

# TEST REPORT

**Application No.:** GZCR2302000116AT  
**Applicant:** Mattel Asia Pacific Sourcing Ltd.  
**Address of Applicant:** 11/F., South Tower, World Finance Centre, Harbour City, Tsimshatsui, Kowloon, 852 Hong Kong  
**Manufacturer:** Mattel Asia Pacific Sourcing Ltd.  
**Address of Manufacturer:** 11/F., South Tower, World Finance Centre, Harbour City, Tsimshatsui, Kowloon, 852 Hong Kong  
**Equipment Under Test (EUT):**  
**EUT Name:** Fun to Connect Phones  
**Model No.:** HNB43  
**Trade Mark:** Fisher-Price  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.247  
**Date of Receipt:** 2023-02-16  
**Date of Test:** 2023-02-17  
**Date of Issue:** 2023-02-20

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

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

Ricky Liu  
Manager



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

Revision Record			
Version	Report No.	Date	Remark
01		2023-02-20	Original

Authorized for issue by			
Tested By			
		Curry Wu/Project Engineer	
Reviewed By			
		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 Average 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

**Note:**

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

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



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## 4 General Information

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

Power supply:	6V DC(1.5V x 4 "AAA" Size Batteries)
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz, 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11 g/n: OFDM(16QAM, 64QAM, QPSK, BPSK)
Channel Spacing:	5MHz
Number of Channels:	802.11b/g/n(HT20): 11, 802.11n(HT40):7
Antenna Type:	PCB Antenna
Antenna Gain:	3.26dBi

### 4.2 Description of Support Units

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



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### 4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Average 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); ± 5.12dB (1GHz-6GHz); ± 5.38dB (6GHz-18GHz); ± 5.61dB (18GHz-40GHz)
Radiated Spurious Emissions (Below 1GHz)	±5.00dB (30MHz-1GHz; 3m); ±4.38dB (30MHz-1GHz; 10m);
Radiated Spurious Emissions (Above 1GHz)	± 5.12dB (1GHz-6GHz); ± 5.38dB (6GHz-18GHz); ± 5.61dB (18GHz-40GHz)
<p>Remark:</p> <p>The <math>U_{lab}</math> (lab Uncertainty) is less than <math>U_{CISPR}</math> (CISPR Uncertainty), so the test results</p> <ul style="list-style-type: none"> <li>- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;</li> <li>- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.</li> </ul>	



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#### 4.4 Test Location

All tests were performed at:

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

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

No tests were sub-contracted.

#### 4.5 Test Facility

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

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

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

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

- **ACMA**

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

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

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

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

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

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

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

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

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

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

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



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#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None



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## 5 Equipment List

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

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

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

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

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



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Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-21	2025-09-20
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2022-12-16	2023-12-15
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2022-12-16	2023-12-15
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2022-10-21	2023-10-20
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2022-07-29	2023-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2022-08-24	2023-08-23

Radiated Spurious Emissions (Below 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	EMC2174	2022-06-19	2025-06-18
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
High Pass Filter (915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2022-12-16	2023-12-15
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2022-10-16	2025-10-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19
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<b>Radiated Spurious Emissions (Above 1GHz)</b>					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-21	2025-09-20
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2022-12-16	2023-12-15
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2022-12-16	2023-12-15
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2022-10-21	2023-10-20
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2022-07-29	2023-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preampfier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2022-08-24	2023-08-23

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



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## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

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

#### 6.1.2 Conclusion

15.203 Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of 15.211, 15.213, 15.217, 15.219, 15.221, or 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 3.26dBi

Antenna location: Refer to internal photo.



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## 7 Radio Spectrum Matter Test Results

### 7.1 Conducted Average 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≤ 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: 50.6 % RH Atmospheric Pressure: 1003 mbar

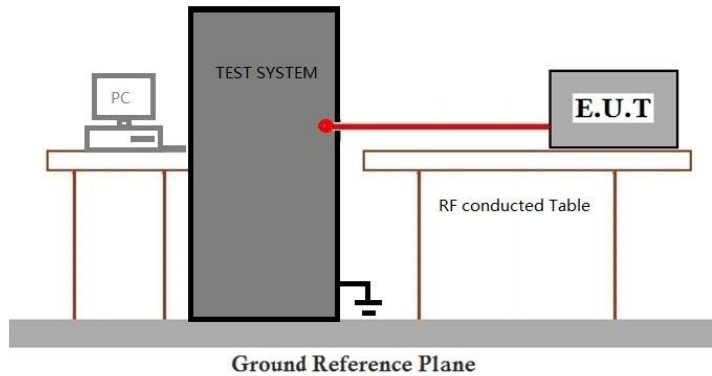
#### 7.1.2 Test Mode Description

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.



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### 7.1.3 Test Setup Diagram



### 7.1.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details



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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

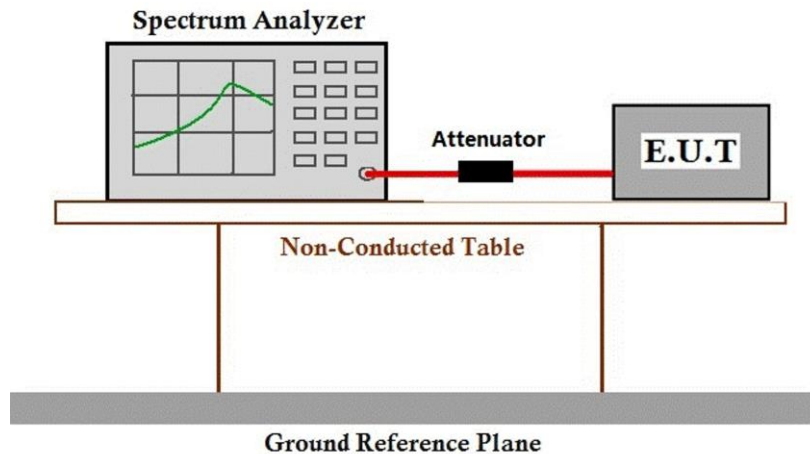
Operating Environment:

Temperature: 24.5 °C      Humidity: 50.6 % RH      Atmospheric Pressure: 1003 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.

#### 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 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

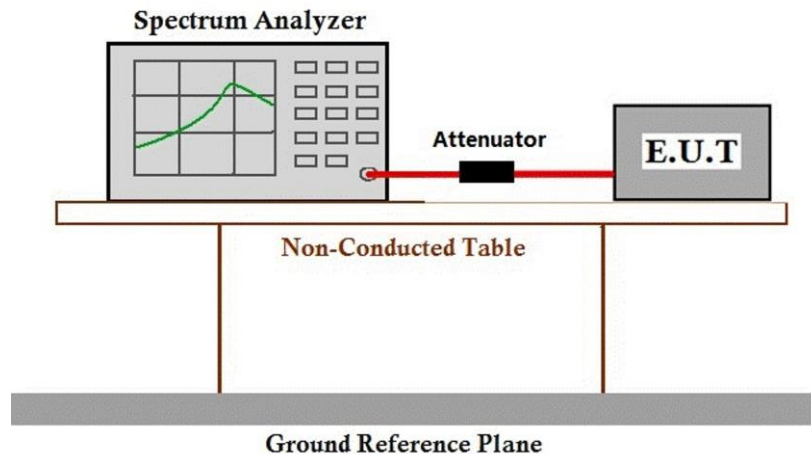
Operating Environment:

Temperature: 24.5 °C Humidity: 50.6 % RH Atmospheric Pressure: 1003 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.

#### 7.3.3 Test Setup Diagram



#### 7.3.4 Measurement Procedure and Data

cable loss=0.9dB

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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)).

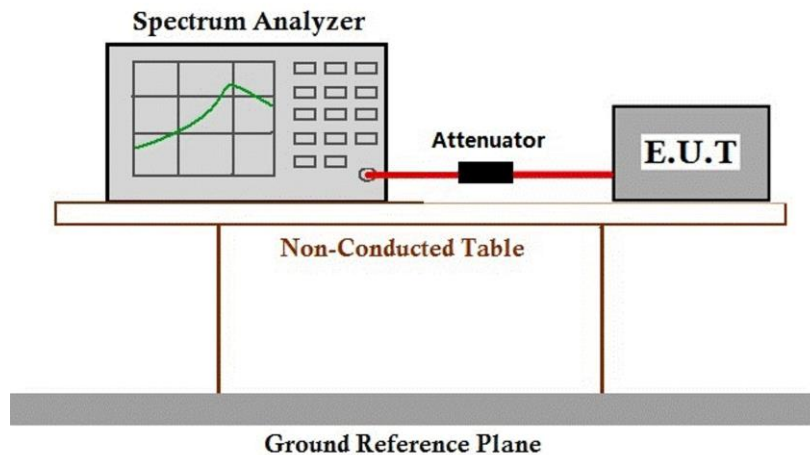
#### 7.4.1 E.U.T. Operation

Operating Environment:  
 Temperature: 24.5 °C Humidity: 50.6 % RH Atmospheric Pressure: 1003 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.

#### 7.4.3 Test Setup Diagram



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**7.4.4 Measurement Procedure and Data**

cable loss=0.9dB

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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

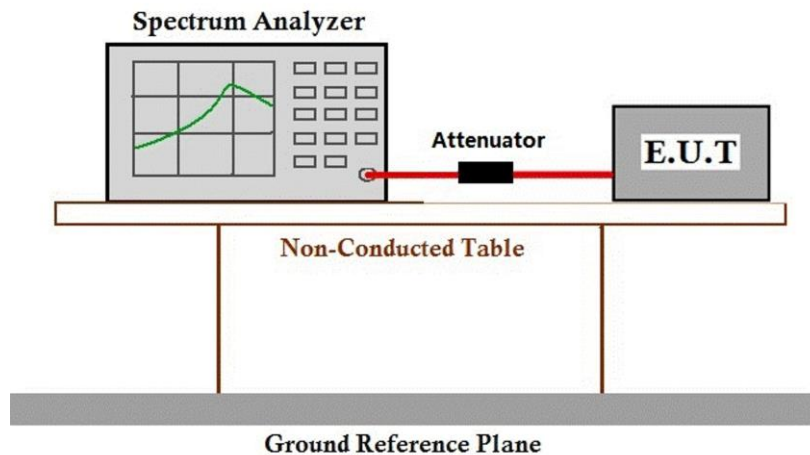
Operating Environment:

Temperature: 24.5 °C Humidity: 50.6 % RH Atmospheric Pressure: 1003 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.

#### 7.5.3 Test Setup Diagram



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**7.5.4 Measurement Procedure and Data**

cable loss=0.9dB

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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  
 Measurement Distance: 3m  
 Limit:

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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

**7.6.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 24.7 °C Humidity: 50.3 % RH Atmospheric Pressure: 1003 mbar

**7.6.2 Test Mode Description**

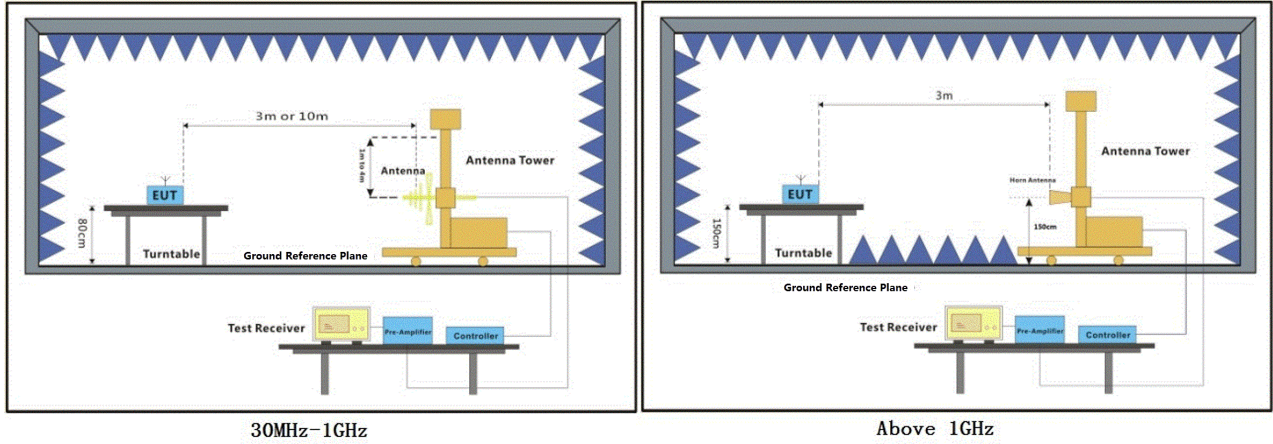
Pre-scan / Mode	Description
Final test Code	
Final test 00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case 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.



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

### 7.6.3 Test Setup Diagram



30MHz-1GHz

Above 1GHz



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**7.6.4 Measurement Procedure and Data**

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

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

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

Remark 3: Remark: For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the widest bandwidth which can be covered the same channel (center frequency) on modes with narrower bandwidth that have the same or lower output power for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.

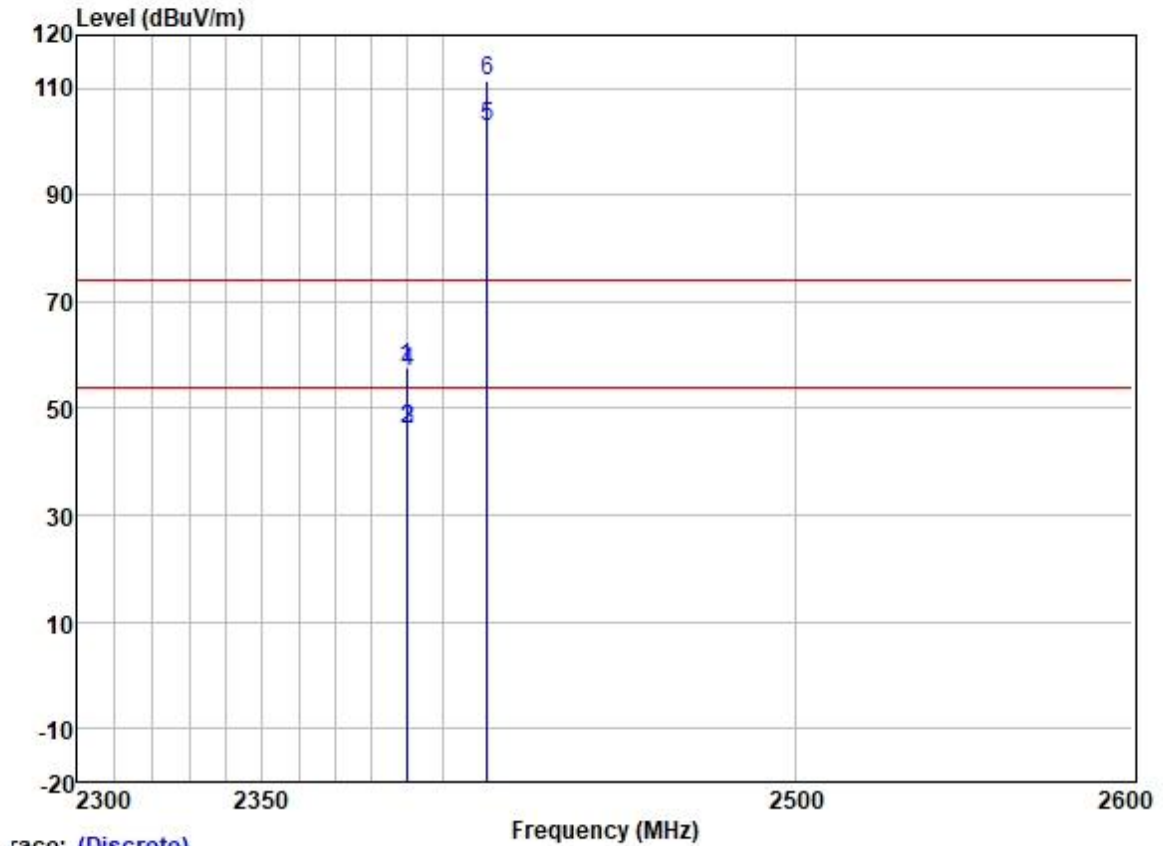


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



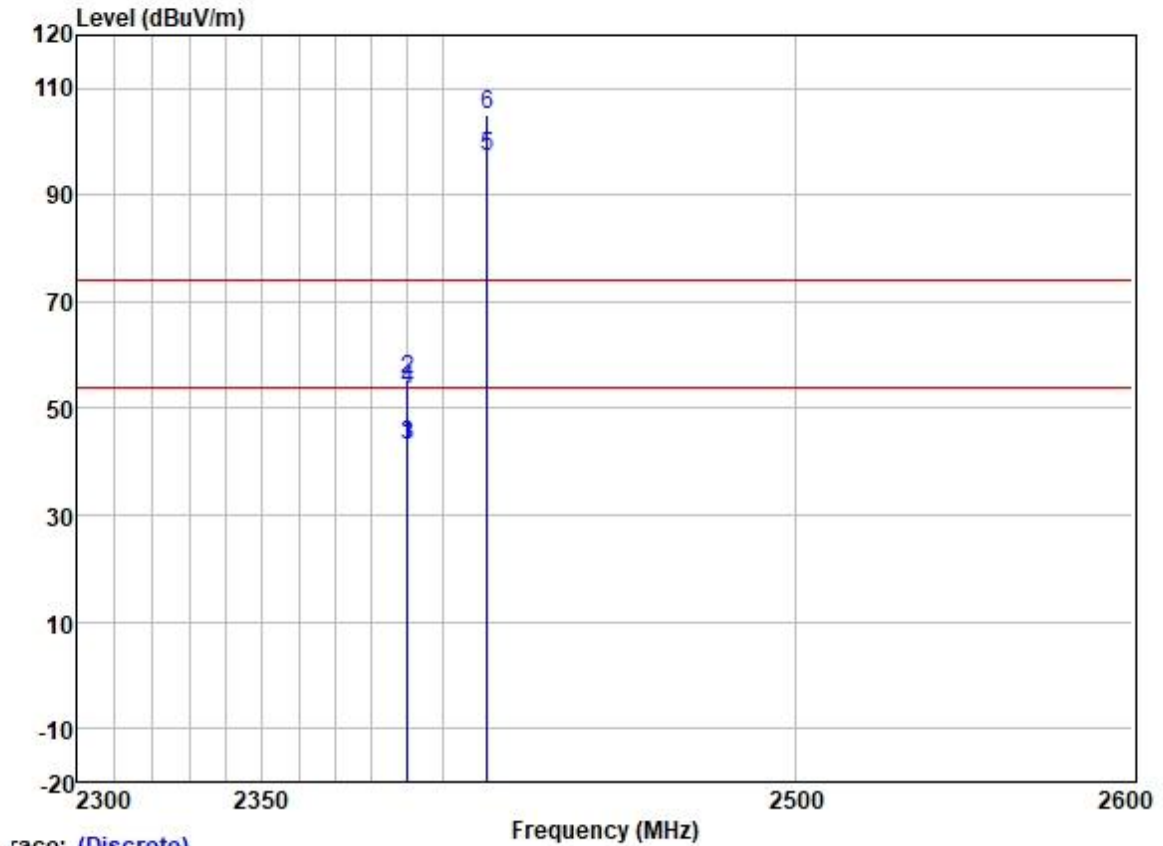
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Level	Limit	Over	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.484	64.33	27.33	3.48	37.59	57.55	74.00	-16.45	HORIZONTAL	Peak
2	2389.968	53.02	27.33	3.48	37.59	46.24	54.00	-7.76	HORIZONTAL	Average
3	2390.000	53.02	27.33	3.48	37.59	46.24	54.00	-7.76	HORIZONTAL	Average
4	2390.000	63.58	27.33	3.48	37.59	56.80	74.00	-17.20	HORIZONTAL	Peak
5 *	2412.000	109.50	27.38	3.47	37.59	102.76	54.00	48.76	HORIZONTAL	Average
6 *	2412.000	118.14	27.38	3.47	37.59	111.40	74.00	37.40	HORIZONTAL	Peak



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



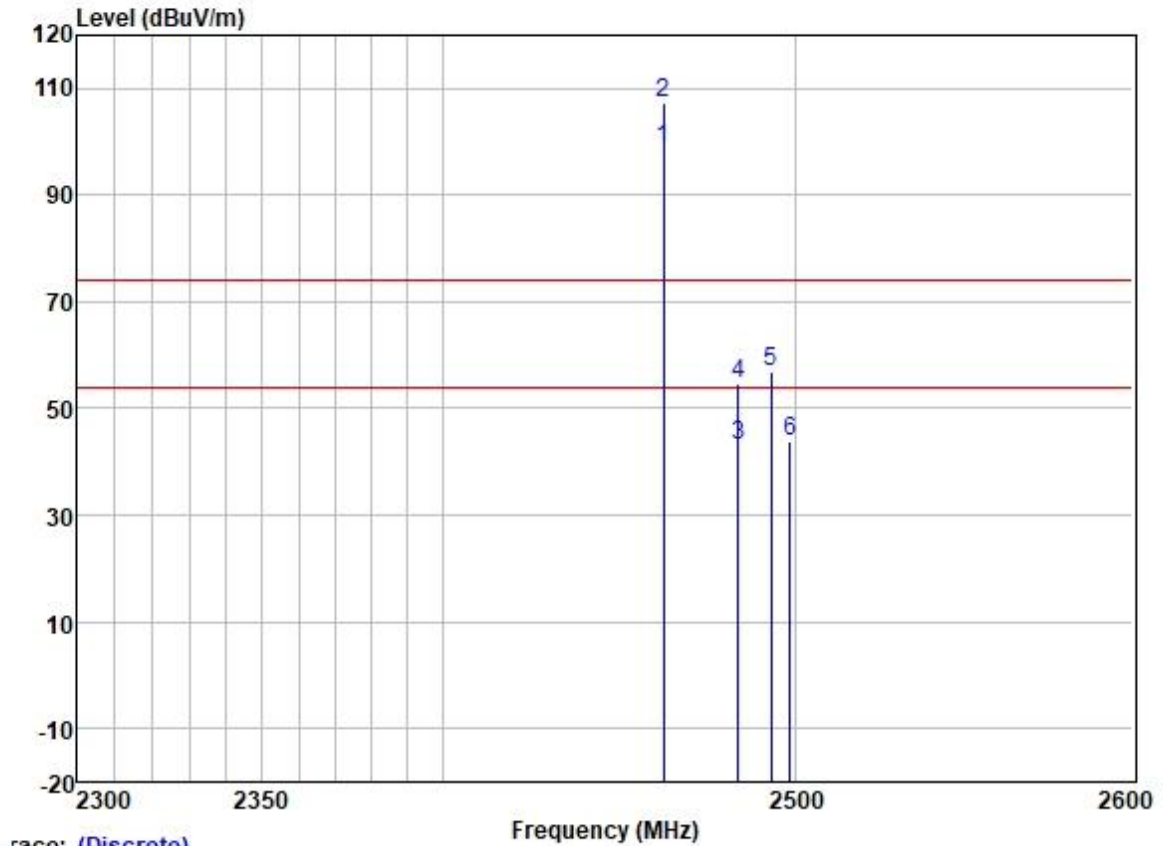
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.968	49.85	27.33	3.48	37.59	43.07	54.00	-10.93	VERTICAL	Average
2	2389.968	62.09	27.33	3.48	37.59	55.31	74.00	-18.69	VERTICAL	Peak
3	2390.000	49.85	27.33	3.48	37.59	43.07	54.00	-10.93	VERTICAL	Average
4	2390.000	60.47	27.33	3.48	37.59	53.69	74.00	-20.31	VERTICAL	Peak
5 *	2412.000	103.97	27.38	3.47	37.59	97.23	54.00	43.23	VERTICAL	Average
6 *	2412.000	111.74	27.38	3.47	37.59	105.00	74.00	31.00	VERTICAL	Peak



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



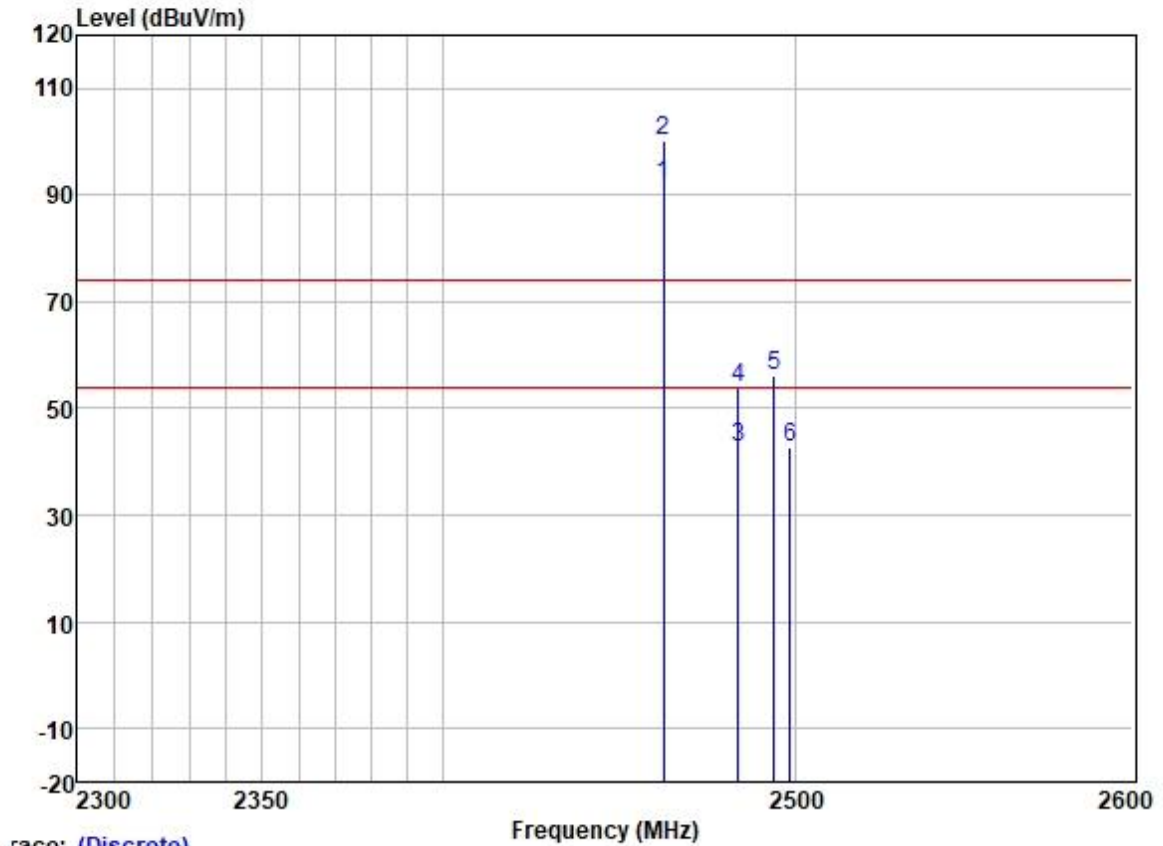
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	105.29	27.45	3.50	37.58	98.66	54.00	44.66	HORIZONTAL	Average
2 *	2462.000	114.12	27.45	3.50	37.58	107.49	74.00	33.49	HORIZONTAL	Peak
3	2483.500	49.74	27.48	3.53	37.57	43.18	54.00	-10.82	HORIZONTAL	Average
4	2483.500	61.24	27.48	3.53	37.57	54.68	74.00	-19.32	HORIZONTAL	Peak
5	2492.939	63.33	27.49	3.47	37.56	56.73	74.00	-17.27	HORIZONTAL	Peak
6	2498.384	50.41	27.50	3.40	37.56	43.75	54.00	-10.25	HORIZONTAL	Average



