

TEST REPORT

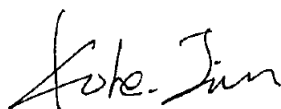
Application No.: GZCR2203000250AT
Applicant: Skycatch, Inc.
Address of Applicant: 424 9th St San Francisco CA 94103
Manufacturer: Skycatch, Inc.
Address of Manufacturer: 424 9th St San Francisco CA 94103
Equipment Under Test (EUT):
EUT Name: Skycatch Secure Controller
Model No.: SKC-SC-01
Trade Mark:



Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2022-03-08
Date of Test: 2022-03-10 to 2022-04-10
Date of Issue: 2022-04-11

Test Result:	Pass*
---------------------	--------------

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



Kobe Jian
EMC Laboratory Manager



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/terms-and-conditions/terms-e-document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
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
No. 198 Kezhu Road, Solentech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgs.com.cn
Guangzhou Branch Testing Center 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	Chapter	Date	Modifier	Remark
01		2022-04-11		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.

EUT powered by built-in battery and external battery, both conditions are tested, EUT powered by built-in battery with the external battery is worst case; only worst case test data recorded in this report.

3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents	4
4 General Information	6
4.1 Details of E.U.T.	6
4.2 Description of Support Units	6
4.3 Measurement Uncertainty	7
4.4 Test Location	8
4.5 Test Facility	8
4.6 Deviation from Standards	9
4.7 Abnormalities from Standard Conditions	9
5 Equipment List	10
6 Radio Spectrum Technical Requirement	14
6.1 Antenna Requirement	14
6.1.1 Test Requirement:	14
6.1.2 Conclusion	14
7 Radio Spectrum Matter Test Results	15
7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)	15
7.1.1 E.U.T. Operation	15
7.1.2 Test Mode Description	15
7.1.3 Test Setup Diagram	16
7.1.4 Measurement Procedure and Data	16
7.2 Conducted Peak Output Power	19
7.2.1 E.U.T. Operation	19
7.2.2 Test Mode Description	19
7.2.3 Test Setup Diagram	20
7.2.4 Measurement Procedure and Data	20
7.3 Minimum 6dB Bandwidth	21
7.3.1 E.U.T. Operation	21
7.3.2 Test Mode Description	21
7.3.3 Test Setup Diagram	21
7.3.4 Measurement Procedure and Data	21
7.4 Power Spectrum Density	22
7.4.1 E.U.T. Operation	22
7.4.2 Test Mode Description	22
7.4.3 Test Setup Diagram	22
7.4.4 Measurement Procedure and Data	22
7.5 Conducted Band Edges Measurement	23
7.5.1 E.U.T. Operation	23
7.5.2 Test Mode Description	23
7.5.3 Test Setup Diagram	23
7.5.4 Measurement Procedure and Data	24



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

7.6	Conducted Spurious Emissions	25
7.6.1	E.U.T. Operation	25
7.6.2	Test Mode Description	25
7.6.3	Test Setup Diagram	25
7.6.4	Measurement Procedure and Data.....	26
7.7	Radiated Emissions which fall in the restricted bands	27
7.7.1	E.U.T. Operation	27
7.7.2	Test Mode Description	27
7.7.3	Test Setup Diagram	28
7.7.4	Measurement Procedure and Data.....	28
7.8	Radiated Spurious Emissions (Below 1GHz).....	45
7.8.1	E.U.T. Operation	45
7.8.2	Test Mode Description	45
7.8.3	Test Setup Diagram	46
7.8.4	Measurement Procedure and Data.....	47
7.9	Radiated Spurious Emissions (Above 1GHz)	51
7.9.1	E.U.T. Operation	51
7.9.2	Test Mode Description	51
7.9.3	Test Setup Diagram	52
7.9.4	Measurement Procedure and Data.....	53
7.10	Duty Cycle	78
7.10.1	E.U.T. Operation.....	78
7.10.2	Test Mode Description.....	78
7.10.3	Test Setup Diagram.....	78
7.10.4	Measurement Procedure and Data	78
8	Test Setup Photo	79
9	EUT Constructional Details (EUT Photos)	79
10	Appendix.....	80



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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

4 General Information

4.1 Details of E.U.T.

Power supply:	External Battery: DC 7.6V,4920mAh Lithium-ion rechargeable battery (to be charged from type C port) Built-in Battery: DC 7.2V,5000mAh Lithium-ion rechargeable battery
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz, 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Channel Spacing:	5MHz
Number of Channels:	802.11g/n(HT20): 11 802.11n(HT40):7
Antenna Type:	PCB pattern
Antenna Gain:	Antenna0&1: 2.5dBi declared by applicant

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Skycatch	QC24-CN	N/A

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	$\pm 2.76\text{dB}$
Conducted Peak Output Power	$\pm 0.75\text{dB}$
Minimum 6dB Bandwidth	$\pm 3\%$
Power Spectrum Density	$\pm 2.84\text{dB}$
Conducted Band Edges Measurement	$\pm 0.75\text{dB}$
Conducted Spurious Emissions	$\pm 0.75\text{dB}$
Radiated Emissions which fall in the restricted bands	$\pm 5.08\text{dB}$ (1GHz-6GHz); $\pm 5.14\text{dB}$ (above 6GHz)
Radiated Spurious Emissions (Below 1GHz)	$\pm 5.06\text{dB}$ (3m); $\pm 4.46\text{dB}$ (10m)
Radiated Spurious Emissions (Above 1GHz)	$\pm 5.08\text{dB}$ (1GHz-6GHz); $\pm 5.14\text{dB}$ (above 6GHz)
Duty Cycle	$\pm 0.37\%$
<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.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

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

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

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

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

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

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

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

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



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
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

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

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	2021-12-23	2022-12-22
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2021-09-24	2022-09-23
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2021-06-01	2022-05-31

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	2021-05-19	2022-05-18
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2021-11-01	2023-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

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

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



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

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

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-12-17	2022-12-16
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2020-09-09	2022-09-08
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-12-17	2022-12-16
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-16	2022-09-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2021-07-29	2022-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2021-08-30	2022-08-29



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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

Radiated Spurious Emissions (Below 1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-12-17	2022-12-16
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-21
				2022-02-21	2025-02-20
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
High Pass Filter (915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2021-12-17	2022-12-16
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25

Radiated Spurious Emissions (Above 1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-12-17	2022-12-16
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2020-09-09	2022-09-08
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-12-17	2022-12-16
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-12-17	2022-12-16
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2021-11-01	2022-10-31
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2021-09-16	2022-09-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Notch Filter (5150-5880)	Mico-Tronics	BRM50716	EMC2168	2021-07-29	2022-07-28
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2021-08-30	2022-08-29



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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

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

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



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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

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 antennas are Antenna 0&1: 2.5dBi.

Directional Gain= $G_{Ant}+10\log(N_{Ant})$ dBi = $2.5+10\log(2)$ dBi = 5.51dBi.

Antenna location: Refer to internal photo.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
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

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: 24.5 °C

Humidity: 53.9 % RH

Atmospheric Pressure: 1003 mbar

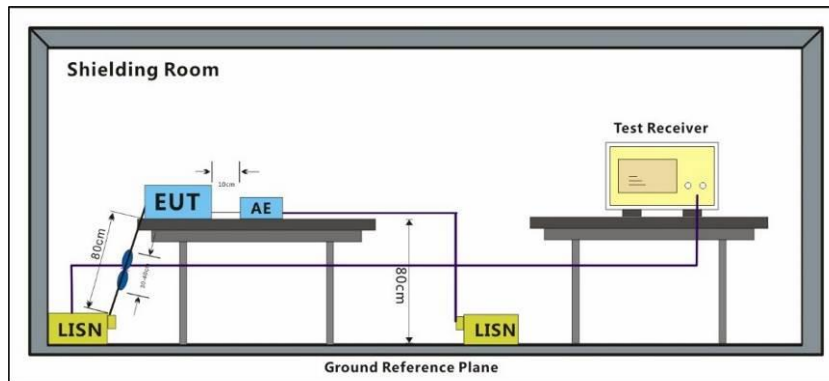
7.1.2 Test Mode Description

Pre-scan /	Mode	Description
Final test	Code	

Final test	01
------------	----

Charge + TX mode(2.4G Wi-Fi)_Keep the EUT in charging and 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.

7.1.3 Test Setup Diagram

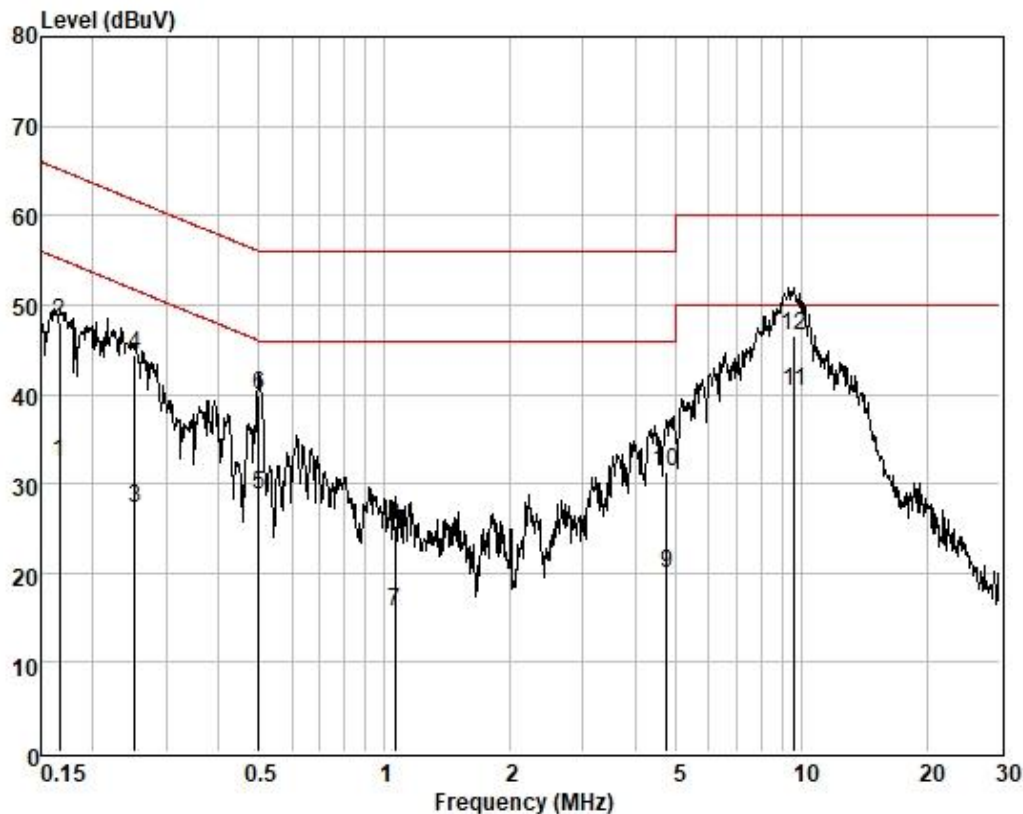


7.1.4 Measurement Procedure and Data

- 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

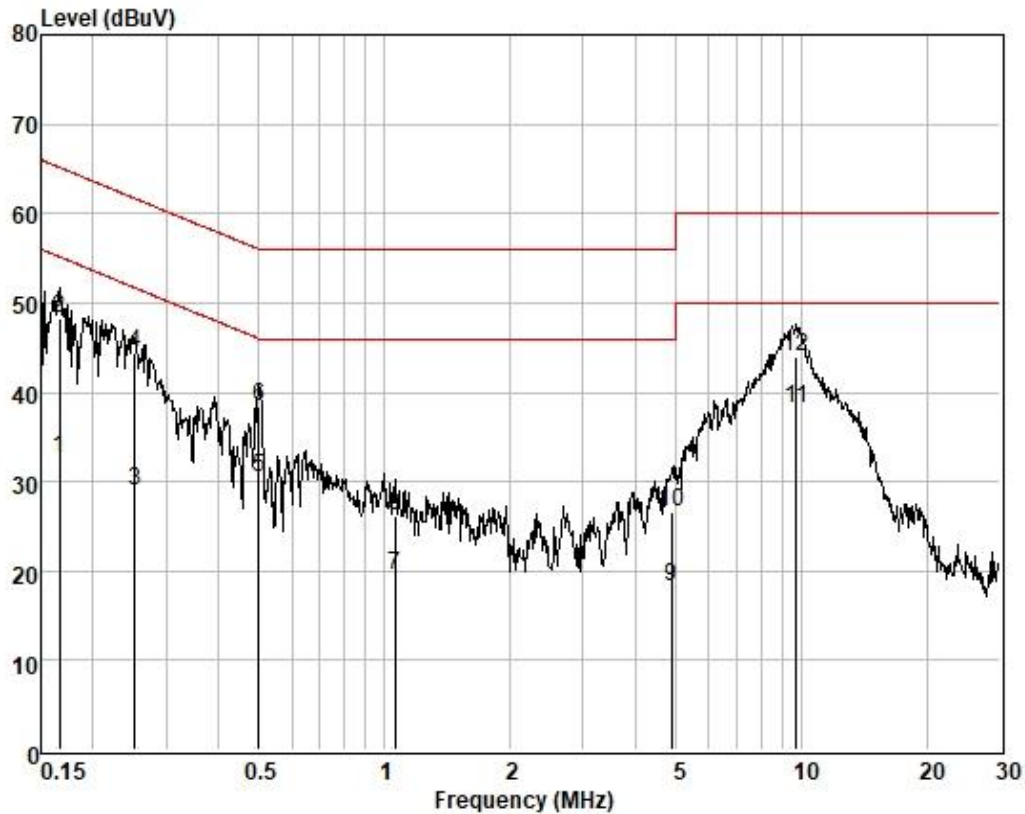
Test Mode: 01; Line: Live line



Condition: LINE
Mode : 2.4 WIFI
Model :

	Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.166	22.67	0.06	9.55	32.28	55.16	-22.88	Average
2	0.166	38.41	0.06	9.55	48.02	65.16	-17.14	QP
3	0.252	17.64	0.06	9.57	27.27	51.69	-24.42	Average
4	0.252	34.86	0.06	9.57	44.49	61.69	-17.20	QP
5	0.499	19.04	0.07	9.59	28.70	46.01	-17.31	Average
6	0.499	30.34	0.07	9.59	40.00	56.01	-16.01	QP
7	1.060	5.92	0.07	9.60	15.59	46.00	-30.41	Average
8	1.060	15.66	0.07	9.60	25.33	56.00	-30.67	QP
9	4.772	10.14	0.18	9.66	19.98	46.00	-26.02	Average
10	4.772	21.53	0.18	9.66	31.37	56.00	-24.63	QP
11	9.654	30.38	0.23	9.77	40.38	50.00	-9.62	Average
12	9.654	36.62	0.23	9.77	46.62	60.00	-13.38	QP

Test Mode: 01; Line: Neutral Line



Condition: NEUTRAL
Mode : 2.4 WIFI
Model :

	Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.166	22.97	0.06	9.54	32.57	55.16	-22.59	Average
2	0.166	38.69	0.06	9.54	48.29	65.16	-16.87	QP
3	0.252	19.38	0.06	9.56	29.00	51.69	-22.69	Average
4	0.252	34.78	0.06	9.56	44.40	61.69	-17.29	QP
5	0.499	20.75	0.07	9.58	30.40	46.01	-15.61	Average
6	0.499	28.64	0.07	9.58	38.29	56.01	-17.72	QP
7	1.060	9.85	0.07	9.59	19.51	46.00	-26.49	Average
8	1.060	16.51	0.07	9.59	26.17	56.00	-29.83	QP
9	4.900	8.38	0.18	9.66	18.22	46.00	-27.78	Average
10	4.900	16.80	0.18	9.66	26.64	56.00	-29.36	QP
11	9.757	28.16	0.23	9.78	38.17	50.00	-11.83	Average
12	9.757	33.97	0.23	9.78	43.98	60.00	-16.02	QP



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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 $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 1003 mbar

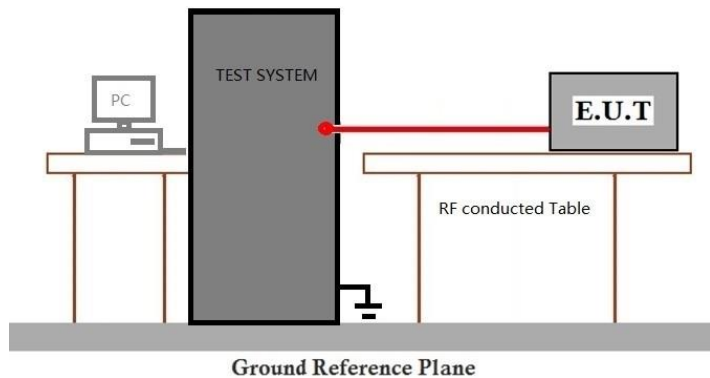
7.2.2 Test Mode Description

Pre-scan /	Mode	Description
Final test	Code	

Final test	00	TX mode(2.4G Wi-Fi)_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

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: 21.9 °C

Humidity: 52.1 % RH

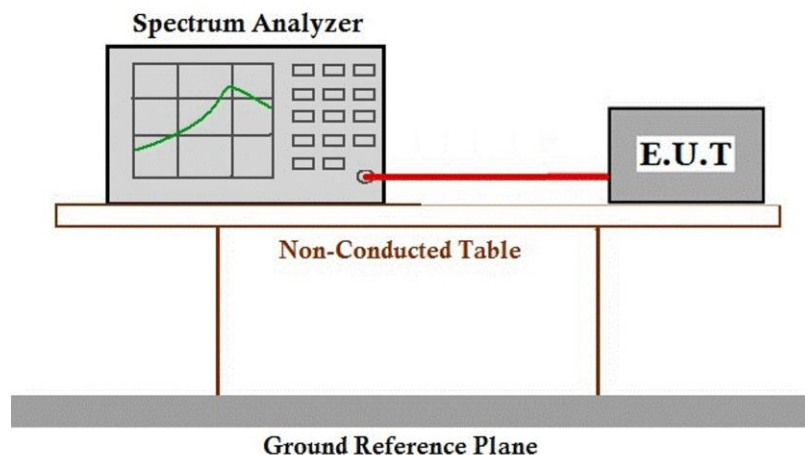
Atmospheric Pressure: 1003 mbar

7.3.2 Test Mode Description

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

Final test	00	TX mode(2.4G Wi-Fi)_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

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: 21.9 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 1003 mbar

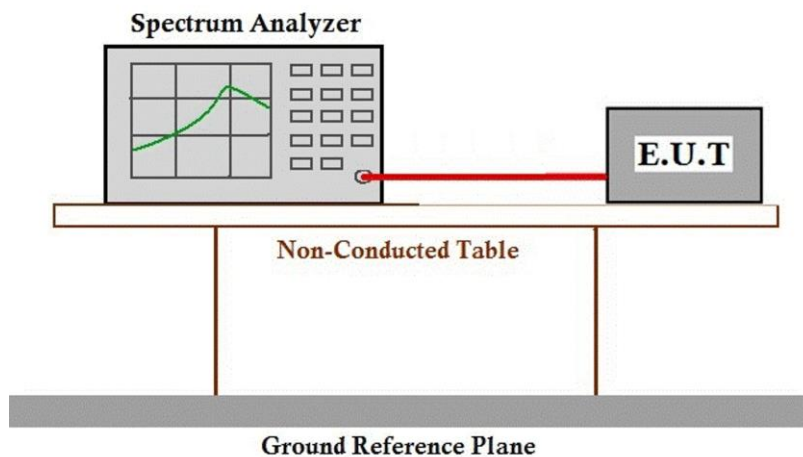
7.4.2 Test Mode Description

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

Final test	00	
------------	----	--

TX mode(2.4G Wi-Fi)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

cable loss=0.9dB

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

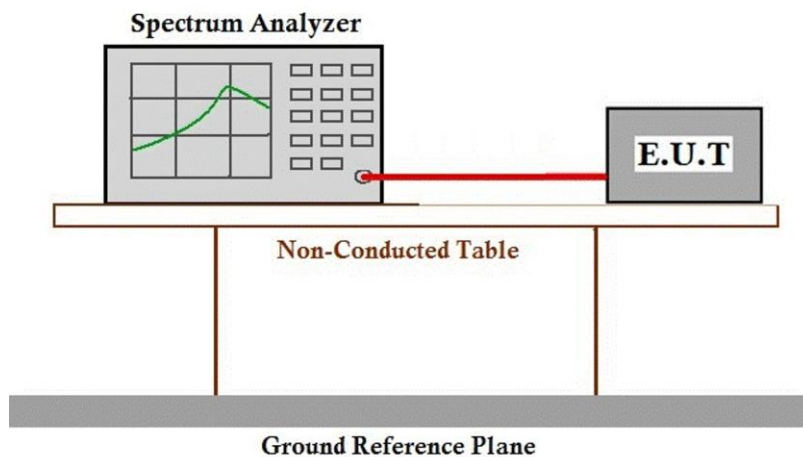
Operating Environment:

Temperature: 21.9 °C Humidity: 52.1 % RH Atmospheric Pressure: 1003 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(2.4G Wi-Fi)_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



7.5.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
 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

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: 21.9 °C

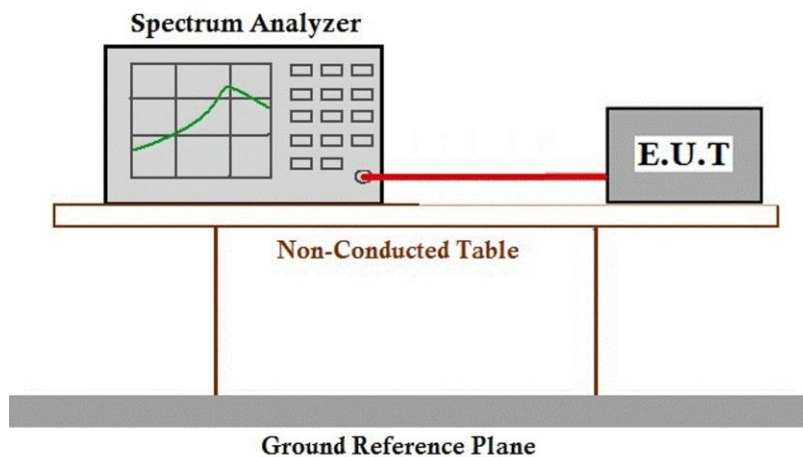
Humidity: 52.1 % RH

Atmospheric Pressure: 1003 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(2.4G Wi-Fi)_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.

