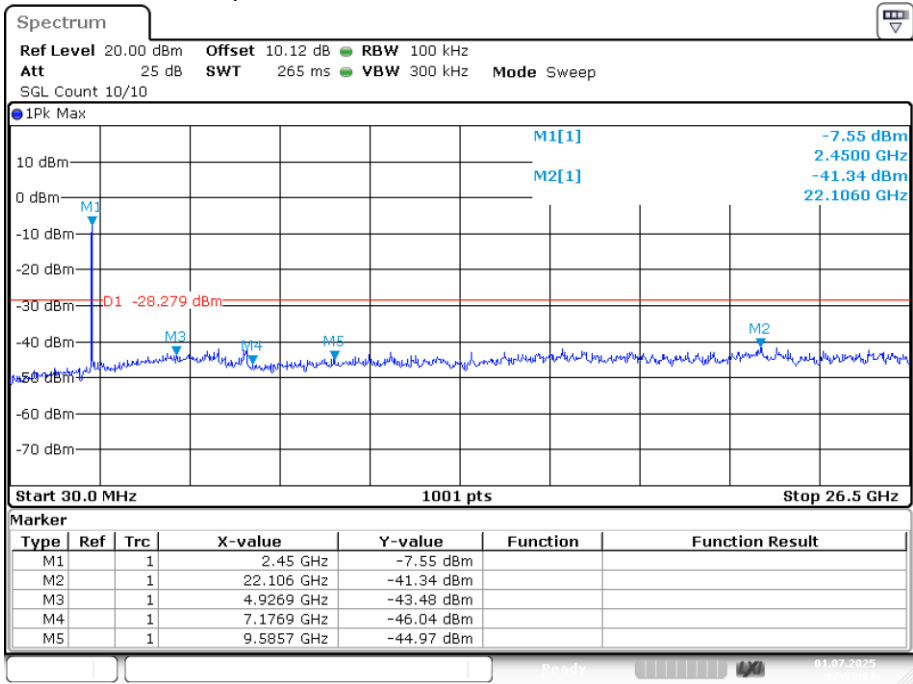
Date: 1.JUL.2025 17:53:16

Tx. Spurious NVNT n40 2437MHz Ant1 Ref



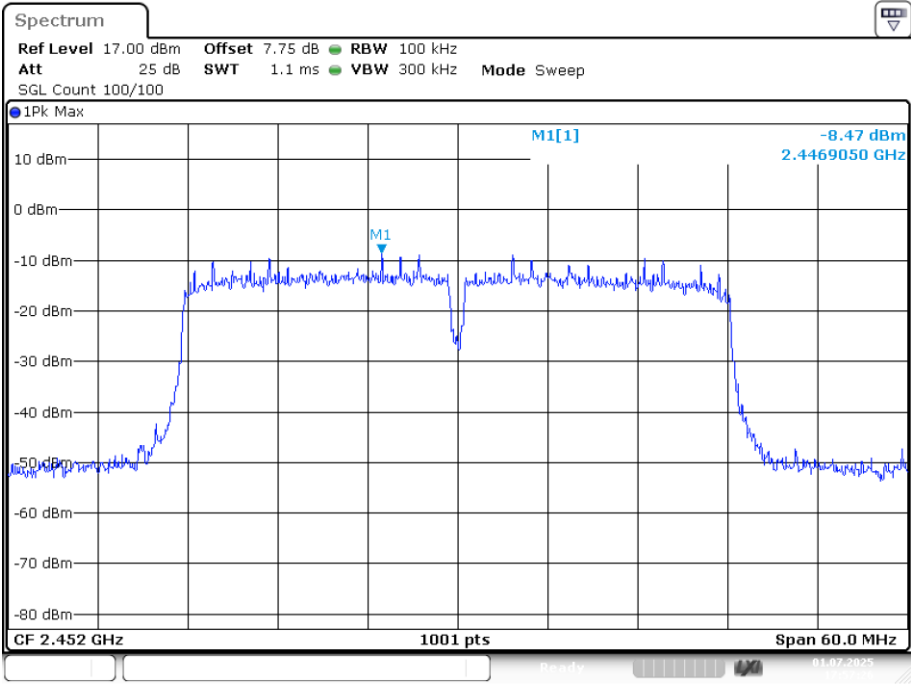
Date: 1.JUL.2025 17:55:08

Tx. Spurious NVNT n40 2437MHz Ant1 Emission



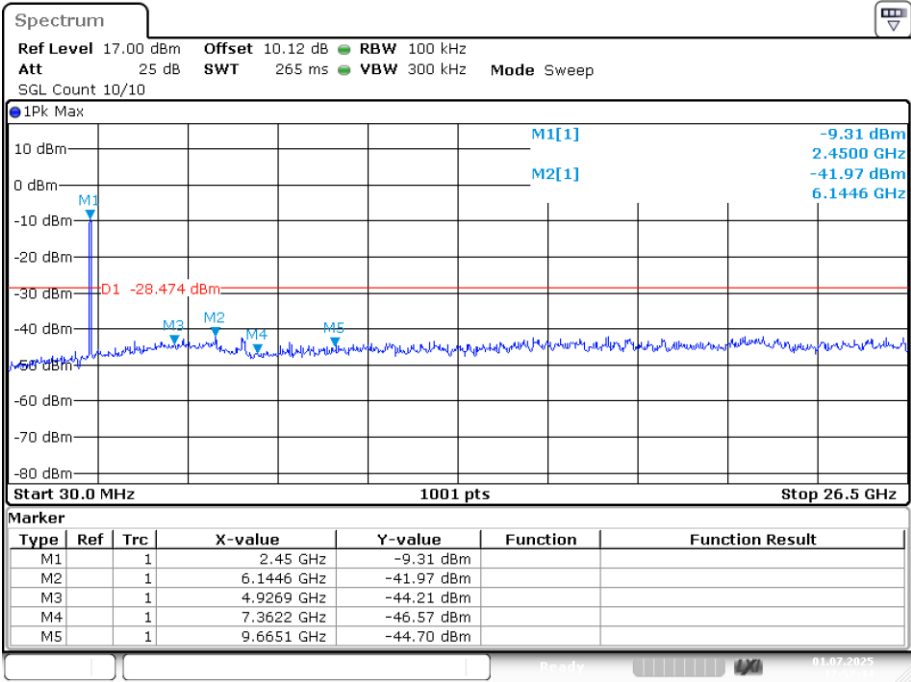
Date: 1.JUL.2025 17:55:26

Tx. Spurious NVNT n40 2452MHz Ant1 Ref



Date: 1.JUL.2025 17:57:26

Tx. Spurious NVNT n40 2452MHz Ant1 Emission



Date: 1.JUL.2025 17:57:44

5. POWER LINE CONDUCTED EMISSION

5.1. Test Limits

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

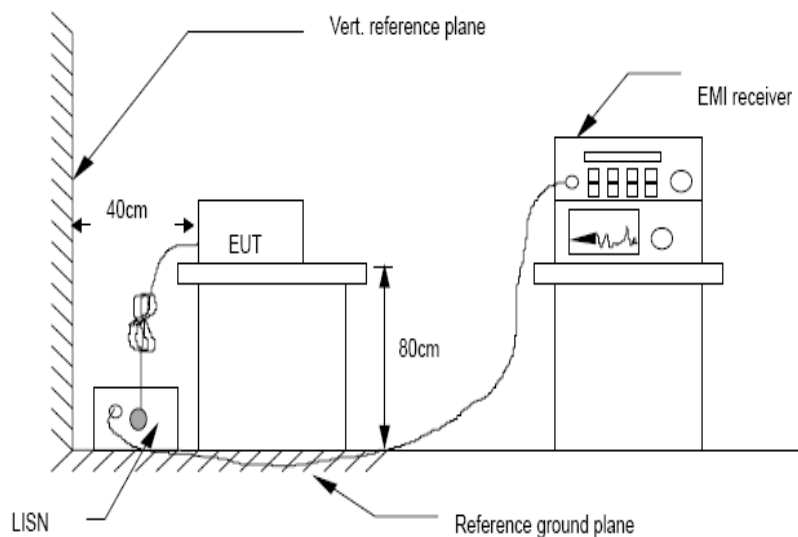
3. The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

