JQA File No. : 400-140079
Issue Date : August 7, 2014

TEST REPORT

Applicant	:	ALPINE ELECTRONICS, INC.
Address	:	20-1 Yoshima-Kogyodanchi Iwaki-city, Fukushima 970-1192 JAPAN
Products	:	Wi-Fi Module
Model No.	:	AFT-RW404
Serial No.	:	-
Test Standard	:	FCC Part 15 / RSS-210, Issue 8
Test Results	:	Passed
Date of Test	:	July 29, 2014 – August 7, 2014

H. Kajiwara

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ilac-MRA VLAC Lab Accreditation VLAC-001-1

- The measurement values stated in Test Report was made with traceable to National Institute of Advanced Industrial Science and Technology (AIST) of Japan and National Institute of Information and Communications Technology (NICT) of Japan.
- The applicable standard, testing condition and testing method which were used for the tests are based on the request of the applicant.
- The test results presented in this report relate only to the offered test sample.
- The contents of this test report cannot be used for the purposes, such as advertisement for consumers.
- This test report shall not be reproduced except in full without the written approval of JQA.
- VLAC does not approve, certify or warrant the product by this test report.

Table of Contents

Definitions for Abbreviation and Symbols Used In This Test Report

"EUT" means Equipment Under the Test.
"AE" means Associated Equipment.
"N/A" means that Not Applicable.
"N/T" means that Not Tested.

☒ - indicates that the listed condition, standard or equipment is applicable for this report.
☐ - indicates that the listed condition, standard or equipment is not applicable for this report.

1 Description of the Equipment Under Test

1	Manufacturer	:	Alpine Electronics, Inc. 20-1 Yoshima-Kogyodanchi Iwaki-city, Fukushima 970-1192 JAPAN
2	Products	:	Wi-Fi Module
3	Model No.	:	AFT-RW404
4	Product Type	:	Prototype
5	Date of Manufacture	:	-
6	Power Rating	:	3.3 VDC
7	Grounding	:	None
8	Transmitting Frequency	:	2412.0 MHz(01CH) –2462.0MHz(11CH)
9	Receiving Frequency	:	2412.0 MHz(01CH) –2462.0MHz(11CH)
10	Max. RF Output Power	:	13.62 dBm(Measure Value of IEEE 802.11b) 18.67 dBm(Measure Value of IEEE 802.11g) 18.78 dBm(Measure Value of IEEE 802.11n Guard Interval 800ns) 18.40 dBm(Measure Value of IEEE 802.11n Guard Interval 400ns)
11	Antenna Type	:	PCB F-inverted antenna (Integral)
12	Antenna Gain	:	-4.48 dBi
13	Category	:	DTS
14	EUT Authorization	:	Certification
15	Received Date of EUT	:	July 29, 2014
16	Channel Plan	:	The carrier spacing is 5 MHz. The carrier frequency is designated by the absolute frequency channel number (ARFCN). The carrier frequency is expressed in the equation shown as follows: Transmitting Frequency (in MHz) = 2407.0 + 5*n Receiving Frequency (in MHz) = 2407.0 + 5*n where, n : channel number ($1 \leq n \leq 11$)

2 Summary of Test Results

Applied Standard : CFR 47 FCC Rules and Regulations Part 15
Subpart C – Intentional Radiators
Industry Canada RSS-210, Issue 8

The EUT described in clause 1 was tested according to the applied standard shown above.
Details of the test configuration is shown in clause 6.
The conclusion for the test items of which are required by the applied standard is indicated under the test result.

☒ - The test result was **passed** for the test requirements of the applied standard.

☐ - The test result was **failed** for the test requirements of the applied standard.

☐ - The test result was **not judged** the test requirements of the applied standard.

In the approval of test results,
- Determining compliance with the limits in this report was based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- No deviations were employed from the applied standard.
- No modifications were conducted by JQA to achieve compliance to the limitations.

Reviewed by:

Yuichi Fukumoto
Advisor
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EMC Testing Div.

Tested by:

Naohiko Ueno
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3 Test Procedure

Test Requirements : FCC §15.247, §15.207 and §15.209
RSS-210 (Issue 8), RSS-Gen(Issue 3)

Test Procedure : ANSI C63.10–2009
The tests were performed with reference to the FCC KDB 558074 D01 DTS Meas. Guidance v03r02, released June 5, 2014.
The test set-up was made in accordance to the general provisions of ANSI C63.10-2009.

4 Test Location

Japan Quality Assurance Organization
SAFETY & EMC CENTER
Testing Dept.
EMC Testing Div.
1-21-25, Kinuta, Setagaya-ku, Tokyo 157-8573, Japan

5 Recognition of Test Laboratory

Japan Quality Assurance Organization, Safety & EMC Center Testing Dept. EMC Testing Div. is accredited under ISO/IEC 17025 by following accreditation bodies and the test facility of Testing Division is registered by the following bodies .

VLAC Code : VLAC-001-1 (Effective through : March 30, 2016)
VCCI Registration Number : A-0001 (Effective through : March 30, 2016)
FCC Registration Number : 349652 (Effective through : March 30, 2016)
IC Registration Number : 2079A-1, 2079A-2 (Effective through : October 23, 2015)
Accredited as conformity assessment body for Japan electrical appliances and material law by METI. (Effective through : February 22, 2016)

6 The Details of the Equipment Under Test

6.1 Test Configuration

The EUT consists of :

Sign	Item	Manufacturer	Model No.	Serial No.	FCC ID
A	Wi-Fi Module	Alpine Electronics, Inc.	AFT-RW404	-	A269ZUA143

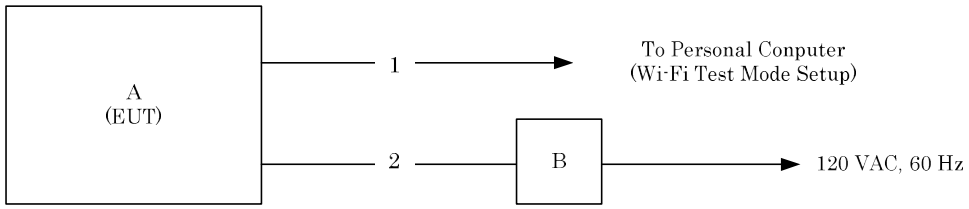
The AE used for testing :

Sign	Item	Manufacturer	Model No.	Serial No.	FCC ID
B	DC Power Supply	Kikusui Electronics Co., Ltd.	PAB18-25DU	30061305	N/A

Type of Cable used for testing :

No.	Description	Identification (Manu. etc.)	Connector Shielded	Cable Shielded	Ferrite Core	Length (m)
1	Control Cable	-	No	No	No	0.4
2	DC Power Cable	-	No	No	No	0.4
3	AC Power Cable	-	No	No	No	2.0

6.2 Test Arrangement (Drawings)



6.3 Operating Condition

Transmitting/Receiving
Transmitting frequency : 2412.0 MHz(1CH) – 2462.0 MHz(11CH)
Receiving frequency : 2412.0 MHz(1CH) – 2462.0 MHz(11CH)

Modulation Type
1. 802.11b : DSSS
2. 802.11g : OFDM
3. 802.11n : OFDM

The tests were performed in the following worst condition.

Mode	Condition
IEEE802.11b	1 Mbps
IEEE802.11g	36 Mbps
IEEE802.11n (GI800ns)	MCS3 (26 Mbps)
IEEE802.11n (GI400ns)	MCS4 (43.3 Mbps)

Note: The worst condition was determined based on the test result of Maximum Peak Output Power(Mid channel).
GI : Guard Interval

The EUT was rotated through three orthogonal axis (X, Y and Z axis) in radiated measurement.
The EUT with temporary antenna port was used in conducted measurement.

7 The Details of the Test Items

Test Item	FCC Specification	Reference of the Test Report	Results	Remarks
Channel Separation	Section 15.247(a)(1) RSS-210 A8.1(b)	-	-	-
Minimum Hopping Channel	Section 15.247(a)(1)(iii) RSS-210 A8.1(d)	-	-	-
Occupied Bandwidth	Section 15.247(a)(2) RSS-210 A8.2(a)	Section 7.3	Passed	-
Dwell Time	Section 15.247(a)(1)(iii) RSS-210 A8.1(d)	-	-	-
Peak Output Power (Conduction)	Section 15.247(b)(3)/ RSS-210 A8.4(4)	Section 7.5	Passed	-
Peak Power Density (Conduction)	Section 15.247(e) RSS-210 A8.2(b)	Section 7.6	Passed	-
Spurious Emissions (Conduction)	Section 15.247(d) RSS-210 A8.5	Section 7.7	Passed	-
AC Powerline Conducted Emission	Section 15.207 RSS-Gen 7.2.4	-	-	-
Radiated Emission	Section 15.247(d) RSS-Gen 7.2.2, RSS-Gen 6	Section 7.9	Passed	-
Maximum Permissible Exposure	Section 2.1093 RSS-102	Section 7.10	Passed	-

7.1 Channel Separation

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☒ - Not Applicable

7.2 Minimum Hopping Channel

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☒ - Not Applicable

7.3 Occupied Bandwidth

For the requirements, ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

For the limits, ☒ - **Passed** ☐ - **Failed** ☐ - **Not judged**

7.3.1 Worst Point and Measurement Uncertainty

The 99% Bandwidth of IEEE 802.11b is	15.3	MHz	at	2412.0	MHz
The 99% Bandwidth of IEEE 802.11g is	16.4	MHz	at	2412.0	MHz
The 99% Bandwidth of IEEE 802.11n(GI=800) is	17.6	MHz	at	2437.0	MHz
The 99% Bandwidth of IEEE 802.11n(GI=400) is	17.6	MHz	at	2412.0	MHz
The 6dB Bandwidth of IEEE 802.11b is	10.1	MHz	at	2412.0	MHz
The 6dB Bandwidth of IEEE 802.11g is	16.5	MHz	at	2412.0	MHz
The 6dB Bandwidth of IEEE 802.11n(GI=800) is	17.6	MHz	at	2437.0	MHz
The 6dB Bandwidth of IEEE 802.11n(GI=400) is	17.7	MHz	at	2412.0	MHz

Uncertainty of Measurement Results +/-0.9 %(2σ)

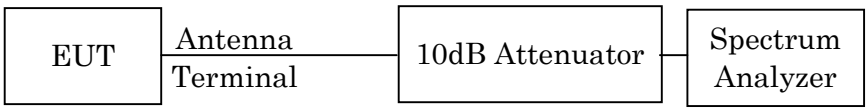
Remarks :

7.3.2 Test Site and Instruments

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Signal Analyzer	N9010A	Agilent Technologies	251	2013/11	1 Year
RF Cable	S 04272B	SUHNER	45	2014/5	1 Year
Attenuator	43KC-10	Anritsu	80	2013/10	1 Year
DC Power Supply	PAB18-25DU	KIKUSUI	-	N/A	N/A

7.3.3 Test Method and Test Setup (Diagrammatic illustration)

The test system is shown as follows:



The setting of the spectrum analyzer are shown as follows:

Res. Bandwidth	100 kHz
Video Bandwidth	300 kHz
Span	30 MHz
Sweep Time	AUTO
Trace	Maxhold

7.3.4 Test Data

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

The resolution bandwidth was set to 100 kHz, -6dBc display line was placed on the screen (or 99%bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

1) IEEE 802.11b / 1 Mbps (Worst case)

Cannel	Freqency (MHz)	99% Bandwidth (MHz)	-6dBc Bandwidth (MHz)	Minimum -6dBc Bandwidth Limit (kHz)
01	2412.0	15.3	10.1	500.0
06	2437.0	15.3	10.1	500.0
11	2462.0	15.3	10.1	500.0

2) IEEE 802.11g / 36 Mbps (Worst case)

Cannel	Freqency (MHz)	99% Bandwidth (MHz)	-6dBc Bandwidth (MHz)	Minimum -6dBc Bandwidth Limit (kHz)
01	2412.0	16.4	16.5	500.0
06	2437.0	16.4	16.5	500.0
11	2462.0	16.4	16.5	500.0

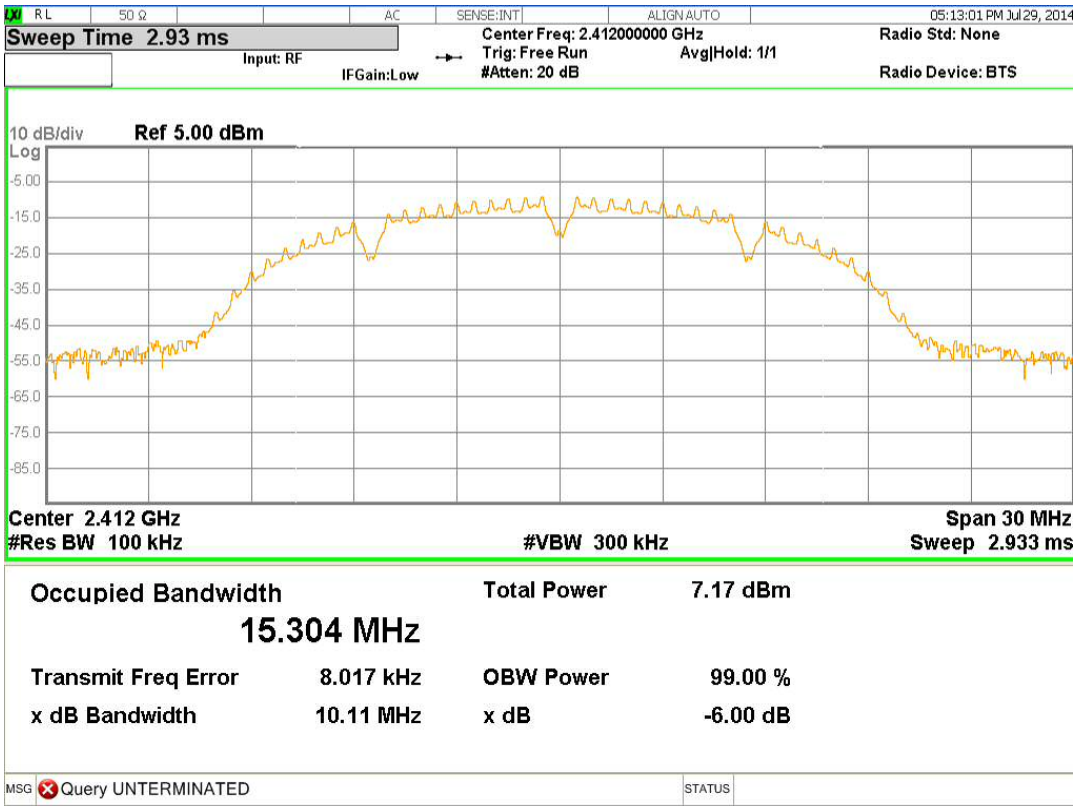
3) IEEE 802.11n(GI=800) / 26 Mbps (Worst case)

Cannel	Freqency (MHz)	99% Bandwidth (MHz)	-6dBc Bandwidth (MHz)	Minimum -6dBc Bandwidth Limit (kHz)
01	2412.0	17.5	17.6	500.0
06	2437.0	17.6	17.6	500.0
11	2462.0	17.5	17.4	500.0

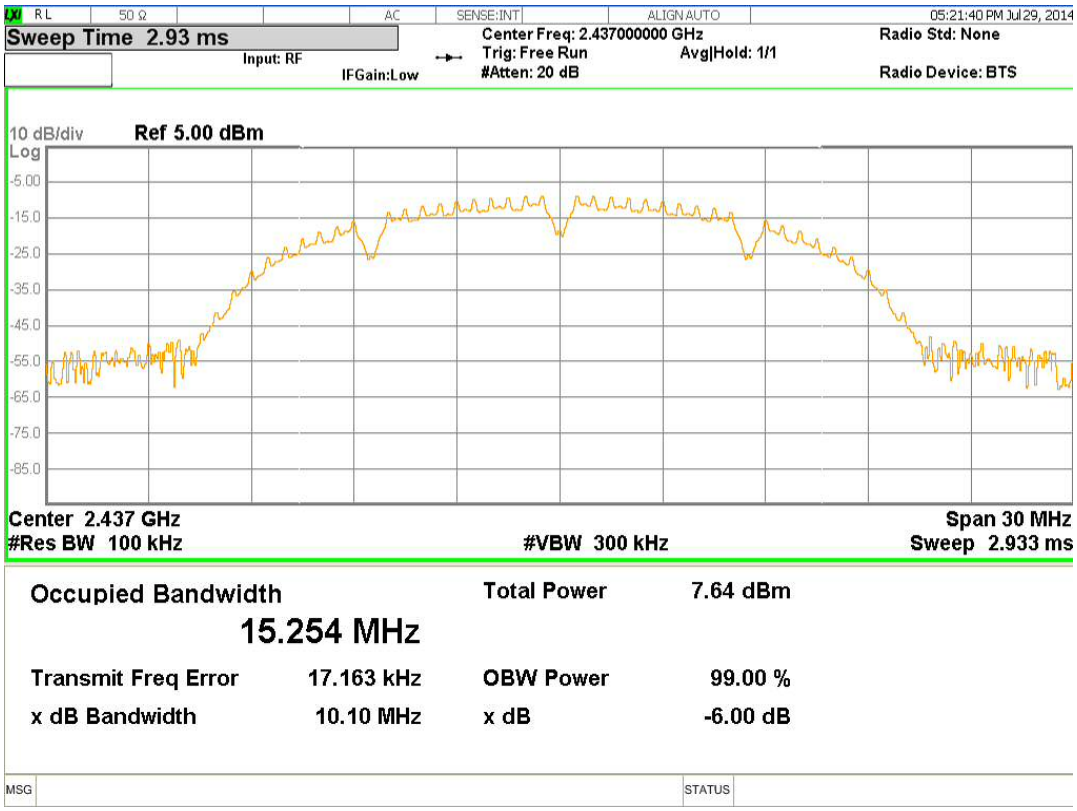
4) IEEE 802.11n(GI=400) / 43.3 Mbps (Worst case)

Cannel	Freqency (MHz)	99% Bandwidth (MHz)	-6dBc Bandwidth (MHz)	Minimum -6dBc Bandwidth Limit (kHz)
01	2412.0	17.6	17.7	500.0
06	2437.0	17.5	17.5	500.0
11	2462.0	17.6	17.6	500.0

