

TEST REPORT

Reference No..... : WTX19X12087485R1W-2
FCC ID : VVXLM842
Applicant : LM Technologies Ltd.
Address : Camrose House,2A Camrose Avenue, Edgware,London
Product Name : LM842 WiFi and Bluetooth 5.0 Dual Mode Combination USB Adapter
Test Model. : LM842
Standards : FCC Part 15.247
Date of Receipt sample : Jun.29, 2020
Date of Test..... : Jun.29, 2020 to Jul.08, 2020
Date of Issue : Jul.08, 2020
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,
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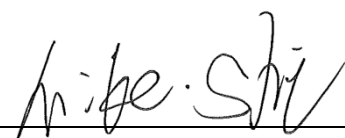
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TABLE OF CONTENTS

1. GENERAL INFORMATION.....	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
1.2 TEST STANDARDS.....	5
1.3 TEST METHODOLOGY.....	5
1.4 TEST FACILITY	5
1.5 EUT SETUP AND TEST MODE.....	6
1.6 MEASUREMENT UNCERTAINTY	7
1.7 TEST EQUIPMENT LIST AND DETAILS.....	8
2. SUMMARY OF TEST RESULTS	10
3. RF EXPOSURE	11
3.1 STANDARD APPLICABLE.....	11
3.2 TEST RESULT.....	11
4. ANTENNA REQUIREMENT	12
4.1 STANDARD APPLICABLE.....	12
4.2 EVALUATION INFORMATION	12
5. FIELD STRENGTH OF SPURIOUS EMISSIONS	13
5.1 STANDARD APPLICABLE.....	13
5.2 TEST PROCEDURE.....	13
5.3 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	15
5.4 SUMMARY OF TEST RESULTS/PLOTS	15
6. OUT OF BAND EMISSIONS.....	24
6.1 STANDARD APPLICABLE.....	24
6.2 TEST PROCEDURE.....	24
6.3 SUMMARY OF TEST RESULTS/PLOTS	25

Report version

Version No.	Date of issue	Description
Rev.00	Jul.08, 2020	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: LM Technologies Ltd.
Address of applicant: Camrose House, 2A Camrose Avenue, Edgware, London

Manufacturer: LM Technologies Ltd.
Address of manufacturer: Camrose House, 2A Camrose Avenue, Edgware, London

General Description of EUT	
Product Name:	LM842 WiFi and Bluetooth 5.0 Dual Mode Combination USB Adapter
Trade Name:	LM Technologies
Model No.:	LM842
Adding Model(s):	842-8420, 842-8421, 842-8422, 842-8423, 842-8424,
	842-8425, 842-8426, 842-8427, 842-8428, 842-8429
Rated Voltage:	DC 5V
Power Adapter Model:	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model LM842, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	15.39dBm (Conducted)
Type of Modulation:	DBPSK, BPSK, DQPSK, QPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 300Mbps
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	ANT A: Integral Antenna ANT B: External Antenna
Antenna Gain:	ANT A: -0.08dBi ANT B: 2dBi

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

558074 D01 15.247 Meas Guidance v05r02: Guidance For Compliance Measurements On Digital Transmission System, Frequency Hopping Spread Spectrum System, And Hybrid System Devices Operating Under Section 15.247 Of The Fcc Rules

662911 D01 Multiple Transmitter Output v02r01: Emissions Testing of Transmitters with Multiple Outputs in the Same Band

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 662911 D01 Multiple Transmitter Output v02r01

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, with a duty cycle equal to 100%, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b	Low:2412MHz, Middle:2437MHz,High:2462MHz
TM2	802.11g	Low:2412MHz, Middle:2437MHz,High:2462MHz
TM3	802.11n-HT20	Low:2412MHz, Middle:2437MHz,High:2462MHz
TM4	802.11n-HT40	Low:2422MHz, Middle:2437MHz,High:2452MHz

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB extension cable	1.2	Shielded	With Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E445	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Power Spectral Density	Conducted	$\pm 1.8\text{dB}$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2020-04-28	2021-04-27
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2020-04-28	2021-04-27
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
SEMT-1042	Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2019-05-05	2021-05-04
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-04-28	2021-04-27
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2020-04-28	2021-04-27
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-04-28	2021-04-27
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2020-04-28	2021-04-27
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2020-04-28	2021-04-27
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2020-04-28	2021-04-27
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2019-05-05	2021-05-04
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2020-04-28	2021-04-27
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2020-04-28	2021-04-27
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2020-04-28	2021-04-27
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	2020-03-17	2021-03-16
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	2020-03-17	2021-03-16
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	2020-03-17	2021-03-16
SEMT-C004	Cable	Zheng DI	2M0RFC	/	2020-03-17	2021-03-16
SEMT-C005	Cable	Zheng DI	1M0RFC	/	2020-03-17	2021-03-16
SEMT-C006	Cable	Zheng DI	1M0RFC	/	2020-03-17	2021-03-16

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§2.1093	RF Exposure	Compliant
§15.203; §15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§15.207(a)	Conducted Emission	N/A
§15.247(e)	Power Spectral Density	N/A
§15.247(a)(2)	DTS Bandwidth	N/A
§15.247(b)(3)	RF Output Power	N/A
§15.209(a)	Radiated Emission	Compliant
§15.247(d)	Band Edge (Out of Band Emissions)	N/A

N/A: not applicable

Note: Report is for C2PC only. The test data includes RF Exposure, Antenna Requirement, Restricted Band of Operation and Radiated Emission. Those not tested mark with N/A (not effected by the C2PC).

3. RF Exposure

3.1 Standard Applicable

According to §1.1307 and §2.1091, the mobile transmitter must comply the RF exposure requirements.

3.2 Test Result

This product complied with the requirement of the RF exposure, please see the SAR Report.

4. Antenna Requirement

4.1 Standard Applicable

According to FCC Part 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. 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.

4.2 Evaluation Information

This product has integral antenna and External antenna, fulfill the requirement of this section.

5. Field Strength of Spurious Emissions

5.1 Standard Applicable

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

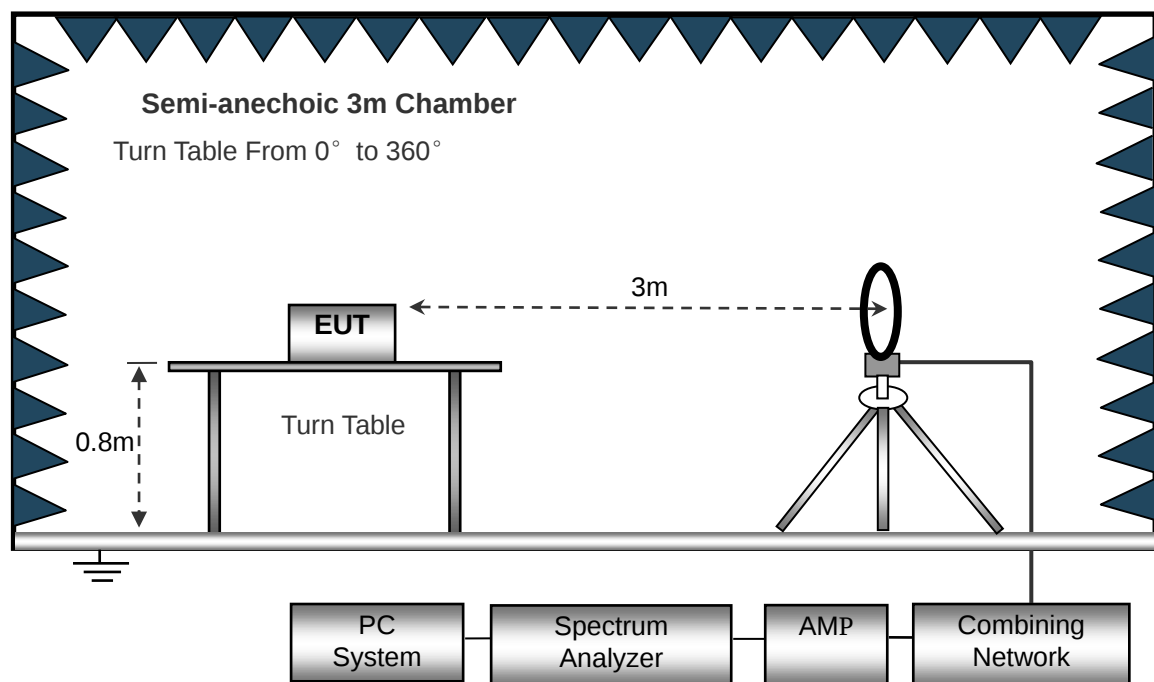
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

