



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

EMC-TRF-01 Rev 1.0

Report No.: GZCR220100014202

Page: 1 of 121

FCC ID: 2A4C7HS-001

TEST REPORT

Application No.:

GZCR2201000142AT

Applicant:

Procter & Gamble (Guangzhou) Technology Innovation Co., Ltd.

Address of Applicant:

Room 101, No. 333, Jiu Fo Jian She Road Huangpu District Sino-Singapore Knowledge City, Guangzhou City, Guangdong Province, China

Manufacturer:

Xia Men Joyatech Co., Ltd.

Address of Manufacturer:

R304, Blog 28, Guanri Rd, Xiamen Software Park

Factory:

Xiamen Tboss Electronics Co., Ltd.

Address of Factory:

5F, Workshop, No.188, Houxiang Road, Xinyang Street, Haicang District, Xiamen

Equipment Under Test (EUT):

EUT Name: Smart scale with barcode scanner

Model No.: HS-001

Standard(s) : 47 CFR Part 15, Subpart C 15.247

Date of Receipt: 2022-01-28

Date of Test: 2022-02-17 to 2022-03-23

Date of Issue: 2022-04-26

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

Kobe Jian
EMC Laboratory Manager



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Revision Record			
Version	Report No.	Date	Remark
01	GZCR220100014202	2022-04-26	Original

Authorized for issue by			
	 _____ Lily Kuang/Project Engineer		
	 _____ Ricky Liu/Reviewer		

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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 11.9.2	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	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	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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3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents	4
4 General Information.....	6
4.1 Details of E.U.T	6
4.2 Description of Support Units	6
4.3 Measurement Uncertainty	7
4.4 Test Location.....	7
4.5 Test Facility	8
4.6 Deviation from Standards.....	8
4.7 Abnormalities from Standard Conditions	8
5 Equipment List.....	9
6 Radio Spectrum Technical Requirement	12
6.1 Antenna Requirement	12
6.1.1 Test Requirement:	12
6.1.2 Conclusion	12
7 Radio Spectrum Matter Test Results	13
7.1 Conducted Peak Output Power.....	13
7.1.1 E.U.T. Operation.....	13
7.1.2 Test Mode Description	13
7.1.3 Test Setup Diagram	13
7.1.4 Measurement Procedure and Data.....	13
7.2 Minimum 6dB Bandwidth	14
7.2.1 E.U.T. Operation.....	14
7.2.2 Test Mode Description	14
7.2.3 Test Setup Diagram	14
7.2.4 Measurement Procedure and Data.....	14
7.3 Power Spectrum Density.....	15
7.3.1 E.U.T. Operation.....	15
7.3.2 Test Mode Description	15
7.3.3 Test Setup Diagram	15
7.3.4 Measurement Procedure and Data.....	15
7.4 Conducted Band Edges Measurement	16
7.4.1 E.U.T. Operation.....	16
7.4.2 Test Mode Description	16
7.4.3 Test Setup Diagram	16
7.4.4 Measurement Procedure and Data.....	16
7.5 Conducted Spurious Emissions	17
7.5.1 E.U.T. Operation.....	17
7.5.2 Test Mode Description	17
7.5.3 Test Setup Diagram.....	17
7.5.4 Measurement Procedure and Data.....	17

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7.6	Radiated Emissions which fall in the restricted bands	18
7.6.1	E.U.T. Operation	18
7.6.2	Test Mode Description	18
7.6.3	Test Setup Diagram	19
7.6.4	Measurement Procedure and Data	19
7.7	Radiated Spurious Emissions Below 1GHz	40
7.7.1	E.U.T. Operation	40
7.7.2	Test Mode Description	40
7.7.3	Test Setup Diagram	41
7.7.4	Measurement Procedure and Data	41
7.8	Radiated Spurious Emissions Above 1GHz	44
7.8.1	E.U.T. Operation	44
7.8.2	Test Mode Description	44
7.8.3	Test Setup Diagram	44
7.8.4	Measurement Procedure and Data	45
8	Emission Test Results	76
8.1	Conducted Emissions at AC Power Line (150kHz-30MHz)	76
8.1.1	E.U.T. Operation	76
8.1.2	Test Mode Description	76
8.1.3	Test Setup Diagram	77
8.1.4	Measurement Procedure and Data	77
9	Test Setup Photo	80
10	EUT Constructional Details (EUT Photos)	81
11	Appendix	82



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 5 V powered by Power Adapter:
Model:	GAT-0501000U
Input:	AC 100-240V, 0.4A, 50/60Hz
Output:	5V==1000mA
Test Voltage:	AC 120 V, 60 Hz
Function:	Weighting
Antenna Gain	3.71dBi declared by applicant
Antenna Type	PCB Antenna
Firmware Version:	ESD1ESD2ESD3
Hardware Version:	V1.1
Testing Software:	ESP 32
Sample NO.:	SP-202200650
For Wi-Fi	
Power Setting:	13.63 dBm can not be changed by user
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11; 802.11n(HT40): 9
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
For BLE	
Power Setting:	3.63dBm can not be changed by user
Operation Frequency:	2402MHz to 2480MHz
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	IBM	T30	S/N78-3VMLX 06/01

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4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±2.76dB
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 3%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Radiated Emissions which fall in the restricted bands	±5.00dB (30MHz-1GHz; 3m);±4.38dB (30MHz-1GHz; 10m);± 4.52dB (1GHz-6GHz);± 4.54dB (above 6GHz)
Radiated Spurious Emissions Below 1GHz	±5.00dB (3m); ±4.38dB (10m)
Radiated Spurious Emissions Above 1GHz	±4.52dB (1GHz-6GHz);±4.54dB(above 6GHz)

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
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Guangzhou, China 510663

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No tests were sub-contracted.

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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.

- **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, IEC60061 and Rules of procedure IEC60062, and the relevant IEC60065 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 Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2019-10-20	2022-10-19
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2021-09-24	2022-09-23
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2021-06-01	2022-05-31
Test Software E3r	Audix	Ver.6.11812	GZE100-77	N/A	N/A

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2021-08-30	2022-08-29
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
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2021-08-30	2022-08-29
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
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2021-08-30	2022-08-29
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
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2021-08-30	2022-08-29
Test Software	TST	V2.0	GZE100-78	N/A	N/A



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Conducted Spurious Emissions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2021-08-30	2022-08-29
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Radiated Emissions which fall in the restricted bands

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-12-17	2022-12-16
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
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiated Spurious Emissions Below 1GHz

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2020-04-16	2022-04-15
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Trilog Broadband Antenna (25MHz-1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2022-03-03	2025-03-02

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Radiated Spurious Emissions Above 1GHz

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-12-17	2022-12-16
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
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-12-17	2022-12-16
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-20	2022-09-19
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2021-07-05	2022-07-05

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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

Standard Requirement:

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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 3.71 dBi.

Antenna location: Refer to internal photo.

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7 Radio Spectrum Matter Test Results

7.1 Conducted Peak Output Power

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

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

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

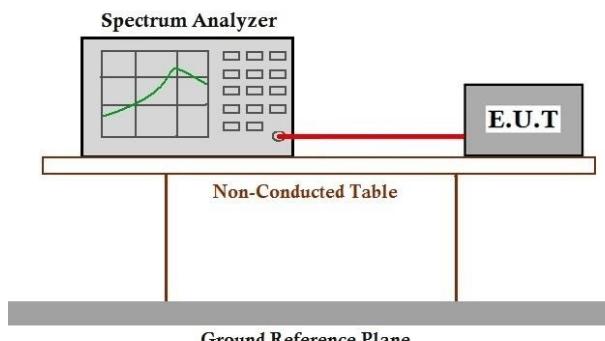
Operating Environment:

Temperature: 24.5 °C Humidity: 60.5 % RH Atmospheric Pressure: 1008 mbar

7.1.2 Test Mode Description

Pre-scan / Mode Final test	Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.2 Minimum 6dB Bandwidth

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

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

Limit: ≥ 500 kHz

7.2.1 E.U.T. Operation

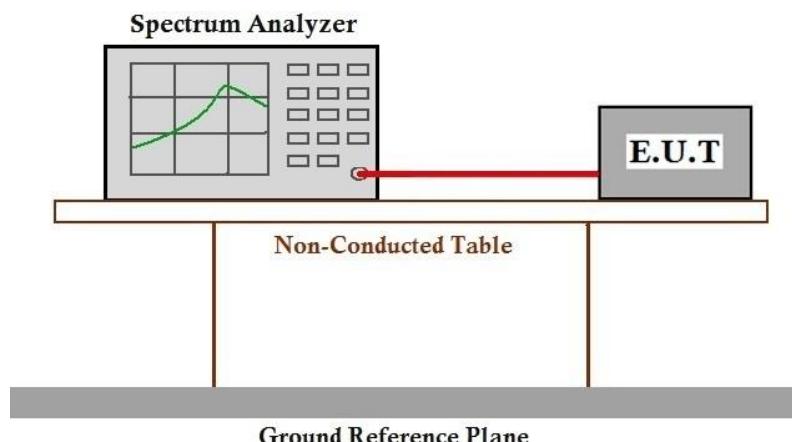
Operating Environment:

Temperature: 24.5 °C Humidity: 60.5 % RH Atmospheric Pressure: 1008 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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7.3 Power Spectrum Density

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

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

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

7.3.1 E.U.T. Operation

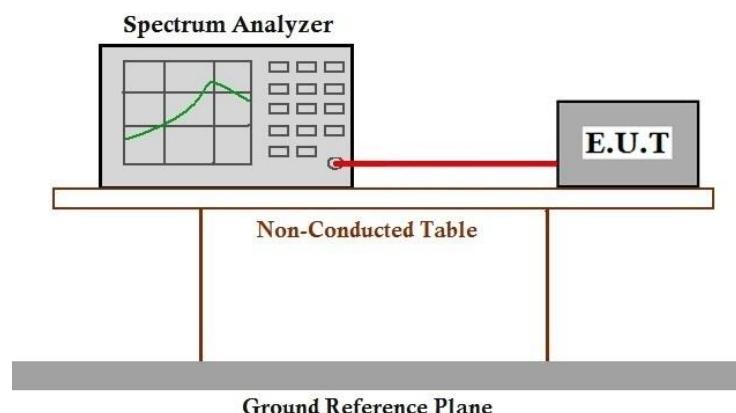
Operating Environment:

Temperature: 24.5 °C Humidity: 60.5 % RH Atmospheric Pressure: 1008 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.4 Conducted Band Edges Measurement

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

Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.4.1 E.U.T. Operation

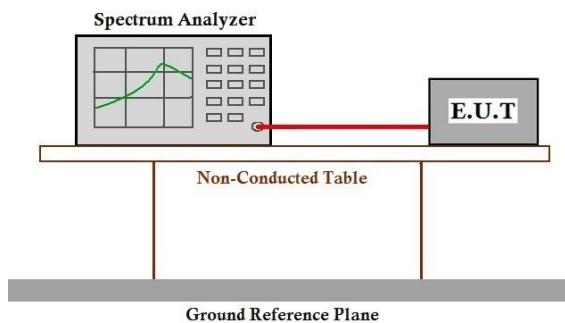
Operating Environment:

Temperature: 24.5 °C Humidity: 60.5 % RH Atmospheric Pressure: 1008 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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7.5 Conducted Spurious Emissions

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

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

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

7.5.1 E.U.T. Operation

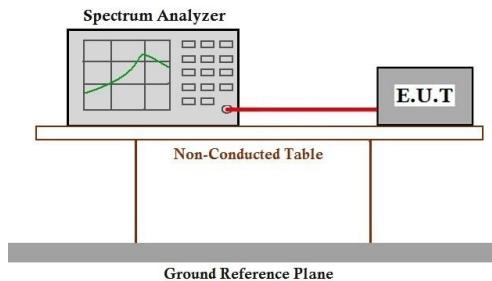
Operating Environment:

Temperature: 24.5 °C Humidity: 60.5 % RH Atmospheric Pressure: 1008 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

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7.6 Radiated Emissions which fall in the restricted bands

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

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

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: 20.7 °C Humidity: 65.5 % RH Atmospheric Pressure: 1014 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

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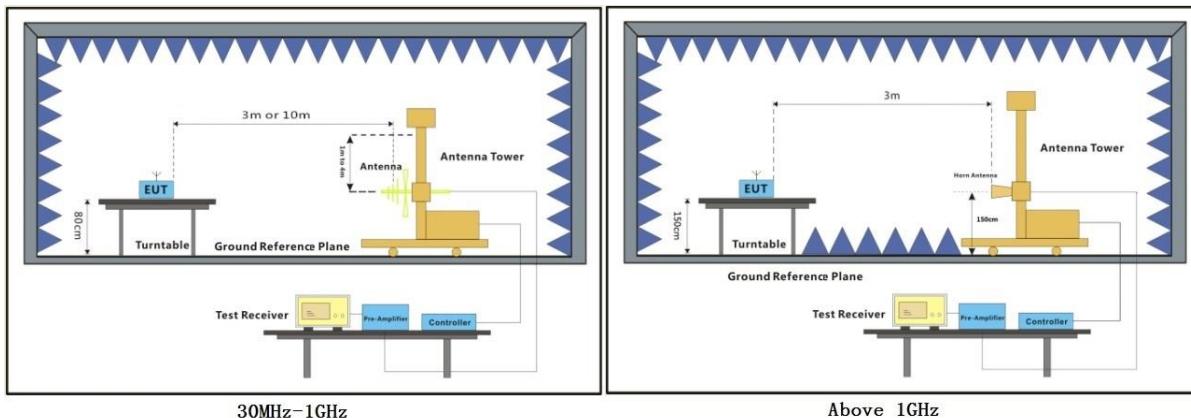
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7.6.3 Test Setup Diagram**7.6.4 Measurement Procedure and Data**

- 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 middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

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

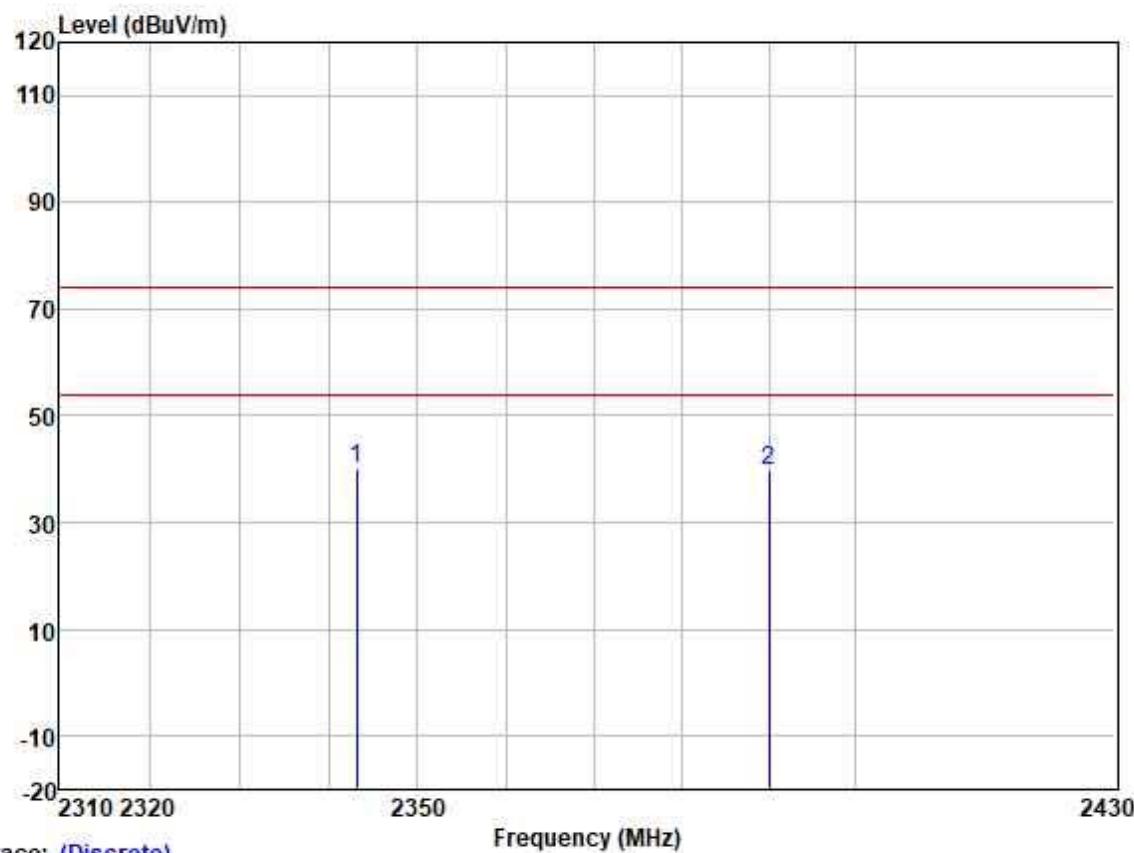
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

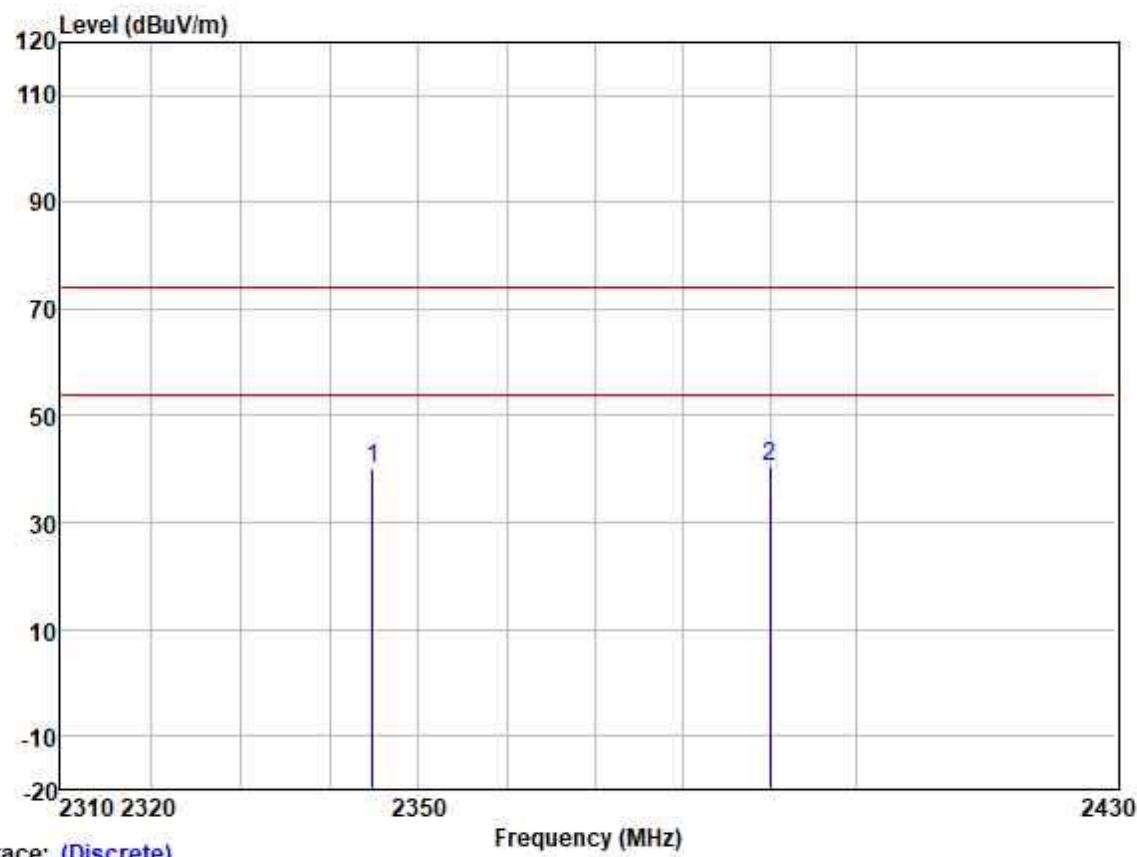


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low

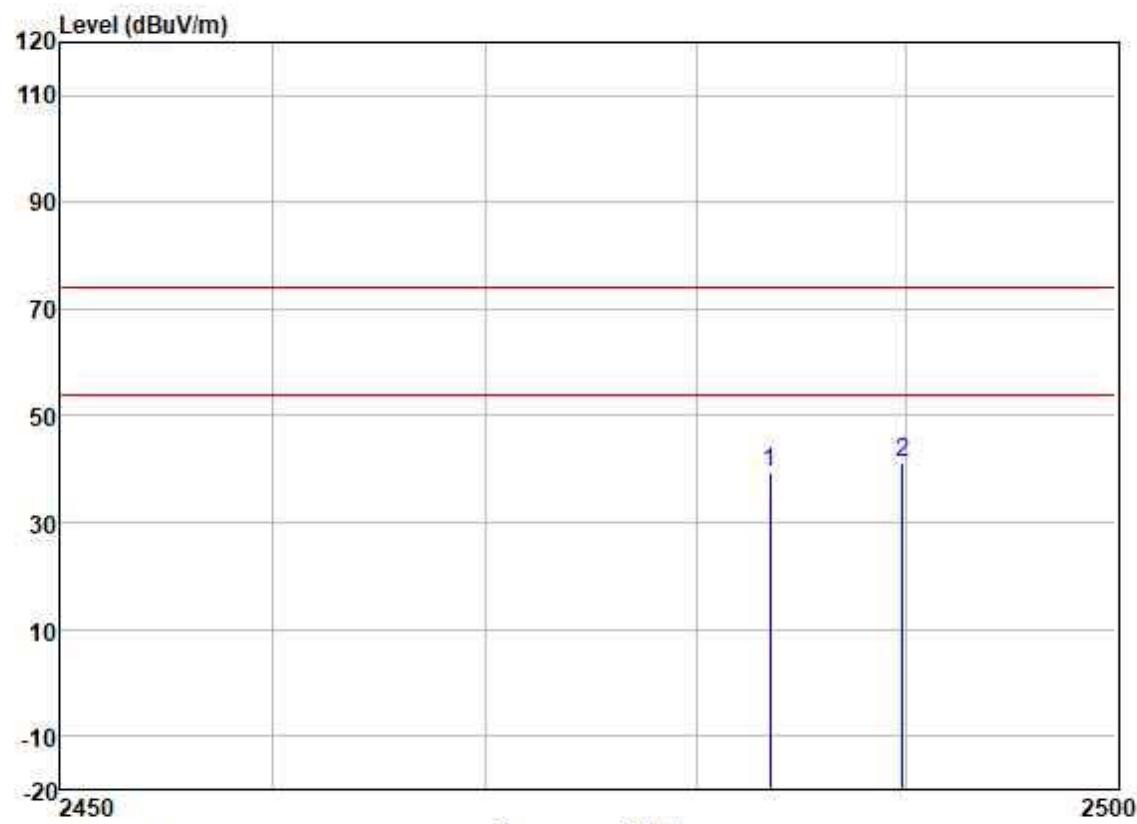


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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High

