



TEST REPORT

Application No.: GZCR2302000103AT
Applicant: SKULLCANDY, INC.
Address of Applicant: 6301 N Landmark Dr Park City UT 84098, Utah United States of America
Manufacturer: SKULLCANDY, INC.
Address of Manufacturer: 6301 N Landmark Dr Park City UT 84098, Utah United States of America
Equipment Under Test (EUT):
EUT Name: Rail ANC/ Rail ANC XT
Model No.: S2IPW
Trade Mark:



Skullcandy

Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2023-02-08
Date of Test: 2023-02-08 to 2023-02-08
Date of Issue: 2023-02-14

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

Ricky Liu

Ricky Liu
Manager



Revision Record			
Version	Report No.	Date	Remark
01		2023-02-14	Original

Authorized for issue by			
Tested By			
		Curry Wu/Project Engineer	
Reviewed By			
		Ricky Liu/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)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1.3	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2013) Section 11.11	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	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions (Below 1GHz)		ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions (Above 1GHz)		ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Duty Cycle		ANSI C63.10 (2013) Section 11.6	KDB 558074 D01 v05r02 section 6	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.



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4 General Information

4.1 Details of E.U.T.

Power supply:	Left earbuds: Li-Ion Polymer Battery 3.7V 57mAh (Charge by travel case) Right earbuds: Li-Ion Polymer Battery 3.7V 57mAh (Charge by travel case) travel case with backup battery: Li-Ion Polymer Battery 3.7V 500mAh (Charged by Type-C port or wireless charging pad))
Cable(s):	USB cable: 10cm unshielded
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.2 Dual mode
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	FPC Antenna
Antenna Gain:	Left earbud:1.49dBi;Right earbud:1.45dBi

4.2 Description of Support Units

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

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Peak Output Power	$\pm 0.75\text{dB}$
Minimum 6dB Bandwidth	$\pm 3\%$
Power Spectrum Density	$\pm 2.84\text{dB}$
Conducted Band Edges Measurement	$\pm 0.75\text{dB}$
Conducted Spurious Emissions	$\pm 0.75\text{dB}$
Radiated Emissions which fall in the restricted bands	$\pm 5.00\text{dB}$ (30MHz-1GHz; 3m); $\pm 5.12\text{dB}$ (1GHz-6GHz); $\pm 5.38\text{dB}$ (6GHz-18GHz); $\pm 5.61\text{dB}$ (18GHz-40GHz)
Radiated Spurious Emissions (Below 1GHz)	$\pm 5.00\text{dB}$ (30MHz-1GHz; 3m); $\pm 4.38\text{dB}$ (30MHz-1GHz; 10m);
Radiated Spurious Emissions (Above 1GHz)	$\pm 5.12\text{dB}$ (1GHz-6GHz); $\pm 5.38\text{dB}$ (6GHz-18GHz); $\pm 5.61\text{dB}$ (18GHz-40GHz)
Duty Cycle	$\pm 0.37\%$
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

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

No tests were sub-contracted.

4.5 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.

- **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.



4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Peak Output Power

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2022-05-16	2023-05-15
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Minimum 6dB Bandwidth

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Power Spectrum Density

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Conducted Band Edges Measurement

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Conducted Spurious Emissions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A



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Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-21	2025-09-20
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2022-12-16	2023-12-15
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2022-12-16	2023-12-15
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	2022-10-21	2023-10-20
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2022-07-29	2023-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2022-08-24	2023-08-23

Radiated Spurious Emissions (Below 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23
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
High Pass Filter (915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2022-12-16	2023-12-15
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2022-10-16	2025-10-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19
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Radiated Spurious Emissions (Above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-21	2025-09-20
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2022-12-16	2023-12-15
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2022-12-16	2023-12-15
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	2022-10-21	2023-10-20
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2022-07-29	2023-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2022-08-24	2023-08-23

Duty Cycle					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

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



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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

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of 15.211, 15.213, 15.217, 15.219, 15.221, or 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

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 integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is Left earbud:1.49dBi;Right earbud:1.45dBi.

Antenna location: Refer to internal photo.

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 11.9.1.3

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: 25.2 °C Humidity: 54.6 % RH Atmospheric Pressure: 1003 mbar

7.1.2 Test Mode Description

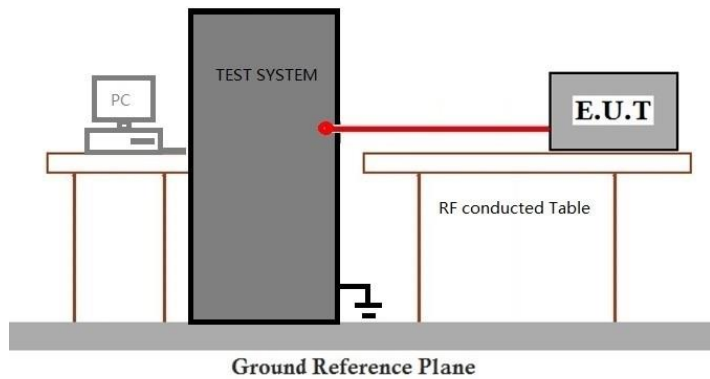
Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation



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7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

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: 25.2 °C

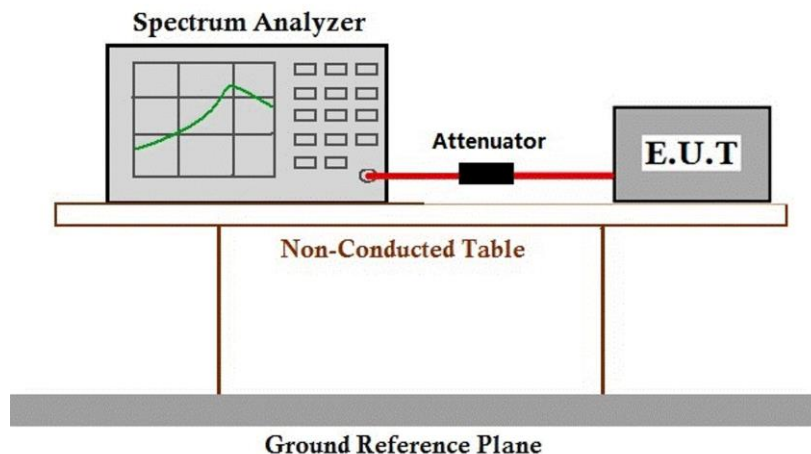
Humidity: 54.6 % RH

Atmospheric Pressure: 1003 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

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: 25.2 °C

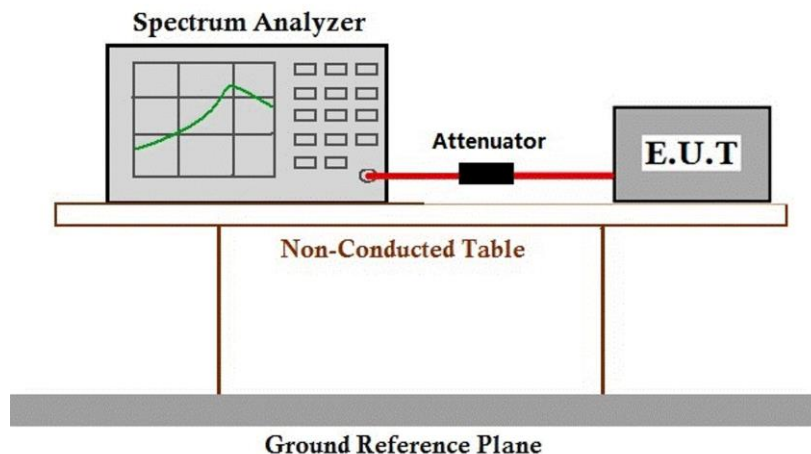
Humidity: 54.6 % RH

Atmospheric Pressure: 1003 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

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)).

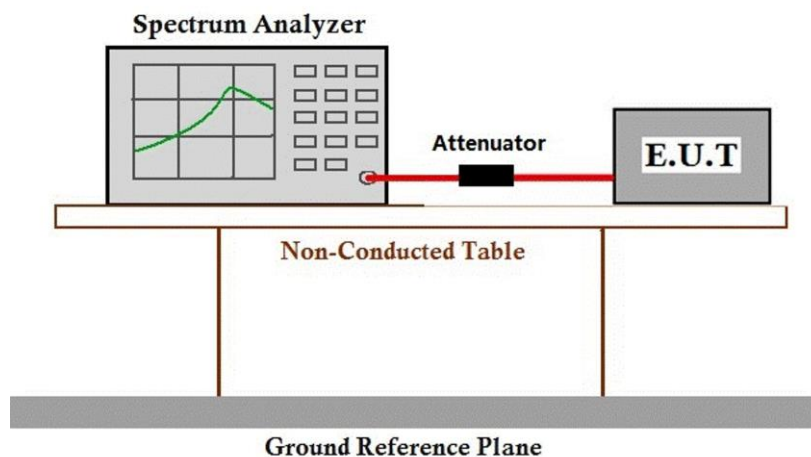
7.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 25.2 °C Humidity: 54.6 % RH Atmospheric Pressure: 1003 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation

7.4.3 Test Setup Diagram



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7.4.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

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

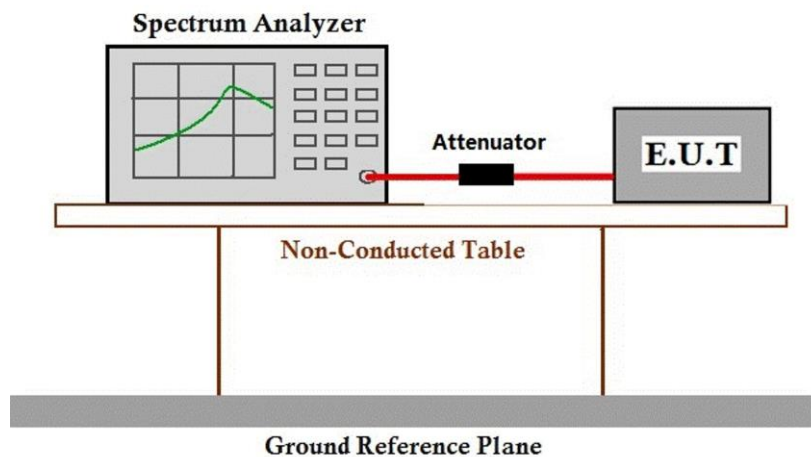
Operating Environment:

Temperature: 25.2 °C Humidity: 54.6 % RH Atmospheric Pressure: 1003 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

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:

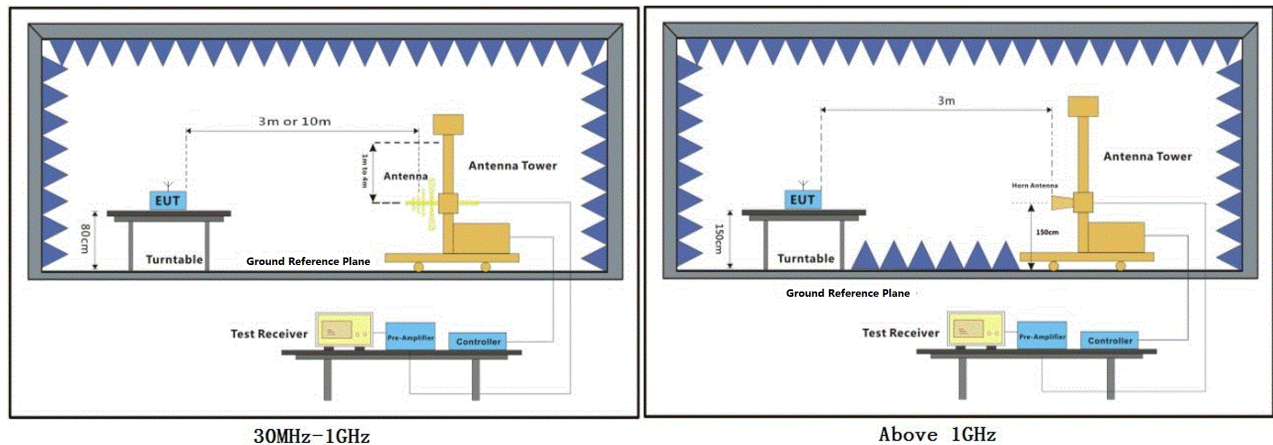
Temperature: 25.4 °C Humidity: 55.6 % RH Atmospheric Pressure: 1003 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation



7.6.3 Test Setup Diagram



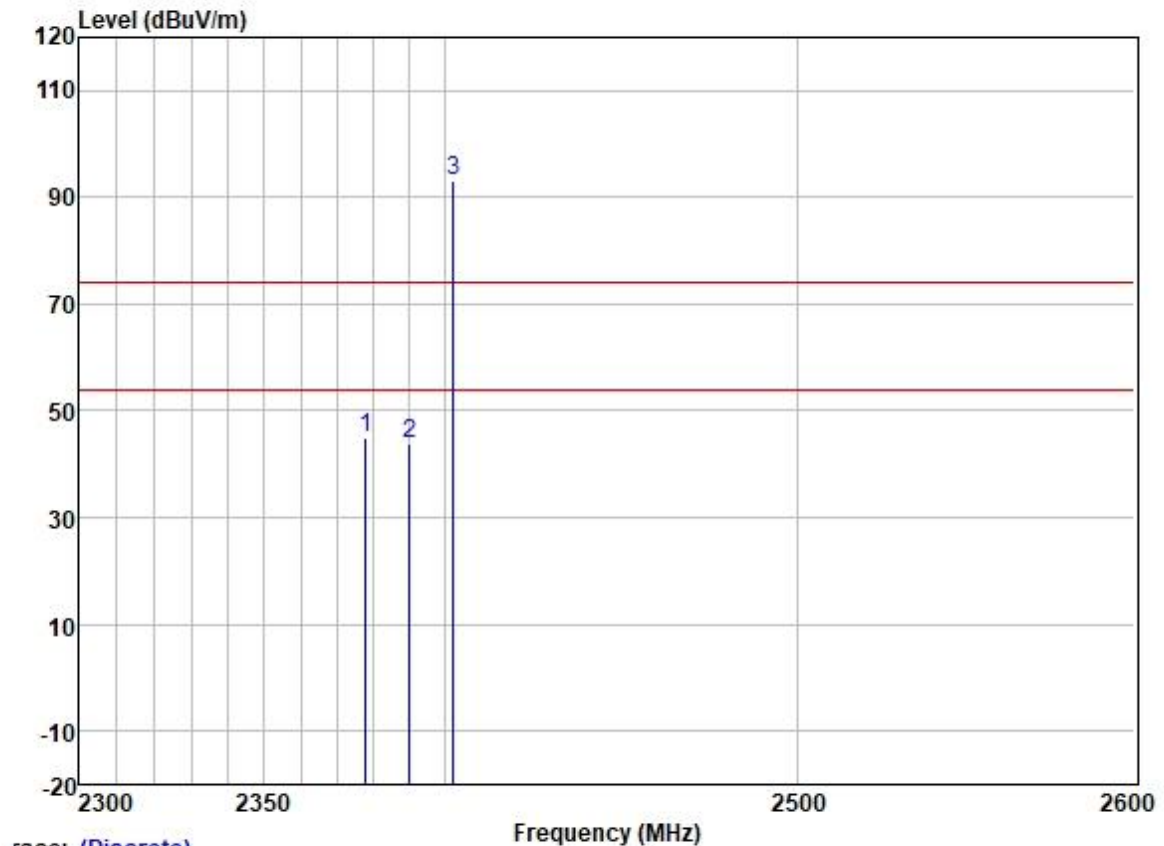
7.6.4 Measurement Procedure and Data

- 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 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.

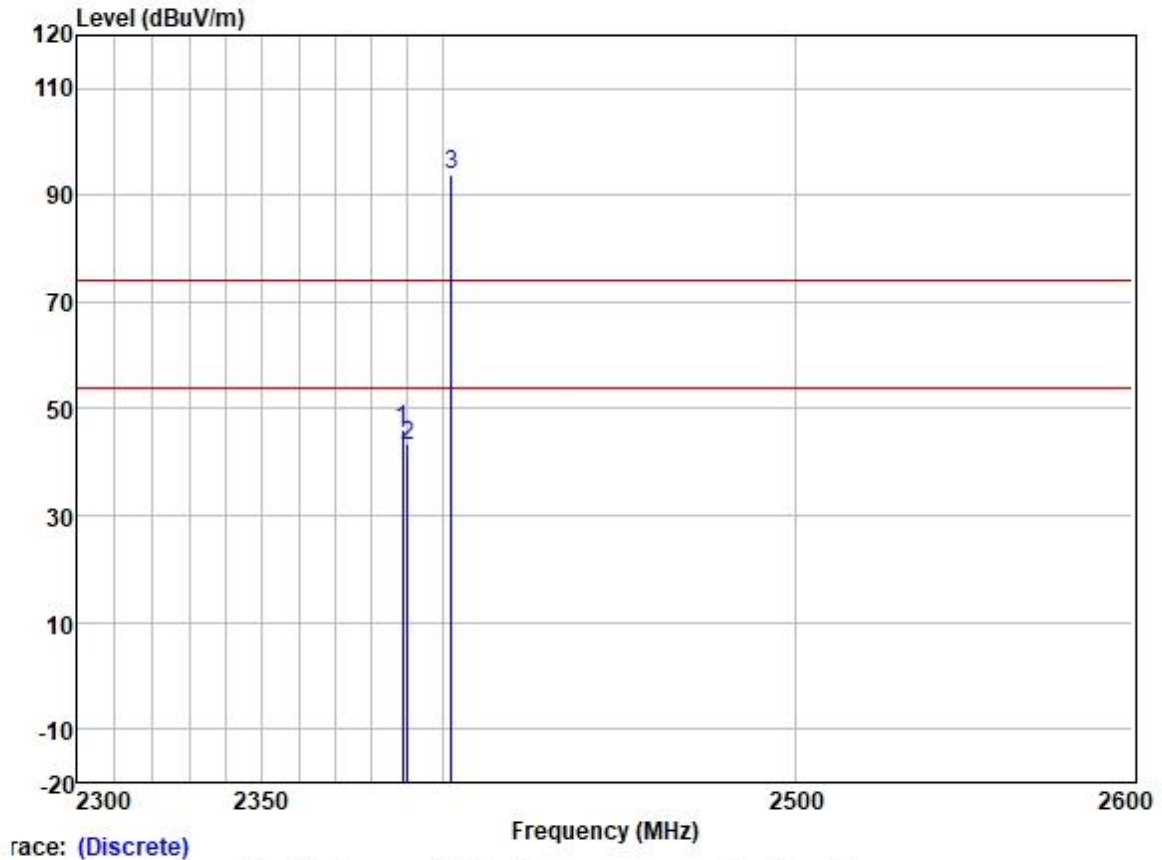
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

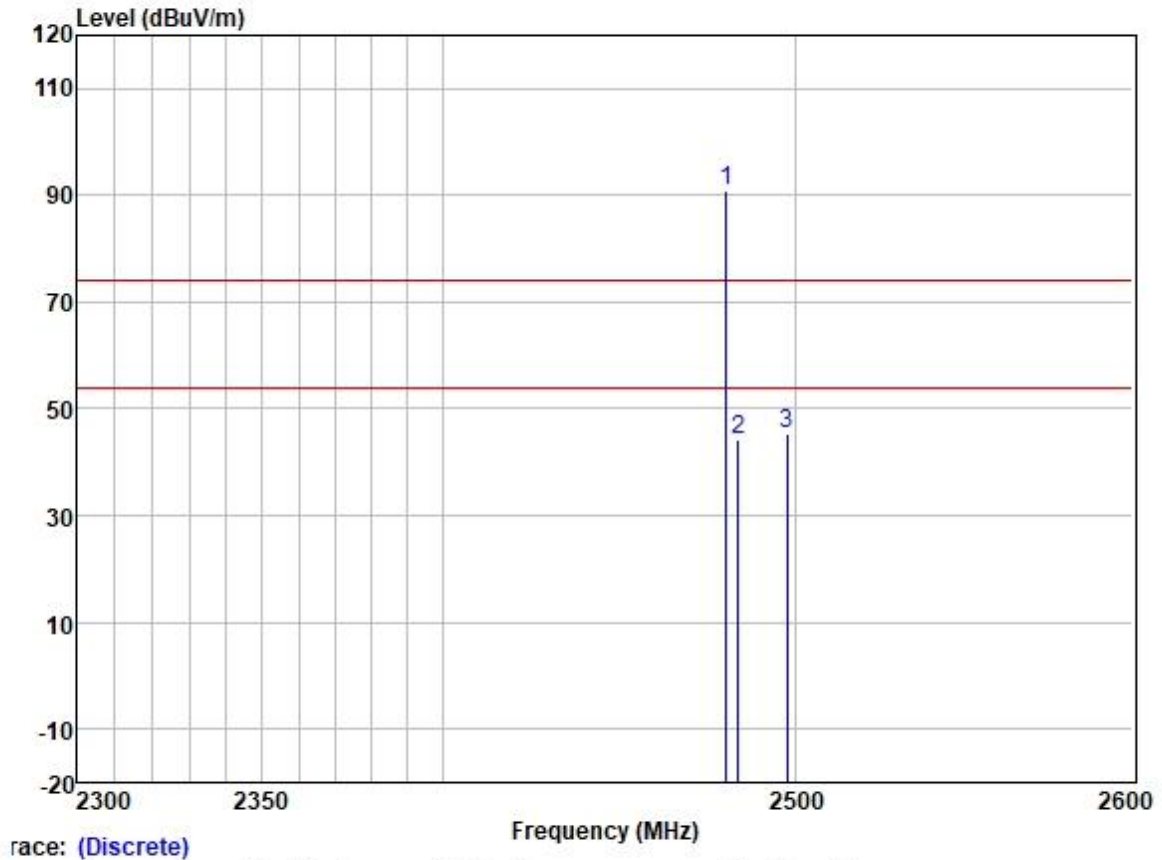
	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2377.840	51.75	27.31	3.46	37.60	44.92	74.00	-29.08	HORIZONTAL	Peak
2	2390.000	50.44	27.33	3.48	37.59	43.66	74.00	-30.34	HORIZONTAL	Peak
3 *	2402.000	100.02	27.35	3.50	37.59	93.28	74.00	19.28	HORIZONTAL	Peak

Test Mode: 00; Polarity: Vertical; Modulation: GFSK; ; Channel: Low



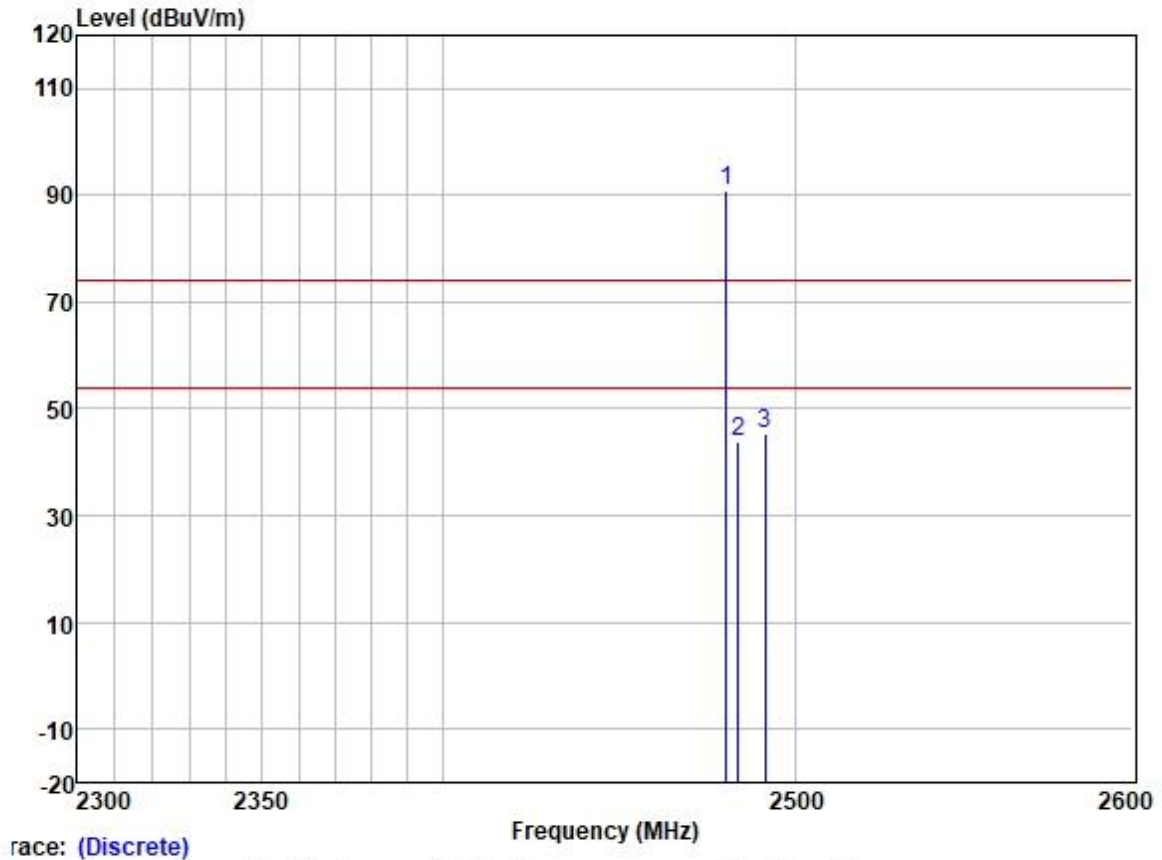
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2388.546	52.97	27.33	3.48	37.59	46.19	74.00	-27.81	VERTICAL	Peak
2	2390.000	50.06	27.33	3.48	37.59	43.28	74.00	-30.72	VERTICAL	Peak
3 *	2402.000	100.53	27.35	3.50	37.59	93.79	74.00	19.79	VERTICAL	Peak

Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; ; Channel: High



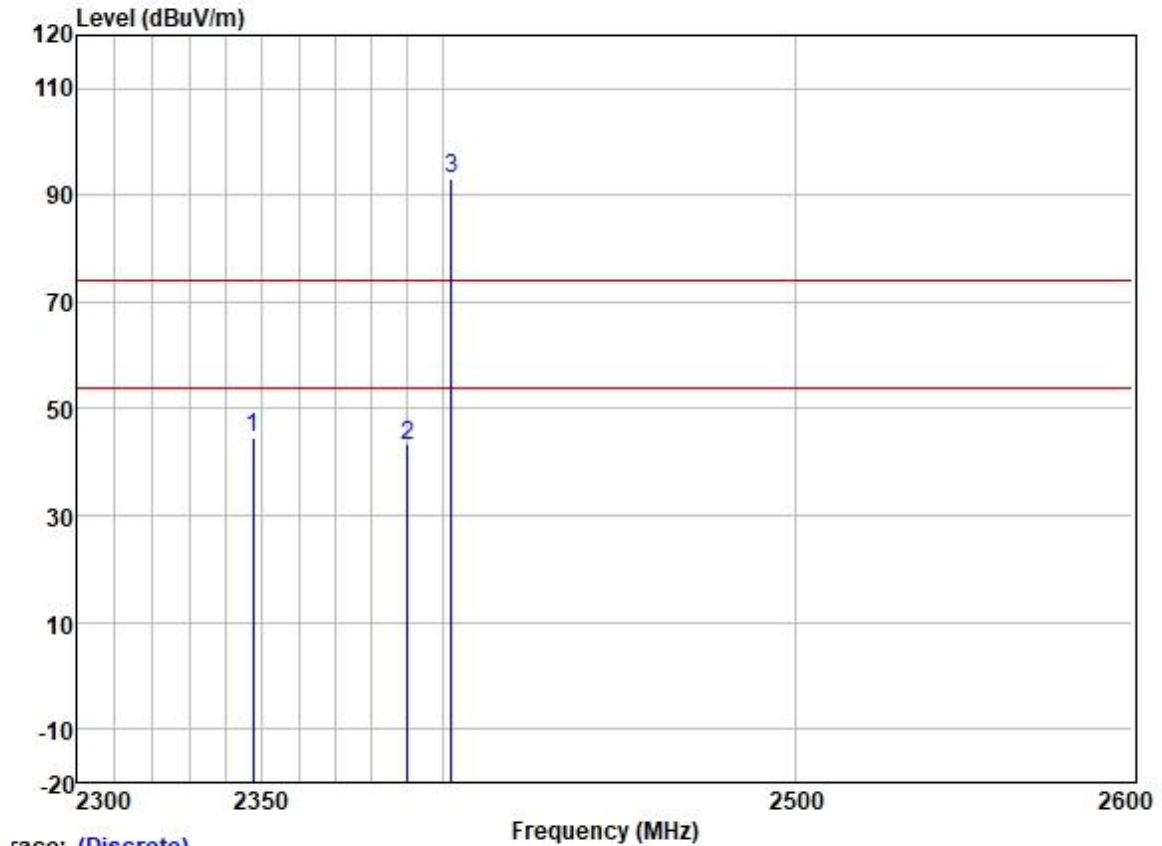
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	97.22	27.47	3.60	37.57	90.72	74.00	16.72	HORIZONTAL	Peak
2	2483.500	50.79	27.48	3.53	37.57	44.23	74.00	-29.77	HORIZONTAL	Peak
3	2497.464	51.86	27.50	3.40	37.56	45.20	74.00	-28.80	HORIZONTAL	Peak

