



Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSCR240400056601

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TEST REPORT

Application No.: KSCR2404000566AT
FCC ID: VPYLBEE5HY2FY
IC: 772C-LBEE5HY2FY
Applicant: Murata Manufacturing Co., Ltd.
Address of Applicant: 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto, 617-8555 Japan
Manufacturer: Murata Manufacturing Co., Ltd.
Address of Manufacturer: 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto, 617-8555 Japan
Equipment Under Test (EUT):
EUT Name: WLAN+Bluetooth Module
Model No.: LBEE5HY2GY, LBEE5HY2FY ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) :
47 CFR Part 15, Subpart C 15.247
RSS-247 Issue 3, August 2023
RSS-Gen Issue 5 Amendment 2 (February 2021)
Date of Receipt: 2024-04-03
Date of Test: 2024-04-15 to 2025-01-13
Date of Issue: 2025-03-12

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

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Revision Record			
Version	Description	Date	Remark
00	Original	2025-03-12	/

Authorized for issue by:			
Tested By		Tommie Tang	
		Tommie_Tang/Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	

2 Test Summary

Radio Spectrum Technical Requirement				
Item	FCC Requirement	IC Requirement	Method	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	RSS-Gen Clause 6.8	N/A	Pass

N/A: Not applicable

Radio Spectrum Matter Part				
Item	FCC Requirement	IC Requirement	Method	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.207	RSS-Gen Clause 8.8	ANSI C63.10 (2013) Section 6.2	Pass
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247a(2)	RSS-247 Clause 5.2(a)	ANSI C63.10 (2013) Section 11.8.1	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247(b)(3)	RSS-247 Clause 5.4(d)	ANSI C63.10 (2013) Section 11.9.1	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247(e)	RSS-247 Clause 5.2(b)	ANSI C63.10 (2013) Section 11.10.2	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247(d)	RSS-247 Clause 5.5	ANSI C63.10 (2013) Section 11.13.3.2	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247(d)	RSS-247 Clause 5.5	ANSI C63.10 (2013) Section 11.11	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.10.5	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	RSS-247 Section 3.3 & RSS-Gen Section 8.9	ANSI C63.10 (2013) Section 6.4,6.5,6.6	Pass
99% Bandwidth	-	RSS-Gen Section 6.7	ANSI C63.10 Section 6.9.3	Pass

Note: There are series models mentioned in this report, and they are identical in electrical and electronic characters. Only the model LBEE5HY2GY was tested since their differences are

Moel	RF functions
LBEE5HY2GY	WLAN 2.4GHz,5GHz+BT/BLE
LBEE5HY2FY	WLAN 2.4GHz,5GHz,6GHz+BT/BLE

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.3V
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.3 Dual mode
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Gain:	PCB Antenna: 2.8dBi (Provided by the manufacturer) Dipole Antenna: 3dBi (Provided by the manufacturer)

4.2 Power level setting using in test:

Channel	BLE			
	S8	S2	1M	2M
0	default	default	default	default
19	default	default	default	default
39	default	default	default	default

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	LENOVO	K27	/
DC Power Supply	Agilent	E3632A	/
Host	/	/	/

4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.6 Test Facility

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

• A2LA

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• FCC

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• ISED

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• VCCI

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None



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5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	EMI Test Receive	R&S	ESCI	KS301101	01/15/2024	01/14/2025
2	LISN	R&S	ENV216	KS301197	01/15/2024	01/14/2025
3	LISN	Schwarzbeck	NNLK 8129	KS301091	01/15/2024	01/14/2025
4	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	01/15/2024	01/14/2025
5	CE test Cable	Thermax	/	CZ301102	01/15/2024	01/14/2025
6	Test Software	Farad	EZ-EMC	/	N.C.R	N.C.R
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/24/2023	08/23/2024
	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/01/2024	07/31/2025
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/24/2023	08/23/2024
	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/01/2024	07/31/2025
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2024	01/13/2025
4	Signal Generator	R&S	SMBV100B	KSEM032	03/19/2024	03/18/2025
5	Signal Generator	R&S	SMW200A	KSEM020-1	08/24/2023	08/23/2024
	Signal Generator	R&S	SMW200A	KSEM020-1	08/02/2024	08/01/2025
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/24/2023	08/23/2024
	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/01/2024	07/31/2025
7	Signal Generator	Agilent	E8257C	KS301066	08/24/2023	08/23/2024
	Signal Generator	Agilent	E8257C	KS301066	08/06/2024	08/05/2025
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/24/2023	08/23/2024
	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/01/2024	07/31/2025
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	03/19/2024	03/18/2025
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/24/2023	08/23/2024
	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/12/2024	08/11/2025
11	Switcher	TST	FY562	KUS2001M001-4	01/15/2024	01/13/2025
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/15/2024	01/13/2025
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	08/27/2023	08/26/2024
	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	08/26/2024	08/25/2025
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	03/19/2024	03/18/2025
15	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/24/2023	08/23/2024
	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/06/2024	08/05/2025
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	03/19/2024	03/18/2025
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	03/18/2023	03/17/2025
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2023	06/28/2025
6	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E006	03/19/2024	03/18/2025
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	03/23/2024	08/22/2026
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	04/07/2023	04/06/2025
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024	01/06/2026
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/15/2024	01/13/2025
11	Amplifier(18~40GHz)	PANSHAN	LNA180400G40	KSEM038	08/24/2023	08/23/2024



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		TECHNOLOGY				
	Amplifier(18~40GHz)	PANSHAN TECHNOLOGY	LNA180400G40	KSEM038	08/12/2024	08/11/2025
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	08/24/2023	08/23/2024
	RE Test Cable	REBES MICROWAVE	/	CZ301097	08/12/2024	08/11/2025
13	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	03/21/2024	03/20/2025
14	Software	Faratronic	EZ_EMV-3A1	/	NCR	NCR
15	Software	ESE	E3_V 6.111221a	/	NCR	NCR

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna complies with this requirement and no consideration of replacement. The best case gain of the PCB antenna is 2.8dBi, Dipole antenna is 3dBi.

Antenna location: Refer to internal photo.

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C

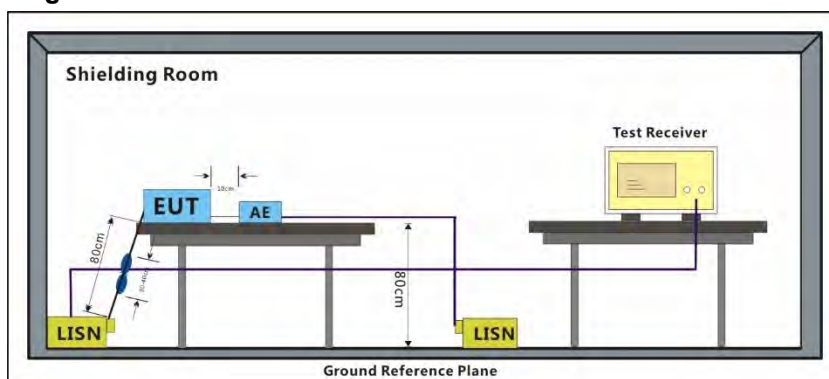
Humidity: 51.2 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\text{ohm}/50\mu\text{H} + 5\text{ohm}$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{LISN Factor}$

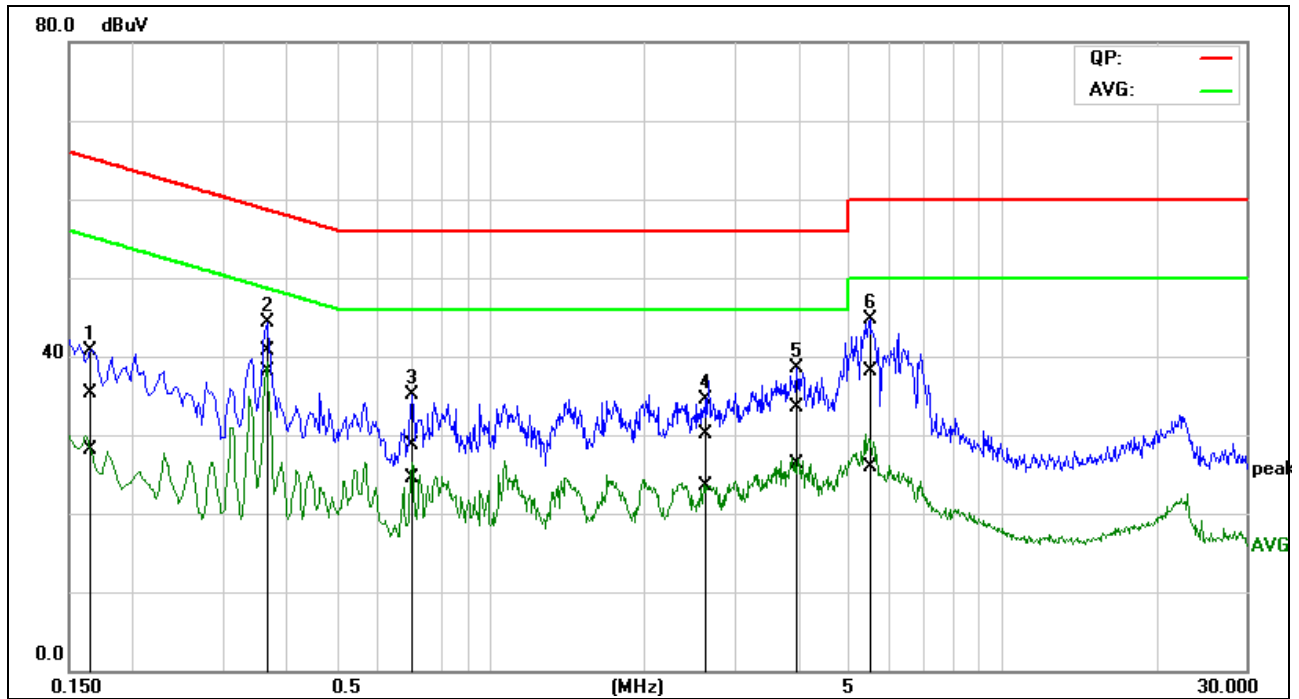
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Test Mode: 08; Line: Live line; Modulation:GFSK; Antenna: Dipole; Channel:middle



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1626	15.12	7.84	20.20	35.32	28.04	65.33	55.33	-30.01	-27.29	Pass
2*	0.3673	20.72	17.96	20.07	40.79	38.03	58.56	48.56	-17.77	-10.53	Pass
3	0.6985	8.85	4.68	19.76	28.61	24.44	56.00	46.00	-27.39	-21.56	Pass
4	2.6200	10.22	3.63	19.94	30.16	23.57	56.00	46.00	-25.84	-22.43	Pass
5	3.9410	13.68	6.45	19.88	33.56	26.33	56.00	46.00	-22.44	-19.67	Pass
6	5.5491	18.12	6.08	19.92	38.04	26.00	60.00	50.00	-21.96	-24.00	Pass

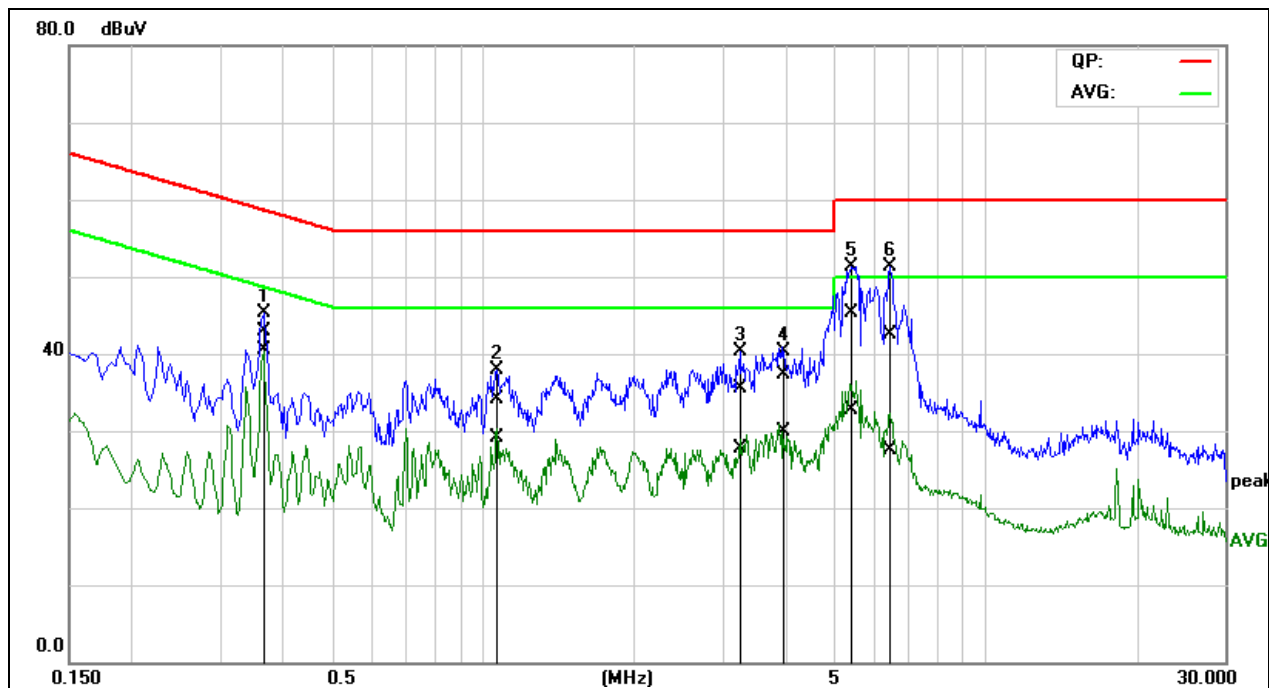
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Test Mode: 08; Line: Neutral Line; Modulation:GFSK; Antenna: Dipole; Channel:middle



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.3654	22.87	20.42	20.10	42.97	40.52	58.60	48.60	-15.63	-8.08	Pass
2	1.0634	14.10	9.21	19.91	34.01	29.12	56.00	46.00	-21.99	-16.88	Pass
3	3.2565	15.55	7.80	19.95	35.50	27.75	56.00	46.00	-20.50	-18.25	Pass
4	3.9924	17.34	10.07	19.91	37.25	29.98	56.00	46.00	-18.75	-16.02	Pass
5	5.4147	25.37	12.91	19.88	45.25	32.79	60.00	50.00	-14.75	-17.21	Pass
6	6.4659	22.61	7.52	19.90	42.51	27.42	60.00	50.00	-17.49	-22.58	Pass

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7.2 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

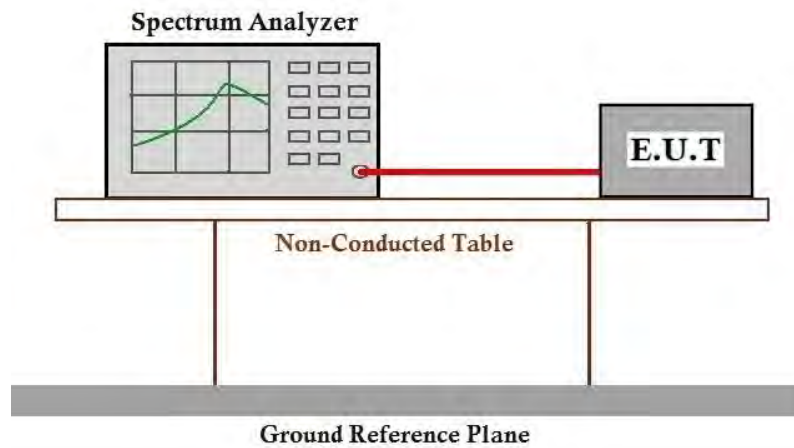
Humidity: 48.2 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details

7.3 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)

Test Method: ANSI C63.10 (2013) Section 11.8.1

Limit:

≥500 kHz

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

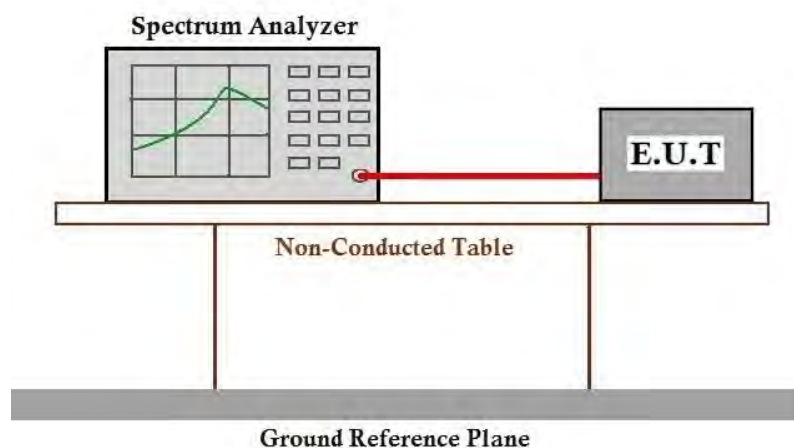
Humidity: 48.2 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.4 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)

Test Method: ANSI C63.10 (2013) Section 11.10.2

Limit:

≤8dBm in any 3 kHz band during any time interval of continuous transmission

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

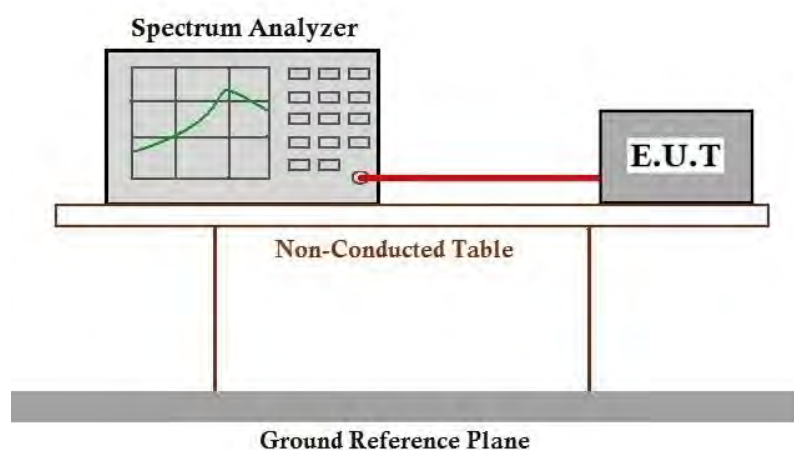
Humidity: 48.2 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.5 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
 Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, 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 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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)).

7.5.1 E.U.T. Operation

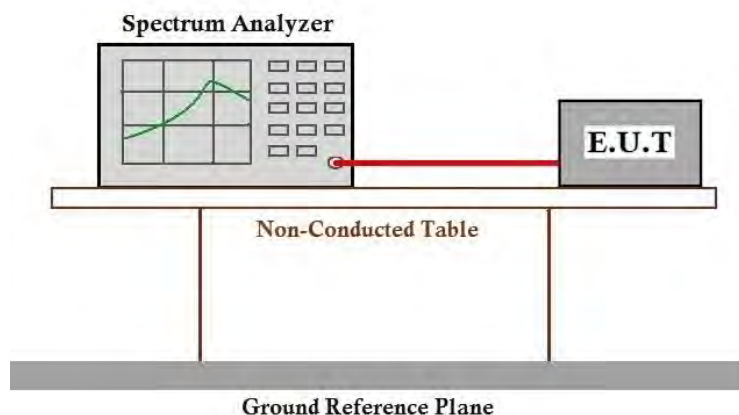
Operating Environment:

Temperature: 25.4 °C Humidity: 48.2 % RH Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.5.3 Test Setup Diagram





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7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.6 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2013) Section 11.11

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, 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 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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)).

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C

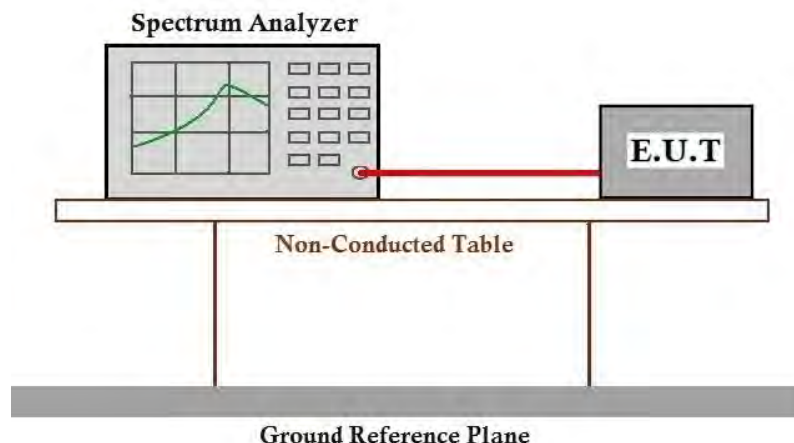
Humidity: 48.2 % RH

Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.6.3 Test Setup Diagram





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7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.7 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C

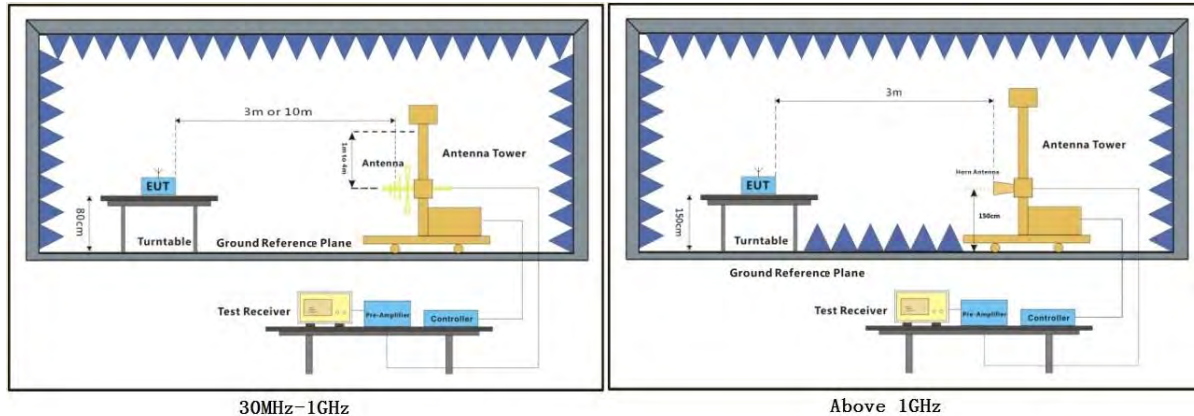
Humidity: 50.5 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

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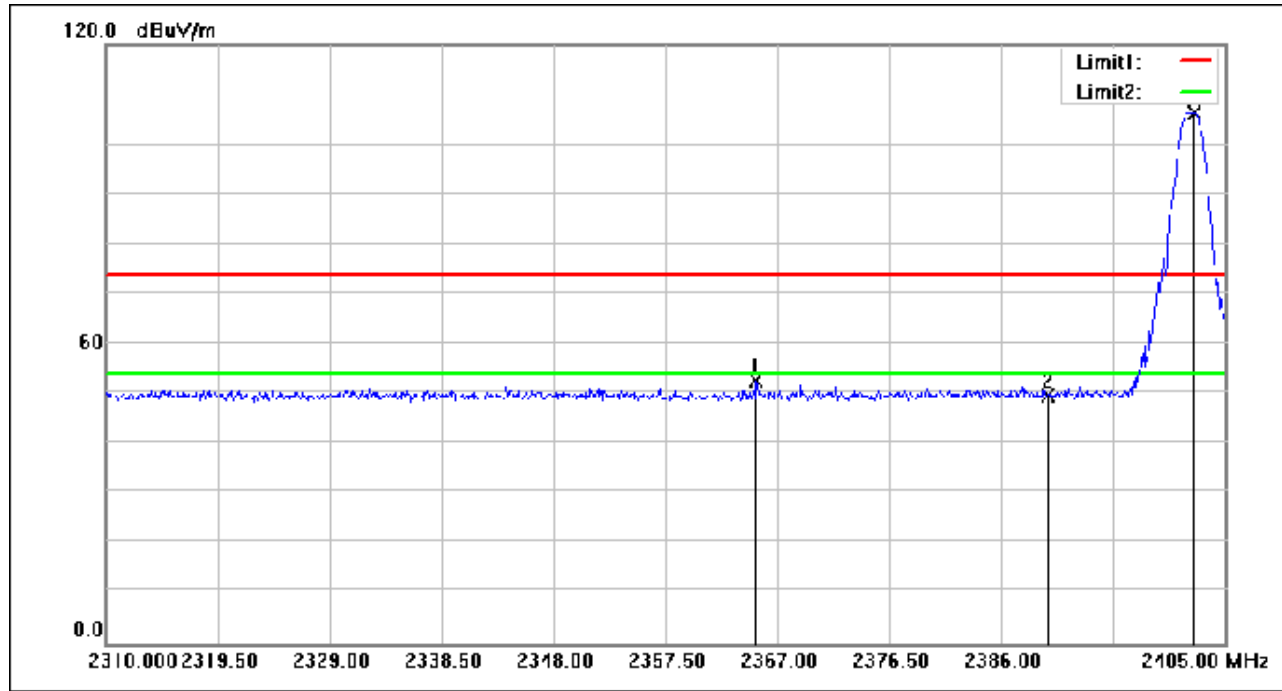
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Dipole Antenna

Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2365.195	77.49	-24.82	52.67	74.00	-21.33	peak
2	2390.000	74.26	-24.71	49.55	74.00	-24.45	peak
3	2402.340	131.09	-24.65	106.44	74.00	32.44	peak

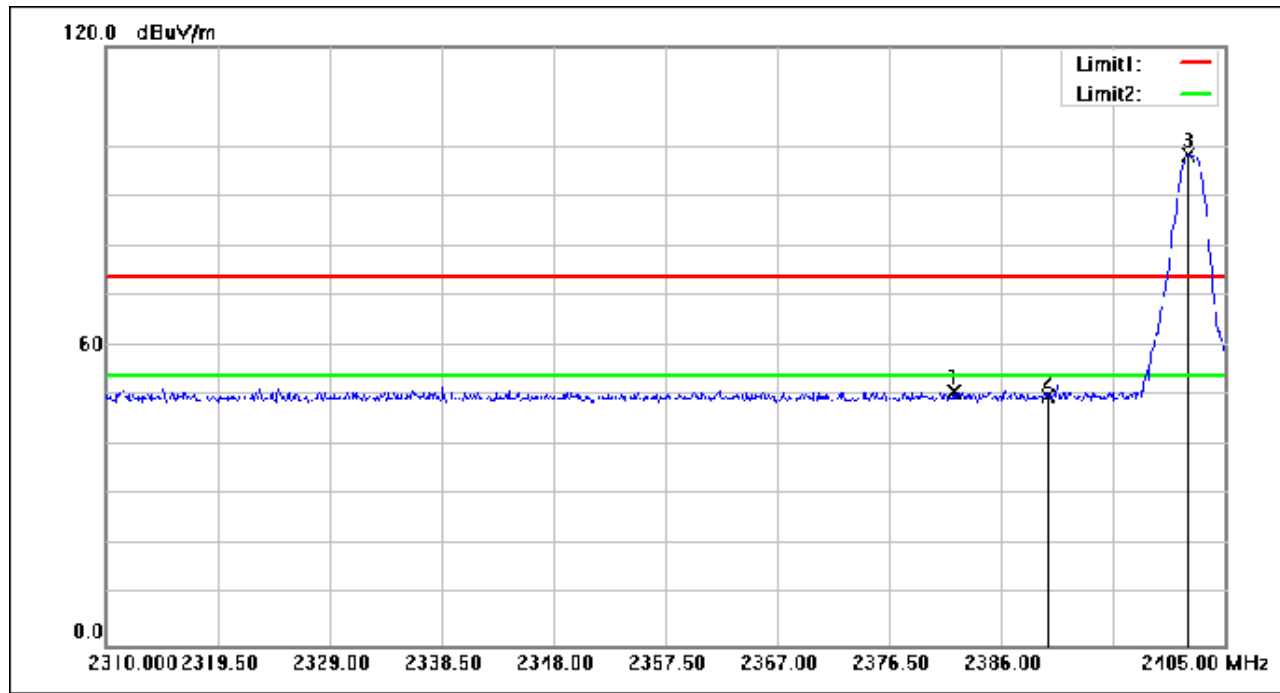
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.010	75.74	-24.74	51.00	74.00	-23.00	peak
2	2390.000	74.66	-24.71	49.95	74.00	-24.05	peak
3	2401.865	122.91	-24.65	98.26	74.00	24.26	peak

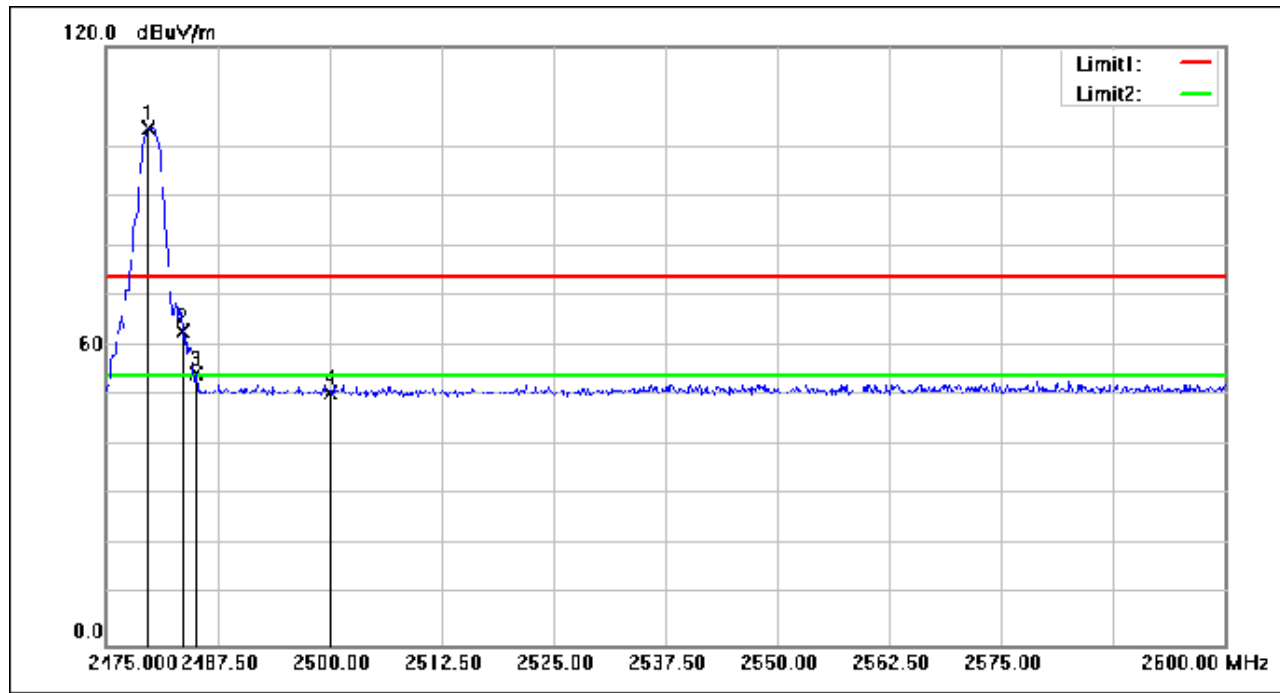
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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	127.95	-24.28	103.67	74.00	29.67	peak
2	2483.500	87.13	-24.27	62.86	74.00	-11.14	peak
3	2485.125	78.71	-24.26	54.45	74.00	-19.55	peak
4	2500.000	74.83	-24.19	50.64	74.00	-23.36	peak

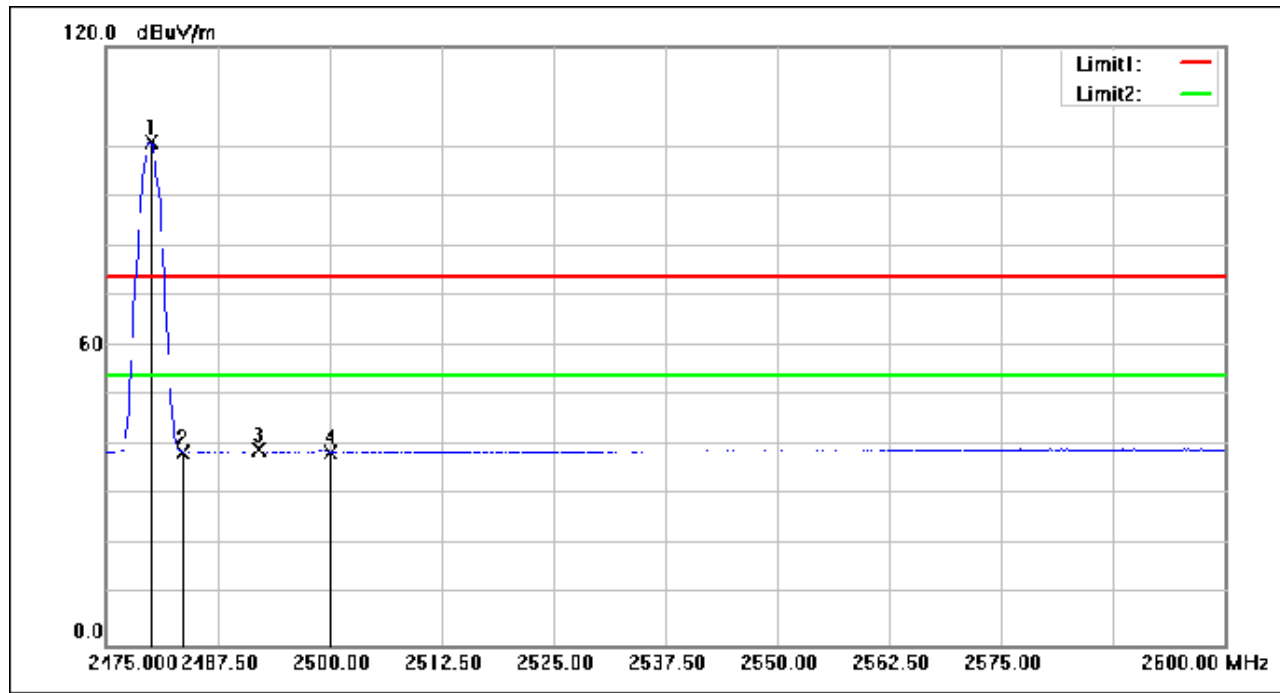
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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	125.33	-24.28	101.05	54.00	47.05	AVG
2	2483.500	62.92	-24.27	38.65	54.00	-15.35	AVG
3	2492.000	63.28	-24.23	39.05	54.00	-14.95	AVG
4	2500.000	62.87	-24.19	38.68	54.00	-15.32	AVG

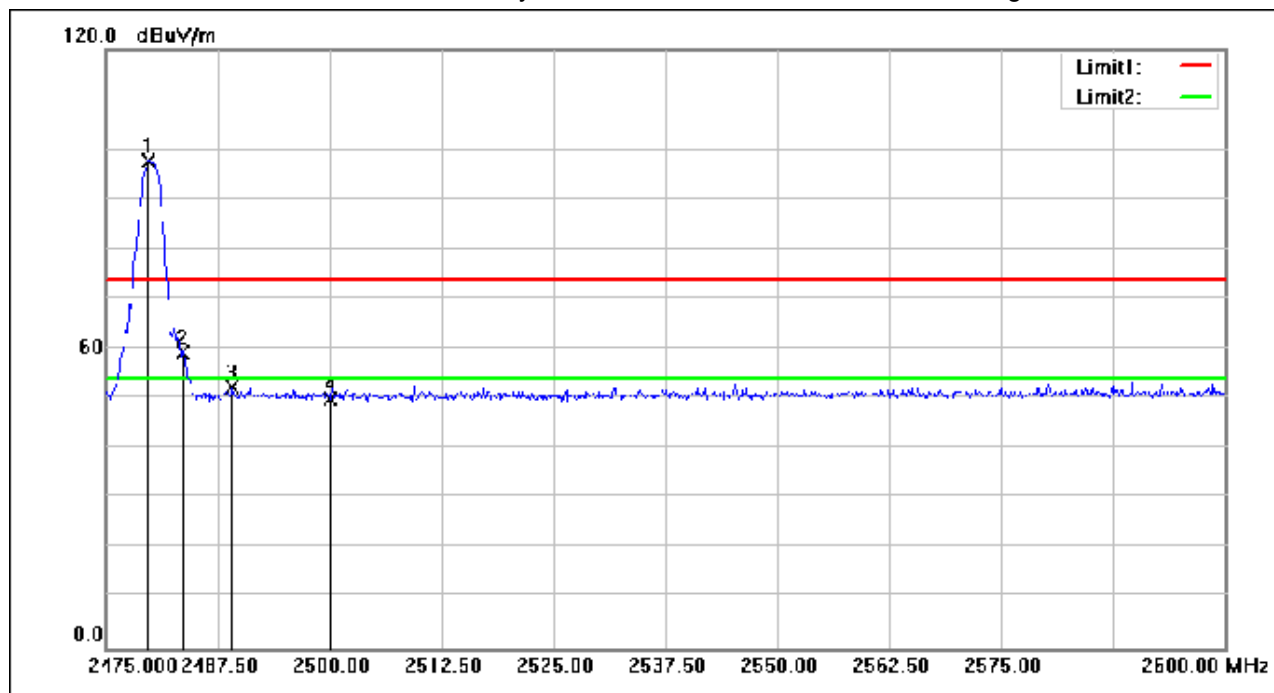
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	121.81	-24.28	97.53	74.00	23.53	peak
2	2483.500	83.47	-24.27	59.20	74.00	-14.80	peak
3	2489.125	76.61	-24.24	52.37	74.00	-21.63	peak
4	2500.000	74.27	-24.19	50.08	74.00	-23.92	peak

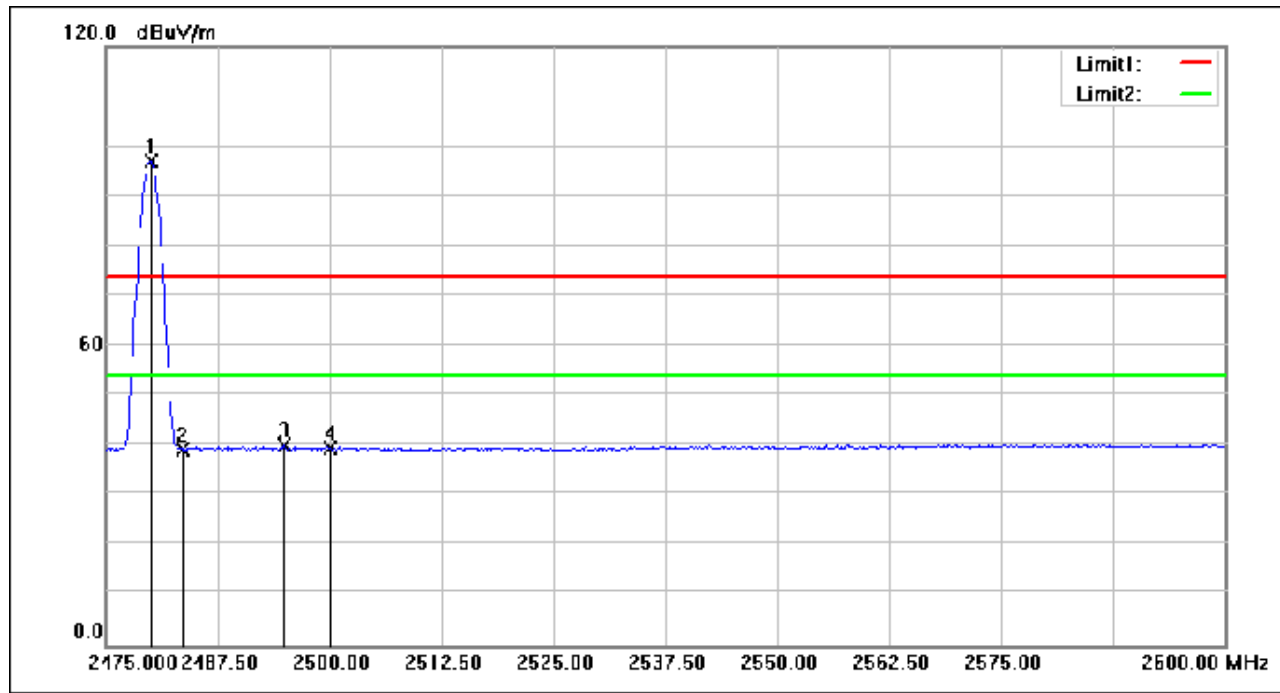
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	121.21	-24.28	96.93	54.00	42.93	AVG
2	2483.500	63.56	-24.27	39.29	54.00	-14.71	AVG
3	2494.875	64.22	-24.21	40.01	54.00	-13.99	AVG
4	2500.000	63.57	-24.19	39.38	54.00	-14.62	AVG

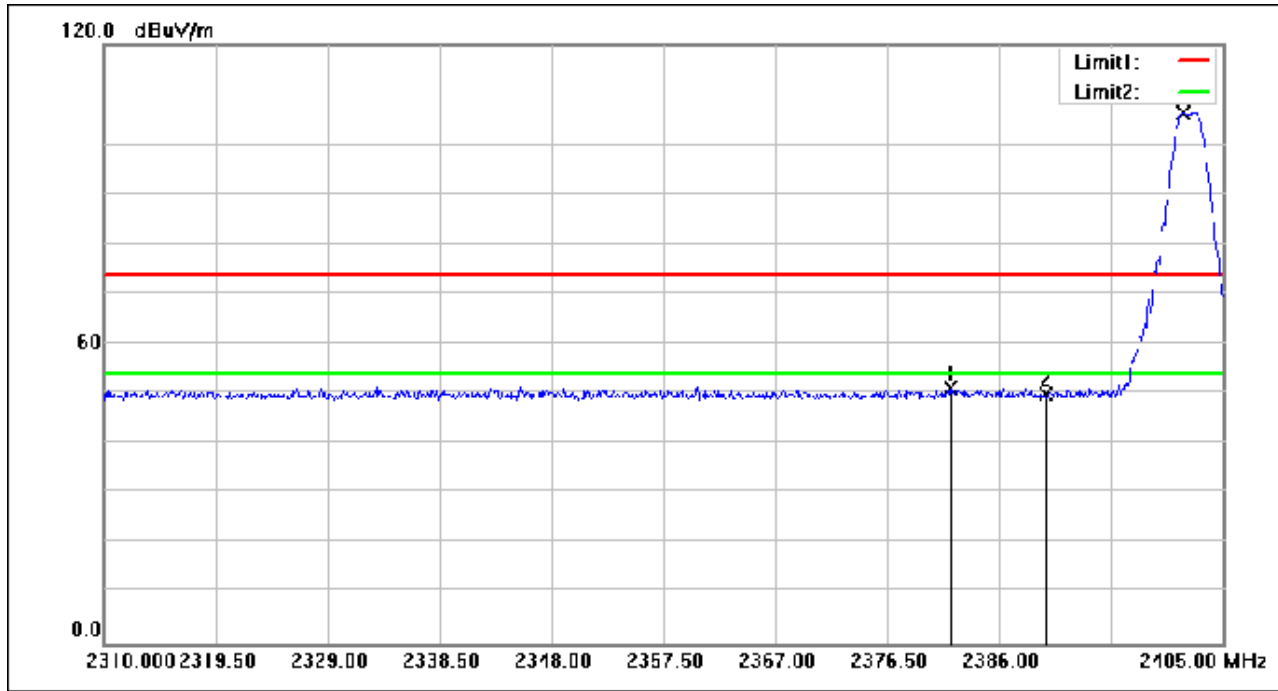
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Test Mode: 08; Polarity: Horizontal; Modulation: GFSK; Channel: Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2381.820	75.87	-24.74	51.13	74.00	-22.87	peak
2	2390.000	74.61	-24.71	49.90	74.00	-24.10	peak
3	2401.580	131.11	-24.65	106.46	74.00	32.46	peak

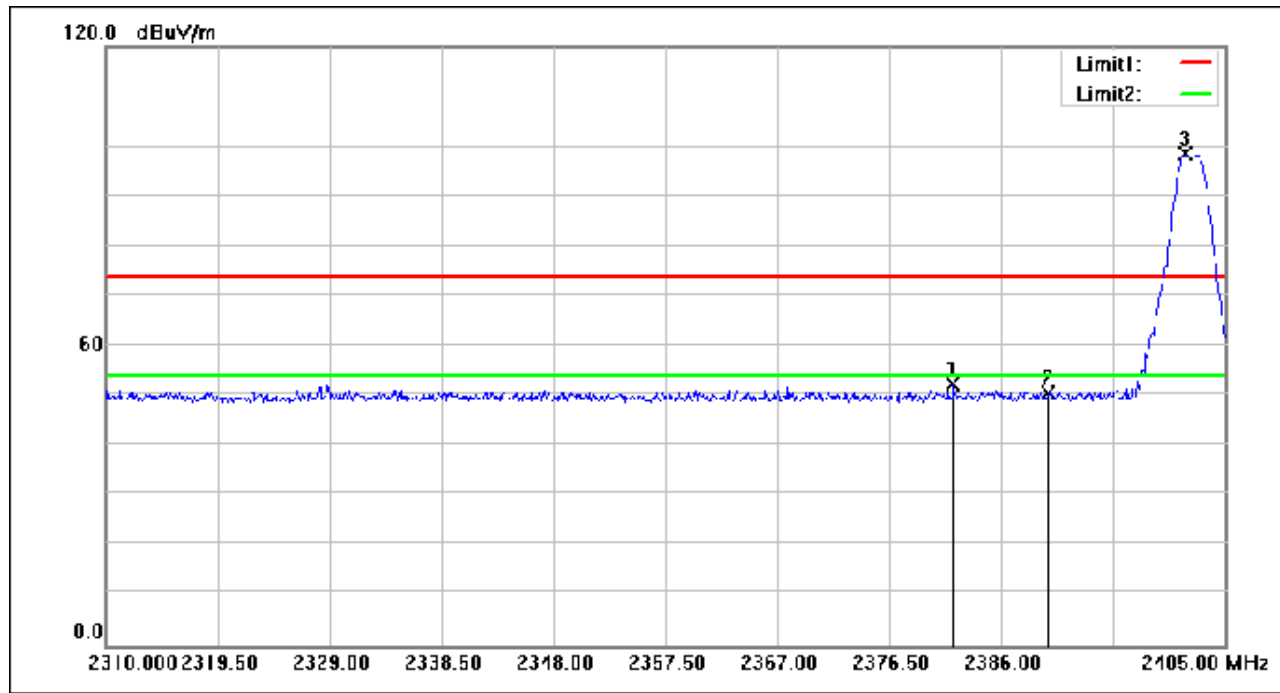
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2381.915	77.08	-24.74	52.34	74.00	-21.66	peak
2	2390.000	75.21	-24.71	50.50	74.00	-23.50	peak
3	2401.580	123.06	-24.65	98.41	74.00	24.41	peak

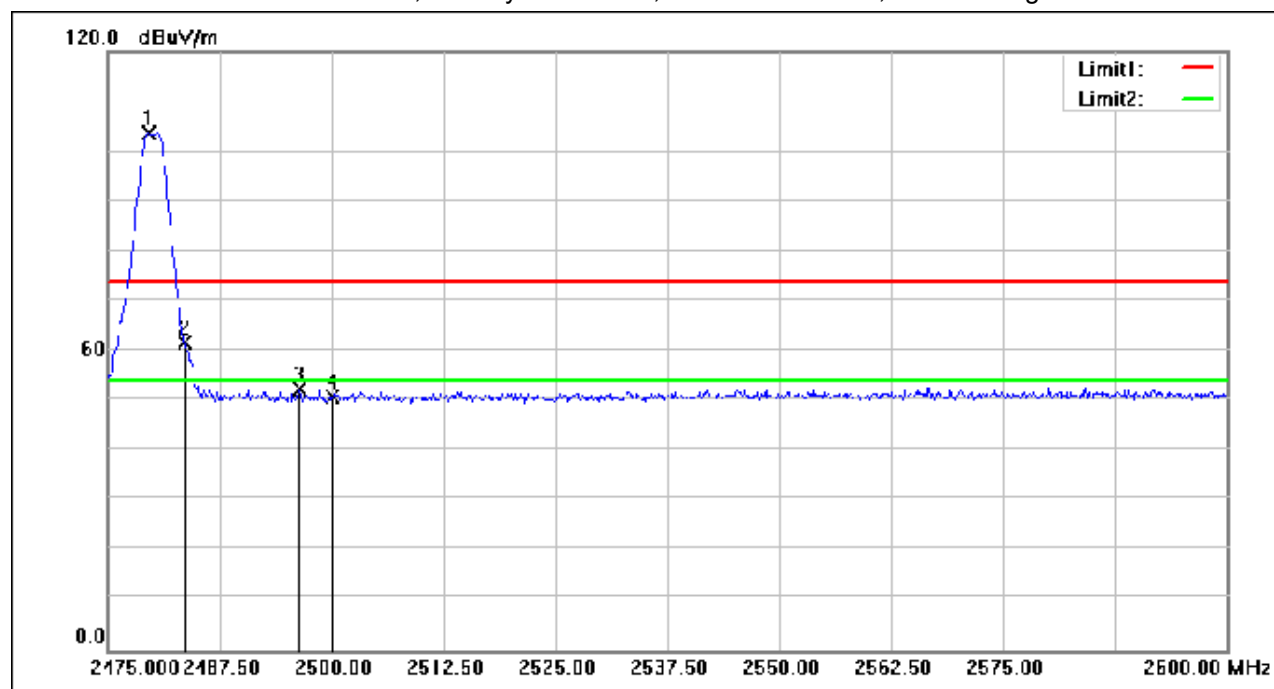
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.500	127.95	-24.28	103.67	74.00	29.67	peak
2	2483.500	85.97	-24.27	61.70	74.00	-12.30	peak
3	2496.375	76.41	-24.20	52.21	74.00	-21.79	peak
4	2500.000	75.04	-24.19	50.85	74.00	-23.15	peak

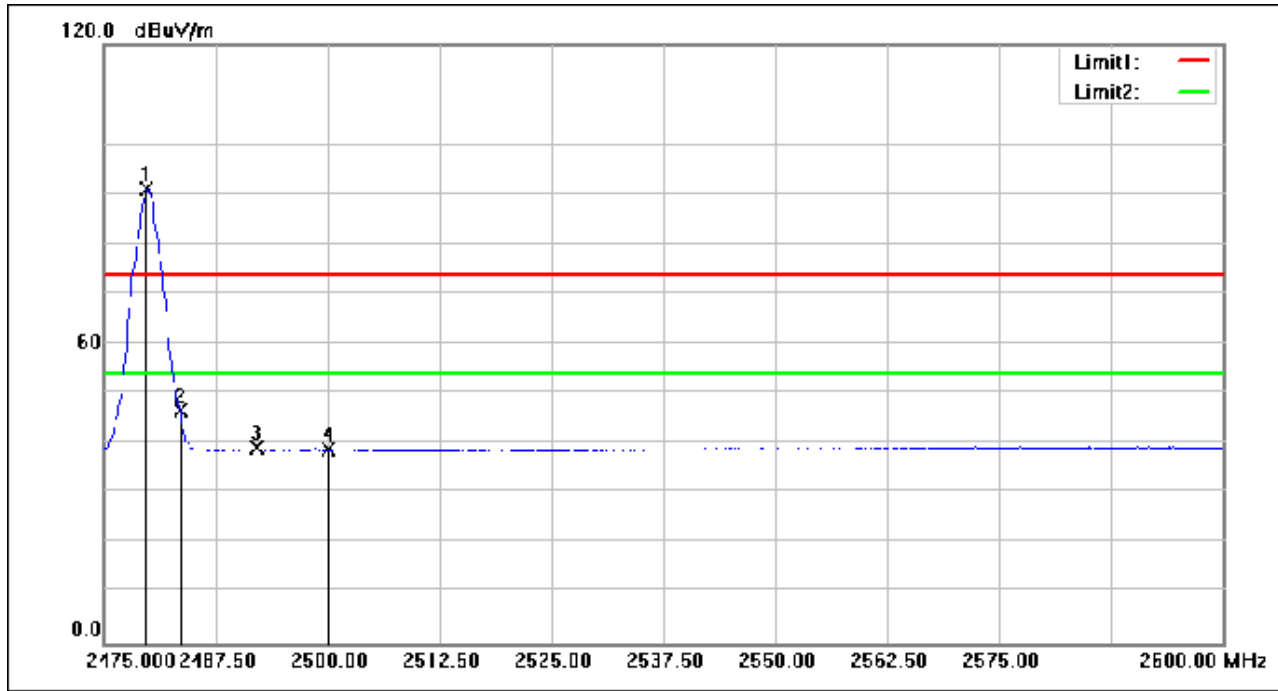
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	115.23	-24.28	90.95	54.00	36.95	AVG
2	2483.500	70.80	-24.27	46.53	54.00	-7.47	AVG
3	2492.000	63.25	-24.23	39.02	54.00	-14.98	AVG
4	2500.000	63.04	-24.19	38.85	54.00	-15.15	AVG

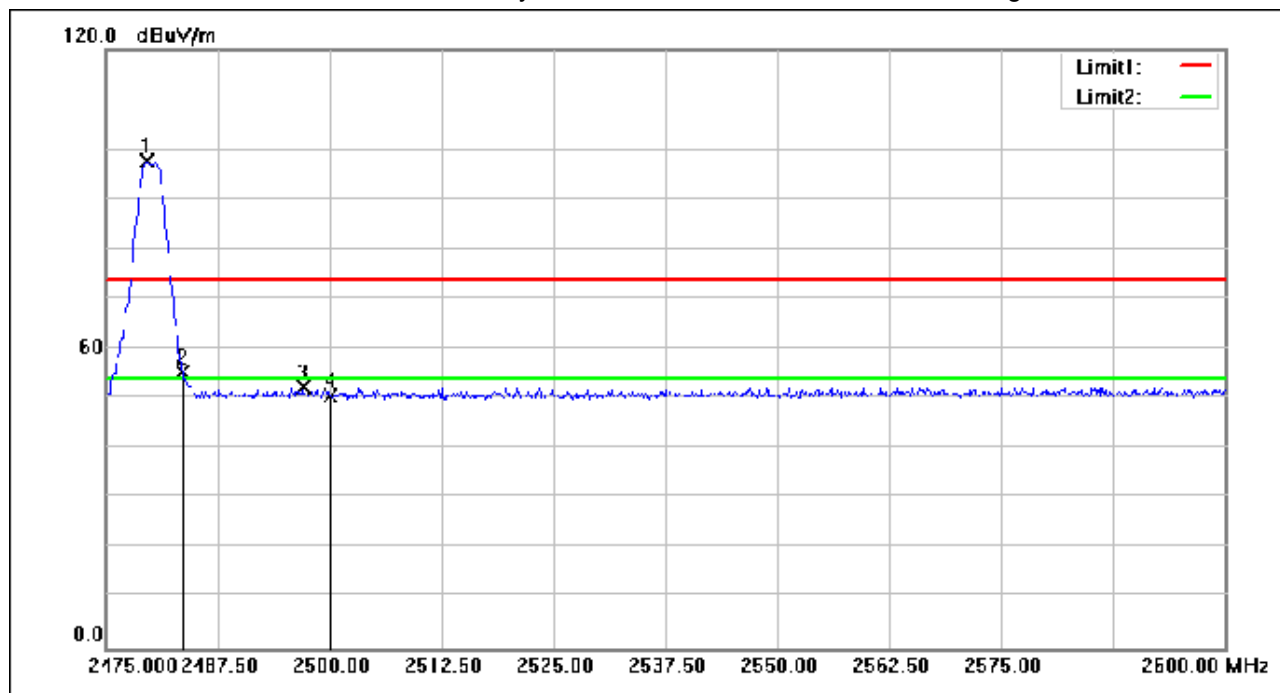
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.500	121.85	-24.28	97.57	74.00	23.57	peak
2	2483.500	79.60	-24.27	55.33	74.00	-18.67	peak
3	2497.000	76.47	-24.20	52.27	74.00	-21.73	peak
4	2500.000	74.79	-24.19	50.60	74.00	-23.40	peak

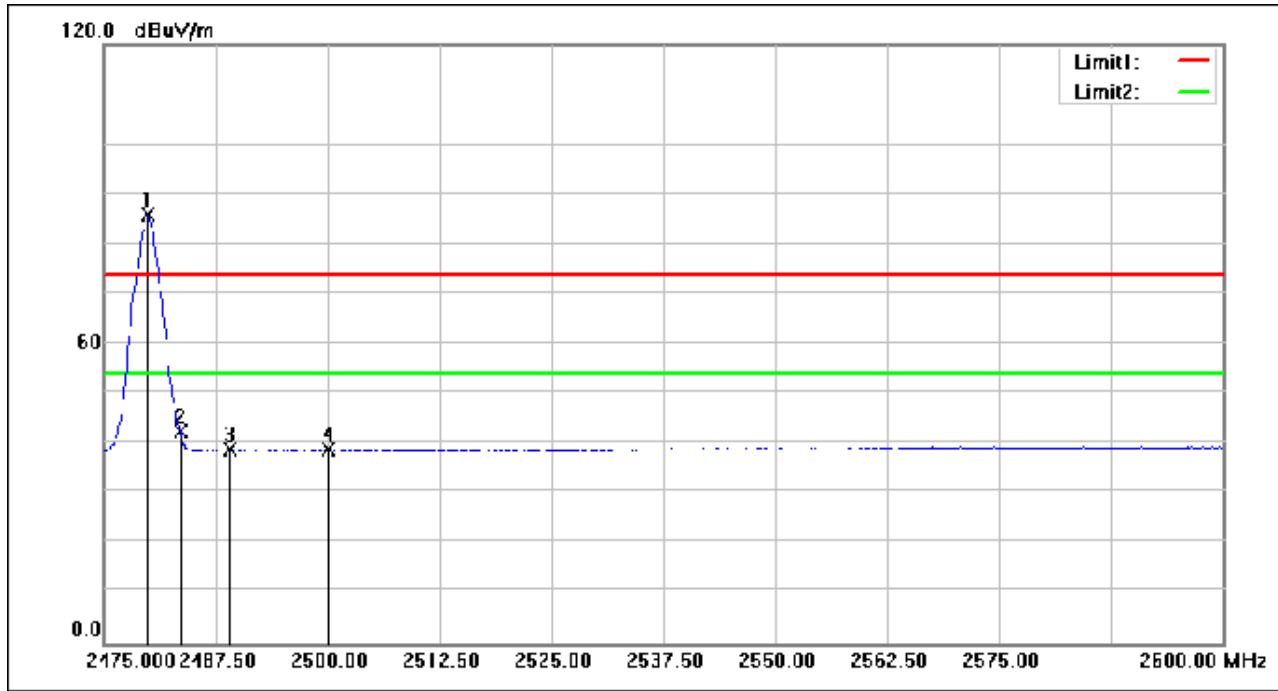
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.875	110.22	-24.28	85.94	54.00	31.94	AVG
2	2483.500	66.62	-24.27	42.35	54.00	-11.65	AVG
3	2489.000	63.17	-24.24	38.93	54.00	-15.07	AVG
4	2500.000	63.07	-24.19	38.88	54.00	-15.12	AVG

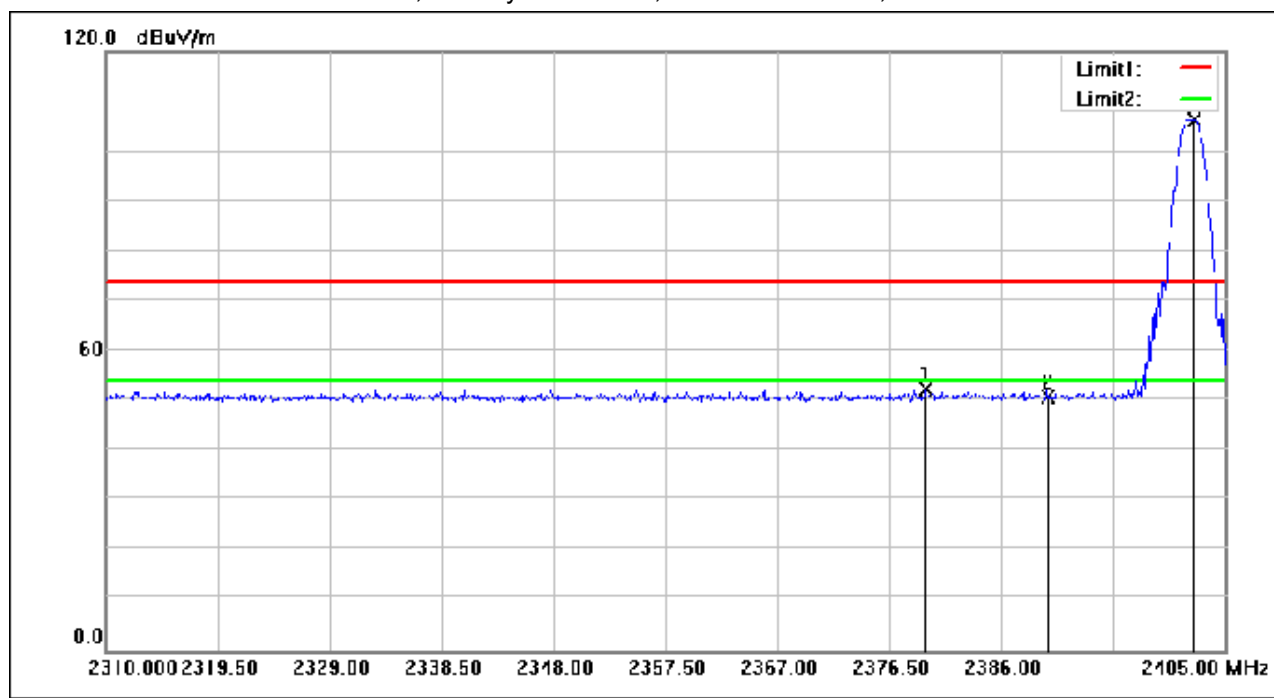
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2379.540	76.96	-24.75	52.21	74.00	-21.79	peak
2	2390.000	75.63	-24.71	50.92	74.00	-23.08	peak
3	2402.435	131.02	-24.65	106.37	74.00	32.37	peak

