

EMC TEST REPORT

Report No. : EME-050405

Model No. : XG-650E

Issued Date : May 23, 2005

Applicant : Z-Com, Inc.
7F-2, No.9, Prosperity RD. I, Science-Based Industrial
Park, Hsinchu, Taiwan

Test By : Intertek Testing Services Taiwan Ltd.
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Project Engineer



Marx Yan

Reviewed By



Jerry Liu

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Summary of Tests**54Mbps. 802.11g Wireless PCI adapter -Model: XG-650E
FCC ID: M4Y-XG650E**

Test	Reference	Results
Minimum 6dB Bandwidth test	15.247(a)(2)	Complies
Maximum Output Power test	15.247(b)	Complies
Radiated Spurious Emission test	15.205, 15.209	Complies
Power Spectrum Density test	15.247(d)	Complies
Power Line Conducted Emission test	15.207	Complies

1. General information

1.1 Identification of the EUT

Applicant	: Z-Com, Inc.
Product	: 54Mbps. 802.11g Wireless PCI adapter
Model No.	: XG-650E
FCC ID.	: M4Y-XG650E
Frequency Range	: 2412MHz ~ 2462 MHz
Channel Number	: 11 Channels
Frequency of Each Channel	: 2412MHz, 2417MHz, 2422MHz, 2427MHz, 2432MHz, 2437MHz, 2442MHz, 2447MHz, 2452MHz, 2457MHz, 2462MHz
Type of Modulation	: OFDM, DSSS
Rated Power	: 3.3Vdc from Notebook PC
Power Cord	: N/A
Sample Received	: Apr. 27, 2005
Test Date(s)	: May 2, 2005 ~ May 9, 2005

A FCC DoC report has been generated for the client.

1.2 Additional information about the EUT

The EUT is designed for Access Point, Router, ATUR, Printer Server series, IP Camera series and Internet Video Server gives User's wireless access the web and network resource without the wire.

The EUT meets special requirements for full modular approval on FCC Public Notice DA 00-1407 and the device is only for OEM integrator, please refer the test result in this report.

For more detail features, please refer to User's manual as file name "Installation guide.pdf"

1.3 Antenna description

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain : 2dBi max

Antenna Type : Dipole antenna

Connector Type : UFL

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.
Notebook PC	DELL	PP01L	CN-06P83-48643-33V-0112

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section § 15.205, §15.207, §15.209, §15.247 and ANSI C63.4/2003.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

The EUT was supplied with 3.3Vdc from Notebook PC.

Plug the EUT into Notebook via a mini-PCI to PCMCIA extension card, then turn on the Notebook PC Power and run the test program “Radioscope.exe” under windows OS, which provide by manufacturer.

During conducted emission test, the EUT was in normal mode communicating with AP. While in other test, it worked in the status of continuously transmitting.

With individual verifying, the maximum output power were found at 11Mbps data rate for 802.11b mode and 54Mbps data rate for 802.11g mode. The final tests were executed under these conditions recorded in this report individually.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.	Intertek ID No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	EC303	04/13/2006
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	EC317	07/14/2005
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	EC353	07/13/2005
Spectrum Analyzer	Rohde & Schwarz	20Hz~40GHz	FSEK 30	EC365	10/18/2005
Horn Antenna	EMCO	1GHz~18GHz	3115	EC338	08/16/2005
Horn Antenna	SCHWARZBECK	14GHz~40GHz	BBHA 9170	EC351	07/08/2005
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	EC368	05/20/2005
Pre-Amplifier	MITEQ	100MHz~26.5GHz	919981	EC373	04/13/2006
Pre-Amplifier	MITEQ	26GHz~40GHz	828825	EC374	01/28/2006
Wideband Peak Power Meter/ Sensor	Anritsu	100MHz~18GHz	ML2497A/MA2491A	EC396	10/18/2005
Controller	HDGmbH	N/A	HD 100	EP317-1	N/A
Antenna Tower	HDGmbH	N/A	MA 240	EP317-2	N/A
Turn Table	HDGmbH	N/A	DS 420S	EP317-3	N/A
LISN	Rohde & Schwarz	9KHz~30MHz	ESH3-Z5	EC344	01/14/2006

Note: The above equipments are within the valid calibration period.

3. Minimum 6dB Bandwidth test

3.1 Operating environment

Temperature: 23 °C
 Relative Humidity: 54 %
 Atmospheric Pressure: 1023 hPa

3.2 Test setup & procedure

The minimum 6dB bandwidth per FCC §15.247(a)(2) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth set at 300kHz, and the SPAN>>RBW. The test was performed at 3 channels (lowest, middle and highest channel). The minimum 6-dB modulation bandwidth is in the following Table.

3.3 Measured data of Minimum 6dB Bandwidth test results

Test Mode: 802.11b (DSSS Modulation) operating mode

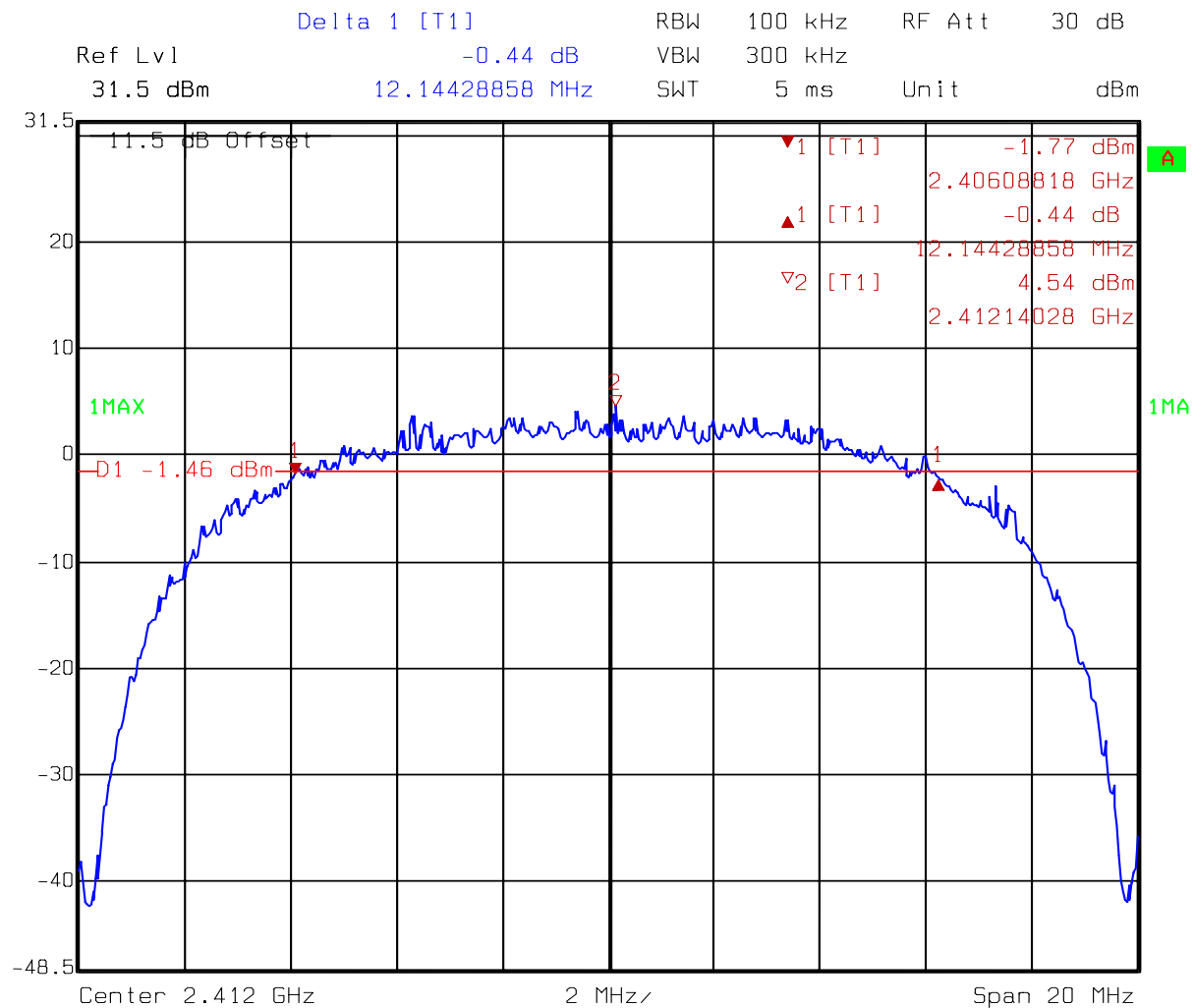
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
1 (lowest)	2412	12.14	>500kHz
6 (middle)	2437	12.18	>500kHz
11 (highest)	2462	12.06	>500kHz

Test Mode: 802.11g (OFDM Modulation) operating mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
1 (lowest)	2412	16.59	>500kHz
6 (middle)	2437	16.59	>500kHz
11 (highest)	2462	16.59	>500kHz

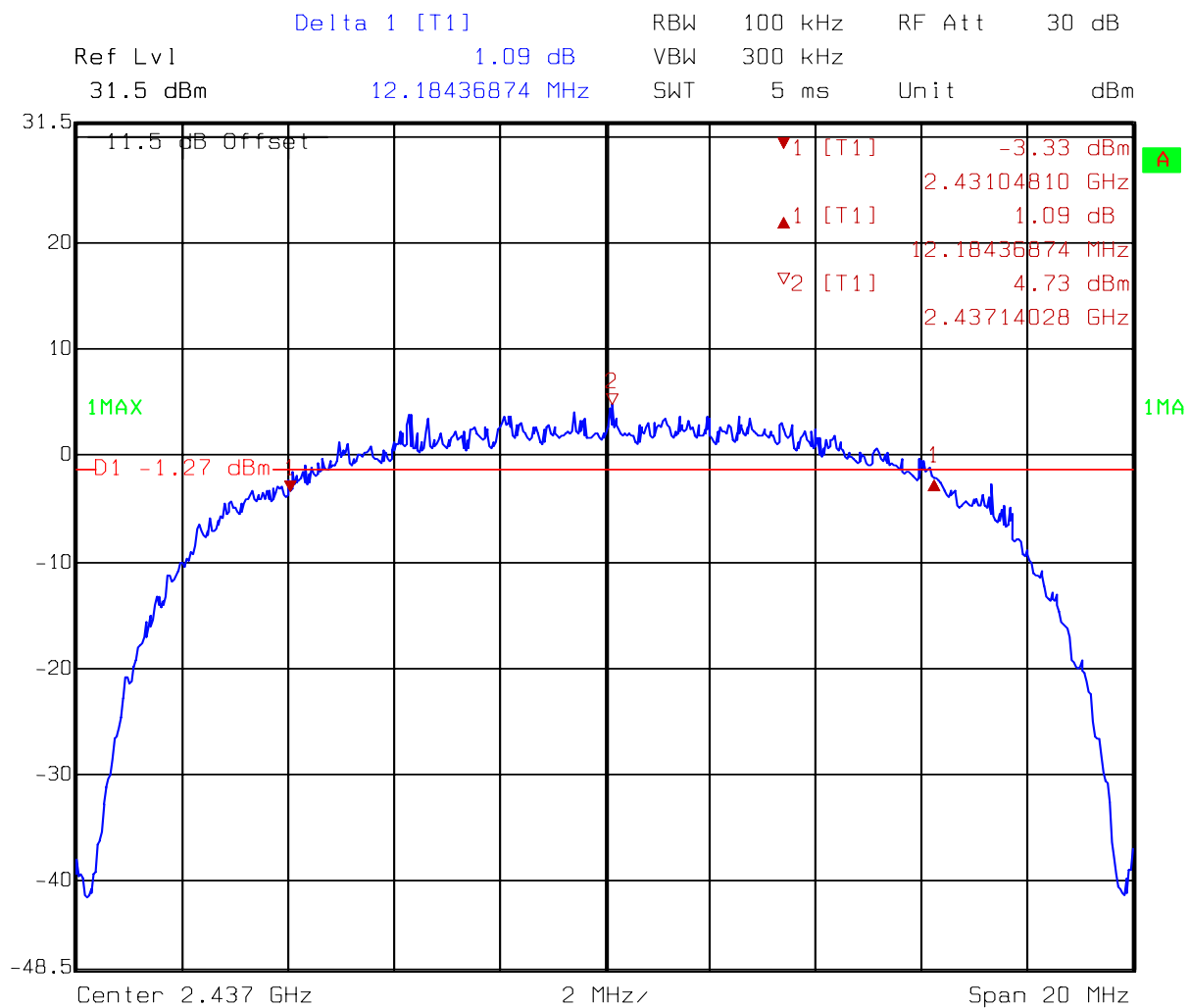
Please see the plot below.