Test Mode: 00; Polarity: Vertical; Modulation: GFSK; ; Channel: High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	97.45	27.47	3.60	37.57	90.95	74.00	16.95	VERTICAL	Peak
2	2483.500	50.35	27.48	3.53	37.57	43.79	74.00	-30.21	VERTICAL	Peak
3	2491.196	52.08	27.49	3.47	37.56	45.48	74.00	-28.52	VERTICAL	Peak

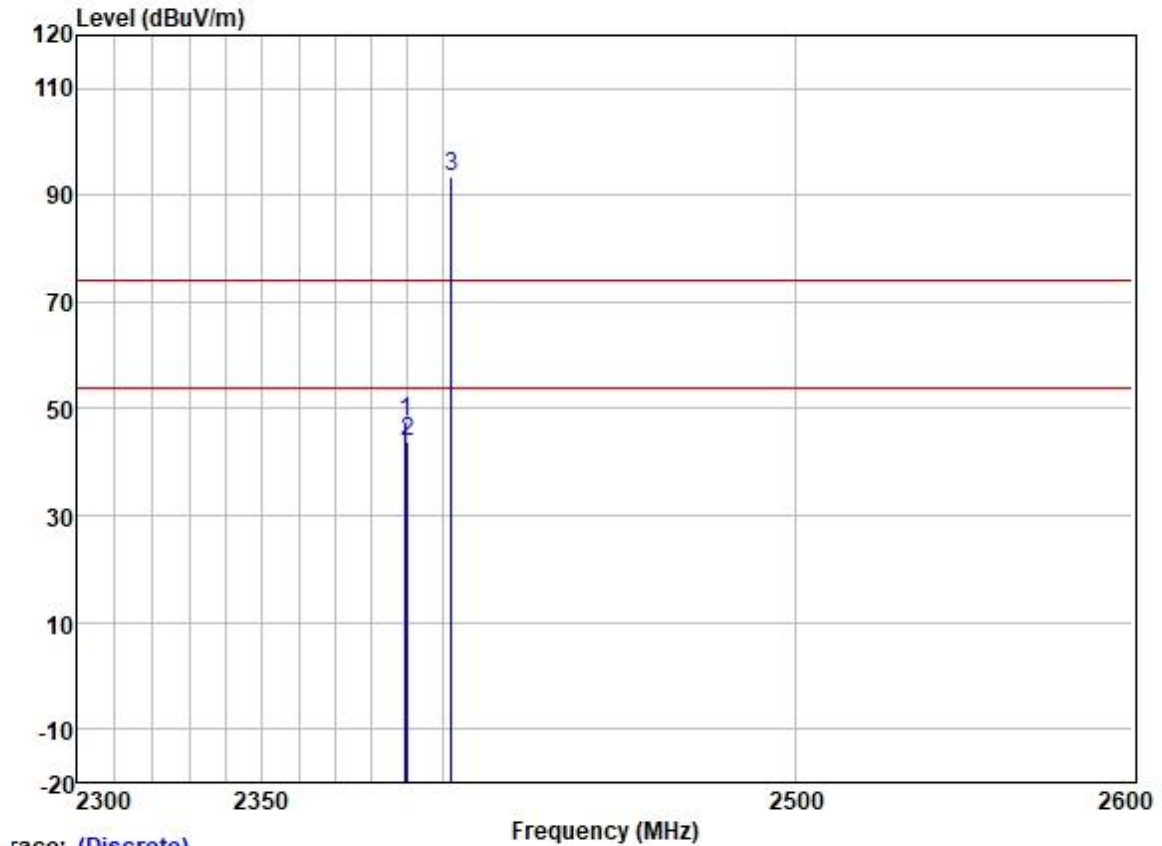
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1	2347.502	51.61	27.24	3.38	37.61	44.62	74.00	-29.38	HORIZONTAL Peak
2	2390.000	50.06	27.33	3.48	37.59	43.28	74.00	-30.72	HORIZONTAL Peak
3 *	2402.000	99.78	27.35	3.50	37.59	93.04	74.00	19.04	HORIZONTAL Peak

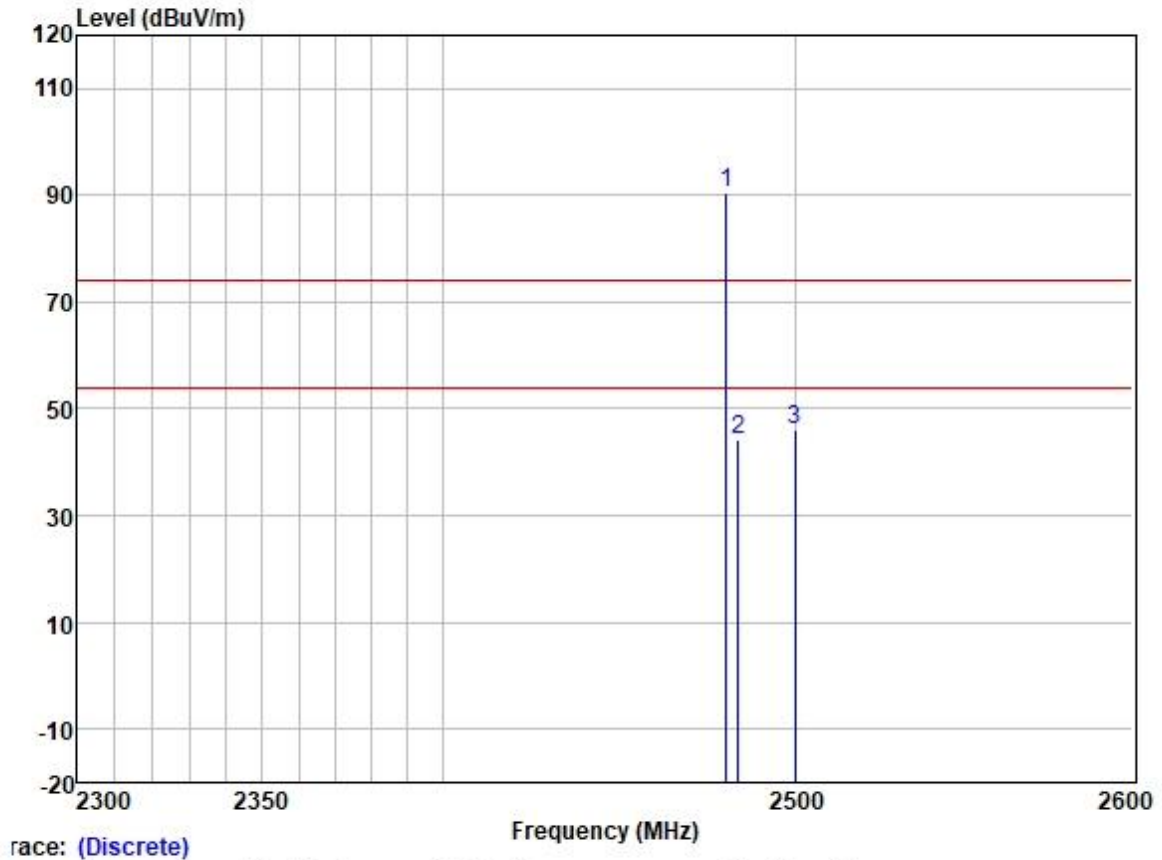
Test Mode: 01; Polarity: Vertical; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

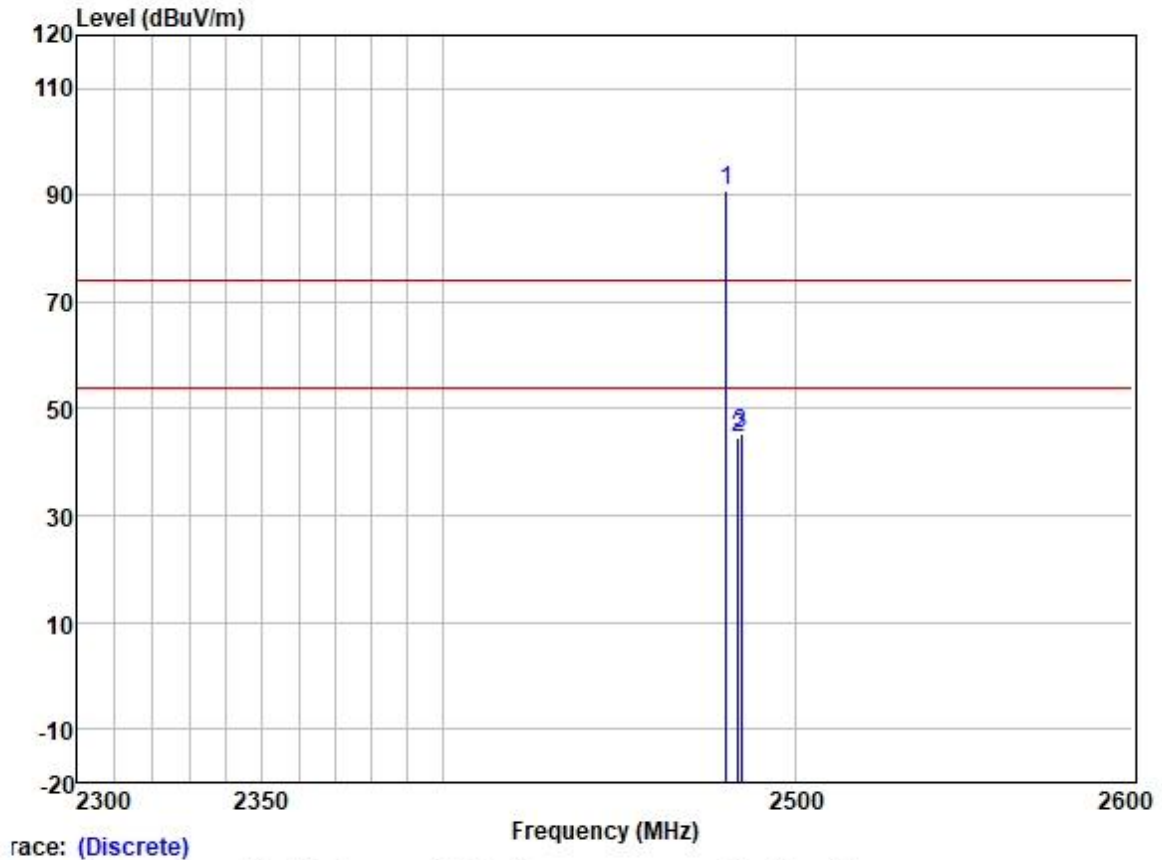
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.457	54.32	27.33	3.48	37.59	47.54	74.00	-26.46	VERTICAL	Peak
2	2390.000	50.66	27.33	3.48	37.59	43.88	74.00	-30.12	VERTICAL	Peak
3 *	2402.000	100.21	27.35	3.50	37.59	93.47	74.00	19.47	VERTICAL	Peak

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



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	97.18	27.47	3.60	37.57	90.68	74.00	16.68	HORIZONTAL	Peak
2	2483.500	50.61	27.48	3.53	37.57	44.05	74.00	-29.95	HORIZONTAL	Peak
3	2499.975	52.76	27.50	3.40	37.56	46.10	74.00	-27.90	HORIZONTAL	Peak

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



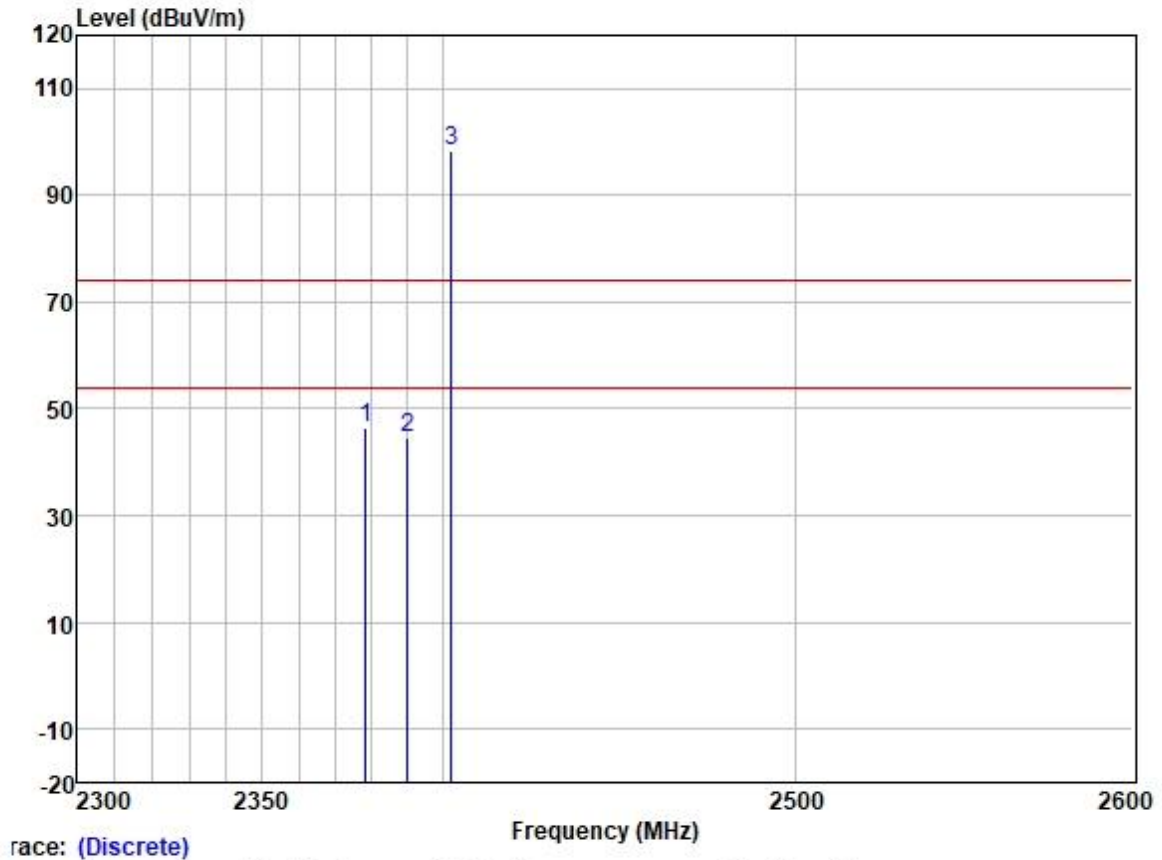
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	* 2480.000	97.40	27.47	3.60	37.57	90.90	74.00	16.90	VERTICAL	Peak
2	2483.500	51.27	27.48	3.53	37.57	44.71	74.00	-29.29	VERTICAL	Peak
3	2484.221	51.86	27.48	3.53	37.57	45.30	74.00	-28.70	VERTICAL	Peak



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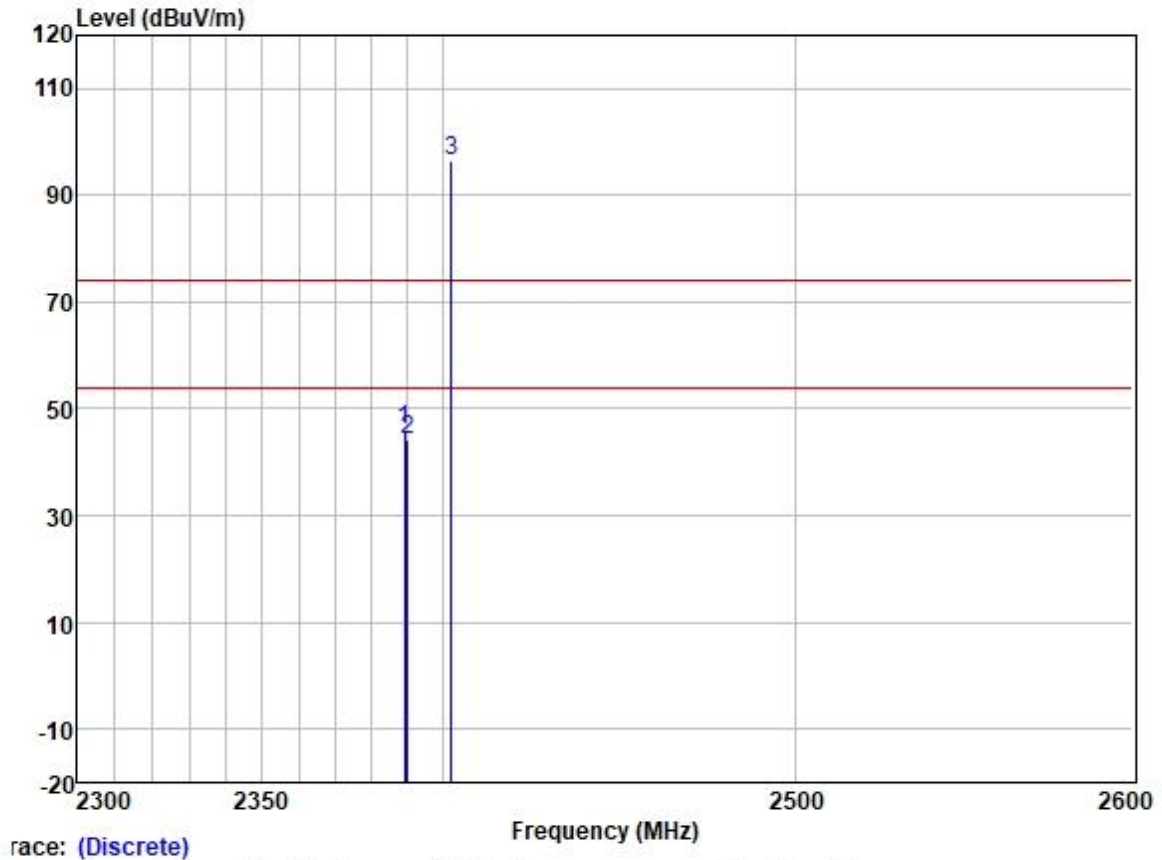
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Test Mode: 04; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



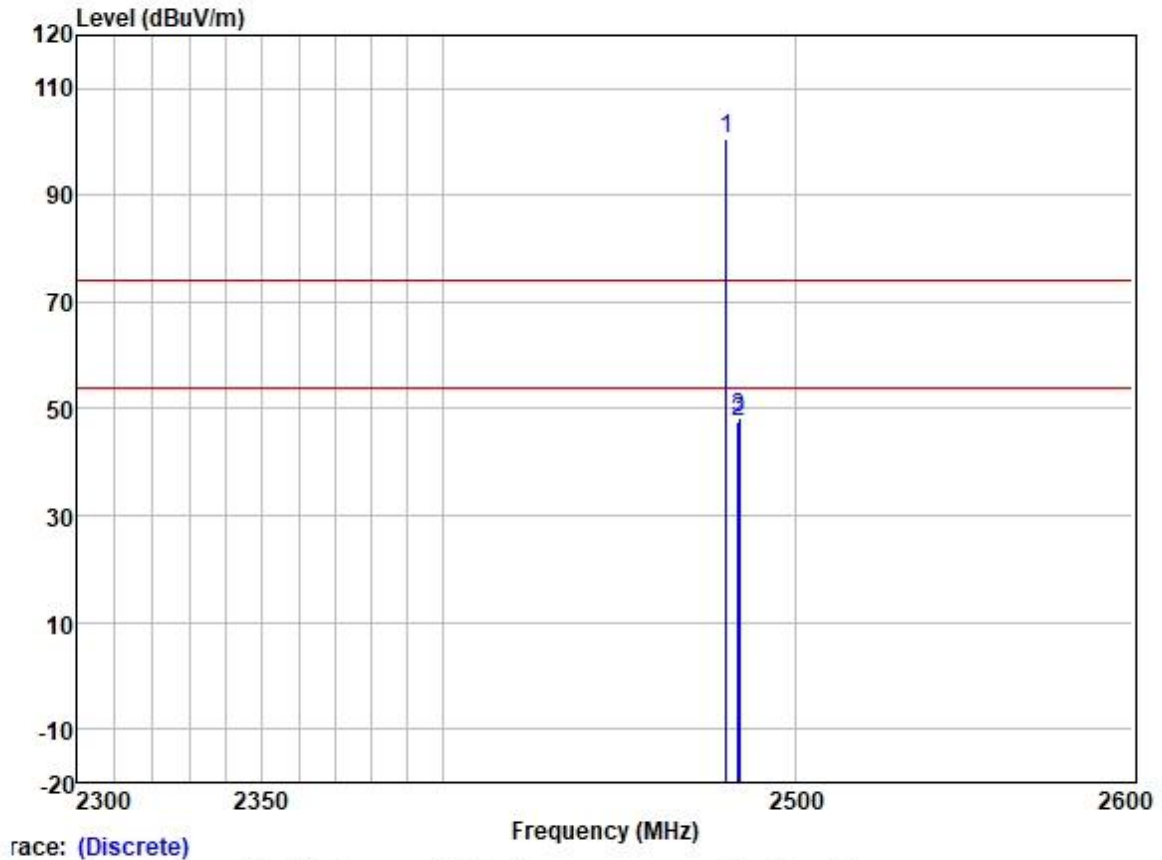
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2378.344	53.22	27.31	3.46	37.60	46.39	74.00	-27.61	HORIZONTAL	Peak
2	2390.000	51.21	27.33	3.48	37.59	44.43	74.00	-29.57	HORIZONTAL	Peak
3 *	2402.000	105.23	27.35	3.50	37.59	98.49	74.00	24.49	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:GFSK; ; Channel:Low



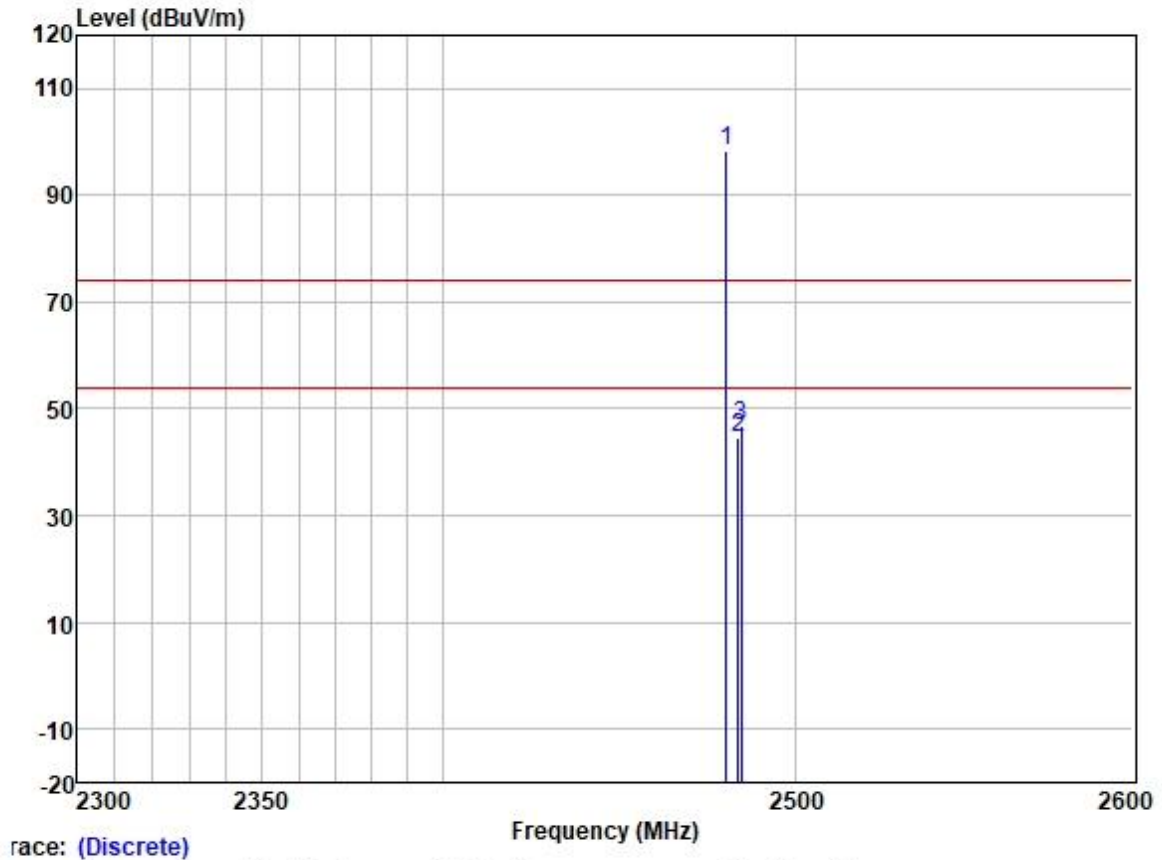
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2388.951	52.86	27.33	3.48	37.59	46.08	74.00	-27.92	VERTICAL	Peak
2	2390.000	50.99	27.33	3.48	37.59	44.21	74.00	-29.79	VERTICAL	Peak
3 *	2402.000	103.26	27.35	3.50	37.59	96.52	74.00	22.52	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:GFSK; ; Channel:High



