



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

EMC-TRF-01 Rev 1.0

Report No.: GZCR210802092403

Page: 1 of 146

FCC ID: YE3600-AX200NG

TEST REPORT

Application No.:

GZCR2108020924AT

Applicant:

DT Research, Inc.

Address of Applicant:

3RD FL NO 36 WUQUAN 7TH RD WUGU DISTRICT, NEW TAIPEI, Taiwan

Manufacturer:

DT Research, Inc.

Address of Manufacturer:

2000 Concourse Drive, San Jose, CA 95131, USA

Factory:

DT Research, Inc. Taiwan Branch

Address of Factory:

6F., No.36 Wuquan 7 th Rd., Wugu Dist. New Taipei City 248 Taiwan

Equipment Under Test (EUT):

EUT Name: Industrial Micro PC/Medical Micro PC

Model No.: 139CSXXX, X is -, any alphanumeric or blank.

139MXXX, X is -, any alphanumeric or blank. ♣

♣

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

Trade Mark:



Standard(s) :

47 CFR Part 15, Subpart C 15.247

Date of Receipt:

2021-08-12

Date of Test:

2021-08-13 to 2021-09-01

Date of Issue:

2021-09-02

Test Result:

Pass*

* 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		2021-09-02		Original

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 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
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

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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Remark:

Model No.: 139CSXXX, X is -, any alphanumeric or blank.

139MXXX, X is -, any alphanumeric or blank.

Only the model 139CS was tested, since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on model no., colour and the difference as below:

Model No.	139CS	139M
Product Name:	Industrial Micro PC	Medical Micro PC
Adapter:	AC Adapter2 Model: EA10951E-190 AC Input: AC 100-240V, 50/60Hz, 2.5A DC Output: DC 19V, 4.73A, 90.0W	Medical AC Adapter1 Model: EM10681V AC Input: AC 100-240V, 50/60Hz, 2.0-1.0A DC Output: DC 19V, 3.78A

Both adapters are tested in this report, only recorded the worse test results(AC Adapter2).

This report is prepared for FCC class II permissive change.

The modular approval by TCB, FCC ID: YE3600-AX200NG, Granted on 05/25/2020.

The module installed into host platform mentioned above is electronically and mechanically identical to the original certified module. The Original FCC testing on module under FCC ID: YE3600-AX200NG was performed with an antenna of higher gain, and the antenna was connected to the module in an open environment. The current host platform under application uses a new antenna of the different type, higher gain and is installed outside the host platform enclosure.

Therefore in this report Conducted Emissions at AC Power Line (150kHz-30MHz), Radiated Emissions which fall in the restricted bands and Radiated Spurious Emissions were fully retested on model 139CS and shown the data in this report.



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4 General Information

4.1 Details of E.U.T.

Power supply:	Medical AC Adapter1
Model:	EM10681V
AC Input:	AC 100-240V, 50/60Hz, 2.0-1.0A
DC Output:	DC 19V, 3.78A
AC Adapter2	
Model:	EA10951E-190
AC Input:	AC 100-240V, 50/60Hz, 2.5A
DC Output:	DC 19V, 4.73A, 90.0W
AC 120V, 60Hz or AC 240V, 50Hz	
Test voltage:	Note: Both nominal AC 120V, 60Hz and AC 240 V, 50Hz are required for testing in accordance with FCC KDB174176, this report only shows the results of the worst test result(AC 120V, 60Hz);
Cable(s):	DC cable:143cm with a ferrite core
Internal Source:	More than 108MHz
Sample Type:	Fixed device
Operation Frequency:	802.11b/g/n/ax(HT20): 2412MHz to 2472MHz 802.11n/ax(HT40): 2422MHz to 2462MHz 802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11n(HT20 and HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax(HT20 and HT40): OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Modulation Type:	802.11b/g, 802.11n/ax HT20: 13 Channels 802.11n/ax HT40: 9 Channels
Channel Numbers:	
Antenna Type:	Dipole Antenna
Antenna Gain:	Antenna1: 2.38dBi, Antenna2: 2.38dBi Note: MIMO for 802.11n/ax.

Channel list for 802.11b/g/n/ax(HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	5	2432MHz	9	2452MHz	13	2472MHz
2	2417MHz	6	2437MHz	10	2457MHz		
3	2422MHz	7	2442MHz	11	2462MHz		
4	2427MHz	8	2447MHz	12	2467MHz		

Channel list for 802.11n/ax(HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
3	2422MHz	6	2437MHz	9	2452MHz
4	2427MHz	7	2442MHz	10	2457MHz
5	2432MHz	8	2447MHz	11	2462MHz

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4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--

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
Radiated Emissions which fall in the restricted bands	±5.08dB (1GHz-6GHz);±5.14dB(above 6GHz)
Radiated Spurious Emissions (Below 1GHz)	±5.06dB (3m); ±4.46dB (10m)
Radiated Spurious Emissions (Above 1GHz)	±5.08dB (1GHz-6GHz);±5.14dB(above 6GHz)

4.4 Test Location

All tests were performed at:

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Guangzhou, China 510663

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No tests were sub-contracted.

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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.

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	2020-09-25	2021-09-24
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

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
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
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
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	2020-09-09	2021-09-08

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Radiated Spurious 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
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16

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	2021-01-08	2022-01-07
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
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
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	2020-09-09	2021-09-08

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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 & 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 connector is a RP-SMA type that comply with Part15.203, the best case gain of the antenna1 is 2.38dBi, antenna2 is 2.38dBi.

Antenna location: Refer to external photo.

EUT support 2x2 MIMO for 802.11n/ax, any transmit signals are correlated with each other, as unequal antenna gains for antenna 1 and antenna 2 but with equal transmit power, therefore,

$$\text{Directional gain} = G_{\text{ANT}} + 10 \log (N_{\text{ANT}}) \text{ dBi}$$

$$\text{Directional gain} = 2.38 + 10 \log (2) \text{ dBi} = 5.39 \text{ dBi}$$



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7 Radio Spectrum Matter Test Results

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

Test Requirement 47 CFR Part 15, Subpart C 15.207

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

Limit:

Frequency of emission(MHz)	Conducted limit(dB 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.

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

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C

Humidity: 48.6 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Mode Final test	Code	Description
Final test	21	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ HT0/HT8 is the worst case of IEEE 802.11n(HT20); data rate @ HT0/HT8 is the worst case of IEEE 802.11n(HT40); data rate @ HE0 is the worst case of IEEE 802.11ax(HT20); data rate @ HE0 is the worst case of IEEE 802.11ax(HT40). Only the data of worst case is recorded in the report.

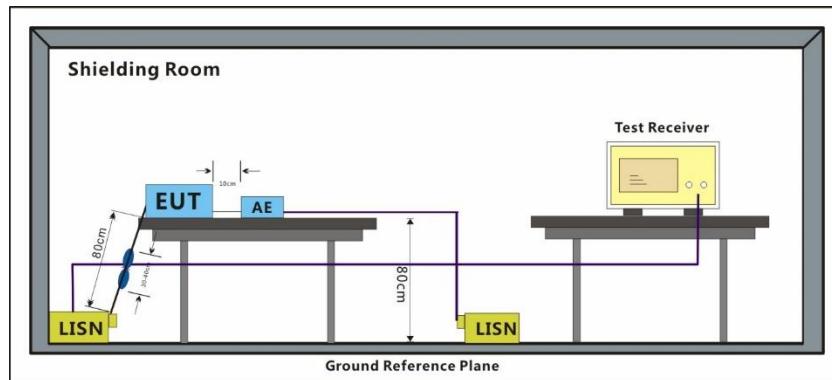
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7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50µH + 50hm 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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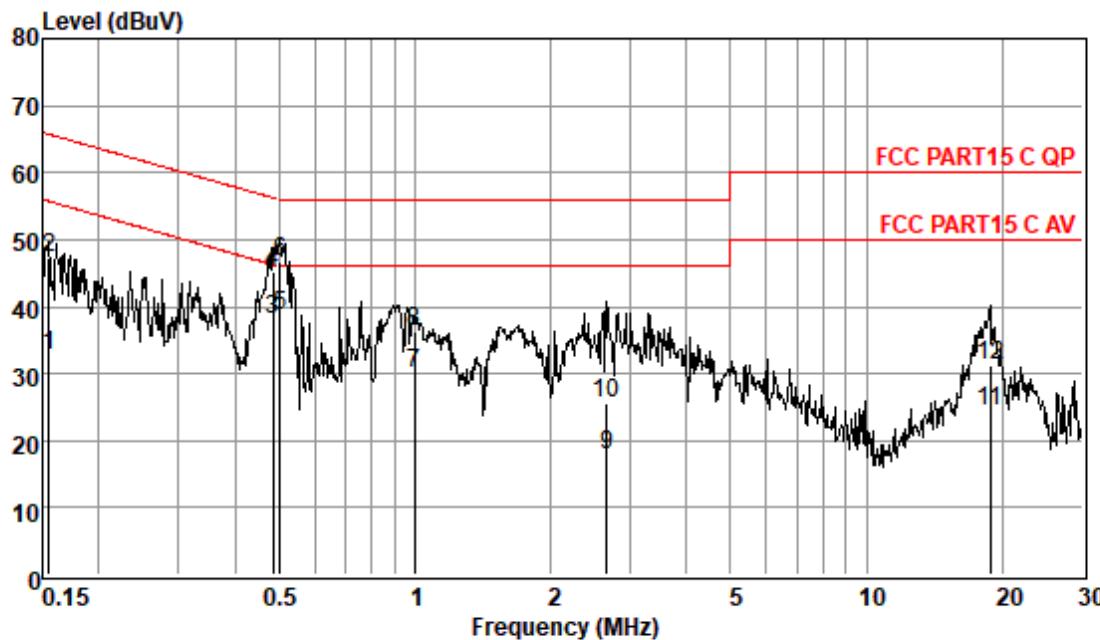
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1. **What is the primary purpose of the study?**

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Test Mode: 21; Line: Live line; Modulation:802.11n; 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	22.91	0.06	9.62	32.59	55.74	-23.15	Average
0.15	37.65	0.06	9.62	47.33	65.74	-18.41	QP
0.49	28.51	0.07	9.63	38.21	46.23	-8.02	Average
0.49	35.60	0.07	9.63	45.30	56.23	-10.93	QP
0.50	28.82	0.07	9.63	38.52	46.00	-7.48	Average
0.50	37.04	0.07	9.63	46.74	56.00	-9.26	QP
1.00	20.44	0.07	9.62	30.13	46.00	-15.87	Average
1.00	26.70	0.07	9.62	36.39	56.00	-19.61	QP
2.66	7.97	0.14	9.62	17.73	46.00	-28.27	Average
2.66	15.91	0.14	9.62	25.67	56.00	-30.33	QP
18.72	14.33	0.35	9.76	24.44	50.00	-25.56	Average
18.72	21.06	0.35	9.76	31.17	60.00	-28.83	QP

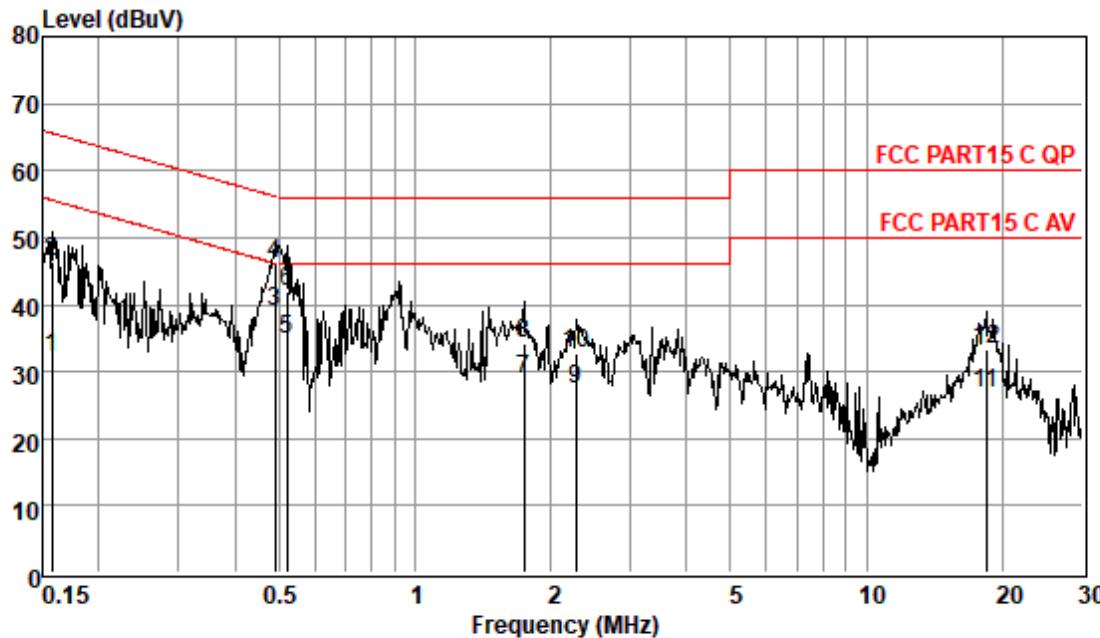
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Test Mode: 21; Line: Neutral Line; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



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	22.56	0.06	9.55	32.17	55.60	-23.43	Average
0.16	36.91	0.06	9.55	46.52	65.60	-19.08	QP
0.49	29.33	0.07	9.55	38.95	46.14	-7.19	Average
0.49	36.58	0.07	9.55	46.20	56.14	-9.94	QP
0.52	25.17	0.07	9.55	34.79	46.00	-11.21	Average
0.52	32.29	0.07	9.55	41.91	56.00	-14.09	QP
1.74	19.15	0.11	9.54	28.80	46.00	-17.20	Average
1.74	24.53	0.11	9.54	34.18	56.00	-21.82	QP
2.27	17.63	0.13	9.54	27.30	46.00	-18.70	Average
2.27	22.98	0.13	9.54	32.65	56.00	-23.35	QP
18.43	16.73	0.35	9.66	26.74	50.00	-23.26	Average
18.43	23.36	0.35	9.66	33.37	60.00	-26.63	QP

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7.2 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

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.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C Humidity: 51.8 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

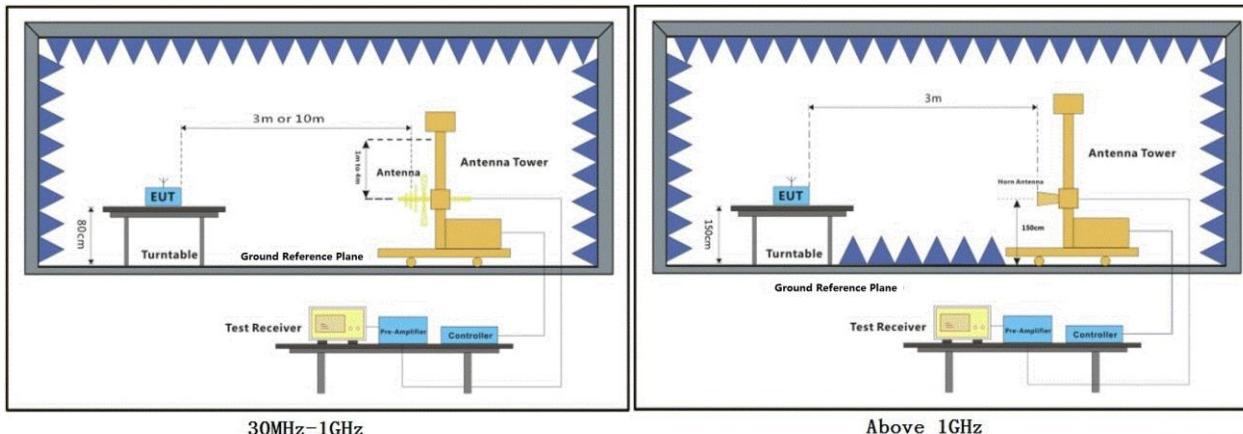
Pre-scan / Mode Final test	Mode Code	Description
Final test	21	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ HT0/HT8 is the worst case of IEEE 802.11n(HT20); data rate @ HT0/HT8 is the worst case of IEEE 802.11n(HT40); data rate @ HE0 is the worst case of IEEE 802.11ax(HT20); data rate @ HE0 is the worst case of IEEE 802.11ax(HT40). Only the data of worst case is recorded in the report.



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7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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

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

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

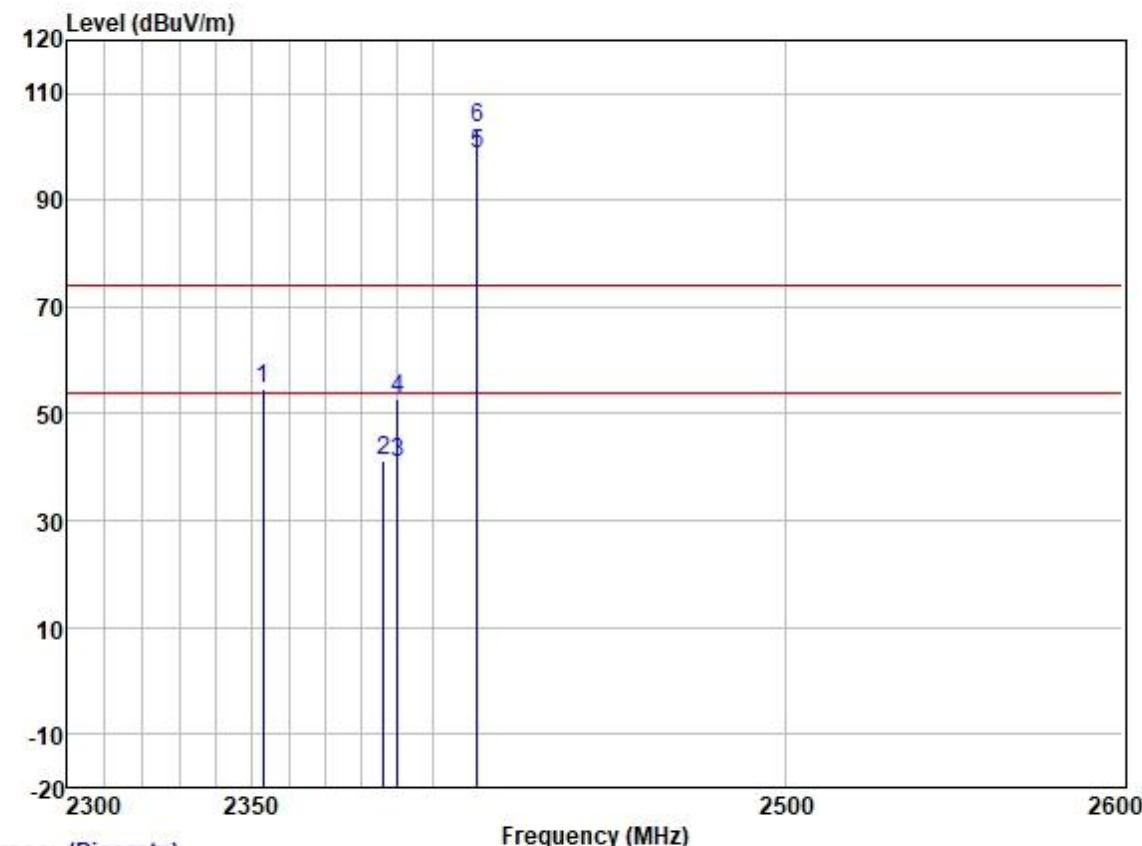
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Mode: (Discrete)

Freq	ReadAntenna		Cable Preamp		Limit Level	Over Line	Limit Pol/Phase	Remark	
	MHz	dBuV	Factor	Loss	dB	dB	dBuV/m	dBuV/m	dB
1	2352.740	61.54	27.25	3.40	37.61	54.58	74.00	-19.42	HORIZONTAL Peak
2	2385.978	48.16	27.33	3.48	37.60	41.37	54.00	-12.63	HORIZONTAL Average
3	2390.000	47.53	27.33	3.48	37.59	40.75	54.00	-13.25	HORIZONTAL Average
4	2390.000	59.62	27.33	3.48	37.59	52.84	74.00	-21.16	HORIZONTAL Peak
5 *	2412.000	105.51	27.38	3.47	37.59	98.77	54.00	44.77	HORIZONTAL Average
6 *	2412.000	110.35	27.38	3.47	37.59	103.61	74.00	29.61	HORIZONTAL Peak

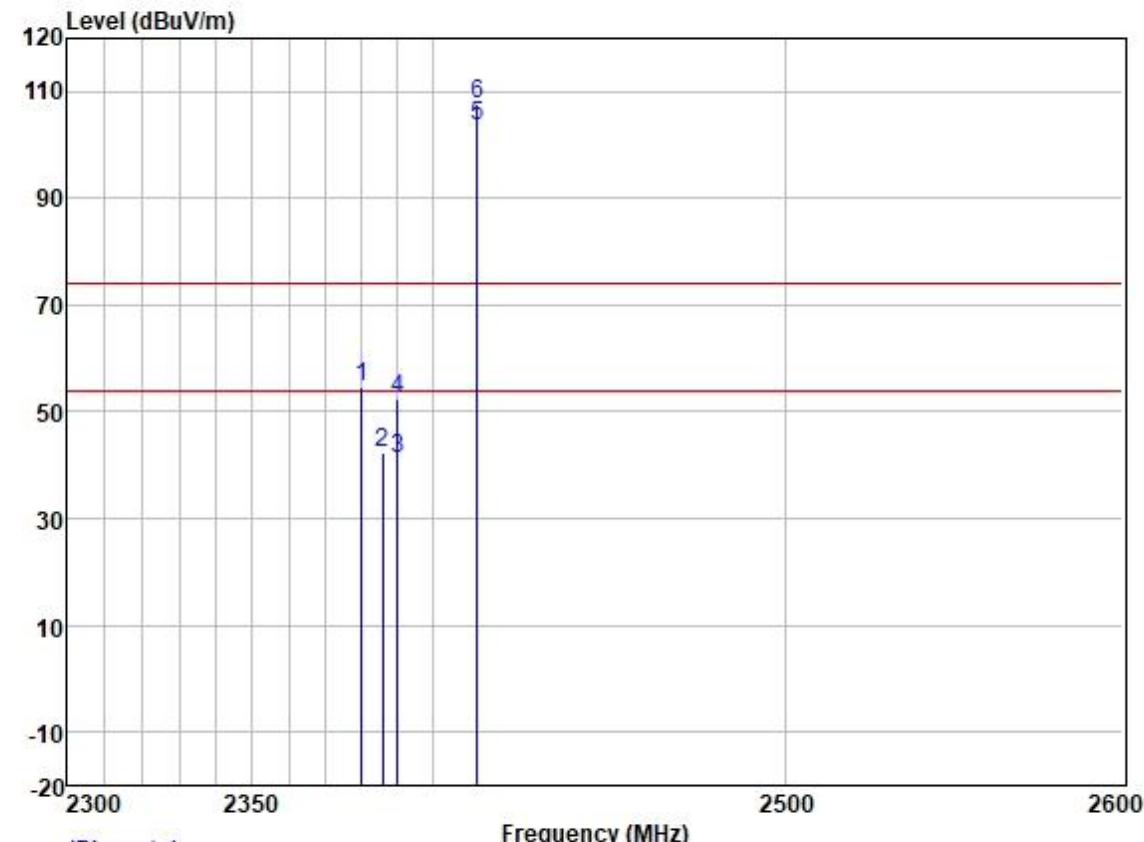
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Test Mode: 21; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	Freq	Level	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2380.064	61.38	27.31	3.46	37.60	54.55	74.00	-19.45	VERTICAL Peak
2	2385.615	48.96	27.33	3.48	37.60	42.17	54.00	-11.83	VERTICAL Average
3	2390.000	47.95	27.33	3.48	37.59	41.17	54.00	-12.83	VERTICAL Average
4	2390.000	59.14	27.33	3.48	37.59	52.36	74.00	-21.64	VERTICAL Peak
5 *	2412.000	110.24	27.38	3.47	37.59	103.50	54.00	49.50	VERTICAL Average
6 *	2412.000	114.27	27.38	3.47	37.59	107.53	74.00	33.53	VERTICAL Peak

