LTA
Laboratory for Test & Approval Co.,Ltd.

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ALIEN

Dates of Tests: June 23~ July 5, 2011
Test Report S/N: LR500111107T
Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID. **P65ALH9000**

APPLICANT **Alien Technology Corporation**

Equipment Class	:	**Digital Transmission System (DTS)**
Manufacturing Description	:	**Industrial PDA**
Manufacturer	:	**ATID CO., Ltd.**
Model name	:	**ALH-9000**
Varient Model name	:	**ALH-9000-EMA**
Test Device Serial No.:	:	**Identical prototype**
Rule Part(s)	:	**FCC Part 15.247 Subpart C; ANSI C-63.4-2003**
Frequency Range	:	**2412MHz ~ 2462MHz**
Max. Output Power	:	**Max 22.54dBm - Conducted (802.11b)**
		Max 26.14dBm - Conducted (802.11g)
Data of issue	:	**Aug 2, 2011**

This test report is issued under the authority of:

Hyun-Chae You, Manager

The test was supervised by:

Il-Shin kim, 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. This report must not be used by the applicant to claim product endorsement by any agency.

NVLAP

NVLAP LAB Code.: 200723-0

TABLE OF CONTENTS

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

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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	2011-09-30	ECT accredited Lab.
KCC	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

Company name	:	Alien Technology Corporation
Address	:	18220 Butterfield Blvd Morgan Hill, CA 95037, USA
Tel / Fax	:	Tel : 408-201-7475 / Fax : 408-201-7475

2-2 Manufacturer

Company name	:	ATID CO., Ltd
Address	:	205 Migun Technoworld 1, 533, Yongsan-dong, Yuseong-gu, Daejeon, Korea, 305-500
Tel / Fax	:	Tel : 82-2-544-1436 / Fax :82-2-544-1438

2-3 Equipment Under Test (EUT)

Trade name	:	Industrial PDA
FCC ID	:	P65ALH9000
Model name	:	ALH-9000
Varient Model name	:	ALH-9000-EMA
Serial number	:	Identical prototype
Date of receipt	:	June 23, 2011
EUT condition	:	Pre-production, not damaged
Antenna type	:	PCB antenna with Max. 3.824 dBi gain
Frequency Range	:	2412MHz ~ 2462MHz (DSSS)
RF output power	:	Max 22.54dBm - Conducted (802.11b)
	:	Max 26.14dBm - Conducted (802.11g)
Number of channels	:	11
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
Power Source for Batt.	:	Battery Pack: 3.7V (Polymer Lithium Ion Battery)
Power for Adaptor.	:	Input: 100-240VAC, 0.4A Output: 5.0VDC, 3A
Firmware Version	:	CE50203ENGALI_0404_T0

2-4 Tested frequency

	LOW	MID	HIGH
Frequency (MHz) for 802.11b/g	2412	2437	2462

2-5 Ancillary Equipment

Equipment	Model No.	Serial No.	Manufacturer
Notebook	Vostro 1015	DN9RBN1	DELL
Cradle	ATUHF	N/A	ATID
Earphone	N/A	N/A	N/A

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.

→ Antenna Requirement
The Alien Technology Corporation FCC ID: P65ALH9000 unit complies with the requirement of §15.203. The antenna is connected to inside of EUT. And type is PCB antenna.

The sample was tested according to the following specification:
FCC Parts 15.247; ANSI C-63.4-2003

3.2 Technical Characteristics Test (802.11b/g)

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 ≥ RBW)

Sweep = auto

Trace = max hold

Detector function = peak

Measurement Data:

Mode	Frequency (MHz)	Channel No.	Test Results	
			Measured Bandwidth (MHz)	Result
802.11b	2412	1	12.59	Complies
	2437	6	12.07	Complies
	2462	11	12.11	Complies
802.11g	2412	1	16.50	Complies
	2437	6	16.50	Complies
	2462	11	16.50	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

6 dB Bandwidth > 500kHz

Measurement Setup

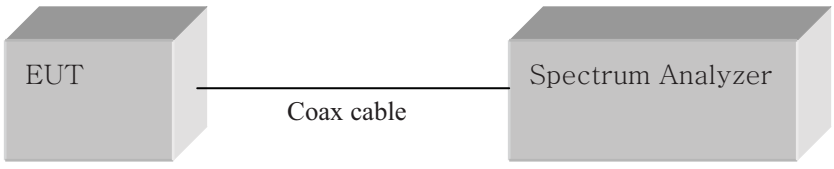
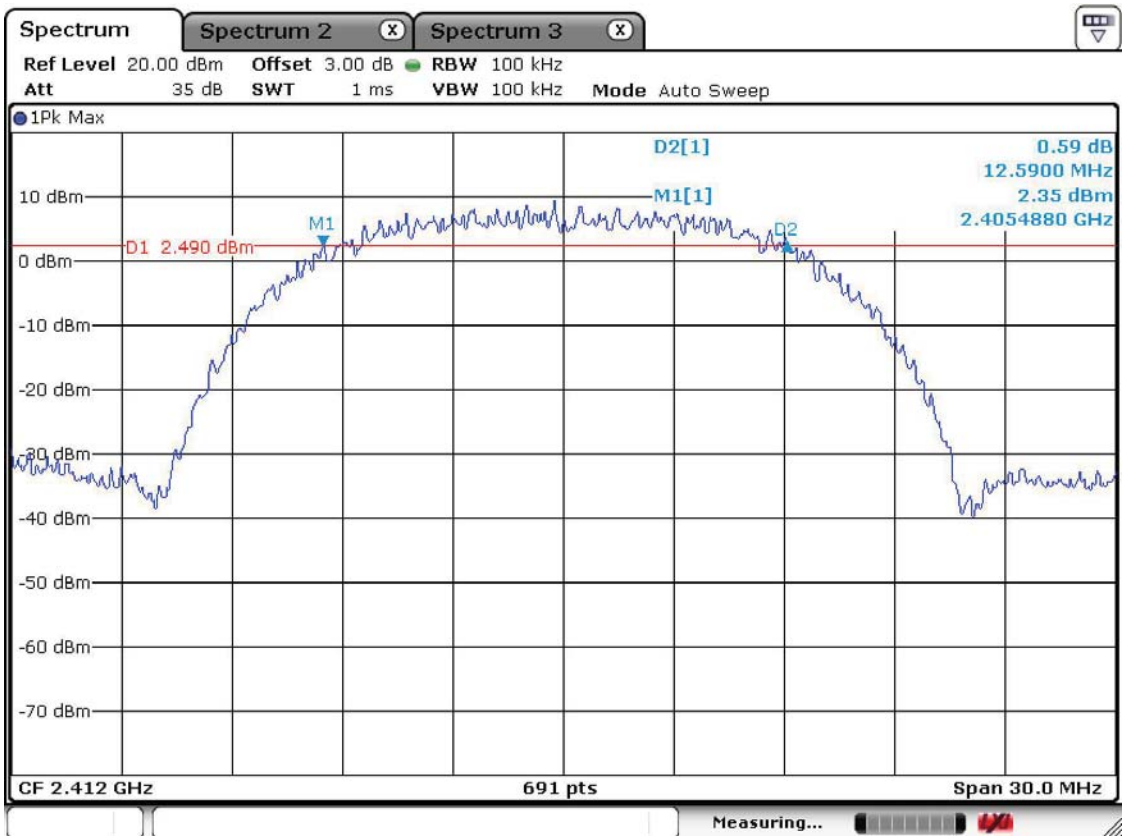
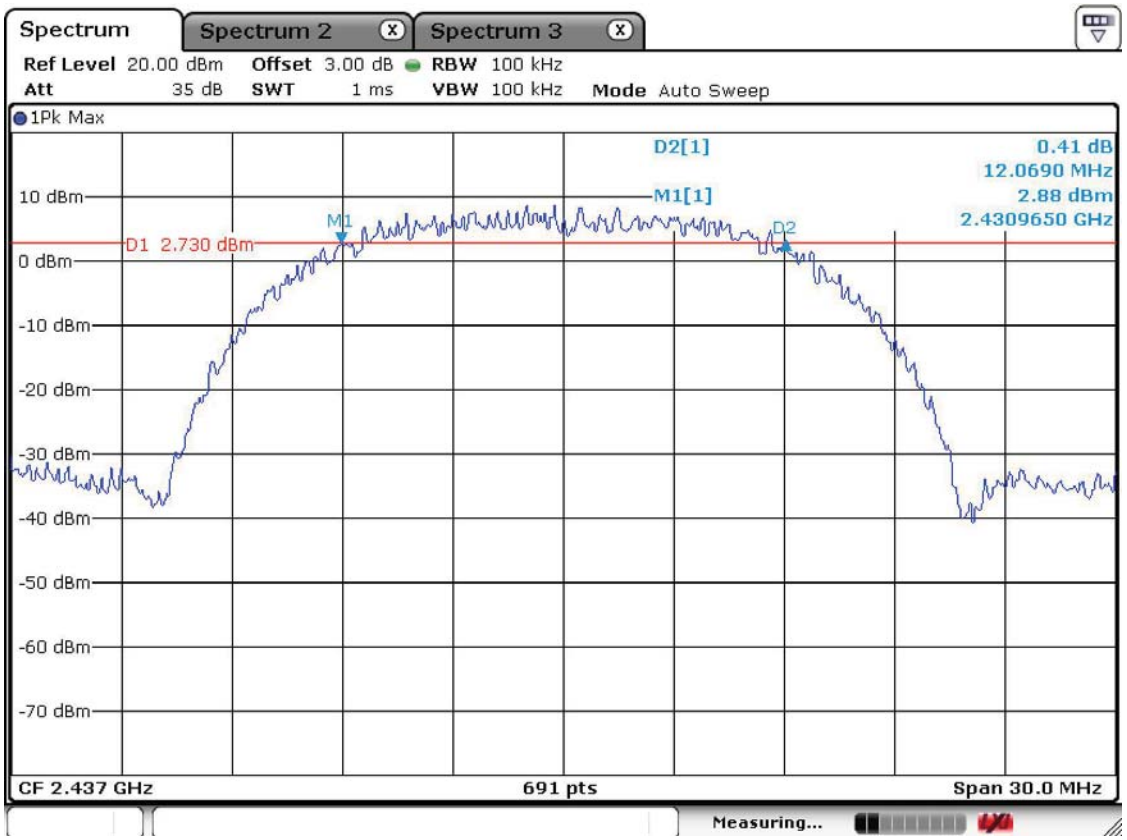


Figure 1: Measurement setup for the carrier frequency separation

802.11b
CH 1



CH 6



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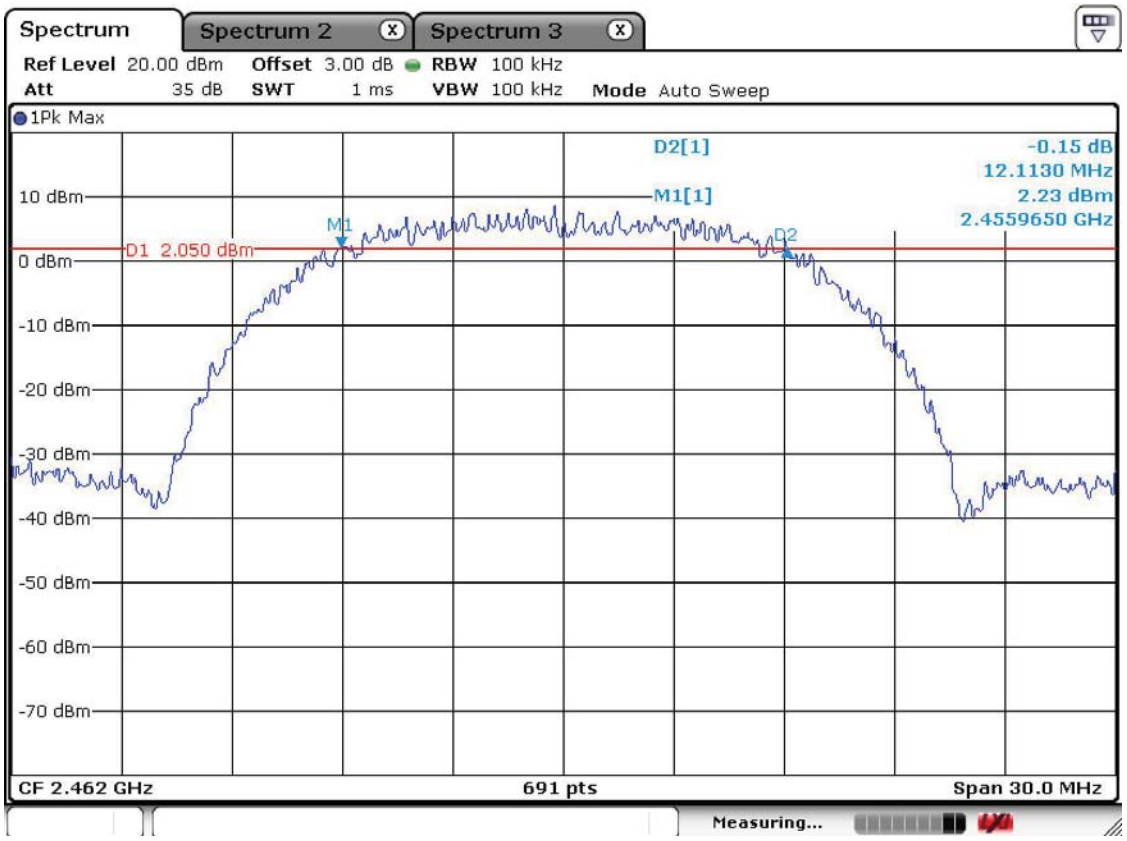
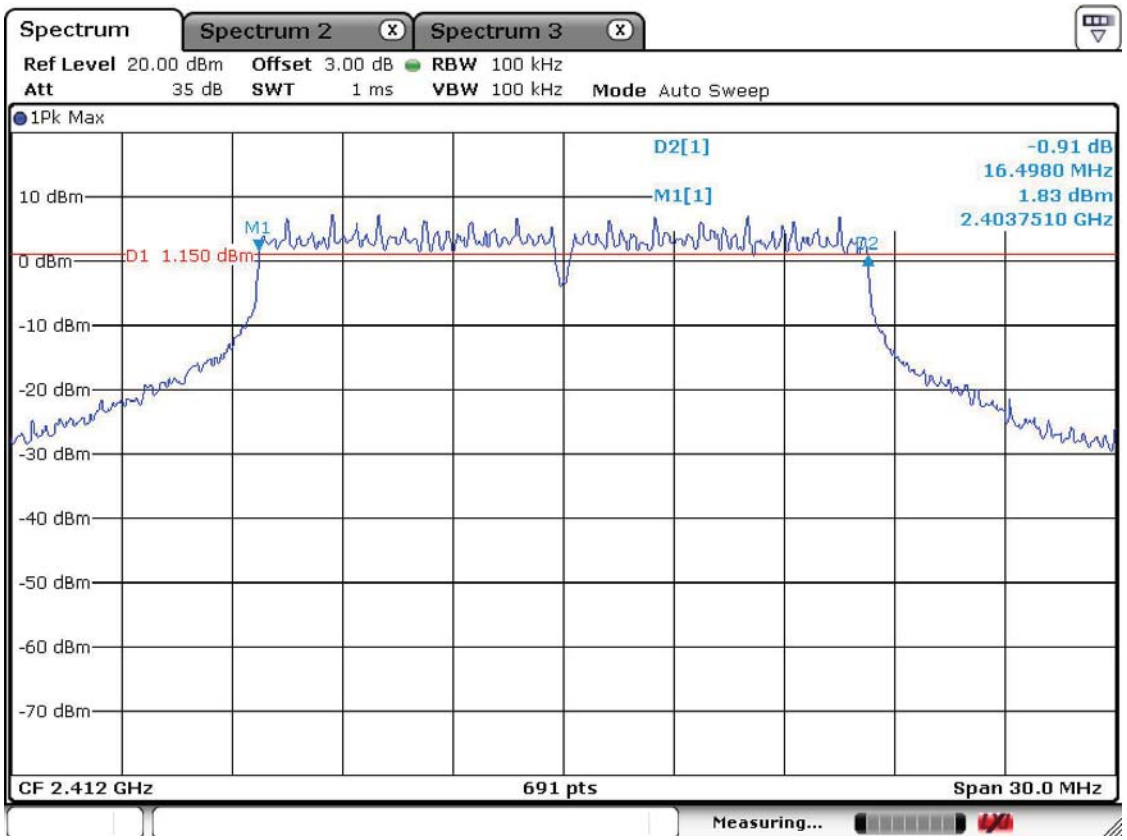

