

TEST REPORT

Application No.: KSCR2509001972AT
FCC ID: 2BR6RFM8418G
Applicant: Shanghai Fudan Microelectronics Group Co.,Ltd.
Address of Applicant: No.220,Handan Road, Shanghai, China
Manufacturer: Shanghai Fudan Microelectronics Group Co.,Ltd.
Address of Manufacturer: No.220,Handan Road, Shanghai, China
Factory: Shanghai Fudan Microelectronics Group Co.,Ltd.
Address of Factory: No.220,Handan Road, Shanghai, China
Equipment Under Test (EUT):
EUT Name: UHF RFID Reader Module
Model No.: FM8418G01U01
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2025-09-08
Date of Test: 2025-09-24 to 2025-09-25
Date of Issue: 2025-09-26

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

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Revision Record			
Version	Description	Date	Remark
00	Original	2025-09-26	/

Authorized for issue by:			
Tested By		Kass Gao	
		Kass_Gao/Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Customer Declaration

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2020) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2020) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2020) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2020) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2020) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(2)	Pass
20dB Bandwidth		ANSI C63.10 (2020) Section 6.9.2	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Carrier Frequencies Separation		ANSI C63.10 (2020) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass
Hopping Channel Number		ANSI C63.10 (2020) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(i)	Pass
Dwell Time		ANSI C63.10 (2020) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(i)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2020) Section 7.8.7.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2020) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(d)	Pass

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 5V
Operation Frequency:	902.75MHz to 927.25MHz
Modulation Type:	FSK
Number of Channels:	50
Channel Spacing:	500kHz
Antenna Type:	Circularly Polarized Panel Antenna
Antenna Gain:	6dBi (Provided by the manufacturer)
Antenna Number:	1
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)

4.2 Power level setting using in test

Channel	FSK
	Ant 1
1	300
26	300
50	300

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	LENOVO	K27	EB24537645
Adapter	YIDAI	YD-BG1200250CN-5A	/

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.		

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

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	KS301196	07/09/2025	07/08/2026
2	LISN	R&S	ENV216	KS301197	01/15/2025	01/14/2026
3	LISN	Schwarzbeck	NNLK 8129	KS301091	01/15/2025	01/14/2026
4	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	12/05/2024	12/04/2025
5	CE test Cable	Thermax	/	CZ301102	01/14/2025	01/13/2026
6	Test Software	Farad	EZ-EMC	/	N.C.R	N.C.R
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	07/09/2025	07/08/2026
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	07/09/2025	07/08/2026
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2025	01/14/2026
4	Signal Generator	R&S	SMBV100B	KSEM032	02/19/2025	02/18/2026
5	Signal Generator	R&S	SMW200A	KSEM020-1	07/09/2025	07/08/2026
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	07/08/2025	07/07/2026
7	Signal Generator	Agilent	E8257C	KS301066	07/22/2025	07/21/2026
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	07/09/2025	07/08/2026
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	02/19/2025	02/18/2026
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	07/08/2025	07/07/2026
11	Switcher	TST	FY562	KUS2001M001-4	01/15/2025	01/14/2026
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/14/2025	01/13/2026
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	07/15/2025	07/14/2026
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	02/26/2025	02/25/2026
15	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	07/09/2025	07/08/2026
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	02/18/2025	02/17/2026
3	Signal Generator	Agilent	E8257C	KS301066	07/22/2025	07/21/2026
4	Loop Antenna (9KHz-30MHz)	COM-POWER	AL-130R	KUS1806E001	07/11/2025	07/10/2026
5	Bilog Antenna (30MHz-1GHz)	TESEQ	CBL 6112D	KUS1806E005	07/12/2025	07/11/2026
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	03/23/2024	03/22/2026
7	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024	01/06/2026
8	Amplifier(30MHz~1GHz)	TST	LNA009100G30	KSEM061	01/15/2025	01/14/2026
9	Amplifier(400MHz~8GHz)	TST	LNA004080G30	KSEM062	01/15/2025	01/14/2026
10	Amplifier(1GHz~18GHz)	TST	LNA010180G45	KSEM039	07/09/2025	07/08/2026
11	Amplifier(18~40GHz)	TST	LNA180400G40	KSEM038	07/09/2025	07/08/2026
12	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	02/26/2025	02/25/2026
13	Software	Faratronic	EZ EMC-v 3A1	/	NCR	NCR
14	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 is Circularly Polarized Panel Antenna and no consideration of replacement. The best case gain of the antenna is 6dBi.

Antenna location: Refer to ExternalPhoto.

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 (2020) 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: 24.9 °C

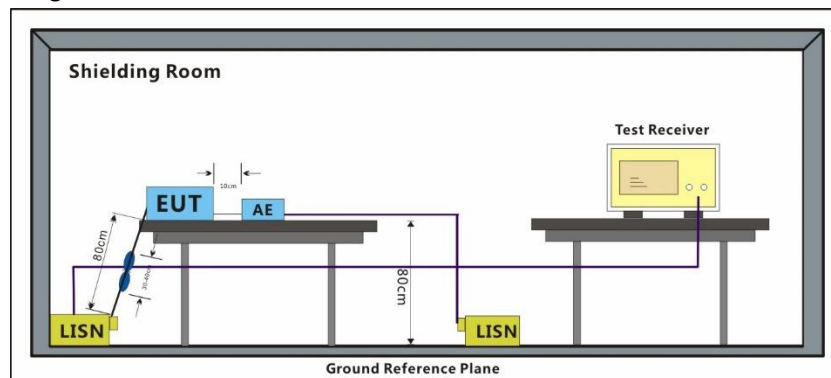
Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.1.3 Test Setup Diagram



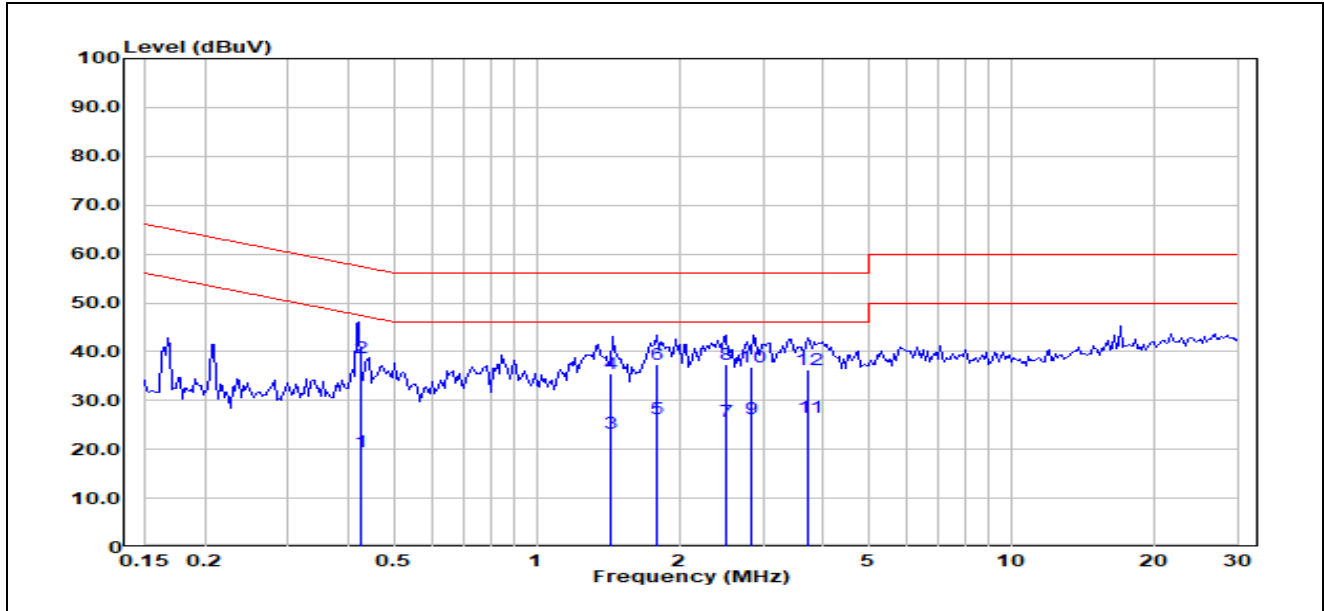
7.1.4 Measurement Procedure and Data

- 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 50ohm/50μH + 5ohm 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 : $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{LISN Factor}$

Test Mode: 01; Line: Live line

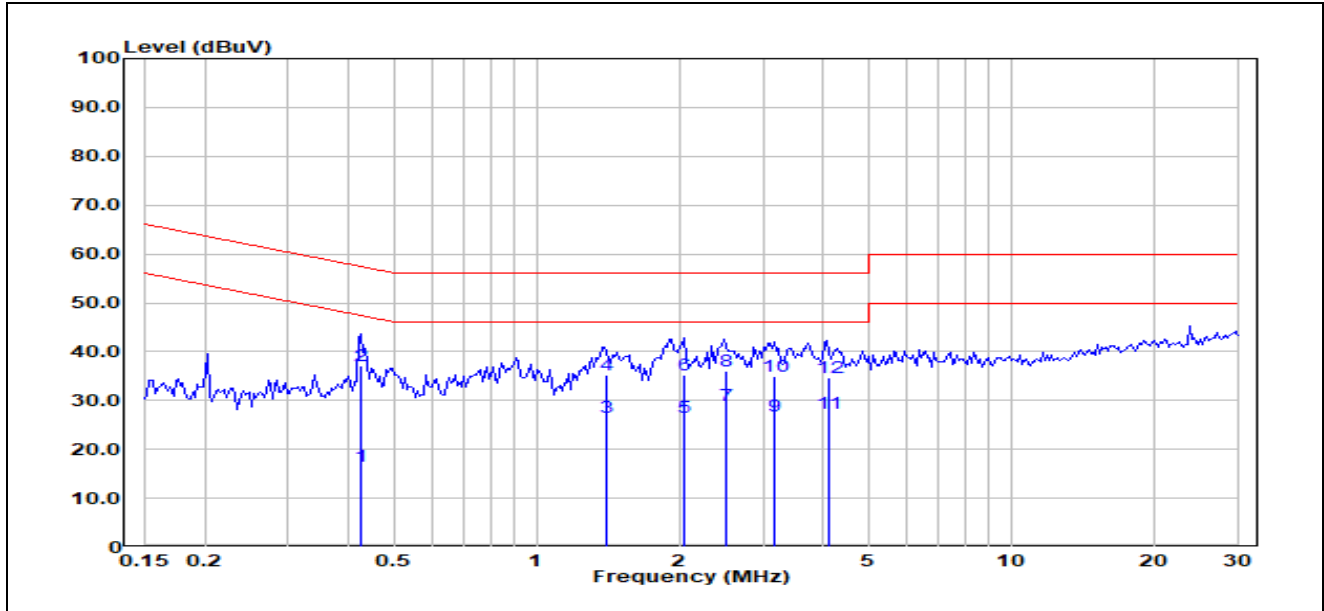
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4268	-0.60	20.13	19.53	47.32	-27.78	Average
2	0.4268	18.68	20.13	38.81	57.32	-18.50	QP
3	1.4380	2.90	20.49	23.39	46.00	-22.61	Average
4	1.4380	14.99	20.49	35.48	56.00	-20.52	QP
5	1.7870	5.71	20.57	26.28	46.00	-19.72	Average
6	1.7870	16.74	20.57	37.31	56.00	-18.69	QP
7	2.5000	4.99	20.73	25.72	46.00	-20.28	Average
8	2.5000	16.60	20.73	37.33	56.00	-18.67	QP
9	2.8300	5.50	20.79	26.29	46.00	-19.71	Average
10	2.8300	16.18	20.79	36.97	56.00	-19.03	QP
11	3.7460	5.43	21.01	26.44	46.00	-19.56	Average
12	3.7460	15.28	21.01	36.29	56.00	-19.71	QP

Test Mode: 01; Line: Neutral Line

Test Data :



No.	Frequency (MHz)	Reading (dBUV)	Correct Factor(dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Remark
1	0.4259	-3.56	20.14	16.58	47.33	-30.75	Average
2	0.4259	17.11	20.14	37.25	57.33	-20.08	QP
3	1.4000	6.12	20.43	26.55	46.00	-19.45	Average
4	1.4000	14.67	20.43	35.10	56.00	-20.90	QP
5	2.0570	5.91	20.58	26.49	46.00	-19.51	Average
6	2.0570	14.63	20.58	35.21	56.00	-20.79	QP
7	2.5080	8.14	20.76	28.90	46.00	-17.10	Average
8	2.5080	15.41	20.76	36.17	56.00	-19.83	QP
9	3.1760	5.77	20.97	26.74	46.00	-19.26	Average
10	3.1760	13.99	20.97	34.96	56.00	-21.04	QP
11	4.1330	6.17	21.27	27.44	46.00	-18.56	Average
12	4.1330	13.40	21.27	34.67	56.00	-21.33	QP

7.2 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 (2020) 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.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

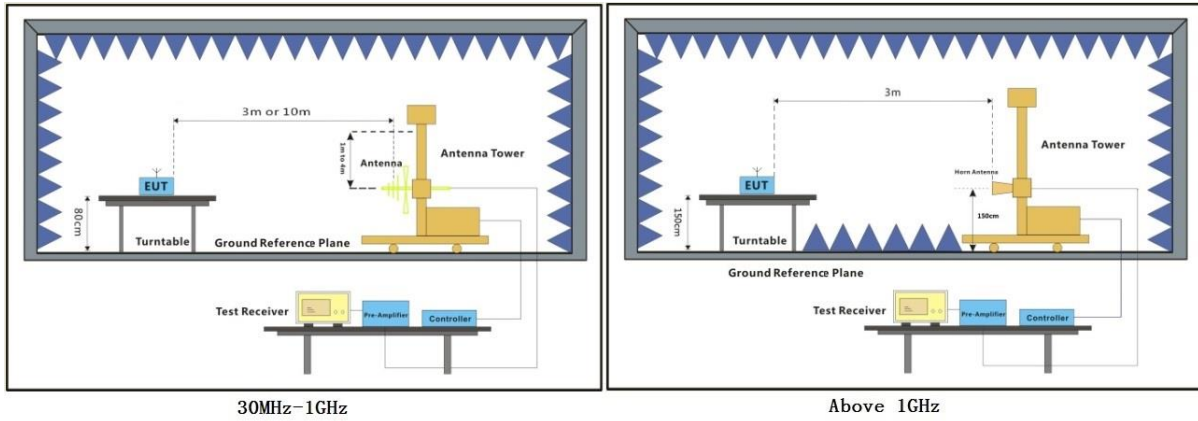
Humidity: 45.8 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.2.3 Test Setup Diagram



7.2.4 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: $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$

