



TEST REPORT

Application No.:

GZCR2110021203AT

Applicant:

KanDao Technology Co., Ltd.

Address of Applicant:

201 Sino-Steel building, Maqueling Industrial District, Maling Area, Yuehai Street, Nanshan, Shenzhen, China

Manufacturer:

KanDao Technology Co., Ltd.

Address of Manufacturer:

201 Sino-Steel building, Maqueling Industrial District, Maling Area, Yuehai Street, Nanshan, Shenzhen, China

Factory:

SKY LIGHT ELECTRONIC (SHENZHEN) LIMITED

Address of Factory:

1F-2F OF NO.9, 1F-5F OF NO.8, ANTUOSHAN HIGH-TECH. INDUSTRIAL PARK, SHAER COMMUNITY, SHAJING STREET, BAO'AN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

Equipment Under Test (EUT):

EUT Name: Kandao Obsidian Pro

Model No.: OSP0415

Trade Mark: KanDao

Standard(s) : 47 CFR Part 15, Subpart E 15.407

Date of Receipt: 2021-10-18

Date of Test: 2021-10-18 to 2021-10-28

Date of Issue: 2021-10-29

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

Kobe Jian
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-10-29		<i>Original</i>

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

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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart C 15.203	Pass
Transmission in the Absence of Data		N/A	47 CFR Part 15, Subpart C 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207 & 15.407 b(6)	Pass
Duty Cycle		KDB 789033 D02 II B 2	KDB 789033 D02 II B 1	Pass
99% Bandwidth		KDB 789033 II D	N/A	Pass
26dB Emission bandwidth		KDB 789033 D02 II C 1	47 CFR Part 15, Subpart C 15.407 (a)	Pass
Maximum Conducted output power		KDB 789033 D02 II E	47 CFR Part 15, Subpart C 15.407 (a)	Pass
Peak Power spectrum density		KDB 789033 D02 II F	47 CFR Part 15, Subpart C 15.407 (a)	Pass
Radiated Emissions (below 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & 15.407(b)	Pass
Radiated Emissions which fall in the restricted bands		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & 15.407(b)	Pass
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart C 15.407 (g)	Pass
Radiated Emissions (above 1GHz)		KDB 789033 D02 II G	47 CFR Part 15, Subpart C 15.209 & 15.407(b)	Pass

Note:

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

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

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 20V powered by an adapter.
Adapter Model:	GST220A20
Input:	AC 100-240V, 50/60Hz, 4.0A
Output:	DC 20V 11A.
Operation Frequency (20MHz):	U-NII-1: 5180-5240MHz
Operation Frequency (40MHz):	U-NII-1: 5190-5230MHz
Operation Frequency (80MHz):	U-NII-1: 5210MHz
Modulation Type:	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	802.11a/n/ac(HT20): 20MHz; 802.11ac/n(HT40) 40MHz; 802.11ac(HT80) 80MHz;
DFS Function:	Without DFS function
TPC Function:	Without TPC function
Antenna Type:	Dipole Antenna
Antenna Gain:	ANT1: 5.0dBi; ANT2: 5.0dBi;

4.2 Description of Support Units

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



4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	3.12dB
Duty Cycle	± 0.37%
99% Bandwidth	± 3%
26dB Emission bandwidth	± 3%
Maximum Conducted output power	± 0.75dB
Peak Power spectrum density	± 2.84dB
Radiated Emissions (below 1GHz)	5.06dB (30MHz-1GHz : 3m) 4.46dB (30MHz-1GHz : 10m)
Radiated Emissions which fall in the restricted bands	± 4.5dB (below 1GHz); ± 4.8dB (above 1GHz);
Frequency Stability	± 7.25 x 10-8
Radiated Emissions (above 1GHz)	5.08 dB (1-6GHz); 5.14 (above 6 GHz)
Remark:	<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.

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4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech 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.

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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

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5 Equipment List

Conducted 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	2021-01-08	2022-01-06
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2021-09-24	2022-09-23
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR4	EMC2221	2021-06-01	2022-05-31

Duty Cycle					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer(10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz-6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	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	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

99% Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer(10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz-6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11



Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	2021-05-19	2022-05-18
EXA Signal Analzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

26dB Emission bandwidth

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer(10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz- 6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	2021-05-19	2022-05-18
EXA Signal Analzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2021-09-16	2022-09-15
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Maximum Conducted output power

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer(10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz- 6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18

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Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	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	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Peak Power spectrum density

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer(10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz-6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	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	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01
Test Software	TST	V2.0	GZE100-78	N/A	N/A

Radiated Emissions (below 1GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26
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

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Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-01-08	2022-01-07
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	2021-01-08	2022-01-07
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	2020-11-13	2021-11-12
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	2021-09-08	2022-09-07

Frequency Stability					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer(10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz-6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	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	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01

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Test Software	TST	V2.0	GZE100-78	N/A	N/A
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Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable(Above 1GHz)	Scoflex	KMKG-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	2021-01-08	2022-01-07
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-01-08	2022-01-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
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	2021-09-08	2022-09-07

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

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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

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.

EUT Antenna:

The antenna port is integrated on the main PCB and it Connect to the RP-SMA connector through the RF cable, the EUT use a Non-standard connector dipole antenna, it can be replaced by user, and the user should use the antenna provided by the manufacturer.

The best case gain of the Antenna 1: 5.0dBi; Antenna 2: 5.0dBi;

For MIMO, Directional Gain = $G_{ANT_Max} + 10\log(2/1) = 8.01\text{dBi}$

Antenna location: Refer to external photo.



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6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart C 15.407 (c)

6.2.2 Conclusion

6.2.2 Conclusion

Standard Requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

EUT Details:

WIFI chip support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detect absence of information to transmit or operational failure, it will be automatically shut off.



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7 Radio Spectrum Matter Test Results

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

Test Requirement 47 CFR Part 15, Subpart C 15.207 & 15.407 b(6)

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

Limit:

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

*Decreases with the logarithm of the frequency.

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 534 % RH Atmospheric Pressure: 1003 mbar

7.1.2 Test Mode Description

Pre-scan / Mode	Final test Code	Description
		TX mode (U-NII-1) 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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	04	

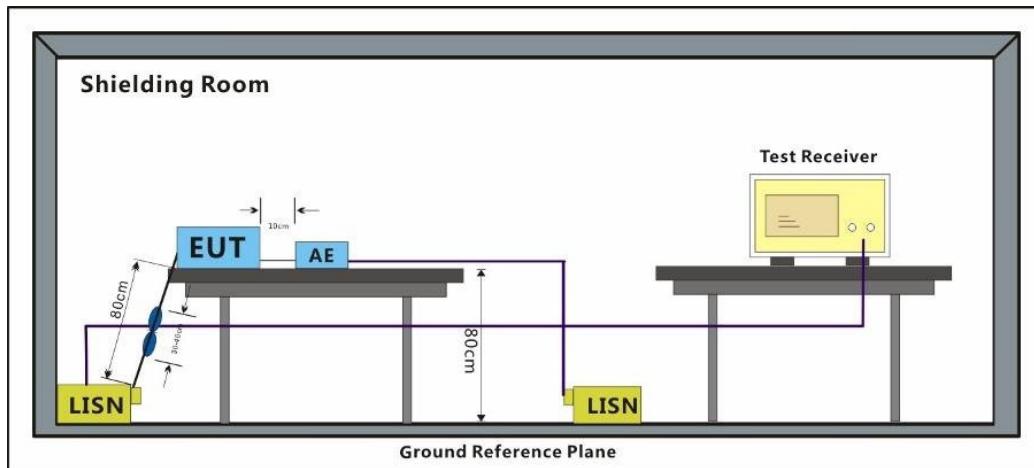
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7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

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

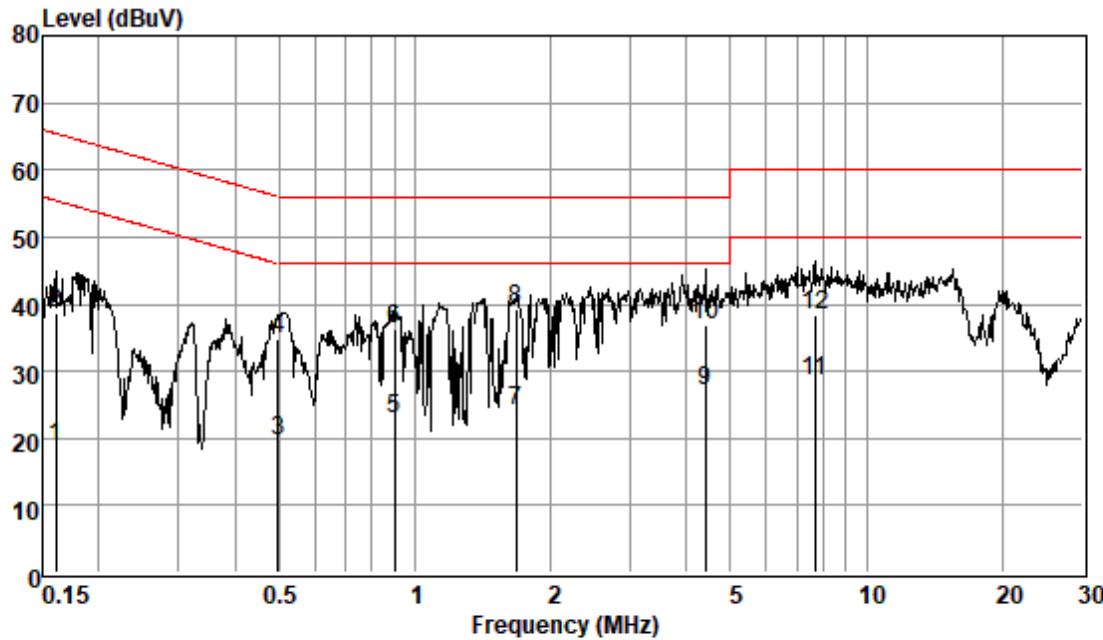
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

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Test Mode: 04; Polarity: Neutral; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Pol :NEUTRAL

Mode :

Model :

Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	9.09	0.06	9.55	18.70	55.43	-36.73	Average
0.16	29.01	0.06	9.55	38.62	65.43	-26.81	QP
0.50	10.05	0.07	9.55	19.67	46.01	-26.34	Average
0.50	25.09	0.07	9.55	34.71	56.01	-21.30	QP
0.90	13.20	0.07	9.55	22.82	46.00	-23.18	Average
0.90	26.68	0.07	9.55	36.30	56.00	-19.70	QP
1.67	14.58	0.11	9.55	24.24	46.00	-21.76	Average
1.67	29.47	0.11	9.55	39.13	56.00	-16.87	QP
4.38	17.42	0.17	9.56	27.15	46.00	-18.85	Average
4.38	27.11	0.17	9.56	36.84	56.00	-19.16	QP
7.69	18.64	0.21	9.58	28.43	50.00	-21.57	Average
7.69	28.52	0.21	9.58	38.31	60.00	-21.69	QP

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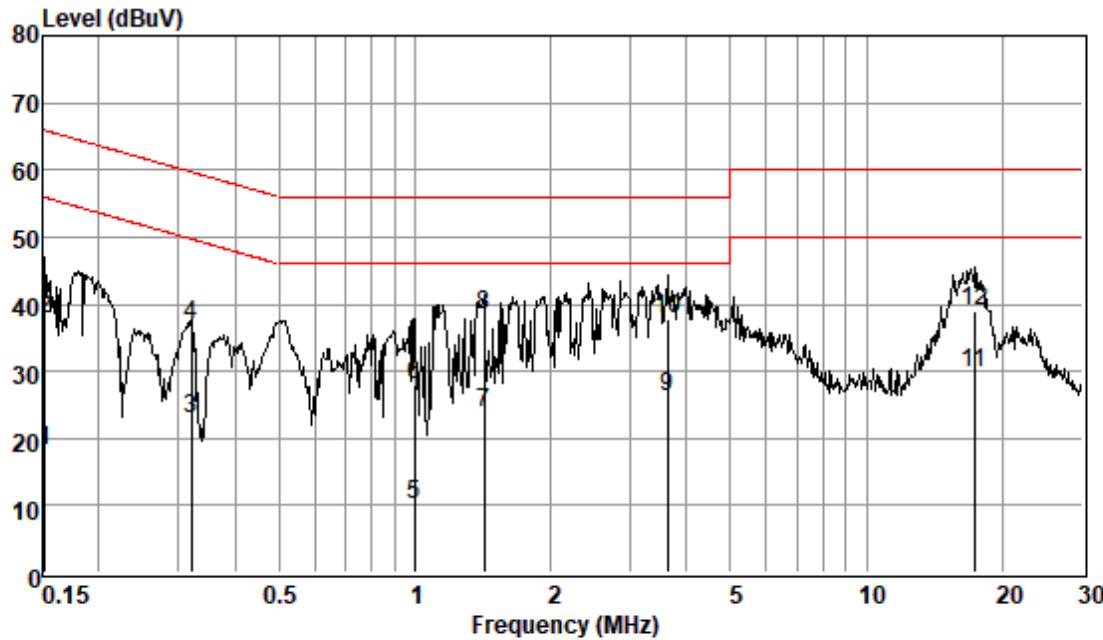


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Test Mode: 04; Polarity: Line; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Pol :LINE

Mode :

Model :

Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.15	8.56	0.06	9.62	18.24	55.91	-37.67	Average
0.15	28.14	0.06	9.62	37.82	65.91	-28.09	QP
0.32	13.19	0.06	9.62	22.87	49.71	-26.84	Average
0.32	27.28	0.06	9.62	36.96	59.71	-22.75	QP
1.00	0.28	0.07	9.62	9.97	46.00	-36.03	Average
1.00	18.19	0.07	9.62	27.88	56.00	-28.12	QP
1.43	14.11	0.09	9.61	23.81	46.00	-22.19	Average
1.43	28.80	0.09	9.61	38.50	56.00	-17.50	QP
3.62	16.48	0.16	9.62	26.26	46.00	-19.74	Average
3.62	28.05	0.16	9.62	37.83	56.00	-18.17	QP
17.29	19.77	0.34	9.75	29.86	50.00	-20.14	Average
17.29	28.88	0.34	9.75	38.97	60.00	-21.03	QP