7.6.3 Test Setup Diagram



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

7.6.4 Measurement Procedure and Data

cable loss=0.9dB

Please Refer to Appendix for Details



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
 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

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: 23.1 °C Humidity: 53.5 % RH Atmospheric Pressure: 1003 mbar

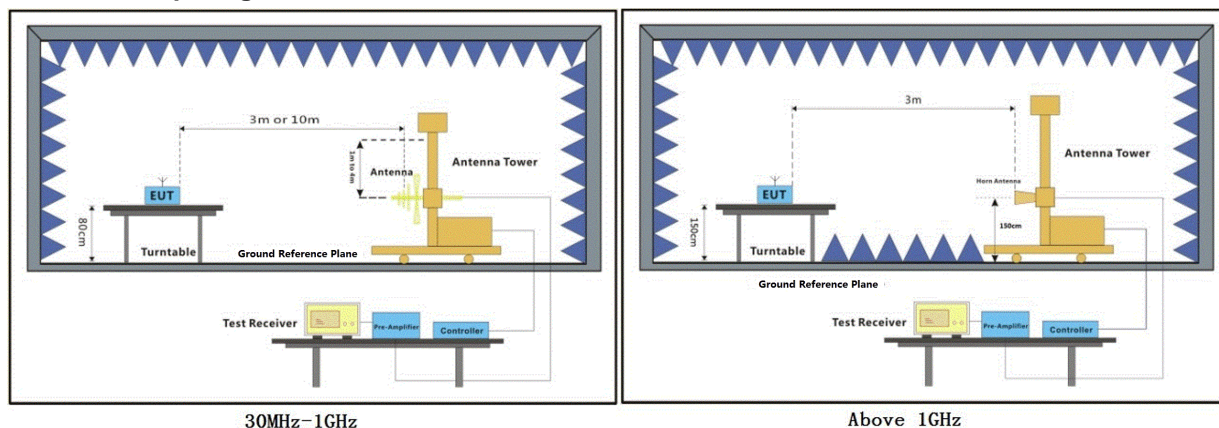
7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(2.4G Wi-Fi)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.
Pre-scan	01	Charge + TX mode(2.4G Wi-Fi)_Keep the EUT in charging and 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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

7.7.3 Test Setup Diagram



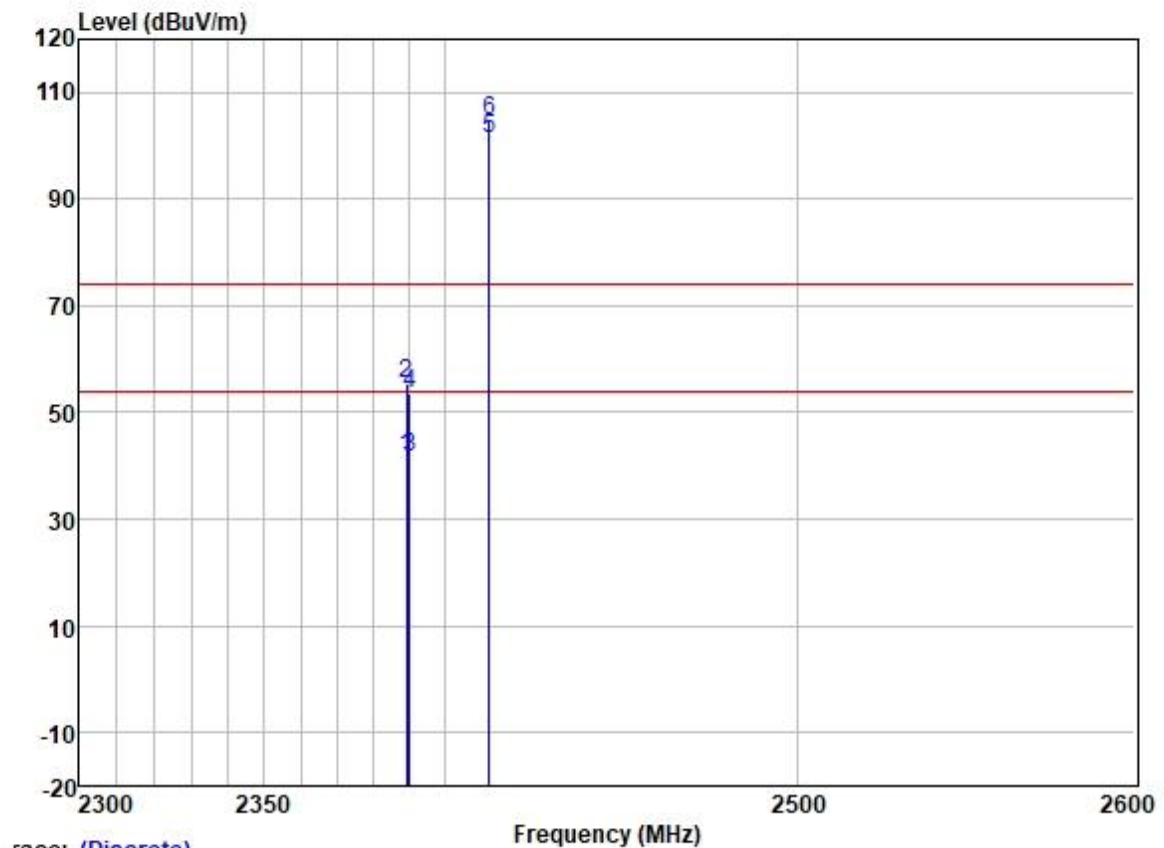
7.7.4 Measurement Procedure and Data

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

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

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

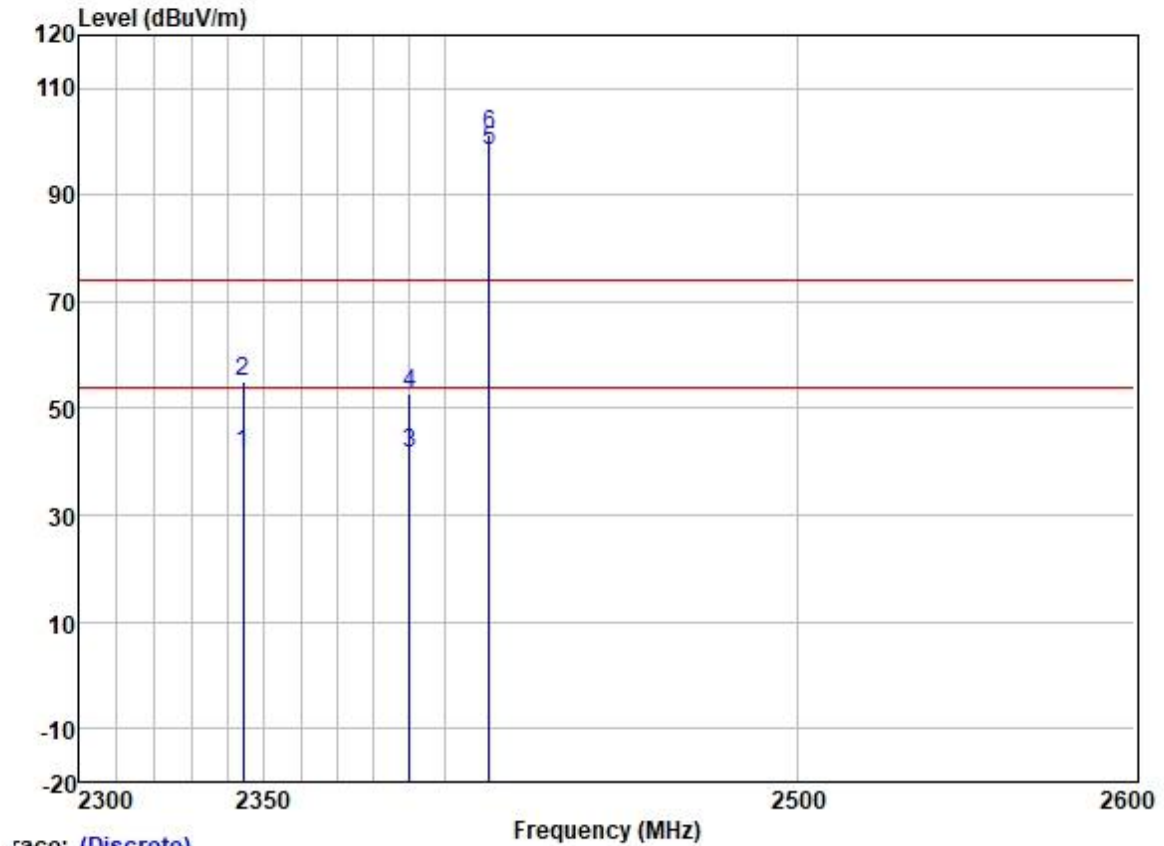
Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel: Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.121	48.45	27.33	3.48	37.59	41.67	54.00	-12.33	HORIZONTAL	Average
2	2389.121	62.07	27.33	3.48	37.59	55.29	74.00	-18.71	HORIZONTAL	Peak
3	2390.000	48.42	27.33	3.48	37.59	41.64	54.00	-12.36	HORIZONTAL	Average
4	2390.000	60.27	27.33	3.48	37.59	53.49	74.00	-20.51	HORIZONTAL	Peak
5 *	2412.000	108.16	27.38	3.47	37.59	101.42	54.00	47.42	HORIZONTAL	Average
6 *	2412.000	111.55	27.38	3.47	37.59	104.81	74.00	30.81	HORIZONTAL	Peak

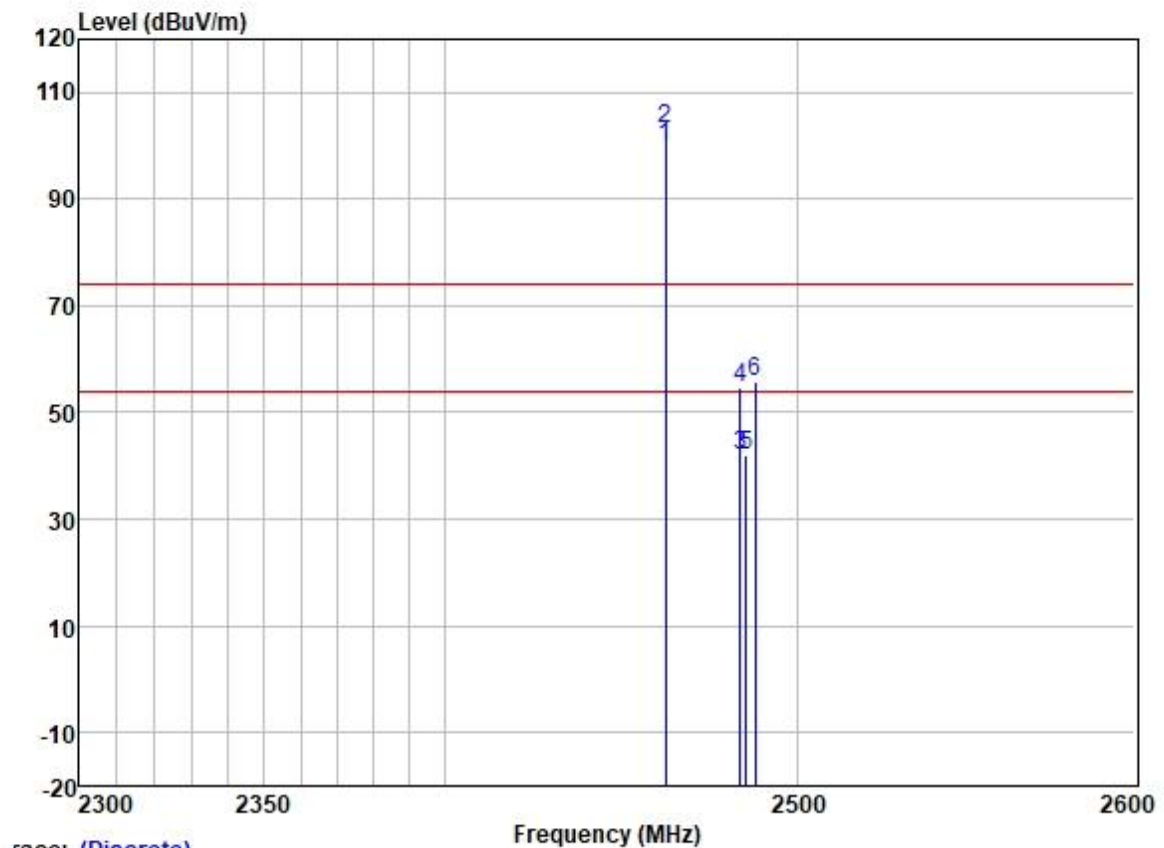
Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel: Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2344.177	48.66	27.24	3.38	37.61	41.67	54.00	-12.33	VERTICAL	Average
2	2344.177	61.90	27.24	3.38	37.61	54.91	74.00	-19.09	VERTICAL	Peak
3	2390.000	48.29	27.33	3.48	37.59	41.51	54.00	-12.49	VERTICAL	Average
4	2390.000	59.71	27.33	3.48	37.59	52.93	74.00	-21.07	VERTICAL	Peak
5 *	2412.000	105.05	27.38	3.47	37.59	98.31	54.00	44.31	VERTICAL	Average
6 *	2412.000	108.14	27.38	3.47	37.59	101.40	74.00	27.40	VERTICAL	Peak

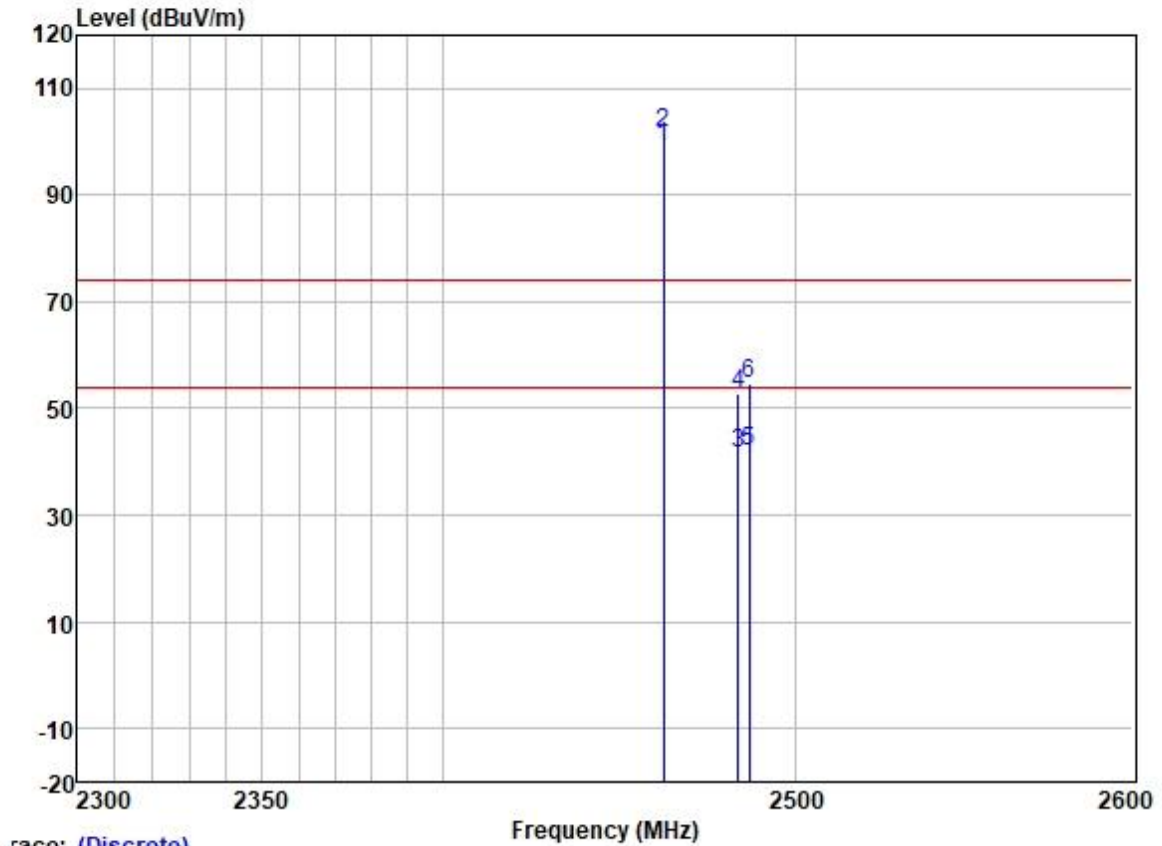
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11b; Bandwidth: 20MHz; Channel: High



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	106.51	27.45	3.50	37.58	99.88	54.00	45.88	HORIZONTAL	Average
2 *	2462.000	109.81	27.45	3.50	37.58	103.18	74.00	29.18	HORIZONTAL	Peak
3	2483.500	48.59	27.48	3.53	37.57	42.03	54.00	-11.97	HORIZONTAL	Average
4	2483.500	61.12	27.48	3.53	37.57	54.56	74.00	-19.44	HORIZONTAL	Peak
5	2485.295	48.62	27.48	3.53	37.57	42.06	54.00	-11.94	HORIZONTAL	Average
6	2487.857	62.30	27.48	3.53	37.56	55.75	74.00	-18.25	HORIZONTAL	Peak

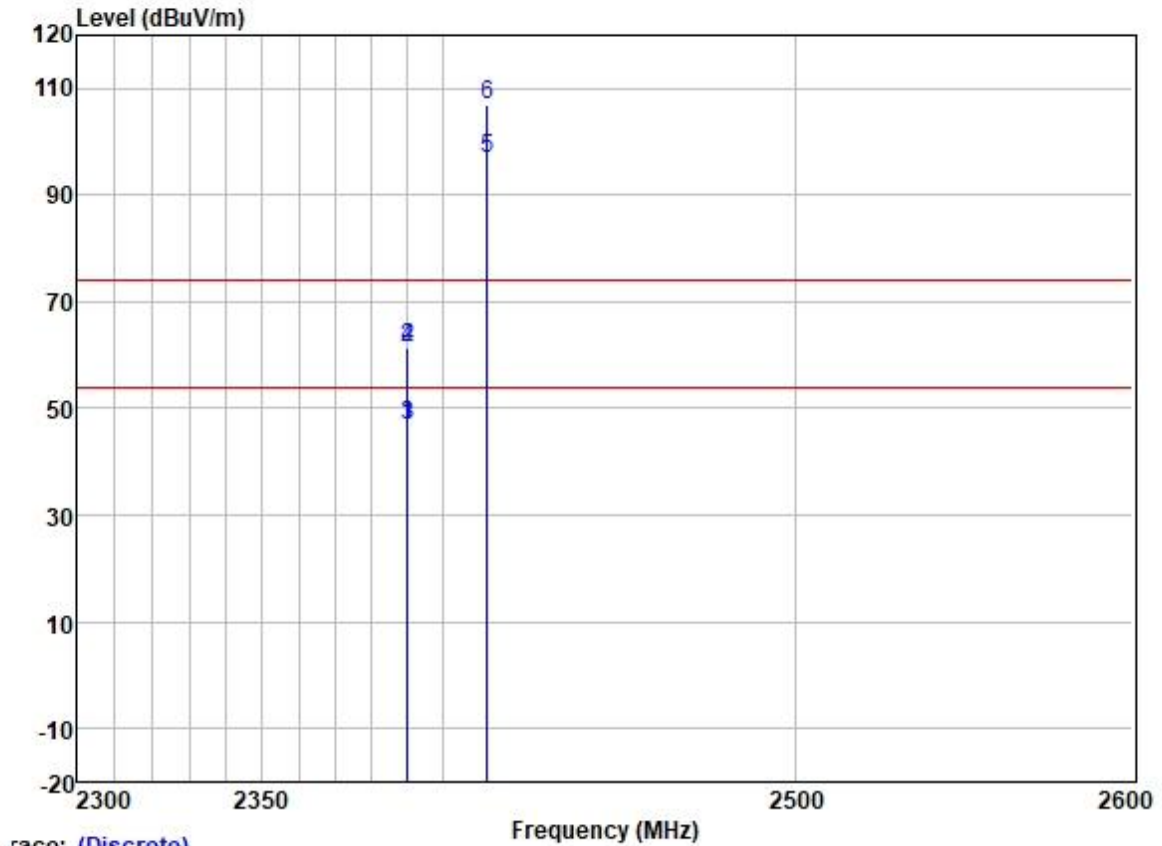
Test Mode: 00; Polarity: Vertical; Modulation: 802.11b; Bandwidth: 20MHz; Channel: High



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	105.83	27.45	3.50	37.58	99.20	54.00	45.20	VERTICAL	Average
2	*	2462.000	108.50	27.45	3.50	37.58	101.87	74.00	27.87	VERTICAL	Peak
3		2483.500	48.34	27.48	3.53	37.57	41.78	54.00	-12.22	VERTICAL	Average
4		2483.500	59.35	27.48	3.53	37.57	52.79	74.00	-21.21	VERTICAL	Peak
5		2486.651	48.51	27.48	3.53	37.57	41.95	54.00	-12.05	VERTICAL	Average
6		2486.651	61.09	27.48	3.53	37.57	54.53	74.00	-19.47	VERTICAL	Peak

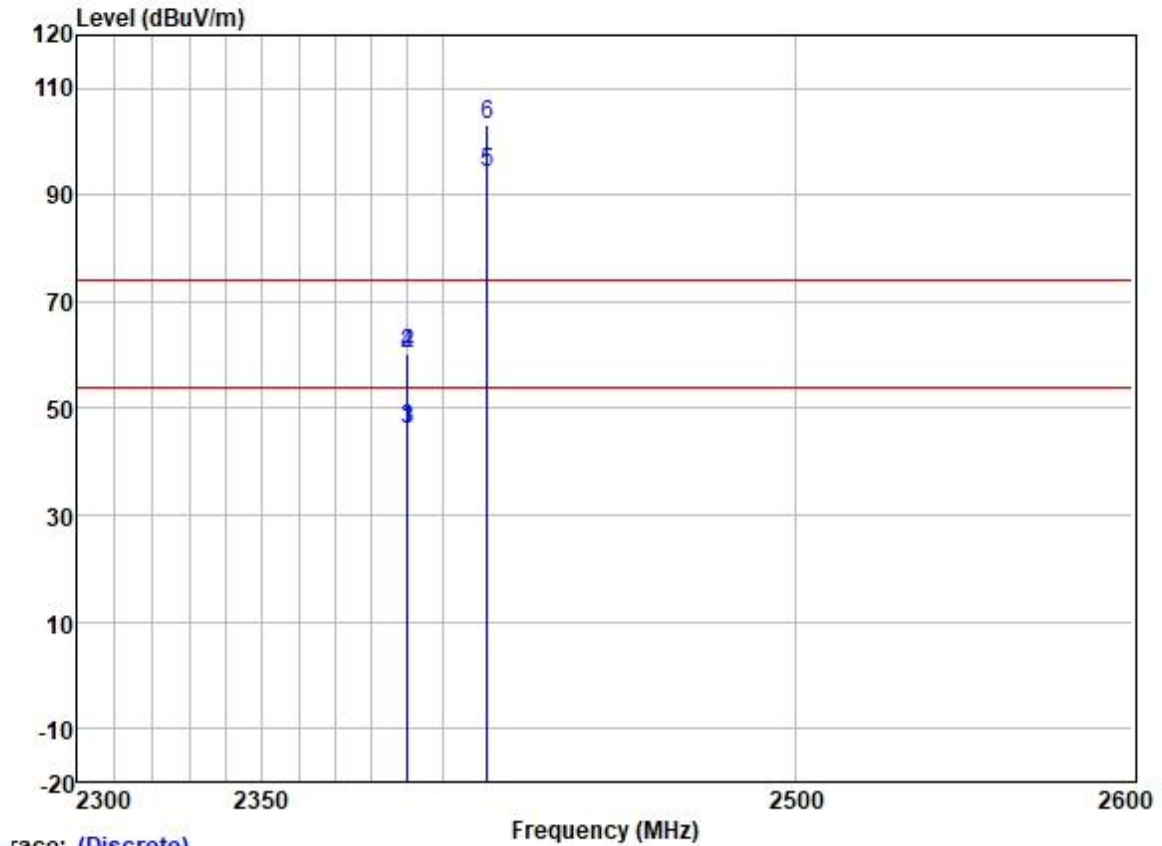
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11g; Bandwidth: 20MHz; Channel: Low



Trace: (Discrete)

	Freq	Read	Antenna	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	2389.847	53.70	27.33	3.48	37.59	46.92	54.00	-7.08	HORIZONTAL Average
2	2389.968	68.32	27.33	3.48	37.59	61.54	74.00	-12.46	HORIZONTAL Peak
3	2390.000	53.67	27.33	3.48	37.59	46.89	54.00	-7.11	HORIZONTAL Average
4	2390.000	68.32	27.33	3.48	37.59	61.54	74.00	-12.46	HORIZONTAL Peak
5 *	2412.000	103.48	27.38	3.47	37.59	96.74	54.00	42.74	HORIZONTAL Average
6 *	2412.000	113.58	27.38	3.47	37.59	106.84	74.00	32.84	HORIZONTAL Peak

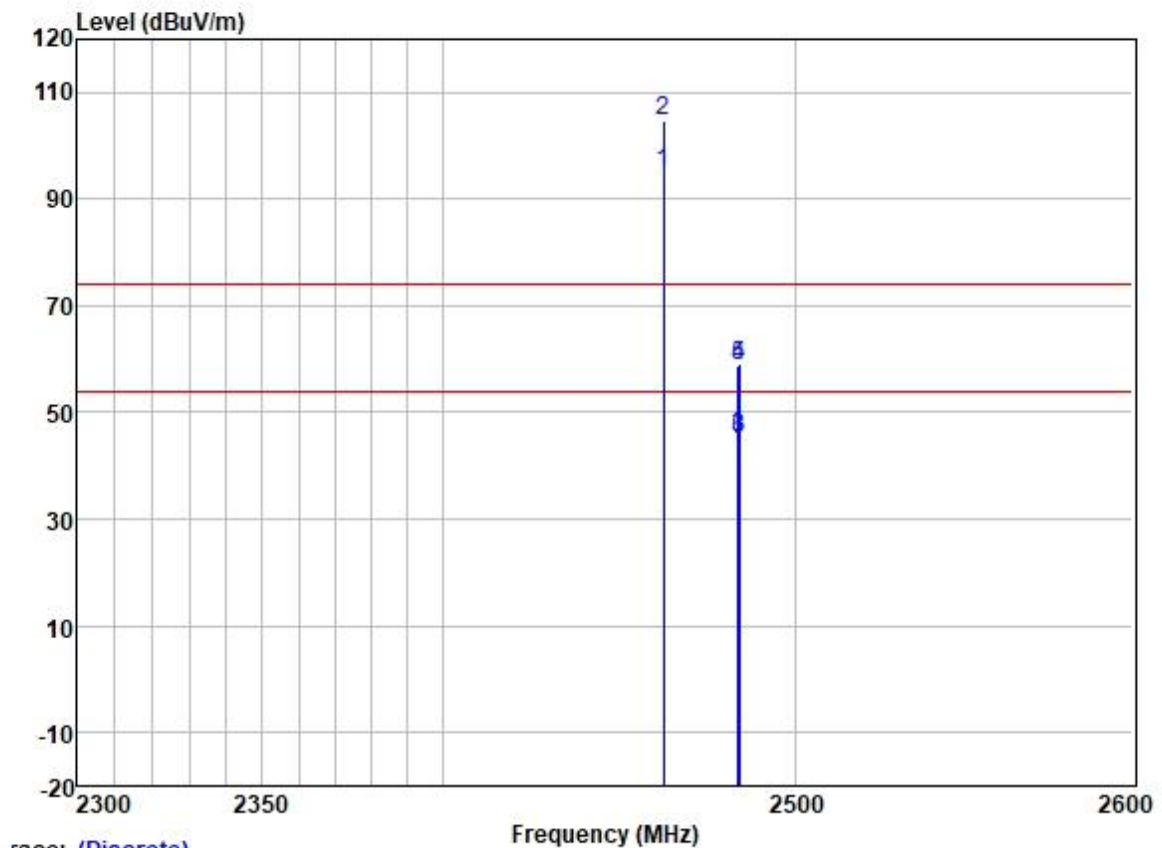
Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel: Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.968	52.93	27.33	3.48	37.59	46.15	54.00	-7.85	VERTICAL	Average
2	2389.968	66.90	27.33	3.48	37.59	60.12	74.00	-13.88	VERTICAL	Peak
3	2390.000	52.93	27.33	3.48	37.59	46.15	54.00	-7.85	VERTICAL	Average
4	2390.000	66.90	27.33	3.48	37.59	60.12	74.00	-13.88	VERTICAL	Peak
5 *	2412.000	100.94	27.38	3.47	37.59	94.20	54.00	40.20	VERTICAL	Average
6 *	2412.000	109.95	27.38	3.47	37.59	103.21	74.00	29.21	VERTICAL	Peak