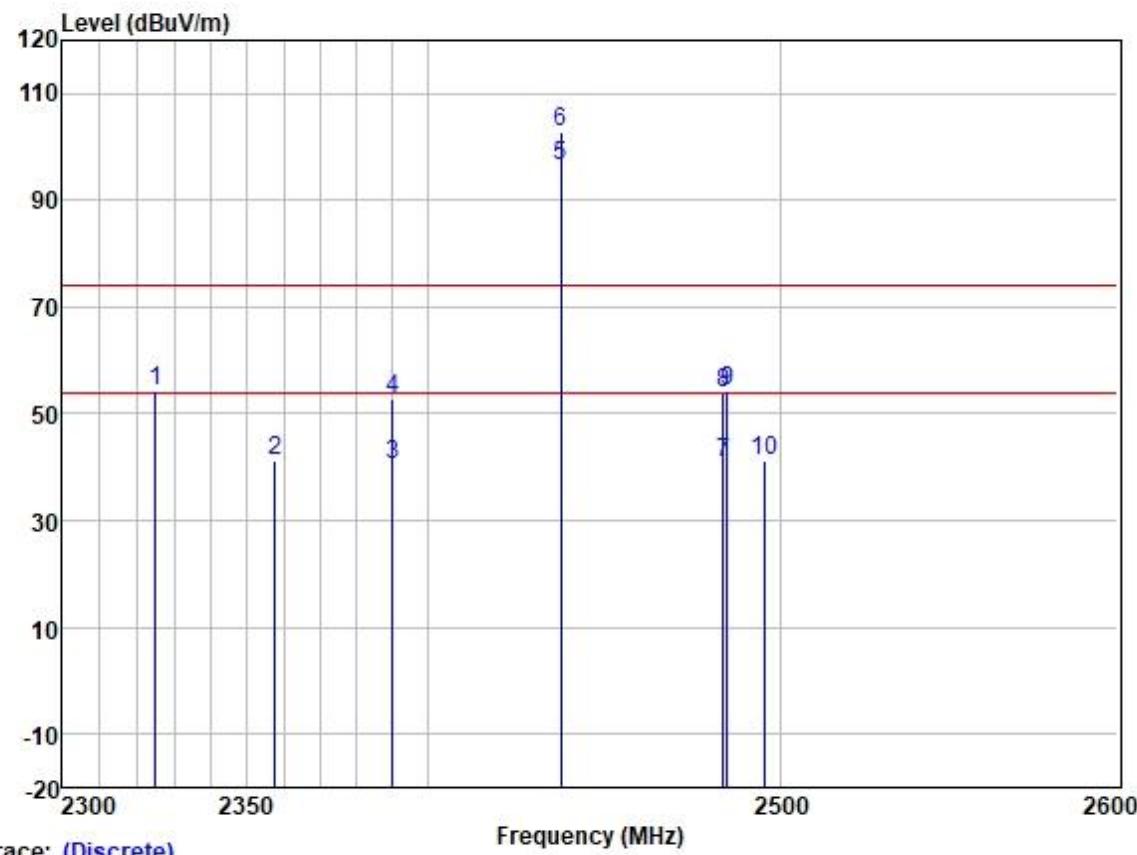
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Freq	ReadAntenna		Cable		Preamp Loss Factor	Limit Level	Over Line	Limit Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB					
1	2325.021	61.41	27.19	3.34	37.62	54.32	74.00	-19.68	HORIZONTAL Peak
2	2357.406	48.02	27.27	3.42	37.61	41.10	54.00	-12.90	HORIZONTAL Average
3	2390.000	47.34	27.33	3.48	37.59	40.56	54.00	-13.44	HORIZONTAL Average
4	2390.000	59.70	27.33	3.48	37.59	52.92	74.00	-21.08	HORIZONTAL Peak
5 *	2437.000	103.38	27.41	3.42	37.58	96.63	54.00	42.63	HORIZONTAL Average
6 *	2437.000	109.49	27.41	3.42	37.58	102.74	74.00	28.74	HORIZONTAL Peak
7	2483.500	47.56	27.48	3.53	37.57	41.00	54.00	-13.00	HORIZONTAL Average
8	2483.500	60.61	27.48	3.53	37.57	54.05	74.00	-19.95	HORIZONTAL Peak
9	2484.634	60.95	27.48	3.53	37.57	54.39	74.00	-19.61	HORIZONTAL Peak
10	2495.262	47.75	27.49	3.47	37.56	41.15	54.00	-12.85	HORIZONTAL Average

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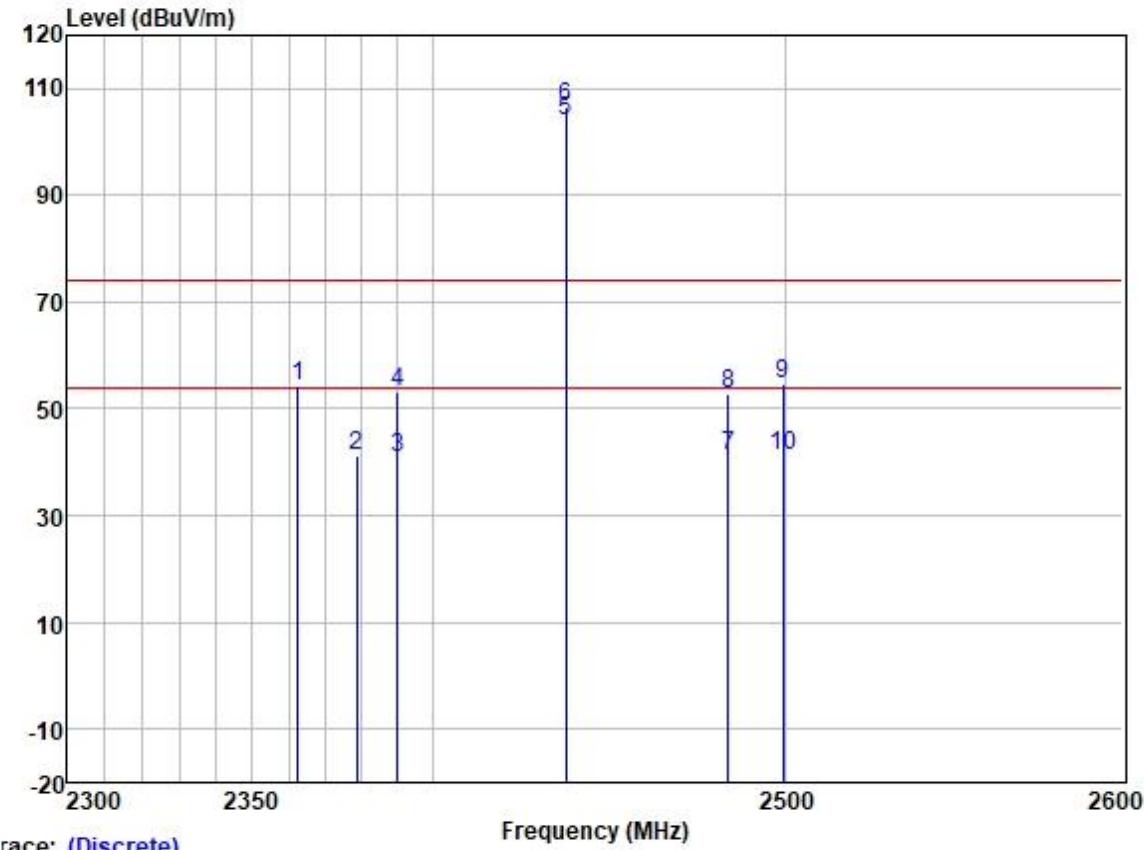
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Test Mode: 21; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:middle



Trace (Discrete)	ReadAntenna		Cable		Preamp		Limit	Over	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss	Factor	Level					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1	2362.442	61.20	27.27	3.42	37.61	54.28	74.00	-19.72	VERTICAL	Peak	
2	2378.556	47.91	27.31	3.46	37.60	41.08	54.00	-12.92	VERTICAL	Average	
3	2390.000	47.47	27.33	3.48	37.59	40.69	54.00	-13.31	VERTICAL	Average	
4	2390.000	59.93	27.33	3.48	37.59	53.15	74.00	-20.85	VERTICAL	Peak	
5 *	2437.000	110.65	27.41	3.42	37.58	103.90	54.00	49.90	VERTICAL	Average	
6 *	2437.000	113.45	27.41	3.42	37.58	106.70	74.00	32.70	VERTICAL	Peak	
7	2483.500	47.82	27.48	3.53	37.57	41.26	54.00	-12.74	VERTICAL	Average	
8	2483.500	59.37	27.48	3.53	37.57	52.81	74.00	-21.19	VERTICAL	Peak	
9	2499.210	61.23	27.50	3.40	37.56	54.57	74.00	-19.43	VERTICAL	Peak	
10	2499.605	47.95	27.50	3.40	37.56	41.29	54.00	-12.71	VERTICAL	Average	

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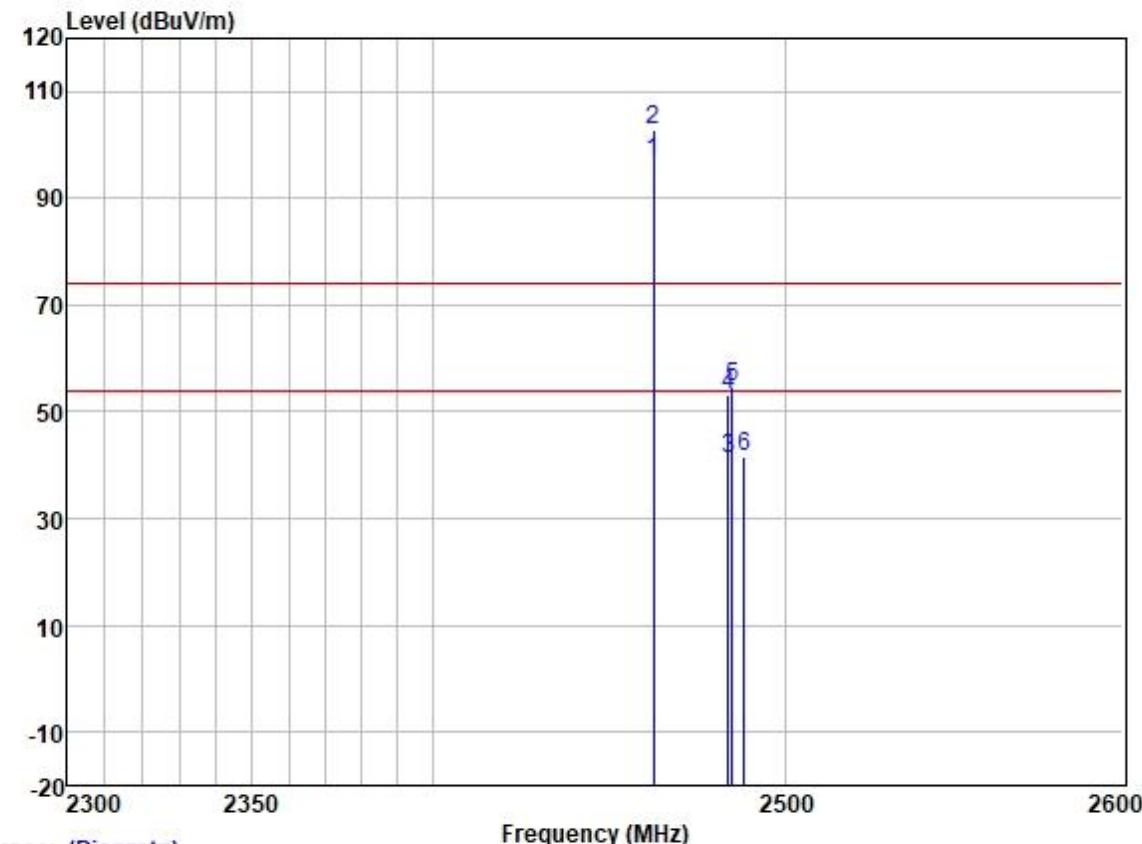
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Model 4000-2000-3000 (2000-3000)

Test Mode: 21; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:11



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor	Loss	Factor						
1 *	2462.000	103.47	27.45	3.50	37.58	96.84	54.00	42.84	HORIZONTAL	Average		
2 *	2462.000	109.62	27.45	3.50	37.58	102.99	74.00	28.99	HORIZONTAL	Peak		
3	2483.500	47.67	27.48	3.53	37.57	41.11	54.00	-12.89	HORIZONTAL	Average		
4	2483.500	59.63	27.48	3.53	37.57	53.07	74.00	-20.93	HORIZONTAL	Peak		
5	2484.492	61.28	27.48	3.53	37.57	54.72	74.00	-19.28	HORIZONTAL	Peak		
6	2488.109	48.10	27.48	3.53	37.56	41.55	54.00	-12.45	HORIZONTAL	Average		

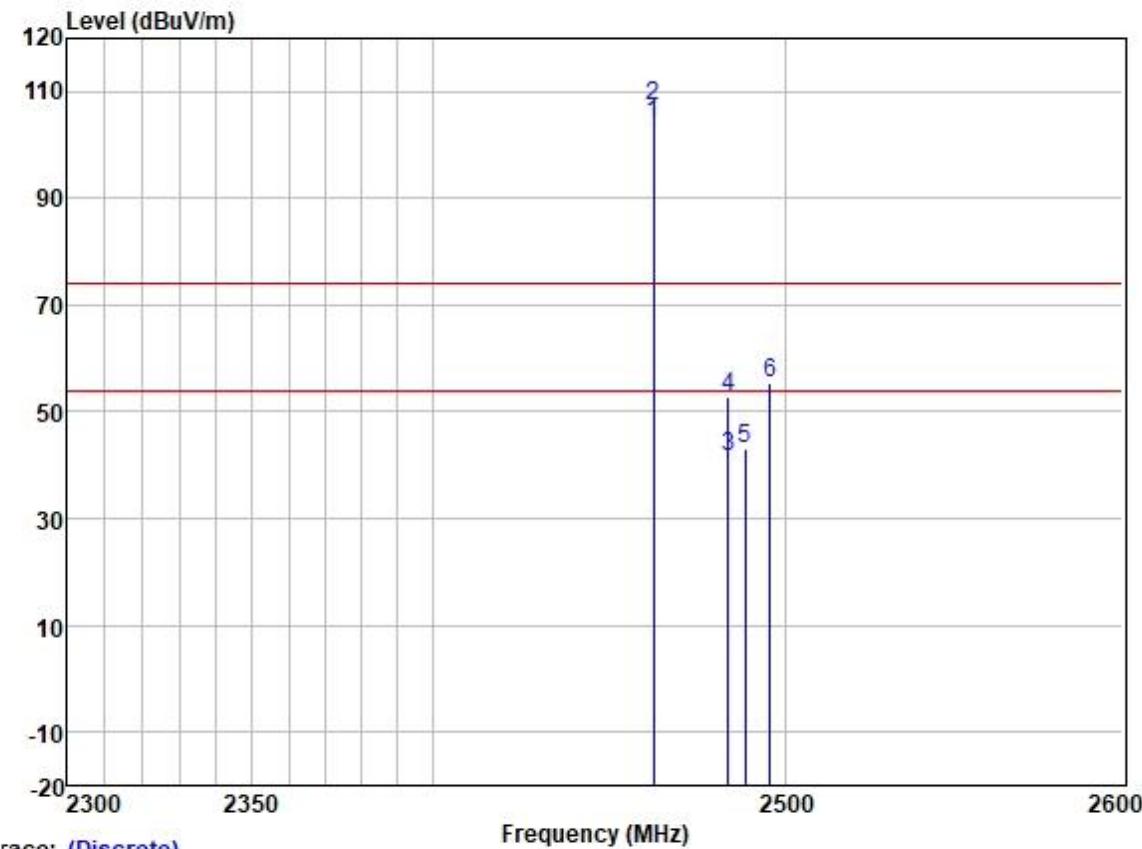
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Test Mode: 21; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:11



Freq	ReadAntenna		Cable		Preamp		Limit Line	Over Line	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m				
MHz	dBuV	dB/m	dB	dB	Level	dBuV/m	dBuV/m	dB		
1 * 2462.000	110.44	27.45	3.50	37.58	103.81	54.00	49.81	VERTICAL	Average	
2 * 2462.000	114.04	27.45	3.50	37.58	107.41	74.00	33.41	VERTICAL	Peak	
3 2483.500	48.33	27.48	3.53	37.57	41.77	54.00	-12.23	VERTICAL	Average	
4 2483.500	59.40	27.48	3.53	37.57	52.84	74.00	-21.16	VERTICAL	Peak	
5 2488.410	49.57	27.48	3.53	37.56	43.02	54.00	-10.98	VERTICAL	Average	
6 2495.559	62.02	27.49	3.47	37.56	55.42	74.00	-18.58	VERTICAL	Peak	

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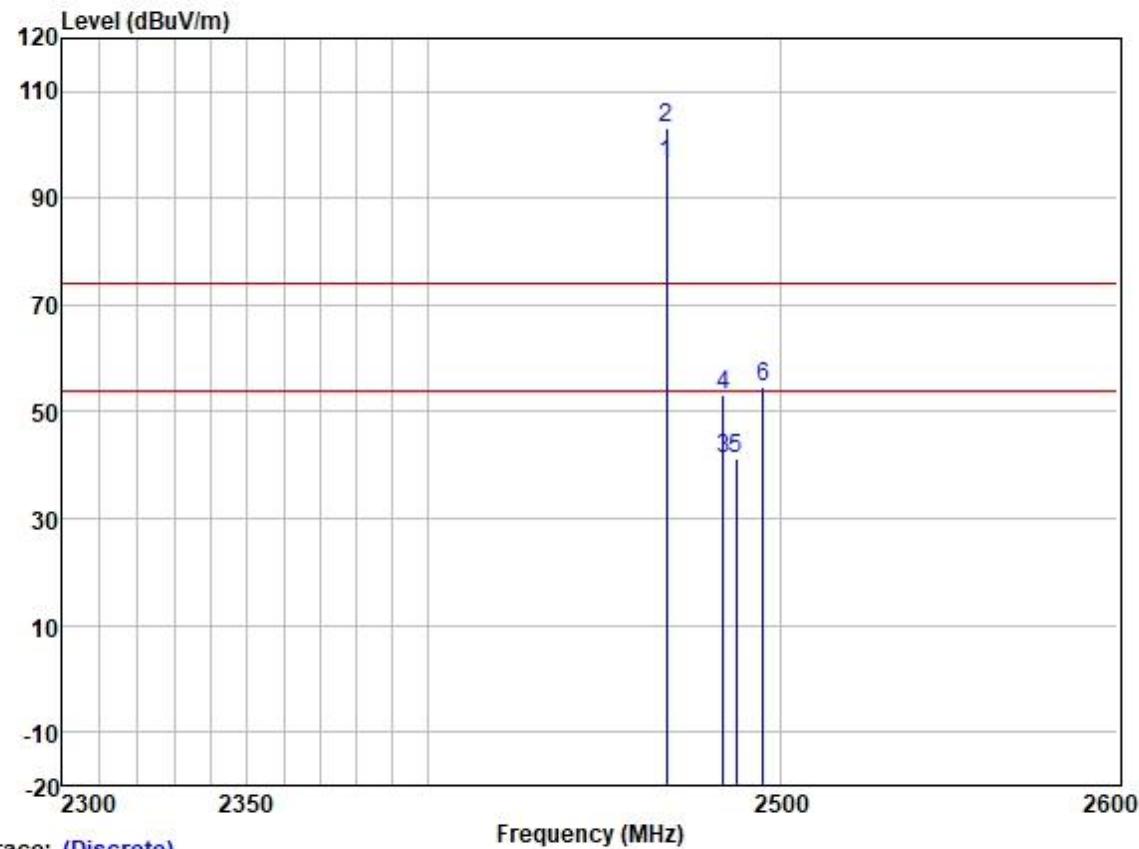


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Test Mode: 21; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:12



Freq	ReadAntenna		Cable Preamp		Limit Line	Over Line	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 * 2467.000	103.06	27.45	3.50	37.57	96.44	54.00	42.44	HORIZONTAL Average
2 * 2467.000	109.98	27.45	3.50	37.57	103.36	74.00	29.36	HORIZONTAL Peak
3 2483.500	47.67	27.48	3.53	37.57	41.11	54.00	-12.89	HORIZONTAL Average
4 2483.500	59.73	27.48	3.53	37.57	53.17	74.00	-20.83	HORIZONTAL Peak
5 2487.204	47.77	27.48	3.53	37.57	41.21	54.00	-12.79	HORIZONTAL Average
6 2495.106	61.33	27.49	3.47	37.56	54.73	74.00	-19.27	HORIZONTAL Peak

