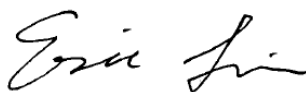


TEST REPORT

Application No.: KSCR2208001460AT
FCC ID: 2A769-PW0161
IC: 28842-PW0161
Applicant: K-tronics (Suzhou) Technology Co., Ltd.
Address of Applicant: No.1088, Dajing Road, Economic and Technological Development Zone, Wujiang District, Suzhou, 215200 Jiangsu, P.R. China
Manufacturer: K-tronics (Suzhou) Technology Co., Ltd.
Address of Manufacturer: No.1088, Dajing Road, Economic and Technological Development Zone, Wujiang District, Suzhou, 215200 Jiangsu, P.R. China
Factory: K-tronics (Suzhou) Technology Co., Ltd.
Address of Factory: No.1088, Dajing Road, Economic and Technological Development Zone, Wujiang District, Suzhou, 215200 Jiangsu, P.R. China
Equipment Under Test (EUT):
EUT Name: Prowise Magic Remote
Model No.: PW.3.15000.0161
Trade Mark: Prowise
Standard(s) : 47 CFR Part 15, Subpart C 15.247
RSS-247 Issue 2, February 2017
RSS-Gen Issue 5 Amendment 2 (February 2021)
Date of Receipt: 2022-08-17
Date of Test: 2022-08-31 to 2022-08-31
Date of Issue: 2022-09-01

Test Result:	Pass*
---------------------	--------------

* In the configuration tested, the EUT complied with the standards specified above.



Eric Lin
Laboratory Manager



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Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220800146001

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Revision Record			
Version	Description	Date	Remark
00	Original	2022-09-01	/

Authorized for issue by:			
		Pawn. Liu	
		Pawn.Liu/Project Engineer	
		Eric Lin	
		Eric Lin /Reviewer	



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2 Test Summary

Item	Method	IC Requirement	FCC Requirement	Result
Antenna Requirement	N/A	RSS-Gen Clause 6.8	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass

Item	Method	IC Requirement	FCC Requirement	Result
Conducted Peak Output Power	ANSI C63.10 (2013) Section 11.9.2	RSS-247 Clause 5.4(d)	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth	ANSI C63.10 (2013) Section 11.8.1	RSS-247 Clause 5.2(a)	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density	ANSI C63.10 (2013) Section 11.10.2	RSS-247 Clause 5.2(b)	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement	ANSI C63.10 (2013) Section 11.13.3.2	RSS-247 Clause 5.5	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions	ANSI C63.10 (2013) Section 11.11	RSS-247 Clause 5.5	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	ANSI C63.10 (2013) Section 6.10.5	RSS-247 Section 3.3 & RSS-Gen Section 8.9	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz	ANSI C63.10 (2013) Section 6.4,6.5	RSS-247 Section 3.3 & RSS-Gen Section 8.9	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz	ANSI C63.10 (2013) Section 6.6	RSS-247 Section 3.3 & RSS-Gen Section 8.9	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
99% Bandwidth	ANSI C63.10 Section 6.9.3	RSS-Gen Section 6.7	N/A	Pass



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Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220800146001

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3V by Battery
Test Voltage:	DC 3V
Operation Frequency:	2406MHz,2411MHz,2424MHz,2433MHz
Number of Channels:	4
Modulation Type:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	0.5dBi(Provided by the manufacturer)
Firmware Version:	Ver3.0
S/N:	61115-009732315A3000001

4.2 Power level setting using in test:

Frequency(MHz)	GFSK
	Ant 1
2406	default
2424	default
2433	default

4.3 Environment Parameter

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(°C)	Voltage(V)
NTNV	25	DC 3V
Note:		
NV:Normal Voltage	LV:Low Extreme Test Voltage	HV:High Extreme Test Voltage
NT:Normal Temperature	LT:Low Extreme Test Temperature	HT:High Extreme Test Temperature

4.4 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Battery	NanFu	LR03	/



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4.5 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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Report No.: KSCR220800146001

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4.6 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).

4.7 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.

4.8 Deviation from Standards

None

4.9 Abnormalities from Standard Conditions

None



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5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/22/2022	08/21/2023
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/22/2022	08/21/2023
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/22/2022	01/21/2023
4	Signal Generator	R&S	SMW200A	KSEM020-1	08/22/2022	08/21/2023
5	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/22/2022	08/21/2023
6	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/22/2022	08/21/2023
7	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	04/01/2022	03/31/2023
8	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/22/2022	08/21/2023
9	Switcher	CCSRF	FY562	KUS2001M001-3	08/22/2022	08/21/2023
10	AC Power Source	EXTECH	6605	KS301178	N.C.R	N.C.R
11	DC Power Supply	Aglient	E3632A	KS301180	N.C.R	N.C.R
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/16/2022	01/15/2023
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	04/01/2021	03/31/2023
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	04/14/2022	04/13/2023
15	Software	BST	TST-PASS	/	N/A	N/A
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	08/22/2022	08/21/2023
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	04/01/2022	03/31/2023
3	Signal Generator	Agilent	E8257C	KS301066	08/22/2022	08/21/2023
4	Loop Antenna	COM-POWER	AL-130R	KUS1806E001	04/13/2021	04/12/2023
5	Bilog Antenna	TESEQ	CBL 6112D	KUS1806E005	06/29/2021	06/28/2023
6	Bilog Antenna	SCHWARZBECK	VULB9160	CZ301016	04/13/2021	04/12/2024
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	04/02/2022	04/01/2024
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	KS301186	02/22/2021	02/21/2023
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	03/17/2022	03/16/2023
10	Amplifier(30MHz~18GHz)	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-1	01/22/2022	01/21/2023
11	Amplifier(18~40GHz)	COM-POWER	PAM-840A	KUS1710E001	01/22/2022	01/21/2023
12	RE Test Cable	REBES MICROWAVE	/	CZ301097	11/14/2021	11/13/2022
13	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	01/04/2022	31/03/2023
14	Software	Faratronic	EZ-EMC-v 3A1	/	N/A	N/A



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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 is PCB Antenna and no consideration of replacement. The best case gain of the antenna is 0.5dBi.

Antenna location: Refer to internal photo.



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7 Radio Spectrum Matter Test Results

7.1 Conducted Peak Output Power

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

Test Method: ANSI C63.10 (2013) Section 11.9.2

Measurement Distance: 3m

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

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK



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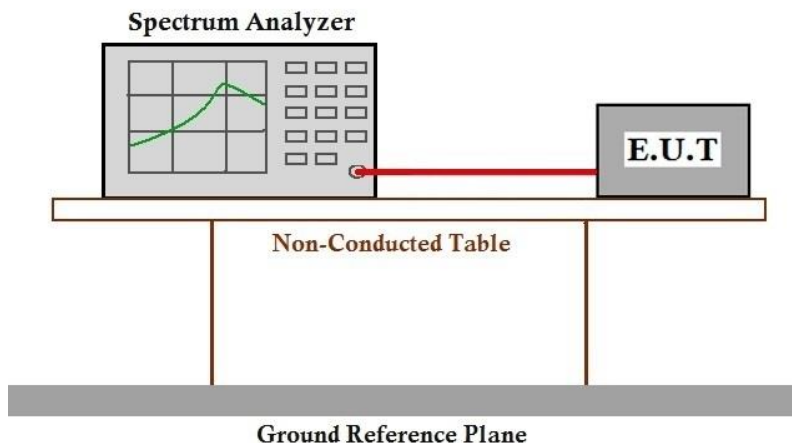
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7.1.3 Test Setup Diagram



7.1.4 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 A for KSCR220800146001



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7.2 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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

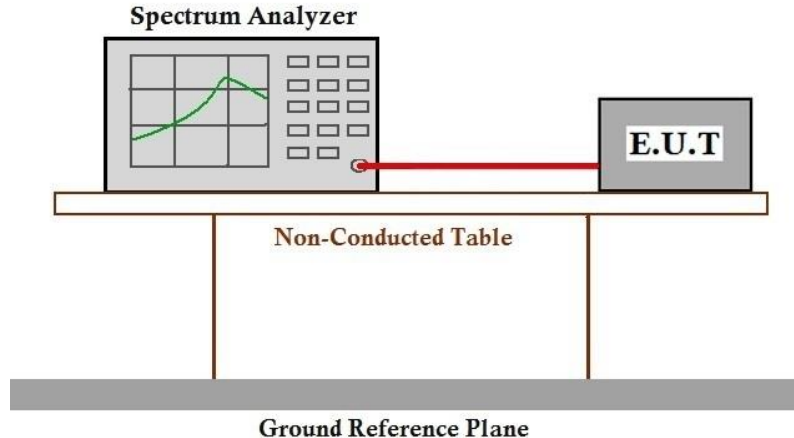
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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7.3 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

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

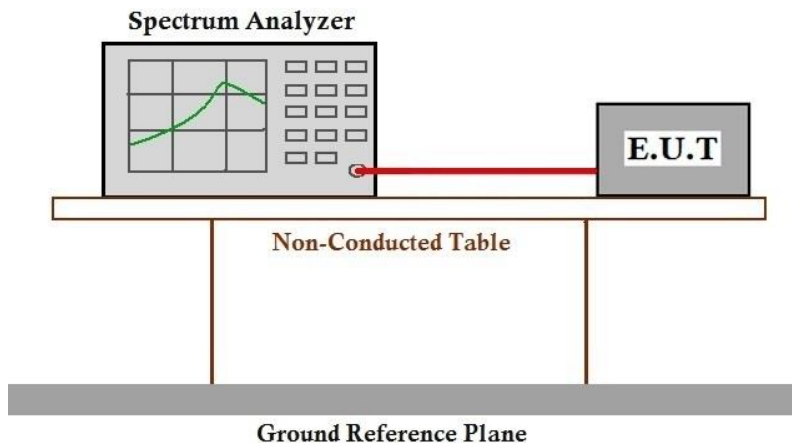
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

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7.4 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)).

7.4.1 E.U.T. Operation

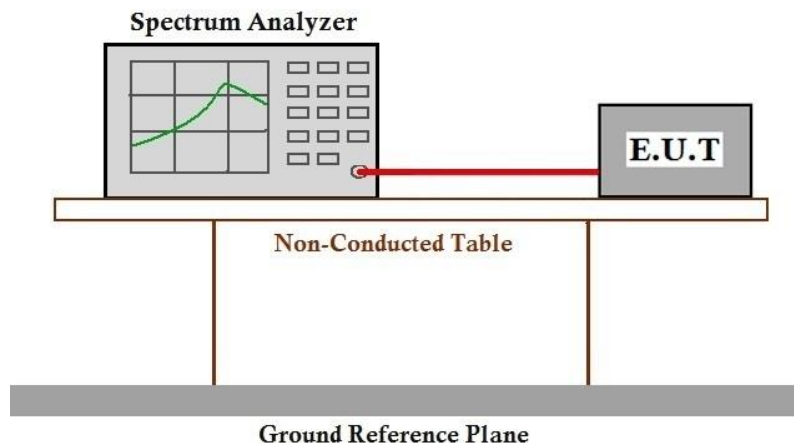
Operating Environment:

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.4.3 Test Setup Diagram



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7.4.4 Measurement Procedure and Data

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7.5 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)).

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

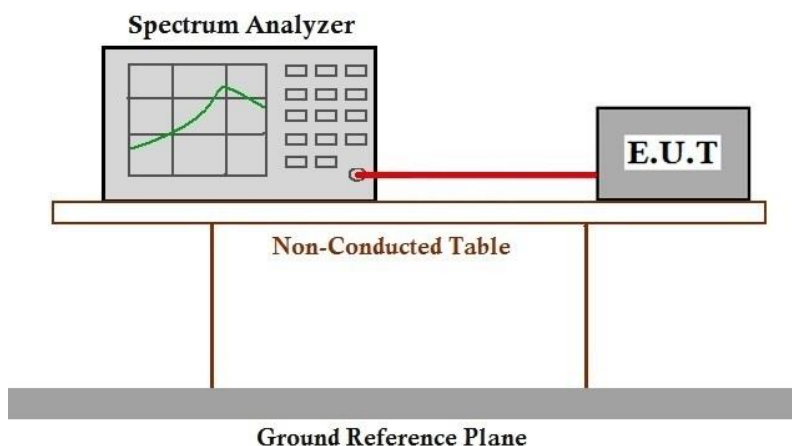
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.5.3 Test Setup Diagram



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7.5.4 Measurement Procedure and Data

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7.6 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

Measurement Distance: 3m

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.

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK



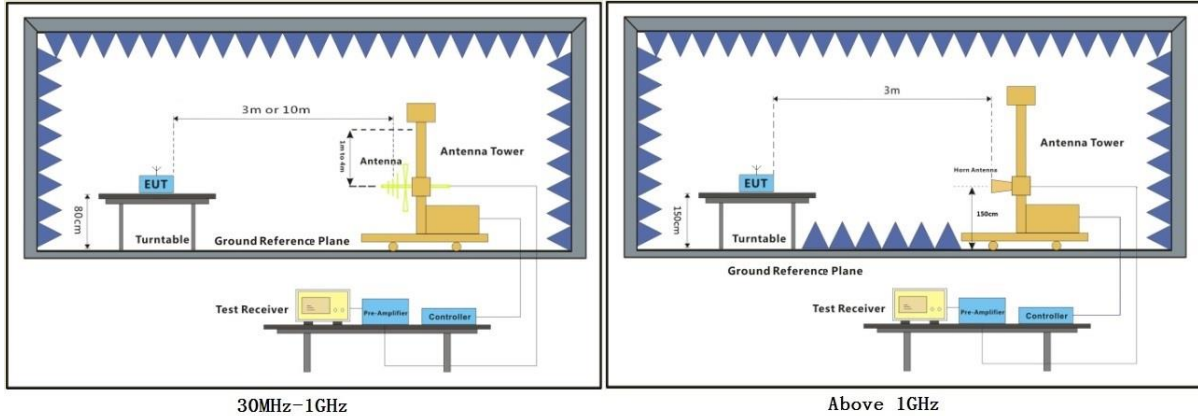
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7.6.3 Test Setup Diagram



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7.6.4 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. 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.
- c. 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.
- d. 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.
- e. 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.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. 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.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. 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.
- j. 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.