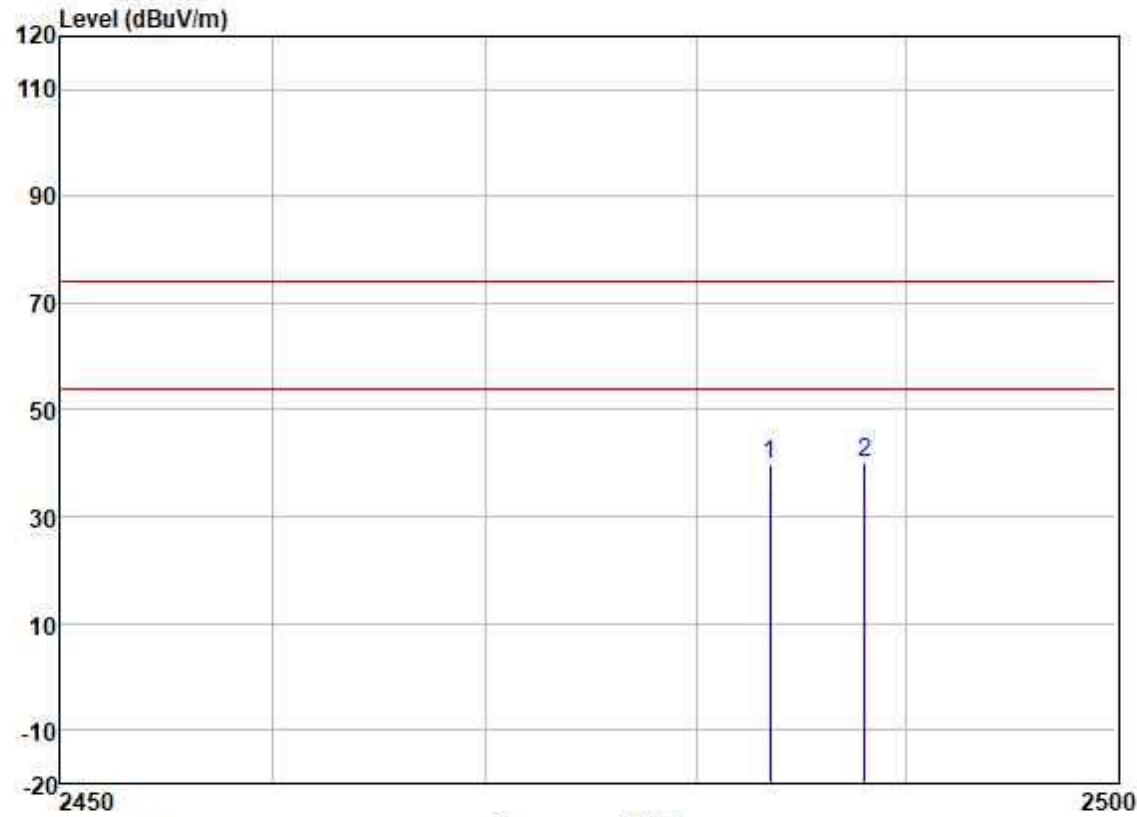


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Race: (Discrete)

Freq	ReadAntenna Level Factor	Cable Loss Factor	Preamp Level	dBuV/m	dBuV/m	dBuV/m	dB	Over		
								Line	Limit	Pol/Phase
MHz	dBuV	dB/m	dB	dB	dB	dB	dB			
1 2483.500	45.68	27.48	3.53	37.13	39.56	74.00	-34.44	HORIZONTAL Peak		
2 2488.008	46.12	27.48	3.53	37.12	40.01	74.00	-33.99	HORIZONTAL Peak		

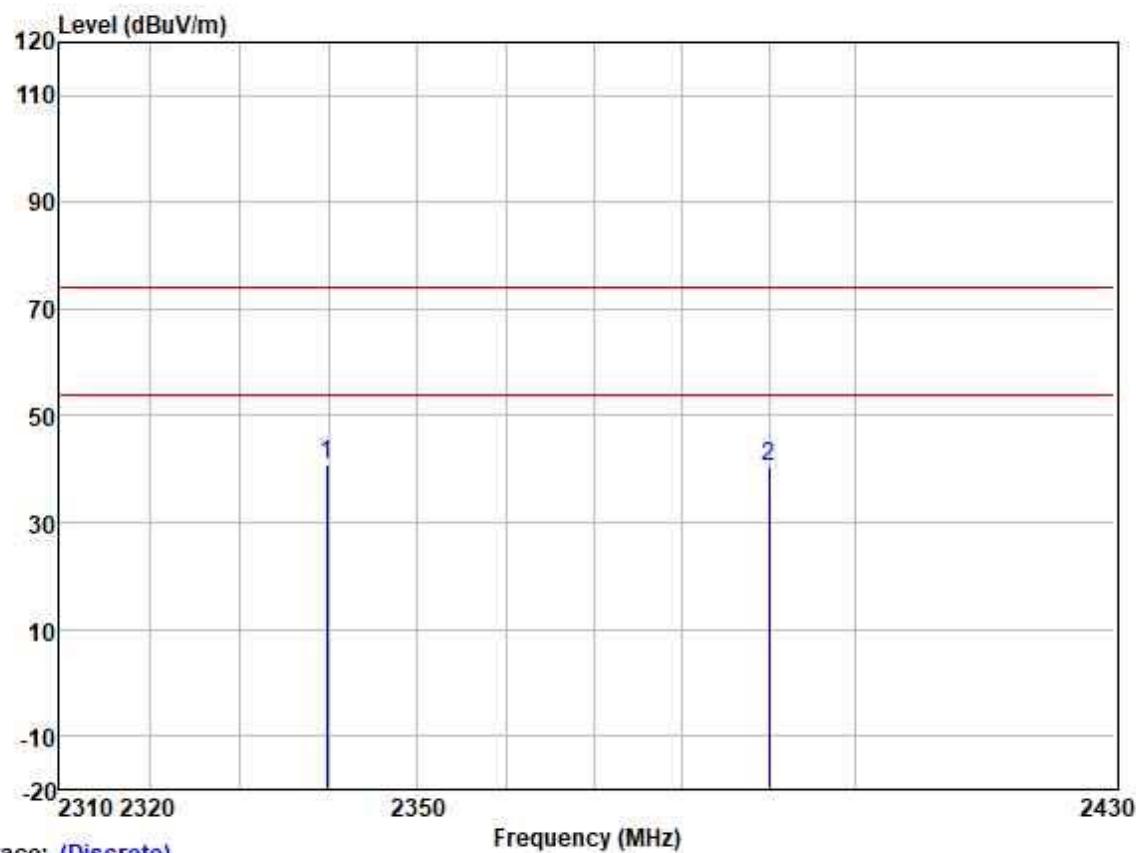
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Race: (Discrete)

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1 2339.788	47.51	27.22	3.37	37.15	40.95	74.00	-33.05	VERTICAL	Peak	
2 2390.000	46.70	27.33	3.48	37.14	40.37	74.00	-33.63	VERTICAL	Peak	

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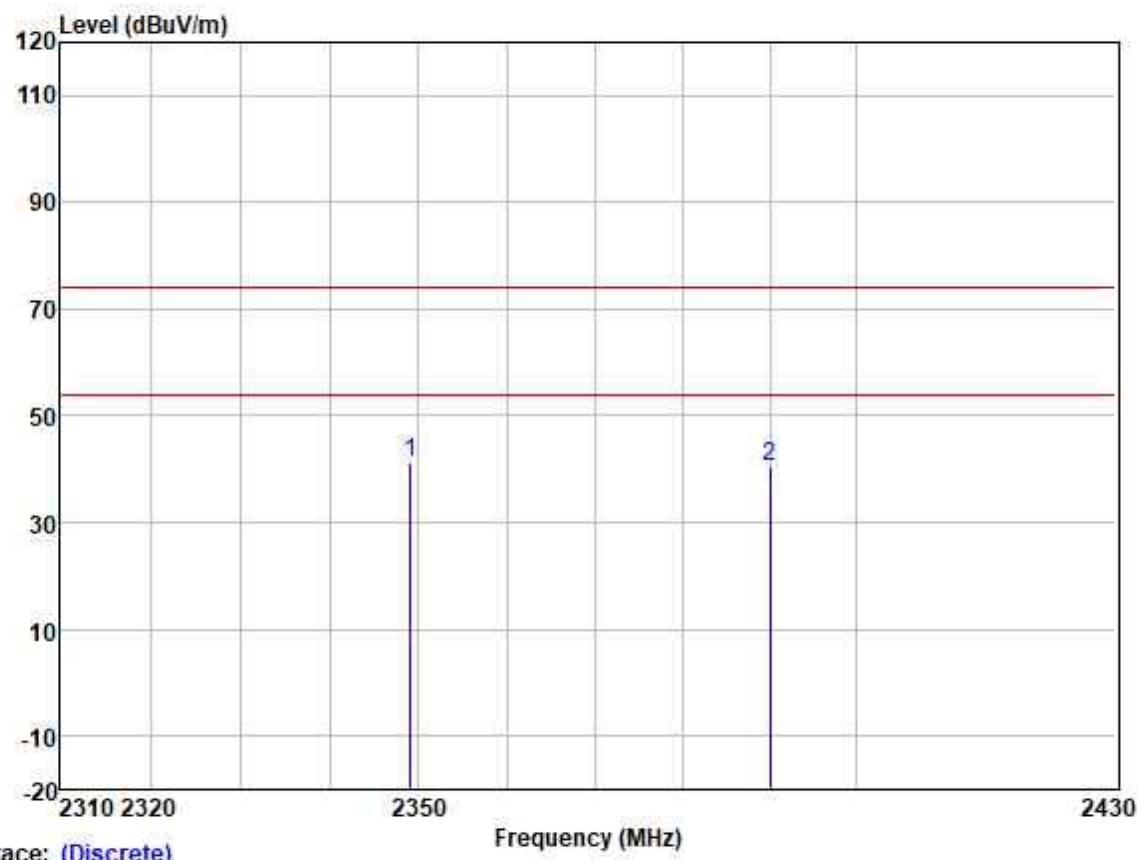
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

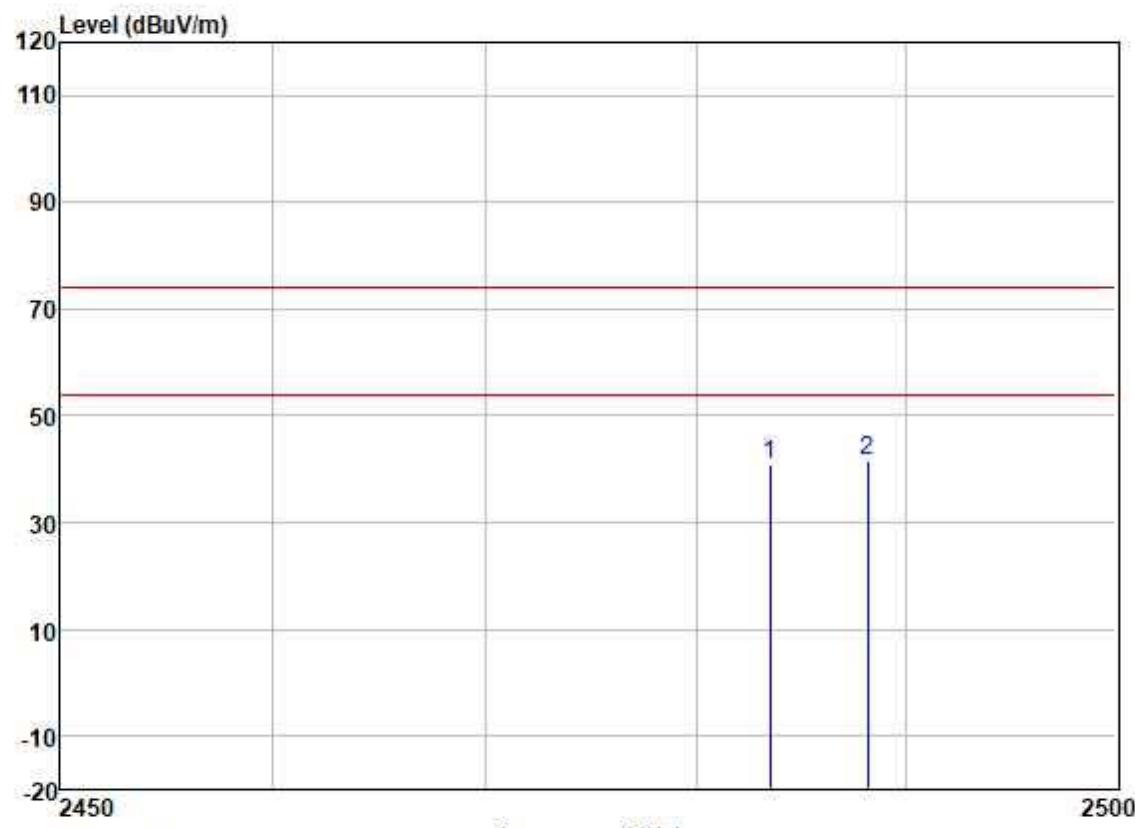


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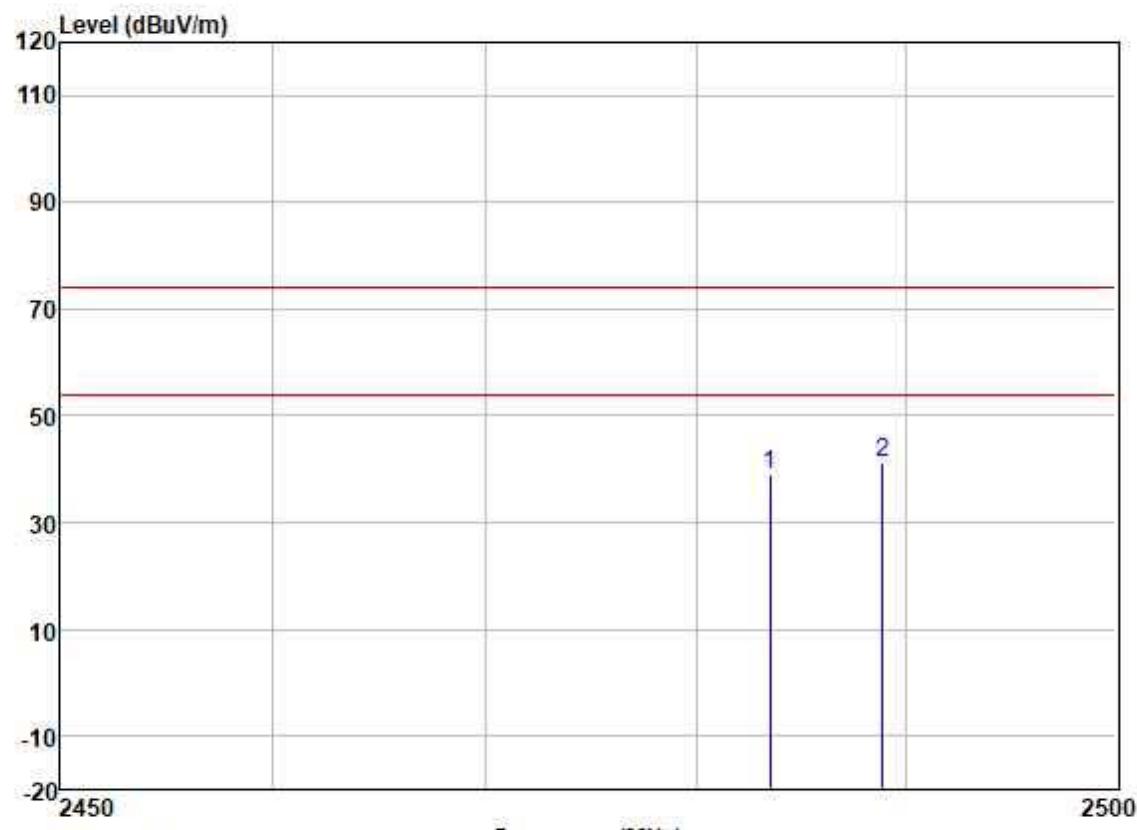


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High

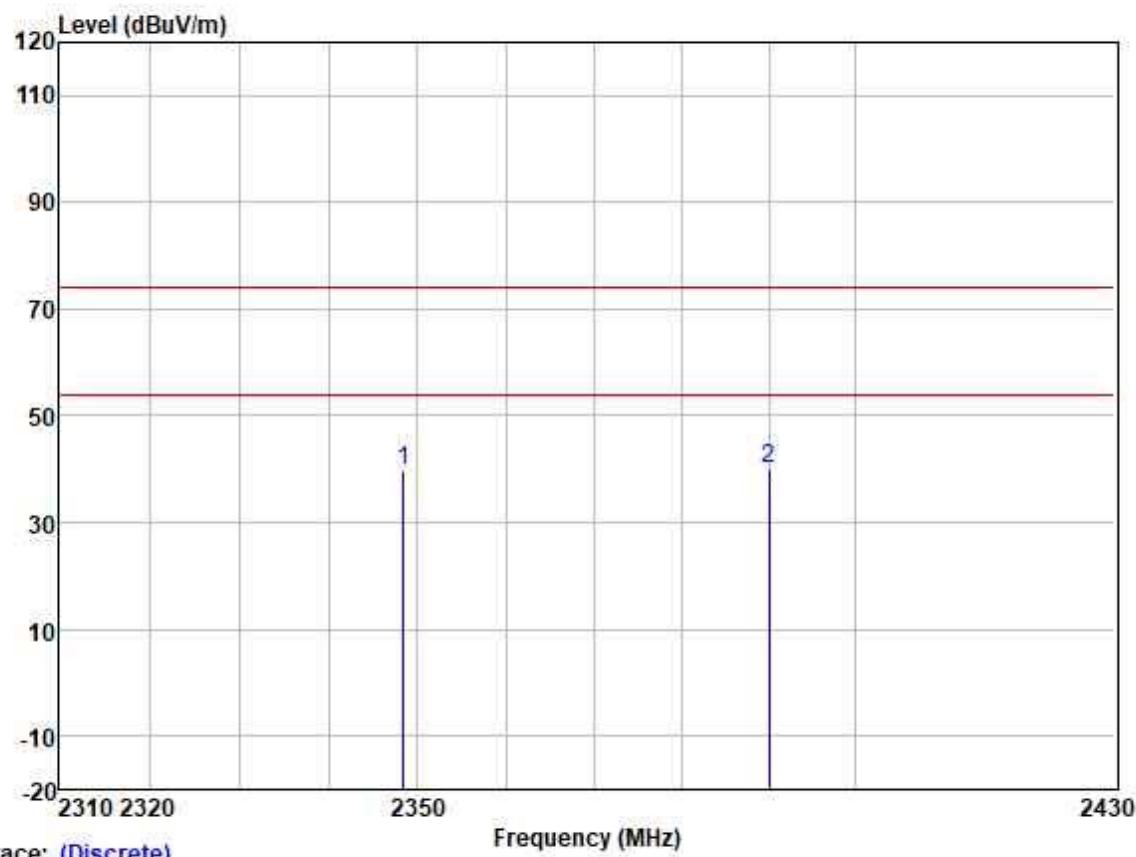


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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Race: (Discrete)

Race	Freq	ReadAntenna		Cable		Preamp		Limit	Over	Limit	Pol/Phase	Remark
		Level	Factor	Loss	Factor	Level	dBuV/m					
	MHz	dBuV	dB/m		dB	dB	dB	dB	dB			
1	2348.454	46.38	27.24	3.38	37.15	39.85	74.00	-34.15	VERTICAL	Peak		
2	2390.000	46.58	27.33	3.48	37.14	40.25	74.00	-33.75	VERTICAL	Peak		

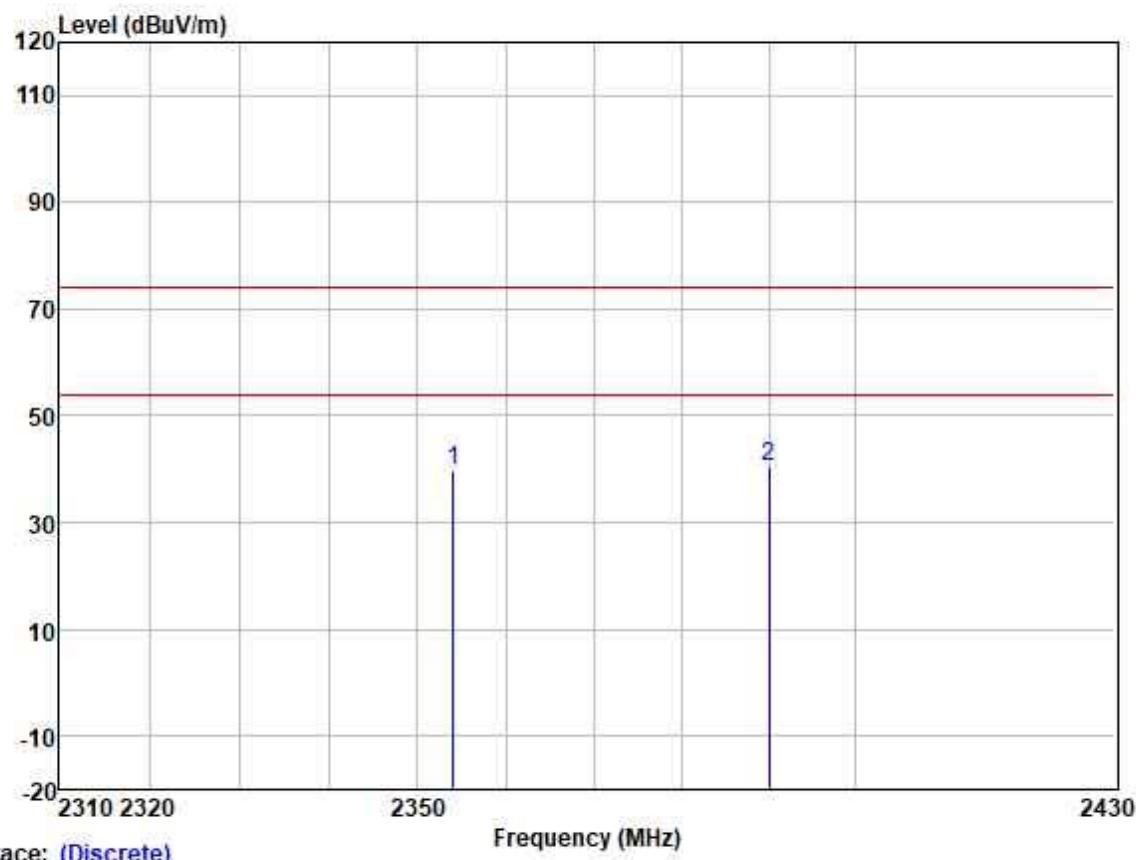
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Race: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 2354.051	46.05	27.25	3.40	37.15	39.55	74.00	-34.45 HORIZONTAL Peak
2 2390.000	46.71	27.33	3.48	37.14	40.38	74.00	-33.62 HORIZONTAL Peak

