LTA
Laboratory for Test & Approval Co.,Ltd.

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http://www.ltalab.com

ENUSTECH

Dates of Tests : October 6~ 25, 2012
Test Report S/N: LR500111210L
Test Site : LTA CO., LTD

CERTIFICATION OF COMPLIANCE

FCC ID	TT2JAK
IC	6329A-JAK
APPLICANT	ENUSTECH

Equipment Class	**:**	**Digital Transmission System (DTS)**
Manufacturing Description	**:**	**WLAN USB Dongle**
Manufacturer	**:**	**ENUSTECH**
Model Name	**:**	**Multishare 1.0**
Test Device Serial No.:	**:**	**Identical prototype**
Rule Part(s)	**:**	**FCC Part 15.247 Subpart C; ANSI C-63.4-2003** **RSS-210 and ISSUE No. :8 Date :2010**
Frequency Range	**:**	**2412MHz ~ 2462MHz**
Max. Output Power	**:**	**Max 12.84dBm - Conducted (802.11b)** **Max 11.69dBm - Conducted (802.11g)** **Max 11.90dBm - Conducted (802.11n_20MHz)** **Max 12.30dBm - Conducted (802.11n_40MHz)**
Data of issue	**:**	**October 26, 2012**

This test report is issued under the authority of:

Kyu-Hyun Lee, Manager

The test was supervised by:

Jung-Moo Her, Test Engineer

This test result only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the test laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

NVLAP LAB Code.: 200723-0

TABLE OF CONTENTS

1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.

Address : 243, Jubug-ri,Yangji-Myeon,Youngin-Si, Kyunggi-Do, Korea. 449-822

Web site : http://www.ltalab.com

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Facsimile +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
NVLAP	U.S.A	200723-0	2013-09-30	ECT accredited Lab.
RRL	KOREA	KR0049	2013-04-24	EMC accredited Lab.
FCC	U.S.A	610755	2014-04-27	FCC filing
FCC	U.S.A	649054	2013-04-13	FCC CAB
VCCI	JAPAN	R2133(10m), C2307	2014-06-21	VCCI registration
VCCI	JAPAN	T-2009	2013-12-23	VCCI registration
VCCI	JAPAN	G-563	2015-05-28	VCCI registration
IC	CANADA	5799A-1	2015-06-21	IC filing

2. Product Information

2-1 Applicant

Company name	:	ENUSTECH
Address	:	Dui Bldg., 6F, Gaepo-dong, 1196-2, Gangnam-gu,Seoul 135-240, Korea
Tel / Fax	:	+82-70-7547-7562 / +82-2-3452-3603

2-2 Equipment Under Test (EUT)

Trade name	:	ENUSTECH
Model name	:	Multishare 1.0
Date of receipt	:	October 5, 2012
EUT condition	:	Pre-production, not damaged
Antenna type	:	Chip antenna with Max. 2.87 dBi gain
Frequency Range	:	2412MHz ~ 2462MHz
RF output power	:	Max 12.84dBm - Conducted (802.11b)
		Max 11.69dBm - Conducted (802.11g)
		Max 11.90dBm - Conducted (802.11n_20MHz)
		Max 12.30dBm - Conducted (802.11n_40MHz)
Number of channels	:	802.11b/g/n_20MHz for 11 and 802.11n_40MHz for 9
Type of Modulation	:	CCK, DQPSK, DBPSK for DSSS
		64QAM, 16QAM, QPSK, BPSK for OFDM
Transfer Rate	:	11, 5.5, 2, 1 Mbps for 802.11b
		54, 48, 36, 24, 18, 12, 9, 6 Mbps for 802.11g
		65/72.2, 58.5/65, 52/57.8, 39/43.3, 26/28.9, 19.5/21.7,
		13/14.4, 6.5/7.2Mbps for 802.11n_20MHz/n_40MHz
Power Source	:	DC 5.0V by USB power
Firmware Version	:	V1.0.0

2-3 Tested frequency

	LOW	MID	HIGH
Frequency (MHz) for 802.11b/g/n_20MHz	2412	2437	2462
Frequency (MHz) for 802.11n_40MHz	2422	2437	2452

2-4 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Smart phone	SHV-E160S	R33C20PNN0R	SAMSUNG

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.247(a)	6 dB Bandwidth	> 500kHz	Conducted	C
15.247(b)	Transmitter Peak Output Power	< 1Watt		C
15.247(d)	Transmitter Power Spectral Density	< 8dBm @ 3kHz		C
15.247(d)	Band Edge & Spurious	> 20 dBc		C
15.209	Field Strength of Harmonics	Emissions	Radiated	C
15.109	Field Strength	-		C
15.207	AC Conducted Emissions	Emissions	Conducted	C
15.203	Antenna requirement	-	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

→ Antenna Requirement
The **ENUSTECH, FCC ID : TT2JAK** unit complies with the requirement of §15.203.
The antenna type is **Chip antenna**.

The sample was tested according to the following specification:
*FCC Parts 15.247; ANSI C-63.4-2003
*FCC KDB Publication No. 558074 D01 DTS Meas. Guidance V01
*FCC TCB Workshop 2012, April

3.2 Technical Characteristics Test

3.2.1 6 dB Bandwidth

Procedure:

*The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.

The bandwidth at 6dB below the highest in-band spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz Span = 50 MHz

VBW = 100 kHz (VBW ≥ RBW) Sweep = auto

Trace = max hold Detector function = peak

Measurement Data: 802.11b

Frequency (MHz)	Channel No.	Test Results(MHz)	
		6dB Bandwidth	99% Bandwidth
2412	1	9.696	14.906
2437	6	9.696	14.906
2462	11	9.696	14.834

Measurement Data: 802.11g

Frequency (MHz)	Channel No.	Test Results(MHz)	
		6dB Bandwidth	99% Bandwidth
2412	1	16.498	16.425
2437	6	16.477	16.425
2462	11	16.498	16.425

Measurement Data: 802.11n_20MHz

Frequency (MHz)	Channel No.	Test Results(MHz)	
		6dB Bandwidth	99% Bandwidth
2412	1	17.728	17.583
2437	6	17.764	17.583
2462	11	17.656	17.583

Minimum Standard:

6 dB Bandwidth > 500kHz

Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

Measurement Data: 802.11n_20MHz

Frequency (MHz)	Channel No.	Test Results(MHz)	
		6dB Bandwidth	99% Bandwidth
2422	3	36.295	35.861
2437	6	35.883	35.947
2452	9	35.644	35.948

- See next pages for actual measured spectrum plots.

Minimum Standard:

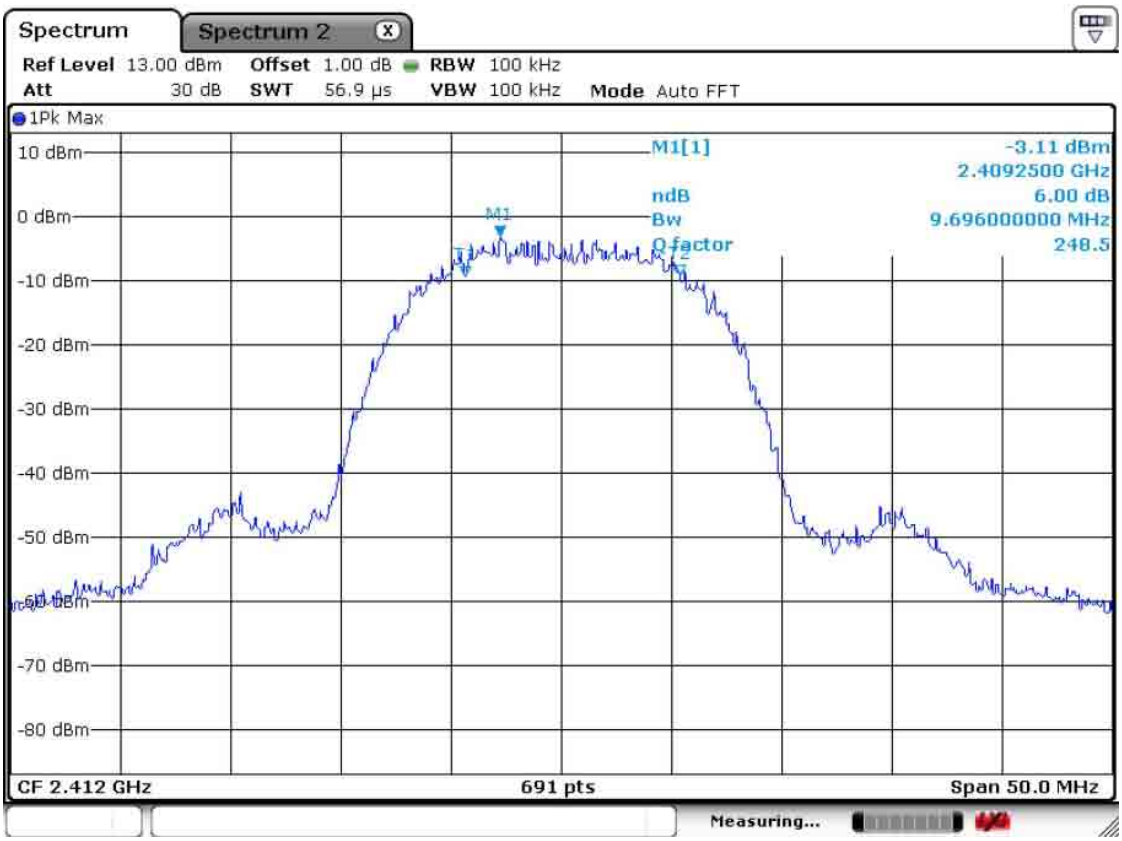
6 dB Bandwidth > 500kHz

Measurement Setup

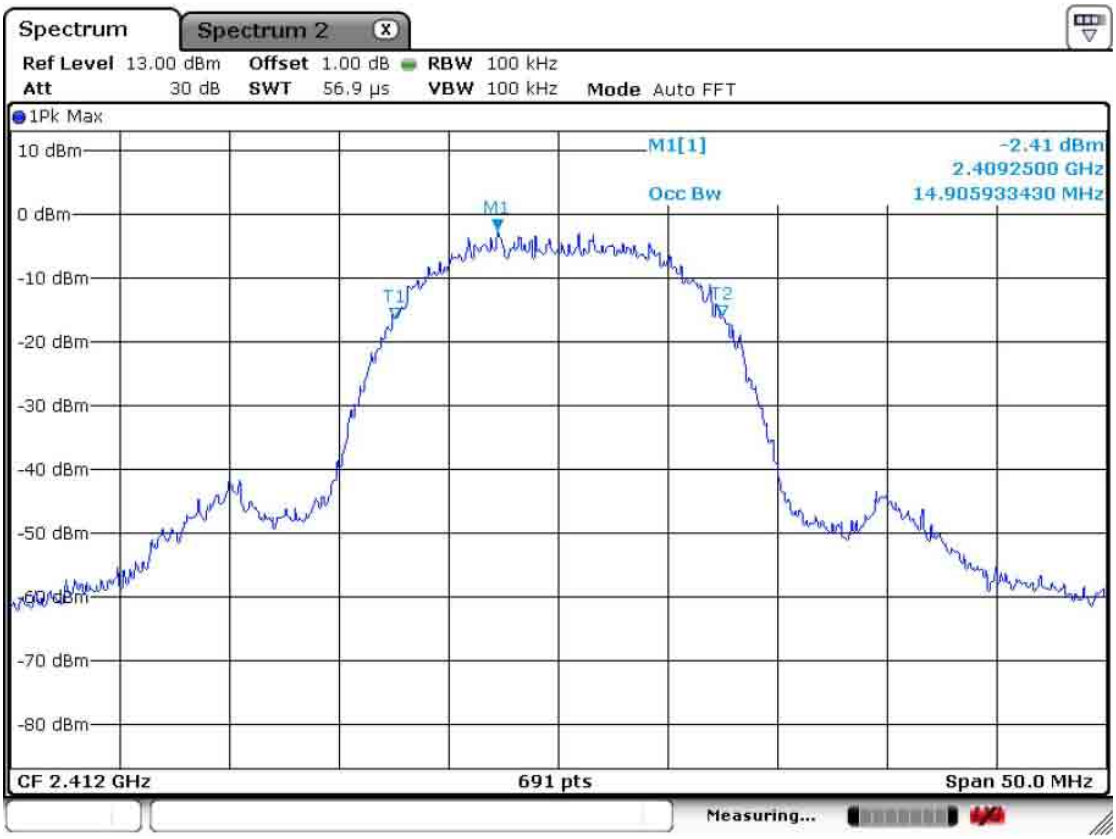
Same as the Chapter 3.2.1 (Figure 1)

Channel 1 802.11b mode

6dB Bandwidth

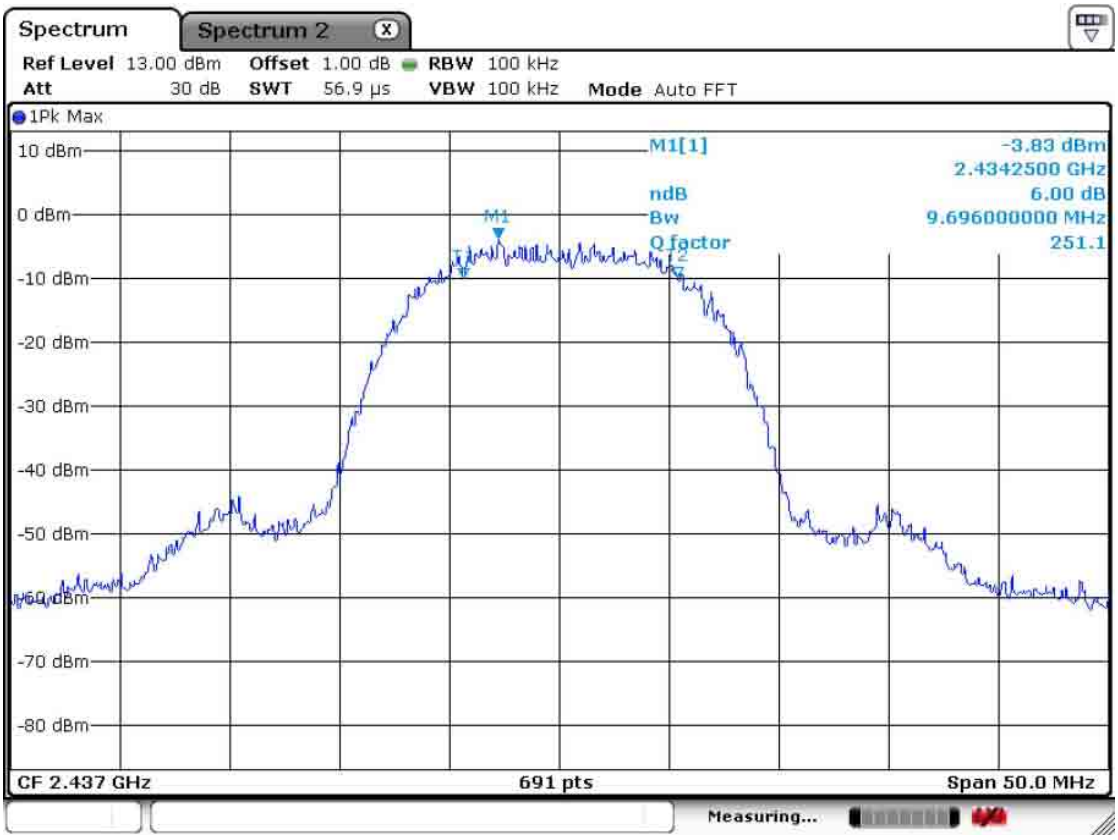


99% Bandwidth

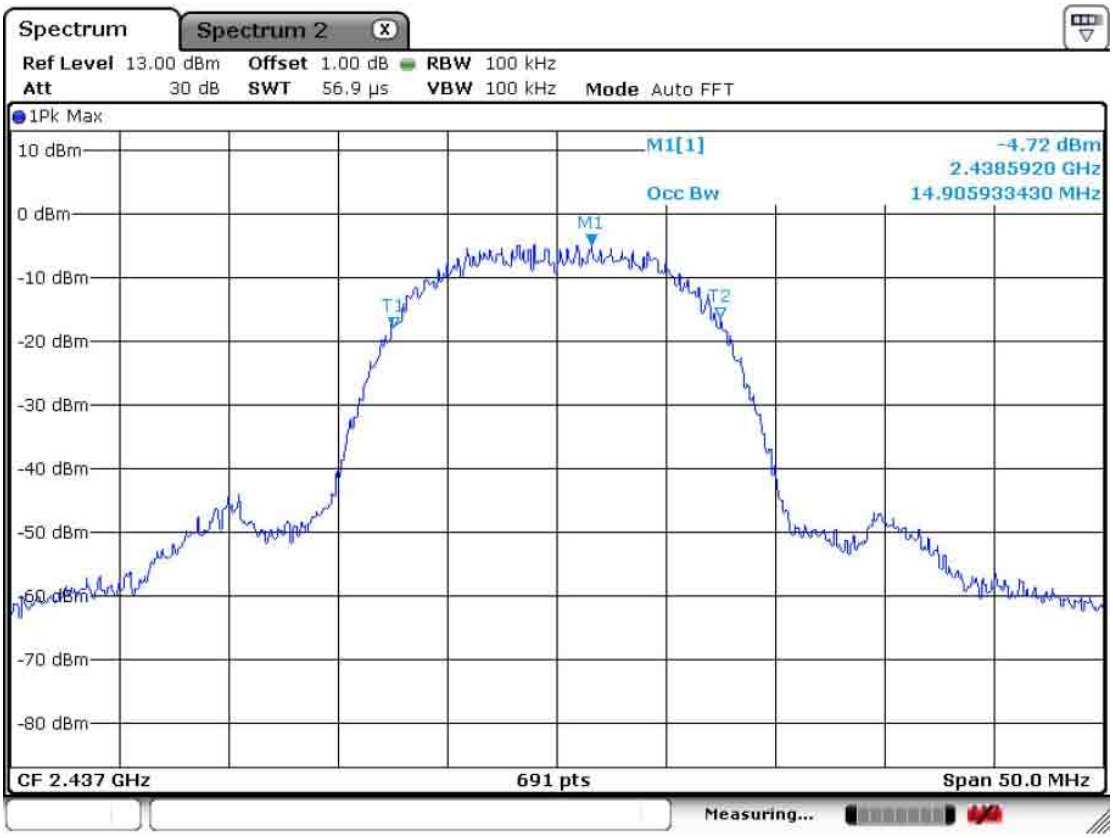


Channel 6 of 802.11b mode

6 dB Bandwidth

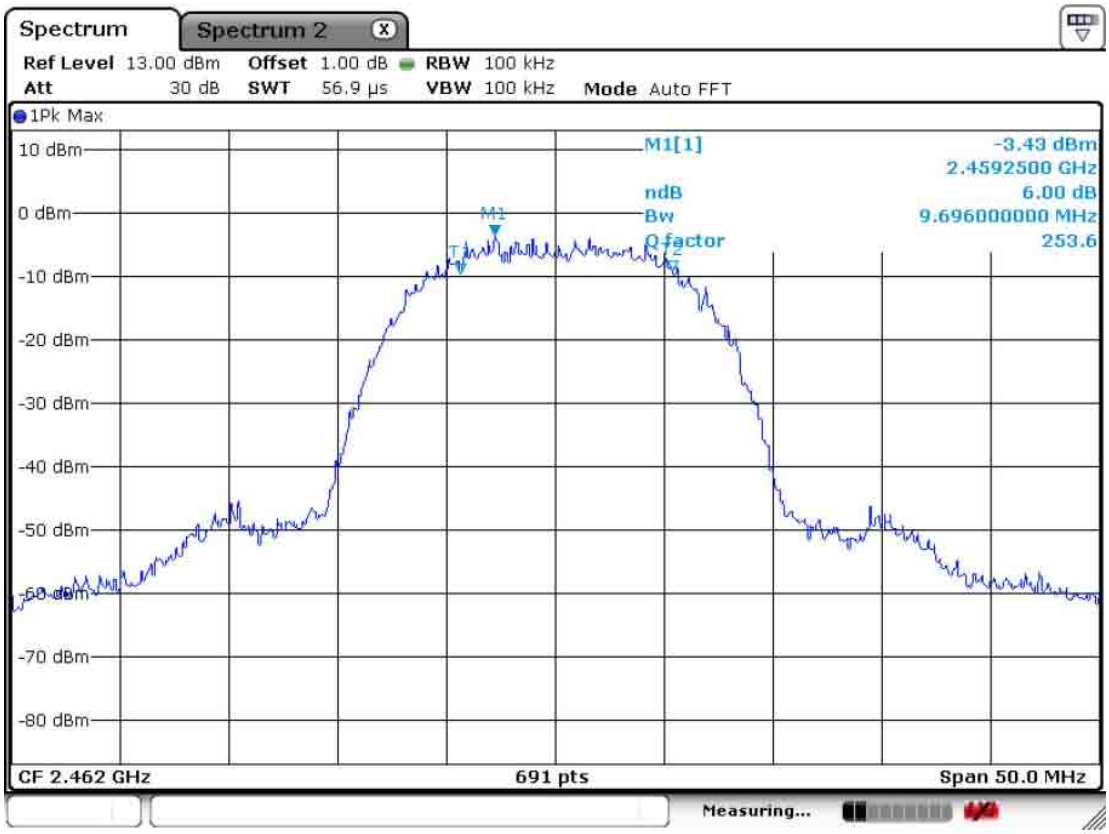


99% Bandwidth



Channel 11 of 802.11b mode

6 dB Bandwidth



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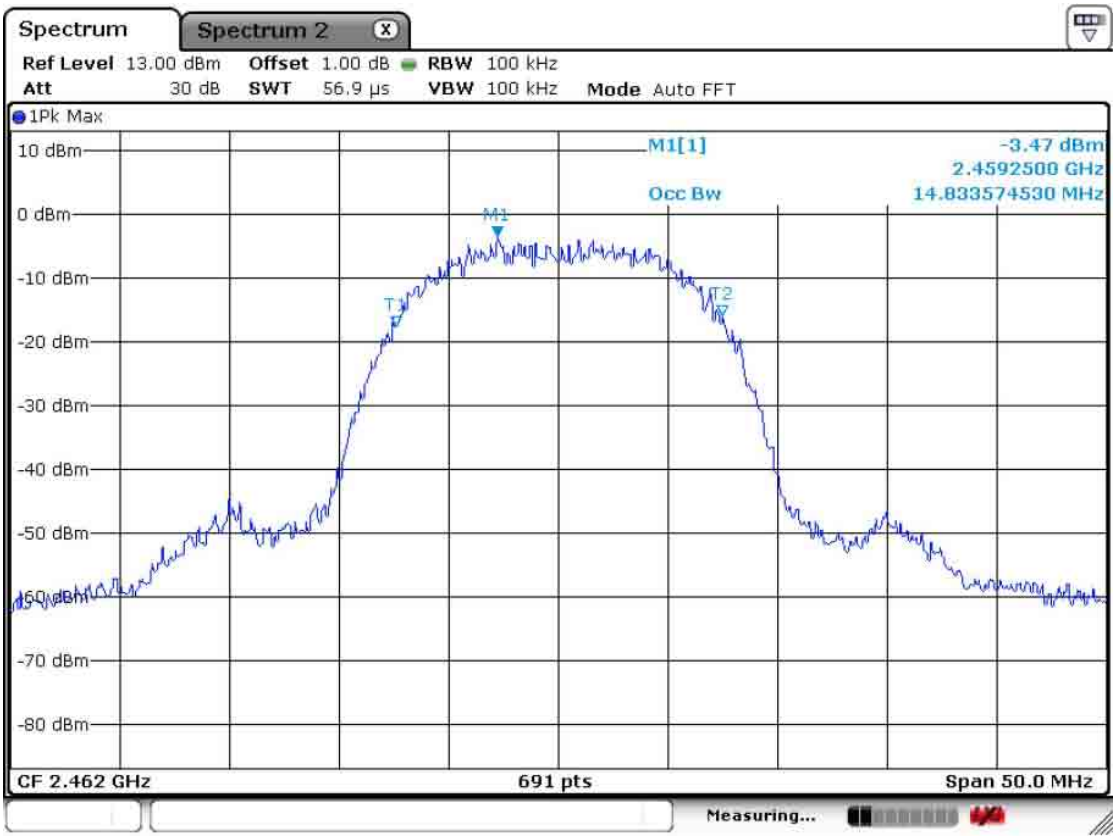
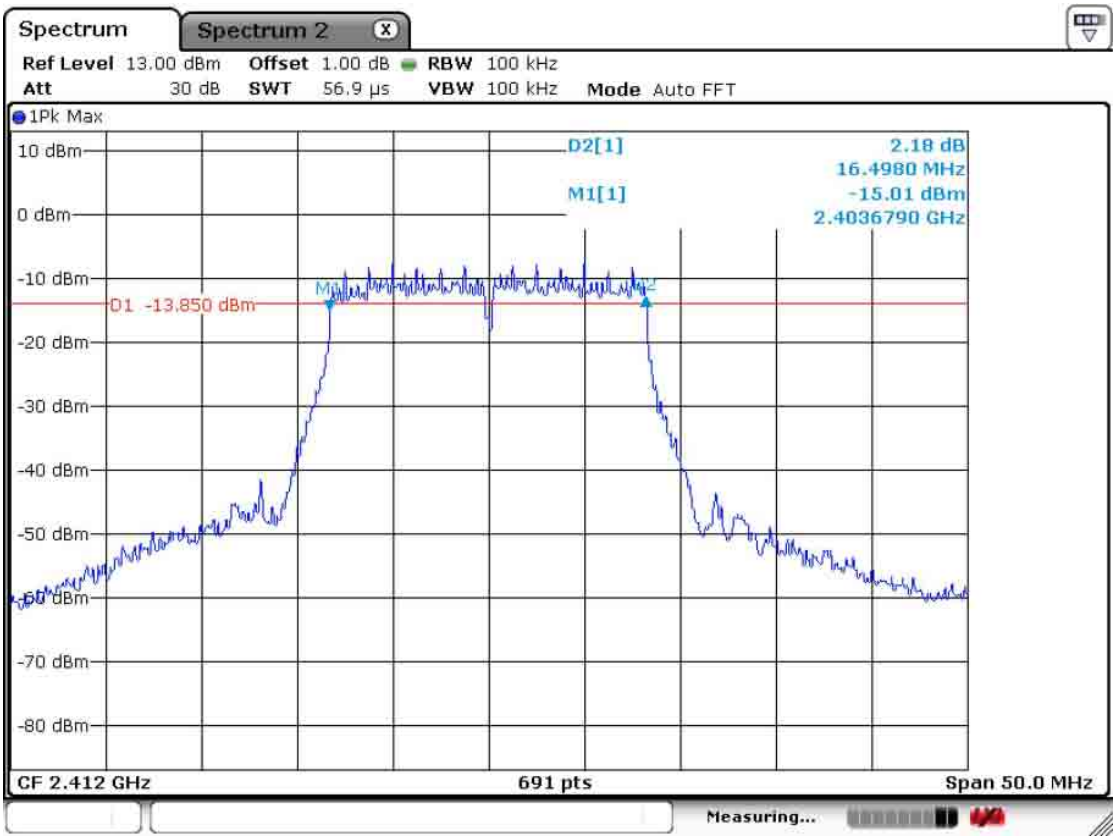


Channel 1 of 802.11g mode

6 dB Bandwidth



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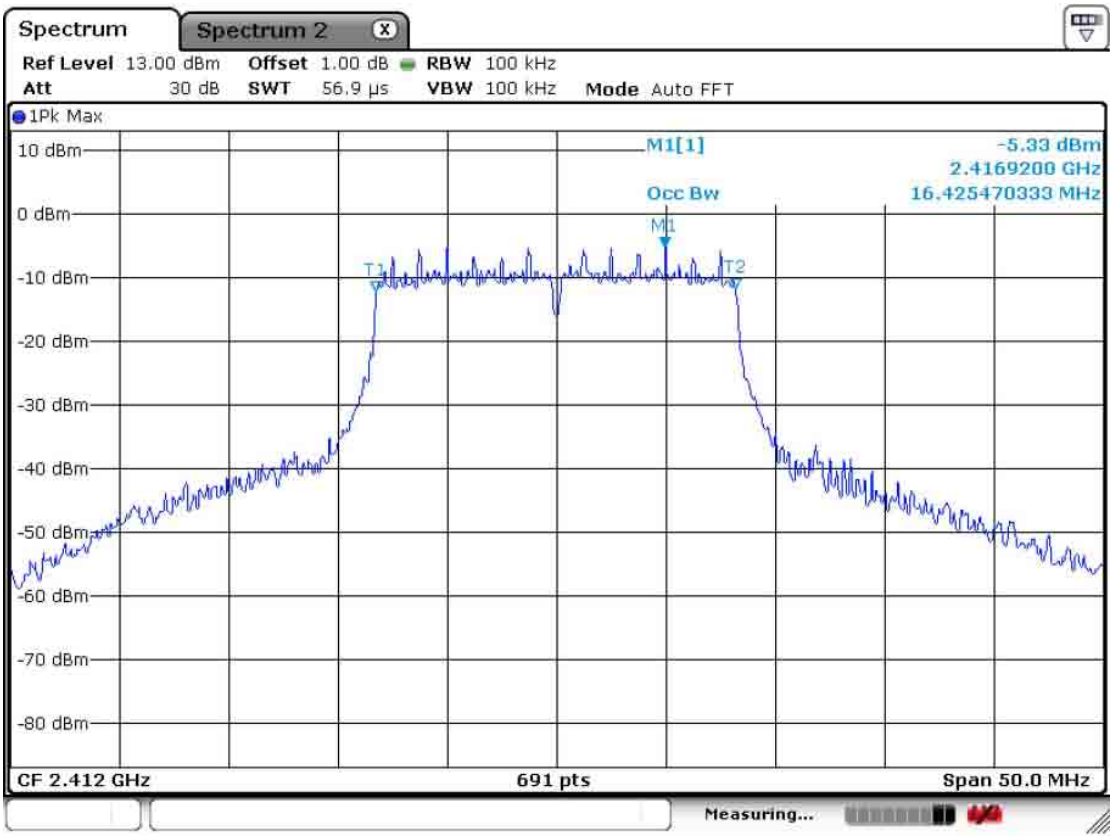
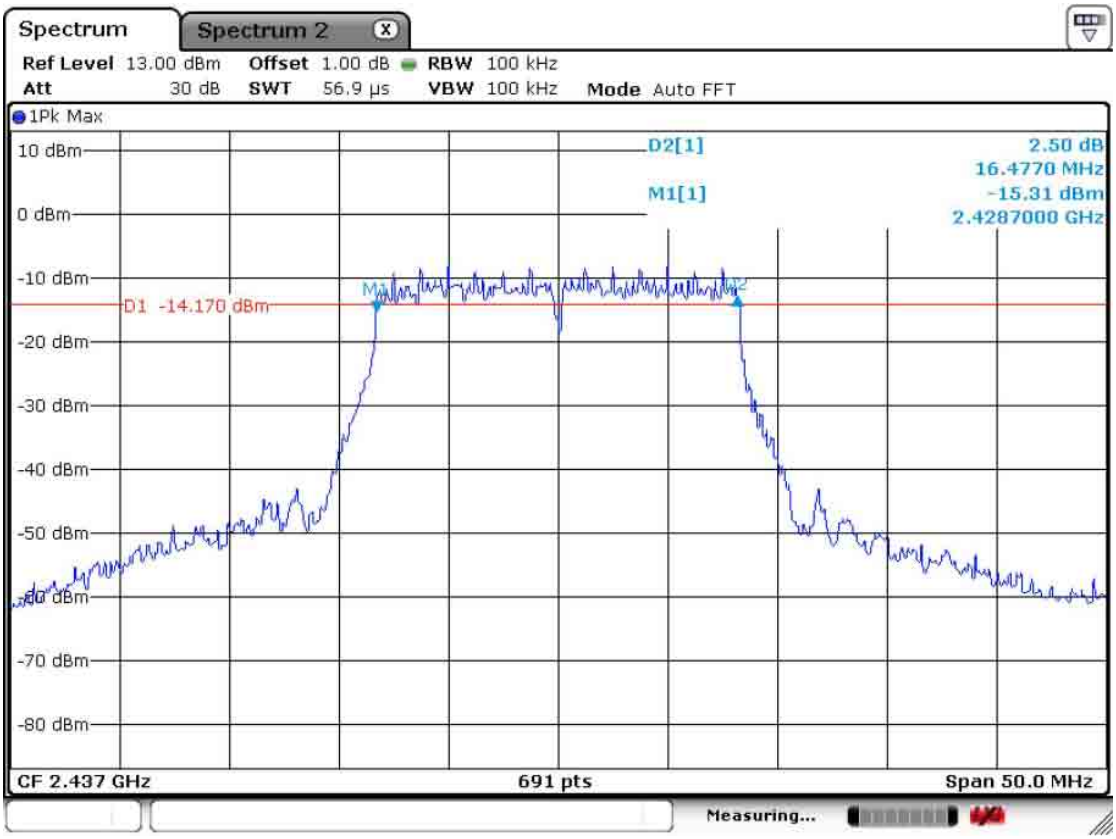