5.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

5.3. Test Setup

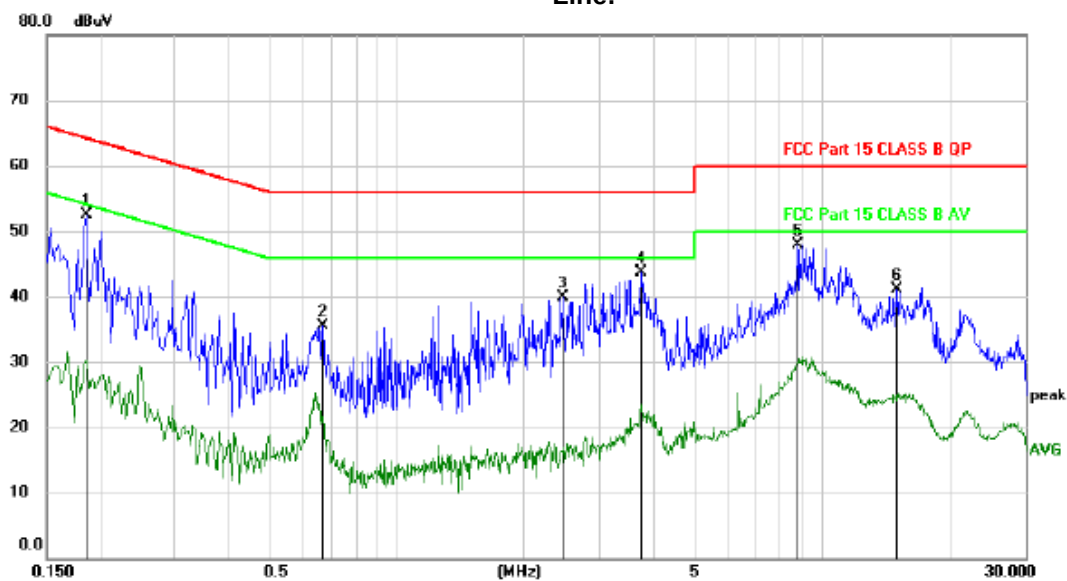


5.4. Test Results

PASS. (See below detailed test data)

Note: If peak Result comply with AV limit, QP and AV Result is deemed to comply with AV limit

Line:

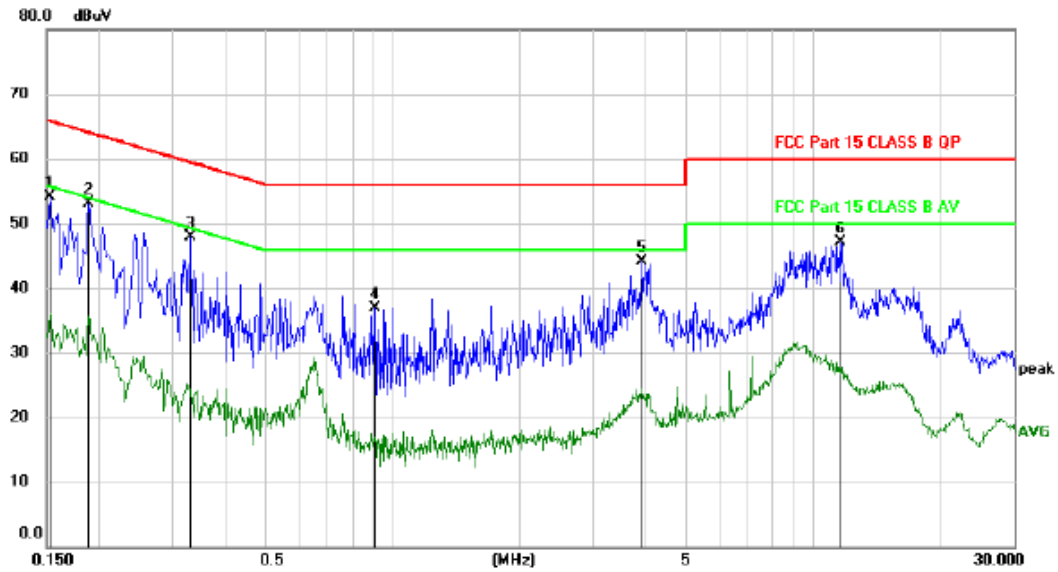


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1860	42.65	9.92	52.57	64.21	-11.64	peak	
2		0.6690	25.56	9.93	35.49	56.00	-20.51	peak	
3		2.4600	30.05	9.90	39.95	56.00	-16.05	peak	
4		3.7530	33.67	9.96	43.63	56.00	-12.37	peak	
5		8.7420	37.65	10.17	47.82	60.00	-12.18	peak	
6		15.0390	30.72	10.33	41.05	60.00	-18.95	peak	

*:Maximum data x:Over limit !:over margin

(Reference Only)

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Neutral:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1530	44.09	9.94	54.03	65.84	-11.81	peak	
2	*	0.1890	43.25	9.92	53.17	64.08	-10.91	peak	
3		0.3300	38.01	9.94	47.95	59.45	-11.50	peak	
4		0.9060	26.90	9.97	36.87	56.00	-19.13	peak	
5		3.9060	34.14	9.96	44.10	56.00	-11.90	peak	
6		11.6700	36.87	10.25	47.12	60.00	-12.88	peak	

*:Maximum data x:Over limit !:over margin

(Reference Only)

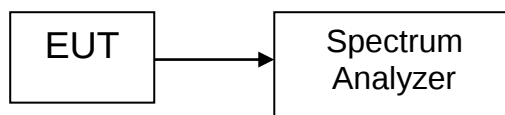
Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Note: 1 All modes and channels have been tested and only the B mode 2412MHz mode with the worst data is listed.

2. All power supplies have been tested, and this report only reflects the worst power supply data (ZL-D060WA2402500)

6. DUTY CYCLE

6.1. Block diagram of test setup



6.2. Test Procedure

Details see the KDB 558074 D01 15.247 Meas Guidance v05r02

11.2.1 A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on and off times of the transmitted signal.

11.2.2 The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq EBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

6.3. Test Results

Pass

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	b	2412	Ant1	99.05	0.04
NVNT	b	2437	Ant1	99.05	0.04
NVNT	b	2462	Ant1	99.04	0.04
NVNT	g	2412	Ant1	94.47	0.25
NVNT	g	2437	Ant1	94.47	0.25
NVNT	g	2462	Ant1	94.59	0.24
NVNT	n20	2412	Ant1	94.09	0.26
NVNT	n20	2437	Ant1	94.12	0.26
NVNT	n20	2462	Ant1	94.1	0.26
NVNT	n40	2422	Ant1	88.81	0.52
NVNT	n40	2437	Ant1	88.81	0.52
NVNT	n40	2452	Ant1	88.81	0.52

7. MAXIMUM PEAK CONDUCTED OUTPUT POWER

7.1. Test limits

Please refer RSS-247 & FCC PART 15: 15.247.

Please refer RSS-247 & FCC PART 15: 15.247.

Regulation 15.247(b) The limit of Maximum Peak conducted output power Measurement is 1W(30dBm). The eirp. shall not exceed 4 W(36dBm).