Test Mode: 802.11b (DSSS Modulation) operating mode



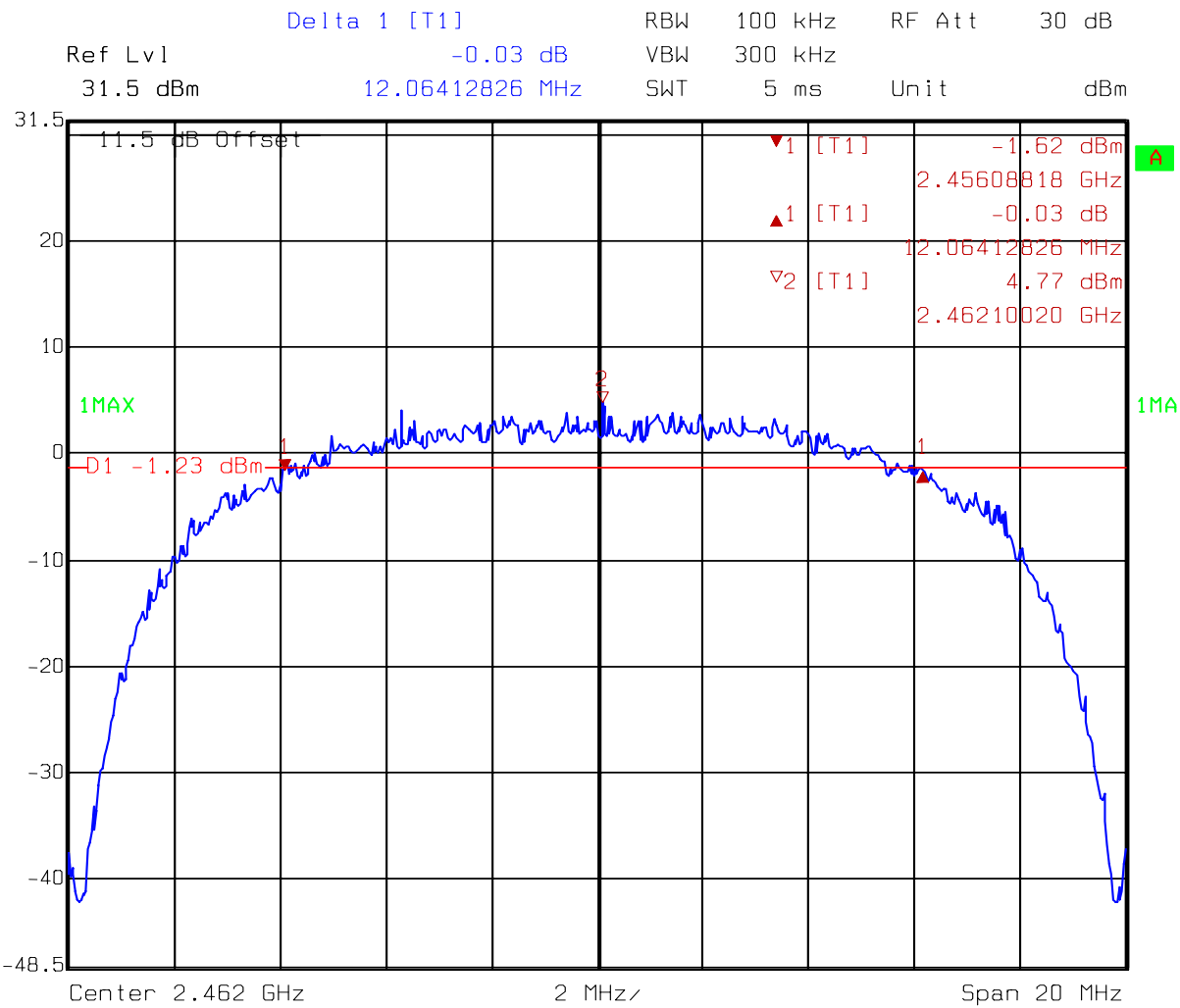
Comment A: 6dB bandwidth at ch 1 (EC365) 802.11b

Date: 06.MAY 2005 10:31:05



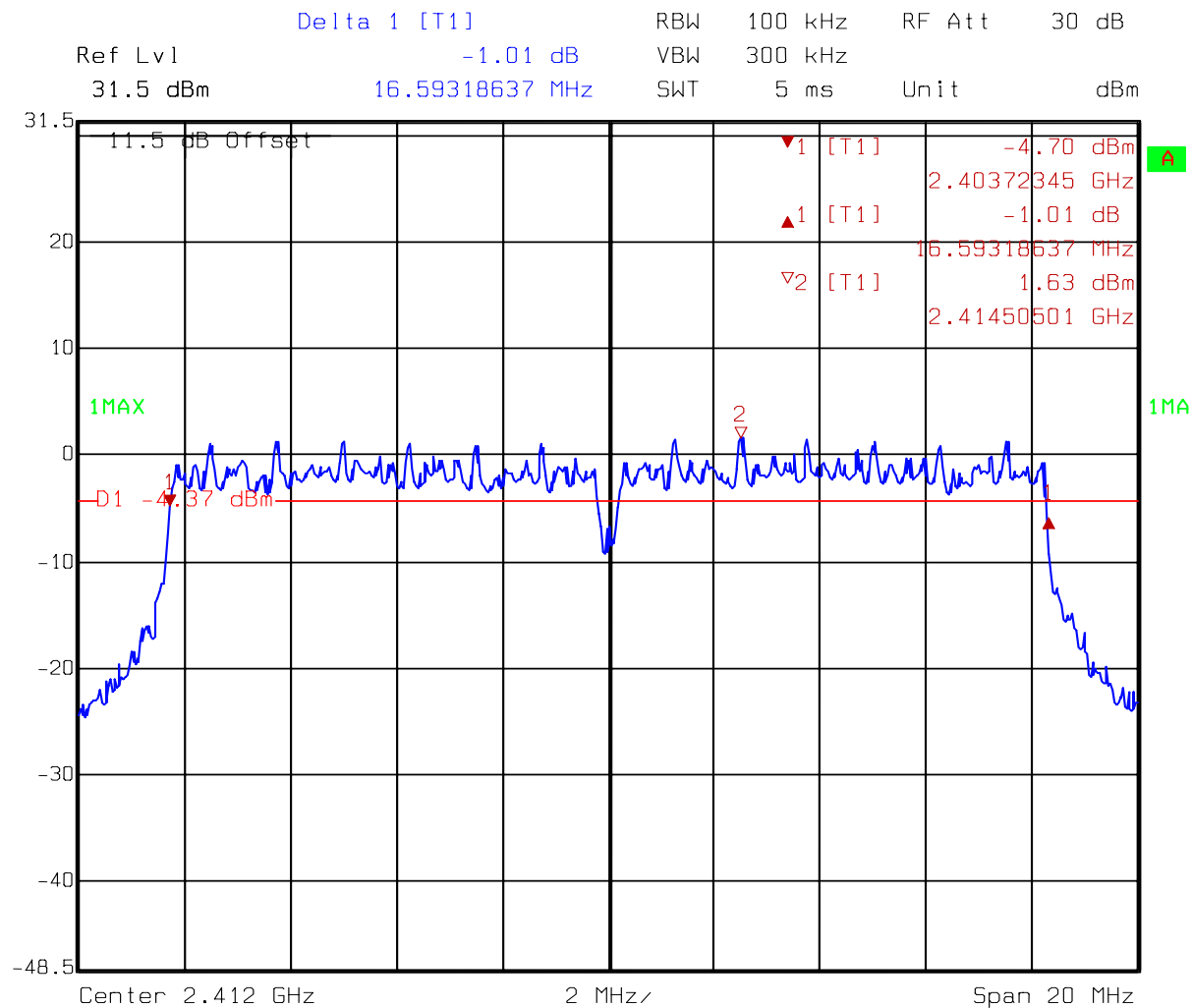
Comment A: 6dB bandwidth at ch 6 (EC365) 802.11b

Date: 06.MAY 2005 10:29:40



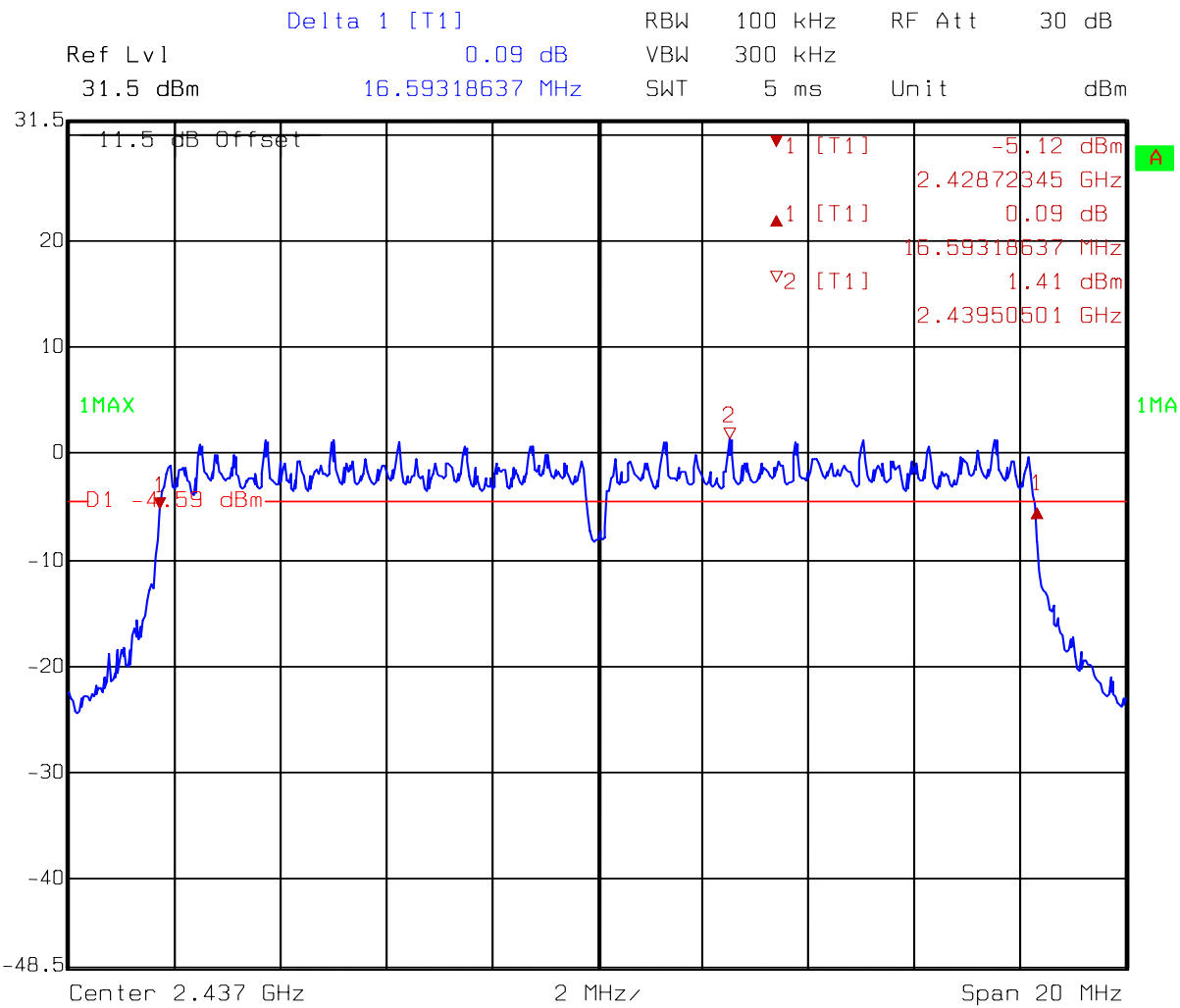
Comment A: 6dB bandwidth at ch 11 (EC365) 802.11b
 Date: 06.MAY 2005 10:27:40

Test Mode: 802.11g (OFDM Modulation) operating mode



Comment A: 6dB bandwidth at ch 1 (EC365) 802.11g

Date: 06.MAY 2005 10:23:22



Comment A: 6dB bandwidth at ch 6 (EC365) 802.11g
 Date: 06.MAY 2005 10:24:52

Comment A: 6dB bandwidth at ch 11 (EC365) 802.11g
Date: 06.MAY 2005 10:26:12

4. Maximum Output Power test

4.1 Operating environment

Temperature: 23 °C
 Relative Humidity: 54 %
 Atmospheric Pressure: 1023 hPa

4.2 Test setup & procedure

The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Power was read directly and cable loss correction (1.5 dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

4.3 Measured data of Maximum Output Power test results

Test Mode: 802.11b (DSSS Modulation) operating mode

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (dBm)
				(dBm)	(mW)	
1 (lowest)	2412	1.5	18.91	20.41	109.90	30
6 (middle)	2437	1.5	18.72	20.22	105.20	30
11 (highest)	2462	1.5	18.86	20.36	108.64	30

Remark:

Conducted Peak Output Power = Reading + C.L.

Test Mode: 802.11g (OFDM Modulation) operating mode

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (dBm)
				(dBm)	(mW)	
1 (lowest)	2412	1.5	20.30	21.80	151.36	30
6 (middle)	2437	1.5	20.08	21.58	143.88	30
11 (highest)	2462	1.5	20.15	21.65	146.22	30

Remark:

Conducted Peak Output Power = Reading + C.L.