Spectrum
Spectrum 2
Spectrum 3
Ref Level 20.00 dBm
Offset 3.00 dB
RBW 100 kHz
Att 35 dB
SWT 1 ms
VBW 100 kHz
Mode Auto Sweep
1Pk Max
D2[1]
-0.15 dB
12.1130 MHz
M1[1]
2.23 dBm
2.4559650 GHz
D1 2.050 dBm
M1
D2
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.462 GHz
691 pts
Span 30.0 MHz
Measuring...

802.11g
CH 1



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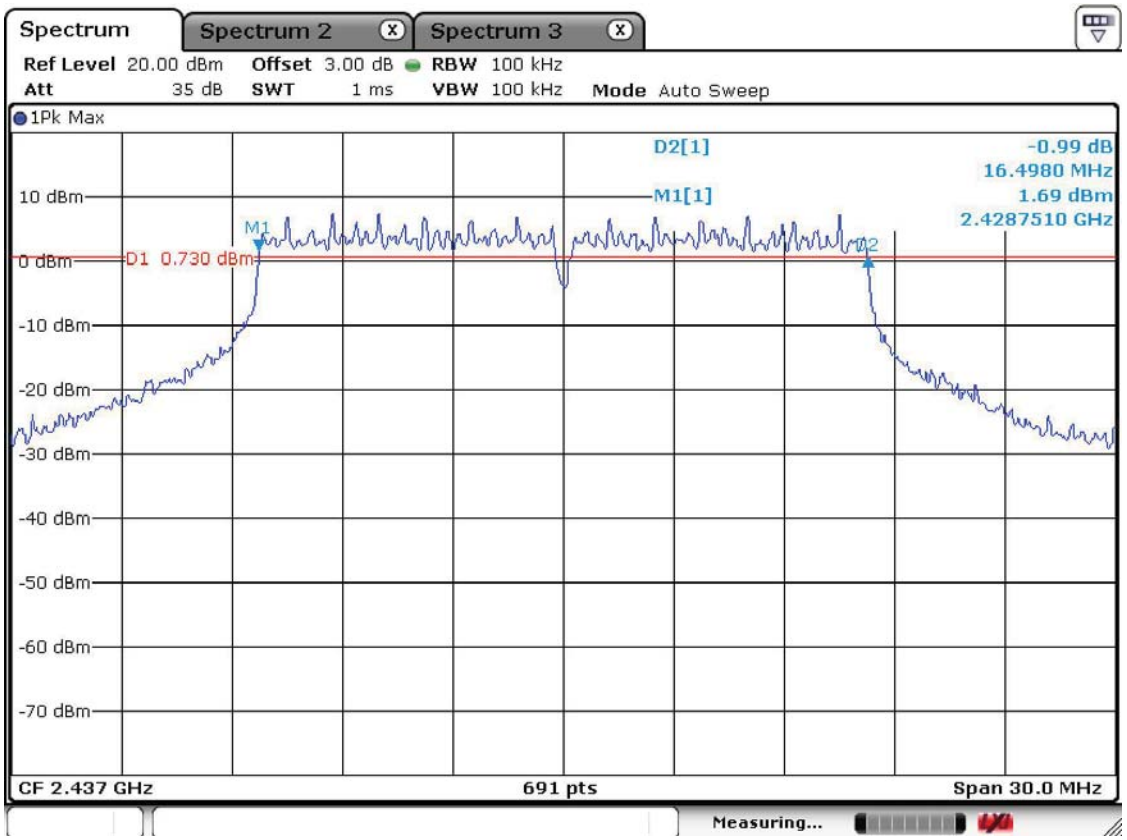
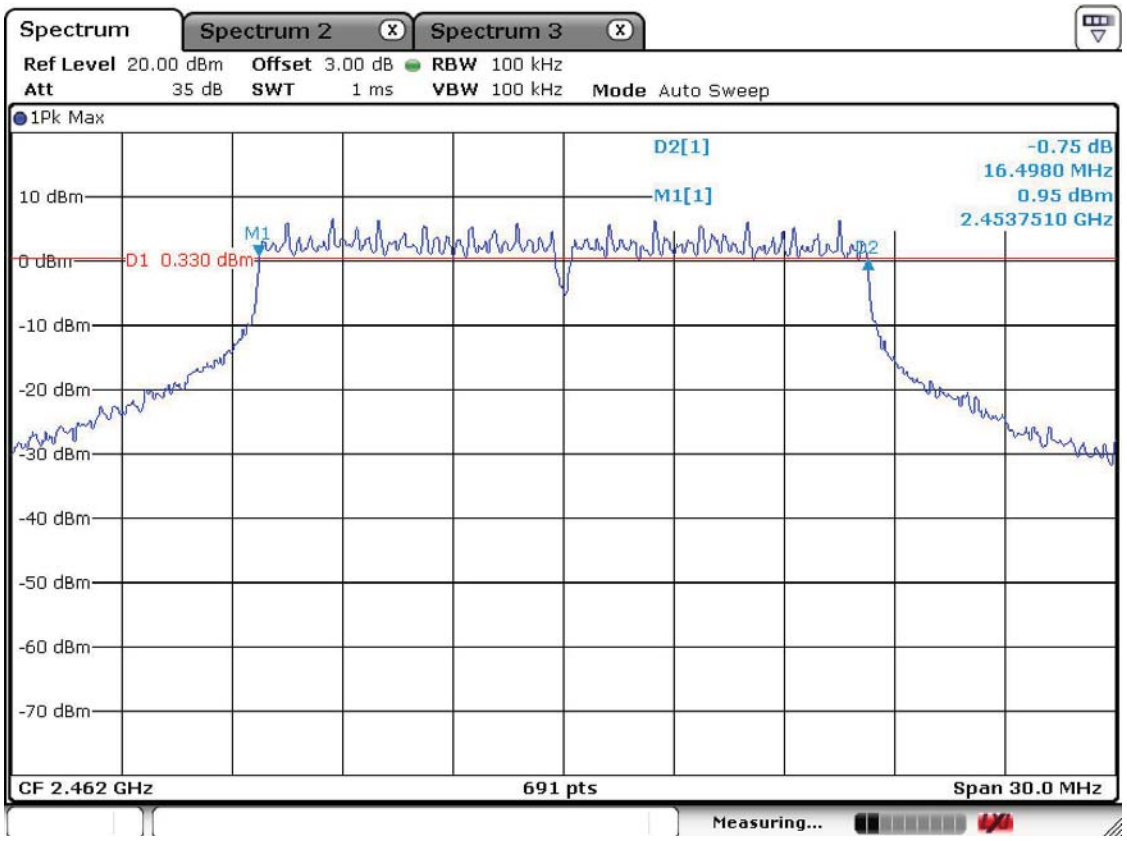


CH 11



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 ≥ RBW) Sweep = auto

Detector function = peak

Measurement Data:

Mode	Frequency (MHz)	Channel No.	Test Results		
			Measured Data (dBm)		Result
			Peak	Average	
802.11b	2412	1	21.95	16.86	Complies
	2437	6	20.72	16.32	Complies
	2462	11	22.54	16.57	Complies
802.11g	2412	1	25.87	16.03	Complies
	2437	6	26.14	16.38	Complies
	2462	11	25.16	15.40	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

Peak output power	< 1W

Measurement Setup

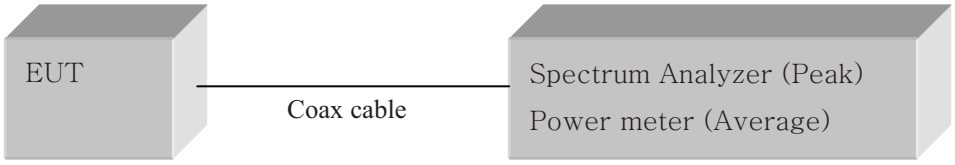
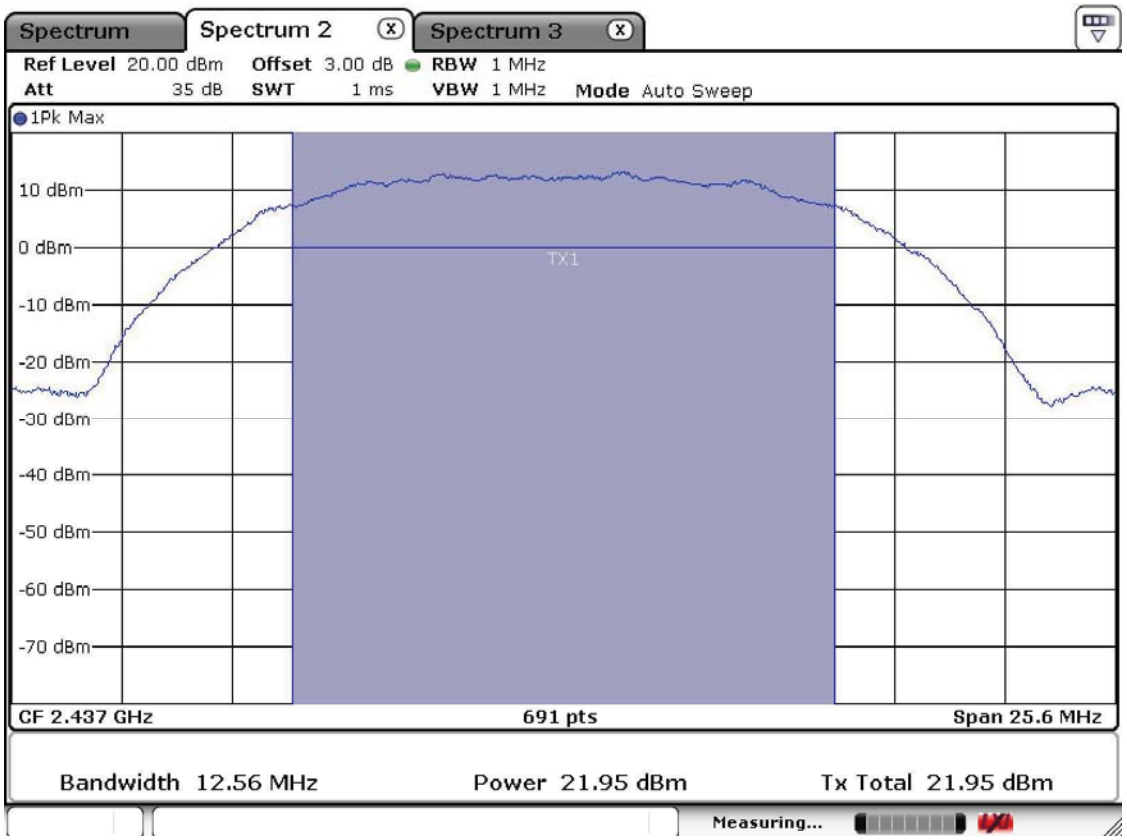
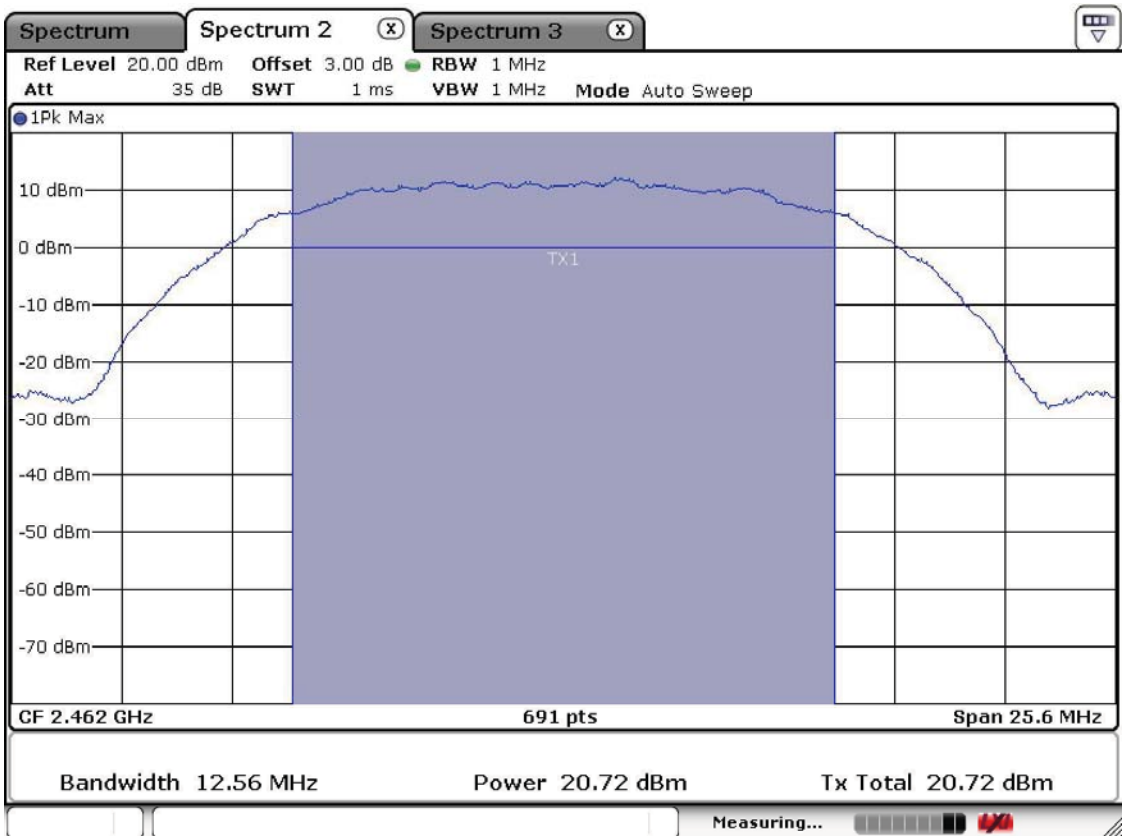