7.2. Test Procedure

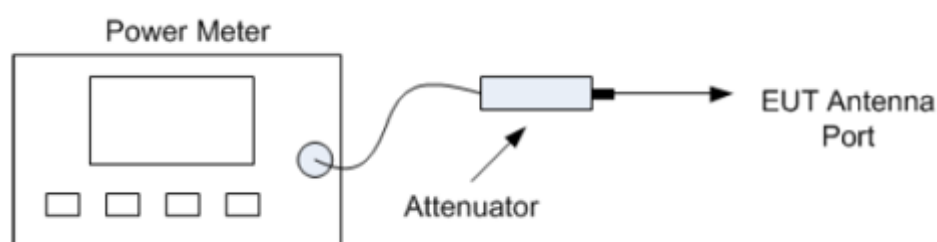
Details see the ANSI C63.10:2013-

7.2.1 Place the EUT on the table and connected to a power meter. The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

7.2.2 At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.

7.2.3 Measure out each mode and each bands peak output power of EUT

7.3. Test Setup



7.4. Test Results

PASS

Detailed information please see the following page.

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	14.333	30	Pass
NVNT	b	2437	Ant1	15.077	30	Pass
NVNT	b	2462	Ant1	15.559	30	Pass
NVNT	g	2412	Ant1	13.621	30	Pass
NVNT	g	2437	Ant1	13.969	30	Pass
NVNT	g	2462	Ant1	13.437	30	Pass
NVNT	n20	2412	Ant1	13.954	30	Pass
NVNT	n20	2437	Ant1	13.472	30	Pass
NVNT	n20	2462	Ant1	13.346	30	Pass
NVNT	n40	2422	Ant1	13.584	30	Pass
NVNT	n40	2437	Ant1	13.665	30	Pass
NVNT	n40	2452	Ant1	13.367	30	Pass

8. POWER SPECTRAL DENSITY

8.1. Test limits

8.1.1 Please refer FCC PART 15: 15.247.

8.1.2 For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

8.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

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

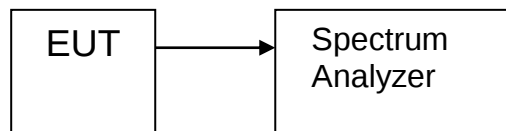
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz(Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$), VBW = 10kHz(Set the VBW $\geq 3 \times \text{RBW}$), span $\geq 1.5 \times \text{DTS bandwidth}$, Detector = PK, detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

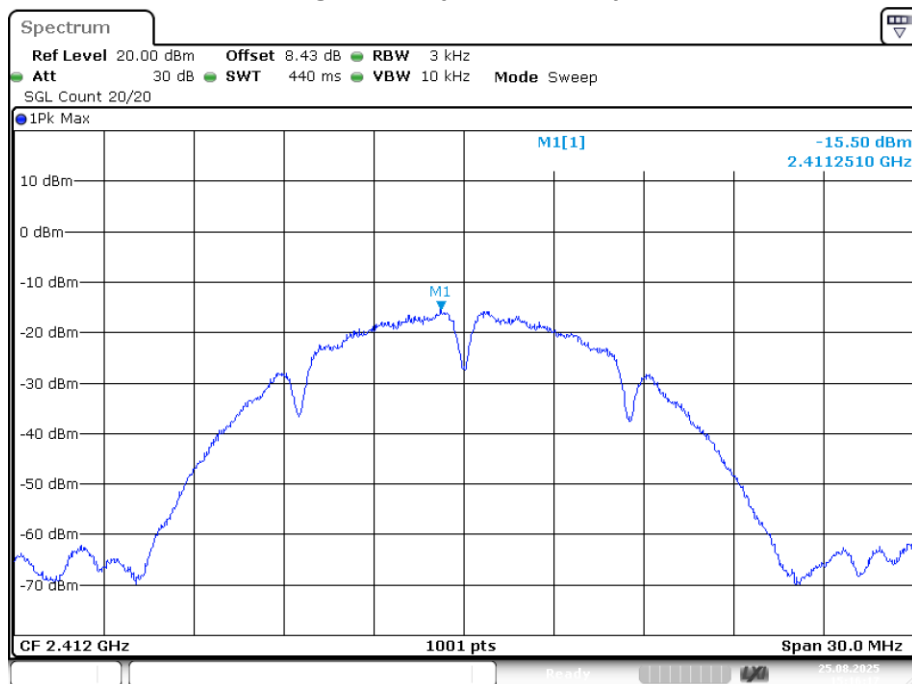
8.3. Test Setup



8.4. Test Results

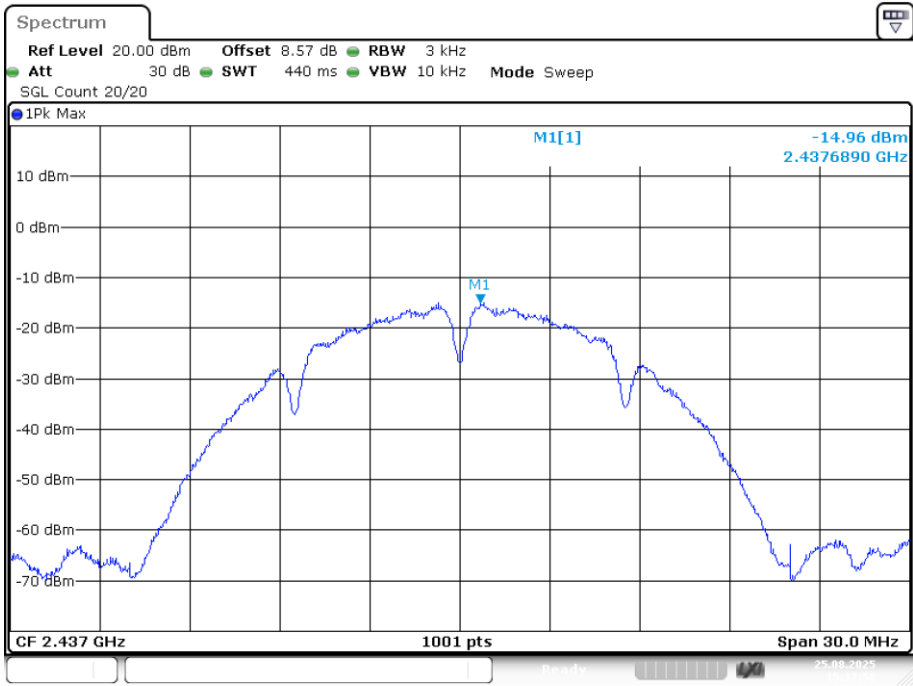
Condition	Mode	Frequency (MHz)	Antenna	Conduct PSD (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	-15.497	8	Pass
NVNT	b	2437	Ant1	-14.962	8	Pass
NVNT	b	2462	Ant1	-14.401	8	Pass
NVNT	g	2412	Ant1	-18.738	8	Pass
NVNT	g	2437	Ant1	-18.664	8	Pass
NVNT	g	2462	Ant1	-18.717	8	Pass
NVNT	n20	2412	Ant1	-18.476	8	Pass
NVNT	n20	2437	Ant1	-18.641	8	Pass
NVNT	n20	2462	Ant1	-18.358	8	Pass
NVNT	n40	2422	Ant1	-24.027	8	Pass
NVNT	n40	2437	Ant1	-22.566	8	Pass
NVNT	n40	2452	Ant1	-22.015	8	Pass