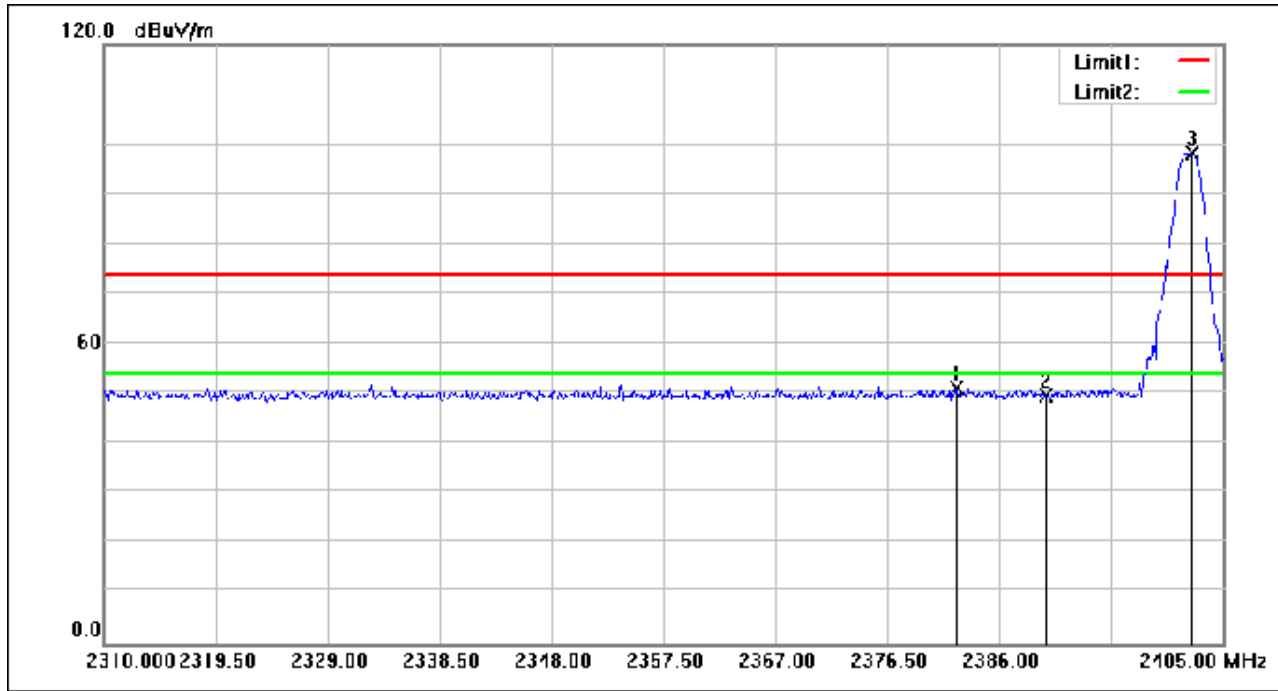
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.390	75.94	-24.74	51.20	74.00	-22.80	peak
2	2390.000	74.47	-24.71	49.76	74.00	-24.24	peak
3	2402.340	122.93	-24.65	98.28	74.00	24.28	peak

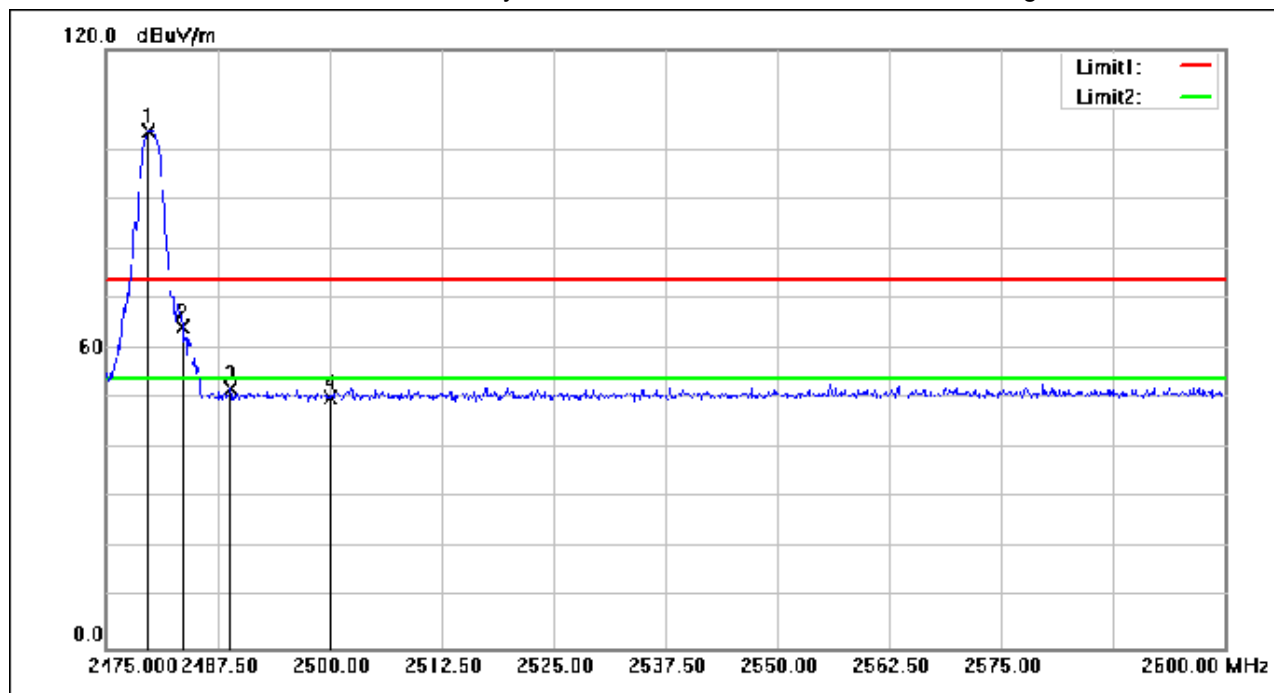
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	127.89	-24.28	103.61	74.00	29.61	peak
2	2483.500	88.71	-24.27	64.44	74.00	-9.56	peak
3	2488.875	76.24	-24.24	52.00	74.00	-22.00	peak
4	2500.000	74.30	-24.19	50.11	74.00	-23.89	peak

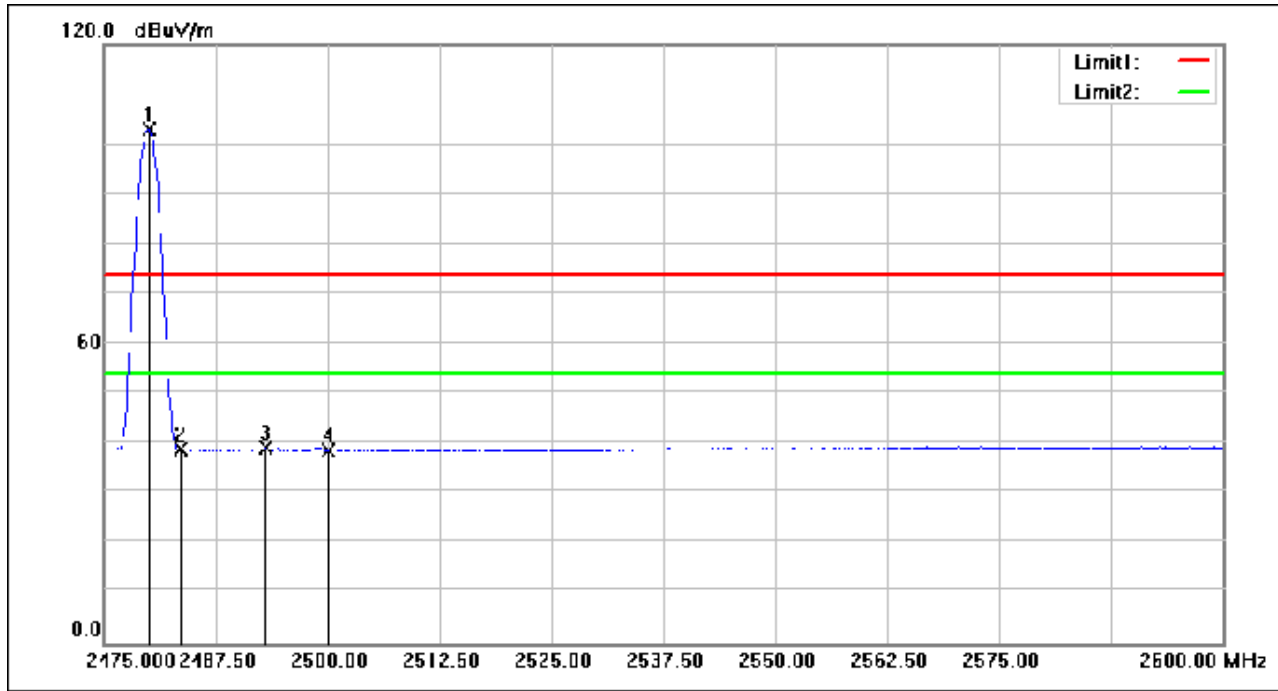
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	127.38	-24.28	103.10	54.00	49.10	AVG
2	2483.500	63.21	-24.27	38.94	54.00	-15.06	AVG
3	2493.125	63.31	-24.22	39.09	54.00	-14.91	AVG
4	2500.000	62.85	-24.19	38.66	54.00	-15.34	AVG

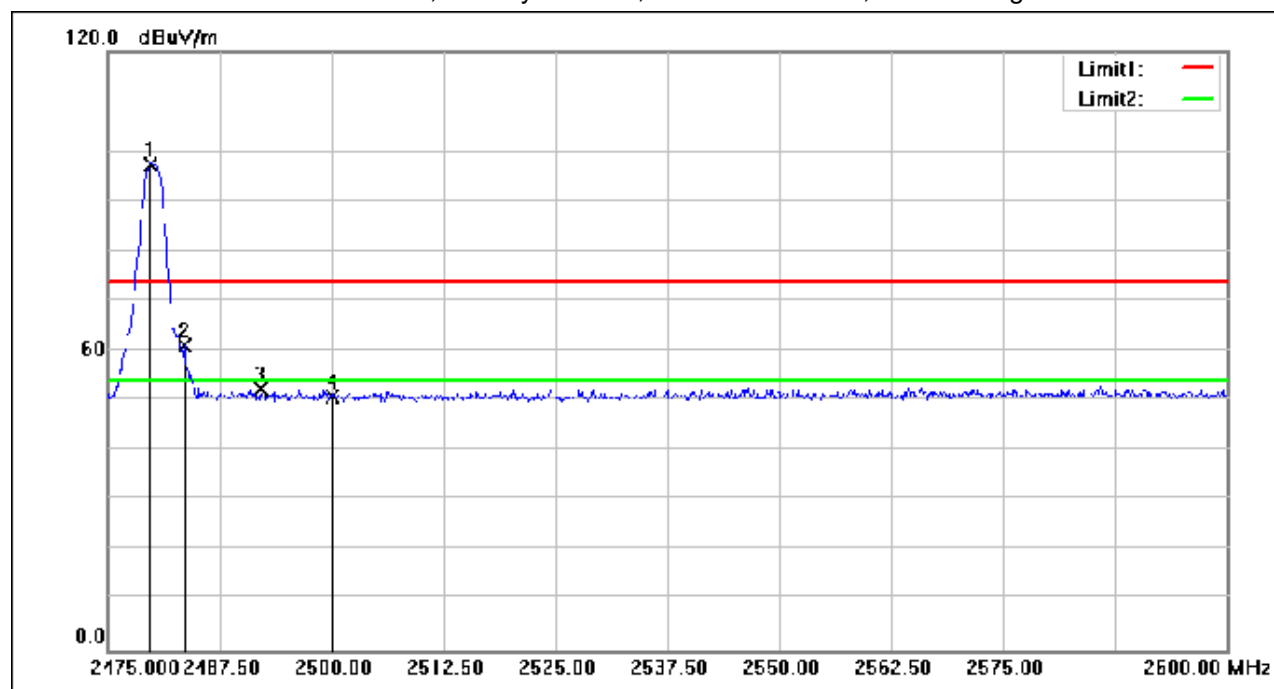
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	121.78	-24.28	97.50	74.00	23.50	peak
2	2483.500	85.22	-24.27	60.95	74.00	-13.05	peak
3	2492.000	76.71	-24.23	52.48	74.00	-21.52	peak
4	2500.000	74.99	-24.19	50.80	74.00	-23.20	peak

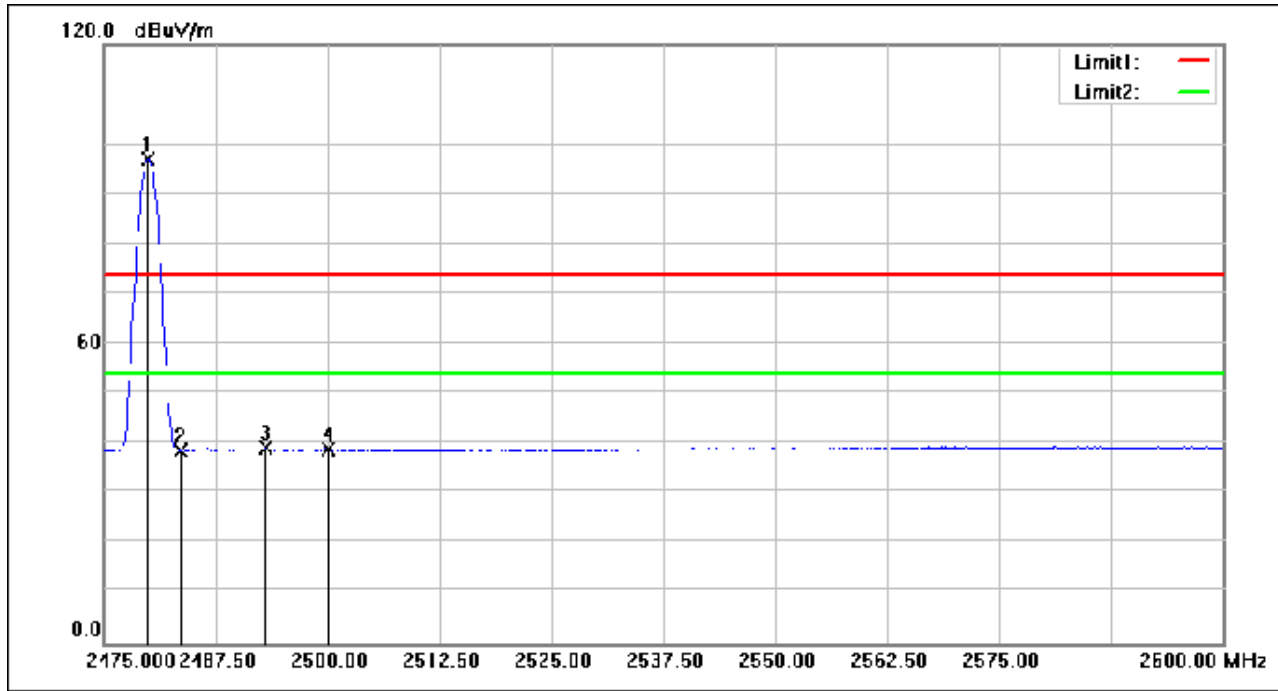
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.875	121.31	-24.28	97.03	54.00	43.03	AVG
2	2483.500	62.91	-24.27	38.64	54.00	-15.36	AVG
3	2493.000	63.23	-24.22	39.01	54.00	-14.99	AVG
4	2500.000	62.90	-24.19	38.71	54.00	-15.29	AVG

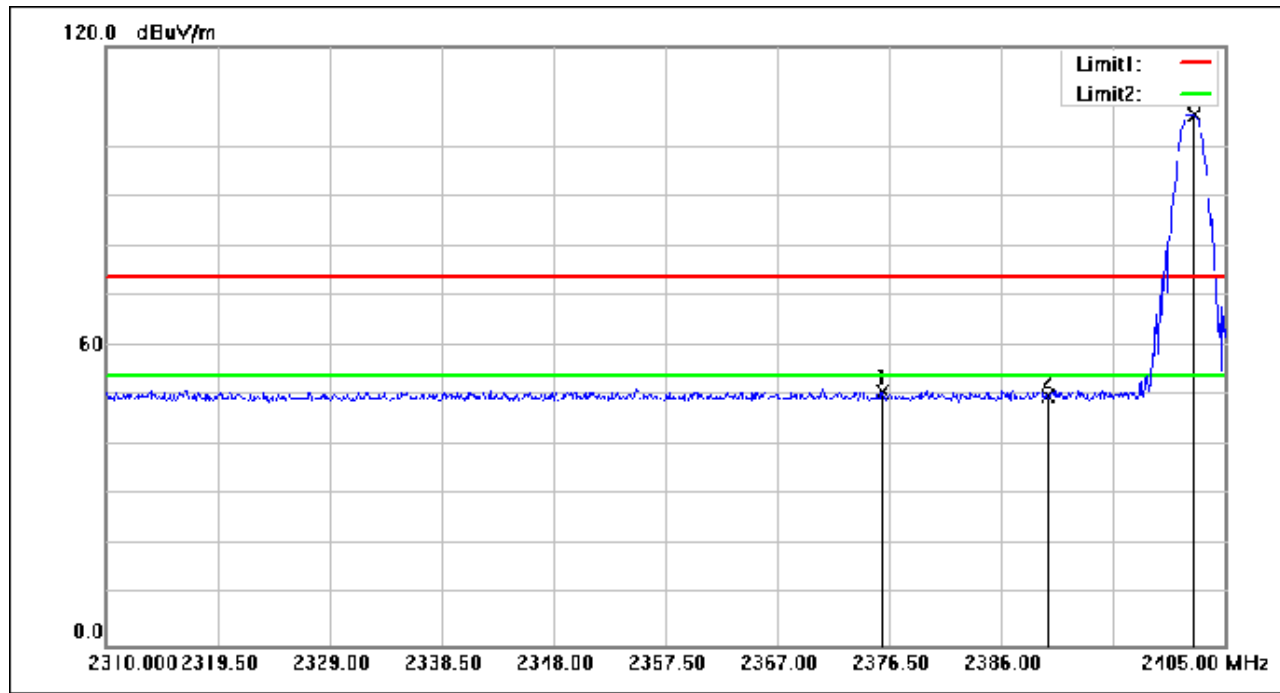
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2375.930	75.68	-24.77	50.91	74.00	-23.09	peak
2	2390.000	74.55	-24.71	49.84	74.00	-24.16	peak
3	2402.340	130.97	-24.65	106.32	74.00	32.32	peak

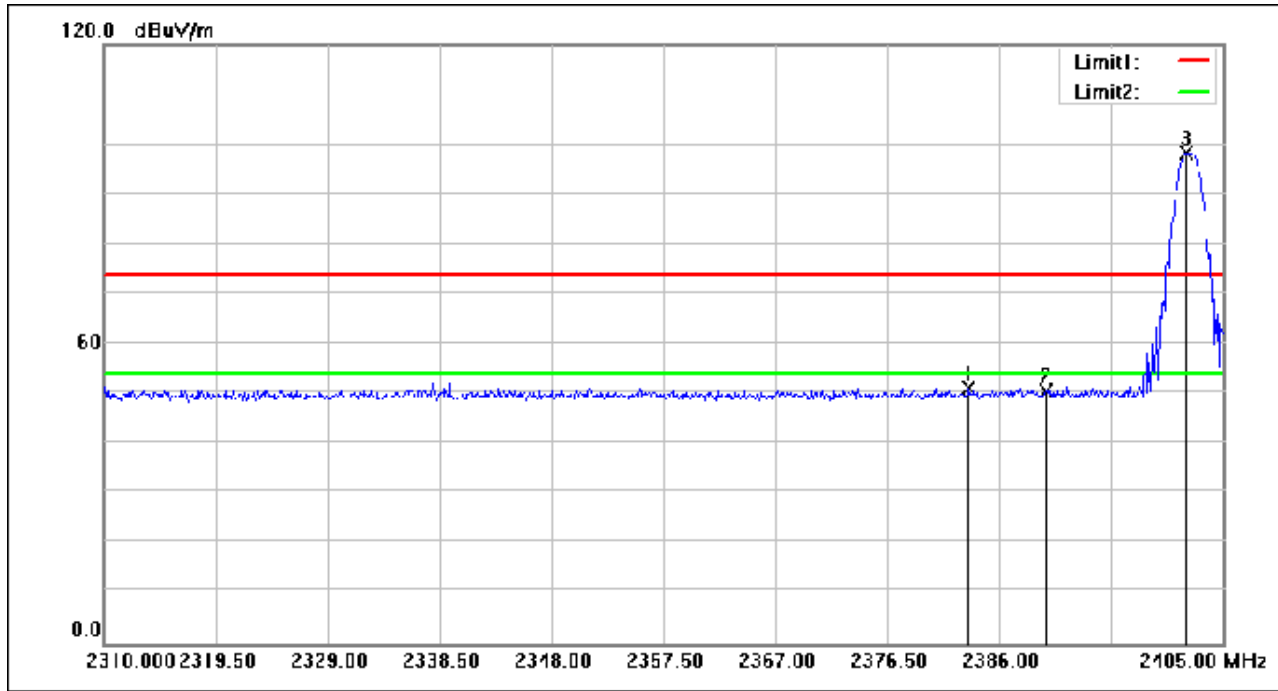
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2383.435	75.79	-24.73	51.06	74.00	-22.94	peak
2	2390.000	75.40	-24.71	50.69	74.00	-23.31	peak
3	2401.865	122.86	-24.65	98.21	74.00	24.21	peak

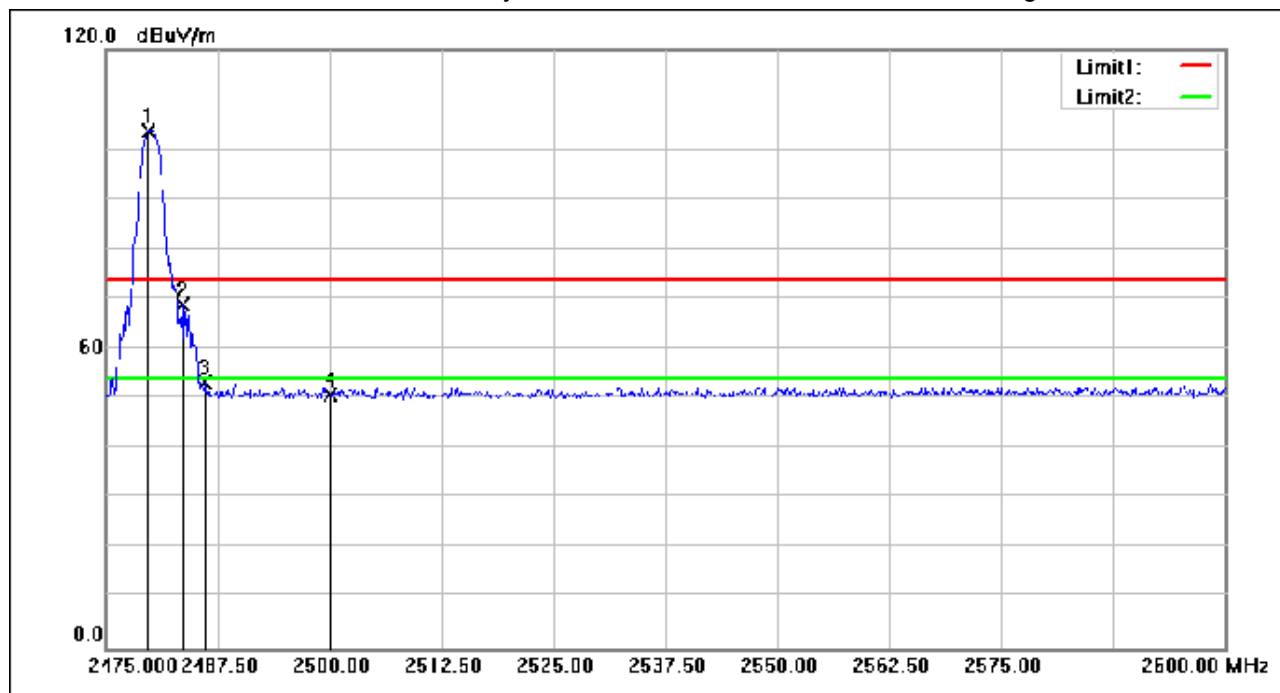
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	127.87	-24.28	103.59	74.00	29.59	peak
2	2483.500	93.14	-24.27	68.87	74.00	-5.13	peak
3	2486.125	77.52	-24.26	53.26	74.00	-20.74	peak
4	2500.000	75.04	-24.19	50.85	74.00	-23.15	peak

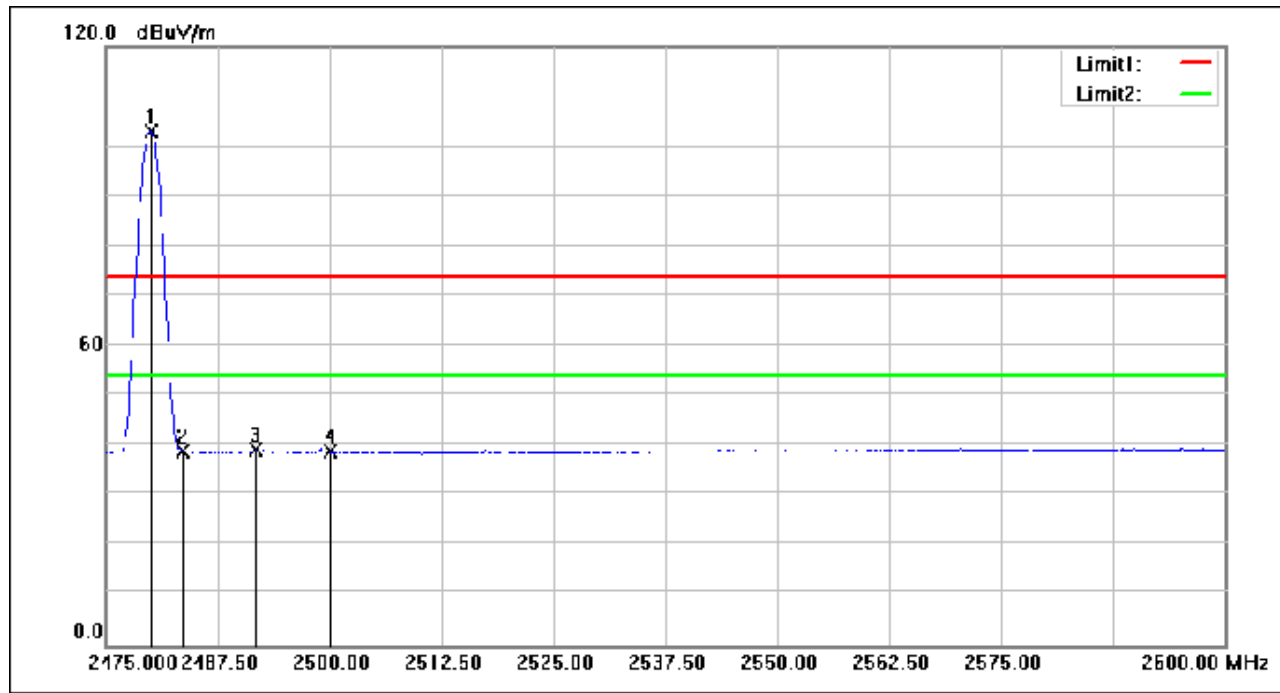
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	127.34	-24.28	103.06	54.00	49.06	AVG
2	2483.500	63.27	-24.27	39.00	54.00	-15.00	AVG
3	2491.750	63.27	-24.23	39.04	54.00	-14.96	AVG
4	2500.000	62.99	-24.19	38.80	54.00	-15.20	AVG

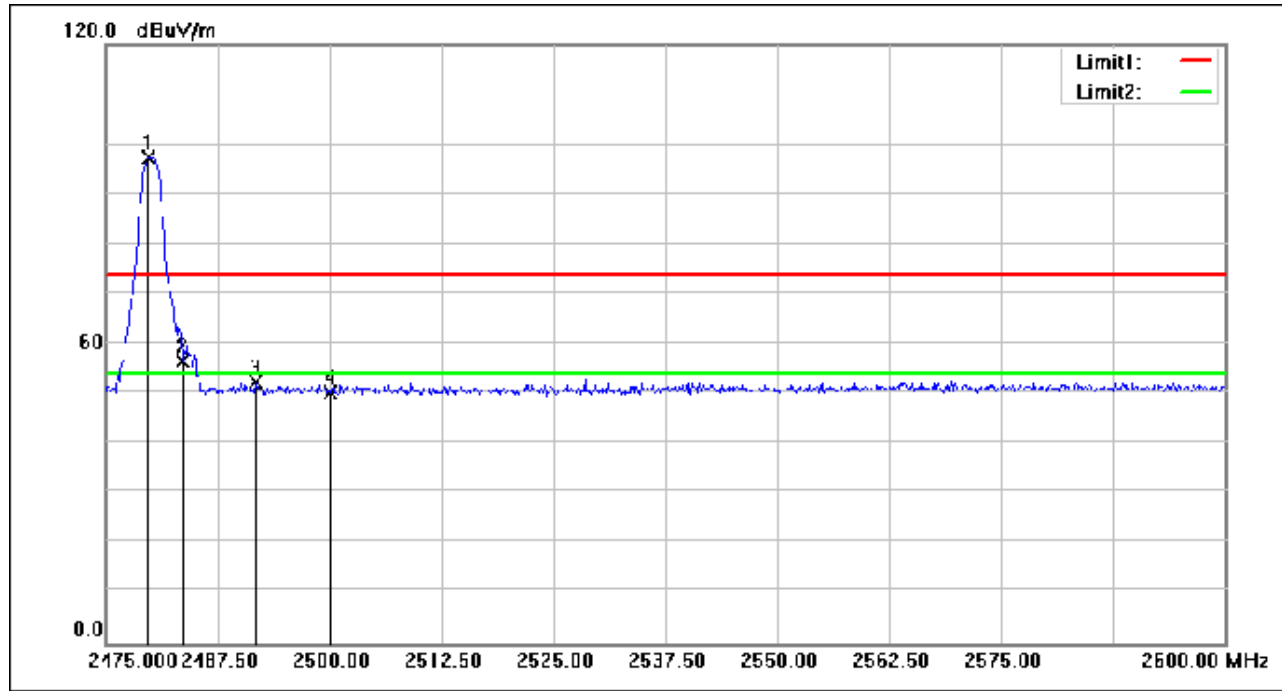
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	121.73	-24.28	97.45	74.00	23.45	peak
2	2483.500	80.85	-24.27	56.58	74.00	-17.42	peak
3	2491.750	76.61	-24.23	52.38	74.00	-21.62	peak
4	2500.000	74.35	-24.19	50.16	74.00	-23.84	peak

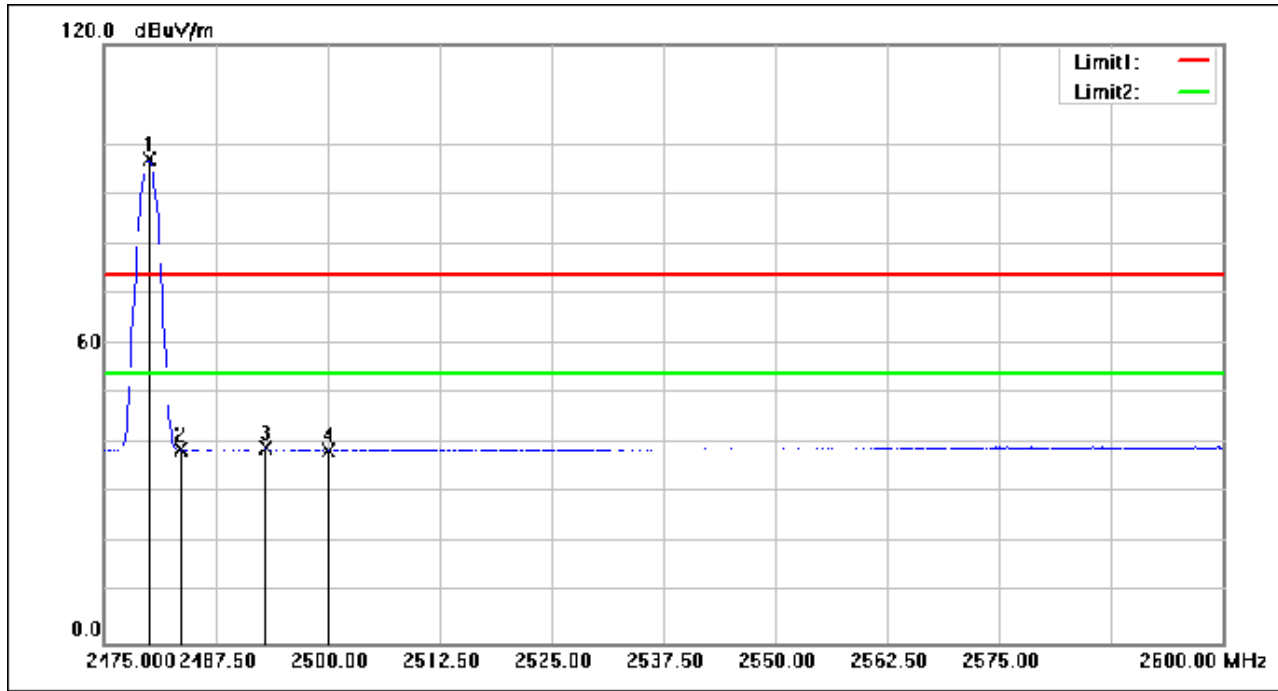
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	121.18	-24.28	96.90	54.00	42.90	AVG
2	2483.500	63.04	-24.27	38.77	54.00	-15.23	AVG
3	2493.000	63.23	-24.22	39.01	54.00	-14.99	AVG
4	2500.000	62.84	-24.19	38.65	54.00	-15.35	AVG

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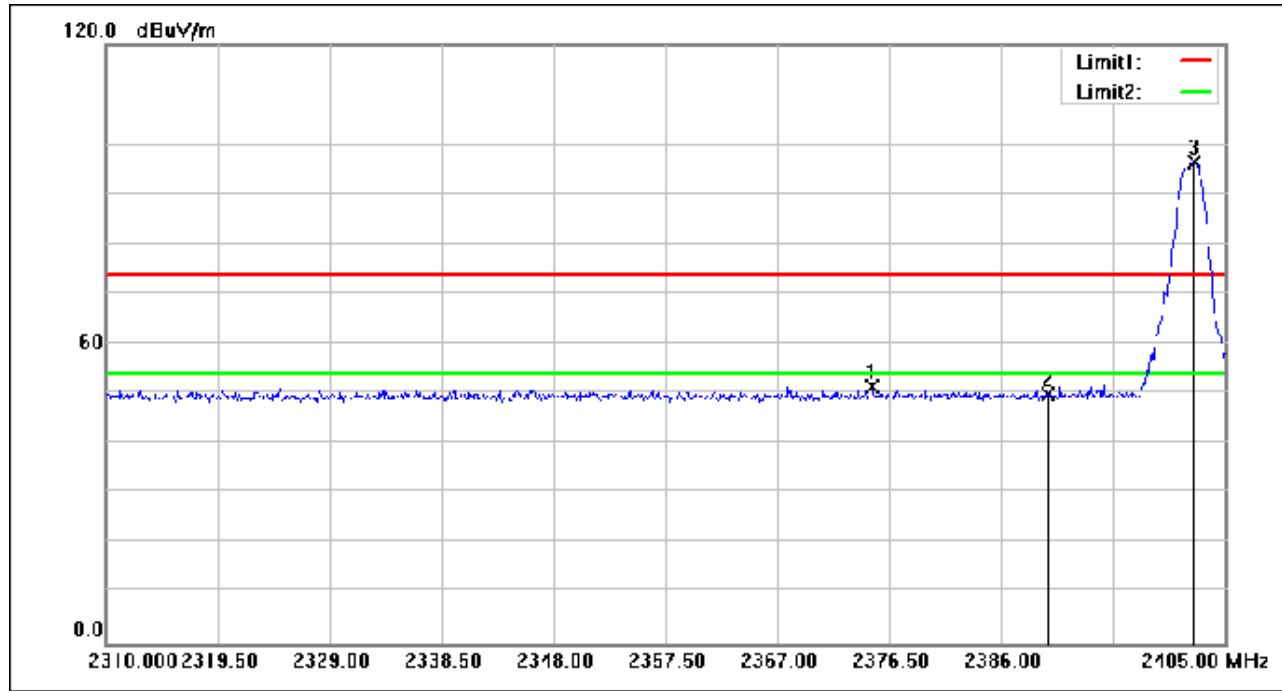
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PCB Antenna

Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2375.075	76.36	-24.78	51.58	74.00	-22.42	peak
2	2390.000	74.63	-24.71	49.92	74.00	-24.08	peak
3	2402.340	121.01	-24.65	96.36	74.00	22.36	peak

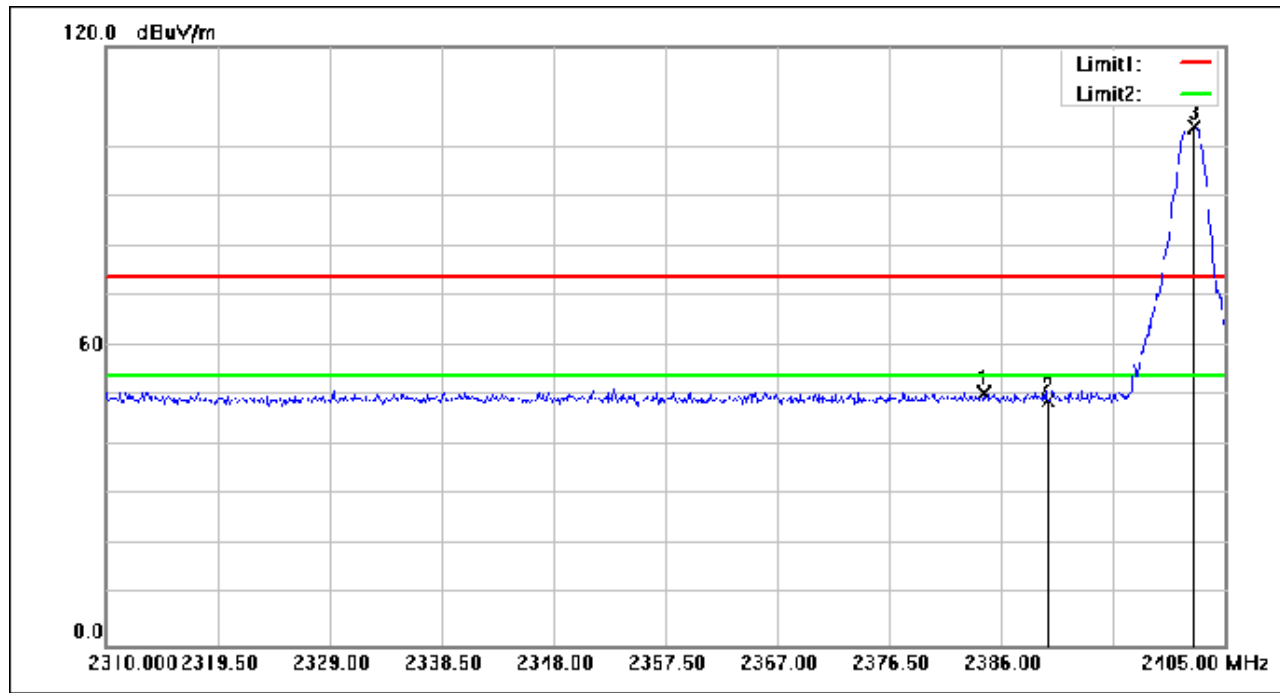
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2384.480	75.37	-24.73	50.64	74.00	-23.36	peak
2	2390.000	73.83	-24.71	49.12	74.00	-24.88	peak
3	2402.340	128.74	-24.65	104.09	74.00	30.09	peak

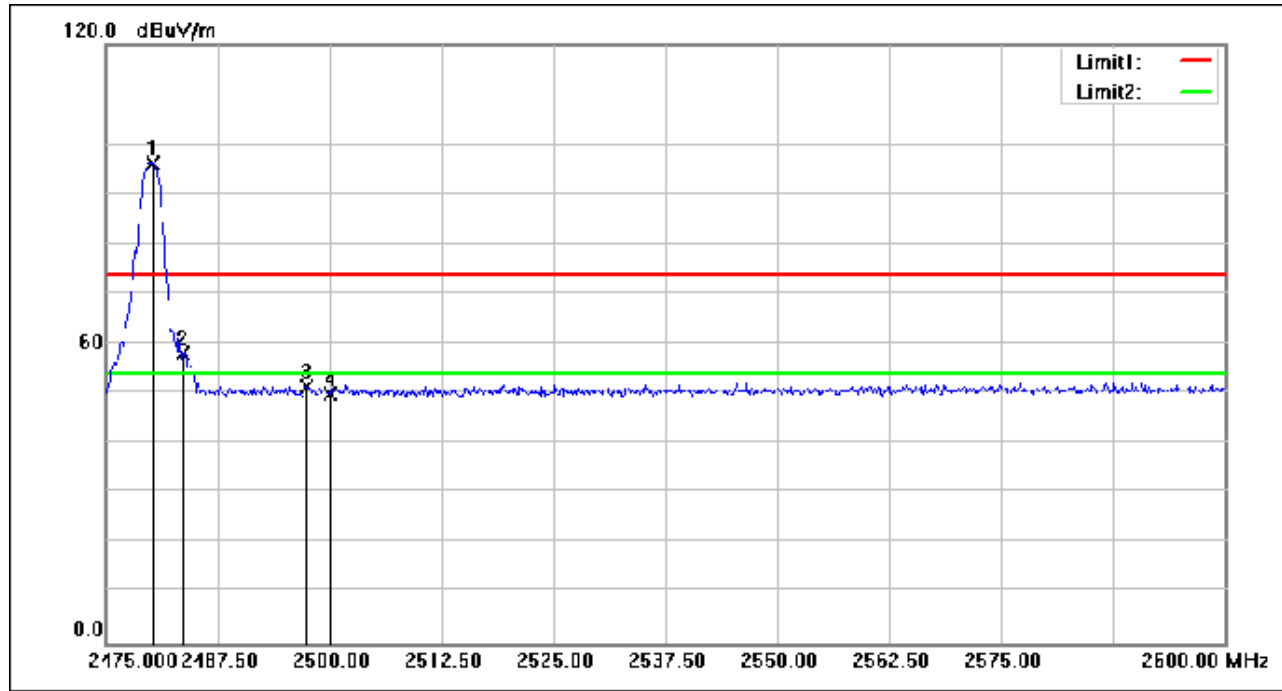
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.250	120.50	-24.28	96.22	74.00	22.22	peak
2	2483.500	82.33	-24.27	58.06	74.00	-15.94	peak
3	2497.375	75.73	-24.20	51.53	74.00	-22.47	peak
4	2500.000	74.11	-24.19	49.92	74.00	-24.08	peak

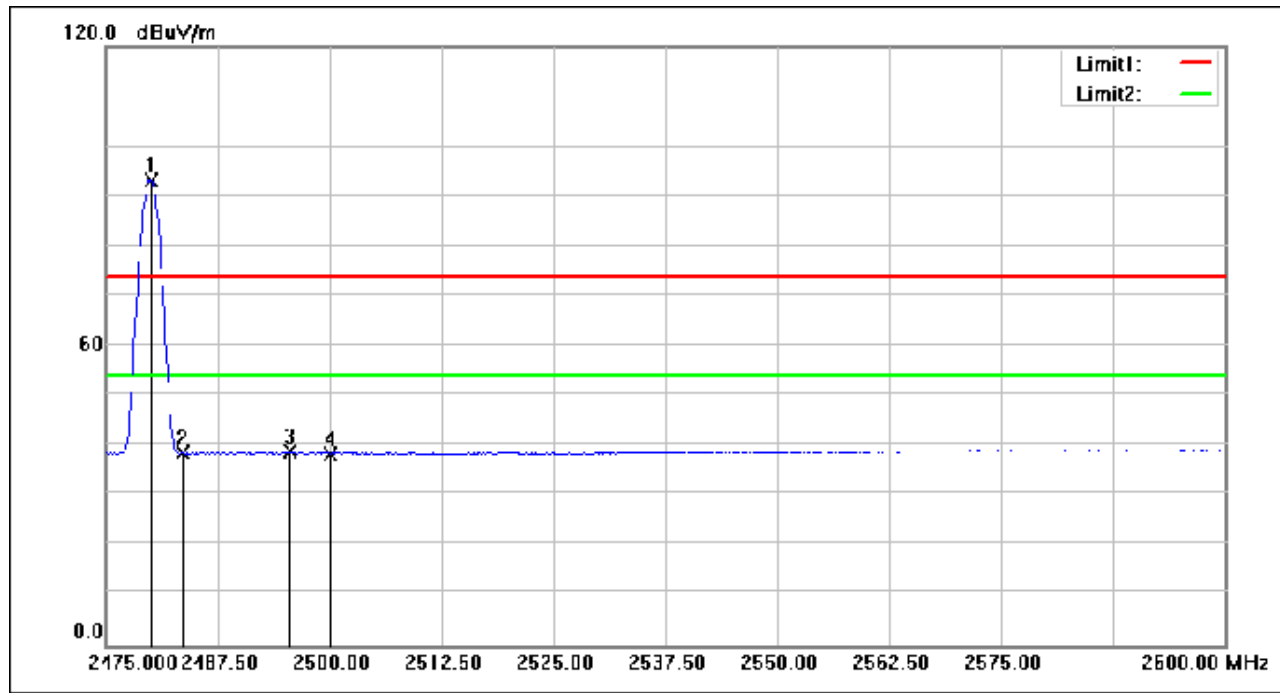
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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	117.58	-24.28	93.30	54.00	39.30	AVG
2	2483.500	62.75	-24.27	38.48	54.00	-15.52	AVG
3	2495.500	62.96	-24.21	38.75	54.00	-15.25	AVG
4	2500.000	62.57	-24.19	38.38	54.00	-15.62	AVG

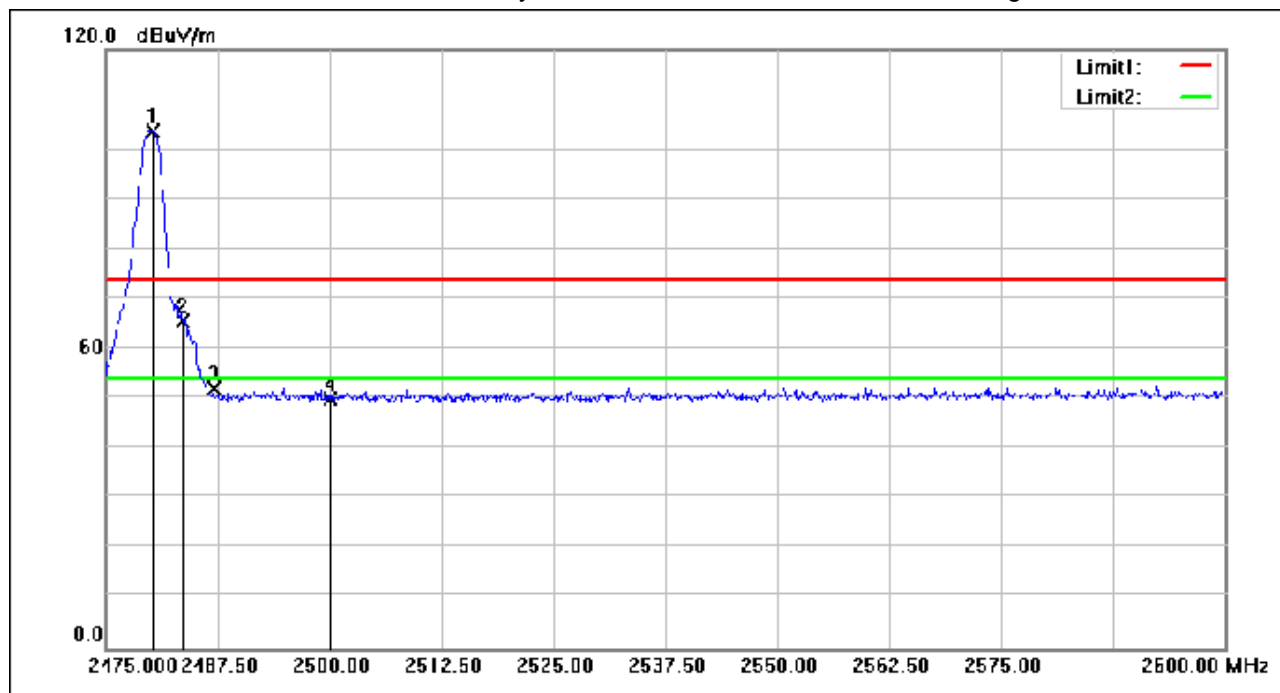
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.250	128.06	-24.28	103.78	74.00	29.78	peak
2	2483.500	89.84	-24.27	65.57	74.00	-8.43	peak
3	2487.000	76.24	-24.25	51.99	74.00	-22.01	peak
4	2500.000	74.03	-24.19	49.84	74.00	-24.16	peak

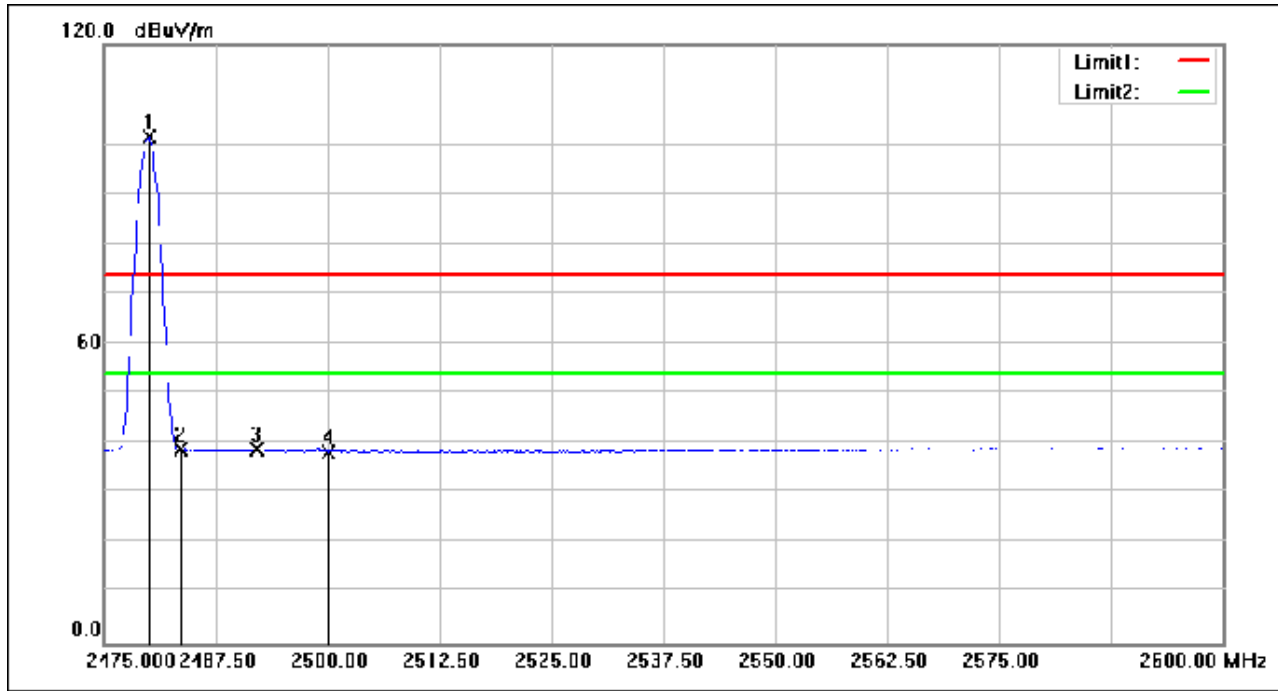
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	125.91	-24.28	101.63	54.00	47.63	AVG
2	2483.500	63.14	-24.27	38.87	54.00	-15.13	AVG
3	2492.000	63.17	-24.23	38.94	54.00	-15.06	AVG
4	2500.000	62.56	-24.19	38.37	54.00	-15.63	AVG

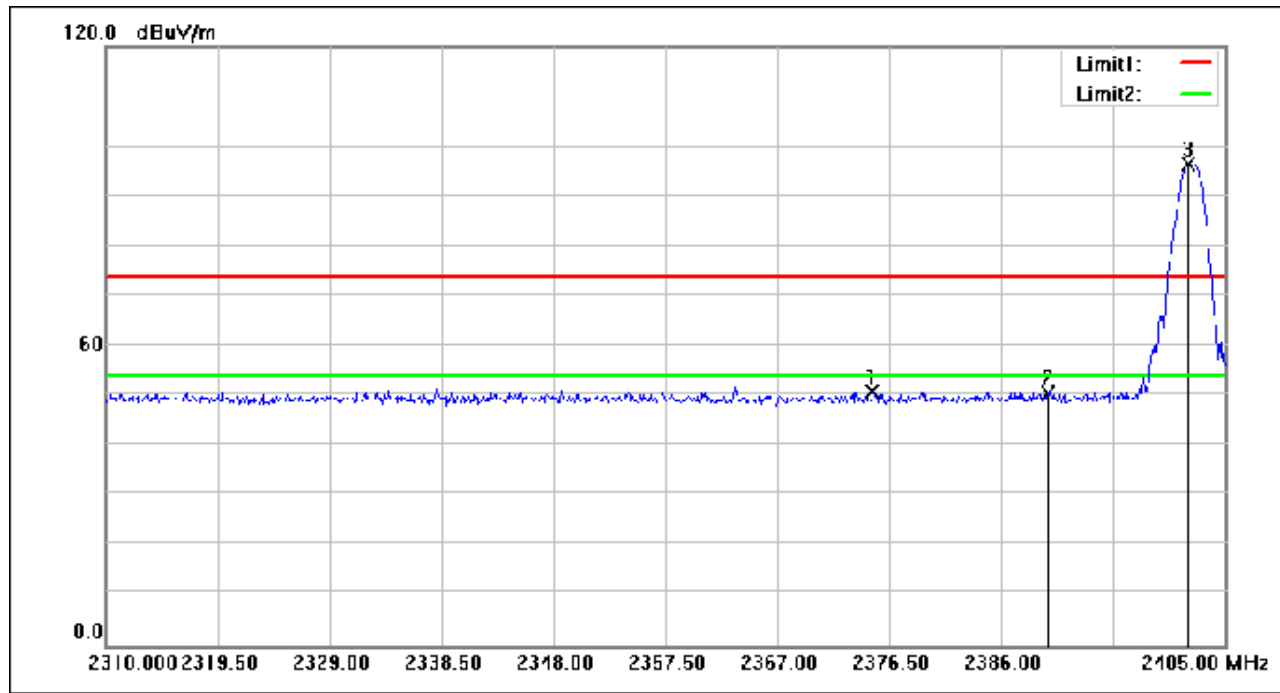
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2375.075	75.69	-24.78	50.91	74.00	-23.09	peak
2	2390.000	75.20	-24.71	50.49	74.00	-23.51	peak
3	2401.865	121.06	-24.65	96.41	74.00	22.41	peak

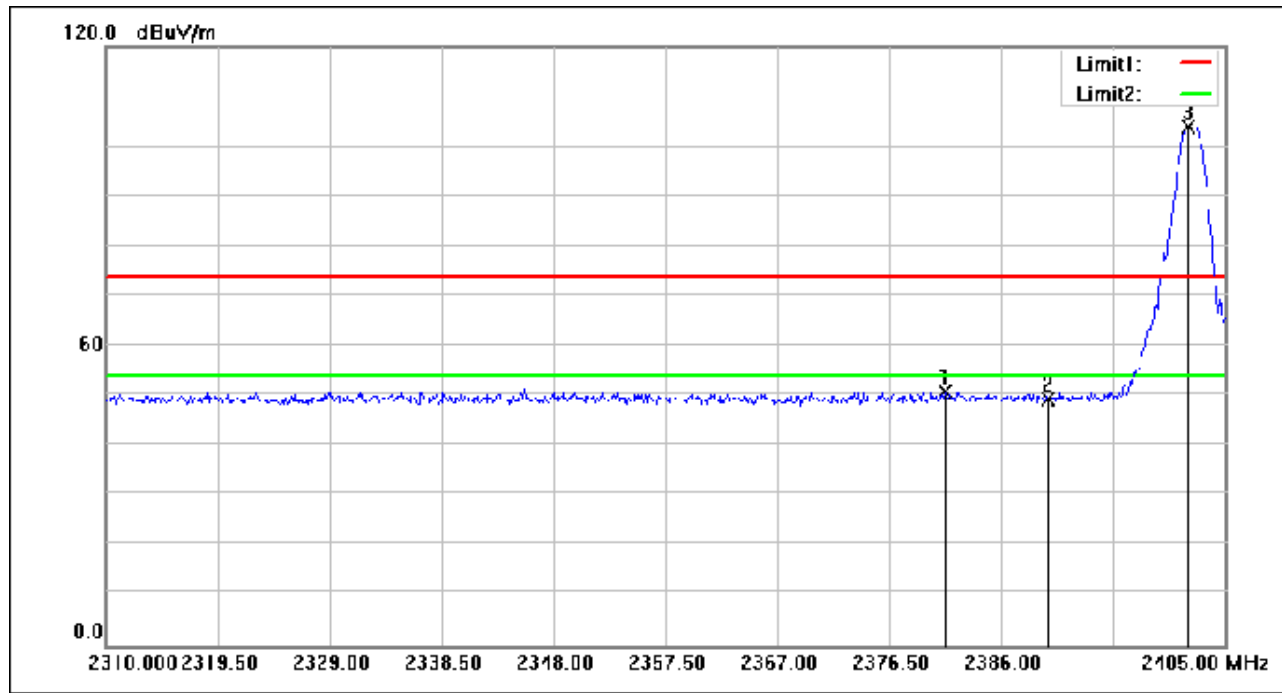
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2381.250	75.62	-24.74	50.88	74.00	-23.12	peak
2	2390.000	73.96	-24.71	49.25	74.00	-24.75	peak
3	2401.865	128.73	-24.65	104.08	74.00	30.08	peak