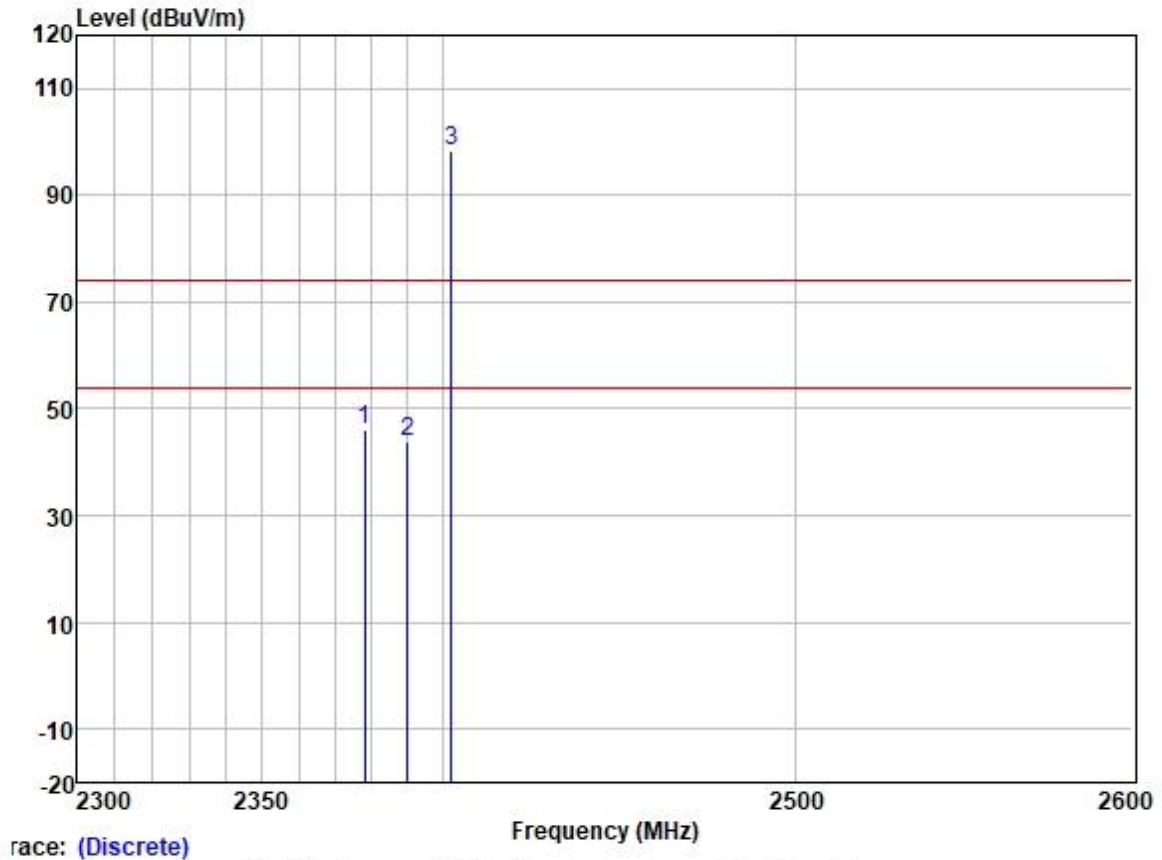
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	107.13	27.47	3.60	37.57	100.63	74.00	26.63	HORIZONTAL	Peak
2	2483.500	54.28	27.48	3.53	37.57	47.72	74.00	-26.28	HORIZONTAL	Peak
3	2483.846	54.86	27.48	3.53	37.57	48.30	74.00	-25.70	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:GFSK; ; Channel:High



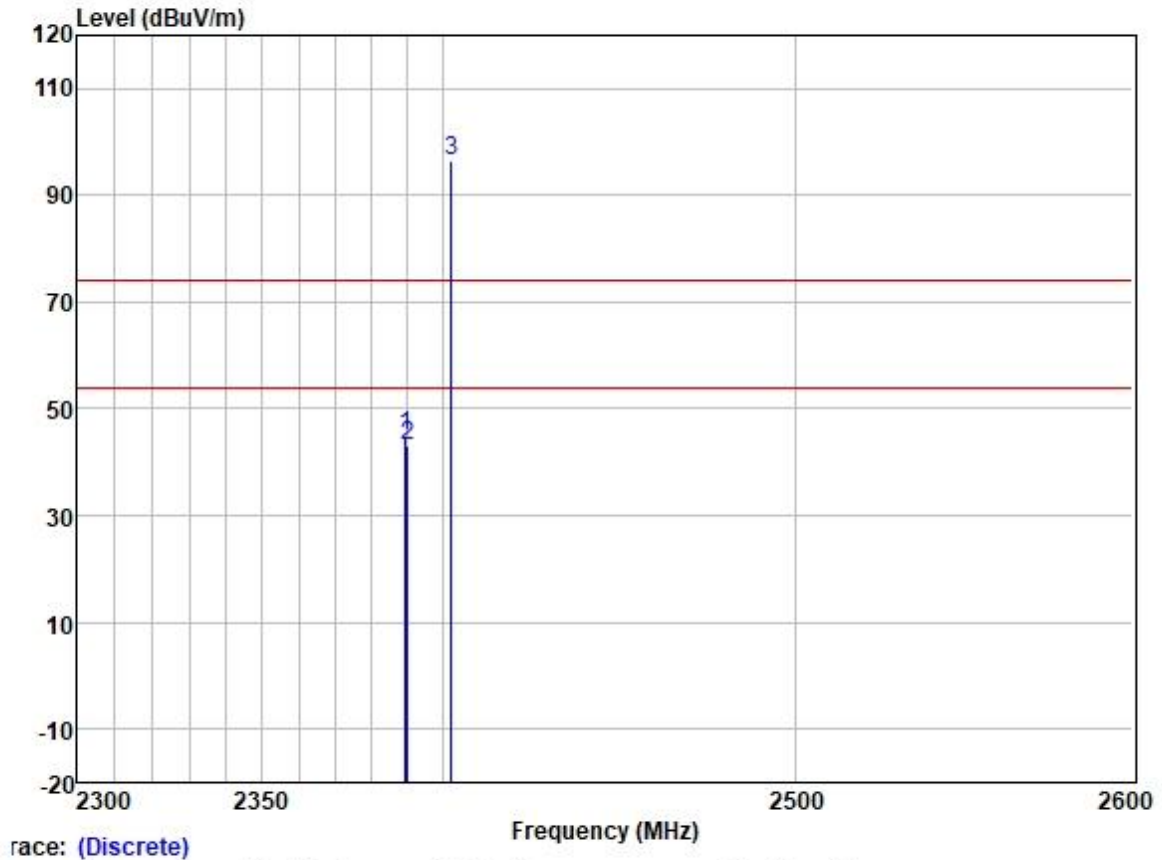
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	105.03	27.47	3.60	37.57	98.53	74.00	24.53	VERTICAL	Peak
2	2483.500	51.26	27.48	3.53	37.57	44.70	74.00	-29.30	VERTICAL	Peak
3	2484.446	53.23	27.48	3.53	37.57	46.67	74.00	-27.33	VERTICAL	Peak

Test Mode: 05; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



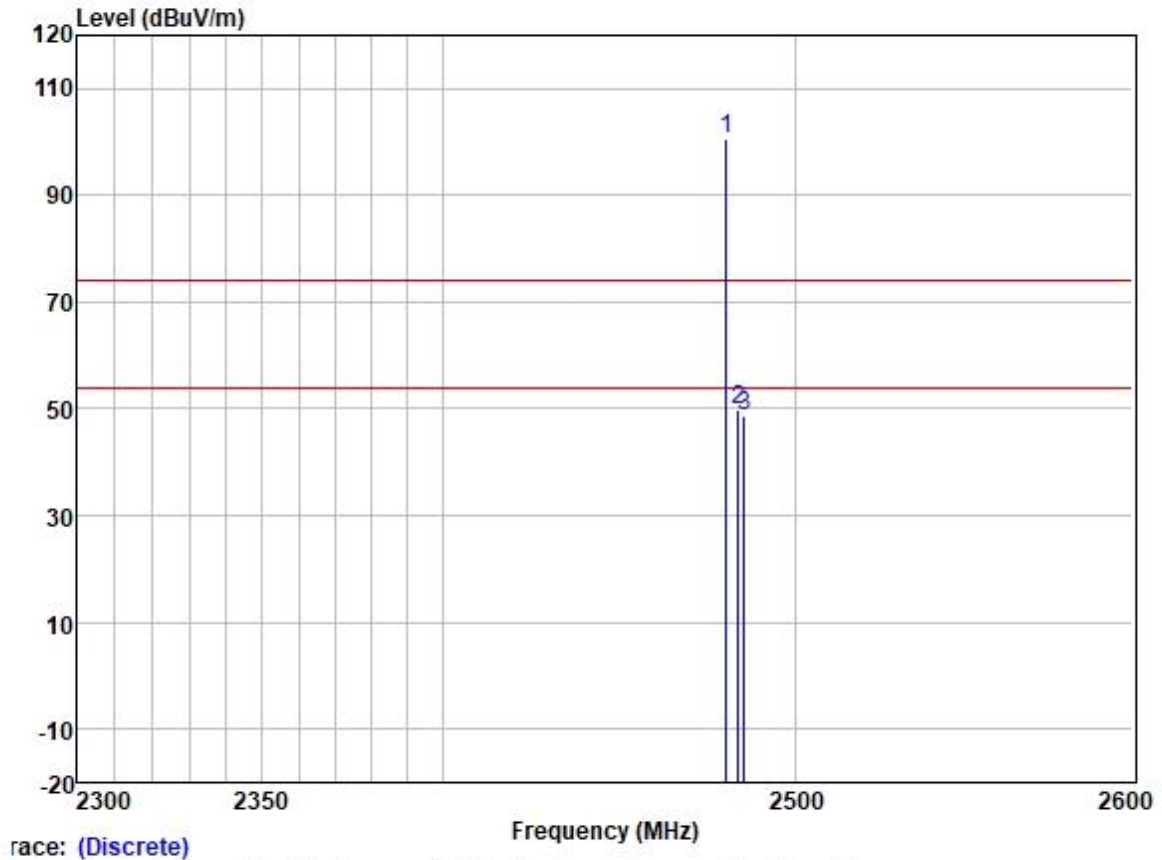
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2377.941	52.84	27.31	3.46	37.60	46.01	74.00	-27.99	HORIZONTAL	Peak
2	2390.000	50.44	27.33	3.48	37.59	43.66	74.00	-30.34	HORIZONTAL	Peak
3 *	2402.000	105.23	27.35	3.50	37.59	98.49	74.00	24.49	HORIZONTAL	Peak

Test Mode: 05; Polarity: Vertical; Modulation: GFSK; ; Channel: Low



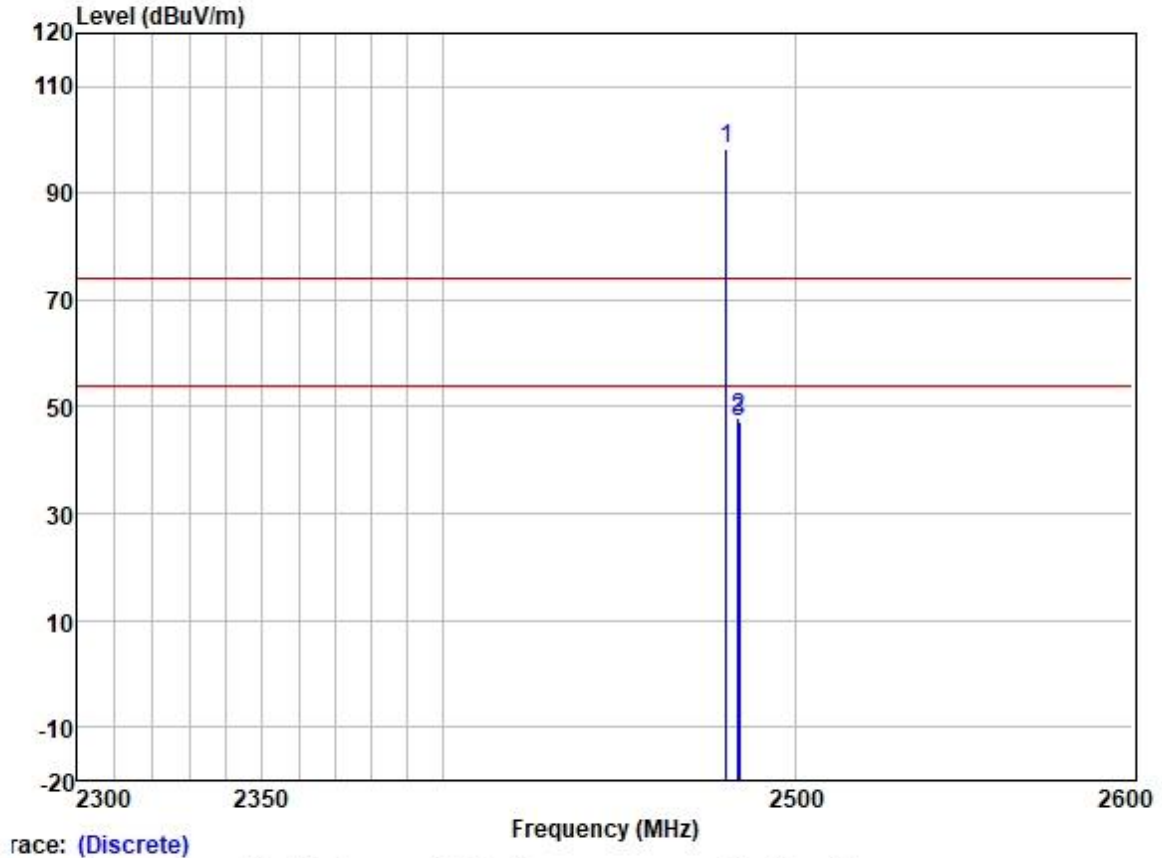
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.457	51.72	27.33	3.48	37.59	44.94	74.00	-29.06	VERTICAL	Peak
2	2390.000	49.91	27.33	3.48	37.59	43.13	74.00	-30.87	VERTICAL	Peak
3 *	2402.000	103.30	27.35	3.50	37.59	96.56	74.00	22.56	VERTICAL	Peak

Test Mode: 05; Polarity: Horizontal; Modulation:GFSK; ; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	107.10	27.47	3.60	37.57	100.60	74.00	26.60	HORIZONTAL	Peak
2	2483.500	56.45	27.48	3.53	37.57	49.89	74.00	-24.11	HORIZONTAL	Peak
3	2485.070	55.16	27.48	3.53	37.57	48.60	74.00	-25.40	HORIZONTAL	Peak

Test Mode: 05; Polarity: Vertical; Modulation: GFSK; ; Channel: High



	Freq	ReadAntenna Level 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 *	2480.000	105.02	27.47	3.60	37.57	98.52	74.00	24.52	VERTICAL Peak
2	2483.500	54.68	27.48	3.53	37.57	48.12	74.00	-25.88	VERTICAL Peak
3	2483.846	53.67	27.48	3.53	37.57	47.11	74.00	-26.89	VERTICAL 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 6.4,6.5,6.6

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.

7.7.1 E.U.T. Operation

Operating Environment:

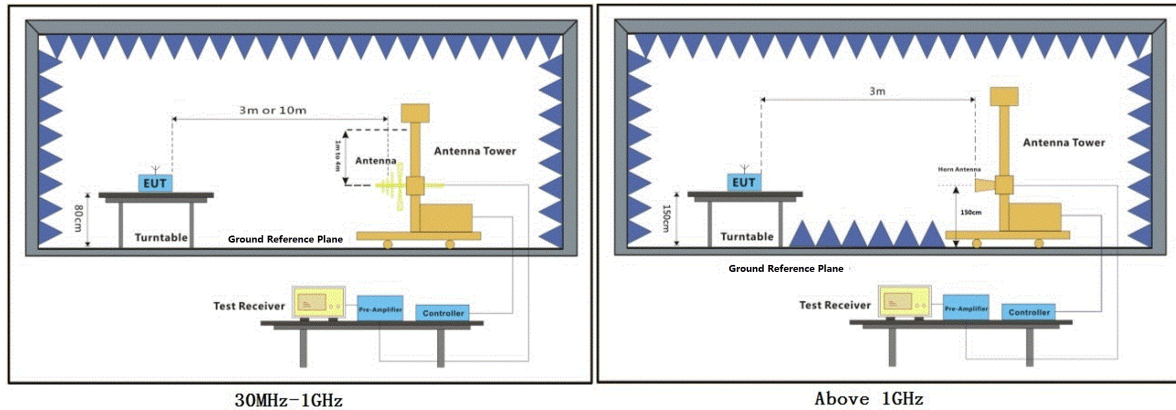
Temperature: 25.4 °C Humidity: 55.6 % RH Atmospheric Pressure: 1003 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation



7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

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

Remark:

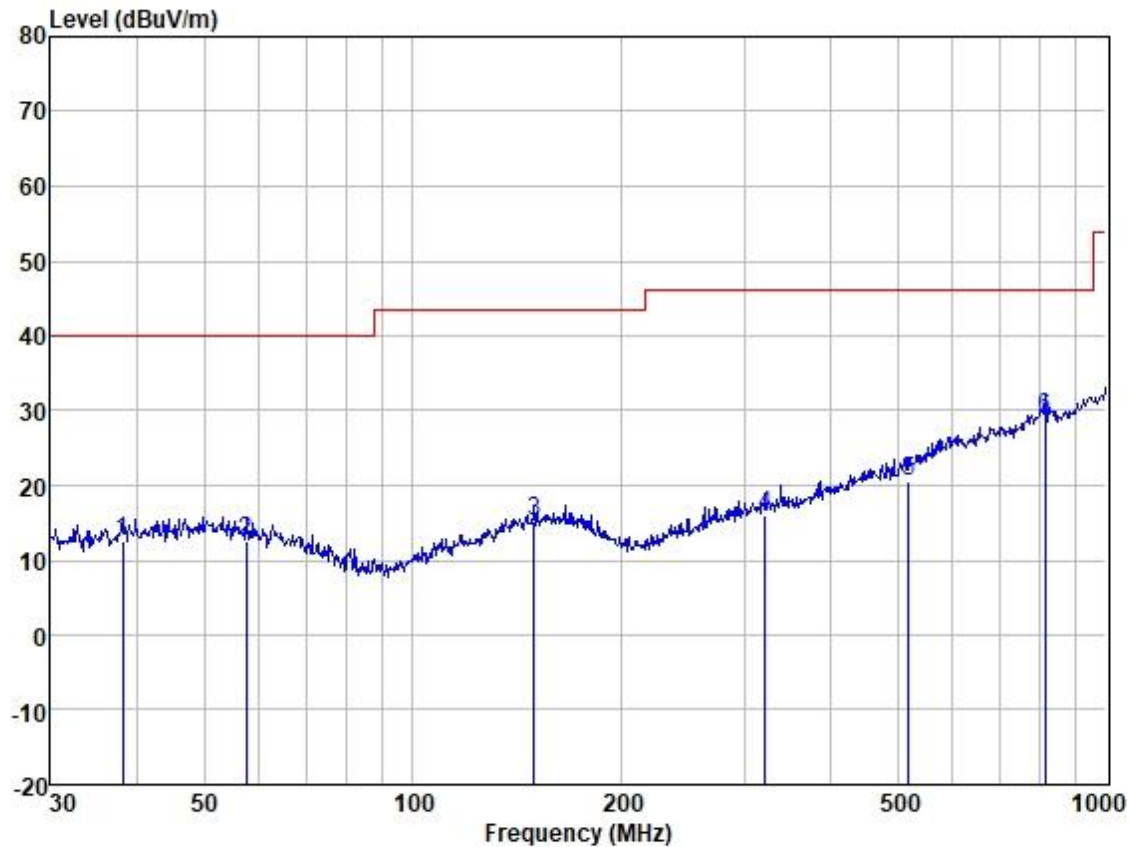
1) Through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

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.

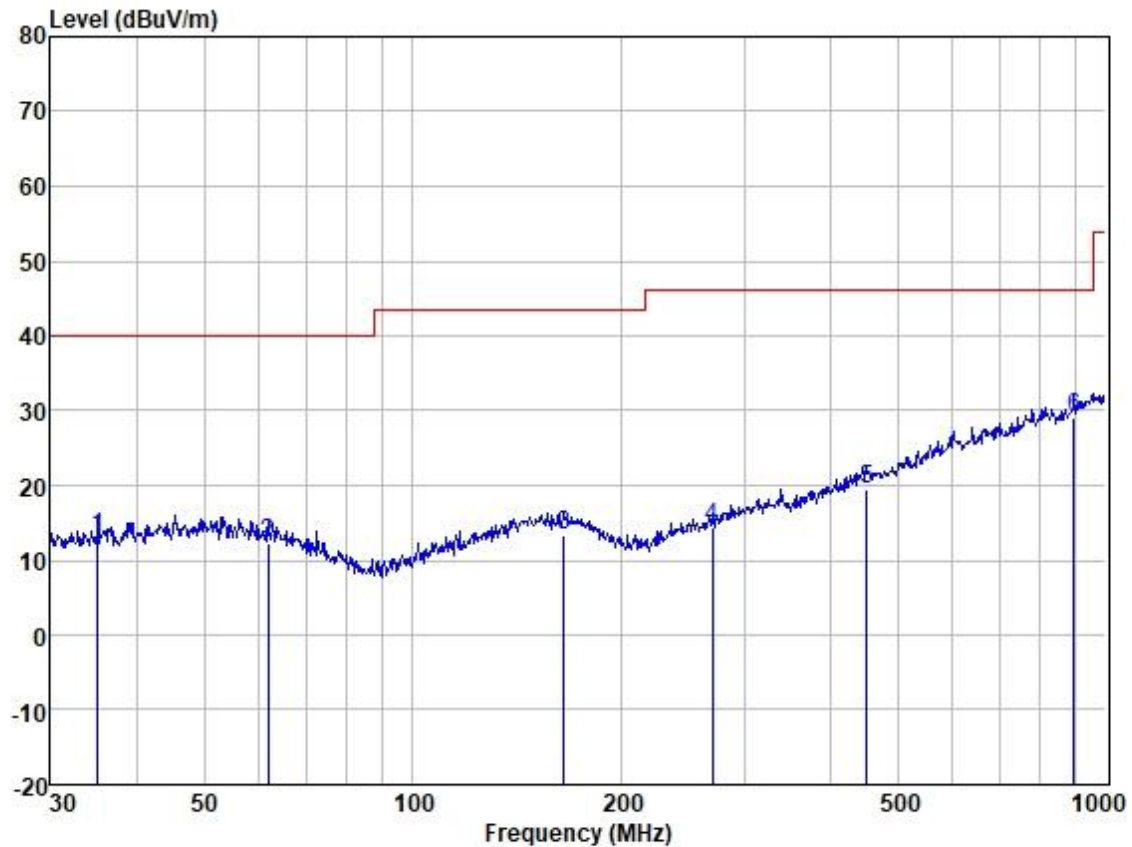
Test Mode: 00; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode : Y3

	Freq	Read Level	Antenna 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	38.078	25.73	13.31	1.08	27.62	12.50	40.00	-27.50	HORIZONTAL	QP
2	57.392	25.39	13.64	1.21	27.60	12.64	40.00	-27.36	HORIZONTAL	QP
3	149.486	26.79	13.52	2.21	27.39	15.13	43.52	-28.39	HORIZONTAL	QP
4	322.189	25.82	14.07	3.38	27.32	15.95	46.02	-30.07	HORIZONTAL	QP
5	519.065	26.19	18.45	4.53	28.63	20.54	46.02	-25.48	HORIZONTAL	QP
6	815.968	28.09	23.33	6.07	28.55	28.94	46.02	-17.08	HORIZONTAL	QP

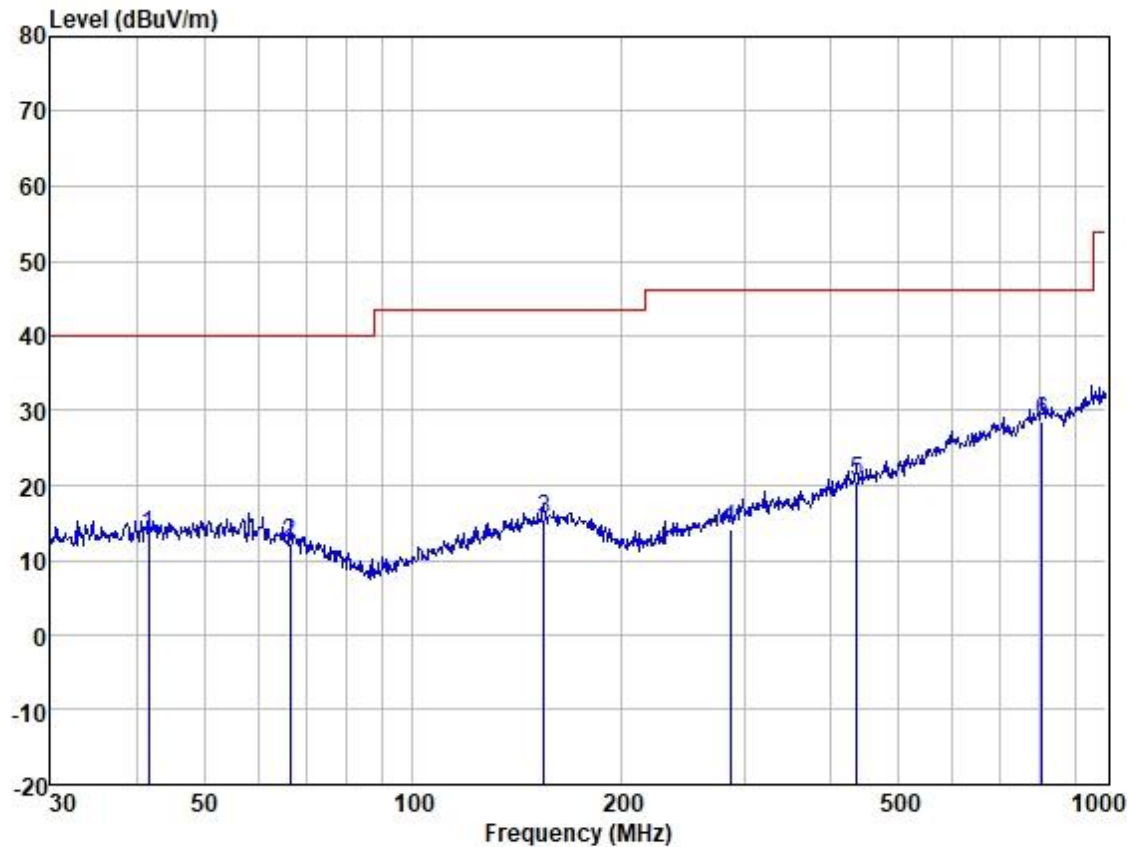
Test Mode: 00; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode : Y3

	Freq	Read Level	Antenna 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	35.128	26.59	12.97	1.06	27.62	13.00	40.00	-27.00	VERTICAL	QP
2	61.778	25.40	13.06	1.28	27.60	12.14	40.00	-27.86	VERTICAL	QP
3	164.908	24.91	13.44	2.36	27.35	13.36	43.52	-30.16	VERTICAL	QP
4	270.375	25.87	12.62	3.09	27.21	14.37	46.02	-31.65	VERTICAL	QP
5	451.135	26.55	17.00	4.18	28.36	19.37	46.02	-26.65	VERTICAL	QP
6	896.997	27.83	23.02	6.41	28.21	29.05	46.02	-16.97	VERTICAL	QP

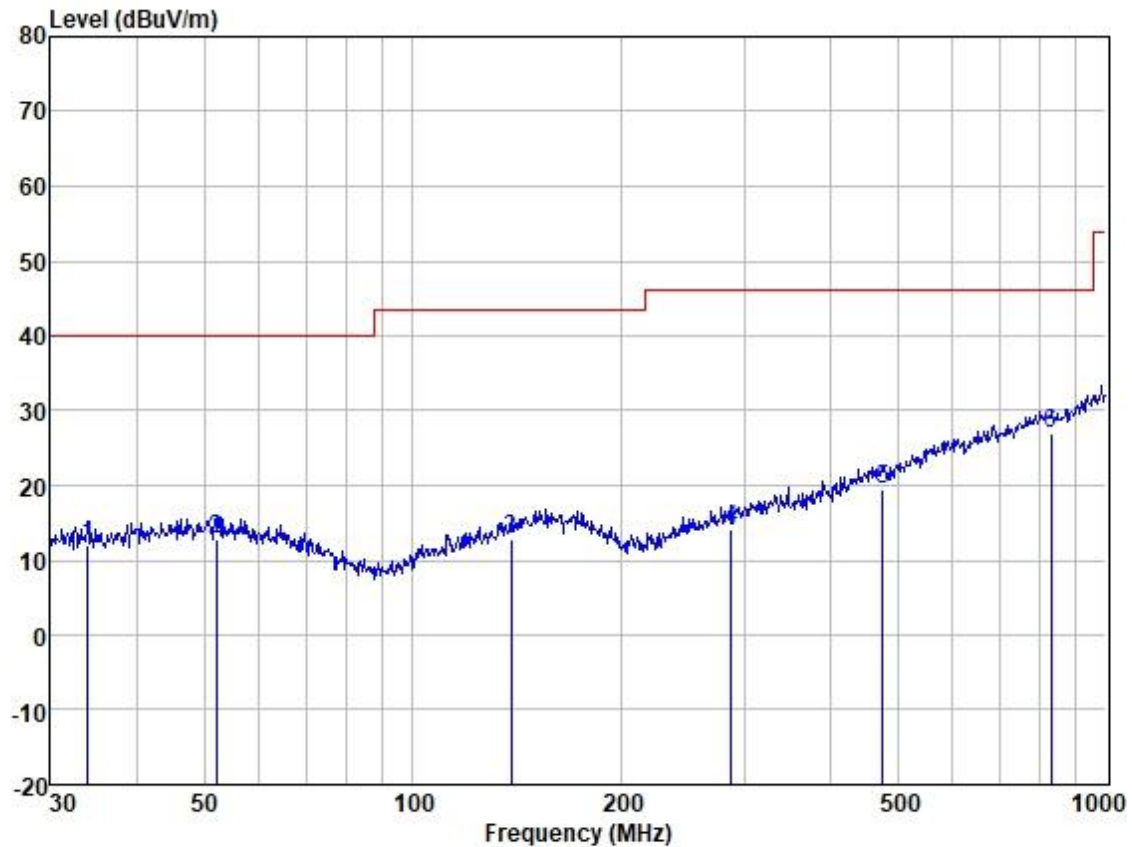
Test Mode: 01; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode : Y4

