



## TEST REPORT

**Application No.:** GZCR2111021436AT  
**Applicant:** Razer Inc  
**Address of Applicant:** 9 Pasteur, Suite 100, Irvine, CA92618, USA  
**Manufacturer:** Razer (Asia-Pacific) Pte Ltd  
**Address of Manufacturer:** Razer SEA HQ, 1 one-north Crescent, #02-01, Singapore 138538  
**Factory:** Razer Technology and Development (Shenzhen) Co., Ltd  
**Address of Factory:** East Wing, 3rd Floor, Block 2, Phase 1 of Vision Shenzhen Business Park, Keji South Road, Hi-Tech Industrial Park, Shenzhen 518057, China

**Equipment Under Test (EUT):**

**EUT Name:** SMART LAMP

**Model No.:** RZ43-0407, RZ43-0407XXXX-XXXX (X can be 0-9 or A-Z) \*

\* Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

**Trade Mark:** RAZER

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

**Date of Receipt:** 2021-12-29

**Date of Test:** 2022-01-02 to 2022-01-12

**Date of Issue:** 2023-08-16

<b>Test Result:</b>	Pass*
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\* In the configuration tested, the EUT complied with the standards specified above.

This report supersedes our previous report GZCR211102143602, issued on 2022-07-04, which is hereby deemed null and void.

Ricky Liu  
Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-07-04		Original
02		2023-08-16		Updated the data

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



## 2 Test Summary

<b>Radio Spectrum Technical Requirement</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
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

<b>Radio Spectrum Matter Part</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
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
Conducted Peak Output Power		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.

**Declaration of EUT Family Grouping:**

Model No.: RZ43-0407, RZ43-0407XXXX-XXXX (X can be 0-9 or A-Z)

Only the model RZ43-0407 was tested, since according to the declaration from the applicant, the electrical circuit design, PCB layout, components used and internal wiring and functions were identical for the above models, with only difference on model name and /or product customization including and not limited to color and printed design.

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## 4 General Information

### 4.1 Details of E.U.T.

Power Supply:	AC Adapter:
	Model: A122-0502000ID
	Input: 100-240V 50/60Hz 0.4A
	Output: 5V 2A 10W
Cable(s):	DC cable 146cm unshielded
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz; 802.11n(HT40): 2422MHz to 2452MHz
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):7
Channel Spacing:	5MHz
Antenna Type:	FPC Antenna
Antenna Gain:	2.24dBi declared by applicant

### 4.2 Description of Support Units

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



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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	±5.08dB (1GHz-6GHz); ±5.14dB (above 6GHz)
Radiated Spurious Emissions (Below 1GHz)	±5.06dB (3m);±4.46dB (10m)
Radiated Spurious Emissions (Above 1GHz)	±5.08dB (1GHz-6GHz); ±5.14dB (above 6GHz)
Duty Cycle	± 0.37%

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## 4.4 Test Location

All tests were performed at:

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198 Kezhu Road, Scitech 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.

- **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, IEC60068-2-27 and Rules of procedure IEC60068-2-27, and the relevant IEC60068-2-27 Operational documents.



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**4.6 Deviation from Standards**

None

**4.7 Abnormalities from Standard Conditions**

None

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## 5 Equipment List

<b>Conducted Emissions at AC Power Line (150kHz-30MHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2021-12-23	2022-12-22
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2021-09-24	2022-09-23
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR4	EMC2221	2021-06-01	2022-05-31

<b>Conducted Peak Output Power</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01

<b>Minimum 6dB Bandwidth</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

<b>Power Spectrum Density</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
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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**Conducted Band Edges Measurement**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
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	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
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
EMI Test Receiver(20Hz-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
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-12-17	2022-12-16
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-16	2022-09-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2021-07-29	2022-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2021-08-30	2022-08-29

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**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	2021-12-17	2022-12-16
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
High Pass Filter (915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2021-12-17	2022-12-16
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25
Active Loop Antenna-GRAY	EMCO	6502	EMC0523	2020-05-26	2022-05-25

**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	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
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-12-17	2022-12-16
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-16	2022-09-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2021-07-29	2022-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27

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Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2021-08-30	2022-08-29
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<b>Duty Cycle</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
EXA Signal Analzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

<b>General used equipment</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
DMM	Fluke	73	EMC0006	2021-07-05	2022-07-05
DMM	Fluke	73	EMC0007	2021-07-05	2022-07-05



## 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 2.24 dBi.

Antenna location: Refer to internal photo.

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## 7 Radio Spectrum Matter Test Results

### 7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C      Humidity: 48.6 % RH      Atmospheric Pressure: 1003 mbar

#### 7.1.2 Test Mode Description

Pre-scan / Mode Final test	Mode Code	Description
Final test	01	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.

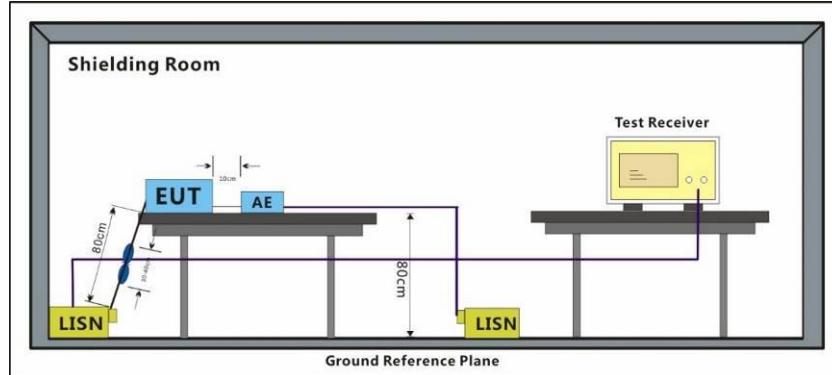
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### 7.1.3 Test Setup Diagram



#### 7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50µH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

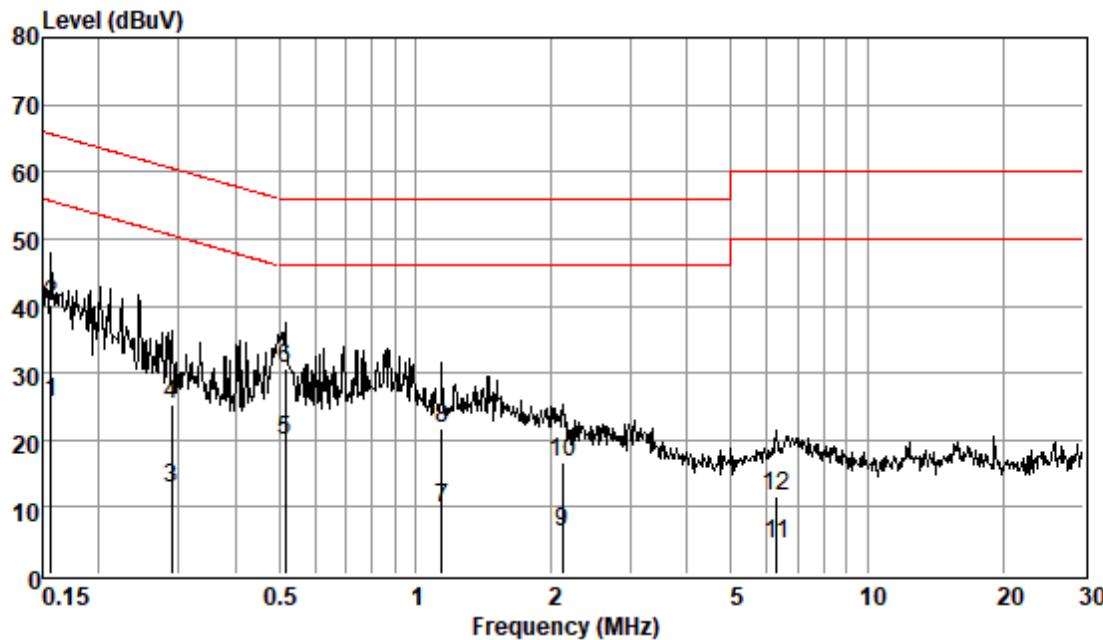
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

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Test Mode: 01; Line: Live line



Pol :LINE

Mode :

Model :

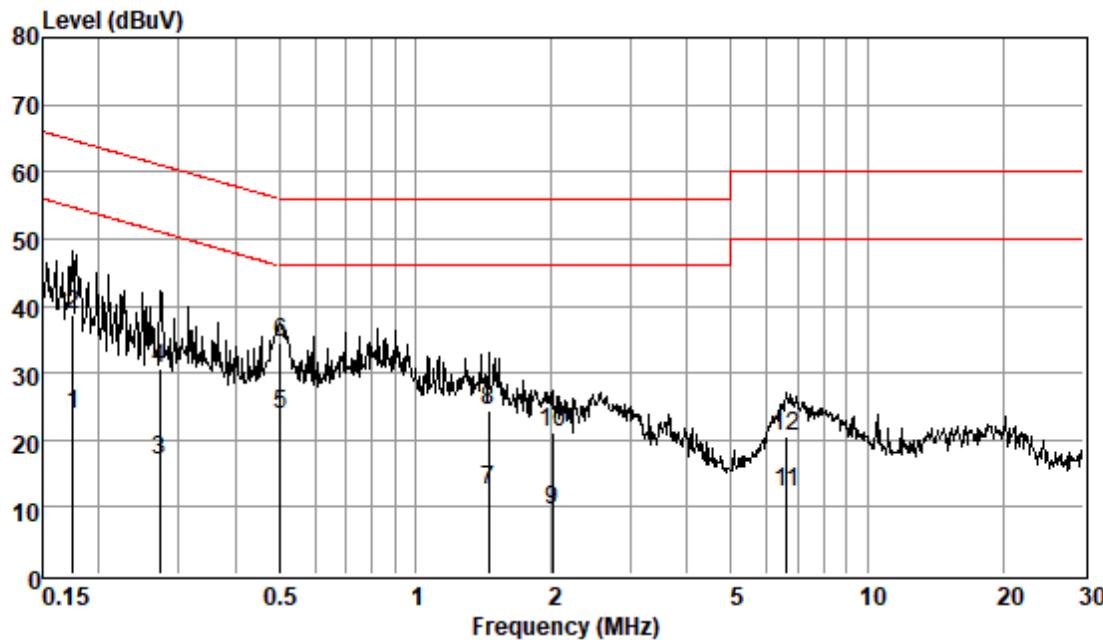
Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	16.02	0.06	9.62	25.70	55.65	-29.95	Average
0.16	30.59	0.06	9.62	40.27	65.65	-25.38	QP
0.29	2.99	0.06	9.62	12.67	50.54	-37.87	Average
0.29	15.48	0.06	9.62	25.16	60.54	-35.38	QP
0.52	10.29	0.07	9.63	19.99	46.00	-26.01	Average
0.52	21.06	0.07	9.63	30.76	56.00	-25.24	QP
1.15	0.17	0.08	9.61	9.86	46.00	-36.14	Average
1.15	12.05	0.08	9.61	21.74	56.00	-34.26	QP
2.12	-3.41	0.12	9.62	6.33	46.00	-39.67	Average
2.12	6.99	0.12	9.62	16.73	56.00	-39.27	QP
6.29	-5.53	0.20	9.67	4.34	50.00	-45.66	Average
6.29	1.86	0.20	9.67	11.73	60.00	-48.27	QP

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Test Mode: 01; Line: Neutral Line



Pol :NEUTRAL

Mode :

Model :

Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.17	14.26	0.06	9.55	23.87	54.72	-30.85	Average
0.17	28.92	0.06	9.55	38.53	64.72	-26.19	QP
0.27	7.34	0.06	9.55	16.95	51.03	-34.08	Average
0.27	20.97	0.06	9.55	30.58	61.03	-30.45	QP
0.50	14.08	0.07	9.55	23.70	46.00	-22.30	Average
0.50	24.87	0.07	9.55	34.49	56.00	-21.51	QP
1.46	2.83	0.10	9.55	12.48	46.00	-33.52	Average
1.46	14.83	0.10	9.55	24.48	56.00	-31.52	QP
2.01	-0.20	0.12	9.54	9.46	46.00	-36.54	Average
2.01	11.45	0.12	9.54	21.11	56.00	-34.89	QP
6.63	2.48	0.20	9.58	12.26	50.00	-37.74	Average
6.63	10.86	0.20	9.58	20.64	60.00	-39.36	QP

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**7.2 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 $\geq 50$ hopping channels
	0.25 for $25 \leq$ hopping channels $< 50$
	1 for digital modulation
2400-2483.5	1 for $\geq 75$ 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

**7.2.1 E.U.T. Operation**

Operating Environment:

Temperature: 22.0 °C

Humidity: 53.5 % RH

Atmospheric Pressure: 1003 mbar

**7.2.2 Test Mode Description**

Pre-scan / Mode Final test	Mode Code	Description
Final test	01	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.

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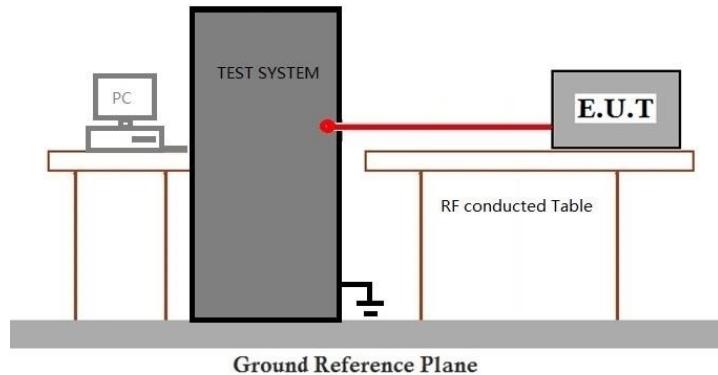
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**7.2.3 Test Setup Diagram****7.2.4 Measurement Procedure and Data**

cable loss=0.9dB

Please Refer to Appendix for Details

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### 7.3 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

#### 7.3.1 E.U.T. Operation

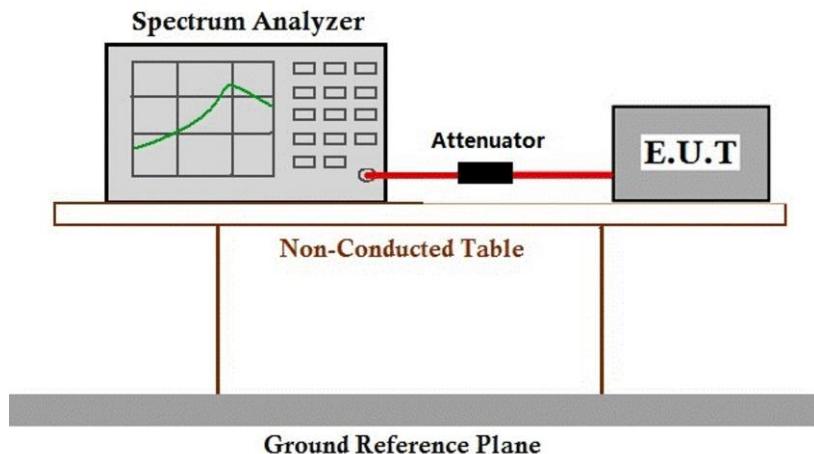
Operating Environment:

Temperature: 22.0 °C Humidity: 53.5 % RH Atmospheric Pressure: 1003 mbar

#### 7.3.2 Test Mode Description

Pre-scan / Mode	Description	
Final test	Code	
Final test	01	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.

#### 7.3.3 Test Setup Diagram



#### 7.3.4 Measurement Procedure and Data

cable loss=0.9dB

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## 7.4 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

### 7.4.1 E.U.T. Operation

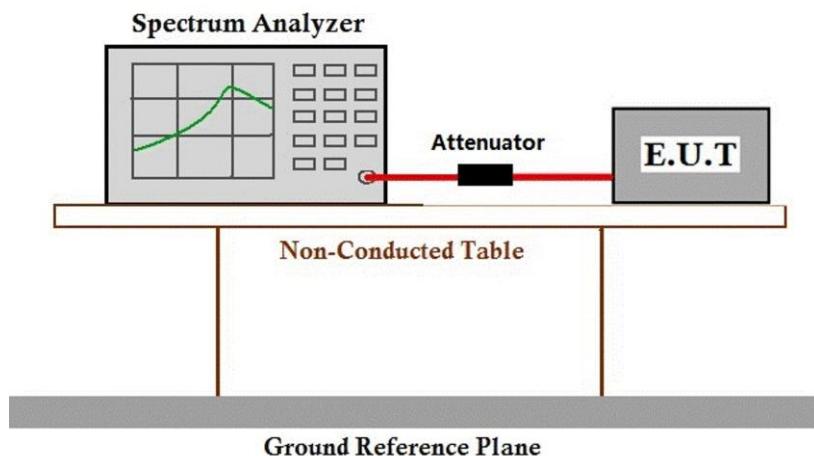
Operating Environment:

Temperature: 22.0 °C Humidity: 53.5 % RH Atmospheric Pressure: 1003 mbar

### 7.4.2 Test Mode Description

Pre-scan / Mode	Description	
Final test	Code	
Final test	01	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.

### 7.4.3 Test Setup Diagram



### 7.4.4 Measurement Procedure and Data

cable loss=0.9dB

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## 7.5 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)).

### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C      Humidity: 53.5 % RH      Atmospheric Pressure: 1003 mbar

### 7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	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.

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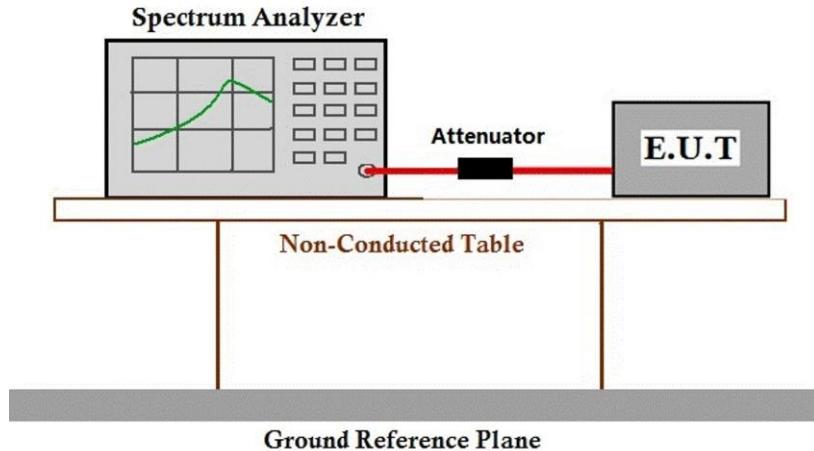
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**7.5.3 Test Setup Diagram****7.5.4 Measurement Procedure and Data**

cable loss=0.9dB

Please Refer to Appendix for Details



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## 7.6 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)).

### 7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 53.5 % RH Atmospheric Pressure: 1003 mbar

### 7.6.2 Test Mode Description

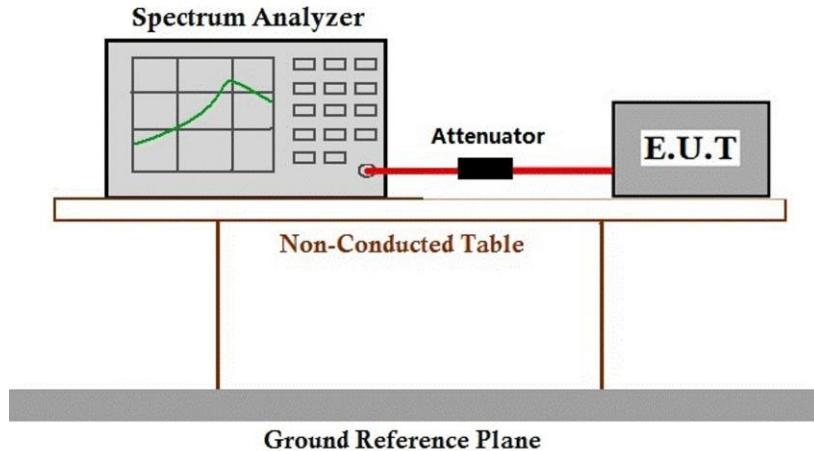
Pre-scan / Final test	Mode Code	Description
Final test	01	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of 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.



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

cable loss=0.9dB

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**7.7 Radiated Emissions which fall in the restricted bands**

Test Requirement 47 CFR Part 15, Subpart C 15.205 &amp; 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.

**7.7.1 E.U.T. Operation**

Operating Environment:

Temperature: 22.4 °C      Humidity: 51.0 % RH      Atmospheric Pressure: 1003 mbar

**7.7.2 Test Mode Description**

Pre-scan / Mode	Final test	Description
		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	01	

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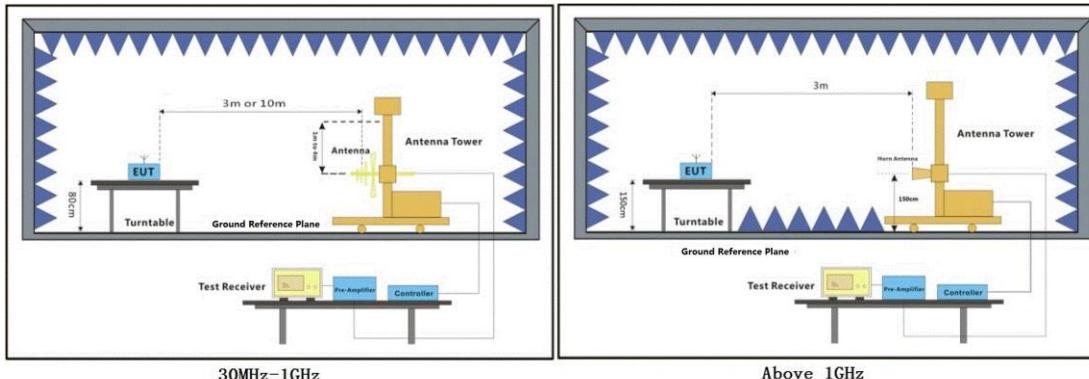


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## 7.7.3 Test Setup Diagram



## 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.
- 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.
- 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 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

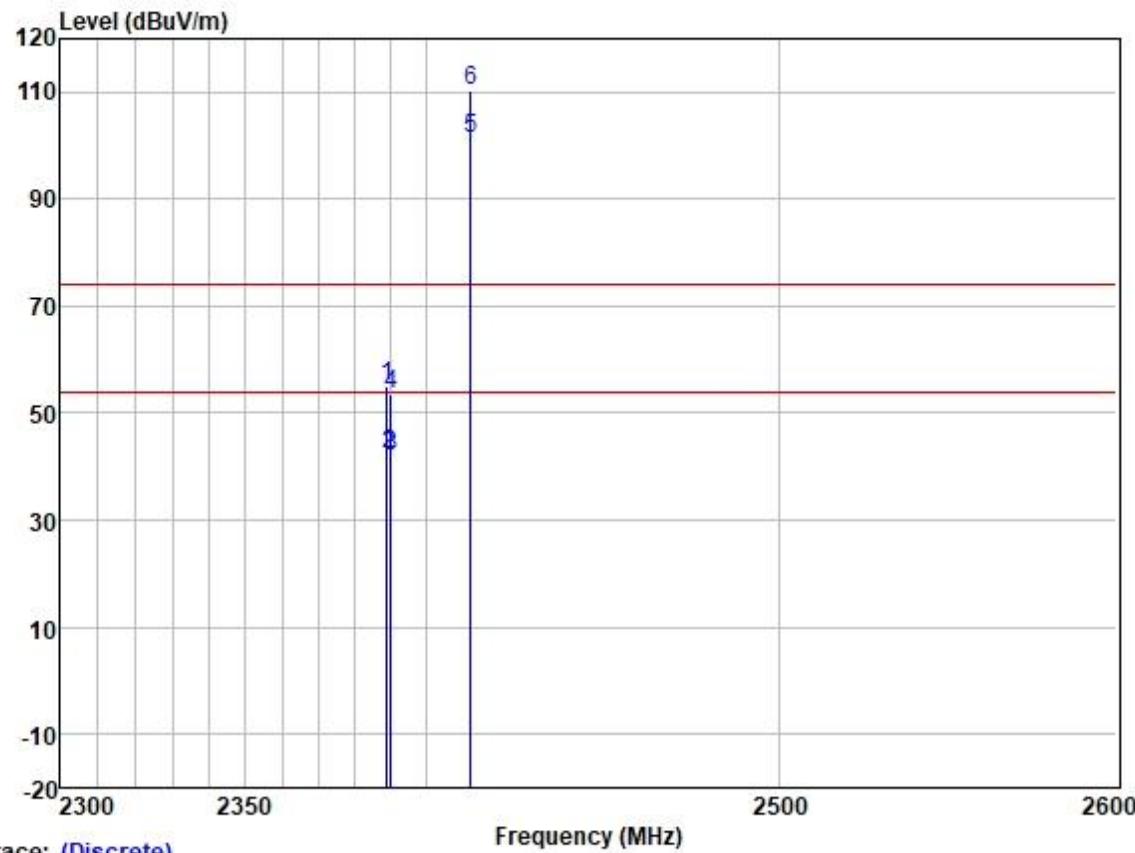
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

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Test Mode: 01; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Mode: (Discrete)

Race:	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	2388.758	61.83	27.33	3.48	37.59	55.05	74.00	-18.95	HORIZONTAL	Peak
2	2389.605	49.19	27.33	3.48	37.59	42.41	54.00	-11.59	HORIZONTAL	Average
3	2390.000	48.76	27.33	3.48	37.59	41.98	54.00	-12.02	HORIZONTAL	Average
4	2390.000	60.51	27.33	3.48	37.59	53.73	74.00	-20.27	HORIZONTAL	Peak
5 *	2412.000	108.20	27.38	3.47	37.59	101.46	54.00	47.46	HORIZONTAL	Average
6 *	2412.000	116.97	27.38	3.47	37.59	110.23	74.00	36.23	HORIZONTAL	Peak

