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삼미정보시스템(주)
 INFORMATION SYSTEMS CO., LTD.

Dates of Tests : Oct 4~24, 2011
 Test Report S/N: LR500111110H
 Test Site : LTA CO., LTD

CERTIFICATION OF COMPLIANCE

FCC ID.

RQKTITANT8

APPLICANT

Sammi Information Systems Co., Ltd.

Equipment Class	:	Digital Transmission System (DTS)
Manufacturing Description	:	Industrial PC
Manufacturer	:	Sammi Information Systems Co., Ltd.
Model name	:	Ti TAN T8
Test Device Serial No.	:	Identical prototype
Rule Part(s)	:	FCC Part 15.247 Subpart C; ANSI C-63.4-2003
Frequency Range	:	2412MHz ~ 2462MHz for 802.11b/g/n
	:	5745MHz ~ 5825MHz for 802.11a/an
Max. Output Power	:	Max 15.32dBm - Conducted (802.11b)
	:	Max 14.19dBm - Conducted (802.11g)
	:	Max 19.11dBm - Conducted (802.11n_20MHz)
	:	Max 18.35dBm - Conducted (802.11n_40MHz)
	:	Max 15.51dBm - Conducted (802.11a)
	:	Max 15.98dBm - Conducted (802.11an_20MHz)
	:	Max 15.97dBm - Conducted (802.11an_40MHz)
Data of issue	:	October 25, 2011

This test report is issued under the authority of:

The test was supervised by:

Hyun-Chae You, Manager

Ki-Hun Cho, 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

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1. General information's

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>
 E-mail : chahn@ltalab.com
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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	2012-09-30	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
IC	CANADA	IC5799	2012-05-14	IC filing

2. Information's about test item

2-1 Client & Manufacturer

Company name : Sammi Information Systems Co., Ltd.
 Address : 11F Kolon Aston Bldg, 505-14, Gasan-dong, Guemcheon-Gu,
 Seoul, 153-803 KOREA
 Tel / Fax : +82 2 790-5505 / +82 2 797-9206

2-2 Equipment Under Test (EUT)

Trade name : Industrial PC
 FCC ID : RQKTITANT8
 Model name : TiTAN T8
 Serial number : Identical prototype
 Date of receipt : September 19, 2011
 EUT condition : Pre-production, not damaged
 Antenna type : Internal PiFA antenna Max gain -3dBi gain
 Frequency Range : 2412MHz ~ 2462MHz for 802.11b/g/n
 : 5745MHz ~ 5825MHz for 802.11a/an
 RF output power : Max 15.40dBm - Conducted (802.11b)
 : Max 14.19dBm - Conducted (802.11g)
 : Max 19.11dBm - Conducted (802.11n_20MHz)
 : Max 18.35dBm - Conducted (802.11n_40MHz)
 : Max 15.51dBm - Conducted (802.11a)
 : Max 15.98dBm - Conducted (802.11an_20MHz)
 : Max 15.97dBm - Conducted (802.11an_40MHz)
 Number of channels : 13 for 802.11b & 802.11g & 802.11n_20MHz
 : 11 for 802.11n_40MHz
 : 5 for 802.11a & 802.11an_20MHz
 : 2 for 802.11an_40MHz
 Type of Modulation : CCK, DQPSK, DBPSK for DSSS
 : 64QAM, 16QAM, QPSK, BPSK for OFDM
 Transfer Rate : 11/5.5/2/1Mbps for 802.11b
 : 54/48/36/24/18/12/9/6Mbps for 802.11g & 802.11a
 : Up to 300.0Mbps
 Power Source : 7.4 Vdc by Battery (Li-Polymer Battery)
 Power for Adaptor. : Input: 100-240VAC, 1.5A Output: 12.0VDC, 5A
 Firmware Version : V1.0

2-3 Tested frequency

	LOW	MID	HIGH
Frequency (MHz) for 802.11b/g/n20	2412	2437	2462
Frequency (MHz) for 802.11n40	2422	2437	2452
Frequency (MHz) for 802.11a/an20	5745	5785	5825
Frequency (MHz) for 802.11an40	5755	-	5795

2-4 Description of Test modes

For 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n_20MHz

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n_40MHz

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

For 5.0GHz:

5 channels are provided for 802.11a and 802.11an_20MHz

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11an_40MHz

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

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	Emission	Radiated	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.

Note 3: This device is only operated by DC

→ Antenna Requirement

The Sammi Information Systems Co., Ltd. FCC ID: RQKTiTANT8 unit complies with the requirement of §15.203.

The Antenna type is the Internal PiFA antenna

The sample was tested according to the following specification:

FCC Parts 15.247; ANSI C-63.4-2003

3.2 Technical Characteristics Test

3.2.1 6 dB Bandwidth

Procedure:

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 = 30 MHz

VBW = 300 kHz (VBW $\geq$ RBW)

Sweep = auto

Trace = max hold

Detector function = peak

Measurement Data: 2.4GHz Band

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11b	2412	1	10.51	Complies
	2437	6	11.25	Complies
	2462	11	11.20	Complies
802.11g	2412	1	16.54	Complies
	2437	6	16.59	Complies
	2462	11	16.59	Complies
802.11n _20MHz	2412	1	17.76	Complies
	2437	6	17.71	Complies
	2462	11	17.76	Complies
802.11n _40MHz	2422	3	36.30	Complies
	2437	6	36.30	Complies
	2452	9	36.21	Complies

- 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)

Measurement Data: 5.0GHz Band

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11a	5745	149	16.67	Complies
	5785	157	16.67	Complies
	5825	165	16.59	Complies
802.11an _20MHz	5745	149	17.76	Complies
	5785	157	17.76	Complies
	5825	165	17.71	Complies
802.11an _40MHz	5755	151	36.47	Complies
	5795	159	36.56	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

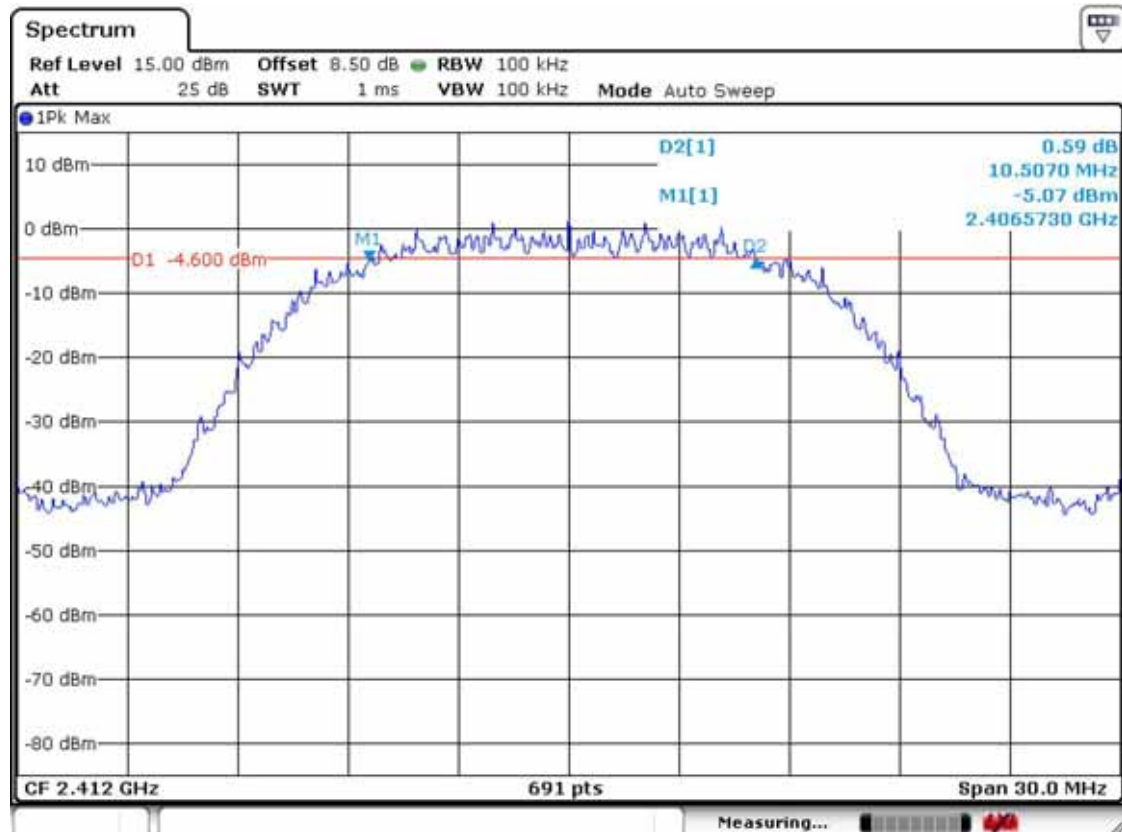
6 dB Bandwidth > 500kHz

Measurement Setup

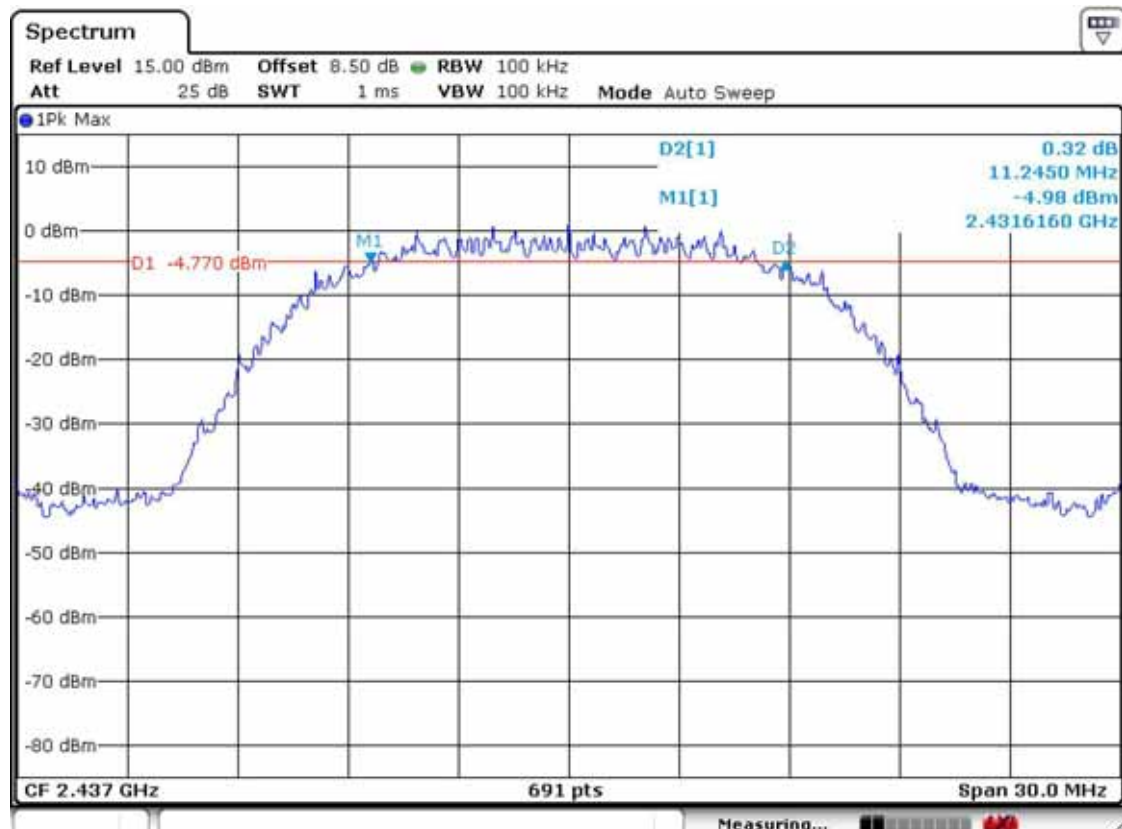
Same as the Chapter 3.2.1 (Figure 1)