Channel 6 of 802.11g mode

6 dB Bandwidth



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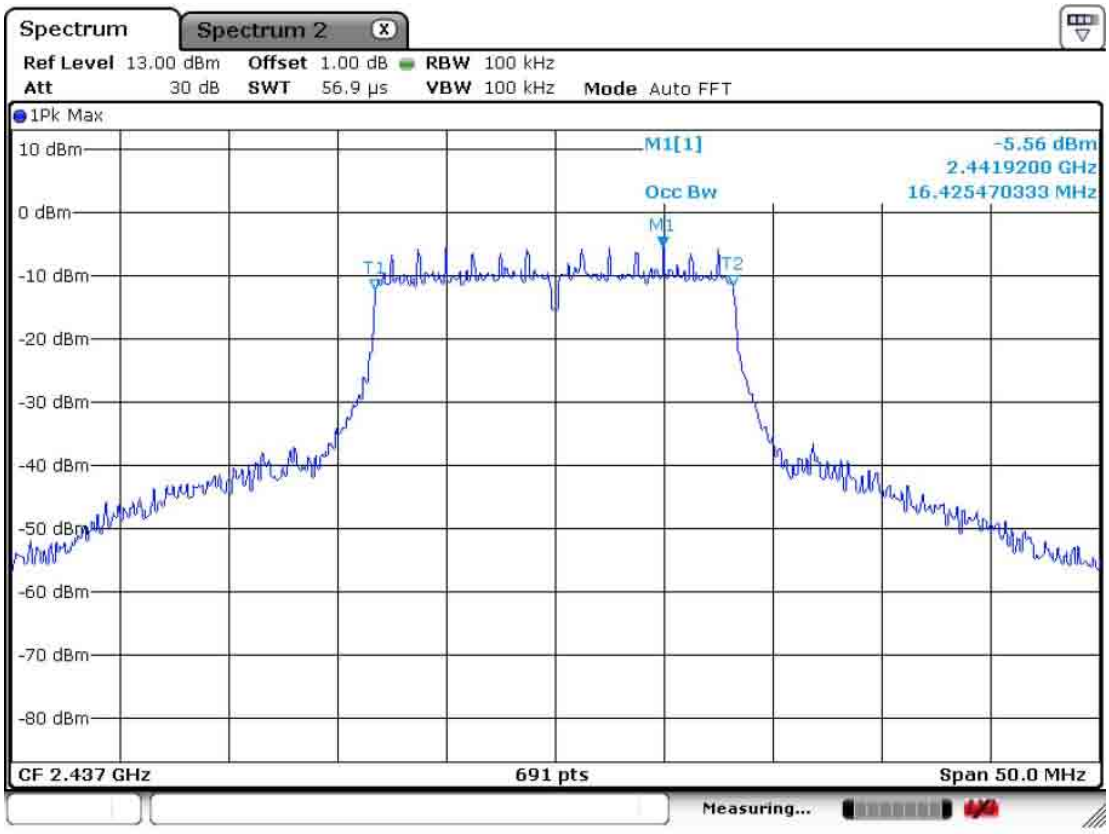
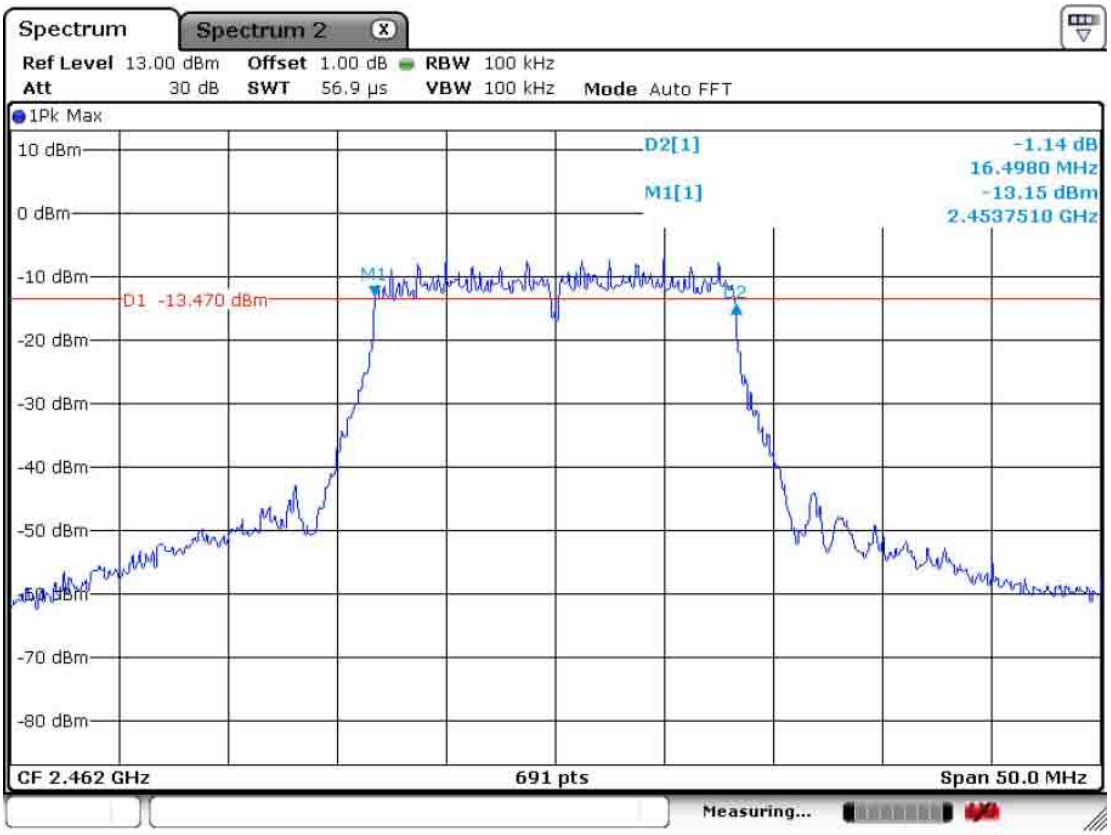


Channel 11 of 802.11g mode

6 dB Bandwidth



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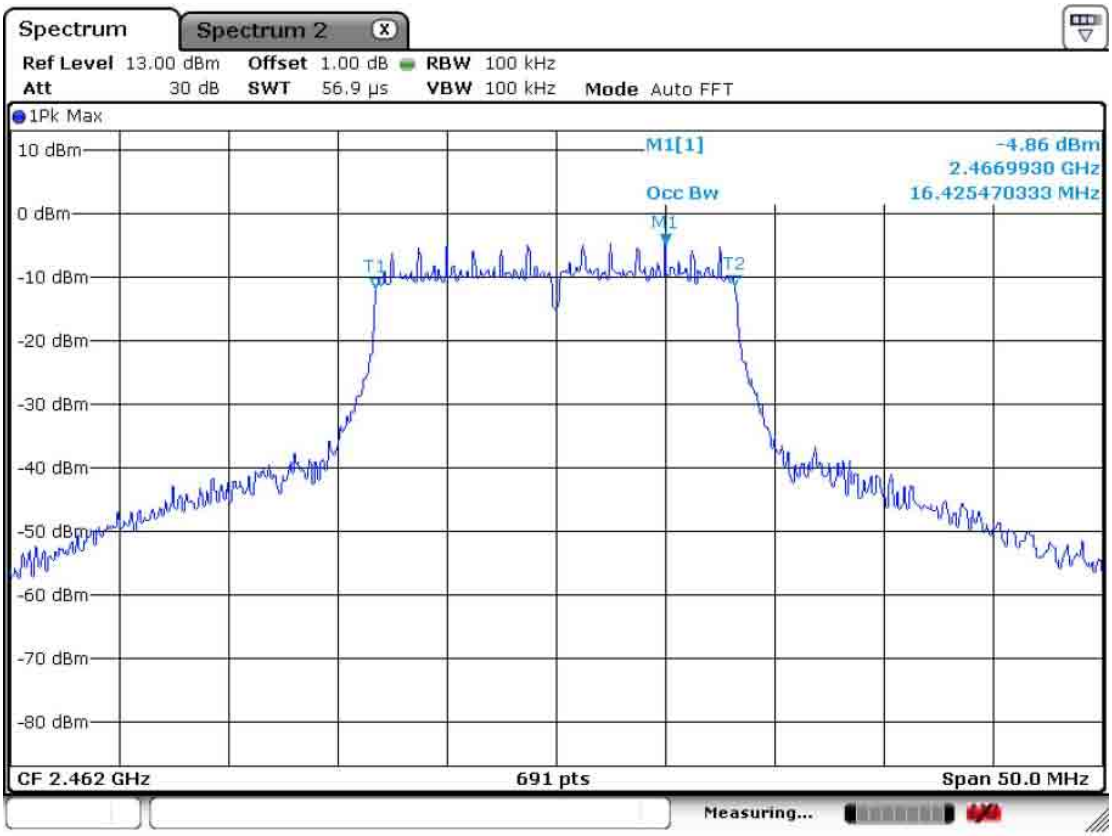
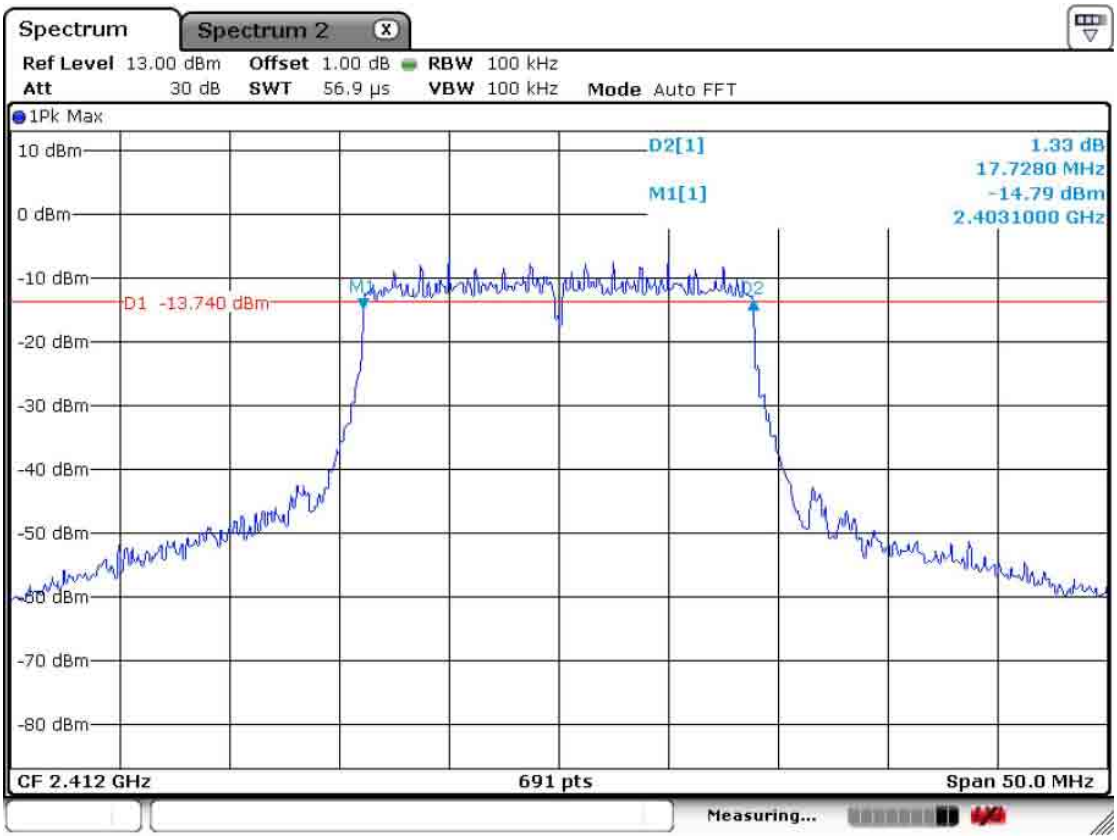
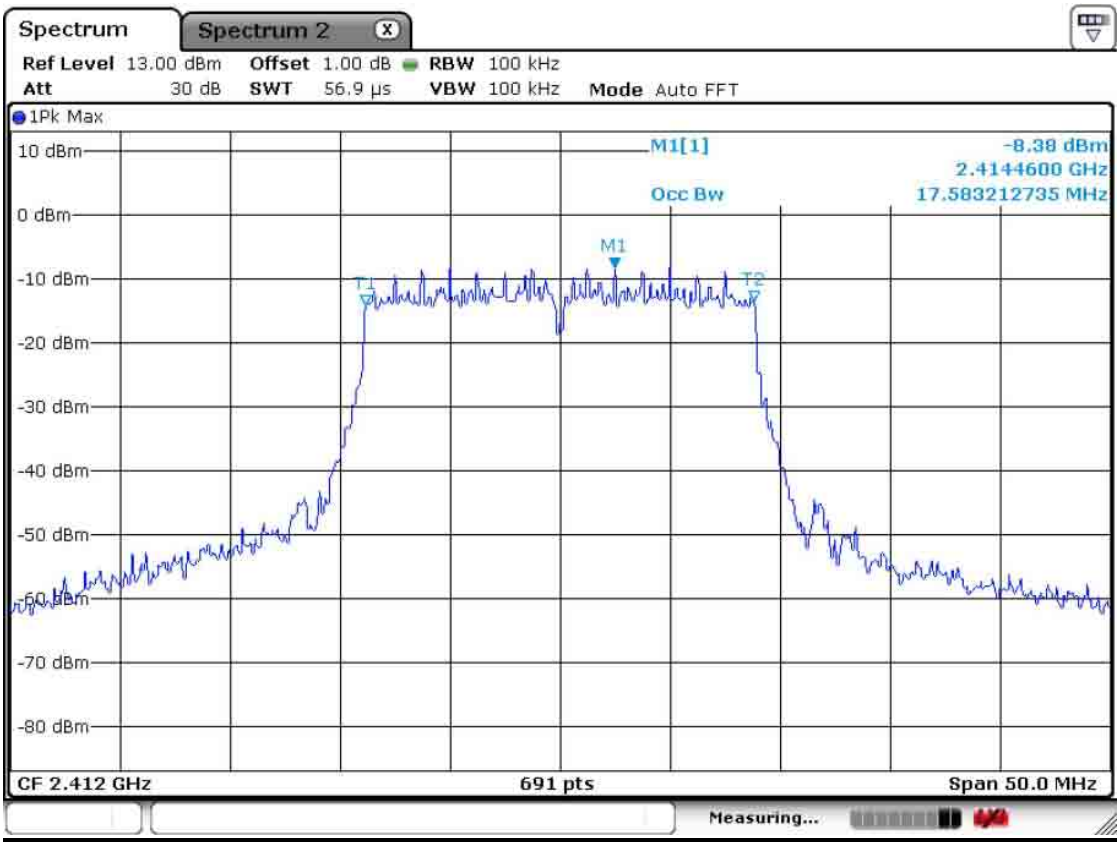


Channel 1 of 802.11n_20MHz mode

6 dB Bandwidth

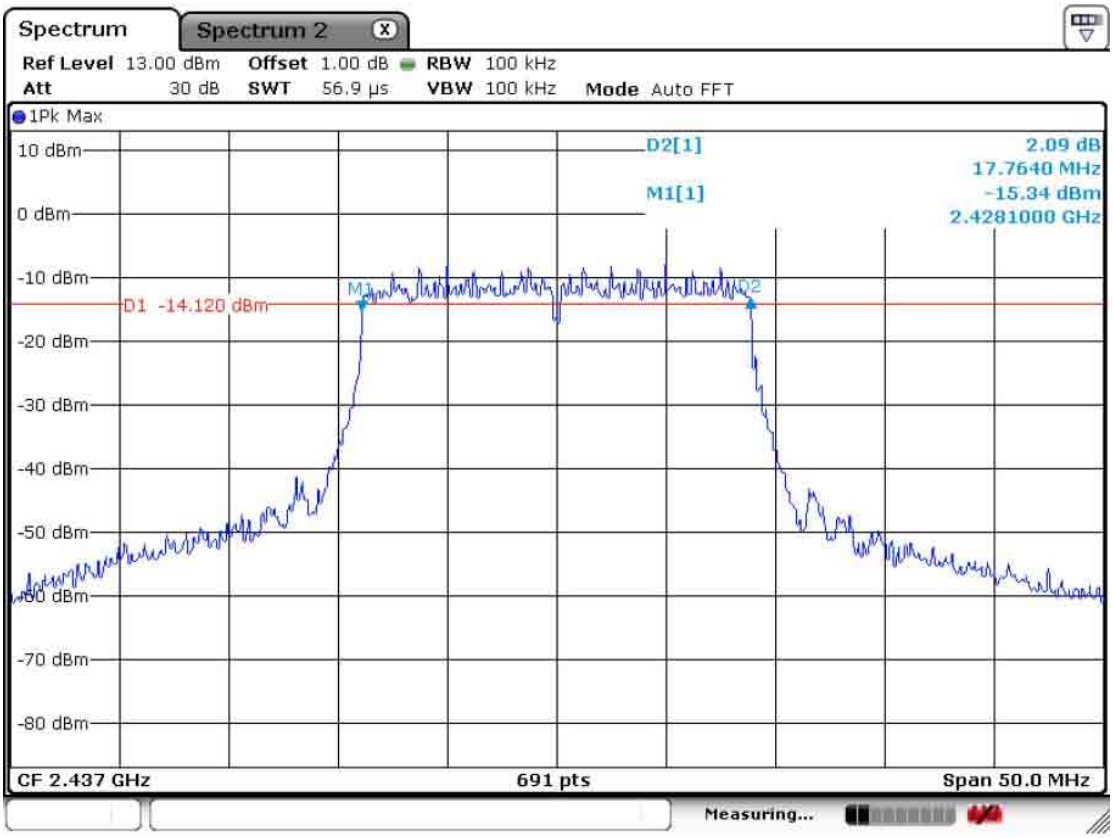


99% Bandwidth



Channel 6 of 802.11n_20MHz mode

6 dB Bandwidth



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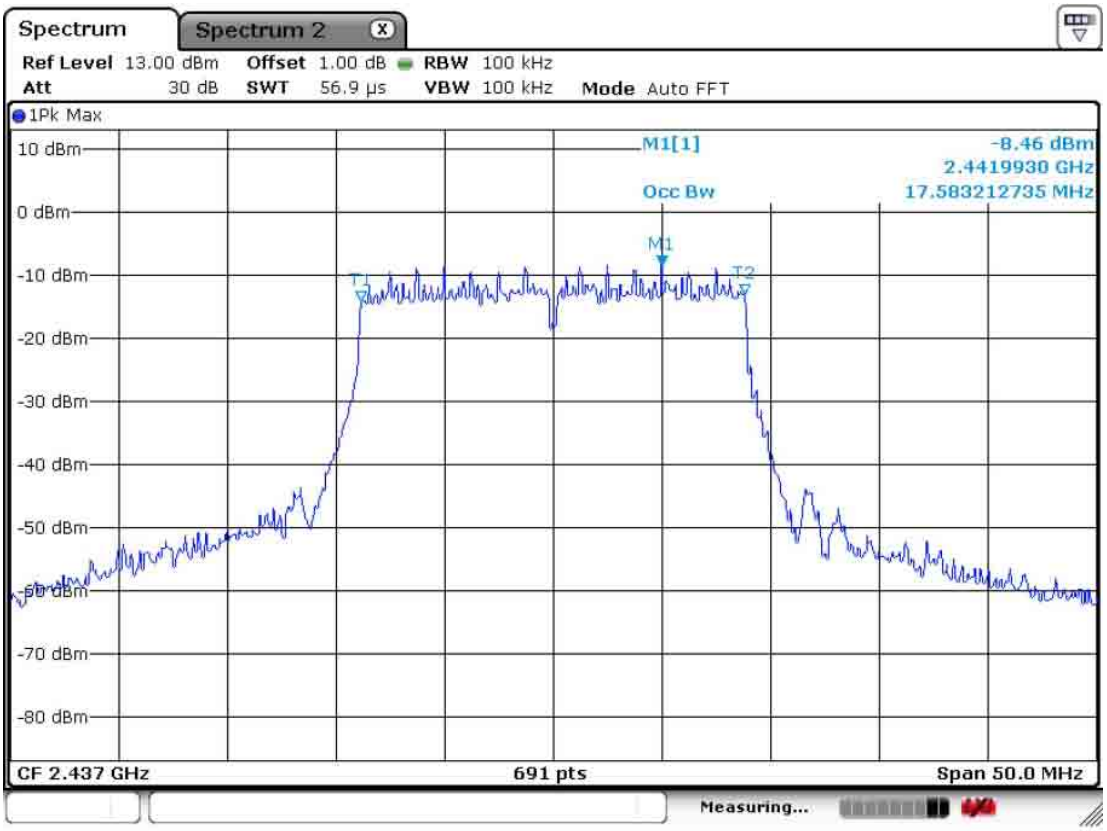
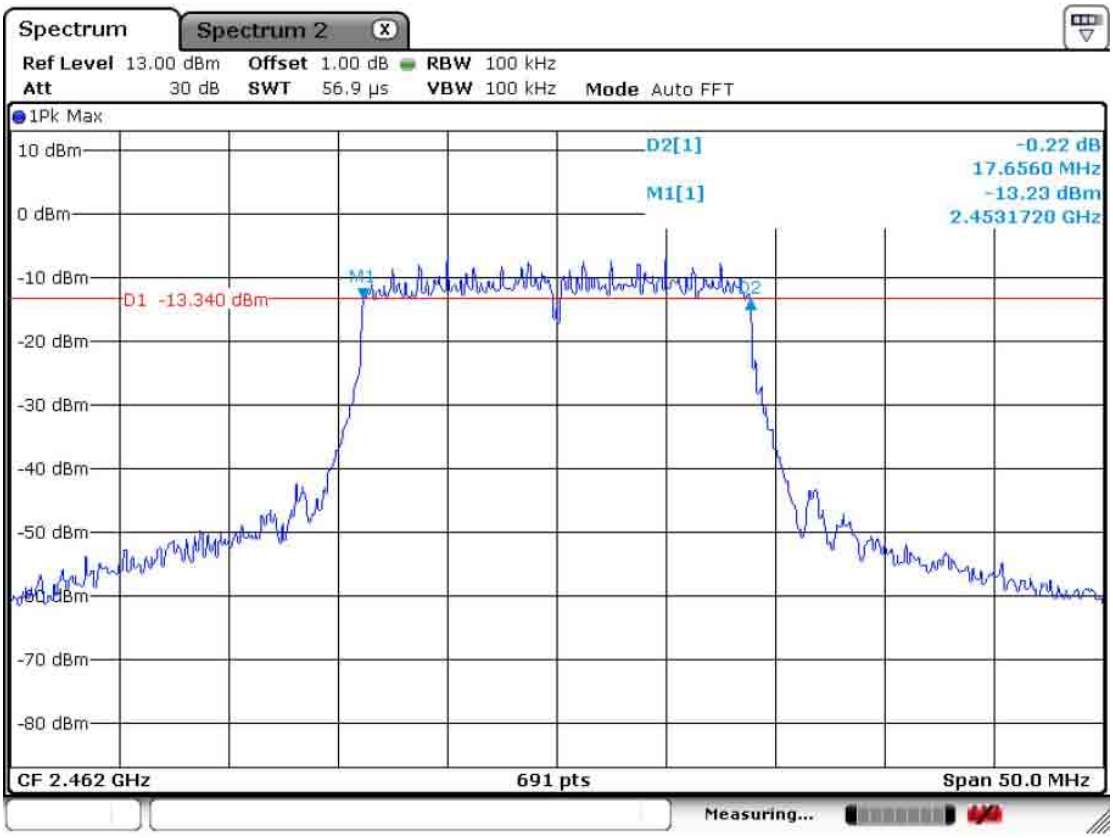


Channel 11 of 802.11n_20MHz mode

6 dB Bandwidth



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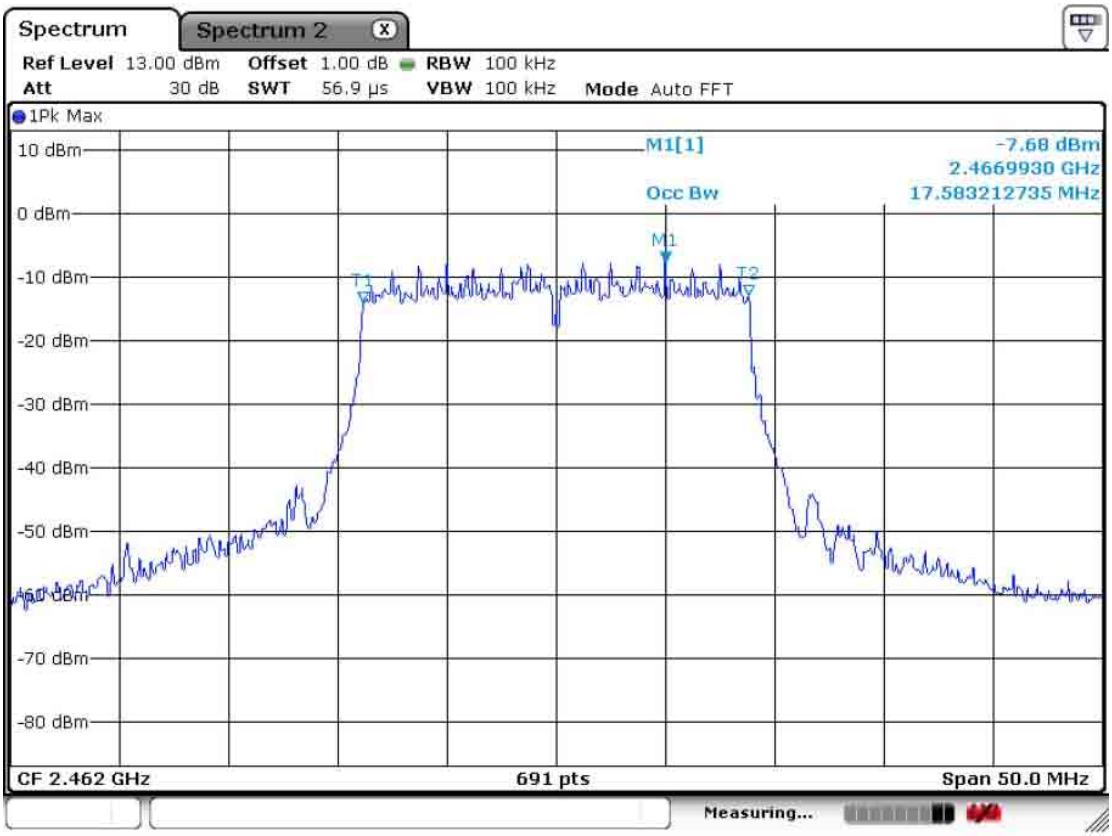
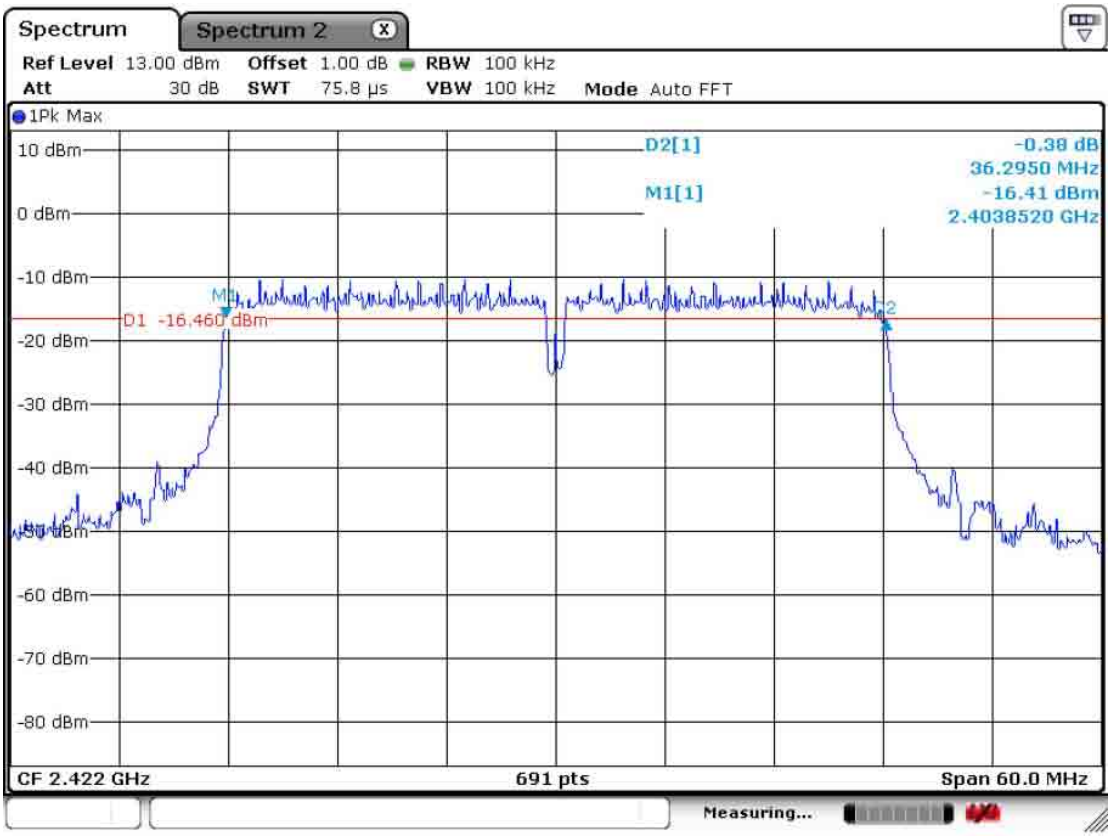