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



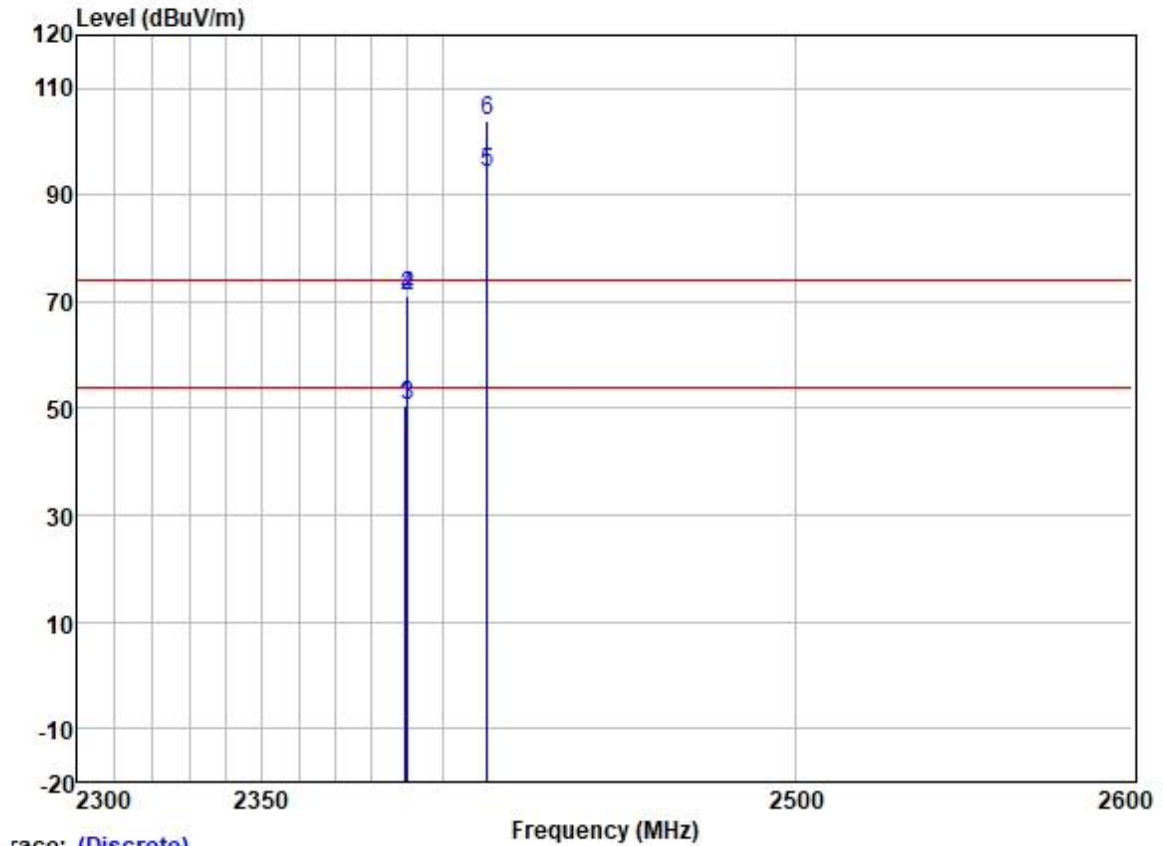
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	98.76	27.45	3.50	37.58	92.13	54.00	38.13	VERTICAL	Average
2 *	2462.000	106.67	27.45	3.50	37.58	100.04	74.00	26.04	VERTICAL	Peak
3	2483.500	49.25	27.48	3.53	37.57	42.69	54.00	-11.31	VERTICAL	Average
4	2483.500	60.46	27.48	3.53	37.57	53.90	74.00	-20.10	VERTICAL	Peak
5	2493.745	62.92	27.49	3.47	37.56	56.32	74.00	-17.68	VERTICAL	Peak
6	2498.586	49.51	27.50	3.40	37.56	42.85	54.00	-11.15	VERTICAL	Average



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



Trace: (Discrete)

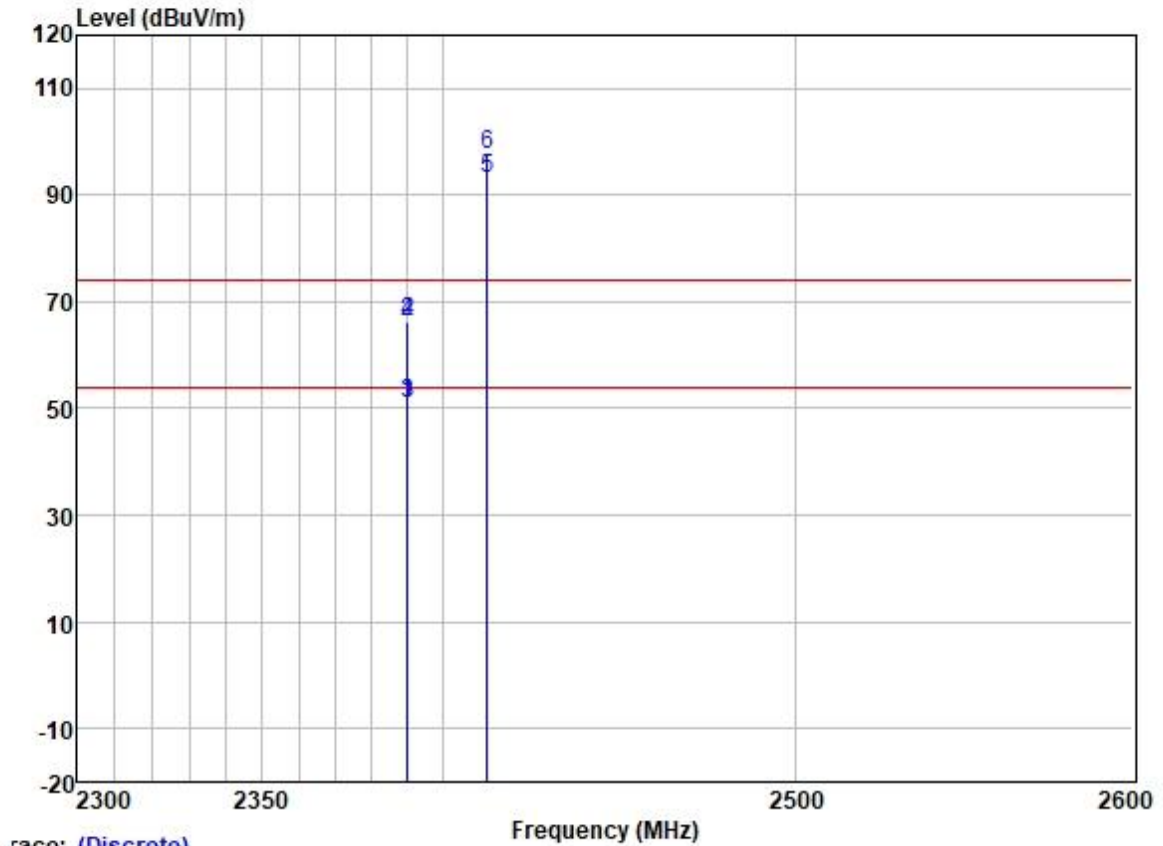
	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.363	57.52	27.33	3.48	37.59	50.74	54.00	-3.26	HORIZONTAL Average
2	2389.968	77.79	27.33	3.48	37.59	71.01	74.00	-2.99	HORIZONTAL Peak
3	2390.000	57.38	27.33	3.48	37.59	50.60	54.00	-3.40	HORIZONTAL Average
4	2390.000	77.79	27.33	3.48	37.59	71.01	74.00	-2.99	HORIZONTAL Peak
5 *	2412.000	101.07	27.38	3.47	37.59	94.33	54.00	40.33	HORIZONTAL Average
6 *	2412.000	110.84	27.38	3.47	37.59	104.10	74.00	30.10	HORIZONTAL Peak



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



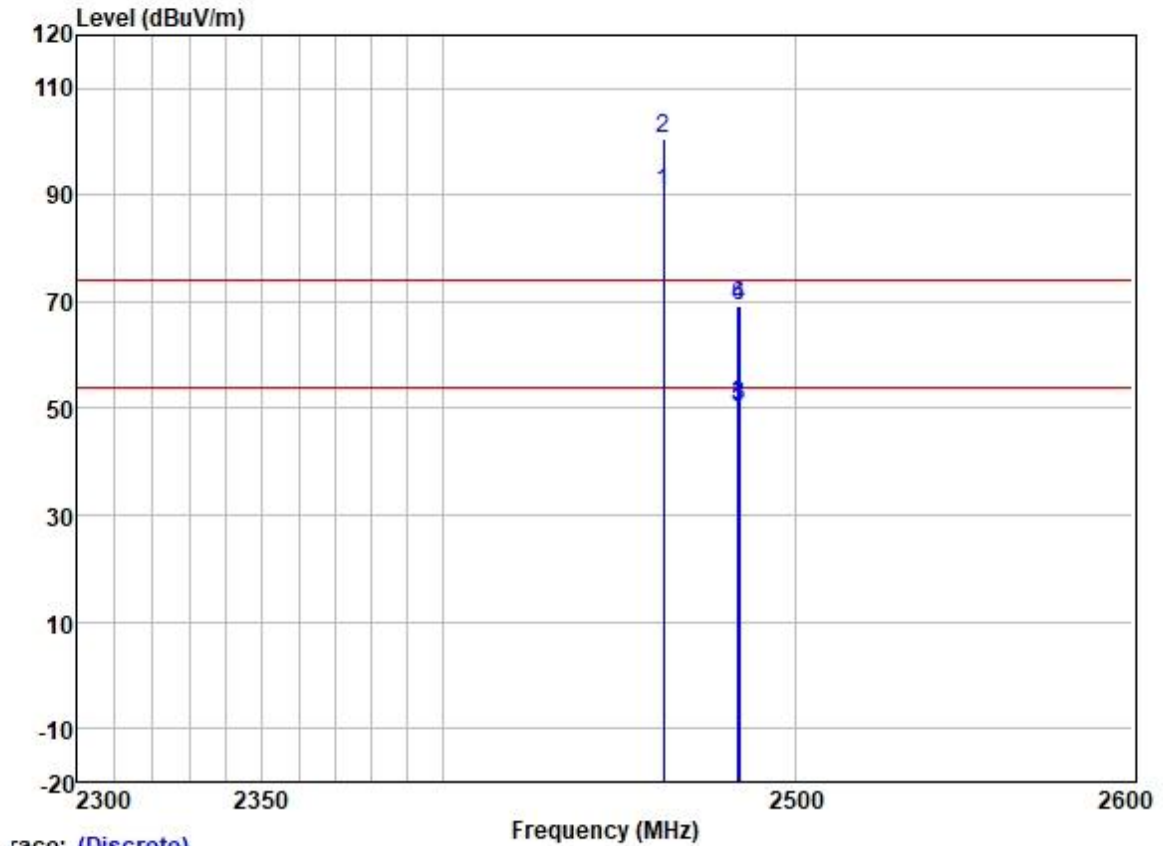
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.968	57.70	27.33	3.48	37.59	50.92	54.00	-3.08	VERTICAL Average
2	2389.968	72.85	27.33	3.48	37.59	66.07	74.00	-7.93	VERTICAL Peak
3	2390.000	57.70	27.33	3.48	37.59	50.92	54.00	-3.08	VERTICAL Average
4	2390.000	72.85	27.33	3.48	37.59	66.07	74.00	-7.93	VERTICAL Peak
5 *	2412.000	99.96	27.38	3.47	37.59	93.22	54.00	39.22	VERTICAL Average
6 *	2412.000	104.34	27.38	3.47	37.59	97.60	74.00	23.60	VERTICAL Peak



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



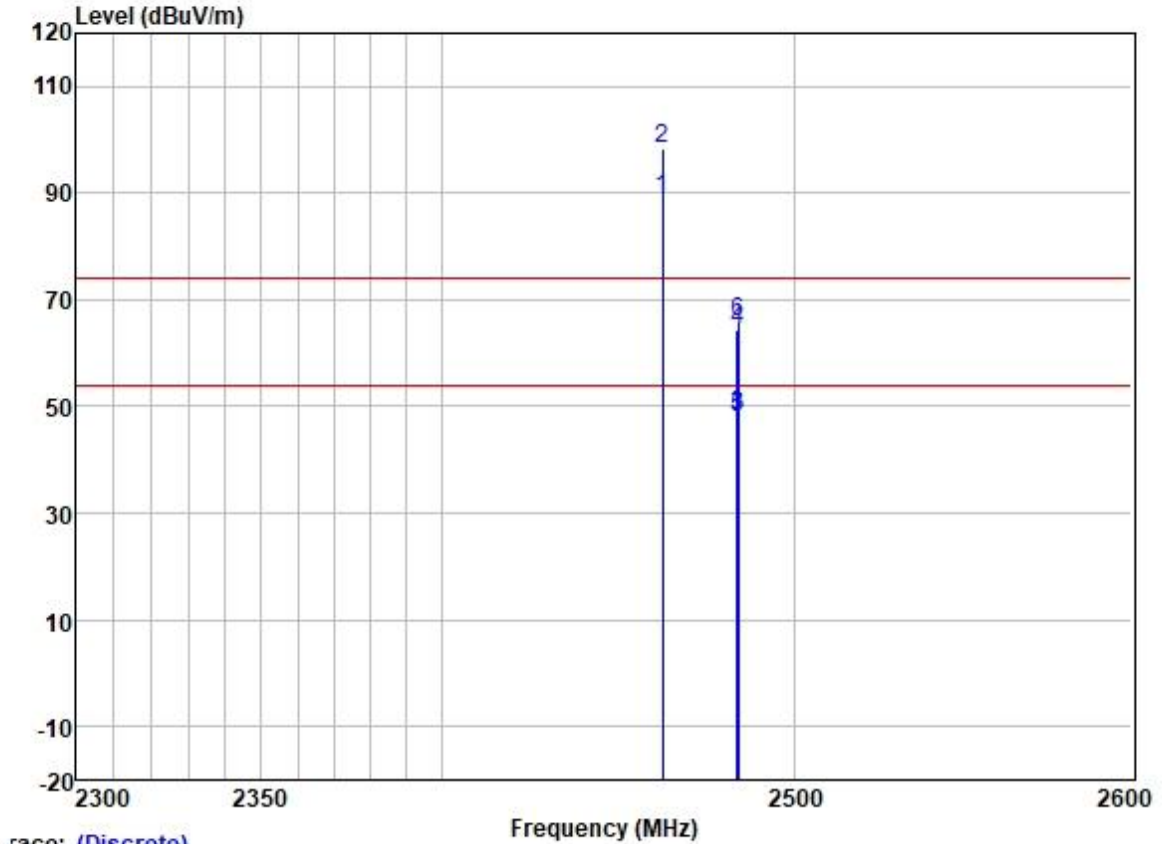
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	97.28	27.45	3.50	37.58	90.65	54.00	36.65	HORIZONTAL	Average
2 *	2462.000	107.18	27.45	3.50	37.58	100.55	74.00	26.55	HORIZONTAL	Peak
3	2483.500	57.08	27.48	3.53	37.57	50.52	54.00	-3.48	HORIZONTAL	Average
4	2483.500	75.71	27.48	3.53	37.57	69.15	74.00	-4.85	HORIZONTAL	Peak
5	2483.790	56.72	27.48	3.53	37.57	50.16	54.00	-3.84	HORIZONTAL	Average
6	2483.890	75.67	27.48	3.53	37.57	69.11	74.00	-4.89	HORIZONTAL	Peak



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



Trace: (Discrete)

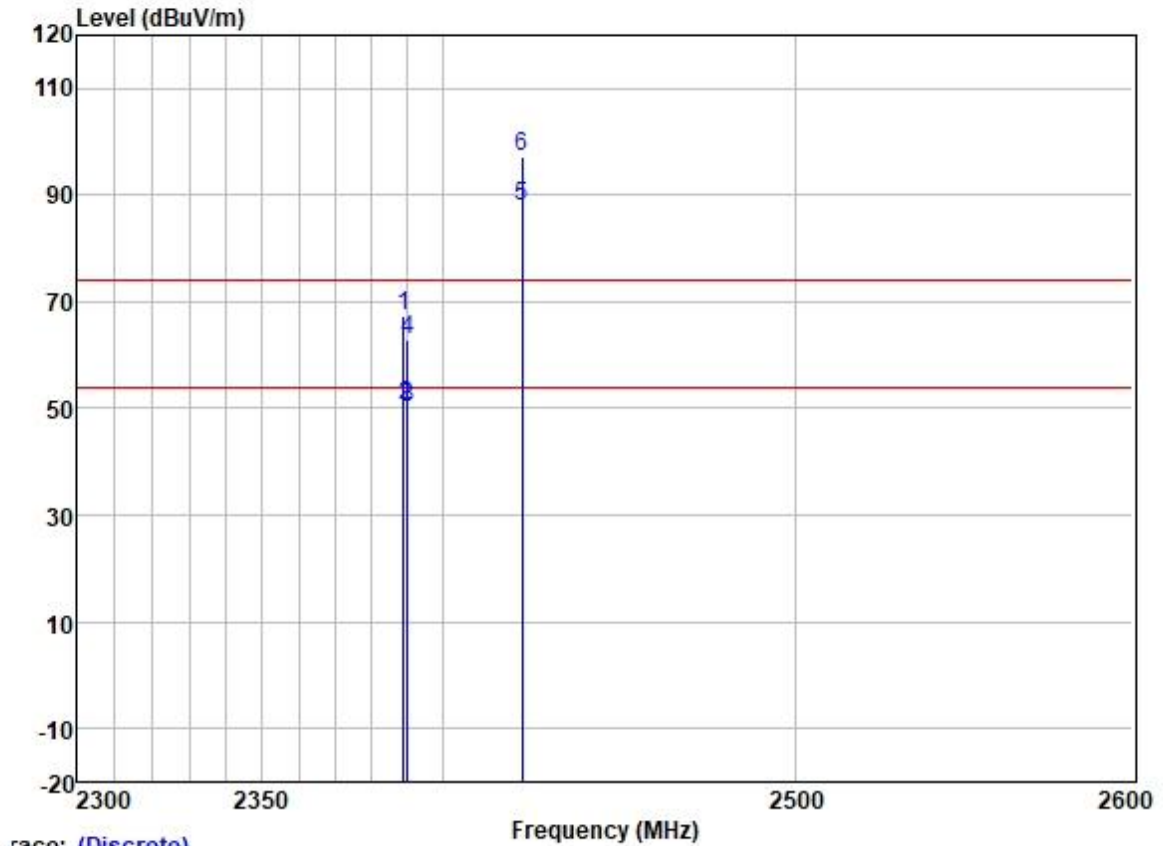
	Read	Antenna	Cable	Preamp	Limit	Over				
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	95.62	27.45	3.50	37.58	88.99	54.00	34.99	VERTICAL	Average
2 *	2462.000	105.06	27.45	3.50	37.58	98.43	74.00	24.43	VERTICAL	Peak
3	2483.500	54.85	27.48	3.53	37.57	48.29	54.00	-5.71	VERTICAL	Average
4	2483.500	70.99	27.48	3.53	37.57	64.43	74.00	-9.57	VERTICAL	Peak
5	2483.790	54.54	27.48	3.53	37.57	47.98	54.00	-6.02	VERTICAL	Average
6	2483.890	72.44	27.48	3.53	37.57	65.88	74.00	-8.12	VERTICAL	Peak



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



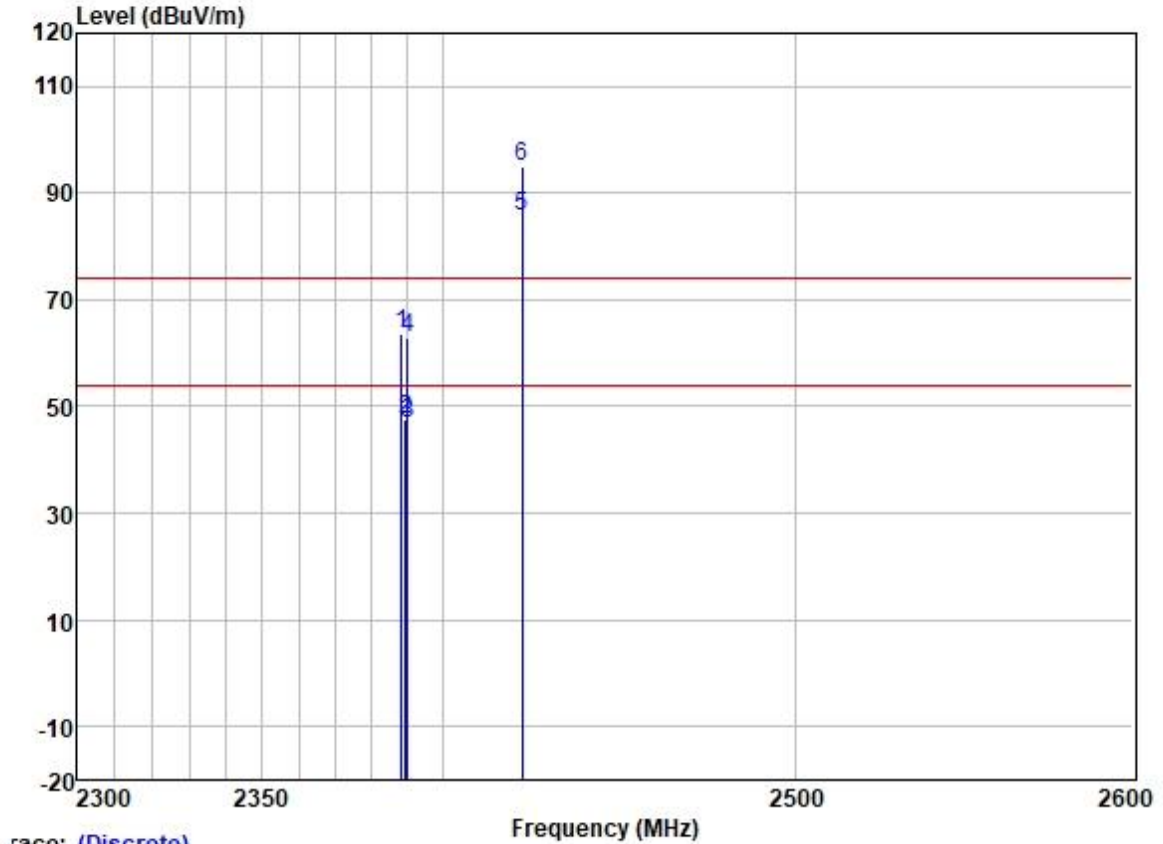
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2388.775	74.18	27.33	3.48	37.59	67.40	74.00	-6.60	HORIZONTAL Peak
2	2389.677	57.17	27.33	3.48	37.59	50.39	54.00	-3.61	HORIZONTAL Average
3	2390.000	56.83	27.33	3.48	37.59	50.05	54.00	-3.95	HORIZONTAL Average
4	2390.000	69.71	27.33	3.48	37.59	62.93	74.00	-11.07	HORIZONTAL Peak
5 *	2422.000	94.62	27.39	3.45	37.58	87.88	54.00	33.88	HORIZONTAL Average
6 *	2422.000	103.92	27.39	3.45	37.58	97.18	74.00	23.18	HORIZONTAL Peak



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



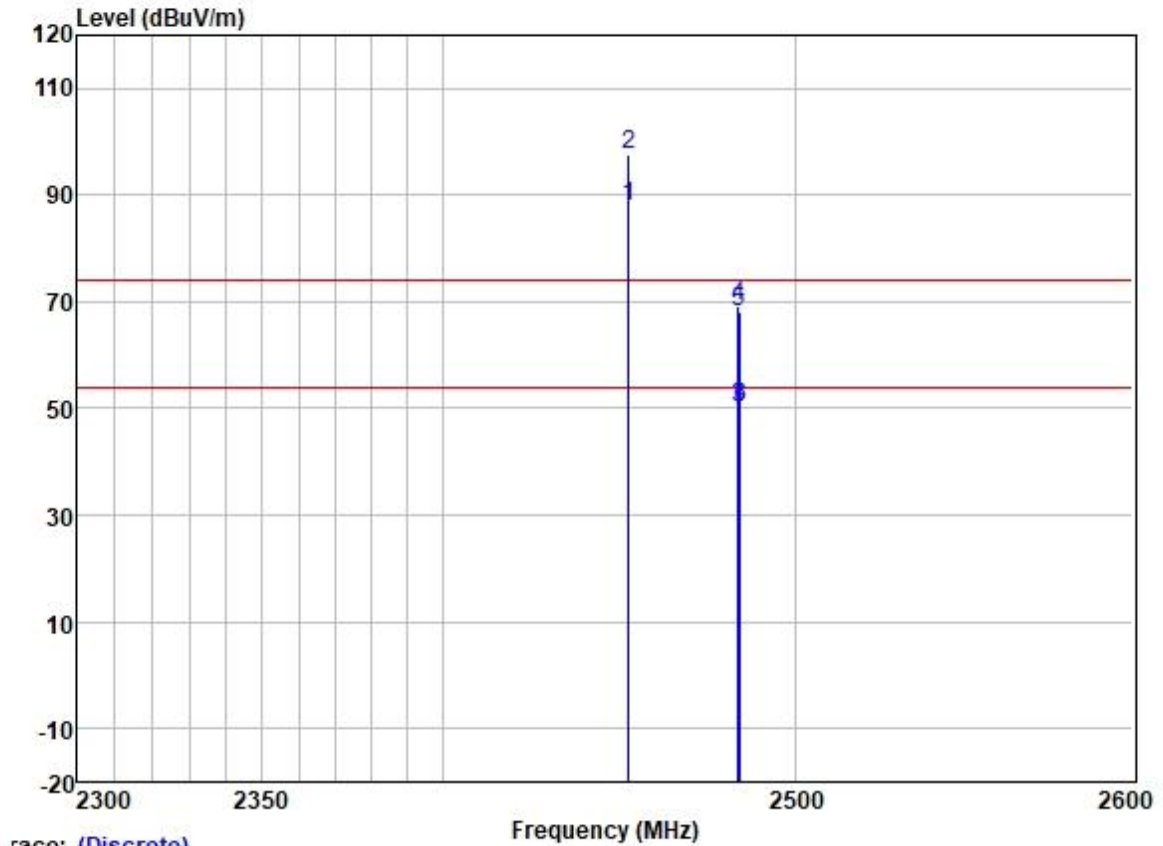
Trace: (Discrete)