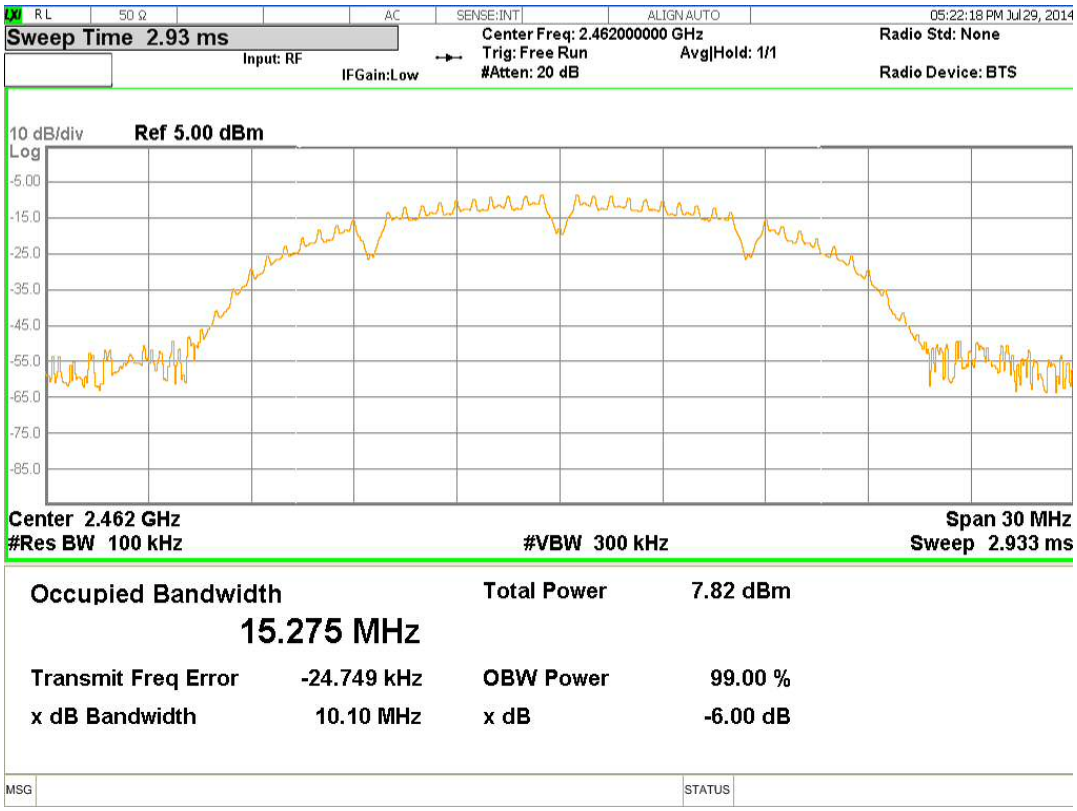
1)IEEE 802.11b



Low Channel

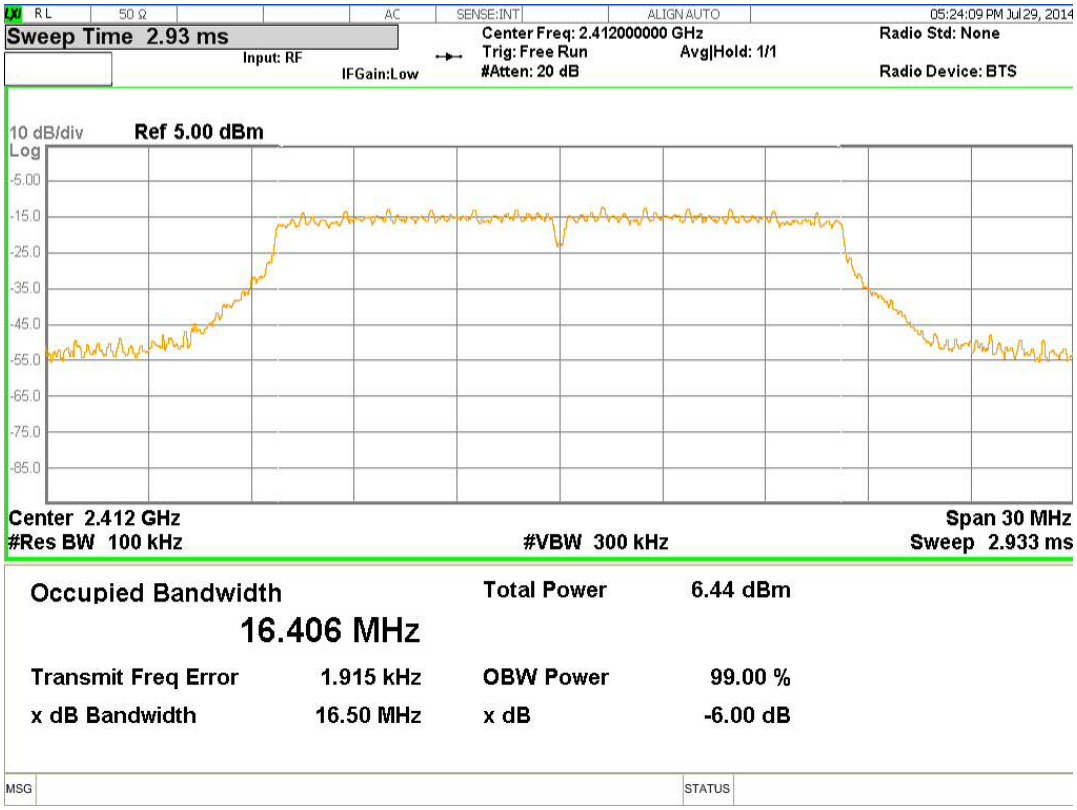


Middle Channel

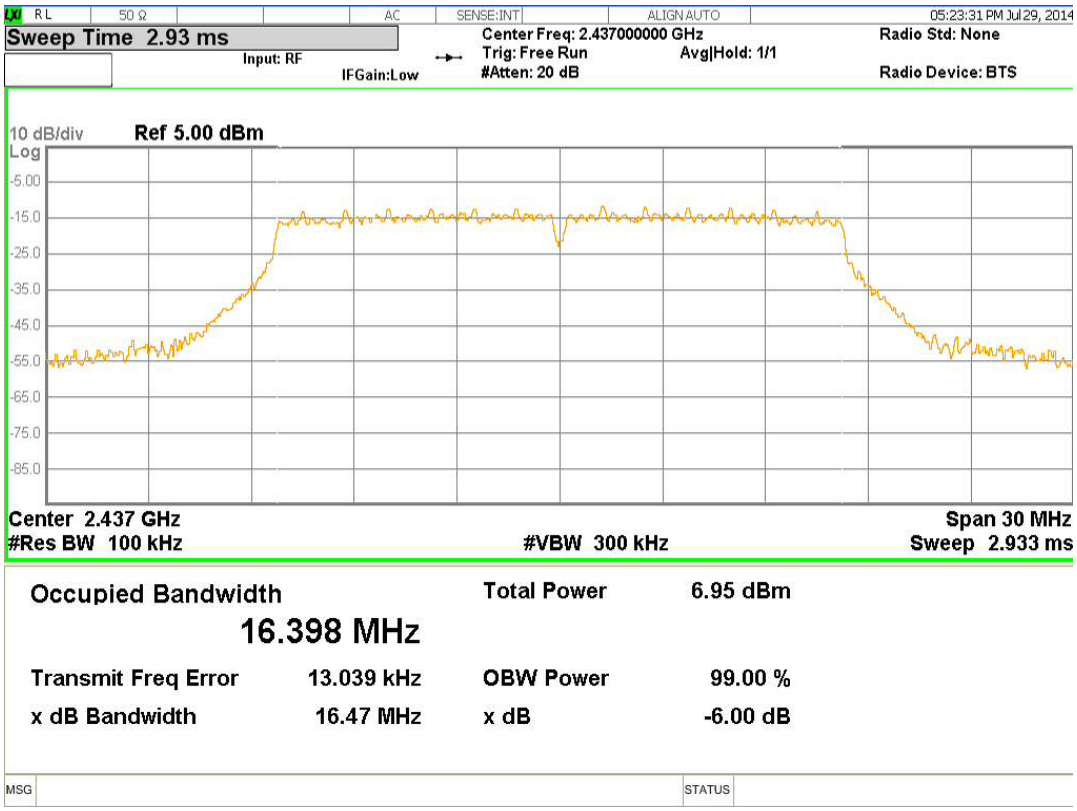


High Channel

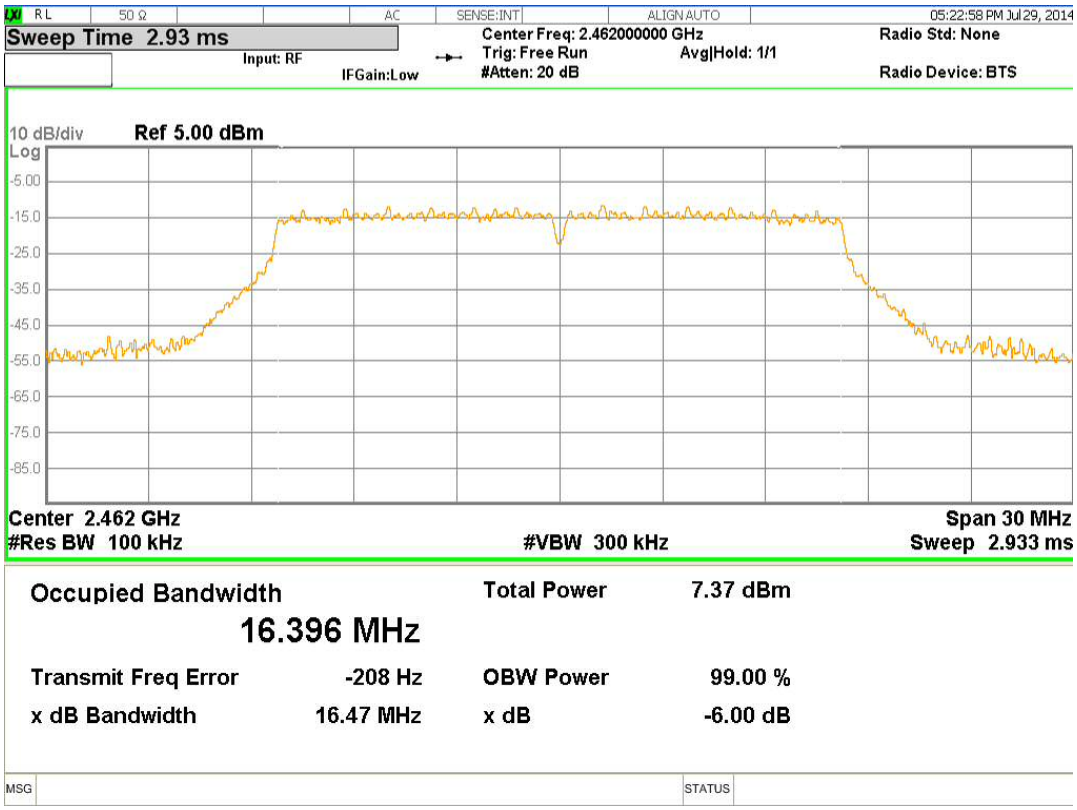
2)IEEE 802.11g



Low Channel

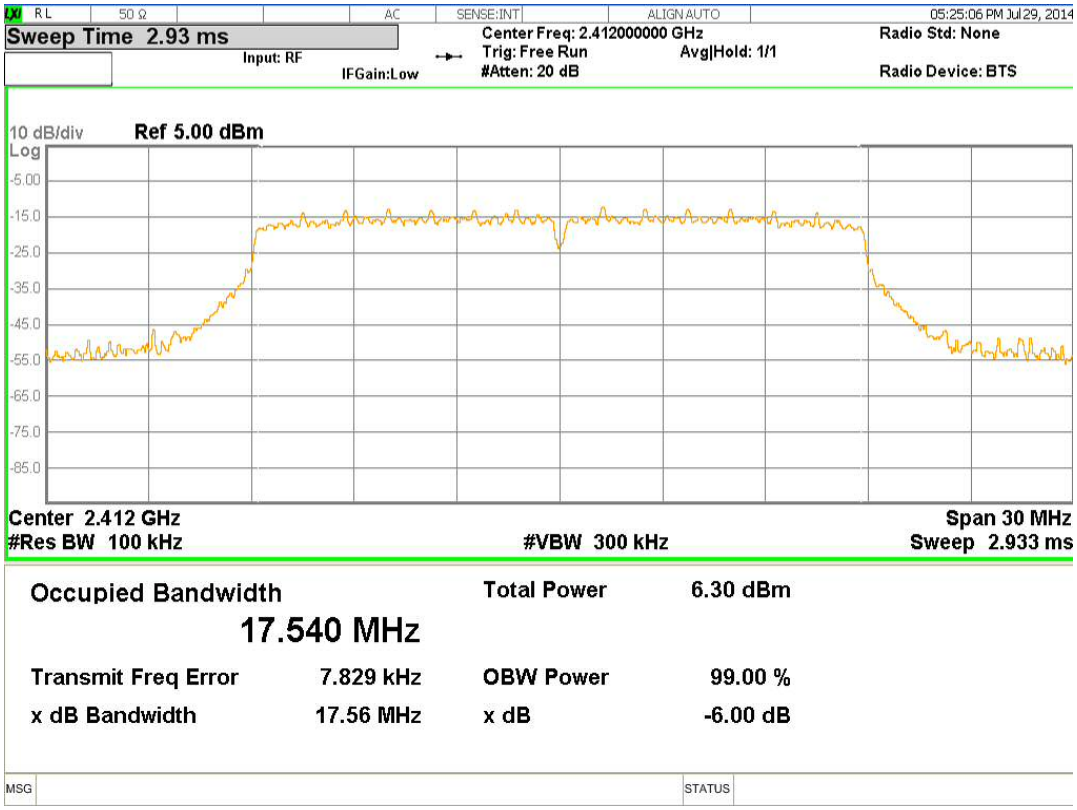


Middle Channel

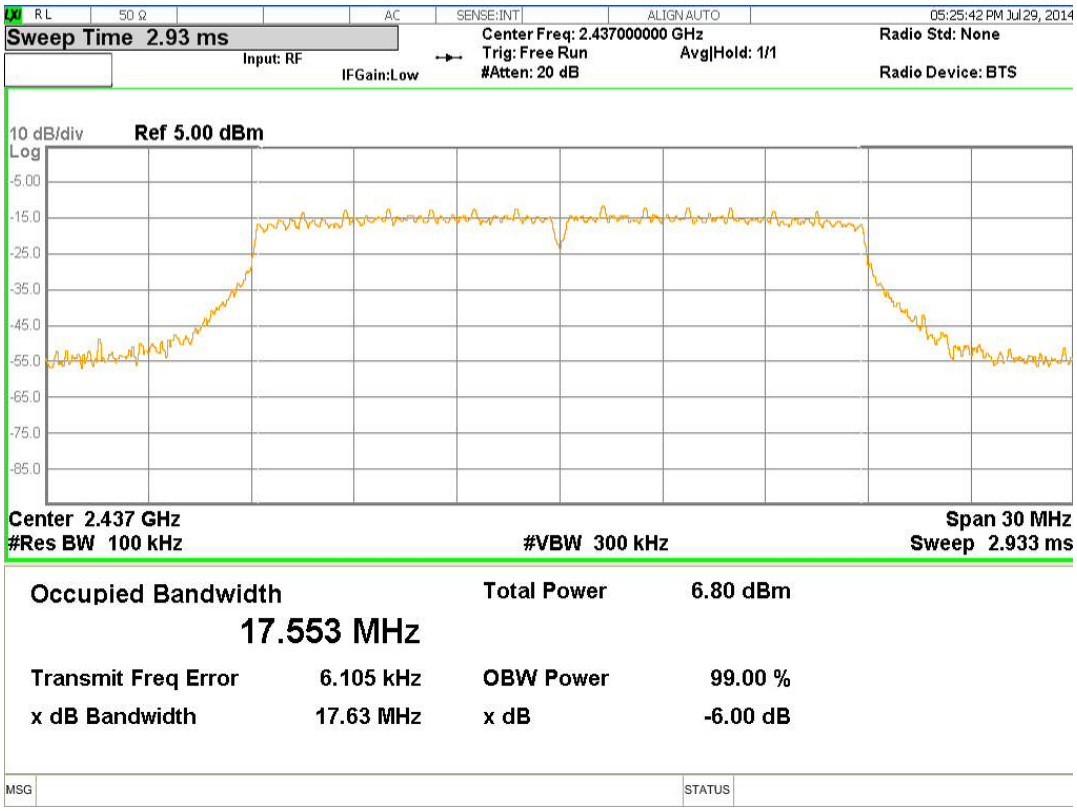


High Channel

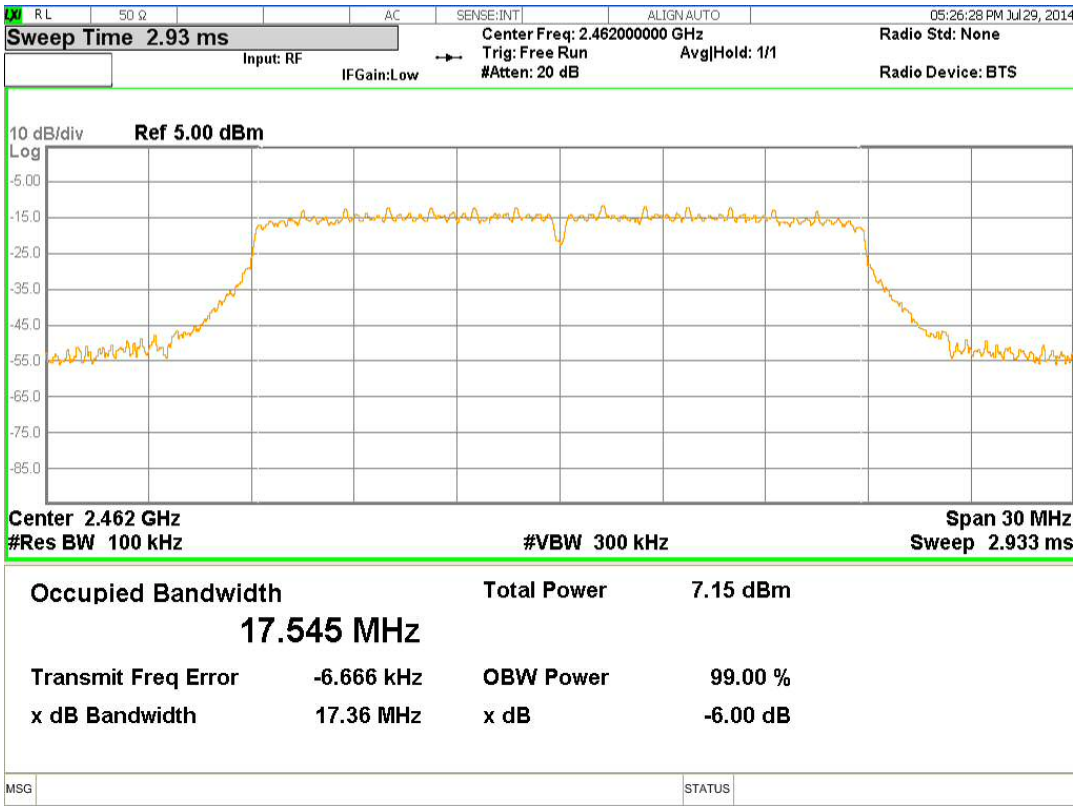
3)IEEE 802.11n (GI=800)



Low Channel

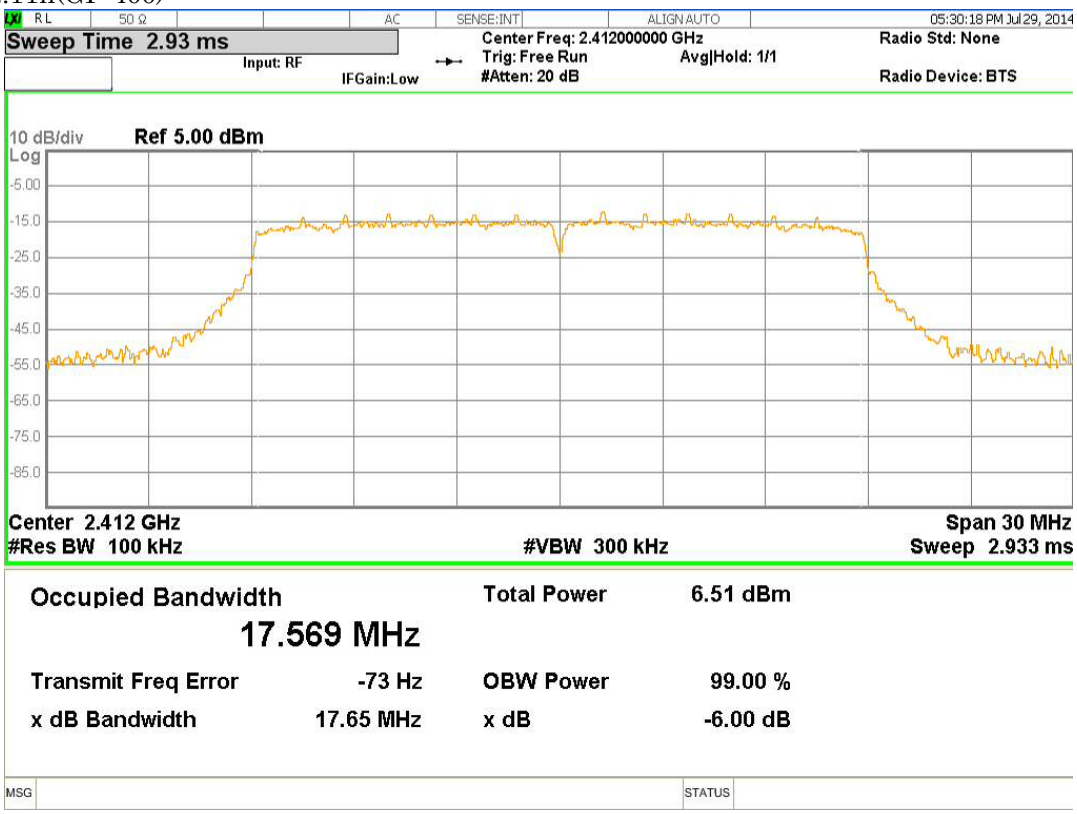


Middle Channel

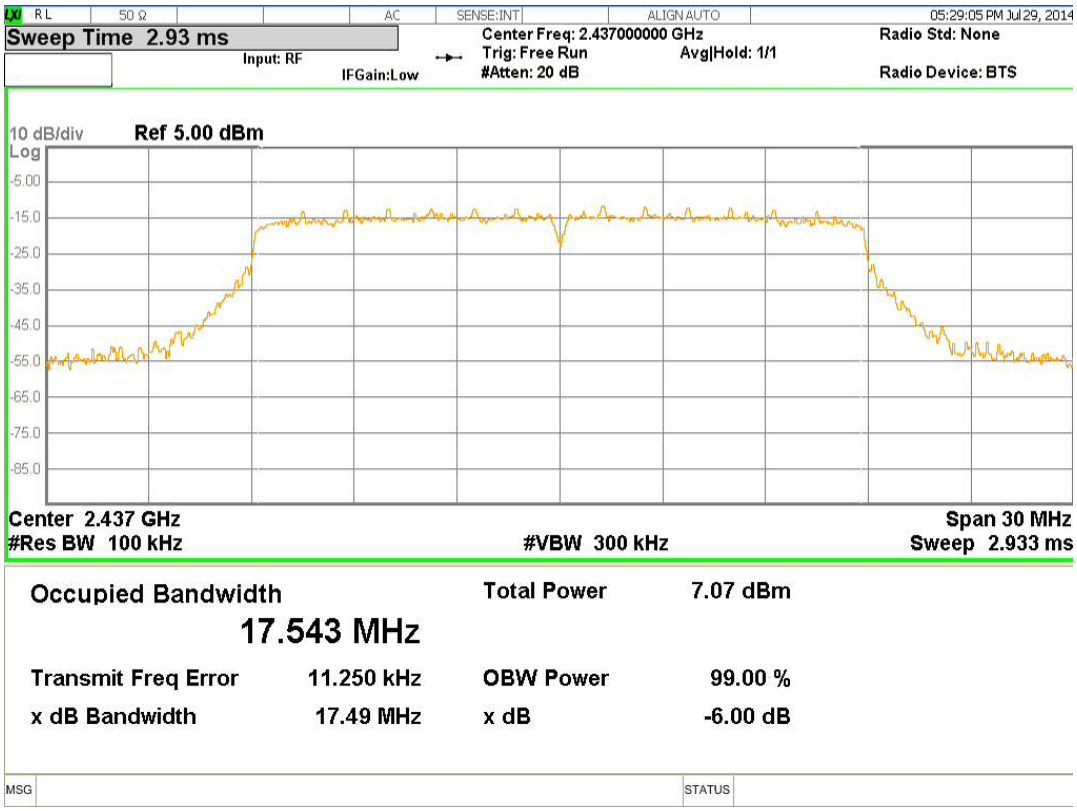


High Channel

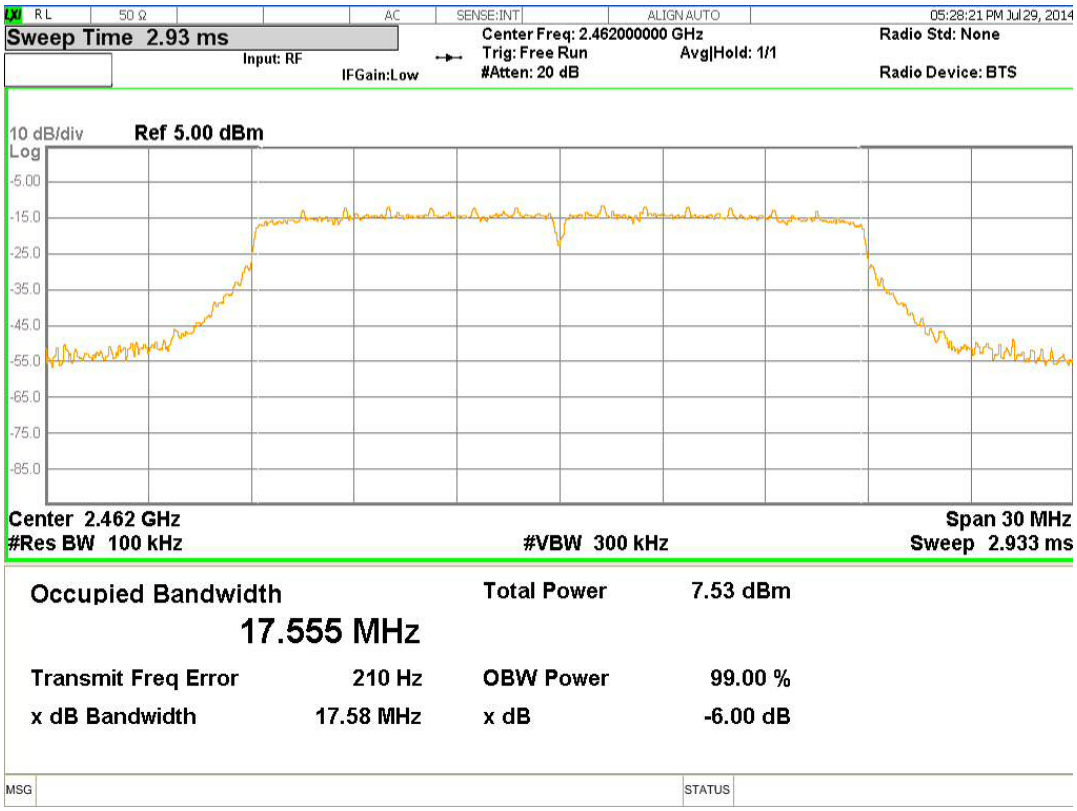
4)IEEE 802.11n(GI=400)



Low Channel



Middle Channel



High Channel

7.4 Dwell Time

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☒ - Not Applicable

7.5 Peak Output Power(Conduction)

For the requirements, ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

For the limits, ☒ **- Passed** ☐ **- Failed** ☐ **- Not judged**

7.5.1 Worst Point and Measurement Uncertainty

Peak Output Power of IEEE 802.11b is	13.62	dBm	at	2437.0	MHz
Peak Output Power of IEEE 802.11g is	18.67	dBm	at	2462.0	MHz
Peak Output Power of IEEE 802.11n(GI=800) is	18.78	dBm	at	2462.0	MHz
Peak Output Power of IEEE 802.11n(GI=400) is	18.40	dBm	at	2462.0	MHz

Uncertainty of Measurement Results at Amplitude +/-0.8 dB(2σ)

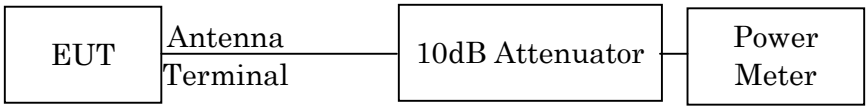
Remarks : _____

7.5.2 Test Site and Instruments

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Power Meter	ML2495A	Anritsu	210	2013/12	1 Year
Power Sensor	MA2491A	Anritsu	211	2013/12	1 Year
RF Cable	S 04272B	SUHNER	45	2014/5	1 Year
Attenuator	43KC-10	Anritsu	80	2013/10	1 Year

7.5.3 Test Method and Test Setup (Diagrammatic illustration)

The Conducted RF Power Output was measured with a power meter, one 10dB attenuator and a short, low loss cable.



7.5.4 Test Data

Mode of EUT : IEEE 802.11b
Data Rate : 1 Mbps

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Transmitting Freqency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
Ch	(MHz)	(dB)	(dBm)	(dBm)	(mW)	(dBm)	(dB)
01	2412	11.22	1.57	12.79	19.01	30.00	17.21
06	2437	11.22	2.40	13.62	23.01	30.00	16.38
11	2462	11.22	2.34	13.56	22.70	30.00	16.44

Calculated result at 2437 MHz, as the worst point shown on underline:

Correction Factor	=	11.22	dB			
+) Meter Reading	=	2.40	dBm			
Result	=	13.62	dBm	=	23.01	mW

Minimum Margin: 30.00 - 13.62 = 16.38 (dB)

Notes

1. The correction factor shows the attenuation pad loss including the cable loss.
2. Setting of measuring instrument(s) :

Detector Function	Video B.W
Peak	OFF

The maximum rate were determined the following mesurement result;

TX 06 channel (2437 MHz)

TX Rate (Mbps)	1	2	5.5	11
Peak Output Power (dBm)	13.62	13.60	13.58	13.56

Then maxmum TX rate is 1 Mbps.

Mode of EUT : IEEE 802.11g
Data Rate : 36 Mbps

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Transmitting Freqency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
Ch	(MHz)	(dB)	(dBm)	(dBm)	(mW)	(dBm)	(dB)
01	2412	11.22	6.11	17.33	54.08	30.00	12.67
06	2437	11.22	7.32	18.54	71.45	30.00	11.46
11	2462	11.22	7.45	18.67	73.62	30.00	11.33

Calculated result at 2462 MHz, as the worst point shown on underline:

Correction Factor	=	11.22	dB		
+) Meter Reading	=	7.45	dBm		
Result	=	18.67	dBm	= 73.62	mW

Minimum Margin: 30.00 - 18.67 = 11.33 (dB)

Notes

1. The correction factor shows the attenuation pad loss including the cable loss.
2. Setting of measuring instrument(s) :

Detector Function	Video B.W
Peak	OFF

The maximum rate were determined the following mesurement result;

TX 06 channel (2437 MHz)

TX Rate (Mbps)	6	9	12	18	24	36	48	54
Peak Output Power (dBm)	18.04	18.20	18.13	18.30	18.37	18.54	18.10	18.36

Then maxmum TX rate is 36 Mbps.

Mode of EUT : IEEE 802.11n(GI=800)
Data Rate : 26 Mbps

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Transmitting Freqency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
Ch	(MHz)	(dB)	(dBm)	(dBm)	(mW)	(dBm)	(dB)
01	2412	11.22	6.67	17.89	61.52	30.00	12.11
06	2437	11.22	7.30	18.52	71.12	30.00	11.48
11	2462	11.22	7.56	18.78	75.51	30.00	11.22

Calculated result at 2462 MHz, as the worst point shown on underline:

Correction Factor	=	11.22	dB		
+) Meter Reading	=	7.56	dBm		
Result	=	18.78	dBm	= 75.51	mW

Minimum Margin: 30.00 - 18.78 = 11.22 (dB)

Notes
1. The correction factor shows the attenuation pad loss including the cable loss.
2. Setting of measuring instrument(s) :

Detector Function	Video B.W
Peak	OFF

The maximum rate were determined the following mesurement result;
TX 06 channel (2437 MHz)

TX Rate (Mbps)	6.5	13	19.5	26	39	52	58.5	65
Peak Output Power (dBm)	17.97	18.20	17.85	18.52	17.08	17.12	16.33	16.79

Then maxmum TX rate is 26 Mbps.

Mode of EUT : IEEE 802.11n(GI=400)
Data Rate : 43.3 Mbps

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Transmitting Freqency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
Ch	(MHz)	(dB)	(dBm)	(dBm)	(mW)	(dBm)	(dB)
01	2412	11.22	6.21	17.43	55.34	30.00	12.57
06	2437	11.22	7.15	18.37	68.71	30.00	11.63
11	2462	11.22	7.18	18.40	69.18	30.00	11.60

Calculated result at 2462 MHz, as the worst point shown on underline:

Correction Factor	=	11.22	dB			
+) Meter Reading	=	7.18	dBm			
Result	=	18.40	dBm	=	69.18	mW

Minimum Margin: 30.00 - 18.40 = 11.60 (dB)

Notes

1. The correction factor shows the attenuation pad loss including the cable loss.
2. Setting of measuring instrument(s) :

Detector Function	Video B.W
Peak	OFF

The maximum rate were determined the following mesurement result;

TX 06 channel (2437 MHz)

TX Rate (Mbps)	7.2	14.4	21.7	28.9	43.3	57.8	65	72.2
Peak Output Power (dBm)	18.11	17.88	17.87	18.30	18.37	16.43	15.86	17.14

Then maxmum TX rate is 43.3 Mbps.

7.6 Peak Power Density(Conduction)

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☒ - Not Applicable

For the limits, ☒ - **Passed** ☐ - **Failed** ☐ - **Not judged**

7.6.1 Worst Point and Measurement Uncertainty

Peak Power Density of IEEE 802.11b is	-10.65	dBm	at	2437.0	MHz
Peak Power Density of IEEE 802.11g is	-15.23	dBm	at	2462.0	MHz
Peak Power Density of IEEE 802.11n(GI=800) is	-14.70	dBm	at	2437.0	MHz
Peak Power Density of IEEE 802.11n(GI=400) is	-15.46	dBm	at	2462.0	MHz

Uncertainty of Measurement Results at Amplitude +/-1.2 dB(2σ)

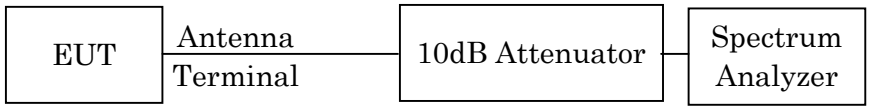
Remarks : _____

7.6.2 Test Site and Instruments

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Signal Analyzer	N9010A	Agilent Technologies	251	2013/11	1 Year
RF Cable	S 04272B	SUHNER	45	2014/5	1 Year
Attenuator	43KC-10	Anritsu	80	2013/10	1 Year
DC Power Supply	PAB18-25DU	KIKUSUI	-	N/A	N/A

7.6.3 Test Method and Test Setup (Diagrammatic illustration)

The Conducted RF Power Output was measured with a power meter, one 10dB attenuator and a short, low loss cable.



7.6.4 Test Data

Mode of EUT : IEEE 802.11b
Data Rate : 1 Mbps (Worst case)

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Ch	Transmitting Freqency (MHz)	Correction Factor (dB)	BWCF (dB)	Meter Reading (dBm)	Conducted Peak Power Density (dBm)	(mW)	Limits (dBm)	Margin (dB)
01	2412	11.22	-10.00	-12.94	-11.72	0.07	8.00	19.72
06	2437	11.22	-10.00	-11.87	-10.65	0.09	8.00	18.65
11	2462	11.22	-10.00	-12.18	-10.96	0.08	8.00	18.96

Calculated result at 2437 MHz, as the worst point shown on underline:

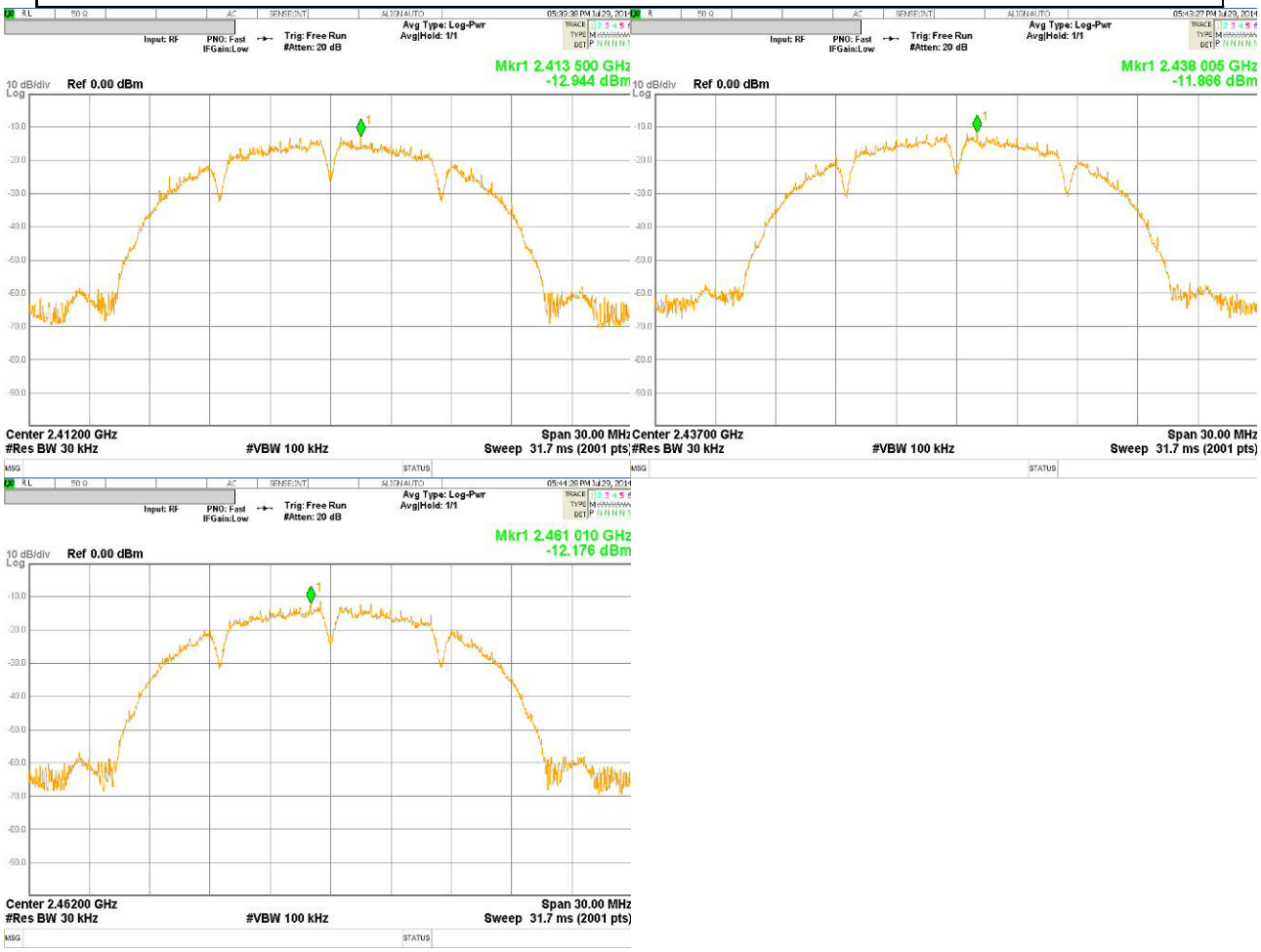
Correction Factor	=	11.22	dB		
BWCF	=	-10.00	dB		
+) Meter Reading	=	-11.87	dBm		
Result	=	-10.65	dBm	= 0.09	mW

Minimum Margin: 8.00 - -10.65 = 18.65 (dB)

Notes

1. The peak power density complied with the limit without BWCF.
2. The correction factor shows the attenuation pad loss including the cable loss.
3. BWCF(bandwidth correction factor) = 10 log (3 kHz/30 kHz) = -10.00 dB
4. Setting of measuring instrument(s) :