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7.2 Duty Cycle

Test Requirement KDB 789033 D02 II B 1
 Test Method: KDB 789033 D02 II B 2

7.2.1 E.U.T. Operation

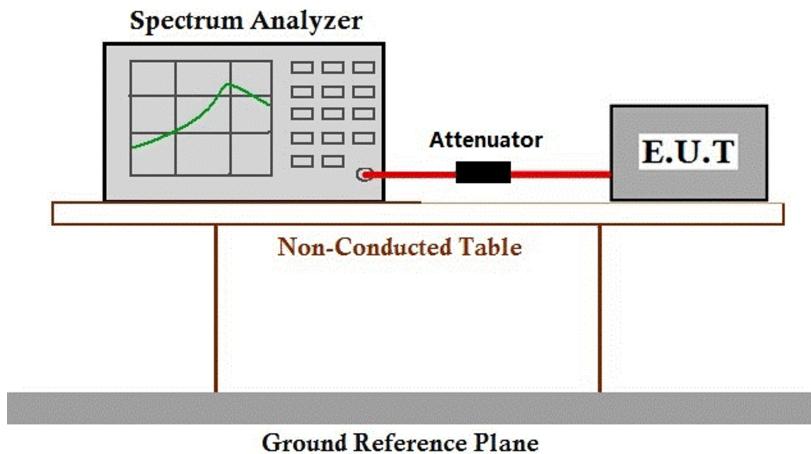
Operating Environment:

Temperature: 21.6 °C Humidity: 51.8 % RH Atmospheric Pressure: 1003 mbar

7.2.2 Test Mode Description

Pre-scan / Mode	Final test	Description
		TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	04	

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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7.3 99% Bandwidth

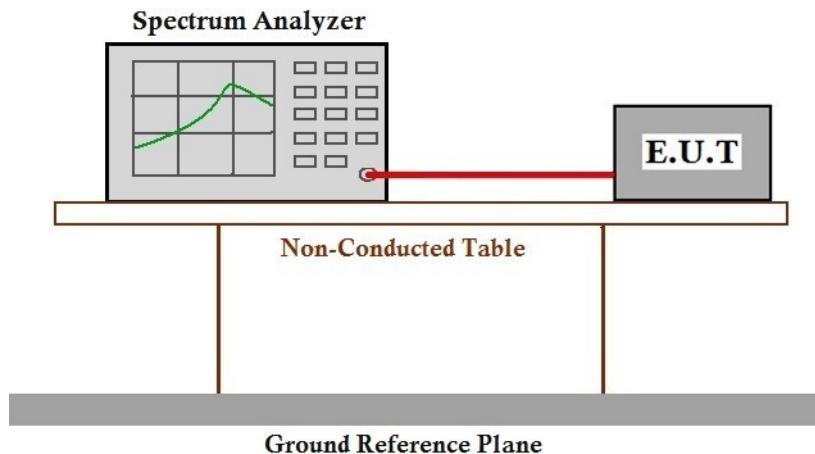
Test Requirement N/A
 Test Method: KDB 789033 II D

7.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.6 °C Humidity: 51.8 % RH Atmospheric Pressure: 1003 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram**7.3.4 Measurement Procedure and Data**

Please Refer to Appendix for Details

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7.4 26dB Emission bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)
Test Method: KDB 789033 D02 II C 1

7.4.1 E.U.T. Operation

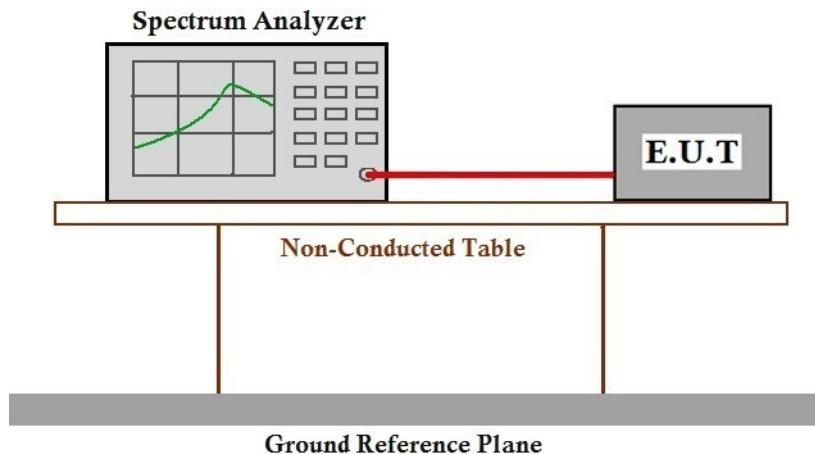
Operating Environment:

Temperature: 21.6 °C Humidity: 51.8 % RH Atmospheric Pressure: 1003 mbar

7.4.2 Test Mode Description

Pre-scan / Mode	Description
Final test	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.
Final test	04
Code	

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.5 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

Frequency band(MHz)	Limit
5150-5250	$\leq 1\text{W}(30\text{dBm})$ for master device
	$\leq 250\text{mW}(24\text{dBm})$ for client device
5250-5350	$\leq 250\text{mW}(24\text{dBm})$ for client device or $11\text{dBm}+10\log B^*$
5470-5725	$\leq 250\text{mW}(24\text{dBm})$ for client device or $11\text{dBm}+10\log B^*$
5725-5850	$\leq 1\text{W}(30\text{dBm})$
Remark:	<p>* Where B is the 26dB emission bandwidth in MHz.</p> <p>The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.</p>

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C Humidity: 51.8 % RH Atmospheric Pressure: 1003 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.

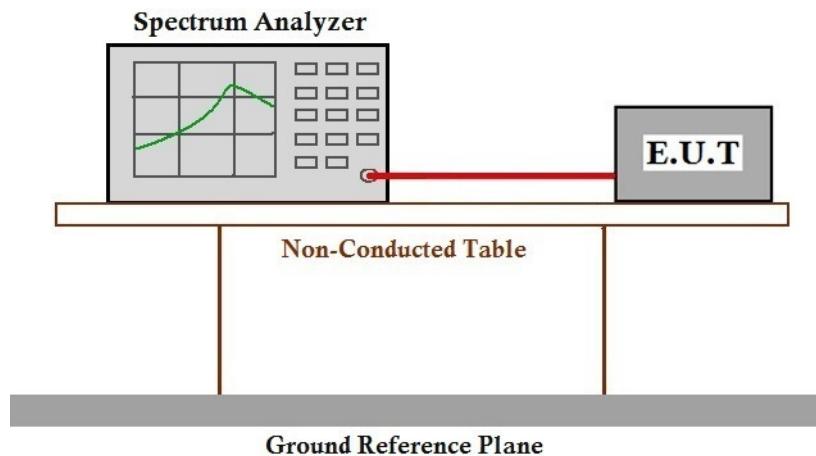
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7.5.3 Test Setup Diagram**7.5.4 Measurement Procedure and Data**

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7.6 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II F

Limit:

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C Humidity: 51.8 % RH Atmospheric Pressure: 1003 mbar

7.6.2 Test Mode Description

Pre-scan / Mode Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.

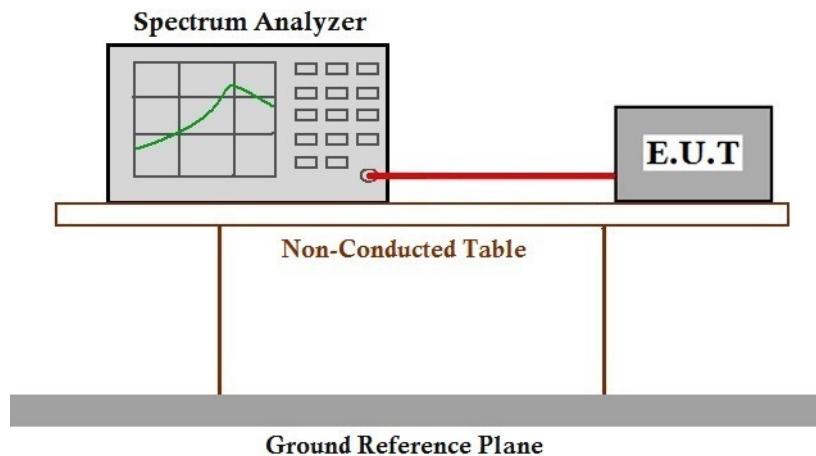
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7.6.3 Test Setup Diagram**7.6.4 Measurement Procedure and Data**

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7.7 Radiated Emissions (below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.407(b)

Test Method: KDB 789033 D02 II G

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

*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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: 21.7 °C

Humidity: 52.8 % RH

Atmospheric Pressure: 1003 mbar

7.7.2 Test Mode Description

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

TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram

7.7.4 Measurement Procedure and Data

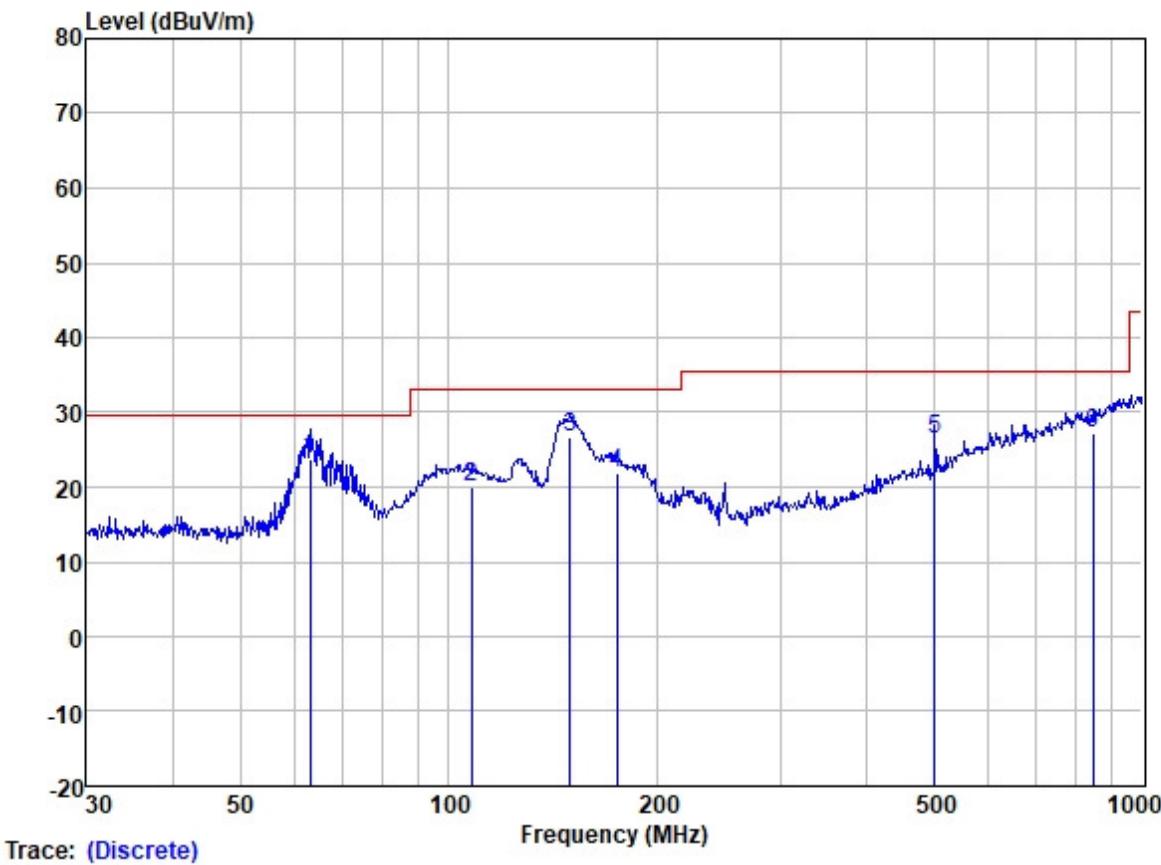
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted 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. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.
3. Scan from 9kHz to 1GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



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



Site : SGS
 Job :
 Model :
 Power :
 Test Mode : 5G WI-FI

Freq	Read	Antena	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1 63.09	36.54	13.00	1.31	27.15	23.70	29.50	-5.80	VERTICAL	QP
2 107.89	34.93	10.30	1.78	27.06	19.95	33.10	-13.15	VERTICAL	QP
3 149.49	37.46	13.78	2.22	26.84	26.62	33.10	-6.48	VERTICAL	QP
4 174.42	33.51	12.65	2.42	26.76	21.82	33.10	-11.28	VERTICAL	QP
5 501.18	31.91	17.93	4.43	27.98	26.29	35.60	-9.31	VERTICAL	QP
6 848.06	25.68	22.78	6.55	27.94	27.07	35.60	-8.53	VERTICAL	QP

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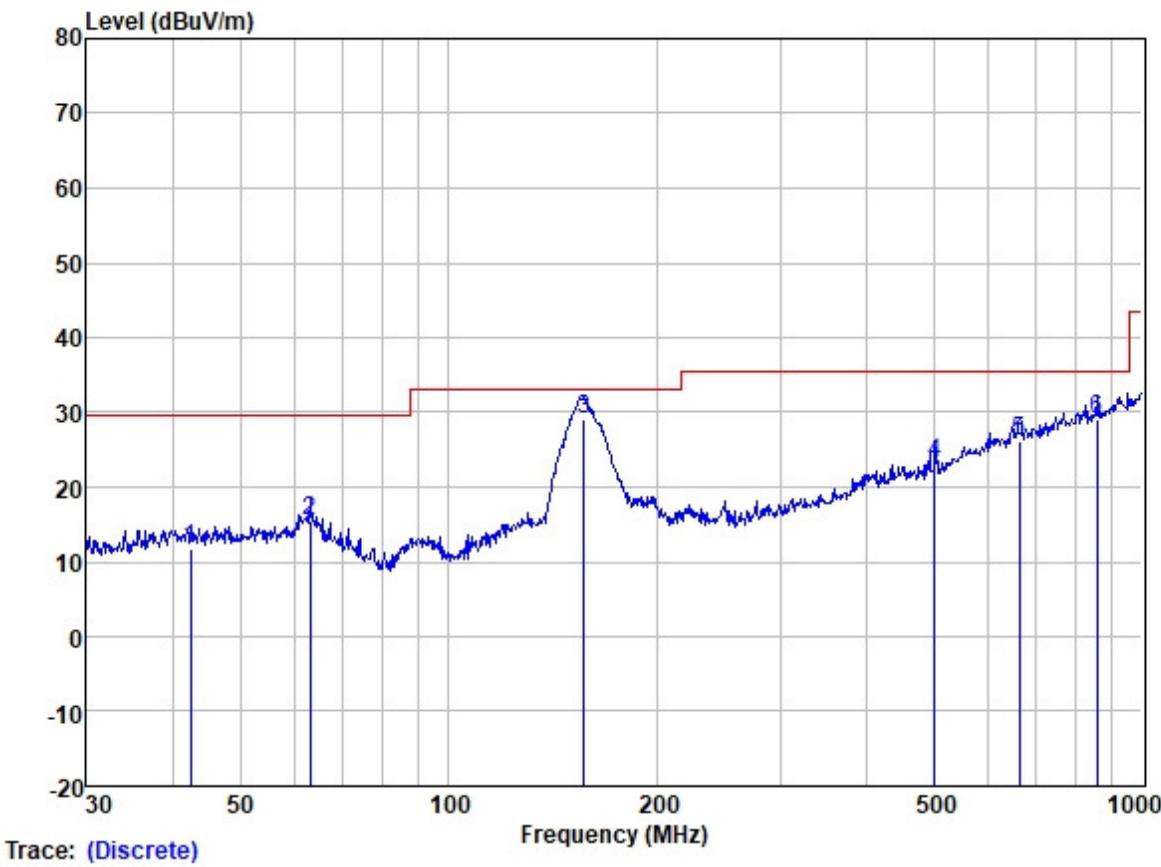
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Site : SGS
Job :
Model :
Power :
Test Mode : 5G WI-FI