Figure 1: Measurement setup for the carrier frequency separation

802.11b
CH 1



CH 6



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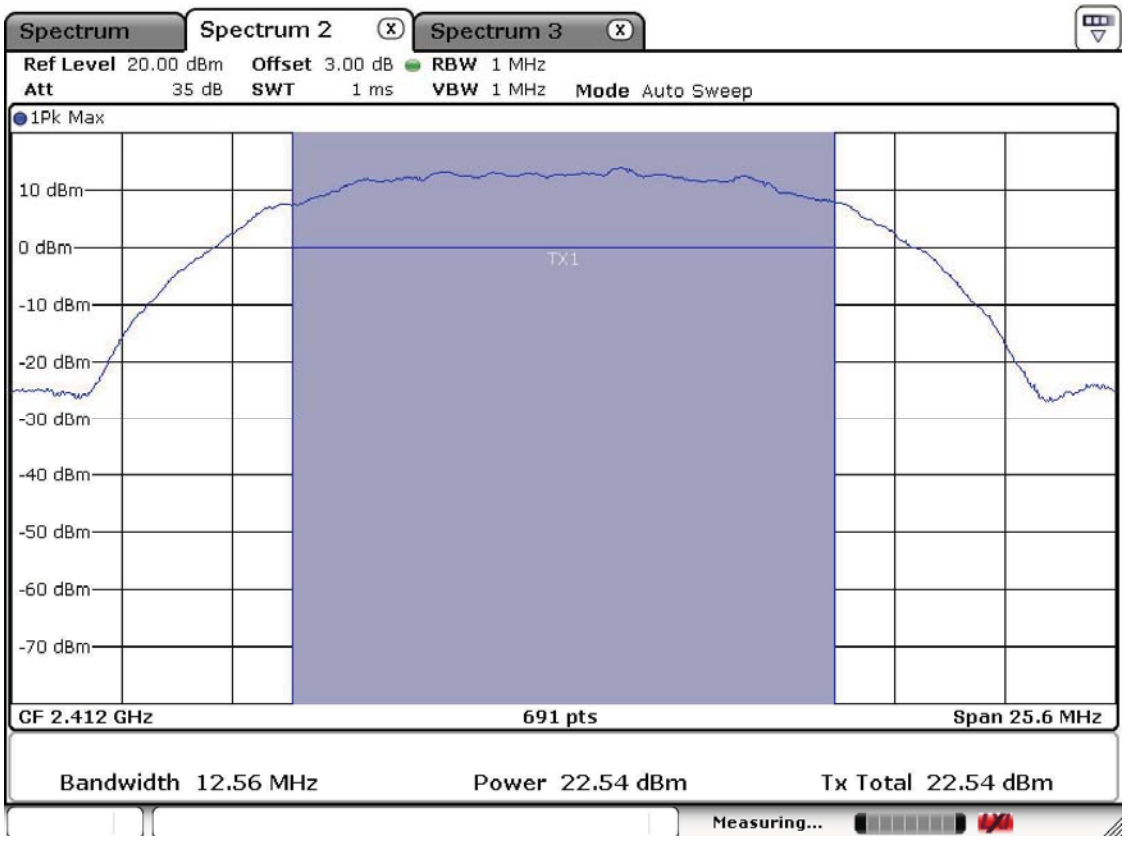
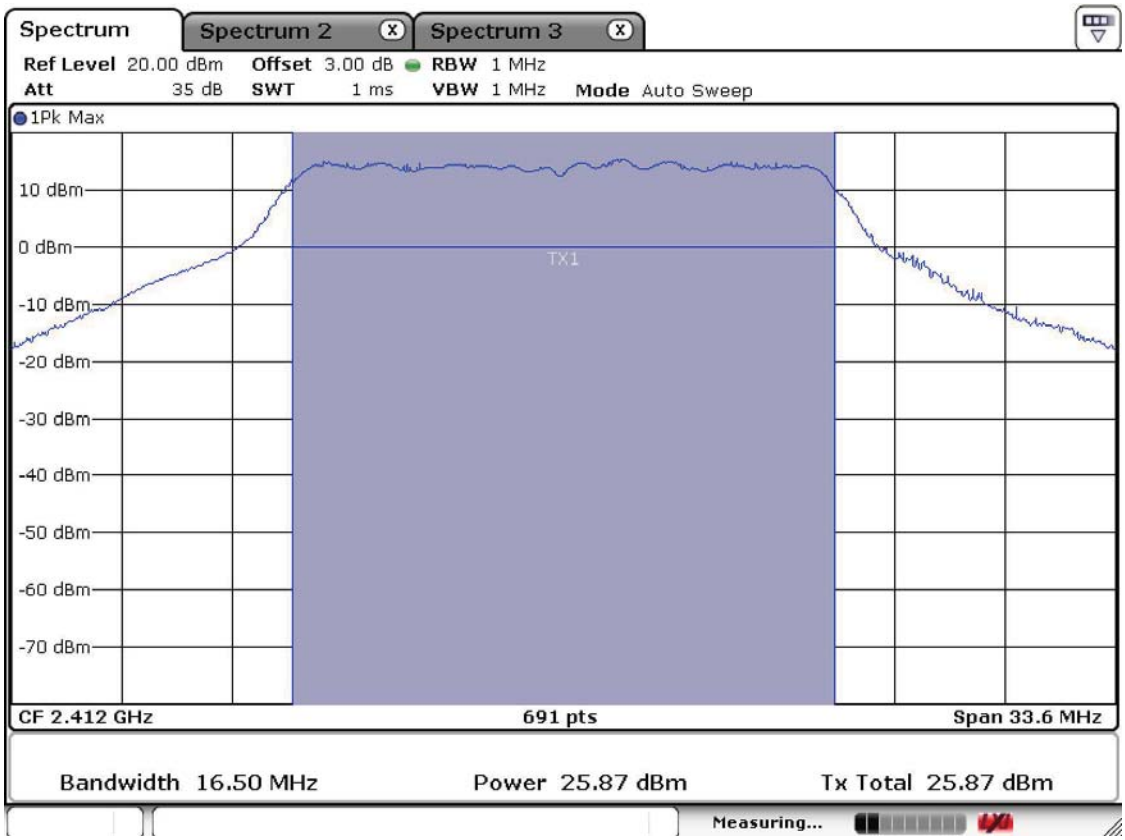
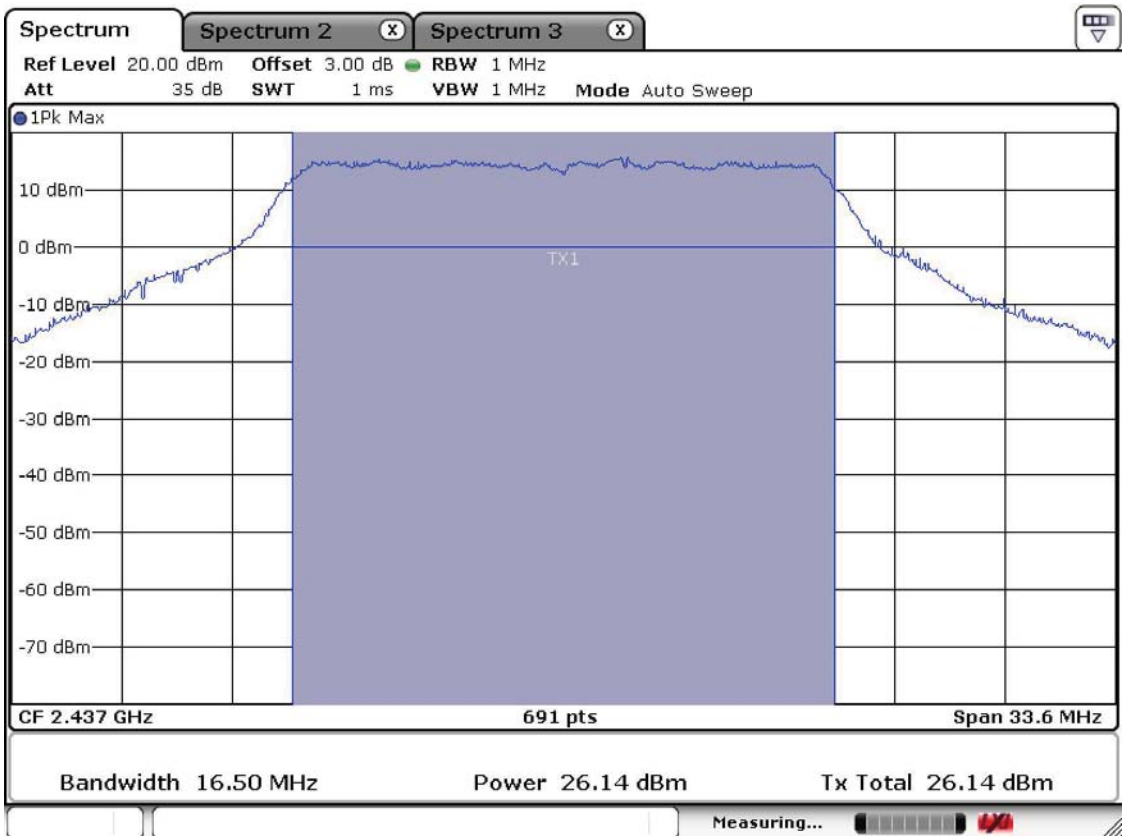

Spectrum
Spectrum 2
Spectrum 3
Ref Level 20.00 dBm
Offset 3.00 dB
RBW 1 MHz
Att 35 dB
SWT 1 ms
VBW 1 MHz
Mode Auto Sweep
1Pk Max
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
TX1
CF 2.412 GHz
691 pts
Span 25.6 MHz
Bandwidth 12.56 MHz
Power 22.54 dBm
Tx Total 22.54 dBm
Measuring...

802.11g

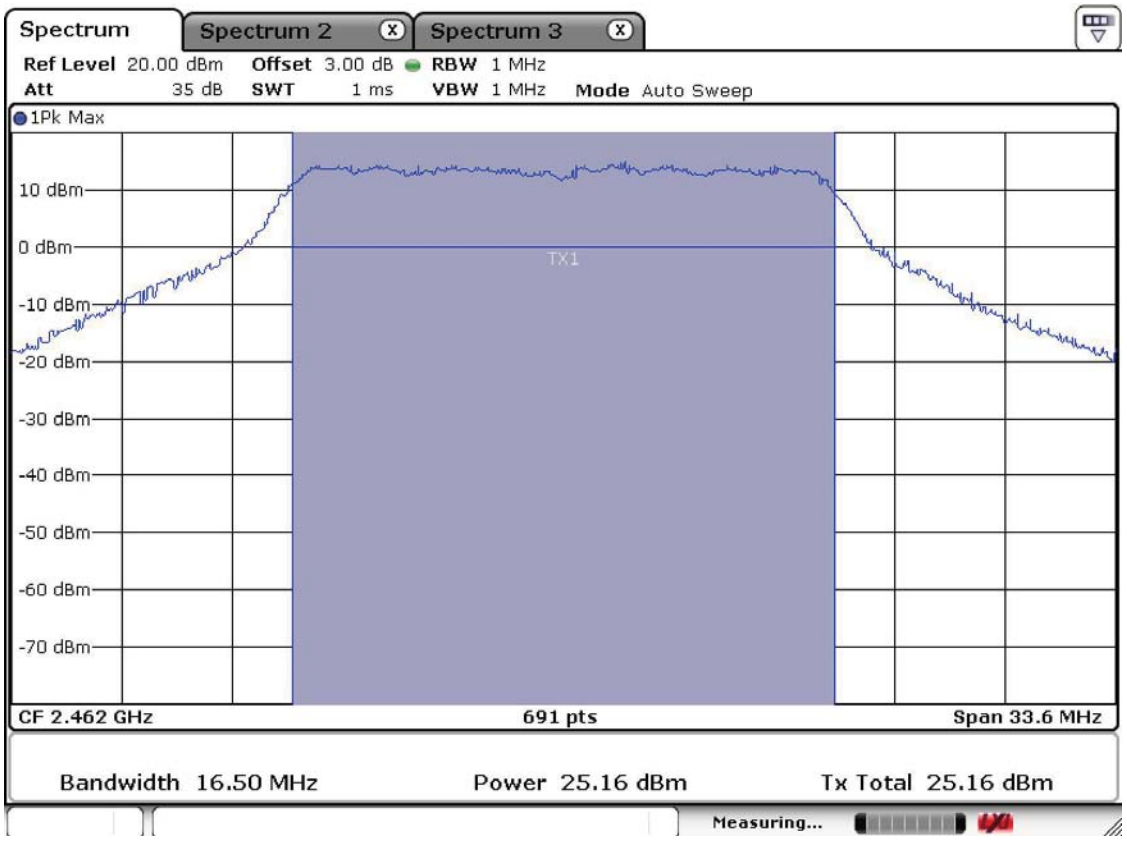
CH 1



CH 6



CH 11


Spectrum
Spectrum 2
Spectrum 3
Ref Level 20.00 dBm
Offset 3.00 dB
RBW 1 MHz
Att 35 dB
SWT 1 ms
VBW 1 MHz
Mode Auto Sweep
1Pk Max
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
TX1
CF 2.462 GHz
691 pts
Span 33.6 MHz
Bandwidth 16.50 MHz
Power 25.16 dBm
Tx Total 25.16 dBm
Measuring...

