



TEST REPORT

Application No.: GZCR2212001583TX
Applicant: Harman International Industries, Inc
Address of Applicant: 8500 Balboa Boulevard, Northridge, California 91329, United States
Manufacturer: Harman International Industries, Inc.
Address of Manufacturer: 8500 Balboa Boulevard, Northridge, California, 91329, United States
Equipment Under Test (EUT):
EUT Name: STUDIO MONITOR
Model No.: 4329P
Trade Mark: JBL
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2023-02-03
Date of Test: 2023-02-03
Date of Issue: 2023-02-07

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

Ricky Liu

Ricky Liu
Manager



Revision Record			
Version	Report No.	Date	Remark
01		2023-02-07	Original

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

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	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 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.



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4 General Information

4.1 Details of E.U.T.

Power supply:	Main speaker: AC 100-240V, 50/60Hz Speaker: AC 100-240V, 50/60Hz 3.0V DC (1.5V x 2 "AAA" Size Batteries) for remote controller
Cable(s):	LAN cable:300cm shielded (Two magnetic rings) AC cable:170cm*2
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz
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
Channel Spacing:	5MHz
Antenna Type:	Integral Antenna
Antenna Gain:	Ant 1: 2.46dBi; Ant 2: 2.80dBi (Two antennas can simultaneous transmission)

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.			

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±2.76dB
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 3%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Radiated Emissions which fall in the restricted bands	±5.00dB (30MHz-1GHz; 3m); ± 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)
Duty Cycle	± 0.37%
<p>Remark:</p> <p>The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results</p> <ul style="list-style-type: none"> – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit. 	

4.4 Test Location

All tests were performed at:

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

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

No tests were sub-contracted.

4.5 Test Facility

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

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

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

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

- **ACMA**

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

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

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

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

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

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

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

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

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

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

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



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Guangzhou Branch EMC Laboratory

No. 198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgs.com.cn
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

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2022-12-16	2023-12-15
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2022-09-09	2023-09-08
Coaxial Cable	HangTianXing	2m	EMC0107	2022-08-24	2023-08-23
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2022-05-20	2023-05-19

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

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

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



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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	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

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



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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	2022-12-16	2023-12-15
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2022-02-22	2025-02-21
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
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19

Radiated Spurious Emissions (Above 1GHz)

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



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Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2022-08-24	2023-08-23
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Duty Cycle					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2022-09-08	2023-09-07
6dB Attenuator	HP	8491A	EMC2062	2022-03-29	2023-03-28
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

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



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

15.203 Requirement:

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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is Ant 1: 2.46dBi; Ant 2: 2.80dBi (Two antennas can simultaneous transmission)

Antenna location: Refer to internal photo.

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(dBμV)	
	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: 25 °C

Humidity: 52 % RH

Atmospheric Pressure: 1003 mbar

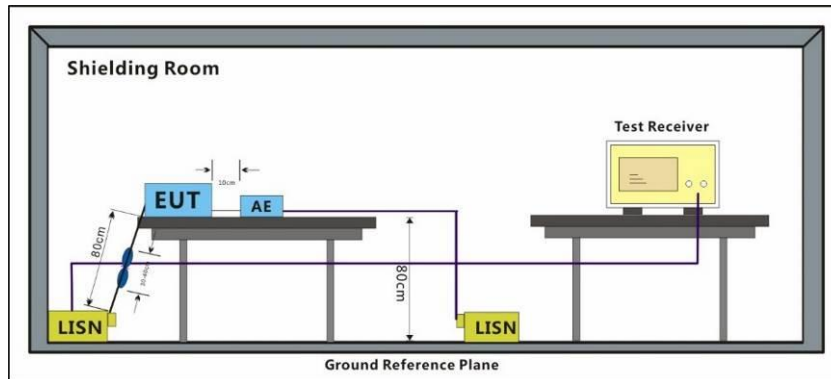
7.1.2 Test Mode Description

Pre-scan /	Mode	Description
Final test	Code	

Final test 04

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); Only the data of worst case is recorded in the report.

7.1.3 Test Setup Diagram

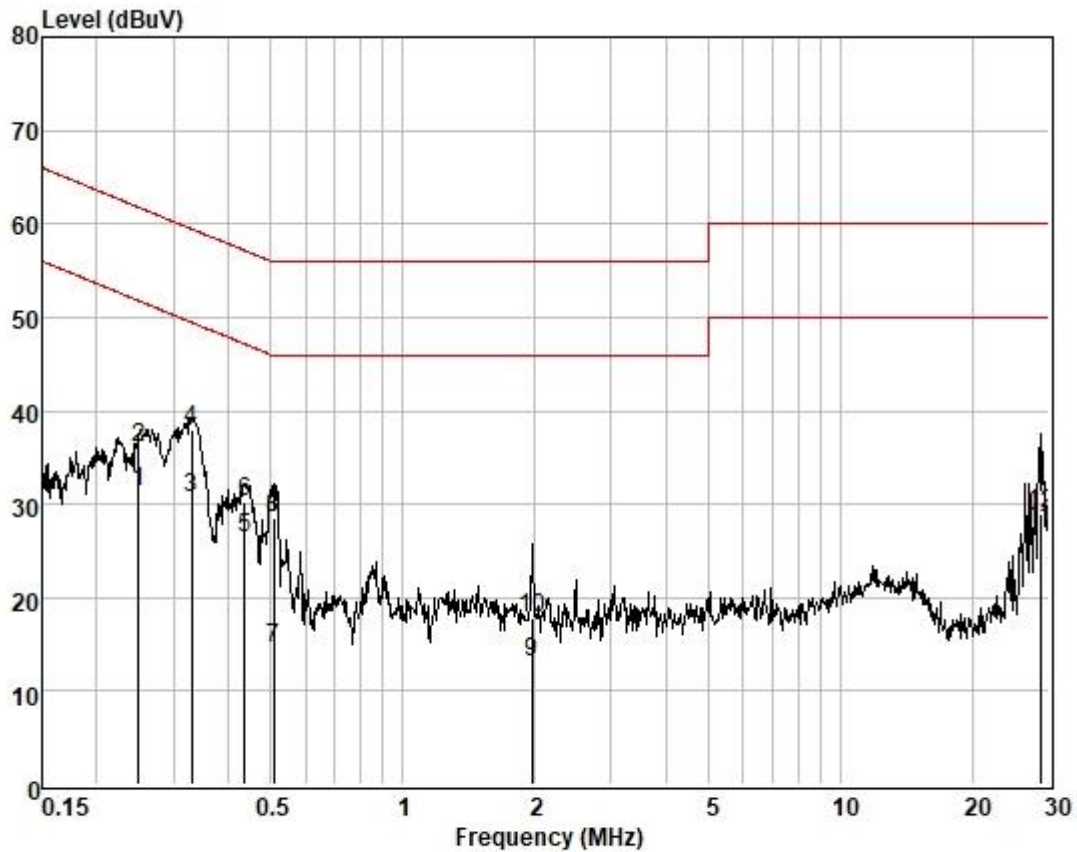


7.1.4 Measurement Procedure and Data

- 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

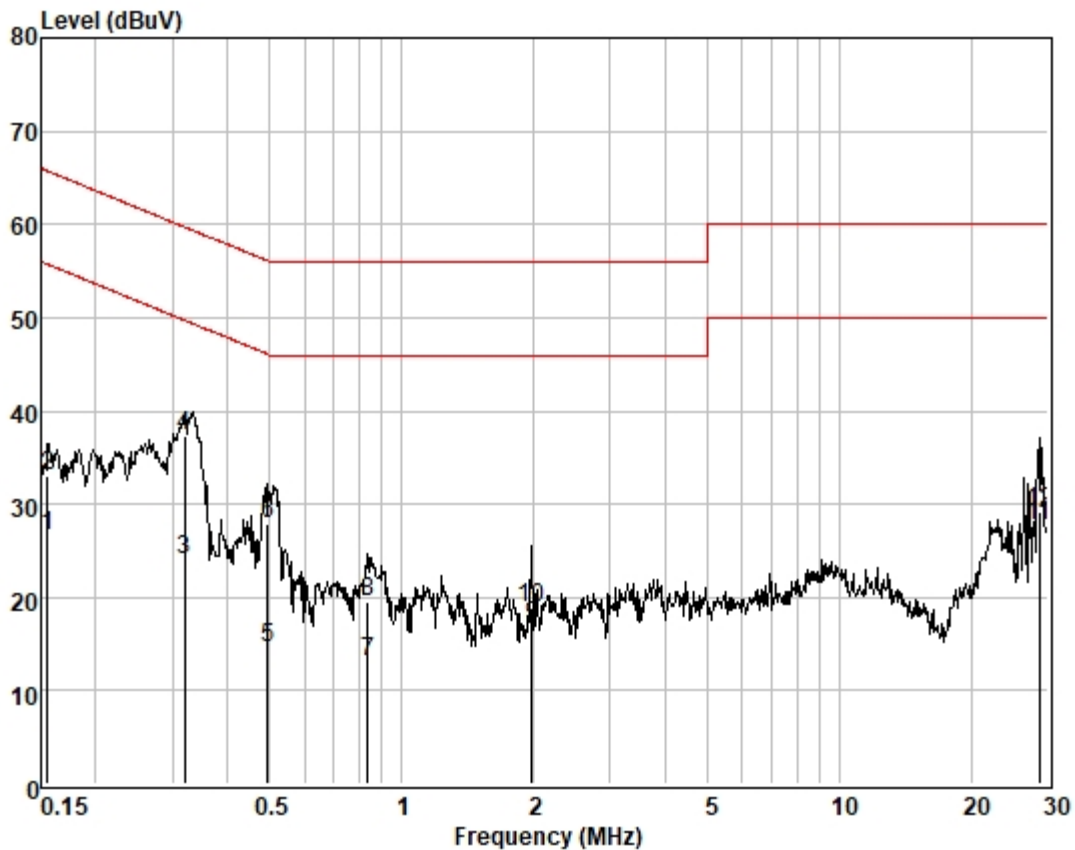
Test Mode: 04; Line: Live line



Condition: LINE
Mode :
Model :
Power :

	Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.249	21.57	0.06	9.61	31.24	51.78	-20.54	Average
2	0.249	26.32	0.06	9.61	35.99	61.78	-25.79	QP
3	0.330	20.97	0.06	9.61	30.64	49.44	-18.80	Average
4	0.330	28.34	0.06	9.61	38.01	59.44	-21.43	QP
5	0.435	16.81	0.06	9.59	26.46	47.15	-20.69	Average
6	0.435	20.53	0.06	9.59	30.18	57.15	-26.97	QP
7	0.507	4.99	0.07	9.59	14.65	46.00	-31.35	Average
8	0.507	18.80	0.07	9.59	28.46	56.00	-27.54	QP
9	1.980	3.43	0.11	9.62	13.16	46.00	-32.84	Average
10	1.980	7.99	0.11	9.62	17.72	56.00	-38.28	QP
11	28.755	17.26	0.42	9.64	27.32	50.00	-22.68	Average
12	28.755	18.96	0.42	9.64	29.02	60.00	-30.98	QP

Test Mode: 04; Line: Neutral Line



Condition: NEUTRAL

Mode :
Model :
Power :

	Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.155	16.98	0.06	9.62	26.66	55.74	-29.08	Average
2	0.155	23.45	0.06	9.62	33.13	65.74	-32.61	QP
3	0.320	14.27	0.06	9.60	23.93	49.71	-25.78	Average
4	0.320	27.67	0.06	9.60	37.33	59.71	-22.38	QP
5	0.494	4.87	0.07	9.60	14.54	46.10	-31.56	Average
6	0.494	18.27	0.07	9.60	27.94	56.10	-28.16	QP
7	0.839	3.32	0.07	9.61	13.00	46.00	-33.00	Average
8	0.839	9.90	0.07	9.61	19.58	56.00	-36.42	QP
9	1.991	7.11	0.12	9.61	16.84	46.00	-29.16	Average
10	1.991	9.08	0.12	9.61	18.81	56.00	-37.19	QP
11	28.755	17.26	0.42	9.92	27.60	50.00	-22.40	Average
12	28.755	18.79	0.42	9.92	29.13	60.00	-30.87	QP

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 ≥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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

Humidity: 52 % RH

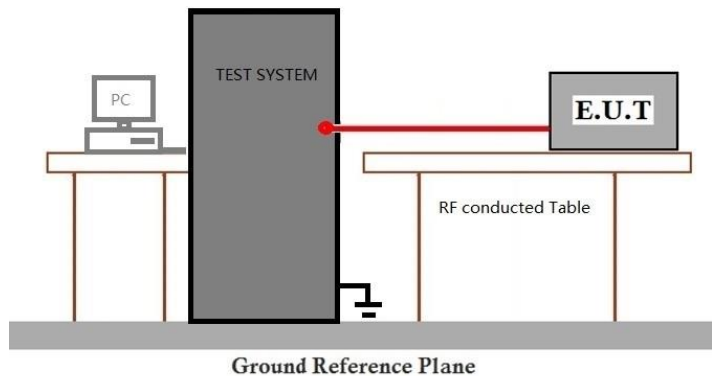
Atmospheric Pressure: 1003 mbar

7.2.2 Test Mode Description

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

Final test	04	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); Only the data of worst case is recorded in the report.
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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

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: 25 °C

Humidity: 52 % RH

Atmospheric Pressure: 1003 mbar

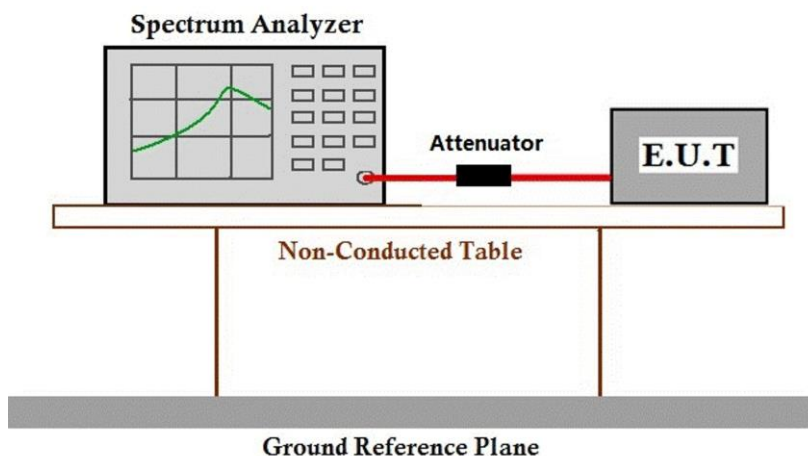
7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
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Final test	04	
------------	----	--

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); 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

Please Refer to Appendix for Details

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: 25 °C

Humidity: 52 % RH

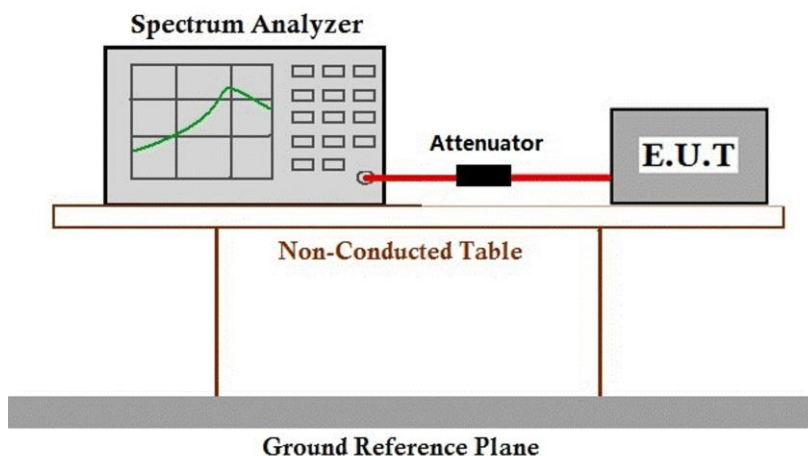
Atmospheric Pressure: 1003 mbar

7.4.2 Test Mode Description

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

Final test	04	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); Only the data of worst case is recorded in the report.
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7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

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)).

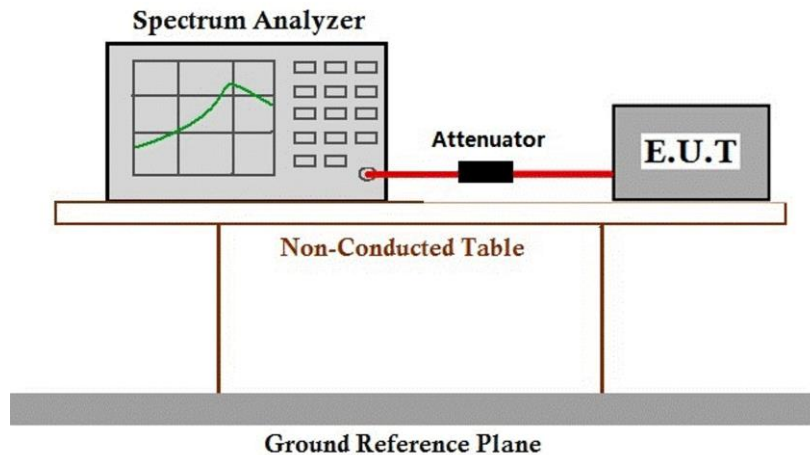
7.5.1 E.U.T. Operation

Operating Environment:
 Temperature: 25 °C Humidity: 52 % RH Atmospheric Pressure: 1003 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	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); Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

7.6 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: 25 °C

Humidity: 52 % RH

Atmospheric Pressure: 1003 mbar



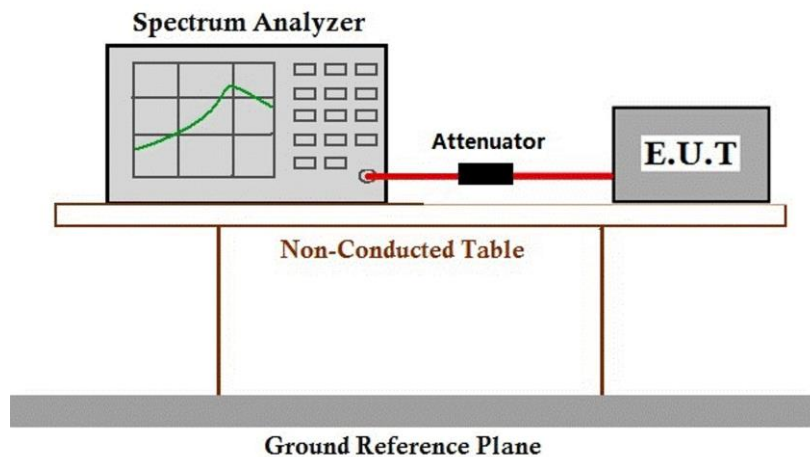
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7.6.1 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	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); Only the data of worst case is recorded in the report.

7.6.2 Test Setup Diagram



7.6.3 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details

7.7 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.