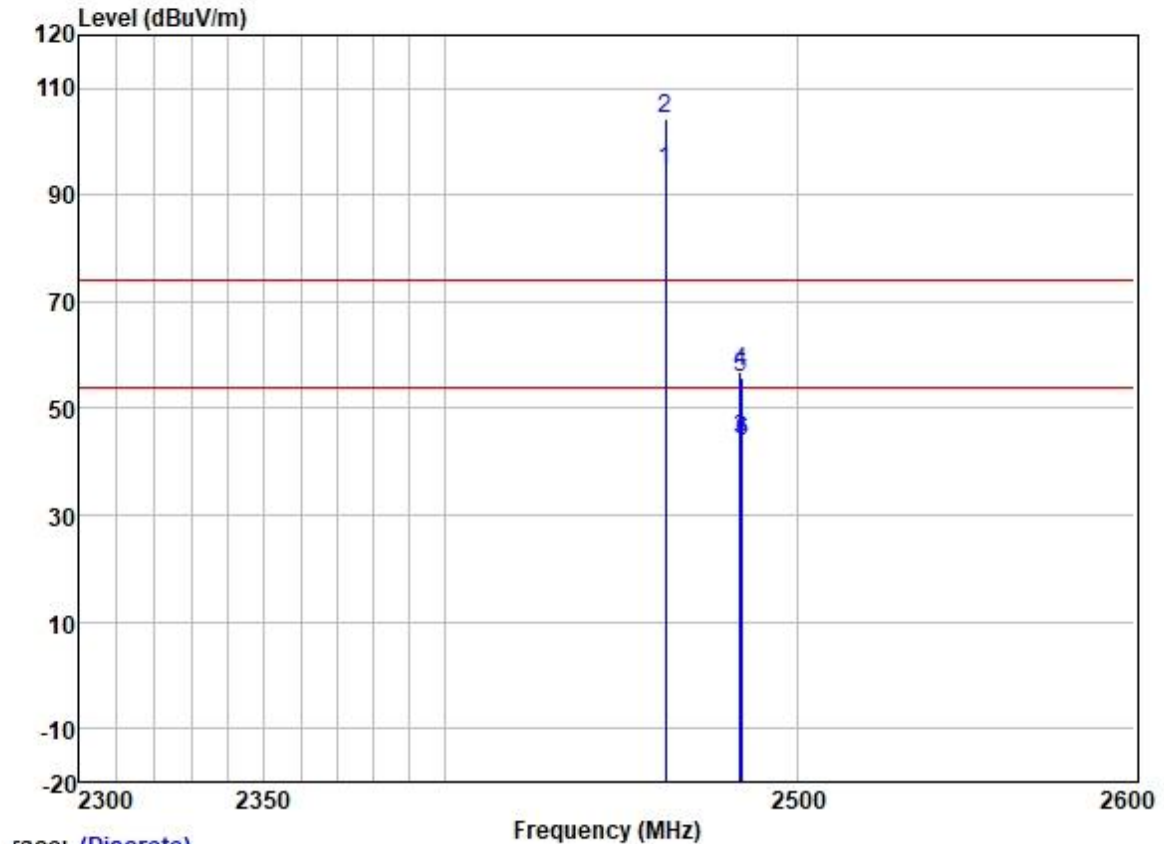
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11g; Bandwidth: 20MHz; Channel: High



race: (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	101.51	27.45	3.50	37.58	94.88	54.00	40.88	HORIZONTAL	Average
2 *	2462.000	111.22	27.45	3.50	37.58	104.59	74.00	30.59	HORIZONTAL	Peak
3	2483.500	51.92	27.48	3.53	37.57	45.36	54.00	-8.64	HORIZONTAL	Average
4	2483.500	65.22	27.48	3.53	37.57	58.66	74.00	-15.34	HORIZONTAL	Peak
5	2483.790	65.52	27.48	3.53	37.57	58.96	74.00	-15.04	HORIZONTAL	Peak
6	2483.890	51.34	27.48	3.53	37.57	44.78	54.00	-9.22	HORIZONTAL	Average

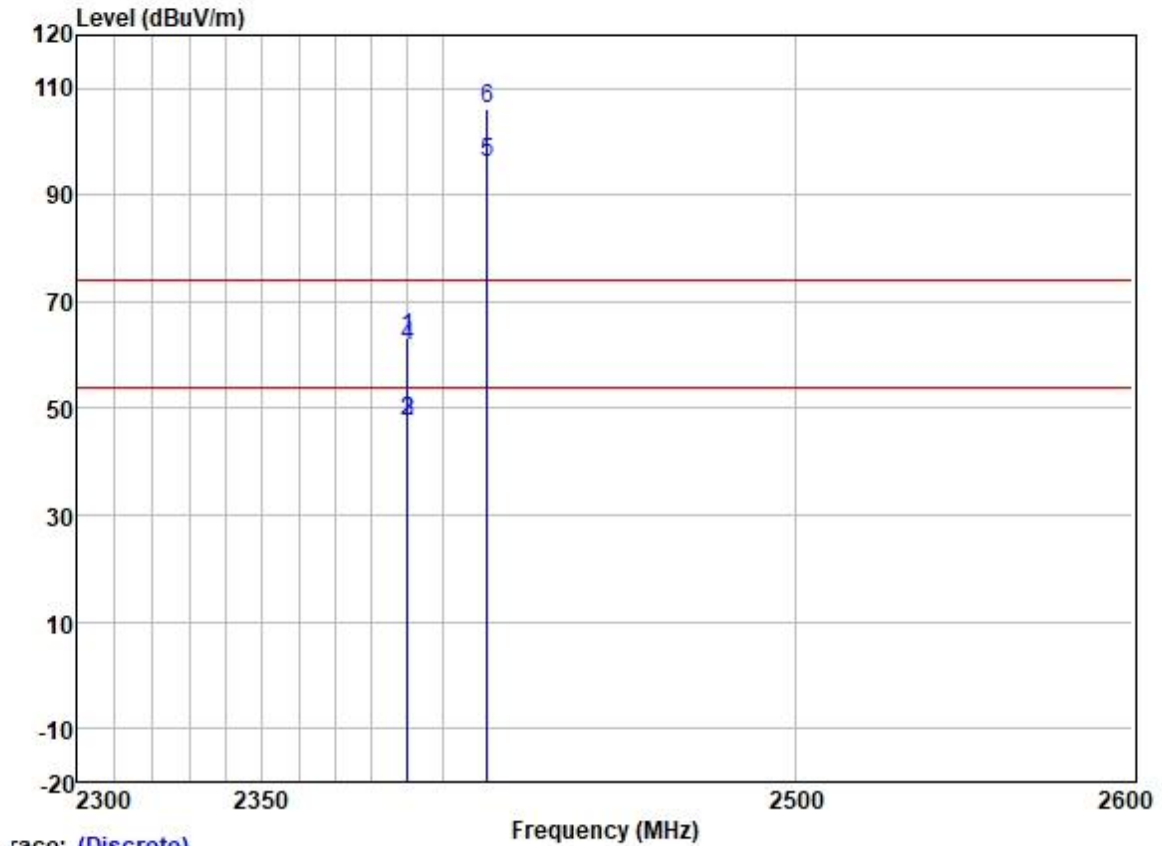
Test Mode: 00; Polarity: Vertical; Modulation: 802.11g; Bandwidth: 20MHz; Channel: High



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	101.37	27.45	3.50	37.58	94.74	54.00	40.74	VERTICAL	Average
2 *	2462.000	111.11	27.45	3.50	37.58	104.48	74.00	30.48	VERTICAL	Peak
3	2483.500	50.80	27.48	3.53	37.57	44.24	54.00	-9.76	VERTICAL	Average
4	2483.500	63.61	27.48	3.53	37.57	57.05	74.00	-16.95	VERTICAL	Peak
5	2483.790	62.37	27.48	3.53	37.57	55.81	74.00	-18.19	VERTICAL	Peak
6	2484.041	50.43	27.48	3.53	37.57	43.87	54.00	-10.13	VERTICAL	Average

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



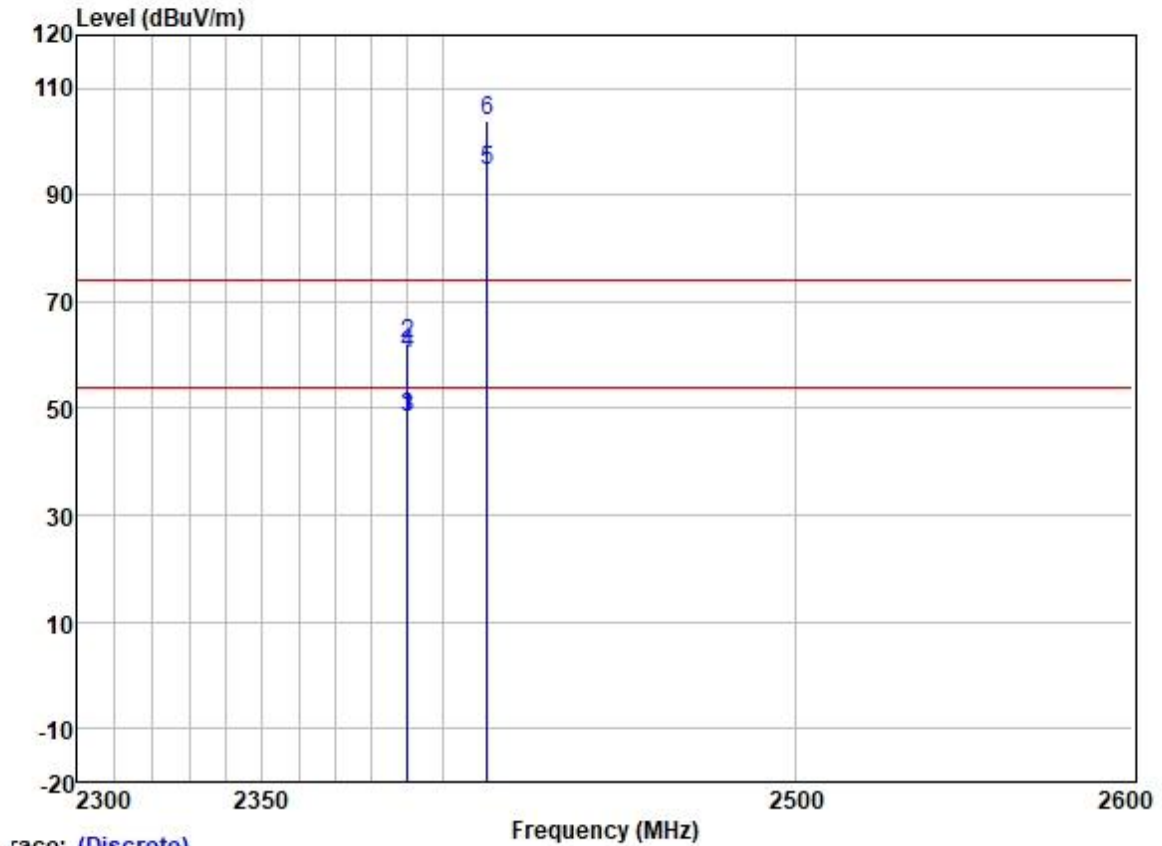
Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.847	69.95	27.33	3.48	37.59	63.17	74.00	-10.83	HORIZONTAL	Peak
2	2389.968	54.53	27.33	3.48	37.59	47.75	54.00	-6.25	HORIZONTAL	Average
3	2390.000	54.53	27.33	3.48	37.59	47.75	54.00	-6.25	HORIZONTAL	Average
4	2390.000	68.41	27.33	3.48	37.59	61.63	74.00	-12.37	HORIZONTAL	Peak
5 *	2412.000	102.96	27.38	3.47	37.59	96.22	54.00	42.22	HORIZONTAL	Average
6 *	2412.000	113.09	27.38	3.47	37.59	106.35	74.00	32.35	HORIZONTAL	Peak



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

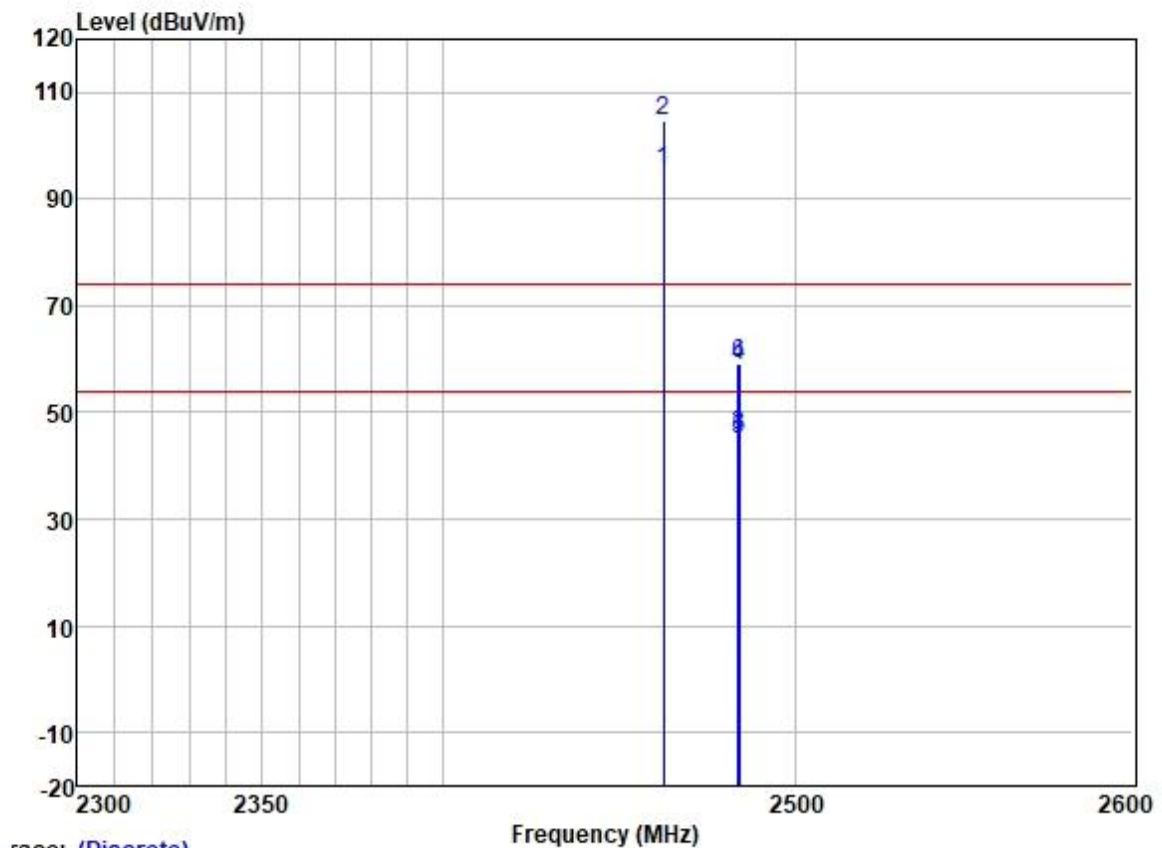
Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Trace: (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	2389.847	55.21	27.33	3.48	37.59	48.43	54.00	-5.57	VERTICAL	Average
2	2389.847	68.85	27.33	3.48	37.59	62.07	74.00	-11.93	VERTICAL	Peak
3	2390.000	55.18	27.33	3.48	37.59	48.40	54.00	-5.60	VERTICAL	Average
4	2390.000	67.22	27.33	3.48	37.59	60.44	74.00	-13.56	VERTICAL	Peak
5 *	2412.000	101.40	27.38	3.47	37.59	94.66	54.00	40.66	VERTICAL	Average
6 *	2412.000	110.66	27.38	3.47	37.59	103.92	74.00	29.92	VERTICAL	Peak

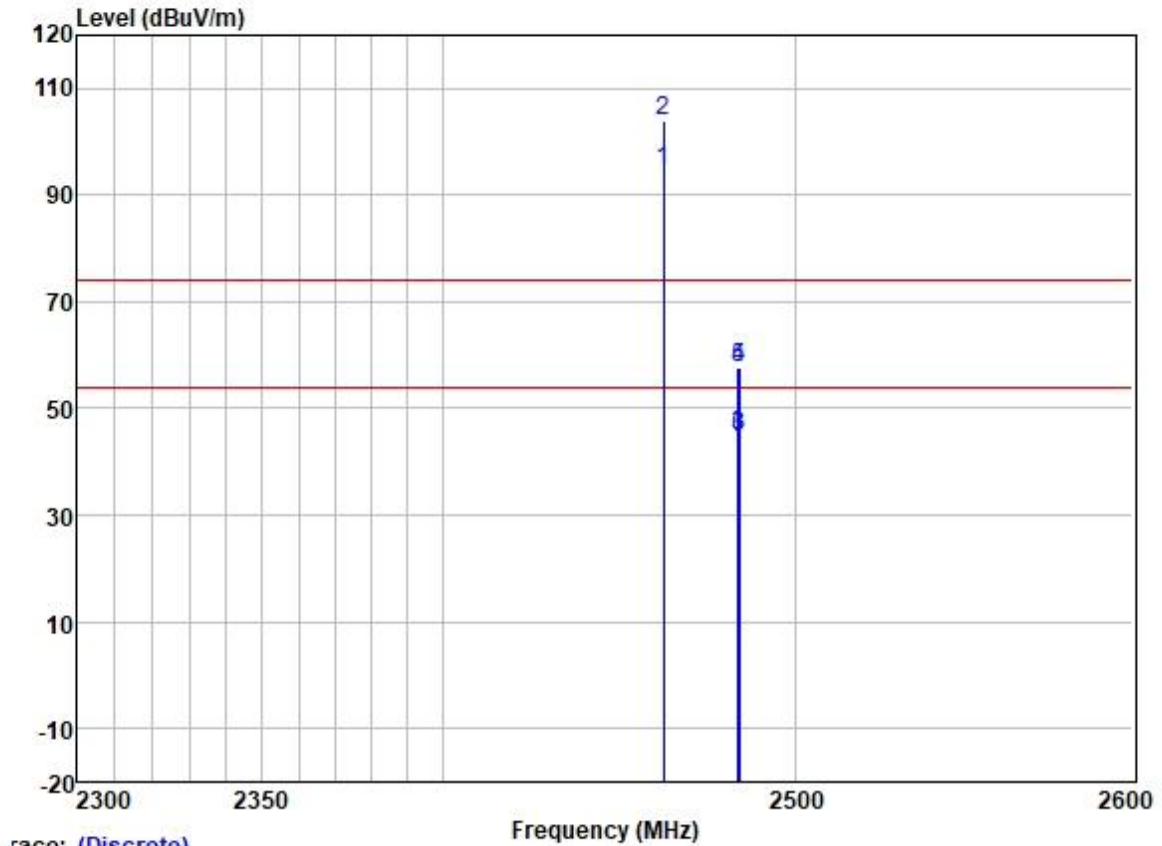
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 20MHz; Channel: High



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	101.81	27.45	3.50	37.58	95.18	54.00	41.18	HORIZONTAL	Average
2 *	2462.000	111.40	27.45	3.50	37.58	104.77	74.00	30.77	HORIZONTAL	Peak
3	2483.500	52.19	27.48	3.53	37.57	45.63	54.00	-8.37	HORIZONTAL	Average
4	2483.500	65.52	27.48	3.53	37.57	58.96	74.00	-15.04	HORIZONTAL	Peak
5	2483.790	51.67	27.48	3.53	37.57	45.11	54.00	-8.89	HORIZONTAL	Average
6	2483.890	65.83	27.48	3.53	37.57	59.27	74.00	-14.73	HORIZONTAL	Peak

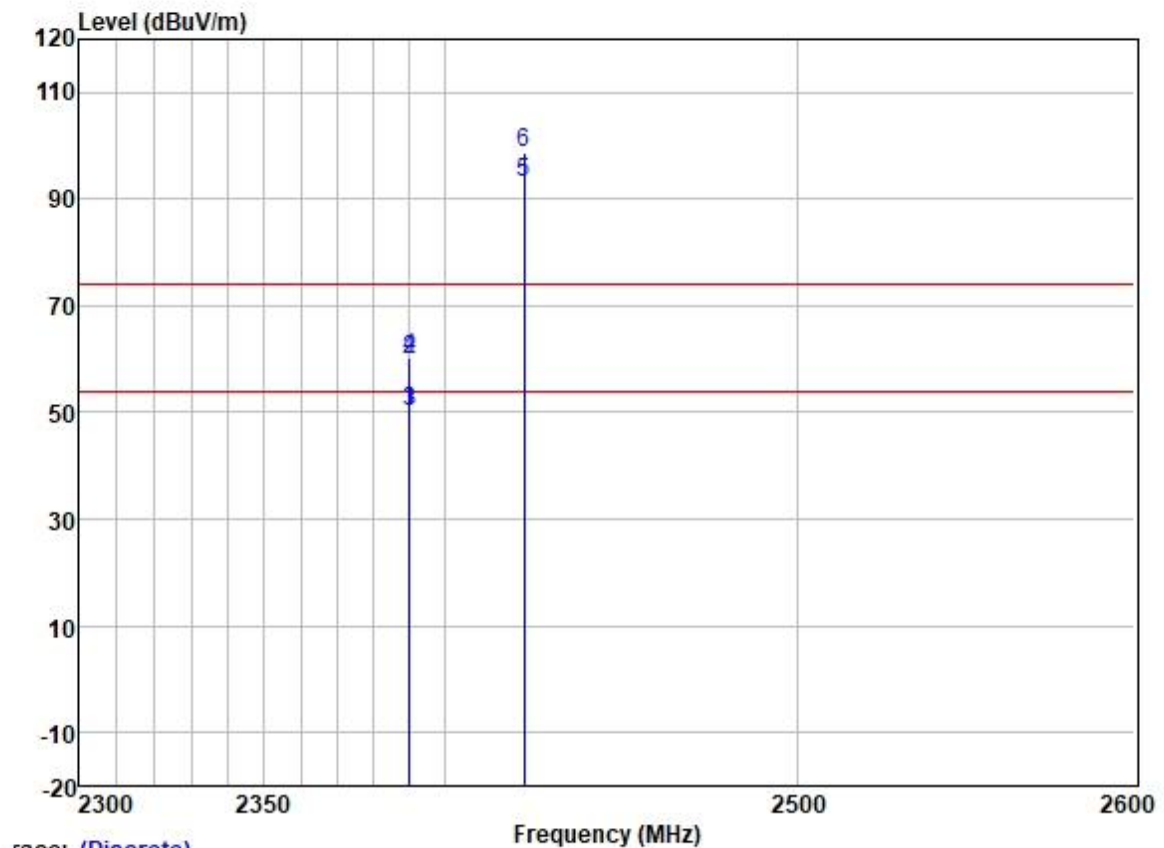
Test Mode: 00; Polarity: Vertical; Modulation: 802.11n; Bandwidth: 20MHz; Channel: High



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	101.42	27.45	3.50	37.58	94.79	54.00	40.79	VERTICAL	Average
2	*	2462.000	110.45	27.45	3.50	37.58	103.82	74.00	29.82	VERTICAL	Peak
3		2483.500	51.52	27.48	3.53	37.57	44.96	54.00	-9.04	VERTICAL	Average
4		2483.500	64.27	27.48	3.53	37.57	57.71	74.00	-16.29	VERTICAL	Peak
5		2483.790	64.10	27.48	3.53	37.57	57.54	74.00	-16.46	VERTICAL	Peak
6		2483.890	51.15	27.48	3.53	37.57	44.59	54.00	-9.41	VERTICAL	Average

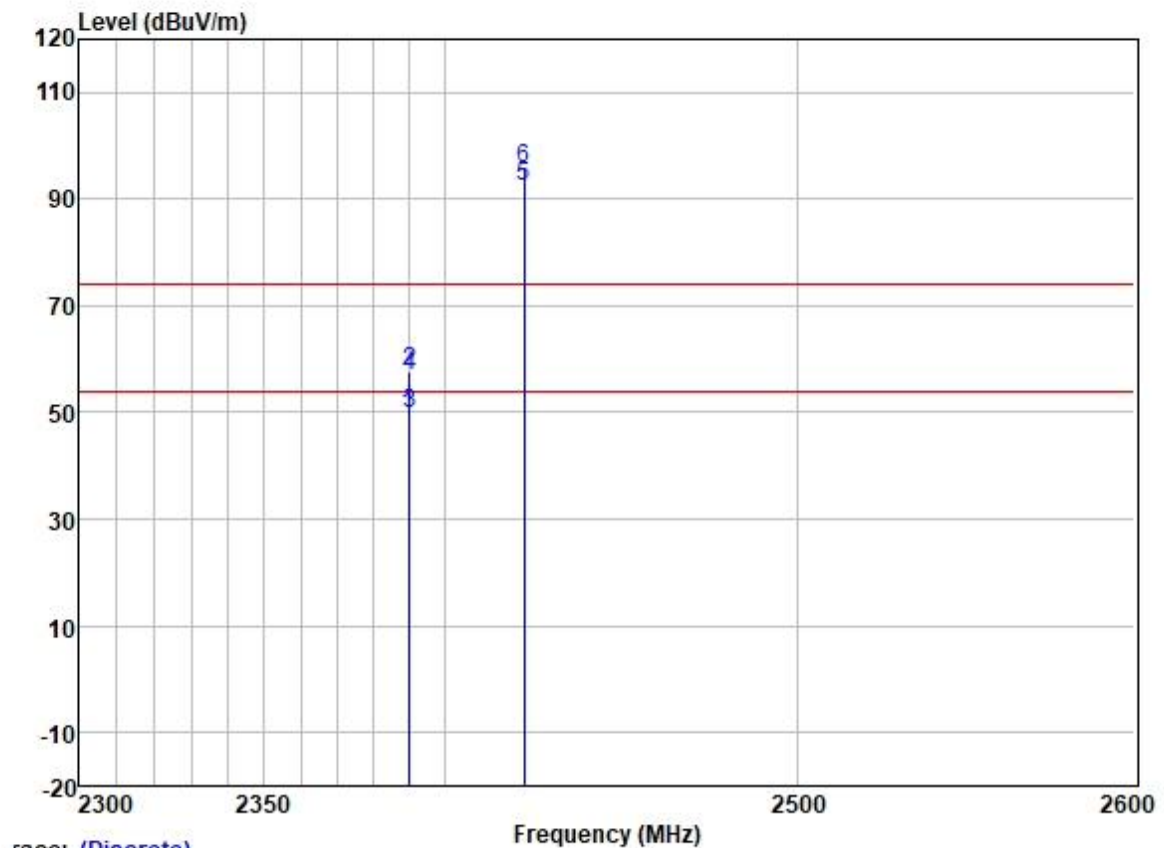
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 40MHz; Channel: Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.827	57.06	27.33	3.48	37.59	50.28	54.00	-3.72	HORIZONTAL	Average
2	2389.827	66.51	27.33	3.48	37.59	59.73	74.00	-14.27	HORIZONTAL	Peak
3	2390.000	57.10	27.33	3.48	37.59	50.32	54.00	-3.68	HORIZONTAL	Average
4	2390.000	67.15	27.33	3.48	37.59	60.37	74.00	-13.63	HORIZONTAL	Peak
5 *	2422.000	99.73	27.39	3.45	37.58	92.99	54.00	38.99	HORIZONTAL	Average
6 *	2422.000	105.63	27.39	3.45	37.58	98.89	74.00	24.89	HORIZONTAL	Peak

