

Test Report

FCC ID: 2ARNO-VAP11G-300

Date of issue: Nov. 01, 2018

Report Number:	MTi181030E121
Sample Description:	WiFi Bridge&repeater
Model(s):	VAP11G-300
Applicant:	Shenzhen HouTian Network Communication Technology Co., Ltd.
Address:	Floor 3, Building B, No.29 Longfeng Road, Long Gang District, Shen zhen City, Guangdong Province, China.
Date of Test:	Oct. 16. 2018 – Nov 01. 2018

Shenzhen Microtest Co., Ltd.
<http://www.mtitest.com>

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Test Result Certification

Applicant's name: Shenzhen HouTian Network Communication Technology Co., Ltd.

Address: Floor 3, Building B, No.29 Longfeng Road, Long Gang District, Shenzhen City, Guangdong Province, China.

Manufacture's Name: Shenzhen HouTian Network Communication Technology Co., Ltd.

Address: Floor 3, Building B, No.29 Longfeng Road, Long Gang District, Shenzhen City, Guangdong Province, China.

Product name: WiFi Bridge&repeater

Trademark: VONETS

Model name: VAP11G-300

Standards: FCC Part 15.247
ANSI C63.10-2013

Test Procedure: KDB558074 D01 v04
KDB662911 D01 v02r01

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:



Demi Mu

Nov. 01, 2018

Reviewed by:



Blue Zheng

Nov. 01, 2018

Approved by:



Smith Chen

Nov. 01, 2018

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1 General information

1.1 Description of EUT

Product name	WiFi Bridge&repeater
Model name	VAP11G-300
Serial Model	N/A
Model difference:	N/A
Operation Frequency	802.11b/g/n20:2412~2462 MHz 802.11n40:2422~2452 MHz
Modulation Type:	11b: DQPSK, DBPSK, DSSS, CCK 11g: BPSK, QPSK, 16QAM, 64QAM, OFDM 11n: BPSK, QPSK, 16QAM, 64QAM with OFDM
Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n:65/52/6.5Mbps
Antenna Type:	PCB Antenna
Antenna Gain (dBi):	For 802.11b/g, working in SISO mode, then the antenna gain as below: 802.11b/g: Antenna A :2dBi 802.11b/g: Antenna B :2dBi
	For 802.11n, working in MIMO mode, the antenna gains should be calculated by the formula: Directional Gain = $G_{ANT} + 10 \cdot \log(N_{ANT})$ dBi $= 2 \text{ dBi} + 10 \cdot \log(2) \text{ dBi} = 5 \text{ dBi}$
Max. Output Power:	15.34dBm
Hardware Version:	VER6.0
Software Version:	3.0.17.9.20
Power Supply:	DC 5V from AC adapter 120V/60Hz
Adapter information:	N/A

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1.2 Operation channel list

Channel List for 802.11b/g/n(20)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	\	\

Channel List for 802.11n(40)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	07	2442
04	2427	08	2447
05	2432	09	2452
06	2437	\	\

1.3 Test channel list

Channel List for 802.11b/g/n(20)

Channel	Channel	Frequency (MHz)
Low	01	2412
Middle	06	2437
High	11	2462

Channel List for 802.11n(40)

Channel	Channel	Frequency (MHz)
Low	03	2422
Middle	06	2437
High	09	2452

1.4 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
/	/	/	/	/

1.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
1	Notebook	/	/	/	/

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Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2 Summary of Test Results

Test procedures according to the technical standards:

No.	Standard Section	Test Item	Result	Remark
1	15.203	Antenna Requirement	Pass	
2	15.247 (b)	Peak Output Power	Pass	
3	15.247 (d)	Power Spectral Density	Pass	
4	15.207	Conducted Emission	Pass	
5	15.247 (c)	Radiated Spurious Emission	Pass	
6	15.205	Conduction Bandedge	Pass	
7	15.205	Spurious RF Conducted Emissions	Pass	
8	15.247 (a)(2)	6dB Bandwidth	Pass	

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3 Test Facilities and Accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

3.2 Environmental conditions

Temperature:	20°C~30°C
Humidity	30%~70%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

The reported uncertainty of measurement $y \pm U$ where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$ providing a level of confidence of approximately 95 %

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

3.4 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Farad	LZ-RF	Lz_Rf 3A3

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4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2018/09/18	2019/09/17
MTI-E002	CMU 200 universal radio communication tester	Rohde&schwarz	CMU 200	114587	2018/09/18	2019/09/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2018/09/18	2019/09/17
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2018/09/18	2019/09/17
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2018/09/18	2019/09/17
MTI-E014	amplifier	America	8447D	3113A06150	2018/09/18	2019/09/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2018/09/18	2019/09/17
MTI-E016	Coupled decoupling network	Schloder	CDA M2/M3	A2210332/2015	2018/09/18	2019/09/17
MTI-E032	Comprehensive test instrument	Rohde&schwarz	CMW500	124192	2018/09/18	2019/09/17
MTI-E034	amplifier	Agilent	8449B	3008A02400	2018/09/18	2019/09/17
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2018/09/18	2019/09/17
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2018/09/18	2019/09/17
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2018/09/18	2019/09/17
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SN016	2018/09/18	2019/09/17
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2018/09/18	2019/09/17
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2018/09/18	2019/09/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2018/09/18	2019/09/17
MTI-E051	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2018/09/18	2019/09/17
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2018/09/18	2019/09/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2018/09/18	2019/09/17
Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).						

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5 Test Result

5.1 Antenna requirement

5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 15.203: 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

5.1.2 EUT Antenna

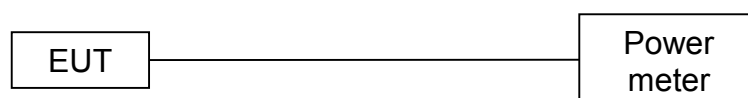
The EUT antenna is PCB antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.

5.2 Peak output power

5.2.1 Limit

FCC Part15 Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak output power	1 watt or 30dBm	2400-2483.5	PASS

5.2.2 Test setup



5.2.3 Test procedure

The EUT was directly connected to the Power meter.

5.2.4 Test results

802.11b

Test Channel	Frequency (MHz)	Output Power (ANTA)		Output Power (ANTB)		Limit (dBm)	
		dBm	mW	dBm	mW	dBm	mW
CH01	2412	12.80	19.05	12.00	15.85	30	1000
CH06	2437	12.13	16.33	11.29	13.46		
CH11	2462	12.21	16.63	11.48	14.06		

802.11g

Test Channel	Frequency (MHz)	Output Power (ANTA)		Output Power (ANTB)		Limit (dBm)	
		dBm	mW	dBm	mW	dBm	mW
CH01	2412	13.41	21.93	12.21	16.63	30	1000
CH06	2437	12.59	18.16	11.37	13.71		
CH11	2462	12.56	18.03	11.73	14.89		

ANTA+ANTB

802.11n20

Test Channel	Frequency (MHz)	Output Power (ANTA)		Output Power (ANTB)		Total Power (ANTA + ANTB)		Limit (dBm)	
		dBm	mW	dBm	mW	dBm	mW	dBm	mW
CH01	2412	12.95	19.72	11.60	14.45	15.34	34.17	30	1000
CH06	2437	12.07	16.11	10.90	12.30	14.53	28.41		
CH11	2462	12.13	16.33	11.29	13.46	14.74	29.79		

802.11n40

Test Channel	Frequency (MHz)	Output Power (ANTA)		Output Power (ANTB)		Total Power (ANTA + ANTB)		Limit (dBm)	
		dBm	mW	dBm	mW	dBm	mW	dBm	mW
CH03	2422	8.72	7.45	7.57	5.71	11.19	13.16	30	1000
CH06	2437	8.85	7.67	7.41	5.51	11.20	13.18		
CH09	2452	8.40	6.92	7.62	5.78	11.04	12.70		

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5.3 Power spectral density

5.3.1 Limit

FCC Part15 Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	Pass

5.3.2 Test Setup



5.3.3 Test Procedure

- The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.
- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS channel bandwidth.
- Set the RBW ≥ 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.
- If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