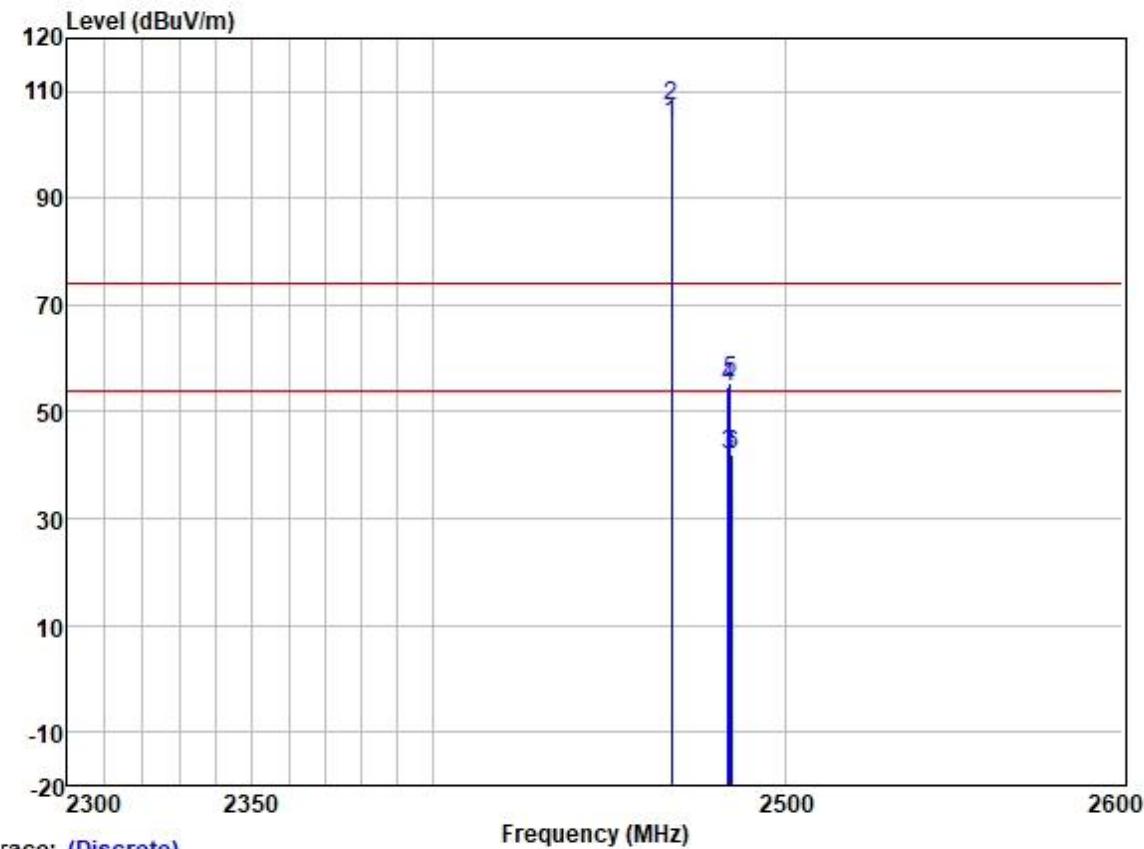
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Test Mode: 21; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:12



Freq	ReadAntenna	Cable	Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	Level	Factor	Loss						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB	dB
1 * 2467.000	110.61	27.45	3.50	37.57	103.99	54.00	49.99	VERTICAL	Average
2 * 2467.000	114.03	27.45	3.50	37.57	107.41	74.00	33.41	VERTICAL	Peak
3 2483.500	48.59	27.48	3.53	37.57	42.03	54.00	-11.97	VERTICAL	Average
4 2483.500	61.19	27.48	3.53	37.57	54.63	74.00	-19.37	VERTICAL	Peak
5 2484.041	62.16	27.48	3.53	37.57	55.60	74.00	-18.40	VERTICAL	Peak
6 2484.743	48.71	27.48	3.53	37.57	42.15	54.00	-11.85	VERTICAL	Average

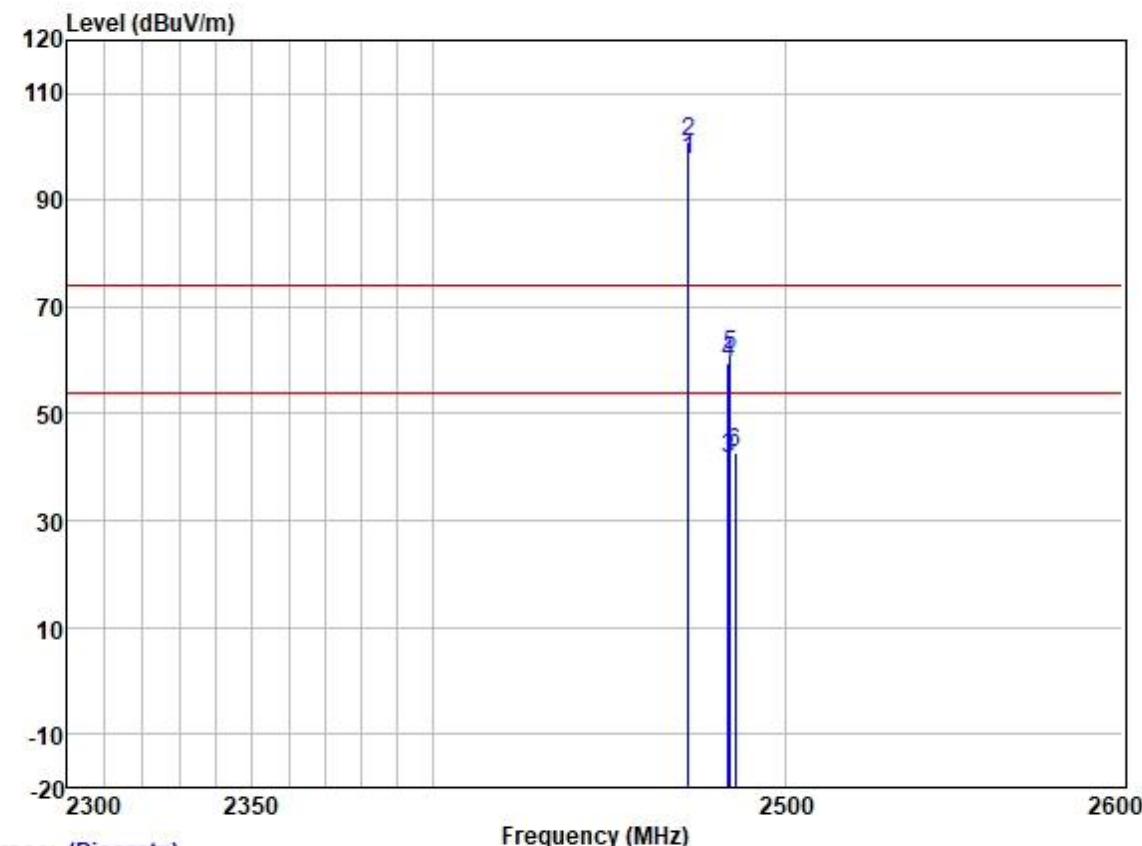
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11b; Bandwidth:20MHz; Channel:13



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 *	2472.000	104.04	27.46	3.55	37.57	97.48	54.00	43.48	HORIZONTAL	Average
2 *	2472.000	107.39	27.46	3.55	37.57	100.83	74.00	26.83	HORIZONTAL	Peak
3	2483.500	48.21	27.48	3.53	37.57	41.65	54.00	-12.35	HORIZONTAL	Average
4	2483.500	65.94	27.48	3.53	37.57	59.38	74.00	-14.62	HORIZONTAL	Peak
5	2483.990	67.67	27.48	3.53	37.57	61.11	74.00	-12.89	HORIZONTAL	Peak
6	2485.597	49.39	27.48	3.53	37.57	42.83	54.00	-11.17	HORIZONTAL	Average

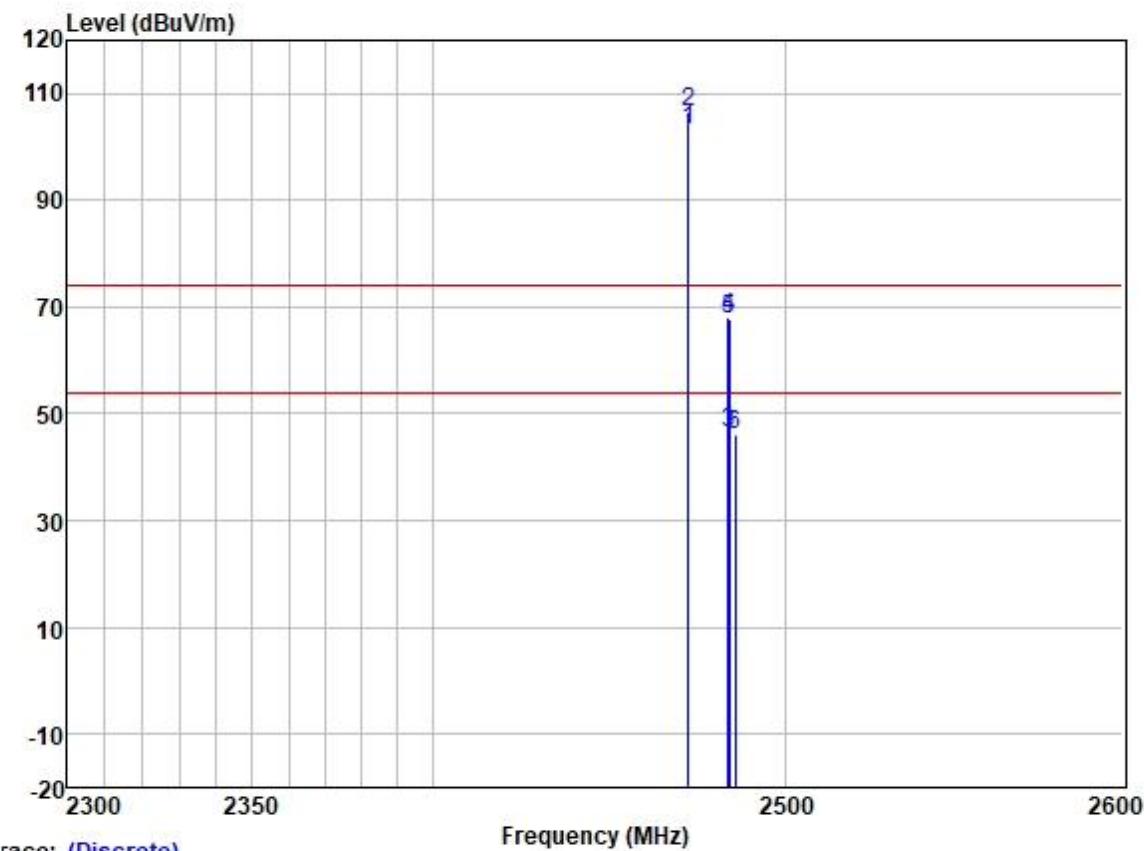
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Test Mode: 21; Polarity: Vertical; Modulation:802.11b; Bandwidth:20MHz; Channel:13



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 *	2472.000	109.80	27.46	3.55	37.57	103.24	54.00	49.24	VERTICAL	Average
2 *	2472.000	113.01	27.46	3.55	37.57	106.45	74.00	32.45	VERTICAL	Peak
3	2483.500	52.94	27.48	3.53	37.57	46.38	54.00	-7.62	VERTICAL	Average
4	2483.500	74.57	27.48	3.53	37.57	68.01	74.00	-5.99	VERTICAL	Peak
5	2483.840	74.30	27.48	3.53	37.57	67.74	74.00	-6.26	VERTICAL	Peak
6	2485.546	52.77	27.48	3.53	37.57	46.21	54.00	-7.79	VERTICAL	Average

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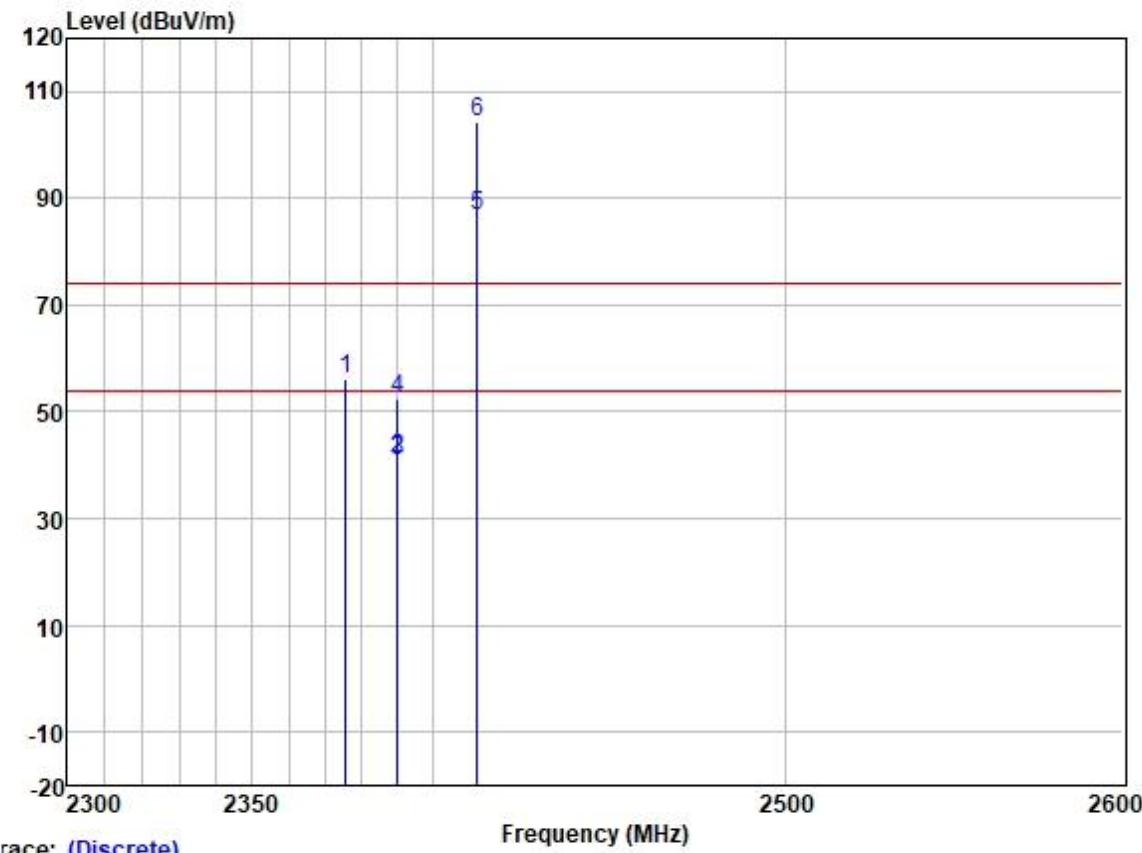
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



Trace: (Discrete)

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	Level	Factor	Loss						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 2375.608	62.99	27.30	3.45	37.60	56.14	74.00	-17.86	HORIZONTAL	Peak
2 2389.847	47.88	27.33	3.48	37.59	41.10	54.00	-12.90	HORIZONTAL	Average
3 2390.000	47.79	27.33	3.48	37.59	41.01	54.00	-12.99	HORIZONTAL	Average
4 2390.000	59.35	27.33	3.48	37.59	52.57	74.00	-21.43	HORIZONTAL	Peak
5 * 2412.000	93.59	27.38	3.47	37.59	86.85	54.00	32.85	HORIZONTAL	Average
6 * 2412.000	111.22	27.38	3.47	37.59	104.48	74.00	30.48	HORIZONTAL	Peak

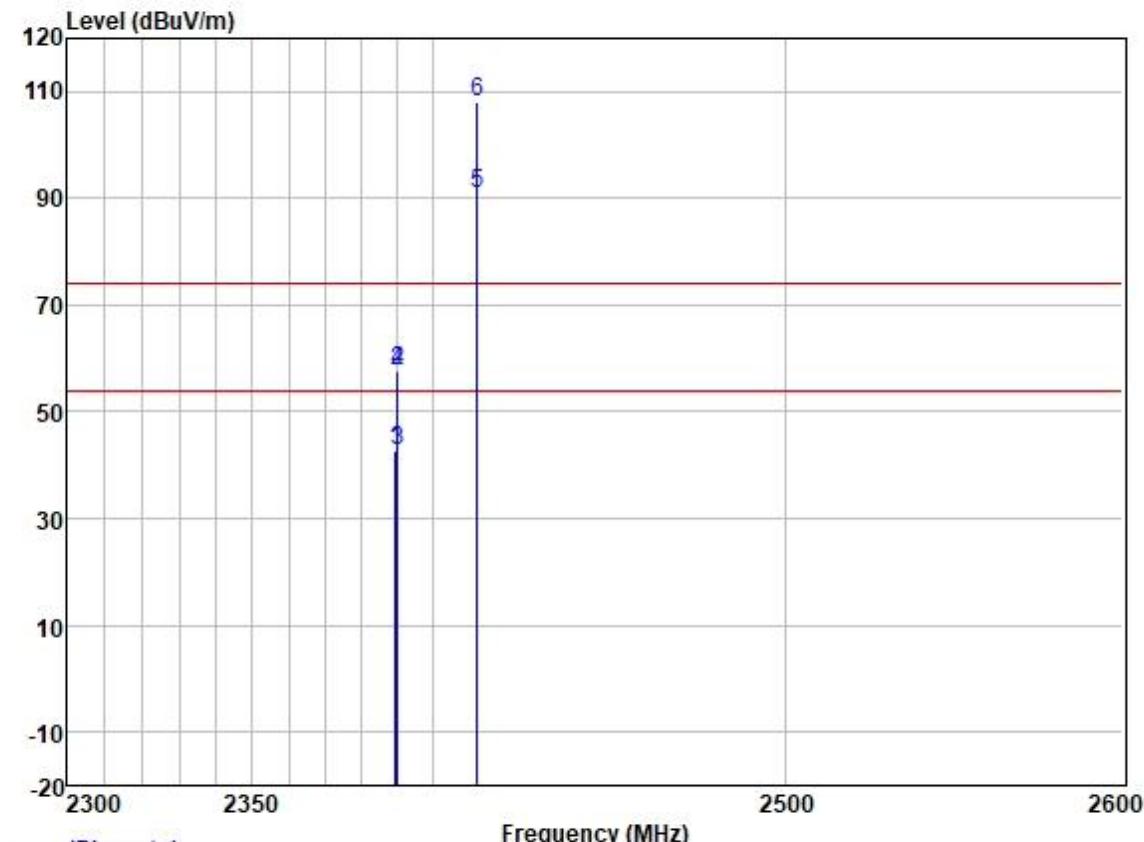
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Test Mode: 21; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:Low



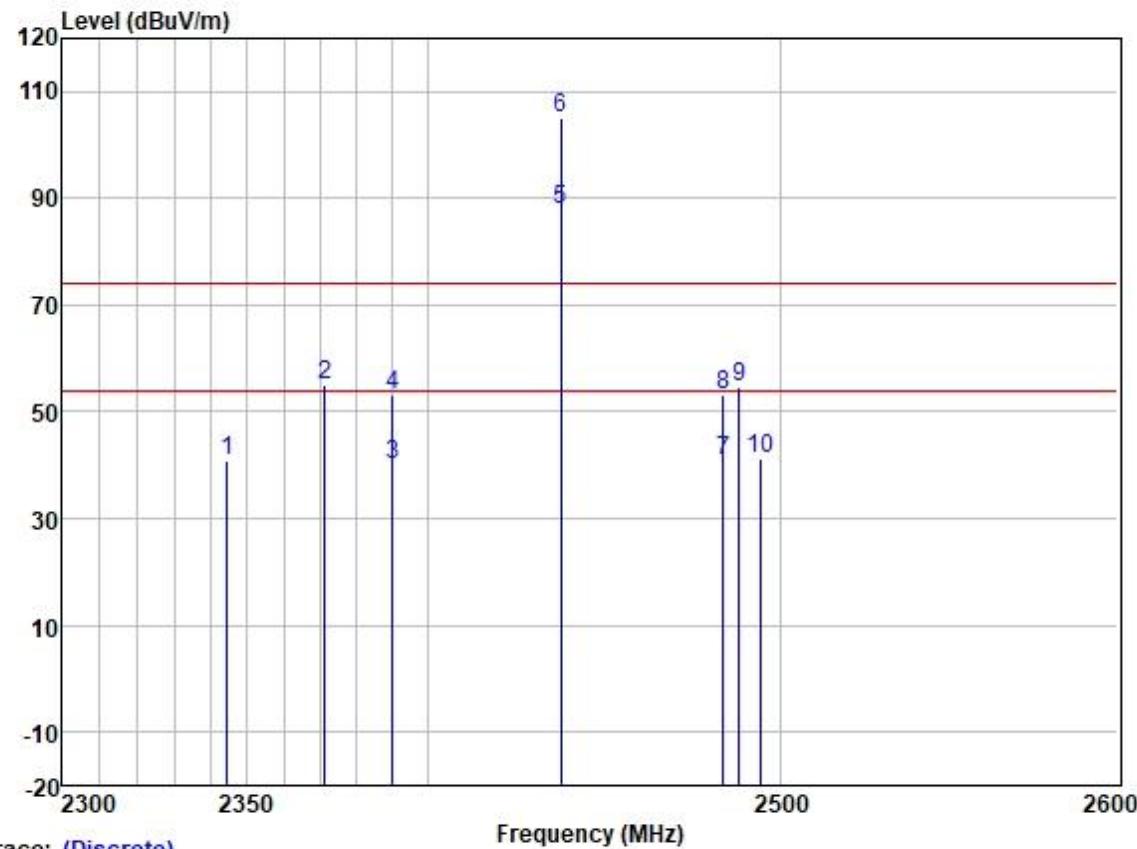
Freq	ReadAntenna		Cable		Preamp		Limit	Over		Remark
	Level	Factor	Loss	Factor	Level	Line		Limit	Pol/Phase	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.363	49.67	27.33	3.48	37.59	42.89	54.00	-11.11	VERTICAL	Average
2	2389.968	64.29	27.33	3.48	37.59	57.51	74.00	-16.49	VERTICAL	Peak
3	2390.000	49.65	27.33	3.48	37.59	42.87	54.00	-11.13	VERTICAL	Average
4	2390.000	64.29	27.33	3.48	37.59	57.51	74.00	-16.49	VERTICAL	Peak
5 *	2412.000	97.80	27.38	3.47	37.59	91.06	54.00	37.06	VERTICAL	Average
6 *	2412.000	114.67	27.38	3.47	37.59	107.93	74.00	33.93	VERTICAL	Peak