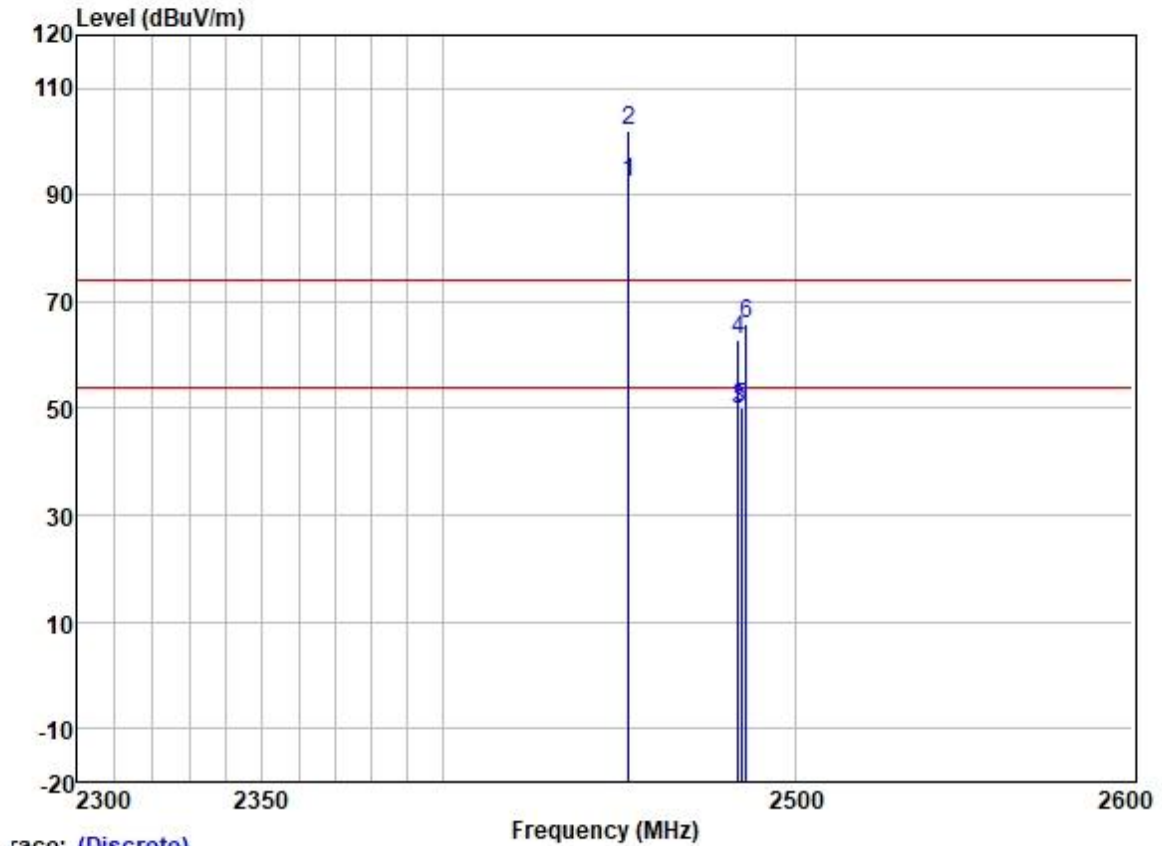
Test Mode: 00; Polarity: Vertical; Modulation: 802.11n; Bandwidth: 40MHz; Channel: Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.526	56.37	27.33	3.48	37.59	49.59	54.00	-4.41	VERTICAL	Average
2	2389.827	64.30	27.33	3.48	37.59	57.52	74.00	-16.48	VERTICAL	Peak
3	2390.000	56.56	27.33	3.48	37.59	49.78	54.00	-4.22	VERTICAL	Average
4	2390.000	63.86	27.33	3.48	37.59	57.08	74.00	-16.92	VERTICAL	Peak
5 *	2422.000	99.19	27.39	3.45	37.58	92.45	54.00	38.45	VERTICAL	Average
6 *	2422.000	102.41	27.39	3.45	37.58	95.67	74.00	21.67	VERTICAL	Peak

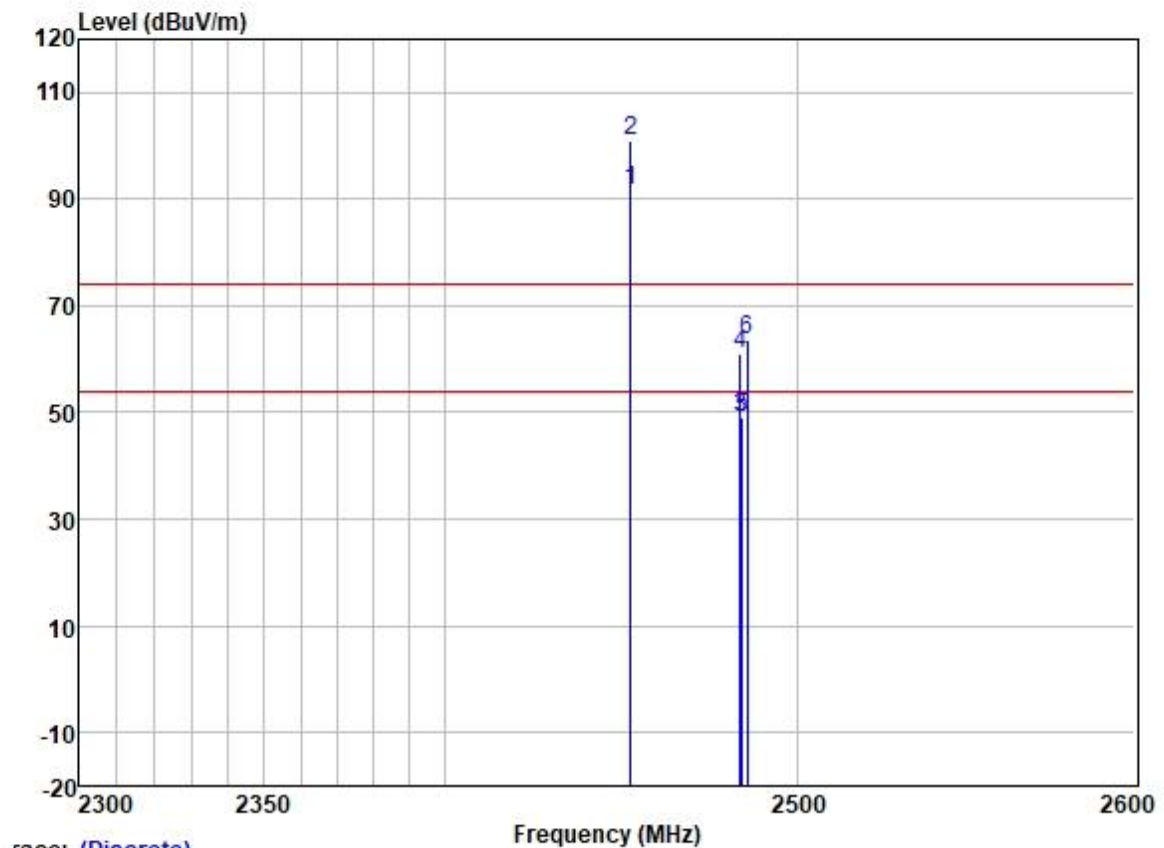
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 40MHz; Channel: High



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	*	2452.000	98.99	27.43	3.40	37.58	92.24	54.00	38.24	HORIZONTAL Average
2	*	2452.000	108.94	27.43	3.40	37.58	102.19	74.00	28.19	HORIZONTAL Peak
3		2483.500	56.34	27.48	3.53	37.57	49.78	54.00	-4.22	HORIZONTAL Average
4		2483.500	69.57	27.48	3.53	37.57	63.01	74.00	-10.99	HORIZONTAL Peak
5		2484.217	56.70	27.48	3.53	37.57	50.14	54.00	-3.86	HORIZONTAL Average
6		2485.770	72.38	27.48	3.53	37.57	65.82	74.00	-8.18	HORIZONTAL Peak

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



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1 *	2452.000	98.45	27.43	3.40	37.58	91.70	54.00	37.70	Average
2 *	2452.000	107.54	27.43	3.40	37.58	100.79	74.00	26.79	Peak
3	2483.500	55.66	27.48	3.53	37.57	49.10	54.00	-4.90	Average
4	2483.500	67.69	27.48	3.53	37.57	61.13	74.00	-12.87	Peak
5	2483.935	55.65	27.48	3.53	37.57	49.09	54.00	-4.91	Average
6	2485.417	70.36	27.48	3.53	37.57	63.80	74.00	-10.20	Peak

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

Limit:

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

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. Radiated emission limits in the two bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.8 °C Humidity: 52.4 % RH Atmospheric Pressure: 1003 mbar

7.8.2 Test Mode Description

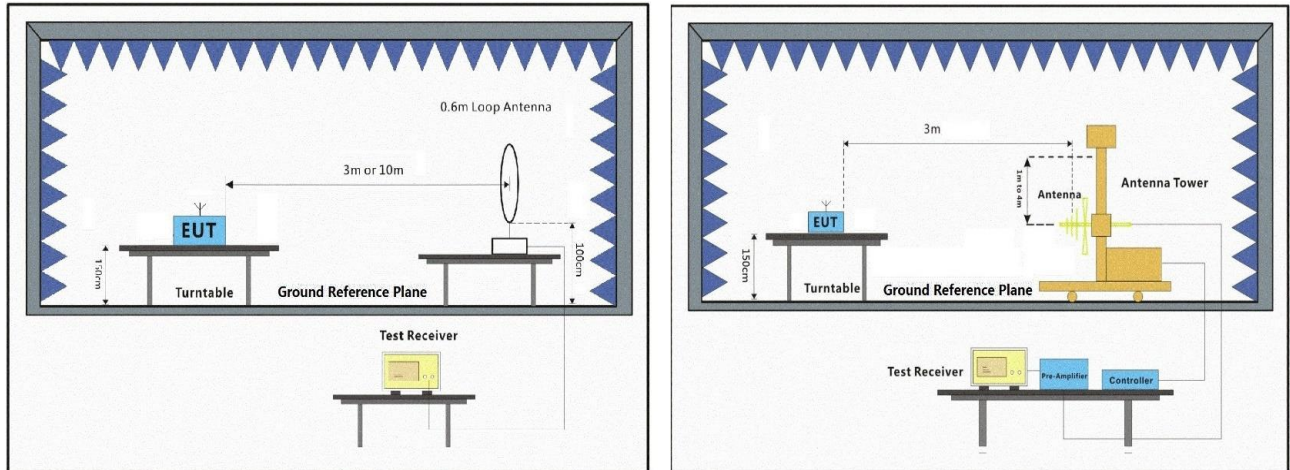
Pre-scan / Mode
Final test Code Description

Pre-scan 00 TX mode(2.4G Wi-Fi)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

Final test 01 Charge + TX mode(2.4G Wi-Fi)_Keep the EUT in charging and 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.



7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

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

Remark:

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

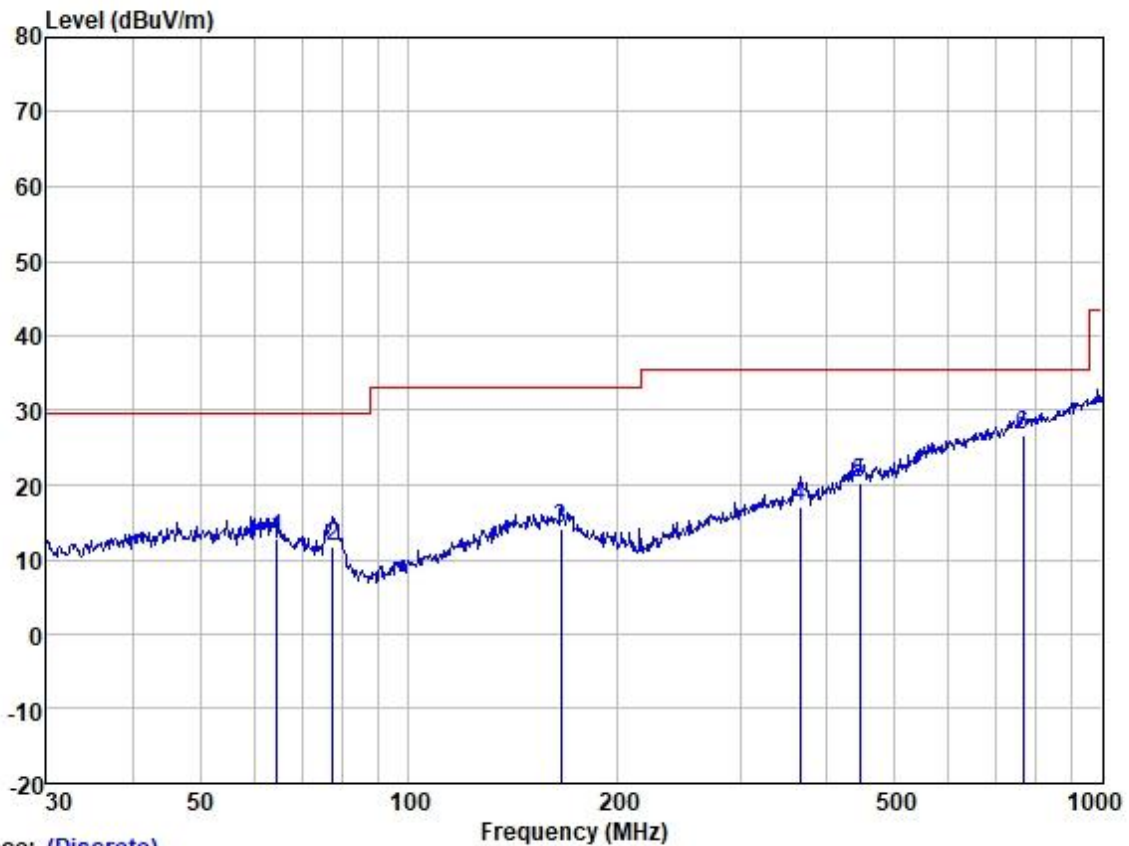
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

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



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



Trace: (Discrete)

Site : SGS

Condition:

Job :

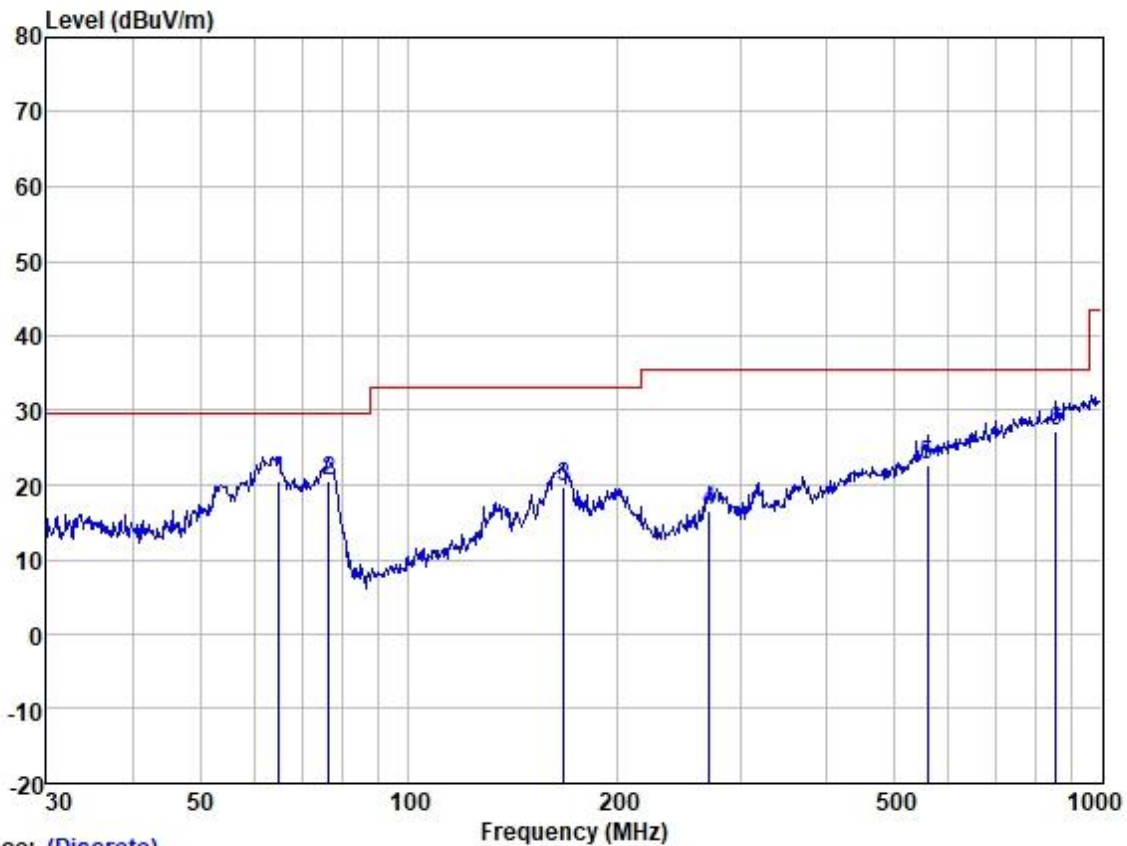
Model :

Power :

Test Mode: 2.4G WIFI

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	64.433	25.18	13.35	1.34	27.15	12.72	29.50	-16.78	HORIZONTAL	QP
2	77.593	27.96	9.47	1.46	27.10	11.79	29.50	-17.71	HORIZONTAL	QP
3	165.487	25.43	13.00	2.37	26.78	14.02	33.10	-19.08	HORIZONTAL	QP
4	366.823	25.71	14.81	3.76	27.17	17.11	35.60	-18.49	HORIZONTAL	QP
5	446.414	26.74	17.00	4.19	27.65	20.28	35.60	-15.32	HORIZONTAL	QP
6	768.748	26.41	22.14	6.05	28.06	26.54	35.60	-9.06	HORIZONTAL	QP

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



Trace: (Discrete)

Site : SGS

Condition:

Job :

Model :

Power :

Test Mode: 2.4G WIFI

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	64.887	33.38	13.05	1.35	27.15	20.63	29.50	-8.87	VERTICAL	QP
2	76.512	36.31	9.81	1.46	27.10	20.48	29.50	-9.02	VERTICAL	QP
3	167.237	31.25	12.87	2.38	26.78	19.72	33.10	-13.38	VERTICAL	QP
4	271.325	27.66	12.53	3.06	26.58	16.67	35.60	-18.93	VERTICAL	QP
5	558.730	27.39	18.47	4.88	28.13	22.61	35.60	-12.99	VERTICAL	QP
6	857.025	25.99	22.57	6.63	27.91	27.28	35.60	-8.32	VERTICAL	QP

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L₃: Level @ 3m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

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
64.433	12.72	4.33	14.42	23.18	40	-16.82	H
77.593	11.79	3.89	12.95	22.25	40	-17.75	H
165.487	14.02	5.02	16.74	24.48	43.5	-19.02	H
366.823	17.11	7.17	23.90	27.57	46	-18.43	H
446.414	20.28	10.33	34.43	30.74	46	-15.26	H
768.748	26.54	21.23	70.77	37.00	46	-9.00	H
64.887	20.63	10.75	35.84	31.09	40	-8.91	V
76.512	20.48	10.57	35.23	30.94	40	-9.06	V
167.237	19.72	9.68	32.28	30.18	43.5	-13.32	V
271.325	16.67	6.82	22.72	27.13	46	-18.87	V
558.730	22.61	13.51	45.02	33.07	46	-12.93	V
857.025	27.28	23.12	77.07	37.74	46	-8.26	V



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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

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 6.6

Measurement Distance: 3m

Limit:

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

Remark: The emission limits shown in the above table 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: 23.1 °C

Humidity: 53.5 % RH

Atmospheric Pressure: 1003 mbar

7.9.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

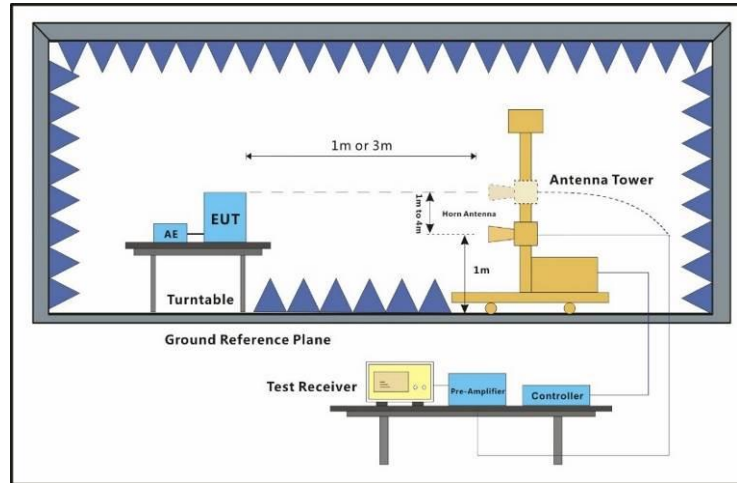
Final test 00 TX mode(2.4G Wi-Fi)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

Pre-scan 01 Charge + TX mode(2.4G Wi-Fi)_Keep the EUT in charging and 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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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:

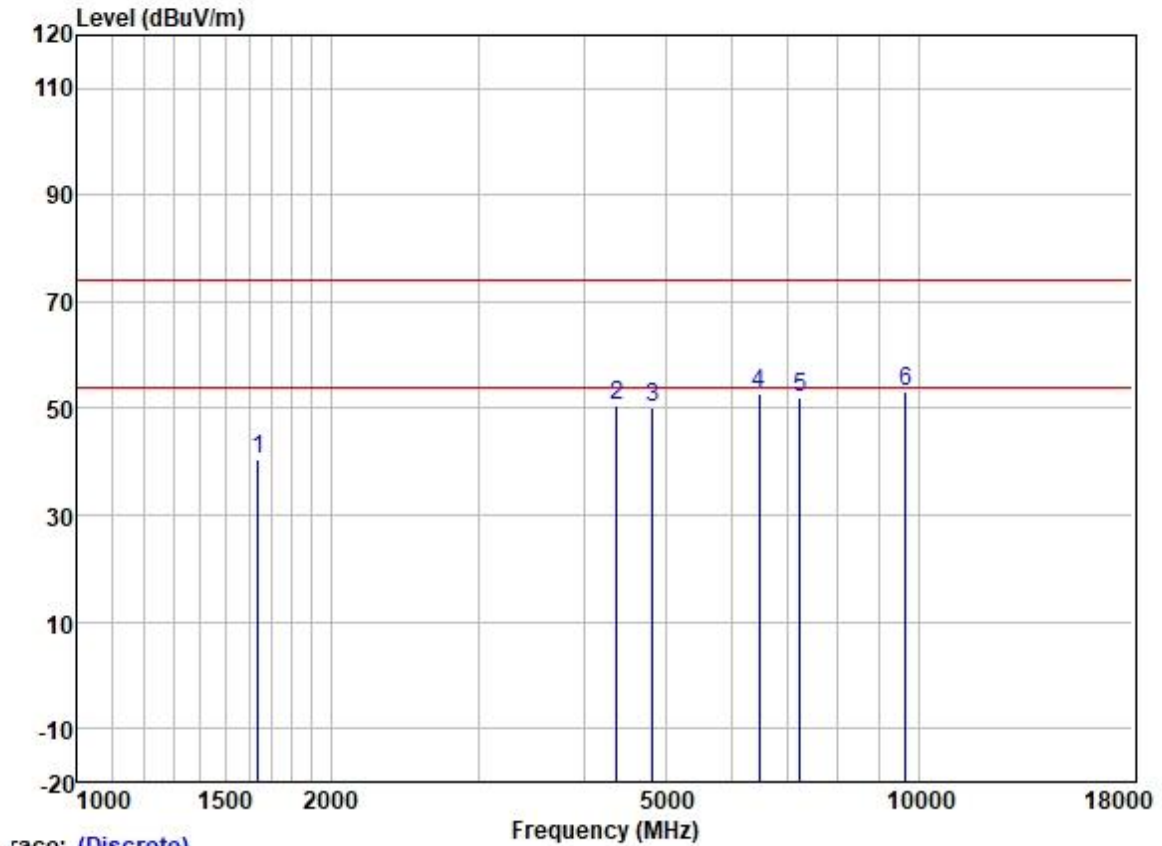
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

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.