Channel 3 of 802.11n_40MHz mode

6 dB Bandwidth



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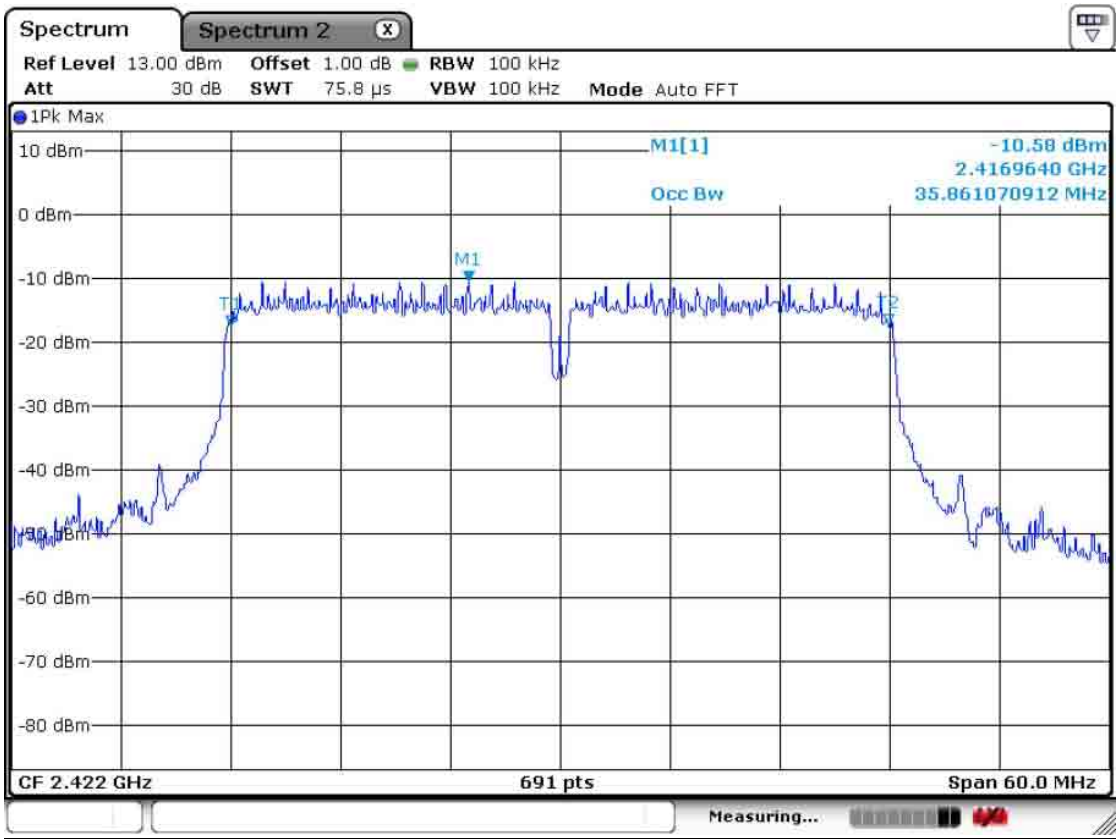
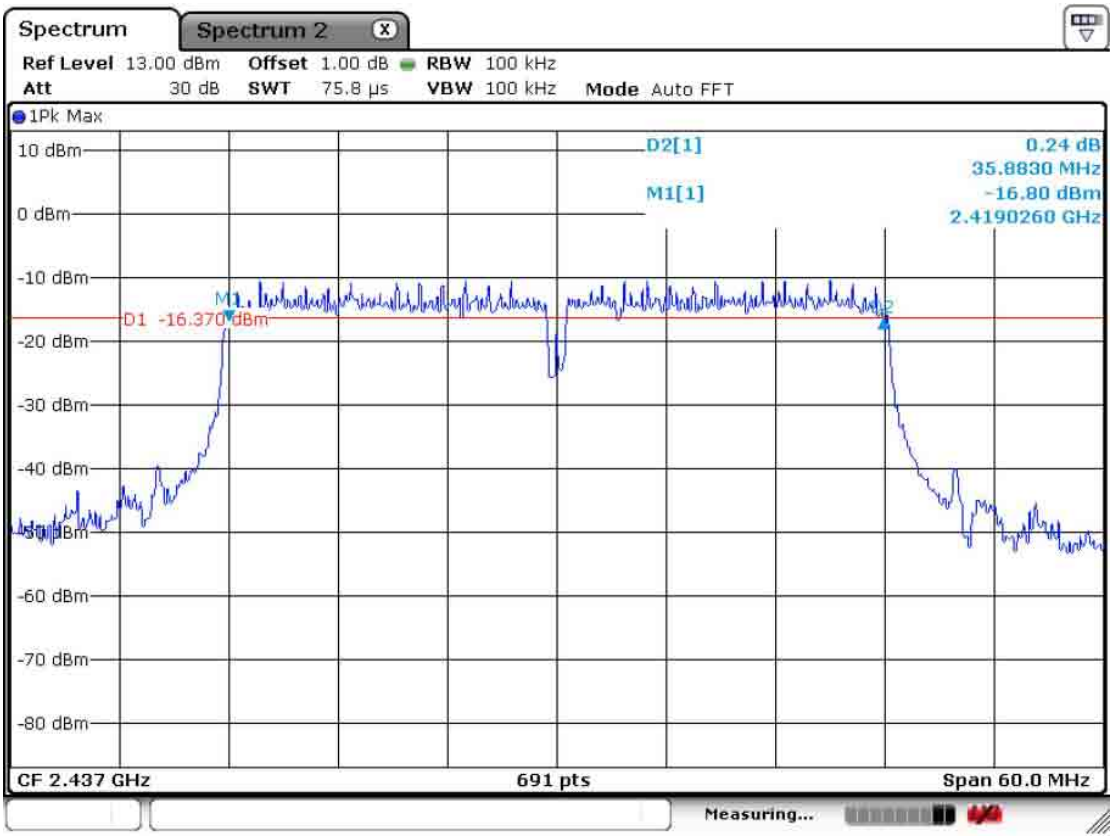


Channel 6 of 802.11n_40MHz mode

6 dB Bandwidth



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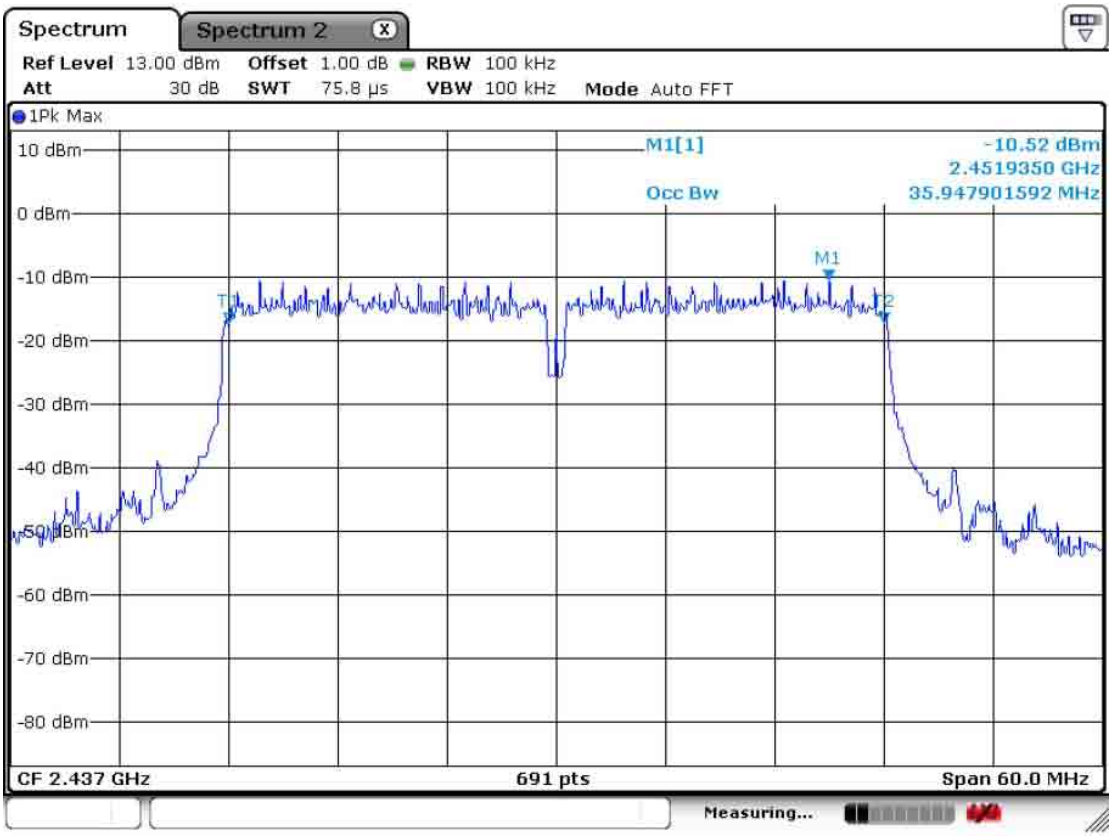
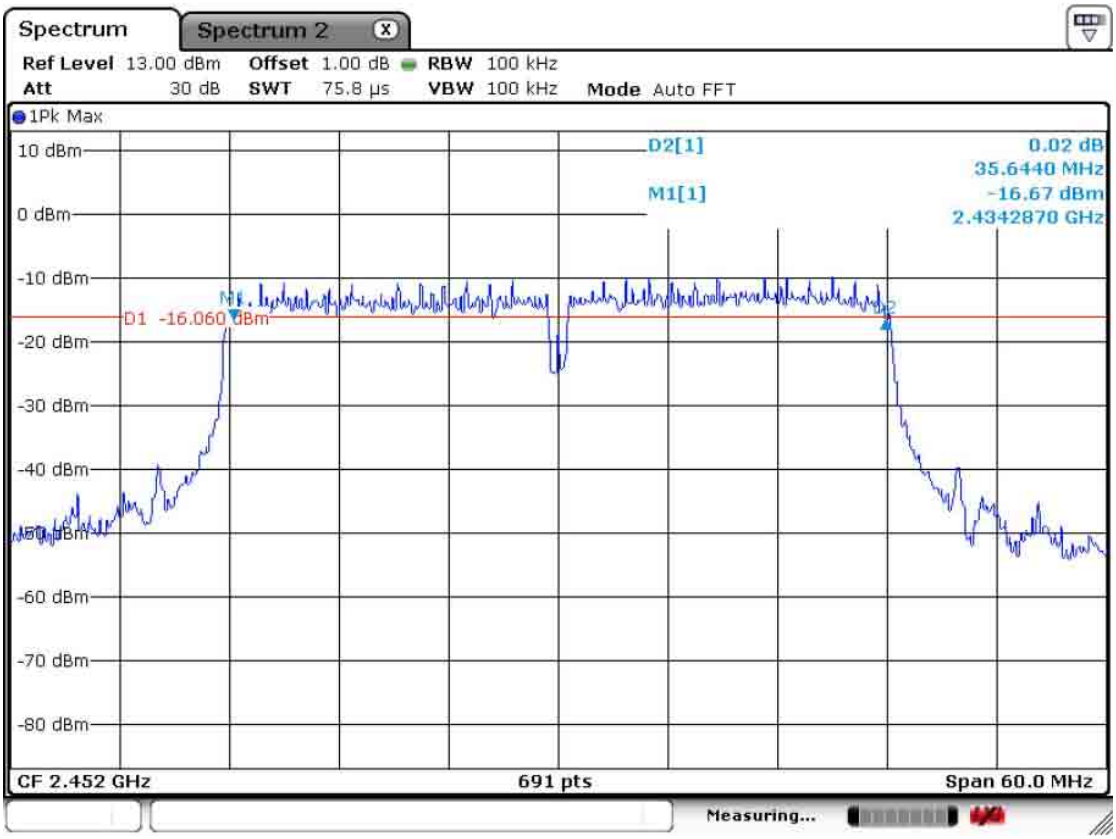


Channel 9 of 802.11n_40MHz mode

6 dB Bandwidth



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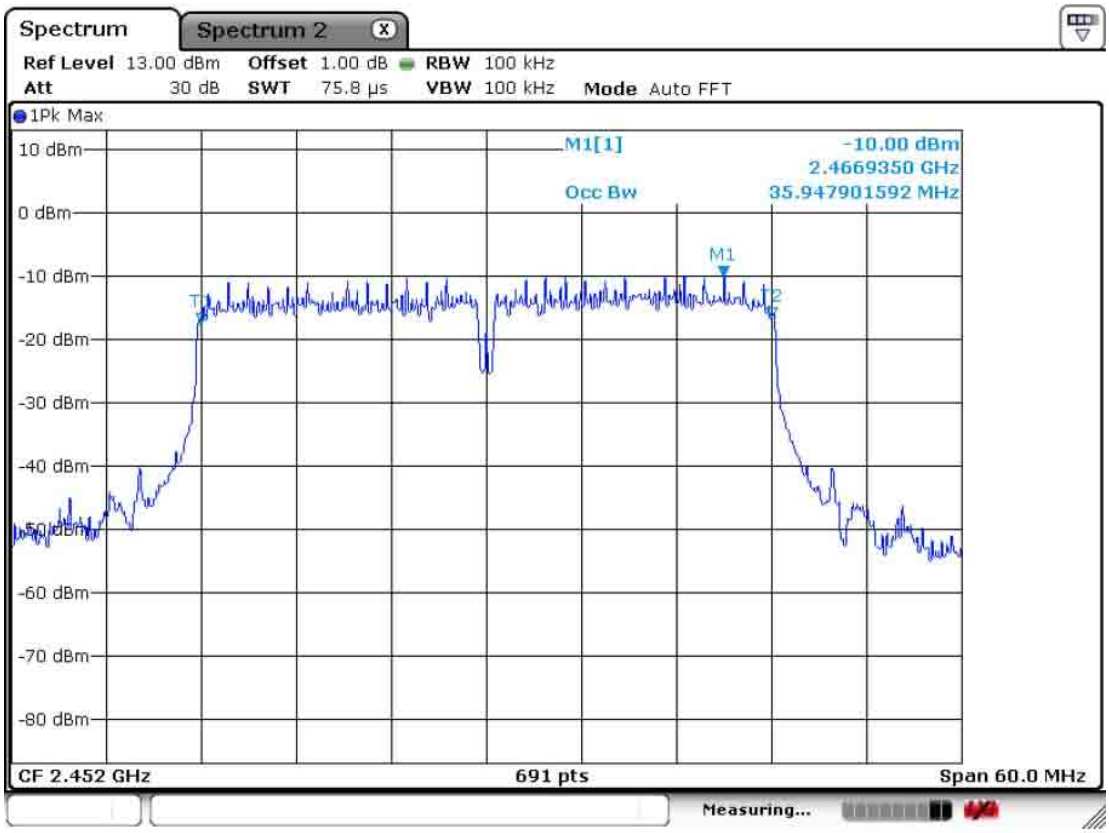


3.2.2 Peak Output Power Measurement

Procedure:

*The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April. The maximum peak output power was measured with the spectrum analyzer connected to the antenna output of the EUT. The spectrum analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth. The EUT was operating in transmit mode at the appropriate center frequency.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 1MHz Span = auto

VBW = 1MHz (VBW ≥ RBW) Sweep = auto

Detector function = peak

Measurement Data:

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Data (dBm)	Result
802.11b	2412	1	12.84	Complies
	2437	6	12.09	Complies
	2462	11	12.43	Complies
802.11g	2412	1	11.35	Complies
	2437	6	10.87	Complies
	2462	11	11.69	Complies
802.11n _20MHz	2412	1	11.90	Complies
	2437	6	11.22	Complies
	2462	11	11.77	Complies
802.11n _40MHz	2422	3	12.00	Complies
	2437	6	11.90	Complies
	2452	9	12.30	Complies

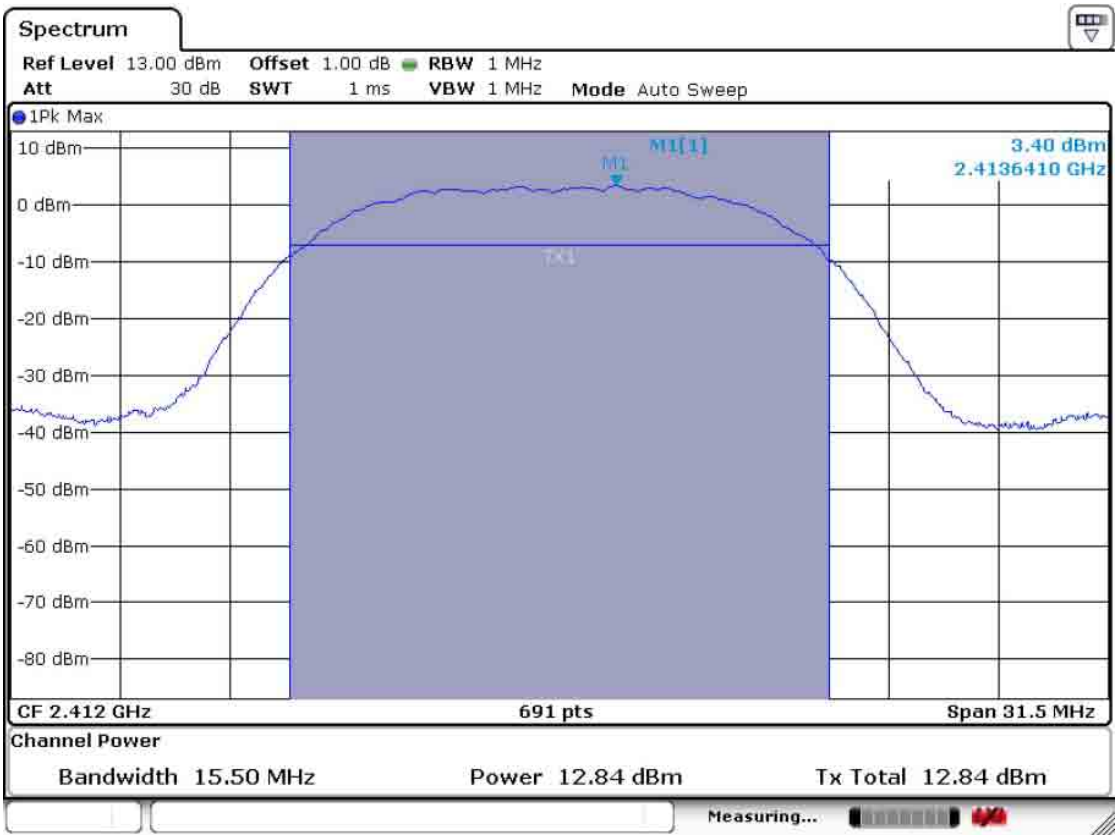
- See next pages for actual measured spectrum plots.

Minimum Standard:

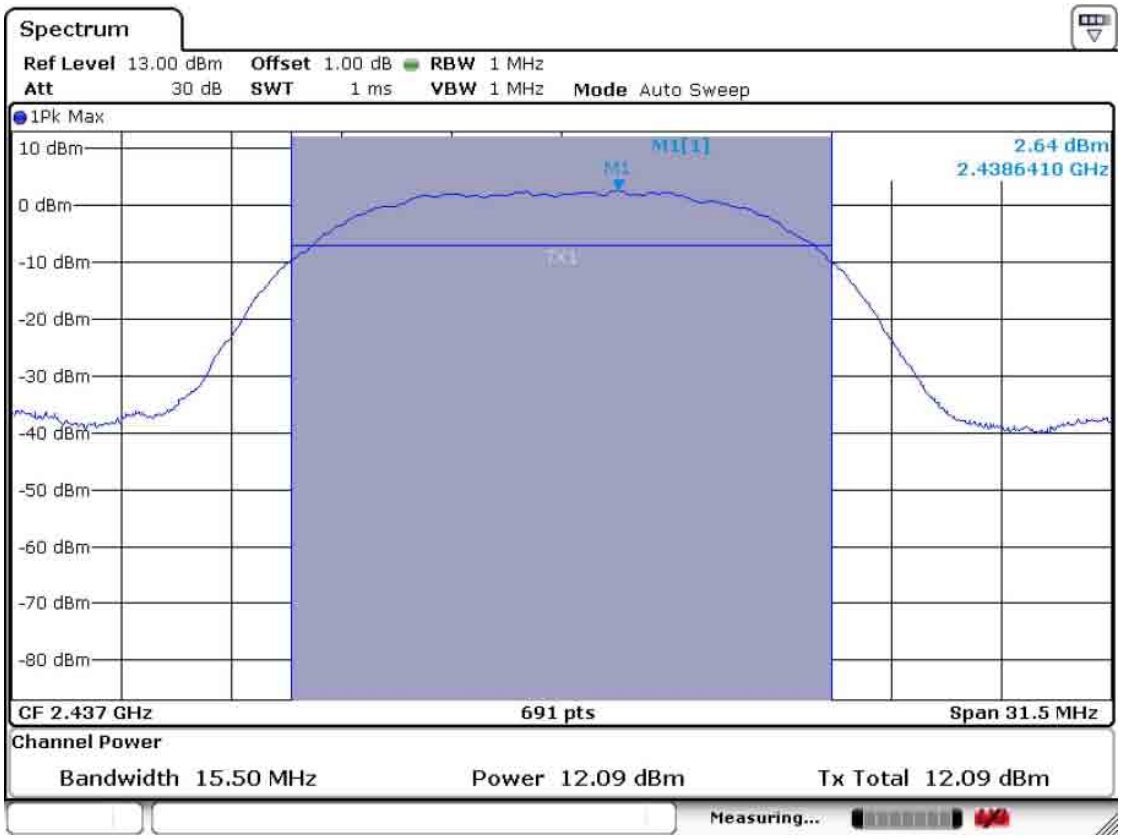
Peak output power	< 1W

802.11b

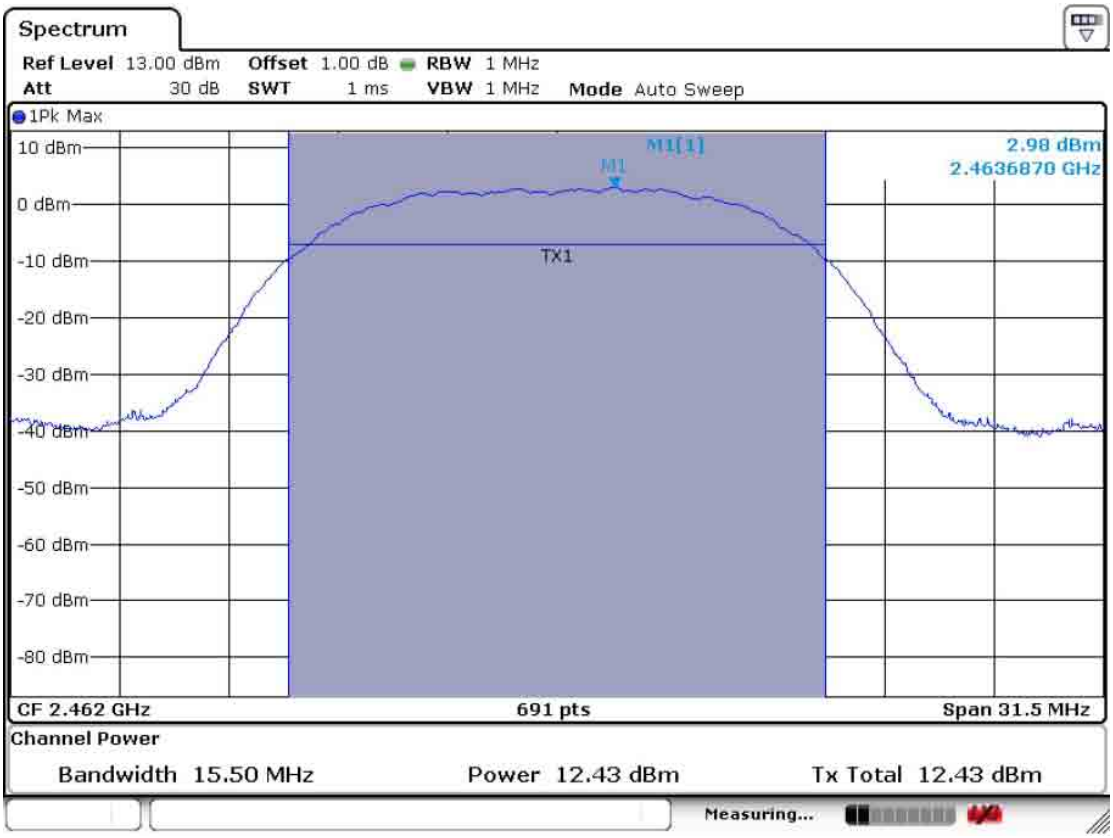
CH 1



CH 6

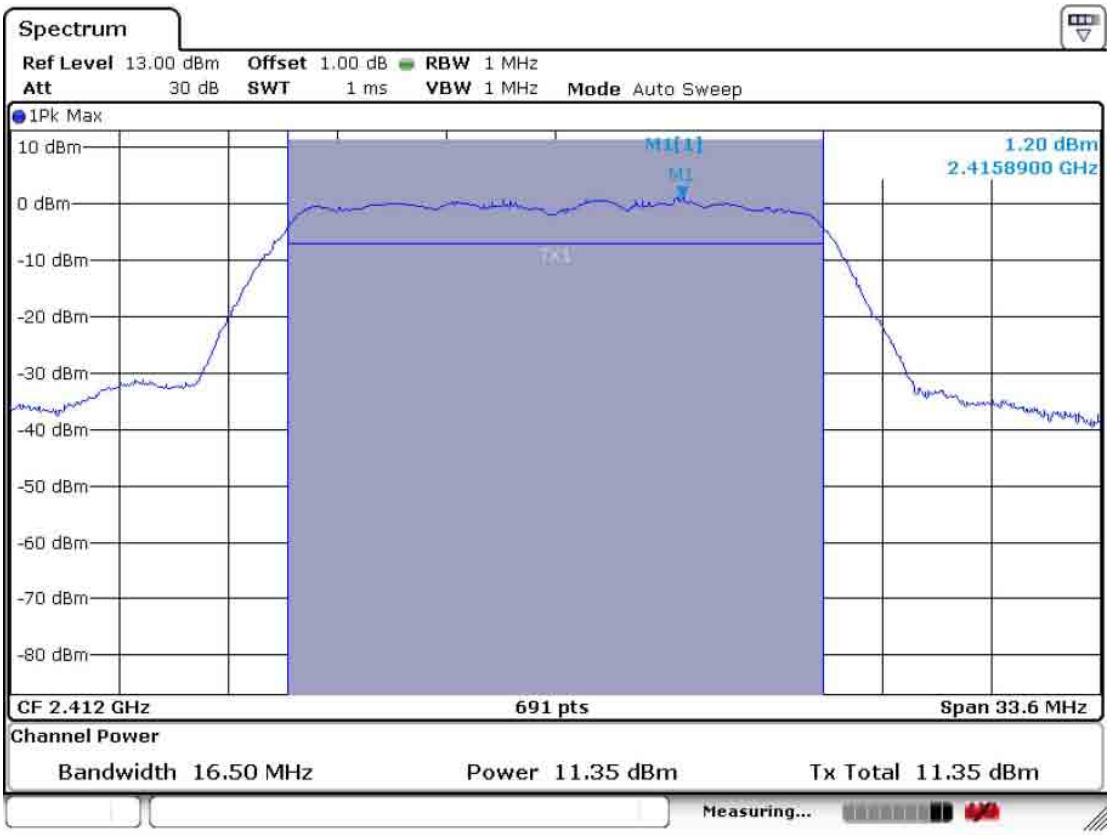


CH 11


Spectrum
Ref Level 13.00 dBm Offset 1.00 dB RBW 1 MHz
Att 30 dB SWT 1 ms VBW 1 MHz Mode Auto Sweep
1Pk Max
M1[1] 2.98 dBm
2.4636870 GHz
M1
TX1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
691 pts
Span 31.5 MHz
Channel Power
Bandwidth 15.50 MHz
Power 12.43 dBm
Tx Total 12.43 dBm
Measuring...

802.11g

CH 1



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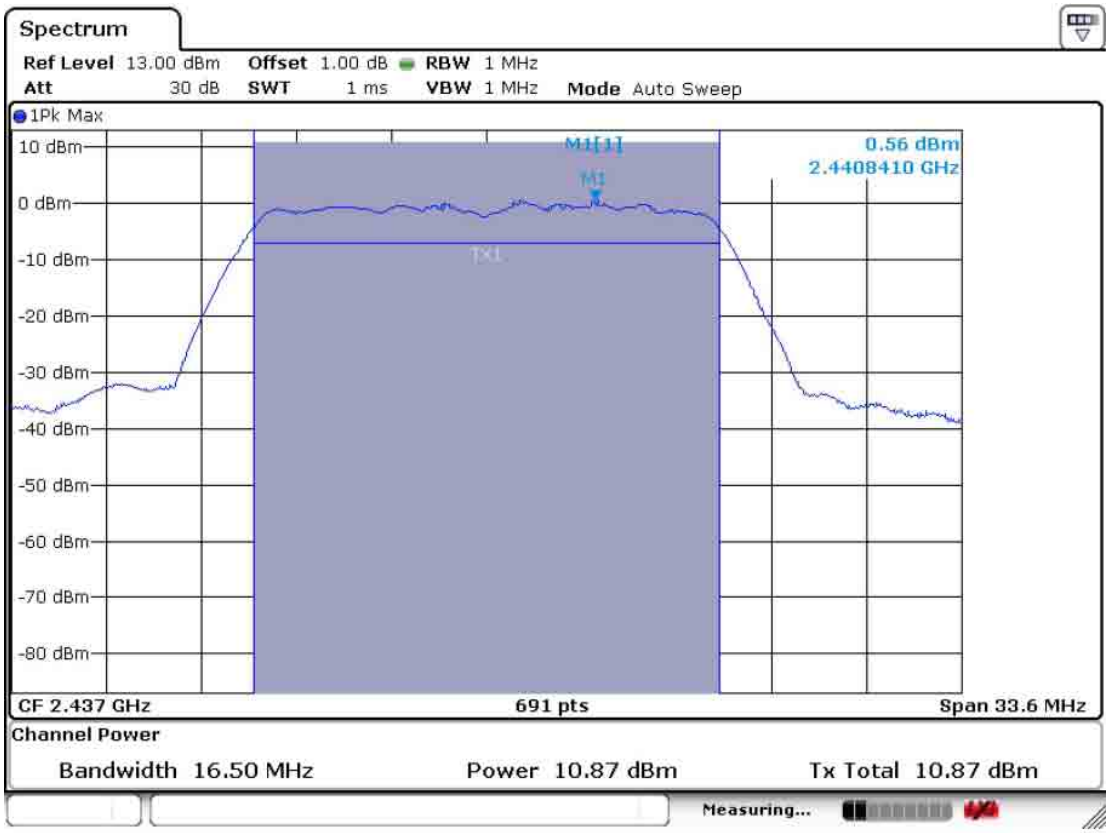
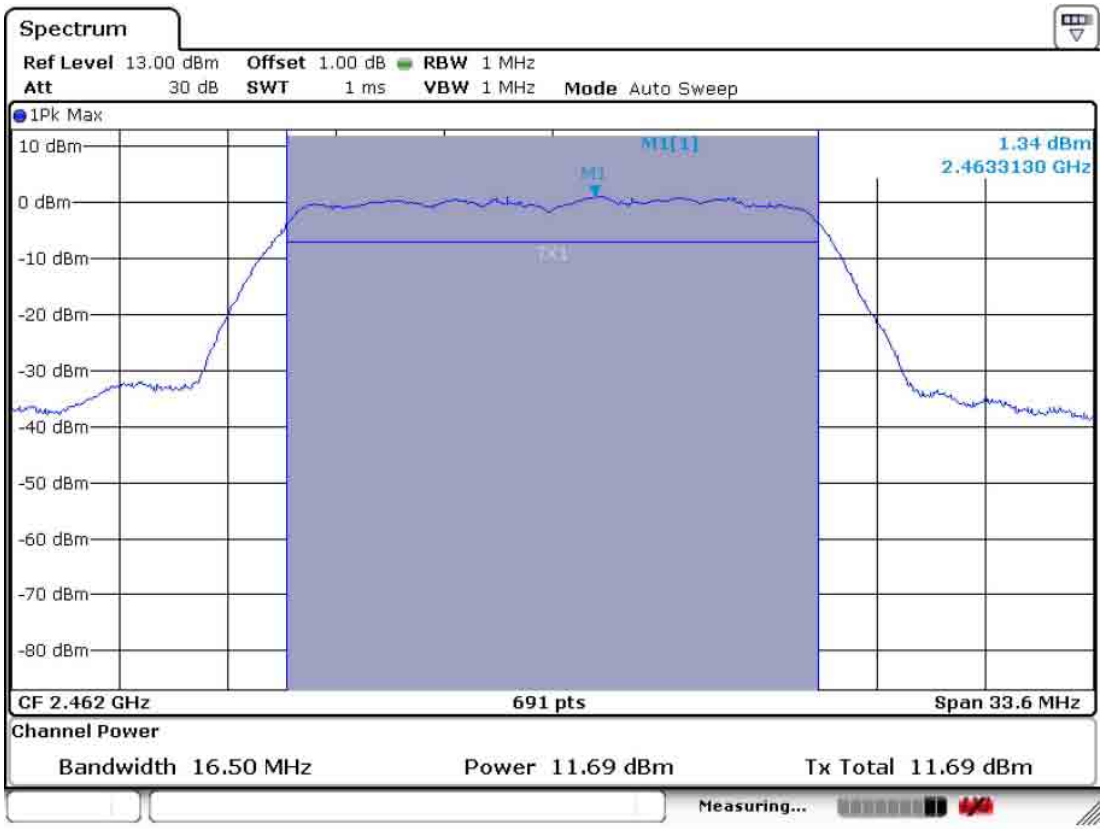
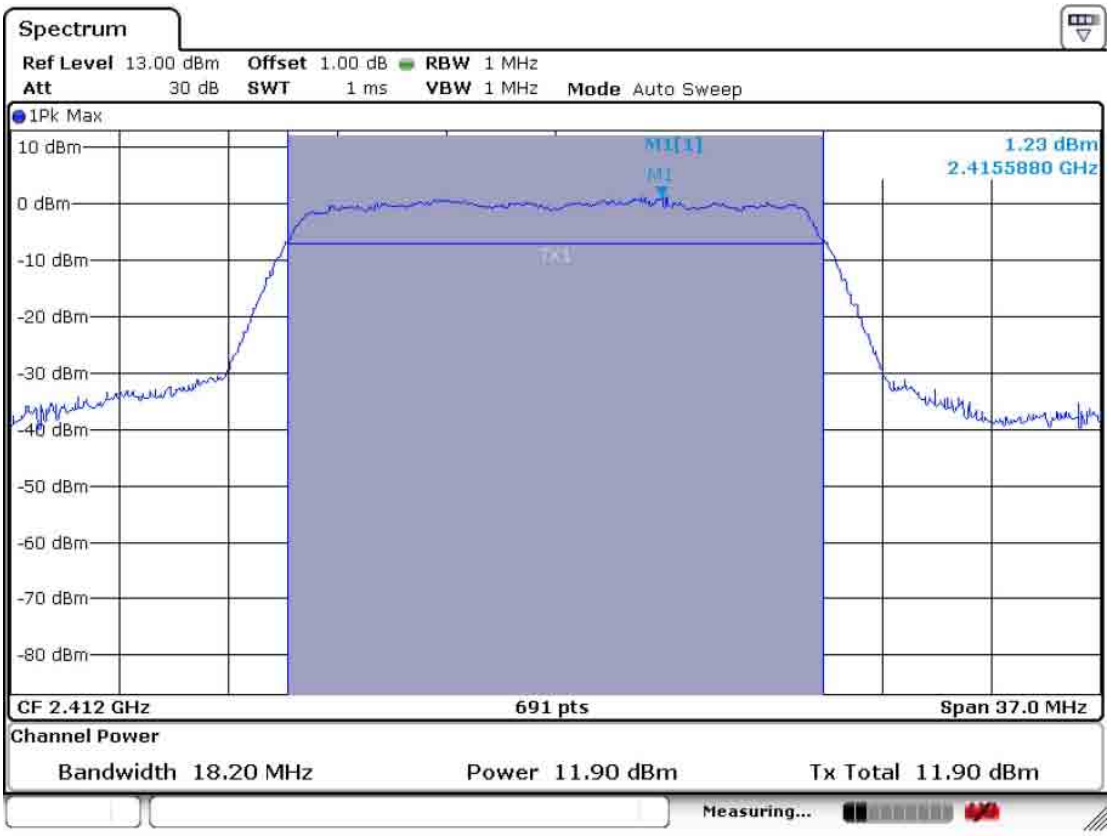