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Test Mode: 21; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1	2344.398	47.96	27.24	3.38	37.61	40.97	54.00	-13.03	HORIZONTAL	Average
2	2371.047	62.06	27.30	3.45	37.60	55.21	74.00	-18.79	HORIZONTAL	Peak
3	2390.000	47.03	27.33	3.48	37.59	40.25	54.00	-13.75	HORIZONTAL	Average
4	2390.000	59.93	27.33	3.48	37.59	53.15	74.00	-20.85	HORIZONTAL	Peak
5	* 2437.000	94.79	27.41	3.42	37.58	88.04	54.00	34.04	HORIZONTAL	Average
6	* 2437.000	111.98	27.41	3.42	37.58	105.23	74.00	31.23	HORIZONTAL	Peak
7	2483.500	47.28	27.48	3.53	37.57	40.72	54.00	-13.28	HORIZONTAL	Average
8	2483.500	59.77	27.48	3.53	37.57	53.21	74.00	-20.79	HORIZONTAL	Peak
9	2487.975	61.15	27.48	3.53	37.56	54.60	74.00	-19.40	HORIZONTAL	Peak
10	2494.473	47.66	27.49	3.47	37.56	41.06	54.00	-12.94	HORIZONTAL	Average

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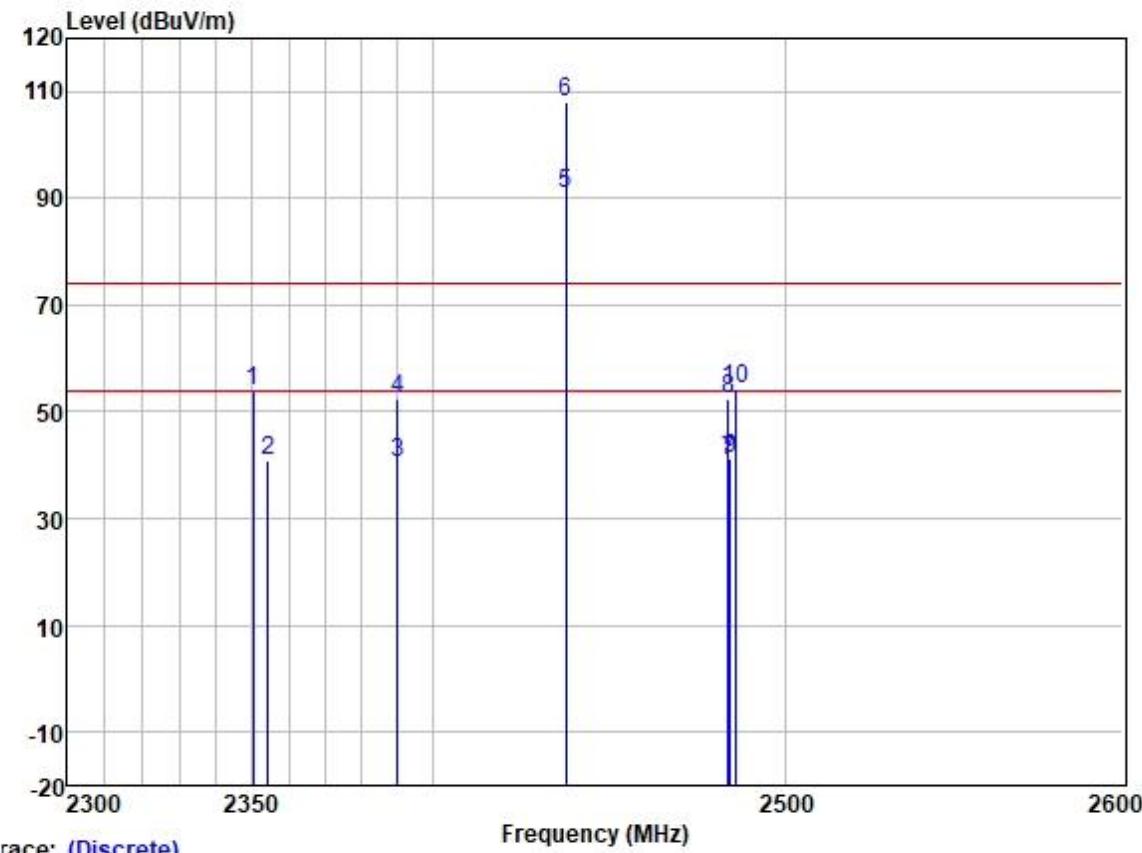
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Test Mode: 21; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:middle



Freq	ReadAntenna		Cable		Preamp		Level	Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	Level					
	MHz	dBuV	dB/m		dB	dB	dBuV/m	dBuV/m		dB	
1	2350.149	60.74	27.25	3.40	37.61	53.78	74.00	-20.22	VERTICAL	Peak	
2	2354.240	47.96	27.25	3.40	37.61	41.00	54.00	-13.00	VERTICAL	Average	
3	2390.000	47.20	27.33	3.48	37.59	40.42	54.00	-13.58	VERTICAL	Average	
4	2390.000	59.08	27.33	3.48	37.59	52.30	74.00	-21.70	VERTICAL	Peak	
5 *	2437.000	97.78	27.41	3.42	37.58	91.03	54.00	37.03	VERTICAL	Average	
6 *	2437.000	114.98	27.41	3.42	37.58	108.23	74.00	34.23	VERTICAL	Peak	
7	2483.500	47.52	27.48	3.53	37.57	40.96	54.00	-13.04	VERTICAL	Average	
8	2483.500	58.99	27.48	3.53	37.57	52.43	74.00	-21.57	VERTICAL	Peak	
9	2484.045	47.65	27.48	3.53	37.57	41.09	54.00	-12.91	VERTICAL	Average	
10	2485.813	60.81	27.48	3.53	37.57	54.25	74.00	-19.75	VERTICAL	Peak	

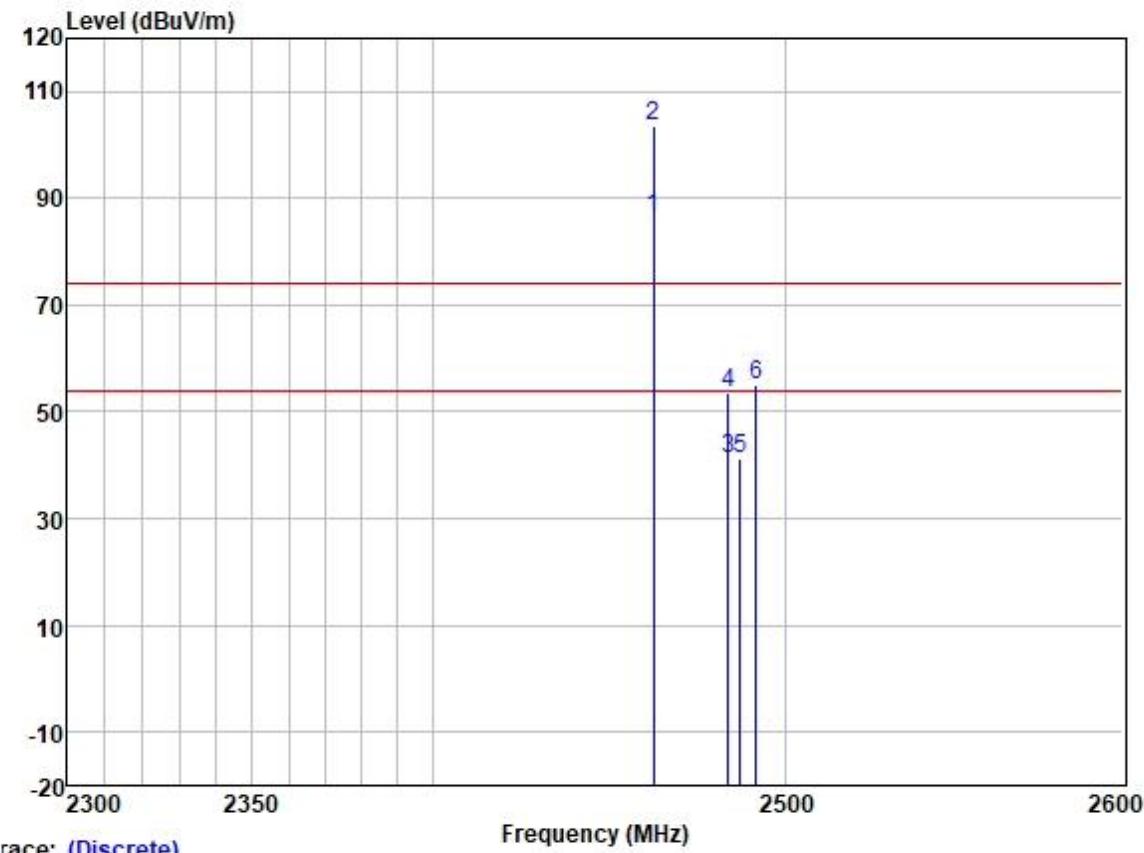
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:11



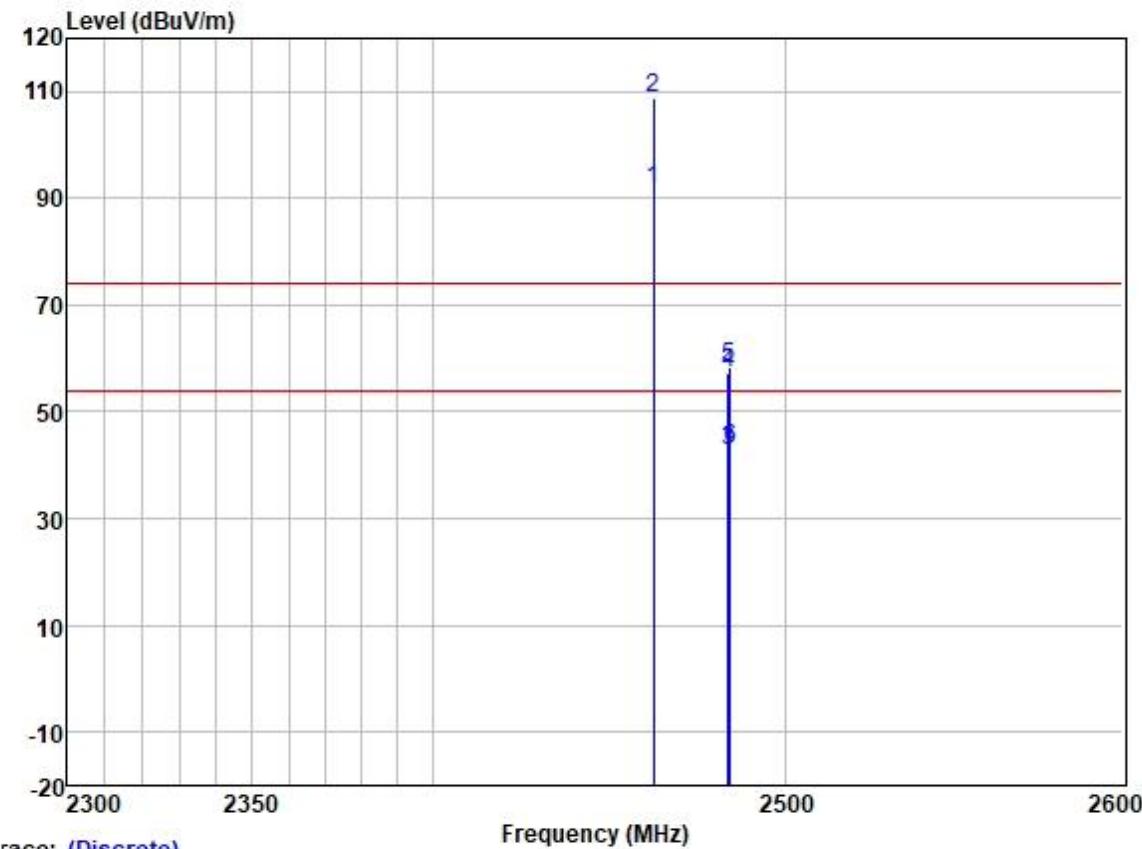
Face: (Discrete)	ReadAntenna			Cable		Preamp		Limit	Over		Remark
	Freq	Level	Factor	Loss	Factor	Level	Line		Limit	Pol/Phase	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 *	2462.000	93.16	27.45	3.50	37.58	86.53	54.00	32.53	HORIZONTAL	Average	
2 *	2462.000	110.18	27.45	3.50	37.58	103.55	74.00	29.55	HORIZONTAL	Peak	
3	2483.500	47.69	27.48	3.53	37.57	41.13	54.00	-12.87	HORIZONTAL	Average	
4	2483.500	60.13	27.48	3.53	37.57	53.57	74.00	-20.43	HORIZONTAL	Peak	
5	2486.903	47.87	27.48	3.53	37.57	41.31	54.00	-12.69	HORIZONTAL	Average	
6	2491.630	61.74	27.49	3.47	37.56	55.14	74.00	-18.86	HORIZONTAL	Peak	

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Guangzhou Branch Testing Center EEC Laboratory

Test Mode: 21; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:11



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp		Limit Line	Over Line	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 * 2462.000	98.12	27.45	3.50	37.58	91.49	54.00	37.49	VERTICAL		Average
2 * 2462.000	115.39	27.45	3.50	37.58	108.76	74.00	34.76	VERTICAL		Peak
3 2483.500	49.39	27.48	3.53	37.57	42.83	54.00	-11.17	VERTICAL		Average
4 2483.500	63.82	27.48	3.53	37.57	57.26	74.00	-16.74	VERTICAL		Peak
5 2483.790	65.11	27.48	3.53	37.57	58.55	74.00	-15.45	VERTICAL		Peak
6 2483.940	49.64	27.48	3.53	37.57	43.08	54.00	-10.92	VERTICAL		Average

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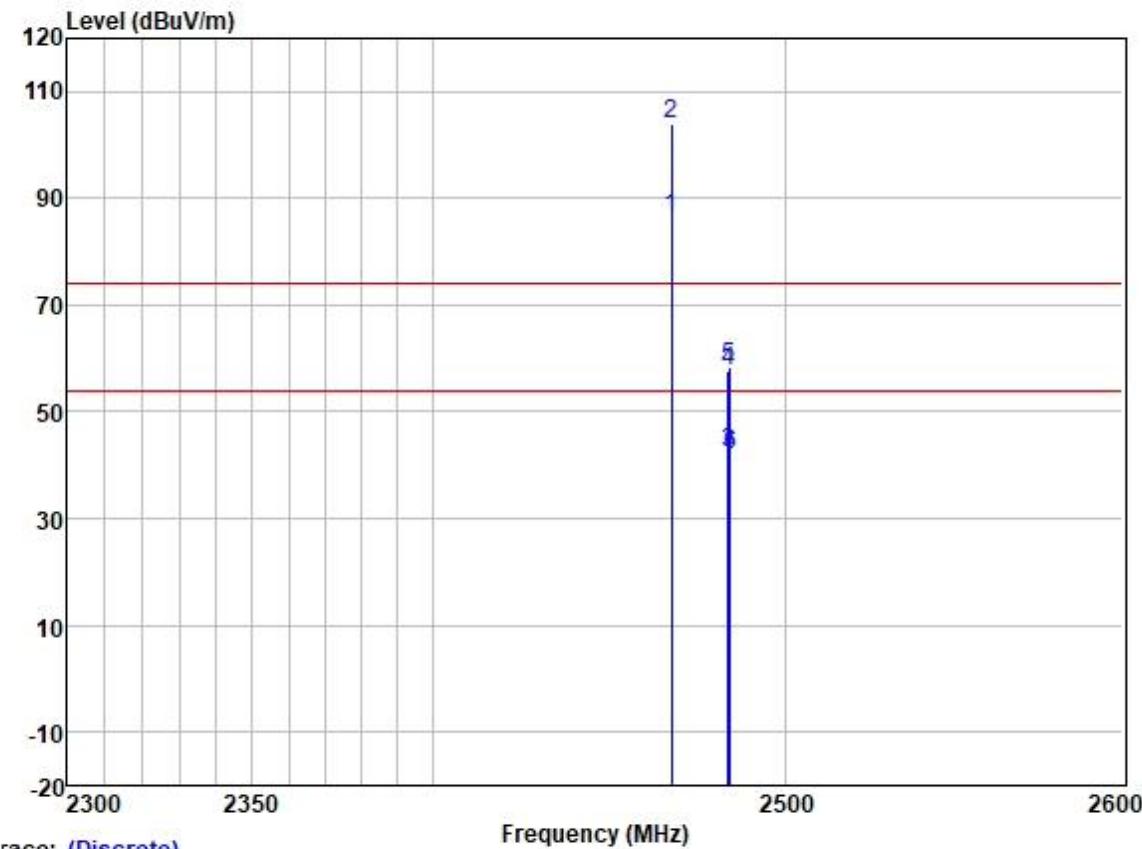
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:12



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Line	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 *	2467.000	93.01	27.45	3.50	37.57	86.39	54.00	32.39	HORIZONTAL	Average
2 *	2467.000	110.70	27.45	3.50	37.57	104.08	74.00	30.08	HORIZONTAL	Peak
3	2483.500	48.90	27.48	3.53	37.57	42.34	54.00	-11.66	HORIZONTAL	Average
4	2483.500	64.08	27.48	3.53	37.57	57.52	74.00	-16.48	HORIZONTAL	Peak
5	2483.840	64.80	27.48	3.53	37.57	58.24	74.00	-15.76	HORIZONTAL	Peak
6	2483.940	48.51	27.48	3.53	37.57	41.95	54.00	-12.05	HORIZONTAL	Average

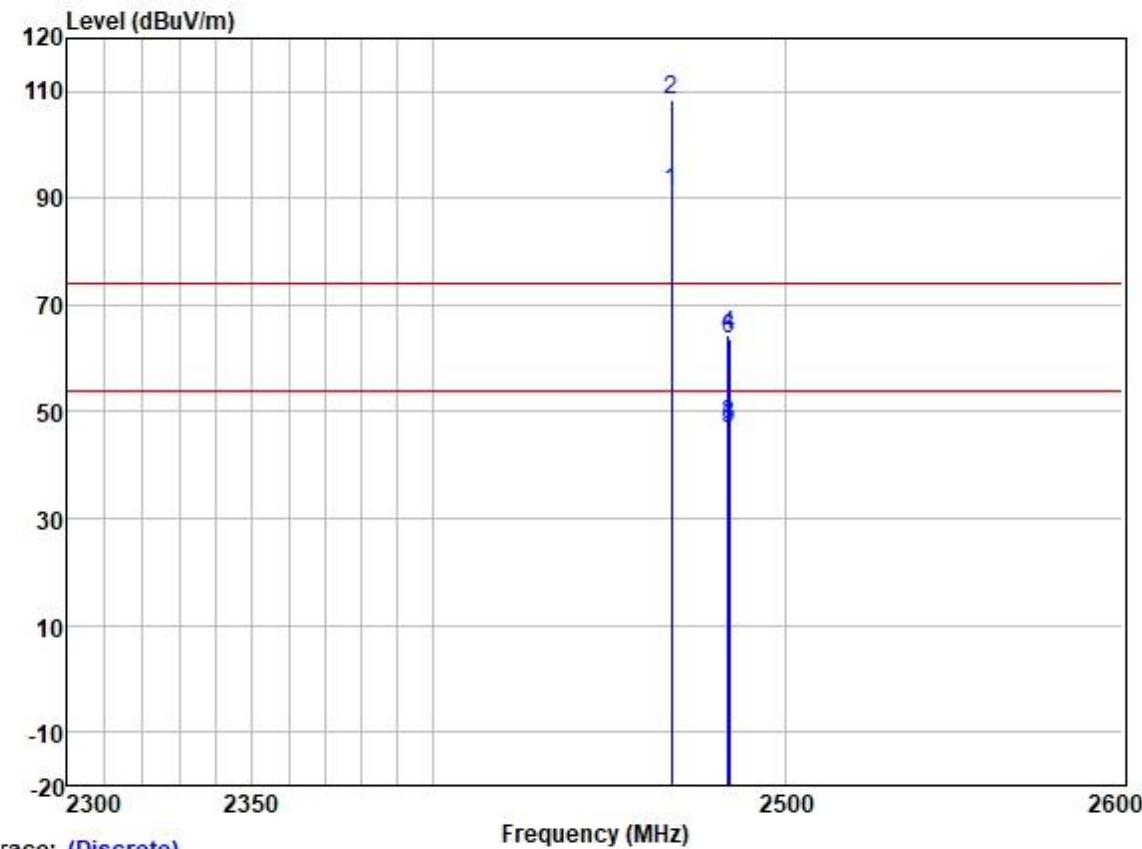
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Guangzhou Branch Testing Center for EEC Laboratory

Test Mode: 21; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:12

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

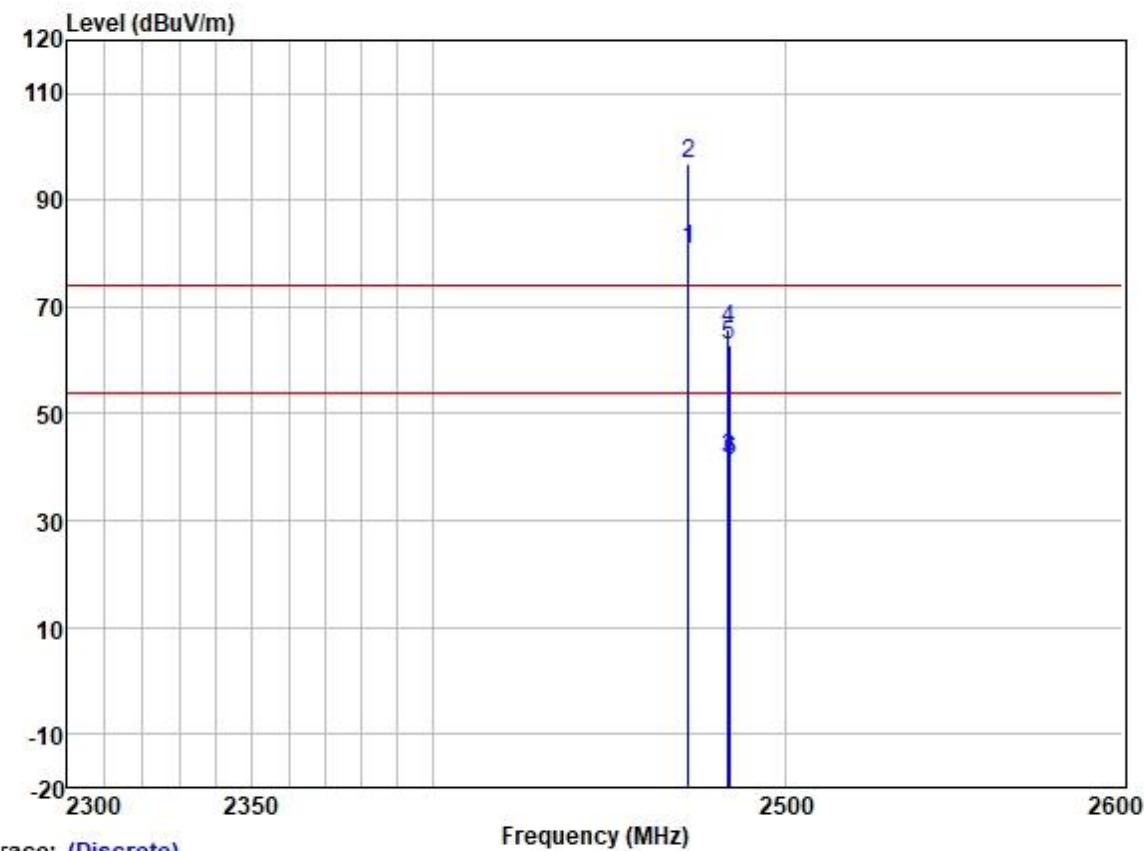
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11g; Bandwidth:20MHz; Channel:13



