

FCC Part 15C

Measurement and Test Report

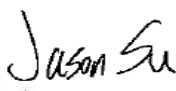
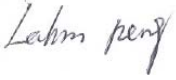

For

Guangzhou Jincheng Electronic Technology Co., Ltd.

Building 4, No.3, South Road, Yongshan Village (Industrial Area),

Shiji, Panyu, Guangzhou, China

FCC ID: UZR-DIYWF44

FCC Rule(s):	<u>FCC Part 15C</u>
Product Description:	<u>Wifi Wireless Rearview System</u>
Tested Model:	<u>DIY-WF-4.3"(C80)</u>
Report No.:	<u>STR14088189I-2</u>
Tested Date:	<u>2014-08-12 to 2014-08-30</u>
Issued Date:	<u>2014-08-30</u>
Tested By:	<u>Jason Su / Engineer</u> 
Reviewed By:	<u>Lahm Peng / EMC Manager</u> 
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> 
Prepared By:	

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	4
1.3 TEST METHODOLOGY.....	4
1.4 TEST FACILITY.....	4
1.5 EUT SETUP AND TEST MODE.....	5
2. SUMMARY OF TEST RESULTS.....	6
3. RF EXPOSURE.....	7
3.1 STANDARD APPLICABLE.....	7
3.2 TEST RESULT.....	7
4. ANTENNA REQUIREMENT.....	8
4.1 STANDARD APPLICABLE.....	8
4.2 EVALUATION INFORMATION.....	8
5. POWER SPECTRAL DENSITY.....	9
5.1 STANDARD APPLICABLE.....	9
5.2 TEST EQUIPMENT LIST AND DETAILS.....	9
5.3 TEST PROCEDURE.....	9
5.4 ENVIRONMENTAL CONDITIONS.....	9
5.5 SUMMARY OF TEST RESULTS/PLOTS.....	10
6. 6DB BANDWIDTH.....	13
6.1 STANDARD APPLICABLE.....	13
6.2 TEST EQUIPMENT LIST AND DETAILS.....	13
6.3 TEST PROCEDURE.....	13
6.4 ENVIRONMENTAL CONDITIONS.....	13
6.5 SUMMARY OF TEST RESULTS/PLOTS.....	14
7. RF OUTPUT POWER.....	17
7.1 STANDARD APPLICABLE.....	17
7.2 TEST EQUIPMENT LIST AND DETAILS.....	17
7.3 TEST PROCEDURE.....	17
7.4 ENVIRONMENTAL CONDITIONS.....	17
7.5 SUMMARY OF TEST RESULTS/PLOTS.....	18
8. FIELD STRENGTH OF SPURIOUS EMISSIONS.....	21
8.1 MEASUREMENT UNCERTAINTY.....	21
8.2 STANDARD APPLICABLE.....	21
8.3 TEST EQUIPMENT LIST AND DETAILS.....	21
8.4 TEST PROCEDURE.....	22
8.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	22
8.6 ENVIRONMENTAL CONDITIONS.....	23
8.7 SUMMARY OF TEST RESULTS/PLOTS.....	23
9. OUT OF BAND EMISSIONS.....	31
9.1 STANDARD APPLICABLE.....	31
9.2 TEST EQUIPMENT LIST AND DETAILS.....	31
9.3 TEST PROCEDURE.....	31
9.4 ENVIRONMENTAL CONDITIONS.....	32
9.5 SUMMARY OF TEST RESULTS/PLOTS.....	32

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Guangzhou Jincheng Electronic Technology Co.,Ltd.
 Address of applicant: Building 4, No.3, South Road, Yongshan Village
 (Industrial Area),Shiji Panyu, Guangzhou, China
 Manufacturer: Guangzhou Jincheng Electronic Technology Co.,Ltd.
 Address of manufacturer: Building 4, No.3, South Road, Yongshan Village
 (Industrial Area),Shiji Panyu, Guangzhou, China

General Description of EUT	
Product Name:	Wifi Wireless Rearview System
Trade Name:	/
Model No.:	DIY-WF-4.3"(C80)
Adding Model(s):	DIY-WF-4.3"(C81)/(C82)/(C92) DIY-WF-3"(C80)/(C81)/(C82)/(C92) DIY-WF-3.5"(C80)/(C81)/(C82)/(C92) DIY-WF-5"(C80)/(C81)/(C82)/(C92) DIY-WF-6"(C80)/(C81)/(C82)/(C92) DIY-WF-7"(C80)/(C81)/(C82)/(C92), VTC404R VTC424R
Rated Voltage:	DC12V
Power Adapter Model:	/
<p><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 DIY-WF-4.3"(C80) but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Support Standards:	802.11g,
Frequency Range:	2412-2472MHz
RF Output Power:	7.62dBm (Conducted)
Type of Modulation:	OFDM
Data Rate:	6-54Mbps
Quantity of Channels:	13
Channel Separation:	5MHz
Type of Antenna:	Integral
Antenna Gain:	2dBi

1.2 Test Standards

The following report is prepared on behalf of the Guangzhou Jincheng Electronic Technology Co.,Ltd. in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

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 C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. The measurement guide KDB 558074 D01 V03r02 for digital transmission systems shall be performed also.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology 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 and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

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

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

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, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11g	2412MHz, 2442MHz, 2472MHz

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Camera Cable	0.85	Unshielded	Without Ferrite
Camera Cable	0.85	Unshielded	Without Ferrite

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

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Battery	CHILWEE	6-DZM-10	/

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
§ 15.207(a)	Conducted Emission	N/A
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	RF Output Power	Compliant
§ 15.209(a)	Radiated Emission	Compliant
§ 15.247(d)	Band Edge (Out of Band Emissions)	Compliant

N/A: not applicable

3. RF Exposure

3.1 Standard Applicable

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

3.2 Test Result

This product complied with the requirement of the RF exposure, please see the RF Exposure 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 a integral antenna, fulfill the requirement of this section.

5. Power Spectral Density

5.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2014-05-28	2015-05-27
Attenuator	ATTEN	ATS100-4-20	/	2014-05-28	2015-05-27

5.3 Test Procedure

According to the KDB 558074 D01 V03r02, the test method of power spectral density as below:

3

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set analyzer center frequency to DTS channel center frequency.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW \geq 3 kHz.
5. Set the VBW \geq 3 x RBW.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.4 Environmental Conditions

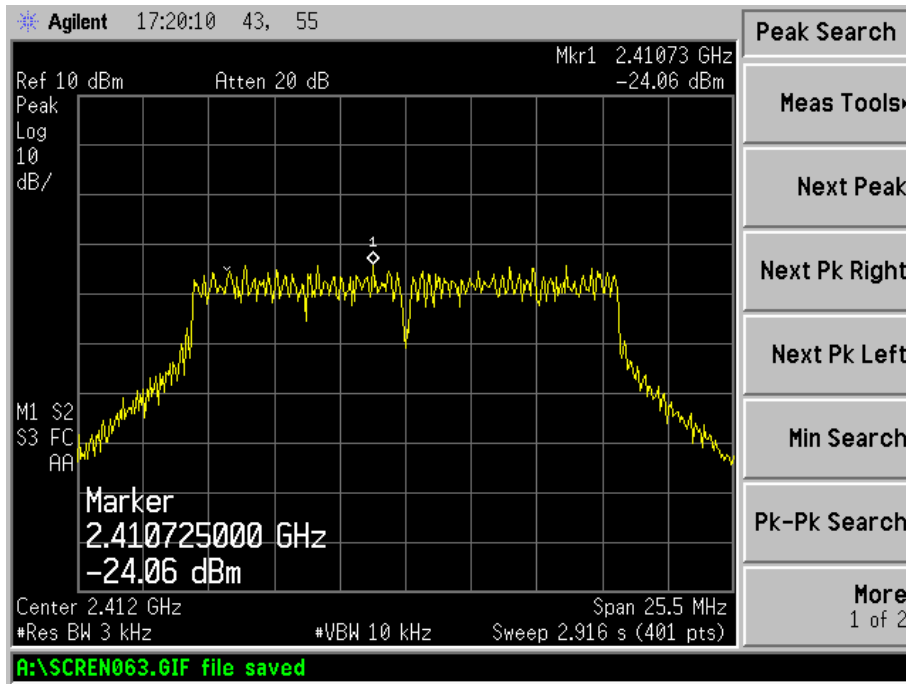
Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.5 Summary of Test Results/Plots