5.2 Test Procedure

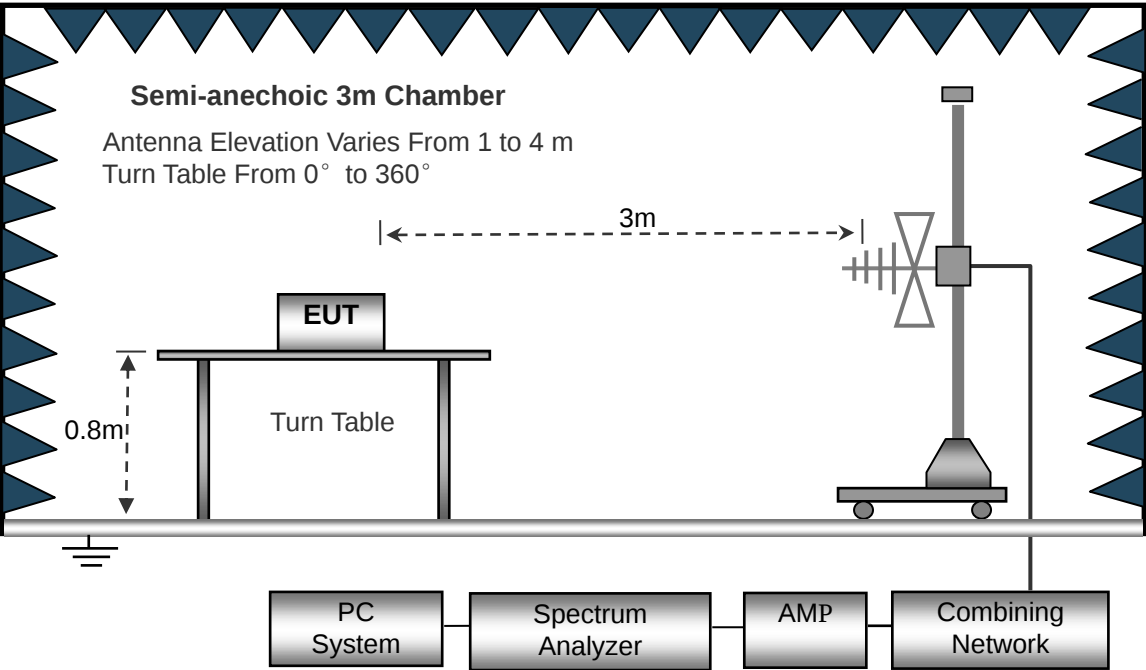
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

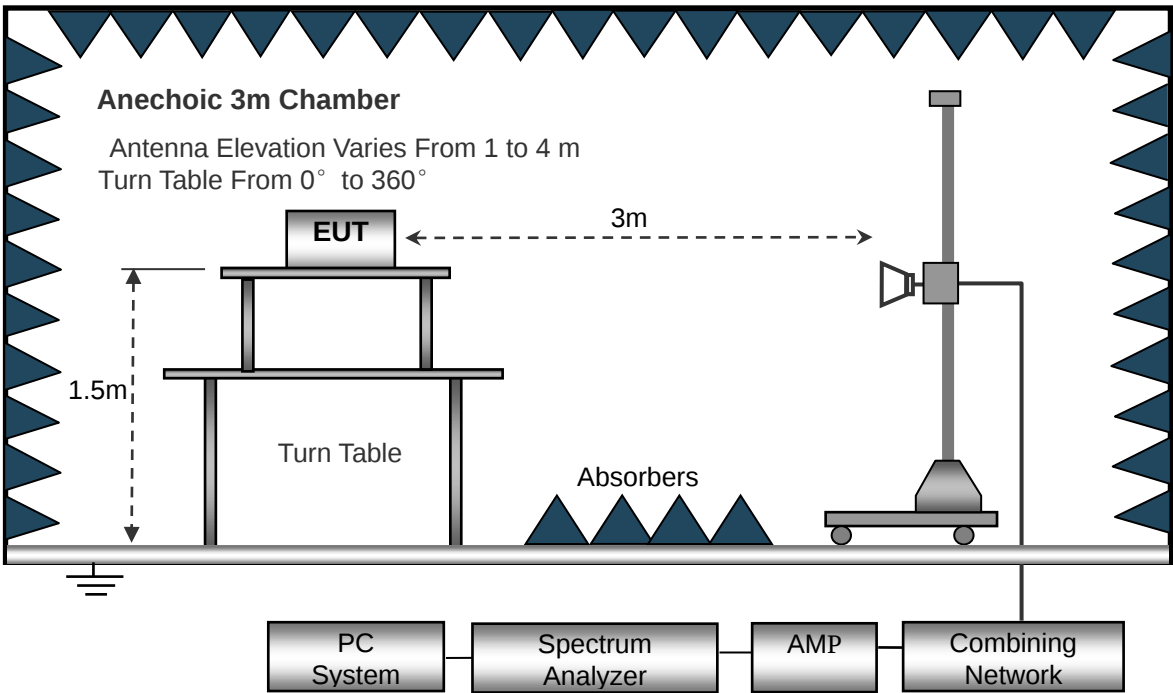
The test setup for emission measurement below 30MHz..



The test setup for emission measurement from 30 MHz to 1 GHz..



The test setup for emission measurement above 1 GHz..



Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Waltek Testing Group (Shenzhen) Co., Ltd.

<http://www.semtest.com.cn>

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

5.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

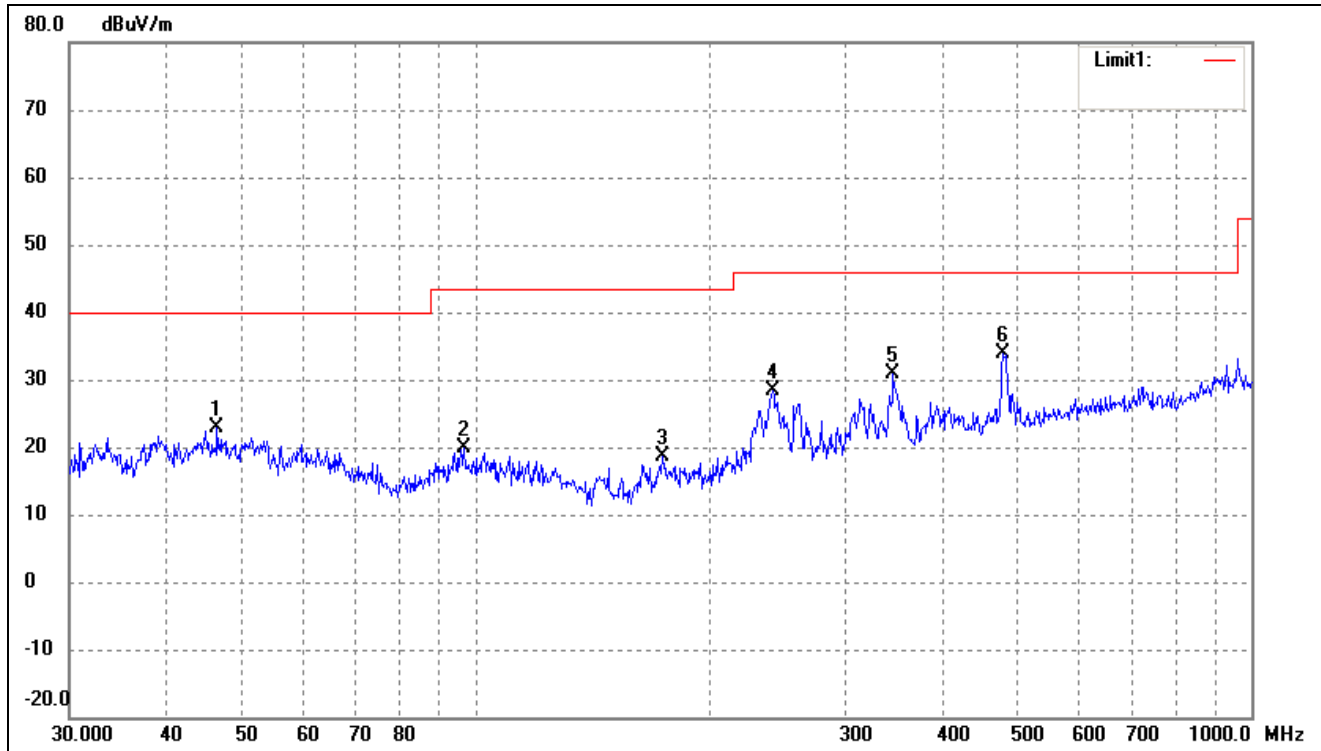
5.4 Summary of Test Results/Plots

Note: 1. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

All test modes (different data rate and different modulation) are performed, but only the worst case is recorded in this report.