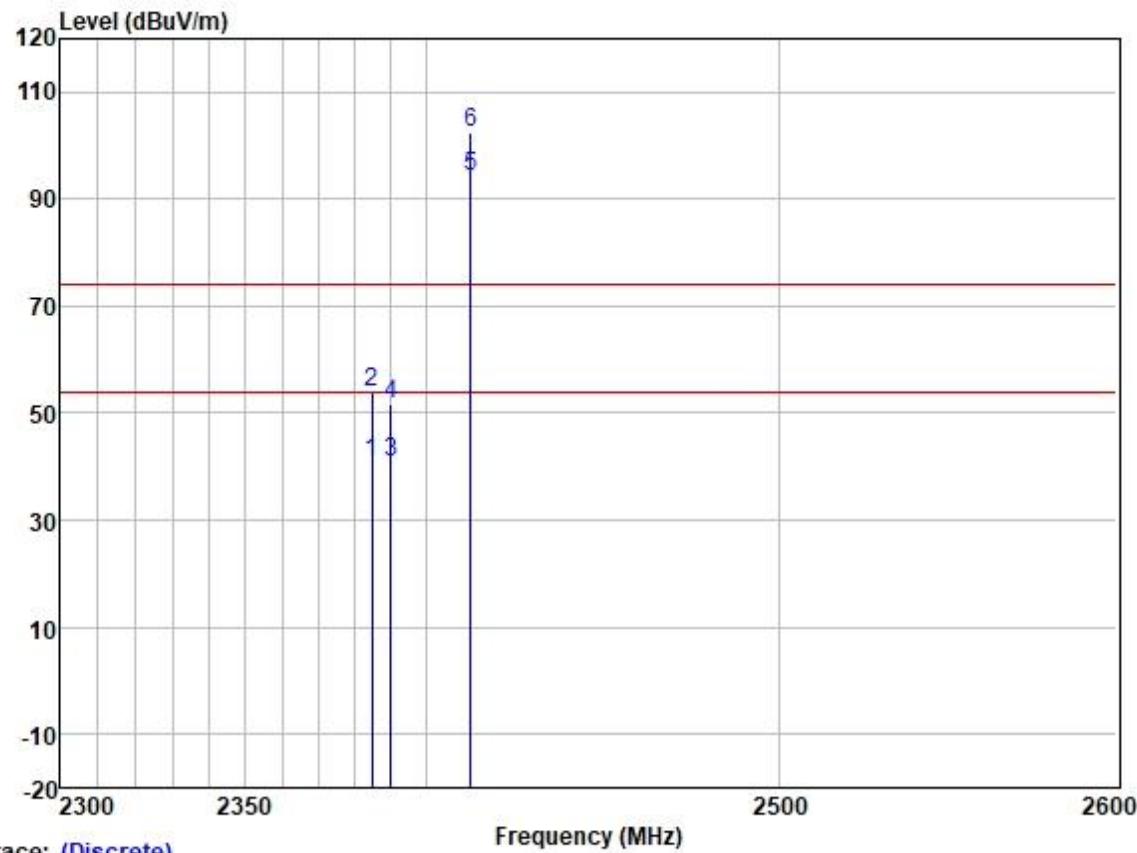
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Test Mode: 01; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss					
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2384.528	47.78	27.33	3.48	37.60	40.99	54.00	-13.01	VERTICAL Average
2	2384.528	60.56	27.33	3.48	37.60	53.77	74.00	-20.23	VERTICAL Peak
3	2390.000	47.48	27.33	3.48	37.59	40.70	54.00	-13.30	VERTICAL Average
4	2390.000	58.55	27.33	3.48	37.59	51.77	74.00	-22.23	VERTICAL Peak
5 *	2412.000	101.01	27.38	3.47	37.59	94.27	54.00	40.27	VERTICAL Average
6 *	2412.000	109.27	27.38	3.47	37.59	102.53	74.00	28.53	VERTICAL Peak

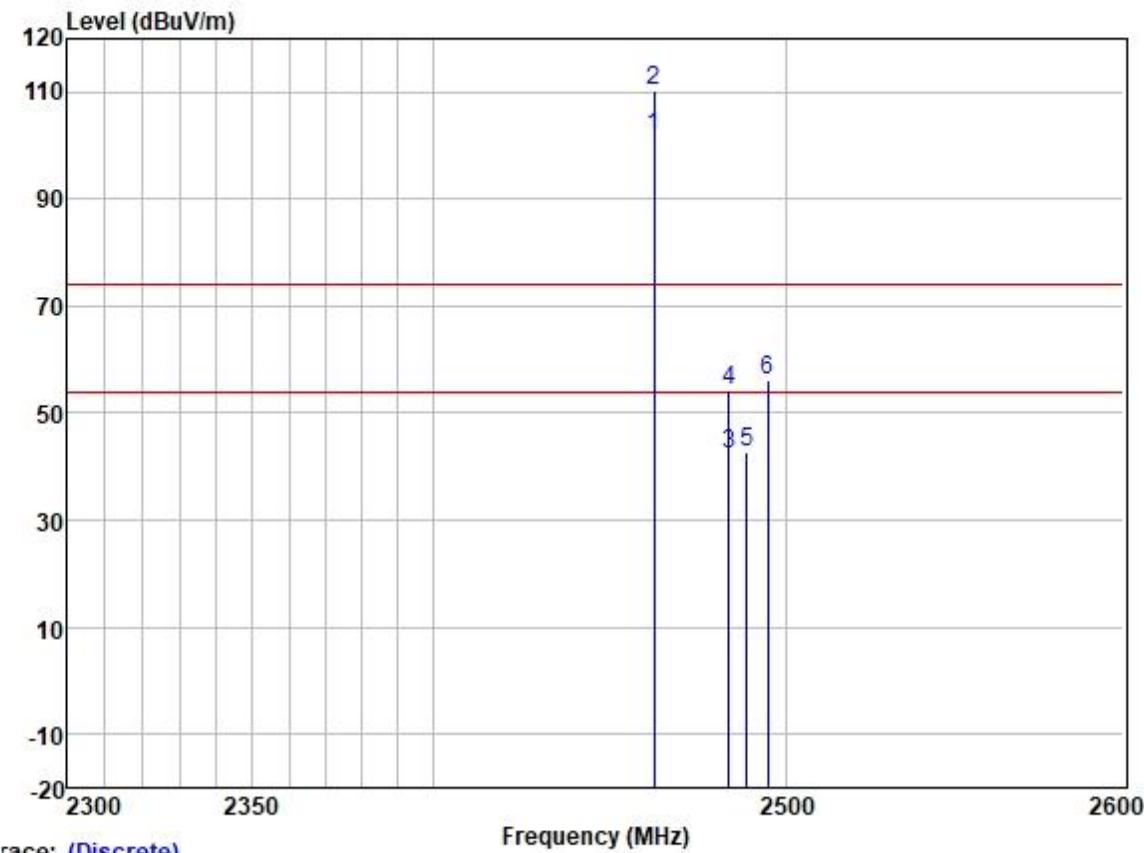
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

Freq MHz	ReadAntenna		Cable		Preamp Level	Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor					
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 * 2462.000	108.26	27.45	3.50	37.58	101.63	54.00	47.63	HORIZONTAL	Average
2 * 2462.000	117.06	27.45	3.50	37.58	110.43	74.00	36.43	HORIZONTAL	Peak
3 2483.500	49.05	27.48	3.53	37.57	42.49	54.00	-11.51	HORIZONTAL	Average
4 2483.500	60.81	27.48	3.53	37.57	54.25	74.00	-19.75	HORIZONTAL	Peak
5 2488.662	49.25	27.48	3.53	37.56	42.70	54.00	-11.30	HORIZONTAL	Average
6 2494.602	62.62	27.49	3.47	37.56	56.02	74.00	-17.98	HORIZONTAL	Peak

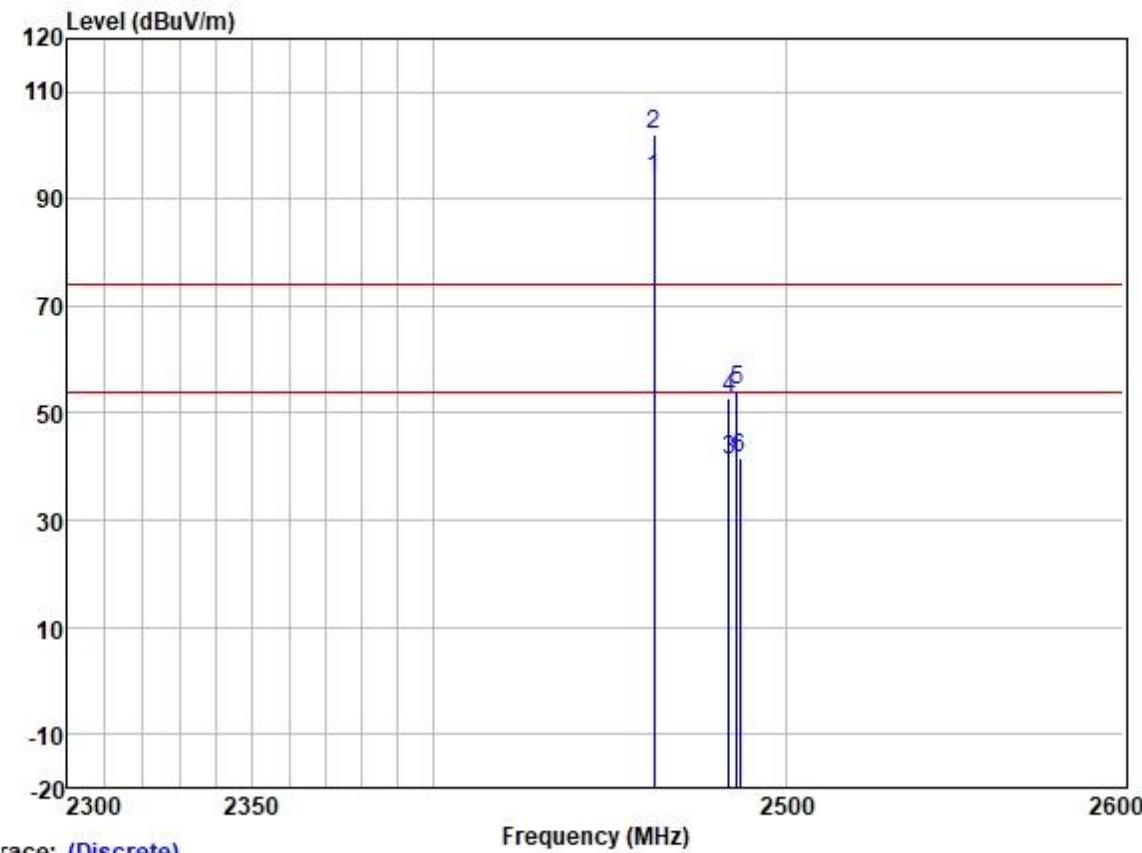
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Test Mode: 01; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

Freq MHz	ReadAntenna	Cable	Preamp	Limit Line dBuV/m	Over Line dB	Pol/Phase	Remark
	Level MHz	Factor	Loss Factor				
	dBuV	dB/m	dB	dB	dBuV/m	dB	
1 * 2462.000	100.54	27.45	3.50	37.58	93.91	54.00	39.91 VERTICAL Average
2 * 2462.000	108.67	27.45	3.50	37.58	102.04	74.00	28.04 VERTICAL Peak
3 2483.500	47.69	27.48	3.53	37.57	41.13	54.00	-12.87 VERTICAL Average
4 2483.500	59.39	27.48	3.53	37.57	52.83	74.00	-21.17 VERTICAL Peak
5 2485.647	60.80	27.48	3.53	37.57	54.24	74.00	-19.76 VERTICAL Peak
6 2486.651	47.99	27.48	3.53	37.57	41.43	54.00	-12.57 VERTICAL Average

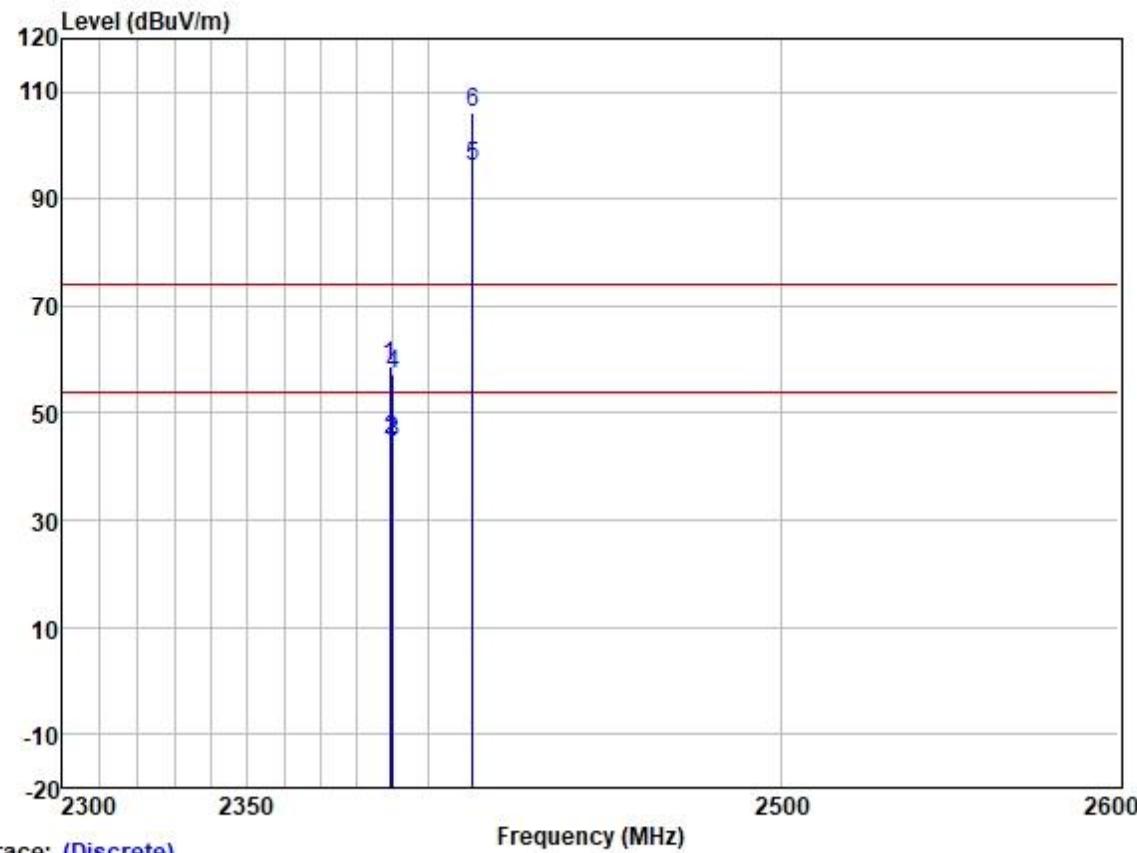
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Mode: (Discrete)

ReadAntenna Freq	Cable		Preamp Level	Limit Line	Over Line	Pol/Phase	Remark
	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2389.000	65.55	27.33	3.48	37.59	58.77	74.00 -15.23 HORIZONTAL Peak
2	2389.726	51.64	27.33	3.48	37.59	44.86	54.00 -9.14 HORIZONTAL Average
3	2390.000	51.31	27.33	3.48	37.59	44.53	54.00 -9.47 HORIZONTAL Average
4	2390.000	64.15	27.33	3.48	37.59	57.37	74.00 -16.63 HORIZONTAL Peak
5 *	2412.000	102.99	27.38	3.47	37.59	96.25	54.00 42.25 HORIZONTAL Average
6 *	2412.000	112.80	27.38	3.47	37.59	106.06	74.00 32.06 HORIZONTAL Peak

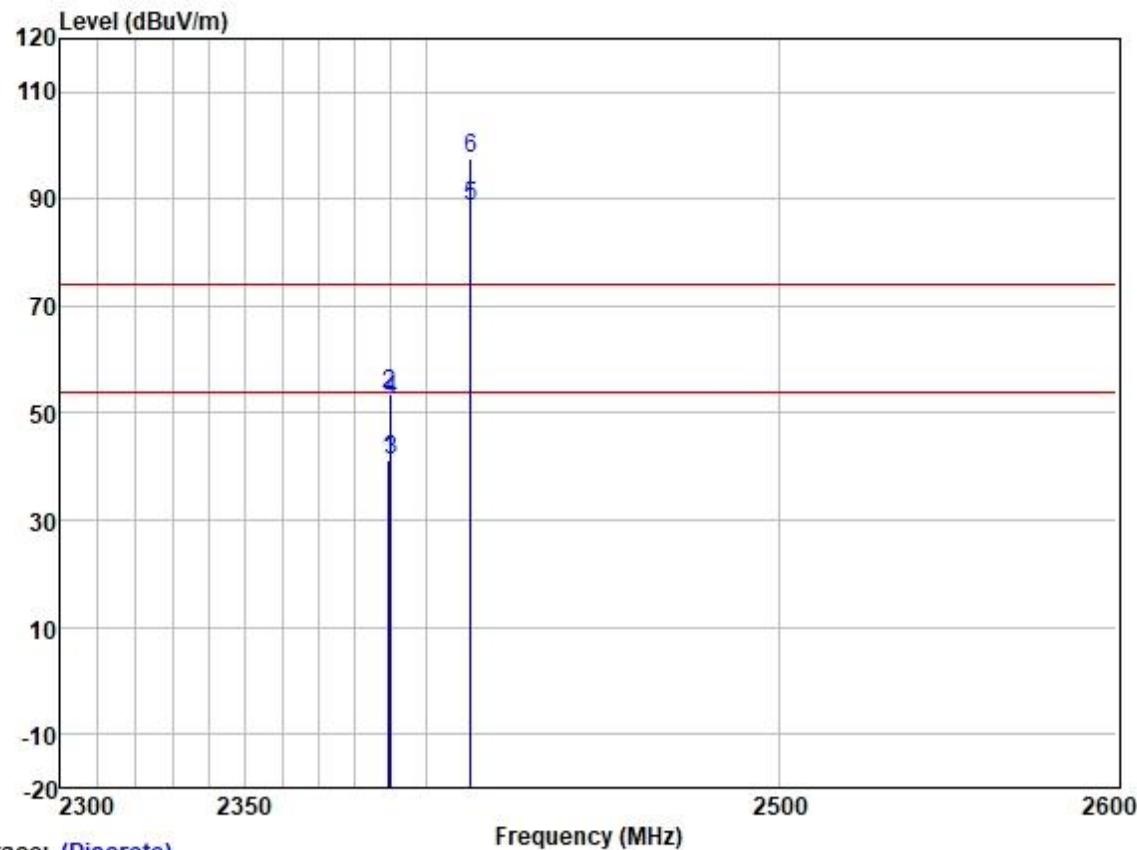
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Test Mode: 01; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB						
1	2389.363	48.12	27.33	3.48	37.59	41.34	54.00	-12.66	VERTICAL	Average
2	2389.484	60.30	27.33	3.48	37.59	53.52	74.00	-20.48	VERTICAL	Peak
3	2390.000	47.84	27.33	3.48	37.59	41.06	54.00	-12.94	VERTICAL	Average
4	2390.000	59.18	27.33	3.48	37.59	52.40	74.00	-21.60	VERTICAL	Peak
5 *	2412.000	95.31	27.38	3.47	37.59	88.57	54.00	34.57	VERTICAL	Average
6 *	2412.000	104.49	27.38	3.47	37.59	97.75	74.00	23.75	VERTICAL	Peak

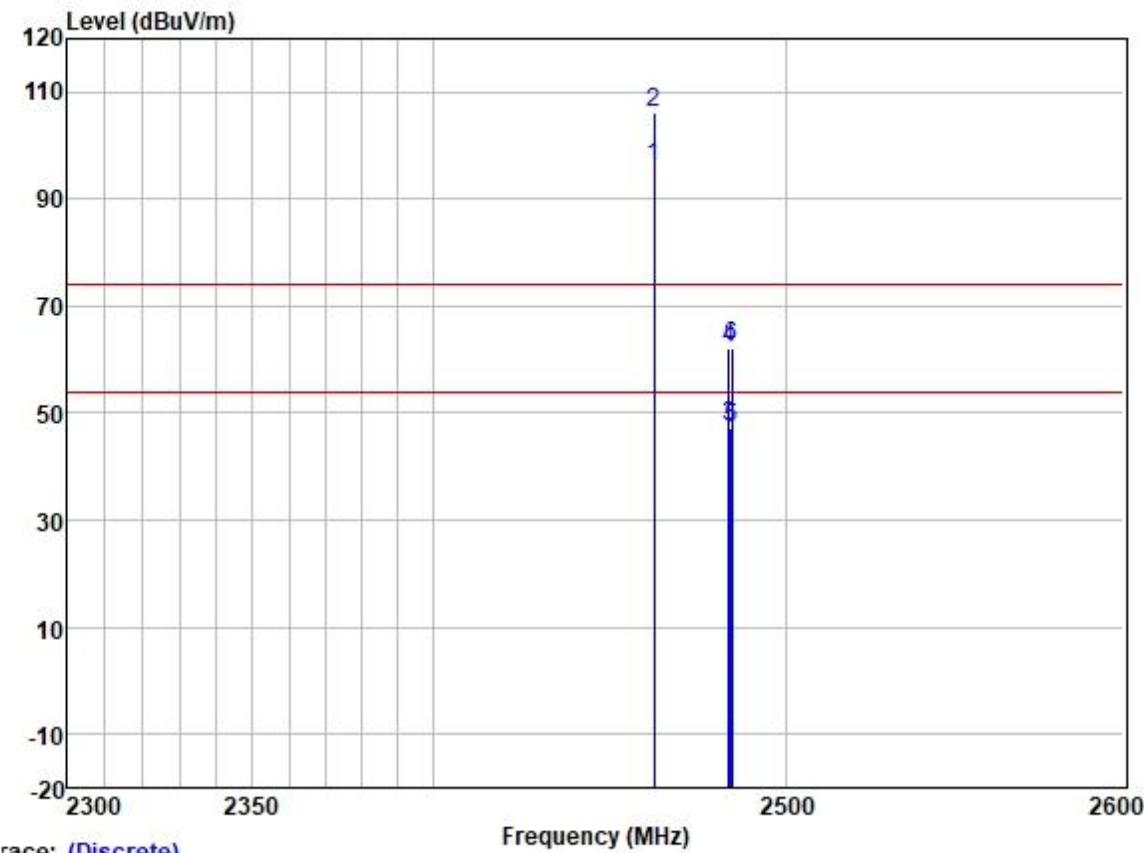
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 *	2462.000	102.78	27.45	3.50	37.58	96.15	54.00 42.15 HORIZONTAL Average
2 *	2462.000	112.94	27.45	3.50	37.58	106.31	74.00 32.31 HORIZONTAL Peak
3	2483.500	54.29	27.48	3.53	37.57	47.73	54.00 -6.27 HORIZONTAL Average
4	2483.500	68.79	27.48	3.53	37.57	62.23	74.00 -11.77 HORIZONTAL Peak
5	2483.990	53.59	27.48	3.53	37.57	47.03	54.00 -6.97 HORIZONTAL Average
6	2484.191	68.88	27.48	3.53	37.57	62.32	74.00 -11.68 HORIZONTAL Peak

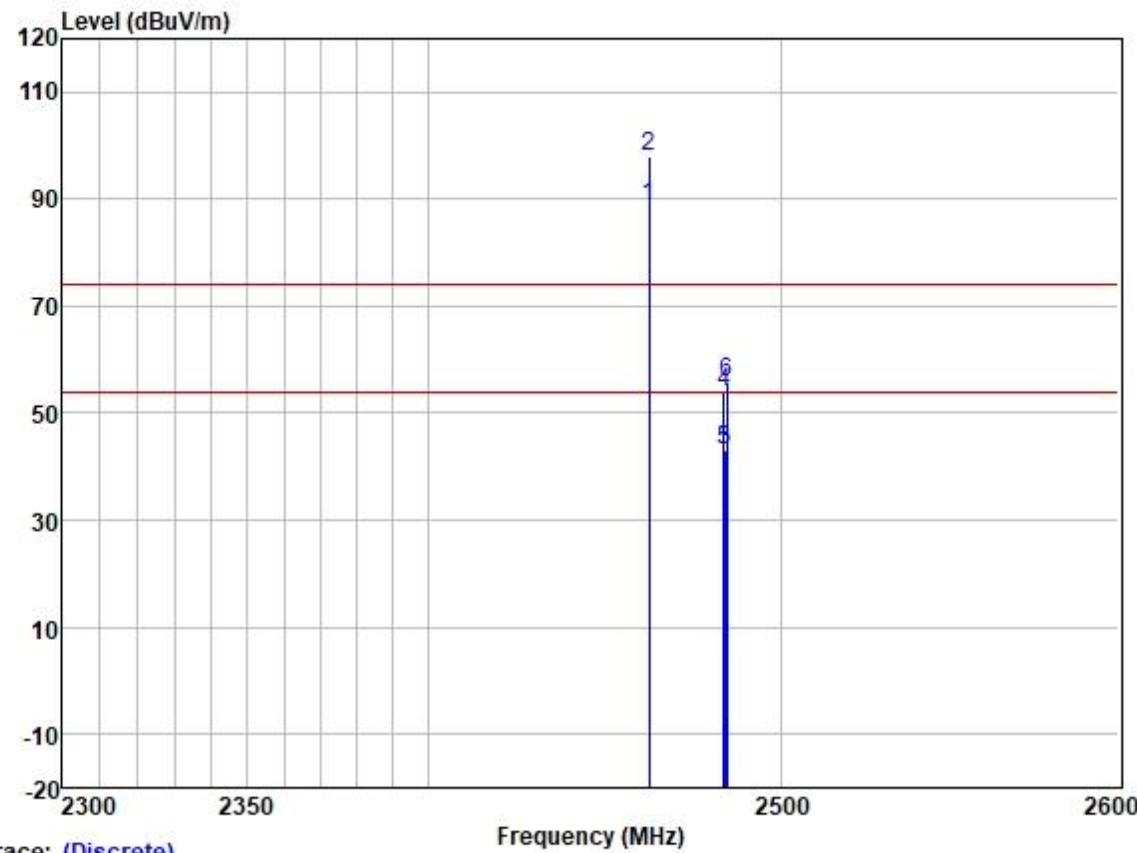
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Test Mode: 01; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Freq MHz	ReadAntenna	Cable	Preamp	Limit Line	Over Line	Pol/Phase	Remark
	Level MHz	Factor	Loss dB				
	dBuV	dB/m					
1 * 2462.000	95.38	27.45	3.50	37.58	88.75	54.00	34.75 VERTICAL Average
2 * 2462.000	104.45	27.45	3.50	37.58	97.82	74.00	23.82 VERTICAL Peak
3 2483.500	49.79	27.48	3.53	37.57	43.23	54.00	-10.77 VERTICAL Average
4 2483.500	60.66	27.48	3.53	37.57	54.10	74.00	-19.90 VERTICAL Peak
5 2483.790	49.63	27.48	3.53	37.57	43.07	54.00	-10.93 VERTICAL Average
6 2484.241	62.19	27.48	3.53	37.57	55.63	74.00	-18.37 VERTICAL Peak