	Read Freq	Antenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit	Over	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2388.324	70.45	27.33	3.48	37.59	63.67	74.00	-10.33	VERTICAL	Peak
2	2389.226	54.33	27.33	3.48	37.59	47.55	54.00	-6.45	VERTICAL	Average
3	2390.000	53.56	27.33	3.48	37.59	46.78	54.00	-7.22	VERTICAL	Average
4	2390.000	69.55	27.33	3.48	37.59	62.77	74.00	-11.23	VERTICAL	Peak
5 *	2422.000	92.22	27.39	3.45	37.58	85.48	54.00	31.48	VERTICAL	Average
6 *	2422.000	101.60	27.39	3.45	37.58	94.86	74.00	20.86	VERTICAL	Peak



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



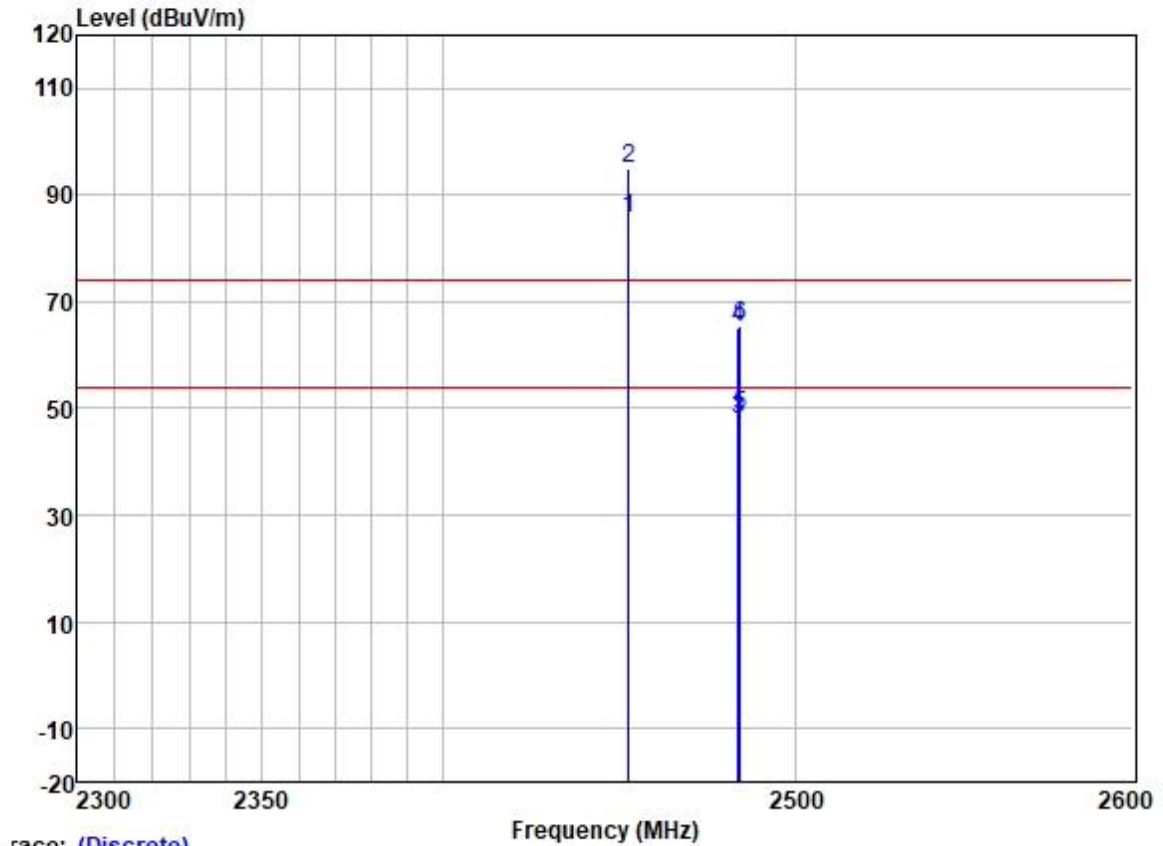
Trace: (Discrete)

	Read	Antenna	Cable	Preamp	Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2452.000	94.59	27.43	3.40	37.58	87.84	54.00	33.84	HORIZONTAL Average
2 *	2452.000	104.23	27.43	3.40	37.58	97.48	74.00	23.48	HORIZONTAL Peak
3	2483.500	56.81	27.48	3.53	37.57	50.25	54.00	-3.75	HORIZONTAL Average
4	2483.500	75.60	27.48	3.53	37.57	69.04	74.00	-4.96	HORIZONTAL Peak
5	2483.865	74.70	27.48	3.53	37.57	68.14	74.00	-5.86	HORIZONTAL Peak
6	2484.006	56.88	27.48	3.53	37.57	50.32	54.00	-3.68	HORIZONTAL Average



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



Trace: (Discrete)

	Read	Antenna	Cable	Preamp	Limit	Over				
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2452.000	92.27	27.43	3.40	37.58	85.52	54.00	31.52	VERTICAL	Average
2 *	2452.000	101.89	27.43	3.40	37.58	95.14	74.00	21.14	VERTICAL	Peak
3	2483.500	54.56	27.48	3.53	37.57	48.00	54.00	-6.00	VERTICAL	Average
4	2483.500	71.53	27.48	3.53	37.57	64.97	74.00	-9.03	VERTICAL	Peak
5	2483.935	55.36	27.48	3.53	37.57	48.80	54.00	-5.20	VERTICAL	Average
6	2484.006	72.00	27.48	3.53	37.57	65.44	74.00	-8.56	VERTICAL	Peak



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

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209  
 Test Method: ANSI C63.10 (2013) Section 6.4,6.5  
 Measurement Distance: 3m  
 Limit:

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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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

Operating Environment:  
 Temperature: 25.4 °C Humidity: 50.8 % RH Atmospheric Pressure: 1003 mbar

**7.7.2 Test Mode Description**

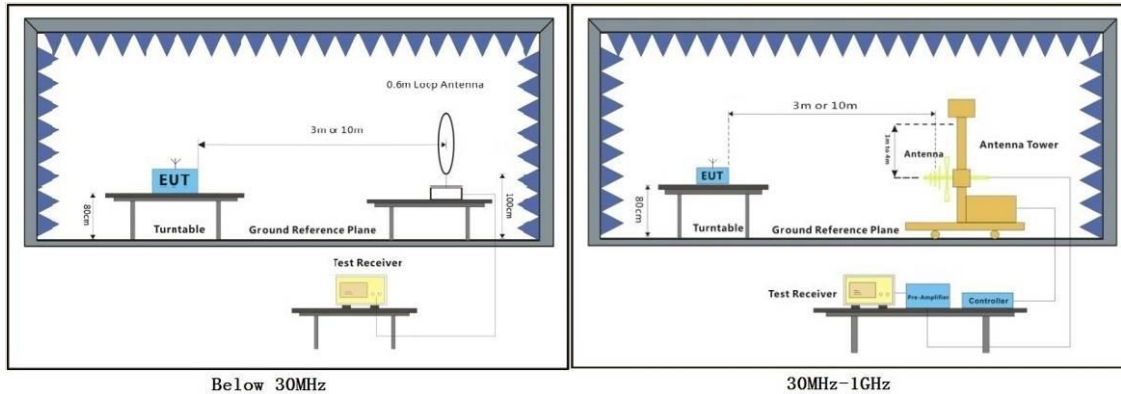
Pre-scan / Mode	Description
Final test Code	
Final test 00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case 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.



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

### 7.7.3 Test Setup Diagram



### 7.7.4 Measurement Procedure and Data

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

Remark:

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



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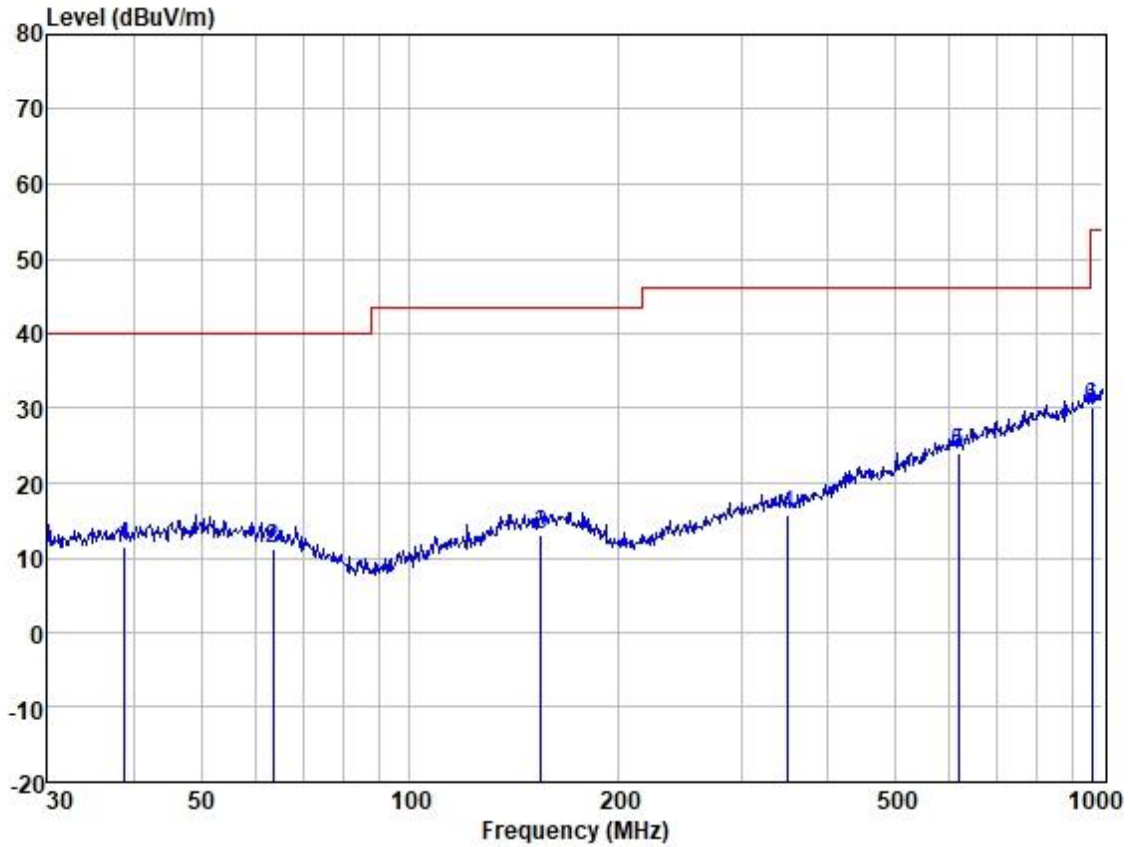


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Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



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

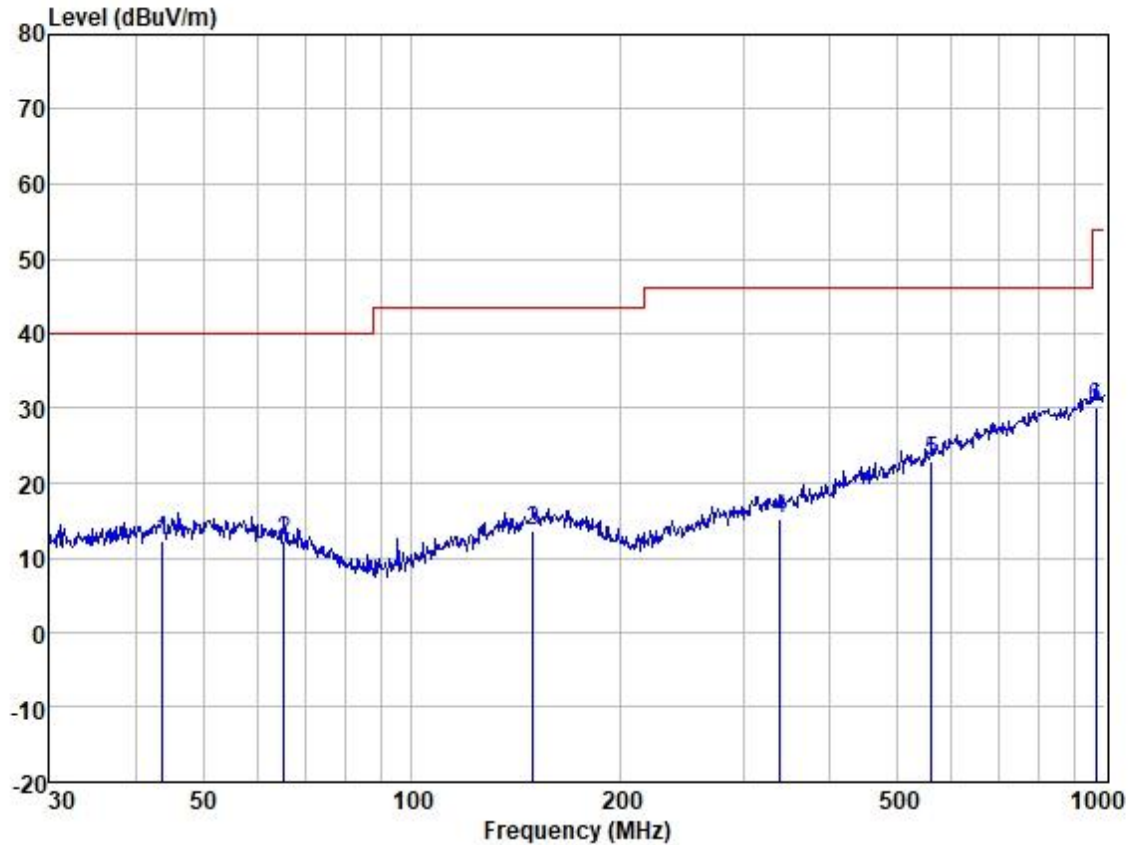
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	38.752	24.72	13.40	1.08	27.61	11.59	40.00	-28.41	HORIZONTAL	QP
2	63.536	24.84	12.76	1.32	27.60	11.32	40.00	-28.68	HORIZONTAL	QP
3	154.279	24.68	13.59	2.27	27.37	13.17	43.52	-30.35	HORIZONTAL	QP
4	350.477	25.36	14.40	3.62	27.67	15.71	46.02	-30.31	HORIZONTAL	QP
5	618.537	27.56	20.01	5.09	28.79	23.87	46.02	-22.15	HORIZONTAL	QP
6	962.162	26.85	24.39	6.90	28.06	30.08	53.98	-23.90	HORIZONTAL	QP



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



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

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	43.659	25.03	13.82	1.10	27.61	12.34	40.00	-27.66	VERTICAL	QP
2	65.343	25.80	12.59	1.35	27.60	12.14	40.00	-27.86	VERTICAL	QP
3	149.486	25.24	13.52	2.21	27.39	13.58	43.52	-29.94	VERTICAL	QP
4	339.589	24.96	14.32	3.51	27.50	15.29	46.02	-30.73	VERTICAL	QP
5	560.693	28.20	18.63	4.78	28.74	22.87	46.02	-23.15	VERTICAL	QP
6	968.934	26.97	24.32	6.90	28.05	30.14	53.98	-23.84	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  
 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: 24.7 °C Humidity: 50.3 % RH Atmospheric Pressure: 1003 mbar

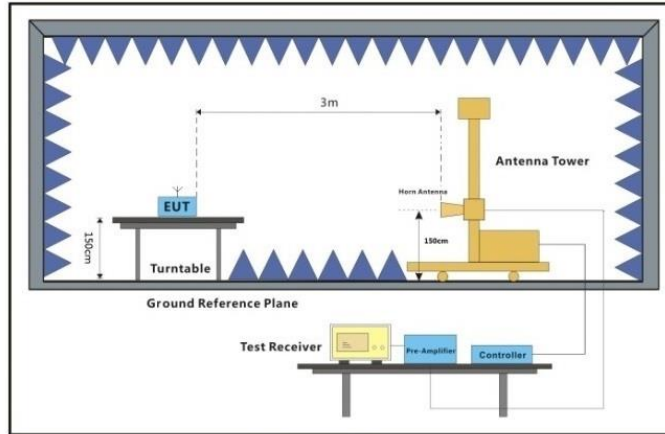
**7.8.2 Test Mode Description**

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.



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### 7.8.3 Test Setup Diagram



Above 1GHz



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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 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:**

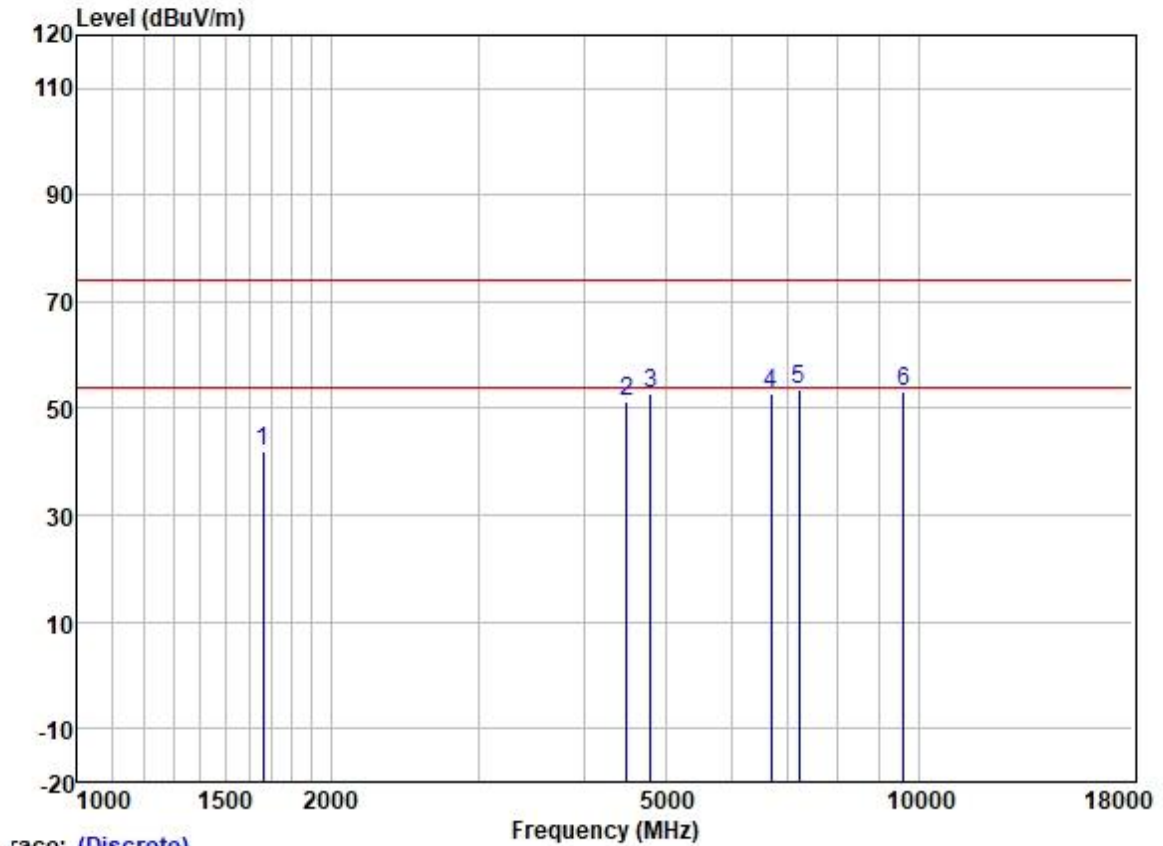
- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
 Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 2) Scan from 1GHz to 25GHz, the disturbance above 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.
- 4) Remark: For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.



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 Guangzhou branch Testing Services Co., Ltd. EEC Laboratory. 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

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



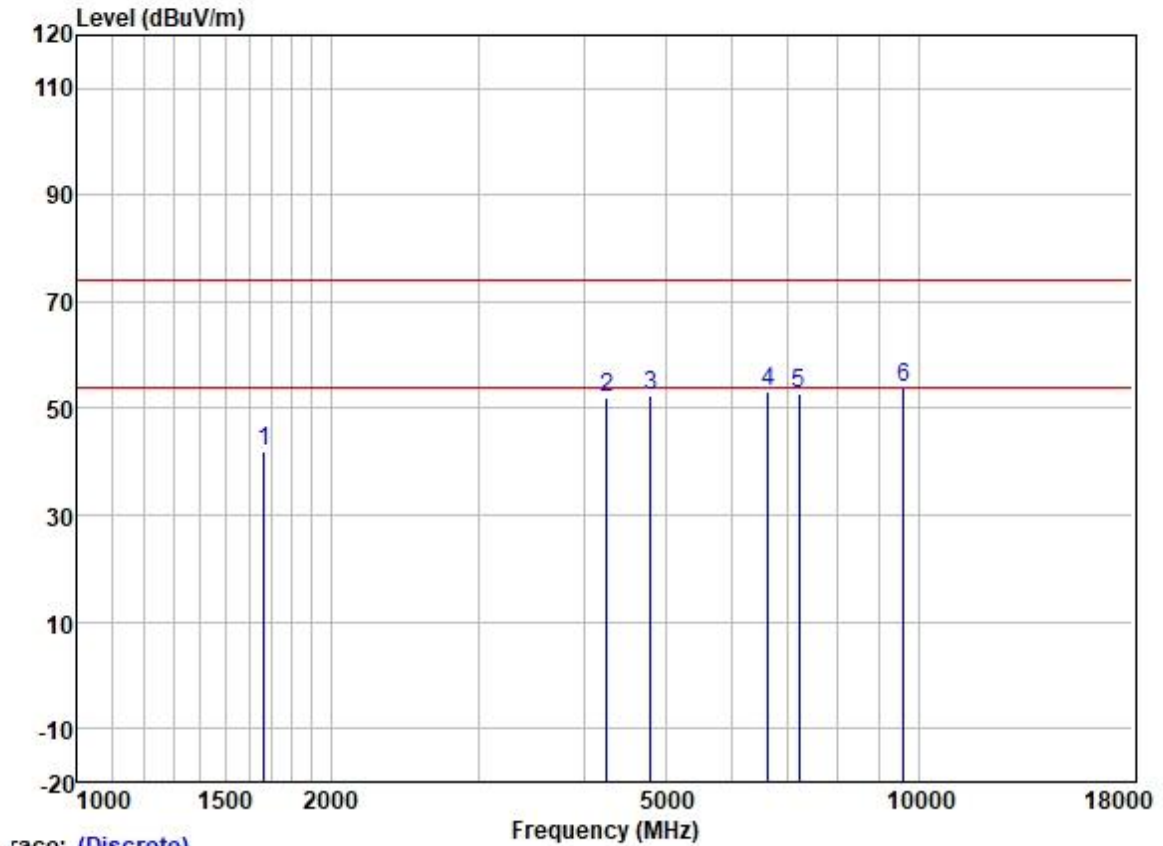
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	51.37	25.65	2.80	37.91	41.91	74.00	-32.09	HORIZONTAL	Peak
2	4495.125	52.44	30.80	5.05	36.82	51.47	74.00	-22.53	HORIZONTAL	Peak
3	4804.000	52.99	31.42	5.40	36.83	52.98	74.00	-21.02	HORIZONTAL	Peak
4	6679.040	49.74	34.33	5.83	37.07	52.83	74.00	-21.17	HORIZONTAL	Peak
5	7206.000	49.22	35.54	5.98	37.38	53.36	74.00	-20.64	HORIZONTAL	Peak
6	9608.000	45.27	38.37	7.07	37.42	53.29	74.00	-20.71	HORIZONTAL	Peak



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



Trace: (Discrete)

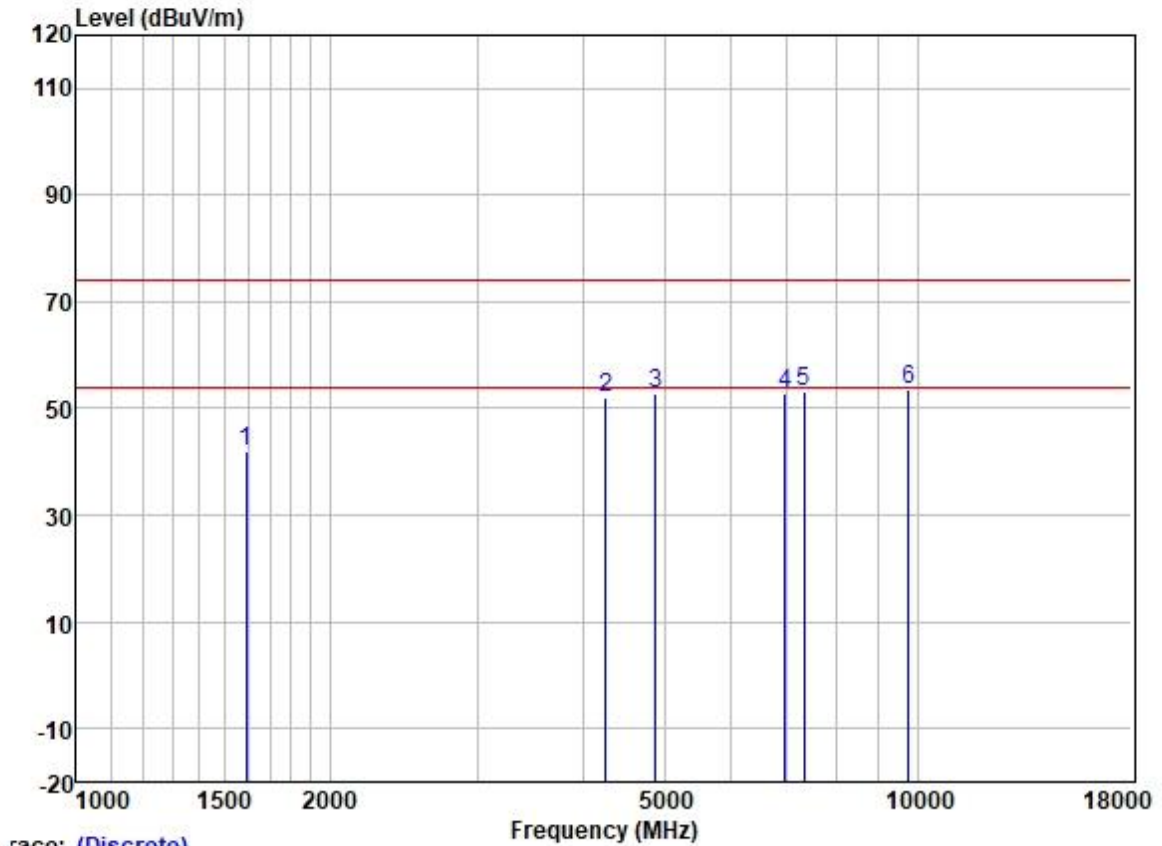
	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1667.951	51.29	25.66	2.80	37.91	41.84	74.00	-32.16	VERTICAL	Peak
2	4254.921	53.90	30.34	4.62	36.81	52.05	74.00	-21.95	VERTICAL	Peak
3	4804.000	52.53	31.42	5.40	36.83	52.52	74.00	-21.48	VERTICAL	Peak
4	6621.375	50.06	34.20	5.83	37.05	53.04	74.00	-20.96	VERTICAL	Peak
5	7206.000	48.70	35.54	5.98	37.38	52.84	74.00	-21.16	VERTICAL	Peak
6	9608.000	45.77	38.37	7.07	37.42	53.79	74.00	-20.21	VERTICAL	Peak