7.7.1 E.U.T. Operation

Operating Environment:

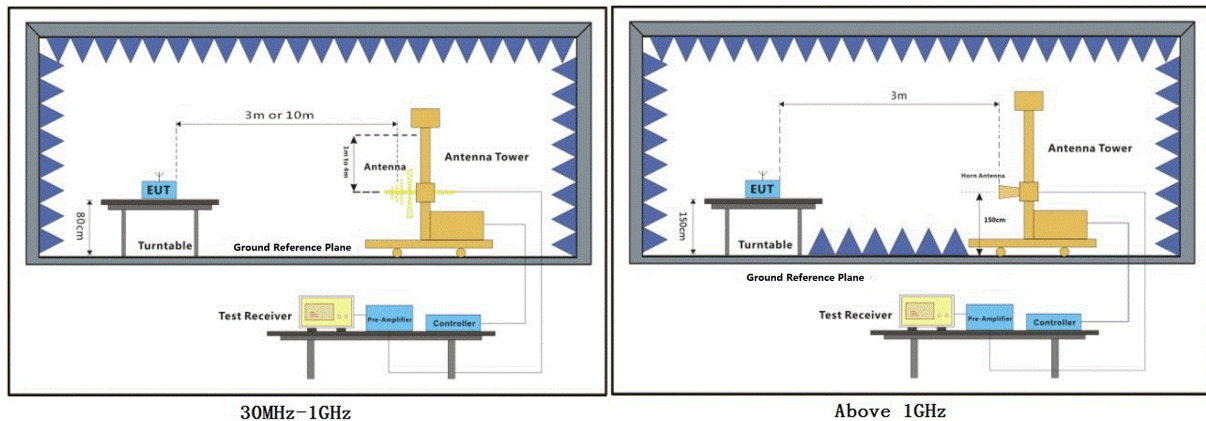
Temperature: 25 °C Humidity: 52 % RH Atmospheric Pressure: 1003 mbar

7.7.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	

Final test	04	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); Only the data of worst case is recorded in the report.
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7.7.3 Test Setup Diagram



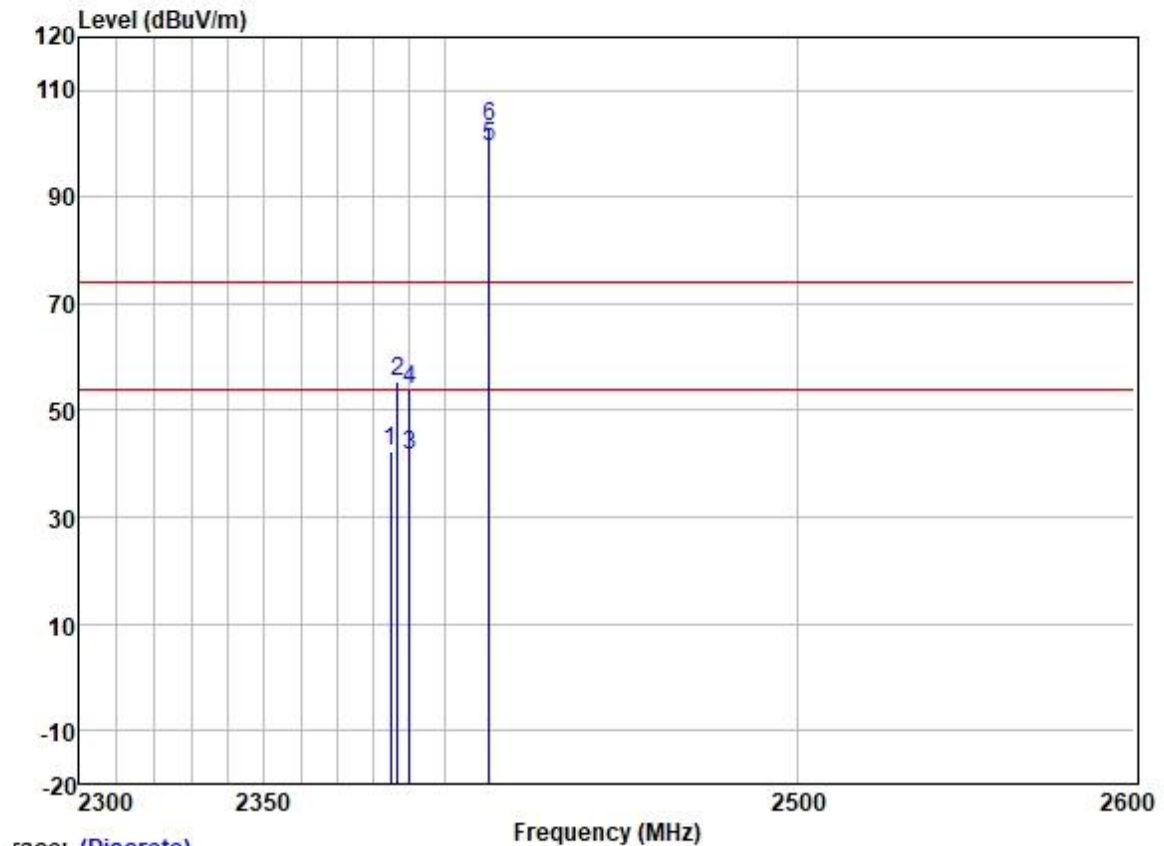
7.7.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 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 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

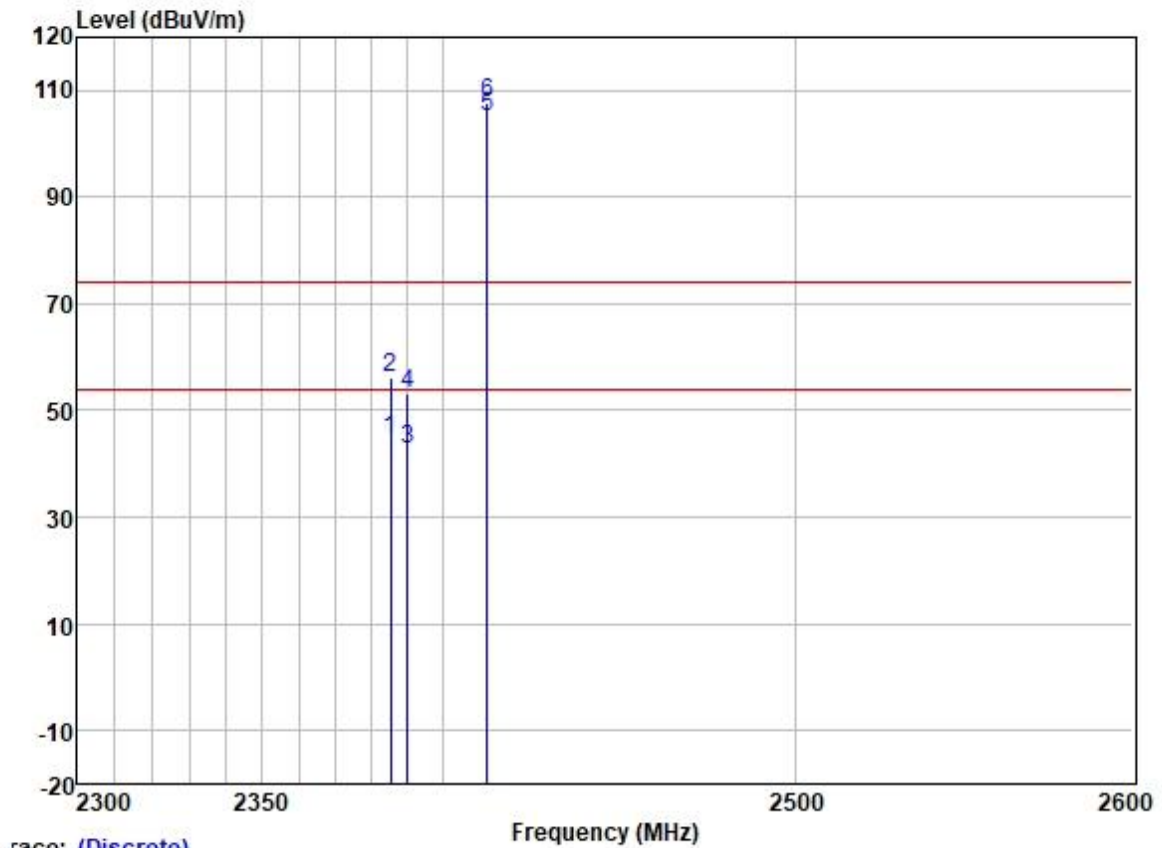
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

Test Mode: 04; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



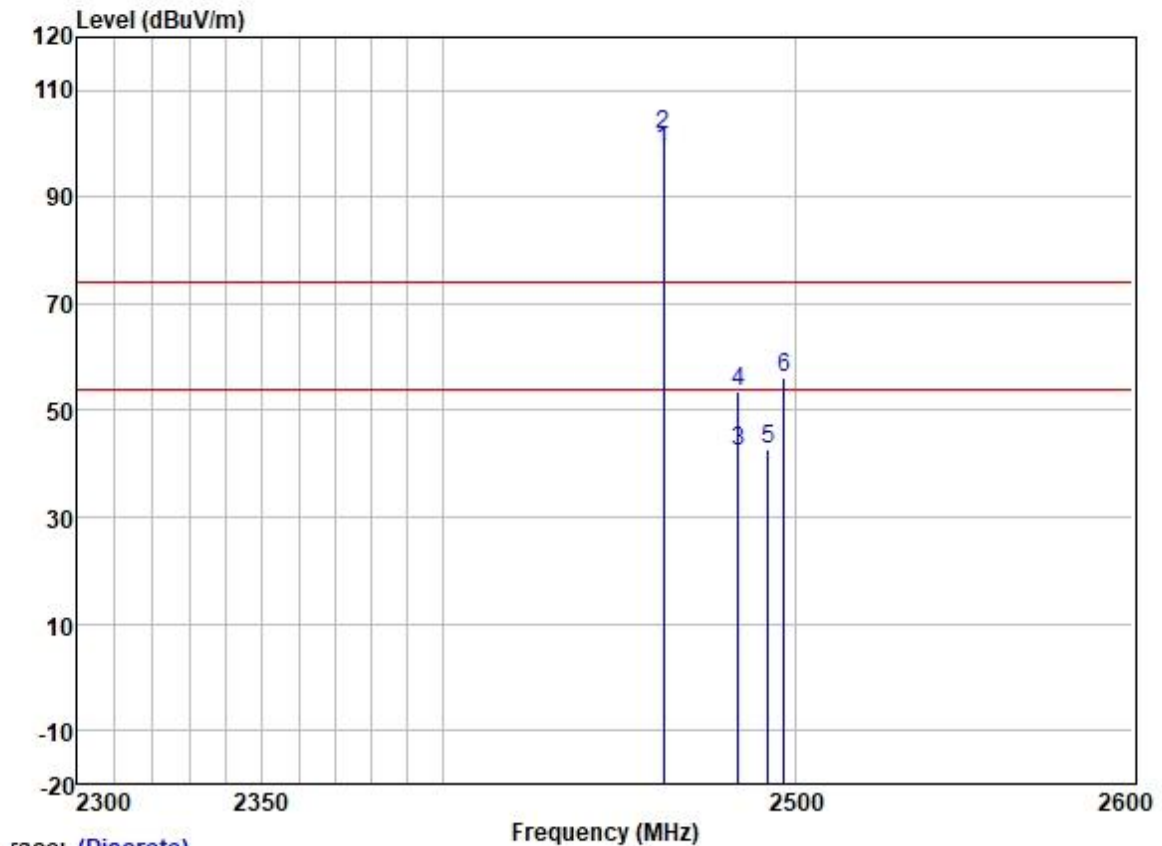
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2384.769	49.07	27.33	3.48	37.60	42.28	54.00	-11.72	HORIZONTAL Average
2	2386.703	62.21	27.33	3.48	37.60	55.42	74.00	-18.58	HORIZONTAL Peak
3	2390.000	48.34	27.33	3.48	37.59	41.56	54.00	-12.44	HORIZONTAL Average
4	2390.000	60.61	27.33	3.48	37.59	53.83	74.00	-20.17	HORIZONTAL Peak
5 *	2412.000	106.39	27.38	3.47	37.59	99.65	54.00	45.65	HORIZONTAL Average
6 *	2412.000	109.82	27.38	3.47	37.59	103.08	74.00	29.08	HORIZONTAL Peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



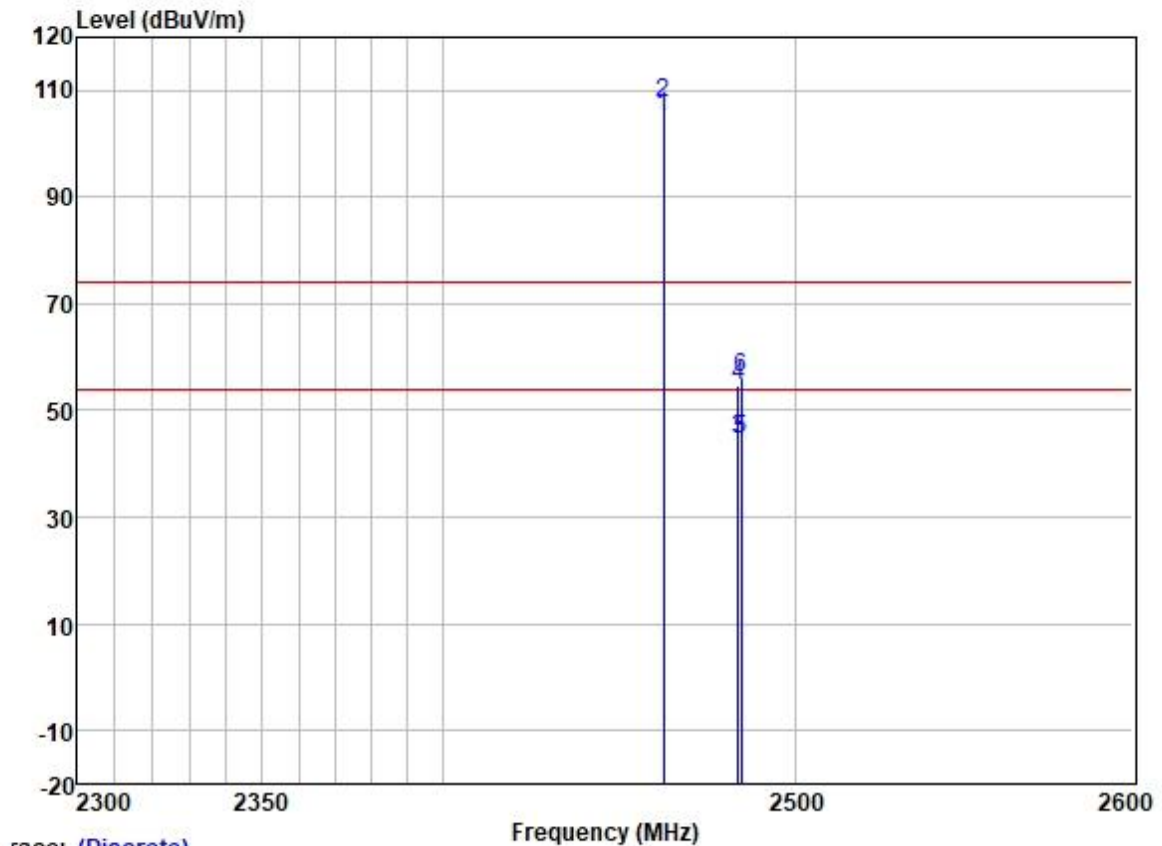
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2385.132	51.52	27.33	3.48	37.60	44.73	54.00	-9.27	VERTICAL Average
2	2385.132	62.79	27.33	3.48	37.60	56.00	74.00	-18.00	VERTICAL Peak
3	2390.000	49.59	27.33	3.48	37.59	42.81	54.00	-11.19	VERTICAL Average
4	2390.000	60.13	27.33	3.48	37.59	53.35	74.00	-20.65	VERTICAL Peak
5 *	2412.000	111.87	27.38	3.47	37.59	105.13	54.00	51.13	VERTICAL Average
6 *	2412.000	114.44	27.38	3.47	37.59	107.70	74.00	33.70	VERTICAL Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	105.18	27.45	3.50	37.58	98.55	54.00	44.55	HORIZONTAL	Average
2 *	2462.000	108.37	27.45	3.50	37.58	101.74	74.00	27.74	HORIZONTAL	Peak
3	2483.500	48.88	27.48	3.53	37.57	42.32	54.00	-11.68	HORIZONTAL	Average
4	2483.500	60.24	27.48	3.53	37.57	53.68	74.00	-20.32	HORIZONTAL	Peak
5	2492.234	49.19	27.49	3.47	37.56	42.59	54.00	-11.41	HORIZONTAL	Average
6	2496.568	62.65	27.50	3.40	37.56	55.99	74.00	-18.01	HORIZONTAL	Peak

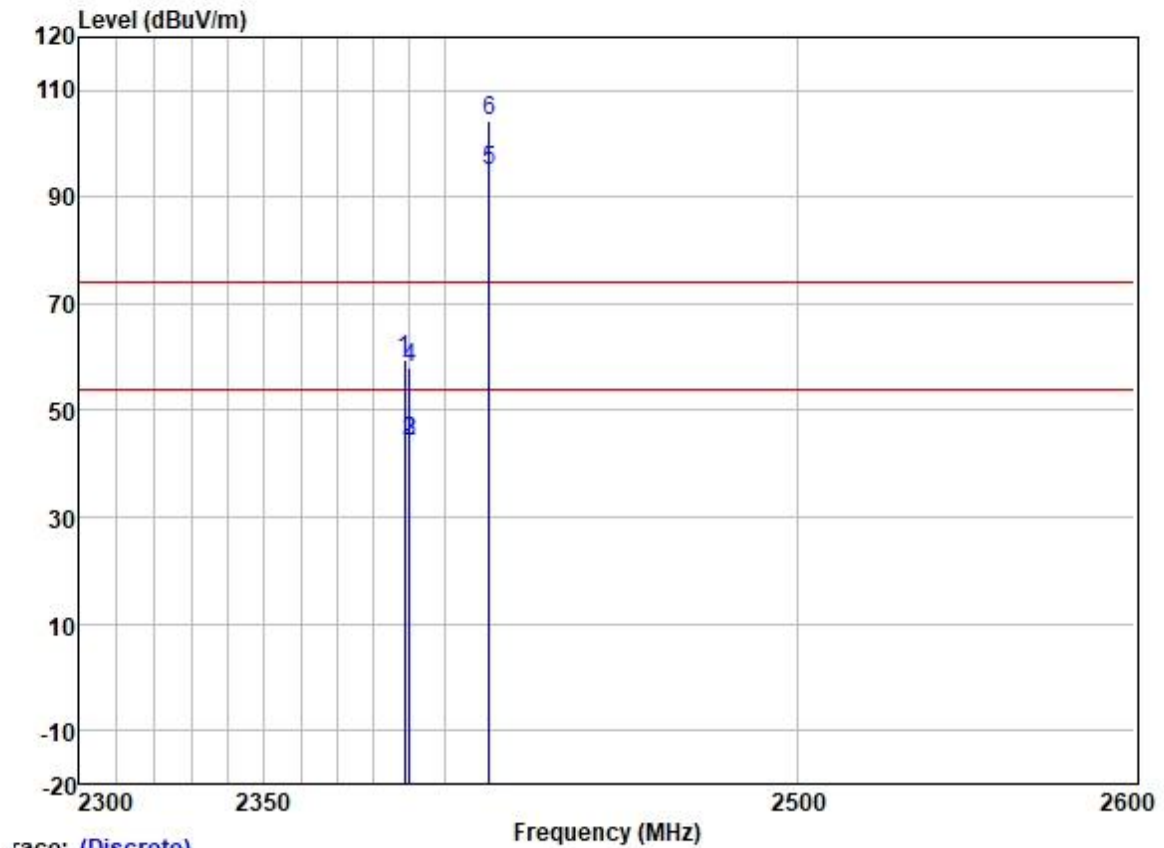
Test Mode: 04; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



race: (Discrete)

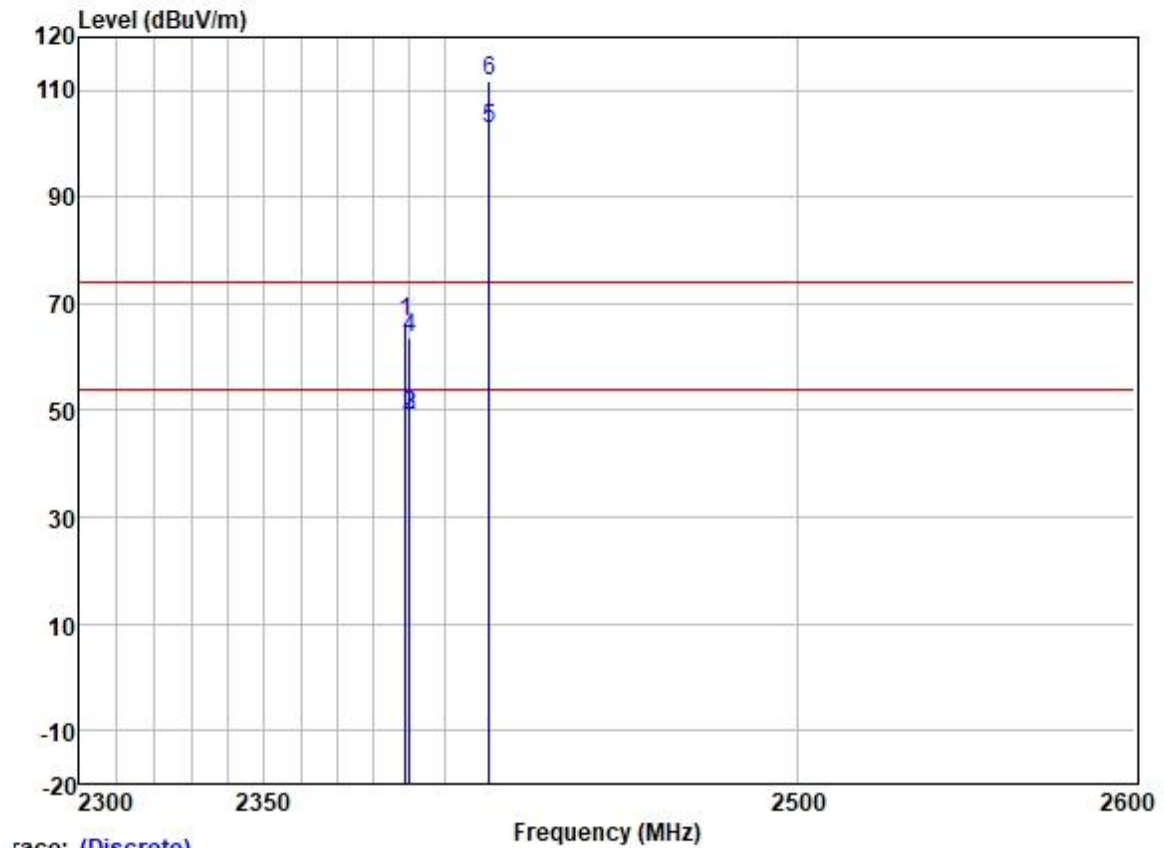
		Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	*	2462.000	111.83	27.45	3.50	37.58	105.20	54.00	51.20	VERTICAL	Average
2	*	2462.000	114.40	27.45	3.50	37.58	107.77	74.00	33.77	VERTICAL	Peak
3		2483.500	51.27	27.48	3.53	37.57	44.71	54.00	-9.29	VERTICAL	Average
4		2483.500	61.32	27.48	3.53	37.57	54.76	74.00	-19.24	VERTICAL	Peak
5		2484.191	51.30	27.48	3.53	37.57	44.74	54.00	-9.26	VERTICAL	Average
6		2484.191	62.54	27.48	3.53	37.57	55.98	74.00	-18.02	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2388.516	66.39	27.33	3.48	37.59	59.61	74.00	-14.39	HORIZONTAL Peak
2	2389.968	50.89	27.33	3.48	37.59	44.11	54.00	-9.89	HORIZONTAL Average
3	2390.000	50.89	27.33	3.48	37.59	44.11	54.00	-9.89	HORIZONTAL Average
4	2390.000	64.82	27.33	3.48	37.59	58.04	74.00	-15.96	HORIZONTAL Peak
5 *	2412.000	101.57	27.38	3.47	37.59	94.83	54.00	40.83	HORIZONTAL Average
6 *	2412.000	110.88	27.38	3.47	37.59	104.14	74.00	30.14	HORIZONTAL Peak