	Freq	Read Level	Antenna 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	41.567	26.24	13.66	1.10	27.61	13.39	40.00	-26.61	HORIZONTAL	QP
2	66.499	26.14	12.23	1.37	27.60	12.14	40.00	-27.86	HORIZONTAL	QP
3	154.279	26.97	13.59	2.27	27.37	15.46	43.52	-28.06	HORIZONTAL	QP
4	286.982	24.93	13.12	3.18	27.21	14.02	46.02	-32.00	HORIZONTAL	QP
5	437.120	28.00	16.70	4.11	28.19	20.62	46.02	-25.40	HORIZONTAL	QP
6	807.429	27.83	23.10	6.07	28.58	28.42	46.02	-17.60	HORIZONTAL	QP

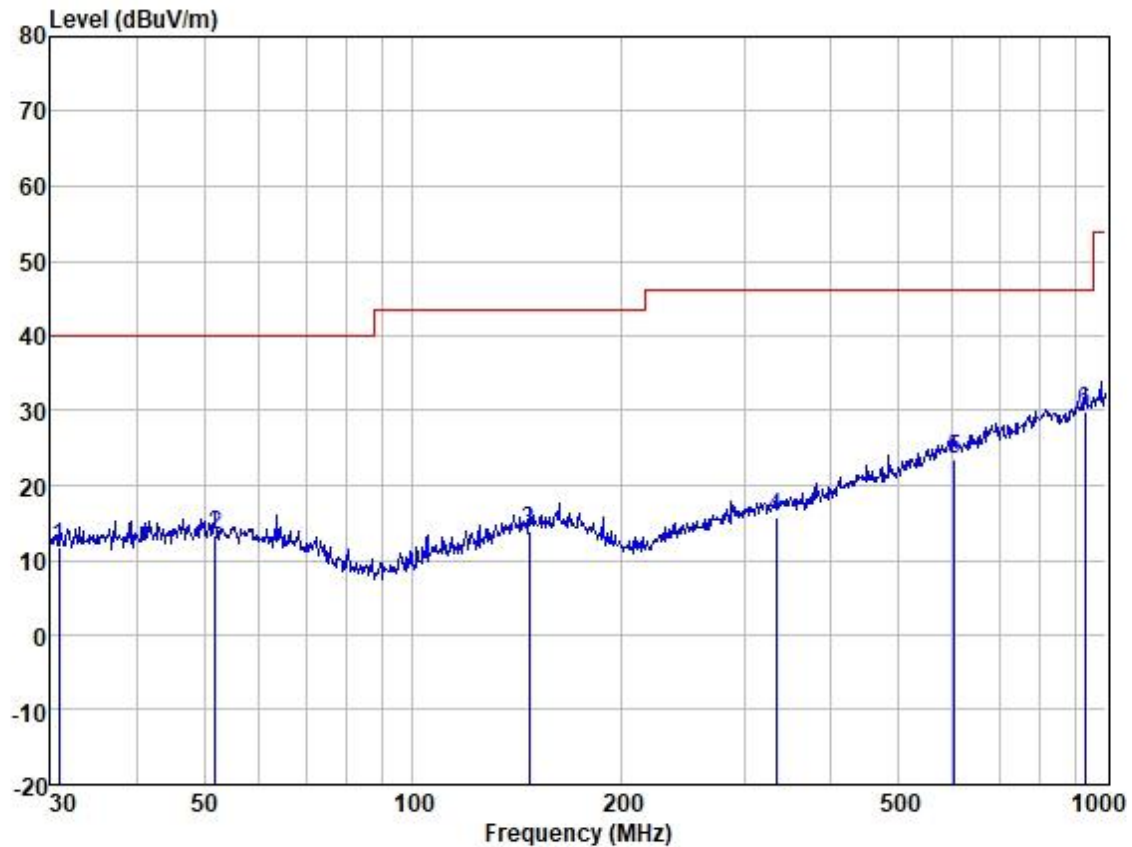
Test Mode: 01; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode : Y4

	Freq	Read Level	Antenna 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	33.917	25.81	12.90	1.05	27.63	12.13	40.00	-27.87	VERTICAL	QP
2	52.025	25.43	13.93	1.15	27.60	12.91	40.00	-27.09	VERTICAL	QP
3	138.387	25.24	12.96	2.05	27.48	12.77	43.52	-30.75	VERTICAL	QP
4	287.990	25.08	13.15	3.18	27.20	14.21	46.02	-31.81	VERTICAL	QP
5	475.499	26.46	17.31	4.32	28.51	19.58	46.02	-26.44	VERTICAL	QP
6	833.317	26.09	23.09	6.14	28.49	26.83	46.02	-19.19	VERTICAL	QP

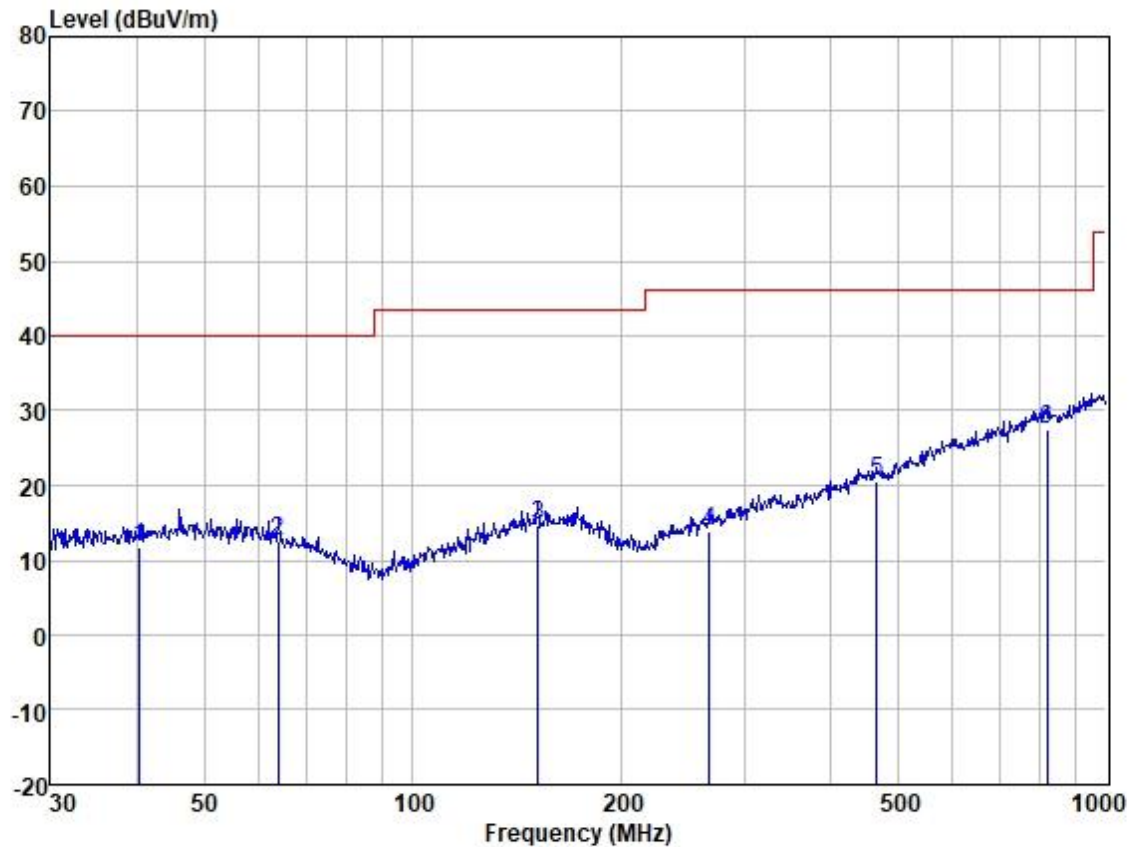
Test Mode: 04; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode : Y5

	Freq	Read Level	Antenna 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	30.853	25.42	12.85	1.02	27.66	11.63	40.00	-28.37	HORIZONTAL	QP
2	51.843	25.77	13.93	1.15	27.60	13.25	40.00	-26.75	HORIZONTAL	QP
3	146.888	25.65	13.40	2.19	27.40	13.84	43.52	-29.68	HORIZONTAL	QP
4	333.687	25.31	14.28	3.47	27.42	15.64	46.02	-30.38	HORIZONTAL	QP
5	603.539	26.94	20.18	5.02	28.80	23.34	46.02	-22.68	HORIZONTAL	QP
6	932.272	27.68	23.67	6.62	28.14	29.83	46.02	-16.19	HORIZONTAL	QP

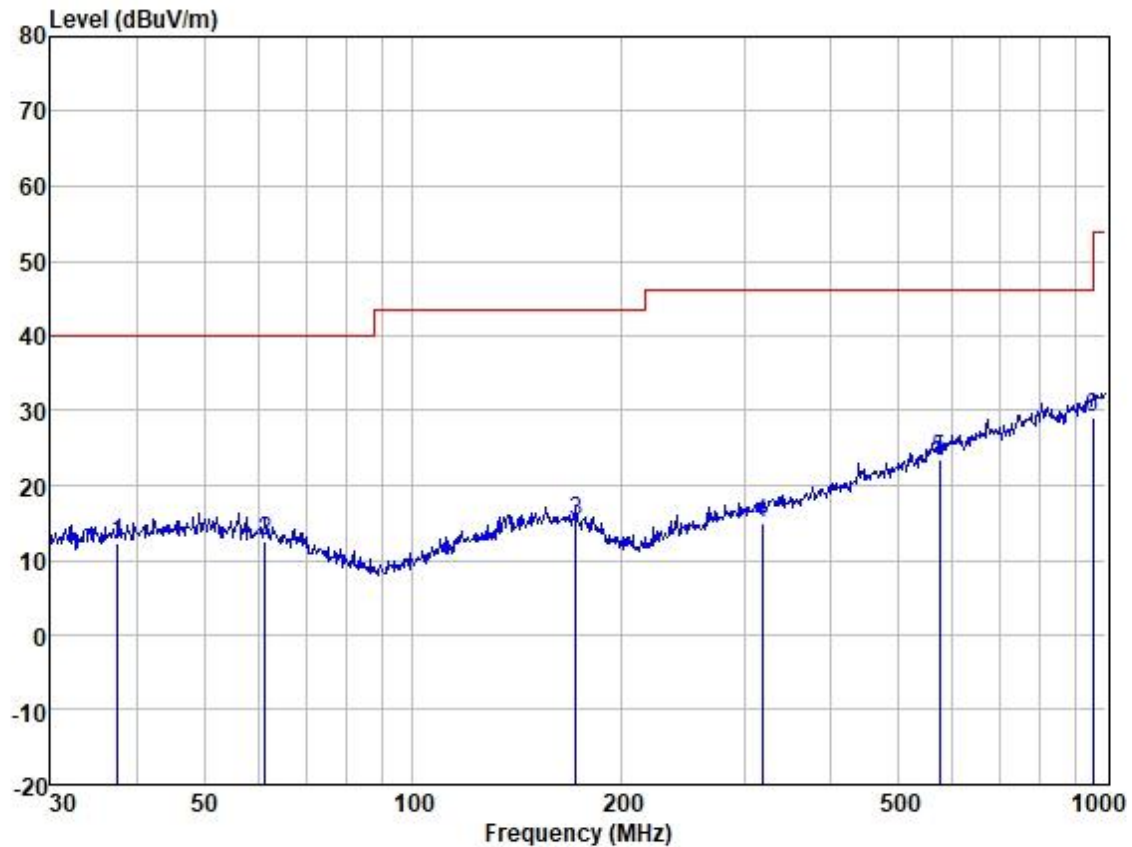
Test Mode: 04; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode : Y5

	Freq	Read Level	Antenna 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	40.276	24.55	13.58	1.09	27.61	11.61	40.00	-28.39	VERTICAL	QP
2	63.983	26.08	12.76	1.32	27.60	12.56	40.00	-27.44	VERTICAL	QP
3	151.597	26.23	13.58	2.25	27.38	14.68	43.52	-28.84	VERTICAL	QP
4	267.546	25.43	12.49	3.09	27.22	13.79	46.02	-32.23	VERTICAL	QP
5	467.235	27.46	17.21	4.30	28.46	20.51	46.02	-25.51	VERTICAL	QP
6	821.710	26.39	23.38	6.11	28.53	27.35	46.02	-18.67	VERTICAL	QP

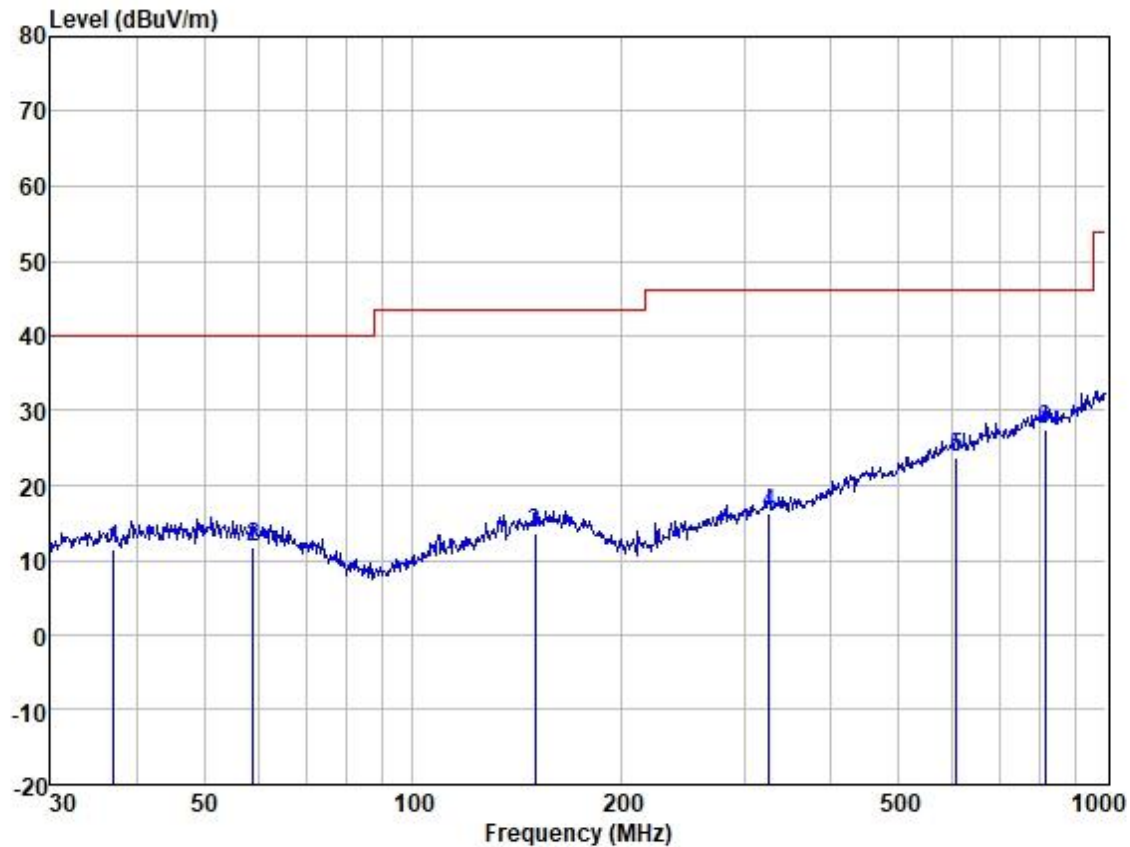
Test Mode: 05; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode : Y6

	Freq	Read Level	Antenna 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	37.548	25.38	13.31	1.07	27.62	12.14	40.00	-27.86	HORIZONTAL	QP
2	61.132	25.56	13.20	1.26	27.60	12.42	40.00	-27.58	HORIZONTAL	QP
3	171.995	26.95	13.10	2.40	27.33	15.12	43.52	-28.40	HORIZONTAL	QP
4	318.817	24.93	14.01	3.35	27.31	14.98	46.02	-31.04	HORIZONTAL	QP
5	574.626	28.31	19.09	4.86	28.77	23.49	46.02	-22.53	HORIZONTAL	QP
6	955.438	25.93	24.31	6.80	28.08	28.96	46.02	-17.06	HORIZONTAL	QP

Test Mode: 05; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode : Y6

	Freq	Read Level	Antenna 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	37.025	24.87	13.20	1.07	27.62	11.52	40.00	-28.48	VERTICAL	QP
2	58.819	24.73	13.45	1.23	27.60	11.81	40.00	-28.19	VERTICAL	QP
3	150.011	25.17	13.58	2.23	27.39	13.59	43.52	-29.93	VERTICAL	QP
4	326.740	26.12	14.19	3.41	27.36	16.36	46.02	-29.66	VERTICAL	QP
5	607.787	27.38	20.15	5.02	28.79	23.76	46.02	-22.26	VERTICAL	QP
6	815.968	26.64	23.33	6.07	28.55	27.49	46.02	-18.53	VERTICAL	QP

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 6.4,6.5,6.6

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.

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 25.4 °C Humidity: 55.6 % RH Atmospheric Pressure: 1003 mbar

7.8.2 Test Mode Description

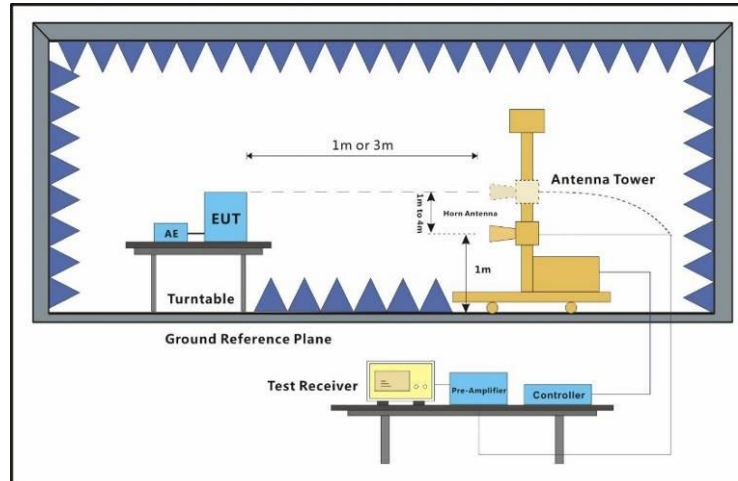
Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation



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7.8.3 Test Setup Diagram



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 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.

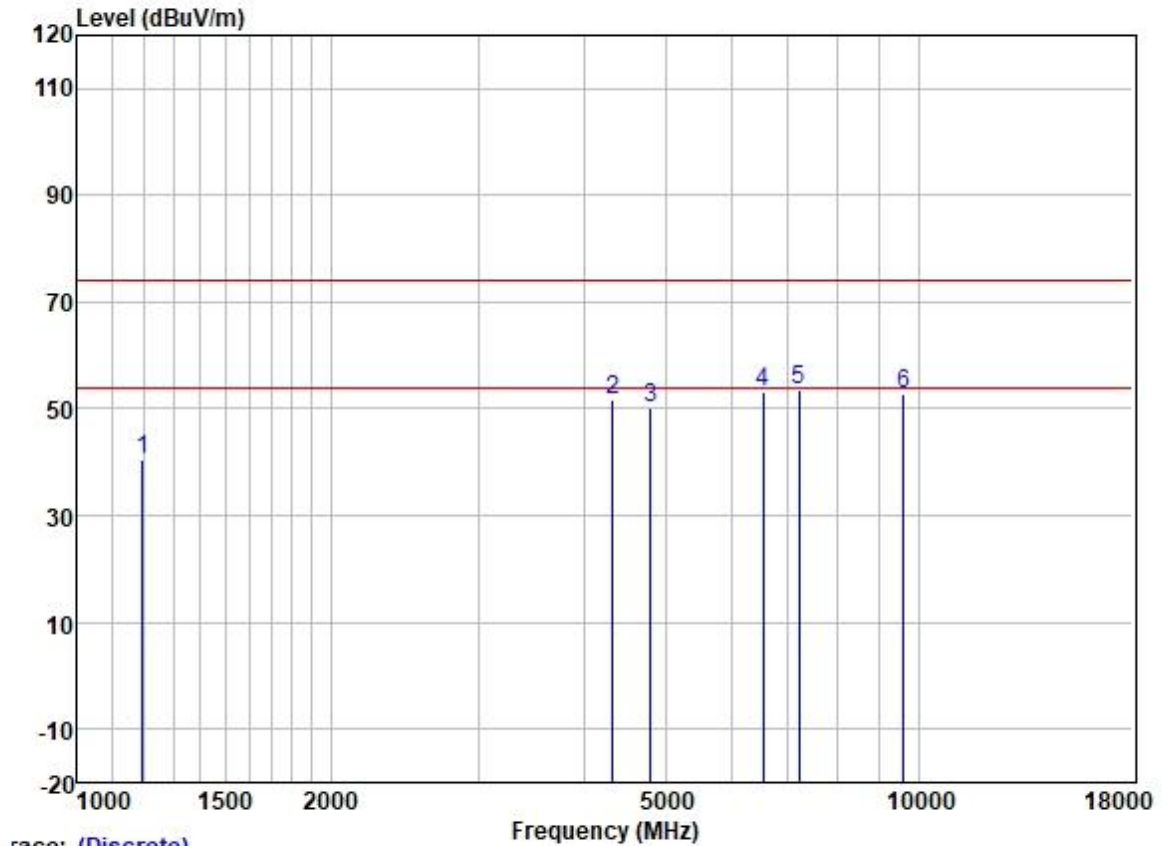
3) The field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only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



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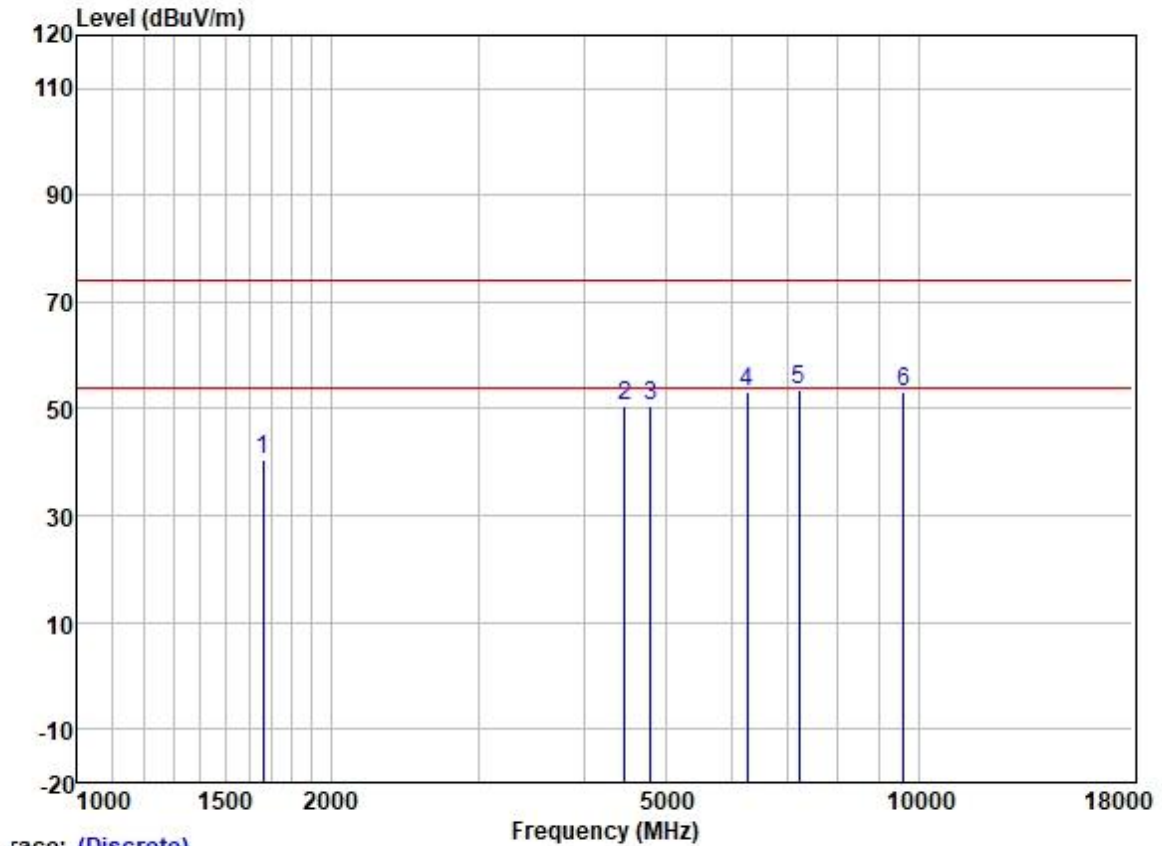
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1196.264	51.89	24.67	2.35	38.39	40.52	74.00	-33.48	HORIZONTAL	Peak
2	4329.354	53.12	30.54	4.67	36.81	51.52	74.00	-22.48	HORIZONTAL	Peak
3	4804.000	50.14	31.42	5.40	36.83	50.13	74.00	-23.87	HORIZONTAL	Peak
4	6545.263	50.41	34.06	5.84	37.03	53.28	74.00	-20.72	HORIZONTAL	Peak
5	7206.000	49.44	35.54	5.98	37.38	53.58	74.00	-20.42	HORIZONTAL	Peak
6	9608.000	44.85	38.37	7.07	37.42	52.87	74.00	-21.13	HORIZONTAL	Peak