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 * 2472.000	87.41	27.46	3.55	37.57	80.85	54.00	26.85	HORIZONTAL	Average	
2 * 2472.000	103.54	27.46	3.55	37.57	96.98	74.00	22.98	HORIZONTAL	Peak	
3 2483.500	47.98	27.48	3.53	37.57	41.42	54.00	-12.58	HORIZONTAL	Average	
4 2483.500	72.48	27.48	3.53	37.57	65.92	74.00	-8.08	HORIZONTAL	Peak	
5 2483.840	69.45	27.48	3.53	37.57	62.89	74.00	-11.11	HORIZONTAL	Peak	
6 2484.091	47.79	27.48	3.53	37.57	41.23	54.00	-12.77	HORIZONTAL	Average	

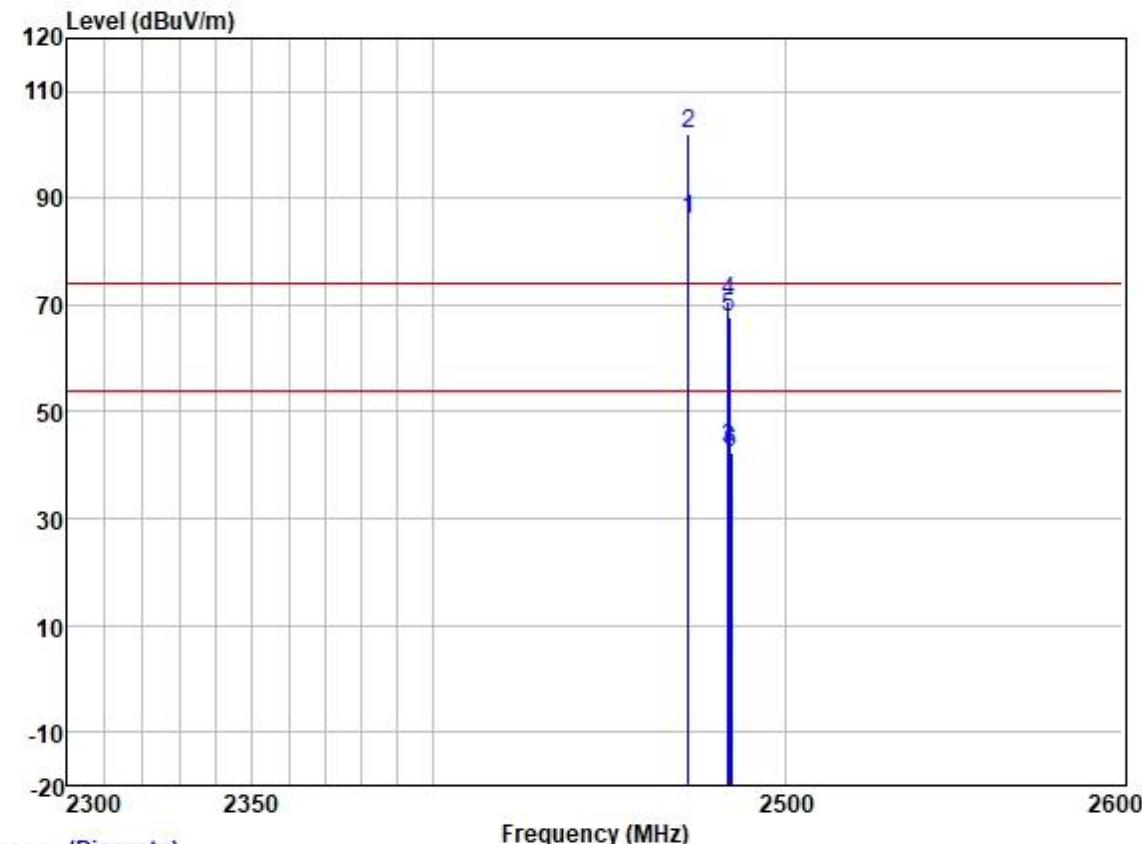
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Test Mode: 21; Polarity: Vertical; Modulation:802.11g; Bandwidth:20MHz; Channel:13



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 *	2472.000	92.42	27.46	3.55	37.57	85.86	54.00	31.86	VERTICAL	Average
2 *	2472.000	108.60	27.46	3.55	37.57	102.04	74.00	28.04	VERTICAL	Peak
3	2483.500	49.62	27.48	3.53	37.57	43.06	54.00	-10.94	VERTICAL	Average
4	2483.500	77.16	27.48	3.53	37.57	70.60	74.00	-3.40	VERTICAL	Peak
5	2483.790	74.42	27.48	3.53	37.57	67.86	74.00	-6.14	VERTICAL	Peak
6	2484.392	49.07	27.48	3.53	37.57	42.51	54.00	-11.49	VERTICAL	Average

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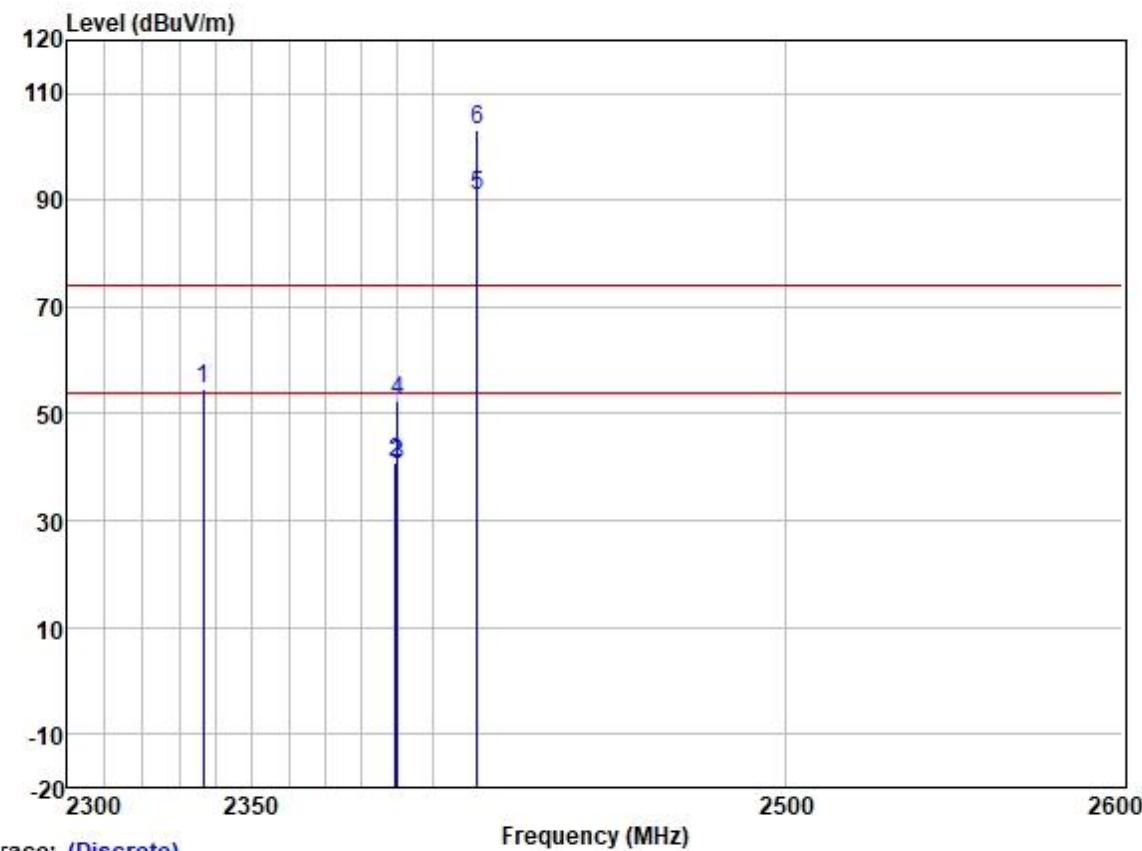
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

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Guangzhou Branch Testing Center EEC Laboratory

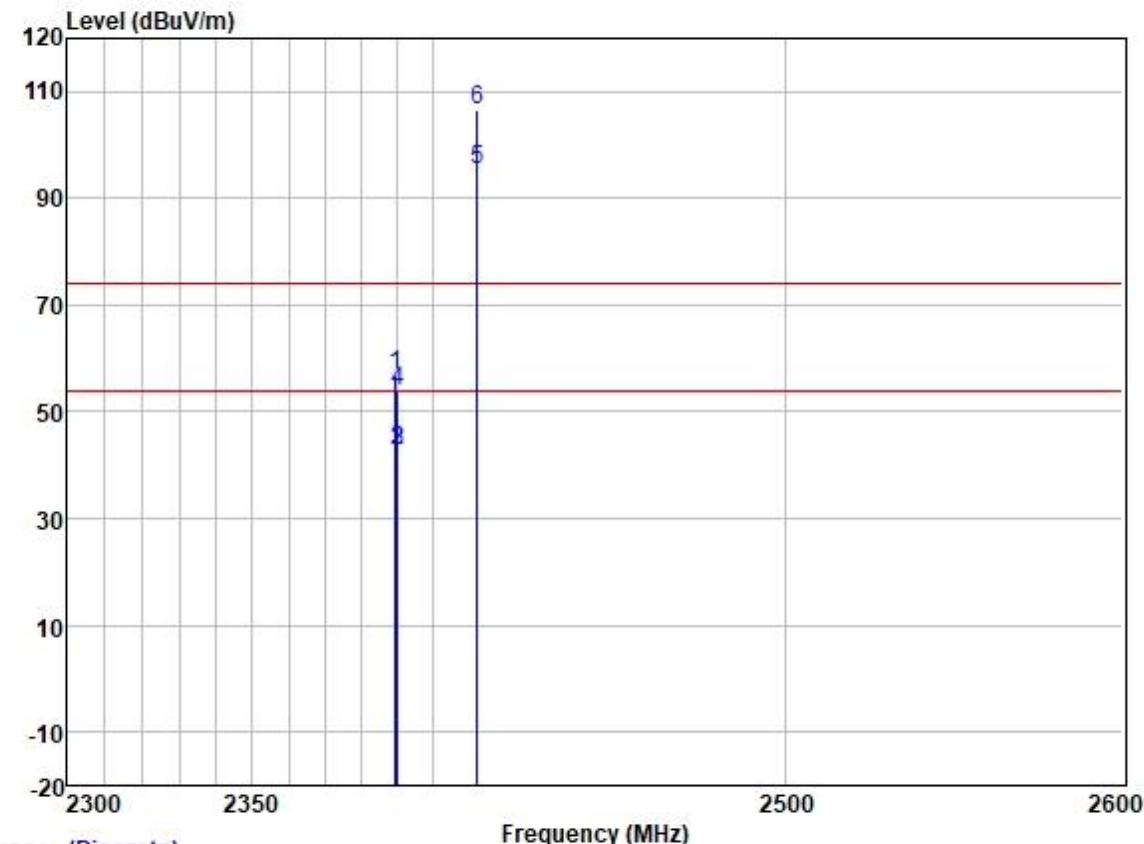
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1	2389.363	63.80	27.33	3.48	37.59	57.02	74.00	-16.98	VERTICAL	Peak
2	2389.968	49.54	27.33	3.48	37.59	42.76	54.00	-11.24	VERTICAL	Average
3	2390.000	49.54	27.33	3.48	37.59	42.76	54.00	-11.24	VERTICAL	Average
4	2390.000	60.85	27.33	3.48	37.59	54.07	74.00	-19.93	VERTICAL	Peak
5 *	2412.000	102.20	27.38	3.47	37.59	95.46	54.00	41.46	VERTICAL	Average
6 *	2412.000	113.38	27.38	3.47	37.59	106.64	74.00	32.64	VERTICAL	Peak

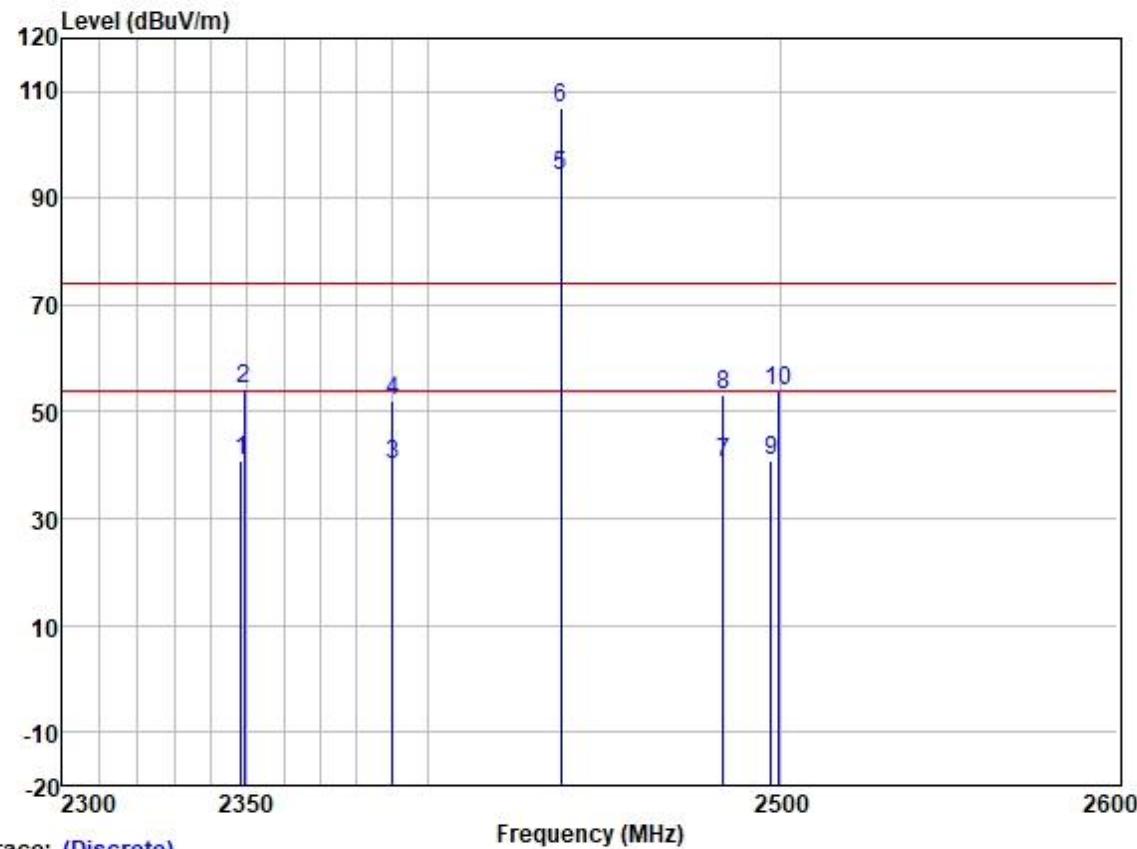
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Freq	ReadAntenna		Cable		Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor							
1	2348.292	47.83	27.24	3.38	37.61	40.84	54.00	-13.16	HORIZONTAL	Average	
2	2349.035	61.46	27.24	3.38	37.61	54.47	74.00	-19.53	HORIZONTAL	Peak	
3	2390.000	47.07	27.33	3.48	37.59	40.29	54.00	-13.71	HORIZONTAL	Average	
4	2390.000	58.92	27.33	3.48	37.59	52.14	74.00	-21.86	HORIZONTAL	Peak	
5	* 2437.000	101.02	27.41	3.42	37.58	94.27	54.00	40.27	HORIZONTAL	Average	
6	* 2437.000	113.83	27.41	3.42	37.58	107.08	74.00	33.08	HORIZONTAL	Peak	
7	2483.500	47.21	27.48	3.53	37.57	40.65	54.00	-13.35	HORIZONTAL	Average	
8	2483.500	59.65	27.48	3.53	37.57	53.09	74.00	-20.91	HORIZONTAL	Peak	
9	2497.432	47.52	27.50	3.40	37.56	40.86	54.00	-13.14	HORIZONTAL	Average	
10	2499.210	60.53	27.50	3.40	37.56	53.87	74.00	-20.13	HORIZONTAL	Peak	

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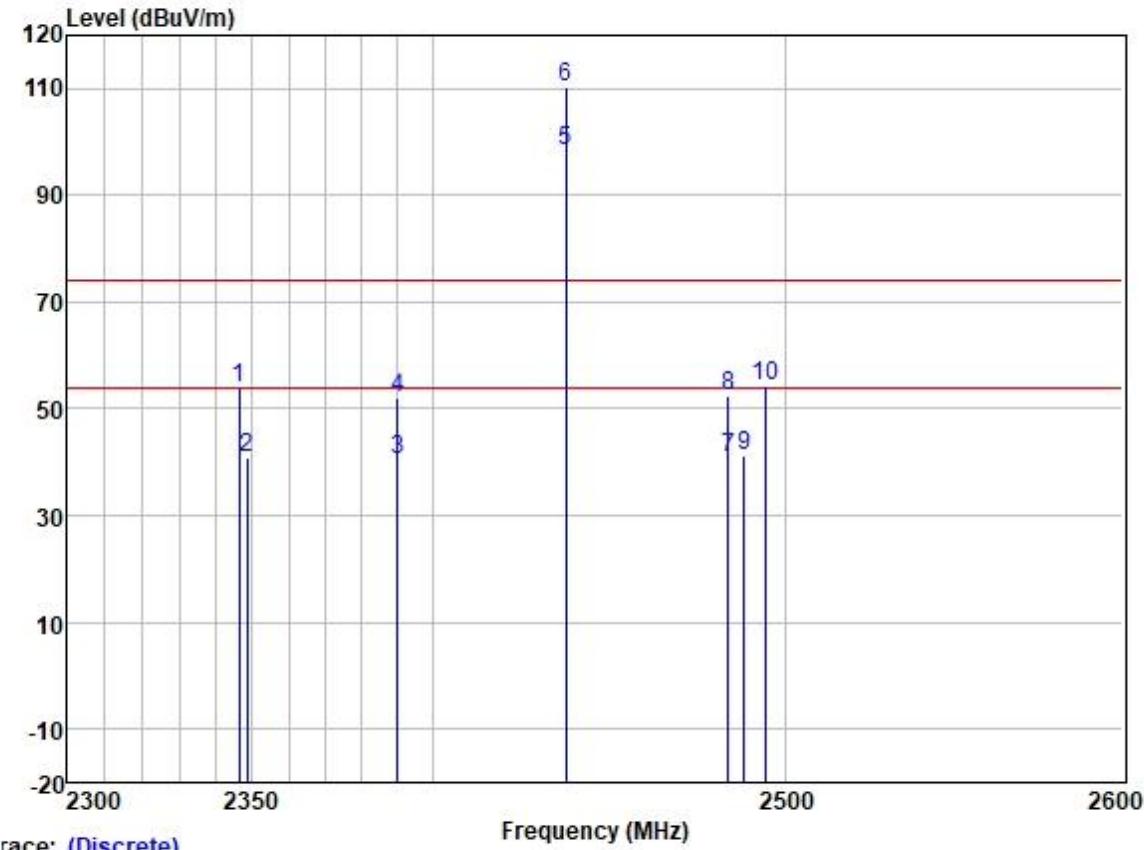
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:middle



Rec. (Discrete)	ReadAntenna		Cable		Preamp		Level	Limit	Over		Remark
	Freq	Level	Factor	Loss	Factor	Line			Limit	Pol/Phase	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1	2346.252	61.03	27.24	3.38	37.61	54.04	74.00	-19.96	VERTICAL	Peak	
2	2348.478	47.79	27.24	3.38	37.61	40.80	54.00	-13.20	VERTICAL	Average	
3	2390.000	47.38	27.33	3.48	37.59	40.60	54.00	-13.40	VERTICAL	Average	
4	2390.000	58.74	27.33	3.48	37.59	51.96	74.00	-22.04	VERTICAL	Peak	
5 *	2437.000	105.01	27.41	3.42	37.58	98.26	54.00	44.26	VERTICAL	Average	
6 *	2437.000	117.11	27.41	3.42	37.58	110.36	74.00	36.36	VERTICAL	Peak	
7	2483.500	47.43	27.48	3.53	37.57	40.87	54.00	-13.13	VERTICAL	Average	
8	2483.500	58.98	27.48	3.53	37.57	52.42	74.00	-21.58	VERTICAL	Peak	
9	2487.975	47.63	27.48	3.53	37.56	41.08	54.00	-12.92	VERTICAL	Average	
10	2494.473	60.90	27.49	3.47	37.56	54.30	74.00	-19.70	VERTICAL	Peak	

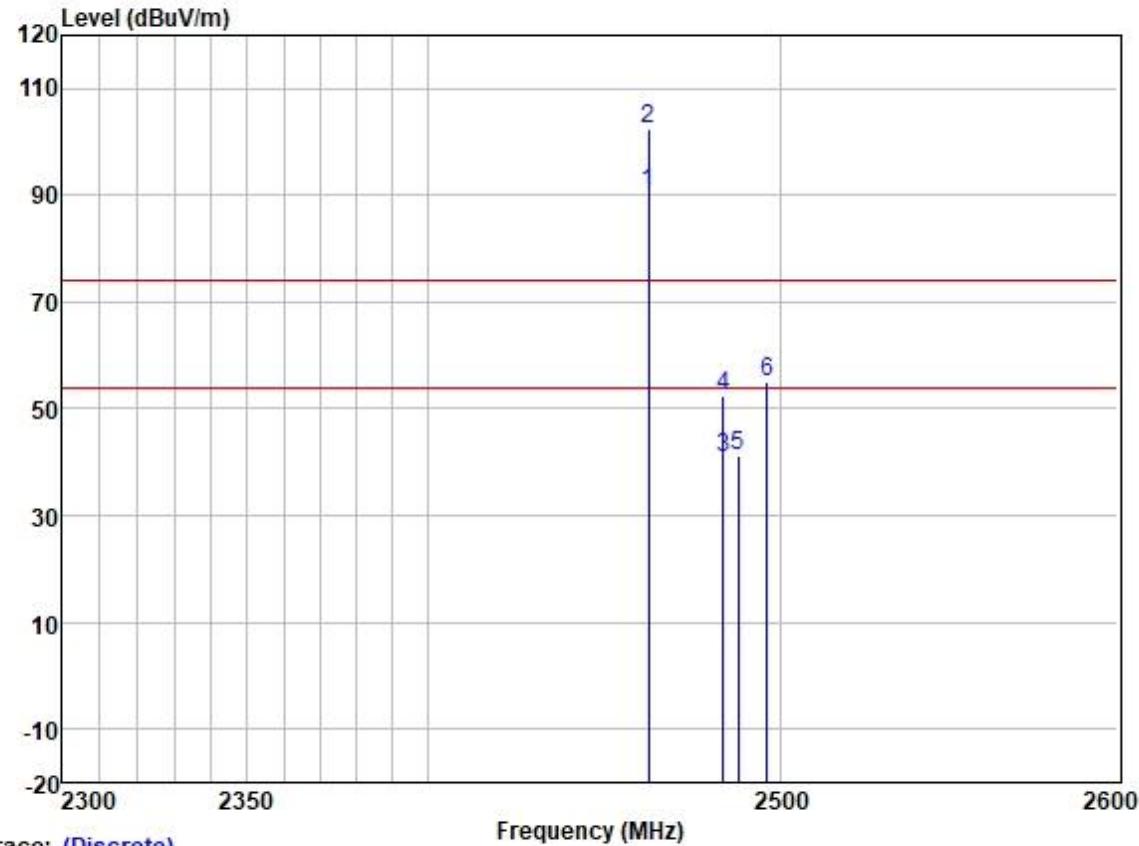
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:11