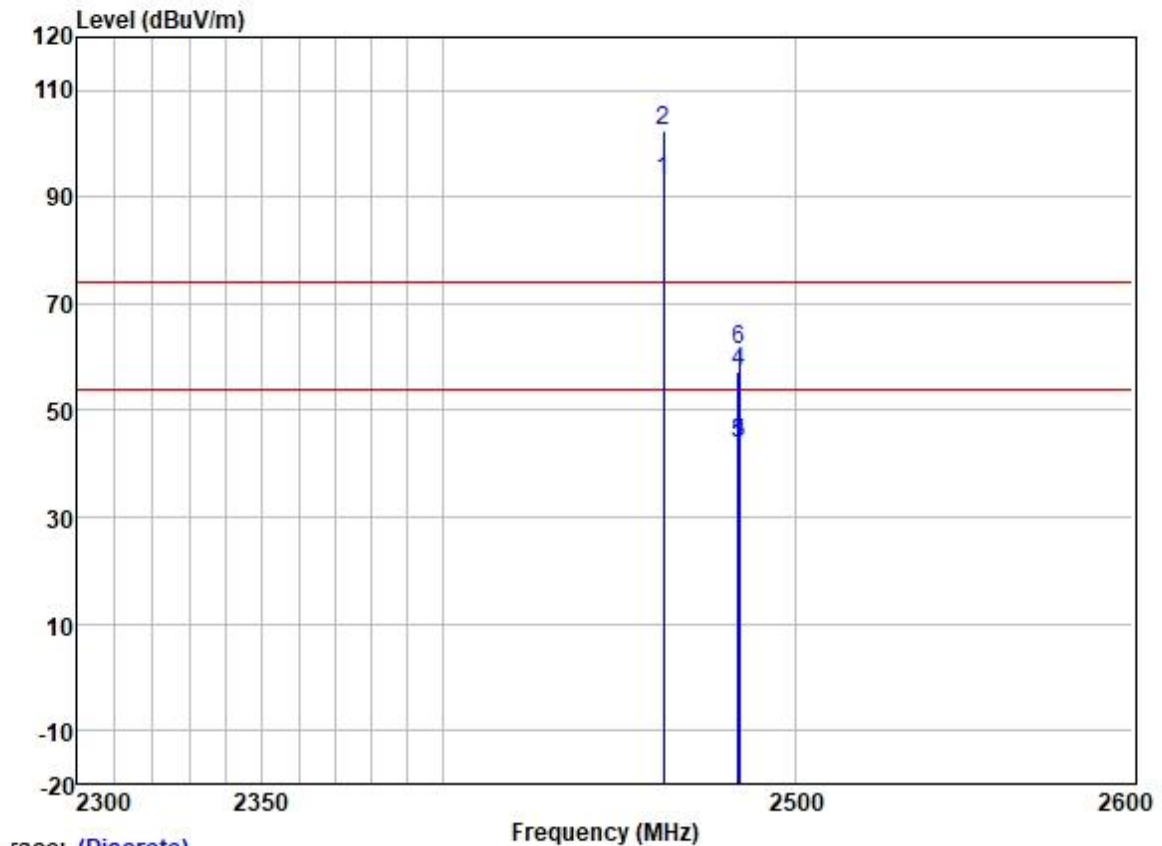
Test Mode: 04; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)

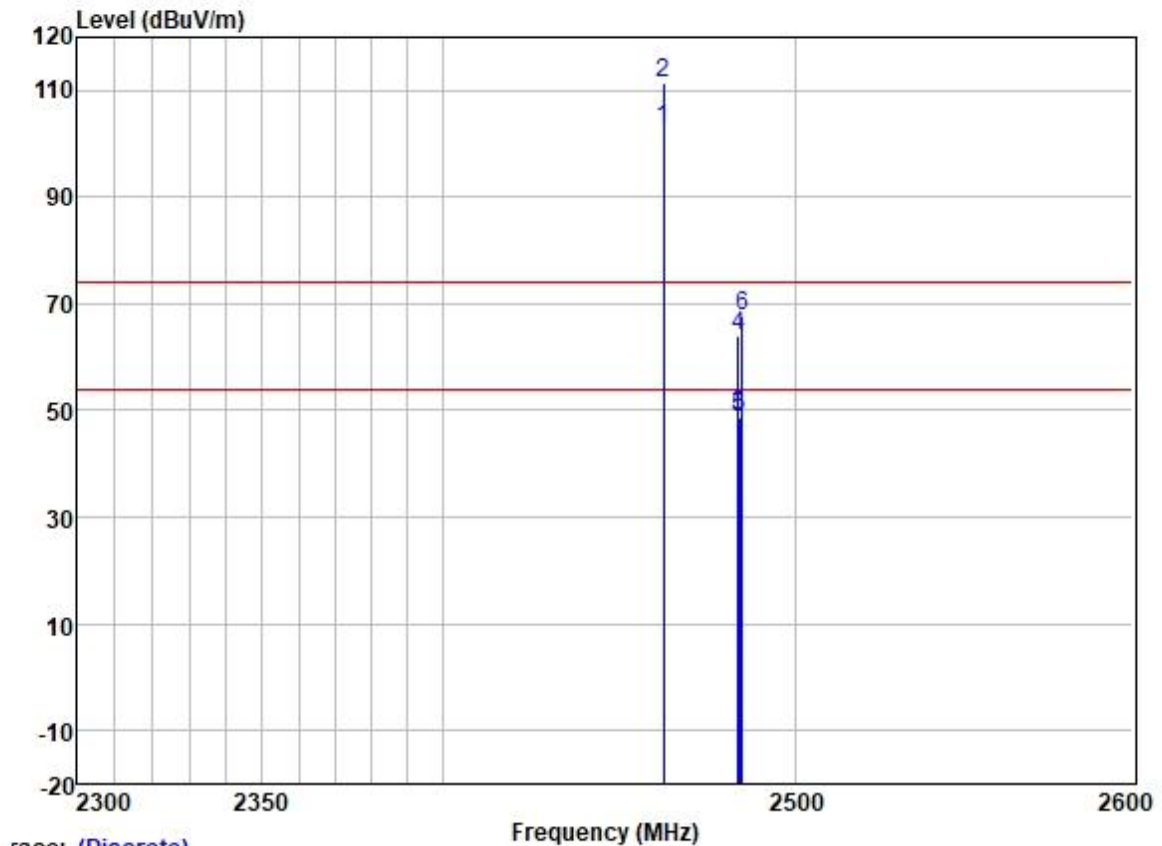
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2388.758	73.47	27.33	3.48	37.59	66.69	74.00	-7.31	VERTICAL	Peak
2	2389.968	55.78	27.33	3.48	37.59	49.00	54.00	-5.00	VERTICAL	Average
3	2390.000	55.78	27.33	3.48	37.59	49.00	54.00	-5.00	VERTICAL	Average
4	2390.000	70.24	27.33	3.48	37.59	63.46	74.00	-10.54	VERTICAL	Peak
5 *	2412.000	109.71	27.38	3.47	37.59	102.97	54.00	48.97	VERTICAL	Average
6 *	2412.000	118.57	27.38	3.47	37.59	111.83	74.00	37.83	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:High



		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	99.87	27.45	3.50	37.58	93.24	54.00	39.24	HORIZONTAL	Average
2 *	2462.000	109.11	27.45	3.50	37.58	102.48	74.00	28.48	HORIZONTAL	Peak
3	2483.500	50.45	27.48	3.53	37.57	43.89	54.00	-10.11	HORIZONTAL	Average
4	2483.500	64.01	27.48	3.53	37.57	57.45	74.00	-16.55	HORIZONTAL	Peak
5	2483.790	50.40	27.48	3.53	37.57	43.84	54.00	-10.16	HORIZONTAL	Average
6	2483.890	67.95	27.48	3.53	37.57	61.39	74.00	-12.61	HORIZONTAL	Peak

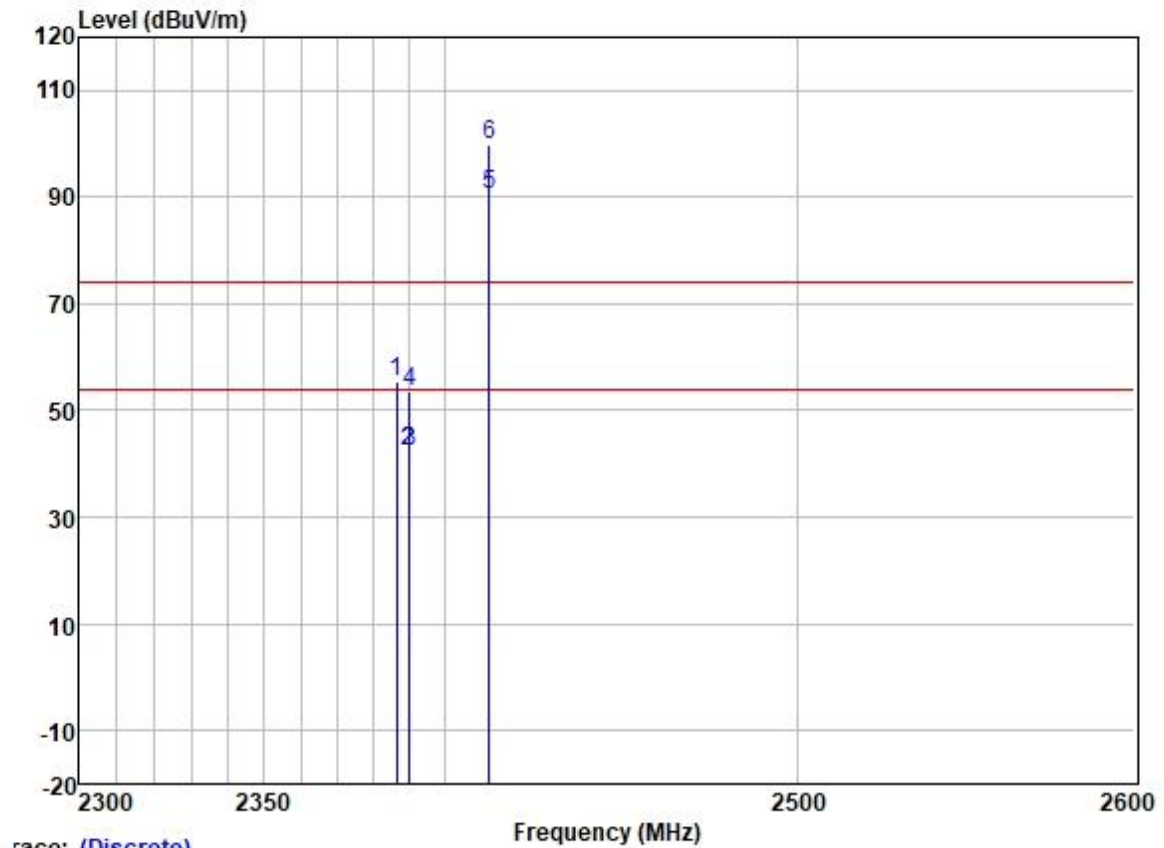
Test Mode: 04; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

		Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	*	2462.000	109.31	27.45	3.50	37.58	102.68	54.00	48.68	VERTICAL	Average
2	*	2462.000	118.02	27.45	3.50	37.58	111.39	74.00	37.39	VERTICAL	Peak
3		2483.500	55.44	27.48	3.53	37.57	48.88	54.00	-5.12	VERTICAL	Average
4		2483.500	70.39	27.48	3.53	37.57	63.83	74.00	-10.17	VERTICAL	Peak
5		2483.840	55.36	27.48	3.53	37.57	48.80	54.00	-5.20	VERTICAL	Average
6		2484.643	74.34	27.48	3.53	37.57	67.78	74.00	-6.22	VERTICAL	Peak

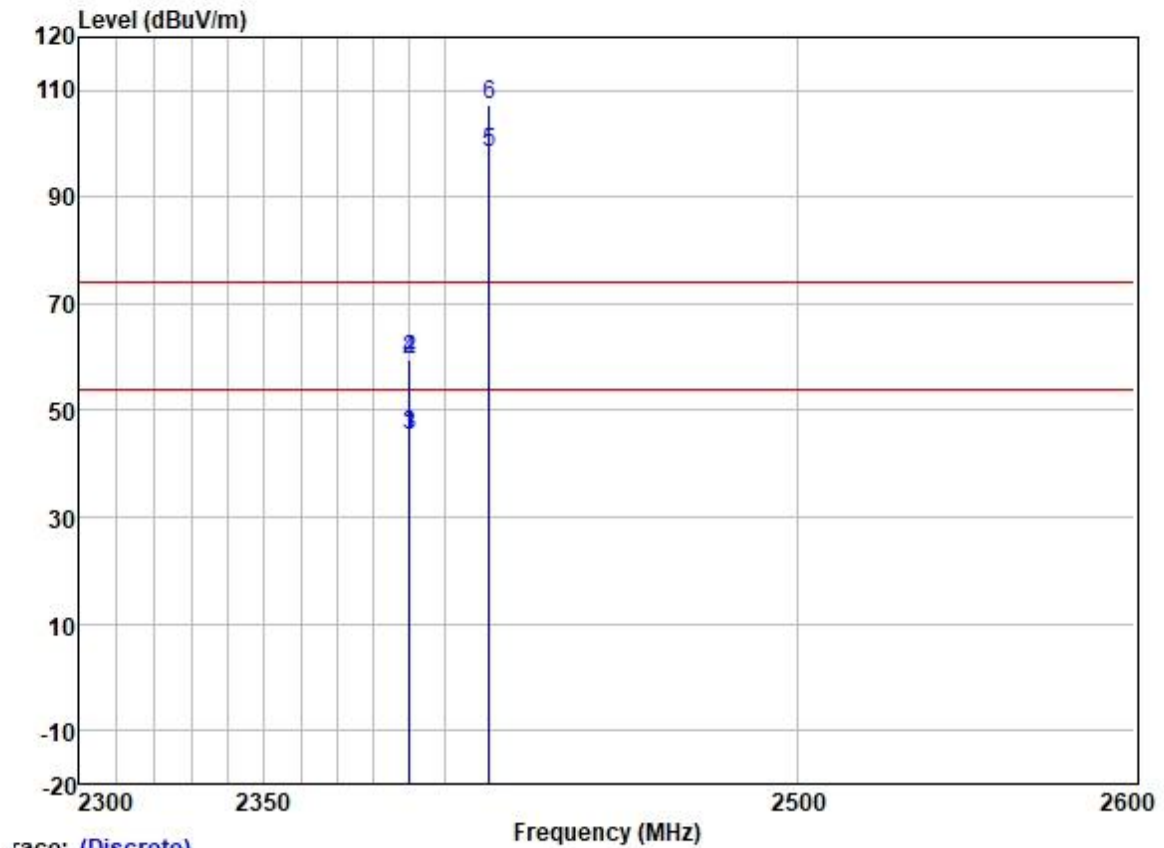
Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2386.340	62.17	27.33	3.48	37.60	55.38	74.00	-18.62	HORIZONTAL Peak
2	2389.484	49.04	27.33	3.48	37.59	42.26	54.00	-11.74	HORIZONTAL Average
3	2390.000	48.95	27.33	3.48	37.59	42.17	54.00	-11.83	HORIZONTAL Average
4	2390.000	60.44	27.33	3.48	37.59	53.66	74.00	-20.34	HORIZONTAL Peak
5 *	2412.000	97.26	27.38	3.47	37.59	90.52	54.00	36.52	HORIZONTAL Average
6 *	2412.000	106.60	27.38	3.47	37.59	99.86	74.00	25.86	HORIZONTAL Peak

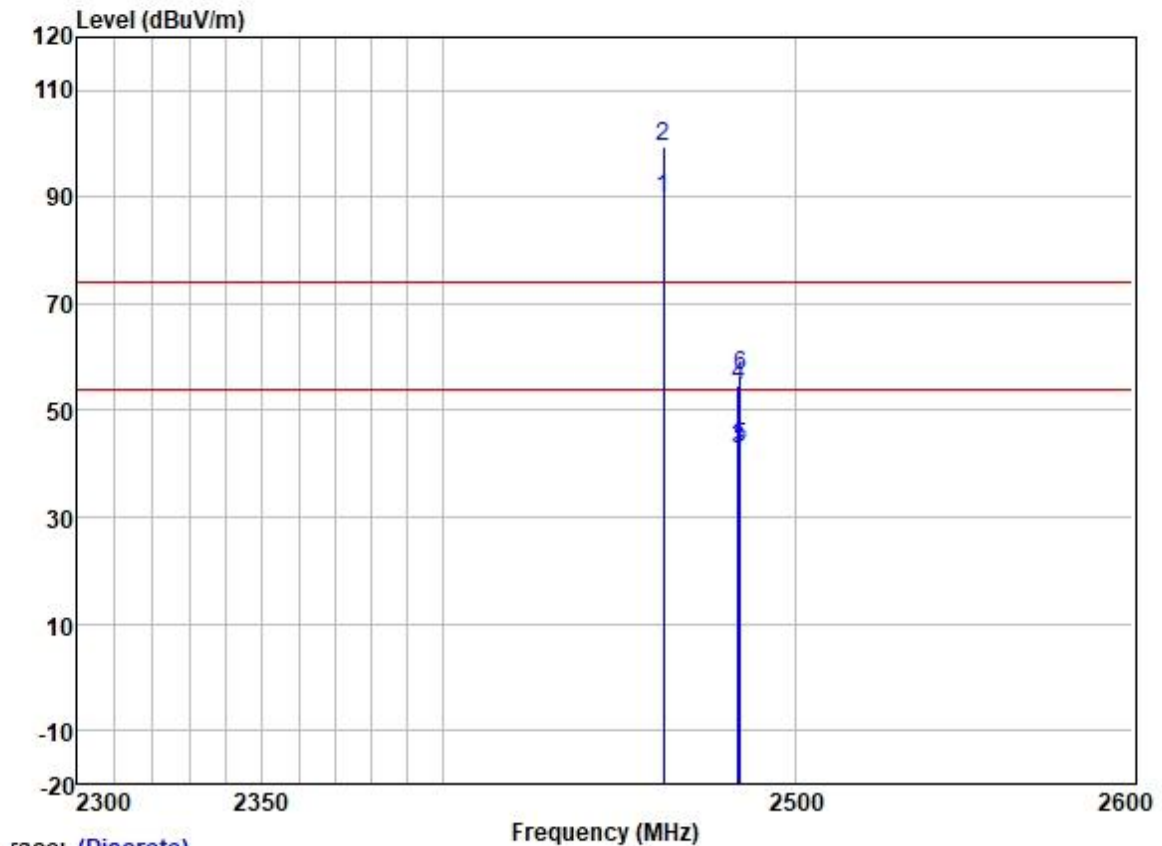
Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2389.968	52.05	27.33	3.48	37.59	45.27	54.00	-8.73	VERTICAL Average
2	2389.968	66.26	27.33	3.48	37.59	59.48	74.00	-14.52	VERTICAL Peak
3	2390.000	52.05	27.33	3.48	37.59	45.27	54.00	-8.73	VERTICAL Average
4	2390.000	66.26	27.33	3.48	37.59	59.48	74.00	-14.52	VERTICAL Peak
5 *	2412.000	105.26	27.38	3.47	37.59	98.52	54.00	44.52	VERTICAL Average
6 *	2412.000	113.95	27.38	3.47	37.59	107.21	74.00	33.21	VERTICAL Peak

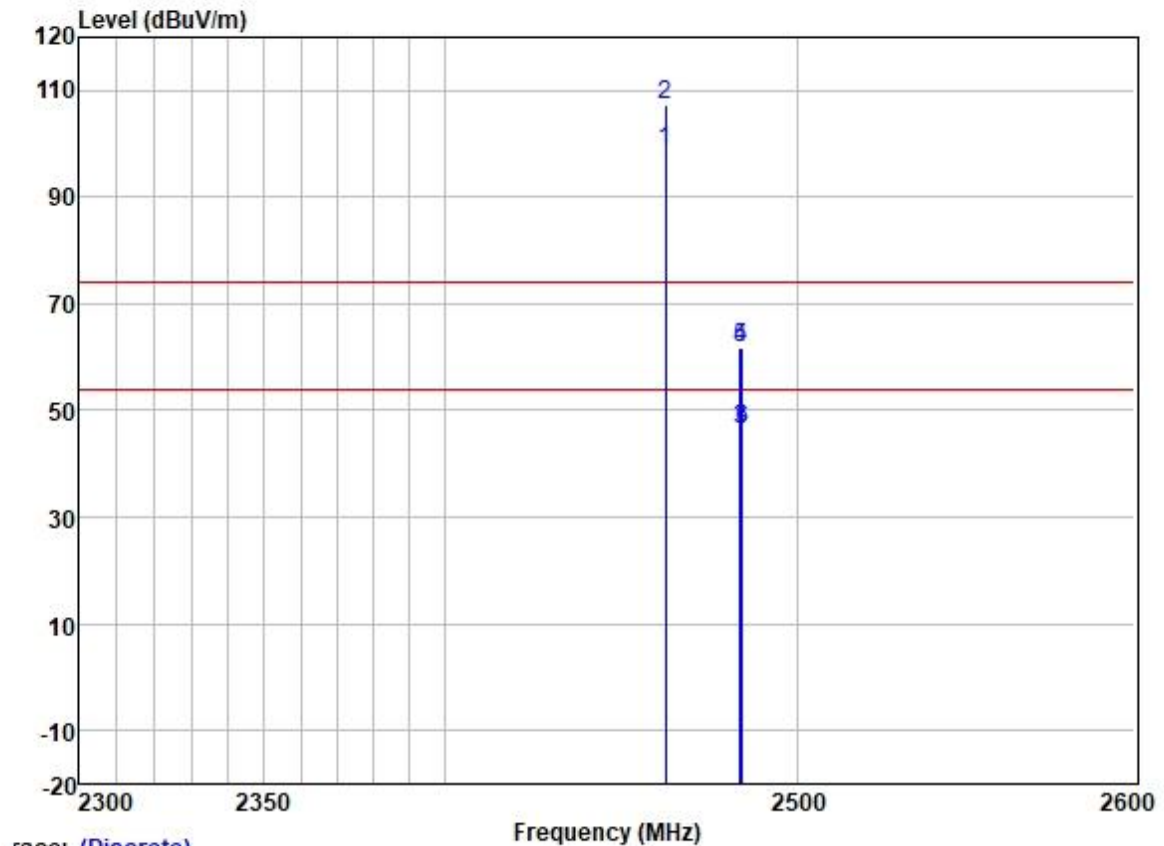
Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	96.50	27.45	3.50	37.58	89.87	54.00	35.87	HORIZONTAL	Average
2 *	2462.000	106.07	27.45	3.50	37.58	99.44	74.00	25.44	HORIZONTAL	Peak
3	2483.500	49.37	27.48	3.53	37.57	42.81	54.00	-11.19	HORIZONTAL	Average
4	2483.500	61.40	27.48	3.53	37.57	54.84	74.00	-19.16	HORIZONTAL	Peak
5	2483.940	49.55	27.48	3.53	37.57	42.99	54.00	-11.01	HORIZONTAL	Average
6	2483.940	63.02	27.48	3.53	37.57	56.46	74.00	-17.54	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Trace: (Discrete)