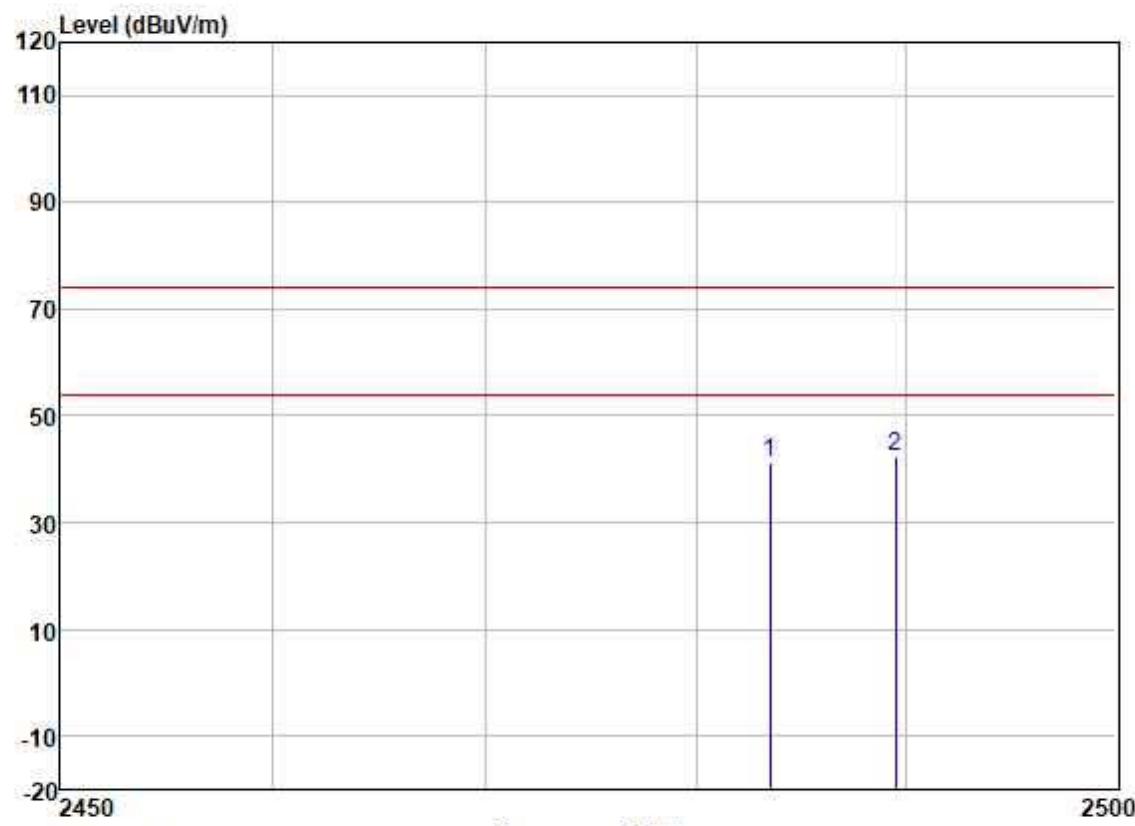
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

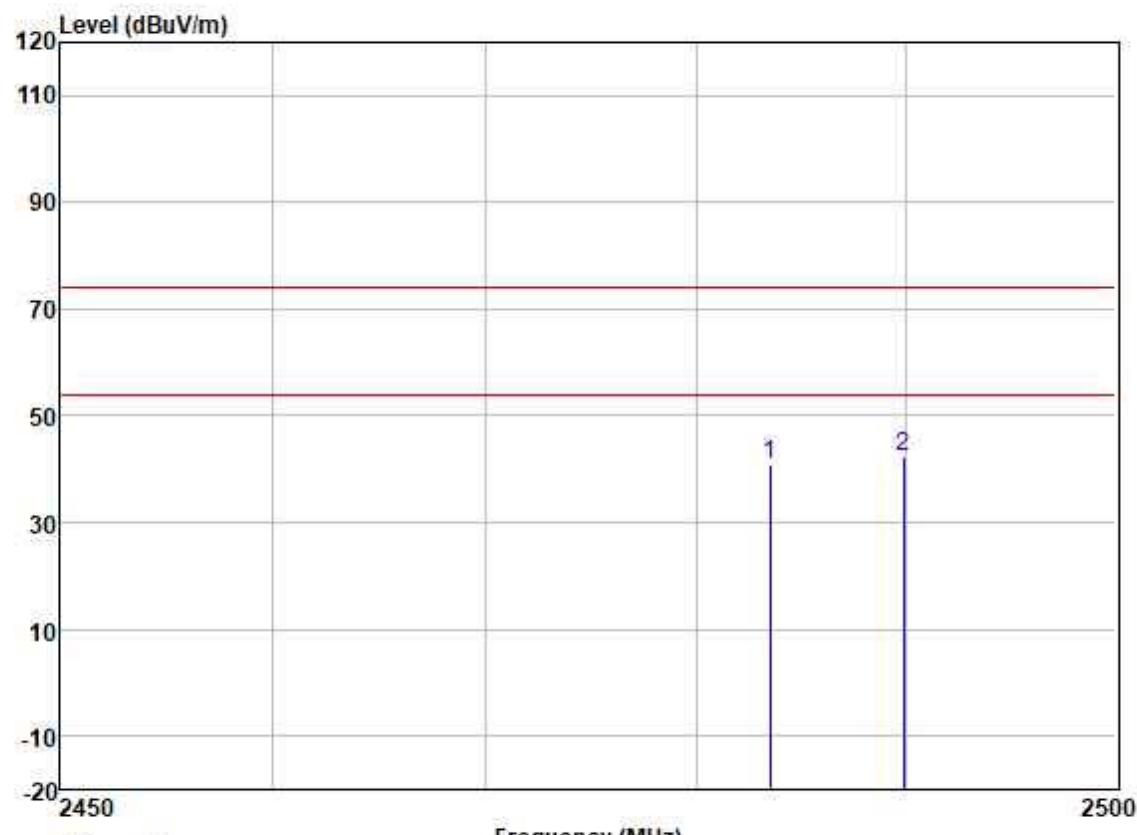


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

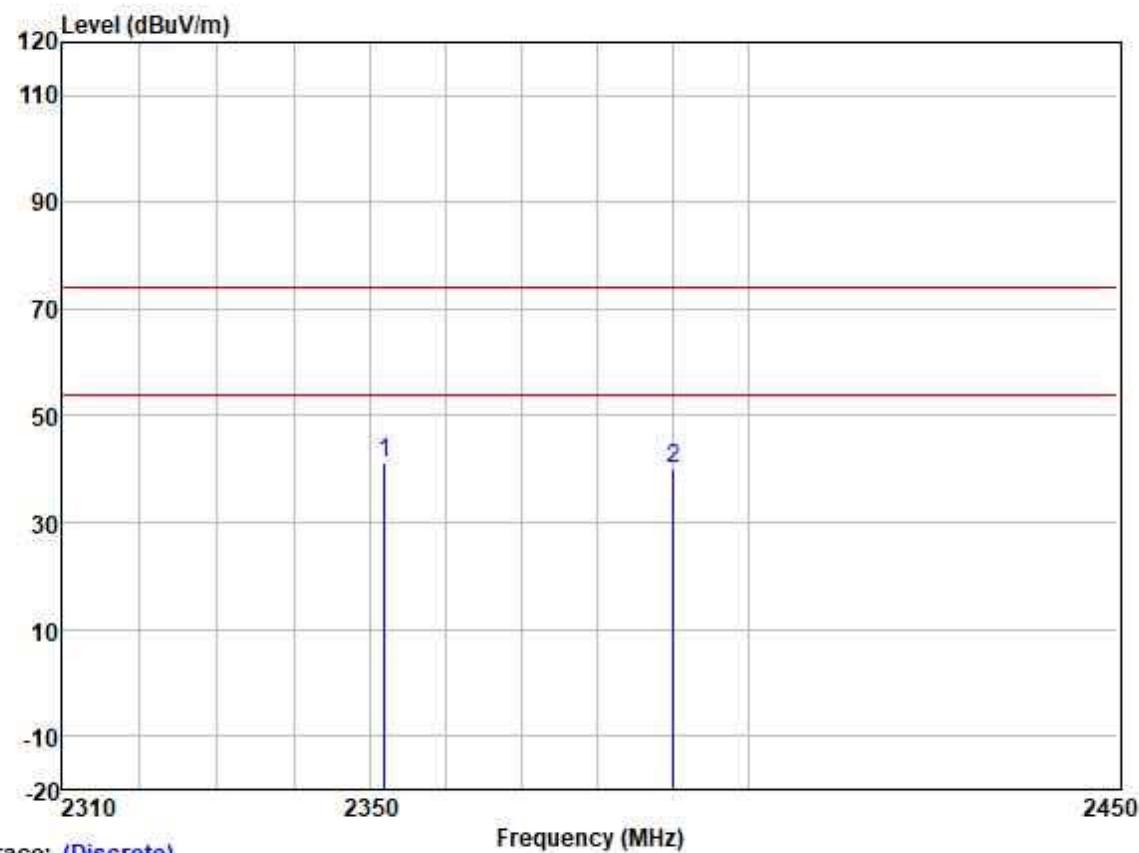


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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor	Loss	Factor					
1	2351.830	47.87	27.25	3.40	37.15	41.37	74.00	-32.63	VERTICAL	Peak	
2	2390.000	46.30	27.33	3.48	37.14	39.97	74.00	-34.03	VERTICAL	Peak	

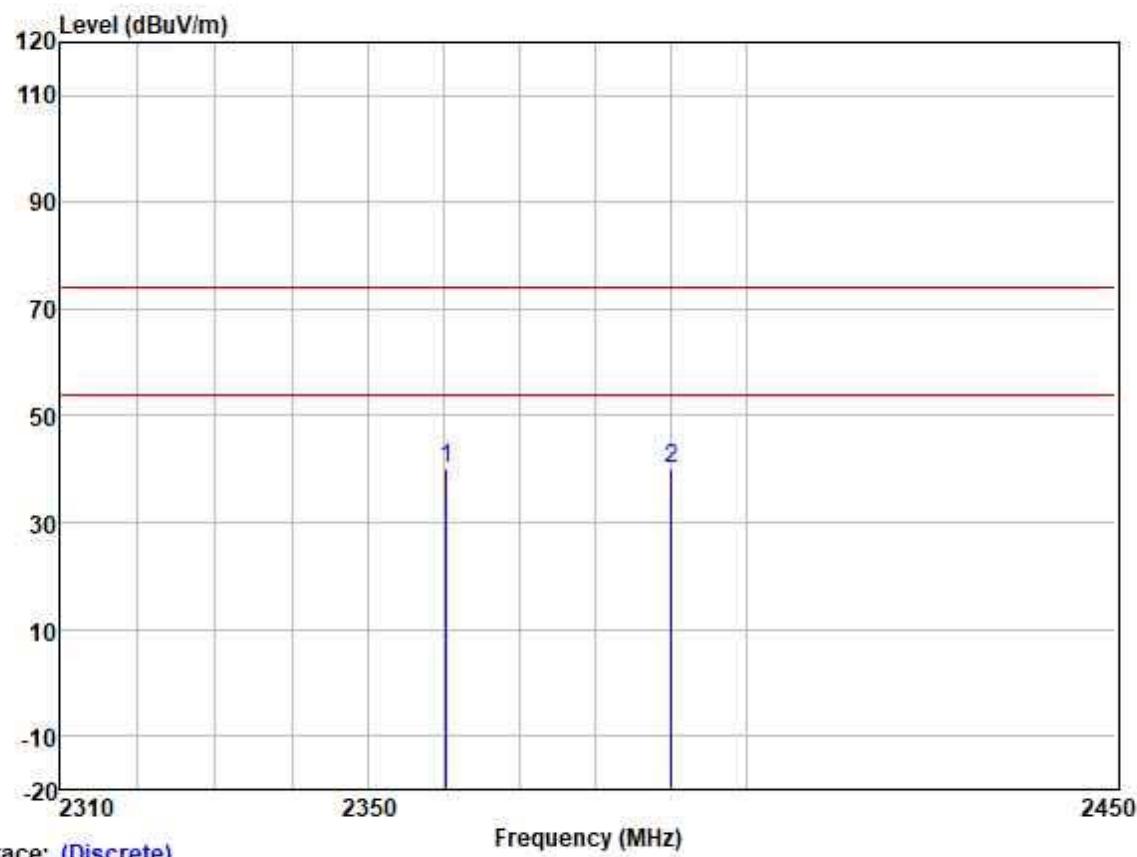
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Race: (Discrete)

Race	Freq	ReadAntenna		Cable		Preamp	Loss	Factor	Level	Limit	Over	Line	Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB					dBuV/m	dBuV/m				
1	2360.287	46.49	27.27	3.42	37.15	40.03	74.00	-33.97	HORIZONTAL	Peak					
2	2390.000	46.37	27.33	3.48	37.14	40.04	74.00	-33.96	HORIZONTAL	Peak					



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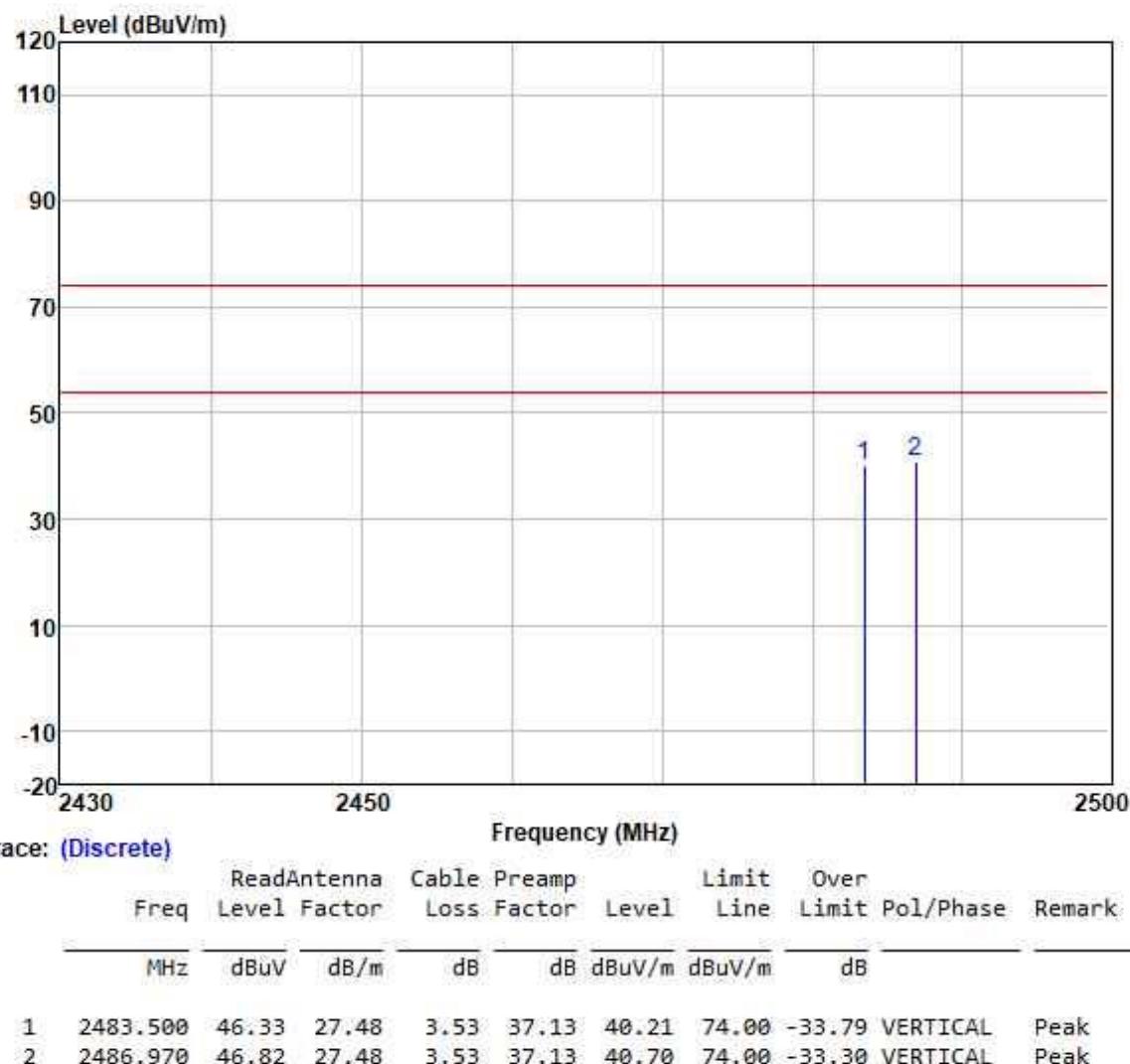
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



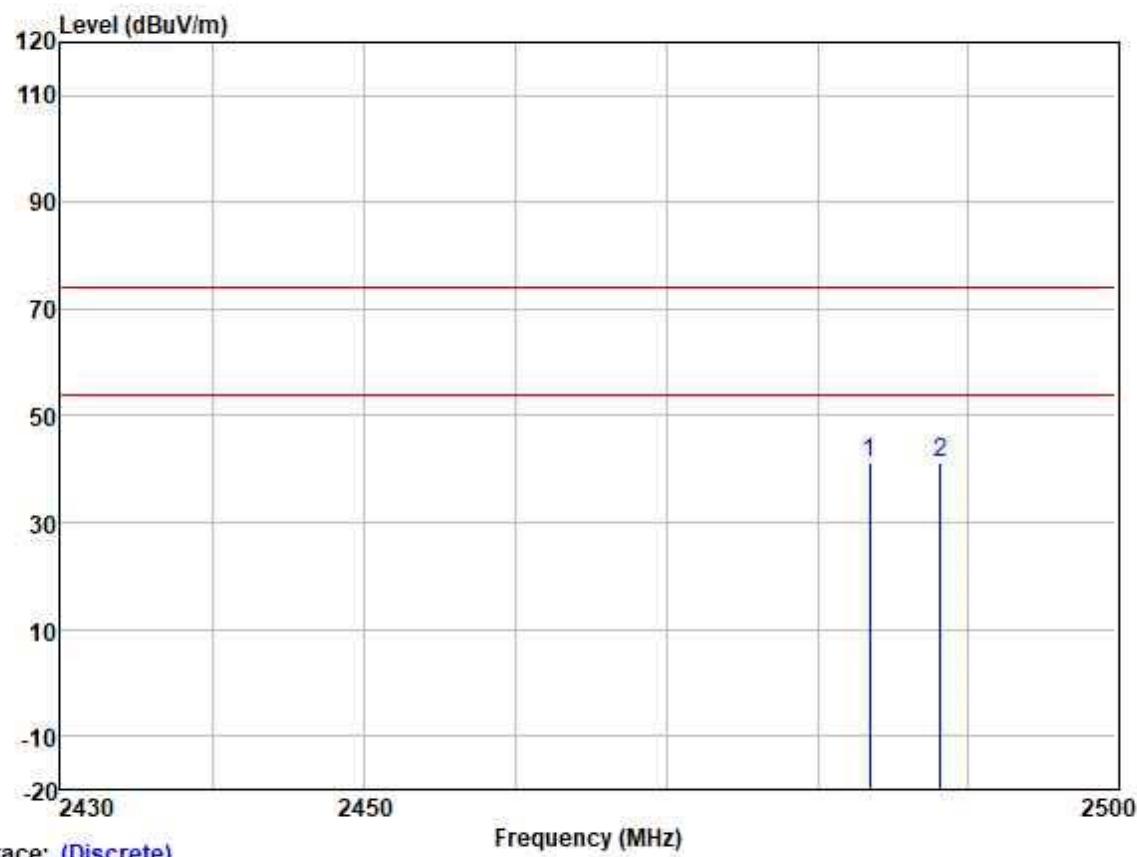
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Race: (Discrete)	ReadAntenna Cable Preamp Limit Over									Remark
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	2483.500	47.30	27.48	3.53	37.13	41.18	74.00	-32.82	HORIZONTAL	Peak
2	2488.242	47.30	27.48	3.53	37.12	41.19	74.00	-32.81	HORIZONTAL	Peak

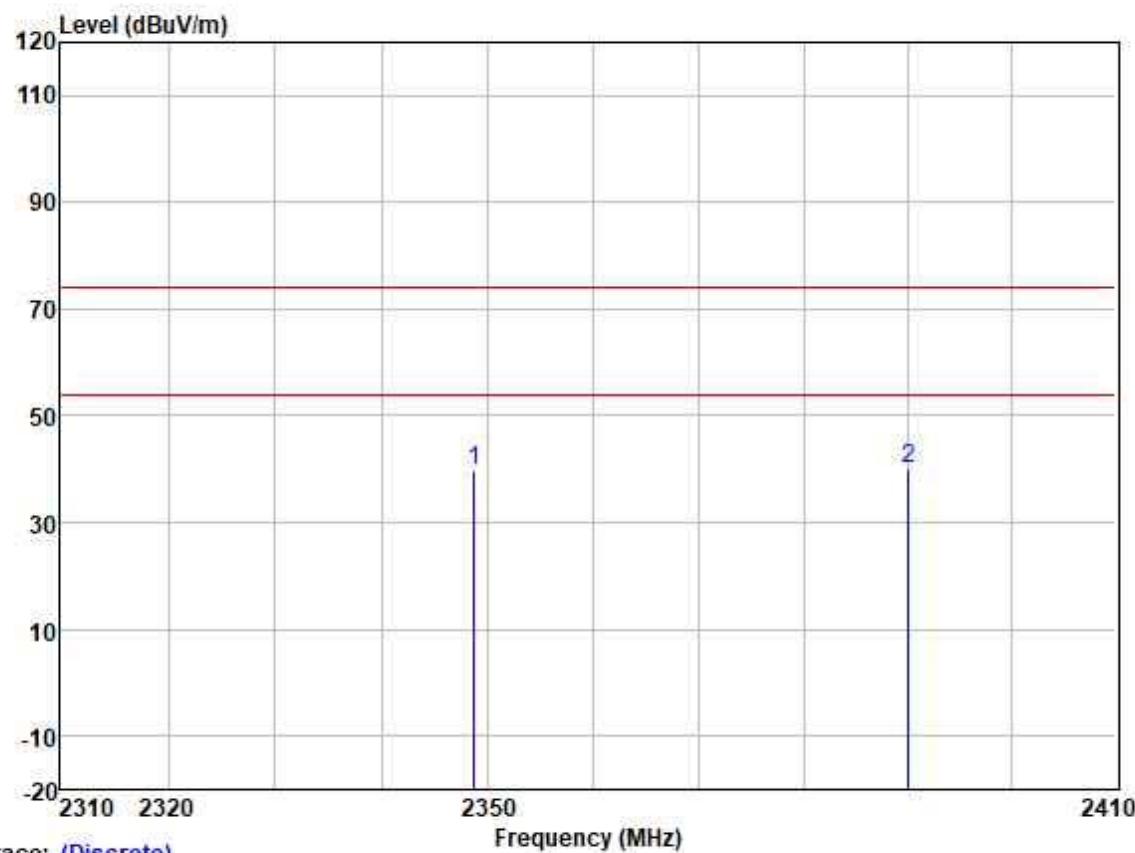
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Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low

