TEST REPORT

Application No.:	GZCR2204000469AT
Applicant:	BM innovations GmbH
Address of Applicant:	Mainburger Str. 3 Hoergertshausen, 85413 Germany
Manufacturer:	BM innovations GmbH
Address of Manufacturer:	Mainburger Str. 3 Hoergertshausen, 85413 Germany
Factory:	SHENZHEN FENDA SMART TECHNOLOGY LIMITED
Address of Factory:	FENDA Hi-TECH PARK, ZHOUSHI ROAD SHIYAN, BAOAN, SHENZHEN
Equipment Under Test (EUT):	
EUT Name:	BM-HRM2
Model No.:	BM-HRM2-US
Trade Mark:	Firstbeat, Activio
Standard(s) :	47 CFR Part 15, Subpart C 15.249
Date of Receipt:	2022-08-09
Date of Test:	2022-08-09 to 2022-08-17
Date of Issue:	2022-08-19
Test Result:	**Pass***

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

Kobe Jian
EMC Laboratory Manager

Revision Record			
Version	**Report No.**	**Date**	**Remark**
01		2022-08-19	Original

Authorized for issue by				
		 **Curry Wu/Project Engineer**		
		 **Ricky Liu/Reviewer**		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.249	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
20dB Bandwidth	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Field Strength of the Fundamental Signal (15.249(a))		ANSI C63.10 (2013) Section 6.5&6.6	47 CFR Part 15, Subpart C 15.249(a)	Pass
Restricted Band Around Fundamental Frequency		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209	Pass
Radiated Emissions (above 1GHz)		ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)	Pass
Radiated Emissions (below 1GHz)		ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)	Pass

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply: 3V DC(3V x 1 "CR2032" Button Cell)
Operation Frequency: 915.35-918.75MHz
Modulation Type: 2FSK
Number of Channels: 35
Channel Spacing: 100KHz
Antenna Type: Integral Antenna

4.2 Operation Frequency each of channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	915.35MHz	11	916.35MHz	21	917.35MHz	31	918.35MHz
2	915.45MHz	12	916.45MHz	22	917.45MHz	32	918.45MHz
3	915.55MHz	13	916.55MHz	23	917.55MHz	33	918.55MHz
4	915.65MHz	14	916.65MHz	24	917.65MHz	34	918.65MHz
5	915.75MHz	15	916.75MHz	25	917.75MHz	35	918.75MHz
6	915.85MHz	16	916.85MHz	26	917.85MHz	36	
7	915.95MHz	17	916.95MHz	27	917.95MHz	37	
8	916.05MHz	18	917.05MHz	28	918.05MHz	38	
9	916.15MHz	19	917.15MHz	29	918.15MHz	39	
10	916.25MHz	20	917.25MHz	30	918.25MHz	40	

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
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The EUT has been tested as an independent unit.			

4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
20dB Bandwidth	± 3%
Field Strength of the Fundamental Signal (15.249(a))	±5.00dB (30MHz-1GHz; 3m); ± 5.12dB (1GHz-6GHz); ± 5.38dB (6GHz-18GHz); ± 5.61dB (18GHz-40GHz)
Restricted Band Around Fundamental Frequency	±5.00dB (30MHz-1GHz; 3m); ± 5.12dB (1GHz-6GHz); ± 5.38dB (6GHz-18GHz); ± 5.61dB (18GHz-40GHz)
Radiated Emissions (above 1GHz)	± 5.12dB (1GHz-6GHz); ± 5.38dB (6GHz-18GHz); ± 5.61dB (18GHz-40GHz)
Radiated Emissions (below 1GHz)	±5.00dB (30MHz-1GHz; 3m); ±4.38dB (30MHz-1GHz; 10m);

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.6 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

5 Equipment List

20dB Bandwidth					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Signal Analzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Field Strength of the Fundamental Signal (15.249(a))					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2022-02-21	2025-02-20
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19

Restricted Band Around Fundamental Frequency					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2022-02-21	2025-02-20
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19

Radiated Emissions (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**

Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2020-09-09	2022-09-08
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-12-17	2022-12-16
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-16	2022-09-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiated Emissions (below 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2022-02-21	2025-02-20
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2022-06-24	2023-06-23
DMM	Fluke	73	EMC0007	2022-06-24	2023-06-23

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

15.203 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.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement.

Antenna location: Refer to Internal photos

7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
Test Method: ANSI C63.10 (2013) Section 6.9

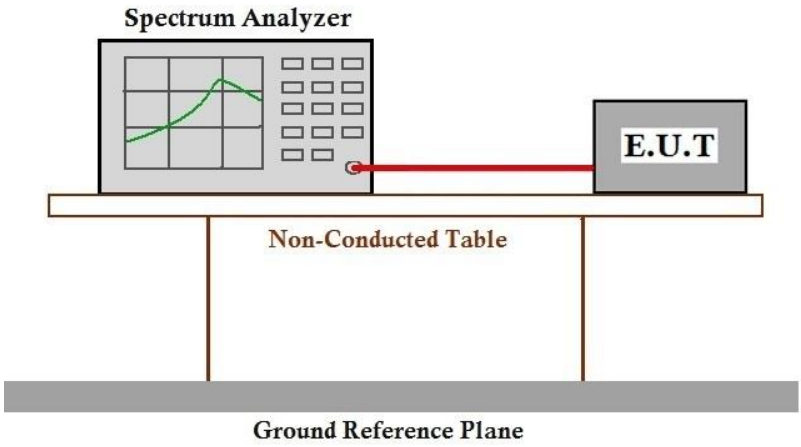
7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23.5 °C Humidity: 56.7 % RH Atmospheric Pressure: 1003 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode_Keep the EUT in transmitting with 2FSK modulation mode.

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.2 Field Strength of the Fundamental Signal (15.249(a))

Test Requirement 47 CFR Part 15, Subpart C 15.249(a)
Test Method: ANSI C63.10 (2013) Section 6.5&6.6
Measurement Distance: 3m
Limit:

Fundamental frequency(MHz)	Field strength of fundamental(millivolts/meter)	Field strength of harmonics(microvolts/meter)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500
Remark: The frequencies above 1000MHz 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 fundamental frequency in “902-928MHz”, the field strength of fundamental is based on Quasi-Peak.		

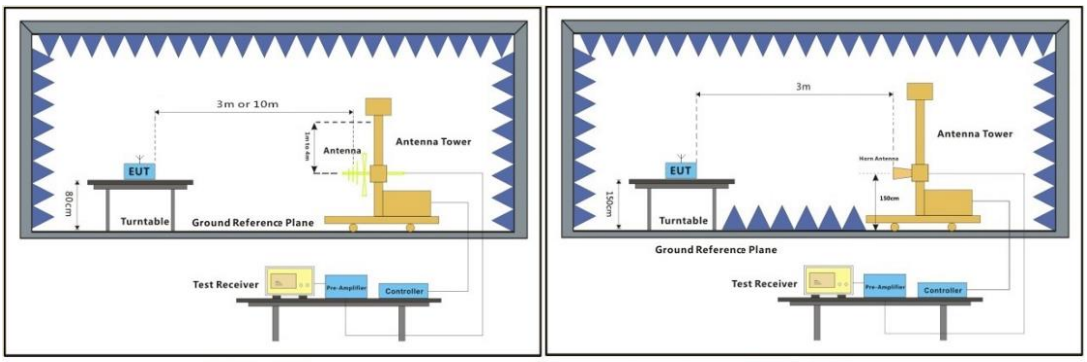
7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 23.6 °C Humidity: 56.8 % RH Atmospheric Pressure: 1003 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode_Keep the EUT in transmitting with 2FSK modulation mode.

7.2.3 Test Setup Diagram



30MHz-1GHz Above 1GHz

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 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 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.

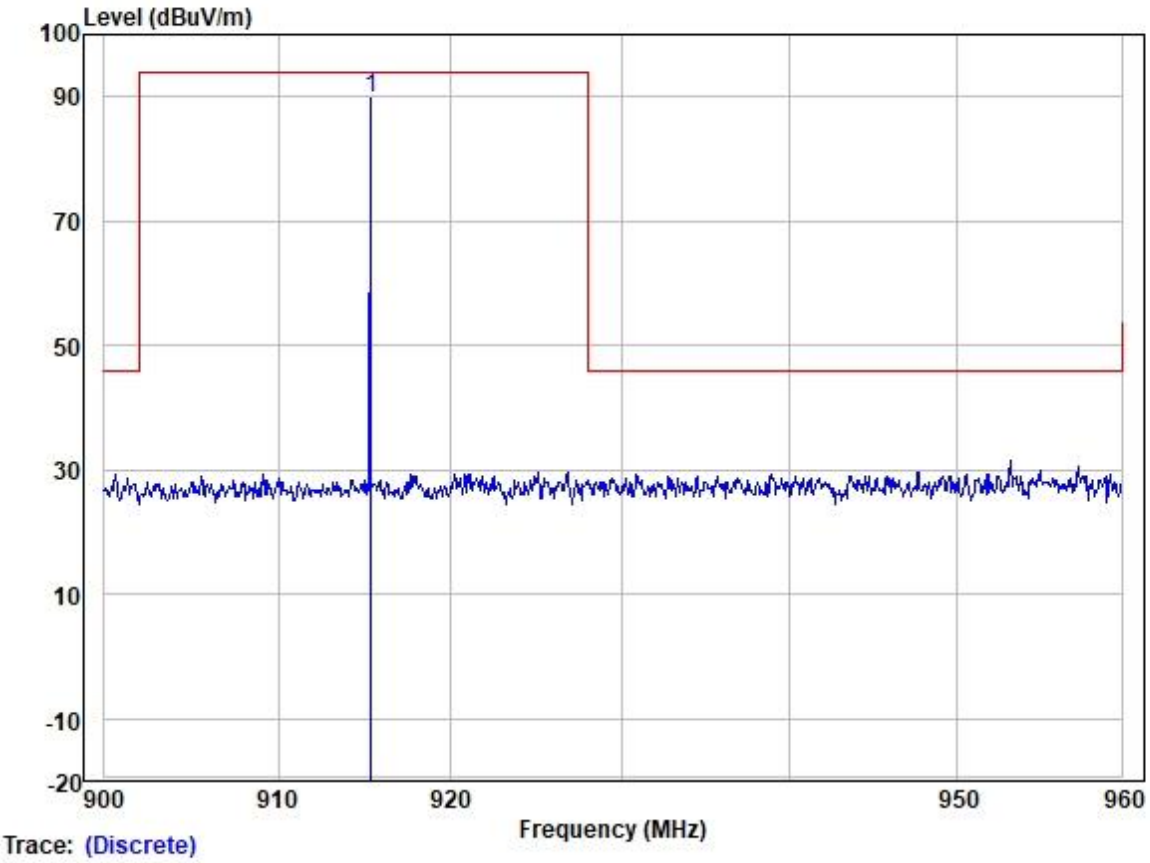
i.The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j.Repeat above procedures until all frequencies measured was complete.