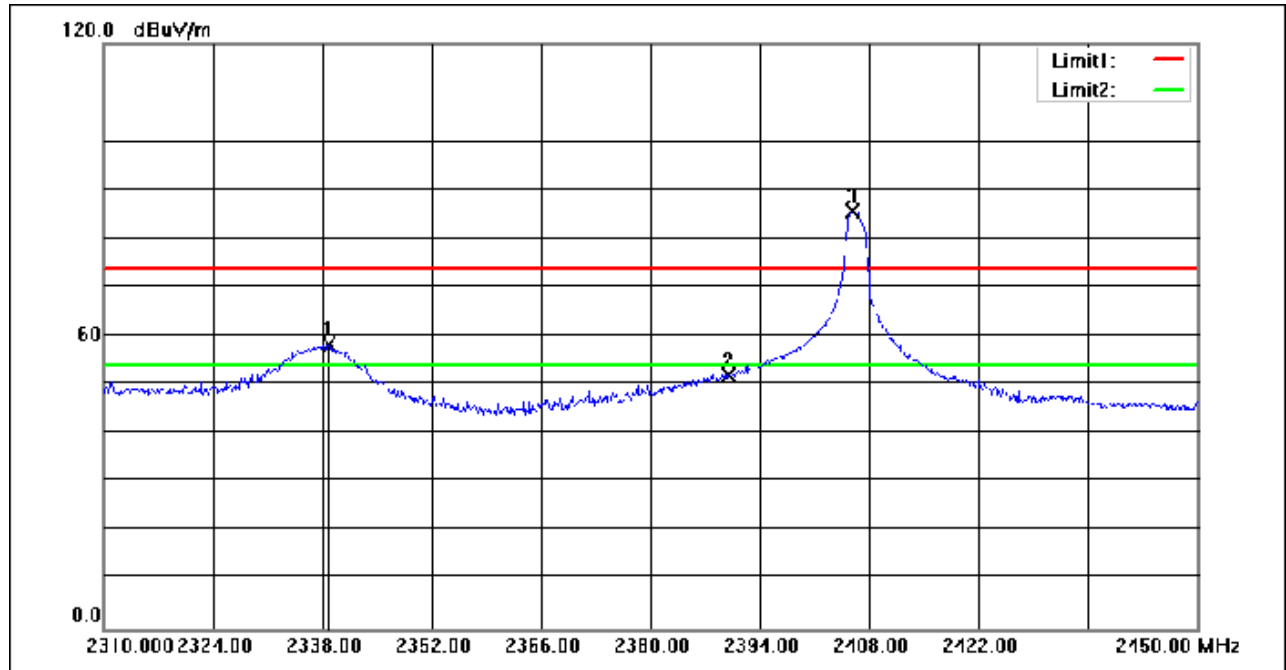
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Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: 2406MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2338.840	77.05	-18.78	58.27	74.00	-15.73	peak
2	2390.000	70.76	-18.75	52.01	74.00	-21.99	peak
3	2405.900	104.48	-18.72	85.76	74.00	11.76	peak



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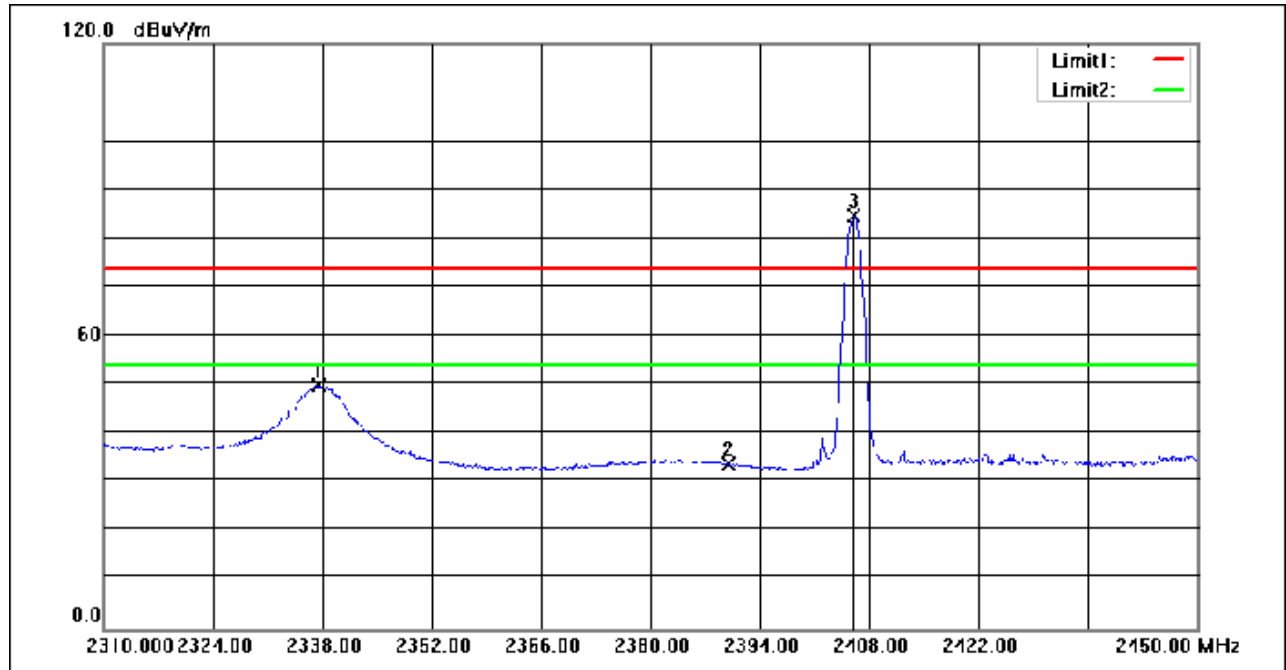
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Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220800146001

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Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: 2406MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2337.580	68.79	-18.78	50.01	54.00	-3.99	AVG
2	2390.000	52.62	-18.75	33.87	54.00	-20.13	AVG
3	2406.040	103.35	-18.72	84.63	54.00	30.63	AVG



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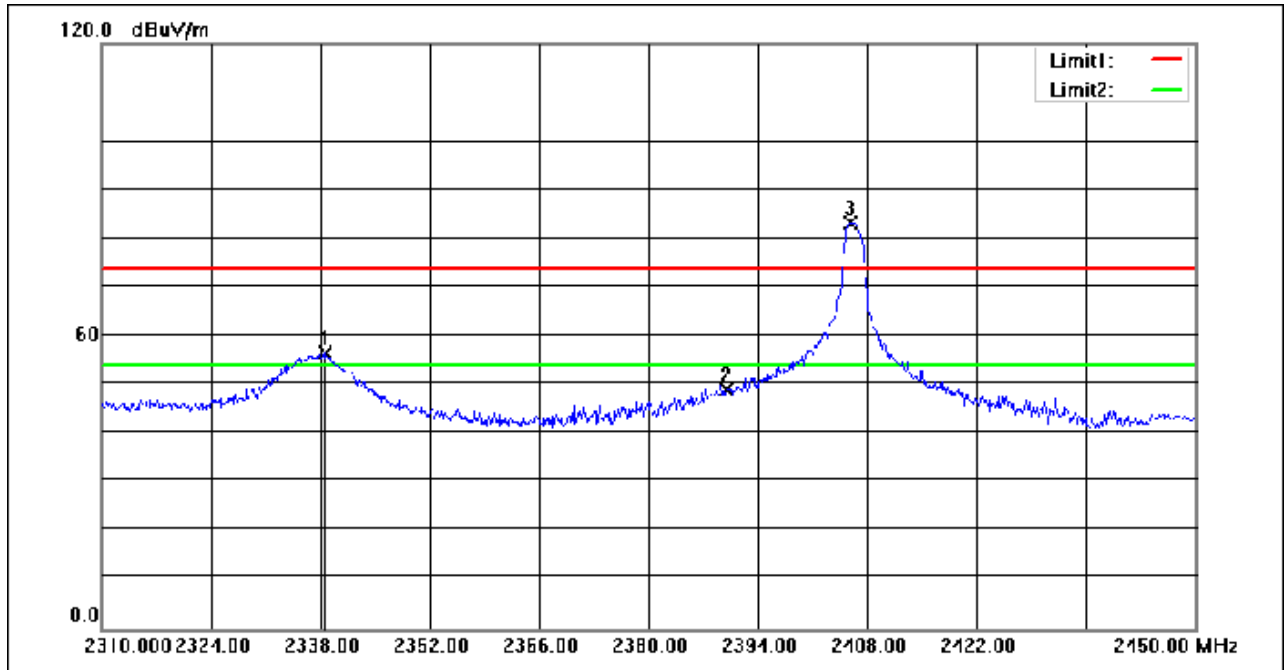
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Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220800146001

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Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: 2406MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2338.700	75.30	-18.78	56.52	74.00	-17.48	peak
2	2390.000	67.81	-18.75	49.06	74.00	-24.94	peak
3	2405.900	102.10	-18.72	83.38	74.00	9.38	peak



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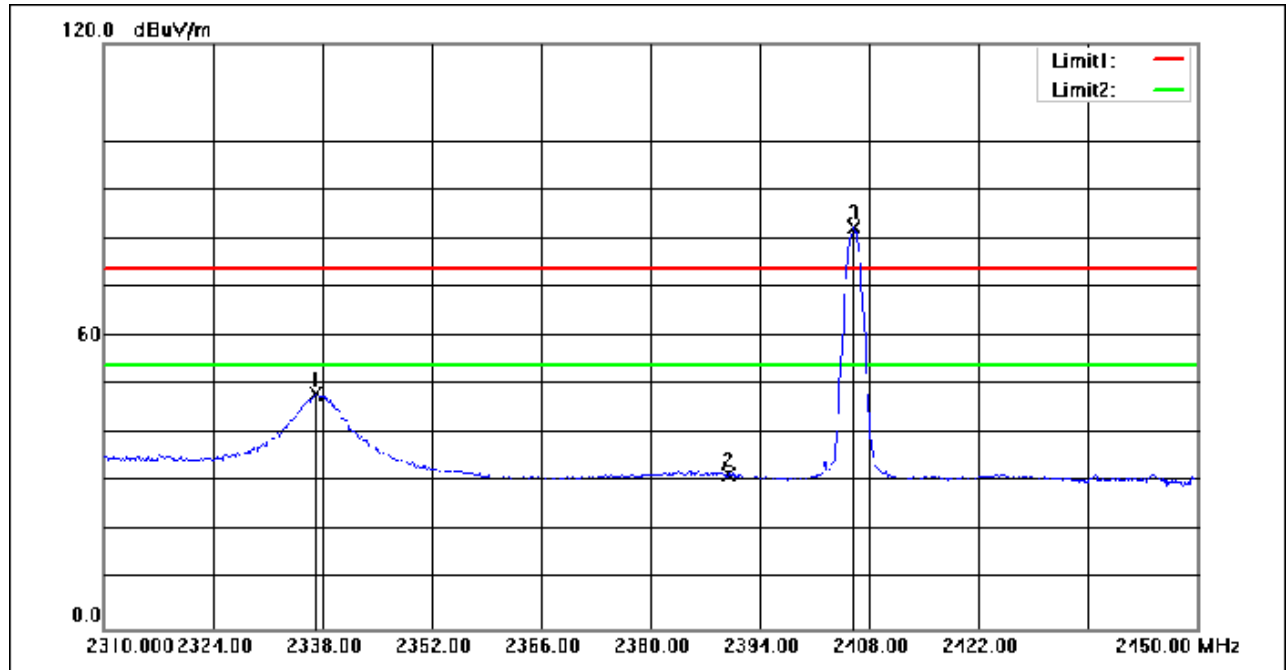
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Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: 2406MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2337.160	66.80	-18.78	48.02	54.00	-5.98	AVG
2	2390.000	50.47	-18.75	31.72	54.00	-22.28	AVG
3	2406.040	101.13	-18.72	82.41	54.00	28.41	AVG



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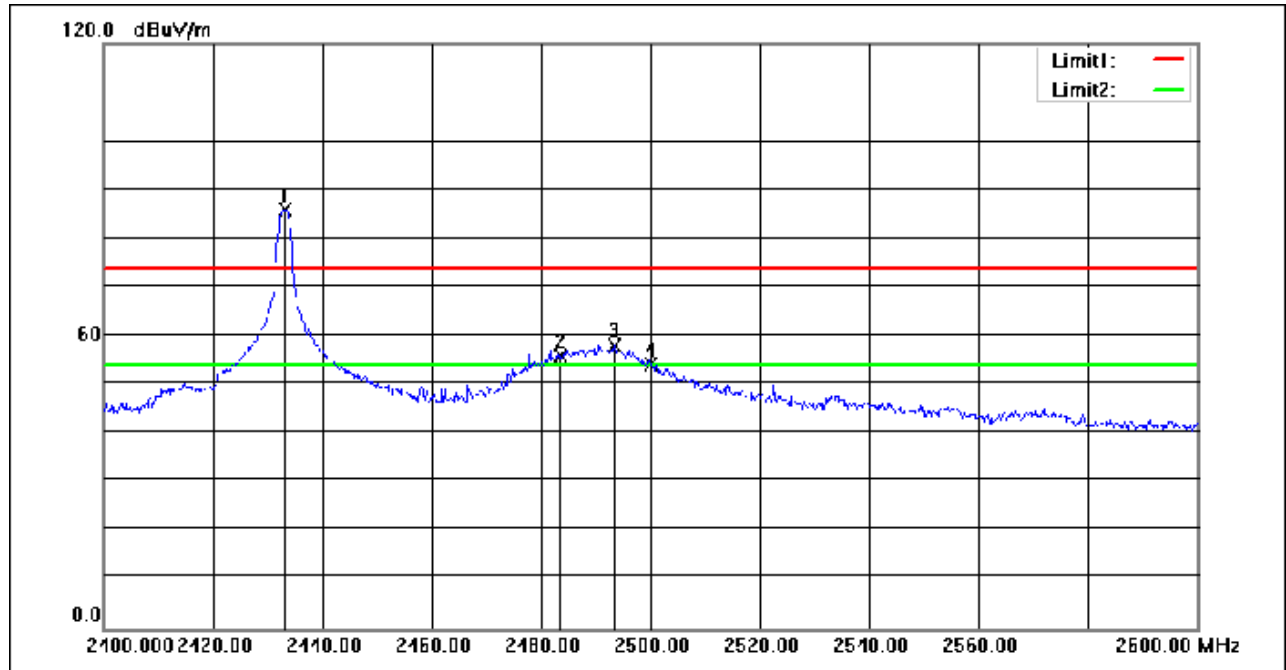
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Report No.: KSCR220800146001