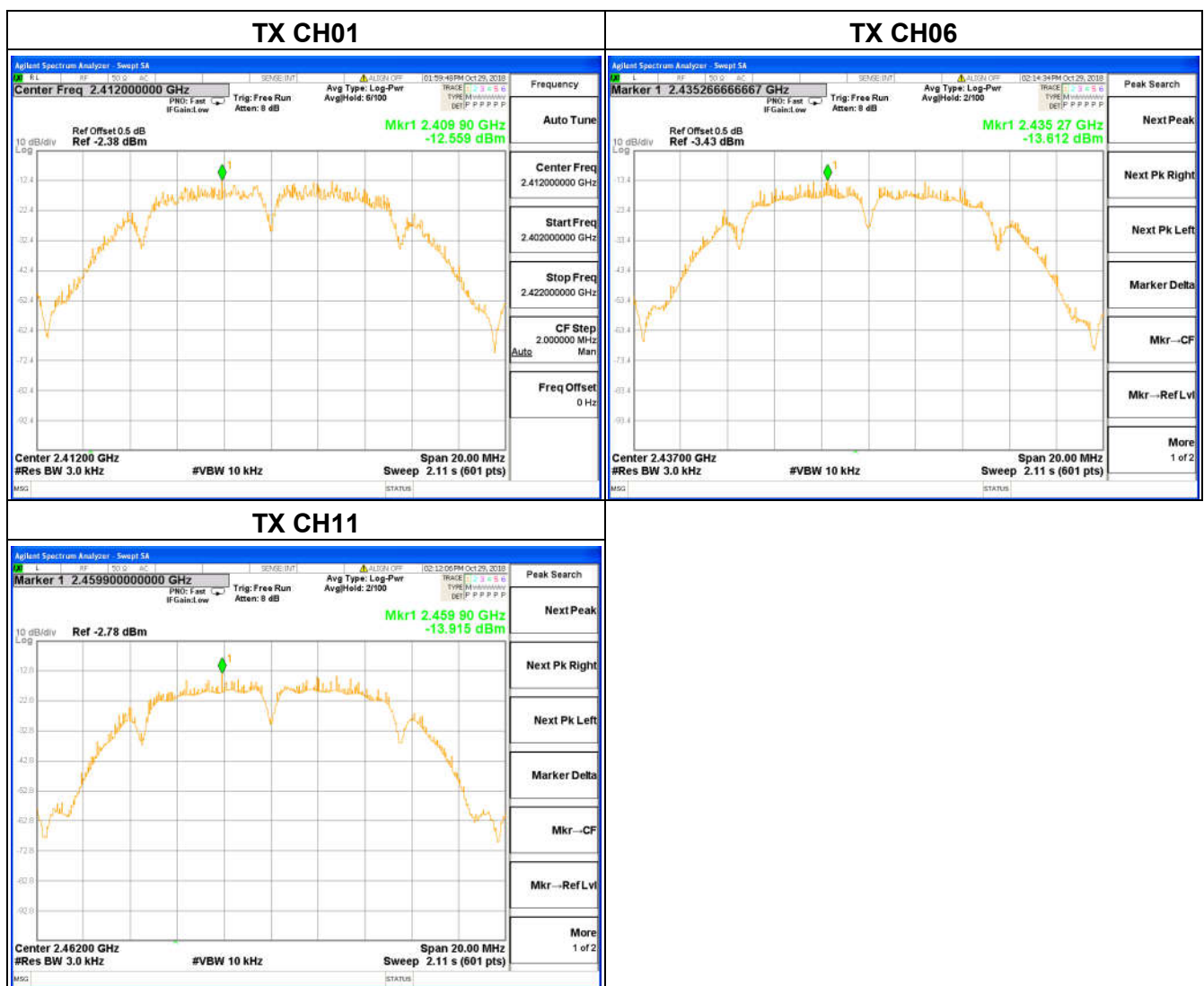
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5.3.4 Test Results

802.11b

ANT A:

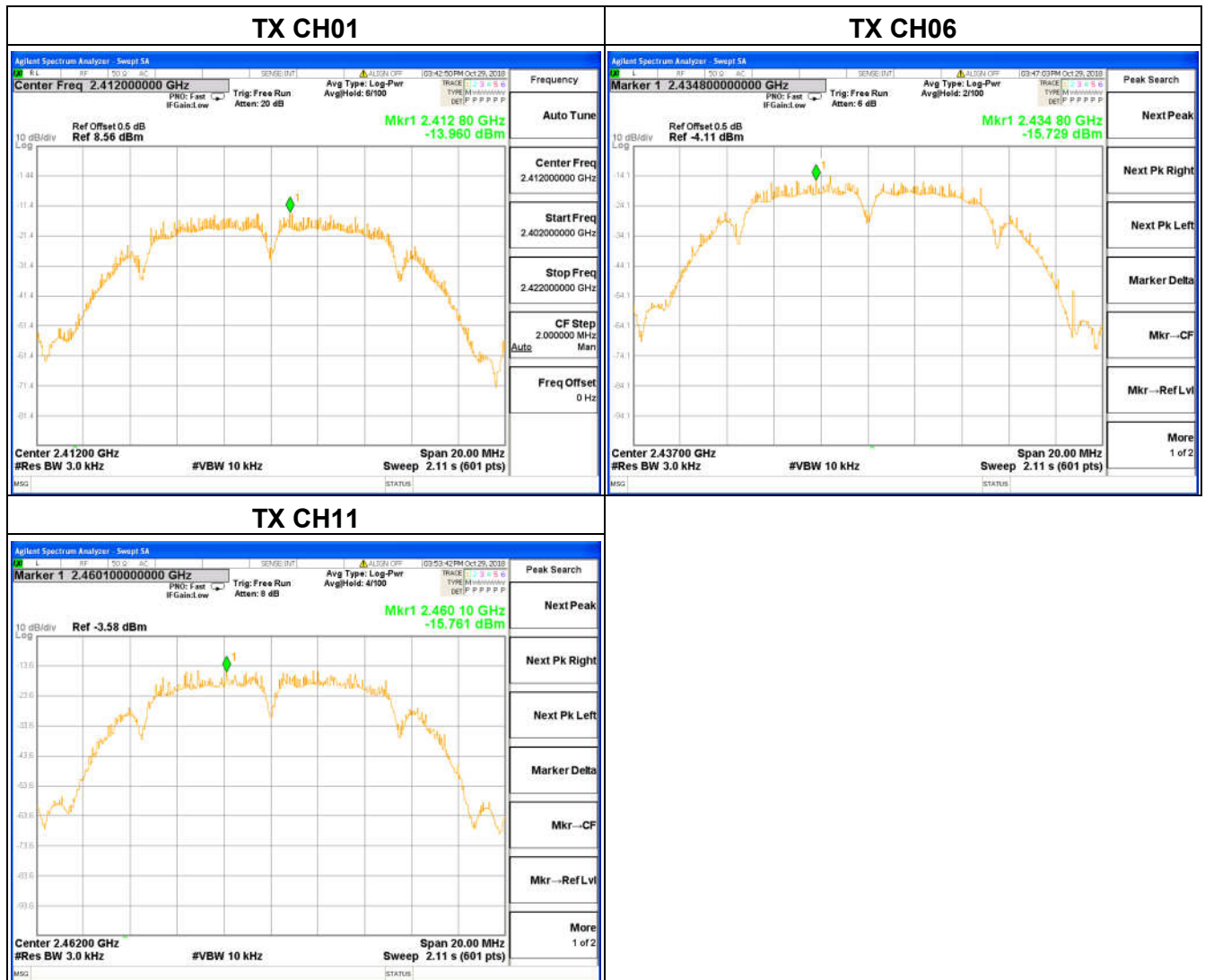
Test Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-12.559	8	Pass
CH06	2437	-13.612	8	Pass
CH11	2462	-13.915	8	Pass



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ANT B:

Test Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-13.960	8	Pass
CH06	2437	-15.729	8	Pass
CH11	2462	-15.761	8	Pass