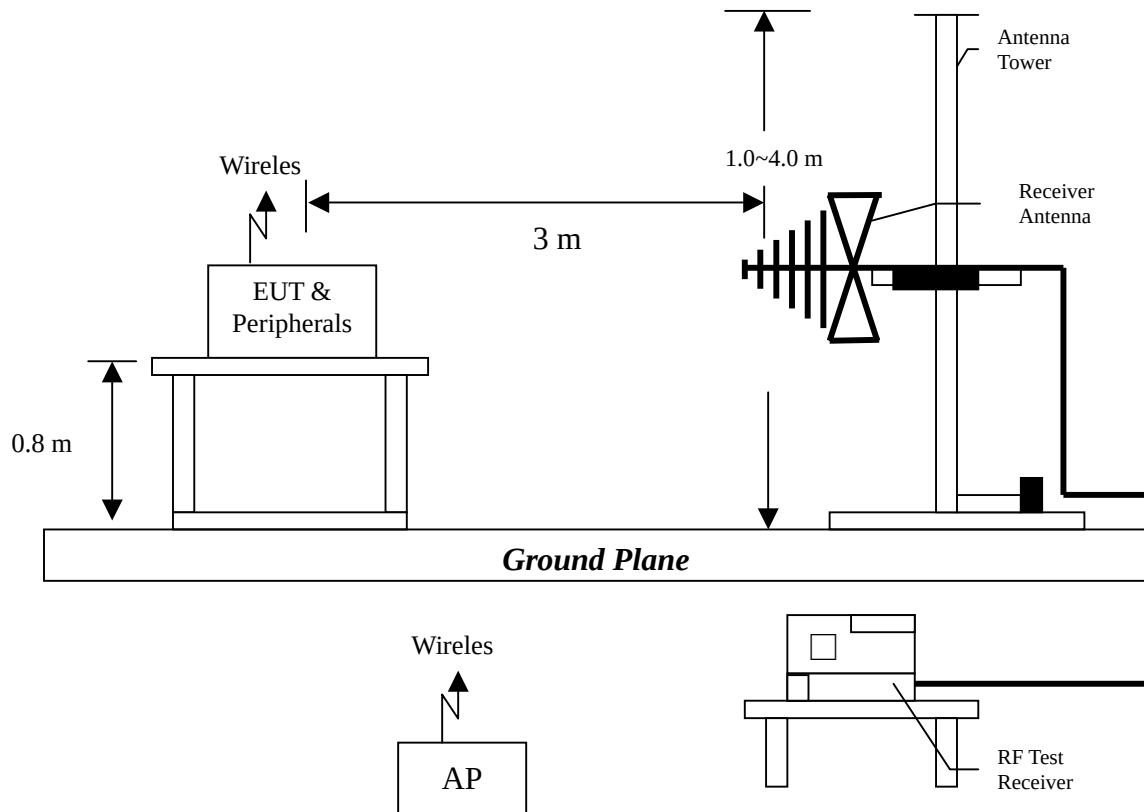
5. Radiated Emission test

5.1 Operating environment

Temperature: 23 °C
 Relative Humidity: 58 %
 Atmospheric Pressure: 1023 hPa

5.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emissions were investigated cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz RBW/VBW) recorded also on the report.

The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

5.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dB μ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.

Expanded uncertainty (k=2) of radiated emission measurement is 4.98 dB.

5.4 Radiated spurious emission test data

5.4.1 Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under 802.11b continuously transmitting mode. Channel 1, 6, 11 were verified. The worst case occurred at 802.11b Tx channel 1.

EUT : XG-650E
Worst Case : 802.11b Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
131.850	QP	V	11.92	18.36	30.28	43.50	-13.22	1.00	226
165.800	QP	V	15.27	18.07	33.34	43.50	-10.16	1.00	282
189.080	QP	V	12.10	20.71	32.81	43.50	-10.69	1.00	169
216.240	QP	V	11.92	22.91	34.83	46.00	-11.17	1.00	246
539.250	QP	V	19.32	15.57	34.89	46.00	-11.11	1.00	179
928.220	QP	V	24.89	12.57	37.46	46.00	-8.54	1.66	34
131.850	QP	H	12.49	21.34	33.83	43.50	-9.67	3.00	293
165.800	QP	H	13.63	21.44	35.07	43.50	-8.43	3.00	164
398.600	QP	H	16.77	19.24	36.01	46.00	-9.99	2.34	121
430.610	QP	H	17.64	16.94	34.58	46.00	-11.42	1.92	27
465.530	QP	H	18.35	16.33	34.68	46.00	-11.32	1.89	29
930.160	QP	H	25.16	13.89	39.05	46.00	-6.95	1.00	285

Remark:

1. Corrected Level = Reading Level + Correction Factor

2. Correction Factor = Antenna Factor + Cable Loss

The test was performed on EUT under 802.11g continuously transmitting mode. Channel 1, 6, 11 were verified. The worst case occurred at 802.11g Tx channel 1.

EUT : XG-650E

Worst Case : 802.11g Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
132.820	QP	V	12.20	19.30	31.50	43.50	-12.00	1.00	229
165.800	QP	V	15.27	17.24	32.51	43.50	-10.99	1.00	141
188.110	QP	V	12.21	19.77	31.98	43.50	-11.52	1.00	347
215.270	QP	V	11.88	23.44	35.32	43.50	-8.18	1.00	297
539.250	QP	V	19.32	15.58	34.90	46.00	-11.10	1.00	256
930.160	QP	V	24.93	10.55	35.48	46.00	-10.52	1.67	297
132.820	QP	H	12.58	22.70	35.28	43.50	-8.22	3.00	64
165.800	QP	H	13.63	21.33	34.96	43.50	-8.54	3.00	124
332.640	QP	H	15.07	19.59	34.66	46.00	-11.34	2.75	121
397.630	QP	H	16.75	19.35	36.10	46.00	-9.90	2.33	42
431.580	QP	H	17.66	17.56	35.22	46.00	-10.78	2.18	26
930.160	QP	H	25.16	12.21	37.37	46.00	-8.63	1.00	256

Remark:

1. Corrected Level = Reading Level + Correction Factor

2. Correction Factor = Antenna Factor + Cable Loss

5.4.2 Measurement results: frequency above 1GHz

The radiated spurious emissions at

Frequency(MHz)	Margin
4076.00	-0.54
9647.88	-0.64

are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.

EUT : XG-650E

Test Condition : 802.11b Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamplifier (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna height (m)	Turn Table angle (degree)
4076.00	PK	V	35.69	38.89	52.08	55.28	74	-18.72	3.86	195.40
4076.00	AV	V	35.69	38.89	50.26	53.46	54	-0.54	3.86	195.40
4824.00	PK	V	36.07	41.64	50.05	55.62	74	-18.38	1.99	95.16
4824.00	AV	V	36.07	41.64	34.94	40.51	54	-13.49	1.99	95.16
9647.88	PK	V	34.28	48.44	45.13	59.29	74	-14.71	2.81	8.70
9647.88	AV	V	34.28	48.44	39.20	53.36	54	-0.64	2.81	8.70
4076.02	PK	H	35.69	38.89	43.40	46.60	74	-27.40	1.19	90.00
4076.02	AV	H	35.69	38.89	38.61	41.81	54	-12.19	1.19	90.00

Remark:

1. Corrected Level = Reading + Correction Factor—Preamplifier
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is :

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

The radiated spurious emissions at

Frequency(MHz)	Margin
4126.00	-0.63
9747.96	-4.13

are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.

EUT : XG-650E

Test Condition : 802.11b Tx at channel 6

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
4126.00	PK	V	35.69	38.89	53.37	56.57	74	-17.43	1.09	166.74
4126.00	AV	V	35.69	38.89	50.17	53.37	54	-0.63	1.09	166.74
4874.04	PK	V	36.07	41.64	52.66	58.23	74	-15.77	1.79	169.28
4874.04	AV	V	36.07	41.64	37.17	42.74	54	-11.26	1.79	169.28
9747.96	PK	V	34.28	48.44	41.23	55.39	74	-18.61	1.12	257.14
9747.96	AV	V	34.28	48.44	35.71	49.87	54	-4.13	1.12	257.14
4125.94	PK	H	35.69	38.89	43.32	46.52	74	-27.48	3.65	62.67
4125.94	AV	H	35.69	38.89	37.47	40.67	54	-13.33	3.65	62.67

Remark:

1. Corrected Level = Reading Level + Correction Factor—Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

The radiated spurious emissions at

Frequency(MHz)	Margin
4176.00	-0.62
9747.96	-4.13

are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.

EUT : XG-650E

Test Condition : 802.11b Tx at channel 11

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamplifier (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
4176.00	PK	V	35.69	38.89	52.55	55.75	74	-18.25	3.21	211.71
4176.00	AV	V	35.69	38.89	50.18	53.38	54	-0.62	3.21	211.71
4923.92	PK	V	36.07	41.64	51.88	57.45	74	-16.55	1.07	272.46
4923.92	AV	V	36.07	41.64	36.60	42.17	54	-11.83	1.07	272.46
41176.06	PK	H	30.42	55.61	19.69	44.88	74	-29.12	1.56	42.26
41176.06	AV	H	30.42	55.61	12.87	38.06	54	-15.94	1.56	42.26

Remark:

1. Corrected Level = Reading Level + Correction Factor—Preamplifier
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

EUT : XG-650E

Test Condition : 802.11g Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
4076.00	PK	V	35.69	38.89	46.80	50.00	74	-24.00	3.20	91.15
4076.00	AV	V	35.69	38.89	40.31	43.51	54	-10.49	3.20	91.15
9650.20	PK	V	34.28	48.44	41.70	55.86	74	-18.14	2.86	191.58
9650.20	AV	V	34.28	48.44	22.34	36.50	54	-17.50	2.86	191.58

Remark:

1. Corrected Level = Reading + Correction Factor—Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is :

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

EUT : XG-650E

Test Condition : 802.11g Tx at channel 6

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
4126.00	PK	V	35.69	38.89	47.62	50.82	74	-23.18	2.77	87.99
4126.00	AV	V	35.69	38.89	41.67	44.87	54	-9.13	2.77	87.99
9749.20	PK	V	34.28	48.44	37.73	51.89	74	-22.11	3.76	81.07
9749.20	AV	V	34.28	48.44	21.46	35.62	54	-18.38	3.76	81.07

Remark:

1. Corrected Level = Reading Level + Correction Factor—Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

EUT : XG-650E

Test Condition : 802.11b Tx at channel 11

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
4175.96	PK	V	35.69	38.89	46.79	49.99	74	-24.01	3.85	327.81
4175.96	AV	V	35.69	38.89	40.46	43.66	54	-10.34	3.85	327.81

Remark:

1. Corrected Level = Reading Level + Correction Factor—Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

6. Power Spectrum Density test

6.1 Operating environment

Temperature: 23 °C
 Relative Humidity: 54 %
 Atmospheric Pressure 1023 hPa

6.2 Test setup & procedure

The power spectrum density per FCC §15.247(d) was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set at 3kHz, the video bandwidth set at 10kHz, a span of 1.5 MHz, and the sweep time set at 500 seconds. Power Density was read directly and cable loss (1.5dB)/external attenuator (10dB) correction was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel). The Power Spectral Density measured result is in the following table.

6.3 Measured data of Power Spectrum Density test results

Test Mode: 802.11b (DSSS Modulation) operating mode

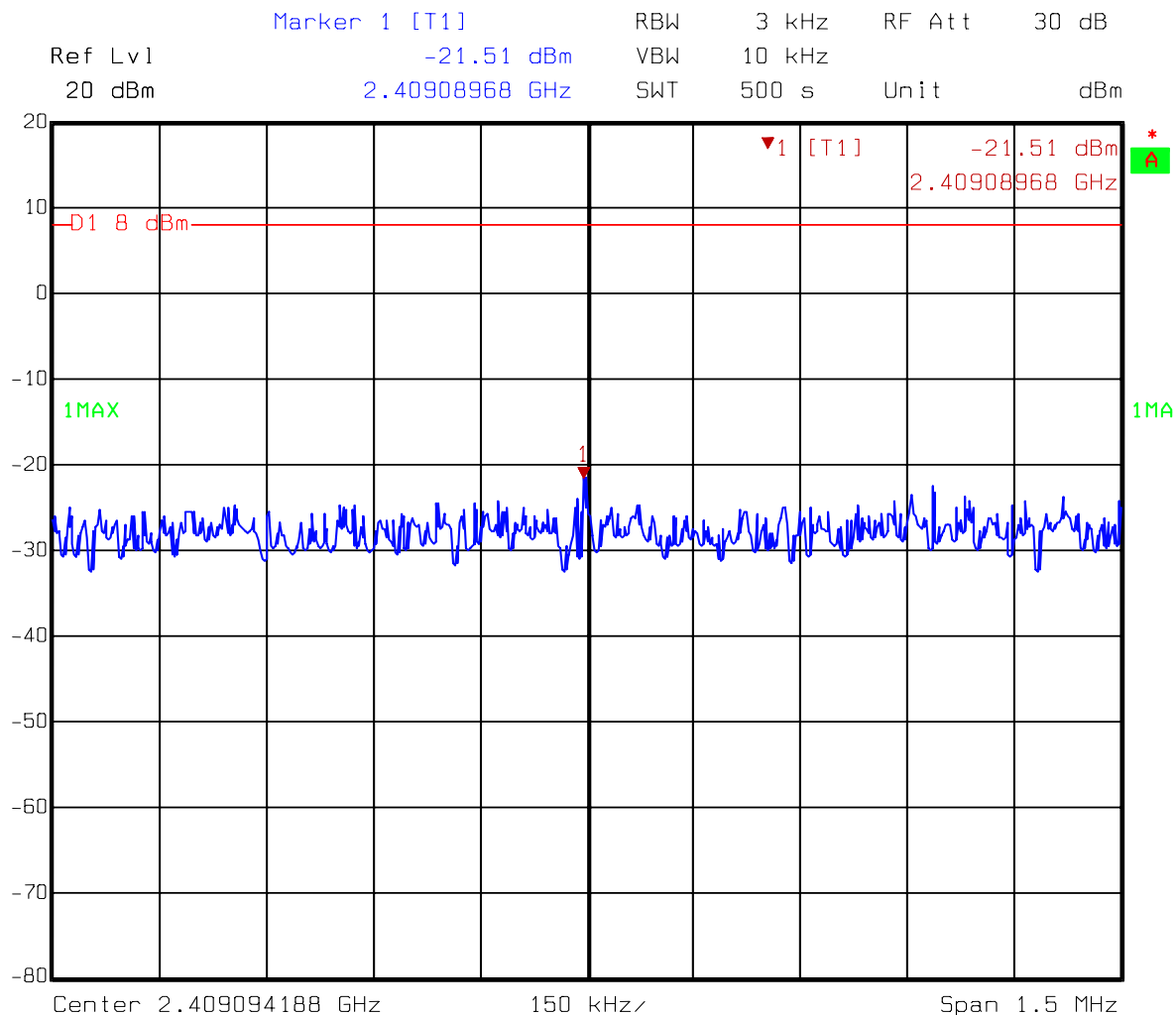
Channel	Frequency (MHz)	Power spectrum density (dBm)	Limit (dBm)
1 (lowest)	2412	-10.01	8
6 (middle)	2437	-10.18	8
11 (highest)	2462	-10.18	8

Test Mode: 802.11g (OFDM Modulation) operating mode

Channel	Frequency (MHz)	Power spectrum density (dBm)	Limit (dBm)
1 (lowest)	2412	-11.64	8
6 (middle)	2437	-12.51	8
11 (highest)	2462	-12.54	8

Please see the plot below.