Freq MHz	Read Level dBuV	Antena Factor dB/m	Cable Loss dB	Preamp Factor dB	Measured Level dBuV/m	Limit Line dBuV/m	Over Limit dBuV	Pol/ Phase	Remark
1 42.45	24.10	13.72	1.11	27.17	11.76	29.50	-17.74	HORIZONTAL	QP
2 63.09	28.32	13.00	1.31	27.15	15.48	29.50	-14.02	HORIZONTAL	QP
3 156.46	39.79	13.70	2.30	26.81	28.98	33.10	-4.12	HORIZONTAL	QP
4 501.18	28.82	17.93	4.43	27.98	23.20	35.60	-12.40	HORIZONTAL	QP
5 665.80	28.15	20.65	5.61	28.17	26.24	35.60	-9.36	HORIZONTAL	QP
6 860.04	27.28	23.00	6.63	27.91	29.00	35.60	-6.60	HORIZONTAL	QP

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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
63.09	23.70	15.31	51.04	34.16	40.00	-5.84	V
107.89	19.95	9.94	33.14	30.41	43.50	-13.09	V
149.49	26.62	21.43	71.43	37.08	43.50	-6.42	V
174.42	21.82	12.33	41.10	32.28	43.50	-11.22	V
501.18	26.29	20.63	68.77	36.75	46.00	-9.25	V
848.06	27.07	22.57	75.23	37.53	46.00	-8.47	V
42.45	11.76	3.87	12.91	22.22	40.00	-17.78	H
63.09	15.48	5.94	19.81	25.94	40.00	-14.06	H
156.46	28.98	28.12	93.73	39.44	43.50	-4.06	H
501.18	23.20	14.45	48.18	33.66	46.00	-12.34	H
665.80	26.24	20.51	68.37	36.70	46.00	-9.30	H
860.04	29.00	28.18	93.95	39.46	46.00	-6.54	H

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7.8 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.407(b)

Test Method: KDB 789033 D02 II G

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

*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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.

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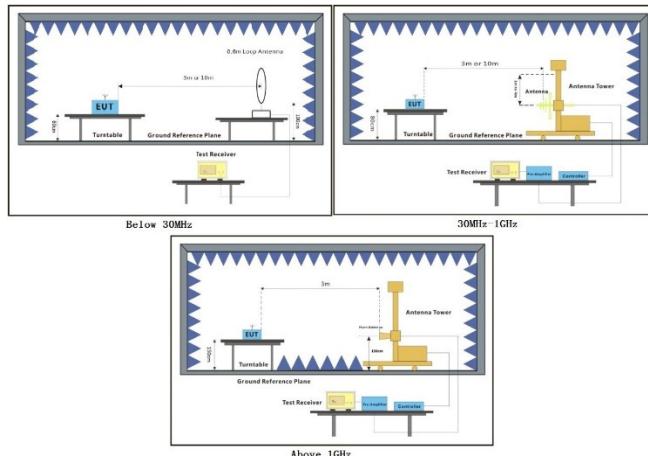
7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.3 °C Humidity: 51.4 % RH Atmospheric Pressure: 1003 mbar

7.8.2 Test Mode Description

Pre-scan / Mode	Description
Final test	
Final test 04	TX mode (U-NII-1)_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 @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20); data rate @ MCS0 is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT20); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT40); data rate @ MCS0 is the worst case of IEEE 802.11ac(VHT80). Only the data of worst case is recorded in the report.

7.8.3 Test Setup Diagram

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

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

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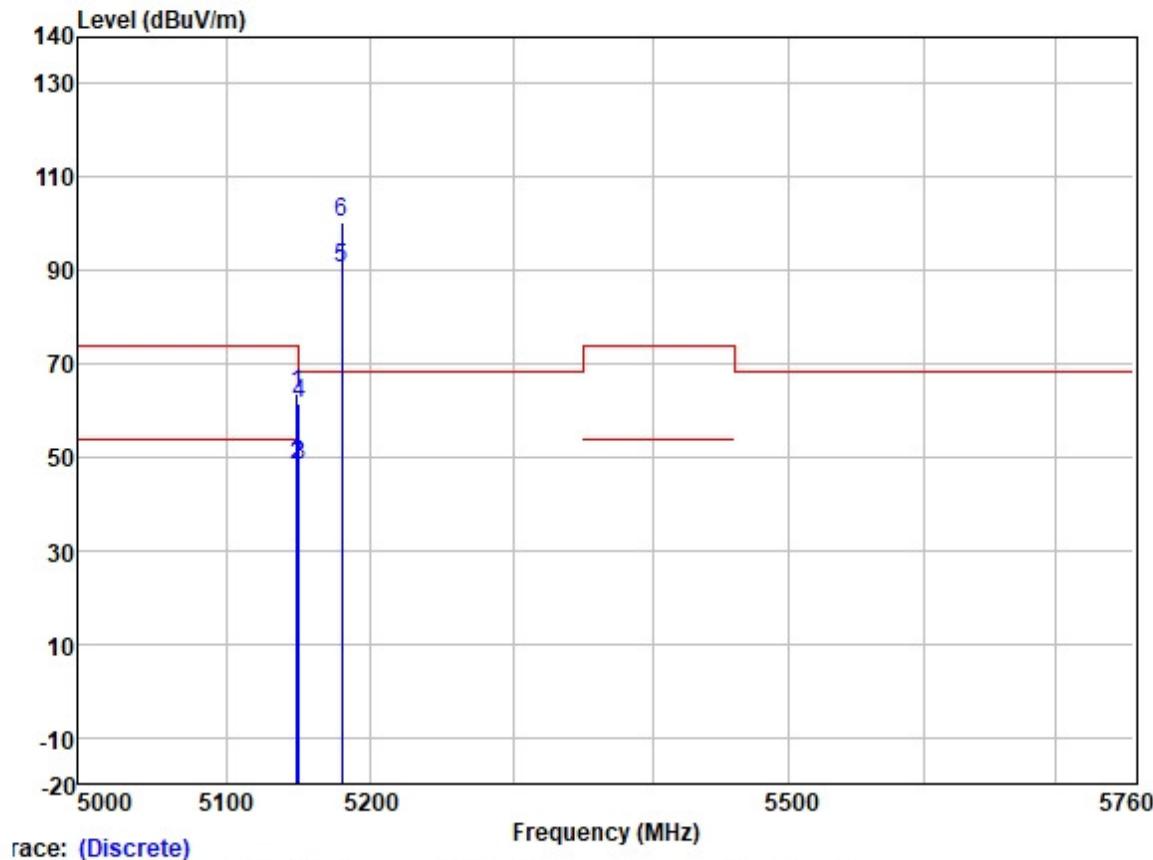
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



ReadAntenna	Cable	Preamp	Limit	Over	Limit			Over	Pol/Phase	Remark
					Freq	Level	Factor	Loss	Factor	Level
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1	5148.757	63.09	31.72	5.62	36.86	63.57	74.00	-10.43	HORIZONTAL	Peak
2	5149.257	47.68	31.72	5.62	36.86	48.16	54.00	-5.84	HORIZONTAL	Average
3	5149.980	47.62	31.72	5.62	36.86	48.10	54.00	-5.90	HORIZONTAL	Average
4	5149.980	61.06	31.72	5.62	36.86	61.54	74.00	-12.46	HORIZONTAL	Peak
5	5180.000	90.10	31.73	5.61	36.87	90.57	-----	-----	HORIZONTAL	Average
6 *	5180.000	99.83	31.73	5.61	36.87	100.30	68.20	32.10	HORIZONTAL	Peak

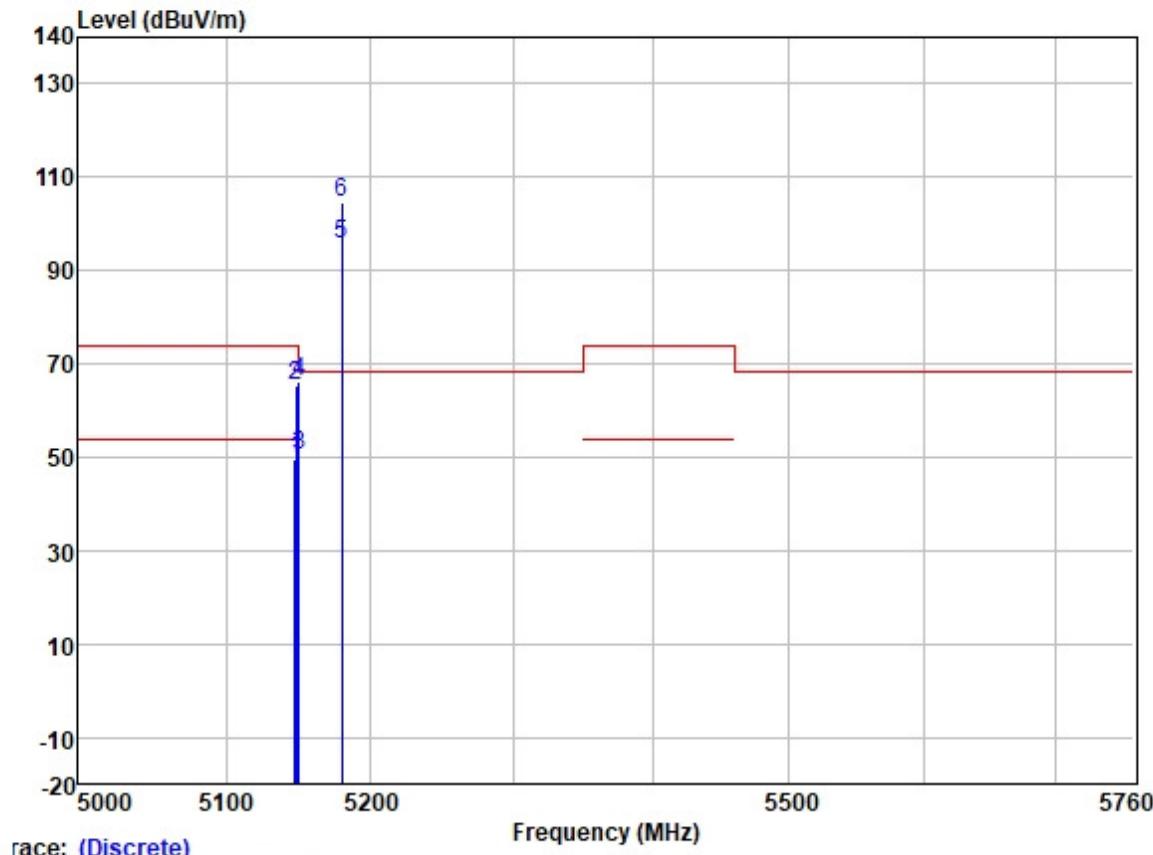
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Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Race: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	5147.058	49.13	31.72	5.62	36.86	49.61	54.00	-4.39	VERTICAL	Average	
2	5147.758	64.85	31.72	5.62	36.86	65.33	74.00	-8.67	VERTICAL	Peak	
3	5149.980	49.80	31.72	5.62	36.86	50.28	54.00	-3.72	VERTICAL	Average	
4	5149.980	65.65	31.72	5.62	36.86	66.13	74.00	-7.87	VERTICAL	Peak	
5	5180.000	95.32	31.73	5.61	36.87	95.79	-----	-----	VERTICAL	Average	
6 *	5180.000	104.04	31.73	5.61	36.87	104.51	68.20	36.31	VERTICAL	Peak	