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 *	2462.000	97.18	27.45	3.50	37.58	90.55	54.00	36.55	HORIZONTAL	Average
2 *	2462.000	109.21	27.45	3.50	37.58	102.58	74.00	28.58	HORIZONTAL	Peak
3	2483.500	47.40	27.48	3.53	37.57	40.84	54.00	-13.16	HORIZONTAL	Average
4	2483.500	58.94	27.48	3.53	37.57	52.38	74.00	-21.62	HORIZONTAL	Peak
5	2487.656	47.63	27.48	3.53	37.56	41.08	54.00	-12.92	HORIZONTAL	Average
6	2496.114	61.51	27.49	3.47	37.56	54.91	74.00	-19.09	HORIZONTAL	Peak

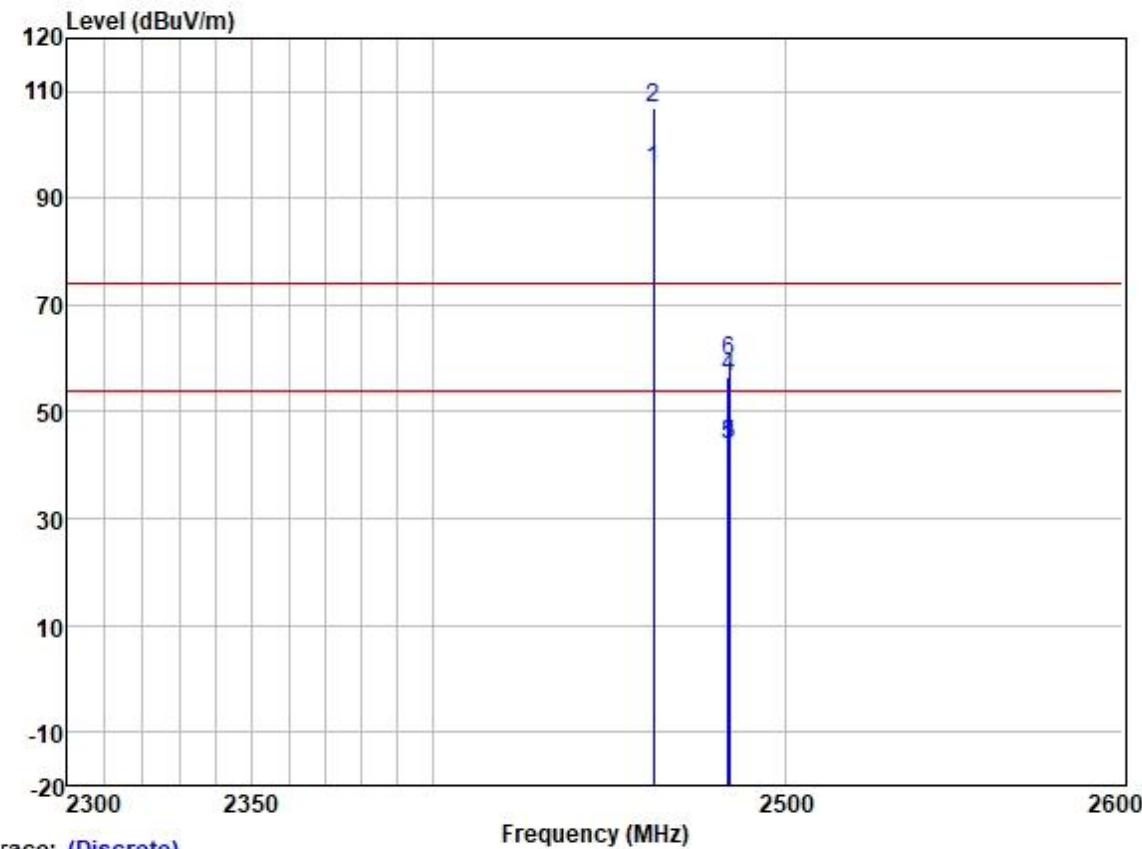
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:11



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Line	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1 * 2462.000	101.89	27.45	3.50	37.58	95.26	54.00	41.26	VERTICAL	Average	
2 * 2462.000	113.73	27.45	3.50	37.58	107.10	74.00	33.10	VERTICAL	Peak	
3 2483.500	50.52	27.48	3.53	37.57	43.96	54.00	-10.04	VERTICAL	Average	
4 2483.500	63.25	27.48	3.53	37.57	56.69	74.00	-17.31	VERTICAL	Peak	
5 2483.790	50.36	27.48	3.53	37.57	43.80	54.00	-10.20	VERTICAL	Average	
6 2483.790	66.13	27.48	3.53	37.57	59.57	74.00	-14.43	VERTICAL	Peak	

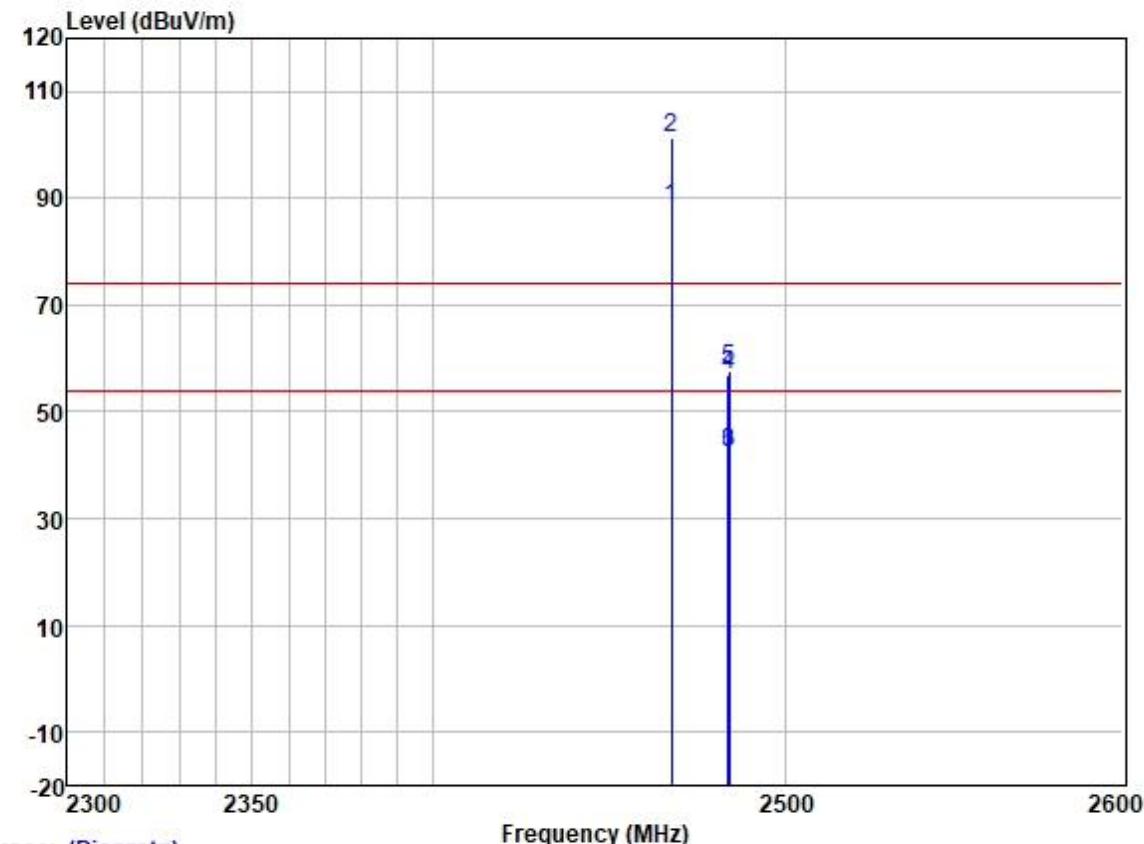
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:12



Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 * 2467.000	95.04	27.45	3.50	37.57	88.42	54.00	34.42	HORIZONTAL	Average	
2 * 2467.000	107.80	27.45	3.50	37.57	101.18	74.00	27.18	HORIZONTAL	Peak	
3 2483.500	49.04	27.48	3.53	37.57	42.48	54.00	-11.52	HORIZONTAL	Average	
4 2483.500	63.34	27.48	3.53	37.57	56.78	74.00	-17.22	HORIZONTAL	Peak	
5 2483.790	64.40	27.48	3.53	37.57	57.84	74.00	-16.16	HORIZONTAL	Peak	
6 2483.840	49.05	27.48	3.53	37.57	42.49	54.00	-11.51	HORIZONTAL	Average	

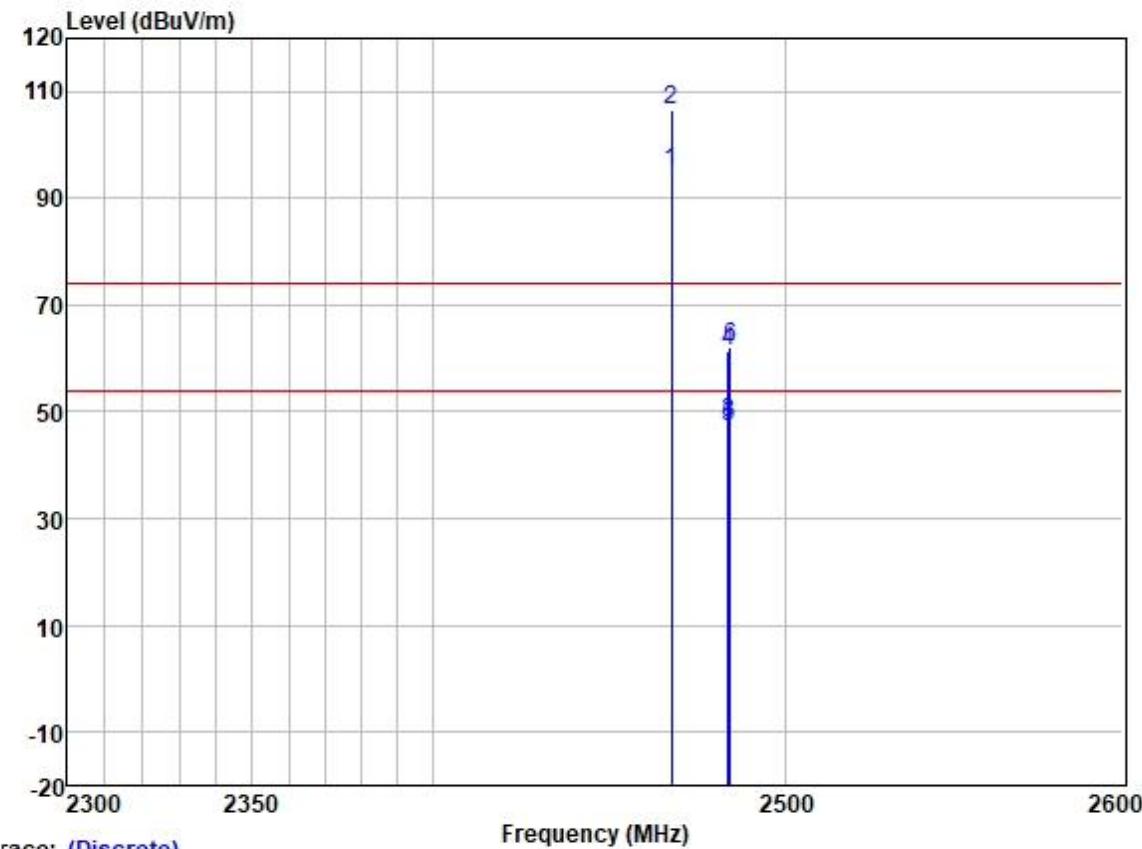
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:12



Freq	ReadAntenna	Cable	Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	Level	Factor	Loss						
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 * 2467.000	101.49	27.45	3.50	37.57	94.87	54.00	40.87	VERTICAL	Average
2 * 2467.000	113.35	27.45	3.50	37.57	106.73	74.00	32.73	VERTICAL	Peak
3 2483.500	54.57	27.48	3.53	37.57	48.01	54.00	-5.99	VERTICAL	Average
4 2483.500	67.81	27.48	3.53	37.57	61.25	74.00	-12.75	VERTICAL	Peak
5 2483.790	53.94	27.48	3.53	37.57	47.38	54.00	-6.62	VERTICAL	Average
6 2484.041	68.84	27.48	3.53	37.57	62.28	74.00	-11.72	VERTICAL	Peak

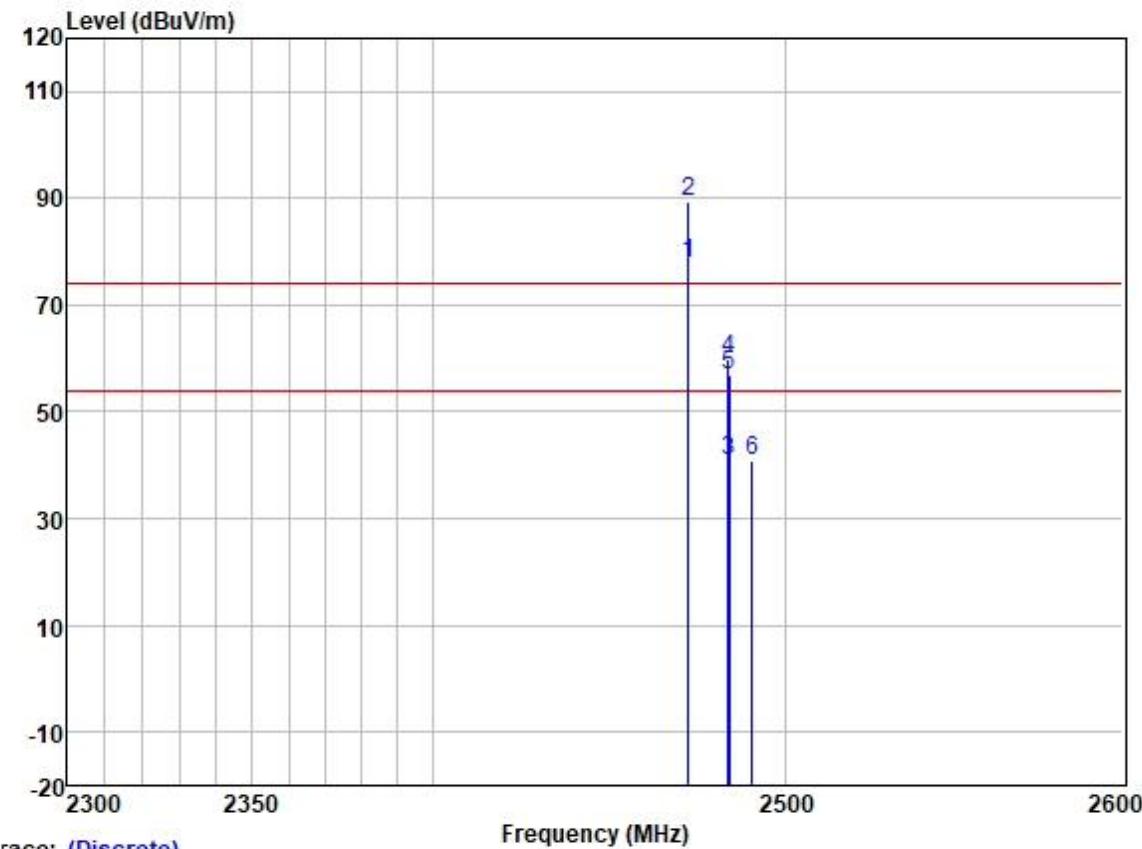
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:13

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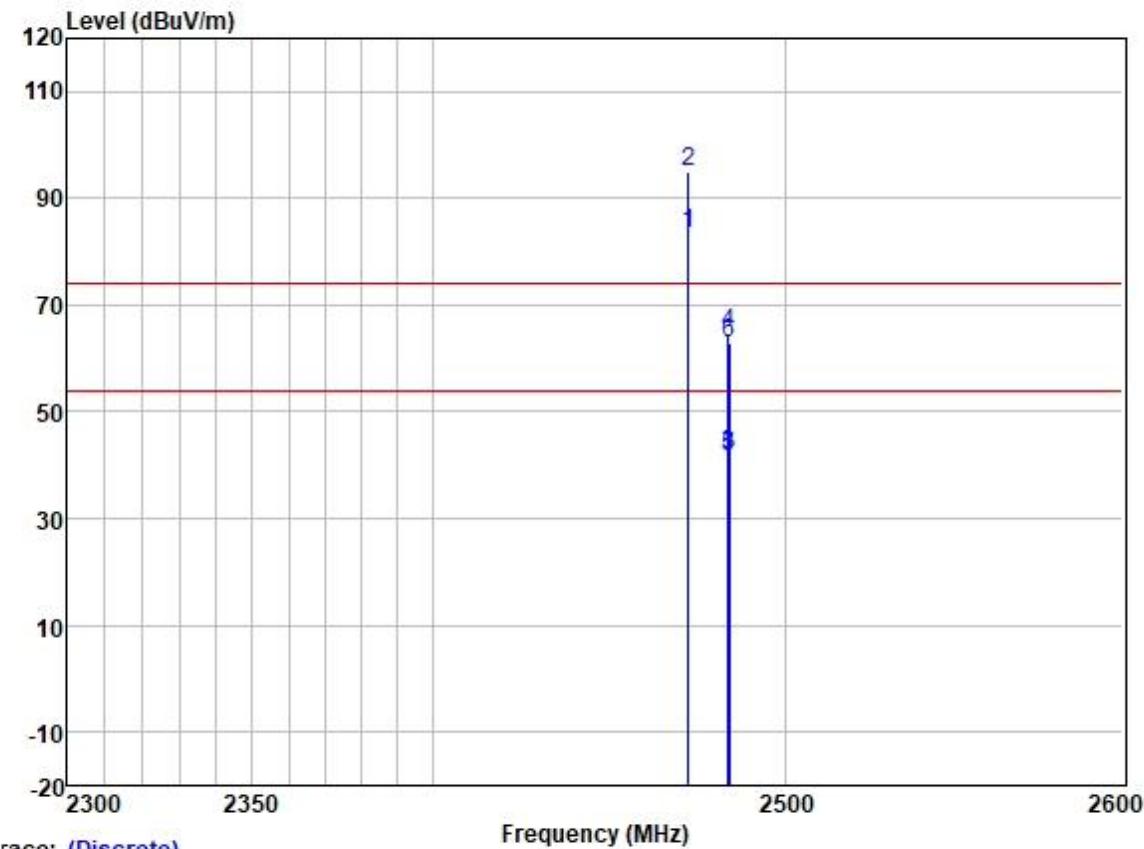
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel: 13



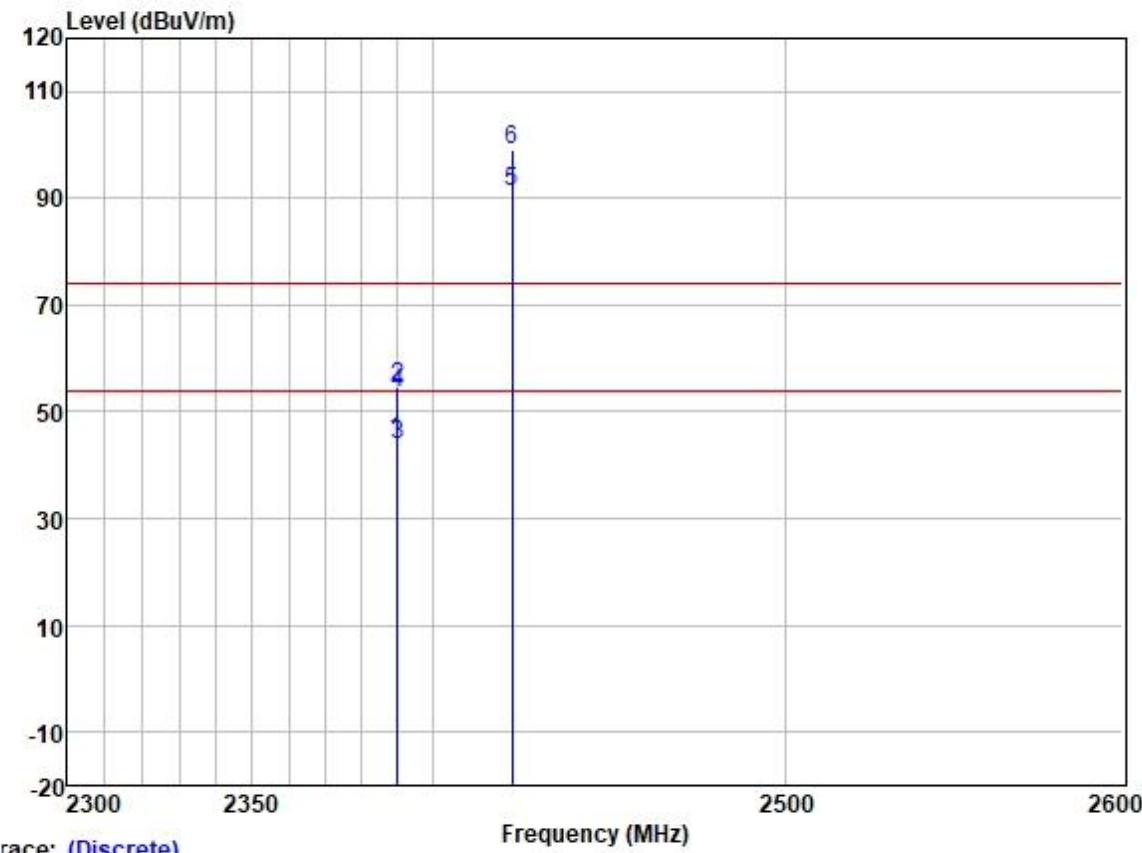
Race: (Discrete)	Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
		Level	Factor	Loss	Factor	Level	Line				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m		dB		
1 *	2472.000	90.14	27.46	3.55	37.57	83.58	54.00	29.58	VERTICAL	Average	
2 *	2472.000	101.36	27.46	3.55	37.57	94.80	74.00	20.80	VERTICAL	Peak	
3	2483.500	48.41	27.48	3.53	37.57	41.85	54.00	-12.15	VERTICAL	Average	
4	2483.500	71.33	27.48	3.53	37.57	64.77	74.00	-9.23	VERTICAL	Peak	
5	2483.840	47.99	27.48	3.53	37.57	41.43	54.00	-12.57	VERTICAL	Average	
6	2483.840	69.30	27.48	3.53	37.57	62.74	74.00	-11.26	VERTICAL	Peak	