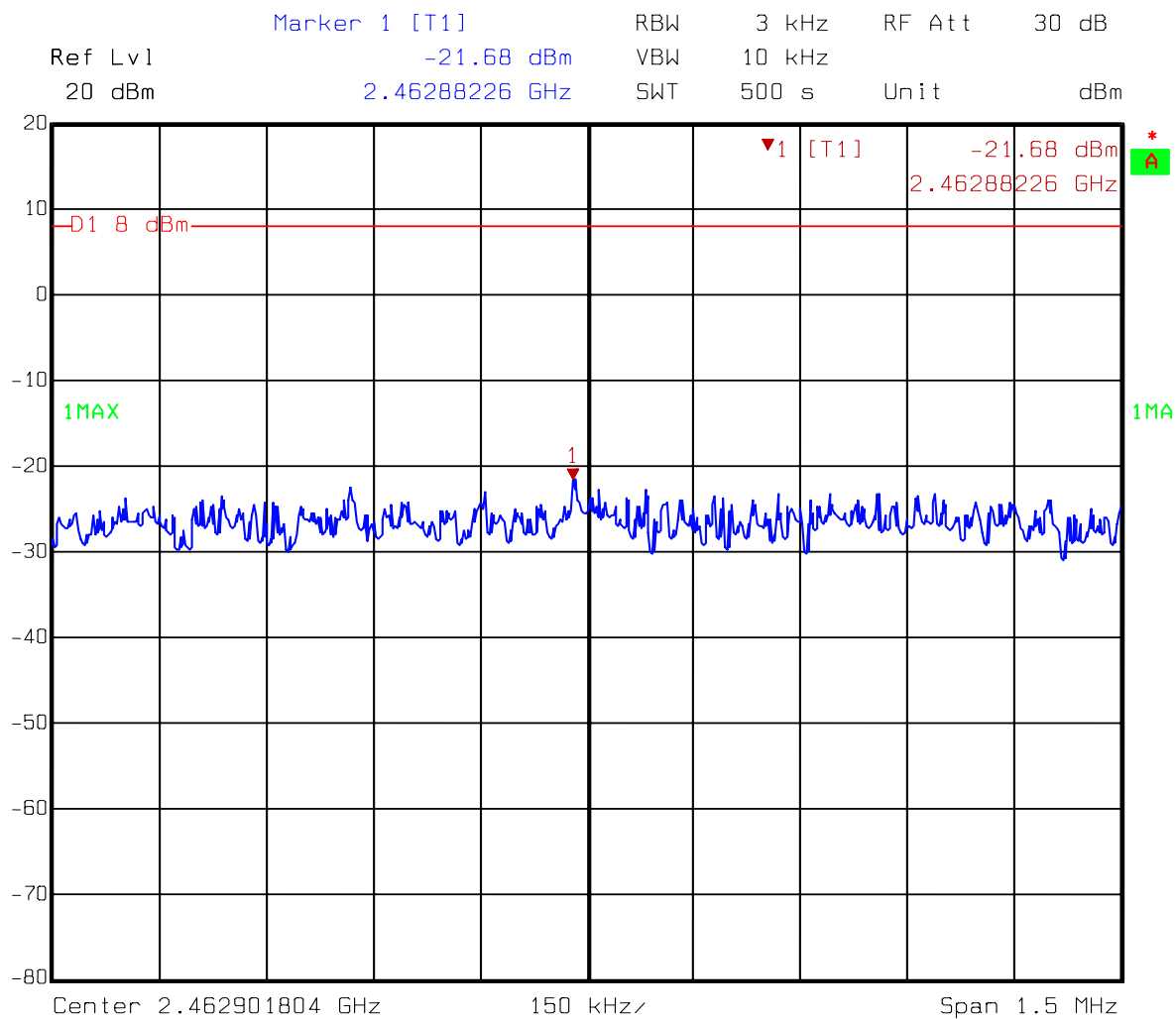
Test Mode: 802.11b (DSSS Modulation) operating mode



Comment A: Power spectrum density at ch1
 ATT=10dB CL=1.5dB (EC365) 802.11b

Date: 06.MAY 2005 10:45:19

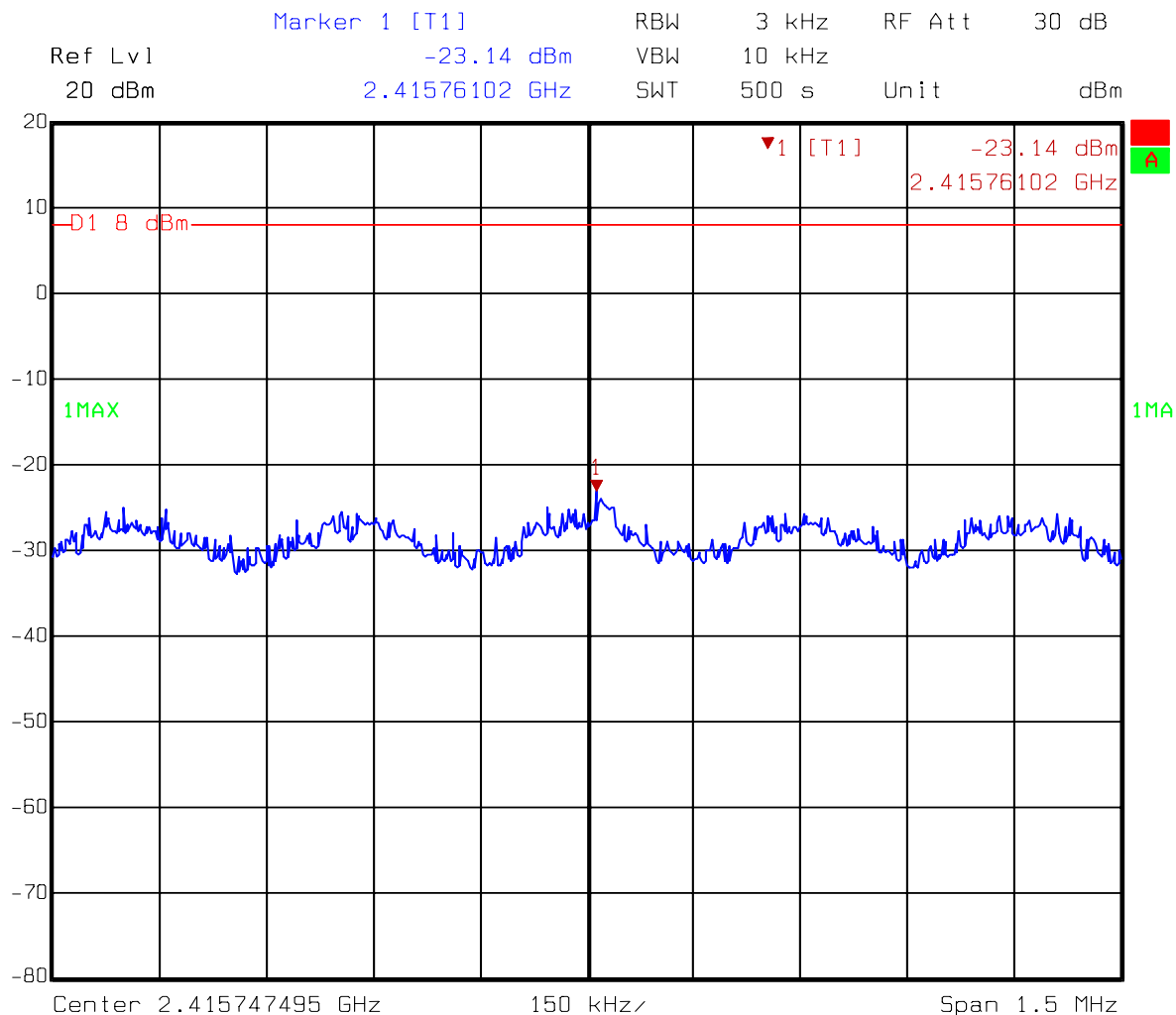
Comment A: Power spectrum density at ch6
ATT=10dB CL=1.5dB (EC365) 802.11b
Date: 06.MAY 2005 10:46:03