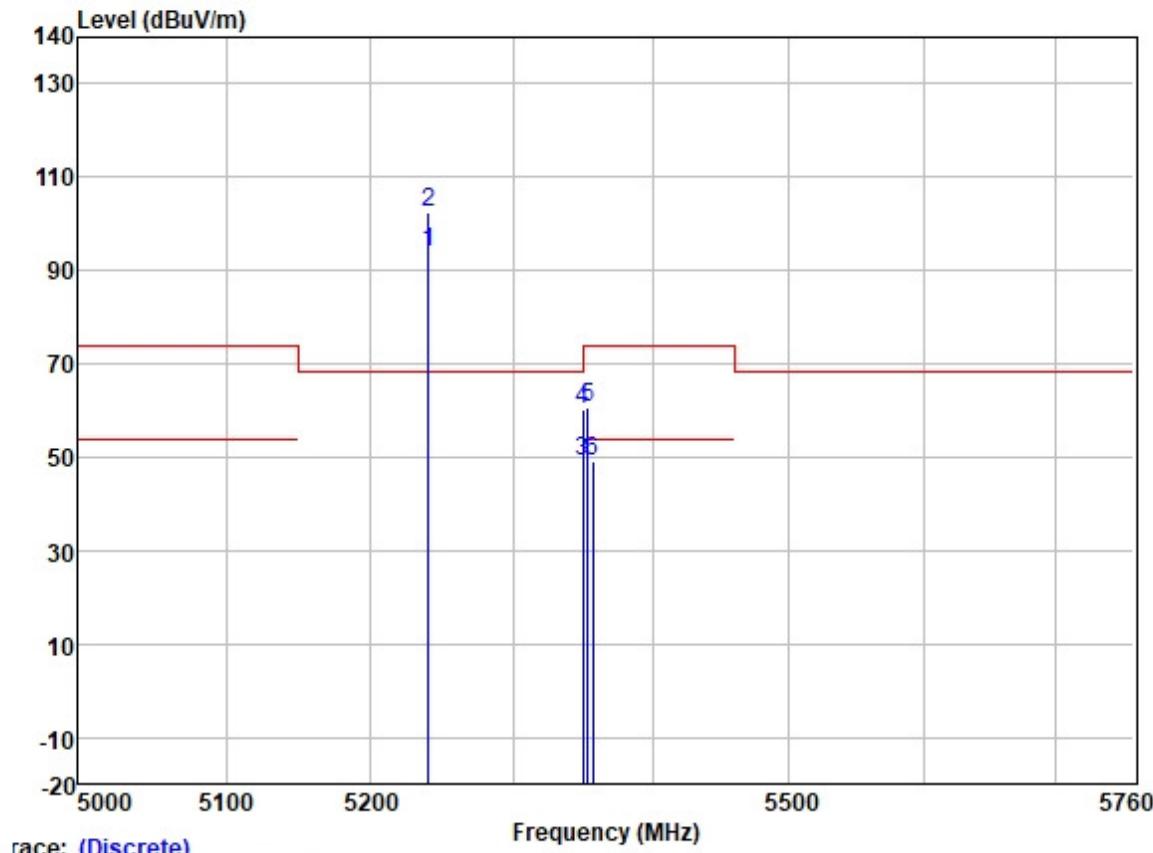
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

ReadAntenna	Cable	Preamp	Limit	Over	Race		Pol/Phase	Remark						
					Freq	Level	Factor	Loss	Factor	Level	Line	dB		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m								
1	5240.000	93.18	31.75	5.74	36.87	93.80	-----	-----	-----	HORIZONTAL	Average			
2 *	5240.000	101.90	31.75	5.74	36.87	102.52	68.20	34.32	HORIZONTAL	Peak				
3	5350.020	48.26	31.77	6.05	36.88	49.20	54.00	-4.80	HORIZONTAL	Average				
4	5350.020	59.42	31.77	6.05	36.88	60.36	74.00	-13.64	HORIZONTAL	Peak				
5	5353.195	59.77	31.77	6.05	36.88	60.71	74.00	-13.29	HORIZONTAL	Peak				
6	5356.596	48.26	31.78	6.03	36.88	49.19	54.00	-4.81	HORIZONTAL	Average				

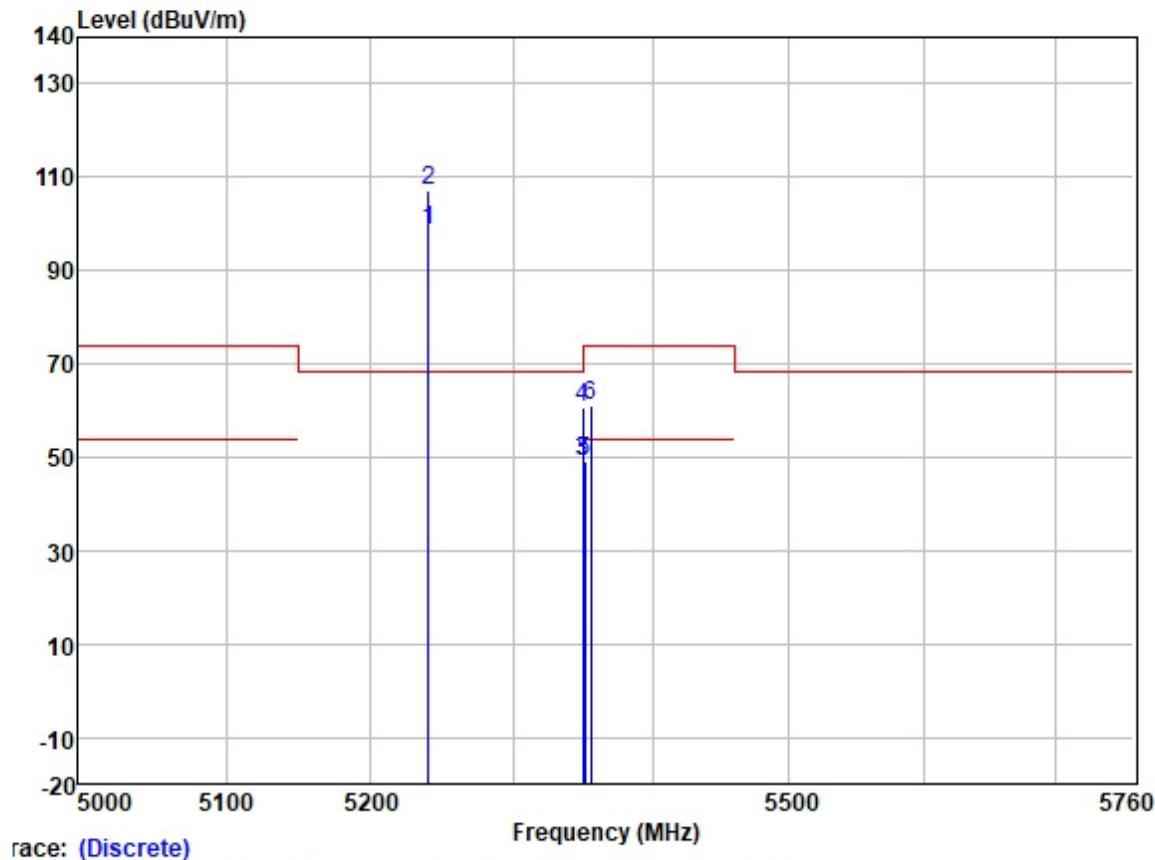
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Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Race: (Discrete)

Race	Freq	ReadAntenna		Cable		Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
		Level	Factor	Loss	Factor							
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB				
1	5240.000	98.01	31.75	5.74	36.87	98.63	-----	-----	-----	-----	-----	Average
2 *	5240.000	106.44	31.75	5.74	36.87	107.06	68.20	38.86	VERTICAL	VERTICAL	VERTICAL	Peak
3	5350.020	47.97	31.77	6.05	36.88	48.91	54.00	-5.09	VERTICAL	VERTICAL	VERTICAL	Average
4	5350.020	59.59	31.77	6.05	36.88	60.53	74.00	-13.47	VERTICAL	VERTICAL	VERTICAL	Peak
5	5351.354	48.28	31.77	6.05	36.88	49.22	54.00	-4.78	VERTICAL	VERTICAL	VERTICAL	Average
6	5355.321	60.16	31.78	6.03	36.88	61.09	74.00	-12.91	VERTICAL	VERTICAL	VERTICAL	Peak

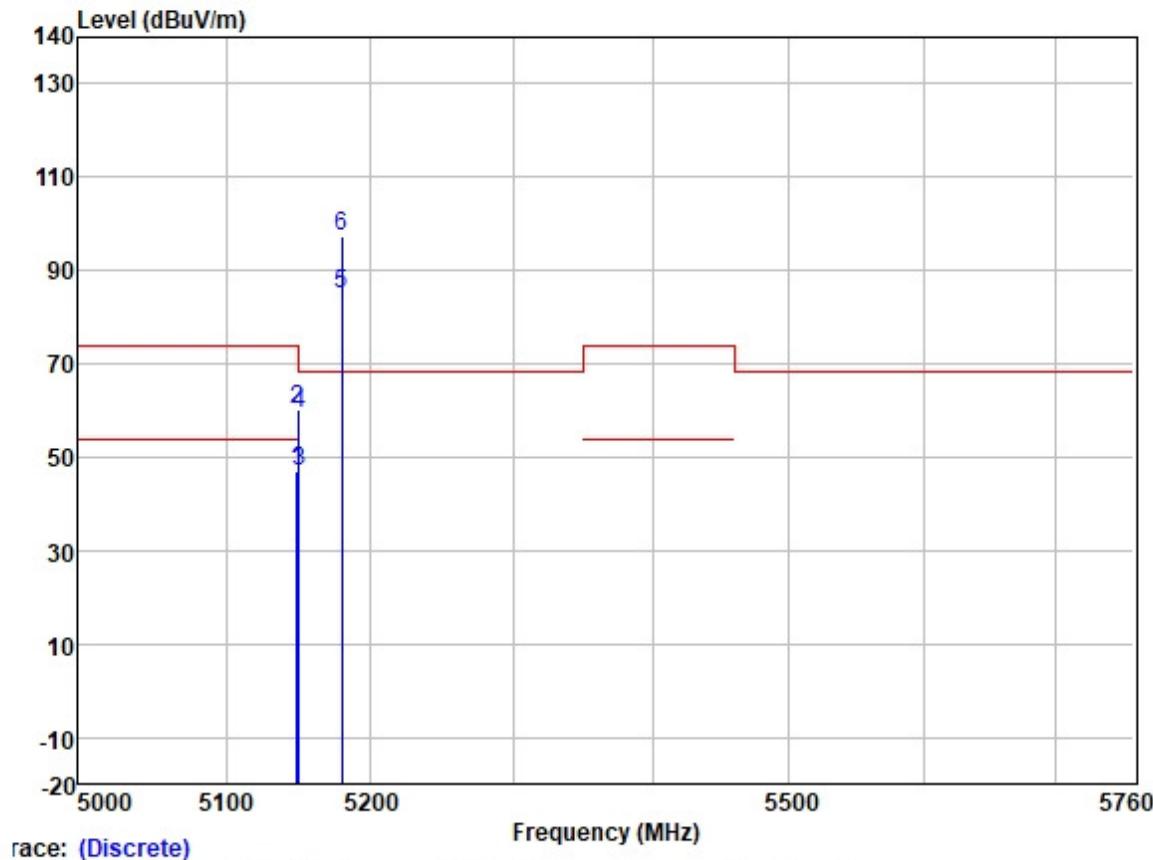
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Index	Frequency (MHz)	ReadAntenna		Cable		Preamp		Limit Line	Over Line	Pol/Phase	Remark
		Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	5148.657	46.65	31.72	5.62	36.86	47.13	54.00	-6.87	HORIZONTAL	Average	
2	5149.257	59.53	31.72	5.62	36.86	60.01	74.00	-13.99	HORIZONTAL	Peak	
3	5149.980	46.50	31.72	5.62	36.86	46.98	54.00	-7.02	HORIZONTAL	Average	
4	5149.980	58.89	31.72	5.62	36.86	59.37	74.00	-14.63	HORIZONTAL	Peak	
5	5180.000	84.48	31.73	5.61	36.87	84.95	-----	-----	HORIZONTAL	Average	
6 *	5180.000	96.96	31.73	5.61	36.87	97.43	68.20	29.23	HORIZONTAL	Peak	

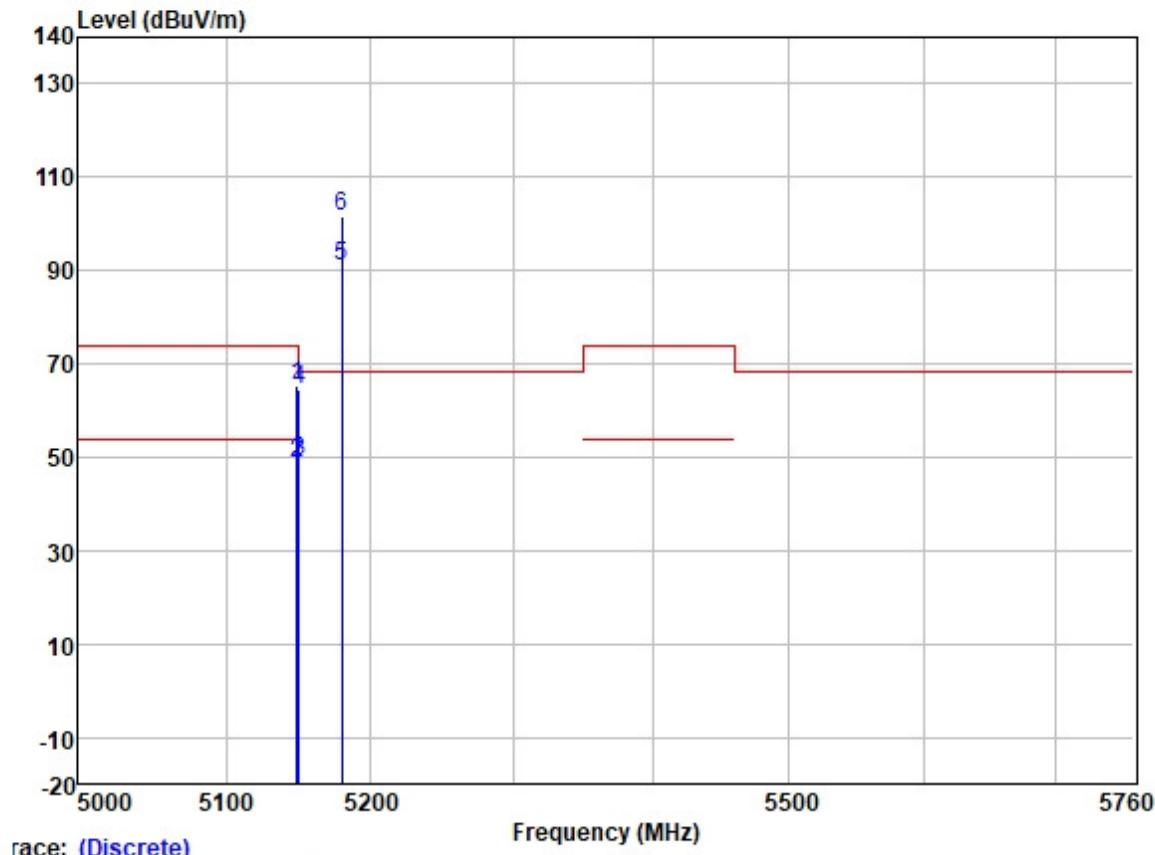
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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	5148.458	64.73	31.72	5.62	36.86	65.21	74.00	-8.79	VERTICAL	Peak
2	5148.958	48.09	31.72	5.62	36.86	48.57	54.00	-5.43	VERTICAL	Average
3	5149.980	48.51	31.72	5.62	36.86	48.99	54.00	-5.01	VERTICAL	Average
4	5149.980	63.95	31.72	5.62	36.86	64.43	74.00	-9.57	VERTICAL	Peak
5	5180.000	90.38	31.73	5.61	36.87	90.85	-----	-----	VERTICAL	Average
6 *	5180.000	101.22	31.73	5.61	36.87	101.69	68.20	33.49	VERTICAL	Peak