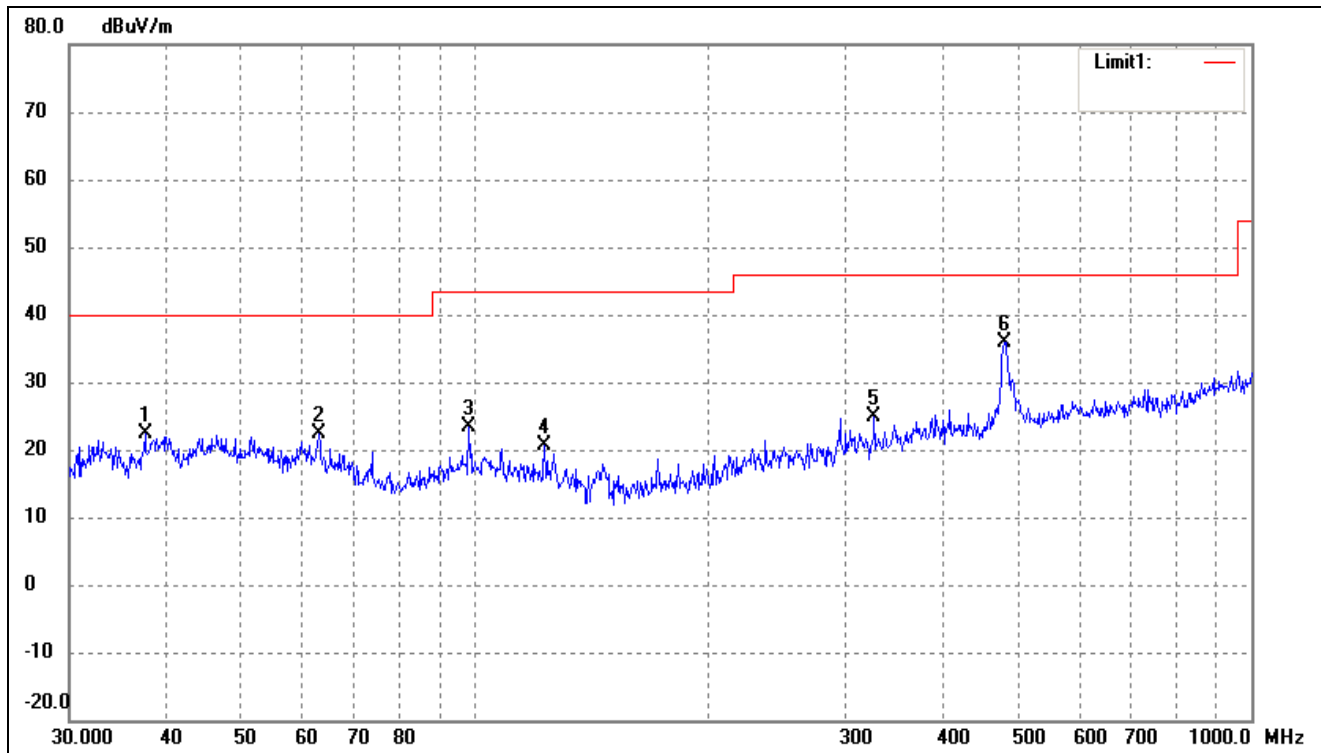
- Spurious Emissions Below 1GHz
- Worst case Antenna B

802.11b_11Mbps			
Test Channel	Low	Polarity:	Horizontal



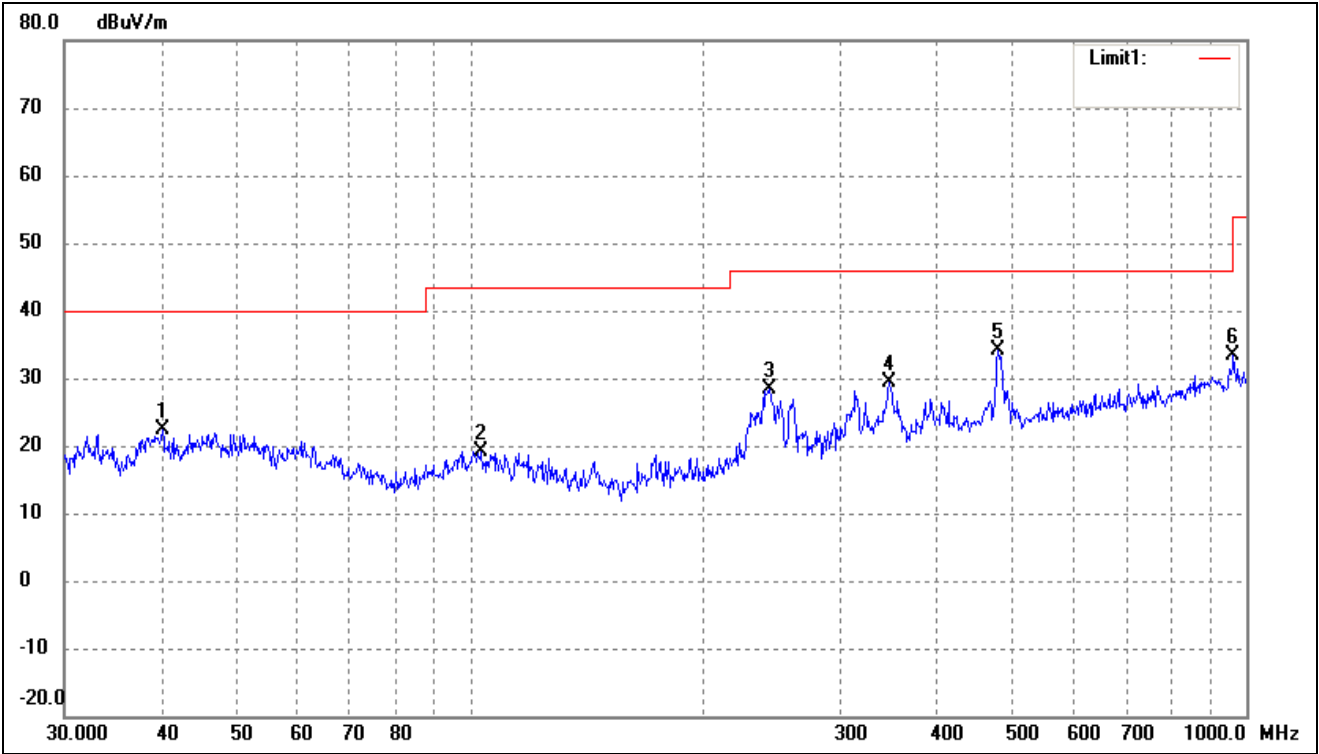
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	46.5030	34.62	-11.72	22.90	40.00	-17.10	-	-	peak
2	96.7749	33.68	-13.86	19.82	43.50	-23.68	-	-	peak
3	174.4241	33.26	-14.71	18.55	43.50	-24.95	-	-	peak
4	241.6763	39.76	-11.34	28.42	46.00	-17.58	-	-	peak
5	345.5952	38.48	-7.70	30.78	46.00	-15.22	-	-	peak
6	478.8456	38.50	-4.69	33.81	46.00	-12.19	-	-	peak

802.11b_11Mbps			
Test Channel	Low	Polarity:	Vertical



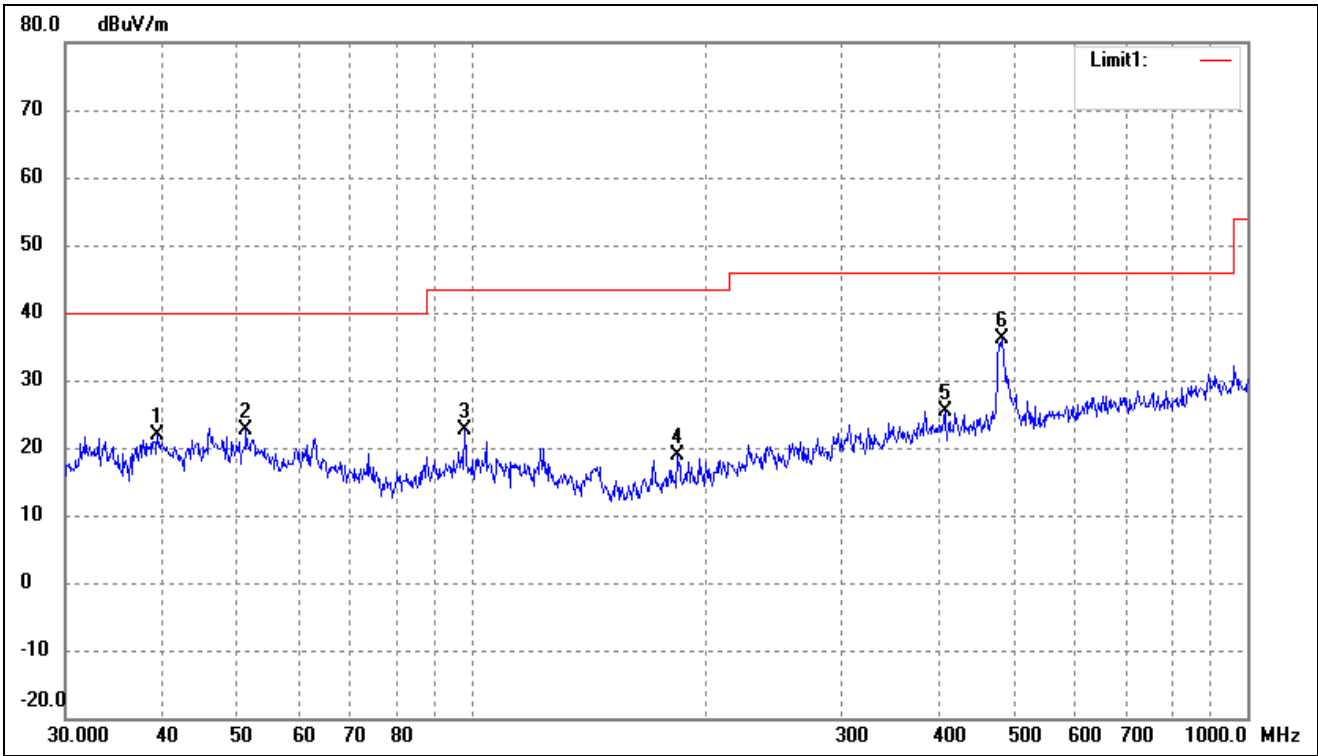
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	37.5479	35.24	-12.91	22.33	40.00	-17.67	-	-	peak
2	62.8708	35.95	-13.53	22.42	40.00	-17.58	-	-	peak
3	98.1419	36.97	-13.62	23.35	43.50	-20.15	-	-	peak
4	122.8340	35.60	-15.05	20.55	43.50	-22.95	-	-	peak
5	326.7395	33.82	-8.86	24.96	46.00	-21.04	-	-	peak
6	480.5276	40.44	-4.64	35.80	46.00	-10.20	-	-	peak