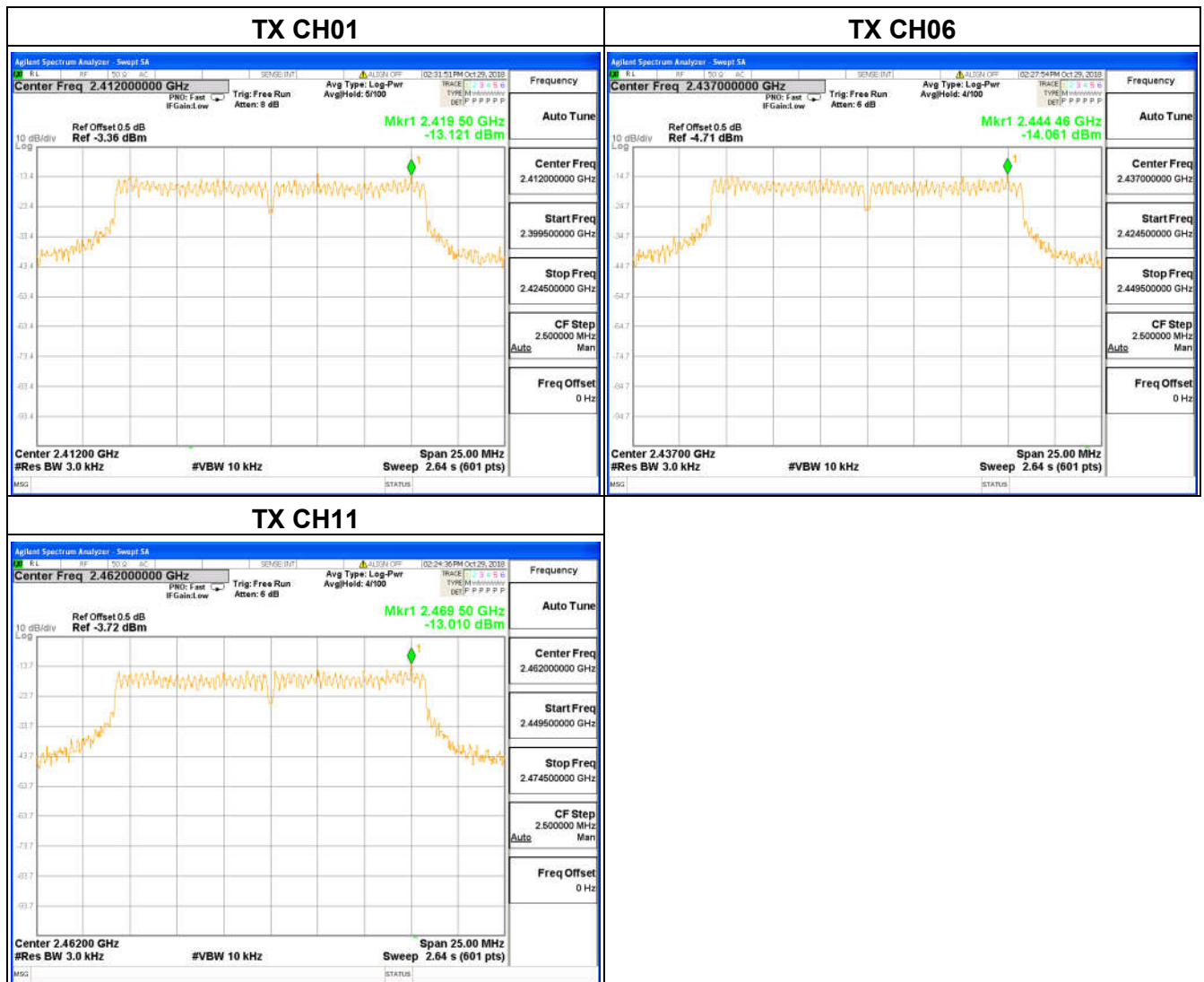


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802.11g

ANT A:

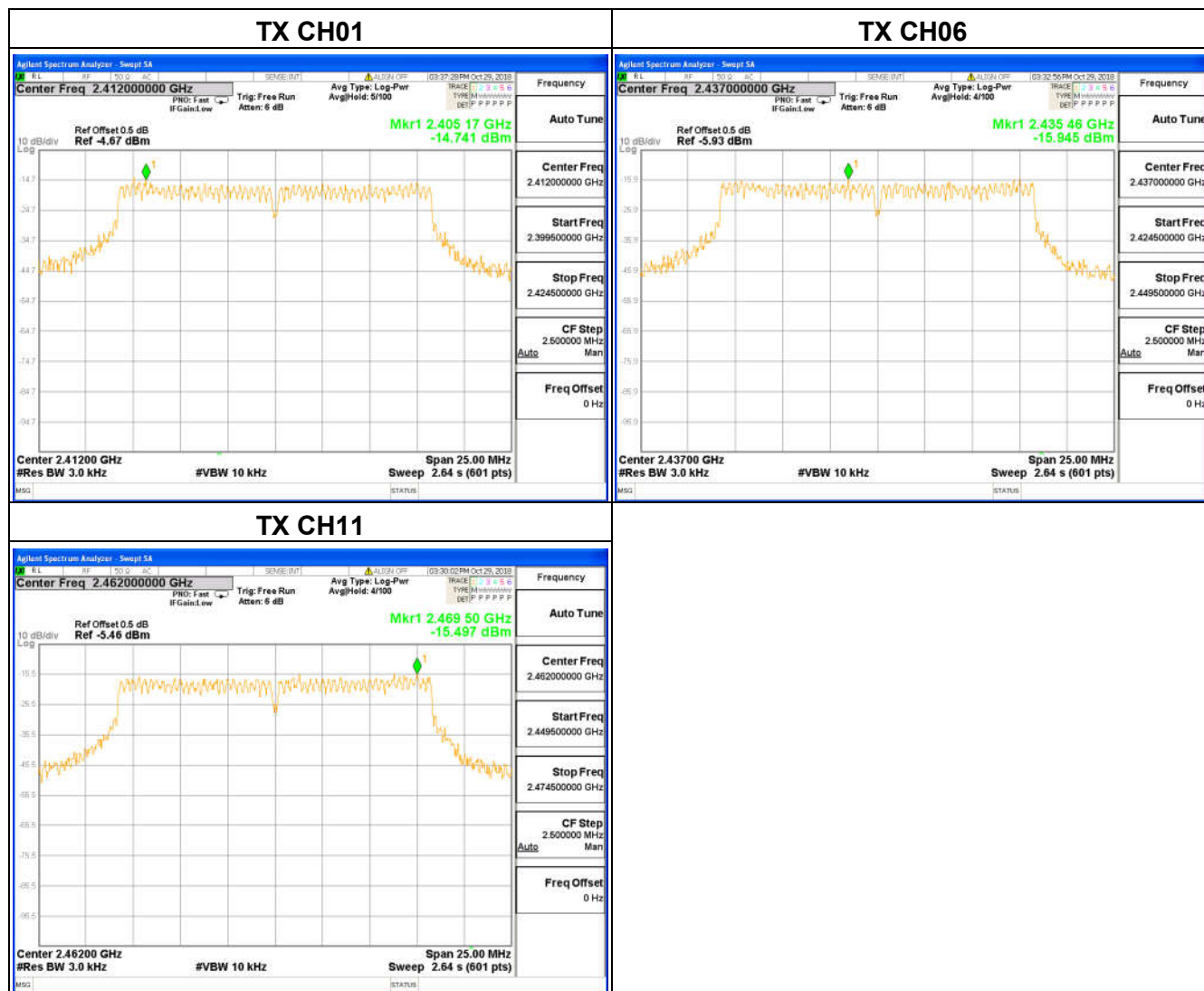
Test Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-13.121	8	Pass
CH06	2437	-14.061	8	Pass
CH11	2462	-13.010	8	Pass



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ANT B:

Test Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-14.741	8	Pass
CH06	2437	-15.945	8	Pass
CH11	2462	-15.497	8	Pass



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802.11n20

ANTA+ANTB

Test Channel	Frequency (MHz)	Power Density of ANTA (dBm/3kHz)	Power Density of ANTB (dBm/3kHz)	Total Power Density of (ANTA + ANTB) (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-14.120	-14.893	-11.48	8	Pass
CH06	2437	-14.261	-16.006	-12.04	8	Pass
CH11	2462	-15.080	-13.689	-11.32	8	Pass