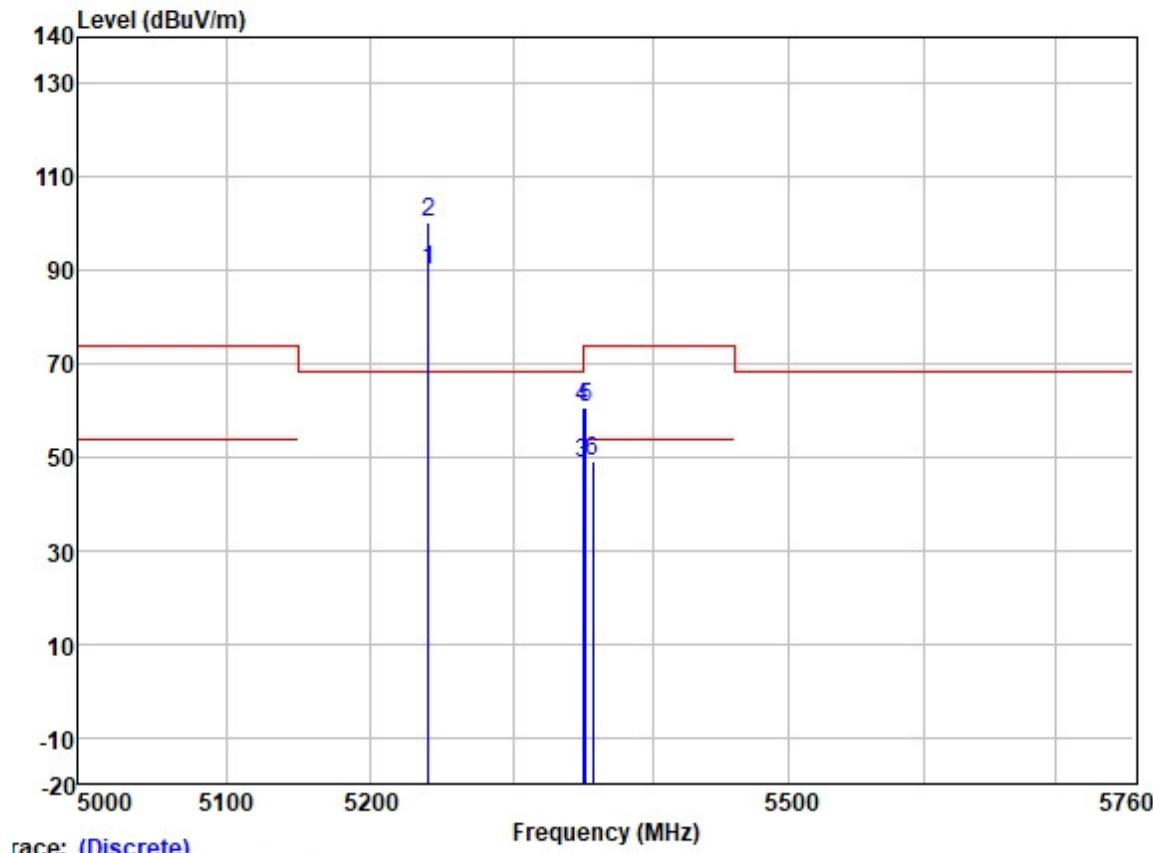
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	5240.000	89.31	31.75	5.74	36.87	89.93	-----	-----	HORIZONTAL	Average
2 *	5240.000	99.60	31.75	5.74	36.87	100.22	68.20	32.02	HORIZONTAL	Peak
3	5350.020	47.86	31.77	6.05	36.88	48.80	54.00	-5.20	HORIZONTAL	Average
4	5350.020	59.66	31.77	6.05	36.88	60.60	74.00	-13.40	HORIZONTAL	Peak
5	5351.637	59.75	31.77	6.05	36.88	60.69	74.00	-13.31	HORIZONTAL	Peak
6	5356.880	48.25	31.78	6.03	36.88	49.18	54.00	-4.82	HORIZONTAL	Average

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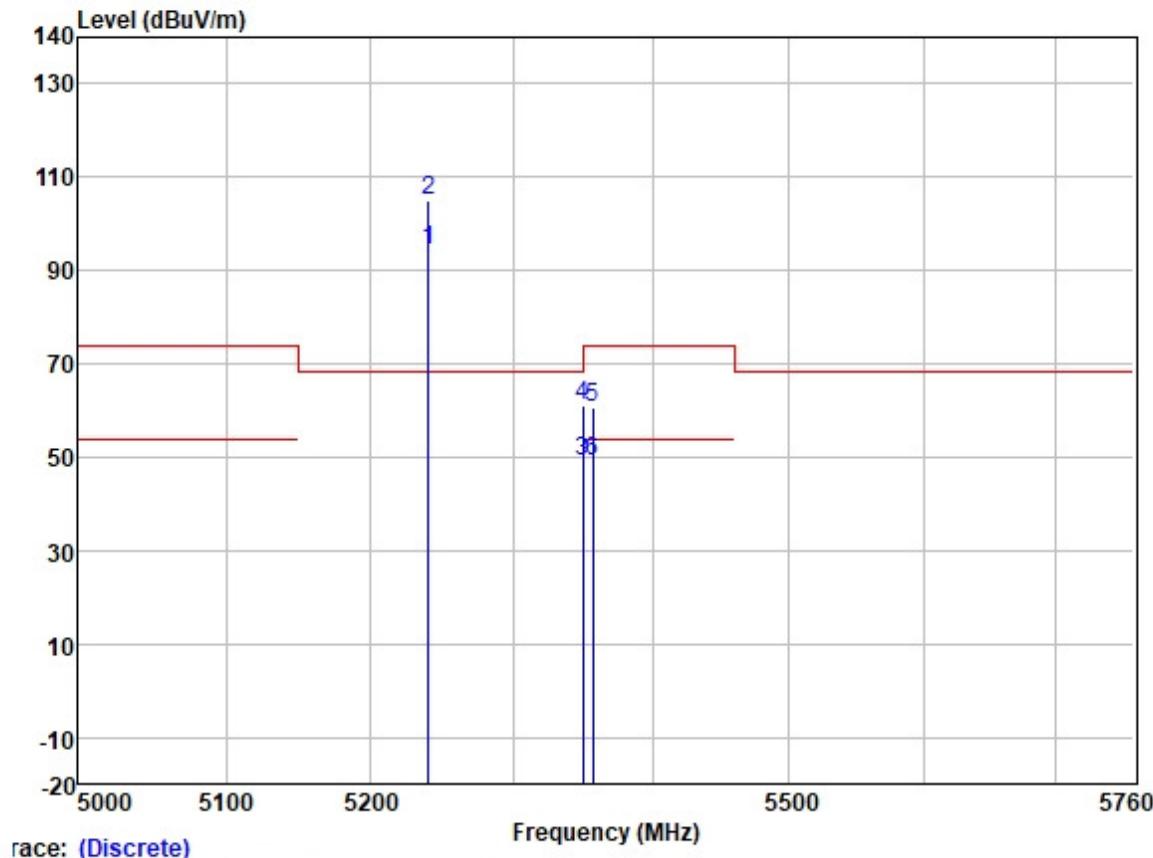


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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High



Race: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Line	Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB				
1	5240.000	93.84	31.75	5.74	36.87	94.46	-----	-----	-----	-----	-----	Average
2 *	5240.000	104.32	31.75	5.74	36.87	104.94	68.20	36.74	VERTICAL	VERTICAL	Peak	
3	5350.020	48.02	31.77	6.05	36.88	48.96	54.00	-5.04	VERTICAL	VERTICAL	Average	
4	5350.020	59.94	31.77	6.05	36.88	60.88	74.00	-13.12	VERTICAL	VERTICAL	Peak	
5	5356.596	59.92	31.78	6.03	36.88	60.85	74.00	-13.15	VERTICAL	VERTICAL	Peak	
6	5357.022	48.37	31.78	6.03	36.88	49.30	54.00	-4.70	VERTICAL	VERTICAL	Average	

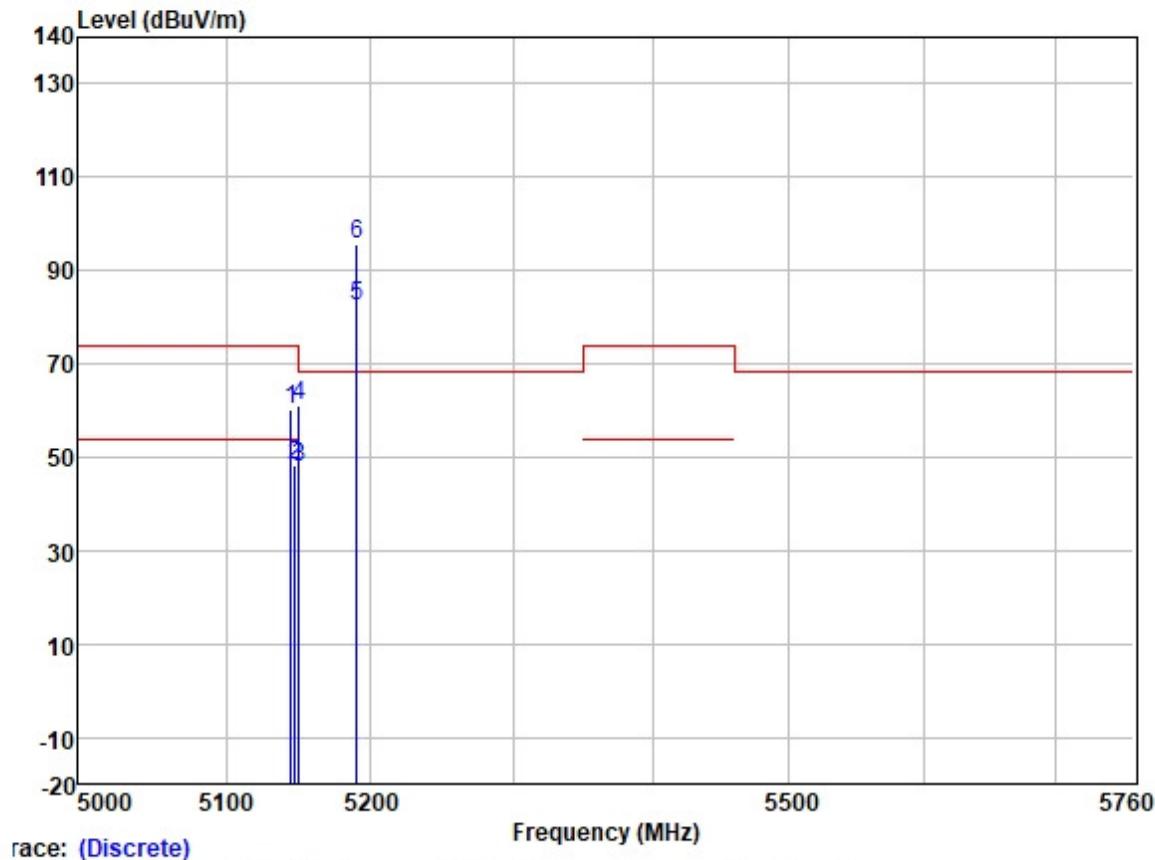
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Index	Frequency (MHz)	ReadAntenna		Cable		Preamp		Limit Line	Over Line	Pol/Phase	Remark
		Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	5144.554	59.83	31.72	5.62	36.86	60.31	74.00	-13.69	HORIZONTAL	Peak	
2	5147.545	47.73	31.72	5.62	36.86	48.21	54.00	-5.79	HORIZONTAL	Average	
3	5149.980	47.53	31.72	5.62	36.86	48.01	54.00	-5.99	HORIZONTAL	Average	
4	5149.980	60.65	31.72	5.62	36.86	61.13	74.00	-12.87	HORIZONTAL	Peak	
5	5190.000	82.15	31.73	5.60	36.87	82.61	-----	-----	HORIZONTAL	Average	
6 *	5190.000	95.18	31.73	5.60	36.87	95.64	68.20	27.44	HORIZONTAL	Peak	

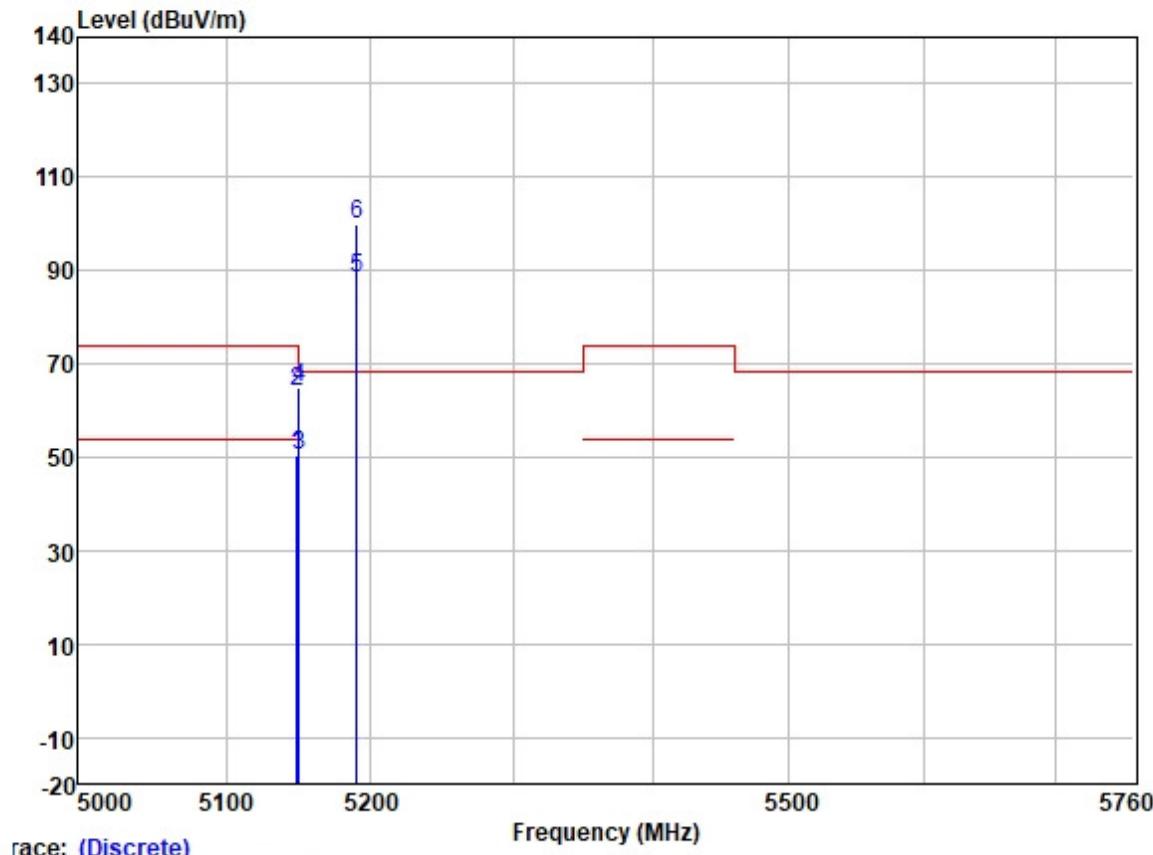
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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