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 = 10 kHz Sweep = 1000 sec

Detector function = peak Trace = max hold

Measurement Data:

Mode	Frequency (MHz)	Ch.	Test Results	
			dBm	Result
802.11b	2412	1	-4.99	Complies
	2437	6	-5.91	Complies
	2462	11	-6.33	Complies
802.11g	2412	1	-7.64	Complies
	2437	6	-7.46	Complies
	2462	11	-8.33	Complies

- See next pages for actual measured spectrum plots.

Minimum Standard:

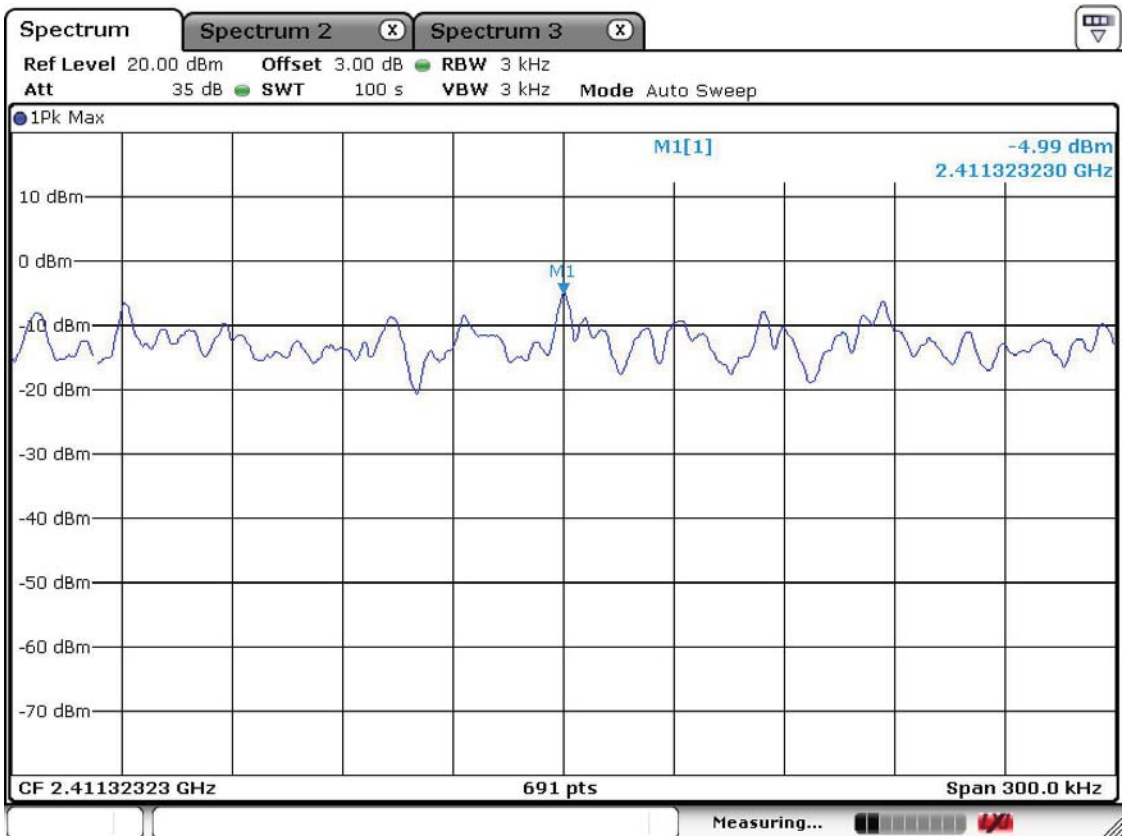
Power Spectral Density	< 8dBm @ 3kHz BW

Measurement Setup

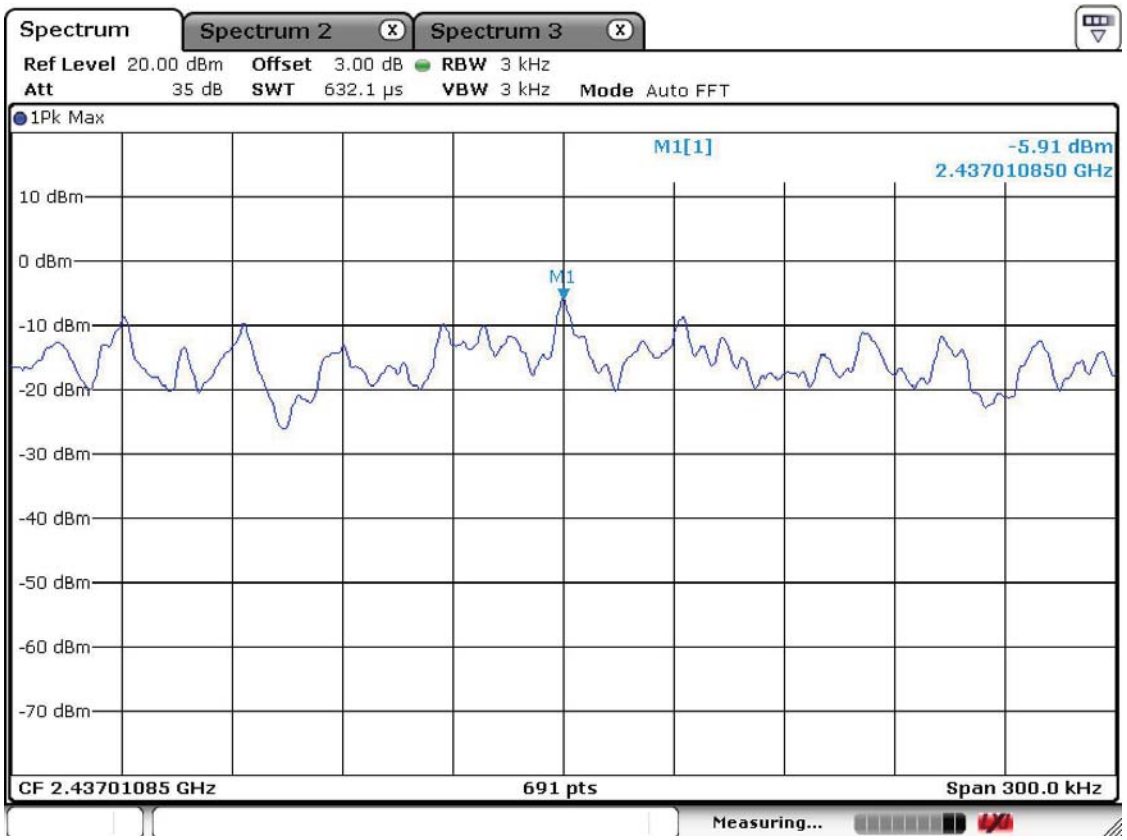
Same as the Chapter 3.2.1 (Figure 1)

802.11b Power Density Measurement

CH 1



CH 6



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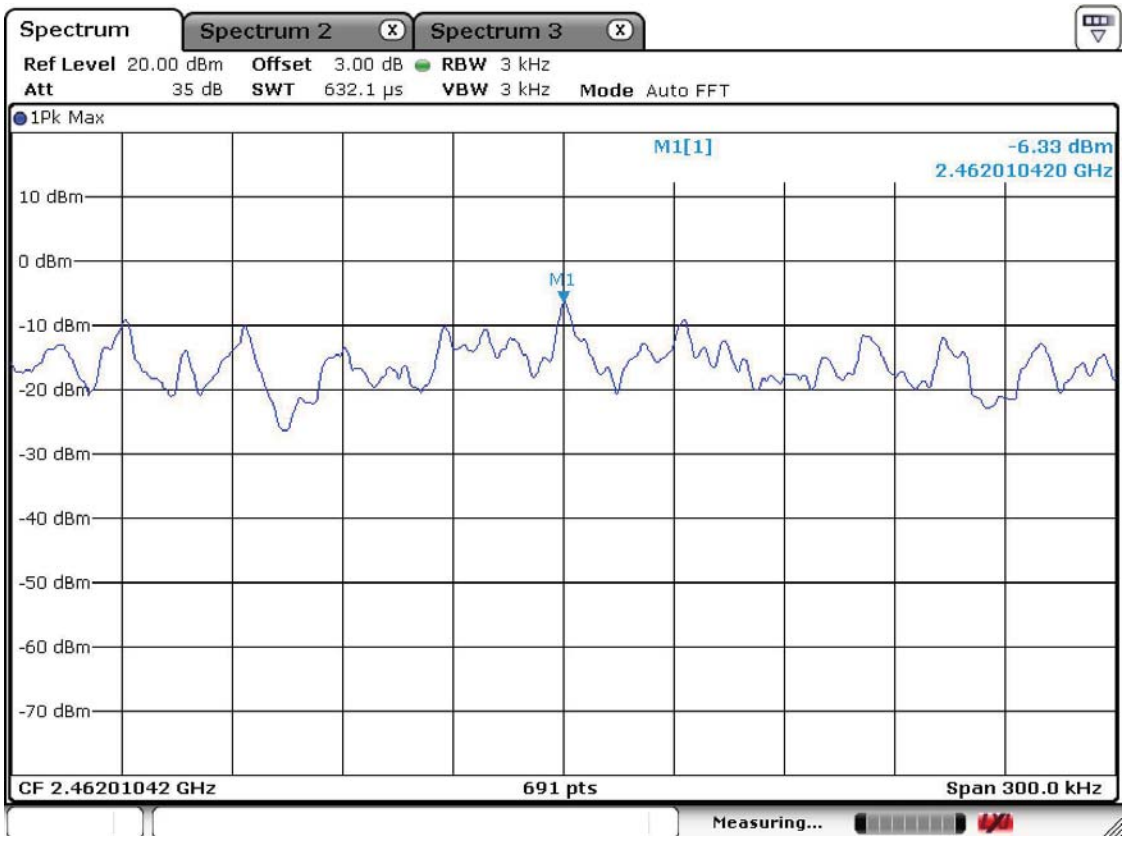
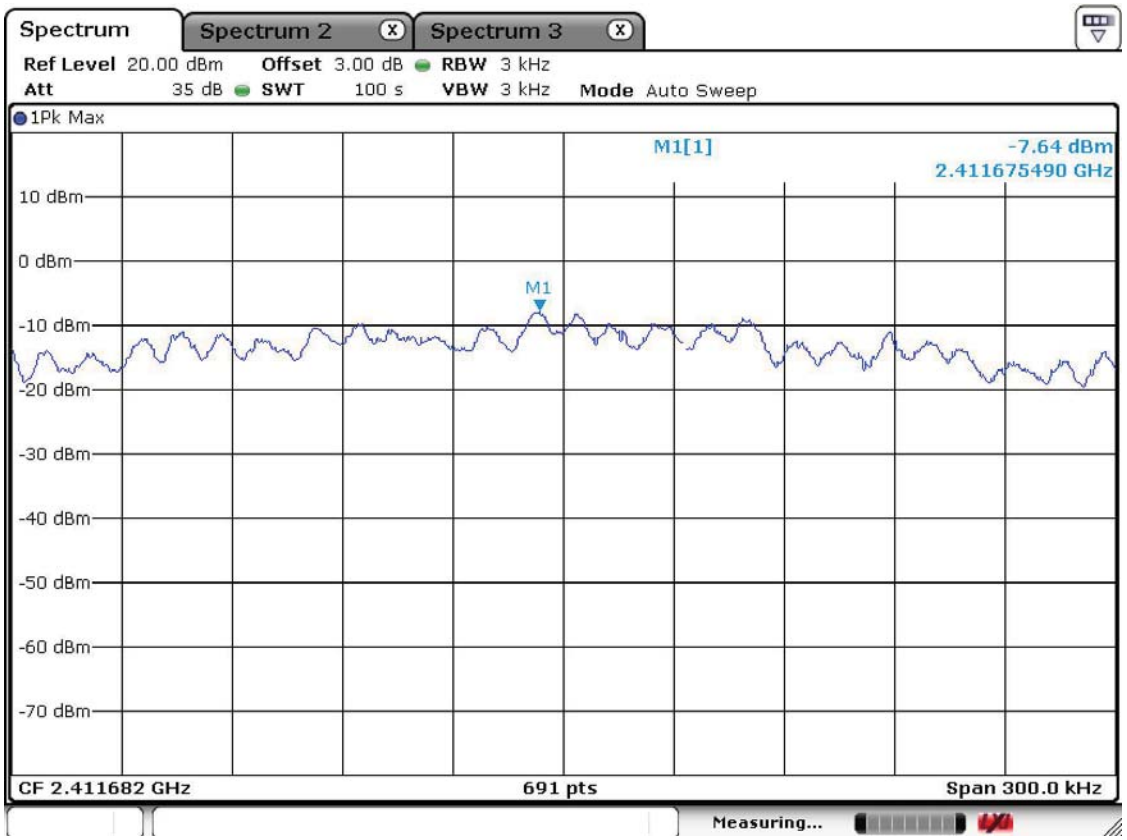

Spectrum
Spectrum 2
Spectrum 3
Ref Level 20.00 dBm Offset 3.00 dB RBW 3 kHz
Att 35 dB SWT 632.1 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
-6.33 dBm
2.462010420 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.46201042 GHz
691 pts
Span 300.0 kHz
Measuring...