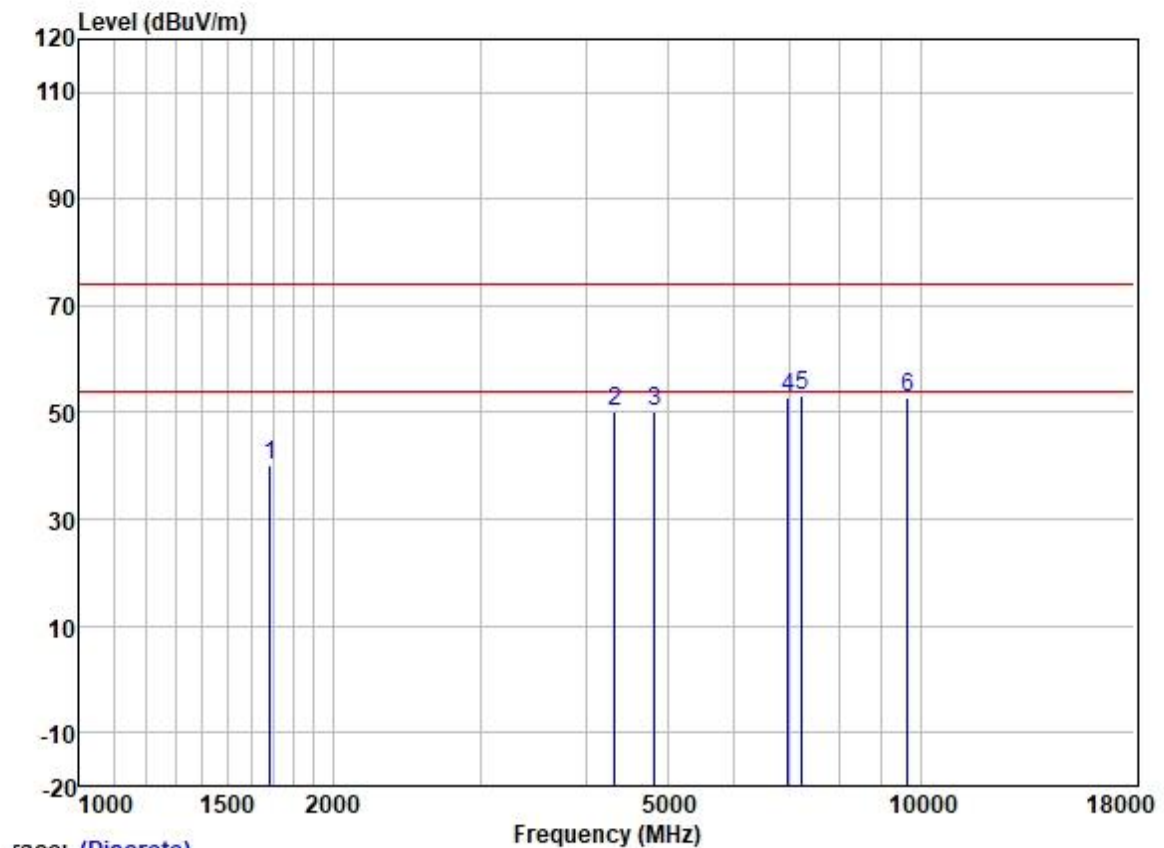
Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel: Low



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1639.274	50.11	25.62	2.80	37.93	40.60	74.00	-33.40	HORIZONTAL	Peak
2	4379.699	52.18	30.64	4.69	36.81	50.70	74.00	-23.30	HORIZONTAL	Peak
3	4824.000	50.25	31.45	5.42	36.83	50.29	74.00	-23.71	HORIZONTAL	Peak
4	6470.026	49.99	33.92	5.86	37.00	52.77	74.00	-21.23	HORIZONTAL	Peak
5	7236.000	47.77	35.70	6.03	37.39	52.11	74.00	-21.89	HORIZONTAL	Peak
6	9648.000	45.26	38.40	7.06	37.42	53.30	74.00	-20.70	HORIZONTAL	Peak

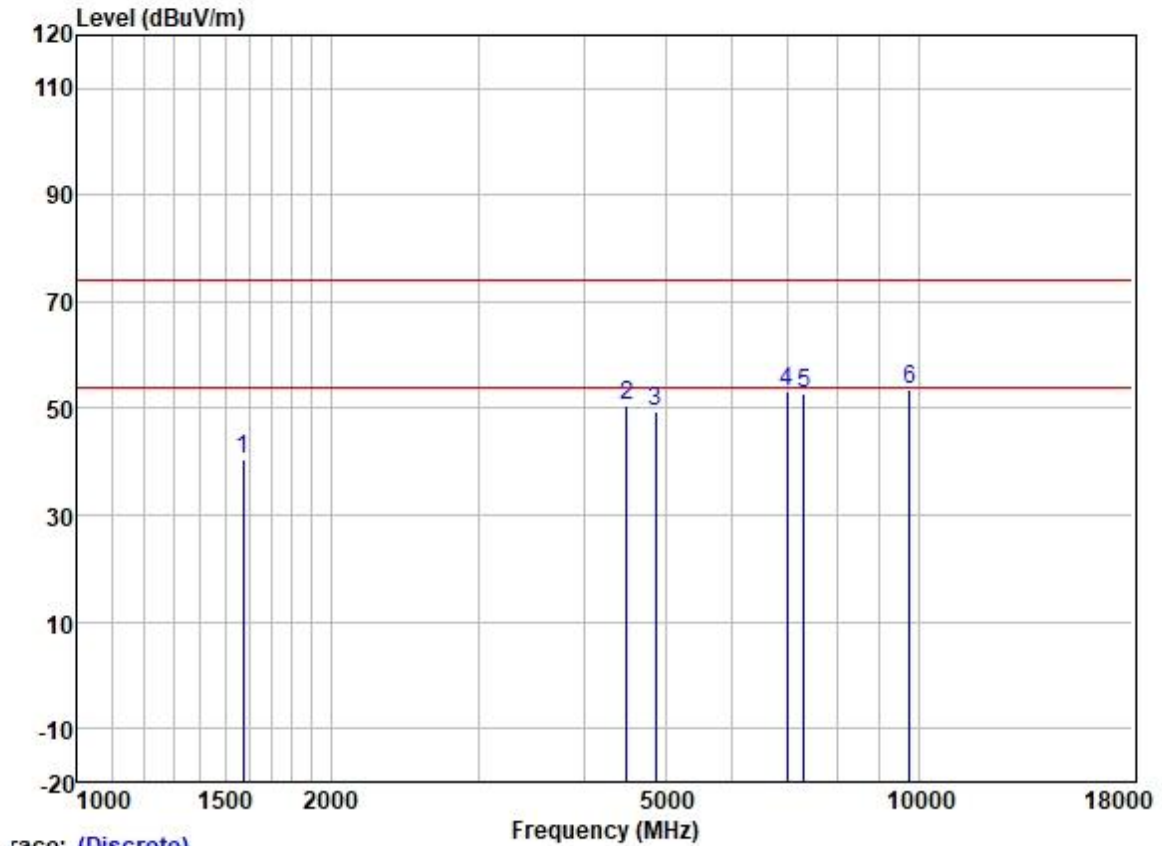
Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel: Low



Trace: (Discrete)

	Freq	Read	Antenna	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	1687.347	49.60	25.69	2.80	37.91	40.18	74.00	-33.82	VERTICAL Peak
2	4329.354	51.91	30.54	4.67	36.81	50.31	74.00	-23.69	VERTICAL Peak
3	4824.000	49.98	31.45	5.42	36.83	50.02	74.00	-23.98	VERTICAL Peak
4	6954.852	49.40	34.95	5.81	37.21	52.95	74.00	-21.05	VERTICAL Peak
5	7236.000	48.75	35.70	6.03	37.39	53.09	74.00	-20.91	VERTICAL Peak
6	9648.000	44.75	38.40	7.06	37.42	52.79	74.00	-21.21	VERTICAL Peak

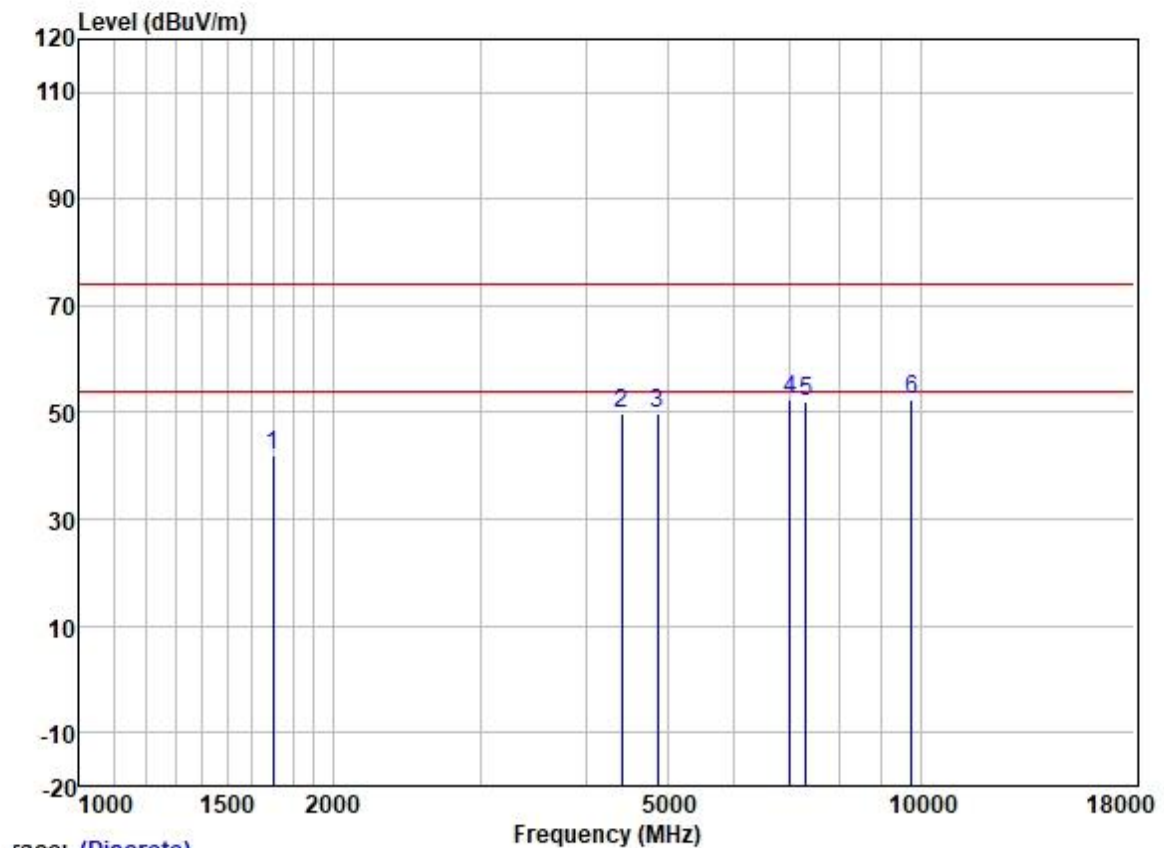
Test Mode: 00; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel: middle



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1574.265	50.02	25.56	2.80	38.00	40.38	74.00	-33.62	HORIZONTAL	Peak
2	4495.125	51.58	30.80	5.05	36.82	50.61	74.00	-23.39	HORIZONTAL	Peak
3	4874.000	49.36	31.54	5.50	36.84	49.56	74.00	-24.44	HORIZONTAL	Peak
4	6974.982	49.50	34.97	5.81	37.23	53.05	74.00	-20.95	HORIZONTAL	Peak
5	7311.000	48.27	35.93	6.11	37.42	52.89	74.00	-21.11	HORIZONTAL	Peak
6	9748.000	45.29	38.50	7.02	37.41	53.40	74.00	-20.60	HORIZONTAL	Peak

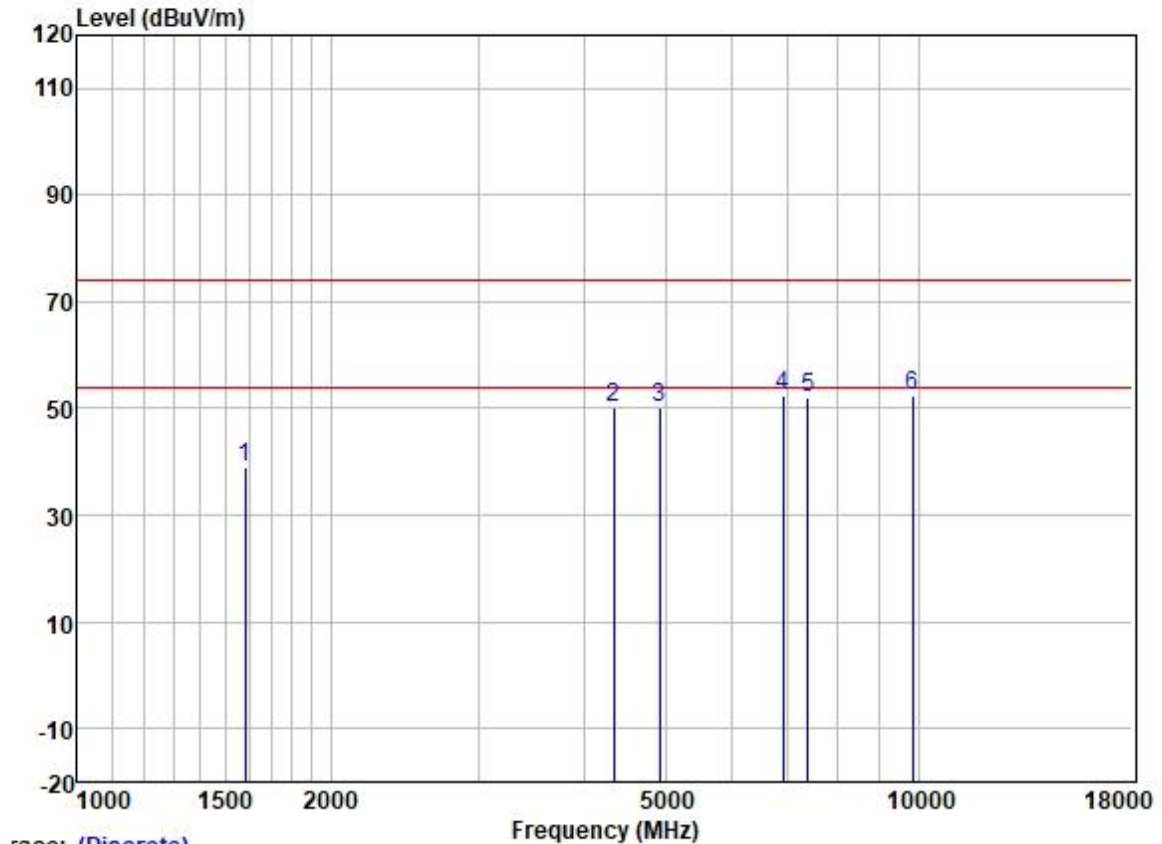
Test Mode: 00; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel: middle



Trace: (Discrete)

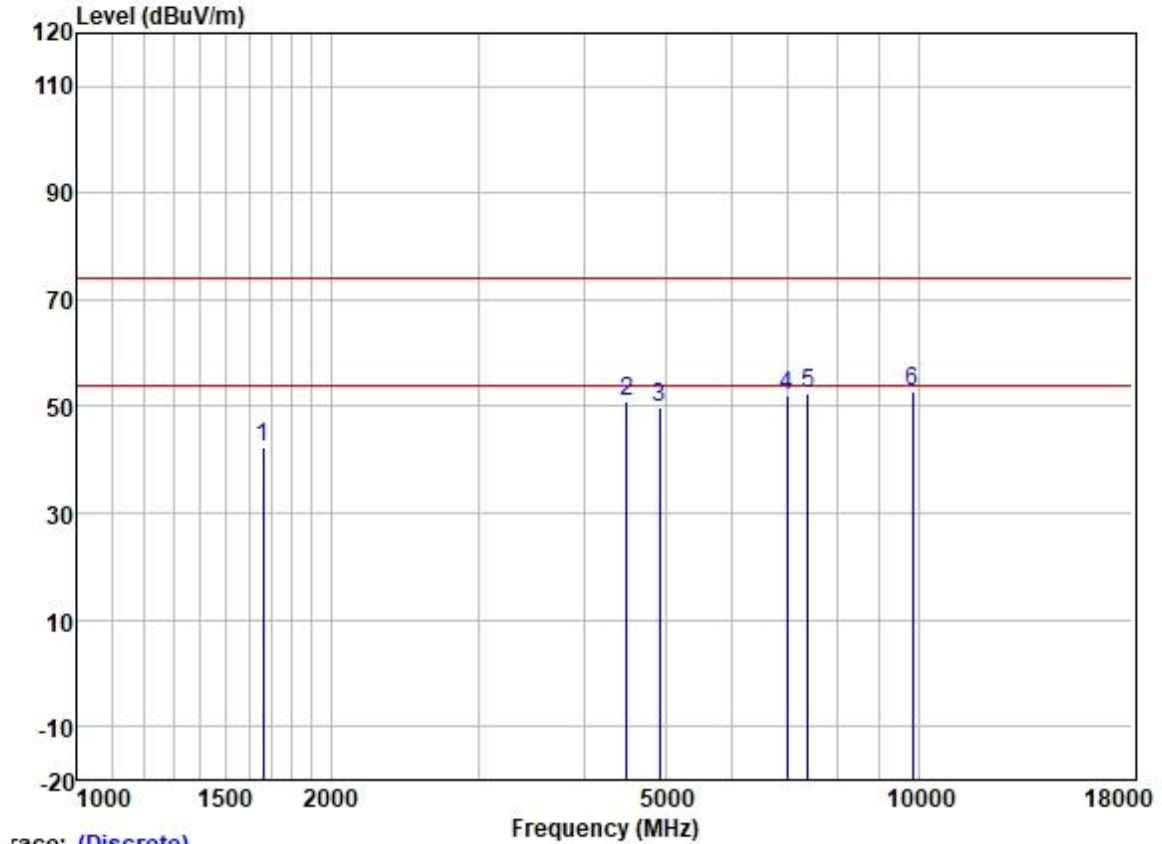
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1697.129	51.49	25.71	2.80	37.89	42.11	74.00	-31.89	VERTICAL	Peak
2	4417.841	51.31	30.70	4.74	36.81	49.94	74.00	-24.06	VERTICAL	Peak
3	4874.000	49.48	31.54	5.50	36.84	49.68	74.00	-24.32	VERTICAL	Peak
4	6995.172	48.86	35.00	5.81	37.25	52.42	74.00	-21.58	VERTICAL	Peak
5	7311.000	47.40	35.93	6.11	37.42	52.02	74.00	-21.98	VERTICAL	Peak
6	9748.000	44.34	38.50	7.02	37.41	52.45	74.00	-21.55	VERTICAL	Peak

Test Mode: 00; Polarity: Horizontal; Modulation: 802.11b; 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	1583.392	48.75	25.56	2.80	38.00	39.11	74.00	-34.89	HORIZONTAL	Peak
2	4341.886	51.86	30.57	4.67	36.81	50.29	74.00	-23.71	HORIZONTAL	Peak
3	4924.000	49.69	31.62	5.60	36.84	50.07	74.00	-23.93	HORIZONTAL	Peak
4	6894.806	48.98	34.85	5.81	37.18	52.46	74.00	-21.54	HORIZONTAL	Peak
5	7386.000	46.99	36.17	6.19	37.45	51.90	74.00	-22.10	HORIZONTAL	Peak
6	9848.000	44.33	38.58	6.99	37.41	52.49	74.00	-21.51	HORIZONTAL	Peak

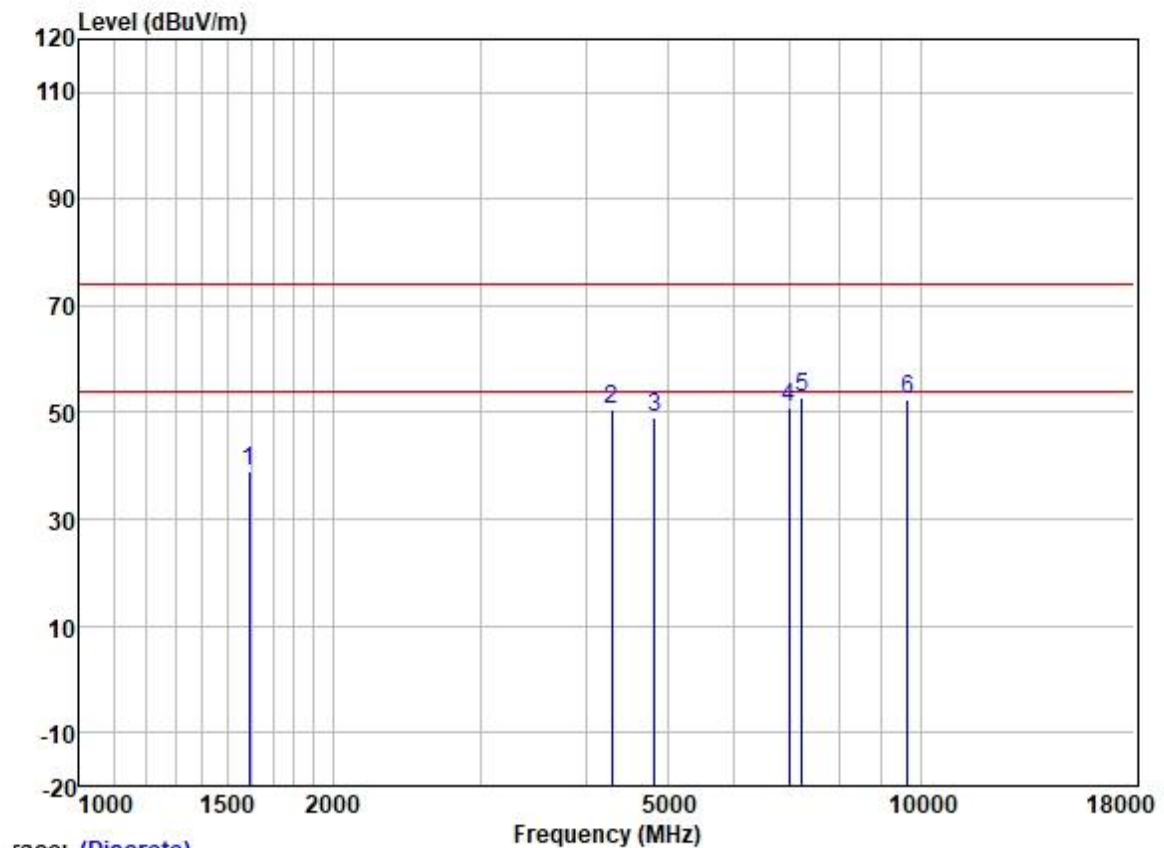
Test Mode: 00; Polarity: Vertical; Modulation: 802.11b; Bandwidth: 20MHz; Channel: High



Trace: (Discrete)

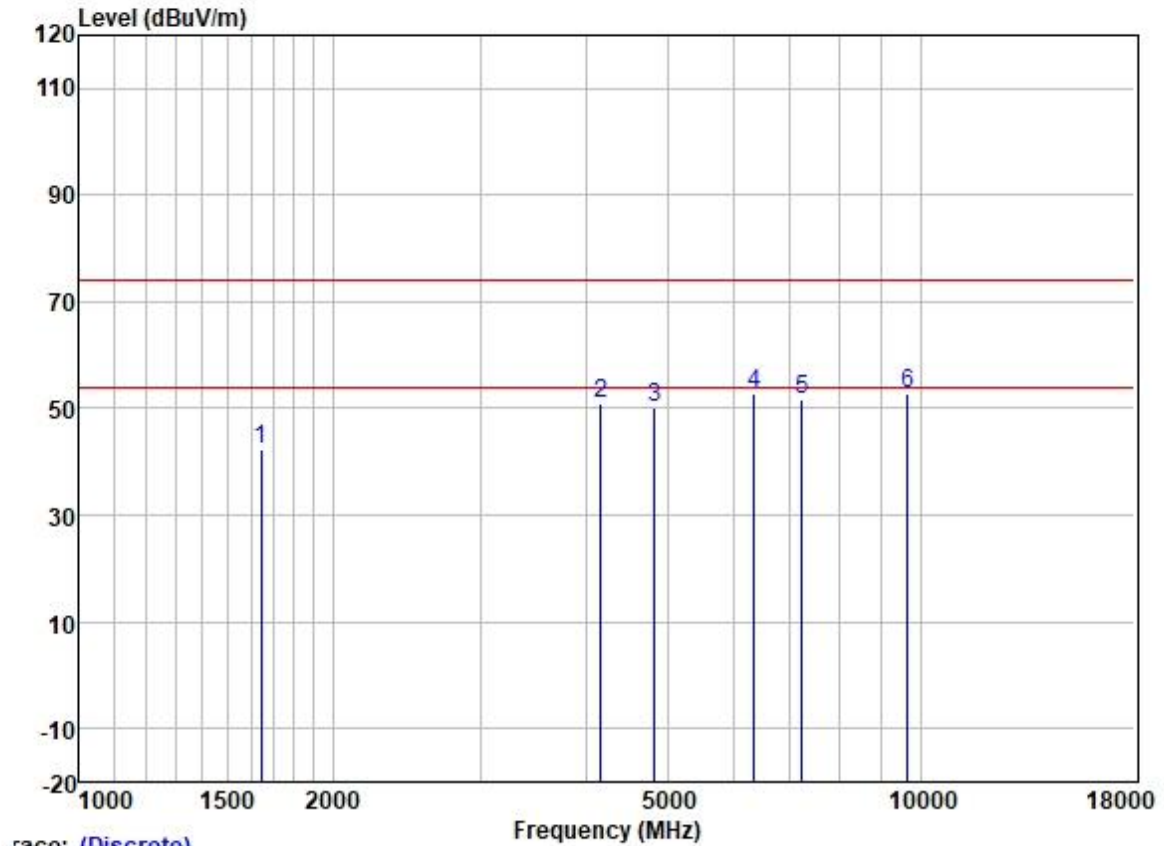
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	51.92	25.65	2.80	37.91	42.46	74.00	-31.54	VERTICAL	Peak
2	4495.125	52.01	30.80	5.05	36.82	51.04	74.00	-22.96	VERTICAL	Peak
3	4924.000	49.60	31.62	5.60	36.84	49.98	74.00	-24.02	VERTICAL	Peak
4	6974.982	48.58	34.97	5.81	37.23	52.13	74.00	-21.87	VERTICAL	Peak
5	7386.000	47.42	36.17	6.19	37.45	52.33	74.00	-21.67	VERTICAL	Peak
6	9848.000	44.68	38.58	6.99	37.41	52.84	74.00	-21.16	VERTICAL	Peak