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Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2433.200	104.55	-18.63	85.92	74.00	11.92	peak
2	2483.500	74.33	-18.45	55.88	74.00	-18.12	peak
3	2493.400	76.51	-18.41	58.10	74.00	-15.90	peak
4	2500.000	72.64	-18.38	54.26	74.00	-19.74	peak



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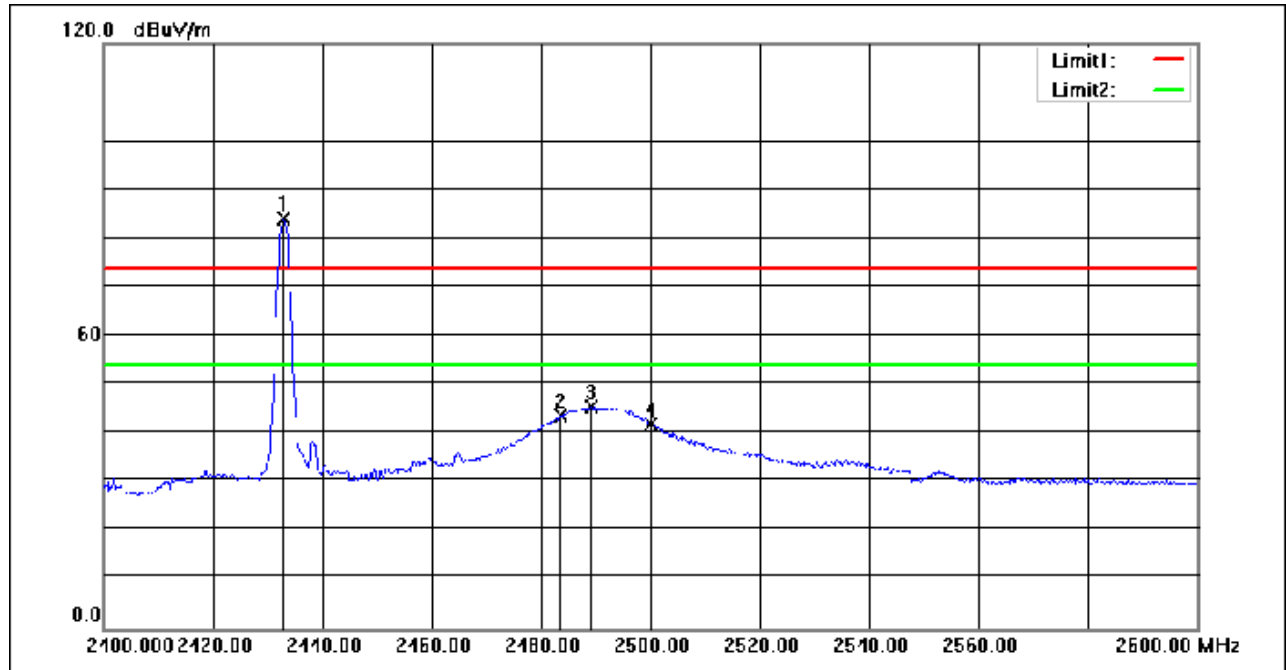
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Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2433.000	102.87	-18.63	84.24	54.00	30.24	AVG
2	2483.500	62.02	-18.45	43.57	54.00	-10.43	AVG
3	2489.200	63.83	-18.42	45.41	54.00	-8.59	AVG
4	2500.000	60.13	-18.38	41.75	54.00	-12.25	AVG



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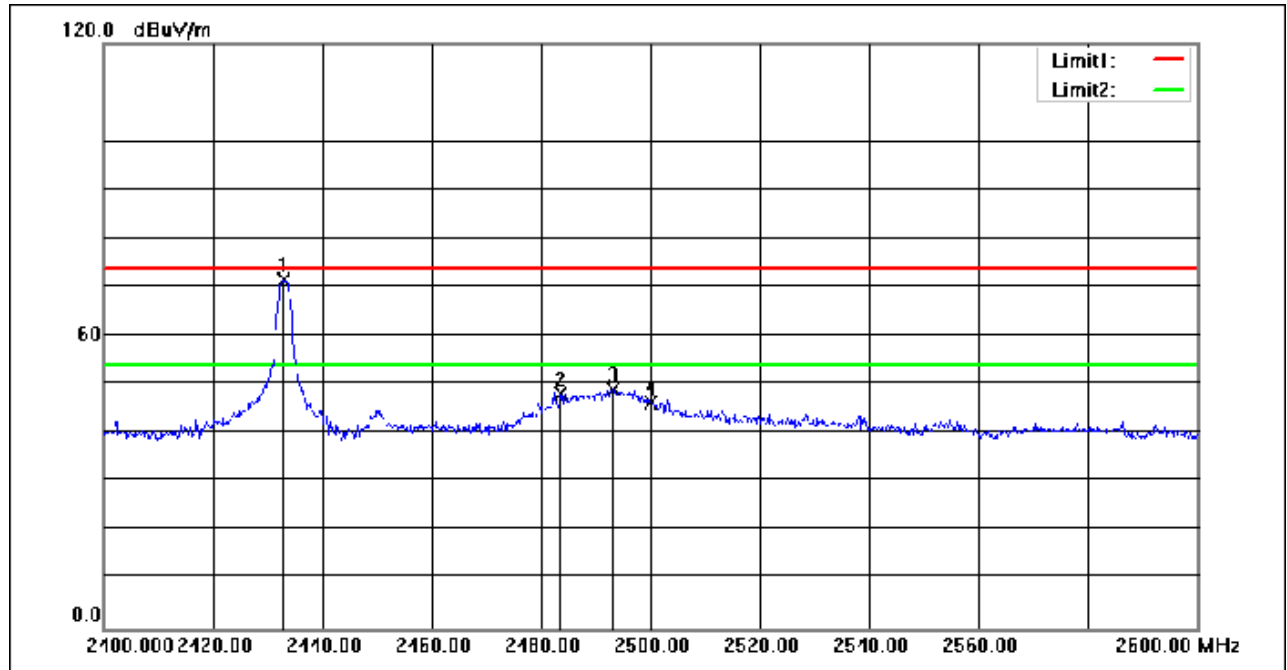
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Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2432.800	90.07	-18.63	71.44	74.00	-2.56	peak
2	2483.500	66.68	-18.45	48.23	74.00	-25.77	peak
3	2493.200	67.47	-18.41	49.06	74.00	-24.94	peak
4	2500.000	64.84	-18.38	46.46	74.00	-27.54	peak



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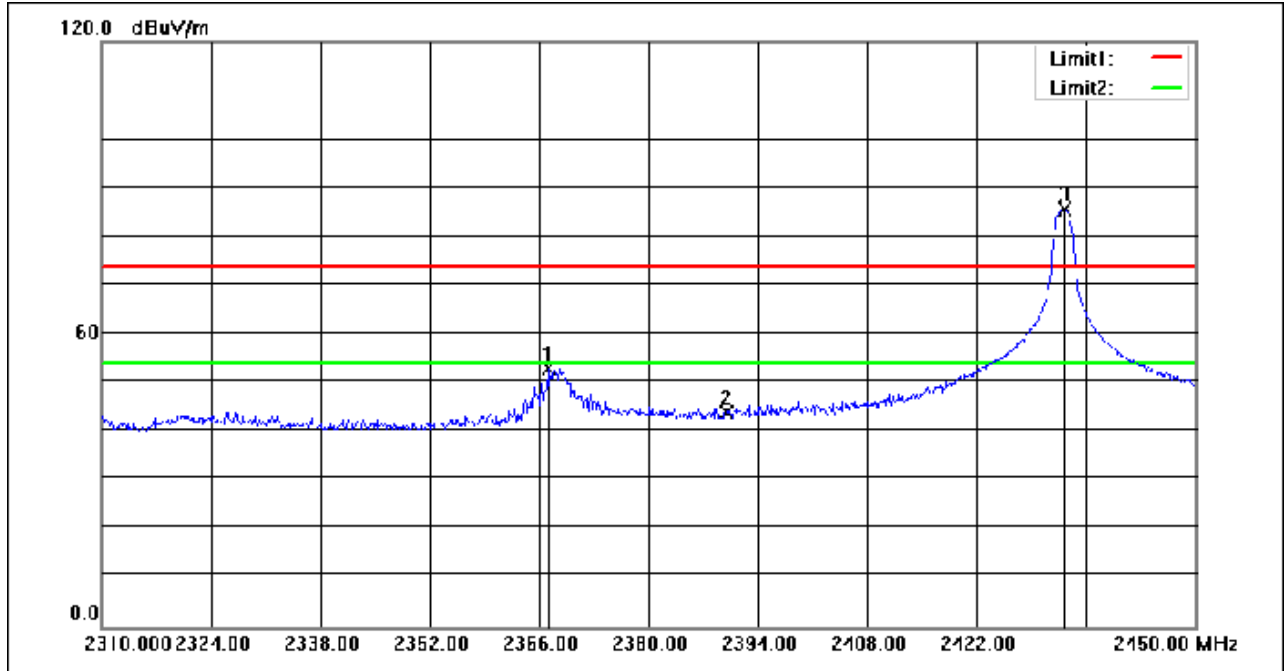
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Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2367.120	71.62	-18.76	52.86	74.00	-21.14	peak
2	2390.000	62.73	-18.75	43.98	74.00	-30.02	peak
3	2433.200	104.15	-18.63	85.52	74.00	11.52	peak



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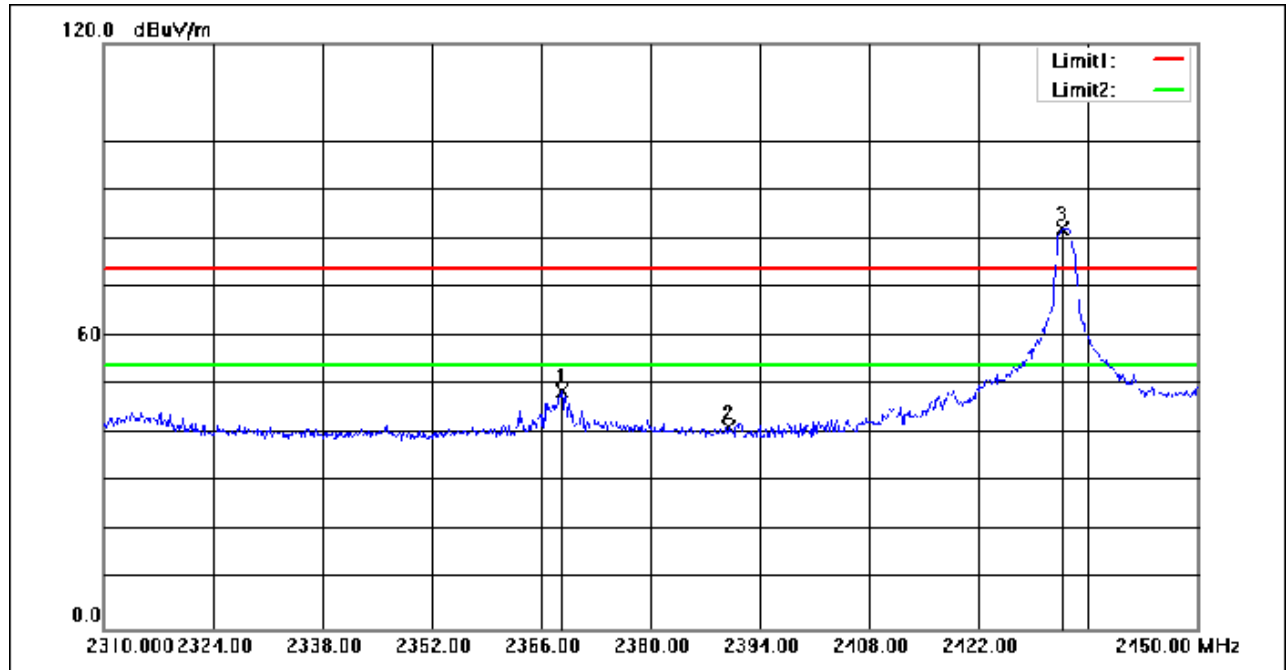
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Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2368.660	67.42	-18.76	48.66	74.00	-25.34	peak
2	2390.000	60.08	-18.75	41.33	74.00	-32.67	peak
3	2432.780	100.76	-18.63	82.13	74.00	8.13	peak



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7.7 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

Measurement Distance: 3m

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

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

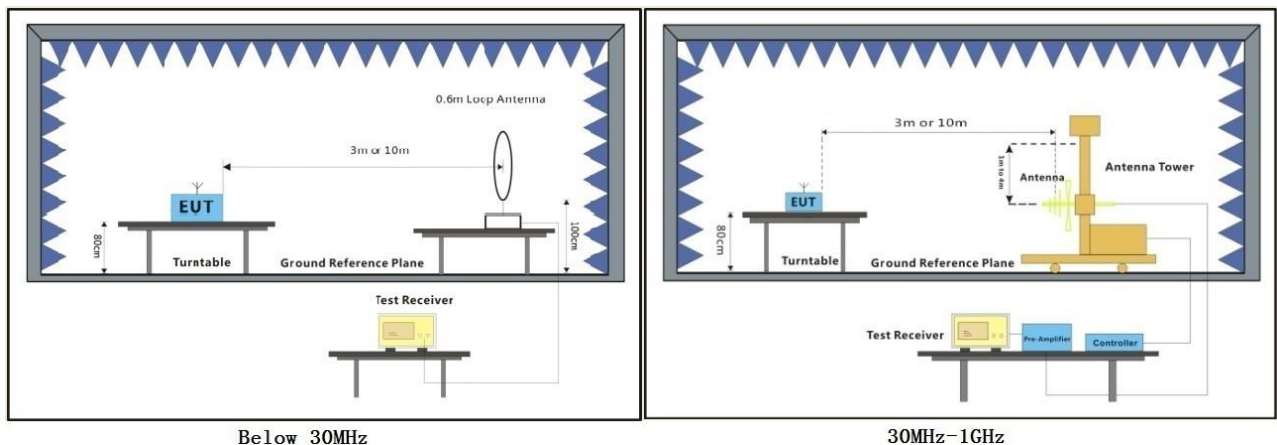
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.7.3 Test Setup Diagram