802.11g Power Density Measurement

CH 1



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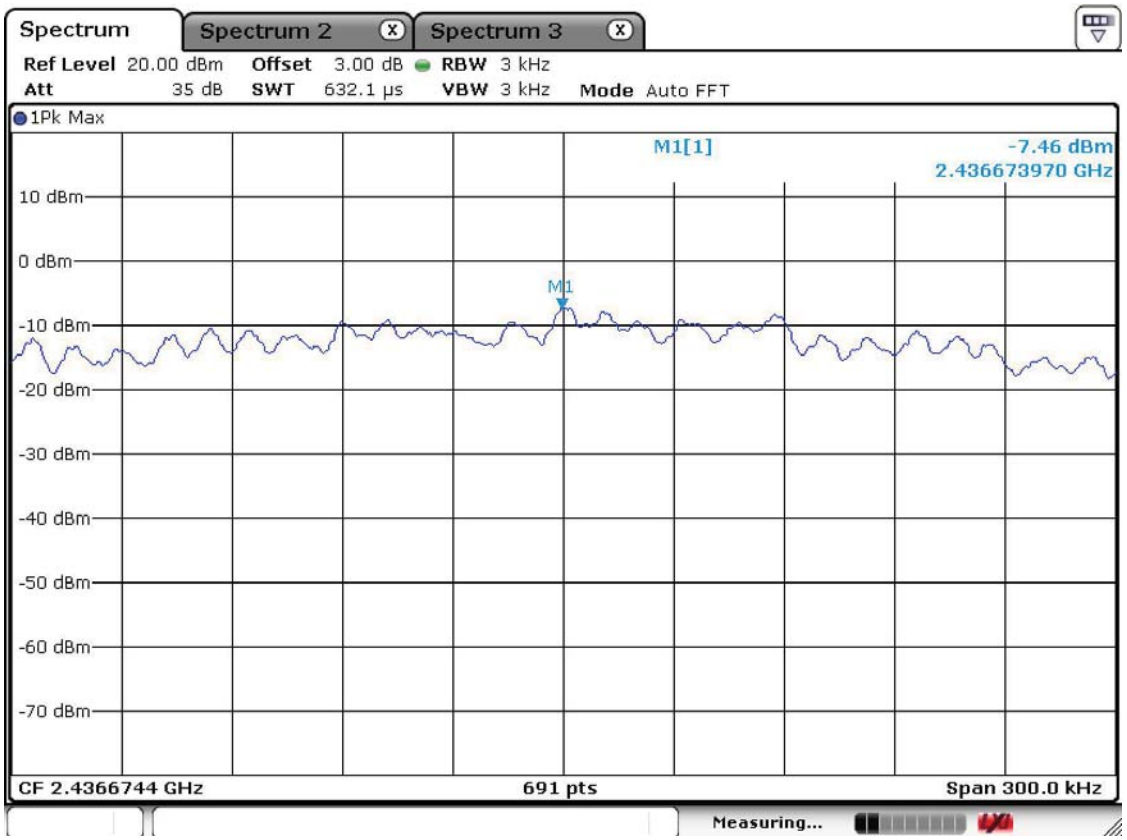

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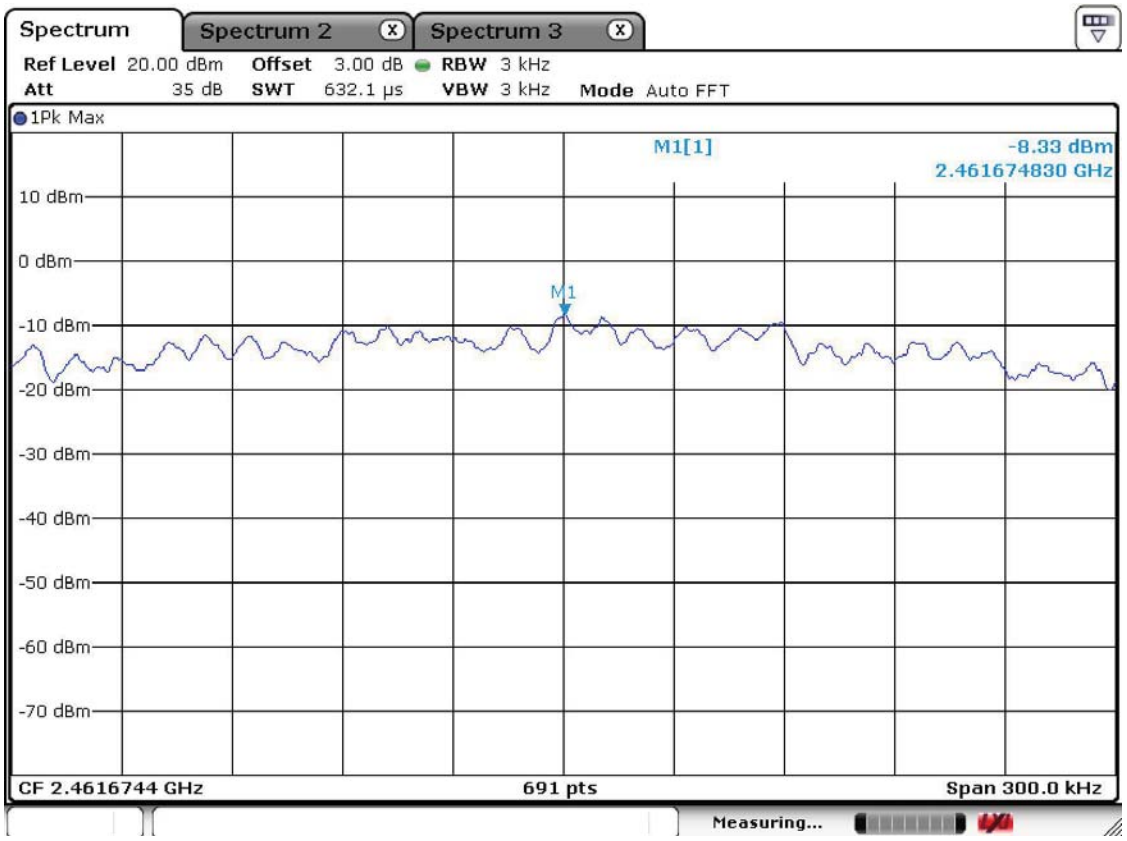

Spectrum
Spectrum 2
Spectrum 3
Ref Level 20.00 dBm Offset 3.00 dB RBW 3 kHz
Att 35 dB SWT 632.1 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
-8.33 dBm
2.461674830 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.4616744 GHz
691 pts
Span 300.0 kHz
Measuring...

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

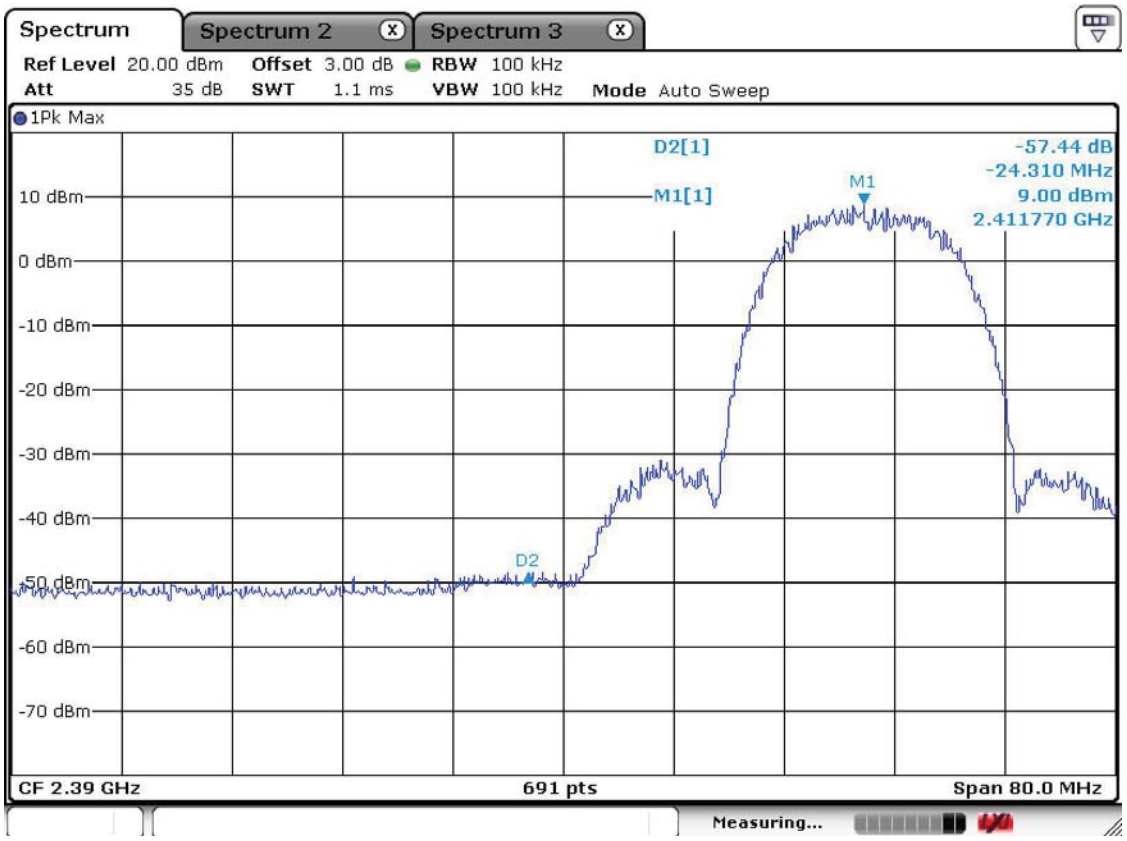
RBW = 100 kHz	VBW = 100 kHz
Span = 40 MHz	Detector function = peak
Trace = max hold	Sweep = auto