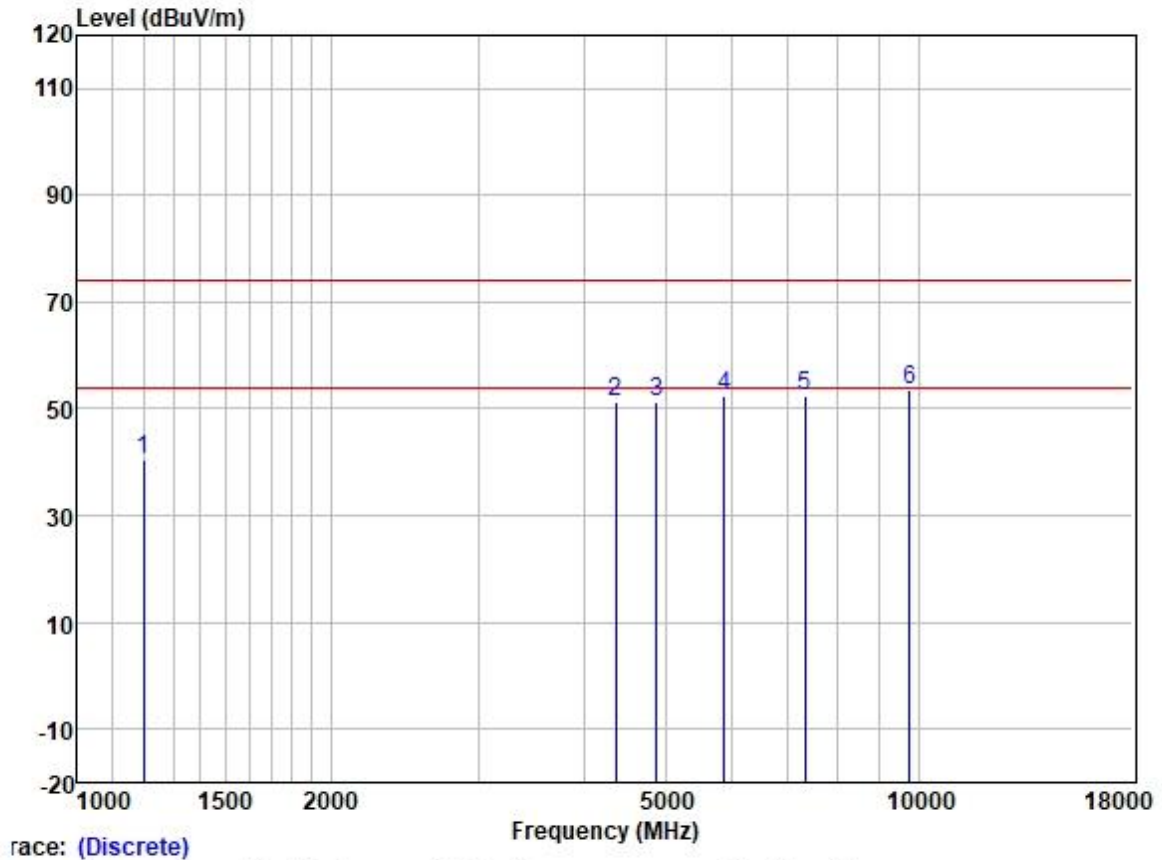
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; ; Channel:Low



race: (Discrete)

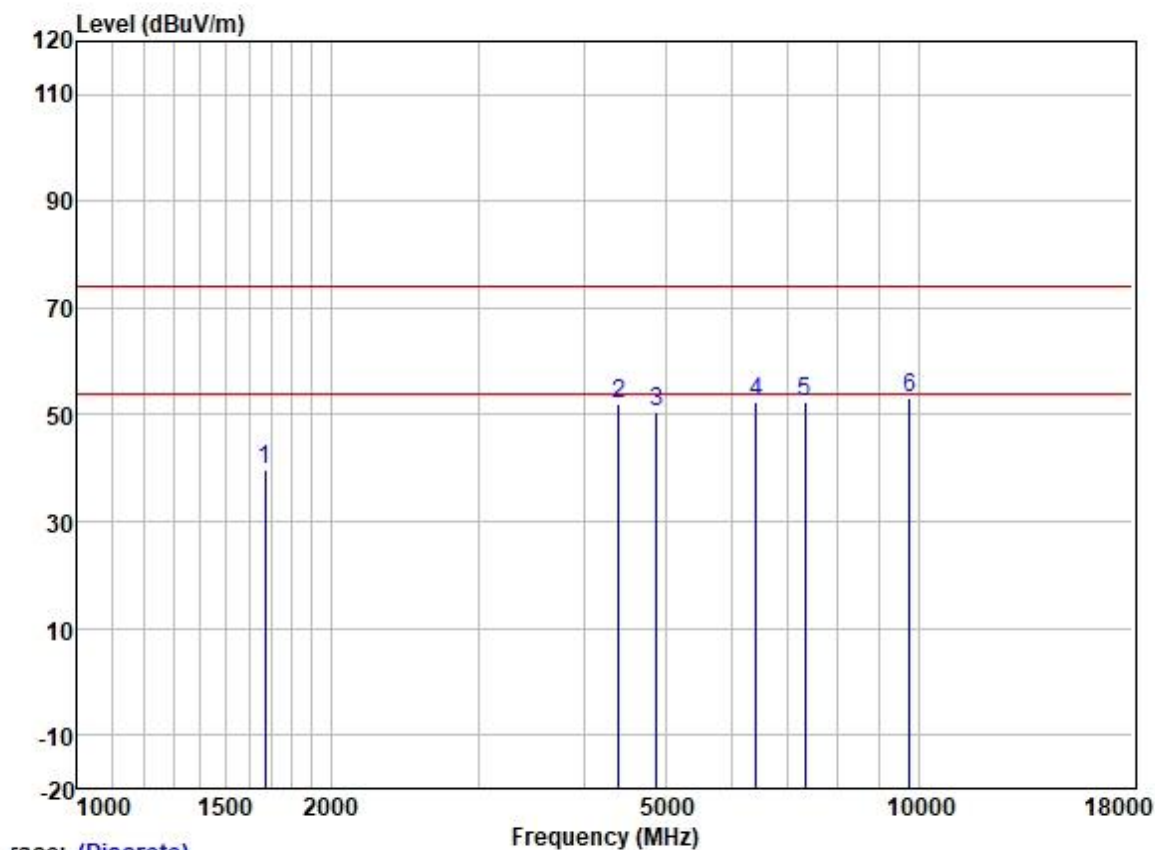
	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1663.137	49.88	25.65	2.80	37.91	40.42	74.00	-33.58	VERTICAL Peak
2	4469.214	51.63	30.77	4.93	36.81	50.52	74.00	-23.48	VERTICAL Peak
3	4804.000	50.69	31.42	5.40	36.83	50.68	74.00	-23.32	VERTICAL Peak
4	6249.464	50.95	33.20	6.02	36.95	53.22	74.00	-20.78	VERTICAL Peak
5	7206.000	49.31	35.54	5.98	37.38	53.45	74.00	-20.55	VERTICAL Peak
6	9608.000	45.25	38.37	7.07	37.42	53.27	74.00	-20.73	VERTICAL Peak

Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; ; Channel:middle



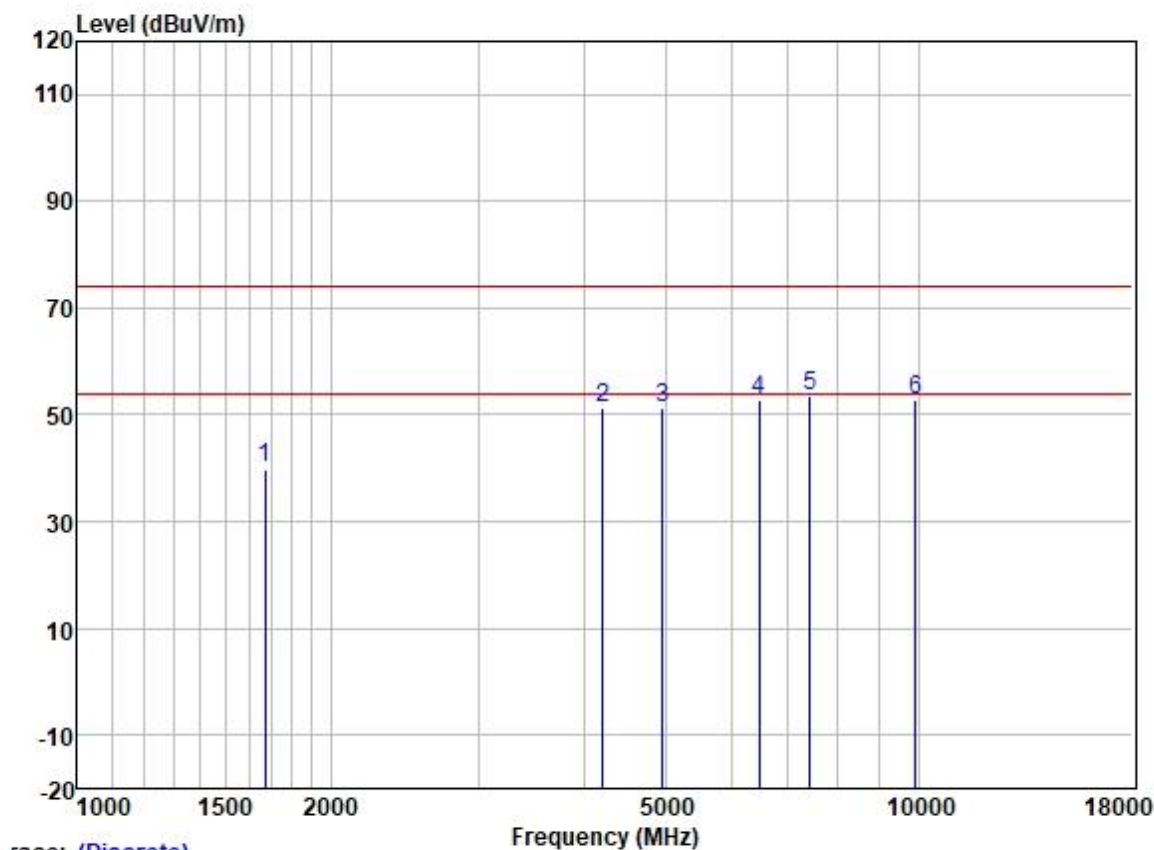
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1199.726	52.02	24.68	2.34	38.39	40.65	74.00	-33.35	HORIZONTAL Peak
2	4367.058	52.88	30.62	4.68	36.81	51.37	74.00	-22.63	HORIZONTAL Peak
3	4880.000	51.15	31.54	5.50	36.84	51.35	74.00	-22.65	HORIZONTAL Peak
4	5881.418	50.96	32.29	5.93	36.90	52.28	74.00	-21.72	HORIZONTAL Peak
5	7320.000	47.81	36.00	6.13	37.43	52.51	74.00	-21.49	HORIZONTAL Peak
6	9760.000	45.40	38.50	7.02	37.41	53.51	74.00	-20.49	HORIZONTAL Peak

Test Mode: 00; Polarity: Vertical; Modulation:GFSK; ; Channel:middle



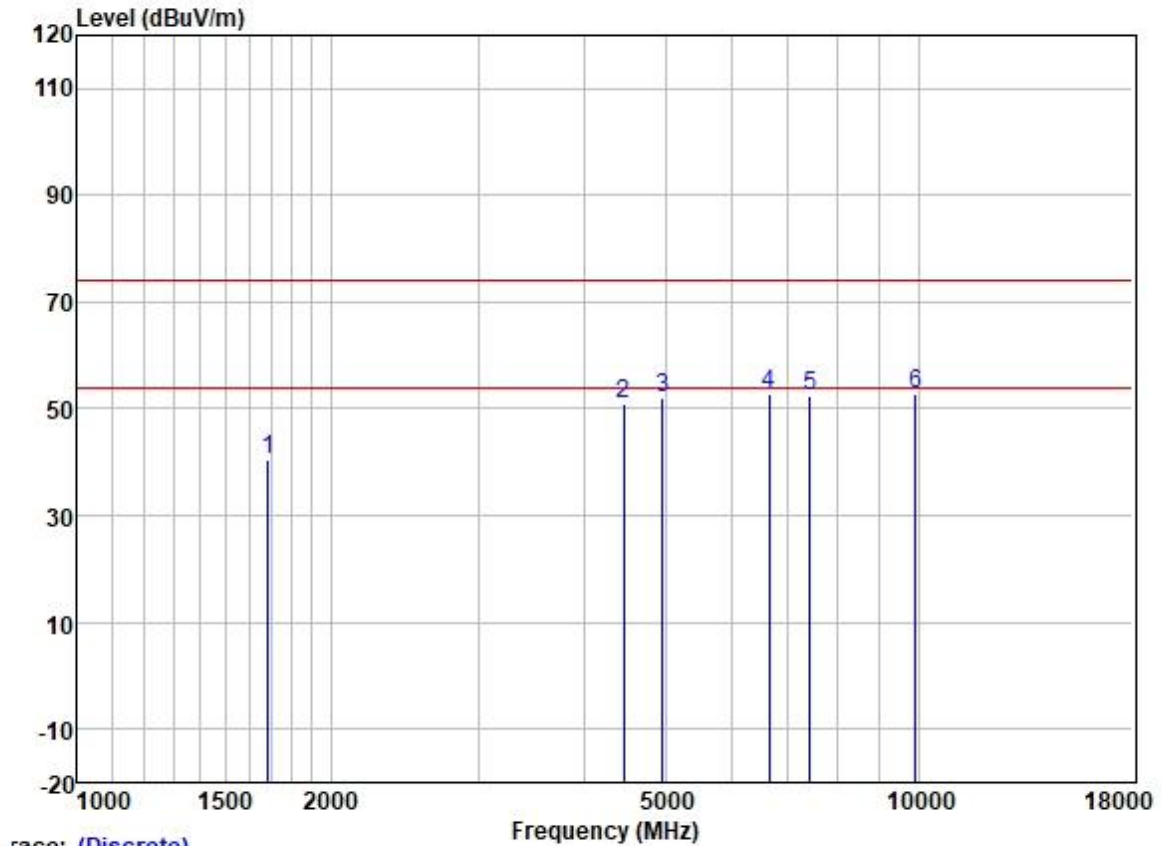
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	49.18	25.67	2.80	37.91	39.74	74.00	-34.26	VERTICAL	Peak
2	4405.090	53.49	30.68	4.70	36.81	52.06	74.00	-21.94	VERTICAL	Peak
3	4880.000	50.19	31.54	5.50	36.84	50.39	74.00	-23.61	VERTICAL	Peak
4	6414.167	49.60	33.79	5.89	36.99	52.29	74.00	-21.71	VERTICAL	Peak
5	7320.000	47.61	36.00	6.13	37.43	52.31	74.00	-21.69	VERTICAL	Peak
6	9760.000	44.90	38.50	7.02	37.41	53.01	74.00	-20.99	VERTICAL	Peak

Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; ; Channel:High



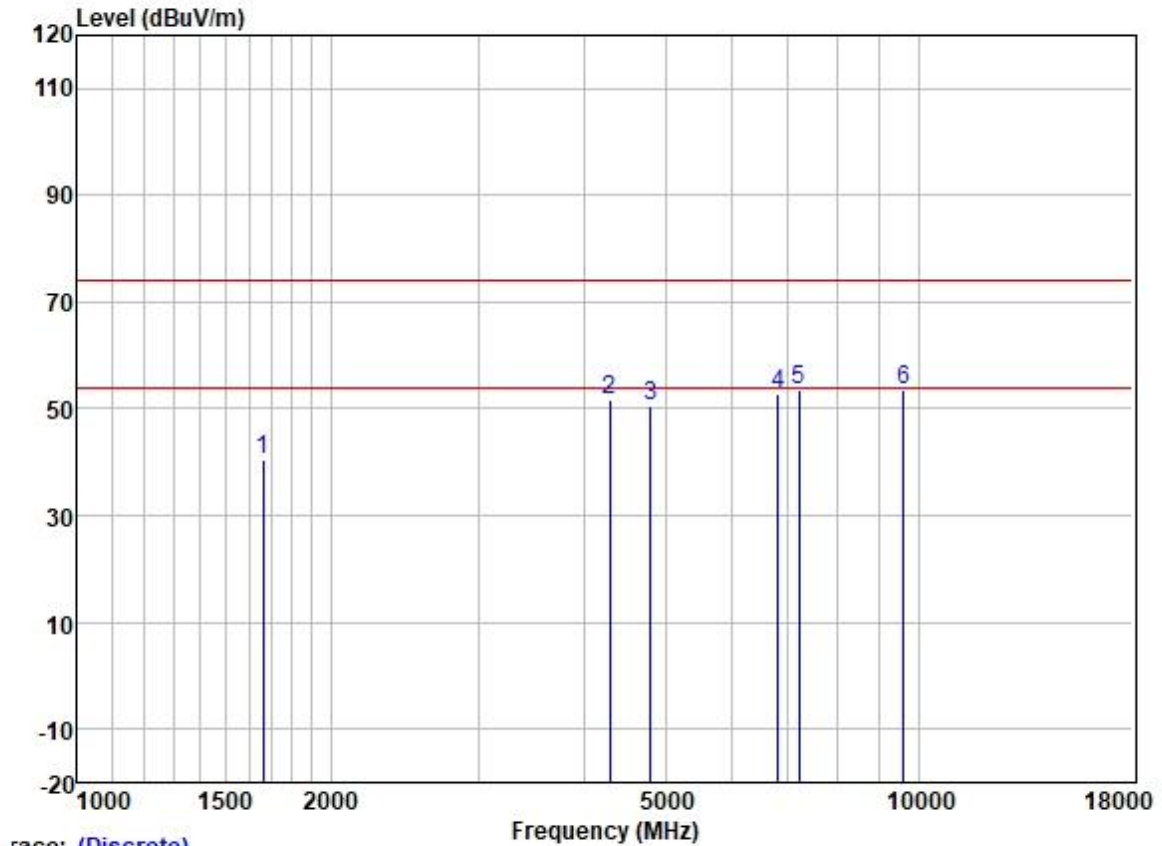
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1672.779	49.36	25.67	2.80	37.91	39.92	74.00	-34.08	HORIZONTAL Peak
2	4218.186	53.28	30.22	4.60	36.81	51.29	74.00	-22.71	HORIZONTAL Peak
3	4960.000	50.73	31.65	5.65	36.84	51.19	74.00	-22.81	HORIZONTAL Peak
4	6470.026	49.98	33.92	5.86	37.00	52.76	74.00	-21.24	HORIZONTAL Peak
5	7440.000	48.38	36.27	6.22	37.47	53.40	74.00	-20.60	HORIZONTAL Peak
6	9920.000	44.68	38.65	6.96	37.40	52.89	74.00	-21.11	HORIZONTAL Peak

Test Mode: 00; Polarity: Vertical; Modulation:GFSK; ; Channel:High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1687.347	50.04	25.69	2.80	37.91	40.62	74.00	-33.38	VERTICAL	Peak
2	4456.315	52.06	30.75	4.88	36.81	50.88	74.00	-23.12	VERTICAL	Peak
3	4960.000	51.53	31.65	5.65	36.84	51.99	74.00	-22.01	VERTICAL	Peak
4	6640.542	49.78	34.24	5.83	37.06	52.79	74.00	-21.21	VERTICAL	Peak
5	7440.000	47.53	36.27	6.22	37.47	52.55	74.00	-21.45	VERTICAL	Peak
6	9920.000	44.72	38.65	6.96	37.40	52.93	74.00	-21.07	VERTICAL	Peak

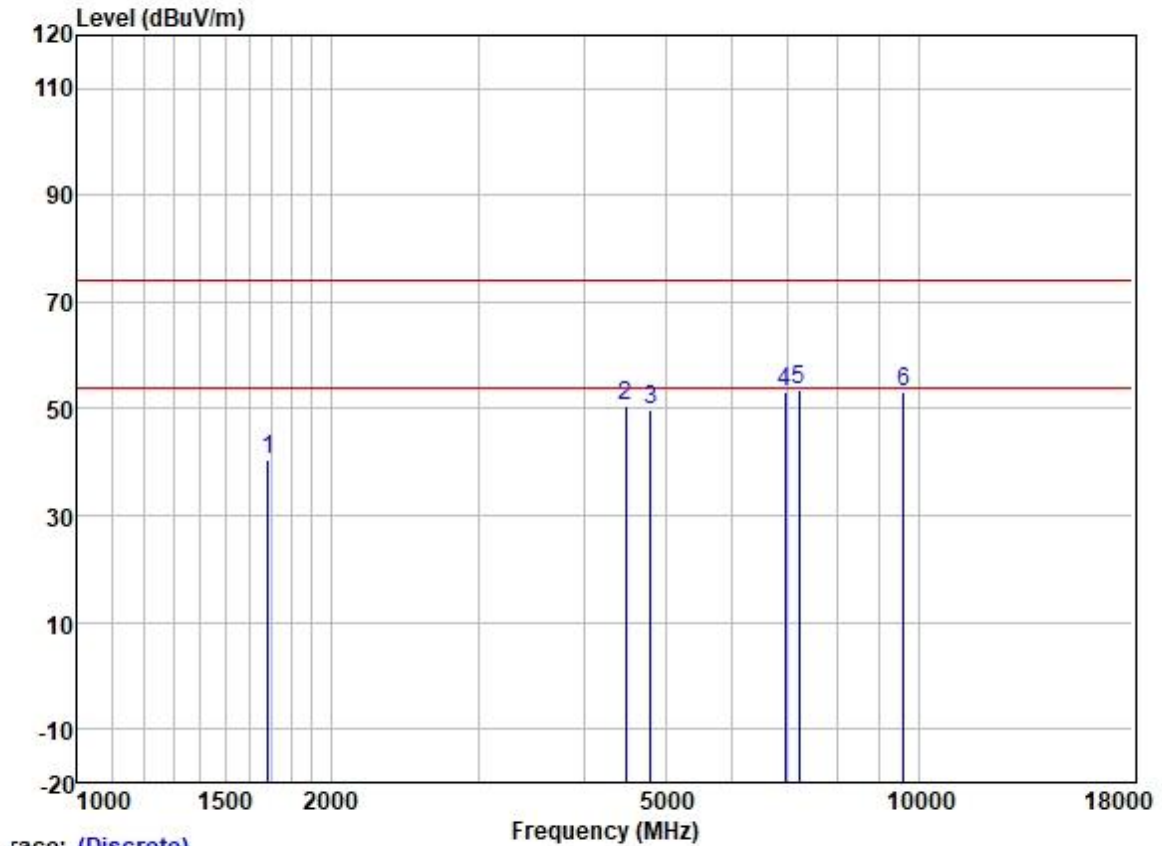
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	49.92	25.65	2.80	37.91	40.46	74.00	-33.54	HORIZONTAL	Peak
2	4291.977	53.32	30.45	4.64	36.81	51.60	74.00	-22.40	HORIZONTAL	Peak
3	4804.000	50.57	31.42	5.40	36.83	50.56	74.00	-23.44	HORIZONTAL	Peak
4	6815.551	49.24	34.70	5.82	37.13	52.63	74.00	-21.37	HORIZONTAL	Peak
5	7206.000	49.51	35.54	5.98	37.38	53.65	74.00	-20.35	HORIZONTAL	Peak
6	9608.000	45.45	38.37	7.07	37.42	53.47	74.00	-20.53	HORIZONTAL	Peak

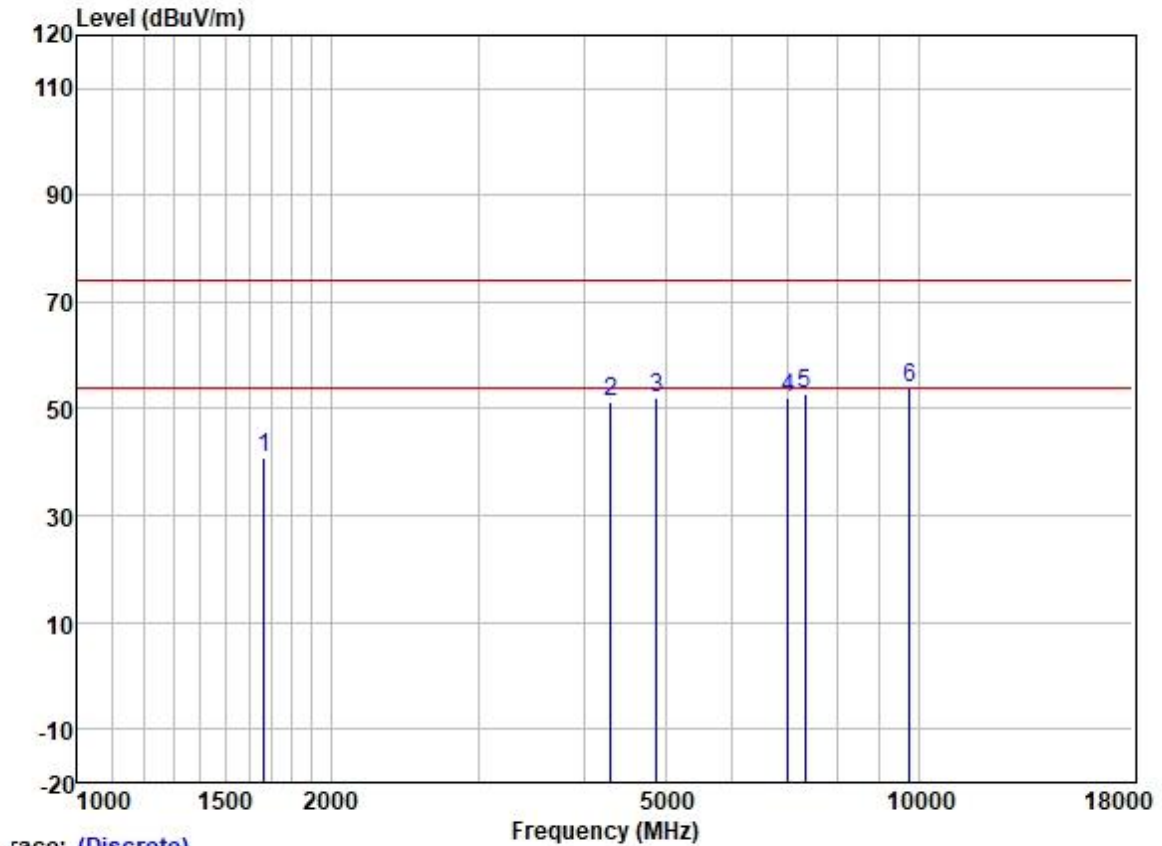
Test Mode: 01; Polarity: Vertical; Modulation:GFSK; ; Channel:Low



race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1687.347	49.94	25.69	2.80	37.91	40.52	74.00	-33.48	VERTICAL	Peak
2	4482.150	51.57	30.78	4.99	36.81	50.53	74.00	-23.47	VERTICAL	Peak
3	4804.000	49.74	31.42	5.40	36.83	49.73	74.00	-24.27	VERTICAL	Peak
4	6934.778	49.72	34.92	5.81	37.19	53.26	74.00	-20.74	VERTICAL	Peak
5	7206.000	49.59	35.54	5.98	37.38	53.73	74.00	-20.27	VERTICAL	Peak
6	9608.000	45.23	38.37	7.07	37.42	53.25	74.00	-20.75	VERTICAL	Peak

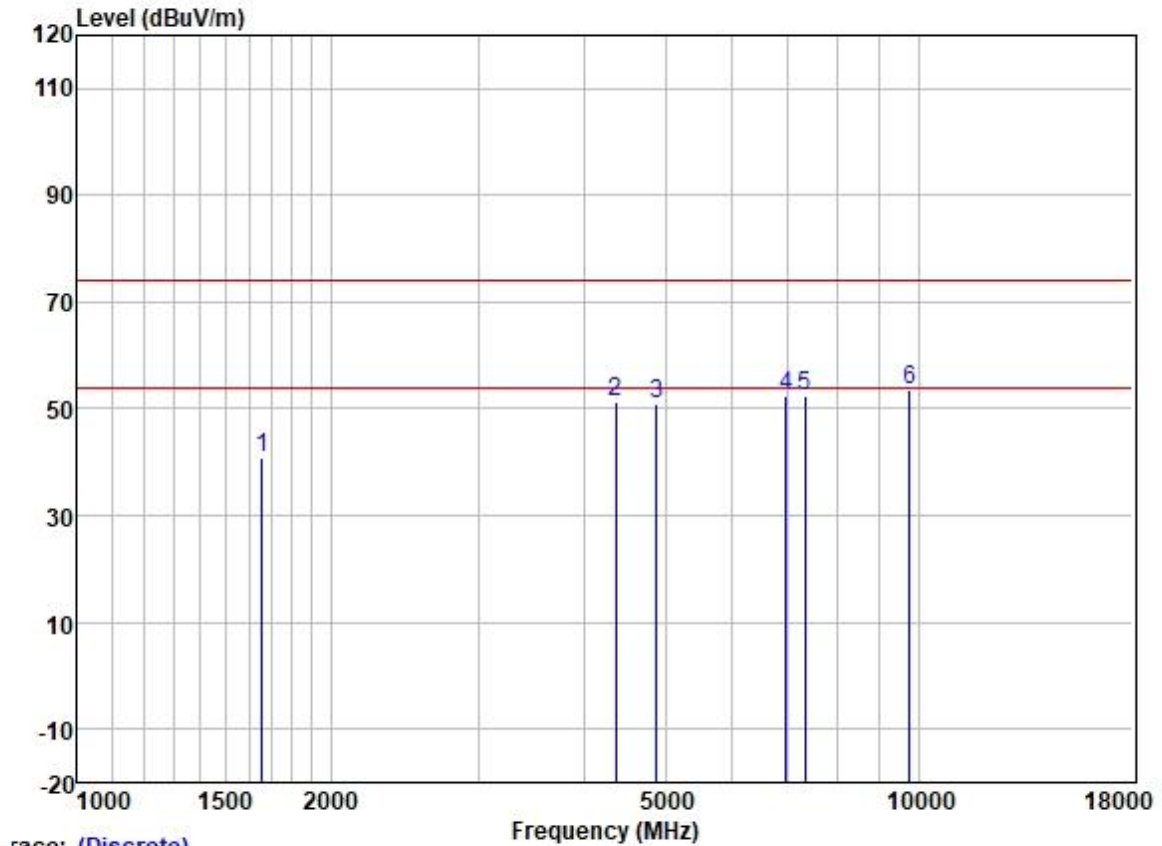
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; ; Channel:middle