Detector Function	RES B.W.	Video B.W.
Peak	30kHz	100kHz



Mode of EUT : IEEE 802.11g
Data Rate : 36 Mbps (Worst case)

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Transmitting Ch	Freqency (MHz)	Correction Factor (dB)	BWCF (dB)	Meter Reading (dBm)	Conducted Peak Power Density (dBm)	(mW)	Limits (dBm)	Margin (dB)
01	2412	11.22	-10.00	-17.10	-15.88	0.03	8.00	23.88
06	2437	11.22	-10.00	-16.67	-15.45	0.03	8.00	23.45
11	2462	11.22	-10.00	-16.45	-15.23	0.03	8.00	23.23

Calculated result at 2462 MHz, as the worst point shown on underline:

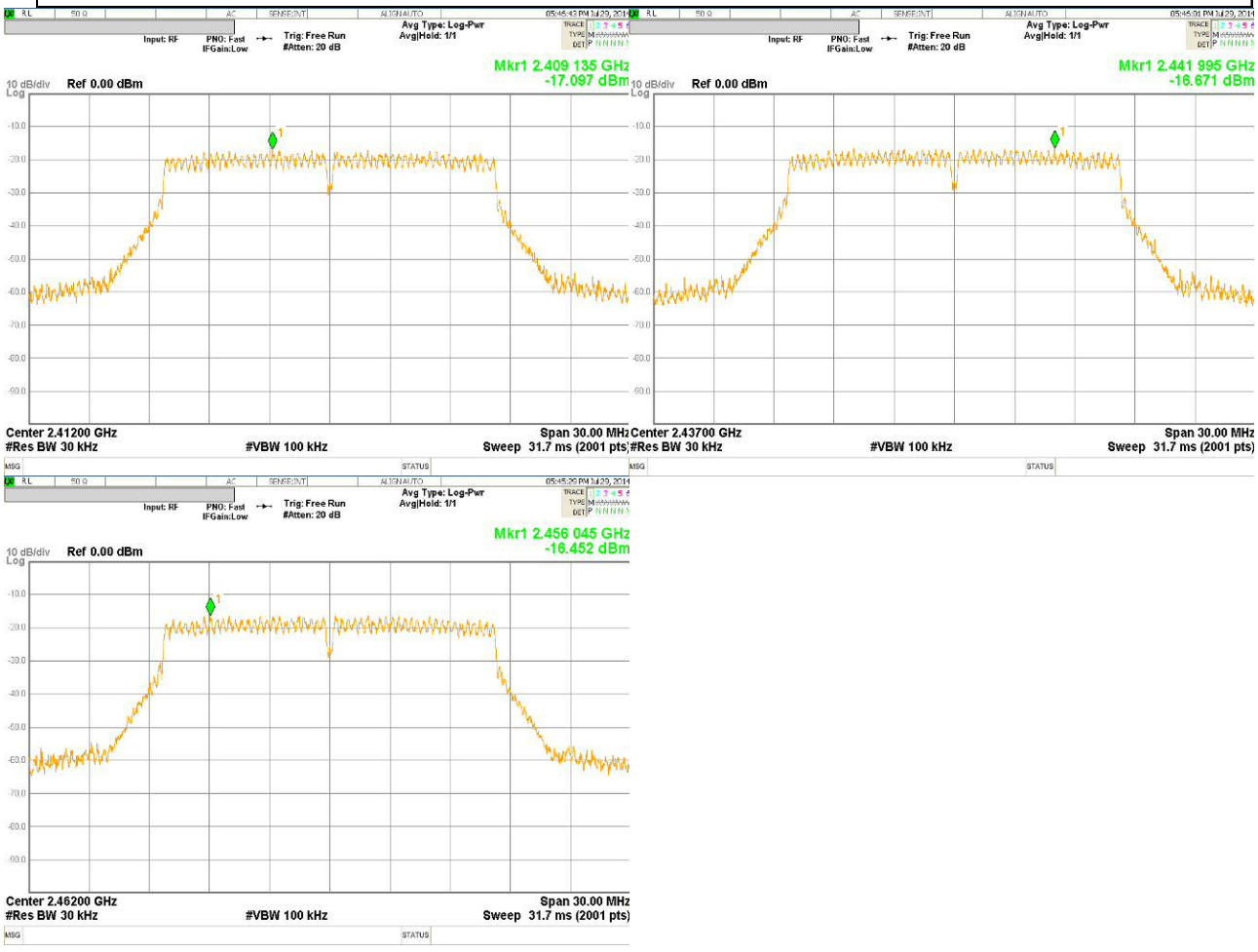
Correction Factor	=	11.22	dB		
BWCF	=	-10.00	dB		
+) Meter Reading	=	-16.45	dBm		
Result	=	-15.23	dBm	= 0.03	mW

Minimum Margin: 8.00 - -15.23 = 23.23 (dB)

Notes

1. The peak power density complied with the limit without BWCF.
2. The correction factor shows the attenuation pad loss including the cable loss.
3. BWCF(bandwidth correction factor) = 10 log (3 kHz/30 kHz) = -10.00 dB
4. Setting of measuring instrument(s) :

Detector Function	RES B.W.	Video B.W.
Peak	30kHz	100kHz



Mode of EUT : IEEE 802.11n(GI=800)
Data Rate : 26 Mbps (Worst case)

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Transmitting Ch	Freqency (MHz)	Correction Factor (dB)	BWCF (dB)	Meter Reading (dBm)	Conducted Peak Power Density (dBm)	(mW)	Limits (dBm)	Margin (dB)
01	2412	11.22	-10.00	-17.19	-15.97	0.03	8.00	23.97
06	2437	11.22	-10.00	-15.92	-14.70	0.03	8.00	22.70
11	2462	11.22	-10.00	-16.43	-15.21	0.03	8.00	23.21

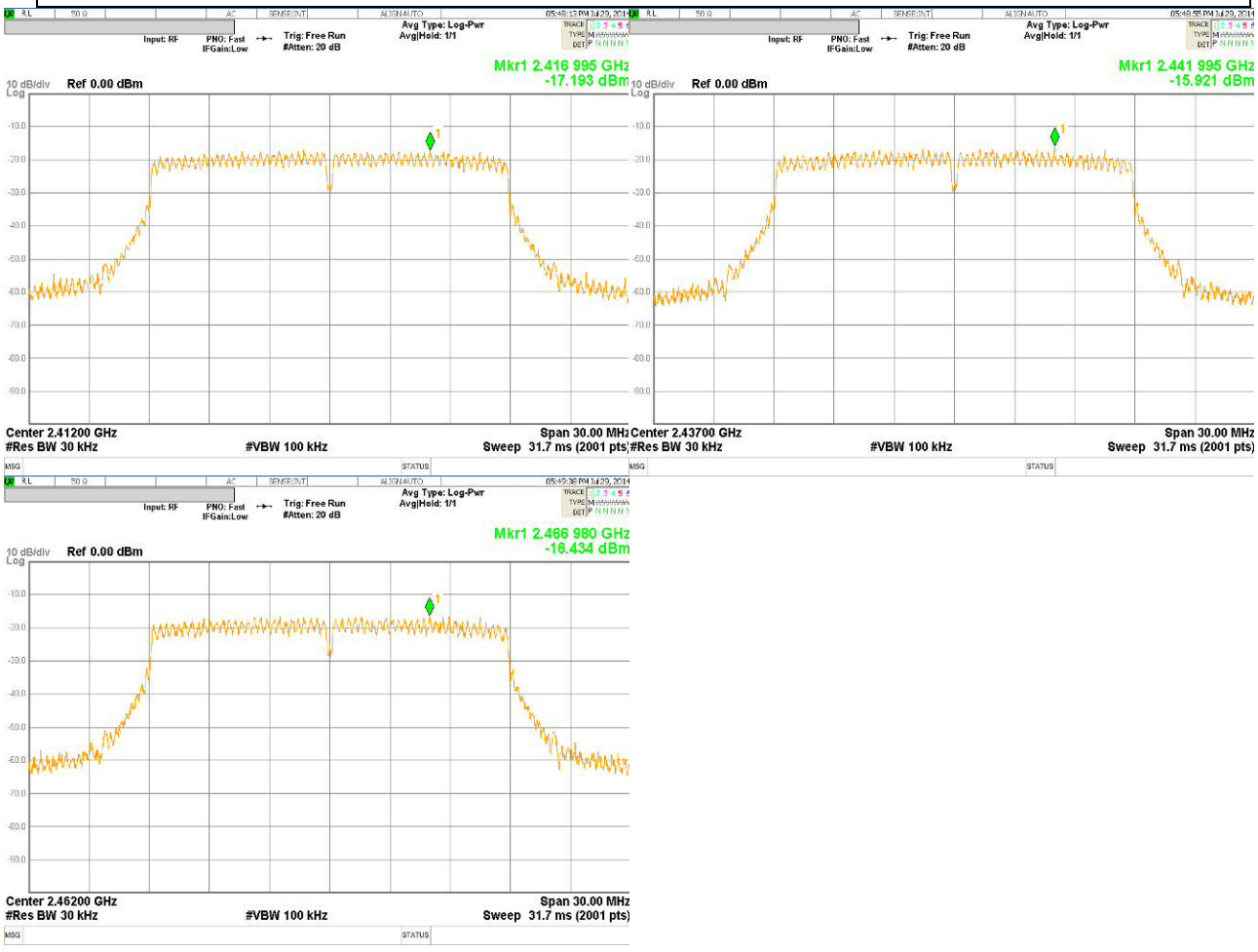
Calculated result at 2437 MHz, as the worst point shown on underline:

Correction Factor	=	11.22	dB		
BWCF	=	-10.00	dB		
+) Meter Reading	=	-15.92	dBm		
Result	=	-14.70	dBm	= 0.03	mW

Minimum Margin: 8.00 - -14.70 = 22.70 (dB)

Notes
1. The peak power density complied with the limit without BWCF.
2. The correction factor shows the attenuation pad loss including the cable loss.
3. BWCF(bandwidth correction factor) = 10 log (3 kHz/30 kHz) = -10.00 dB
4. Setting of measuring instrument(s) :

Detector Function	RES B.W.	Video B.W.
Peak	30kHz	100kHz



Mode of EUT : IEEE 802.11n(GI=400)
Data Rate : 43.3 Mbps (Worst case)

Date : July 29 ,2014
Temp. : 25 ℃
Humi. : 60 %

Ch	Transmitting Freqency (MHz)	Correction Factor (dB)	BWCF (dB)	Meter Reading (dBm)	Conducted Peak Power Density (dBm)	(mW)	Limits (dBm)	Margin (dB)
01	2412	11.22	-10.00	-17.19	-15.97	0.03	8.00	23.97
06	2437	11.22	-10.00	-16.87	-15.65	0.03	8.00	23.65
11	2462	11.22	-10.00	-16.68	-15.46	0.03	8.00	23.46

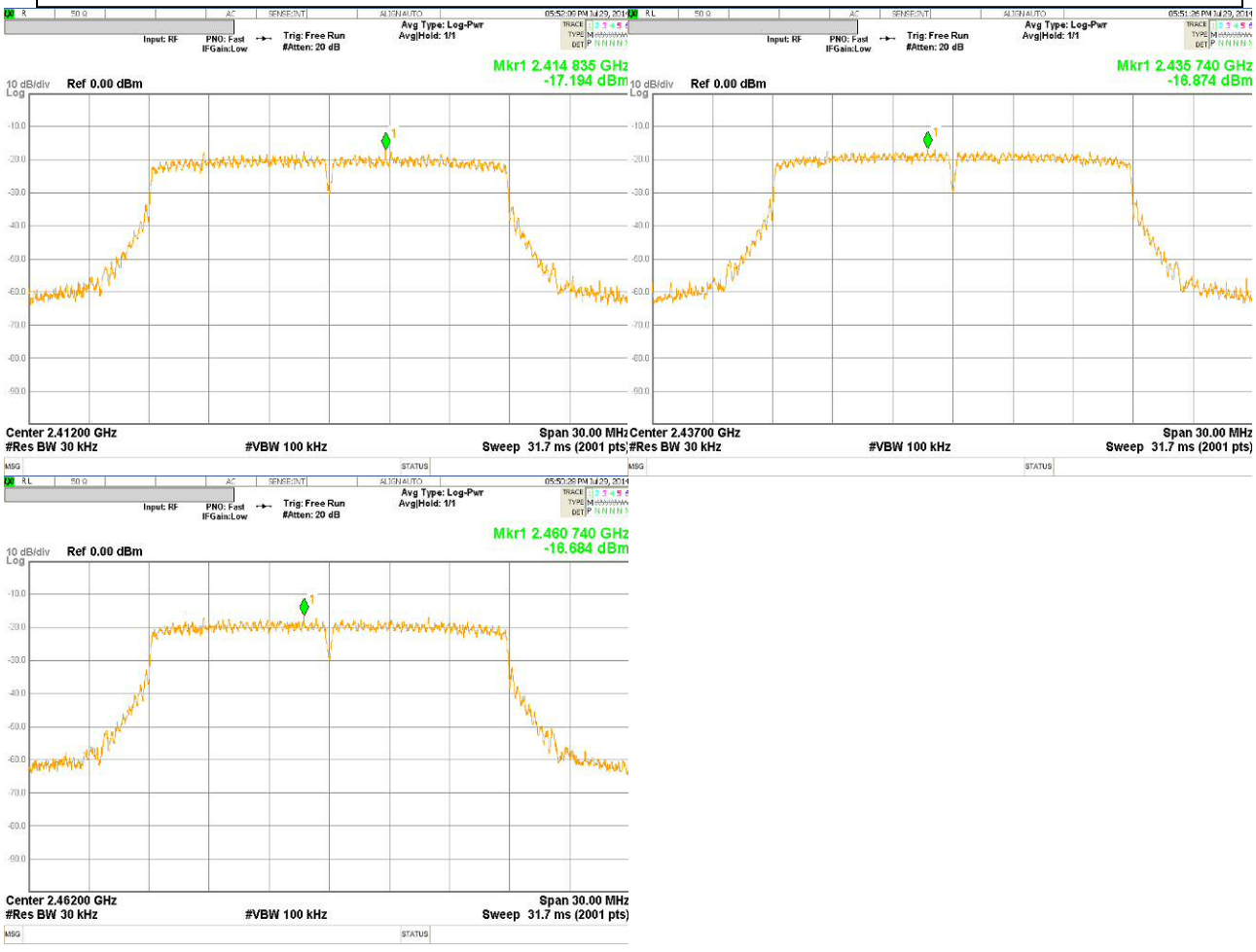
Calculated result at 2462 MHz, as the worst point shown on underline:

Correction Factor	=	11.22	dB			
BWCF	=	-10.00	dB			
+) Meter Reading	=	-16.68	dBm			
Result	=	-15.46	dBm	=	0.03	mW

Minimum Margin: 8.00 - -15.46 = 23.46 (dB)

Notes
1. The peak power density complied with the limit without BWCF.
2. The correction factor shows the attenuation pad loss including the cable loss.
3. BWCF(bandwidth correction factor) = 10 log (3 kHz/30 kHz) = -10.00 dB
4. Setting of measuring instrument(s) :

Detector Function	RES B.W.	Video B.W.
Peak	30kHz	100kHz



7.7 Spurious Emissions(Conduction)

For the requirements, ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

For the limits, ☒ **- Passed** ☐ **- Failed** ☐ **- Not judged**

7.7.1 Worst Point and Measurement Uncertainty

Uncertainty of Measurement Results

9 kHz – 1GHz	+/-1.0	dB(2σ)
1GHz – 18GHz	+/-1.2	dB(2σ)
18GHz – 40GHz	+/-1.6	dB(2σ)

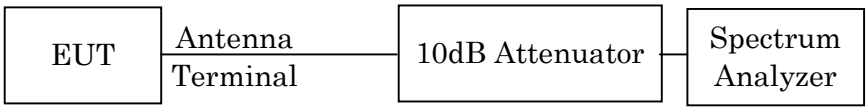
Remarks :

7.7.2 Test Site and Instruments

Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Receiver	ESI26	Rohde & Schwarz	13	2014/6	1 Year
RF Cable	S 04272B	SUHNER	45	2014/5	1 Year
Attenuator	43KC-10	Anritsu	80	2013/10	1 Year

7.7.3 Test Method and Test Setup (Diagrammatic illustration)

The test system is shown as follows:



The setting of the spectrum analyzer are shown as follows:

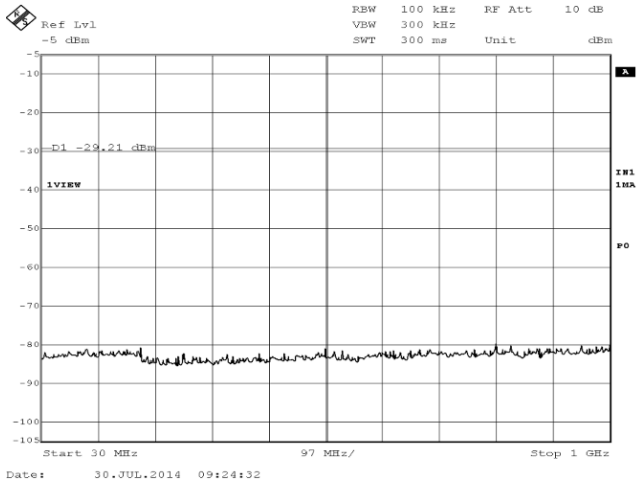
Frequency Range	30 MHz - 25 GHz	Band-Edge
Res. Bandwidth	100 kHz	100 kHz
Video Bandwidth	300 kHz	300 kHz
Sweep Time	AUTO	AUTO
Trace	Maxhold	Maxhold

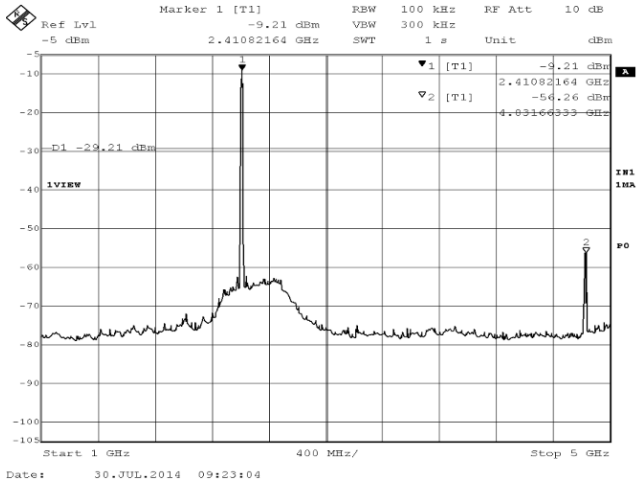
7.7.4 Test Data

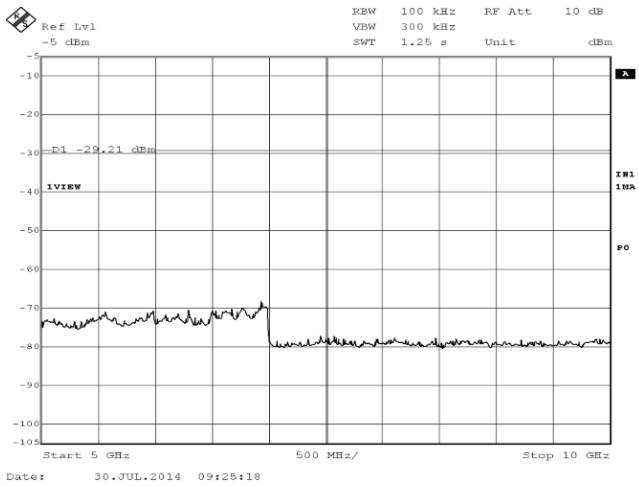
Test Date : July 30, 2014
Temp.:24°C, Humi:56%