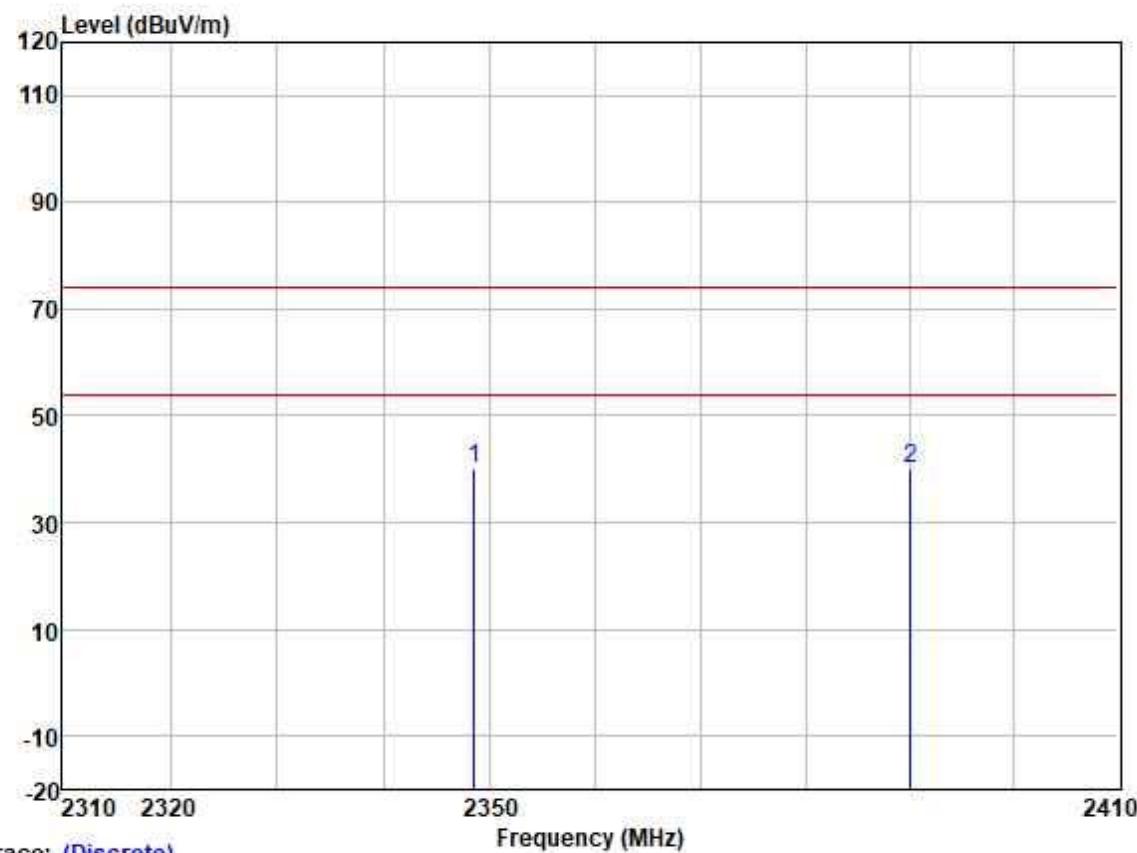


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Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:Low

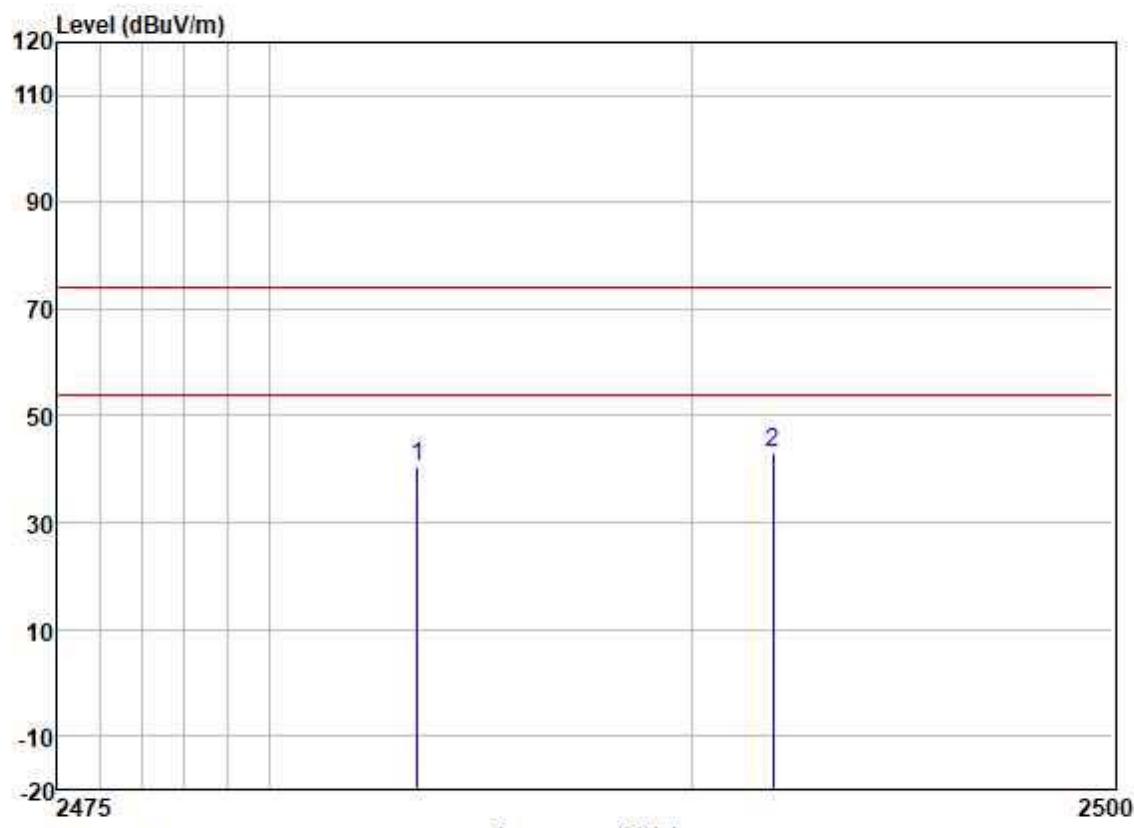


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Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:High

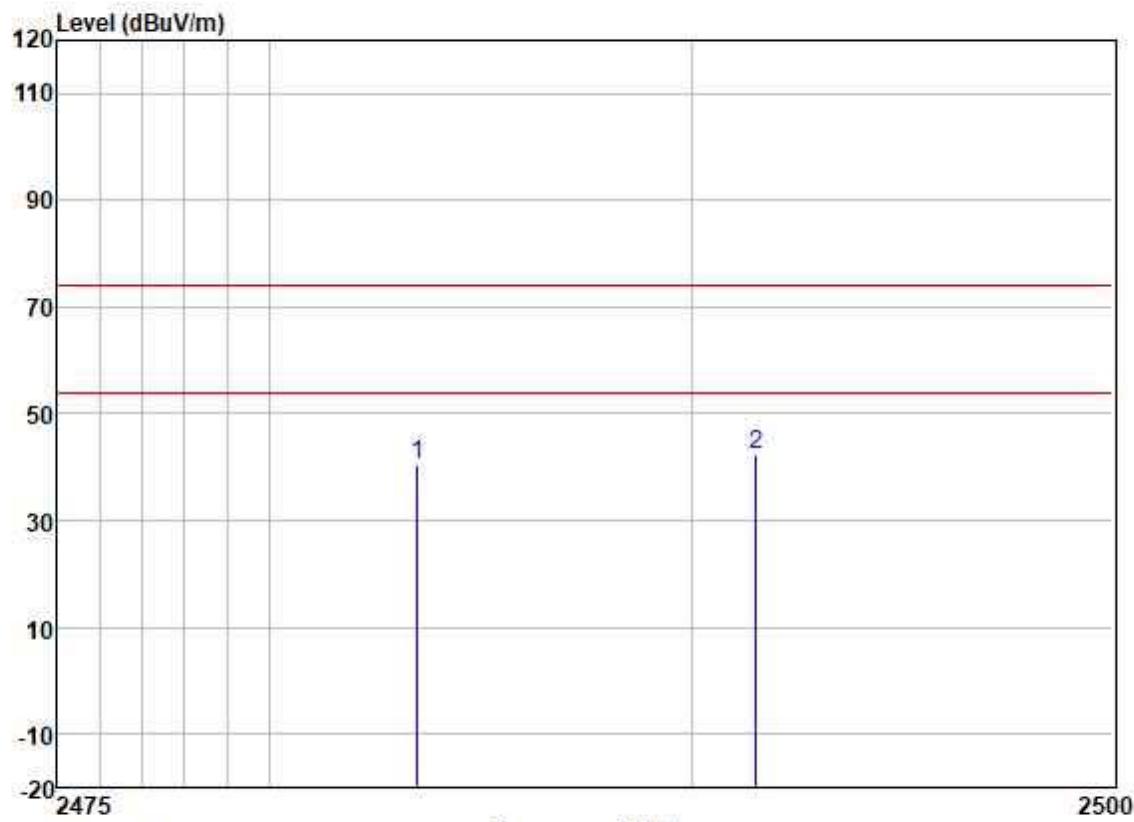


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Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:High



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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

Limit:

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

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 21.1 °C

Humidity: 58.4 % RH

Atmospheric Pressure: 1008 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Pre-scan / Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

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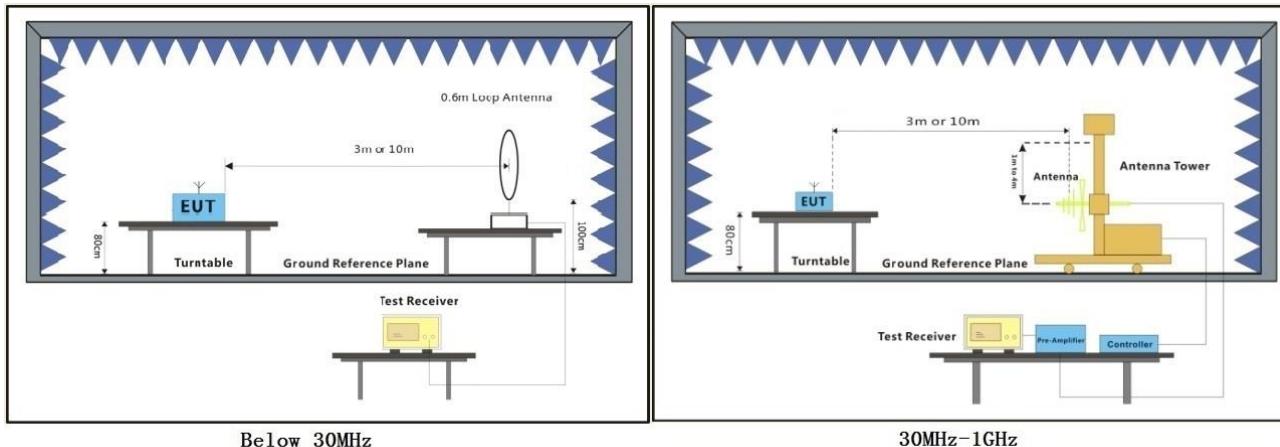
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7.7.3 Test Setup Diagram



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 quasi-peak method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

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

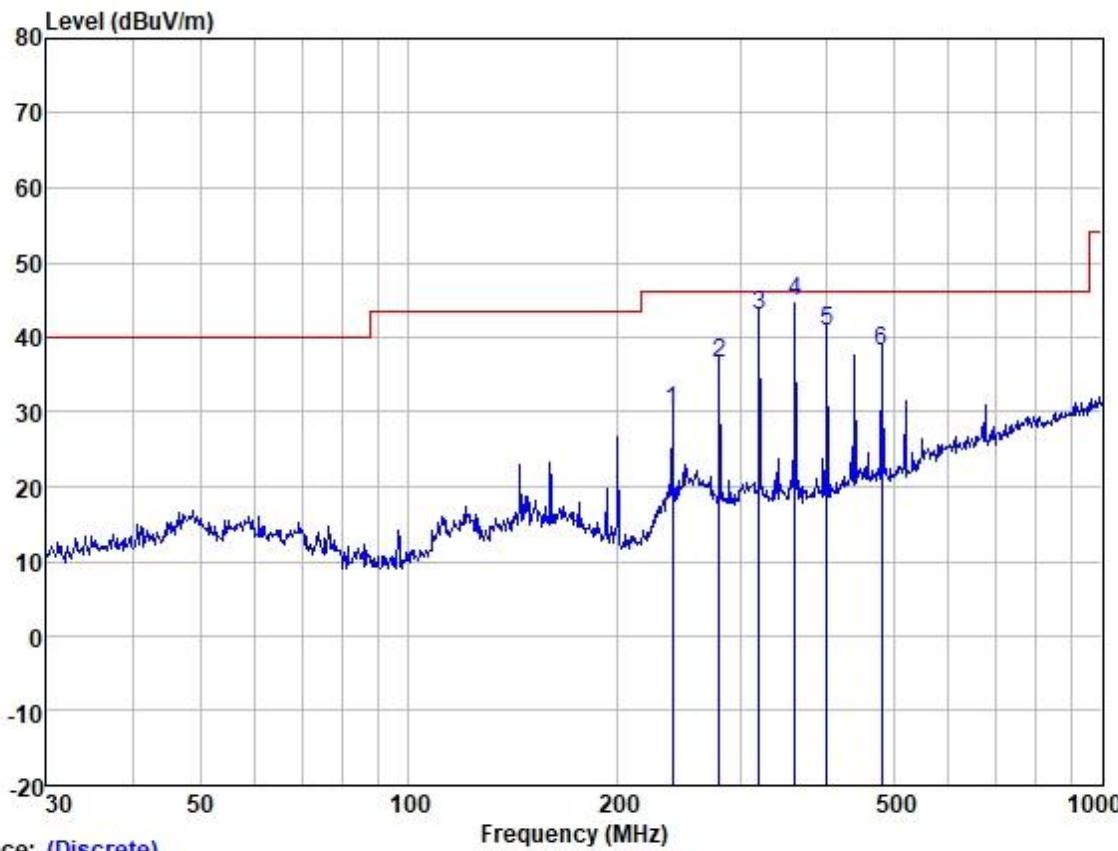
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Test Mode: 00; Polarity: Horizontal



Site : SGS

Condition:

Job :

Model :

Power :

Test Mode: 3-21

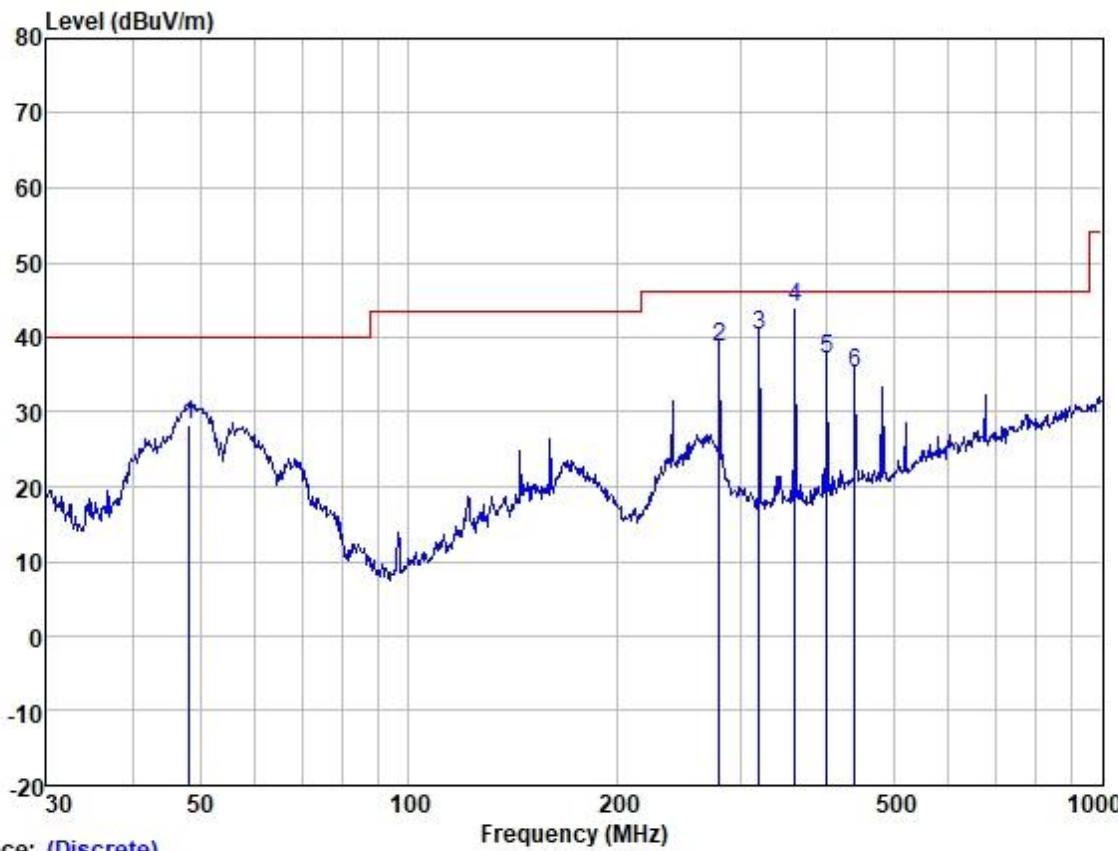
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	239.987	42.61	11.40	2.81	26.66	30.16	46.00 -15.84 HORIZONTAL QP
2	280.024	47.02	12.90	3.09	26.57	36.44	46.00 -9.56 HORIZONTAL QP
3	319.937	52.26	14.00	3.32	26.66	42.92	46.00 -3.08 HORIZONTAL QP
4	359.996	53.80	14.50	3.70	27.11	44.89	46.00 -1.11 HORIZONTAL QP
5	400.432	48.87	15.40	3.93	27.33	40.87	46.00 -5.13 HORIZONTAL QP
6	480.528	44.40	17.30	4.34	27.91	38.13	46.00 -7.87 HORIZONTAL QP

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Test Mode: 00; Polarity: Vertical



Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	48.163	40.55	13.71	1.13	27.17	28.22	40.00 -11.78 VERTICAL QP
2	280.024	49.33	12.90	3.09	26.57	38.75	46.00 -7.25 VERTICAL QP
3	319.937	49.63	14.00	3.32	26.66	40.29	46.00 -5.71 VERTICAL QP
4	360.448	52.93	14.50	3.70	27.11	44.02	46.00 -1.98 VERTICAL QP
5	400.432	45.01	15.40	3.93	27.33	37.01	46.00 -8.99 VERTICAL QP
6	440.196	41.89	16.80	4.13	27.57	35.25	46.00 -10.75 VERTICAL QP

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7.8 Radiated Spurious Emissions Above 1GHz

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

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

Limit:

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

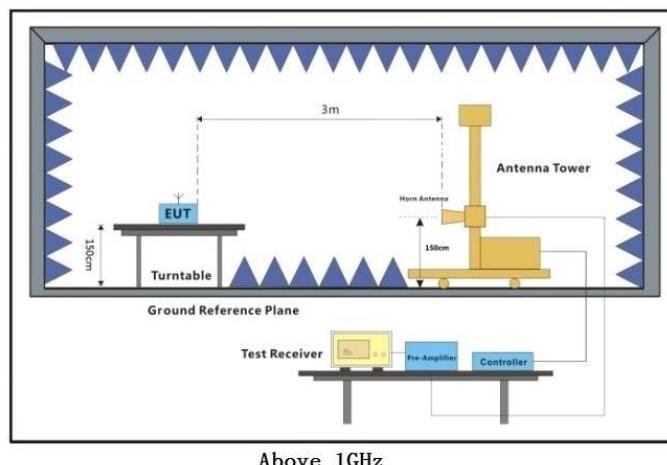
7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 20.7 °C Humidity: 65.5 % RH Atmospheric Pressure: 1014 mbar

7.8.2 Test Mode Description

Pre-scan / Mode Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Final test	02	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.8.3 Test Setup Diagram

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7.8.4 Measurement Procedure and Data

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

Remark:

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

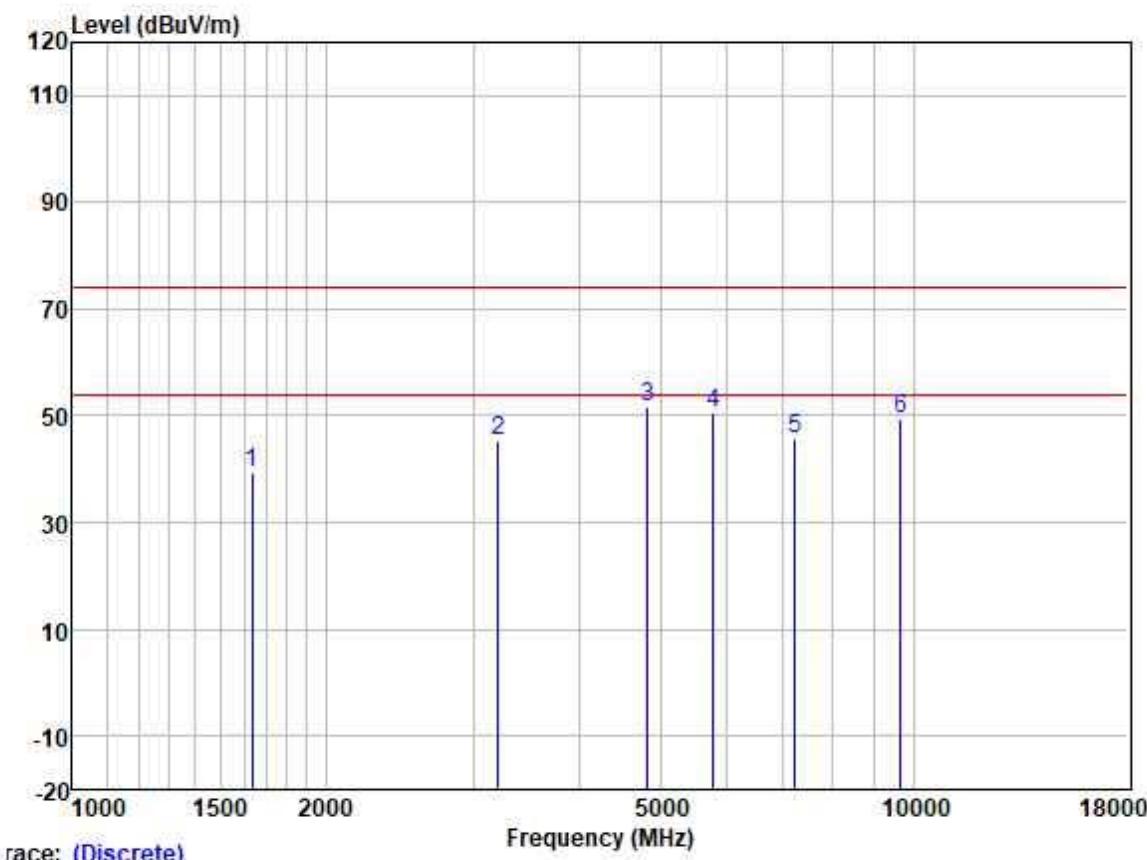
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor							
1	1634.543	48.50	25.62	2.80	37.55	39.37	74.00	-34.63	VERTICAL	peak	
2	3205.345	49.55	28.60	4.00	36.86	45.29	74.00	-28.71	VERTICAL	peak	
3	4824.000	51.18	31.45	5.42	36.50	51.55	74.00	-22.45	VERTICAL	peak	
4	5780.300	48.37	32.16	6.10	36.14	50.49	74.00	-23.51	VERTICAL	peak	
5	7236.000	40.74	35.70	6.03	36.94	45.53	74.00	-28.47	VERTICAL	peak	
6	9648.000	40.72	38.40	7.06	36.85	49.33	74.00	-24.67	VERTICAL	peak	