802.11b

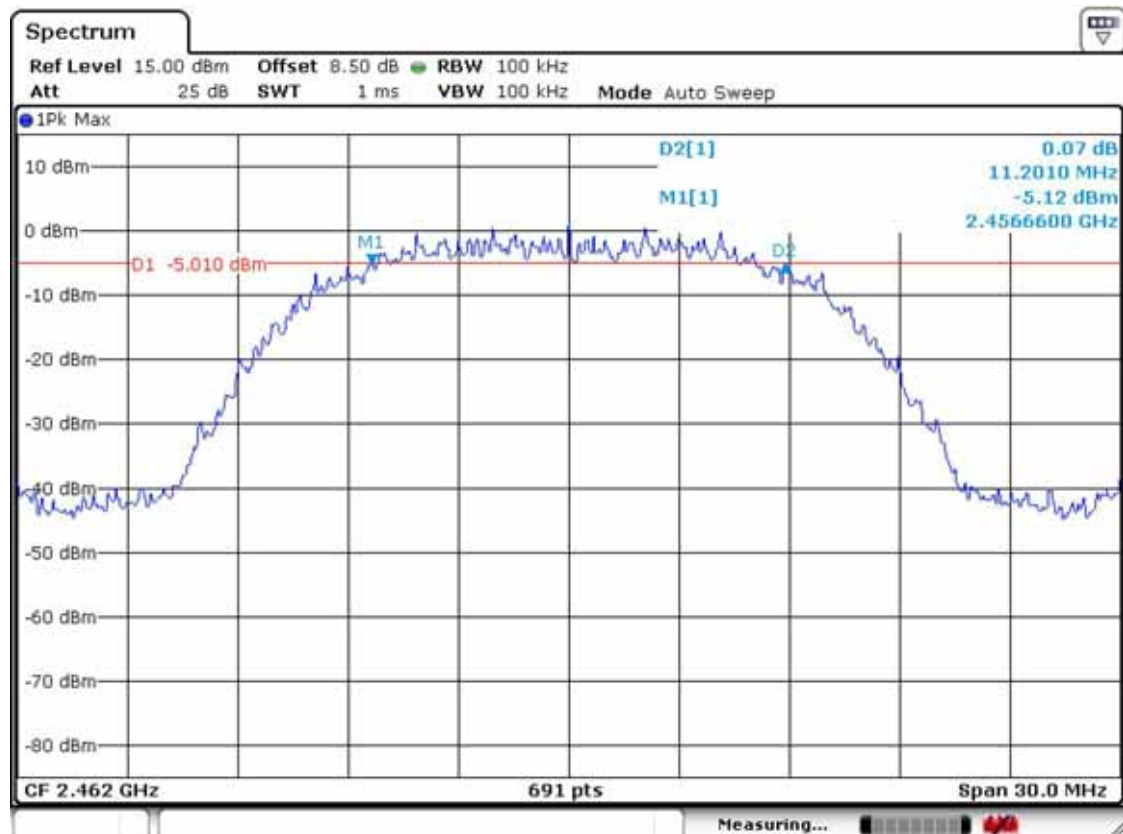
CH 1



CH 6

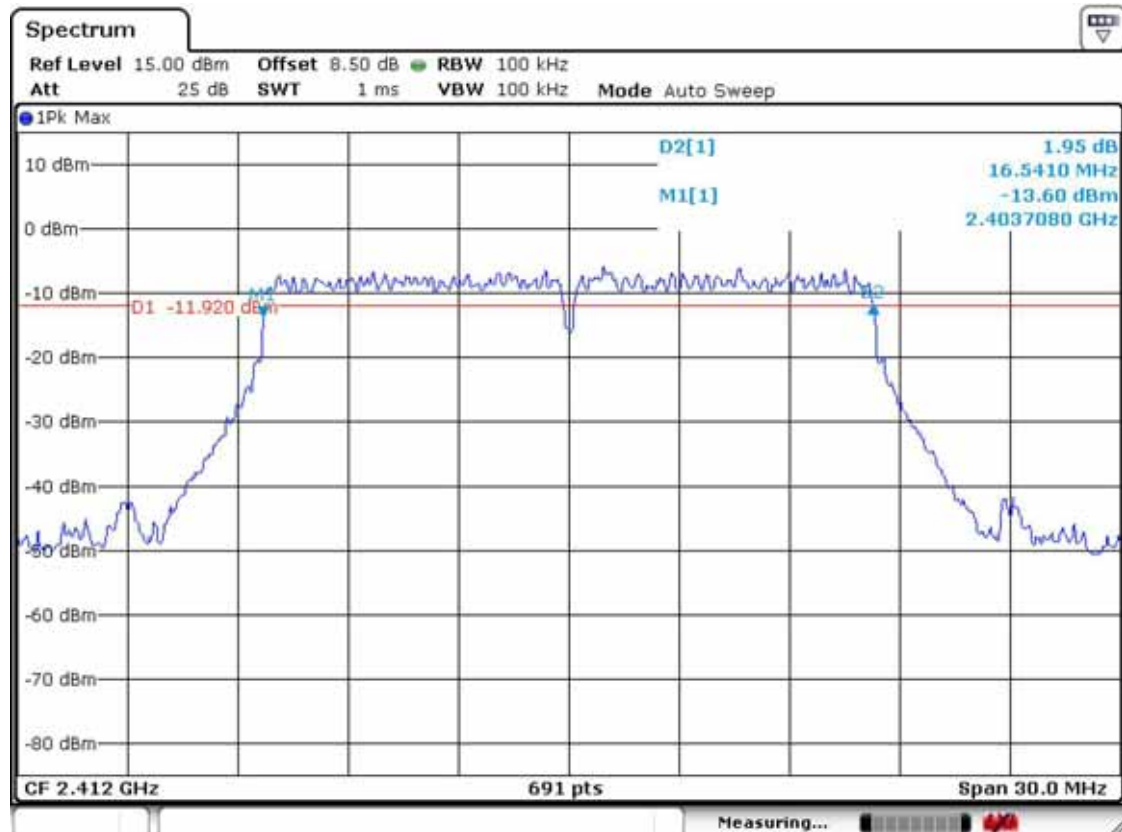


CH 11

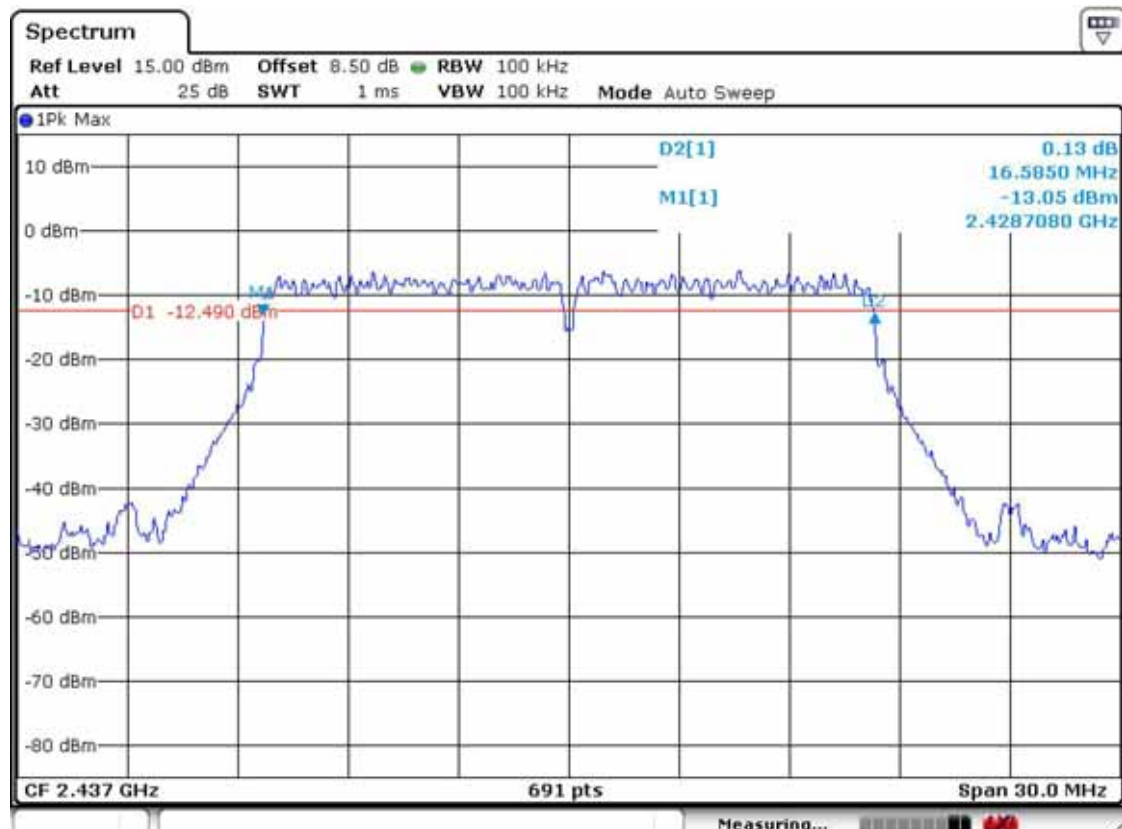


802.11g

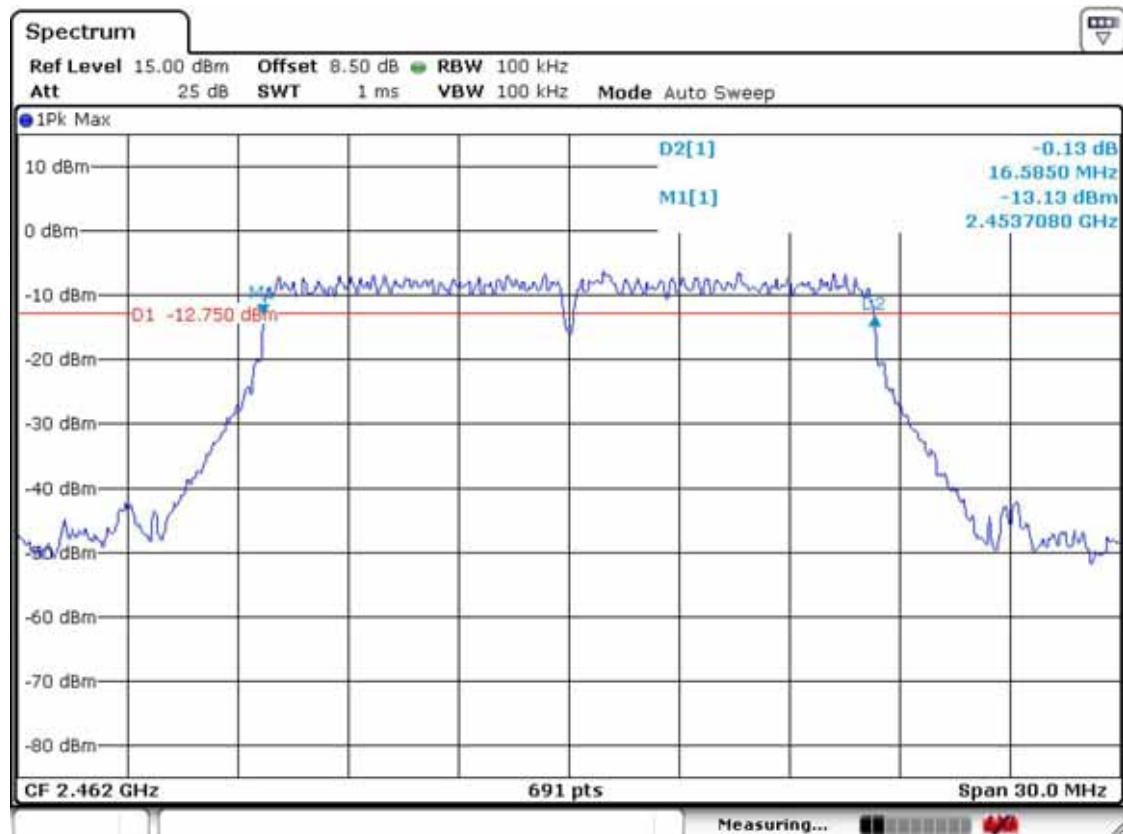
CH 1



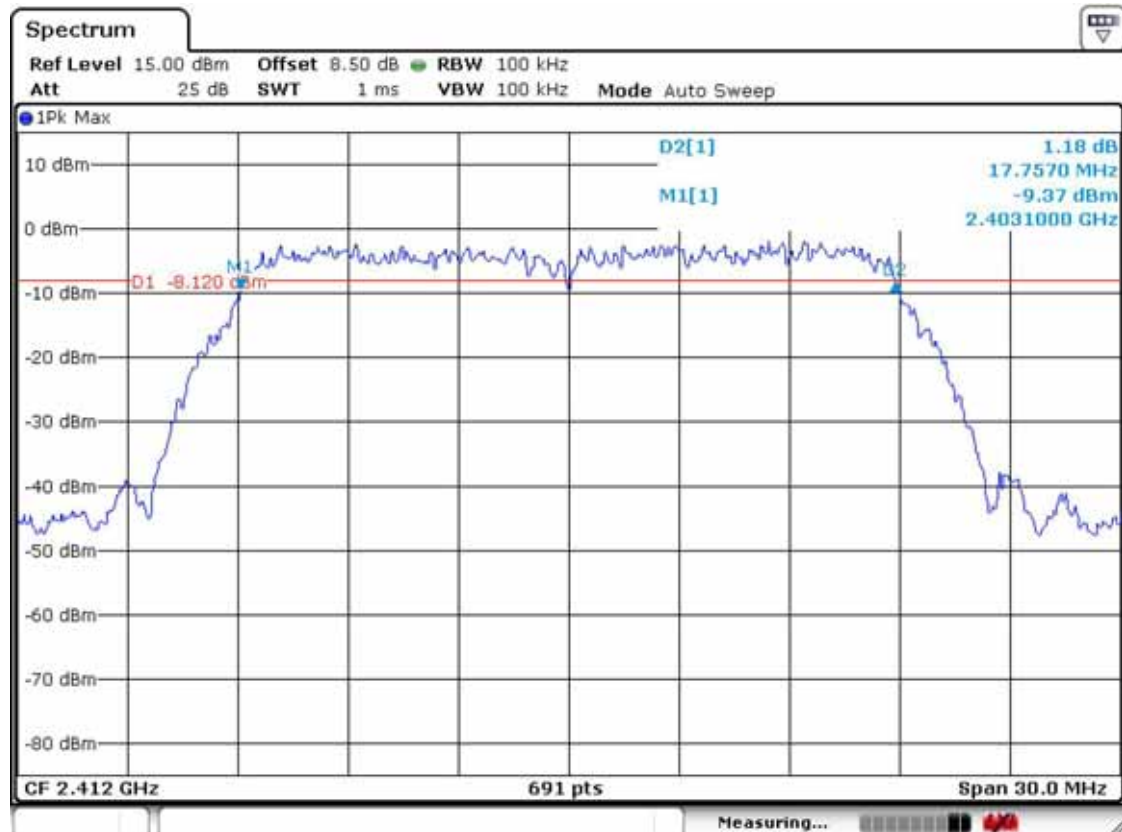
CH 6



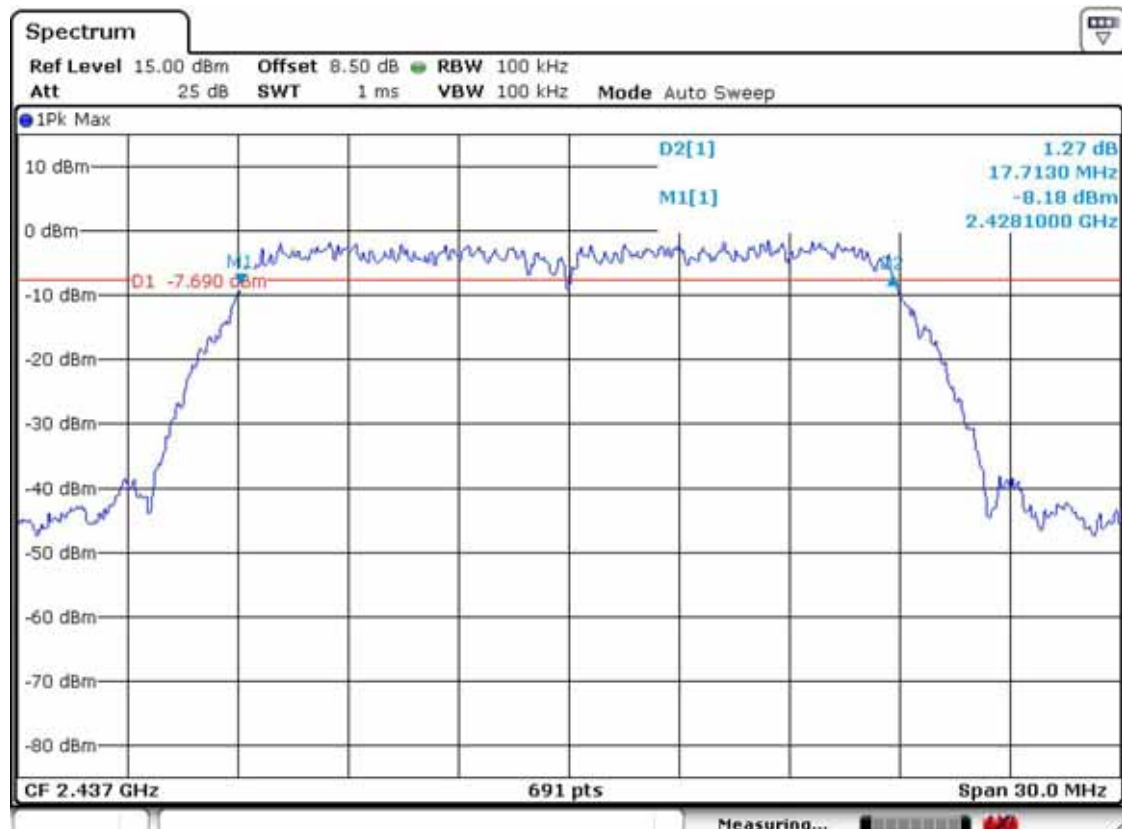
CH 11



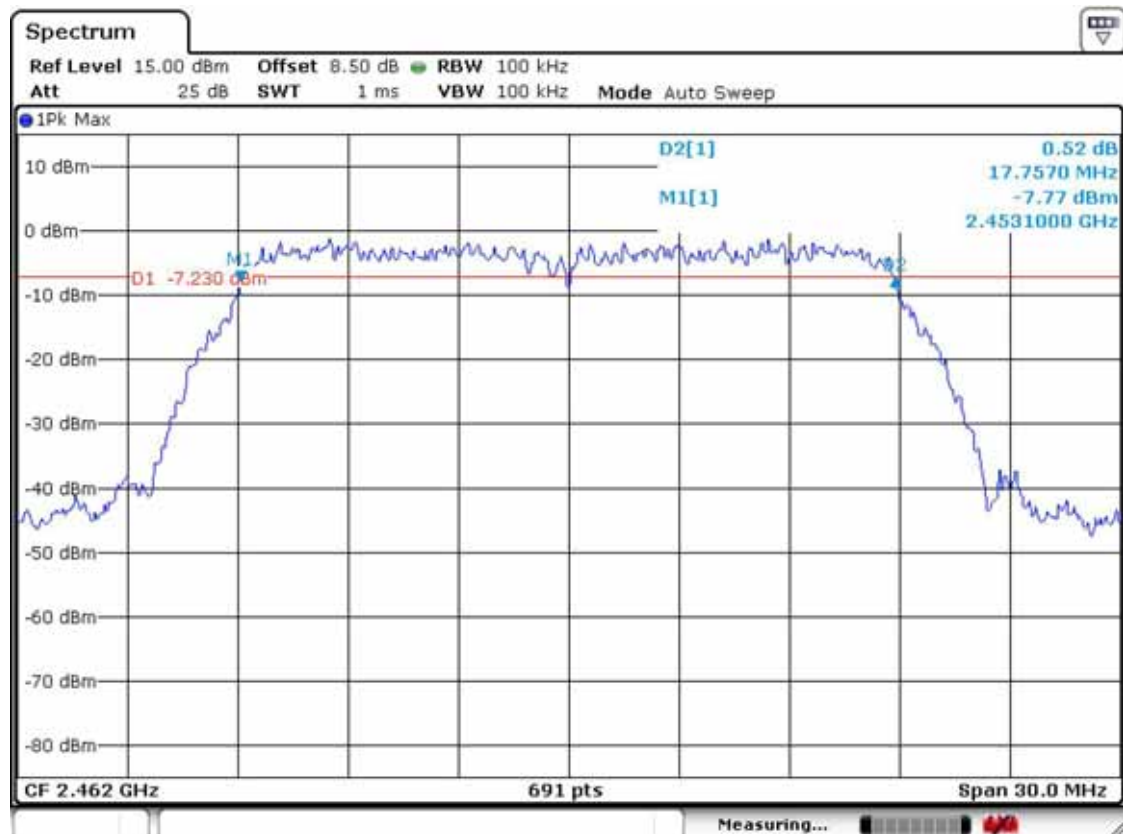
802.11n_20MHz CH 1



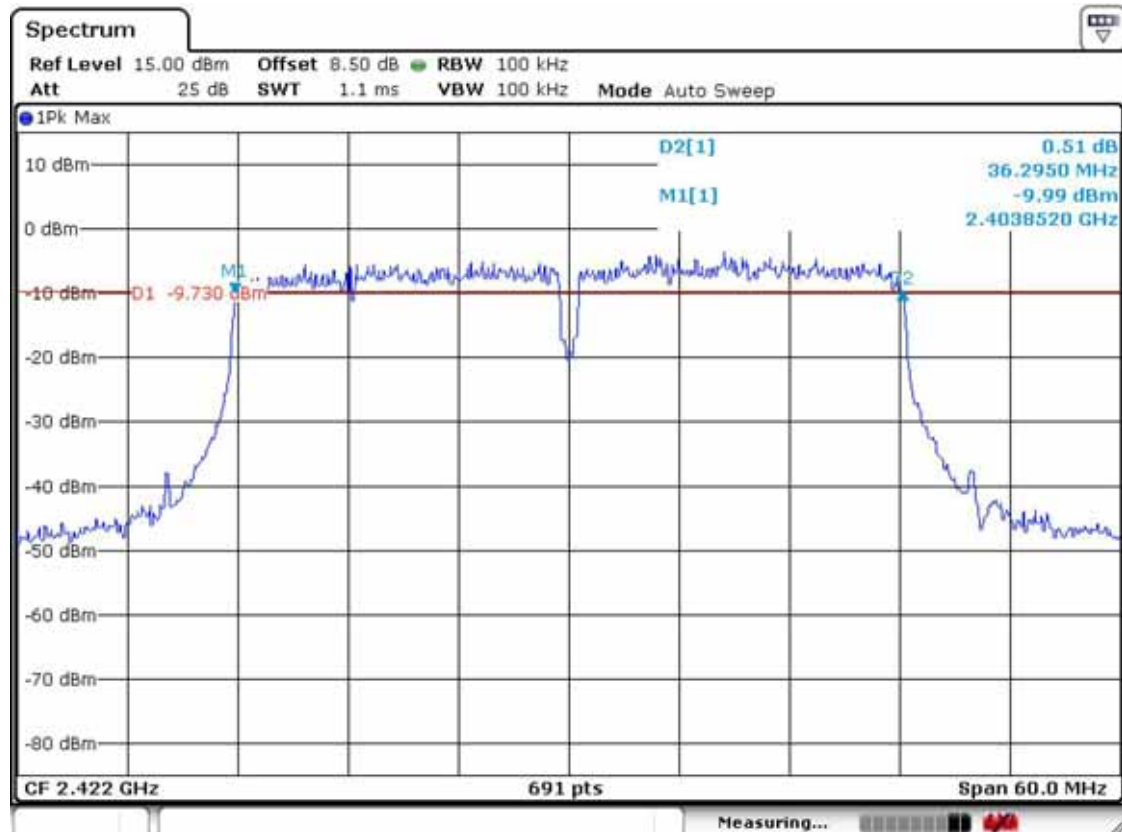
CH 6



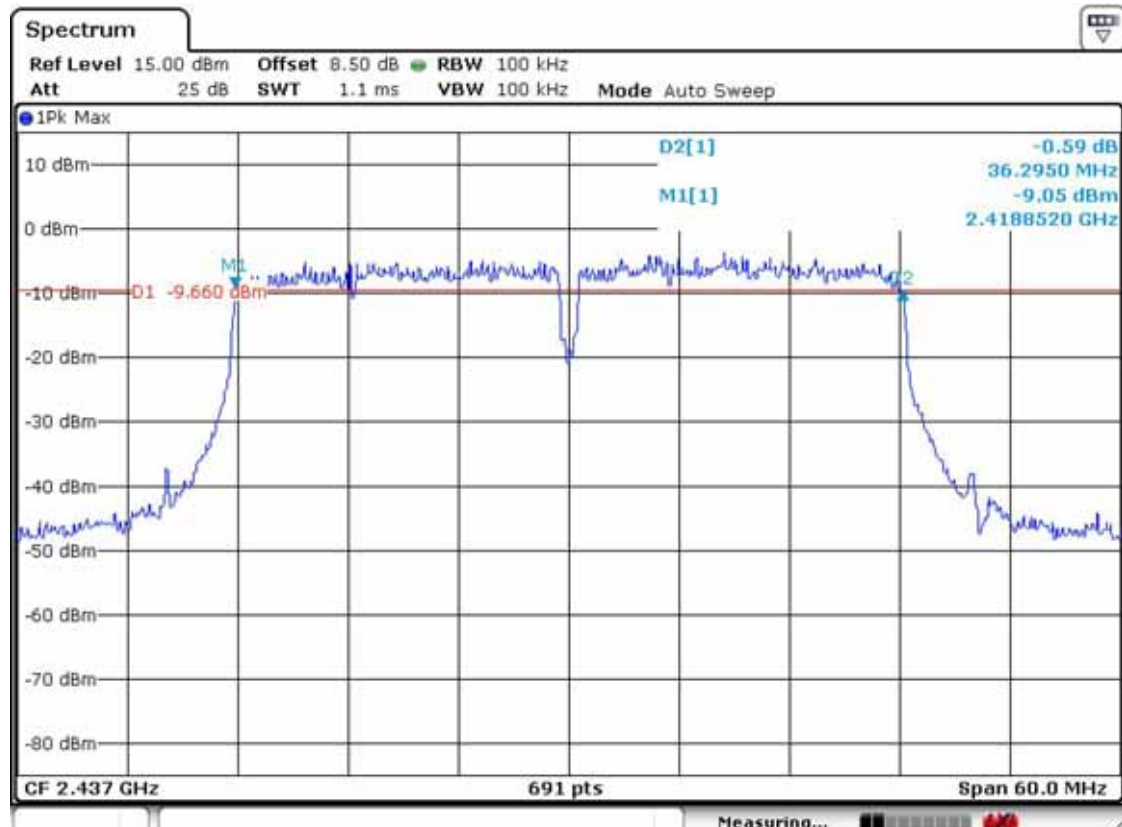
CH 11



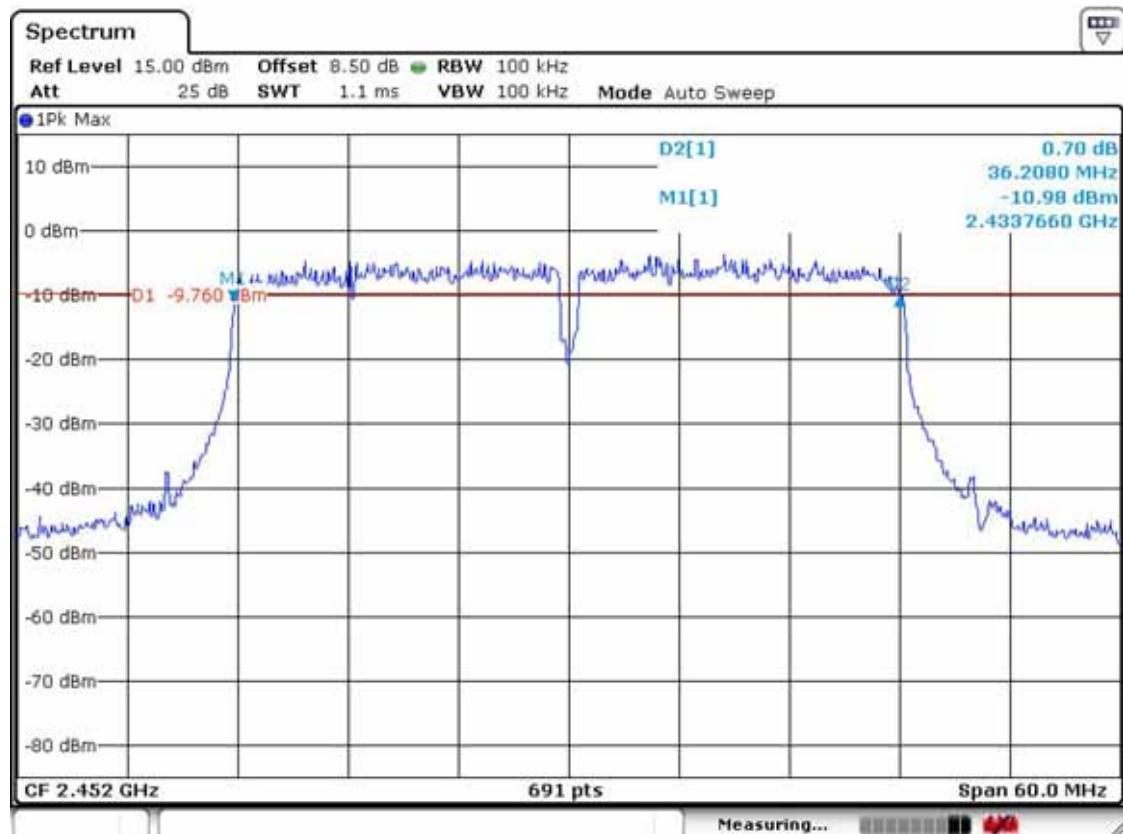
802.11n_40MHz CH 3



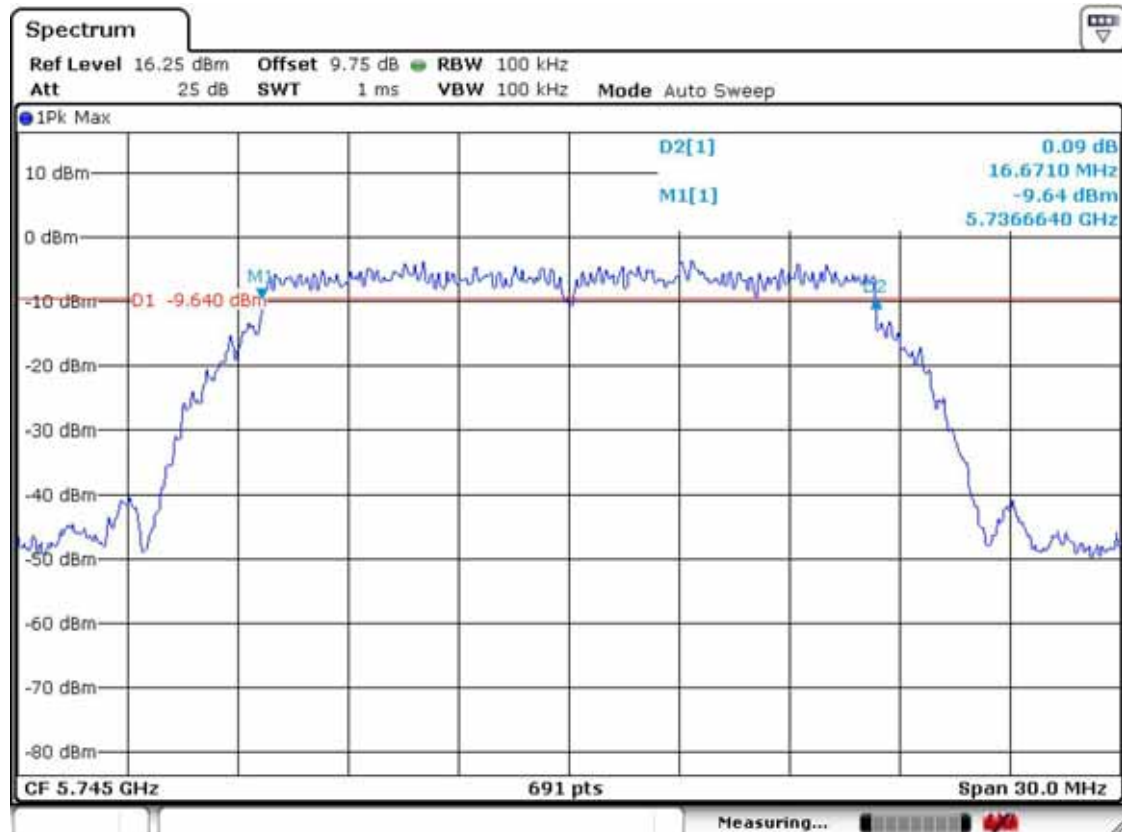
CH 6



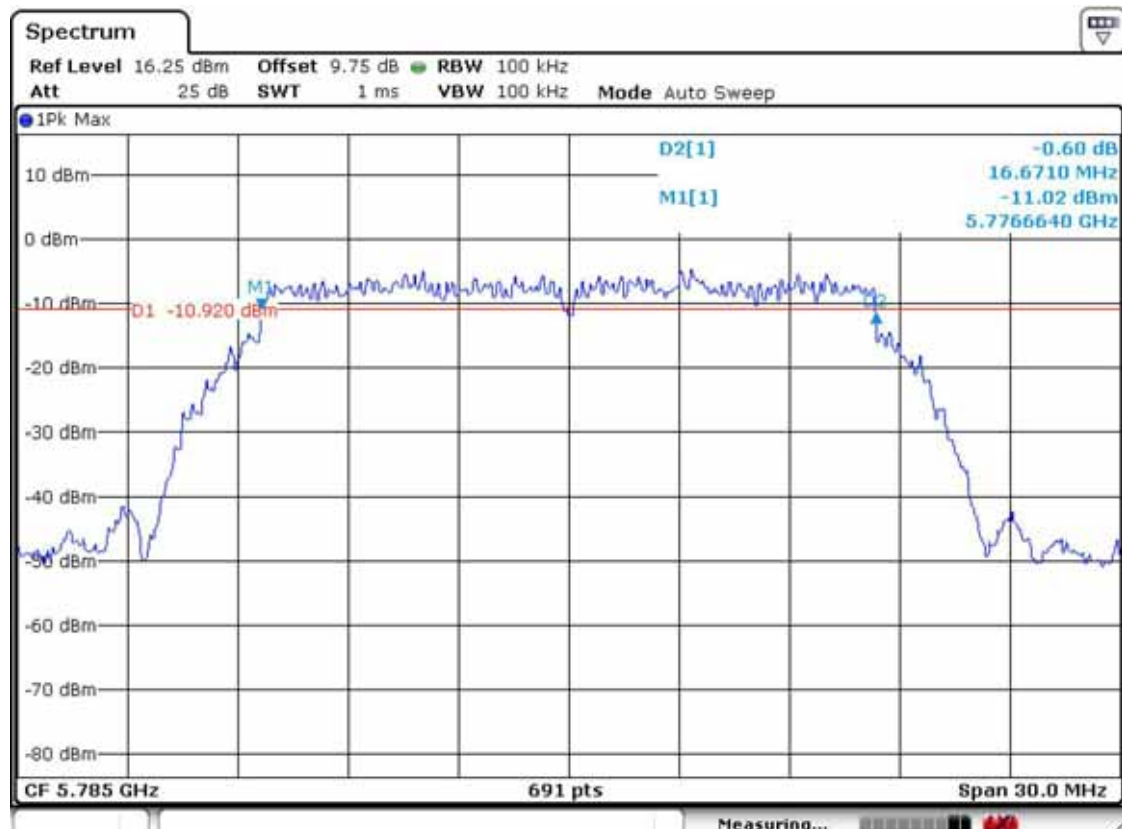
CH 9



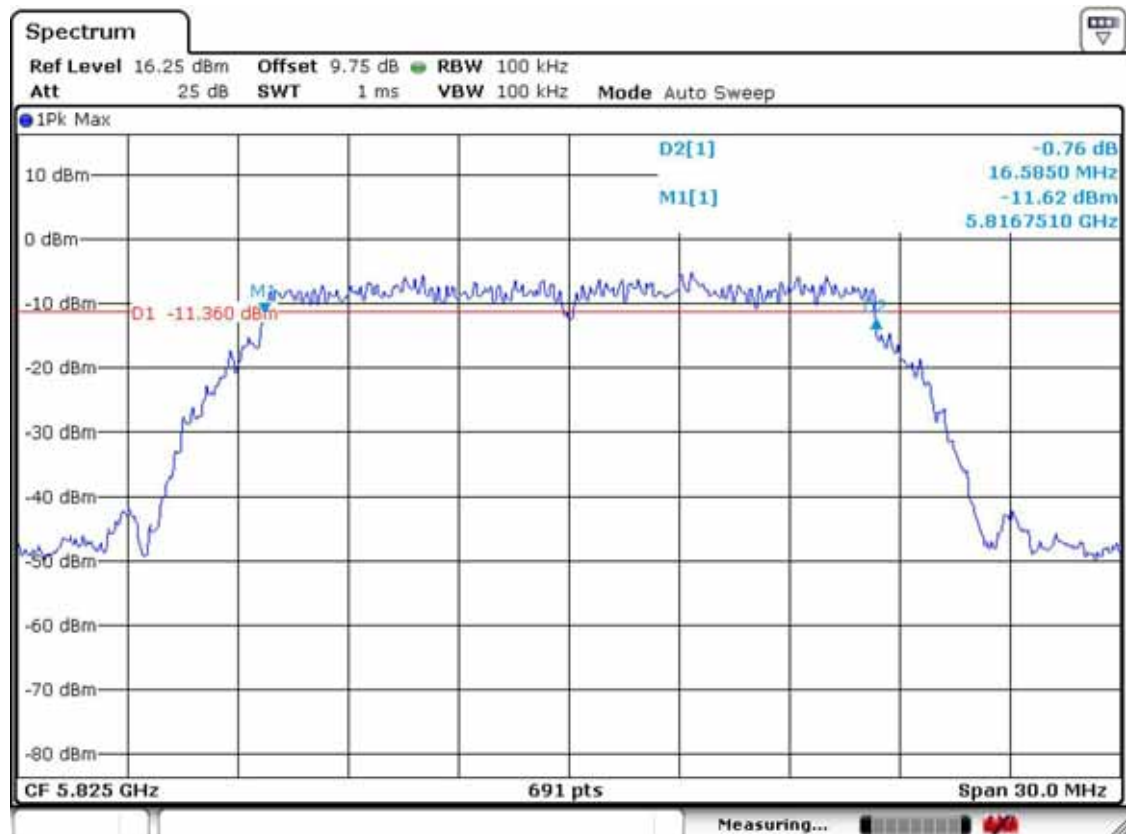
802.11a CH 149



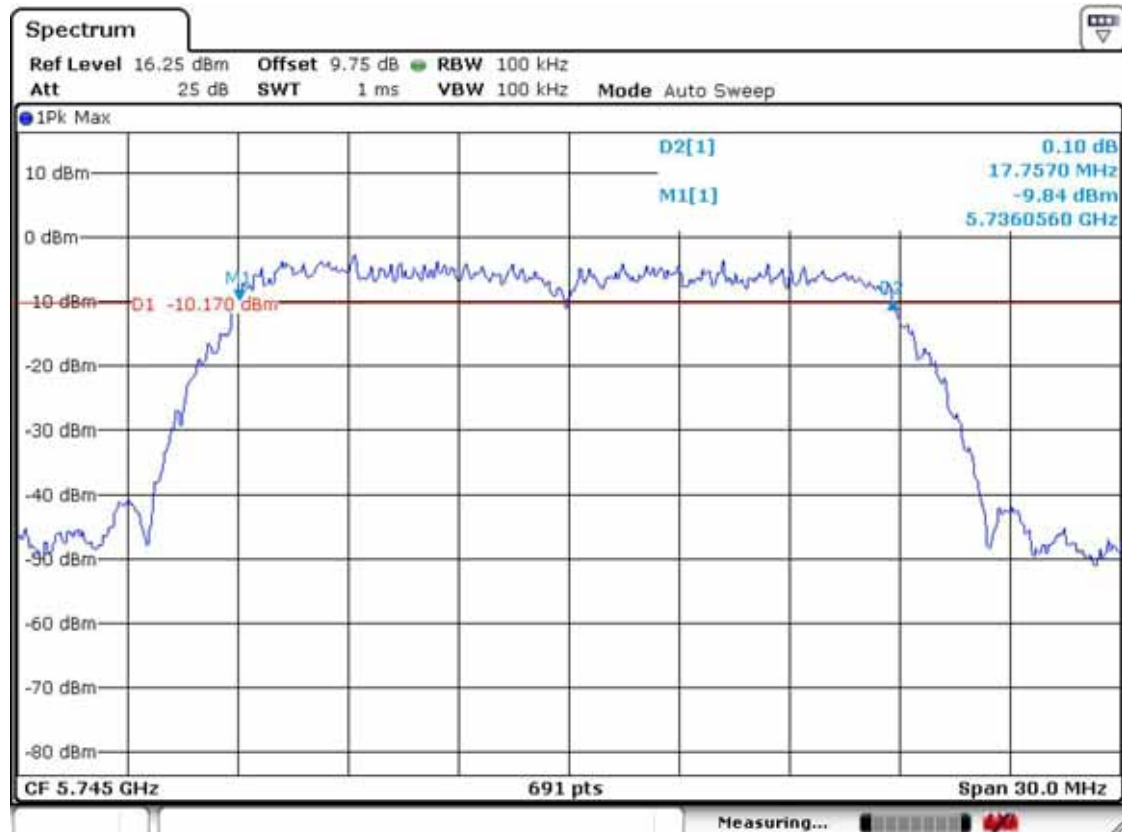
CH 157



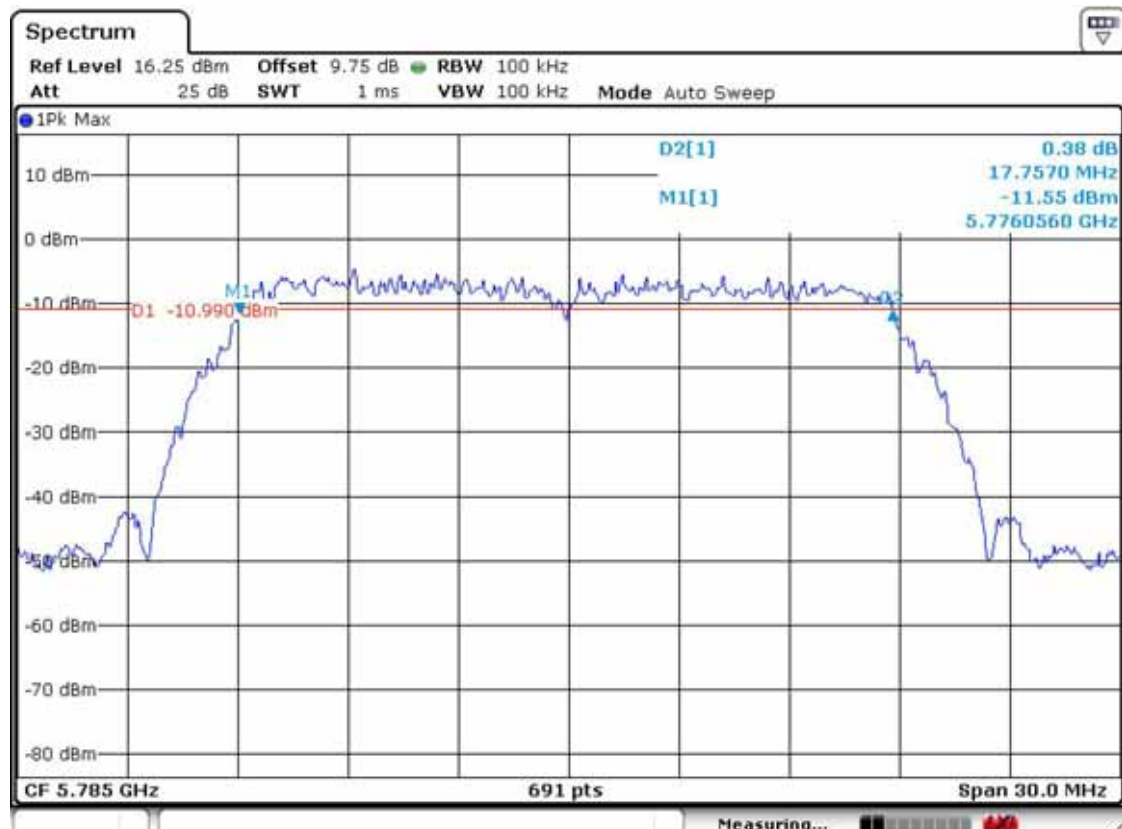
CH 165



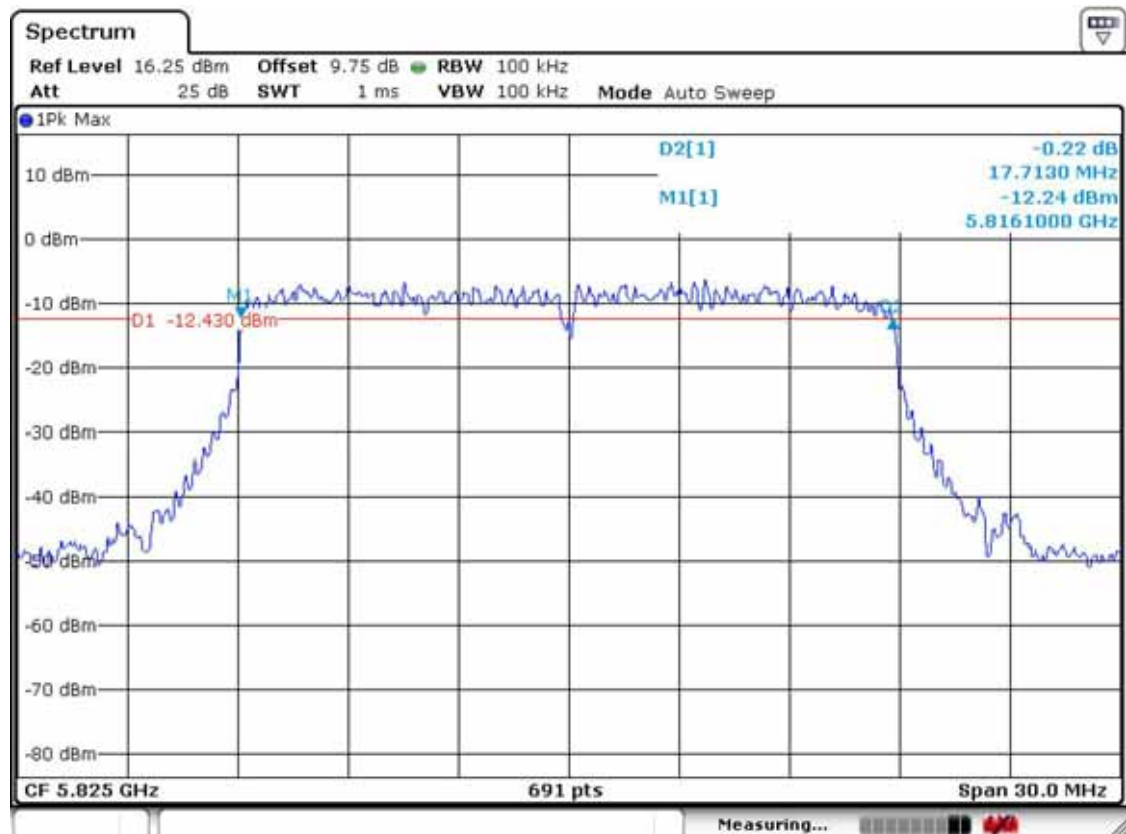
802.11an_20MHz CH 149



CH 157

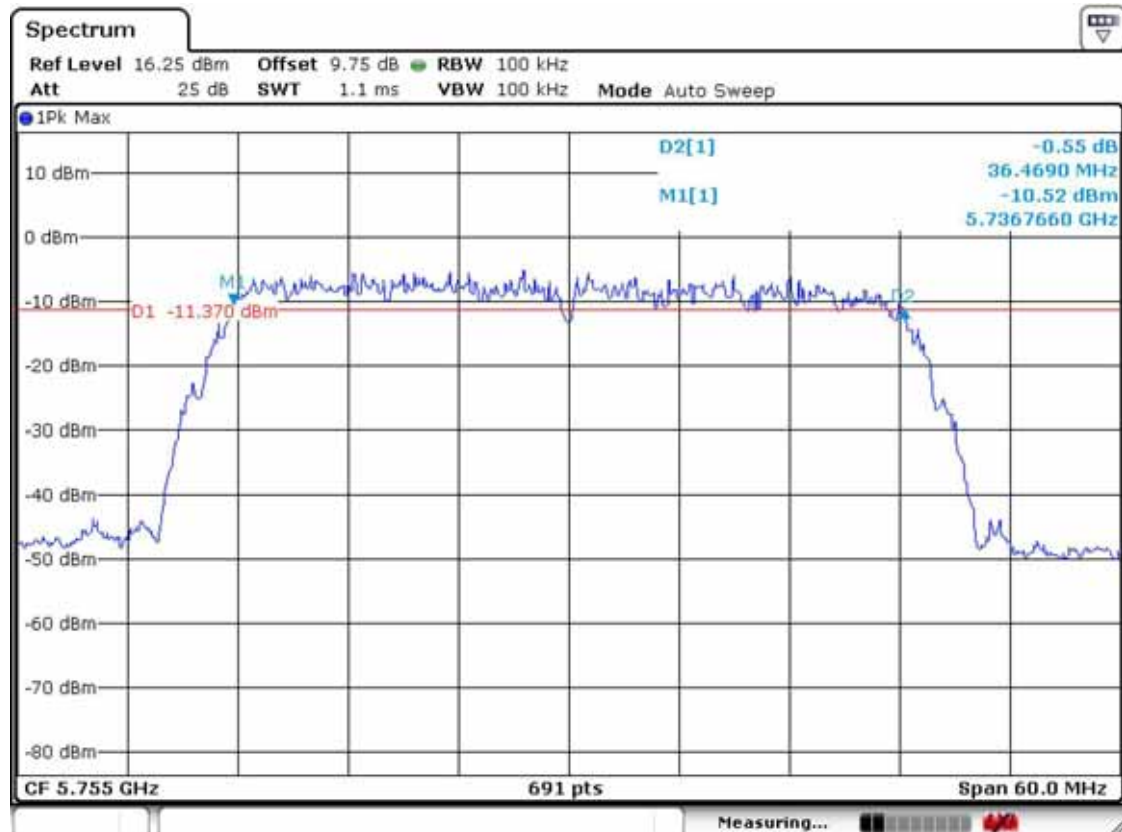


CH 165

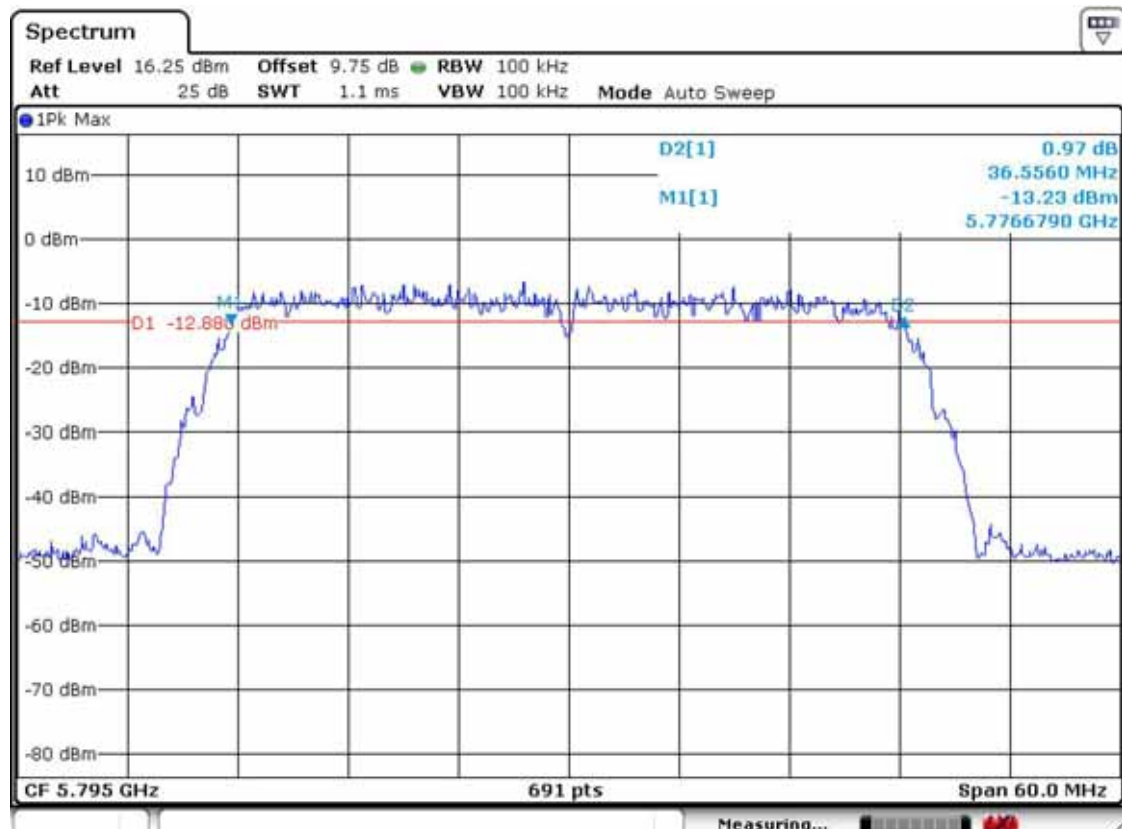


802.11an_40MHz

CH 151



CH 159



3.2.2 Peak Output Power Measurement

Procedure:

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 = 3MHz (VBW $\geq$ RBW)

Sweep = auto

Detector function = peak

Measurement Data: 2.4GHz Band

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11b	2412	1	15.31	Complies
	2437	6	15.40	Complies
	2462	11	15.32	Complies
802.11g	2412	1	14.01	Complies
	2437	6	13.91	Complies
	2462	11	14.19	Complies
802.11n _20MHz	2412	1	17.95	Complies
	2437	6	18.83	Complies
	2462	11	19.11	Complies
802.11n _40MHz	2422	3	17.59	Complies
	2437	6	18.09	Complies
	2452	9	18.35	Complies

Measurement Data: 5.0GHz Band

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11a	5745	149	15.51	Complies
	5785	157	14.44	Complies
	5825	165	13.87	Complies
802.11an _20MHz	5745	149	15.98	Complies
	5785	157	14.37	Complies
	5825	165	13.68	Complies
802.11an _40MHz	5755	151	15.97	Complies
	5795	159	14.62	Complies

- See next pages for actual measured spectrum plots.

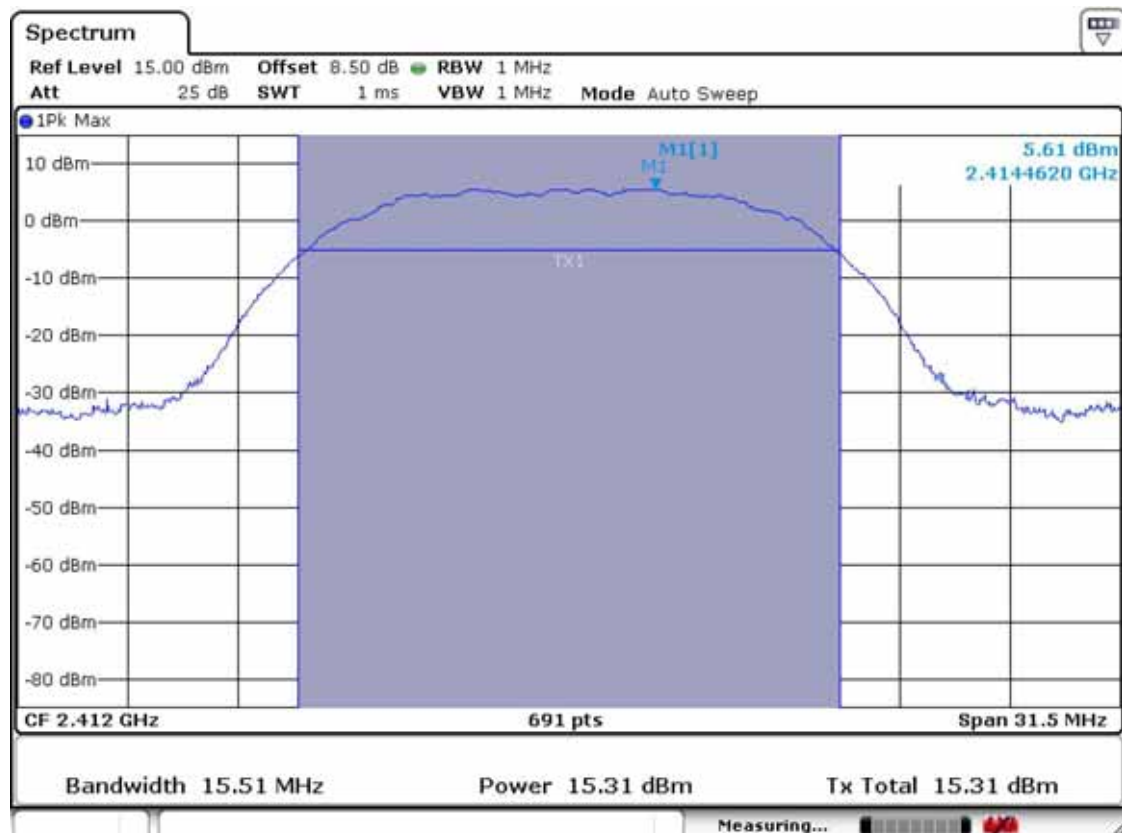
Minimum Standard:

Peak output power

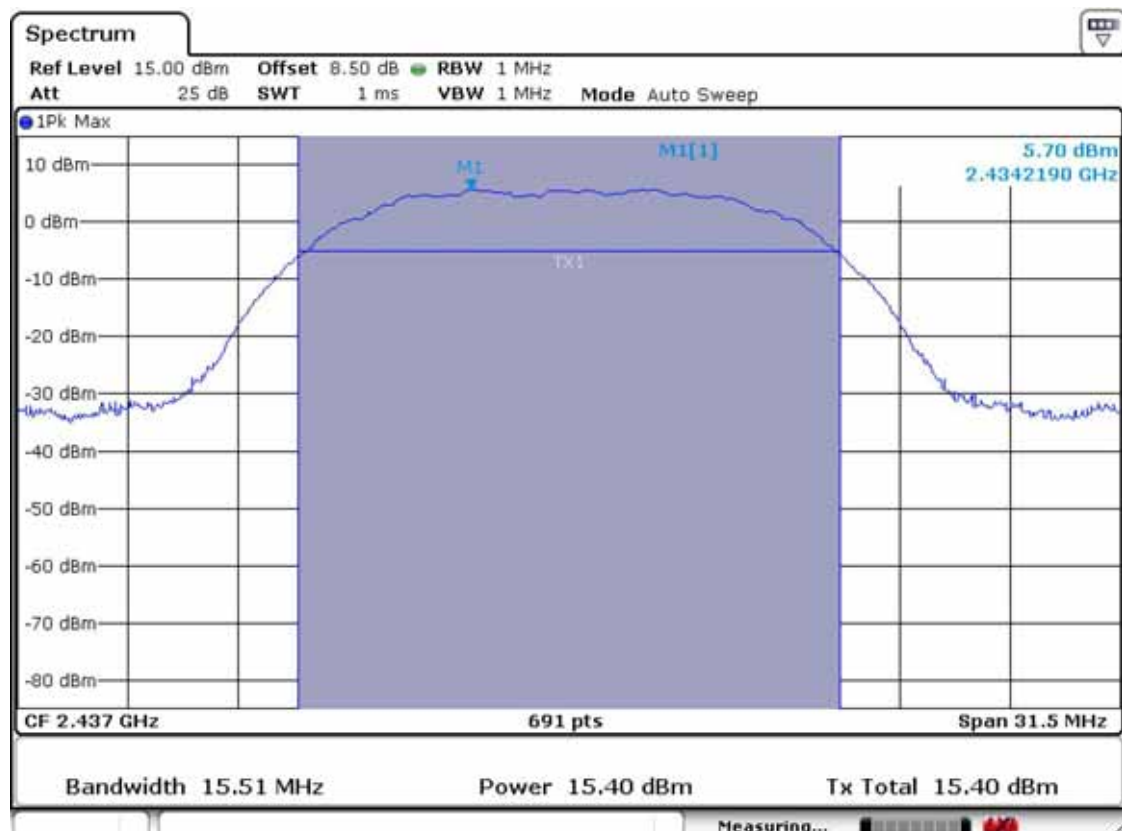
< 1W

802.11b

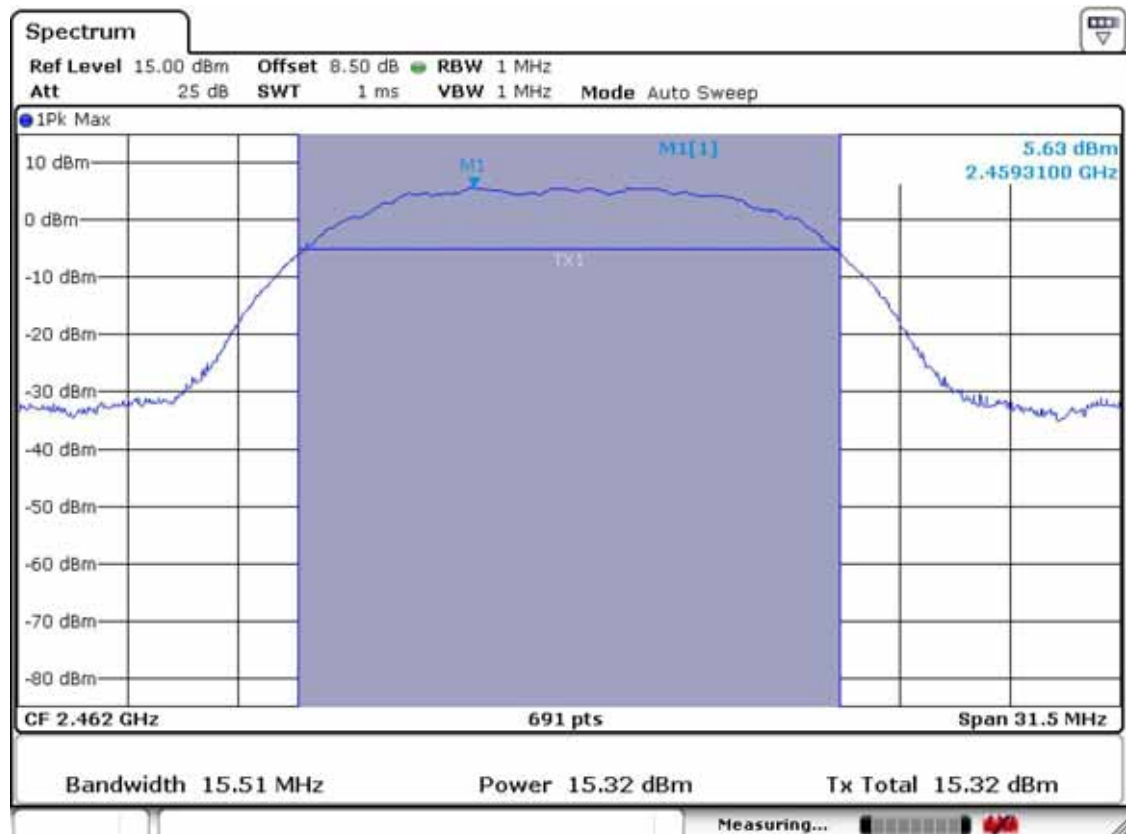
CH 1



CH 6

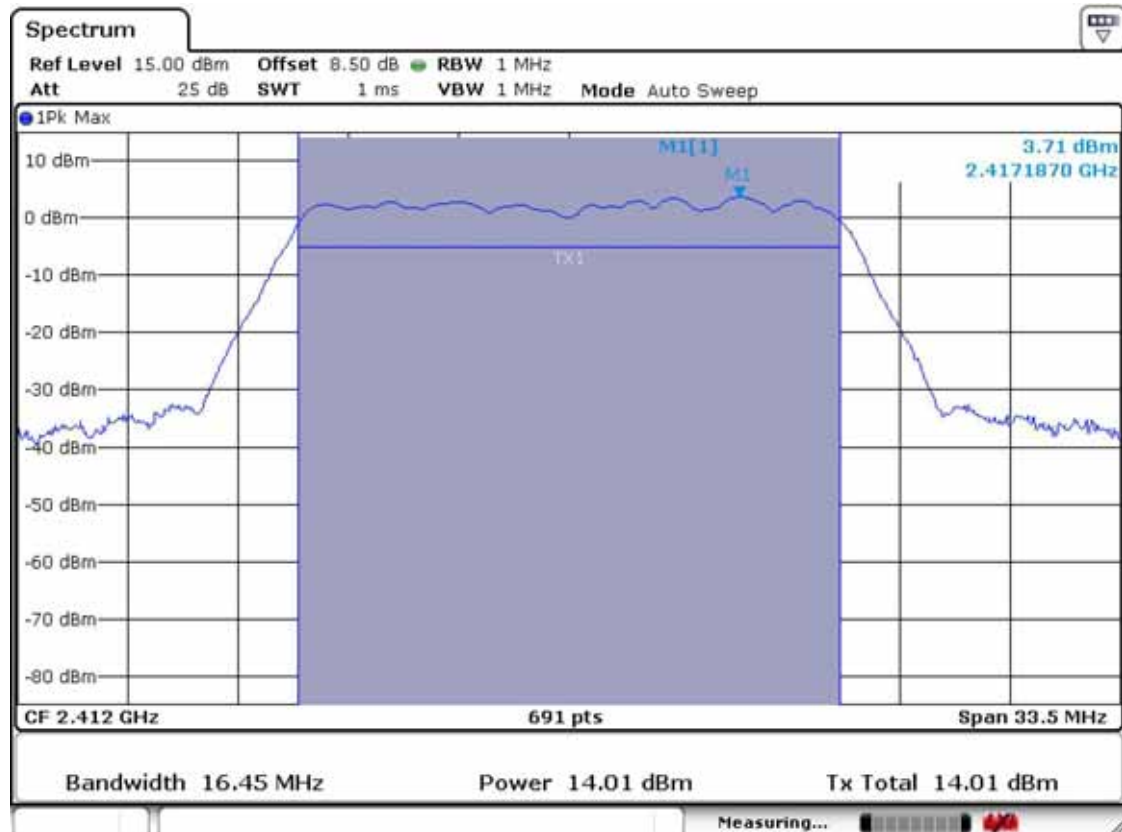


CH 11

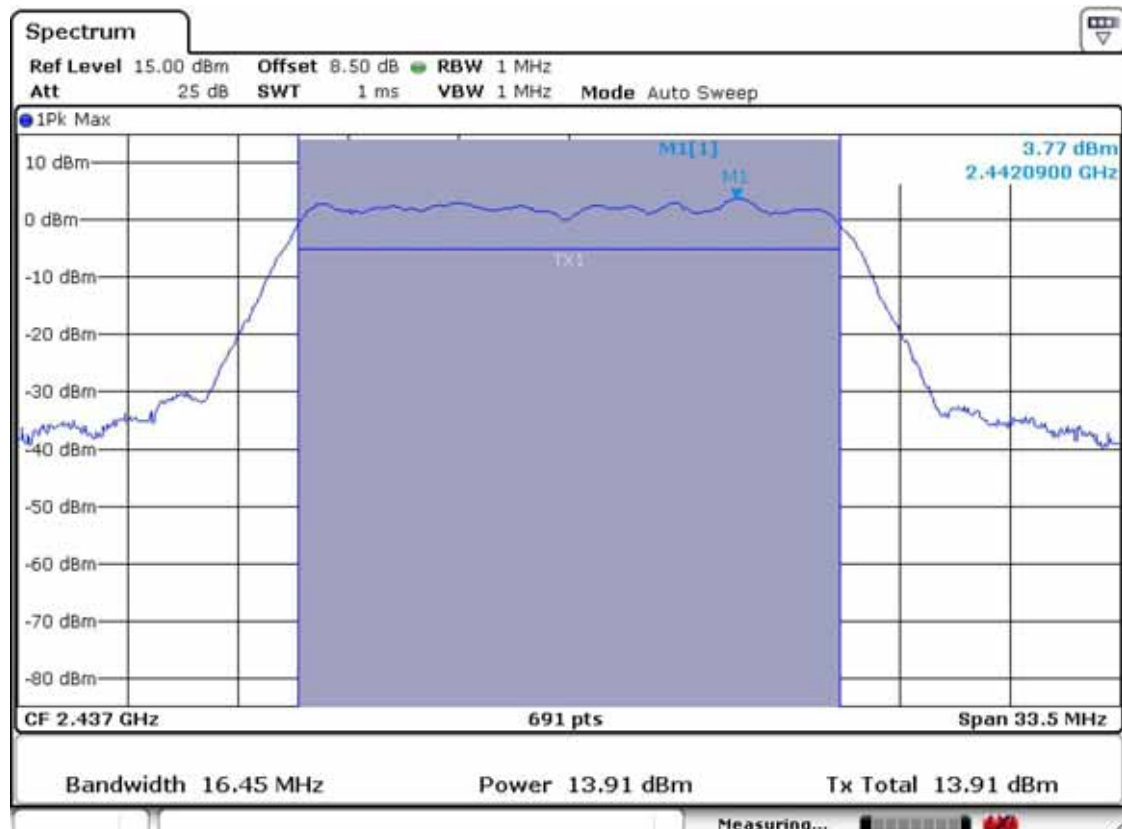


802.11g

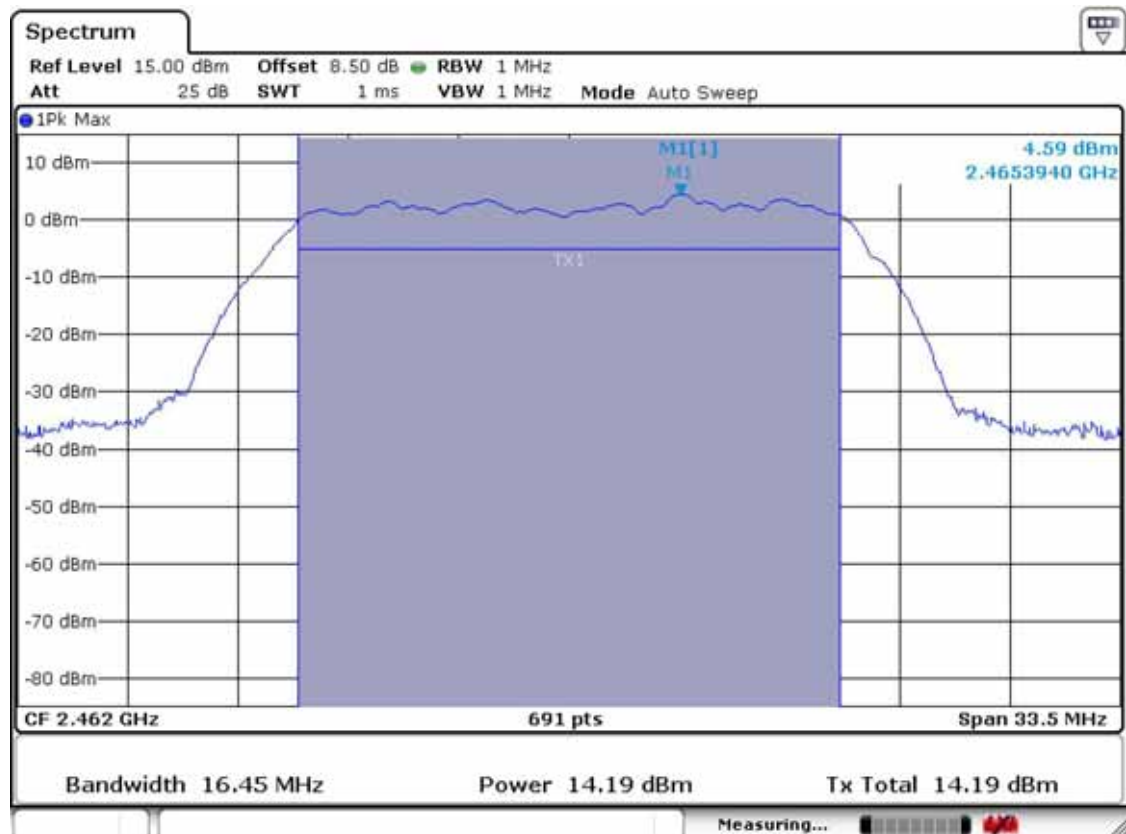
CH 1



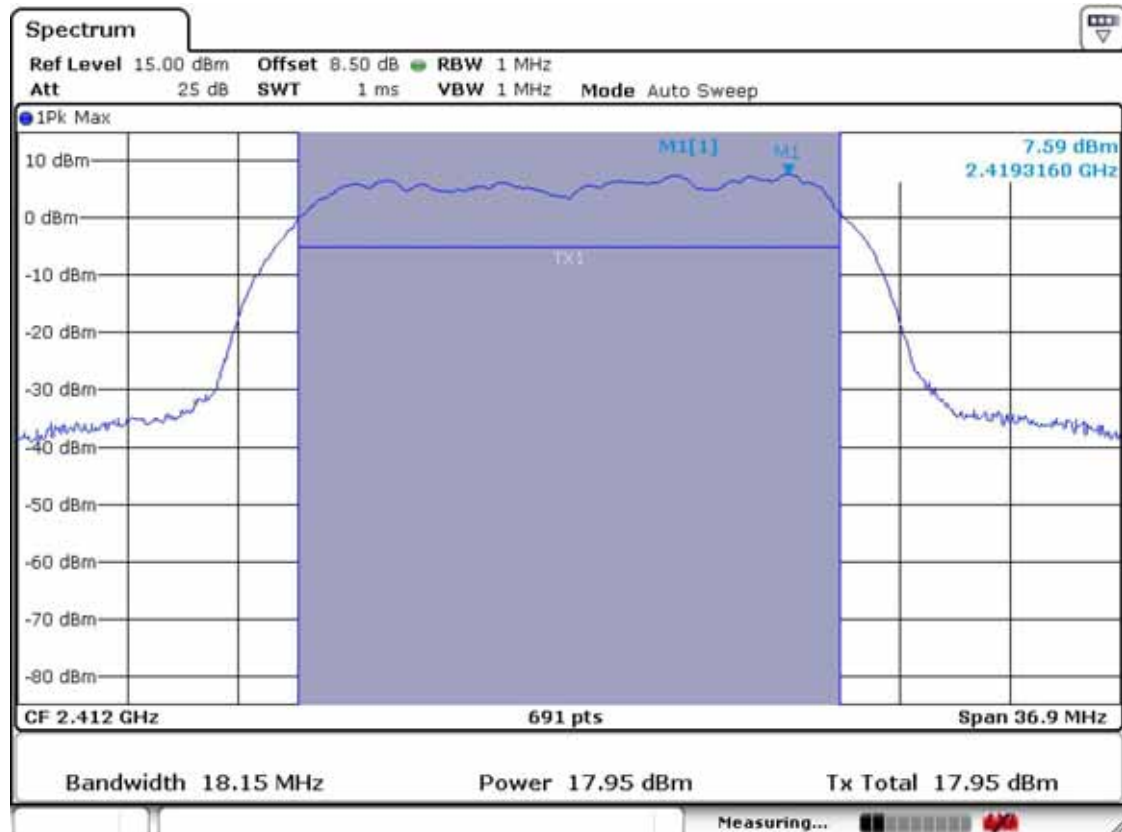
CH 6



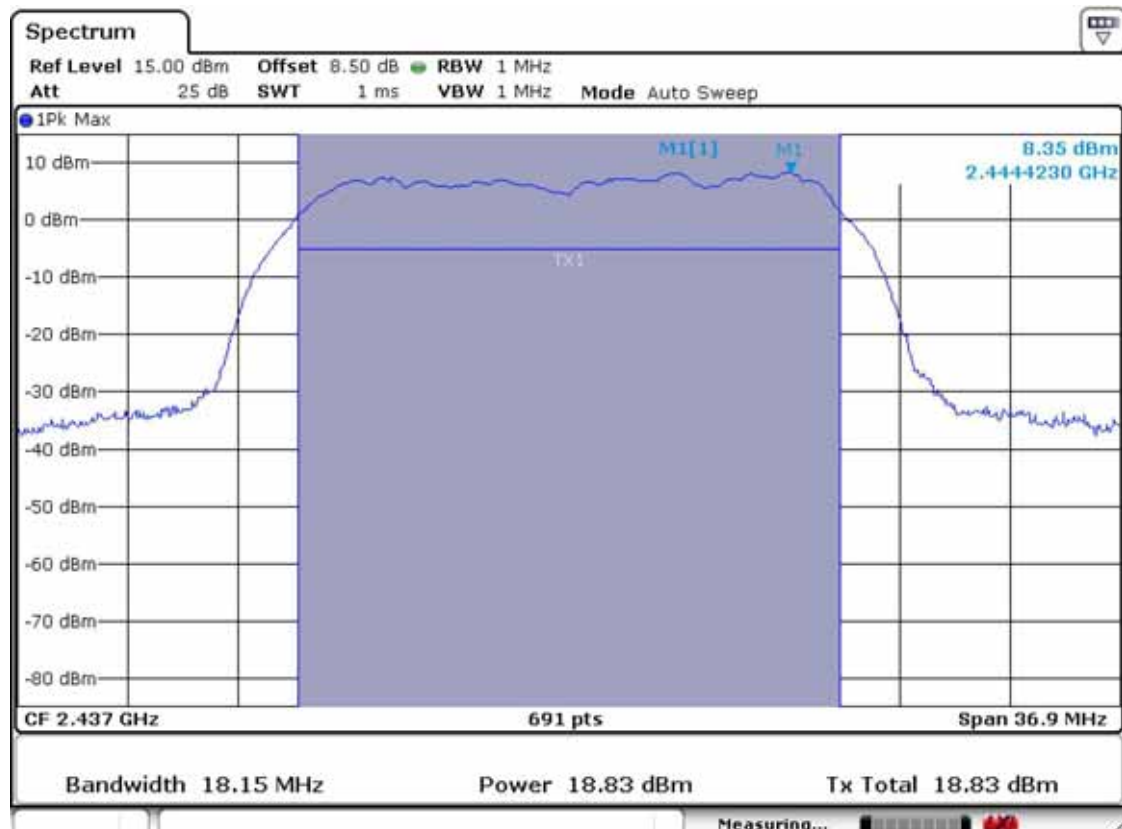
CH 11



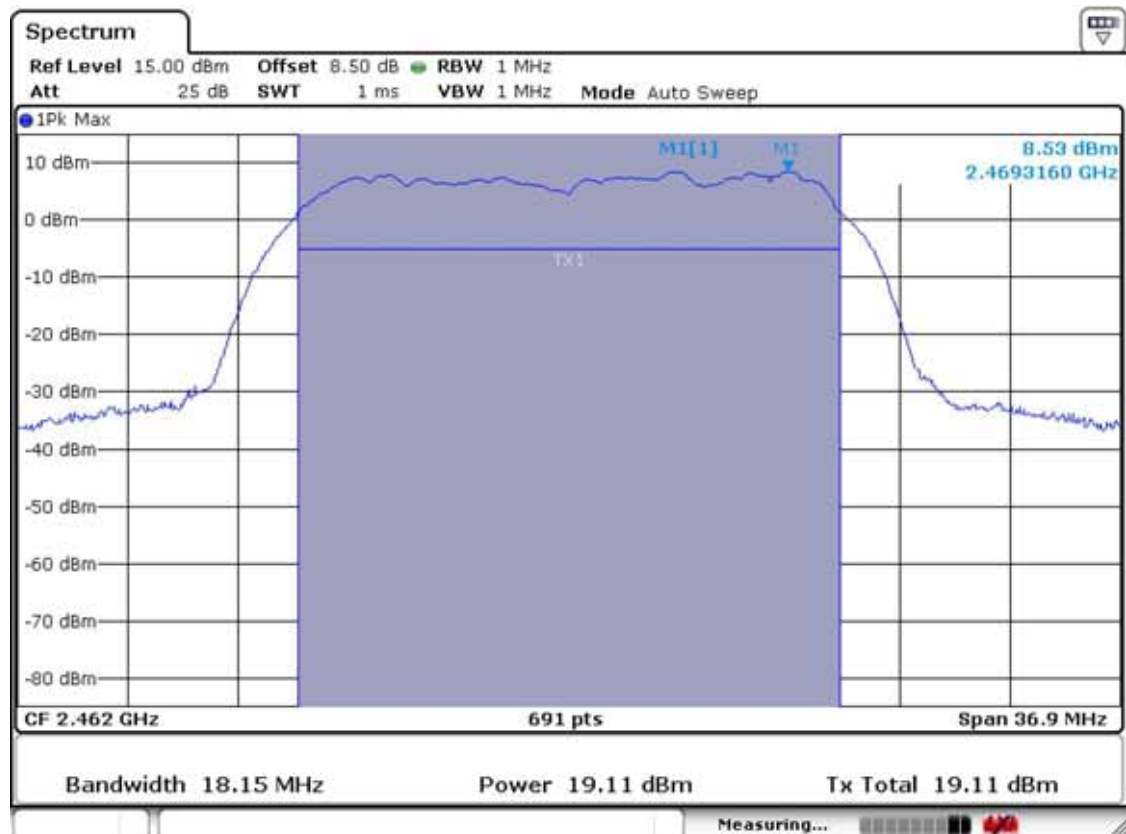
802.11n_20MHz CH 1



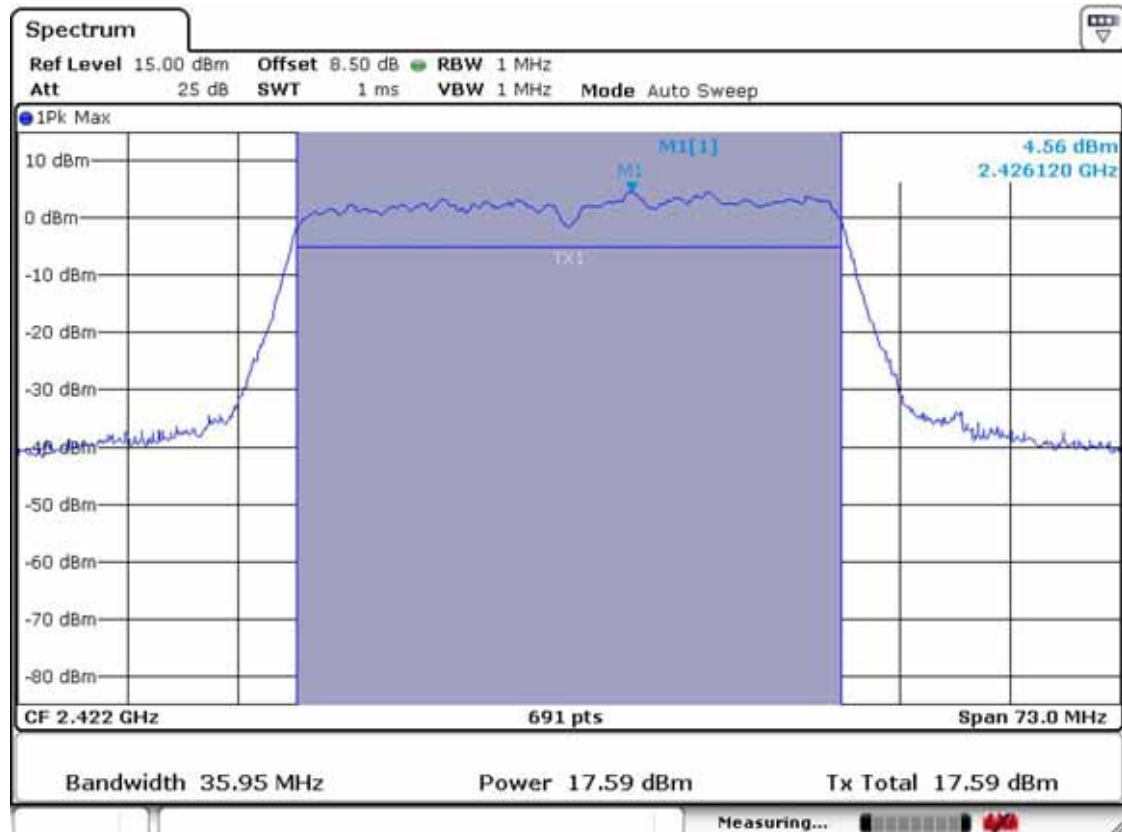
CH 6



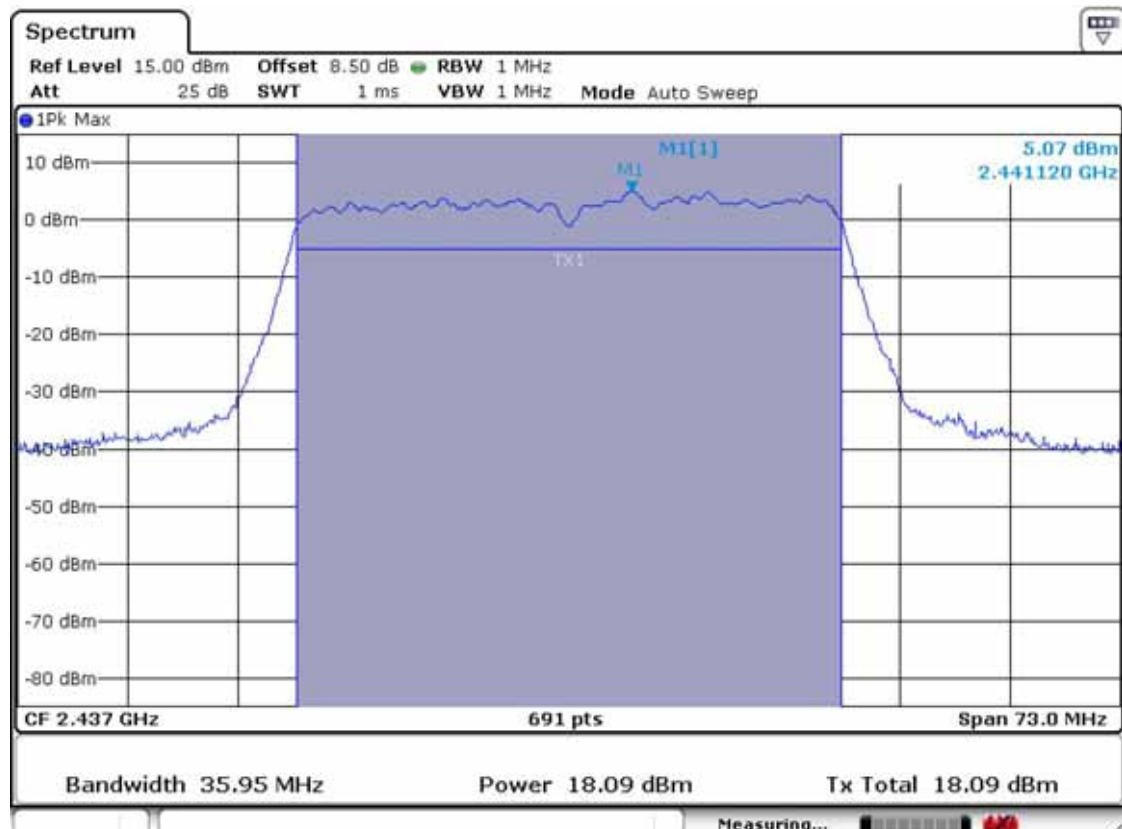
CH 11



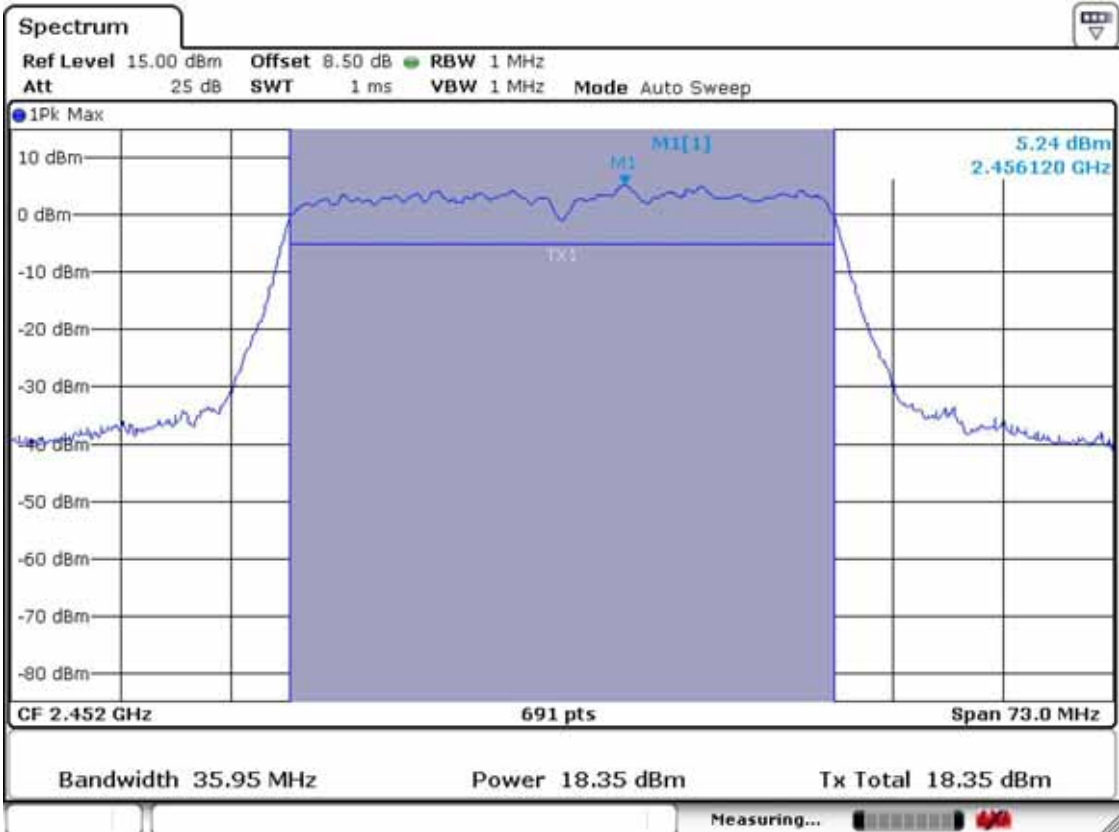
802.11n_40MHz CH 3



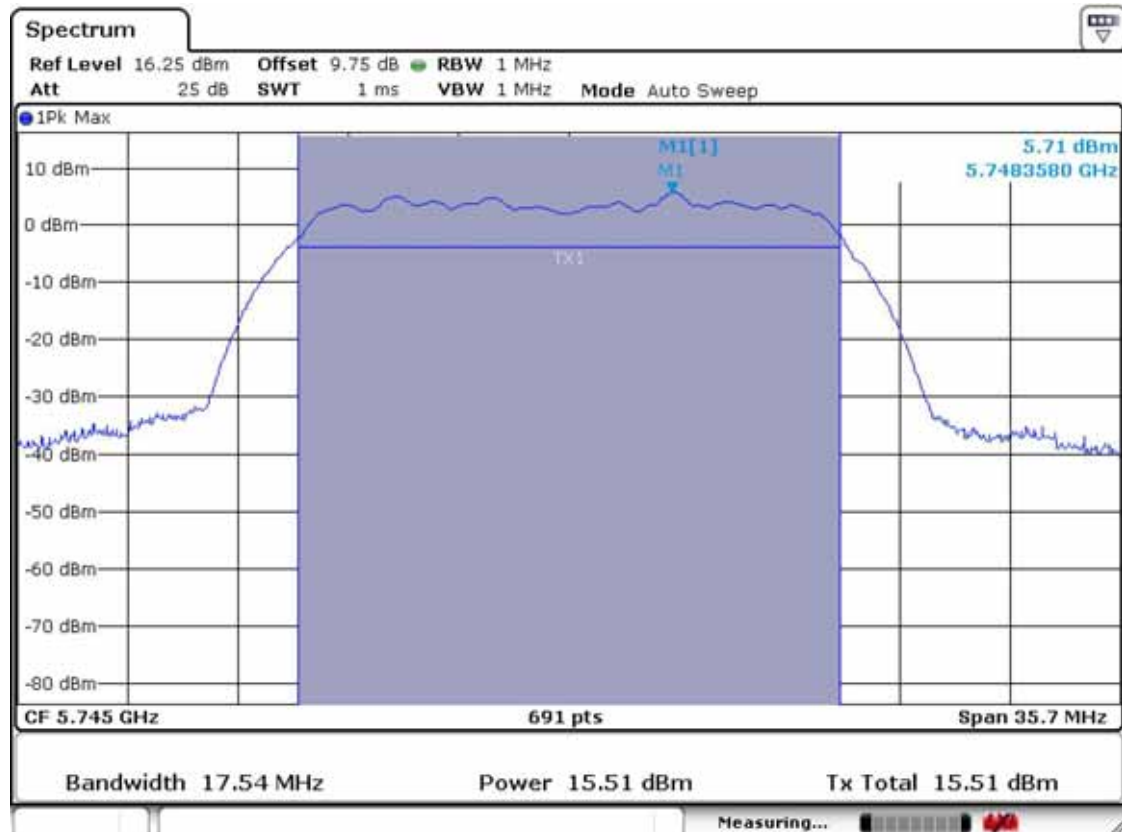
CH 6



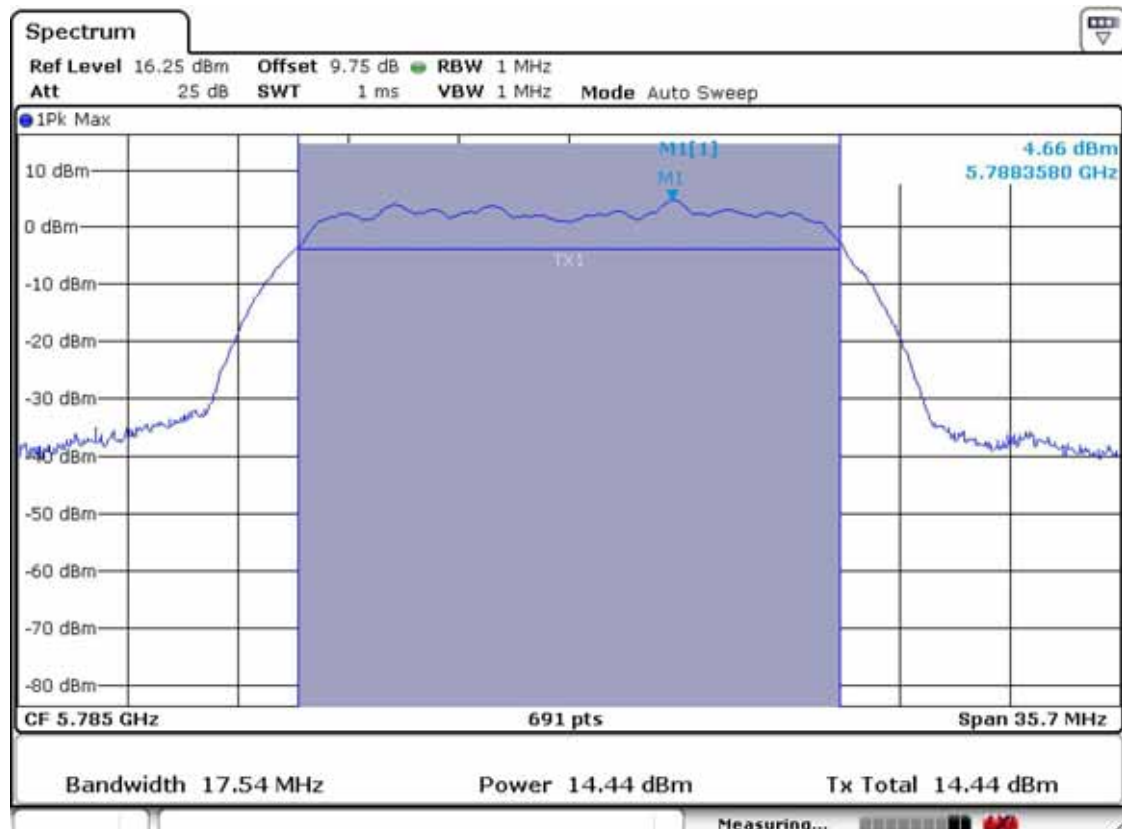
CH 9



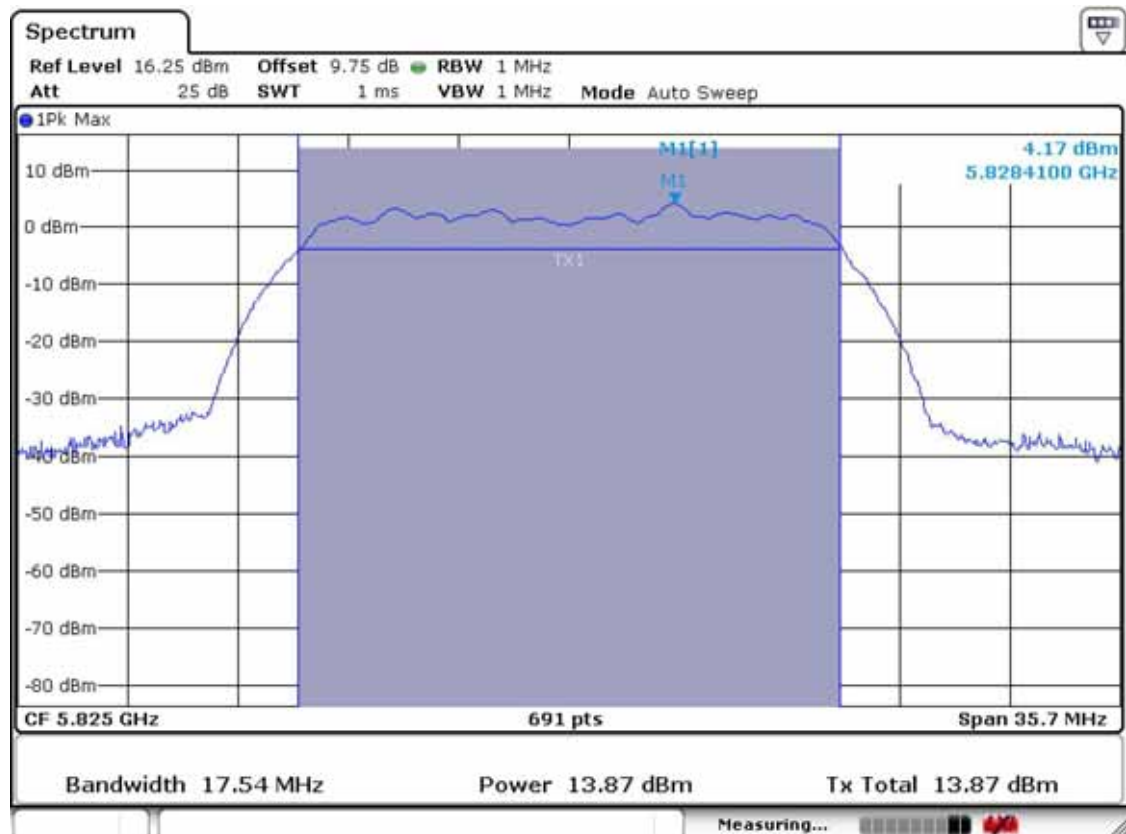
802.11a CH 149



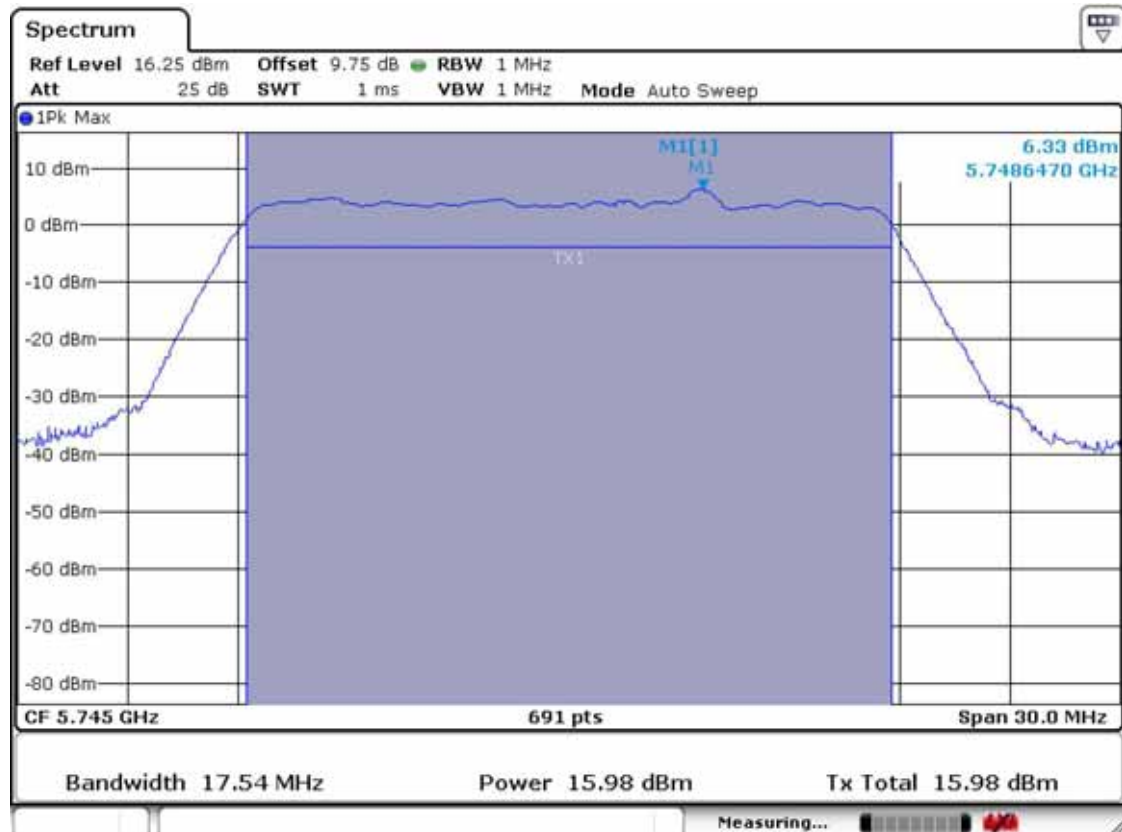
CH 157



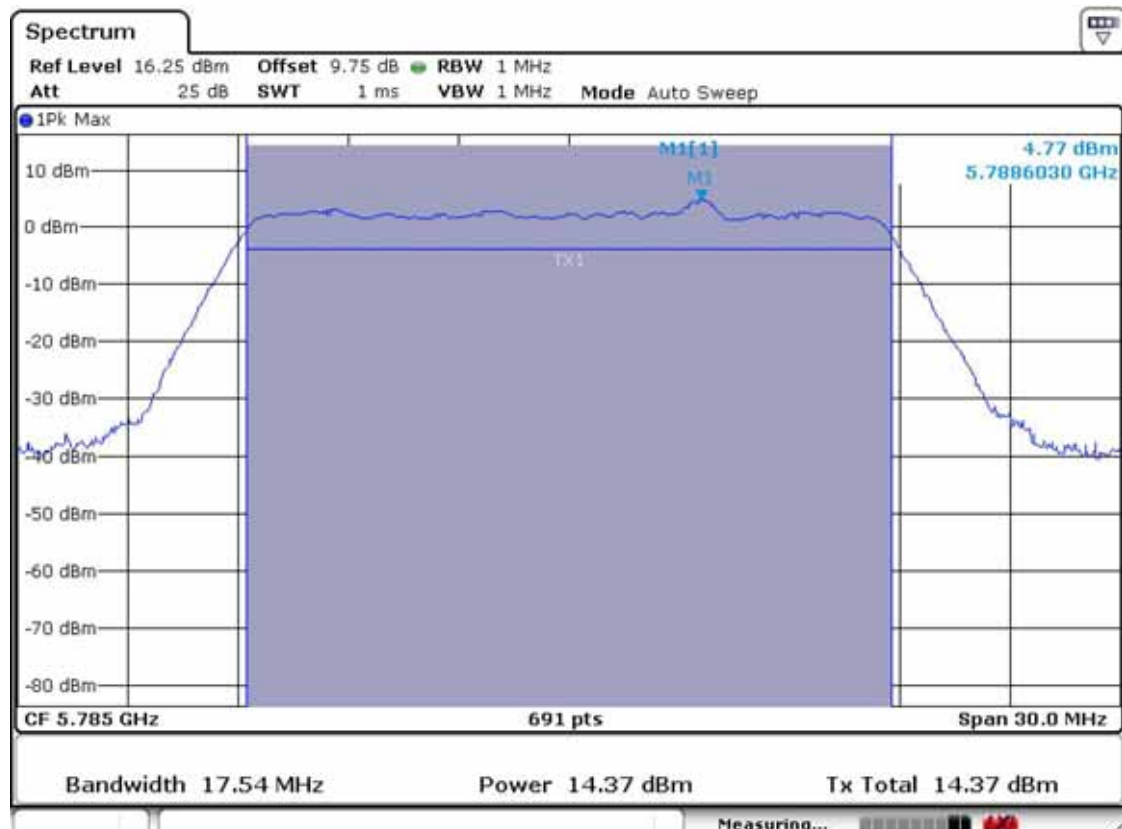
CH 165



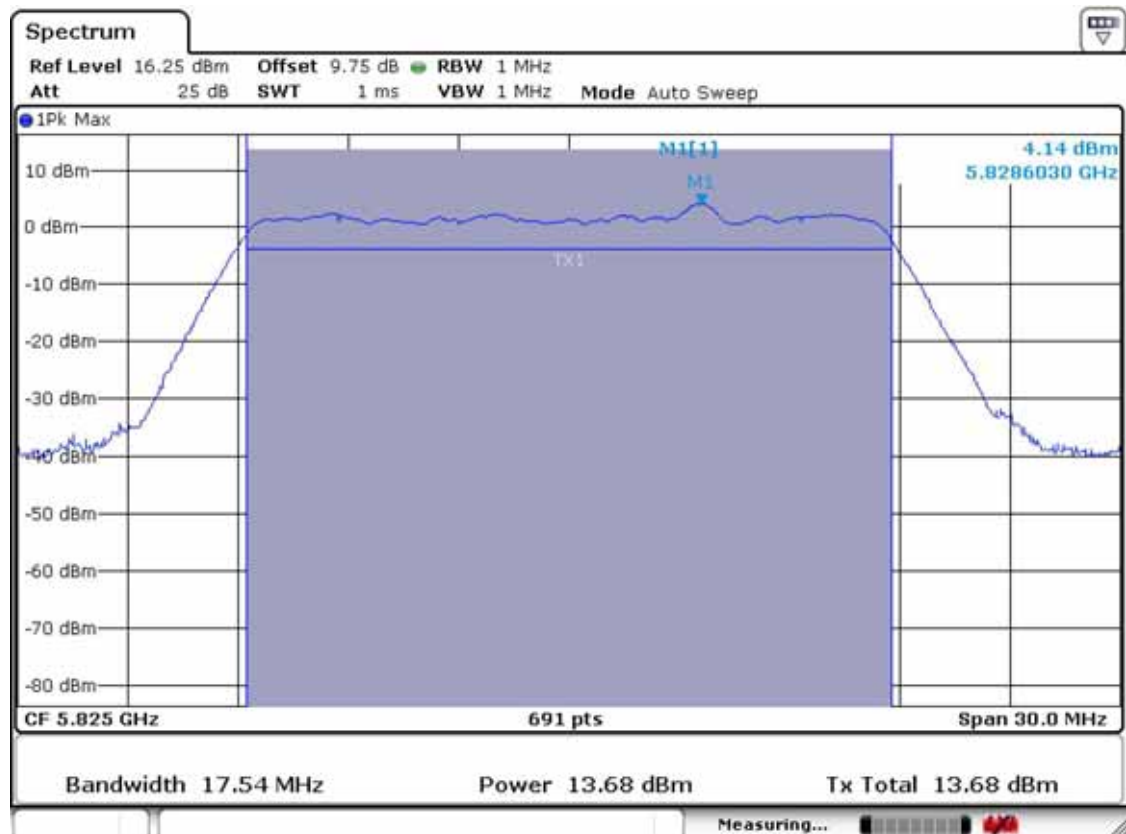
802.11an_20MHz CH 149



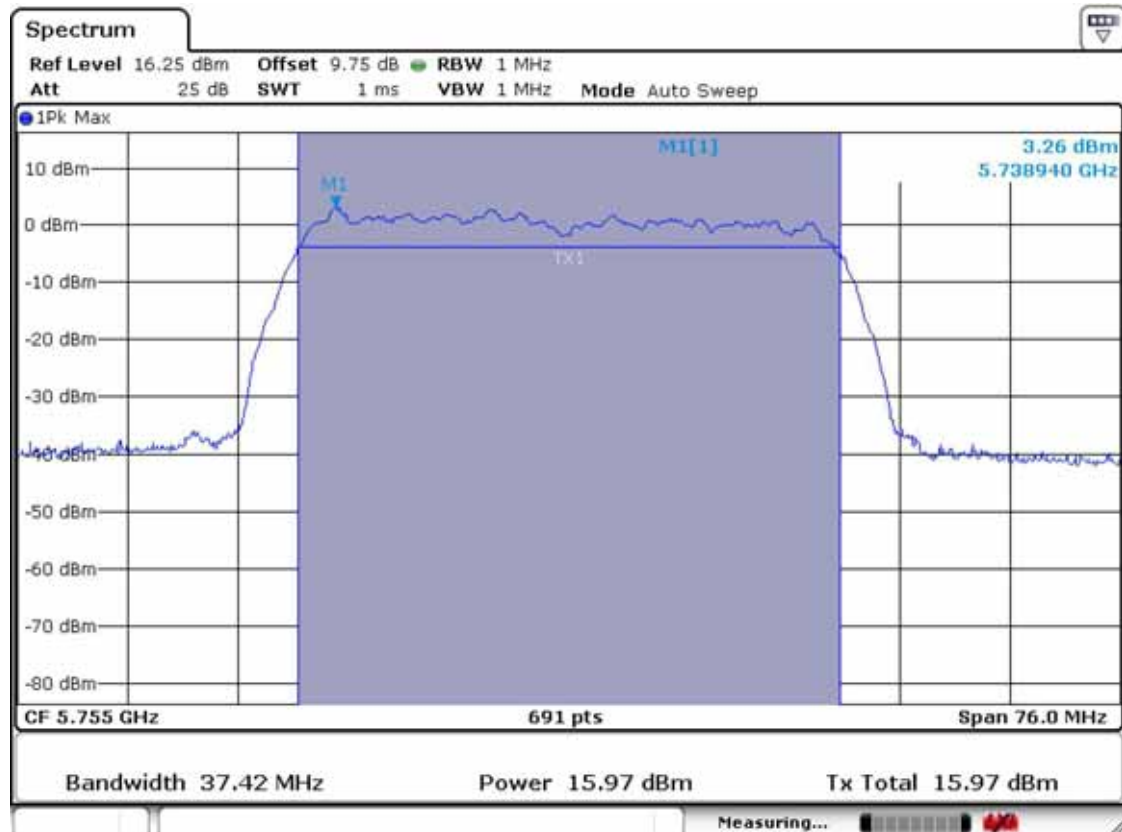
CH 157



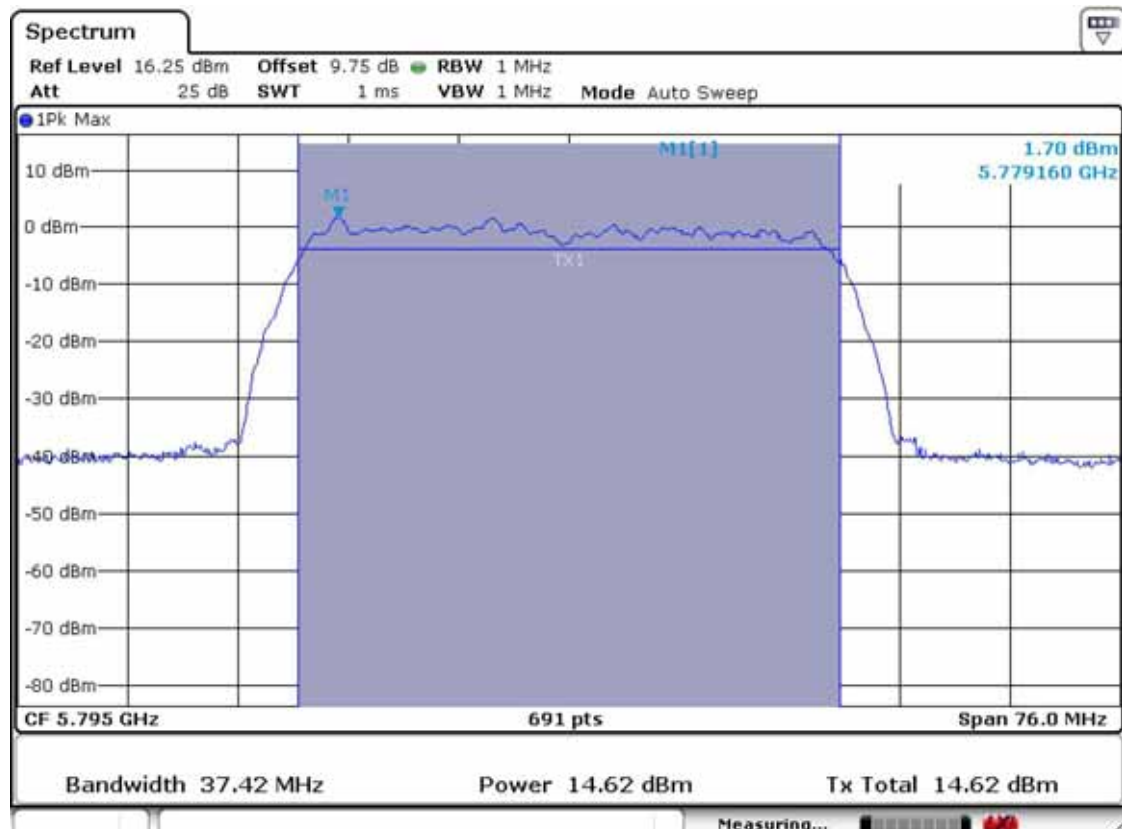
CH 165



802.11an_40MHz CH 151



CH 159



3.2.3 Power Spectral Density

Procedure:

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: 2.4GHz Band

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11b	2412	1	-16.47	Complies
	2437	6	-16.45	Complies
	2462	11	-16.61	Complies
802.11g	2412	1	-21.84	Complies
	2437	6	-21.87	Complies
	2462	11	-21.87	Complies
802.11n _20MHz	2412	1	-16.57	Complies
	2437	6	-15.83	Complies
	2462	11	-15.71	Complies
802.11n _40MHz	2422	3	-19.15	Complies
	2437	6	-18.78	Complies
	2452	9	-18.60	Complies

Measurement Data: 5.0GHz Band

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11a	5745	149	-18.49	Complies
	5785	157	-19.55	Complies
	5825	165	-21.85	Complies
802.11an _20MHz	5745	149	-19.06	Complies
	5785	157	-20.99	Complies
	5825	165	-21.90	Complies
802.11an _40MHz	5755	151	-20.80	Complies
	5795	159	-22.45	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

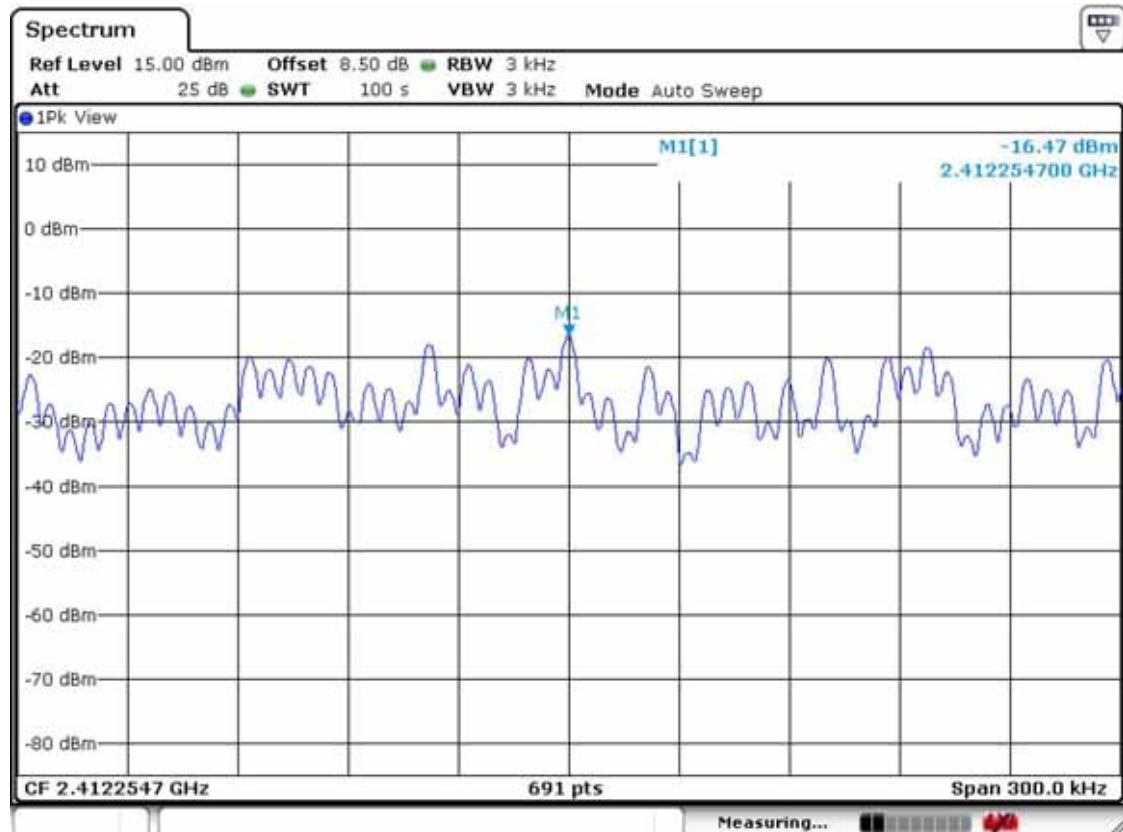
Power Spectral Density	< 8dBm @ 3kHz BW
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Measurement Setup

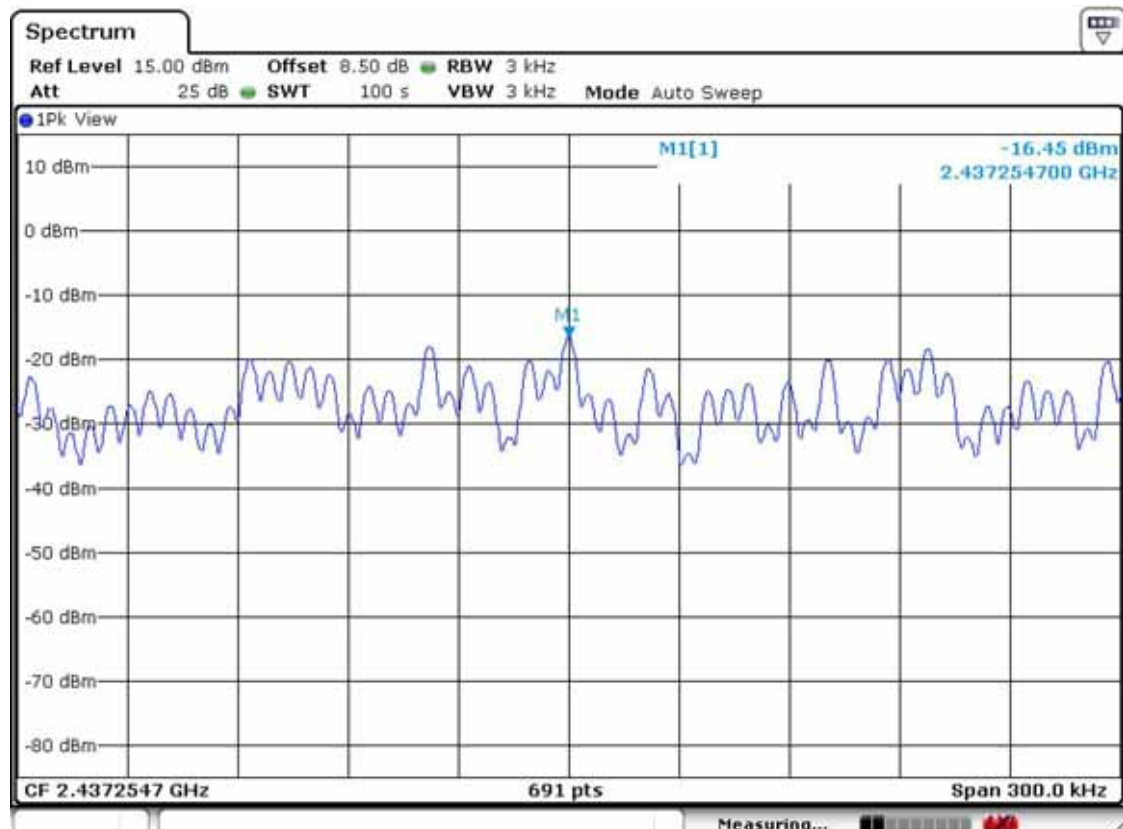
Same as the Chapter 3.2.1 (Figure 1)