PSD NVNT b 2412MHz Ant1



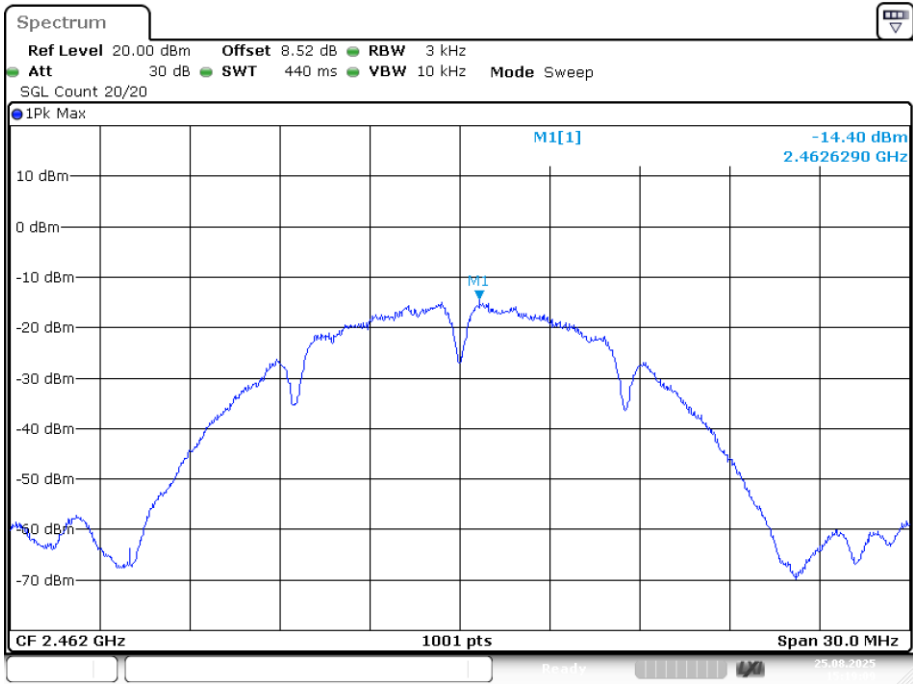
Date: 25.AUG.2025 15:16:17

PSD NVNT b 2437MHz Ant1



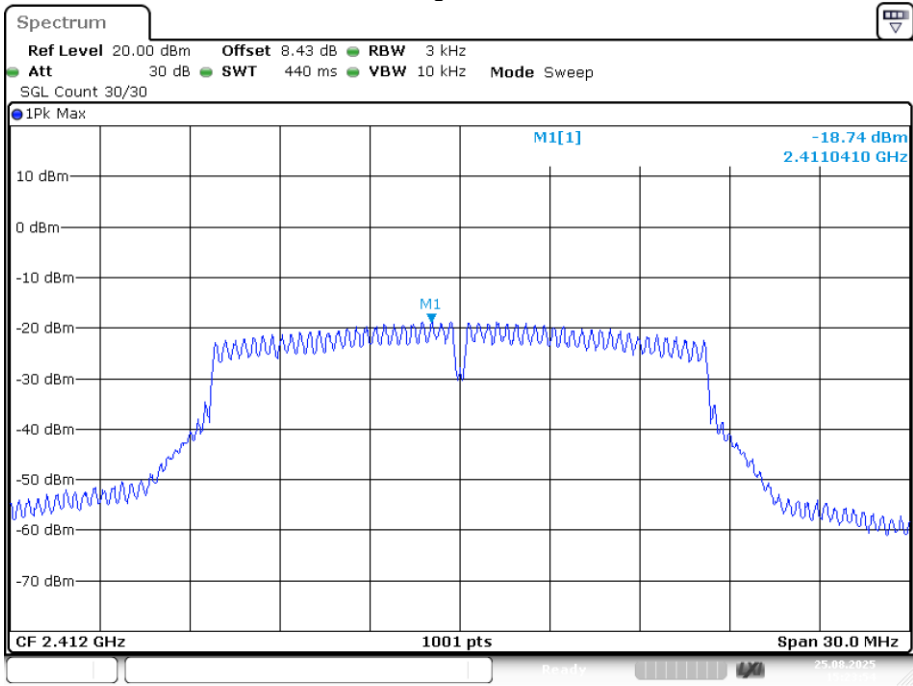
Date: 25.AUG.2025 15:17:59

PSD NVNT b 2462MHz Ant1



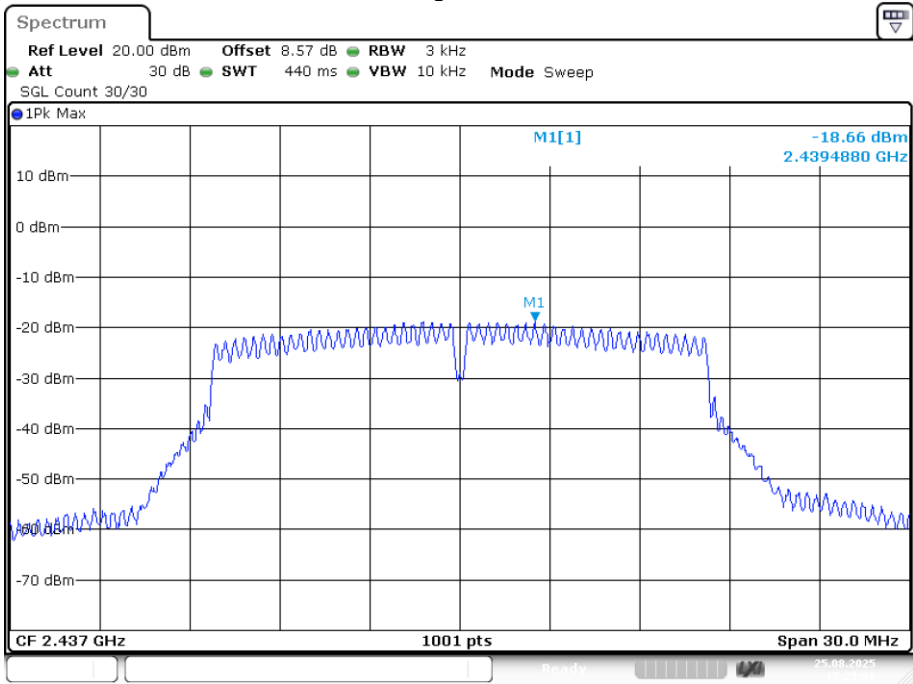
Date: 25.AUG.2025 15:19:09

PSD NVNT g 2412MHz Ant1



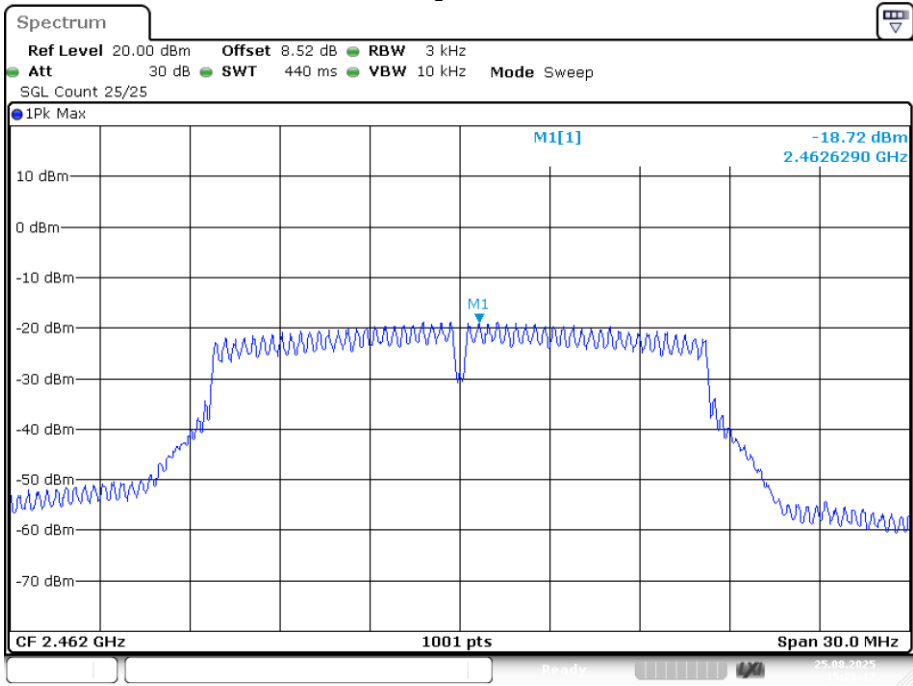
Date: 25.AUG.2025 15:23:54

PSD NVNT g 2437MHz Ant1



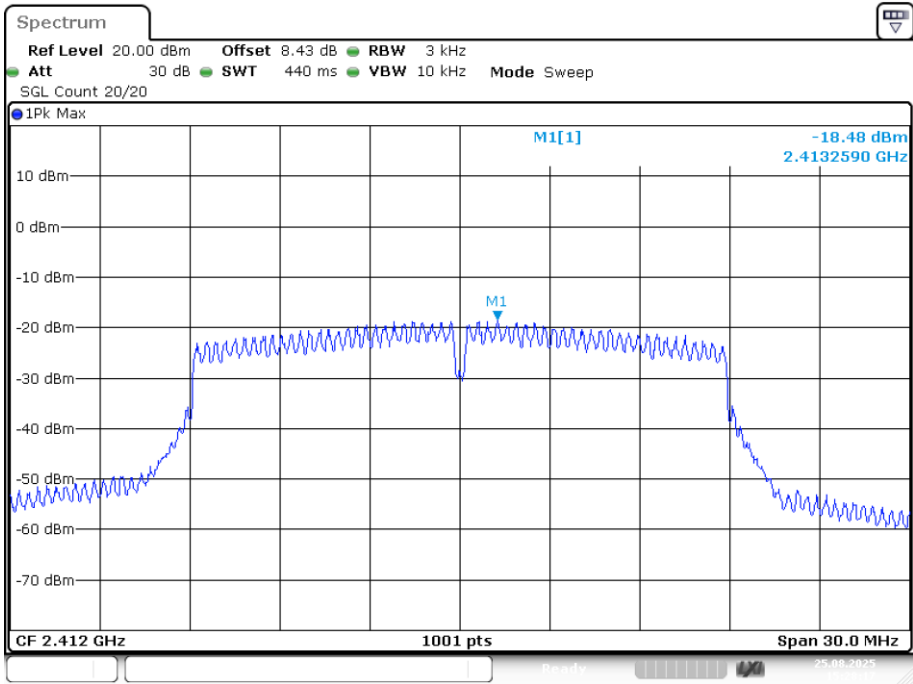
Date: 25.AUG.2025 15:25:08

PSD NVNT g 2462MHz Ant1