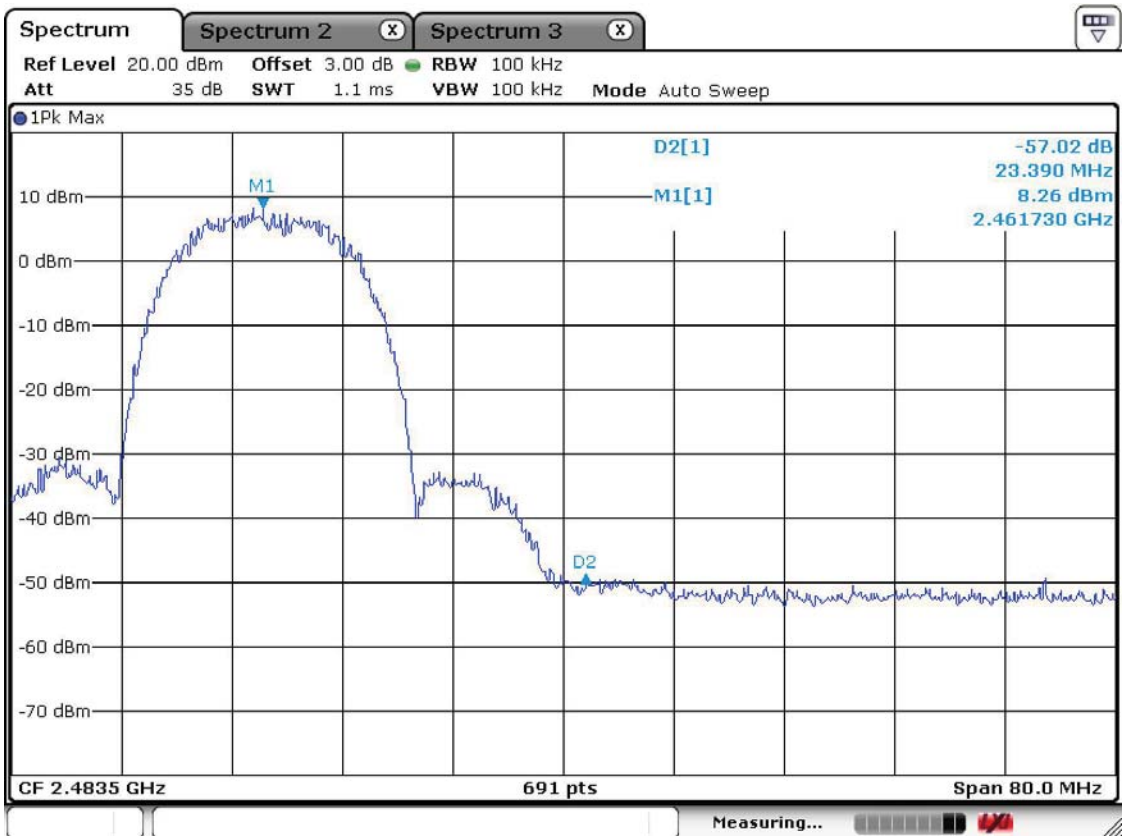
Measurement Data: Complies

- 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

802.11b Band–edge : Conducted Measurements





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

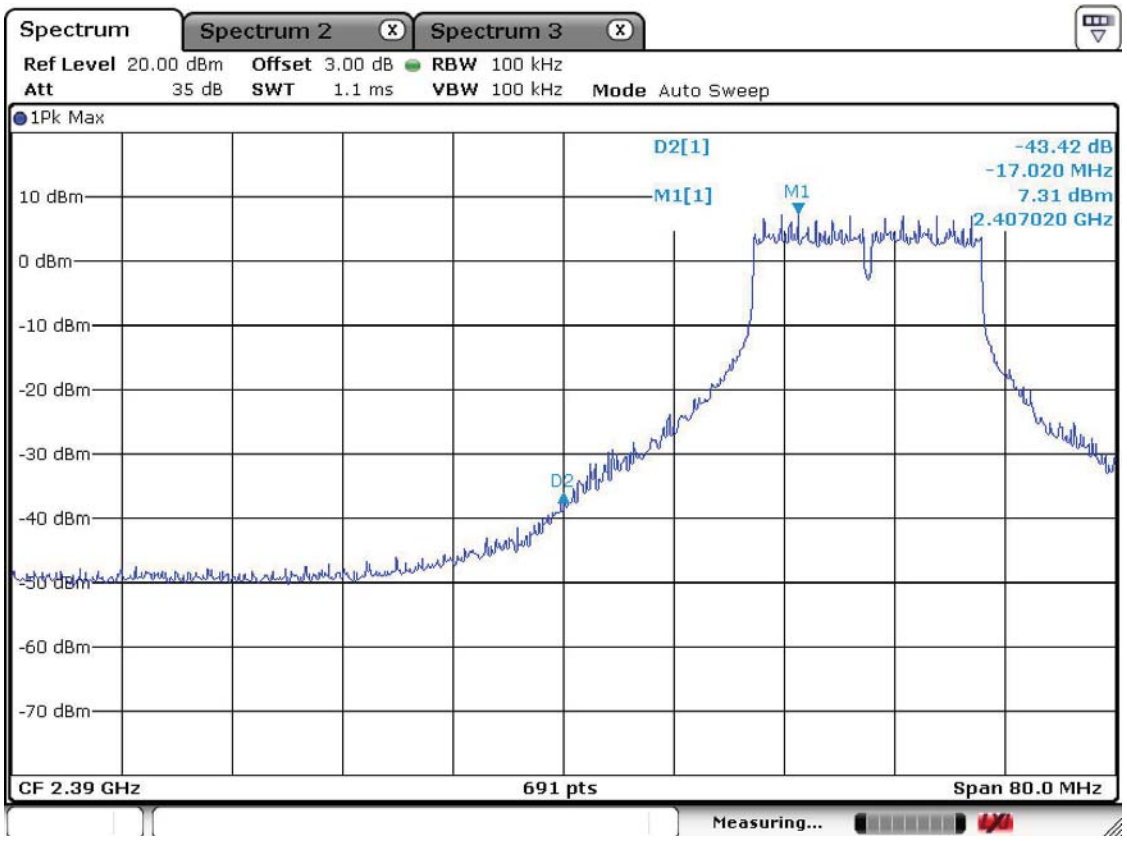
Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
2390	51.39	67.37	H	25.4	37.1	4.0	54.0	74.0	43.6	59.6	10.4	14.4

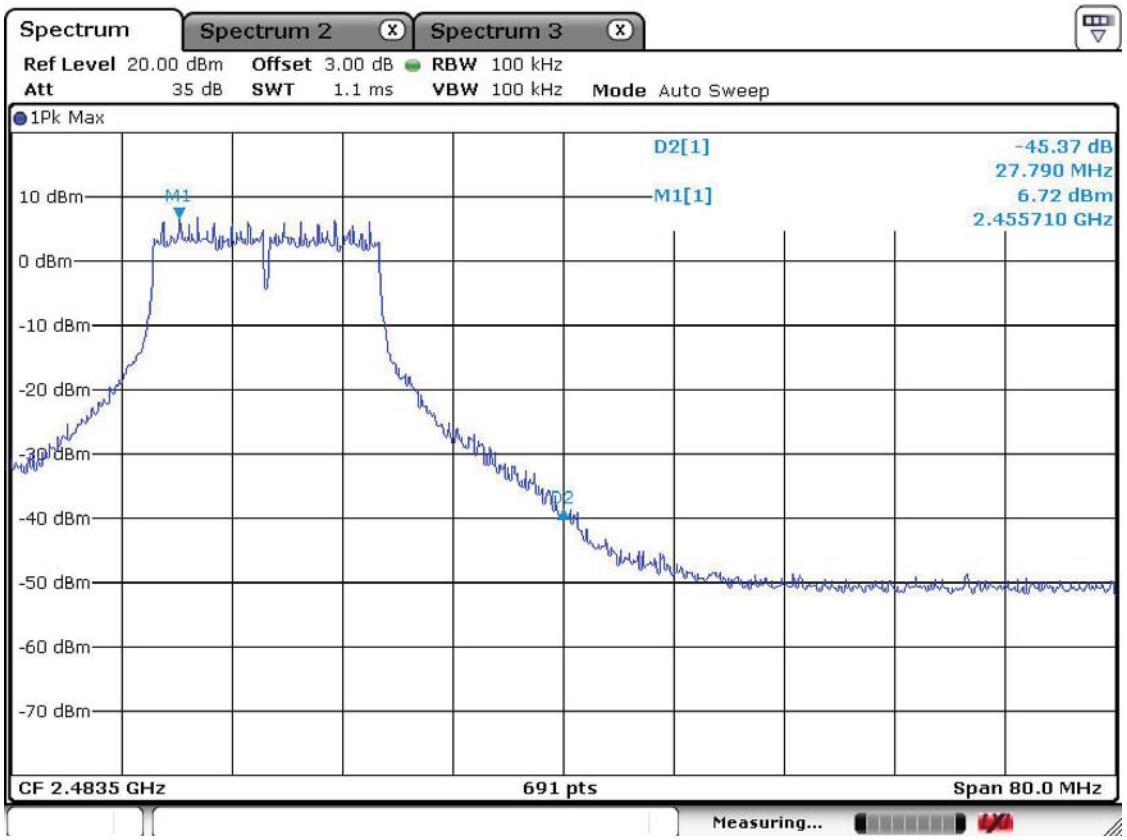
Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
2483.5	52.52	70.15	H	25.4	37.1	4.0	54.0	74.0	44.8	62.4	9.2	11.6

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] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
2390	57.05	70.59	H	25.4	37.1	4.0	54.0	74.0	49.3	62.8	4.7	11.2

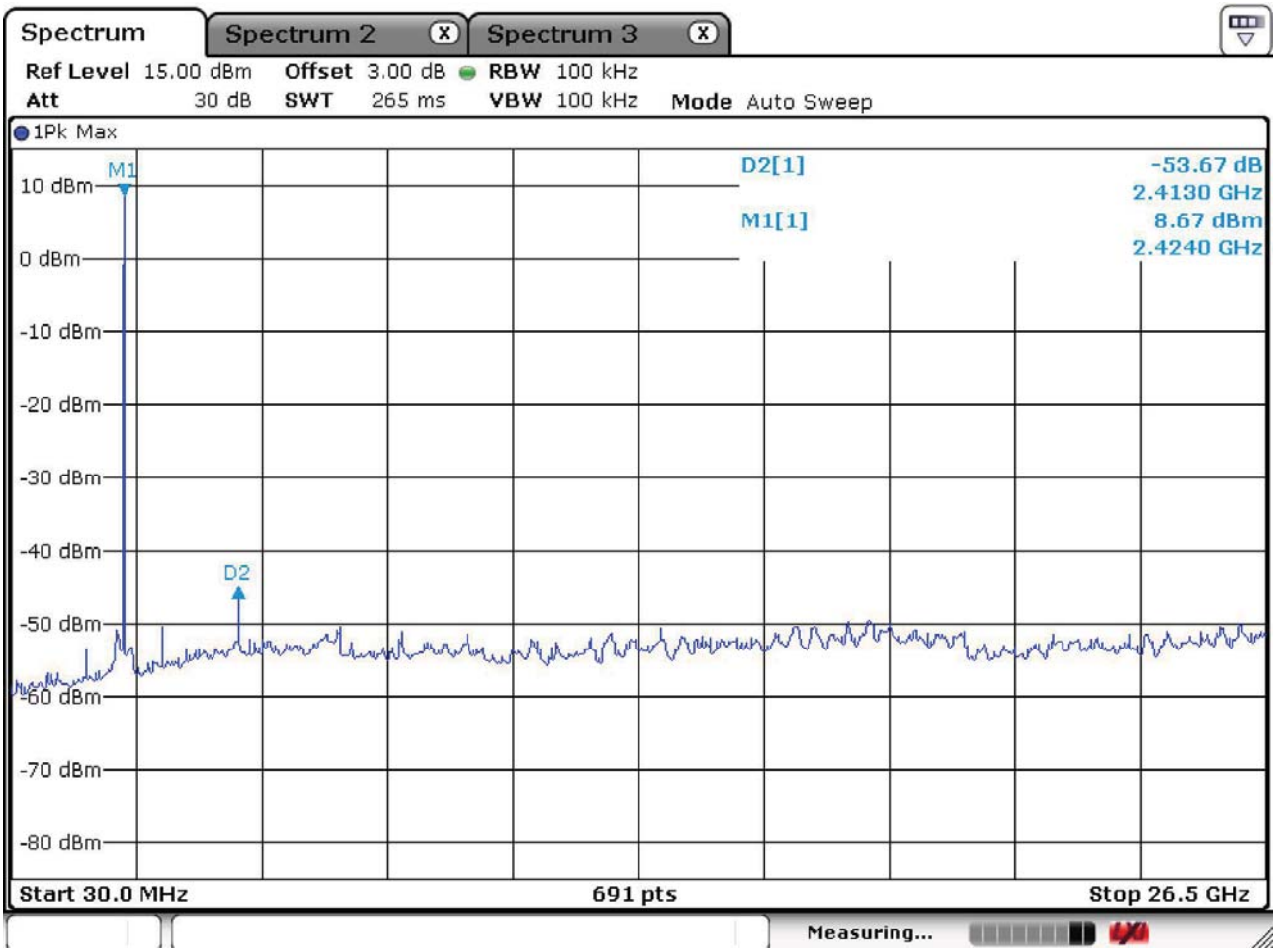
Band-edges in the restricted band 2483.5-2500 MHz measurement

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
2483.5	59.28	72.98	H	25.4	37.1	4.0	54.0	74.0	51.5	65.2	2.5	8.8

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

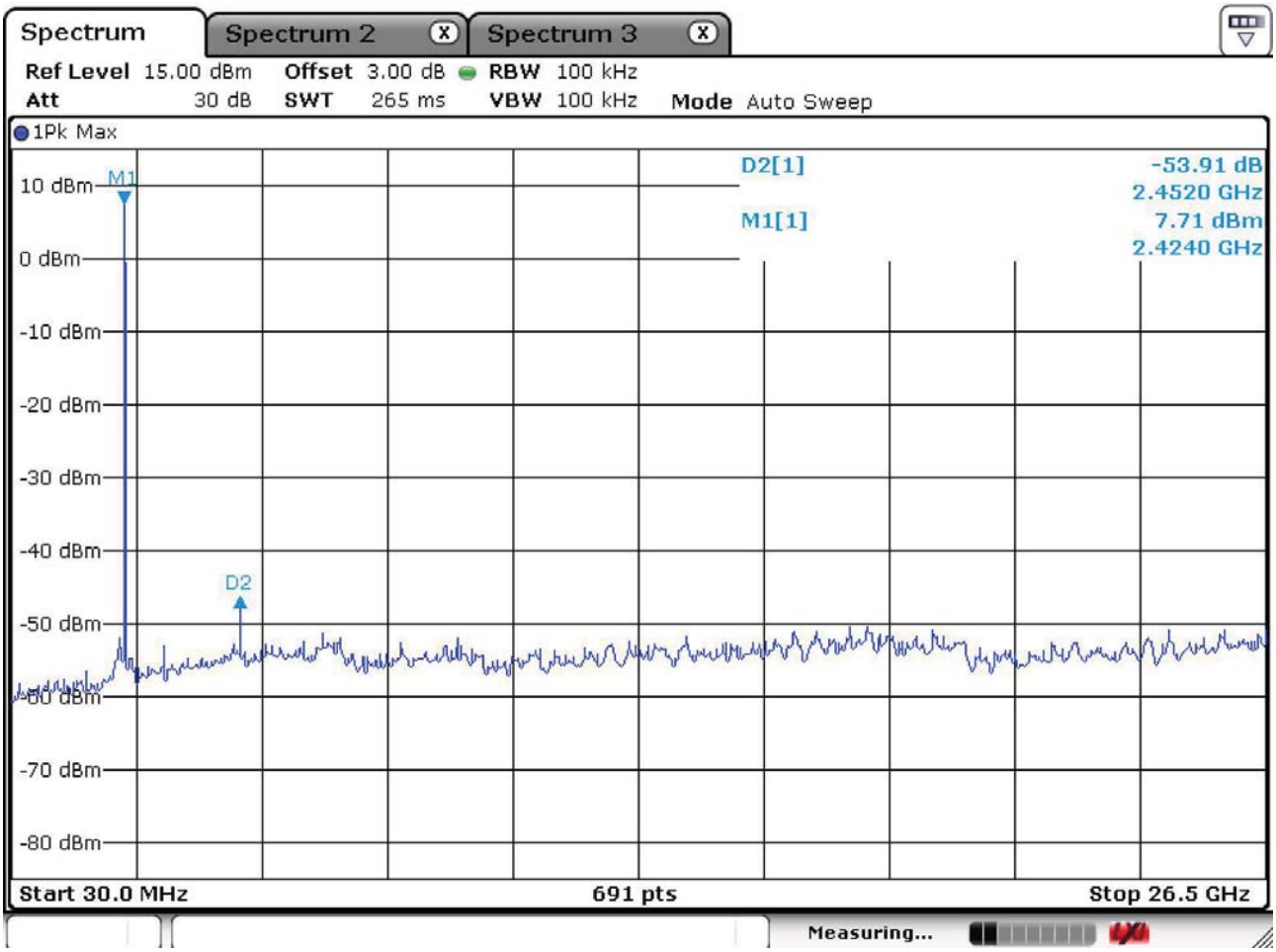
802.11b - Low channel

Frequency Range = 30 MHz ~ 10th harmonic.