802.11b Power Density Measurement

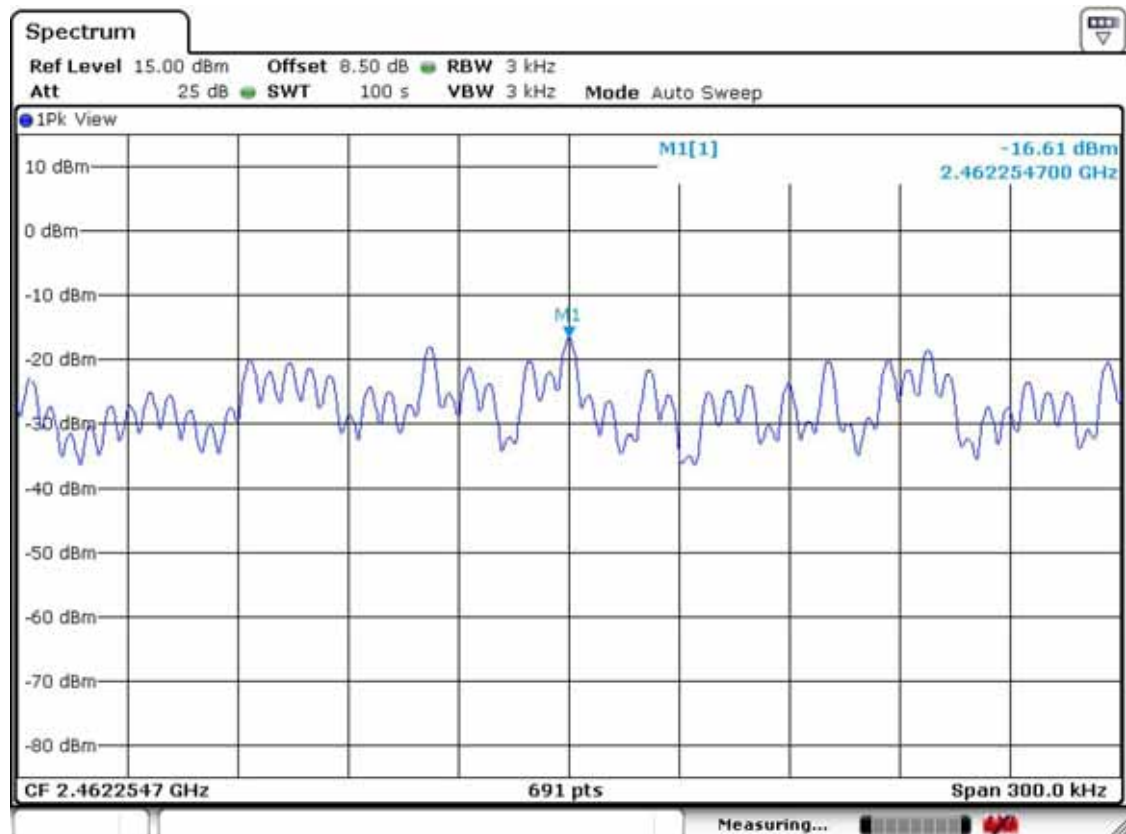
CH 1



CH 6

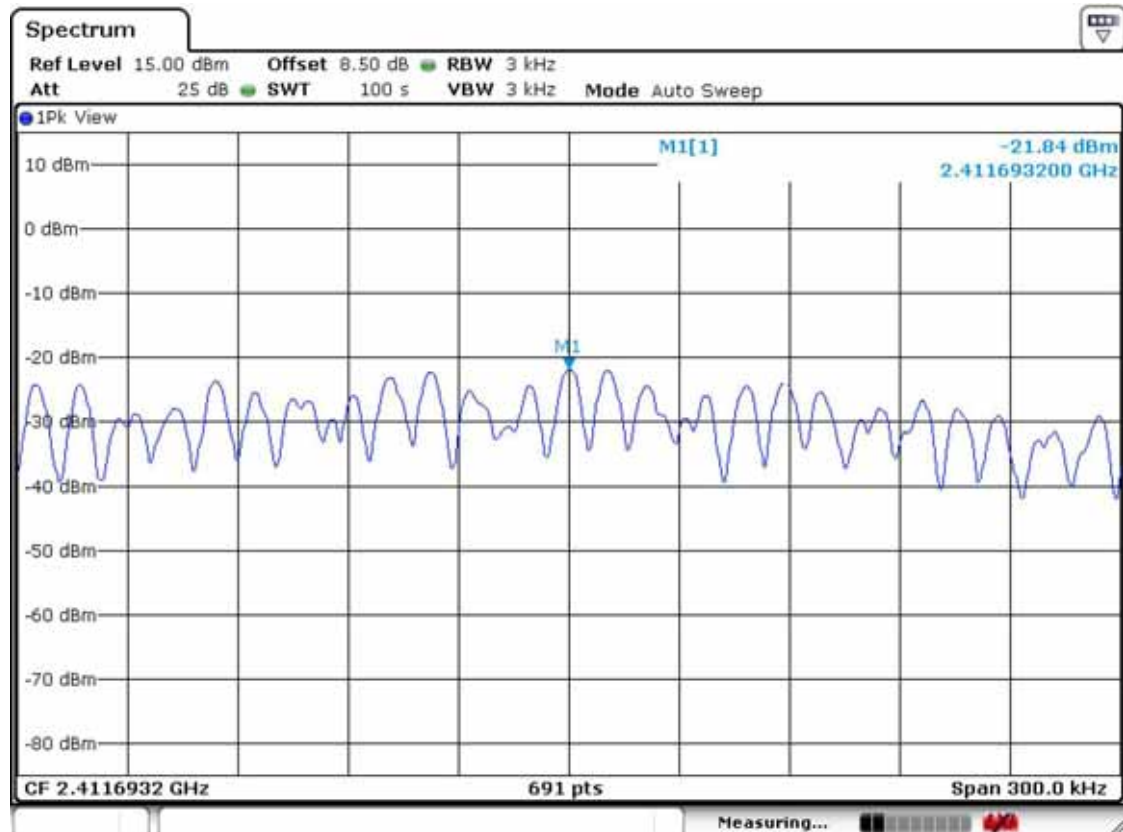


CH 11

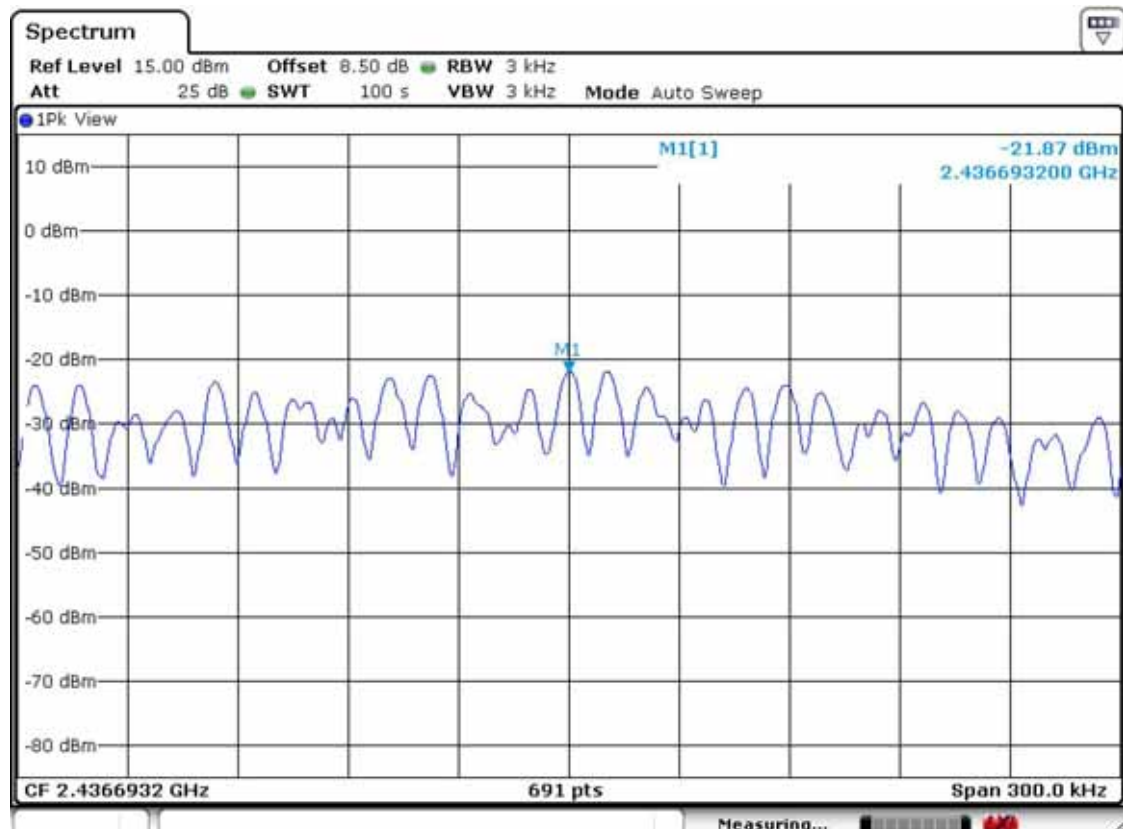


802.11g Power Density Measurement

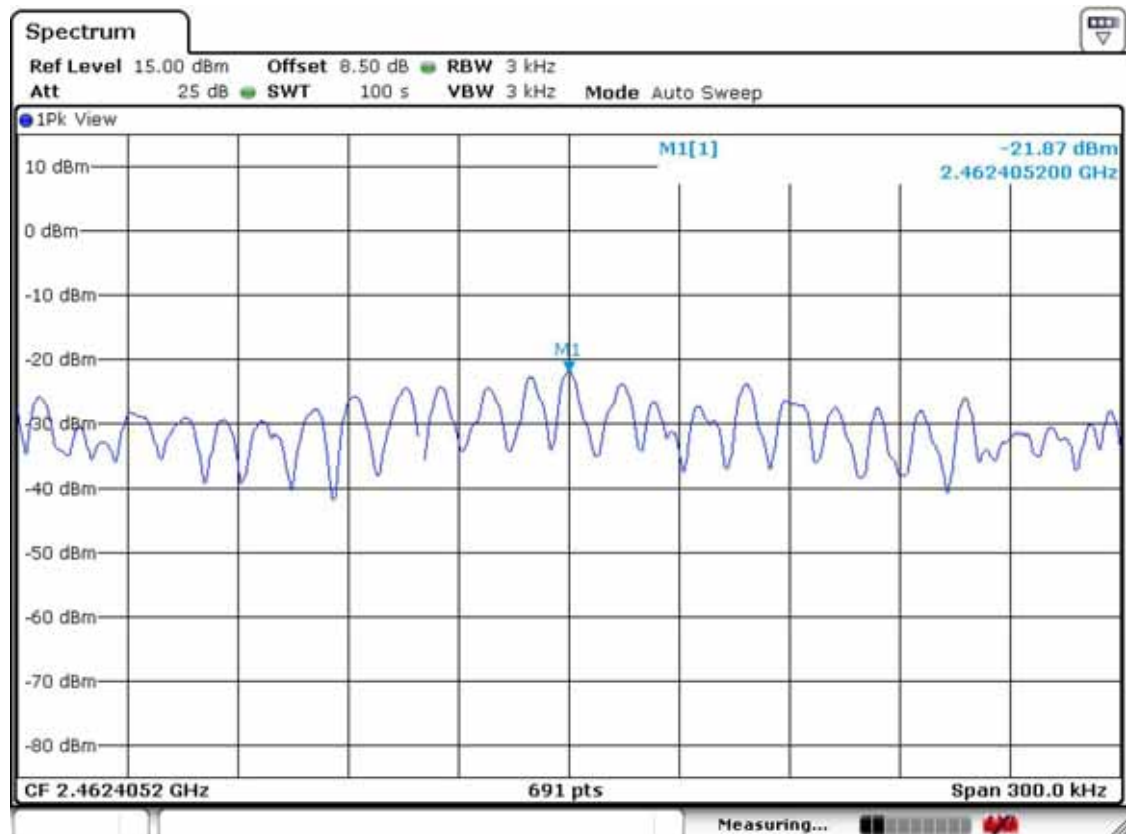
CH 1



CH 6

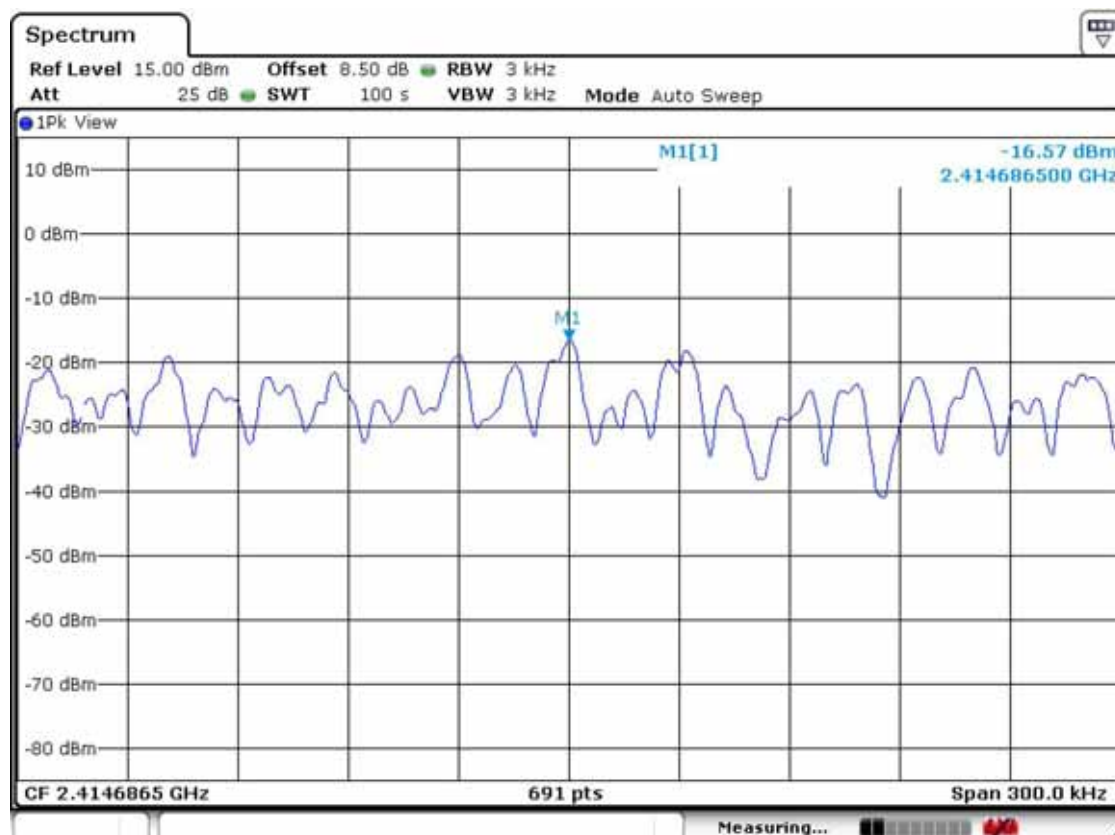


CH 11

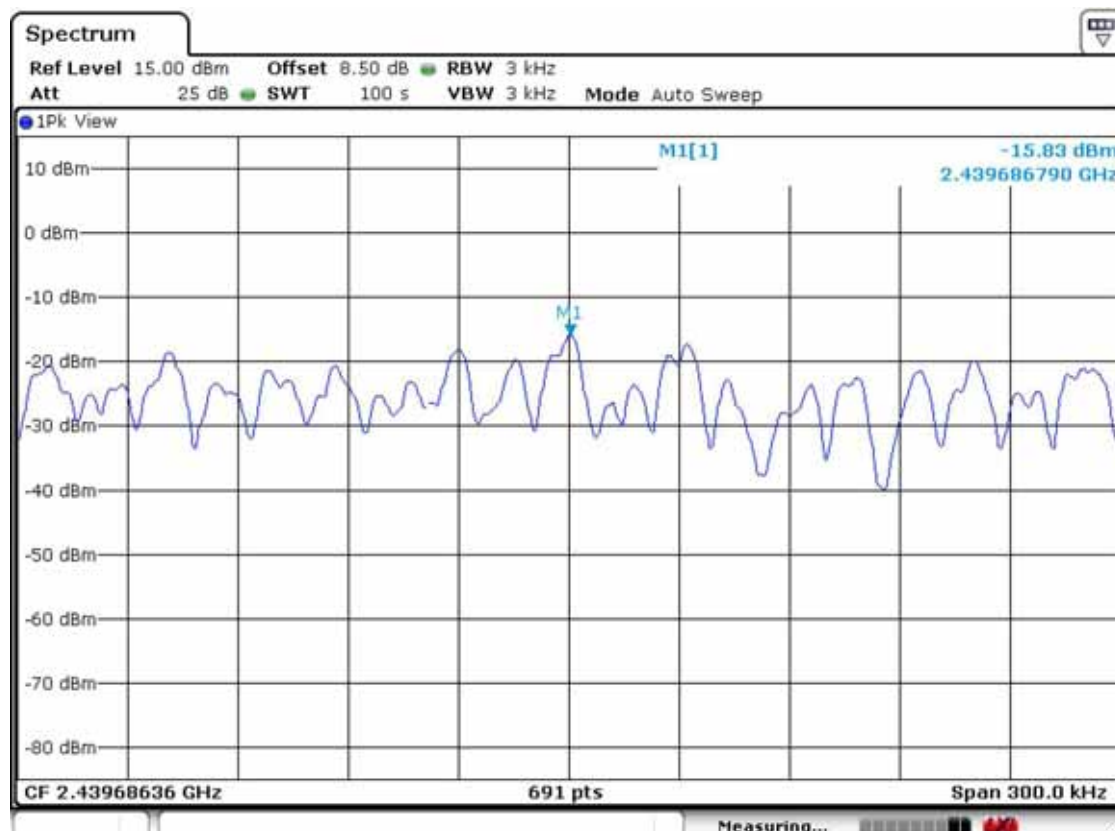


802.11n_20MHz Power Density Measurement

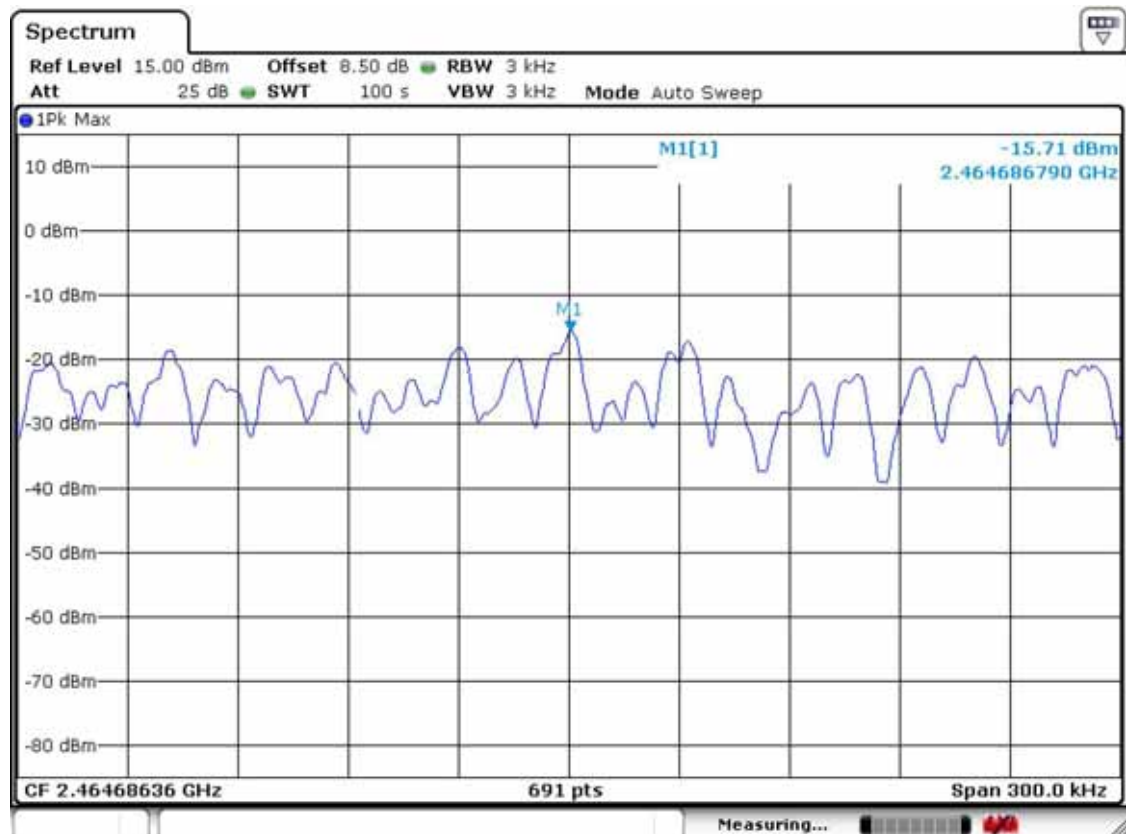
CH 1



CH 6

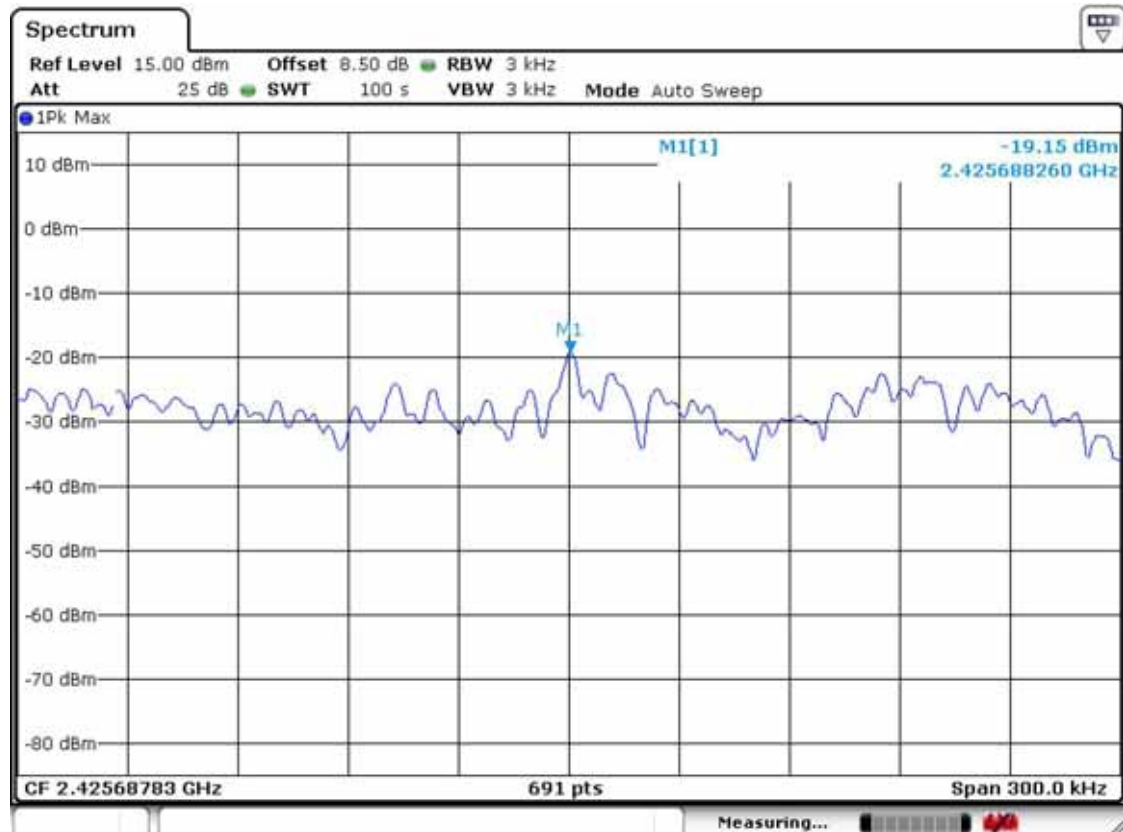


CH 11

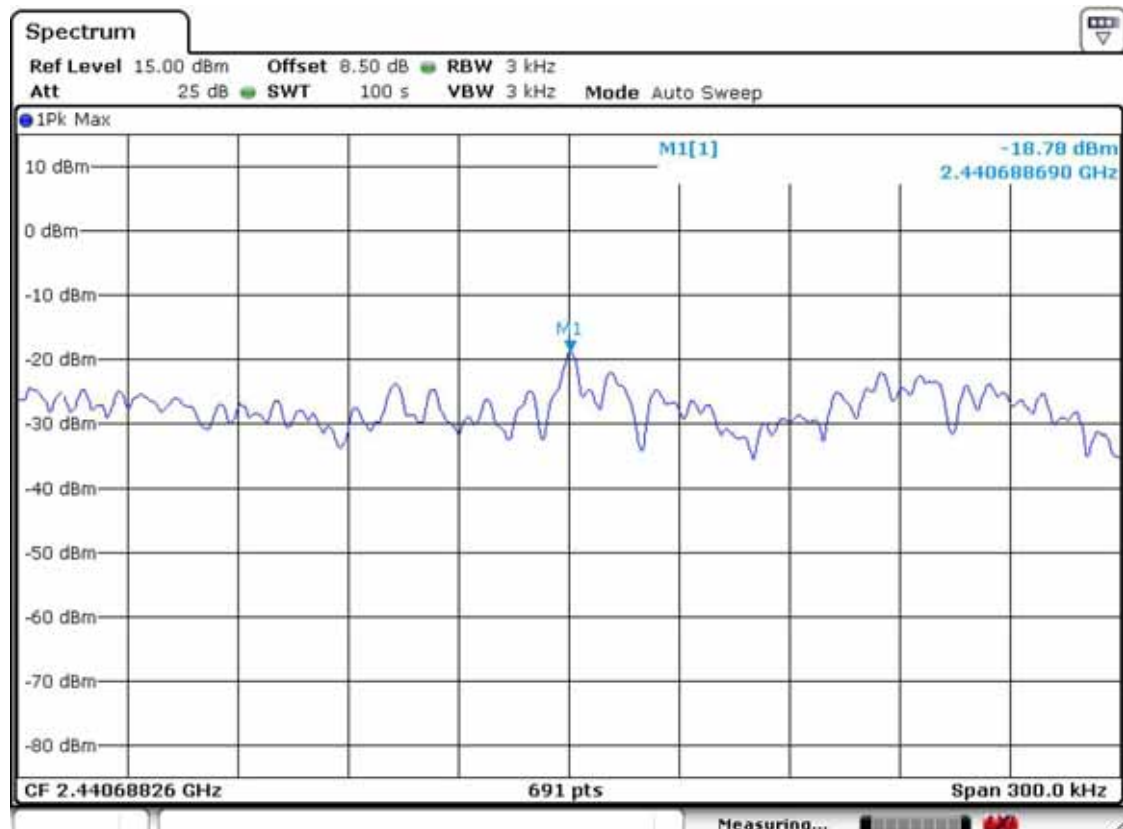


802.11n_40MHz Power Density Measurement

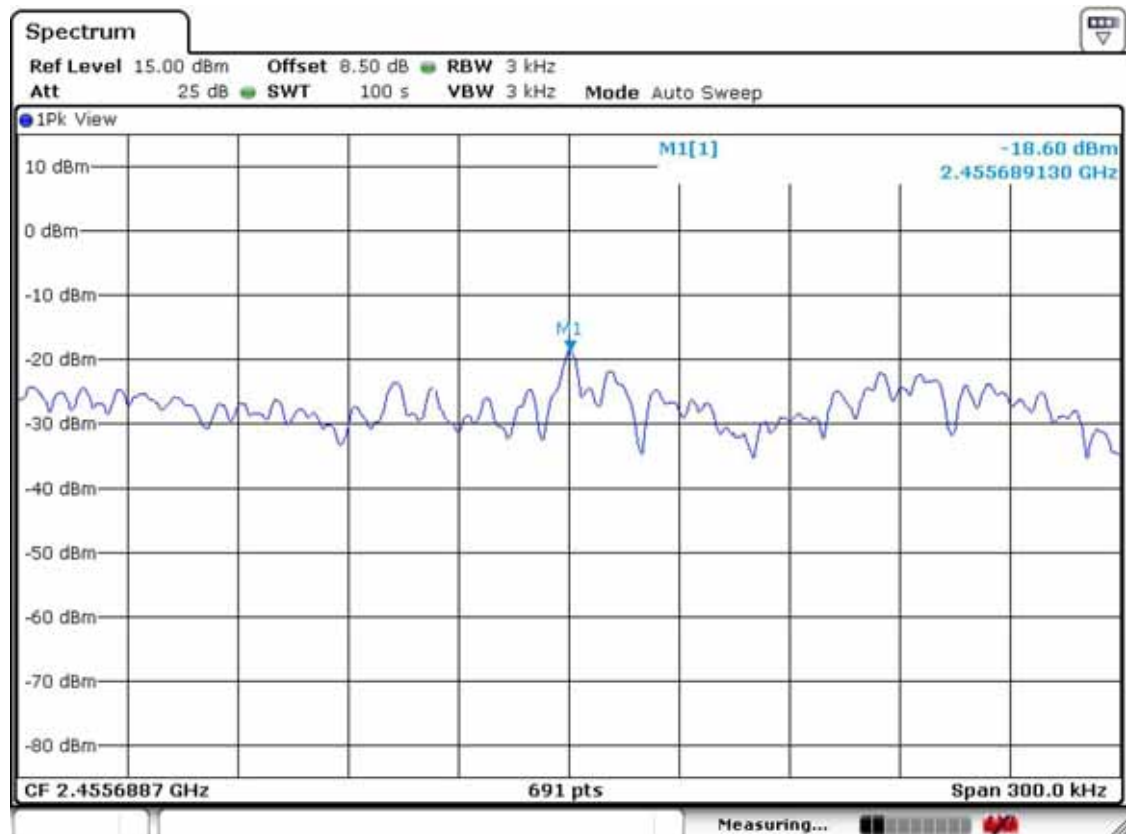
CH 3



CH 6

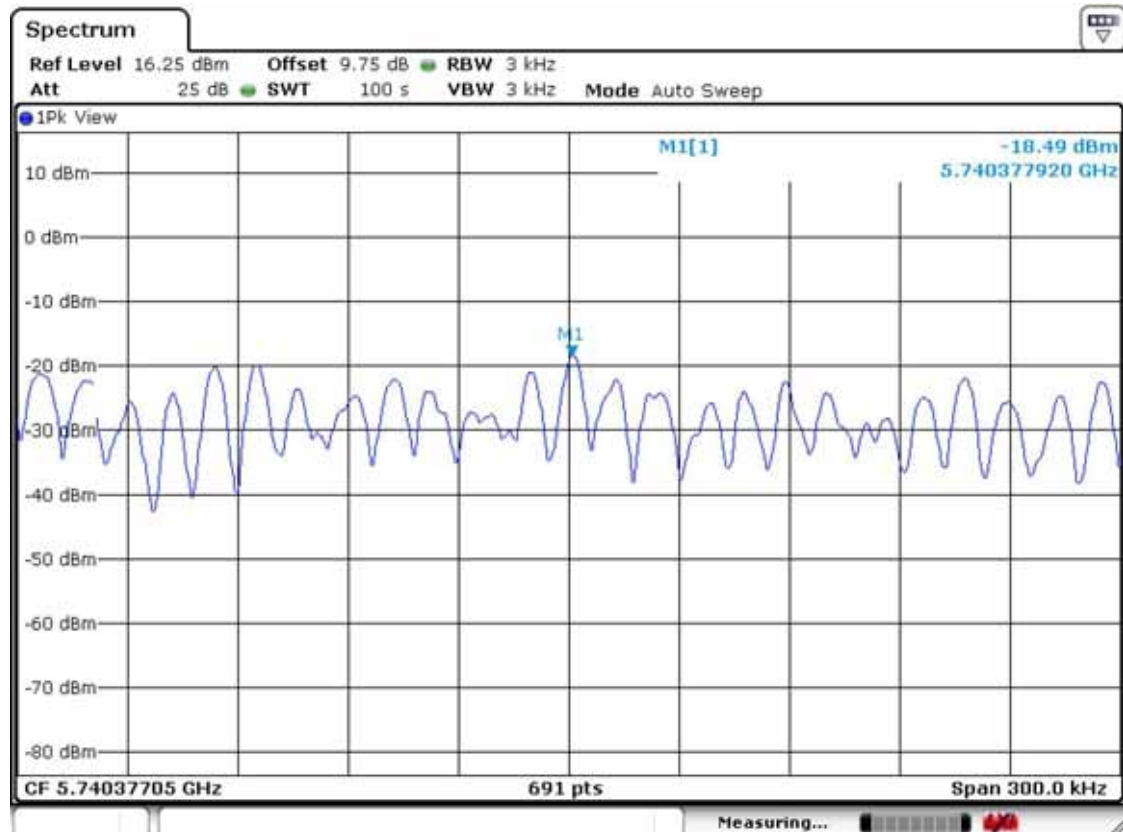


CH 9

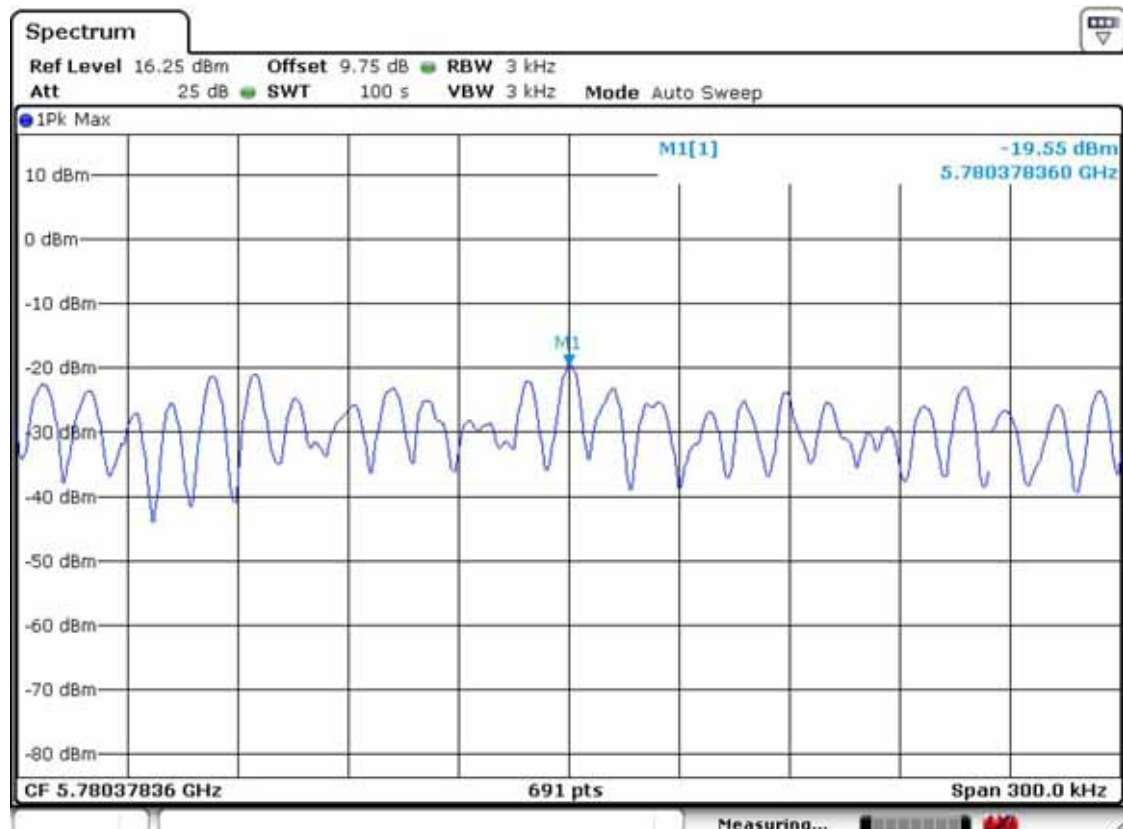


802.11a Power Density Measurement

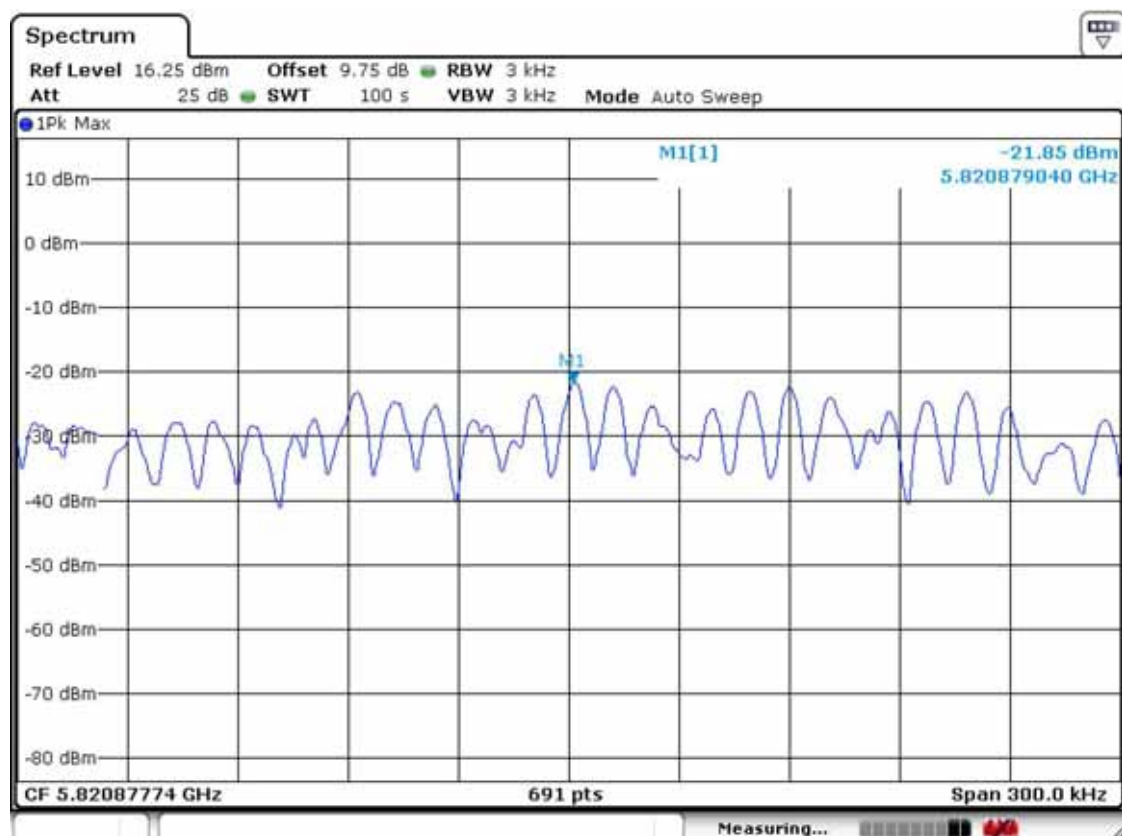
CH 149



CH 157

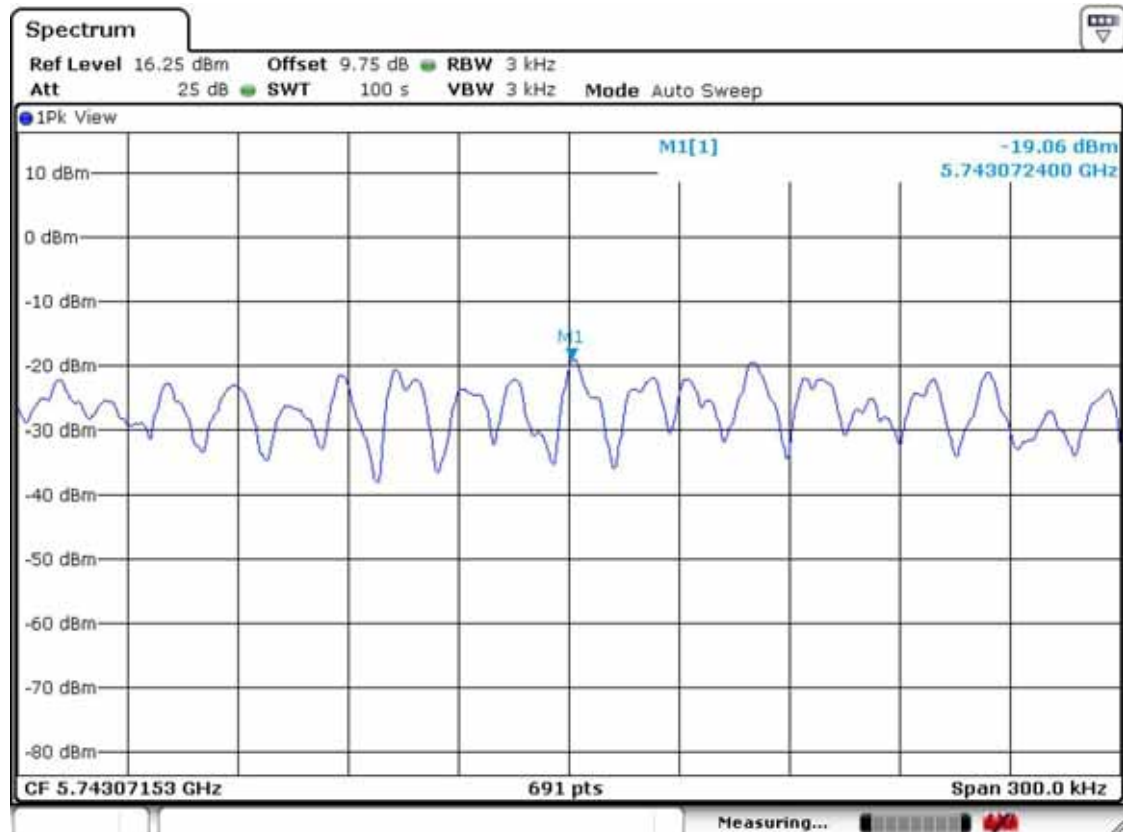


CH 165

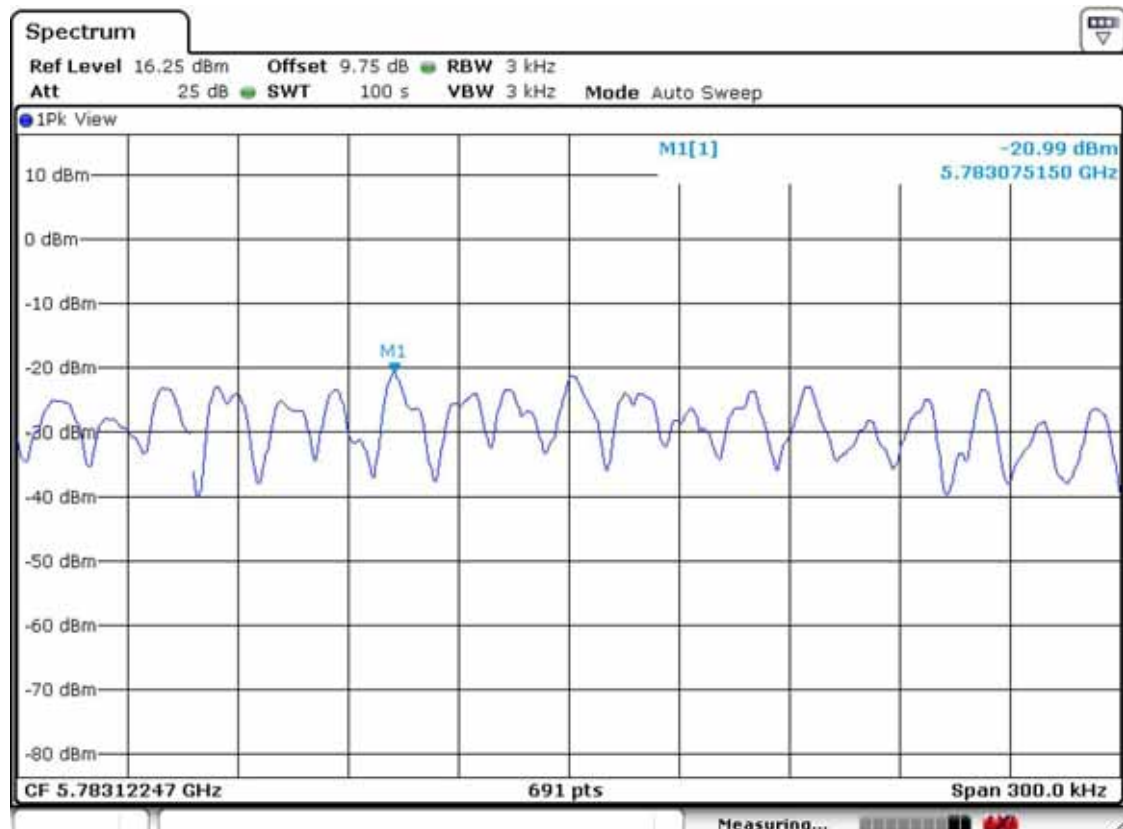


802.11an_20MHz Power Density Measurement