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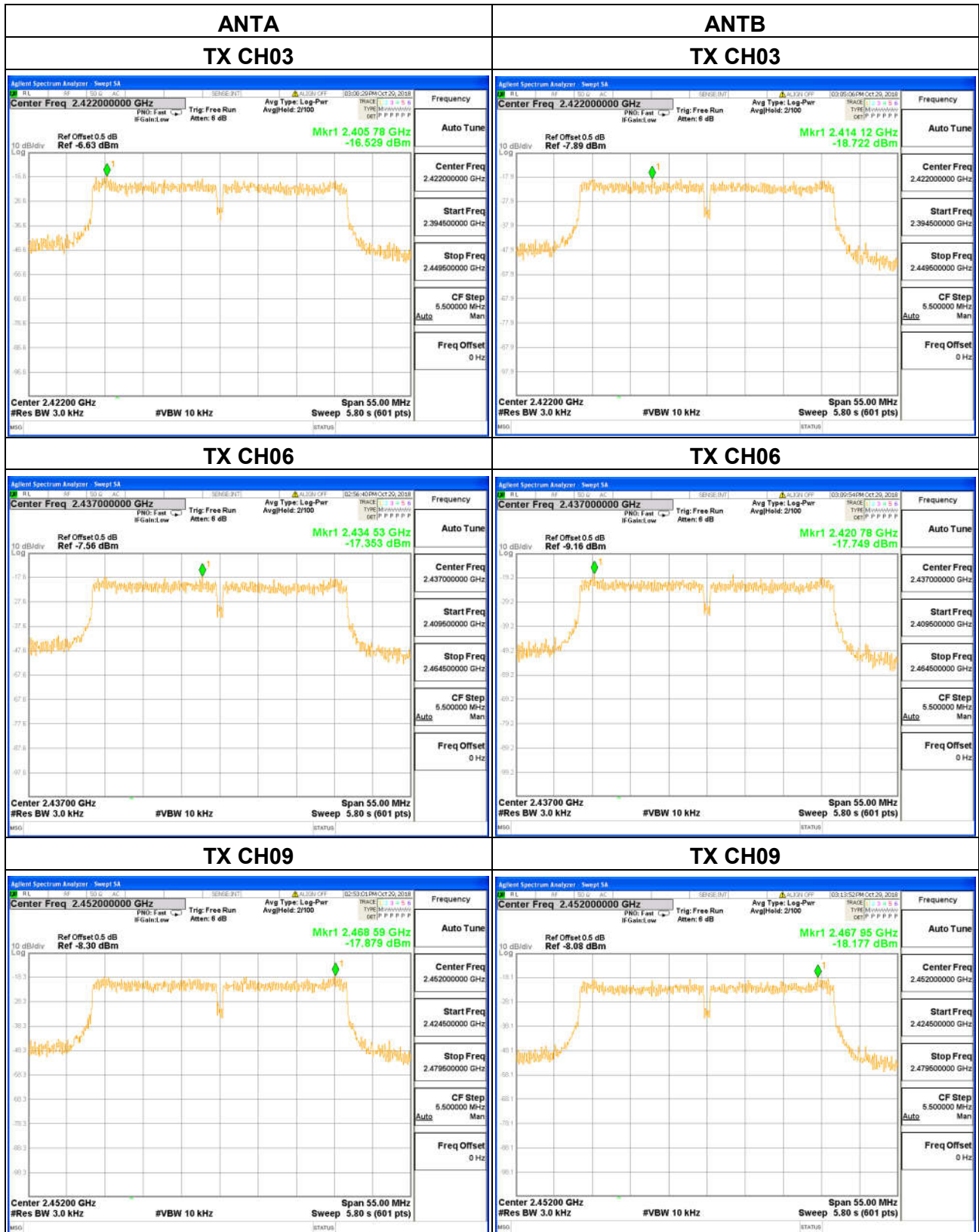


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802.11n40

Test Channel	Frequency (MHz)	Power Density of ANTA (dBm/3kHz)	Power Density of ANTB (dBm/3kHz)	Total Power Density of (ANTA + ANTB) (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH03	2422	-16.529	-18.722	-14.48	8	Pass
CH06	2437	-17.353	-17.749	-14.54	8	Pass
CH09	2452	-17.897	-18.177	-15.02	8	Pass

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5.4 Conducted emission

5.4.1 Limits

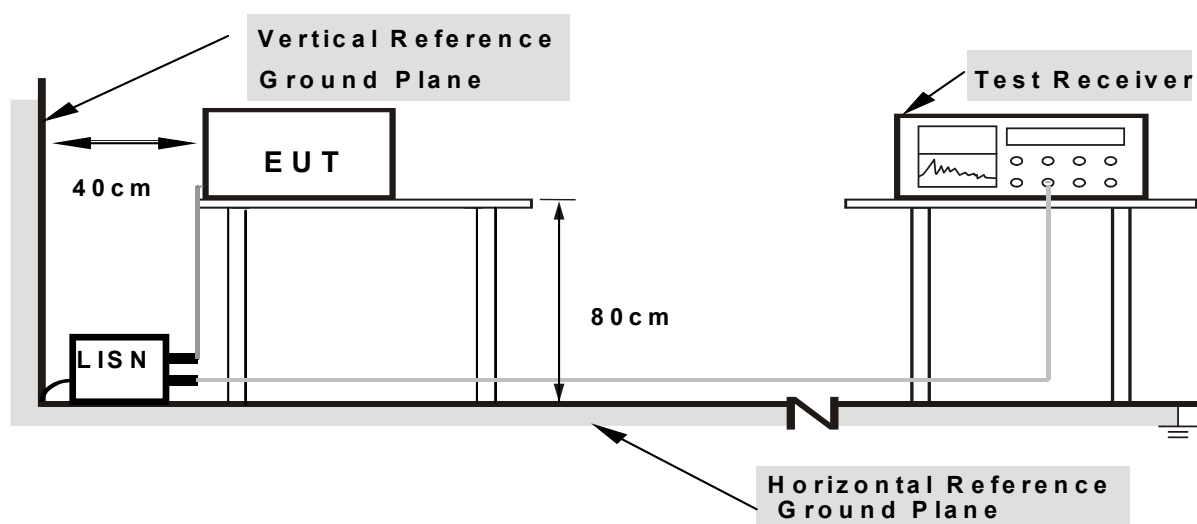
FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note

(1)The tighter limit applies at the band edges.

(2)The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.4.2 Test setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

5.4.3 Test procedure

a. EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

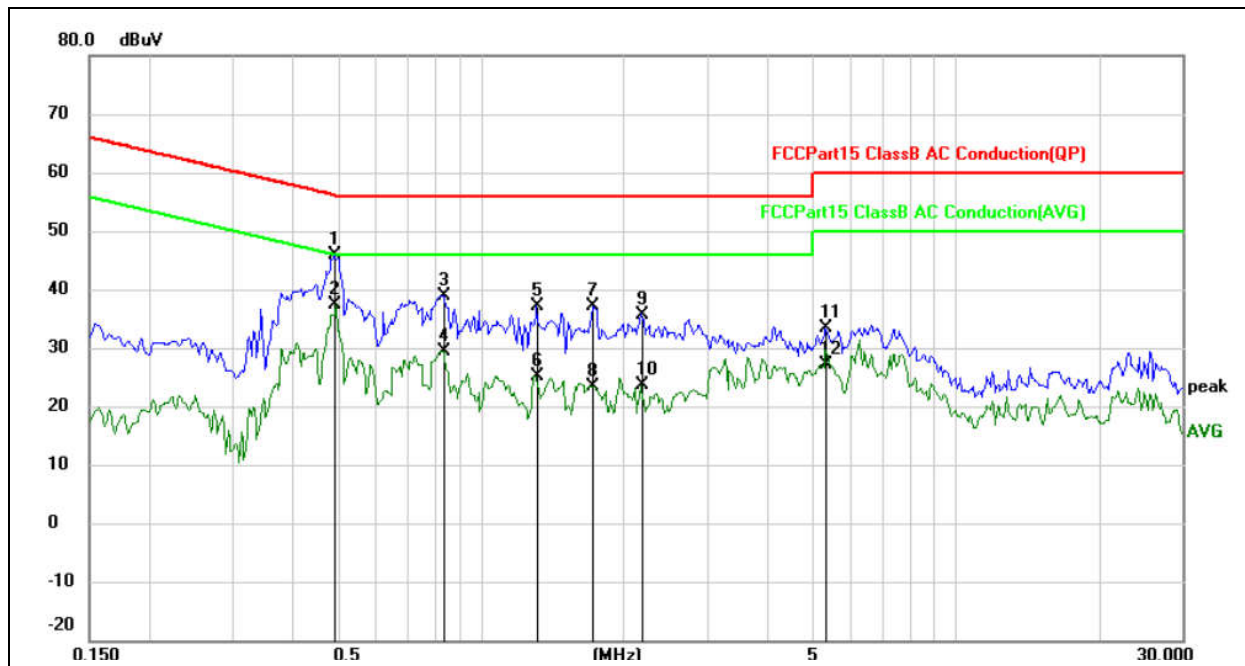
b. The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- d. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- f. LISN at least 80 cm from nearest part of EUT chassis.

For the actual test configuration, please refer to the related Item –EUT Test Photos.