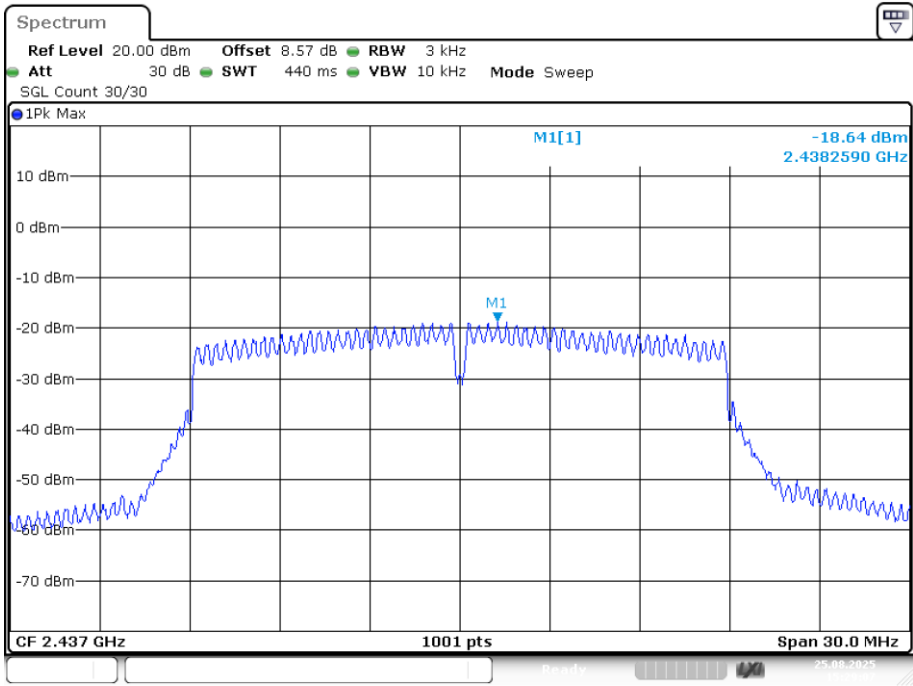
Date: 25.AUG.2025 15:26:17

PSD NVNT n20 2412MHz Ant1



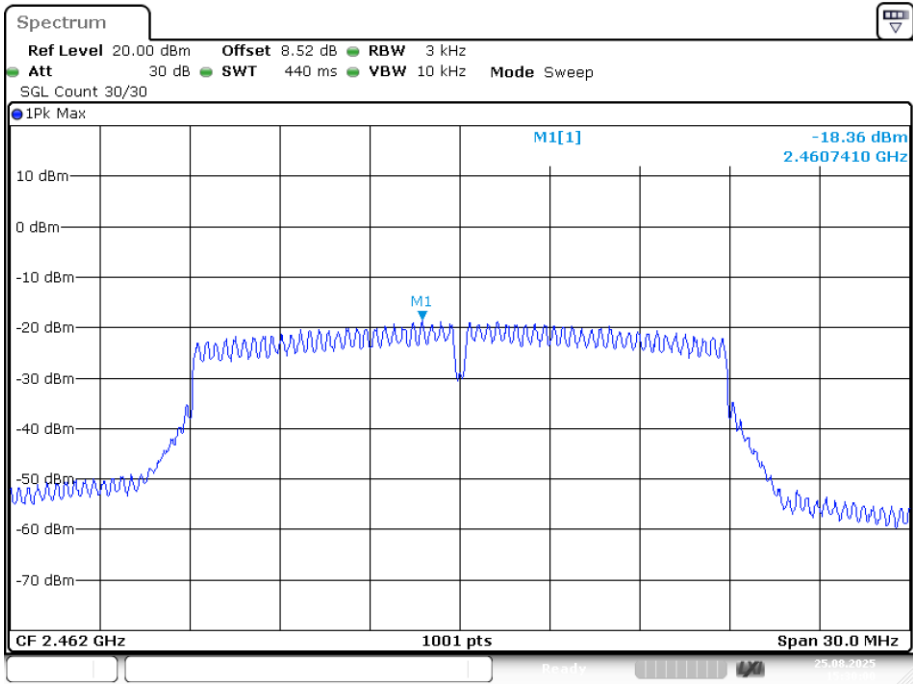
Date: 25.AUG.2025 15:28:18

PSD NVNT n20 2437MHz Ant1



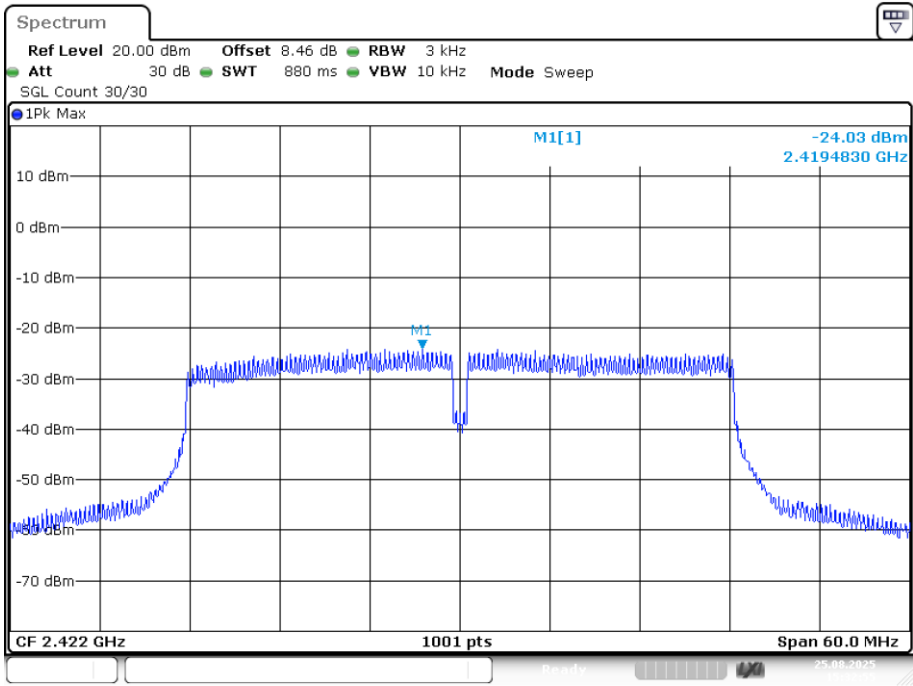
Date: 25.AUG.2025 15:29:07

PSD NVNT n20 2462MHz Ant1



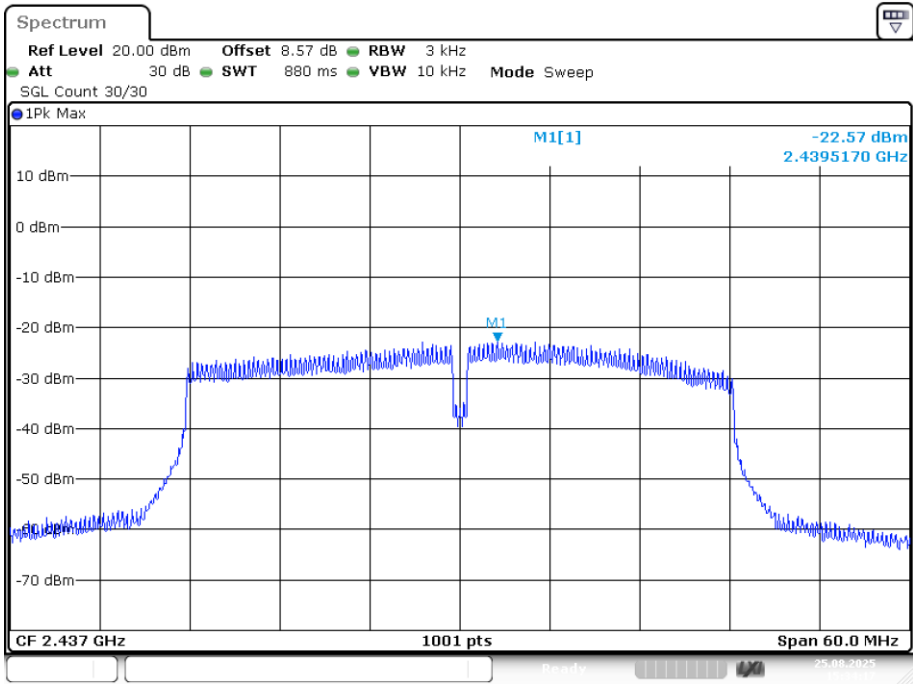
Date: 25.AUG.2025 15:30:00

PSD NVNT n40 2422MHz Ant1



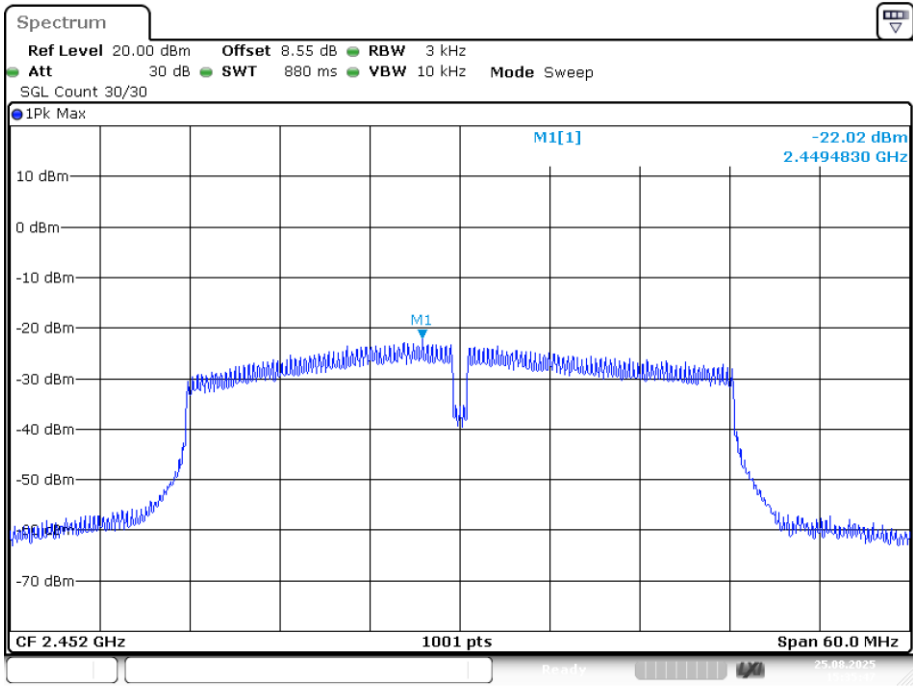
Date: 25.AUG.2025 15:32:55

PSD NVNT n40 2437MHz Ant1



Date: 25.AUG.2025 15:34:17

PSD NVNT n40 2452MHz Ant1



Date: 25.AUG.2025 15:35:46

9. BANDWIDTH

9.1. Test limits

Please refer FCC PART 15: 15.247

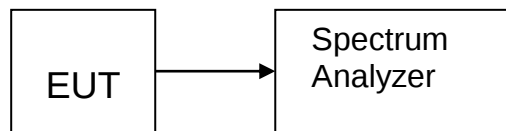
For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz.

9.2. Test Procedure

Details see the KDB558074 D01 Meas Guidance v05r02

- a) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
- b) The test receiver set RBW = 100kHz, VBW $\geq$ 3*RBW =300kHz,, Peak Detector, Sweep time set auto, detail see the test plot.