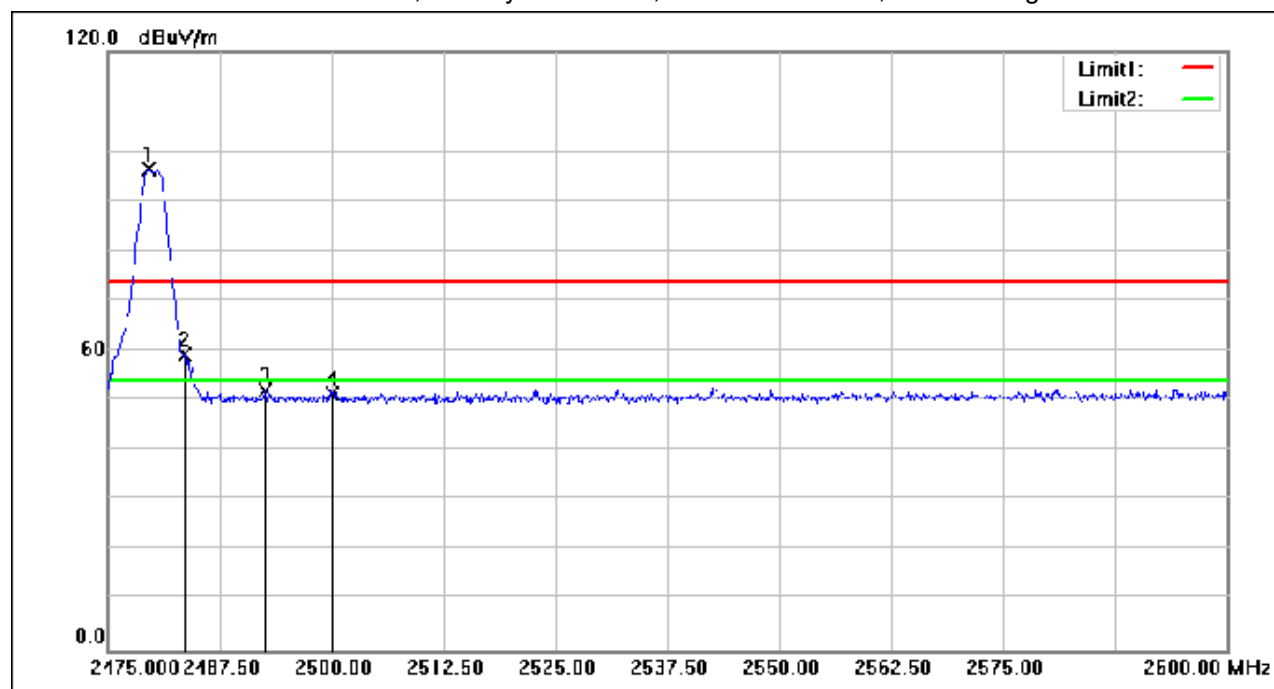
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.500	120.59	-24.28	96.31	74.00	22.31	peak
2	2483.500	83.50	-24.27	59.23	74.00	-14.77	peak
3	2492.625	76.21	-24.23	51.98	74.00	-22.02	peak
4	2500.000	75.69	-24.19	51.50	74.00	-22.50	peak

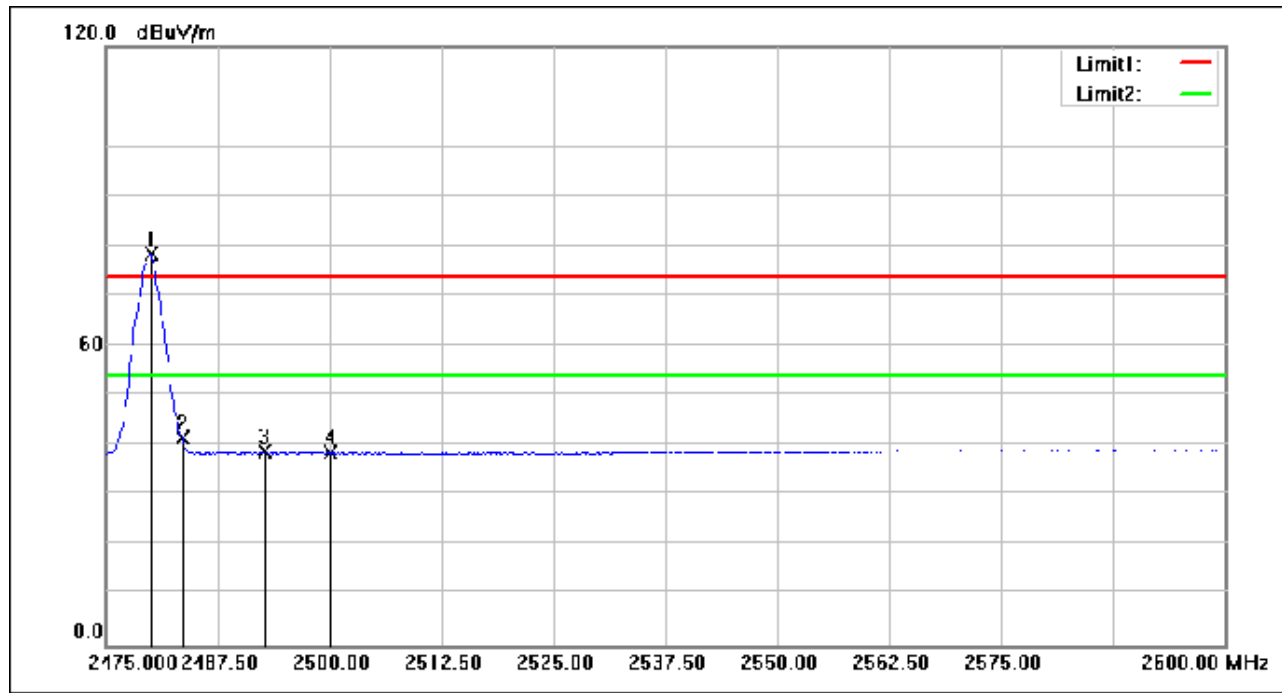
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	102.78	-24.28	78.50	54.00	24.50	AVG
2	2483.500	65.82	-24.27	41.55	54.00	-12.45	AVG
3	2492.750	62.94	-24.23	38.71	54.00	-15.29	AVG
4	2500.000	62.60	-24.19	38.41	54.00	-15.59	AVG

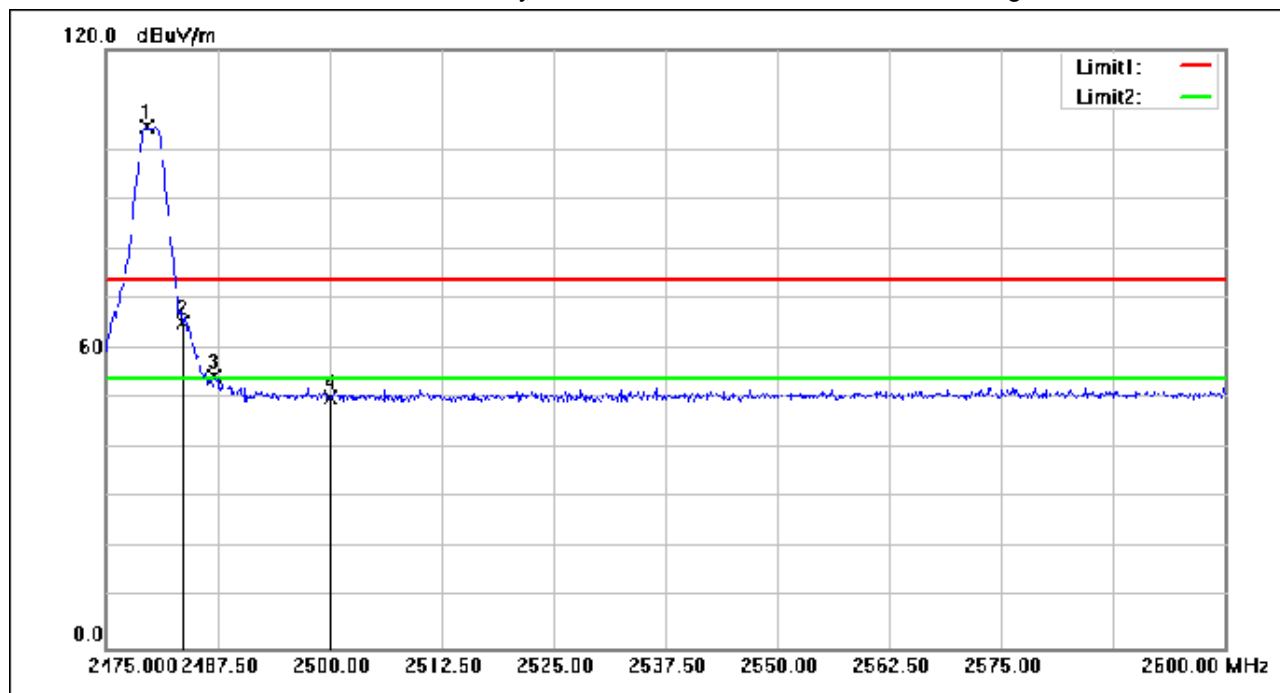
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.500	128.87	-24.28	104.59	74.00	30.59	peak
2	2483.500	89.62	-24.27	65.35	74.00	-8.65	peak
3	2487.125	78.66	-24.25	54.41	74.00	-19.59	peak
4	2500.000	74.39	-24.19	50.20	74.00	-23.80	peak

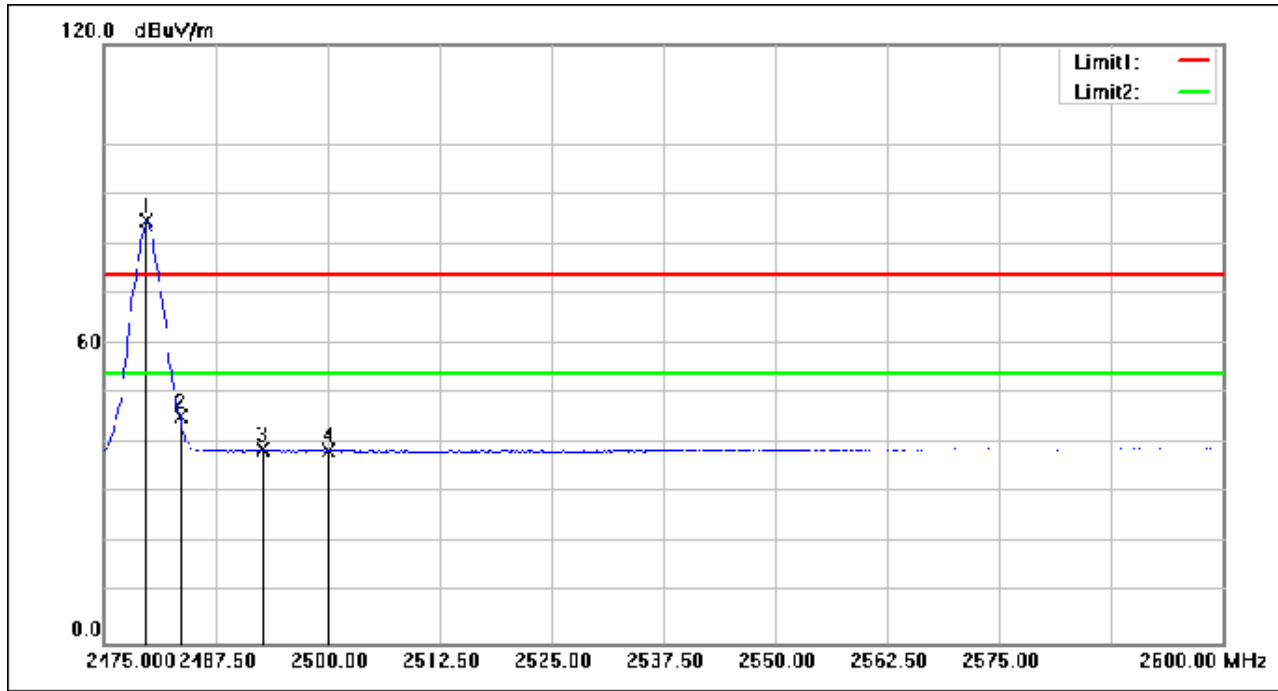
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	108.95	-24.28	84.67	54.00	30.67	AVG
2	2483.500	69.69	-24.27	45.42	54.00	-8.58	AVG
3	2492.750	62.95	-24.23	38.72	54.00	-15.28	AVG
4	2500.000	62.66	-24.19	38.47	54.00	-15.53	AVG

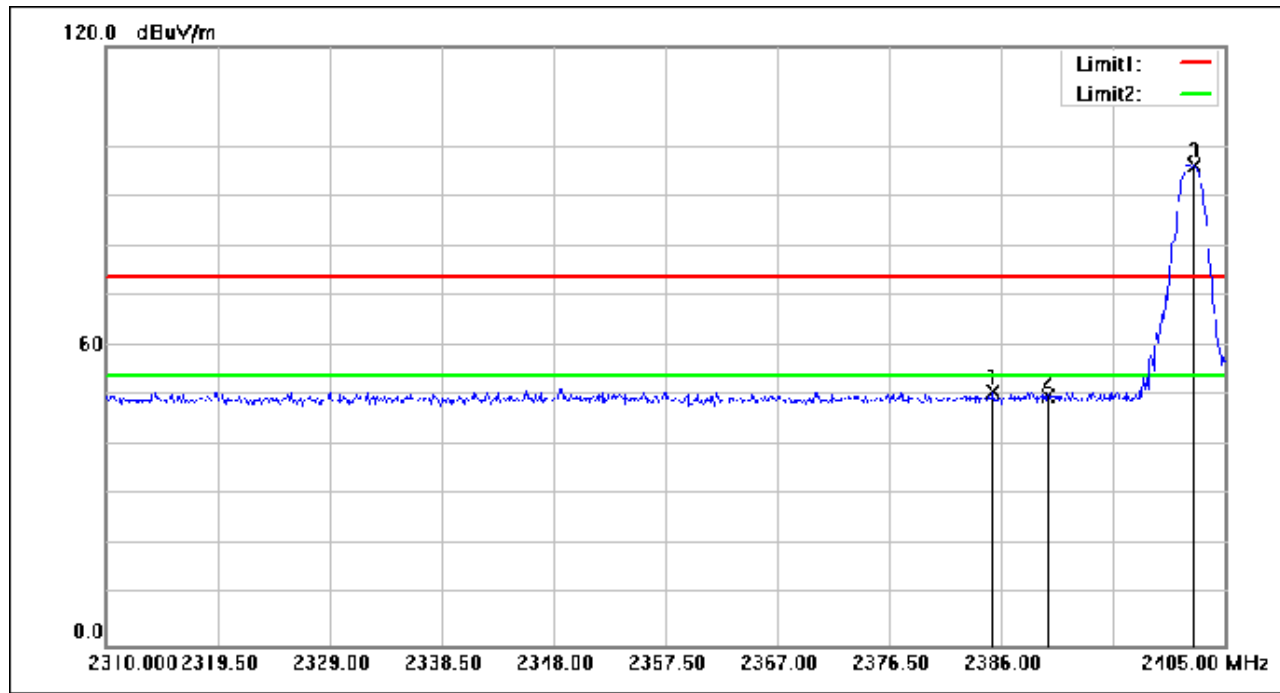
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Test Mode: 09; Polarity: Horizontal; Modulation: GFSK; Channel: Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2385.335	75.43	-24.73	50.70	74.00	-23.30	peak
2	2390.000	74.60	-24.71	49.89	74.00	-24.11	peak
3	2402.435	120.75	-24.65	96.10	74.00	22.10	peak

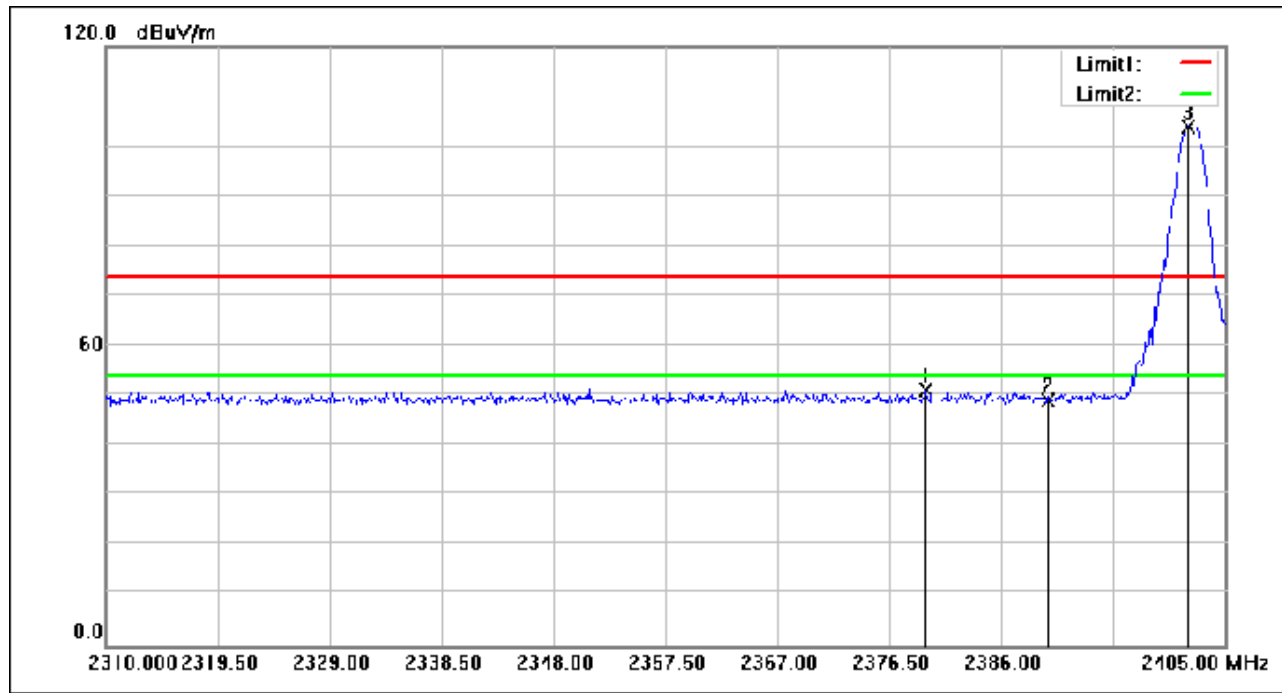
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2379.635	75.91	-24.75	51.16	74.00	-22.84	peak
2	2390.000	73.80	-24.71	49.09	74.00	-24.91	peak
3	2401.865	128.75	-24.65	104.10	74.00	30.10	peak

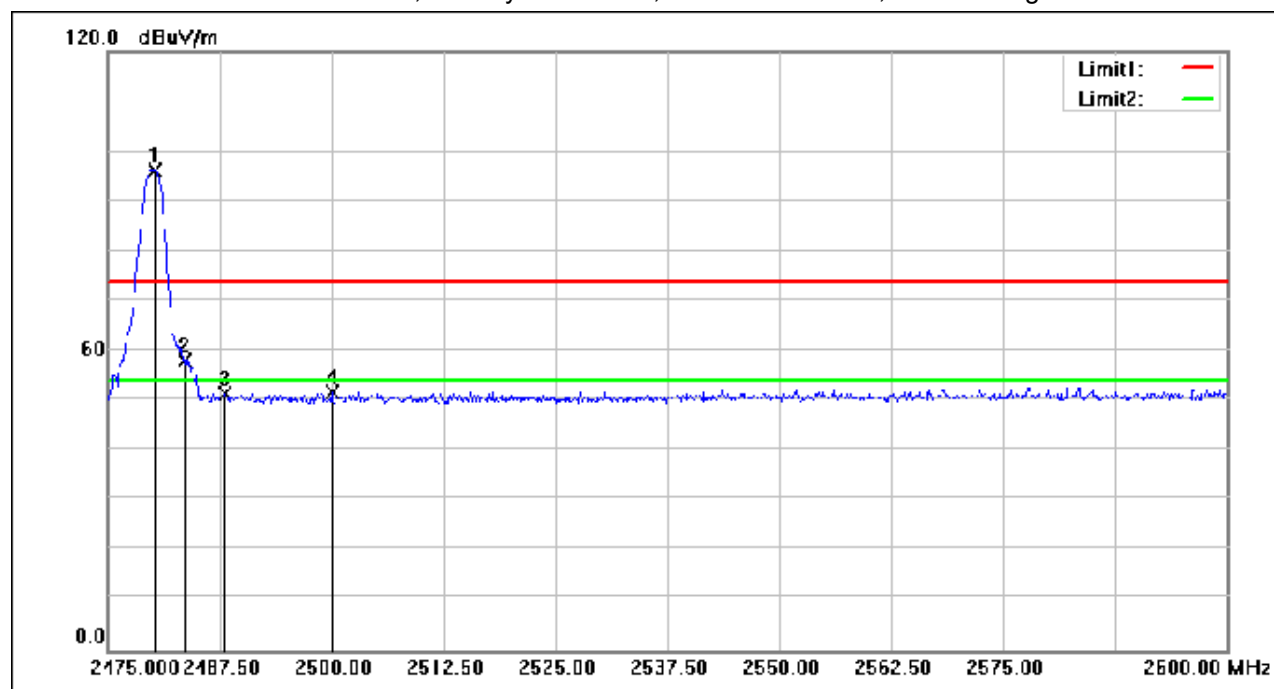
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Test Mode: 09; Polarity: Horizontal; Modulation: GFSK; Channel: High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.250	120.54	-24.28	96.26	74.00	22.26	peak
2	2483.500	82.40	-24.27	58.13	74.00	-15.87	peak
3	2488.000	75.69	-24.25	51.44	74.00	-22.56	peak
4	2500.000	75.88	-24.19	51.69	74.00	-22.31	peak

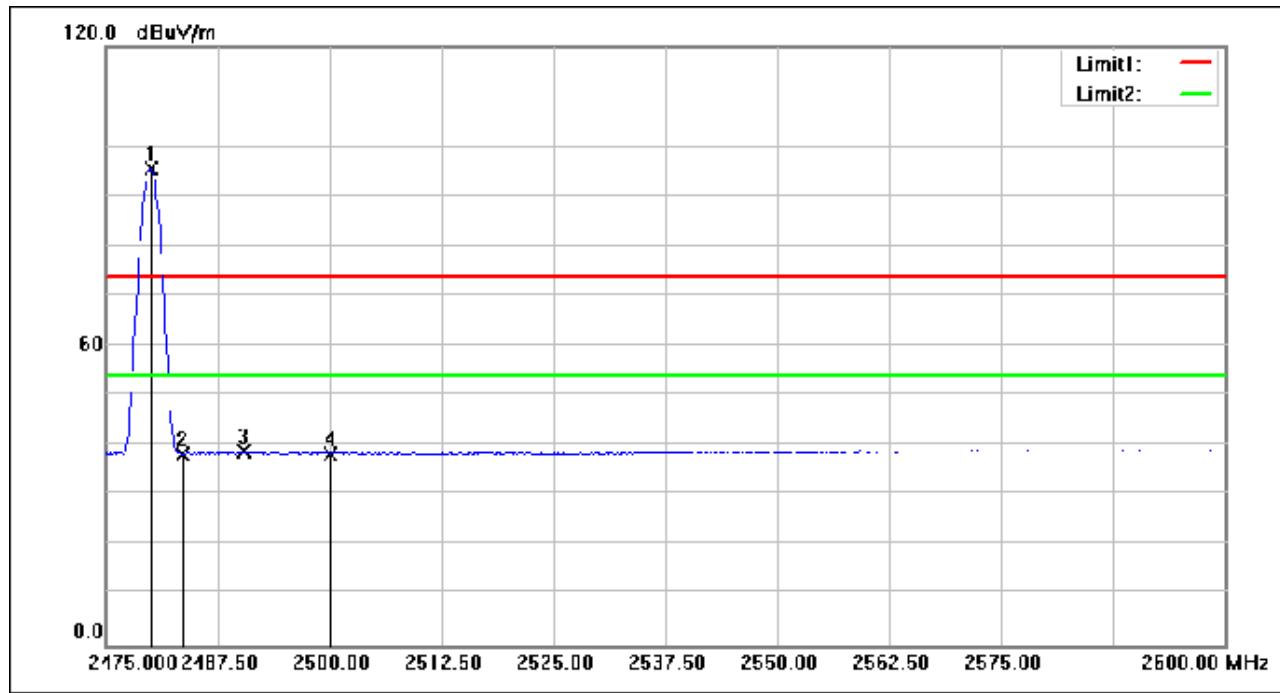
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	119.93	-24.28	95.65	54.00	41.65	AVG
2	2483.500	62.67	-24.27	38.40	54.00	-15.60	AVG
3	2490.375	62.94	-24.24	38.70	54.00	-15.30	AVG
4	2500.000	62.56	-24.19	38.37	54.00	-15.63	AVG

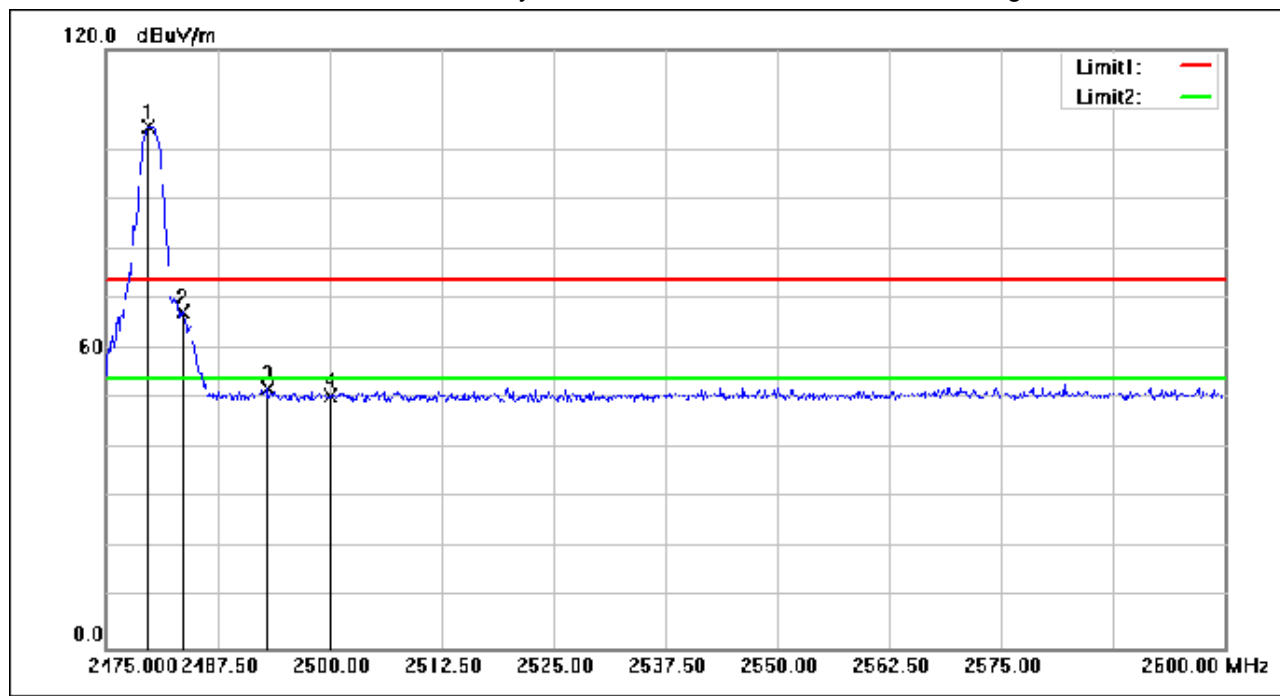
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.750	128.83	-24.28	104.55	74.00	30.55	peak
2	2483.500	91.77	-24.27	67.50	74.00	-6.50	peak
3	2493.000	76.25	-24.22	52.03	74.00	-21.97	peak
4	2500.000	74.86	-24.19	50.67	74.00	-23.33	peak

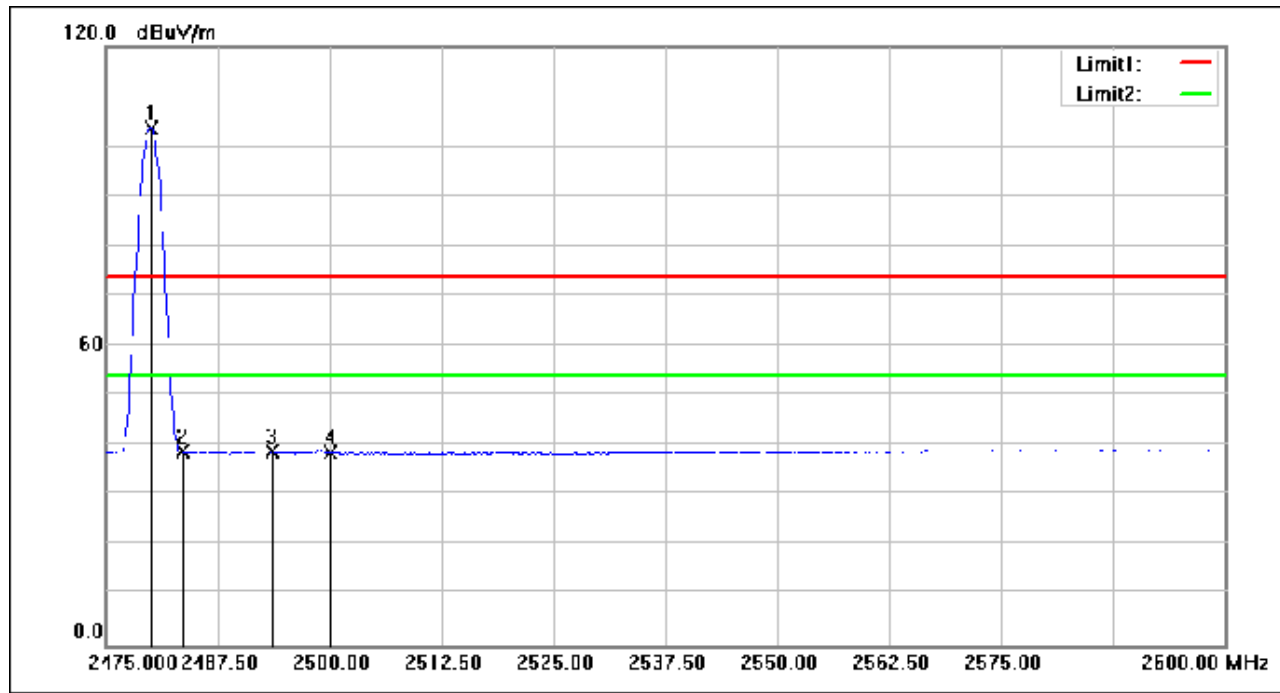
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	128.05	-24.28	103.77	54.00	49.77	AVG
2	2483.500	63.04	-24.27	38.77	54.00	-15.23	AVG
3	2493.500	63.13	-24.22	38.91	54.00	-15.09	AVG
4	2500.000	62.69	-24.19	38.50	54.00	-15.50	AVG

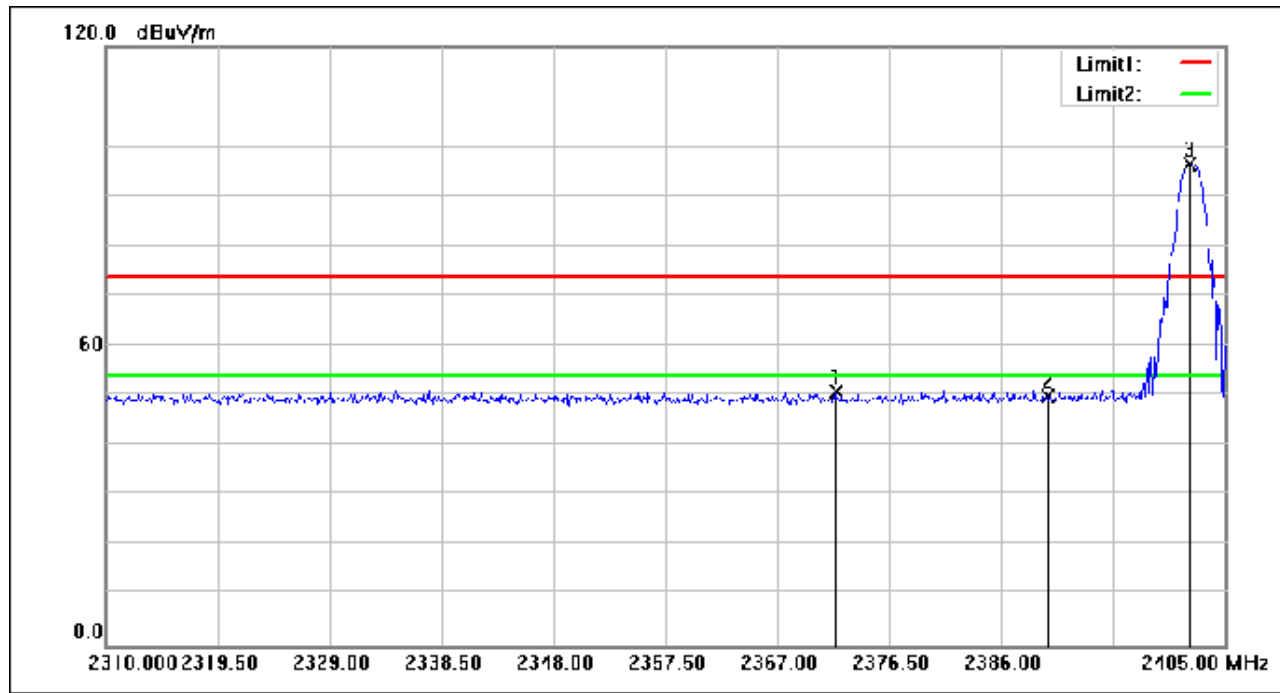
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Test Mode: 10; Polarity: Horizontal; Modulation: GFSK; Channel: Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2371.940	75.63	-24.79	50.84	74.00	-23.16	peak
2	2390.000	74.72	-24.71	50.01	74.00	-23.99	peak
3	2402.055	121.02	-24.65	96.37	74.00	22.37	peak

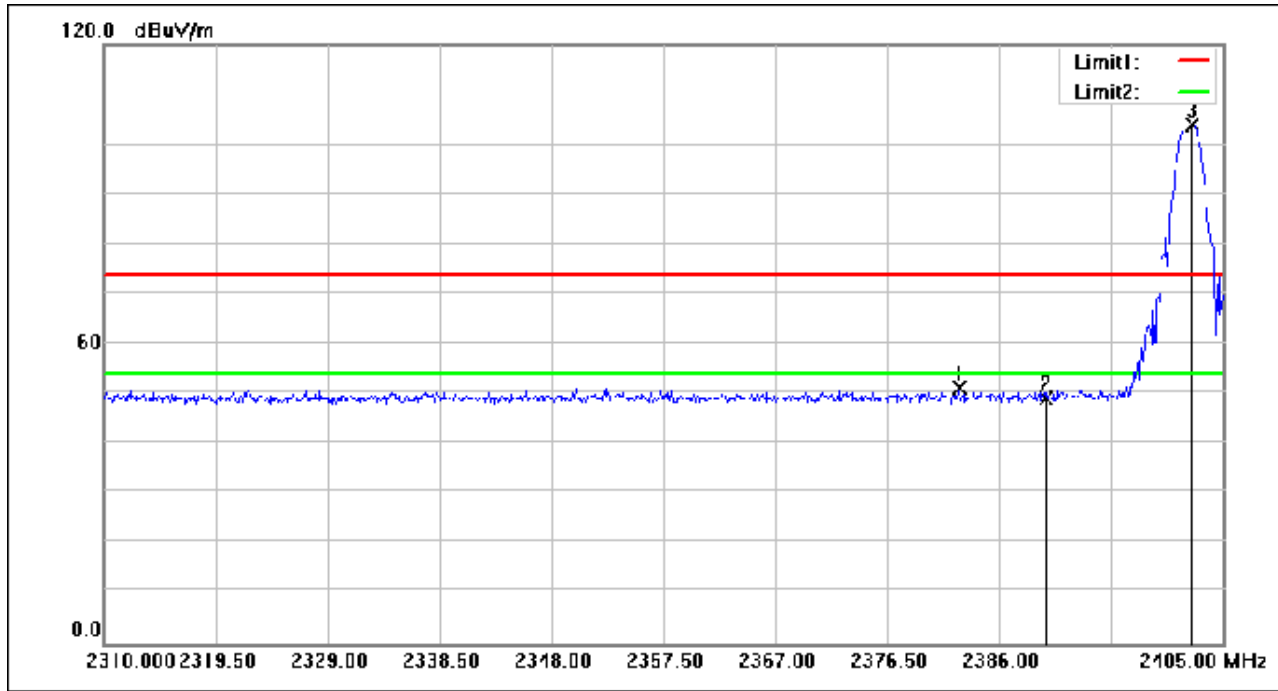
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2382.580	75.91	-24.74	51.17	74.00	-22.83	peak
2	2390.000	73.63	-24.71	48.92	74.00	-25.08	peak
3	2402.340	128.63	-24.65	103.98	74.00	29.98	peak

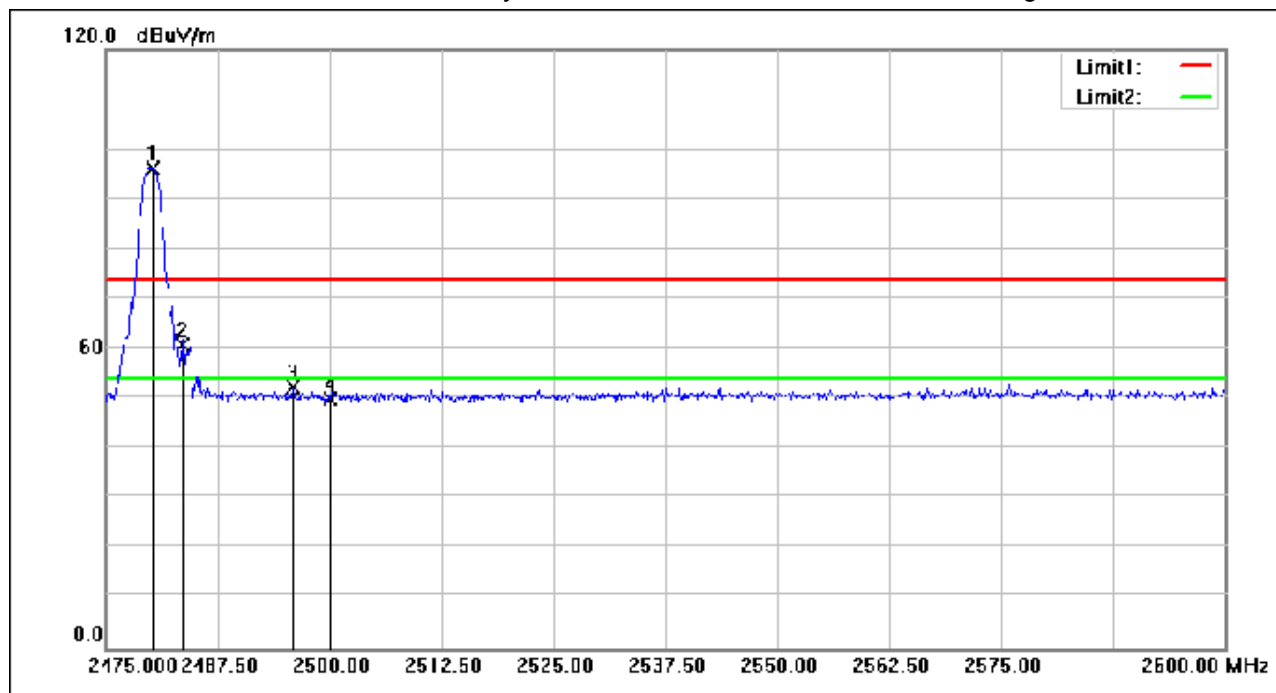
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.250	120.55	-24.28	96.27	74.00	22.27	peak
2	2483.500	85.16	-24.27	60.89	74.00	-13.11	peak
3	2495.875	76.48	-24.21	52.27	74.00	-21.73	peak
4	2500.000	74.19	-24.19	50.00	74.00	-24.00	peak

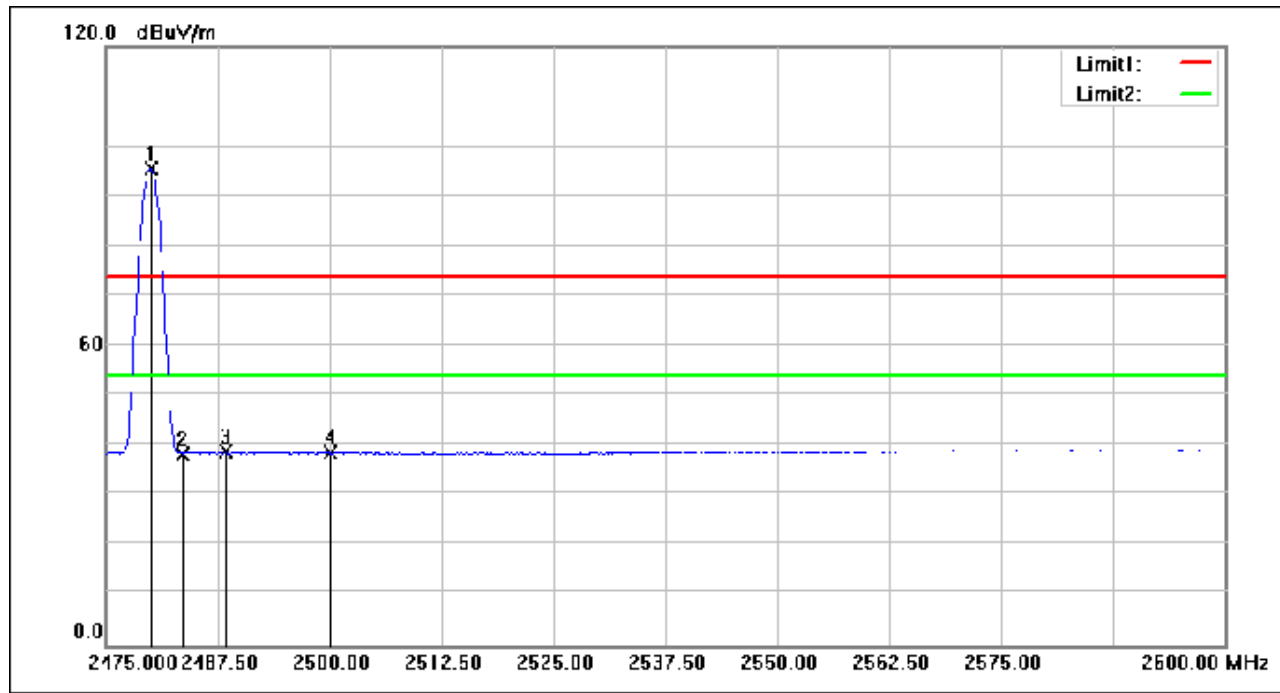
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	119.88	-24.28	95.60	54.00	41.60	AVG
2	2483.500	62.66	-24.27	38.39	54.00	-15.61	AVG
3	2488.375	62.99	-24.25	38.74	54.00	-15.26	AVG
4	2500.000	62.61	-24.19	38.42	54.00	-15.58	AVG

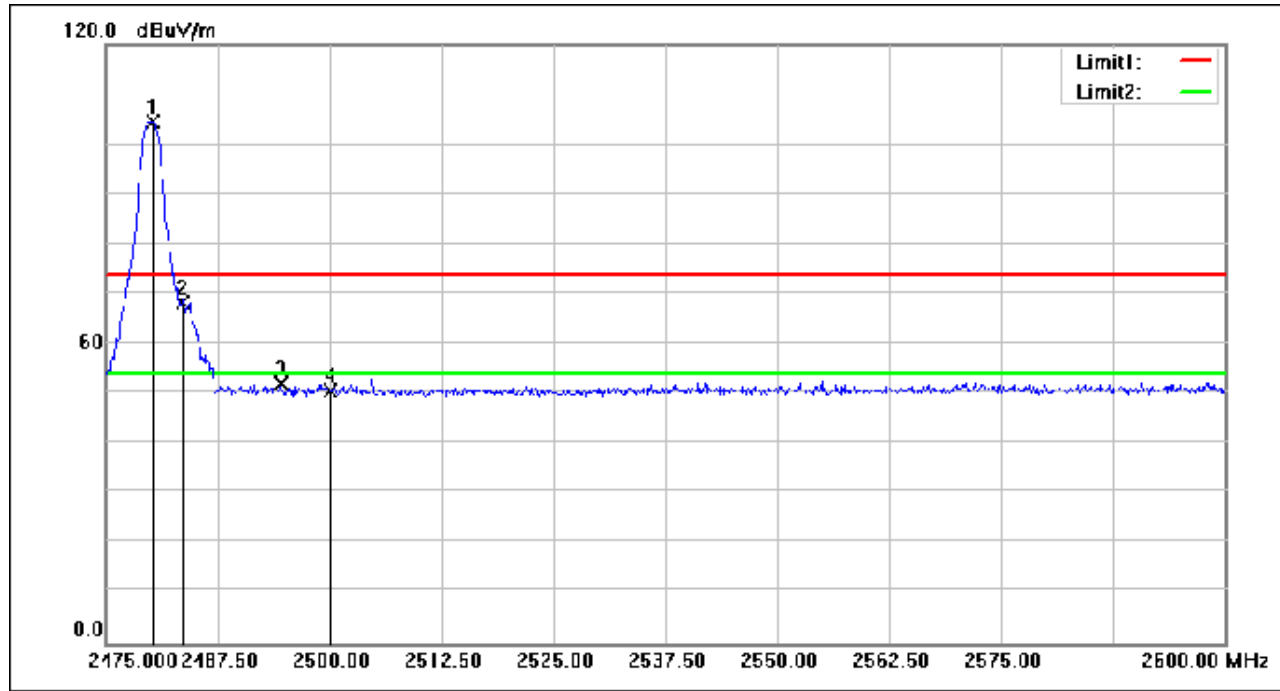
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.250	128.80	-24.28	104.52	74.00	30.52	peak
2	2483.500	92.46	-24.27	68.19	74.00	-5.81	peak
3	2494.500	76.27	-24.21	52.06	74.00	-21.94	peak
4	2500.000	74.79	-24.19	50.60	74.00	-23.40	peak

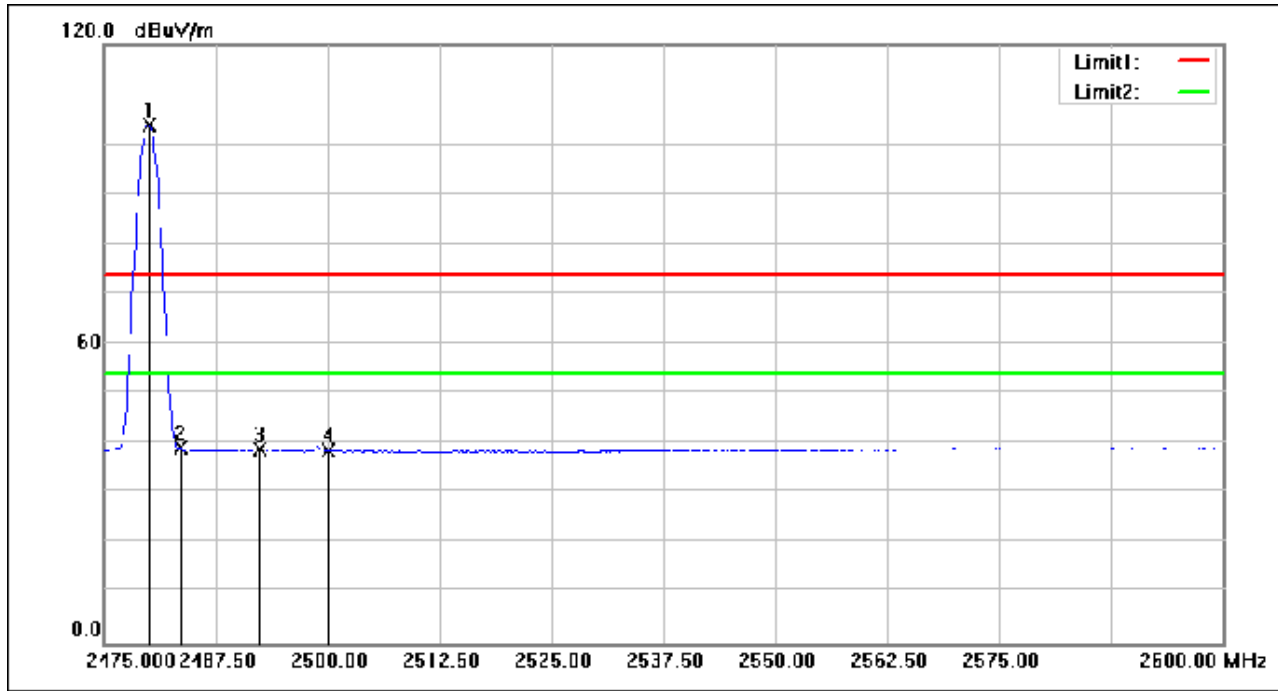
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	128.22	-24.28	103.94	54.00	49.94	AVG
2	2483.500	63.31	-24.27	39.04	54.00	-14.96	AVG
3	2492.375	63.23	-24.23	39.00	54.00	-15.00	AVG
4	2500.000	62.64	-24.19	38.45	54.00	-15.55	AVG

7.8 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C

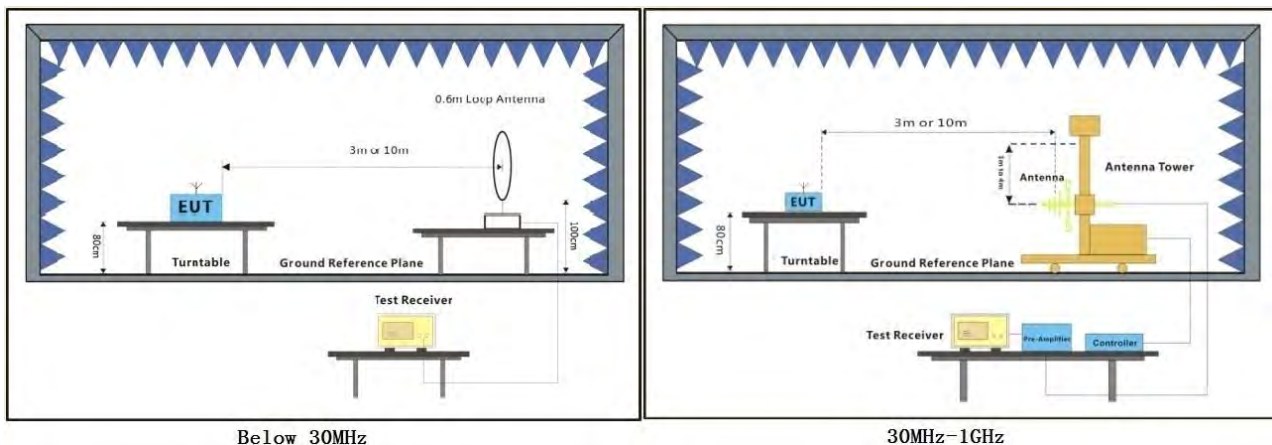
Humidity: 50.5 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamplifier Factor}$
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

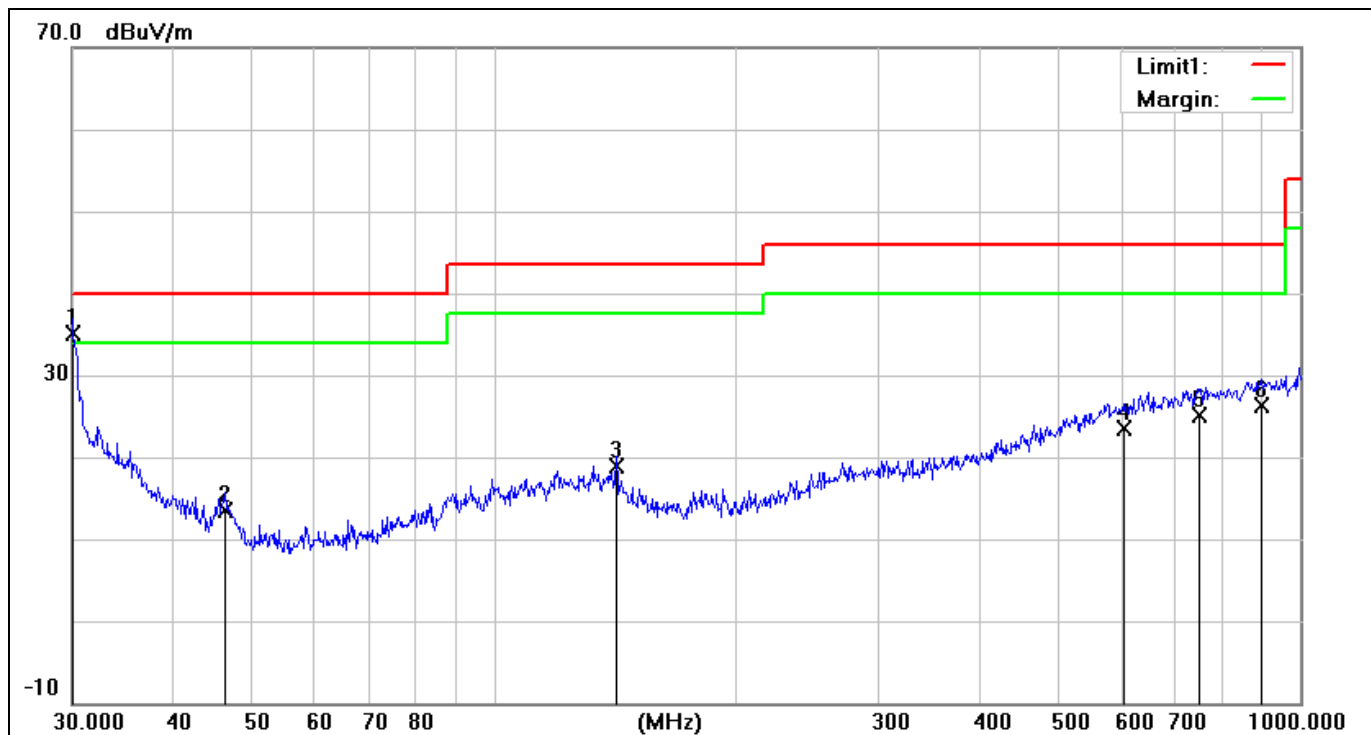
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Test Mode: 08; Polarity: Horizontal; Modulation: GFSK; Antenna: Dipole; Channel: middle



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.0000	15.74	19.42	35.16	40.00	-4.84	100	242	QP
2	46.3402	5.55	8.04	13.59	40.00	-26.41	100	257	QP
3	141.8262	4.99	13.87	18.86	43.50	-24.64	100	47	QP
4	605.6592	0.70	22.82	23.52	46.00	-22.48	200	52	QP
5	750.1083	0.78	24.29	25.07	46.00	-20.93	100	208	QP
6	896.9965	0.54	25.80	26.34	46.00	-19.66	100	357	QP

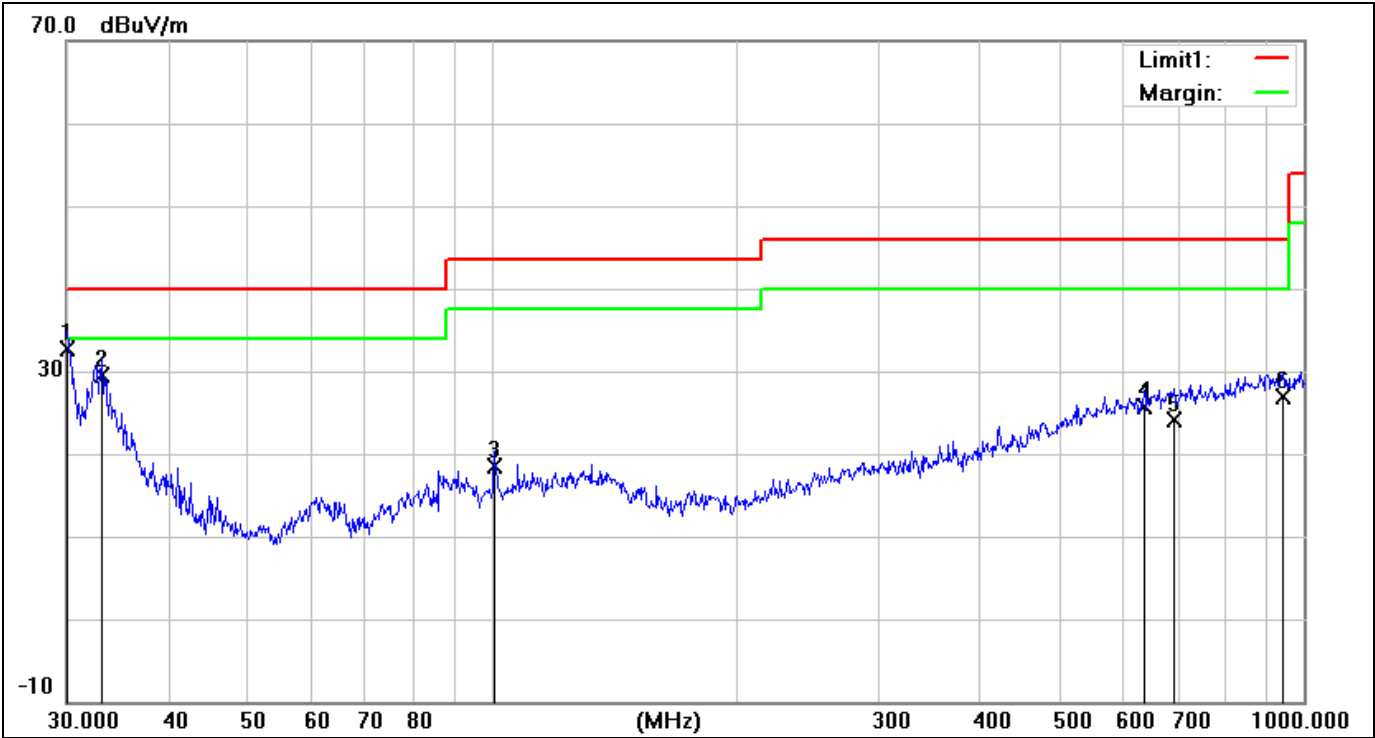
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Antenna: Dipole; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.1054	13.29	19.34	32.63	40.00	-7.37	100	291	QP
2	33.2112	12.21	17.30	29.51	40.00	-10.49	100	40	QP
3	100.9340	5.65	12.77	18.42	43.50	-25.08	200	217	QP
4	636.1340	2.56	23.07	25.63	46.00	-20.37	100	89	QP
5	691.9867	0.37	23.78	24.15	46.00	-21.85	100	198	QP
6	942.1305	1.26	25.63	26.89	46.00	-19.11	100	330	QP

7.9 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 20.5 °C

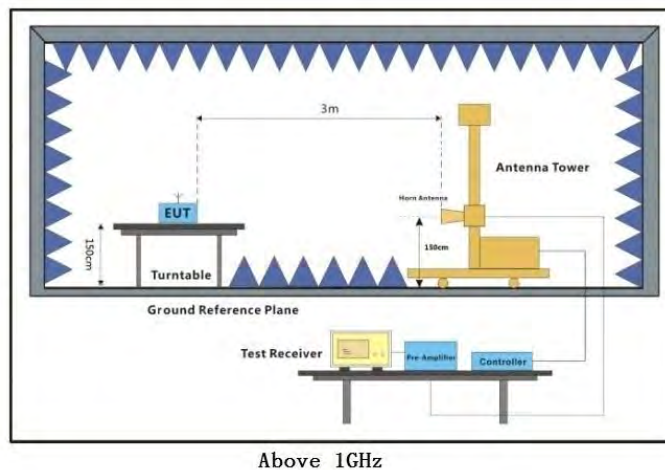
Humidity: 50.5 % RH

Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamplifier Factor}$
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

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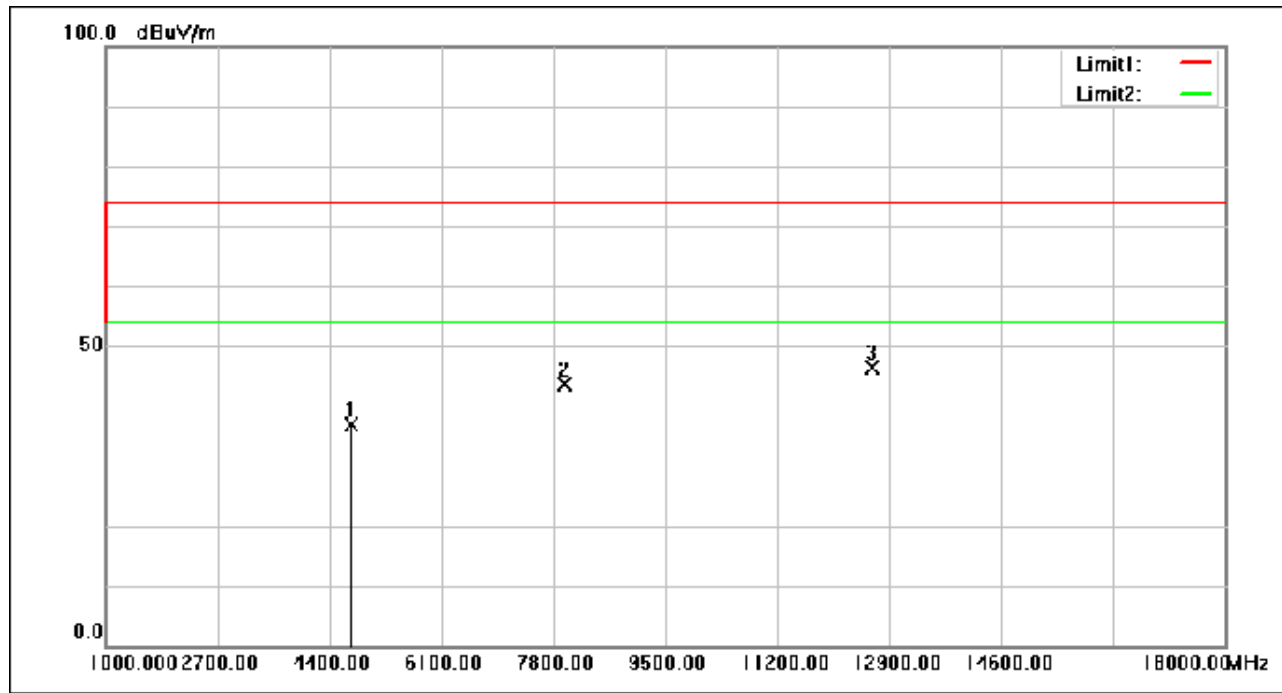
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Dipole Antenna

Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4736.600	55.51	-18.60	36.91	74.00	-37.09	peak
2	7970.000	54.25	-10.64	43.61	74.00	-30.39	peak
3	12632.080	52.60	-6.18	46.42	74.00	-27.58	peak

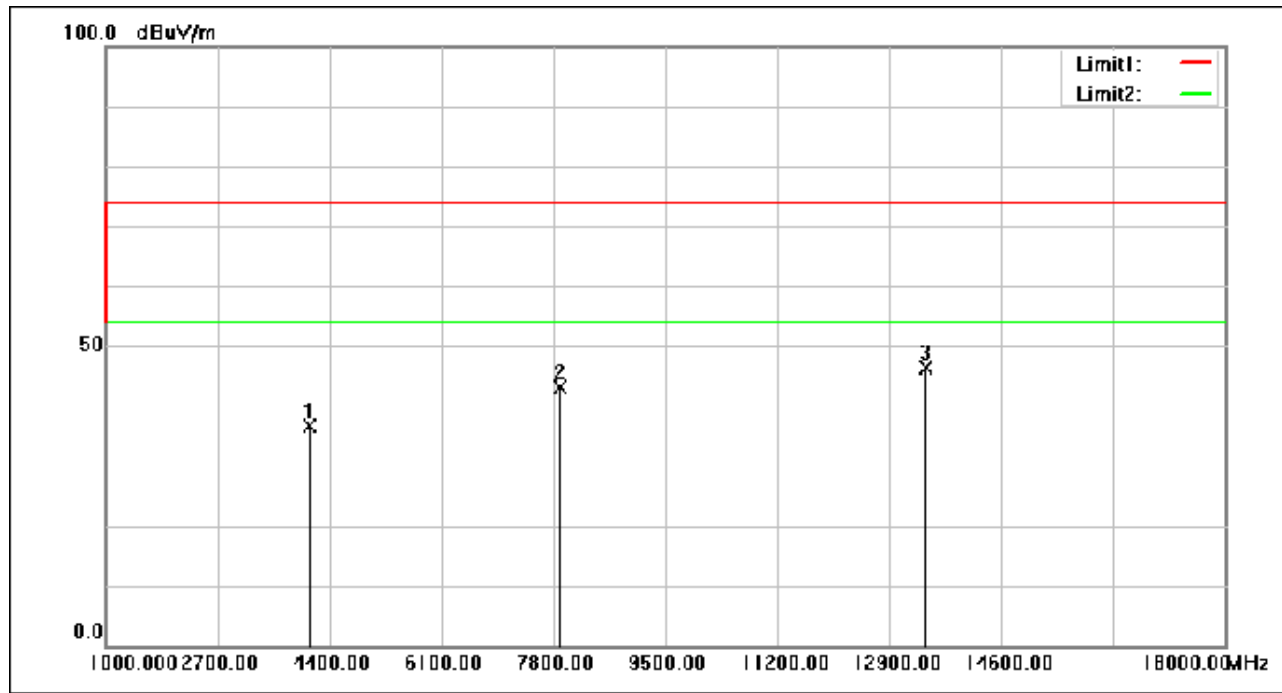
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4098.080	56.77	-20.05	36.72	74.00	-37.28	peak
2	7903.360	53.75	-10.73	43.02	74.00	-30.98	peak
3	13474.600	52.83	-6.33	46.50	74.00	-27.50	peak

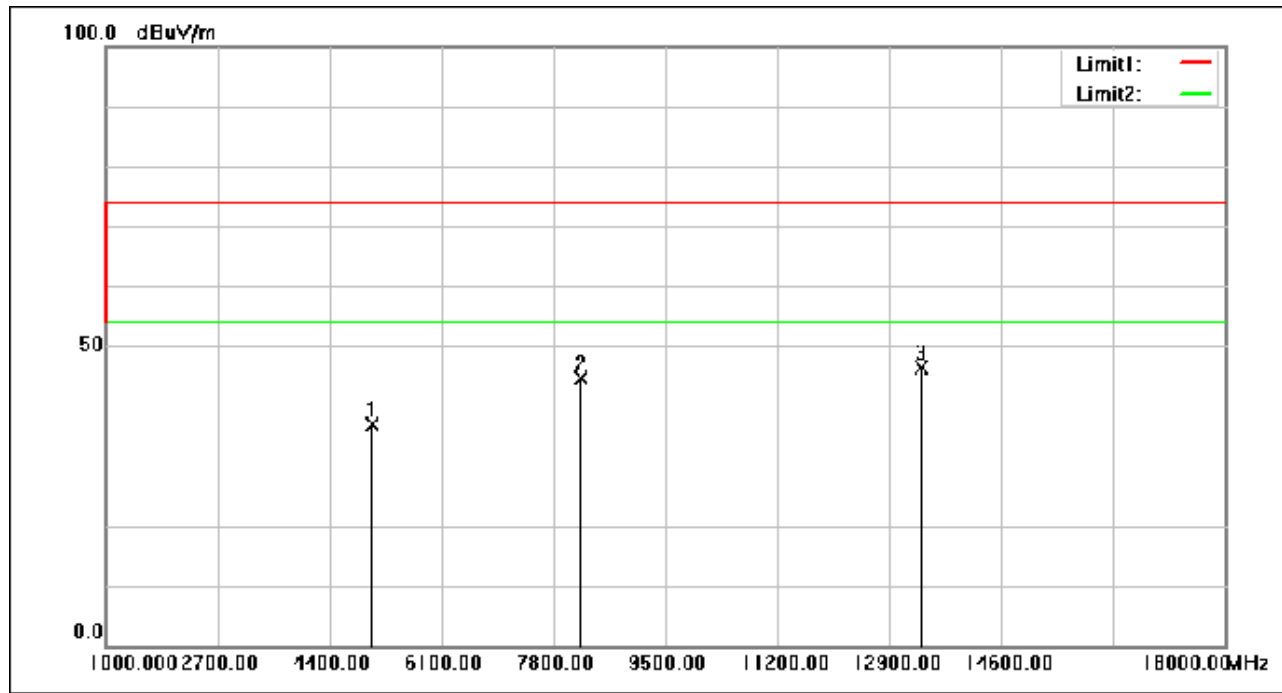
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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5059.600	55.28	-18.34	36.94	74.00	-37.06	peak
2	8228.400	54.76	-10.20	44.56	74.00	-29.44	peak
3	13388.240	52.60	-6.32	46.28	74.00	-27.72	peak

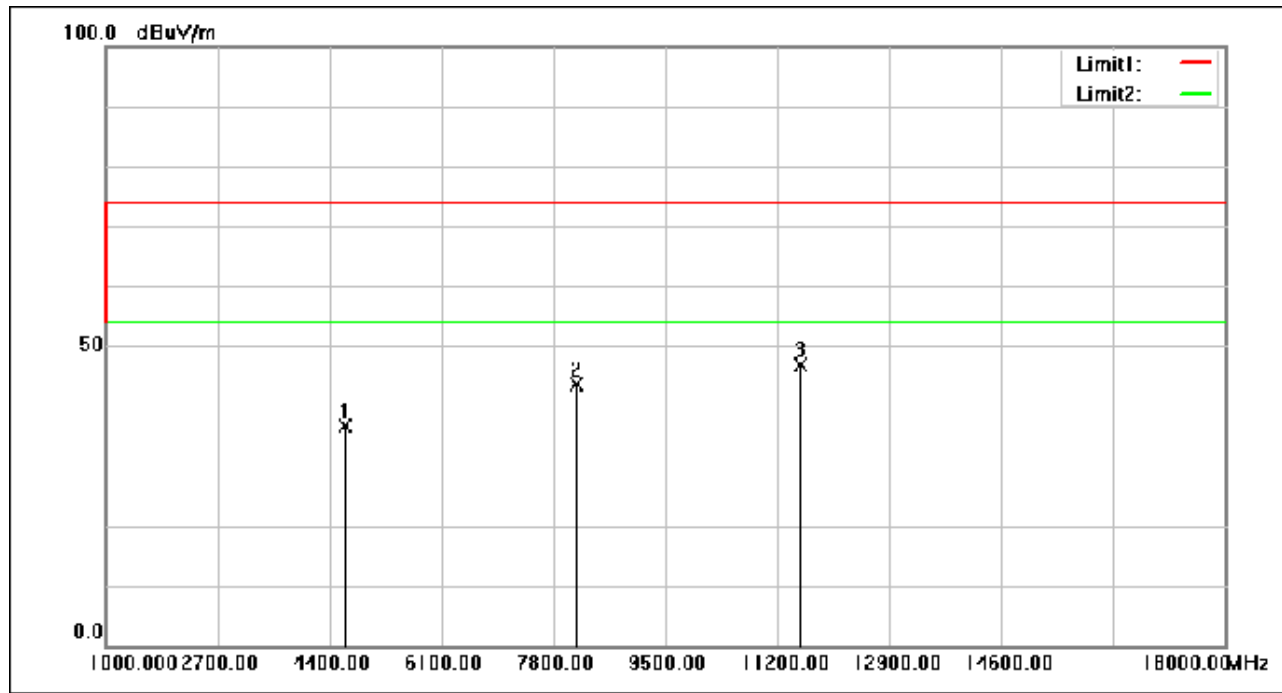
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4649.560	55.32	-18.65	36.67	74.00	-37.33	peak
2	8154.280	54.00	-10.32	43.68	74.00	-30.32	peak
3	11556.320	53.21	-6.31	46.90	74.00	-27.10	peak

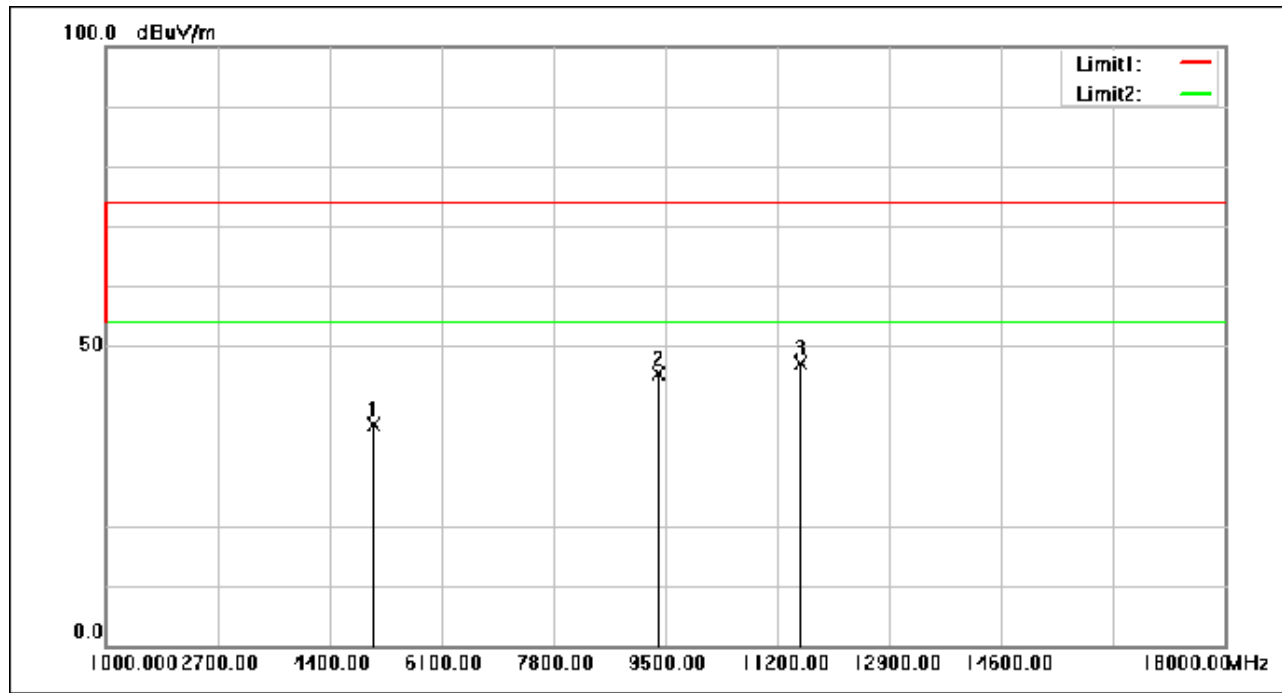
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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5063.680	55.25	-18.34	36.91	74.00	-37.09	peak
2	9404.120	53.50	-8.13	45.37	74.00	-28.63	peak
3	11567.880	53.54	-6.30	47.24	74.00	-26.76	peak

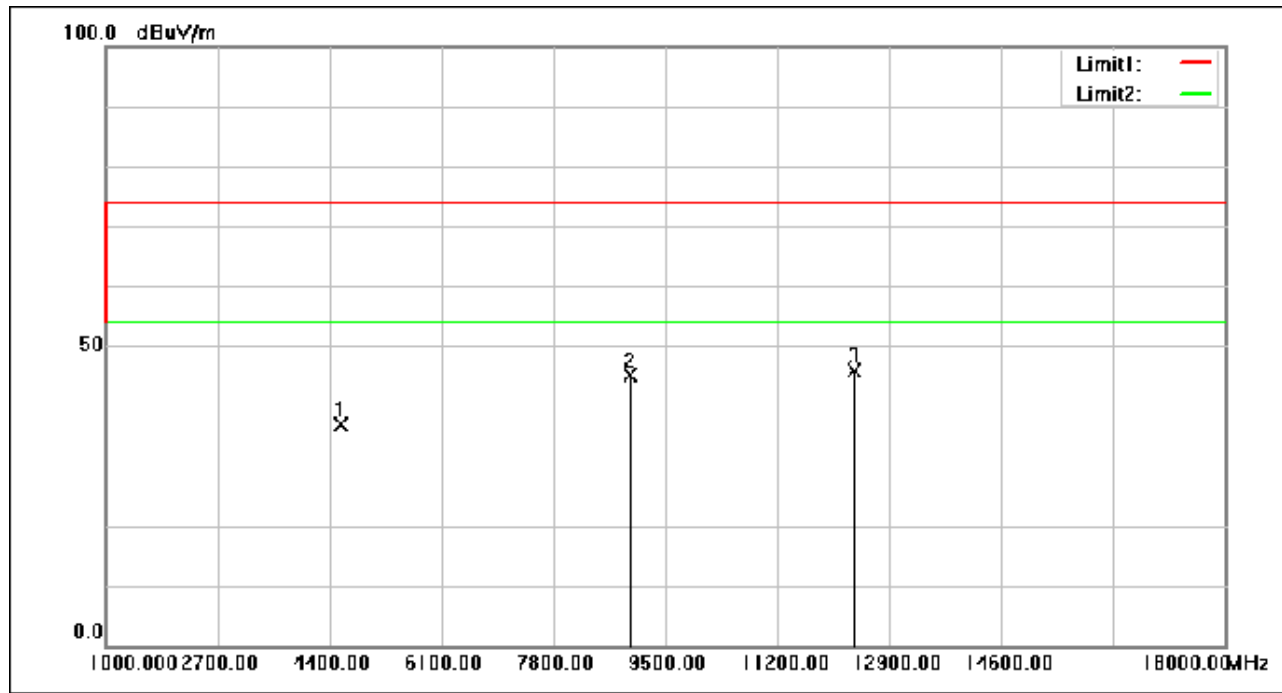
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4579.520	55.66	-18.73	36.93	74.00	-37.07	peak
2	8974.360	54.14	-8.96	45.18	74.00	-28.82	peak
3	12381.160	52.01	-6.06	45.95	74.00	-28.05	peak

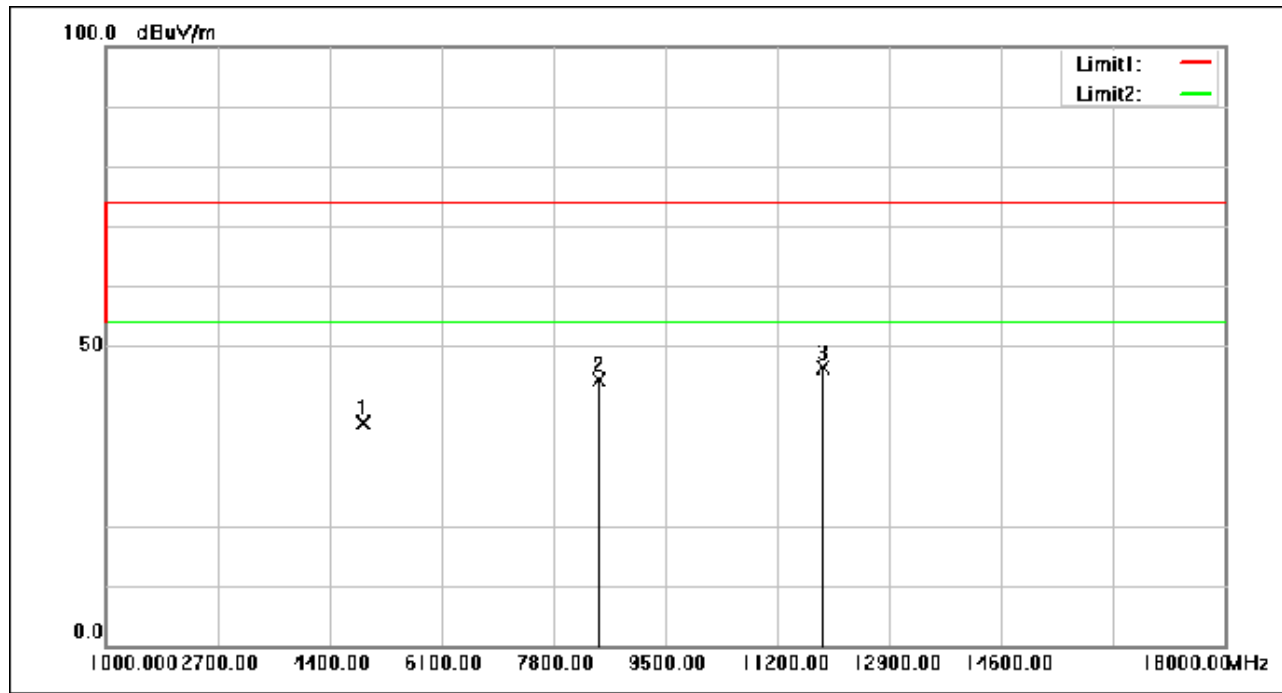
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.280	55.53	-18.49	37.04	74.00	-36.96	peak
2	8510.600	54.14	-9.74	44.40	74.00	-29.60	peak
3	11884.760	52.53	-6.05	46.48	74.00	-27.52	peak

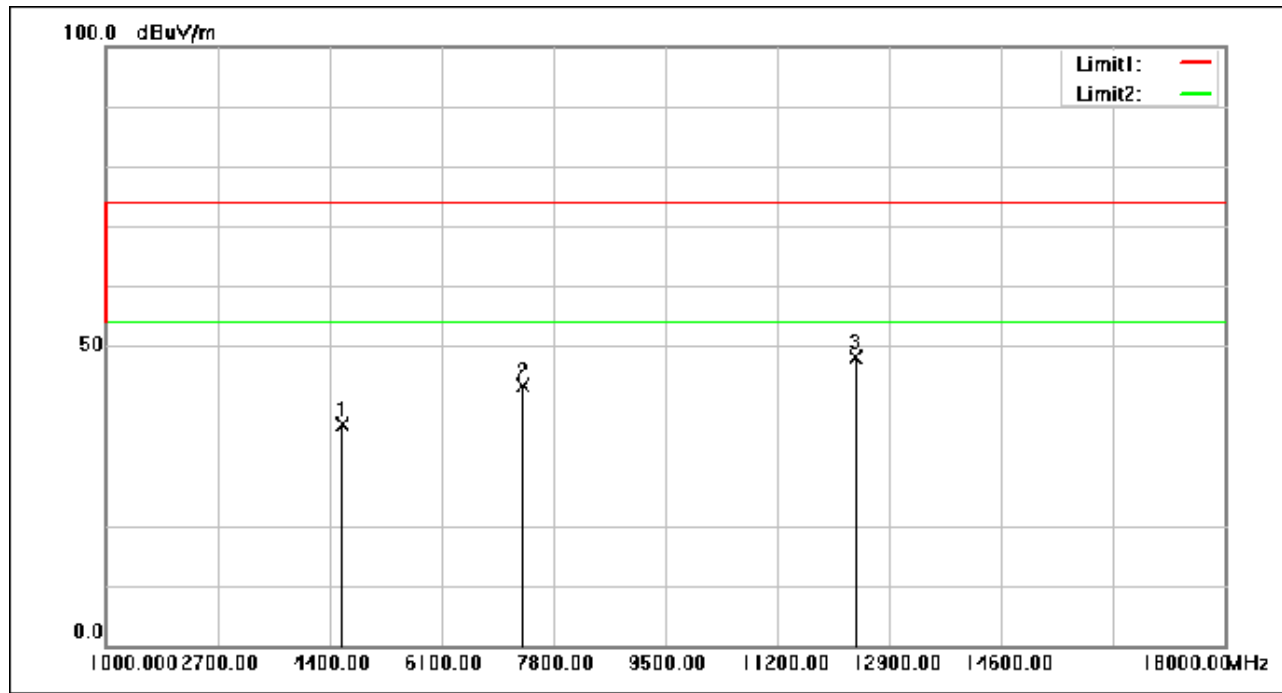
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4598.560	55.61	-18.68	36.93	74.00	-37.07	peak
2	7350.520	54.76	-11.41	43.35	74.00	-30.65	peak
3	12400.200	54.08	-6.07	48.01	74.00	-25.99	peak

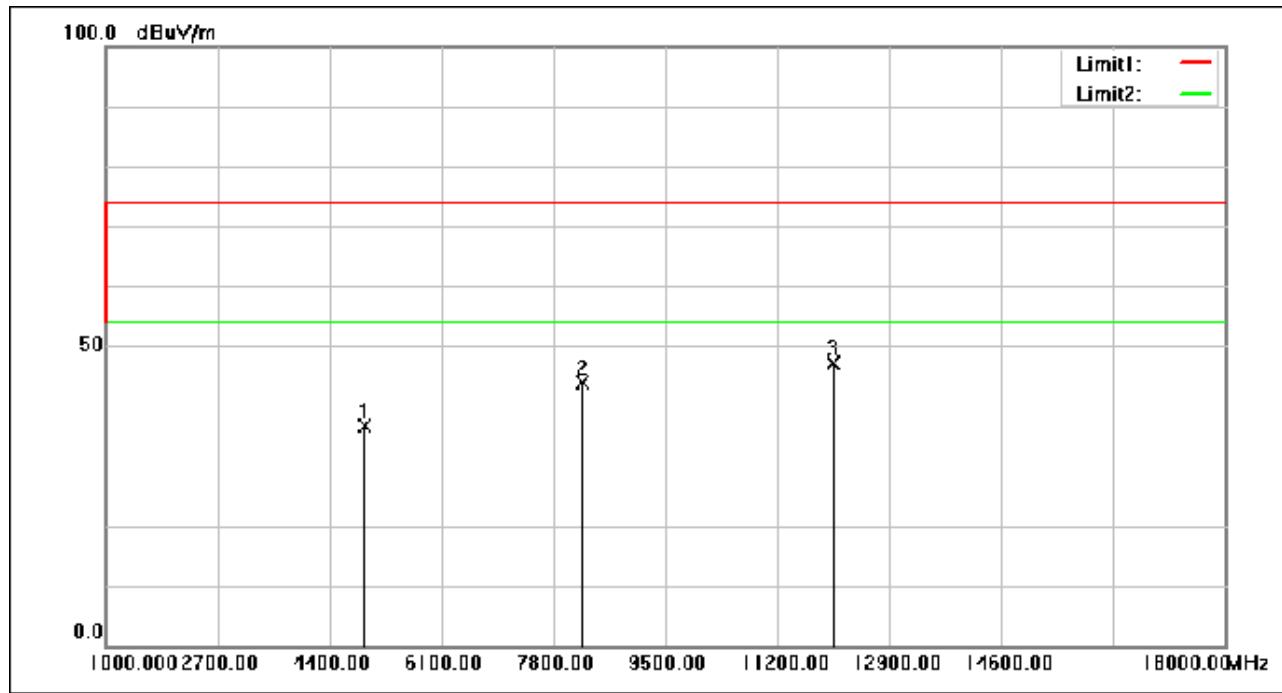
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4929.040	55.12	-18.49	36.63	74.00	-37.37	peak
2	8242.680	53.97	-10.18	43.79	74.00	-30.21	peak
3	12061.560	52.96	-5.92	47.04	74.00	-26.96	peak

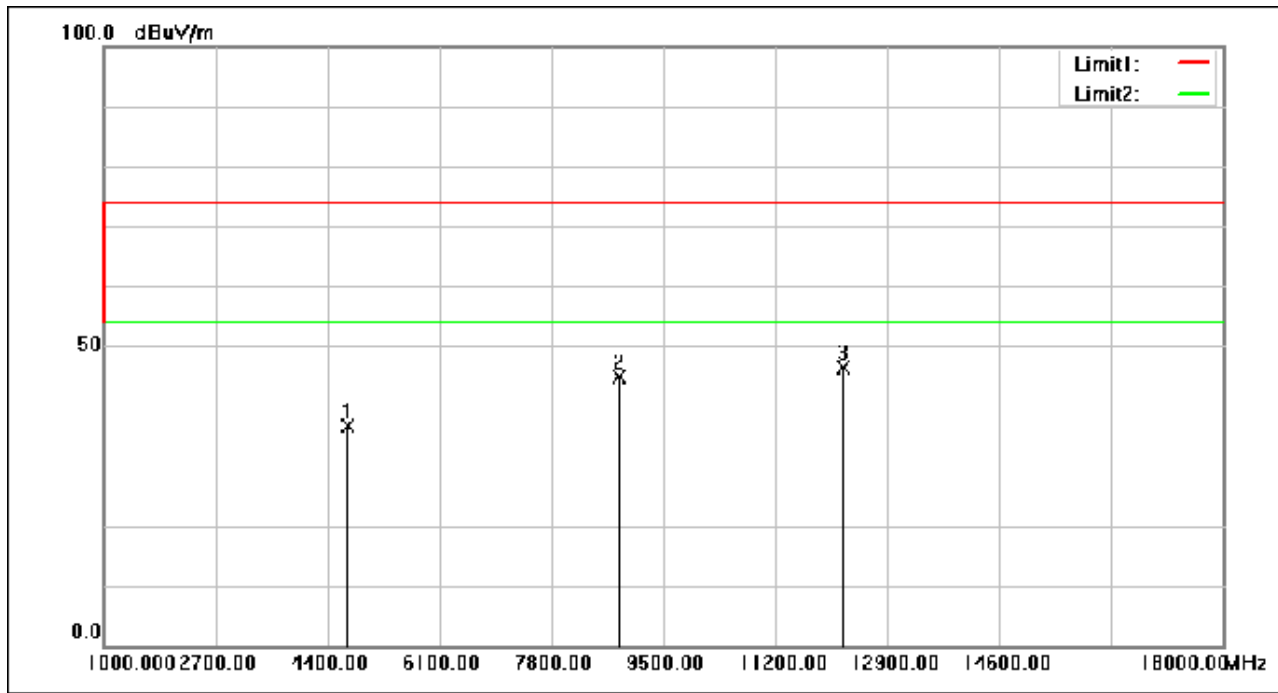
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4716.880	55.33	-18.61	36.72	74.00	-37.28	peak
2	8824.760	54.17	-9.21	44.96	74.00	-29.04	peak
3	12240.400	52.31	-5.99	46.32	74.00	-27.68	peak

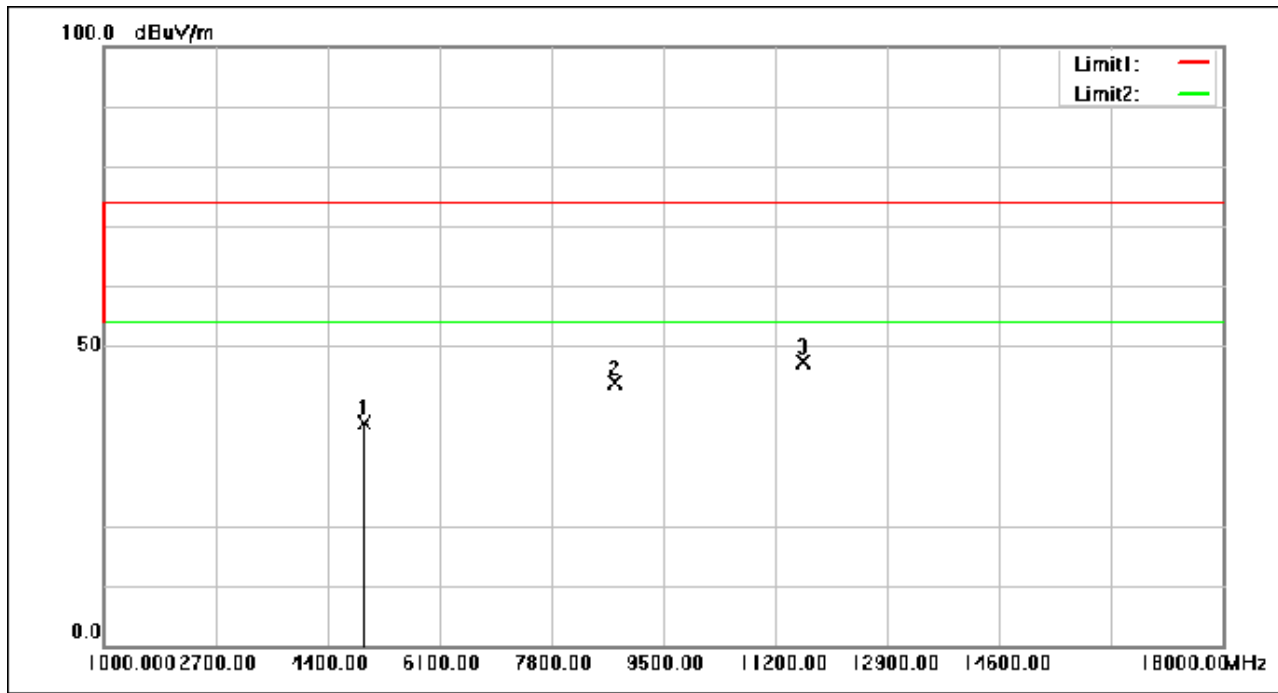
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4965.760	55.52	-18.47	37.05	74.00	-36.95	peak
2	8769.680	53.26	-9.31	43.95	74.00	-30.05	peak
3	11620.920	53.55	-6.26	47.29	74.00	-26.71	peak

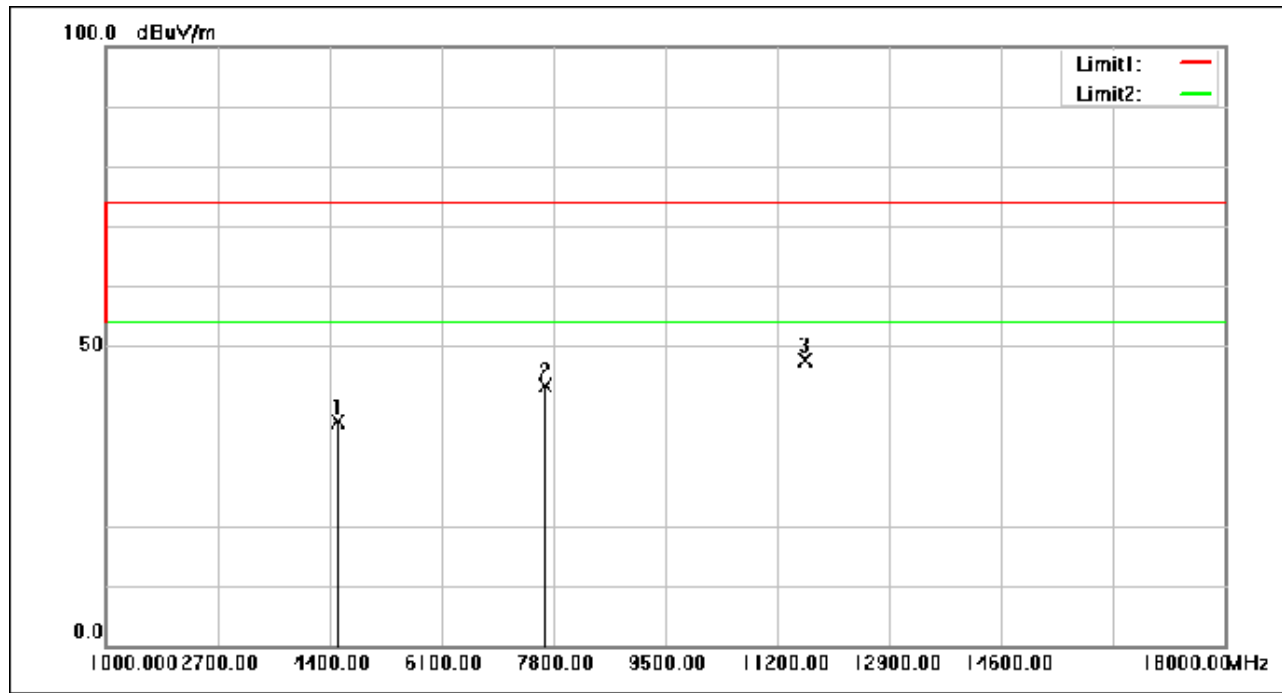
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4524.440	56.26	-18.89	37.37	74.00	-36.63	peak
2	7689.160	54.43	-11.01	43.42	74.00	-30.58	peak
3	11619.560	53.78	-6.26	47.52	74.00	-26.48	peak

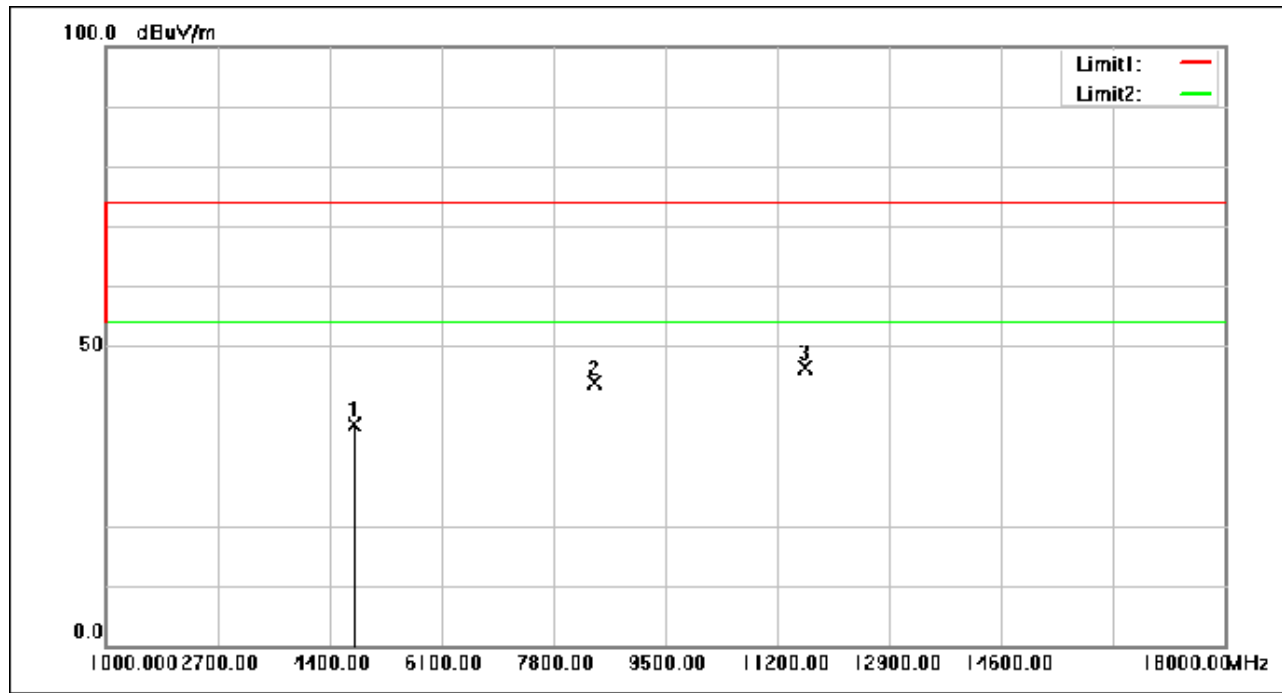
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4784.880	55.53	-18.57	36.96	74.00	-37.04	peak
2	8434.440	53.72	-9.86	43.86	74.00	-30.14	peak
3	11627.040	52.51	-6.25	46.26	74.00	-27.74	peak

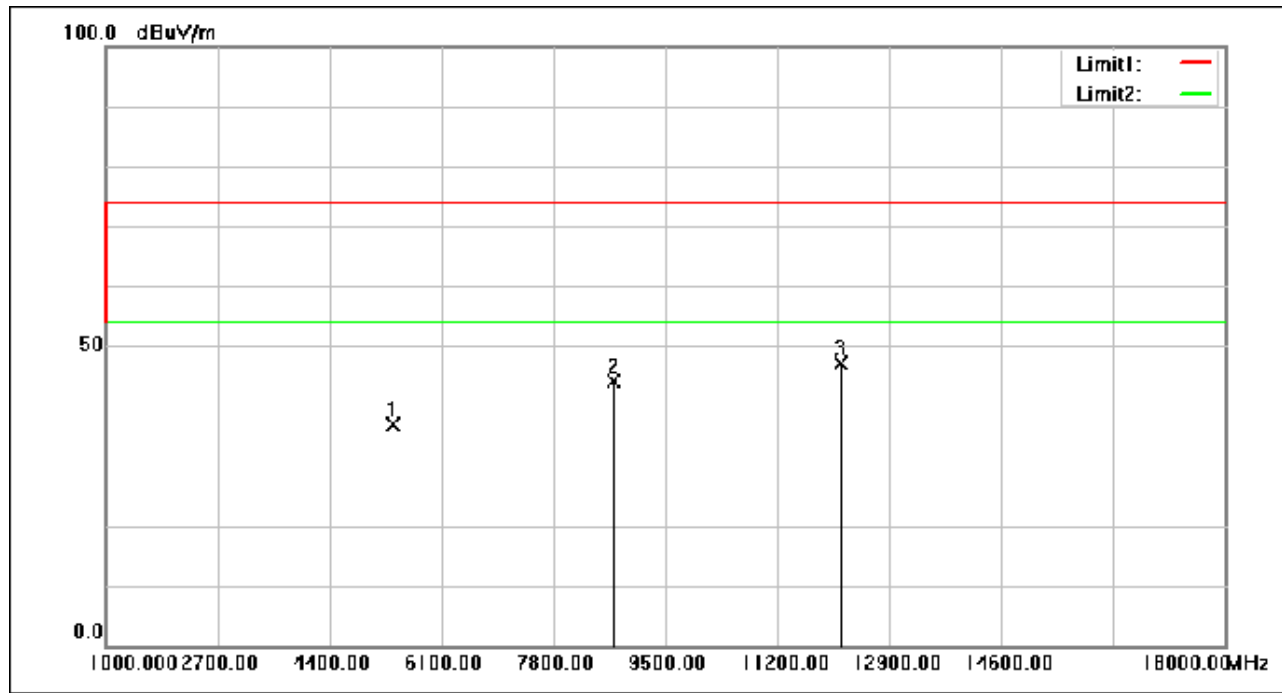
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5366.280	54.78	-17.90	36.88	74.00	-37.12	peak
2	8719.360	53.44	-9.39	44.05	74.00	-29.95	peak
3	12172.400	53.09	-5.97	47.12	74.00	-26.88	peak

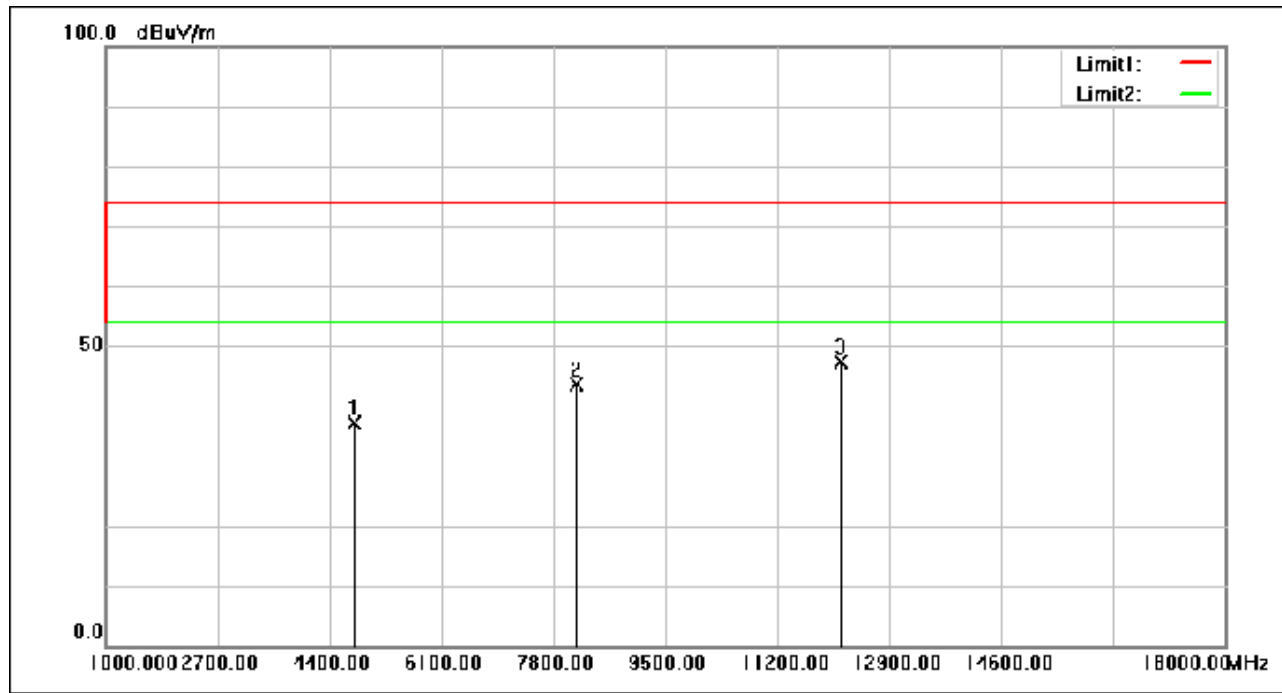
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4777.400	55.71	-18.58	37.13	74.00	-36.87	peak
2	8155.640	53.93	-10.32	43.61	74.00	-30.39	peak
3	12175.120	53.23	-5.96	47.27	74.00	-26.73	peak

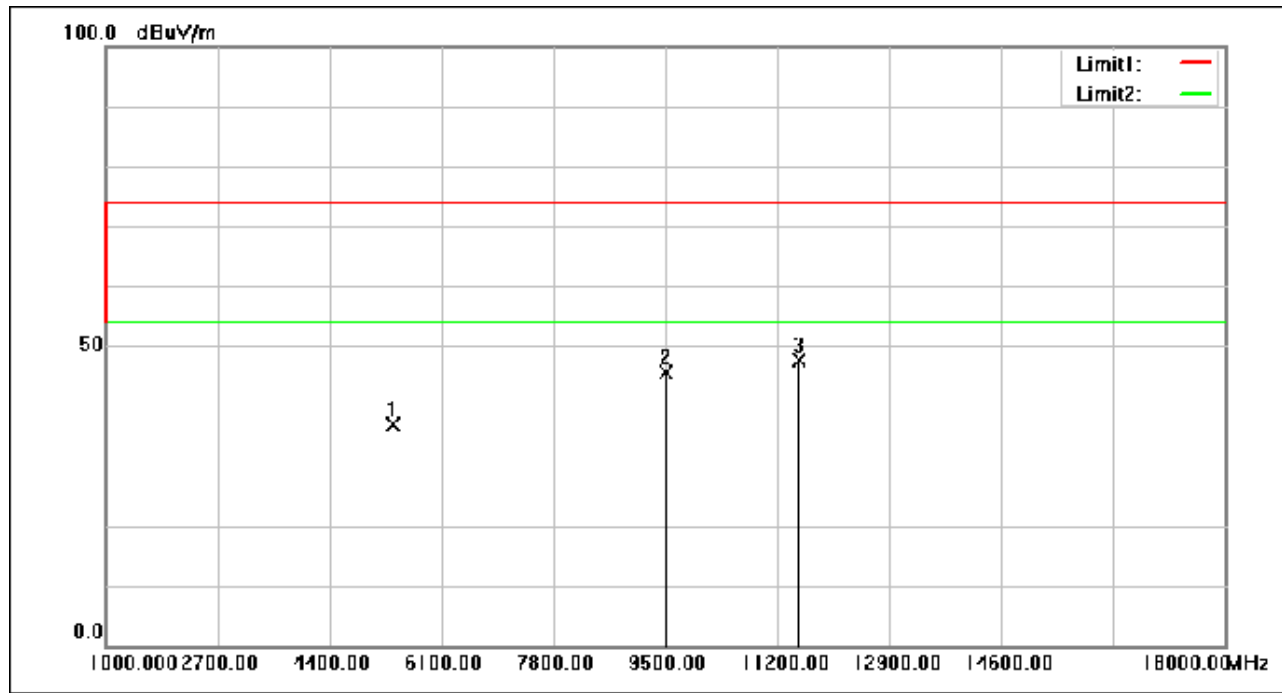
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5354.040	54.77	-17.91	36.86	74.00	-37.14	peak
2	9517.680	53.66	-7.92	45.74	74.00	-28.26	peak
3	11537.280	53.85	-6.33	47.52	74.00	-26.48	peak

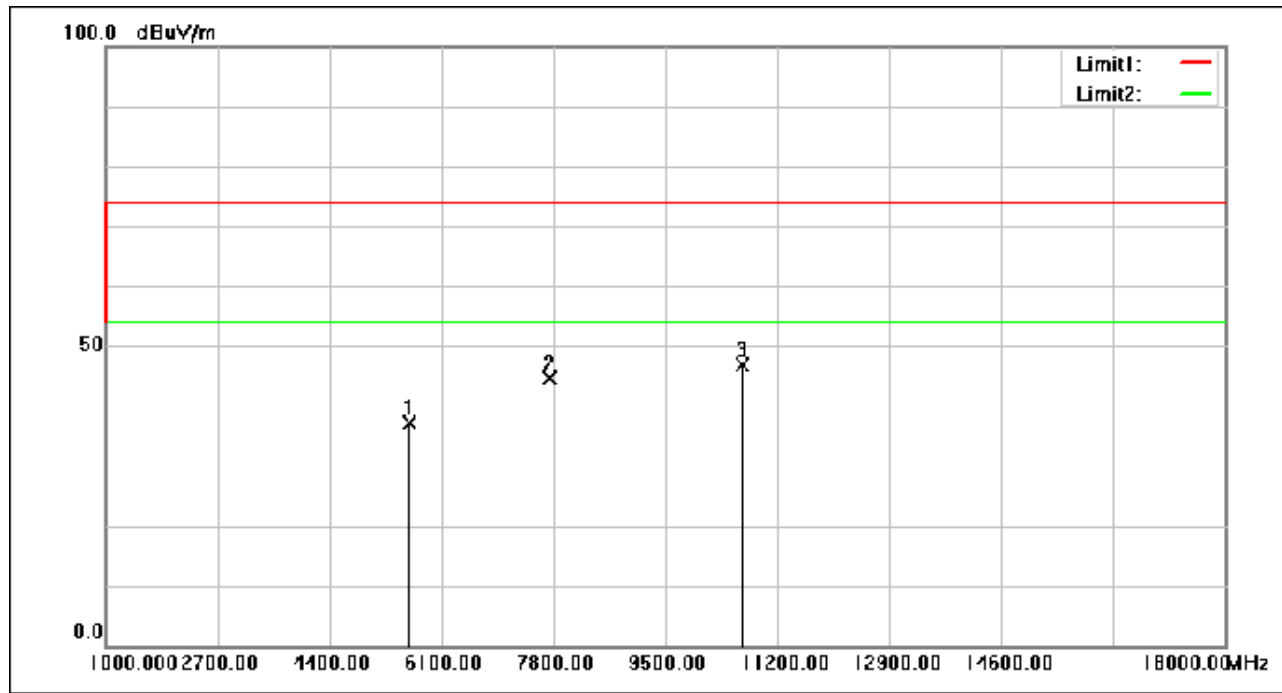
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5611.760	54.52	-17.39	37.13	74.00	-36.87	peak
2	7759.200	55.51	-10.92	44.59	74.00	-29.41	peak
3	10675.720	53.83	-6.94	46.89	74.00	-27.11	peak

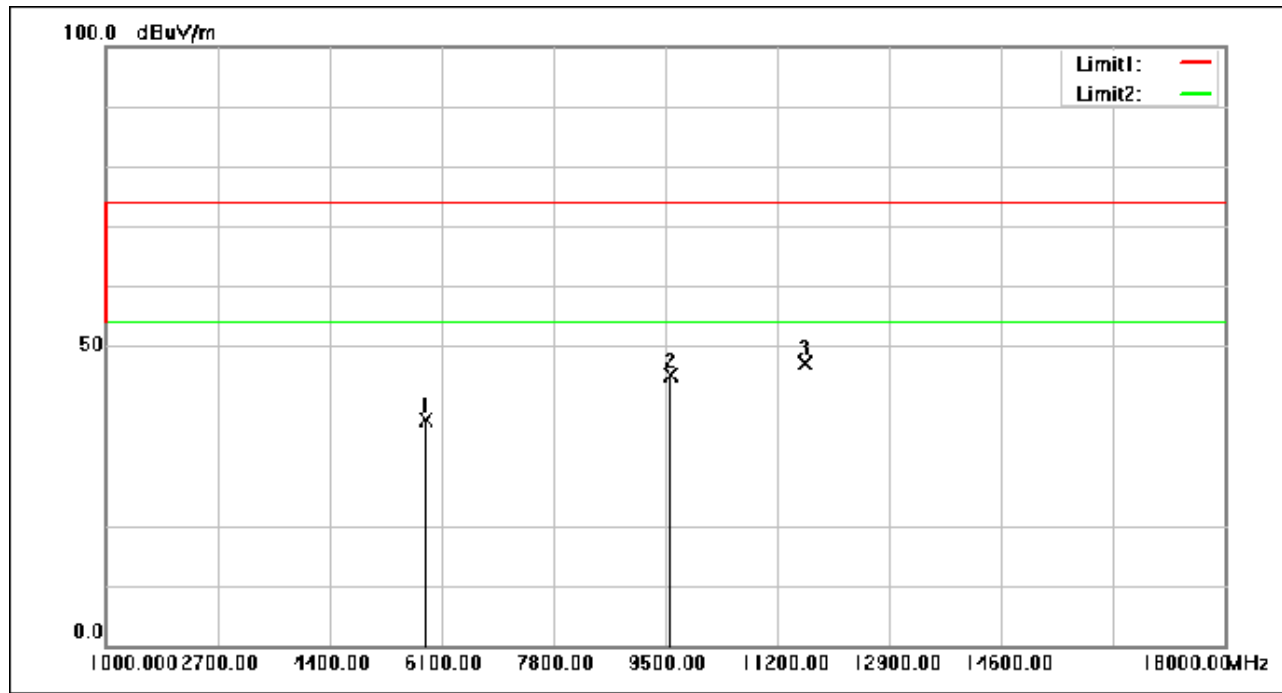
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5874.920	54.01	-16.30	37.71	74.00	-36.29	peak
2	9570.040	52.94	-7.82	45.12	74.00	-28.88	peak
3	11617.520	53.32	-6.26	47.06	74.00	-26.94	peak

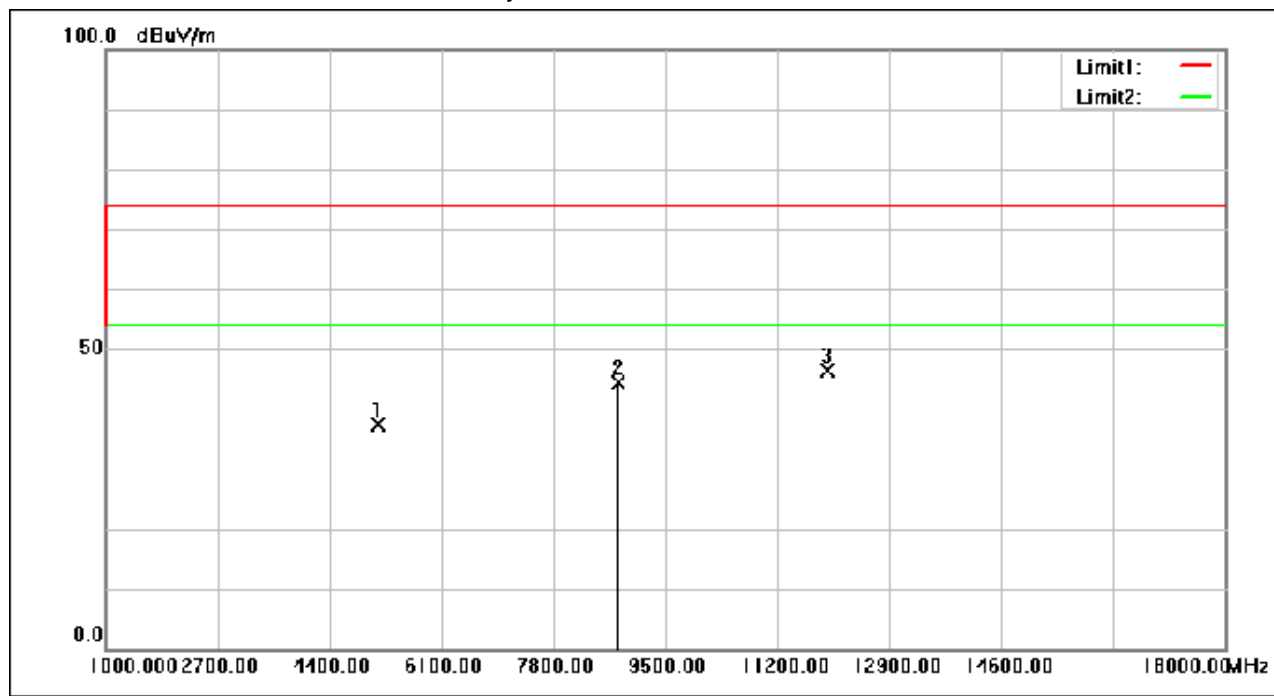
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5144.600	55.63	-18.22	37.41	74.00	-36.59	peak
2	8799.600	53.54	-9.26	44.28	74.00	-29.72	peak
3	11973.160	52.31	-5.93	46.38	74.00	-27.62	peak

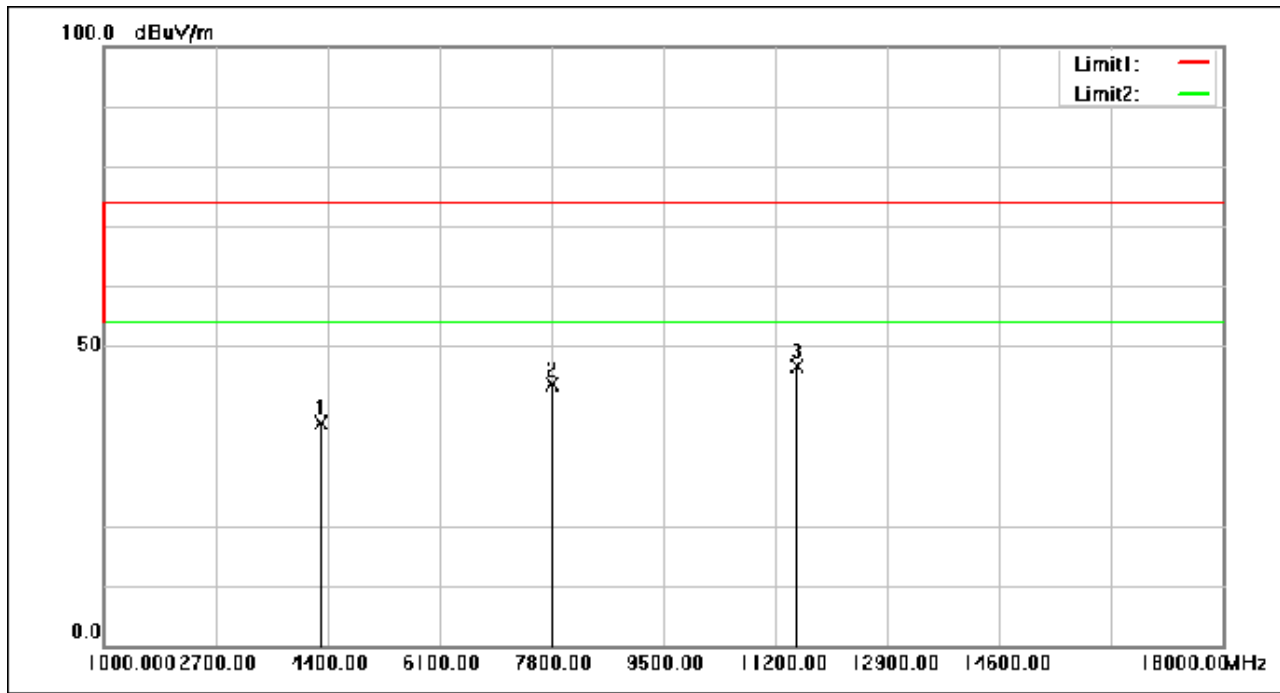
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4314.320	56.62	-19.51	37.11	74.00	-36.89	peak
2	7803.400	54.53	-10.86	43.67	74.00	-30.33	peak
3	11537.280	52.91	-6.33	46.58	74.00	-27.42	peak

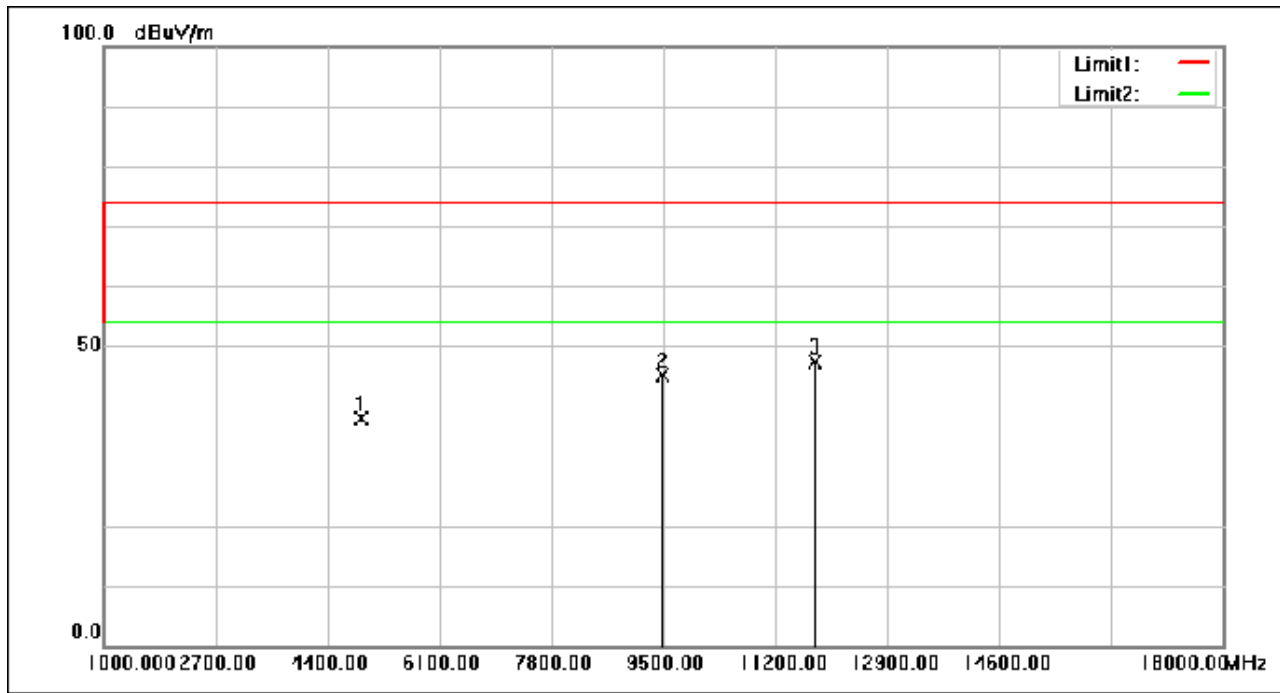
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4921.560	56.47	-18.49	37.98	74.00	-36.02	peak
2	9493.880	53.02	-7.97	45.05	74.00	-28.95	peak
3	11807.920	53.61	-6.11	47.50	74.00	-26.50	peak