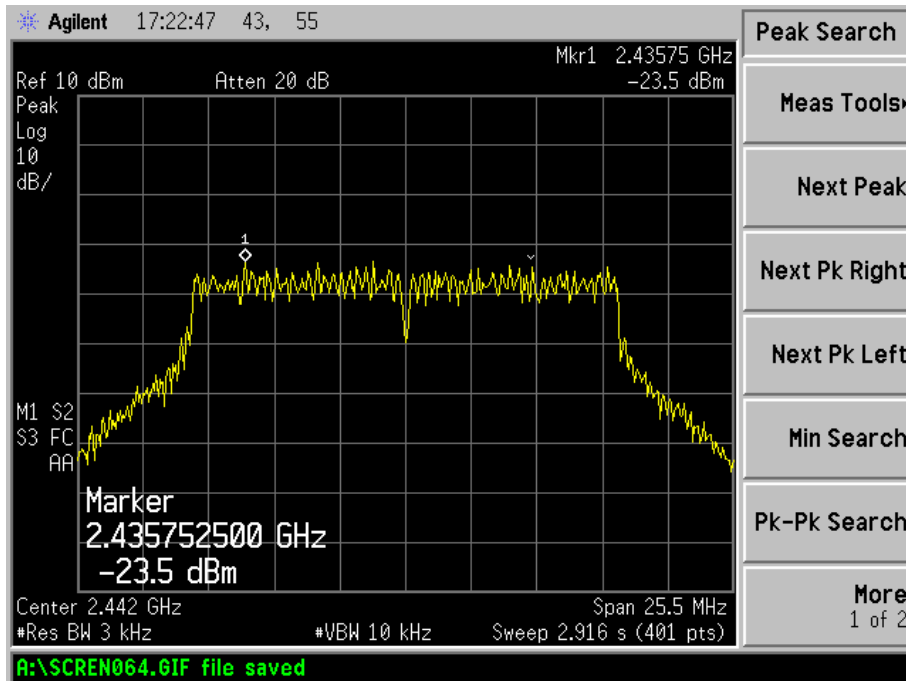
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
802.11g	2412	-24.06	8
	2442	-23.50	8
	2472	-22.19	8

Please refer to the following test plots:

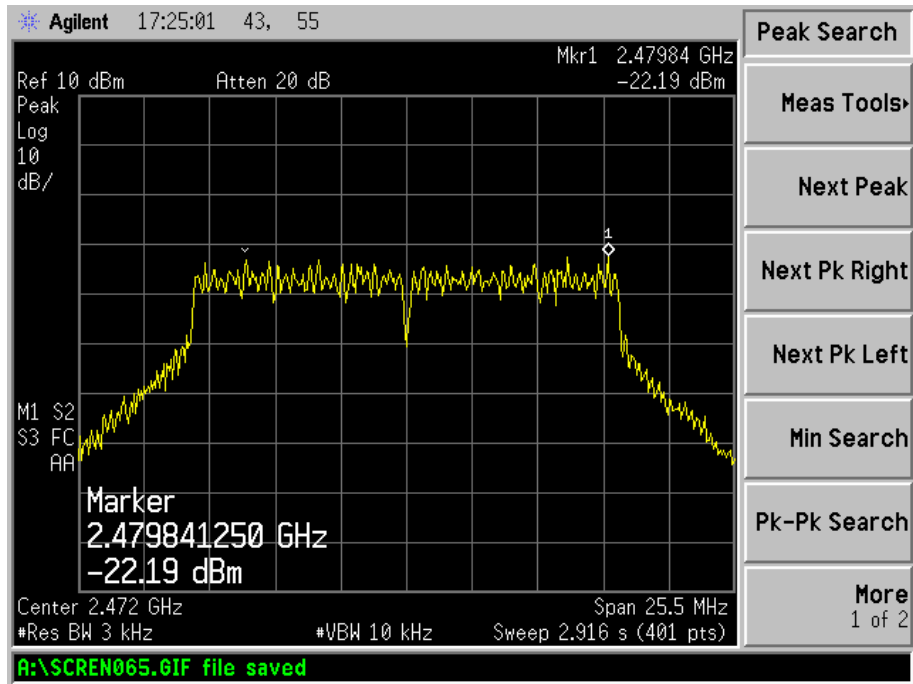
802.11g-Low Channel



802.11g-Middle Channel



802.11g-High Channel



6. 6dB Bandwidth

6.1 Standard Applicable

According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

6.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2014-05-28	2015-05-27
Attenuator	ATTEN	ATS100-4-20	/	2014-05-28	2015-05-27

6.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set resolution bandwidth (RBW) = 1-5% or DTS BW, not to exceed 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission..

6.4 Environmental Conditions

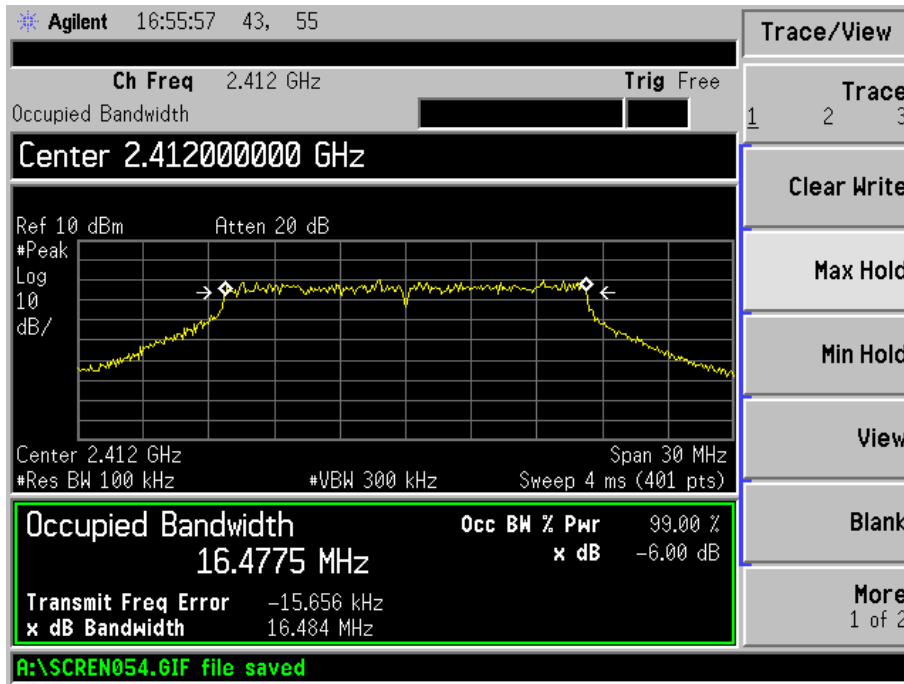
Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