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

Remark 2: Antenna: 3 denotes the type of antenna for above 1000MHz.

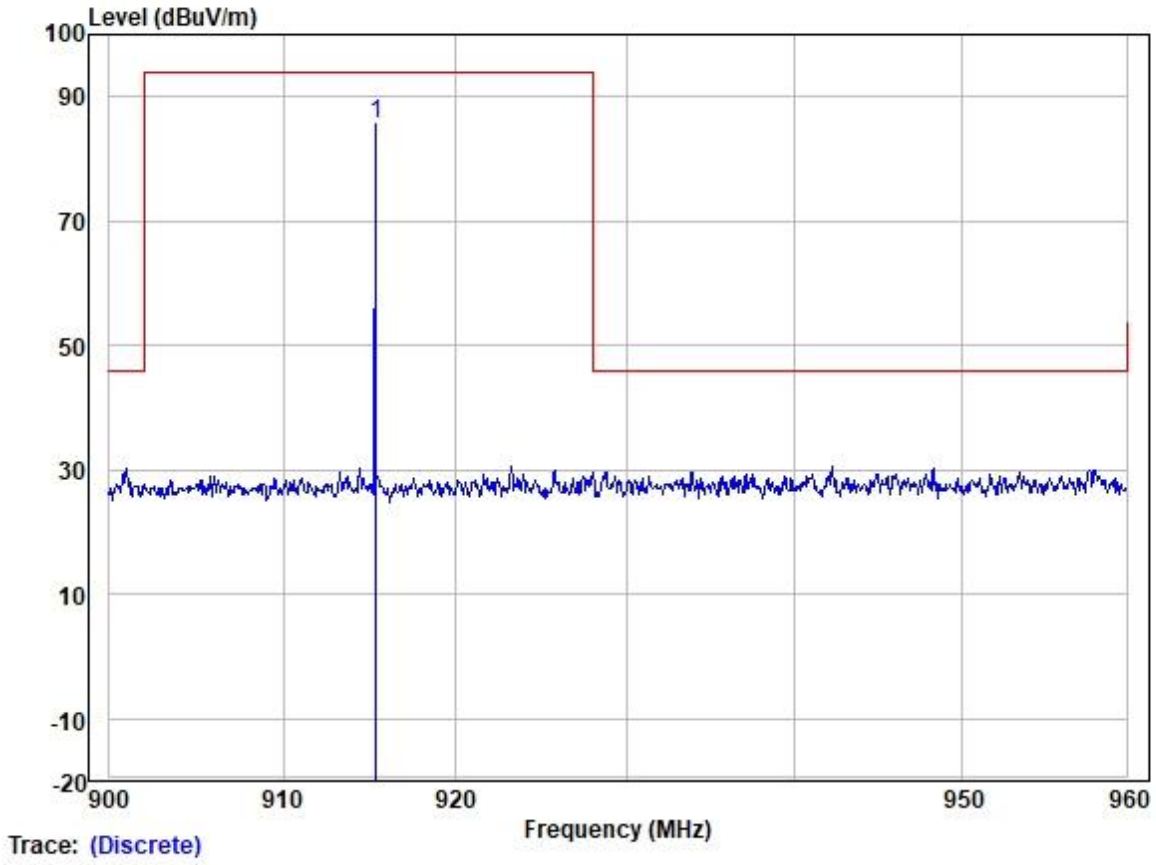
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK;Channel:Low



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	915.350	87.02	23.53	6.96	27.83	89.68	94.00	-4.32	HORIZONTAL	QP

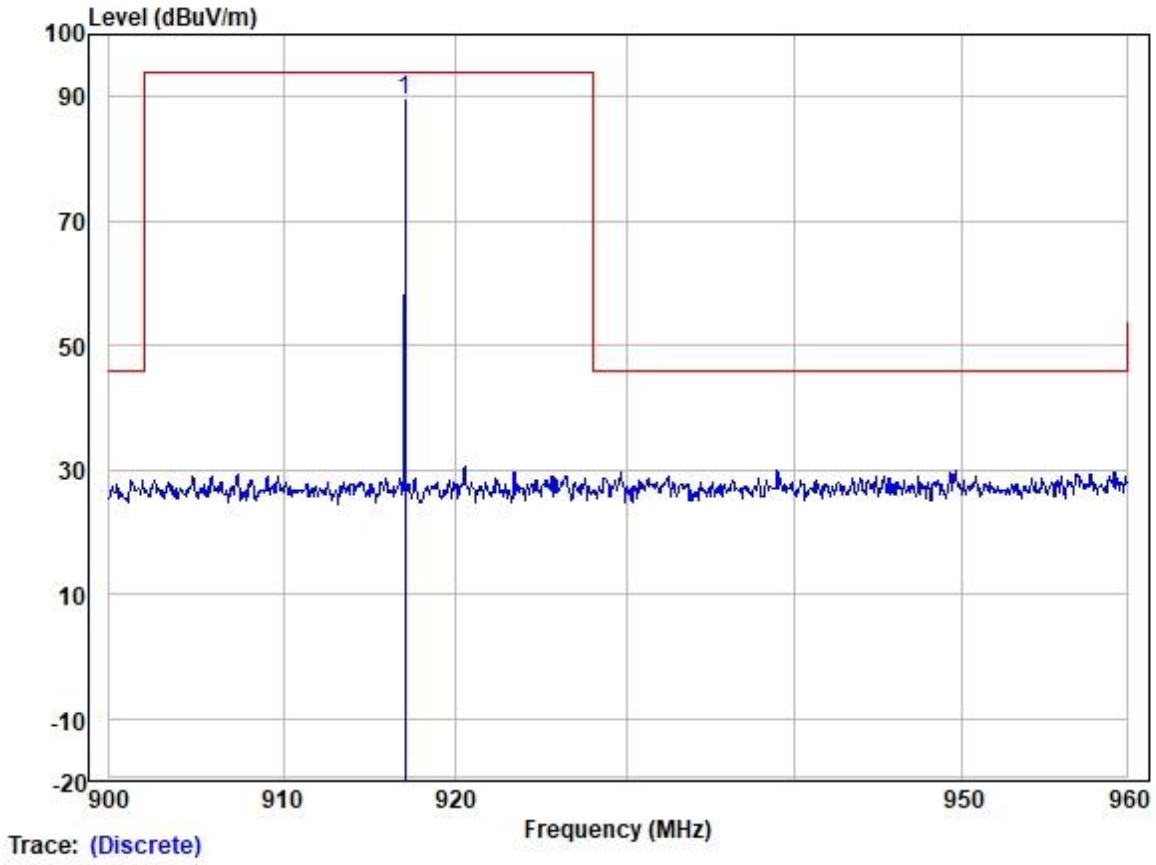
Test Mode: 01; Polarity: Vertical; Modulation:2FSK;Channel:Low



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	915.350	82.88	23.53	6.96	27.83	85.54	94.00	-8.46	VERTICAL	QP

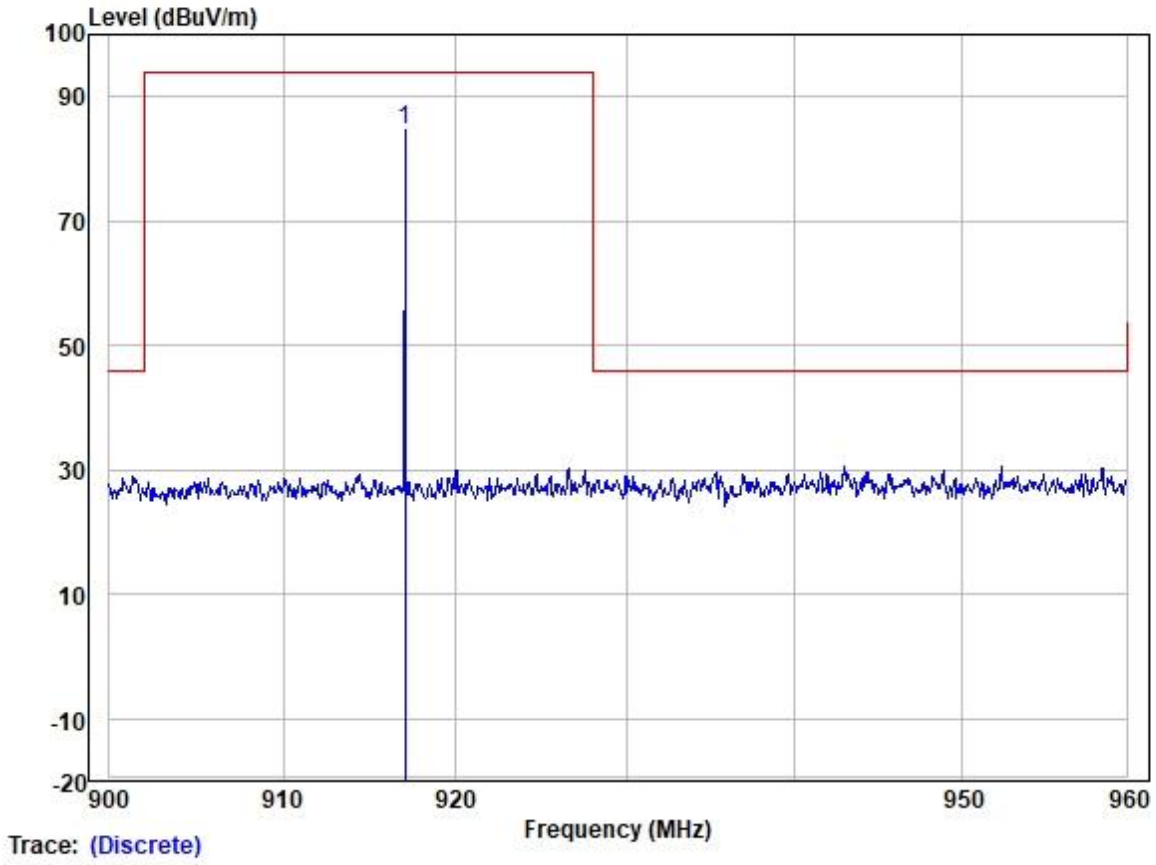
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:Middle