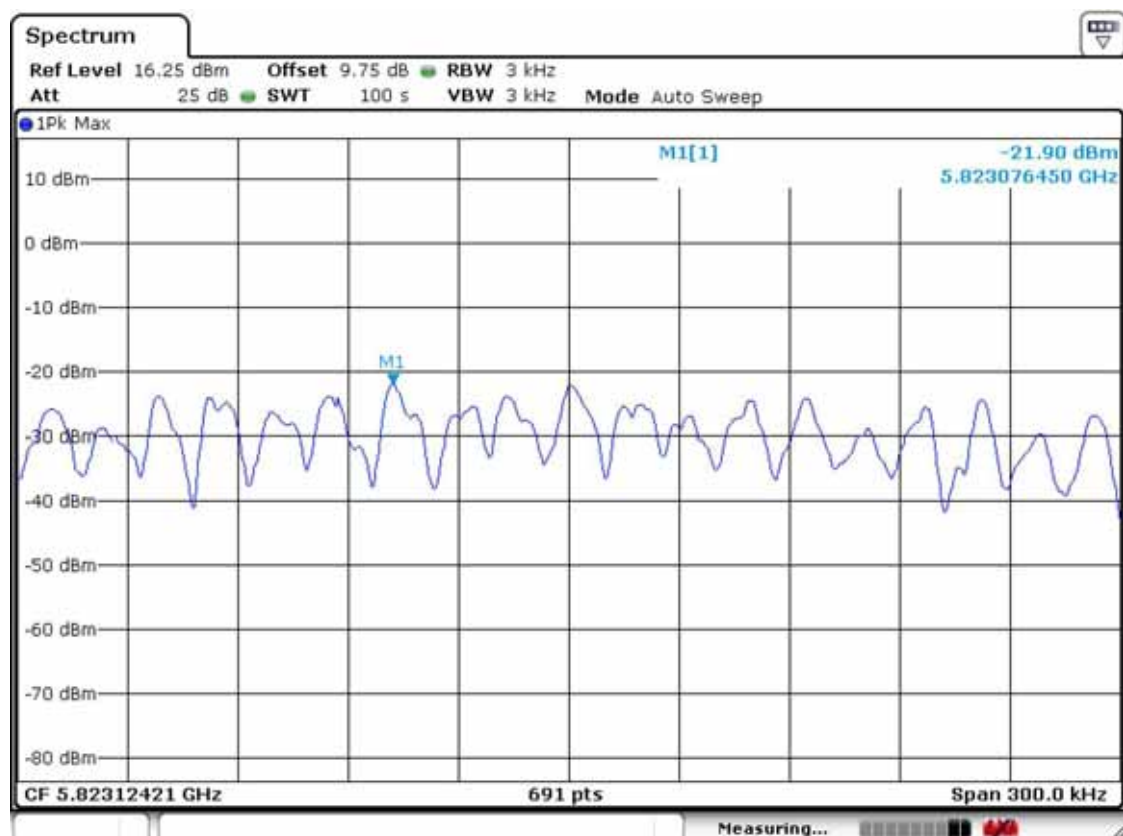
CH 149



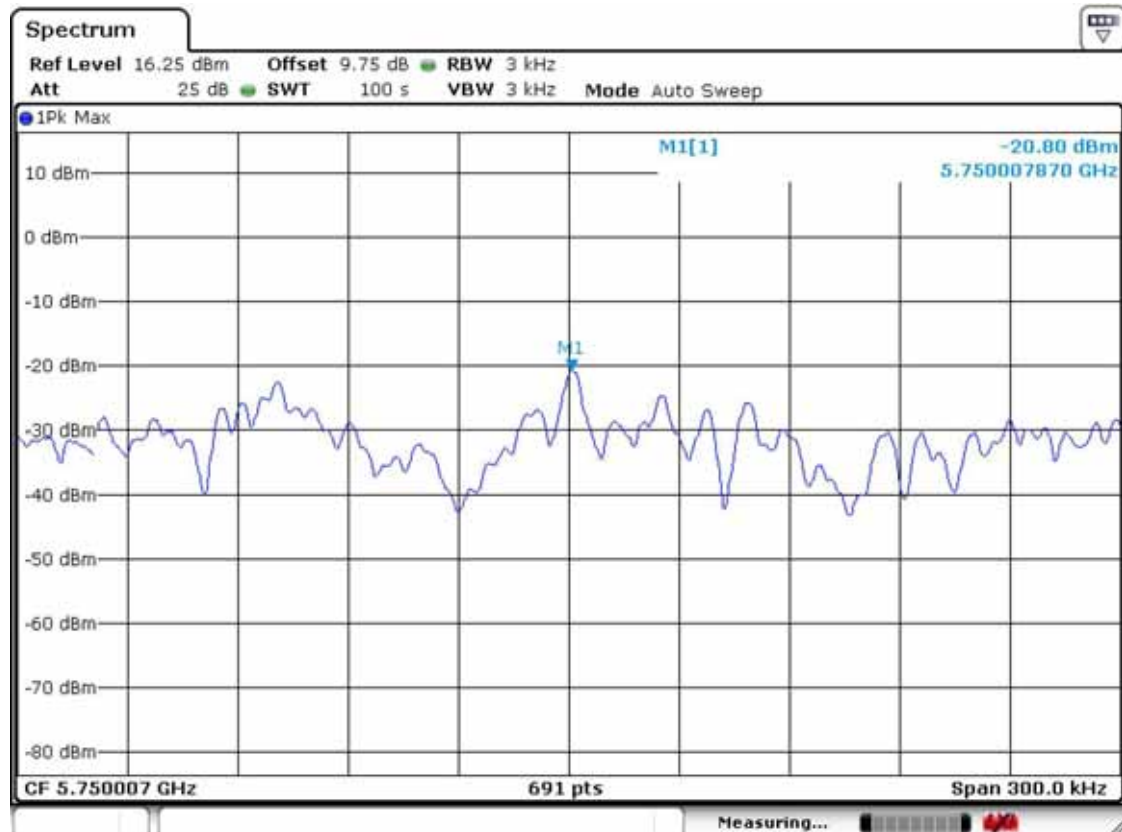
CH 157



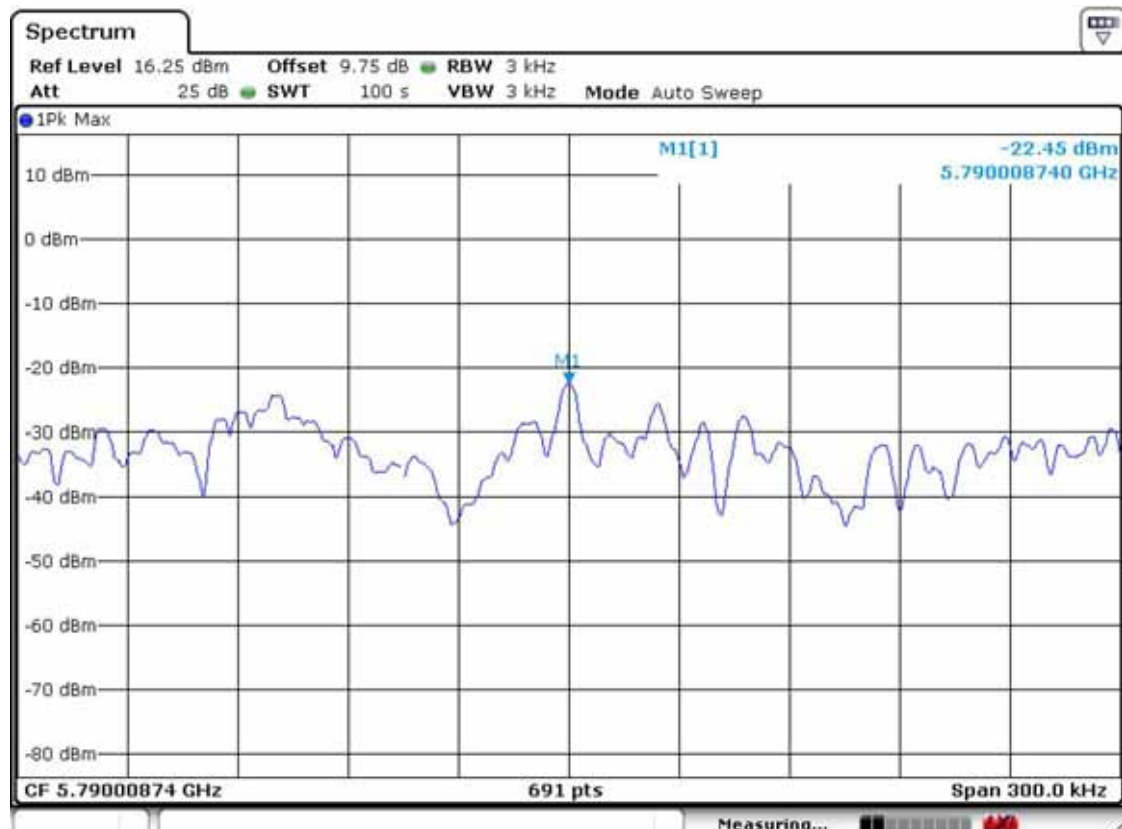
CH 165



802.11an_40MHz Power Density Measurement CH 151



CH 159



3.2.4 Band - edge

Procedure:

The bandwidth at 20dB down from the highest inband spectral density is 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 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 = 40 MHz

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data: Complies

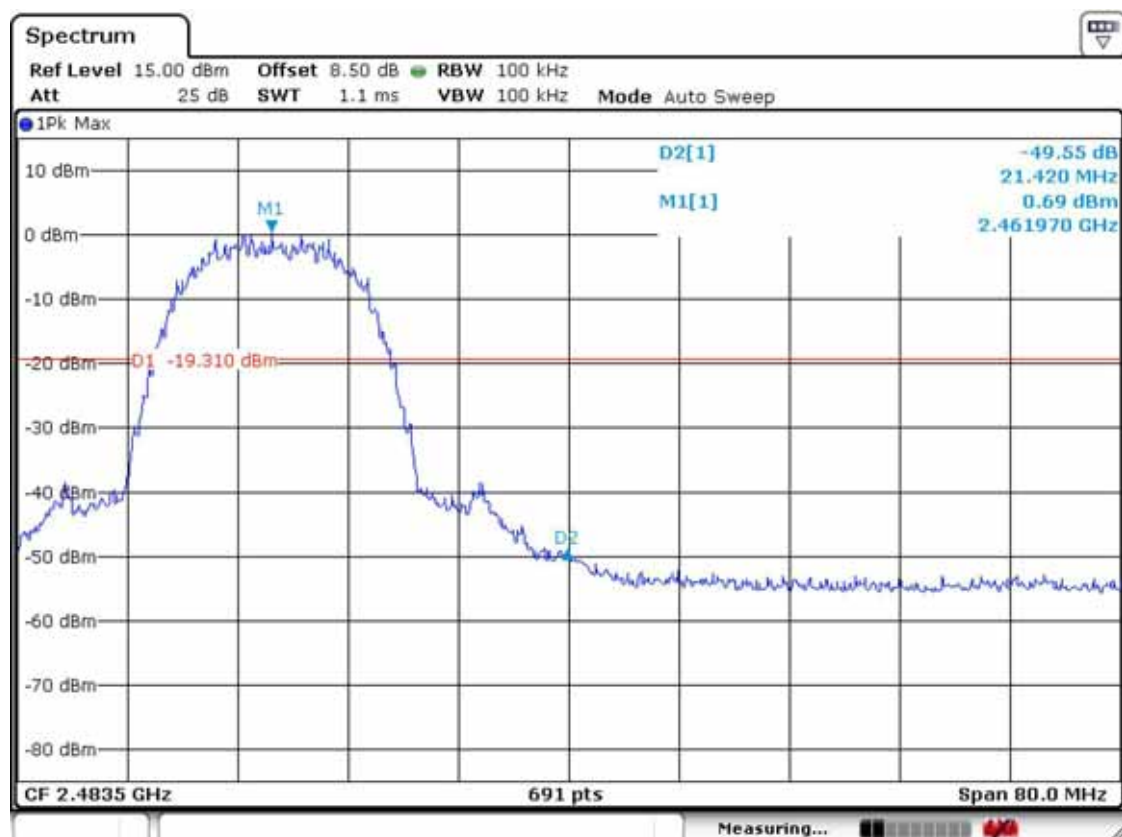
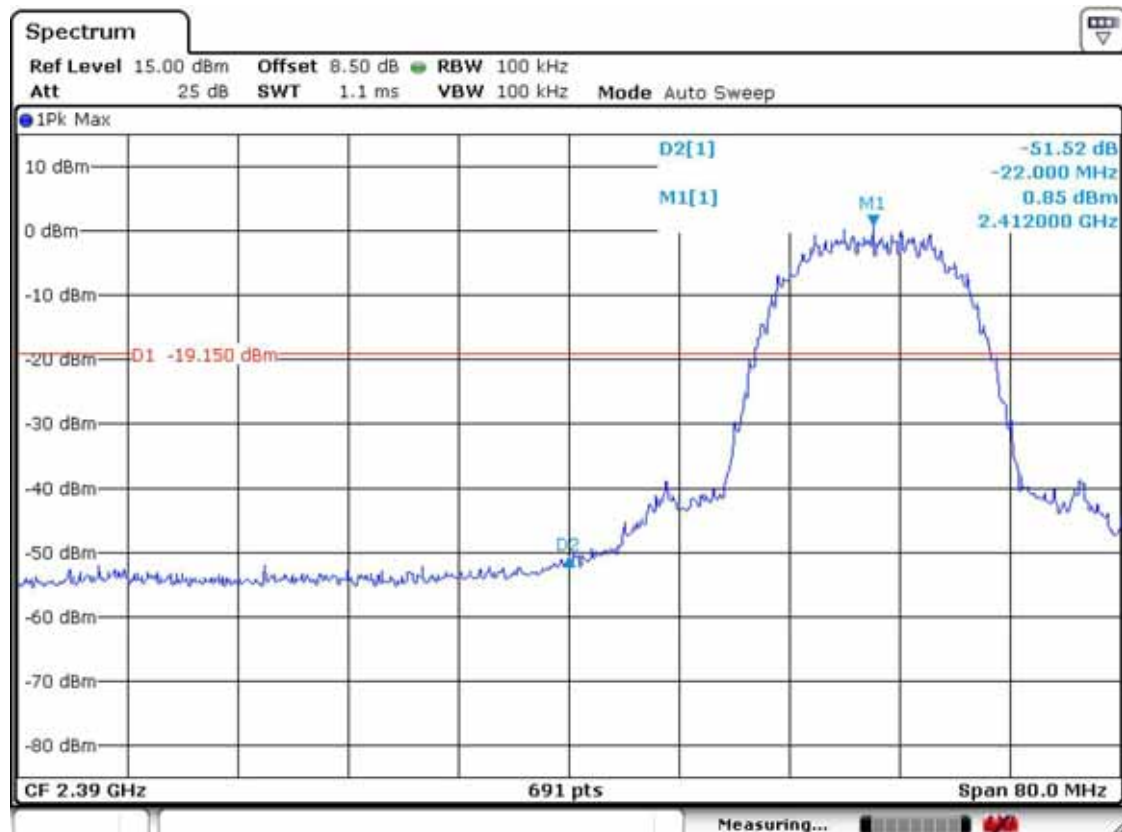
- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

Minimum Standard:	> 20 dBc
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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

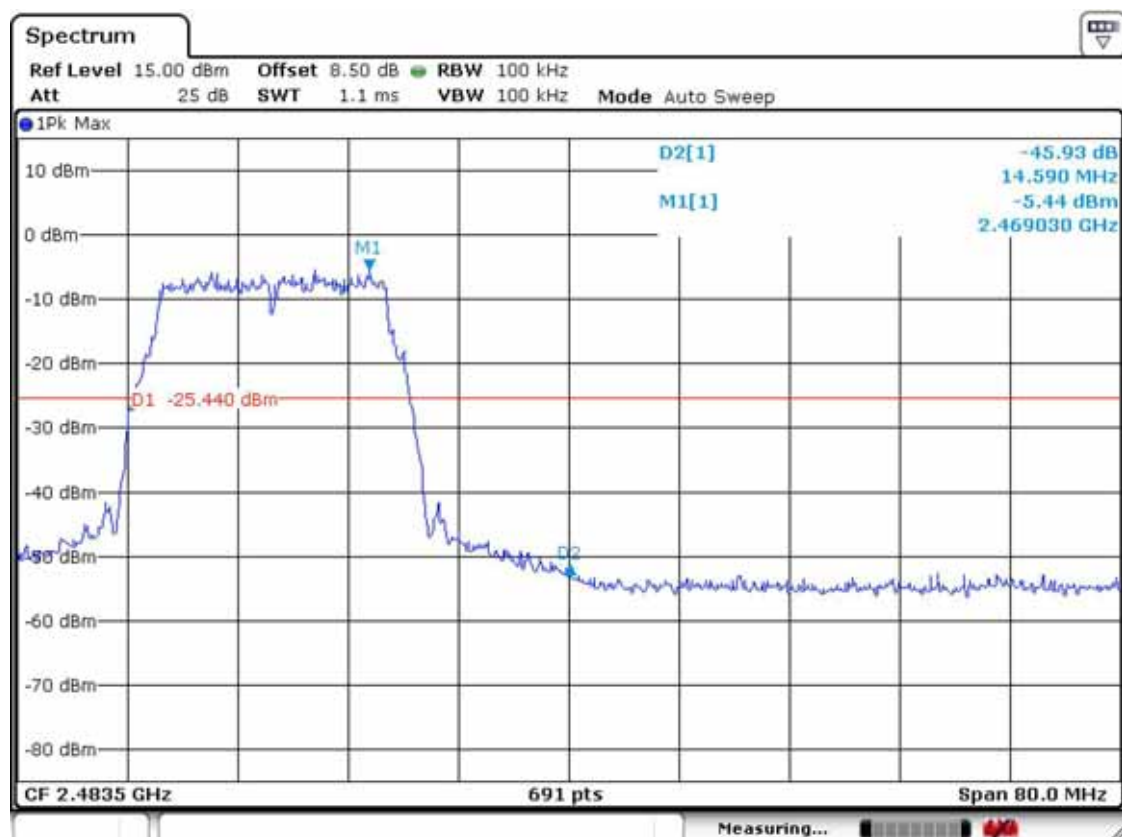
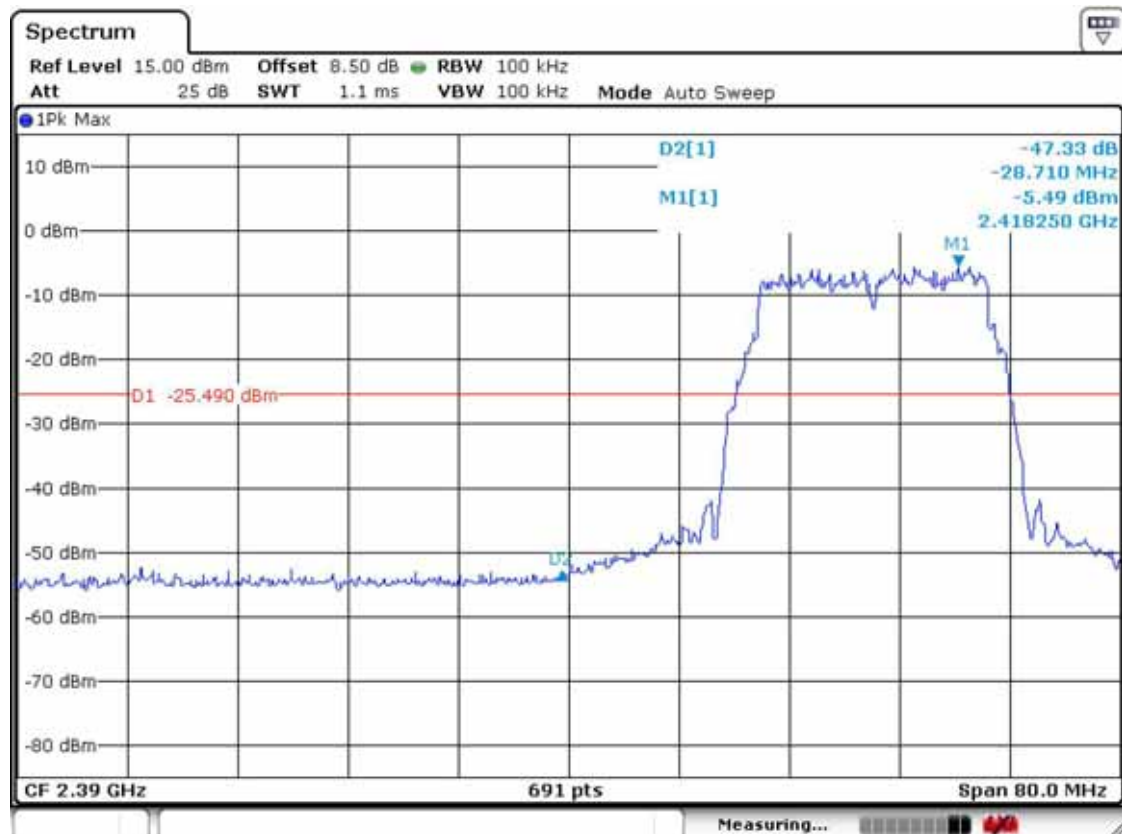
Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2390.0	40.1	52.2	V	25.4	37.1	4.0	54.0	74.0	32.3	44.4	21.7	29.6