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Guangzhou Branch Testing Center EEC Laboratory

Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Race: (Discrete)

Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1	2389.526	51.35	27.33	3.48	37.59	44.57	54.00	-9.43	HORIZONTAL	Average
2	2389.827	61.54	27.33	3.48	37.59	54.76	74.00	-19.24	HORIZONTAL	Peak
3	2390.000	50.74	27.33	3.48	37.59	43.96	54.00	-10.04	HORIZONTAL	Average
4	2390.000	60.32	27.33	3.48	37.59	53.54	74.00	-20.46	HORIZONTAL	Peak
5 *	2422.000	98.11	27.39	3.45	37.58	91.37	54.00	37.37	HORIZONTAL	Average
6 *	2422.000	105.81	27.39	3.45	37.58	99.07	74.00	25.07	HORIZONTAL	Peak

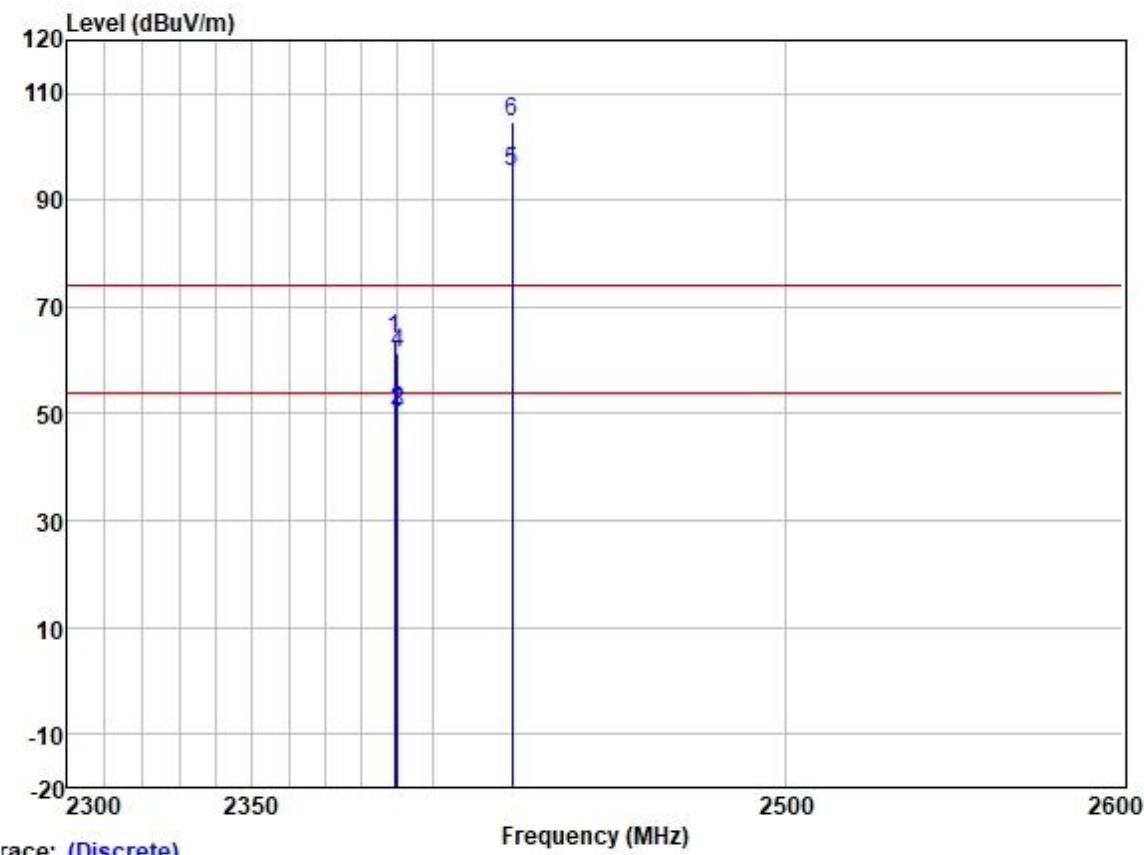
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Freq	ReadAntenna		Cable		Preamp		Limit Line	Over Line	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.075	70.60	27.33	3.48	37.59	63.82	74.00	-10.18	VERTICAL	Peak
2	2389.827	57.49	27.33	3.48	37.59	50.71	54.00	-3.29	VERTICAL	Average
3	2390.000	57.13	27.33	3.48	37.59	50.35	54.00	-3.65	VERTICAL	Average
4	2390.000	68.29	27.33	3.48	37.59	61.51	74.00	-12.49	VERTICAL	Peak
5 *	2422.000	102.26	27.39	3.45	37.58	95.52	54.00	41.52	VERTICAL	Average
6 *	2422.000	111.36	27.39	3.45	37.58	104.62	74.00	30.62	VERTICAL	Peak

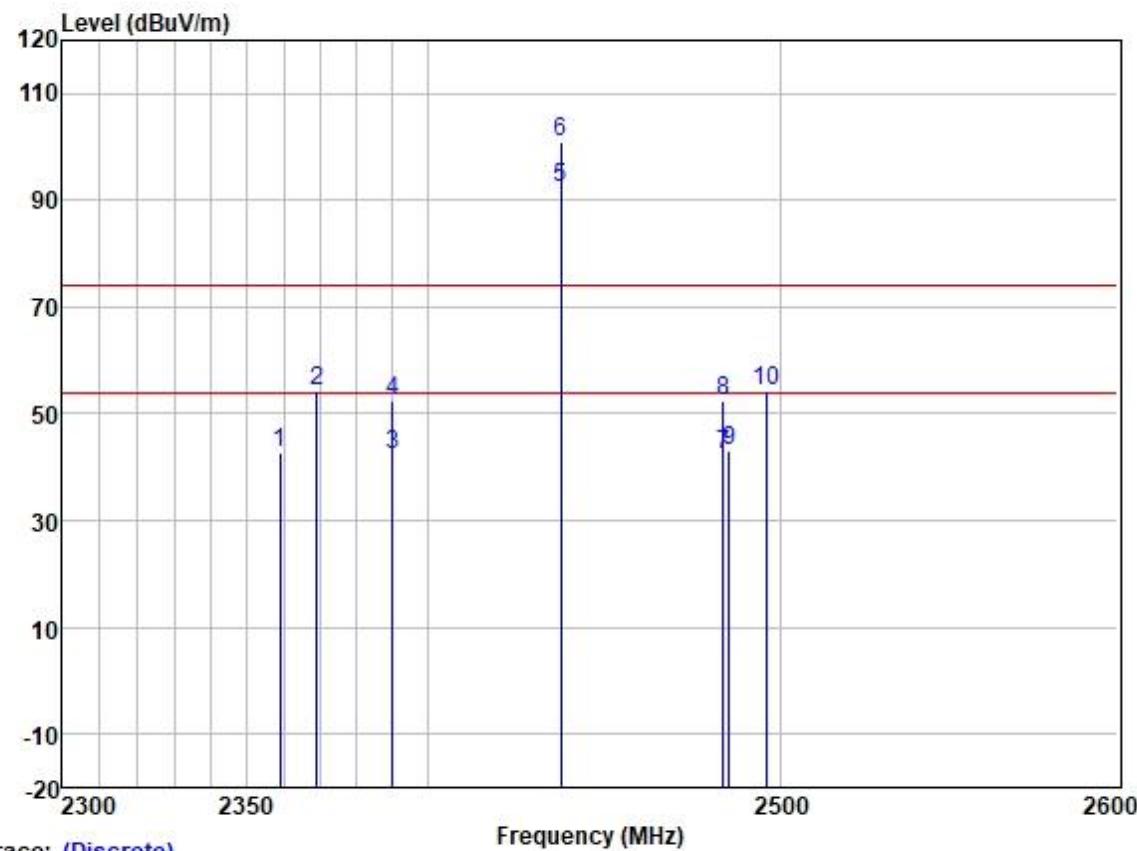
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Freq	ReadAntenna		Cable		Preamp Loss Factor	Level	Limit Line	Over Line	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1	2358.897	49.71	27.27	3.42	37.61	42.79	54.00	-11.21	HORIZONTAL	Average
2	2368.987	61.29	27.28	3.43	37.60	54.40	74.00	-19.60	HORIZONTAL	Peak
3	2390.000	48.97	27.33	3.48	37.59	42.19	54.00	-11.81	HORIZONTAL	Average
4	2390.000	59.07	27.33	3.48	37.59	52.29	74.00	-21.71	HORIZONTAL	Peak
5 *	2437.000	99.07	27.41	3.42	37.58	92.32	54.00	38.32	HORIZONTAL	Average
6 *	2437.000	107.75	27.41	3.42	37.58	101.00	74.00	27.00	HORIZONTAL	Peak
7	2483.500	48.83	27.48	3.53	37.57	42.27	54.00	-11.73	HORIZONTAL	Average
8	2483.500	59.15	27.48	3.53	37.57	52.59	74.00	-21.41	HORIZONTAL	Peak
9	2485.223	49.51	27.48	3.53	37.57	42.95	54.00	-11.05	HORIZONTAL	Average
10	2496.248	60.94	27.49	3.47	37.56	54.34	74.00	-19.66	HORIZONTAL	Peak

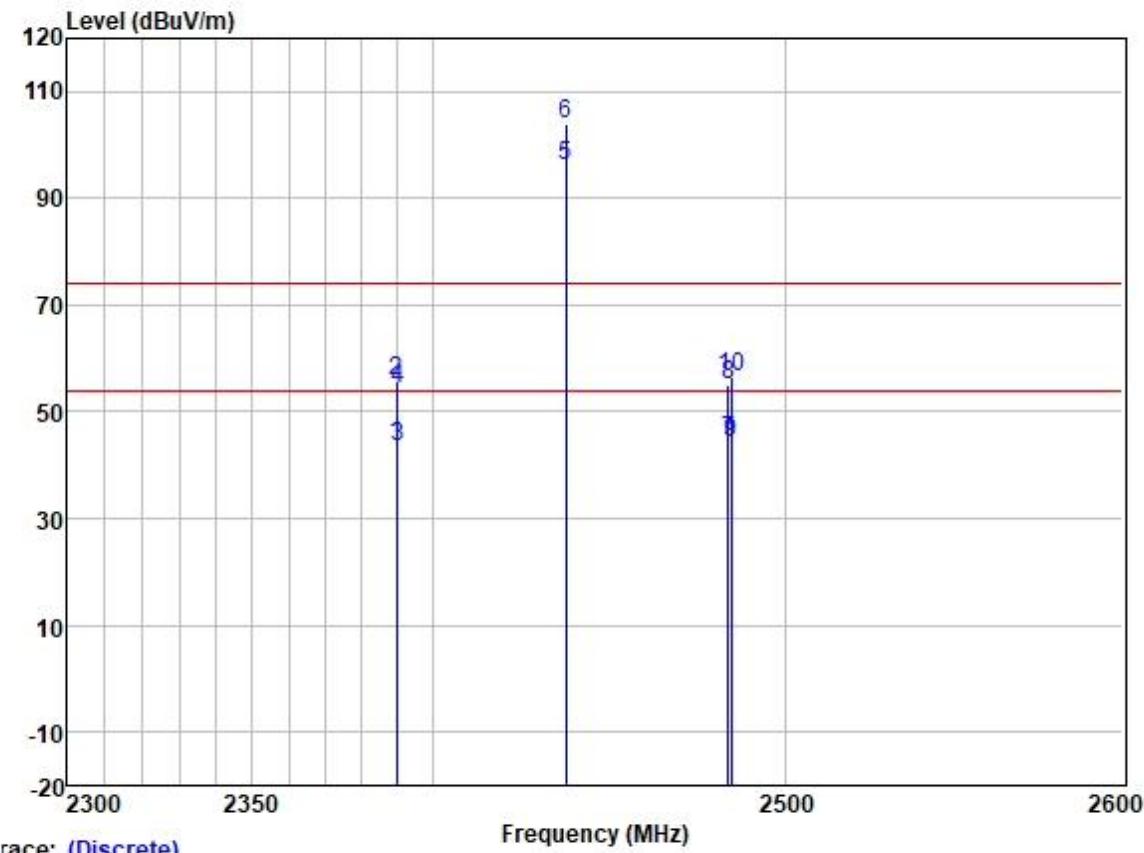
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:middle



Freq	ReadAntenna		Cable		Preamp	Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	Loss							
1	2389.485	50.69	27.33	3.48	37.59	43.91	54.00	-10.09	VERTICAL	Average	
2	2389.674	62.75	27.33	3.48	37.59	55.97	74.00	-18.03	VERTICAL	Peak	
3	2390.000	50.41	27.33	3.48	37.59	43.63	54.00	-10.37	VERTICAL	Average	
4	2390.000	60.91	27.33	3.48	37.59	54.13	74.00	-19.87	VERTICAL	Peak	
5	2437.000	102.80	27.41	3.42	37.58	96.05	54.00	42.05	VERTICAL	Average	
6	2437.000	110.80	27.41	3.42	37.58	104.05	74.00	30.05	VERTICAL	Peak	
7	2483.500	51.13	27.48	3.53	37.57	44.57	54.00	-9.43	VERTICAL	Average	
8	2483.500	61.44	27.48	3.53	37.57	54.88	74.00	-19.12	VERTICAL	Peak	
9	2484.241	50.65	27.48	3.53	37.57	44.09	54.00	-9.91	VERTICAL	Average	
10	2484.634	63.16	27.48	3.53	37.57	56.60	74.00	-17.40	VERTICAL	Peak	

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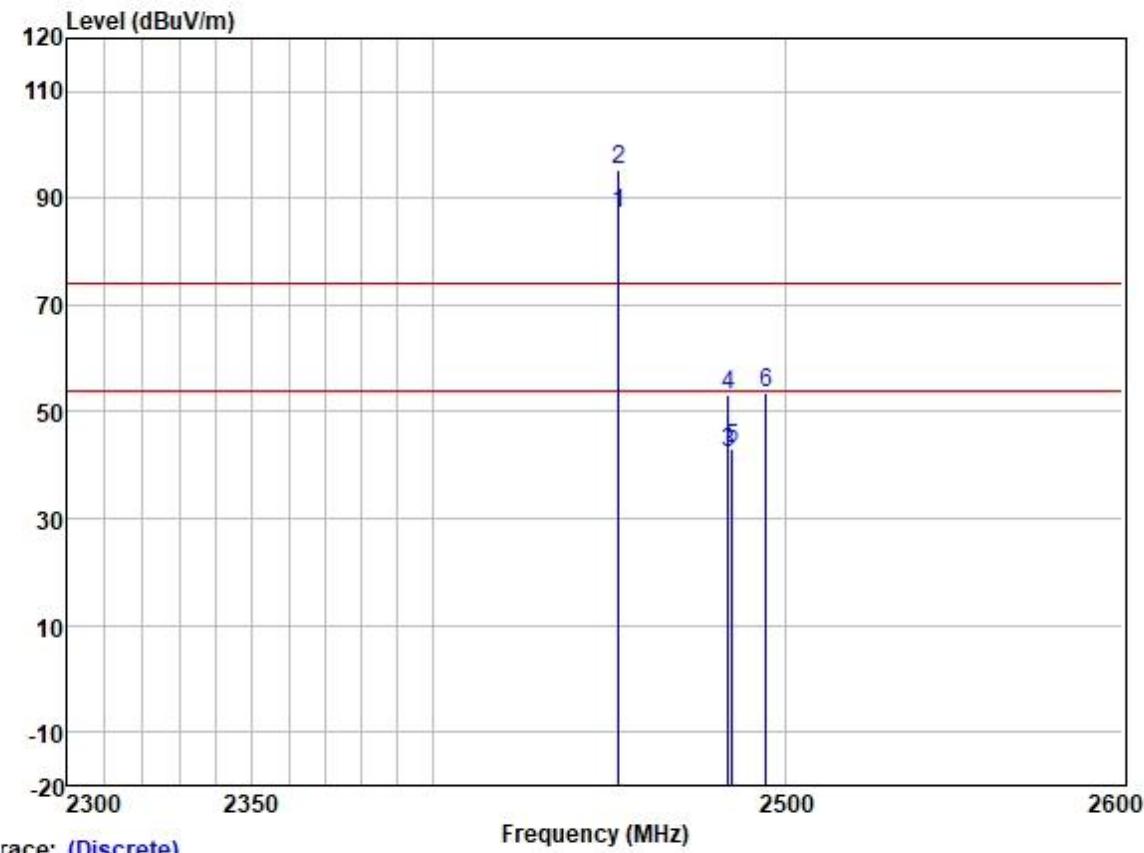


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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:9



	Freq	ReadAntenna Level	ReadAntenna Factor	Cable Loss	Cable Factor	Preamp Level	Preamp dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV/m	dB		
1	2452.000	93.84	27.43	3.40	37.58	87.09	54.00	33.09	HORIZONTAL	Average	
2	2452.000	102.17	27.43	3.40	37.58	95.42	74.00	21.42	HORIZONTAL	Peak	
3	2483.500	48.80	27.48	3.53	37.57	42.24	54.00	-11.76	HORIZONTAL	Average	
4	2483.500	59.60	27.48	3.53	37.57	53.04	74.00	-20.96	HORIZONTAL	Peak	
5	2484.641	49.57	27.48	3.53	37.57	43.01	54.00	-10.99	HORIZONTAL	Average	
6	2494.327	60.28	27.49	3.47	37.56	53.68	74.00	-20.32	HORIZONTAL	Peak	

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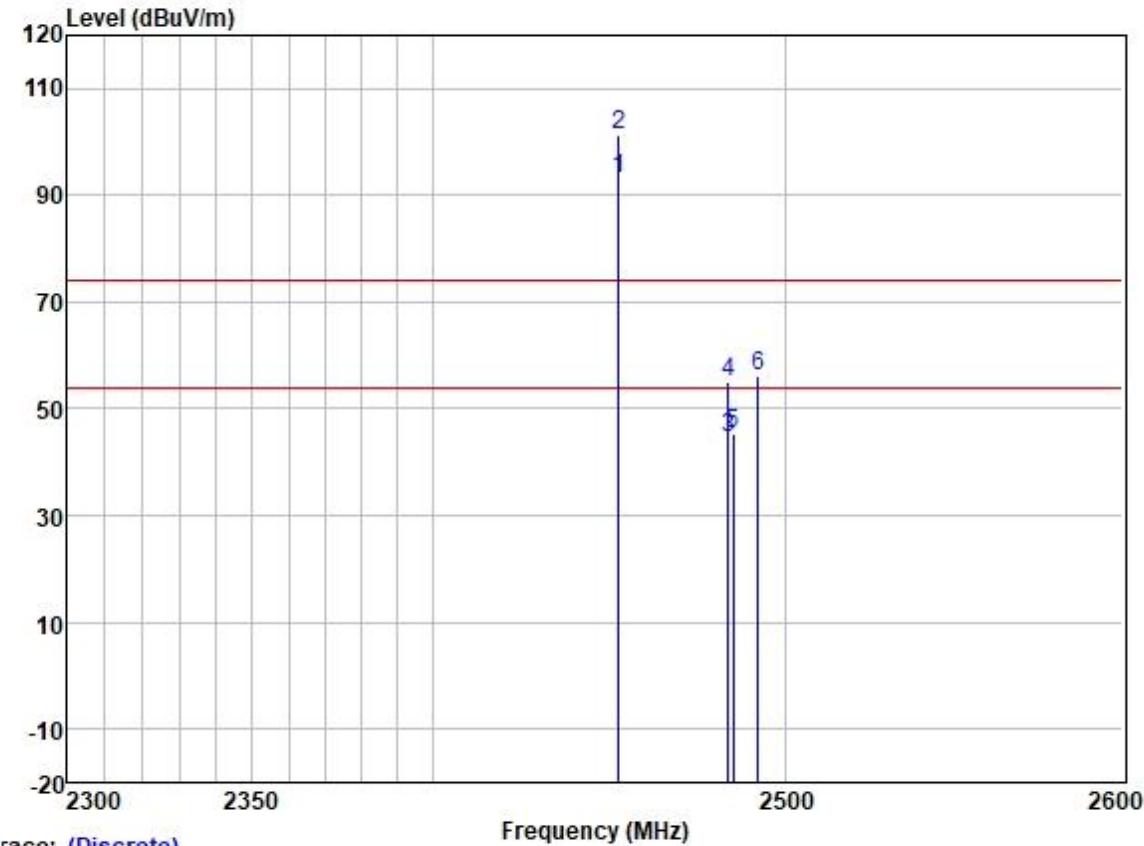
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:9