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1667.951	50.28	25.66	2.80	37.91	40.83	74.00	-33.17	HORIZONTAL	Peak
2	4304.400	52.88	30.48	4.65	36.81	51.20	74.00	-22.80	HORIZONTAL	Peak
3	4880.000	51.70	31.54	5.50	36.84	51.90	74.00	-22.10	HORIZONTAL	Peak
4	6995.172	48.57	35.00	5.81	37.25	52.13	74.00	-21.87	HORIZONTAL	Peak
5	7320.000	48.20	36.00	6.13	37.43	52.90	74.00	-21.10	HORIZONTAL	Peak
6	9760.000	45.70	38.50	7.02	37.41	53.81	74.00	-20.19	HORIZONTAL	Peak

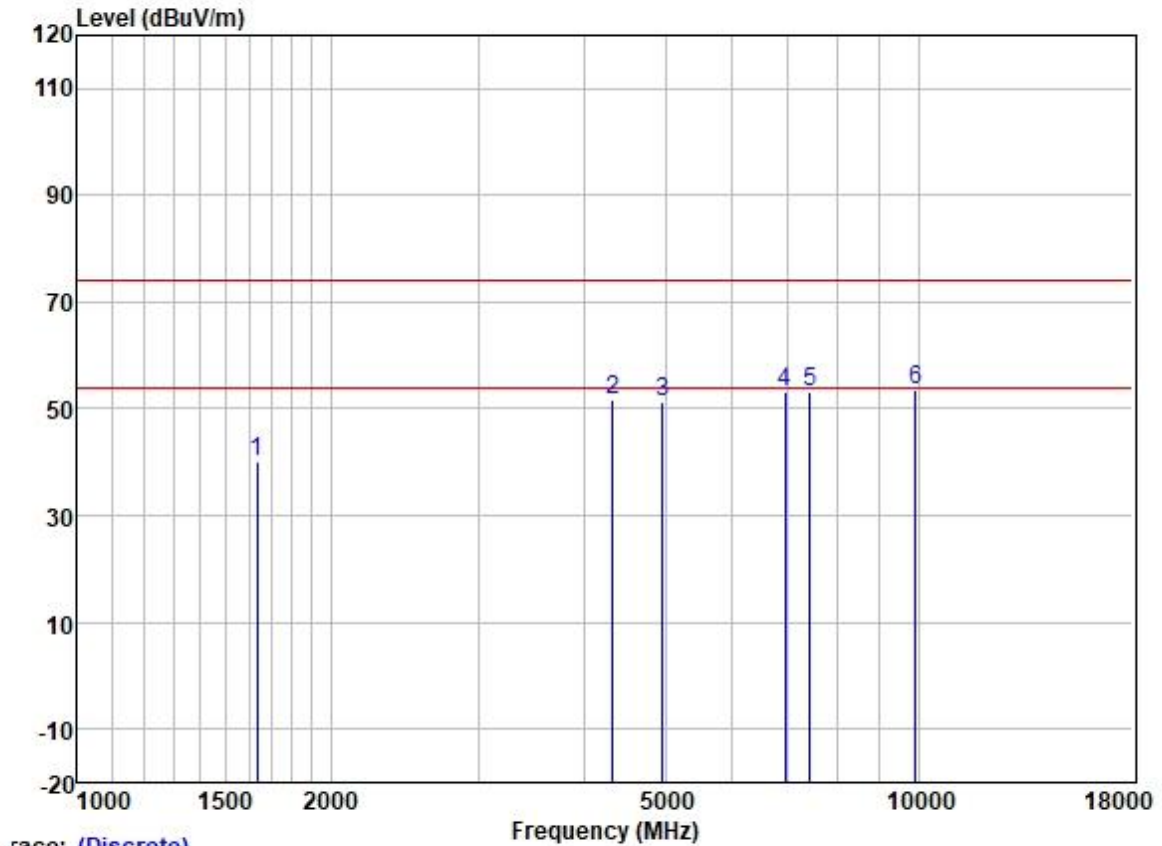
Test Mode: 01; Polarity: Vertical; Modulation:GFSK; ; Channel:middle



race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1658.337	50.43	25.65	2.80	37.93	40.95	74.00	-33.05	VERTICAL	Peak
2	4367.058	52.77	30.62	4.68	36.81	51.26	74.00	-22.74	VERTICAL	Peak
3	4880.000	50.73	31.54	5.50	36.84	50.93	74.00	-23.07	VERTICAL	Peak
4	6954.852	49.01	34.95	5.81	37.21	52.56	74.00	-21.44	VERTICAL	Peak
5	7320.000	47.56	36.00	6.13	37.43	52.26	74.00	-21.74	VERTICAL	Peak
6	9760.000	45.44	38.50	7.02	37.41	53.55	74.00	-20.45	VERTICAL	Peak

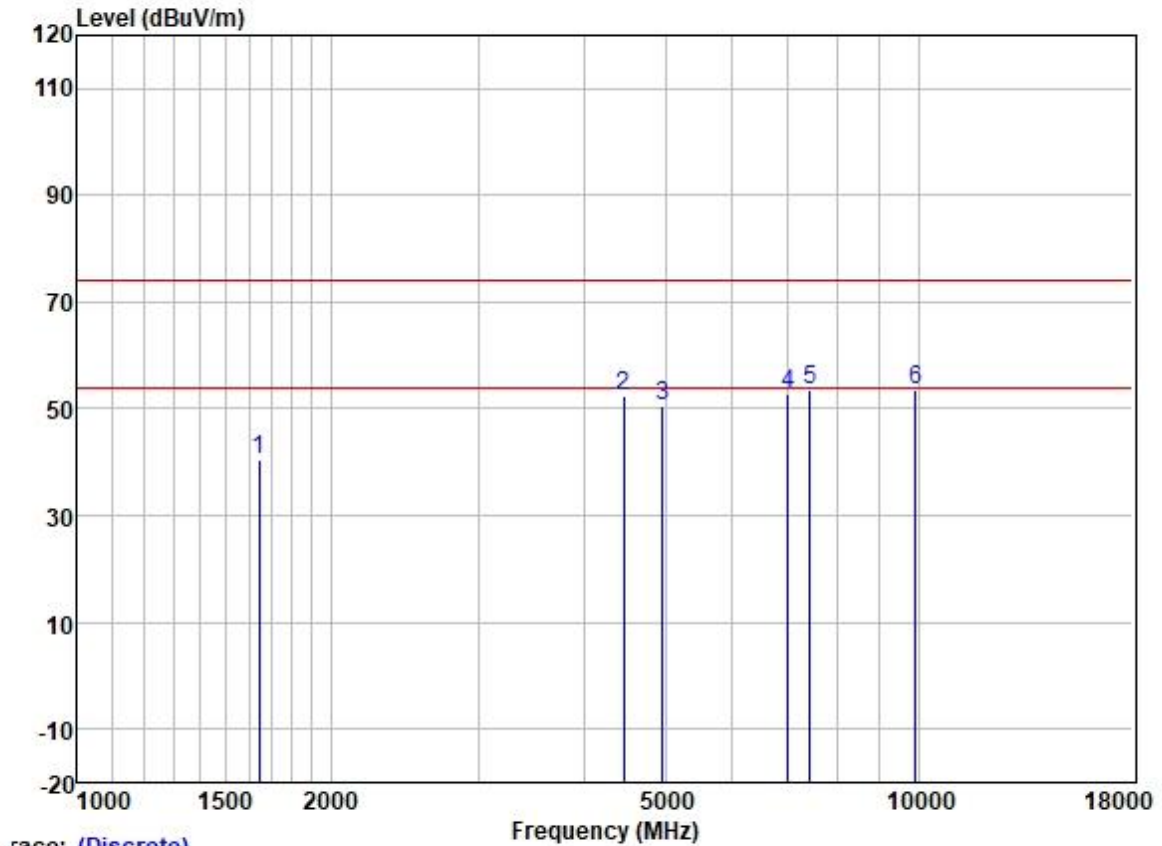
Test Mode: 01; Polarity: Horizontal; Modulation:GFSK; ; Channel:High



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1634.543	49.76	25.62	2.80	37.95	40.23	74.00	-33.77	HORIZONTAL	Peak
2	4329.354	53.35	30.54	4.67	36.81	51.75	74.00	-22.25	HORIZONTAL	Peak
3	4960.000	50.89	31.65	5.65	36.84	51.35	74.00	-22.65	HORIZONTAL	Peak
4	6934.778	49.59	34.92	5.81	37.19	53.13	74.00	-20.87	HORIZONTAL	Peak
5	7440.000	48.28	36.27	6.22	37.47	53.30	74.00	-20.70	HORIZONTAL	Peak
6	9920.000	45.35	38.65	6.96	37.40	53.56	74.00	-20.44	HORIZONTAL	Peak

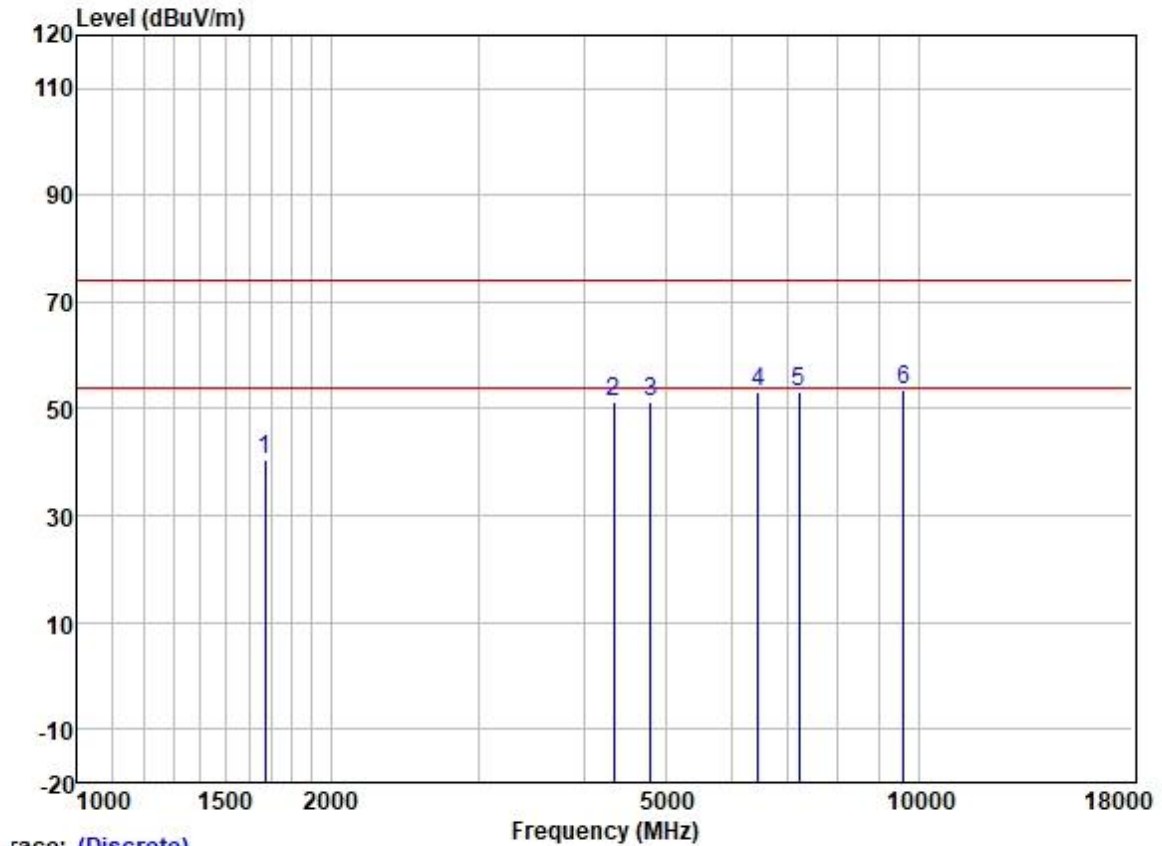
Test Mode: 01; Polarity: Vertical; Modulation:GFSK; ; Channel:High



Trace: (Discrete)

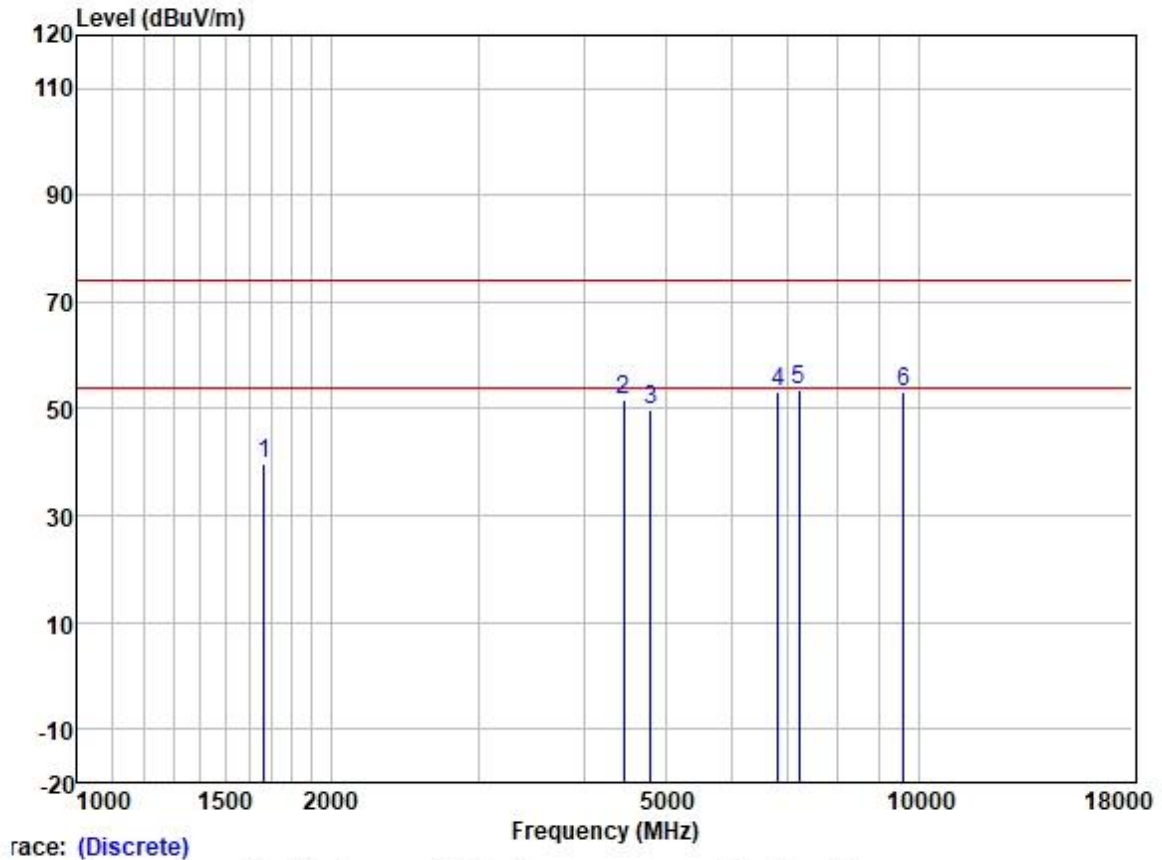
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1644.019	49.96	25.63	2.80	37.93	40.46	74.00	-33.54	VERTICAL Peak
2	4456.315	53.73	30.75	4.88	36.81	52.55	74.00	-21.45	VERTICAL Peak
3	4960.000	50.15	31.65	5.65	36.84	50.61	74.00	-23.39	VERTICAL Peak
4	6995.172	49.20	35.00	5.81	37.25	52.76	74.00	-21.24	VERTICAL Peak
5	7440.000	48.45	36.27	6.22	37.47	53.47	74.00	-20.53	VERTICAL Peak
6	9920.000	45.22	38.65	6.96	37.40	53.43	74.00	-20.57	VERTICAL Peak

Test Mode: 04; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



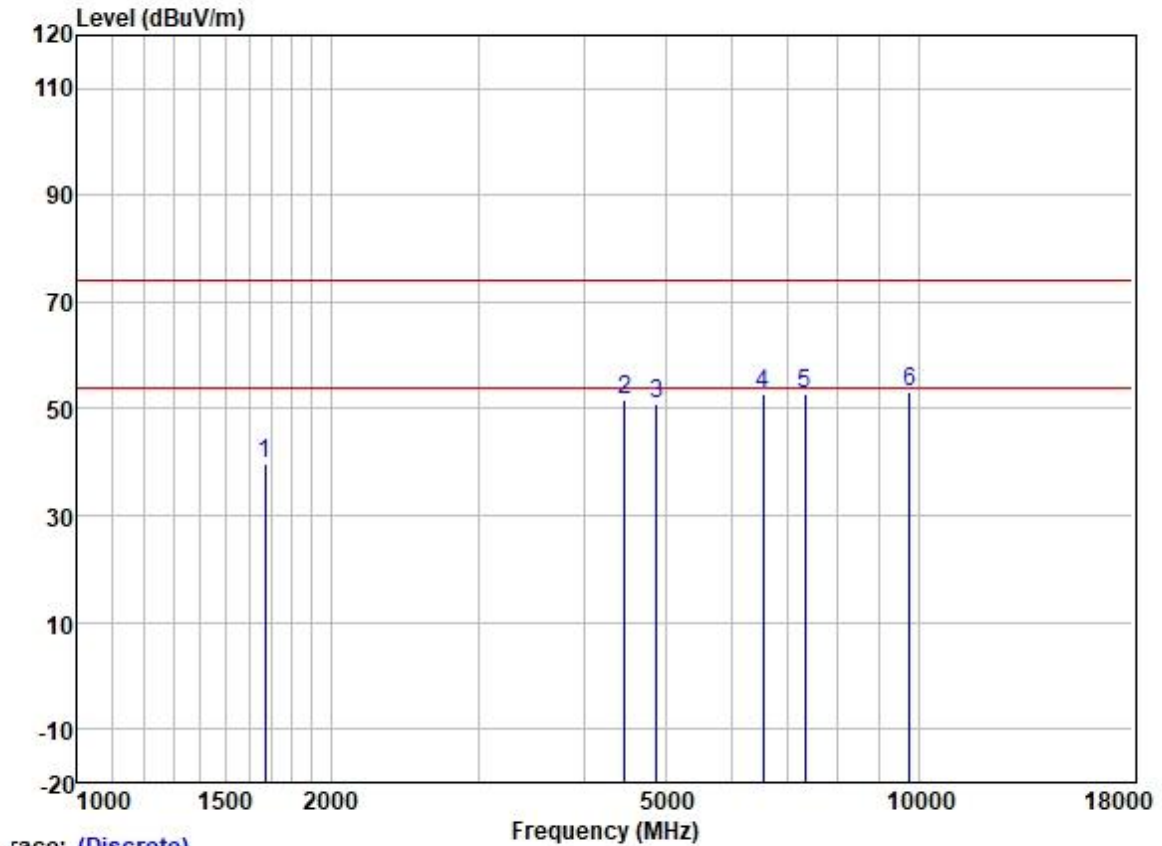
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	49.81	25.67	2.80	37.91	40.37	74.00	-33.63	HORIZONTAL	Peak
2	4341.886	52.73	30.57	4.67	36.81	51.16	74.00	-22.84	HORIZONTAL	Peak
3	4804.000	51.46	31.42	5.40	36.83	51.45	74.00	-22.55	HORIZONTAL	Peak
4	6451.353	50.40	33.88	5.87	37.00	53.15	74.00	-20.85	HORIZONTAL	Peak
5	7206.000	49.02	35.54	5.98	37.38	53.16	74.00	-20.84	HORIZONTAL	Peak
6	9608.000	45.50	38.37	7.07	37.42	53.52	74.00	-20.48	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:GFSK; ; Channel:Low



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1667.951	49.15	25.66	2.80	37.91	39.70	74.00	-34.30	VERTICAL	Peak
2	4456.315	53.01	30.75	4.88	36.81	51.83	74.00	-22.17	VERTICAL	Peak
3	4804.000	49.79	31.42	5.40	36.83	49.78	74.00	-24.22	VERTICAL	Peak
4	6815.551	49.86	34.70	5.82	37.13	53.25	74.00	-20.75	VERTICAL	Peak
5	7206.000	49.44	35.54	5.98	37.38	53.58	74.00	-20.42	VERTICAL	Peak
6	9608.000	45.05	38.37	7.07	37.42	53.07	74.00	-20.93	VERTICAL	Peak

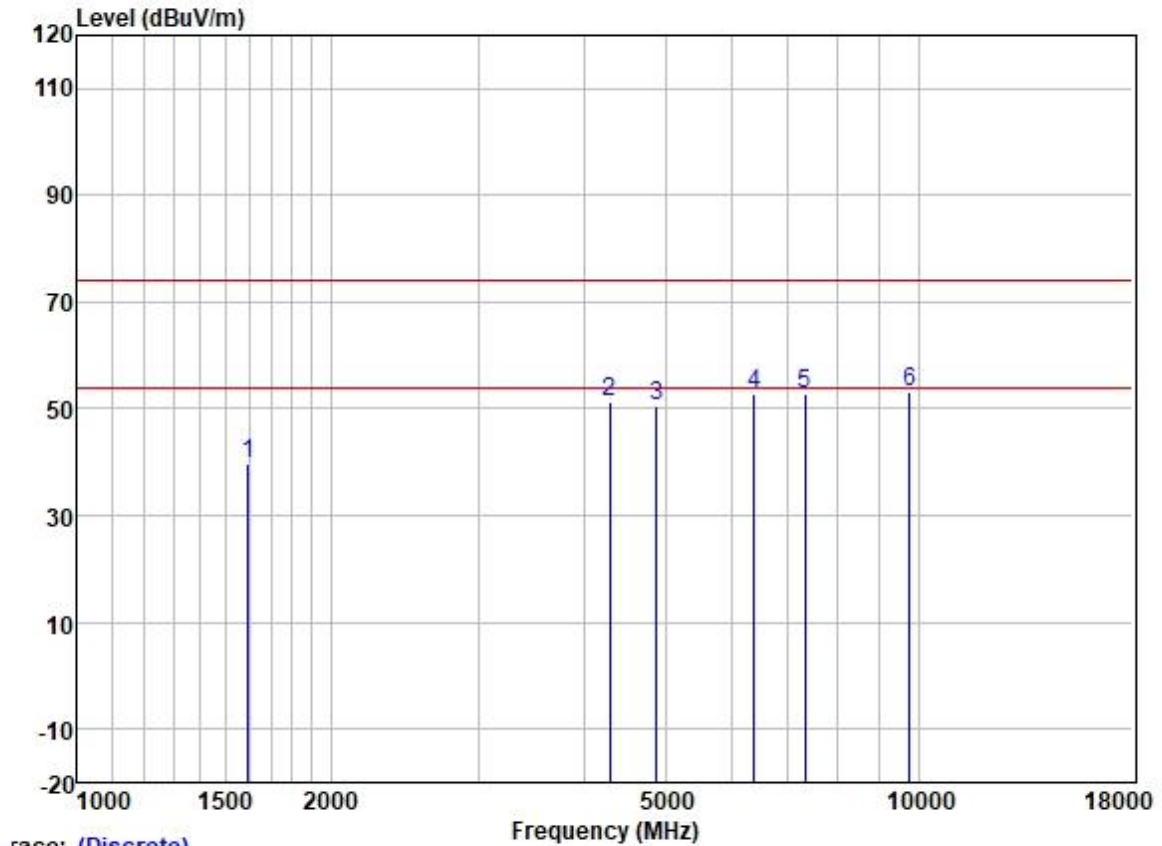
Test Mode: 04; Polarity: Horizontal; Modulation:GFSK; ; Channel:middle



Trace: (Discrete)

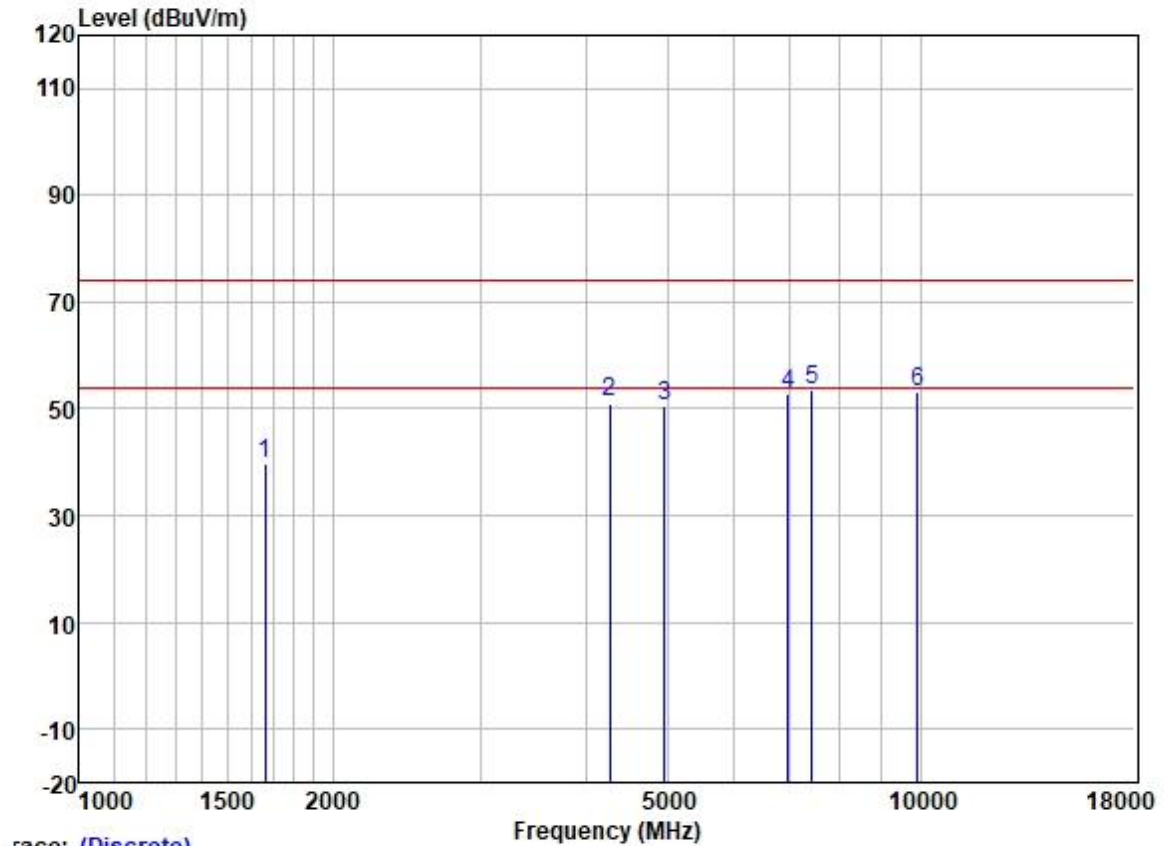
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1672.779	49.24	25.67	2.80	37.91	39.80	74.00	-34.20	HORIZONTAL Peak
2	4469.214	52.92	30.77	4.93	36.81	51.81	74.00	-22.19	HORIZONTAL Peak
3	4880.000	50.63	31.54	5.50	36.84	50.83	74.00	-23.17	HORIZONTAL Peak
4	6545.263	50.11	34.06	5.84	37.03	52.98	74.00	-21.02	HORIZONTAL Peak
5	7320.000	47.93	36.00	6.13	37.43	52.63	74.00	-21.37	HORIZONTAL Peak
6	9760.000	45.02	38.50	7.02	37.41	53.13	74.00	-20.87	HORIZONTAL Peak