802.11b_11Mbps			
Test Channel	Middle	Polarity:	Horizontal



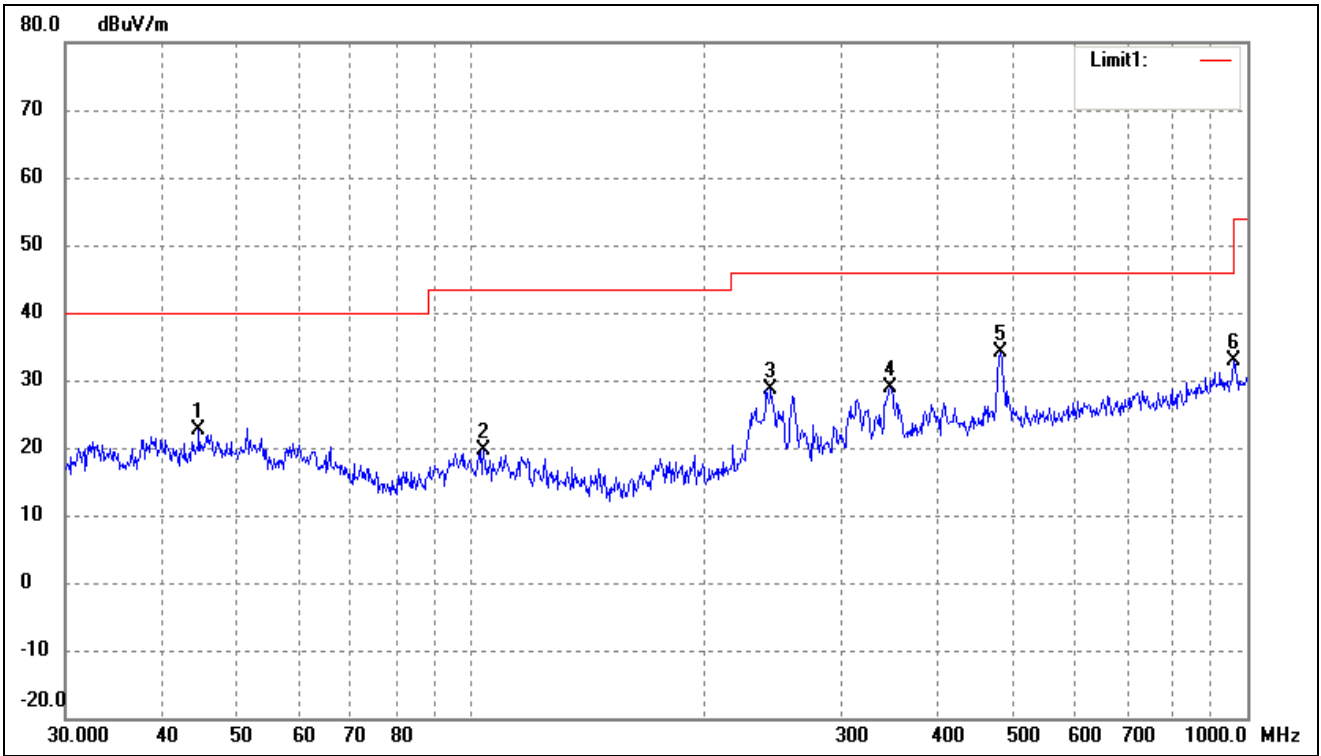
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	40.1347	34.37	-11.98	22.39	40.00	-17.61	-	-	peak
2	103.4421	32.40	-13.31	19.09	43.50	-24.41	-	-	peak
3	242.5253	39.71	-11.29	28.42	46.00	-17.58	-	-	peak
4	346.8092	37.03	-7.63	29.40	46.00	-16.60	-	-	peak
5	478.8456	38.79	-4.69	34.10	46.00	-11.90	-	-	peak
6	962.1623	32.02	1.41	33.43	54.00	-20.57	-	-	peak

802.11b_11Mbps			
Test Channel	Middle	Polarity:	Vertical



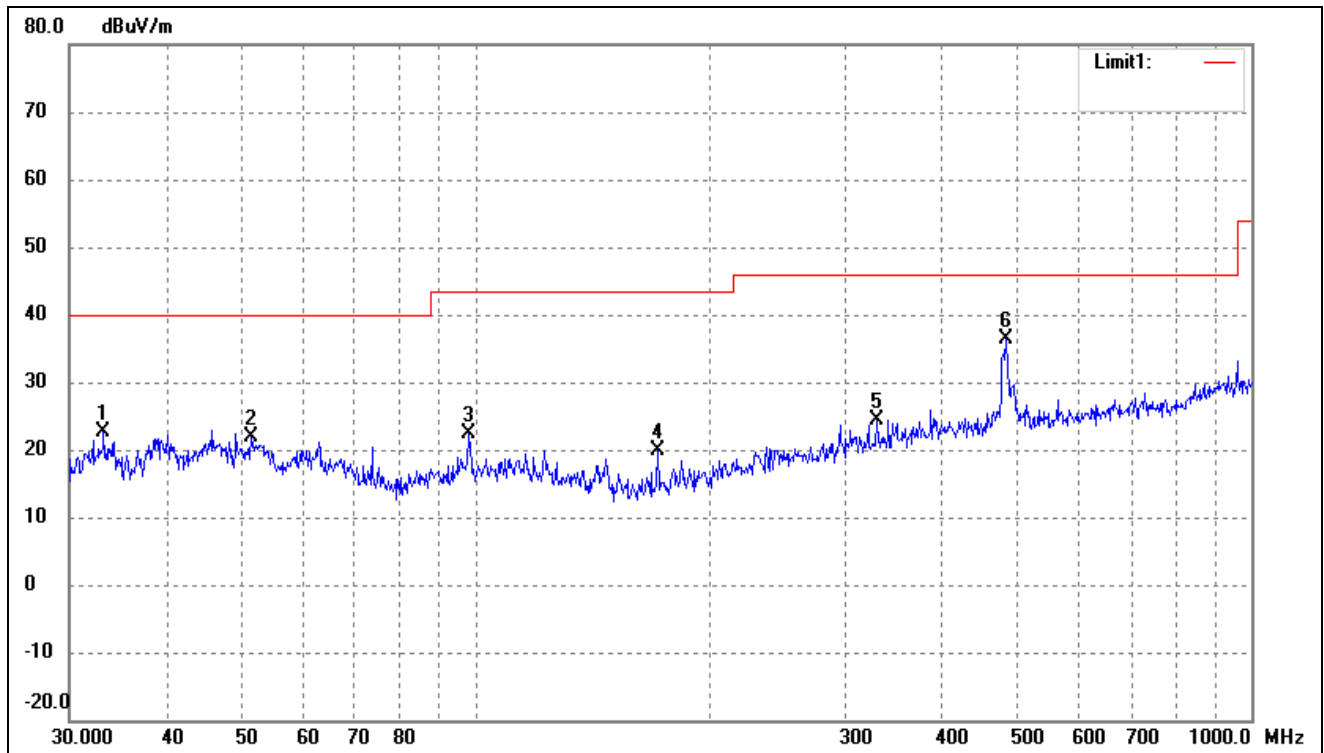
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	39.4372	34.08	-12.19	21.89	40.00	-18.11	-	-	peak
2	51.3005	34.43	-11.90	22.53	40.00	-17.47	-	-	peak
3	98.1419	36.14	-13.62	22.52	43.50	-20.98	-	-	peak
4	184.4898	32.65	-13.78	18.87	43.50	-24.63	-	-	peak
5	407.5145	31.76	-6.28	25.48	46.00	-20.52	-	-	peak
6	482.2156	40.70	-4.59	36.11	46.00	-9.89	-	-	peak

802.11b_11Mbps			
Test Channel	High	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	44.5868	34.42	-11.82	22.60	40.00	-17.40	-	-	peak
2	103.8055	32.89	-13.32	19.57	43.50	-23.93	-	-	peak
3	243.3772	39.90	-11.26	28.64	46.00	-17.36	-	-	peak
4	346.8092	36.41	-7.63	28.78	46.00	-17.22	-	-	peak
5	480.5276	38.73	-4.64	34.09	46.00	-11.91	-	-	peak
6	962.1623	31.48	1.41	32.89	54.00	-21.11	-	-	peak