Comment A: Power spectrum density at ch11
 ATT=10dB CL=1.5dB (EC365) 802.11b

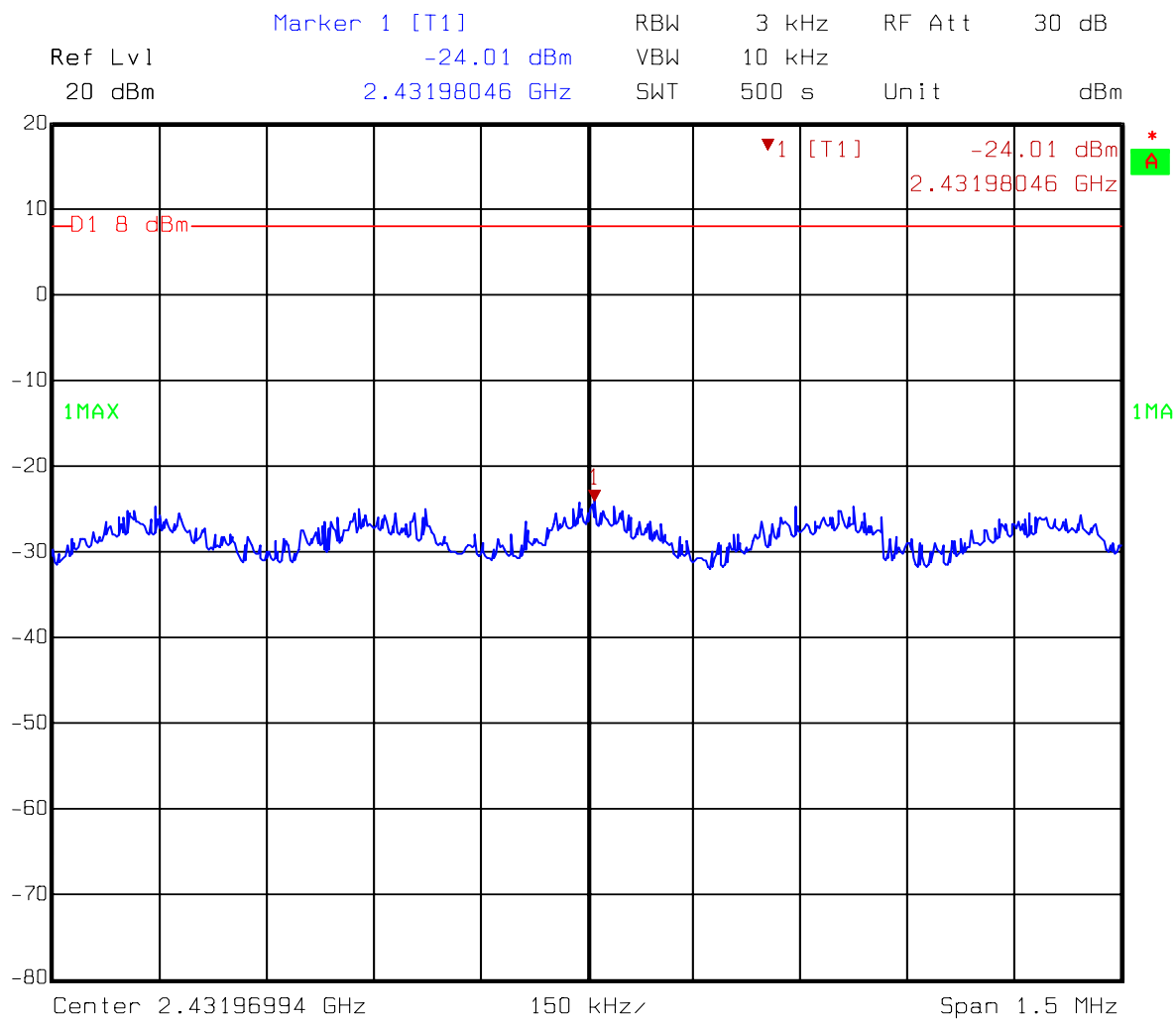
Date: 06.MAY 2005 10:43:36

Test Mode: 802.11g (OFDM Modulation) operating mode



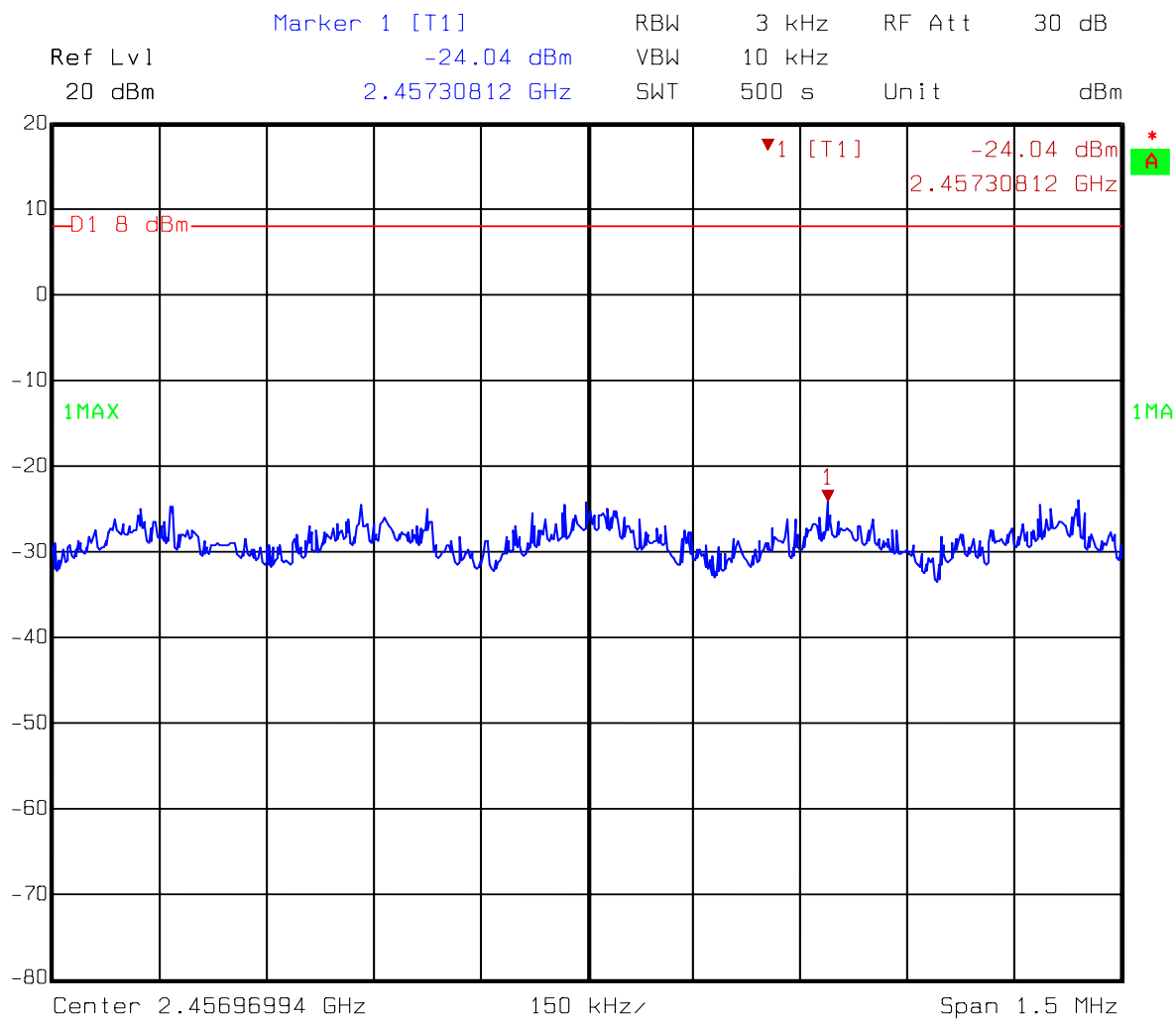
Comment A: Power spectrum density at ch1
 ATT=10dB CL=1.5dB (EC365) 802.11g

Date: 06.MAY 2005 10:38:59



Comment A: Power spectrum density at ch6
 ATT=10dB CL=1.5dB (EC365) 802.11g

Date: 06.MAY 2005 10:40:14



Comment A: Power spectrum density at ch11
 ATT=10dB CL=1.5dB (EC365) 802.11g

Date: 06.MAY 2005 10:41:04

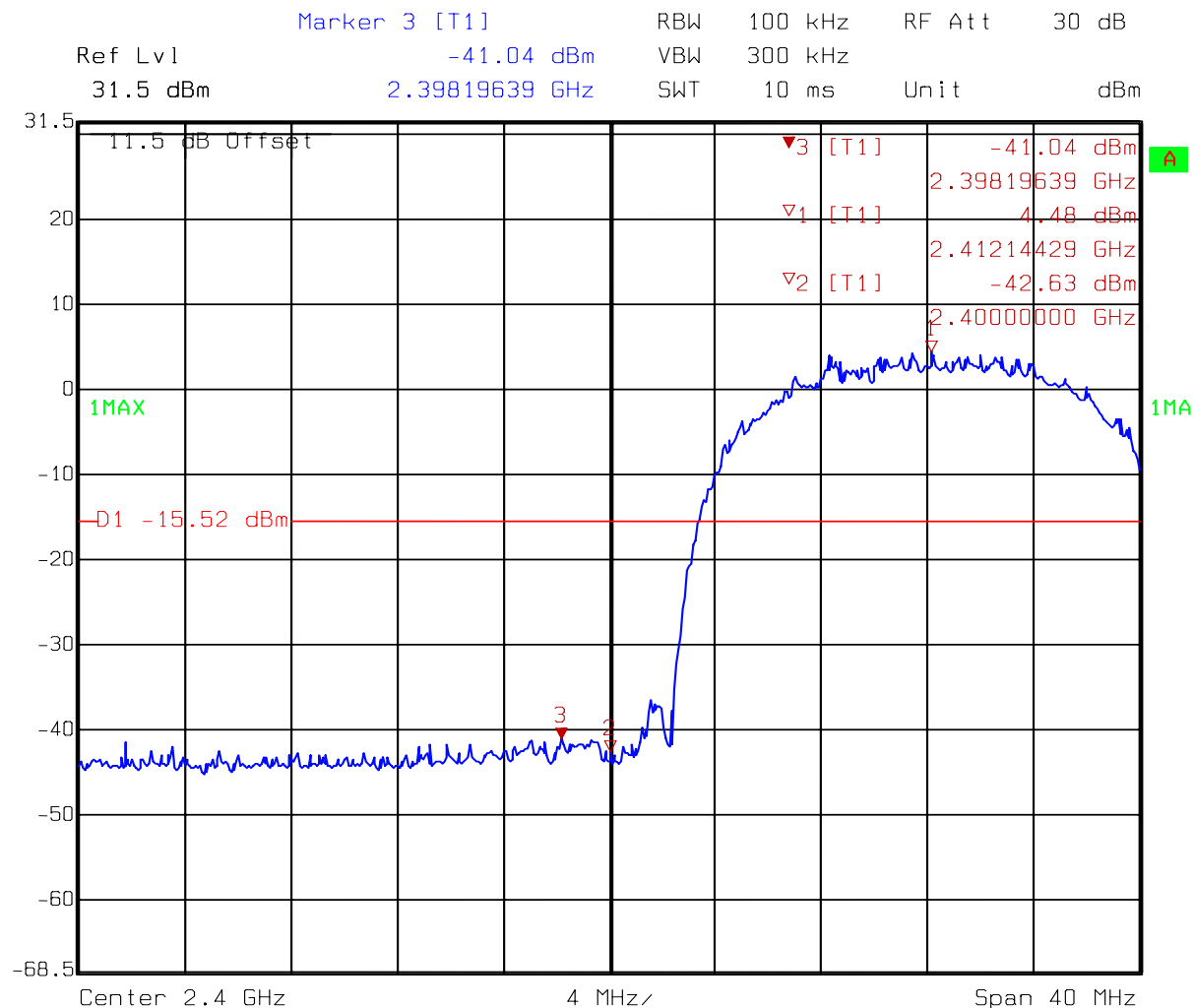
7. Emission on the band edge §FCC 15.247(C)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Please see the plot below.

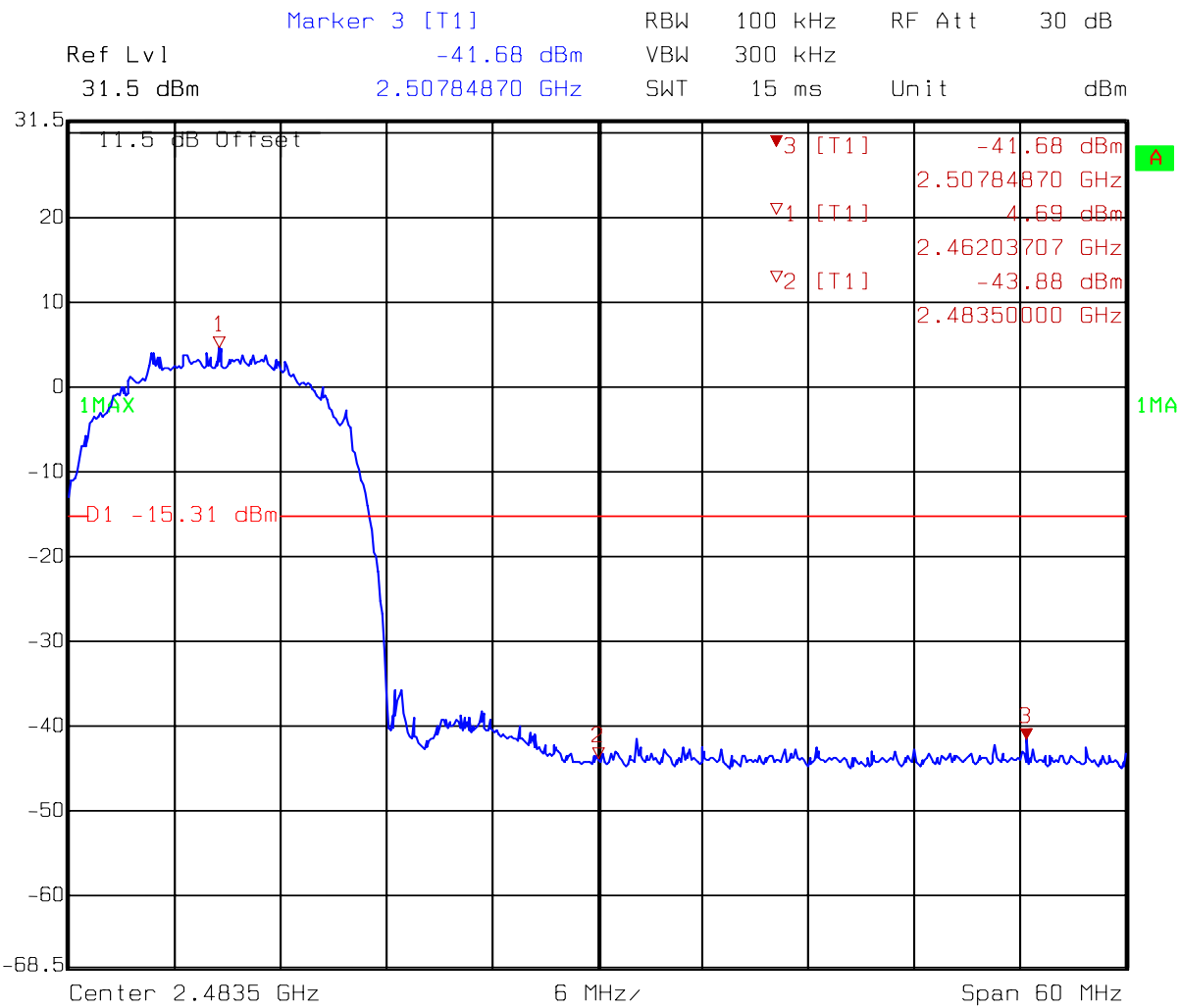
7.1 Band-edge (Conducted method)