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



Trace: (Discrete)

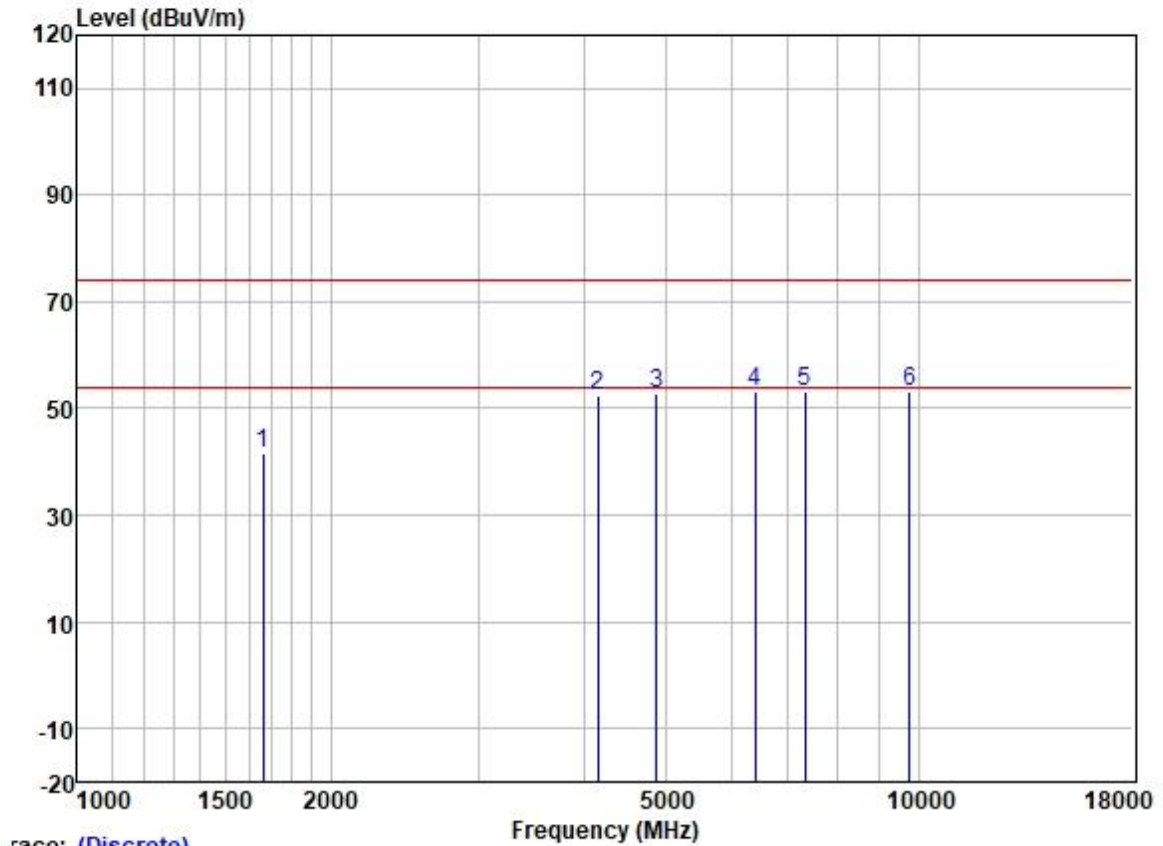
	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1592.571	51.67	25.57	2.80	37.98	42.06	74.00	-31.94	HORIZONTAL	Peak
2	4254.921	54.02	30.34	4.62	36.81	52.17	74.00	-21.83	HORIZONTAL	Peak
3	4882.000	52.38	31.56	5.52	36.84	52.62	74.00	-21.38	HORIZONTAL	Peak
4	6954.852	49.21	34.95	5.81	37.21	52.76	74.00	-21.24	HORIZONTAL	Peak
5	7323.000	48.57	36.00	6.13	37.43	53.27	74.00	-20.73	HORIZONTAL	Peak
6	9764.000	45.36	38.50	7.02	37.41	53.47	74.00	-20.53	HORIZONTAL	Peak



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



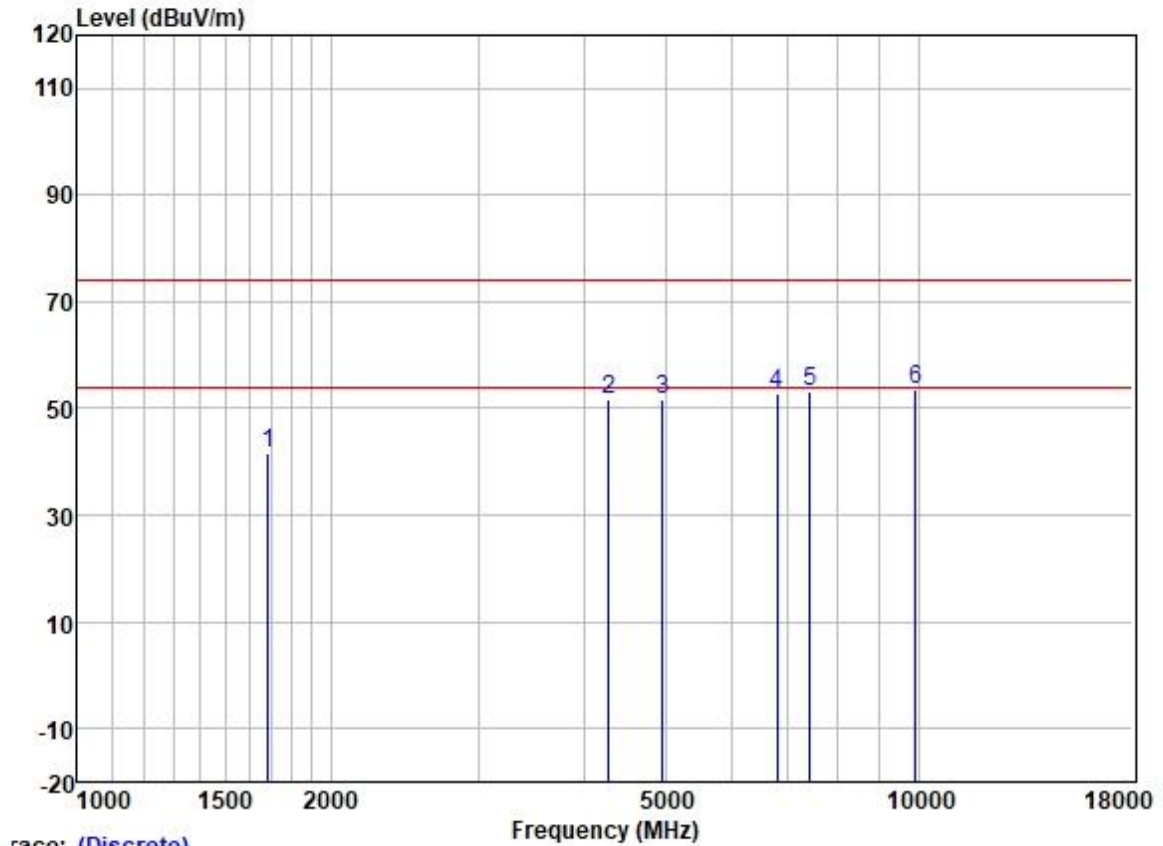
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1663.137	51.23	25.65	2.80	37.91	41.77	74.00	-32.23	VERTICAL Peak
2	4157.664	54.42	30.06	4.60	36.80	52.28	74.00	-21.72	VERTICAL Peak
3	4882.000	52.46	31.56	5.52	36.84	52.70	74.00	-21.30	VERTICAL Peak
4	6395.654	50.52	33.74	5.90	36.98	53.18	74.00	-20.82	VERTICAL Peak
5	7323.000	48.65	36.00	6.13	37.43	53.35	74.00	-20.65	VERTICAL Peak
6	9764.000	45.08	38.50	7.02	37.41	53.19	74.00	-20.81	VERTICAL Peak



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



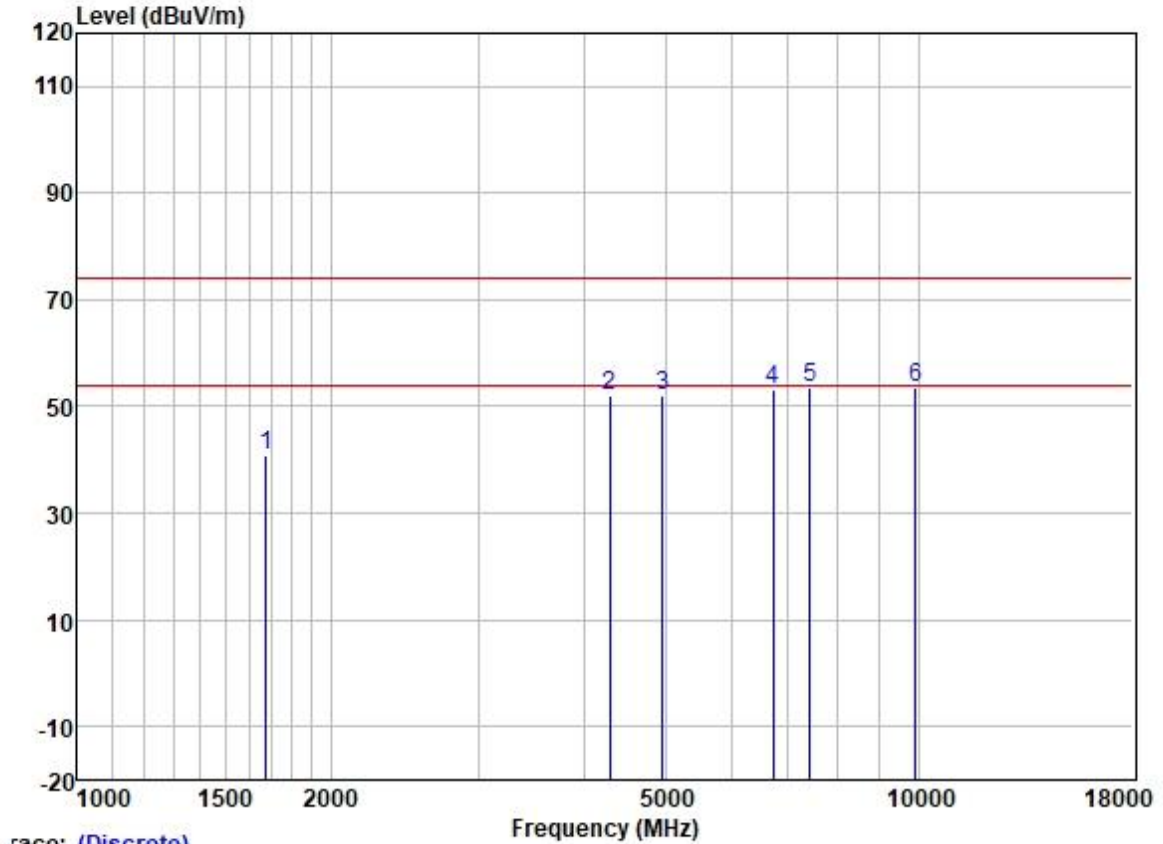
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1687.347	51.19	25.69	2.80	37.91	41.77	74.00	-32.23	HORIZONTAL Peak
2	4279.589	53.55	30.42	4.63	36.81	51.79	74.00	-22.21	HORIZONTAL Peak
3	4960.000	51.26	31.65	5.65	36.84	51.72	74.00	-22.28	HORIZONTAL Peak
4	6795.879	49.57	34.66	5.82	37.12	52.93	74.00	-21.07	HORIZONTAL Peak
5	7440.000	48.00	36.27	6.22	37.47	53.02	74.00	-20.98	HORIZONTAL Peak
6	9920.000	45.40	38.65	6.96	37.40	53.61	74.00	-20.39	HORIZONTAL Peak



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



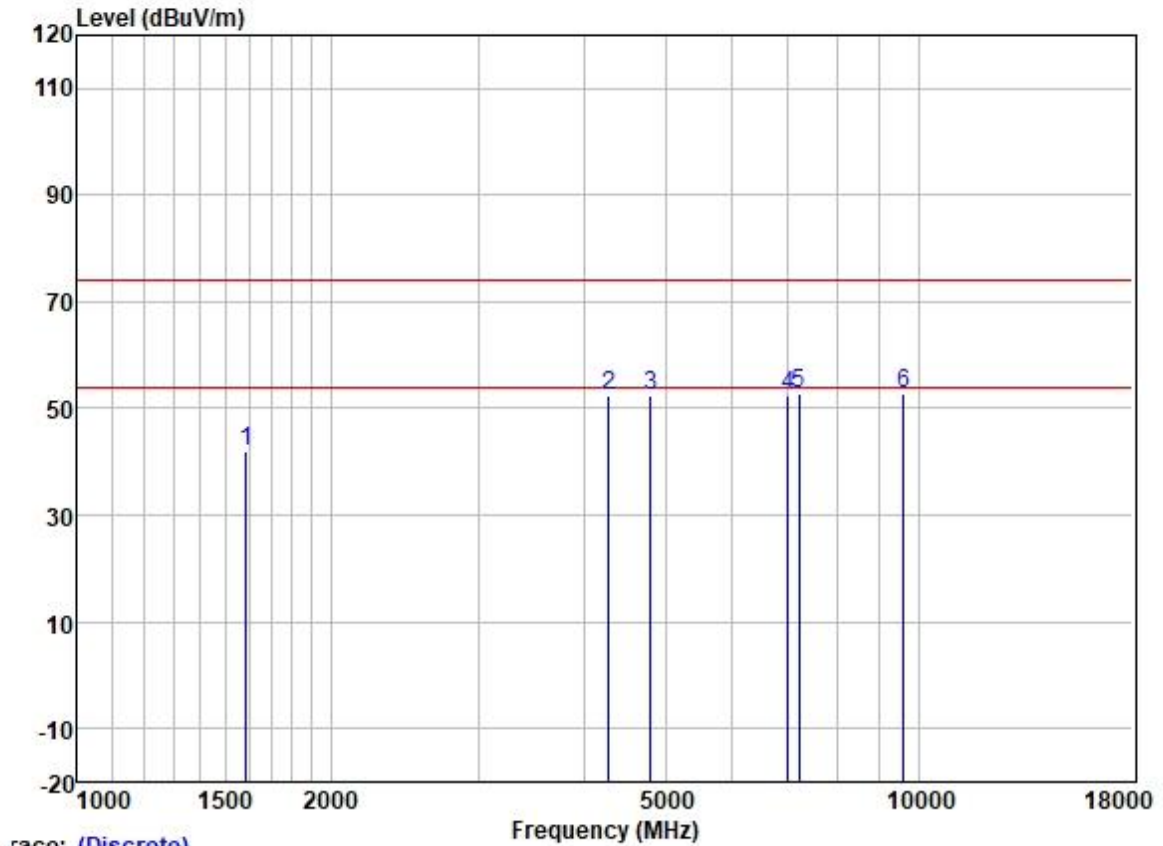
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1677.621	50.40	25.68	2.80	37.91	40.97	74.00	-33.03	VERTICAL	Peak
2	4291.977	53.64	30.45	4.64	36.81	51.92	74.00	-22.08	VERTICAL	Peak
3	4960.000	51.49	31.65	5.65	36.84	51.95	74.00	-22.05	VERTICAL	Peak
4	6717.762	50.00	34.44	5.83	37.09	53.18	74.00	-20.82	VERTICAL	Peak
5	7440.000	48.61	36.27	6.22	37.47	53.63	74.00	-20.37	VERTICAL	Peak
6	9920.000	45.32	38.65	6.96	37.40	53.53	74.00	-20.47	VERTICAL	Peak



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



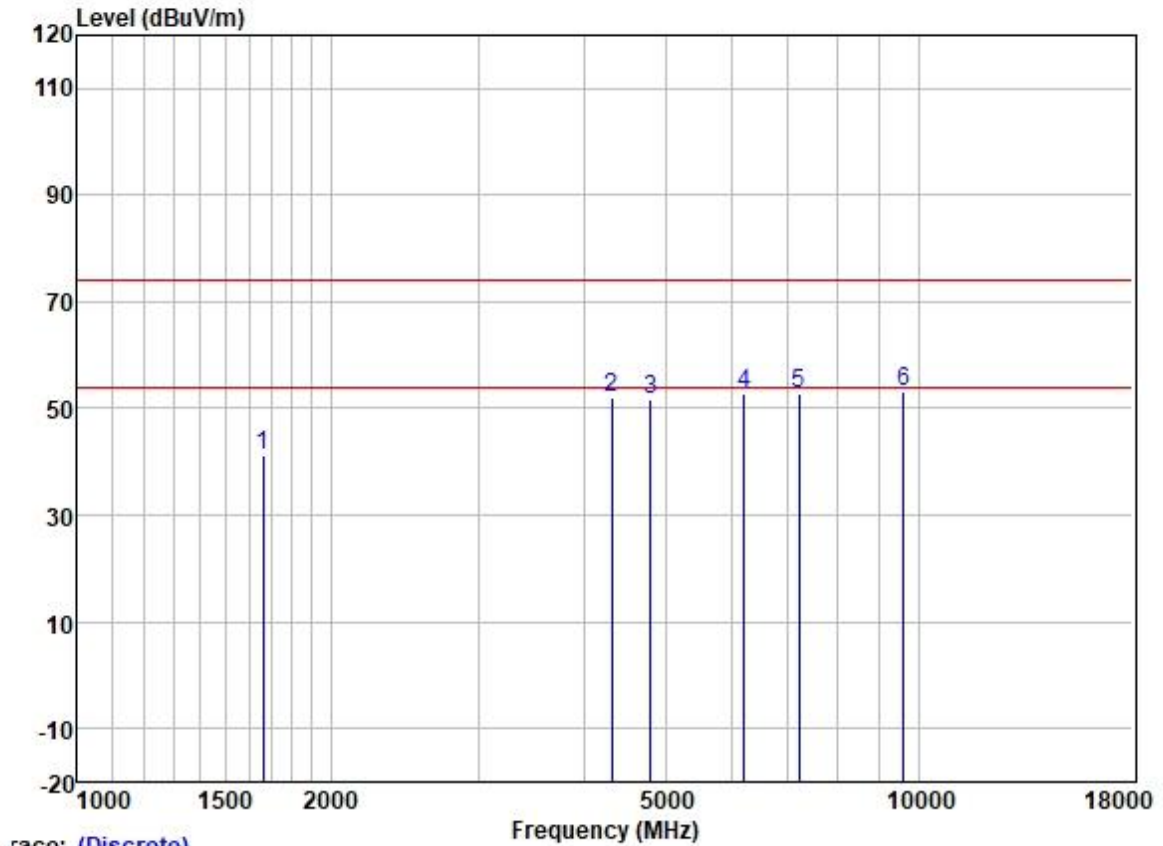
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1587.975	51.44	25.57	2.80	37.98	41.83	74.00	-32.17	HORIZONTAL	Peak
2	4279.589	54.25	30.42	4.63	36.81	52.49	74.00	-21.51	HORIZONTAL	Peak
3	4804.000	52.61	31.42	5.40	36.83	52.60	74.00	-21.40	HORIZONTAL	Peak
4	6995.172	48.73	35.00	5.81	37.25	52.29	74.00	-21.71	HORIZONTAL	Peak
5	7206.000	48.75	35.54	5.98	37.38	52.89	74.00	-21.11	HORIZONTAL	Peak
6	9608.000	44.96	38.37	7.07	37.42	52.98	74.00	-21.02	HORIZONTAL	Peak



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



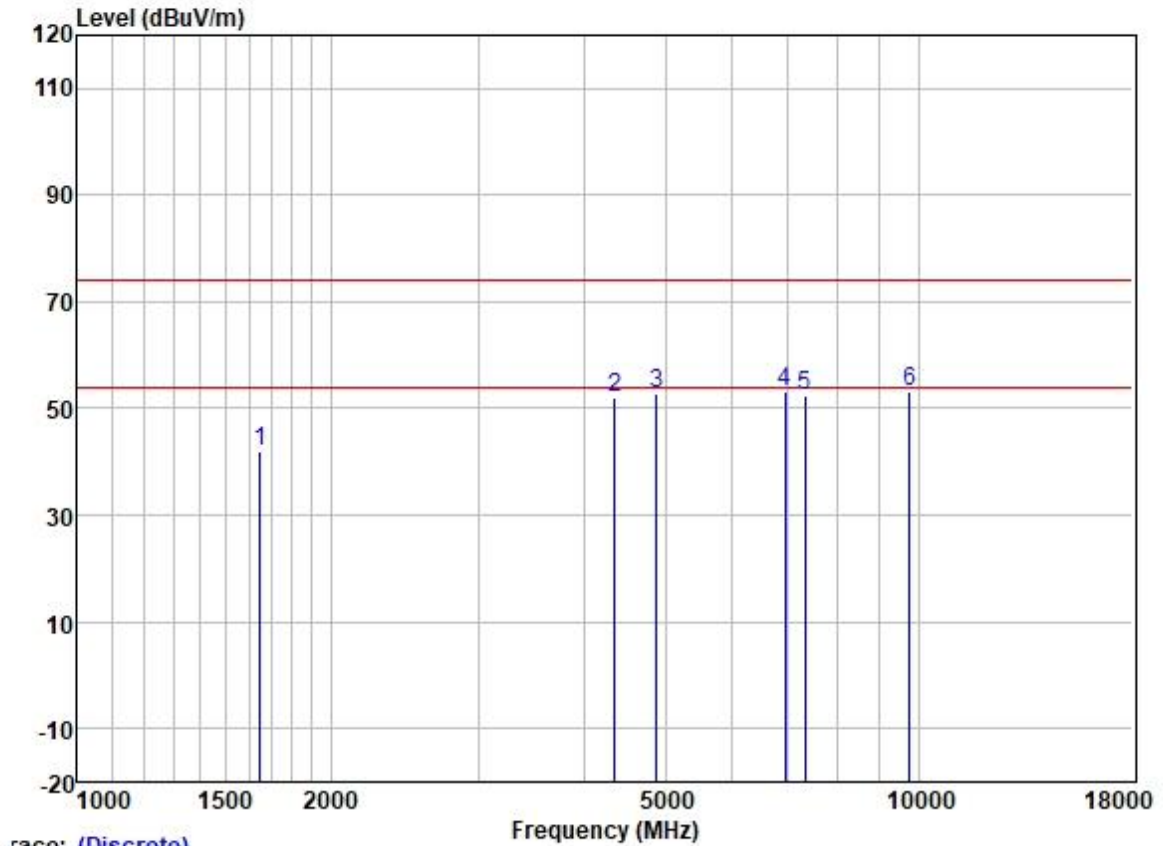
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1663.137	50.77	25.65	2.80	37.91	41.31	74.00 -32.69	VERTICAL	Peak
2	4316.859	53.65	30.51	4.66	36.81	52.01	74.00 -21.99	VERTICAL	Peak
3	4804.000	51.57	31.42	5.40	36.83	51.56	74.00 -22.44	VERTICAL	Peak
4	6213.441	50.74	33.03	6.06	36.94	52.89	74.00 -21.11	VERTICAL	Peak
5	7206.000	48.74	35.54	5.98	37.38	52.88	74.00 -21.12	VERTICAL	Peak
6	9608.000	45.13	38.37	7.07	37.42	53.15	74.00 -20.85	VERTICAL	Peak



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



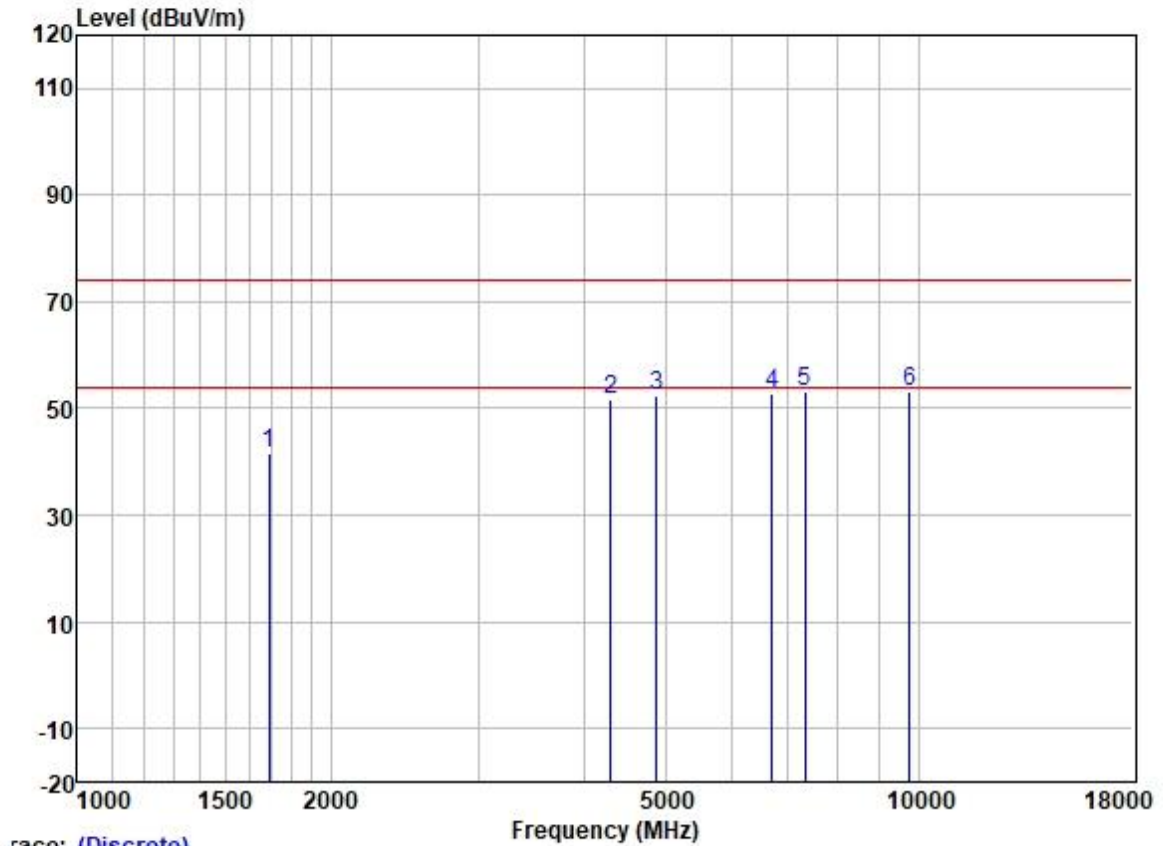
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1648.778	51.52	25.63	2.80	37.93	42.02	-31.98	HORIZONTAL	Peak
2	4354.454	53.54	30.59	4.68	36.81	52.00	-22.00	HORIZONTAL	Peak
3	4880.000	52.53	31.54	5.50	36.84	52.73	-21.27	HORIZONTAL	Peak
4	6934.778	49.70	34.92	5.81	37.19	53.24	-20.76	HORIZONTAL	Peak
5	7320.000	47.88	36.00	6.13	37.43	52.58	-21.42	HORIZONTAL	Peak
6	9760.000	44.95	38.50	7.02	37.41	53.06	-20.94	HORIZONTAL	Peak