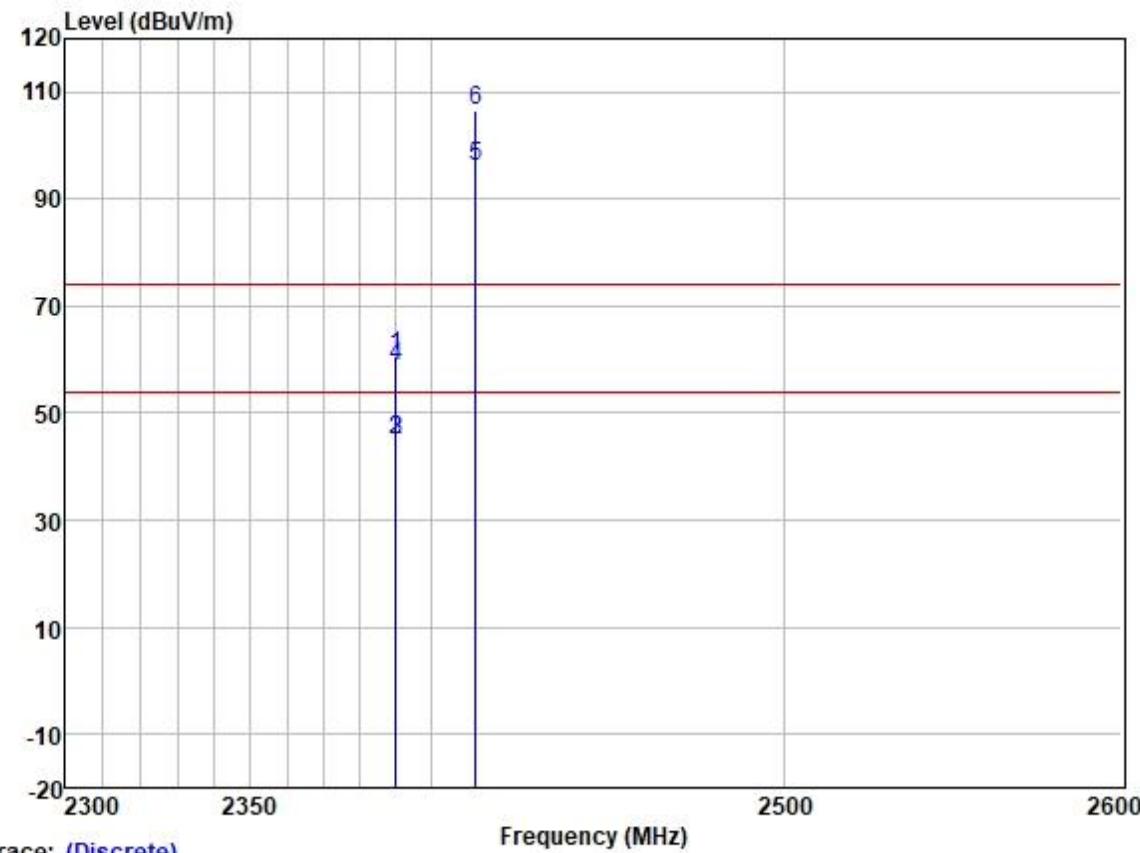
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark	
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB
1 2389.847	67.39	27.33	3.48	37.59	60.61	74.00	-13.39	HORIZONTAL Peak
2 2389.968	51.74	27.33	3.48	37.59	44.96	54.00	-9.04	HORIZONTAL Average
3 2390.000	51.74	27.33	3.48	37.59	44.96	54.00	-9.04	HORIZONTAL Average
4 2390.000	65.40	27.33	3.48	37.59	58.62	74.00	-15.38	HORIZONTAL Peak
5 * 2412.000	102.84	27.38	3.47	37.59	96.10	54.00	42.10	HORIZONTAL Average
6 * 2412.000	113.38	27.38	3.47	37.59	106.64	74.00	32.64	HORIZONTAL Peak

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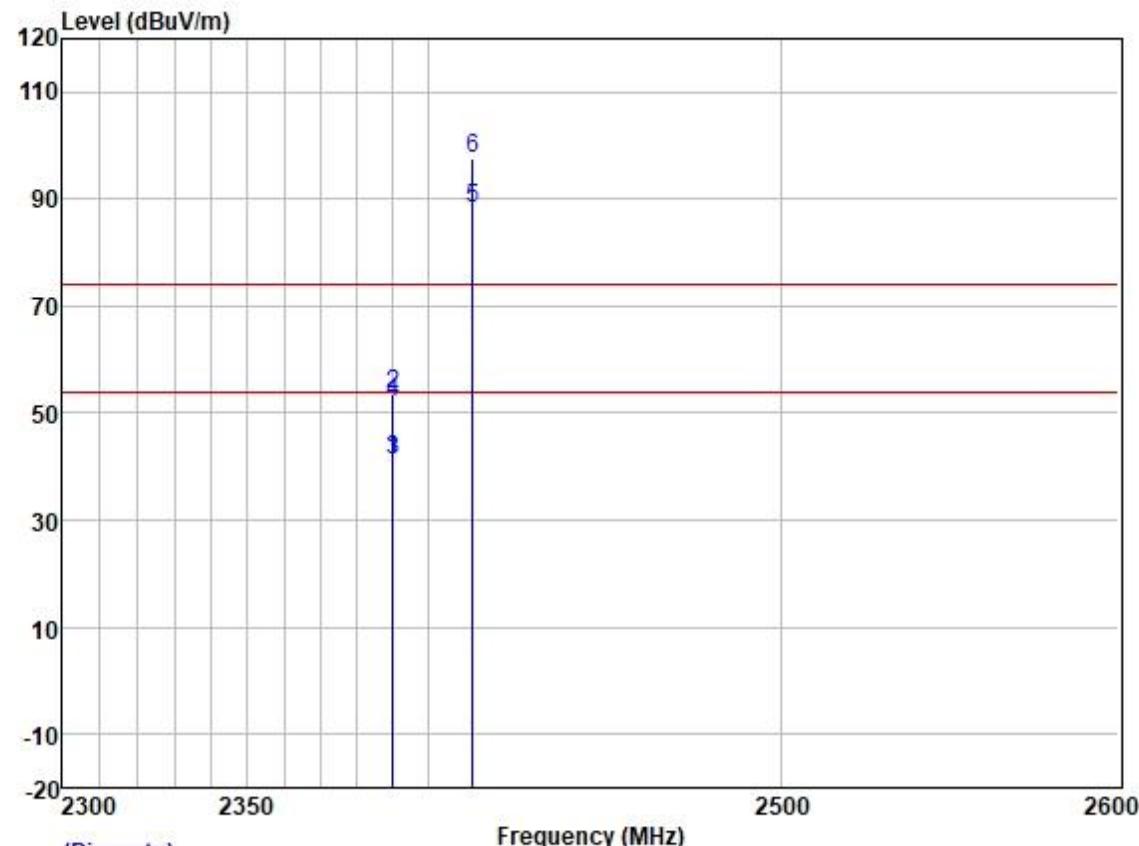


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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



ReadAntenna	Cable			Preamp	Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.968	48.00	27.33	3.48	37.59	41.22	54.00	-12.78 VERTICAL Average
2	2389.968	60.21	27.33	3.48	37.59	53.43	74.00	-20.57 VERTICAL Peak
3	2390.000	48.00	27.33	3.48	37.59	41.22	54.00	-12.78 VERTICAL Average
4	2390.000	58.95	27.33	3.48	37.59	52.17	74.00	-21.83 VERTICAL Peak
5 *	2412.000	95.06	27.38	3.47	37.59	88.32	54.00	34.32 VERTICAL Average
6 *	2412.000	104.28	27.38	3.47	37.59	97.54	74.00	23.54 VERTICAL Peak

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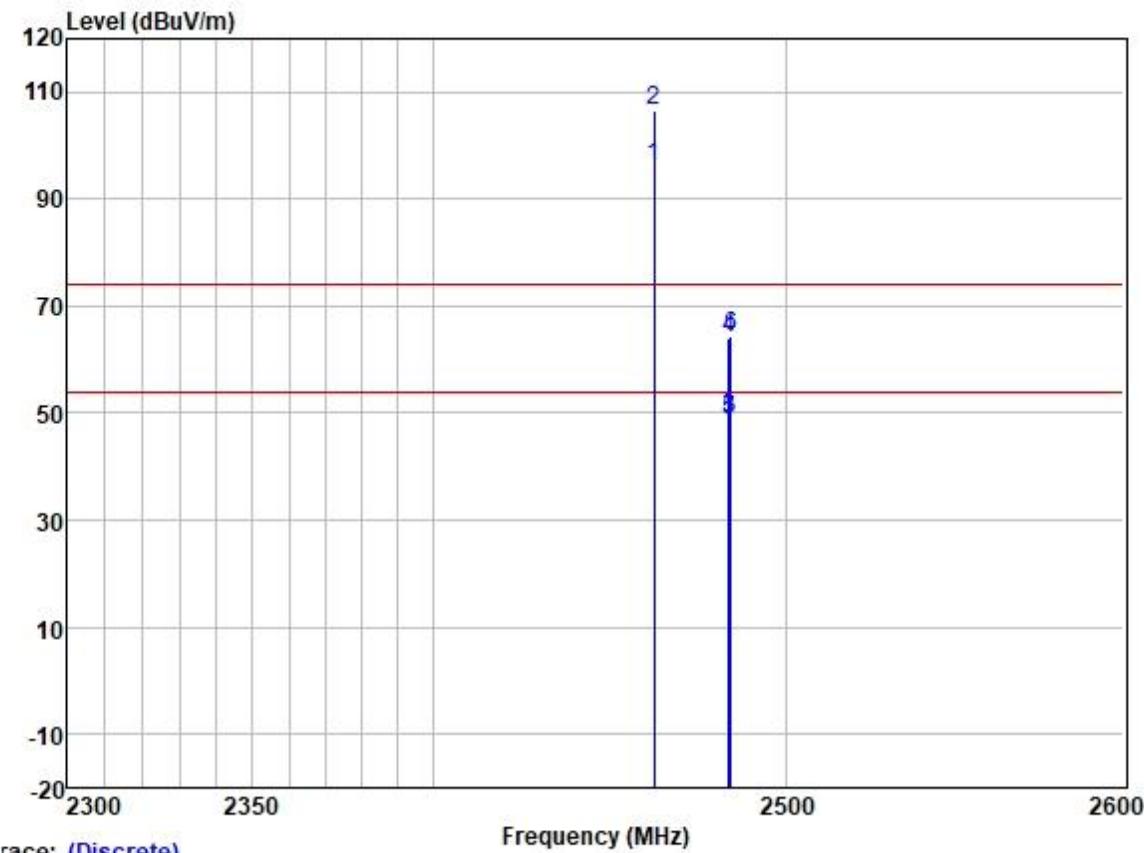
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark	
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB
1 *	2462.000	102.72	27.45	3.50	37.58	96.09	54.00	42.09 HORIZONTAL Average
2 *	2462.000	113.23	27.45	3.50	37.58	106.60	74.00	32.60 HORIZONTAL Peak
3	2483.500	55.54	27.48	3.53	37.57	48.98	54.00	-5.02 HORIZONTAL Average
4	2483.500	70.38	27.48	3.53	37.57	63.82	74.00	-10.18 HORIZONTAL Peak
5	2483.840	55.25	27.48	3.53	37.57	48.69	54.00	-5.31 HORIZONTAL Average
6	2483.990	70.88	27.48	3.53	37.57	64.32	74.00	-9.68 HORIZONTAL Peak

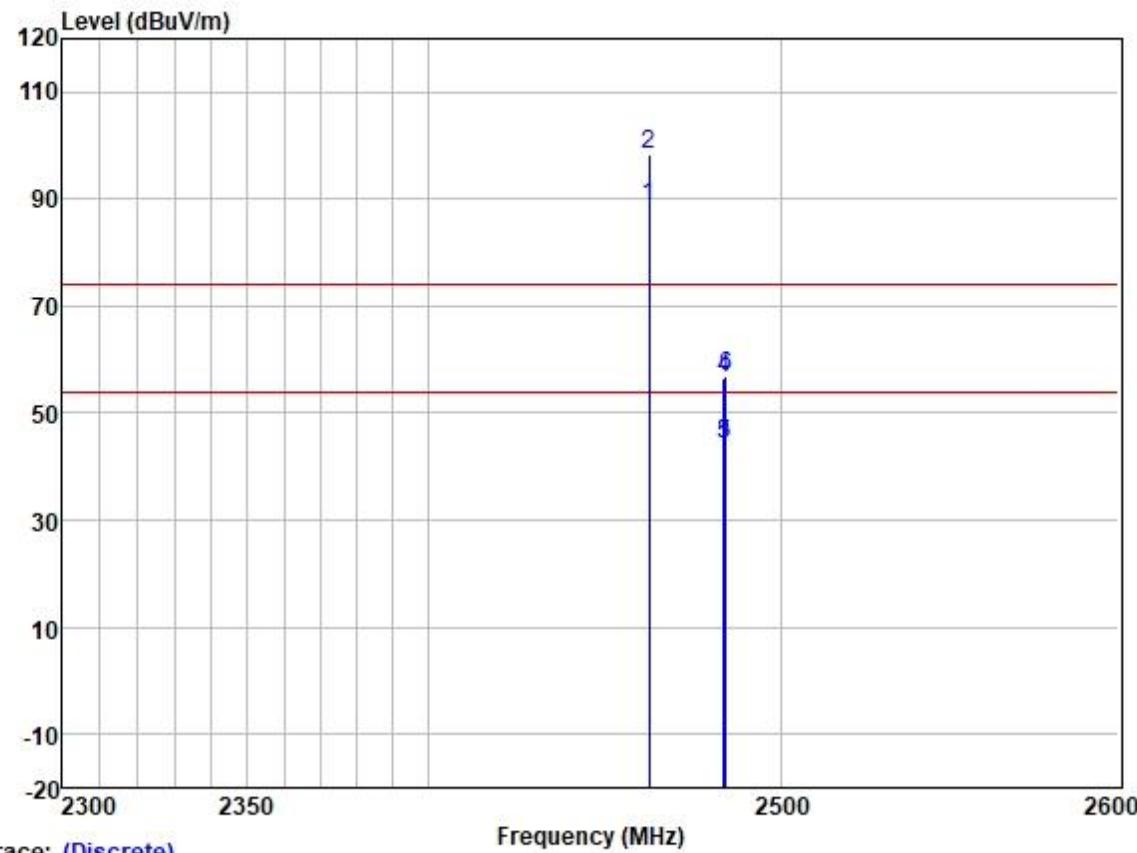
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 * 2462.000	95.29	27.45	3.50	37.58	88.66	54.00	34.66 VERTICAL Average
2 * 2462.000	104.89	27.45	3.50	37.58	98.26	74.00	24.26 VERTICAL Peak
3 2483.500	50.62	27.48	3.53	37.57	44.06	54.00	-9.94 VERTICAL Average
4 2483.500	63.19	27.48	3.53	37.57	56.63	74.00	-17.37 VERTICAL Peak
5 2483.840	50.73	27.48	3.53	37.57	44.17	54.00	-9.83 VERTICAL Average
6 2484.041	63.38	27.48	3.53	37.57	56.82	74.00	-17.18 VERTICAL Peak

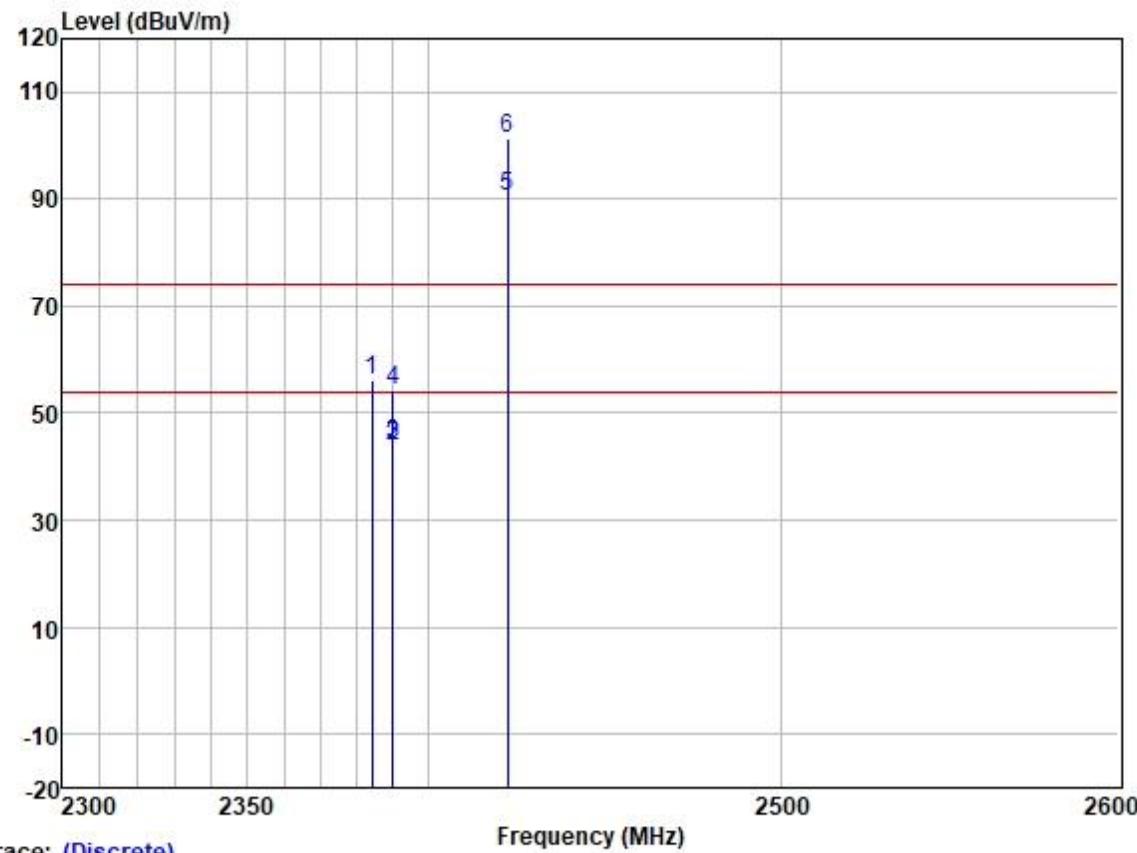
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Trace: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark	
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB
1	2383.970	62.98	27.33	3.48	37.60	56.19	74.00	-17.81
2	2389.827	50.72	27.33	3.48	37.59	43.94	54.00	-10.06
3	2390.000	51.07	27.33	3.48	37.59	44.29	54.00	-9.71
4	2390.000	60.90	27.33	3.48	37.59	54.12	74.00	-19.88
5 *	2422.000	97.41	27.39	3.45	37.58	90.67	54.00	36.67
6 *	2422.000	107.94	27.39	3.45	37.58	101.20	74.00	27.20

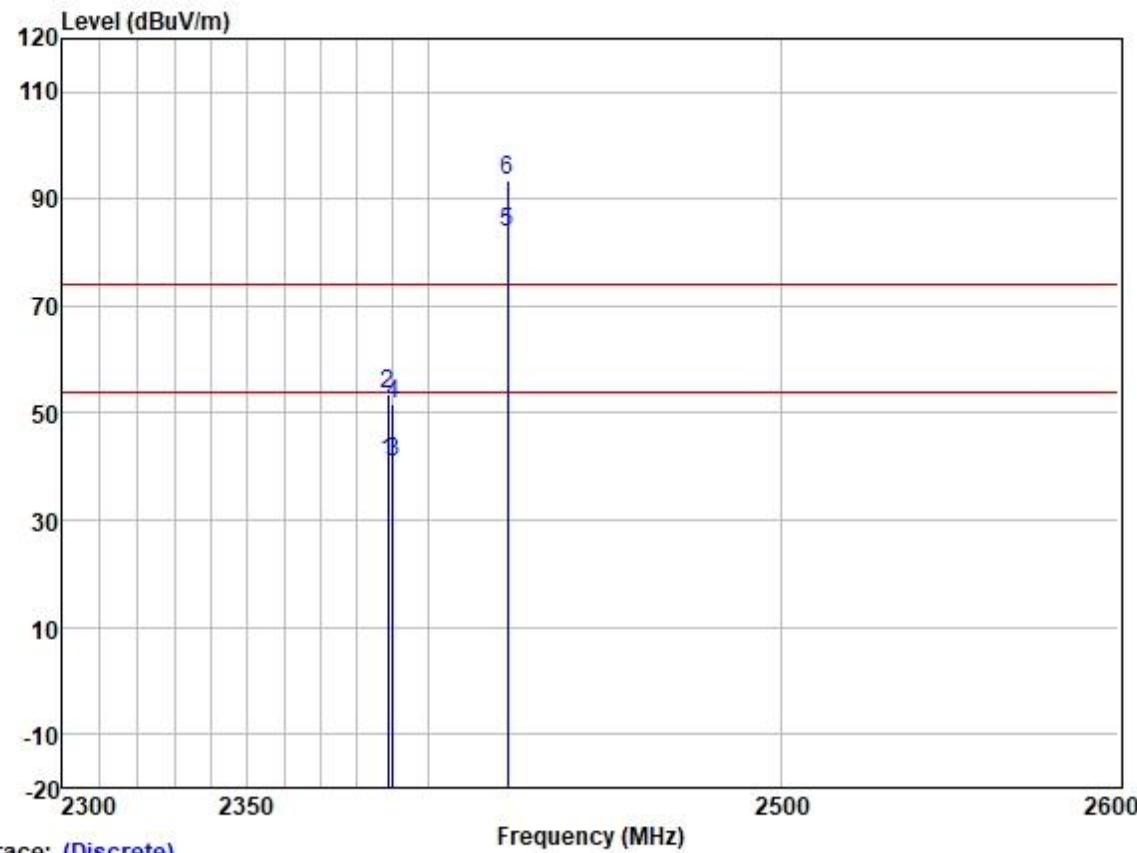
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Mode: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss					
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2388.474	47.60	27.33	3.48	37.59	40.82	54.00	-13.18	VERTICAL Average
2	2388.474	60.16	27.33	3.48	37.59	53.38	74.00	-20.62	VERTICAL Peak
3	2390.000	47.47	27.33	3.48	37.59	40.69	54.00	-13.31	VERTICAL Average
4	2390.000	58.38	27.33	3.48	37.59	51.60	74.00	-22.40	VERTICAL Peak
5 *	2422.000	90.50	27.39	3.45	37.58	83.76	54.00	29.76	VERTICAL Average
6 *	2422.000	100.18	27.39	3.45	37.58	93.44	74.00	19.44	VERTICAL Peak

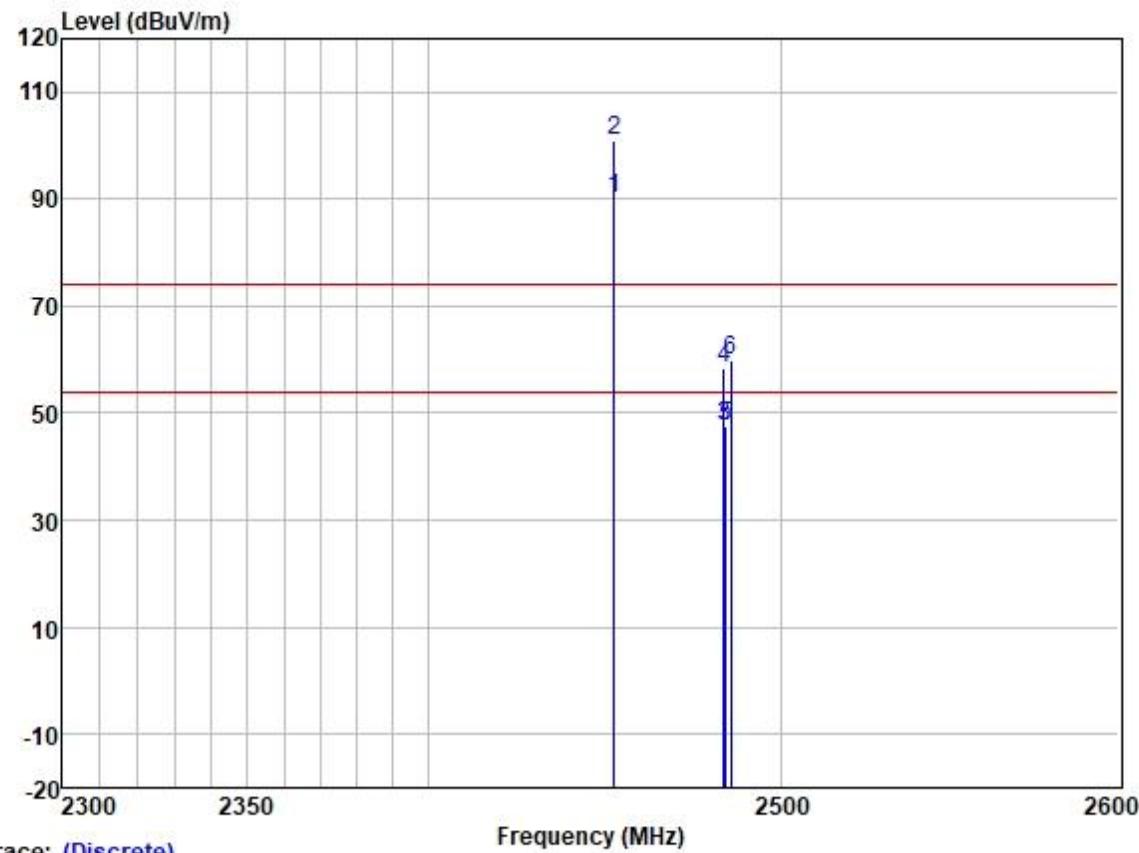
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Mode: (Discrete)

Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	Level	Factor	dB						
1 *	2452.000	97.03	27.43	3.40	37.58	90.28	54.00	36.28	HORIZONTAL	Average
2 *	2452.000	107.57	27.43	3.40	37.58	100.82	74.00	26.82	HORIZONTAL	Peak
3	2483.500	54.30	27.48	3.53	37.57	47.74	54.00	-6.26	HORIZONTAL	Average
4	2483.500	65.07	27.48	3.53	37.57	58.51	74.00	-15.49	HORIZONTAL	Peak
5	2483.935	54.28	27.48	3.53	37.57	47.72	54.00	-6.28	HORIZONTAL	Average
6	2485.488	66.43	27.48	3.53	37.57	59.87	74.00	-14.13	HORIZONTAL	Peak

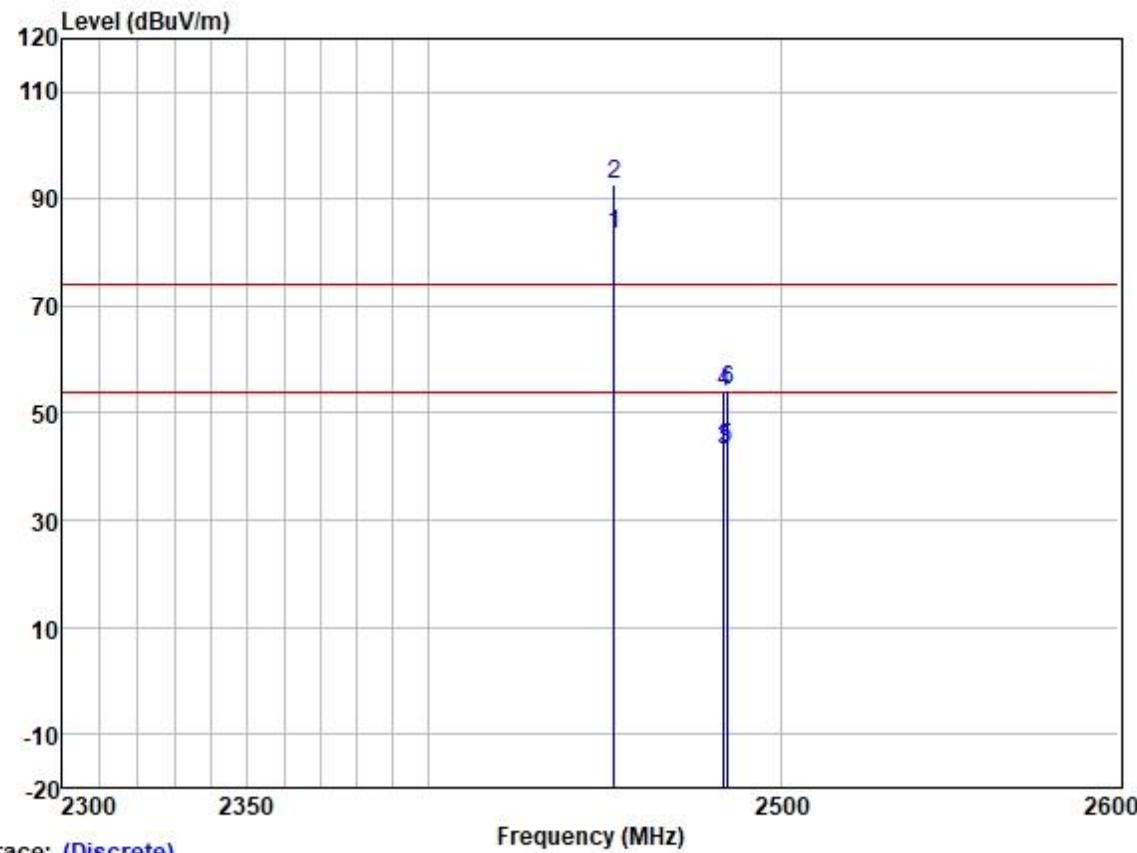
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Mode: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	Level	Factor	Loss						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV/m	dB	
1 * 2452.000	90.32	27.43	3.40	37.58	83.57	54.00	29.57	VERTICAL	Average
2 * 2452.000	99.55	27.43	3.40	37.58	92.80	74.00	18.80	VERTICAL	Peak
3 2483.500	49.71	27.48	3.53	37.57	43.15	54.00	-10.85	VERTICAL	Average
4 2483.500	60.30	27.48	3.53	37.57	53.74	74.00	-20.26	VERTICAL	Peak
5 2484.429	49.88	27.48	3.53	37.57	43.32	54.00	-10.68	VERTICAL	Average
6 2484.500	61.01	27.48	3.53	37.57	54.45	74.00	-19.55	VERTICAL	Peak

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**7.8 Radiated Spurious Emissions (Below 1GHz)**

Test Requirement 47 CFR Part 15, Subpart C 15.205 &amp; 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: 22.7 °C      Humidity: 56.3 % RH      Atmospheric Pressure: 1003 mbar

**7.8.2 Test Mode Description**

Pre-scan / Mode	Final test	Description
		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 01	

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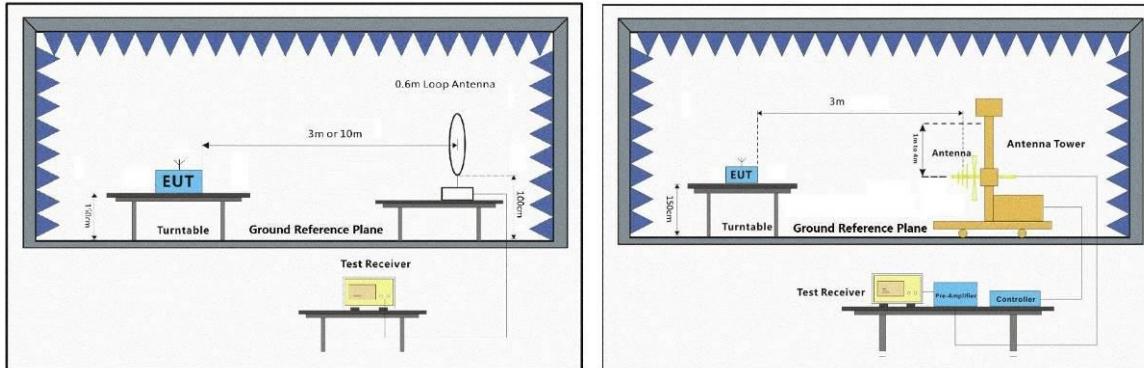
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**7.8.3 Test Setup Diagram****7.8.4 Measurement Procedure and Data**

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

**Remark:**

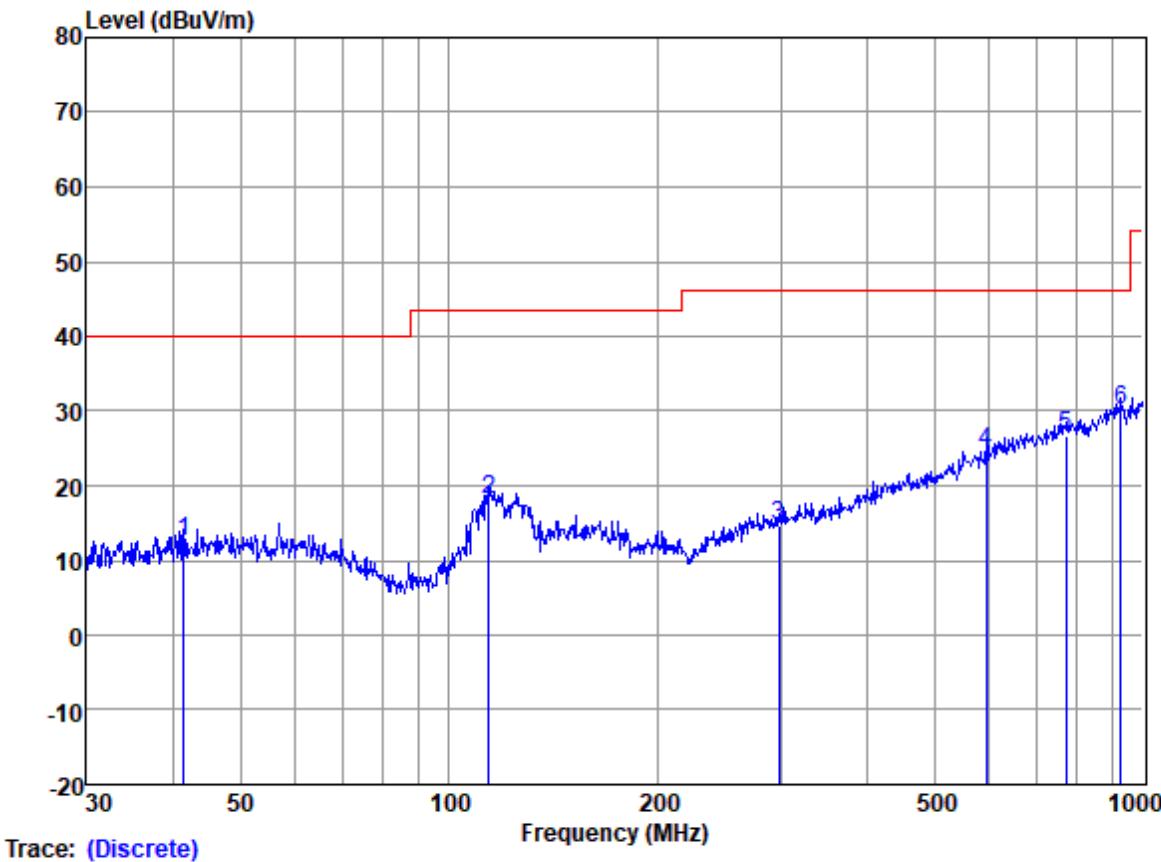
- 1) Through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

- 3) Scan from 9kHz to 1 GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



Test Mode: 01; Polarity: Horizontal



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

Freq	Read	Antenna	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1 41.42	24.84	13.65	1.11	27.17	12.43	40.00	-27.57	HORIZONTAL	QP
2 114.11	32.89	10.60	1.82	27.05	18.26	43.50	-25.24	HORIZONTAL	QP
3 298.27	24.37	13.57	3.16	26.55	14.55	46.00	-31.45	HORIZONTAL	QP
4 593.05	28.15	19.60	5.10	28.20	24.65	46.00	-21.35	HORIZONTAL	QP
5 774.16	26.47	22.25	6.08	28.05	26.75	46.00	-19.25	HORIZONTAL	QP
6 929.01	26.95	23.80	7.06	27.80	30.01	46.00	-15.99	HORIZONTAL	QP

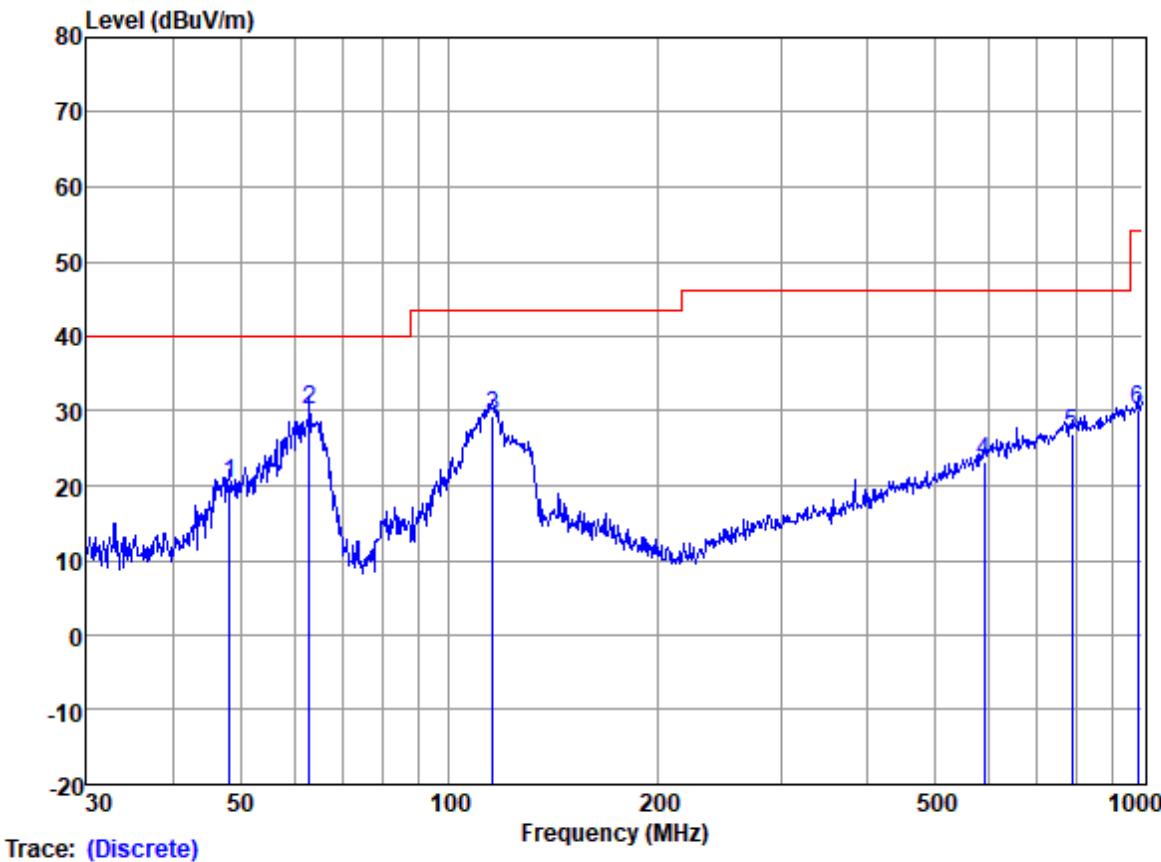
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Test Mode: 01; Polarity: Vertical



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

Freq	Read	Antenna	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1 48.16	32.25	13.99	1.13	27.17	20.20	40.00	-19.80	VERTICAL	QP
2 62.87	42.93	13.02	1.31	27.15	30.11	40.00	-9.89	VERTICAL	QP
3 115.32	43.91	10.65	1.83	27.04	29.35	43.50	-14.15	VERTICAL	QP
4 590.97	26.82	19.50	5.10	28.20	23.22	46.00	-22.78	VERTICAL	QP
5 790.62	26.28	22.50	6.14	28.04	26.88	46.00	-19.12	VERTICAL	QP
6 982.62	26.29	24.13	7.31	27.68	30.05	54.00	-23.95	VERTICAL	QP

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**7.9 Radiated Spurious Emissions (Above 1GHz)**

Test Requirement 47 CFR Part 15, Subpart C 15.205 &amp; 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.

**7.9.1 E.U.T. Operation**

Operating Environment:

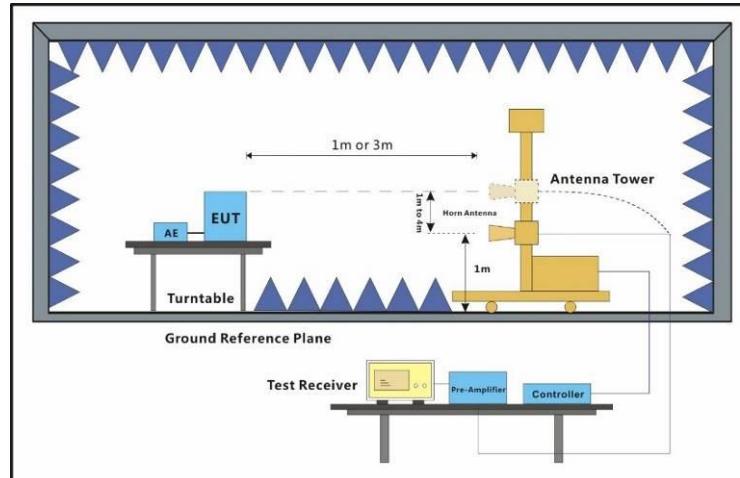
Temperature: 22.4 °C      Humidity: 51.0 % RH      Atmospheric Pressure: 1003 mbar

**7.9.2 Test Mode Description**

Pre-scan / Mode	Final test	Description
		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	01	

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**7.9.3 Test Setup Diagram**

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**7.9.4 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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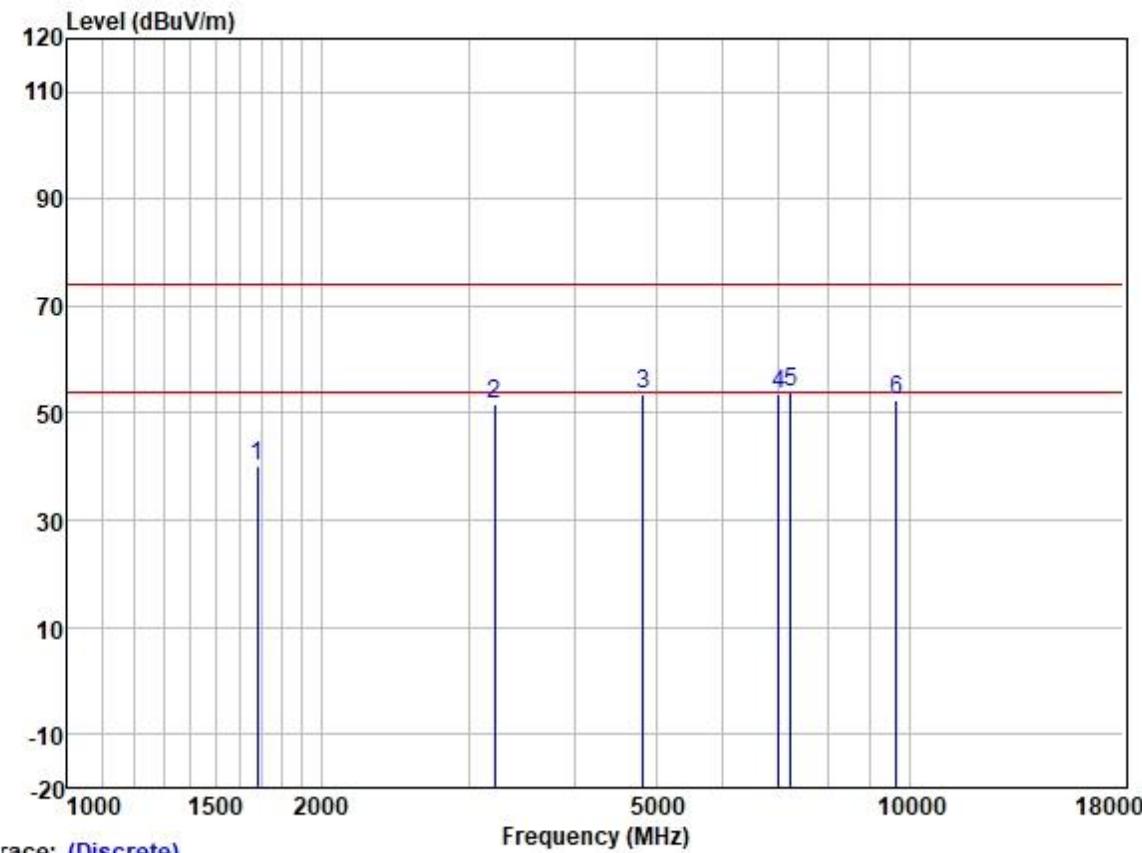


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Test Mode: 01; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Race:	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	1682.477	49.44	25.68	2.80	37.91	40.01	74.00	-33.99	HORIZONTAL	Peak
2	3214.623	56.02	28.61	4.01	37.07	51.57	74.00	-22.43	HORIZONTAL	Peak
3	4824.000	53.61	31.45	5.42	36.83	53.65	74.00	-20.35	HORIZONTAL	Peak
4	6995.172	49.98	35.00	5.81	37.25	53.54	74.00	-20.46	HORIZONTAL	Peak
5	7236.000	49.63	35.70	6.03	37.39	53.97	74.00	-20.03	HORIZONTAL	Peak
6	9648.000	44.41	38.40	7.06	37.42	52.45	74.00	-21.55	HORIZONTAL	Peak

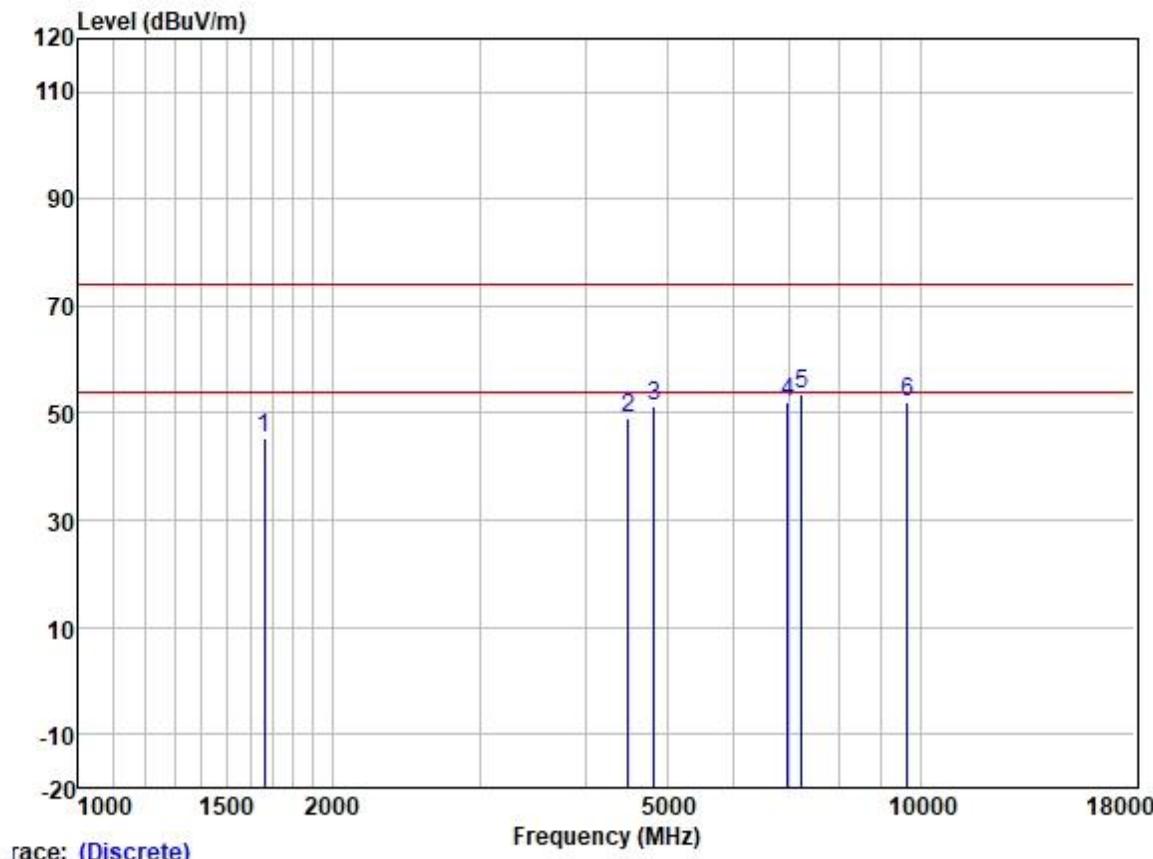
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Test Mode: 01; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



ReadAntenna	Cable			Preamp	Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1663.137	54.97	25.65	2.80	37.91	45.51	74.00	-28.49 VERTICAL Peak
2	4495.125	49.88	30.80	5.05	36.82	48.91	74.00	-25.09 VERTICAL Peak
3	4824.000	51.40	31.45	5.42	36.83	51.44	74.00	-22.56 VERTICAL Peak
4	6954.852	48.50	34.95	5.81	37.21	52.05	74.00	-21.95 VERTICAL Peak
5	7236.000	49.10	35.70	6.03	37.39	53.44	74.00	-20.56 VERTICAL Peak
6	9648.000	43.99	38.40	7.06	37.42	52.03	74.00	-21.97 VERTICAL Peak

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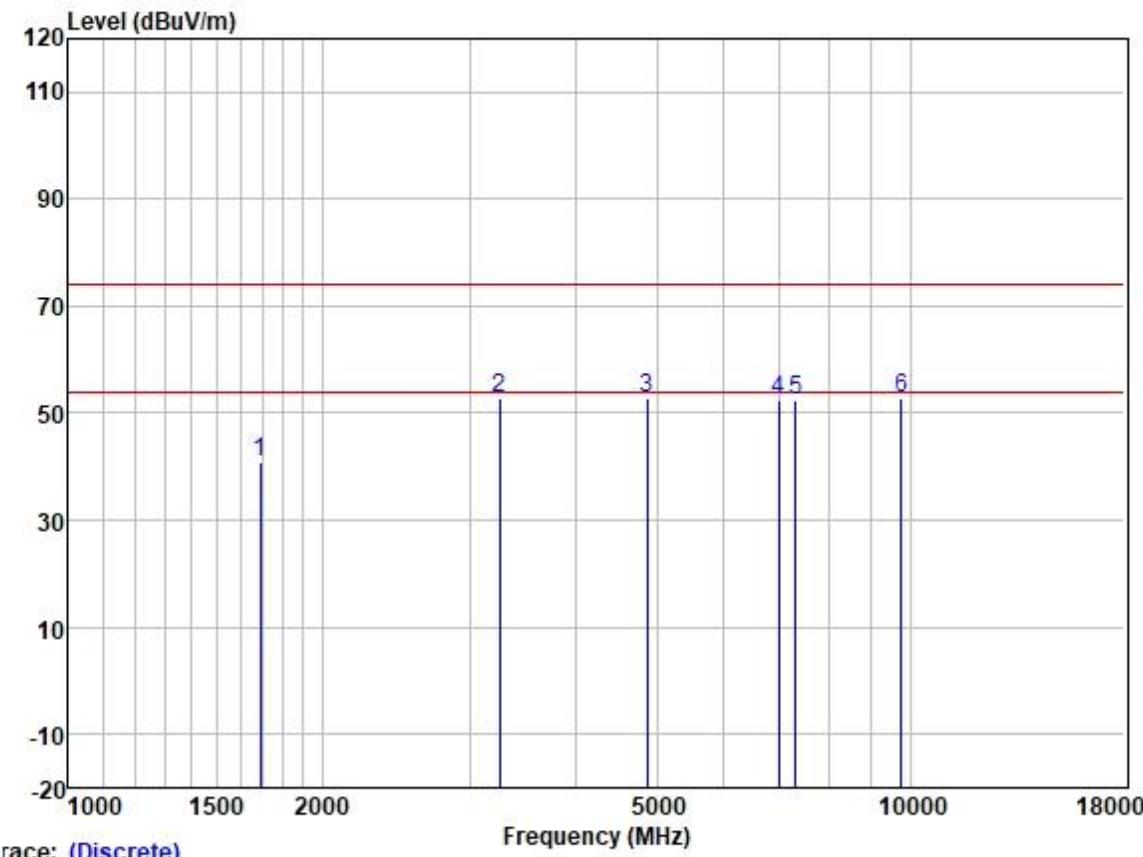
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Index	Frequency (MHz)	ReadAntenna		Cable		Preamp		Limit Line	Over Limit	Pol/Phase	Remark
		Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m		dB		
1	1692.231	50.36	25.70	2.80	37.89	40.97	74.00	-33.03	HORIZONTAL	Peak	
2	3252.005	57.00	28.68	4.03	37.06	52.65	74.00	-21.35	HORIZONTAL	Peak	
3	4874.000	52.42	31.54	5.50	36.84	52.62	74.00	-21.38	HORIZONTAL	Peak	
4	6974.982	48.85	34.97	5.81	37.23	52.40	74.00	-21.60	HORIZONTAL	Peak	
5	7311.000	47.91	35.93	6.11	37.42	52.53	74.00	-21.47	HORIZONTAL	Peak	
6	9748.000	44.60	38.50	7.02	37.41	52.71	74.00	-21.29	HORIZONTAL	Peak	