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



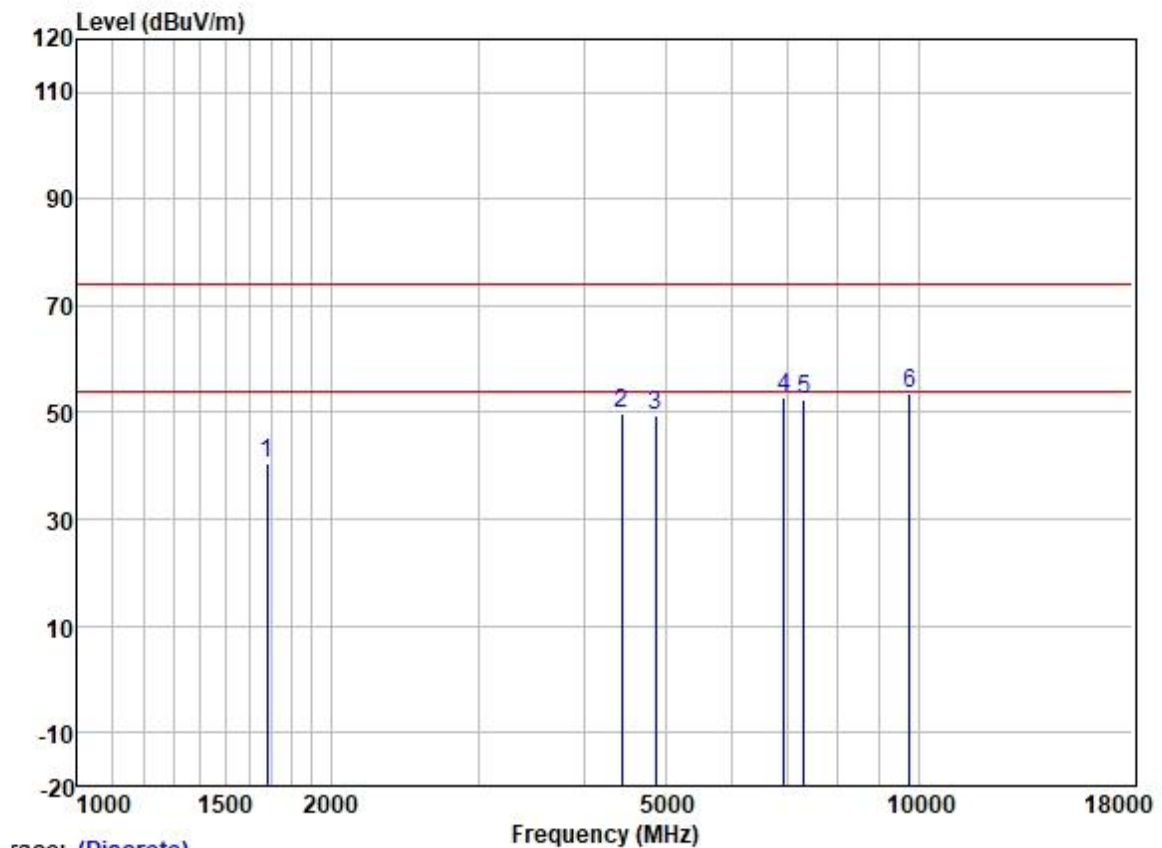
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1592.571	48.44	25.57	2.80	37.98	38.83	74.00	-35.17	HORIZONTAL	Peak
2	4291.977	52.13	30.45	4.64	36.81	50.41	74.00	-23.59	HORIZONTAL	Peak
3	4824.000	48.99	31.45	5.42	36.83	49.03	74.00	-24.97	HORIZONTAL	Peak
4	6974.982	47.32	34.97	5.81	37.23	50.87	74.00	-23.13	HORIZONTAL	Peak
5	7236.000	48.48	35.70	6.03	37.39	52.82	74.00	-21.18	HORIZONTAL	Peak
6	9648.000	44.46	38.40	7.06	37.42	52.50	74.00	-21.50	HORIZONTAL	Peak

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



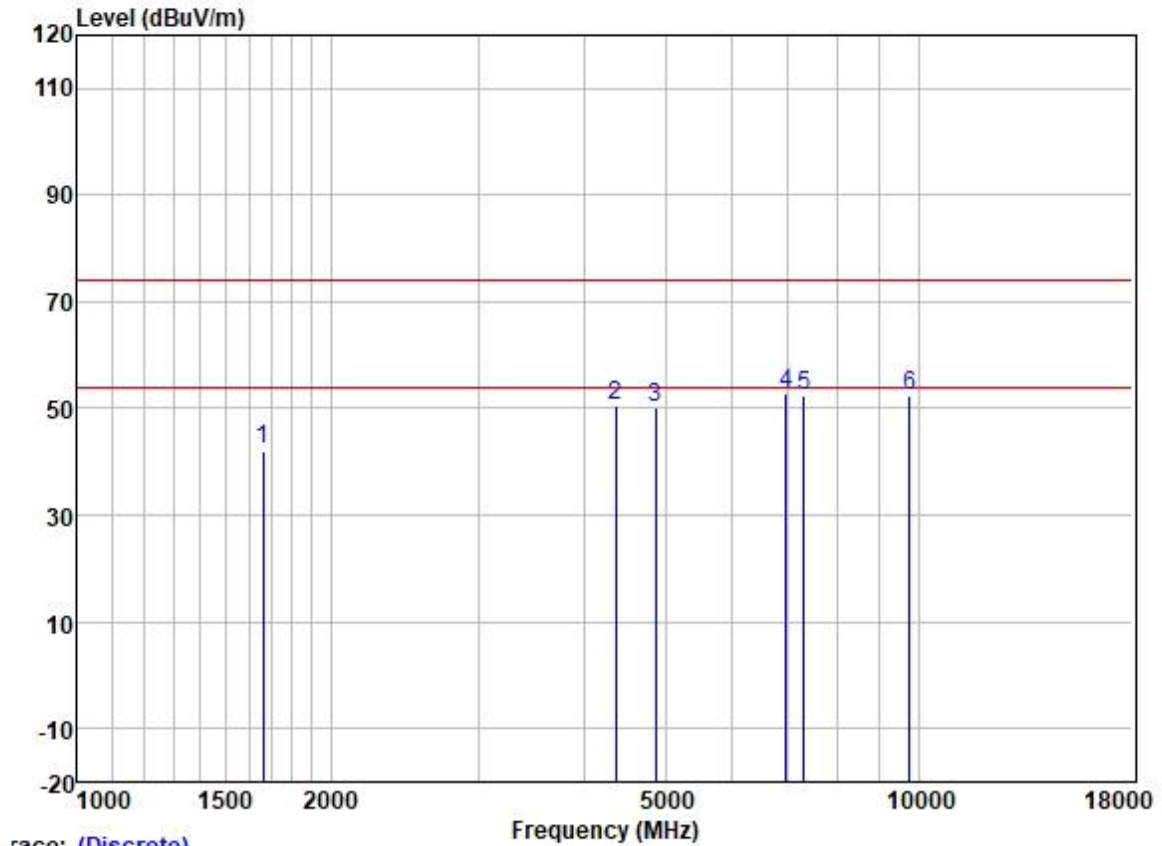
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1644.019	51.72	25.63	2.80	37.93	42.22	74.00	-31.78	VERTICAL	Peak
2	4169.698	53.22	30.09	4.60	36.80	51.11	74.00	-22.89	VERTICAL	Peak
3	4824.000	50.16	31.45	5.42	36.83	50.20	74.00	-23.80	VERTICAL	Peak
4	6340.436	50.17	33.57	5.94	36.97	52.71	74.00	-21.29	VERTICAL	Peak
5	7236.000	47.28	35.70	6.03	37.39	51.62	74.00	-22.38	VERTICAL	Peak
6	9648.000	44.83	38.40	7.06	37.42	52.87	74.00	-21.13	VERTICAL	Peak

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



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1682.477	49.85	25.68	2.80	37.91	40.42	74.00	-33.58	HORIZONTAL	Peak
2	4443.453	51.18	30.73	4.83	36.81	49.93	74.00	-24.07	HORIZONTAL	Peak
3	4874.000	49.22	31.54	5.50	36.84	49.42	74.00	-24.58	HORIZONTAL	Peak
4	6914.763	49.27	34.89	5.81	37.19	52.78	74.00	-21.22	HORIZONTAL	Peak
5	7311.000	47.75	35.93	6.11	37.42	52.37	74.00	-21.63	HORIZONTAL	Peak
6	9748.000	45.35	38.50	7.02	37.41	53.46	74.00	-20.54	HORIZONTAL	Peak

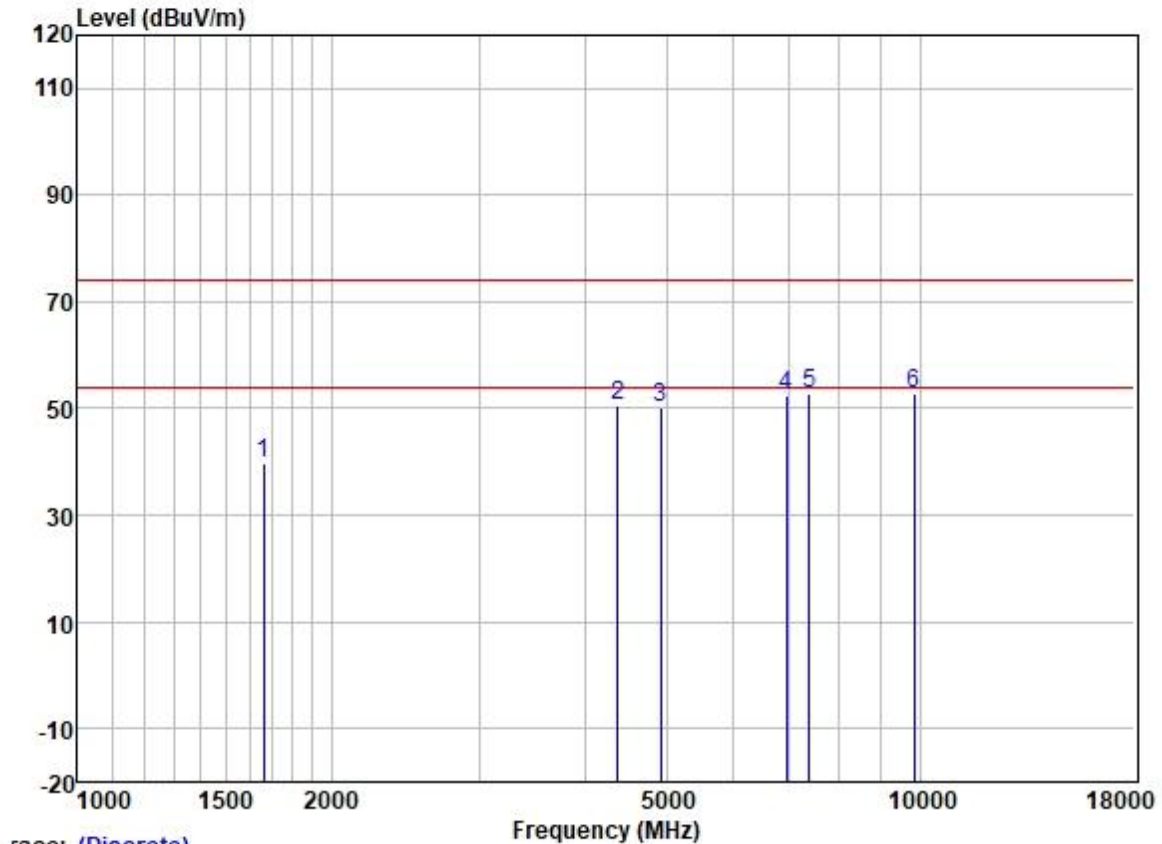
Test Mode: 00; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel: middle



Trace: (Discrete)

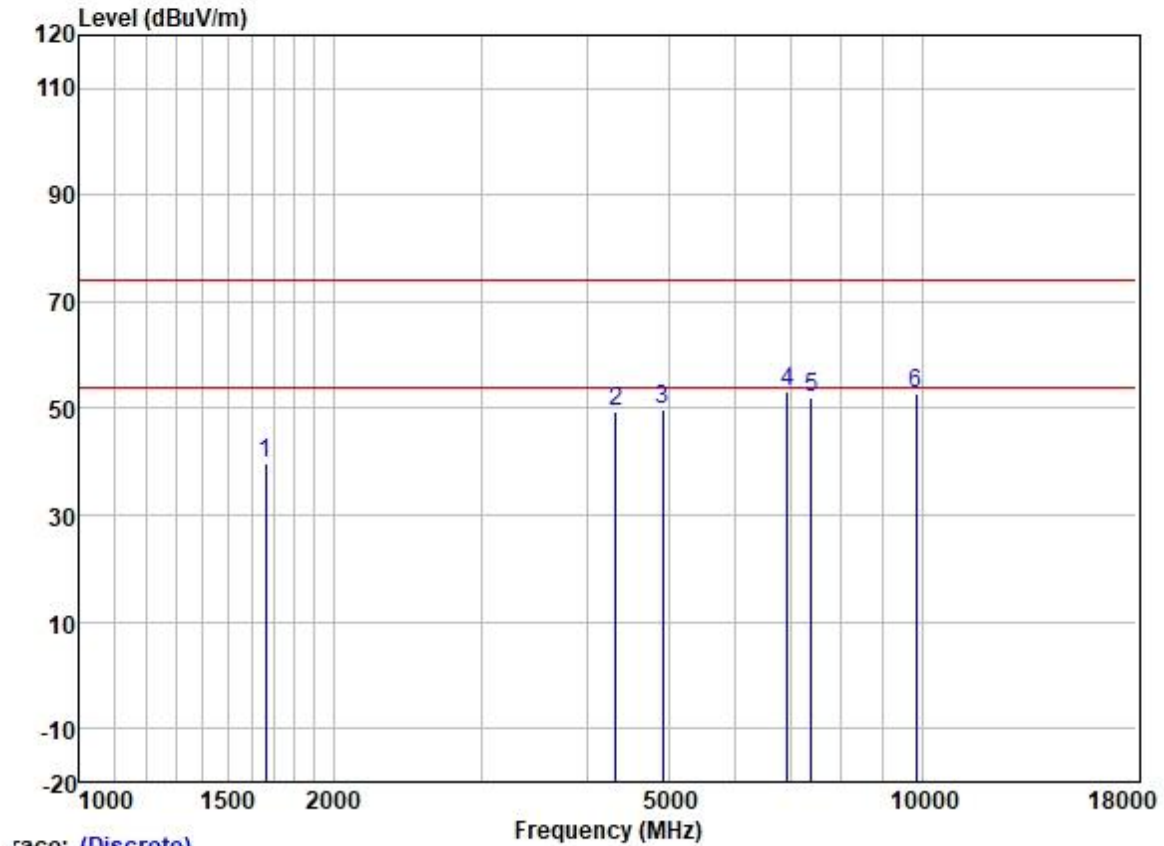
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	51.62	25.65	2.80	37.91	42.16	74.00	-31.84	VERTICAL	Peak
2	4367.058	52.20	30.62	4.68	36.81	50.69	74.00	-23.31	VERTICAL	Peak
3	4874.000	50.05	31.54	5.50	36.84	50.25	74.00	-23.75	VERTICAL	Peak
4	6954.852	49.18	34.95	5.81	37.21	52.73	74.00	-21.27	VERTICAL	Peak
5	7311.000	47.94	35.93	6.11	37.42	52.56	74.00	-21.44	VERTICAL	Peak
6	9748.000	44.33	38.50	7.02	37.41	52.44	74.00	-21.56	VERTICAL	Peak

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



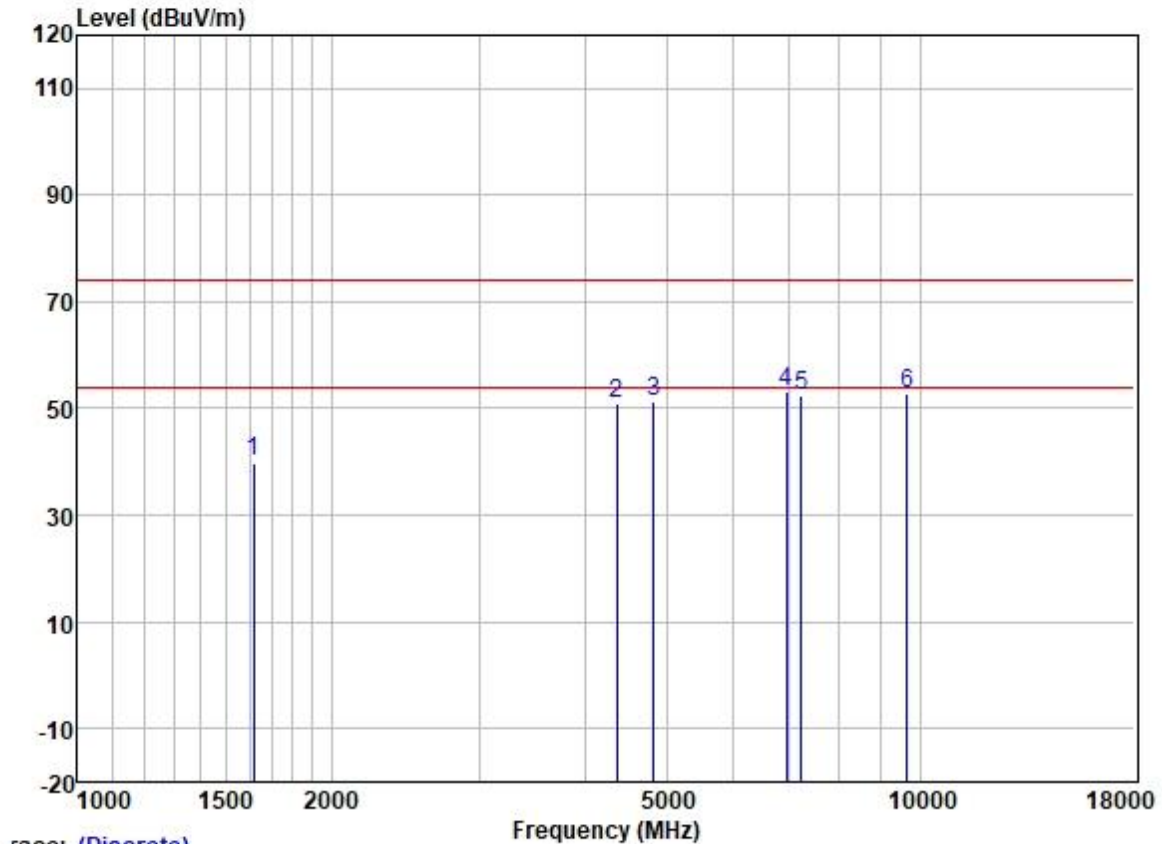
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1	1663.137	49.36	25.65	2.80	37.91	39.90	74.00	-34.10	HORIZONTAL Peak
2	4379.699	51.88	30.64	4.69	36.81	50.40	74.00	-23.60	HORIZONTAL Peak
3	4924.000	49.84	31.62	5.60	36.84	50.22	74.00	-23.78	HORIZONTAL Peak
4	6934.778	48.70	34.92	5.81	37.19	52.24	74.00	-21.76	HORIZONTAL Peak
5	7386.000	47.94	36.17	6.19	37.45	52.85	74.00	-21.15	HORIZONTAL Peak
6	9848.000	44.64	38.58	6.99	37.41	52.80	74.00	-21.20	HORIZONTAL Peak

Test Mode: 00; Polarity: Vertical; Modulation: 802.11g; 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	49.03	25.65	2.80	37.91	39.57	74.00	-34.43	VERTICAL	Peak
2	4329.354	51.05	30.54	4.67	36.81	49.45	74.00	-24.55	VERTICAL	Peak
3	4924.000	49.57	31.62	5.60	36.84	49.95	74.00	-24.05	VERTICAL	Peak
4	6914.763	49.50	34.89	5.81	37.19	53.01	74.00	-20.99	VERTICAL	Peak
5	7386.000	47.16	36.17	6.19	37.45	52.07	74.00	-21.93	VERTICAL	Peak
6	9848.000	44.61	38.58	6.99	37.41	52.77	74.00	-21.23	VERTICAL	Peak

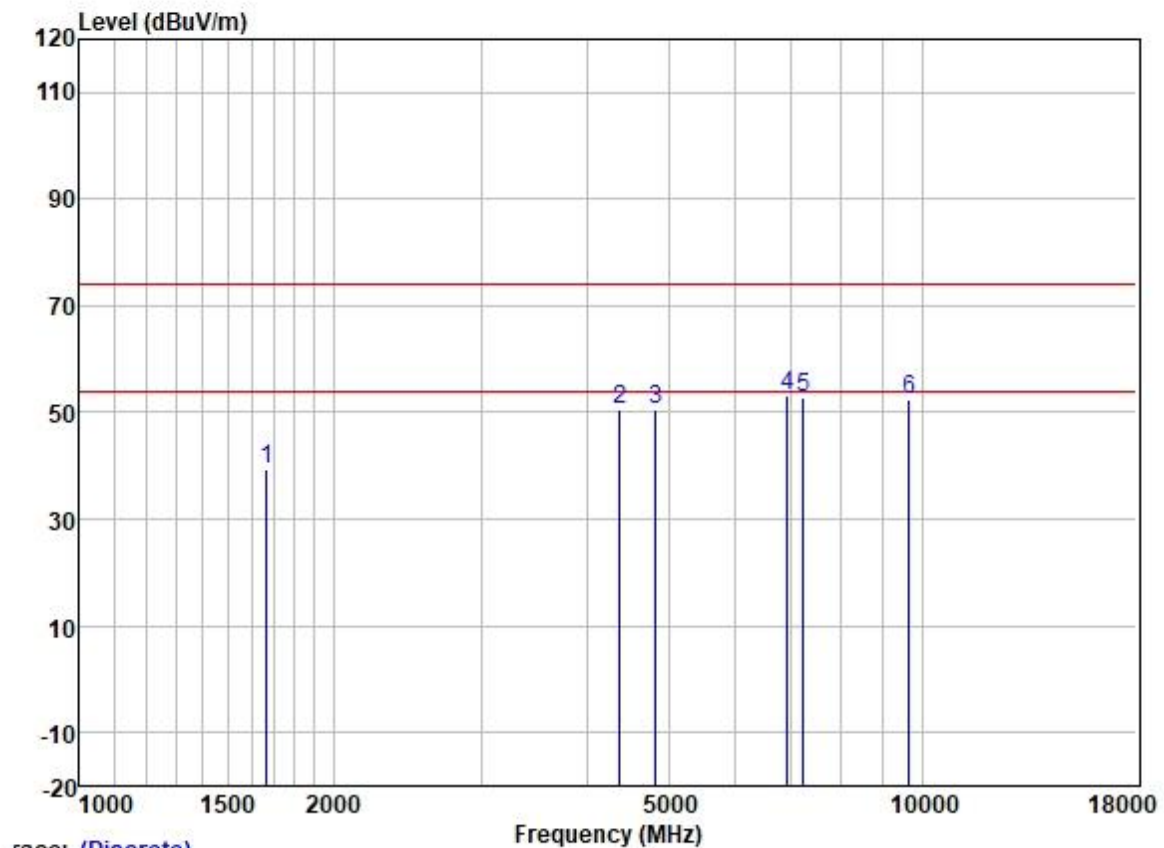
Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Trace: (Discrete)

	Freq	Read	Antenna	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	1615.754	49.47	25.60	2.80	37.95	39.92	74.00	-34.08	HORIZONTAL Peak
2	4367.058	52.30	30.62	4.68	36.81	50.79	74.00	-23.21	HORIZONTAL Peak
3	4824.000	51.11	31.45	5.42	36.83	51.15	74.00	-22.85	HORIZONTAL Peak
4	6934.778	49.60	34.92	5.81	37.19	53.14	74.00	-20.86	HORIZONTAL Peak
5	7236.000	48.20	35.70	6.03	37.39	52.54	74.00	-21.46	HORIZONTAL Peak
6	9648.000	44.86	38.40	7.06	37.42	52.90	74.00	-21.10	HORIZONTAL Peak