9.3. Test Setup

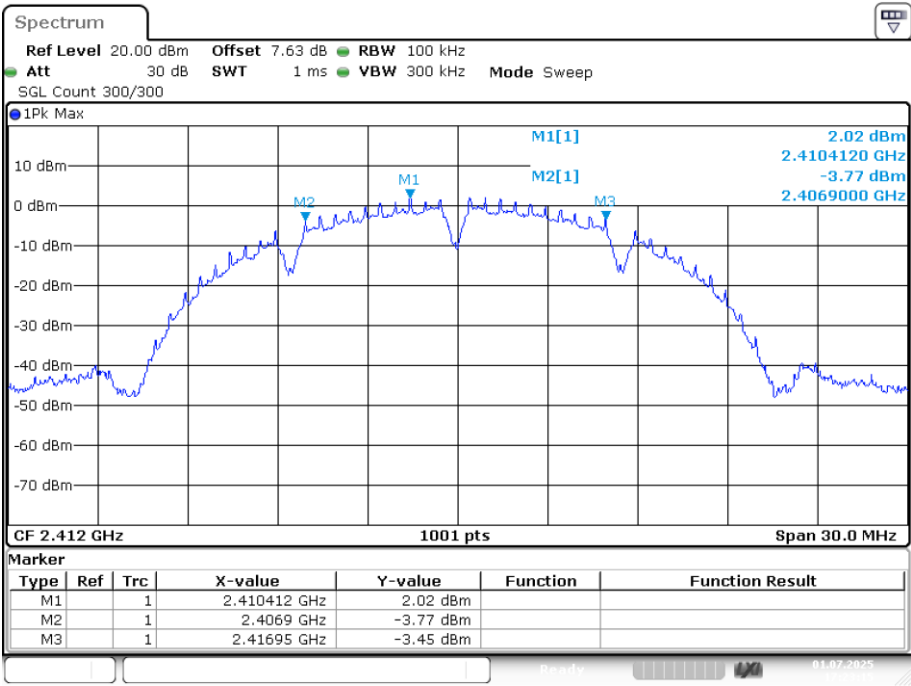


9.4. Test Results

-6dB Bandwidth

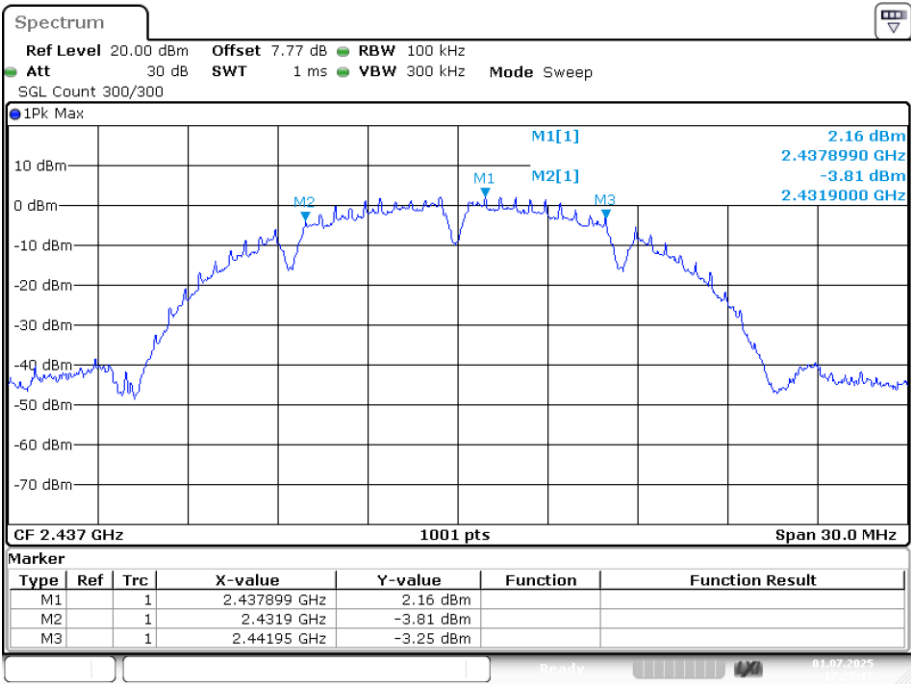
Condition	Mode	Frequency (MHz)	Antenna	-6 db bandwidth (MHz)	Limit -6 db bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	10.05	0.5	Pass
NVNT	b	2437	Ant1	10.05	0.5	Pass
NVNT	b	2462	Ant1	9.54	0.5	Pass
NVNT	g	2412	Ant1	16.32	0.5	Pass
NVNT	g	2437	Ant1	16.35	0.5	Pass
NVNT	g	2462	Ant1	16.32	0.5	Pass
NVNT	n20	2412	Ant1	17.31	0.5	Pass
NVNT	n20	2437	Ant1	17.16	0.5	Pass
NVNT	n20	2462	Ant1	16.68	0.5	Pass
NVNT	n40	2422	Ant1	33.84	0.5	Pass
NVNT	n40	2437	Ant1	33.9	0.5	Pass
NVNT	n40	2452	Ant1	35.34	0.5	Pass