CH 11

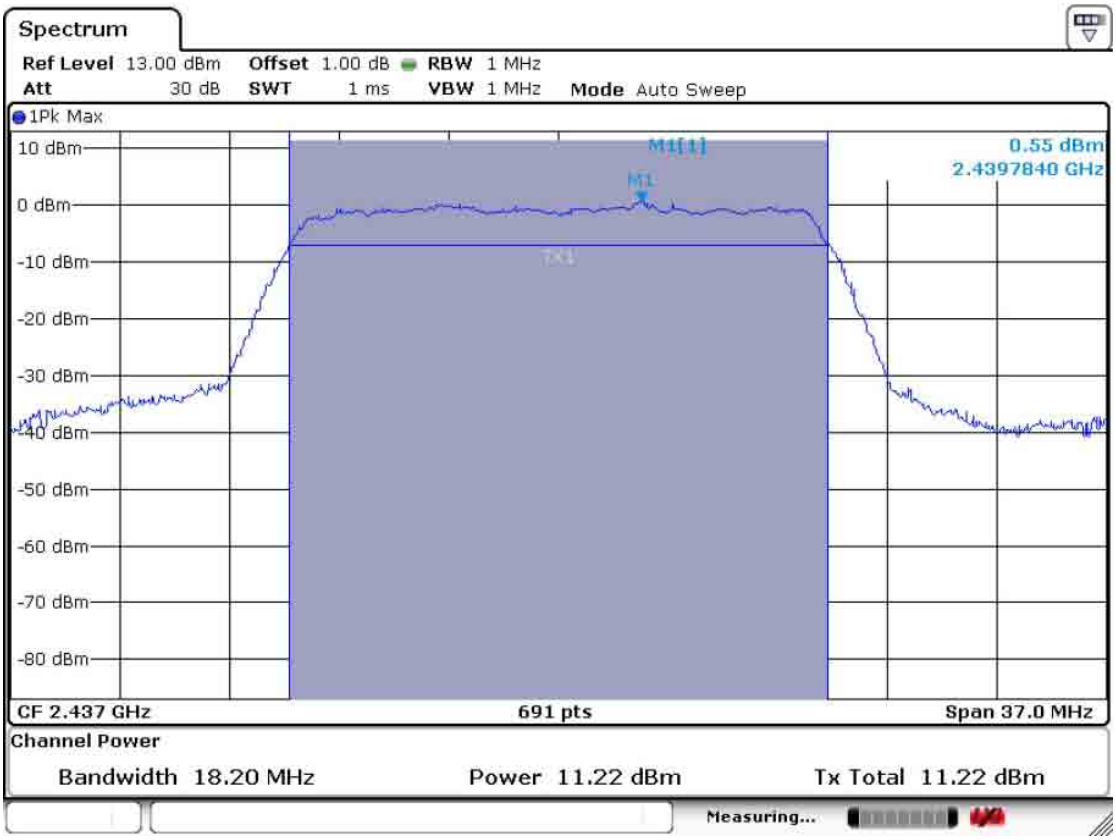

Spectrum
Ref Level 13.00 dBm Offset 1.00 dB RBW 1 MHz
Att 30 dB SWT 1 ms VBW 1 MHz Mode Auto Sweep
1Pk Max
M1[1] 1.34 dBm
2.4633130 GHz
M1
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
691 pts
Span 33.6 MHz
Channel Power
Bandwidth 16.50 MHz
Power 11.69 dBm
Tx Total 11.69 dBm
Measuring...

802.11n_20MHz

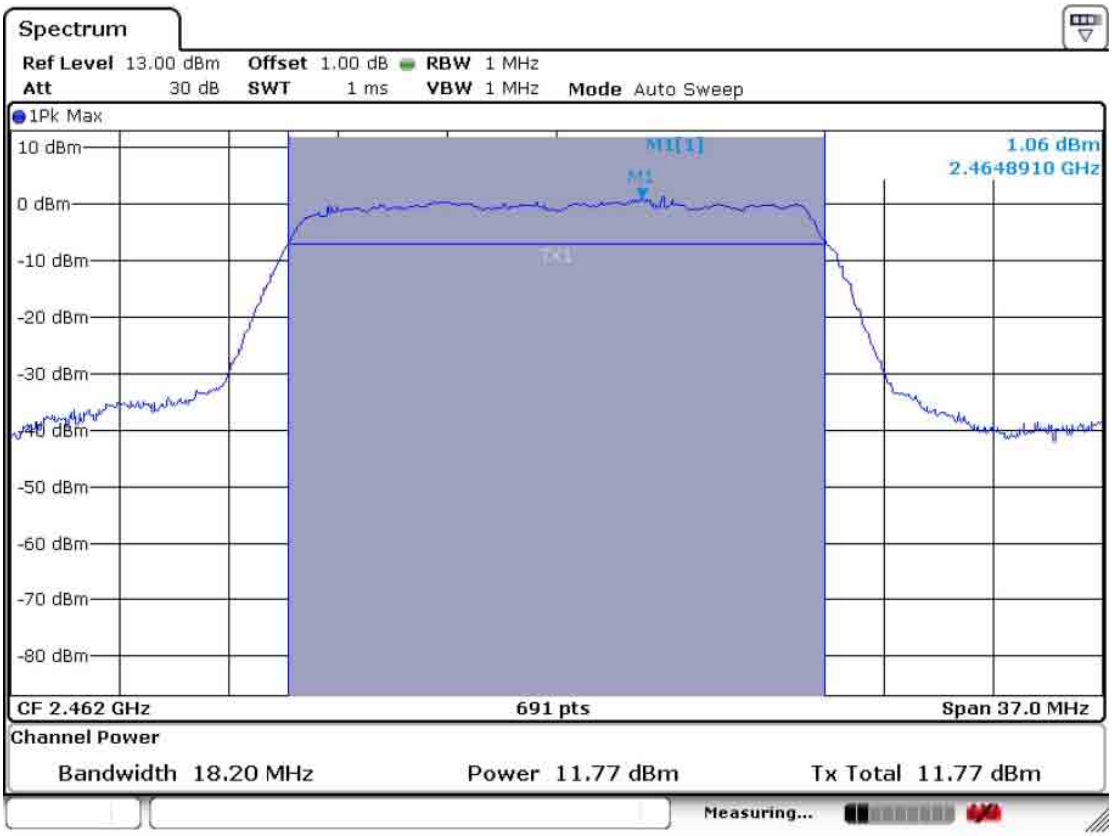
CH 1



CH 6

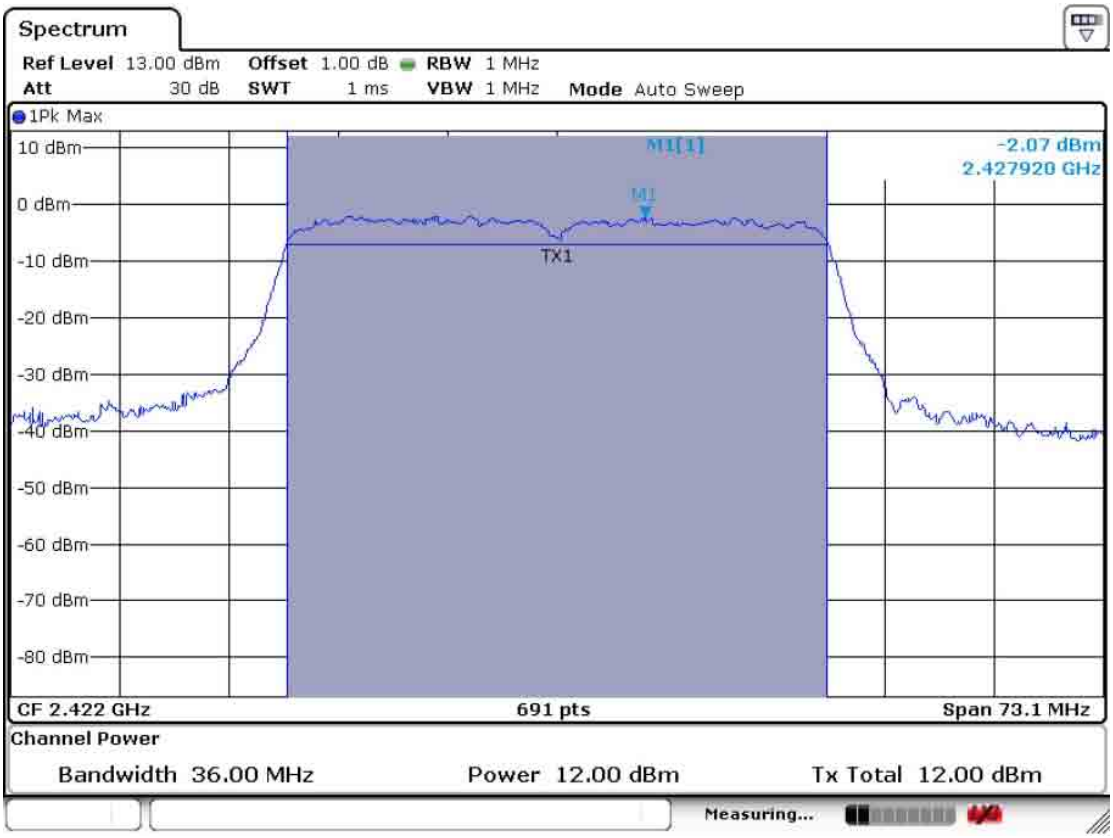


CH 11

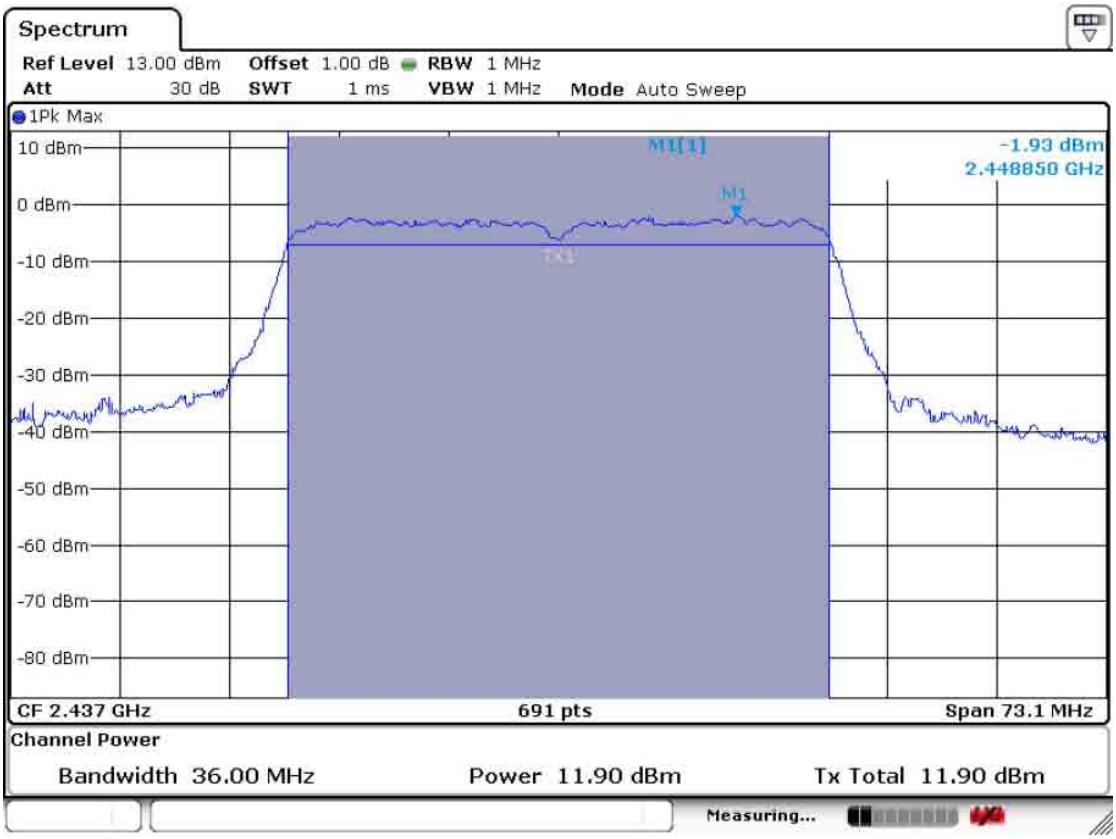

Spectrum
Ref Level 13.00 dBm Offset 1.00 dB RBW 1 MHz
Att 30 dB SWT 1 ms VBW 1 MHz Mode Auto Sweep
1Pk Max
M1[1] 1.06 dBm
2.4648910 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.462 GHz
691 pts
Span 37.0 MHz
Channel Power
Bandwidth 18.20 MHz
Power 11.77 dBm
Tx Total 11.77 dBm
Measuring...

802.11n_40MHz

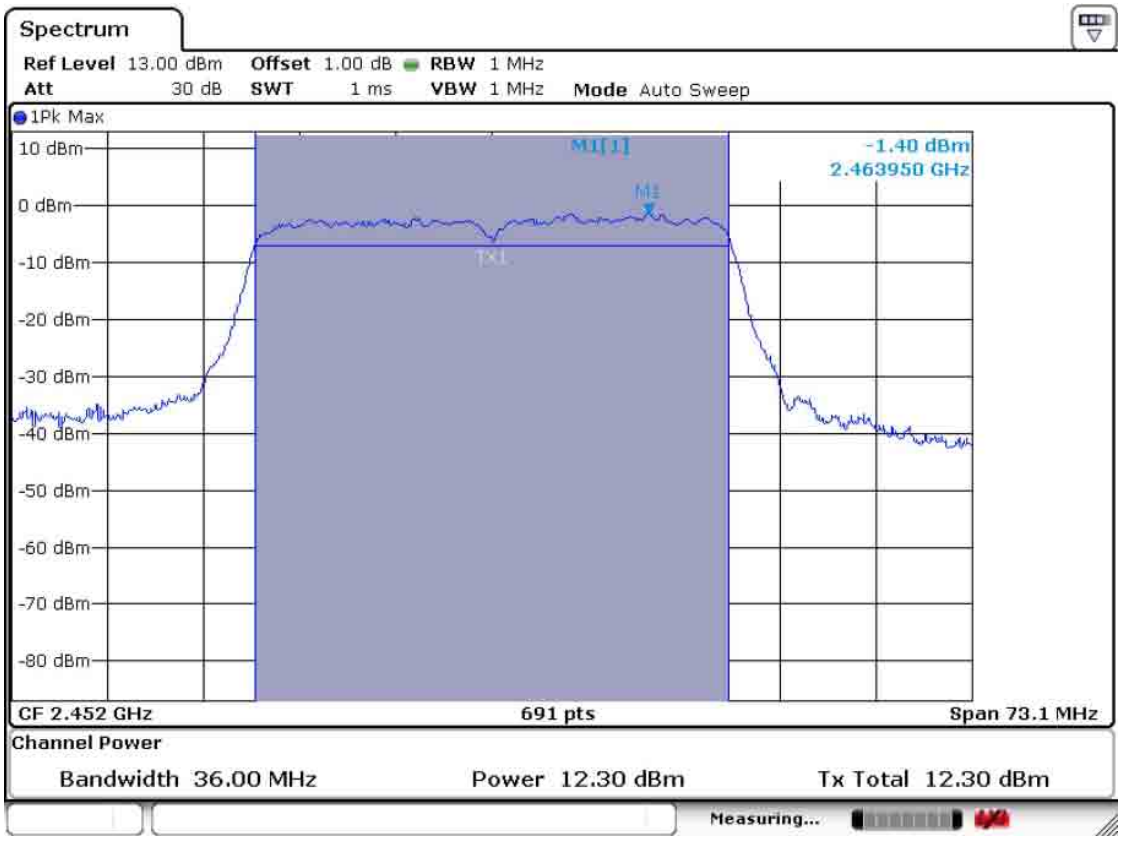
CH 3



CH 6



CH 9


Spectrum
Ref Level 13.00 dBm Offset 1.00 dB RBW 1 MHz
Att 30 dB SWT 1 ms VBW 1 MHz Mode Auto Sweep
1Pk Max
M1[1] -1.40 dBm
2.463950 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.452 GHz
691 pts
Span 73.1 MHz
Channel Power
Bandwidth 36.00 MHz
Power 12.30 dBm
Tx Total 12.30 dBm
Measuring...

3.2.3 Power Spectral Density

Procedure:

*The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April. The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

The spectrum analyzer is set to:

RBW = 3 kHz — Span = 300 kHz

VBW = 3 kHz — Sweep = 100 sec

Detector function = peak — Trace = max hold

Measurement Data:

Mode	Frequency (MHz)	Ch.	Test Results	
			dBm	Result
802.11b	2412	1	-19.05	Complies
	2437	6	-19.83	Complies
	2462	11	-19.18	Complies
802.11b	2412	1	-22.02	Complies
	2437	6	-23.60	Complies
	2462	11	-22.56	Complies
802.11n_20MHz	2412	1	-25.41	Complies
	2437	6	-25.60	Complies
	2462	11	-24.84	Complies
802.11n_40MHz	2422	3	-29.18	Complies
	2437	6	-29.31	Complies
	2452	9	-28.92	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

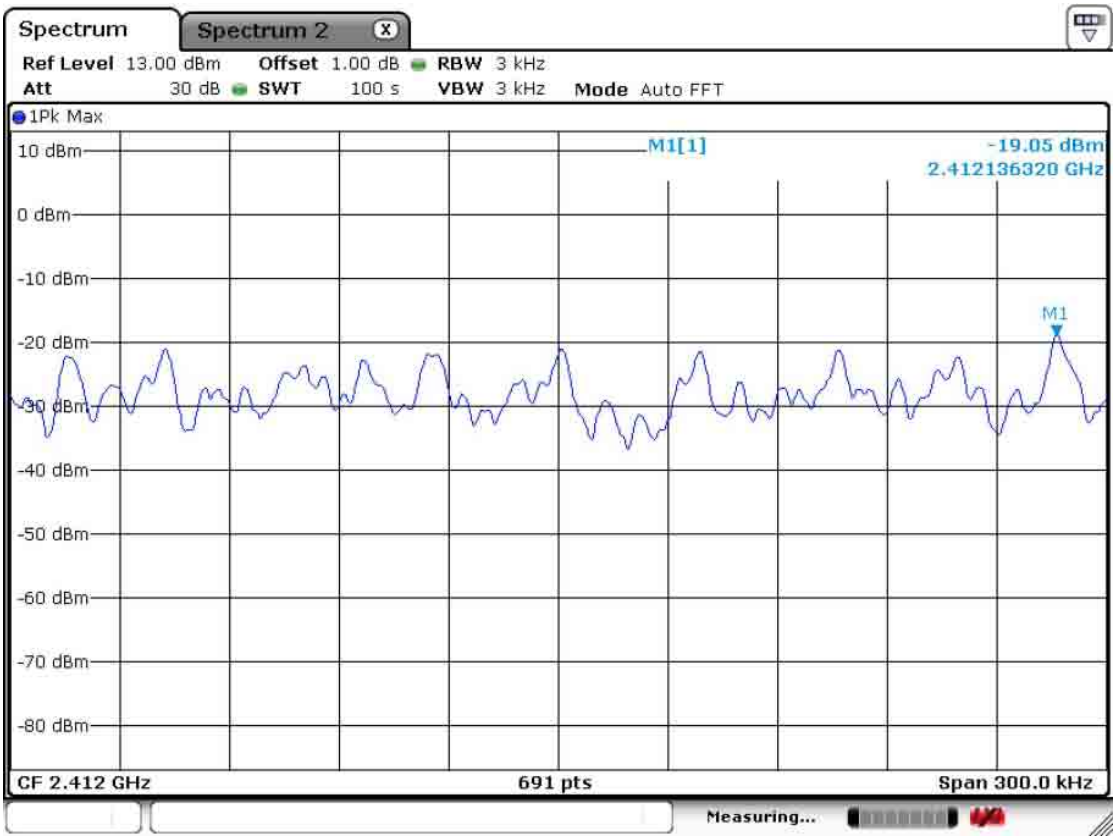
Power Spectral Density	< 8dBm @ 3kHz BW

Measurement Setup

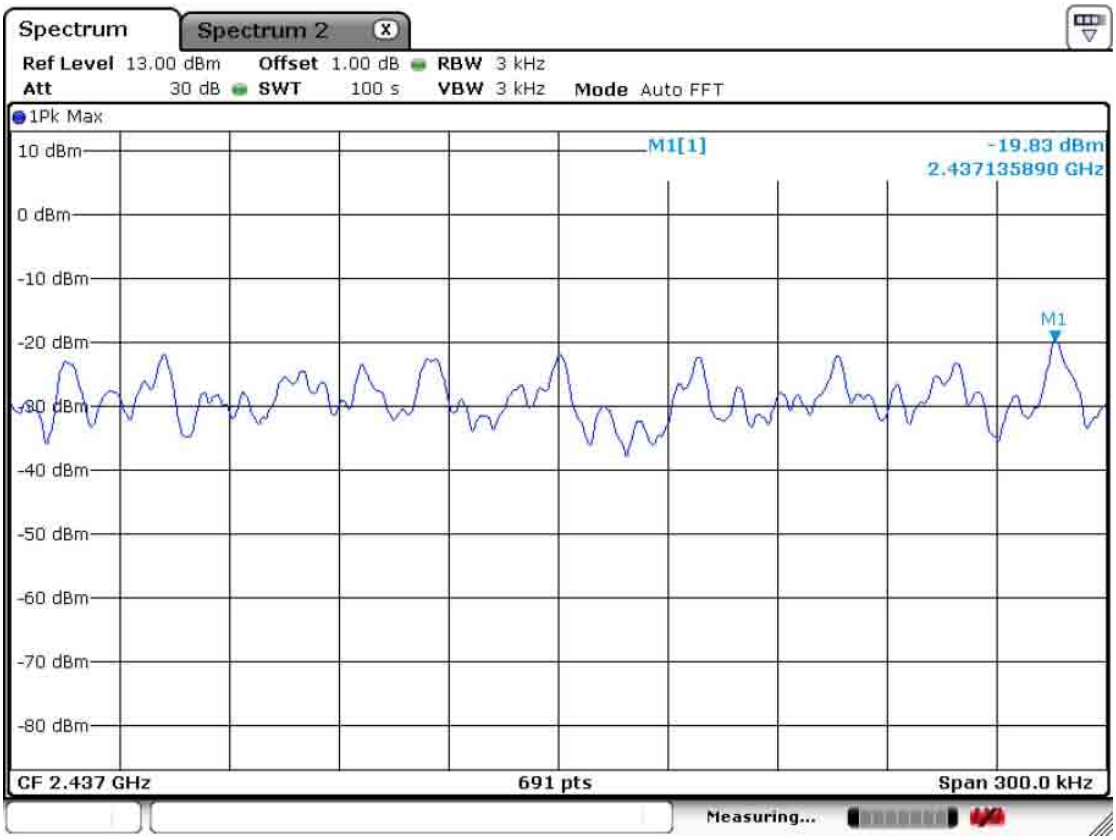
Same as the Chapter 3.2.1 (Figure 1)

802.11b Power Density Measurement

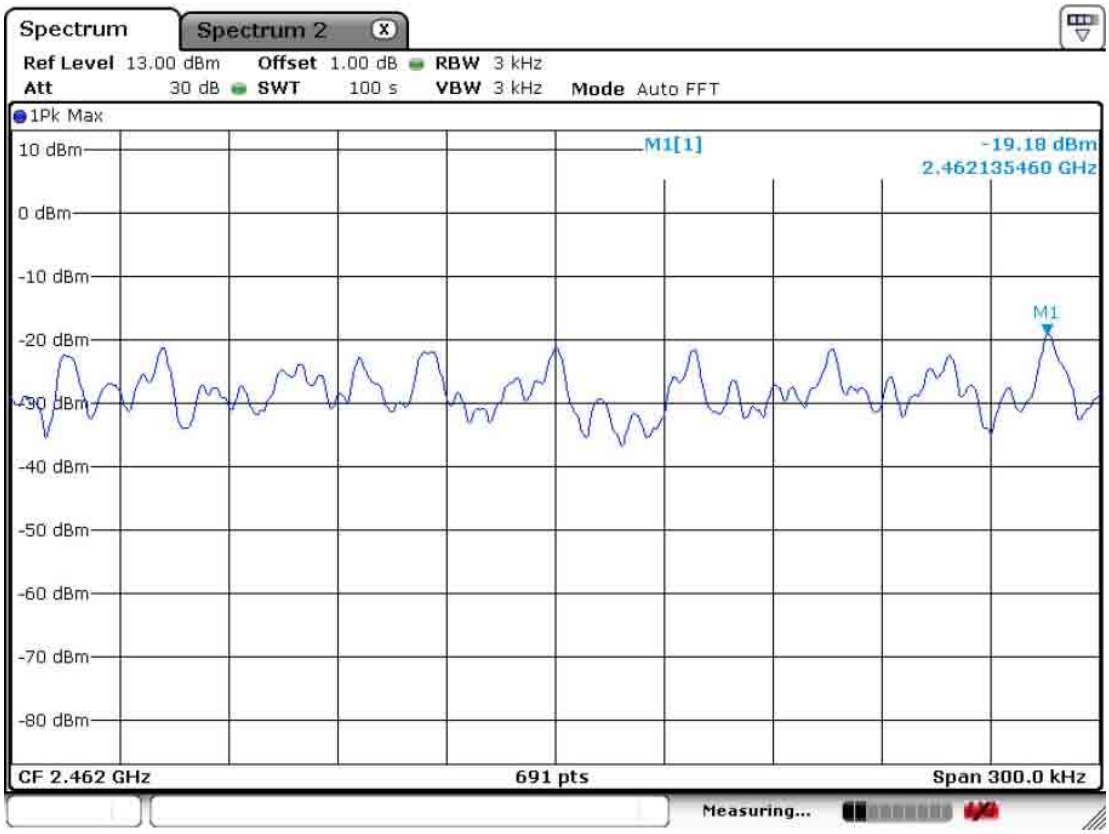
CH 1



CH 6

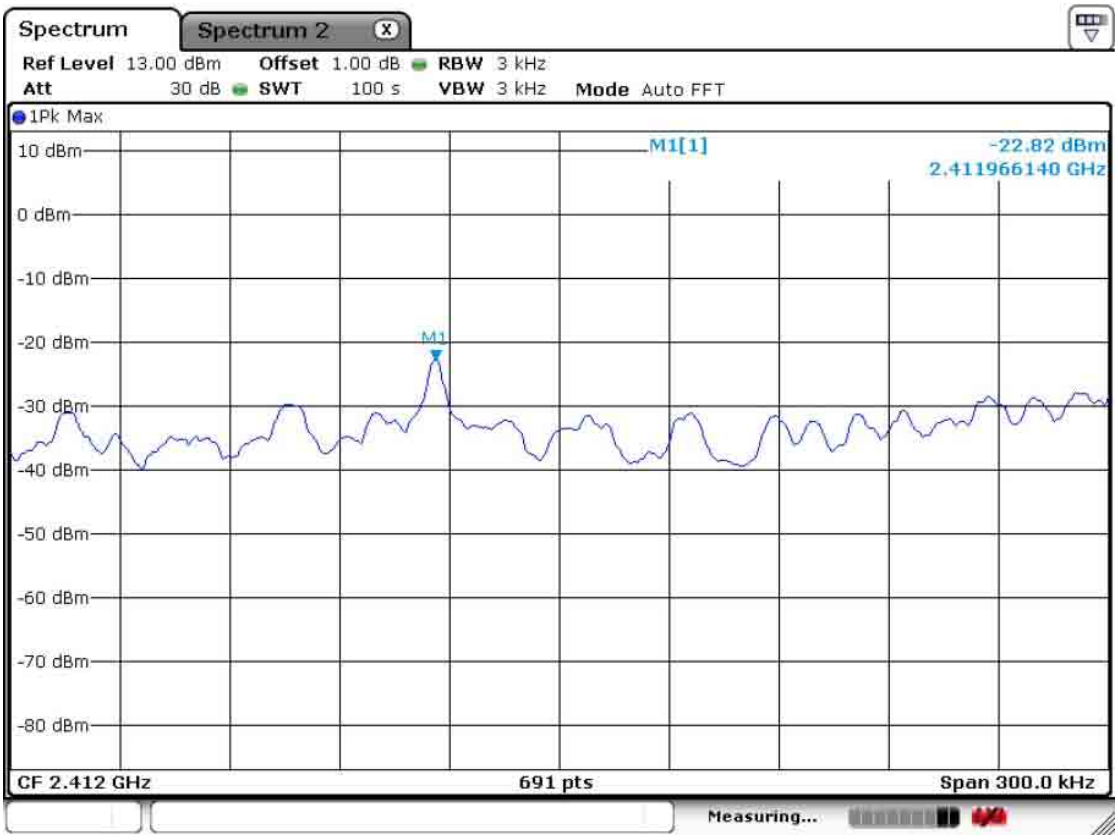


CH 11

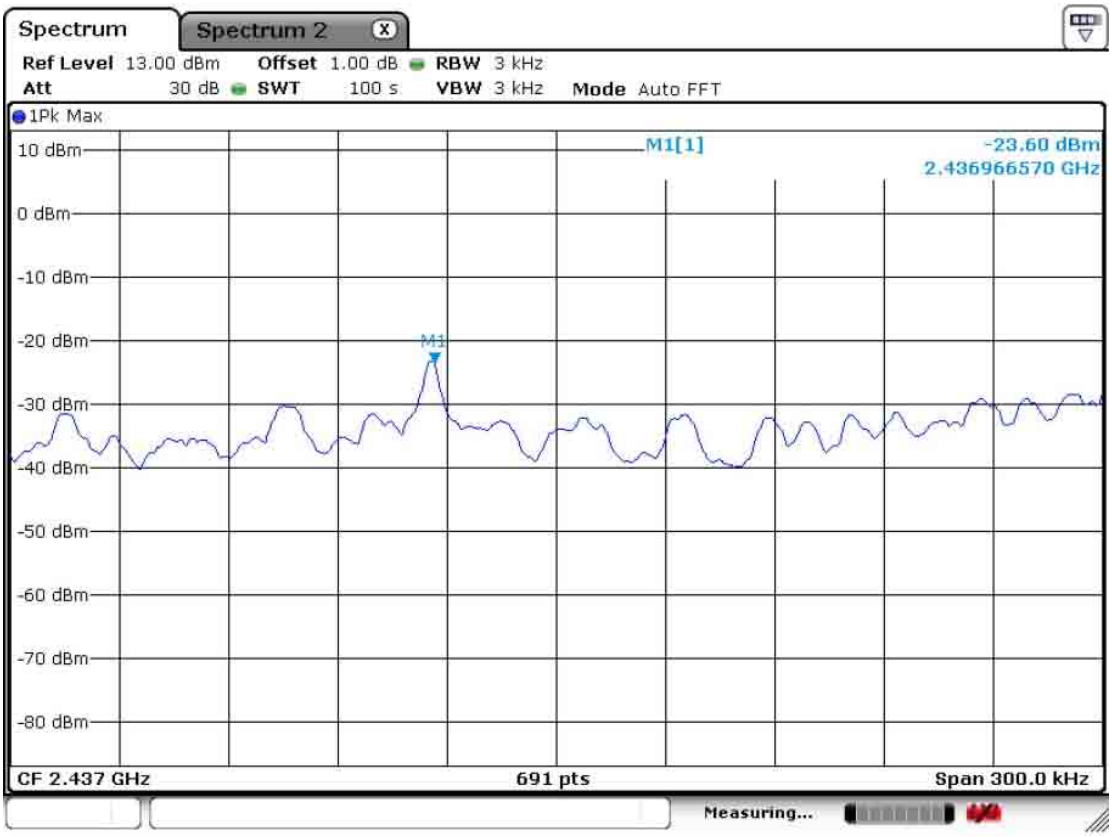

Spectrum
Spectrum 2
Ref Level 13.00 dBm Offset 1.00 dB RBW 3 kHz
Att 30 dB SWT 100 s VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
-19.18 dBm
2.462135460 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
CF 2.462 GHz
691 pts
Span 300.0 kHz
Measuring...