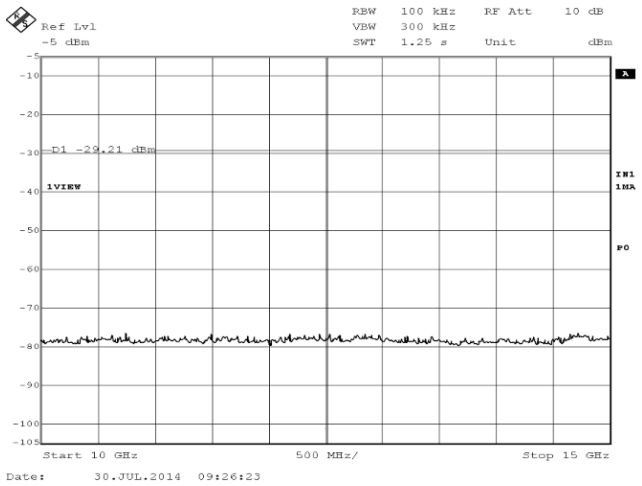
1) IEEE 802.11b

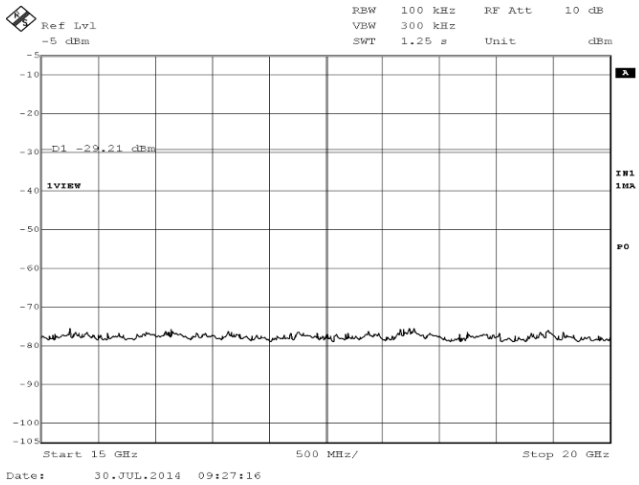
Low Channel

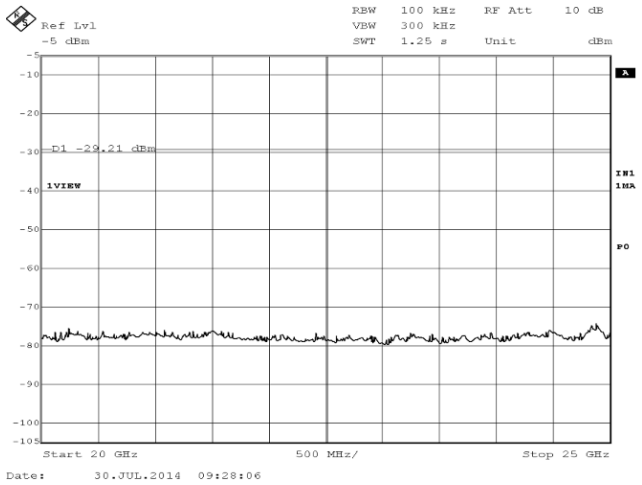




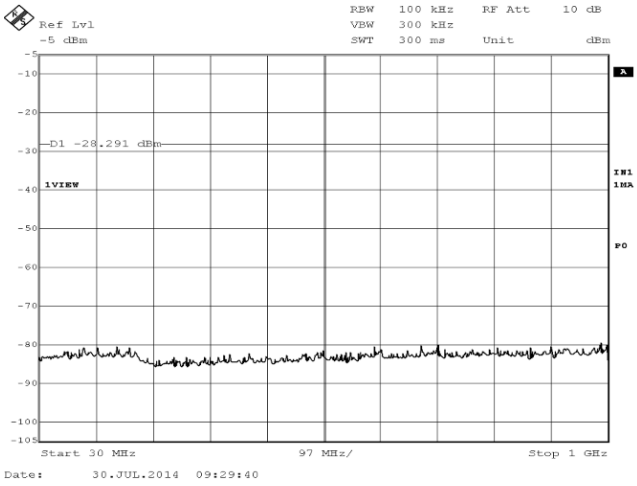


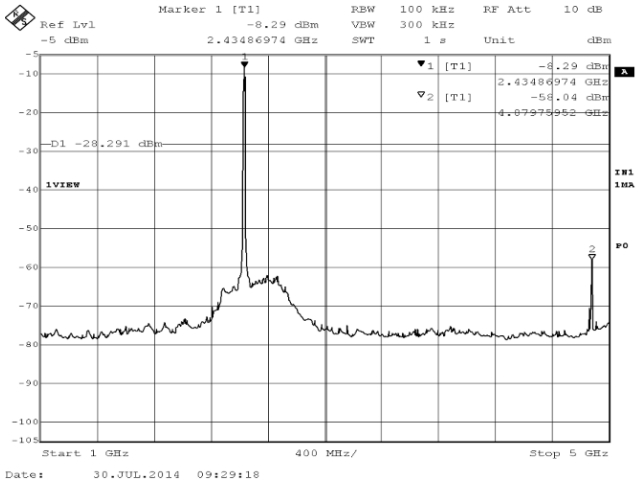


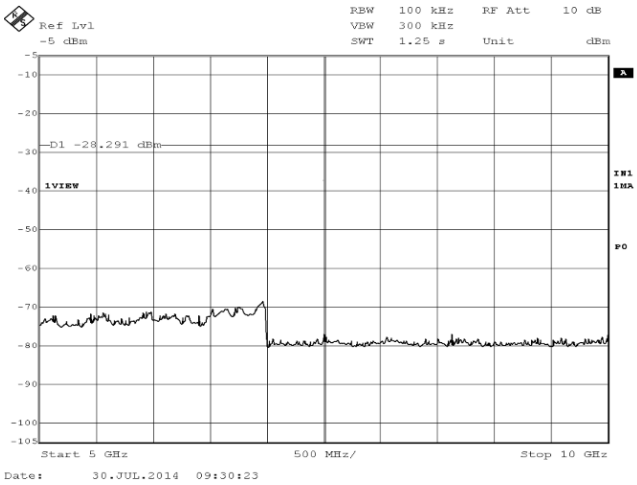


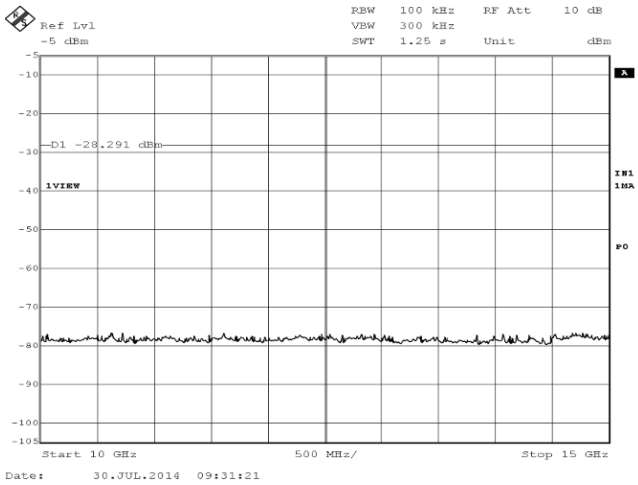


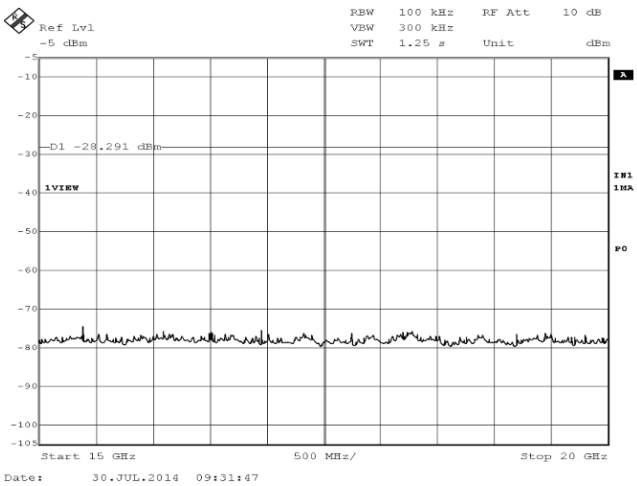
Middle Channel

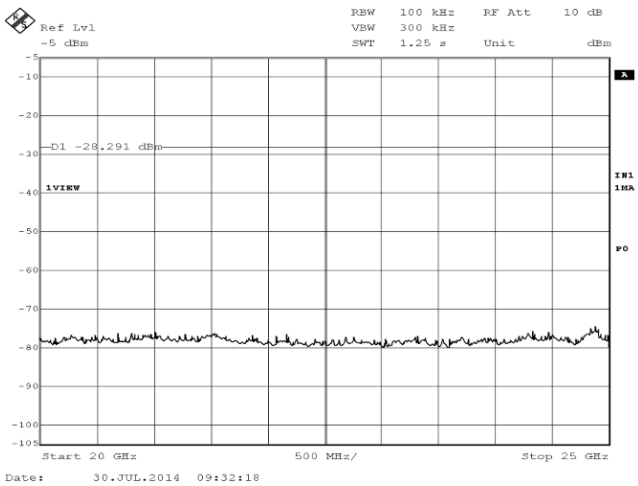




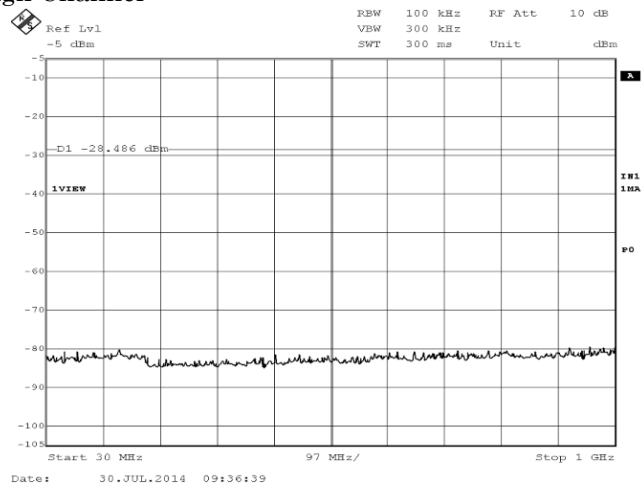


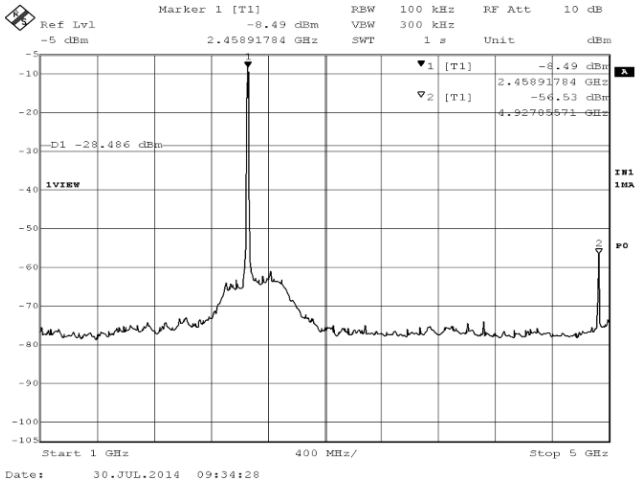


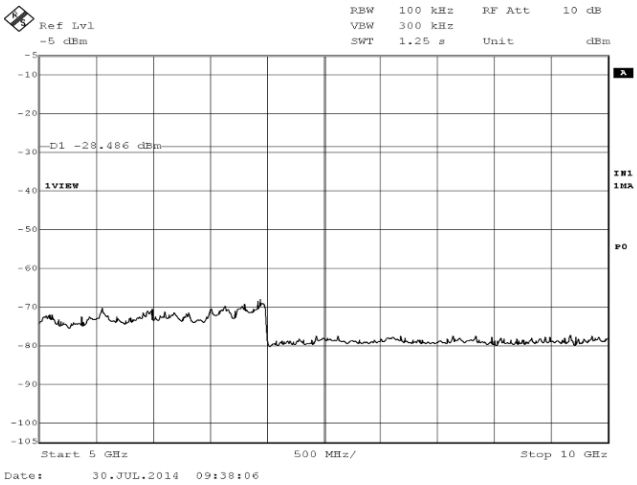


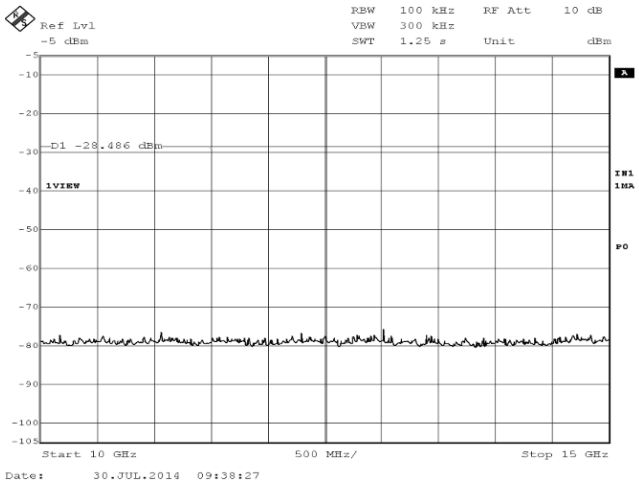


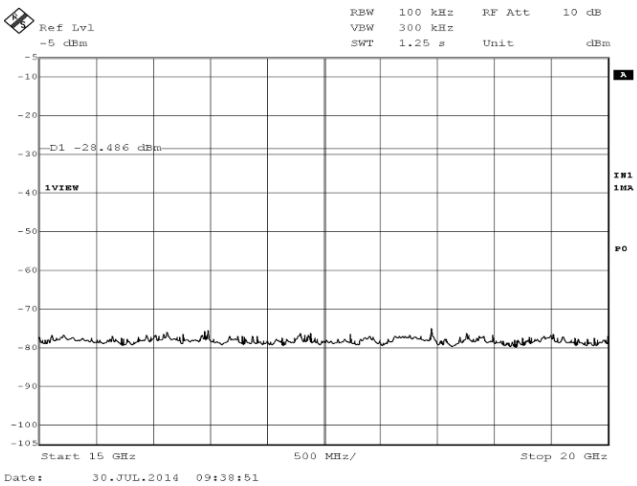
High Channel

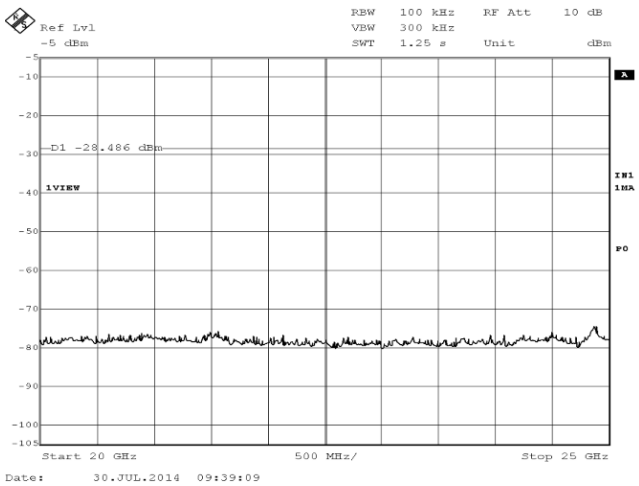








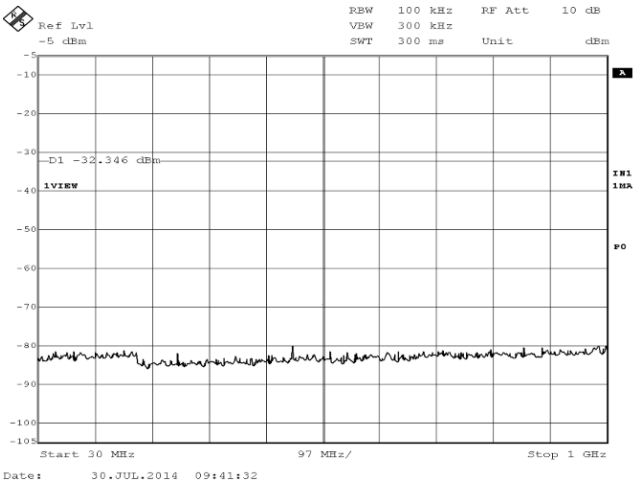


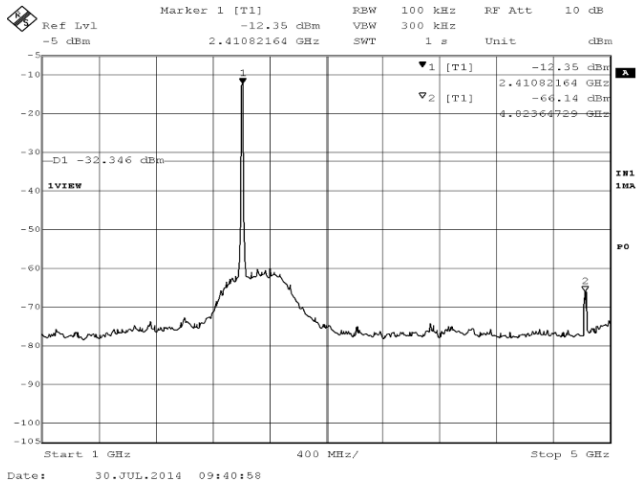


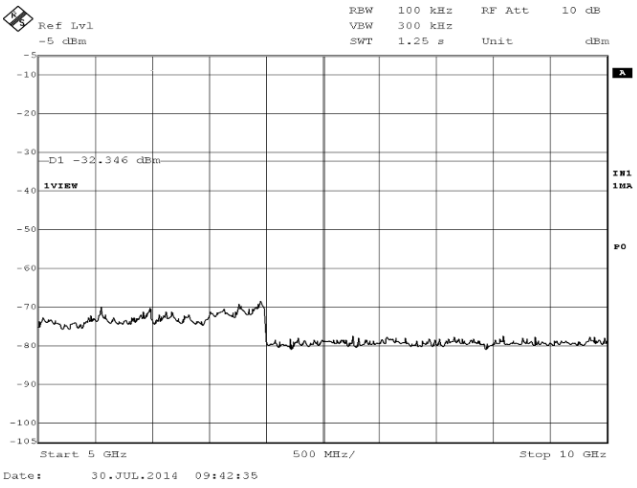
Test Date : July 30, 2014
Temp.:24°C, Humi:56%

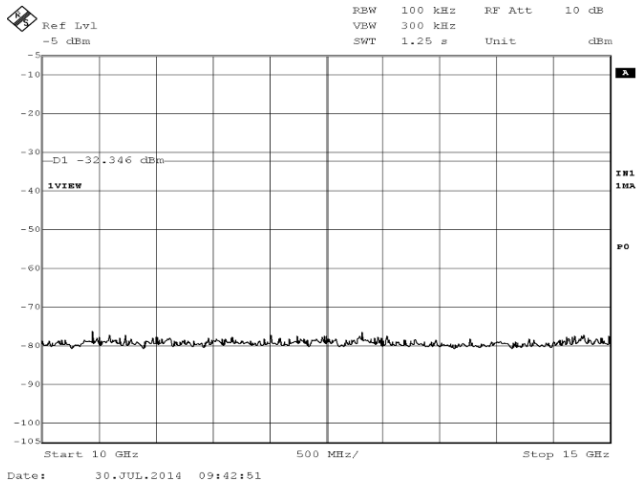
2) IEEE 802.11g

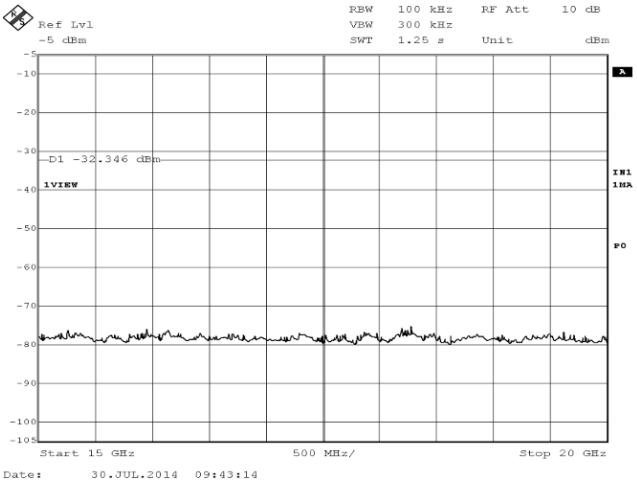
Low Channel

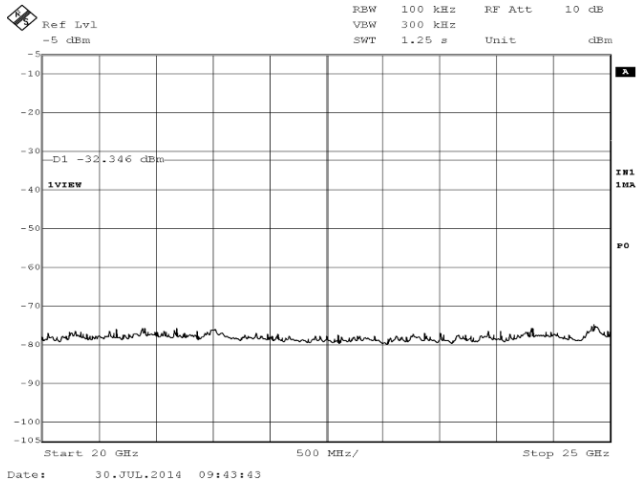




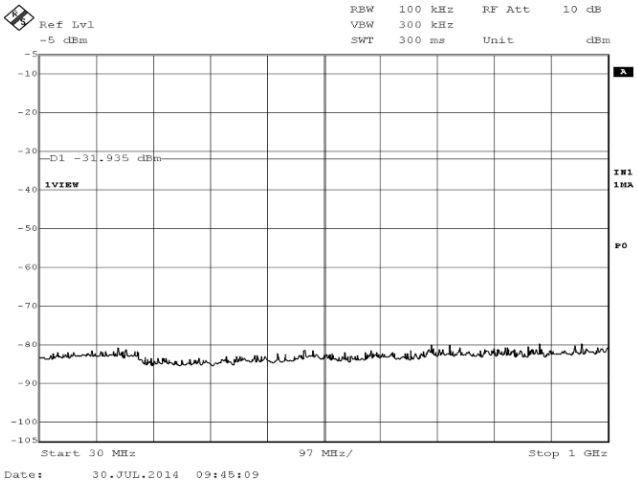


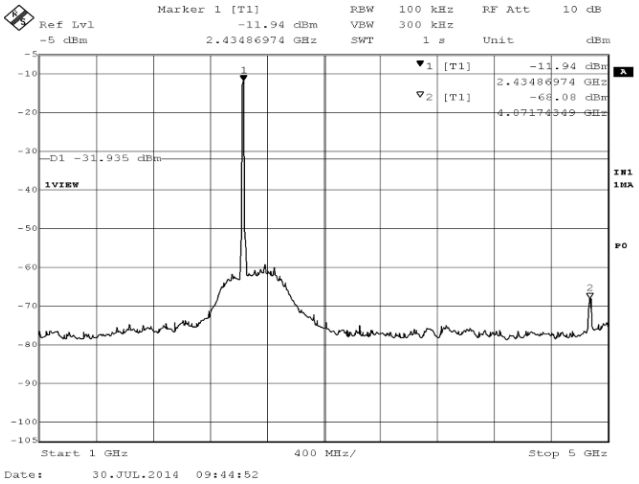


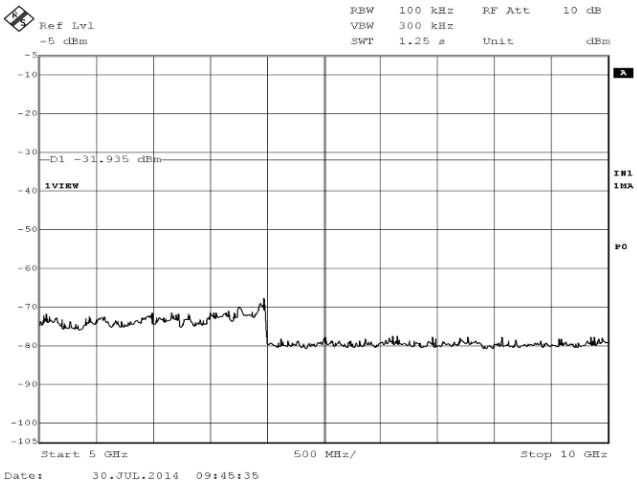


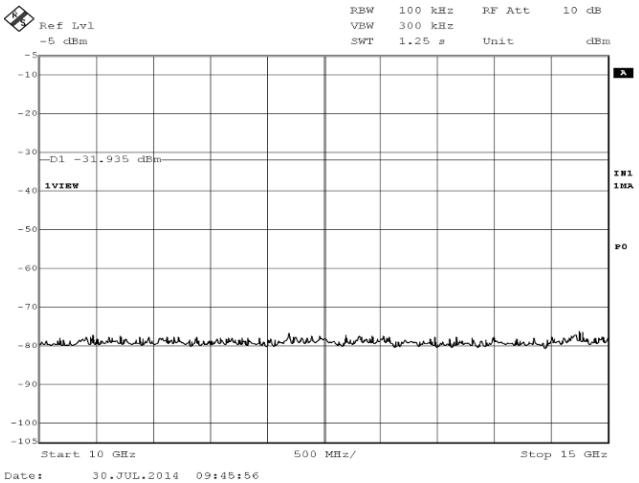


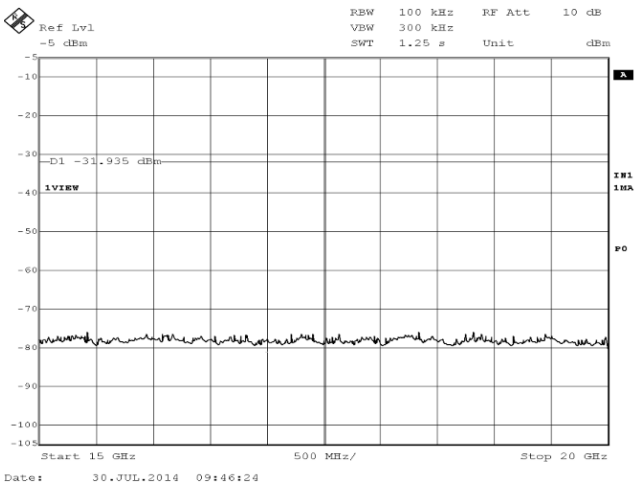
Middle Channel

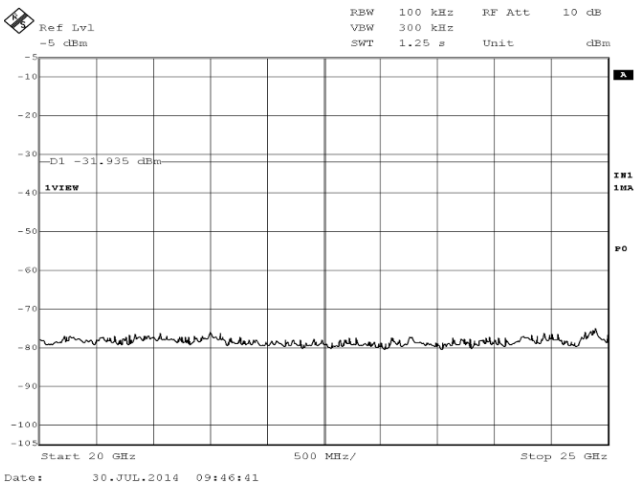




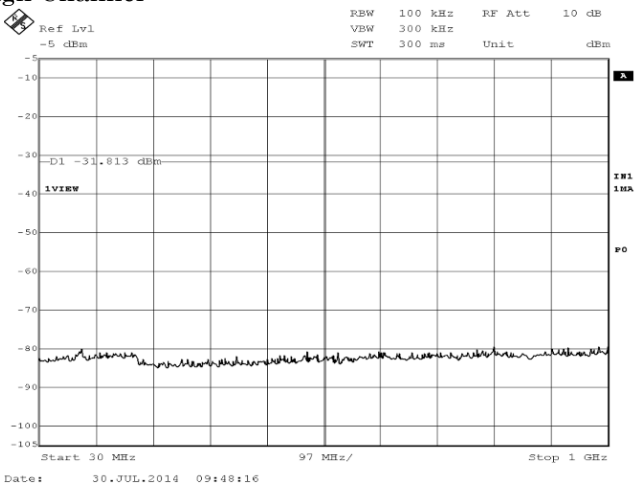


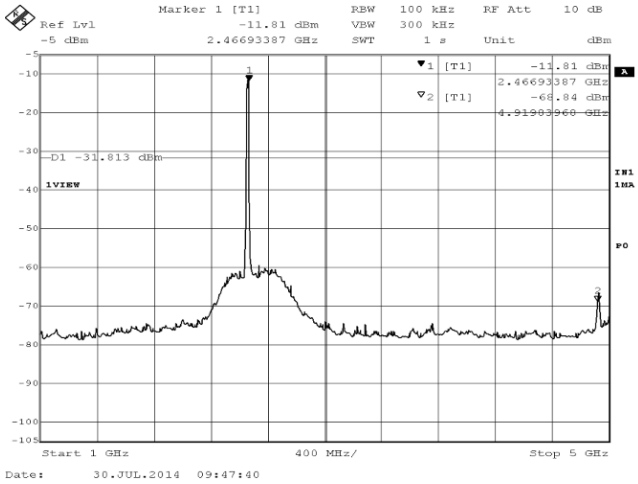


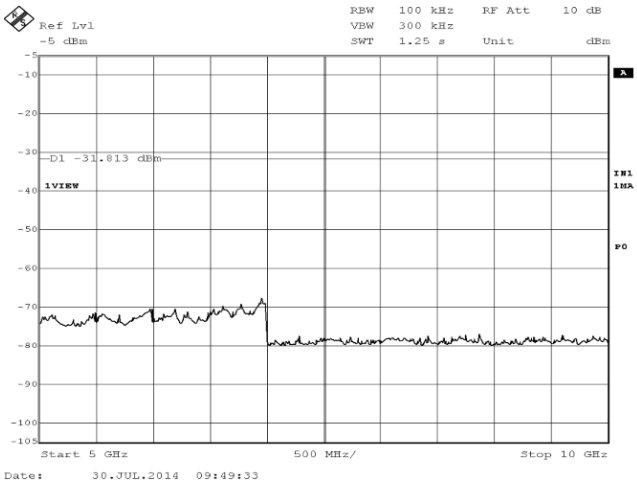


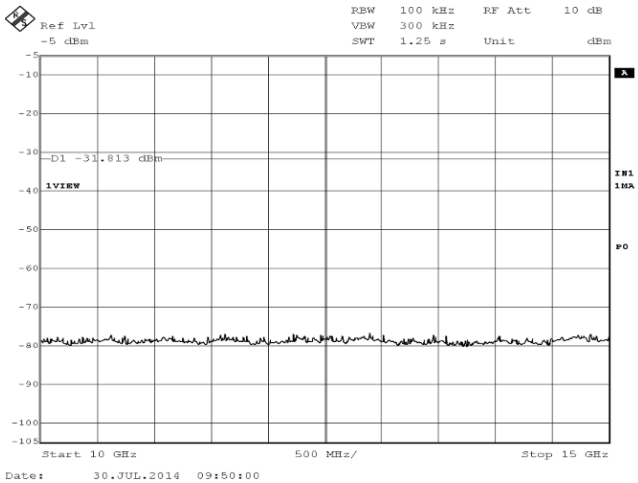


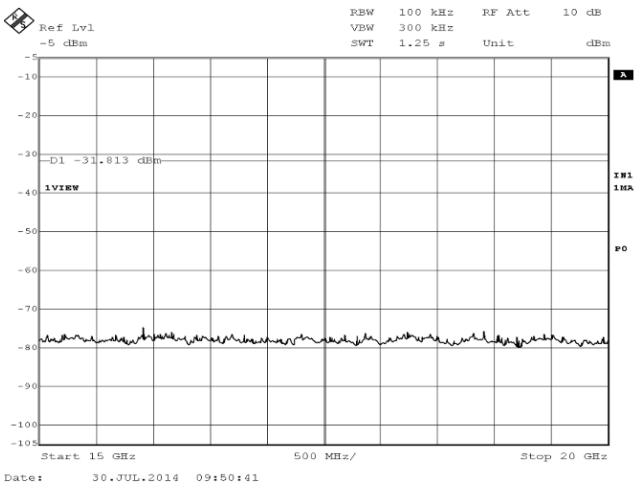
High Channel

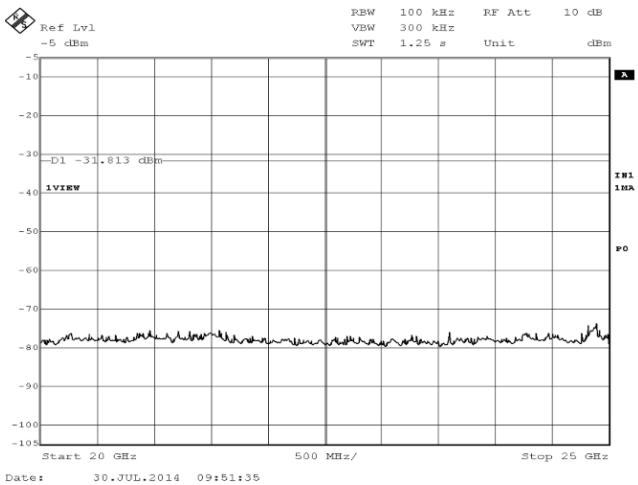








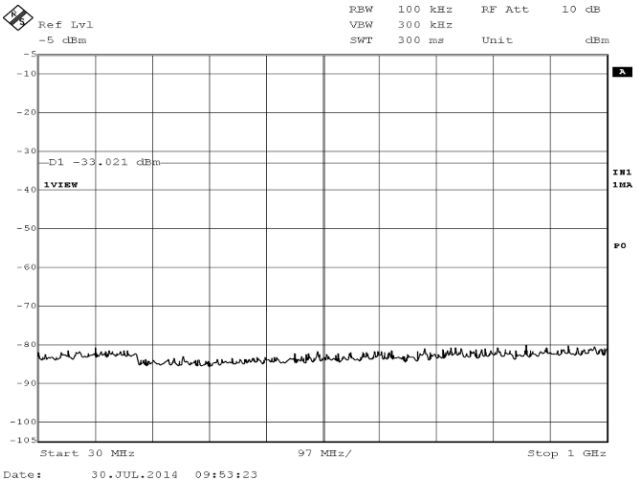


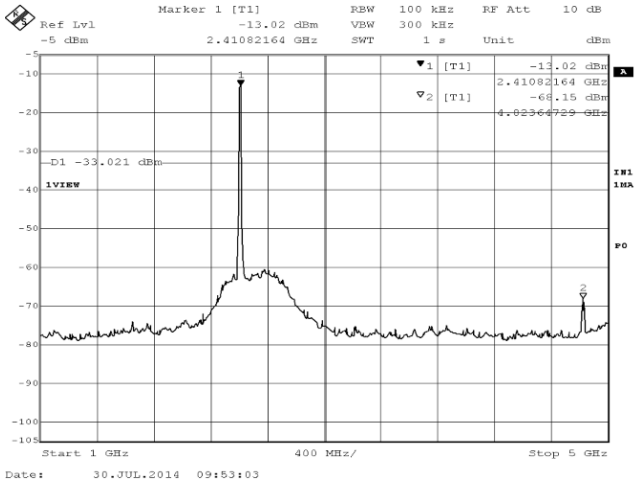


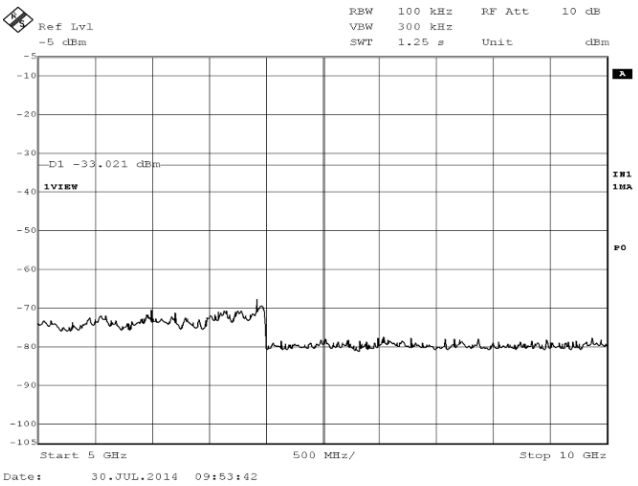
Test Date : July 30, 2014
Temp.:24°C, Humi:56%

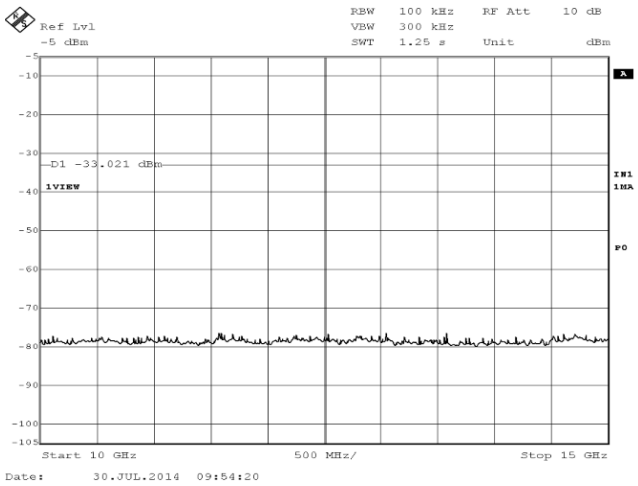
3) IEEE 802.11n(GI=800)