802.11b_11Mbps			
Test Channel	High	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	33.2112	36.53	-13.97	22.56	40.00	-17.44	-	-	peak
2	51.4807	33.74	-11.96	21.78	40.00	-18.22	-	-	peak
3	98.1419	35.95	-13.62	22.33	43.50	-21.17	-	-	peak
4	171.9946	34.74	-14.88	19.86	43.50	-23.64	-	-	peak
5	329.0390	32.98	-8.72	24.26	46.00	-21.74	-	-	peak
6	482.2156	40.95	-4.59	36.36	46.00	-9.64	-	-	peak

Remark: '- Means' the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

- Spurious Emissions Above 1GHz
- Test Mode: 802.11b_11Mbps Antenna A worst case

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.00	62.78	-3.86	58.92	74	-15.08	H	PK
4824.00	42.67	-3.86	38.81	54	-15.19	H	AV
7236.00	57.34	1.10	58.44	74	-15.56	H	PK
7236.00	39.96	1.10	41.06	54	-12.94	H	AV
4824.00	62.36	-3.86	58.50	74	-15.50	V	PK
4824.00	44.89	-3.86	41.03	54	-12.97	V	AV
7236.00	56.05	1.10	57.15	74	-16.85	V	PK
7236.00	41.46	1.10	42.56	54	-11.44	V	AV
Middle Channel-2437MHz							
4874.00	63.15	-3.74	59.41	74	-14.59	H	PK
4874.00	42.67	-3.74	38.93	54	-15.07	H	AV
7311.00	55.73	1.47	57.20	74	-16.80	H	PK
7311.00	38.88	1.47	40.35	54	-13.65	H	AV
4874.00	63.11	-3.74	59.37	74	-14.63	V	PK
4874.00	41.73	-3.74	37.99	54	-16.01	V	AV
7311.00	58.17	1.47	59.64	74	-14.36	V	PK
7311.00	40.27	1.47	41.74	54	-12.26	V	AV
High Channel-2462MHz							
4924.00	59.95	-3.63	56.32	74	-17.68	H	PK
4924.00	41.61	-3.63	37.98	54	-16.02	H	AV
7386.00	56.05	1.62	57.67	74	-16.33	H	PK
7386.00	42.67	1.62	44.29	54	-9.71	H	AV
4924.00	60.71	-3.63	57.08	74	-16.92	V	PK
4924.00	43.71	-3.63	40.08	54	-13.92	V	AV
7386.00	57.28	1.62	58.90	74	-15.10	V	PK
7386.00	41.48	1.62	43.10	54	-10.90	V	AV

➤ Test Mode: 802.11b_11Mbps Antenna B worst case

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.00	59.62	-3.86	55.76	74	-18.24	H	PK
4824.00	45.20	-3.86	41.34	54	-12.66	H	AV
7236.00	54.27	1.10	55.37	74	-18.63	H	PK
7236.00	37.68	1.10	38.78	54	-15.22	H	AV
4824.00	61.84	-3.86	57.98	74	-16.02	V	PK
4824.00	41.14	-3.86	37.28	54	-16.72	V	AV
7236.00	58.45	1.10	59.55	74	-14.45	V	PK
7236.00	39.85	1.10	40.95	54	-13.05	V	AV
Middle Channel-2437MHz							
4874.00	60.49	-3.74	56.75	74	-17.25	H	PK
4874.00	41.80	-3.74	38.06	54	-15.94	H	AV
7311.00	56.07	1.47	57.54	74	-16.46	H	PK
7311.00	40.74	1.47	42.21	54	-11.79	H	AV
4874.00	62.13	-3.74	58.39	74	-15.61	V	PK
4874.00	42.06	-3.74	38.32	54	-15.68	V	AV
7311.00	55.87	1.47	57.34	74	-16.66	V	PK
7311.00	40.26	1.47	41.73	54	-12.27	V	AV
High Channel-2462MHz							
4924.00	61.69	-3.63	58.06	74	-15.94	H	PK
4924.00	44.23	-3.63	40.60	54	-13.40	H	AV
7386.00	54.14	1.62	55.76	74	-18.24	H	PK
7386.00	38.71	1.62	40.33	54	-13.67	H	AV
4924.00	61.31	-3.63	57.68	74	-16.32	V	PK
4924.00	45.47	-3.63	41.84	54	-12.16	V	AV
7386.00	57.25	1.62	58.87	74	-15.13	V	PK
7386.00	40.90	1.62	42.52	54	-11.48	V	AV

6. Out of Band Emissions

6.1 Standard Applicable

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

6.2 Test Procedure

According to the KDB 558074D01 v05r02 Subclause 8.4 and ANSI C63.10-2013 Subclause 11.11, the Emissions in nonrestricted frequency bands test method as follows:

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq [3 \times \text{RBW}]$.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

According to the KDB 558074 D01 v05r02 Subclause 8.5 and ANSI C63.10-2013 Subclause 11.12, the Emissions in restricted frequency bands test method as follows:

A. Radiated emission measurements:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)

RBW = 1MHz, VBW = 1MHz for peak value measured

RBW = 1MHz, VBW = 10Hz for average value measured

Sweep = auto; Detector function = peak/average; Trace = max hold

All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205. Note that the method of measurement KDB publication number: 913591 may be used for the radiated bandedge measurements.

B. Antenna-port conducted measurements

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 9.
- b) $VBW \geq [3 \times RBW]$.
- c) Detector = peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be lengthened for low-duty-cycle applications.)

Table 9—RBW as a function of frequency

Frequency	RBW
9 kHz to 150 kHz	200 Hz to 300 Hz
0.15 MHz to 30 MHz	9 kHz to 10 kHz
30 MHz to 1000 MHz	100 kHz to 120 kHz
>1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in section 8.1. Report the three highest emissions relative to the limit.