		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2462.000	105.26	27.45	3.50	37.58	98.63	54.00	44.63	VERTICAL	Average
2 *	2462.000	114.11	27.45	3.50	37.58	107.48	74.00	33.48	VERTICAL	Peak
3	2483.500	53.01	27.48	3.53	37.57	46.45	54.00	-7.55	VERTICAL	Average
4	2483.500	68.18	27.48	3.53	37.57	61.62	74.00	-12.38	VERTICAL	Peak
5	2483.840	68.21	27.48	3.53	37.57	61.65	74.00	-12.35	VERTICAL	Peak
6	2483.940	53.17	27.48	3.53	37.57	46.61	54.00	-7.39	VERTICAL	Average

7.8 Radiated Spurious Emissions (Below 1GHz)

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

Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

Measurement Distance: 10m

Limit:

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

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

7.8.1 E.U.T. Operation

Operating Environment:

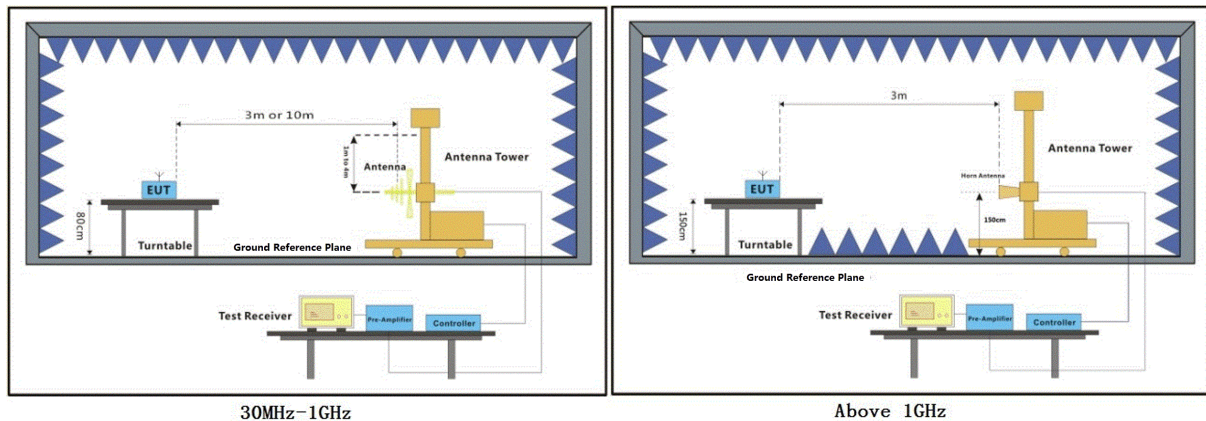
Temperature: 25 °C Humidity: 52 % RH Atmospheric Pressure: 1003 mbar

7.8.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

Final test 04 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); Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram



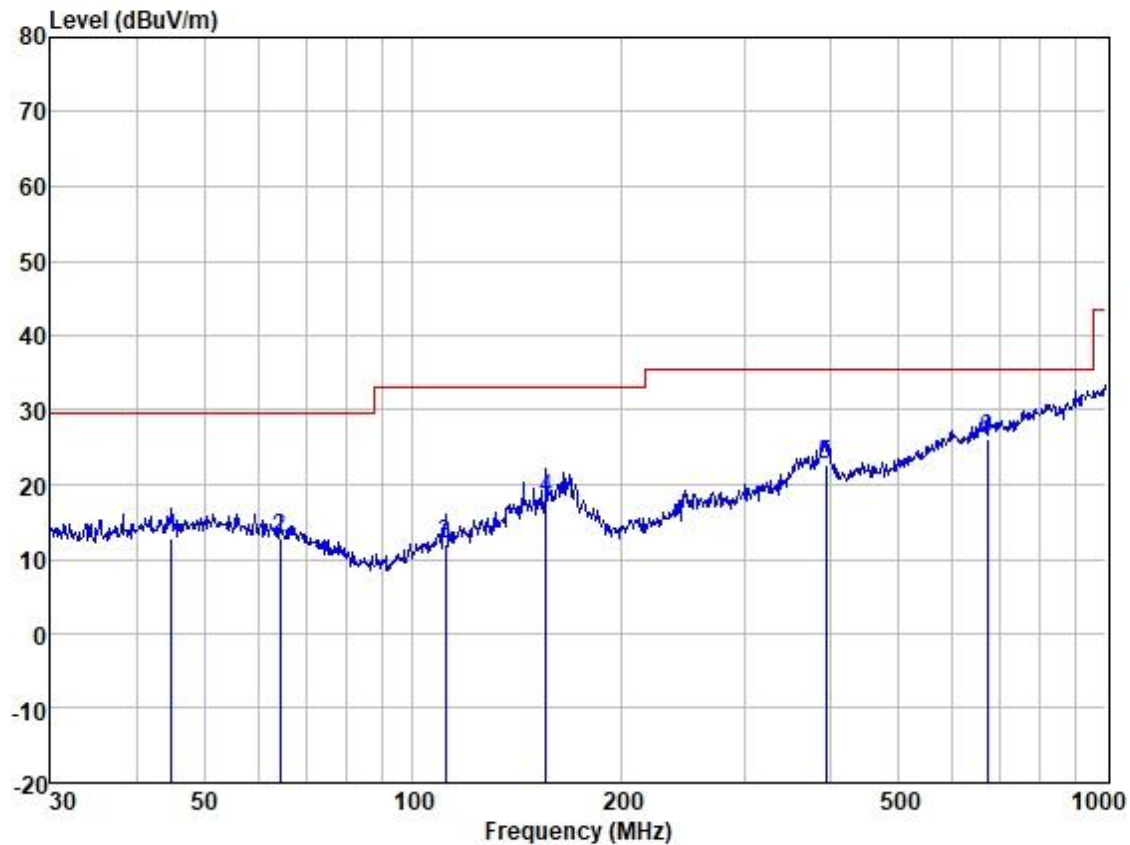
7.8.4 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 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.

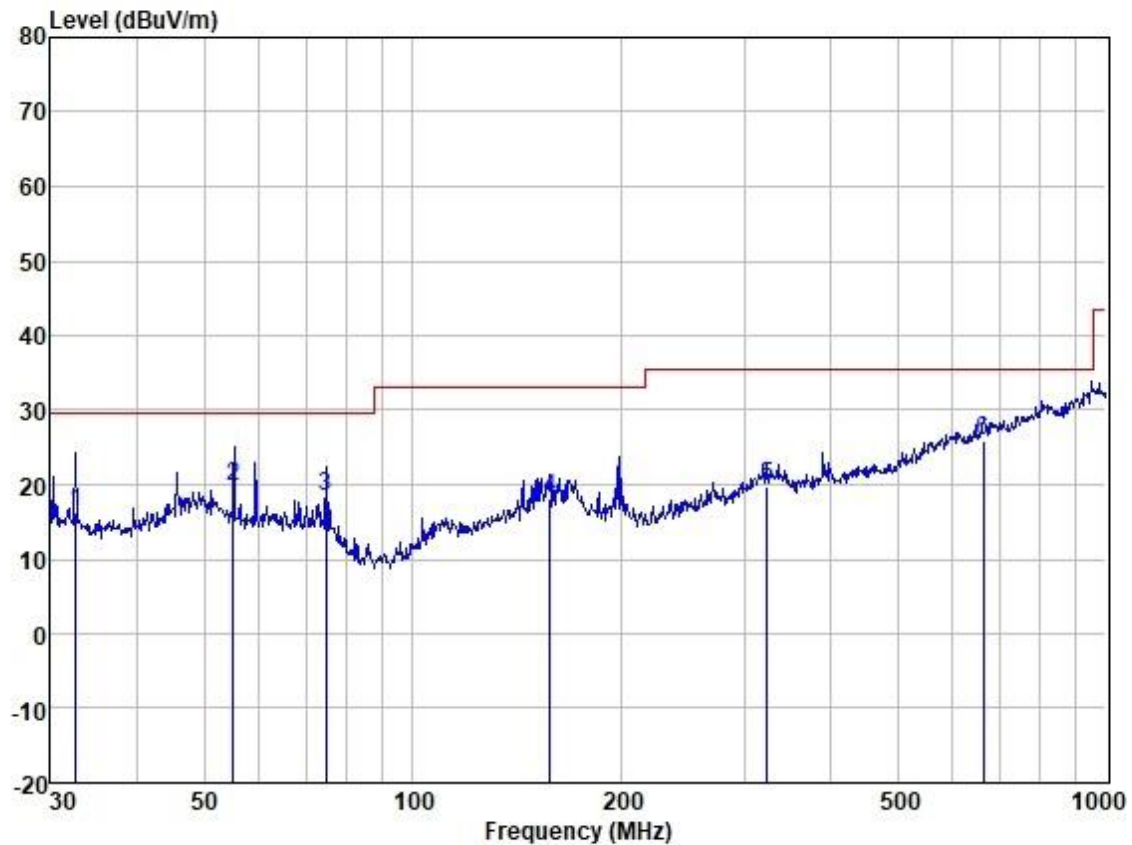
Test Mode: 04; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode : 2.4G

	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	44.901	25.31	13.88	1.12	27.60	12.71	29.54	-16.83	HORIZONTAL	QP
2	64.208	26.33	12.76	1.34	27.60	12.83	29.54	-16.71	HORIZONTAL	QP
3	111.347	27.18	10.49	1.80	27.58	11.89	33.06	-21.17	HORIZONTAL	QP
4	155.364	29.58	13.59	2.30	27.37	18.10	33.06	-14.96	HORIZONTAL	QP
5	393.472	31.41	15.44	3.91	27.98	22.78	35.56	-12.78	HORIZONTAL	QP
6	672.845	28.26	20.81	5.65	28.72	26.00	35.56	-9.56	HORIZONTAL	QP

Test Mode: 04; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode : 2.4G

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.634	29.94	12.85	1.05	27.64	16.20	29.54	-13.34	VERTICAL	QP
2	55.027	32.27	13.81	1.19	27.60	19.67	29.54	-9.87	VERTICAL	QP
3	74.919	34.24	10.43	1.45	27.60	18.52	29.54	-11.02	VERTICAL	QP
4	157.559	29.66	13.64	2.31	27.36	18.25	33.06	-14.81	VERTICAL	QP
5	324.456	29.61	14.14	3.35	27.34	19.76	35.56	-15.80	VERTICAL	QP
6	665.804	28.26	20.64	5.61	28.73	25.78	35.56	-9.78	VERTICAL	QP

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
44.901	12.71	4.32	14.40	23.17	40.00	-16.83	H
64.208	12.83	4.38	14.60	23.29	40.00	-16.71	H
111.347	11.89	3.93	13.10	22.35	43.50	-21.15	H
155.364	18.10	8.04	26.78	28.56	43.50	-14.94	H
393.472	22.78	13.77	45.91	33.24	46.00	-12.76	H
672.845	26.00	19.95	66.51	36.46	46.00	-9.54	H
32.634	16.20	6.46	21.52	26.66	40.00	-13.34	V
55.027	19.67	9.63	32.09	30.13	40.00	-9.87	V
74.919	18.52	8.43	28.11	28.98	40.00	-11.02	V
157.559	18.25	8.18	27.25	28.71	43.50	-14.79	V
324.455	19.76	9.73	32.42	30.22	46.00	-15.78	V
665.804	25.78	19.45	64.85	36.24	46.00	-9.76	V



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7.9 Radiated Spurious Emissions (Above 1GHz)

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

Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

Measurement Distance: 3m

Limit:

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

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

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C

Humidity: 52 % RH

Atmospheric Pressure: 1003 mbar

7.9.2 Test Mode Description

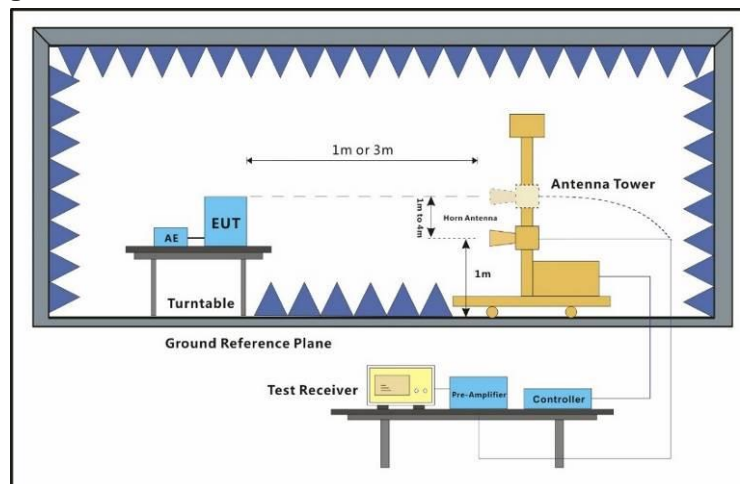
Pre-scan / Mode
Final test Code

Description

Final test 04

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); Only the data of worst case is recorded in the report.

7.9.3 Test Setup Diagram



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.

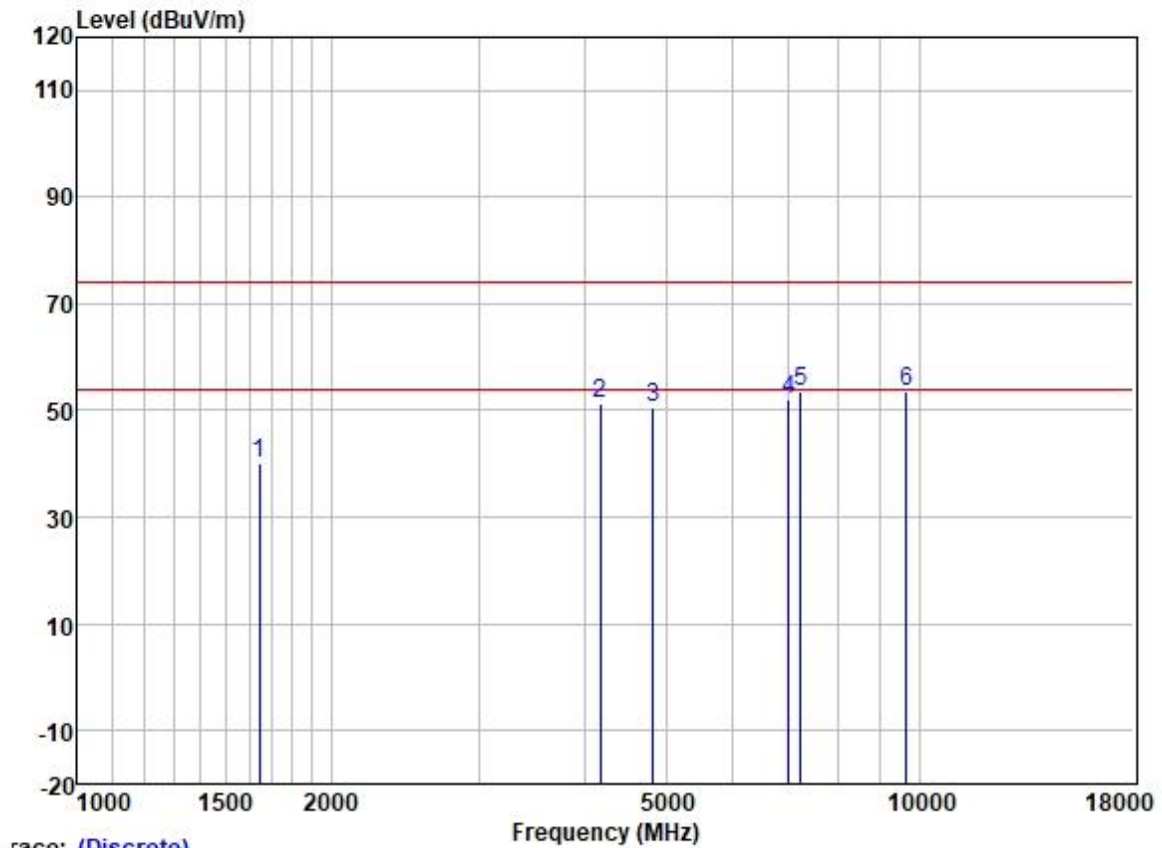
4) For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.



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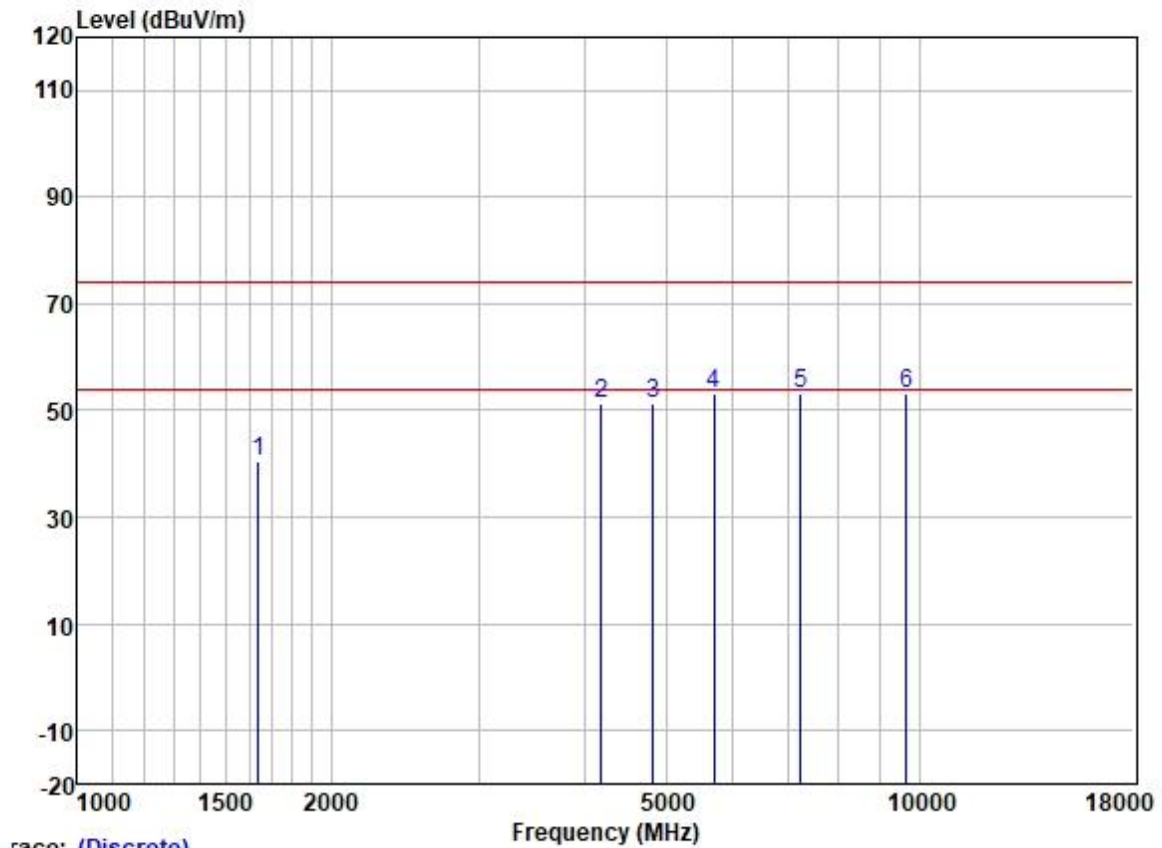
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

Test Mode: 04; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1644.019	49.47	25.63	2.80	37.93	39.97	74.00	-34.03	HORIZONTAL	Peak
2	4181.768	53.55	30.12	4.60	36.80	51.47	74.00	-22.53	HORIZONTAL	Peak
3	4824.000	50.39	31.45	5.42	36.83	50.43	74.00	-23.57	HORIZONTAL	Peak
4	6995.172	48.62	35.00	5.81	37.25	52.18	74.00	-21.82	HORIZONTAL	Peak
5	7236.000	49.07	35.70	6.03	37.39	53.41	74.00	-20.59	HORIZONTAL	Peak
6	9648.000	45.46	38.40	7.06	37.42	53.50	74.00	-20.50	HORIZONTAL	Peak