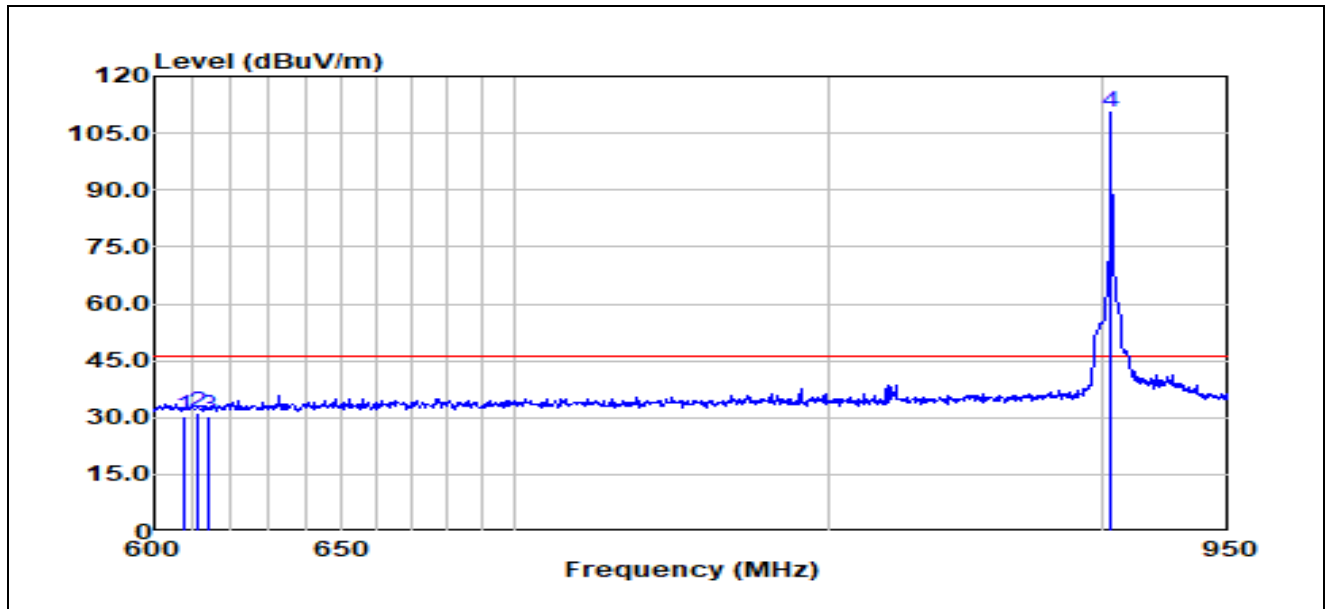
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 4: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

Test Mode: 01; Polarity: Horizontal; Channel: Low

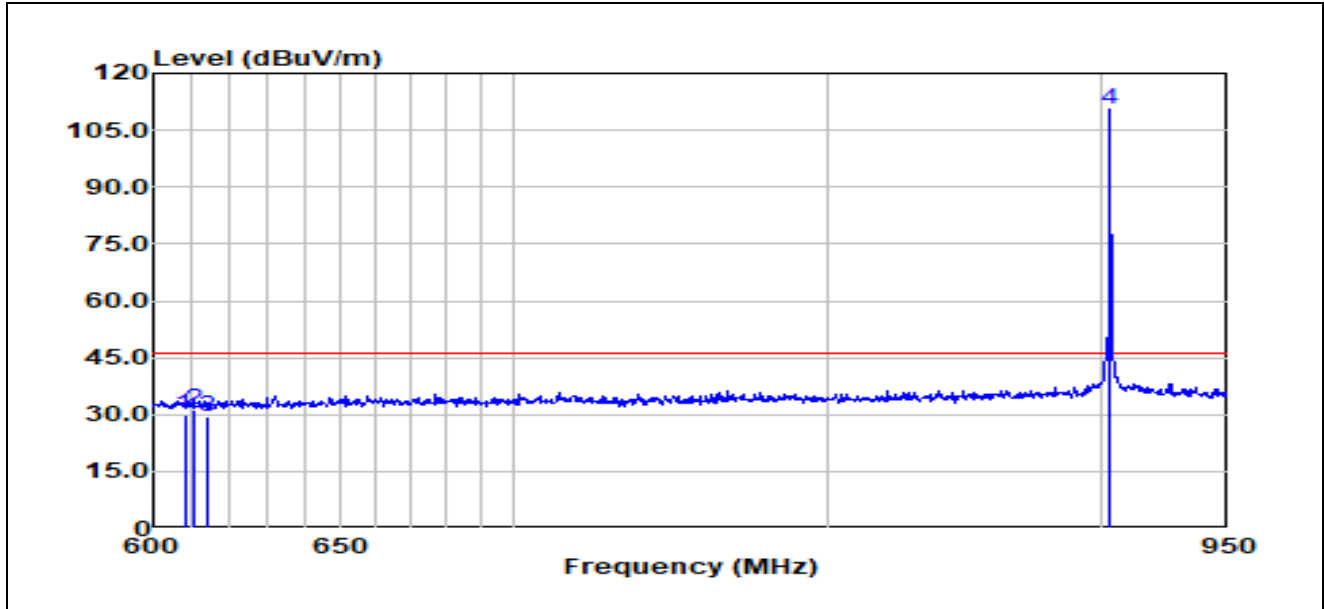
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	608.00	1.79	28.74	30.53	46.00	-15.47	QP
2	611.41	2.35	28.71	31.06	46.00	-14.94	QP
3	614.00	1.48	28.75	30.23	46.00	-15.77	QP
4	902.76	78.90	31.47	110.37	46.00	64.37	Peak

Test Mode: 01; Polarity: Vertical; Channel: Low

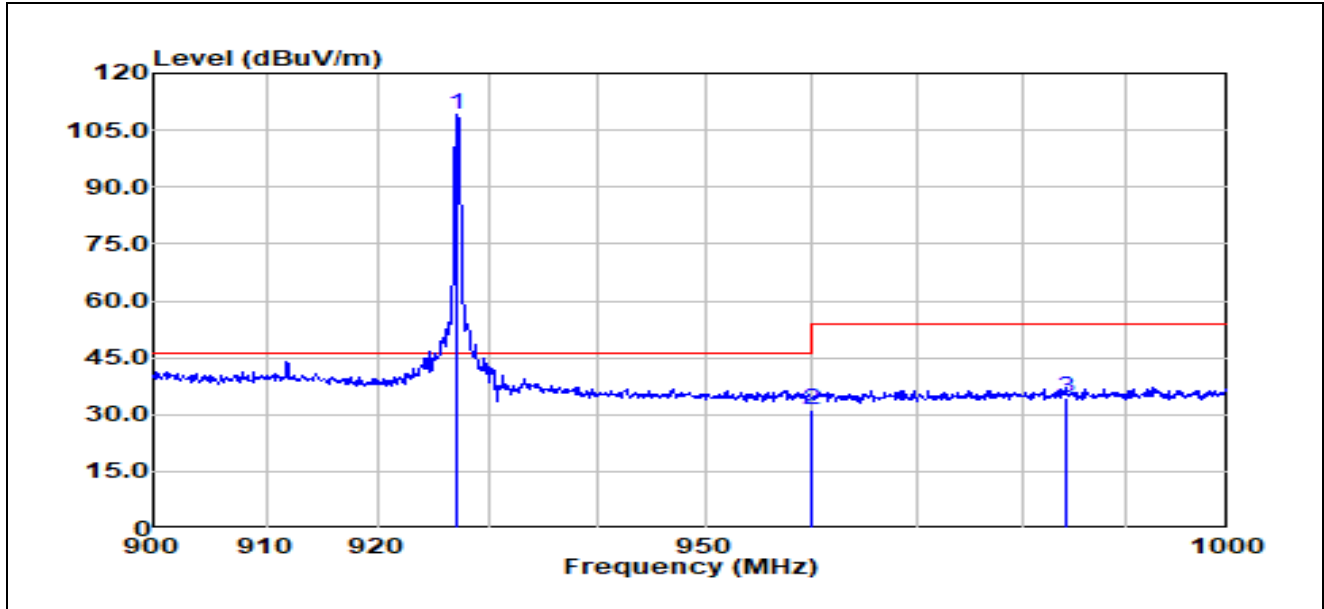
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	608.00	1.32	28.74	30.06	46.00	-15.94	QP
2	610.29	2.31	28.82	31.13	46.00	-14.87	QP
3	614.00	0.85	28.75	29.60	46.00	-16.40	QP
4	902.76	78.80	31.47	110.27	46.00	64.27	Peak

Test Mode: 01; Polarity: Horizontal; Channel: High

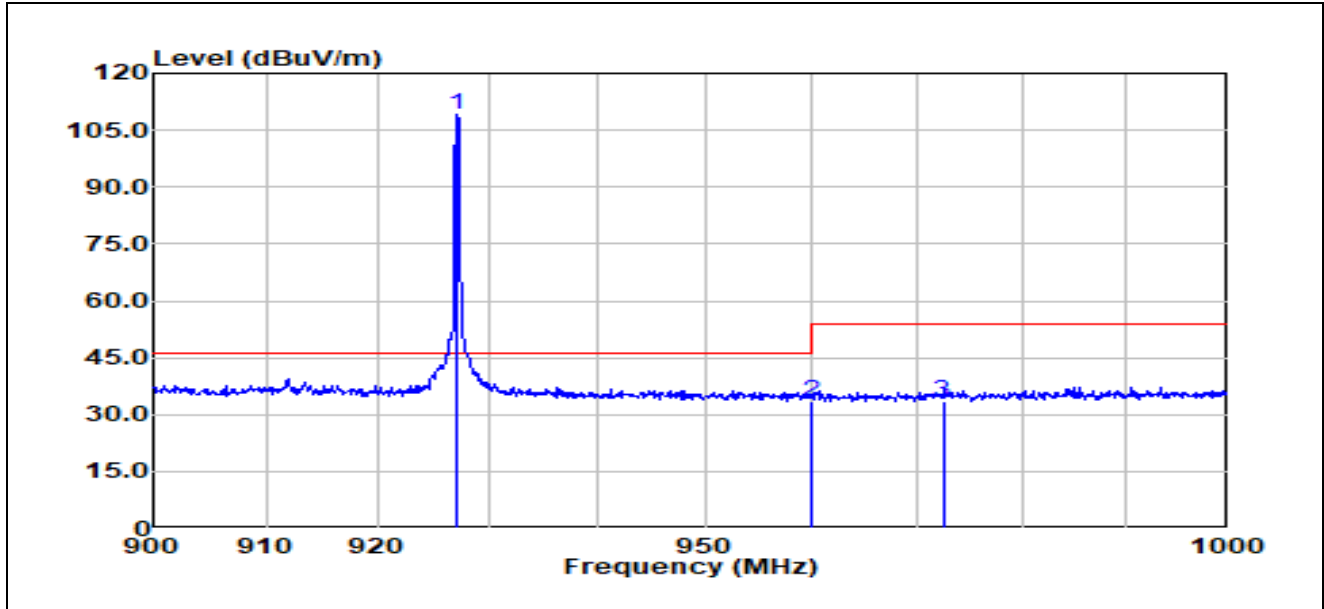
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	927.20	77.96	31.12	109.08	46.00	63.08	Peak
2	960.00	0.17	31.06	31.23	46.00	-14.77	QP
3	984.10	2.84	31.36	34.20	54.00	-19.80	QP

Test Mode: 01; Polarity: Vertical; Channel: High

Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	927.20	78.20	31.12	109.32	46.00	63.32	Peak
2	960.00	2.28	31.06	33.34	46.00	-12.66	QP
3	972.40	2.58	31.06	33.64	54.00	-20.36	QP

7.3 Radiated Spurious Emissions Below 1GHz

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

Test Method: ANSI C63.10 (2020) 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

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

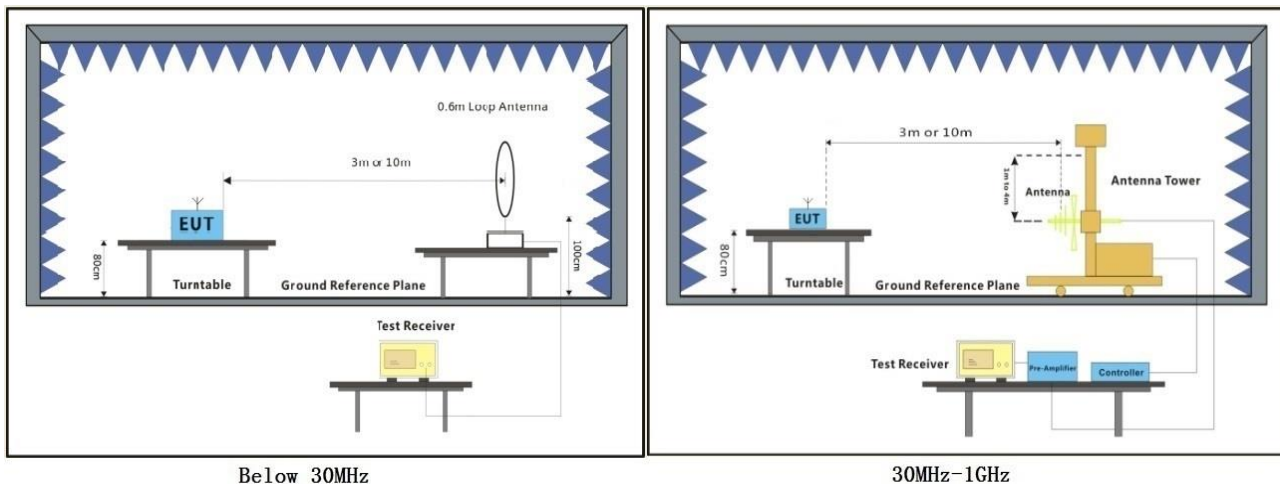
Humidity: 45.8 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

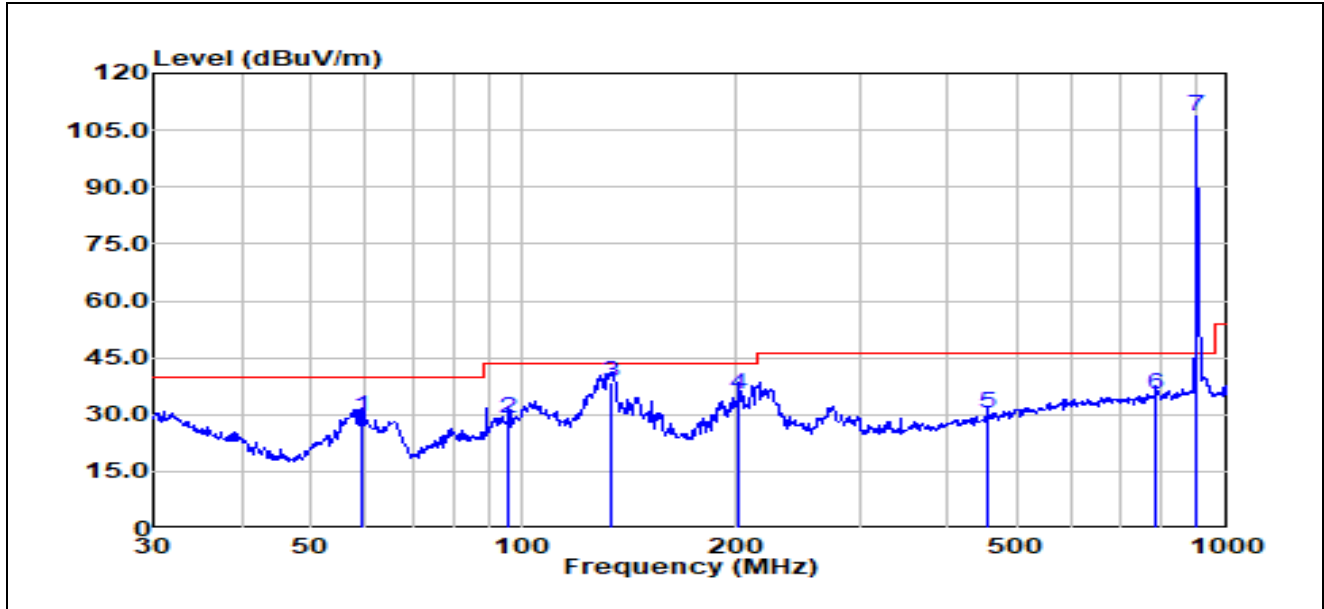
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, 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. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$
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.