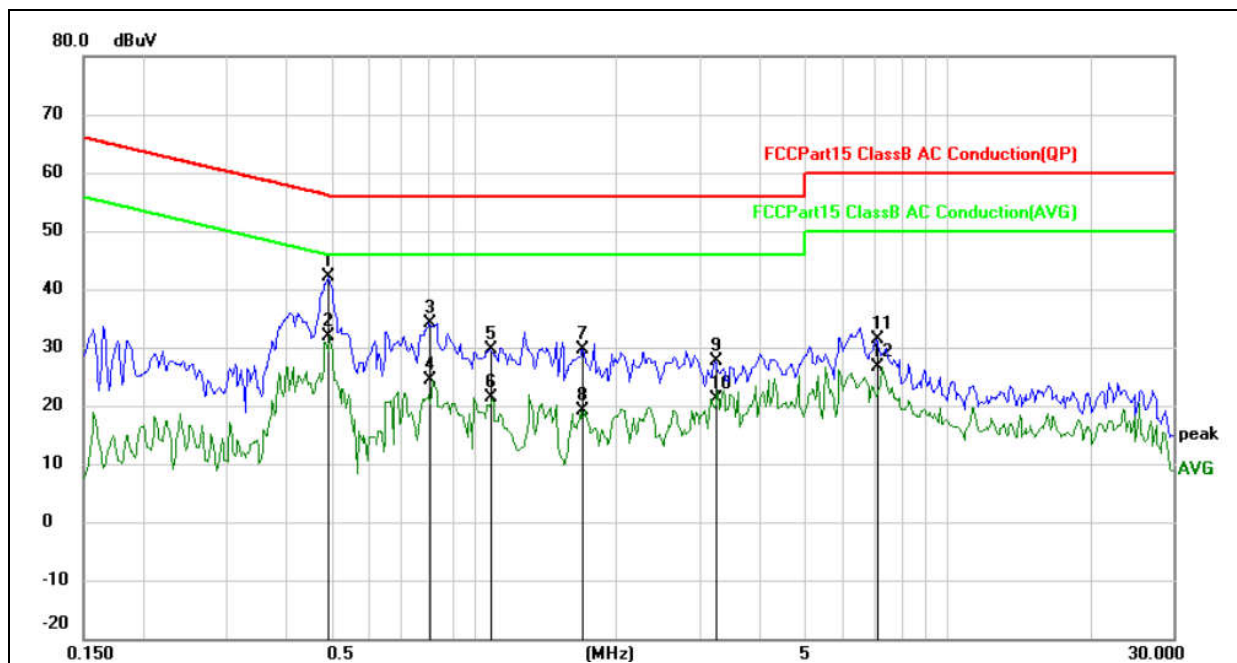
EUT :	WiFi Bridge&repeater	Model Name. :	VAP11G-300
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	TX Mode



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4938	44.19	1.57	45.76	56.10	-10.34	QP	
2	*	0.4938	35.75	1.57	37.32	46.10	-8.78	AVG	
3		0.8375	37.43	1.57	39.00	56.00	-17.00	QP	
4		0.8375	27.84	1.57	29.41	46.00	-16.59	AVG	
5		1.3102	35.48	1.58	37.06	56.00	-18.94	QP	
6		1.3102	23.61	1.58	25.19	46.00	-20.81	AVG	
7		1.7242	35.47	1.58	37.05	56.00	-18.95	QP	
8		1.7242	21.85	1.58	23.43	46.00	-22.57	AVG	
9		2.1783	34.29	1.46	35.75	56.00	-20.25	QP	
10		2.1783	22.05	1.46	23.51	46.00	-22.49	AVG	
11		5.3281	32.94	0.34	33.28	60.00	-26.72	QP	
12		5.3281	26.75	0.34	27.09	50.00	-22.91	AVG	

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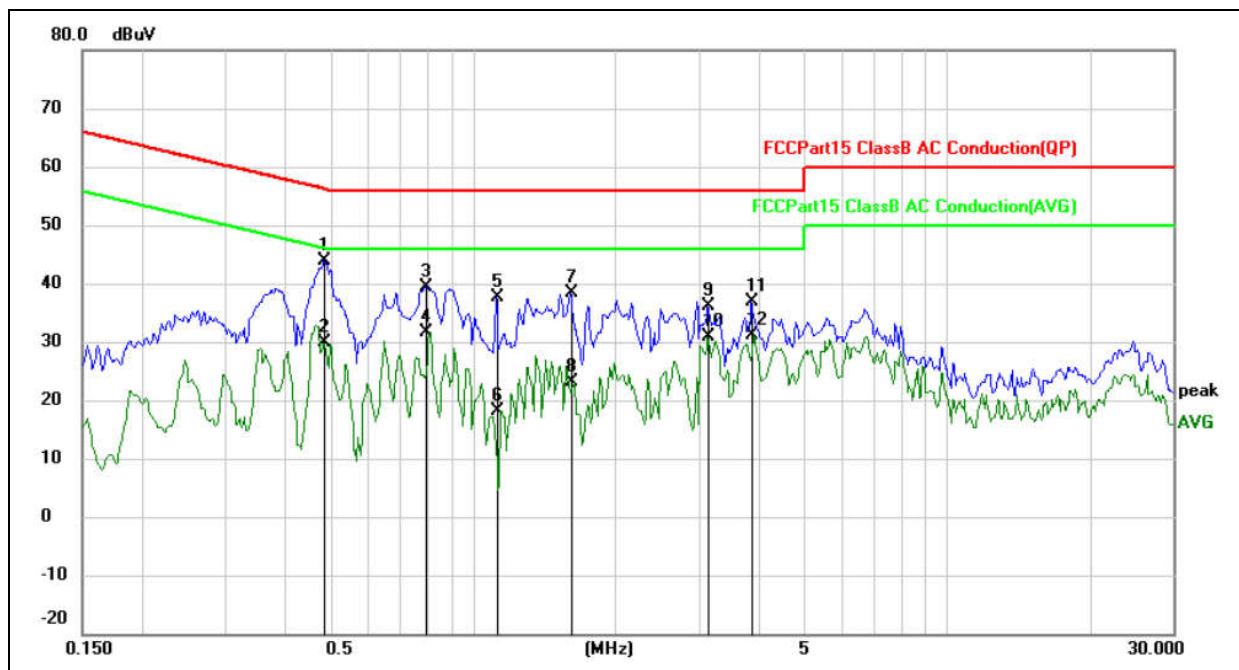
EUT :	WiFi Bridge&repeater	Model Name. :	VAP11G-300
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	TX Mode



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.4938	40.45	1.57	42.02	56.10	-14.08	QP	
2		0.4938	30.41	1.57	31.98	46.10	-14.12	AVG	
3		0.8063	32.56	1.57	34.13	56.00	-21.87	QP	
4		0.8063	22.81	1.57	24.38	46.00	-21.62	AVG	
5		1.0836	28.04	1.58	29.62	56.00	-26.38	QP	
6		1.0836	19.73	1.58	21.31	46.00	-24.69	AVG	
7		1.6969	28.15	1.58	29.73	56.00	-26.27	QP	
8		1.6969	17.65	1.58	19.23	46.00	-26.77	AVG	
9		3.2344	26.64	0.99	27.63	56.00	-28.37	QP	
10		3.2344	20.05	0.99	21.04	46.00	-24.96	AVG	
11		7.0820	31.01	0.39	31.40	60.00	-28.60	QP	
12		7.0820	26.13	0.39	26.52	50.00	-23.48	AVG	