6.5 Summary of Test Results/Plots

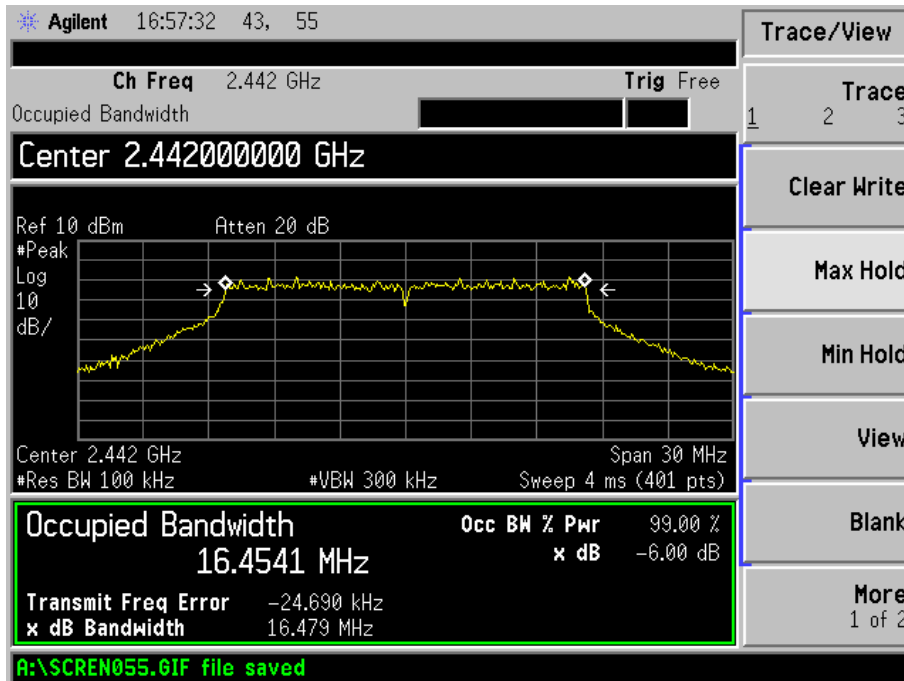
Test Mode	Test Channel MHz	6 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz
802.11g	2412	16484	16477.5	500
	2442	16479	16454.1	500
	2472	16478	16470.2	500

Please refer to the following test plots:

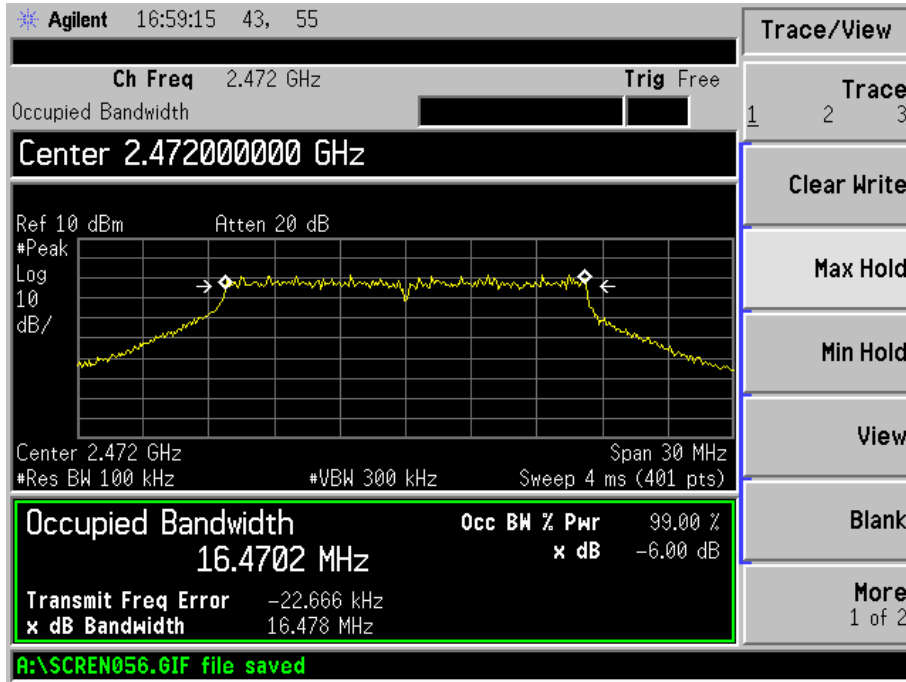
802.11g-Low Channel



802.11g-Middle Channel



802.11g-High Channel



7. RF Output Power

7.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

7.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	Agilent	E4402B	US41192821	2014-05-28	2015-05-27
Attenuator	ATTEN	ATS100-4-20	/	2014-05-28	2015-05-27

7.3 Test Procedure

According to section 15.247(b)-power output of the KDB-558074 D01 V03r02, 8.1.2 Option 2 (channel integration method) this procedure should only be used when the maximum available RBW of the spectrum/signal analyzer is less than the DTS bandwidth.

1. Set the RBW = maximum available (at least 1 MHz).
2. Set the VBW = 3 x RBW or maximum available setting (must be \geq RBW).
3. Set the span to fully encompass the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some analyzers, this may require a manual override to ensure use of peak detector).

7.4 Environmental Conditions

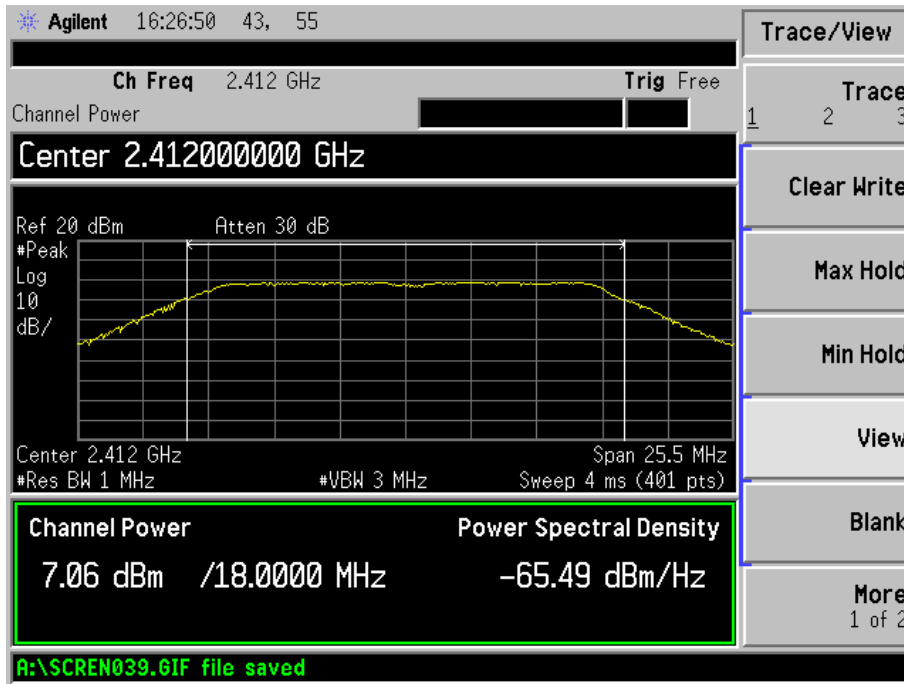
Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1011 mbar