Test Mode: 01; Polarity: Horizontal; Channel: Low

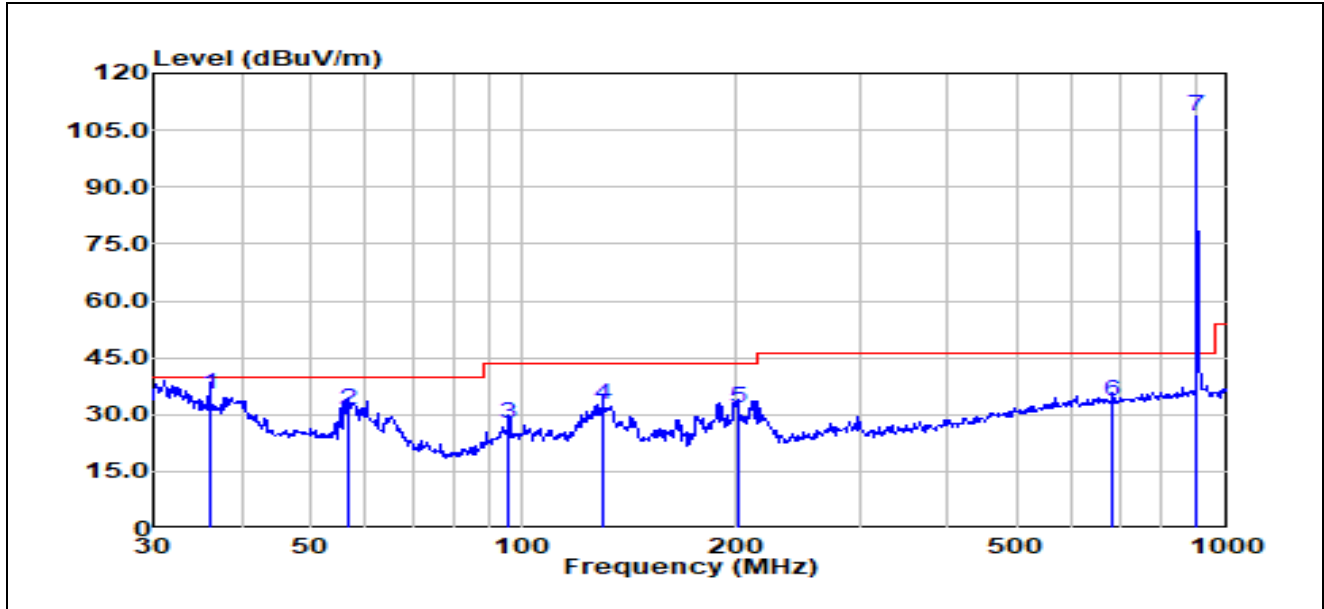
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	59.03	18.16	11.45	29.61	40.00	-10.39	QP
2	95.76	11.01	17.77	28.78	43.50	-14.72	QP
3	133.15	18.46	19.96	38.42	43.50	-5.08	QP
4	202.81	18.29	17.21	35.49	43.50	-8.01	QP
5	455.91	4.90	25.25	30.15	46.00	-15.85	QP
6	790.62	5.17	30.30	35.47	46.00	-10.53	QP
7	903.31	77.38	31.36	108.74	46.00	62.74	Peak

Test Mode: 01; Polarity: Vertical; Channel: Low

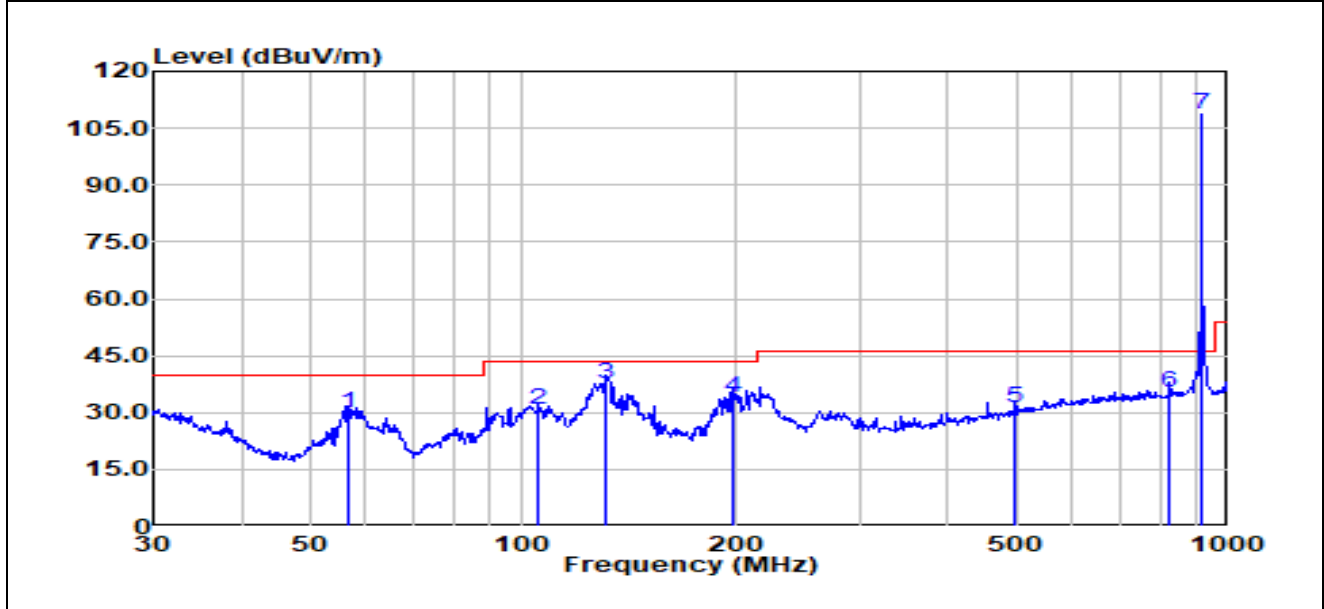
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.00	14.31	21.17	35.48	40.00	-4.52	QP
2	56.79	19.35	12.08	31.43	40.00	-8.57	QP
3	95.76	9.94	17.77	27.71	43.50	-15.79	QP
4	129.92	12.37	20.34	32.71	43.50	-10.79	QP
5	202.10	14.73	17.17	31.90	43.50	-11.60	QP
6	684.75	3.96	29.64	33.60	46.00	-12.40	QP
7	903.31	77.42	31.36	108.78	46.00	62.78	Peak

Test Mode: 01; Polarity: Horizontal; Channel: Middle

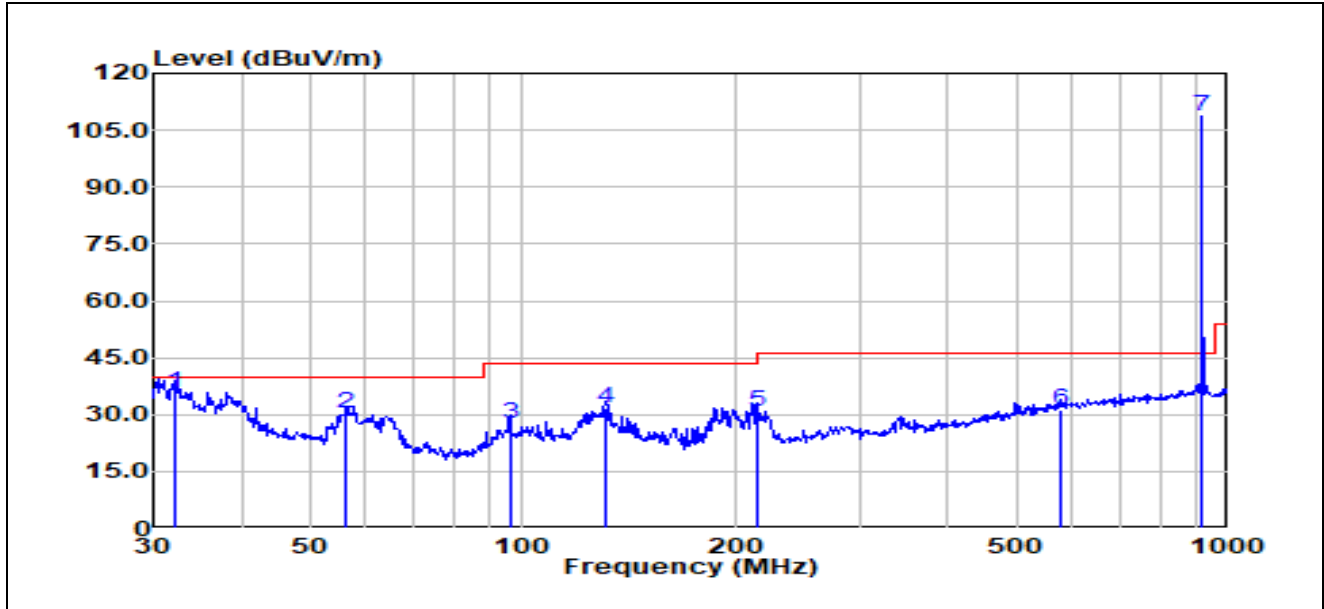
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	56.59	17.63	12.11	29.74	40.00	-10.26	QP
2	105.27	11.72	19.01	30.73	43.50	-12.77	QP
3	131.30	17.42	20.35	37.77	43.50	-5.73	QP
4	199.29	16.45	17.45	33.90	43.50	-9.60	QP
5	499.43	4.43	26.73	31.16	46.00	-14.84	QP
6	824.60	4.79	30.46	35.25	46.00	-10.75	QP
7	916.07	77.31	31.43	108.74	46.00	62.74	Peak

Test Mode: 01; Polarity: Vertical; Channel: Middle

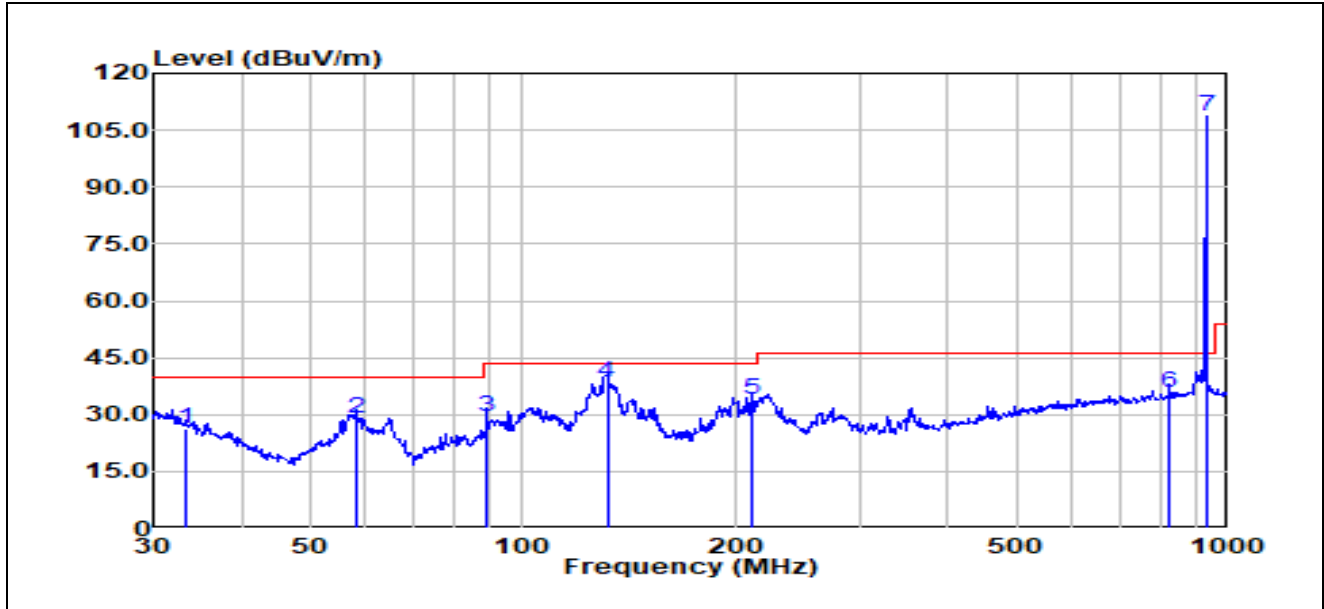
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	32.18	12.46	23.30	35.76	40.00	-4.24	QP
2	56.40	18.05	12.14	30.19	40.00	-9.81	QP
3	96.10	10.22	17.58	27.80	43.50	-15.70	QP
4	131.30	11.38	20.35	31.73	43.50	-11.77	QP
5	214.51	12.69	18.16	30.85	43.50	-12.65	QP
6	576.64	2.97	28.22	31.19	46.00	-14.81	QP
7	916.07	77.43	31.43	108.86	46.00	62.86	Peak

Test Mode: 01; Polarity: Horizontal; Channel: High

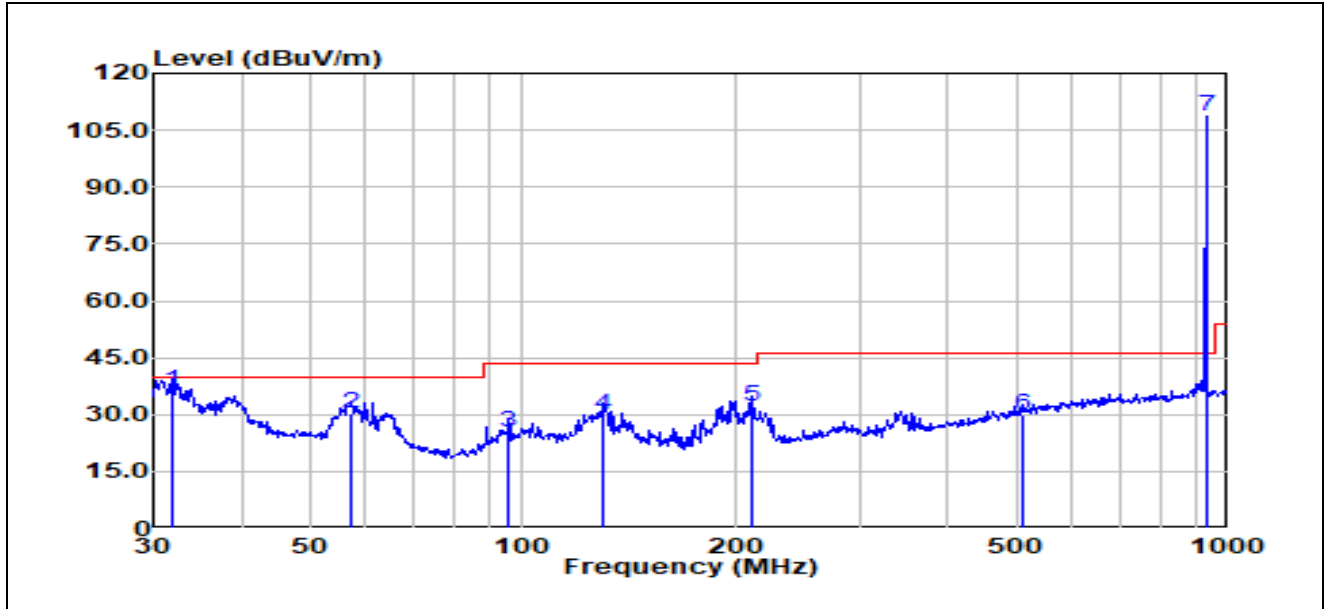
Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.33	3.46	22.92	26.38	40.00	-13.62	QP
2	58.00	17.34	11.80	29.14	40.00	-10.86	QP
3	88.96	12.27	17.29	29.56	43.50	-13.94	QP
4	131.76	18.47	20.21	38.68	43.50	-4.82	QP
5	210.79	15.80	18.02	33.82	43.50	-9.68	QP
6	824.60	5.40	30.46	35.86	46.00	-10.14	QP
7	929.01	77.37	31.14	108.51	46.00	62.51	Peak

Test Mode: 01; Polarity: Vertical; Channel: High

Test Data :



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.84	12.88	23.49	36.37	40.00	-3.63	QP
2	57.39	18.30	11.95	30.25	40.00	-9.75	QP
3	95.76	7.80	17.77	25.57	43.50	-17.93	QP
4	129.92	9.55	20.34	29.89	43.50	-13.61	QP
5	210.79	14.04	18.02	32.06	43.50	-11.44	QP
6	510.04	2.65	27.05	29.70	46.00	-16.30	QP
7	929.01	77.42	31.14	108.56	46.00	62.56	Peak

7.4 Radiated Spurious Emissions Above 1GHz

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

Test Method: ANSI C63.10 (2020) Section 6.6

Measurement Distance: 3M

Limit:

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

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

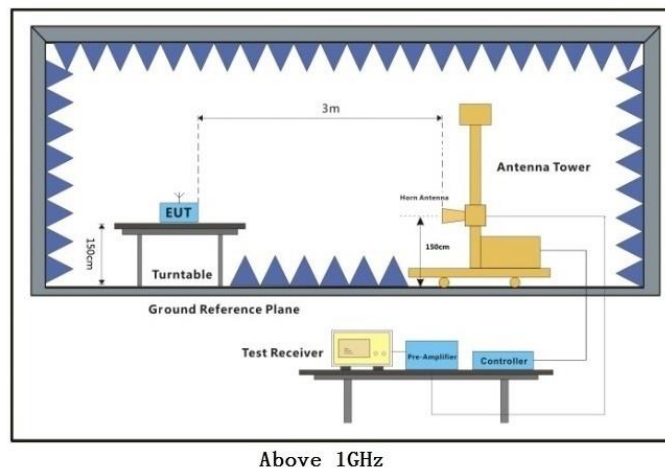
Humidity: 45.8 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.4.3 Test Setup Diagram



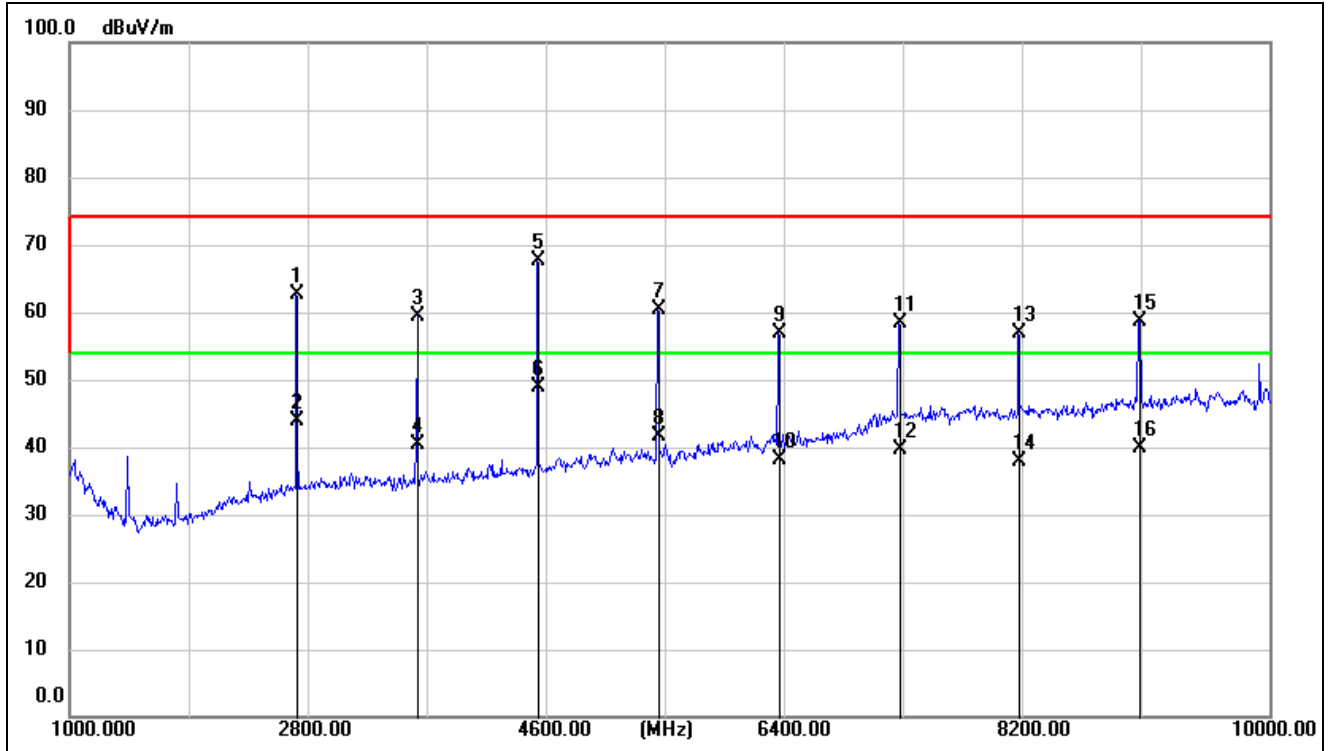
7.4.4 Measurement Procedure and Data

- 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:

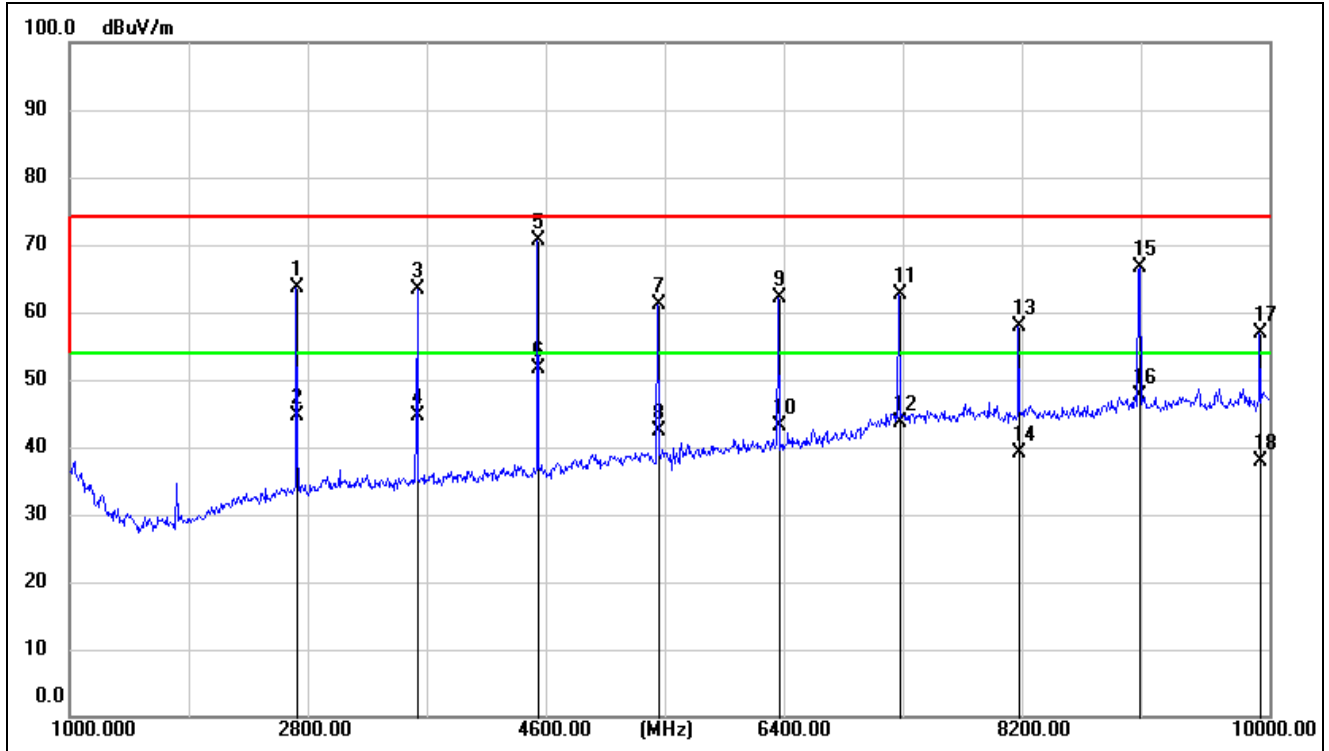
1. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. 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.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
- 5: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

Test Mode: 01; Polarity: Horizontal; Channel: Low



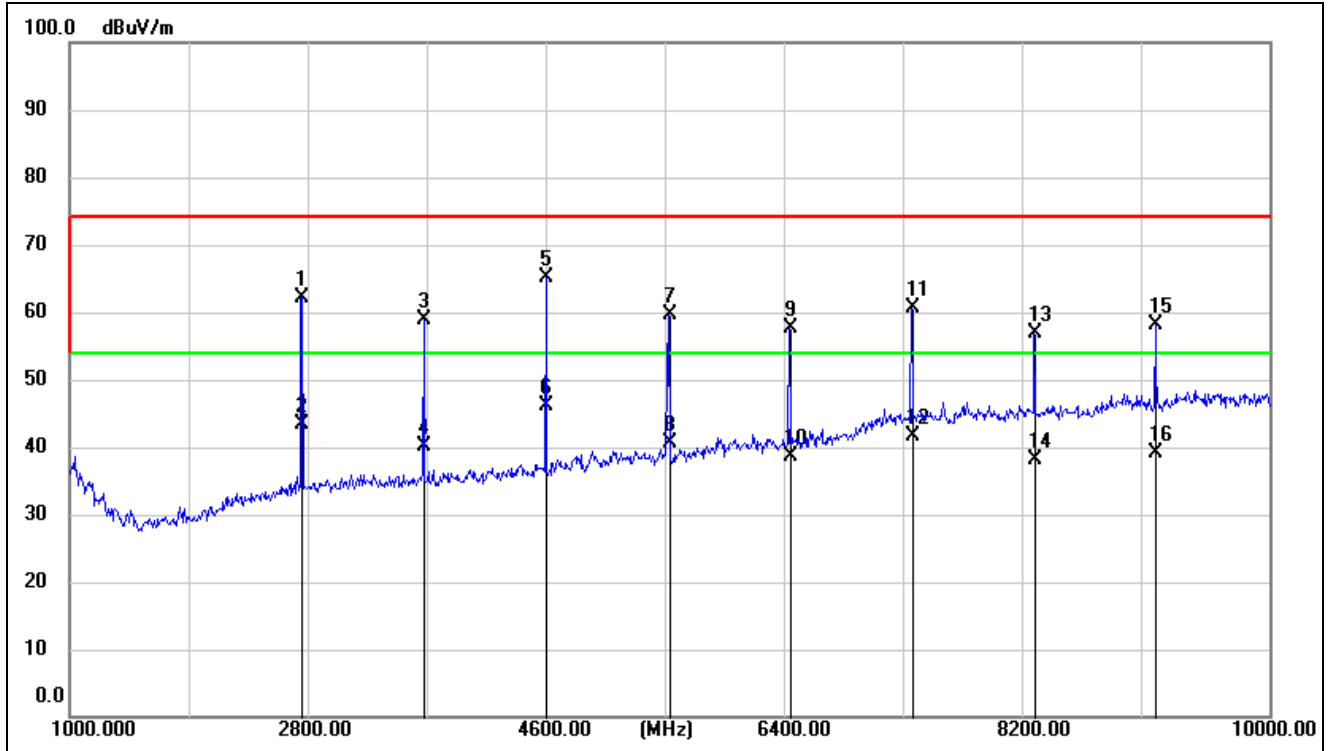
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2708.200	86.40	-23.71	62.69	74.00	-11.31	peak
2	2708.200	67.50	-23.71	43.79	54.00	-10.21	AVG
3	3611.350	81.30	-21.90	59.40	74.00	-14.60	peak
4	3611.350	62.40	-21.90	40.50	54.00	-13.50	AVG
5	4514.050	86.91	-19.20	67.71	74.00	-6.29	peak
6	4514.050	68.01	-19.20	48.81	54.00	-5.19	AVG
7	5416.750	76.74	-16.28	60.46	74.00	-13.54	peak
8	5416.750	57.84	-16.28	41.56	54.00	-12.44	AVG
9	6319.450	70.39	-13.48	56.91	74.00	-17.09	peak
10	6319.450	51.49	-13.48	38.01	54.00	-15.99	AVG
11	7222.150	69.03	-10.53	58.50	74.00	-15.50	peak
12	7222.150	50.13	-10.53	39.60	54.00	-14.40	AVG
13	8124.850	66.46	-9.69	56.77	74.00	-17.23	peak
14	8124.850	47.56	-9.69	37.87	54.00	-16.13	AVG
15	9027.550	66.83	-8.15	58.68	74.00	-15.32	peak
16	9027.550	47.93	-8.15	39.78	54.00	-14.22	AVG

Test Mode: 01; Polarity: Vertical; Channel: Low



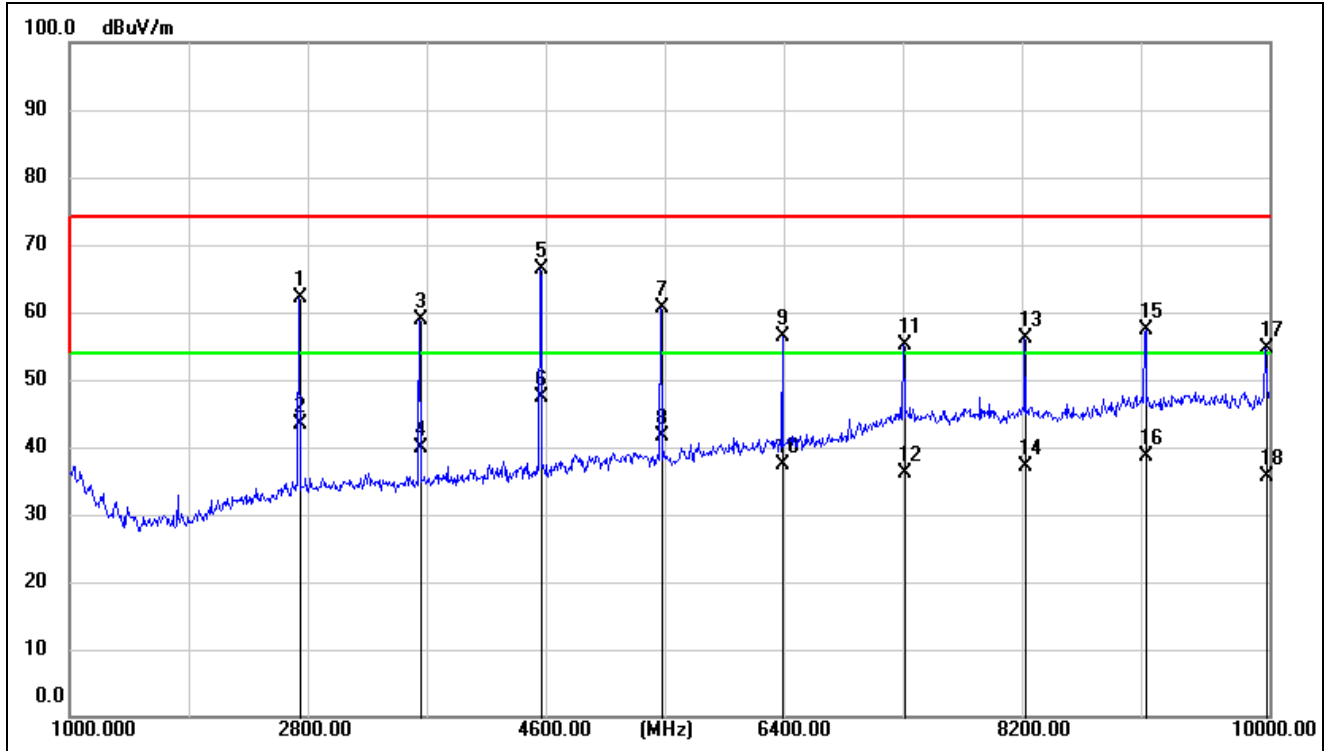
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2708.200	87.35	-23.71	63.64	74.00	-10.36	peak
2	2708.200	68.45	-23.71	44.74	54.00	-9.26	AVG
3	3610.900	85.21	-21.90	63.31	74.00	-10.69	peak
4	3610.900	66.61	-21.90	44.71	54.00	-9.29	AVG
5	4514.050	89.75	-19.20	70.55	74.00	-3.45	peak
6	4514.050	70.85	-19.20	51.65	54.00	-2.35	AVG
7	5416.750	77.44	-16.28	61.16	74.00	-12.84	peak
8	5416.750	58.54	-16.28	42.26	54.00	-11.74	AVG
9	6319.450	75.49	-13.48	62.01	74.00	-11.99	peak
10	6319.450	56.59	-13.48	43.11	54.00	-10.89	AVG
11	7222.150	73.05	-10.53	62.52	74.00	-11.48	peak
12	7222.150	54.15	-10.53	43.62	54.00	-10.38	AVG
13	8125.300	67.64	-9.68	57.96	74.00	-16.04	peak
14	8125.300	48.74	-9.68	39.06	54.00	-14.94	AVG
15	9028.000	74.75	-8.14	66.61	74.00	-7.39	peak
16	9028.000	55.85	-8.14	47.71	54.00	-6.29	AVG
17	9930.700	63.53	-6.72	56.81	74.00	-17.19	peak
18	9930.700	44.63	-6.72	37.91	54.00	-16.09	AVG