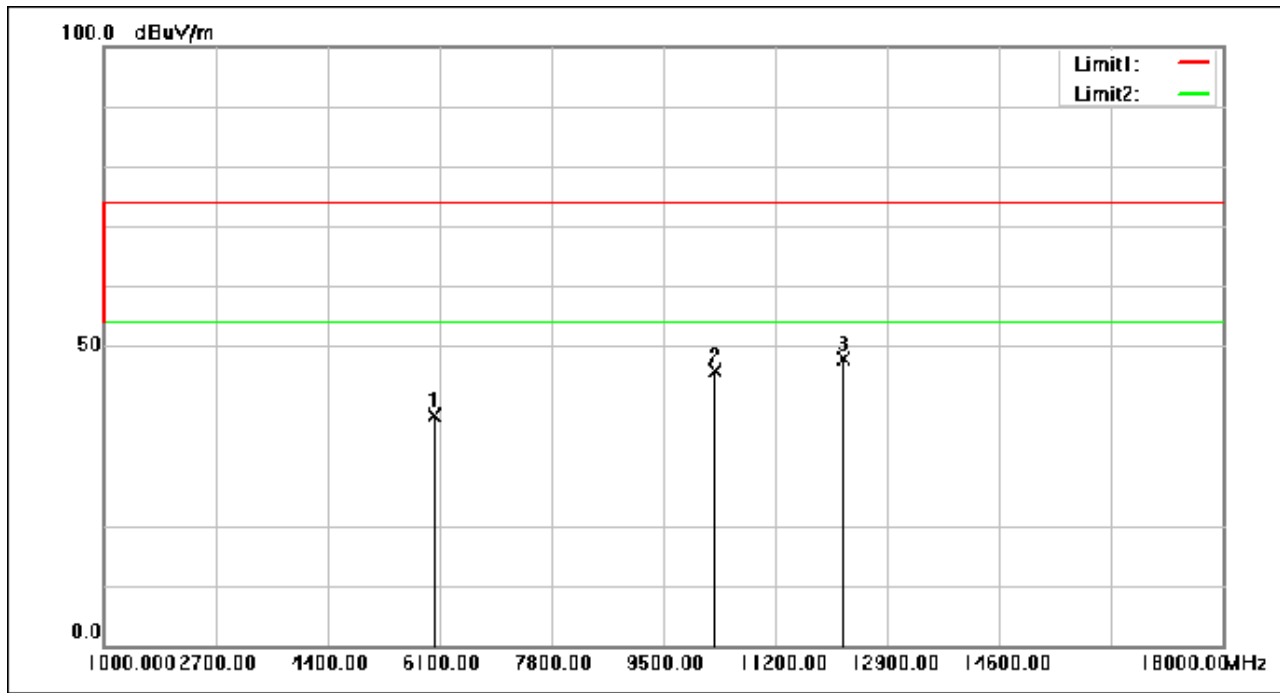
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6019.080	54.12	-15.69	38.43	74.00	-35.57	peak
2	10286.080	53.14	-7.16	45.98	74.00	-28.02	peak
3	12251.960	54.00	-6.00	48.00	74.00	-26.00	peak

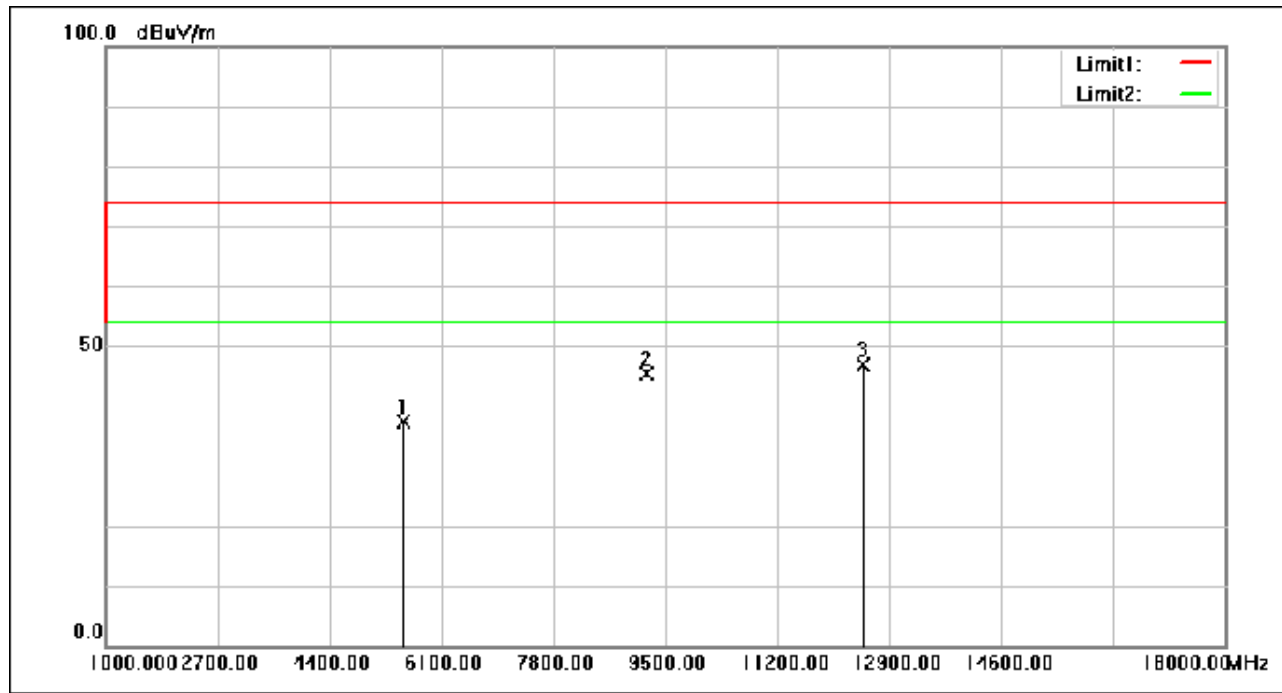
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5530.840	55.10	-17.65	37.45	74.00	-36.55	peak
2	9220.520	53.90	-8.48	45.42	74.00	-28.58	peak
3	12495.400	53.02	-6.11	46.91	74.00	-27.09	peak

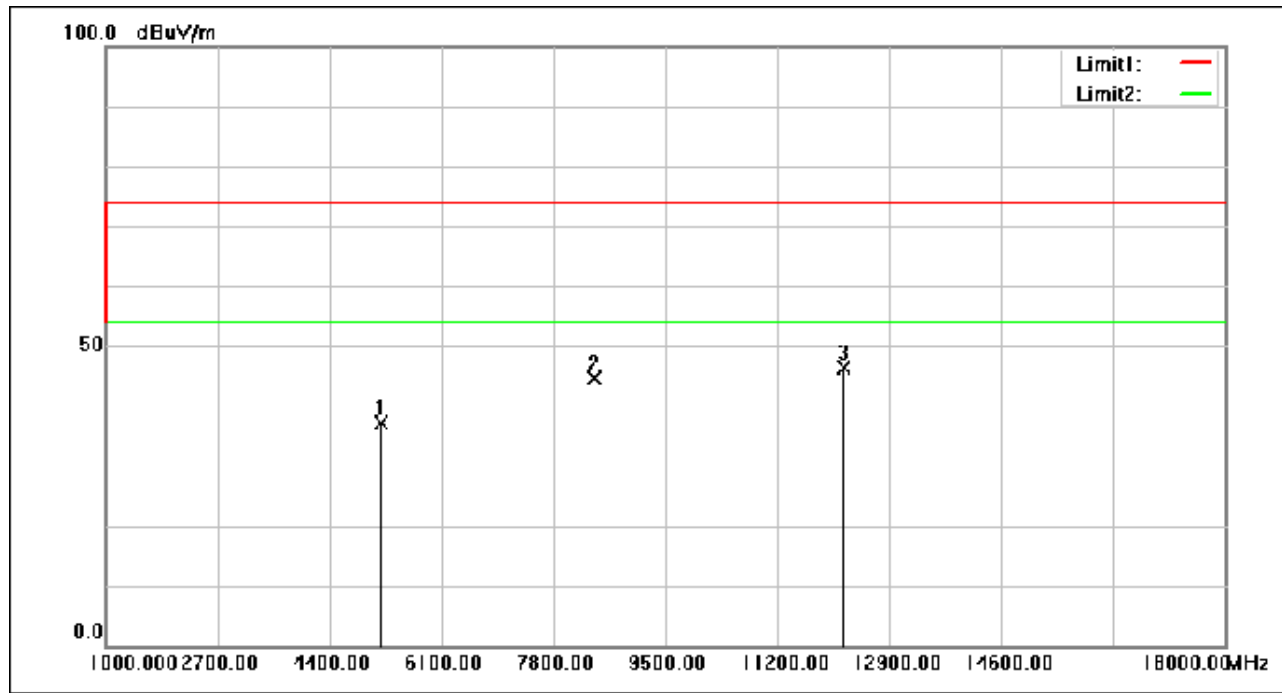
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5197.640	55.24	-18.14	37.10	74.00	-36.90	peak
2	8441.240	54.45	-9.85	44.60	74.00	-29.40	peak
3	12207.760	52.47	-5.98	46.49	74.00	-27.51	peak

Compliance Certification Services (Kunshan) Inc.

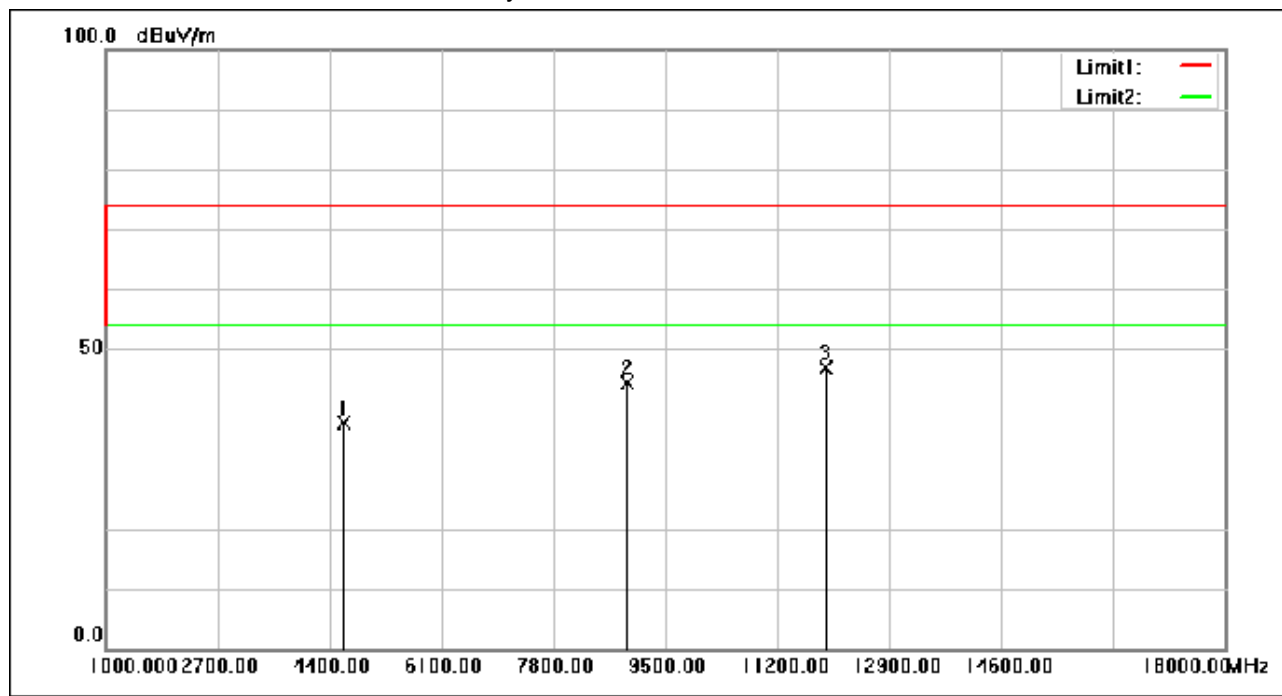
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PCB Antenna

Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4610.120	56.36	-18.68	37.68	74.00	-36.32	peak
2	8938.320	53.43	-9.03	44.40	74.00	-29.60	peak
3	11937.120	52.84	-5.99	46.85	74.00	-27.15	peak

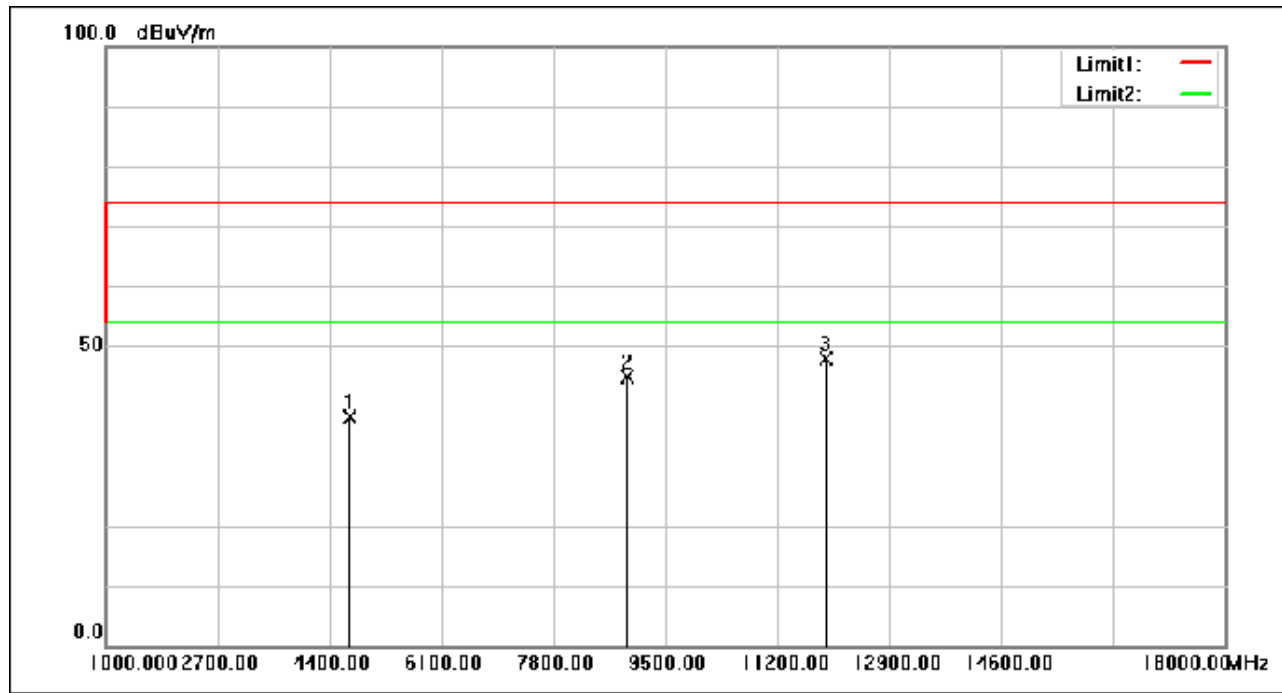
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4720.280	56.62	-18.61	38.01	74.00	-35.99	peak
2	8934.240	53.93	-9.04	44.89	74.00	-29.11	peak
3	11942.560	53.98	-5.98	48.00	74.00	-26.00	peak

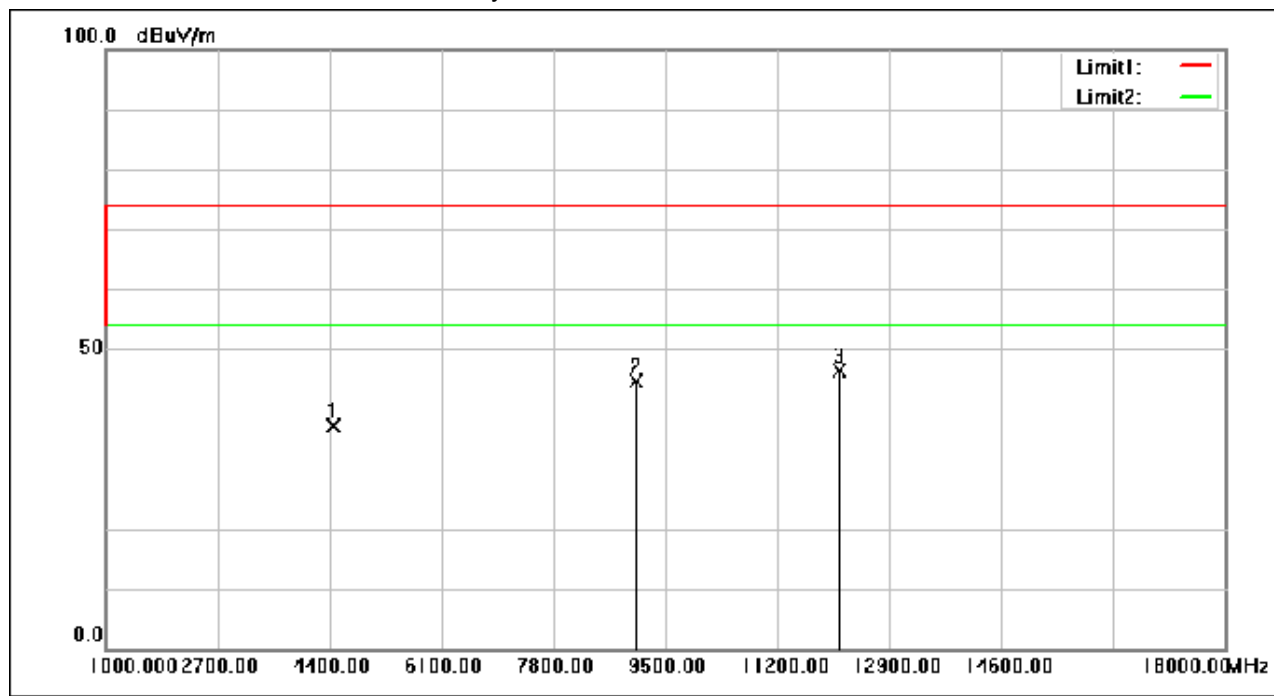
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4467.320	56.27	-19.06	37.21	74.00	-36.79	peak
2	9067.520	53.40	-8.77	44.63	74.00	-29.37	peak
3	12150.640	52.28	-5.96	46.32	74.00	-27.68	peak

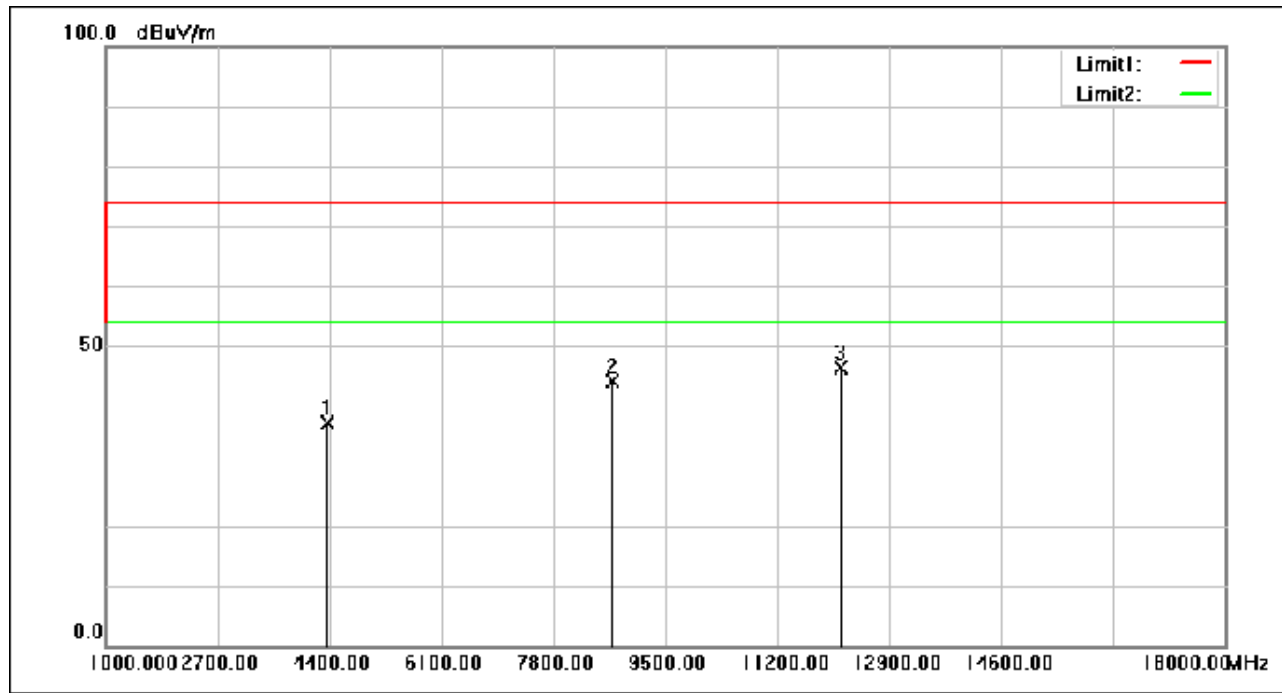
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4366.680	56.42	-19.35	37.07	74.00	-36.93	peak
2	8714.600	53.47	-9.40	44.07	74.00	-29.93	peak
3	12175.120	52.37	-5.96	46.41	74.00	-27.59	peak

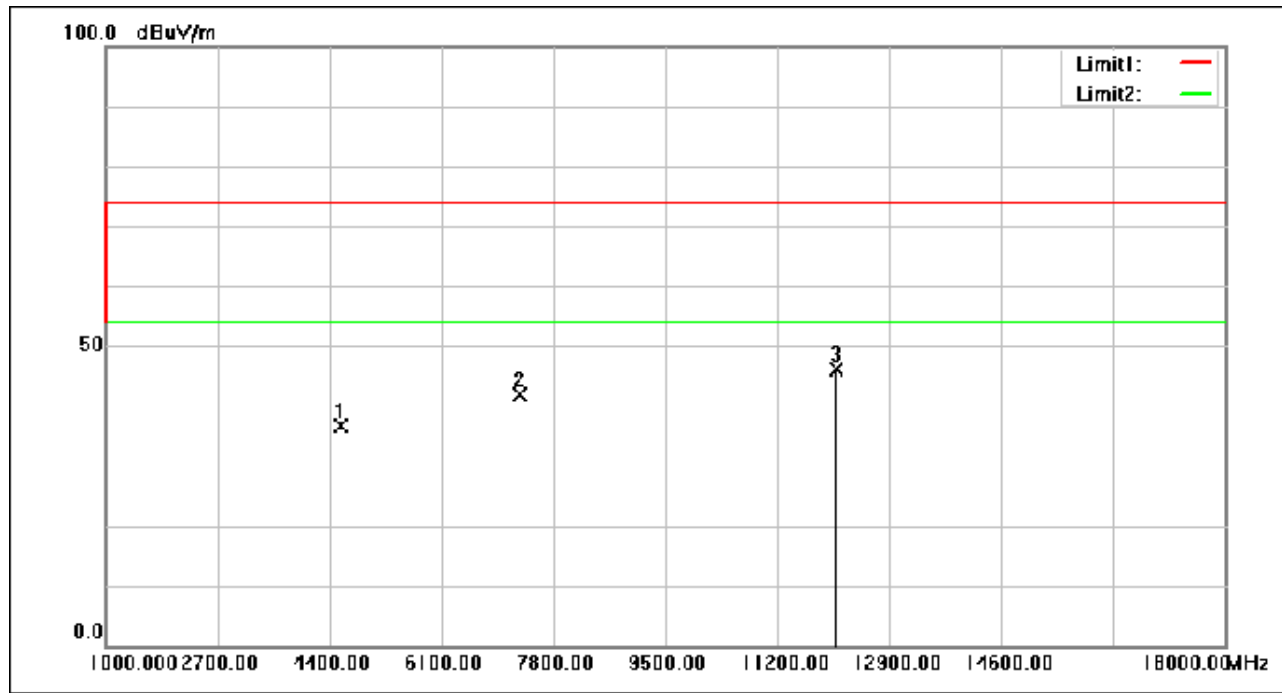
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4578.160	55.41	-18.74	36.67	74.00	-37.33	peak
2	7304.960	53.27	-11.43	41.84	74.00	-32.16	peak
3	12106.440	51.98	-5.94	46.04	74.00	-27.96	peak

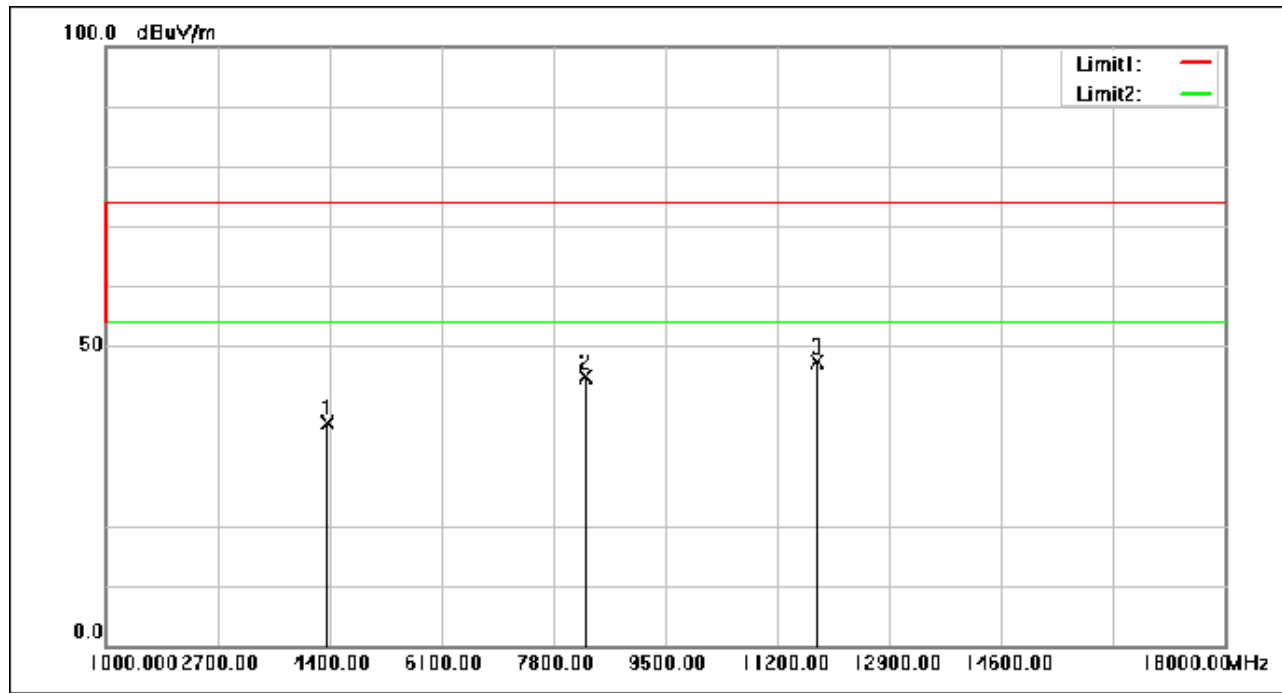
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Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4381.640	56.45	-19.31	37.14	74.00	-36.86	peak
2	8284.160	55.09	-10.11	44.98	74.00	-29.02	peak
3	11806.560	53.40	-6.11	47.29	74.00	-26.71	peak

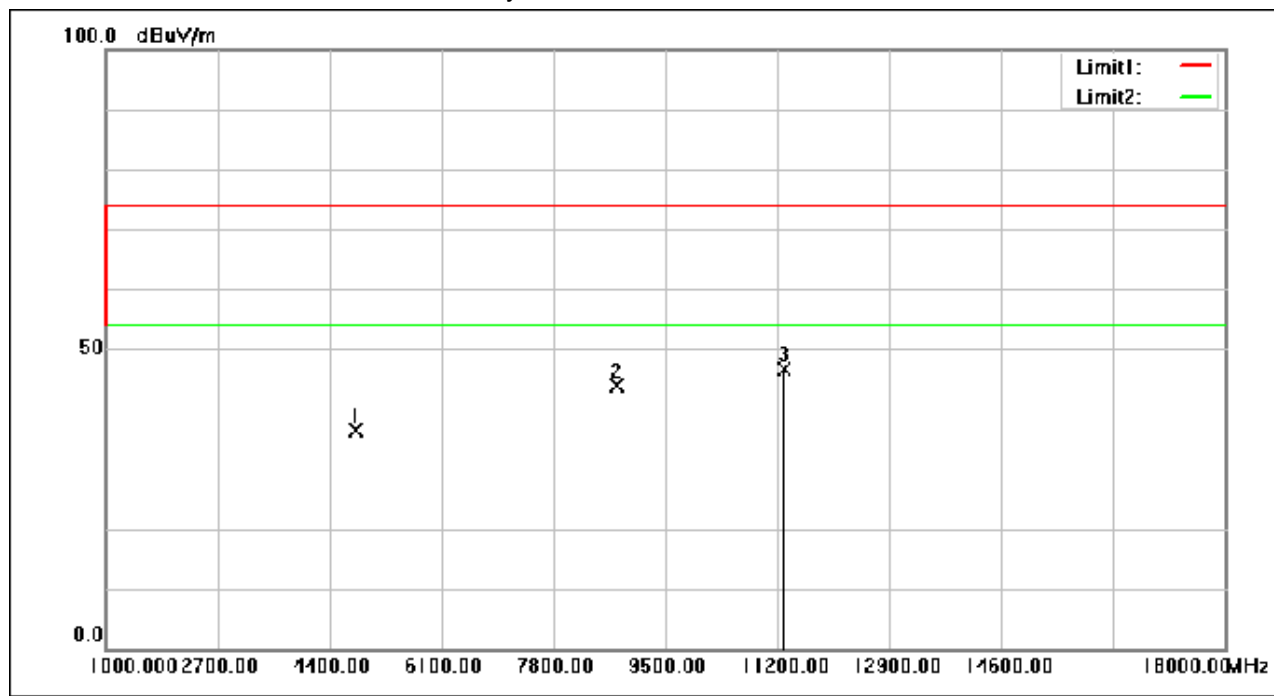
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4801.200	55.00	-18.56	36.44	74.00	-37.56	peak
2	8761.520	53.11	-9.32	43.79	74.00	-30.21	peak
3	11318.320	53.05	-6.50	46.55	74.00	-27.45	peak

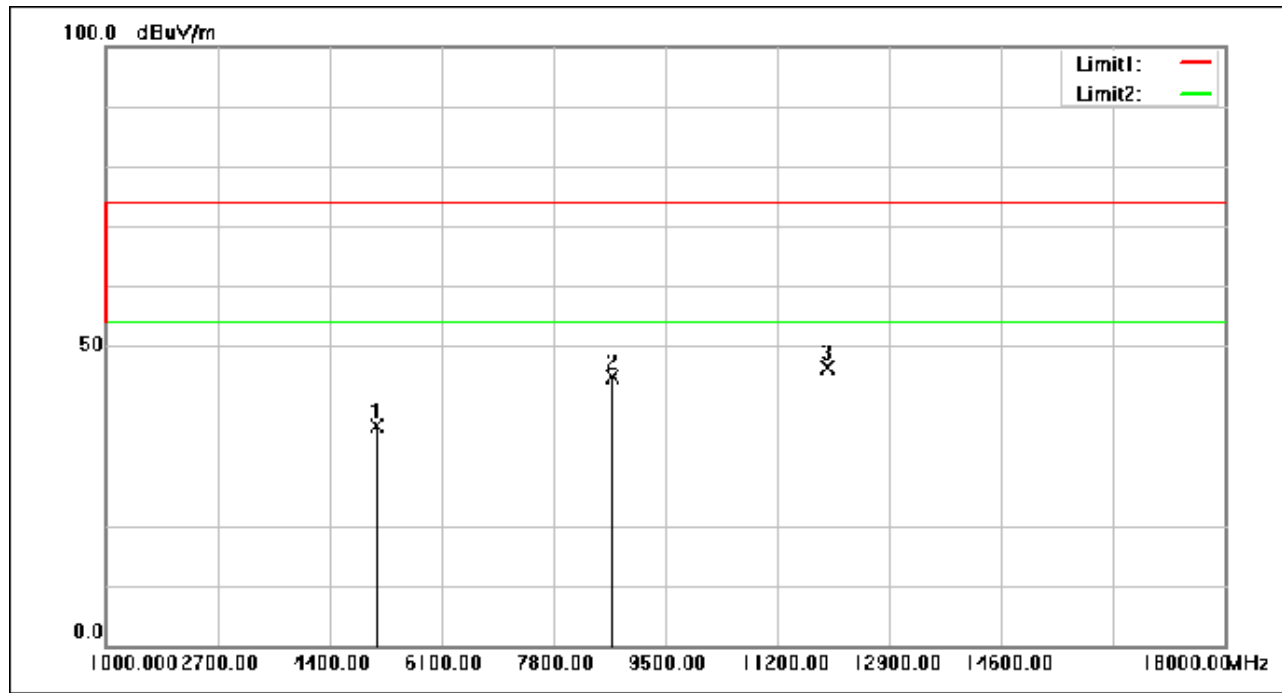
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5122.840	54.87	-18.25	36.62	74.00	-37.38	peak
2	8704.400	54.35	-9.42	44.93	74.00	-29.07	peak
3	11949.360	52.30	-5.97	46.33	74.00	-27.67	peak

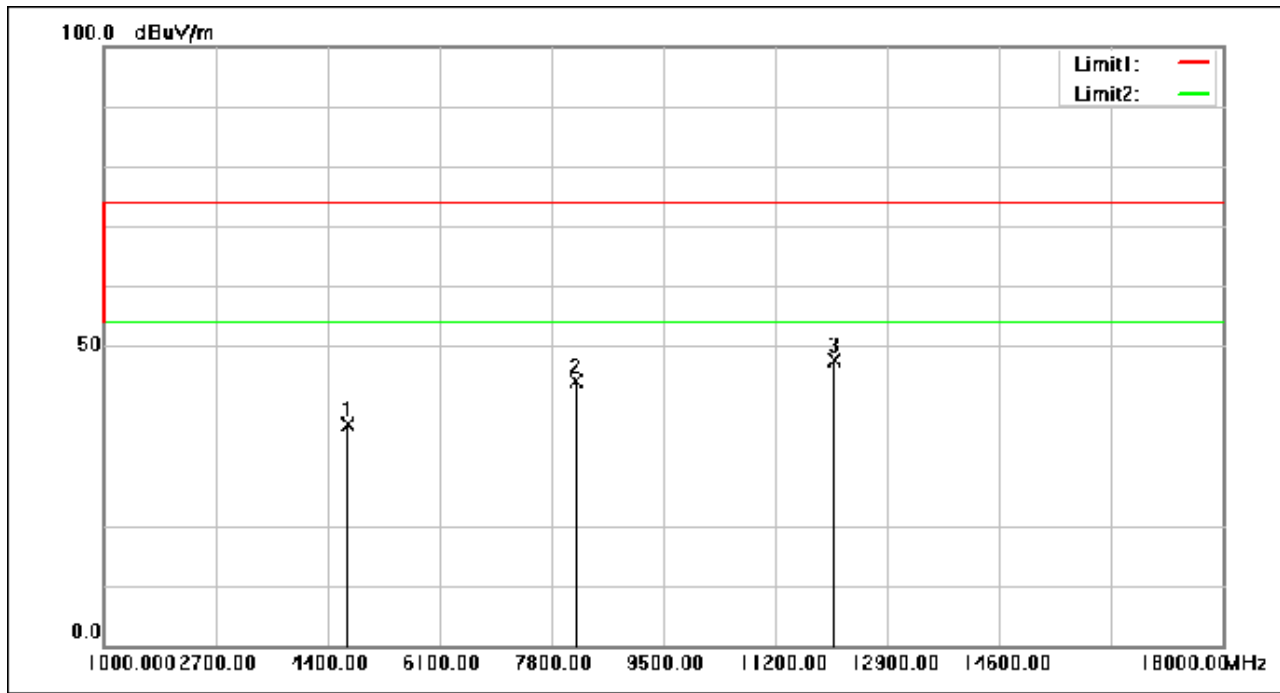
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Test Mode: 08; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4722.320	55.46	-18.61	36.85	74.00	-37.15	peak
2	8177.400	54.41	-10.29	44.12	74.00	-29.88	peak
3	12113.240	53.49	-5.93	47.56	74.00	-26.44	peak

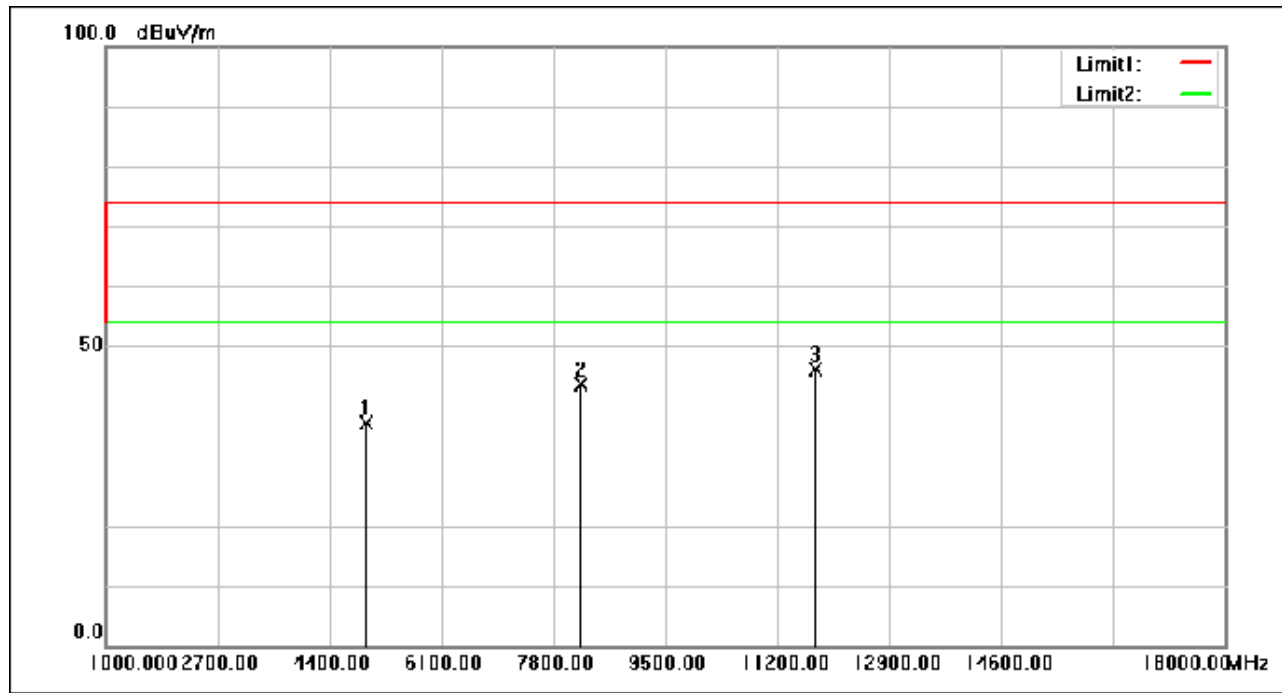
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.320	55.58	-18.47	37.11	74.00	-36.89	peak
2	8211.400	53.96	-10.23	43.73	74.00	-30.27	peak
3	11786.840	52.26	-6.12	46.14	74.00	-27.86	peak

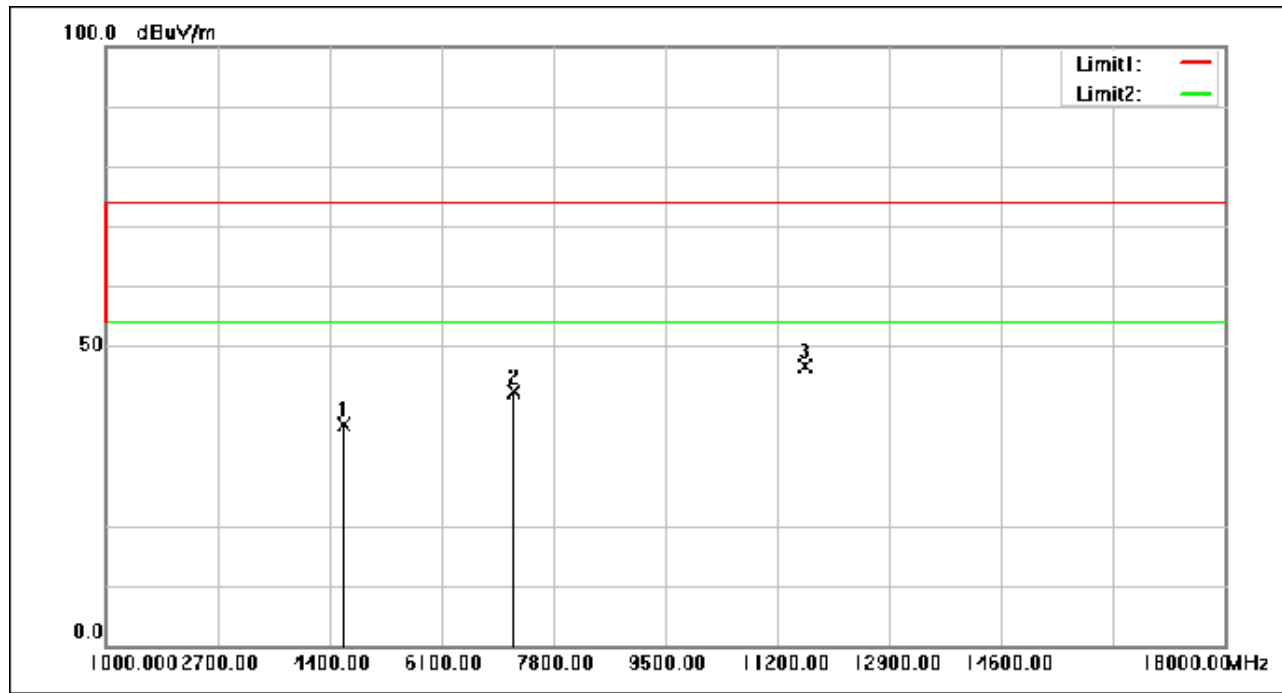
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Test Mode: 08; Polarity: Horizontal; Modulation: GFSK; Channel: High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4623.720	55.47	-18.66	36.81	74.00	-37.19	peak
2	7209.080	53.93	-11.47	42.46	74.00	-31.54	peak
3	11619.560	52.77	-6.26	46.51	74.00	-27.49	peak

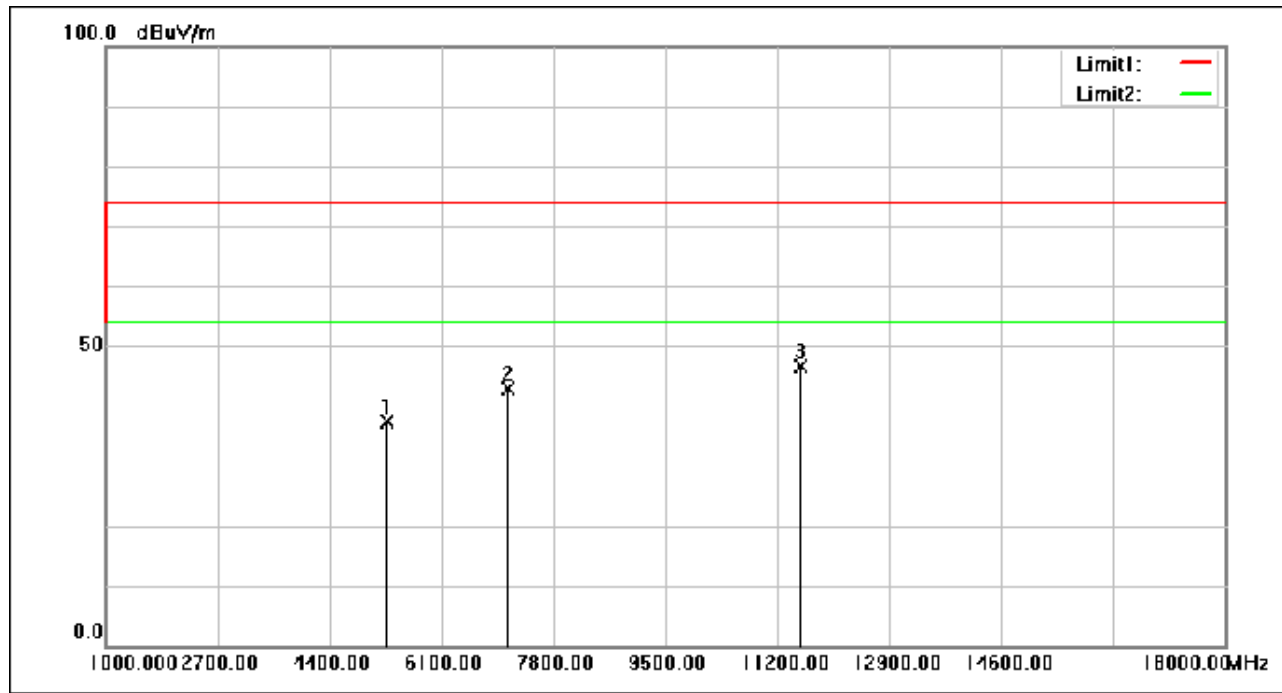
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Test Mode: 08; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5270.400	55.37	-18.03	37.34	74.00	-36.66	peak
2	7113.200	54.51	-11.51	43.00	74.00	-31.00	peak
3	11547.480	52.87	-6.32	46.55	74.00	-27.45	peak

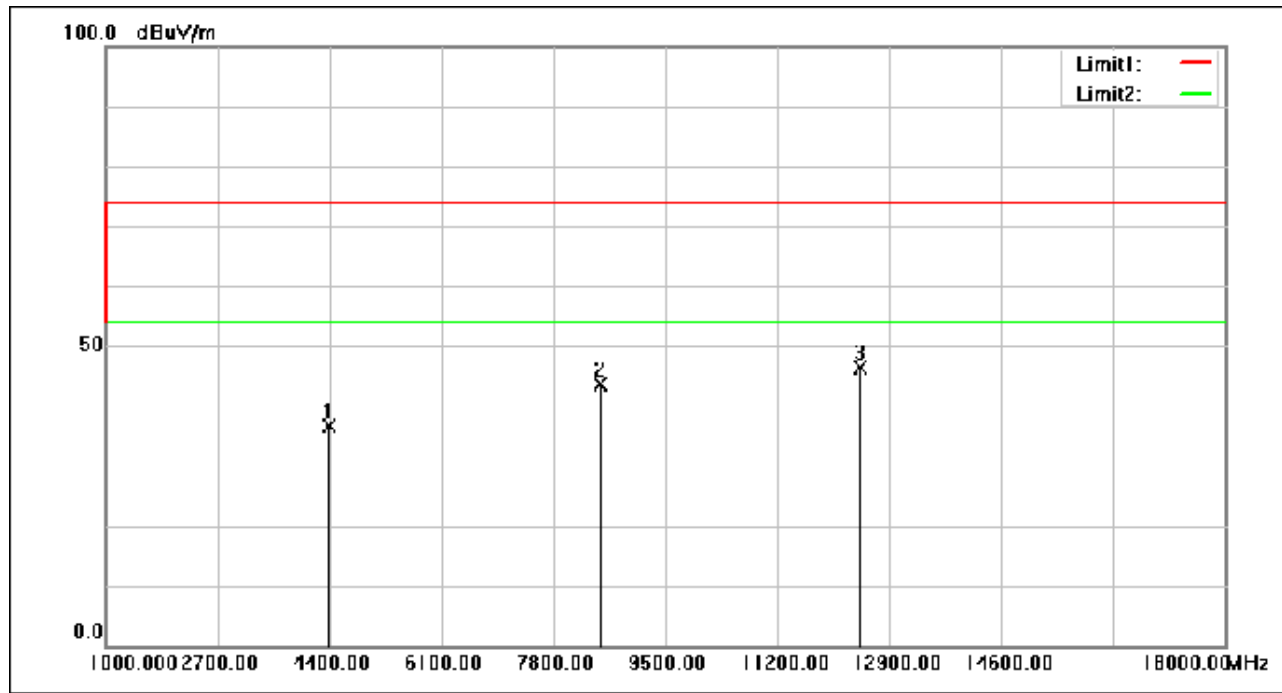
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4390.480	55.95	-19.28	36.67	74.00	-37.33	peak
2	8516.720	53.23	-9.72	43.51	74.00	-30.49	peak
3	12470.240	52.52	-6.10	46.42	74.00	-27.58	peak

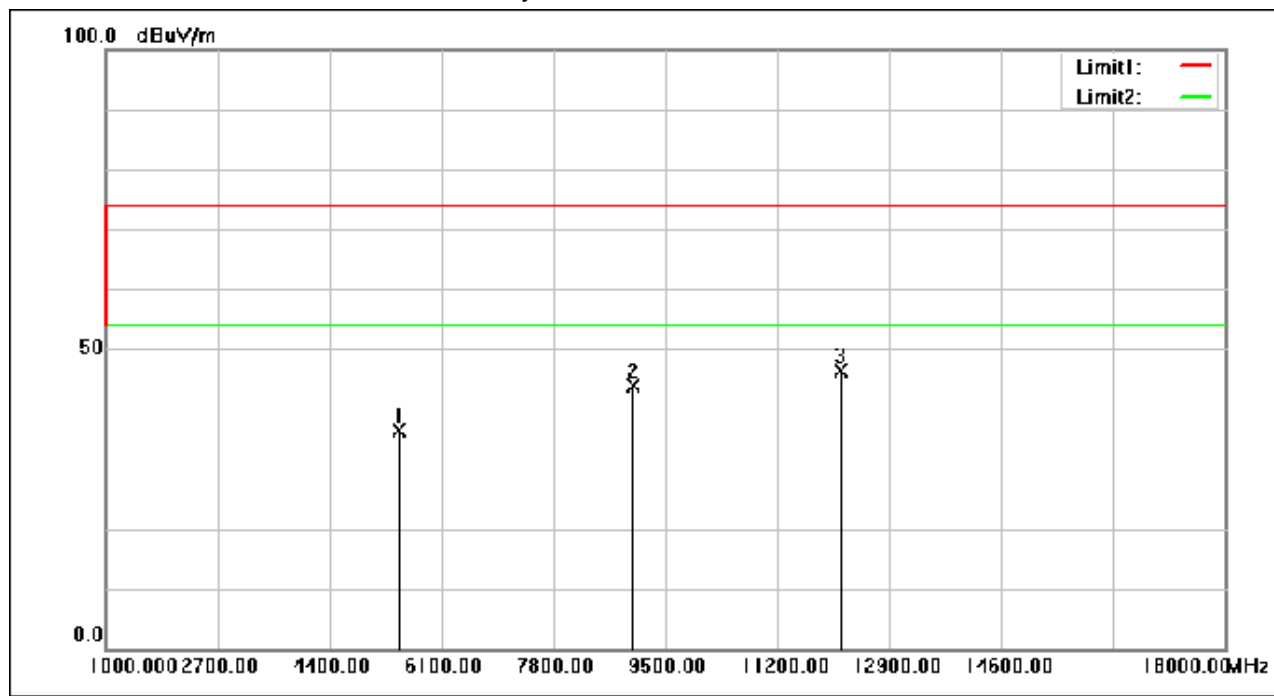
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5462.840	54.17	-17.75	36.42	74.00	-37.58	peak
2	9017.880	52.75	-8.86	43.89	74.00	-30.11	peak
3	12156.760	52.24	-5.96	46.28	74.00	-27.72	peak

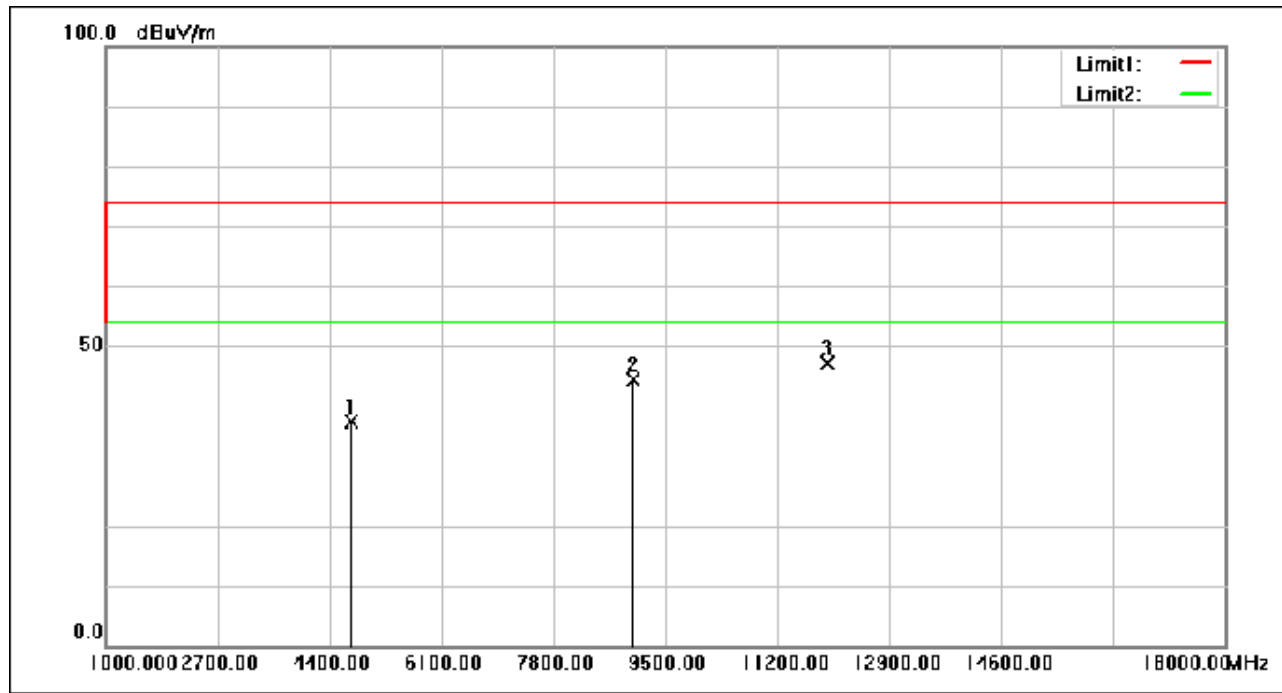
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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4727.760	55.91	-18.61	37.30	74.00	-36.70	peak
2	9022.640	53.11	-8.85	44.26	74.00	-29.74	peak
3	11959.560	53.01	-5.95	47.06	74.00	-26.94	peak

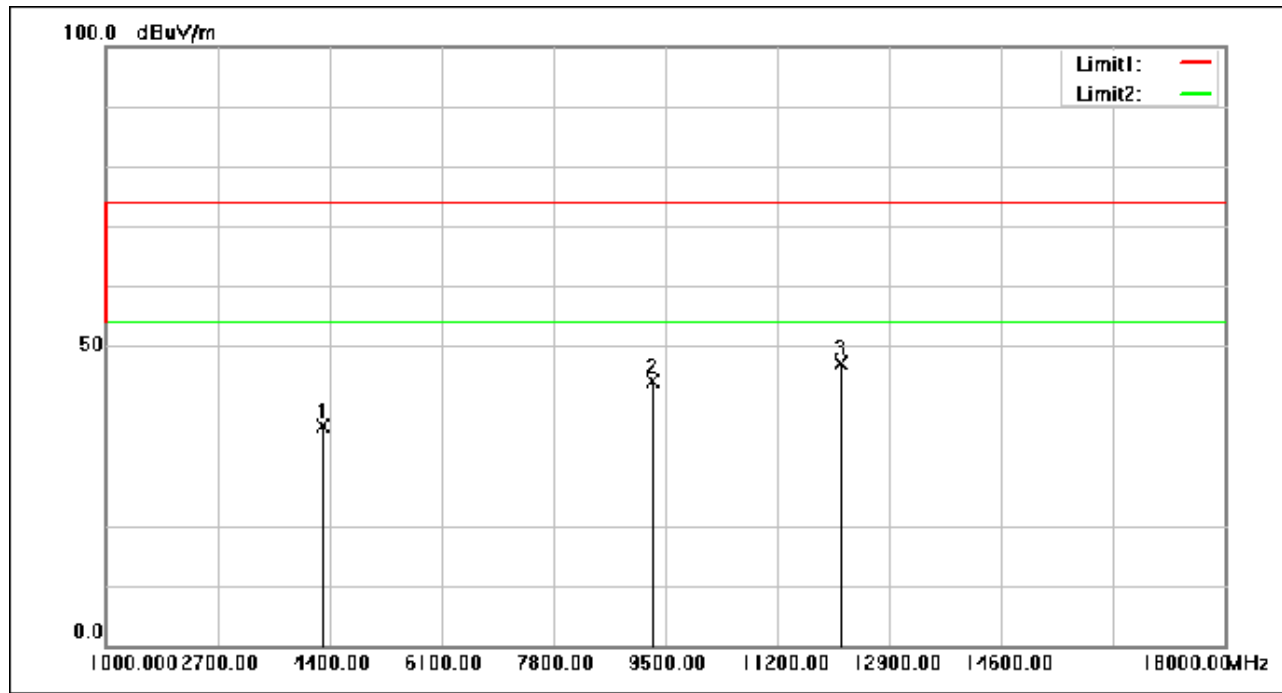
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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4300.720	56.13	-19.54	36.59	74.00	-37.41	peak
2	9307.560	52.44	-8.32	44.12	74.00	-29.88	peak
3	12178.520	53.19	-5.97	47.22	74.00	-26.78	peak

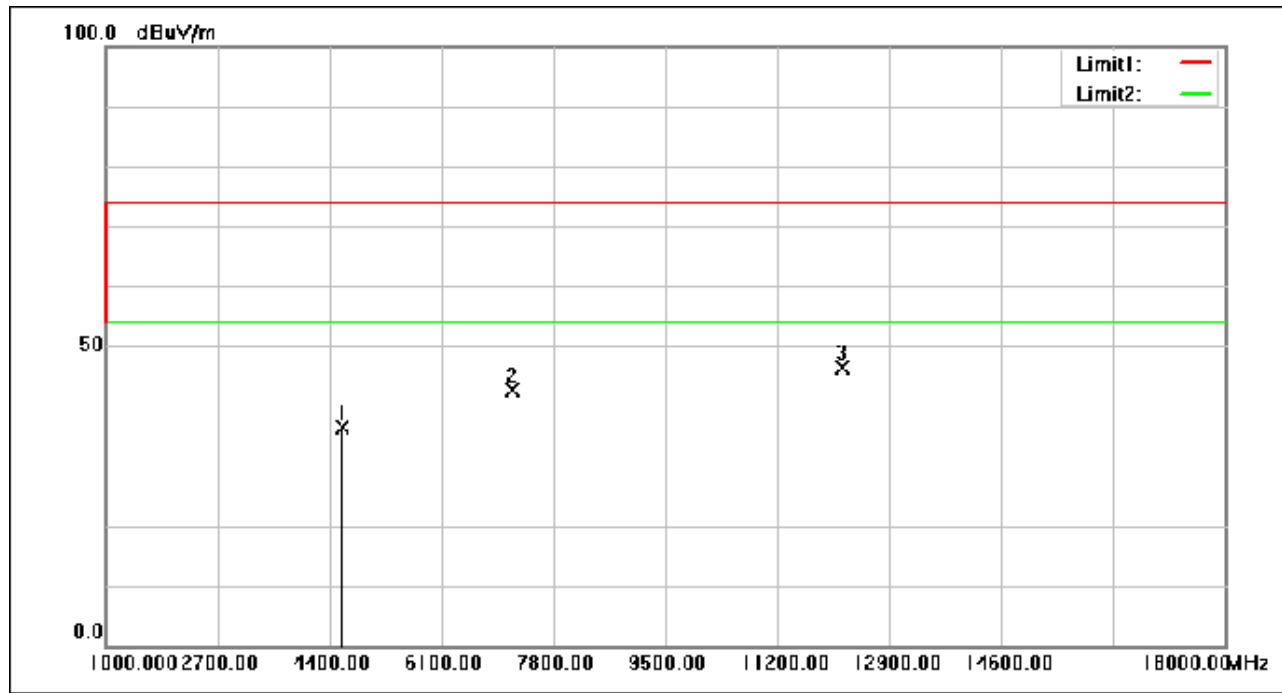
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 09; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4592.440	55.04	-18.70	36.34	74.00	-37.66	peak
2	7174.400	54.23	-11.48	42.75	74.00	-31.25	peak
3	12189.400	52.44	-5.97	46.47	74.00	-27.53	peak