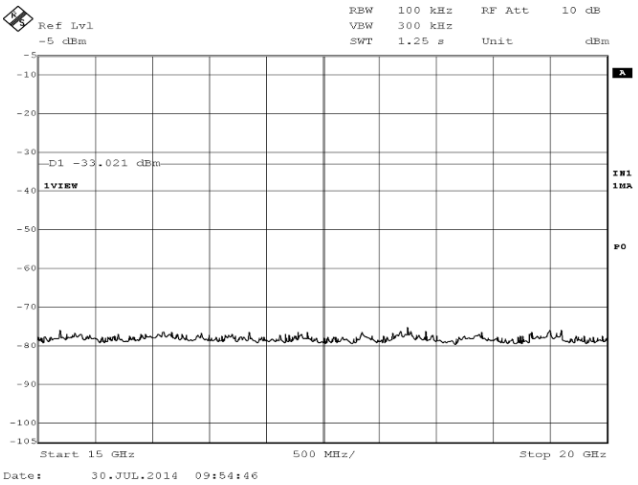
Low Channel

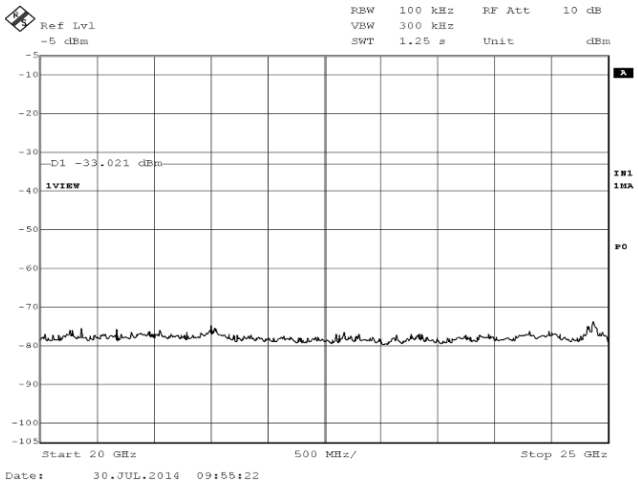




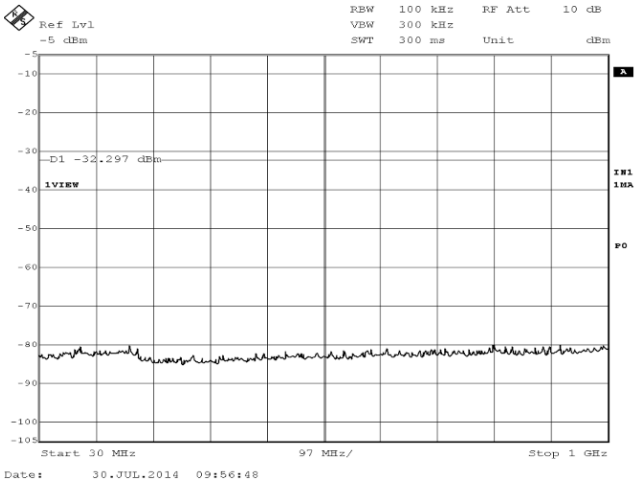


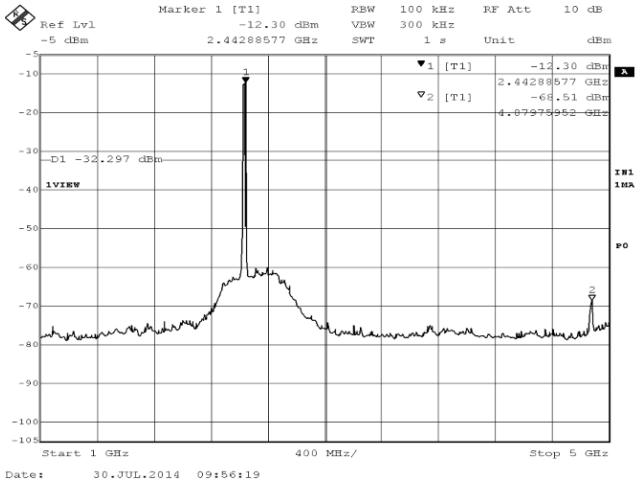


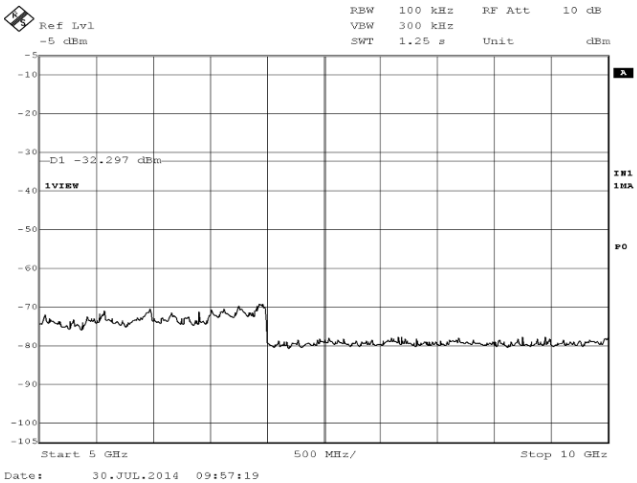


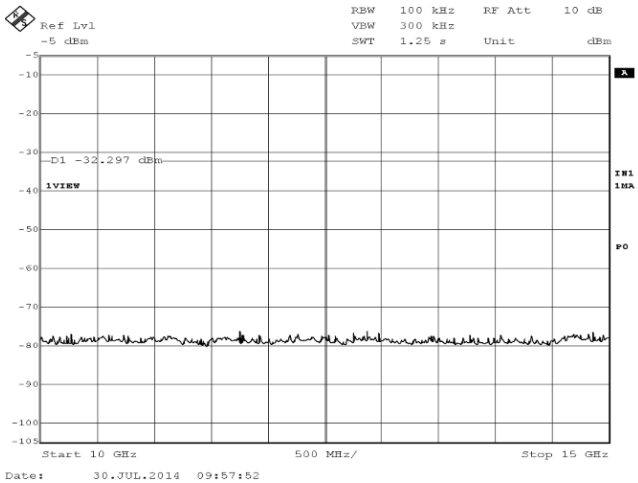


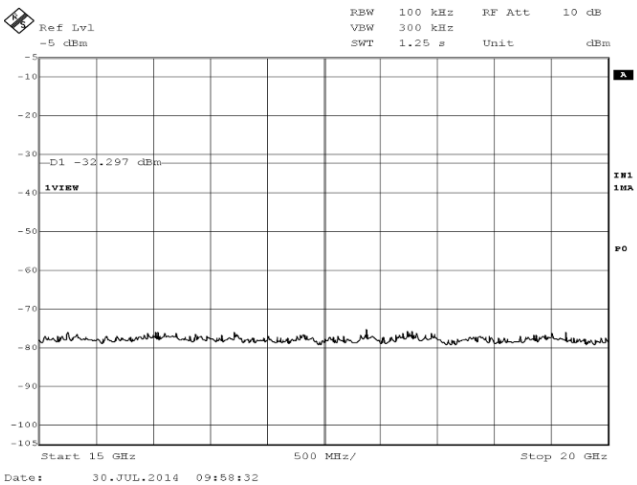
Middle Channel

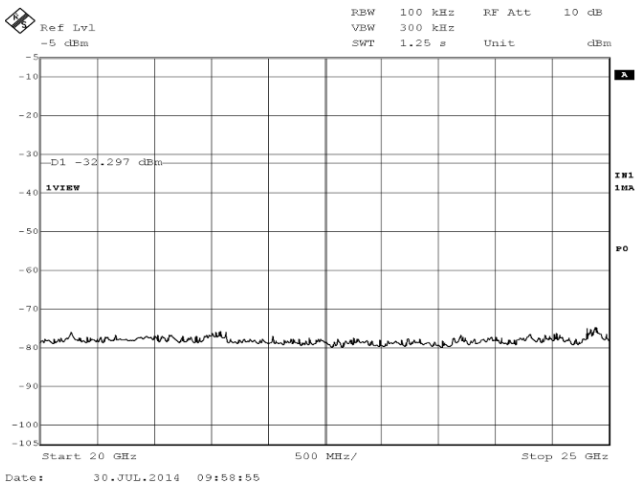




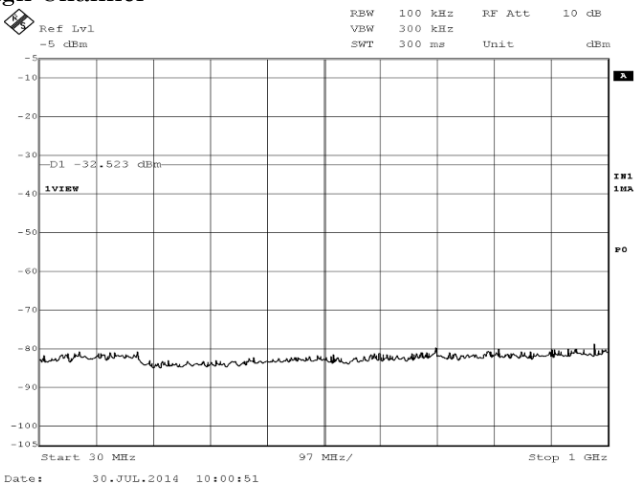


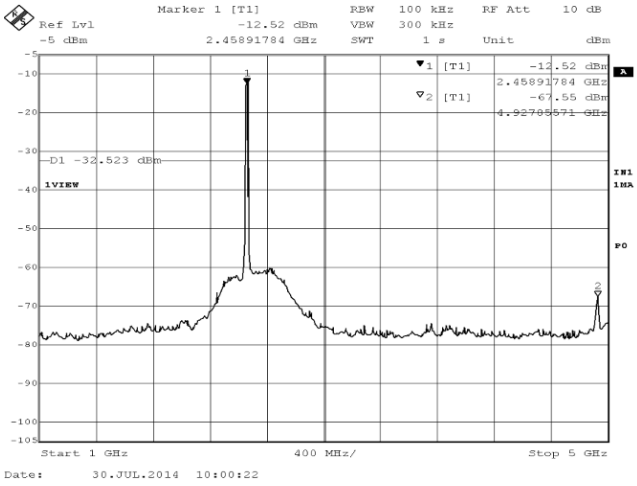


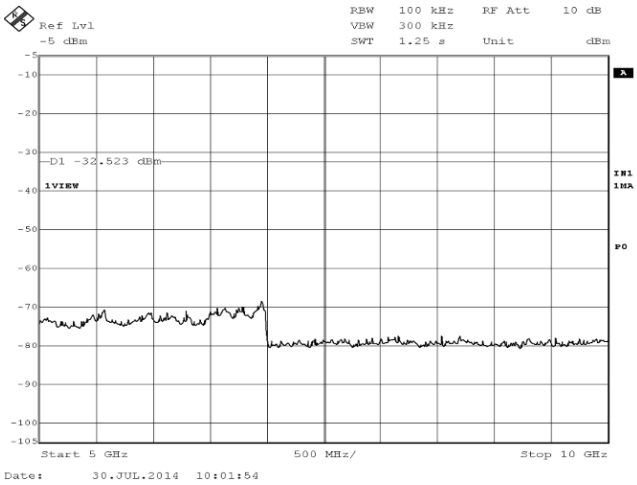


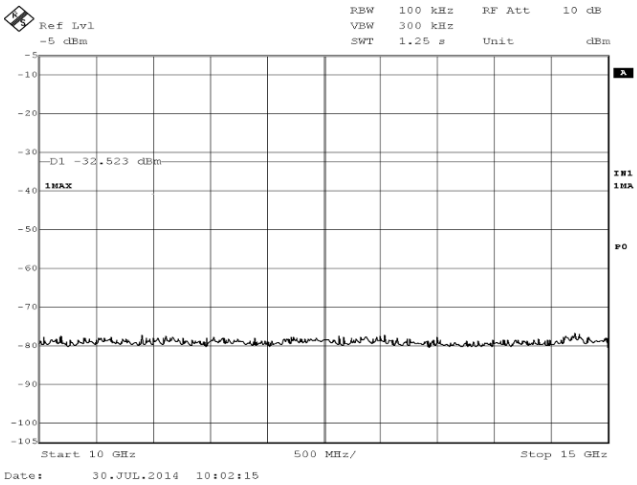


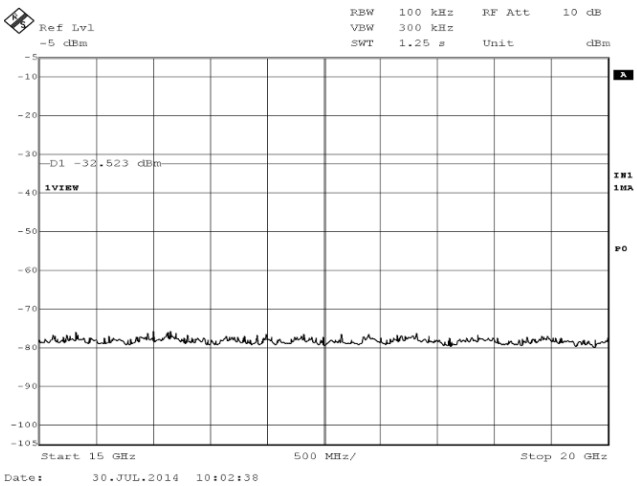
High Channel

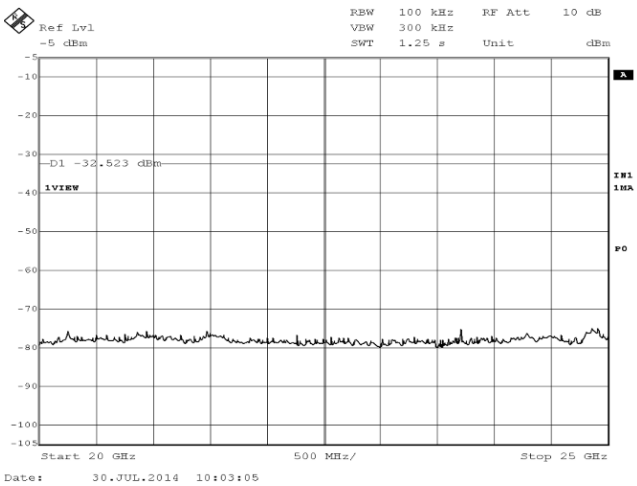








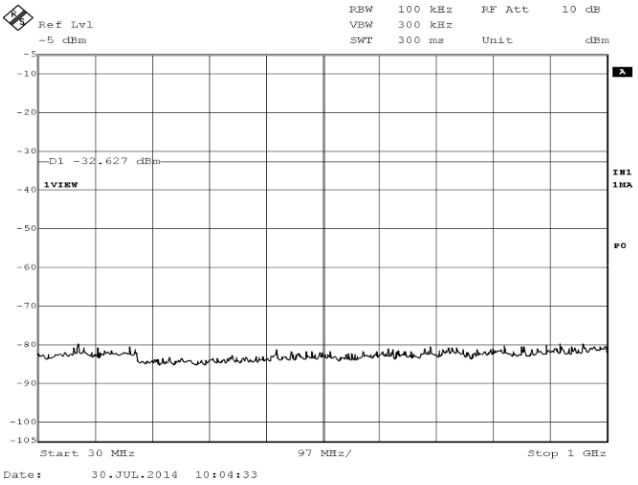


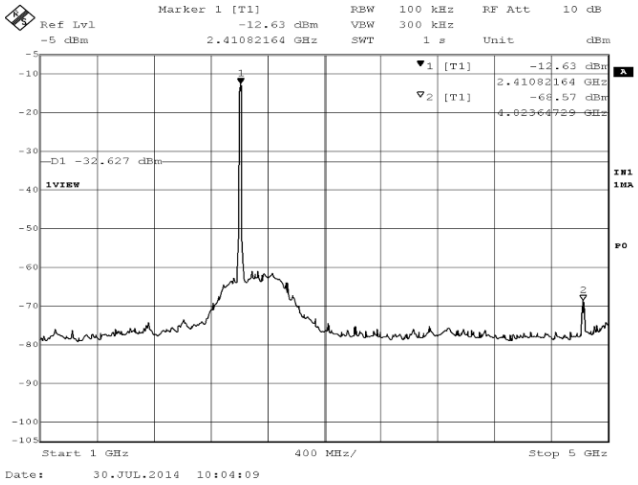


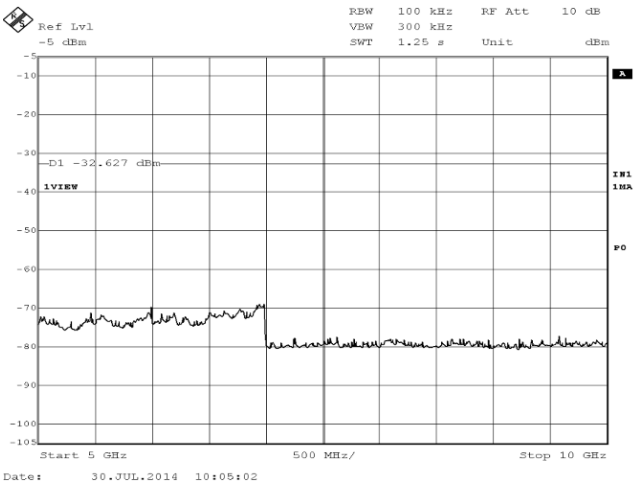
Test Date : July 30, 2014
Temp.:24°C, Humi:56%

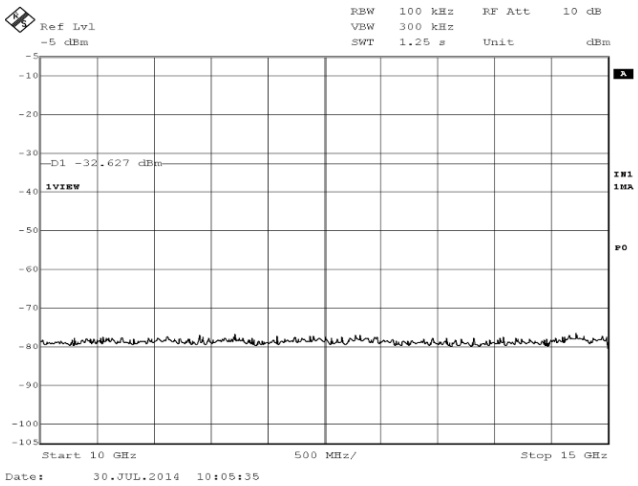
4) IEEE 802.11n(GI=400)