Test Mode: 01; Polarity: Horizontal; Channel: Middle



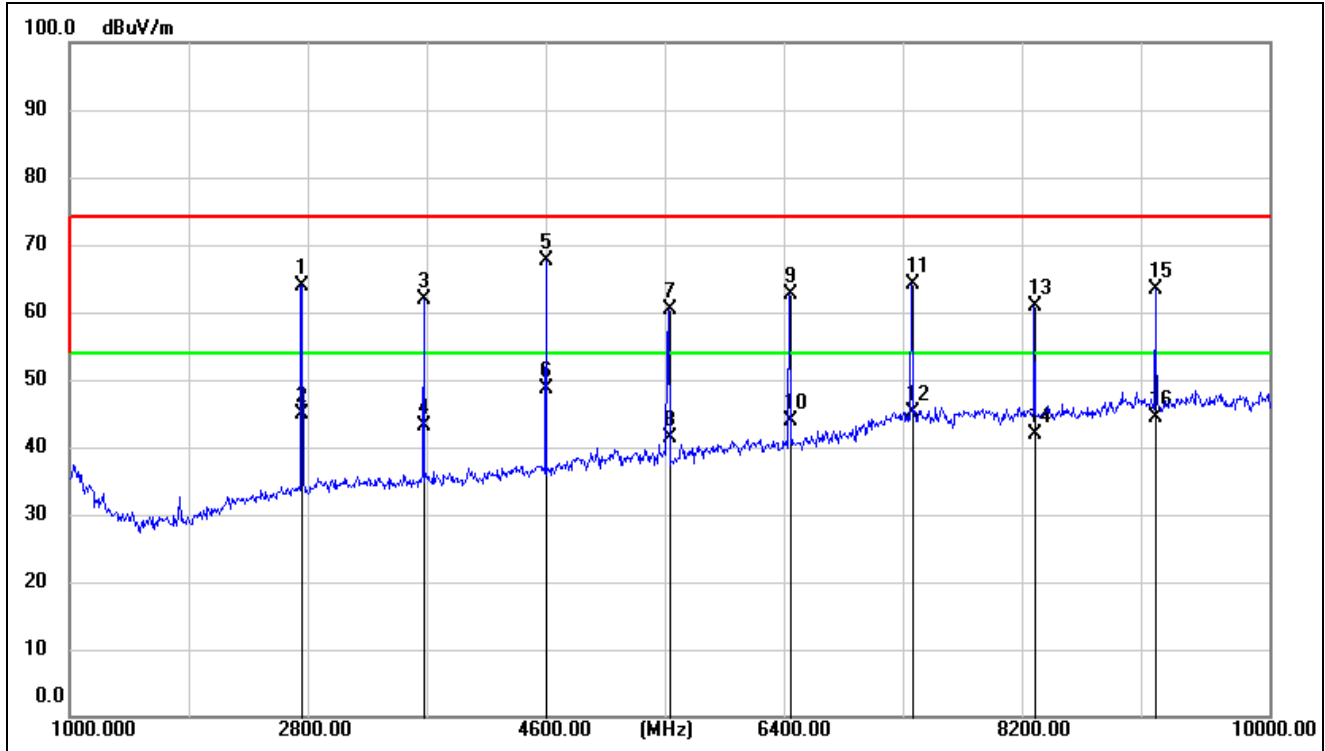
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2746.000	85.78	-23.60	62.18	74.00	-11.82	peak
2	2746.000	66.88	-23.60	43.28	54.00	-10.72	AVG
3	3660.850	80.76	-21.76	59.00	74.00	-15.00	peak
4	3660.850	61.86	-21.76	40.10	54.00	-13.90	AVG
5	4576.600	84.00	-18.91	65.09	74.00	-8.91	peak
6	4576.600	65.10	-18.91	46.19	54.00	-7.81	AVG
7	5491.900	75.71	-16.15	59.56	74.00	-14.44	peak
8	5491.900	56.81	-16.15	40.66	54.00	-13.34	AVG
9	6406.750	70.82	-13.22	57.60	74.00	-16.40	peak
10	6406.750	51.92	-13.22	38.70	54.00	-15.30	AVG
11	7322.500	70.86	-10.32	60.54	74.00	-13.46	peak
12	7322.500	51.96	-10.32	41.64	54.00	-12.36	AVG
13	8237.800	66.56	-9.62	56.94	74.00	-17.06	peak
14	8237.800	47.66	-9.62	38.04	54.00	-15.96	AVG
15	9153.100	66.04	-7.96	58.08	74.00	-15.92	peak
16	9153.100	47.14	-7.96	39.18	54.00	-14.82	AVG

Test Mode: 01; Polarity: Vertical; Channel: Middle



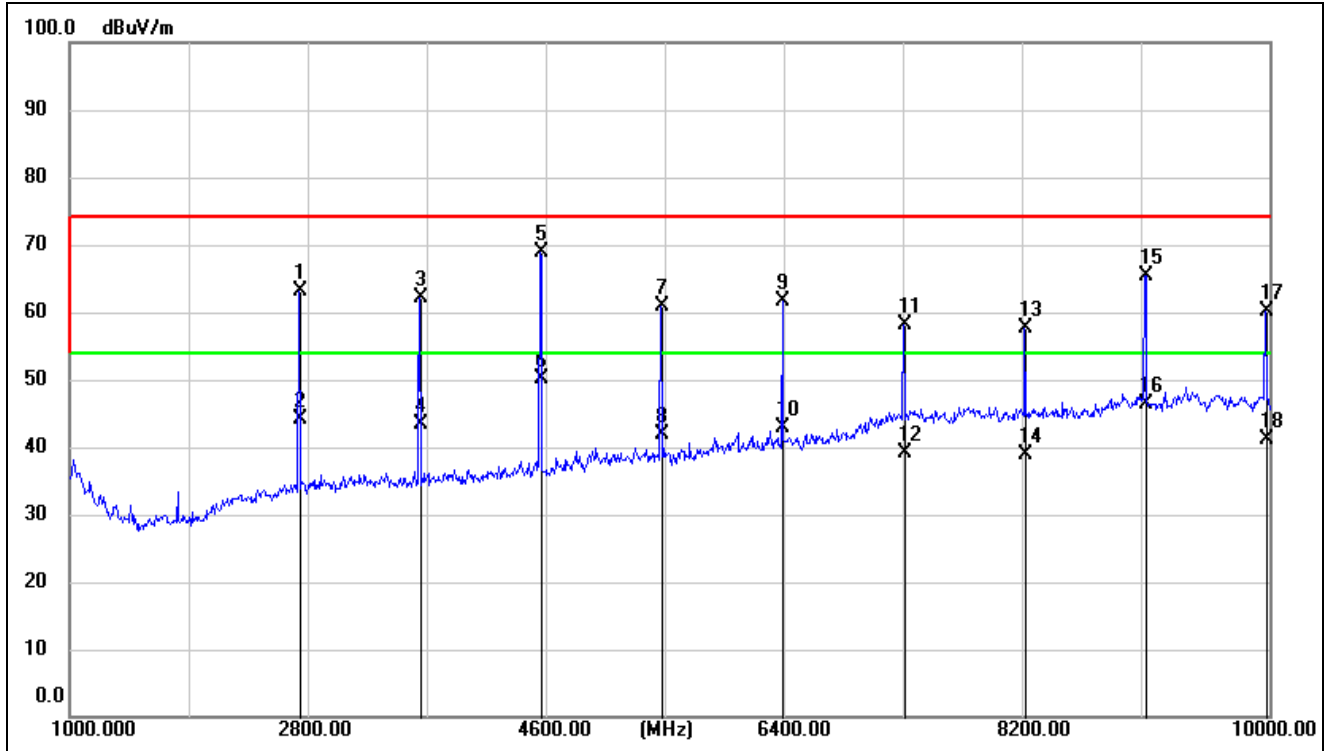
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2721.700	85.84	-23.67	62.17	74.00	-11.83	peak
2	2721.700	66.94	-23.67	43.27	54.00	-10.73	AVG
3	3628.900	80.63	-21.84	58.79	74.00	-15.21	peak
4	3628.900	61.73	-21.84	39.89	54.00	-14.11	AVG
5	4536.550	85.36	-19.09	66.27	74.00	-7.73	peak
6	4536.550	66.46	-19.09	47.37	54.00	-6.63	AVG
7	5443.750	76.85	-16.23	60.62	74.00	-13.38	peak
8	5443.750	57.95	-16.23	41.72	54.00	-12.28	AVG
9	6350.950	69.68	-13.39	56.29	74.00	-17.71	peak
10	6350.950	50.78	-13.39	37.39	54.00	-16.61	AVG
11	7258.150	65.59	-10.46	55.13	74.00	-18.87	peak
12	7258.150	46.69	-10.46	36.23	54.00	-17.77	AVG
13	8165.800	65.71	-9.66	56.05	74.00	-17.95	peak
14	8165.800	46.81	-9.66	37.15	54.00	-16.85	AVG
15	9073.000	65.49	-8.08	57.41	74.00	-16.59	peak
16	9073.000	46.59	-8.08	38.51	54.00	-15.49	AVG
17	9980.200	61.22	-6.63	54.59	74.00	-19.41	peak
18	9980.200	42.32	-6.63	35.69	54.00	-18.31	AVG

Test Mode: 01; Polarity: Horizontal; Channel: High



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2746.000	87.45	-23.60	63.85	74.00	-10.15	peak
2	2746.000	68.55	-23.60	44.95	54.00	-9.05	AVG
3	3661.300	83.71	-21.76	61.95	74.00	-12.05	peak
4	3661.300	64.81	-21.76	43.05	54.00	-10.95	AVG
5	4576.600	86.51	-18.91	67.60	74.00	-6.40	peak
6	4576.600	67.61	-18.91	48.70	54.00	-5.30	AVG
7	5491.450	76.42	-16.15	60.27	74.00	-13.73	peak
8	5491.450	57.52	-16.15	41.37	54.00	-12.63	AVG
9	6406.750	75.90	-13.22	62.68	74.00	-11.32	peak
10	6406.750	57.00	-13.22	43.78	54.00	-10.22	AVG
11	7322.500	74.47	-10.32	64.15	74.00	-9.85	peak
12	7322.500	55.57	-10.32	45.25	54.00	-8.75	AVG
13	8237.350	70.48	-9.62	60.86	74.00	-13.14	peak
14	8237.350	51.58	-9.62	41.96	54.00	-12.04	AVG
15	9152.650	71.31	-7.96	63.35	74.00	-10.65	peak
16	9152.650	52.41	-7.96	44.45	54.00	-9.55	AVG

Test Mode: 01; Polarity: Vertical; Channel: High



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2721.700	86.77	-23.67	63.10	74.00	-10.90	peak
2	2721.700	67.87	-23.67	44.20	54.00	-9.80	AVG
3	3628.900	84.04	-21.84	62.20	74.00	-11.80	peak
4	3628.900	65.14	-21.84	43.30	54.00	-10.70	AVG
5	4536.550	88.06	-19.09	68.97	74.00	-5.03	peak
6	4536.550	69.16	-19.09	50.07	54.00	-3.93	AVG
7	5443.750	77.11	-16.23	60.88	74.00	-13.12	peak
8	5443.750	58.21	-16.23	41.98	54.00	-12.02	AVG
9	6350.950	75.08	-13.39	61.69	74.00	-12.31	peak
10	6350.950	56.18	-13.39	42.79	54.00	-11.21	AVG
11	7258.600	68.48	-10.46	58.02	74.00	-15.98	peak
12	7258.600	49.58	-10.46	39.12	54.00	-14.88	AVG
13	8165.800	67.34	-9.66	57.68	74.00	-16.32	peak
14	8165.800	48.44	-9.66	38.78	54.00	-15.22	AVG
15	9073.000	73.38	-8.08	65.30	74.00	-8.70	peak
16	9073.000	54.48	-8.08	46.40	54.00	-7.60	AVG
17	9980.200	66.67	-6.63	60.04	74.00	-13.96	peak
18	9980.200	47.77	-6.63	41.14	54.00	-12.86	AVG

7.5 Conducted Peak Output Power

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

Test Method: ANSI C63.10 (2020) Section 7.8.5

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

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

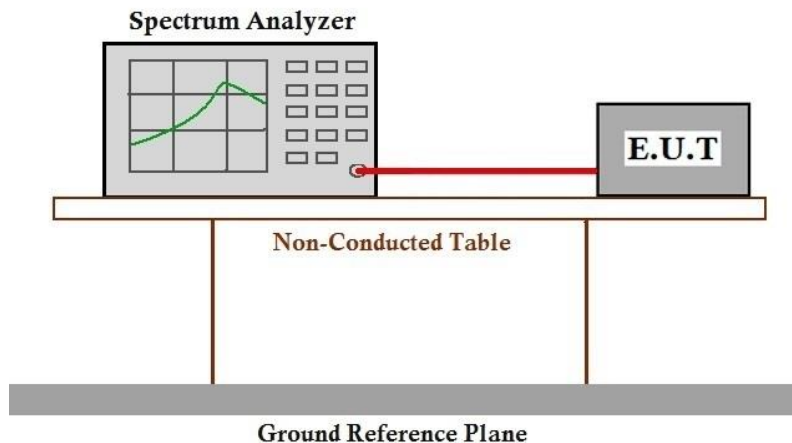
Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.5.3 Test Setup Diagram





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7.5.4 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

7.6 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247(a)(1)

Test Method: ANSI C63.10 (2020) Section 6.9.2

Limit:

20 dB bandwidth of the hopping channel	Hopping frequencies	Average time of occupancy
less than 250 kHz	least 50 hopping frequencies	shall not be greater than 0.4 seconds within a 20 second period
250 kHz to 500kHz	least 25 hopping frequencies	shall not be greater than 0.4 seconds within a 10 second period.

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.6.3 Measurement Procedure and Data

Please Refer to Appendix for Details

7.7 Carrier Frequencies Separation

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)

Test Method: ANSI C63.10 (2020) Section 7.8.2

Limit:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_Hop mode_Keep the EUT in frequency hopping mode with FSK modulation.

7.7.3 Measurement Procedure and Data

Please Refer to Appendix for Details

7.8 Hopping Channel Number

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)(i)

Test Method: ANSI C63.10 (2020) Section 7.8.3

Limit:

Frequency range(MHz)	Number of hopping channels (minimum)
902-928	50 for 20dB bandwidth <250kHz
	25 for 20dB bandwidth ≥250kHz
2400-2483.5	15
5725-5850	75

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_Hop mode_Keep the EUT in frequency hopping mode with FSK modulation.

7.8.3 Measurement Procedure and Data

Please Refer to Appendix for Details

7.9 Dwell Time

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)(i)

Test Method: ANSI C63.10 (2020) Section 7.8.4

Limit:

Frequency(MHz)	Limit
902-928	0.4S within a 20S period(20dB bandwidth<250kHz)
	0.4S within a 10S period(20dB bandwidth≥250kHz)
2400-2483.5	0.4S within a period of 0.4S multiplied by the number of hopping channels
5725-5850	0.4S within a 30S period

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_Hop mode_Keep the EUT in frequency hopping mode with FSK modulation.

7.9.3 Measurement Procedure and Data

Please Refer to Appendix for Details

7.10 Conducted Band Edges Measurement

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

Test Method: ANSI C63.10 (2020) Section 7.8.7.2

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)).