7.5 Summary of Test Results/Plots

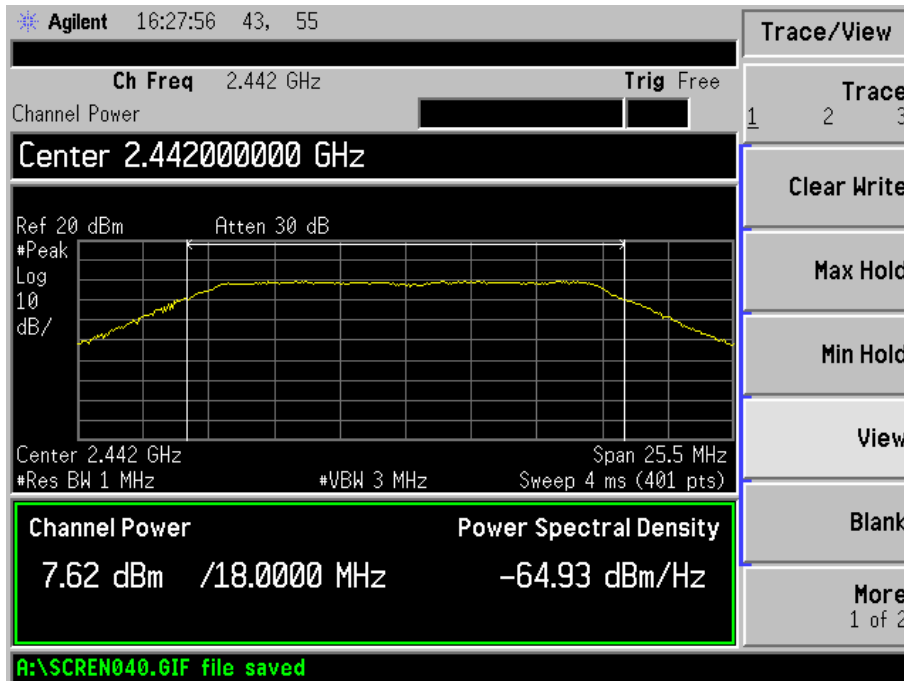
Test Mode	Frequency MHz	Reading dBm	Output Power mW	Limit mW
802.11g_54Mbps	2412	7.06	5.082	1000
	2442	7.62	5.781	1000
	2472	7.41	5.508	1000

Please refer to the following test plots:

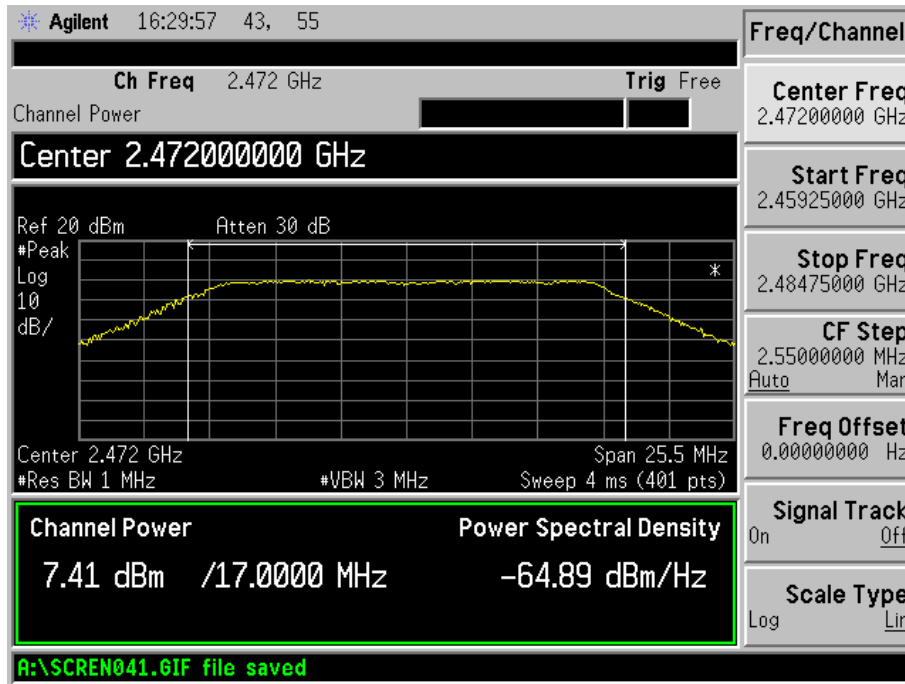
802.11g-Low Channel



802.11g-Middle Channel



802.11g-High Channel



8. Field Strength of Spurious Emissions

8.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 5.10 dB.

8.2 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.

8.3 Test Equipment List and Details

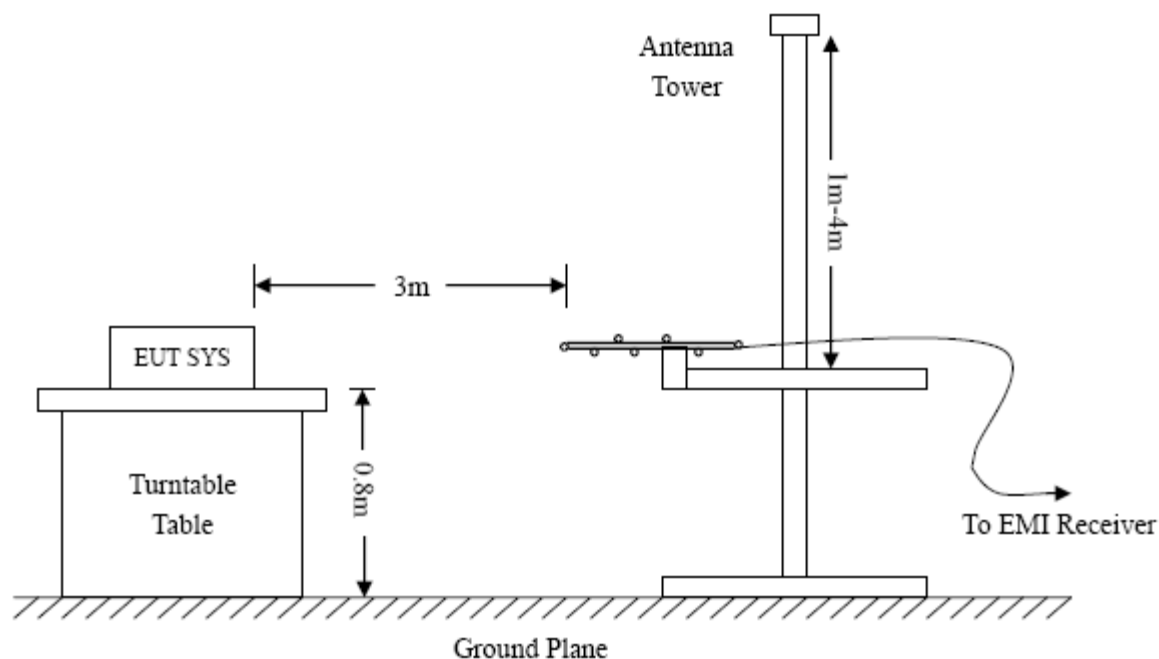
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Horn Antenna	ETS	3116B	00088203	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-24	2015-05-23

8.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 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.



Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

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

8.5 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 for Class B. The equation for margin calculation is as follows:

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

8.6 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

8.7 Summary of Test Results/Plots

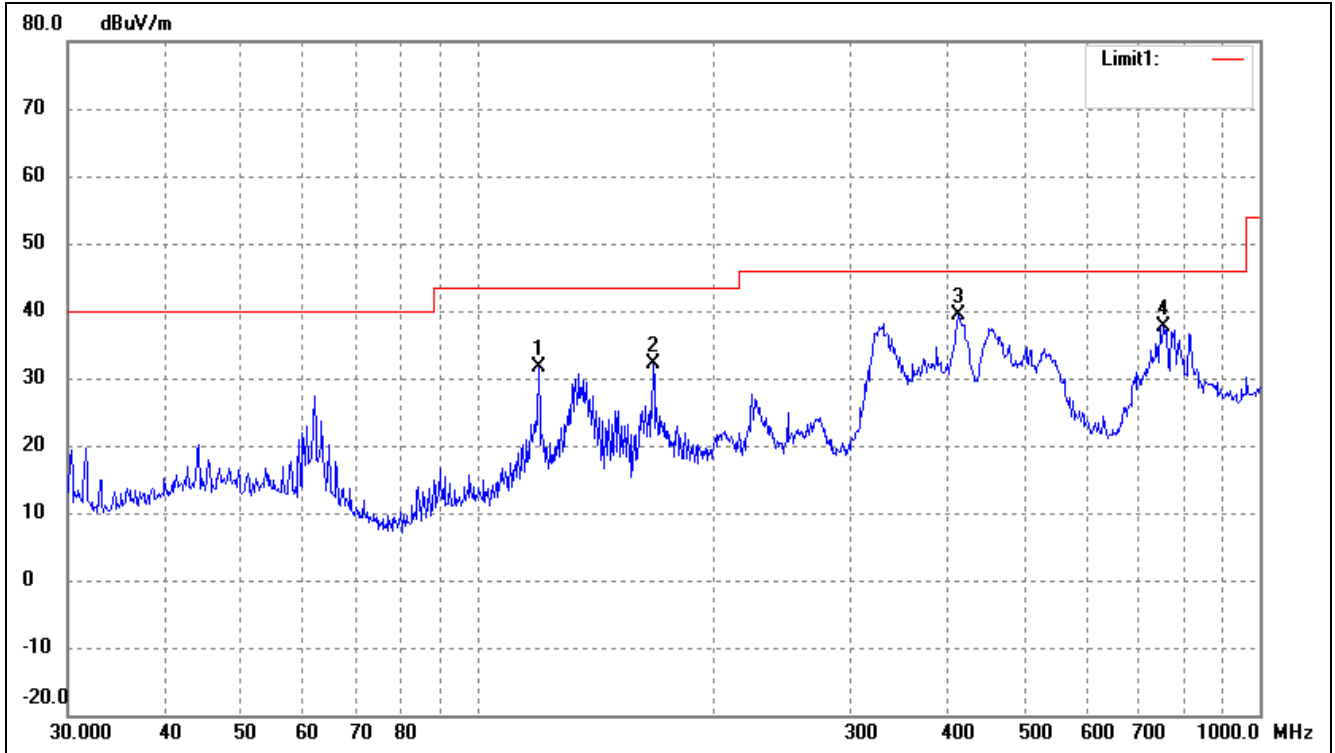
According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst cases:

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

Plot of Radiated Emissions Test Data (30MHz to 1GHz)

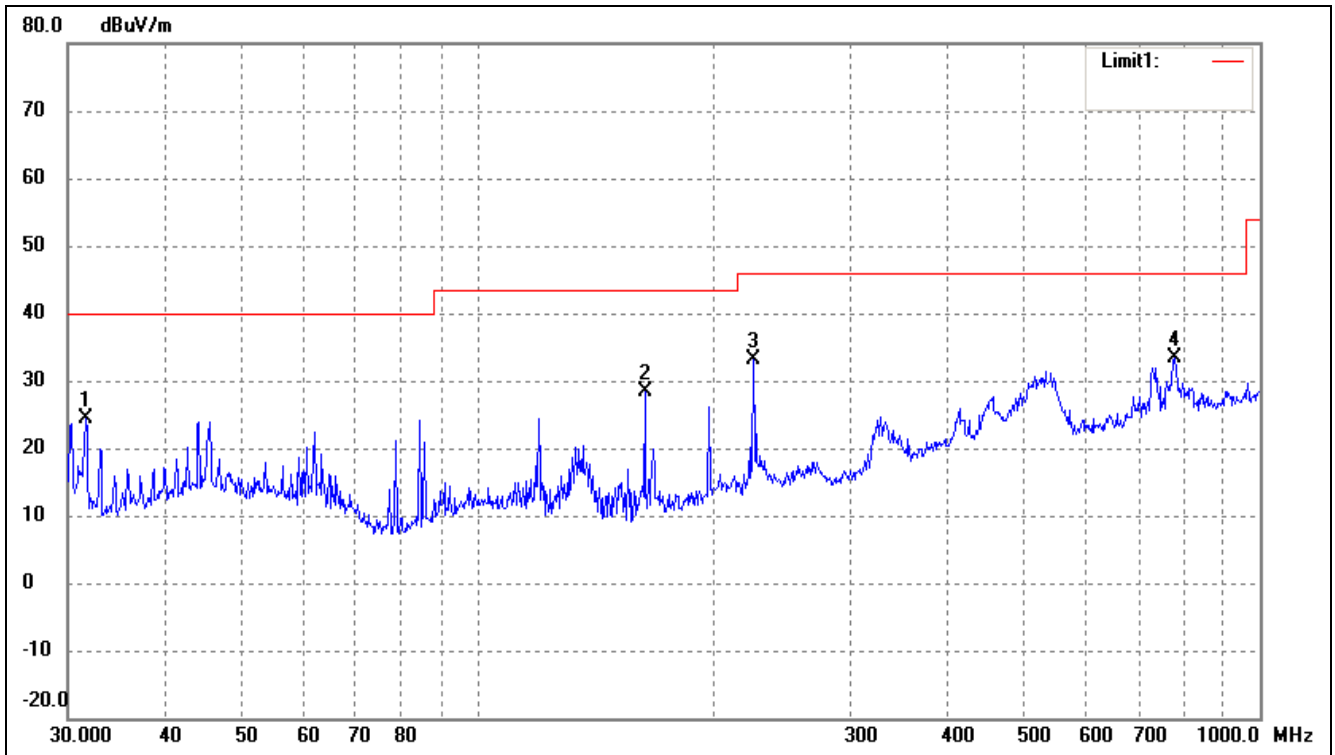
EUT: *Wifi Wireless Rearview System*
 Tested Model: *DIY-WF-4.3"(C80)*
 Operating Condition: *802.11g Transmitting Low Channel-2412MHz*
 Comment: *DC12V*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	119.8556	42.84	-11.25	31.59	43.50	-11.91	254	100	peak
2	167.8243	44.02	-11.95	32.07	43.50	-11.43	153	100	peak
3	411.8240	42.02	-2.65	39.37	46.00	-6.63	28	100	peak
4	752.7432	36.54	1.12	37.66	46.00	-8.34	360	100	peak