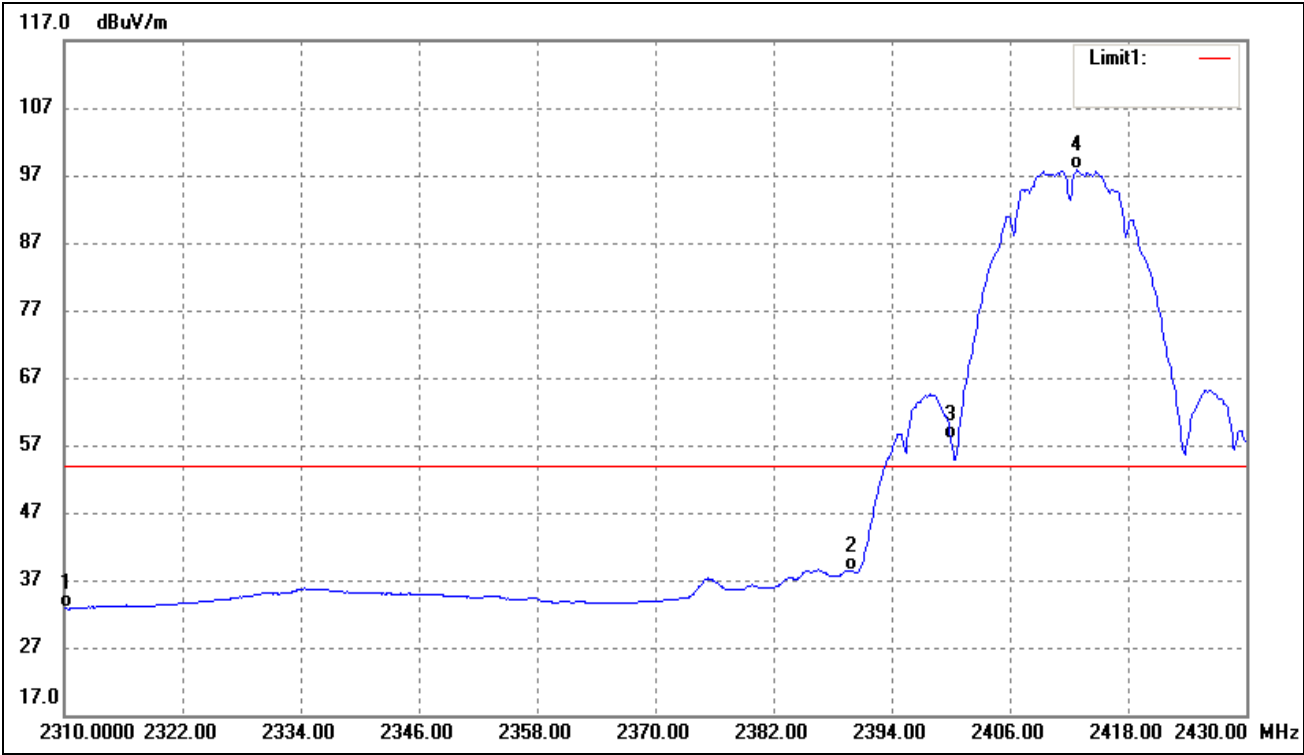
6.3 Summary of Test Results/Plots

➤ Radiated test

Worst case

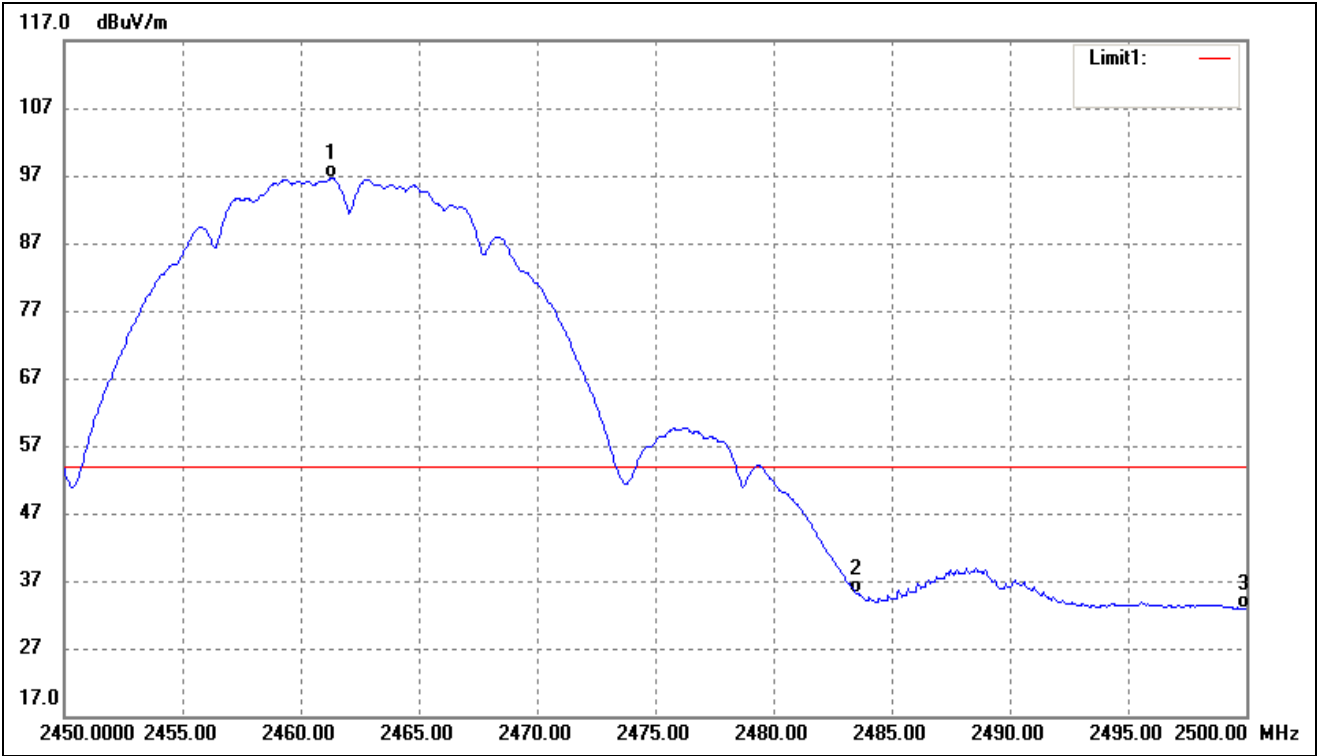
➤ Antenna B

802.11b_11Mbps			
Test Channel	Low	Polarity:	Vertical(worst case)



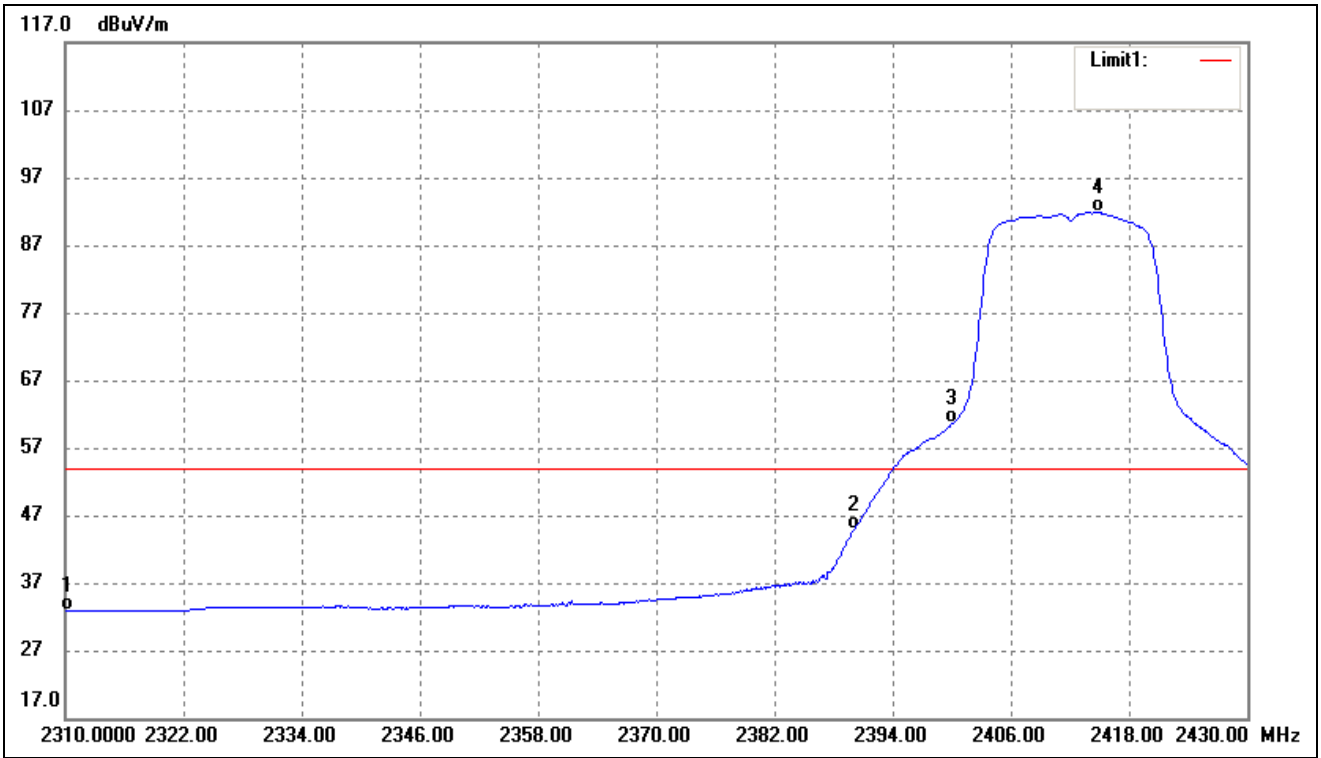
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	42.47	-9.66	32.81	54.00	-21.19	Average Detector
	2310.000	55.33	-9.66	45.67	74.00	-28.33	Peak Detector
2	2390.000	47.77	-9.50	38.27	54.00	-15.73	Average Detector
	2390.000	60.38	-9.50	50.88	74.00	-23.12	Peak Detector
3	2400.000	67.41	-9.48	57.93	Delta=39.83dB		Average Detector
4	2412.840	107.22	-9.46	97.76			Average Detector

802.11b_11Mbps			
Test Channel	High	Polarity:	Vertical(worst case)



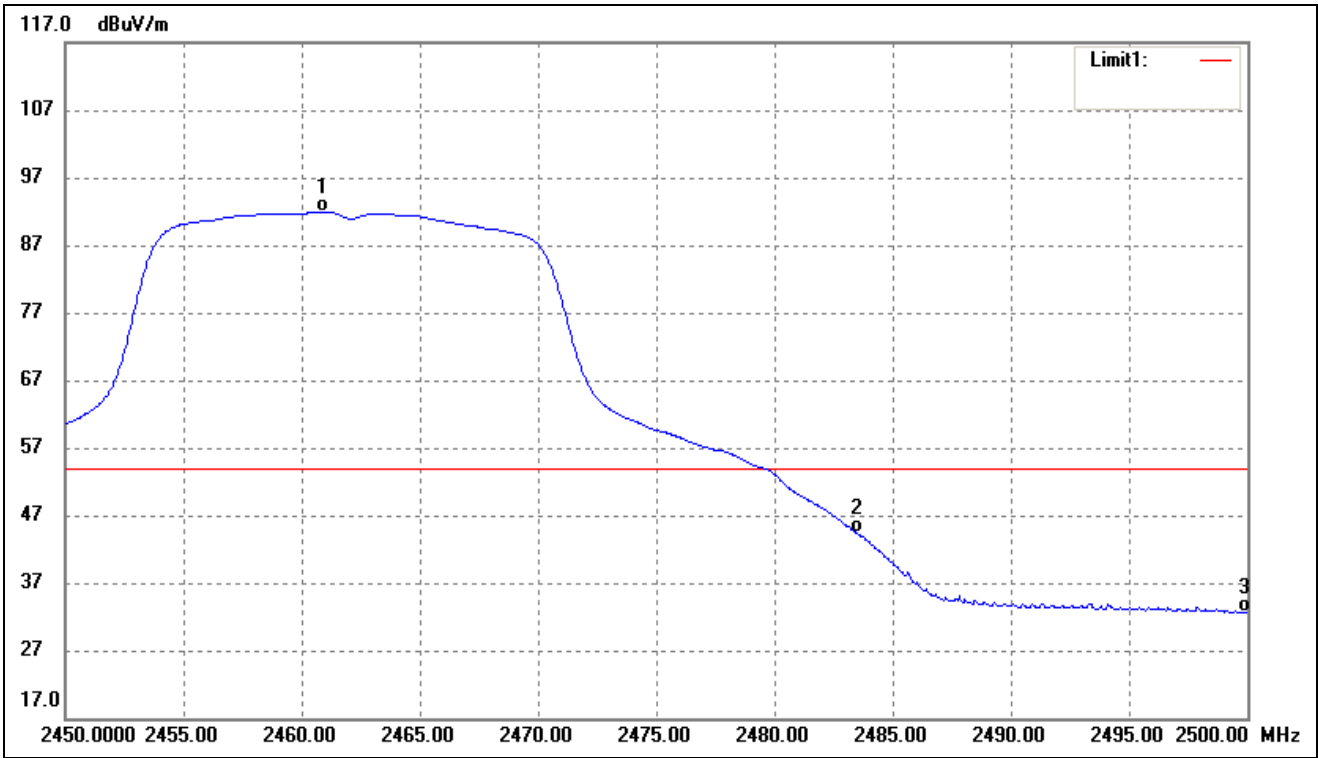
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2461.300	105.93	-9.36	96.57	/	/	Average Detector
	2460.600	110.56	-9.36	101.20	/	/	Peak Detector
2	2483.500	44.51	-9.31	35.20	54.00	-18.80	Average Detector
	2483.500	55.67	-9.31	46.36	74.00	-27.64	Peak Detector
3	2500.000	42.27	-9.28	32.99	54.00	-21.01	Average Detector
	2500.000	54.21	-9.28	44.93	74.00	-29.07	Peak Detector