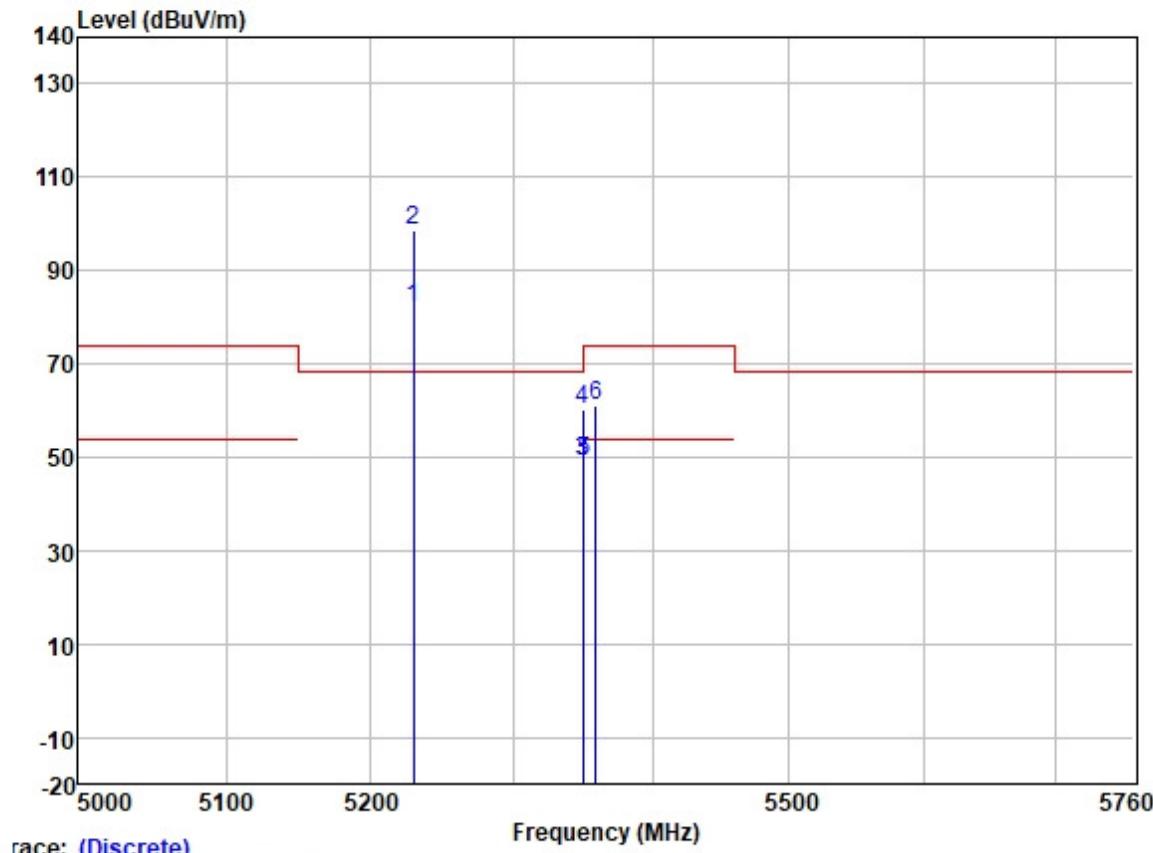
Index	Frequency (MHz)	ReadAntenna		Cable		Preamp Loss	Factor	Limit Level	Line	Over Limit	Pol/Phase	Remark
		Freq	Level	Factor	dB							
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1	5148.384	49.85	31.72	5.62	36.86	50.33	54.00	-3.67	VERTICAL		Average	
2	5149.342	63.46	31.72	5.62	36.86	63.94	74.00	-10.06	VERTICAL		Peak	
3	5149.980	50.07	31.72	5.62	36.86	50.55	54.00	-3.45	VERTICAL		Average	
4	5149.980	64.22	31.72	5.62	36.86	64.70	74.00	-9.30	VERTICAL		Peak	
5	5190.000	88.05	31.73	5.60	36.87	88.51	-----	-----	VERTICAL		Average	
6 *	5190.000	99.26	31.73	5.60	36.87	99.72	68.20	31.52	VERTICAL		Peak	

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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Trace: (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Limit	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	5230.000	81.30	31.74	5.70	36.87	81.87	-----	-----	HORIZONTAL	Average	
2 *	5230.000	98.14	31.74	5.70	36.87	98.71	68.20	30.51	HORIZONTAL	Peak	
3	5350.020	48.30	31.77	6.05	36.88	49.24	54.00	-4.76	HORIZONTAL	Average	
4	5350.020	59.23	31.77	6.05	36.88	60.17	74.00	-13.83	HORIZONTAL	Peak	
5	5350.749	48.26	31.77	6.05	36.88	49.20	54.00	-4.80	HORIZONTAL	Average	
6	5359.350	60.10	31.78	6.03	36.88	61.03	74.00	-12.97	HORIZONTAL	Peak	

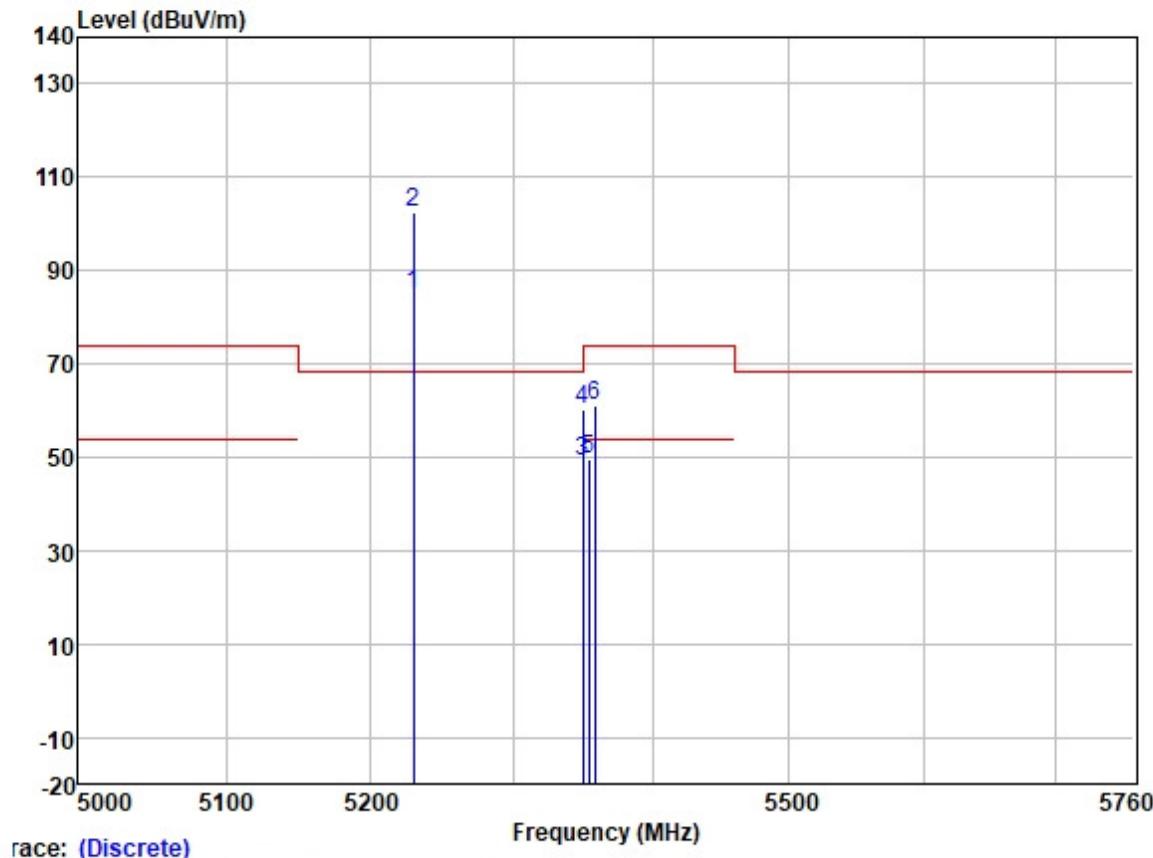
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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Mode: (Discrete)

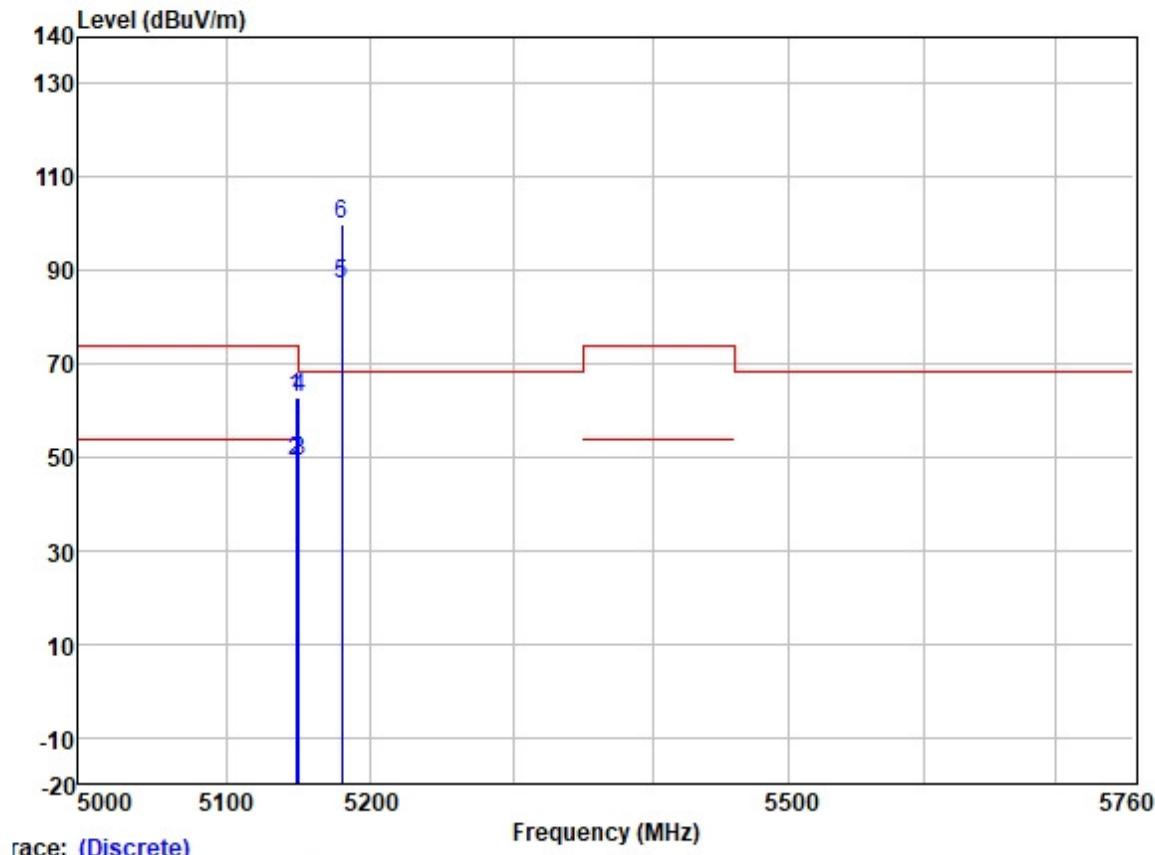
ReadAntenna	Cable		Preamp	Limit	Over	Pol/Phase	Remark	
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	5230.000	84.45	31.74	5.70	36.87	85.02	-----	----- VERTICAL Average
2 *	5230.000	101.69	31.74	5.70	36.87	102.26	68.20	34.06 VERTICAL Peak
3	5350.020	48.32	31.77	6.05	36.88	49.26	54.00	-4.74 VERTICAL Average
4	5350.020	59.40	31.77	6.05	36.88	60.34	74.00	-13.66 VERTICAL Peak
5	5353.993	48.50	31.77	6.05	36.88	49.44	54.00	-4.56 VERTICAL Average
6	5358.376	60.08	31.78	6.03	36.88	61.01	74.00	-12.99 VERTICAL Peak