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7.7.4 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. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp 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.
3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



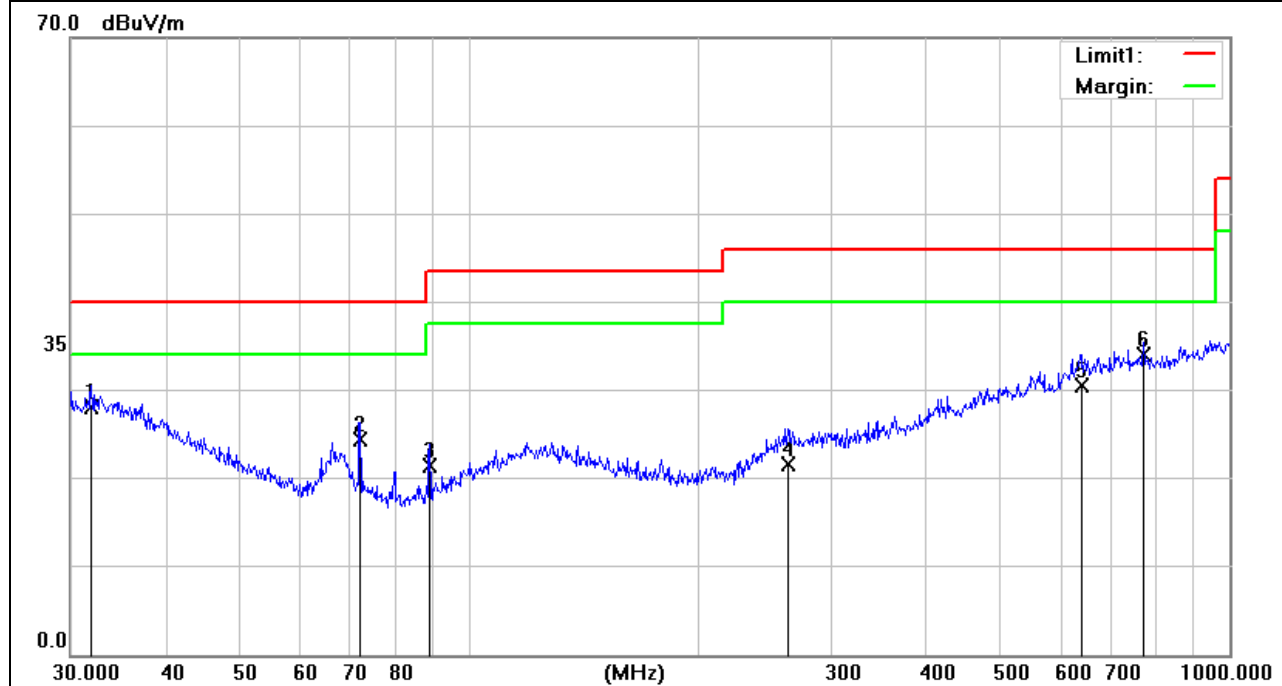
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Test Mode: 00; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.9546	2.94	25.16	28.10	40.00	-11.90	QP
2	72.0843	8.78	15.62	24.40	40.00	-15.60	QP
3	88.9640	6.75	14.64	21.39	43.50	-22.11	QP
4	262.8955	0.66	21.03	21.69	46.00	-24.31	QP
5	638.3686	2.78	27.78	30.56	46.00	-15.44	QP
6	771.4486	31.67	2.31	33.98	46.00	-12.02	QP



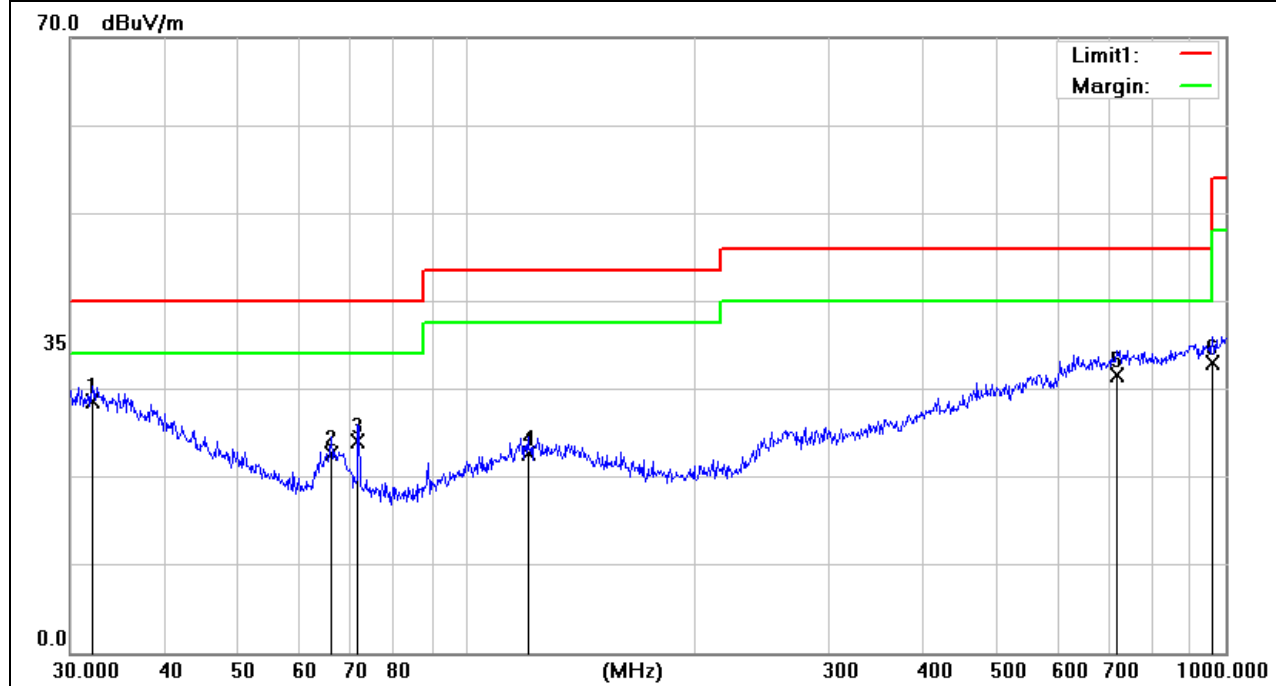
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Test Mode: 00; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	32.0667	3.54	25.15	28.69	40.00	-11.31	QP
2	66.2662	7.41	15.19	22.60	40.00	-17.40	QP
3	71.8320	8.40	15.65	24.05	40.00	-15.95	QP
4	120.2766	3.31	19.38	22.69	43.50	-20.81	QP
5	719.1995	29.15	2.43	31.58	46.00	-14.42	QP
6	958.7943	30.41	2.58	32.99	46.00	-13.01	QP



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7.8 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

Measurement Distance: 3m

Limit:

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

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

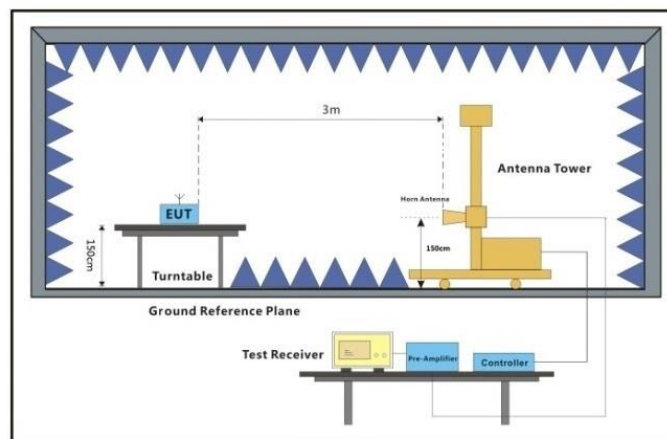
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.8.3 Test Setup Diagram



Above 1GHz



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7.8.4 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. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp 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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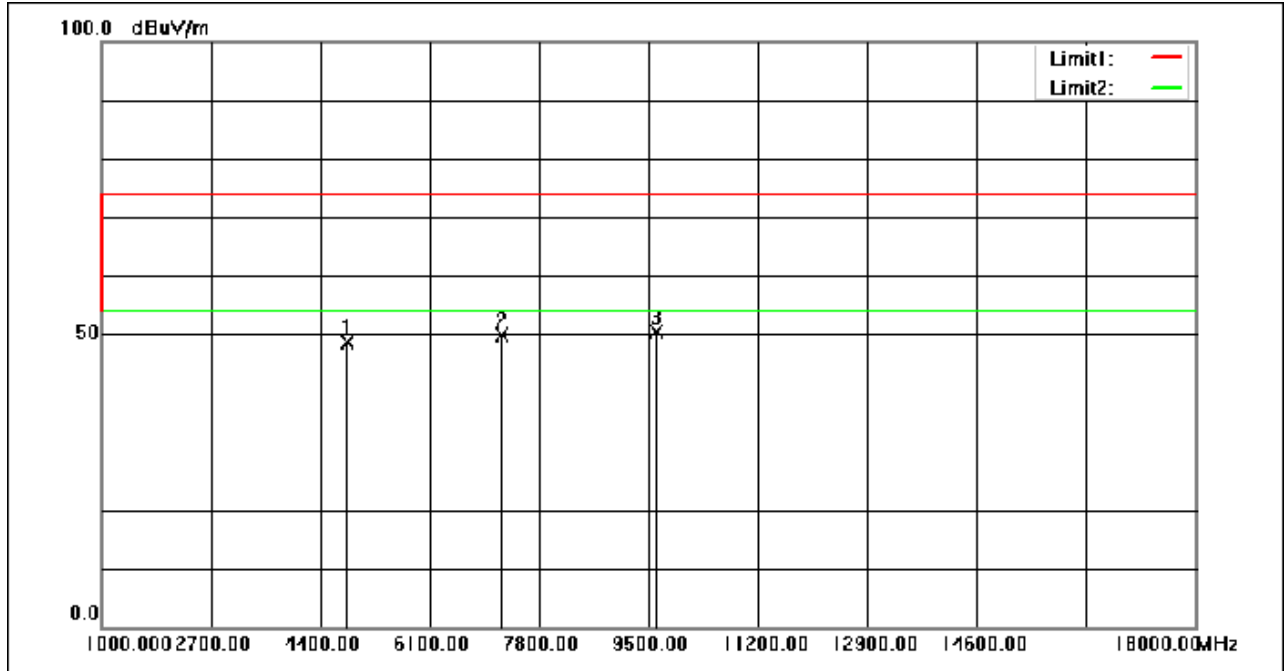
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Report No.: KSCR220800146001

Page: 37 of 66

Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel: 2406MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4812.000	57.45	-8.83	48.62	74.00	-25.38	peak
2	7218.000	55.85	-5.88	49.97	74.00	-24.03	peak
3	9624.000	51.71	-1.28	50.43	74.00	-23.57	peak



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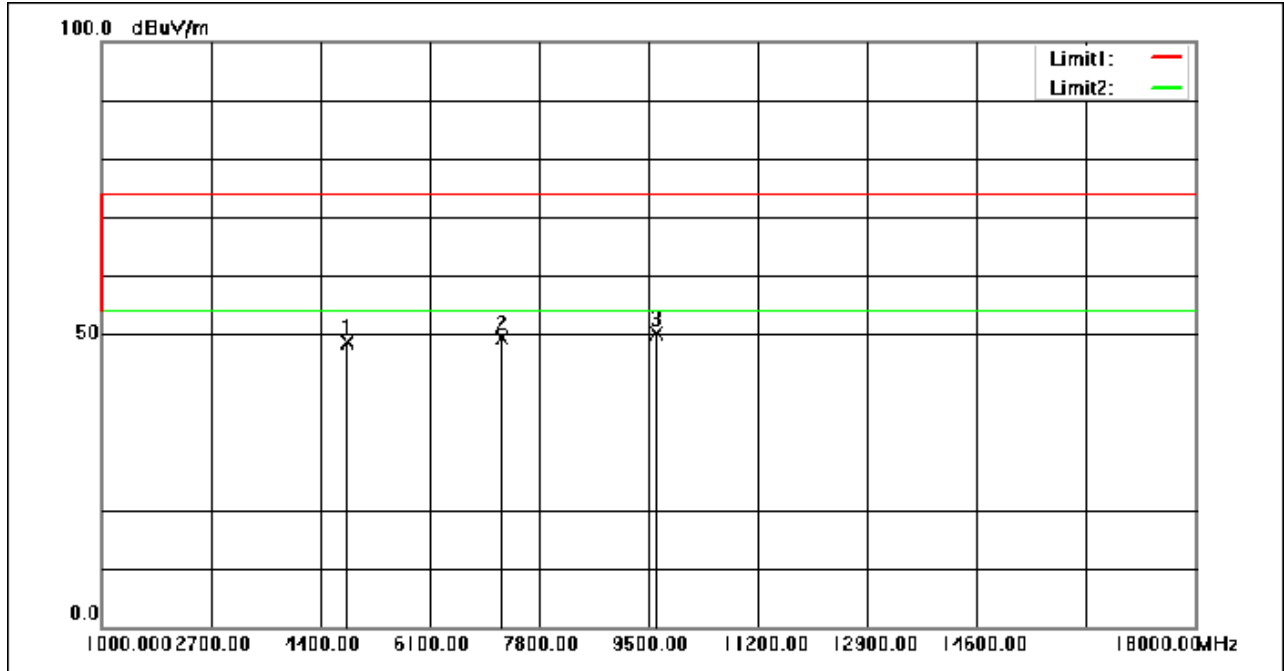
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Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220800146001

Page: 38 of 66

Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: 2406MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4812.000	57.36	-8.83	48.53	74.00	-25.47	peak
2	7218.000	55.34	-5.88	49.46	74.00	-24.54	peak
3	9624.000	51.47	-1.28	50.19	74.00	-23.81	peak