7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_Hop mode_Keep the EUT in frequency hopping mode with FSK modulation.
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.10.3 Measurement Procedure and Data

Please Refer to Appendix for Details

7.11 Conducted Spurious Emissions

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

Test Method: ANSI C63.10 (2020) Section 7.8.7

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)).

7.11.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

Humidity: 48.1 % RH

Atmospheric Pressure: 1010 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with FSK modulation.

7.11.3 Measurement Procedure and Data

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2509001972AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix_Photographs of EUT Constructional Details for KSCR2509001972AT

10 Appendix

1. Bandwidth

1.1 Test Result

1.1.1 OBW

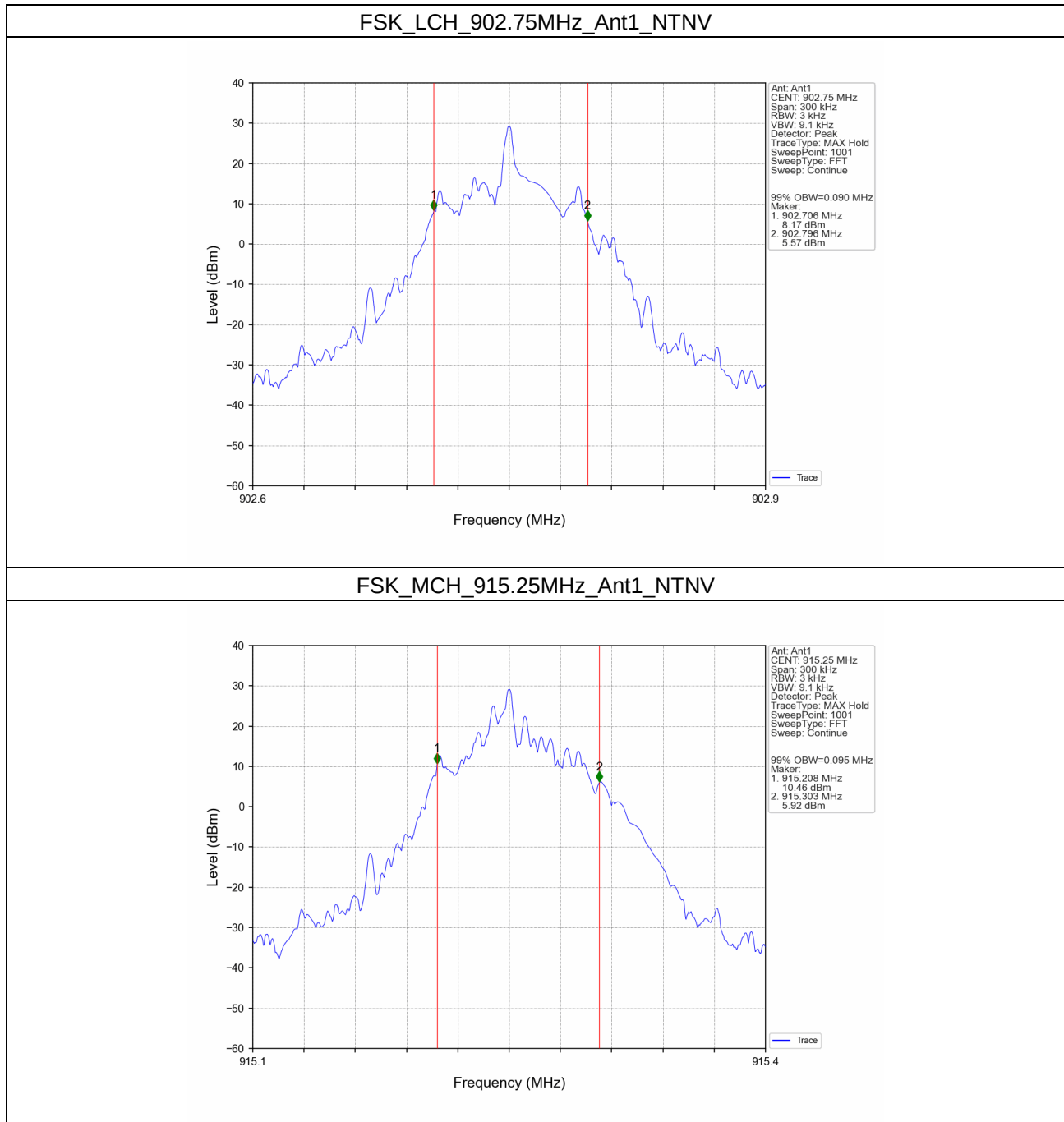
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
FSK	SISO	902.75	1	0.090	/	Pass
		915.25	1	0.095	/	Pass
		927.25	1	0.093	/	Pass

1.1.2 20dB BW

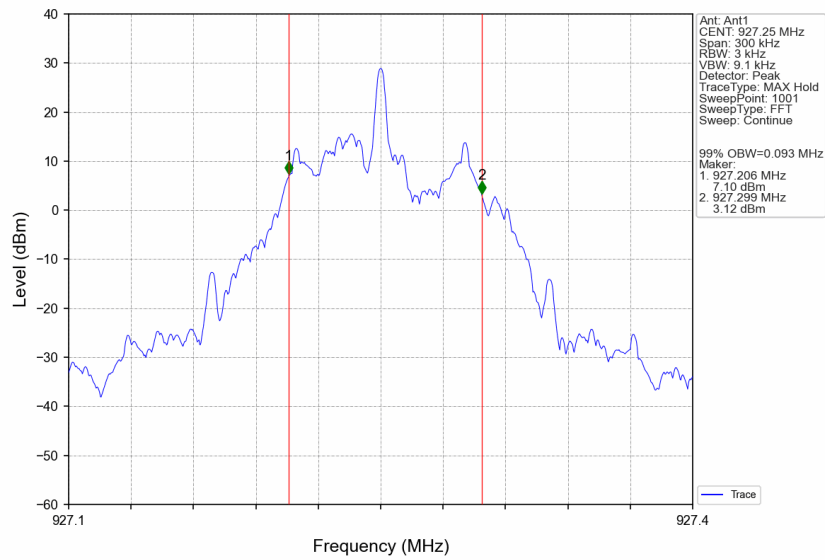
Mode	TX Type	Frequency (MHz)	ANT	20dB Bandwidth (MHz)		Verdict
				Result	Limit	
FSK	SISO	902.75	1	0.086	/	Pass
		915.25	1	0.086	/	Pass
		927.25	1	0.086	/	Pass

1.2 Test Graph

1.2.1 OBW

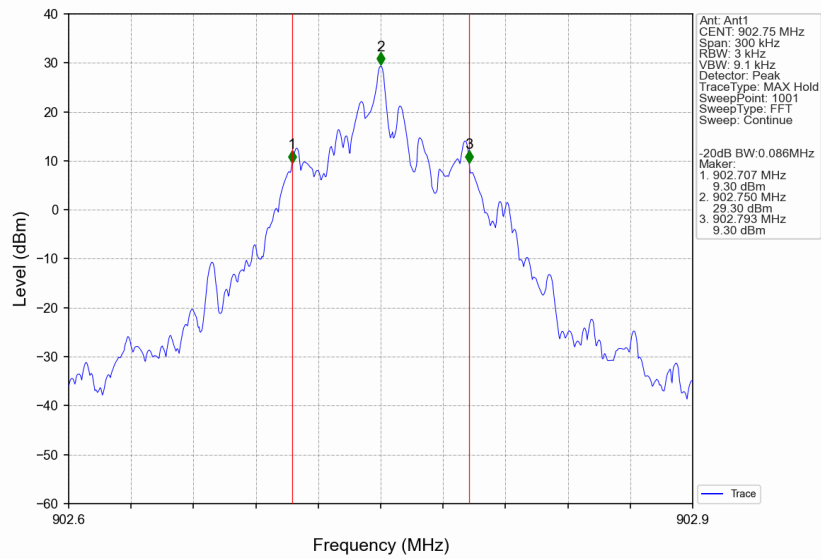


FSK_HCH_927.25MHz_Ant1_NTNV

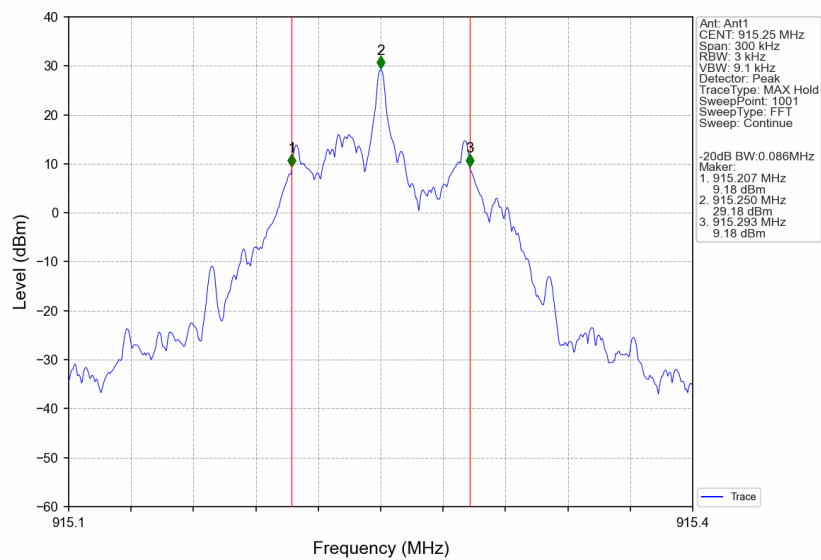


1.2.2 20dB BW

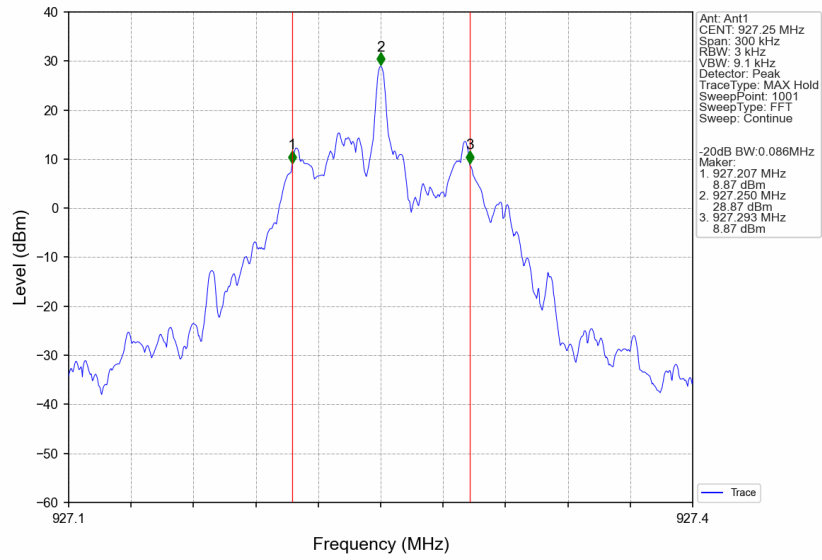
FSK_LCH_902.75MHz_Ant1_NTNV



FSK_MCH_915.25MHz_Ant1_NTNV



FSK_HCH_927.25MHz_Ant1_NTNV





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2. Maximum Conducted Output Power

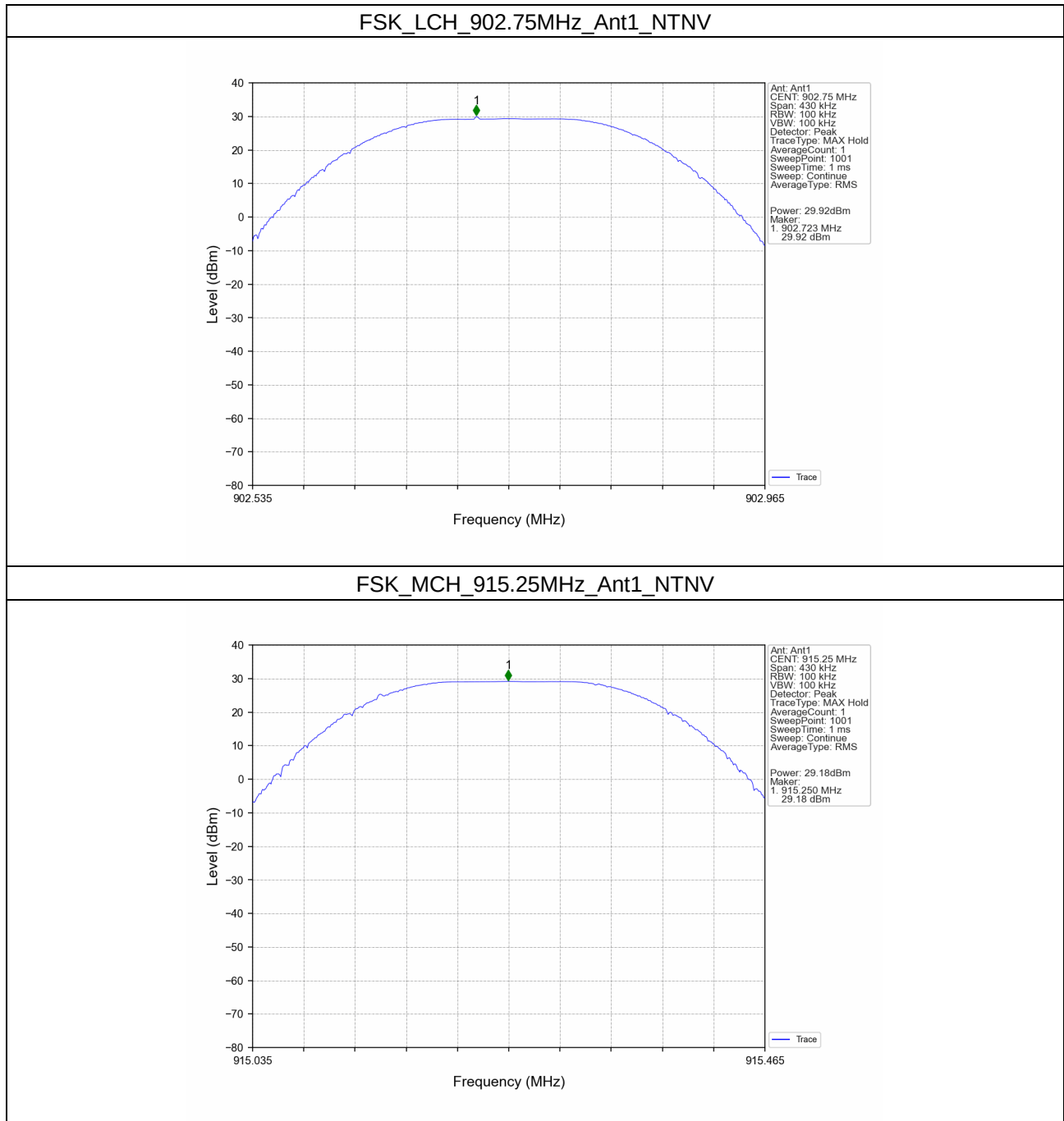
2.1 Test Result

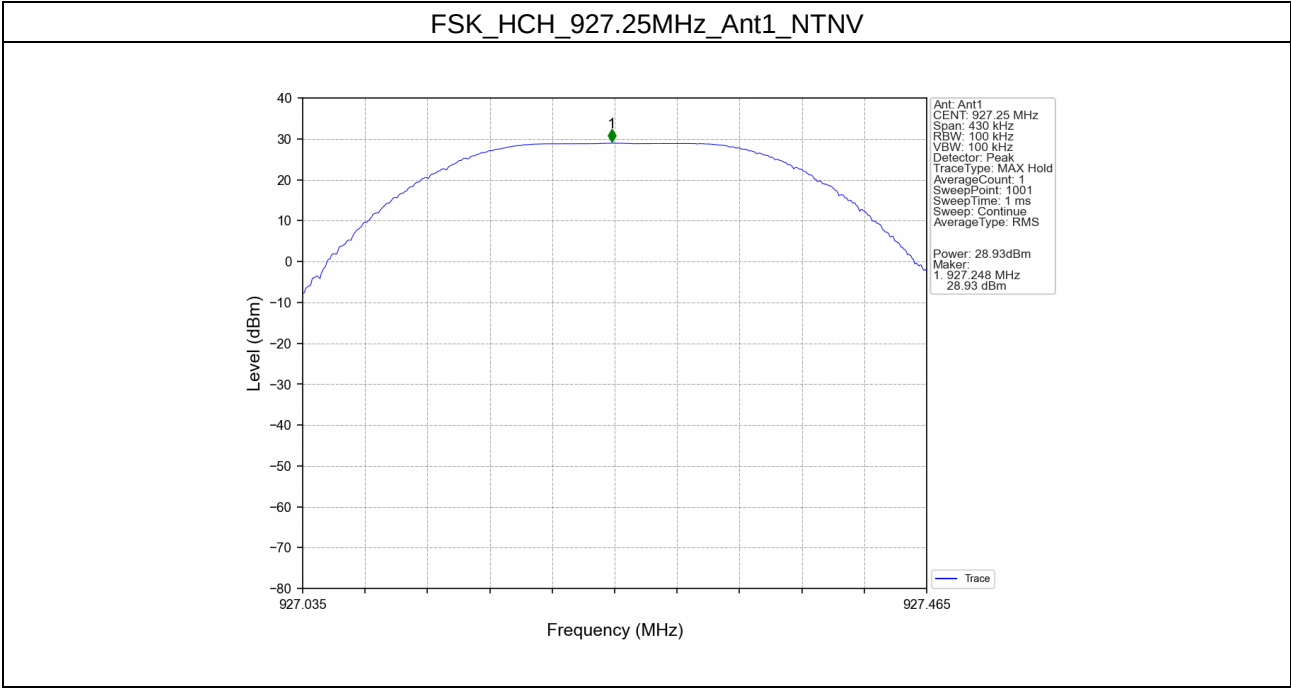
2.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
FSK	SISO	902.75	29.92	<=30	Pass
		915.25	29.18	<=30	Pass
		927.25	28.93	<=30	Pass
Note1: Antenna Gain: Ant1: 6.00dBi					