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



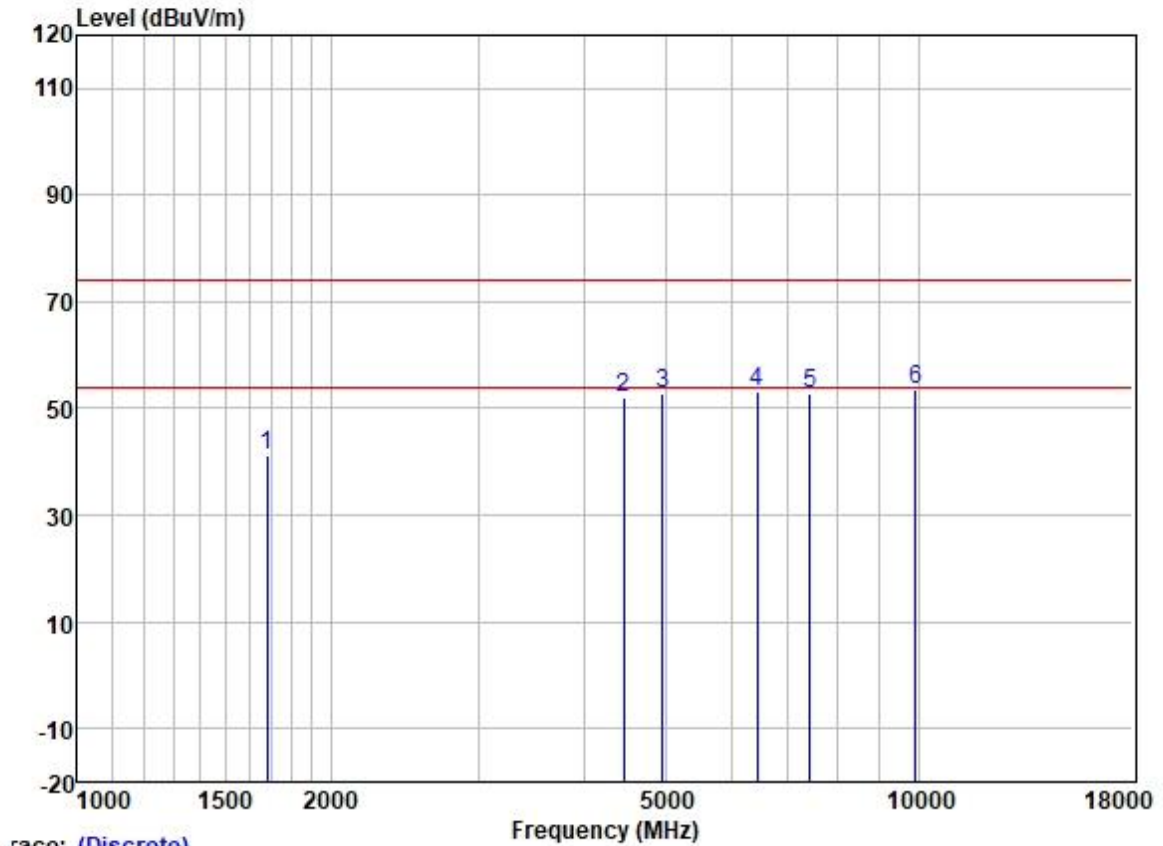
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1692.231	50.92	25.70	2.80	37.89	41.53	74.00 -32.47	VERTICAL	Peak
2	4304.400	53.50	30.48	4.65	36.81	51.82	74.00 -22.18	VERTICAL	Peak
3	4880.000	52.22	31.54	5.50	36.84	52.42	74.00 -21.58	VERTICAL	Peak
4	6698.373	49.67	34.38	5.83	37.08	52.80	74.00 -21.20	VERTICAL	Peak
5	7320.000	48.65	36.00	6.13	37.43	53.35	74.00 -20.65	VERTICAL	Peak
6	9760.000	45.07	38.50	7.02	37.41	53.18	74.00 -20.82	VERTICAL	Peak



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



Trace: (Discrete)

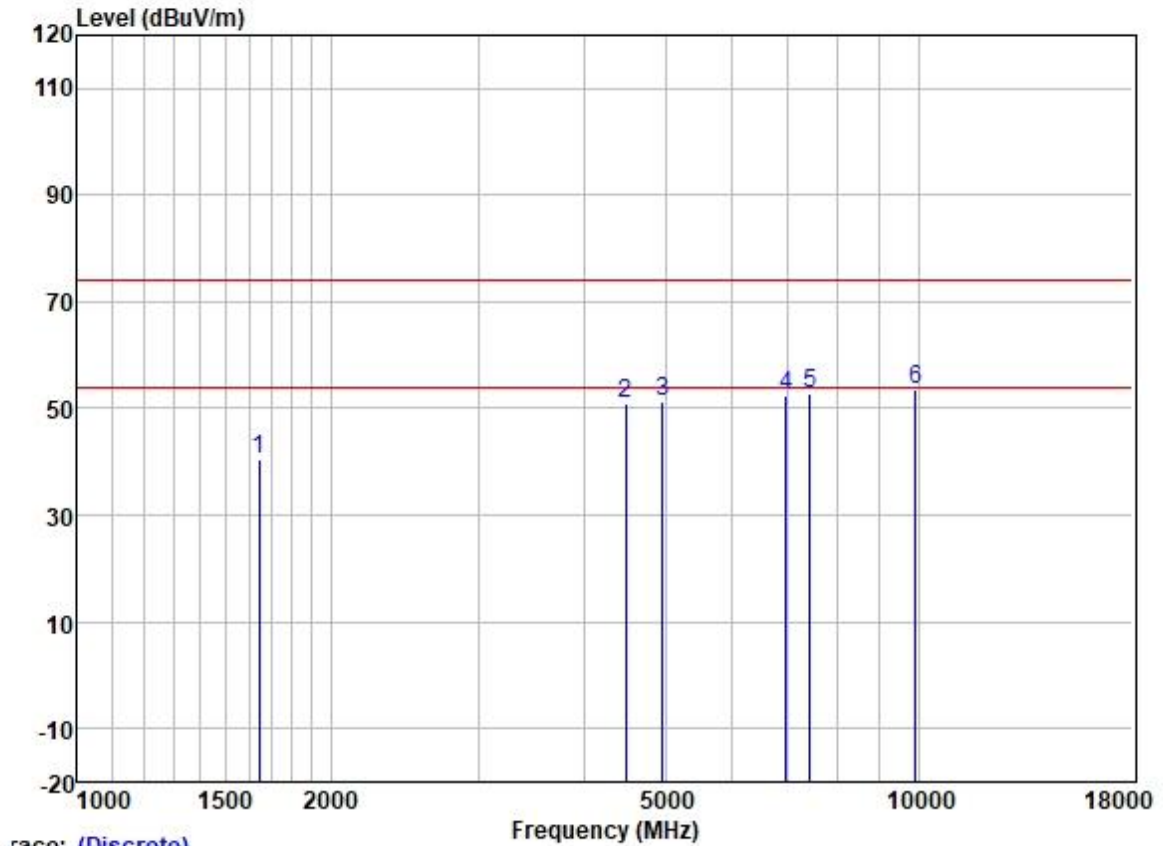
	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1682.477	50.80	25.68	2.80	37.91	41.37	74.00	-32.63	HORIZONTAL	Peak
2	4456.315	53.15	30.75	4.88	36.81	51.97	74.00	-22.03	HORIZONTAL	Peak
3	4960.000	52.27	31.65	5.65	36.84	52.73	74.00	-21.27	HORIZONTAL	Peak
4	6432.732	50.27	33.83	5.88	36.99	52.99	74.00	-21.01	HORIZONTAL	Peak
5	7440.000	47.93	36.27	6.22	37.47	52.95	74.00	-21.05	HORIZONTAL	Peak
6	9920.000	45.18	38.65	6.96	37.40	53.39	74.00	-20.61	HORIZONTAL	Peak



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



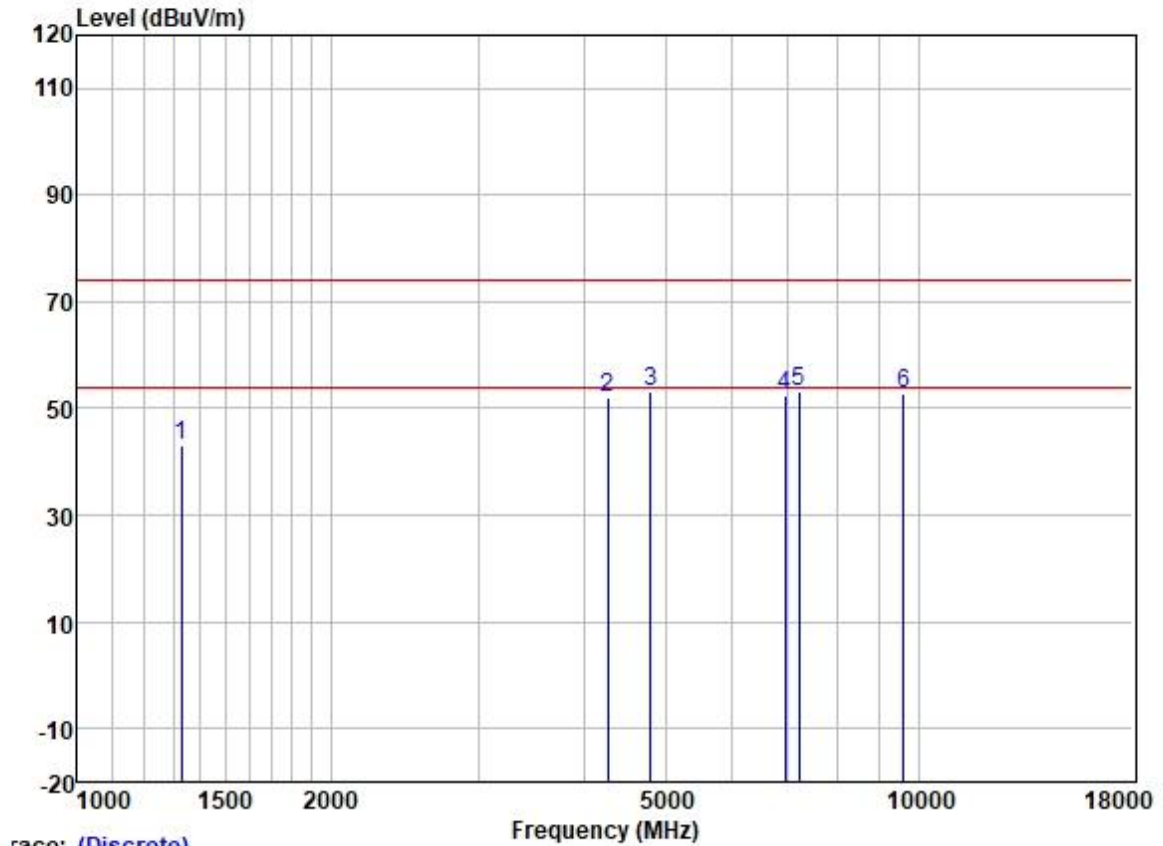
Trace: (Discrete)

	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1644.019	49.99	25.63	2.80	37.93	40.49	74.00	-33.51	VERTICAL Peak
2	4482.150	52.03	30.78	4.99	36.81	50.99	74.00	-23.01	VERTICAL Peak
3	4960.000	50.90	31.65	5.65	36.84	51.36	74.00	-22.64	VERTICAL Peak
4	6954.852	48.98	34.95	5.81	37.21	52.53	74.00	-21.47	VERTICAL Peak
5	7440.000	47.69	36.27	6.22	37.47	52.71	74.00	-21.29	VERTICAL Peak
6	9920.000	45.39	38.65	6.96	37.40	53.60	74.00	-20.40	VERTICAL Peak



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



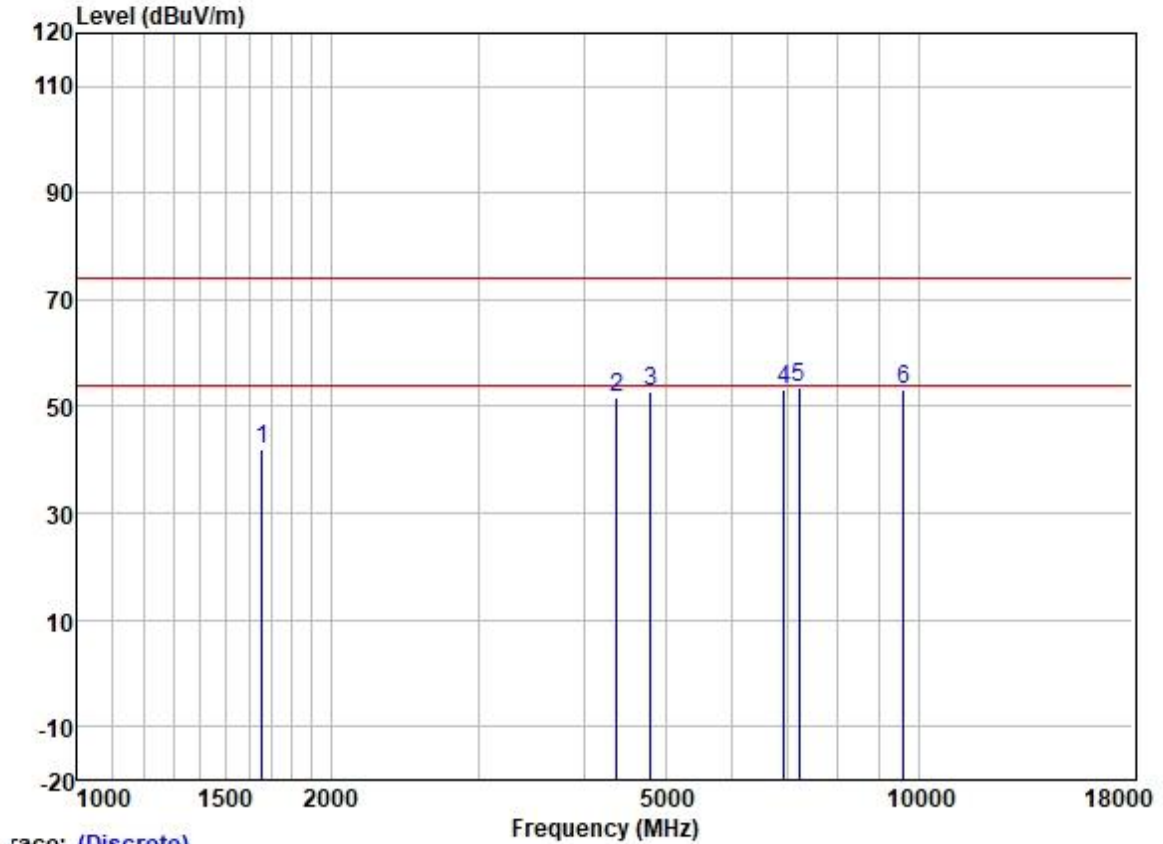
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1331.288	53.35	25.28	2.60	38.29	42.94	74.00	-31.06	HORIZONTAL Peak
2	4267.237	53.85	30.38	4.63	36.81	52.05	74.00	-21.95	HORIZONTAL Peak
3	4804.000	53.34	31.42	5.40	36.83	53.33	74.00	-20.67	HORIZONTAL Peak
4	6934.778	49.03	34.92	5.81	37.19	52.57	74.00	-21.43	HORIZONTAL Peak
5	7206.000	49.11	35.54	5.98	37.38	53.25	74.00	-20.75	HORIZONTAL Peak
6	9608.000	44.93	38.37	7.07	37.42	52.95	74.00	-21.05	HORIZONTAL Peak



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



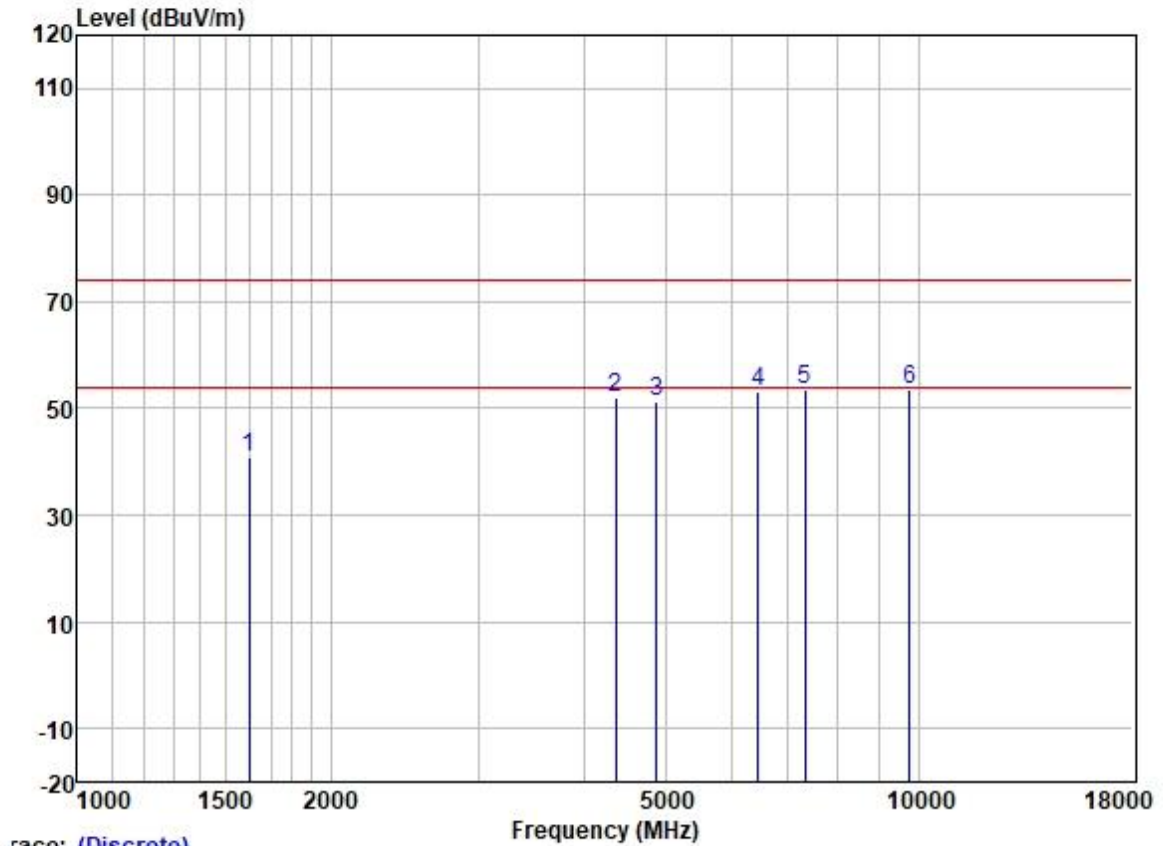
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1658.337	51.33	25.65	2.80	37.93	41.85	74.00	-32.15	VERTICAL	Peak
2	4379.699	53.28	30.64	4.69	36.81	51.80	74.00	-22.20	VERTICAL	Peak
3	4804.000	52.75	31.42	5.40	36.83	52.74	74.00	-21.26	VERTICAL	Peak
4	6914.763	49.68	34.89	5.81	37.19	53.19	74.00	-20.81	VERTICAL	Peak
5	7206.000	49.33	35.54	5.98	37.38	53.47	74.00	-20.53	VERTICAL	Peak
6	9608.000	45.02	38.37	7.07	37.42	53.04	74.00	-20.96	VERTICAL	Peak



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



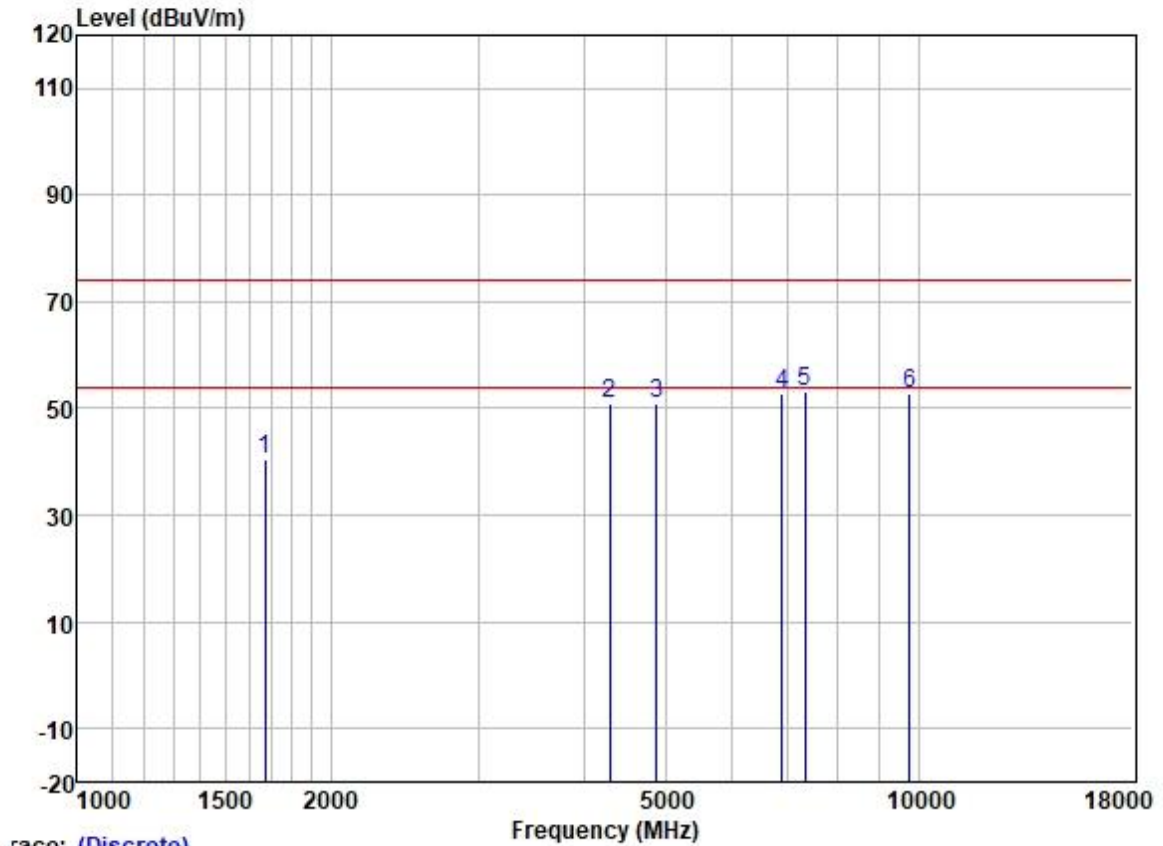
Trace: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1601.804	50.34	25.58	2.80	37.98	40.74	74.00	-33.26	HORIZONTAL	Peak
2	4367.058	53.41	30.62	4.68	36.81	51.90	74.00	-22.10	HORIZONTAL	Peak
3	4880.000	50.98	31.54	5.50	36.84	51.18	74.00	-22.82	HORIZONTAL	Peak
4	6451.353	50.30	33.88	5.87	37.00	53.05	74.00	-20.95	HORIZONTAL	Peak
5	7320.000	48.69	36.00	6.13	37.43	53.39	74.00	-20.61	HORIZONTAL	Peak
6	9760.000	45.61	38.50	7.02	37.41	53.72	74.00	-20.28	HORIZONTAL	Peak



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



Trace: (Discrete)