Test Mode: 802.11b (DSSS Modulation) operating mode



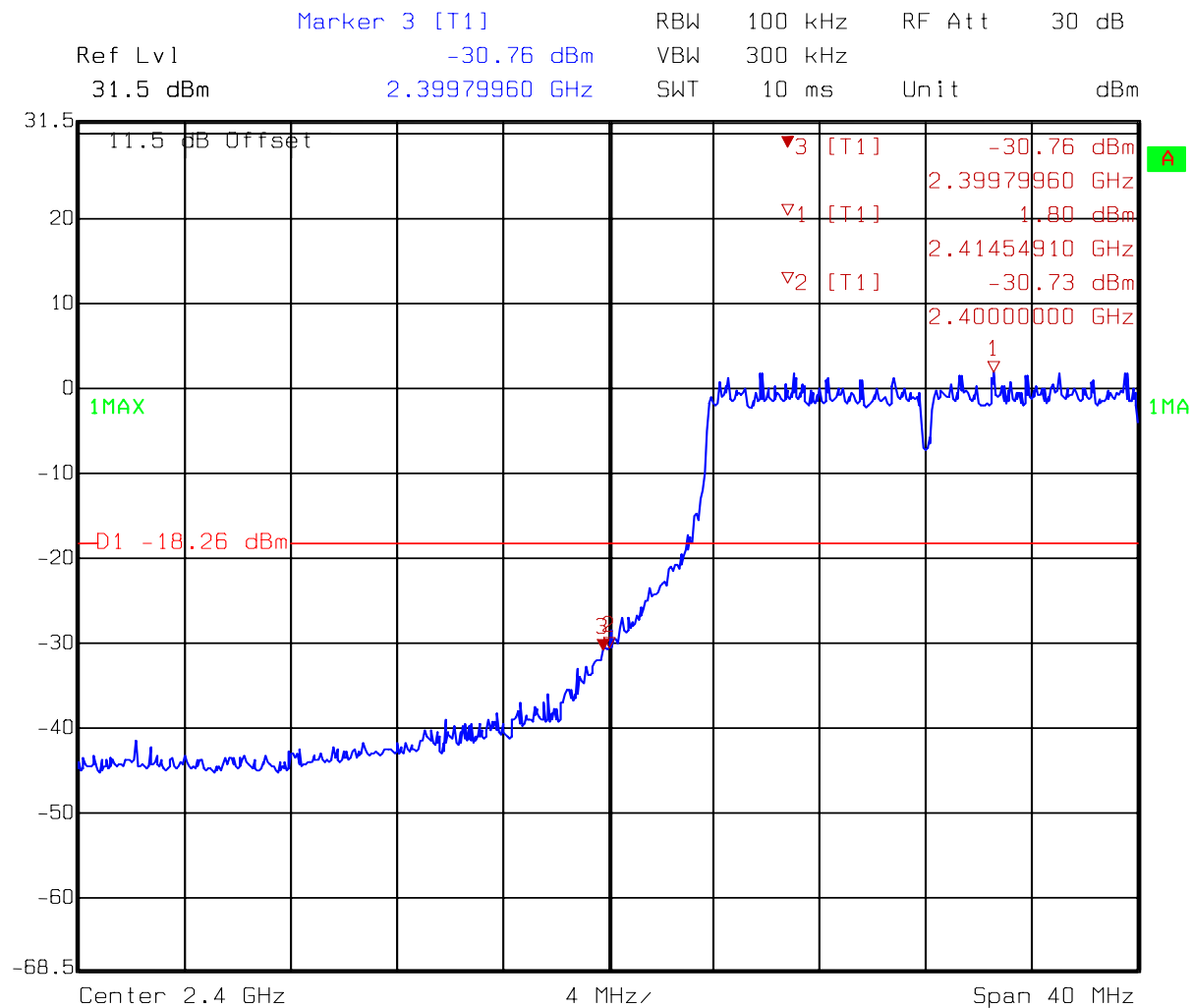
Comment A: Band-edge at ch1 (EC365) 802.11b

Date: 06.MAY 2005 10:33:10



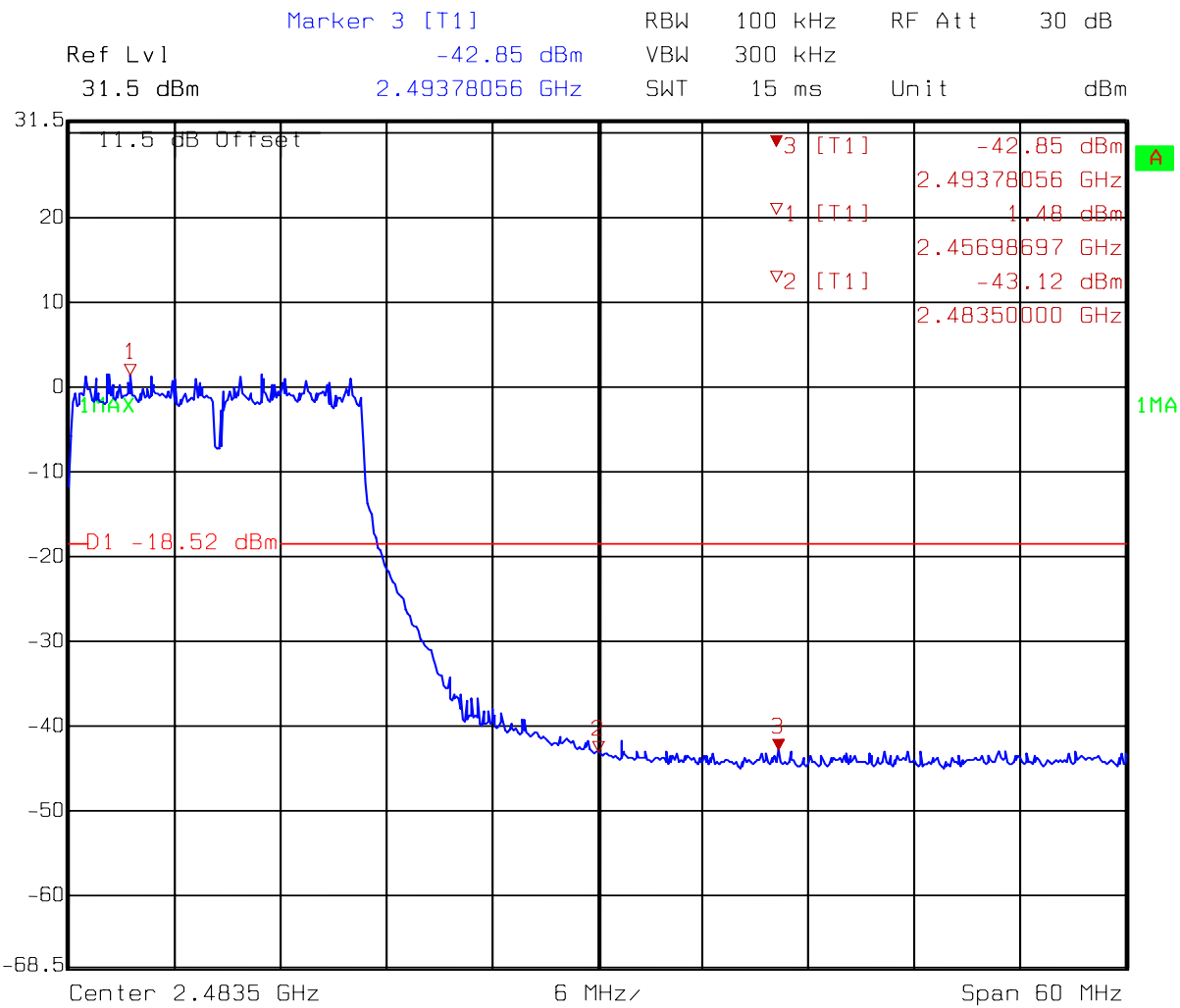
Comment A: Band-edge at ch11 (EC365) 802.11b
 Date: 06.MAY 2005 10:34:31

Test Mode: 802.11g (OFDM Modulation) operating mode



Comment A: Band-edge at ch1 (EC365) 802.11g

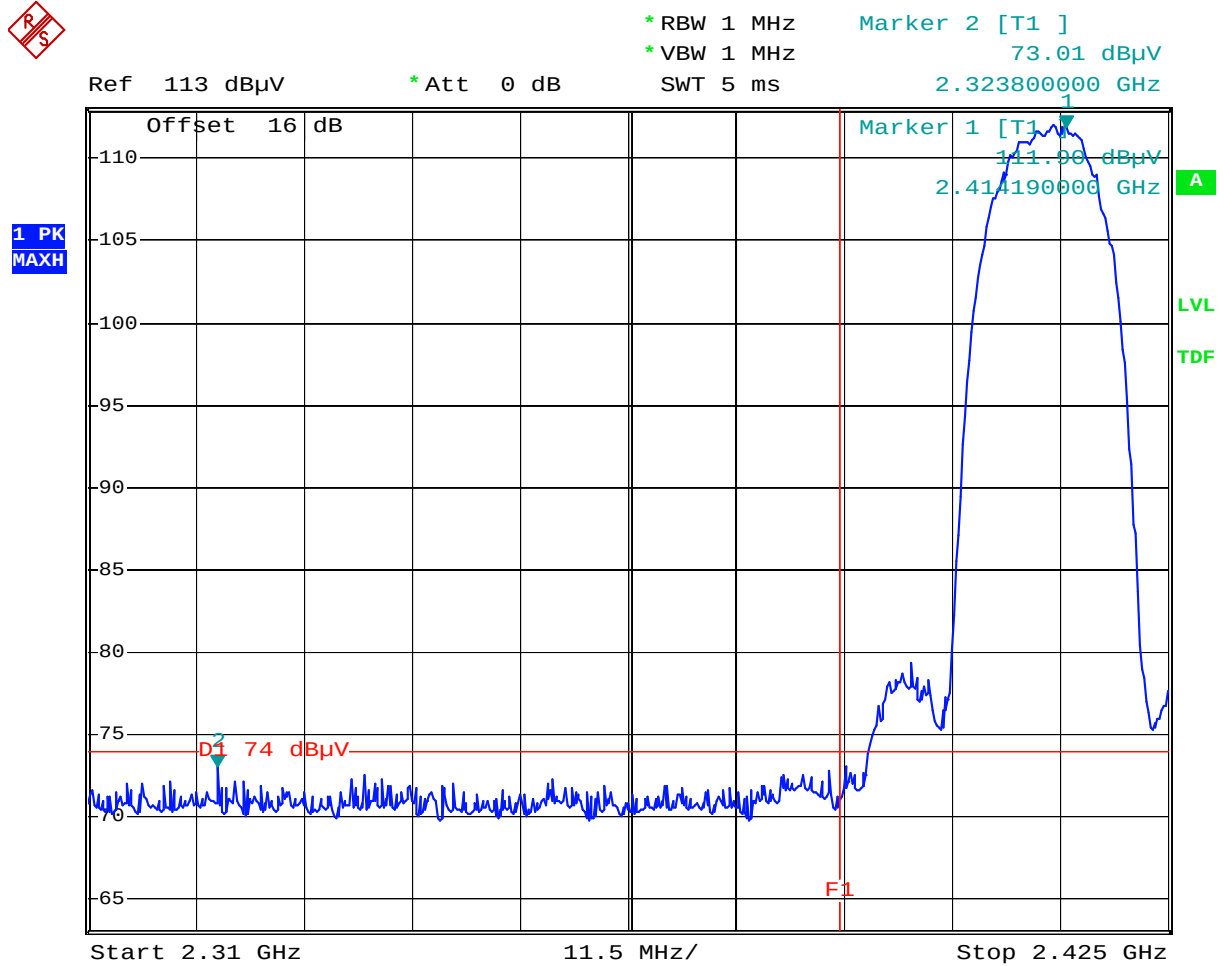
Date: 06.MAY 2005 10:36:39



Comment A: Band-edge at ch11 (EC365) 802.11g
 Date: 06.MAY 2005 10:35:39

7.2 Band-edge (Radiated method)

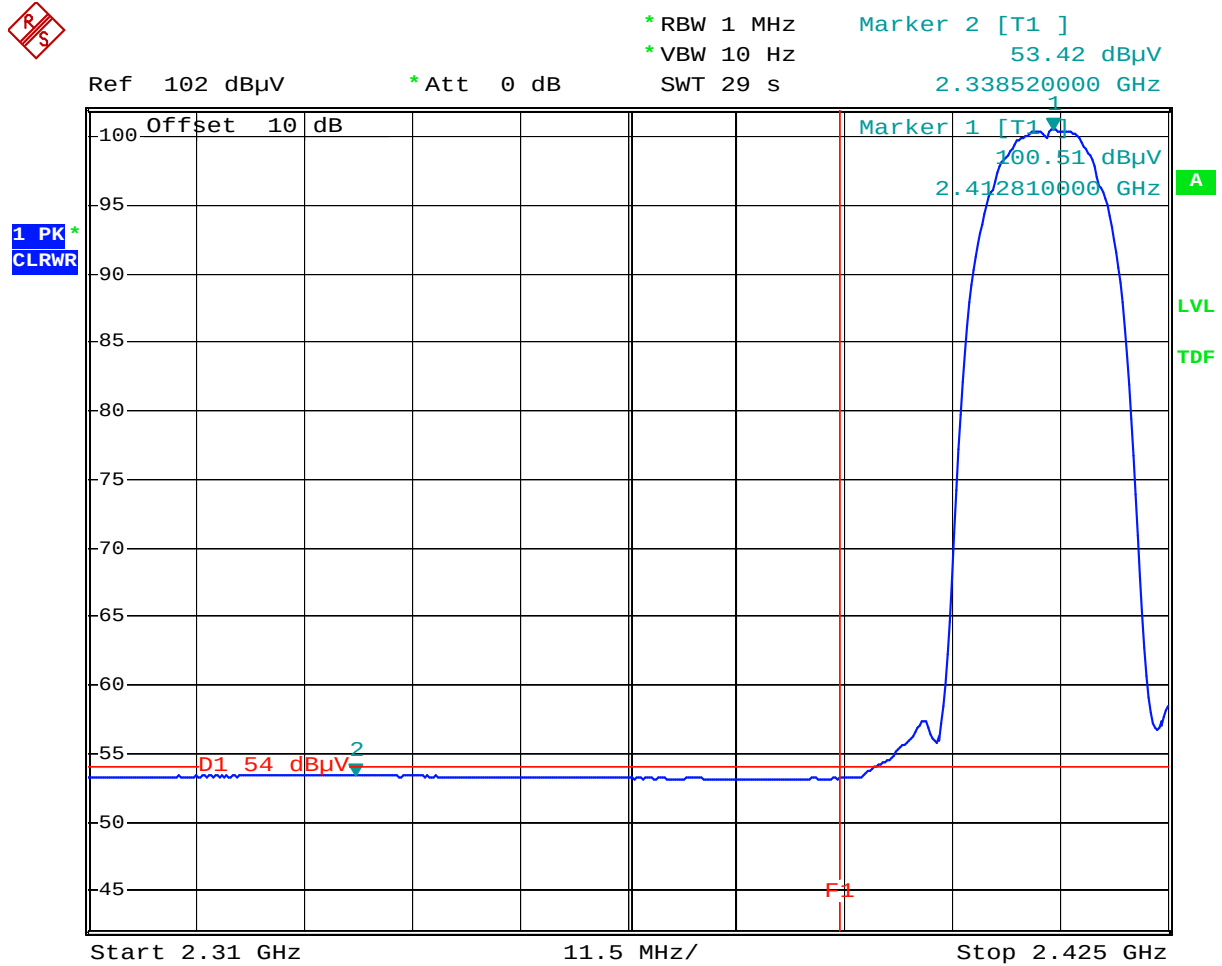
Test Mode: 802.11b (DSSS Modulation) operating mode