-6dB Bandwidth NVNT b 2412MHz Ant1



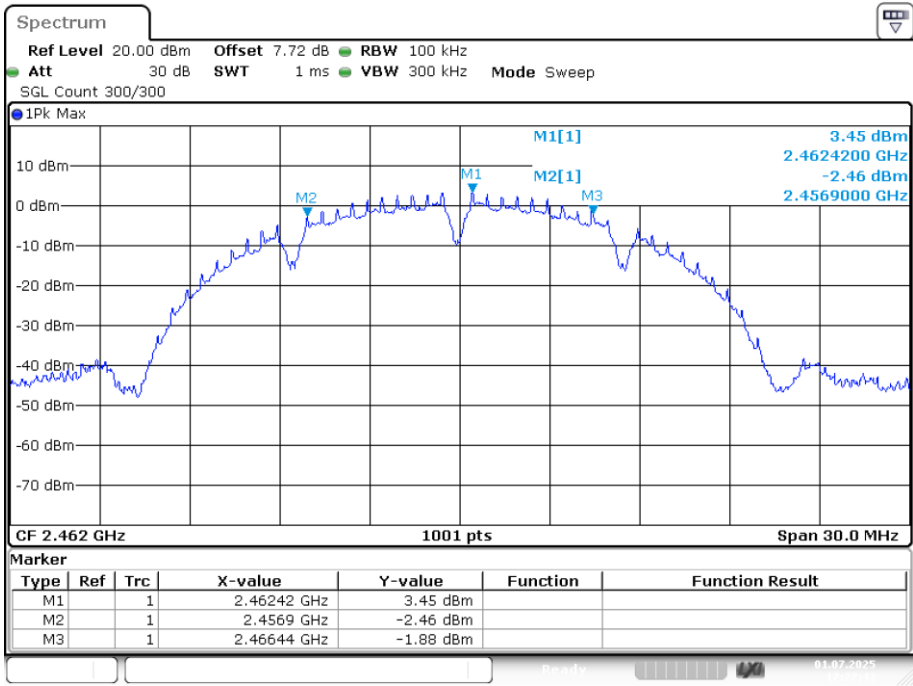
Date: 1.JUL.2025 17:23:15

-6dB Bandwidth NVNT b 2437MHz Ant1



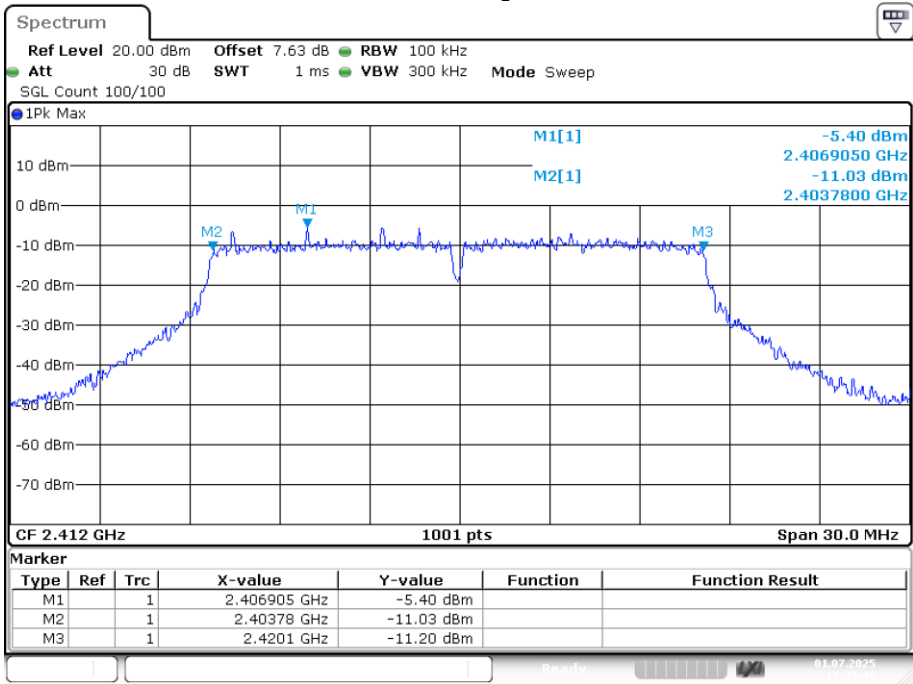
Date: 1.JUL.2025 17:25:17

-6dB Bandwidth NVNT b 2462MHz Ant1



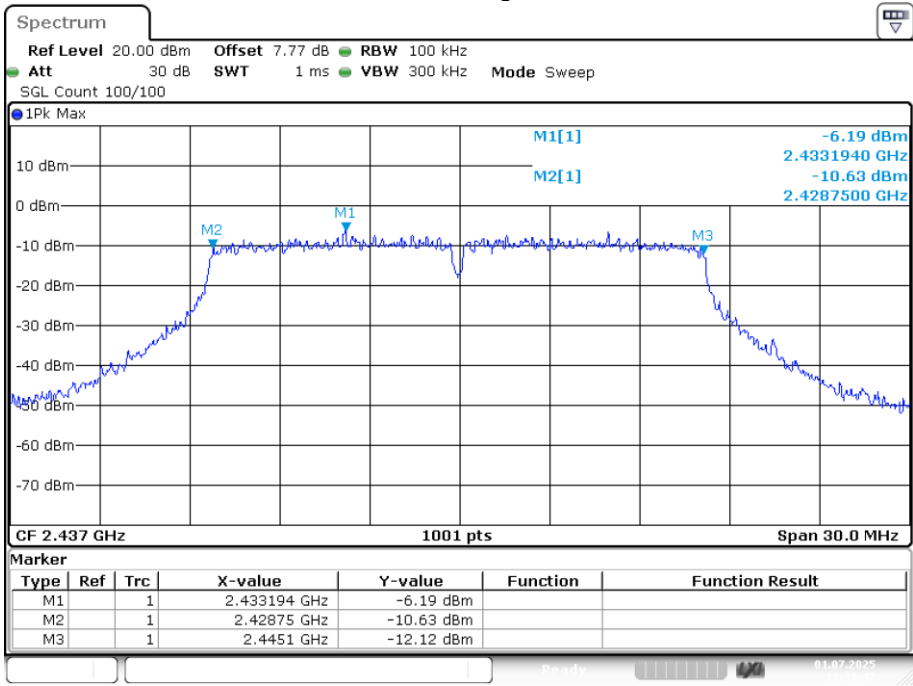
Date: 1.JUL.2025 17:27:43

-6dB Bandwidth NVNT g 2412MHz Ant1



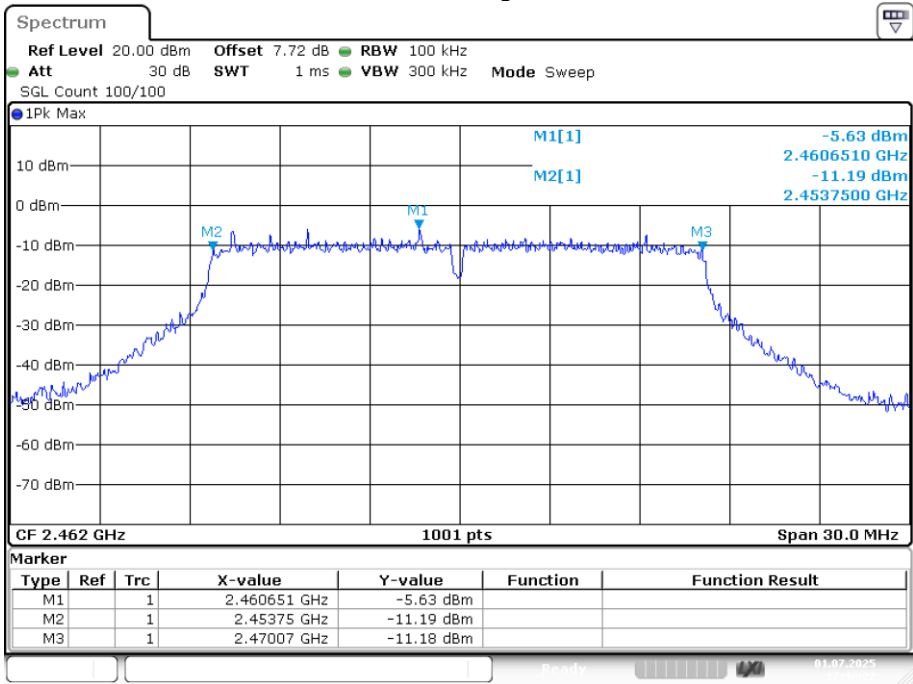
Date: 1.JUL.2025 17:37:45

-6dB Bandwidth NVNT g 2437MHz Ant1



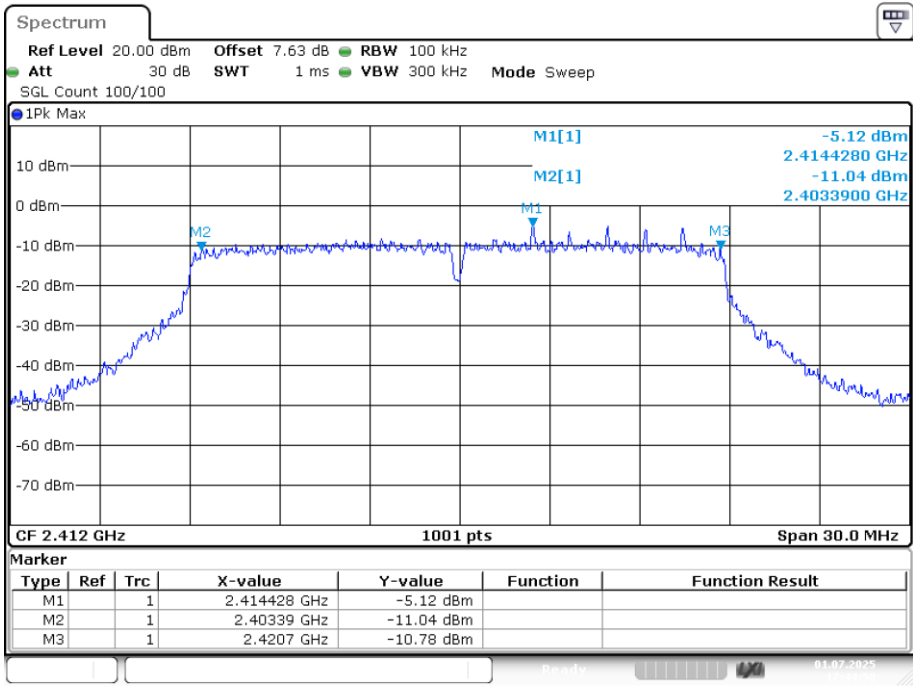
Date: 1.JUL.2025 17:39:46

-6dB Bandwidth NVNT g 2462MHz Ant1



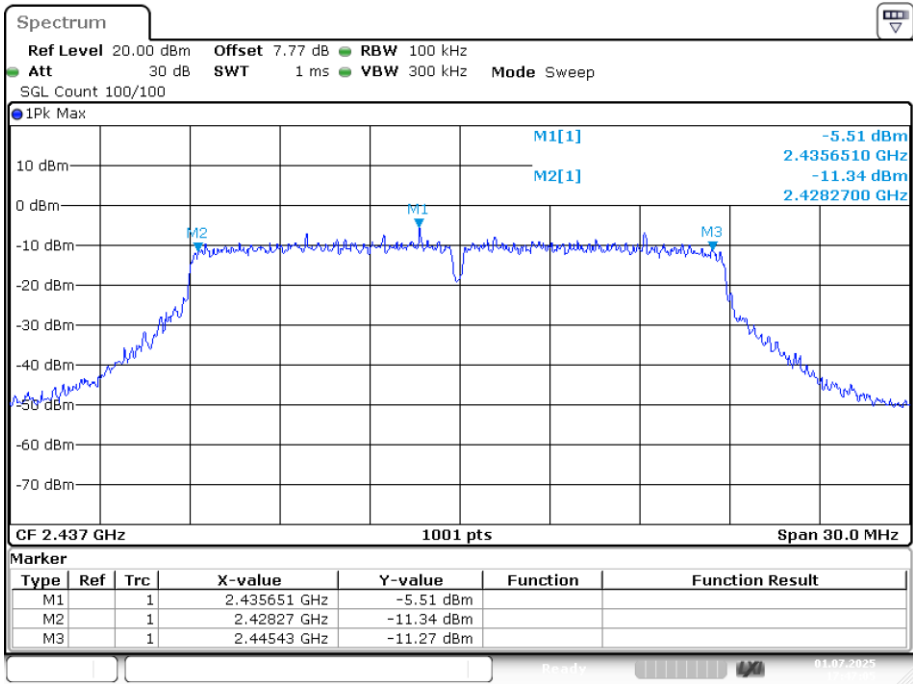
Date: 1.JUL.2025 17:42:22

-6dB Bandwidth NVNT n20 2412MHz Ant1



Date: 1.JUL.2025 17:44:50

-6dB Bandwidth NVNT n20 2437MHz Ant1



Date: 1.JUL.2025 17:47:05