Test Specification: Vertical

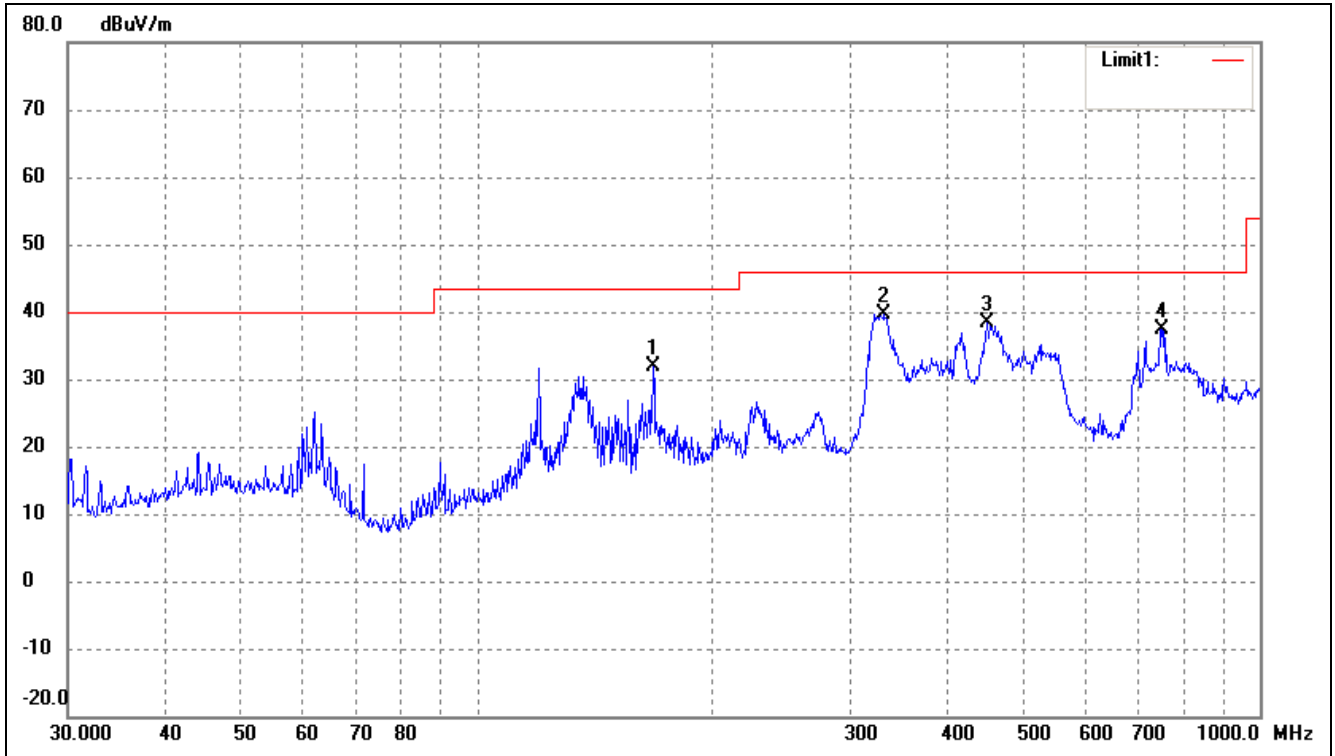


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	31.6202	35.04	-10.59	24.45	40.00	-15.55	114	100	peak
2	163.7550	40.51	-12.15	28.36	43.50	-15.14	270	100	peak
3	225.3080	41.71	-8.61	33.10	46.00	-12.90	360	100	peak
4	776.8778	30.09	3.40	33.49	46.00	-12.51	116	100	peak

Operating Condition: 802.11g Transmitting Middle Channel-2442MHz

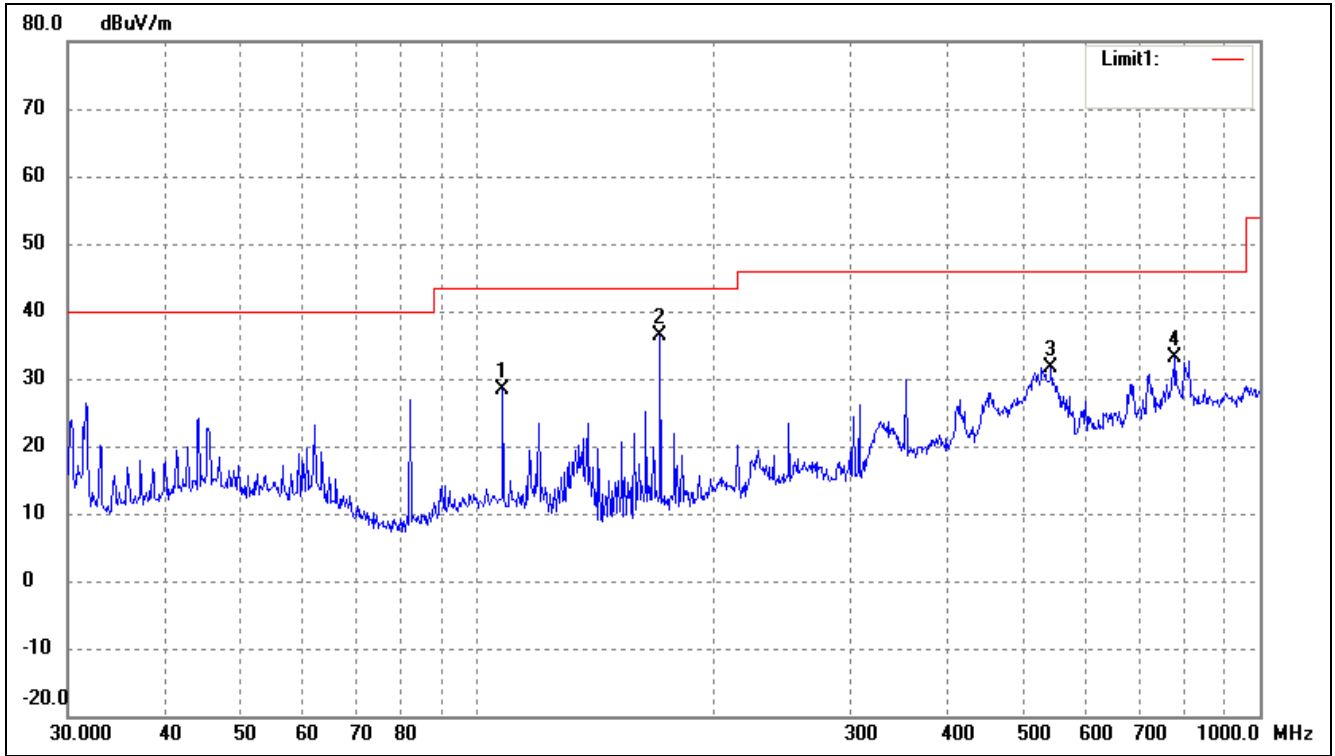
Comment: DC12V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	167.8243	43.91	-11.95	31.96	43.50	-11.54	178	100	peak
2	331.3546	44.69	-4.94	39.75	46.00	-6.25	224	100	peak
3	447.9822	40.59	-2.19	38.40	46.00	-7.60	160	100	peak
4	750.1083	36.47	1.03	37.50	46.00	-8.50	290	100	peak