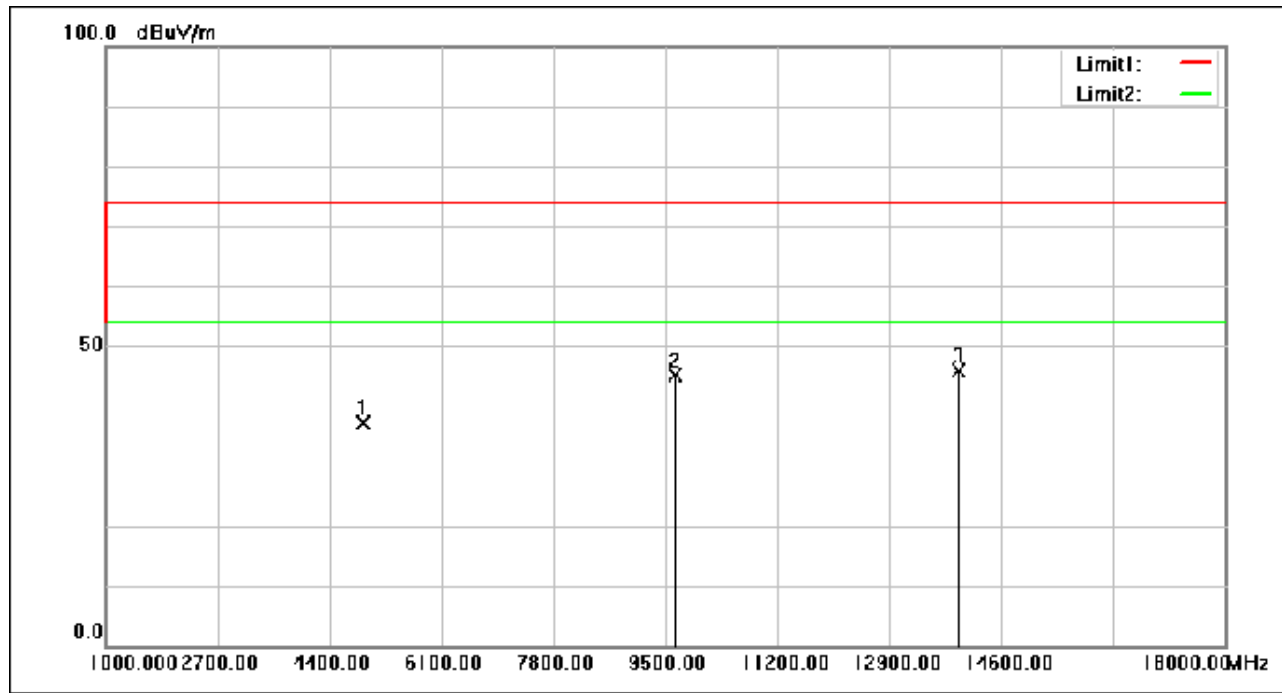
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 09; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4916.120	55.52	-18.49	37.03	74.00	-36.97	peak
2	9661.840	52.67	-7.65	45.02	74.00	-28.98	peak
3	13966.240	52.35	-6.42	45.93	74.00	-28.07	peak

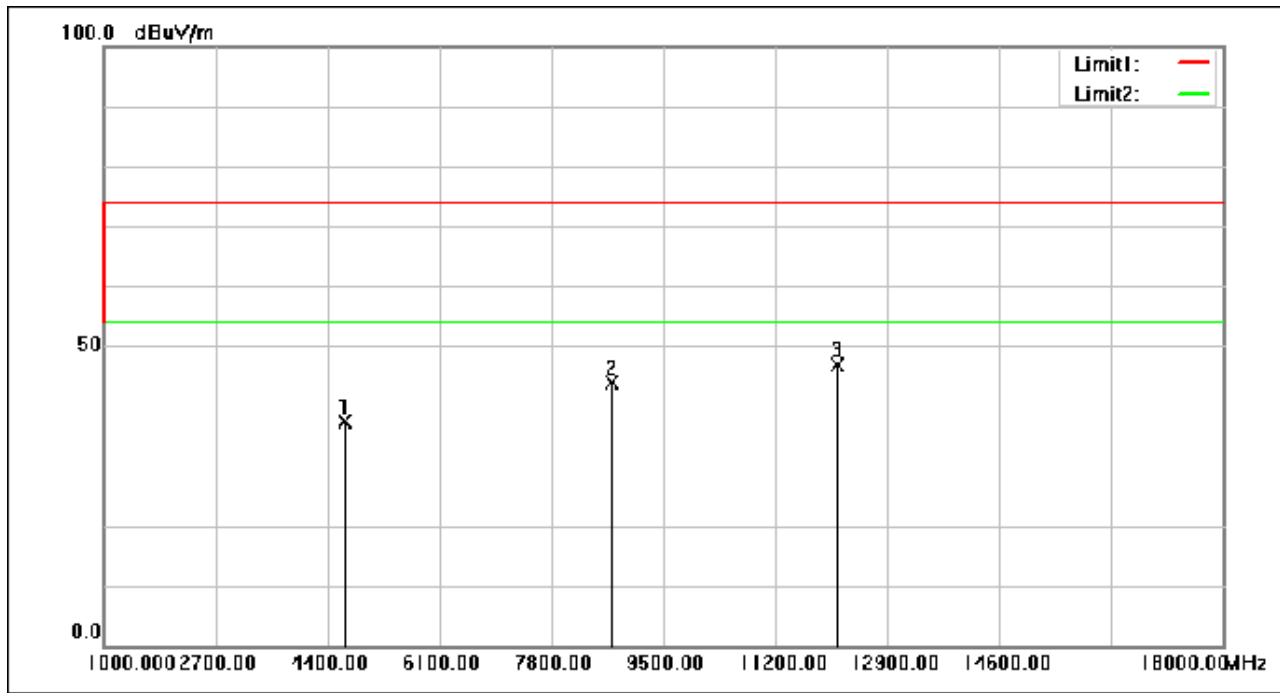
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4657.720	55.92	-18.64	37.28	74.00	-36.72	peak
2	8721.400	53.15	-9.38	43.77	74.00	-30.23	peak
3	12136.360	52.73	-5.95	46.78	74.00	-27.22	peak

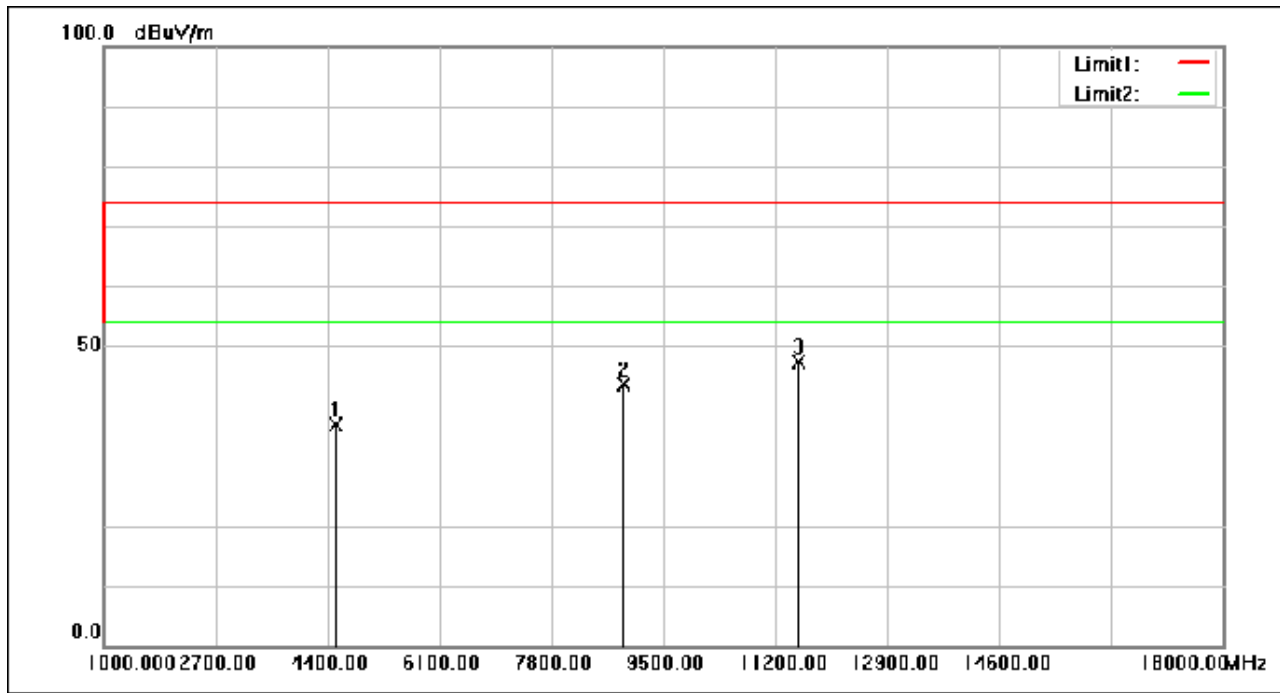
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:Low



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4529.880	55.86	-18.88	36.98	74.00	-37.02	peak
2	8919.960	52.71	-9.06	43.65	74.00	-30.35	peak
3	11567.200	53.61	-6.30	47.31	74.00	-26.69	peak

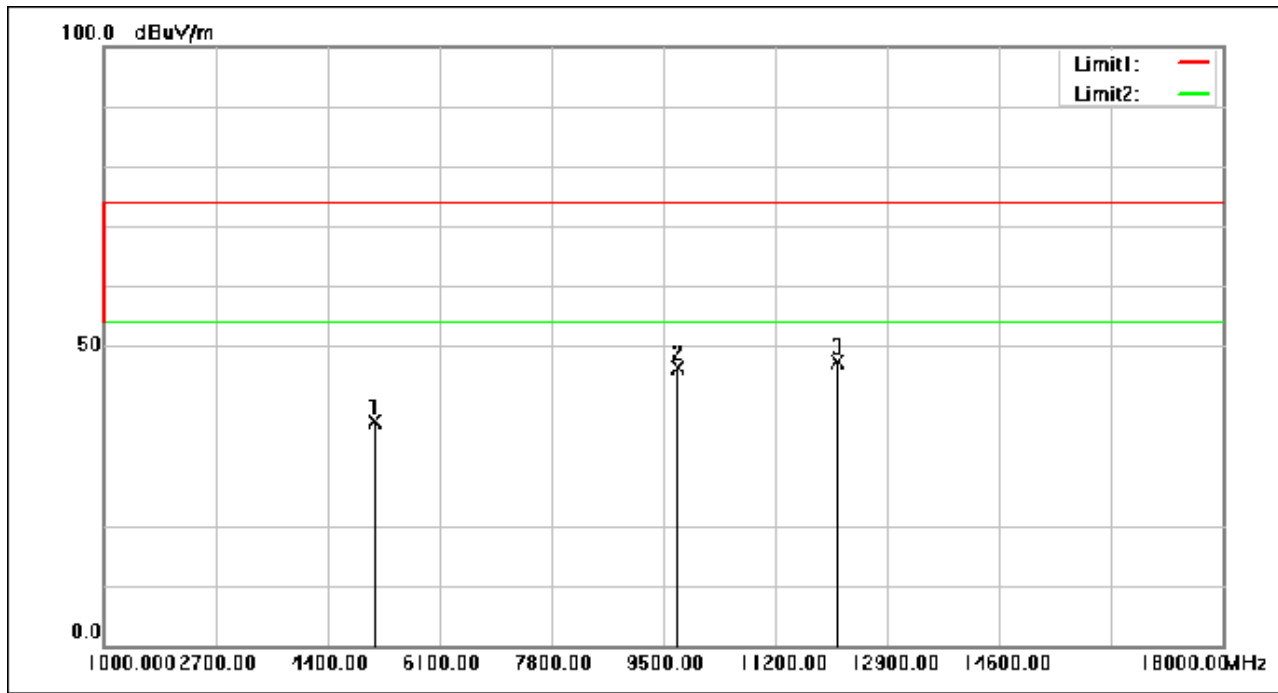
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5123.520	55.74	-18.25	37.49	74.00	-36.51	peak
2	9734.600	53.97	-7.51	46.46	74.00	-27.54	peak
3	12140.440	53.39	-5.95	47.44	74.00	-26.56	peak

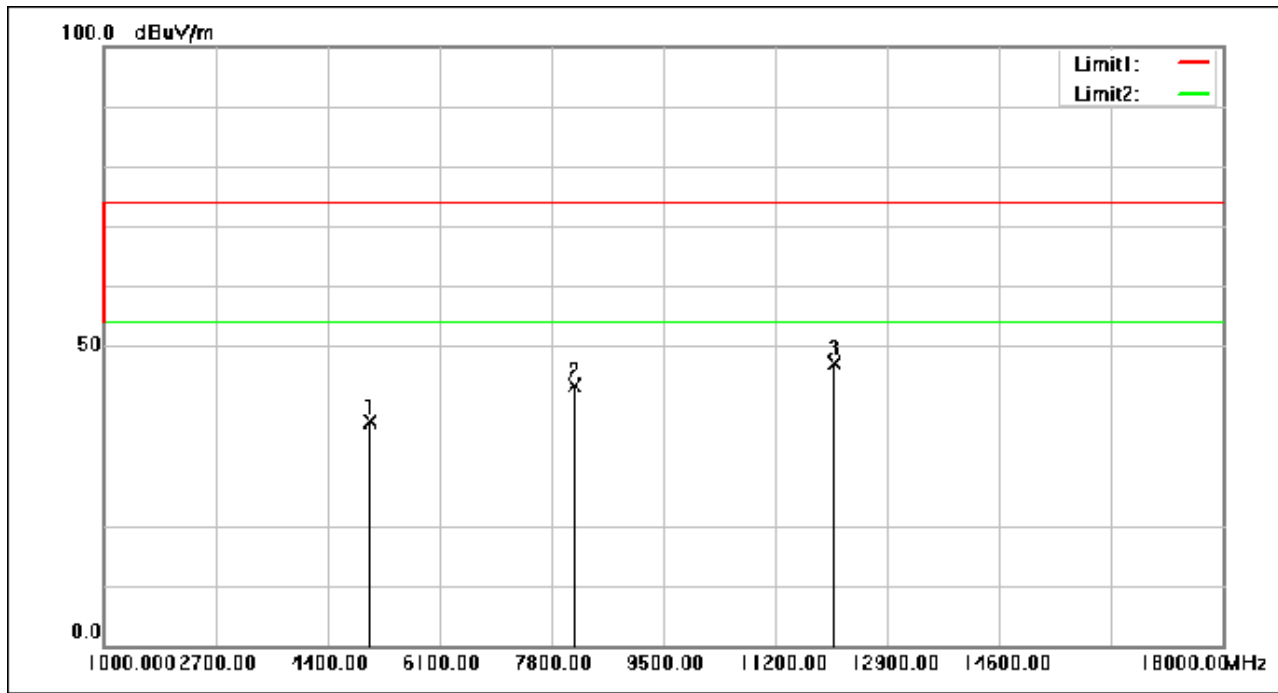
Compliance Certification Services (Kunshan) Inc.

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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:middle



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5057.560	55.67	-18.35	37.32	74.00	-36.68	peak
2	8171.960	53.65	-10.30	43.35	74.00	-30.65	peak
3	12111.200	53.15	-5.94	47.21	74.00	-26.79	peak

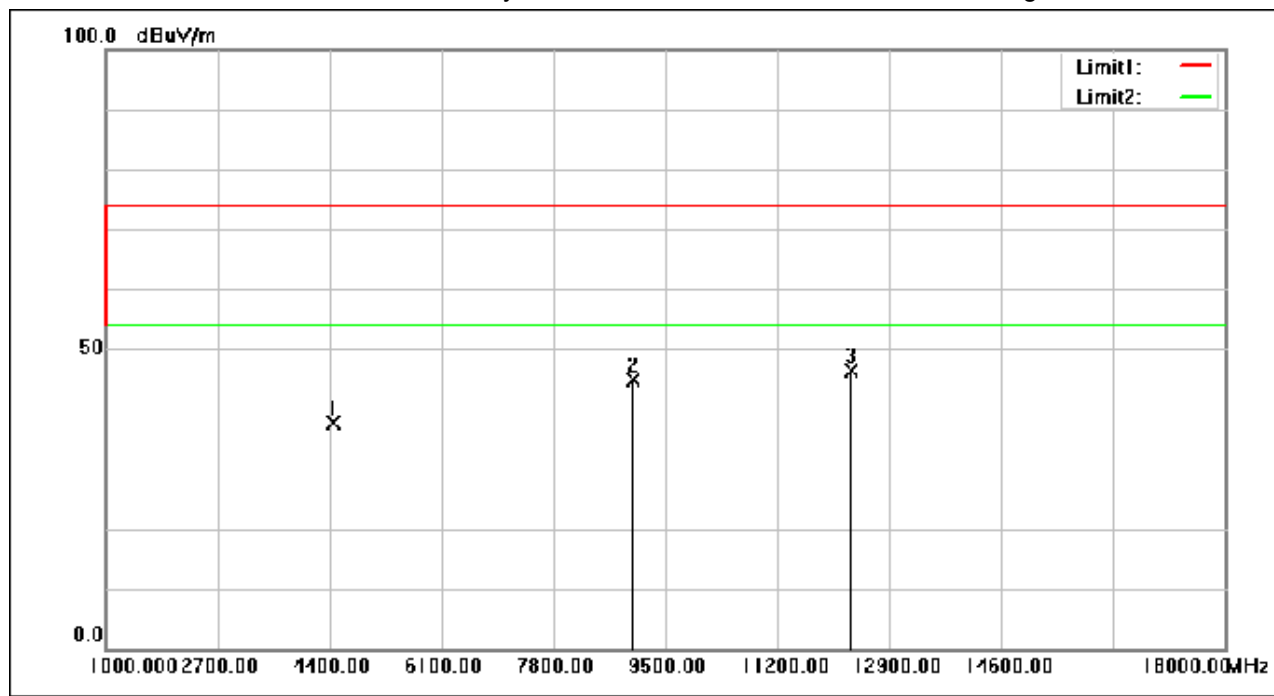
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Test Mode: 10; Polarity: Horizontal; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4456.440	56.81	-19.08	37.73	74.00	-36.27	peak
2	9021.280	53.83	-8.86	44.97	74.00	-29.03	peak
3	12324.720	52.52	-6.04	46.48	74.00	-27.52	peak

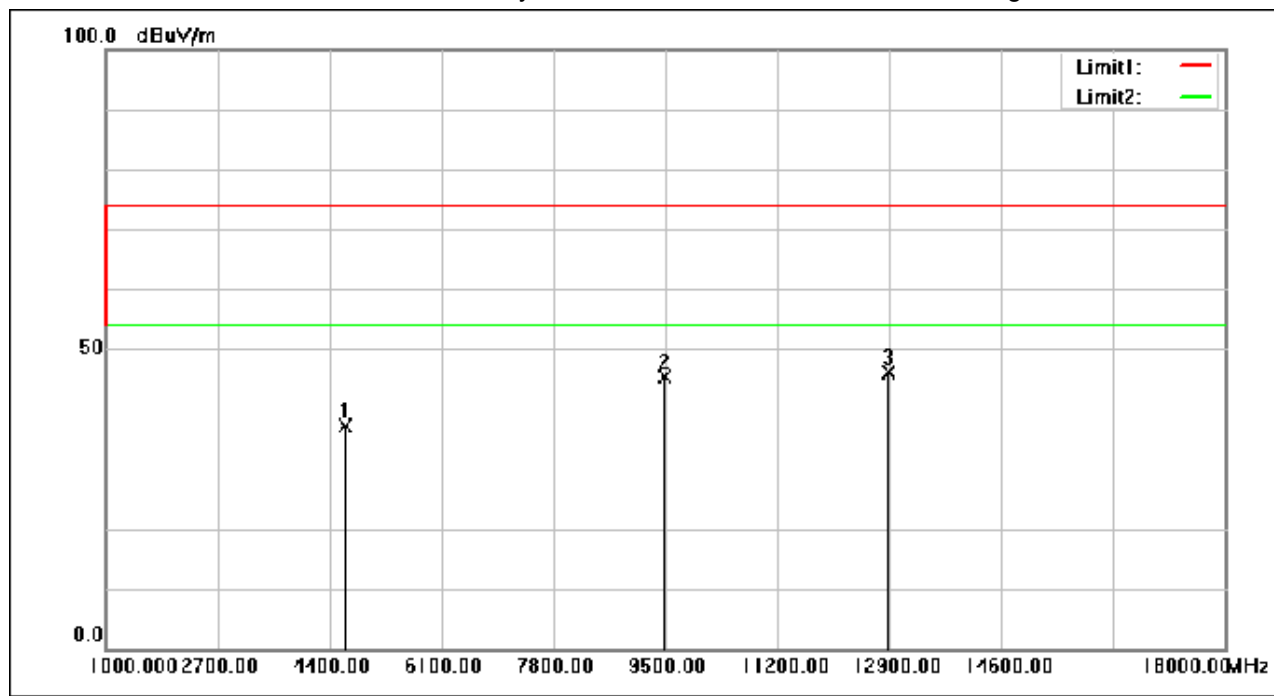
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Test Mode: 10; Polarity: Vertical; Modulation:GFSK; Channel:High



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4642.080	55.69	-18.66	37.03	74.00	-36.97	peak
2	9497.280	53.28	-7.96	45.32	74.00	-28.68	peak
3	12895.240	52.35	-6.29	46.06	74.00	-27.94	peak

7.10 99% Bandwidth

Test Requirement RSS-Gen Section 6.7
Test Method: ANSI C63.10 (2013) Section 6.9.3

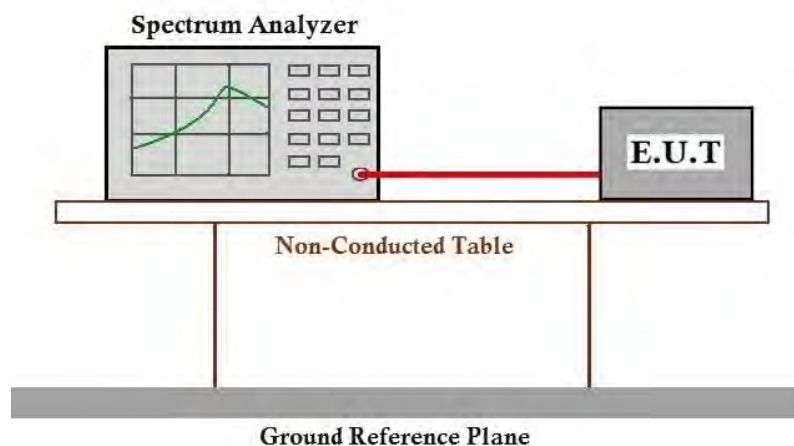
7.10.1 E.U.T. Operation

Operating Environment:
Temperature: 18.1 °C Humidity: 50.5 % RH Atmospheric Pressure: 1010 mbar

7.10.1 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	08	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	09	TX mode(S2)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	10	TX mode(S8)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.10.2 Test Setup Diagram



7.10.3 Measurement Procedure and Data

Please Refer to Appendix for Details



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2404000566AT

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for KSCR2404000566AT

10 Appendix

1. Duty Cycle

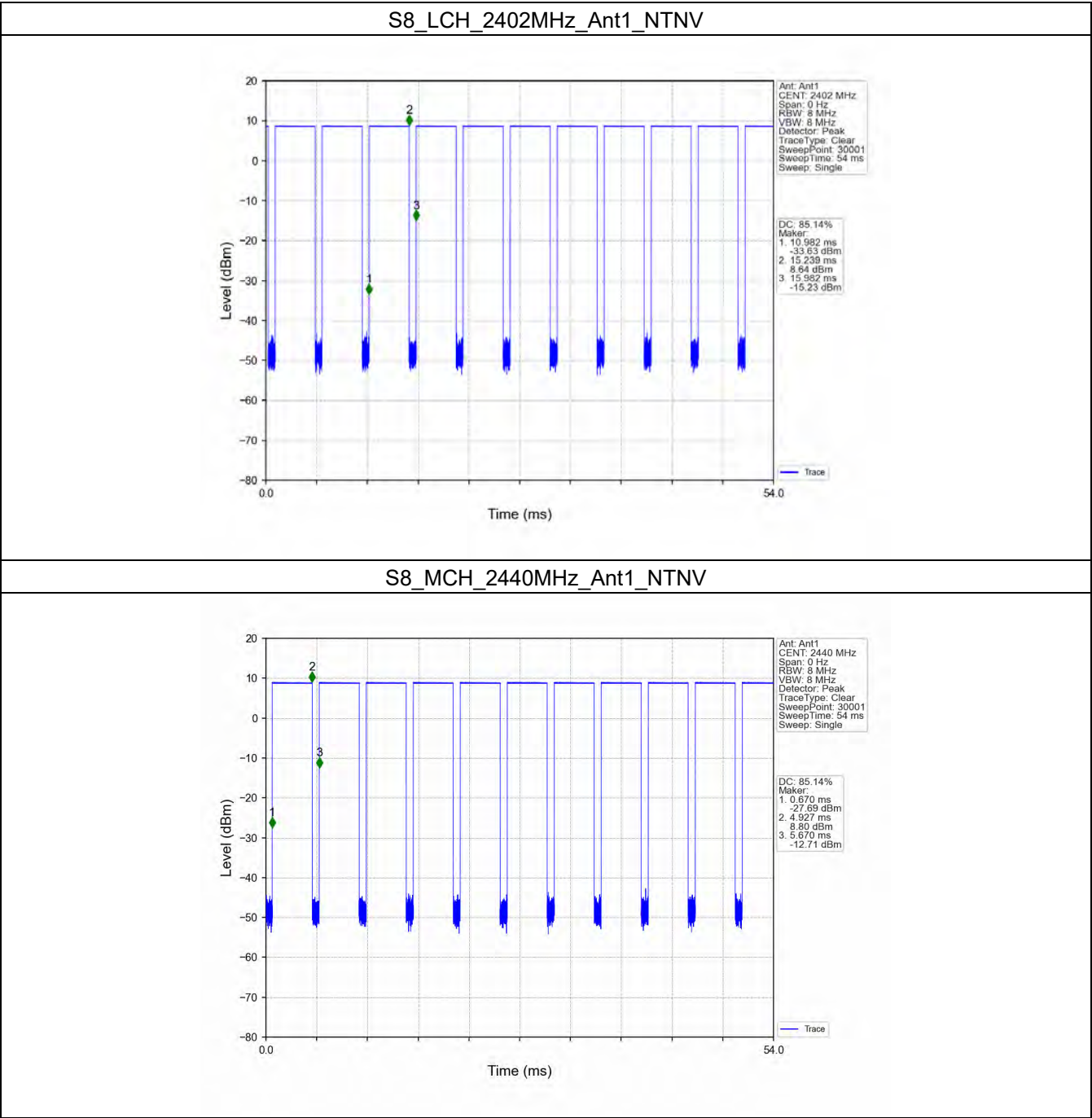
1.1 Test Result

1.1.1 Ant1

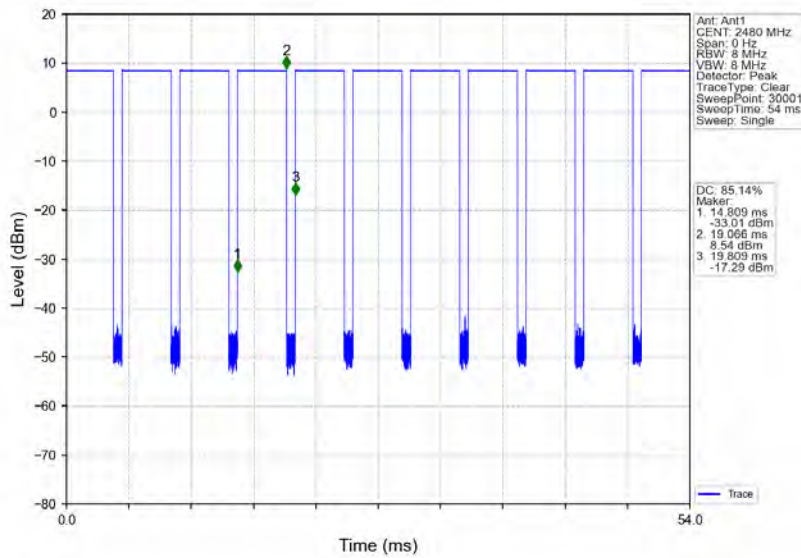
Ant1							
Mode	TX Type	Frequency (MHz)	T _{on} (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
S8	SISO	2402	4.257	5.000	85.14	0.70	0.04
		2440	4.257	5.000	85.14	0.70	0.04
		2480	4.257	5.000	85.14	0.70	0.04
S2	SISO	2402	1.354	1.876	72.17	1.42	0.03
		2440	1.354	1.876	72.17	1.42	0.03
		2480	1.353	1.875	72.16	1.42	0.01
1M	SISO	2402	0.535	1.250	42.80	3.69	0.02
		2440	0.534	1.250	42.72	3.69	0.02
		2480	0.535	1.250	42.80	3.69	0.03
2M	SISO	2402	0.274	0.625	43.84	3.58	0.03
		2440	0.275	0.625	44.00	3.57	0.00
		2480	0.274	0.625	43.84	3.58	0.00

1.2 Test Graph

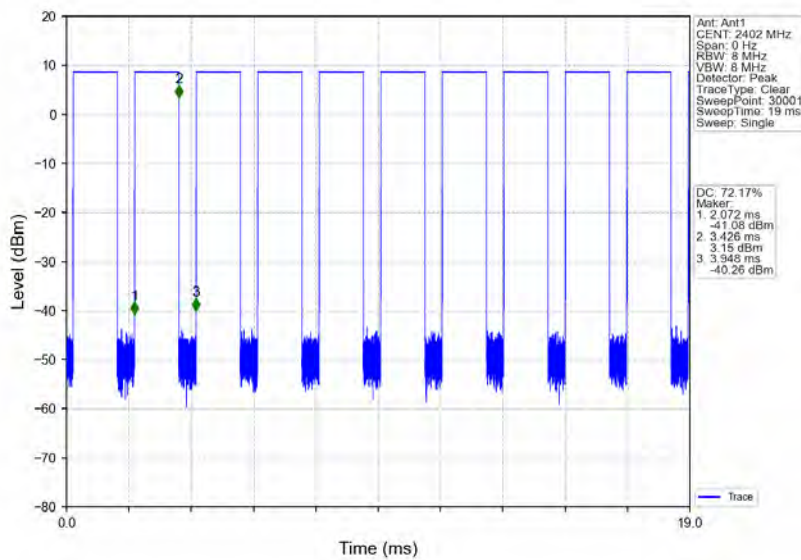
1.2.1 Ant1



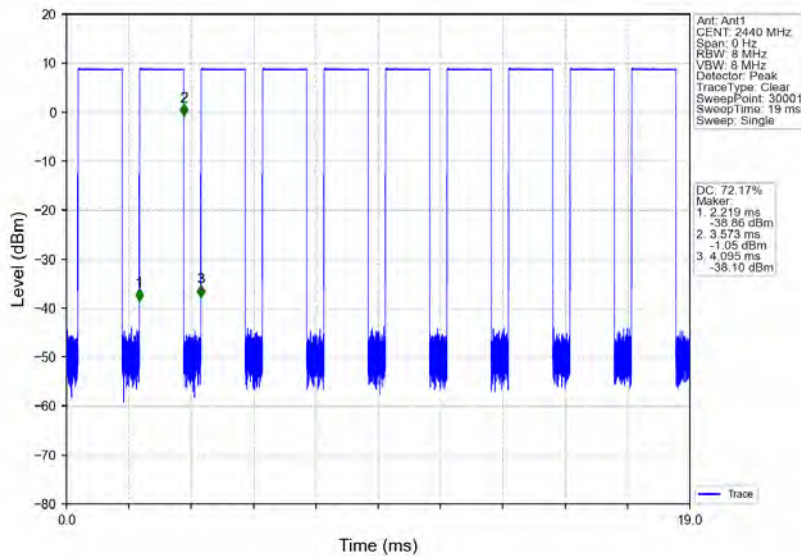
S8_HCH_2480MHz_Ant1_NTNV



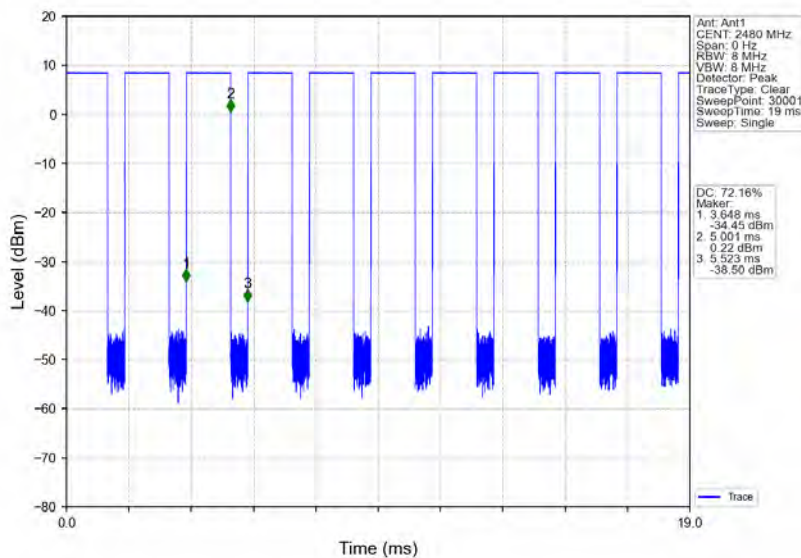
S2_LCH_2402MHz_Ant1_NTNV



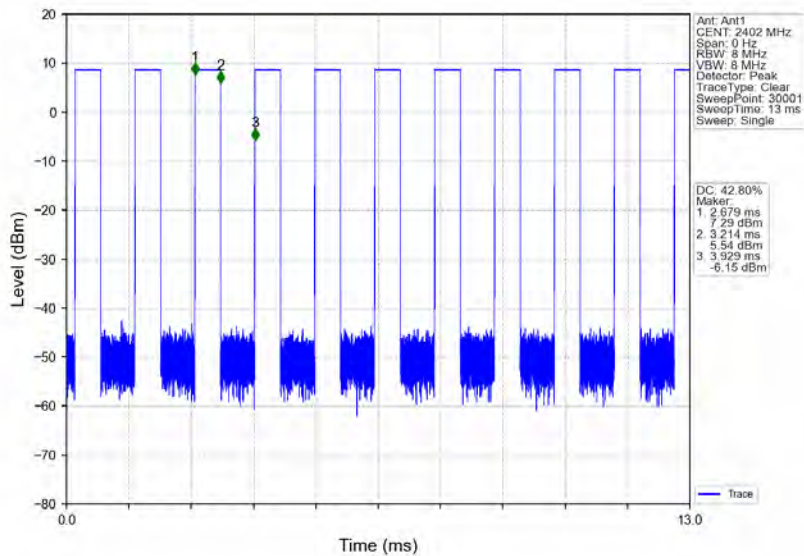
S2_MCH_2440MHz_Ant1_NTNV



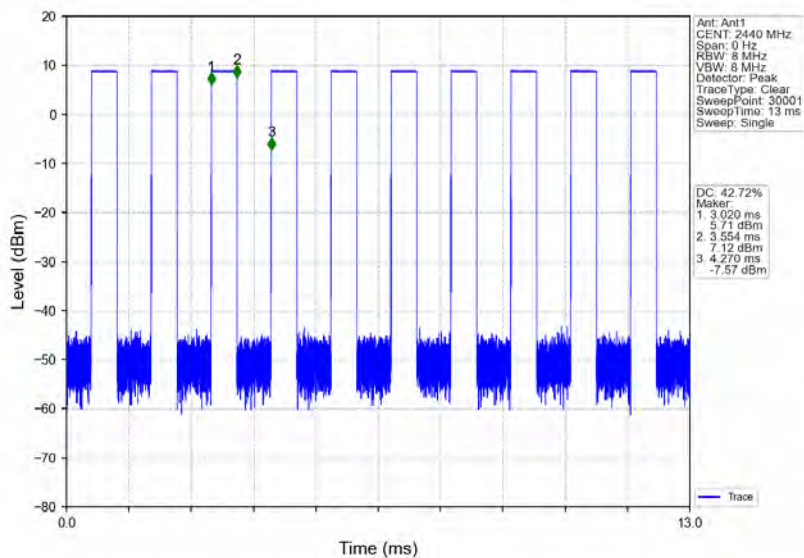
S2_HCH_2480MHz_Ant1_NTNV



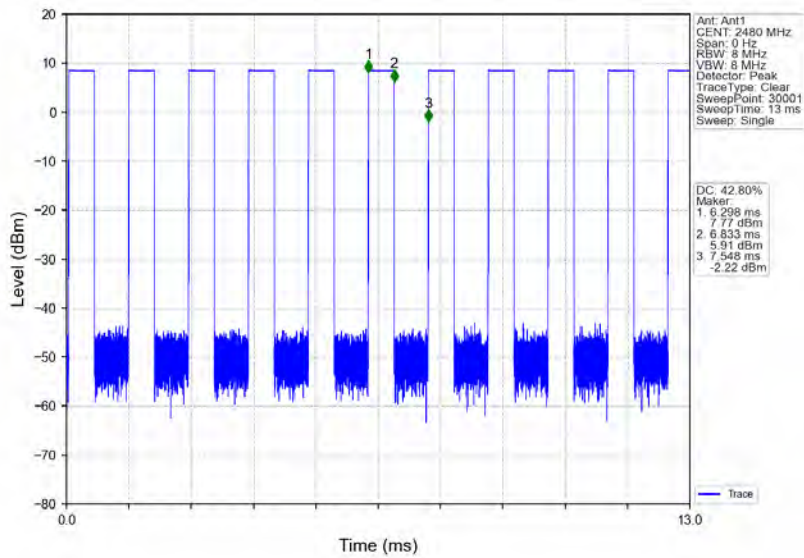
1M_LCH_2402MHz_Ant1_NTNV



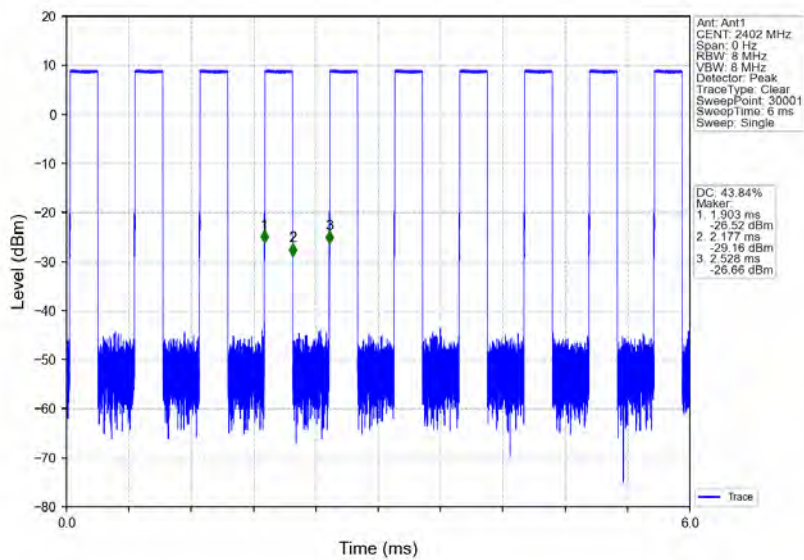
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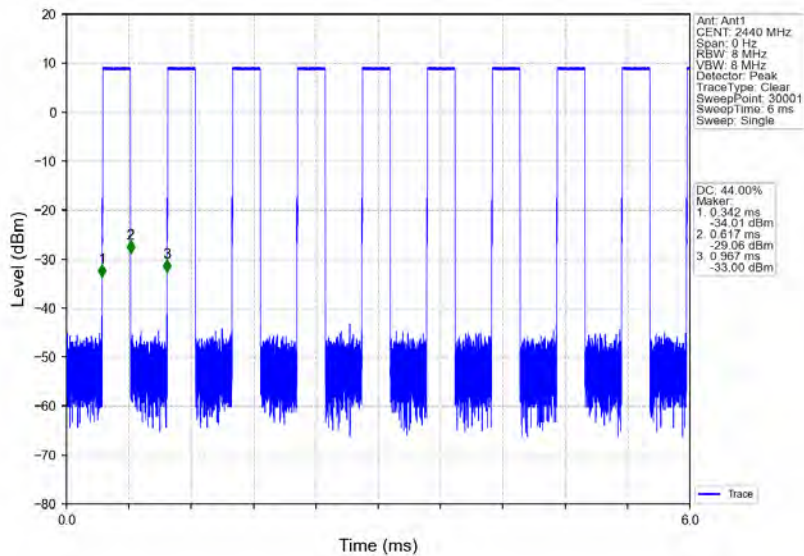
1M_HCH_2480MHz_Ant1_NTNV



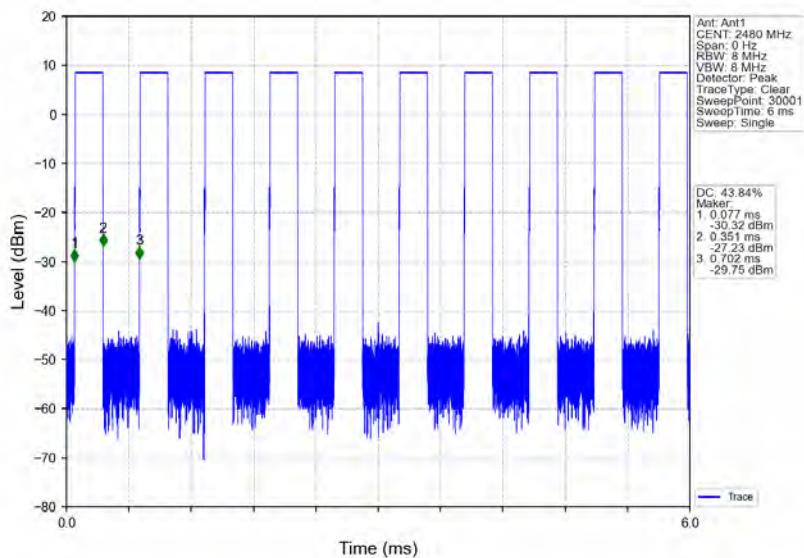
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

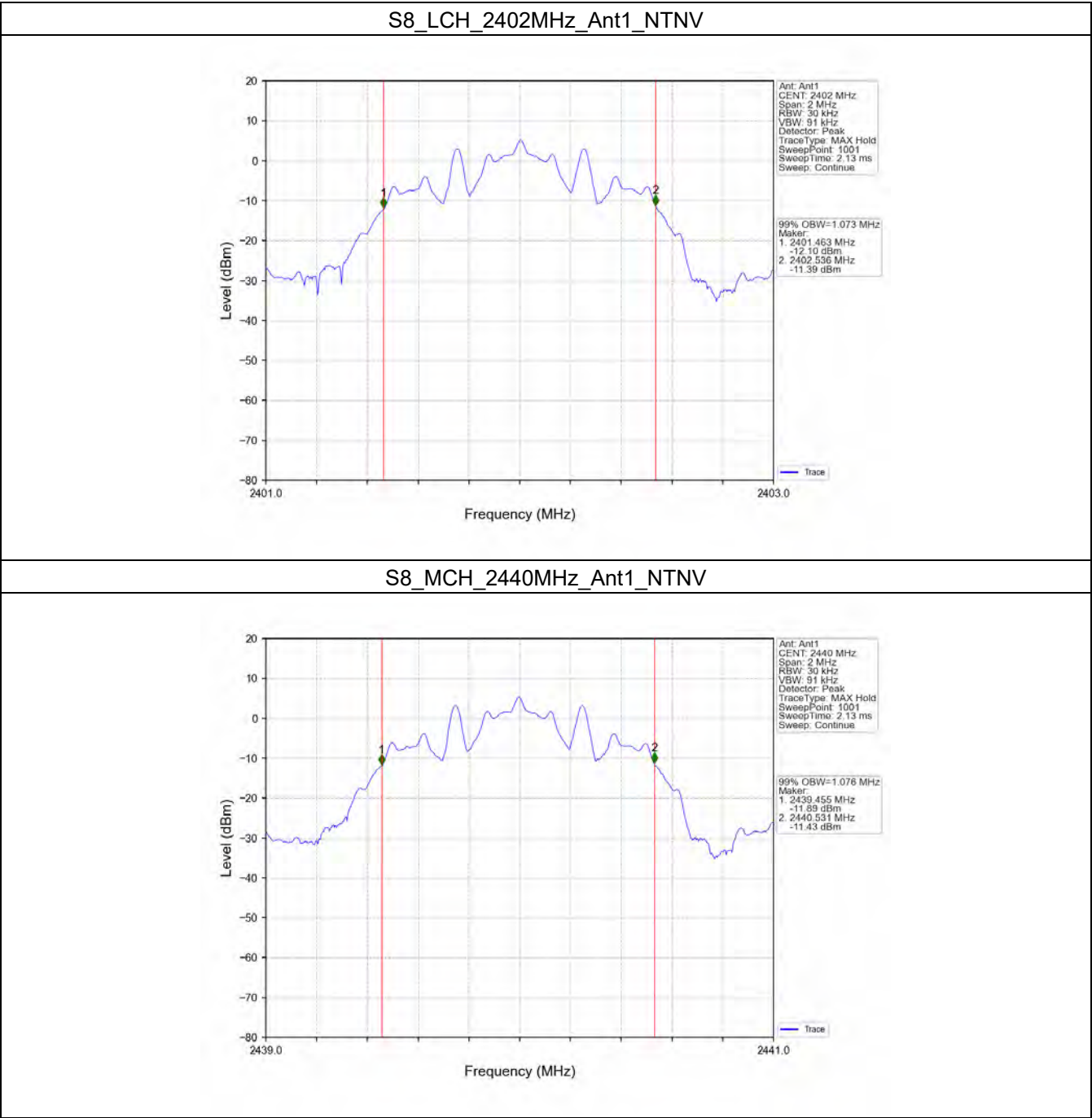
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
S8	SISO	2402	1	1.073	/	Pass
		2440	1	1.076	/	Pass
		2480	1	1.078	/	Pass
S2	SISO	2402	1	1.032	/	Pass
		2440	1	1.034	/	Pass
		2480	1	1.038	/	Pass
1M	SISO	2402	1	1.052	/	Pass
		2440	1	1.055	/	Pass
		2480	1	1.057	/	Pass
2M	SISO	2402	1	2.087	/	Pass
		2440	1	2.094	/	Pass
		2480	1	2.099	/	Pass

2.1.2 6dB BW

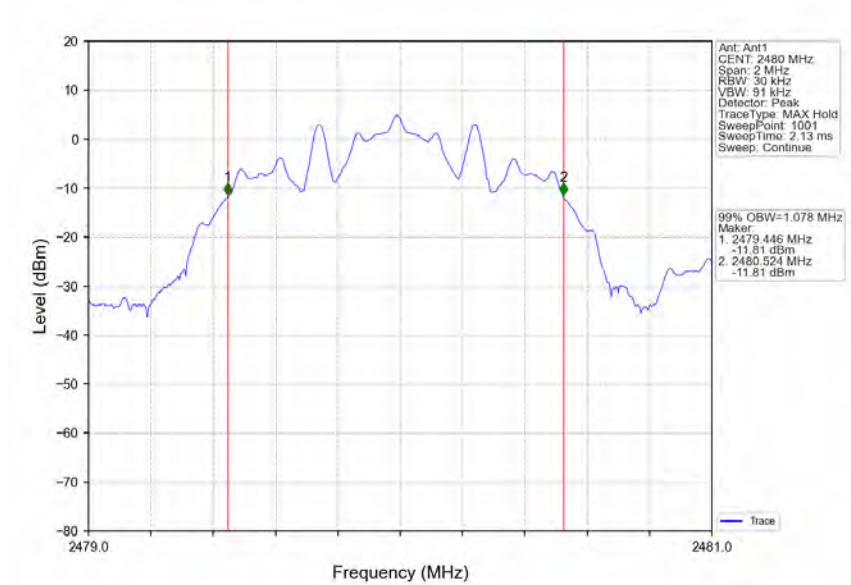
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
S8	SISO	2402	1	0.690	≥ 0.5	Pass
		2440	1	0.692	≥ 0.5	Pass
		2480	1	0.702	≥ 0.5	Pass
S2	SISO	2402	1	0.663	≥ 0.5	Pass
		2440	1	0.663	≥ 0.5	Pass
		2480	1	0.661	≥ 0.5	Pass
1M	SISO	2402	1	0.698	≥ 0.5	Pass
		2440	1	0.698	≥ 0.5	Pass
		2480	1	0.706	≥ 0.5	Pass
2M	SISO	2402	1	1.273	≥ 0.5	Pass
		2440	1	1.271	≥ 0.5	Pass
		2480	1	1.270	≥ 0.5	Pass

2.2 Test Graph

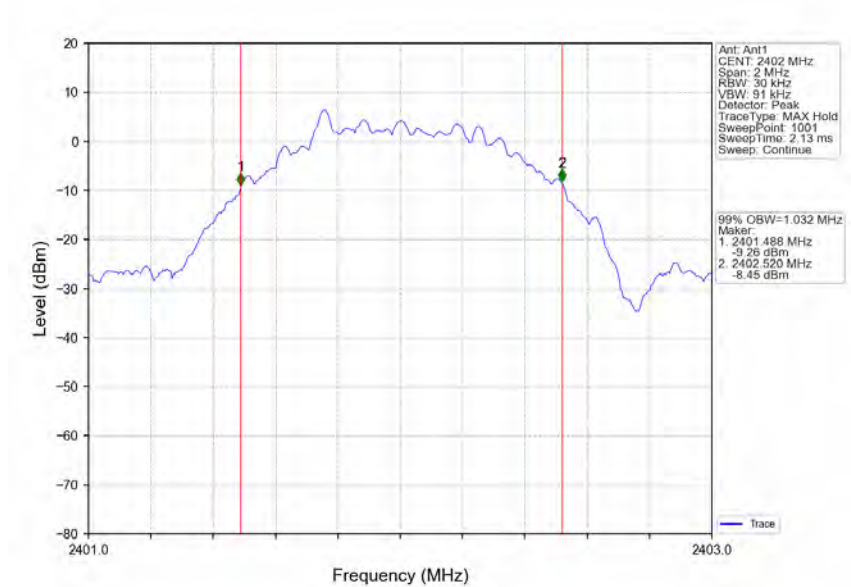
2.2.1 OBW



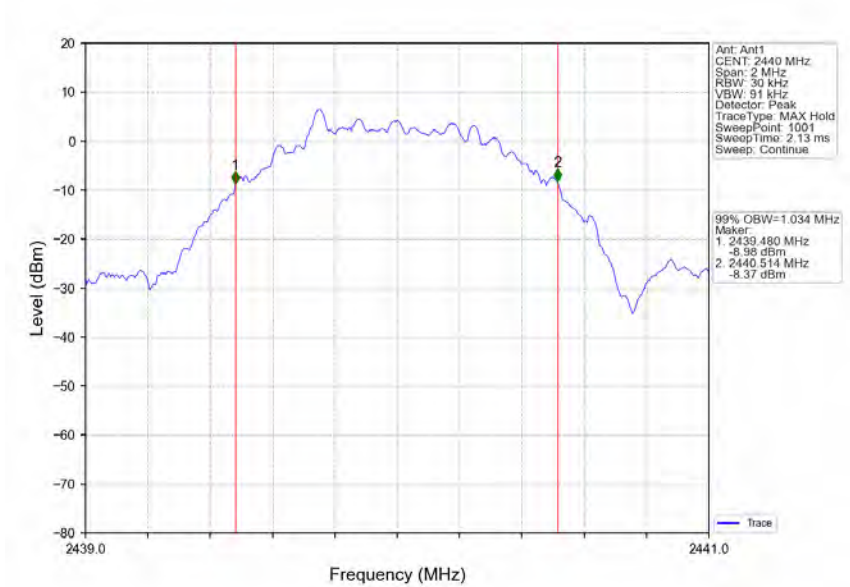
S8_HCH_2480MHz_Ant1_NTNV



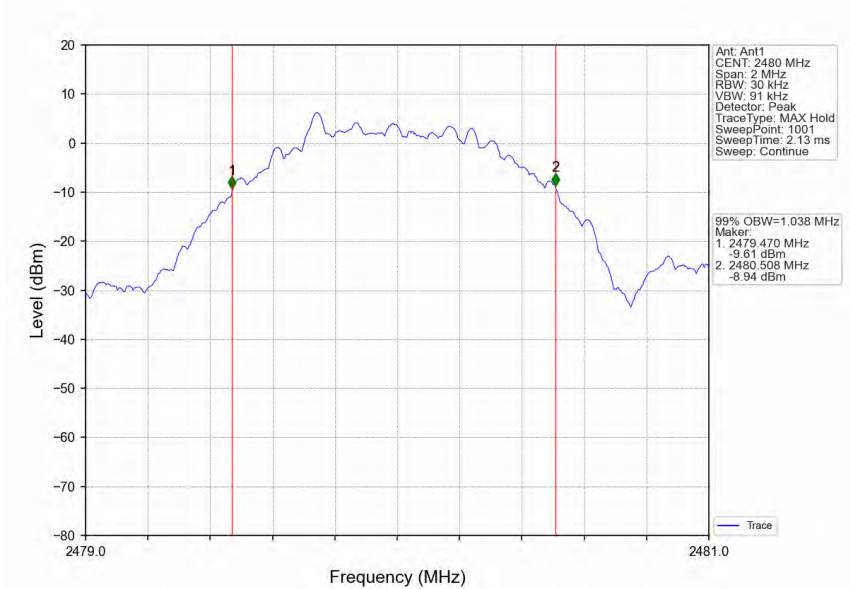
S2_LCH_2402MHz_Ant1_NTNV



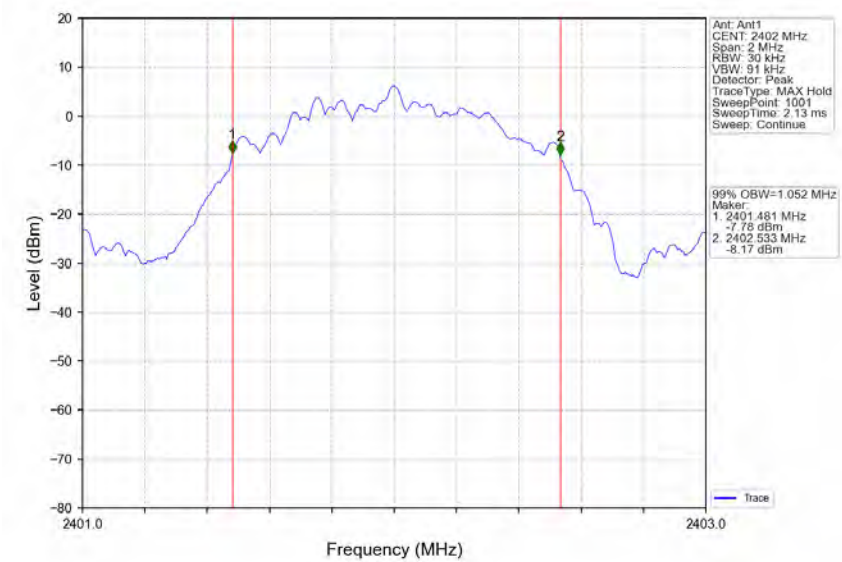
S2_MCH_2440MHz_Ant1_NTNV



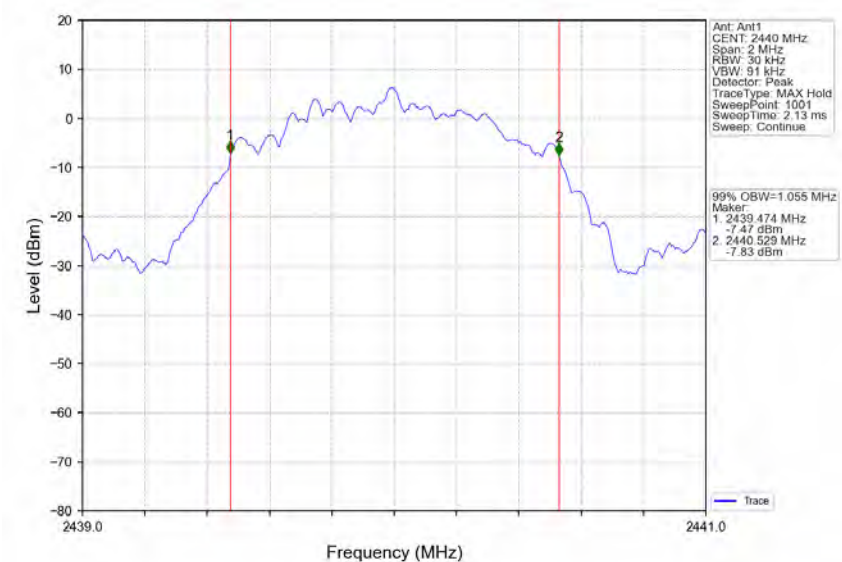
S2_HCH_2480MHz_Ant1_NTNV



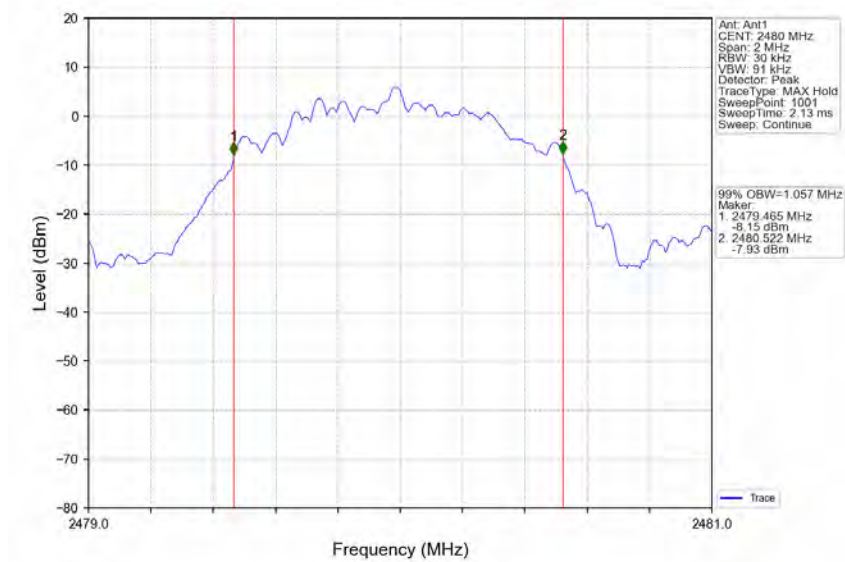
1M_LCH_2402MHz_Ant1_NTNV



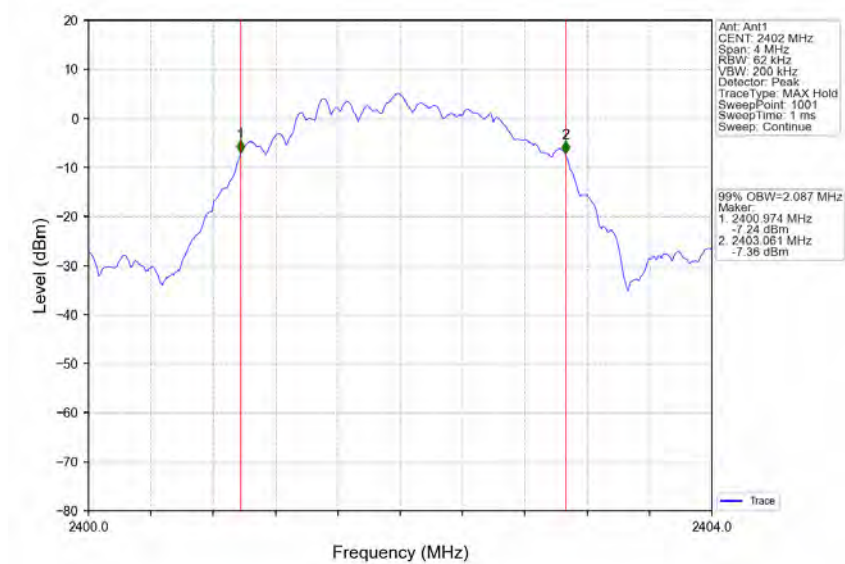
1M_MCH_2440MHz_Ant1_NTNV



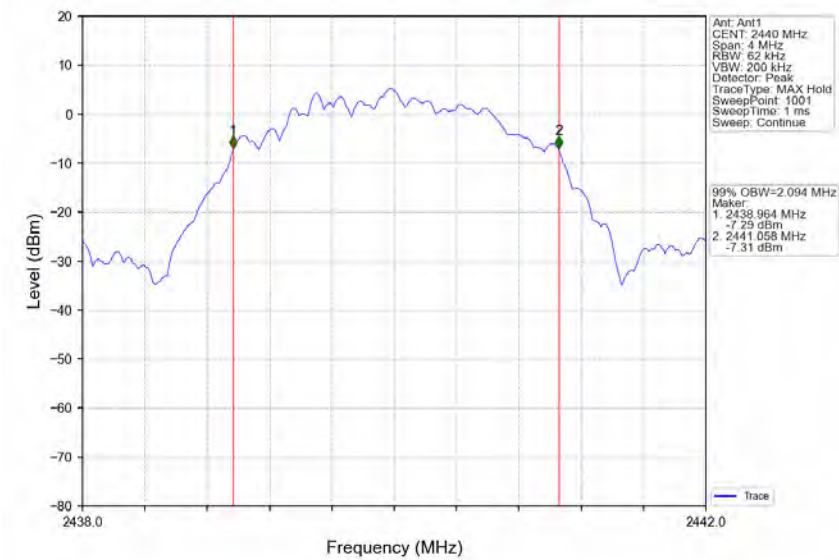
1M_HCH_2480MHz_Ant1_NTNV



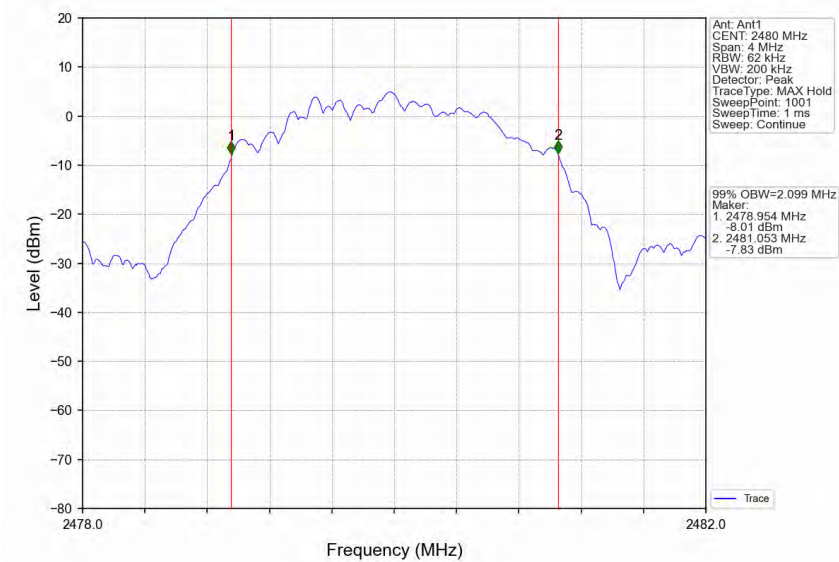
2M_LCH_2402MHz_Ant1_NTNV



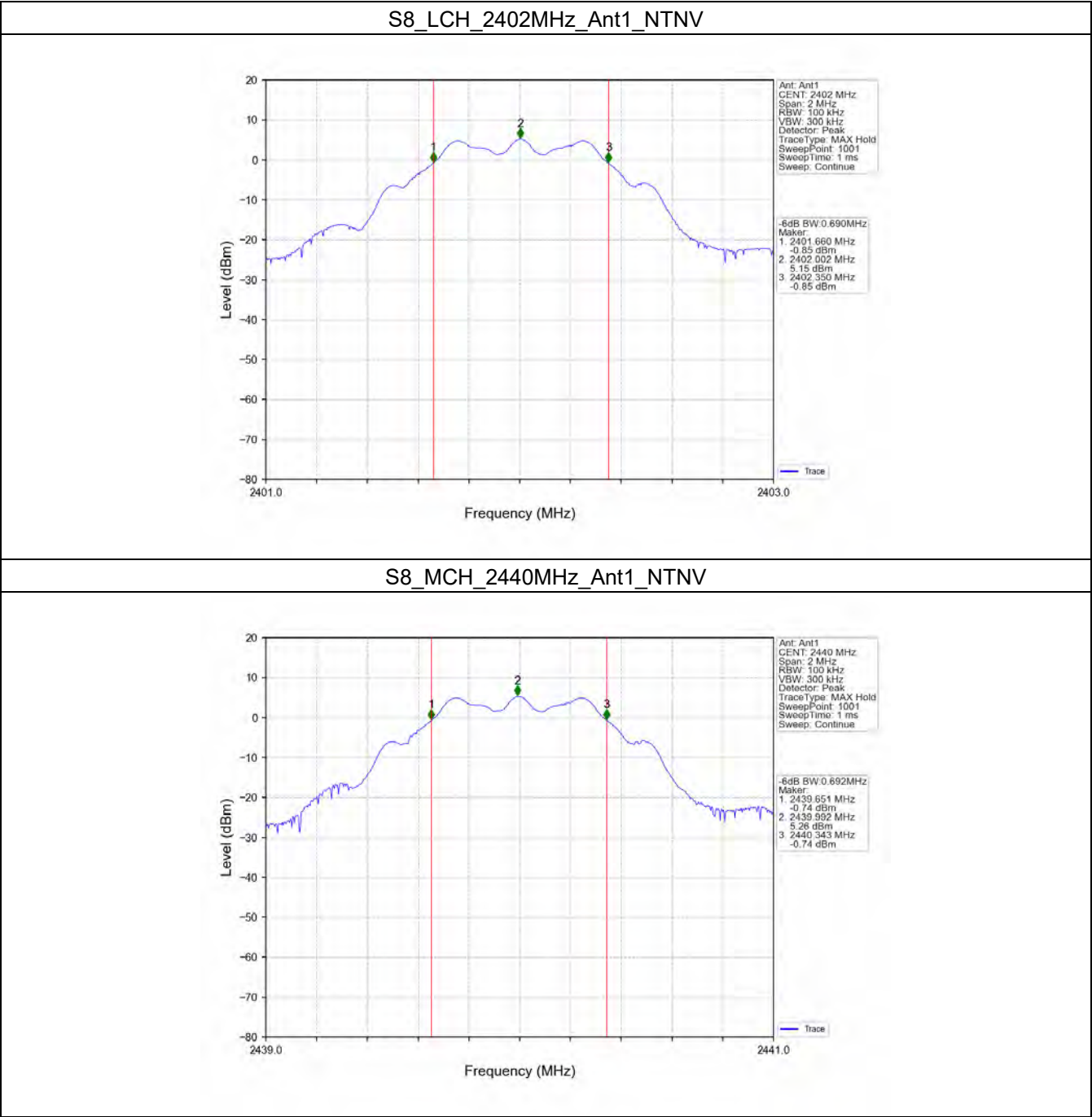
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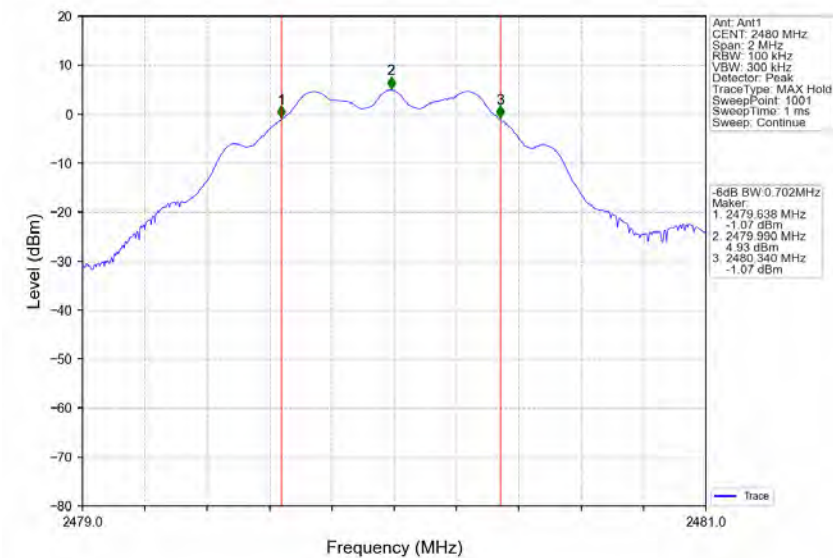
2M_HCH_2480MHz_Ant1_NTNV