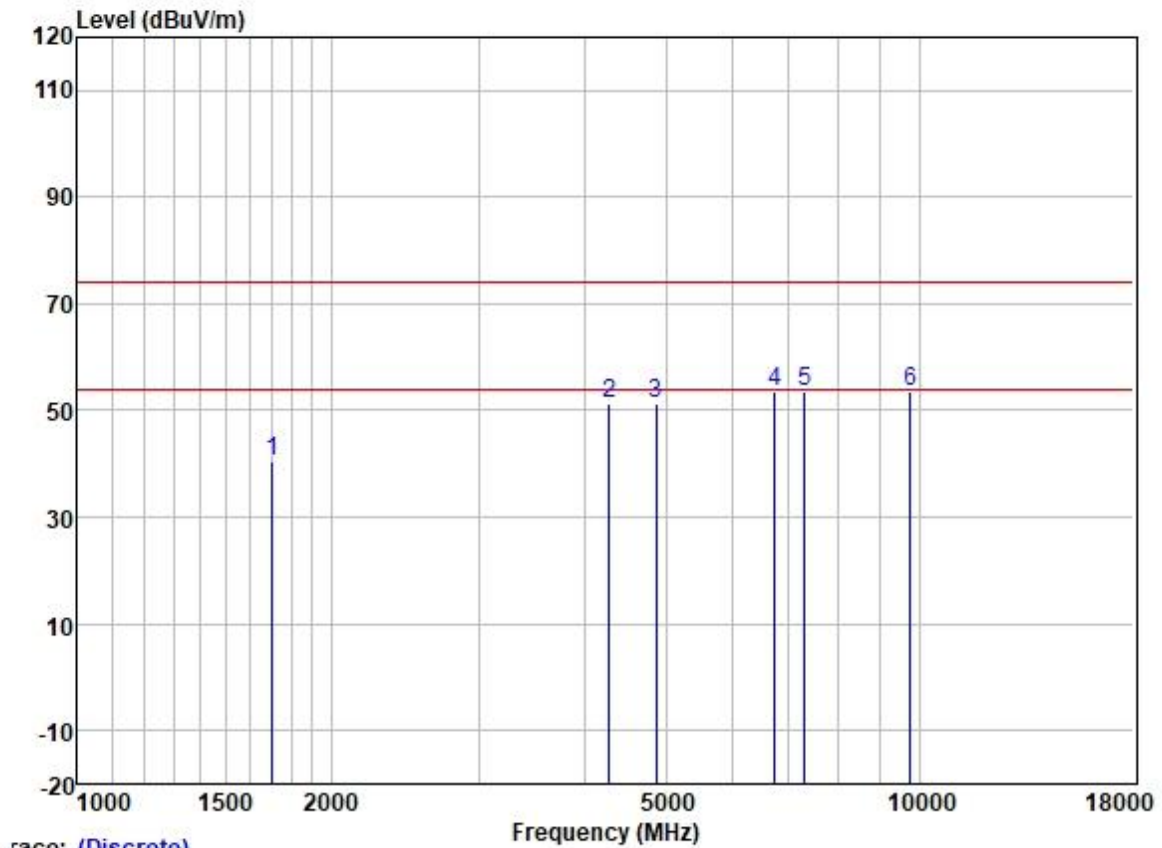
Test Mode: 04; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



race: (Discrete)

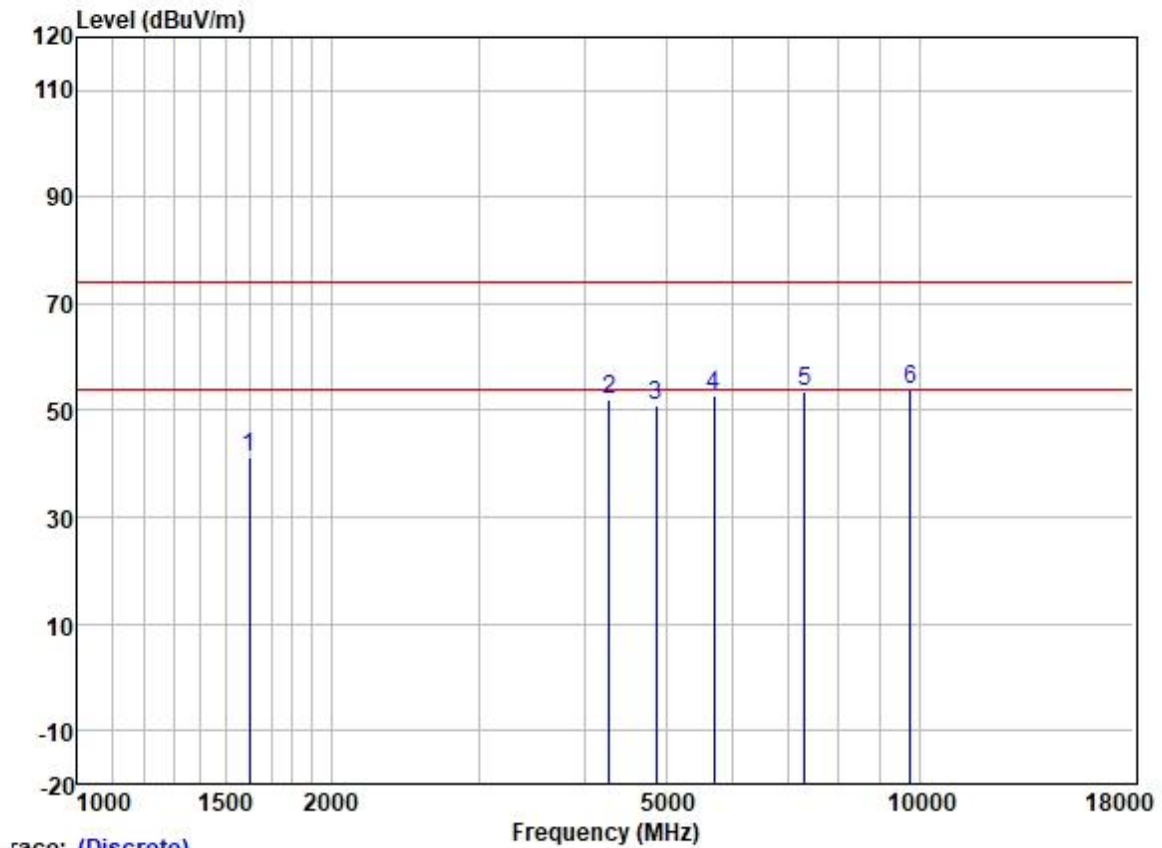
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1639.274	49.94	25.62	2.80	37.93	40.43	74.00	-33.57	VERTICAL	Peak
2	4193.872	53.32	30.15	4.60	36.81	51.26	74.00	-22.74	VERTICAL	Peak
3	4824.000	51.17	31.45	5.42	36.83	51.21	74.00	-22.79	VERTICAL	Peak
4	5697.365	51.74	32.01	6.40	36.89	53.26	74.00	-20.74	VERTICAL	Peak
5	7236.000	48.96	35.70	6.03	37.39	53.30	74.00	-20.70	VERTICAL	Peak
6	9648.000	44.98	38.40	7.06	37.42	53.02	74.00	-20.98	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1	1702.042	49.73	25.72	2.80	37.89	40.36	74.00	-33.64	HORIZONTAL Peak
2	4279.589	53.17	30.42	4.63	36.81	51.41	74.00	-22.59	HORIZONTAL Peak
3	4874.000	51.10	31.54	5.50	36.84	51.30	74.00	-22.70	HORIZONTAL Peak
4	6737.207	50.45	34.50	5.82	37.09	53.68	74.00	-20.32	HORIZONTAL Peak
5	7311.000	49.05	35.93	6.11	37.42	53.67	74.00	-20.33	HORIZONTAL Peak
6	9748.000	45.57	38.50	7.02	37.41	53.68	74.00	-20.32	HORIZONTAL Peak

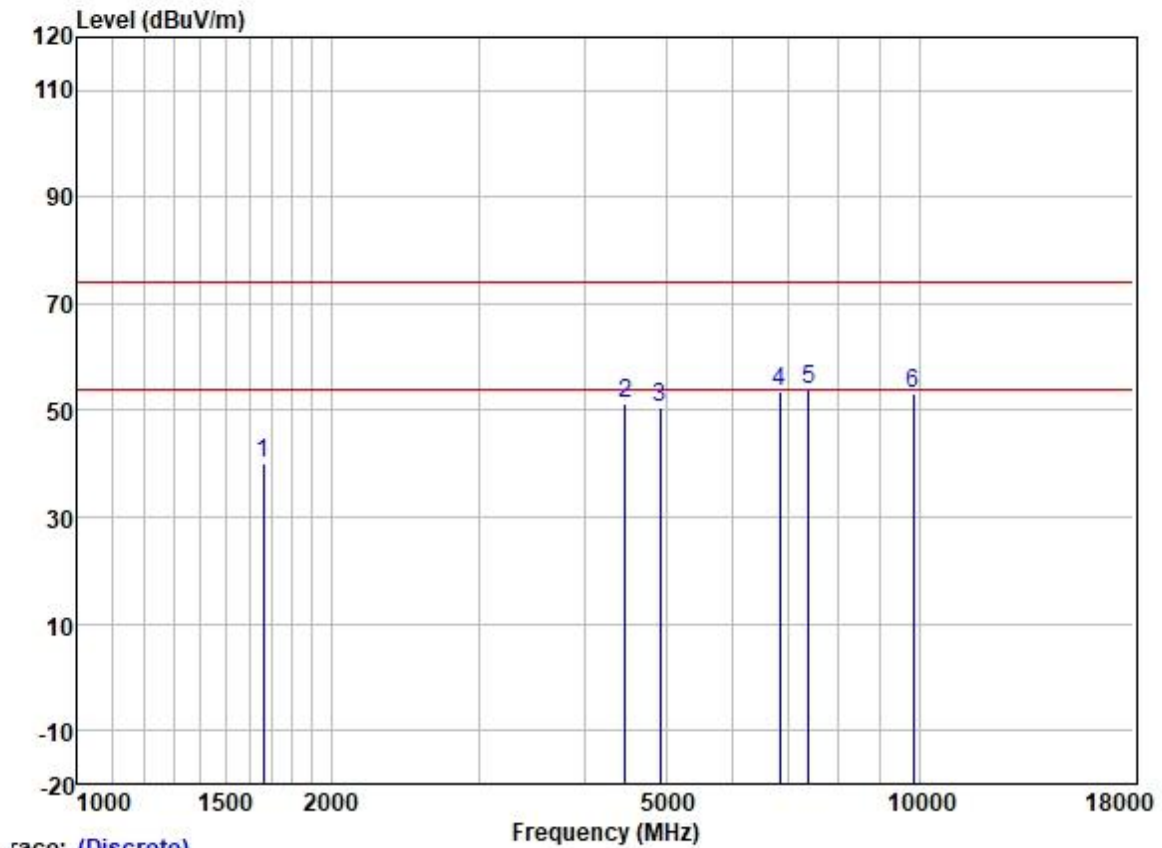
Test Mode: 04; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Trace: (Discrete)

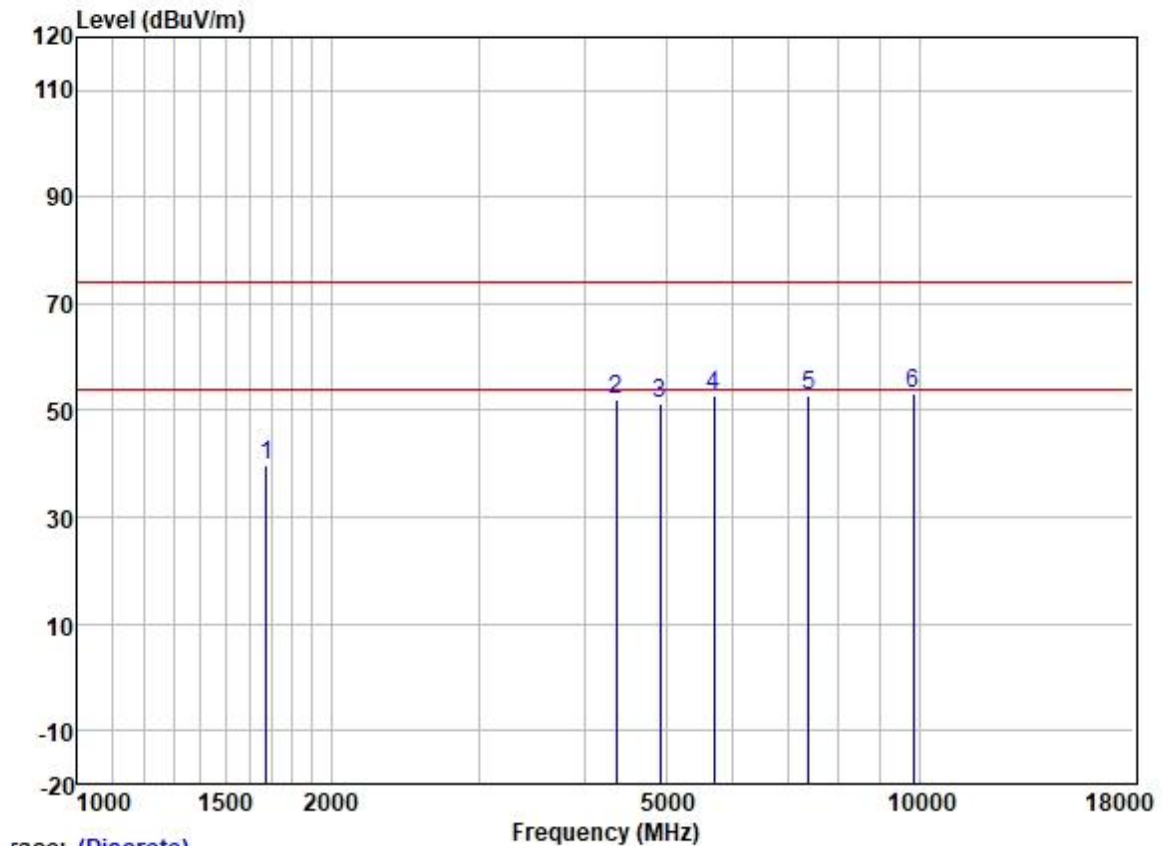
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1601.804	50.69	25.58	2.80	37.98	41.09	74.00	-32.91	VERTICAL Peak
2	4279.589	53.65	30.42	4.63	36.81	51.89	74.00	-22.11	VERTICAL Peak
3	4874.000	50.69	31.54	5.50	36.84	50.89	74.00	-23.11	VERTICAL Peak
4	5697.365	51.32	32.01	6.40	36.89	52.84	74.00	-21.16	VERTICAL Peak
5	7311.000	48.98	35.93	6.11	37.42	53.60	74.00	-20.40	VERTICAL Peak
6	9748.000	45.78	38.50	7.02	37.41	53.89	74.00	-20.11	VERTICAL Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:High



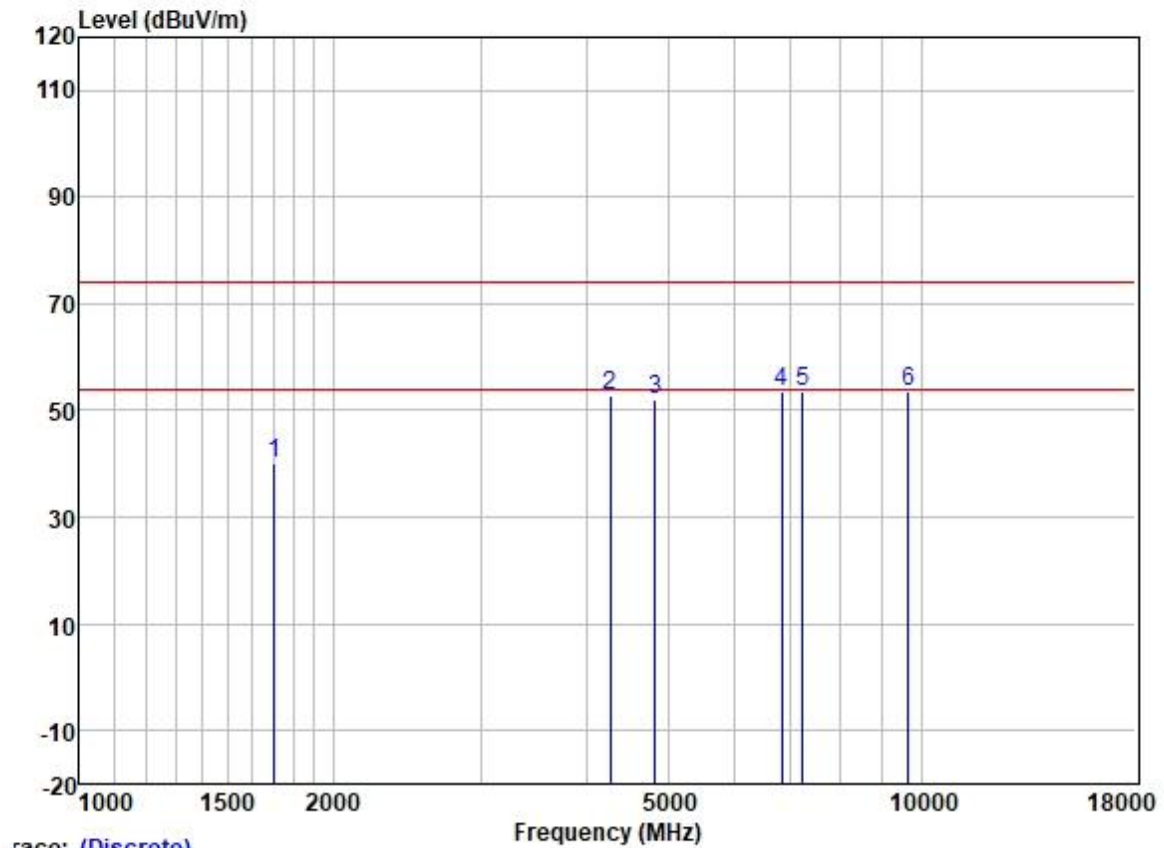
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1663.137	49.68	25.65	2.80	37.91	40.22	74.00	-33.78	HORIZONTAL Peak
2	4469.214	52.33	30.77	4.93	36.81	51.22	74.00	-22.78	HORIZONTAL Peak
3	4924.000	50.25	31.62	5.60	36.84	50.63	74.00	-23.37	HORIZONTAL Peak
4	6835.278	49.94	34.74	5.82	37.13	53.37	74.00	-20.63	HORIZONTAL Peak
5	7386.000	49.09	36.17	6.19	37.45	54.00	74.00	-20.00	HORIZONTAL Peak
6	9848.000	45.18	38.58	6.99	37.41	53.34	74.00	-20.66	HORIZONTAL Peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:High



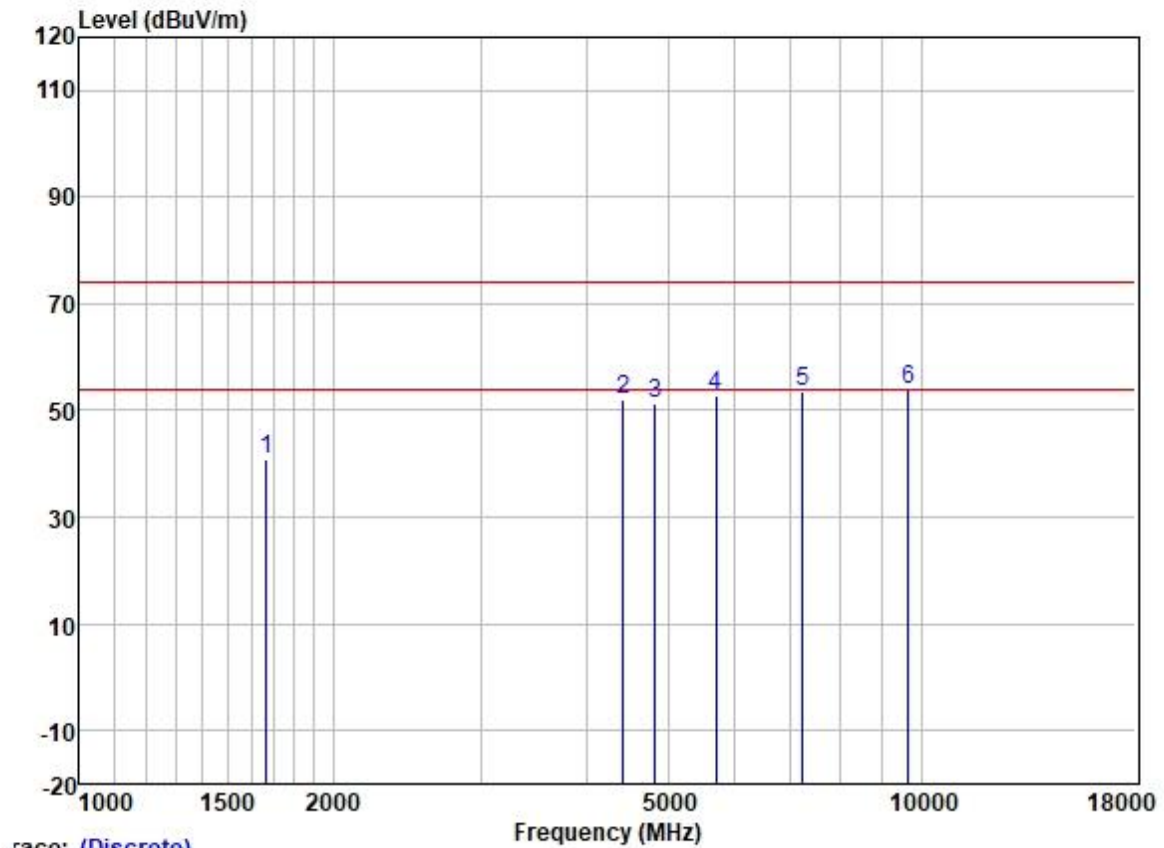
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1677.621	49.16	25.68	2.80	37.91	39.73	74.00	-34.27	VERTICAL Peak
2	4367.058	53.62	30.62	4.68	36.81	52.11	74.00	-21.89	VERTICAL Peak
3	4924.000	50.79	31.62	5.60	36.84	51.17	74.00	-22.83	VERTICAL Peak
4	5697.365	51.32	32.01	6.40	36.89	52.84	74.00	-21.16	VERTICAL Peak
5	7386.000	47.85	36.17	6.19	37.45	52.76	74.00	-21.24	VERTICAL Peak
6	9848.000	44.83	38.58	6.99	37.41	52.99	74.00	-21.01	VERTICAL Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