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

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2483.8	45.3	58.5	V	25.4	37.1	4.0	54.0	74.0	37.6	50.7	16.4	23.3

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

802.11g Band-edge : Conducted Measurements



Band-edges in the restricted band 2310-2390 MHz measurement

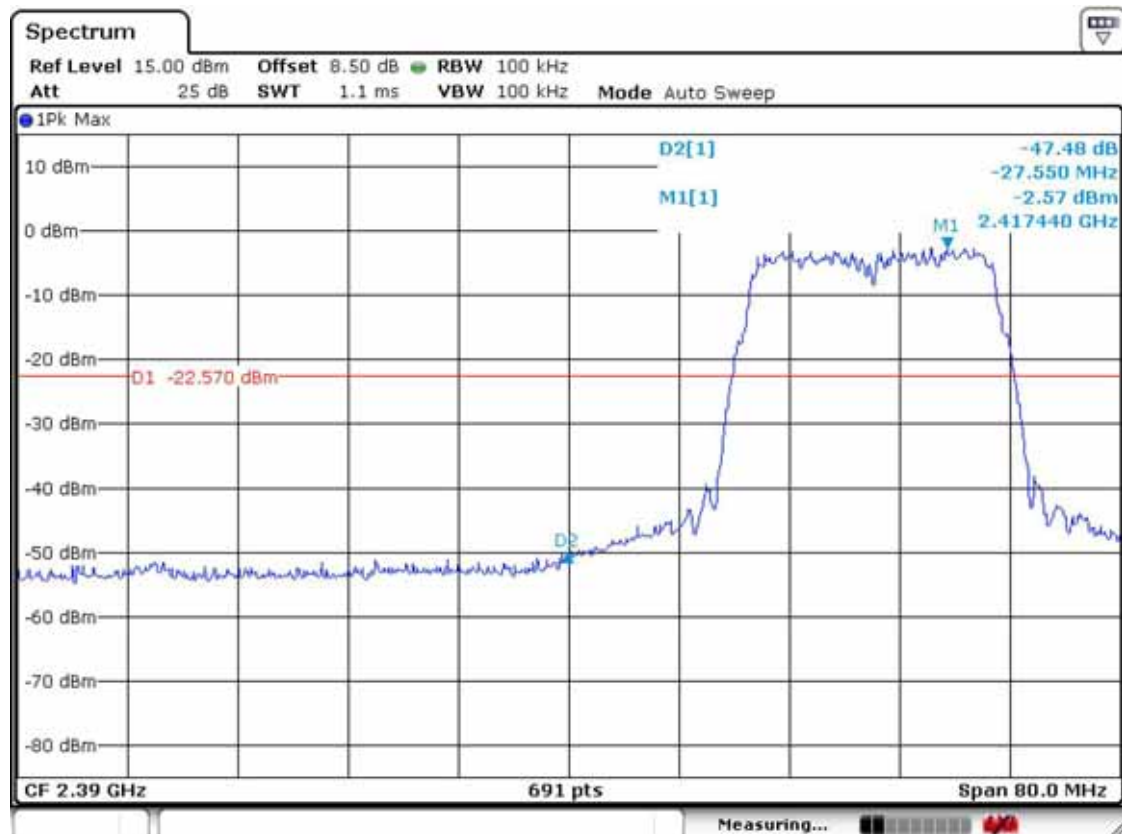
Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2389.4	41.1	55.0	V	25.4	37.1	4.0	54.0	74.0	33.3	47.3	20.7	26.8

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

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
2484.0	46.8	58.6	V	25.4	37.1	4.0	54.0	74.0	39.0	50.9	15.0	23.1

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

802.11n_20MHz Band-edge : Conducted Measurements



Band-edges in the restricted band 2310-2390 MHz measurement

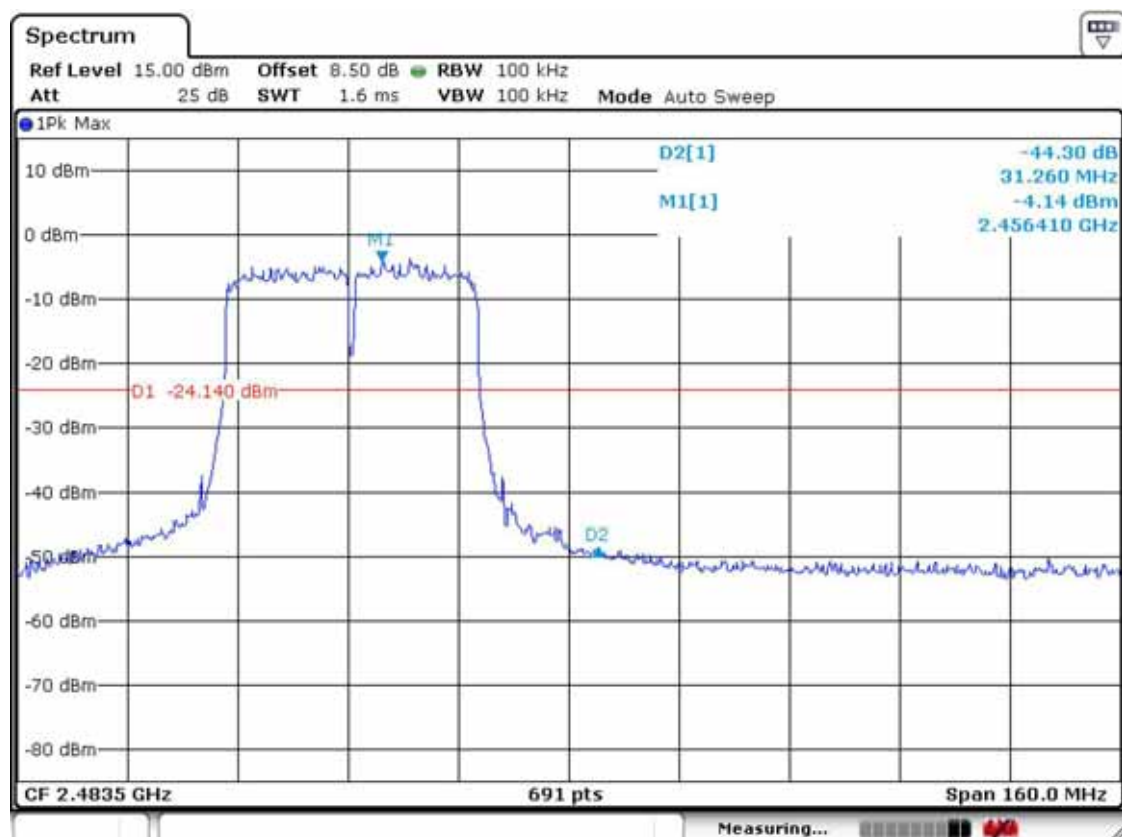
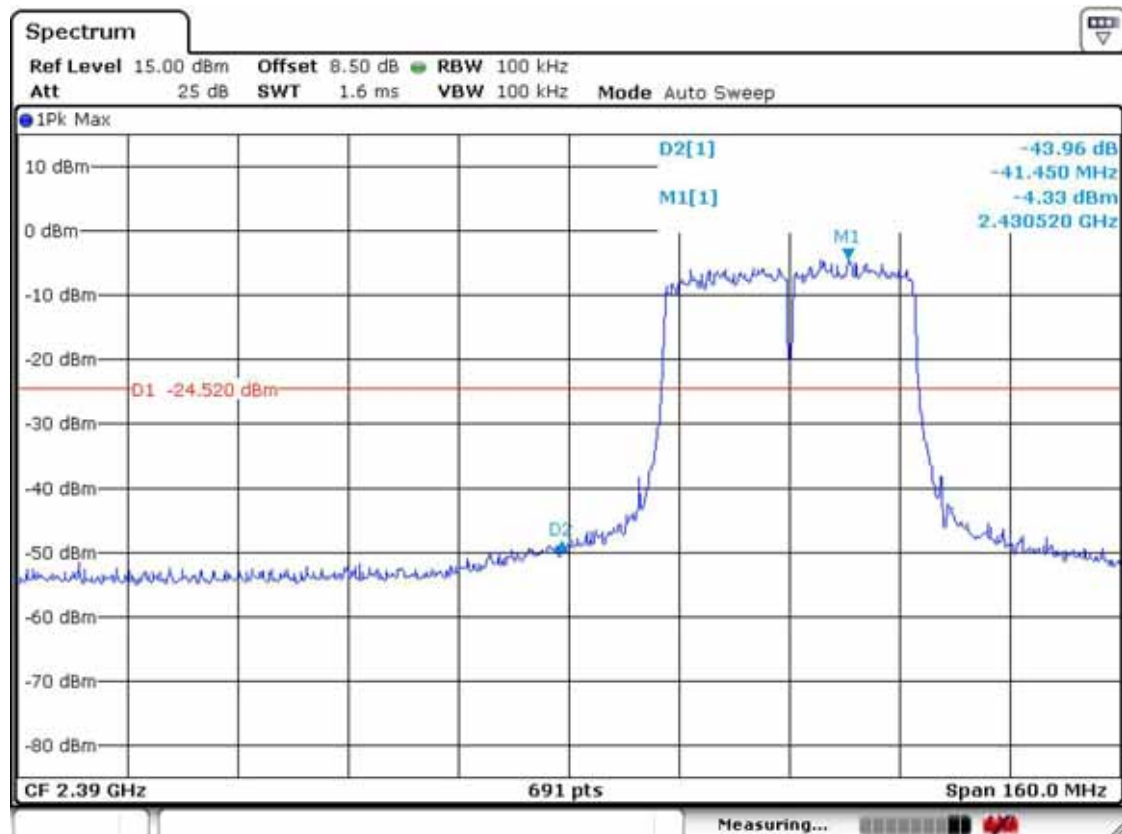
Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2389.4	45.9	59.4	V	25.4	37.1	4.0	54.0	74.0	38.1	51.7	15.9	22.3

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

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2484.0	45.4	57.8	H	25.4	37.1	4.0	54.0	74.0	37.6	50.1	16.4	23.9

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

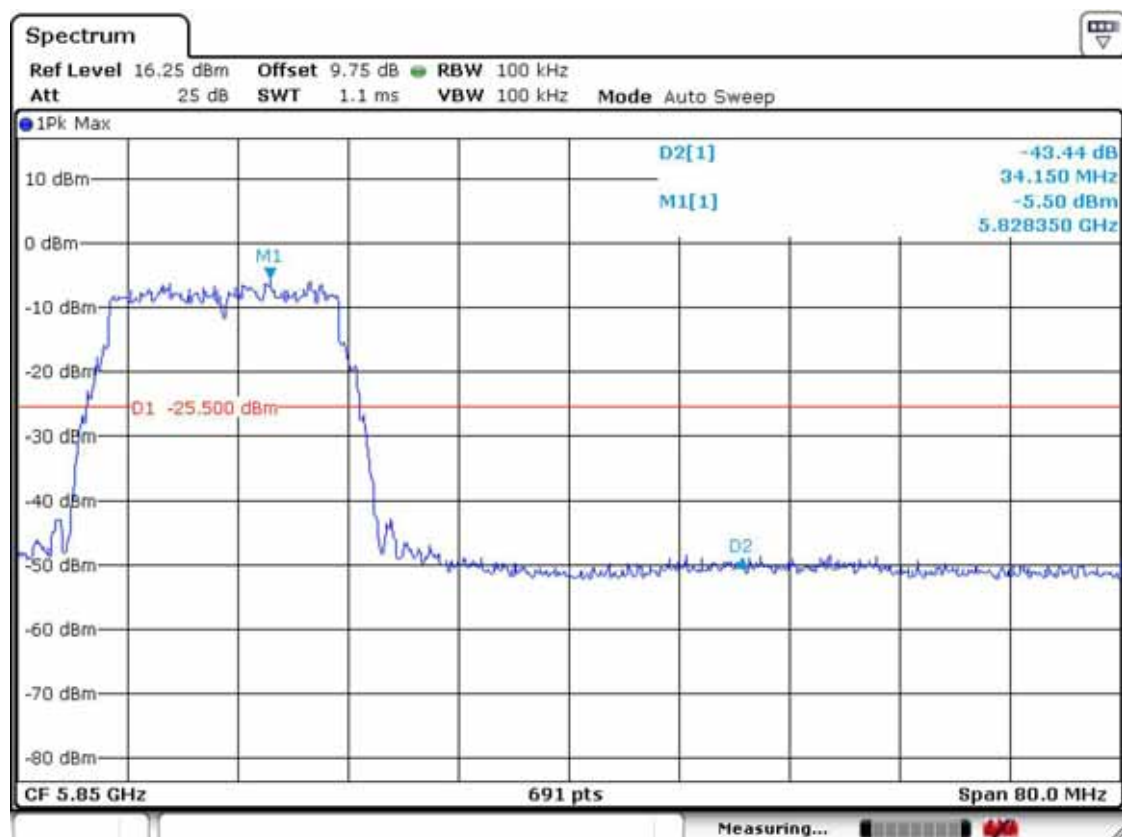
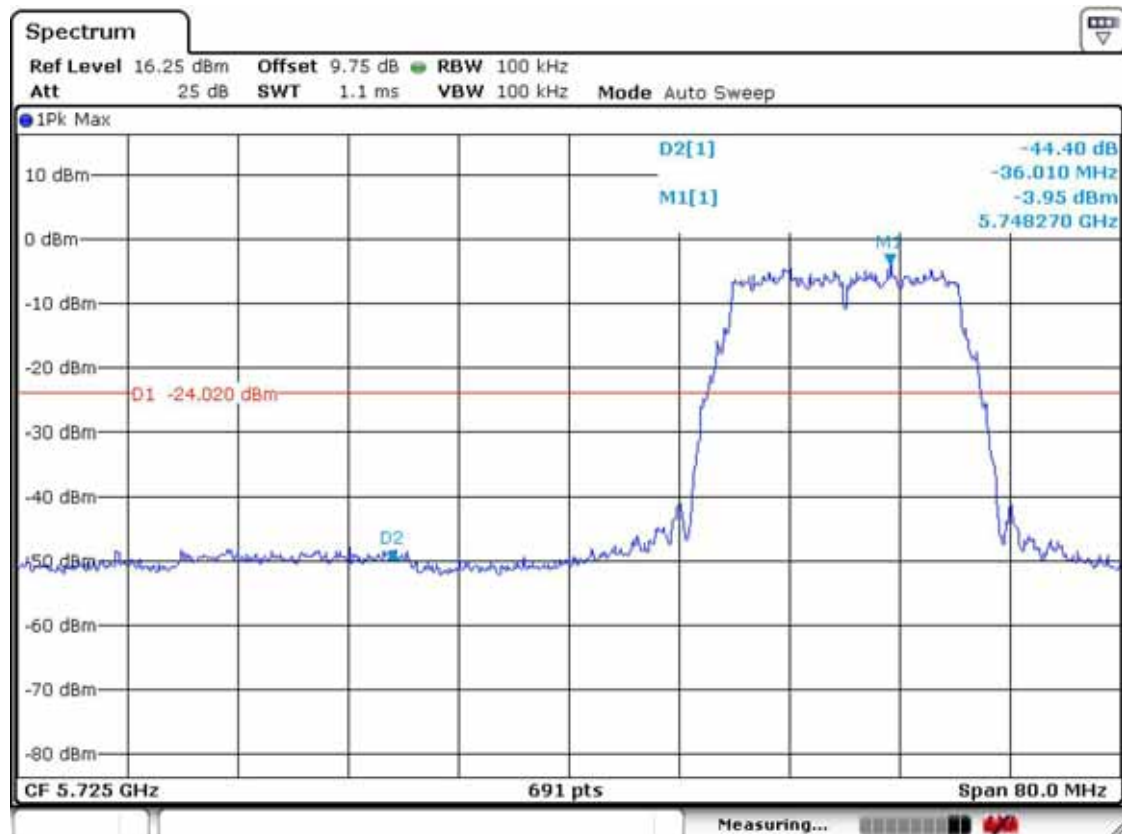
Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2389.9	38.5	50.8	V	25.4	37.1	4.0	54.0	74.0	30.8	43.0	23.2	31.0

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

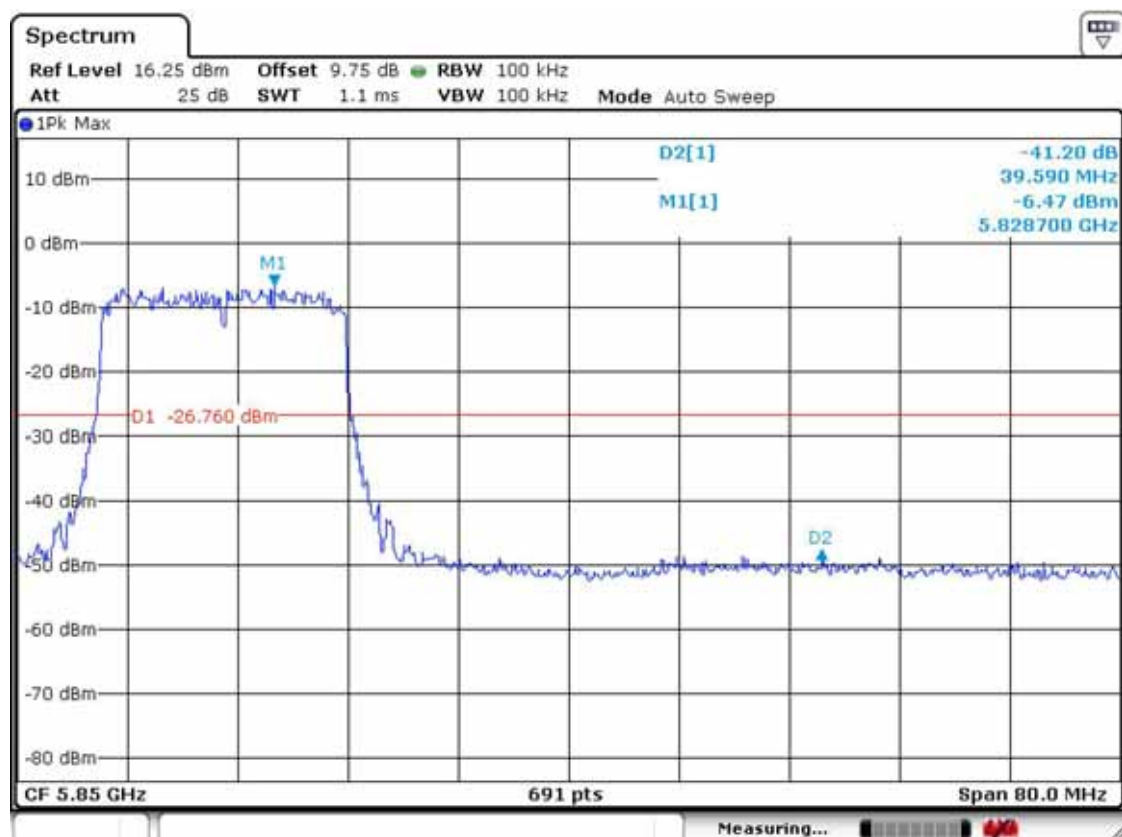
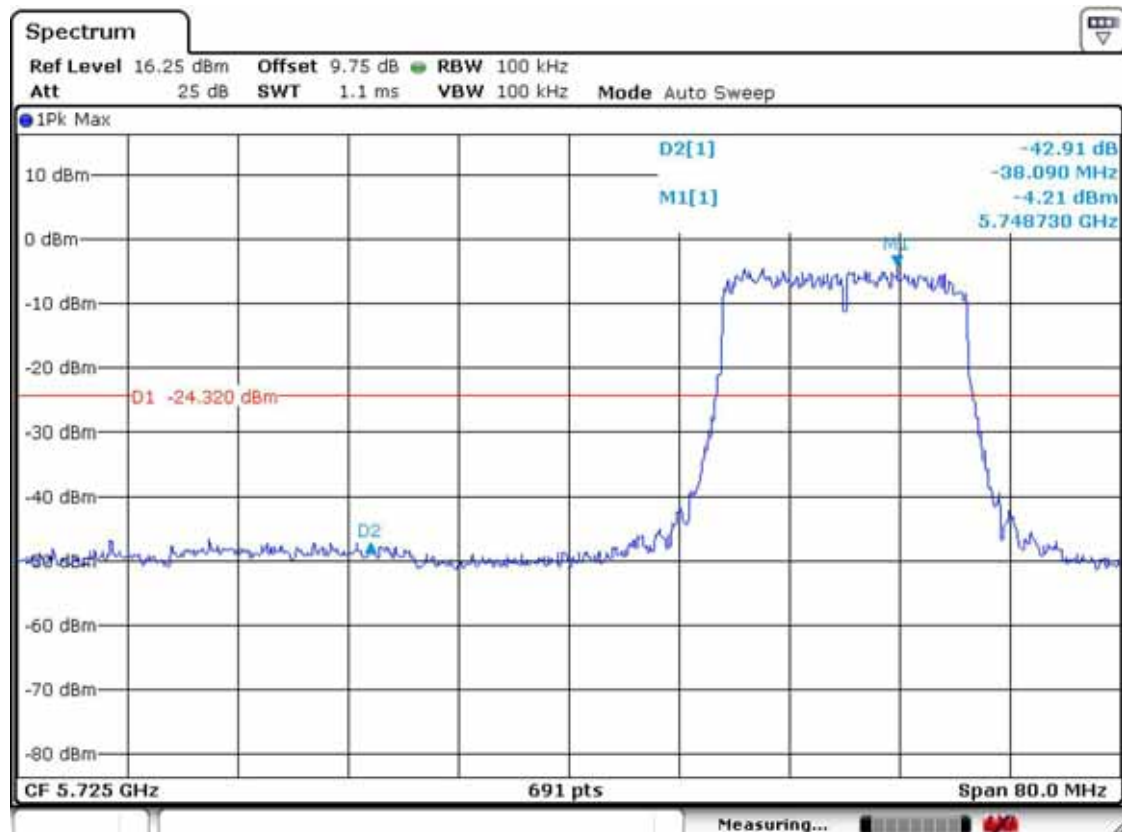
Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV	Peak		Antenna	Amp. Gain	Cable	AV	Peak	AV	Peak	AV	Peak
2483.7	32.8	43.7	H	25.4	37.1	4.0	54.0	74.0	25.1	36.0	28.9	38.1

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

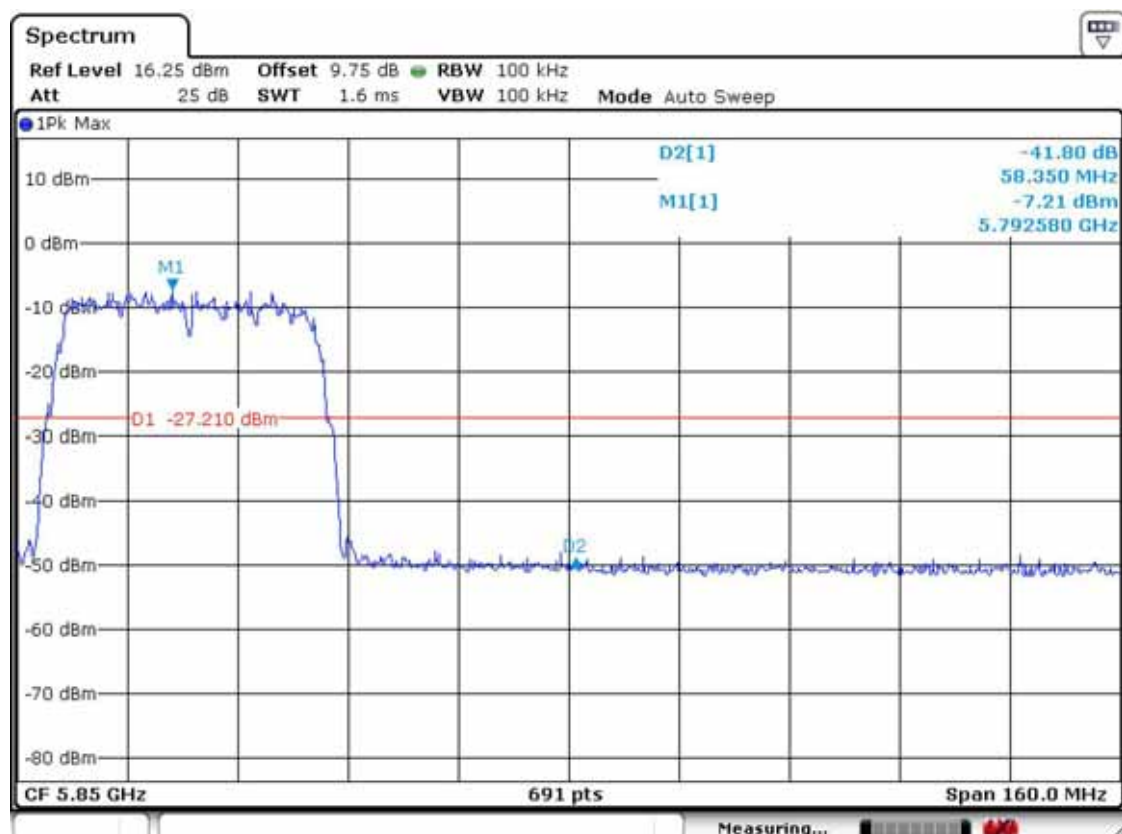
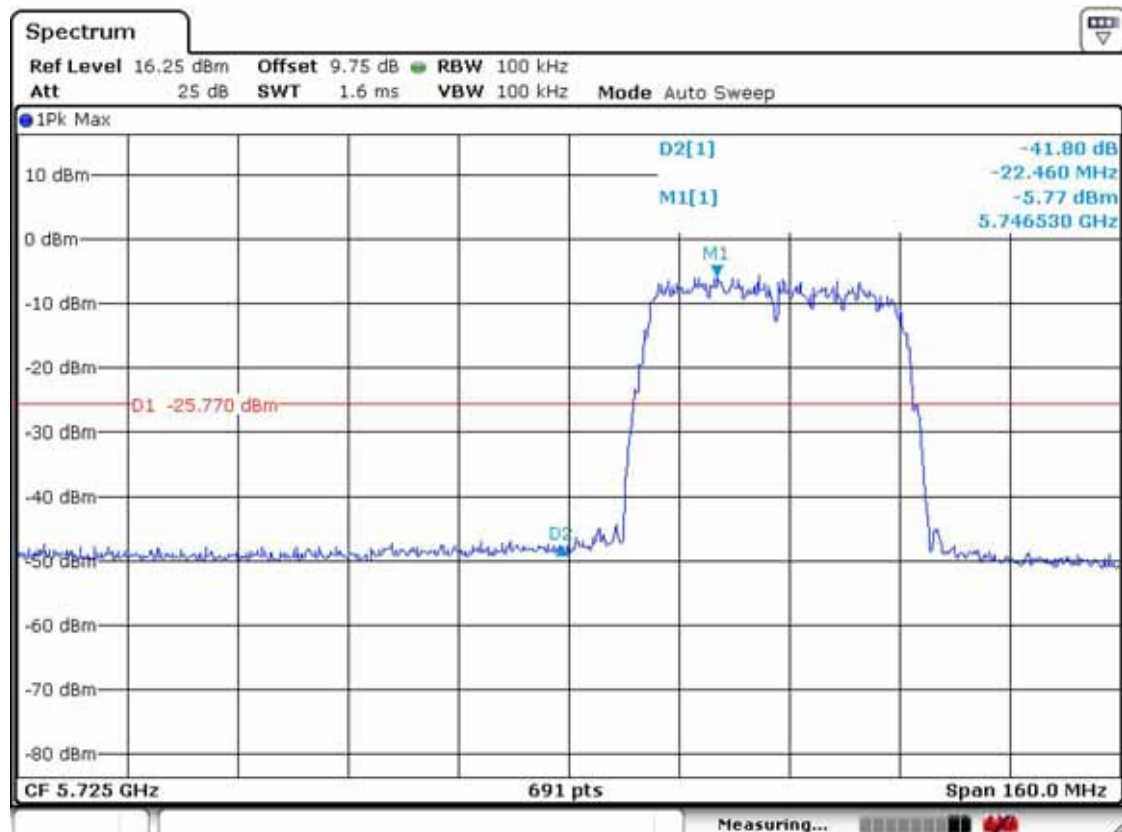
802.11a Band-edge : Conducted Measurements



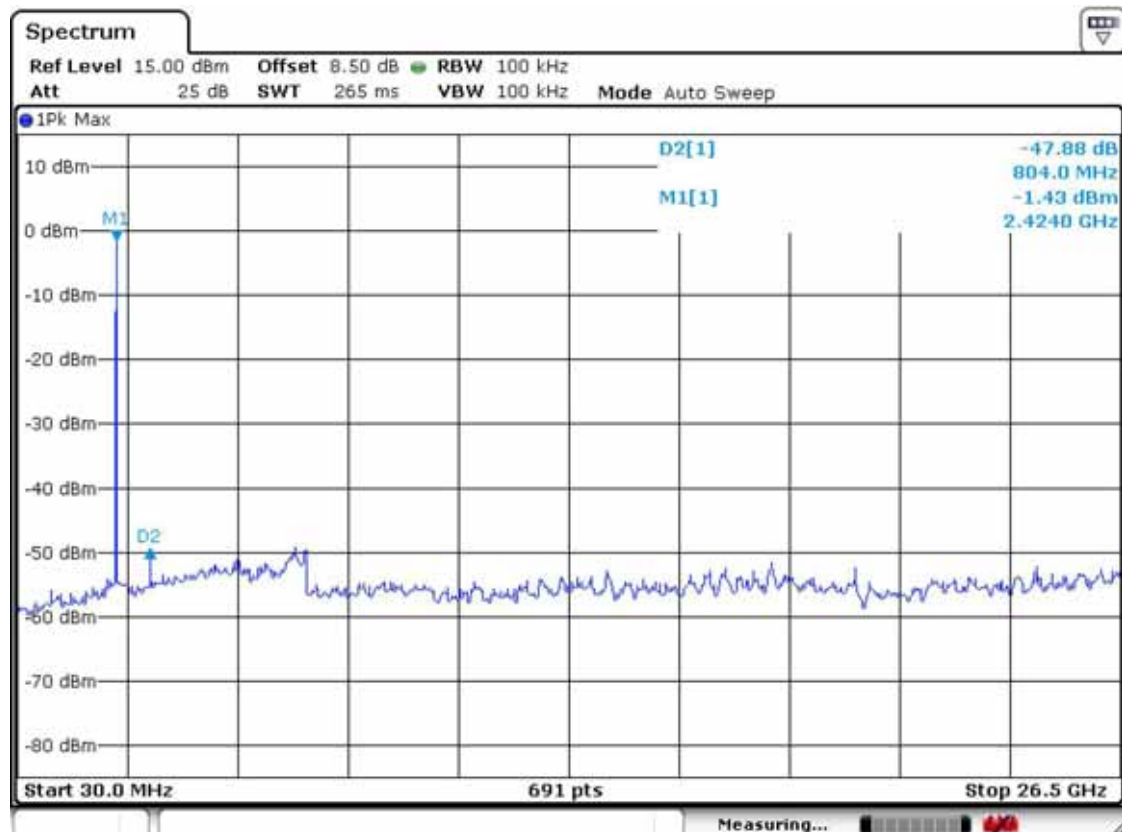
802.11an_20MHz Band-edge : Conducted Measurements



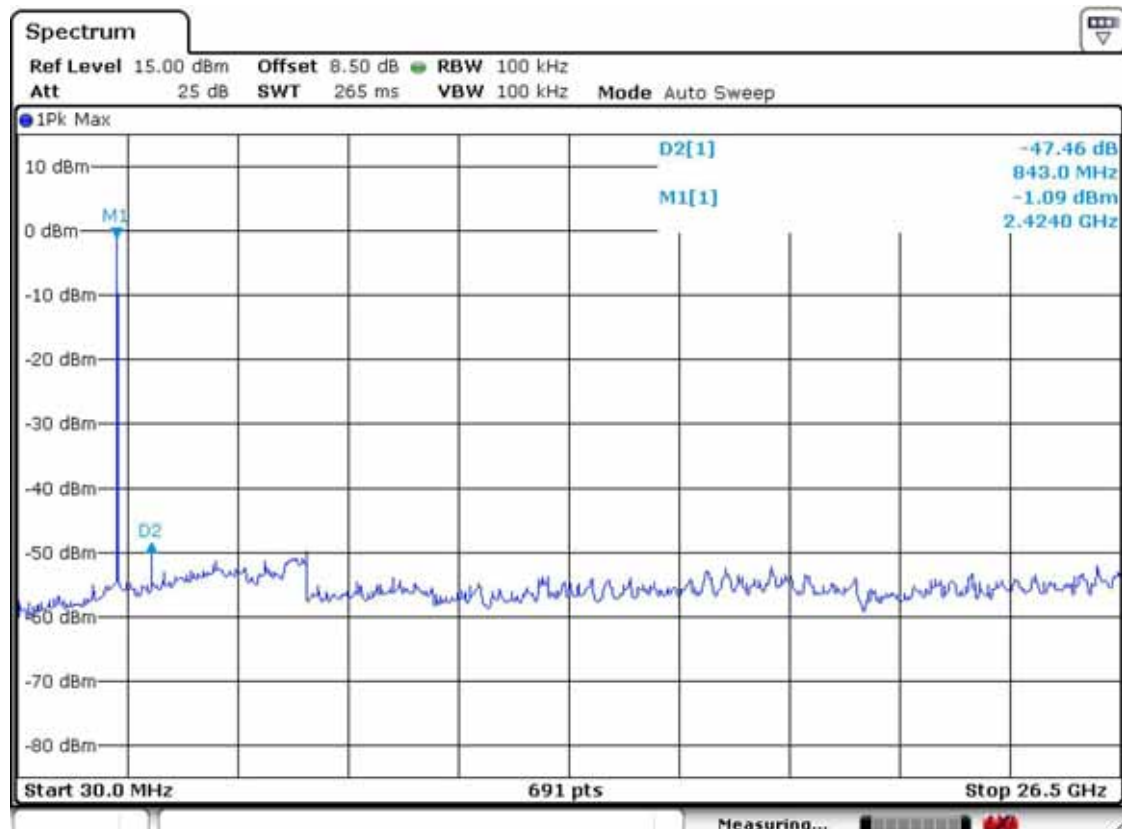
802.11an_40MHz Band-edge : Conducted Measurements



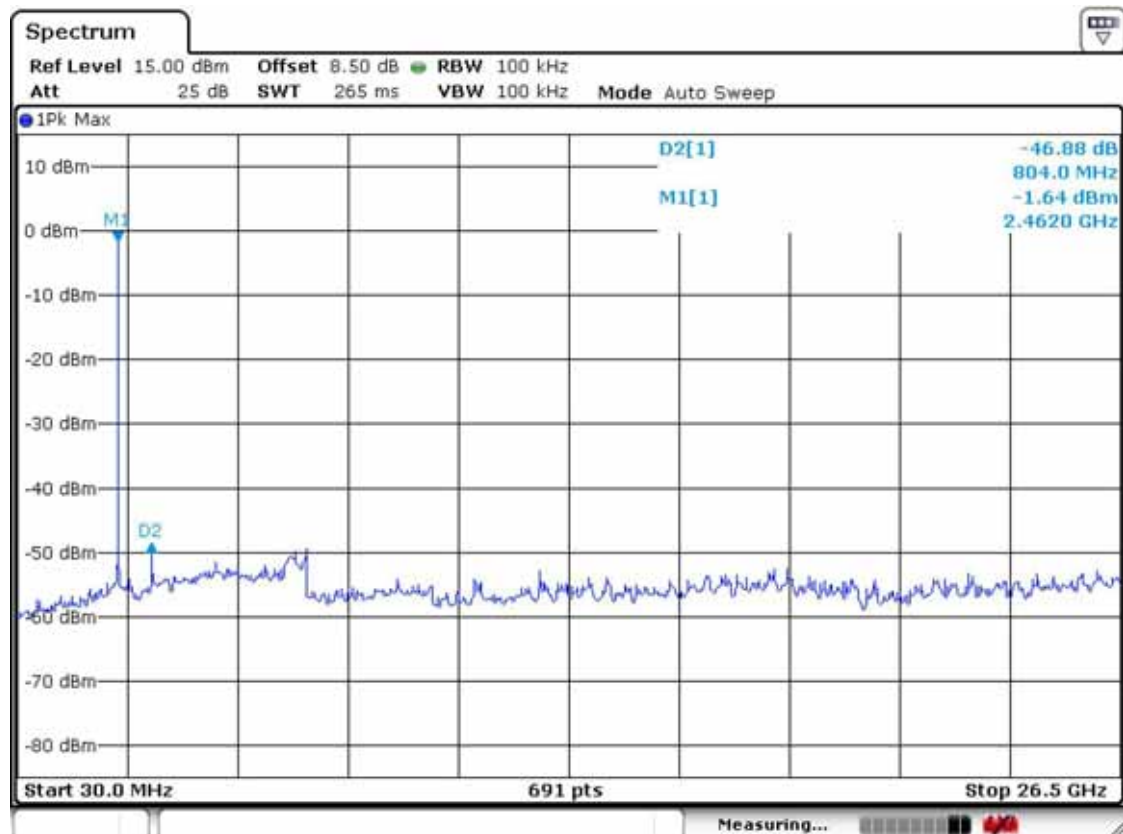
802.11b – channel 1

Frequency Range = 30 MHz ~ 10th harmonic.

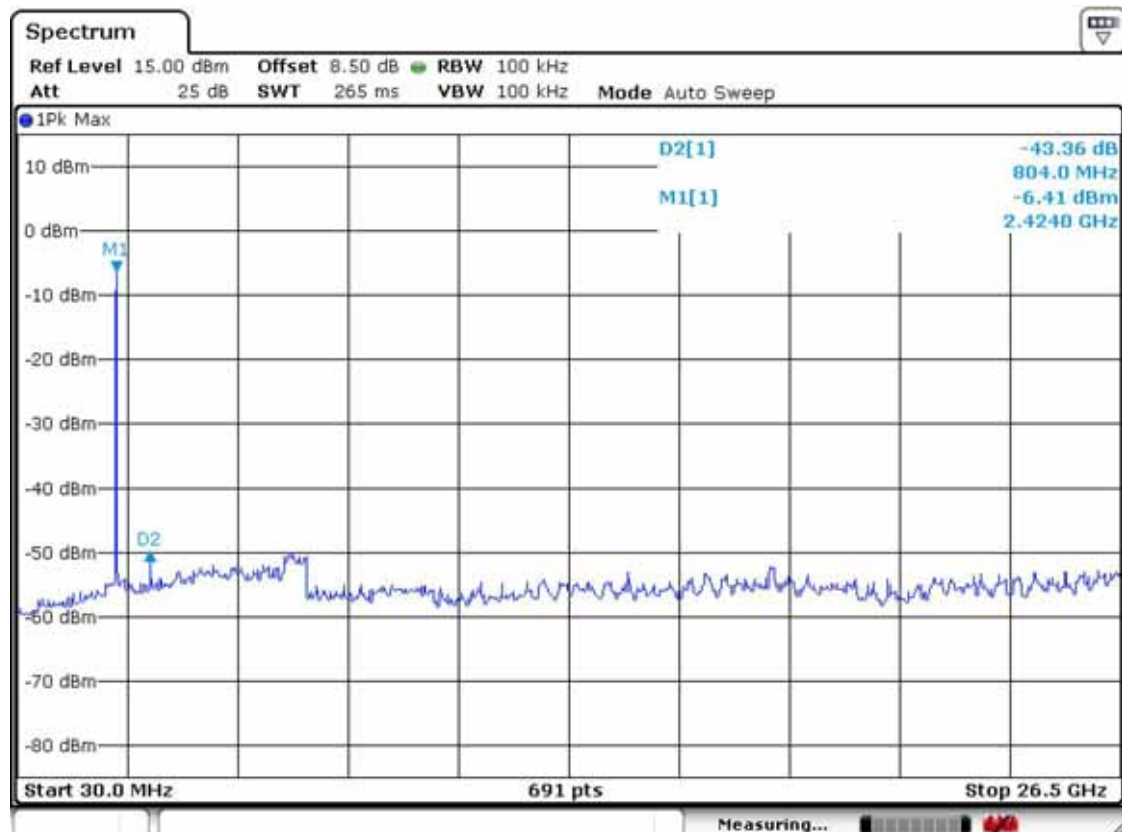
802.11b – channel 6

Frequency Range = 30 MHz ~ 10th harmonic.