Test Specification: Vertical

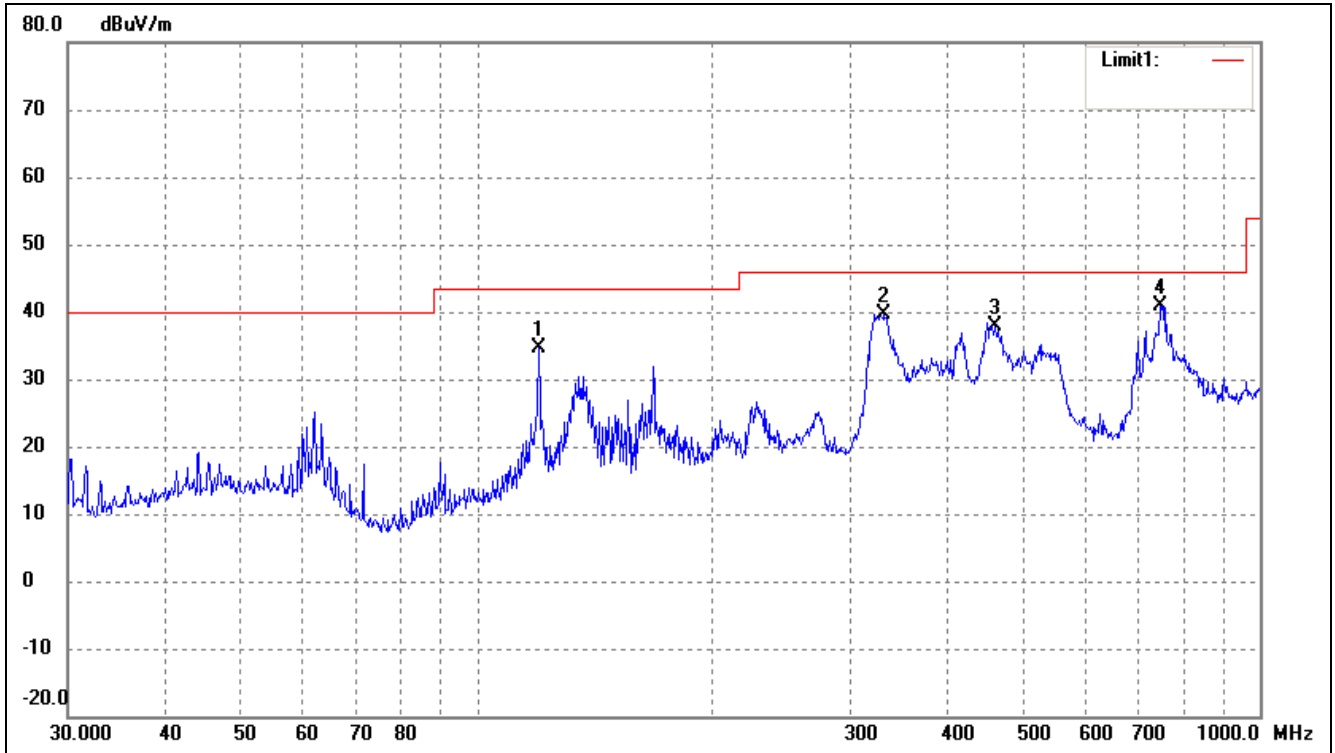


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	107.8877	38.02	-9.59	28.43	43.50	-15.07	256	100	peak
2	171.3926	48.03	-11.74	36.29	43.50	-7.21	360	100	peak
3	541.3725	31.80	-0.07	31.73	46.00	-14.27	345	100	peak
4	779.6068	29.65	3.44	33.09	46.00	-12.91	245	100	peak

Operating Condition: 802.11g Transmitting High Channel-2472MHz

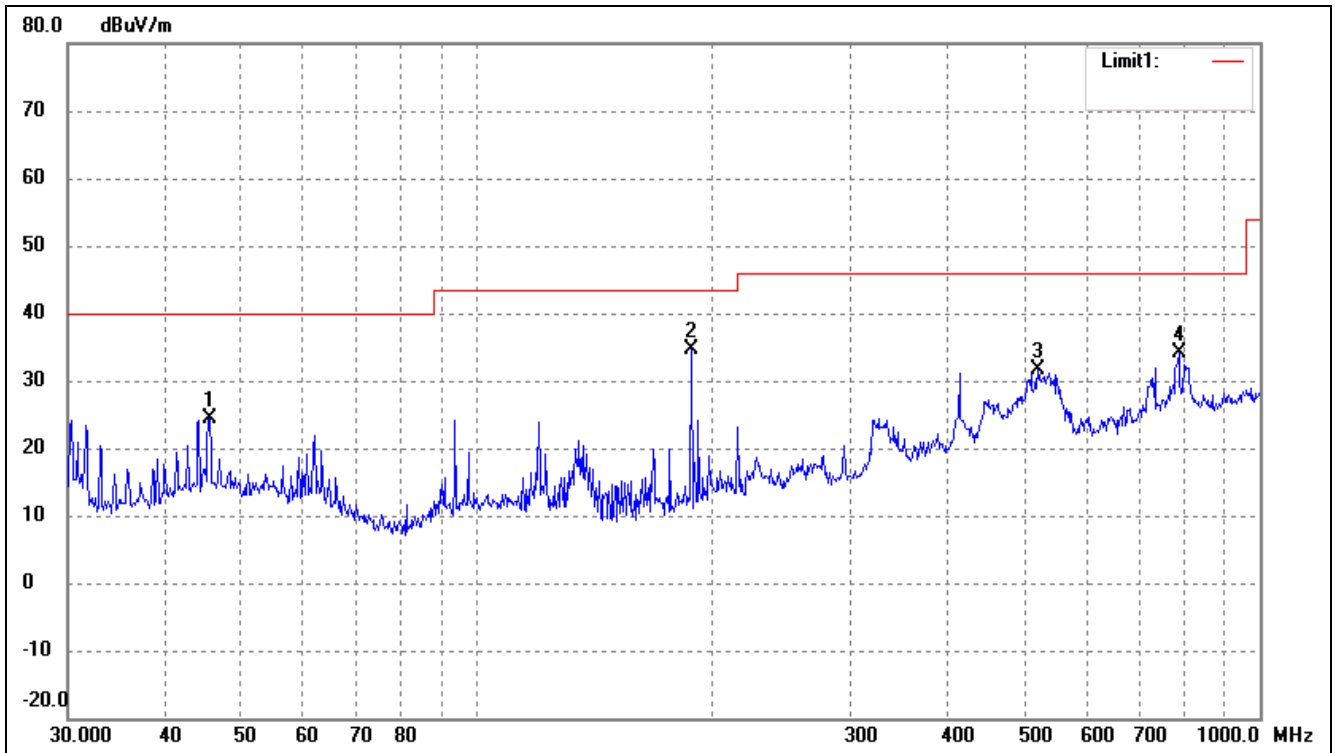
Comment: DC12V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	119.8555	45.85	-11.25	34.60	43.50	-8.90	176	100	peak
2	331.3546	44.69	-4.94	39.75	46.00	-6.25	255	100	peak
3	459.1143	39.84	-2.07	37.77	46.00	-8.23	37	100	peak
4	744.8660	40.17	0.83	41.00	46.00	-5.00	178	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	45.5348	31.77	-7.46	24.31	40.00	-15.69	360	100	peak
2	187.7530	44.96	-10.30	34.66	43.50	-8.84	225	100	peak
3	520.8882	32.18	-0.60	31.58	46.00	-14.42	160	100	peak
4	787.8513	30.49	3.55	34.04	46.00	-11.96	310	100	peak

Test Mode: 802.11g

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Low Channel-2412MHz							
4824.000	55.50	-3.86	51.64	74.00	-22.36	H	PK
4824.000	42.23	-3.86	38.37	54.00	-15.63	H	AV
7236.000	48.42	1.10	49.52	74.00	-24.48	H	PK
7236.000	34.40	1.10	35.50	54.00	-18.50	H	AV
4824.000	55.99	-3.86	52.13	74.00	-21.87	V	PK
4824.000	42.65	-3.86	38.79	54.00	-15.21	V	AV
7236.000	49.22	1.10	50.32	74.00	-23.68	V	PK
7236.000	35.54	1.10	36.64	54.00	-17.36	V	AV
Middle Channel-2442MHz							
4884.000	55.10	-3.74	51.36	74.00	-22.64	H	PK
4884.000	43.28	-3.74	39.54	54.00	-14.46	H	AV
7326.000	47.38	1.47	48.85	74.00	-25.15	H	PK
7326.000	35.27	1.47	36.74	54.00	-17.26	H	AV
4884.000	57.07	-3.74	53.33	74.00	-20.67	V	PK
4884.000	43.86	-3.74	40.12	54.00	-13.88	V	AV
7326.000	48.40	1.47	49.87	74.00	-24.13	V	PK
7326.000	35.33	1.47	36.80	54.00	-17.20	V	AV
High Channel-2472MHz							
4944.000	54.00	-3.59	50.41	74.00	-23.59	H	PK
4944.000	40.75	-3.59	37.16	54.00	-16.84	H	AV
7416.000	47.18	1.79	48.97	74.00	-25.03	H	PK
7416.000	34.73	1.79	36.52	54.00	-17.48	H	AV
4944.000	56.11	-3.59	52.52	74.00	-21.48	V	PK
4944.000	42.69	-3.59	39.10	54.00	-14.90	V	AV
7416.000	48.58	1.79	50.37	74.00	-23.63	V	PK
7416.000	35.95	1.79	37.74	54.00	-16.26	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz.

9. Out of Band Emissions

9.1 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).

9.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23

9.3 Test Procedure

According to the KDB 558074D01 v03r02, the band-edge radiated test method as follows:

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.

According to the KDB 558074 D01 V03r02, the conducted spurious emissions test method as follows:

1. Set start frequency to DTS channel edge frequency.
2. Set stop frequency so as to encompass the spectrum to be examined.
3. Set RBW = 100 kHz.
4. Set VBW \geq 300 kHz.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
9. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

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.