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



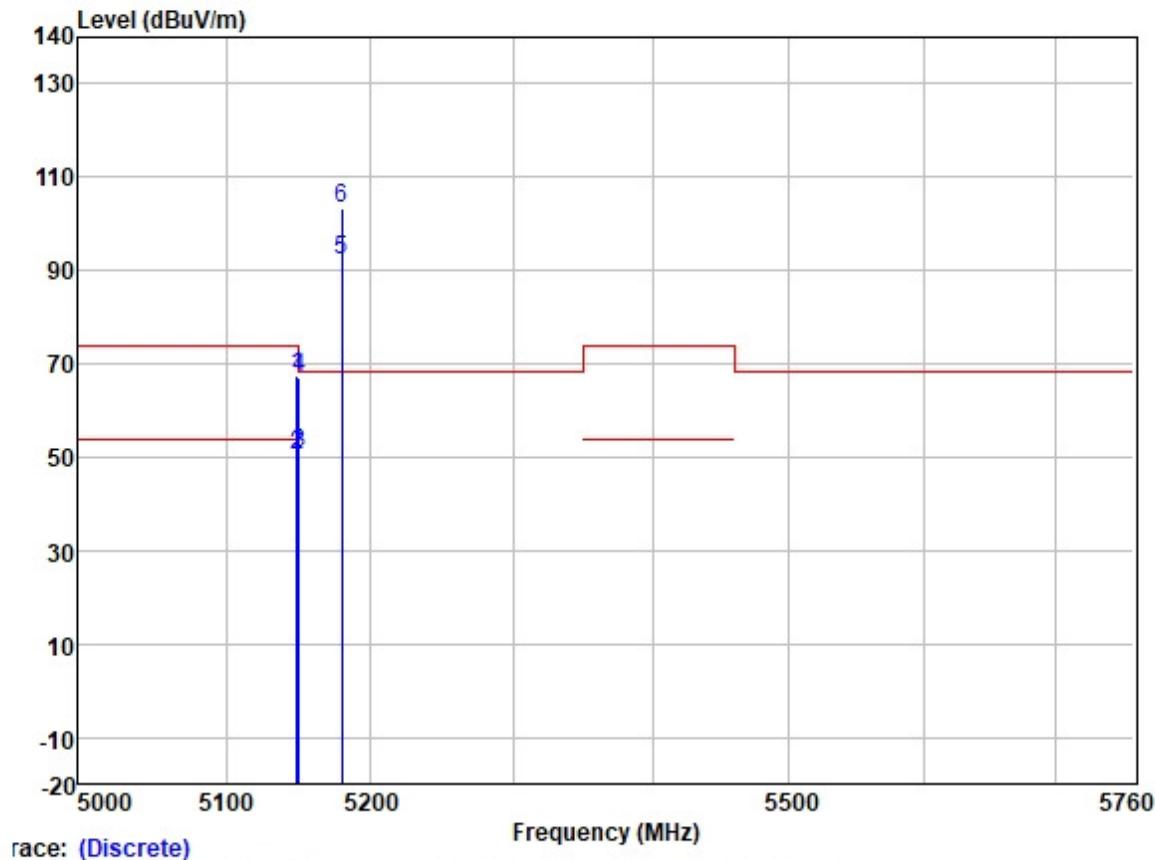
ReadAntenna	Cable	Preamp	Limit	Over	Limit			Over	Pol/Phase	Remark
					Freq	Level	Factor	Loss	Factor	Level
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1	5147.658	62.25	31.72	5.62	36.86	62.73	74.00	-11.27	HORIZONTAL	Peak
2	5147.758	48.56	31.72	5.62	36.86	49.04	54.00	-4.96	HORIZONTAL	Average
3	5149.980	48.76	31.72	5.62	36.86	49.24	54.00	-4.76	HORIZONTAL	Average
4	5149.980	62.31	31.72	5.62	36.86	62.79	74.00	-11.21	HORIZONTAL	Peak
5	5180.000	86.63	31.73	5.61	36.87	87.10	-----	-----	HORIZONTAL	Average
6 *	5180.000	99.38	31.73	5.61	36.87	99.85	68.20	31.65	HORIZONTAL	Peak

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



Index	Frequency (MHz)	ReadAntenna		Cable		Preamp		Limit Line	Over Limit	Pol/Phase	Remark
		Freq	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	5148.657	66.88	31.72	5.62	36.86	67.36	74.00	-6.64	VERTICAL	Peak	
2	5149.458	50.01	31.72	5.62	36.86	50.49	54.00	-3.51	VERTICAL	Average	
3	5149.980	50.39	31.72	5.62	36.86	50.87	54.00	-3.13	VERTICAL	Average	
4	5149.980	66.41	31.72	5.62	36.86	66.89	74.00	-7.11	VERTICAL	Peak	
5	5180.000	91.95	31.73	5.61	36.87	92.42	-----	-----	VERTICAL	Average	
6 *	5180.000	102.72	31.73	5.61	36.87	103.19	68.20	34.99	VERTICAL	Peak	

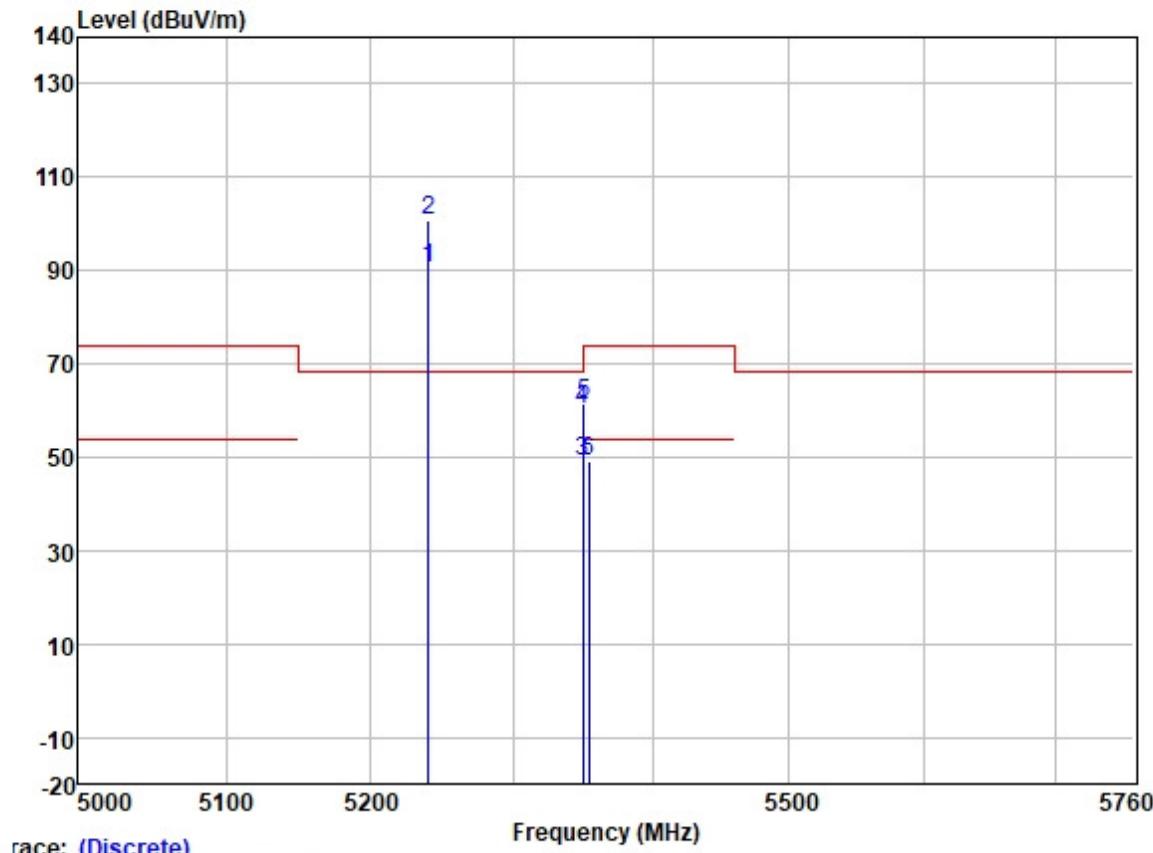
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

ReadAntenna	Cable	Preamp	Limit	Over	Race: (Discrete)		Pol/Phase	Remark
					Freq	Level	Factor	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	5240.000	89.87	31.75	5.74	36.87	90.49	-----	HORIZONTAL Average
2 *	5240.000	100.23	31.75	5.74	36.87	100.85	68.20	32.65 HORIZONTAL Peak
3	5350.020	48.33	31.77	6.05	36.88	49.27	54.00	-4.73 HORIZONTAL Average
4	5350.020	59.35	31.77	6.05	36.88	60.29	74.00	-13.71 HORIZONTAL Peak
5	5350.787	60.38	31.77	6.05	36.88	61.32	74.00	-12.68 HORIZONTAL Peak
6	5353.762	48.30	31.77	6.05	36.88	49.24	54.00	-4.76 HORIZONTAL Average

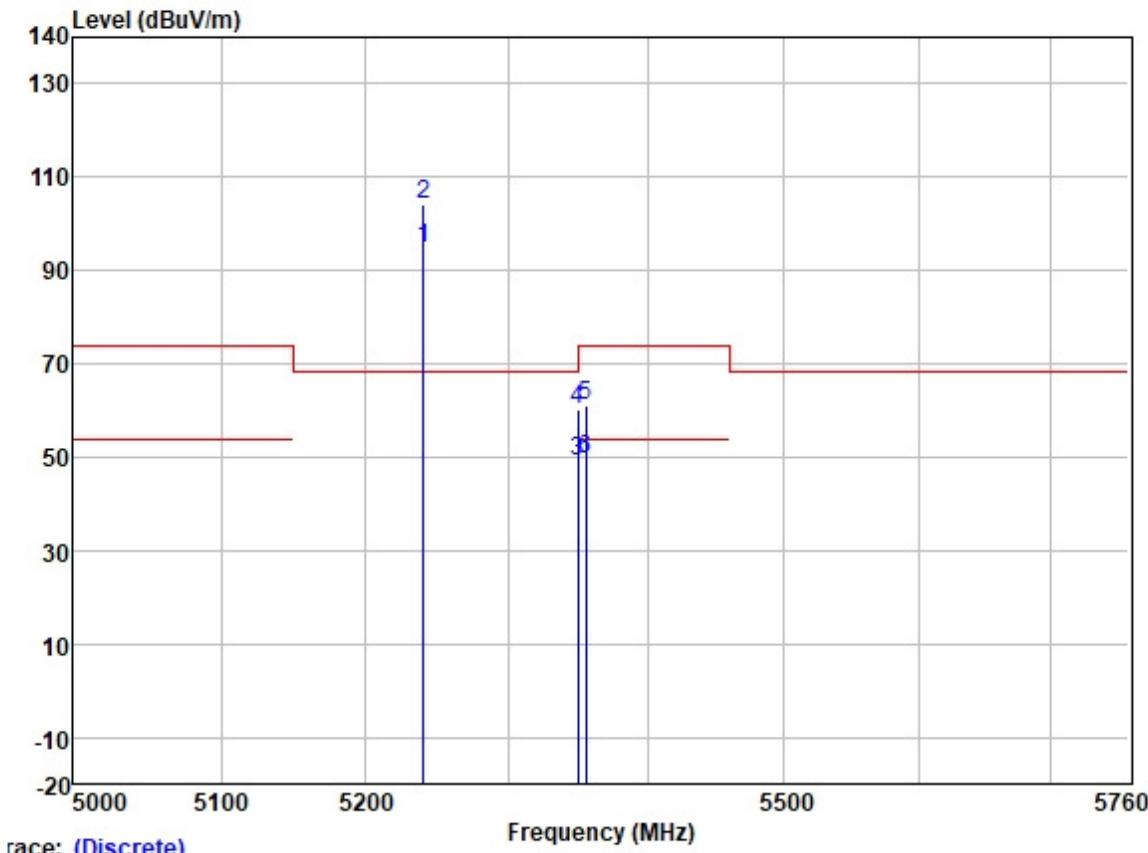
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Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:20MHz; Channel:High



Mode: (Discrete)

ReadAntenna	Cable	Preamp	Limit	Over	Limit		Over	Pol/Phase	Remark
					Freq	Level			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 5240.000	94.19	31.75	5.74	36.87	94.81	-----	-----	VERTICAL	Average
2 * 5240.000	103.67	31.75	5.74	36.87	104.29	68.20	36.09	VERTICAL	Peak
3 5350.020	48.10	31.77	6.05	36.88	49.04	54.00	-4.96	VERTICAL	Average
4 5350.020	59.22	31.77	6.05	36.88	60.16	74.00	-13.84	VERTICAL	Peak
5 5355.604	59.98	31.78	6.03	36.88	60.91	74.00	-13.09	VERTICAL	Peak
6 5355.746	48.42	31.78	6.03	36.88	49.35	54.00	-4.65	VERTICAL	Average

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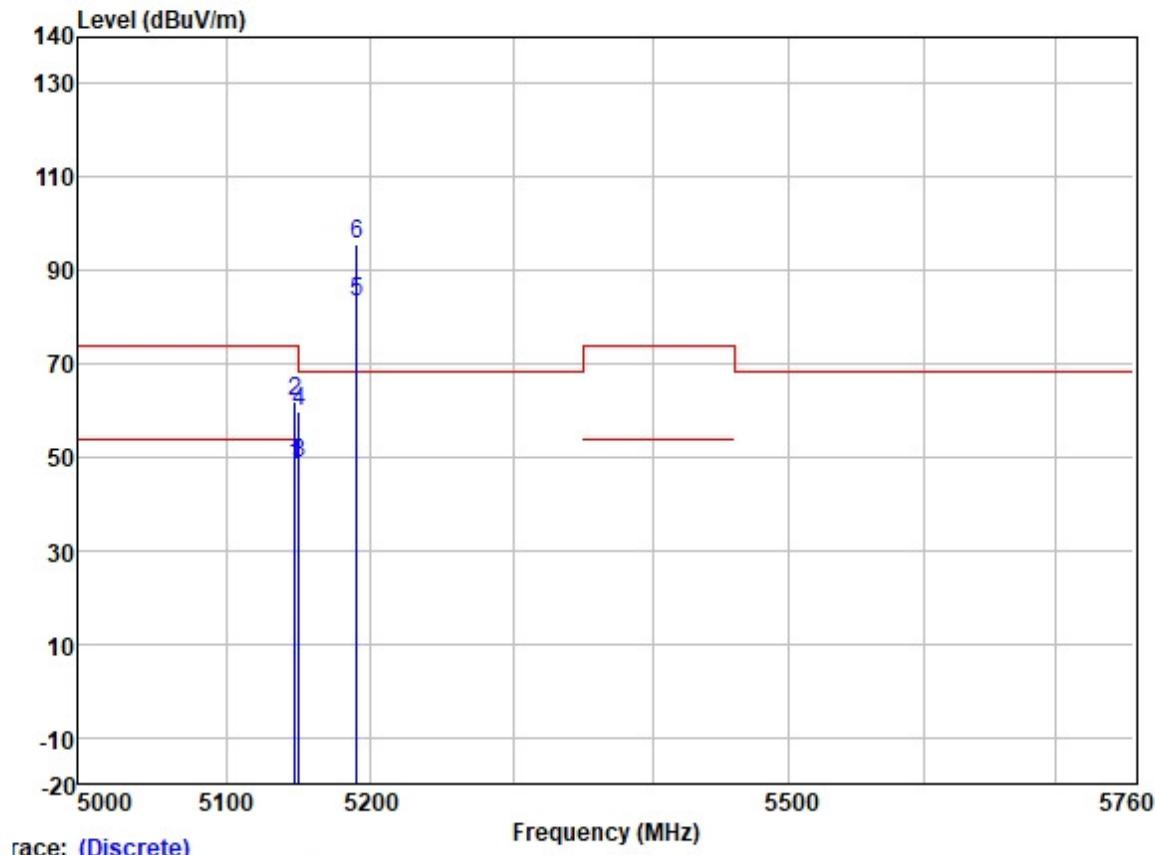
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