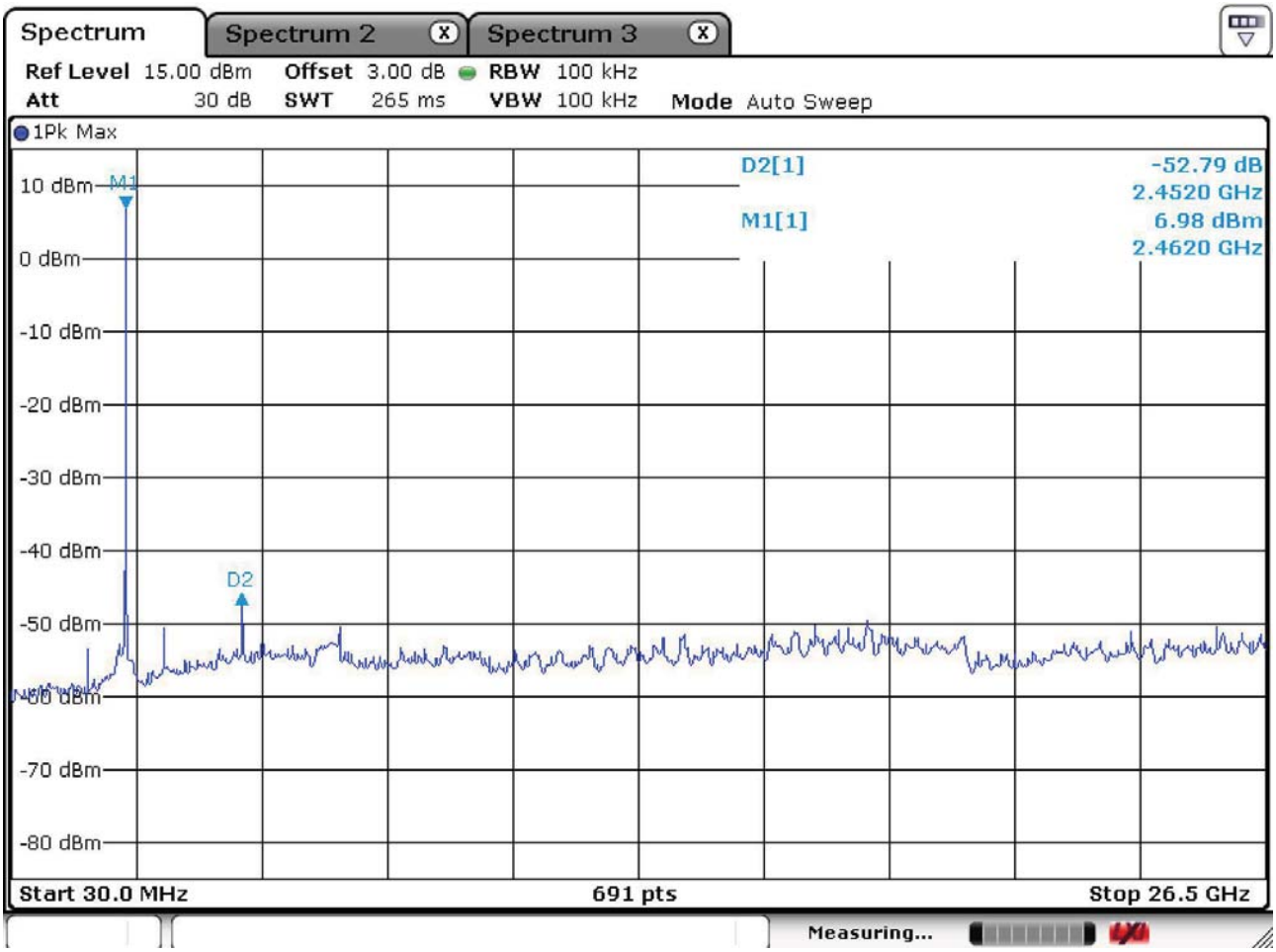
802.11b - Mid channel

Frequency Range = 30 MHz ~ 10th harmonic.



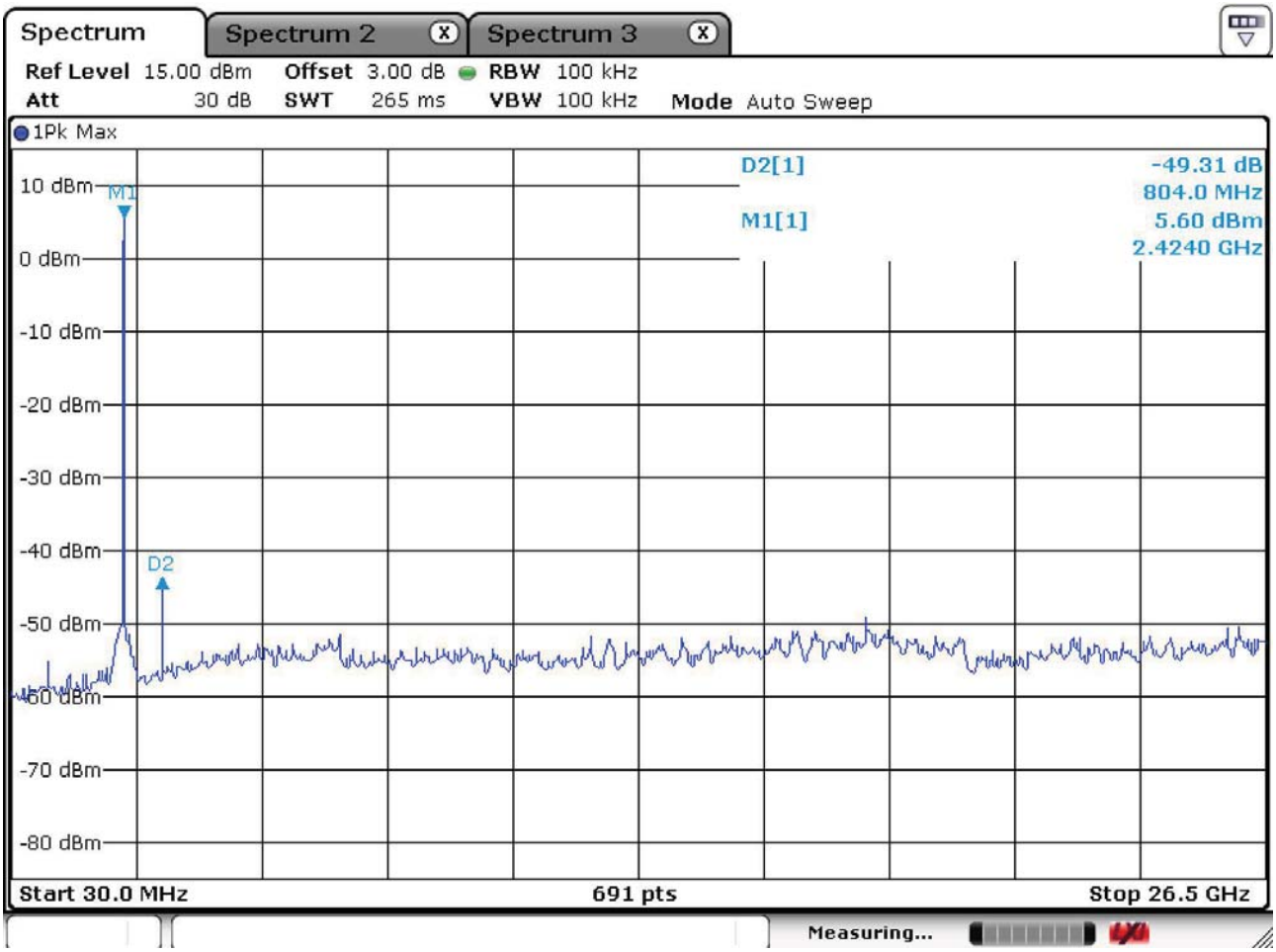
802.11b – High channel

Frequency Range = 30 MHz ~ 10th harmonic.



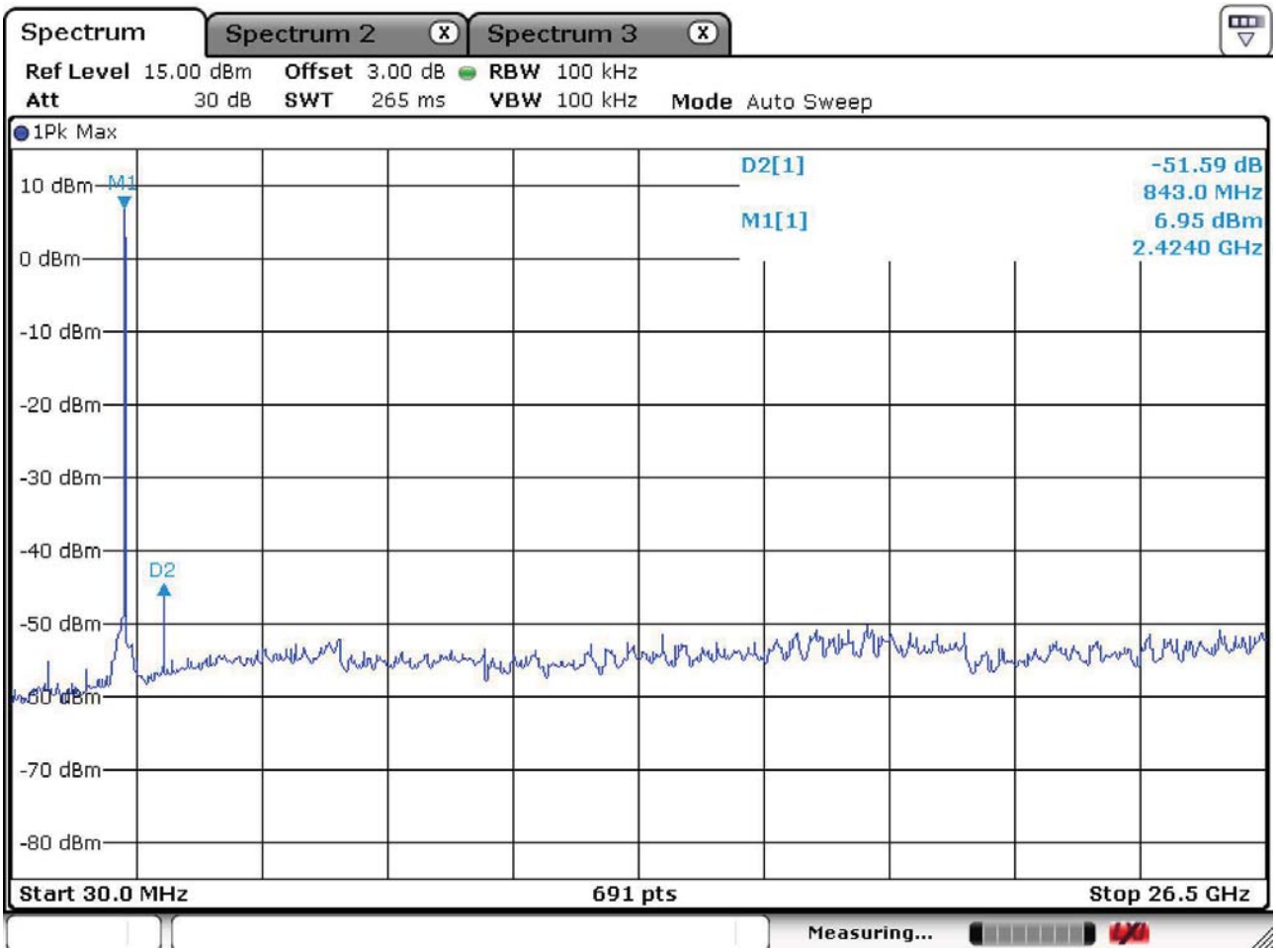
802.11g - Low channel

Frequency Range = 30 MHz ~ 10th harmonic.



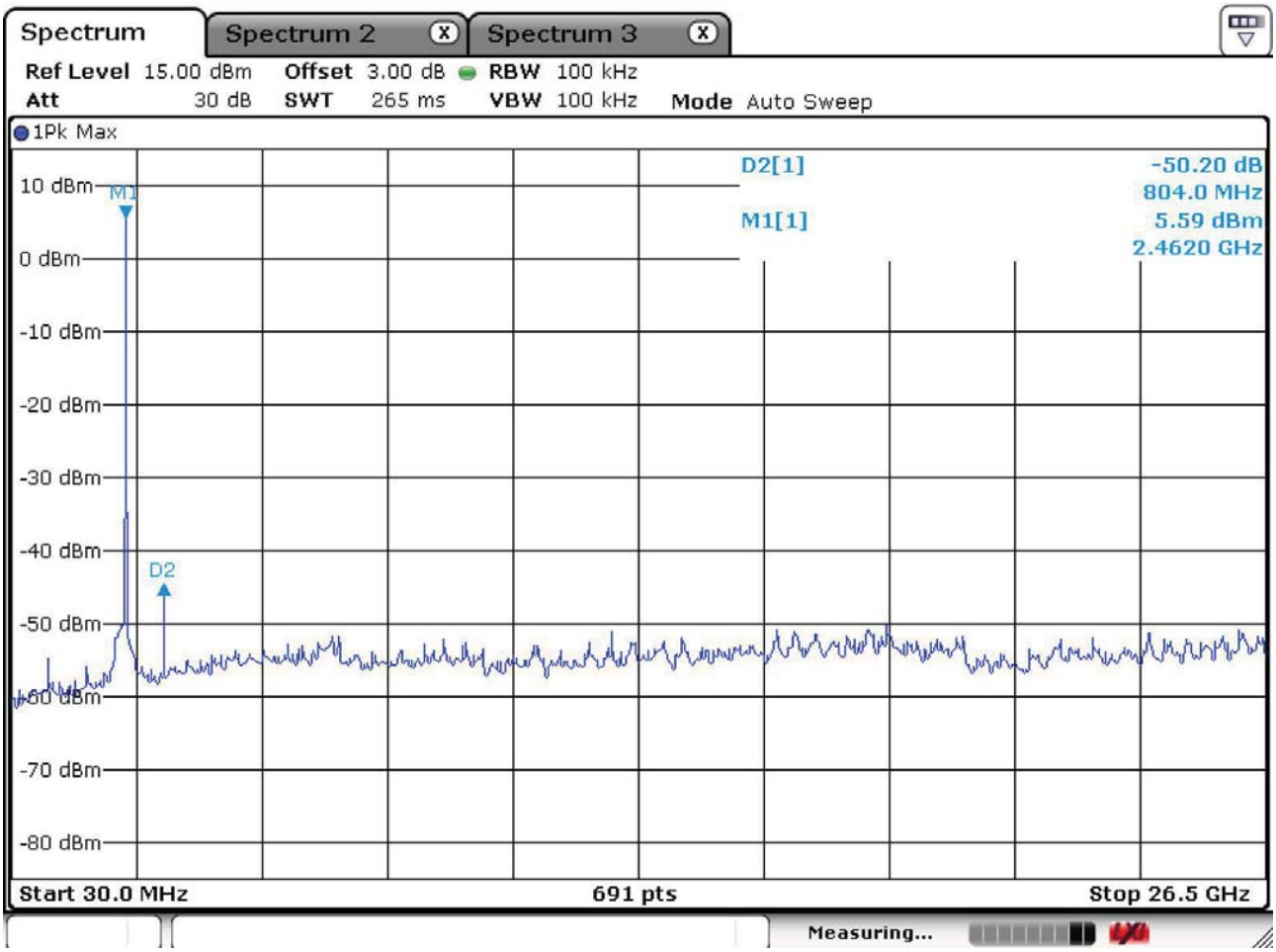
802.11g - Mid channel

Frequency Range = 30 MHz ~ 10th harmonic.