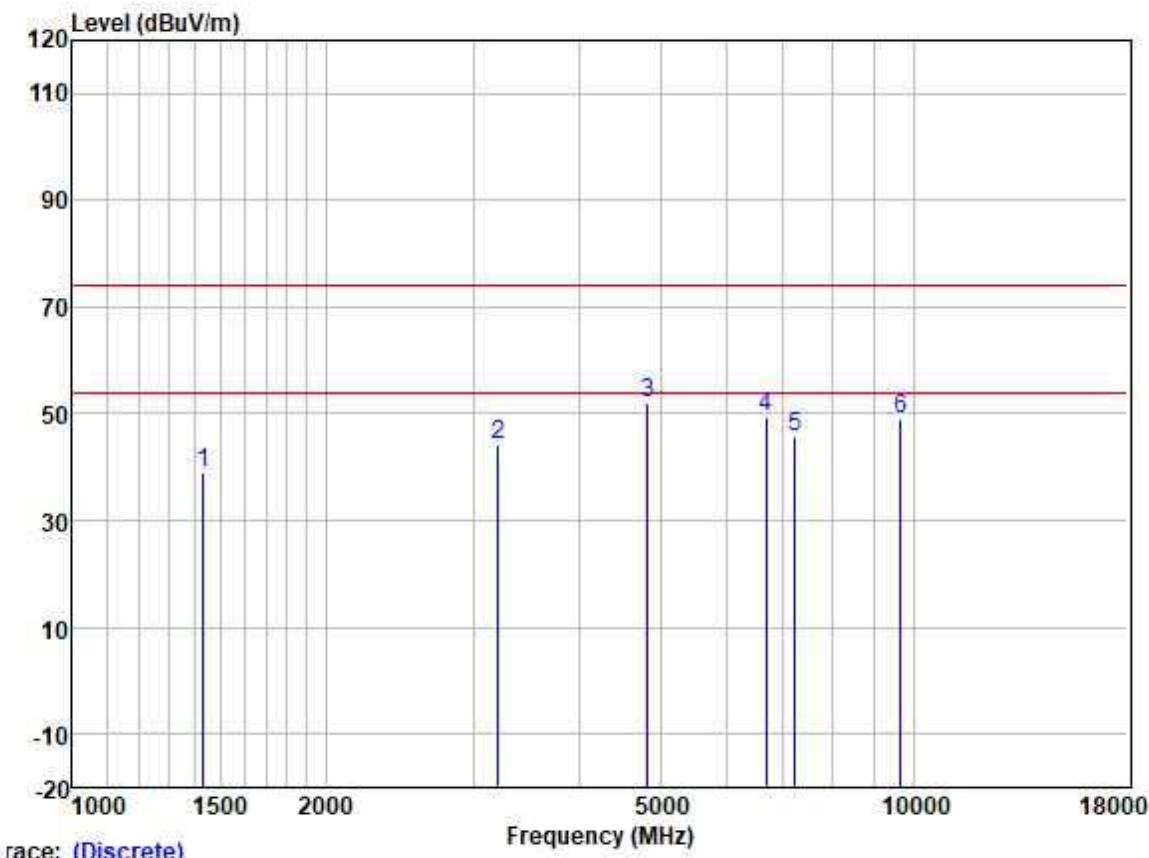
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Race:	Freq	ReadAntenna		Cable		Preamp	Limit	Over	Limit	Pol/Phase	Remark
		Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	1431.047	48.79	25.43	2.66	37.88	39.00	74.00	-35.00	HORIZONTAL	peak	
2	3205.345	48.63	28.60	4.00	36.86	44.37	74.00	-29.63	HORIZONTAL	peak	
3	4824.000	51.58	31.45	5.42	36.50	51.95	74.00	-22.05	HORIZONTAL	peak	
4	6679.040	45.65	34.33	5.83	36.39	49.42	74.00	-24.58	HORIZONTAL	peak	
5	7236.000	40.78	35.70	6.03	36.94	45.57	74.00	-28.43	HORIZONTAL	peak	
6	9648.000	40.59	38.40	7.06	36.85	49.20	74.00	-24.80	HORIZONTAL	peak	

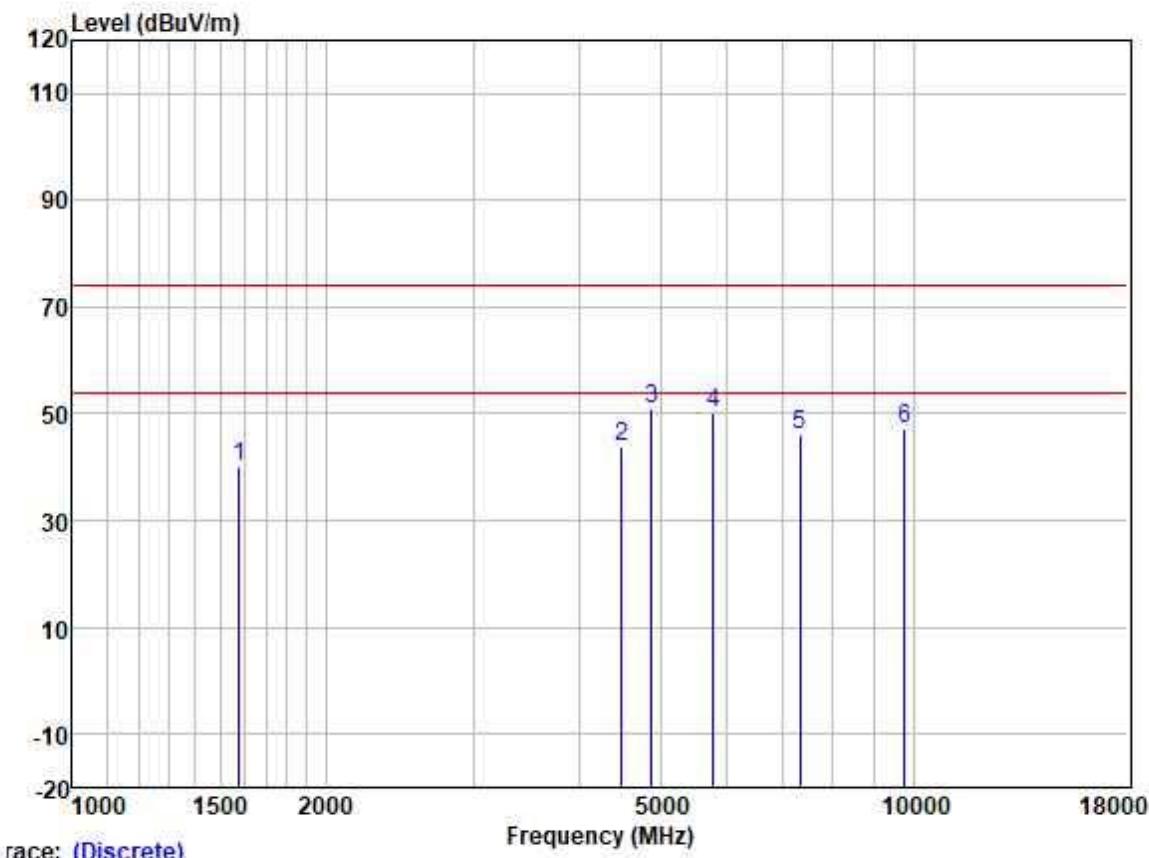
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Race: (Discrete)

Freq	ReadAntenna		Cable Preamp		Limit	Over	Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	Loss Factor	dB	dBuV/m	dBuV/m	dB	
1	1578.822	49.32	25.56	2.80	37.62	40.06	74.00	-33.94	VERTICAL peak
2	4495.125	44.72	30.80	5.05	36.60	43.97	74.00	-30.03	VERTICAL peak
3	4884.000	50.50	31.56	5.52	36.48	51.10	74.00	-22.90	VERTICAL peak
4	5780.300	48.22	32.16	6.10	36.14	50.34	74.00	-23.66	VERTICAL peak
5	7326.000	40.81	36.00	6.13	37.01	45.93	74.00	-28.07	VERTICAL peak
6	9768.000	38.50	38.53	7.01	36.83	47.21	74.00	-26.79	VERTICAL peak

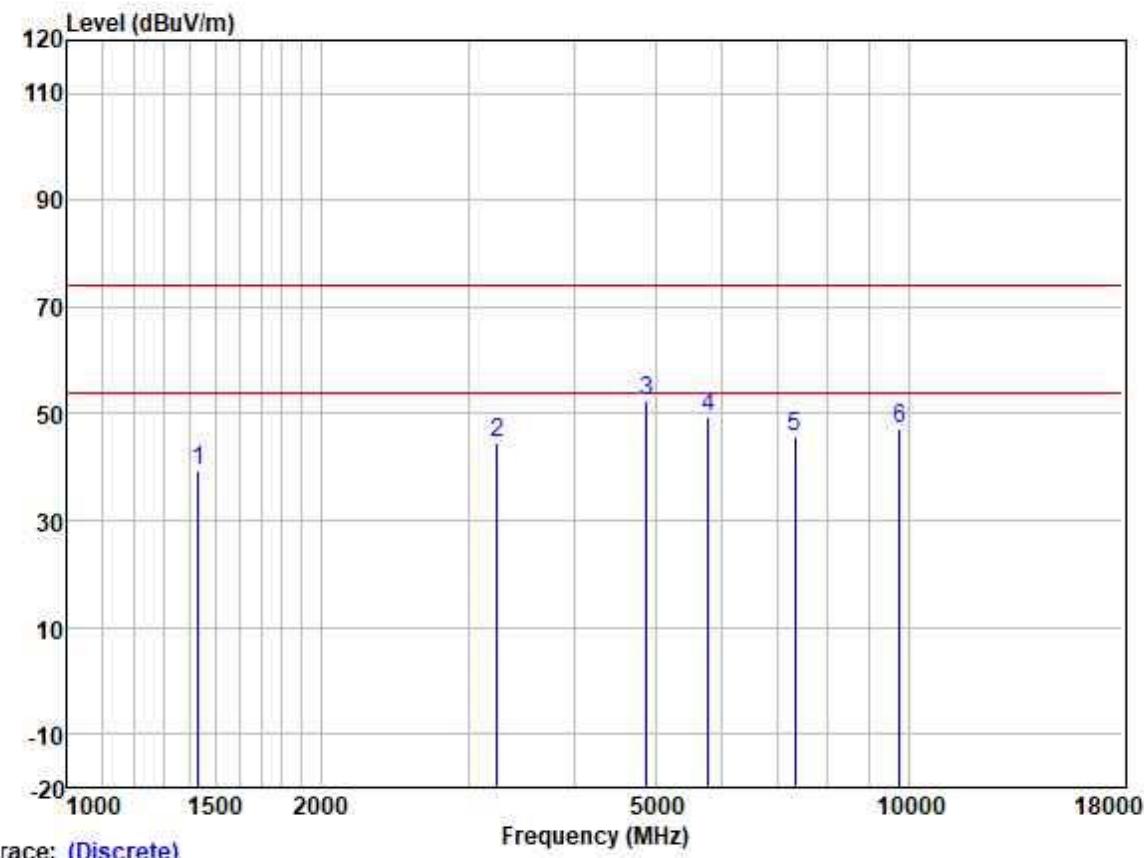
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Loss	Factor	Level	Limit	Line	Over	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB				dB	dBuV/m	dBuV/m	dB	dB	dB	dB
1	1431.047	49.17	25.43	2.66	37.88	39.38	74.00	-34.62	HORIZONTAL	peak				
2	3242.619	48.63	28.67	4.02	36.84	44.48	74.00	-29.52	HORIZONTAL	peak				
3	4884.000	51.93	31.56	5.52	36.48	52.53	74.00	-21.47	HORIZONTAL	peak				
4	5780.300	47.14	32.16	6.10	36.14	49.26	74.00	-24.74	HORIZONTAL	peak				
5	7326.000	40.65	36.00	6.13	37.01	45.77	74.00	-28.23	HORIZONTAL	peak				
6	9768.000	38.57	38.53	7.01	36.83	47.28	74.00	-26.72	HORIZONTAL	peak				

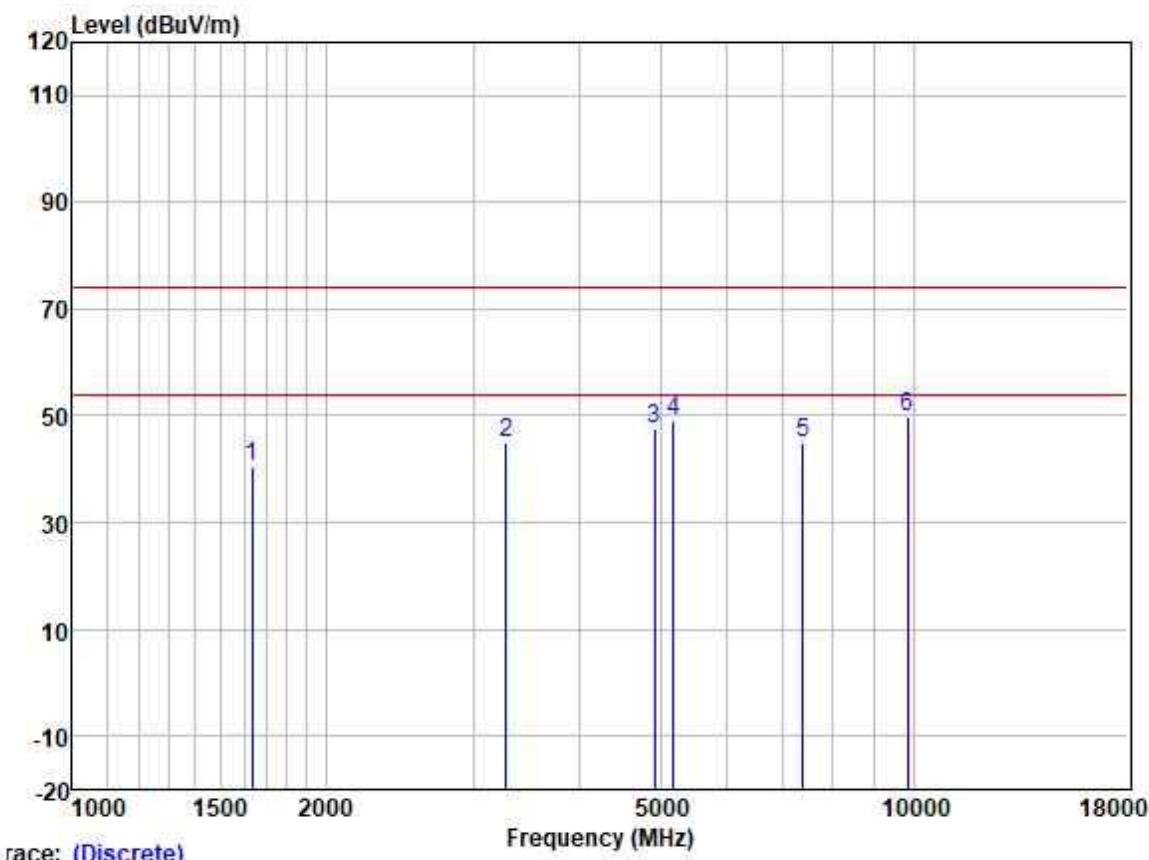
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Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 1634.543	49.61	25.62	2.80	37.55	40.48	74.00	-33.52	VERTICAL	peak
2 3280.326	49.11	28.73	4.04	36.83	45.05	74.00	-28.95	VERTICAL	peak
3 4924.000	46.92	31.62	5.60	36.45	47.69	74.00	-26.31	VERTICAL	peak
4 5179.049	48.15	31.73	5.61	36.30	49.19	74.00	-24.81	VERTICAL	peak
5 7386.000	39.79	36.17	6.19	37.04	45.11	74.00	-28.89	VERTICAL	peak
6 9848.000	41.20	38.58	6.99	36.82	49.95	74.00	-24.05	VERTICAL	peak

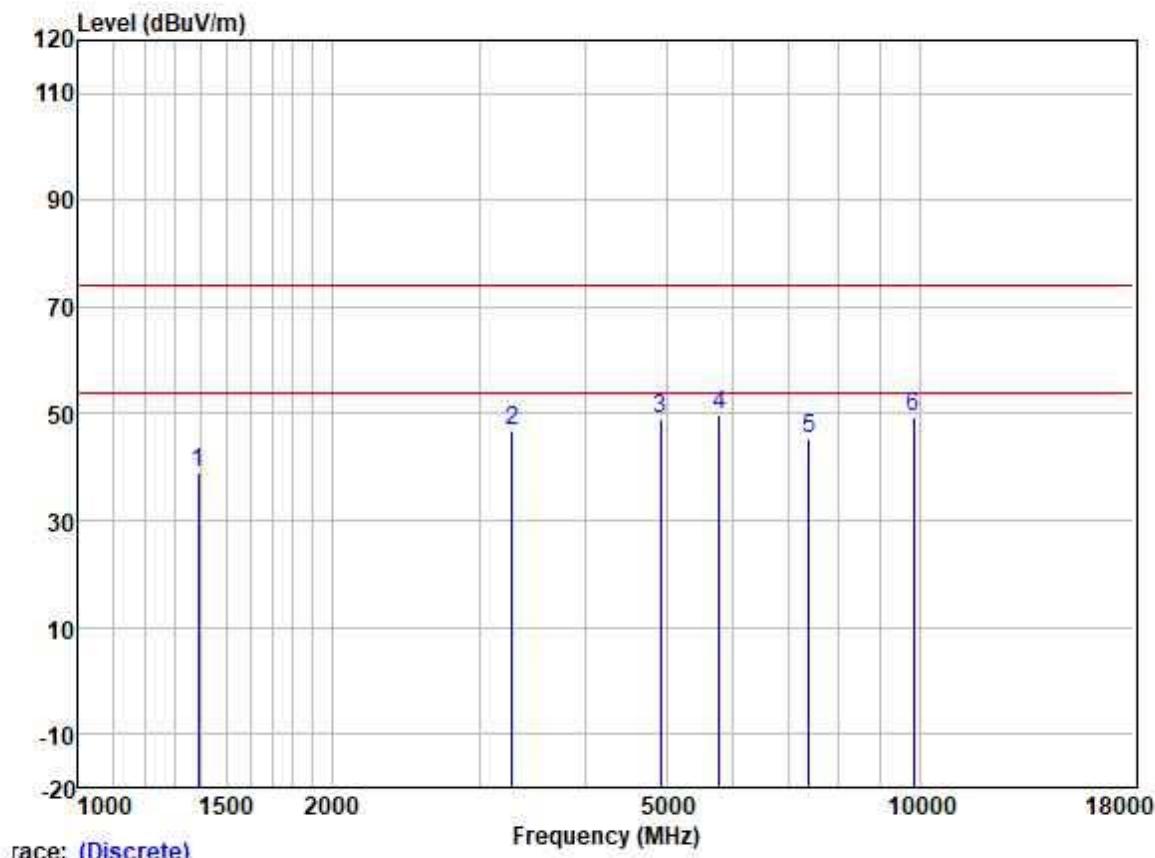
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Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	1390.276	48.93	25.38	2.60	37.92	38.99	74.00	-35.01	HORIZONTAL	peak	
2	3280.326	50.89	28.73	4.04	36.83	46.83	74.00	-27.17	HORIZONTAL	peak	
3	4924.000	48.37	31.62	5.60	36.45	49.14	74.00	-24.86	HORIZONTAL	peak	
4	5780.300	47.80	32.16	6.10	36.14	49.92	74.00	-24.08	HORIZONTAL	peak	
5	7386.000	40.06	36.17	6.19	37.04	45.38	74.00	-28.62	HORIZONTAL	peak	
6	9848.000	40.71	38.58	6.99	36.82	49.46	74.00	-24.54	HORIZONTAL	peak	

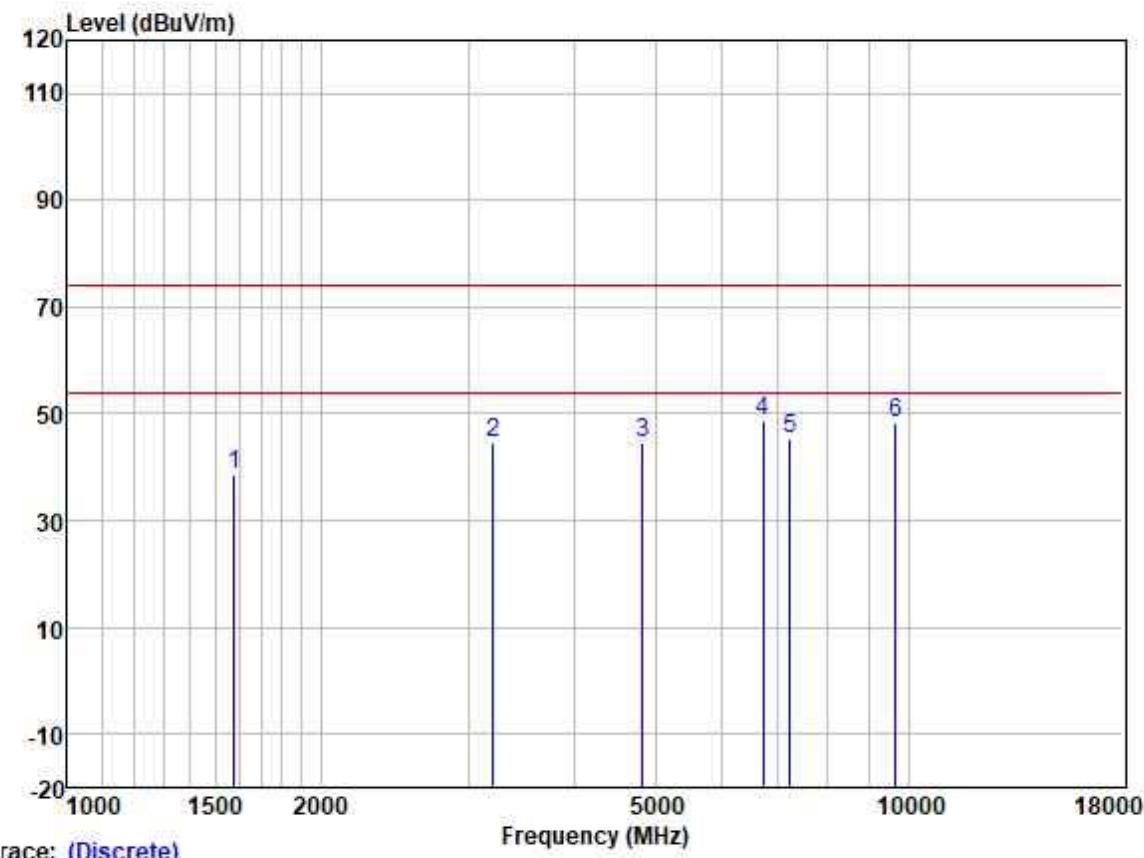
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Race: (Discrete)	ReadAntenna		Cable Preamp		Limit	Over	Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1578.822	47.96	25.56	2.80	37.62	38.70	74.00	-35.30	VERTICAL peak
2	3205.345	48.70	28.60	4.00	36.86	44.44	74.00	-29.56	VERTICAL peak
3	4824.000	44.16	31.45	5.42	36.50	44.53	74.00	-29.47	VERTICAL peak
4	6717.762	44.76	34.44	5.83	36.42	48.61	74.00	-25.39	VERTICAL peak
5	7236.000	40.45	35.70	6.03	36.94	45.24	74.00	-28.76	VERTICAL peak
6	9648.000	39.53	38.40	7.06	36.85	48.14	74.00	-25.86	VERTICAL peak