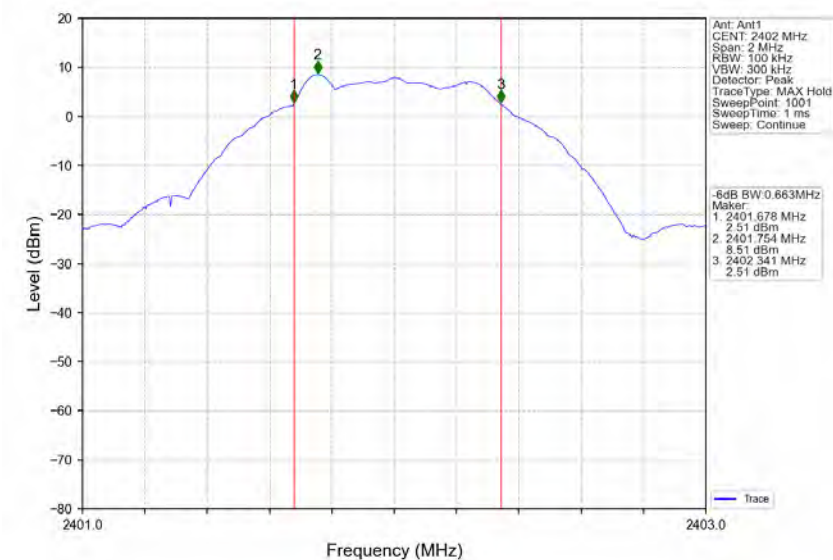
2.2.2 6dB BW



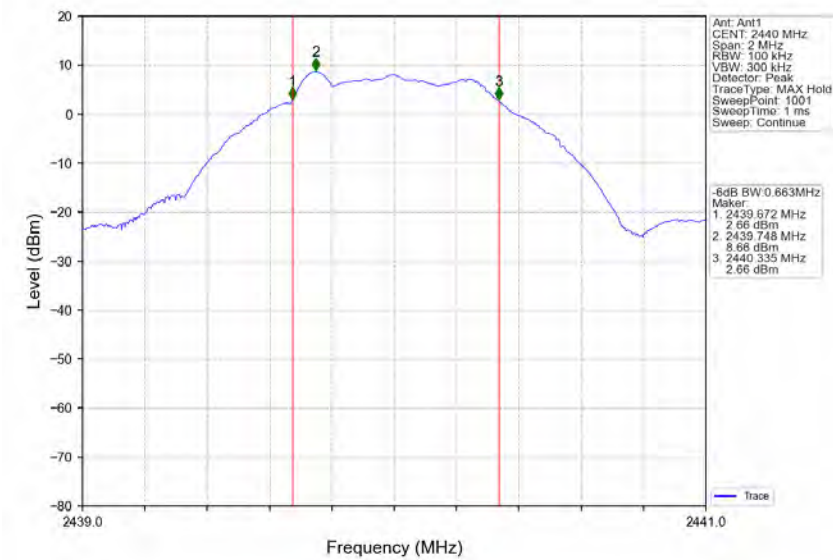
S8_HCH_2480MHz_Ant1_NTNV



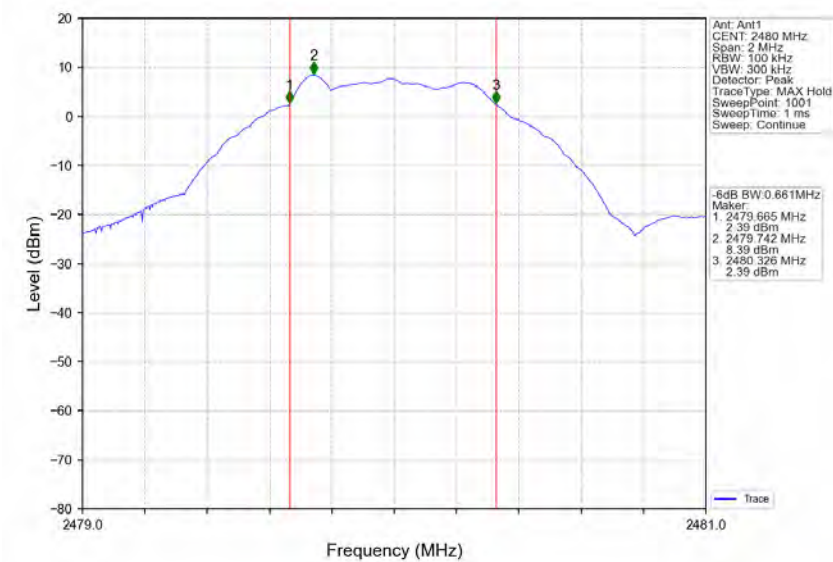
S2_LCH_2402MHz_Ant1_NTNV



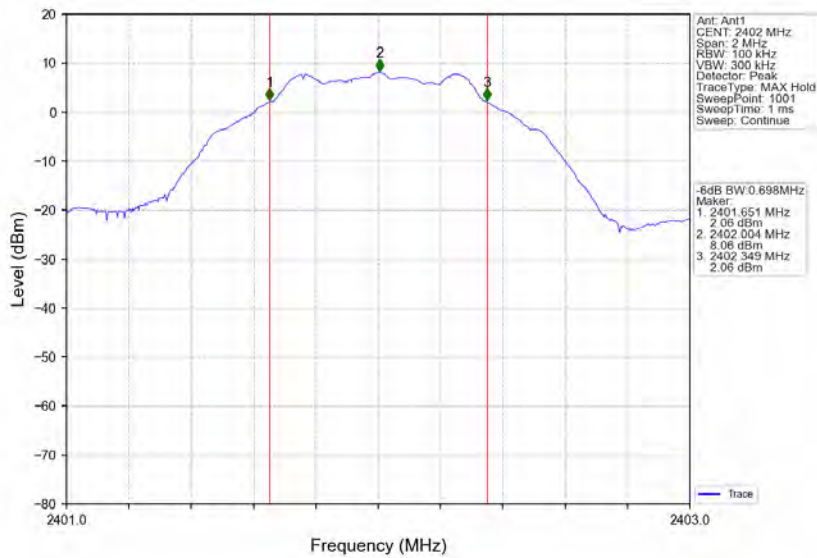
S2_MCH_2440MHz_Ant1_NTNV



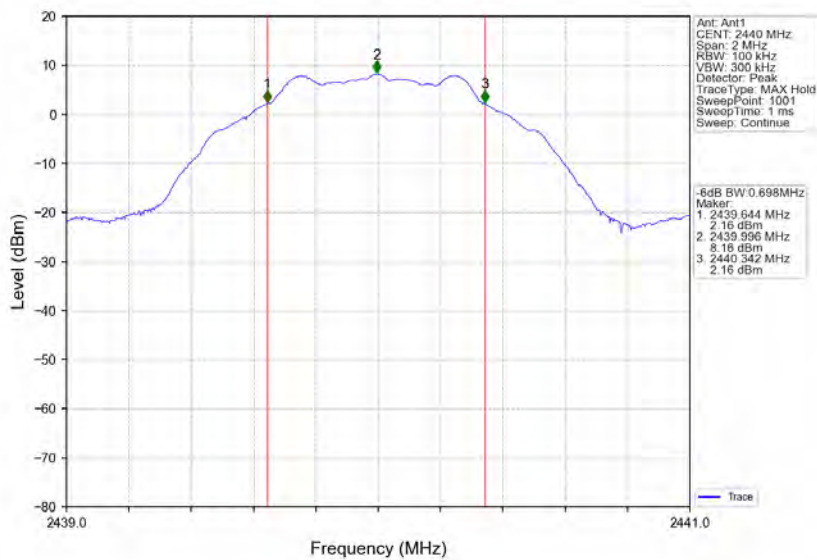
S2_HCH_2480MHz_Ant1_NTNV



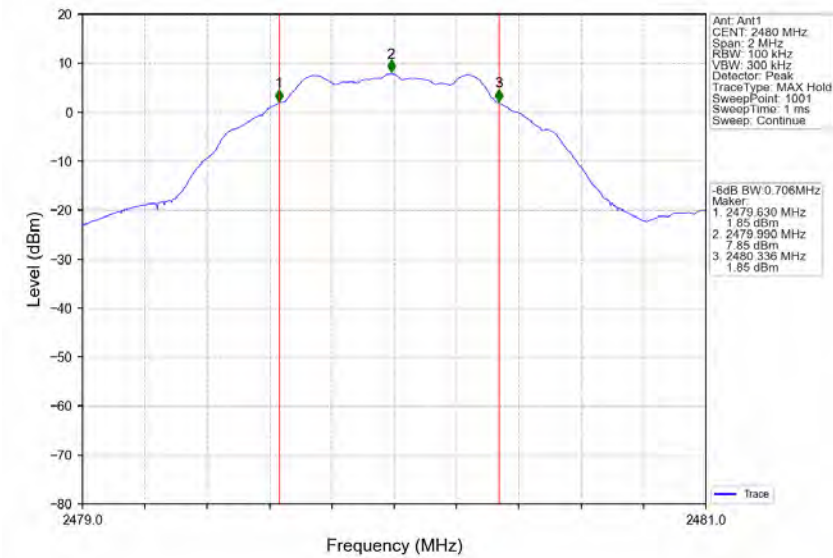
1M_LCH_2402MHz_Ant1_NTNV



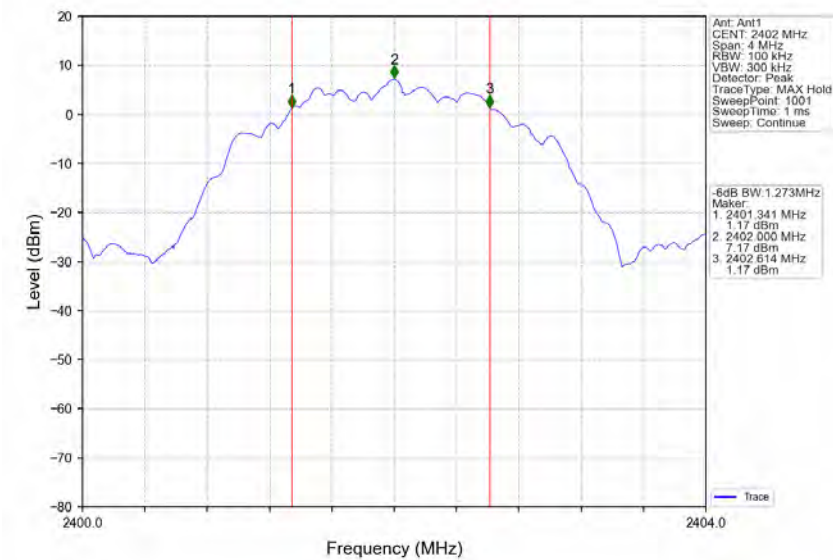
1M_MCH_2440MHz_Ant1_NTNV



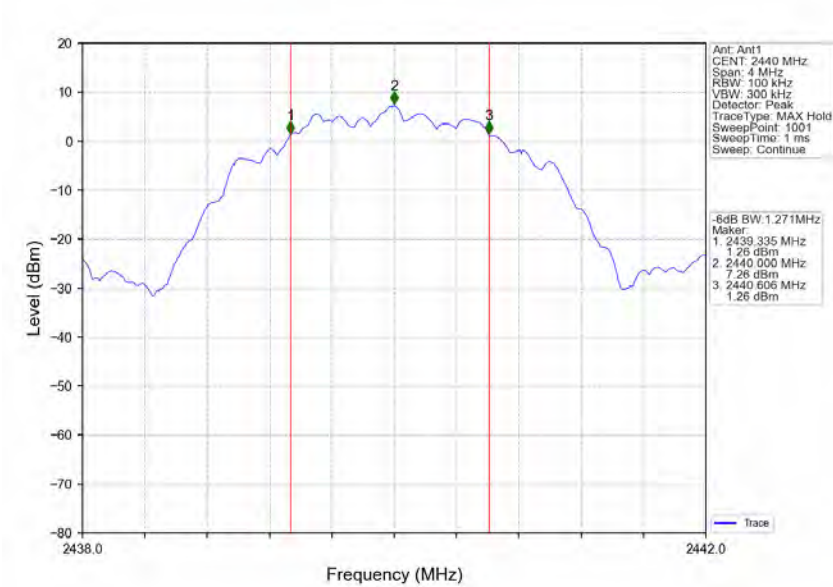
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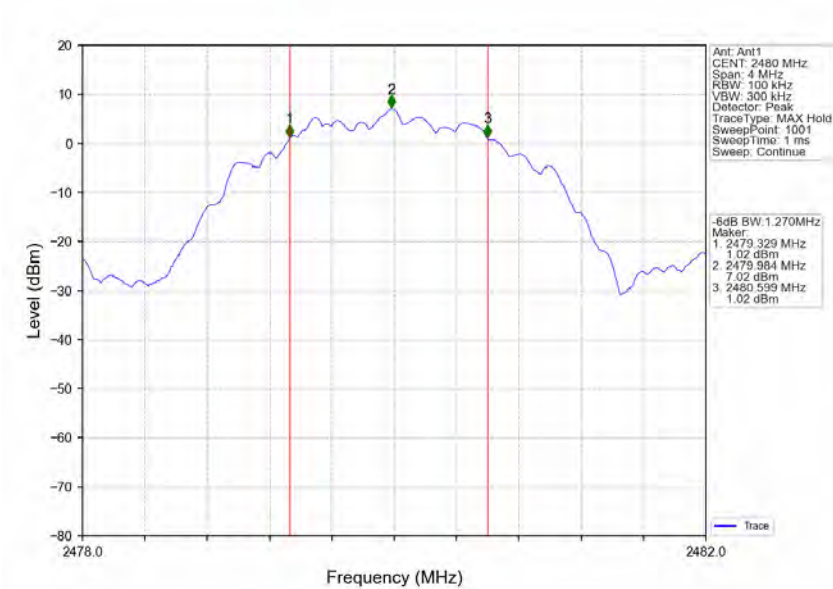
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
S8	SISO	2402	8.74	<=30	Pass
		2440	8.86	<=30	Pass
		2480	8.53	<=30	Pass
S2	SISO	2402	8.76	<=30	Pass
		2440	8.87	<=30	Pass
		2480	8.55	<=30	Pass
1M	SISO	2402	8.74	<=30	Pass
		2440	8.86	<=30	Pass
		2480	8.55	<=30	Pass
2M	SISO	2402	8.89	<=30	Pass
		2440	8.98	<=30	Pass
		2480	8.62	<=30	Pass

Note1: Antenna Gain: Ant1: 3.00dBi;

3.1.2 EIRP (Dipole antenna)

Mode	TX Type	Frequency (MHz)	E.I.R.P (dBm)		Verdict
			ANT1	Limit	
S8	SISO	2402	11.74	<=36.02	Pass
		2440	11.86	<=36.02	Pass
		2480	11.53	<=36.02	Pass
S2	SISO	2402	11.76	<=36.02	Pass
		2440	11.87	<=36.02	Pass
		2480	11.55	<=36.02	Pass
1M	SISO	2402	11.74	<=36.02	Pass
		2440	11.86	<=36.02	Pass
		2480	11.55	<=36.02	Pass
2M	SISO	2402	11.89	<=36.02	Pass
		2440	11.98	<=36.02	Pass
		2480	11.62	<=36.02	Pass

Note1: Dipole Antenna Gain: 3.00dBi;
Note2: E.I.R.P = Measured Power + Antenna Gain

3.1.2 EIRP (PCB antenna)

Mode	TX	Frequency	E.I.R.P (dBm)	Verdict
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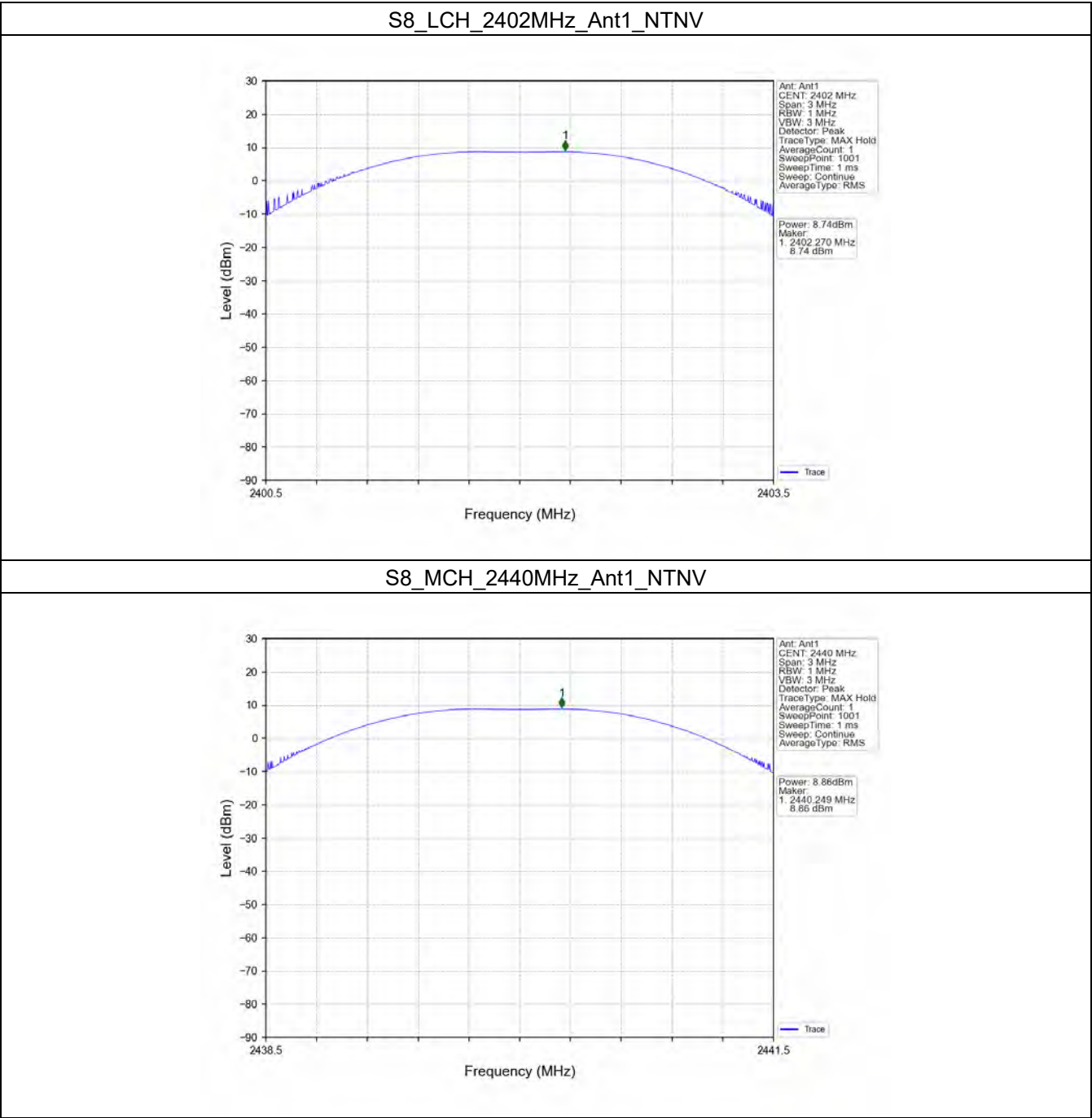
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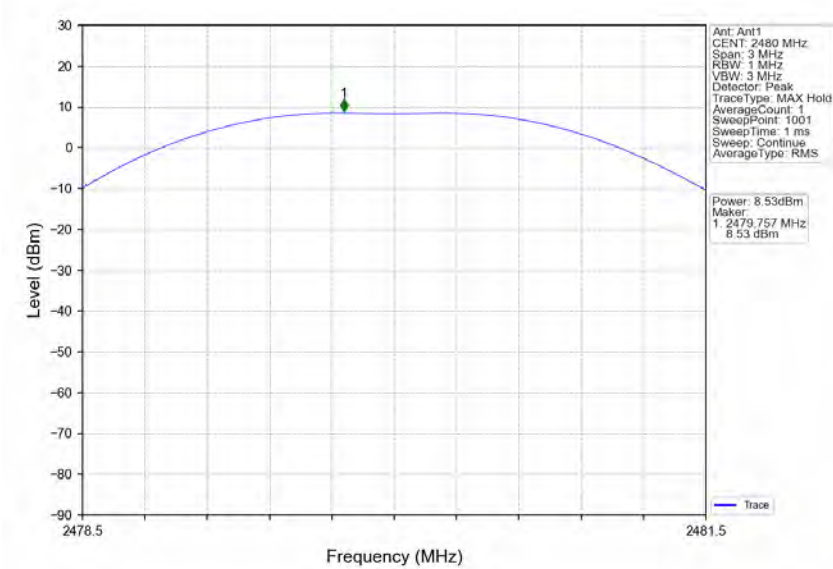
	Type	(MHz)	ANT1	Limit	
S8	SISO	2402	11.54	<=36.02	Pass
		2440	11.66	<=36.02	Pass
		2480	11.33	<=36.02	Pass
S2	SISO	2402	11.56	<=36.02	Pass
		2440	11.67	<=36.02	Pass
		2480	11.35	<=36.02	Pass
1M	SISO	2402	11.54	<=36.02	Pass
		2440	11.66	<=36.02	Pass
		2480	11.35	<=36.02	Pass
2M	SISO	2402	11.69	<=36.02	Pass
		2440	11.78	<=36.02	Pass
		2480	11.42	<=36.02	Pass
Note1: PCB Antenna Gain: 2.80dBi; Note2: E.I.R.P = Measured Power + Antenna Gain					

3.2 Test Graph

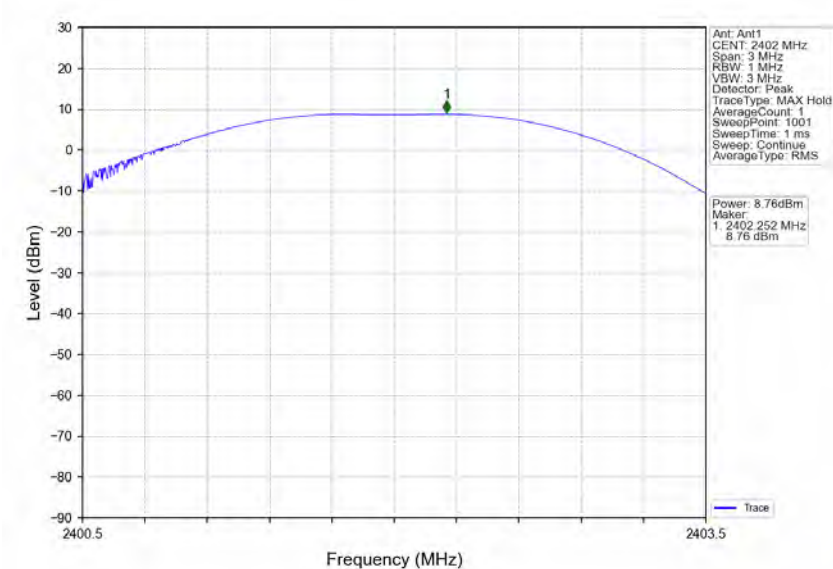
3.2.1 Power



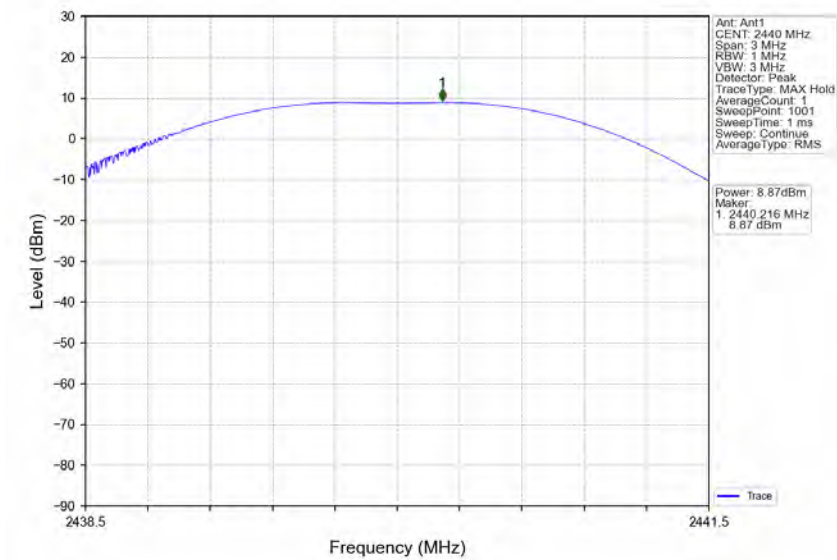
S8_HCH_2480MHz_Ant1_NTNV



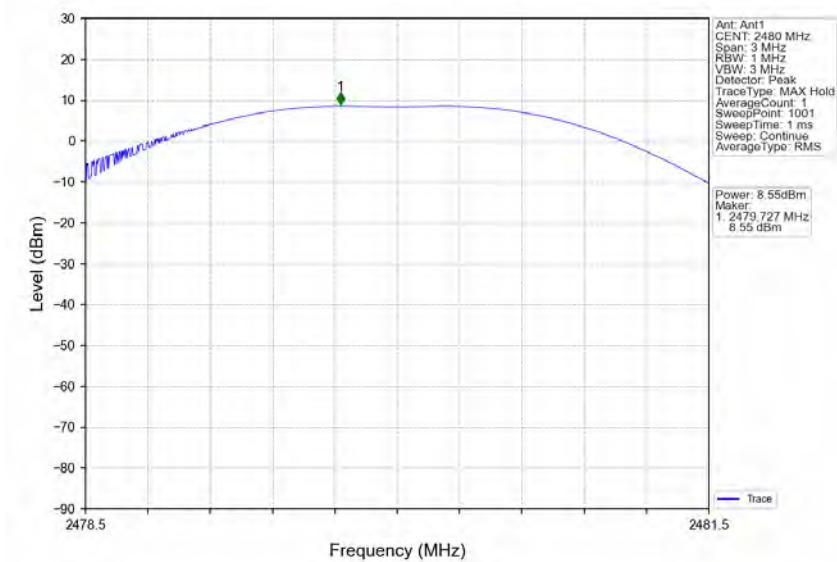
S2_LCH_2402MHz_Ant1_NTNV



S2_MCH_2440MHz_Ant1_NTNV



S2_HCH_2480MHz_Ant1_NTNV



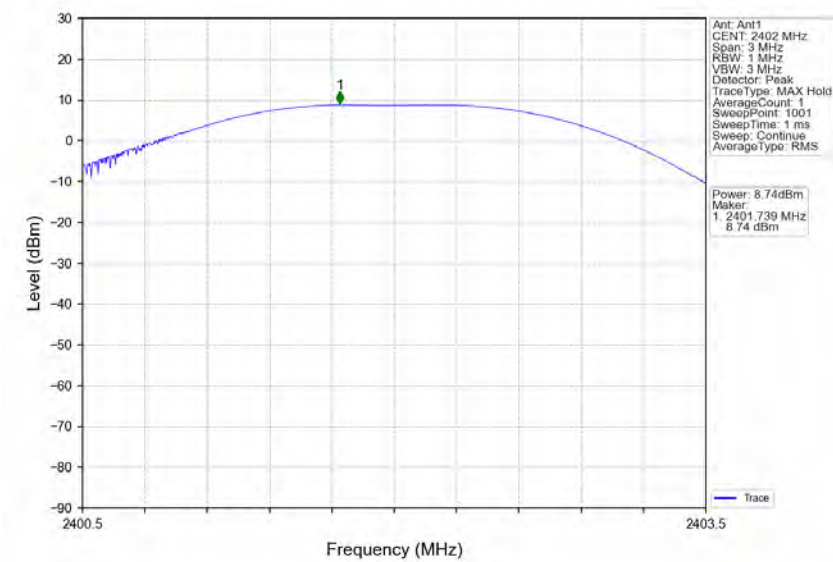
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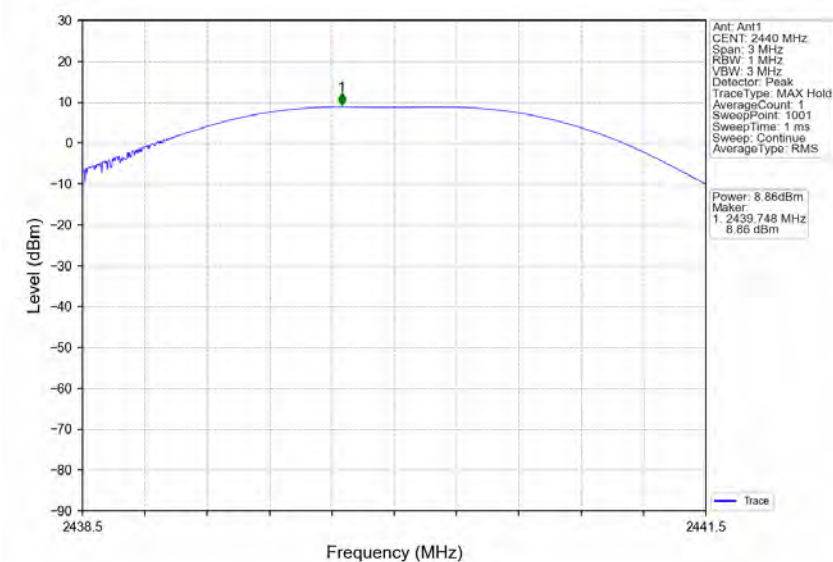
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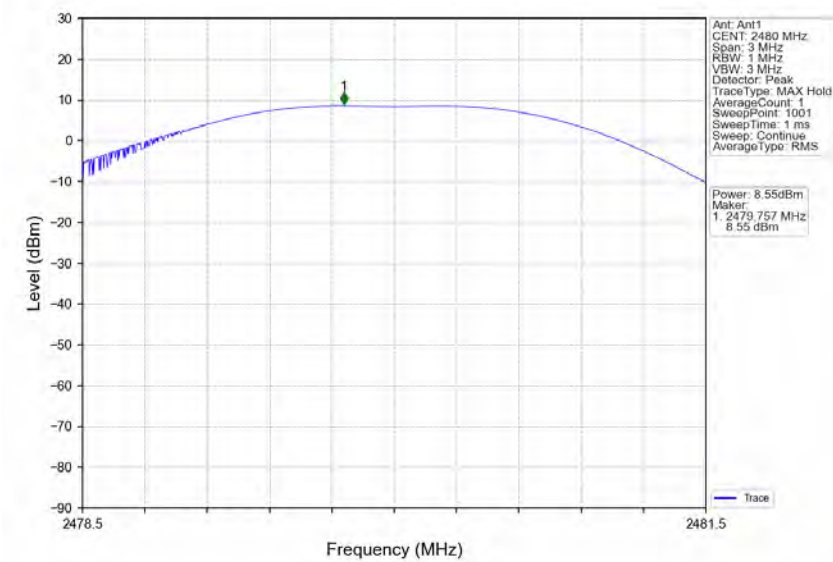
1M_LCH_2402MHz_Ant1_NTNV



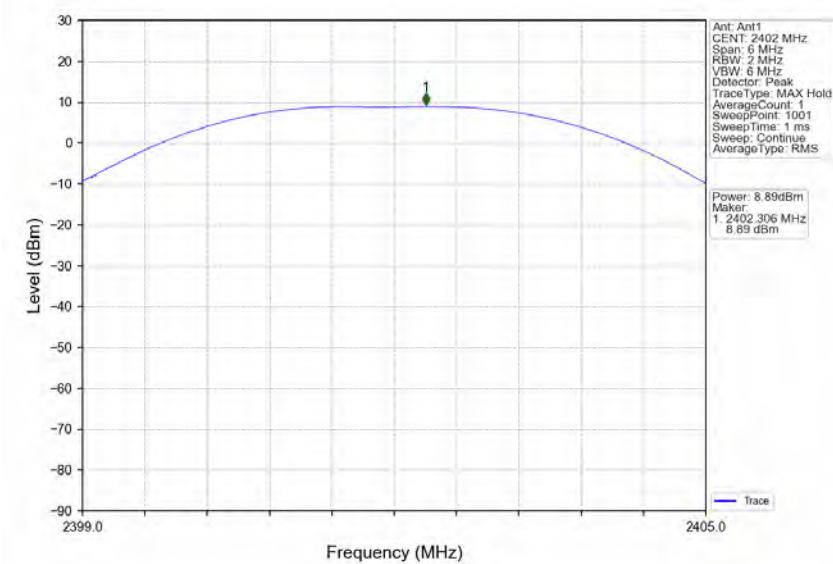
1M_MCH_2440MHz_Ant1_NTNV



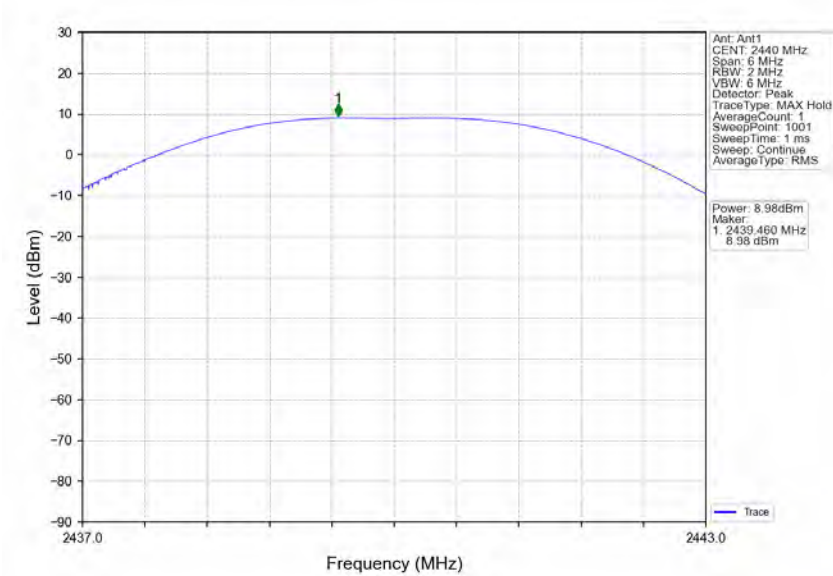
1M_HCH_2480MHz_Ant1_NTNV



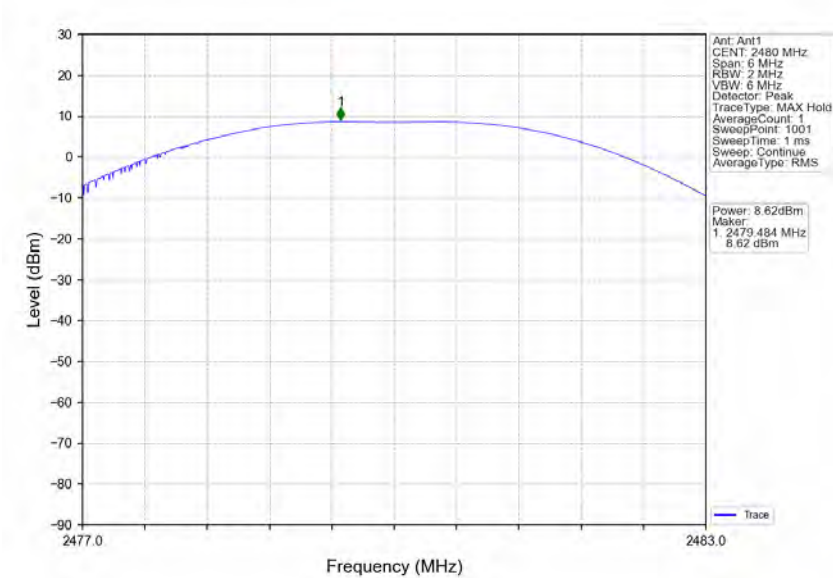
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



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4. Maximum Power Spectral Density

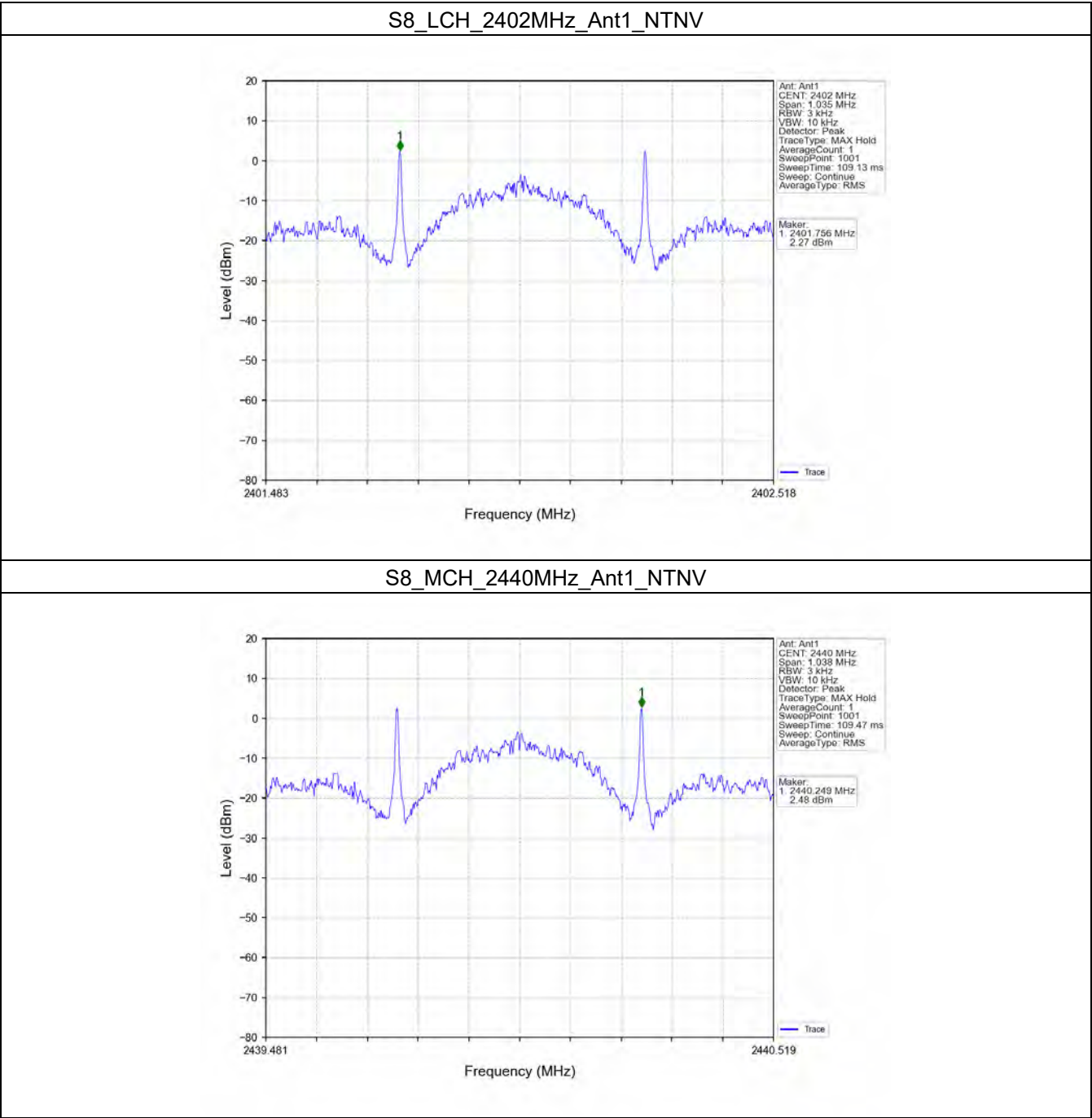
4.1 Test Result

4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
S8	SISO	2402	2.27	<=8	Pass
		2440	2.48	<=8	Pass
		2480	2.25	<=8	Pass
S2	SISO	2402	2.30	<=8	Pass
		2440	2.39	<=8	Pass
		2480	2.13	<=8	Pass
1M	SISO	2402	-6.83	<=8	Pass
		2440	-6.86	<=8	Pass
		2480	-7.02	<=8	Pass
2M	SISO	2402	-9.88	<=8	Pass
		2440	-9.72	<=8	Pass
		2480	-10.14	<=8	Pass
Note1: Antenna Gain: Ant1: 3.00dBi;					

4.2 Test Graph

4.2.1 PSD



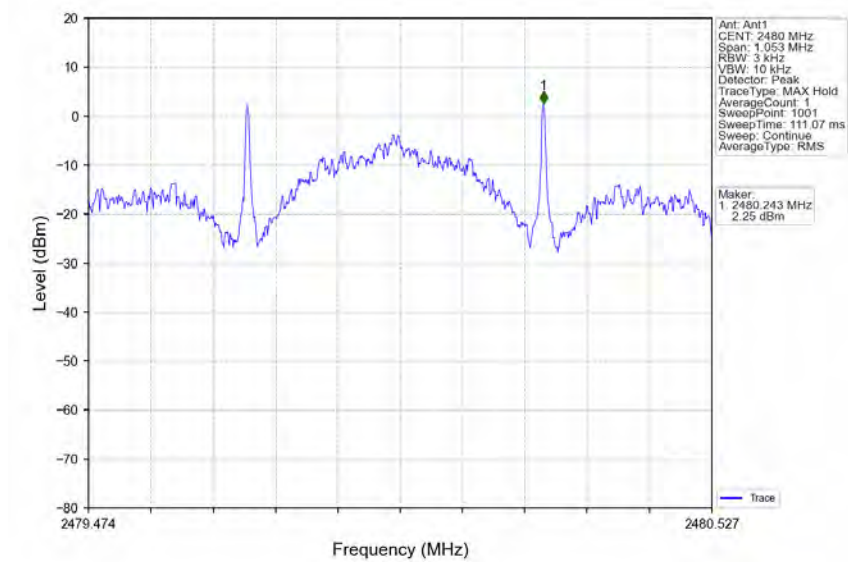
Compliance Certification Services (Kunshan) Inc.

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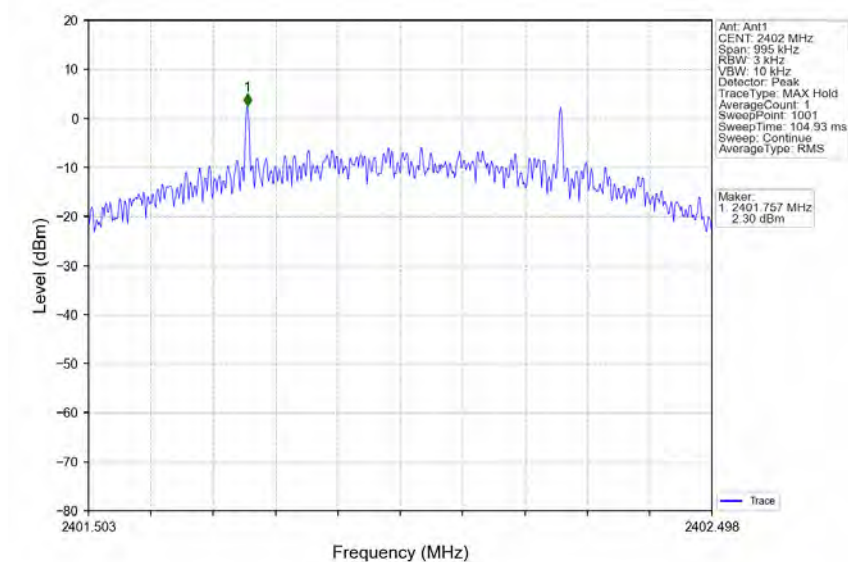
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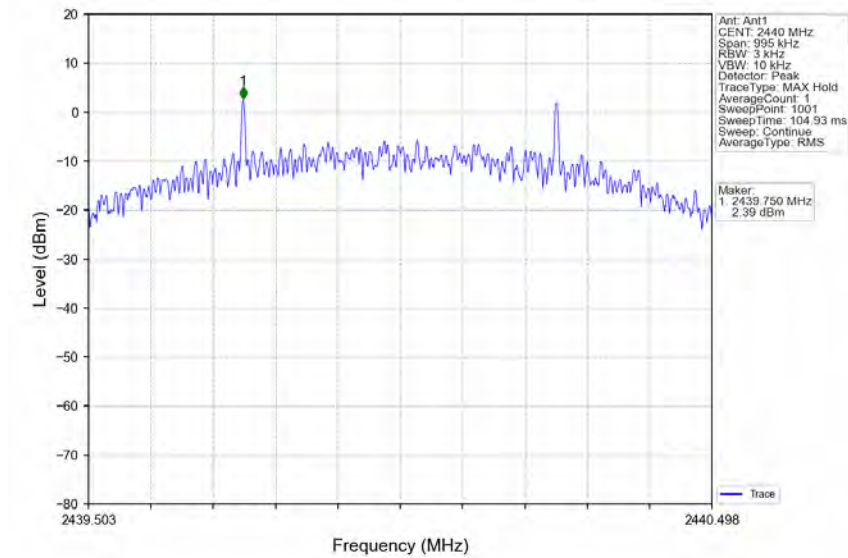
S8_HCH_2480MHz_Ant1_NTNV



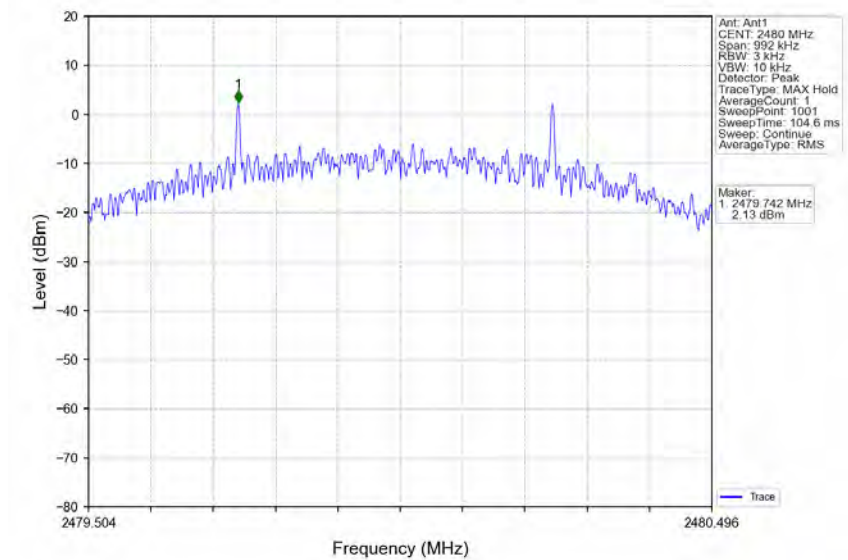
S2_LCH_2402MHz_Ant1_NTNV



S2_MCH_2440MHz_Ant1_NTNV



S2_HCH_2480MHz_Ant1_NTNV



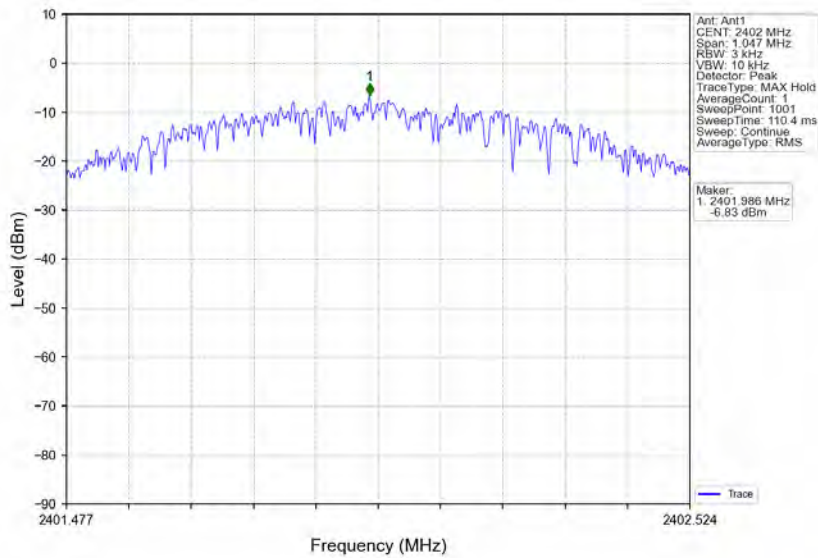
Compliance Certification Services (Kunshan) Inc.