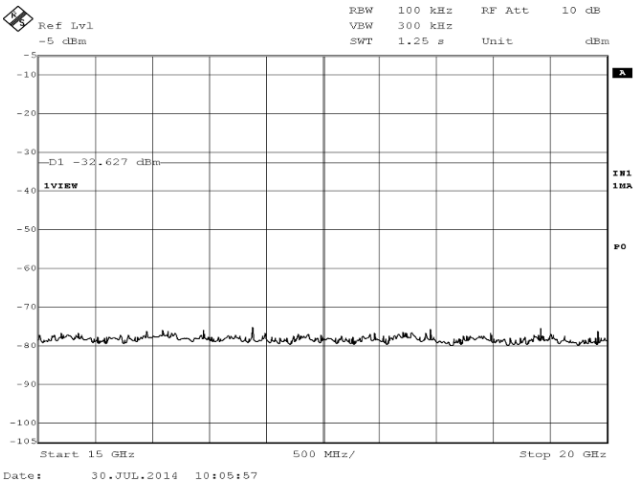
Low Channel

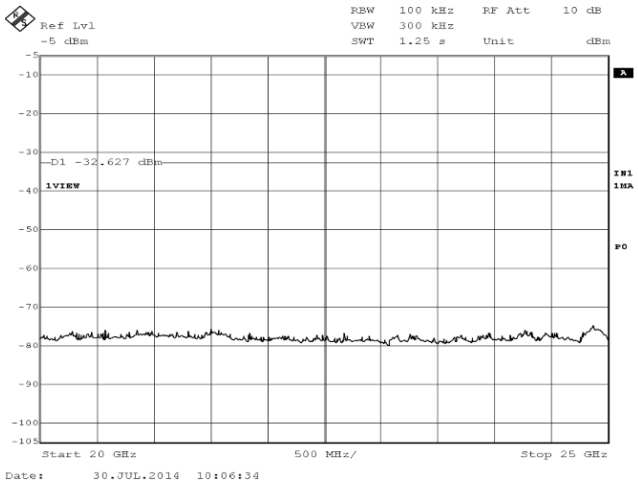




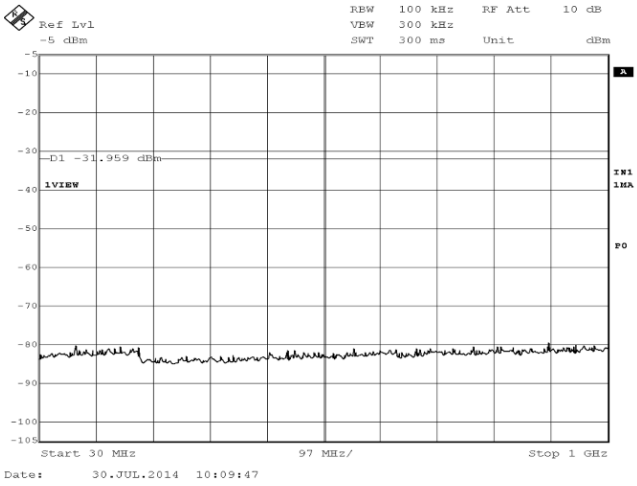


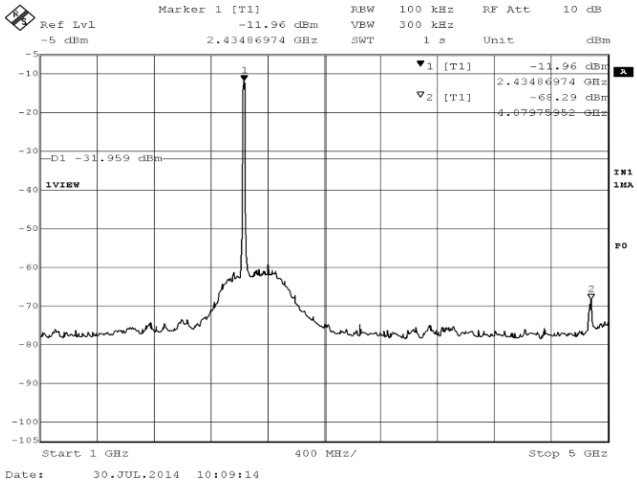


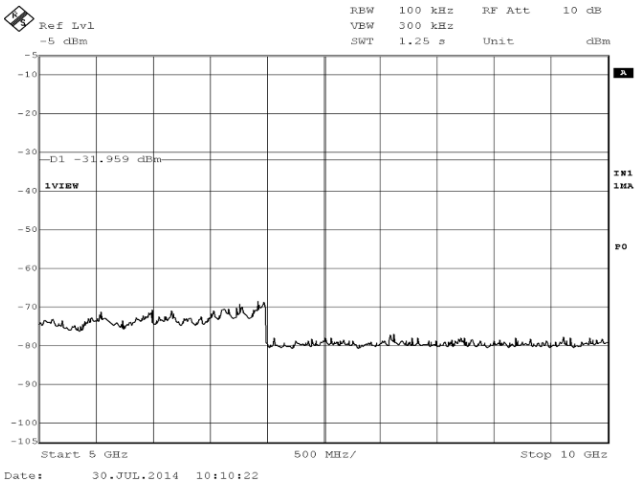


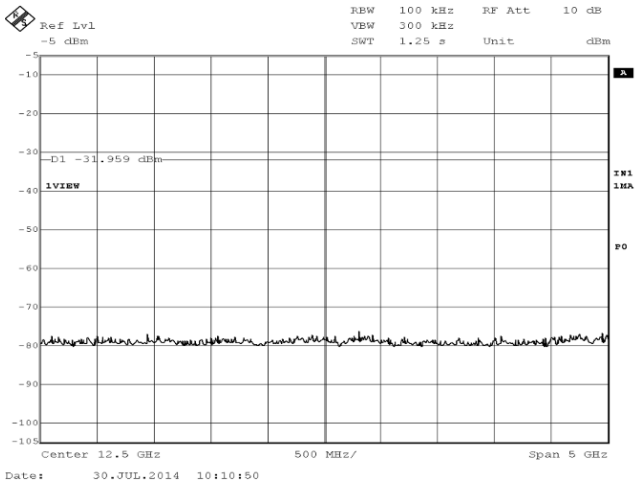


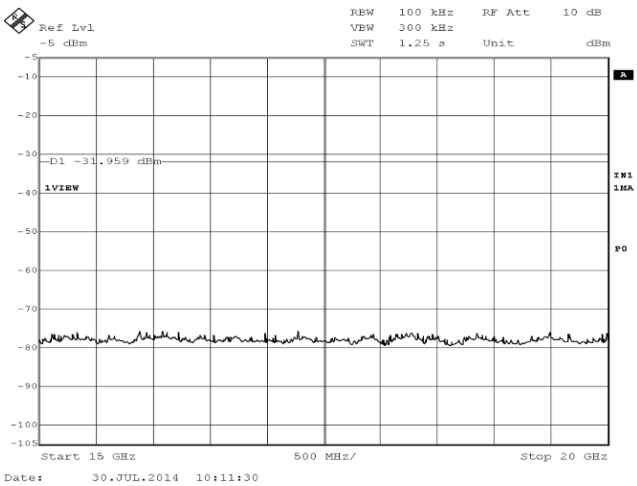
Middle Channel

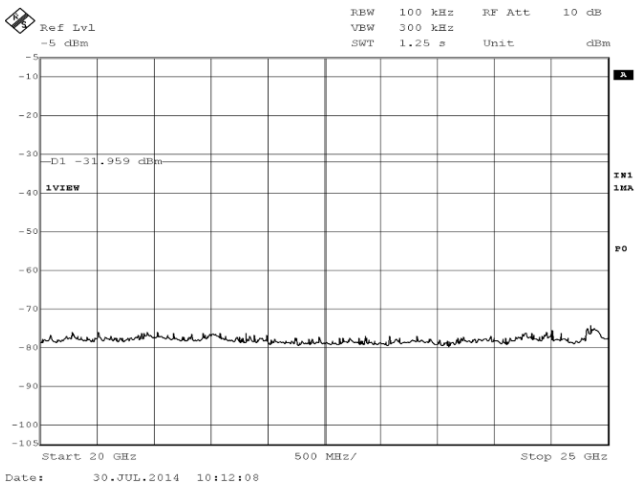




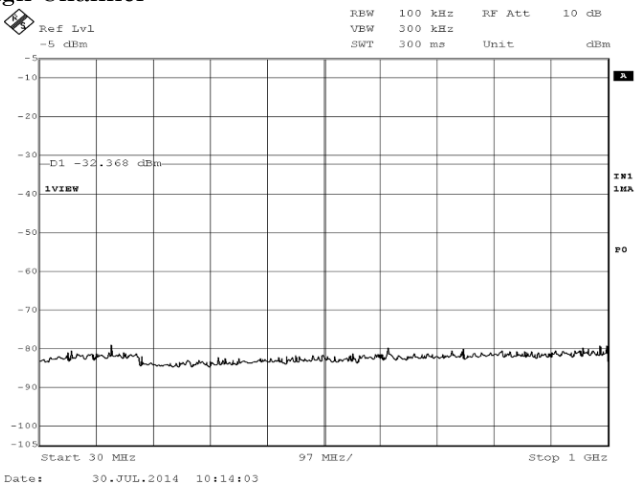


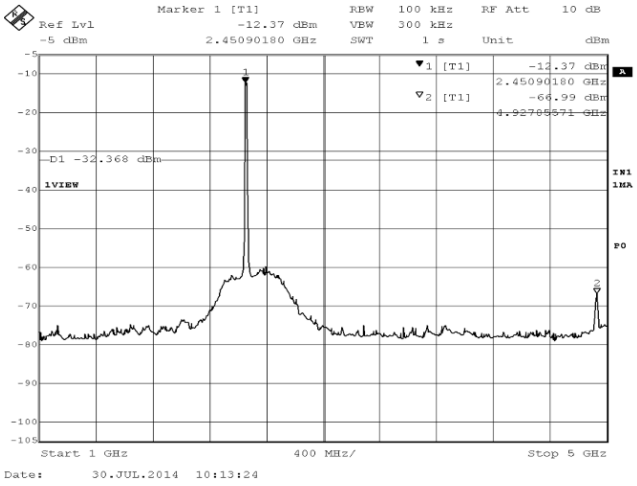


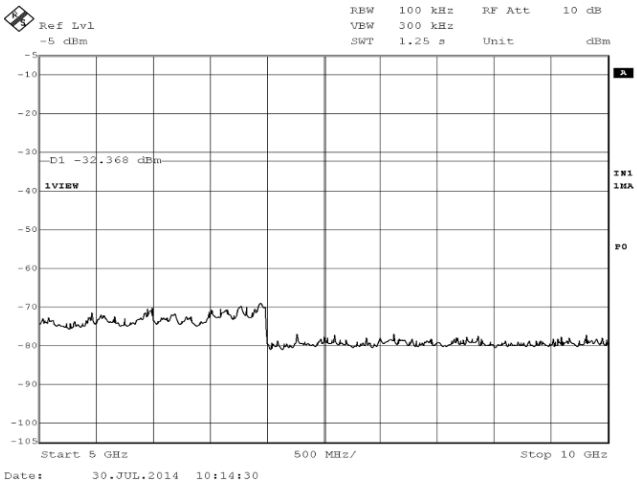


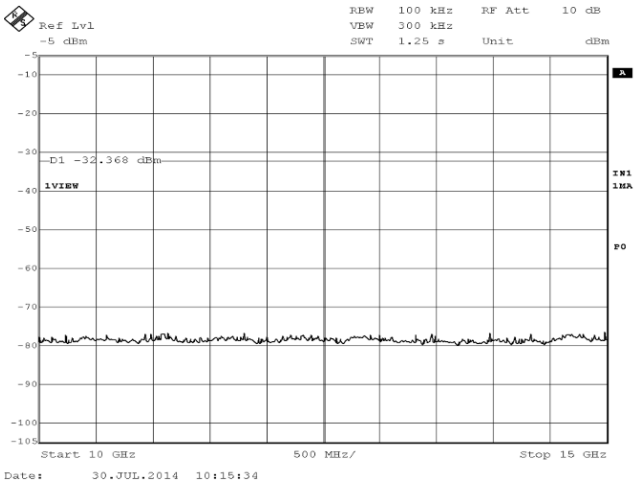


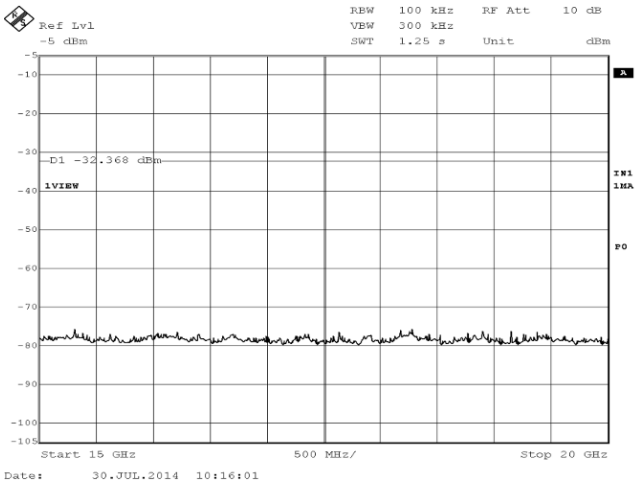
High Channel

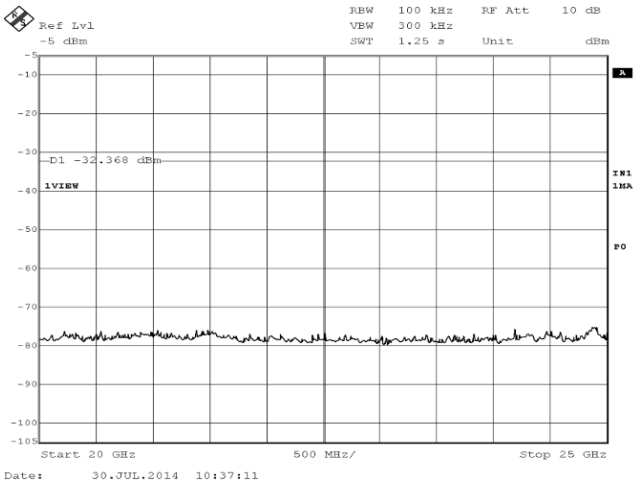








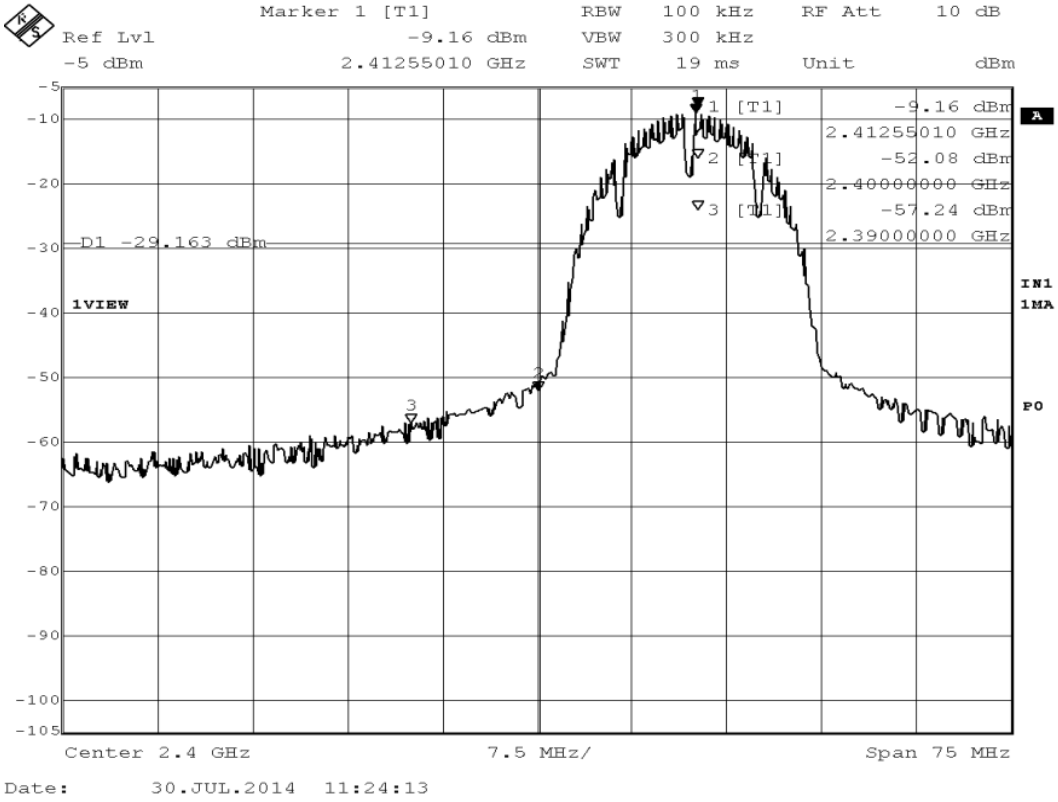




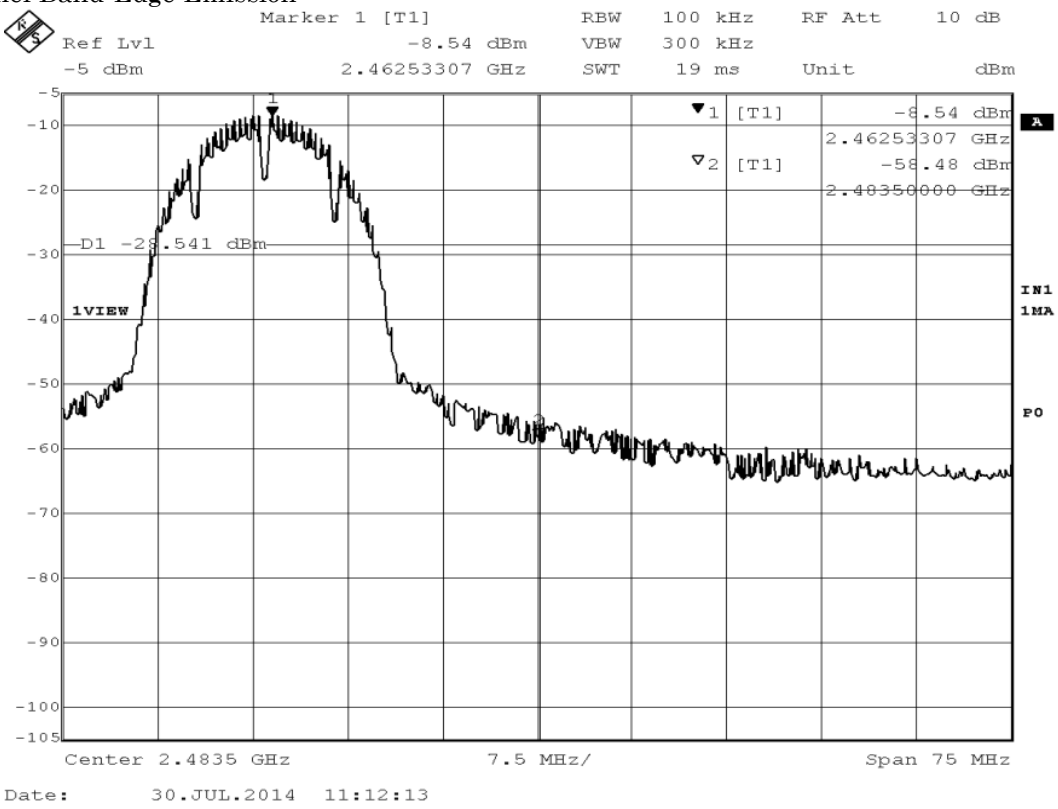
Band-Edge Emission

1) IEEE 802.11b

Low Channel Band-Edge Emission

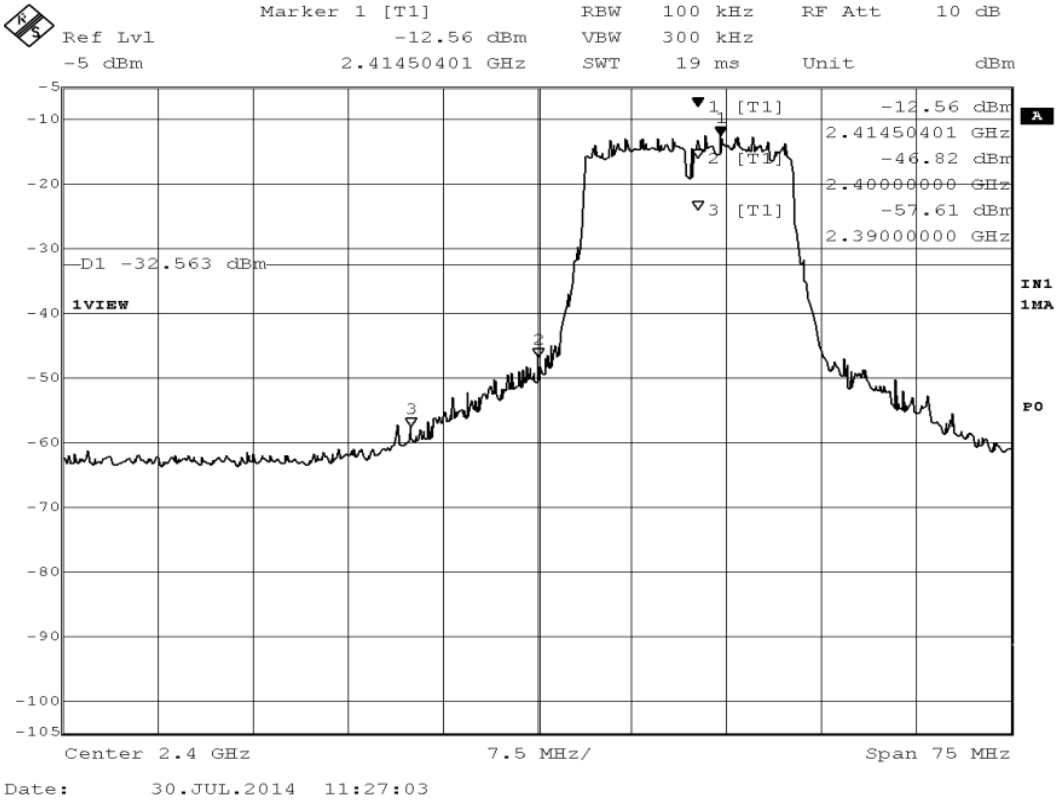


High Channel Band-Edge Emission

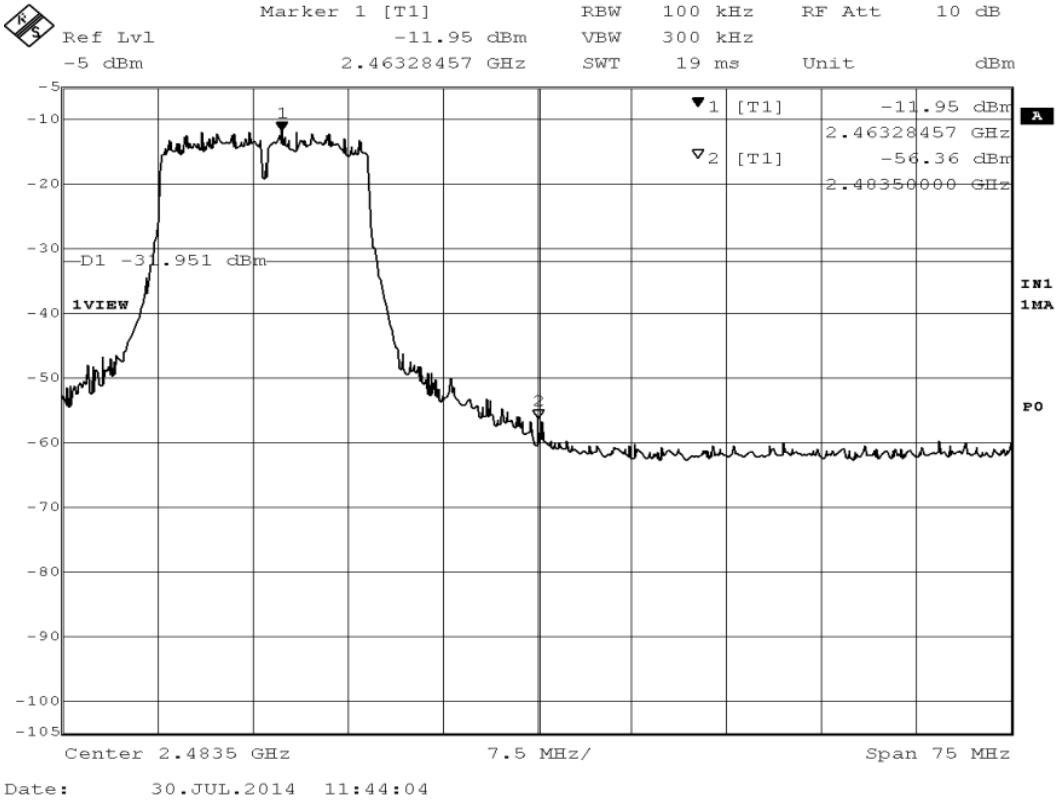


2) IEEE 802.11g

Low Channel Band-Edge Emission

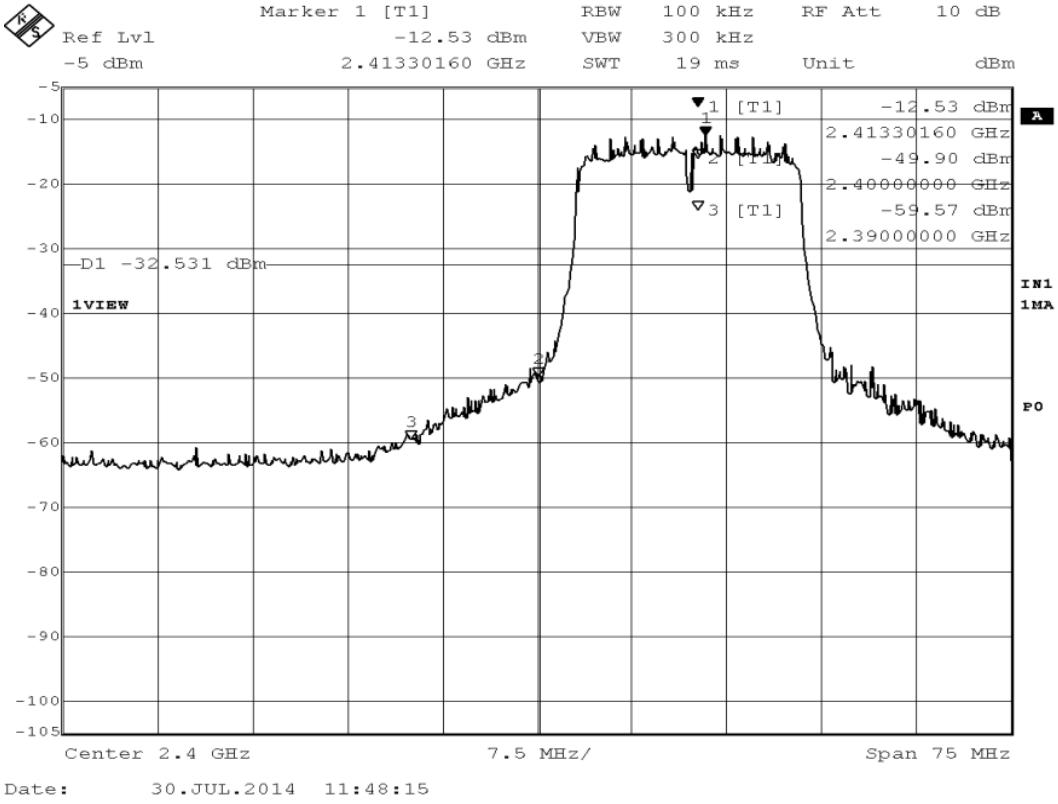


High Channel Band-Edge Emission

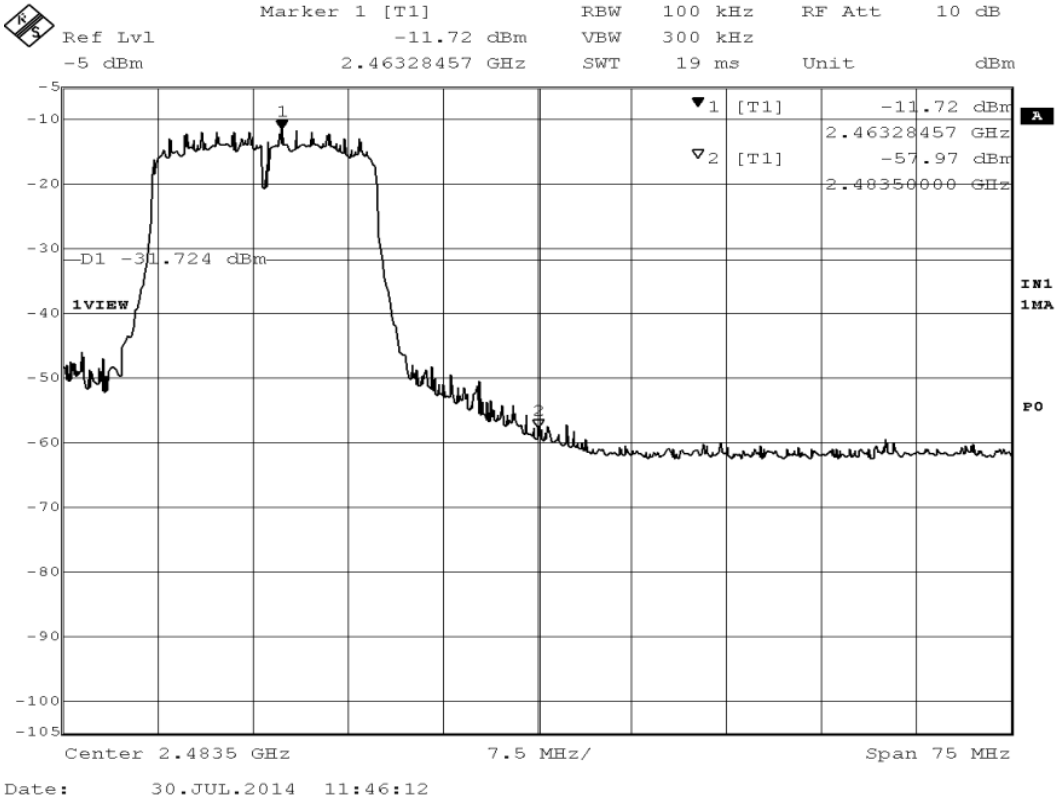


3) IEEE 802.11n(GI=800)

Low Channel Band-Edge Emission

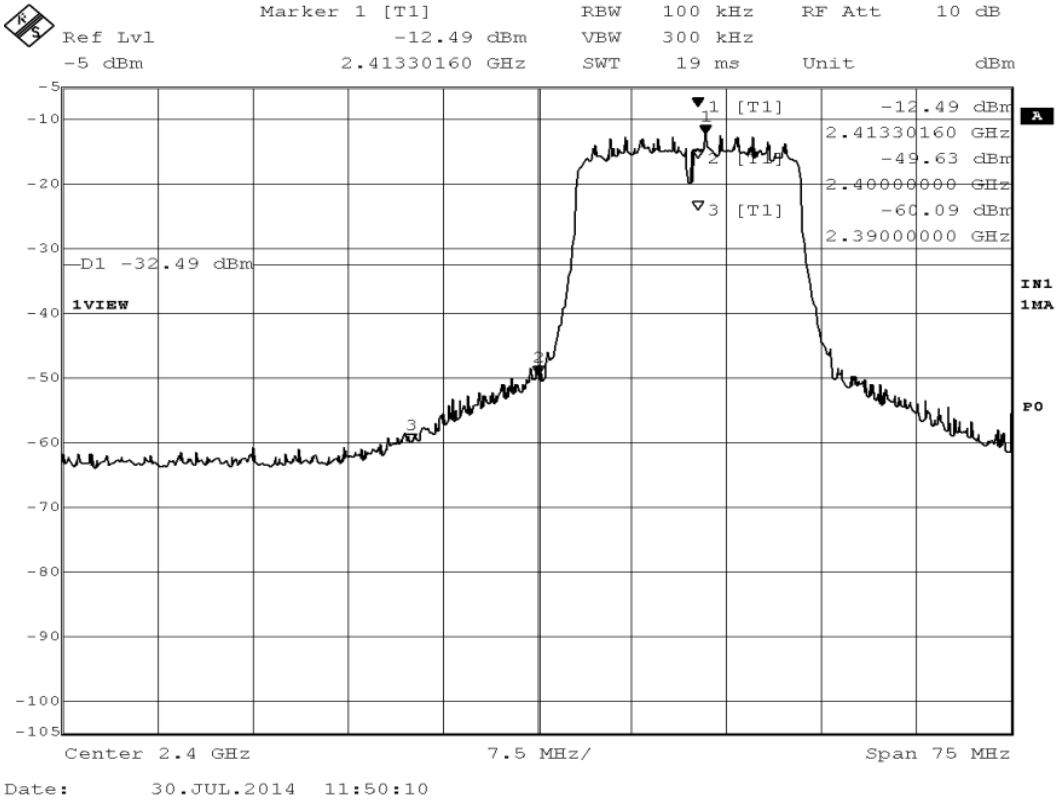


High Channel Band-Edge Emission

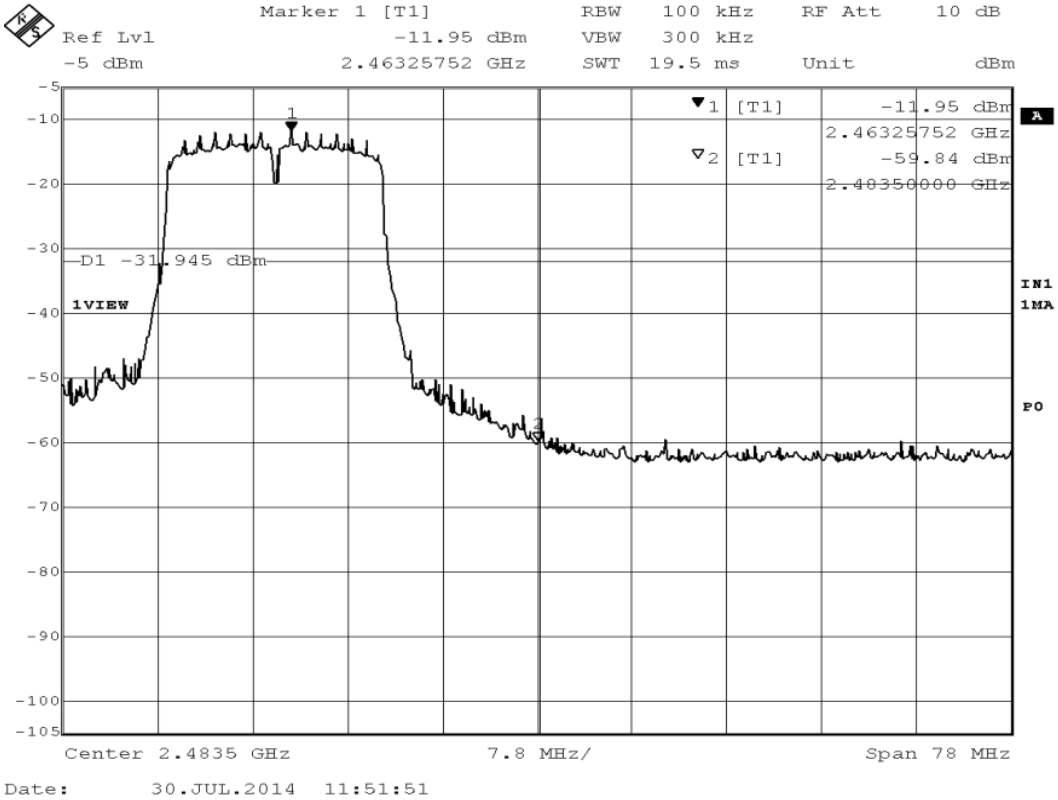


4) IEEE 802.11n(GI=400)

Low Channel Band-Edge Emission



High Channel Band-Edge Emission



7.8 AC Powerline Conducted Emission

For the requirements, ☐ - Applicable [☐ - Tested. ☐ - Not tested by applicant request.]
☒ - Not Applicable
(Reason : This module is intended to use automotive equipment)

7.9 Radiated Emission

The requirements are ☒ - Applicable [☒ - Tested. ☐ - Not tested by applicant request.]
☐ - Not Applicable

☒ - **Passed** ☐ - **Failed** ☐ - **Not judged**

7.9.1 Worst Point and Measurement Uncertainty

Min. Limit Margin (Average) 2.86 dB at 2505.6 MHz

Uncertainty of Measurement Results

9 kHz – 30 MHz	+/-2.5	dB(2σ)
30 MHz – 300 MHz	+/-4.6	dB(2σ)
300 MHz – 1000 MHz	+/-4.5	dB(2σ)
1 GHz – 6 GHz	+/-4.2	dB(2σ)
6 GHz – 18 GHz	+/-4.6	dB(2σ)
18 GHz – 26.5 GHz	+/-4.8	dB(2σ)
26.5 GHz – 40 GHz	+/-4.8	dB(2σ)

Remarks : Measurement result is within the range of measurement uncertainty.

7.9.2 Test Site and Instruments

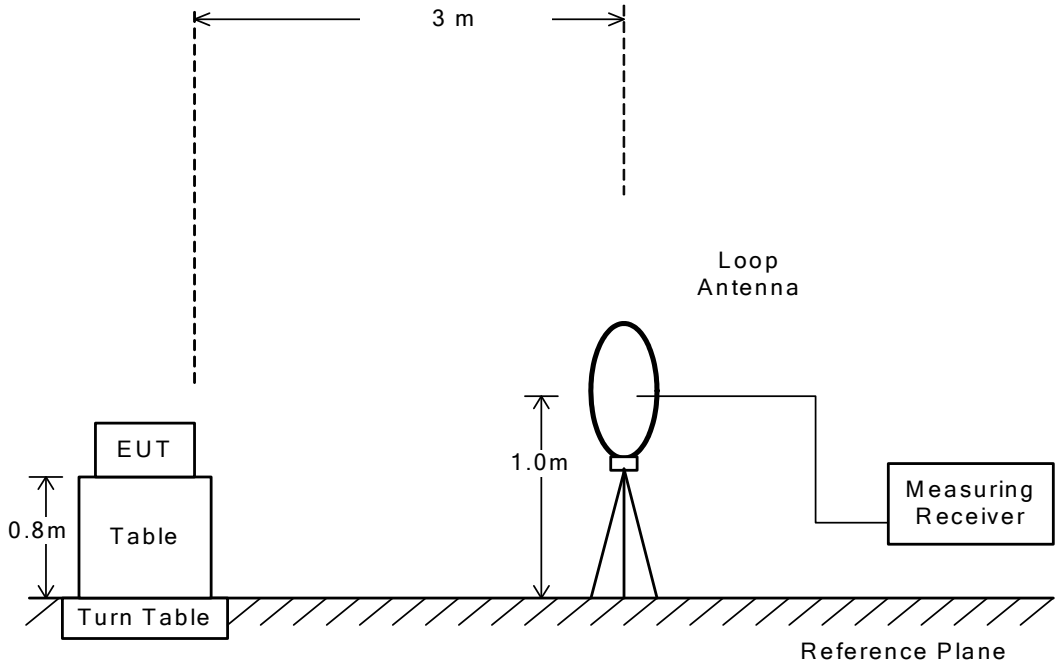
Type	Model	Manufacturer	ID No.	Last Cal.	Interval
Anechoic Chamber A	--	TDK	1	2013/9	1 Year
Test Receiver	ESI26	Rohde & Schwarz	13	2014/6	1 Year
Loop Antenna	HFH2-Z2	Rohde & Schwarz	21	2013/11	1 Year
Biconical Antenna	BBA9106	Schwarzbeck	167	2014/7	1 Year
Log-periodic Antenna	UHALP9108-A1	Schwarzbeck	168	2014/7	1 Year
Log-periodic Antenna	HL050	Rohde & Schwarz	198	2013/12	1 Year
Horn Antenna	3160-08	EMCO	237	2014/5	1 Year
Horn Antenna	3160-09	EMCO	238	2013/12	1 Year
RF Cable	5D-2W	Fujikura	38	2014/2	1 Year
RF Cable	F130-S1S1-394	MEGA PHASE	195	2014/4	1 Year
RF Cable	SUCOFLEC 102E	HUBER+SHUNER	241	2013/10	1 Year
RF Amplifier	JS4-00102600-28-5A	MITEQ	57	2013/8	1 Year
Band Rejection Filter	BRM12294	MICRO-TRONICS	78	2013/10	1 Year

7.9.3 Test Method and Test Setup (Diagrammatic illustration)

7.9.3.1 Radiated Emission 9 kHz – 30 MHz

The preliminary tests were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.
The EUT configuration(in X, Y and Z axis), cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for the final tests.

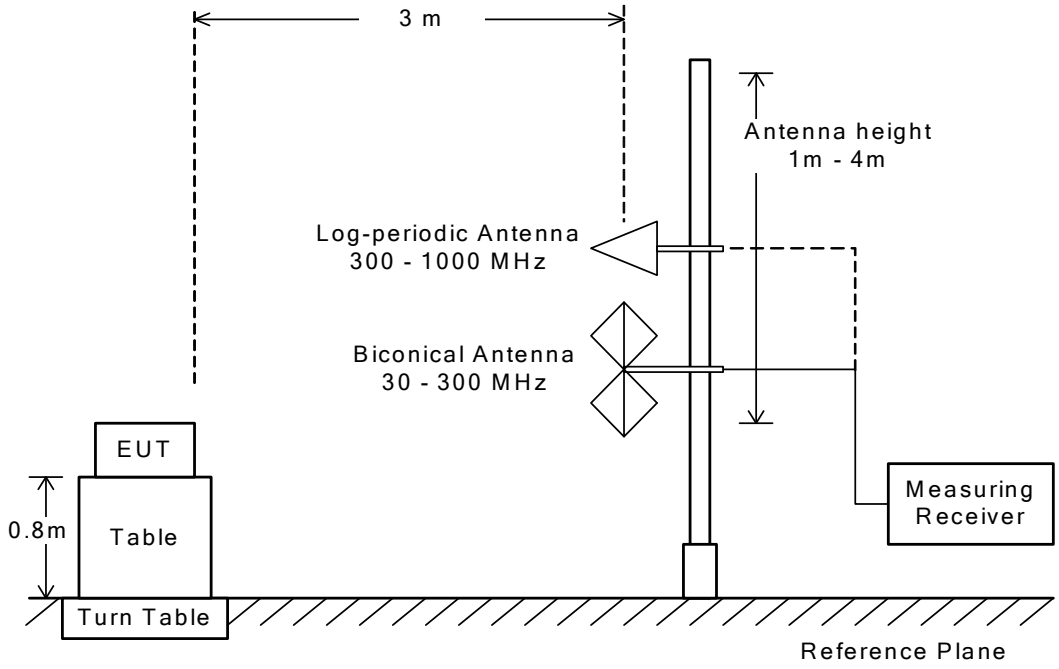
– Side View –



7.9.3.2 Radiated Emission 30 MHz – 1000 MHz

The preliminary tests were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.
The EUT configuration(in X, Y and Z axis), cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for the final tests.