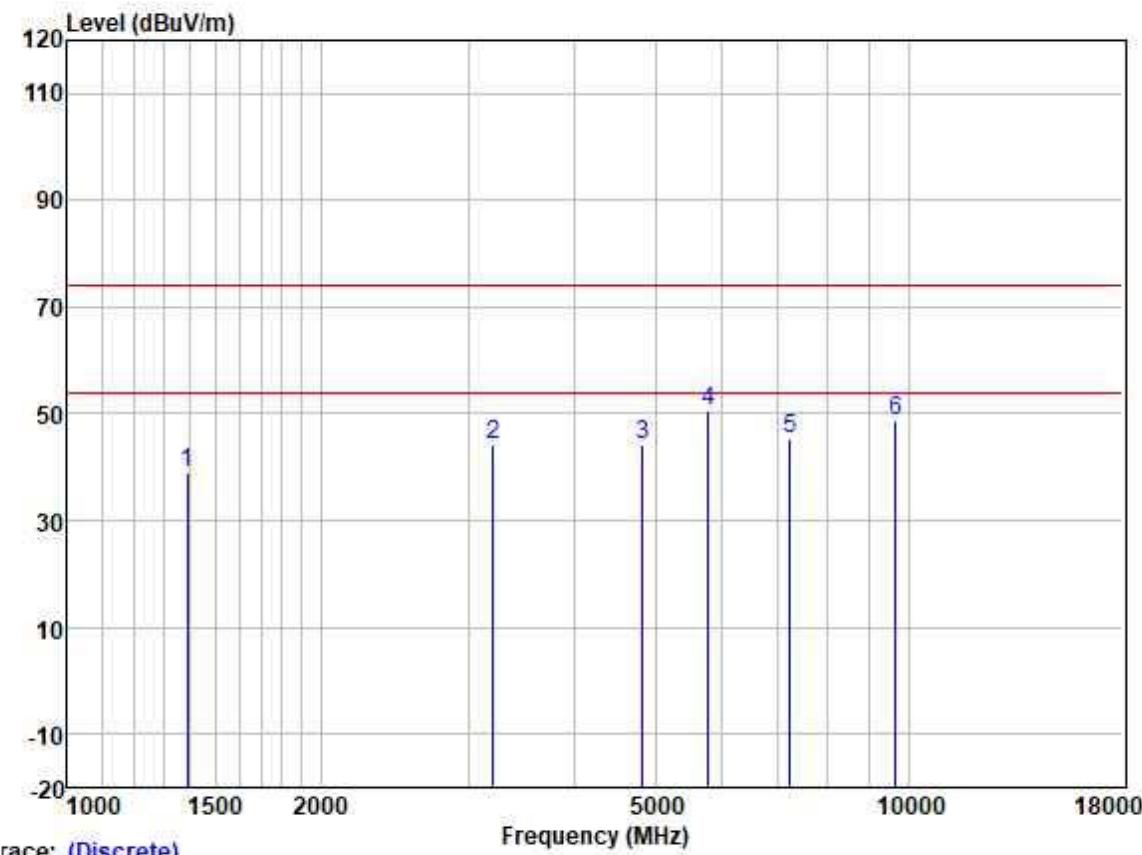
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low

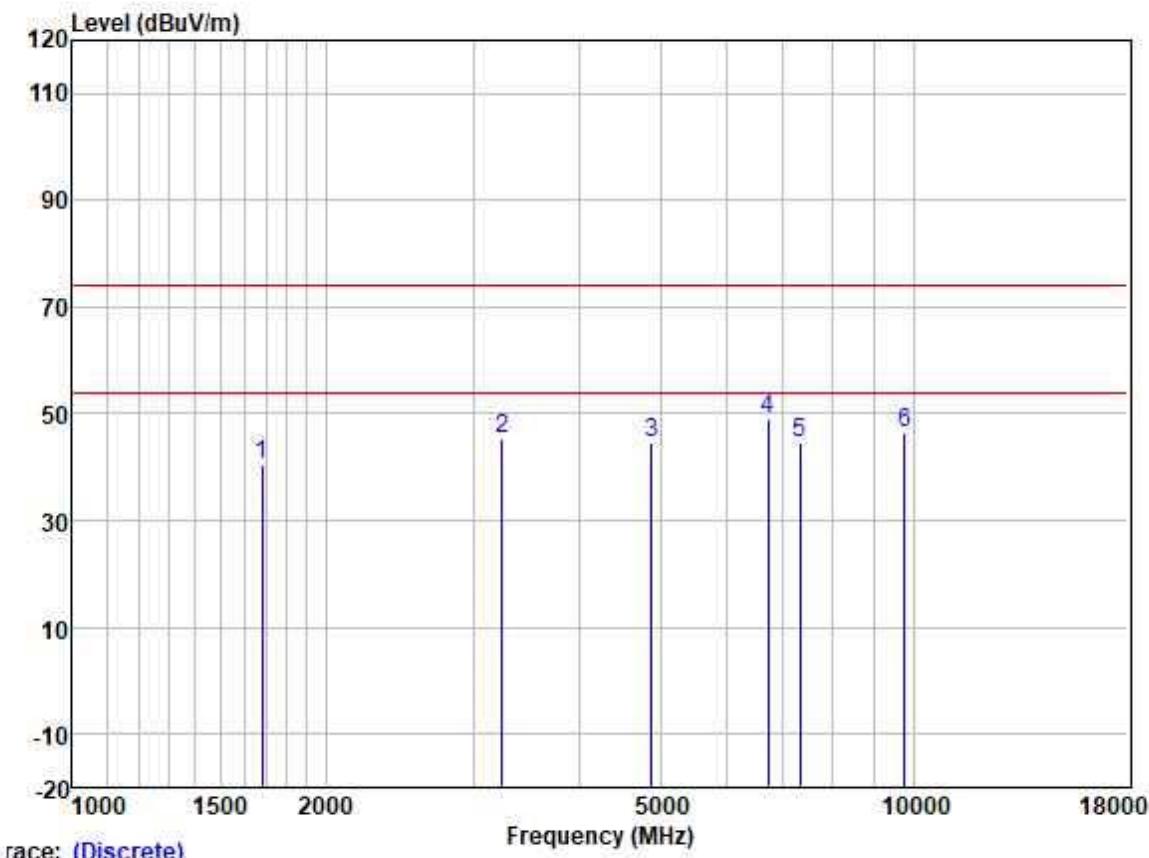


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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle

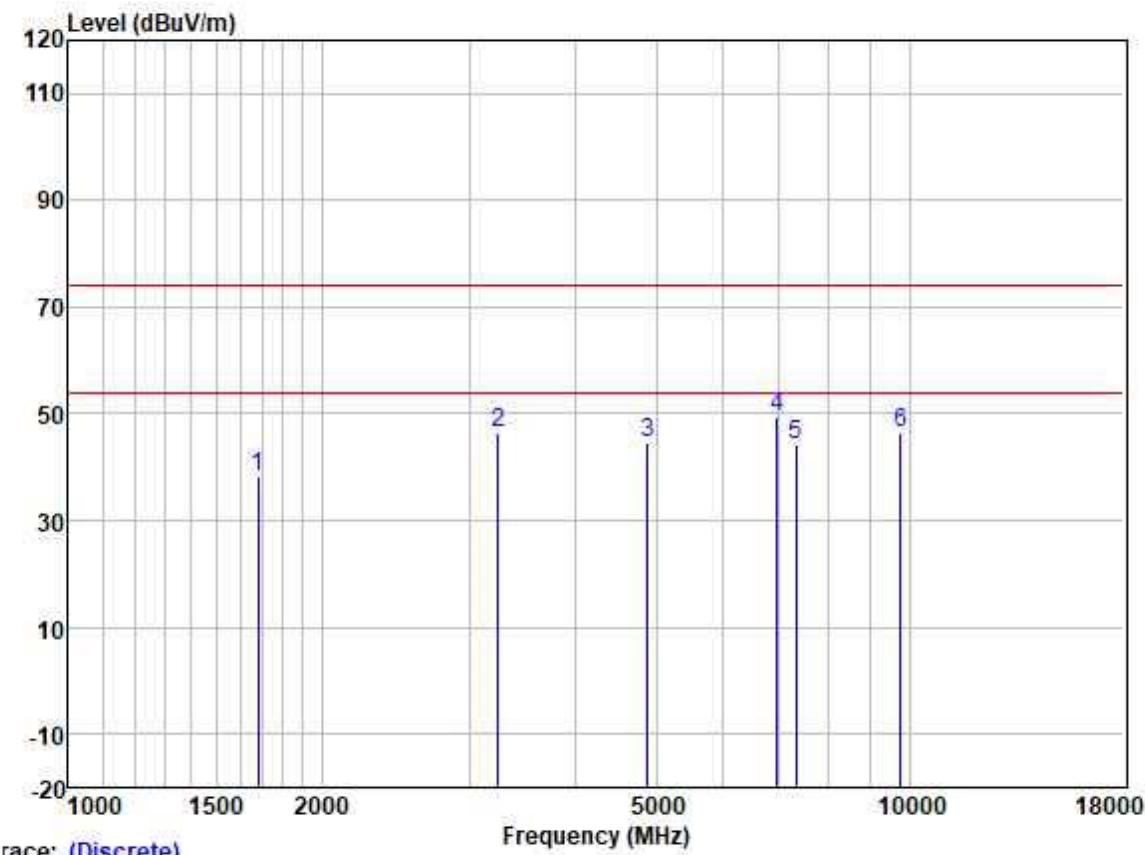


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



Freq	ReadAntenna		Cable Preamp		Limit	Over	Line	Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB	dB	
1 1682.477	47.32	25.68	2.80	37.48	38.32	74.00	-35.68	HORIZONTAL	peak	
2 3242.619	50.52	28.67	4.02	36.84	46.37	74.00	-27.63	HORIZONTAL	peak	
3 4884.000	44.05	31.56	5.52	36.48	44.65	74.00	-29.35	HORIZONTAL	peak	
4 6954.852	45.23	34.95	5.81	36.63	49.36	74.00	-24.64	HORIZONTAL	peak	
5 7326.000	39.13	36.00	6.13	37.01	44.25	74.00	-29.75	HORIZONTAL	peak	
6 9768.000	37.91	38.53	7.01	36.83	46.62	74.00	-27.38	HORIZONTAL	peak	

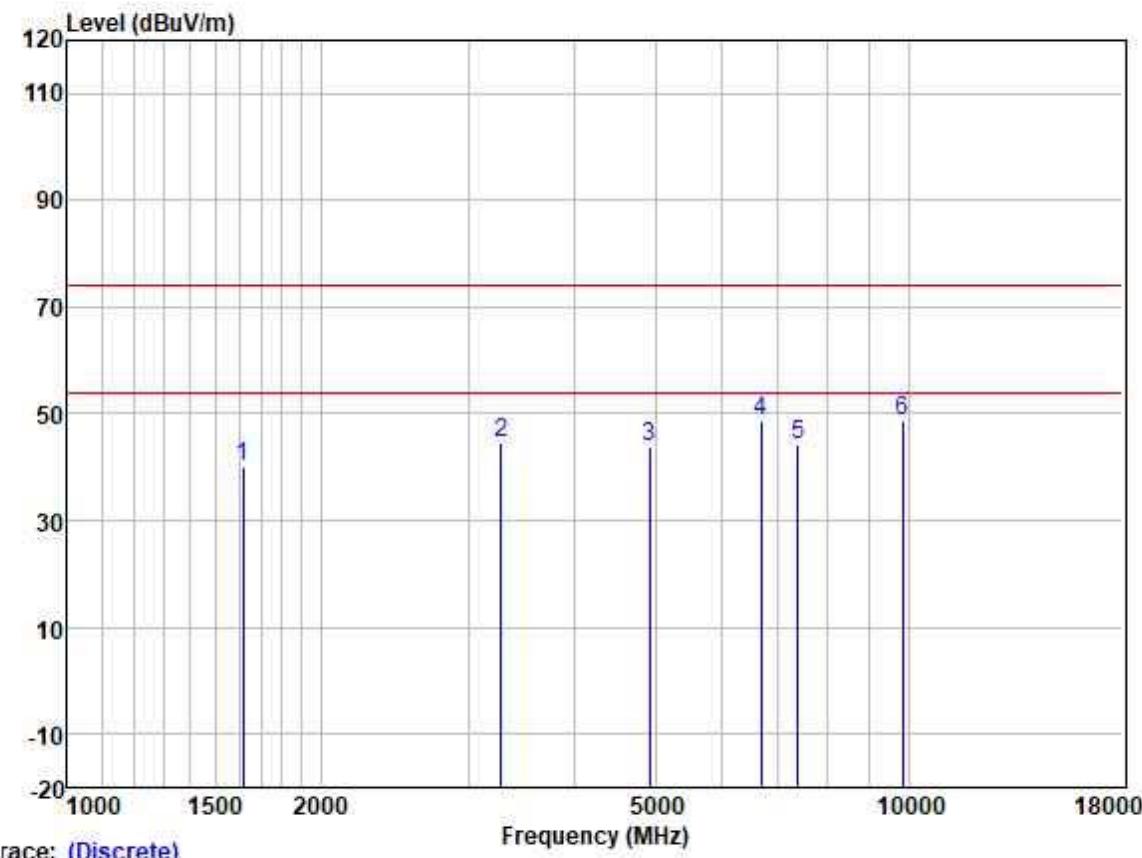
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Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

Freq	ReadAntenna		Cable Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 1615.754	49.34	25.60	2.80	37.55	40.19	74.00	-33.81	VERTICAL peak
2 3280.326	48.73	28.73	4.04	36.83	44.67	74.00	-29.33	VERTICAL peak
3 4924.000	43.02	31.62	5.60	36.45	43.79	74.00	-30.21	VERTICAL peak
4 6679.040	44.92	34.33	5.83	36.39	48.69	74.00	-25.31	VERTICAL peak
5 7386.000	39.06	36.17	6.19	37.04	44.38	74.00	-29.62	VERTICAL peak
6 9848.000	39.93	38.58	6.99	36.82	48.68	74.00	-25.32	VERTICAL peak

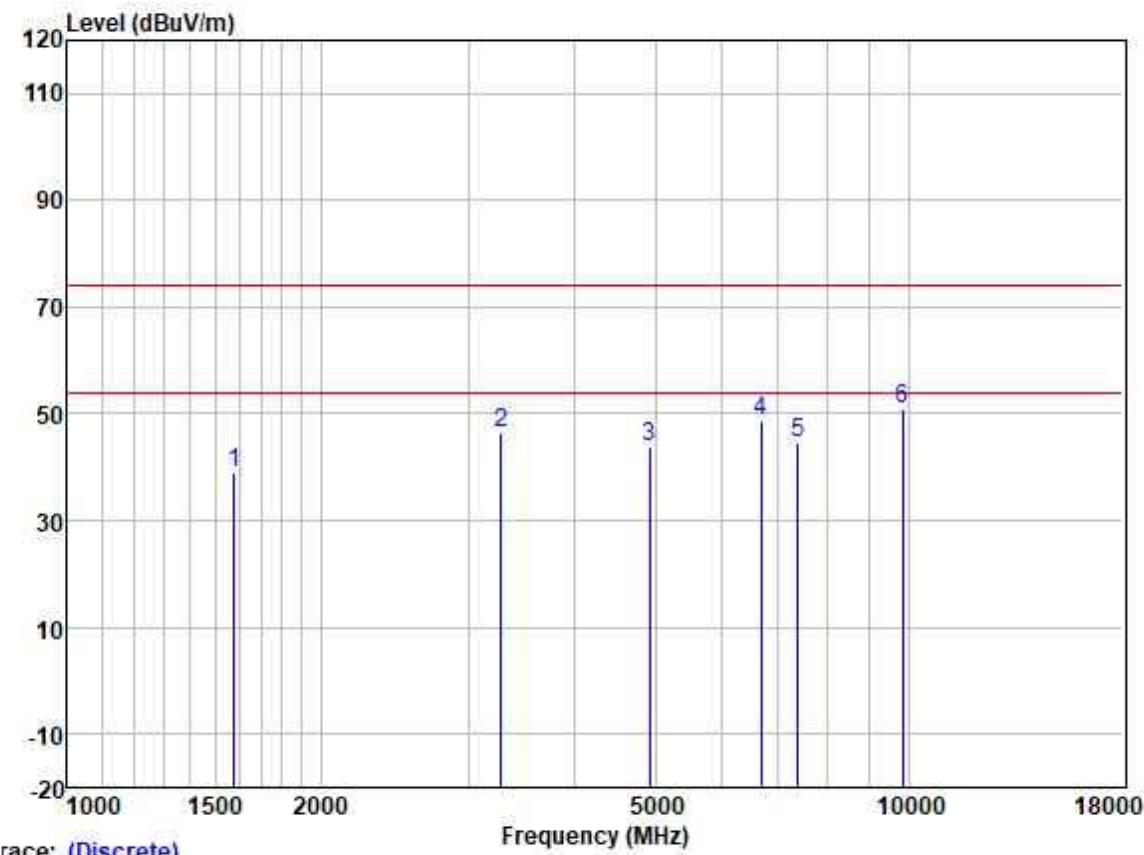
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Loss	Factor	Level	Limit	Line	Over	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB										
1	1578.822	48.41	25.56	2.80	37.62	39.15	74.00	-34.85	HORIZONTAL	peak				
2	3280.326	50.40	28.73	4.04	36.83	46.34	74.00	-27.66	HORIZONTAL	peak				
3	4924.000	42.97	31.62	5.60	36.45	43.74	74.00	-30.26	HORIZONTAL	peak				
4	6679.040	44.90	34.33	5.83	36.39	48.67	74.00	-25.33	HORIZONTAL	peak				
5	7386.000	39.13	36.17	6.19	37.04	44.45	74.00	-29.55	HORIZONTAL	peak				
6	9848.000	42.36	38.58	6.99	36.82	51.11	74.00	-22.89	HORIZONTAL	peak				

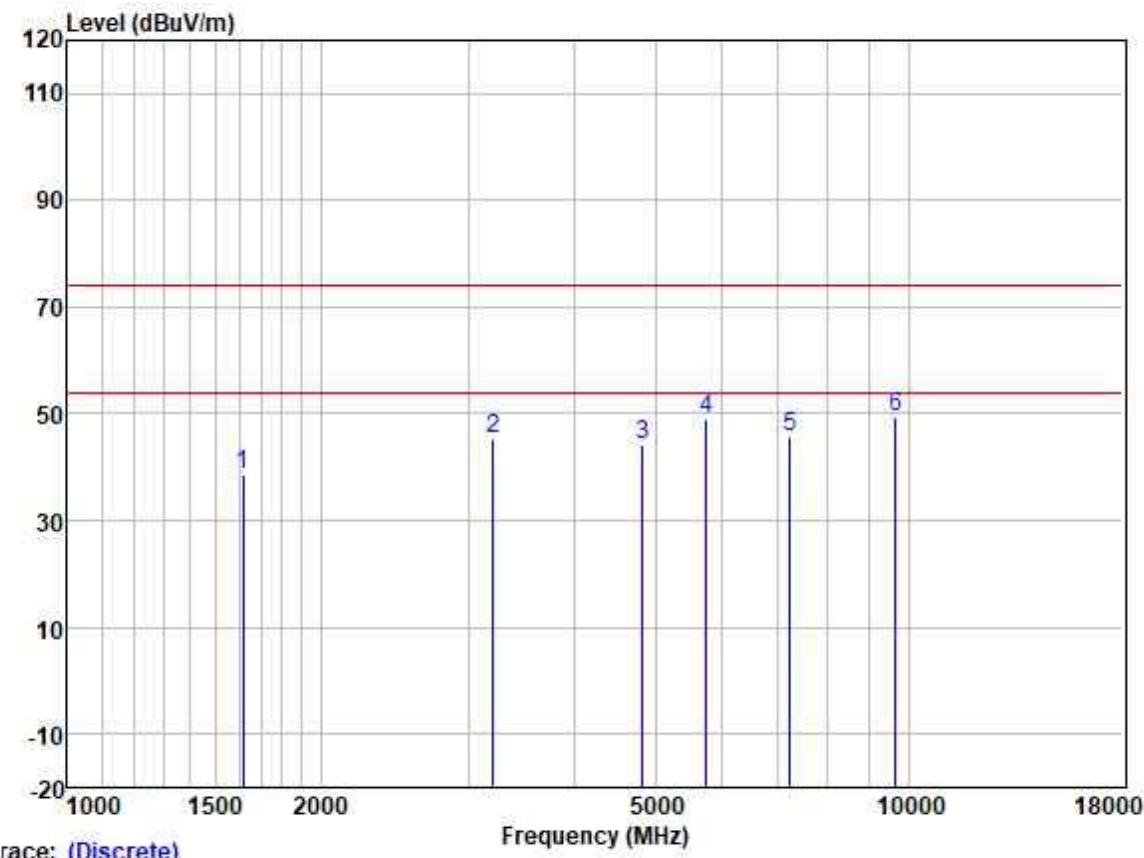
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Freq	ReadAntenna		Cable		Preamp	Limit	Over	Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 1615.754	47.89	25.60	2.80	37.55	38.74	74.00	-35.26	VERTICAL	peak	
2 3205.345	49.67	28.60	4.00	36.86	45.41	74.00	-28.59	VERTICAL	peak	
3 4824.000	43.73	31.45	5.42	36.50	44.10	74.00	-29.90	VERTICAL	peak	
4 5746.982	46.91	32.10	6.20	36.14	49.07	74.00	-24.93	VERTICAL	peak	
5 7236.000	40.91	35.70	6.03	36.94	45.70	74.00	-28.30	VERTICAL	peak	
6 9648.000	40.81	38.40	7.06	36.85	49.42	74.00	-24.58	VERTICAL	peak	