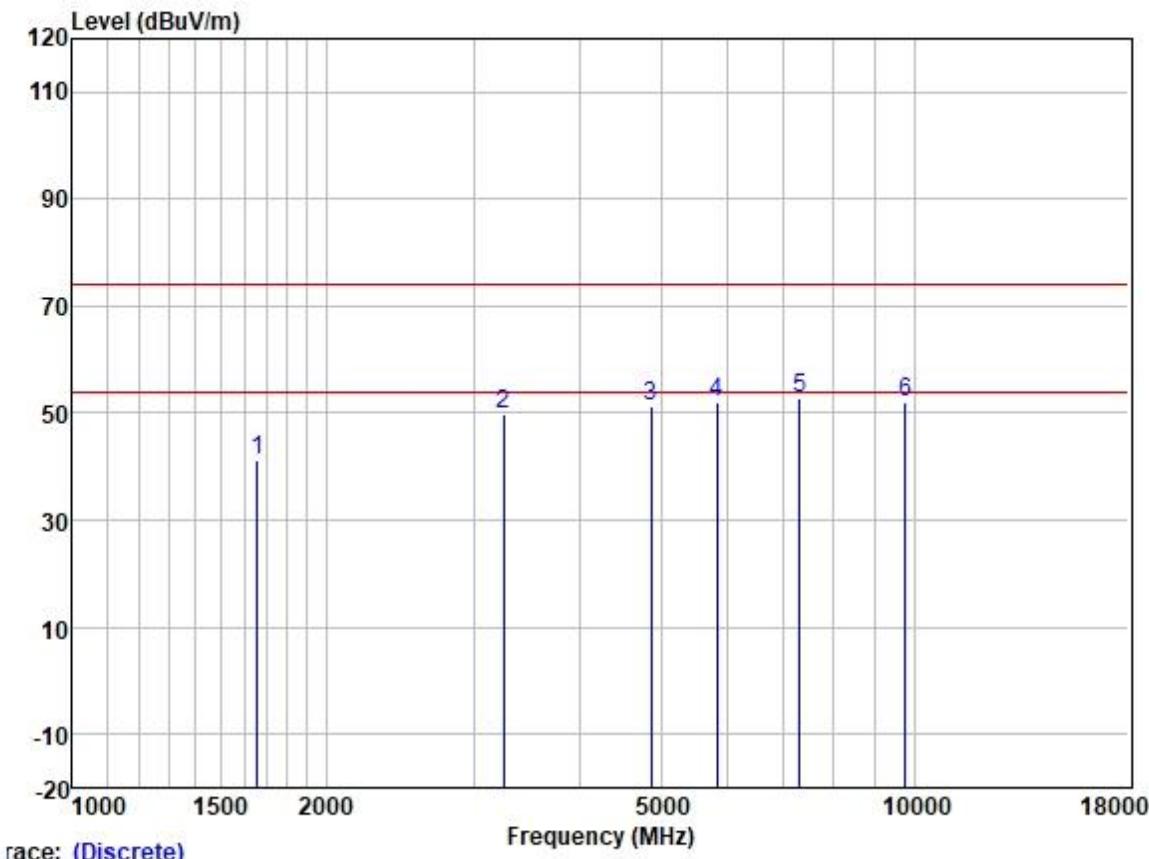
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Test Mode: 01; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1658.337	50.60	25.65	2.80	37.93	41.12	74.00	-32.88	VERTICAL Peak
2	3252.005	54.01	28.68	4.03	37.06	49.66	74.00	-24.34	VERTICAL Peak
3	4874.000	51.09	31.54	5.50	36.84	51.29	74.00	-22.71	VERTICAL Peak
4	5830.640	50.70	32.23	6.04	36.90	52.07	74.00	-21.93	VERTICAL Peak
5	7311.000	48.21	35.93	6.11	37.42	52.83	74.00	-21.17	VERTICAL Peak
6	9748.000	44.02	38.50	7.02	37.41	52.13	74.00	-21.87	VERTICAL Peak

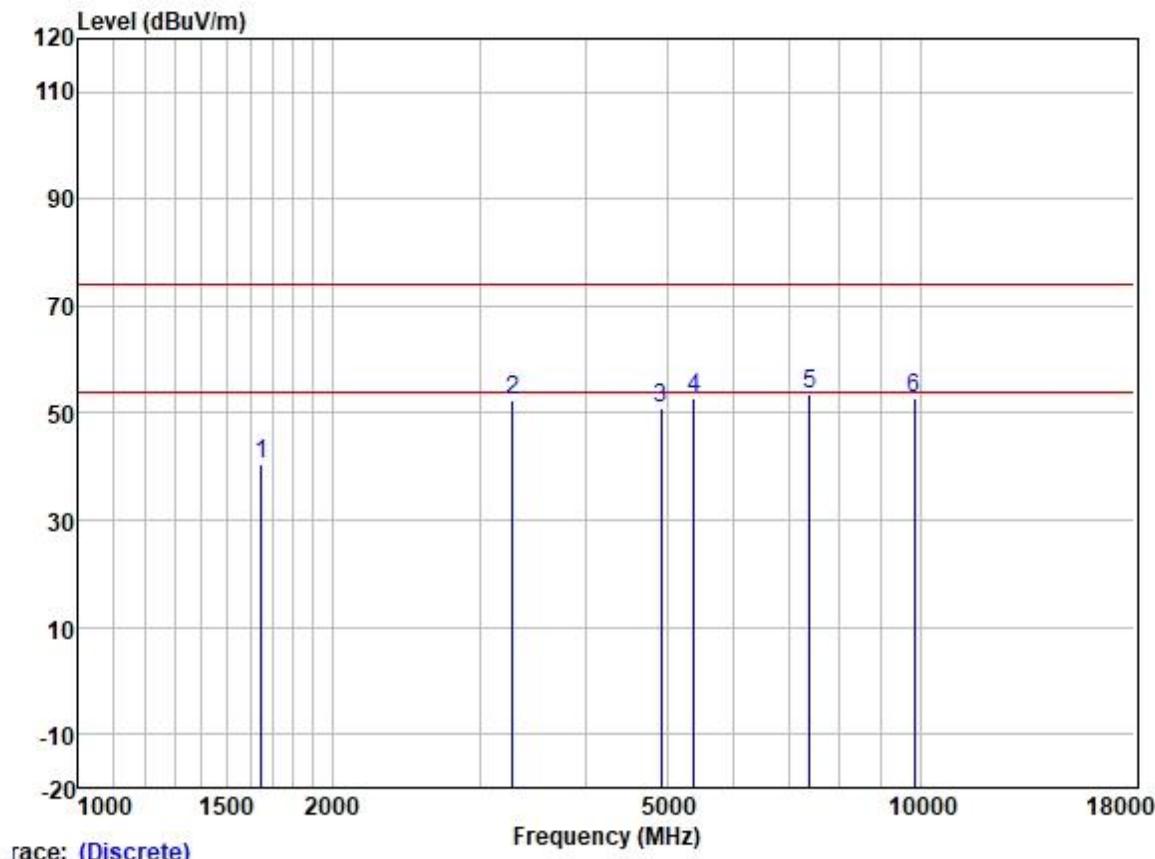
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High

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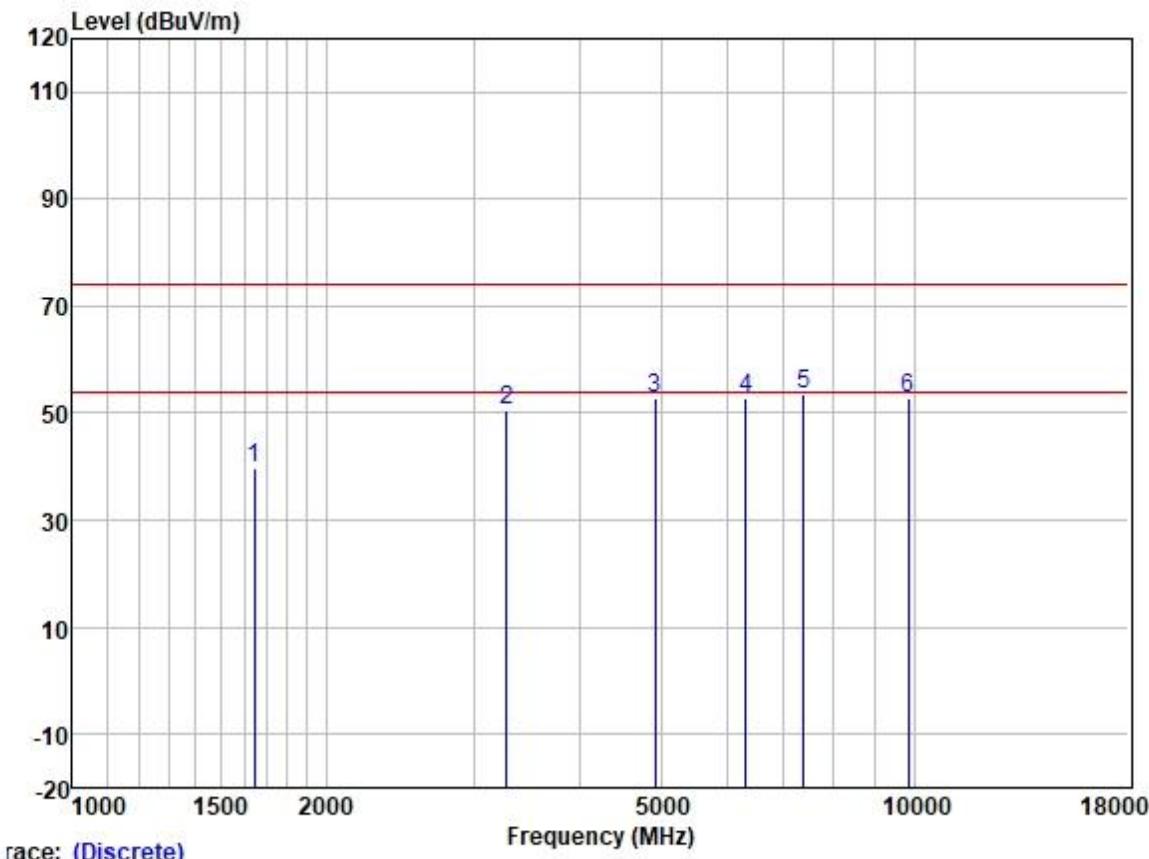
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Test Mode: 01; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

Freq	ReadAntenna		Cable		Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Level				
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m		dB		
1	1644.019	49.15	25.63	2.80	37.93	39.65	74.00	-34.35	VERTICAL	Peak
2	3280.326	54.98	28.73	4.04	37.04	50.71	74.00	-23.29	VERTICAL	Peak
3	4924.000	52.43	31.62	5.60	36.84	52.81	74.00	-21.19	VERTICAL	Peak
4	6303.890	50.46	33.44	5.97	36.96	52.91	74.00	-21.09	VERTICAL	Peak
5	7386.000	48.55	36.17	6.19	37.45	53.46	74.00	-20.54	VERTICAL	Peak
6	9848.000	44.71	38.58	6.99	37.41	52.87	74.00	-21.13	VERTICAL	Peak

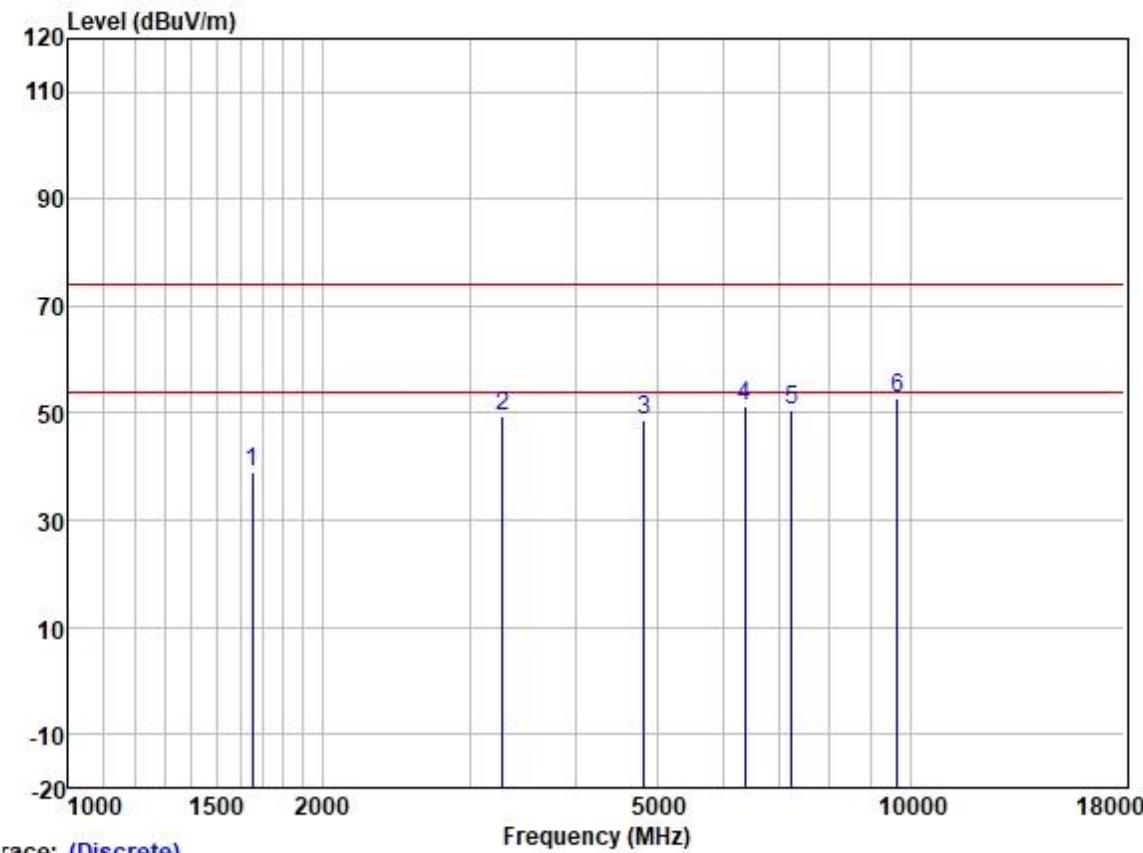
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1653.550	48.32	25.64	2.80	37.93	38.83	74.00	-35.17	HORIZONTAL	Peak
2	3280.326	53.86	28.73	4.04	37.04	49.59	74.00	-24.41	HORIZONTAL	Peak
3	4824.000	48.64	31.45	5.42	36.83	48.68	74.00	-25.32	HORIZONTAL	Peak
4	6358.789	48.85	33.63	5.92	36.97	51.43	74.00	-22.57	HORIZONTAL	Peak
5	7236.000	46.26	35.70	6.03	37.39	50.60	74.00	-23.40	HORIZONTAL	Peak
6	9648.000	44.76	38.40	7.06	37.42	52.80	74.00	-21.20	HORIZONTAL	Peak

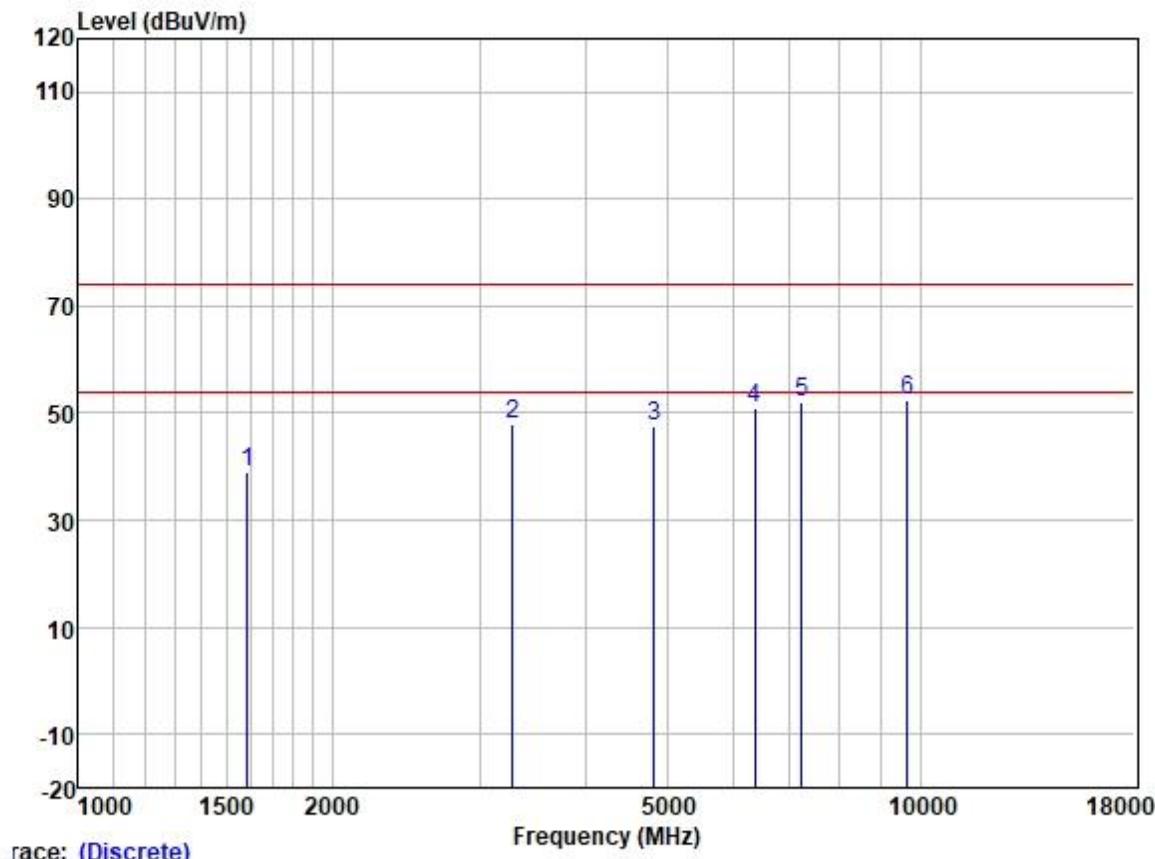
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SGS-CSTC Standards Technical Services Co., Ltd.  
Guangzhou Branch Testing Center for EEC Laboratory

Test Mode: 01; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Race: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1587.975	48.66	25.57	2.80	37.98	39.05	74.00	-34.95	VERTICAL	Peak
2	3280.326	52.24	28.73	4.04	37.04	47.97	74.00	-26.03	VERTICAL	Peak
3	4824.000	47.54	31.45	5.42	36.83	47.58	74.00	-26.42	VERTICAL	Peak
4	6358.789	48.23	33.63	5.92	36.97	50.81	74.00	-23.19	VERTICAL	Peak
5	7236.000	47.54	35.70	6.03	37.39	51.88	74.00	-22.12	VERTICAL	Peak
6	9648.000	44.30	38.40	7.06	37.42	52.34	74.00	-21.66	VERTICAL	Peak

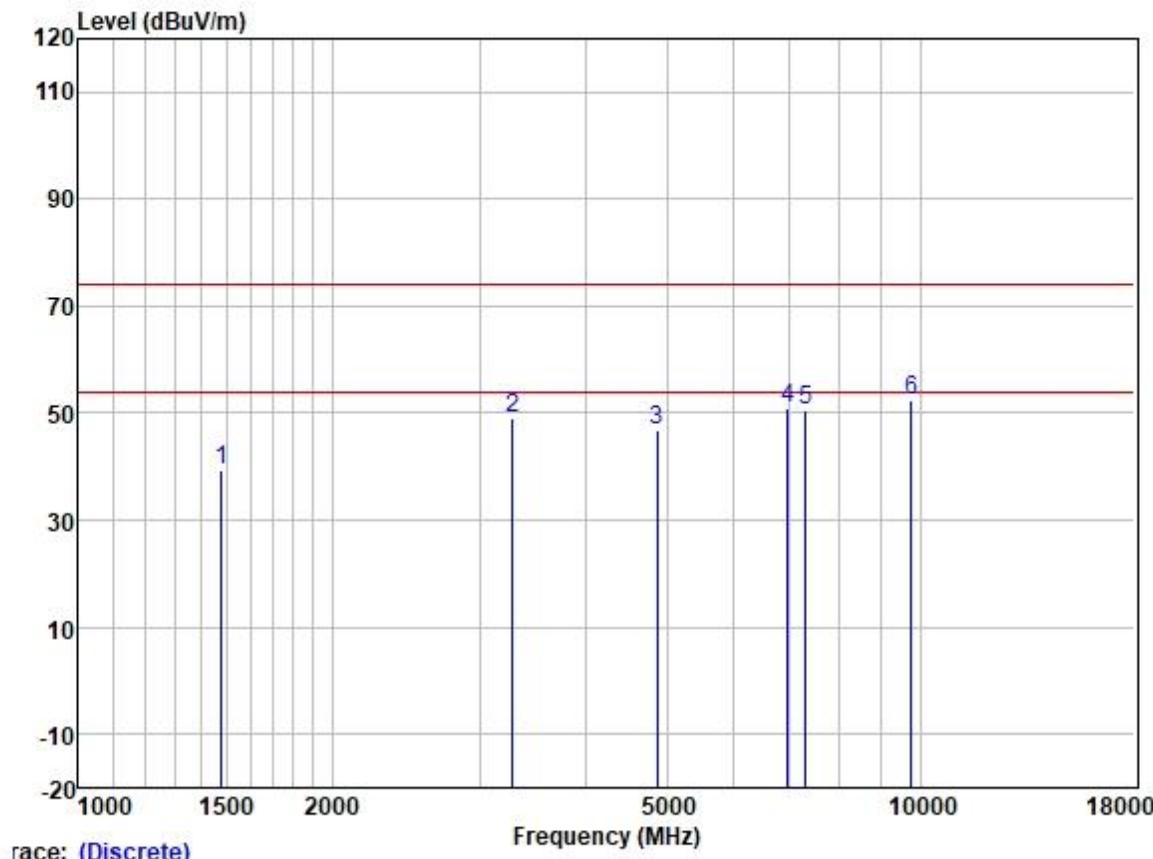
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1477.276	49.15	25.48	2.77	38.13	39.27	74.00	-34.73	HORIZONTAL	Peak
2	3280.326	53.35	28.73	4.04	37.04	49.08	74.00	-24.92	HORIZONTAL	Peak
3	4874.000	46.51	31.54	5.50	36.84	46.71	74.00	-27.29	HORIZONTAL	Peak
4	6954.852	47.34	34.95	5.81	37.21	50.89	74.00	-23.11	HORIZONTAL	Peak
5	7311.000	46.05	35.93	6.11	37.42	50.67	74.00	-23.33	HORIZONTAL	Peak
6	9748.000	44.13	38.50	7.02	37.41	52.24	74.00	-21.76	HORIZONTAL	Peak

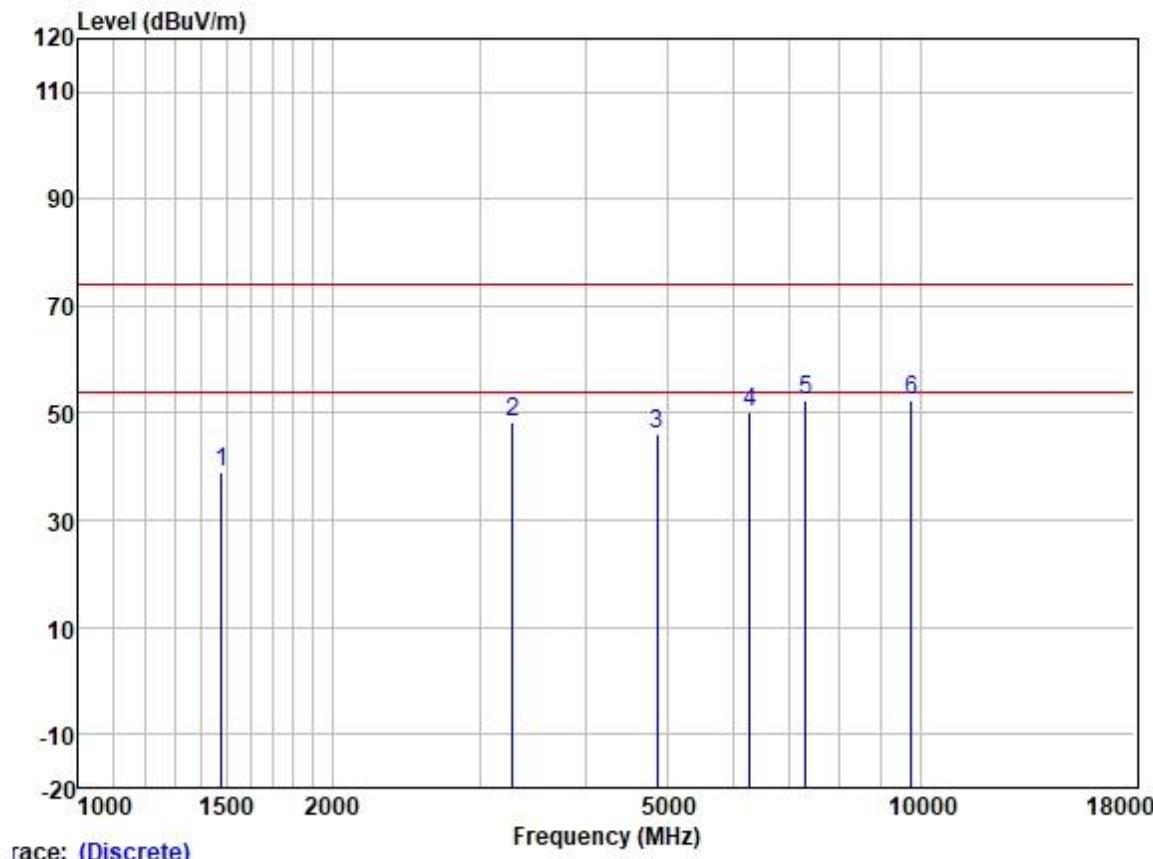
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Test Mode: 01; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle

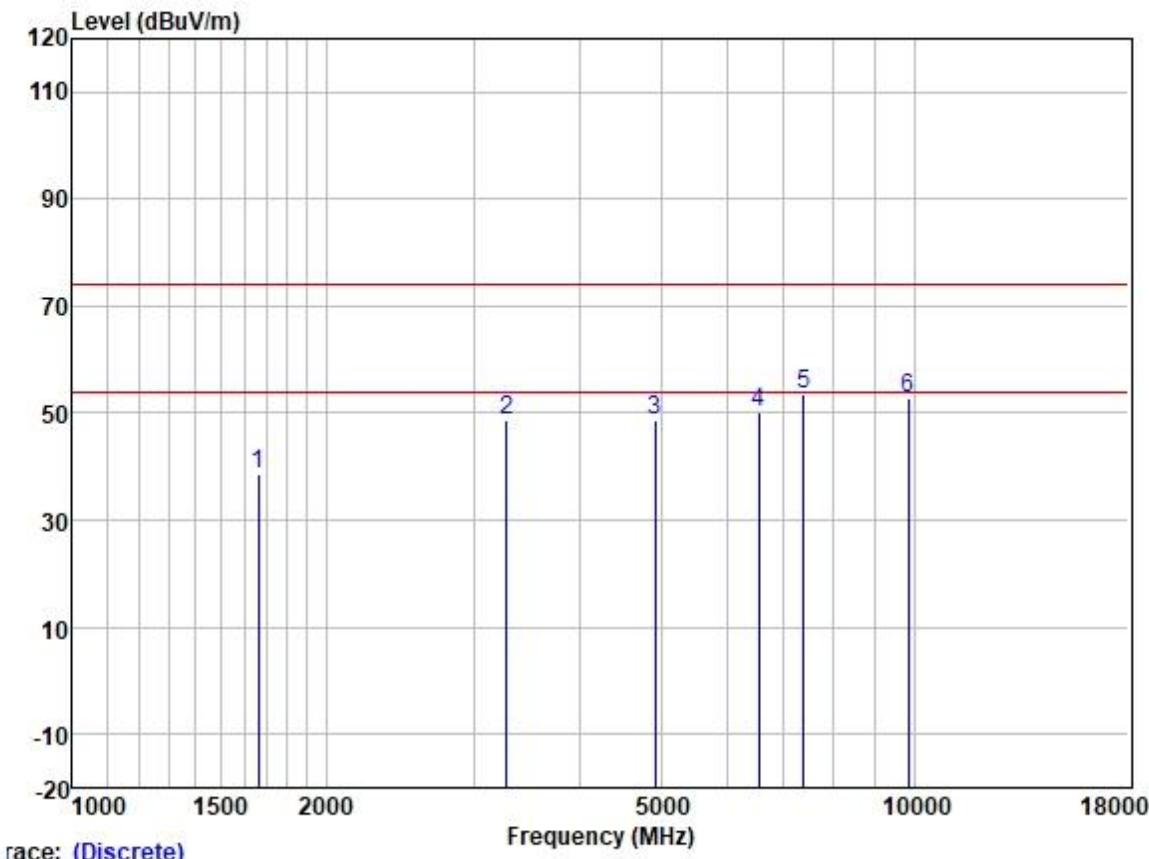
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Race: (Discrete)	ReadAntenna		Cable		Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	47.95	25.65	2.80	37.91	38.49	74.00	-35.51	HORIZONTAL	Peak
2	3280.326	52.82	28.73	4.04	37.04	48.55	74.00	-25.45	HORIZONTAL	Peak
3	4924.000	48.25	31.62	5.60	36.84	48.63	74.00	-25.37	HORIZONTAL	Peak
4	6545.263	47.37	34.06	5.84	37.03	50.24	74.00	-23.76	HORIZONTAL	Peak
5	7386.000	48.52	36.17	6.19	37.45	53.43	74.00	-20.57	HORIZONTAL	Peak
6	9848.000	44.60	38.58	6.99	37.41	52.76	74.00	-21.24	HORIZONTAL	Peak

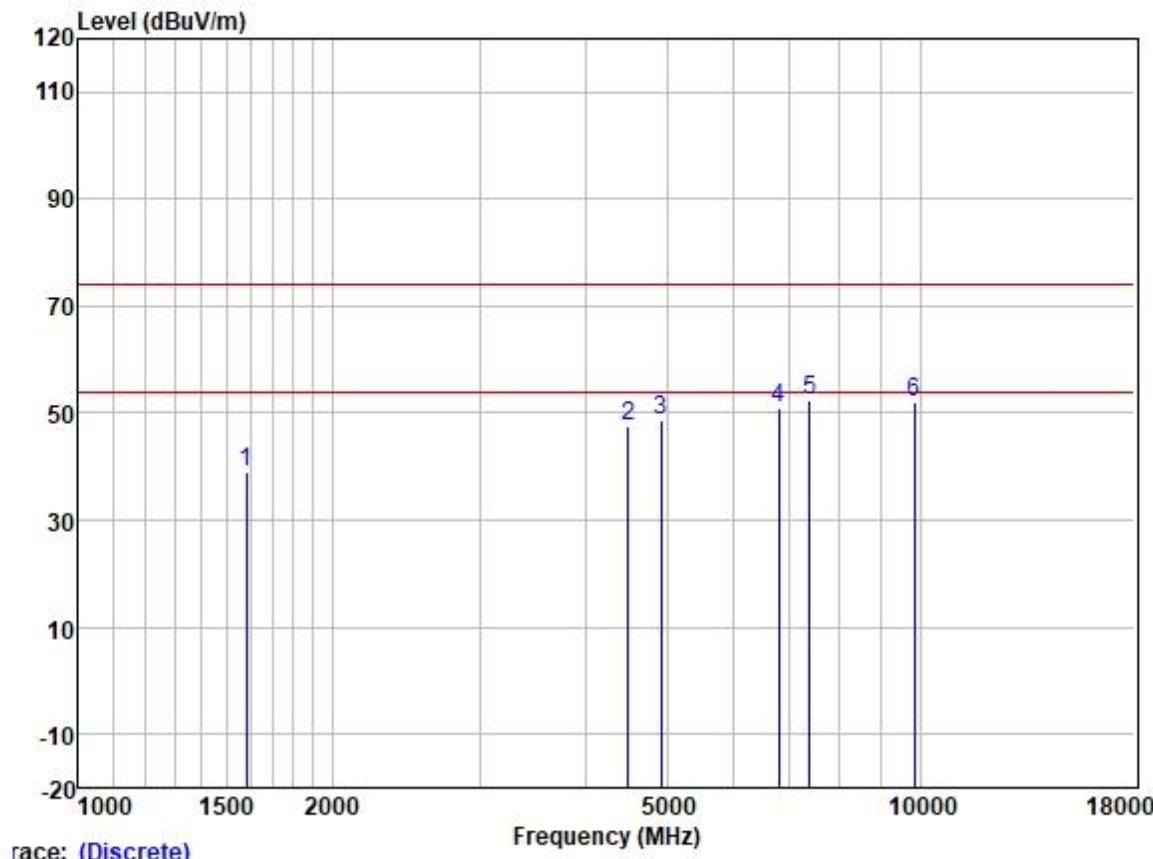
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Guangzhou Branch Testing Center for EEC Laboratory

Test Mode: 01; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



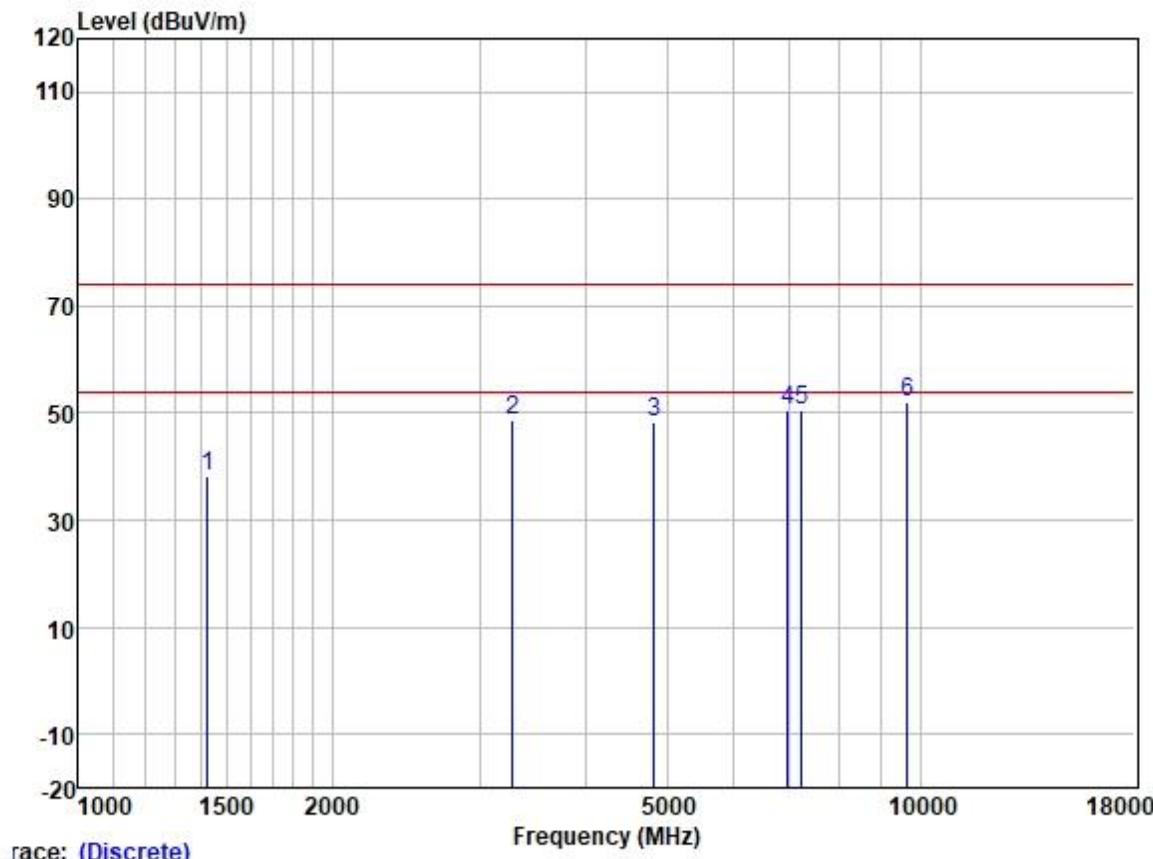
Race: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1583.392	48.55	25.56	2.80	38.00	38.91	74.00	-35.09	VERTICAL	Peak
2	4495.125	48.53	30.80	5.05	36.82	47.56	74.00	-26.44	VERTICAL	Peak
3	4924.000	48.41	31.62	5.60	36.84	48.79	74.00	-25.21	VERTICAL	Peak
4	6795.879	47.39	34.66	5.82	37.12	50.75	74.00	-23.25	VERTICAL	Peak
5	7386.000	47.63	36.17	6.19	37.45	52.54	74.00	-21.46	VERTICAL	Peak
6	9848.000	44.02	38.58	6.99	37.41	52.18	74.00	-21.82	VERTICAL	Peak

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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1422.798	48.20	25.42	2.64	38.20	38.06	74.00	-35.94	HORIZONTAL	Peak
2	3280.326	52.84	28.73	4.04	37.04	48.57	74.00	-25.43	HORIZONTAL	Peak
3	4824.000	48.21	31.45	5.42	36.83	48.25	74.00	-25.75	HORIZONTAL	Peak
4	6954.852	47.03	34.95	5.81	37.21	50.58	74.00	-23.42	HORIZONTAL	Peak
5	7236.000	46.16	35.70	6.03	37.39	50.50	74.00	-23.50	HORIZONTAL	Peak
6	9648.000	44.12	38.40	7.06	37.42	52.16	74.00	-21.84	HORIZONTAL	Peak

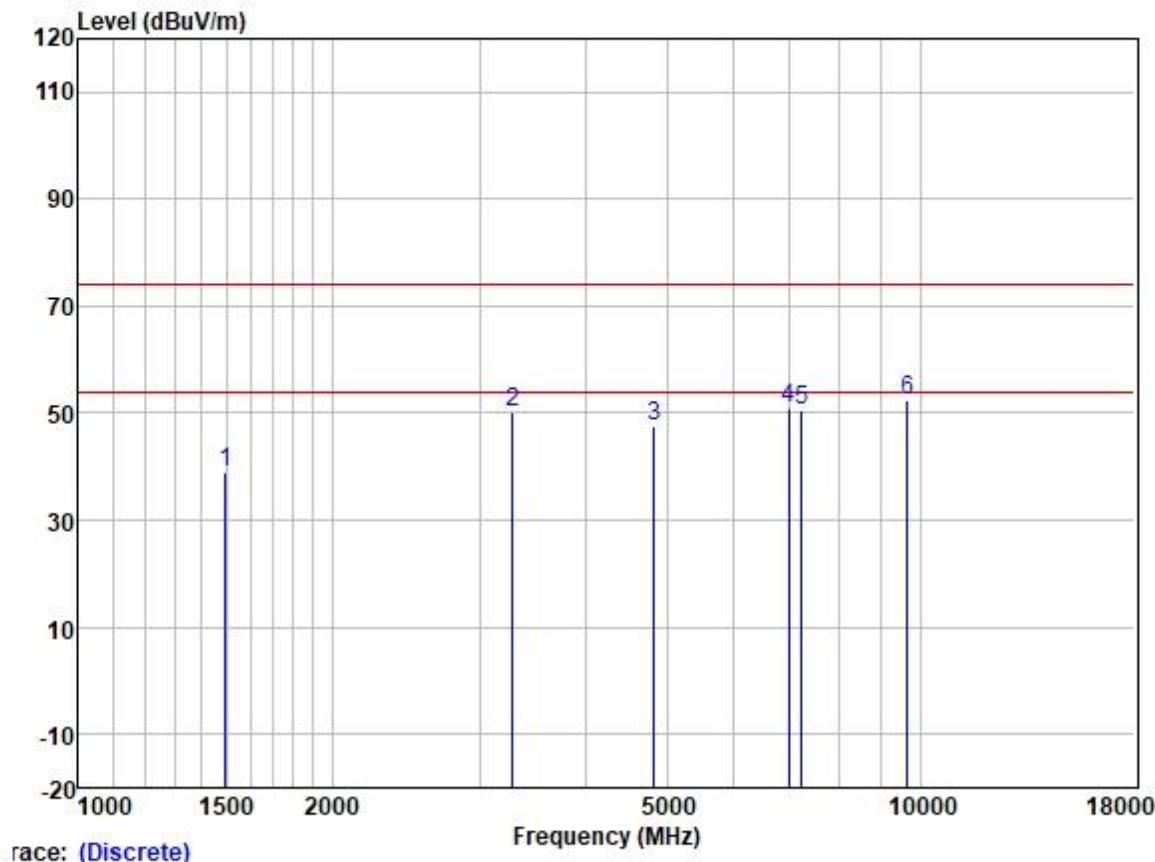
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Index	Frequency (MHz)	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
		Freq	Level	Factor	Loss					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1494.455	48.81	25.50	2.79	38.10	39.00	74.00	-35.00	VERTICAL	Peak
2	3280.326	54.28	28.73	4.04	37.04	50.01	74.00	-23.99	VERTICAL	Peak
3	4824.000	47.62	31.45	5.42	36.83	47.66	74.00	-26.34	VERTICAL	Peak
4	6974.982	47.52	34.97	5.81	37.23	51.07	74.00	-22.93	VERTICAL	Peak
5	7236.000	46.04	35.70	6.03	37.39	50.38	74.00	-23.62	VERTICAL	Peak
6	9648.000	44.29	38.40	7.06	37.42	52.33	74.00	-21.67	VERTICAL	Peak

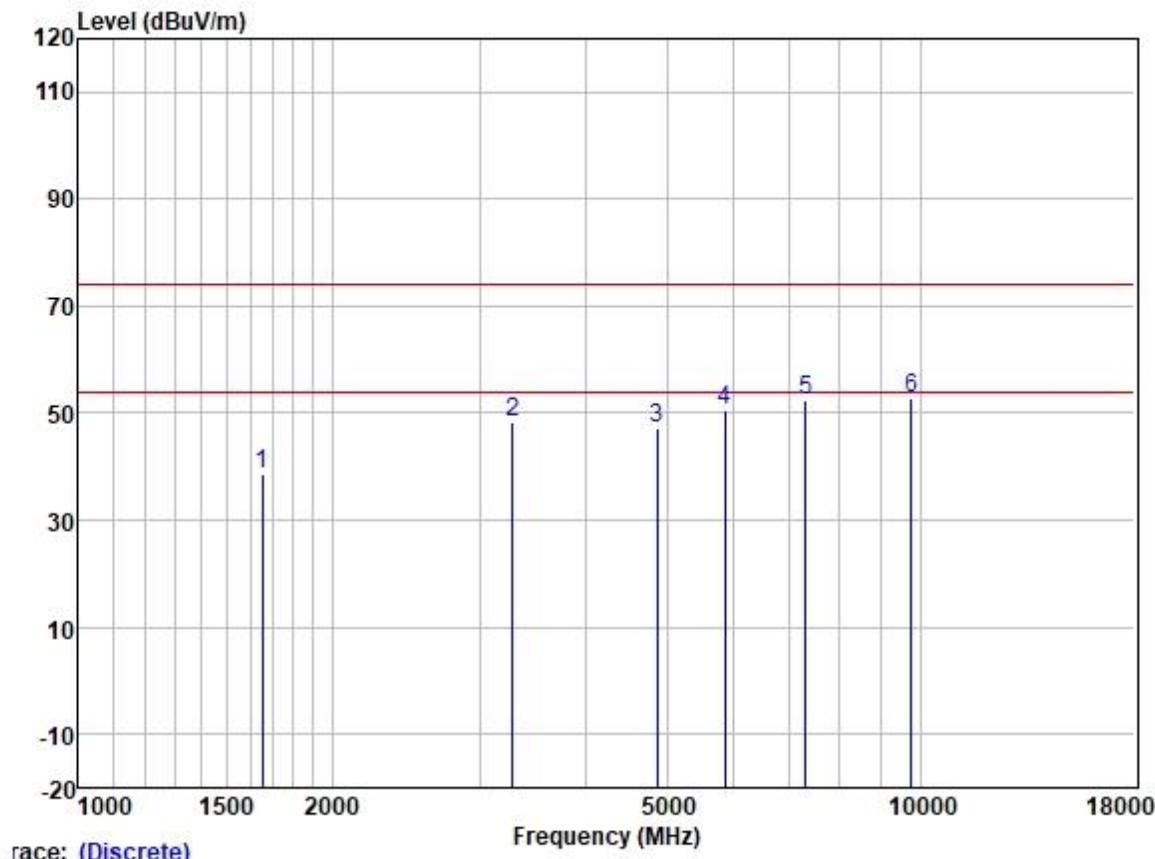
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit Line	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	48.04	25.64	2.80	37.93	38.55	74.00	-35.45	HORIZONTAL	Peak
2	3280.326	52.43	28.73	4.04	37.04	48.16	74.00	-25.84	HORIZONTAL	Peak
3	4874.000	47.13	31.54	5.50	36.84	47.33	74.00	-26.67	HORIZONTAL	Peak
4	5864.443	49.25	32.27	5.96	36.90	50.58	74.00	-23.42	HORIZONTAL	Peak
5	7311.000	47.72	35.93	6.11	37.42	52.34	74.00	-21.66	HORIZONTAL	Peak
6	9748.000	44.64	38.50	7.02	37.41	52.75	74.00	-21.25	HORIZONTAL	Peak

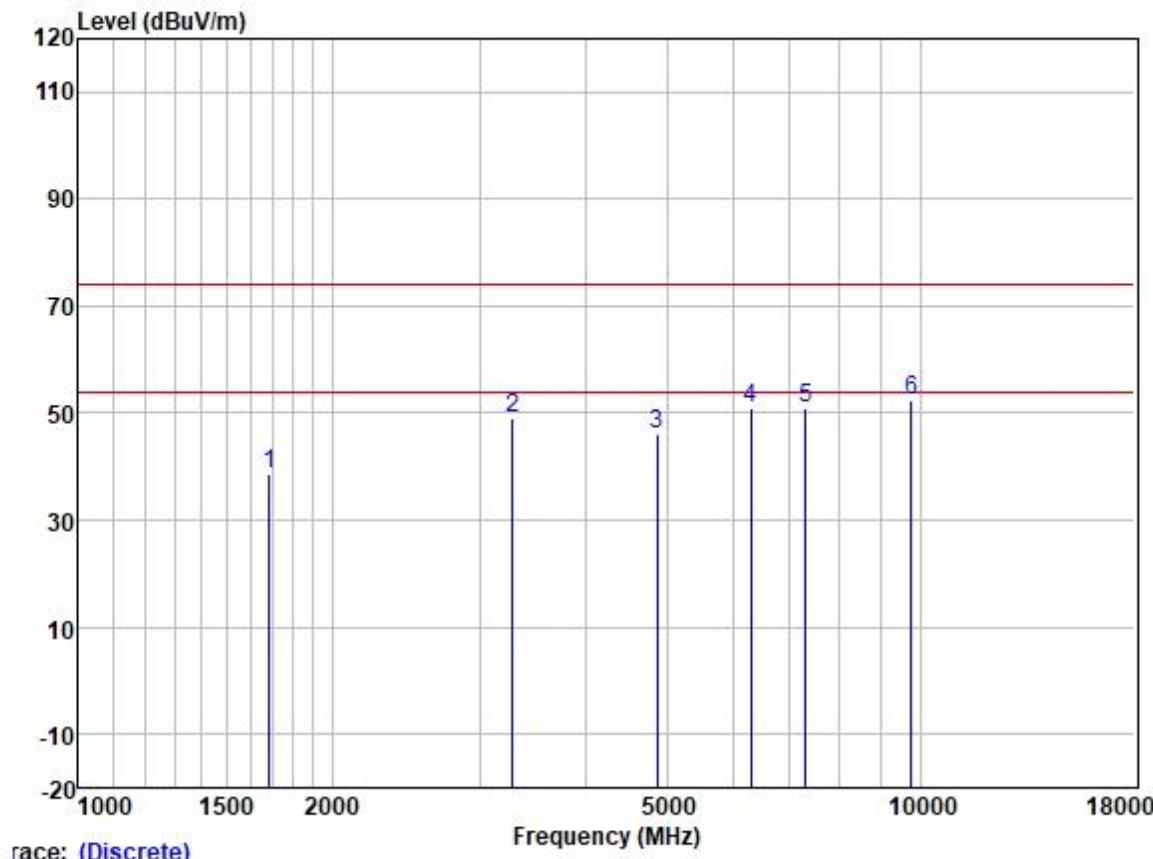
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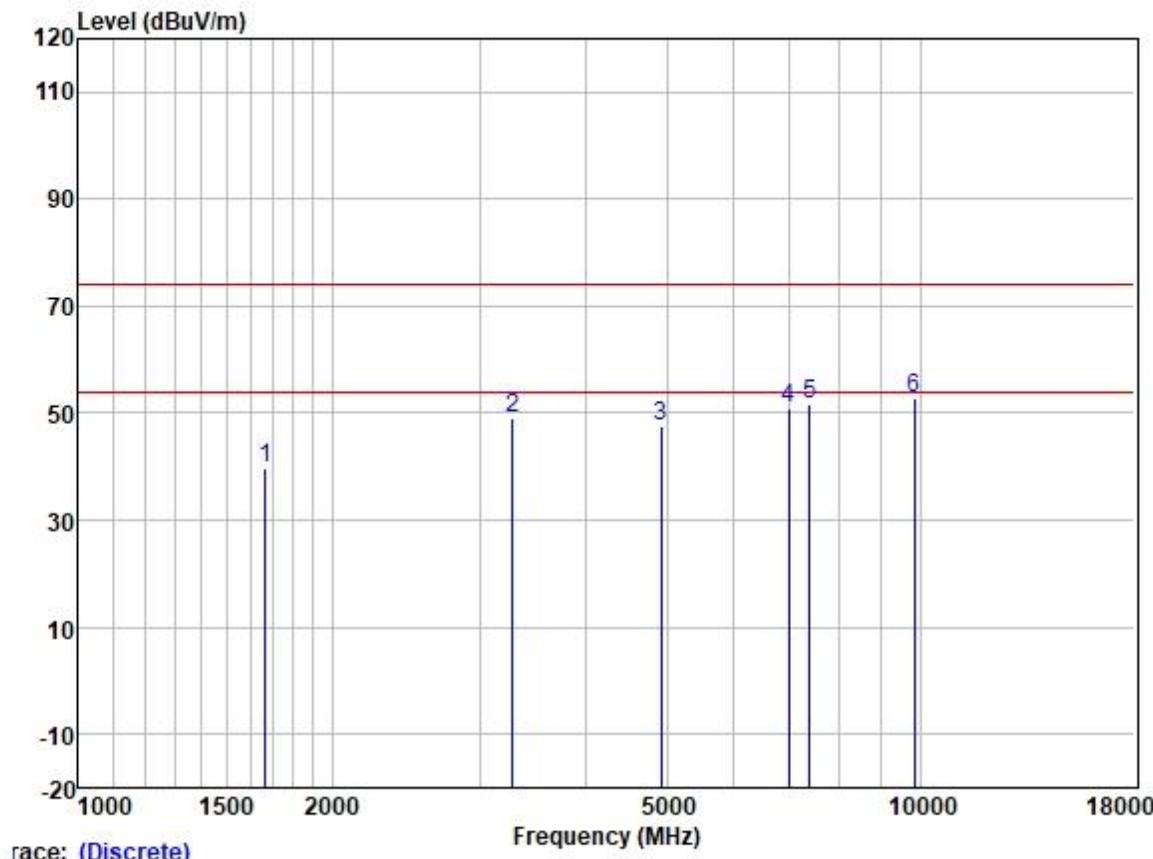