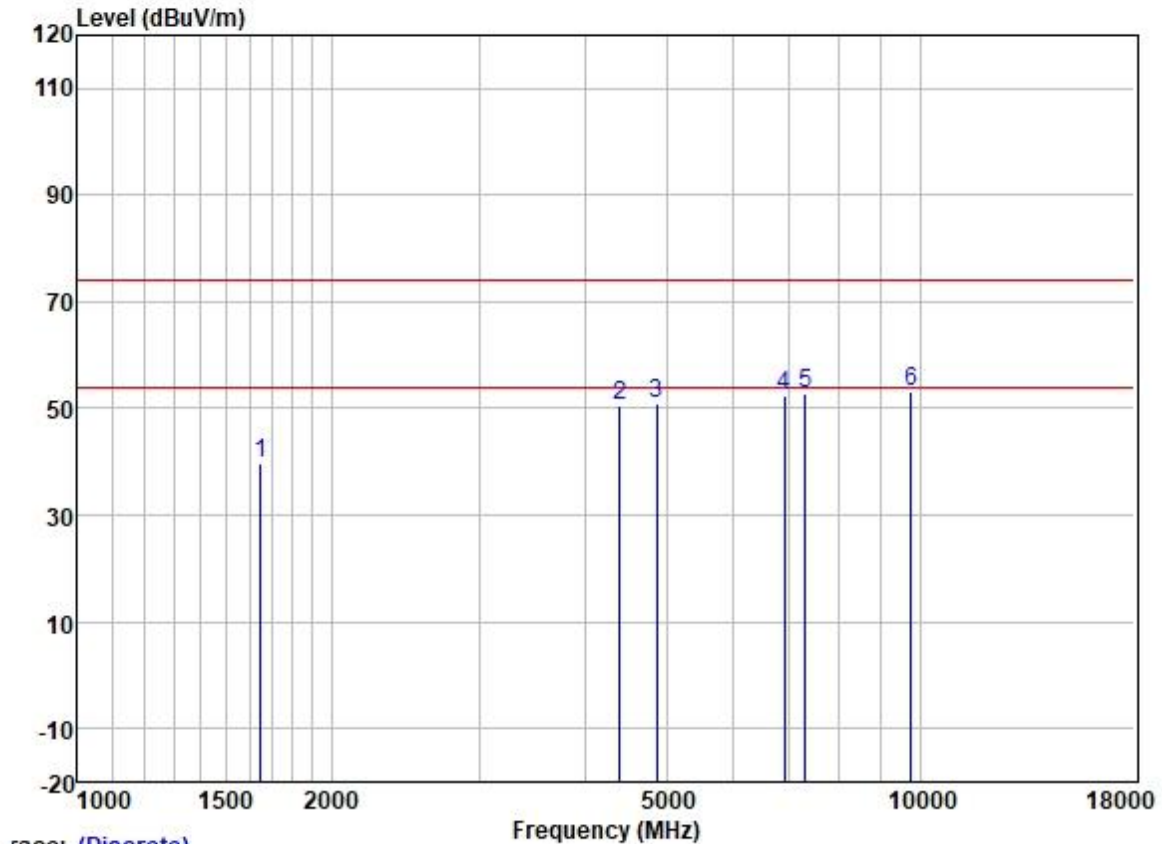
Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: Low



Trace: (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	1667.951	48.92	25.66	2.80	37.91	39.47	74.00	-34.53	VERTICAL	Peak
2	4379.699	51.95	30.64	4.69	36.81	50.47	74.00	-23.53	VERTICAL	Peak
3	4824.000	50.44	31.45	5.42	36.83	50.48	74.00	-23.52	VERTICAL	Peak
4	6914.763	49.58	34.89	5.81	37.19	53.09	74.00	-20.91	VERTICAL	Peak
5	7236.000	48.36	35.70	6.03	37.39	52.70	74.00	-21.30	VERTICAL	Peak
6	9648.000	44.52	38.40	7.06	37.42	52.56	74.00	-21.44	VERTICAL	Peak

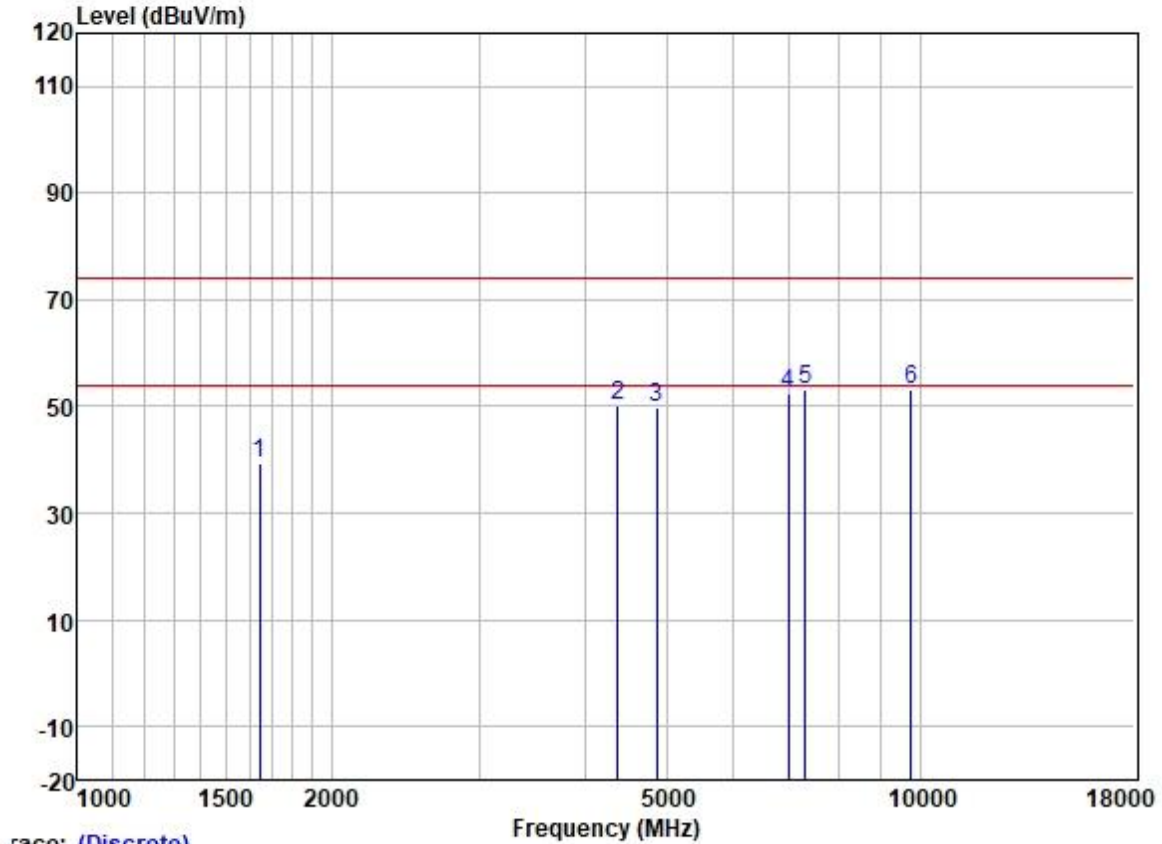
Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel: middle



Trace: (Discrete)

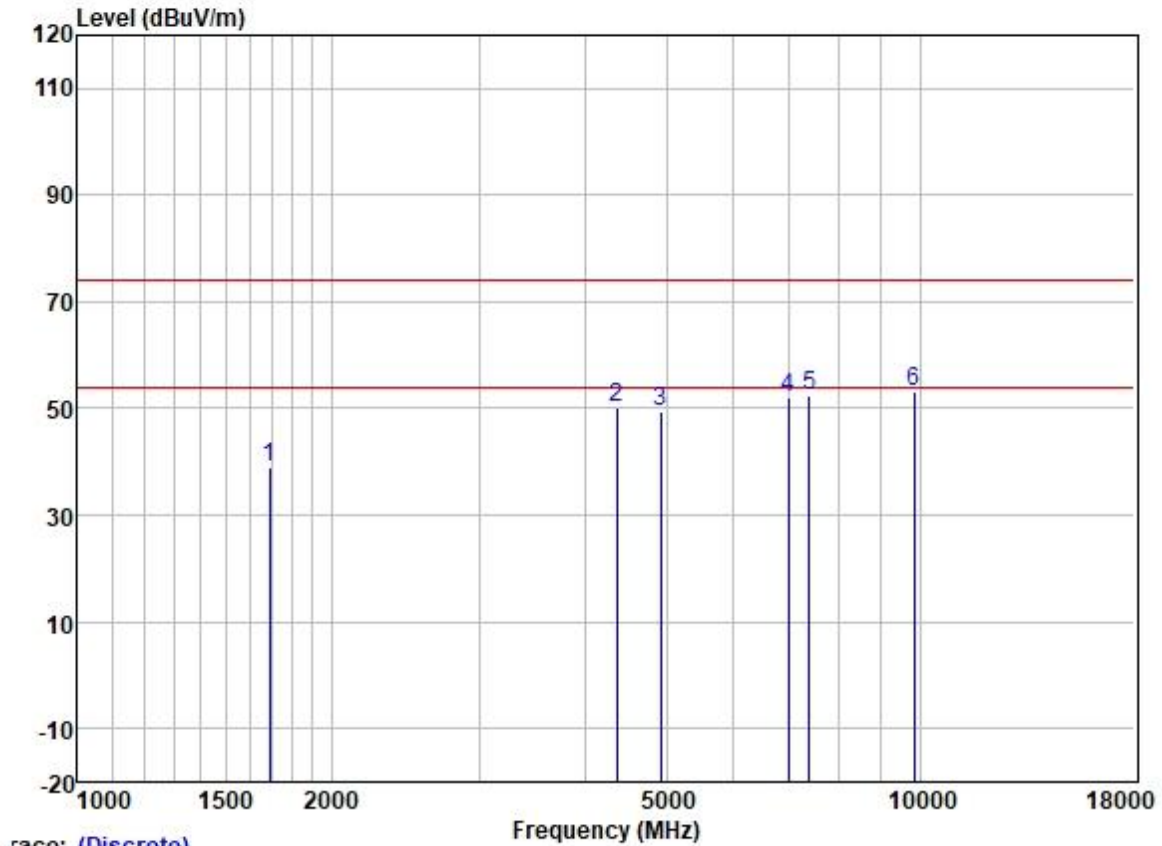
	Freq	Read	Antenna	Cable	Preamp	Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1	1648.778	49.23	25.63	2.80	37.93	39.73	74.00	-34.27	HORIZONTAL Peak
2	4405.090	52.09	30.68	4.70	36.81	50.66	74.00	-23.34	HORIZONTAL Peak
3	4874.000	50.57	31.54	5.50	36.84	50.77	74.00	-23.23	HORIZONTAL Peak
4	6894.806	48.92	34.85	5.81	37.18	52.40	74.00	-21.60	HORIZONTAL Peak
5	7311.000	48.01	35.93	6.11	37.42	52.63	74.00	-21.37	HORIZONTAL Peak
6	9748.000	45.02	38.50	7.02	37.41	53.13	74.00	-20.87	HORIZONTAL Peak

Test Mode: 00; Polarity: Vertical; 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	1644.019	49.01	25.63	2.80	37.93	39.51	74.00	-34.49	VERTICAL	Peak
2	4379.699	51.57	30.64	4.69	36.81	50.09	74.00	-23.91	VERTICAL	Peak
3	4874.000	49.59	31.54	5.50	36.84	49.79	74.00	-24.21	VERTICAL	Peak
4	6974.982	49.00	34.97	5.81	37.23	52.55	74.00	-21.45	VERTICAL	Peak
5	7311.000	48.45	35.93	6.11	37.42	53.07	74.00	-20.93	VERTICAL	Peak
6	9748.000	44.93	38.50	7.02	37.41	53.04	74.00	-20.96	VERTICAL	Peak

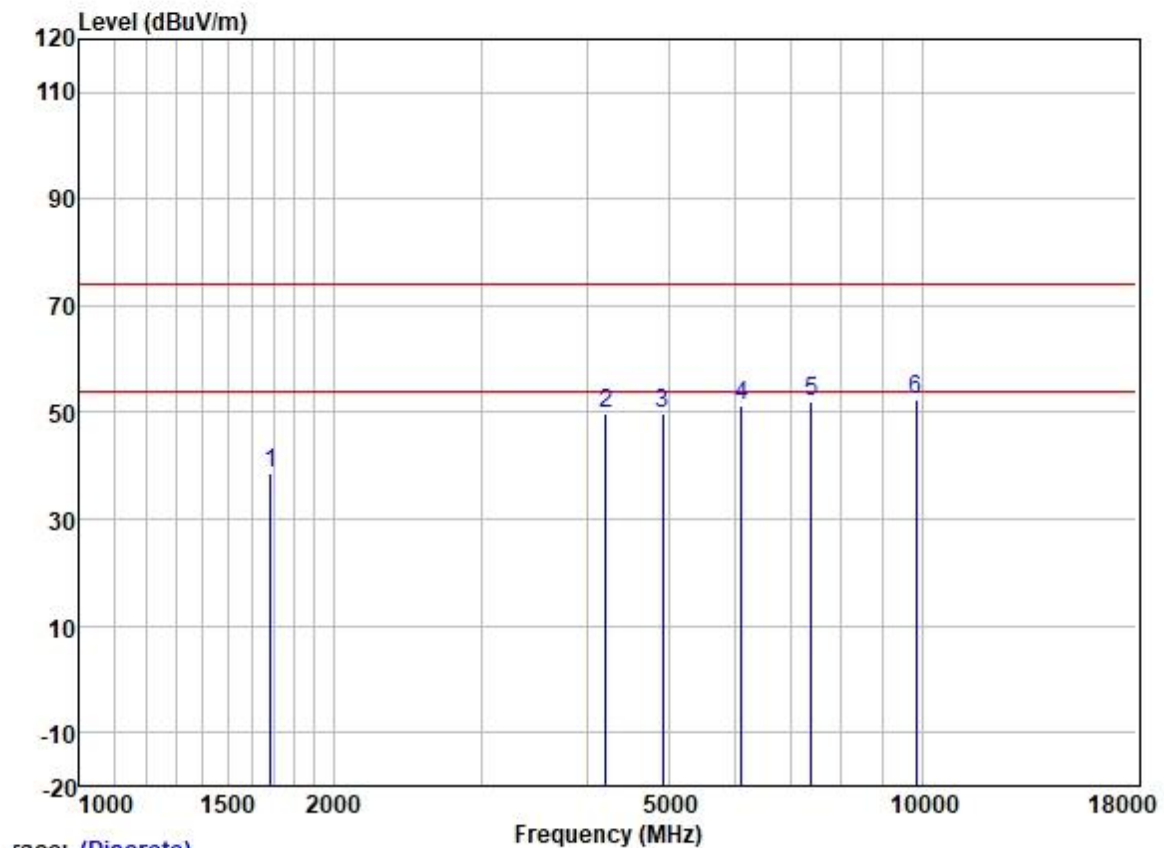
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 20MHz; Channel: High



Trace: (Discrete)

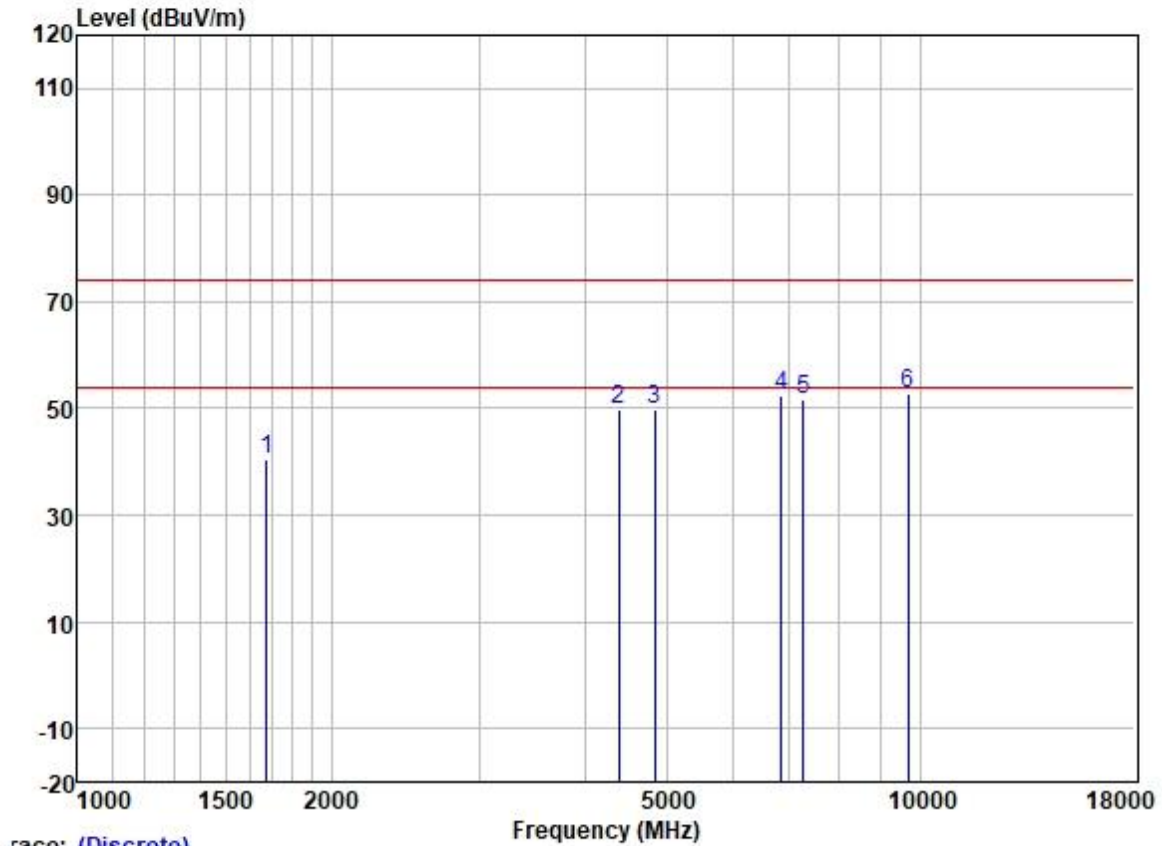
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1692.231	48.37	25.70	2.80	37.89	38.98	74.00	-35.02	HORIZONTAL	Peak
2	4367.058	51.60	30.62	4.68	36.81	50.09	74.00	-23.91	HORIZONTAL	Peak
3	4924.000	49.14	31.62	5.60	36.84	49.52	74.00	-24.48	HORIZONTAL	Peak
4	6974.982	48.47	34.97	5.81	37.23	52.02	74.00	-21.98	HORIZONTAL	Peak
5	7386.000	47.56	36.17	6.19	37.45	52.47	74.00	-21.53	HORIZONTAL	Peak
6	9848.000	45.19	38.58	6.99	37.41	53.35	74.00	-20.65	HORIZONTAL	Peak

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



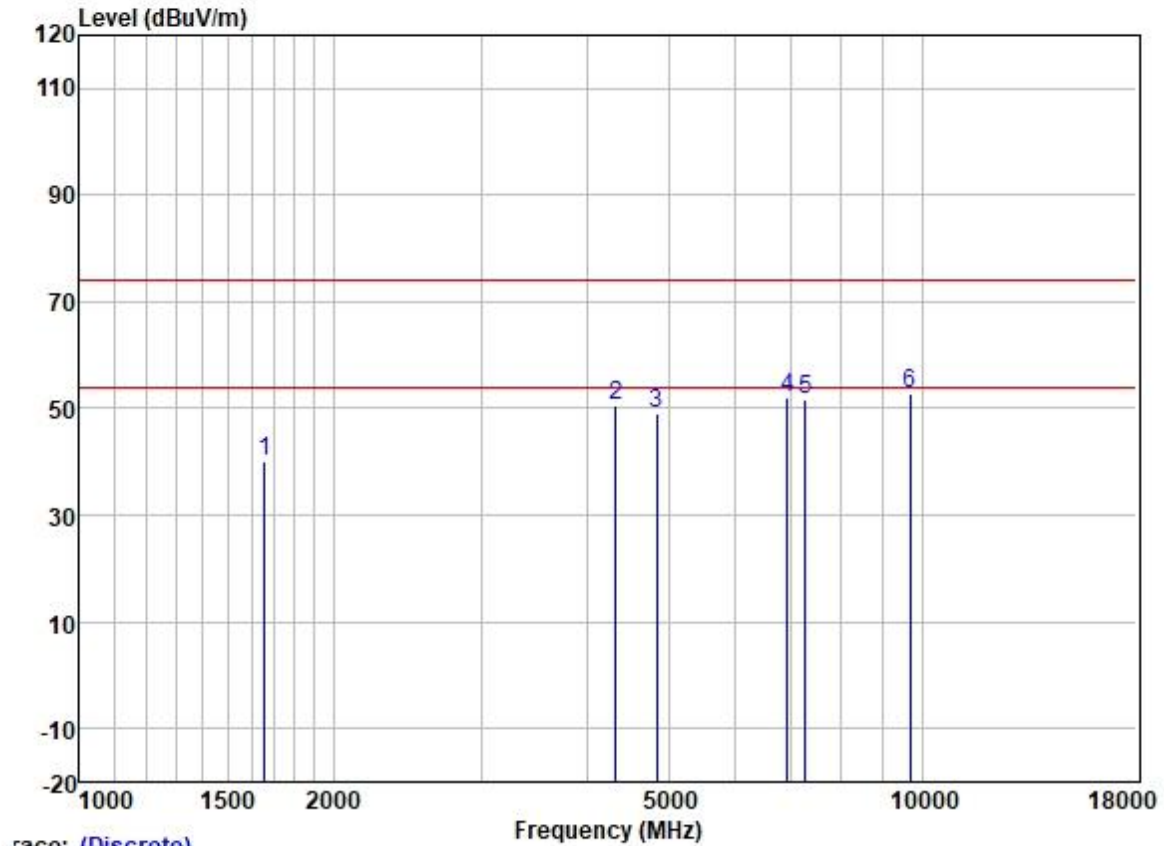
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1687.347	48.20	25.69	2.80	37.91	38.78	74.00	-35.22	VERTICAL	Peak
2	4218.186	51.96	30.22	4.60	36.81	49.97	74.00	-24.03	VERTICAL	Peak
3	4924.000	49.32	31.62	5.60	36.84	49.70	74.00	-24.30	VERTICAL	Peak
4	6106.616	49.54	32.66	6.14	36.92	51.42	74.00	-22.58	VERTICAL	Peak
5	7386.000	47.21	36.17	6.19	37.45	52.12	74.00	-21.88	VERTICAL	Peak
6	9848.000	44.45	38.58	6.99	37.41	52.61	74.00	-21.39	VERTICAL	Peak

Test Mode: 00; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; 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	1677.621	49.75	25.68	2.80	37.91	40.32	74.00	-33.68	HORIZONTAL	Peak
2	4392.376	51.31	30.66	4.70	36.81	49.86	74.00	-24.14	HORIZONTAL	Peak
3	4844.000	49.73	31.50	5.45	36.84	49.84	74.00	-24.16	HORIZONTAL	Peak
4	6855.063	48.89	34.78	5.82	37.15	52.34	74.00	-21.66	HORIZONTAL	Peak
5	7266.000	47.25	35.78	6.06	37.41	51.68	74.00	-22.32	HORIZONTAL	Peak
6	9688.000	44.74	38.44	7.04	37.42	52.80	74.00	-21.20	HORIZONTAL	Peak

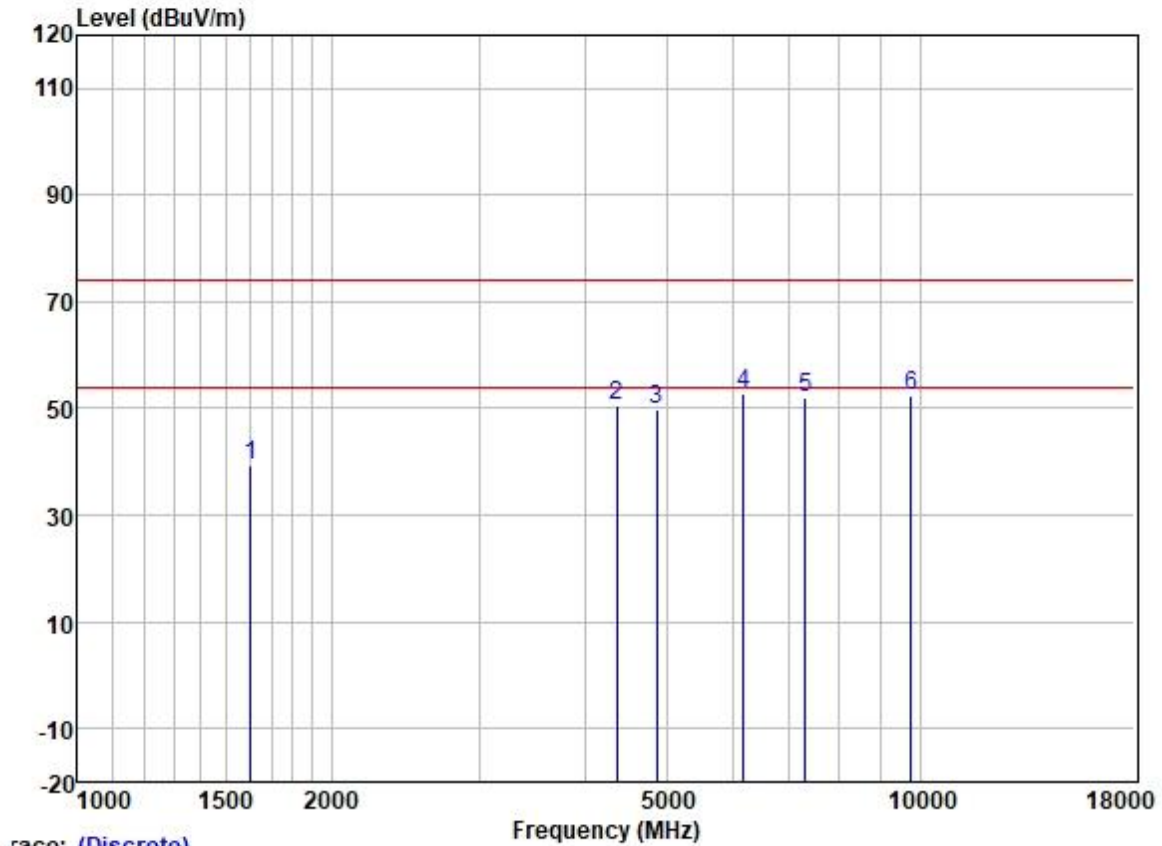
Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel: Low