9.4 Environmental Conditions

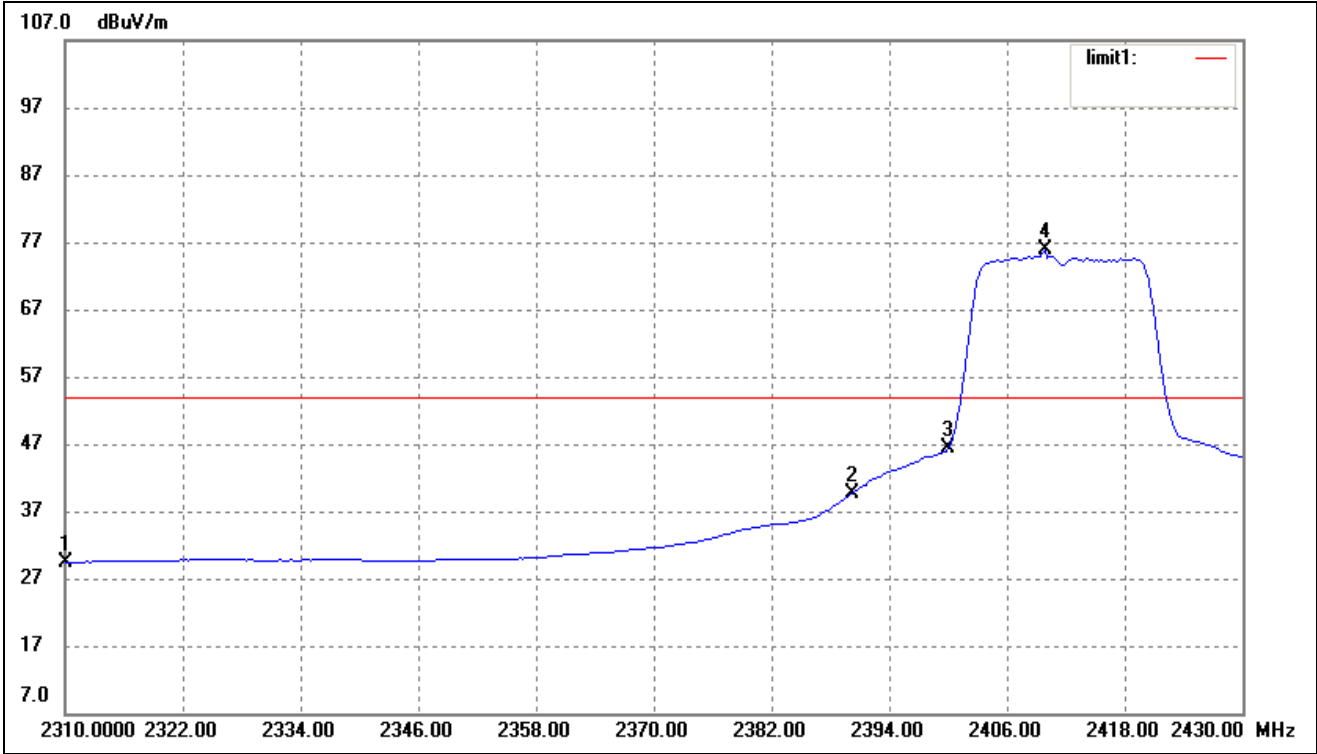
Temperature:	23°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

9.5 Summary of Test Results/Plots

Please refer to the test plots as below.

802.11g-Lowest Bandedge

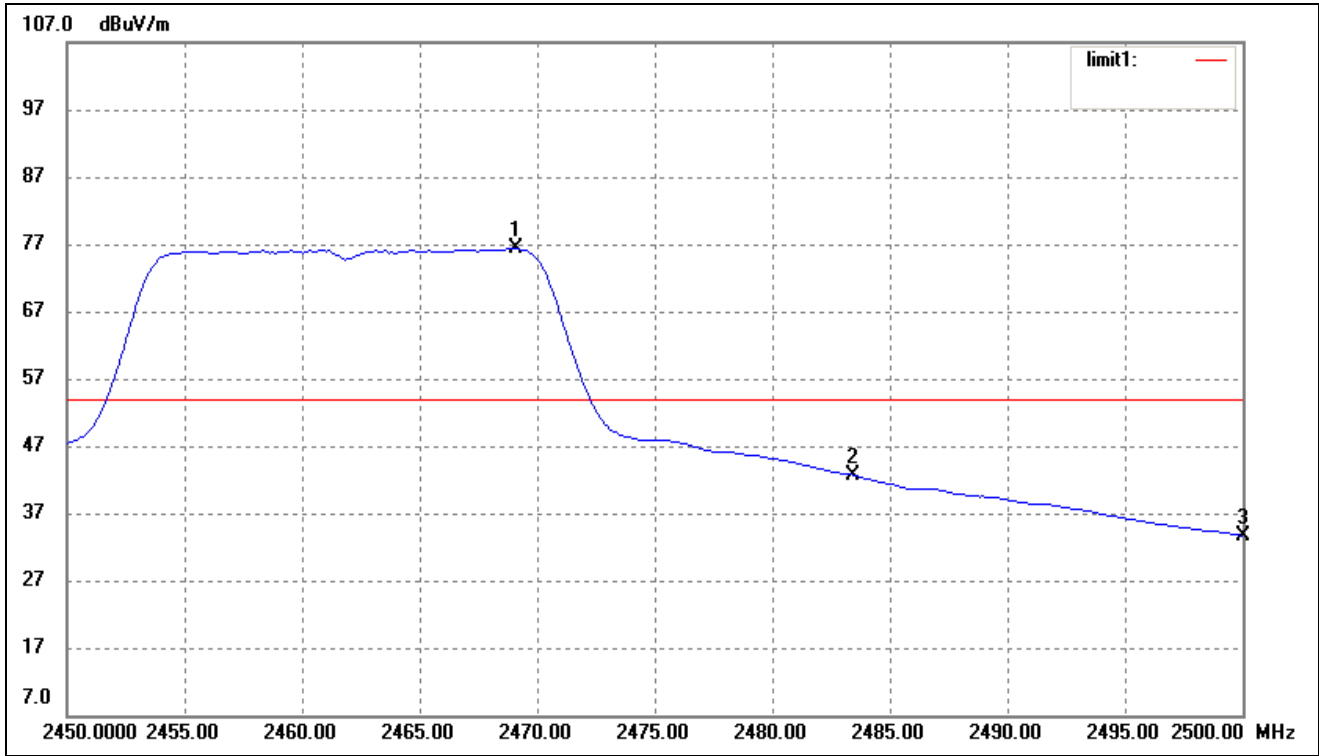
Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	33.12	-3.71	29.41	54.00	-24.59	Average Detector
		45.83	-3.71	42.12	74.00	-31.88	Peak Detector
2	2390.000	43.19	-3.54	39.65	54.00	-14.35	Average Detector
		67.35	-3.54	63.81	74.00	-10.19	Peak Detector
3	2400.000	49.90	-3.51	46.39	Delta = 29.44 dBc		Average Detector
4	2409.901	79.31	-3.48	75.83			Average Detector

802.11g-Highest Bandedge

Vertical (Worst case)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2469.180	79.67	-3.35	76.32	/	/	Average Detector
	2469.180	93.27	-3.36	89.91	/	/	Peak Detector
2	2483.500	Delta = 41.96dBc		34.36	54.00	-19.64	Average Detector
	2483.500			57.95	74.00	-16.05	Peak Detector
3	2500.000	36.98	-3.28	33.70	54.00	-20.30	Average Detector
	2500.000	65.23	-3.28	61.95	74.00	-12.05	Peak Detector

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