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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Point	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	1667.951	49.14	25.66	2.80	37.91	39.69	74.00	-34.31	HORIZONTAL	Peak
2	3280.326	53.15	28.73	4.04	37.04	48.88	74.00	-25.12	HORIZONTAL	Peak
3	4924.000	47.06	31.62	5.60	36.84	47.44	74.00	-26.56	HORIZONTAL	Peak
4	6974.982	47.52	34.97	5.81	37.23	51.07	74.00	-22.93	HORIZONTAL	Peak
5	7386.000	46.86	36.17	6.19	37.45	51.77	74.00	-22.23	HORIZONTAL	Peak
6	9848.000	44.77	38.58	6.99	37.41	52.93	74.00	-21.07	HORIZONTAL	Peak

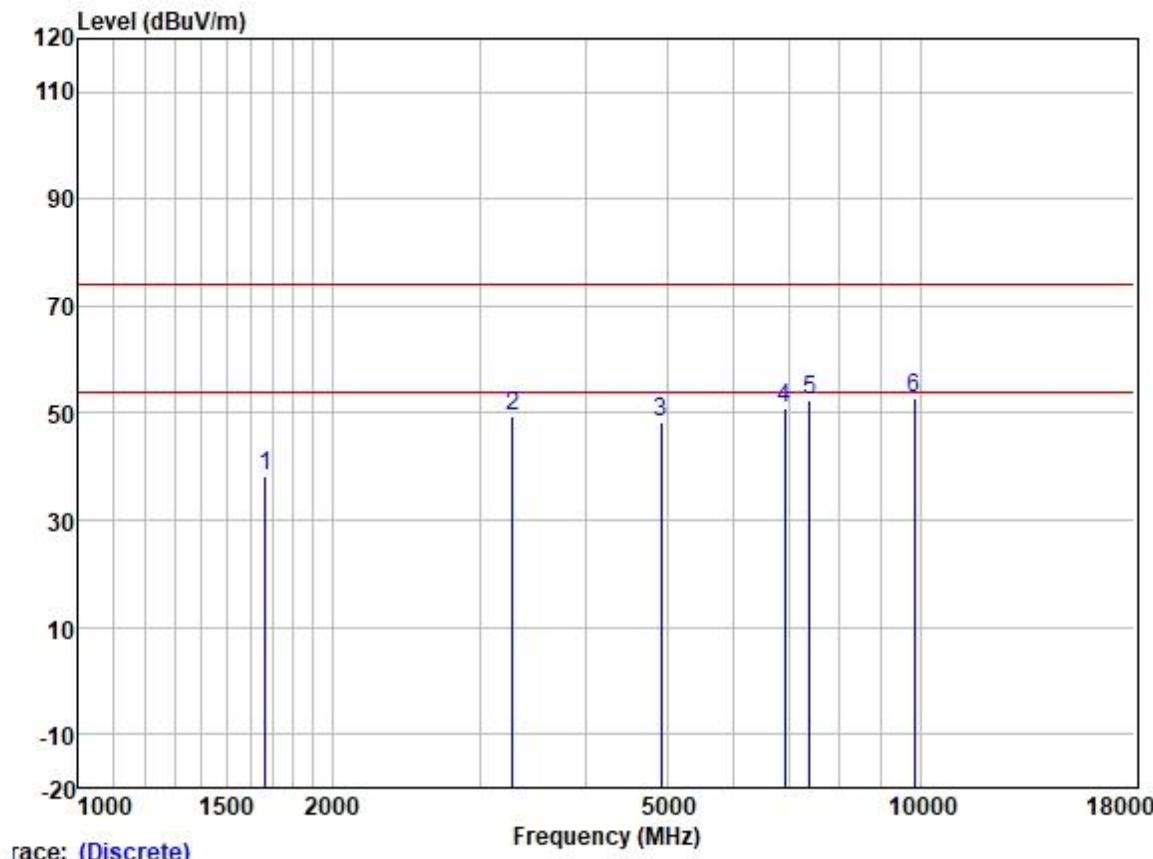
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Index	Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
		Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1667.951	47.76	25.66	2.80	37.91	38.31	74.00	-35.69	VERTICAL Peak
2	3280.326	53.53	28.73	4.04	37.04	49.26	74.00	-24.74	VERTICAL Peak
3	4924.000	48.05	31.62	5.60	36.84	48.43	74.00	-25.57	VERTICAL Peak
4	6894.806	47.38	34.85	5.81	37.18	50.86	74.00	-23.14	VERTICAL Peak
5	7386.000	47.38	36.17	6.19	37.45	52.29	74.00	-21.71	VERTICAL Peak
6	9848.000	44.66	38.58	6.99	37.41	52.82	74.00	-21.18	VERTICAL Peak

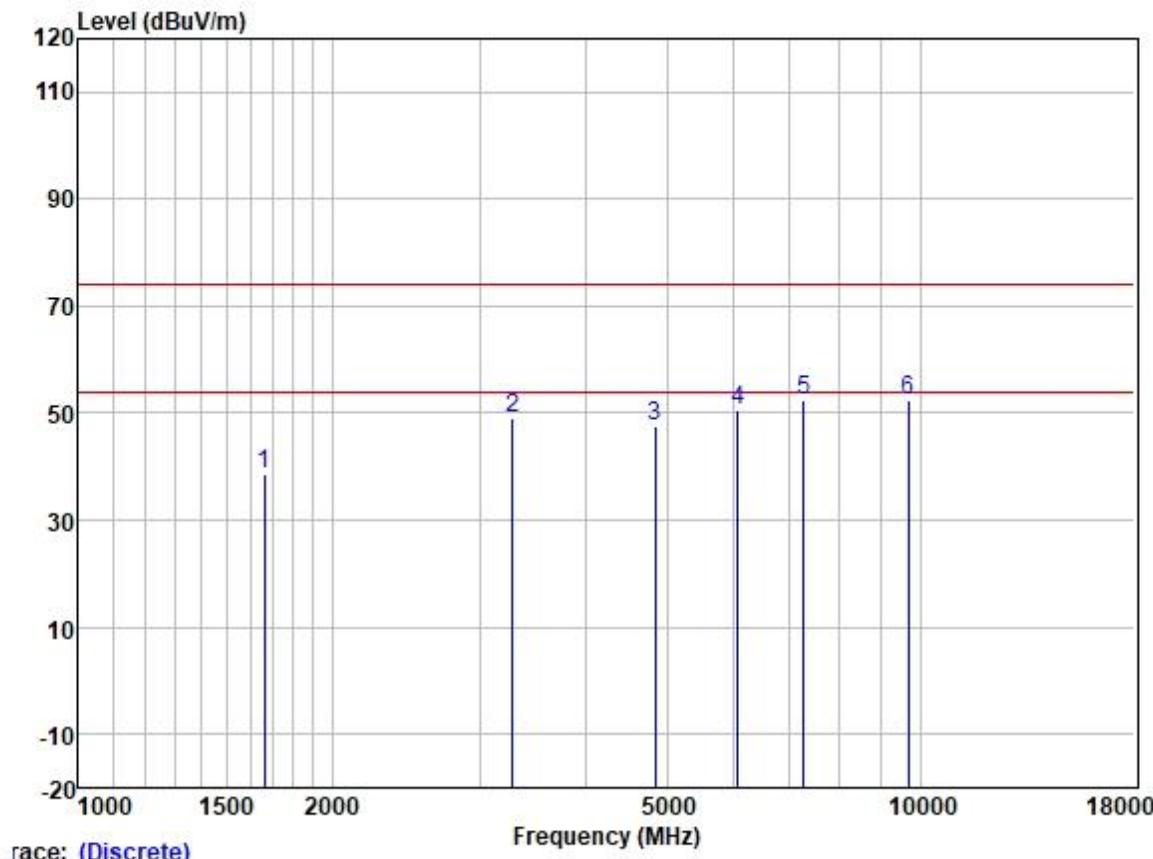
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Point	Frequency (MHz)	ReadAntenna		Cable		Preamp		Limit Line	Over Limit	Pol/Phase	Remark
		Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	1663.137	48.10	25.65	2.80	37.91	38.64	74.00	-35.36	HORIZONTAL	Peak	
2	3280.326	53.40	28.73	4.04	37.04	49.13	74.00	-24.87	HORIZONTAL	Peak	
3	4844.000	47.28	31.50	5.45	36.84	47.39	74.00	-26.61	HORIZONTAL	Peak	
4	6071.417	48.61	32.57	6.16	36.91	50.43	74.00	-23.57	HORIZONTAL	Peak	
5	7266.000	48.18	35.78	6.06	37.41	52.61	74.00	-21.39	HORIZONTAL	Peak	
6	9688.000	44.21	38.44	7.04	37.42	52.27	74.00	-21.73	HORIZONTAL	Peak	

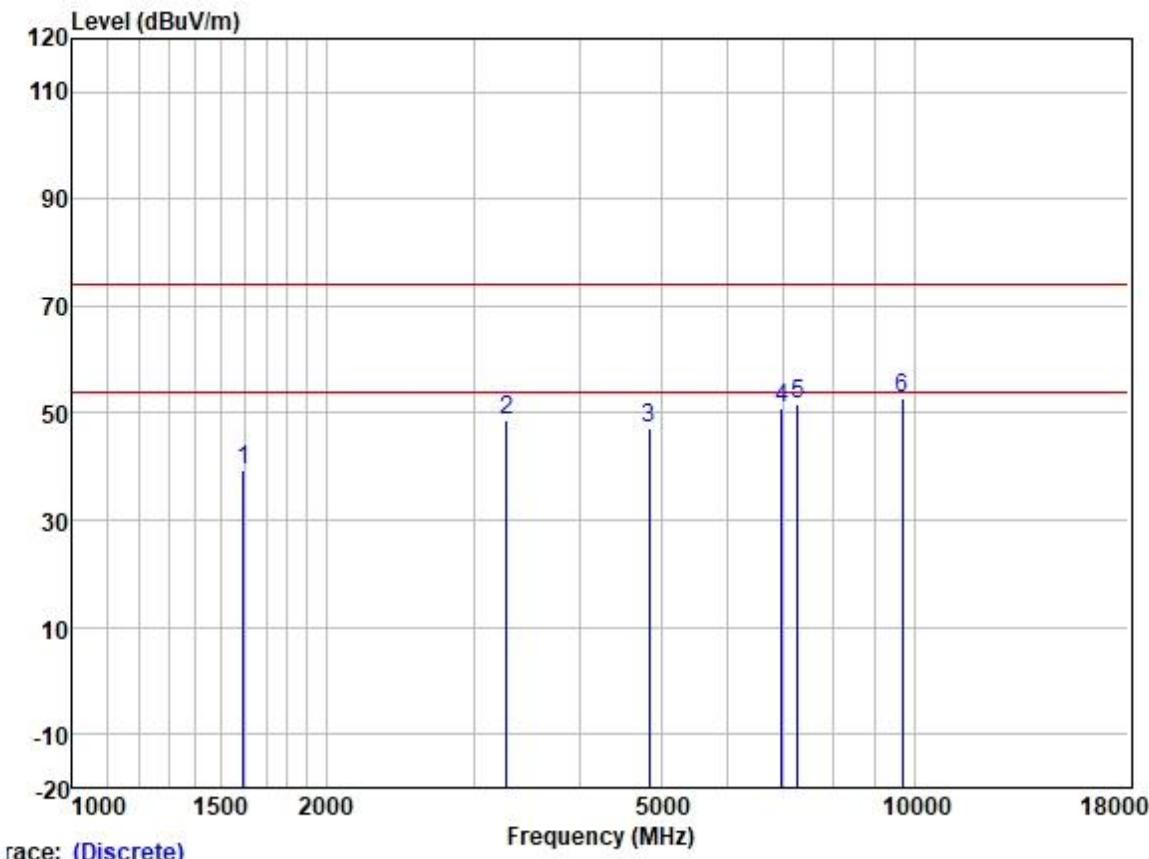
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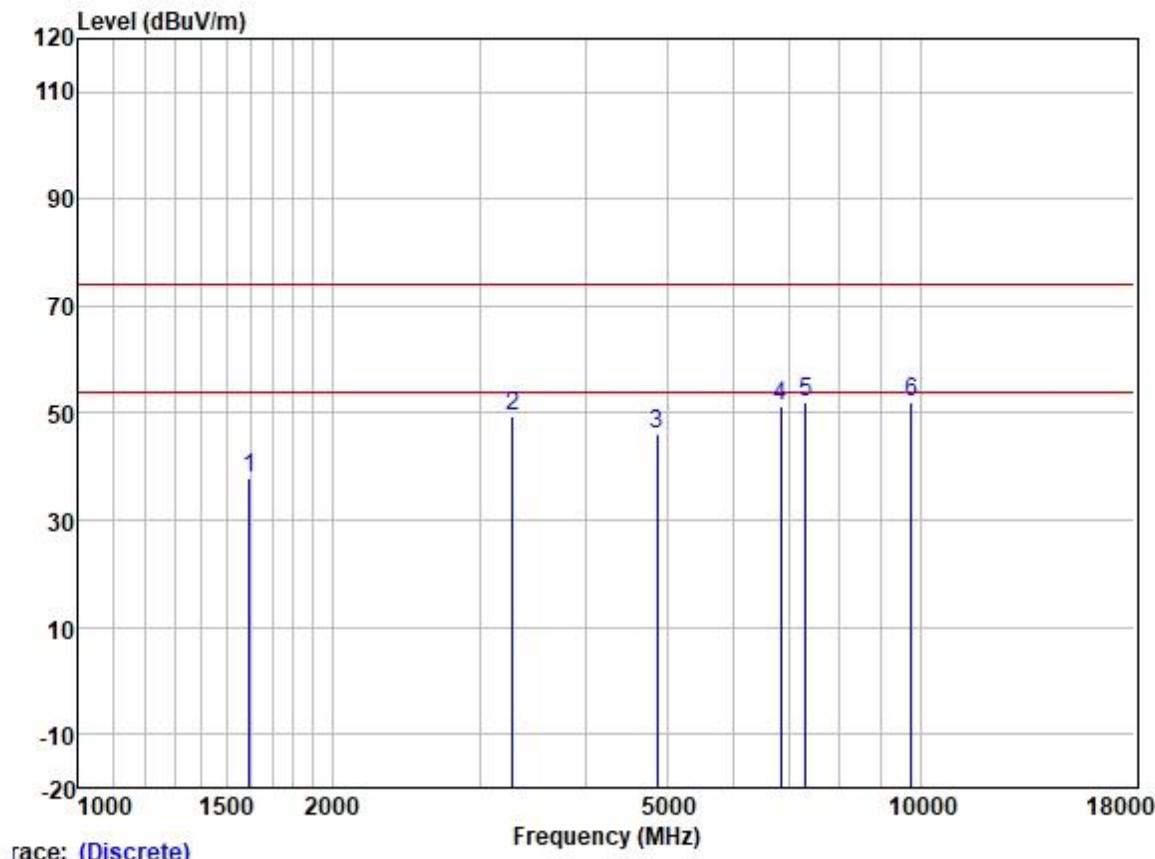


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Guangzhou Branch Testing Center for EEC Laboratory

Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1597.181	47.63	25.58	2.80	37.98	38.03	74.00	-35.97	HORIZONTAL	Peak
2	3280.326	53.57	28.73	4.04	37.04	49.30	74.00	-24.70	HORIZONTAL	Peak
3	4874.000	45.95	31.54	5.50	36.84	46.15	74.00	-27.85	HORIZONTAL	Peak
4	6835.278	47.91	34.74	5.82	37.13	51.34	74.00	-22.66	HORIZONTAL	Peak
5	7311.000	47.60	35.93	6.11	37.42	52.22	74.00	-21.78	HORIZONTAL	Peak
6	9748.000	43.92	38.50	7.02	37.41	52.03	74.00	-21.97	HORIZONTAL	Peak

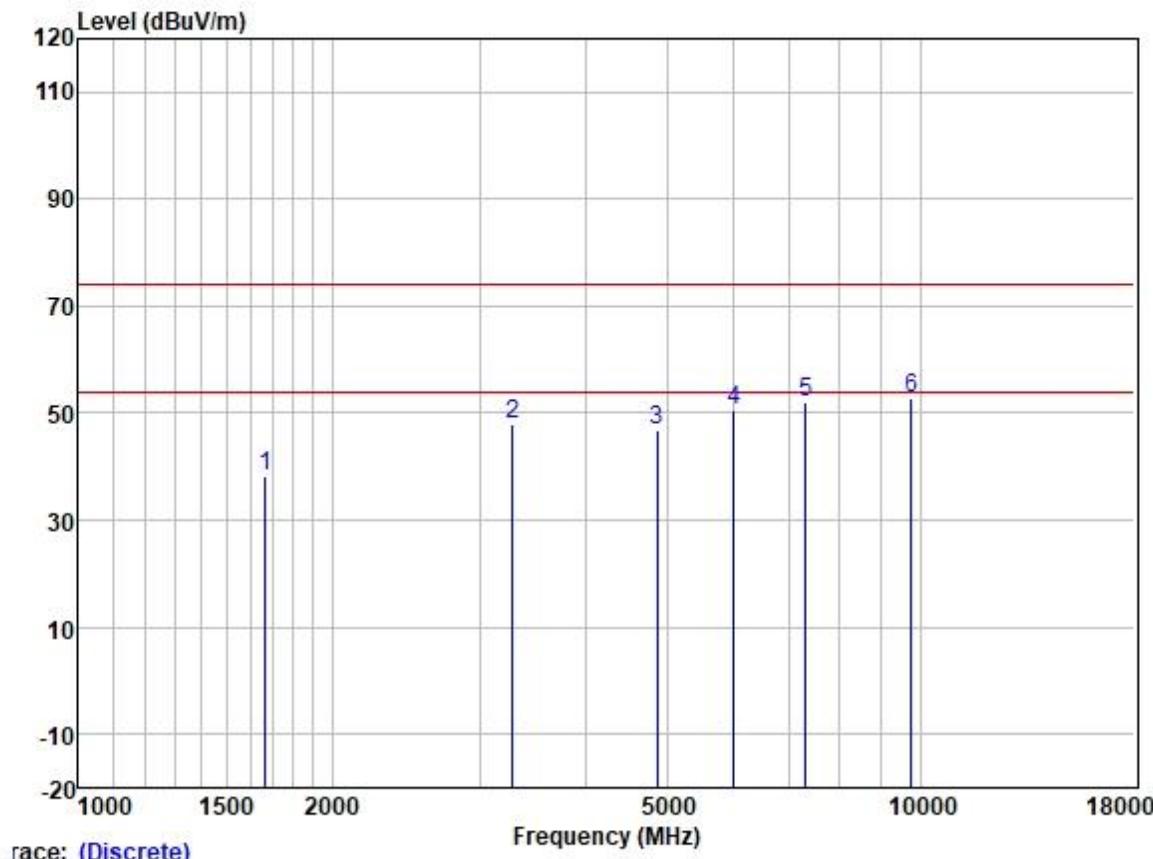
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



ReadAntenna	Cable			Preamp	Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1667.951	47.83	25.66	2.80	37.91	38.38	74.00	-35.62 VERTICAL Peak
2	3280.326	52.24	28.73	4.04	37.04	47.97	74.00	-26.03 VERTICAL Peak
3	4874.000	46.54	31.54	5.50	36.84	46.74	74.00	-27.26 VERTICAL Peak
4	6001.626	48.78	32.40	6.20	36.90	50.48	74.00	-23.52 VERTICAL Peak
5	7311.000	47.29	35.93	6.11	37.42	51.91	74.00	-22.09 VERTICAL Peak
6	9748.000	44.74	38.50	7.02	37.41	52.85	74.00	-21.15 VERTICAL Peak

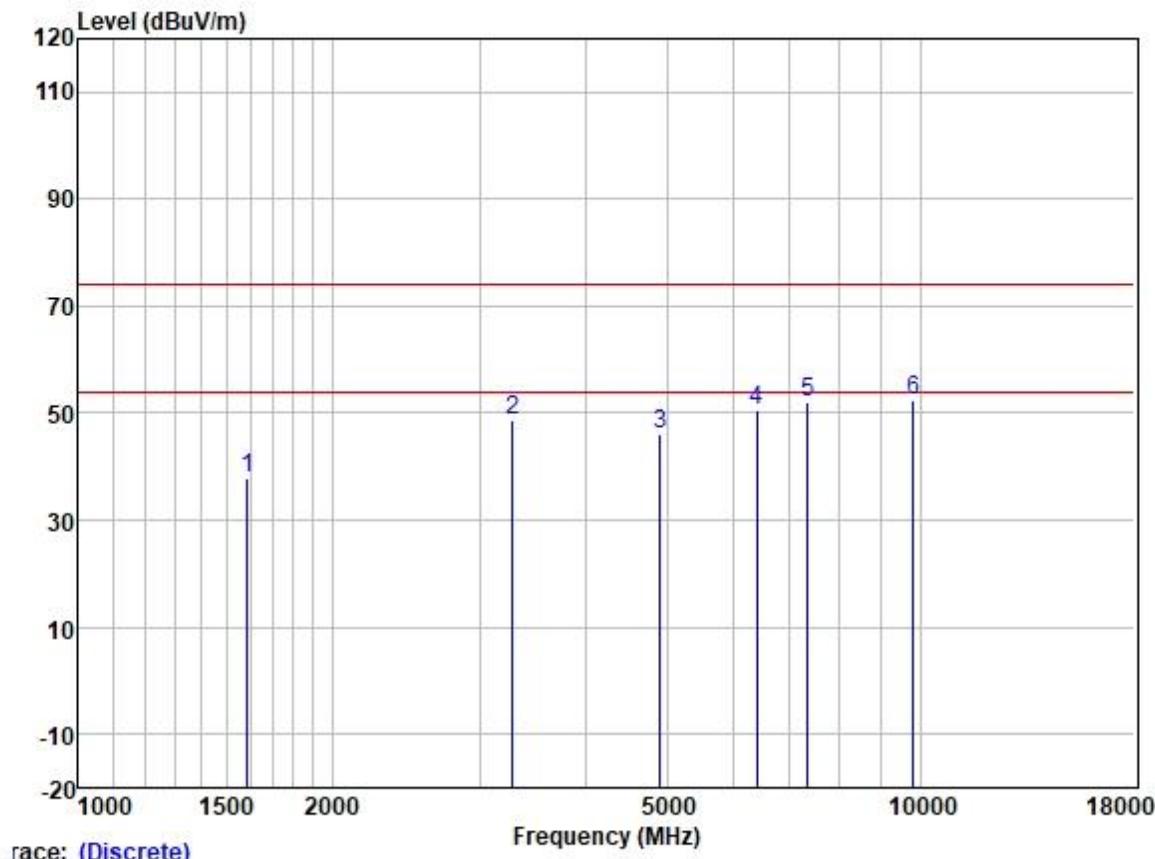
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Test Mode: 01; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1587.975	47.50	25.57	2.80	37.98	37.89	74.00	-36.11	HORIZONTAL	Peak
2	3280.326	52.89	28.73	4.04	37.04	48.62	74.00	-25.38	HORIZONTAL	Peak
3	4904.000	45.78	31.58	5.55	36.84	46.07	74.00	-27.93	HORIZONTAL	Peak
4	6395.654	48.08	33.74	5.90	36.98	50.74	74.00	-23.26	HORIZONTAL	Peak
5	7356.000	47.16	36.06	6.15	37.44	51.93	74.00	-22.07	HORIZONTAL	Peak
6	9808.000	44.34	38.56	7.00	37.41	52.49	74.00	-21.51	HORIZONTAL	Peak

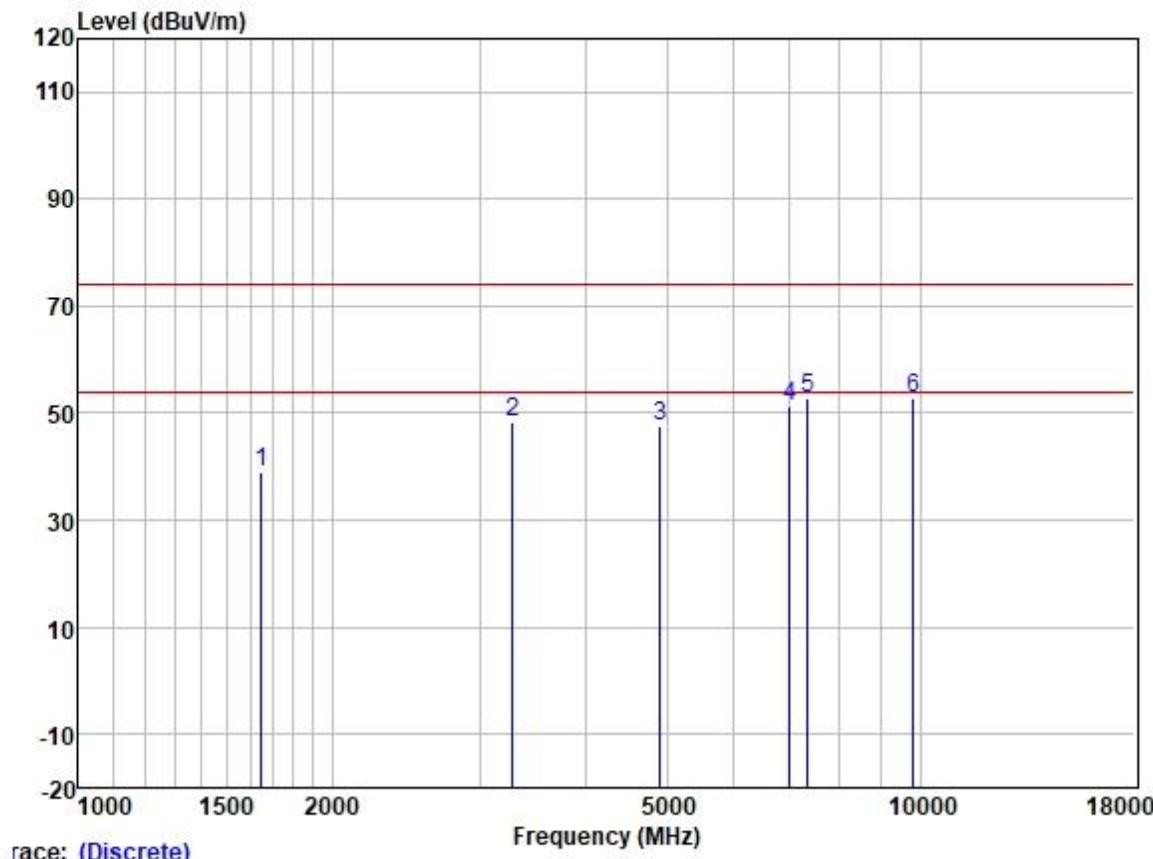
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Test Mode: 01; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Line	Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
		Freq	Level	Factor	Loss						
	MHz	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1648.778	48.41	25.63	2.80	37.93	38.91	74.00	-35.09	VERTICAL	Peak	
2	3280.326	52.70	28.73	4.04	37.04	48.43	74.00	-25.57	VERTICAL	Peak	
3	4904.000	47.29	31.58	5.55	36.84	47.58	74.00	-26.42	VERTICAL	Peak	
4	6995.172	47.59	35.00	5.81	37.25	51.15	74.00	-22.85	VERTICAL	Peak	
5	7356.000	47.97	36.06	6.15	37.44	52.74	74.00	-21.26	VERTICAL	Peak	
6	9808.000	44.63	38.56	7.00	37.41	52.78	74.00	-21.22	VERTICAL	Peak	

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**7.10 Duty Cycle**

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

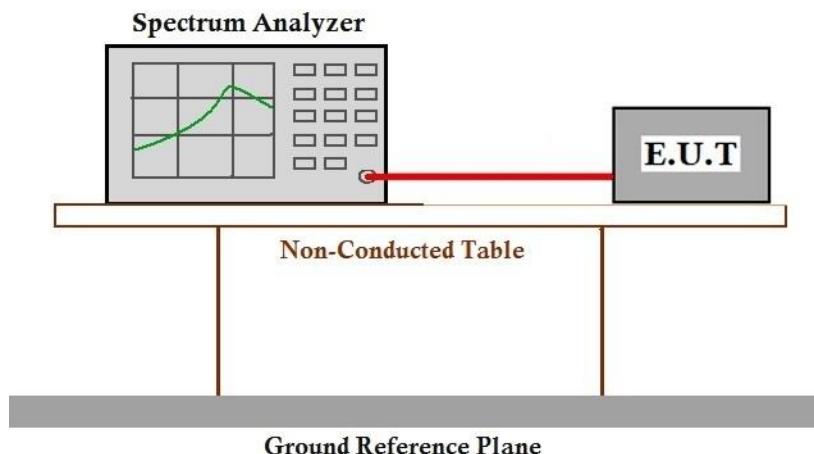
**7.10.1 E.U.T. Operation**

Operating Environment:

Temperature: 22.0 °C      Humidity: 53.5 % RH      Atmospheric Pressure: 1003 mbar

**7.10.2 Test Mode Description**

Pre-scan / Final test	Mode Code	Description
Final test	01	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.