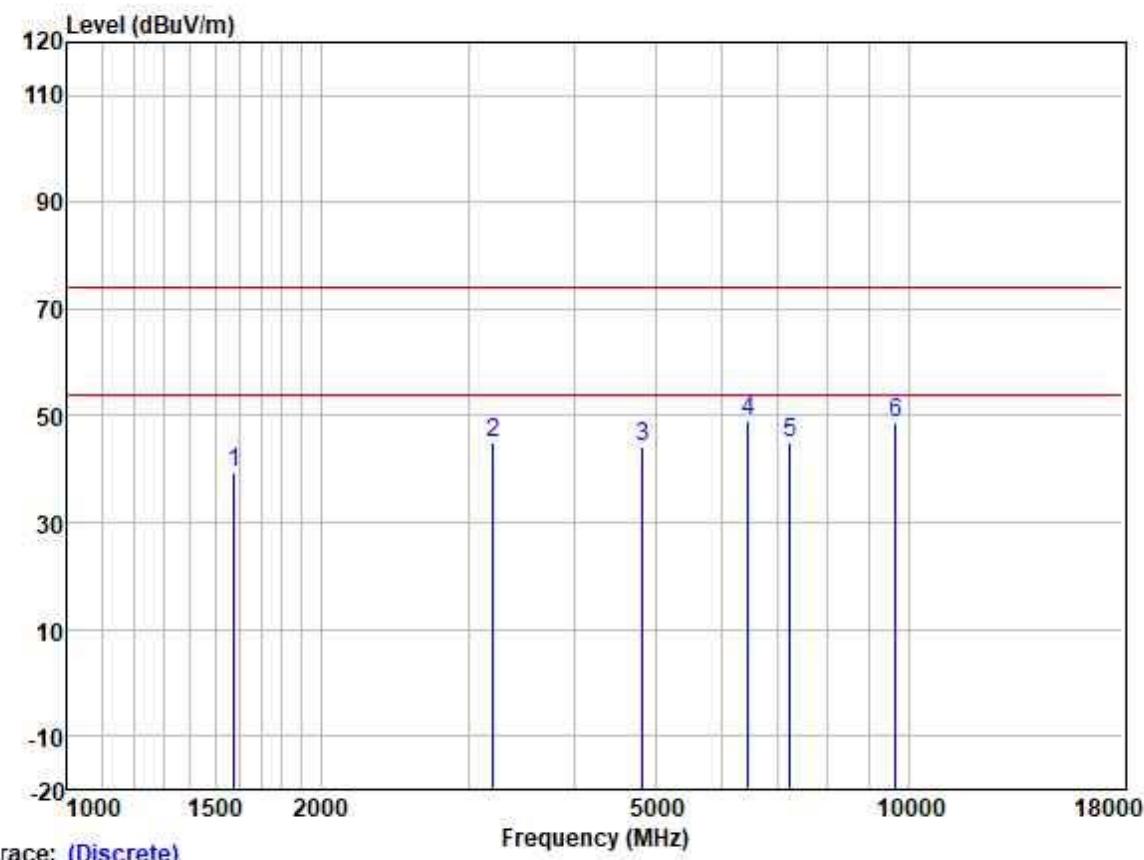
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

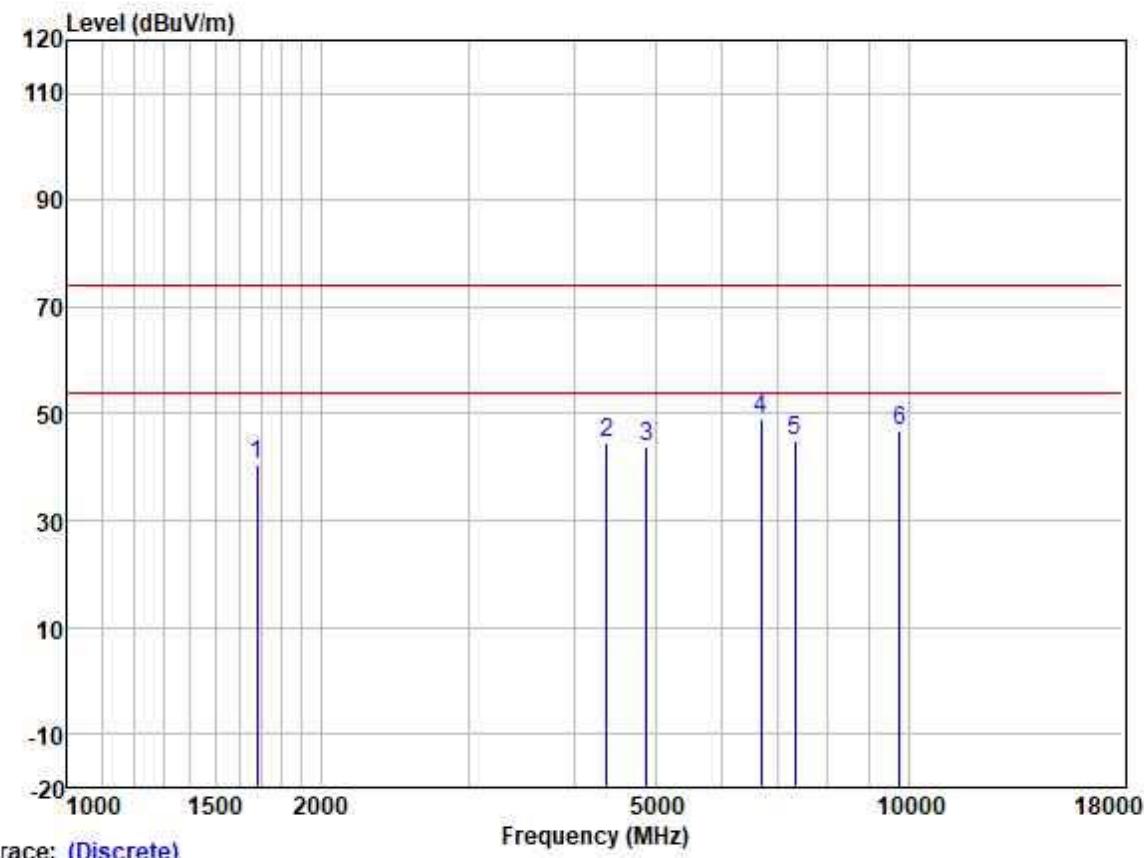


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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle

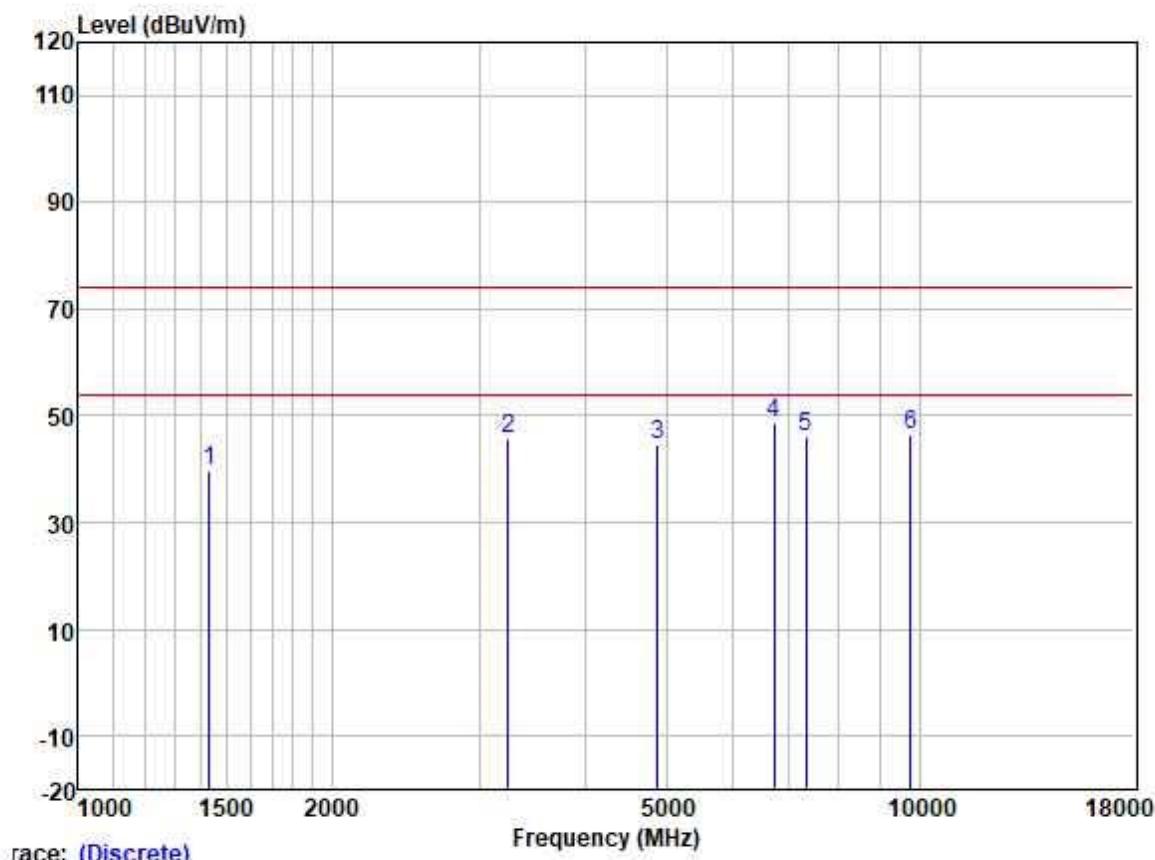


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	MHz	Level	Factor	Loss				
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1431.047	49.55	25.43	2.66	37.88	39.76	74.00	-34.24 HORIZONTAL peak
2	3242.619	49.67	28.67	4.02	36.84	45.52	74.00	-28.48 HORIZONTAL peak
3	4884.000	43.95	31.56	5.52	36.48	44.55	74.00	-29.45 HORIZONTAL peak
4	6717.762	44.95	34.44	5.83	36.42	48.80	74.00	-25.20 HORIZONTAL peak
5	7326.000	40.92	36.00	6.13	37.01	46.04	74.00	-27.96 HORIZONTAL peak
6	9768.000	37.80	38.53	7.01	36.83	46.51	74.00	-27.49 HORIZONTAL peak

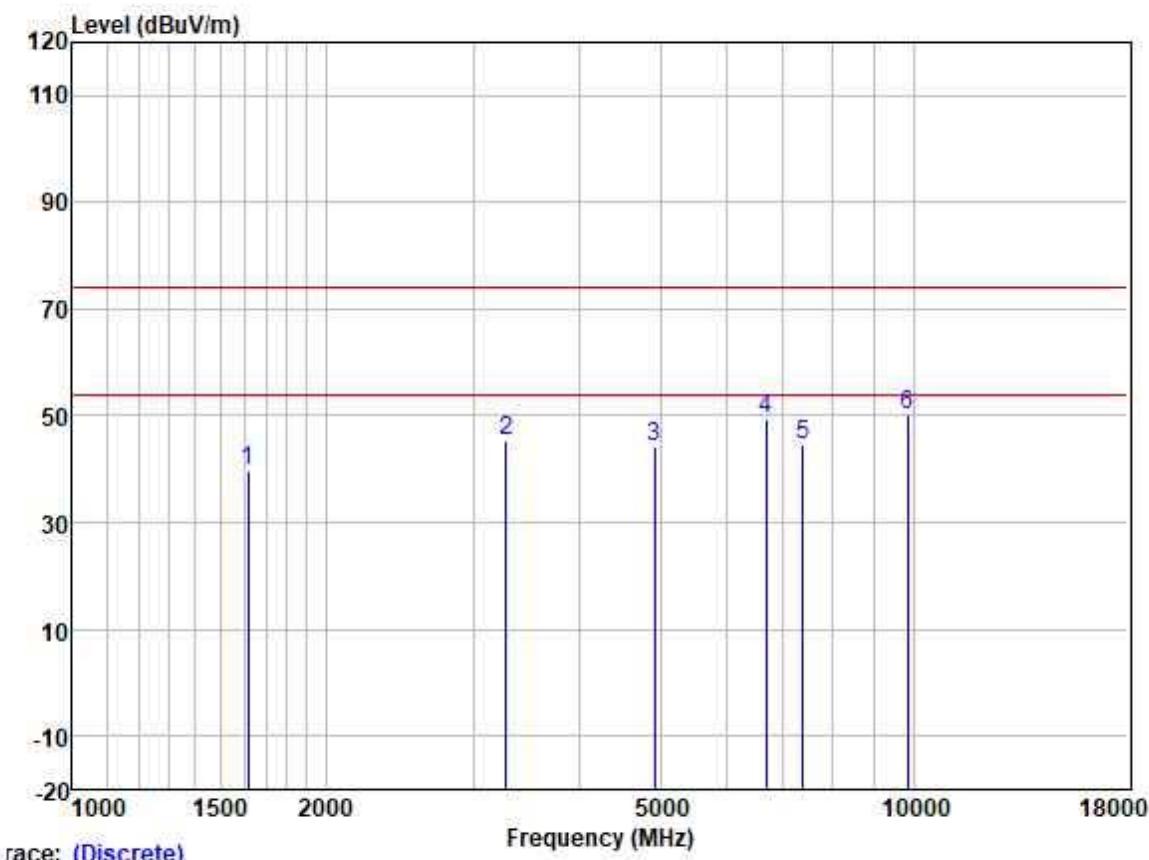
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

Index	Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
		Level	Factor	Loss	Factor					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1615.754	49.04	25.60	2.80	37.55	39.89	74.00	-34.11	VERTICAL	peak
2	3280.326	49.49	28.73	4.04	36.83	45.43	74.00	-28.57	VERTICAL	peak
3	4924.000	43.60	31.62	5.60	36.45	44.37	74.00	-29.63	VERTICAL	peak
4	6679.040	45.79	34.33	5.83	36.39	49.56	74.00	-24.44	VERTICAL	peak
5	7386.000	39.09	36.17	6.19	37.04	44.41	74.00	-29.59	VERTICAL	peak
6	9848.000	41.34	38.58	6.99	36.82	50.09	74.00	-23.91	VERTICAL	peak

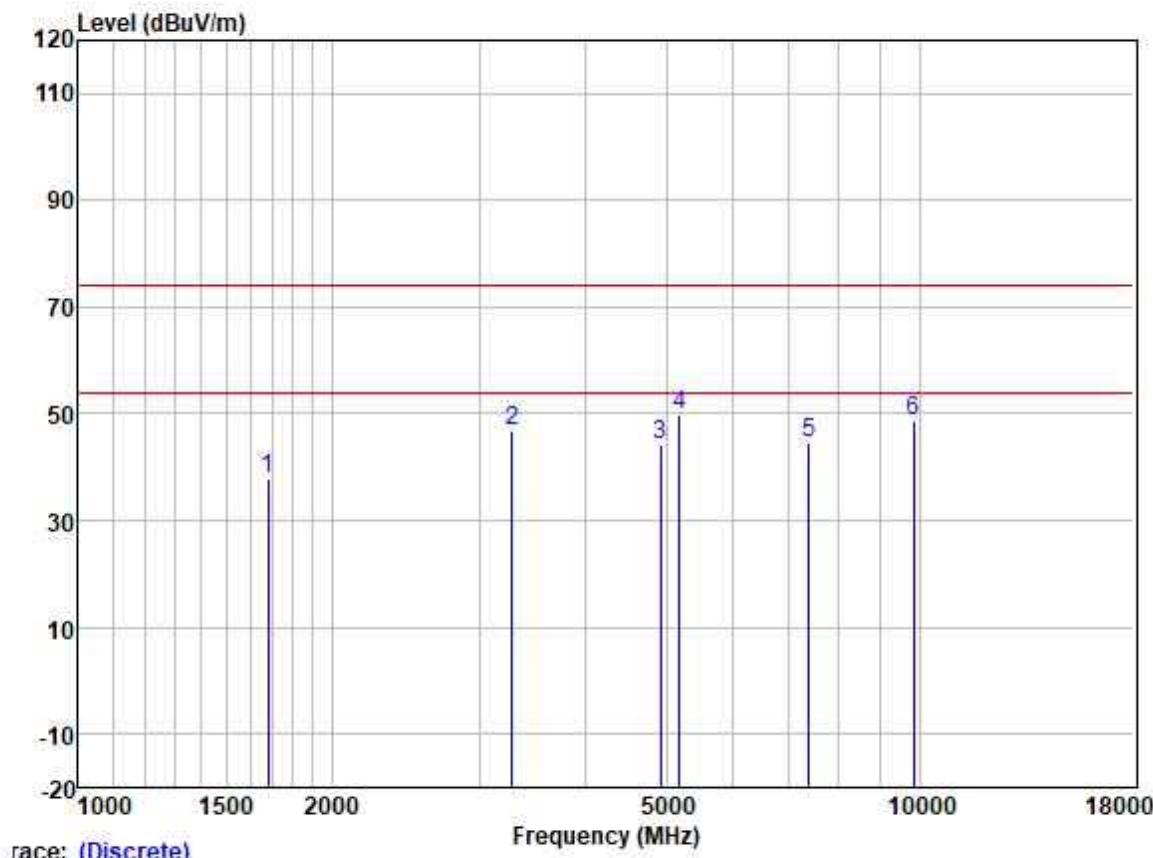
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Trace: (Discrete)	Freq	ReadAntenna		Cable		Preamp	Limit	Over	Limit	Pol/Phase	Remark
		Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	1682.477	47.04	25.68	2.80	37.48	38.04	74.00	-35.96	HORIZONTAL	peak	
2	3280.326	50.73	28.73	4.04	36.83	46.67	74.00	-27.33	HORIZONTAL	peak	
3	4924.000	43.49	31.62	5.60	36.45	44.26	74.00	-29.74	HORIZONTAL	peak	
4	5179.049	48.60	31.73	5.61	36.30	49.64	74.00	-24.36	HORIZONTAL	peak	
5	7386.000	39.10	36.17	6.19	37.04	44.42	74.00	-29.58	HORIZONTAL	peak	
6	9848.000	39.91	38.58	6.99	36.82	48.66	74.00	-25.34	HORIZONTAL	peak	

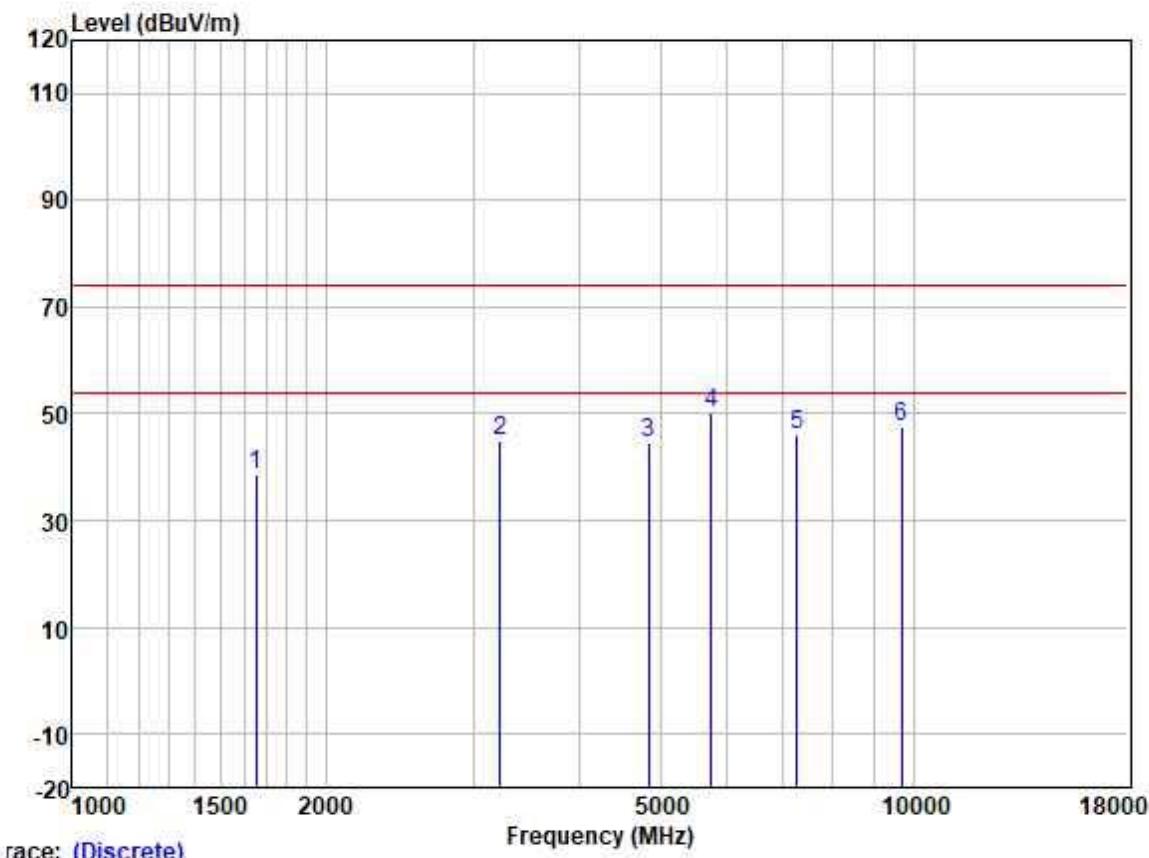
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	1653.550	47.82	25.64	2.80	37.51	38.75	74.00	-35.25	VERTICAL	peak	
2	3223.928	49.16	28.63	4.01	36.85	44.95	74.00	-29.05	VERTICAL	peak	
3	4844.000	44.03	31.50	5.45	36.49	44.49	74.00	-29.51	VERTICAL	peak	
4	5746.982	47.97	32.10	6.20	36.14	50.13	74.00	-23.87	VERTICAL	peak	
5	7266.000	41.23	35.78	6.06	36.98	46.09	74.00	-27.91	VERTICAL	peak	
6	9688.000	38.80	38.44	7.04	36.84	47.44	74.00	-26.56	VERTICAL	peak	