Comment: Band-Edge at ch1 F1=2390MHz

Comment: Peak external ATT=16dB (EC371/EC353) 802.11b

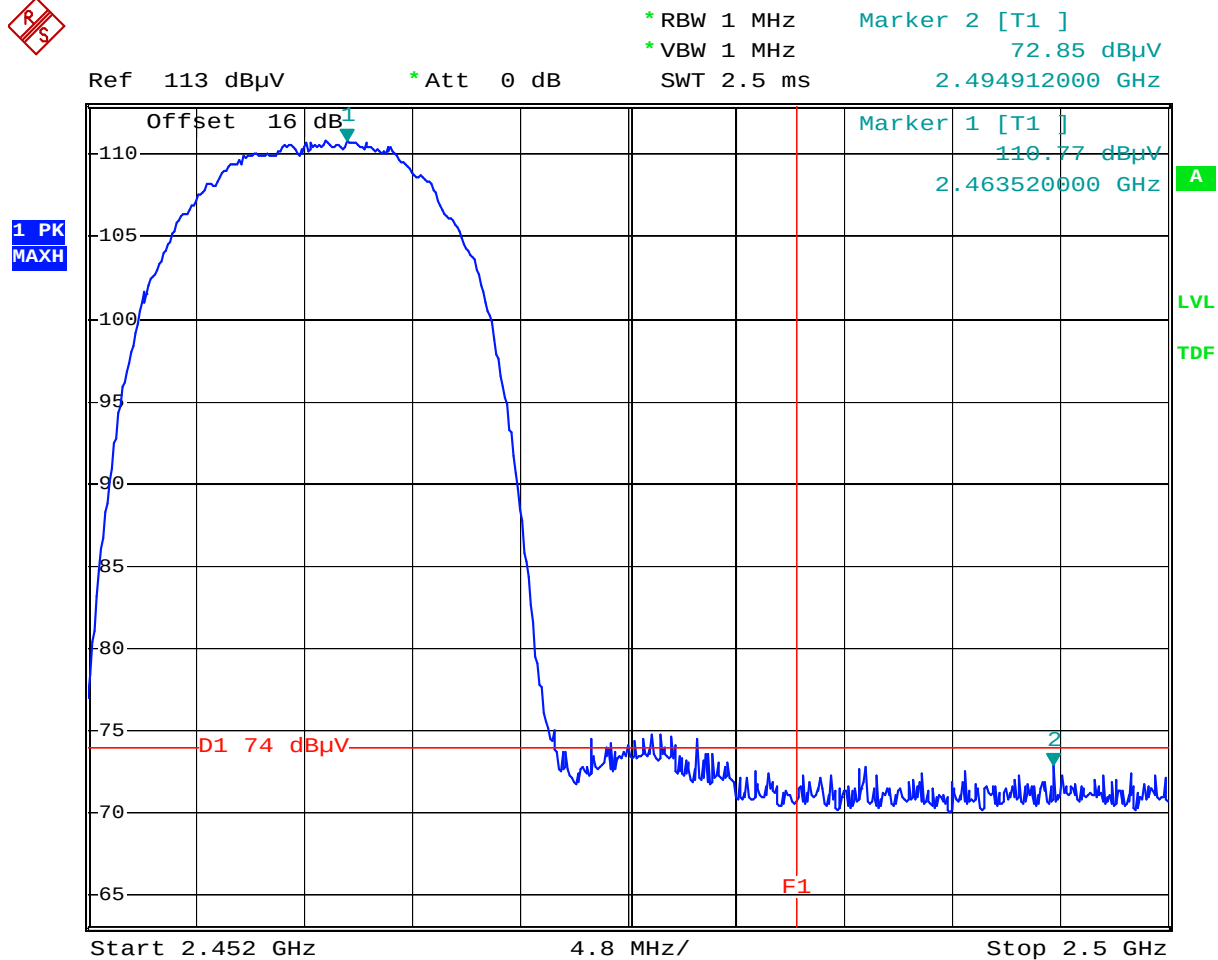
Date: 6.MAY.2005 10:05:04



Comment: Band-Edge at 11b low channel F1=2390MHz

Comment: AV external ATT=10dB (EC371/EC353)

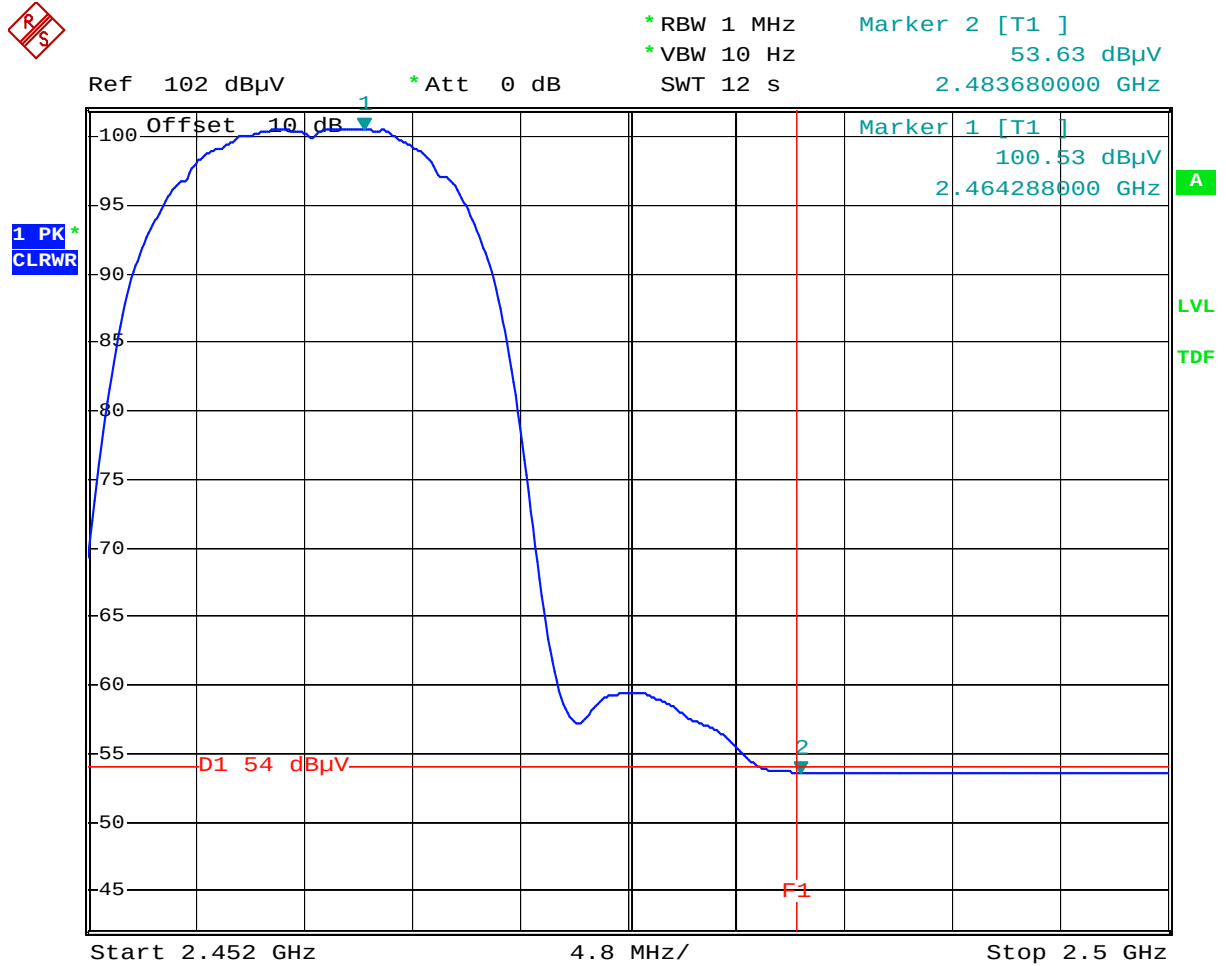
Date: 6.MAY.2005 10:15:37



Comment: Band-Edge at ch11 F1=2483.5MHz

Comment: Peak external ATT=16dB (EC371/EC353) 802.11b

Date: 6.MAY.2005 10:34:17

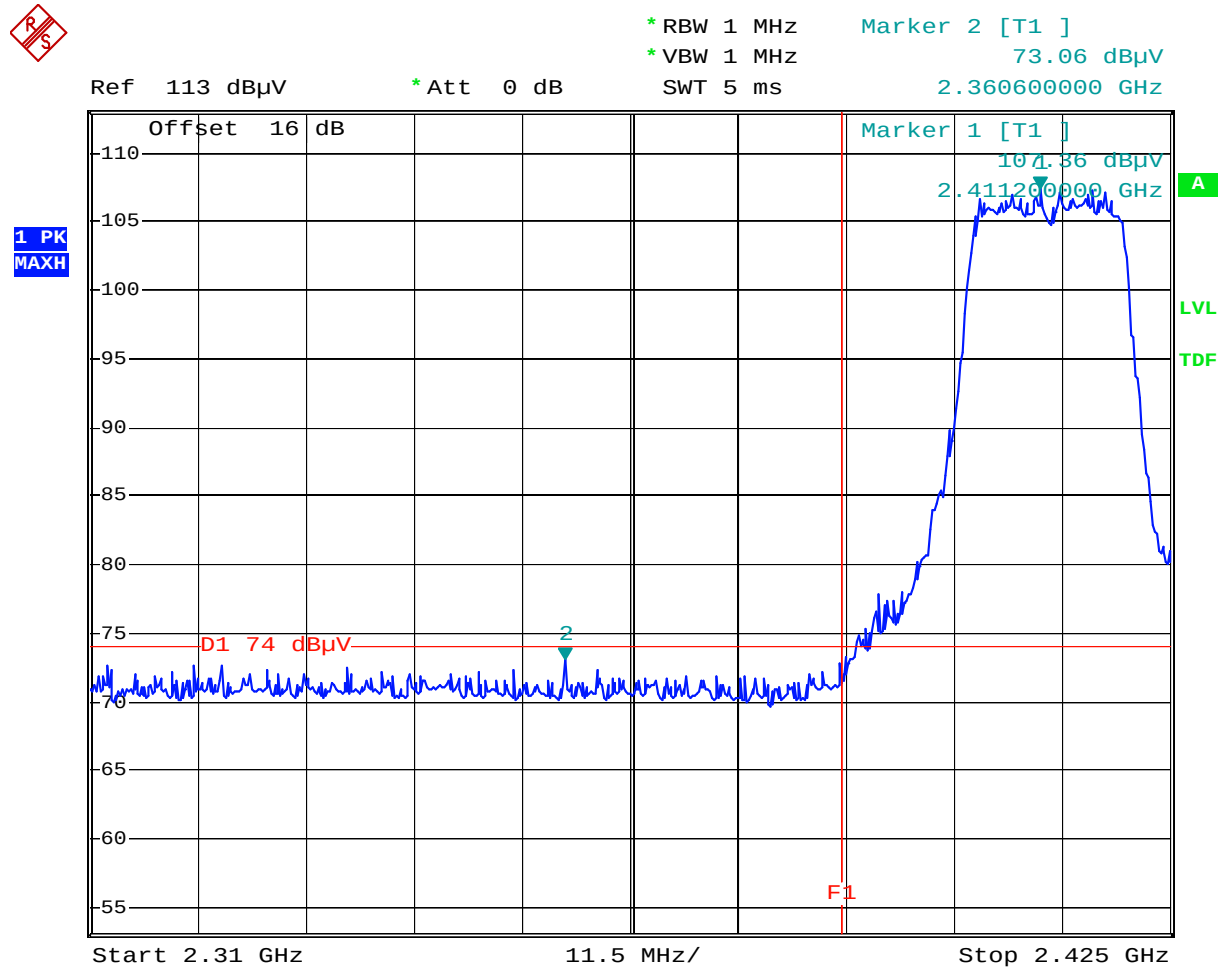


Comment: Band-Edge at 11b high channel F1=2483.5MHz

Comment: AV external ATT=10dB (EC371/EC353)