802.11g_54Mbps			
Test Channel	Low	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	42.45	-9.66	32.79	54.00	-21.21	Average Detector
	2310.000	55.35	-9.66	45.69	74.00	-28.31	Peak Detector
2	2390.000	54.38	-9.50	44.88	54.00	-9.12	Average Detector
	2390.000	74.85	-9.50	65.35	74.00	-8.65	Peak Detector
3	2400.000	70.01	-9.48	60.53	Delta=31.31dB		Average Detector
4	2414.880	101.30	-9.46	91.84			Average Detector

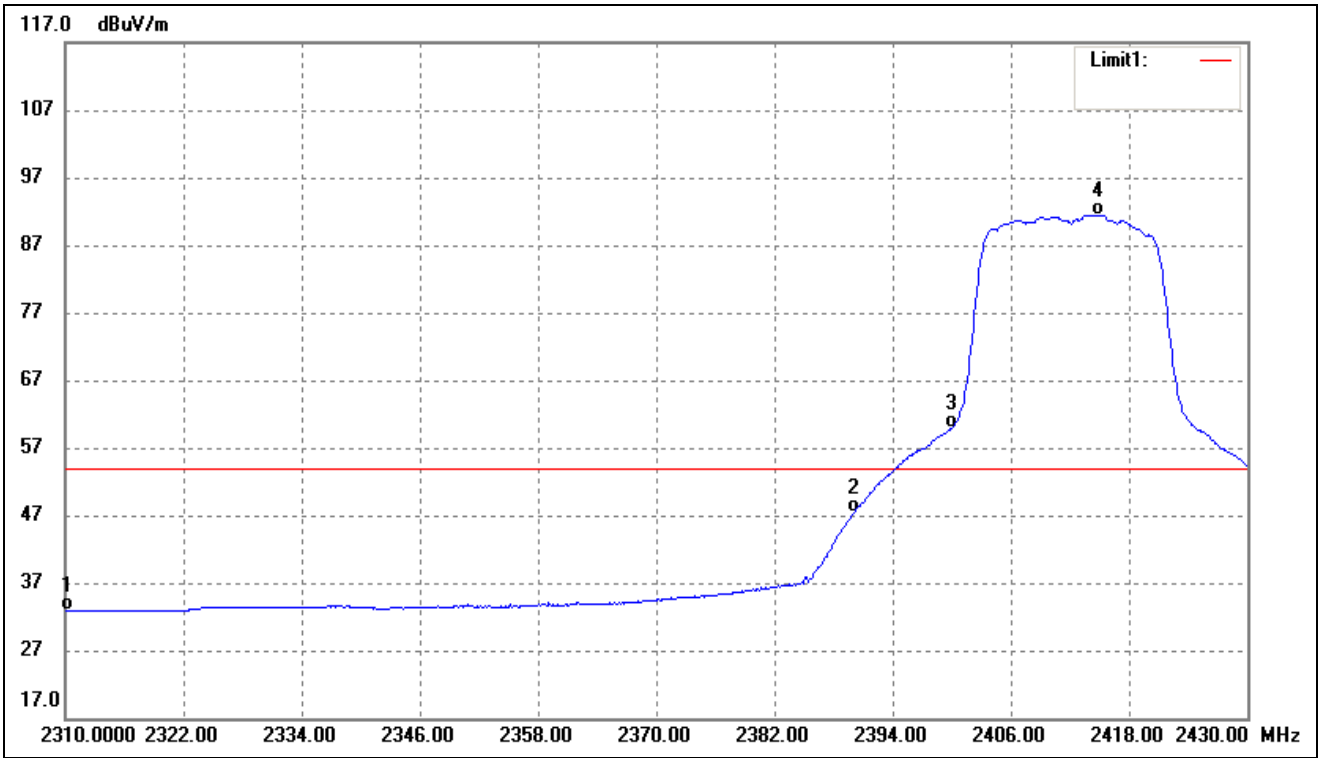
802.11g_54Mbps			
Test Channel	High	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	2460.900	101.34	-9.36	91.98	/	/	Average Detector
	2460.600	112.02	-9.36	102.66	/	/	Peak Detector
2	2483.500	53.66	-9.31	44.35	54.00	-9.65	Average Detector
	2483.500	72.49	-9.31	63.18	74.00	-10.82	Peak Detector
3	2500.000	41.93	-9.28	32.65	54.00	-21.35	Average Detector
	2500.000	53.88	-9.28	44.60	74.00	-29.40	Peak Detector

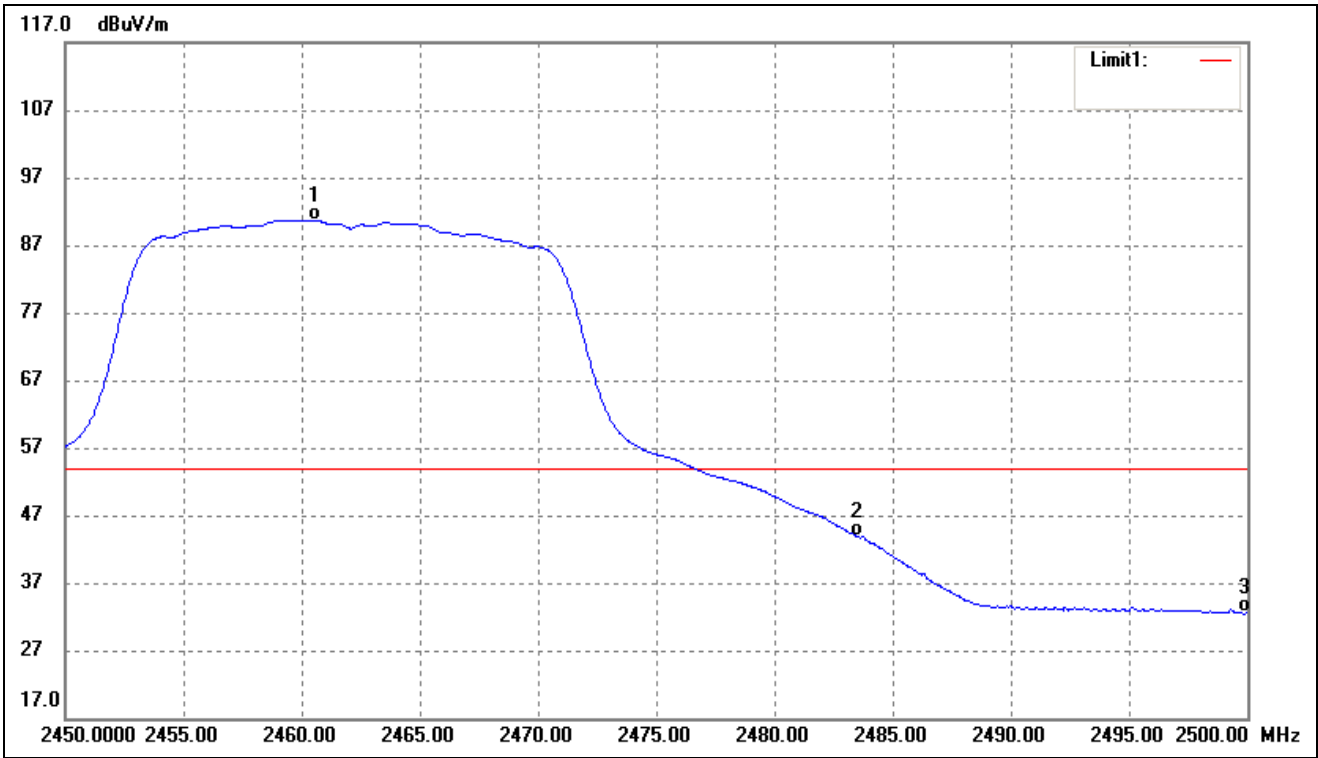
➤ Antenna A+AntennaB

802.11n-HT20_MCS7			
Test Channel	Low	Polarity:	Vertical(worst case)