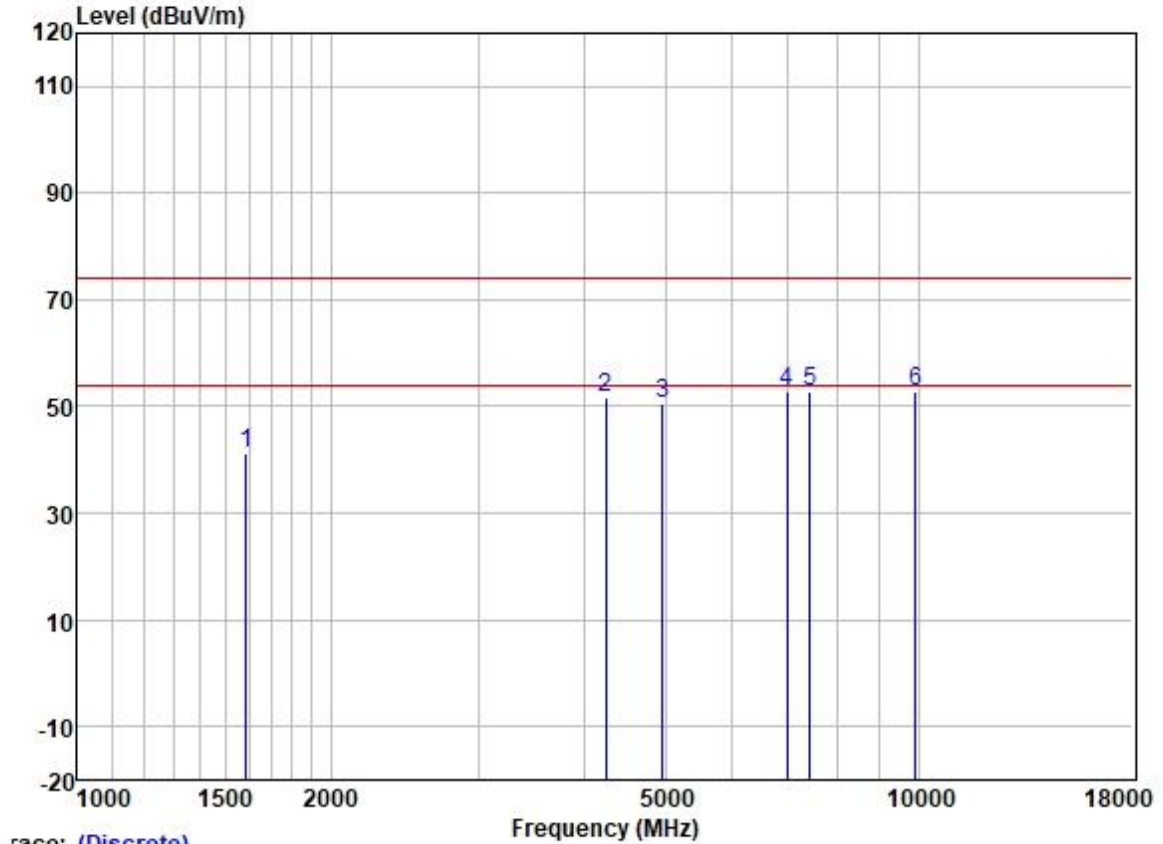
	Read	Antenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	49.88	25.67	2.80	37.91	40.44	74.00	-33.56	VERTICAL	Peak
2	4291.977	52.61	30.45	4.64	36.81	50.89	74.00	-23.11	VERTICAL	Peak
3	4880.000	50.88	31.54	5.50	36.84	51.08	74.00	-22.92	VERTICAL	Peak
4	6874.906	49.16	34.82	5.82	37.16	52.64	74.00	-21.36	VERTICAL	Peak
5	7320.000	48.59	36.00	6.13	37.43	53.29	74.00	-20.71	VERTICAL	Peak
6	9760.000	44.79	38.50	7.02	37.41	52.90	74.00	-21.10	VERTICAL	Peak



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

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



Trace: (Discrete)

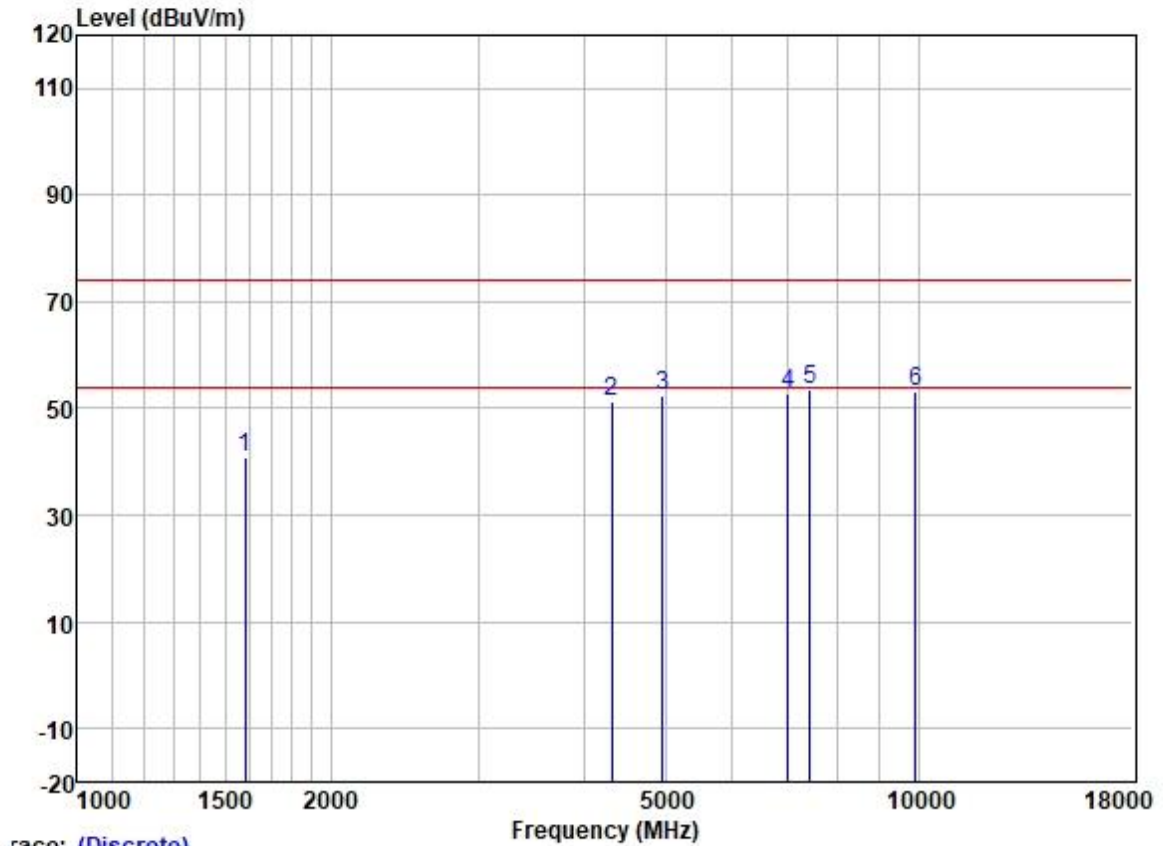
	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1587.975	50.76	25.57	2.80	37.98	41.15	74.00	-32.85	HORIZONTAL Peak
2	4242.641	53.46	30.30	4.62	36.81	51.57	74.00	-22.43	HORIZONTAL Peak
3	4960.000	50.26	31.65	5.65	36.84	50.72	74.00	-23.28	HORIZONTAL Peak
4	6974.982	49.22	34.97	5.81	37.23	52.77	74.00	-21.23	HORIZONTAL Peak
5	7440.000	47.87	36.27	6.22	37.47	52.89	74.00	-21.11	HORIZONTAL Peak
6	9920.000	44.59	38.65	6.96	37.40	52.80	74.00	-21.20	HORIZONTAL Peak



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



race: (Discrete)

	Read	Antenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	1583.392	50.58	25.56	2.80	38.00	40.94	74.00	-33.06	VERTICAL	Peak
2	4316.859	52.91	30.51	4.66	36.81	51.27	74.00	-22.73	VERTICAL	Peak
3	4960.000	51.98	31.65	5.65	36.84	52.44	74.00	-21.56	VERTICAL	Peak
4	6995.172	49.28	35.00	5.81	37.25	52.84	74.00	-21.16	VERTICAL	Peak
5	7440.000	48.59	36.27	6.22	37.47	53.61	74.00	-20.39	VERTICAL	Peak
6	9920.000	45.09	38.65	6.96	37.40	53.30	74.00	-20.70	VERTICAL	Peak



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## 8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR2302000116AT

## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR2302000116AT



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## 10 Appendix

### 1. Duty Cycle

#### 1.1 Ant1

##### 1.1.1 Test Result

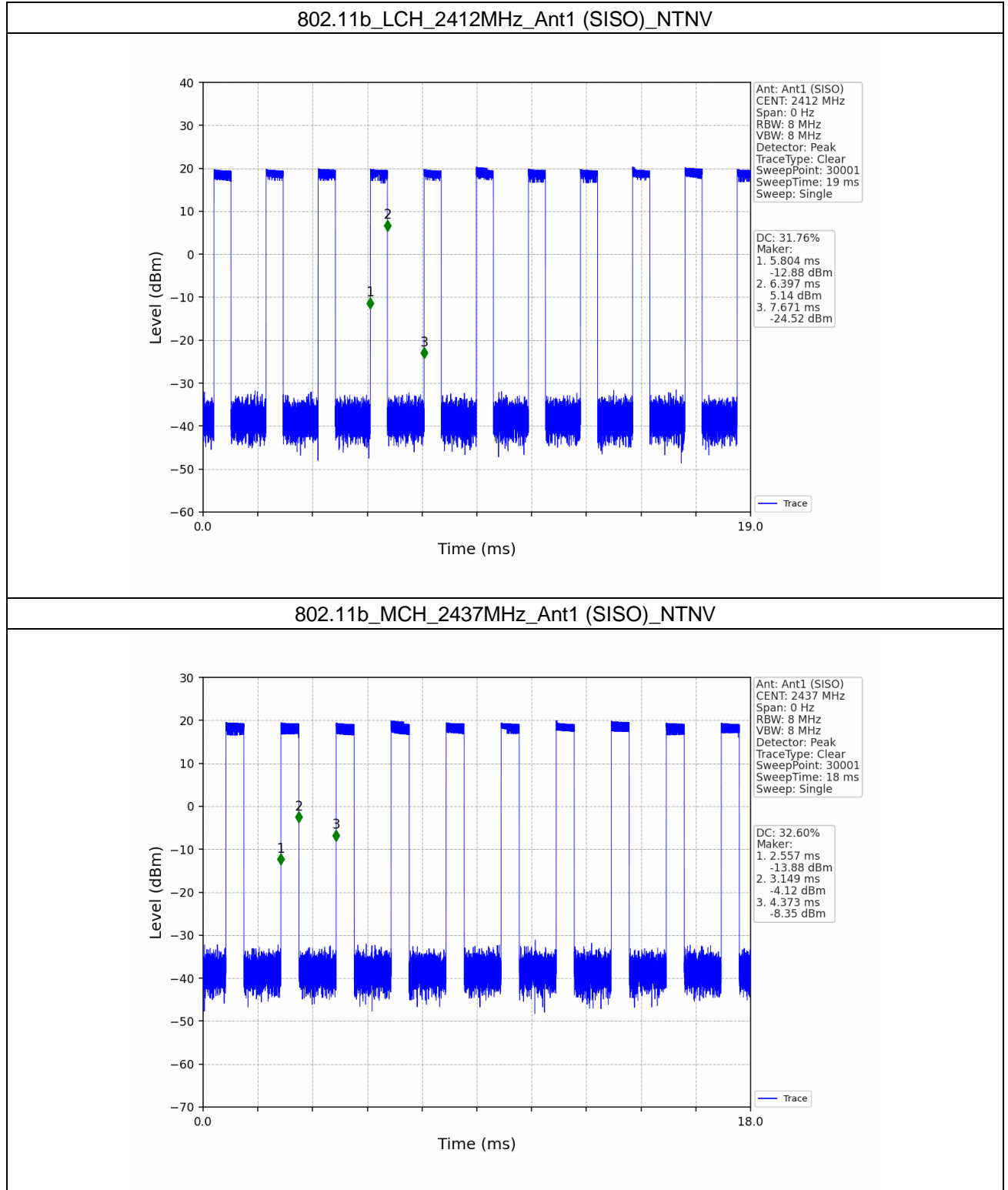
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	0.593	1.867	31.76	4.98	1.02
		2437	0.592	1.816	32.60	4.87	0.15
		2462	0.593	1.815	32.67	4.86	0.14
802.11g	SISO	2412	0.585	1.807	32.37	4.90	0.11
		2437	0.585	1.807	32.37	4.90	0.10
		2462	0.585	1.855	31.54	5.01	0.92
802.11n (HT20)	SISO	2412	0.561	1.783	31.46	5.02	0.05
		2437	0.561	1.783	31.46	5.02	0.13
		2462	0.560	1.782	31.43	5.03	0.10
802.11n (HT40)	SISO	2422	0.581	1.926	30.17	5.20	2.15
		2437	0.581	1.803	32.22	4.92	0.03
		2452	0.581	1.803	32.22	4.92	0.03



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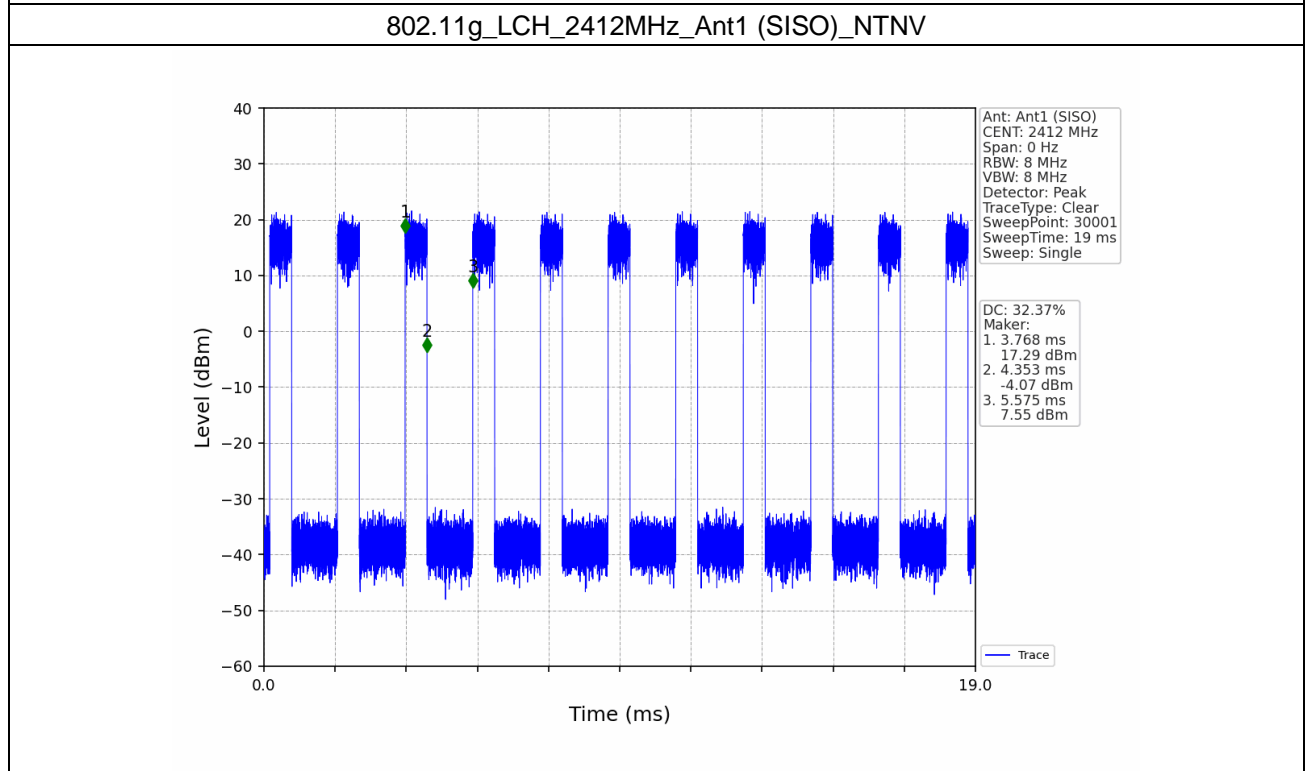
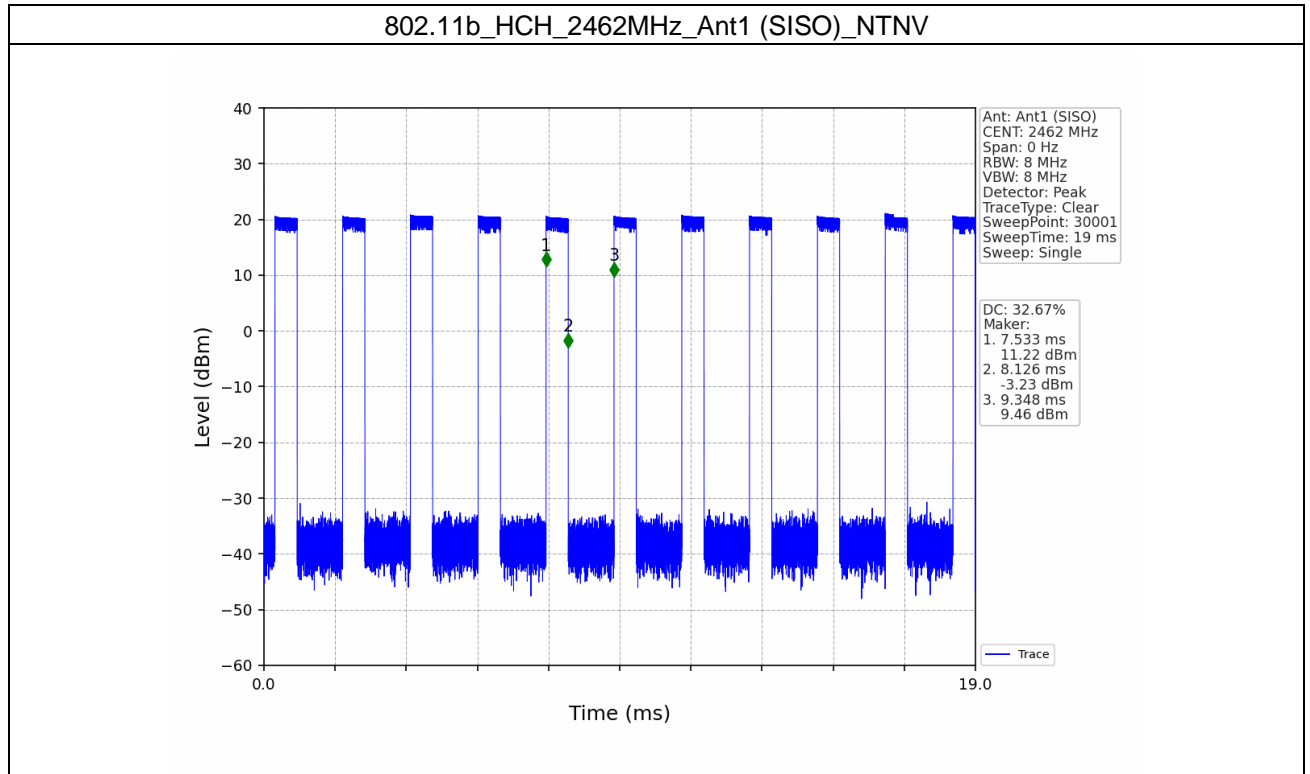
### 1.1.2 Test Graph