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	917.050	86.85	23.53	7.01	27.82	89.57	94.00	-4.43	HORIZONTAL	QP

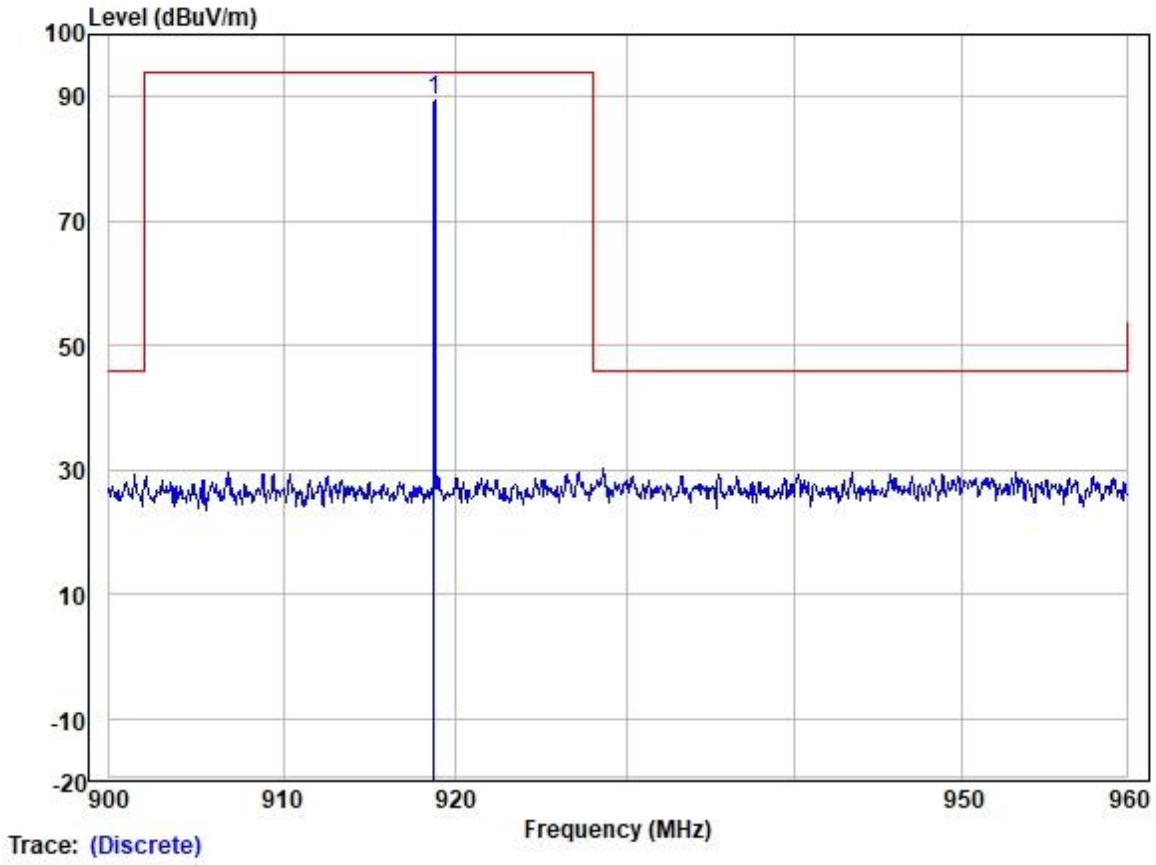
Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:Middle



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	917.050	82.01	23.53	7.01	27.82	84.73	94.00	-9.27	VERTICAL	QP

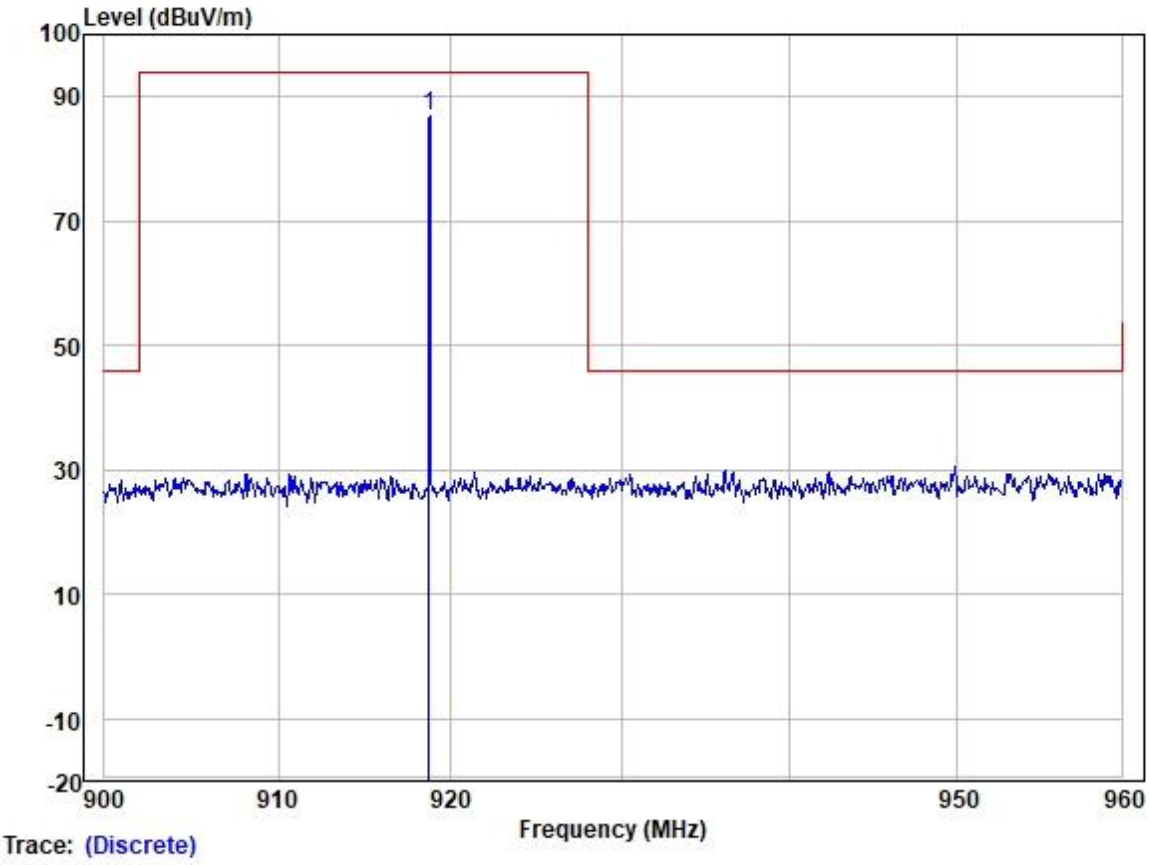
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; Channel:High



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	918.750	86.72	23.60	7.01	27.82	89.51	94.00	-4.49	HORIZONTAL	QP

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



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	918.750	84.13	23.60	7.01	27.82	86.92	94.00	-7.08	VERTICAL	QP

7.3 Radiated Emissions (above 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Measurement Distance: 3m
Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	-	300
0.490-1.705	24000/F(kHz)	-	-	30
1.705-30	30	-	-	30
30-88	100	40.0	QP	3
88-216	150	43.5	QP	3
216-960	200	46.0	QP	3
960-1000	500	54.0	QP	3
Above 1000	500	54.0	AV	3

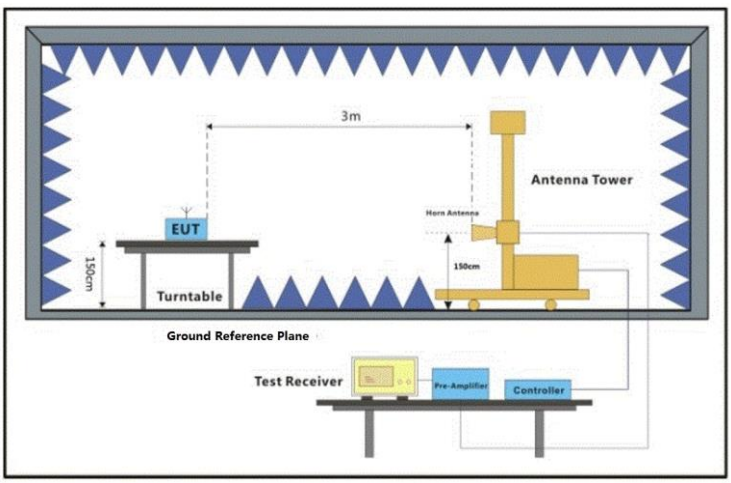
7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 23.7 °C Humidity: 57.2 % RH Atmospheric Pressure: 1003 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode_Keep the EUT in transmitting with 2FSK modulation mode.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

a. 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 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, quasi-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:

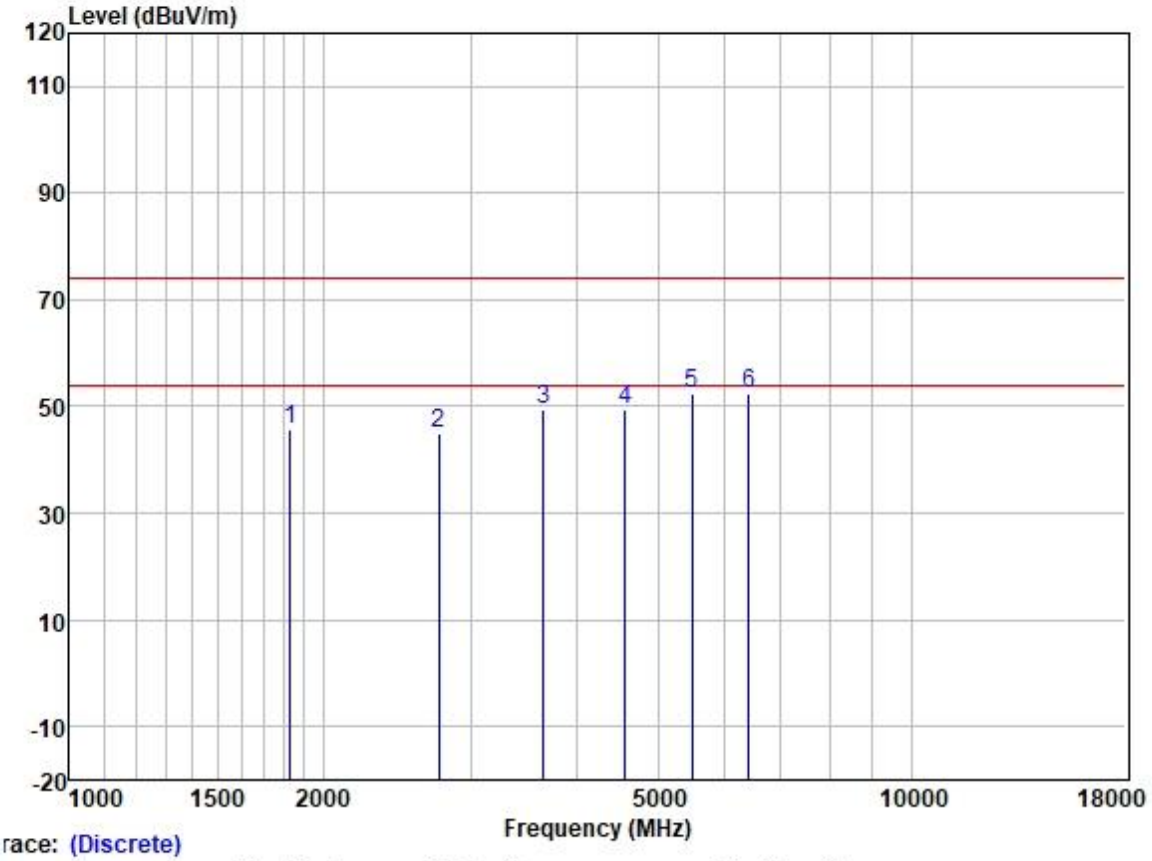
1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

2) Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3) 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.