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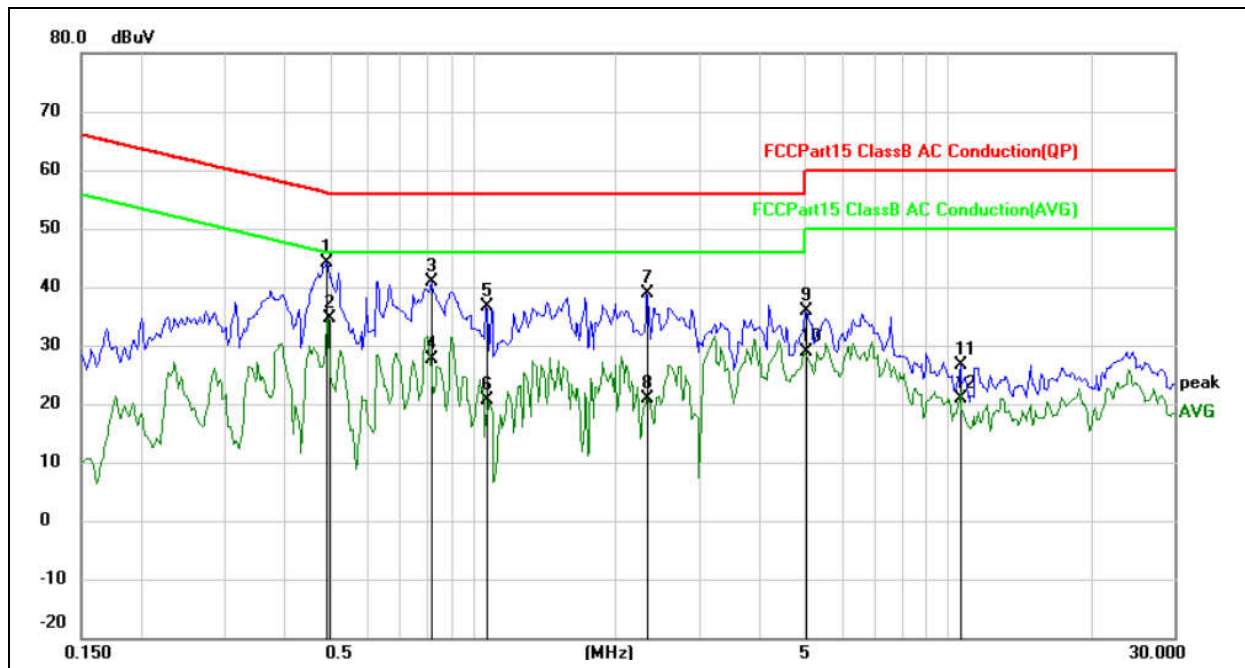
EUT :	WiFi Bridge&repeater	Model Name. :	VAP11G-300
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from adapter AC 240V/60Hz	Test Mode :	TX Mode



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.4859	43.92	0.02	43.94	56.24	-12.30	QP	
2		0.4859	29.77	0.02	29.79	46.24	-16.45	AVG	
3		0.7945	39.25	0.02	39.27	56.00	-16.73	QP	
4		0.7945	31.58	0.02	31.60	46.00	-14.40	AVG	
5		1.1187	37.54	0.02	37.56	56.00	-18.44	QP	
6		1.1187	18.15	0.02	18.17	46.00	-27.83	AVG	
7		1.6069	38.32	0.02	38.34	56.00	-17.66	QP	
8		1.6069	23.00	0.02	23.02	46.00	-22.98	AVG	
9		3.1250	36.18	0.04	36.22	56.00	-19.78	QP	
10		3.1250	30.96	0.04	31.00	46.00	-15.00	AVG	
11		3.8633	36.78	0.04	36.82	56.00	-19.18	QP	
12		3.8633	31.08	0.04	31.12	46.00	-14.88	AVG	

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EUT :	WiFi Bridge&repeater	Model Name. :	VAP11G-300
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from adapter AC 240/60Hz	Test Mode :	TX Mode



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4938	44.21	0.02	44.23	56.10	-11.87	QP	
2	*	0.4977	34.55	0.02	34.57	46.04	-11.47	AVG	
3		0.8180	40.93	0.02	40.95	56.00	-15.05	QP	
4		0.8180	27.71	0.02	27.73	46.00	-18.27	AVG	
5		1.0680	36.51	0.02	36.53	56.00	-19.47	QP	
6		1.0680	20.49	0.02	20.51	46.00	-25.49	AVG	
7		2.3297	38.96	0.03	38.99	56.00	-17.01	QP	
8		2.3297	20.94	0.03	20.97	46.00	-25.03	AVG	
9		5.0078	35.96	0.04	36.00	60.00	-24.00	QP	
10		5.0078	28.93	0.04	28.97	50.00	-21.03	AVG	
11		10.6445	26.43	0.10	26.53	60.00	-33.47	QP	
12		10.6445	20.71	0.10	20.81	50.00	-29.19	AVG	

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5.5 Radiated spurious

5.5.1 Limits

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency (MHz)	Field Strength (micorvolts/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

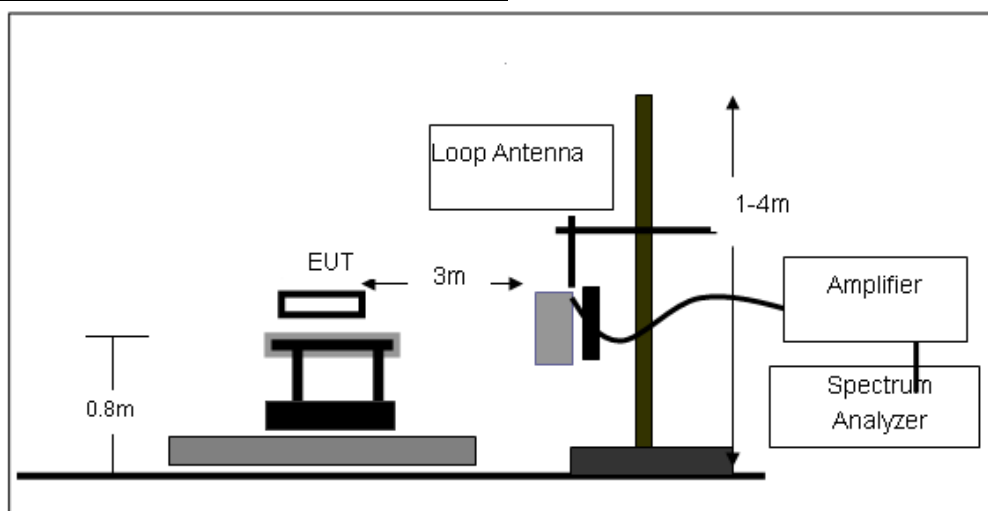
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

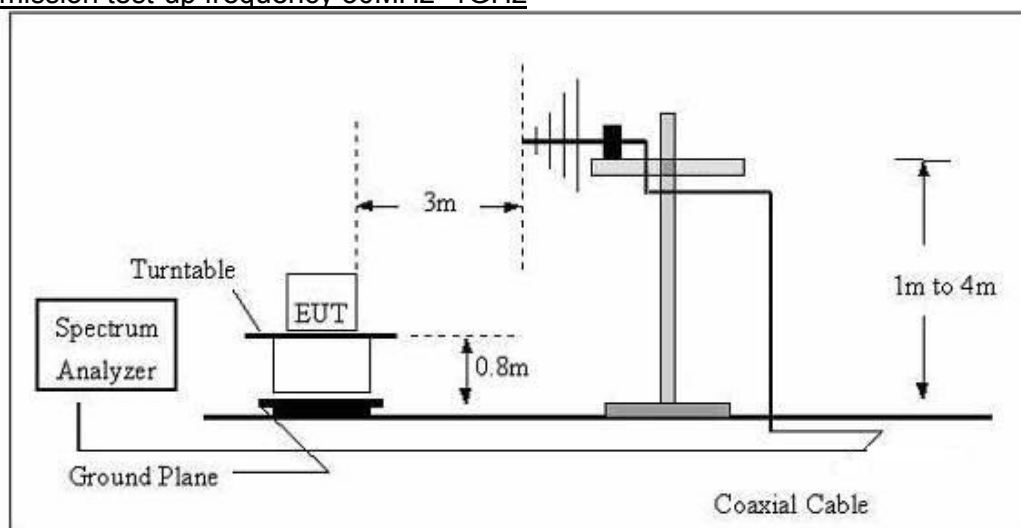
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5.5.2 Test setup

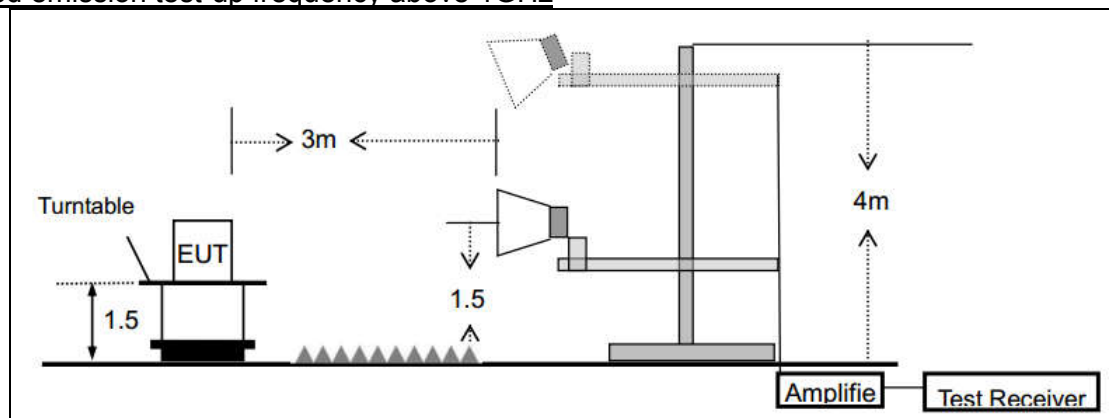
Radiated emission test-up frequency below 30MHz



Radiated emission test-up frequency 30MHz~1GHz



Radiated emission test-up frequency above 1GHz



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5.5.3 Test procedure

- a. The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range below 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.
- b. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- c. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for $f \geq 1\text{GHz}$, 100 kHz for $f < 1\text{GHz}$, VBW $\geq$ RBW, Sweep = auto, Detector function = peak, Trace = max hold.
- d. Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- e. The peak level, once corrected, must comply with the limit specified in Section 15.209. Set the RBW = 1MHz, VBW = 10Hz, Detector = RMS for AV value, while maintaining all of the other instrument settings.
- f. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- g. For the actual test configuration, please refer to the related Item –EUT Test photos.

Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.5.4 Test results

5.5.4.1 Radiation emission

Below 30MHz

EUT:	WiFi Bridge&repeater	Model Name:	VAP11G-300
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage:	DC 5 from adapter AC 120V/60Hz
Test Mode:	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

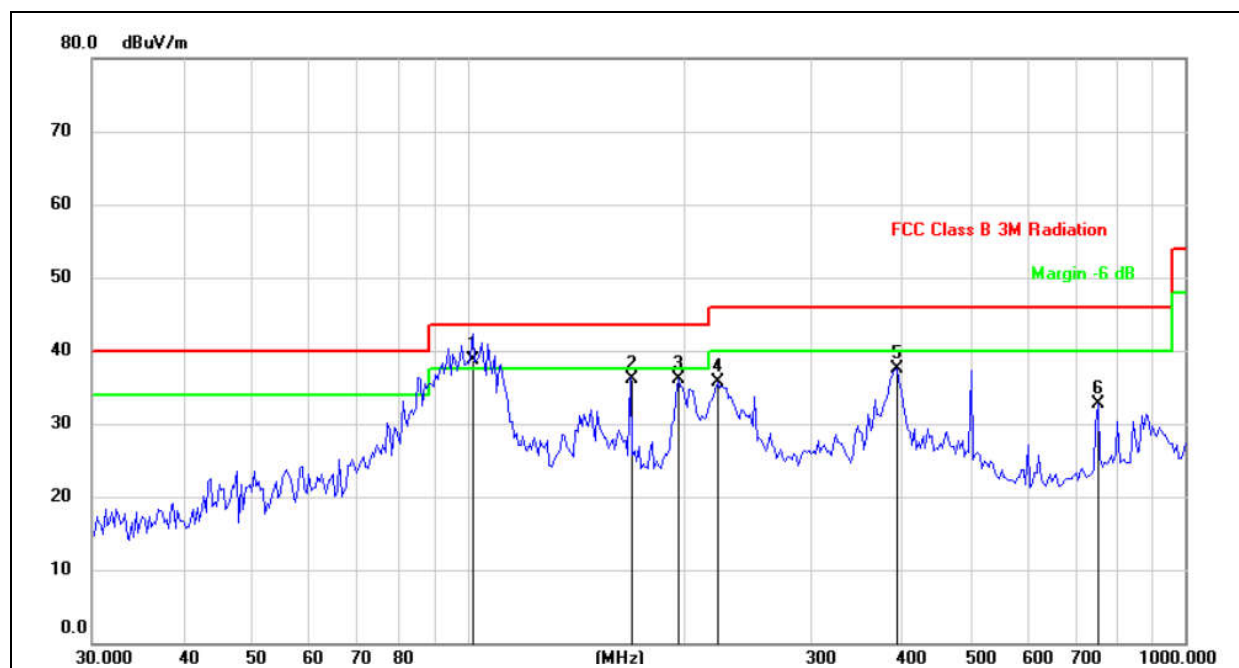
Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuV) + distance extrapolation factor.

Between 30MHz – 1GHz

All the modulation modes have been tested, and the worst result was report as below:

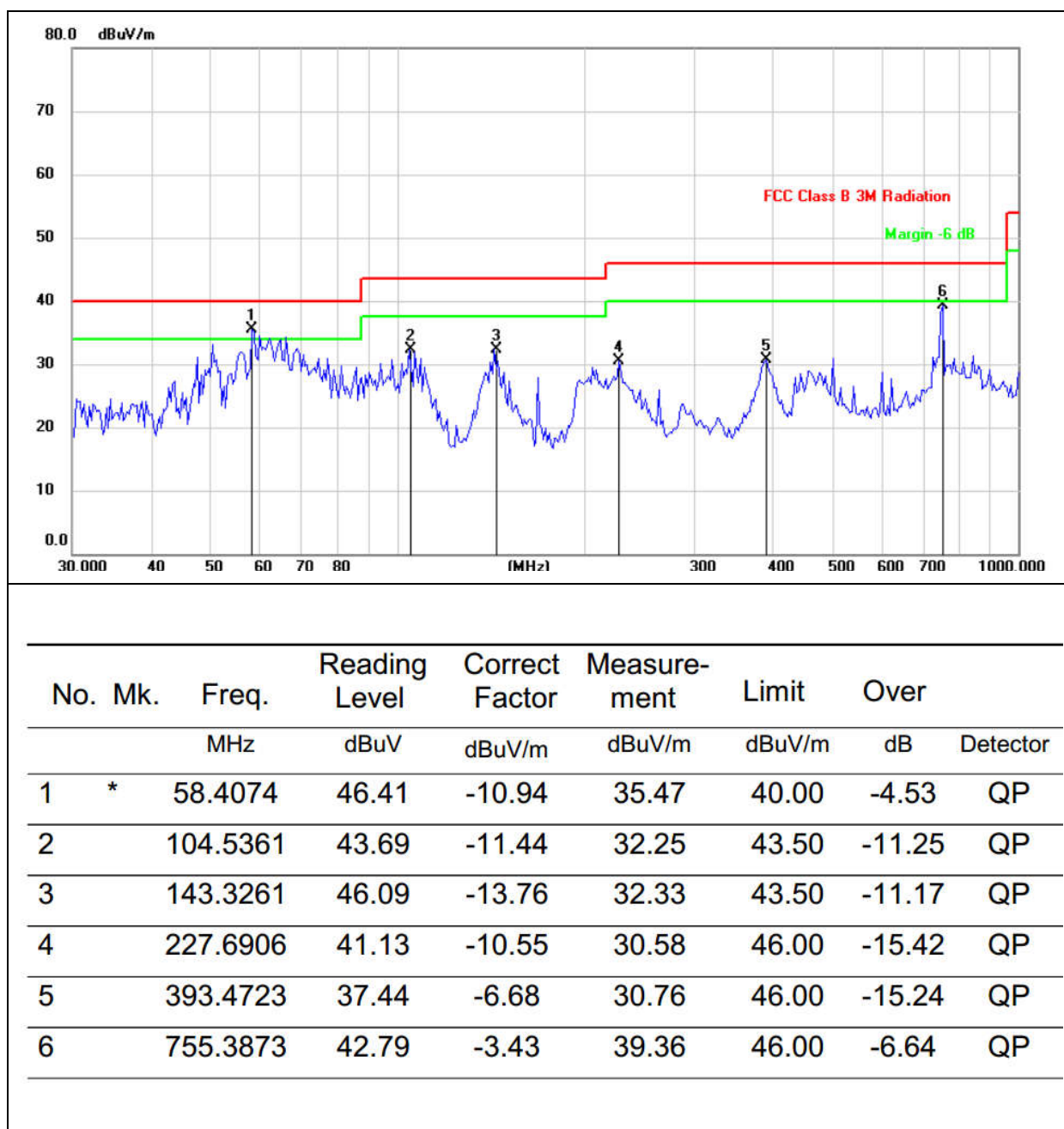
EUT :	WiFi Bridge&repeater	Model Name. :	VAP11G-300
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	H
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	802.11 b CH01



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBuV/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	101.6443	50.23	-11.43	38.80	43.50	-4.70	QP
2		168.4138	50.56	-14.36	36.20	43.50	-7.30	QP
3		196.5098	48.36	-12.26	36.10	43.50	-7.40	QP
4		222.9502	46.67	-10.94	35.73	46.00	-10.27	QP
5		396.2415	44.09	-6.62	37.47	46.00	-8.53	QP
6		755.3873	36.12	-3.43	32.69	46.00	-13.31	QP

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EUT :	WiFi Bridge&repeater	Model Name. :	VAP11G-300
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	V
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	802.11 b CH01



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1G-25GHz

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(3) All other emissions more than 20dB below the limit.