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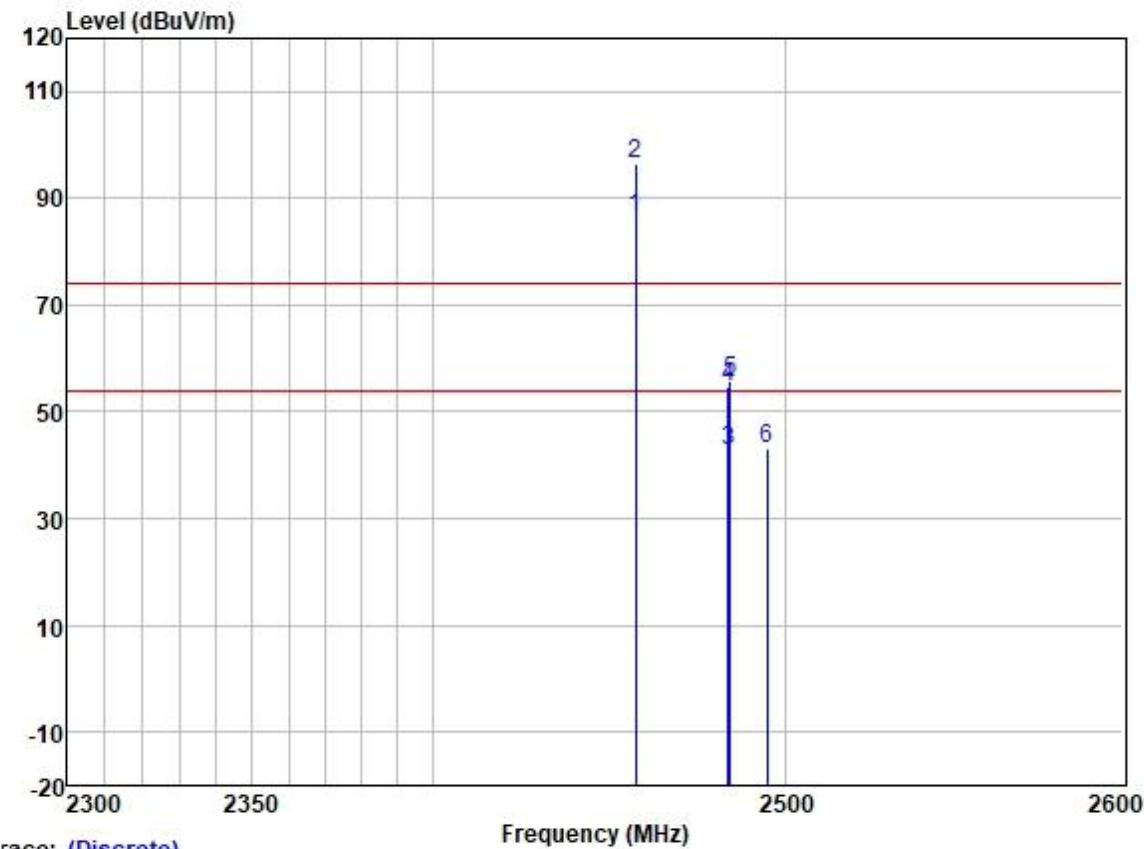
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:10



Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 * 2457.000	92.98	27.44	3.45	37.58	86.29	54.00	32.29	HORIZONTAL	Average	
2 * 2457.000	103.22	27.44	3.45	37.58	96.53	74.00	22.53	HORIZONTAL	Peak	
3 2483.500	49.16	27.48	3.53	37.57	42.60	54.00	-11.40	HORIZONTAL	Average	
4 2483.500	61.37	27.48	3.53	37.57	54.81	74.00	-19.19	HORIZONTAL	Peak	
5 2484.147	62.37	27.48	3.53	37.57	55.81	74.00	-18.19	HORIZONTAL	Peak	
6 2494.610	49.79	27.49	3.47	37.56	43.19	54.00	-10.81	HORIZONTAL	Average	

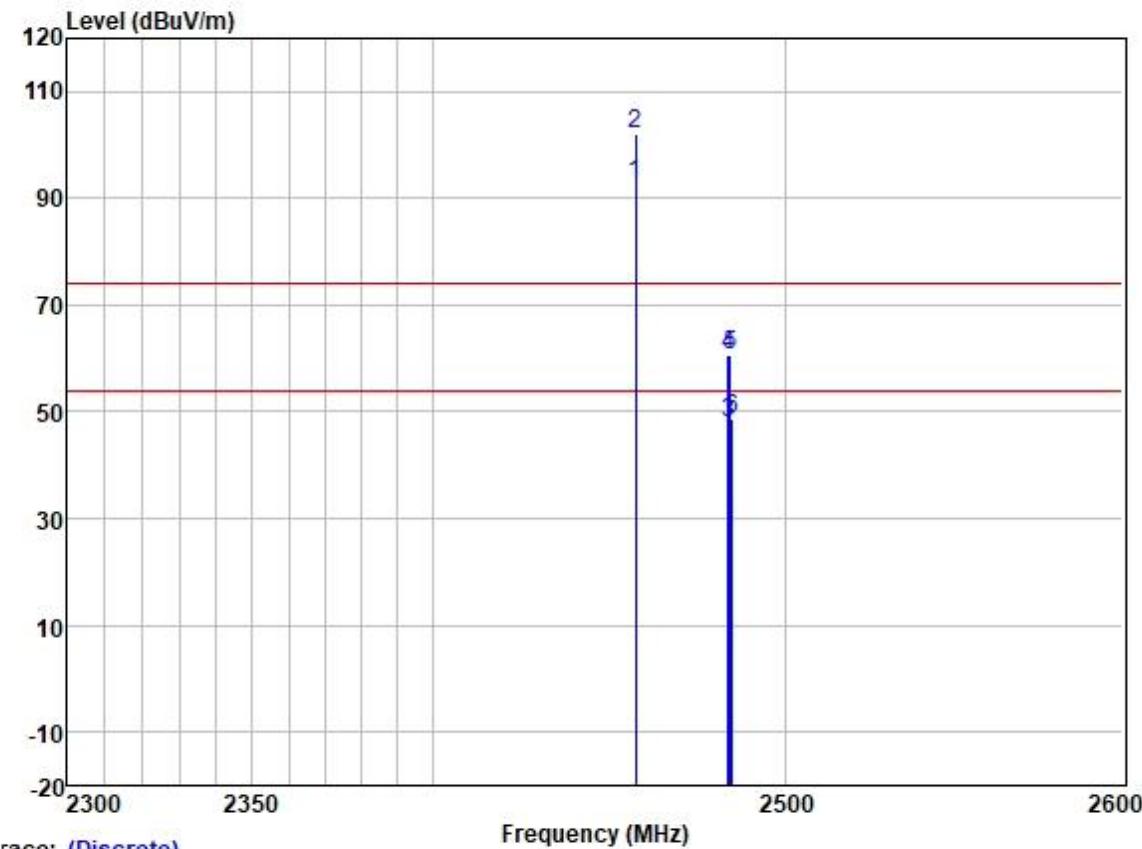
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:10



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 * 2457.000	99.61	27.44	3.45	37.58	92.92	54.00	38.92	VERTICAL			Average
2 * 2457.000	108.65	27.44	3.45	37.58	101.96	74.00	27.96	VERTICAL			Peak
3 2483.500	54.48	27.48	3.53	37.57	47.92	54.00	-6.08	VERTICAL			Average
4 2483.500	67.26	27.48	3.53	37.57	60.70	74.00	-13.30	VERTICAL			Peak
5 2484.147	67.05	27.48	3.53	37.57	60.49	74.00	-13.51	VERTICAL			Peak
6 2484.500	55.08	27.48	3.53	37.57	48.52	54.00	-5.48	VERTICAL			Average

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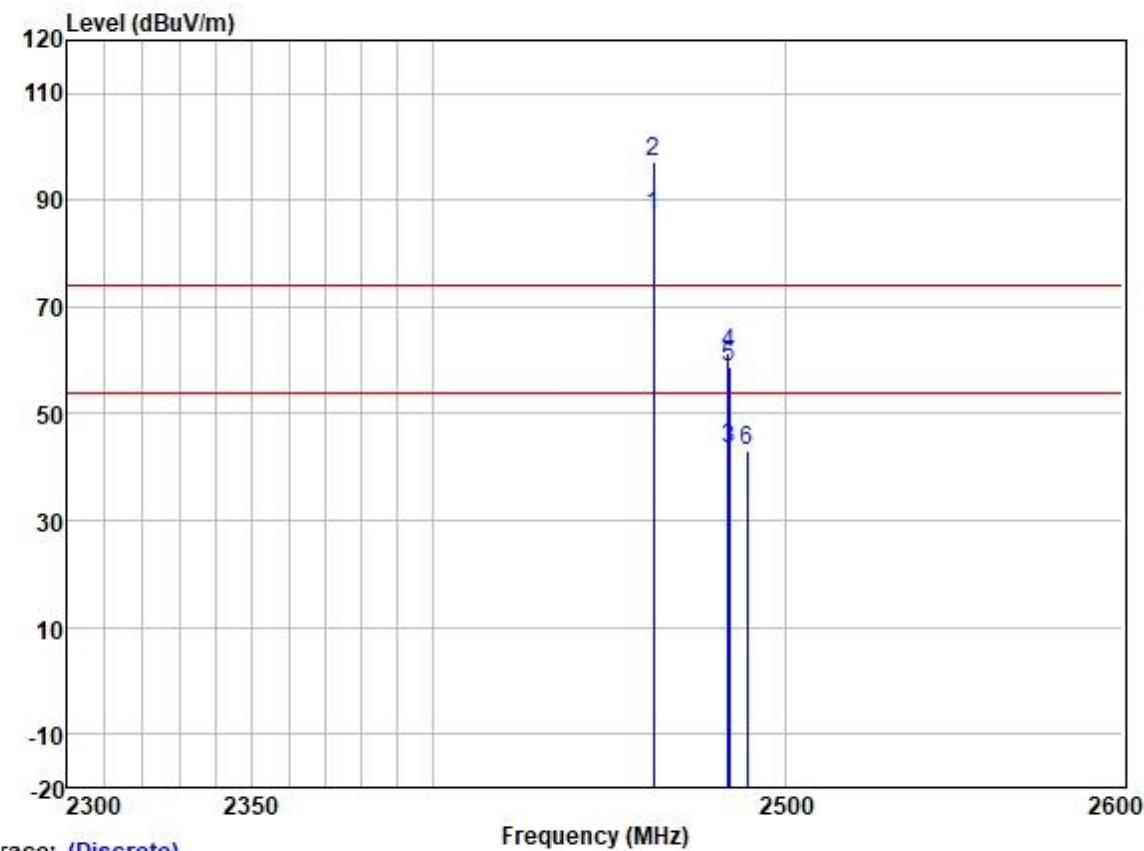
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:11



Freq	ReadAntenna		Cable		Preamp		Limit	Over	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor	Loss	Factor	dB	dBuV/m	dBuV/m	dB		
1 * 2462.000	93.91	27.45	3.50	37.58	87.28	54.00	33.28	HORIZONTAL	Average			
2 * 2462.000	103.77	27.45	3.50	37.58	97.14	74.00	23.14	HORIZONTAL	Peak			
3 2483.500	49.86	27.48	3.53	37.57	43.30	54.00	-10.70	HORIZONTAL	Average			
4 2483.500	67.86	27.48	3.53	37.57	61.30	74.00	-12.70	HORIZONTAL	Peak			
5 2483.865	65.33	27.48	3.53	37.57	58.77	74.00	-15.23	HORIZONTAL	Peak			
6 2488.949	49.82	27.48	3.53	37.56	43.27	54.00	-10.73	HORIZONTAL	Average			

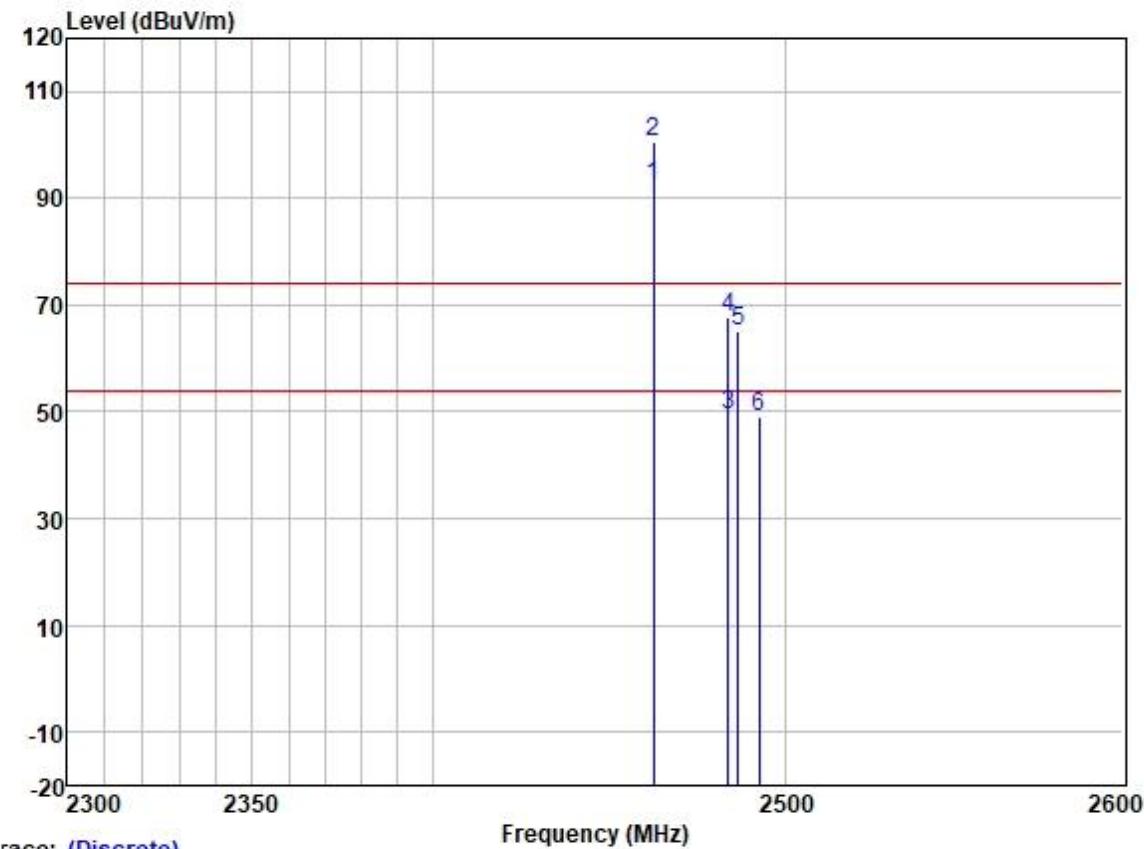
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Test Mode: 21; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:11



Freq	ReadAntenna		Cable		Preamp		Limit Line	Over Line	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Level				
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB			
1 *	2462.000	98.88	27.45	3.50	37.58	92.25	54.00	38.25	VERTICAL	Average
2 *	2462.000	107.33	27.45	3.50	37.58	100.70	74.00	26.70	VERTICAL	Peak
3	2483.500	56.08	27.48	3.53	37.57	49.52	54.00	-4.48	VERTICAL	Average
4	2483.500	74.36	27.48	3.53	37.57	67.80	74.00	-6.20	VERTICAL	Peak
5	2486.476	71.71	27.48	3.53	37.57	65.15	74.00	-8.85	VERTICAL	Peak
6	2492.415	55.75	27.49	3.47	37.56	49.15	54.00	-4.85	VERTICAL	Average

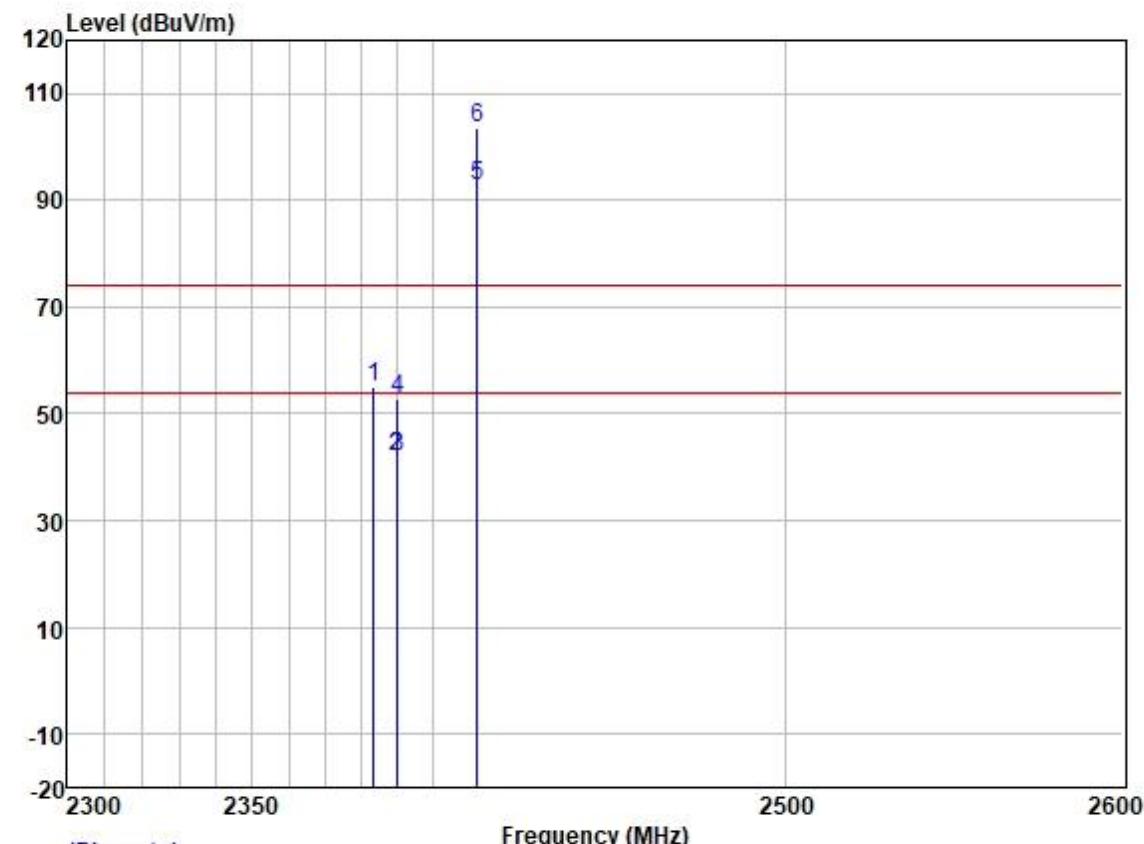
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Test Mode: 21; Polarity: Horizontal; Modulation:802.11ax; Bandwidth:20MHz; Channel:Low



Freq	ReadAntenna		Cable		Preamp Loss Factor	Limit Level	Over Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB						
1	2383.200	61.71	27.31	3.46	37.60	54.88	74.00	-19.12	HORIZONTAL	Peak
2	2389.726	48.87	27.33	3.48	37.59	42.09	54.00	-11.91	HORIZONTAL	Average
3	2390.000	48.70	27.33	3.48	37.59	41.92	54.00	-12.08	HORIZONTAL	Average
4	2390.000	59.59	27.33	3.48	37.59	52.81	74.00	-21.19	HORIZONTAL	Peak
5 *	2412.000	99.56	27.38	3.47	37.59	92.82	54.00	38.82	HORIZONTAL	Average
6 *	2412.000	110.22	27.38	3.47	37.59	103.48	74.00	29.48	HORIZONTAL	Peak

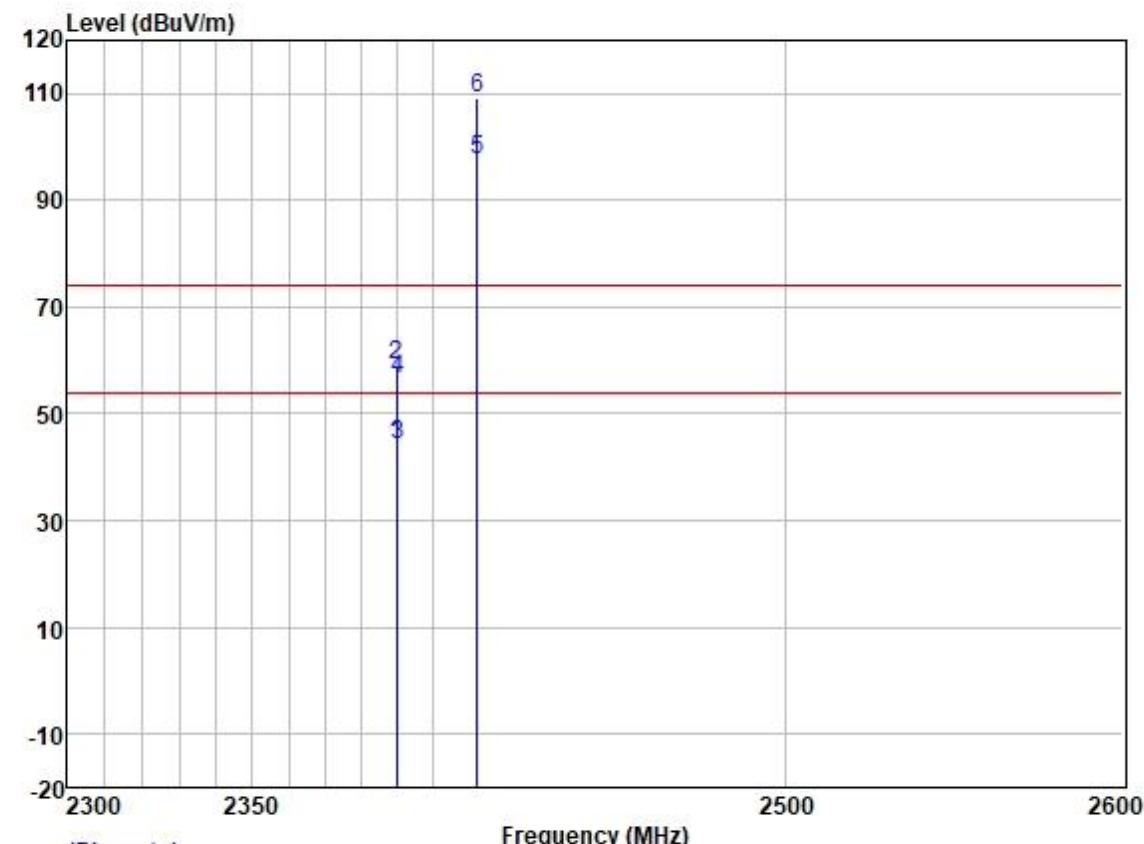
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Test Mode: 21; Polarity: Vertical; Modulation:802.11ax; Bandwidth:20MHz; Channel:Low



Freq	ReadAntenna		Cable		Preamp Loss Factor	Limit Level	Over Line	Limit Pol/Phase	Remark
	MHz	dBuV	Level Factor	dB					
1	2389.726	51.16	27.33	3.48	37.59	44.38	54.00	-9.62	VERTICAL Average
2	2389.726	66.01	27.33	3.48	37.59	59.23	74.00	-14.77	VERTICAL Peak
3	2390.000	50.89	27.33	3.48	37.59	44.11	54.00	-9.89	VERTICAL Average
4	2390.000	63.37	27.33	3.48	37.59	56.59	74.00	-17.41	VERTICAL Peak
5 *	2412.000	104.38	27.38	3.47	37.59	97.64	54.00	43.64	VERTICAL Average
6 *	2412.000	115.77	27.38	3.47	37.59	109.03	74.00	35.03	VERTICAL Peak

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