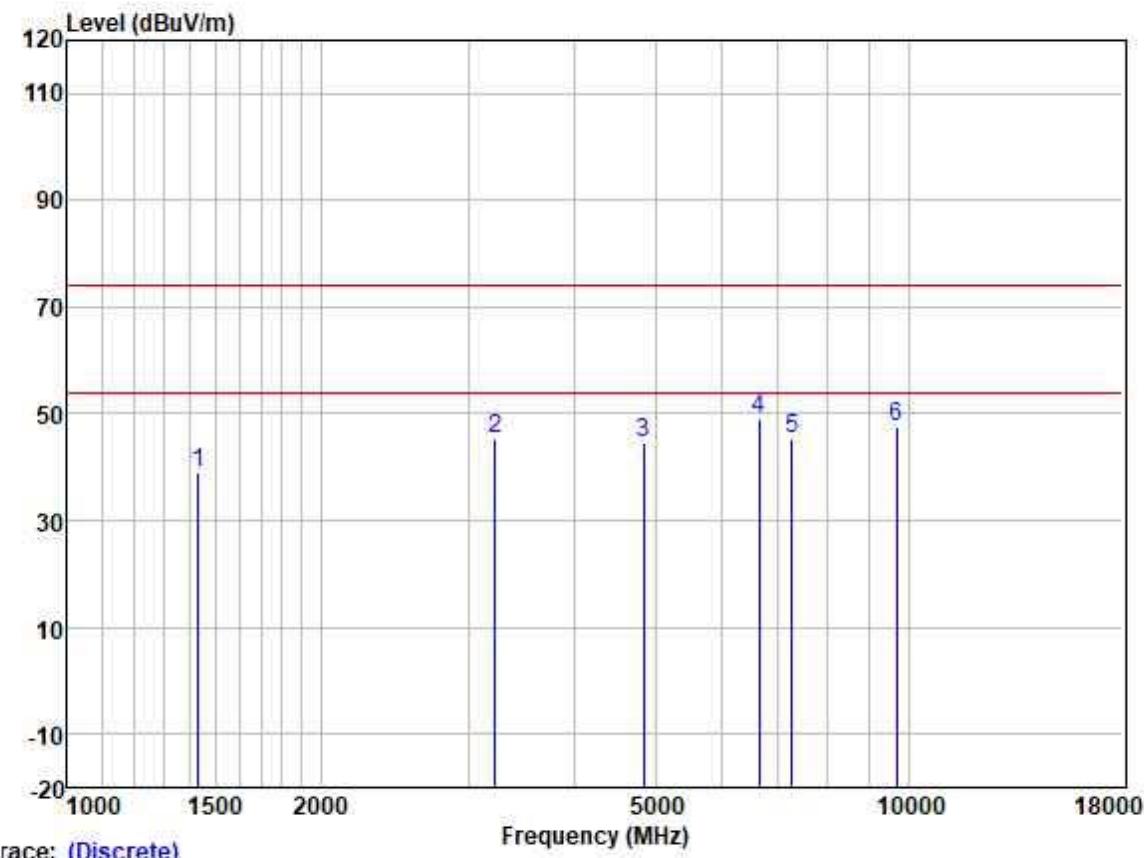
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Mode: (Discrete)

Freq	ReadAntenna		Cable Preamp		Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	Cable Loss	Preamp Factor					
1	1431.047	48.69	25.43	2.66	37.88	38.90	74.00	-35.10	HORIZONTAL	peak
2	3223.928	49.49	28.63	4.01	36.85	45.28	74.00	-28.72	HORIZONTAL	peak
3	4844.000	44.24	31.50	5.45	36.49	44.70	74.00	-29.30	HORIZONTAL	peak
4	6640.542	45.30	34.24	5.83	36.37	49.00	74.00	-25.00	HORIZONTAL	peak
5	7266.000	40.30	35.78	6.06	36.98	45.16	74.00	-28.84	HORIZONTAL	peak
6	9688.000	38.82	38.44	7.04	36.84	47.46	74.00	-26.54	HORIZONTAL	peak

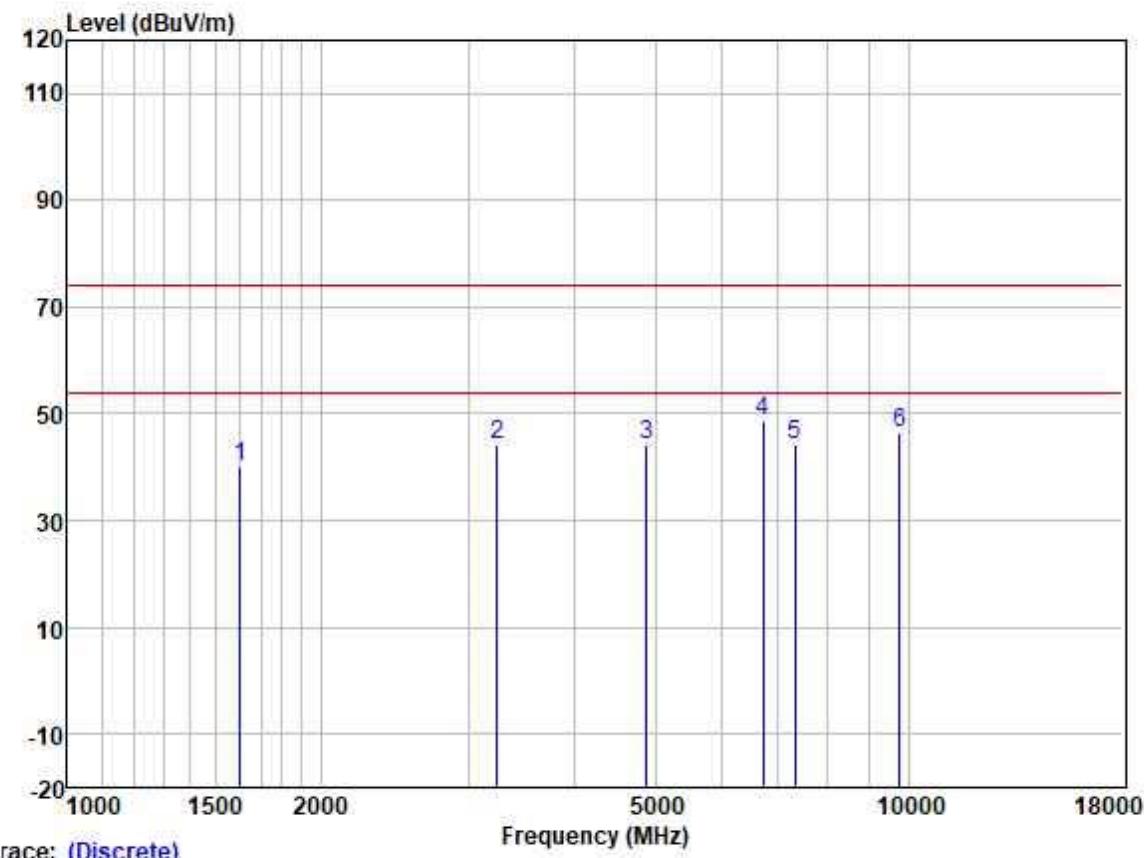
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Mode: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Loss	Factor	Level	Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB										
1 1606.441	49.48	25.59	2.80	37.58	40.29	74.00	-33.71	VERTICAL						peak
2 3242.619	48.28	28.67	4.02	36.84	44.13	74.00	-29.87	VERTICAL						peak
3 4884.000	43.57	31.56	5.52	36.48	44.17	74.00	-29.83	VERTICAL						peak
4 6717.762	44.90	34.44	5.83	36.42	48.75	74.00	-25.25	VERTICAL						peak
5 7326.000	39.19	36.00	6.13	37.01	44.31	74.00	-29.69	VERTICAL						peak
6 9768.000	37.83	38.53	7.01	36.83	46.54	74.00	-27.46	VERTICAL						peak

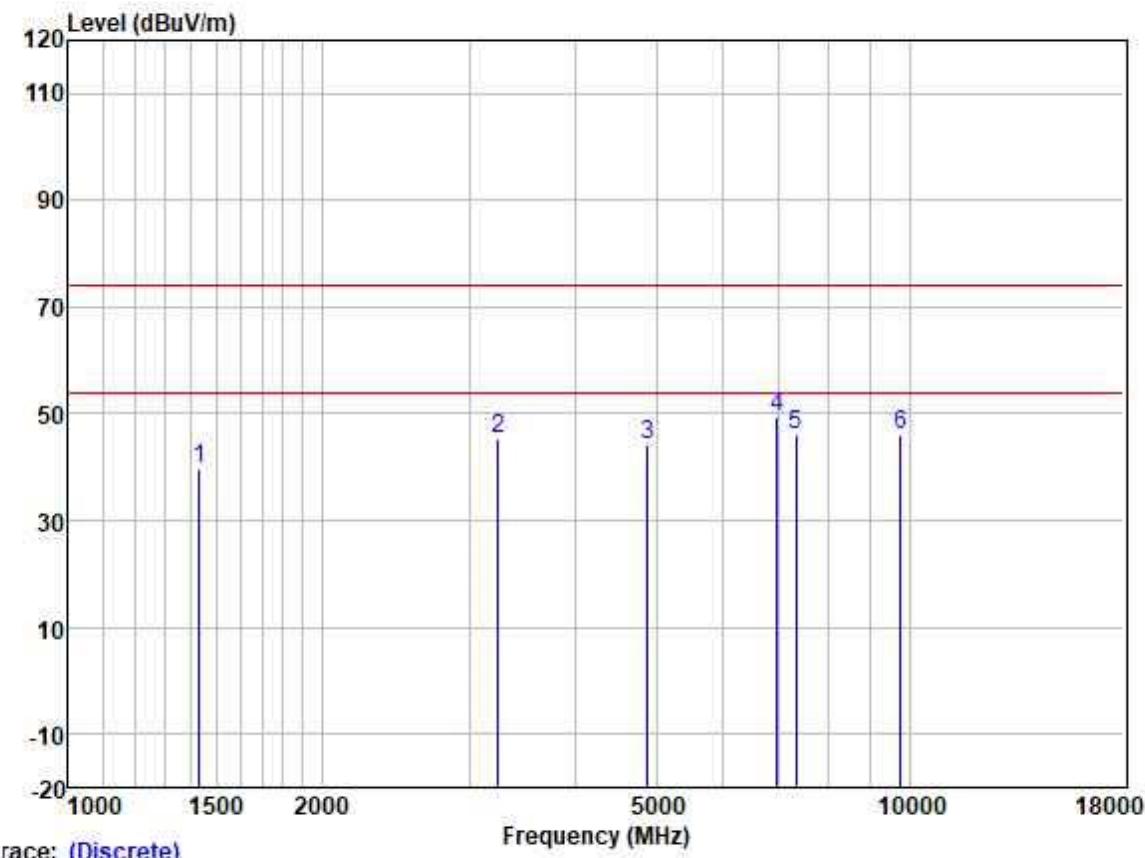
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Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Race: (Discrete)

Freq	ReadAntenna		Cable Preamp		Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	Cable Loss	Preamp Factor					
1	1431.047	49.65	25.43	2.66	37.88	39.86	74.00	-34.14	HORIZONTAL	peak
2	3242.619	49.62	28.67	4.02	36.84	45.47	74.00	-28.53	HORIZONTAL	peak
3	4884.000	43.64	31.56	5.52	36.48	44.24	74.00	-29.76	HORIZONTAL	peak
4	6954.852	45.14	34.95	5.81	36.63	49.27	74.00	-24.73	HORIZONTAL	peak
5	7326.000	40.79	36.00	6.13	37.01	45.91	74.00	-28.09	HORIZONTAL	peak
6	9768.000	37.25	38.53	7.01	36.83	45.96	74.00	-28.04	HORIZONTAL	peak

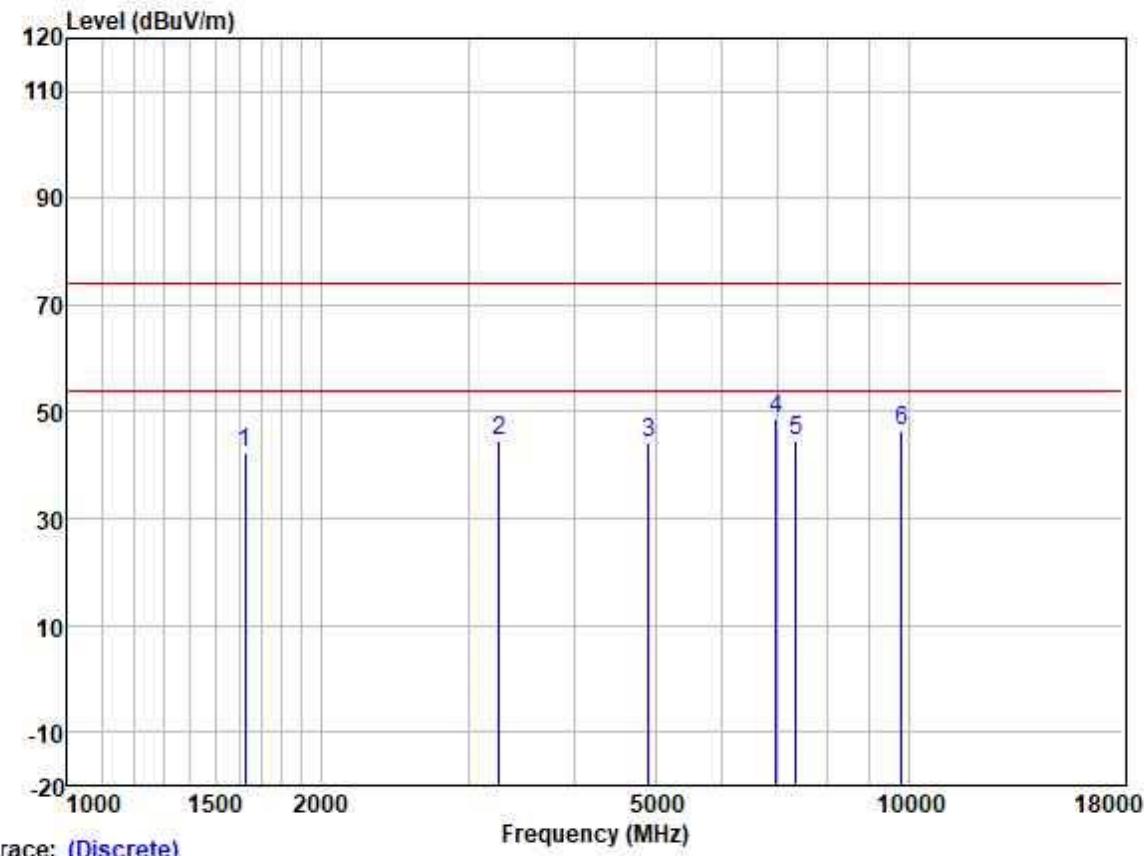
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Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Race: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit		Over	Limit	Pol/Phase	Remark
				Level	Factor				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 1625.121	51.40	25.61	2.80	37.55	42.26	74.00	-31.74	VERTICAL	peak
2 3261.418	48.85	28.70	4.03	36.84	44.74	74.00	-29.26	VERTICAL	peak
3 4904.000	43.50	31.58	5.55	36.46	44.17	74.00	-29.83	VERTICAL	peak
4 6954.852	44.39	34.95	5.81	36.63	48.52	74.00	-25.48	VERTICAL	peak
5 7356.000	39.38	36.06	6.15	37.03	44.56	74.00	-29.44	VERTICAL	peak
6 9808.000	37.63	38.56	7.00	36.83	46.36	74.00	-27.64	VERTICAL	peak

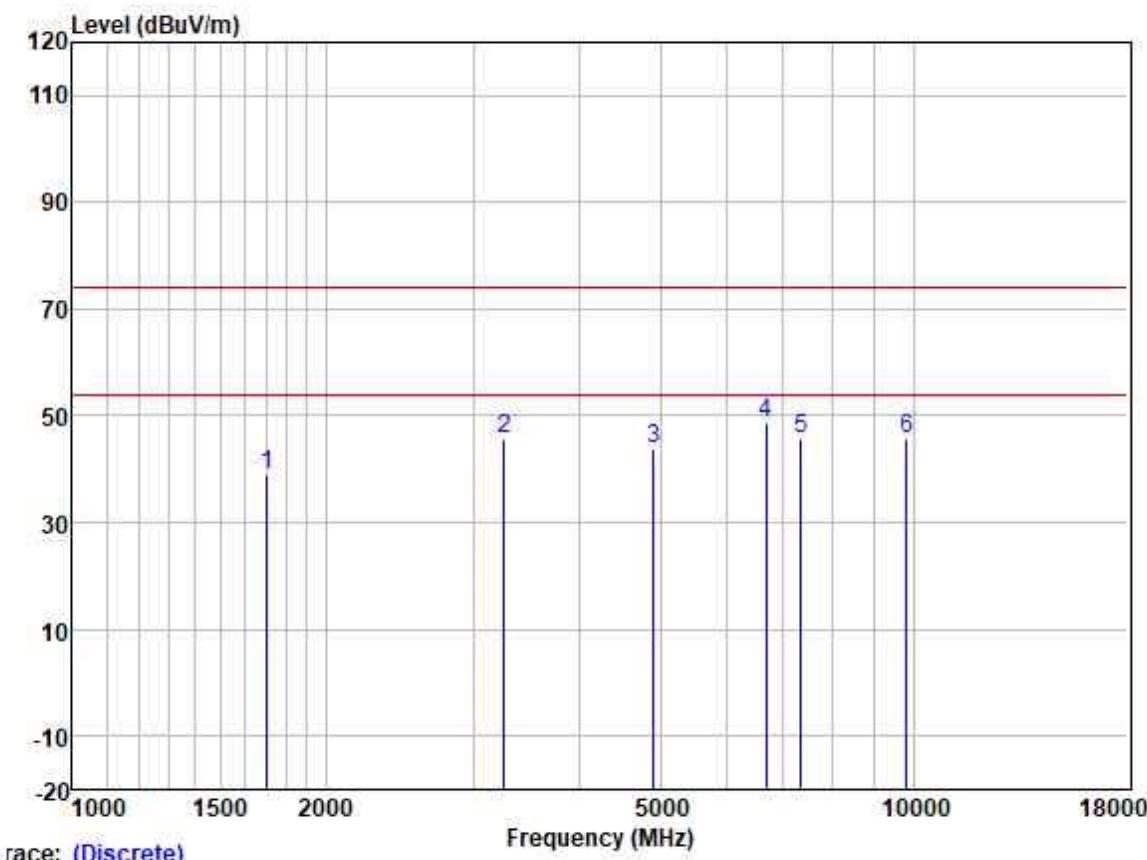
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Trace: (Discrete)	ReadAntenna		Cable Preamp		Limit	Over	Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level	Line	Line	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1702.042	48.02	25.72	2.80	37.46	39.08	74.00	-34.92	HORIZONTAL	peak
2	3261.418	49.99	28.70	4.03	36.84	45.88	74.00	-28.12	HORIZONTAL	peak
3	4904.000	43.31	31.58	5.55	36.46	43.98	74.00	-30.02	HORIZONTAL	peak
4	6679.040	44.90	34.33	5.83	36.39	48.67	74.00	-25.33	HORIZONTAL	peak
5	7356.000	40.37	36.06	6.15	37.03	45.55	74.00	-28.45	HORIZONTAL	peak
6	9808.000	36.95	38.56	7.00	36.83	45.68	74.00	-28.32	HORIZONTAL	peak

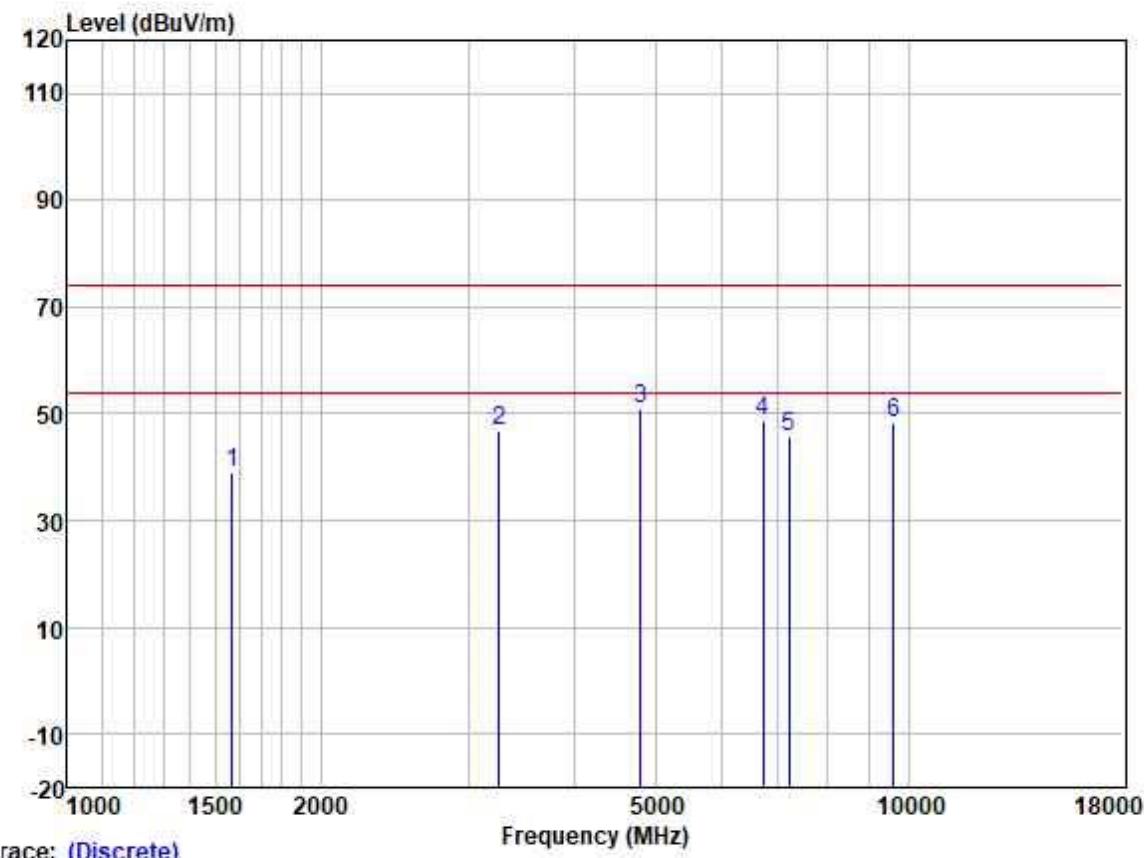
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Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low



Mode: (Discrete)

Order	Freq	ReadAntenna		Cable		Preamp	Loss	Factor	Level	Limit	Line	Over	Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB										
1	1569.721	48.37	25.55	2.80	37.62	39.10	74.00	-34.90	VERTICAL					peak	
2	3261.418	51.05	28.70	4.03	36.84	46.94	74.00	-27.06	VERTICAL					peak	
3	4804.000	50.67	31.42	5.40	36.51	50.98	74.00	-23.02	VERTICAL					peak	
4	6717.762	44.68	34.44	5.83	36.42	48.53	74.00	-25.47	VERTICAL					peak	
5	7206.000	41.19	35.54	5.98	36.92	45.79	74.00	-28.21	VERTICAL					peak	
6	9608.000	39.77	38.37	7.07	36.86	48.35	74.00	-25.65	VERTICAL					peak	

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