Test Mode: 04; Polarity: Vertical; Modulation:GFSK; ; Channel:middle



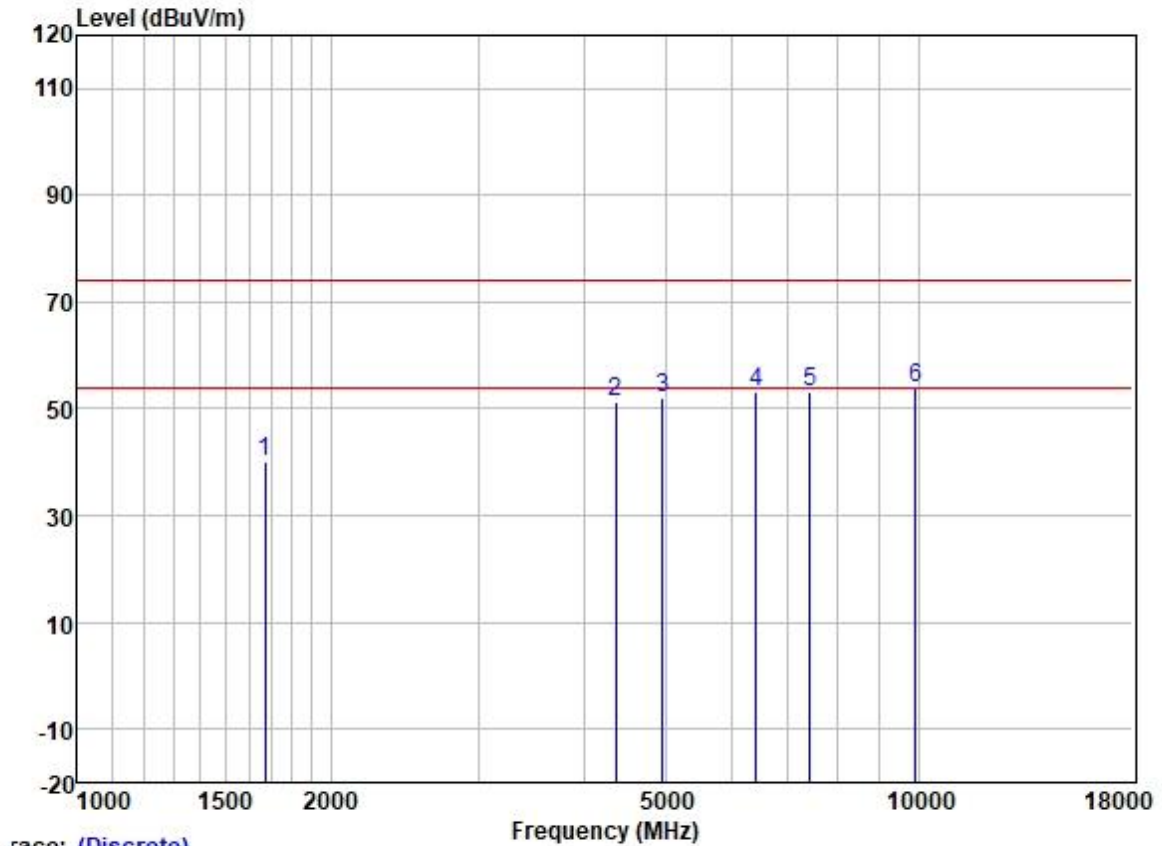
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1597.181	49.18	25.58	2.80	37.98	39.58	74.00	-34.42	VERTICAL	Peak
2	4291.977	53.09	30.45	4.64	36.81	51.37	74.00	-22.63	VERTICAL	Peak
3	4880.000	50.40	31.54	5.50	36.84	50.60	74.00	-23.40	VERTICAL	Peak
4	6377.195	50.19	33.68	5.91	36.98	52.80	74.00	-21.20	VERTICAL	Peak
5	7320.000	48.07	36.00	6.13	37.43	52.77	74.00	-21.23	VERTICAL	Peak
6	9760.000	45.09	38.50	7.02	37.41	53.20	74.00	-20.80	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:GFSK; ; Channel:High



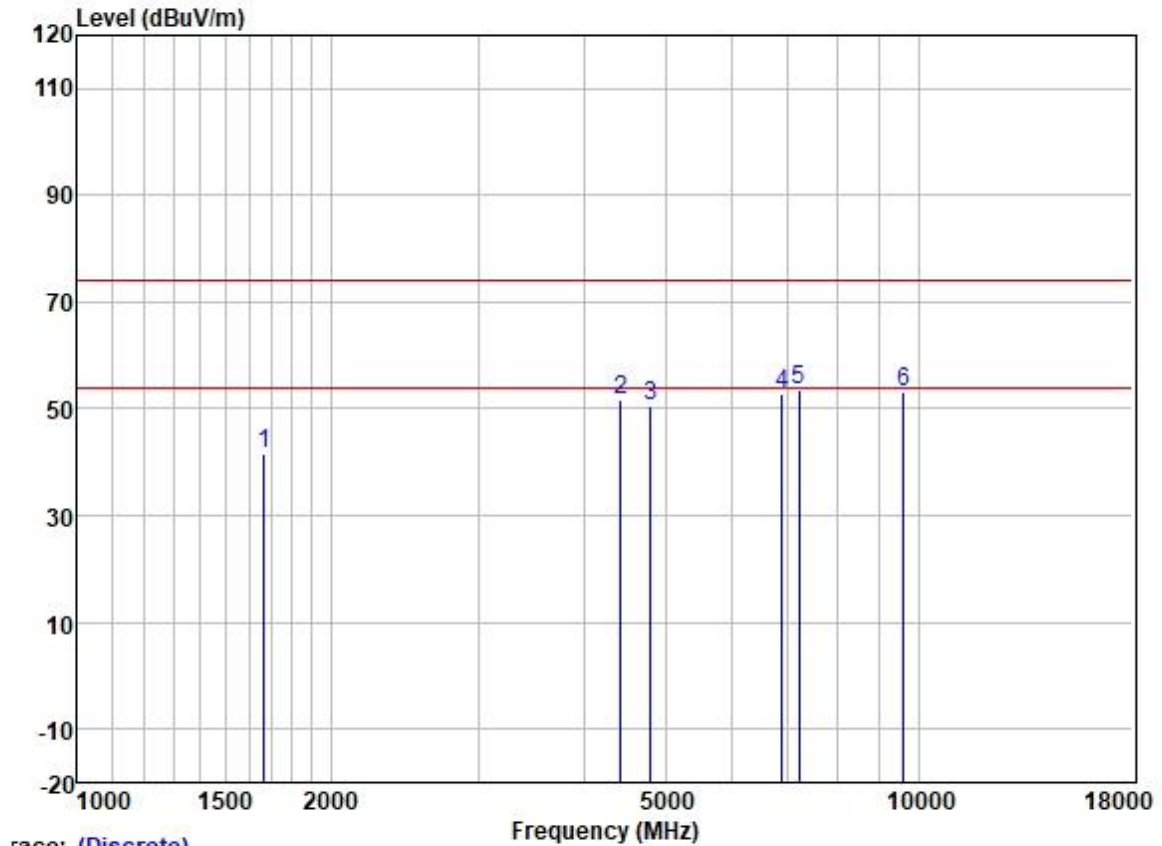
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	49.03	25.65	2.80	37.91	39.57	74.00	-34.43	HORIZONTAL	Peak
2	4267.237	52.92	30.38	4.63	36.81	51.12	74.00	-22.88	HORIZONTAL	Peak
3	4960.000	49.99	31.65	5.65	36.84	50.45	74.00	-23.55	HORIZONTAL	Peak
4	6954.852	49.09	34.95	5.81	37.21	52.64	74.00	-21.36	HORIZONTAL	Peak
5	7440.000	48.47	36.27	6.22	37.47	53.49	74.00	-20.51	HORIZONTAL	Peak
6	9920.000	45.02	38.65	6.96	37.40	53.23	74.00	-20.77	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:GFSK; ; Channel:High



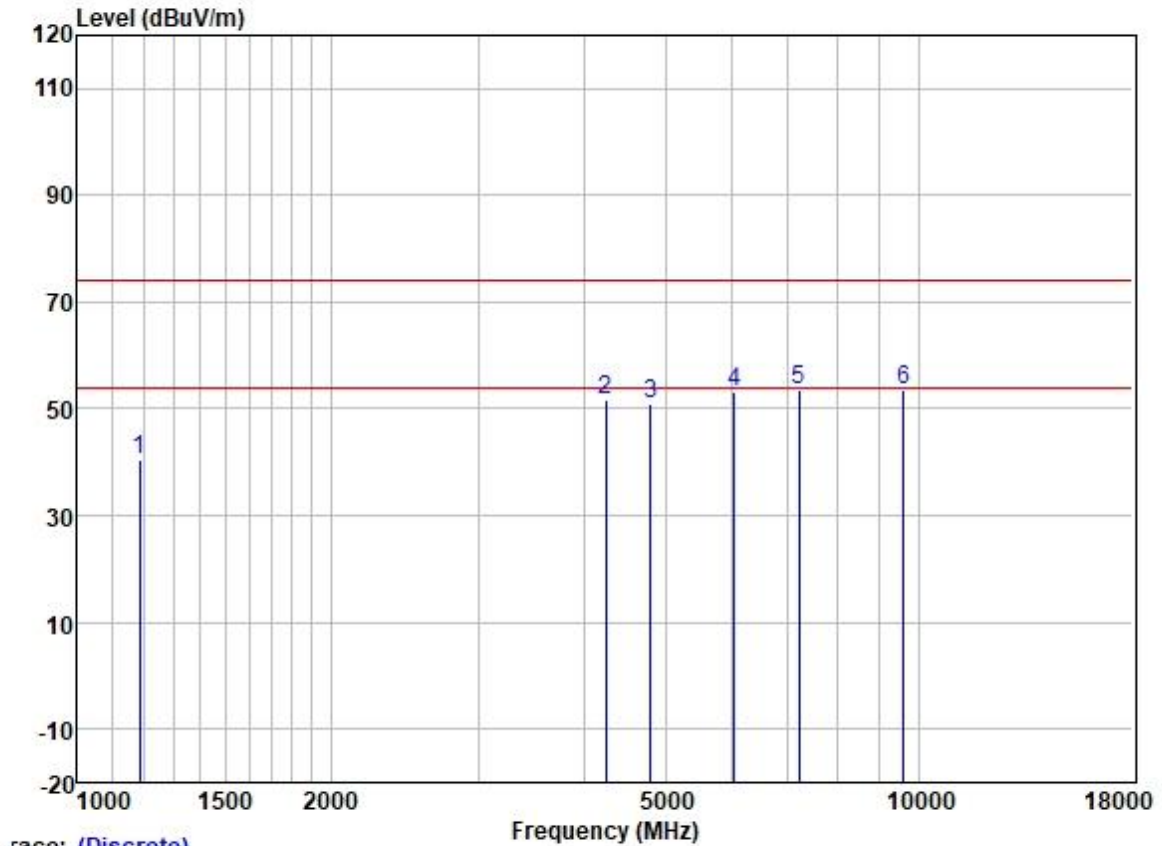
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	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	49.58	25.67	2.80	37.91	40.14	74.00	-33.86	VERTICAL	Peak
2	4367.058	52.86	30.62	4.68	36.81	51.35	74.00	-22.65	VERTICAL	Peak
3	4960.000	51.54	31.65	5.65	36.84	52.00	74.00	-22.00	VERTICAL	Peak
4	6414.167	50.55	33.79	5.89	36.99	53.24	74.00	-20.76	VERTICAL	Peak
5	7440.000	48.12	36.27	6.22	37.47	53.14	74.00	-20.86	VERTICAL	Peak
6	9920.000	45.77	38.65	6.96	37.40	53.98	74.00	-20.02	VERTICAL	Peak

Test Mode: 05; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low



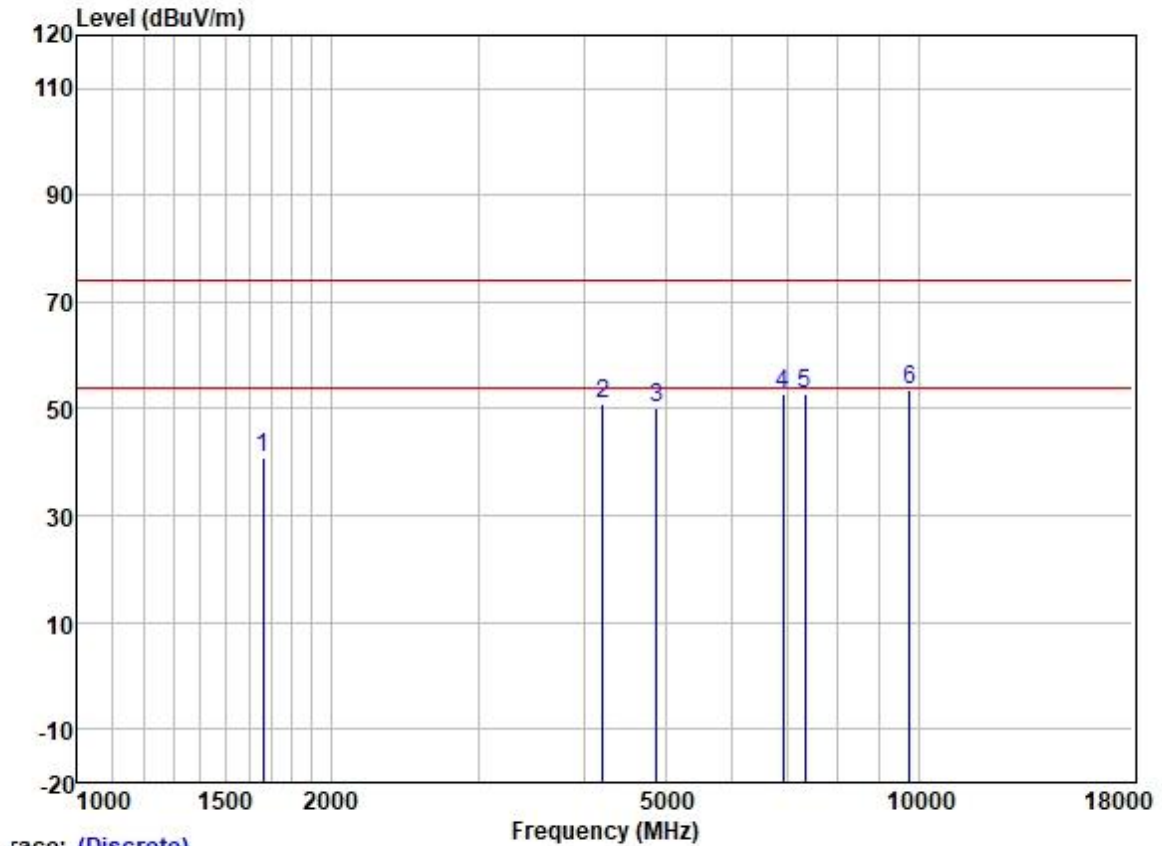
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	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1667.951	51.03	25.66	2.80	37.91	41.58	74.00	-32.42	HORIZONTAL Peak
2	4430.628	53.04	30.72	4.78	36.81	51.73	74.00	-22.27	HORIZONTAL Peak
3	4804.000	50.46	31.42	5.40	36.83	50.45	74.00	-23.55	HORIZONTAL Peak
4	6874.906	49.21	34.82	5.82	37.16	52.69	74.00	-21.31	HORIZONTAL Peak
5	7206.000	49.54	35.54	5.98	37.38	53.68	74.00	-20.32	HORIZONTAL Peak
6	9608.000	45.08	38.37	7.07	37.42	53.10	74.00	-20.90	HORIZONTAL Peak

Test Mode: 05; Polarity: Vertical; Modulation:GFSK; ; Channel:Low



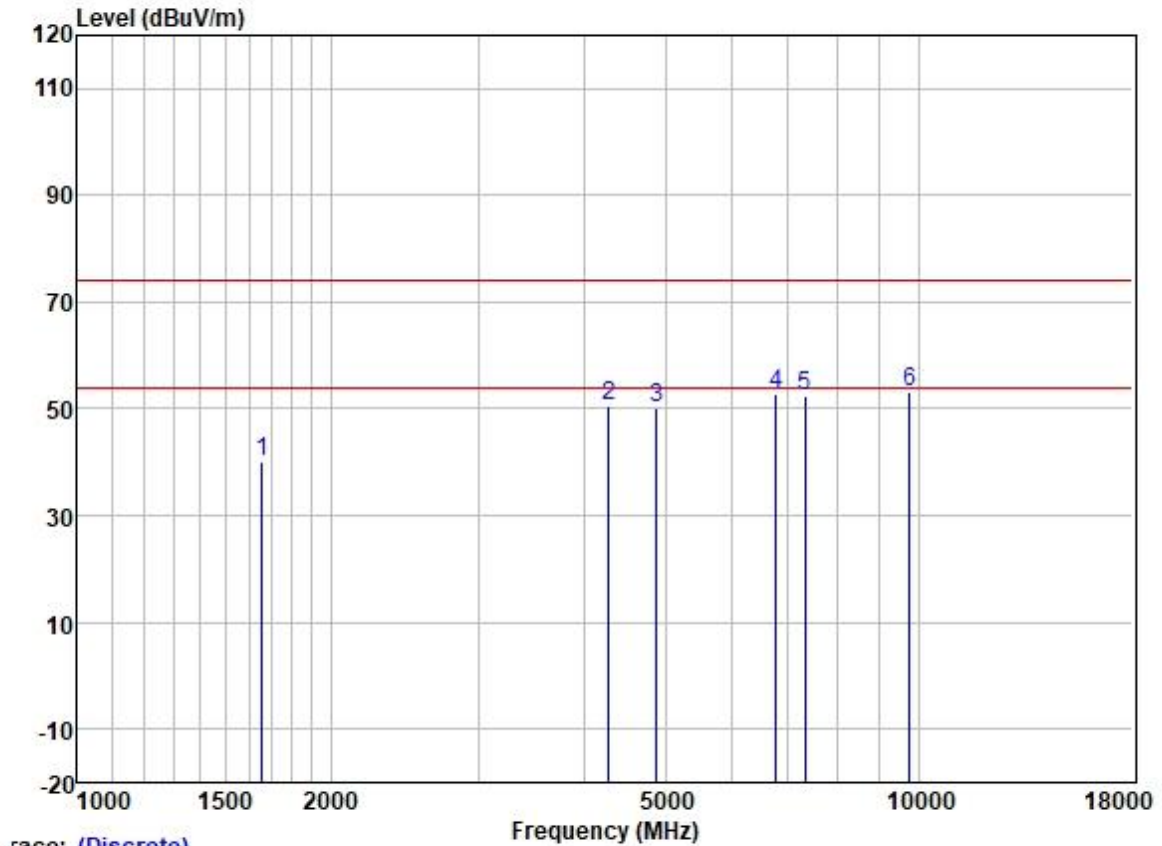
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	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1185.936	51.71	24.62	2.37	38.40	40.30	74.00	-33.70	VERTICAL Peak
2	4242.641	53.66	30.30	4.62	36.81	51.77	74.00	-22.23	VERTICAL Peak
3	4804.000	50.99	31.42	5.40	36.83	50.98	74.00	-23.02	VERTICAL Peak
4	6036.421	51.26	32.48	6.18	36.90	53.02	74.00	-20.98	VERTICAL Peak
5	7206.000	49.58	35.54	5.98	37.38	53.72	74.00	-20.28	VERTICAL Peak
6	9608.000	45.52	38.37	7.07	37.42	53.54	74.00	-20.46	VERTICAL Peak

Test Mode: 05; Polarity: Horizontal; Modulation:GFSK; ; Channel:middle



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	50.34	25.65	2.80	37.91	40.88	74.00	-33.12	HORIZONTAL	Peak
2	4218.186	53.10	30.22	4.60	36.81	51.11	74.00	-22.89	HORIZONTAL	Peak
3	4880.000	50.11	31.54	5.50	36.84	50.31	74.00	-23.69	HORIZONTAL	Peak
4	6894.806	49.36	34.85	5.81	37.18	52.84	74.00	-21.16	HORIZONTAL	Peak
5	7320.000	48.01	36.00	6.13	37.43	52.71	74.00	-21.29	HORIZONTAL	Peak
6	9760.000	45.57	38.50	7.02	37.41	53.68	74.00	-20.32	HORIZONTAL	Peak

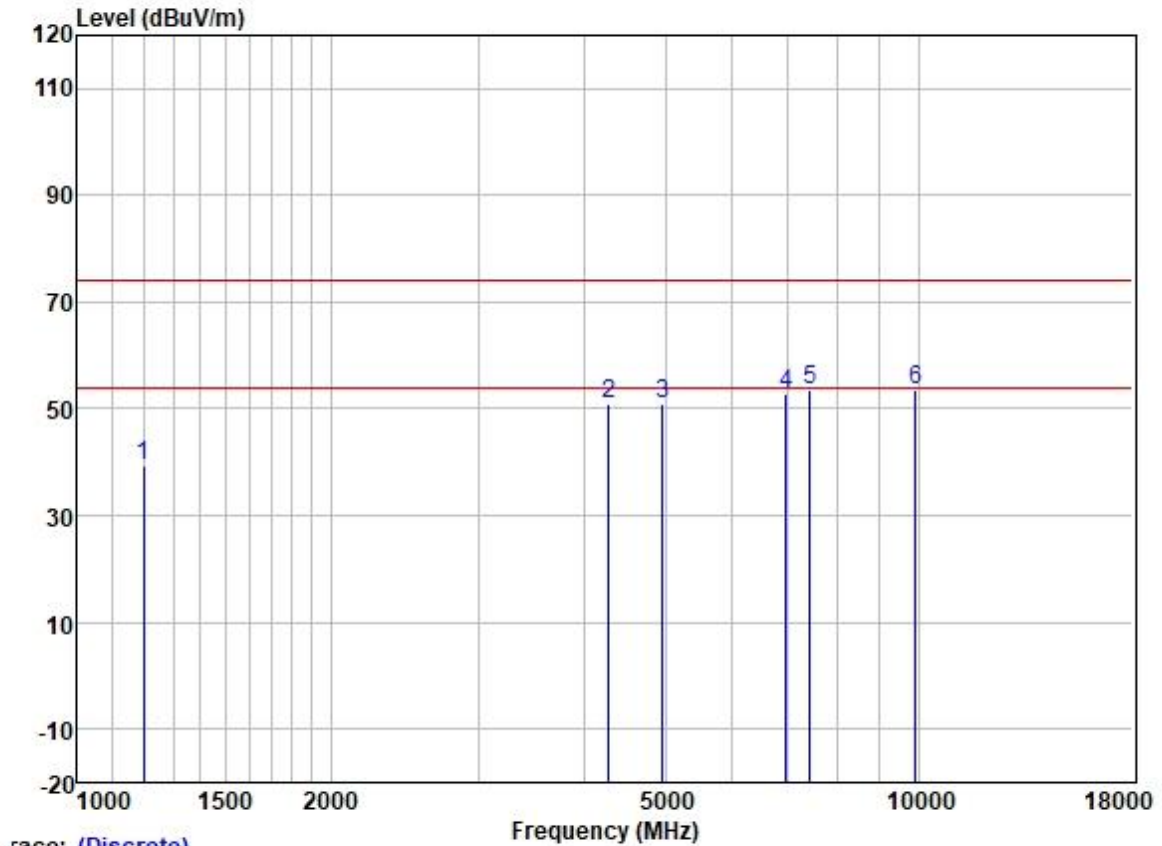
Test Mode: 05; Polarity: Vertical; Modulation:GFSK; ; Channel:middle



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1658.337	49.51	25.65	2.80	37.93	40.03	74.00	-33.97	VERTICAL	Peak
2	4279.589	52.36	30.42	4.63	36.81	50.60	74.00	-23.40	VERTICAL	Peak
3	4880.000	50.15	31.54	5.50	36.84	50.35	74.00	-23.65	VERTICAL	Peak
4	6776.265	49.42	34.61	5.82	37.11	52.74	74.00	-21.26	VERTICAL	Peak
5	7320.000	47.89	36.00	6.13	37.43	52.59	74.00	-21.41	VERTICAL	Peak
6	9760.000	45.17	38.50	7.02	37.41	53.28	74.00	-20.72	VERTICAL	Peak

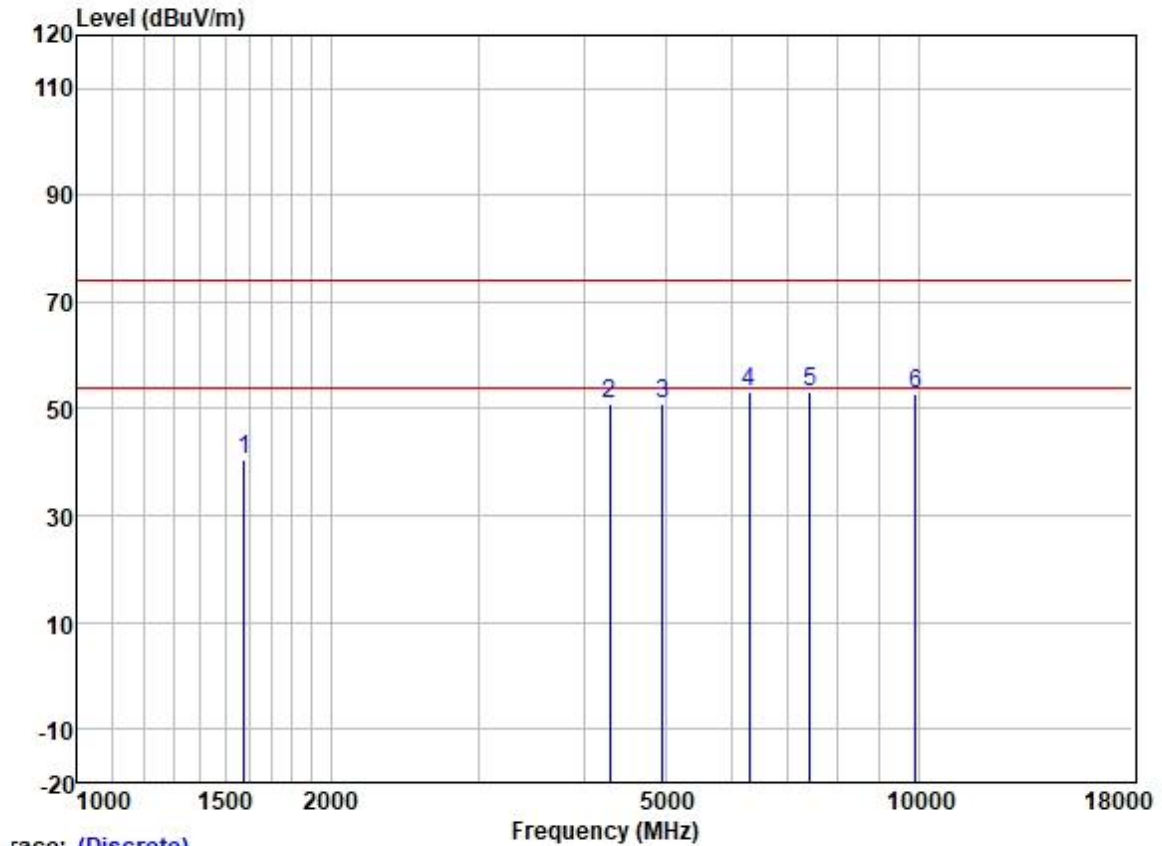
Test Mode: 05; Polarity: Horizontal; Modulation:GFSK; ; Channel:High