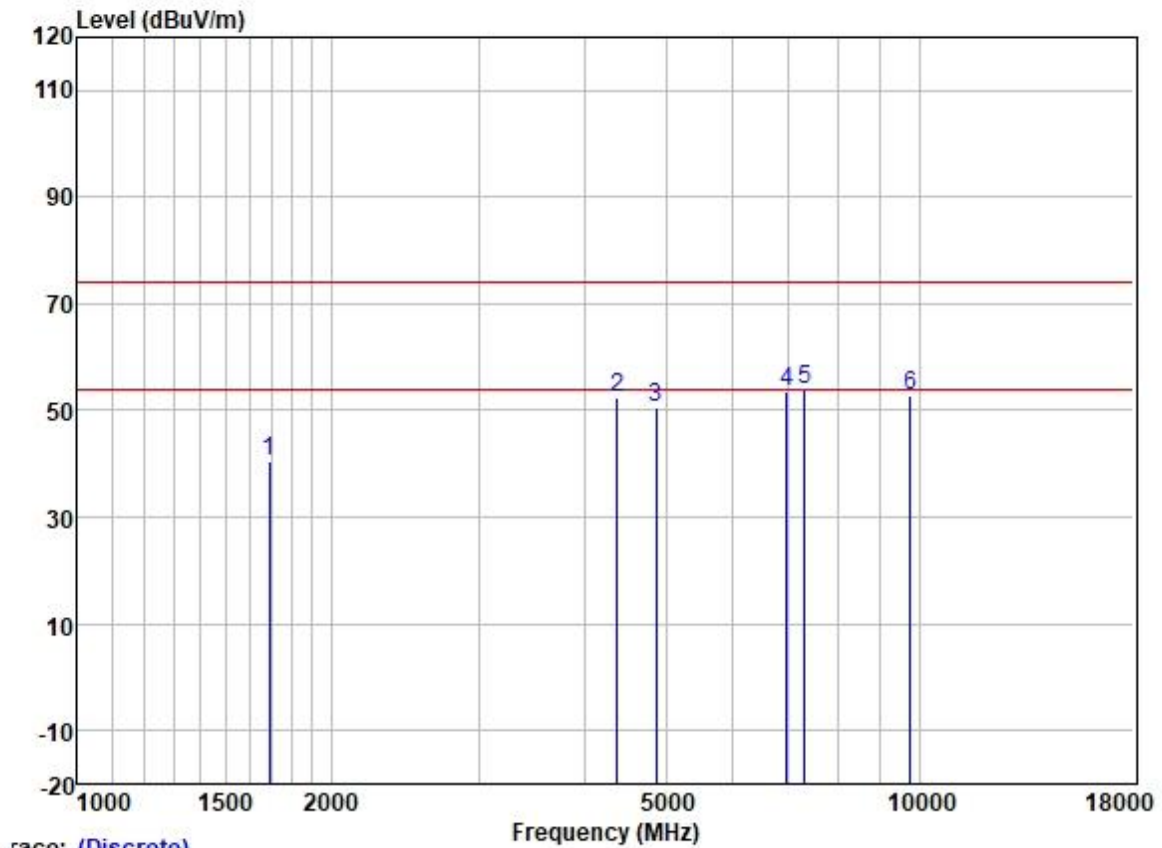
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1702.042	49.32	25.72	2.80	37.89	39.95	74.00	-34.05	HORIZONTAL	Peak
2	4267.237	54.76	30.38	4.63	36.81	52.96	74.00	-21.04	HORIZONTAL	Peak
3	4824.000	51.83	31.45	5.42	36.83	51.87	74.00	-22.13	HORIZONTAL	Peak
4	6835.278	50.25	34.74	5.82	37.13	53.68	74.00	-20.32	HORIZONTAL	Peak
5	7236.000	49.21	35.70	6.03	37.39	53.55	74.00	-20.45	HORIZONTAL	Peak
6	9648.000	45.42	38.40	7.06	37.42	53.46	74.00	-20.54	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



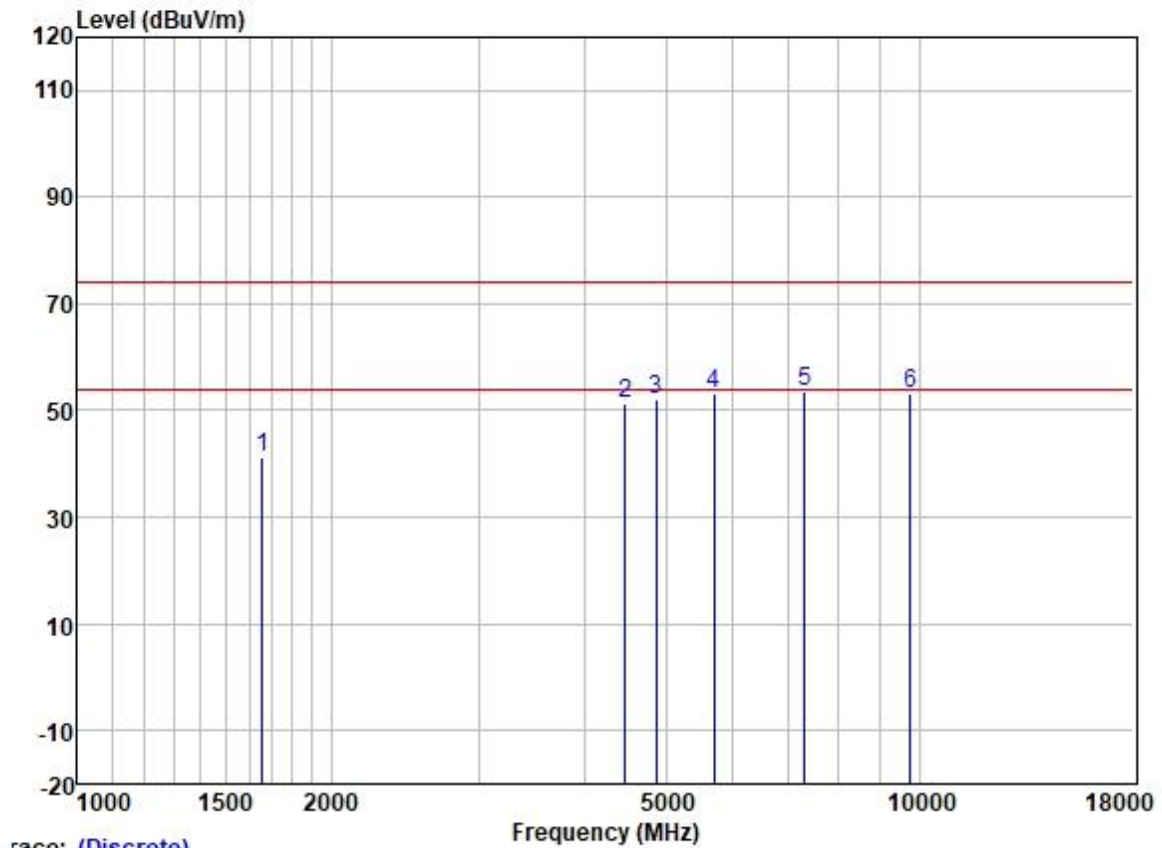
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1667.951	50.39	25.66	2.80	37.91	40.94	74.00	-33.06	VERTICAL	Peak
2	4430.628	53.33	30.72	4.78	36.81	52.02	74.00	-21.98	VERTICAL	Peak
3	4824.000	51.29	31.45	5.42	36.83	51.33	74.00	-22.67	VERTICAL	Peak
4	5697.365	51.45	32.01	6.40	36.89	52.97	74.00	-21.03	VERTICAL	Peak
5	7236.000	49.23	35.70	6.03	37.39	53.57	74.00	-20.43	VERTICAL	Peak
6	9648.000	45.92	38.40	7.06	37.42	53.96	74.00	-20.04	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



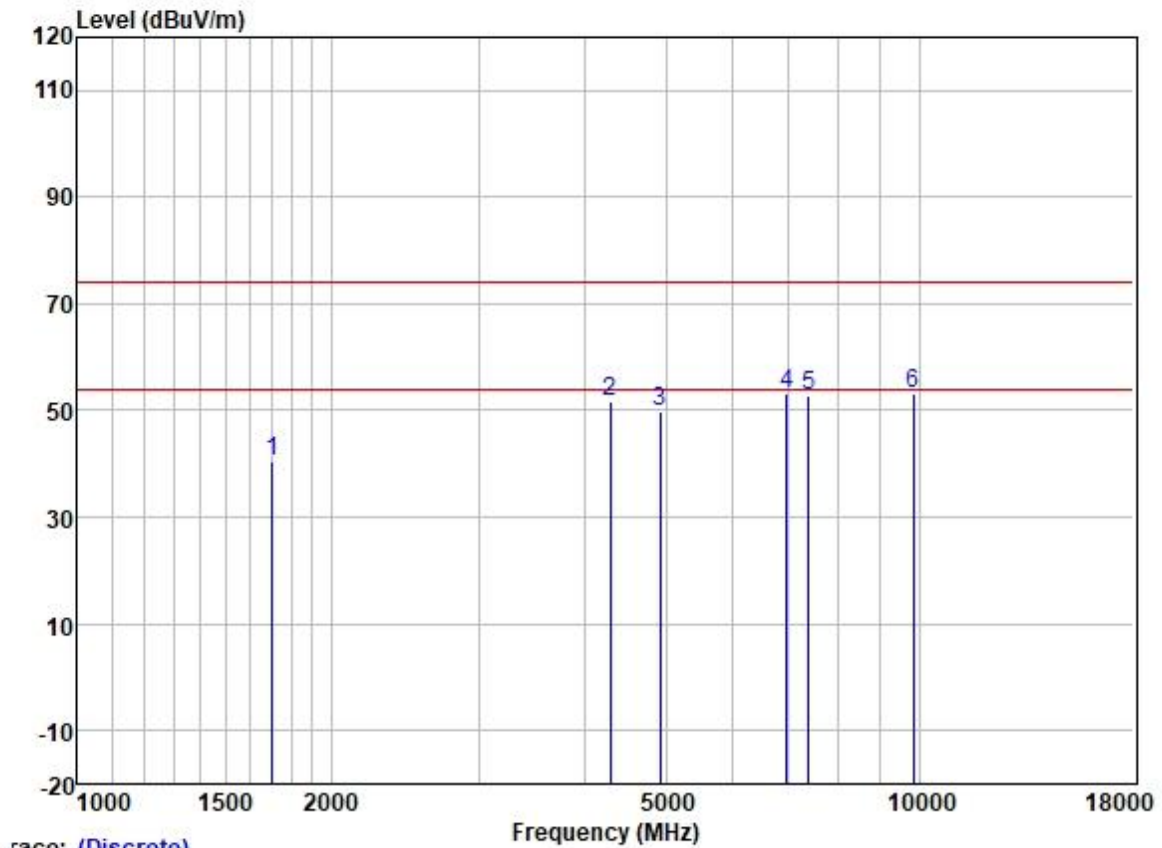
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1692.231	49.81	25.70	2.80	37.89	40.42	74.00	-33.58	HORIZONTAL Peak
2	4379.699	53.82	30.64	4.69	36.81	52.34	74.00	-21.66	HORIZONTAL Peak
3	4874.000	50.43	31.54	5.50	36.84	50.63	74.00	-23.37	HORIZONTAL Peak
4	6954.852	50.09	34.95	5.81	37.21	53.64	74.00	-20.36	HORIZONTAL Peak
5	7311.000	49.13	35.93	6.11	37.42	53.75	74.00	-20.25	HORIZONTAL Peak
6	9748.000	44.87	38.50	7.02	37.41	52.98	74.00	-21.02	HORIZONTAL Peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



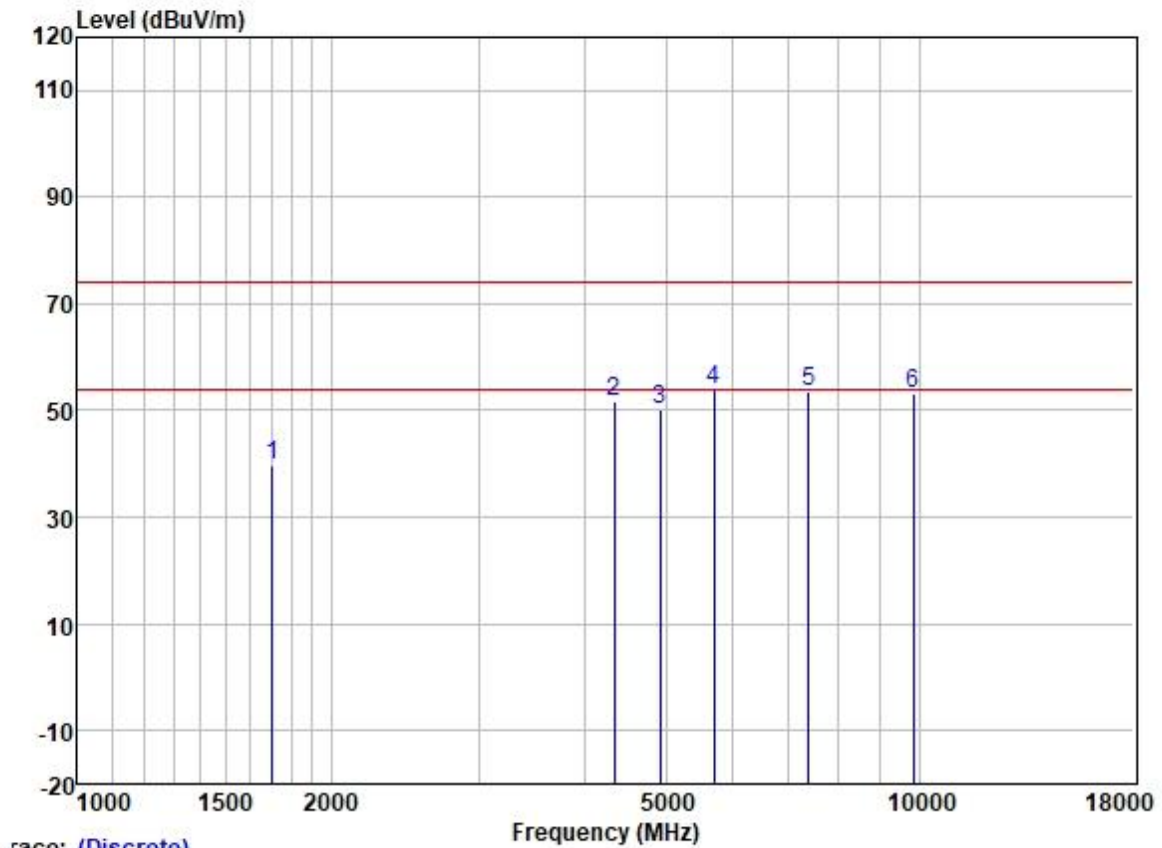
	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1658.337	50.63	25.65	2.80	37.93	41.15	74.00	-32.85	VERTICAL	Peak
2	4469.214	52.34	30.77	4.93	36.81	51.23	74.00	-22.77	VERTICAL	Peak
3	4874.000	51.77	31.54	5.50	36.84	51.97	74.00	-22.03	VERTICAL	Peak
4	5697.365	51.48	32.01	6.40	36.89	53.00	74.00	-21.00	VERTICAL	Peak
5	7311.000	49.00	35.93	6.11	37.42	53.62	74.00	-20.38	VERTICAL	Peak
6	9748.000	45.22	38.50	7.02	37.41	53.33	74.00	-20.67	VERTICAL	Peak

Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	dBuV/m	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1702.042	49.89	25.72	2.80	37.89	40.52	74.00	-33.48	HORIZONTAL	Peak
2	4291.977	53.50	30.45	4.64	36.81	51.78	74.00	-22.22	HORIZONTAL	Peak
3	4924.000	49.50	31.62	5.60	36.84	49.88	74.00	-24.12	HORIZONTAL	Peak
4	6954.852	49.63	34.95	5.81	37.21	53.18	74.00	-20.82	HORIZONTAL	Peak
5	7386.000	48.03	36.17	6.19	37.45	52.94	74.00	-21.06	HORIZONTAL	Peak
6	9848.000	45.08	38.58	6.99	37.41	53.24	74.00	-20.76	HORIZONTAL	Peak

Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1702.042	49.16	25.72	2.80	37.89	39.79	74.00	-34.21	VERTICAL	Peak
2	4341.886	53.43	30.57	4.67	36.81	51.86	74.00	-22.14	VERTICAL	Peak
3	4924.000	49.76	31.62	5.60	36.84	50.14	74.00	-23.86	VERTICAL	Peak
4	5697.365	52.23	32.01	6.40	36.89	53.75	74.00	-20.25	VERTICAL	Peak
5	7386.000	48.82	36.17	6.19	37.45	53.73	74.00	-20.27	VERTICAL	Peak
6	9848.000	44.93	38.58	6.99	37.41	53.09	74.00	-20.91	VERTICAL	Peak

7.10 Duty Cycle

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

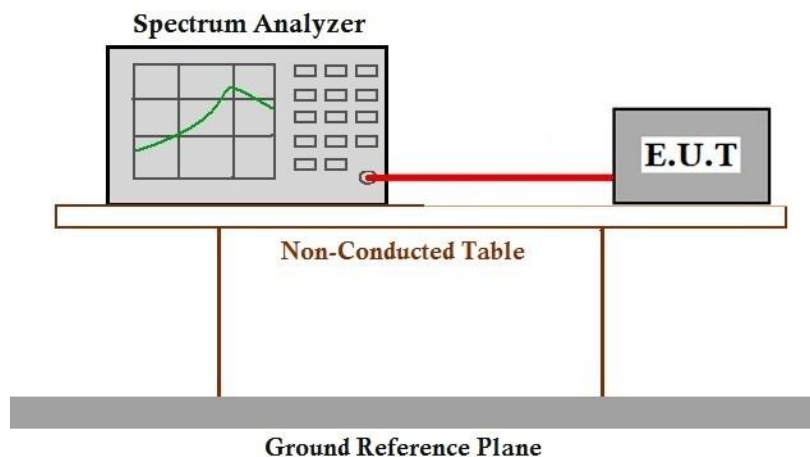
7.10.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 52 % RH Atmospheric Pressure: 1003 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	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); 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