2.2 Test Graph

2.2.1 Power







3. Carrier Frequency Separation

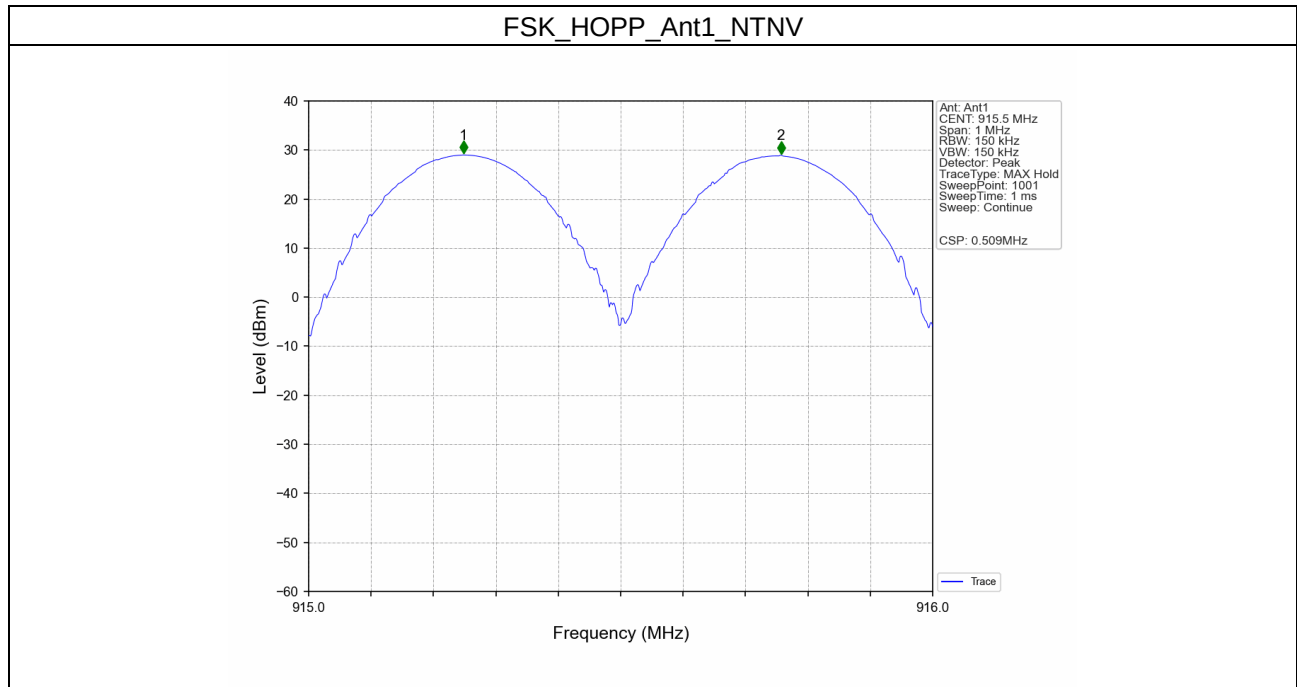
3.1 Test Result

3.1.1 Ant1

Ant1						
Mode	TX Type	Frequency (MHz)	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
FSK	SISO	HOPP	0.509	0.086	≥ 0.086	Pass

3.2 Test Graph

3.2.1 Ant1





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4. Number of Hopping Frequencies

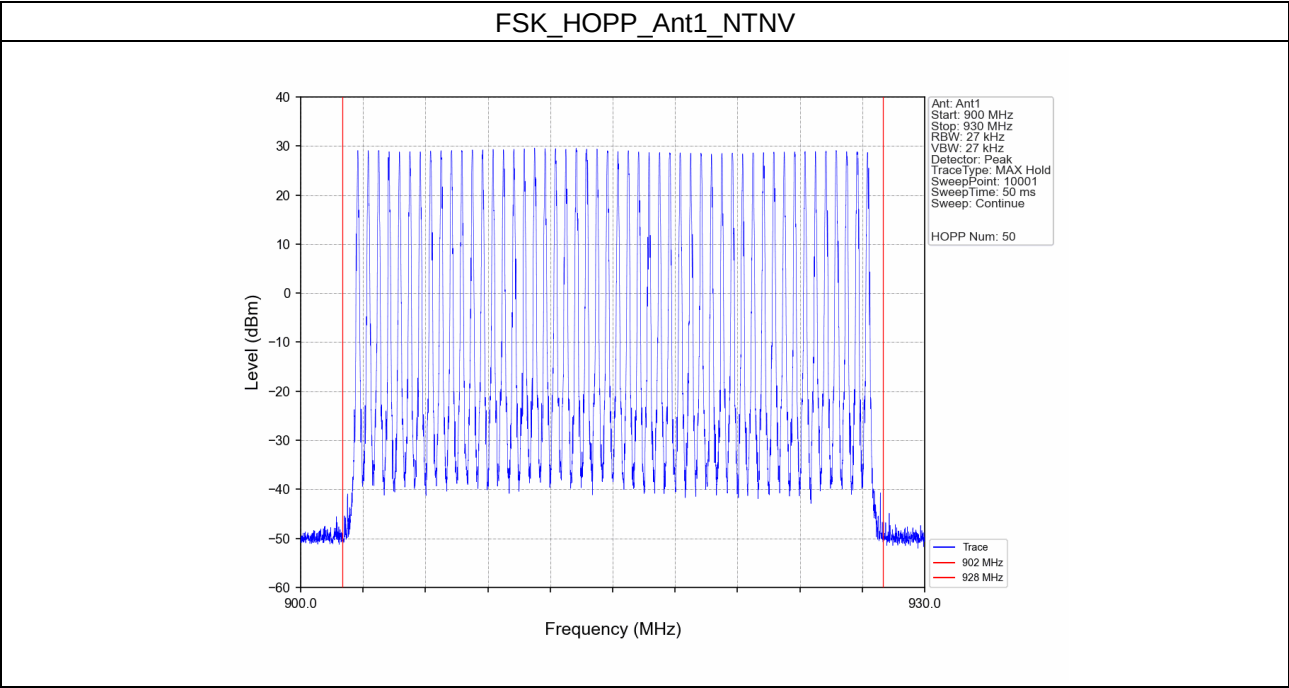
4.1 Test Result

4.1.1 HoppNum

Mode	TX Type	Frequency (MHz)	Num of Hopping Frequencies		Verdict
			ANT1	Limit	
FSK	SISO	HOPP	50	≥ 50	Pass

4.2 Test Graph

4.2.1 HoppNum





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5. Time of Occupancy (Dwell Time)

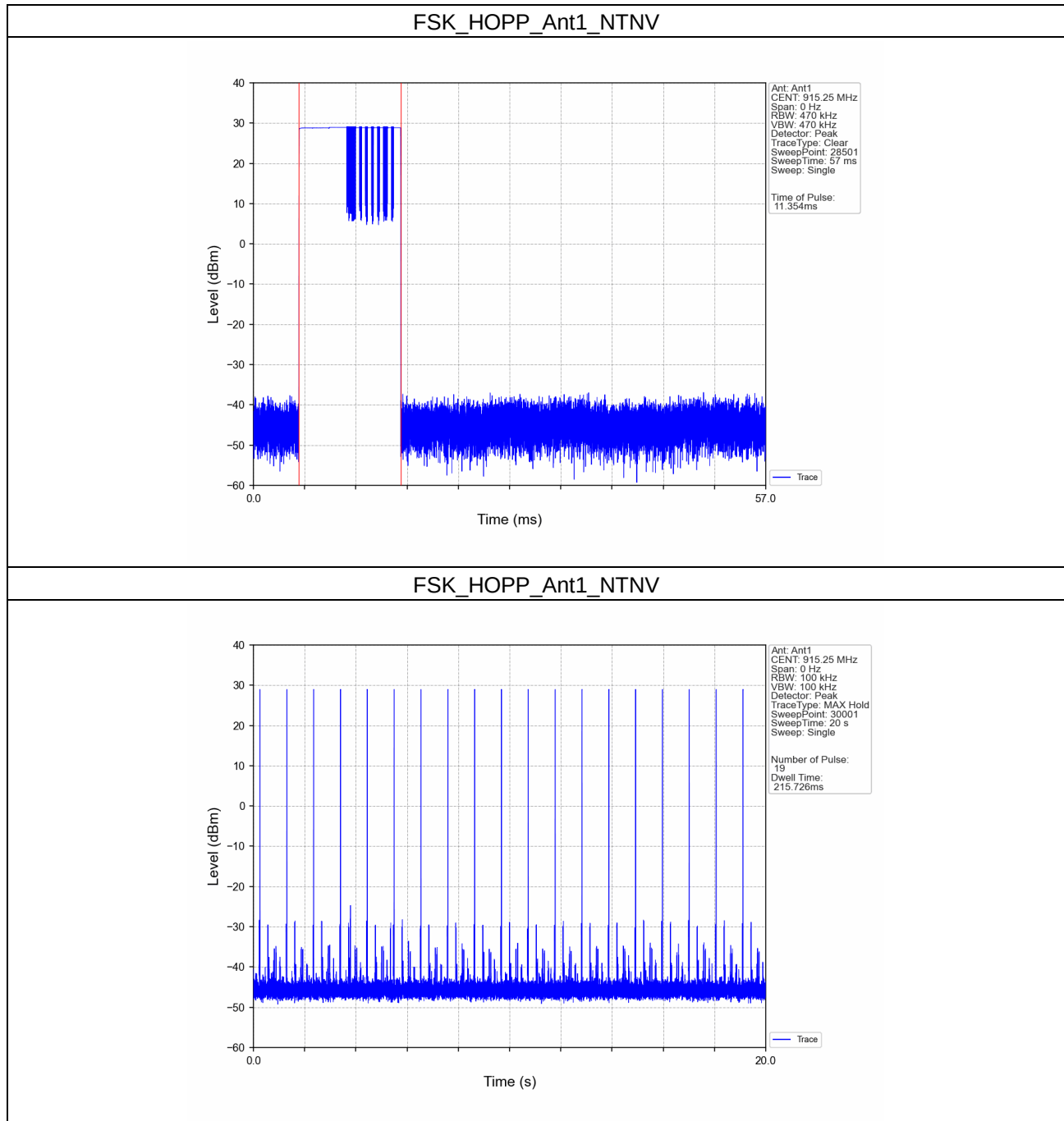
5.1 Test Result

5.1.1 Ant1

Ant1								
Mode	TX Type	Frequency (MHz)	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
FSK	SISO	HOPP	11.354	20.000	19	215.726	<=400	Pass

5.2 Test Graph

5.2.1 Ant1



6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Test Result

6.1.1 Ref

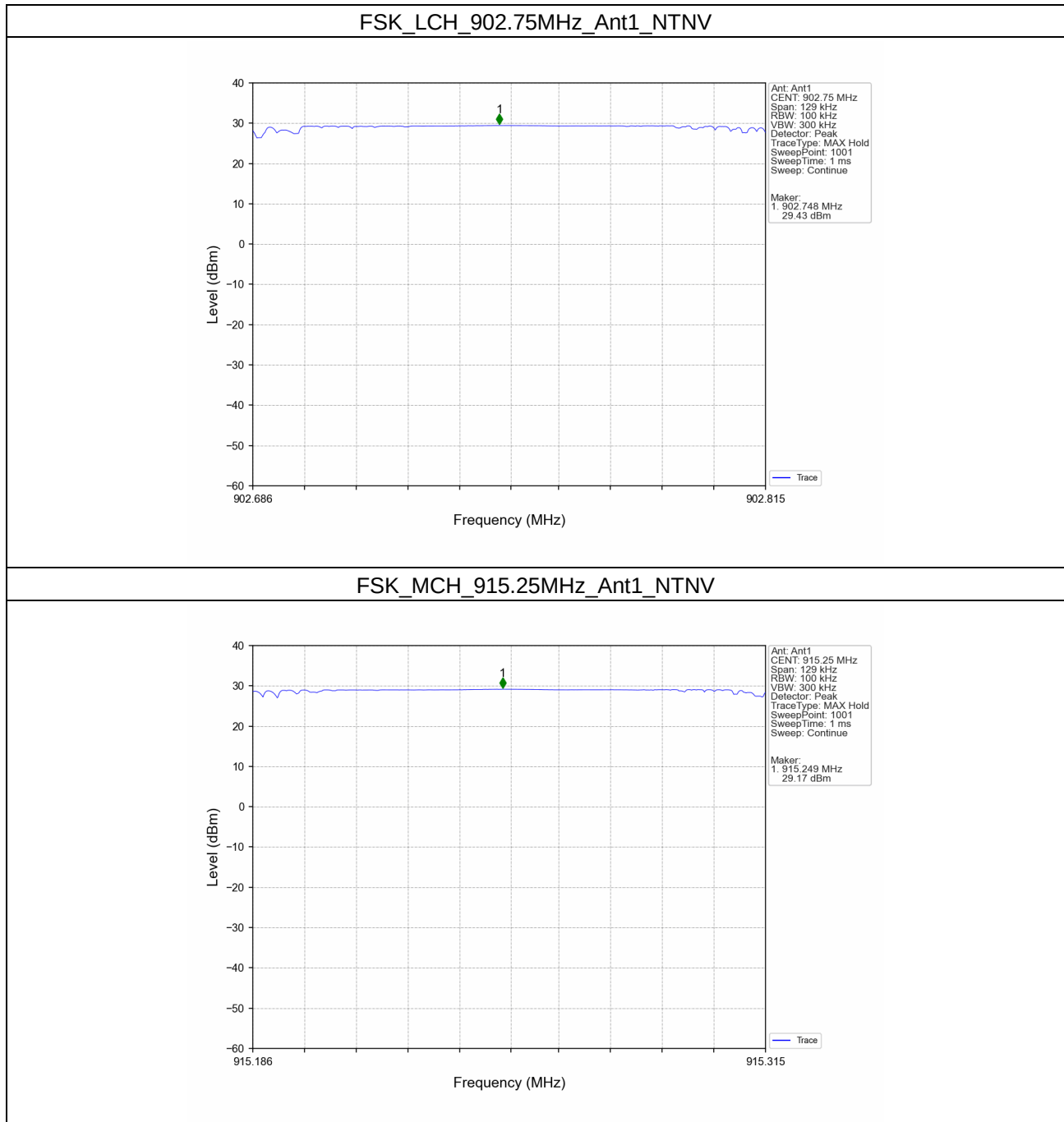
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
FSK	SISO	902.75	1	29.43
		915.25	1	29.17
		927.25	1	28.99
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.				