802.11g Power Density Measurement

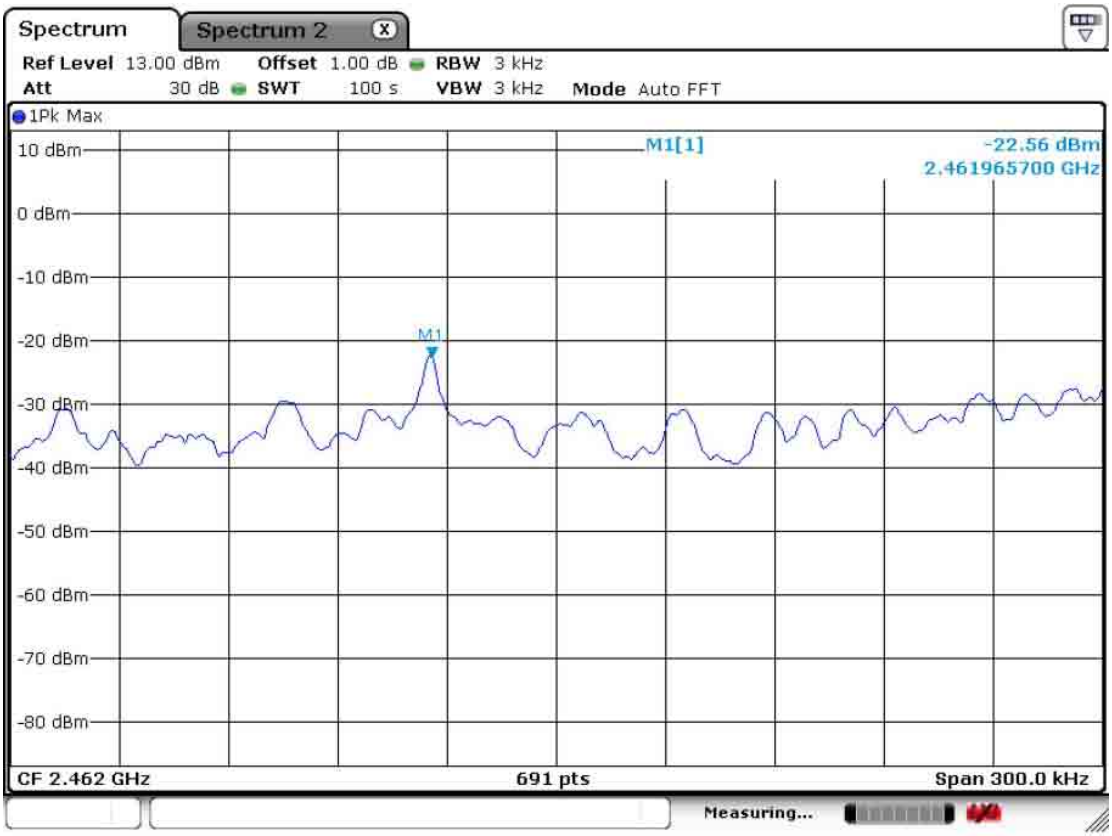
CH 1



CH 6

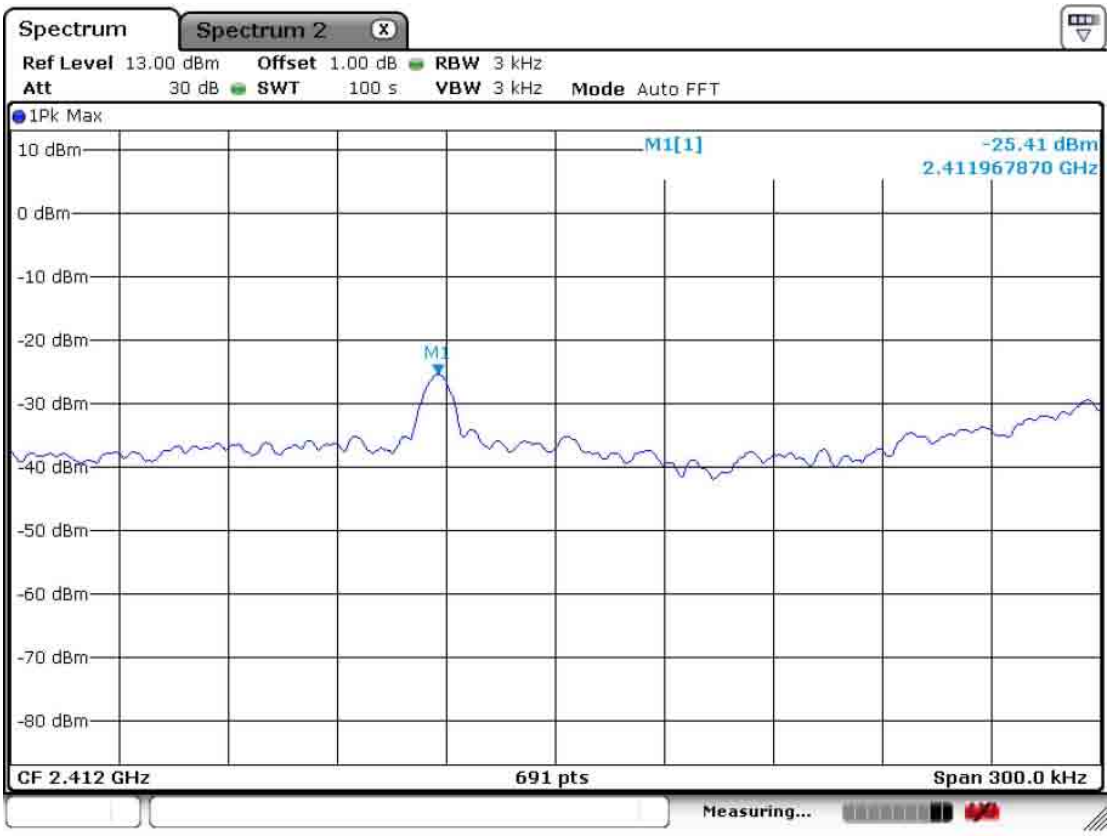


CH 11

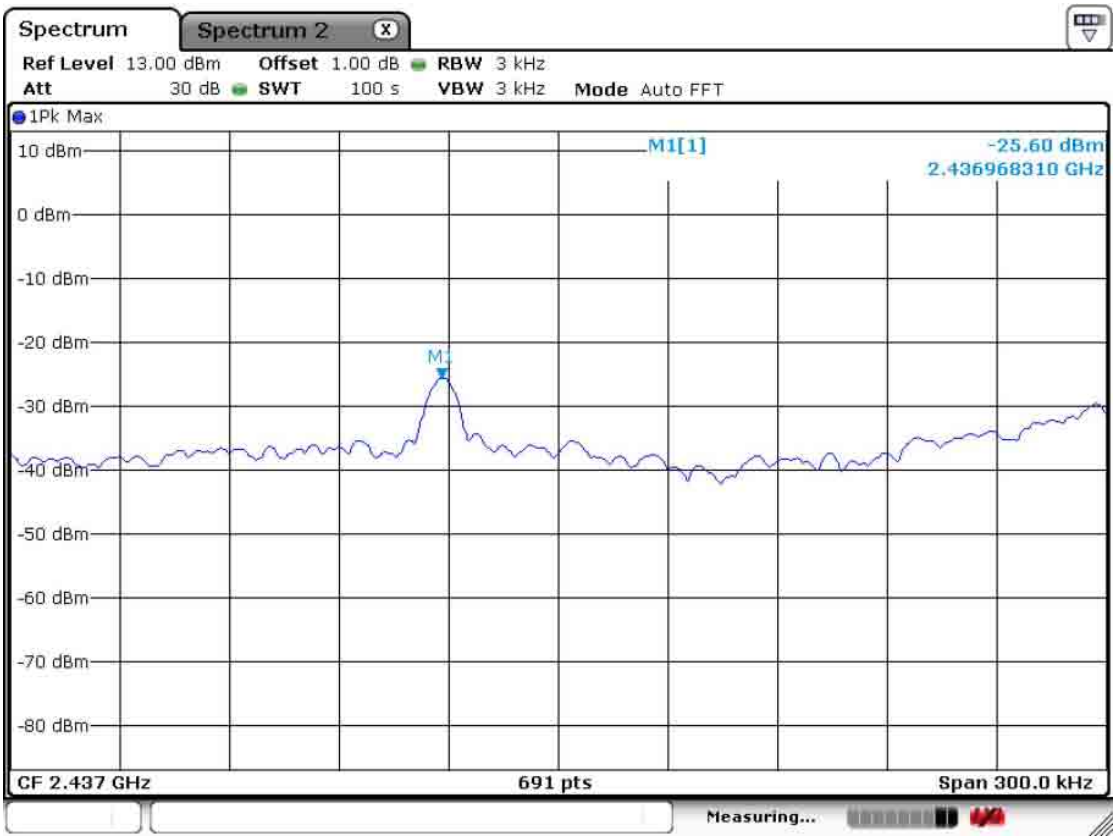

Spectrum
Spectrum 2
Ref Level 13.00 dBm Offset 1.00 dB RBW 3 kHz
Att 30 dB SWT 100 s VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
-22.56 dBm
2.461965700 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
CF 2.462 GHz
691 pts
Span 300.0 kHz
Measuring...

802.11n_20MHz Power Density Measurement

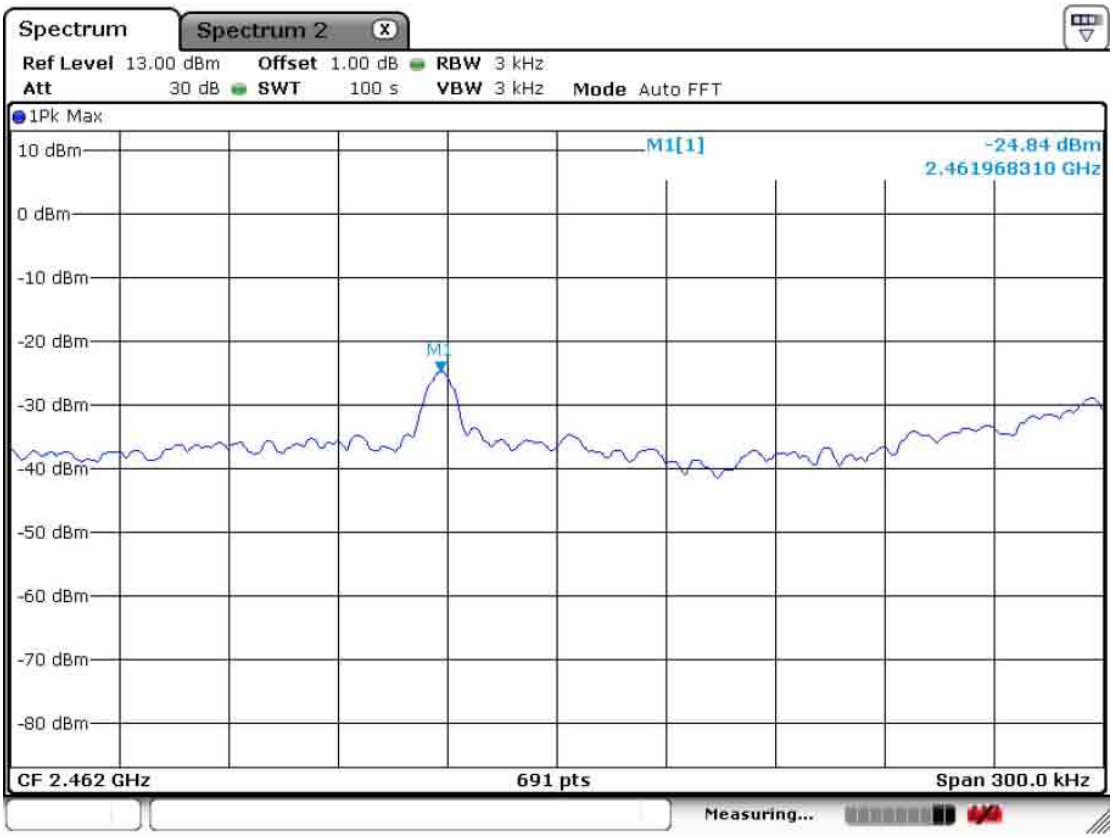
CH 1



CH 6

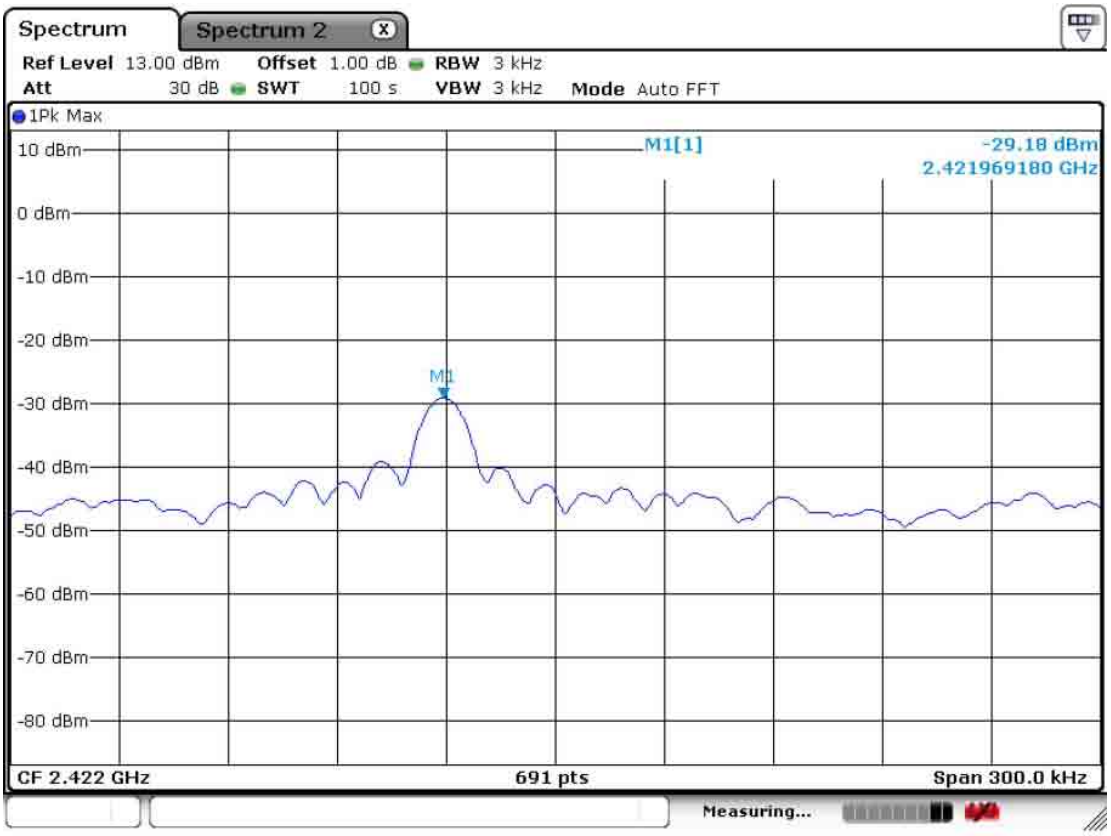


CH 11

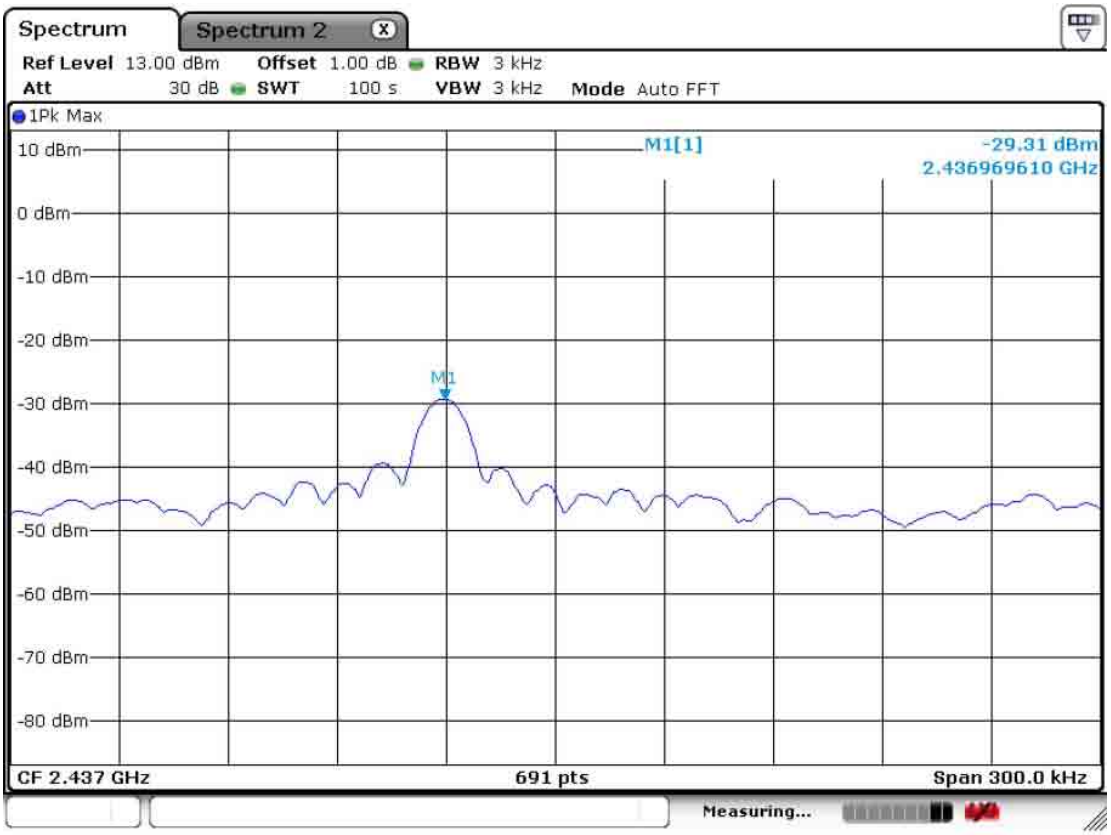

Spectrum
Spectrum 2
Ref Level 13.00 dBm Offset 1.00 dB RBW 3 kHz
Att 30 dB SWT 100 s VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
-24.84 dBm
2.461968310 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
CF 2.462 GHz
691 pts
Span 300.0 kHz
Measuring...

802.11n_40MHz Power Density Measurement

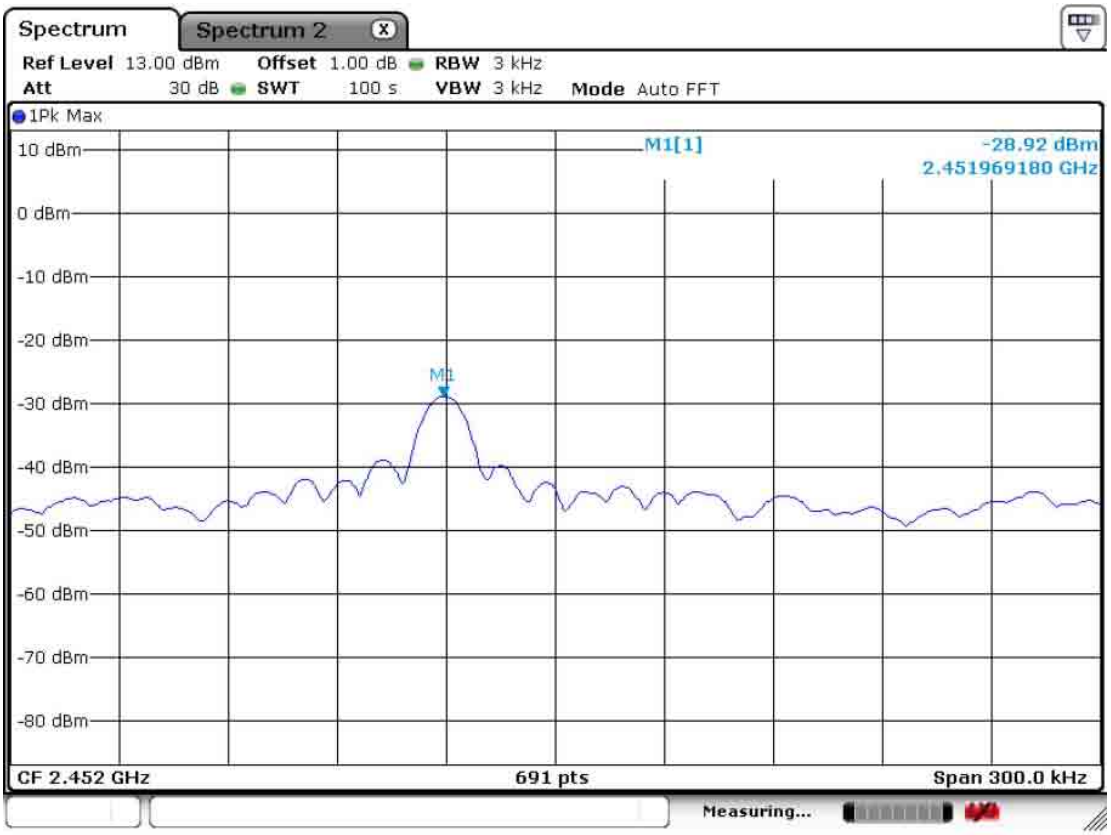
CH 3



CH 6



CH 9


Spectrum
Spectrum 2
Ref Level 13.00 dBm Offset 1.00 dB RBW 3 kHz
Att 30 dB SWT 100 s VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
-28.92 dBm
2.451969180 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
CF 2.452 GHz
691 pts
Span 300.0 kHz
Measuring...

3.2.4 Band - edge

Procedure:

*The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz	VBW = 100 kHz
Span = 80 MHz	Detector function = peak
Trace = max hold	Sweep = auto

Measurement Data: Complies

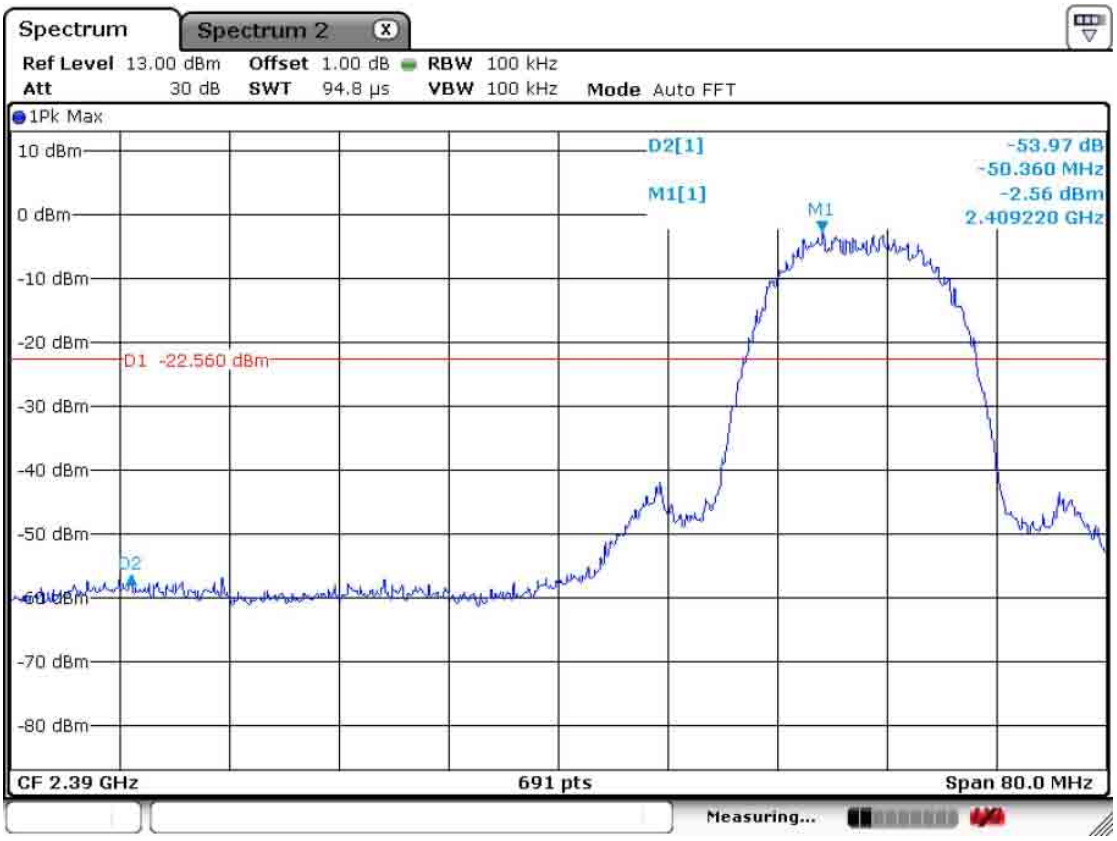
- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

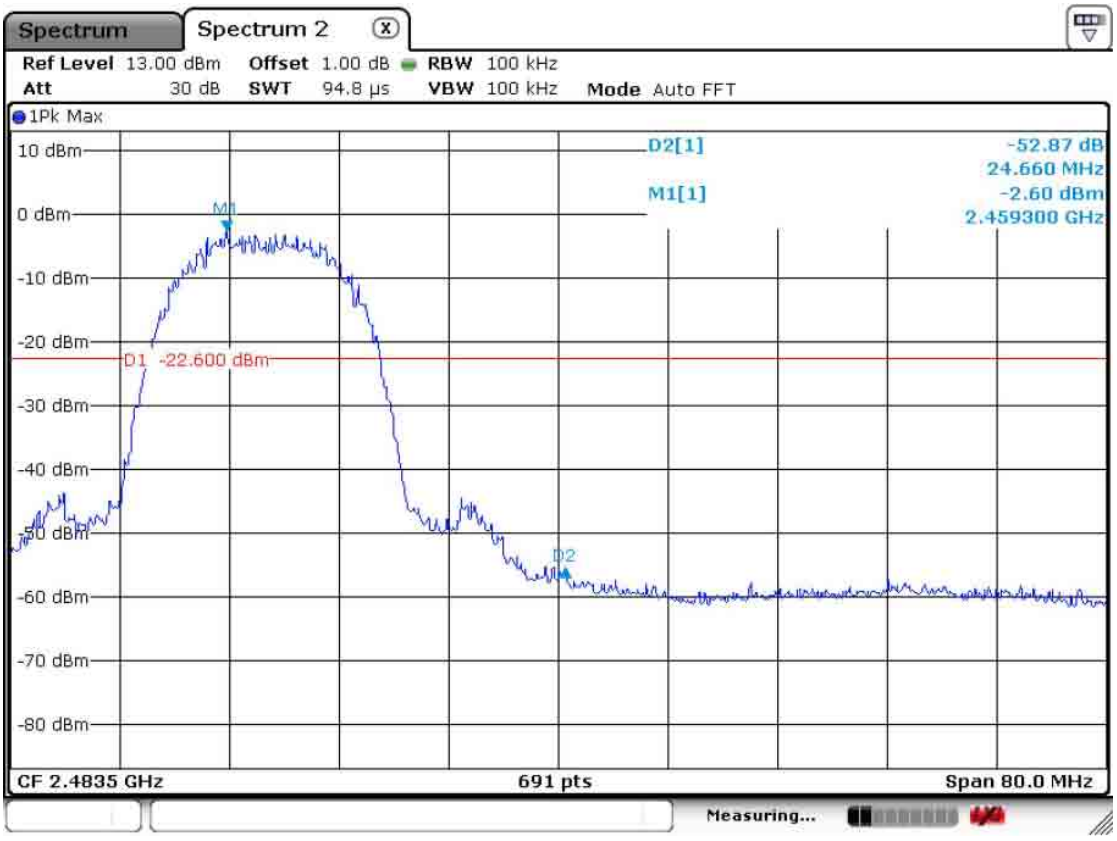
Minimum Standard:	> 20 dBc

Measurement Setup

Same as the Chapter 3.2.1 (Figure 1)