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR2212001583TX

9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR2212001583TX

10 Appendix

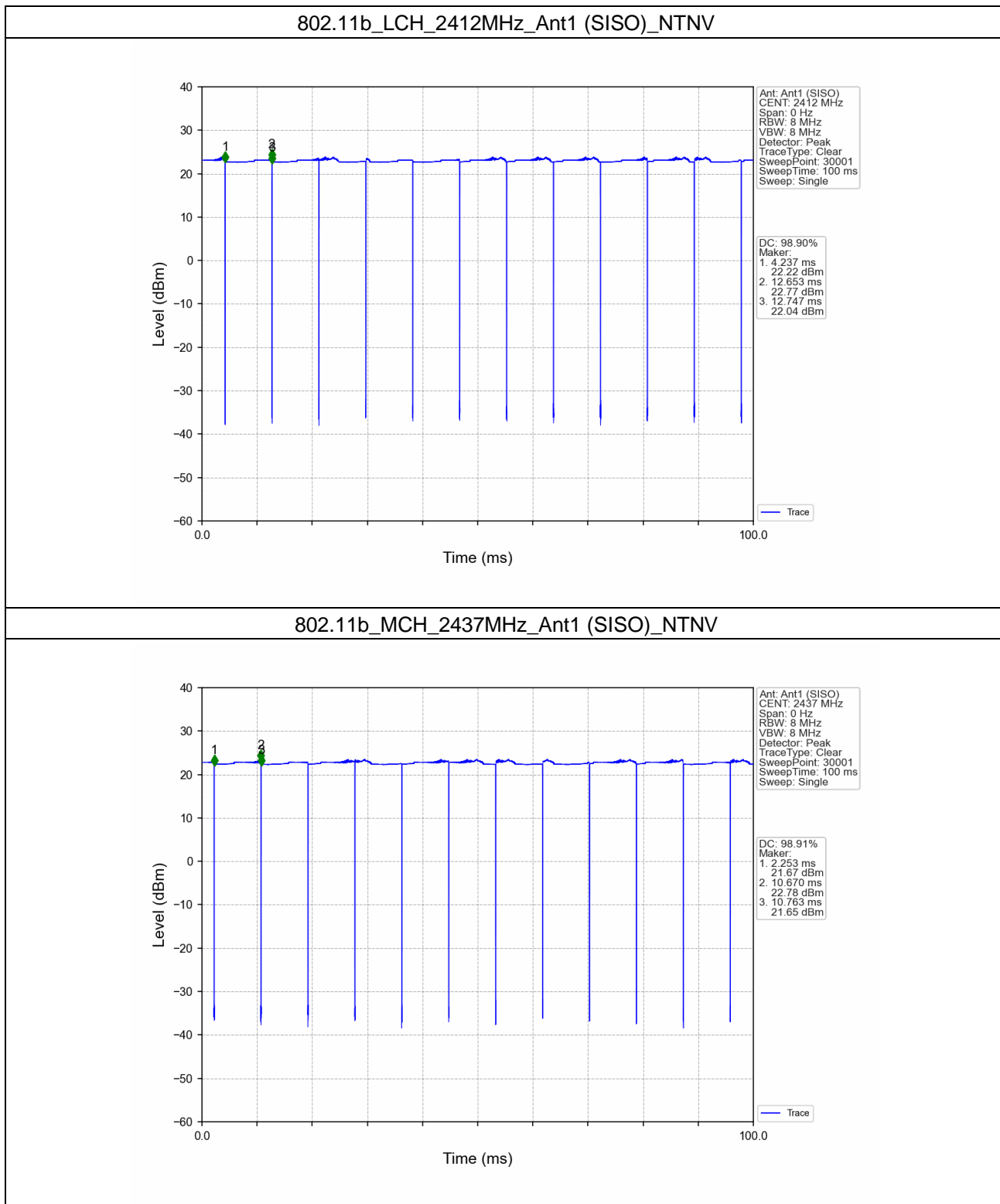
1. Duty Cycle

1.1 Ant1

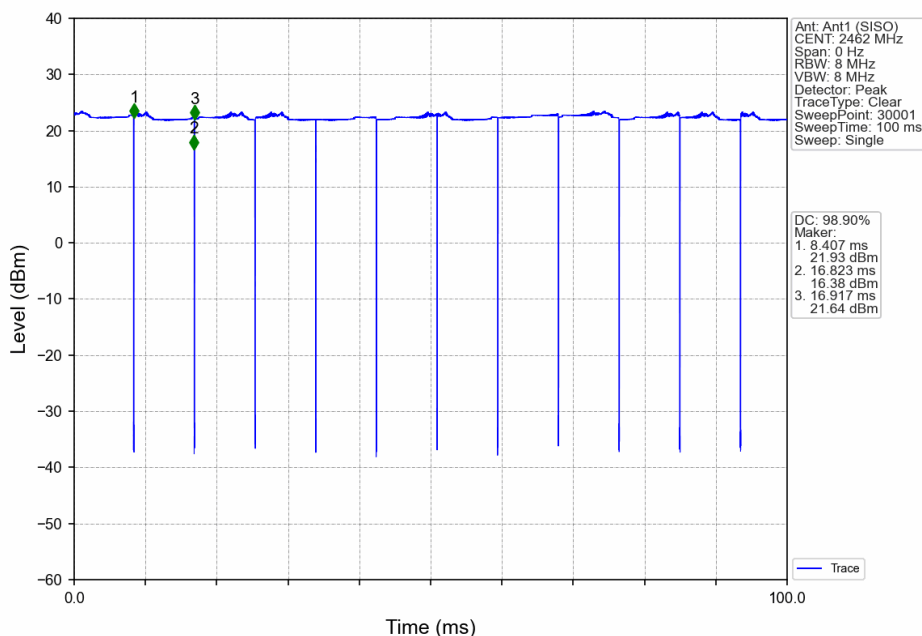
1.1.1 Test Result

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	8.416	8.510	98.90	0.05	0.04
		2437	8.417	8.510	98.91	0.05	0.00
		2462	8.416	8.510	98.90	0.05	0.00
802.11g	SISO	2412	1.397	1.496	93.38	0.30	0.03
		2437	1.397	1.496	93.38	0.30	0.00
		2462	1.396	1.495	93.38	0.30	0.07
802.11n (HT20)	MIMO	2412	0.166	0.264	62.88	2.01	0.15
		2437	0.167	0.263	63.50	1.97	0.13
		2462	0.166	0.264	62.88	2.01	0.15

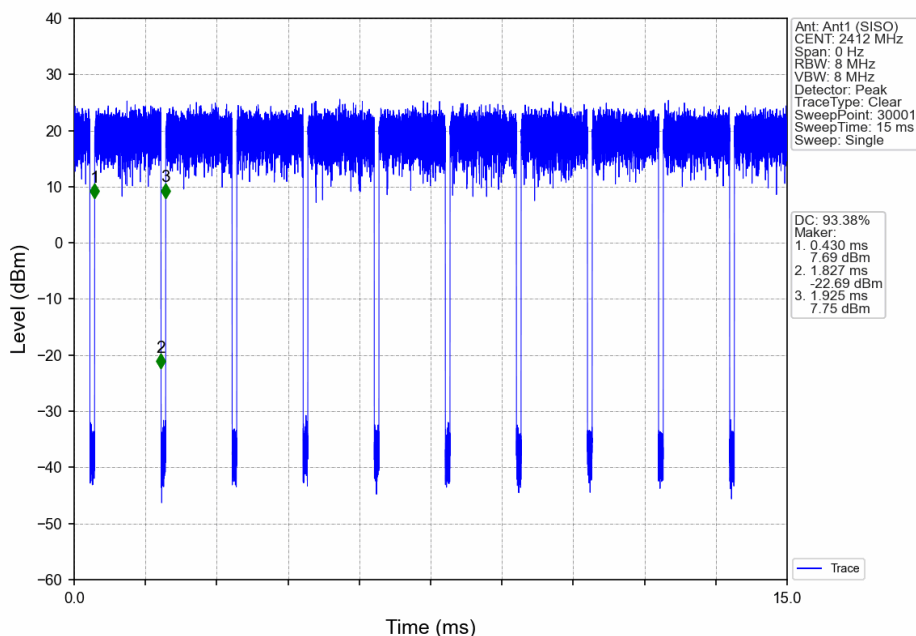
1.1.2 Test Graph



802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



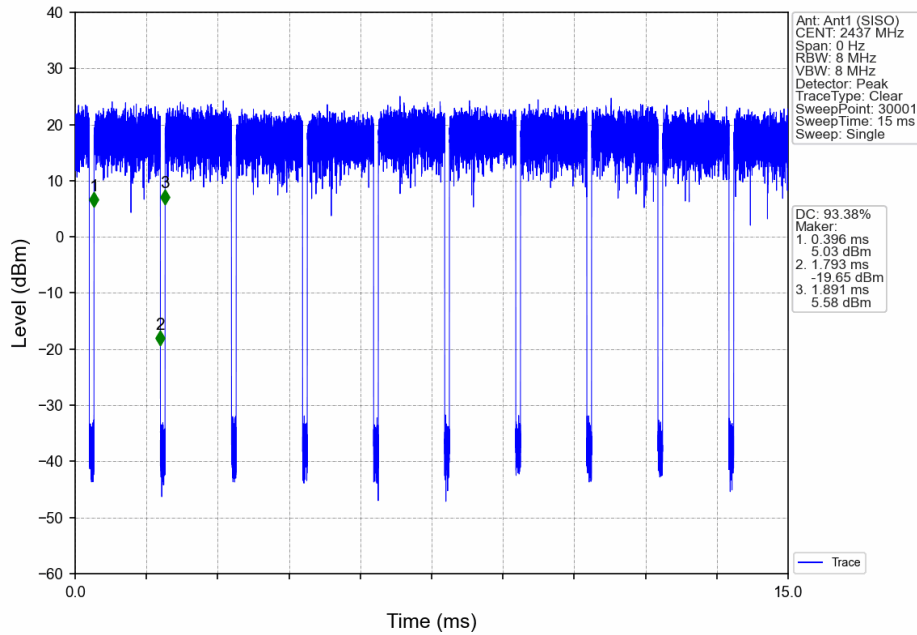
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



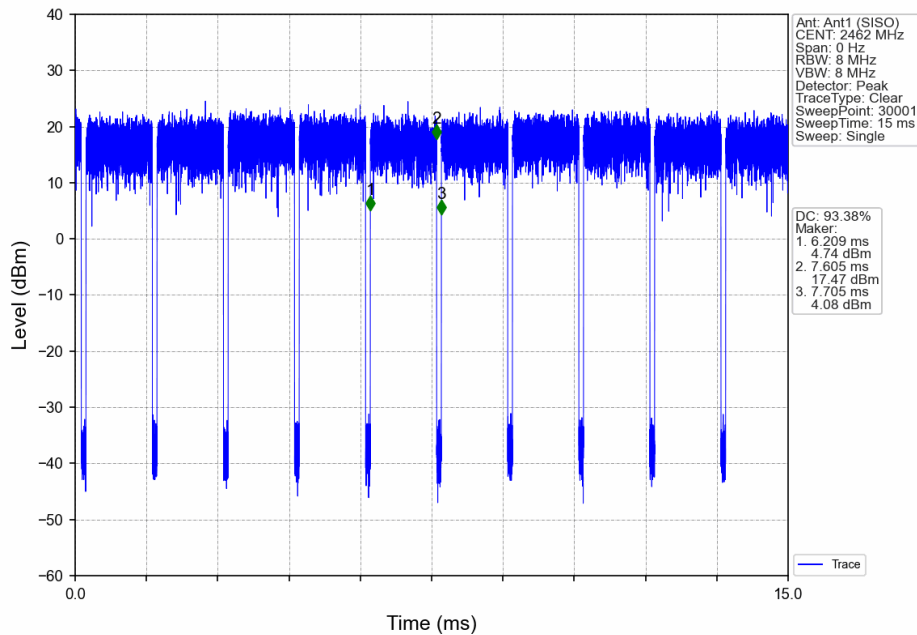
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802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

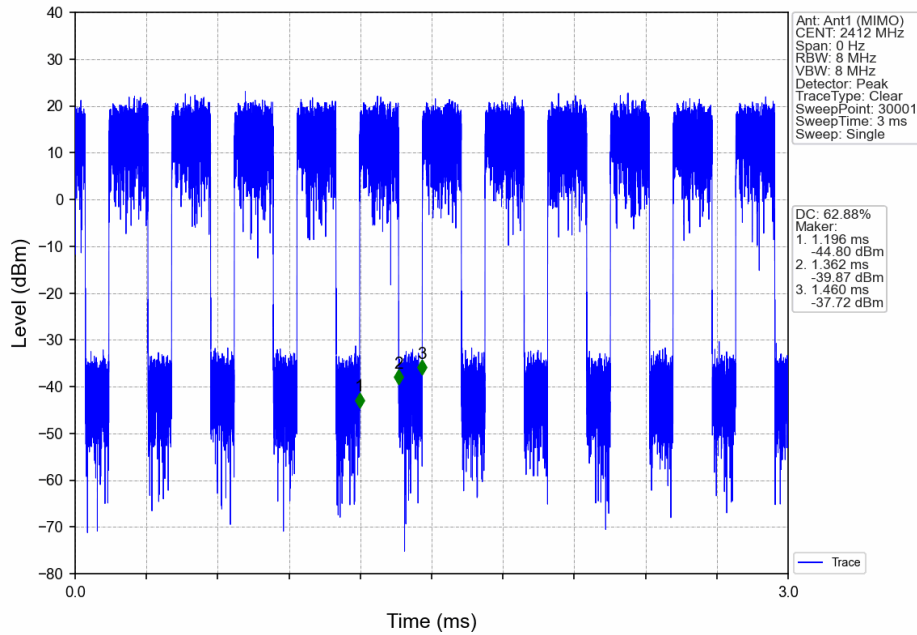


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

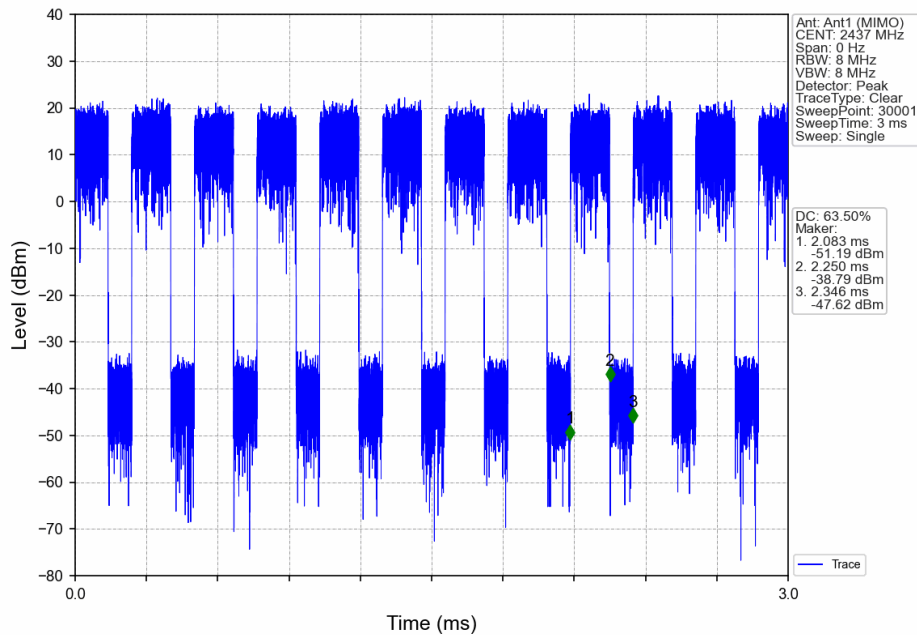


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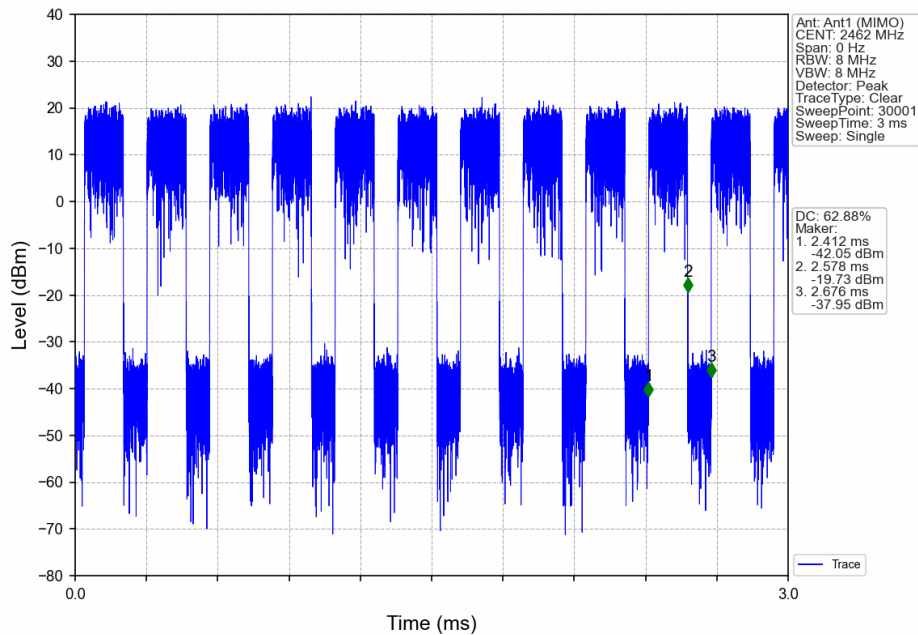
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



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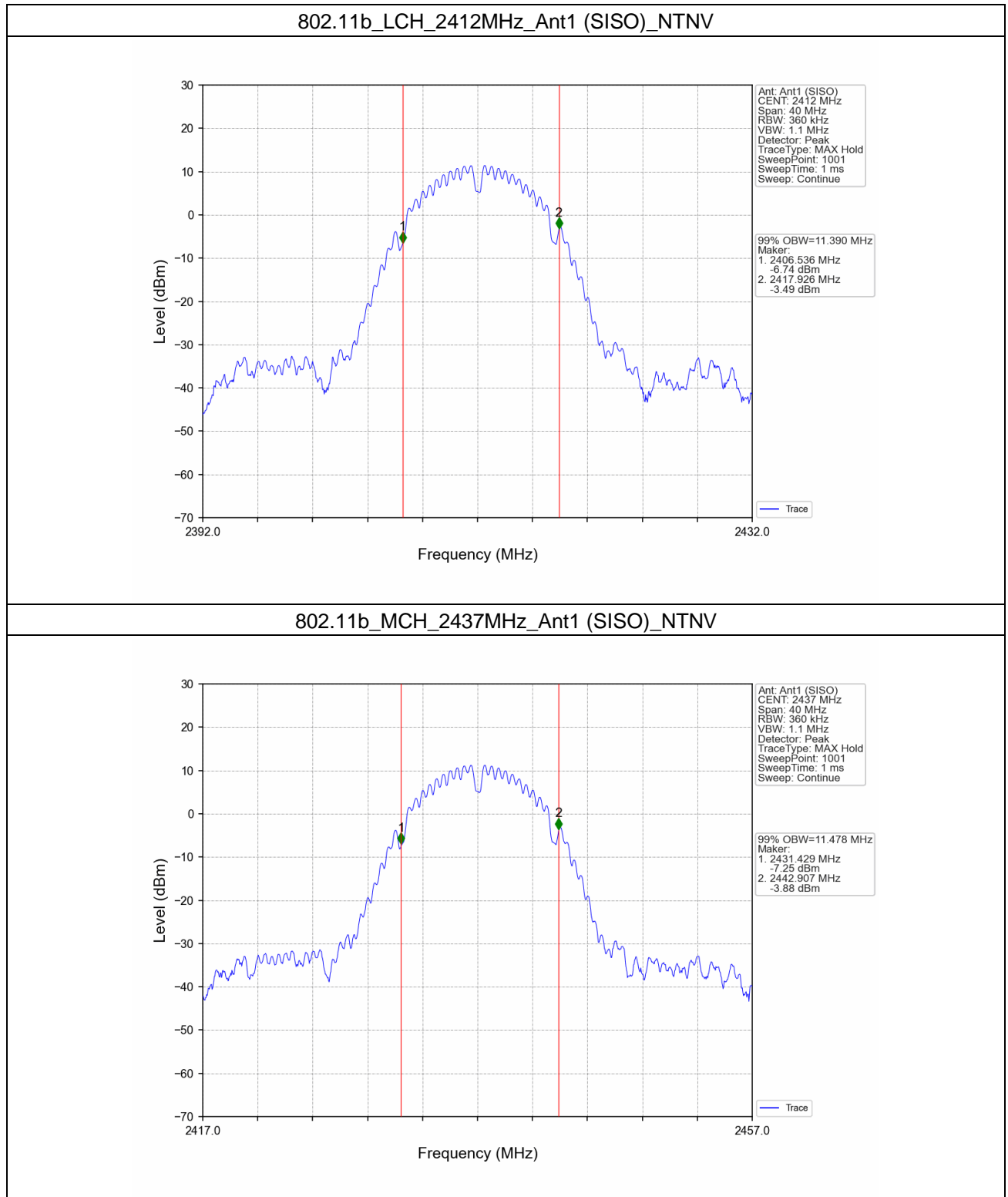
2. Bandwidth

2.1 OBW

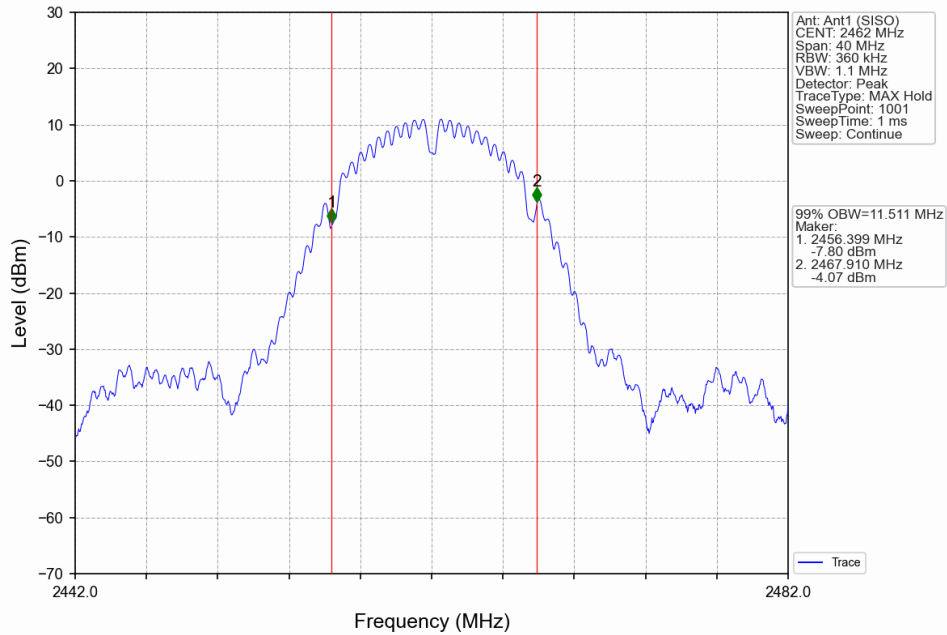
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	Verdict
				Result	
802.11b	SISO	2412	1	11.390	Pass
		2437	1	11.478	Pass
		2462	1	11.511	Pass
802.11g	SISO	2412	1	18.594	Pass
		2437	1	18.311	Pass
		2462	1	18.321	Pass
802.11n (HT20)	MIMO	2412	1	18.714	Pass
		2437	1	18.723	Pass
		2462	1	18.735	Pass