802.11g – High channel

Frequency Range = 30 MHz ~ 10th harmonic.



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 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
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:

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4824	46.7	60	H	31.4	36.5	5.7	54.0	74.0	47.4	60.7	6.6	13.3
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4874	46.5	58.7	H	31.4	36.5	5.7	54.0	74.0	47.2	59.4	6.8	14.6
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4924	47	59.6	H	31.4	36.5	5.7	54.0	74.0	47.7	60.3	6.3	13.7
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

802.11g Measurement Data:

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4824	44.8	57.9	H	31.4	36.5	5.7	54.0	74.0	45.5	58.6	8.5	15.4
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4874	44.5	56.2	H	31.4	36.5	5.7	54.0	74.0	45.2	56.9	8.8	17.1
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

Frequency [MHz]	Reading [dBuV/m] AV / Peak		Pol.	Correction Factor Antenna	Amp. Gain	Cable	Limits [dBuV/m] AV / Peak		Result [dBuV/m] AV / Peak		Margin [dB] AV / Peak	
4924	44.2	56.5	H	31.4	36.5	5.7	54.0	74.0	44.9	57.2	9.1	16.8
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

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

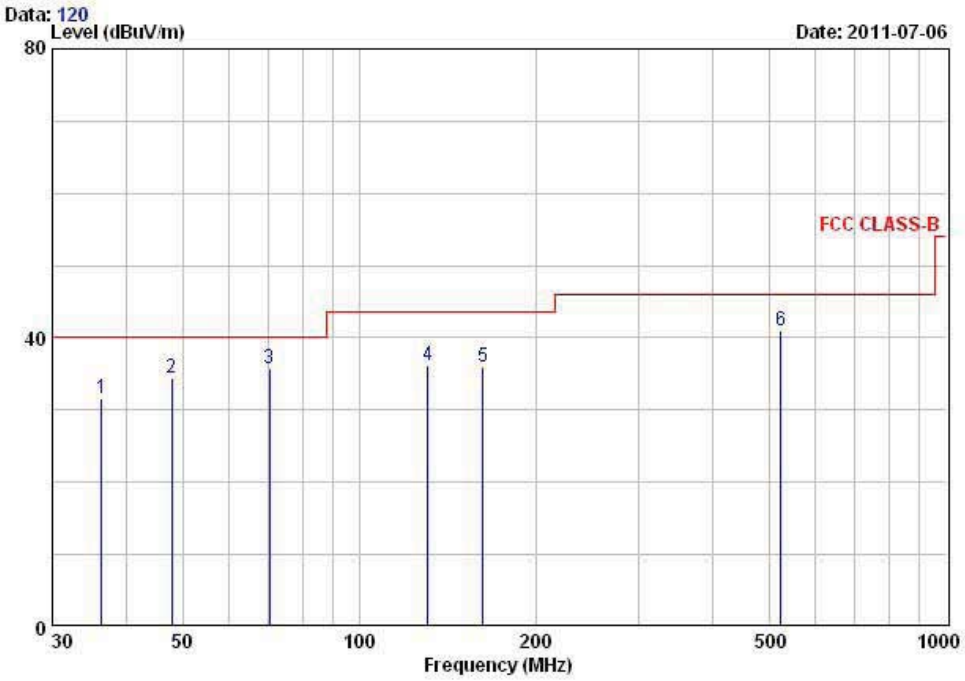
Radiated Emissions –WLAN+Activesync+"H"+MP3+Cam

LTA
Laboratory for Test & Approval Co.,Ltd.

243 Jubug-ri, yangji-Myeon, Youngin-si,
Gyeonggi-do 449-822 Korea
Tel :+82-31-3236008,9
Fax:+82-31-3236010

EUT/Model No.: ALH-9000 TEST MODE: WLAN mode

Temp Humi : 24 / 82 Tested by: PARK.H.W



	Freq	Reading	C.F	Result	Limit QP	Margin	Height	Angle	Polarity
	MHz	dBuV/m	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	36.38	43.50	-11.90	31.60	40.00	8.40	105	215	VERTICAL
2	47.99	45.30	-10.75	34.55	40.00	5.45	115	167	VERTICAL
3	70.34	48.20	-12.46	35.74	40.00	4.26	109	154	VERTICAL
4	130.84	46.80	-10.57	36.23	43.50	7.27	264	105	HORIZONTAL
5	162.61	44.80	-8.89	35.91	43.50	7.59	264	157	HORIZONTAL
6	522.72	43.50	-2.54	40.96	46.00	5.04	334	215	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

- 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

Radiated Emissions – WLAN+Activesync+"H"+MP3 LINE

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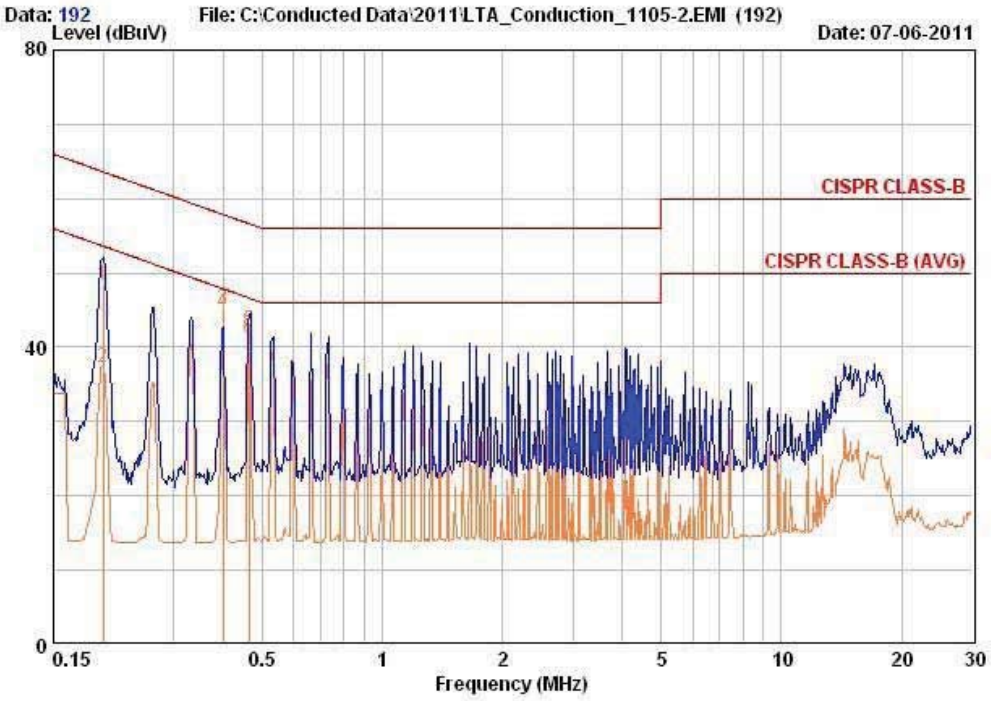
Fax:+82-31-3236010

EUT / Model No.	: ALH-9000	Phase	: LINE
Test Mode	: WLAN+Activesync+"H"+MP3+Cam mode	Test Power	: 120 / 60
Temp./Humi.	: 23 / 55	Test Engineer	: PARK.H.W



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
0.200	38.84	27.54	9.64	48.48	37.18	63.61	53.61	15.13	16.43
0.399	35.53	34.93	9.67	45.20	44.60	57.87	47.87	12.67	3.27
0.464	32.62	31.62	9.67	42.29	41.29	56.62	46.62	14.33	5.33

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

Radiated Emissions – WLAN+Activesync+"H"+MP3 NEUTRAL

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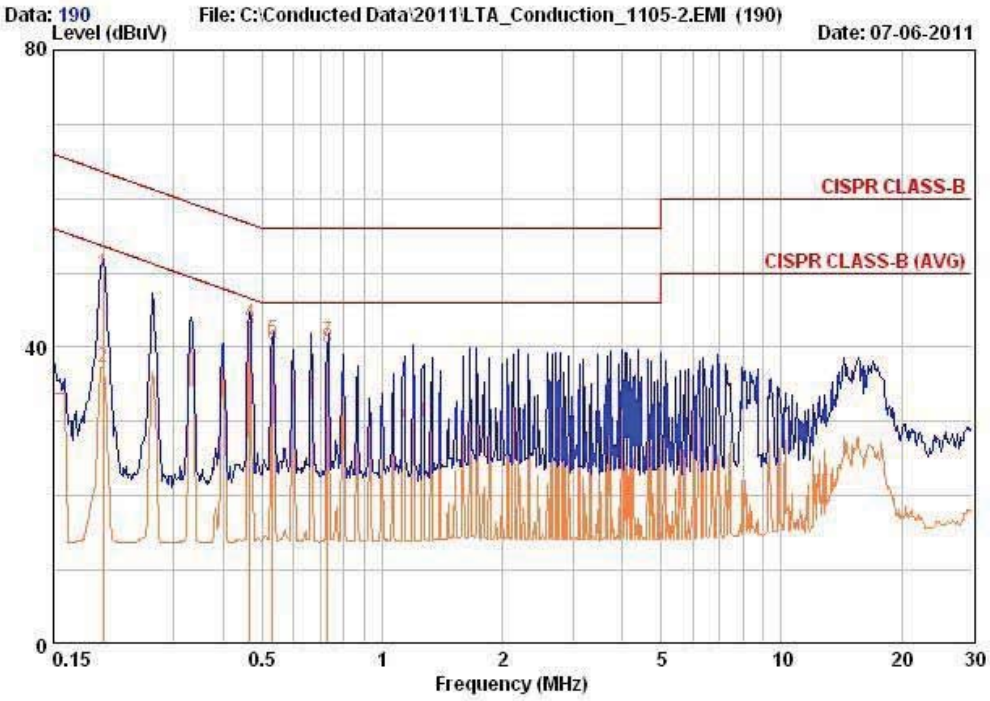
Fax:+82-31-3236010

EUT / Model No.	: ALH-9000	Phase	: NEUTRAL
Test Mode	: WLAN+Activesync+"H"+MP3+Cam mode	Test Power	: 120 / 60
Temp./Humi.	: 23 / 55	Test Engineer	: PARK.H.W



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
0.200	40.24	27.74	9.64	49.88	37.38	63.61	53.61	13.73	16.23
0.466	33.52	32.72	9.66	43.19	42.39	56.58	46.58	13.40	4.20
0.531	31.42	30.72	9.67	41.09	40.39	56.00	46.00	14.91	5.61
0.731	31.12	30.22	9.66	40.78	39.88	56.00	46.00	15.22	6.12

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	Spectrum Analyzer (~2.9GHz)	8594E	3710A04074	HP	2 year	2009-10-12
3	Signal Generator (~3.2GHz)	8648C	3623A02597	HP	1 year	2011-03-30
4	Signal Generator (1~20GHz)	83711B	US34490456	HP	1 year	2011-03-30
5	Attenuator (3dB)	8491A	37822	HP	2 year	2010-10-08
6	Attenuator (10dB)	8491A	63196	HP	2 year	2010-10-08
7	Attenuator (30dB)	8498A	3318A10929	HP	2 year	2011-01-05
8	Test Receiver (~30MHz)	ESHS10	828404/009	R&S	1 year	2011-03-30
9	EMI Test Receiver (~1GHz)	ESCI7	100722	R&S	1 year	2010-10-08
10	RF Amplifier (~1.3GHz)	8447D	2439A09058	HP	2 year	2010-10-08
11	RF Amplifier (1~18GHz)	8449B	3008A02126	HP	2 year	2010-03-29
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	2010-10-07
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	2 year	2010-04-12
21	Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-	-
22	Power Divider	11636A	6243	HP	2 year	2010-10-08
23	DC Power Supply	6622A	3448A03079	HP	-	-
24	Frequency Counter	5342A	2826A12411	HP	1 year	2011-03-30
25	Power Meter	EPM-441A	GB32481702	HP	1 year	2011-03-30
26	Power Sensor	8481A	US41030291	HP	1 year	2010-10-08
27	Audio Analyzer	8903B	3729A18901	HP	1 year	2010-10-08
28	Modulation Analyzer	8901B	3749A05878	HP	1 year	2010-10-08
29	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2010-10-08
30	Stop Watch	HS-3	601Q09R	CASIO	2 year	2010-03-31
31	LISN	ENV216	100408	R&S	1 year	2010-10-08
32	UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	2 year	2010-05-13
33	Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	-	-
34	Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	-	-