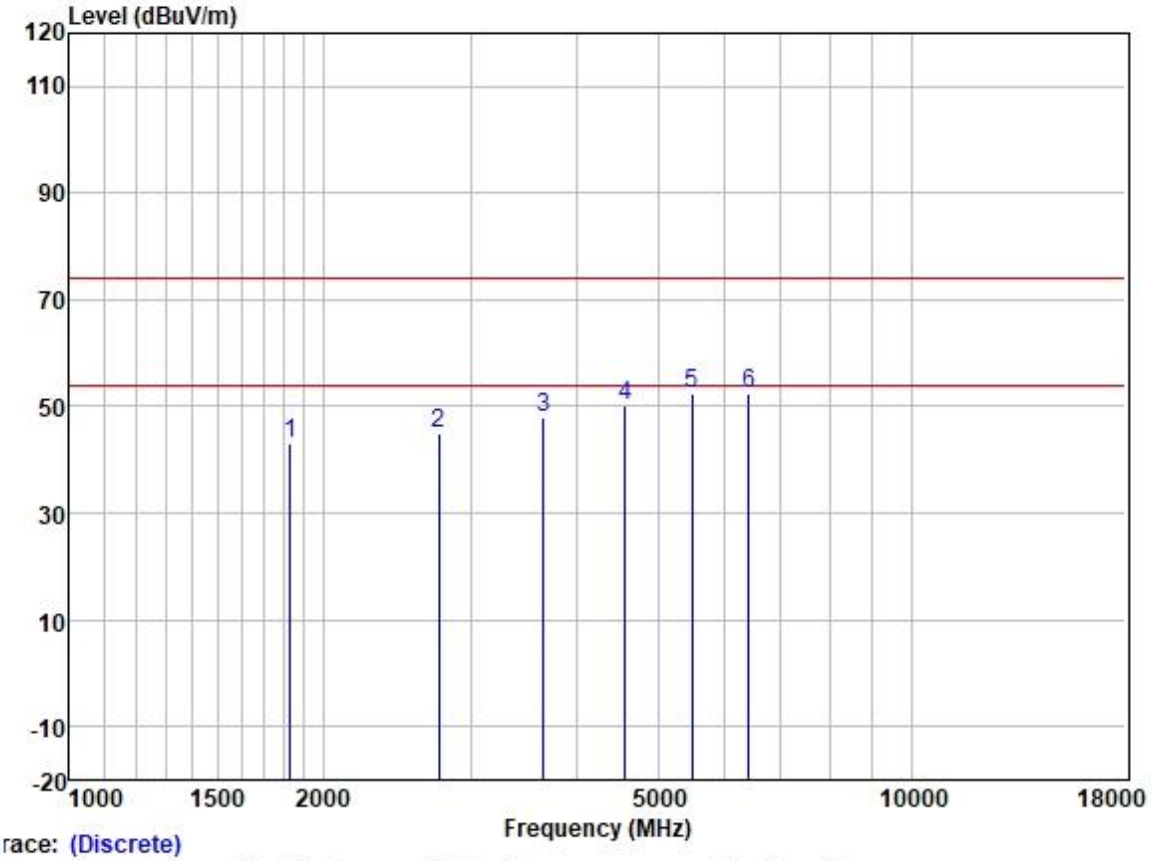
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:Low



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1830.700	54.66	25.98	2.97	37.80	45.81	74.00	-28.19	HORIZONTAL	Peak
2	2746.050	50.91	27.98	3.64	37.44	45.09	74.00	-28.91	HORIZONTAL	Peak
3	3661.400	52.78	29.15	4.53	36.89	49.57	74.00	-24.43	HORIZONTAL	Peak
4	4576.750	50.20	30.91	5.33	36.82	49.62	74.00	-24.38	HORIZONTAL	Peak
5	5492.100	51.29	31.80	6.36	36.88	52.57	74.00	-21.43	HORIZONTAL	Peak
6	6407.450	49.75	33.79	5.89	36.98	52.45	74.00	-21.55	HORIZONTAL	Peak

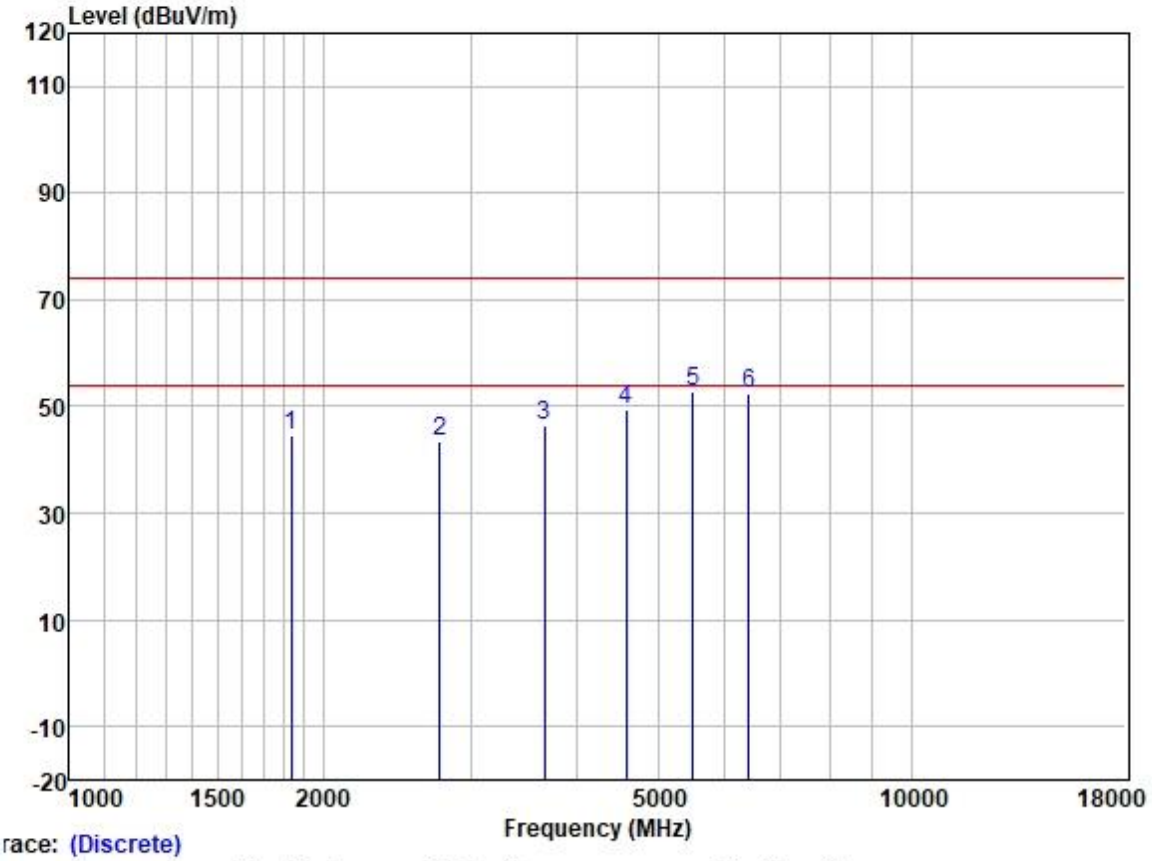
Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:Low



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1830.700	52.04	25.98	2.97	37.80	43.19	74.00	-30.81	VERTICAL	Peak
2	2746.050	50.67	27.98	3.64	37.44	44.85	74.00	-29.15	VERTICAL	Peak
3	3661.400	51.17	29.15	4.53	36.89	47.96	74.00	-26.04	VERTICAL	Peak
4	4576.750	50.84	30.91	5.33	36.82	50.26	74.00	-23.74	VERTICAL	Peak
5	5492.100	51.22	31.80	6.36	36.88	52.50	74.00	-21.50	VERTICAL	Peak
6	6407.450	49.75	33.79	5.89	36.98	52.45	74.00	-21.55	VERTICAL	Peak