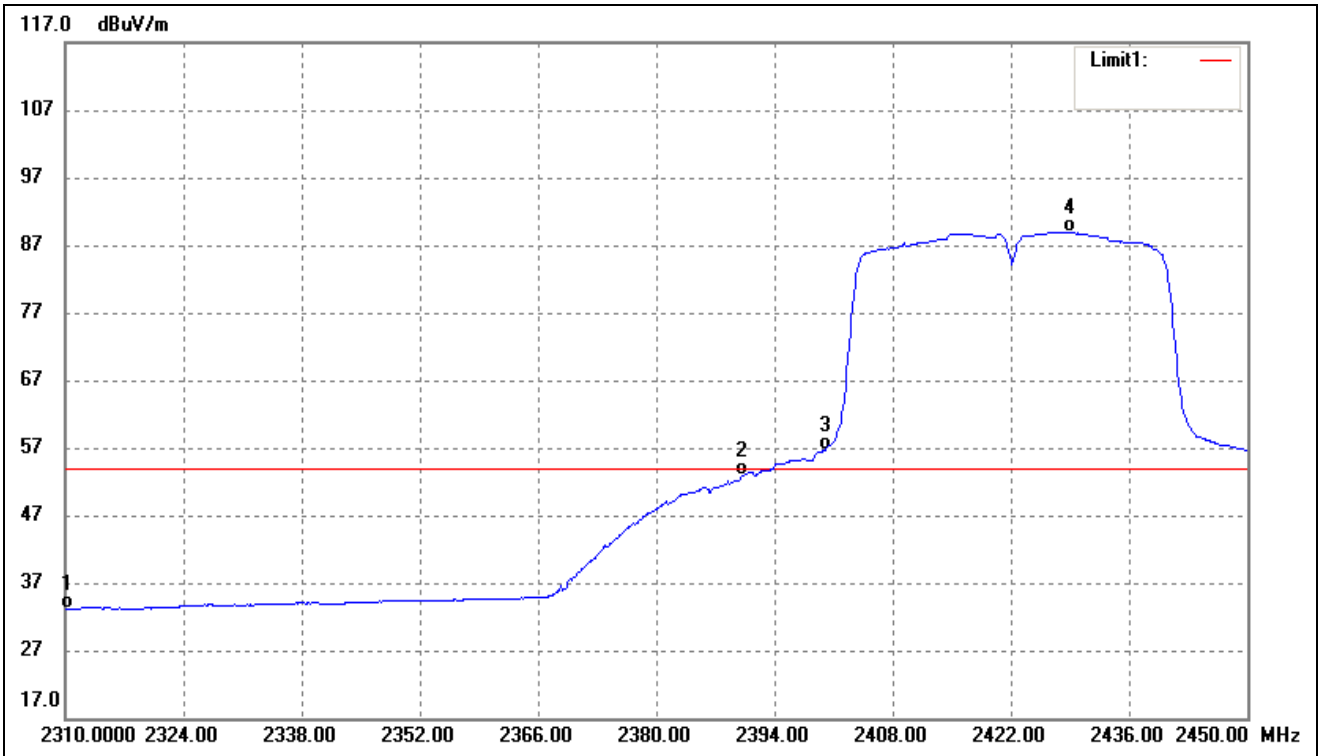
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	42.48	-9.66	32.82	54.00	-21.18	Average Detector
	2310.000	55.54	-9.66	45.88	74.00	-28.12	Peak Detector
2	2390.000	56.97	-9.50	47.47	54.00	-6.53	Average Detector
	2390.000	78.31	-9.50	68.81	74.00	-5.19	Peak Detector
3	2400.000	69.42	-9.48	59.94	Delta=31.49dB		Average Detector
4	2414.880	100.89	-9.46	91.43			Average Detector

802.11n-HT20_MCS7			
Test Channel	High	Polarity:	Vertical(worst case)



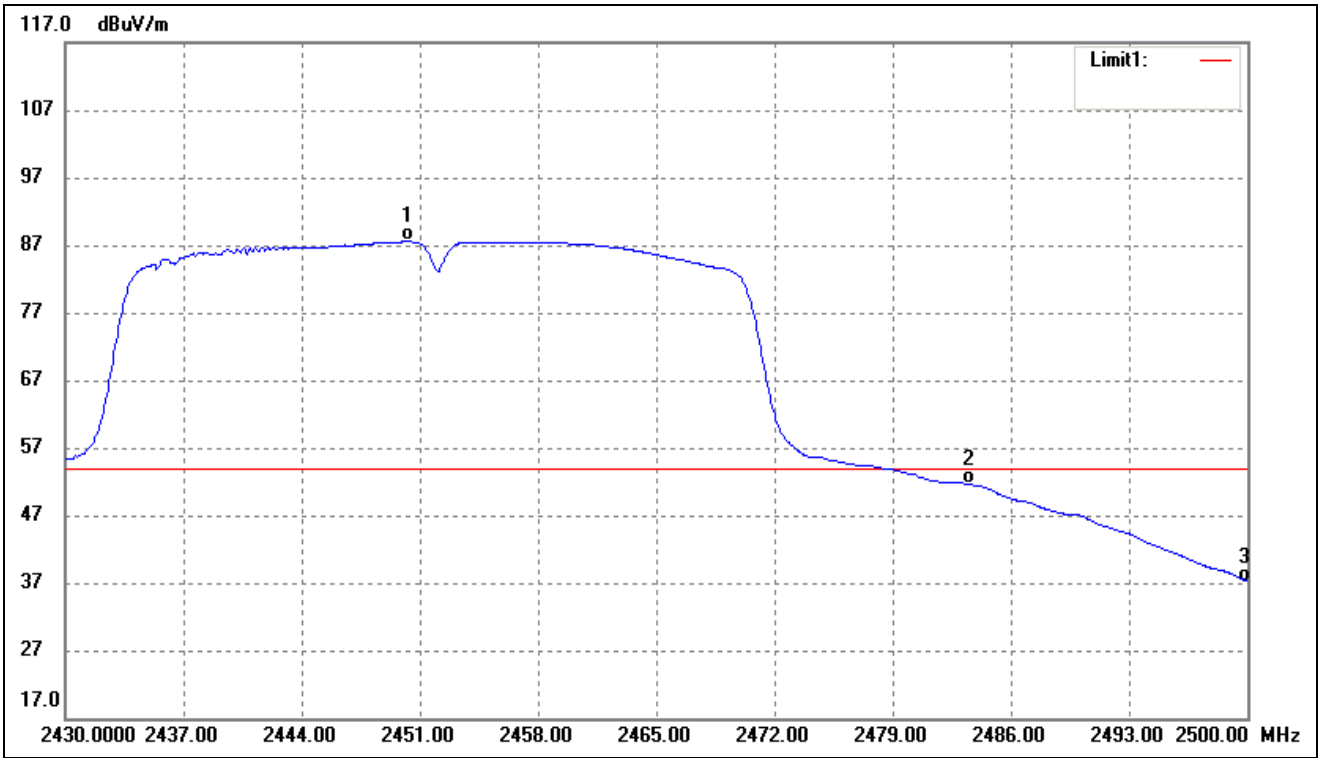
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2460.550	100.06	-9.36	90.70	/	/	Average Detector
	2460.000	110.73	-9.35	101.38	/	/	Peak Detector
2	2483.500	53.21	-9.31	43.90	54.00	-10.10	Average Detector
	2483.500	73.86	-9.31	64.55	74.00	-9.45	Peak Detector
3	2500.000	41.79	-9.28	32.51	54.00	-21.49	Average Detector
	2500.000	56.47	-9.28	47.19	74.00	-26.81	Peak Detector

802.11n-HT40_MCS7			
Test Channel	Low	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	42.82	-9.66	33.16	54.00	-20.84	Average Detector
	2310.000	55.03	-9.66	45.37	74.00	-28.63	Peak Detector
2	2390.000	62.34	-9.50	52.84	54.00	-1.16	Average Detector
	2390.000	78.56	-9.50	69.06	74.00	-4.94	Peak Detector
3	2400.000	66.11	-9.48	56.63	Delta=32.22dBc		Average Detector
4	2429.000	98.27	-9.42	88.85			Average Detector

802.11n-HT40_MCS7			
Test Channel	High	Polarity:	Vertical(worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2450.300	96.95	-9.38	87.57	/	/	Average Detector
	2454.920	109.50	-9.37	100.13	/	/	Peak Detector
2	2483.500	60.88	-9.31	51.57	54.00	-2.43	Average Detector
	2483.500	81.30	-9.31	71.99	74.00	-2.01	Peak Detector
3	2500.000	46.43	-9.28	37.15	54.00	-16.85	Average Detector
	2500.000	68.26	-9.28	58.98	74.00	-15.02	Peak Detector

***** END OF REPORT *****