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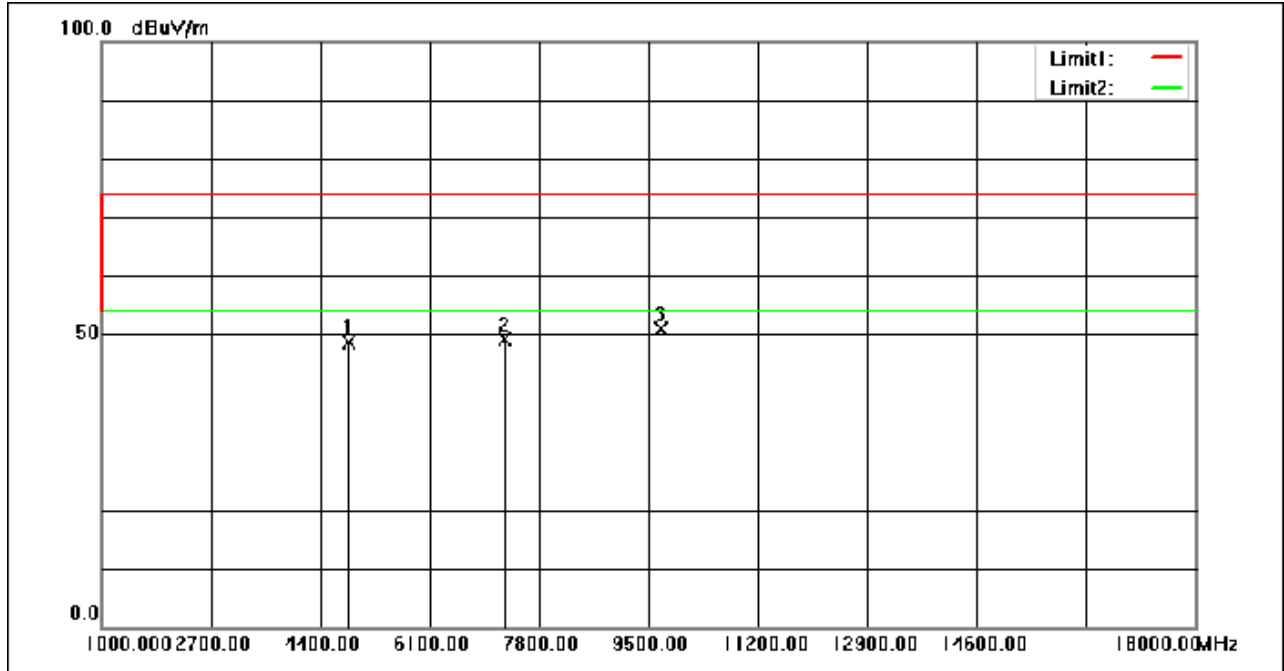
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Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220800146001

Page: 39 of 66

Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel: 2424MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4848.000	57.41	-8.70	48.71	74.00	-25.29	peak
2	7272.000	55.00	-5.83	49.17	74.00	-24.83	peak
3	9696.000	52.36	-1.37	50.99	74.00	-23.01	peak



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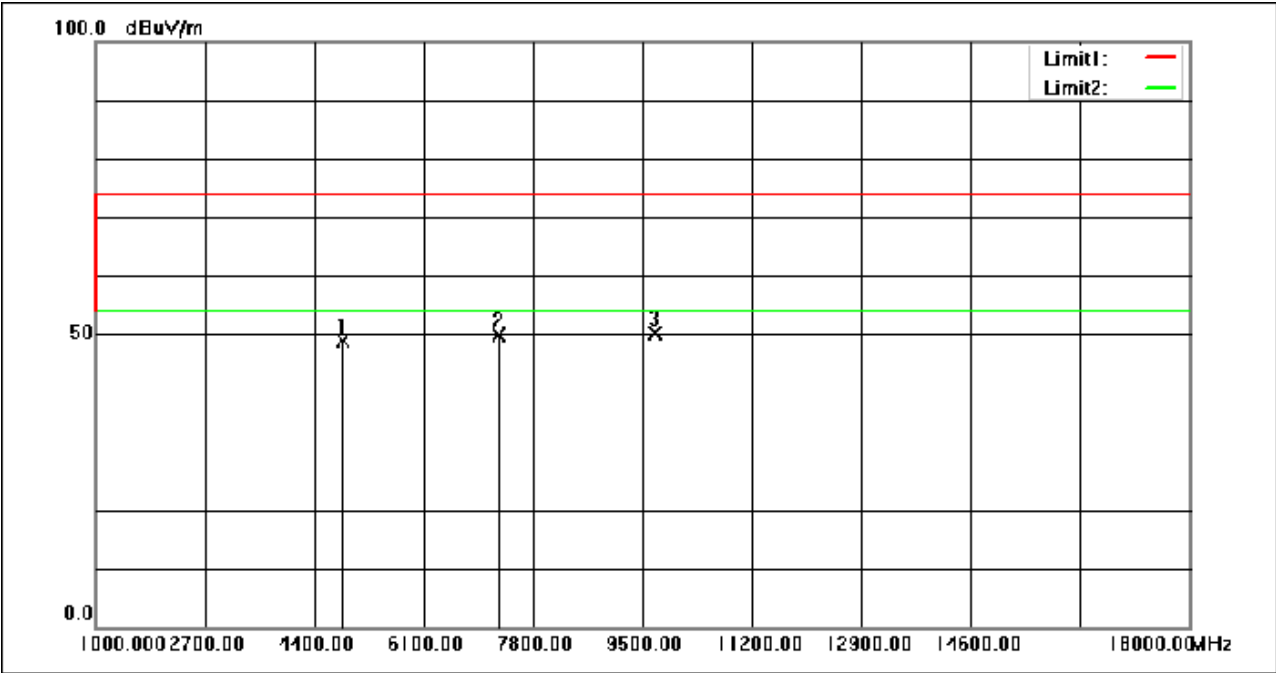
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Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel: 2424MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4848.000	57.64	-8.70	48.94	74.00	-25.06	peak
2	7272.000	55.67	-5.83	49.84	74.00	-24.16	peak
3	9696.000	51.50	-1.37	50.13	74.00	-23.87	peak



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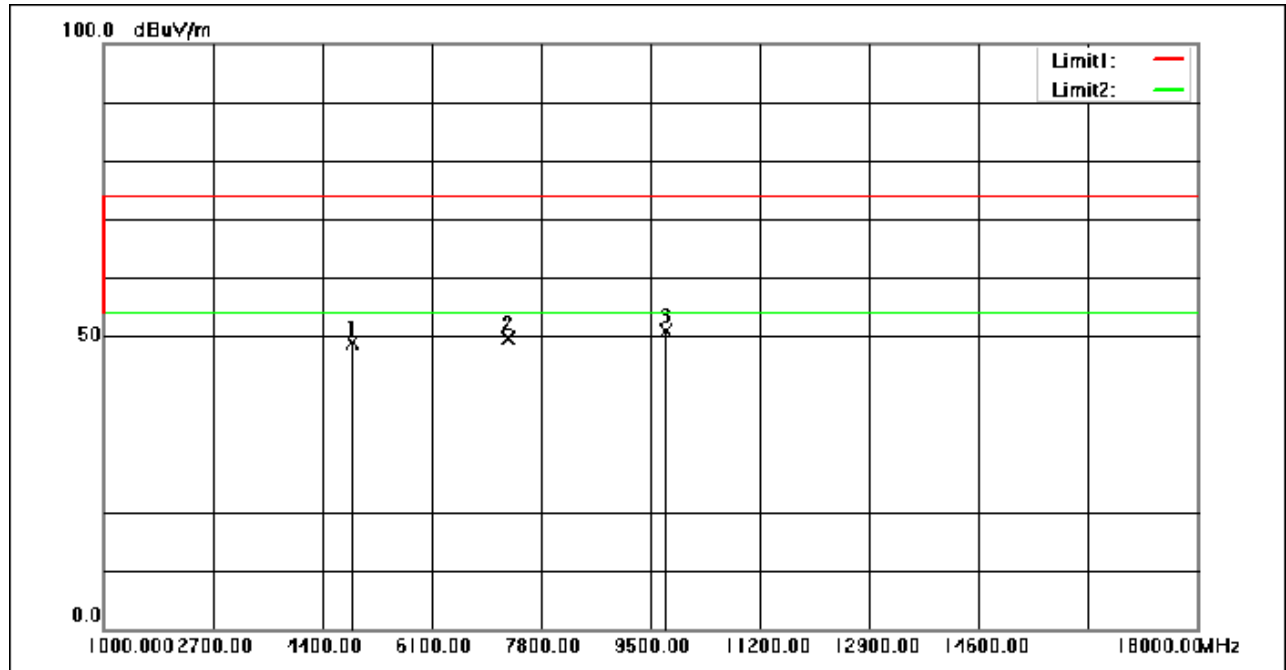
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Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4866.000	57.46	-8.64	48.82	74.00	-25.18	peak
2	7299.000	55.45	-5.79	49.66	74.00	-24.34	peak
3	9732.000	52.34	-1.41	50.93	74.00	-23.07	peak



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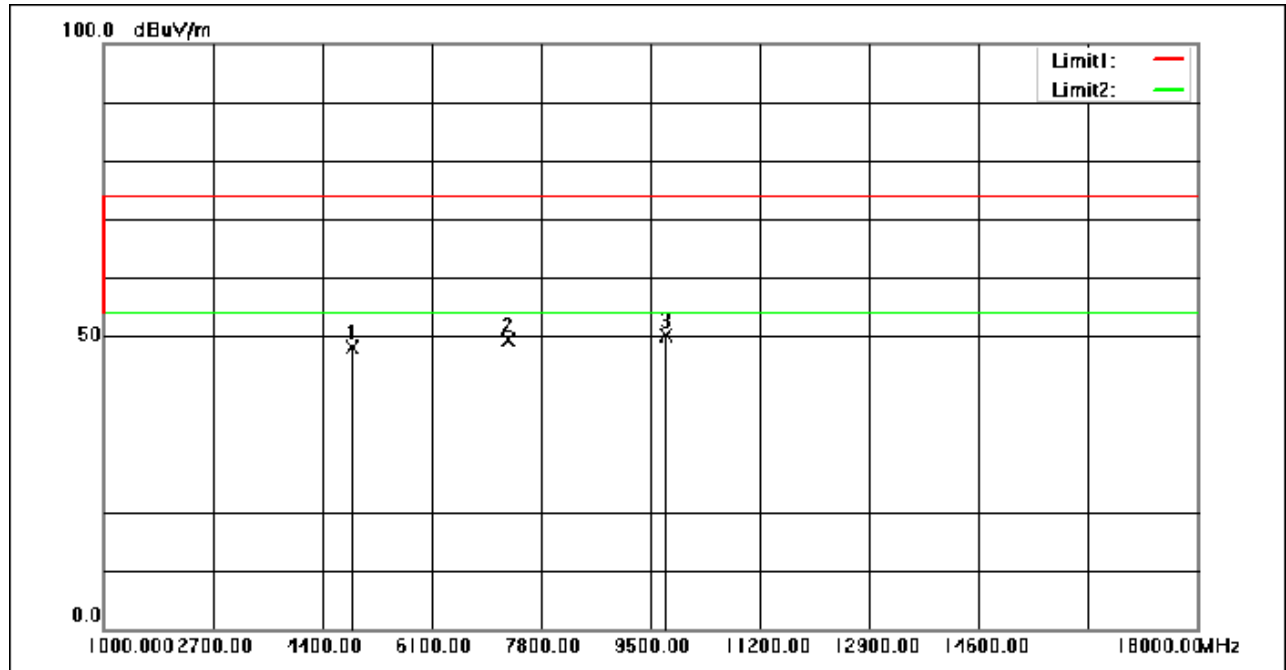
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Report No.: KSCR220800146001

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Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: 2433MHz



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4866.000	56.79	-8.64	48.15	74.00	-25.85	peak
2	7299.000	55.25	-5.79	49.46	74.00	-24.54	peak
3	9732.000	51.48	-1.41	50.07	74.00	-23.93	peak



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7.9 99% Bandwidth

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

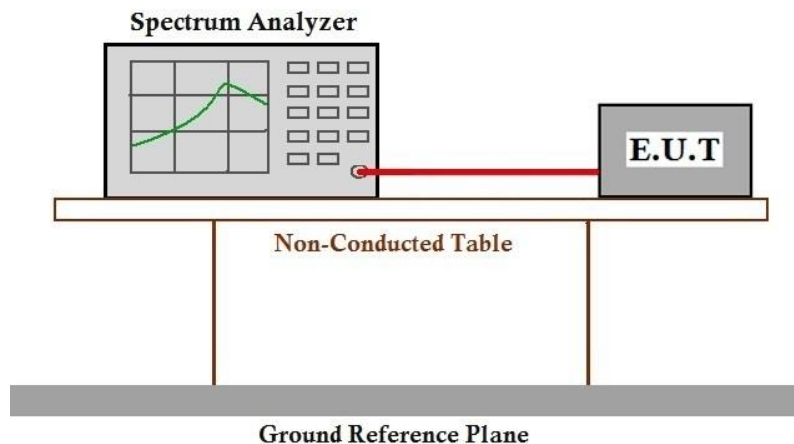
7.9.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

Please Refer to Appendix A for KSCR220800146001



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2208001460AT

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for KSCR2208001460AT



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10 Appendix

1. Duty Cycle

1.1 Ant1

1.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
GFSK	SISO	2406	0.627	0.860	72.91	1.37	6.13
		2424	0.627	0.858	73.08	1.36	10.48
		2433	0.628	0.836	75.12	1.24	9.72