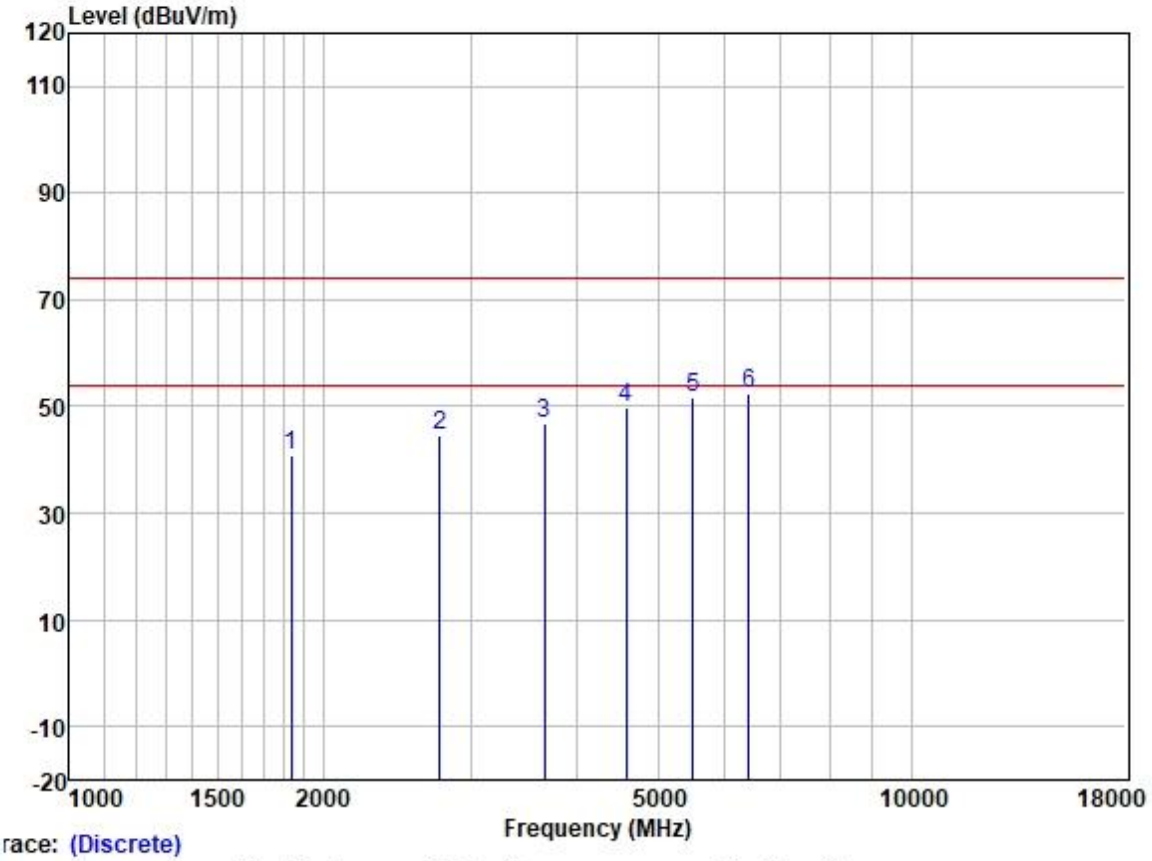
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1834.100	53.48	25.98	2.96	37.80	44.62	74.00	-29.38	HORIZONTAL	Peak
2	2751.150	49.33	28.01	3.65	37.44	43.55	74.00	-30.45	HORIZONTAL	Peak
3	3668.200	49.54	29.17	4.54	36.88	46.37	74.00	-27.63	HORIZONTAL	Peak
4	4585.250	49.86	30.93	5.37	36.82	49.34	74.00	-24.66	HORIZONTAL	Peak
5	5502.300	51.41	31.80	6.40	36.88	52.73	74.00	-21.27	HORIZONTAL	Peak
6	6419.350	49.63	33.79	5.89	36.99	52.32	74.00	-21.68	HORIZONTAL	Peak

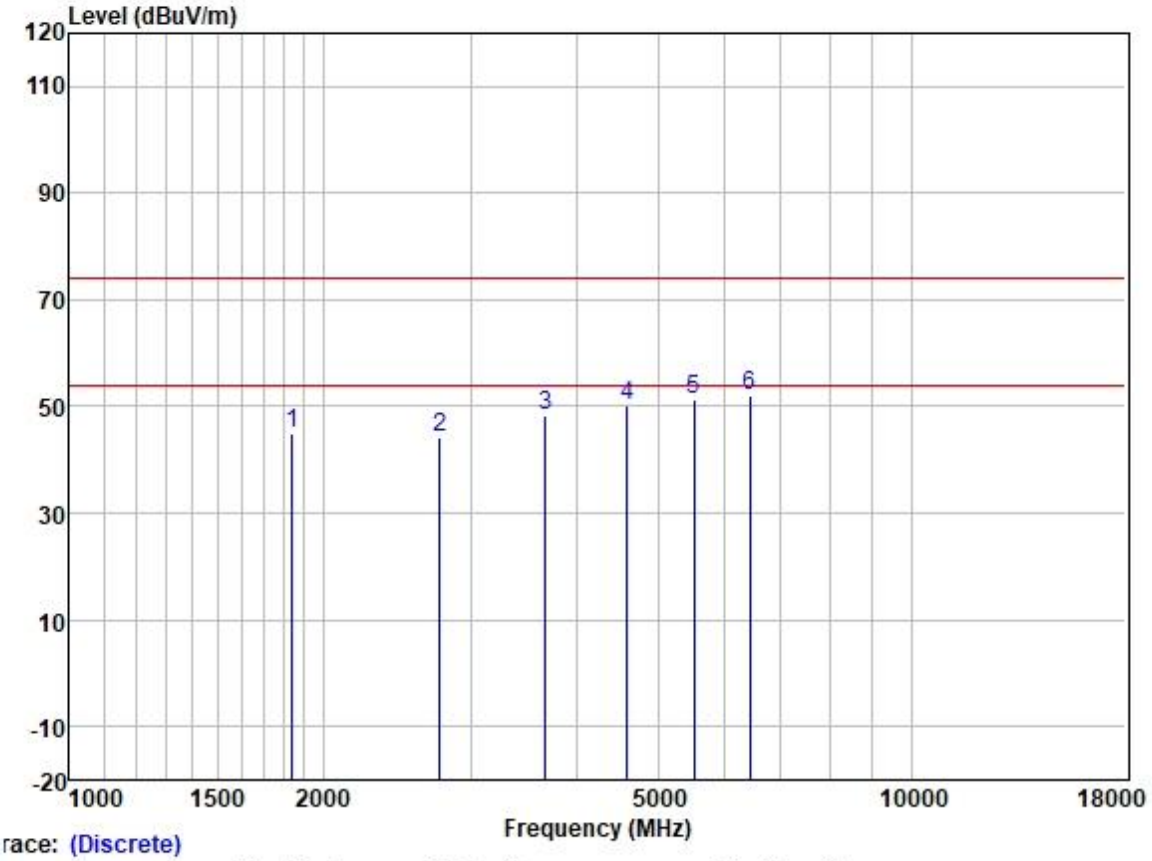
Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:middle



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1834.100	49.81	25.98	2.96	37.80	40.95	74.00	-33.05	VERTICAL	Peak
2	2751.150	50.22	28.01	3.65	37.44	44.44	74.00	-29.56	VERTICAL	Peak
3	3668.200	49.99	29.17	4.54	36.88	46.82	74.00	-27.18	VERTICAL	Peak
4	4585.250	50.38	30.93	5.37	36.82	49.86	74.00	-24.14	VERTICAL	Peak
5	5502.300	50.26	31.80	6.40	36.88	51.58	74.00	-22.42	VERTICAL	Peak
6	6419.350	49.77	33.79	5.89	36.99	52.46	74.00	-21.54	VERTICAL	Peak

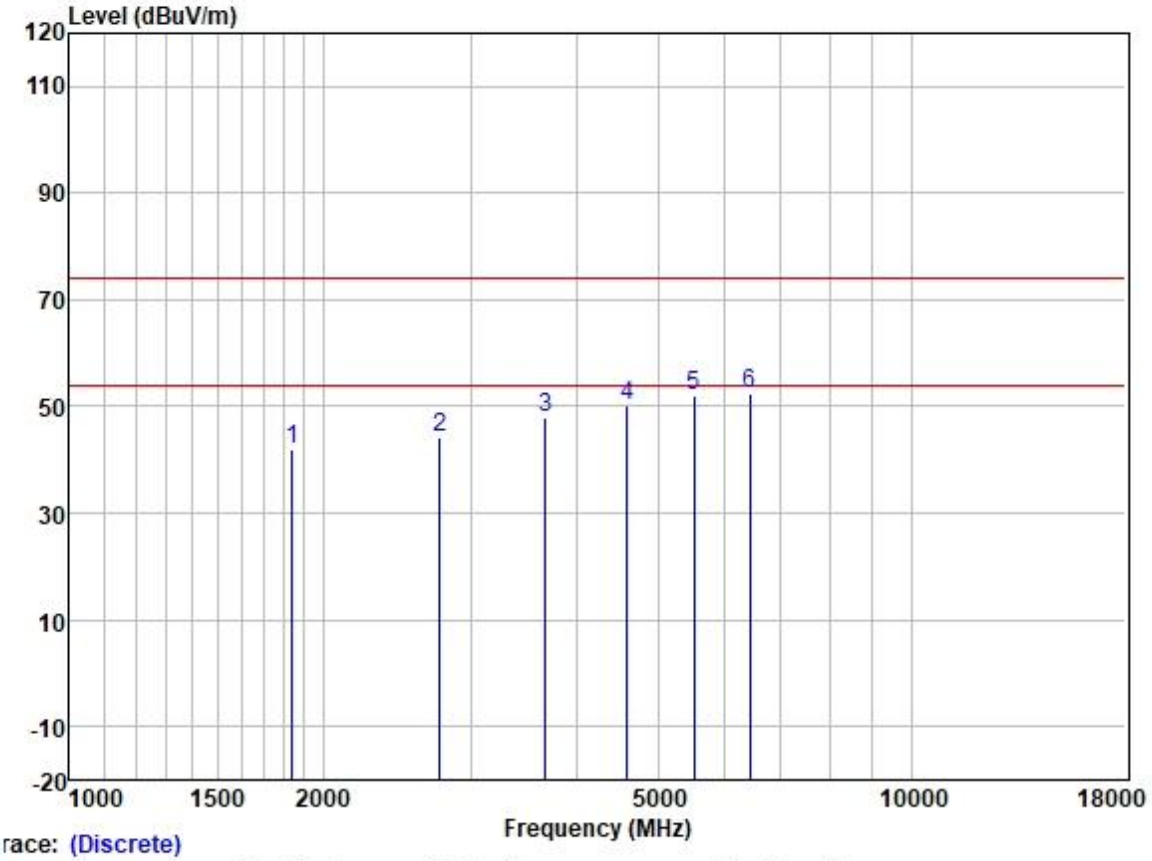
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1837.500	53.86	25.98	2.96	37.78	45.02	74.00	-28.98	HORIZONTAL	Peak
2	2756.250	49.95	28.03	3.66	37.44	44.20	74.00	-29.80	HORIZONTAL	Peak
3	3675.000	51.37	29.17	4.54	36.88	48.20	74.00	-25.80	HORIZONTAL	Peak
4	4593.750	50.69	30.95	5.40	36.82	50.22	74.00	-23.78	HORIZONTAL	Peak
5	5512.500	49.96	31.81	6.38	36.88	51.27	74.00	-22.73	HORIZONTAL	Peak
6	6431.250	49.43	33.83	5.88	36.99	52.15	74.00	-21.85	HORIZONTAL	Peak

Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:High



race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1837.500	50.76	25.98	2.96	37.78	41.92	74.00	-32.08	VERTICAL	Peak
2	2756.250	49.90	28.03	3.66	37.44	44.15	74.00	-29.85	VERTICAL	Peak
3	3675.000	51.05	29.17	4.54	36.88	47.88	74.00	-26.12	VERTICAL	Peak
4	4593.750	50.57	30.95	5.40	36.82	50.10	74.00	-23.90	VERTICAL	Peak
5	5512.500	50.85	31.81	6.38	36.88	52.16	74.00	-21.84	VERTICAL	Peak
6	6431.250	49.61	33.83	5.88	36.99	52.33	74.00	-21.67	VERTICAL	Peak

7.4 Radiated Emissions (below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Measurement Distance: 3m
Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	-	300
0.490-1.705	24000/F(kHz)	-	-	30
1.705-30	30	-	-	30
30-88	100	40.0	QP	3
88-216	150	43.5	QP	3
216-960	200	46.0	QP	3
960-1000	500	54.0	QP	3
Above 1000	500	54.0	AV	3

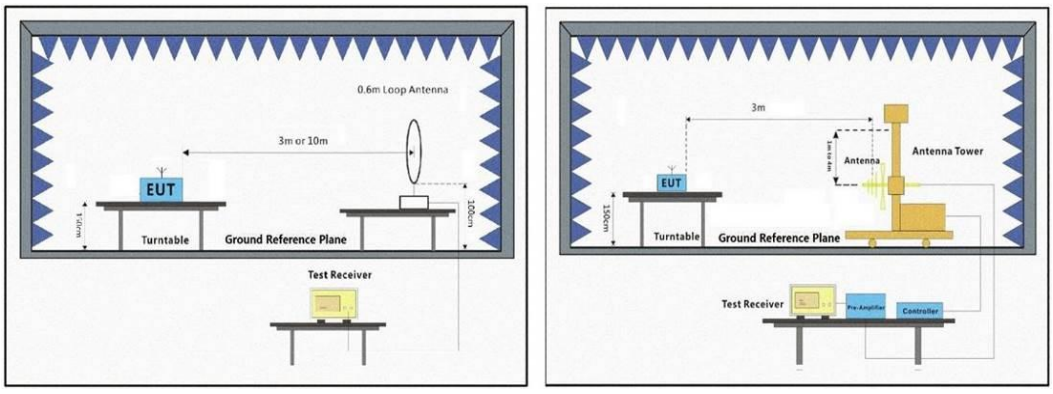
7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 23.2 °C Humidity: 56.8 % RH Atmospheric Pressure: 1003 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode_Keep the EUT in transmitting with 2FSK modulation mode.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 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 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, quasi-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:

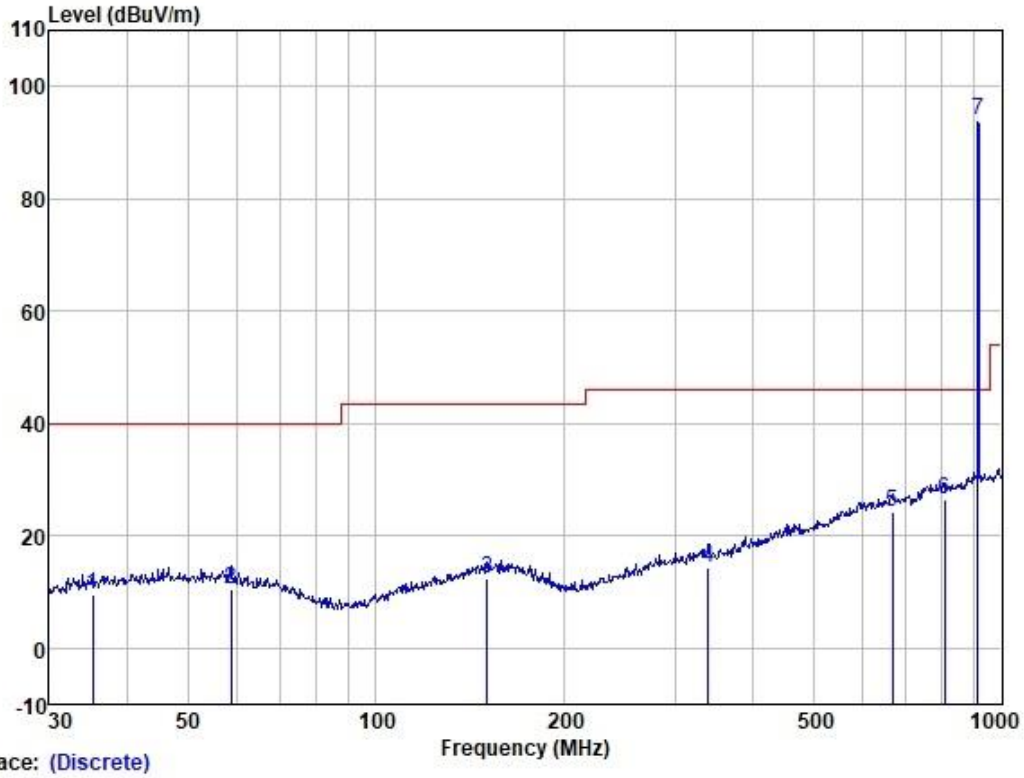
1) Through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

3) Scan from 9kHz to 1 GHz, 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.

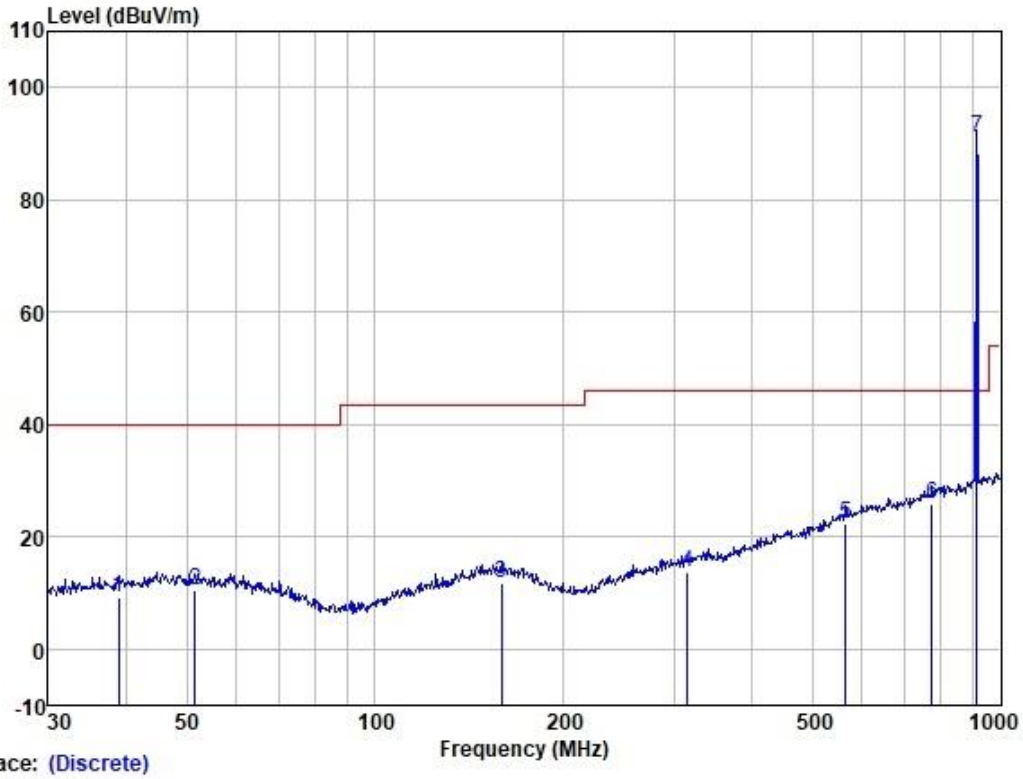
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:Low



Trace: (Discrete)
Site : SGS
Condition:
Job :
Model :
Power :
Test Mode:

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	35.251	23.03	12.52	1.07	27.18	9.44	40.00	-30.56	HORIZONTAL	QP
2	58.613	23.39	13.04	1.24	27.16	10.51	40.00	-29.49	HORIZONTAL	QP
3	150.538	23.62	13.34	2.24	26.83	12.37	43.50	-31.13	HORIZONTAL	QP
4	339.589	23.59	14.21	3.50	26.84	14.46	46.00	-31.54	HORIZONTAL	QP
5	668.142	26.36	20.52	5.61	28.17	24.32	46.00	-21.68	HORIZONTAL	QP
6	810.265	25.61	22.57	6.23	28.02	26.39	46.00	-19.61	HORIZONTAL	QP
7 *	915.470	91.14	23.73	6.96	27.83	94.00	46.00	48.00	HORIZONTAL	Peak

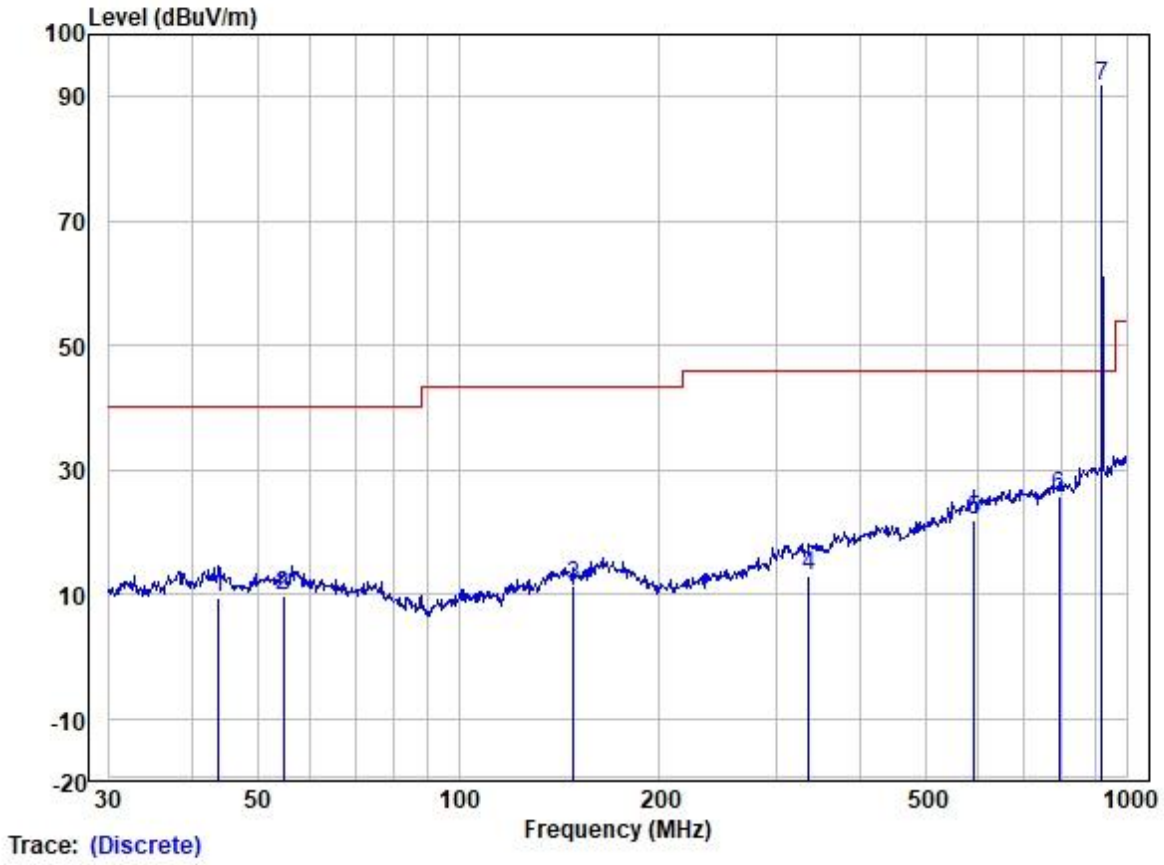
Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:Low