All the modulation modes have been tested, and the worst result was report as below:

Frequency	Read Level	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Remark	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
Low Channel (2412 MHz)(802.11b)--Above 1G									
4824.161	62.89	5.21	35.59	44.30	59.39	74.00	-14.61	Pk	Vertical
4824.161	40.65	5.21	35.59	44.30	37.15	54.00	-16.85	AV	Vertical
7236.396	60.39	6.48	36.27	44.60	58.54	74.00	-15.46	Pk	Vertical
7236.396	44.31	6.48	36.27	44.60	42.46	54.00	-11.54	AV	Vertical
4824.154	61.20	5.21	35.55	44.30	57.66	74.00	-16.34	Pk	Horizontal
4824.154	42.39	5.21	35.55	44.30	38.85	54.00	-15.15	AV	Horizontal
7236.168	63.29	6.48	36.27	44.52	61.52	74.00	-12.48	Pk	Horizontal
7236.168	46.86	6.48	36.27	44.52	45.09	54.00	-8.91	AV	Horizontal
Low Channel (2437 MHz)(802.11b)--Above 1G									
4874.112	62.41	5.21	35.66	44.20	59.08	74.00	-14.92	Pk	Vertical
4874.112	42.62	5.21	35.66	44.20	39.29	54.00	-14.71	AV	Vertical
7311.247	60.48	7.10	36.50	44.43	59.65	74.00	-14.35	Pk	Vertical
7311.247	47.40	7.10	36.50	44.43	46.57	54.00	-7.43	AV	Vertical
4874.132	60.72	5.21	35.66	44.20	57.39	74.00	-16.61	Pk	Horizontal
4874.132	48.28	5.21	35.66	44.20	44.95	54.00	-9.05	AV	Horizontal
7311.085	59.38	7.10	36.50	44.43	58.55	74.00	-15.45	Pk	Horizontal
7311.085	42.20	7.10	36.50	44.43	41.37	54.00	-12.63	AV	Horizontal
Low Channel (2462 MHz)(802.11b)--Above 1G									
4924.169	65.93	5.21	35.52	44.21	62.45	74.00	-11.55	Pk	Vertical
4924.169	42.72	5.21	35.52	44.21	39.24	54.00	-14.76	AV	Vertical
7386.215	60.65	7.10	36.53	44.60	59.68	74.00	-14.32	Pk	Vertical
7386.215	45.06	7.10	36.53	44.60	44.09	54.00	-9.91	AV	Vertical
4924.045	67.09	5.21	35.52	44.21	63.61	74.00	-10.39	Pk	Horizontal
4924.045	46.58	5.21	35.52	44.21	43.10	54.00	-10.90	AV	Horizontal
7386.132	61.39	7.10	36.53	44.60	60.42	74.00	-13.58	Pk	Horizontal
7386.132	44.44	7.10	36.53	44.60	43.47	54.00	-10.53	AV	Horizontal

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5.5.4.2 Band edge - radiated

Note: (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
(2) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(3) All other emissions more than 20dB below the limit.
The following data is the worst mode. The worst mode is antenna A

Frequency	Meter Reading	Cable Loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
802.11b									
2310.00	56.42	2.97	27.80	43.80	43.39	74	-30.61	Pk	Horizontal
2310.00	43.82	2.97	27.80	43.80	30.79	54	-23.21	AV	Horizontal
2310.00	58.94	2.97	27.80	43.80	45.91	74	-28.09	Pk	Vertical
2310.00	42.36	2.97	27.80	43.80	29.33	54	-24.67	AV	Vertical
2390.00	57.90	3.14	27.21	43.80	44.45	74	-29.55	Pk	Vertical
2390.00	42.23	3.14	27.21	43.80	28.78	54	-25.22	AV	Vertical
2390.00	56.99	3.14	27.21	43.80	43.54	74	-30.46	Pk	Horizontal
2390.00	42.14	3.14	27.21	43.80	28.69	54	-25.31	AV	Horizontal
2483.50	58.07	3.58	27.70	44.00	45.35	74	-28.65	Pk	Vertical
2483.50	43.27	3.58	27.70	44.00	30.55	54	-23.45	AV	Vertical
2483.50	58.64	3.58	27.70	44.00	45.92	74	-28.08	Pk	Horizontal
2483.50	42.16	3.58	27.70	44.00	29.44	54	-24.56	AV	Horizontal
802.11g									
2310.00	58.25	2.97	27.80	43.80	45.22	74	-28.78	Pk	Horizontal
2310.00	44.05	2.97	27.80	43.80	31.02	54	-22.98	AV	Horizontal
2310.00	56.92	2.97	27.80	43.80	43.89	74	-30.11	Pk	Vertical
2310.00	42.61	2.97	27.80	43.80	29.58	54	-24.42	AV	Vertical
2390.00	57.86	3.14	27.21	43.80	44.41	74	-29.59	Pk	Vertical
2390.00	41.97	3.14	27.21	43.80	28.52	54	-25.48	AV	Vertical
2390.00	58.33	3.14	27.21	43.80	44.88	74	-29.12	Pk	Horizontal
2390.00	43.56	3.14	27.21	43.80	30.11	54	-23.89	AV	Horizontal
2483.50	59.07	3.58	27.70	44.00	46.35	74	-27.65	Pk	Vertical
2483.50	44.40	3.58	27.70	44.00	31.68	54	-22.32	AV	Vertical
2483.50	59.20	3.58	27.70	44.00	46.48	74	-27.52	Pk	Horizontal
2483.50	42.08	3.58	27.70	44.00	29.36	54	-24.64	AV	Horizontal
802.11n20									
2310.00	58.22	2.97	27.80	43.80	45.19	74	-28.81	Pk	Horizontal
2310.00	43.53	2.97	27.80	43.80	30.50	54	-23.50	AV	Horizontal
2310.00	59.10	2.97	27.80	43.80	46.07	74	-27.93	Pk	Vertical

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2310.00	42.61	2.97	27.80	43.80	29.58	54	-24.42	AV	Vertical
2390.00	57.41	3.14	27.21	43.80	43.96	74	-30.04	Pk	Vertical
2390.00	41.95	3.14	27.21	43.80	28.50	54	-25.50	AV	Vertical
2390.00	56.39	3.14	27.21	43.80	42.94	74	-31.06	Pk	Horizontal
2390.00	41.81	3.14	27.21	43.80	28.36	54	-25.64	AV	Horizontal
2483.50	57.73	3.58	27.70	44.00	45.01	74	-28.99	Pk	Vertical
2483.50	42.54	3.58	27.70	44.00	29.82	54	-24.18	AV	Vertical
2483.50	58.53	3.58	27.70	44.00	45.81	74	-28.19	Pk	Horizontal
2483.50	42.28	3.58	27.70	44.00	29.56	54	-24.44	AV	Horizontal
802.11n40									
2310.00	57.74	2.97	27.80	43.80	44.71	74	-29.29	Pk	Horizontal
2310.00	43.83	2.97	27.80	43.80	30.80	54	-23.20	AV	Horizontal
2310.00	59.14	2.97	27.80	43.80	46.11	74	-27.89	Pk	Vertical
2310.00	42.42	2.97	27.80	43.80	29.39	54	-24.61	AV	Vertical
2390.00	58.23	3.14	27.21	43.80	44.78	74	-29.22	Pk	Vertical
2390.00	42.53	3.14	27.21	43.80	29.08	54	-24.92	AV	Vertical
2390.00	57.14	3.14	27.21	43.80	43.69	74	-30.31	Pk	Horizontal
2390.00	42.20	3.14	27.21	43.80	28.75	54	-25.25	AV	Horizontal
2483.50	57.70	3.58	27.70	44.00	44.98	74	-29.02	Pk	Vertical
2483.50	42.54	3.58	27.70	44.00	29.82	54	-24.18	AV	Vertical
2483.50	59.09	3.58	27.70	44.00	46.37	74	-27.63	Pk	Horizontal
2483.50	41.70	3.58	27.70	44.00	28.98	54	-25.02	AV	Horizontal

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