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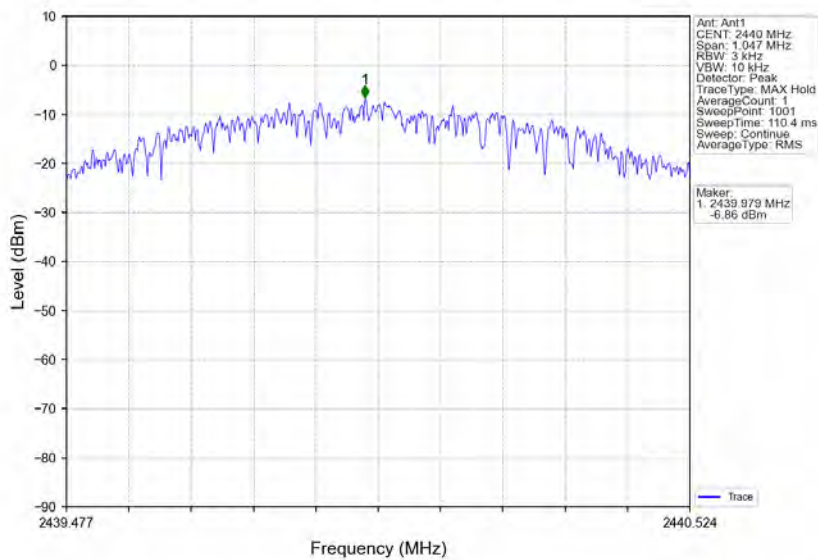
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1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



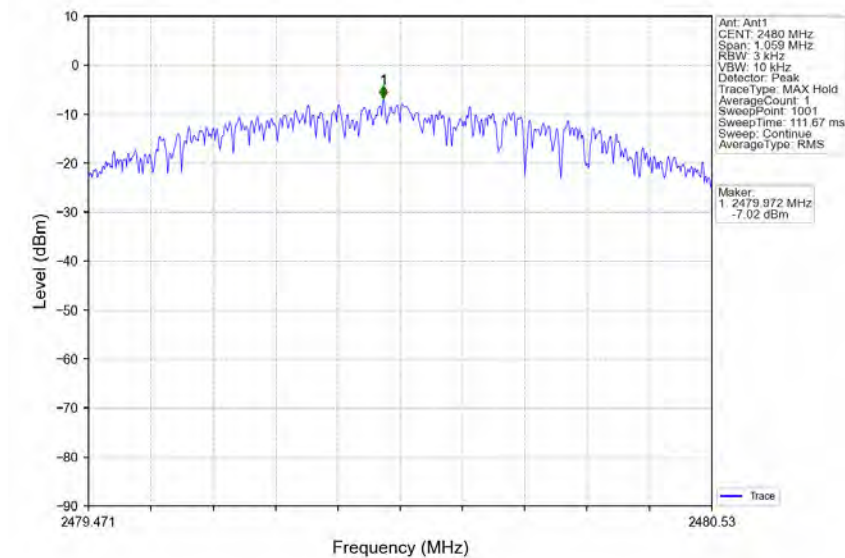
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

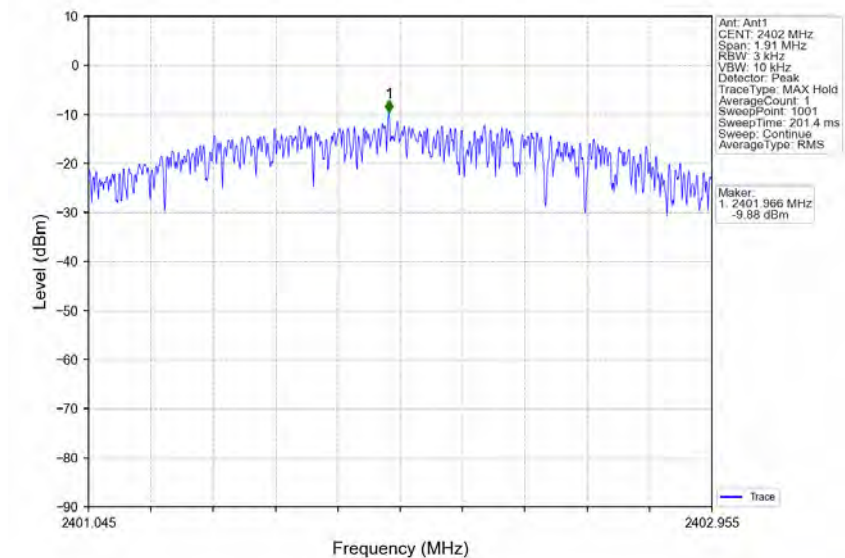
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1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2402MHz_Ant1_NTNV



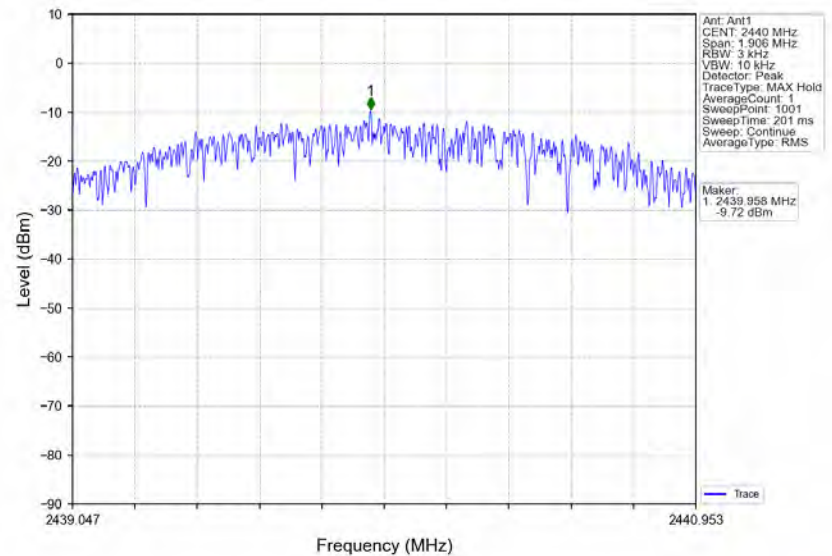
Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

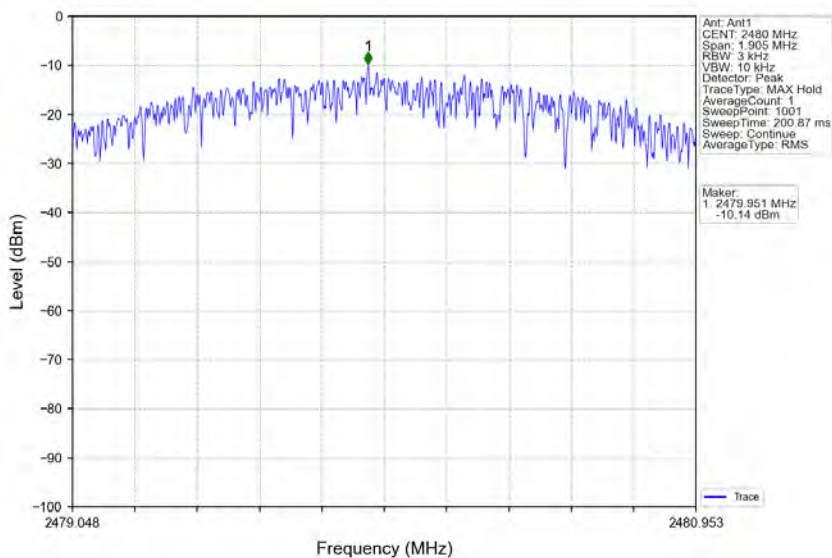
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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
S8	SISO	2402	1	5.04
		2440	1	5.22
		2480	1	4.85
S2	SISO	2402	1	8.47
		2440	1	8.63
		2480	1	8.31
1M	SISO	2402	1	8.04
		2440	1	8.13
		2480	1	7.81
2M	SISO	2402	1	7.17
		2440	1	7.29
		2480	1	7.01

Note1: Refer to RSS-247 Issue 2 section 5.5 and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

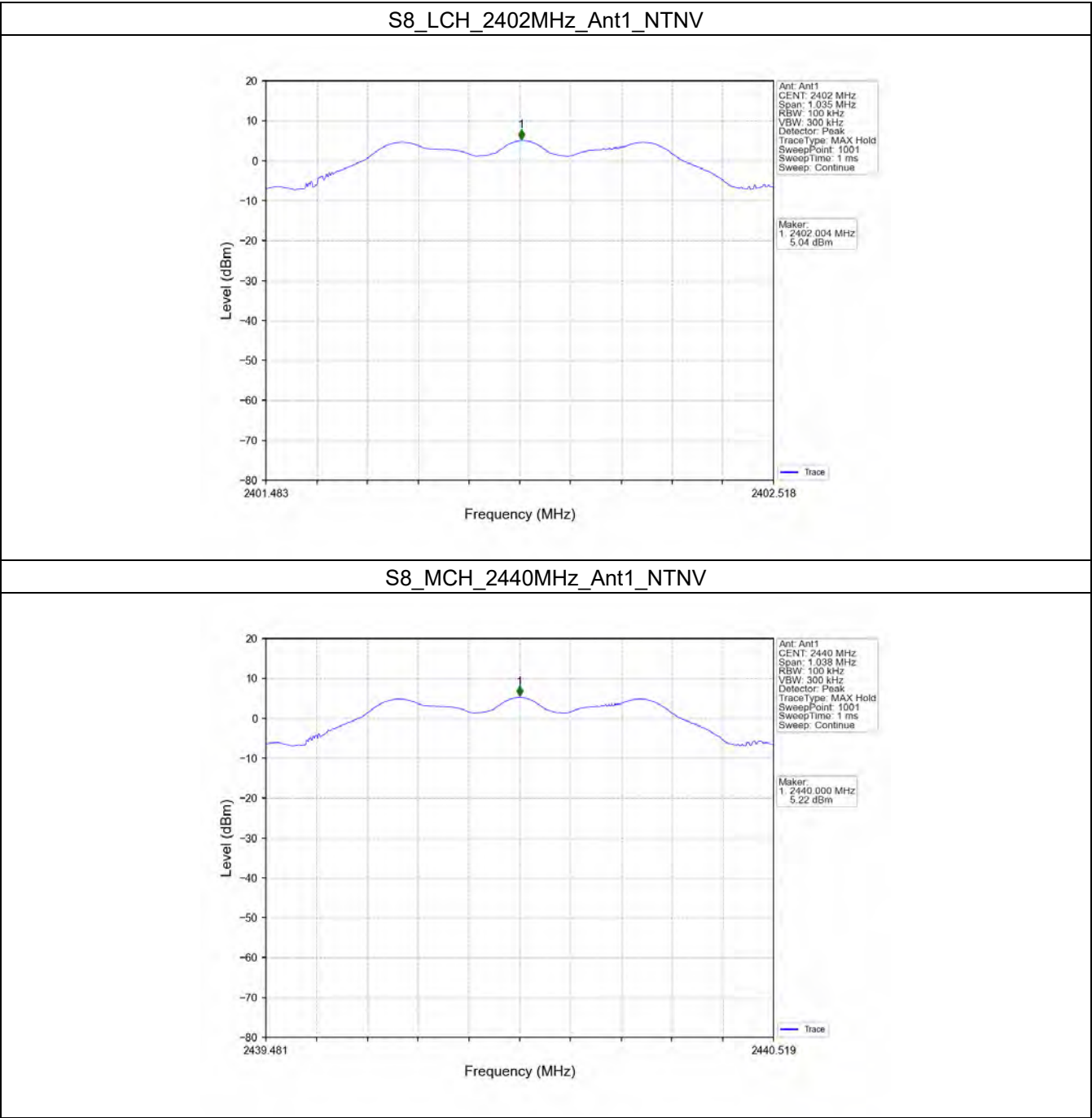
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
S8	SISO	2402	1	5.22	-14.78	Pass
		2440	1	5.22	-14.78	Pass
		2480	1	5.22	-14.78	Pass
S2	SISO	2402	1	8.63	-11.37	Pass
		2440	1	8.63	-11.37	Pass
		2480	1	8.63	-11.37	Pass
1M	SISO	2402	1	8.13	-11.87	Pass
		2440	1	8.13	-11.87	Pass
		2480	1	8.13	-11.87	Pass
2M	SISO	2402	1	7.29	-12.71	Pass
		2440	1	7.29	-12.71	Pass
		2480	1	7.29	-12.71	Pass

Note1: Refer to RSS-247 Issue 2 section 5.5 and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

5.2 Test Graph

5.2.1 Ref



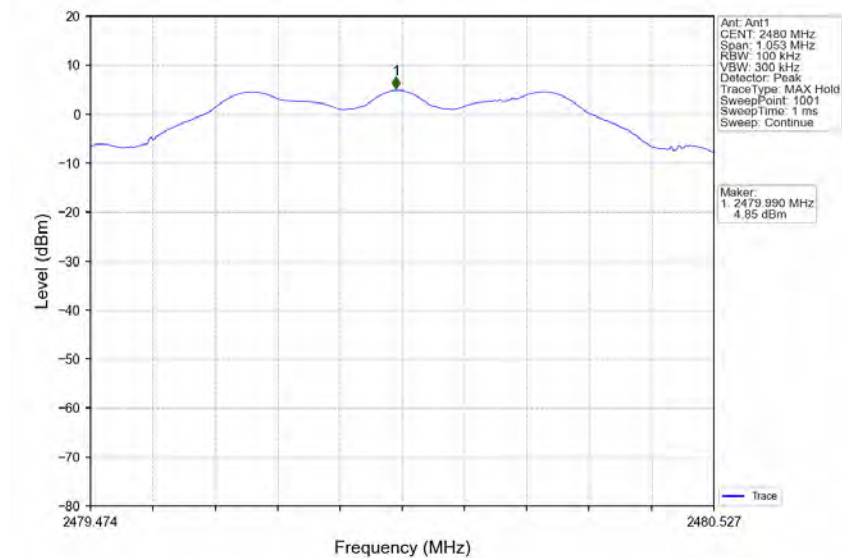
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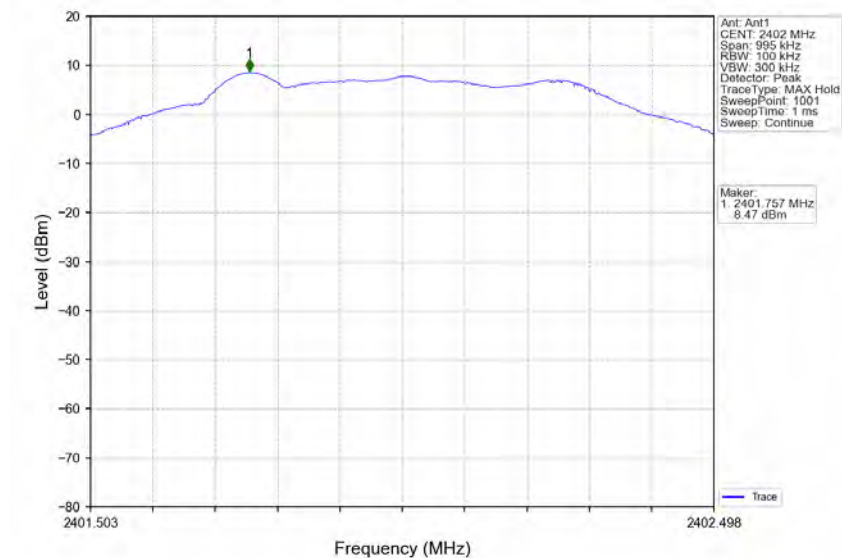
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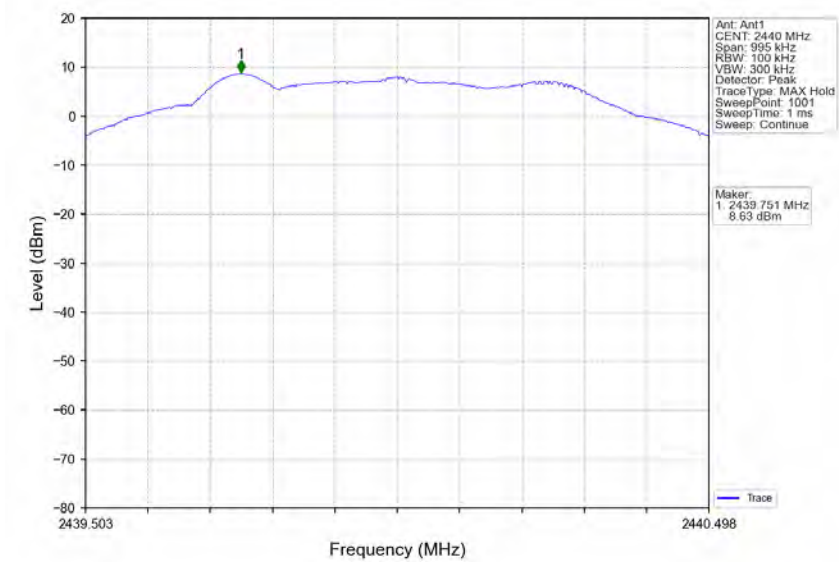
S8_HCH_2480MHz_Ant1_NTNV



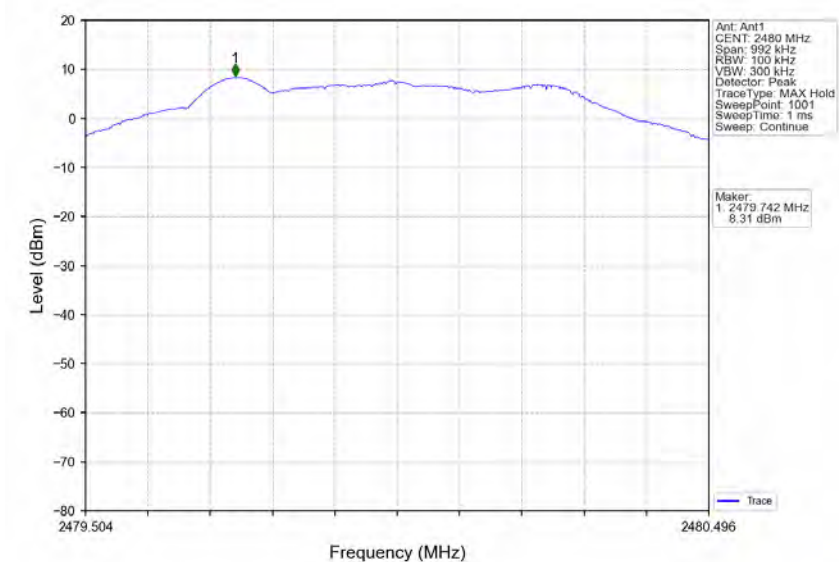
S2_LCH_2402MHz_Ant1_NTNV



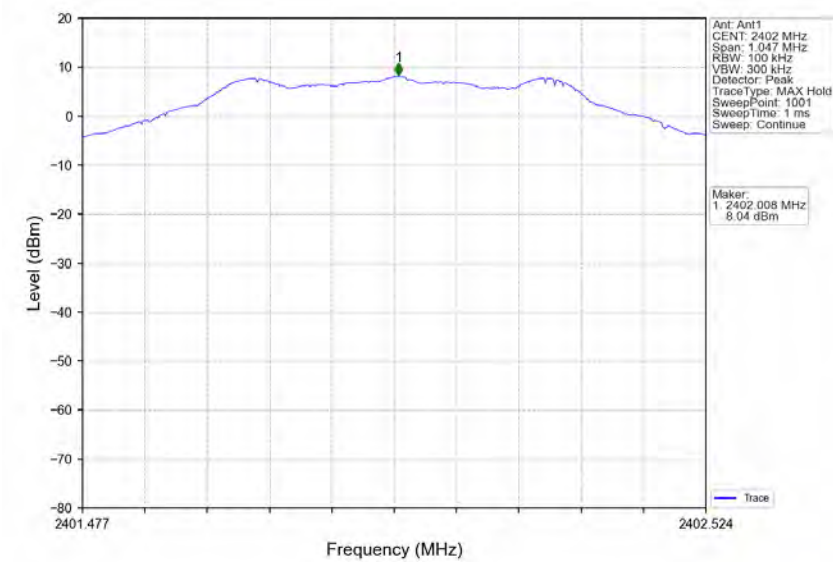
S2_MCH_2440MHz_Ant1_NTNV



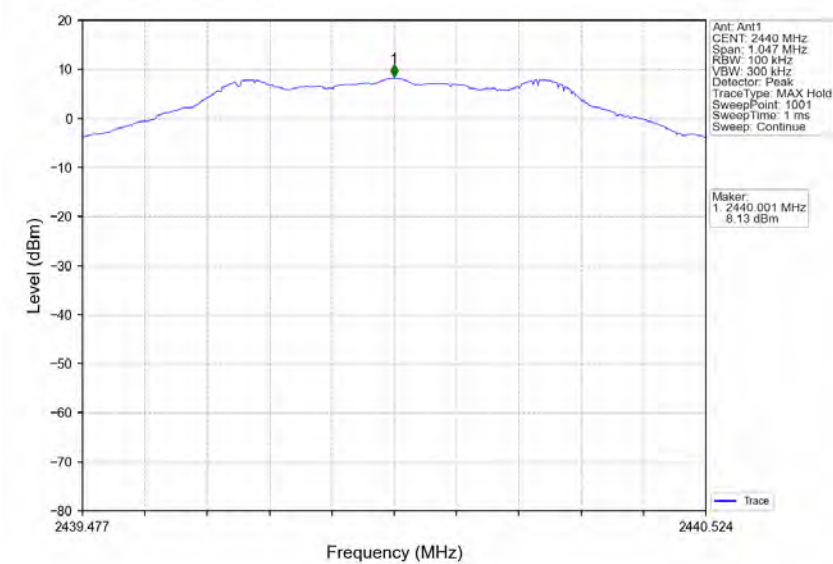
S2_HCH_2480MHz_Ant1_NTNV



1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



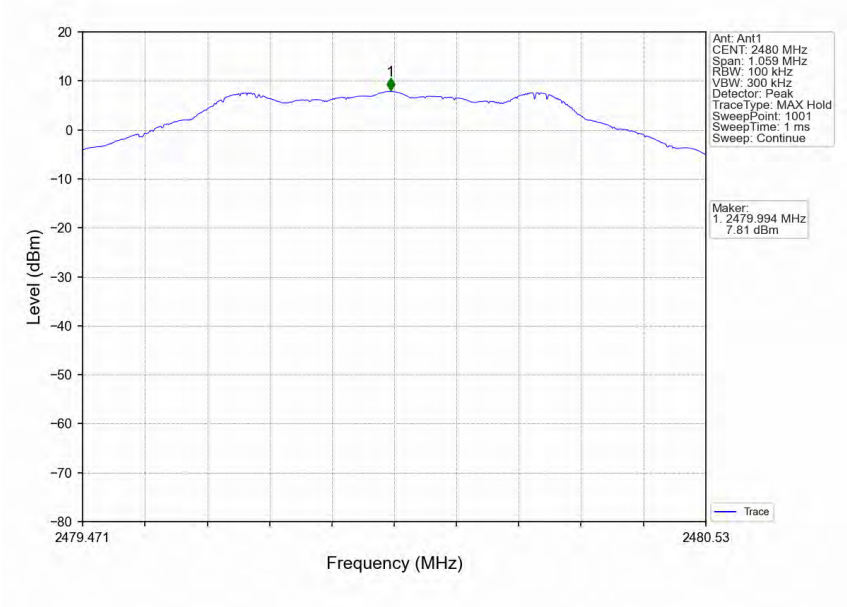
Compliance Certification Services (Kunshan) Inc.

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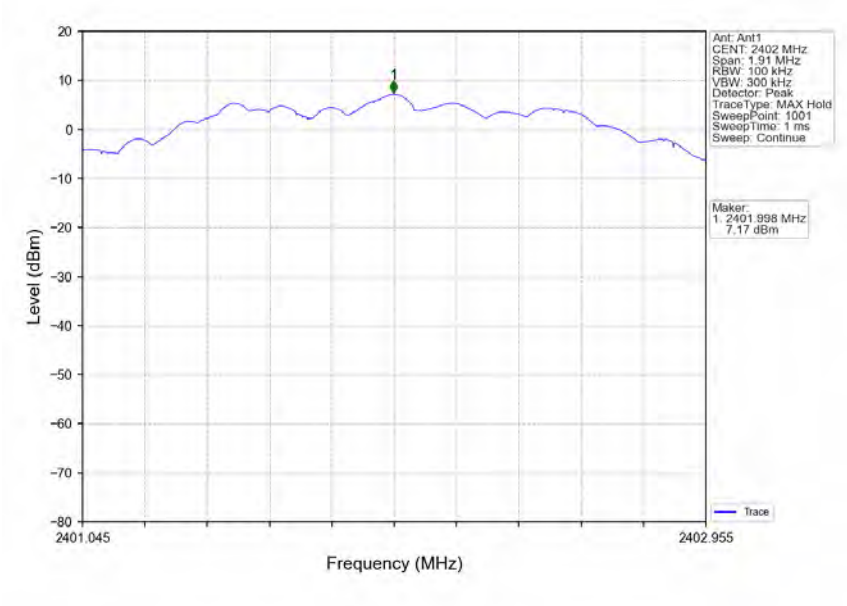
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1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2402MHz_Ant1_NTNV



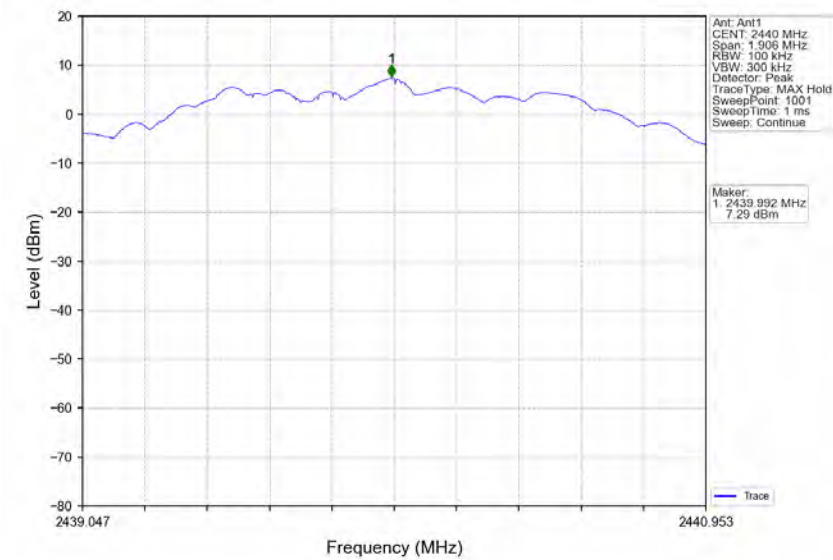
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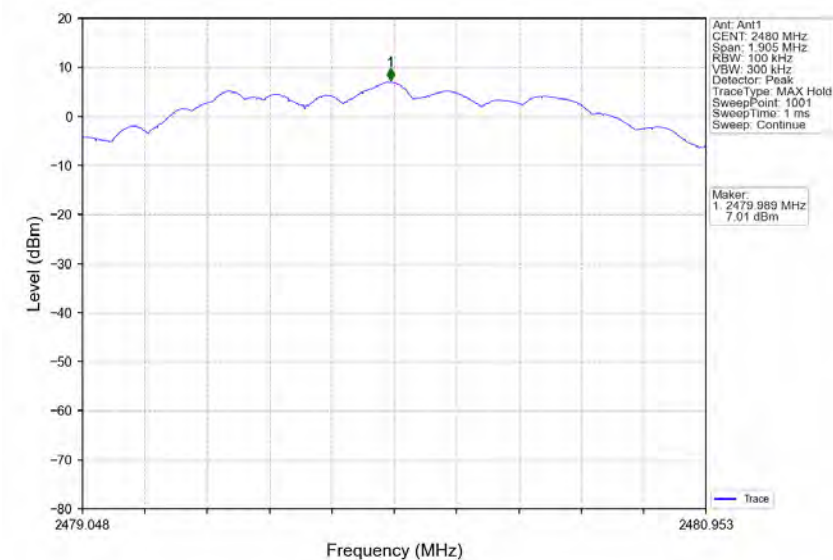
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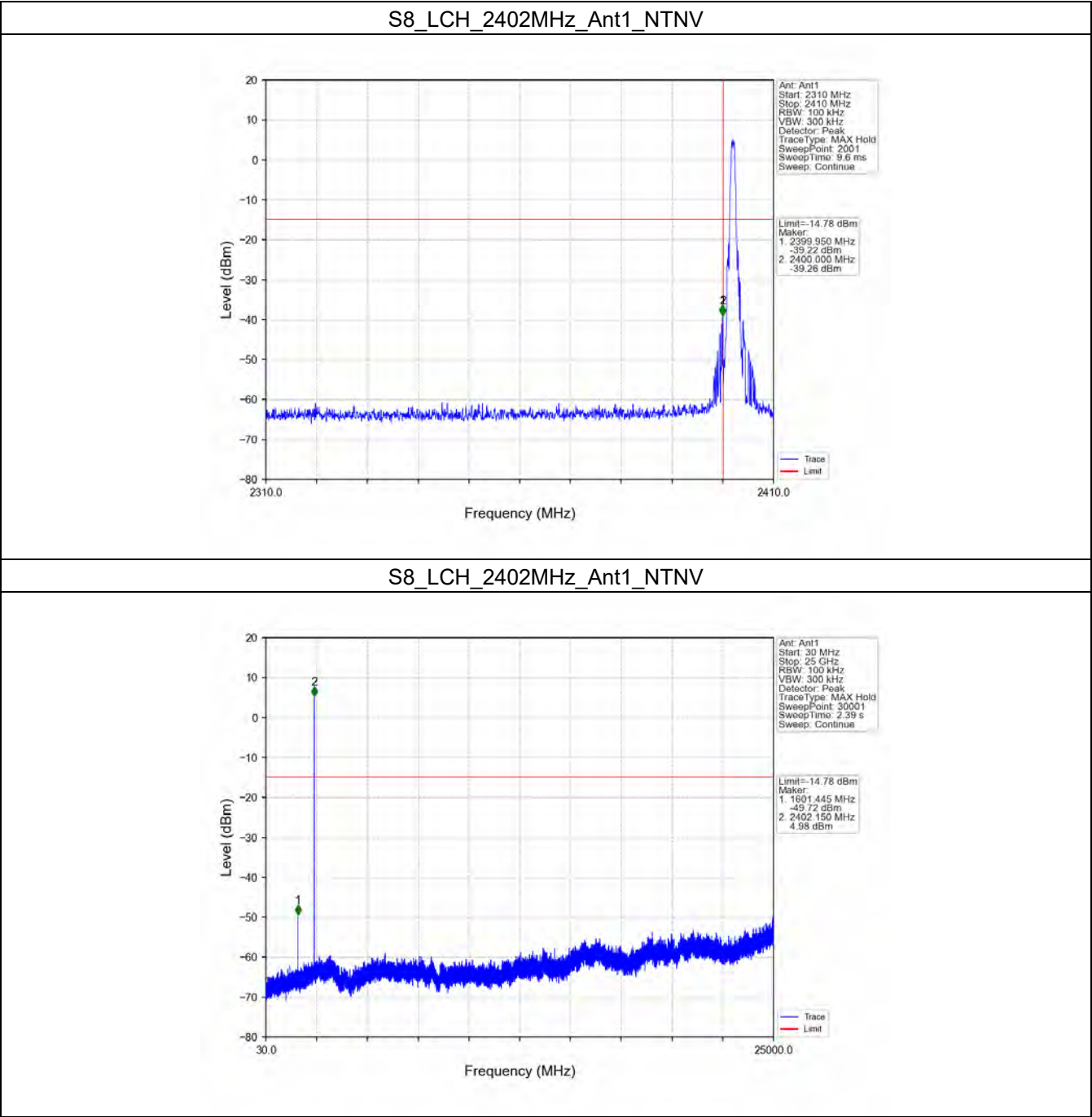
2M_MCH_2440MHz_Ant1_NTNV



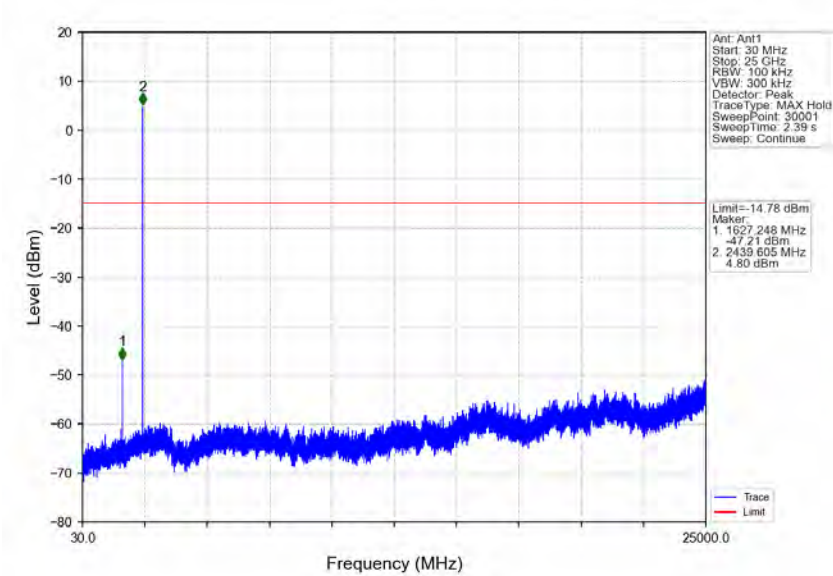
2M_HCH_2480MHz_Ant1_NTNV



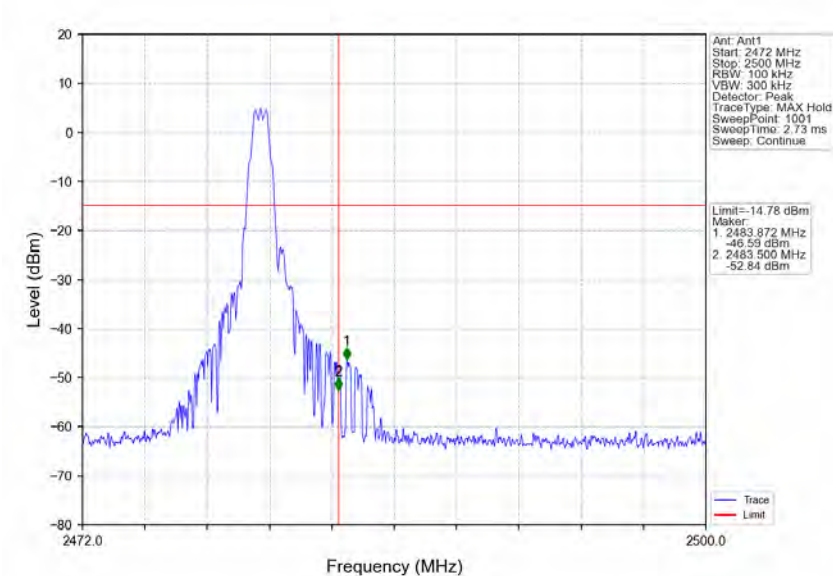
5.2.2 CSE



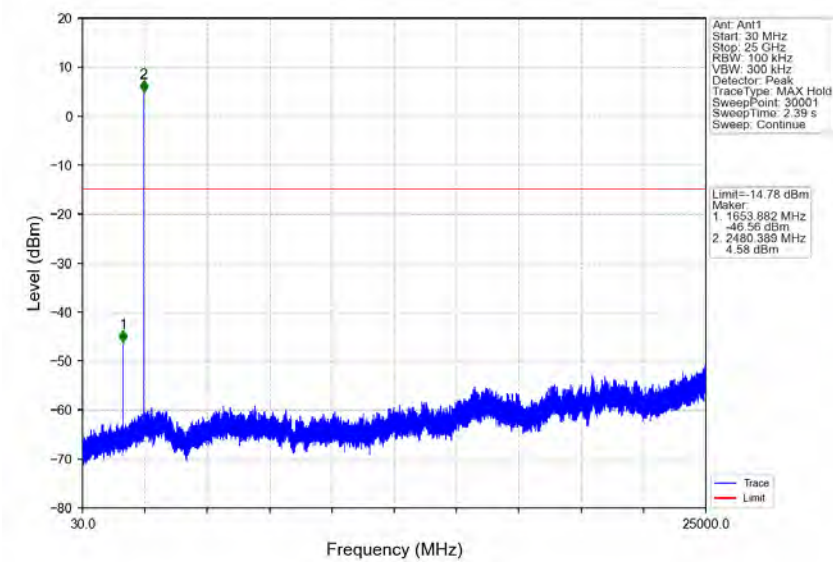
S8_MCH_2440MHz_Ant1_NTNV



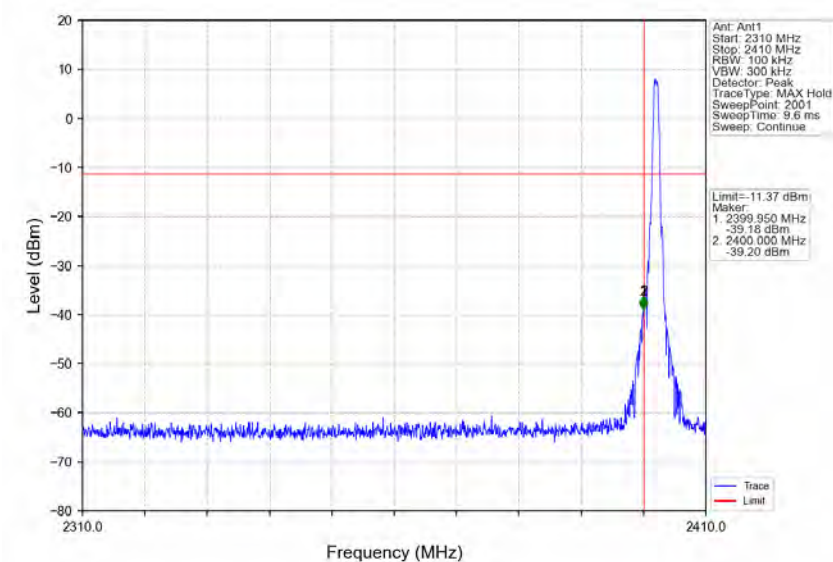
S8_HCH_2480MHz_Ant1_NTNV



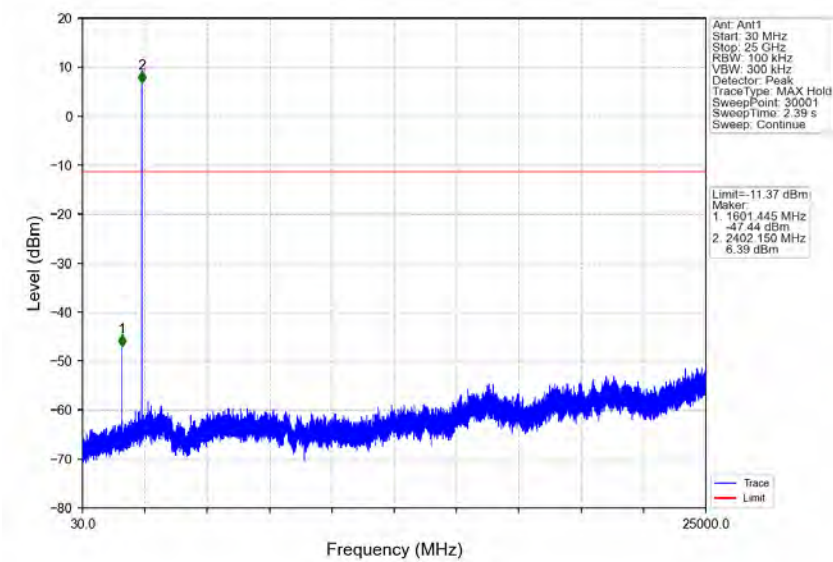
S8_HCH_2480MHz_Ant1_NTNV



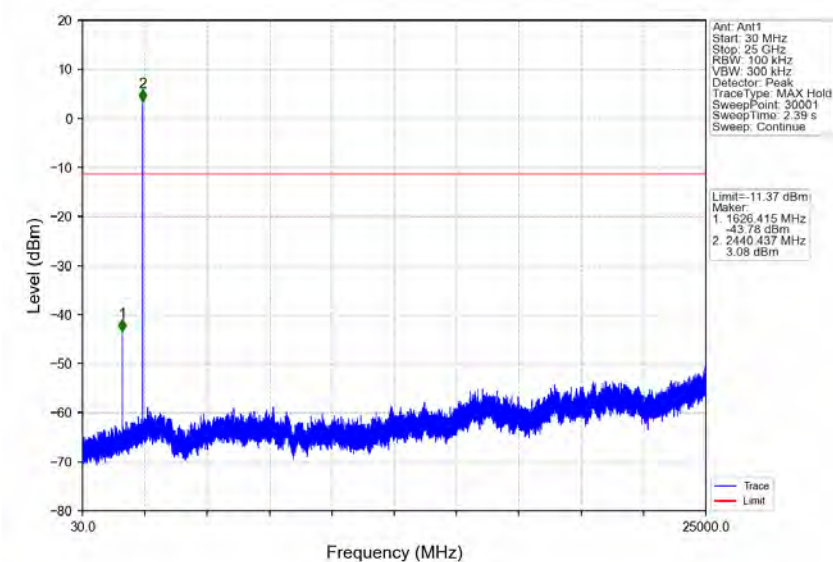
S2_LCH_2402MHz_Ant1_NTNV



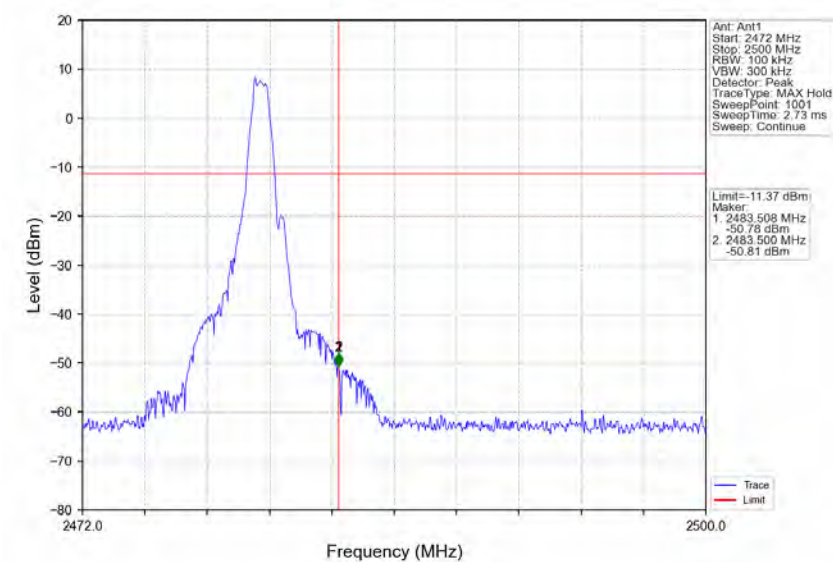
S2_LCH_2402MHz_Ant1_NTNV



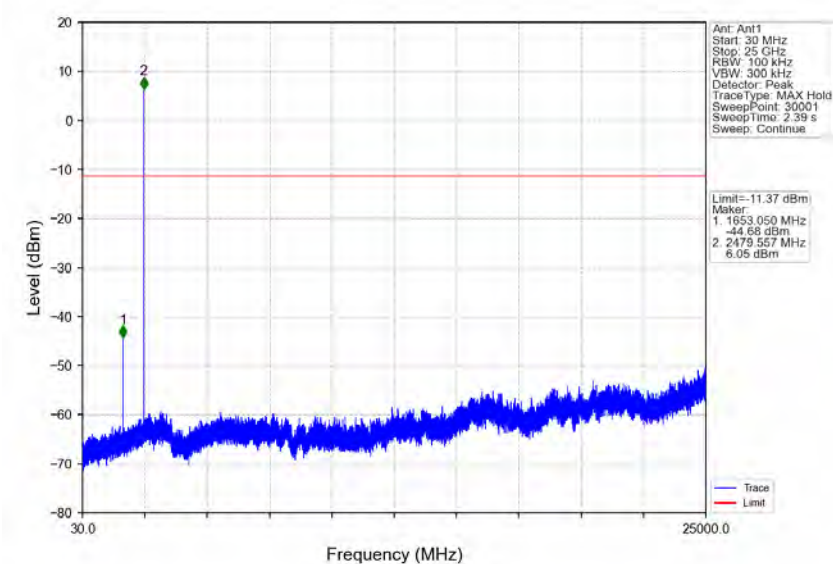
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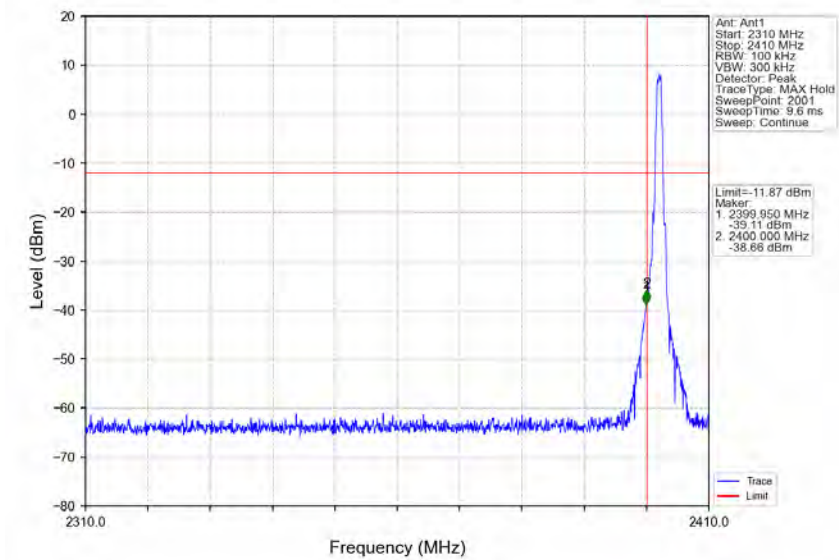
S2_HCH_2480MHz_Ant1_NTNV



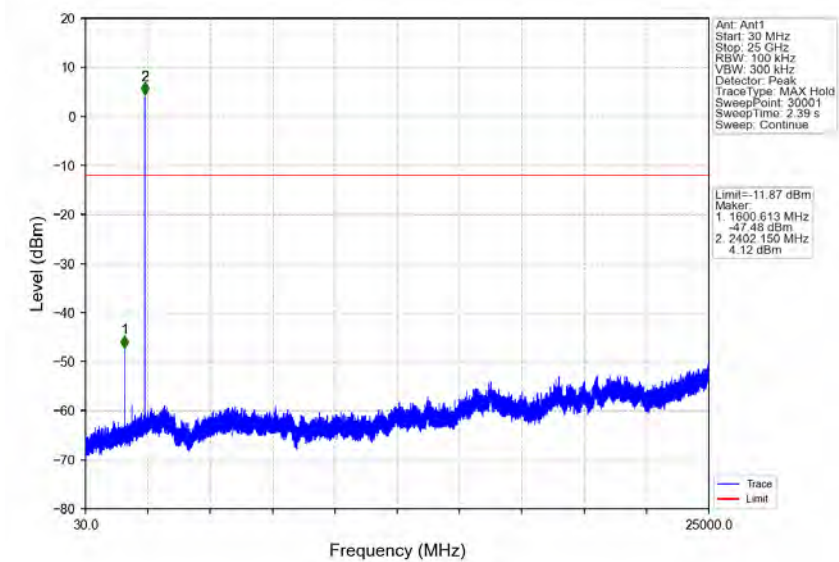
S2_HCH_2480MHz_Ant1_NTNV



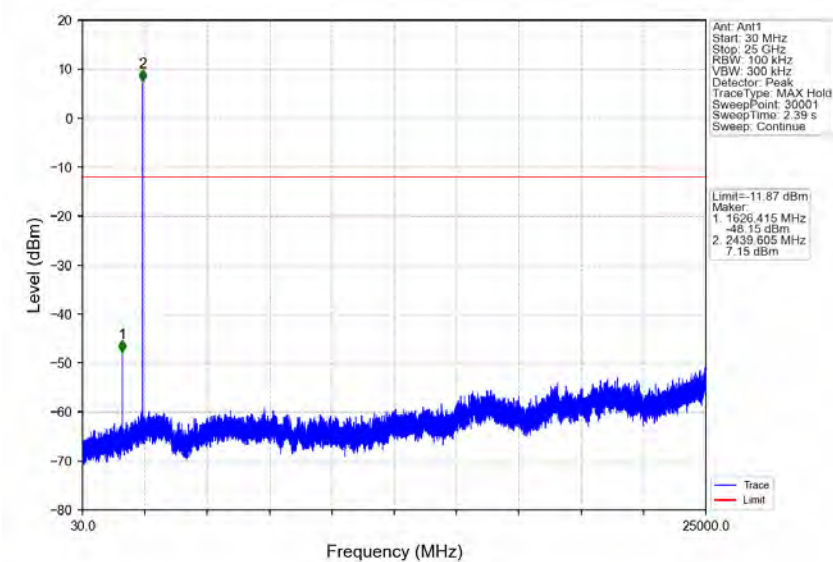
1M_LCH_2402MHz_Ant1_NTNV



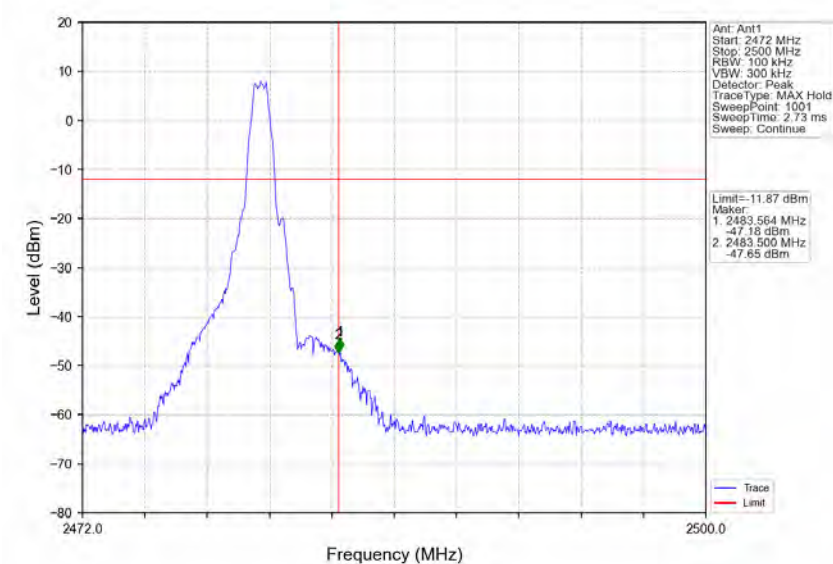
1M_LCH_2402MHz_Ant1_NTNV



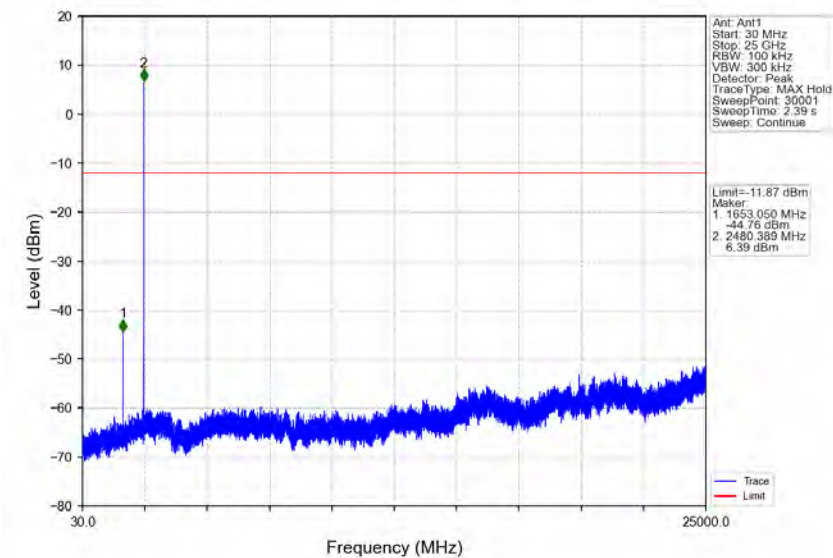
1M_MCH_2440MHz_Ant1_NTNV



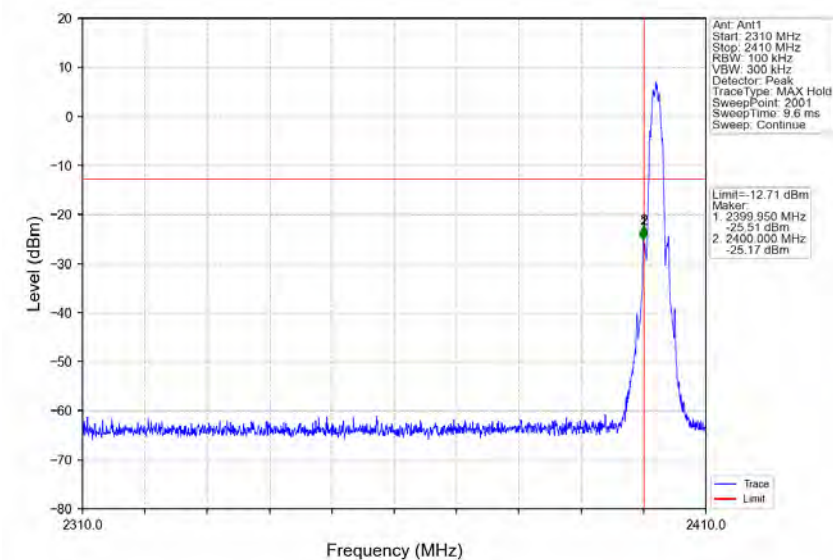
1M_HCH_2480MHz_Ant1_NTNV



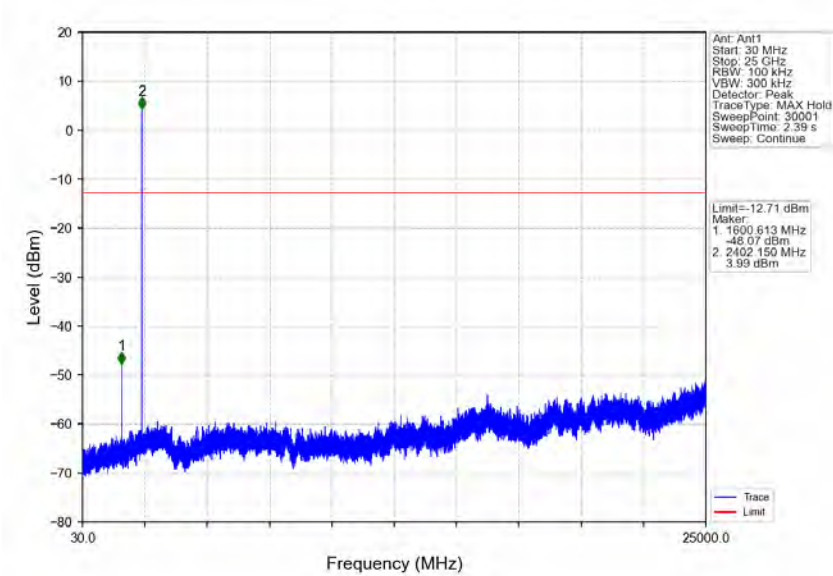
1M_HCH_2480MHz_Ant1_NTNV



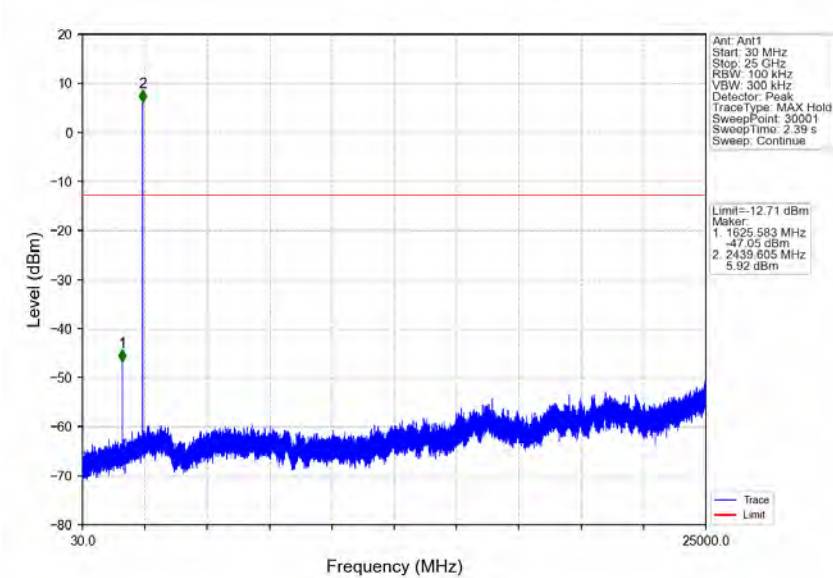
2M_LCH_2402MHz_Ant1_NTNV



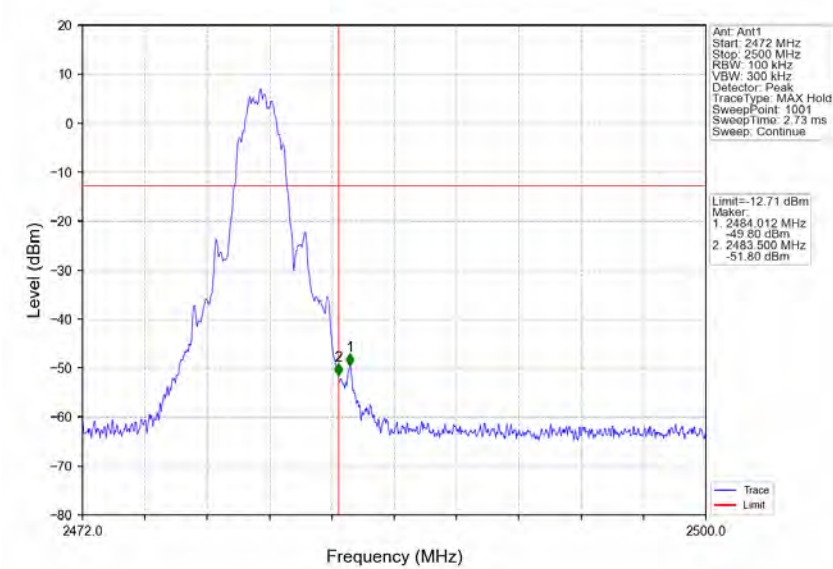
2M_LCH_2402MHz_Ant1_NTNV



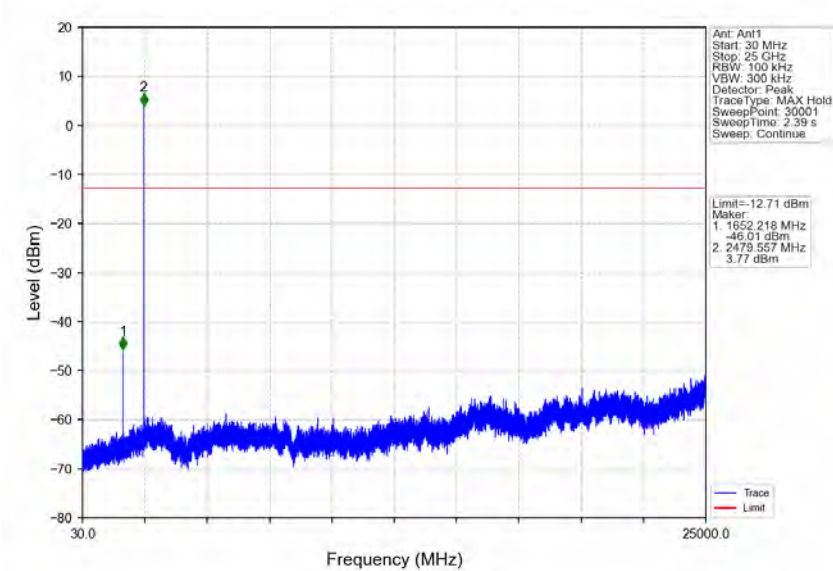
2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



6. Frequency Error

6.1 Test Result

6.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit (MHz)	Verdict
S8	SISO	2402	20	2.805	2402.009	2401.571 to 2402.429	Pass
				3.300	2402.009	2401.571 to 2402.429	Pass
				3.795	2402.011	2401.571 to 2402.429	Pass
			-20	3.300	2402.006	2401.571 to 2402.429	Pass
			50	3.300	2402.007	2401.571 to 2402.429	Pass
		2440	20	2.805	2440.003	2439.57 to 2440.43	Pass
				3.300	2440.005	2439.57 to 2440.43	Pass
				3.795	2440.006	2439.57 to 2440.43	Pass
			-20	3.300	2440.003	2439.57 to 2440.43	Pass
			50	3.300	2440.004	2439.57 to 2440.43	Pass
		2480	20	2.805	2479.994	2479.569 to 2480.431	Pass
				3.300	2480.001	2479.569 to 2480.431	Pass
				3.795	2480.001	2479.569 to 2480.431	Pass
			-20	3.300	2480.000	2479.569 to 2480.431	Pass
			50	3.300	2479.992	2479.569 to 2480.431	Pass
S2	SISO	2402	20	2.805	2401.995	2401.587 to 2402.413	Pass
				3.300	2401.991	2401.587 to 2402.413	Pass
				3.795	2401.996	2401.587 to 2402.413	Pass
			-20	3.300	2401.997	2401.587 to 2402.413	Pass
			50	3.300	2401.993	2401.587 to 2402.413	Pass
		2440	20	2.805	2439.987	2439.586 to 2440.414	Pass
				3.300	2439.985	2439.586 to 2440.414	Pass
				3.795	2439.987	2439.586 to 2440.414	Pass
			-20	3.300	2439.984	2439.586 to 2440.414	Pass
			50	3.300	2439.983	2439.586 to 2440.414	Pass
		2480	20	2.805	2479.971	2479.585 to 2480.415	Pass
				3.300	2479.968	2479.585 to 2480.415	Pass
				3.795	2479.970	2479.585 to 2480.415	Pass
			-20	3.300	2479.968	2479.585 to 2480.415	Pass
			50	3.300	2479.970	2479.585 to 2480.415	Pass
1M	SISO	2402	20	2.805	2401.998	2401.579 to 2402.421	Pass
				3.300	2401.998	2401.579 to 2402.421	Pass
				3.795	2401.997	2401.579 to 2402.421	Pass
			-20	3.300	2401.998	2401.579 to 2402.421	Pass



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			50	3.300	2401.997	2401.579 to 2402.421	Pass		
		2440	20	2.805	2439.990	2439.578 to 2440.422	Pass		
				3.300	2439.989	2439.578 to 2440.422	Pass		
				3.795	2439.987	2439.578 to 2440.422	Pass		
				-20	3.300	2439.990	2439.578 to 2440.422	Pass	
			50	3.300	2439.987	2439.578 to 2440.422	Pass		
		2480	20	2.805	2479.974	2479.577 to 2480.423	Pass		
				3.300	2479.973	2479.577 to 2480.423	Pass		
				3.795	2479.974	2479.577 to 2480.423	Pass		
			-20	3.300	2479.975	2479.577 to 2480.423	Pass		
			50	3.300	2479.974	2479.577 to 2480.423	Pass		
		2M	SISO	2402	20	2.805	2402.012	2401.165 to 2402.835	Pass
						3.300	2402.012	2401.165 to 2402.835	Pass
						3.795	2402.012	2401.165 to 2402.835	Pass
					-20	3.300	2402.014	2401.165 to 2402.835	Pass
					50	3.300	2402.010	2401.165 to 2402.835	Pass
2440	20			2.805	2440.006	2439.162 to 2440.838	Pass		
				3.300	2440.006	2439.162 to 2440.838	Pass		
				3.795	2440.008	2439.162 to 2440.838	Pass		
	-20			3.300	2440.008	2439.162 to 2440.838	Pass		
	50			3.300	2440.004	2439.162 to 2440.838	Pass		
2480	20			2.805	2479.998	2479.16 to 2480.84	Pass		
				3.300	2480.000	2479.16 to 2480.84	Pass		
				3.795	2479.998	2479.16 to 2480.84	Pass		
	-20			3.300	2480.002	2479.16 to 2480.84	Pass		
	50			3.300	2479.998	2479.16 to 2480.84	Pass		

- End of the Report -