Date: 6.MAY.2005 10:31:41

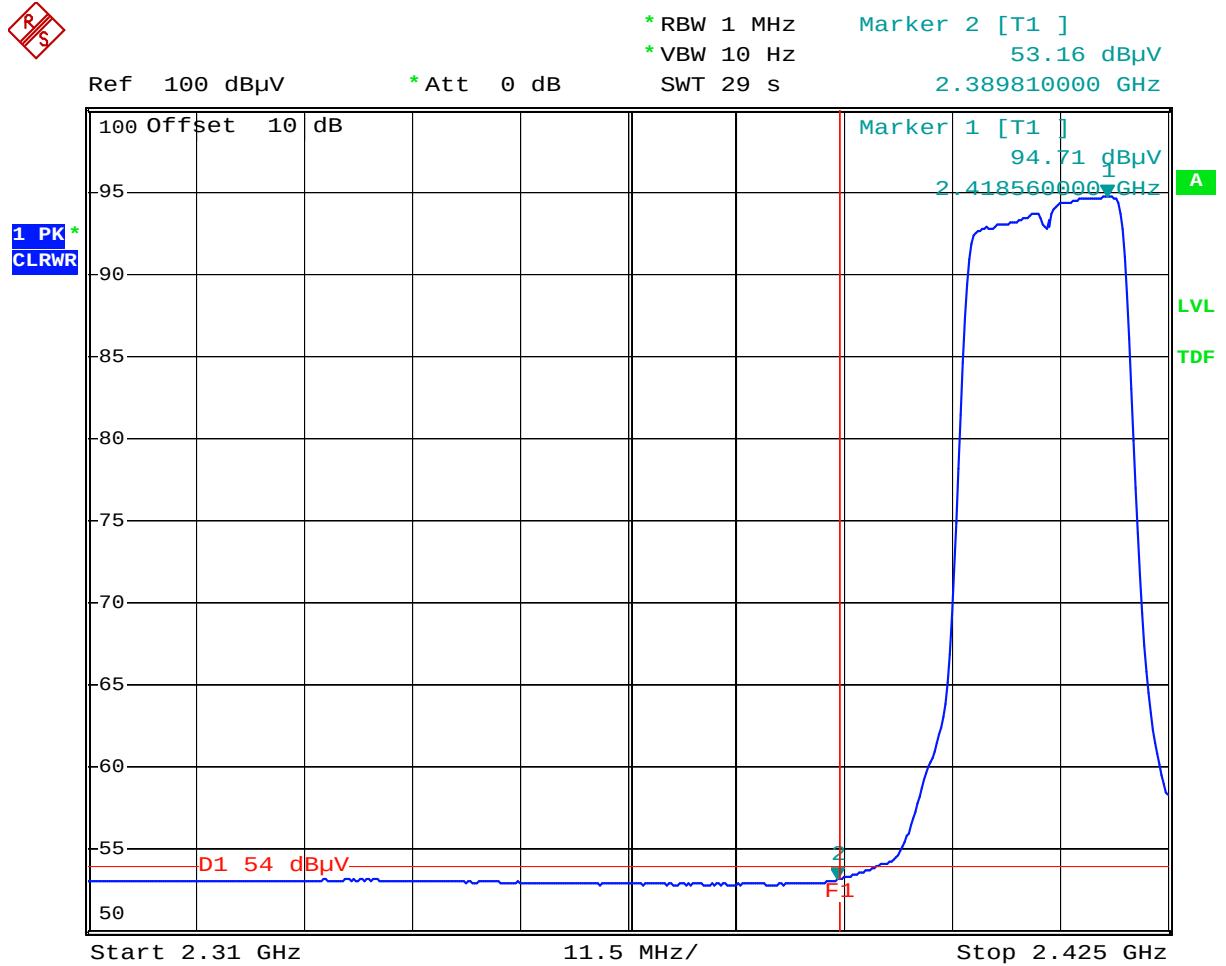
Test Mode: 802.11g (OFDM Modulation) operating mode



Comment: Band-Edge at ch1 F1=2390MHz

Comment: Peak external ATT=16dB (EC371/EC353) 802.11g

Date: 6.MAY.2005 10:18:23



Comment: Band-Edge at 11g low channel F1=2390MHz

Comment: AV external ATT=10dB (EC371/EC353)

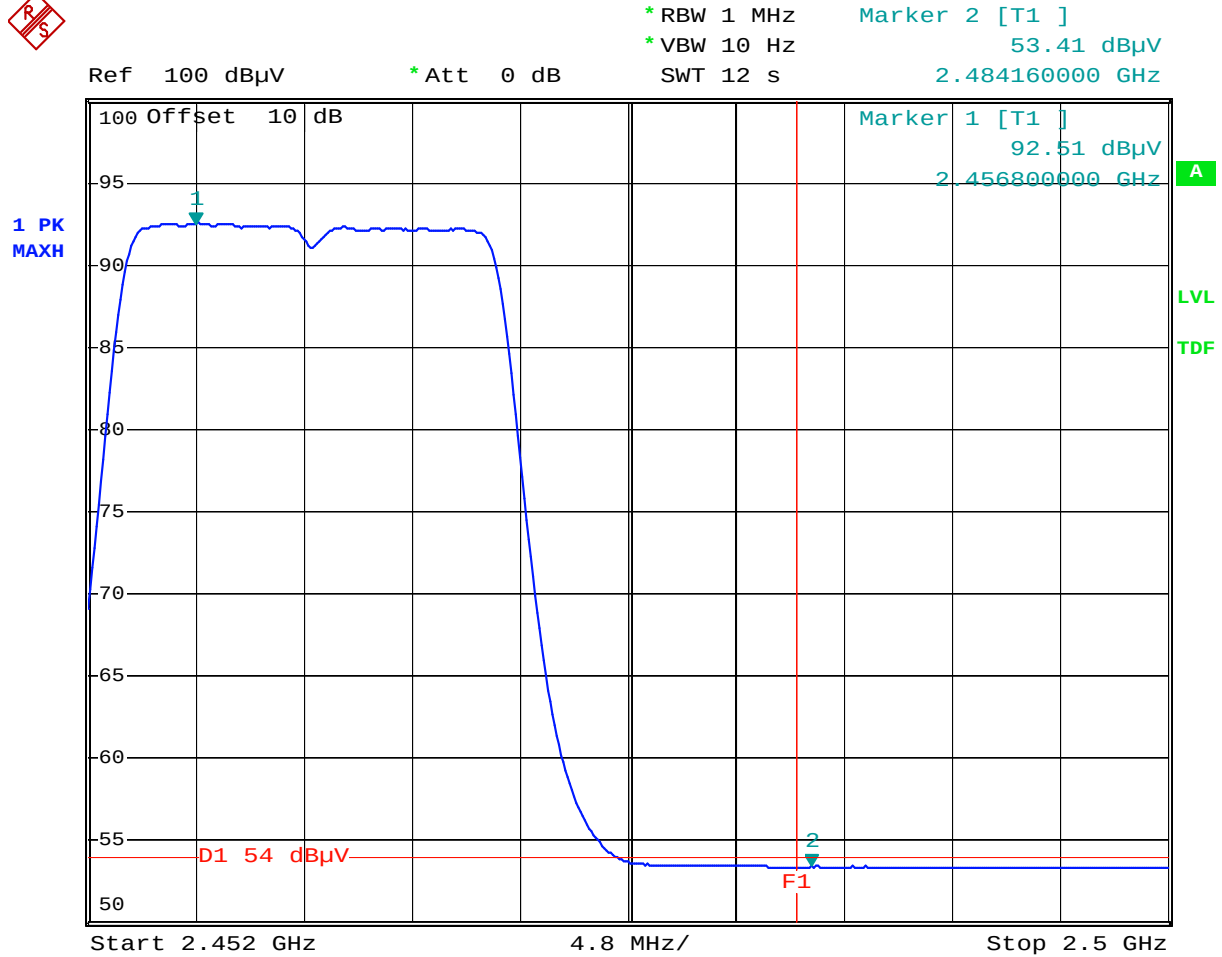
Date: 6.MAY.2005 10:36:47



Comment: Band-Edge at ch11 F1=2483.5MHz

Comment: Peak external ATT=16dB (EC371/EC353) 802.11g

Date: 6.MAY.2005 10:27:13



Comment: Band-Edge at 11g high channel F1=2483.5MHz

Comment: AV external ATT=10dB (EC371/EC353)

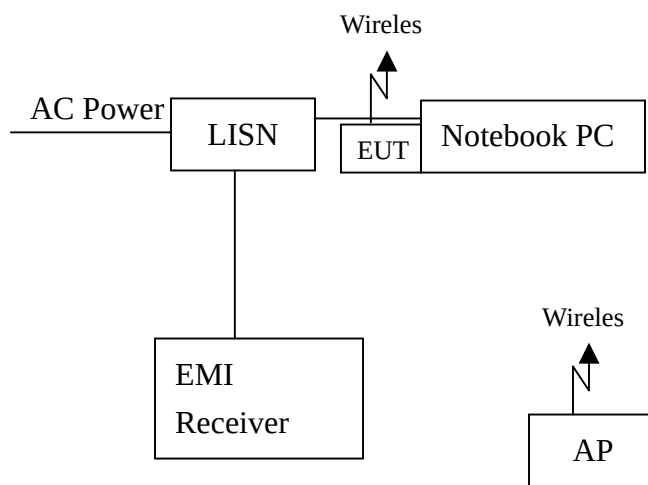
Date: 6.MAY.2005 18:18:16

8. Power Line Conducted Emission test §FCC 15.207

8.1 Operating environment

Temperature:	23	°C
Relative Humidity:	60	%
Atmospheric Pressure	1023	hPa

8.2 Test setup & procedure



The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement. The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

8.3 Emission limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

8.4 Uncertainty of Conducted Emission

Expanded uncertainty (k=2) of conducted emission measurement is 2.6 dB.

8.5 Power Line Conducted Emission test data

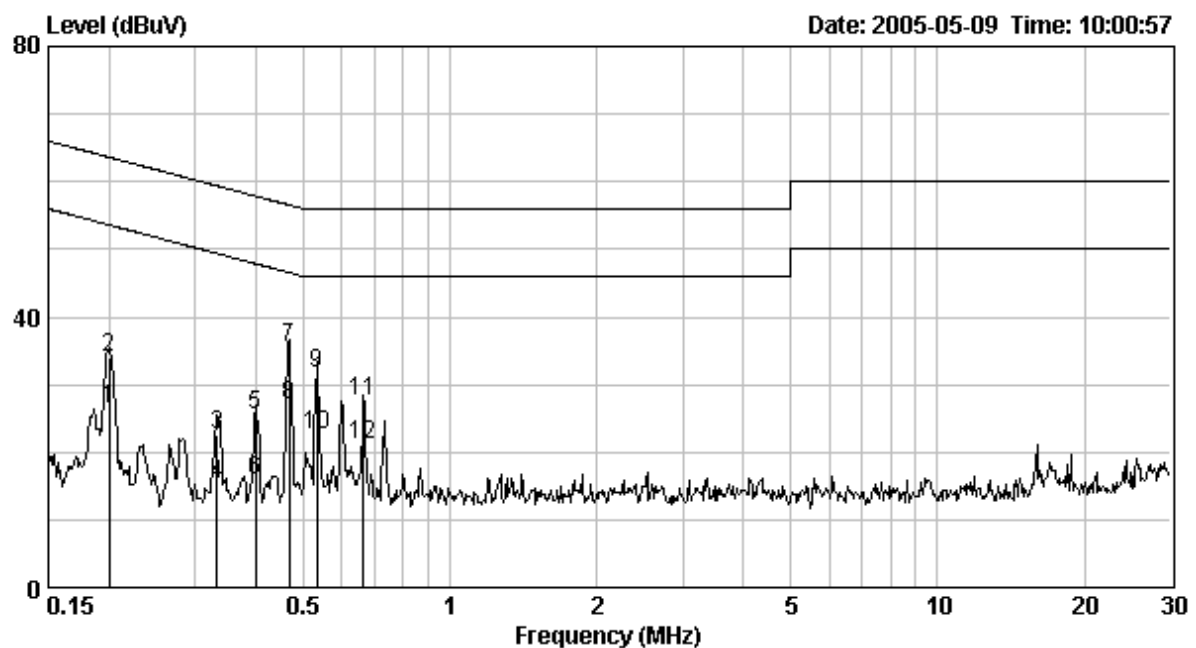
The test was performed in the 802.11b and 802.11g normal operating modes, the worst case occurred at 802.11g normal operating mode.

Phase : Line
EUT : XG-650E
Worst Case : 802.11g normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level Av (dBuV)	Limit Av (dBuV)	Margin (dB)	
						Qp	Av
0.200	0.10	34.04	63.62	26.48	53.62	-29.58	-27.14
0.333	0.10	22.60	59.38	15.36	49.38	-36.78	-34.02
0.400	0.10	25.60	57.86	15.69	47.86	-32.26	-32.17
0.469	0.10	35.60	56.54	27.05	46.54	-20.94	-19.49
0.532	0.10	31.56	56.00	22.43	46.00	-24.44	-23.57
0.666	0.10	27.46	56.00	20.98	46.00	-28.54	-25.02

Remark:

1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
 EUT : XG-650E
 Worst Case : 802.11g normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB)	
						Qp	Av
0.200	0.10	34.12	63.62	26.48	53.62	-29.50	-27.14
0.335	0.10	23.10	59.32	13.65	49.32	-36.22	-35.67
0.400	0.10	25.60	57.86	15.92	47.86	-32.26	-31.94
0.469	0.10	35.90	56.54	26.95	46.54	-20.64	-19.59
0.532	0.10	31.44	56.00	22.12	46.00	-24.56	-23.88
0.666	0.10	27.38	56.00	20.62	46.00	-28.62	-25.38

Remark:

1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)