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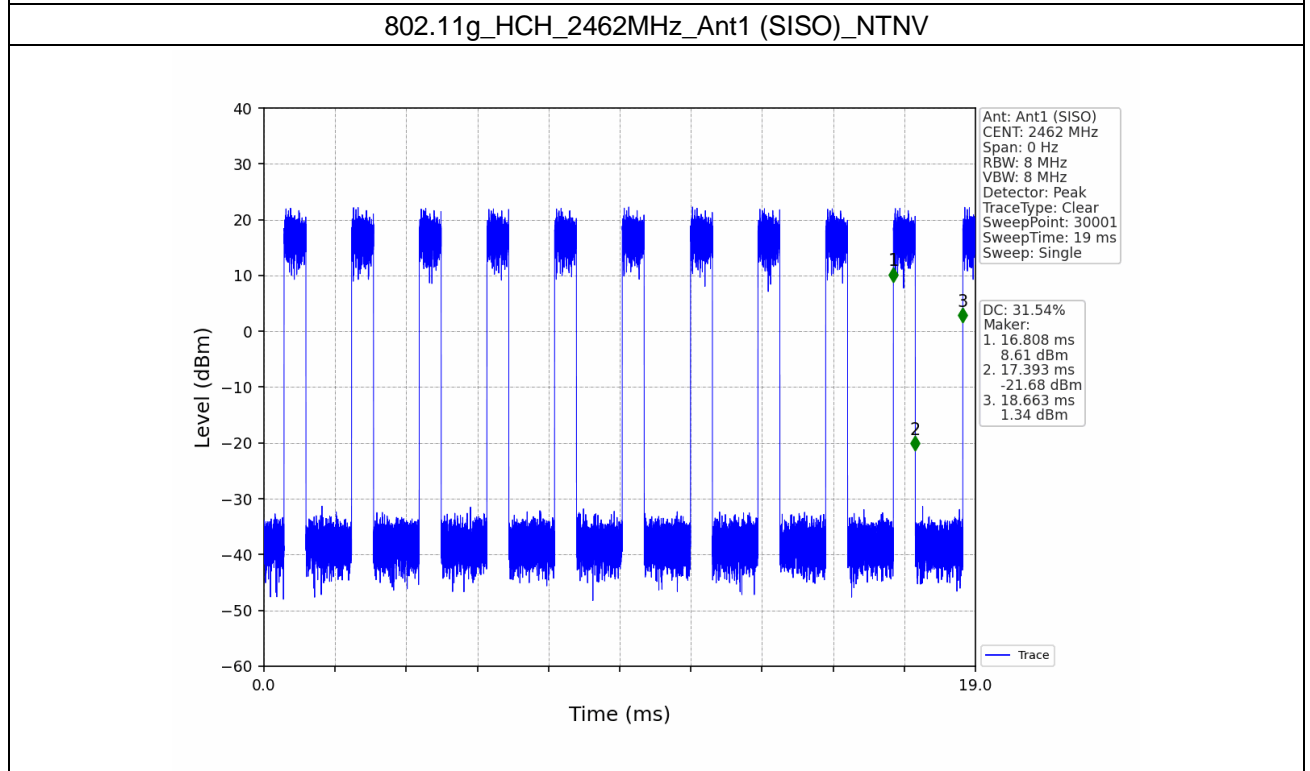
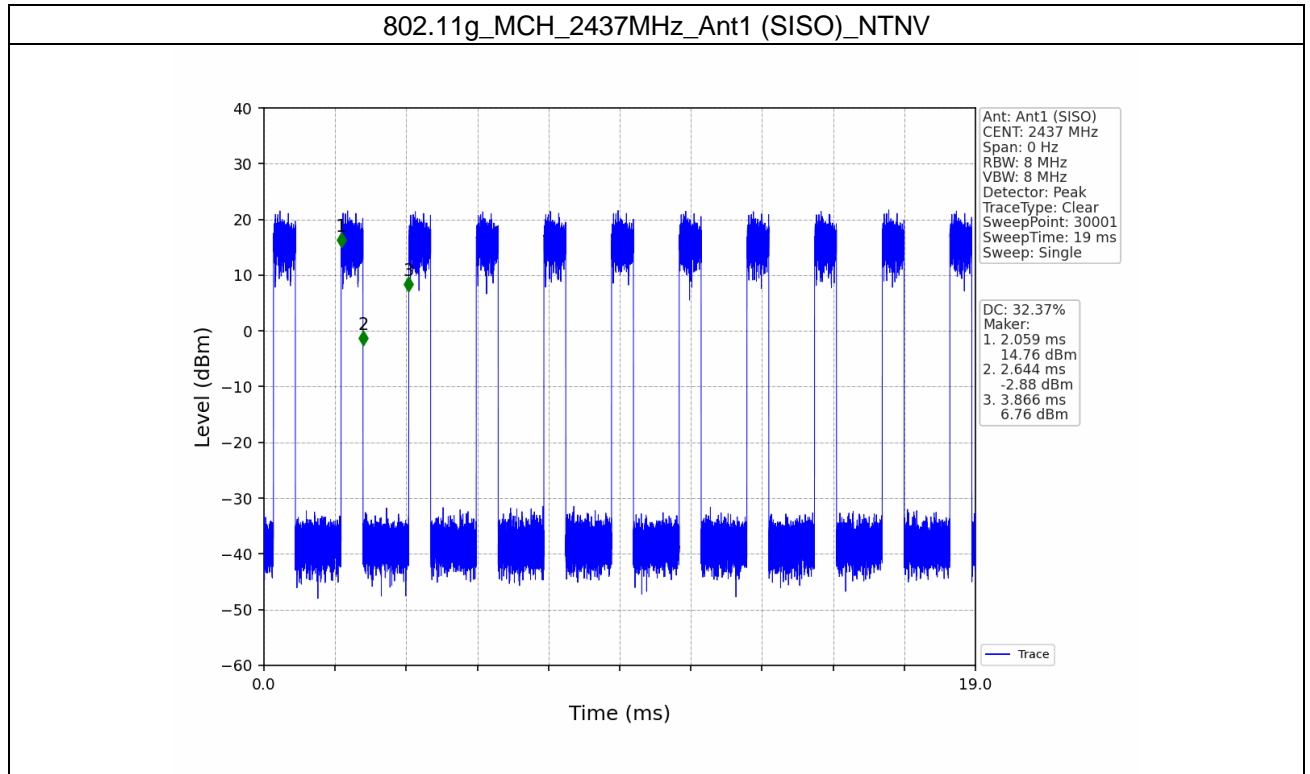
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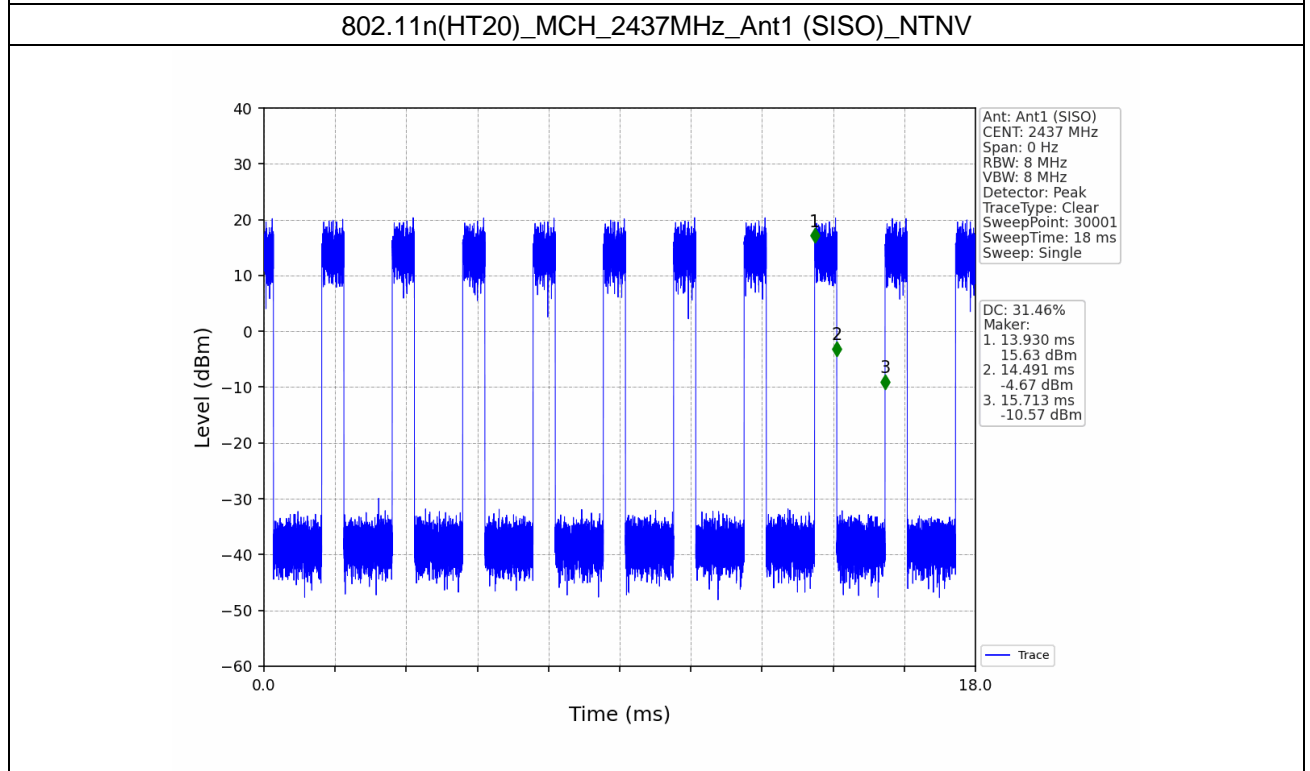
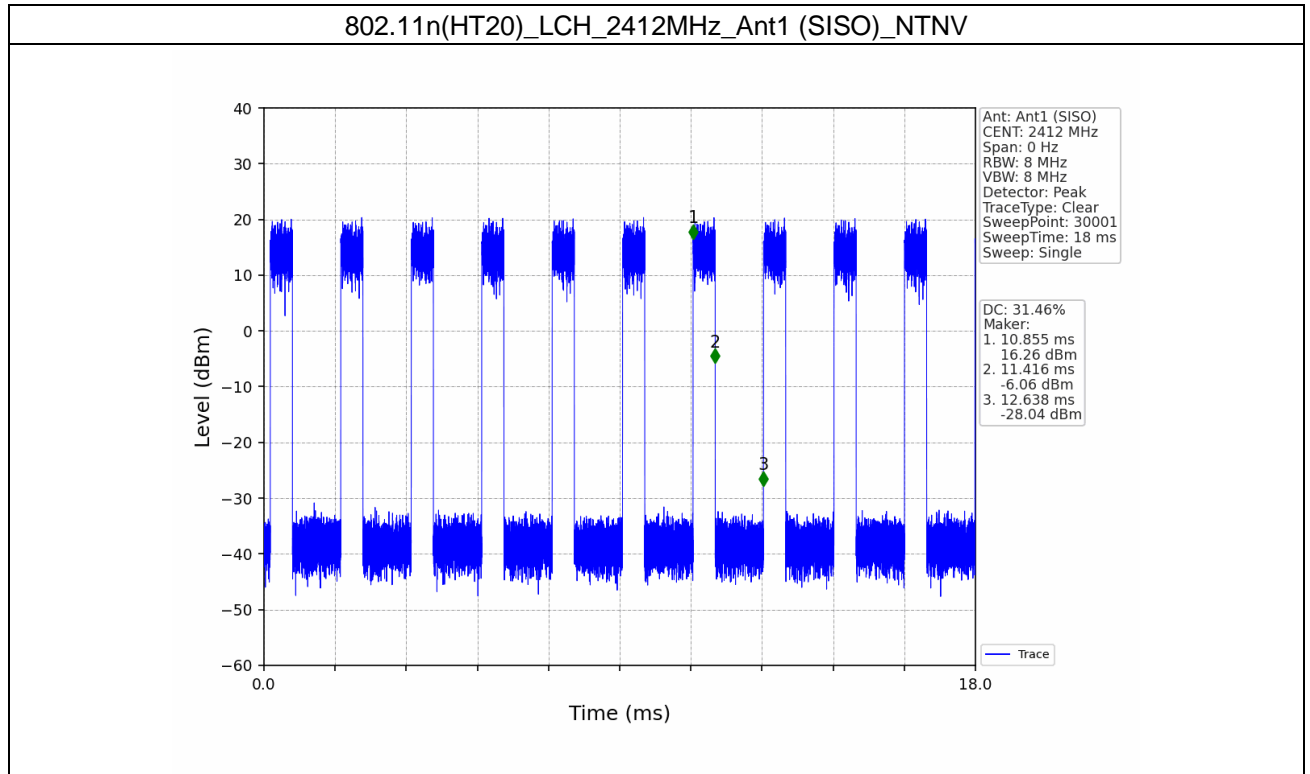
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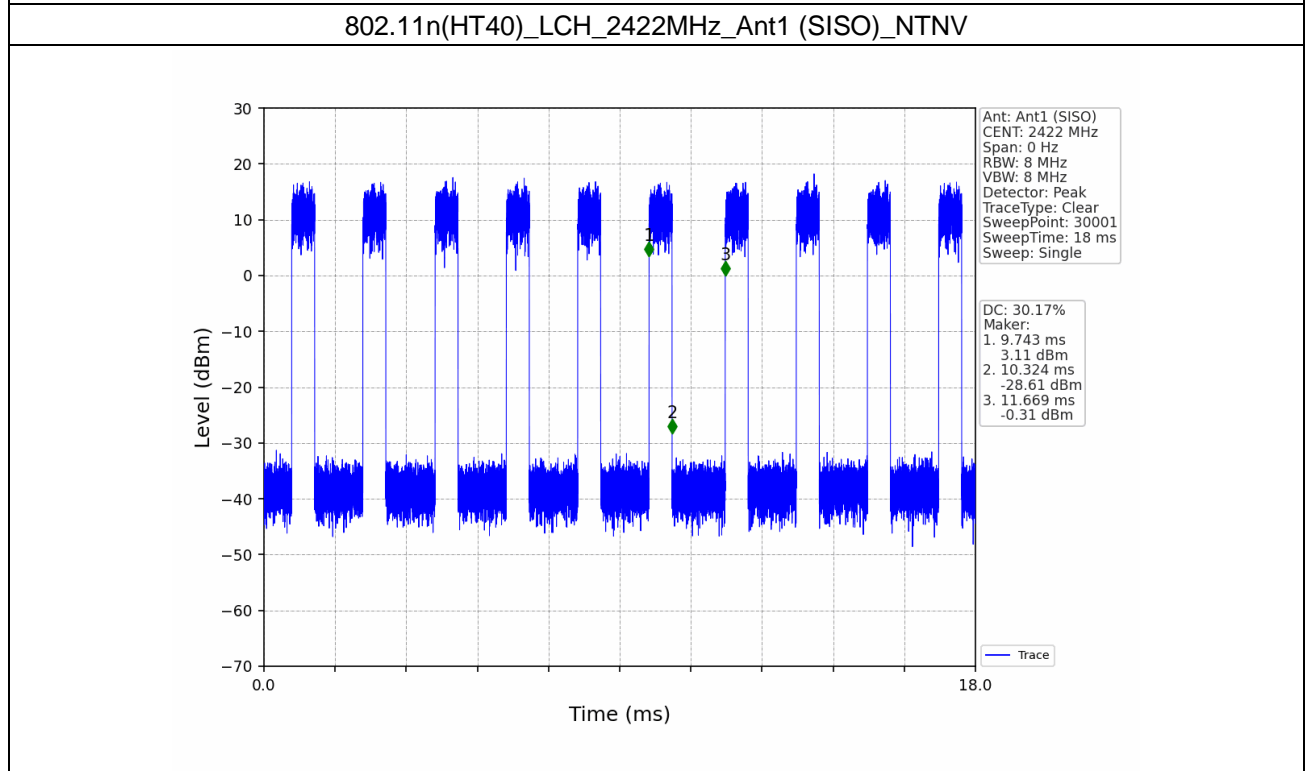
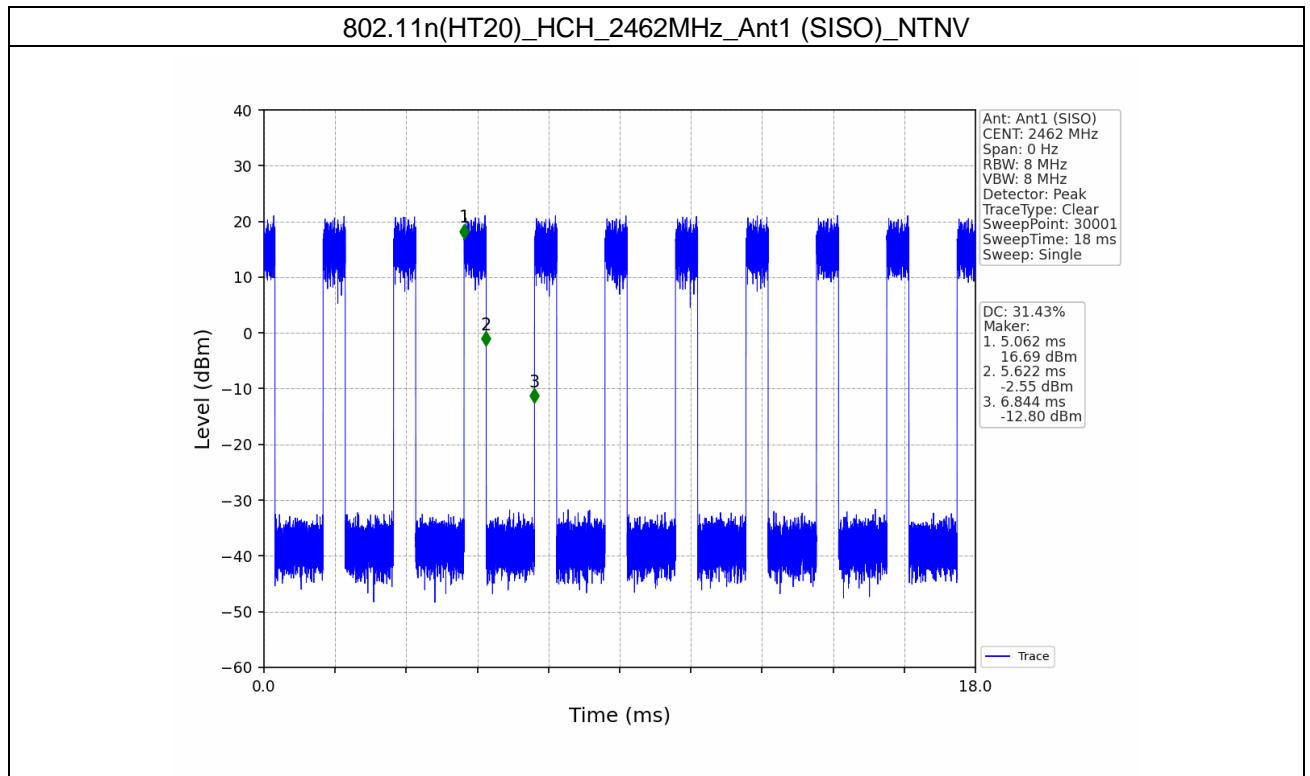
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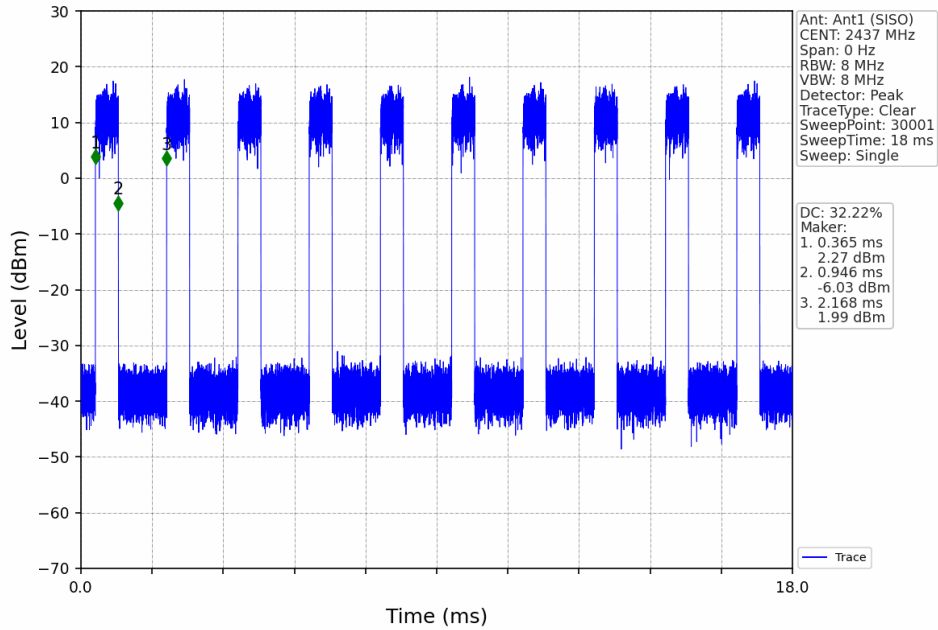


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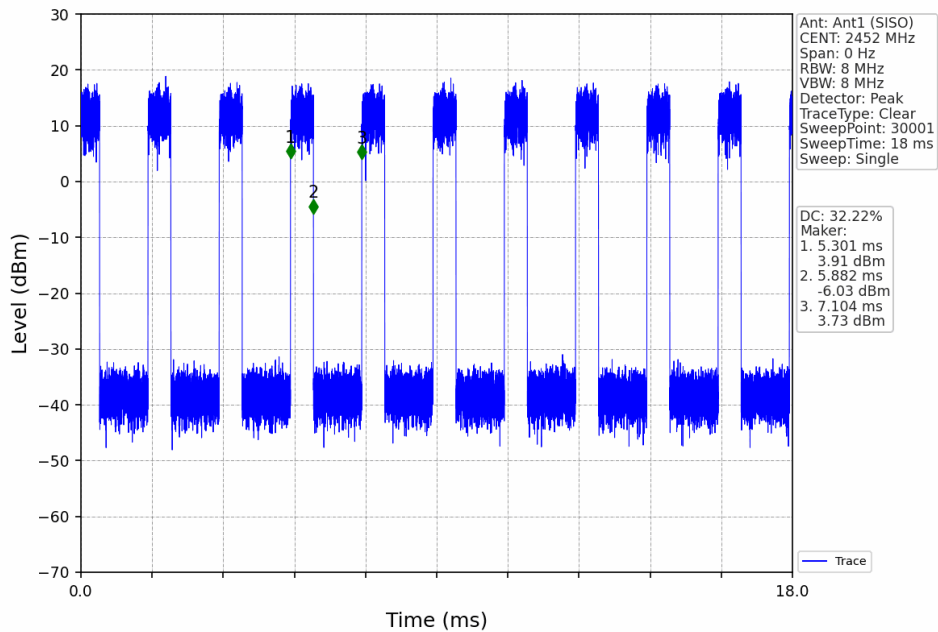
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802.11n(HT40)\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



802.11n(HT40)\_HCH\_2452MHz\_Ant1 (SISO)\_NTNV



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## 2. Bandwidth

### 2.1 OBW

#### 2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	Verdict
				Result	
802.11b	SISO	2412	1	12.958	Pass
		2437	1	12.947	Pass
		2462	1	12.976	Pass
802.11g	SISO	2412	1	17.973	Pass
		2437	1	17.951	Pass
		2462	1	18.085	Pass
802.11n (HT20)	SISO	2412	1	18.755	Pass
		2437	1	18.710	Pass
		2462	1	18.796	Pass
802.11n (HT40)	SISO	2422	1	37.561	Pass
		2437	1	37.485	Pass
		2452	1	37.574	Pass

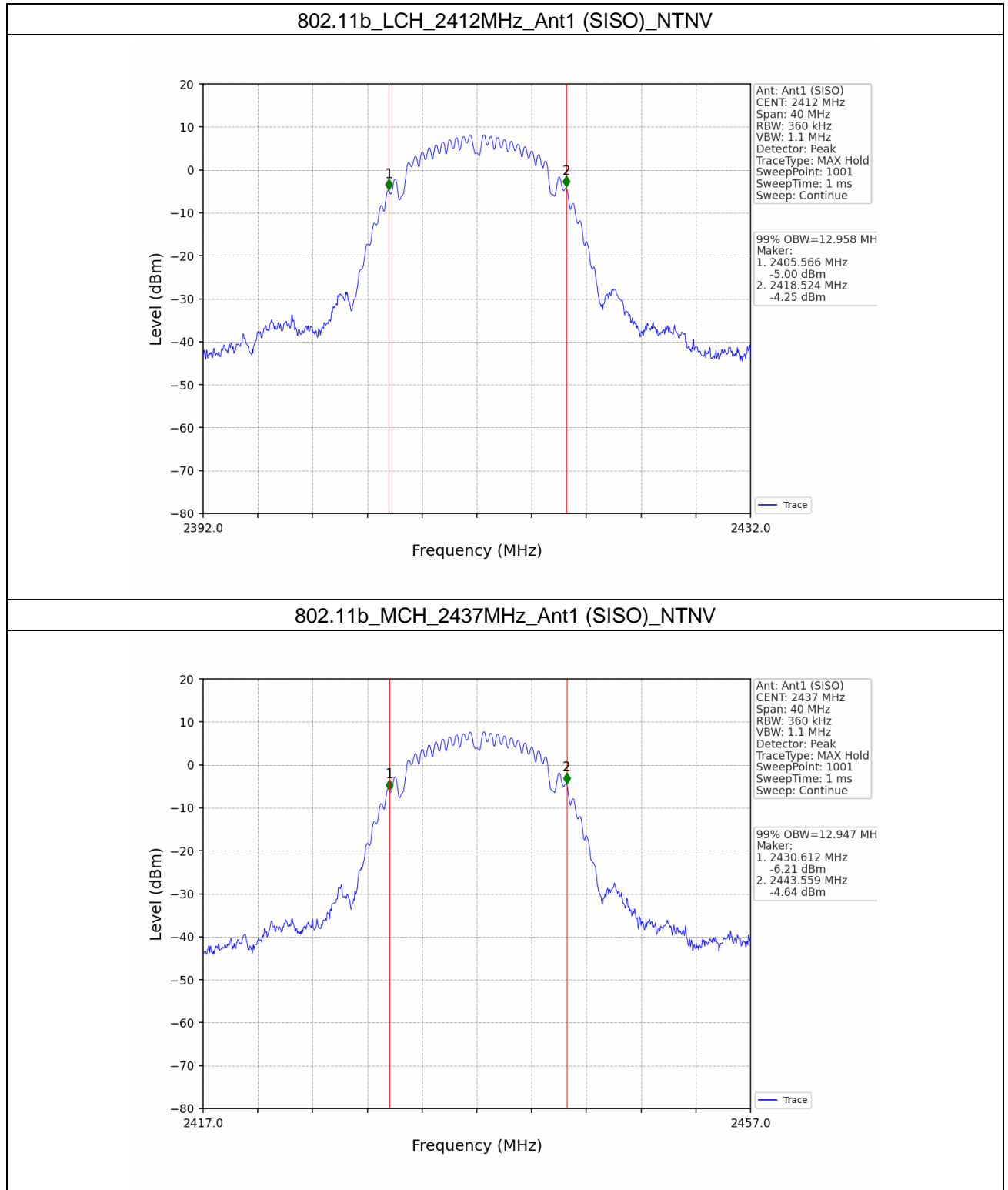


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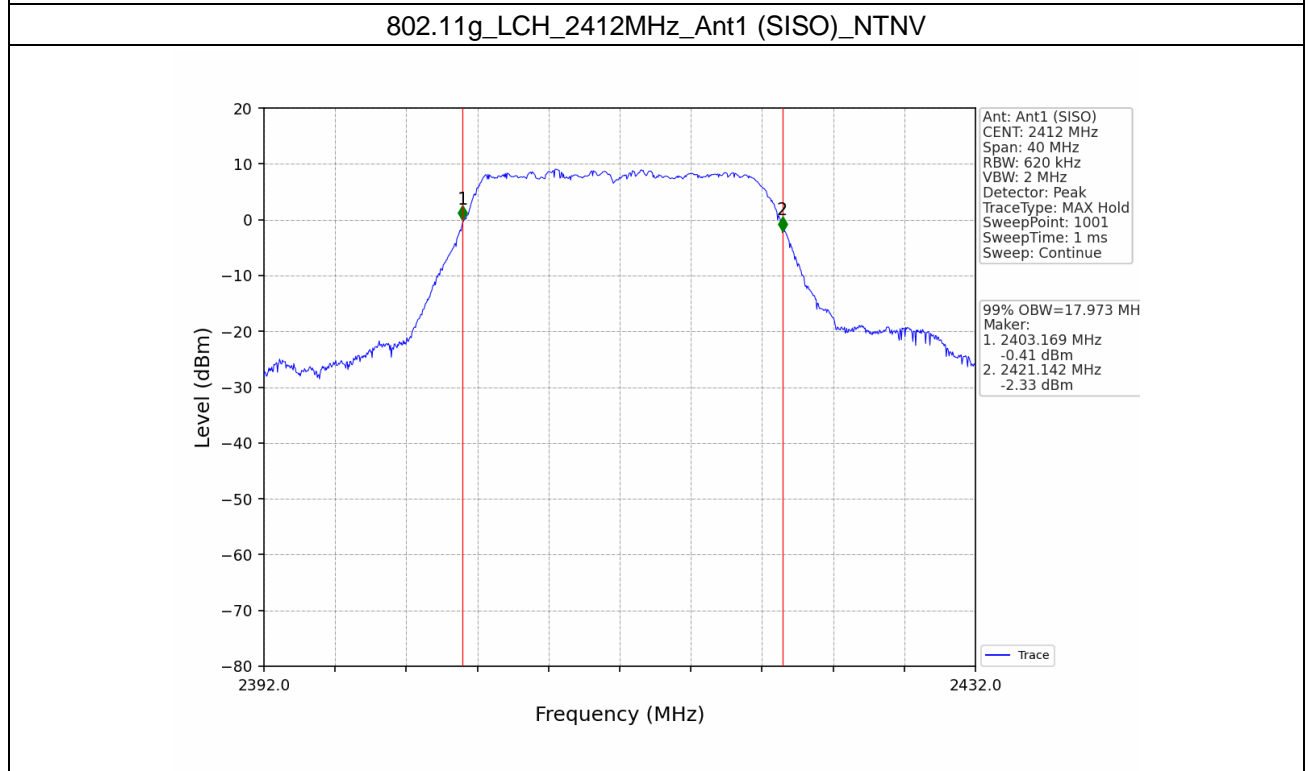
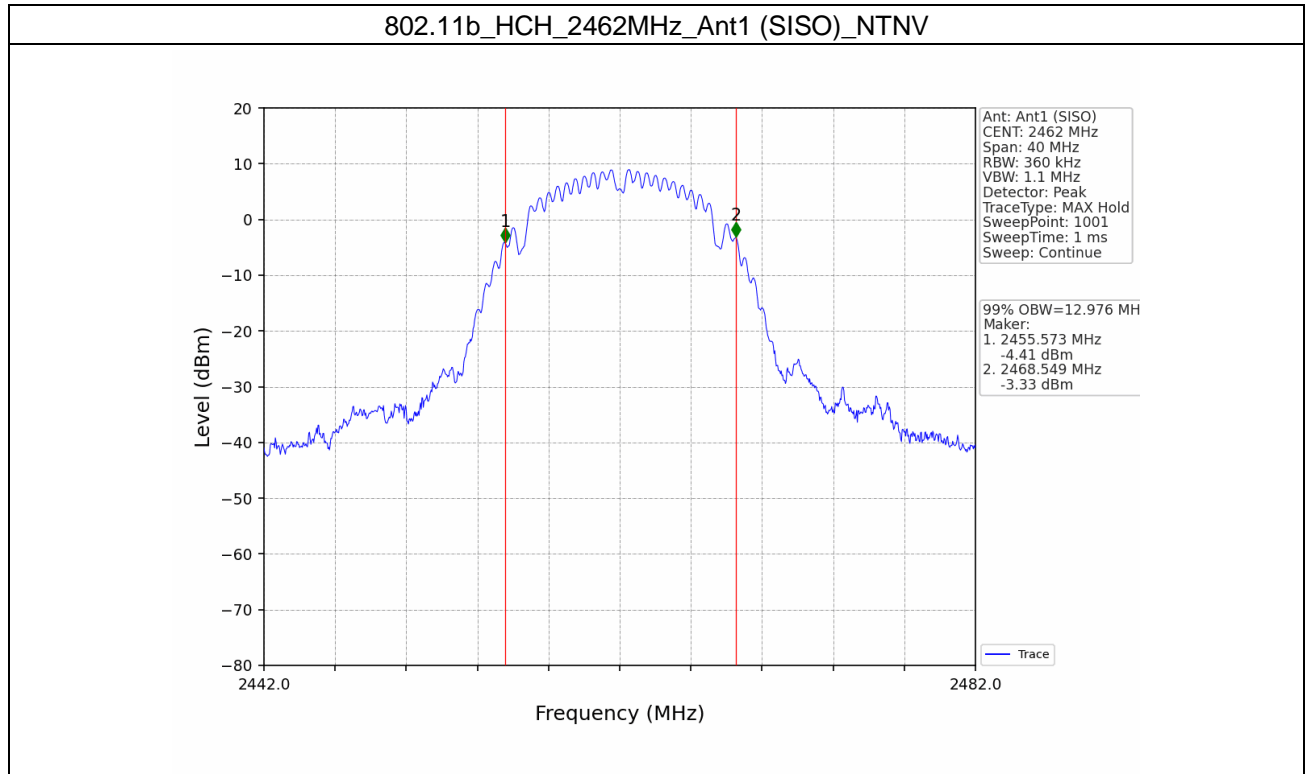