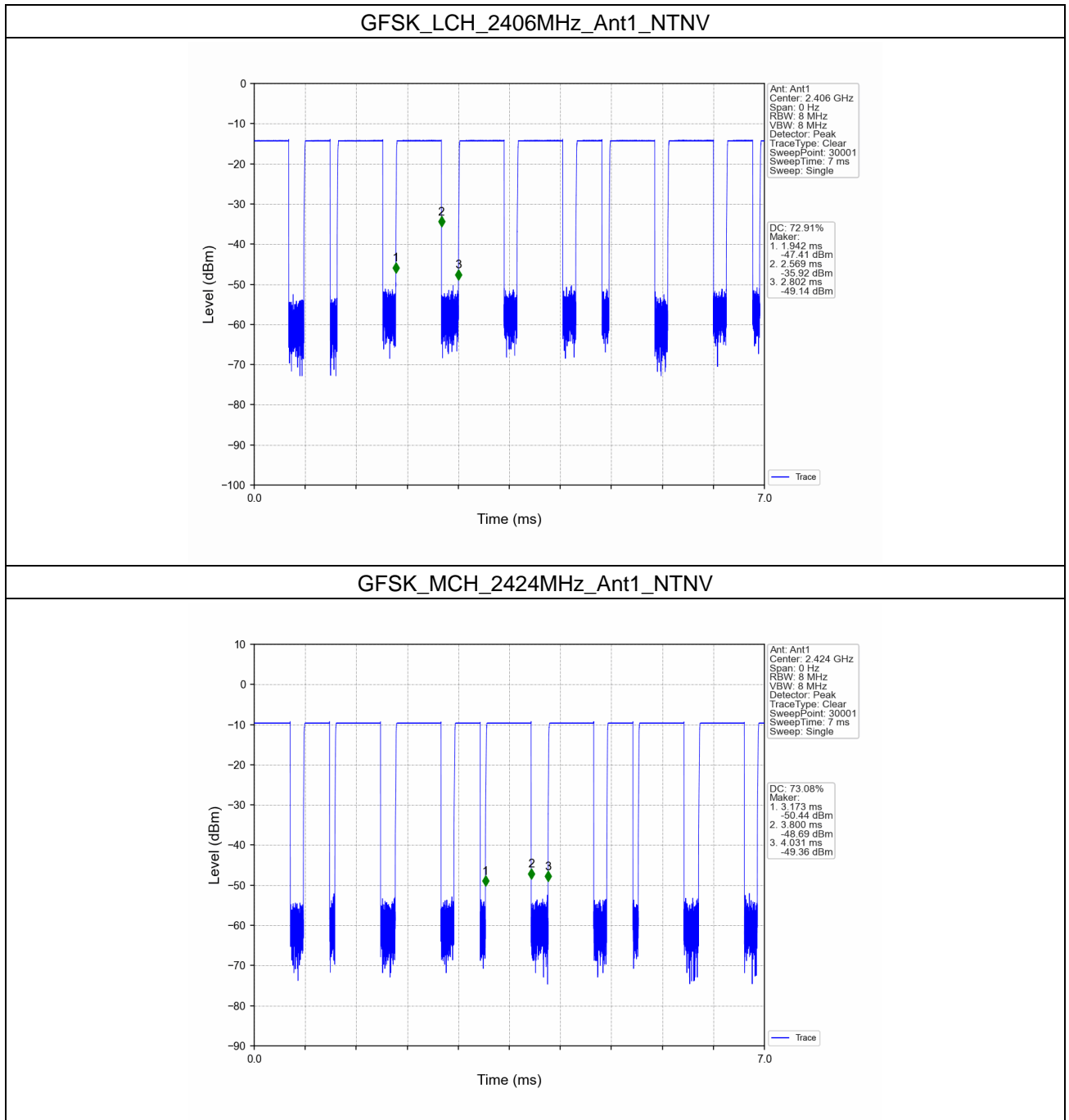
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1.1.2 Test Graph



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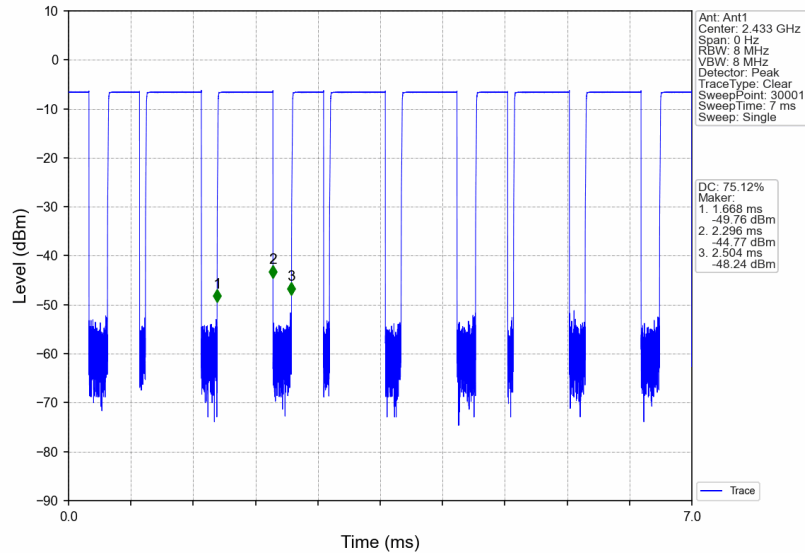
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2. Bandwidth

2.1 OBW

2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	Verdict
				Result	
GFSK	SISO	2406	1	1.083	Pass
		2424	1	1.139	Pass
		2433	1	1.379	Pass



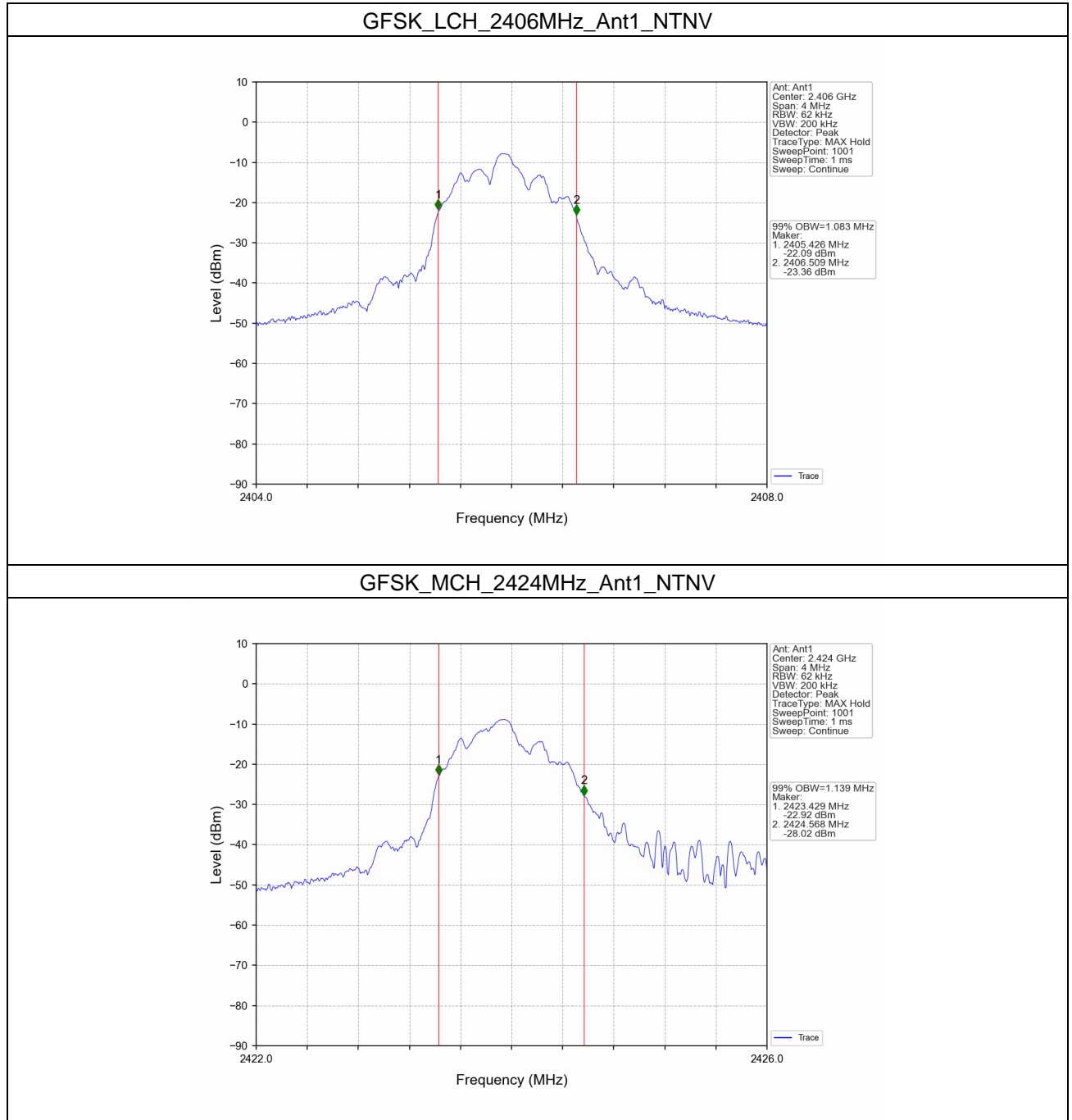
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2.1.2 Test Graph



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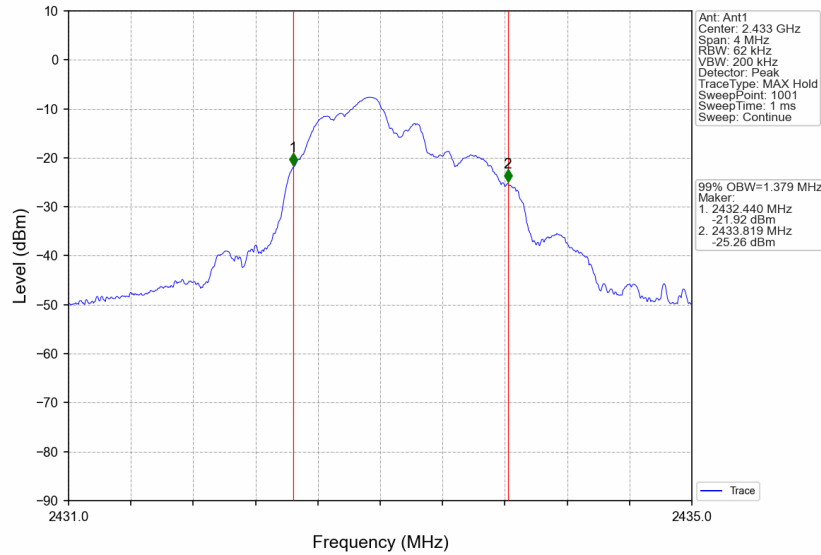
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2.2 6dB BW

2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
GFSK	SISO	2406	1	0.714	≥ 0.5	Pass
		2424	1	0.714	≥ 0.5	Pass
		2433	1	0.750	≥ 0.5	Pass



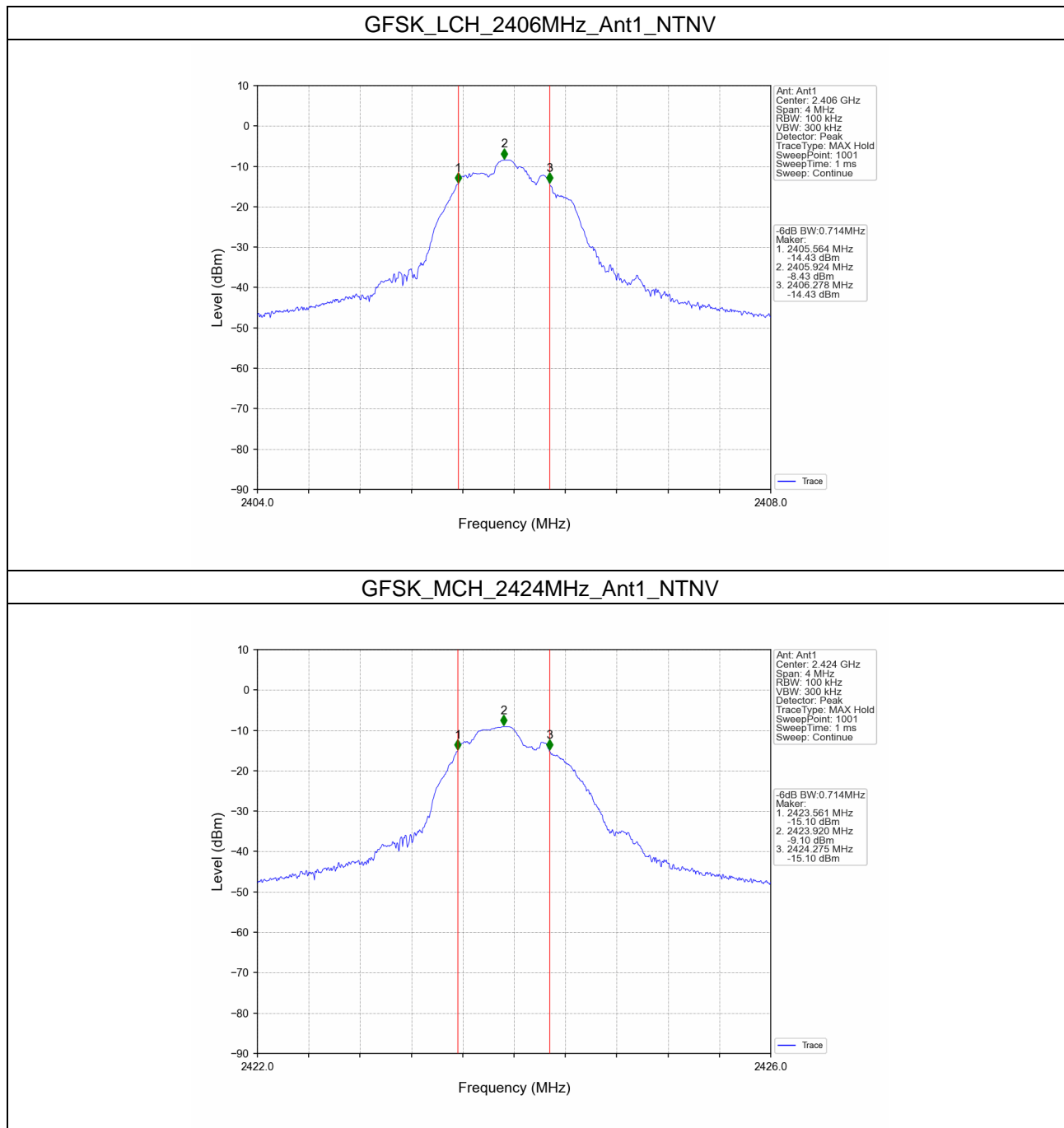
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2.2.2 Test Graph