802.11b Band–edge : Conducted Measurements





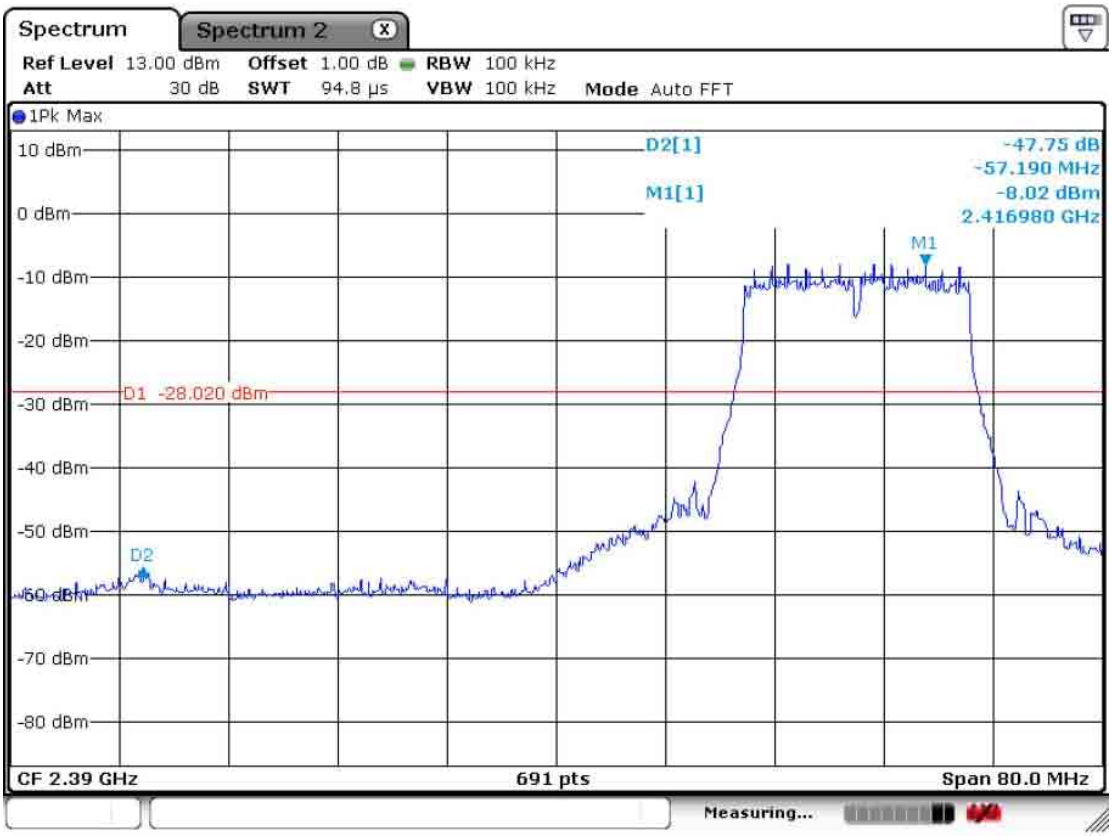
Band-edges in the restricted band 2310-2390 MHz measurement (802.11b mode)

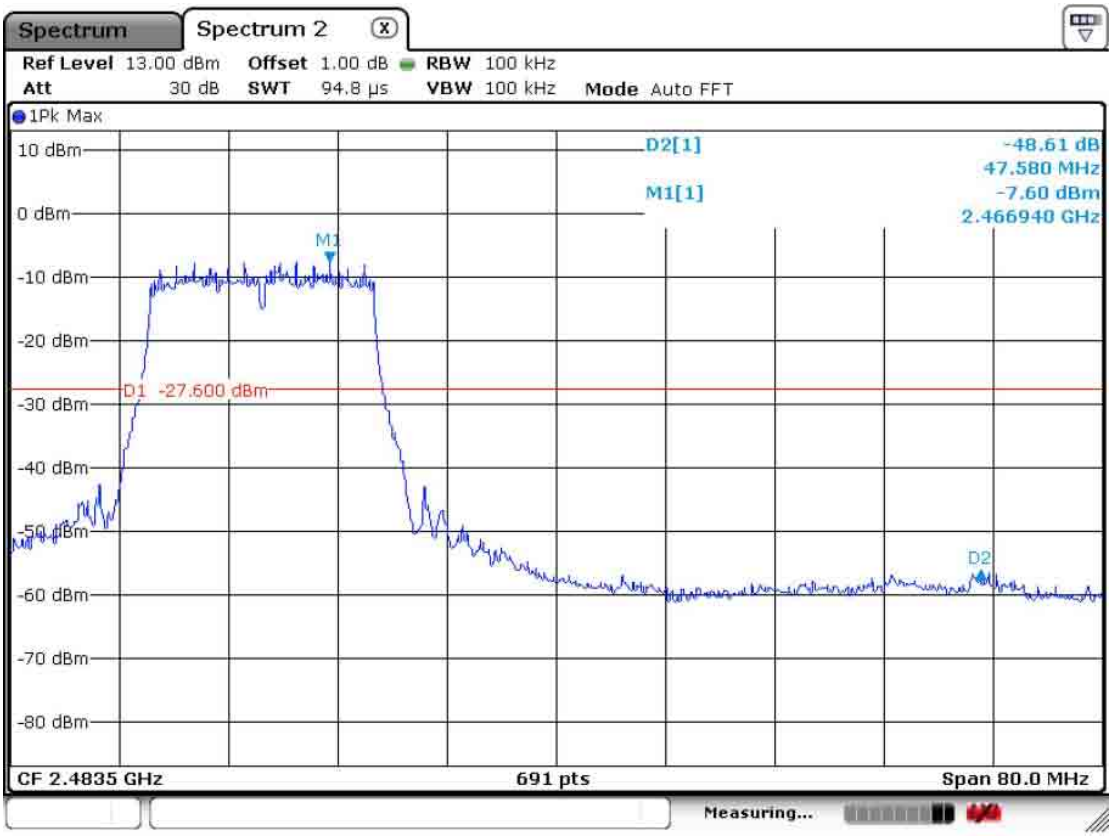
Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
2389.8	37.8	50.3	H	28.2	26.7	54.0	74.0	39.3	51.8	14.7	22.2

Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
2483.5	41.8	55.6	H	28.2	26.7	54.0	74.0	43.3	57.1	10.7	16.9

802.11g Band–edge : Conducted Measurements





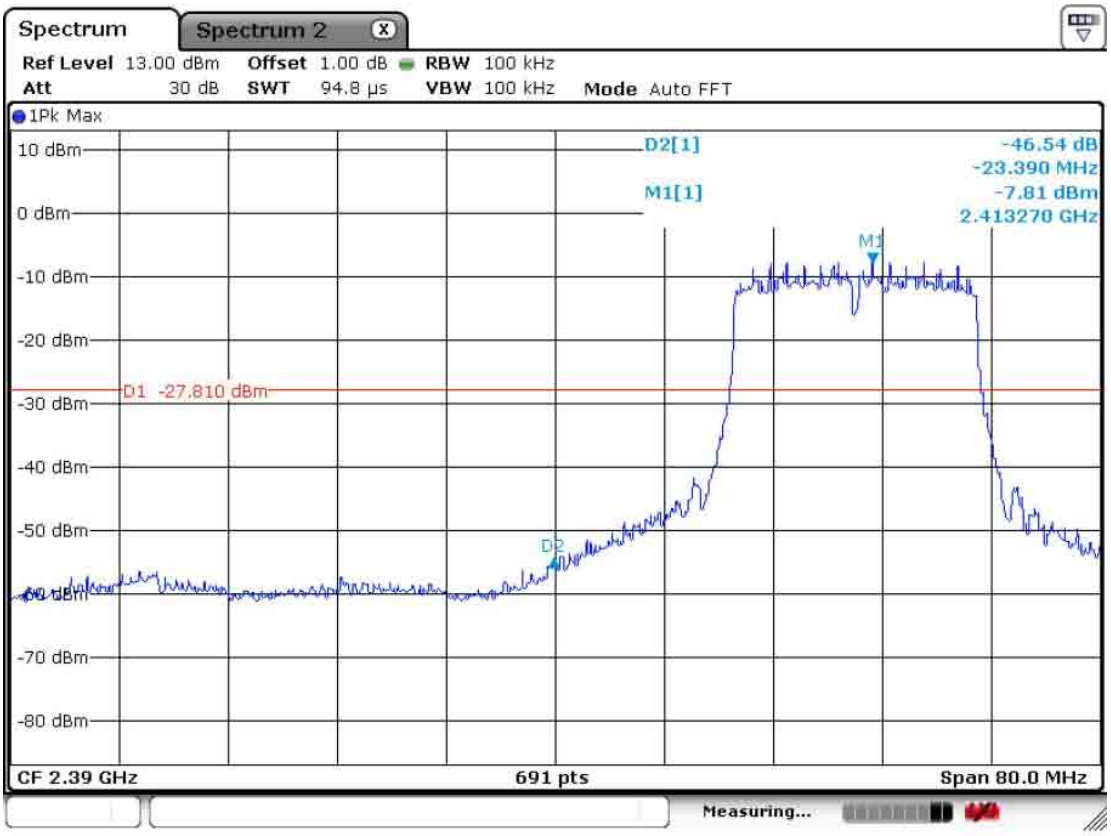
Band-edges in the restricted band 2310-2390 MHz measurement (802.11g mode)

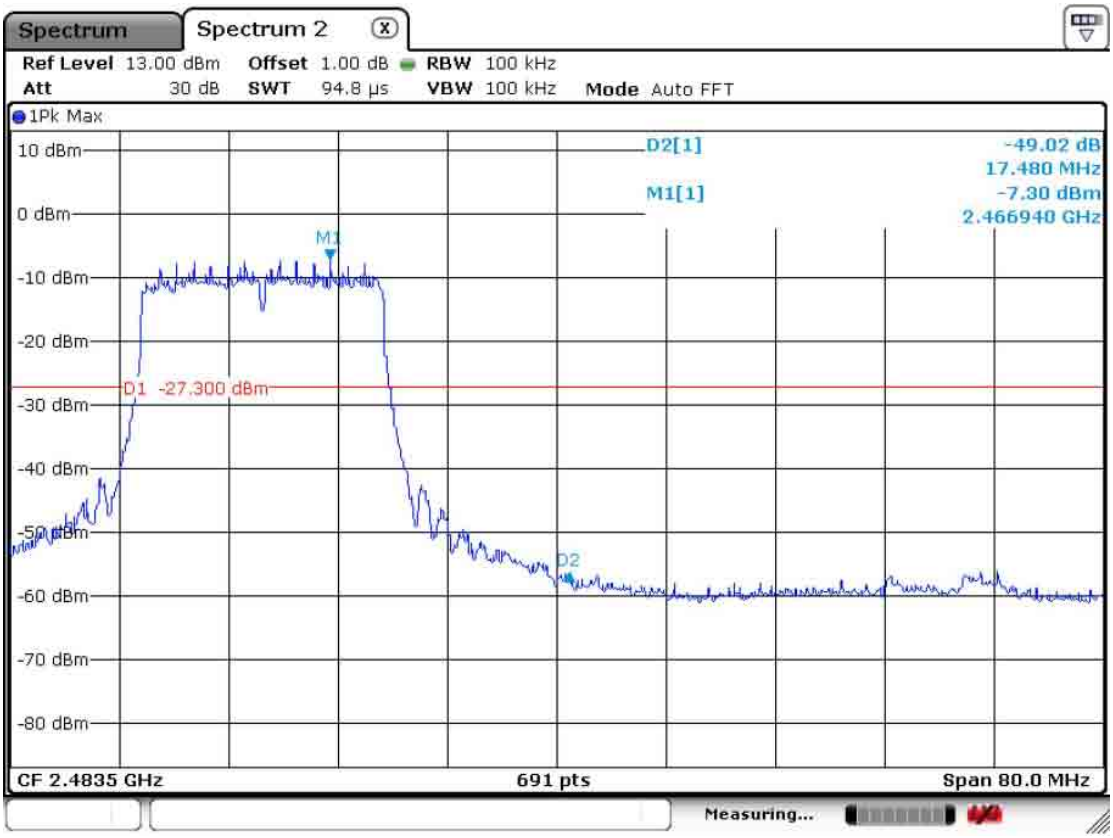
Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
2389.8	37.1	55.8	H	28.2	26.7	54.0	74.0	38.6	57.3	15.4	16.7

Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
2483.5	39.6	62.3	H	28.2	26.7	54.0	74.0	41.1	63.8	12.9	10.2

802.11n_20MHz Band–edge : Conducted Measurements





Band-edges in the restricted band 2310-2390 MHz measurement (802.11n_20MHz mode)

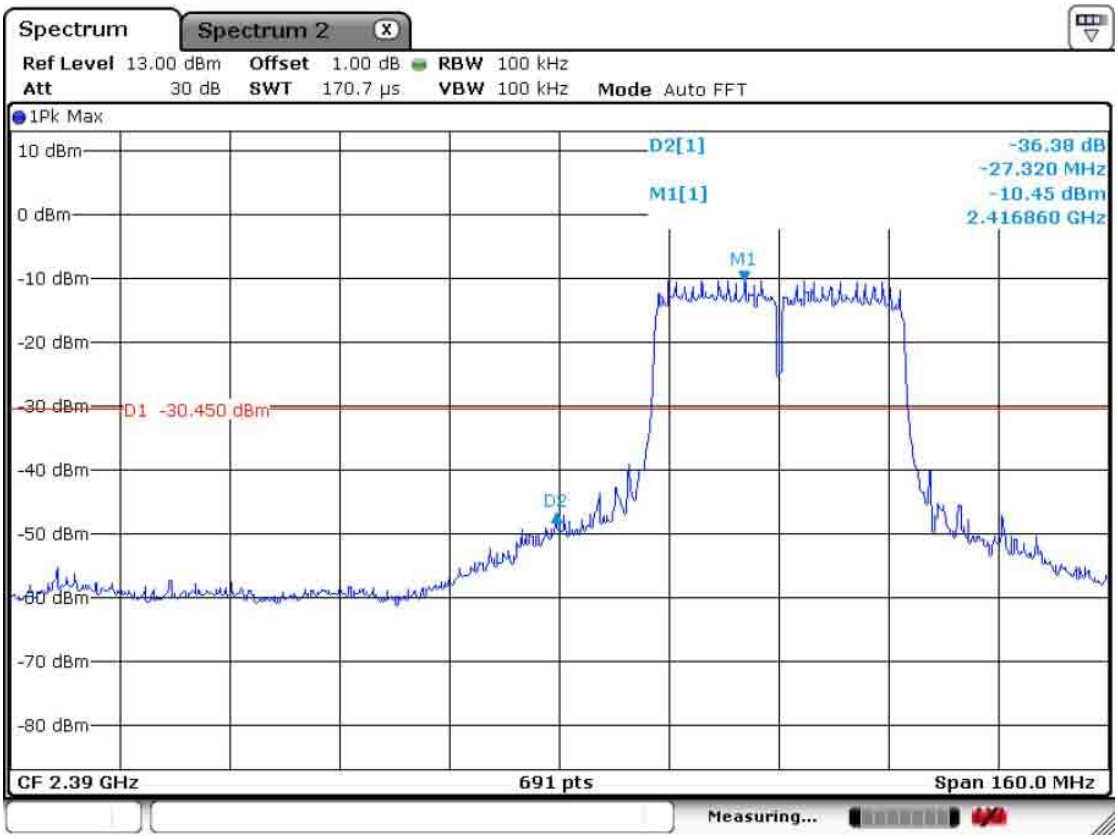
Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
2389.7	36.7	54.3	H	28.2	26.7	54.0	74.0	38.2	55.8	15.8	18.2

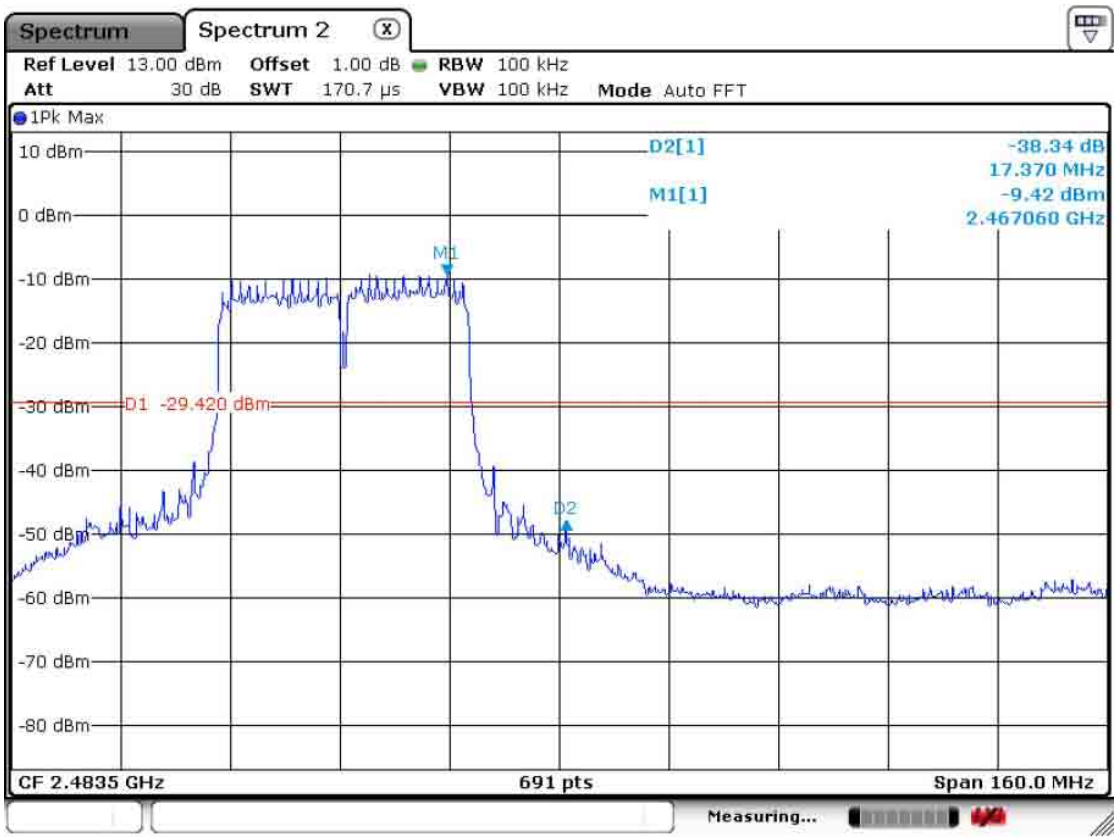
Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
2483.5	39.9	57.8	H	28.2	26.7	54.0	74.0	41.4	59.3	12.6	14.7

Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

802.11n_40MHz Band–edge : Conducted Measurements





Band-edges in the restricted band 2310-2390 MHz measurement (802.11n_40MHz mode)

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor		Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
				Antenna	Amp. Gain+Cable						
2389.7	37.8	59.6	H	28.2	26.7	54.0	74.0	39.3	61.1	14.7	12.9

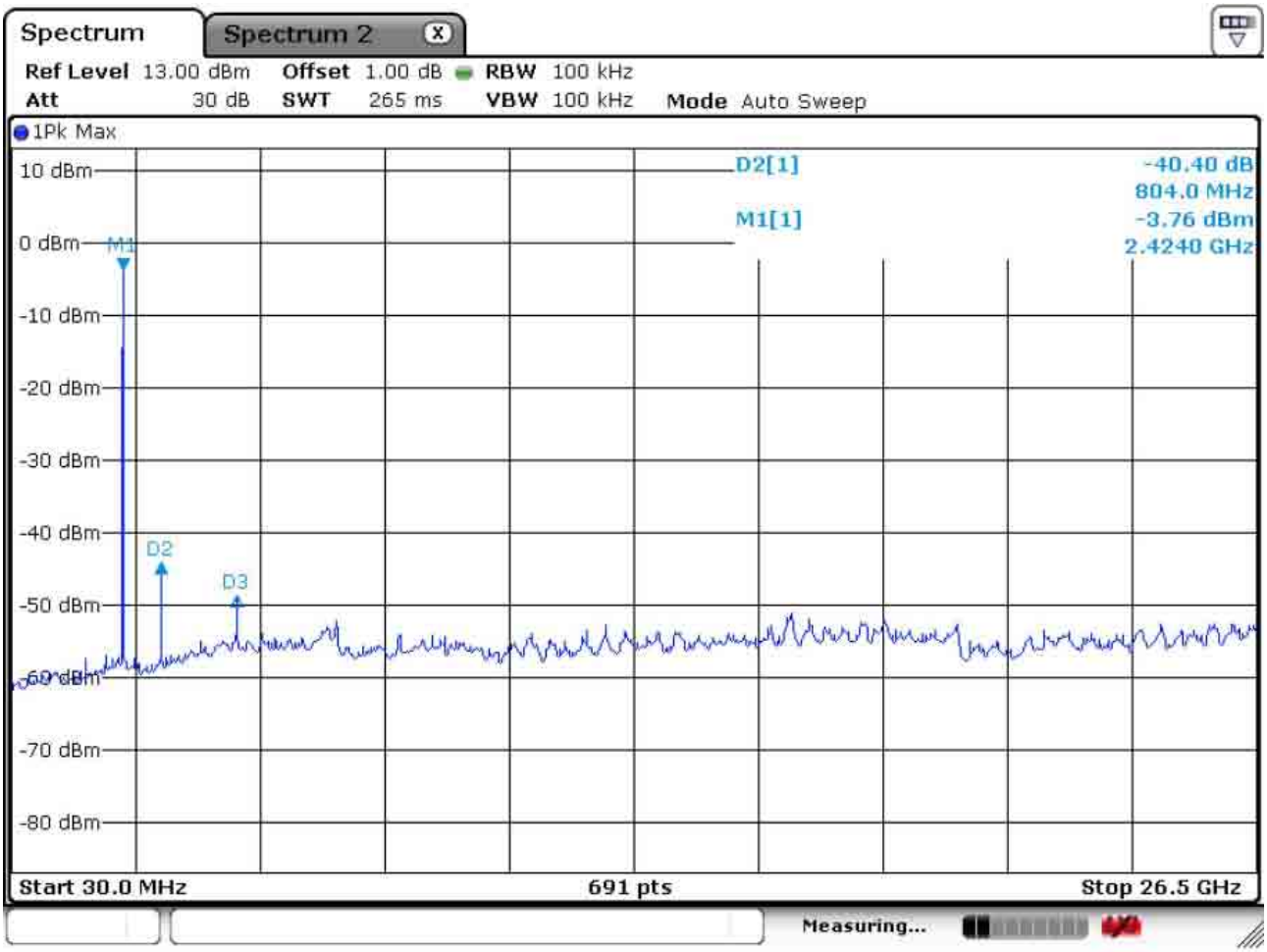
Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor		Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
				Antenna	Amp. Gain+Cable						
2483.5	38.5	60.2	H	28.2	26.7	54.0	74.0	40.0	61.7	14.0	12.3

Note : This EUT was tested in 3 orthogonal positions and the worst-case data was presented

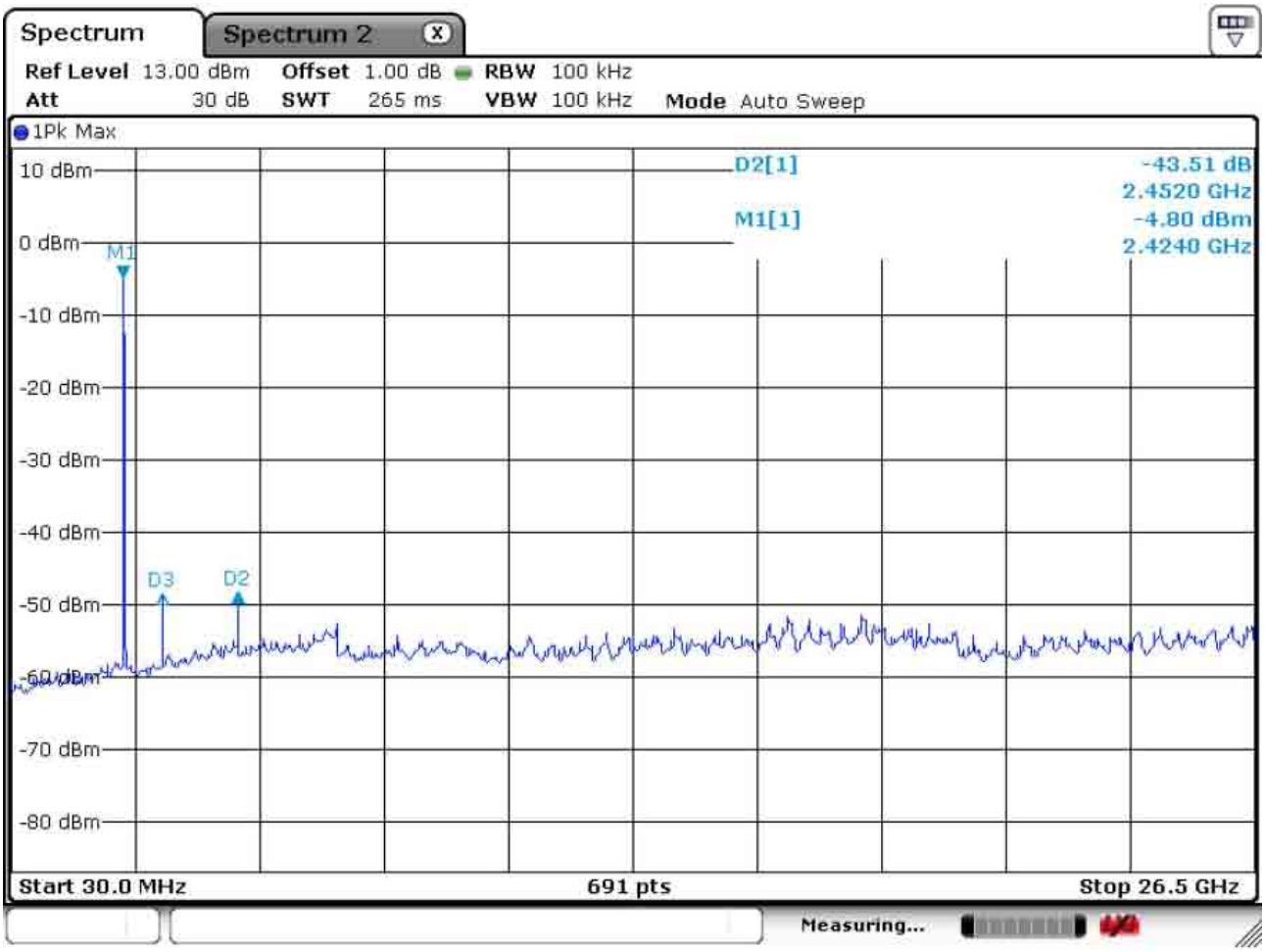
802.11b - Low channel

Frequency Range = 30 MHz ~ 10th harmonic.



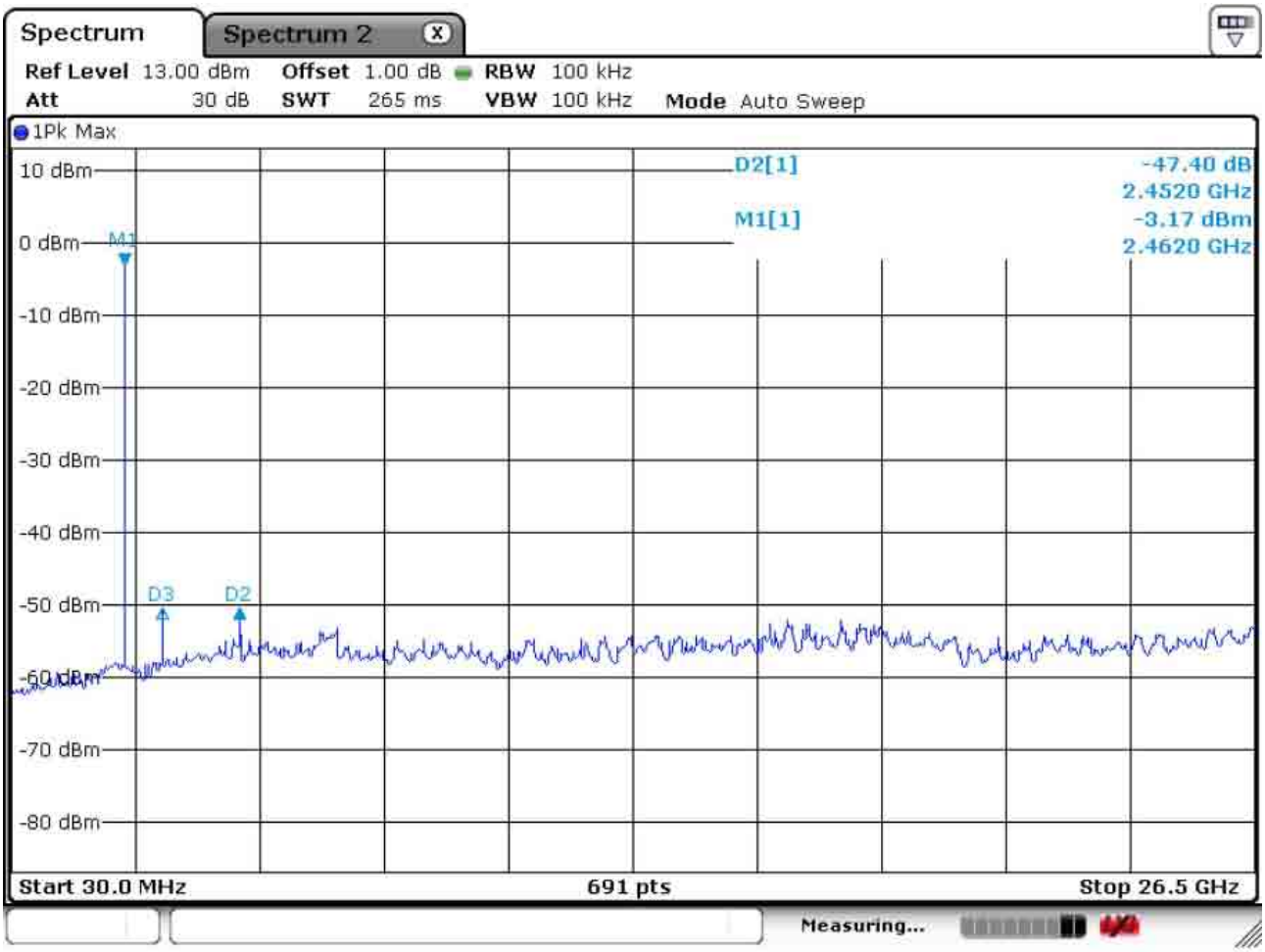
802.11b - Mid channel

Frequency Range = 30 MHz ~ 10th harmonic.