– Side View –



7.9.3.3 Radiated Emission above 1 GHz

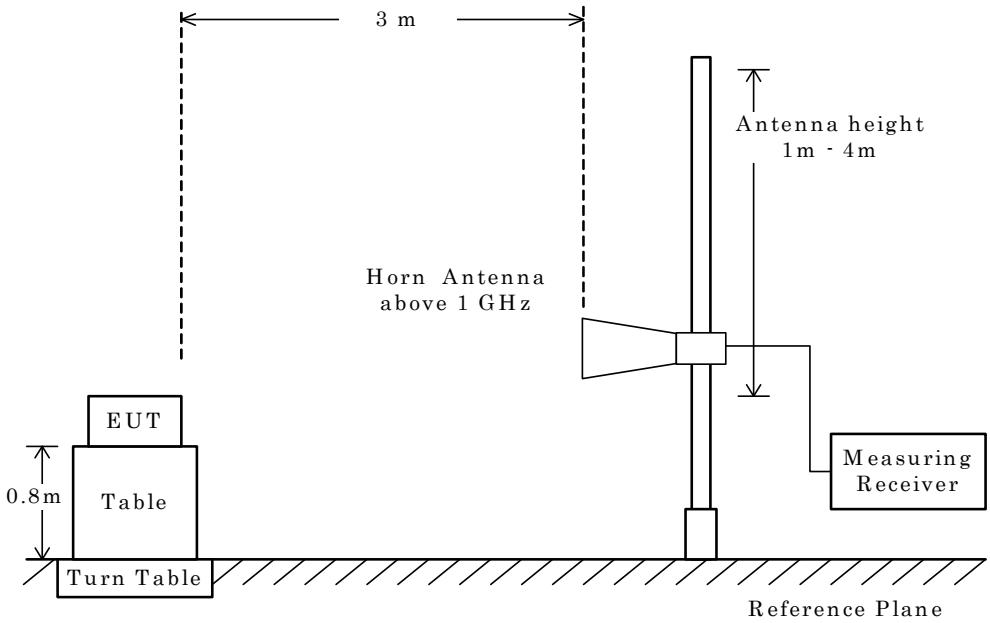
The preliminary tests were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.
The EUT configuration(in X, Y and Z axis), cable configuration and mode of operation were determined for producing the maximum level of emissions.
This configurations was used for the final tests.

The setting of the measuring instruments are shown as follows:

Type	Peak	Average
Detector Function	Peak	Peak(Linear Detector)
Res. Bandwidth	1 MHz	1 MHz
Video Bandwidth	3 MHz	≥ 1/T *1)
Sweep Time	AUTO	AUTO
Trace	Max Hold	Max Hold

Note: 1. T: Minimum transmission duration

– Side View –



NOTE
The antenna height is scanned depending on the EUT's size and mounting height.

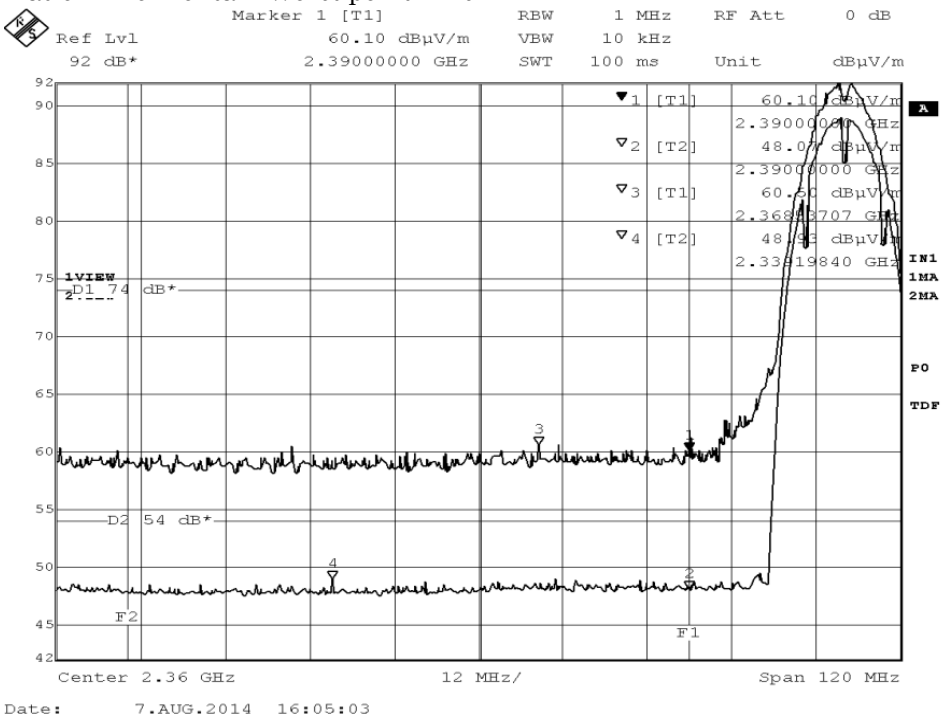
7.9.4 Test Data

7.9.4.1 Band-edge Compliance

Test Date : August 7, 2014

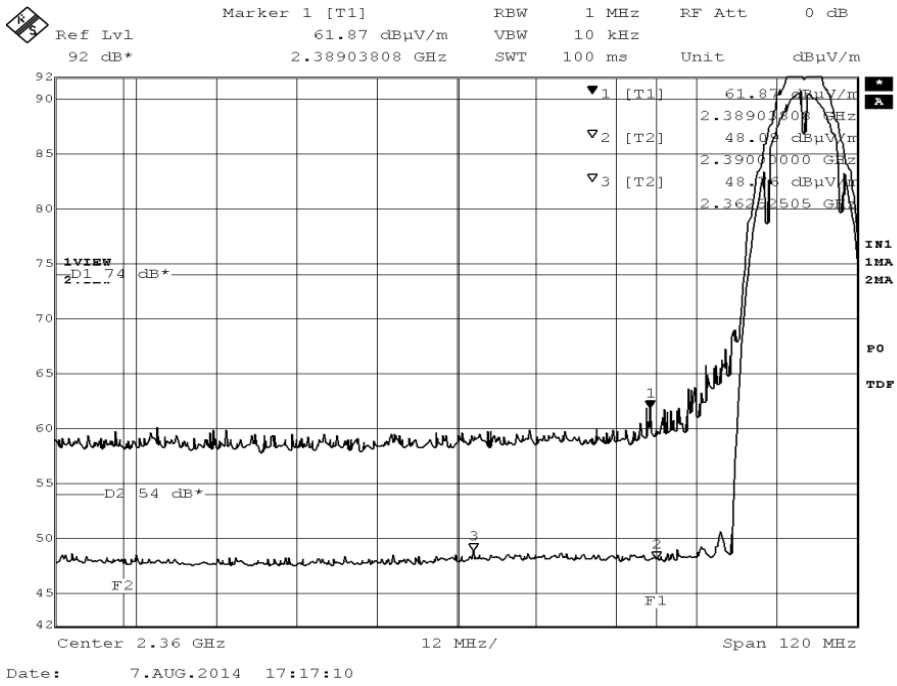
IEEE 802.11b, worst condition 1/T=53Hz Temp.:24°C, Humi:56%

Mode of EUT : TX (IEEE 802.11b, 1ch(2412MHz))
Antenna Polarization : Horizontal / Worst point Axis : Y



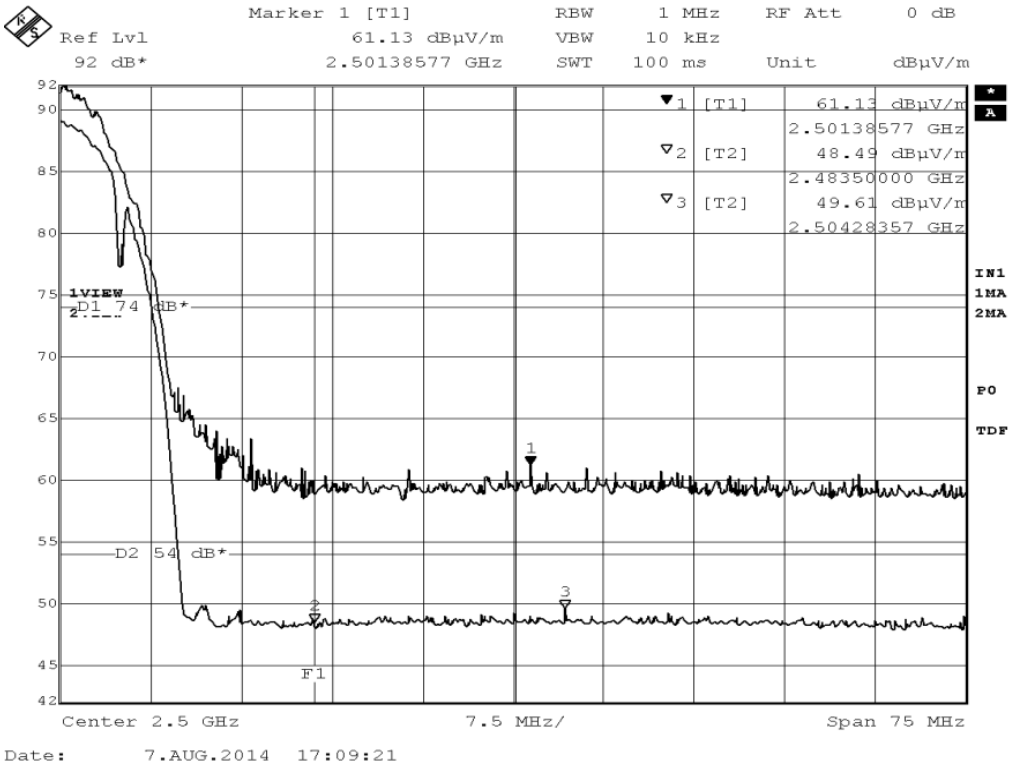
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11b, 1ch(2412MHz))
Antenna Polarization : Vertical
Worst point Axis : X



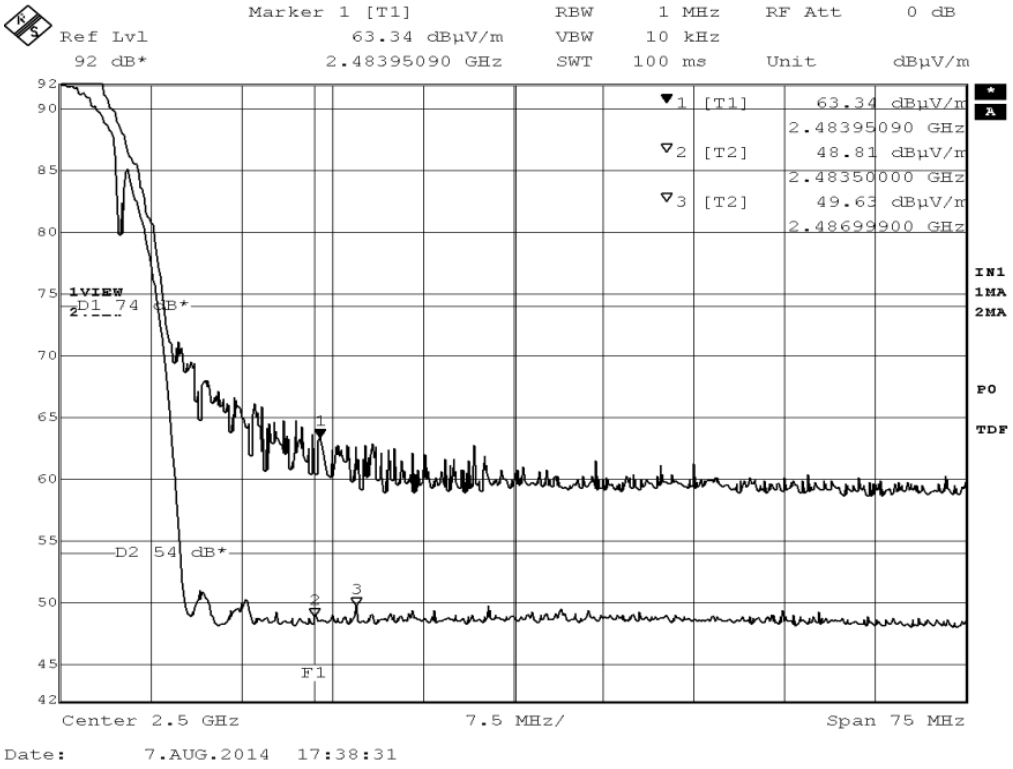
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11b, 11ch(2462MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

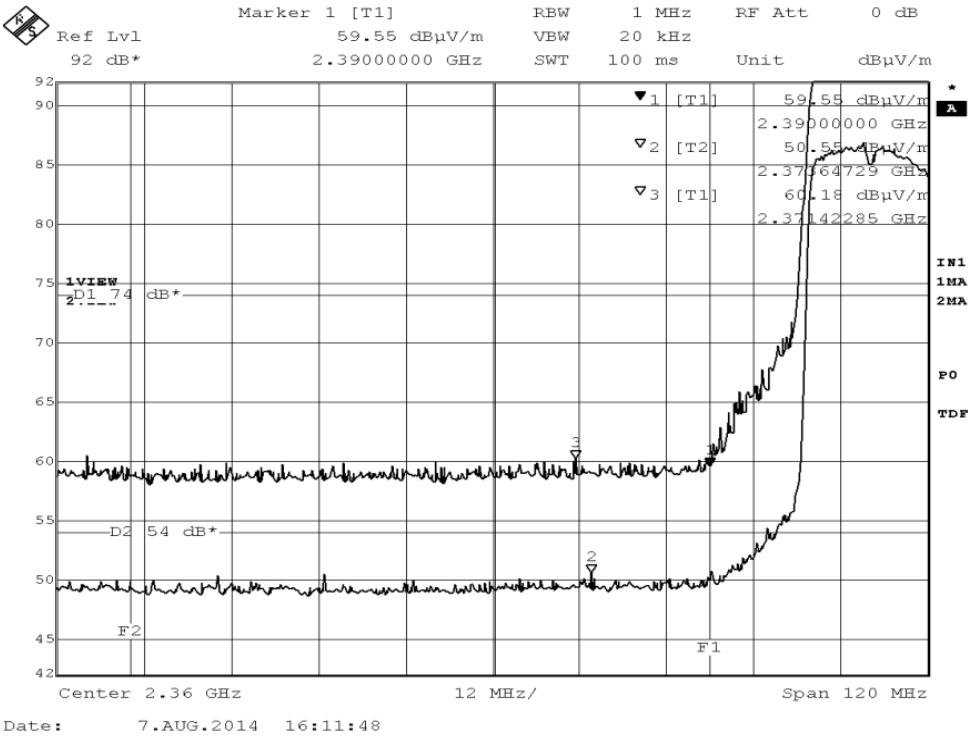
Mode of EUT : TX (IEEE 802.11b, 11ch(2462MHz))
Antenna Polarization : Vertical
Worst point Axis : X



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

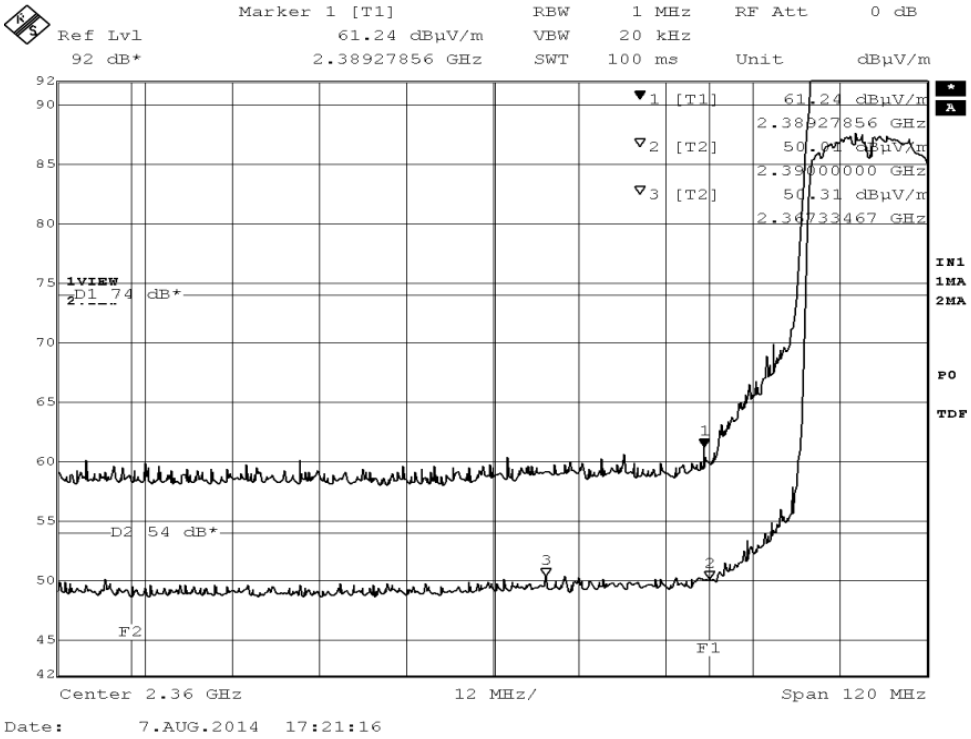
IEEE 802.11g, worst condition 1/T=1.852kHz

Mode of EUT : TX (IEEE 802.11g, 1ch(2412MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



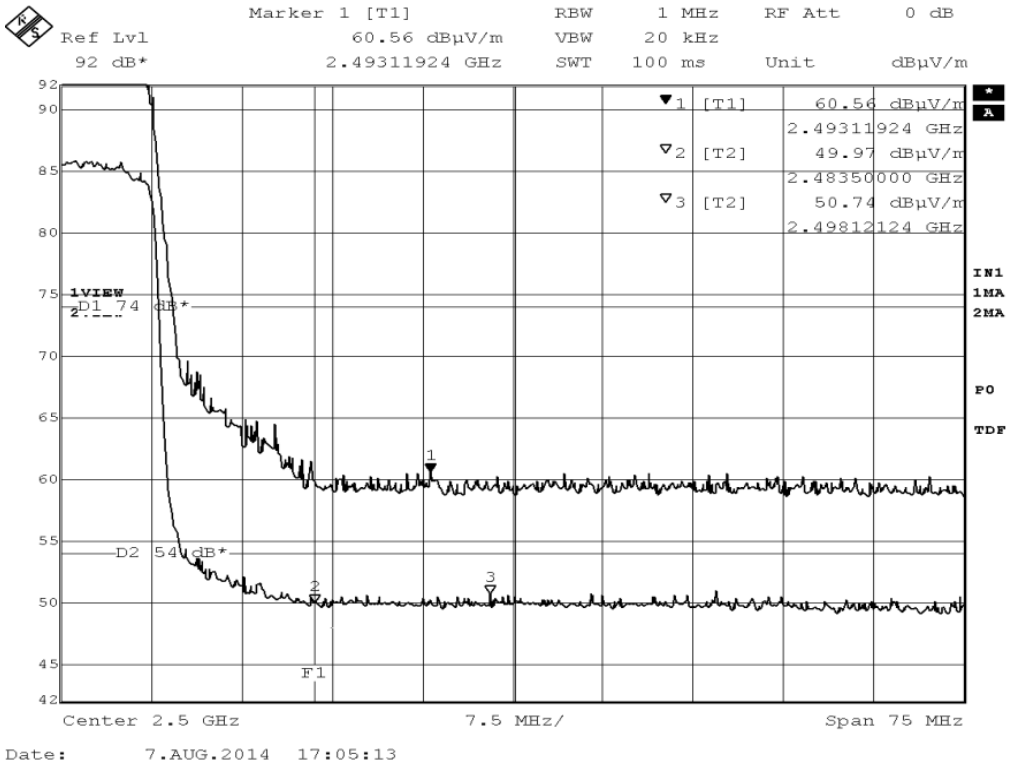
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11g, 1ch(2412MHz))
Antenna Polarization : Vertical
Worst point Axis : X



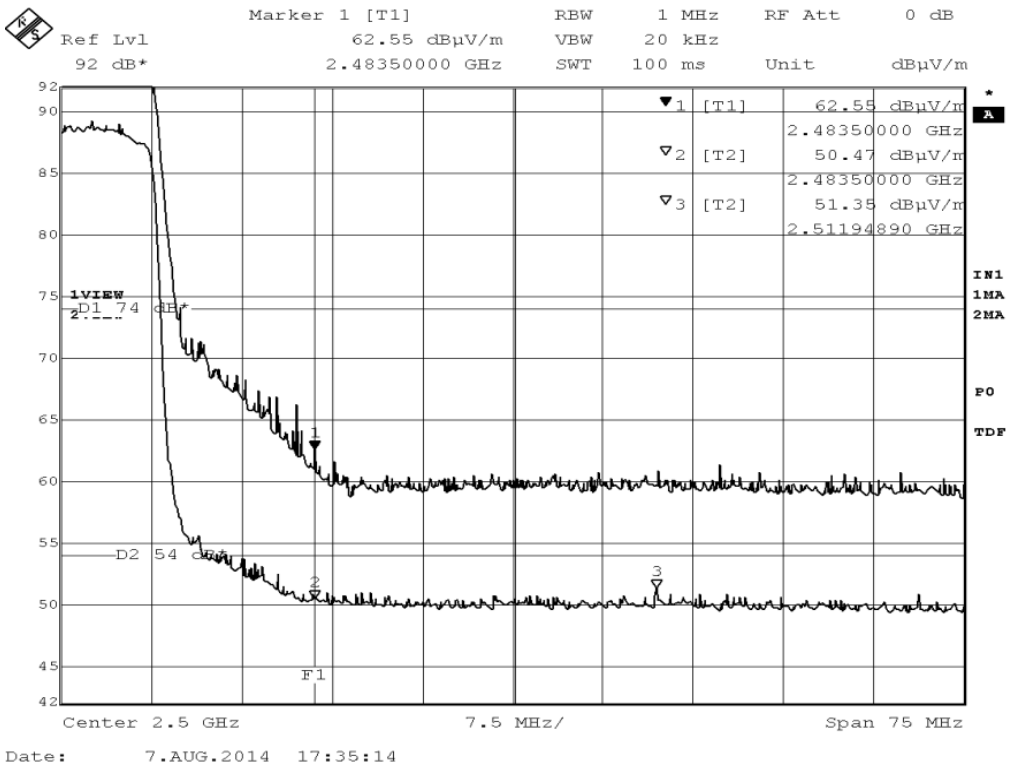
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11g, 11ch(2462MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

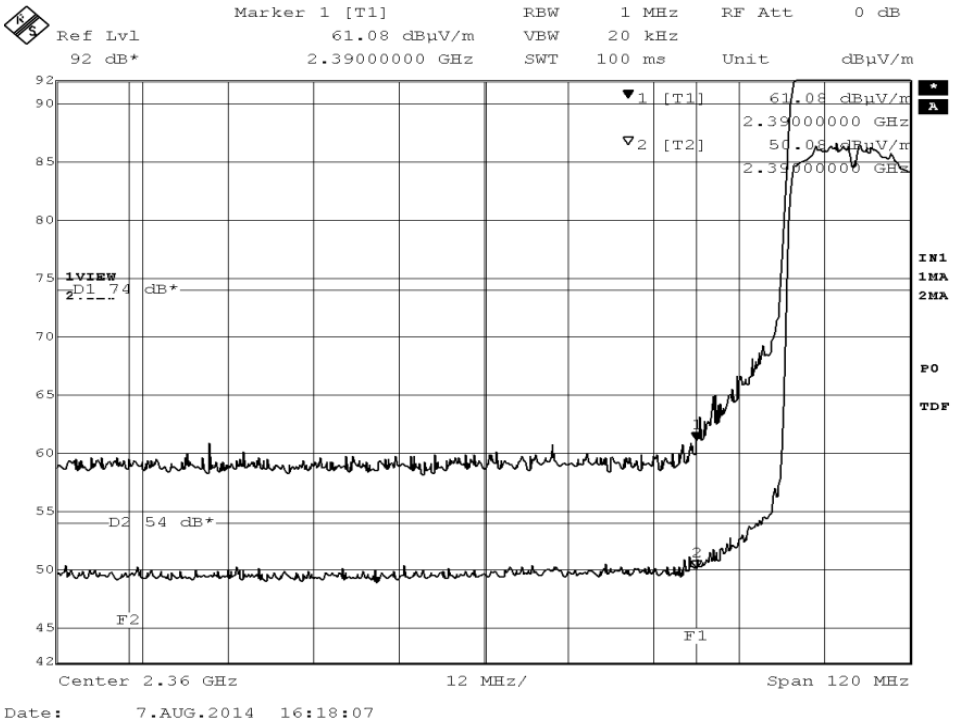
Mode of EUT : TX (IEEE 802.11g, 11ch(2462MHz))
Antenna Polarization : Vertical
Worst point Axis : X



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

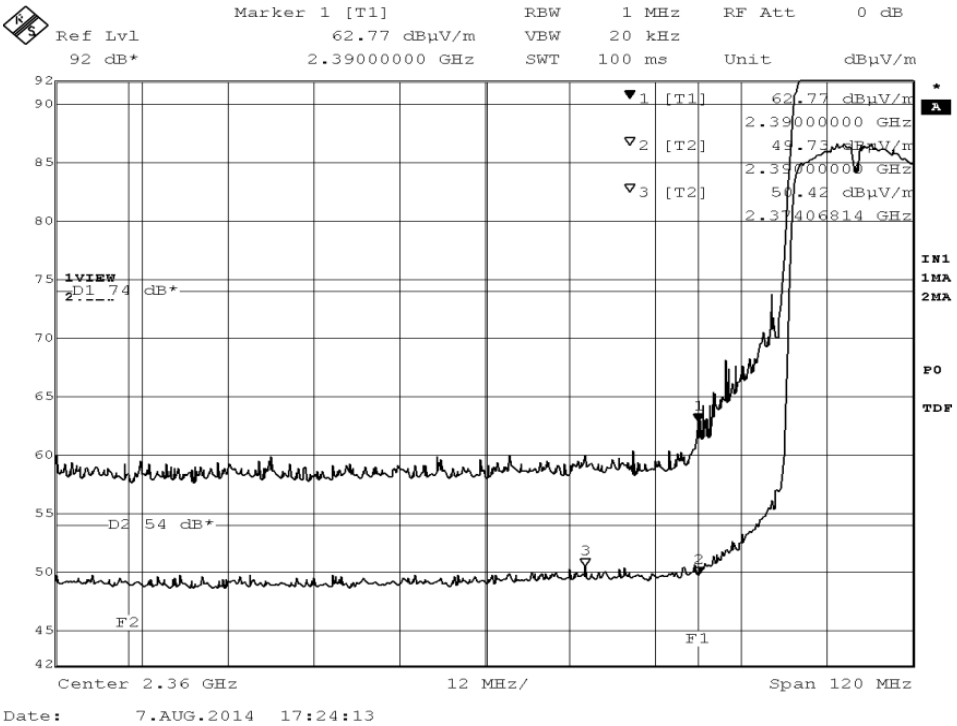
IEEE 802.11n(GI=800), worst condition 1/T=1.323kHz

Mode of EUT : TX (IEEE 802.11n(GI=800), 1ch(2412MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



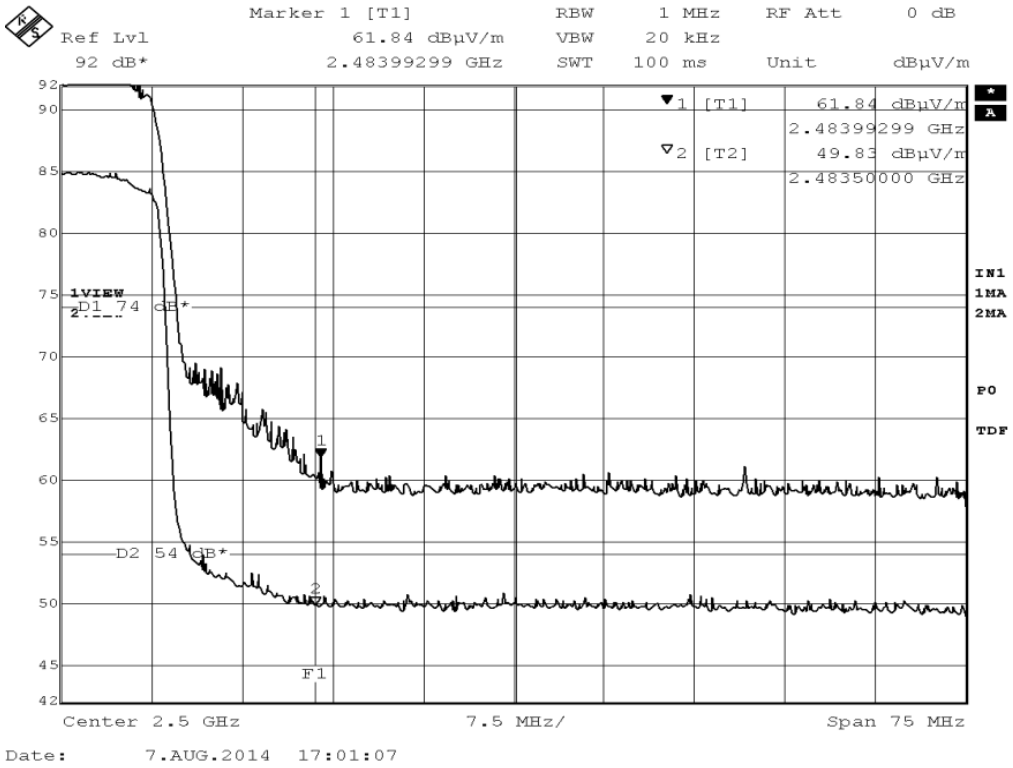
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11n(GI=800), 1ch(2412MHz))
Antenna Polarization : Vertical
Worst point Axis : X