Trace: (Discrete)
Site : SGS
Condition:
Job :
Model :
Power :
Test Mode:

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	38.888	22.23	12.94	1.09	27.18	9.08	40.00	-30.92	VERTICAL	QP
2	51.481	22.92	13.59	1.16	27.17	10.50	40.00	-29.50	VERTICAL	QP
3	159.225	22.75	13.34	2.33	26.80	11.62	43.50	-31.88	VERTICAL	QP
4	315.481	23.32	13.61	3.29	26.63	13.59	46.00	-32.41	VERTICAL	QP
5	564.639	27.09	18.59	4.93	28.15	22.46	46.00	-23.54	VERTICAL	QP
6	776.878	25.74	22.19	6.08	28.05	25.96	46.00	-20.04	VERTICAL	QP
7 *	915.370	88.39	23.73	6.96	27.83	91.25	46.00	45.25	VERTICAL	Peak

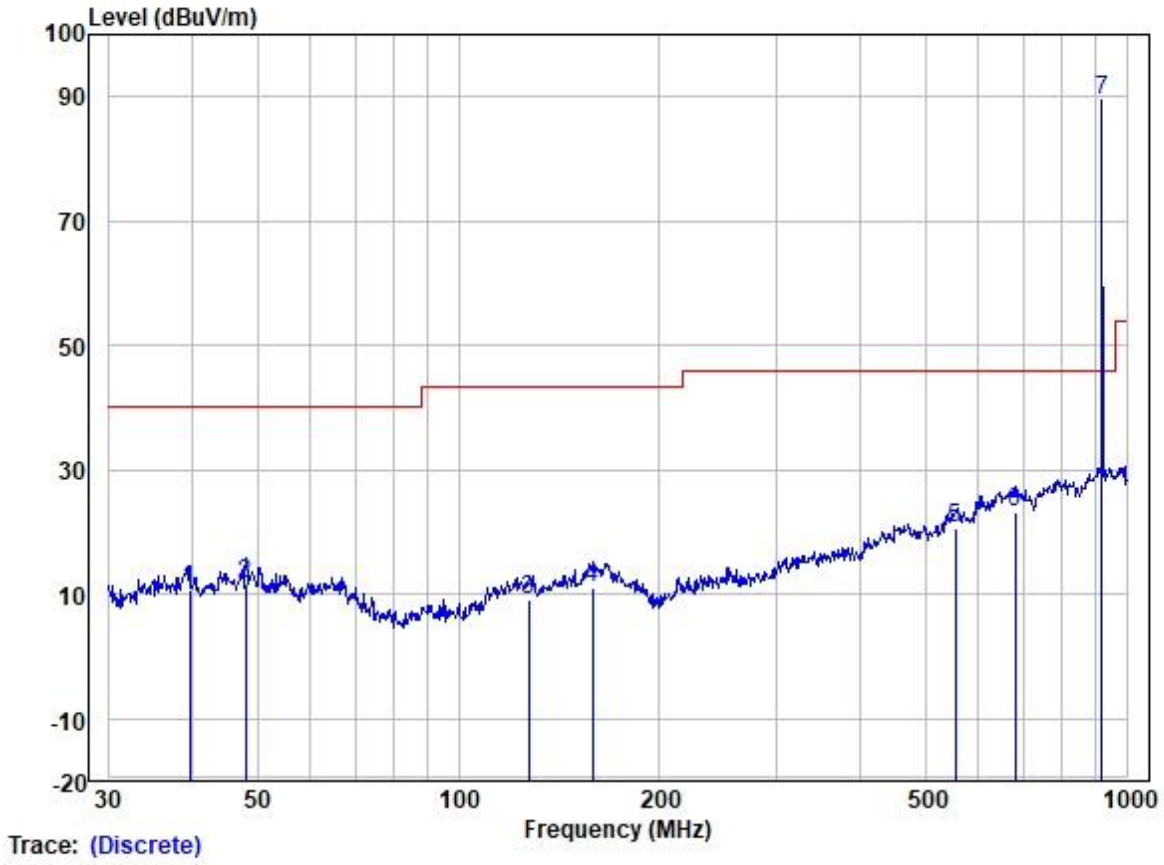
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:Middle



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	43.812	22.24	13.39	1.12	27.17	9.58	40.00	-30.42	HORIZONTAL	QP
2	54.643	22.27	13.39	1.19	27.16	9.69	40.00	-30.31	HORIZONTAL	QP
3	148.441	22.64	13.31	2.22	26.84	11.33	43.50	-32.17	HORIZONTAL	QP
4	334.859	22.21	14.19	3.46	26.78	13.08	46.00	-32.92	HORIZONTAL	QP
5	590.974	25.60	19.29	5.10	28.20	21.79	46.00	-24.21	HORIZONTAL	QP
6	790.619	25.20	22.58	6.14	28.04	25.88	46.00	-20.12	HORIZONTAL	QP
7	917.050	88.87	23.73	7.01	27.82	91.79	46.00	45.79	HORIZONTAL	Peak

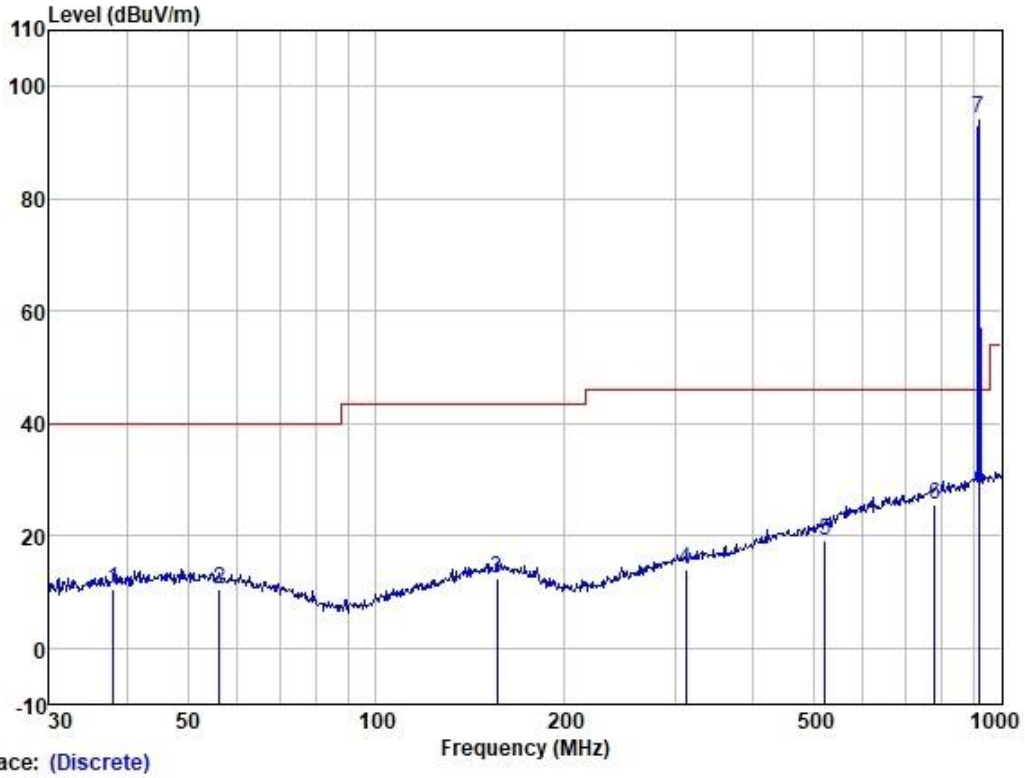
Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:Middle



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	39.576	23.73	12.99	1.10	27.18	10.64	40.00	-29.36	VERTICAL	QP
2	47.994	24.25	13.55	1.13	27.17	11.76	40.00	-28.24	VERTICAL	QP
3	127.218	22.50	11.60	1.94	27.00	9.04	43.50	-34.46	VERTICAL	QP
4	158.668	22.17	13.36	2.33	26.80	11.06	43.50	-32.44	VERTICAL	QP
5	552.883	25.49	18.29	4.83	28.12	20.49	46.00	-25.51	VERTICAL	QP
6	679.960	25.28	20.48	5.70	28.17	23.29	46.00	-22.71	VERTICAL	QP
7	917.050	86.49	23.73	7.01	27.82	89.41	46.00	43.41	VERTICAL	Peak