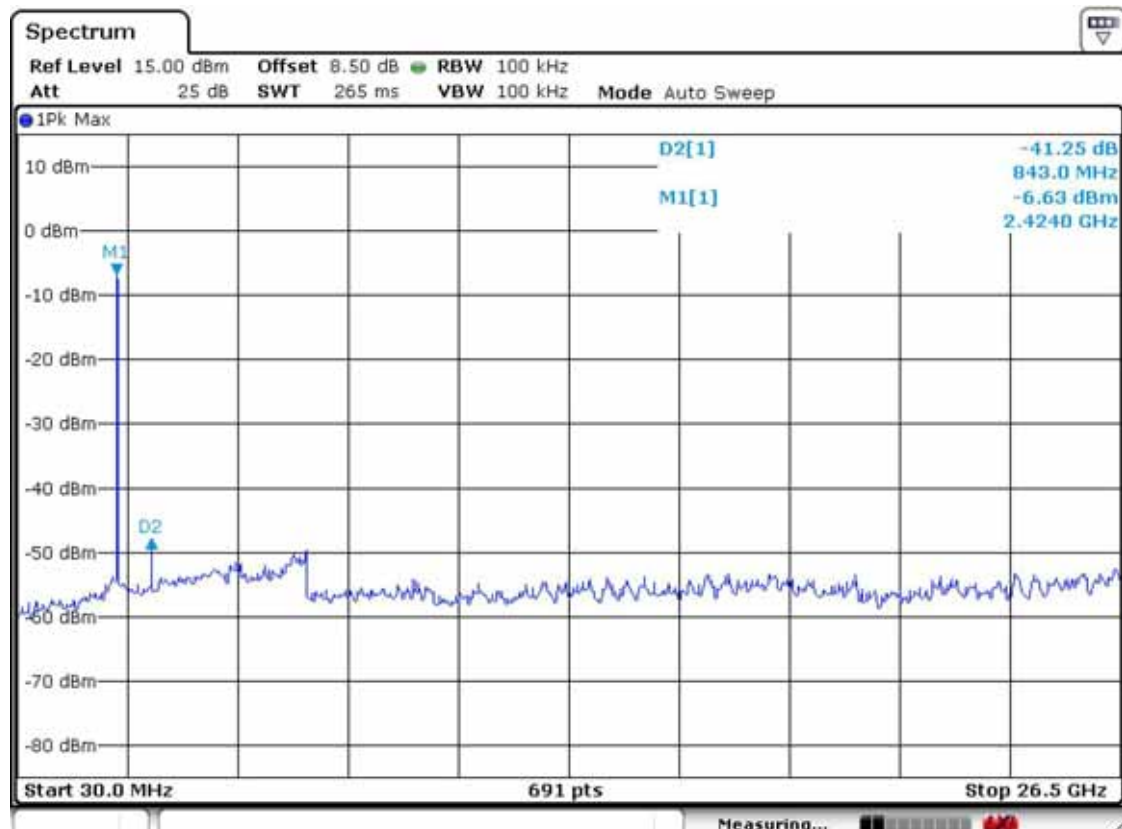
802.11b –channel 11
Frequency Range = 30 MHz ~ 10th harmonic.



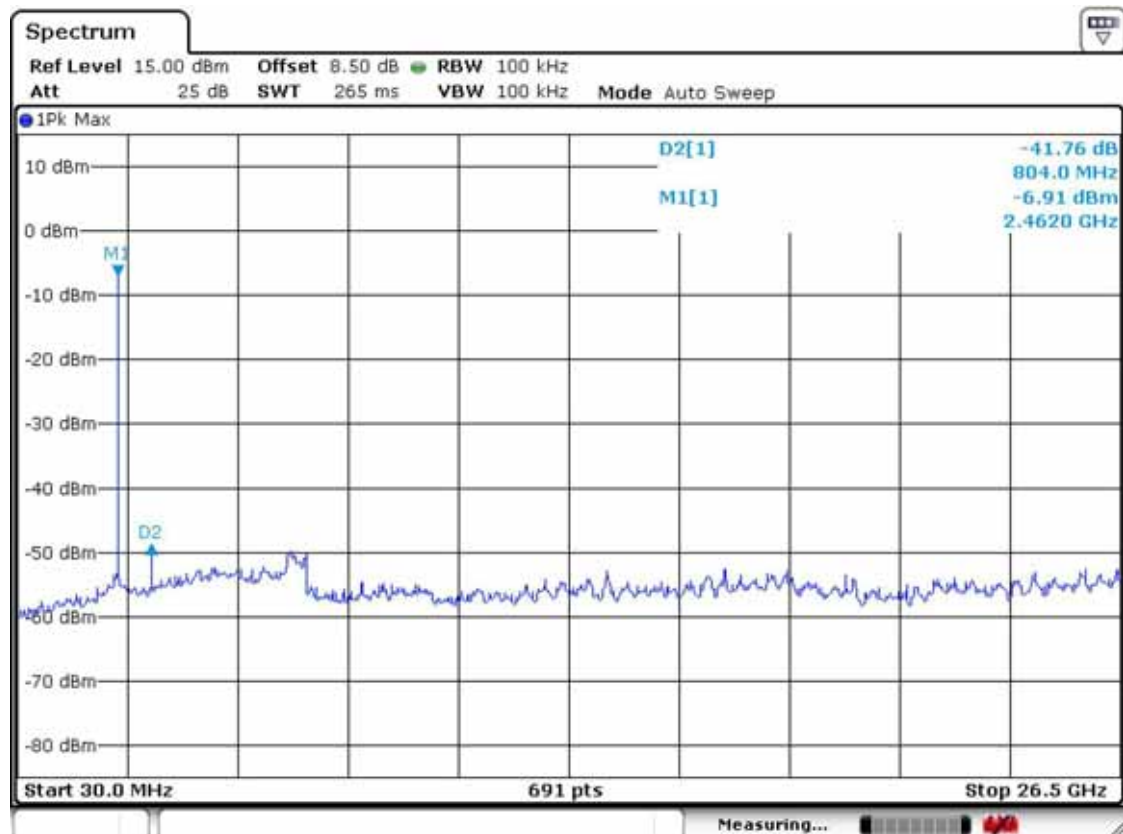
802.11g – channel 1
Frequency Range = 30 MHz ~ 10th harmonic.



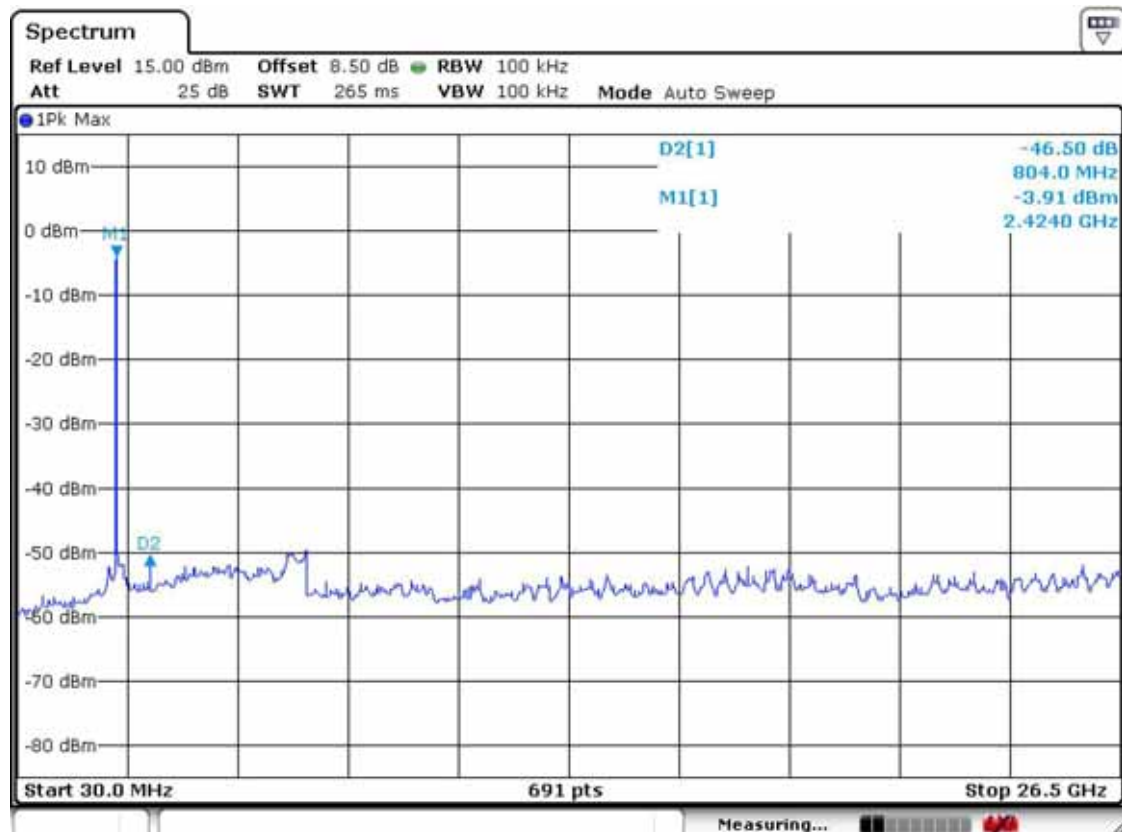
802.11g – channel 6
Frequency Range = 30 MHz ~ 10th harmonic.



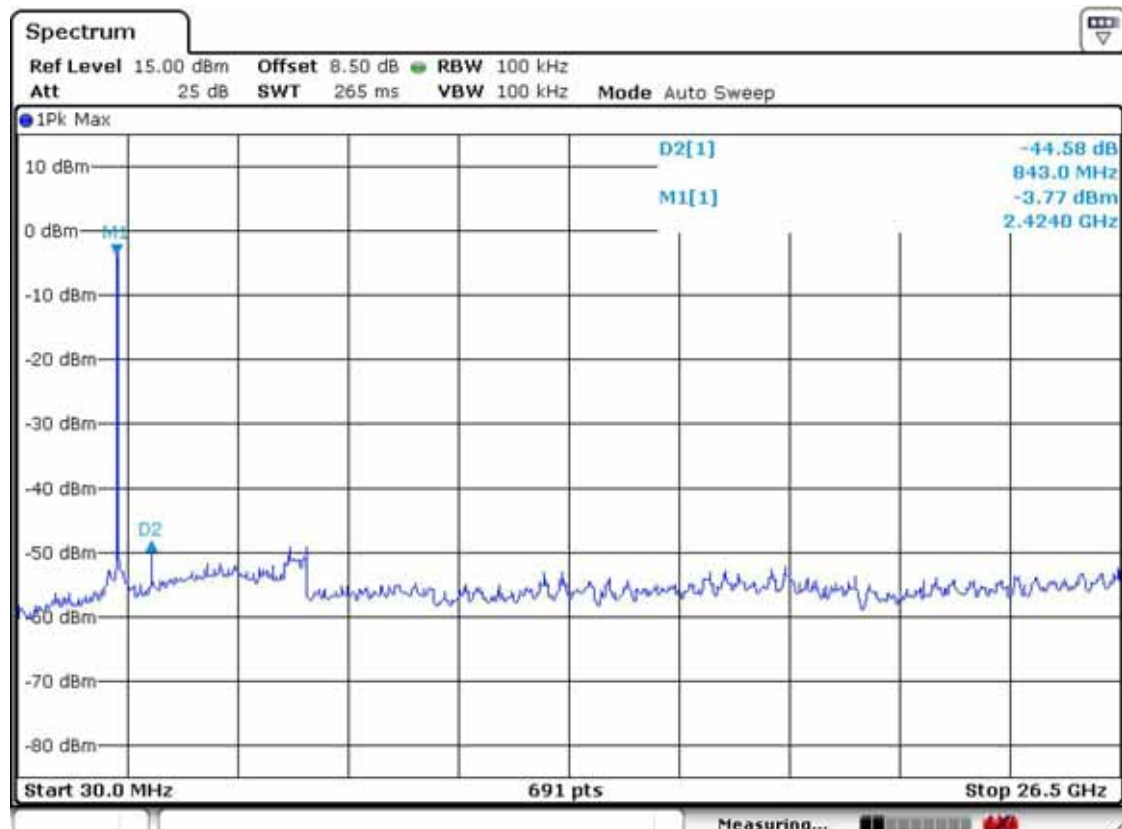
802.11g –channel 11
Frequency Range = 30 MHz ~ 10th harmonic.



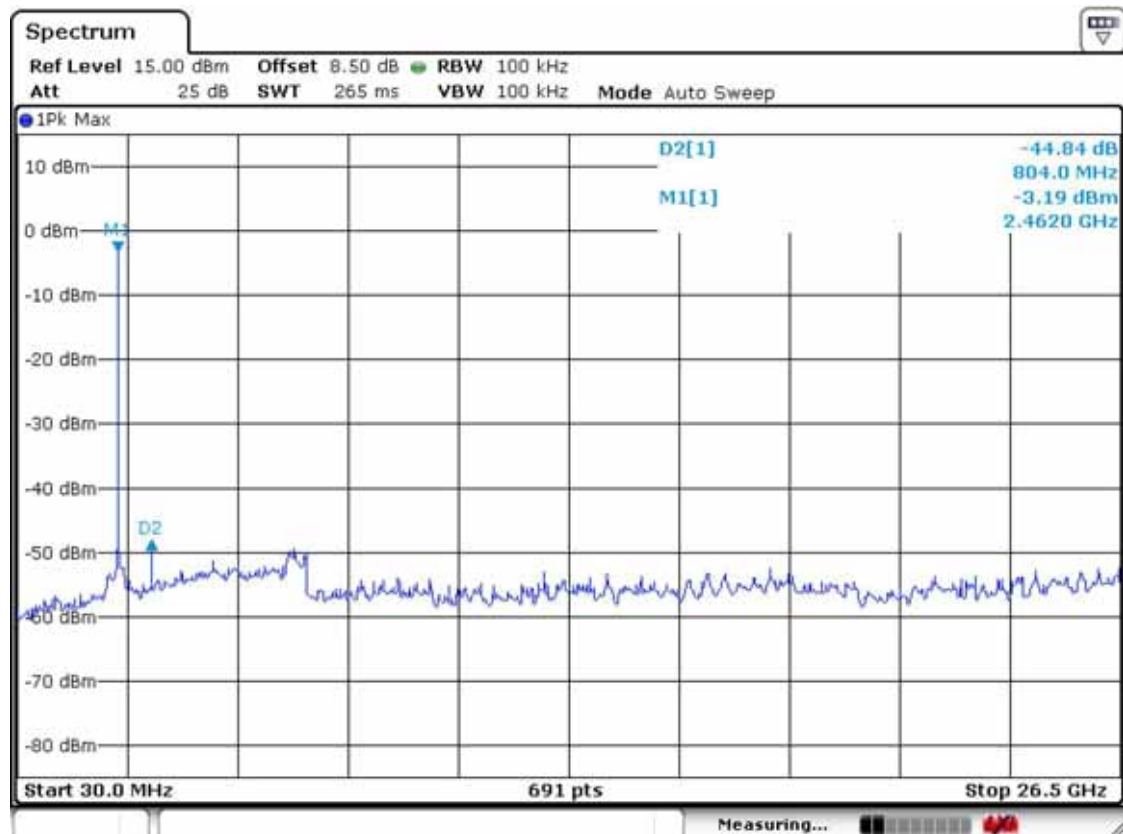
802.11n_20MHz – channel 1

Frequency Range = 30 MHz ~ 10th harmonic.

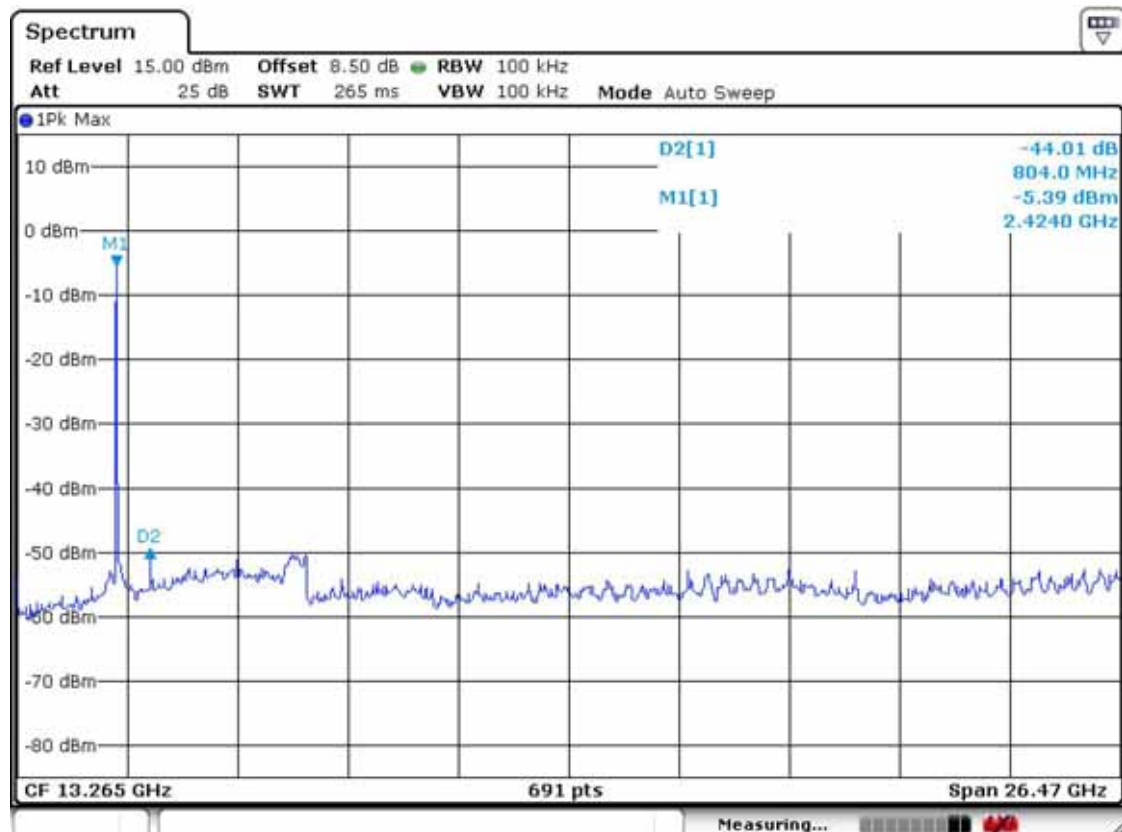
802.11n_20MHz – channel 6

Frequency Range = 30 MHz ~ 10th harmonic.

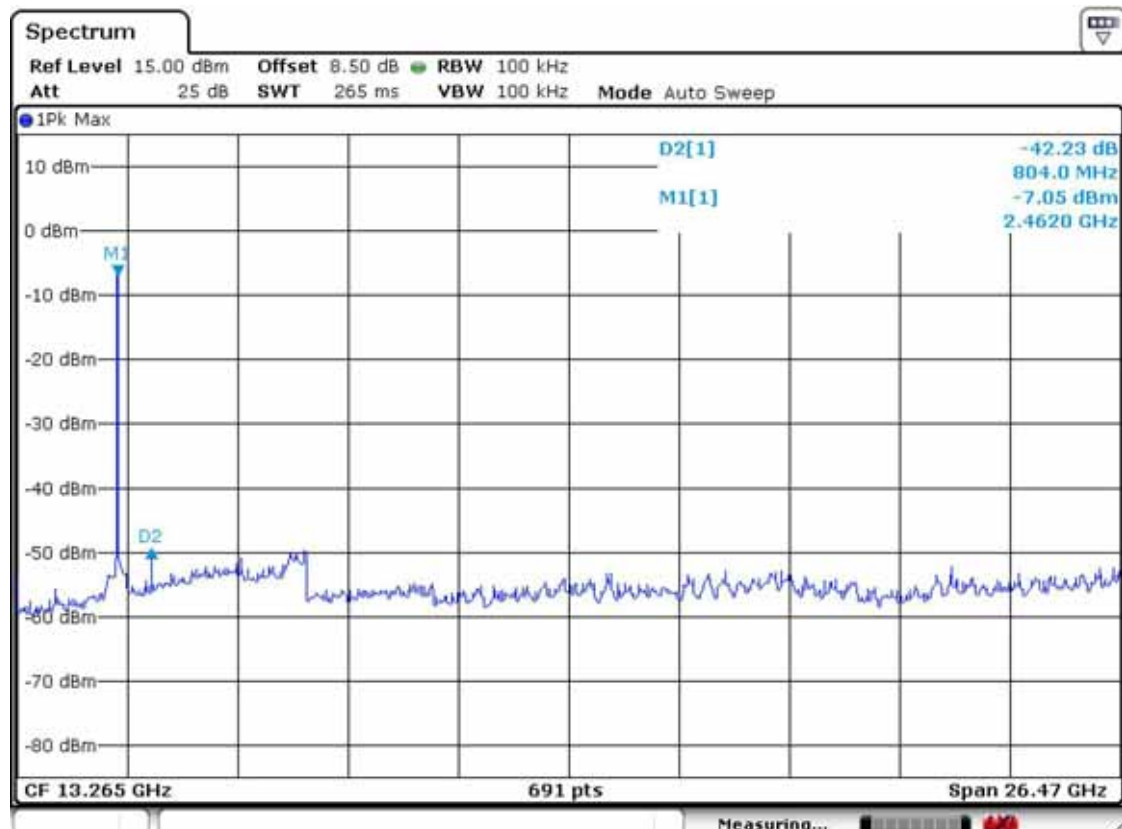
802.11n_20MHz –channel 11

Frequency Range = 30 MHz ~ 10th harmonic.

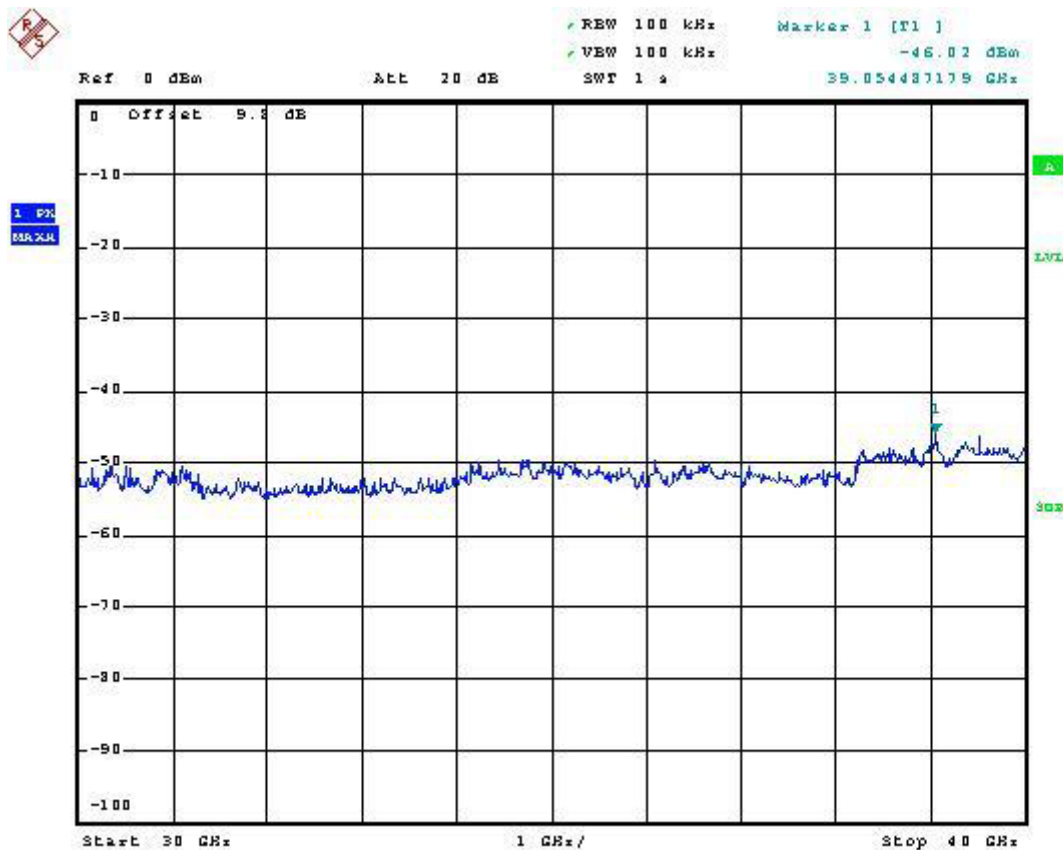
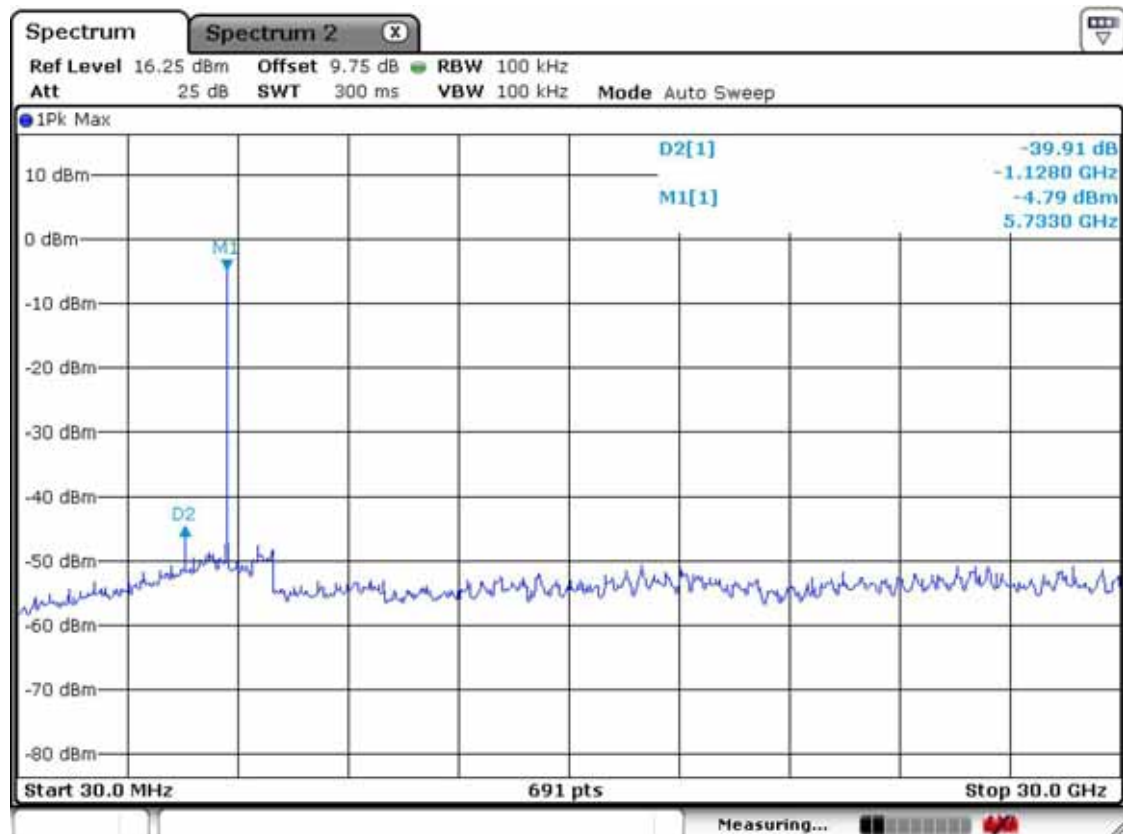
802.11n_40MHz – channel 3

Frequency Range = 30 MHz ~ 10th harmonic.

802.11n_40MHz – channel 6

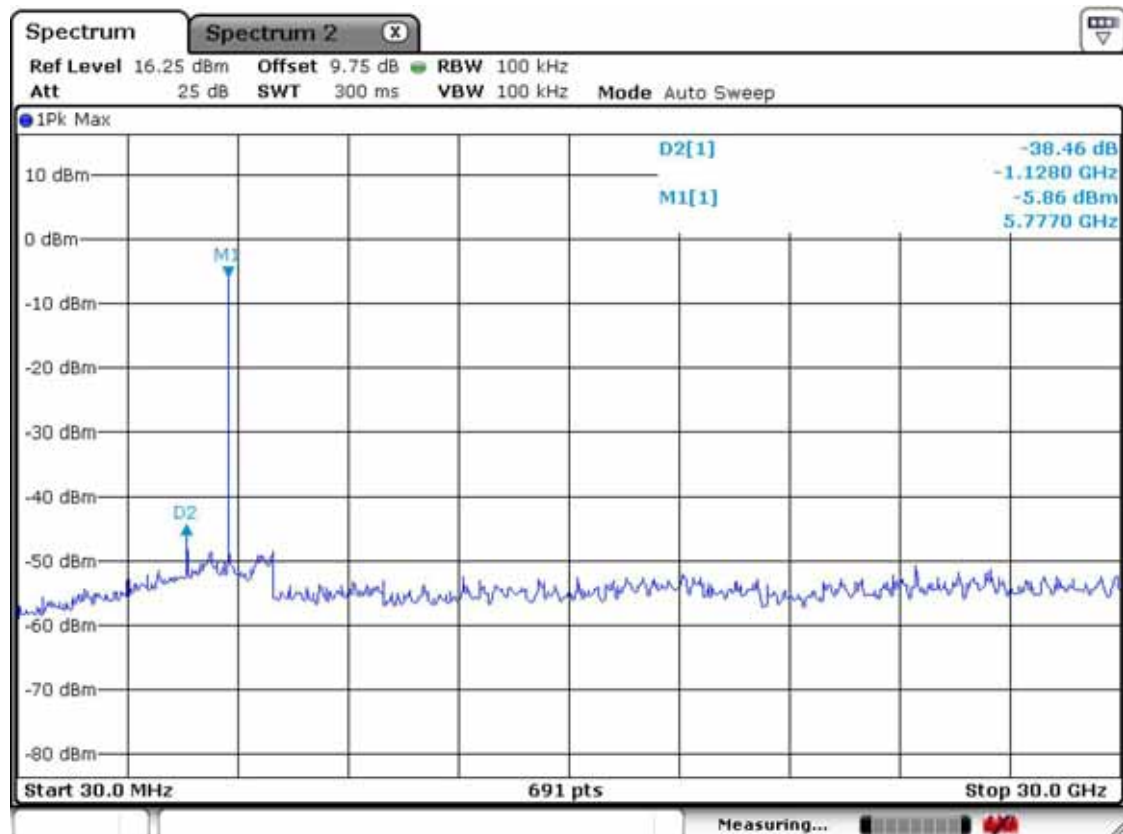
Frequency Range = 30 MHz ~ 10th harmonic.

802.11a – channel 149
Frequency Range = 30 MHz ~ 40 GHz

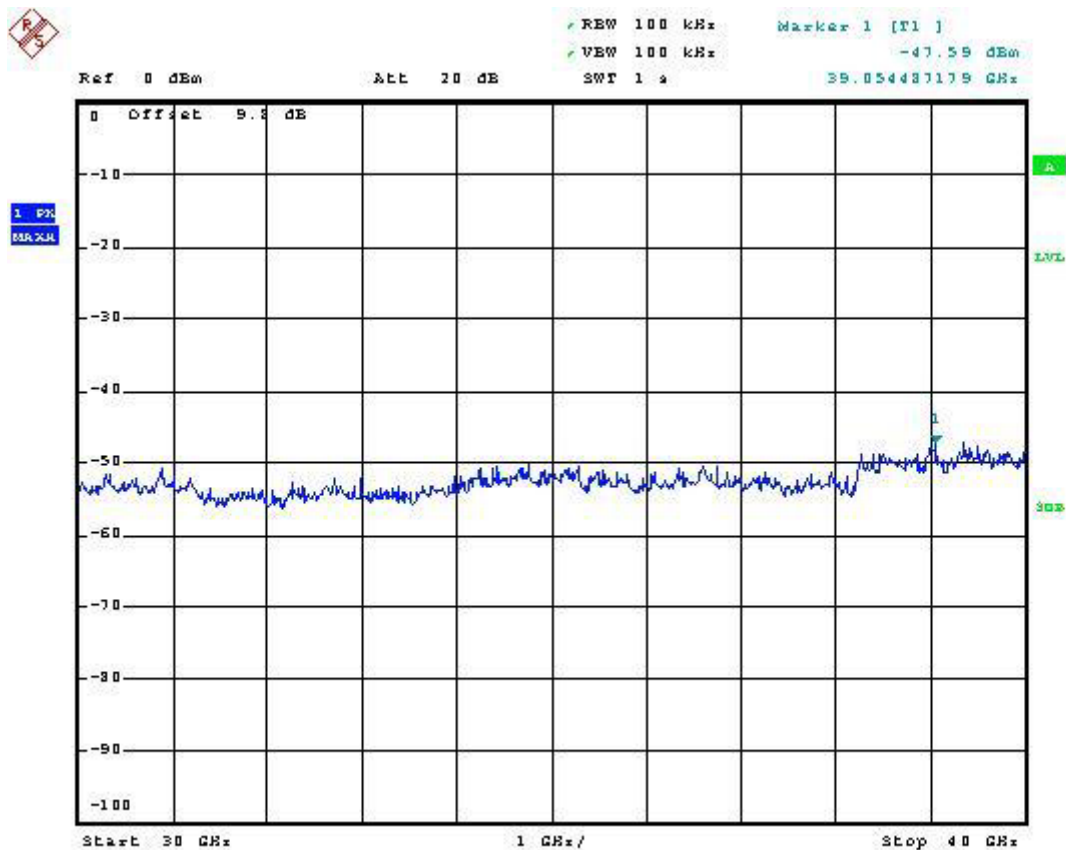
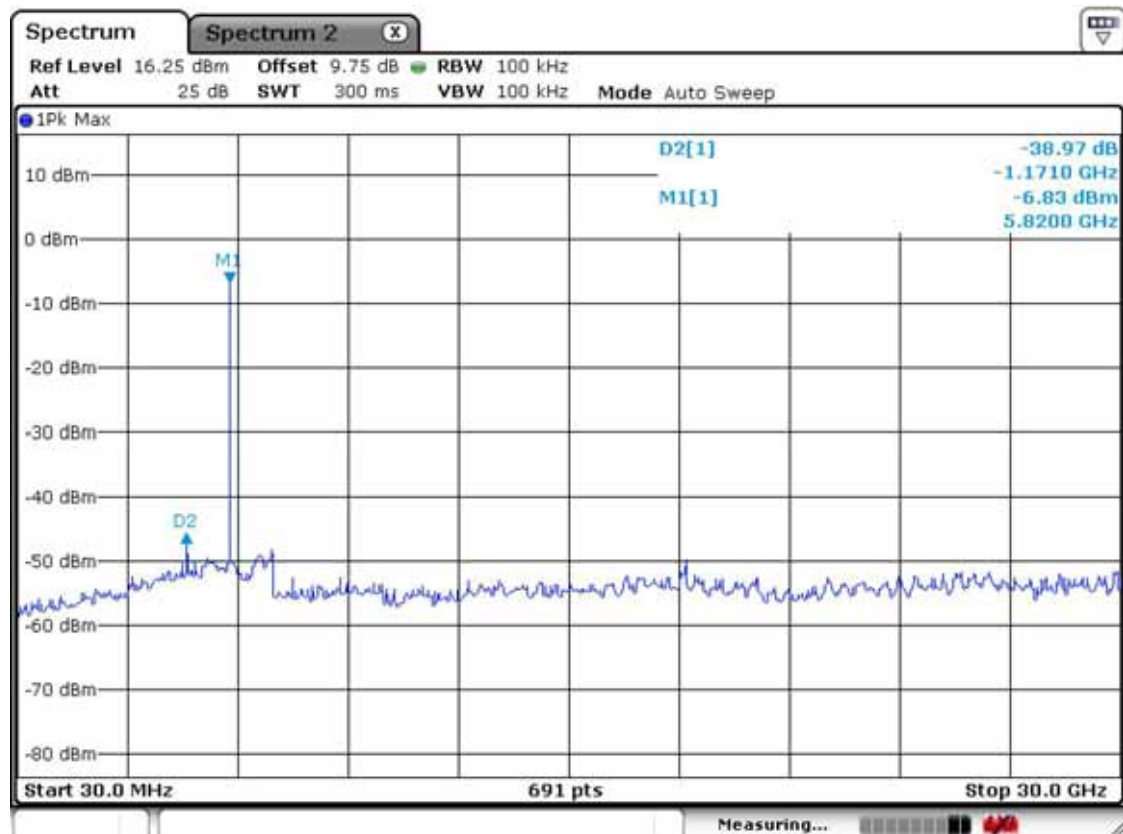


802.11a – channel 157

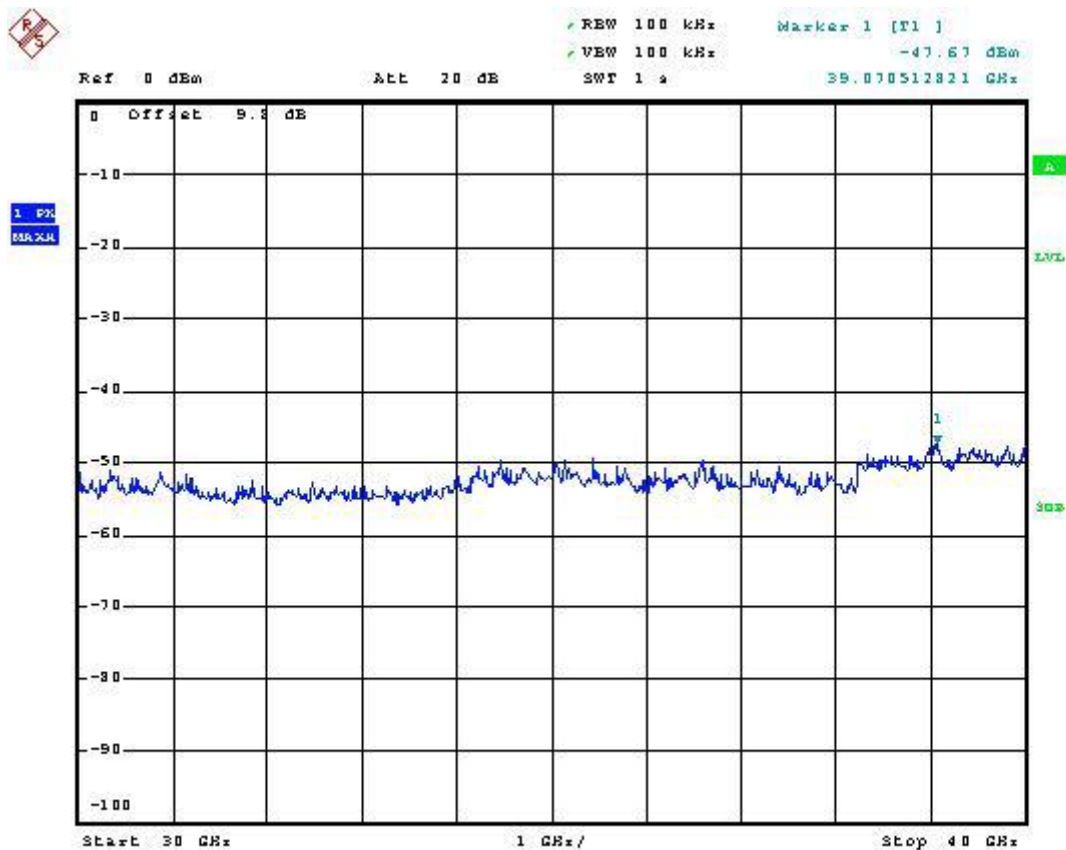
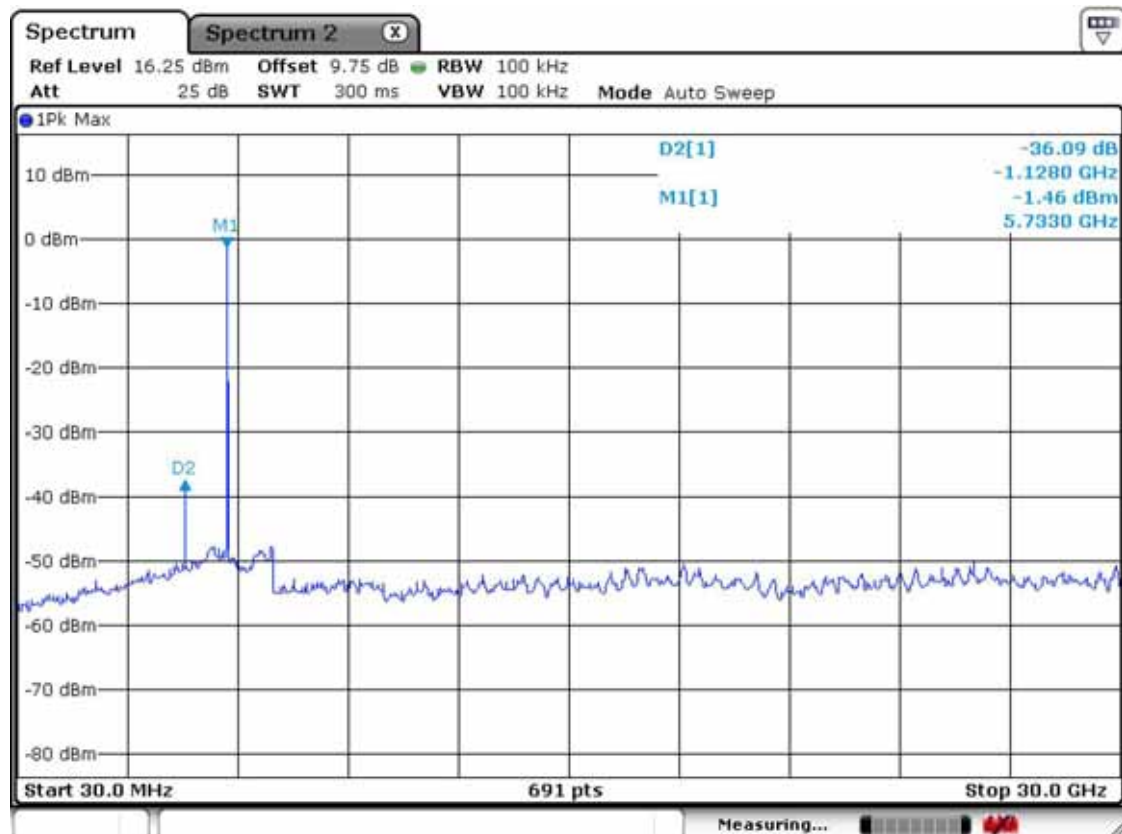
Frequency Range = 30 MHz ~ 40 GHz