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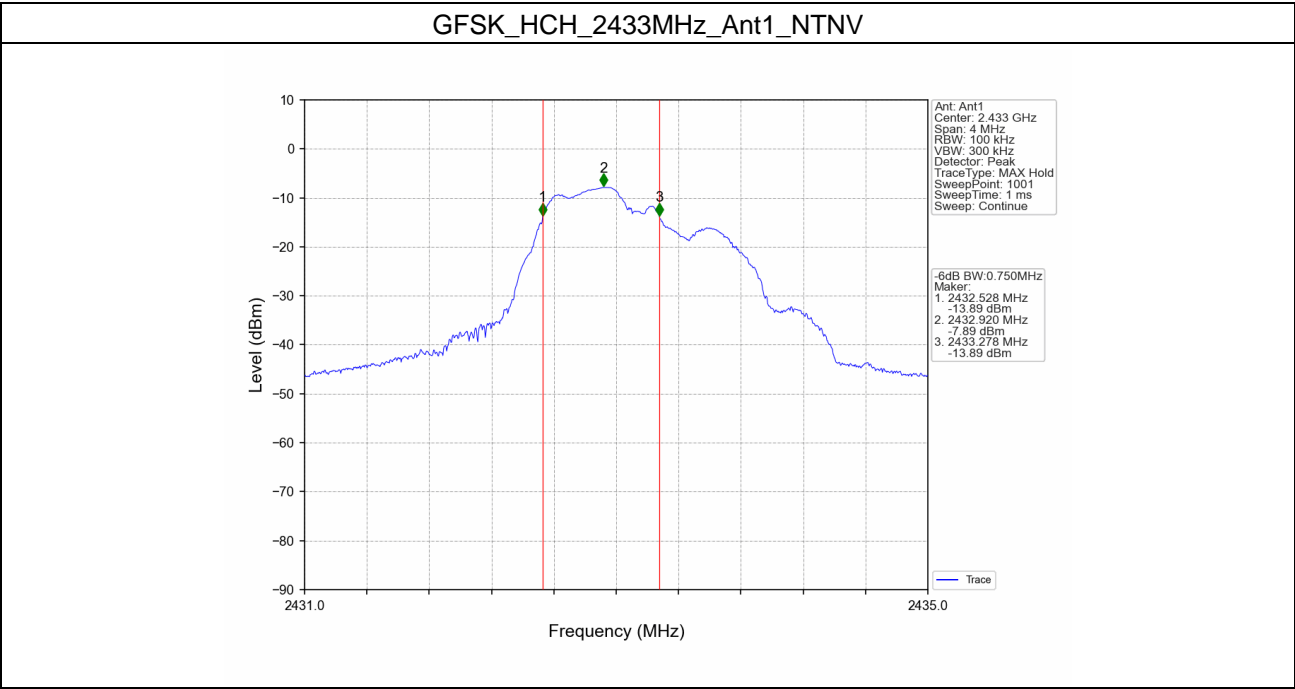
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3. Maximum Conducted Output Power

3.1 Power

3.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
GFSK	SISO	2406	-9.48	<=30	Pass
		2424	-8.52	<=30	Pass
		2433	-8.01	<=30	Pass

Note1: Antenna Gain: Ant1: 0.50dBi;



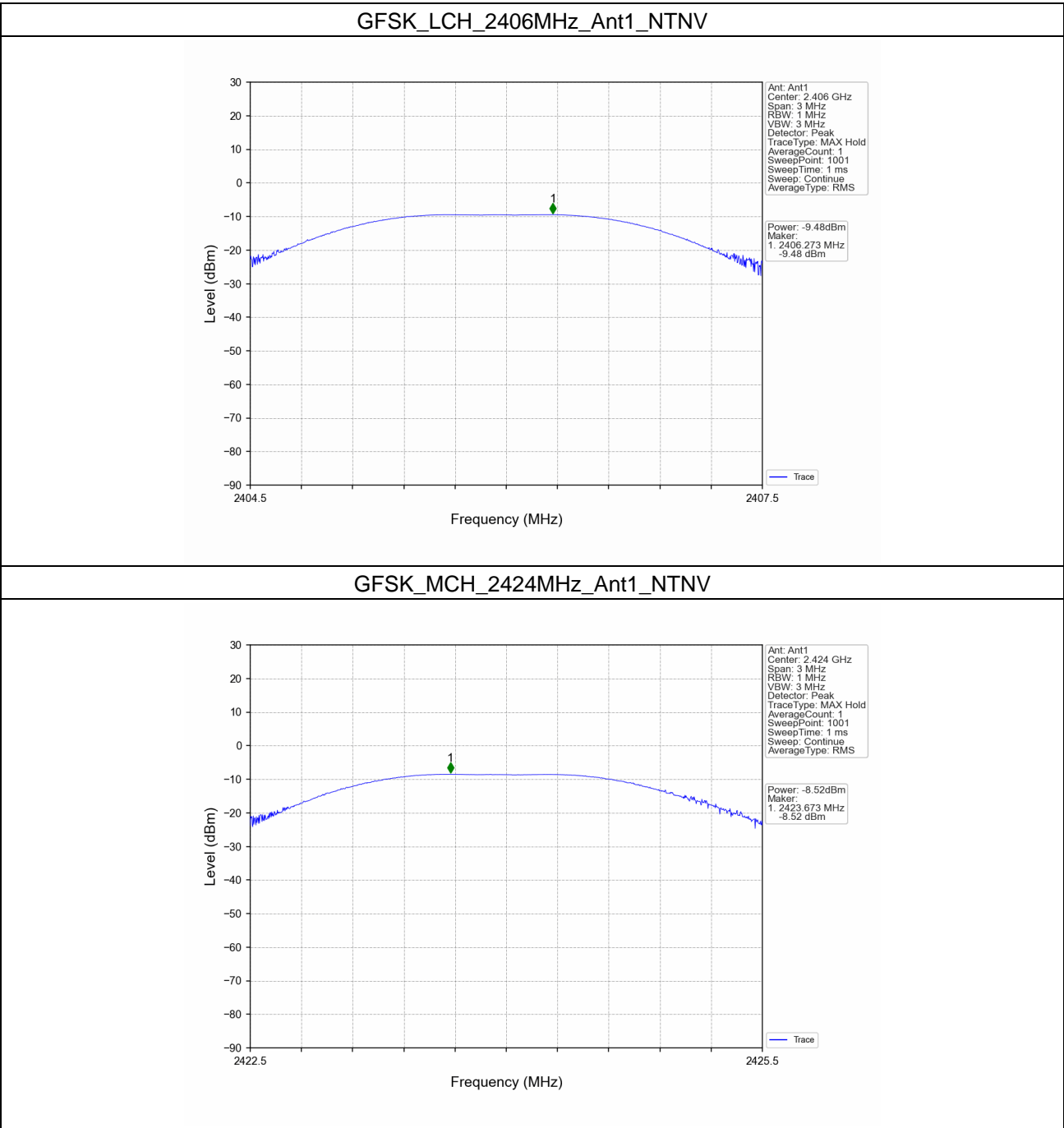
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3.1.2 Test Graph



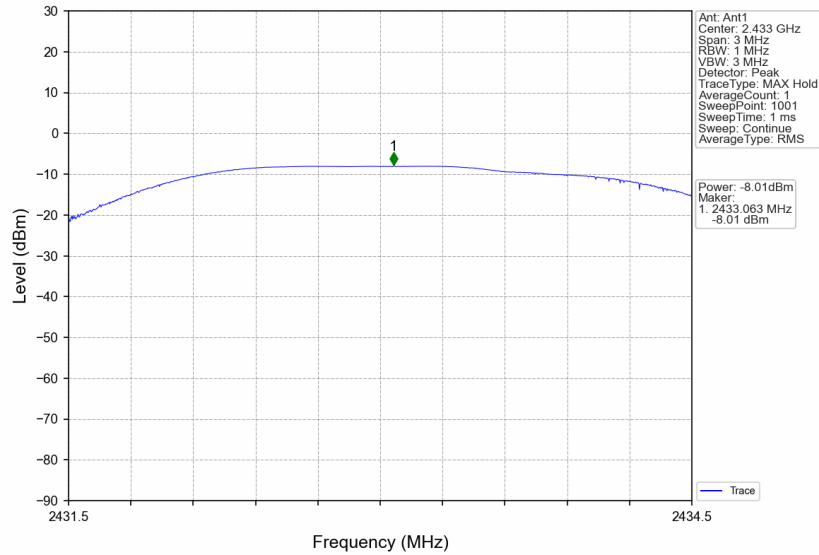
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4. Maximum Power Spectral Density

4.1 PSD

4.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
GFSK	SISO	2406	-17.74	<=8	Pass
		2424	-15.59	<=8	Pass
		2433	-14.01	<=8	Pass

Note1: Antenna Gain: Ant1: 0.50dBi;



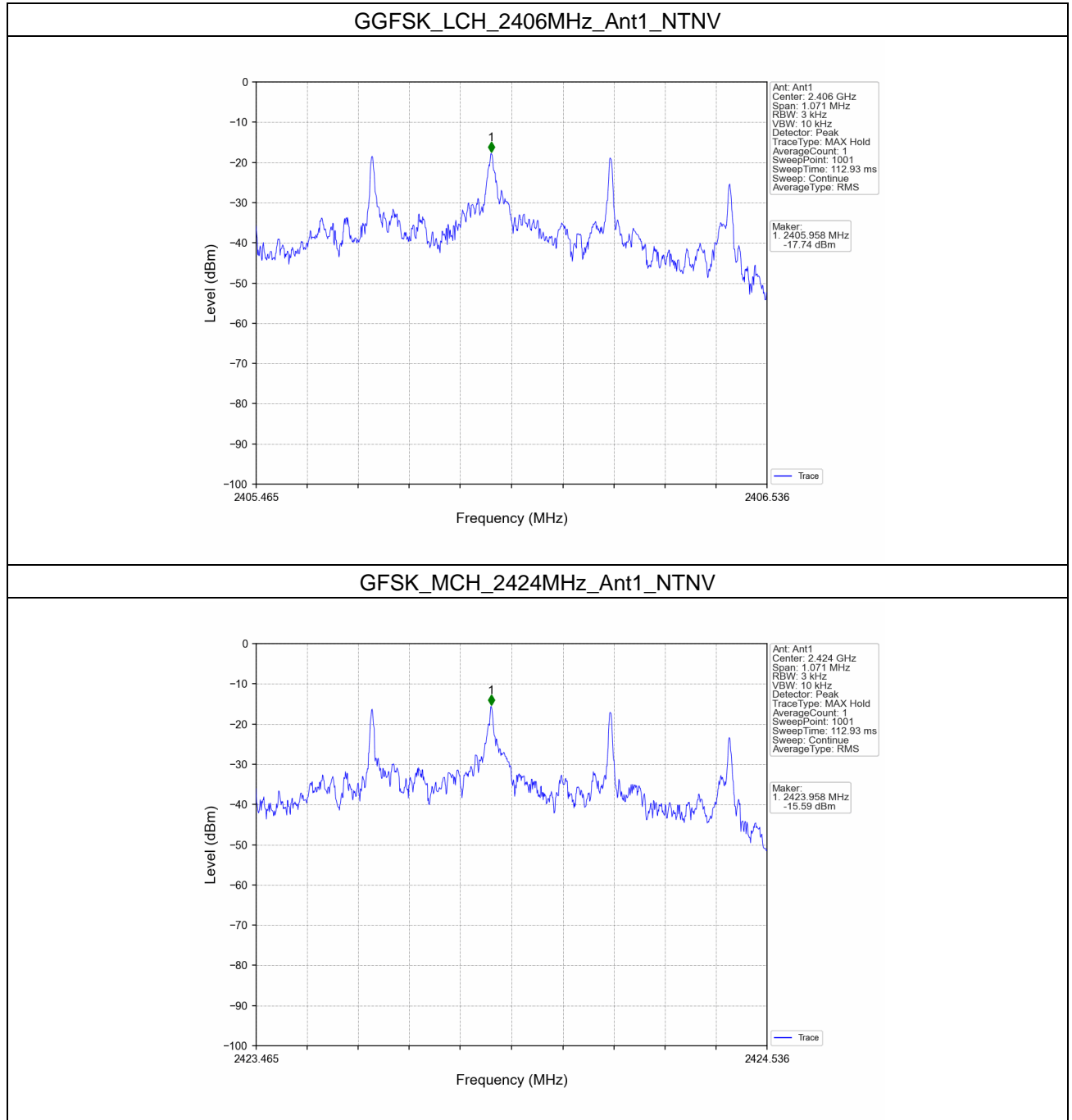
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4.1.2 Test Graph



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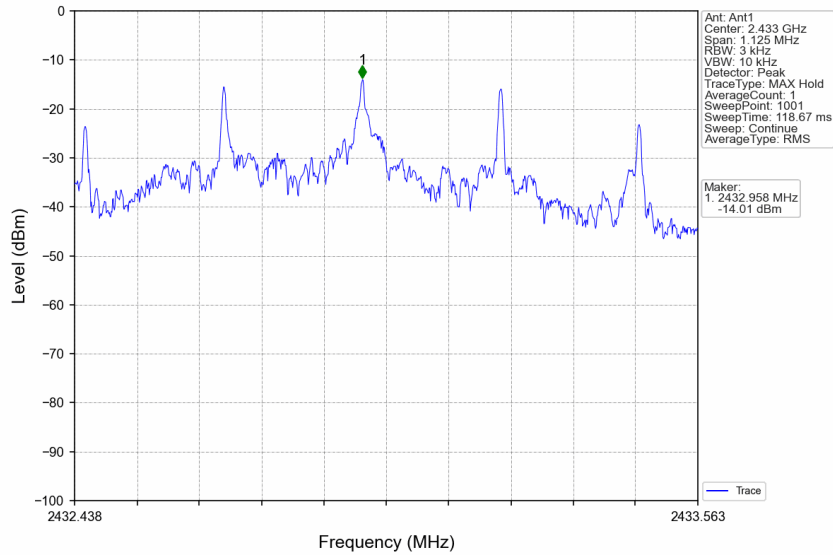
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5. Unwanted Emissions InStandard Non-restricted Frequency Bands

5.1 Ref

5.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
GGFSK	SISO	2406	1	-12.32
		2424	1	-8.76
		2433	1	-8.14

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

Note2: RBW = 1MHz was used during the pre-test. The final test will be performed at RBW=100kHz while the margin is less than 3dB.