Trace: (Discrete)

		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1199.726	50.75	24.68	2.34	38.39	39.38	74.00	-34.62	HORIZONTAL	Peak
2	4279.589	52.71	30.42	4.63	36.81	50.95	74.00	-23.05	HORIZONTAL	Peak
3	4960.000	50.60	31.65	5.65	36.84	51.06	74.00	-22.94	HORIZONTAL	Peak
4	6954.852	49.14	34.95	5.81	37.21	52.69	74.00	-21.31	HORIZONTAL	Peak
5	7440.000	48.56	36.27	6.22	37.47	53.58	74.00	-20.42	HORIZONTAL	Peak
6	9920.000	45.28	38.65	6.96	37.40	53.49	74.00	-20.51	HORIZONTAL	Peak

Test Mode: 05; Polarity: Vertical; Modulation: GFSK; ; Channel: High



race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1578.822	50.30	25.56	2.80	38.00	40.66	74.00	-33.34	VERTICAL	Peak
2	4291.977	52.79	30.45	4.64	36.81	51.07	74.00	-22.93	VERTICAL	Peak
3	4960.000	50.61	31.65	5.65	36.84	51.07	74.00	-22.93	VERTICAL	Peak
4	6285.695	50.72	33.37	5.98	36.95	53.12	74.00	-20.88	VERTICAL	Peak
5	7440.000	48.00	36.27	6.22	37.47	53.02	74.00	-20.98	VERTICAL	Peak
6	9920.000	44.63	38.65	6.96	37.40	52.84	74.00	-21.16	VERTICAL	Peak

7.9 Duty Cycle

Test Requirement KDB 558074 D01 v05r02 section 6
Test Method: ANSI C63.10 (2013) Section 11.6

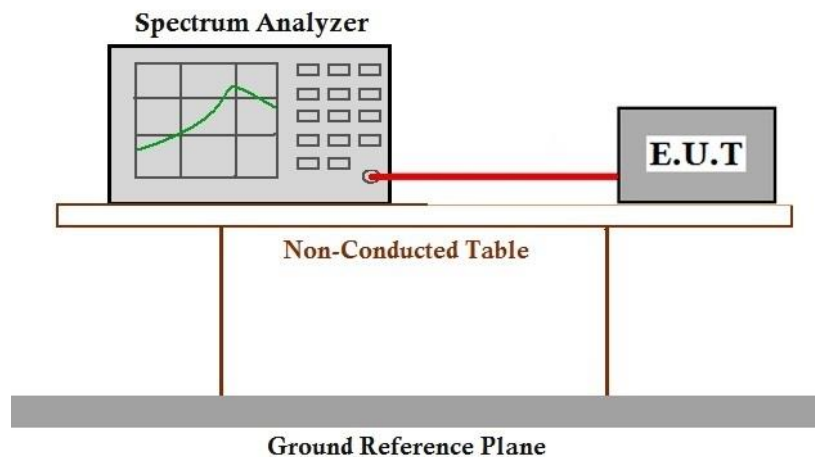
7.9.1 E.U.T. Operation

Operating Environment:
Temperature: 25.2 °C Humidity: 54.6 % RH Atmospheric Pressure: 1003 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	01	TX mode(2Mbps)(Left earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	04	TX mode(1Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	05	TX mode(2Mbps)(Right earbud)_Keep the EUT in continuously transmitting mode with GFSK modulation

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR2302000103AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR2302000103AT

10 Appendix

For right earbud:

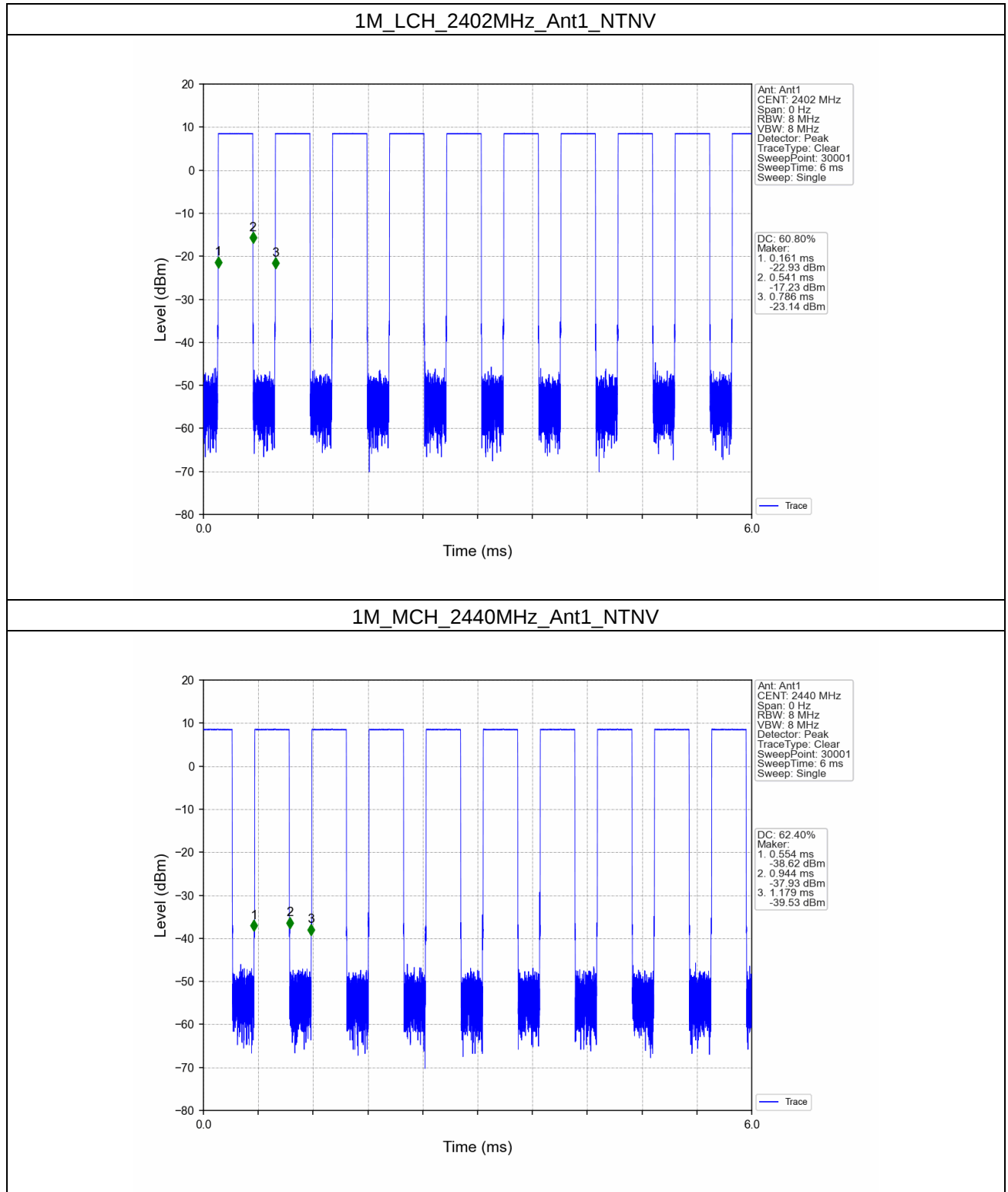
1. Duty Cycle

1.1 Ant1

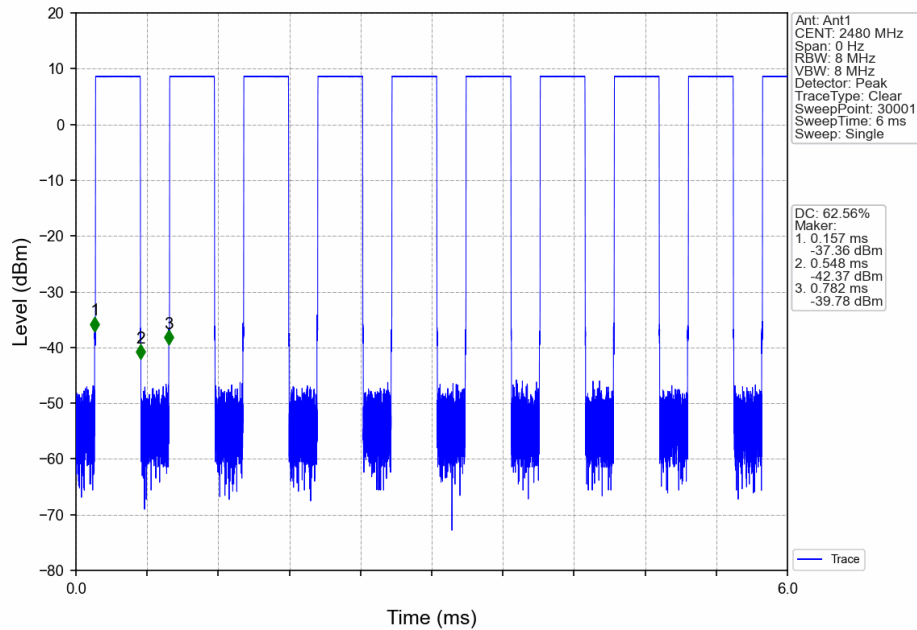
1.1.1 Test Result

Ant1							
Mode	Tx Type	Frequency (MHz)	T _{on} (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.380	0.625	60.80	2.16	0.00
		2440	0.390	0.625	62.40	2.05	0.03
		2480	0.391	0.625	62.56	2.04	0.00
2M	SISO	2402	0.206	0.625	32.96	4.82	0.00
		2440	0.206	0.625	32.96	4.82	0.00
		2480	0.207	0.625	33.12	4.80	0.00

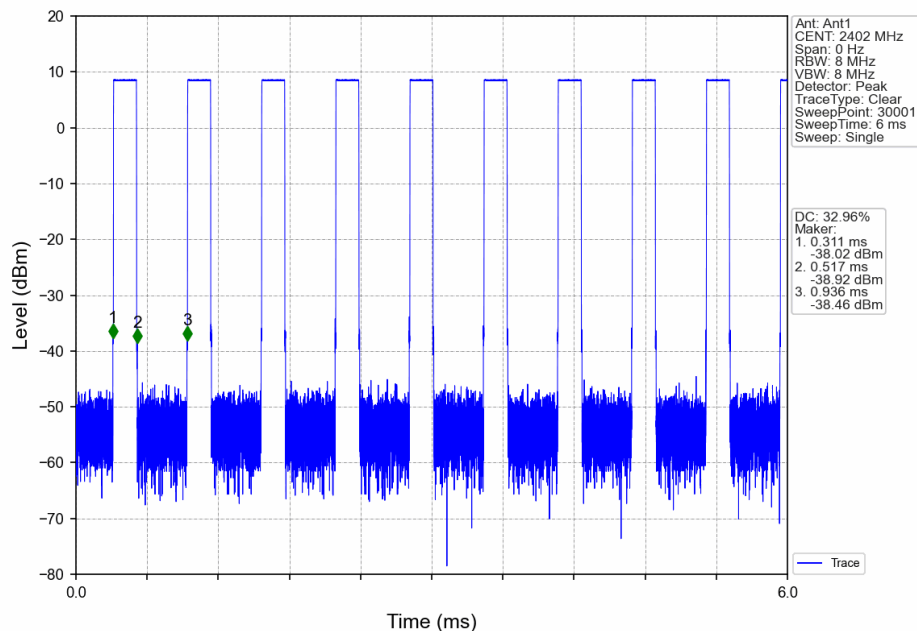
1.1.2 Test Graph



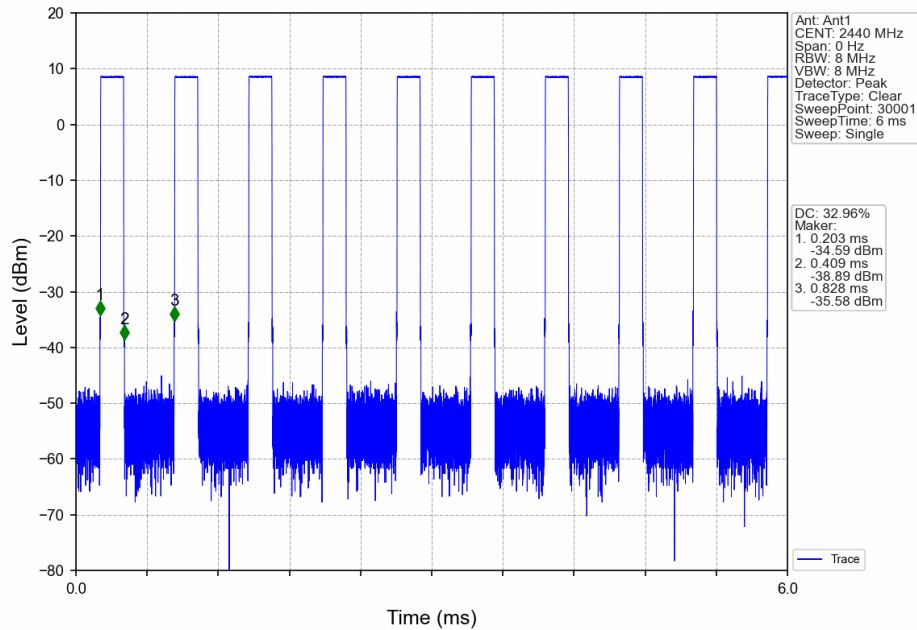
1M_HCH_2480MHz_Ant1_NTNV



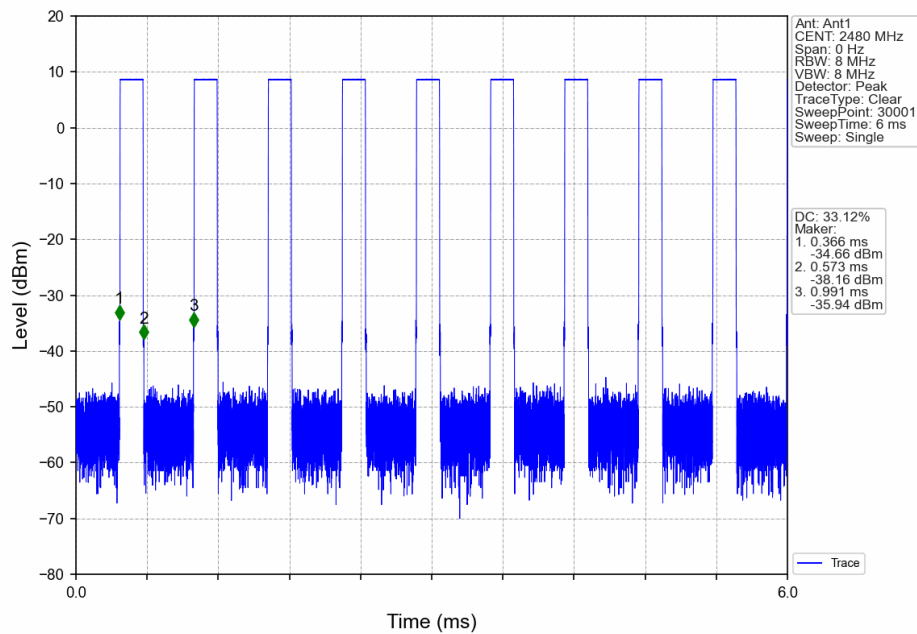
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



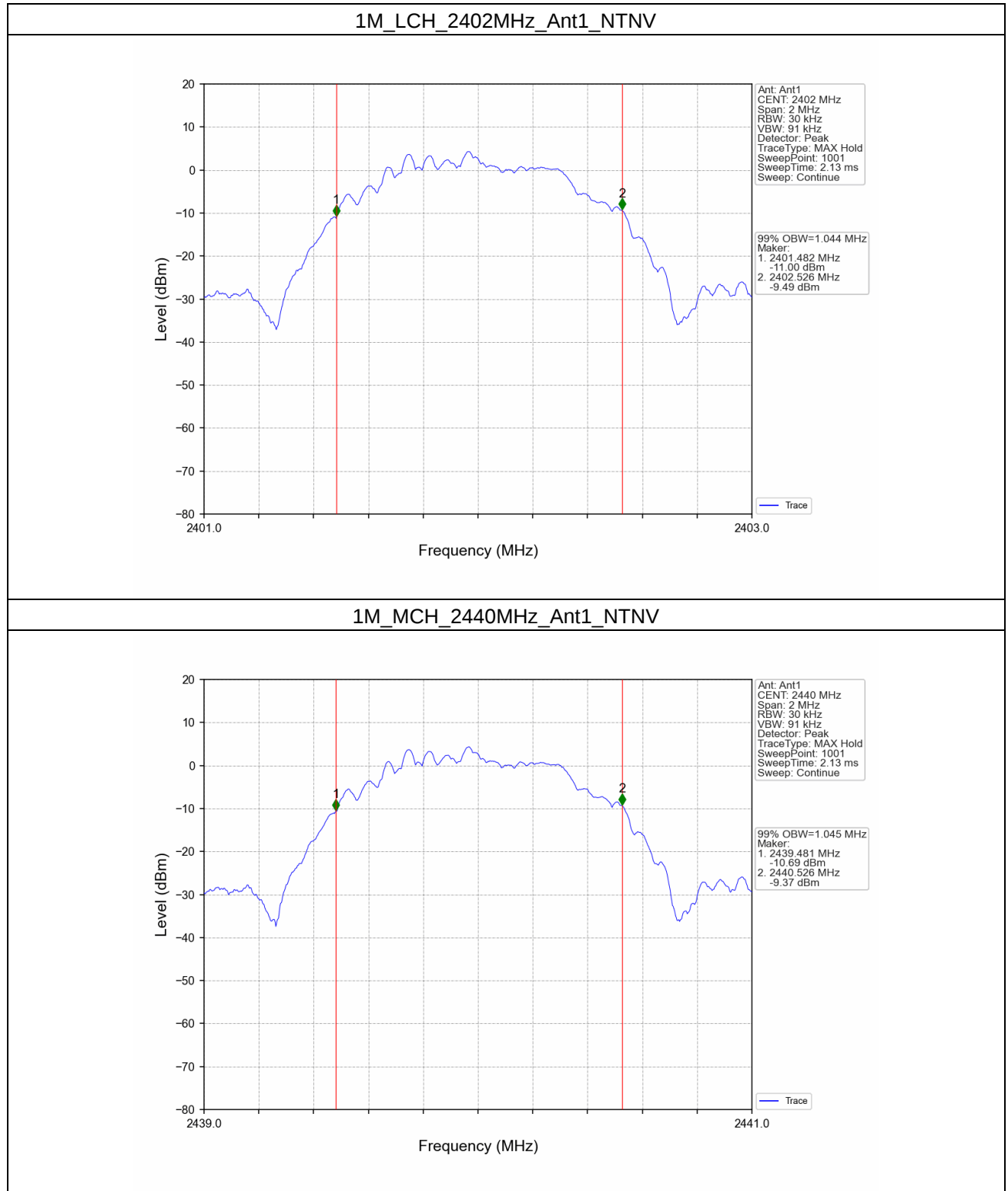
2. Bandwidth

2.1 OBW

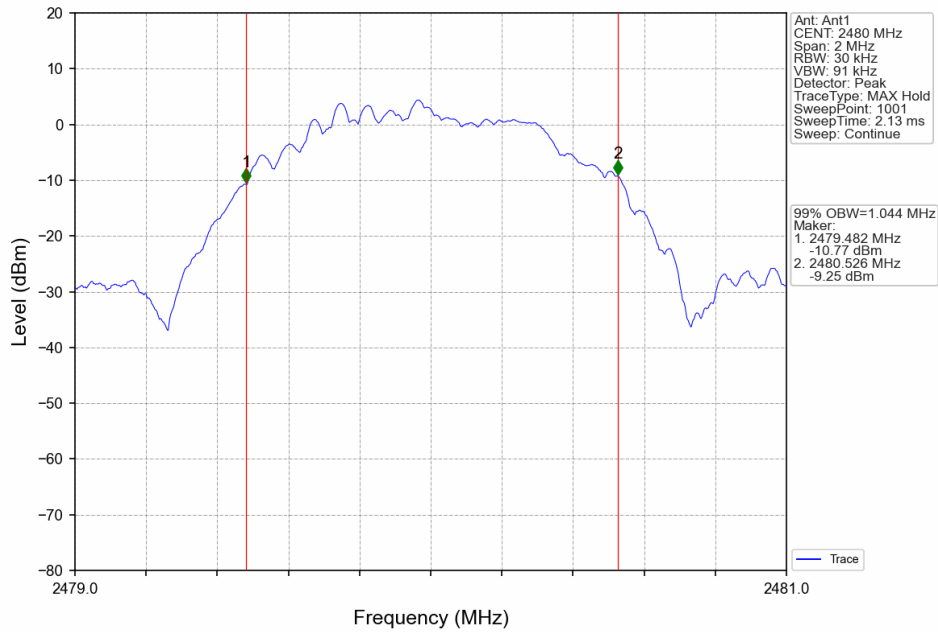
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	Verdict
				Result	
1M	SISO	2402	1	1.044	Pass
		2440	1	1.045	Pass
		2480	1	1.044	Pass
2M	SISO	2402	1	2.082	Pass
		2440	1	2.082	Pass
		2480	1	2.082	Pass

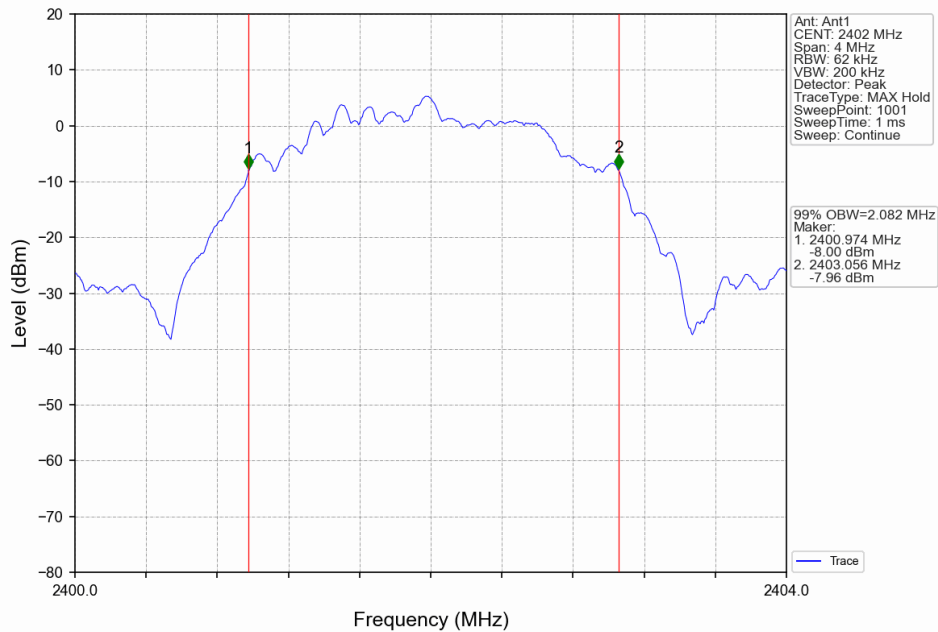
2.1.2 Test Graph



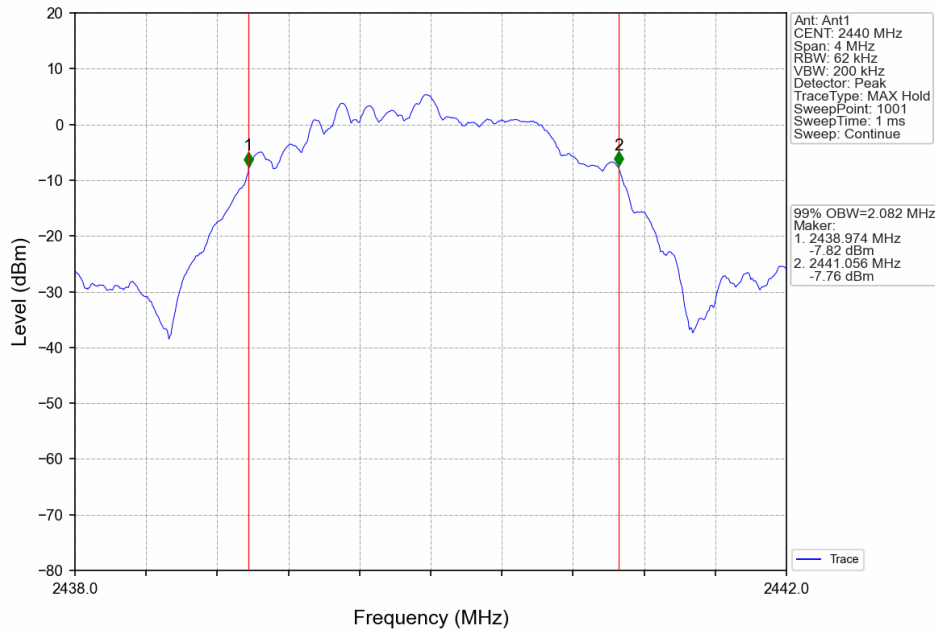
1M_HCH_2480MHz_Ant1_NTNV



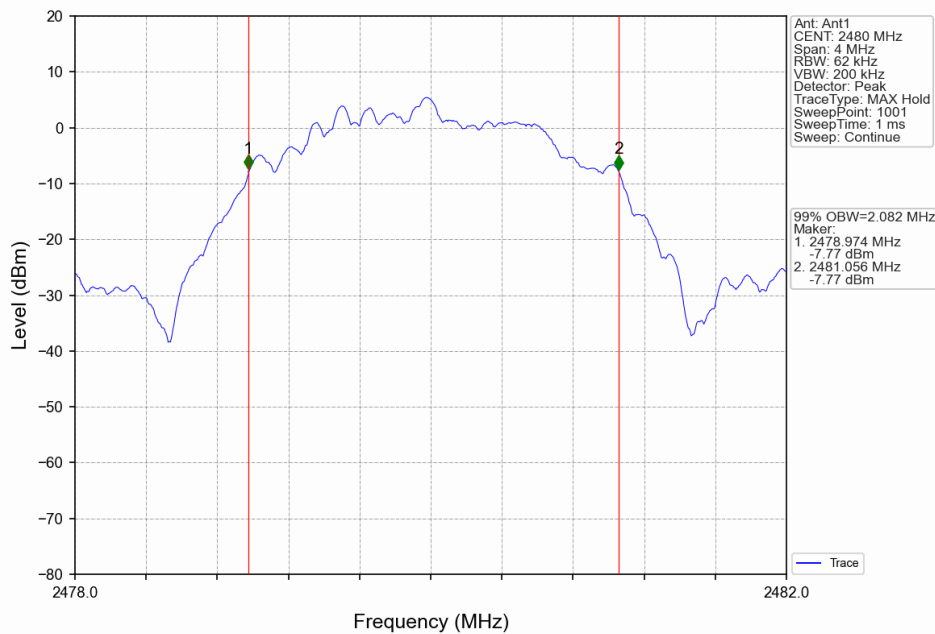
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2.2 6dB BW

2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.723	≥ 0.5	Pass
		2440	1	0.713	≥ 0.5	Pass
		2480	1	0.709	≥ 0.5	Pass
2M	SISO	2402	1	1.254	≥ 0.5	Pass
		2440	1	1.258	≥ 0.5	Pass
		2480	1	1.267	≥ 0.5	Pass

2.2.2 Test Graph