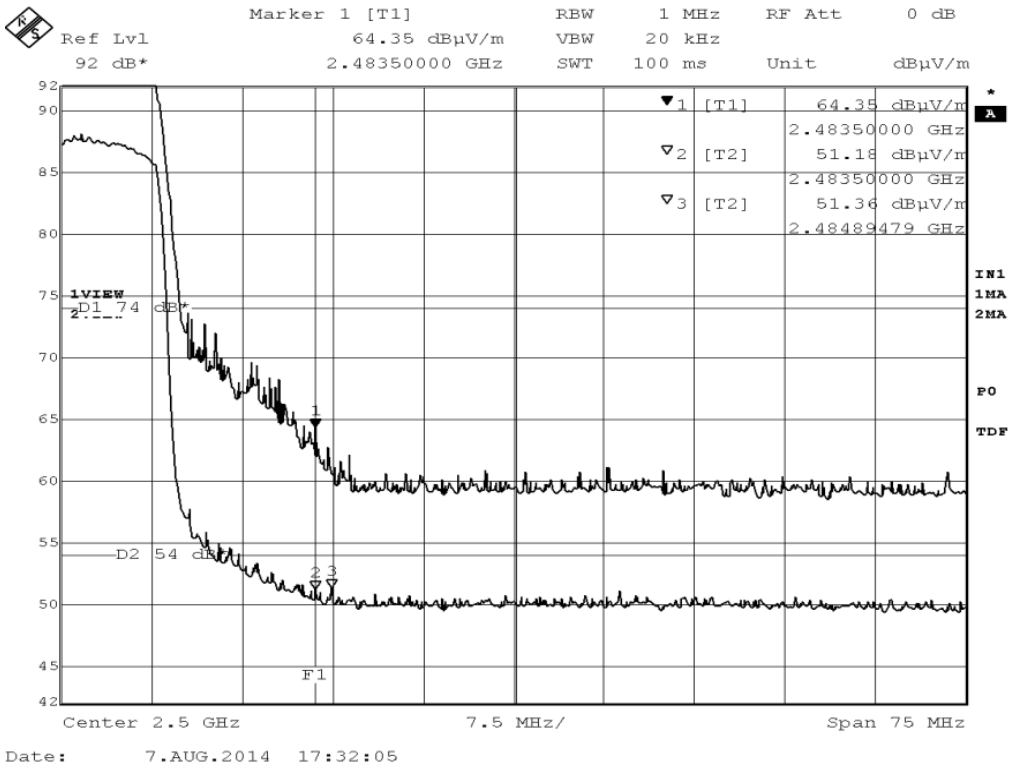
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11n(GI=800), 11ch(2462MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

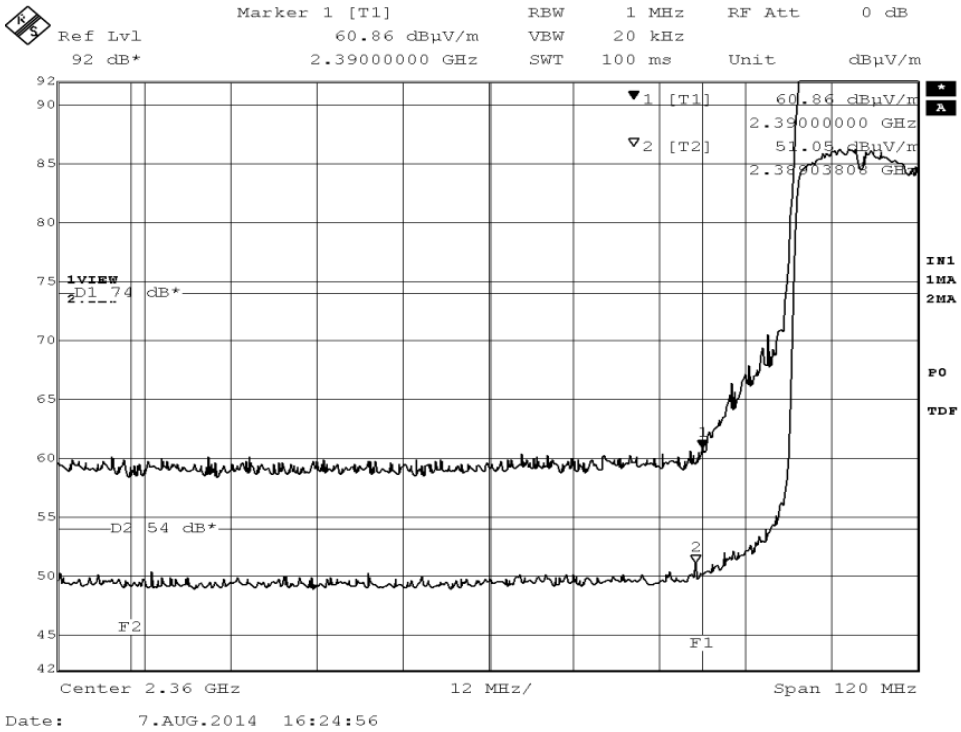
Mode of EUT : TX (IEEE 802.11n(GI=800), 11ch(2462MHz))
Antenna Polarization : Vertical
Worst point Axis : X



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

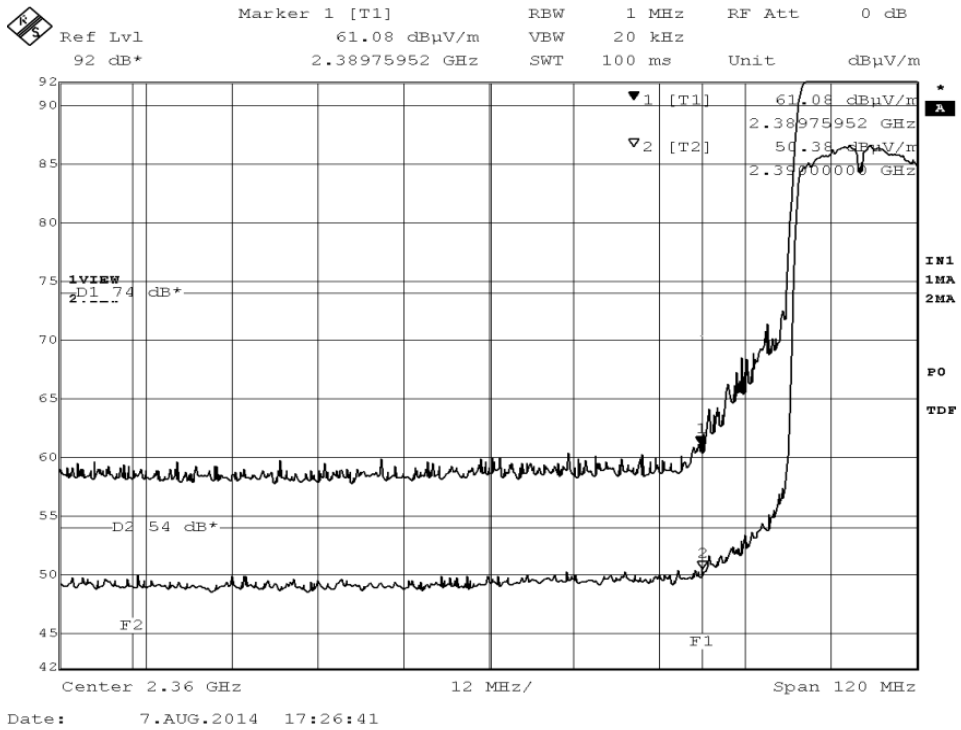
IEEE 802.11n(GI=400), worst condition 1/T=2.146kHz

Mode of EUT : TX (IEEE 802.11n(GI=400), 1ch(2412MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



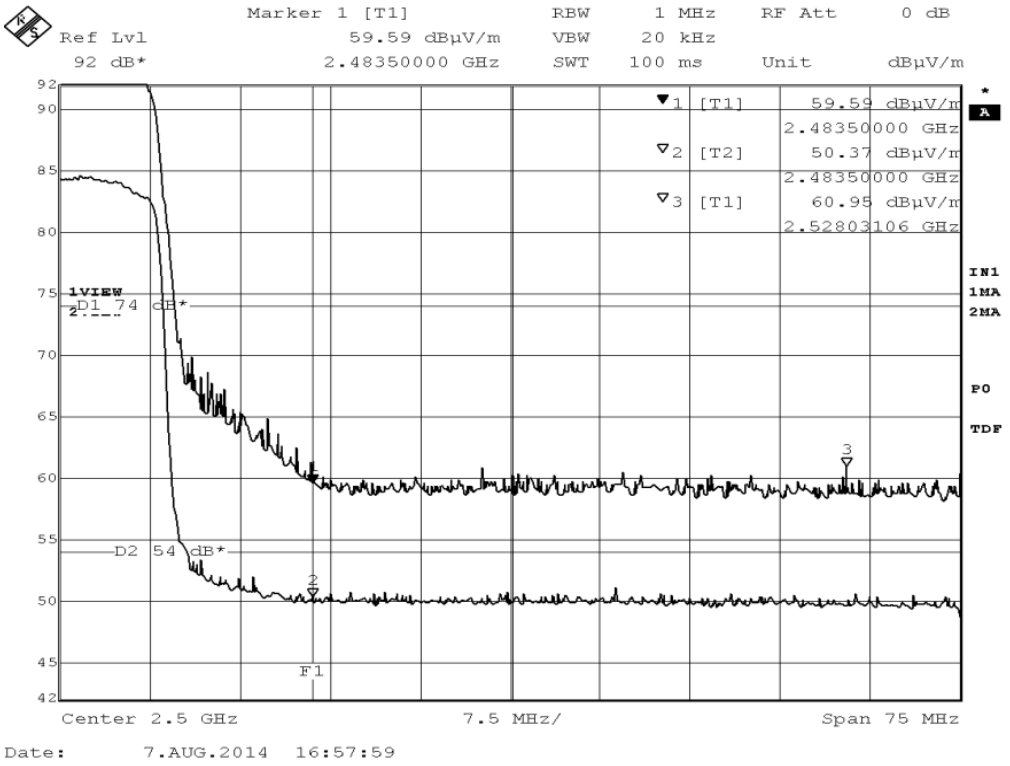
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11n(GI=400), 1ch(2412MHz))
Antenna Polarization : Vertical
Worst point Axis : X



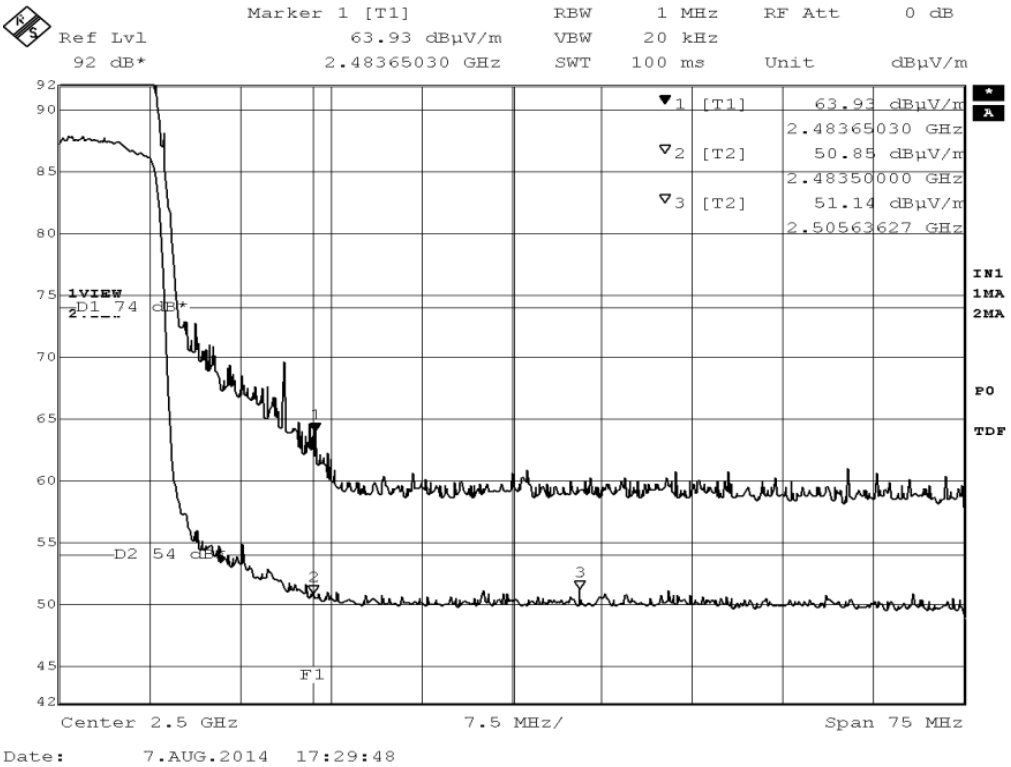
Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11n(GI=400), 11ch(2462MHz))
Antenna Polarization : Horizontal
Worst point Axis : Y



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

Mode of EUT : TX (IEEE 802.11n(GI=400), 11ch(2462MHz))
Antenna Polarization : Vertical
Worst point Axis : X



Note: The trace 1 is Peak detection. The trace 2 is Peak(Linear) detection.

7.9.4.2 Other Spurious Emission (9kHz – 30MHz)

Test Date : August 1, 2014
Temp.:23°C, Humi:60%

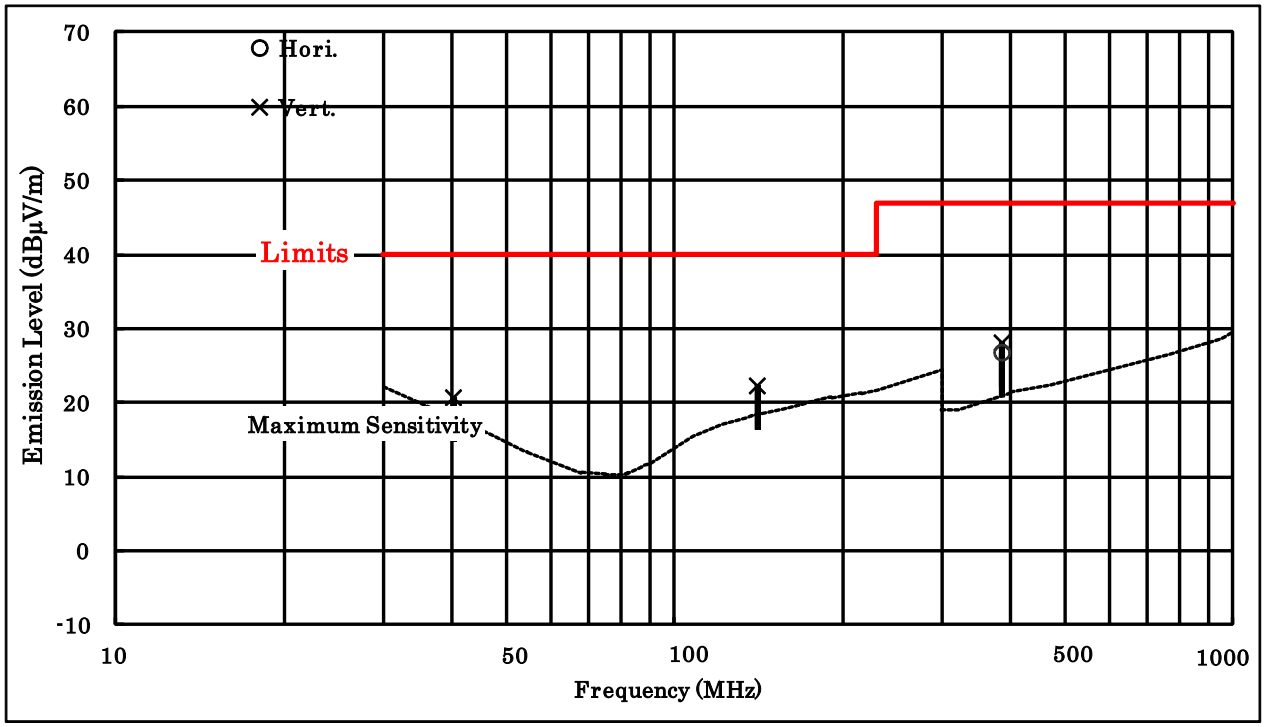
Mode of EUT : All modes have been investigated and the worst case mode has been listed.
Results : No spurious emissions in the range 20dB below the limit.

7.9.4.3 Other Spurious Emission (30MHz – 1000MHz)

Mode of EUT : All modes have been investigated and the worst case mode has been listed.
Worst point Axis : Z

Date : August 1, 2014
Temp : 23℃ Humi : 60%

Frequency (MHz)	Antenna Factor (dB/m)	Meter Reading (dBμV) Hori.	Meter Reading (dBμV) Vert.	Limits (dBμV/m) Q.P	Emission Level (dBμV/m) Hori.	Emission Level (dBμV/m) Vert.	Margin (dB) Hori.	Margin (dB) Vert.
40.0	18.4	< 0.0	2.4	40.0	< 18.4	20.8	> 21.6	19.2
140.0	18.4	< 0.0	4.0	40.0	< 18.4	22.4	> 21.6	17.6
295.1	24.2	< 0.0	< 0.0	47.0	< 24.2	< 24.2	> 22.8	> 22.8
384.0	20.9	6.0	7.3	47.0	26.9	28.2	20.1	18.8
828.9	27.6	< 0.0	< 0.0	47.0	< 27.6	< 27.6	> 19.4	> 19.4



Notes: 1) The testing location : Anechoic Chamber A Distance : 3 m
2) The spectrum was checked from 30 MHz to 1000 MHz.
3) Antenna factor includes the cable loss.
4) Hori. : Horizontal polarization Vert. : Vertical polarization
5) Q.P: Quasi-Peak Detector
6) The symbol of "<" means "or less", ">" means "more than".
7) A sample calculation was made at 40.0 MHz
(Antenna Factor) + (Meter Reading) = 18.4 + 2.4 = 20.8 dBμV

7.9.4.4 Other Spurious Emission (Above 1000MHz)

Mode of EUT : Tx IEEE 802.11b
Worst point Axis : Y

Date : August 7 ,2014
Temp. : 24 ℃
Humi. : 56 %

Freqency	Antenna Factor	Corr. Factor	Meter Readings [dB(μV)] Horizontal		Vertical		Limits [dB(μV/m)]		Results [dB(μV/m)]		Margin [dB]		Remarks
[MHz]	[dB(1/m)]	[dB]	PK	AVE	PK	AVE	PK	AVE	PK	AVE	PK	AVE	
Test condition : Tx Low Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4824.0	35.8	-25.7	40.5	34.1	40.7	32.9	74.0	54.0	50.8	44.2	23.2	9.8	
12060.0	43.7	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
19296.0	40.2	-29.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.0	< 38.0	> 23.0	> 16.0	
Test condition : Tx Mid Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4874.0	36.1	-25.7	< 40.0	32.0	40.3	33.2	74.0	54.0	50.7	43.6	23.3	10.4	
7311.0	38.8	-34.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 44.5	< 31.5	> 29.5	> 22.5	
12185.0	44.0	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.7	< 38.7	> 22.3	> 15.3	
19496.0	40.2	-29.0	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.2	< 38.2	> 22.8	> 15.8	
Test condition : Tx High Ch													
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4924.0	36.0	-25.7	< 40.0	27.9	< 40.0	28.5	74.0	54.0	< 50.3	38.8	> 23.7	15.2	
7686.0	39.1	-33.9	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 45.2	< 32.2	> 28.8	> 21.8	
12130.0	43.9	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.6	< 38.6	> 22.4	> 15.4	
19696.0	40.2	-28.8	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
22158.0	40.2	-26.5	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 53.7	< 40.7	> 20.3	> 13.3	

Calculated result at 1654.1 MHz, as the worst point shown on underline:

Antenna Factor	=	35.8	dB(1/m)
Corr. Factor	=	-25.7	dB
+) Meter Reading	=	34.1	dB(μV)
Result	=	44.2	dB(μV/m)

Minimum Margin: 54.0 - 44.2 = 9.8 (dB)

NOTES
1. Test Distance : 3 m (1 GHz to 6 GHz) and 1 m (6 GHz to 25 GHz)
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss[dB] - Pre-Amp. Gain [dB] (1 GHz - 6 GHz)
   Corr. Factor [dB] = Cable Loss - Measrement distance conversion[dB] - Pre-Amp. Gain [dB] (6 GHz - 25 GHz)
   Measrement distance conversion[dB] = 20 * Log (1m / 3m)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Peak (Linear) Detector

Mode of EUT : Tx IEEE 802.11g
Worst point Axis : Y

Date : August 7 ,2014
Temp. : 24 ℃
Humi. : 56 %

Freqency	Antenna Factor	Corr. Factor	Meter Readings [dB(μV)] Horizontal PK	Horizontal AVE	Vertical PK	Vertical AVE	Limits [dB(μV/m)] PK	Limits AVE	Results [dB(μV/m)] PK	Results AVE	Margin [dB] PK	Margin AVE	Remarks
[MHz]	[dB(1/m)]	[dB]											
Test condition : Tx Low Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4824.0	35.8	-25.7	40.7	27.8	< 40.0	27.7	74.0	54.0	50.8	37.9	23.2	16.1	
12060.0	43.7	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
19296.0	40.2	-29.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.0	< 38.0	> 23.0	> 16.0	
Test condition : Tx Mid Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4874.0	36.1	-25.7	< 40.0	< 27.0	< 40.0	27.7	74.0	54.0	< 50.4	38.1	> 23.6	15.9	
7311.0	38.8	-34.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 44.5	< 31.5	> 29.5	> 22.5	
12185.0	44.0	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.7	< 38.7	> 22.3	> 15.3	
19496.0	40.2	-29.0	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.2	< 38.2	> 22.8	> 15.8	
Test condition : Tx High Ch													
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4924.0	36.0	-25.7	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 50.3	< 37.3	> 23.7	> 16.7	
7686.0	39.1	-33.9	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 45.2	< 32.2	> 28.8	> 21.8	
12130.0	43.9	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.6	< 38.6	> 22.4	> 15.4	
19696.0	40.2	-28.8	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
22158.0	40.2	-26.5	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 53.7	< 40.7	> 20.3	> 13.3	

Calculated result at 1654.1 MHz, as the worst point shown on underline:

	Antenna Factor	=	40.2 dB(1/m)
	Corr. Factor	=	-26.5 dB
+)	Meter Reading	=	27.0 dB(μV)
	Result	=	40.7 dB(μV/m)

Minimum Margin: 54.0 - 40.7 = 13.3 (dB)

NOTES
1. Test Distance : 3 m (1 GHz to 6 GHz) and 1 m (6 GHz to 25 GHz)
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss[dB] - Pre-Amp. Gain [dB] (1 GHz - 6 GHz)
   Corr. Factor [dB] = Cable Loss - Measrement distance conversion[dB] - Pre-Amp. Gain [dB] (6 GHz - 25 GHz)
   Measrement distance conversion[dB] = 20 * Log (1m / 3m)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Peak (Linear) Detector

Mode of EUT : Tx IEEE 802.11n(GI=800)
Worst point Axis : Y

Date : August 7 ,2014
Temp. : 24 ℃
Humi. : 56 %

Freqency	Antenna Factor	Corr. Factor	Meter Readings [dB(μV)] Horizontal PK	Horizontal AVE	Vertical PK	Vertical AVE	Limits [dB(μV/m)] PK	Limits AVE	Results [dB(μV/m)] PK	Results AVE	Margin [dB] PK	Margin AVE	Remarks
[MHz]	[dB(1/m)]	[dB]											
Test condition : Tx Low Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4824.0	35.8	-25.7	< 40.0	27.2	< 40.0	27.4	74.0	54.0	< 50.1	37.5	> 23.9	16.5	
12060.0	43.7	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
19296.0	40.2	-29.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.0	< 38.0	> 23.0	> 16.0	
Test condition : Tx Mid Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4874.0	36.1	-25.7	< 40.0	< 27.0	< 40.0	27.4	74.0	54.0	< 50.4	37.8	> 23.6	16.2	
7311.0	38.8	-34.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 44.5	< 31.5	> 29.5	> 22.5	
12185.0	44.0	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.7	< 38.7	> 22.3	> 15.3	
19496.0	40.2	-29.0	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.2	< 38.2	> 22.8	> 15.8	
Test condition : Tx High Ch													
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4924.0	36.0	-25.7	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 50.3	< 37.3	> 23.7	> 16.7	
7686.0	39.1	-33.9	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 45.2	< 32.2	> 28.8	> 21.8	
12130.0	43.9	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.6	< 38.6	> 22.4	> 15.4	
19696.0	40.2	-28.8	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
22158.0	40.2	-26.5	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 53.7	< 40.7	> 20.3	> 13.3	

Calculated result at 1654.1 MHz, as the worst point shown on underline:

	Antenna Factor	=	40.2 dB(1/m)
	Corr. Factor	=	-26.5 dB
+)	Meter Reading	=	27.0 dB(μV)
	Result	=	40.7 dB(μV/m)

Minimum Margin: 54.0 - 40.7 = 13.3 (dB)

NOTES
1. Test Distance : 3 m (1 GHz to 6 GHz) and 1 m (6 GHz to 25 GHz)
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss[dB] - Pre-Amp. Gain [dB] (1 GHz - 6 GHz)
   Corr. Factor [dB] = Cable Loss - Measrement distance conversion[dB] - Pre-Amp. Gain [dB] (6 GHz - 25 GHz)
   Measrement distance conversion[dB] = 20 * Log (1m / 3m)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Peak (Linear) Detector

Mode of EUT : Tx IEEE 802.11n(GI=400)
Worst point Axis : Y

Date : August 7 ,2014
Temp. : 24 ℃
Humi. : 56 %

Freqency	Antenna Factor	Corr. Factor	Meter Readings [dB(μV)] Horizontal		Vertical		Limits [dB(μV/m)]		Results [dB(μV/m)]		Margin [dB]		Remarks
[MHz]	[dB(1/m)]	[dB]	PK	AVE	PK	AVE	PK	AVE	PK	AVE	PK	AVE	
Test condition : Tx Low Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4824.0	35.8	-25.7	< 40.0	27.4	< 40.0	27.5	74.0	54.0	< 50.1	37.6	> 23.9	16.4	
12060.0	43.7	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
19296.0	40.2	-29.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.0	< 38.0	> 23.0	> 16.0	
Test condition : Tx Mid Ch													
1196.2	23.1	-27.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 35.8	< 22.8	> 38.2	> 31.2	
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4874.0	36.1	-25.7	< 40.0	27.1	< 40.0	27.5	74.0	54.0	< 50.4	37.9	> 23.6	16.1	
7311.0	38.8	-34.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 44.5	< 31.5	> 29.5	> 22.5	
12185.0	44.0	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.7	< 38.7	> 22.3	> 15.3	
19496.0	40.2	-29.0	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.2	< 38.2	> 22.8	> 15.8	
Test condition : Tx High Ch													
1262.7	23.5	-27.2	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 36.3	< 23.3	> 37.7	> 30.7	
4924.0	36.0	-25.7	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 50.3	< 37.3	> 23.7	> 16.7	
7686.0	39.1	-33.9	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 45.2	< 32.2	> 28.8	> 21.8	
12130.0	43.9	-32.3	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.6	< 38.6	> 22.4	> 15.4	
19696.0	40.2	-28.8	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 51.3	< 38.3	> 22.7	> 15.7	
22158.0	40.2	-26.5	< 40.0	< 27.0	< 40.0	< 27.0	74.0	54.0	< 53.7	< 40.7	> 20.3	> 13.3	

Calculated result at 1654.1 MHz, as the worst point shown on underline:

Antenna Factor	=	40.2	dB(1/m)
Corr. Factor	=	-26.5	dB
+) Meter Reading	=	27.0	dB(μV)
Result	=	40.7	dB(μV/m)

Minimum Margin: 54.0 - 40.7 = 13.3 (dB)

NOTES
1. Test Distance : 3 m (1 GHz to 6 GHz) and 1 m (6 GHz to 25 GHz)
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss[dB] - Pre-Amp. Gain [dB] (1 GHz - 6 GHz)
   Corr. Factor [dB] = Cable Loss - Measrement distance conversion[dB] - Pre-Amp. Gain [dB] (6 GHz - 25 GHz)
   Measrement distance conversion[dB] = 20 * Log (1m / 3m)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Peak (Linear) Detector