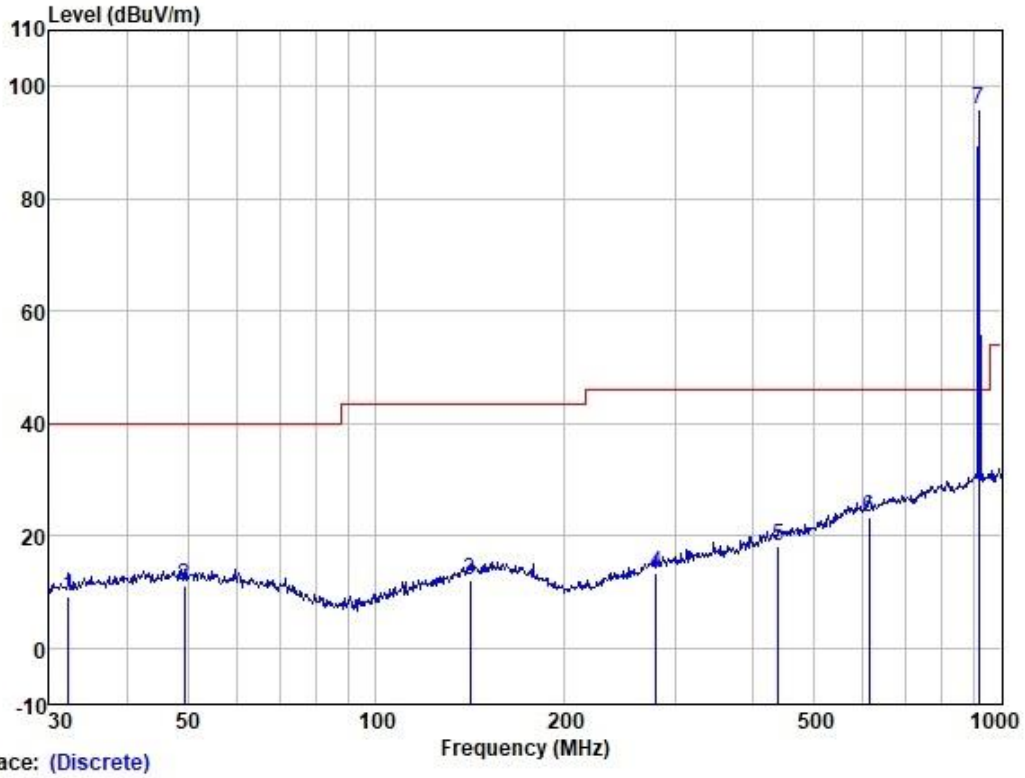
Test Mode: 01; Polarity: Horizontal; Modulation:2FSK; Channel:High



Trace: (Discrete)
Site : SGS
Condition:
Job :
Model :
Power :
Test Mode:

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	37.945	23.64	12.81	1.09	27.18	10.36	40.00	-29.64	HORIZONTAL	QP
2	56.197	23.17	13.26	1.20	27.16	10.47	40.00	-29.53	HORIZONTAL	QP
3	155.910	23.45	13.34	2.30	26.81	12.28	43.50	-31.22	HORIZONTAL	QP
4	312.179	23.74	13.50	3.26	26.61	13.89	46.00	-32.11	HORIZONTAL	QP
5	522.718	24.66	18.08	4.55	28.02	19.27	46.00	-26.73	HORIZONTAL	QP
6	782.345	25.24	22.23	6.11	28.05	25.53	46.00	-20.47	HORIZONTAL	QP
7 *	918.840	91.38	23.84	7.01	27.82	94.41	46.00	48.41	HORIZONTAL	Peak

Test Mode: 01; Polarity: Vertical; Modulation:2FSK; Channel:High



Trace: (Discrete)
Site : SGS
Condition:
Job :
Model :
Power :
Test Mode:

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.179	23.45	11.99	1.04	27.19	9.29	40.00	-30.71	VERTICAL	QP
2	49.359	23.55	13.61	1.14	27.17	11.13	40.00	-28.87	VERTICAL	QP
3	141.330	23.91	12.92	2.12	26.90	12.05	43.50	-31.45	VERTICAL	QP
4	280.024	24.06	12.72	3.09	26.57	13.30	46.00	-32.70	VERTICAL	QP
5	440.196	24.86	16.62	4.13	27.57	18.04	46.00	-27.96	VERTICAL	QP
6	614.214	26.01	20.10	5.23	28.20	23.14	46.00	-22.86	VERTICAL	QP
7 *	918.840	93.01	23.84	7.01	27.82	96.04	46.00	50.04	VERTICAL	Peak

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR2204000469AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR2204000469AT

10 Appendix

1. Bandwidth

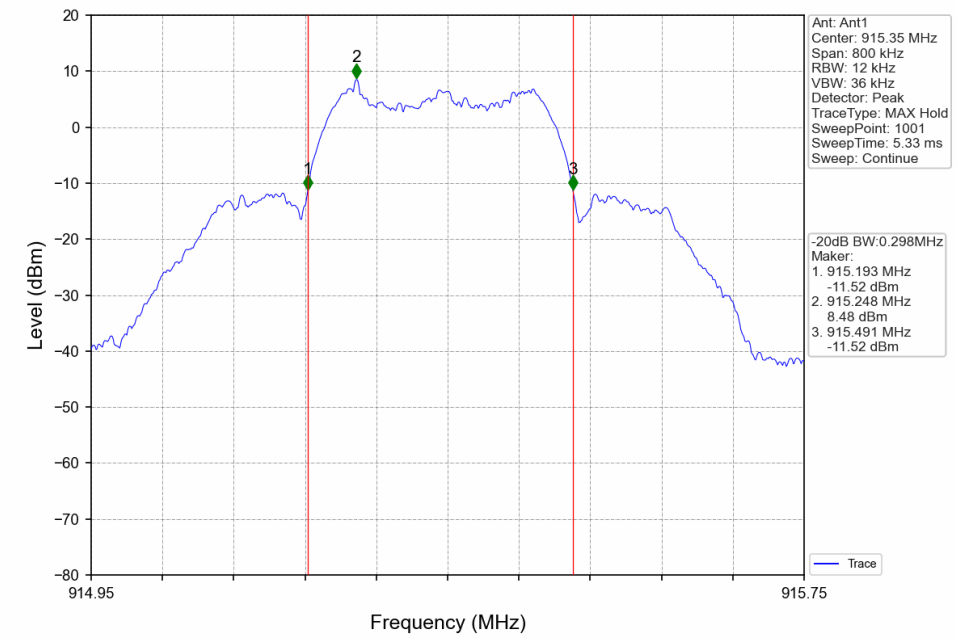
1.2 20dB BW

1.2.1 Test Result

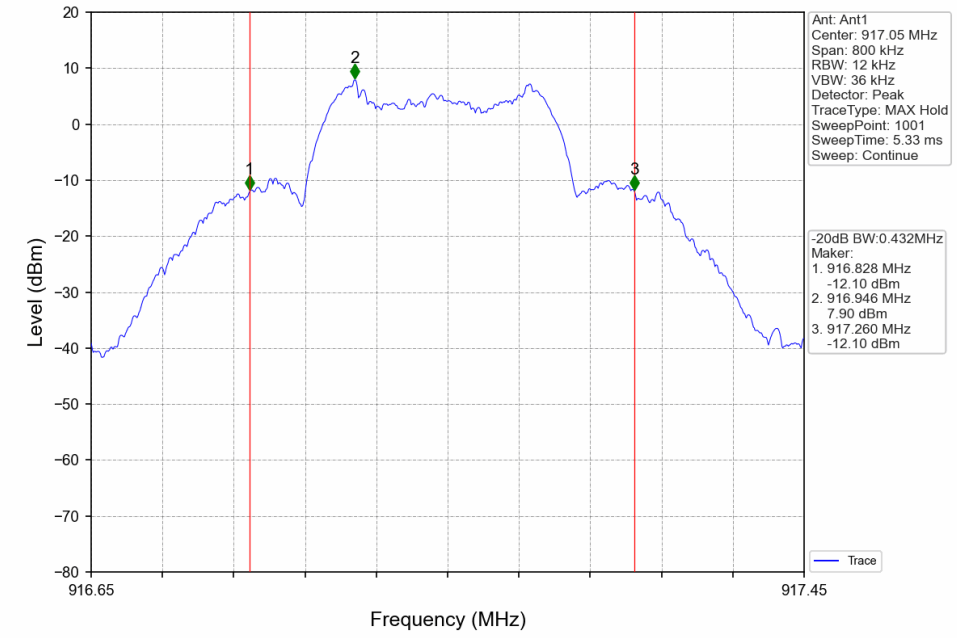
Mode	TX Type	Frequency (MHz)	ANT	20dB Bandwidth (MHz) Result	Verdict
2FSK	SISO	915.35	1	0.298	Pass
		917.05	1	0.432	Pass
		918.75	1	0.405	Pass

1.2.2 Test Graph

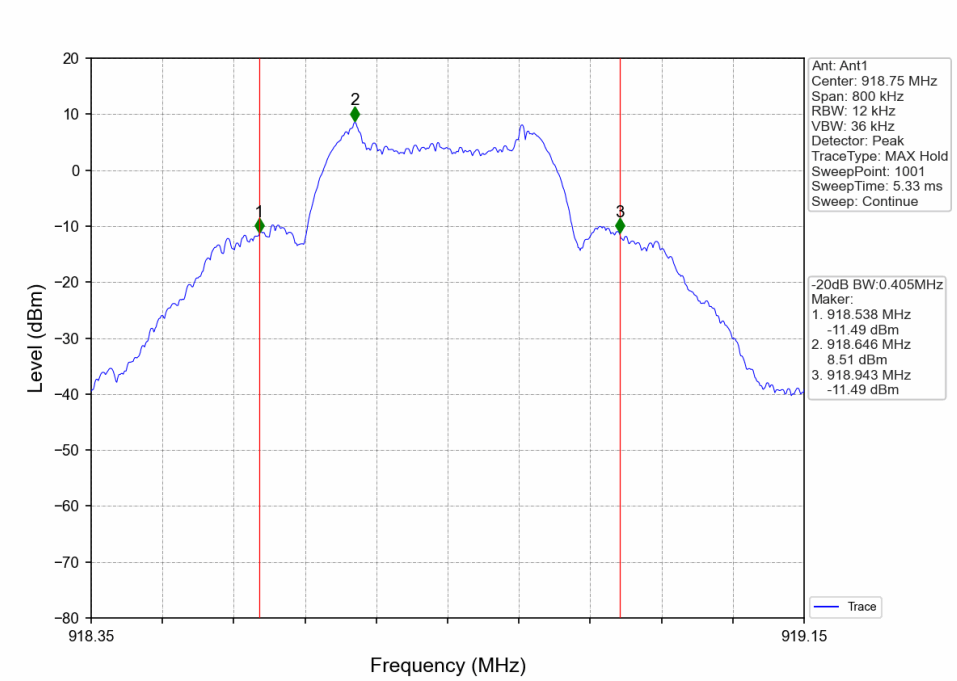
2FSK _LCH_915.35MHz



2FSK _MCH_917.05MHz_



2FSK _HCH_918.75MHz



- End of the Report -