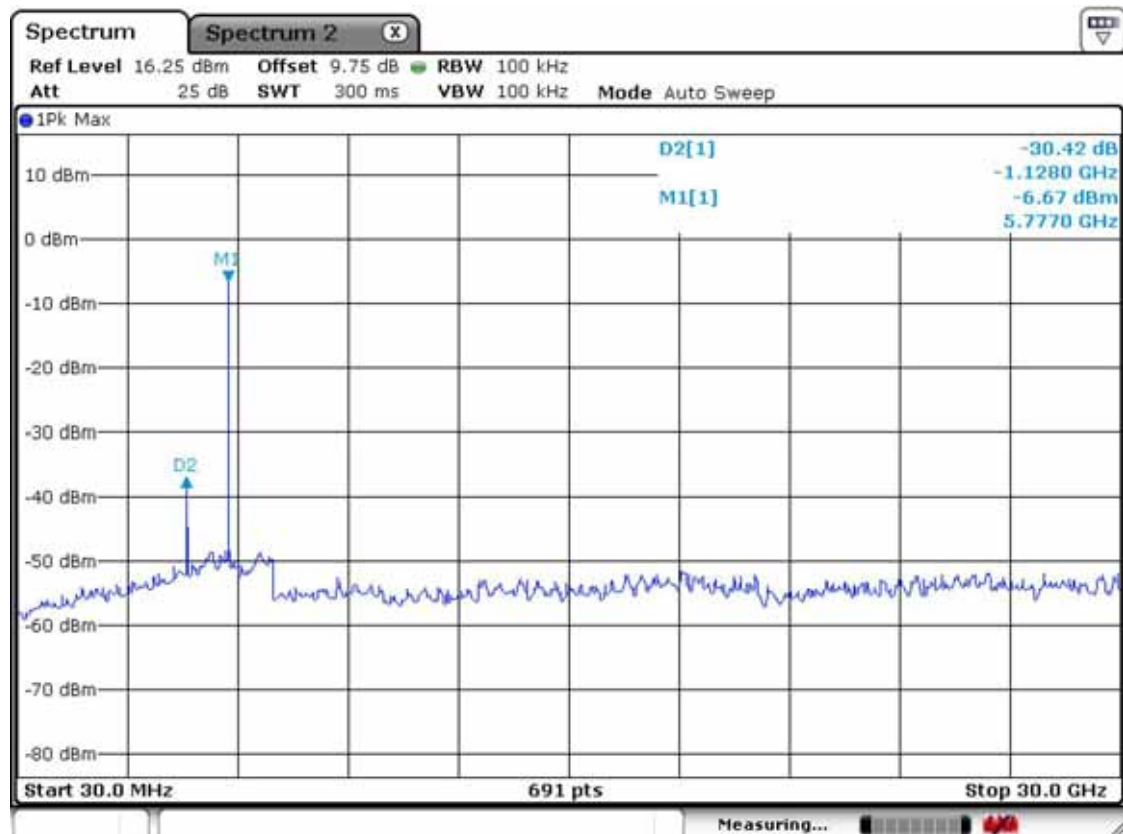
802.11a –channel 165
Frequency Range = 30 MHz ~ 40 GHz



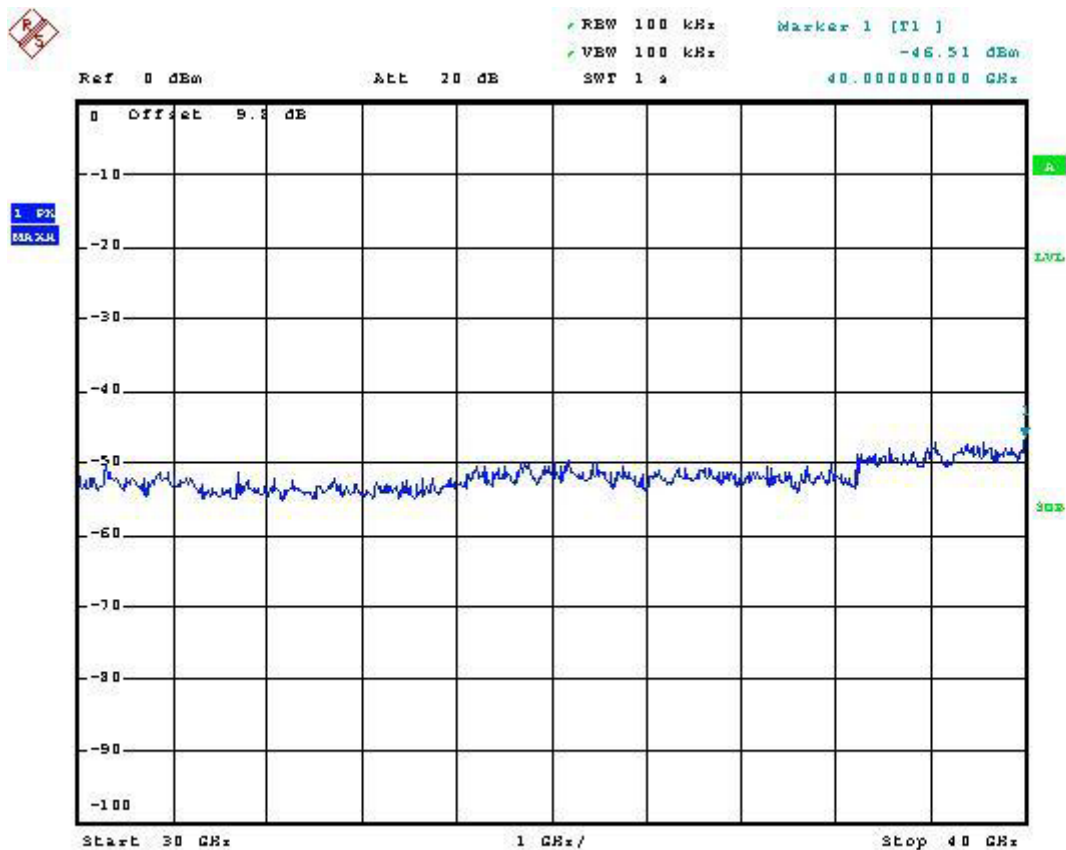
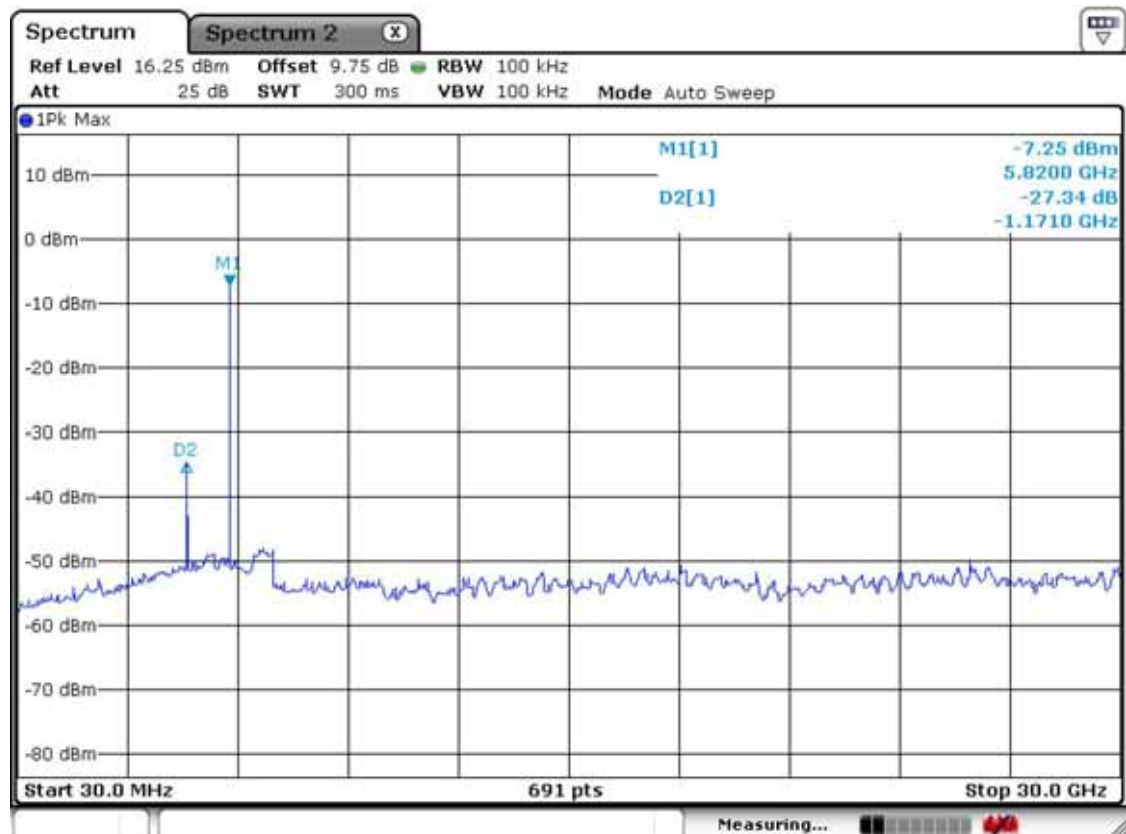
802.11an_20MHz – channel 149
Frequency Range = 30 MHz ~ 40 GHz



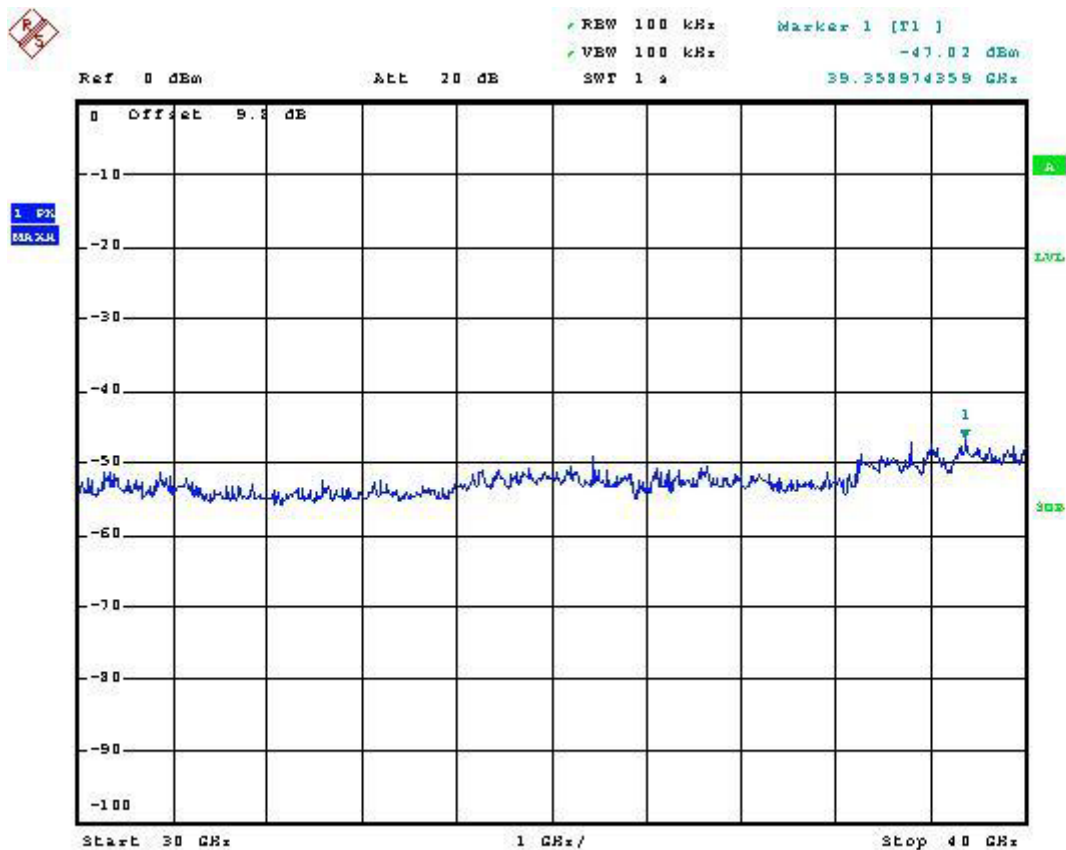
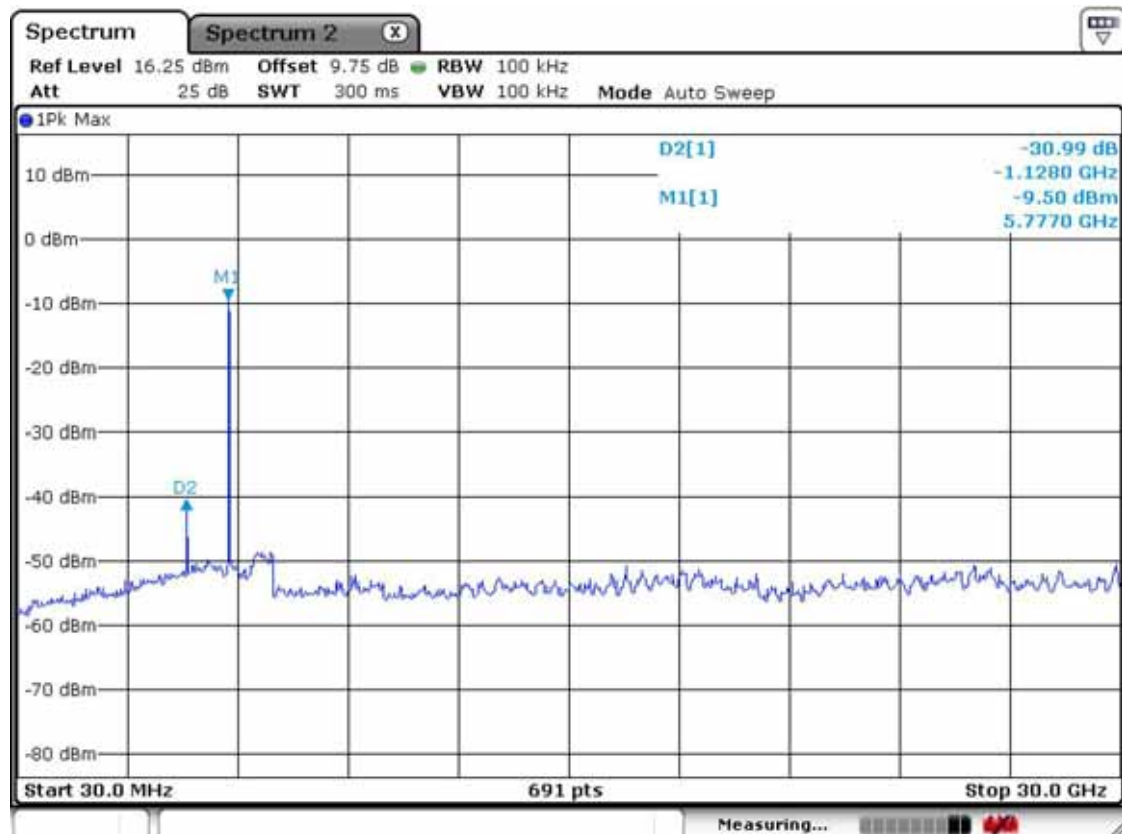
802.11an_20MHz – channel 157
Frequency Range = 30 MHz ~ 40 GHz



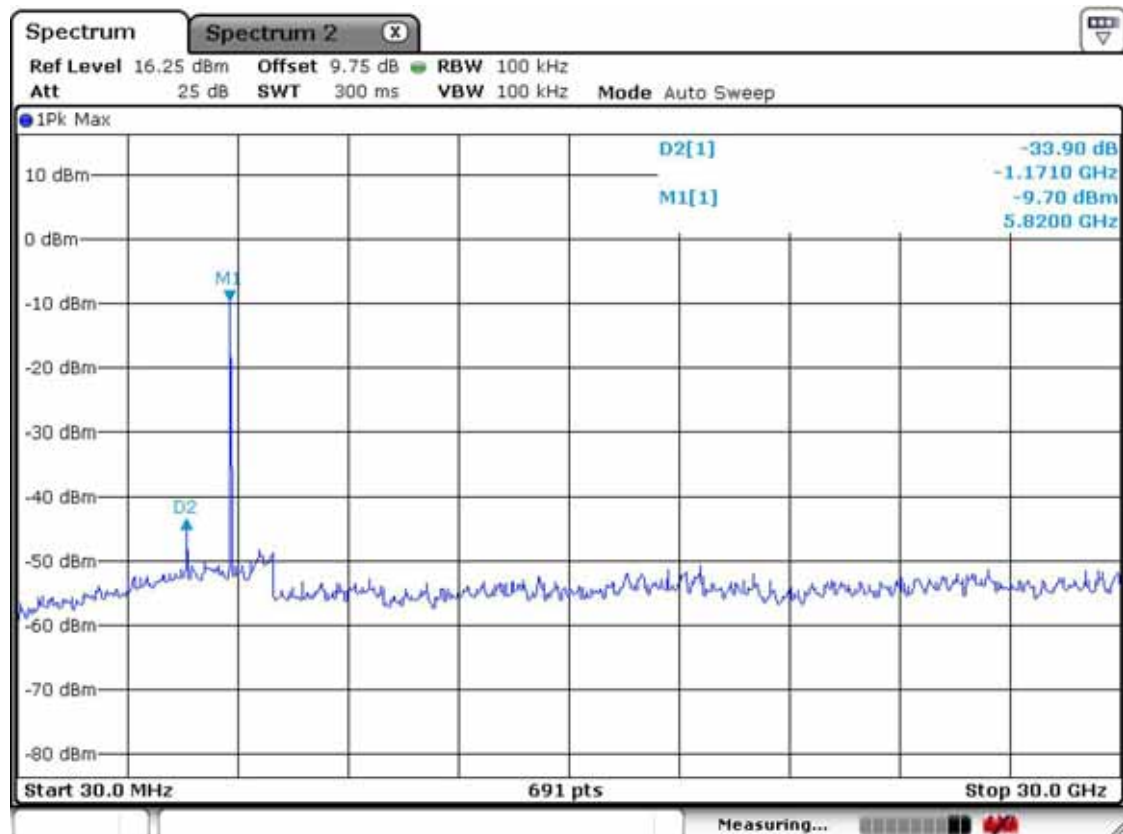
802.11an_20MHz -channel 165
Frequency Range = 30 MHz ~ 40 GHz



802.11an_40MHz – channel 151
Frequency Range = 30 MHz ~ 40 GHz



802.11an_40MHz – channel 159
Frequency Range = 30 MHz ~ 40 GHz



3.2.5 Field Strength of Harmonics

Procedure:

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 = 30 MHz ~ 10th harmonic.

RBW = 100 kHz (30MHz ~ 1 GHz)

VBW ≥ RBW

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data: Complies

- See next pages for actual measured data.

Minimum Standard: FCC Part 15.109

Frequency (MHz)	Limit (uV/m) @ 10m
30 ~ 88	90
88 ~ 216	150
216 ~ 960	210
Above 960	300

** 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:

Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4824.0	43.5	54.0	V	31.4	36.5	5.7	54.0	74.0	44.1	54.7	9.9	19.4
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4883.0	38.7	51.5	V	31.4	36.5	5.7	54.0	74.0	39.4	52.2	14.7	21.8
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4924.0	40.3	53.4	V	31.4	36.5	5.7	54.0	74.0	41.0	54.1	13.0	19.9
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

802.11g Measurement Data:

Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4824.0	37.8	50.6	V	31.4	36.5	5.7	54.0	74.0	38.4	51.2	15.6	22.8
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

802.11a Measurement Data:

Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4595.0	49.8	51.8	V	31.4	36.5	5.7	54.0	74.0	50.5	52.5	3.5	21.5
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4627.0	49.9	52.4	V	31.4	36.5	5.7	54.0	74.0	50.6	53.1	3.4	20.9
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
[MHz]	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4659.9	48.7	51.6	V	31.4	36.5	5.7	54.0	74.0	49.4	52.3	4.6	21.7
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

802.11an 20MHz Measurement Data:

Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
	[MHz]	AV / Peak		Antenna	Amp. Gain	Cable	AV / Peak	AV / Peak	AV / Peak			
4596.0	43.5	55.4	V	31.4	36.5	5.7	54.0	74.0	44.2	56.1	9.8	17.9
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
	[MHz]	AV / Peak		Antenna	Amp. Gain	Cable	AV / Peak	AV / Peak	AV / Peak			
4627.9	49.6	52.3	H	31.4	36.5	5.7	54.0	74.0	50.2	53.0	3.8	21.0
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency	Reading		Pol.	Correction			Limits		Result		Margin	
	[dBuV / m]			Factor			[dBuV / m]		[dBuV / m]		[dB]	
	[MHz]	AV / Peak		Antenna	Amp. Gain	Cable	AV / Peak	AV / Peak	AV / Peak			
4659.8	49.4	51.6	V	31.4	36.5	5.7	54.0	74.0	50.1	52.3	3.9	21.7
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

802.11an 40MHz Measurement Data:

Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4604.0	50.2	52.9	V	31.4	36.5	5.7	54.0	74.0	50.9	53.6	3.1	20.4
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
Frequency [MHz]	Reading [dBuV / m]		Pol.	Correction Factor			Limits [dBuV / m]		Result [dBuV / m]		Margin [dB]	
	AV / Peak			Antenna	Amp. Gain	Cable	AV / Peak		AV / Peak		AV / Peak	
4659.8	48.4	50.6	V	31.4	36.5	5.7	54.0	74.0	49.0	51.3	5.0	22.7
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

Radiated Emissions – Below 1GHz WORST-CASE DATA:
802.11n(20MHz) CH 6+ File+"H"+Cam+H/T+Web Mode



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EUT/Model No.: TiTAN T8

TEST MODE: n(20MHz)_CH6+File+"H"+Cam+MP3+H/T+Web

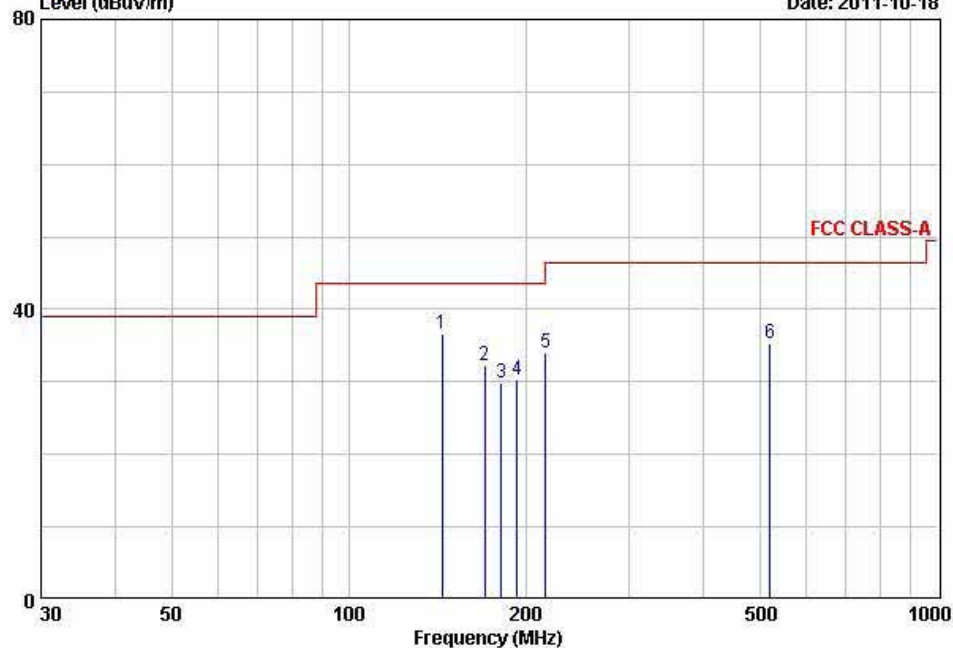
Temp Humi : 16 / 30

Tested by: PARK.H.W

Data: 13

Level (dBuV/m)

Date: 2011-10-18



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV/m	dB/m	dBuV/m	QP	dB	cm	deg	
1	144.04	49.88	-13.20	36.68	43.50	6.82	400	30	HORIZONTAL
2	170.25	45.51	-13.35	32.16	43.50	11.34	216	161	HORIZONTAL
3	181.56	43.81	-14.03	29.78	43.50	13.72	100	212	VERTICAL
4	193.31	45.33	-14.98	30.35	43.50	13.15	100	209	VERTICAL
5	216.00	48.48	-14.55	33.93	43.50	9.57	400	230	HORIZONTAL
6	520.68	40.92	-5.66	35.26	46.40	11.14	342	160	HORIZONTAL

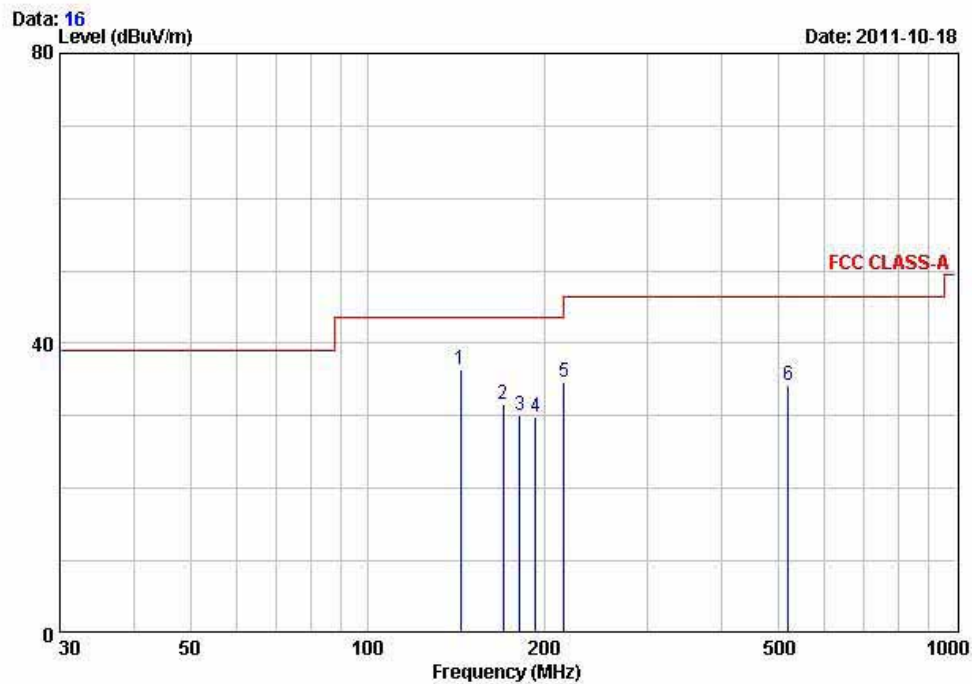
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

Radiated Emissions – Below 1GHz WORST-CASE DATA:
802.11an(40MHz) CH 149+ File+"H"+Cam+H/T+Web Mode



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EUT/Model No.: TiTAN T8 TEST MODE: an(40MHz)_CH149+File+"H"+Cam+MP3+H/T+Web
 Temp Humi : 16 / 30 Tested by: PARK.H.W



	Freq	Reading	C.F	Result	Limit	Margin	Height	Angle	Polarity
	MHz	dBuV/m	dB/m	dBuV/m	QP	dB	cm	deg	
1	144.04	49.65	-13.20	36.45	43.50	7.05	400	35	HORIZONTAL
2	170.25	45.02	-13.35	31.67	43.50	11.83	211	165	HORIZONTAL
3	181.56	44.09	-14.03	30.06	43.50	13.44	100	205	VERTICAL
4	193.31	44.89	-14.98	29.91	43.50	13.59	100	216	VERTICAL
5	216.00	49.14	-14.55	34.59	43.50	8.91	400	227	HORIZONTAL
6	520.68	39.88	-5.66	34.22	46.40	12.18	342	166	HORIZONTAL

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

3.2.8 AC Conducted Emissions

Procedure:

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

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

Minimum Standard: FCC Part 15.107

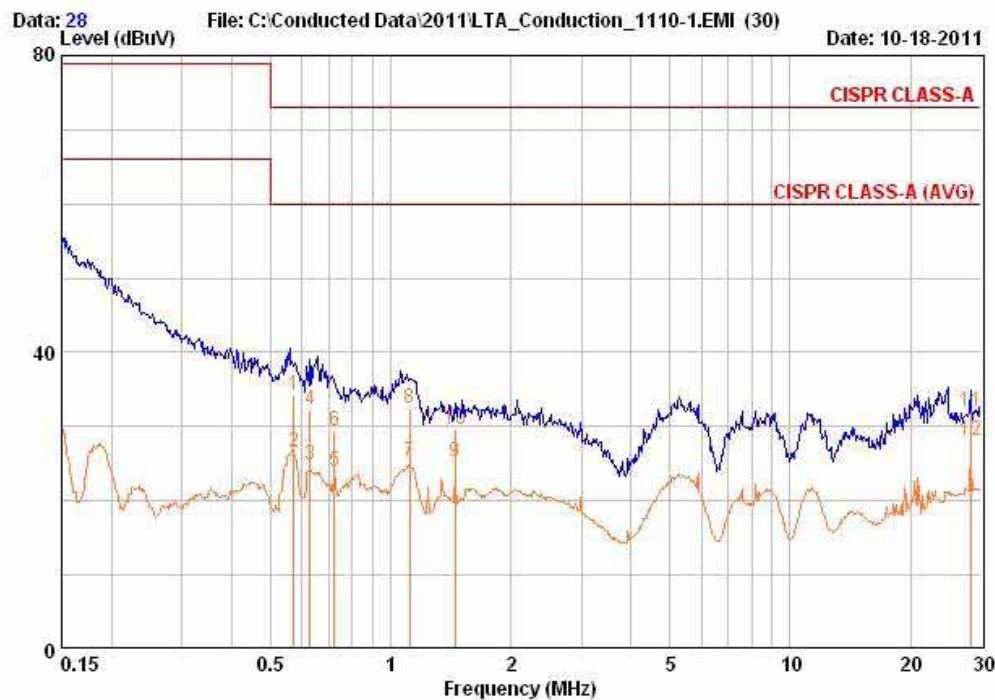
Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	79 dBuV	66 dBuV
0.5 ~ 30	73 dBuV	60 dBuV

* Decreases with the logarithm of the frequency

Conducted Emissions – WLAN+File+”H”+Cam+H/T+Web mode LINE

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EUT / Model No.: TiTAN T8 Phase : LINE
Test Mode : WLAN+File+”H”+Cam+MP3+H/T+Web modest Power : 120 / 60
Temp./Humi. : 20 / 47 Test Engineer : PARK.H.W



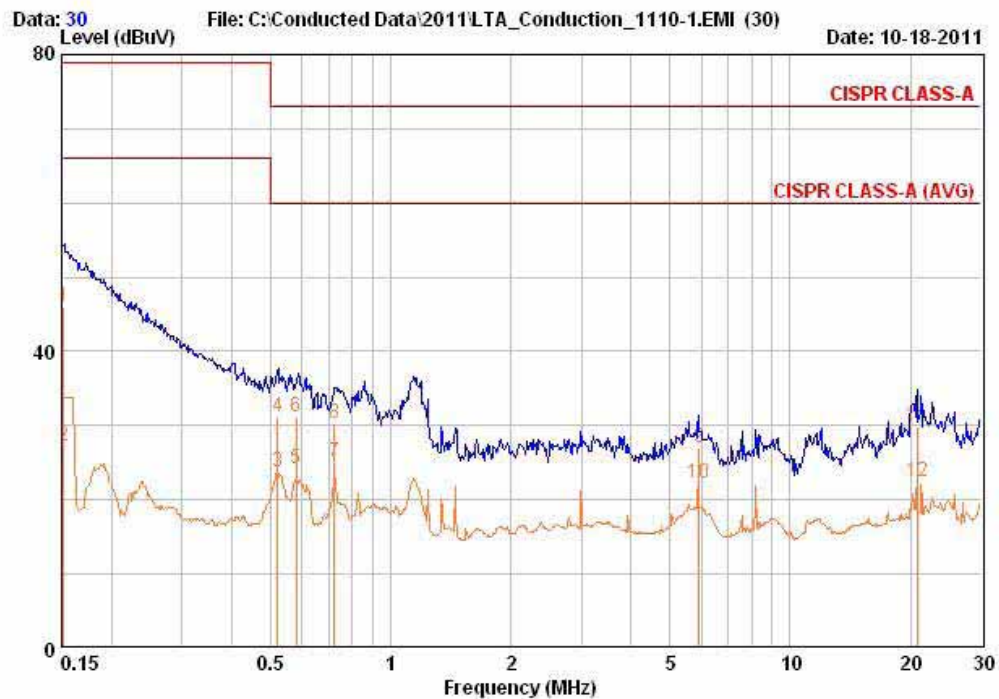
Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	dBuV	dBuV		dBuV	dBuV	dBuV	dBuV	dB	dB
0.572	24.52	17.02	9.65	34.17	26.67	73.00	60.00	38.83	33.33
0.628	22.62	15.22	9.68	32.30	24.90	73.00	60.00	40.70	35.10
0.721	19.72	14.32	9.71	29.43	24.03	73.00	60.00	43.57	35.97
1.118	22.83	15.63	9.75	32.59	25.39	73.00	60.00	40.41	34.61
1.450	19.84	15.64	9.74	29.58	25.38	73.00	60.00	43.42	34.62
28.325	21.90	17.90	10.17	32.06	28.06	73.00	60.00	40.94	31.94

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

Conducted Emissions – WLAN+File+"H"+Cam+H/T+Web mode NEUTRAL

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EUT / Model No.: TITAN T8 Phase : NEUTRAL
Test Mode : WLAN+File+"H"+Cam+MP3+H/T+Web modest Power : 120 / 60
Temp./Humi. : 20 / 47 Test Engineer : PARK.H.W



Freq	RD	RD	C.F	Result	Result	Limit	Limit	Margin	Margin
MHz	QP	AV		QP	AV	QP	AV	QP	AV
	dBuV	dBuV	dB	dBuV	dBuV	dBuV	dBuV	dB	dB
0.152	36.34	17.64	9.65	45.99	27.29	79.00	66.00	33.01	38.71
0.521	21.42	14.02	9.69	31.11	23.71	73.00	60.00	41.89	36.29
0.579	21.42	14.62	9.67	31.09	24.29	73.00	60.00	41.91	35.71
0.724	20.72	15.42	9.64	30.36	25.06	73.00	60.00	42.64	34.94
5.907	17.22	12.42	9.81	27.03	22.23	73.00	60.00	45.97	37.77
20.819	19.87	12.47	10.02	29.89	22.49	73.00	60.00	43.11	37.51

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	2011-01-24
2	Signal Generator (~3.2GHz)	8648C	3623A02597	HP	1 year	2011-03-30
3	Signal Generator (1~20GHz)	83711B	US34490456	HP	1 year	2011-03-30
4	Attenuator (3dB)	8491A	37822	HP	2 year	2010-10-08
5	Attenuator (10dB)	8491A	63196	HP	2 year	2010-10-08
6	Attenuator (30dB)	8498A	3318A10929	HP	2 year	2011-01-05
7	Test Receiver (~30MHz)	ESHS10	828404/009	R&S	1 year	2011-03-30
8	EMI Test Receiver (~1GHz)	ESCI7	100722	R&S	1 year	2011-10-07
9	RF Amplifier (~1.3GHz)	8447D	2439A09058	HP	2 year	2010-10-08
10	RF Amplifier (1~18GHz)	8449B	3008A02126	HP	2 year	2010-03-29
11	Horn Antenna (1~18GHz)	BBHA 9120D	9120D122	SCHWARZBECK	2 year	2010-12-24
12	Horn Antenna (18 ~ 40GHz)	SAS-574	154	Schwarzbeck	2 year	2010-11-25
13	Horn Antenna (18 ~ 40GHz)	SAS-574	155	Schwarzbeck	2 year	2010-11-25
14	TRILOG Antenna	VULB 9160	9160-3172	SCHWARZBECK	2 year	2010-10-07
15	Dipole Antenna	VHA9103	2116	SCHWARZBECK	2 year	2010-11-25
16	Dipole Antenna	VHA9103	2117	SCHWARZBECK	2 year	2010-11-25
17	Dipole Antenna	VHA9105	2261	SCHWARZBECK	2 year	2010-11-25
18	Dipole Antenna	VHA9105	2262	SCHWARZBECK	2 year	2010-11-25
19	Hygro-Thermograph	THB-36	0041557-01	ISUZU	2 year	2010-04-12
20	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-	-
21	Power Divider	11636A	6243	HP	2 year	2010-10-08
22	DC Power Supply	6622A	3448A03079	HP	-	-
23	Frequency Counter	5342A	2826A12411	HP	1 year	2011-03-30
24	Power Meter	EPM-441A	GB32481702	HP	1 year	2011-03-30
25	Power Sensor	8481A	US41030291	HP	1 year	2011-10-07
26	Audio Analyzer	8903B	3729A18901	HP	1 year	2011-10-07
27	Modulation Analyzer	8901B	3749A05878	HP	1 year	2011-10-07
28	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2011-10-07
29	Stop Watch	HS-3	601Q09R	CASIO	2 year	2010-03-31
30	LISN	ENV216	100408	R&S	1 year	2011-10-07
31	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	2 year	2010-05-13
32	Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	-	-
33	Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	-	-
34	Spectrum Analyzer (~40GHz)	FSQ40	200035	R&S	1 year	2011-02-10