Mode: (Discrete)

Line	Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
		Freq	Level	Factor	Loss					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	5147.545	47.95	31.72	5.62	36.86	48.43	54.00	-5.57	HORIZONTAL	Average
2	5147.545	61.40	31.72	5.62	36.86	61.88	74.00	-12.12	HORIZONTAL	Peak
3	5149.980	48.08	31.72	5.62	36.86	48.56	54.00	-5.44	HORIZONTAL	Average
4	5149.980	59.30	31.72	5.62	36.86	59.78	74.00	-14.22	HORIZONTAL	Peak
5	5190.000	82.70	31.73	5.60	36.87	83.16	-----	-----	HORIZONTAL	Average
6 *	5190.000	95.26	31.73	5.60	36.87	95.72	68.20	27.52	HORIZONTAL	Peak

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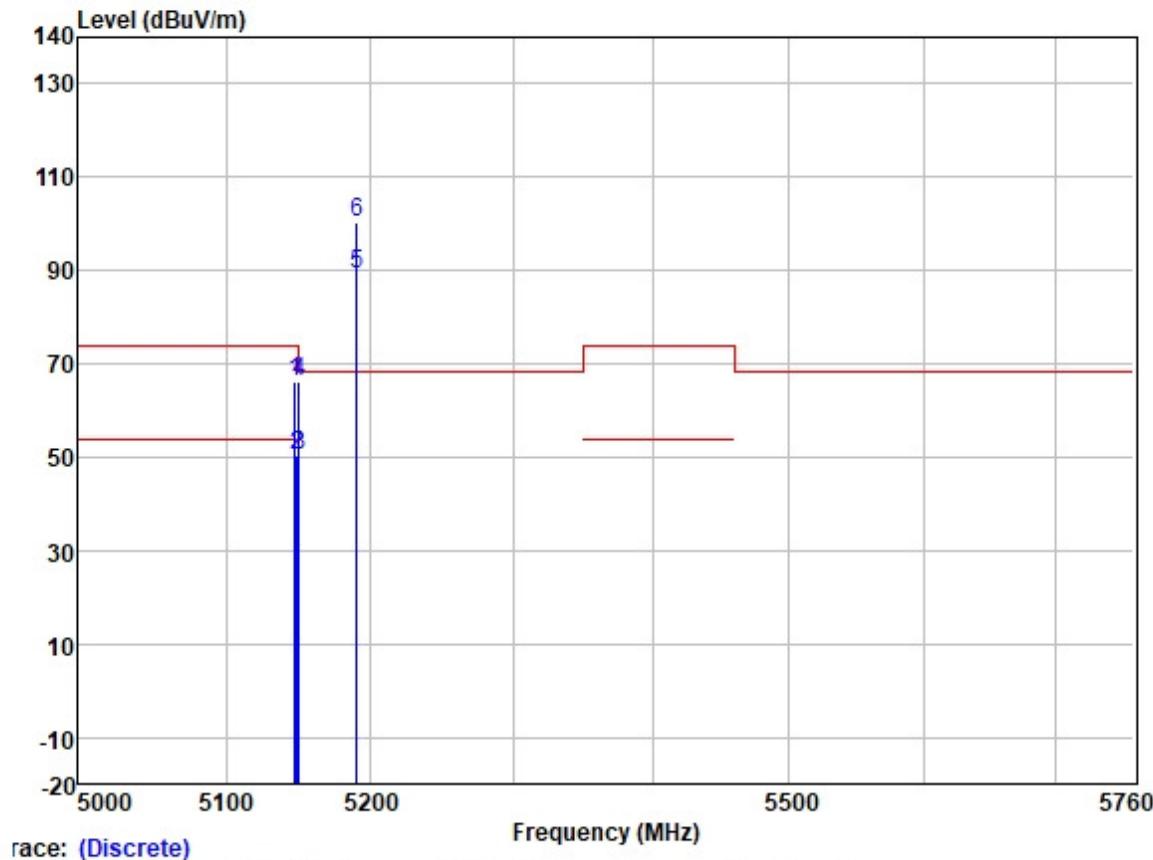
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Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:Low



Mode: (Discrete)

ReadAntenna	Cable	Preamp	Limit	Over	Limit		Over	Pol/Phase	Remark
					Freq	Level			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 5146.947	65.58	31.72	5.62	36.86	66.06	74.00	-7.94	VERTICAL	Peak
2 5148.623	49.77	31.72	5.62	36.86	50.25	54.00	-3.75	VERTICAL	Average
3 5149.980	49.89	31.72	5.62	36.86	50.37	54.00	-3.63	VERTICAL	Average
4 5149.980	65.50	31.72	5.62	36.86	65.98	74.00	-8.02	VERTICAL	Peak
5 5190.000	88.92	31.73	5.60	36.87	89.38	-----	-----	VERTICAL	Average
6 * 5190.000	100.05	31.73	5.60	36.87	100.51	68.20	32.31	VERTICAL	Peak

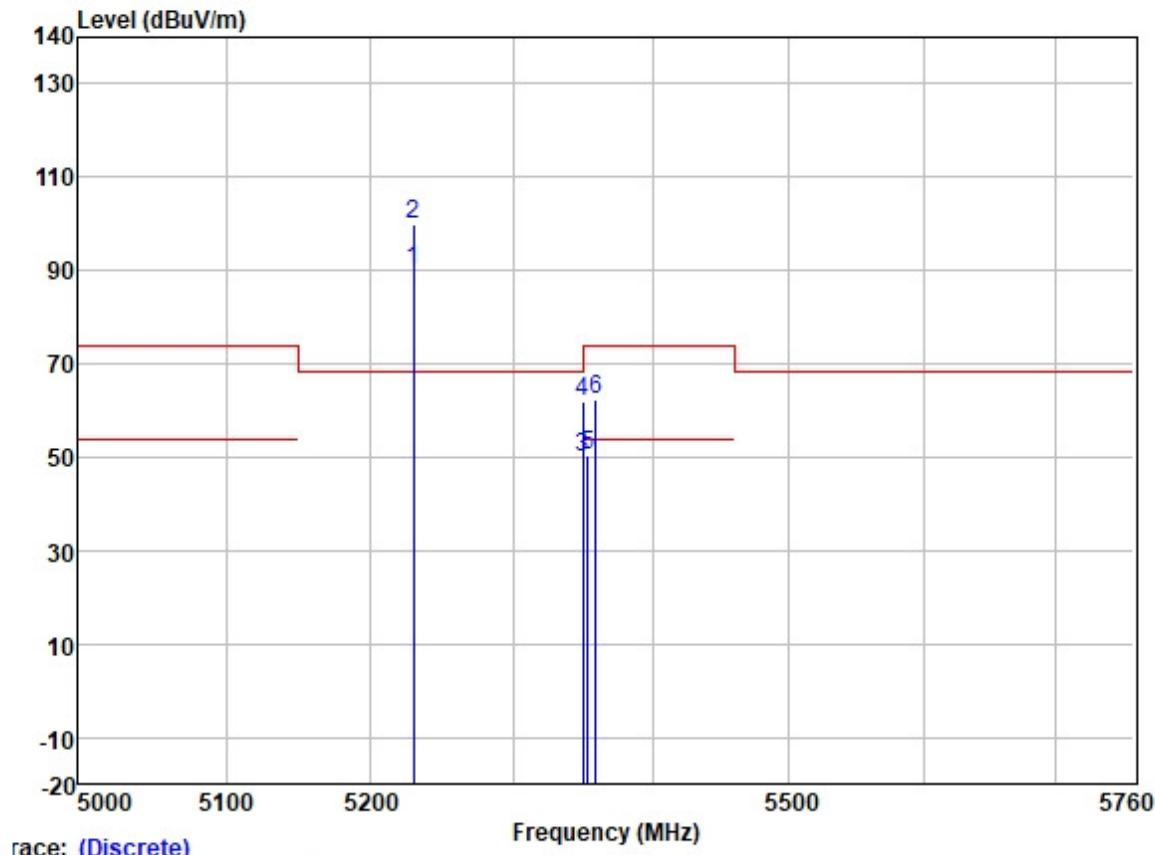
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



ReadAntenna	Cable	Preamp	Limit	Over	Limit			Pol/Phase	Remark
					Freq	Level	Factor		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	5230.000	89.52	31.74	5.70	36.87	90.09	-----	HORIZONTAL	Average
2 *	5230.000	99.19	31.74	5.70	36.87	99.76	68.20	31.56	HORIZONTAL Peak
3	5350.020	48.92	31.77	6.05	36.88	49.86	54.00	-4.14	HORIZONTAL Average
4	5350.020	61.07	31.77	6.05	36.88	62.01	74.00	-11.99	HORIZONTAL Peak
5	5353.020	49.37	31.77	6.05	36.88	50.31	54.00	-3.69	HORIZONTAL Average
6	5358.701	61.21	31.78	6.03	36.88	62.14	74.00	-11.86	HORIZONTAL Peak

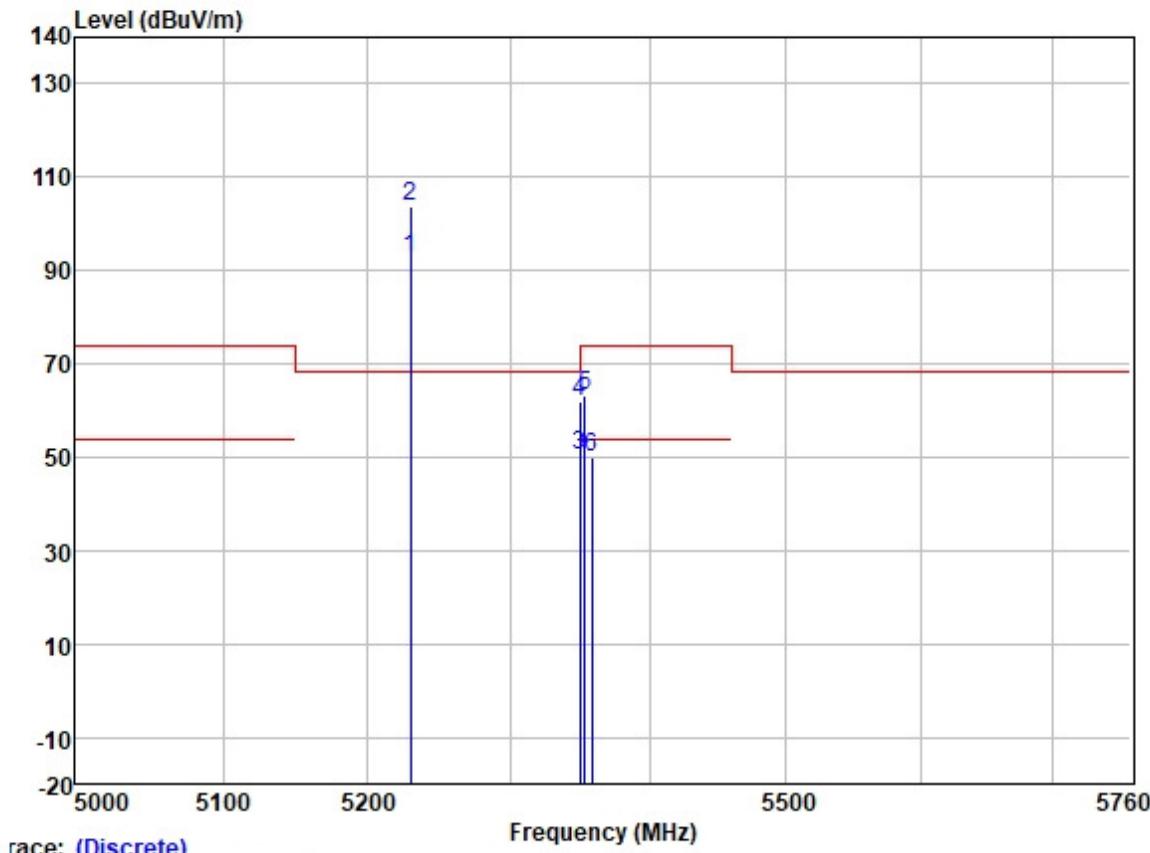
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Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:40MHz; Channel:High



Mode: (Discrete)

ReadAntenna	Cable	Preamp	Limit	Over	Race:		Pol/Phase	Remark						
					Freq	Level	Factor	Loss	Factor	Level	Line	Limit		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB	dB	dB	dB	dB		
1	5230.000	92.26	31.74	5.70	36.87	92.83	-----	-----	-----	-----	-----	-----	VERTICAL	Average
2 *	5230.000	103.04	31.74	5.70	36.87	103.61	68.20	35.41	35.41	35.41	35.41	35.41	VERTICAL	Peak
3	5350.020	49.62	31.77	6.05	36.88	50.56	54.00	-3.44	-3.44	-3.44	-3.44	-3.44	VERTICAL	Average
4	5350.020	60.98	31.77	6.05	36.88	61.92	74.00	-12.08	-12.08	-12.08	-12.08	-12.08	VERTICAL	Peak
5	5353.669	62.18	31.77	6.05	36.88	63.12	74.00	-10.88	-10.88	-10.88	-10.88	-10.88	VERTICAL	Peak
6	5358.538	49.09	31.78	6.03	36.88	50.02	54.00	-3.98	-3.98	-3.98	-3.98	-3.98	VERTICAL	Average

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