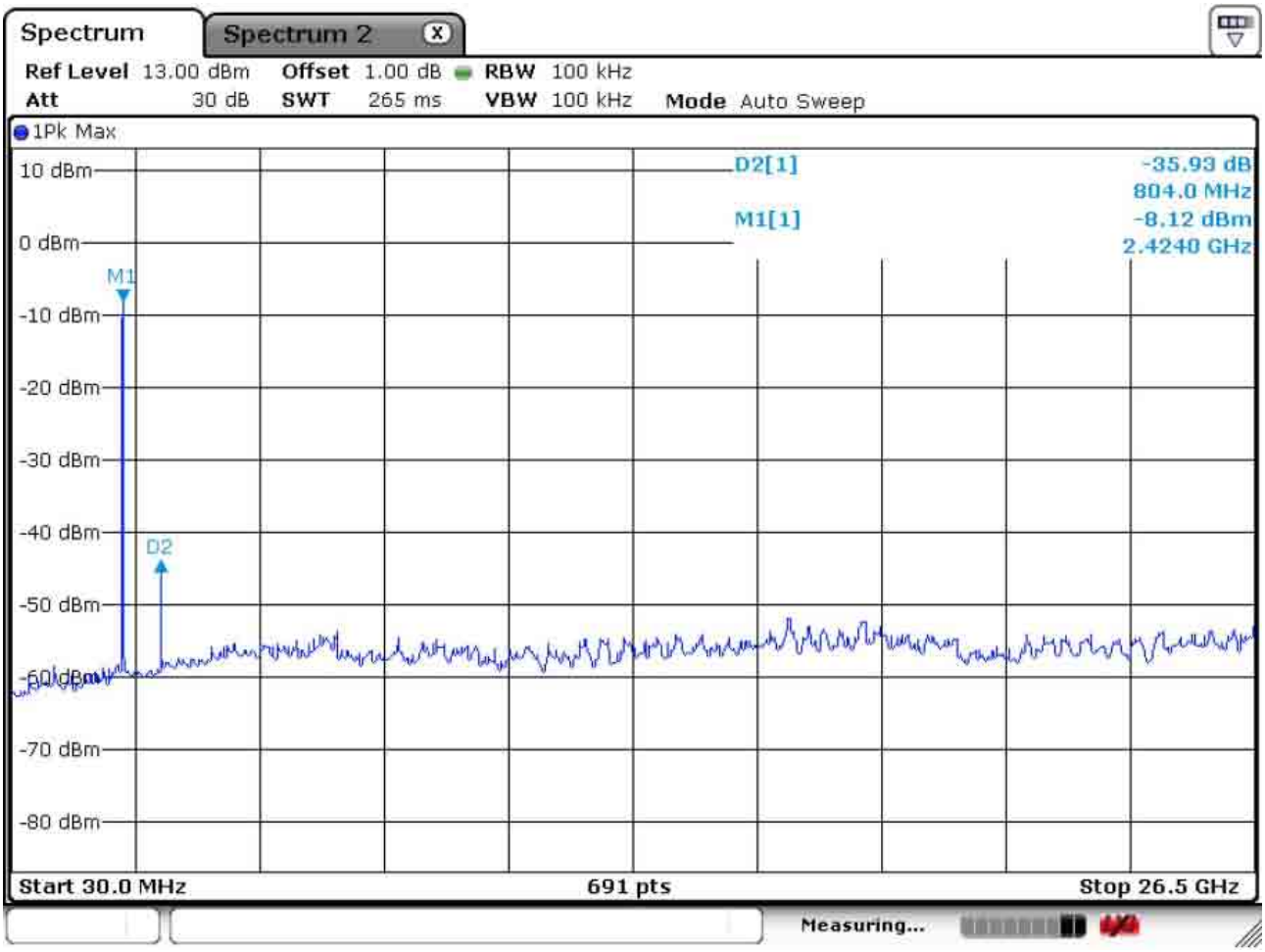
802.11b – High channel

Frequency Range = 30 MHz ~ 10th harmonic.



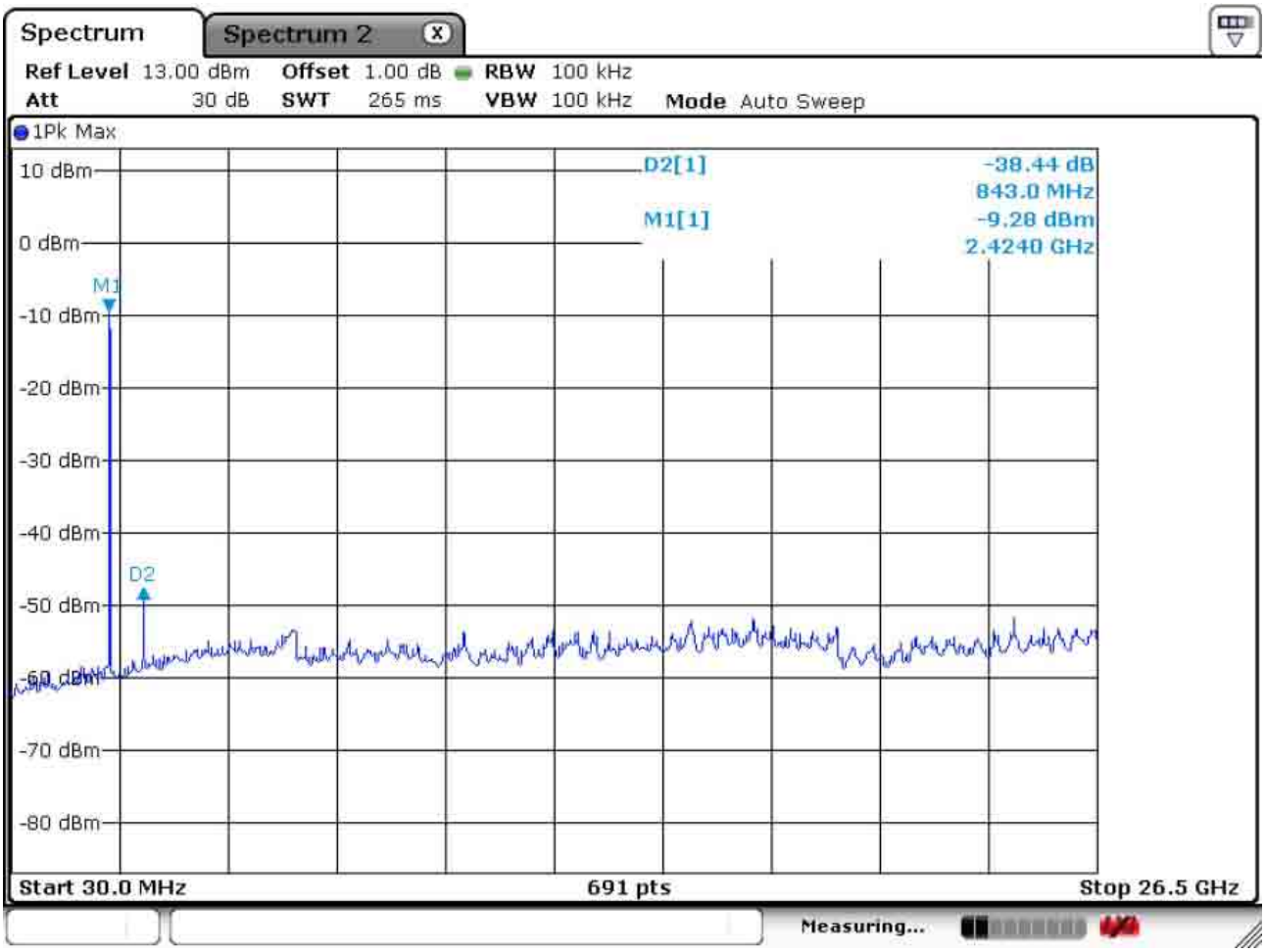
802.11g - Low channel

Frequency Range = 30 MHz ~ 10th harmonic.



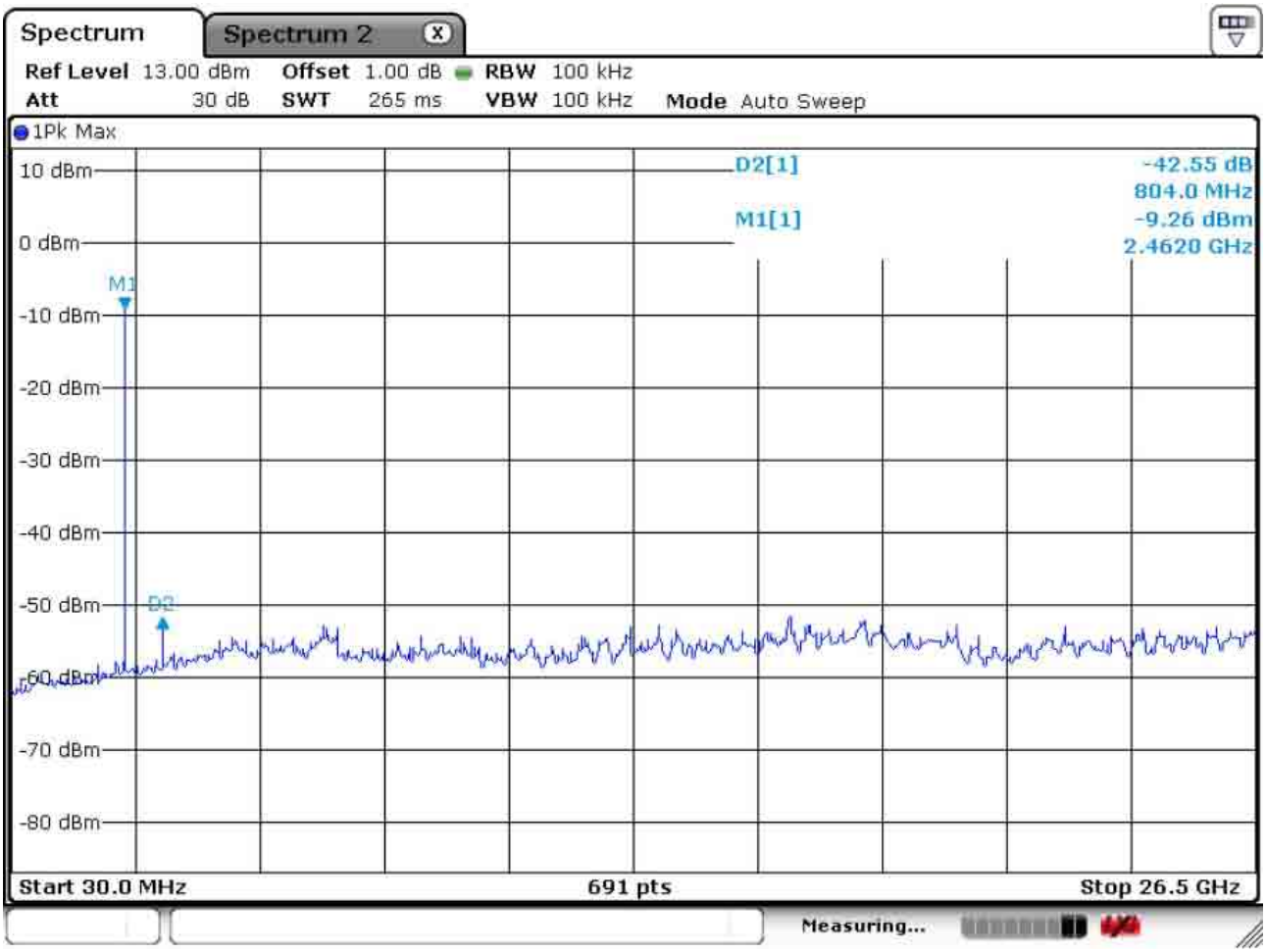
802.11g - Mid channel

Frequency Range = 30 MHz ~ 10th harmonic.



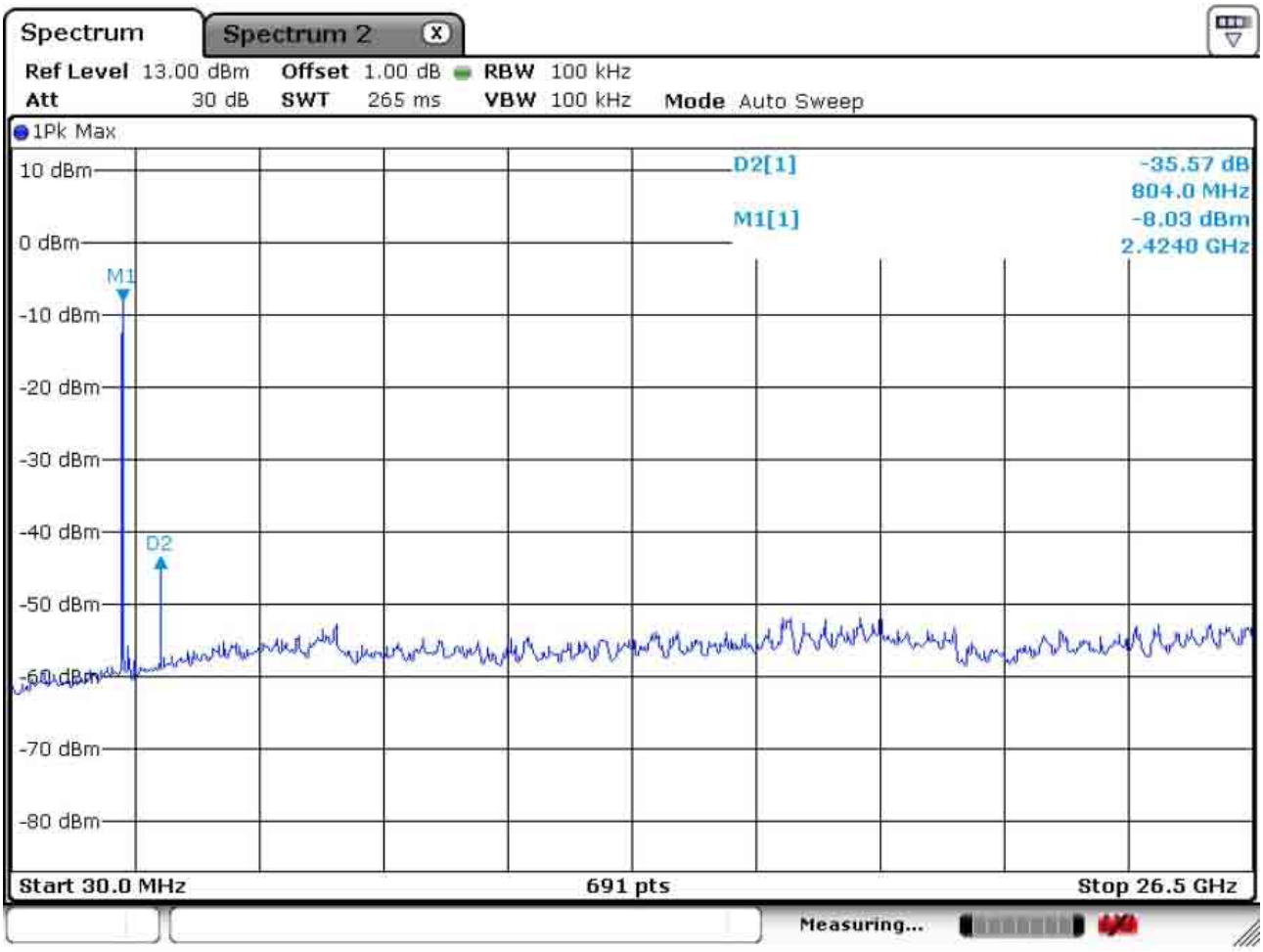
802.11g – High channel

Frequency Range = 30 MHz ~ 10th harmonic.



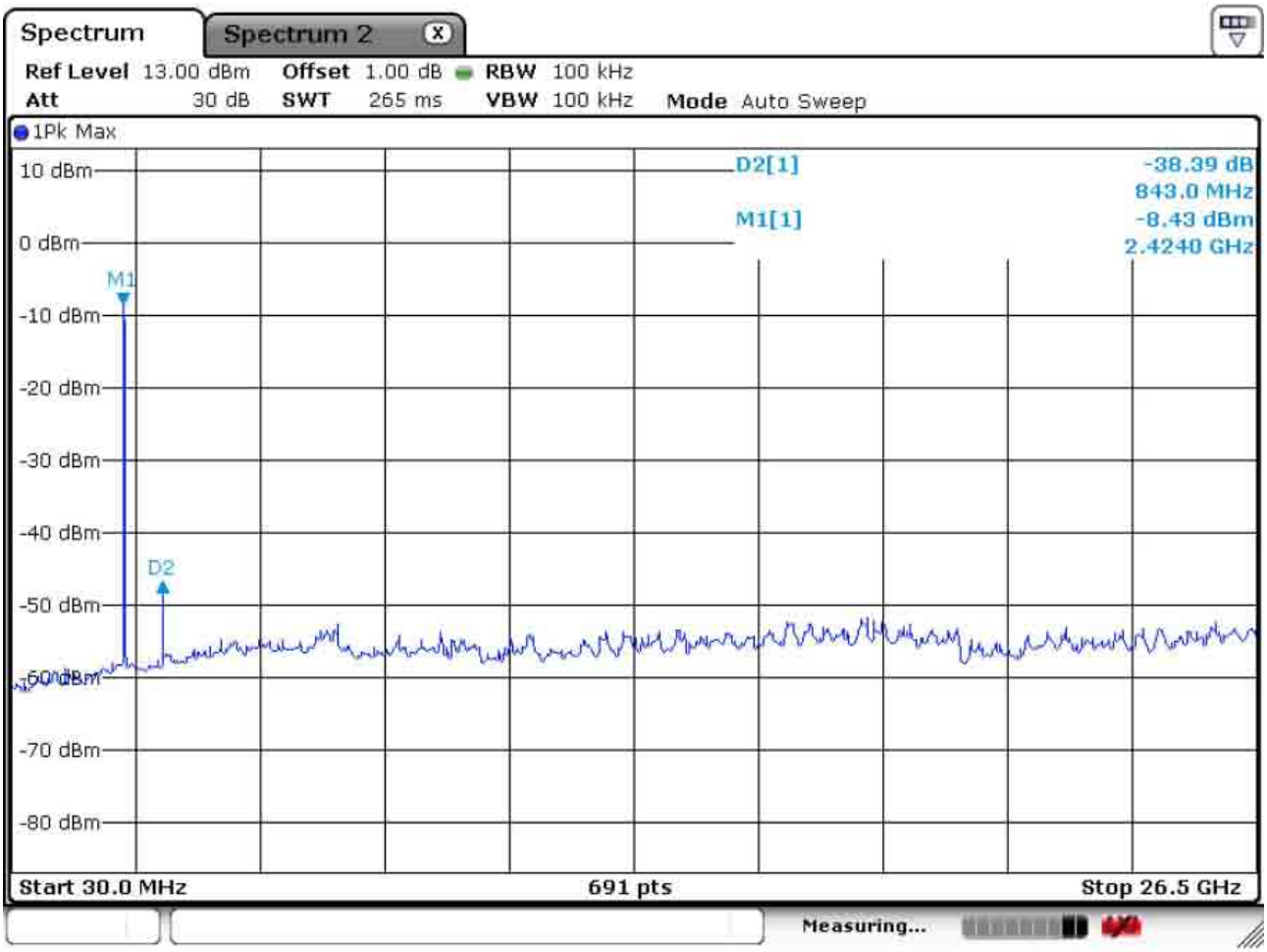
802.11n_20MHz - Low channel

Frequency Range = 30 MHz ~ 10th harmonic.



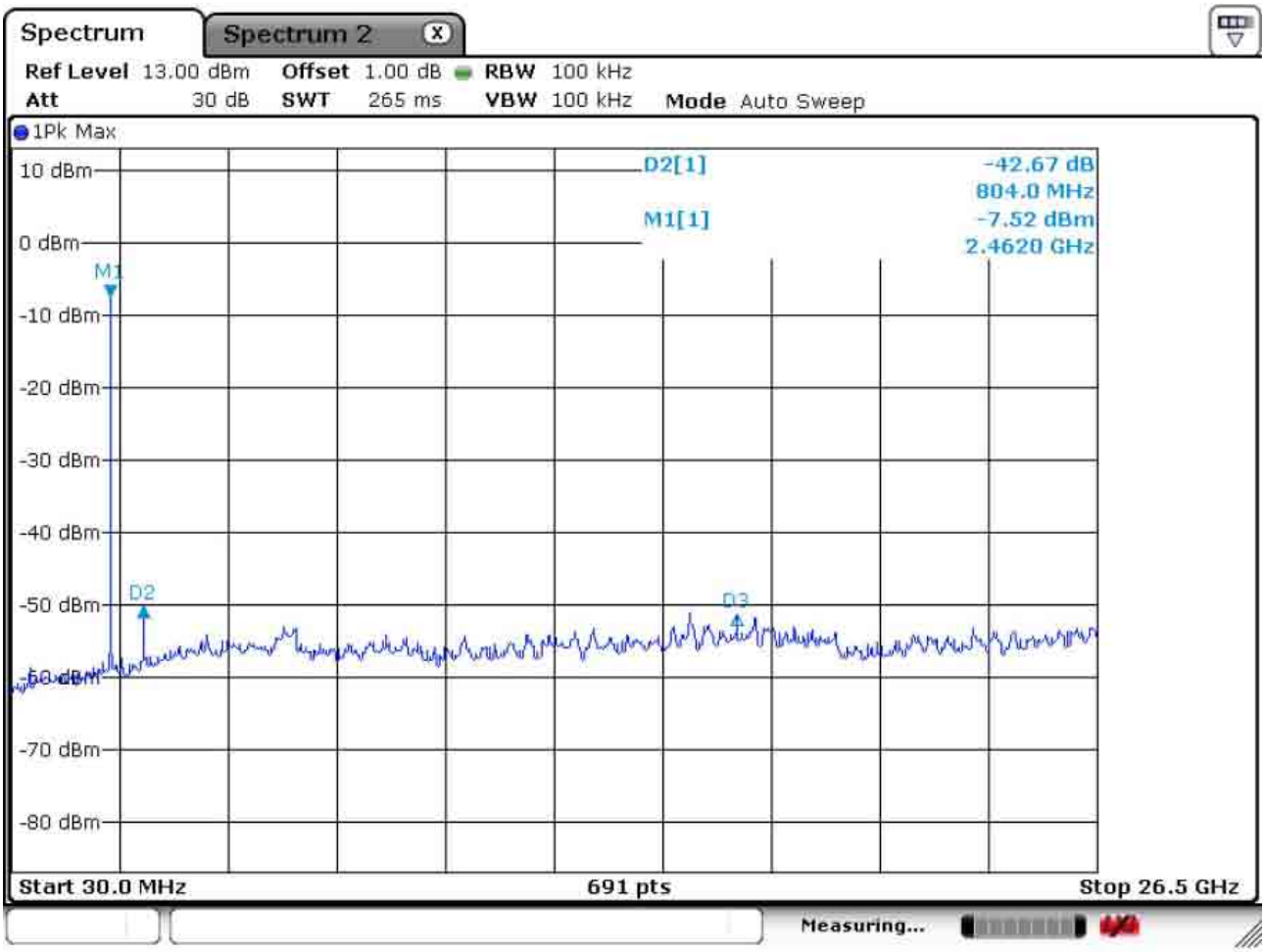
802.11n_20MHz - Mid channel

Frequency Range = 30 MHz ~ 10th harmonic.



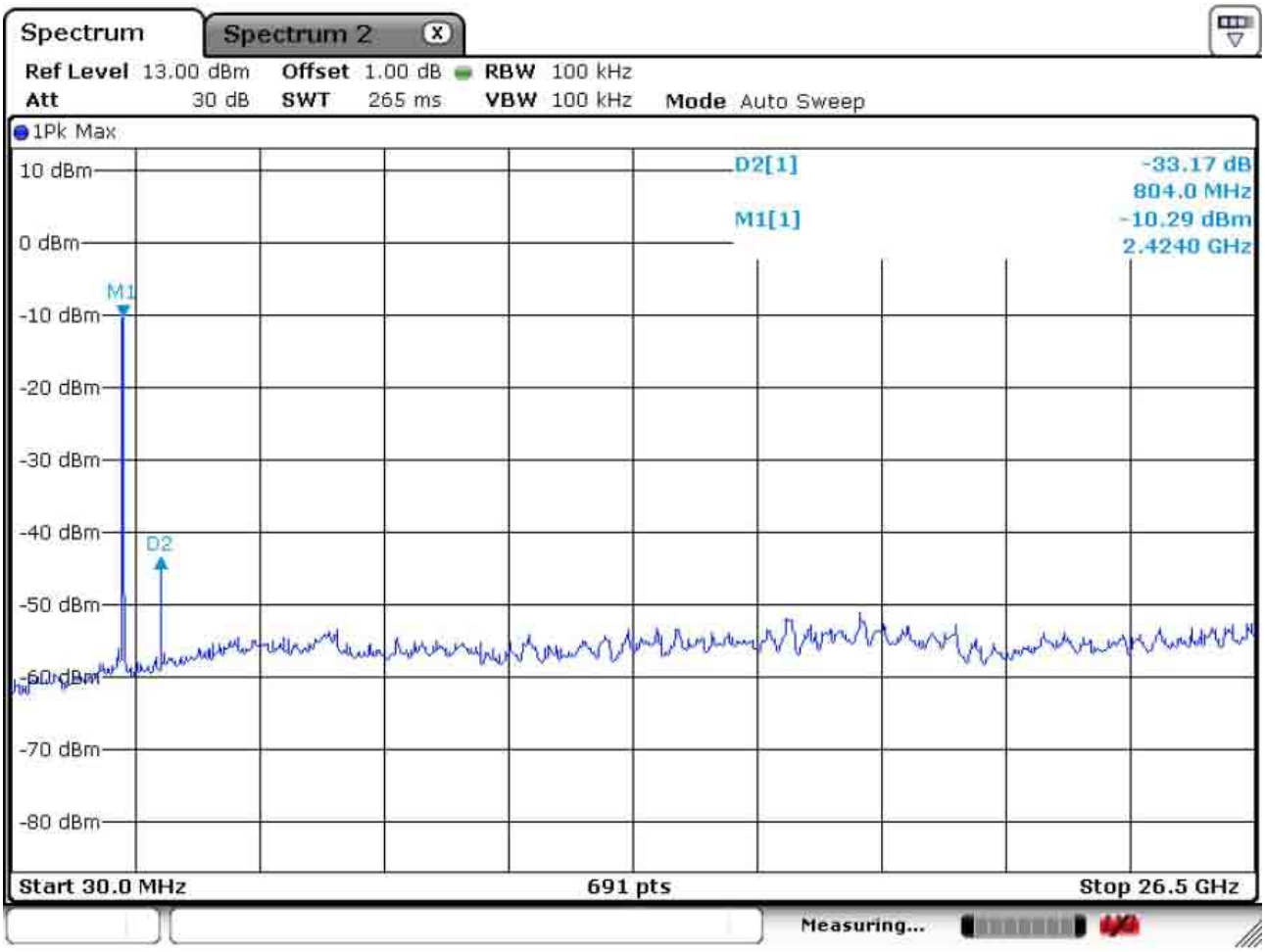
802.11n_20MHz – High channel

Frequency Range = 30 MHz ~ 10th harmonic.



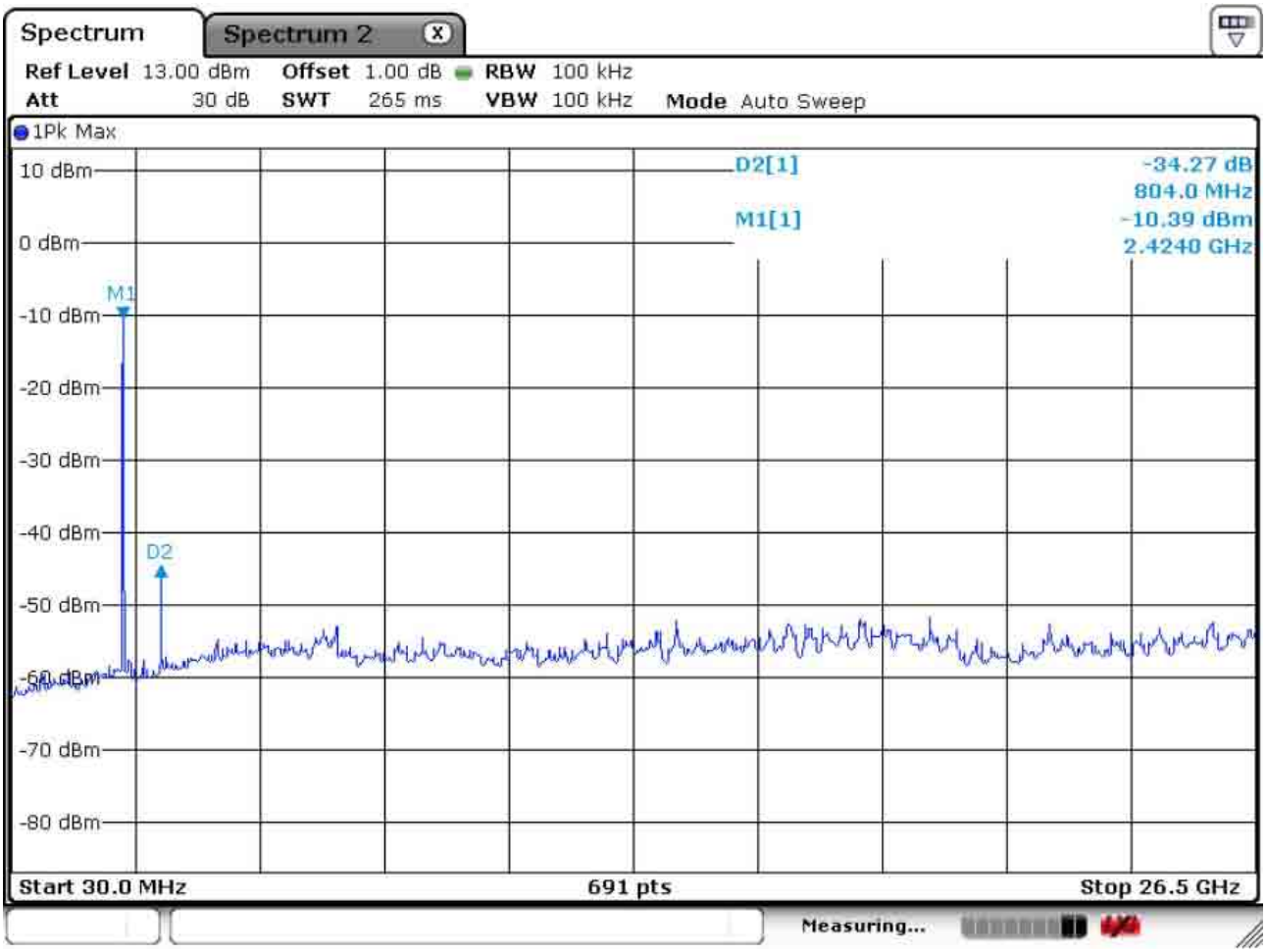
802.11n_40MHz - Low channel

Frequency Range = 30 MHz ~ 10th harmonic.



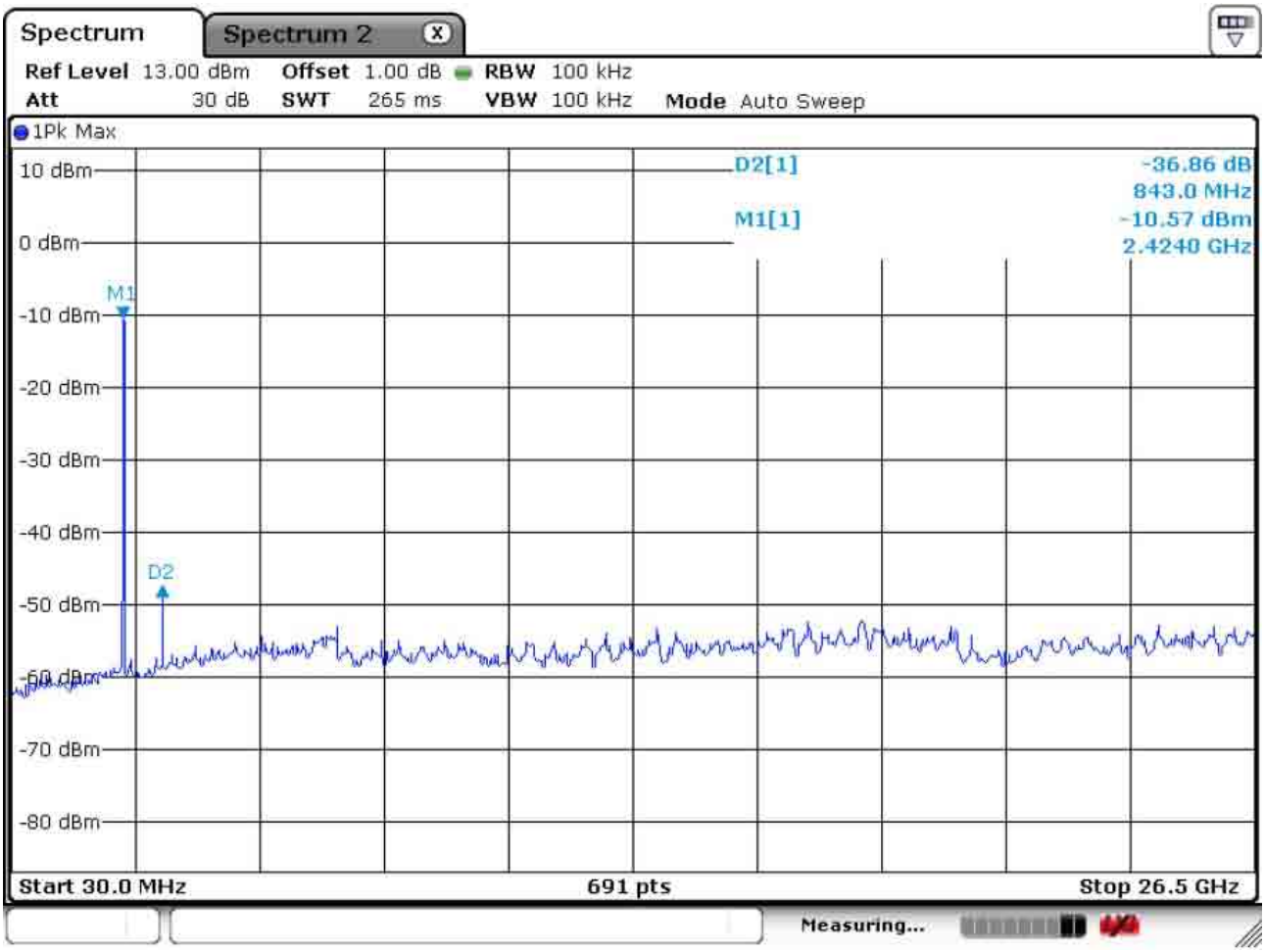
802.11n_40MHz - Mid channel

Frequency Range = 30 MHz ~ 10th harmonic.