Trace: (Discrete)

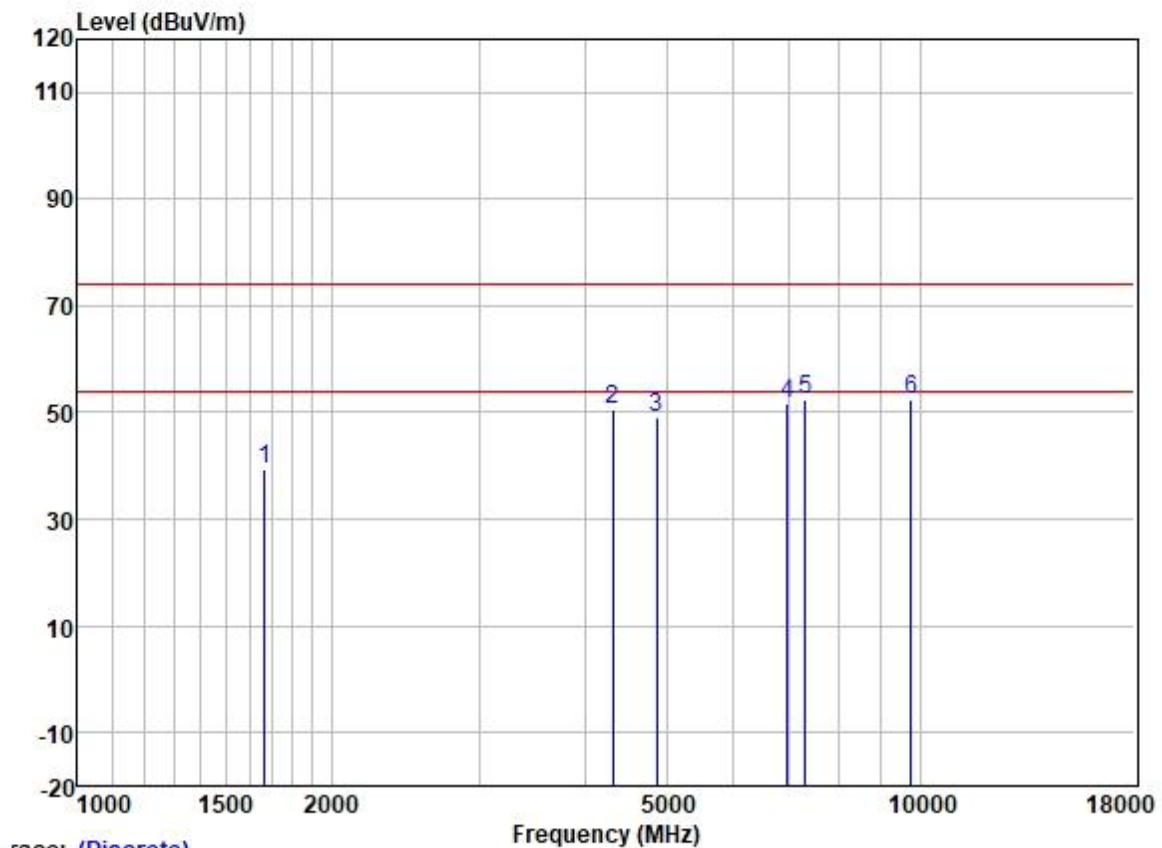
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1658.337	49.69	25.65	2.80	37.93	40.21	74.00	-33.79	VERTICAL	Peak
2	4329.354	52.05	30.54	4.67	36.81	50.45	74.00	-23.55	VERTICAL	Peak
3	4844.000	48.84	31.50	5.45	36.84	48.95	74.00	-25.05	VERTICAL	Peak
4	6914.763	48.39	34.89	5.81	37.19	51.90	74.00	-22.10	VERTICAL	Peak
5	7266.000	47.43	35.78	6.06	37.41	51.86	74.00	-22.14	VERTICAL	Peak
6	9688.000	44.56	38.44	7.04	37.42	52.62	74.00	-21.38	VERTICAL	Peak

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



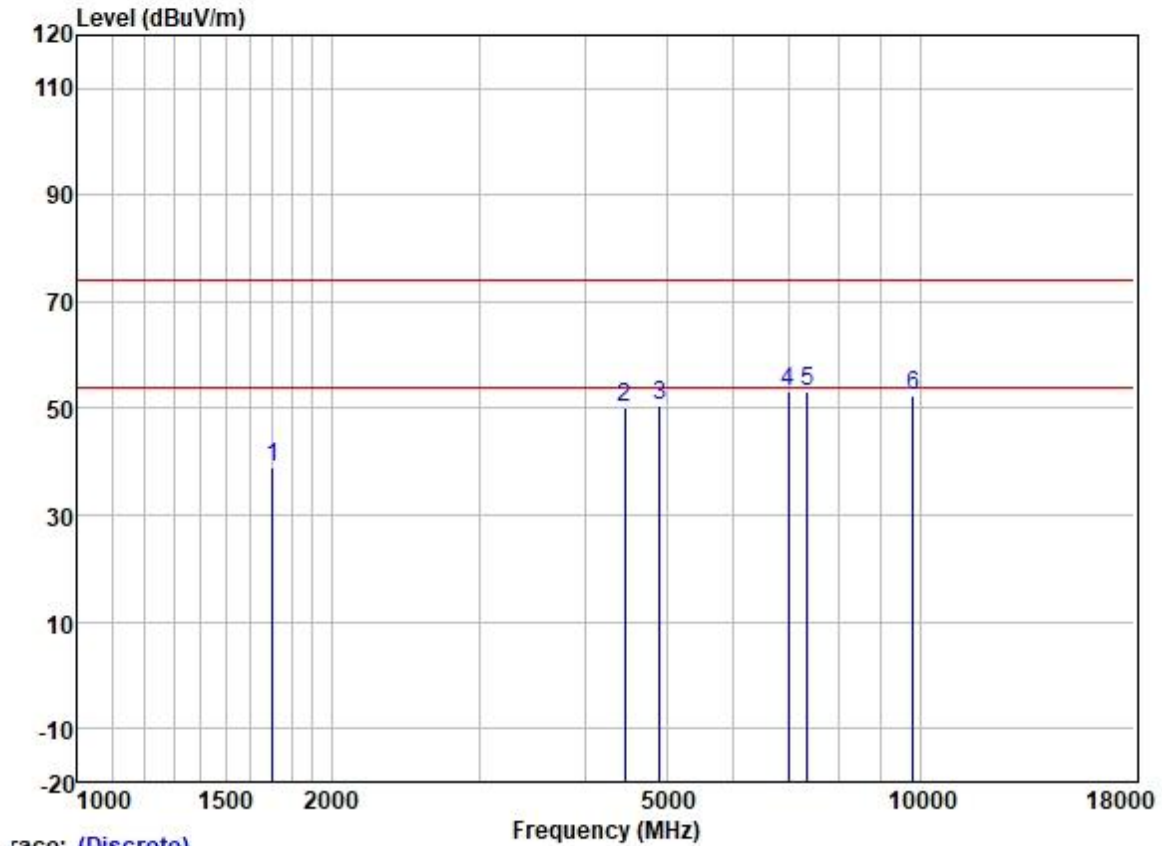
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1	1606.441	49.04	25.59	2.80	37.98	39.45	74.00	-34.55	HORIZONTAL Peak
2	4367.058	52.15	30.62	4.68	36.81	50.64	74.00	-23.36	HORIZONTAL Peak
3	4874.000	49.65	31.54	5.50	36.84	49.85	74.00	-24.15	HORIZONTAL Peak
4	6177.627	50.87	32.89	6.09	36.93	52.92	74.00	-21.08	HORIZONTAL Peak
5	7311.000	47.61	35.93	6.11	37.42	52.23	74.00	-21.77	HORIZONTAL Peak
6	9748.000	44.28	38.50	7.02	37.41	52.39	74.00	-21.61	HORIZONTAL Peak

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; 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	1667.951	48.83	25.66	2.80	37.91	39.38	74.00	-34.62	VERTICAL	Peak
2	4316.859	52.24	30.51	4.66	36.81	50.60	74.00	-23.40	VERTICAL	Peak
3	4874.000	49.01	31.54	5.50	36.84	49.21	74.00	-24.79	VERTICAL	Peak
4	6954.852	48.02	34.95	5.81	37.21	51.57	74.00	-22.43	VERTICAL	Peak
5	7311.000	47.75	35.93	6.11	37.42	52.37	74.00	-21.63	VERTICAL	Peak
6	9748.000	44.24	38.50	7.02	37.41	52.35	74.00	-21.65	VERTICAL	Peak

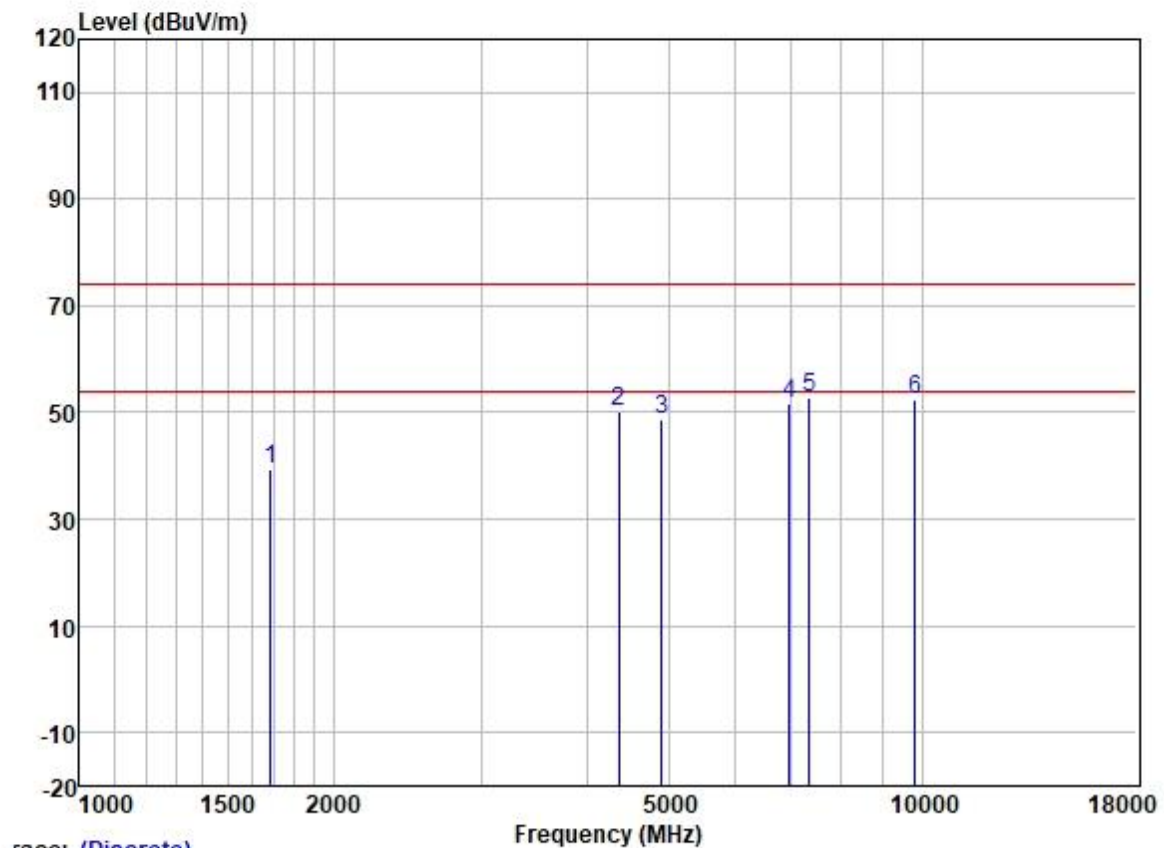
Test Mode: 00; Polarity: Horizontal; Modulation: 802.11n; Bandwidth: 40MHz; Channel: High



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1	1702.042	48.19	25.72	2.80	37.89	38.82	74.00	-35.18	HORIZONTAL Peak
2	4456.315	51.20	30.75	4.88	36.81	50.02	74.00	-23.98	HORIZONTAL Peak
3	4904.000	50.09	31.58	5.55	36.84	50.38	74.00	-23.62	HORIZONTAL Peak
4	6974.982	49.67	34.97	5.81	37.23	53.22	74.00	-20.78	HORIZONTAL Peak
5	7356.000	48.26	36.06	6.15	37.44	53.03	74.00	-20.97	HORIZONTAL Peak
6	9808.000	44.29	38.56	7.00	37.41	52.44	74.00	-21.56	HORIZONTAL Peak

Test Mode: 00; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; 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	1687.347	48.84	25.69	2.80	37.91	39.42	74.00	-34.58	VERTICAL	Peak
2	4367.058	51.88	30.62	4.68	36.81	50.37	74.00	-23.63	VERTICAL	Peak
3	4904.000	48.52	31.58	5.55	36.84	48.81	74.00	-25.19	VERTICAL	Peak
4	6954.852	48.27	34.95	5.81	37.21	51.82	74.00	-22.18	VERTICAL	Peak
5	7356.000	48.08	36.06	6.15	37.44	52.85	74.00	-21.15	VERTICAL	Peak
6	9808.000	44.35	38.56	7.00	37.41	52.50	74.00	-21.50	VERTICAL	Peak

7.10 Duty Cycle

Test Requirement

KDB 558074 D01 v05r02 section 6

7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 21.9 °C

Humidity: 52.1 % RH

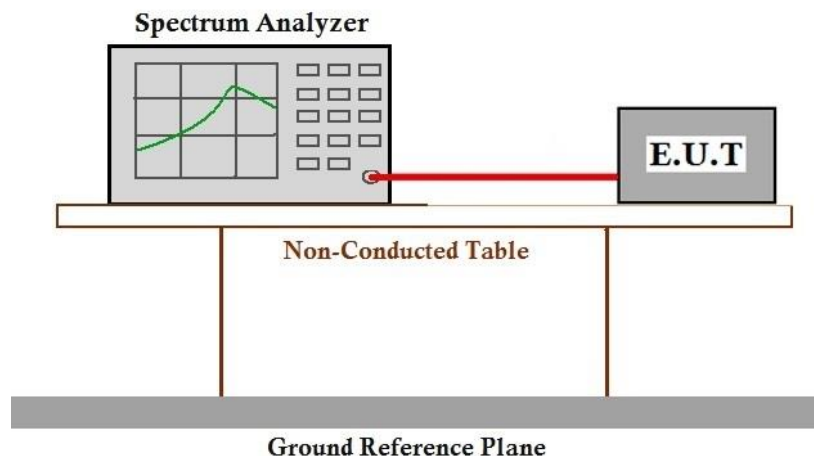
Atmospheric Pressure: 1003 mbar

7.10.2 Test Mode Description

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

Final test	00	TX mode(2.4G Wi-Fi)_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); data rate @ MCS0 is the worst case of IEEE 802.11ax(HEW20); data rate @ MCS0 is the worst case of IEEE 802.11ax(HEW40). 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 – Setup photos for GZCR2203000250AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for GZCR2203000250AT

10 Appendix

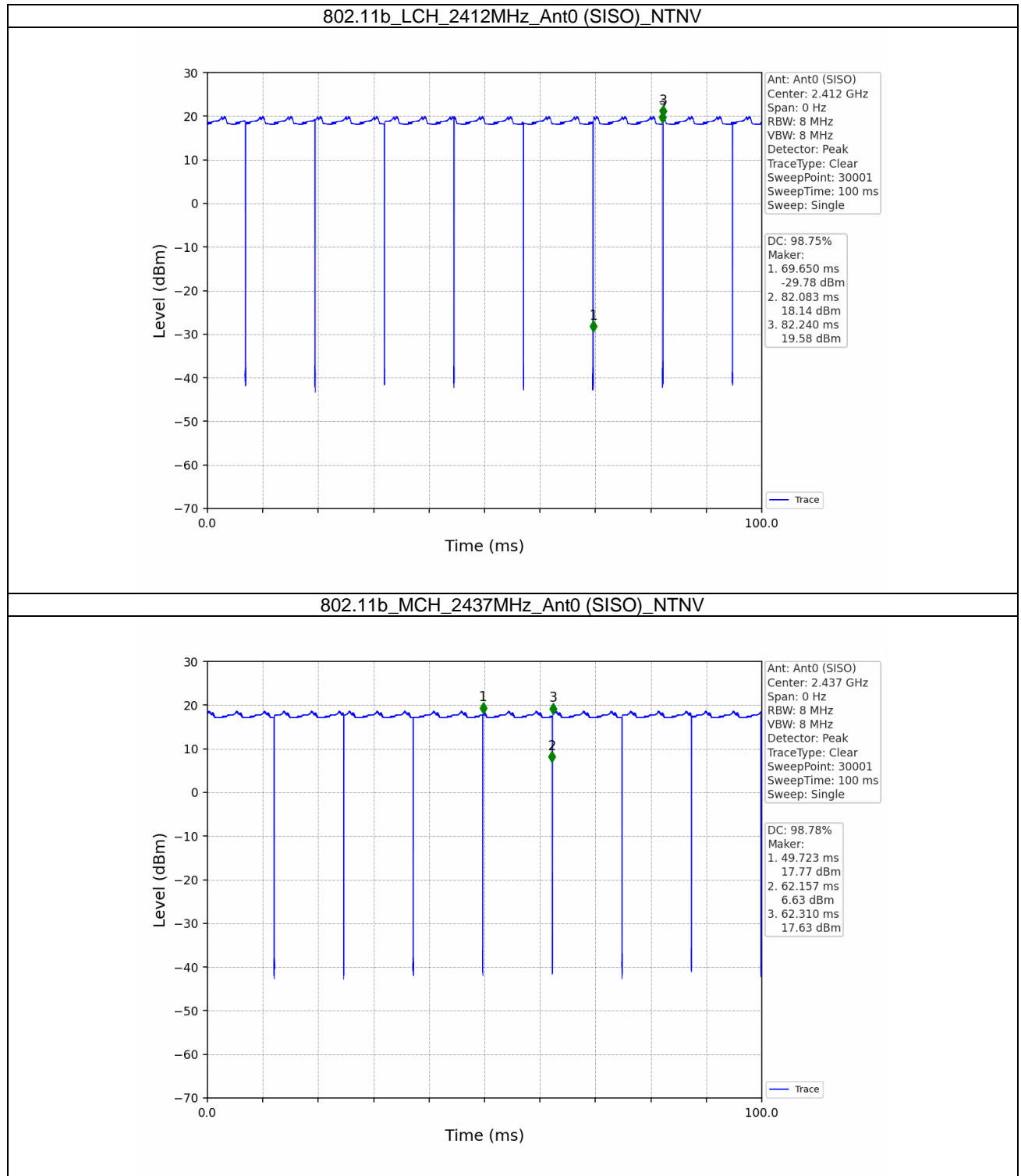
1. Duty Cycle

1.1 Ant0

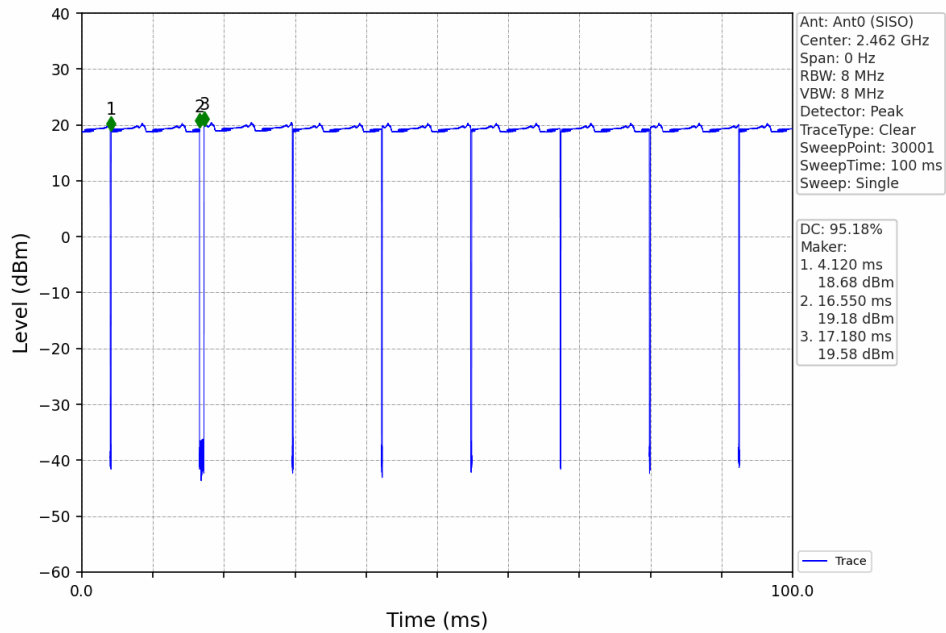
1.1.1 Test Result

Ant0							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	12.433	12.590	98.75	0.05	0.45
		2437	12.434	12.587	98.78	0.05	0.42
		2462	12.430	13.060	95.18	0.21	4.03
802.11g	SISO	2412	2.065	2.234	92.44	0.34	2.69
		2437	2.065	2.234	92.44	0.34	2.72
		2462	2.073	2.344	88.44	0.53	7.08
802.11n (HT20)	MIMO	2412	0.985	1.041	94.62	0.24	0.07
		2437	1.925	2.085	92.33	0.35	2.47
		2462	1.924	2.094	91.88	0.37	2.86
802.11n (HT40)	MIMO	2422	0.949	1.109	85.57	0.68	4.41
		2437	0.948	1.117	84.87	0.71	5.08
		2452	0.949	1.118	84.88	0.71	5.08

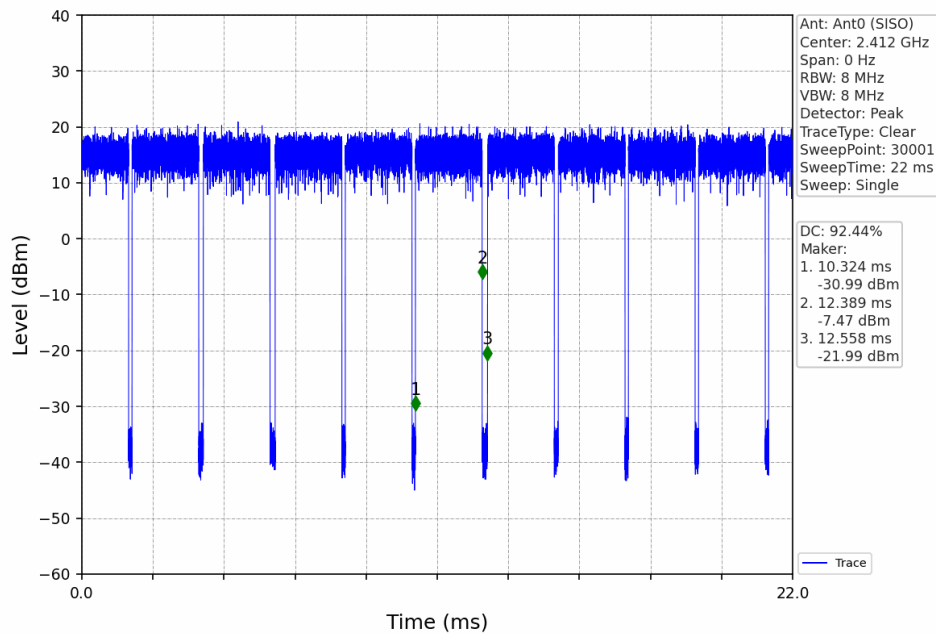
1.1.2 Test Graph



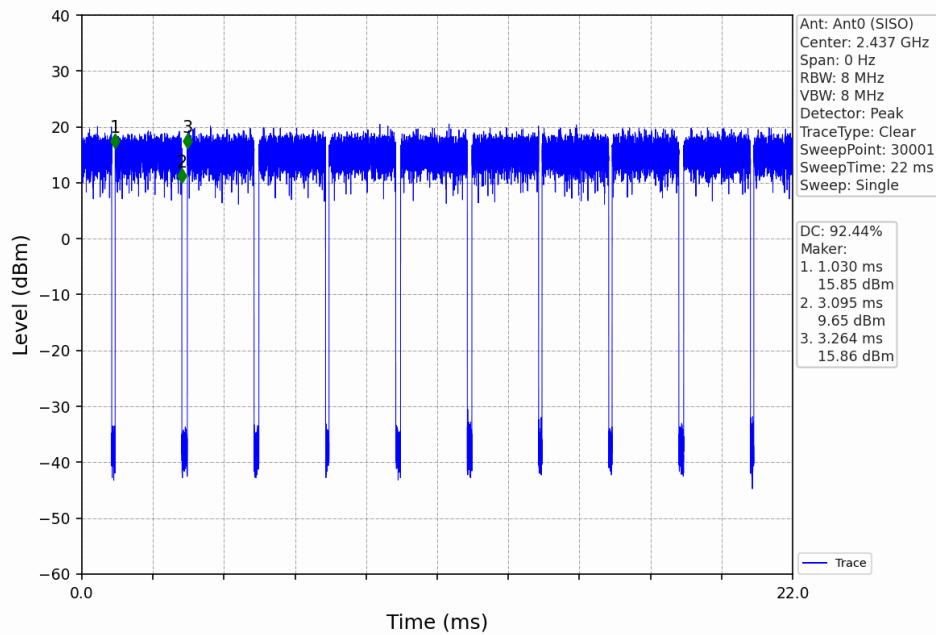
802.11b_HCH_2462MHz_Ant0 (SISO)_NTNV



802.11g_LCH_2412MHz_Ant0 (SISO)_NTNV



802.11g_MCH_2437MHz_Ant0 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant0 (SISO)_NTNV