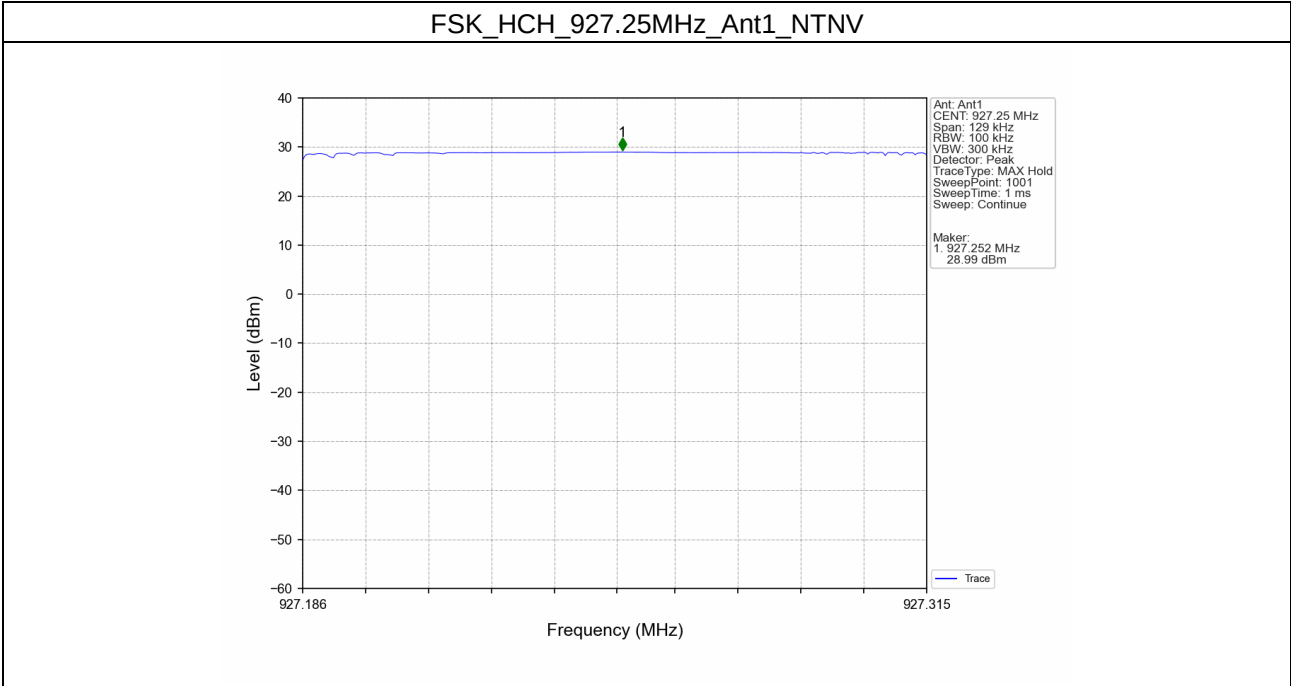
6.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
FSK	SISO	902.75	1	29.43	9.43	Pass
		915.25	1	29.43	9.43	Pass
		927.25	1	29.43	9.43	Pass
		HOPP	1	29.43	9.43	Pass
				29.43	9.43	Pass
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.						

6.2 Test Graph

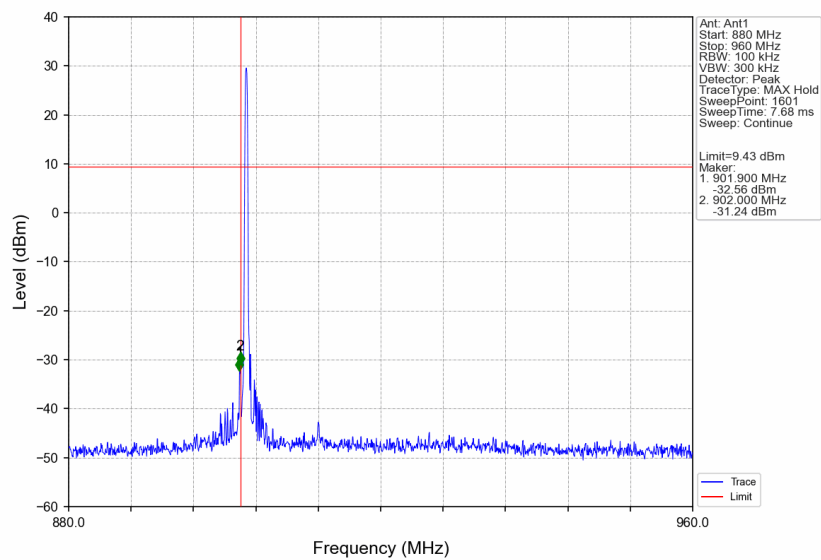
6.2.1 Ref



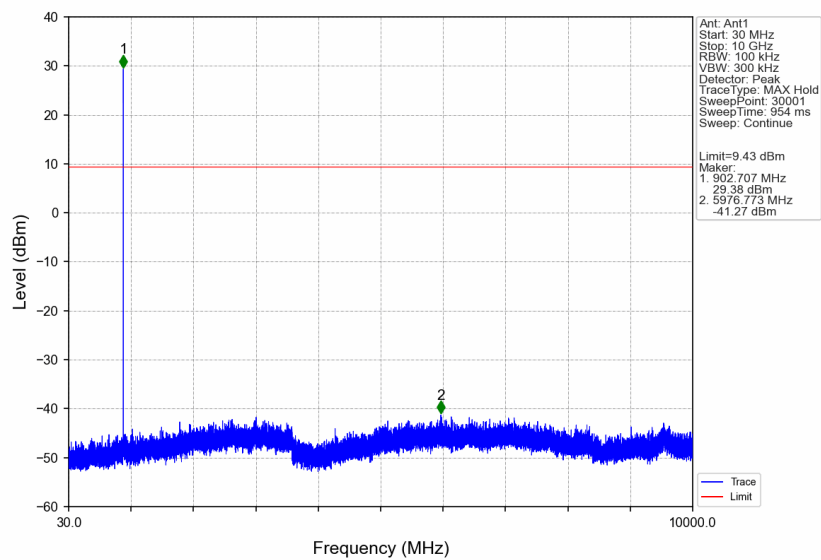


6.2.2 CSE

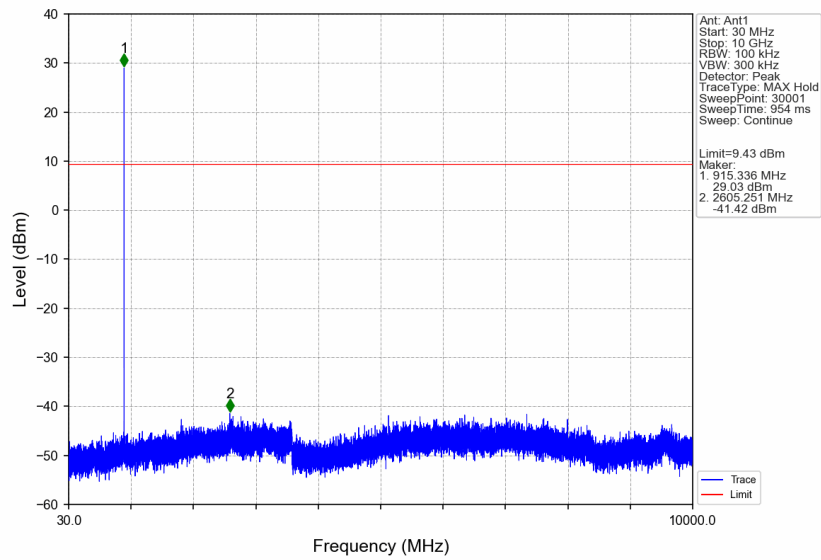
FSK_LCH_902.75MHz_Ant1_NTNV



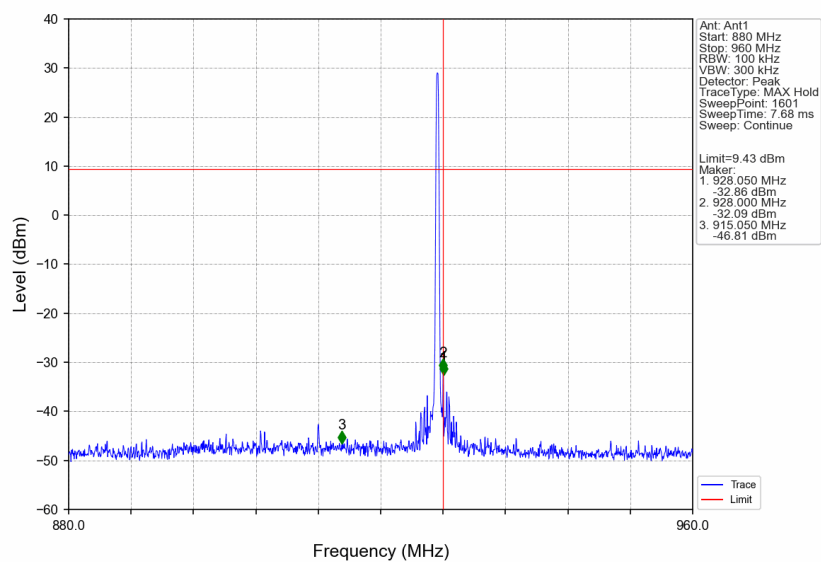
FSK_LCH_902.75MHz_Ant1_NTNV



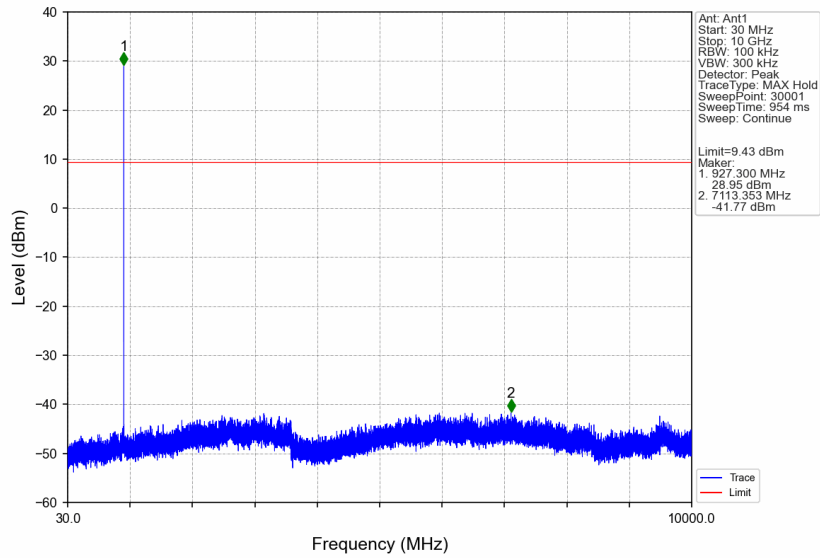
FSK_MCH_915.25MHz_Ant1_NTNV



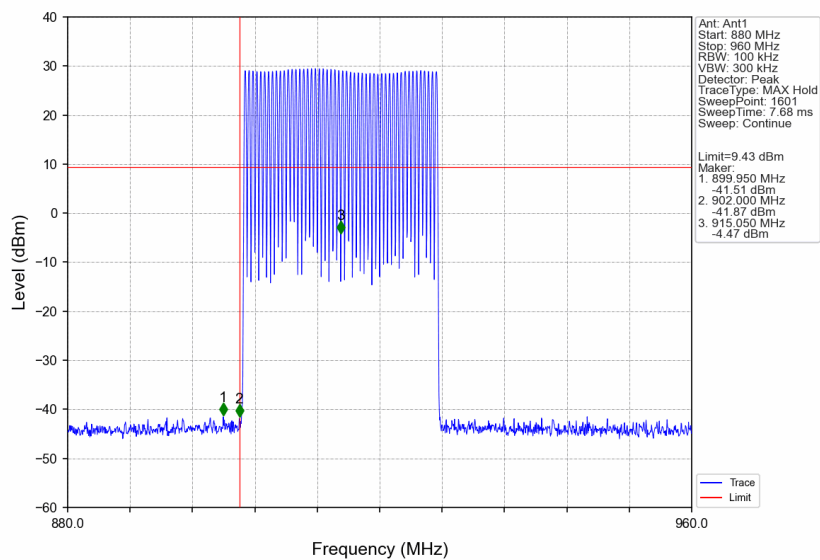
FSK_HCH_927.25MHz_Ant1_NTNV

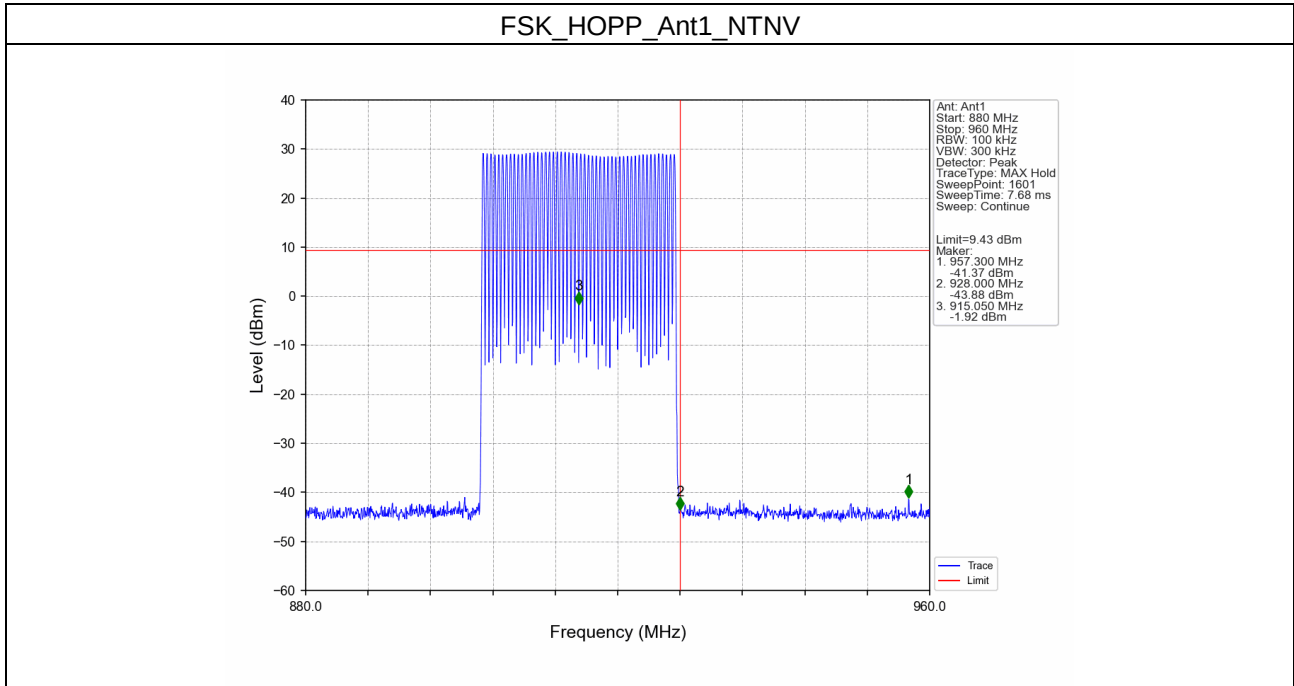


FSK_HCH_927.25MHz_Ant1_NTNV



FSK_HOPP_Ant1_NTNV





- End of the Report -