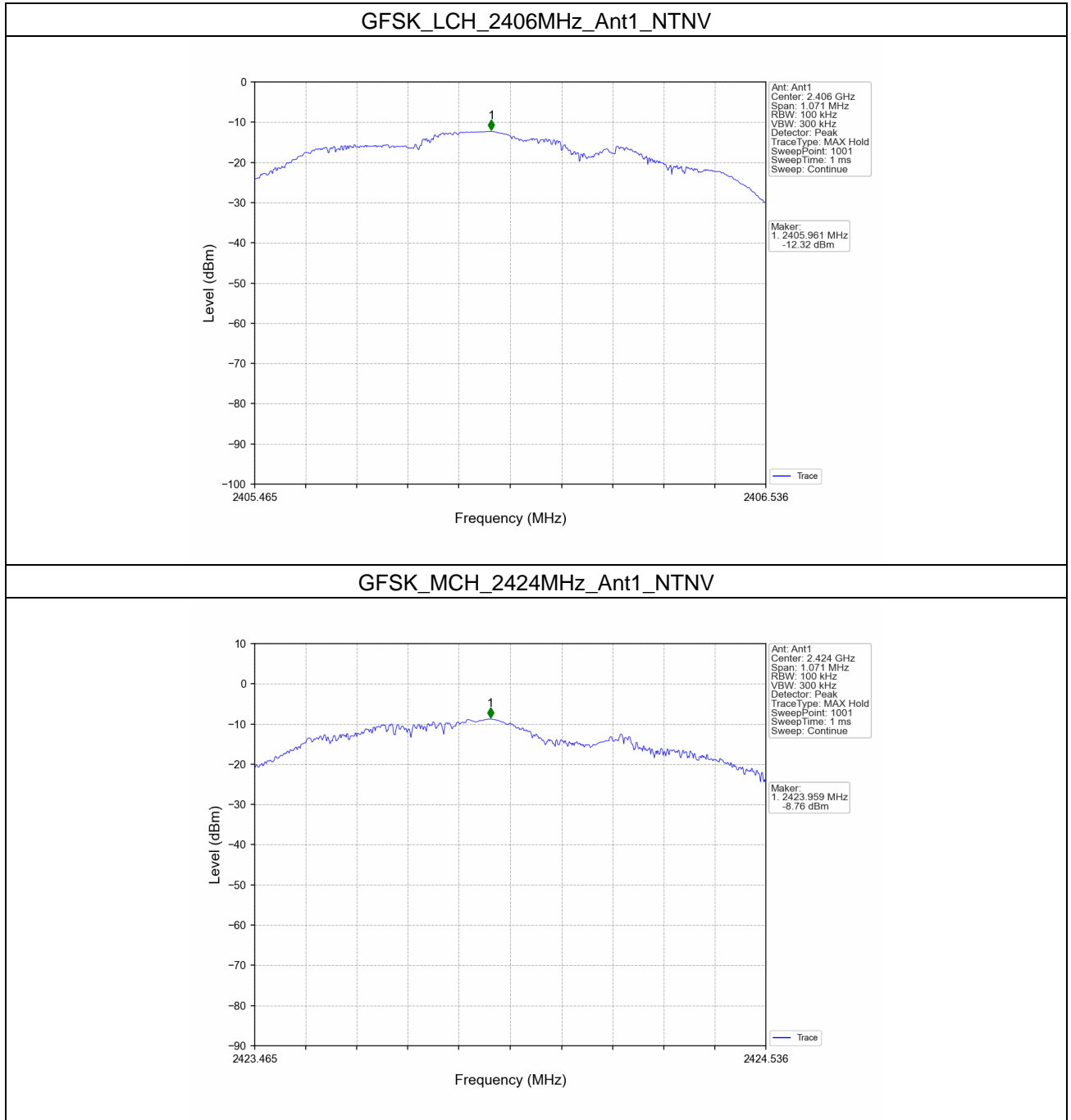
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5.1.2 Test Graph



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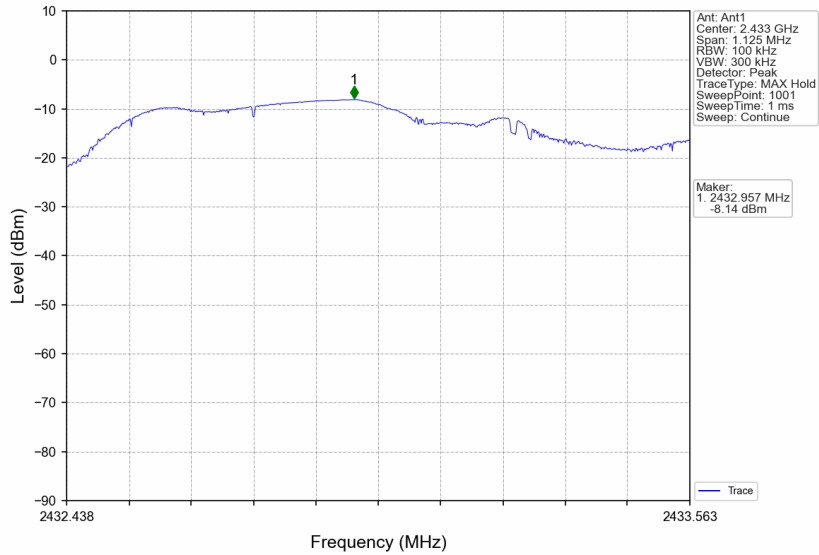
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5.2 CSE

5.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GGFSK	SISO	2406	1	-8.14	-28.14	Pass
		2424	1	-8.14	-28.14	Pass
		2433	1	-8.14	-28.14	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

Note2: RBW = 1MHz was used during the pre-test. The final test will be performed at RBW=100kHz while the margin is less than 3dB.



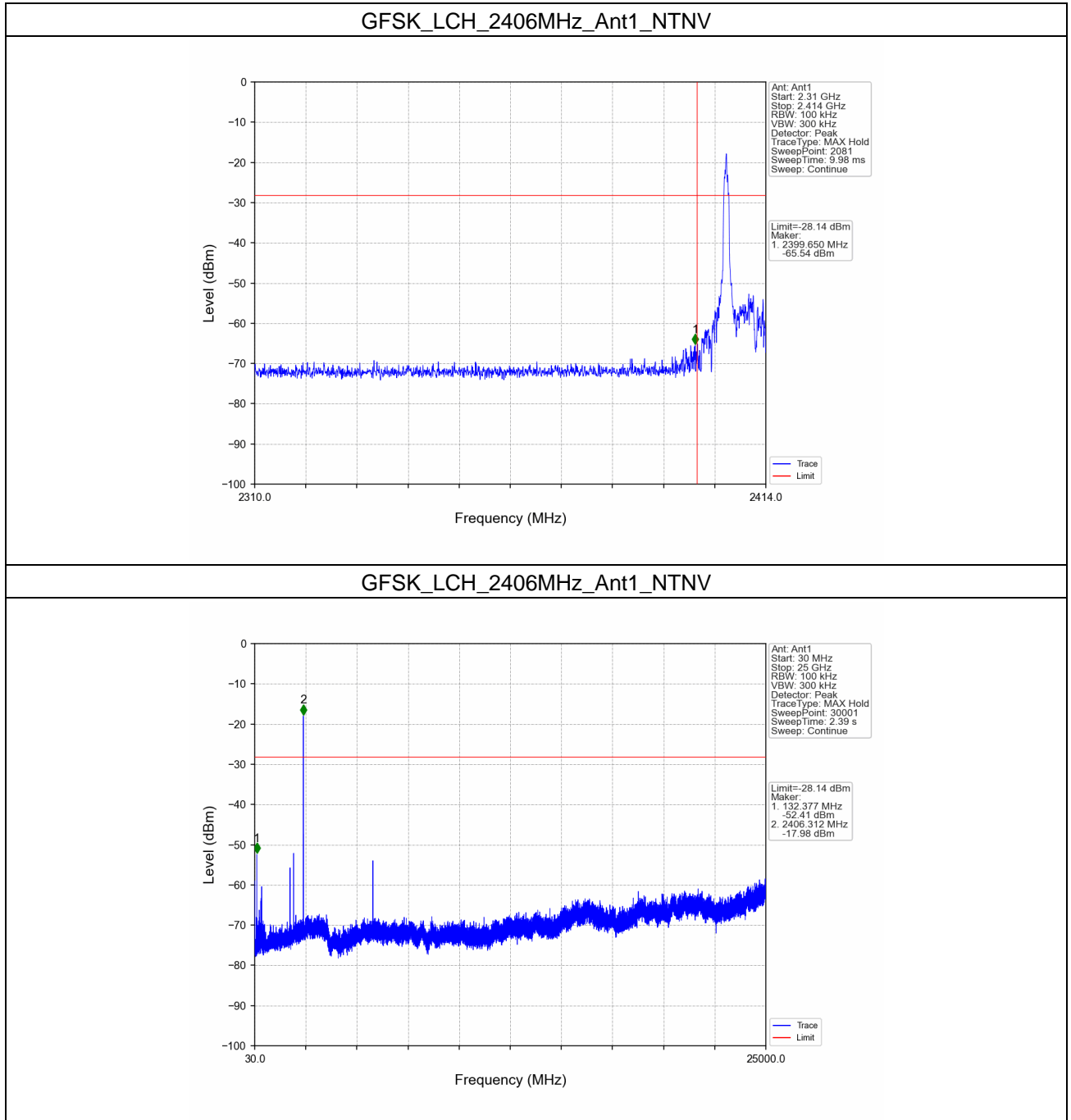
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5.2.2 Test Graph



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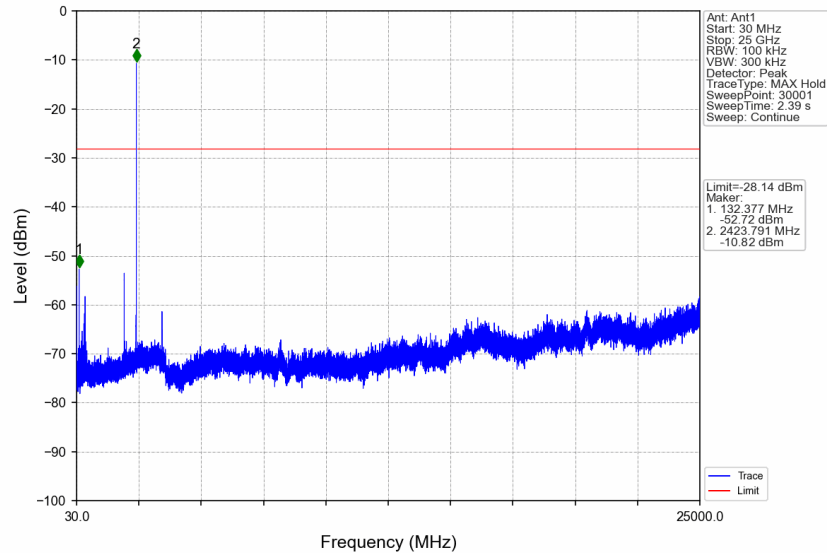
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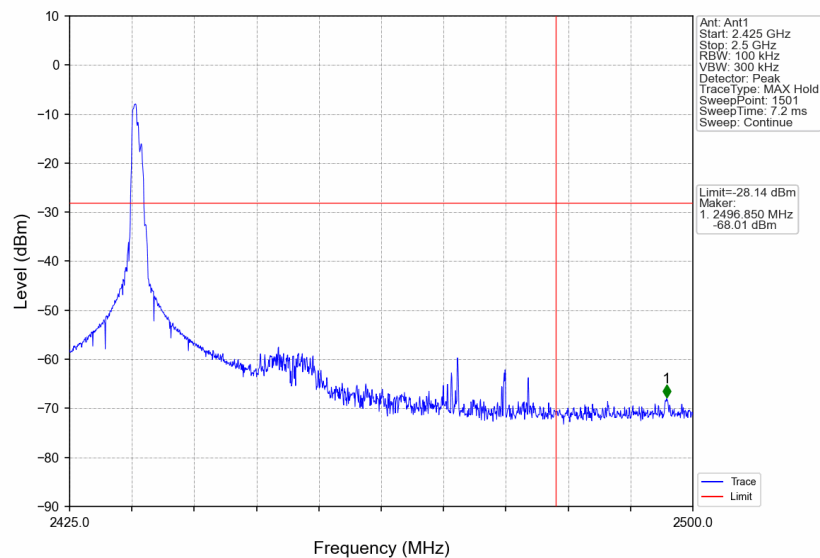
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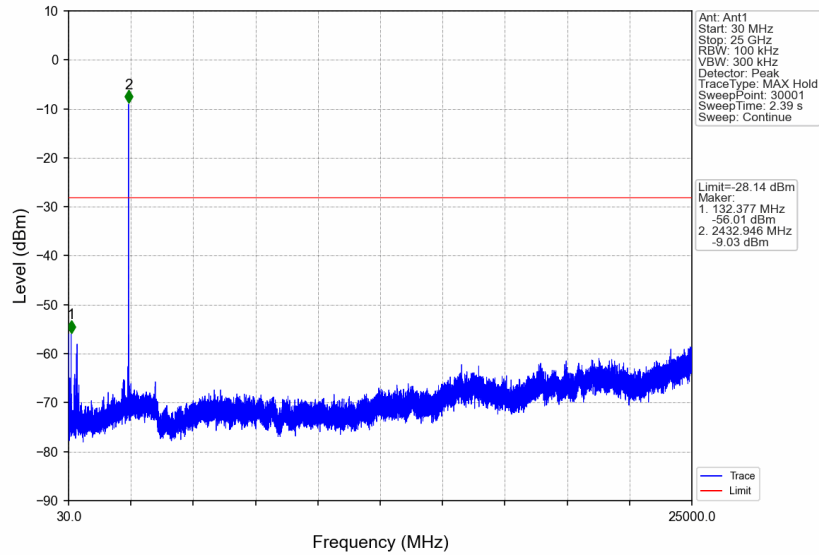
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