### 2.1.2 Test Graph



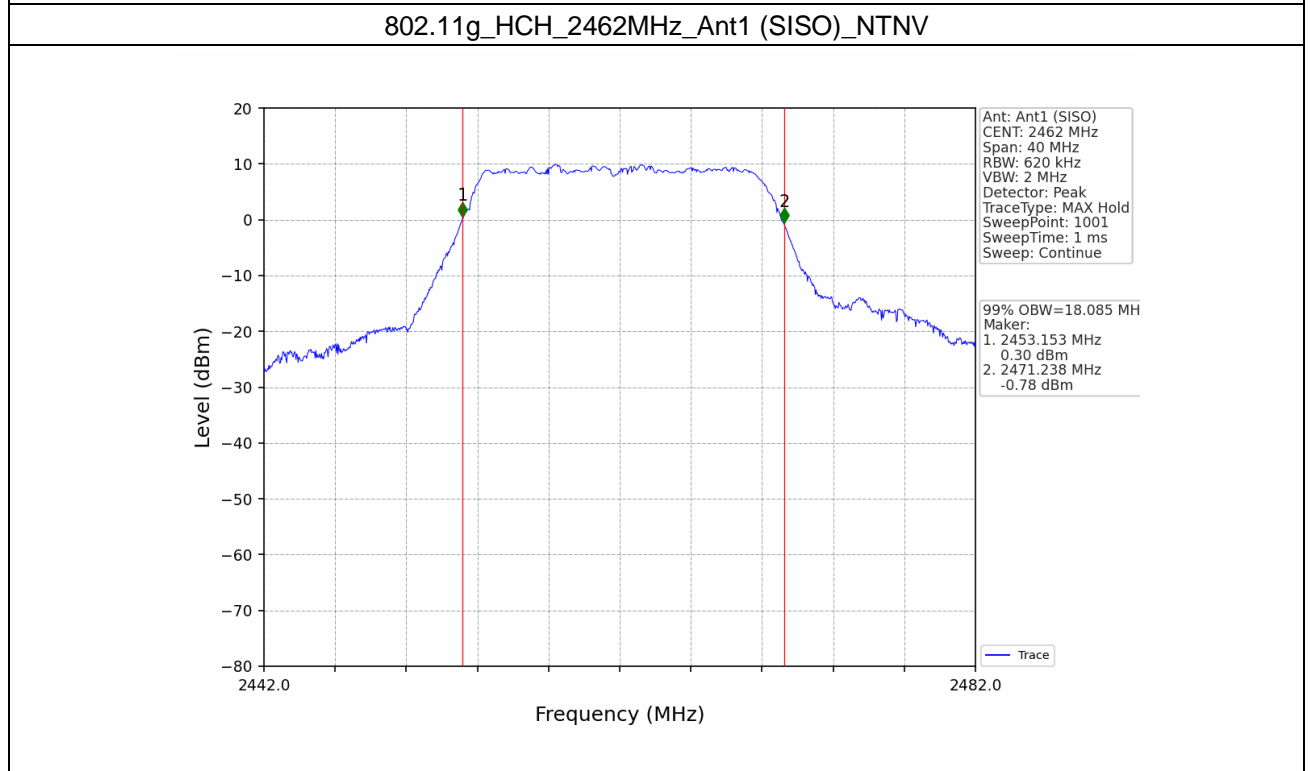
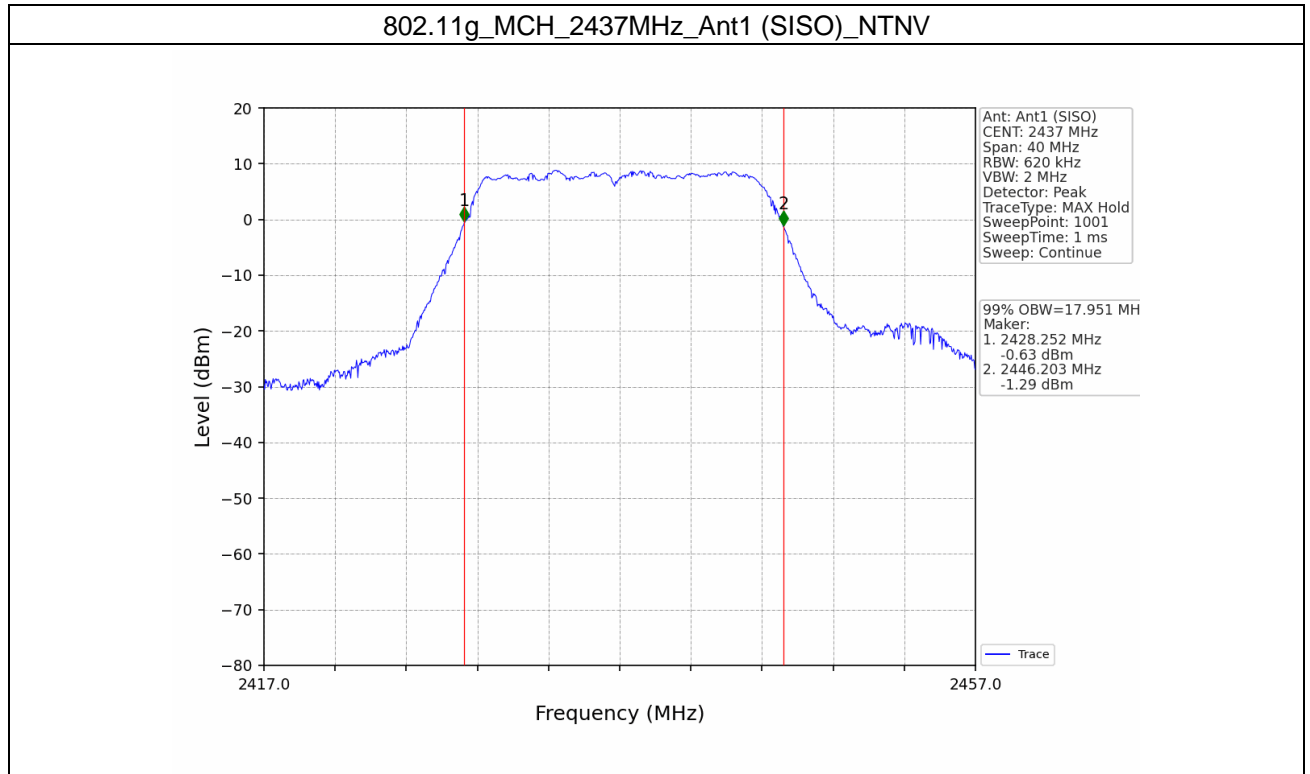
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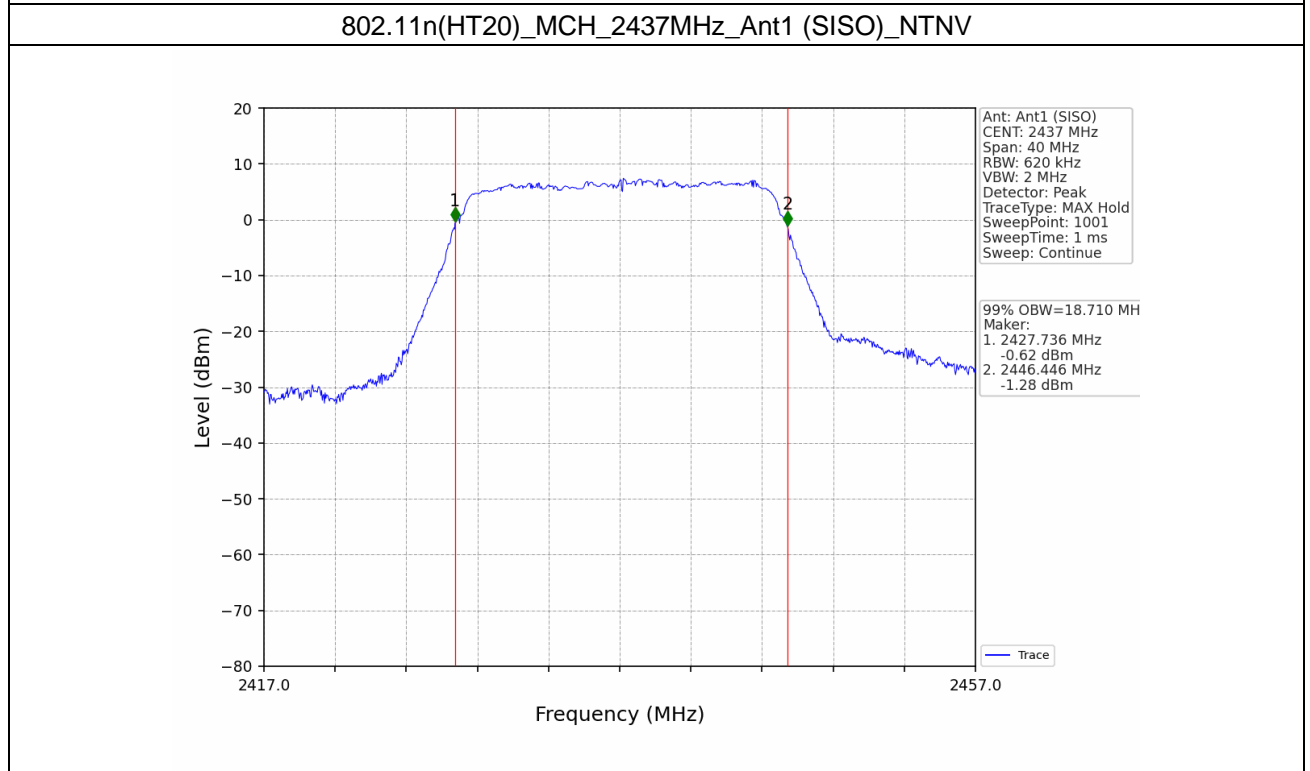
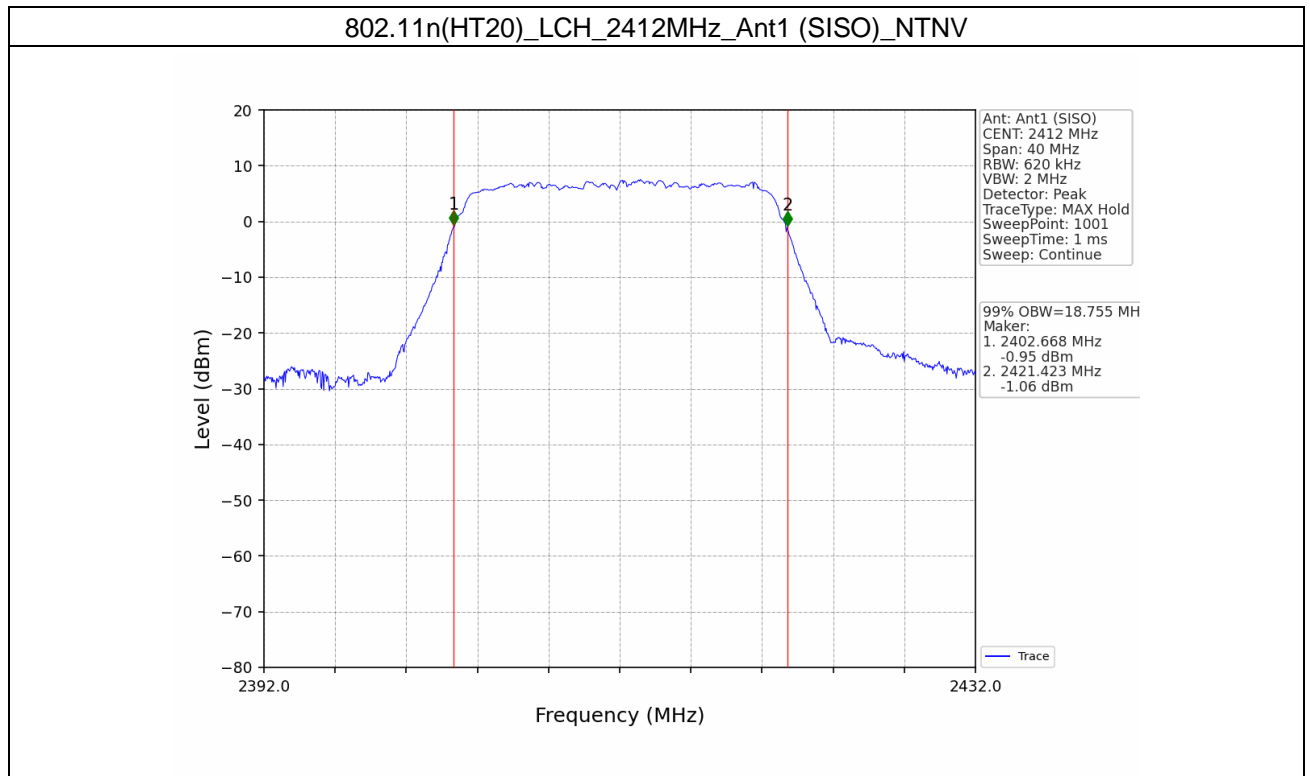
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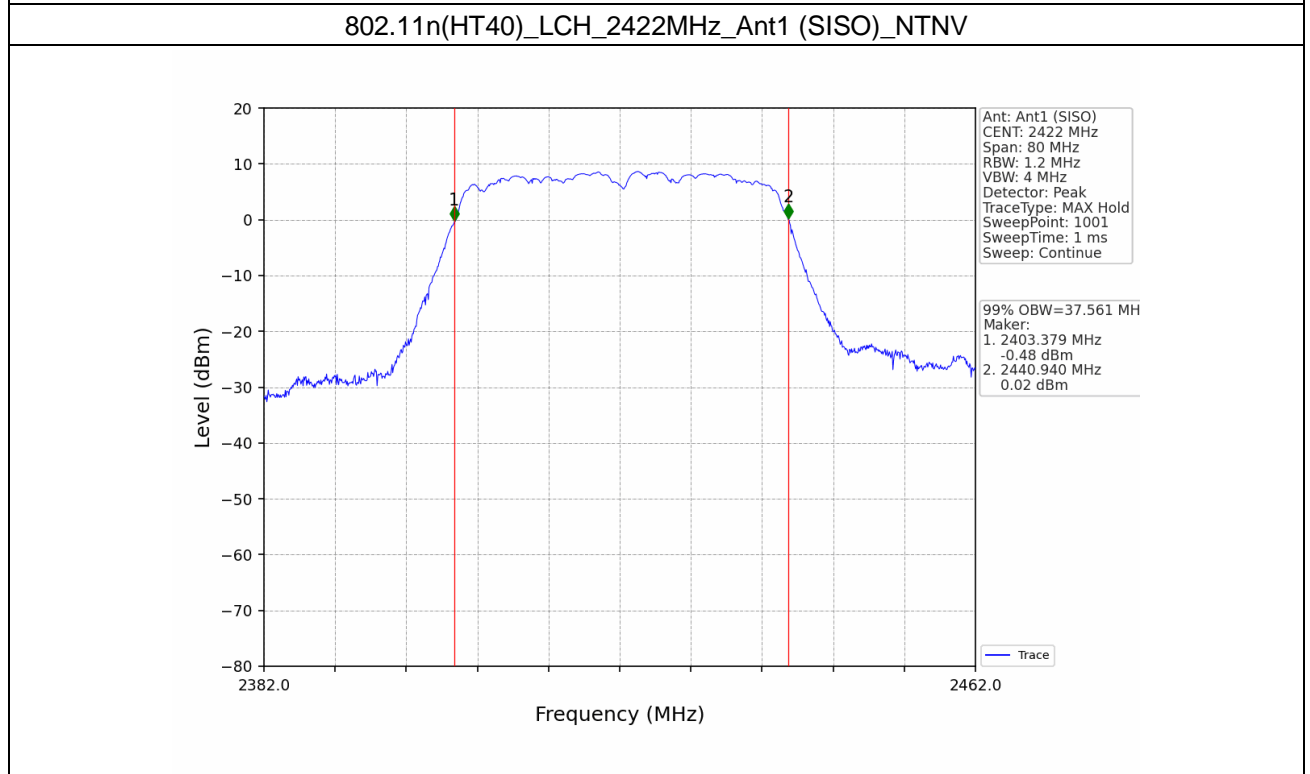
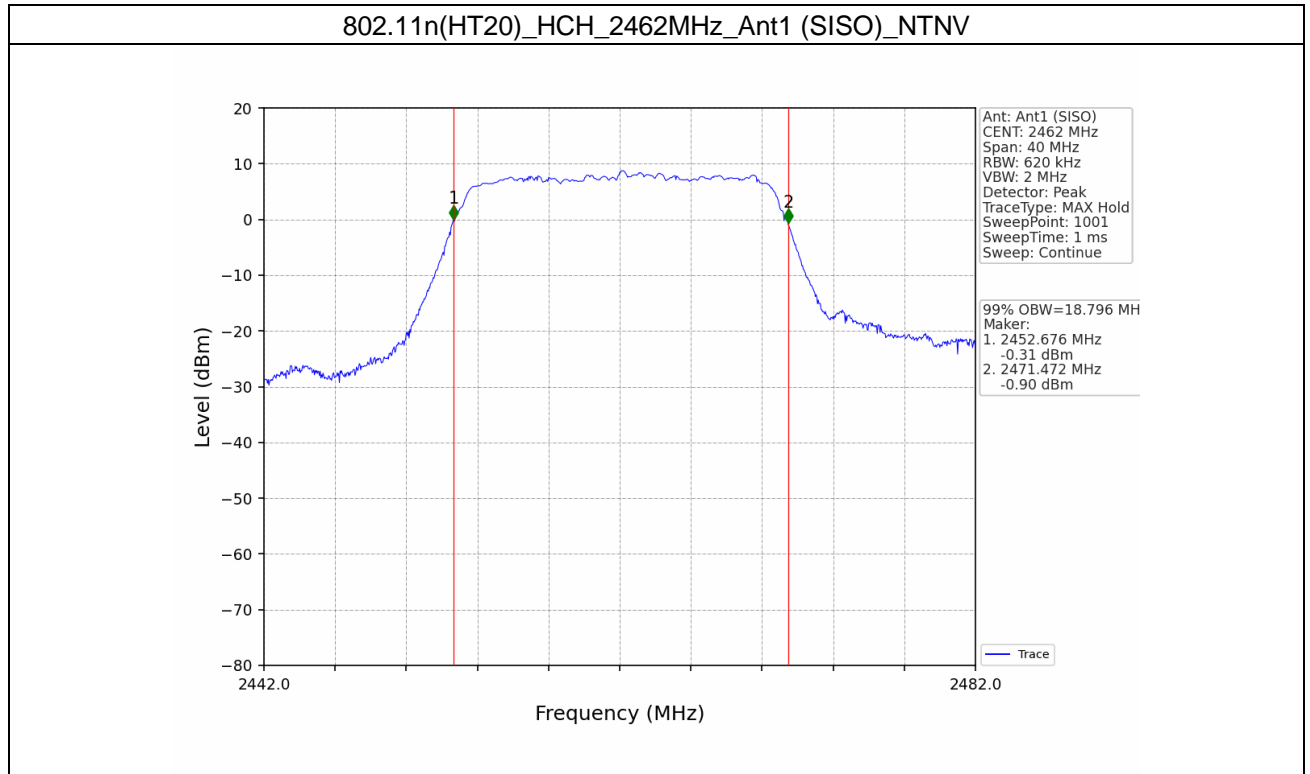
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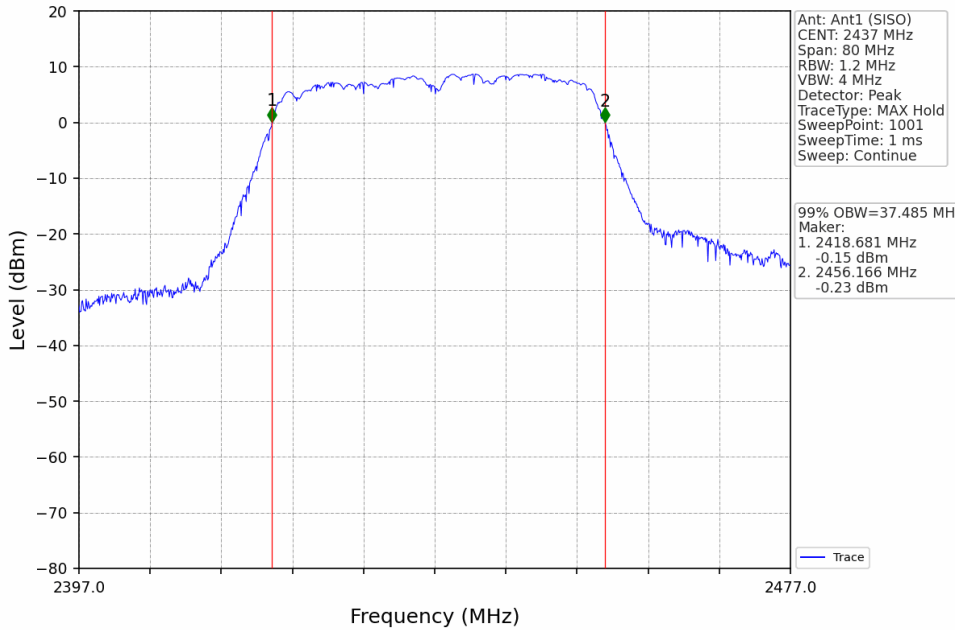
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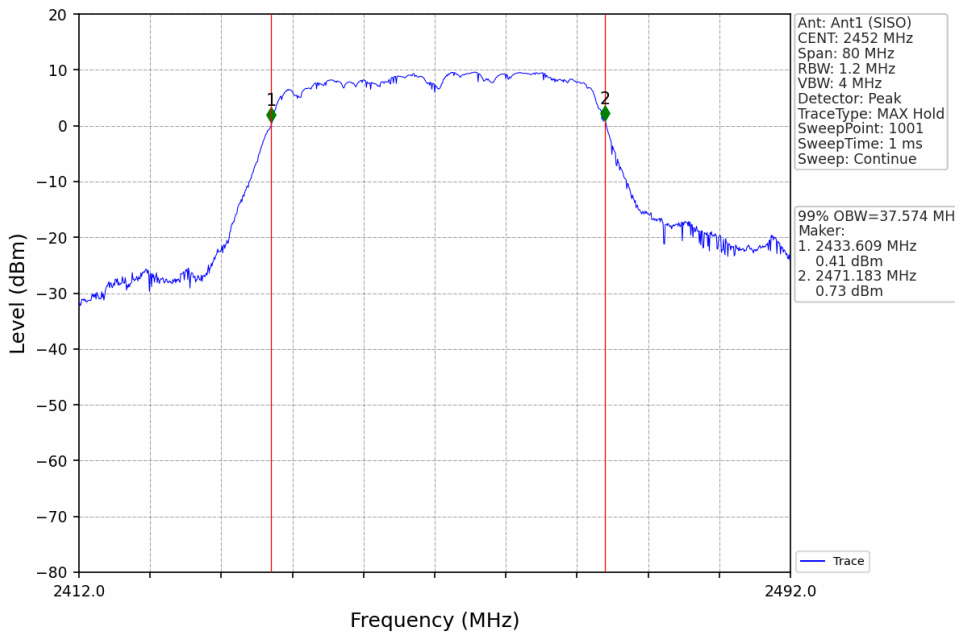
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802.11n(HT40)\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



802.11n(HT40)\_HCH\_2452MHz\_Ant1 (SISO)\_NTNV



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## 2.2 6dB BW

### 2.2.1 Test Result

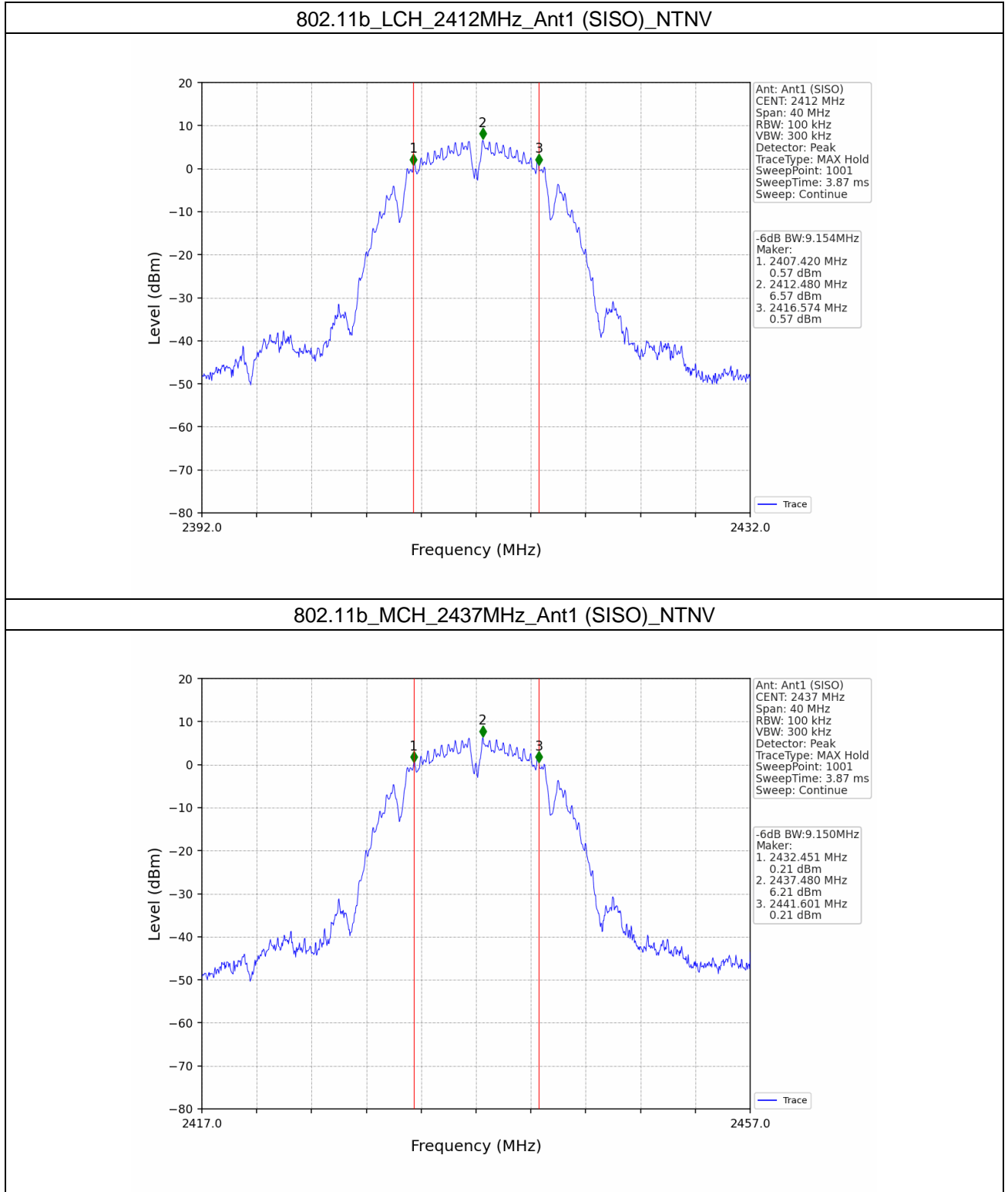
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.154	>=0.5	Pass
		2437	1	9.150	>=0.5	Pass
		2462	1	9.175	>=0.5	Pass
802.11g	SISO	2412	1	16.349	>=0.5	Pass
		2437	1	16.109	>=0.5	Pass
		2462	1	16.345	>=0.5	Pass
802.11n (HT20)	SISO	2412	1	17.306	>=0.5	Pass
		2437	1	16.972	>=0.5	Pass
		2462	1	17.073	>=0.5	Pass
802.11n (HT40)	SISO	2422	1	35.182	>=0.5	Pass
		2437	1	35.740	>=0.5	Pass
		2452	1	35.163	>=0.5	Pass



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### 2.2.2 Test Graph



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