802.11n_40MHz – High channel

Frequency Range = 30 MHz ~ 10th harmonic.



3.2.5 Field Strength of Harmonics-Transmitter

Procedure:

*The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test requirement. The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 9 KHz ~ 10^{th} harmonic.

RBW = 120 kHz (9 KHz ~ 1 GHz) Peak:VBW ≥ RBW

= 1 MHz (1 GHz ~ 10^{th} harmonic) Average:VBW=10Hz

Span = 100 MHz Detector function = Peak and Average

Trace = max hold Sweep = auto

Measurement Data: Complies

- Refer to the next page.
- No other emissions were detected at a level greater than 20dB below limit.
- The three antennas were used with this EUT during the Testing.

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
0.009 ~ 0.490	2400/F (kHz) @ 300m
0.490 ~ 1.705	24000/F (kHz) @ 30m
1.705 ~ 30	30 @ 30m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

802.11b Measurement Data: (above 1GHz)

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	M [dB] AV	M [dB] Peak
4821.4	40.9	53.8	H	33.1	24.9	54.0	74.0	49.1	62.0	4.9	12.0
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
4857.3	39.7	53.9	H	33.1	24.9	54.0	74.0	47.9	62.1	6.1	11.9
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
4864.5	40.1	54.2	H	33.1	24.9	54.0	74.0	48.3	62.4	5.7	11.6
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

No other emissions were detected at a level greater than 20dB below limit.

802.11b Measurement Data: (9kHz - 30MHz)

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp.Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
-	-	-	-	-	-	-	-	-	-	-	-
No emissions were detected at a level greater than 20dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20dB below limit.

802.11g Measurement Data: (above 1GHz)

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	M [dB] AV	M [dB] Peak
4838.7	37.5	51.6	H	33.1	24.9	54.0	74.0	45.7	59.8	8.3	14.2
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
4864.1	36.8	50.8	H	33.1	24.9	54.0	74.0	45.0	59.0	9.0	15.0
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
4885.9	36.1	50.3	H	33.1	24.9	54.0	74.0	44.3	58.5	9.7	15.5
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

No other emissions were detected at a level greater than 20dB below limit.

802.11g Measurement Data: (9kHz - 30MHz)

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp.Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
-	-	-	-	-	-	-	-	-	-	-	-
No emissions were detected at a level greater than 20dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20dB below limit.

802.11n_20MHz Measurement Data: (above 1GHz)

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		M [dB] AV / Peak	
4848.2	35.8	49.4	H	33.1	24.9	54.0	74.0	44.0	57.6	10.0	16.4
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4886.3	35.6	49.1	H	33.1	24.9	54.0	74.0	43.8	57.3	10.2	16.7
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4921.6	35.9	49.6	H	33.1	24.9	54.0	74.0	44.1	57.8	9.9	16.2
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

No other emissions were detected at a level greater than 20dB below limit.

802.11n_20MHz Measurement Data: (9kHz - 30MHz)

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Correction Factor Amp.Gain+Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
-	-	-	-	-	-	-	-	-	-	-	-
No emissions were detected at a level greater than 20dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20dB below limit.

802.11n_40MHz Measurement Data: (above 1GHz)

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	M [dB] AV	M [dB] Peak
4865.1	36.2	51.3	H	33.1	24.9	54.0	74.0	44.4	59.5	9.6	14.5
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
4908.6	35.8	50.1	H	33.1	24.9	54.0	74.0	44.0	58.3	10.0	15.7
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
4951.7	36.1	50.7	H	33.1	24.9	54.0	74.0	44.3	58.9	9.7	15.1
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

No other emissions were detected at a level greater than 20dB below limit.

802.11n_40MHz Measurement Data: (9kHz - 30MHz)

Frequency [MHz]	Reading [dBuV/m] AV	Reading [dBuV/m] Peak	Pol.	Correction Factor Antenna	Correction Factor Amp.Gain+Cable	Limits [dBuV/m] AV	Limits [dBuV/m] Peak	Result [dBuV/m] AV	Result [dBuV/m] Peak	Margin [dB] AV	Margin [dB] Peak
-	-	-	-	-	-	-	-	-	-	-	-
No emissions were detected at a level greater than 20dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20dB below limit.

Radiated Emissions – WLAN mode (Worst case, B mode)

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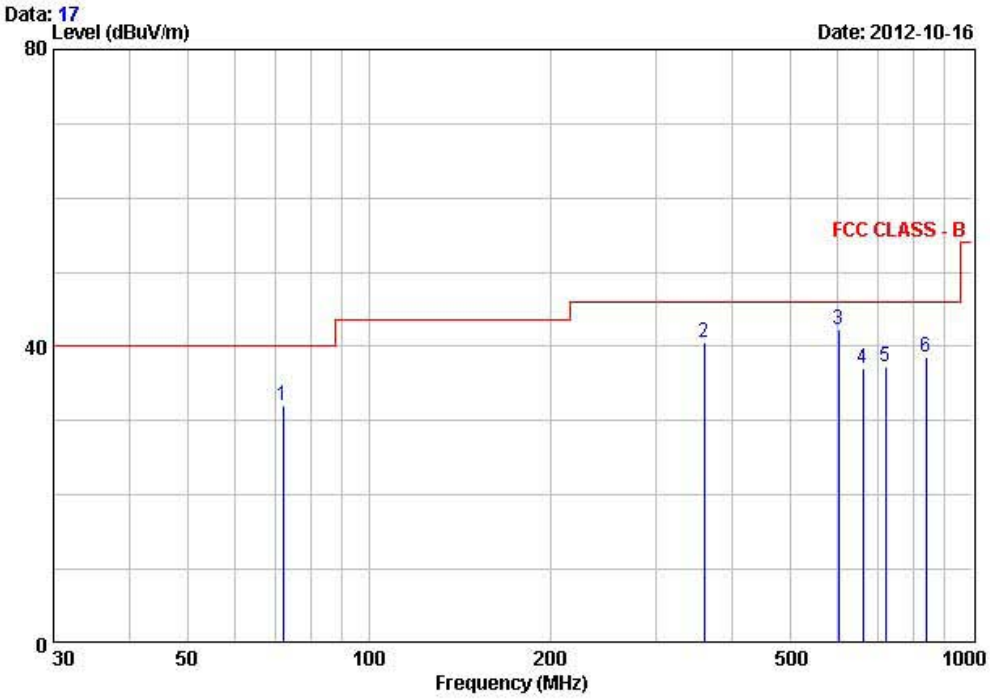
EUT/Model No.: Multishare 1.0 TEST MODE: Wifi mode

Temp Humi : 23 / 46 Tested by: Ko Gun



	Freq	Reading	C.F	Result	Limit QP	Margin	Height	Angle	Polarity
	MHz	dBuV/m	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	72.04	49.70	-17.72	31.98	40.00	8.02	100	284	VERTICAL
2	360.02	50.60	-10.06	40.54	46.00	5.46	186	245	HORIZONTAL
3	600.66	46.30	-4.08	42.22	46.00	3.78	211	155	HORIZONTAL
4	660.30	39.50	-2.51	36.99	46.00	9.01	245	51	HORIZONTAL
5	720.26	38.40	-1.12	37.28	46.00	8.72	316	180	HORIZONTAL
6	840.07	37.50	1.06	38.56	46.00	7.44	315	209	HORIZONTAL

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

3.2.6 Field Strength of Harmonics - Receivers

Definition:

The field strength of emissions from intentional radiators was measured. In case of the air temperature of the test site is out of the range is 10 to 40°C before the testing proceeds the warm-up time of EUT maintain adequately

Test method	:	FCC Part 15.209
Frequency Range	:	9 KHz ~ 10th harmonic.
Bandwidth	:	120 kHz (F < 1GHz) 1 MHz (F > 1GHz)
Distance of antenna	:	3 meters
Test mode	:	Rx mode
Result	:	**Complies**

Measurement Data:

- Refer to the next page.
- No other emissions were detected at a level greater than 20dB below limit
- It gave the worse case emissions.

Field Strength Limit

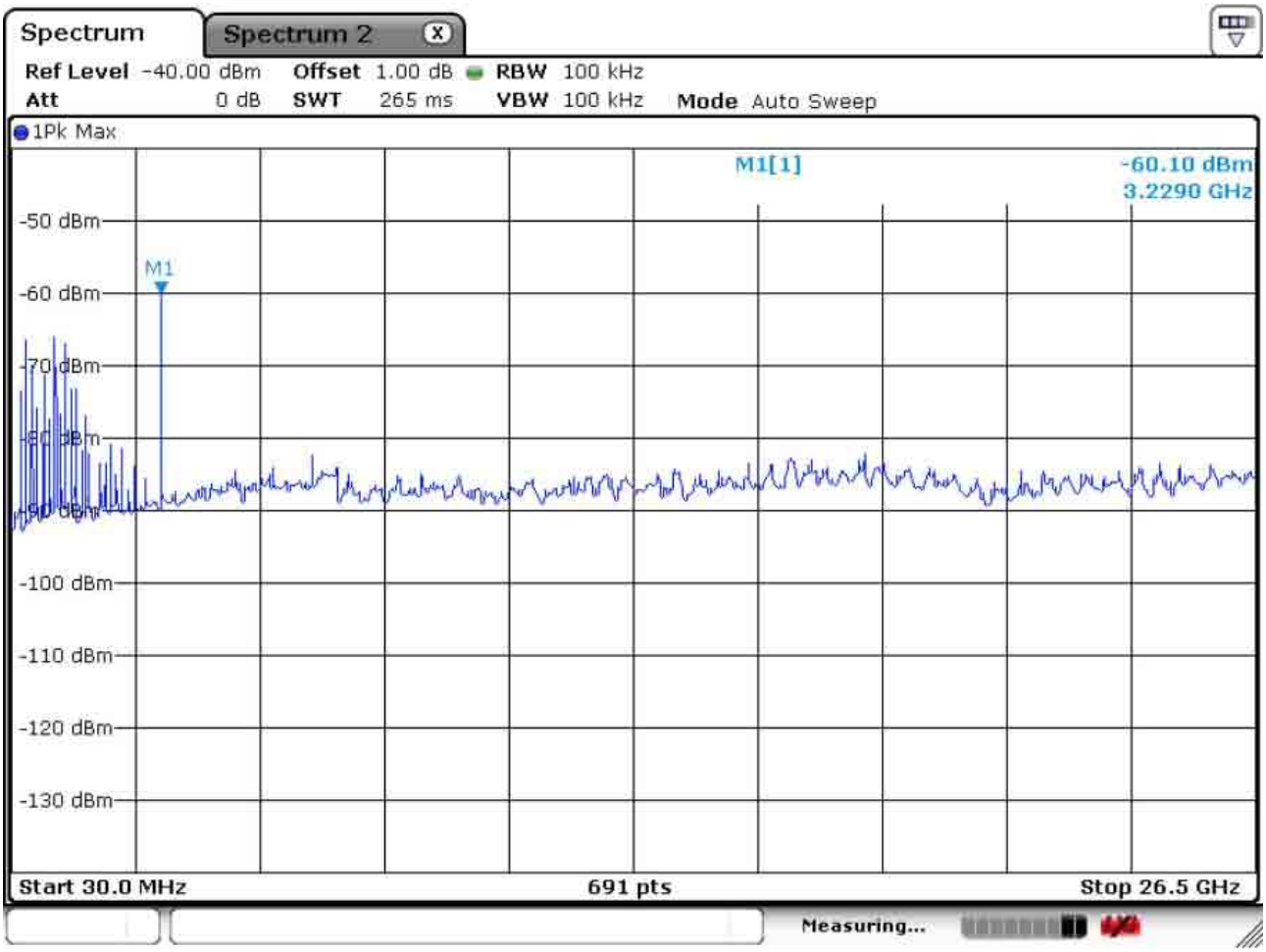
Part 15.209 LIMIT:

Frequency (MHz)	Limit (uV/m) @ 3m
0.009 ~ 0.490	2400/F(kHz)
0.490 ~ 1.705	24000/F(kHz)
1.705 ~ 30	30
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

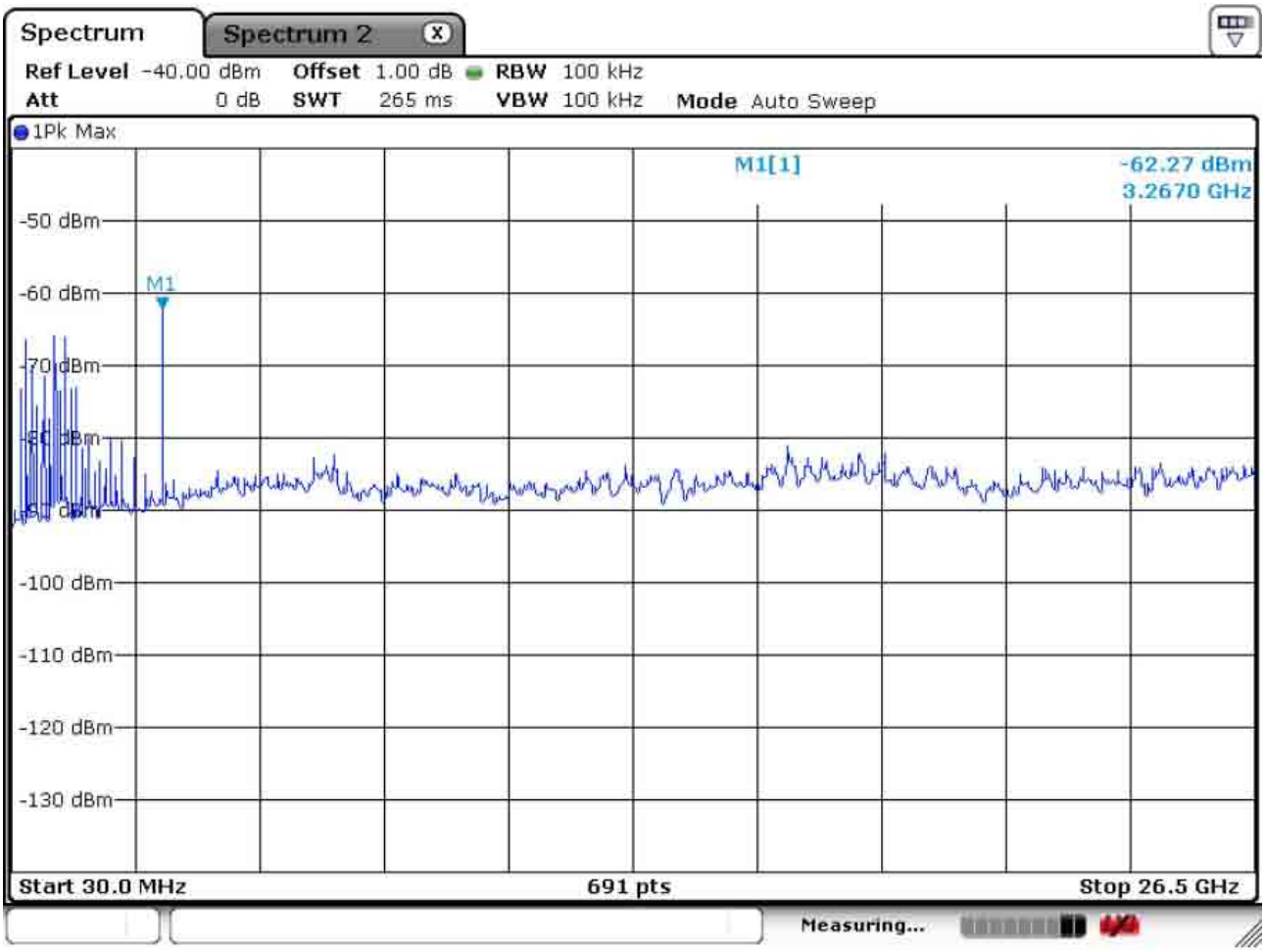
Conducted Emission – Low channel

Frequency Range = 30 MHz ~ 26.5 GHz



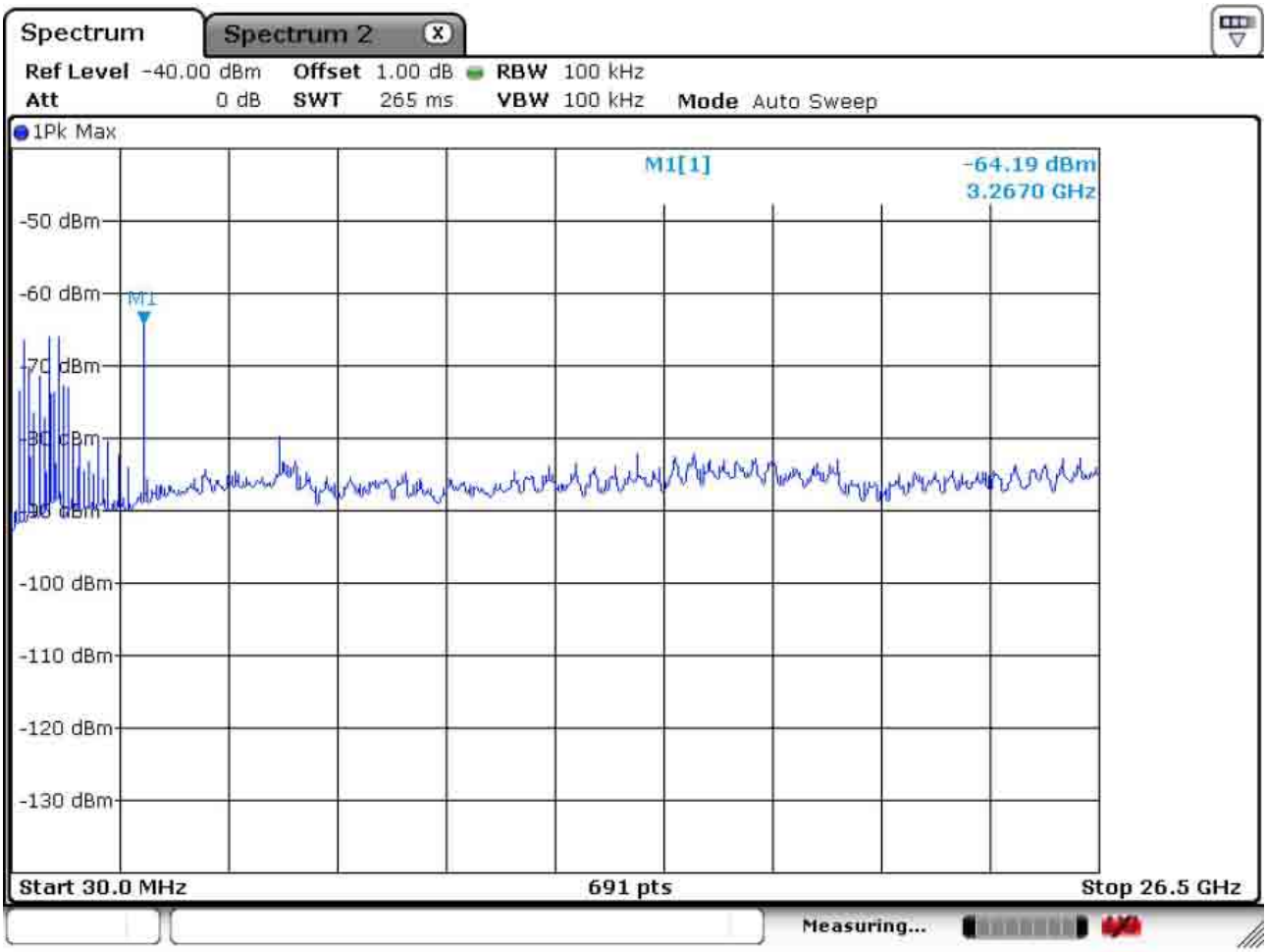
Conduceted Emission – Middle channel

Frequency Range = 30 MHz ~ 26.5 GHz



Conduceted Emission – High channel

Frequency Range = 30 MHz ~ 26.5 GHz



Measurement Data: (30MHz ~ 10th harmonic.)

Frequency [MHz]	Reading [dBuV/m] AV / Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain +Cable	Limits [dBuV/m] AV / Peak	Result [dBuV/m] AV / Peak	Margin [dB] AV / Peak
No emissions were detected at a level greater than 20dB below limit.							
Frequency [MHz]	Reading [dBuV/m] AV / Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain +Cable	Limits [dBuV/m] AV / Peak	Result [dBuV/m] AV / Peak	Margin [dB] AV / Peak
No emissions were detected at a level greater than 20dB below limit.							
Frequency [MHz]	Reading [dBuV/m] AV / Peak	Pol.	Correction Factor Antenna	Correction Factor Amp. Gain +Cable	Limits [dBuV/m] AV / Peak	Result [dBuV/m] AV / Peak	Margin [dB] AV / Peak
No emissions were detected at a level greater than 20dB below limit.							

Measurement Data: (9kHz - 30MHz)

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Correction Factor Amp.Gain+Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
-	-	-	-	-	-	-	-	-	-	-	-
No emissions were detected at a level greater than 20dB below limit.											
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

*No emissions were detected at a level greater than 20dB below limit.

3.2.7 AC Conducted Emissions

Procedure:

*The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009. The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: Complies

- See next pages for actual measured spectrum plots.
- No emissions were detected at a level greater than 20dB below limit.

Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

AC Conducted Emissions –WLAN – Line (Worst case, B mode)

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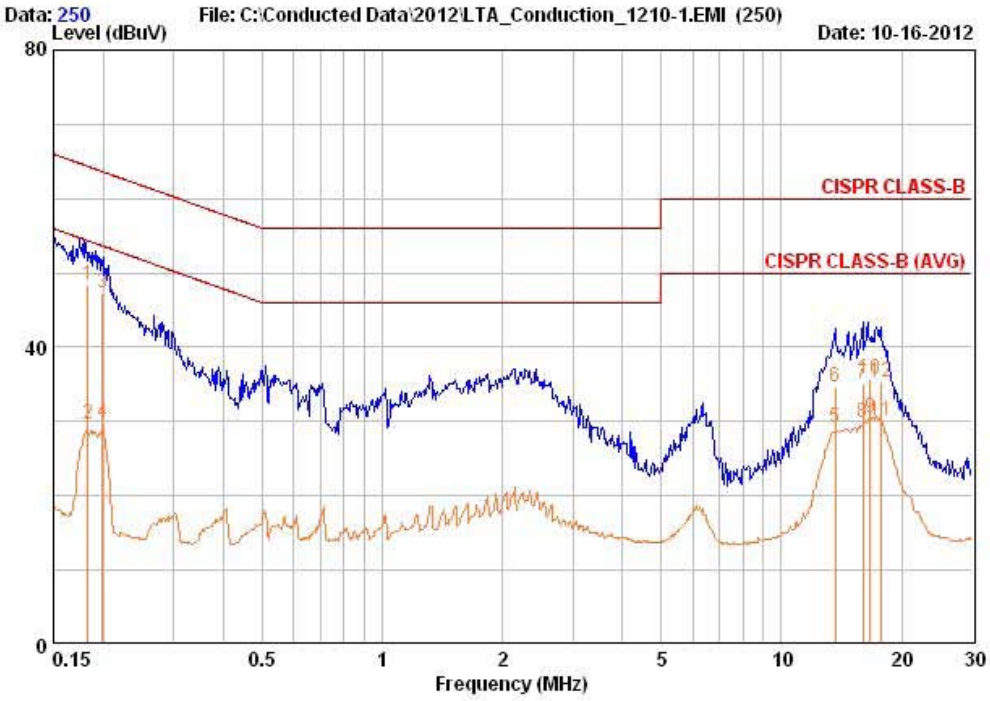
EUT / Model No.	: Multishare 1.0	Phase	: LINE
Test Mode	: Wifi mode	Test Power	: 120 / 60
Temp./Humi.	: 26 / 54	Test Engineer	: Ko Gun



Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
MHz	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.183	38.75	20.05	9.60	48.35	29.65	64.35	54.35	16.00	24.70
0.199	37.65	20.35	9.58	47.23	29.93	63.65	53.65	16.42	23.72
13.625	24.70	19.40	9.86	34.55	29.25	60.00	50.00	25.45	20.75
15.973	25.31	20.01	9.89	35.19	29.89	60.00	50.00	24.81	20.11
16.658	25.81	20.71	9.89	35.70	30.60	60.00	50.00	24.30	19.40
17.838	25.41	20.11	9.90	35.32	30.02	60.00	50.00	24.68	19.98

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

AC Conducted Emissions – PING +WLAN – Neutral (Worst case, B mode)

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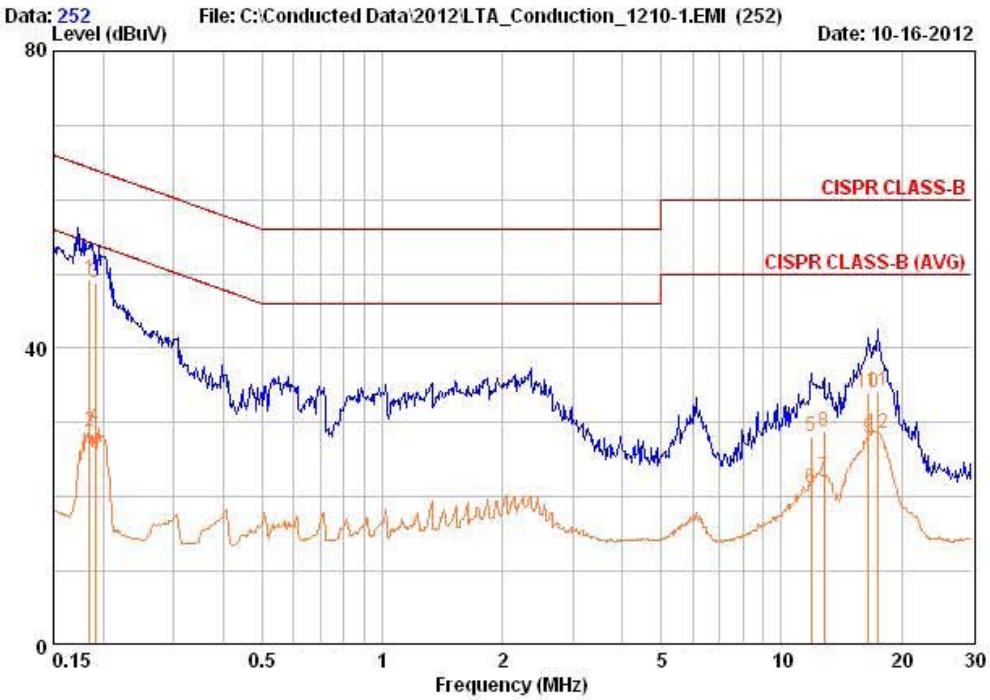
EUT / Model No.	: Multishare 1.0	Phase	: NEUTRAL
Test Mode	: Wifi mode	Test Power	: 120 / 60
Temp./Humi.	: 26 / 54	Test Engineer	: Ko Gun



Freq	RD QP	RD AV	C.F	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
MHz	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.185	39.75	19.25	9.59	49.34	28.84	64.26	54.26	14.92	25.42
0.191	39.25	19.85	9.58	48.83	29.43	63.99	53.99	15.16	24.56
11.850	18.19	11.39	9.84	28.03	21.23	60.00	50.00	31.97	28.77
12.780	18.99	12.89	9.87	28.86	22.76	60.00	50.00	31.14	27.24
16.570	24.01	17.91	9.96	33.97	27.87	60.00	50.00	26.03	22.13
17.470	24.21	18.61	9.98	34.19	28.59	60.00	50.00	25.81	21.41

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss

APPENDIX

TEST EQUIPMENT USED FOR TESTS

	Description	Model No.	Serial No.	Manufacturer	Interval	Last Cal. Date
1	Spectrum Analyzer (~30GHz)	FSV-30	100757	R&S	1 year	2012-01-10
2	Spectrum Analyzer (~2.9GHz)	8594E	3710A04074	HP	2 year	Self-Calibration
3	Signal Generator (~3.2GHz)	8648C	3623A02597	HP	1 year	2012-03-26
4	Signal Generator (1~20GHz)	83711B	US34490456	HP	1 year	2012-03-26
5	Attenuator (3dB)	8491A	37822	HP	2 year	2012-09-22
6	Attenuator (10dB)	8491A	63196	HP	2 year	2012-09-22
7	Attenuator (30dB)	8498A	3318A10929	HP	2 year	2011-01-05
8	Test Receiver (~30MHz)	ESHS10	828404/009	R&S	1 year	2012-03-26
9	EMI Test Receiver (~7GHz)	ESCI7	100722	R&S	1 year	2012-09-22
10	RF Amplifier (~1.3GHz)	8447D	2439A09058	HP	2 year	2012-09-22
11	RF Amplifier (1~18GHz)	8449B	3008A02126	HP	2 year	2012-03-26
12	Horn Antenna (1~18GHz)	BBHA 9120D	9120D122	SCHWARZBECK	2 year	2010-12-24
13	Horn Antenna (18 ~ 40GHz)	SAS-574	154	Schwarzbeck	2 year	2010-11-25
14	Horn Antenna (18 ~ 40GHz)	SAS-574	155	Schwarzbeck	2 year	2010-11-25
15	TRILOG Antenna	VULB 9160	9160-3172	SCHWARZBECK	2 year	2012-09-20
16	Dipole Antenna	VHA9103	2116	SCHWARZBECK	2 year	2010-11-25
17	Dipole Antenna	VHA9103	2117	SCHWARZBECK	2 year	2010-11-25
18	Dipole Antenna	VHA9105	2261	SCHWARZBECK	2 year	2010-11-25
19	Dipole Antenna	VHA9105	2262	SCHWARZBECK	2 year	2010-11-25
20	Hygro-Thermograph	THB-36	0041557-01	ISUZU	1 year	2012-09-26
21	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-	-
22	Power Divider	11636A	6243	HP	2 year	2012-09-22
23	DC Power Supply	6622A	3448A03079	HP	-	-
24	Frequency Counter	5342A	2826A12411	HP	1 year	2012-03-26
25	Power Meter	EPM-441A	GB32481702	HP	1 year	2012-03-26
26	Power Sensor	8481A	US41030291	HP	1 year	2012-09-22
27	Audio Analyzer	8903B	3729A18901	HP	1 year	2012-09-22
28	Modulation Analyzer	8901B	3749A05878	HP	1 year	2012-09-22
29	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2012-09-22
30	Stop Watch	HS-3	601Q09R	CASIO	2 year	2012-03-26
31	LISN	ENV216	100408	R&S	1 year	2012-09-22
32	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	2 year	2012-06-27
33	Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	-	-
34	Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	-	-