**7.10.3 Test Setup Diagram****7.10.4 Measurement Procedure and Data**

cable loss=0.9dB

Please Refer to Appendix for Details

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## 8 Test Setup Photo

Refer to Appendix - Test Setup Photos for GZCR2111021436AT.

## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZCR2111021436AT.

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## 10 Appendix

### 1. Duty Cycle

#### 1.1 Ant1

##### 1.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2462	100.000	100.000	100.00	0.00	0.00
802.11g	SISO	2412	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2462	100.000	100.000	100.00	0.00	0.00
802.11n (HT20)	SISO	2412	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2462	100.000	100.000	100.00	0.00	0.00
802.11n (HT40)	SISO	2422	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2452	100.000	100.000	100.00	0.00	0.00

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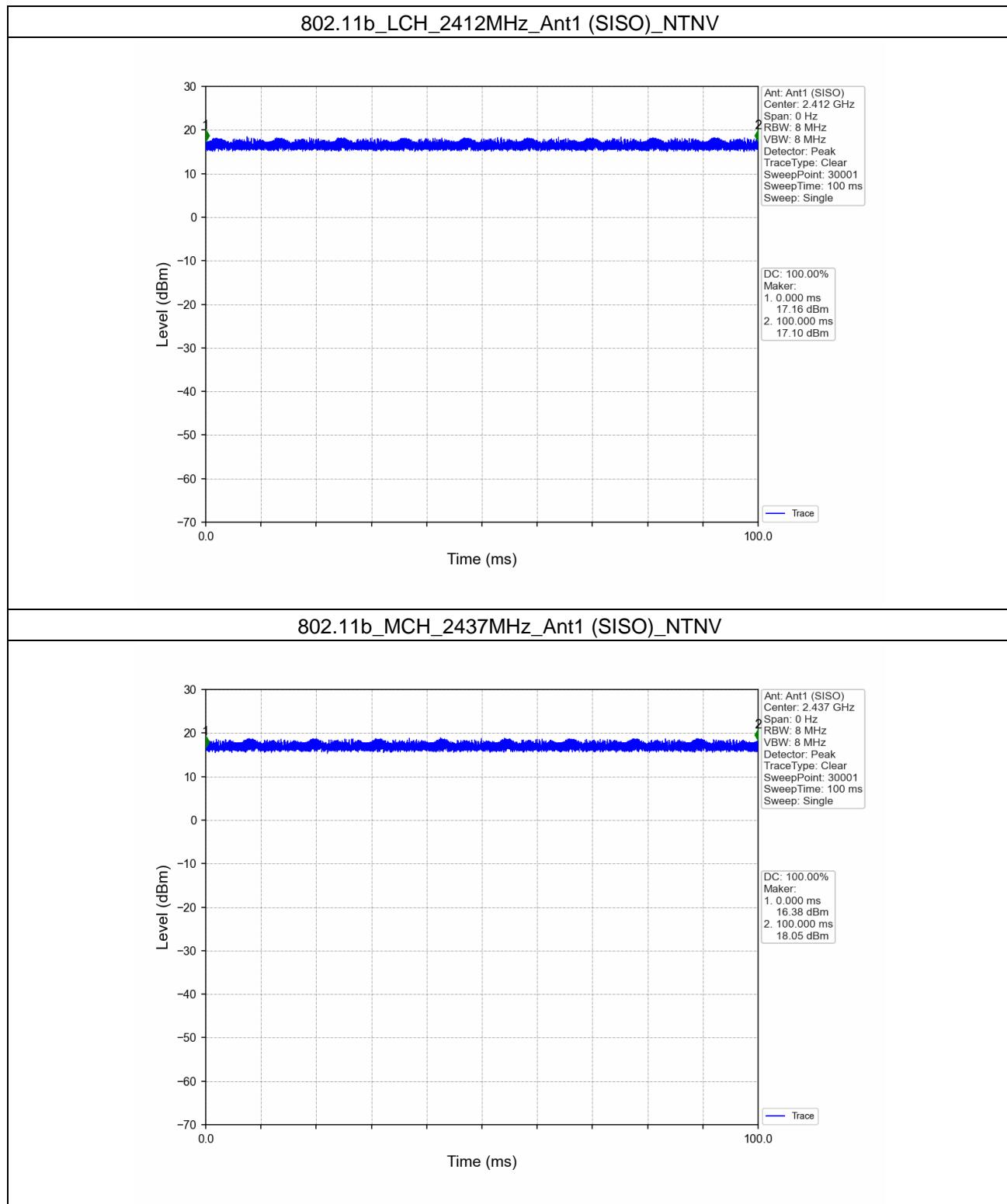
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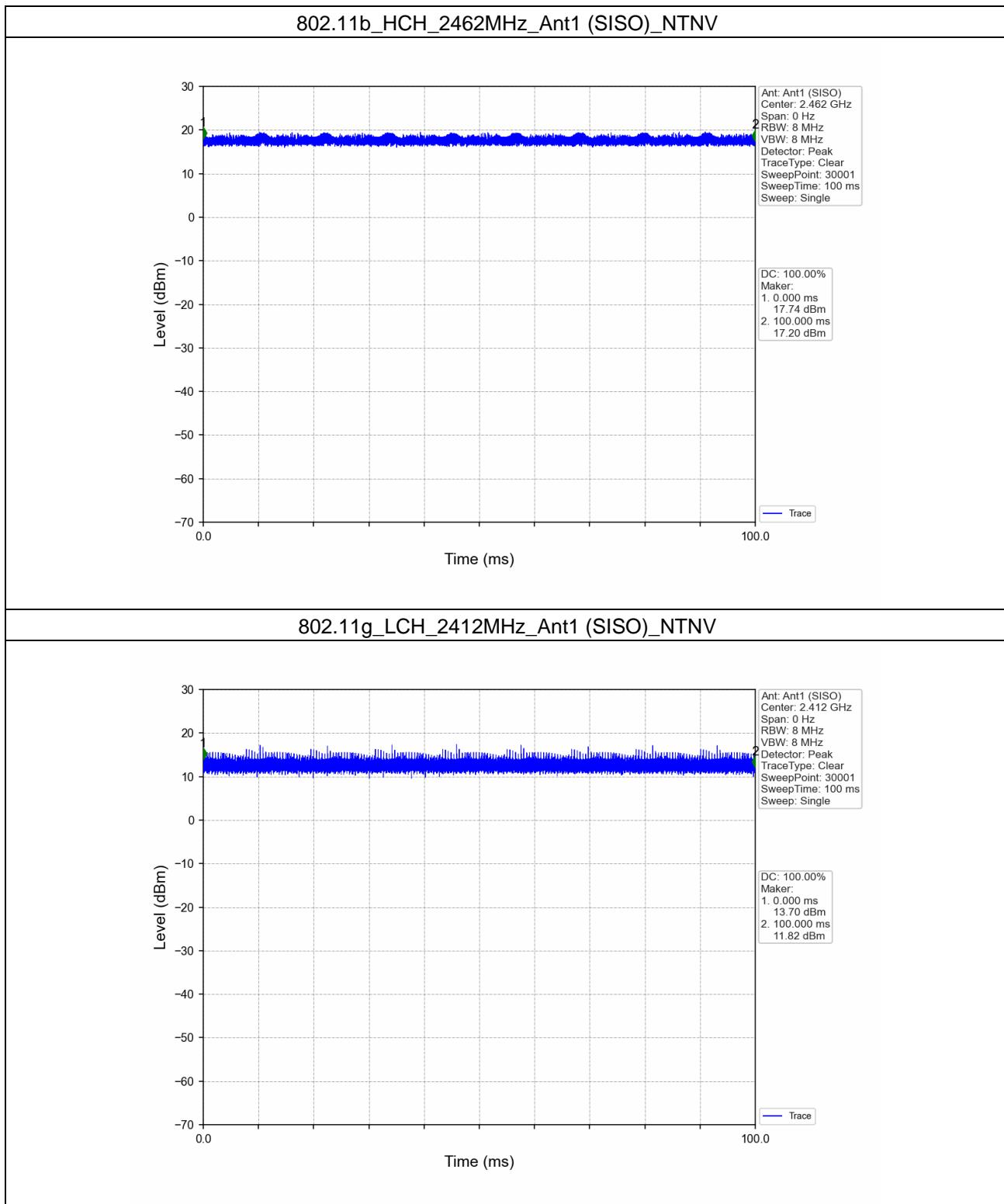
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**1.1.2 Test Graph**

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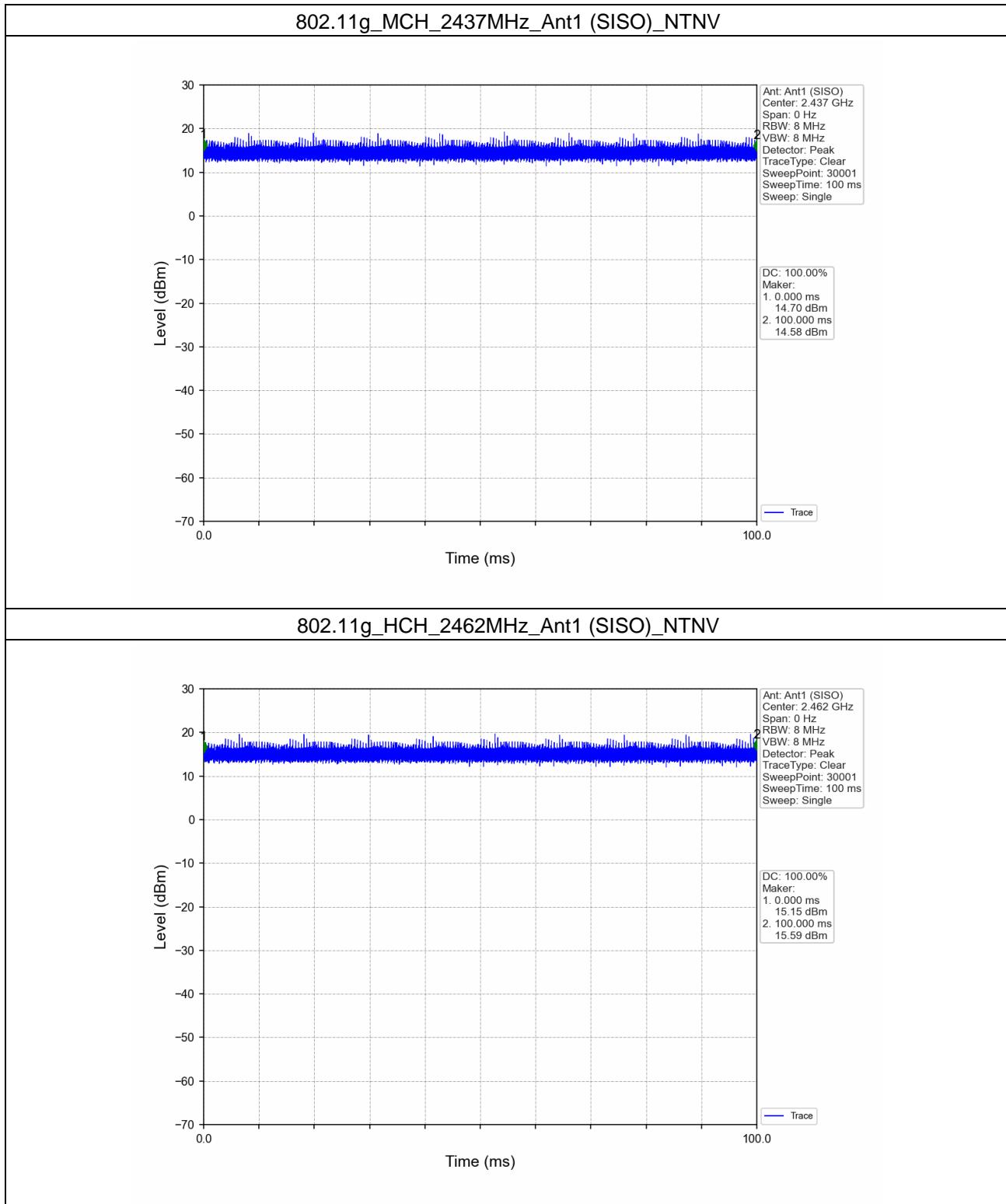
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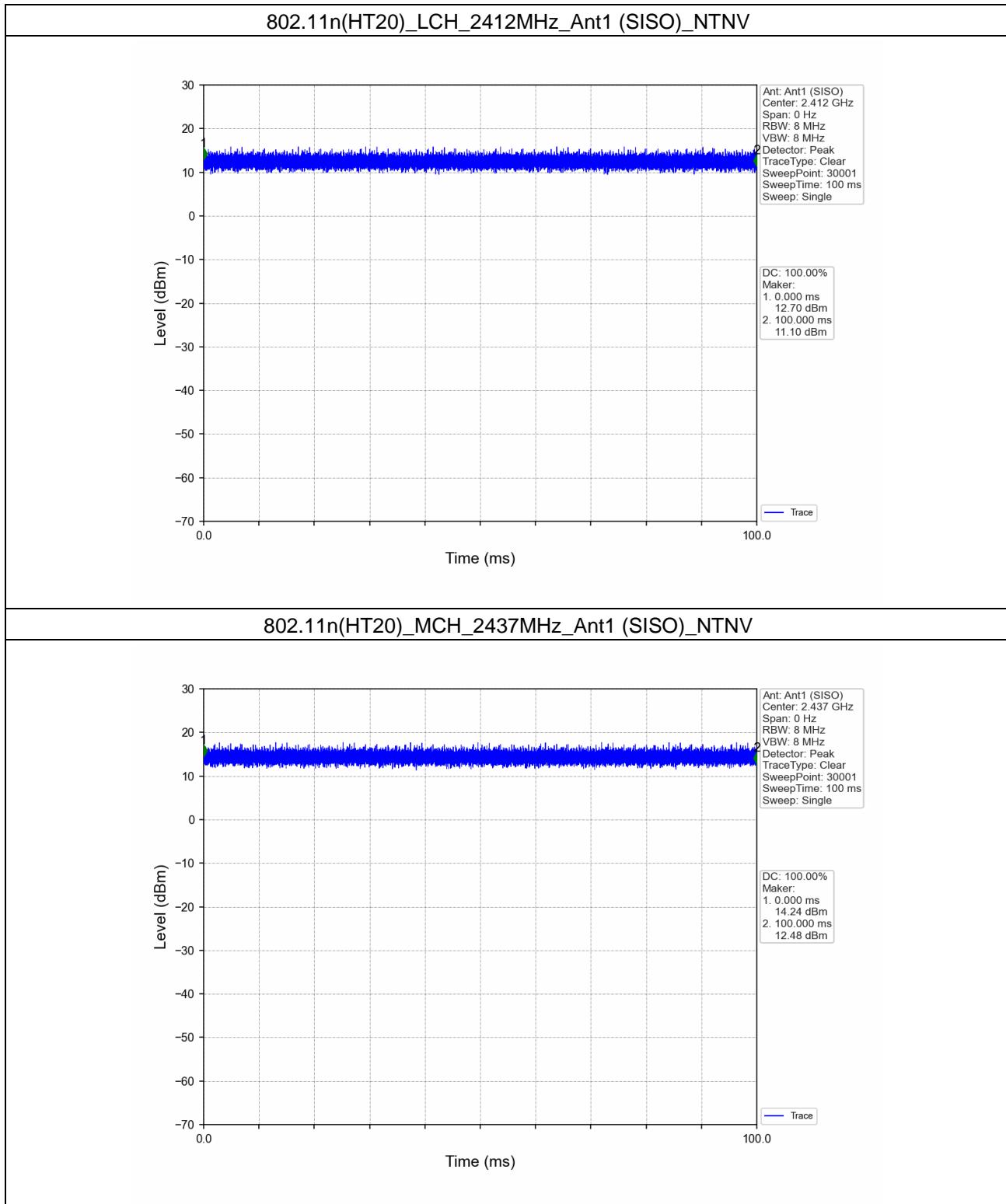
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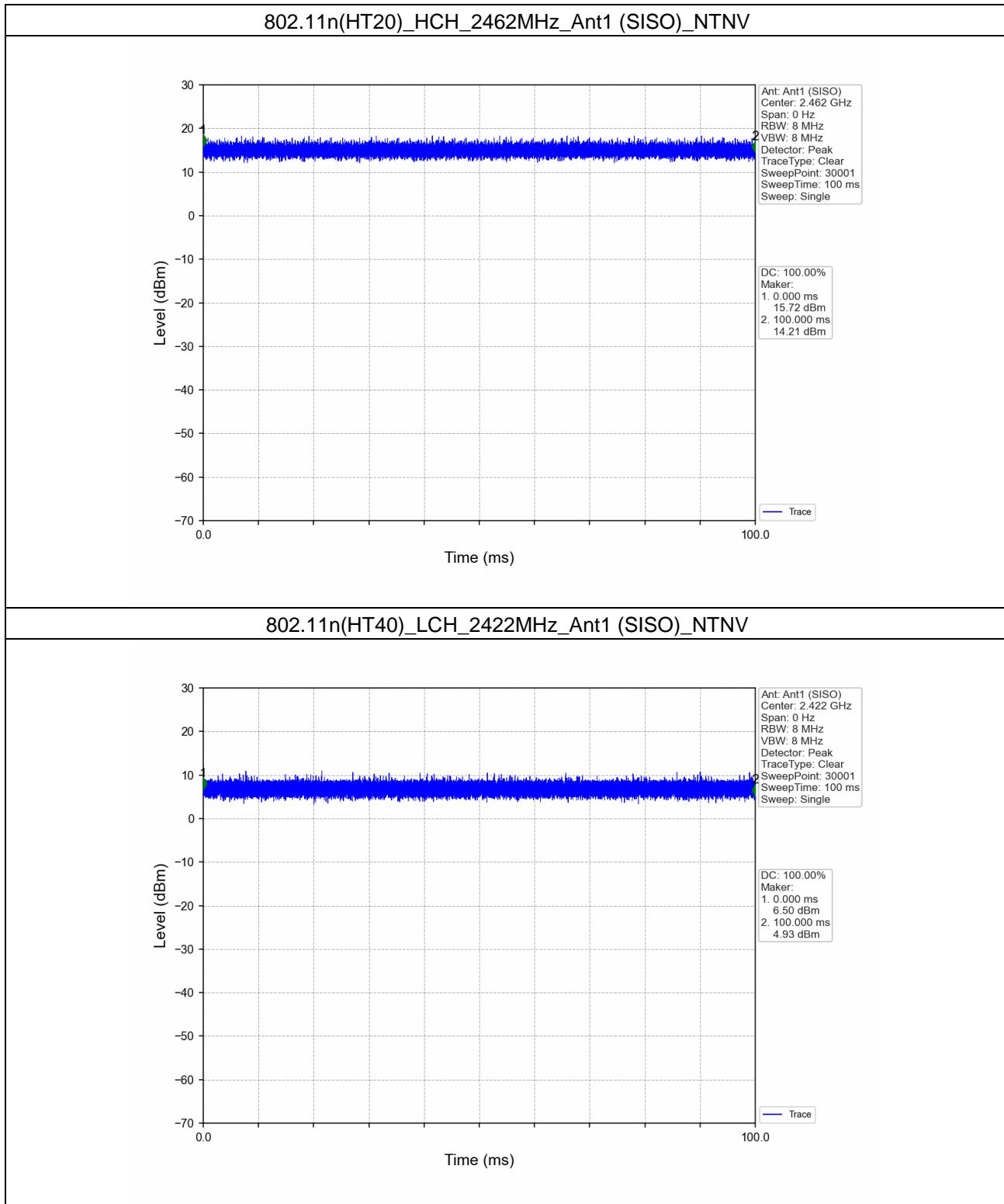
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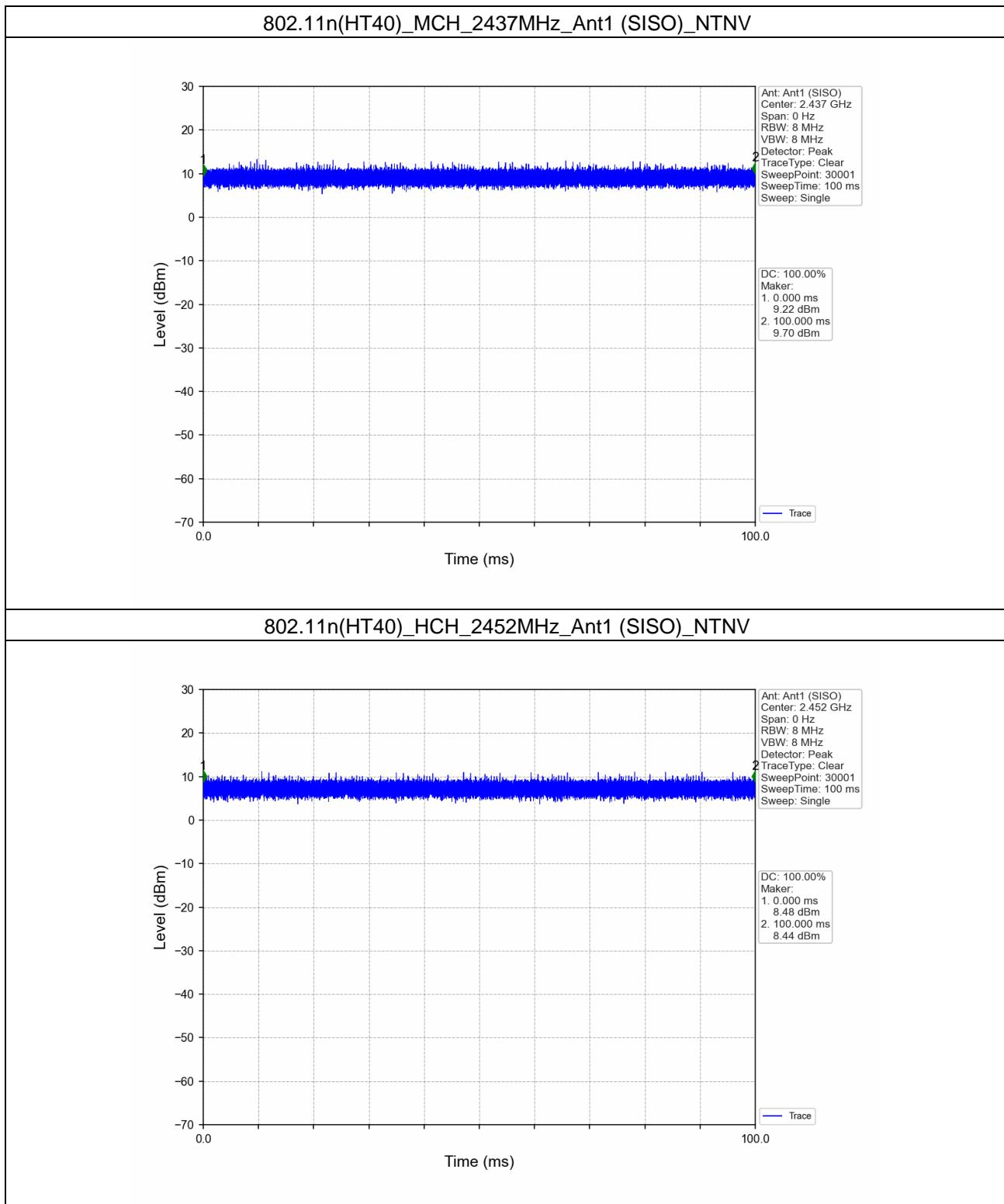
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