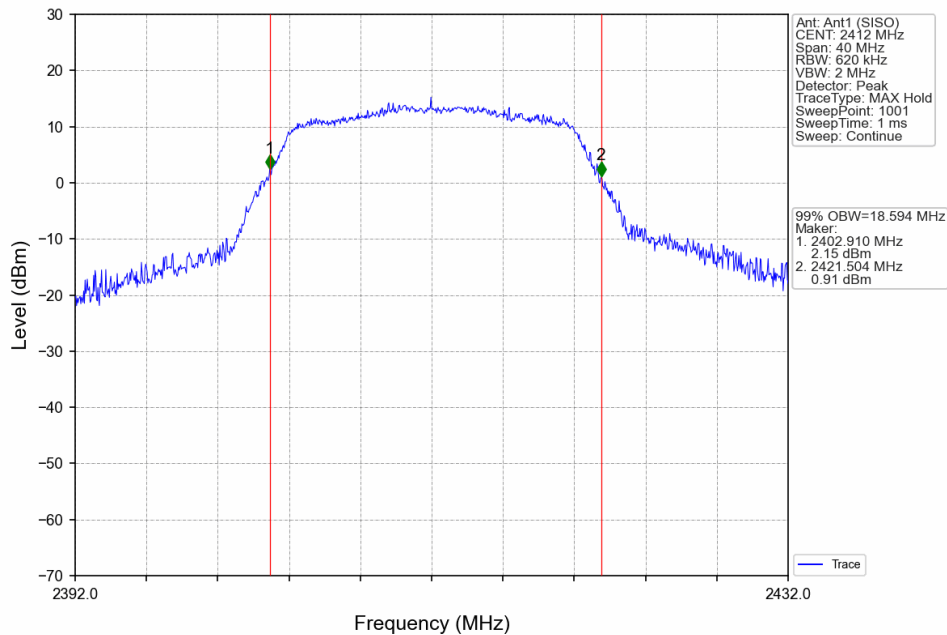
2.1.2 Test Graph



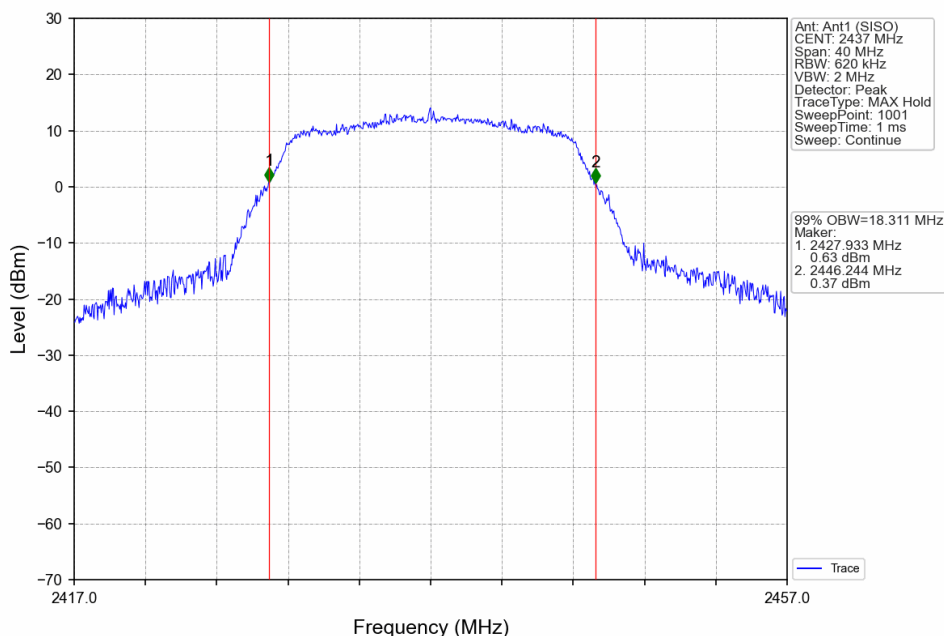
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



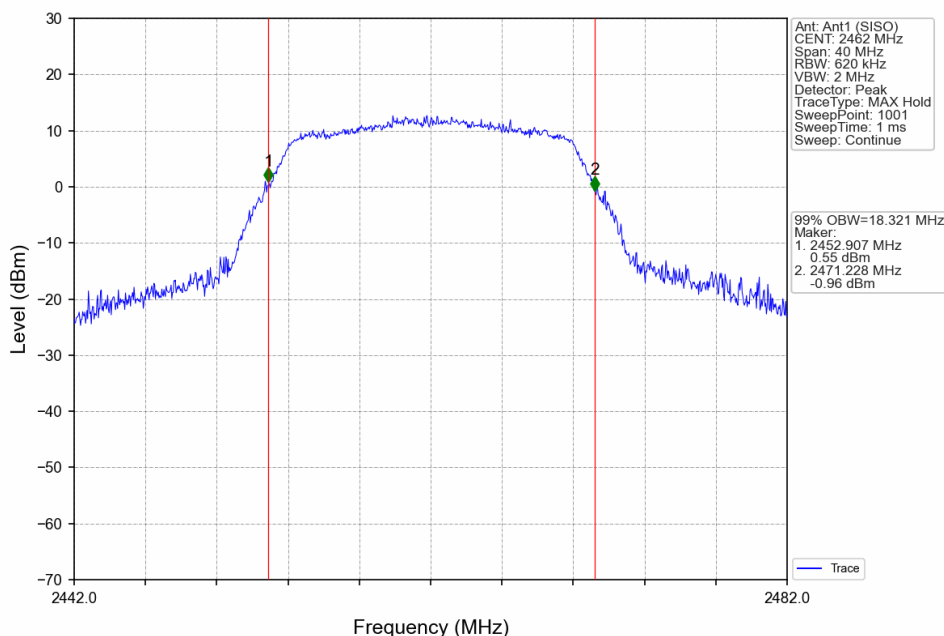
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



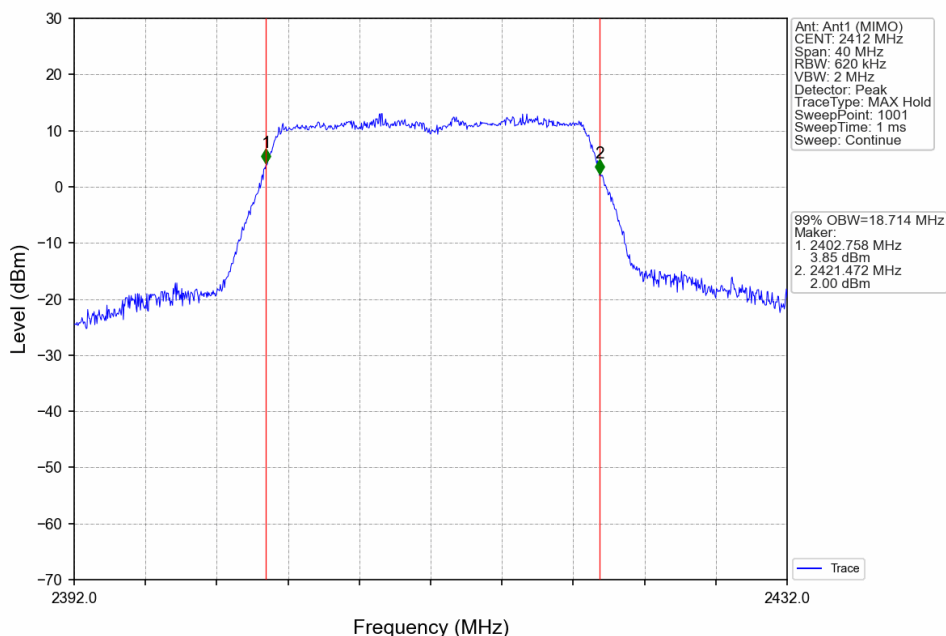
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



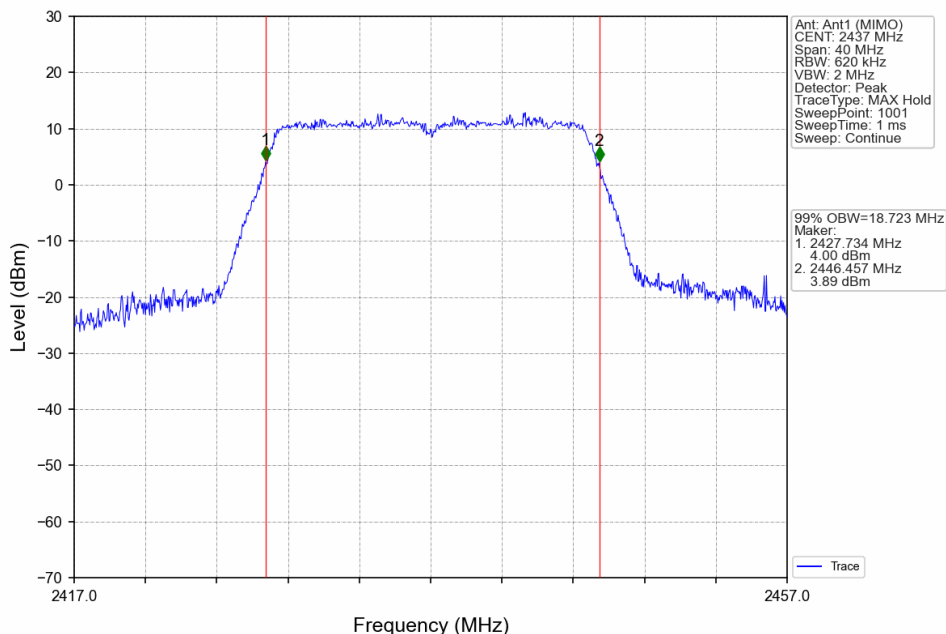
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



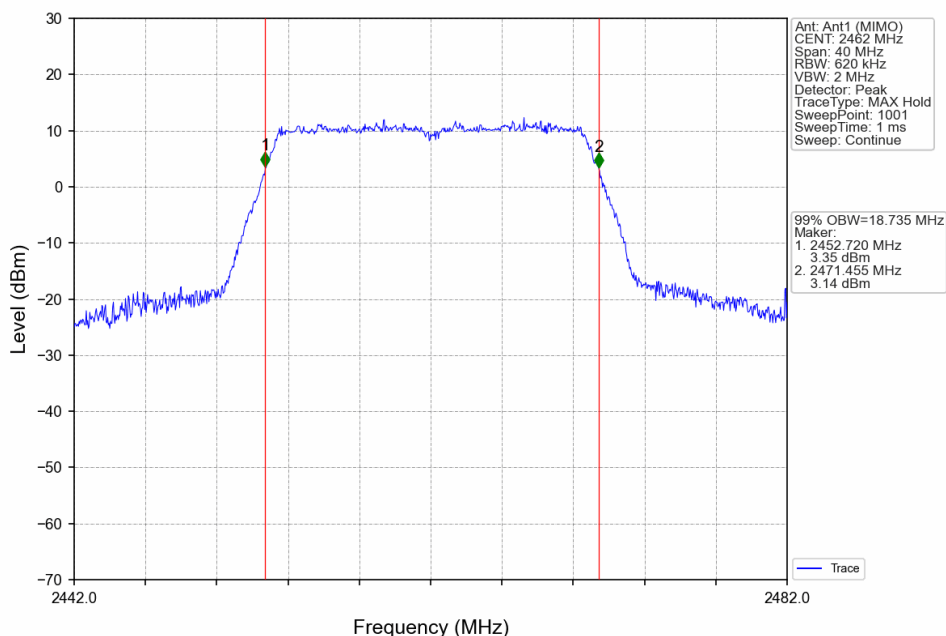
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV

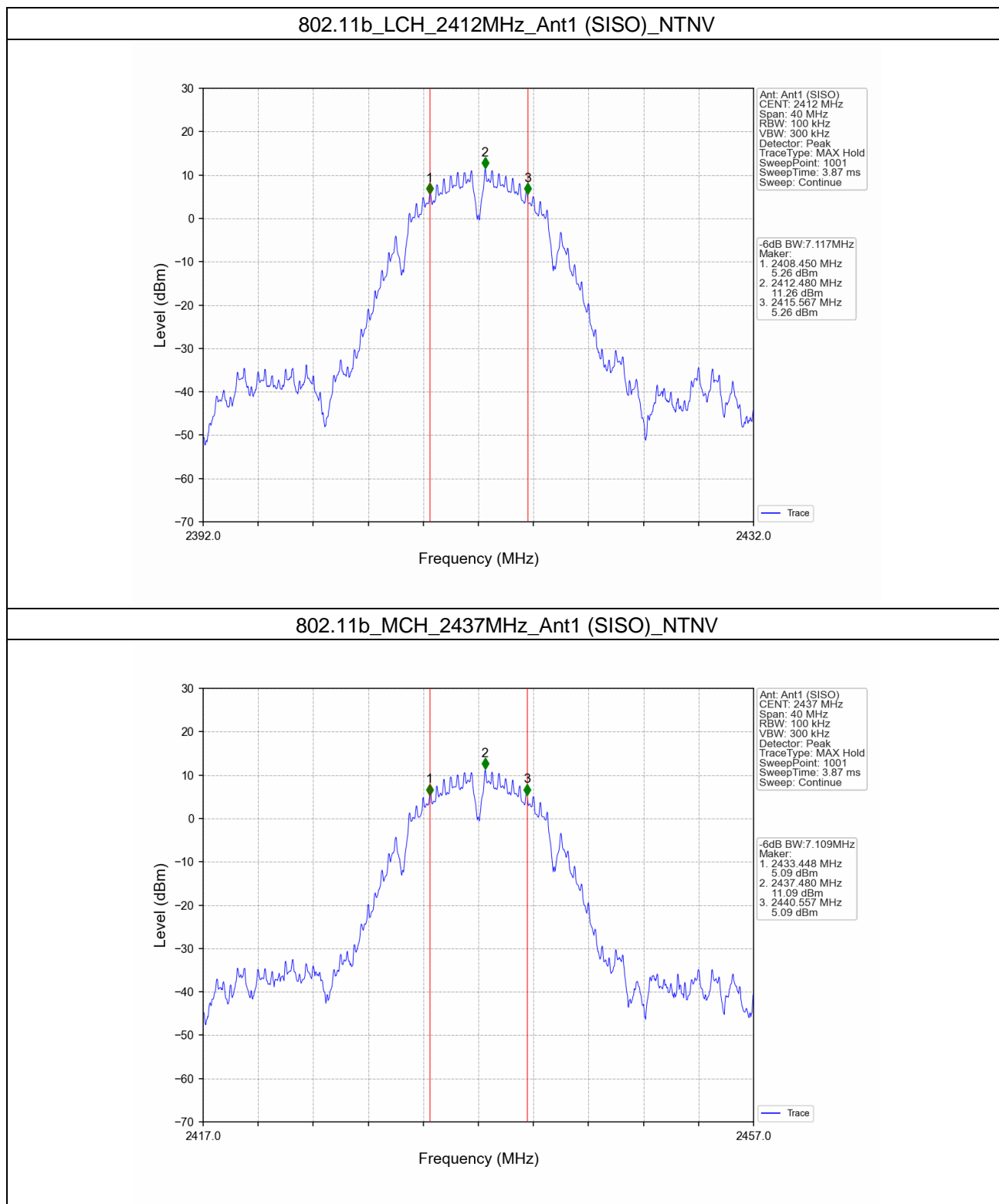


2.2 6dB BW

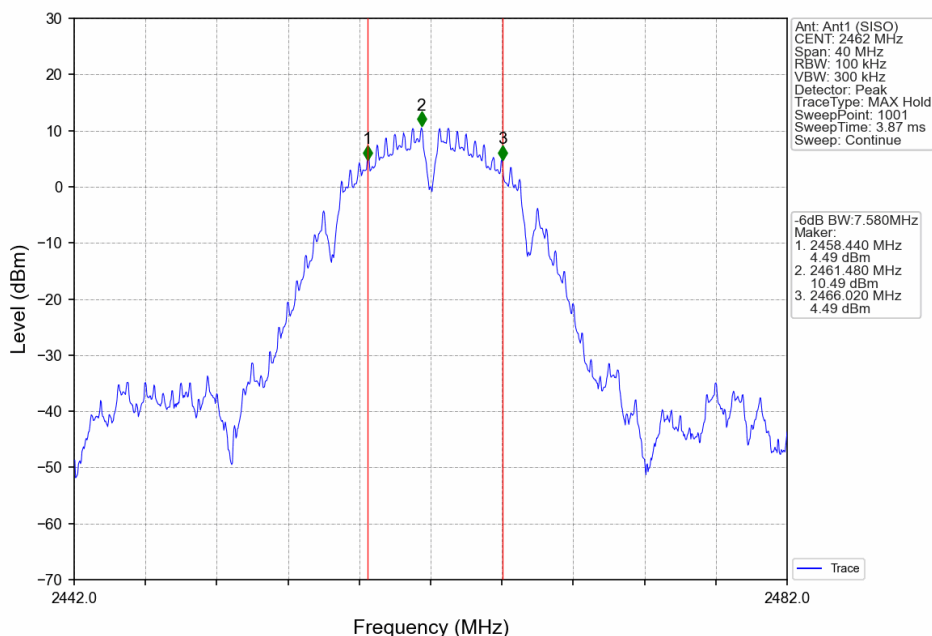
2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	7.117	≥ 0.5	Pass
		2437	1	7.109	≥ 0.5	Pass
		2462	1	7.580	≥ 0.5	Pass
802.11g	SISO	2412	1	16.384	≥ 0.5	Pass
		2437	1	16.400	≥ 0.5	Pass
		2462	1	16.403	≥ 0.5	Pass
802.11n (HT20)	MIMO	2412	1	17.785	≥ 0.5	Pass
		2437	1	17.790	≥ 0.5	Pass
		2462	1	17.802	≥ 0.5	Pass

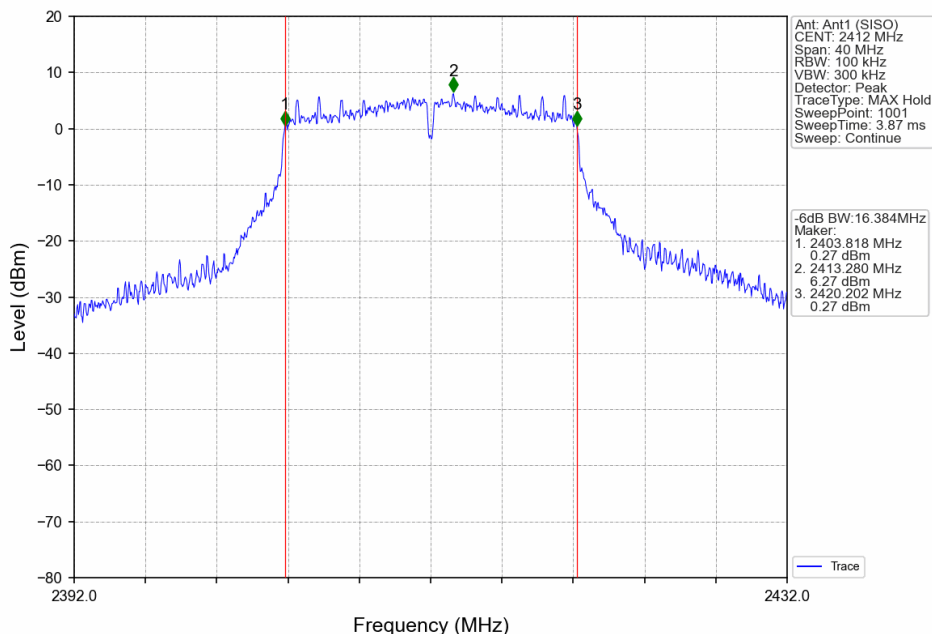
2.2.2 Test Graph



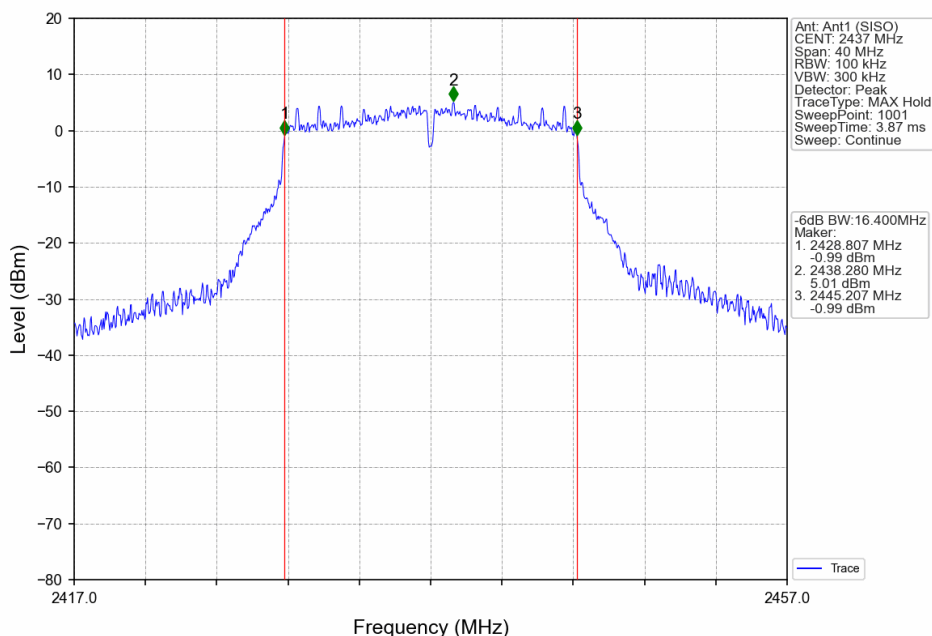
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

