

EMC TEST REPORT

Report No. : EME-041008

Model No. : WUG2660

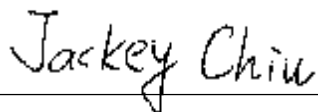
Issued Date : Nov. 5, 2004

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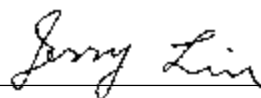
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Project Engineer



Jackey Chiu

Reviewed By



Jerry Liu

Table of Contents

Summary of Tests.....	4
1. General information	5
1.1 Identification of the EUT	5
1.2 Additional information about the EUT	5
1.3 Antenna description	6
1.4 Peripherals equipment.....	7
2. Test specifications	8
2.1 Test standard	8
2.2 Operation mode	8
2.3 Test equipment.....	9
3. Minimum 6dB Bandwidth test.....	10
3.1 Operating environment.....	10
3.2 Test setup & procedure.....	10
3.3 Measured data of Minimum 6dB Bandwidth test results.....	10
4. Maximum Output Power test.....	17
4.1 Operating environment.....	17
4.2 Test setup & procedure.....	17
4.3 Measured data of Maximum Output Power test results.....	17
5. Radiated Emission test.....	18
5.1 Operating environment.....	18
5.2 Test setup & procedure.....	18
5.3 Emission limits	19
5.4 Radiated spurious emission test data	20
5.4.1 Measurement results: frequencies equal to or less than 1 GHz.....	21
5.4.2 Measurement results: frequency above 1GHz.....	27
6. Power Spectrum Density test.....	45
6.1 Operating environment.....	45
6.2 Test setup & procedure.....	45
6.3 Measured data of Power Spectrum Density test results.....	45
7. Emission on the band edge §FCC 15.247(C).....	52
7.1 Band-edge (Conducted method).....	53
7.2 Band-edge (Radiated method).....	57

8. Power Line Conducted Emission test §FCC 15.207	81
8.1 Operating environment.....	81
8.2 Test setup & procedure.....	81
8.3 Emission limit.....	82
8.5 Uncertainty of Conducted Emission	82
8.5 Power Line Conducted Emission test data.....	83

Summary of Tests**802.11b/g Wireless LAN USB 2.0 Adapter-Model: WUG2660
FCC ID: MQ4WUG2660**

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	: AboCom Systems, Inc.
Product	: 802.11b/g Wireless LAN USB 2.0 Adapter
Model No.	: WUG2660
FCC ID.	: MQ4WUG2660
Frequency Range	: 2400 MHz to 2483.5MHz
Channel Number	: 11 Channels
Frequency of Each Channel	: 2412MHz, 2417MHz, 2422MHz, 2427MHz, 2432MHz, 2437MHz, 2442MHz, 2447MHz, 2452MHz, 2457MHz, 2462MHz
Type of Modulation	: DSSS, OFDM
Rated Power	: 5Vdc
Power Cord	: N/A
Sample Received	: Oct. 18, 2004
Test Date(s)	: Oct. 18, 2004 to Nov. 3, 2004

A FCC DoC report has been generated for the client.

1.2 Additional information about the EUT

The EUT is an 802.11b/g Wireless LAN USB 2.0 Adapter, and was defined as information technology equipment.

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 EUT has three types of antenna, one of which is permanently connected antenna (antenna 3), and the other can be replaced (antenna 1 and antenna 2).

The antenna 1 and antenna 2 are connected to EUT via a cable.

For permanently connected antenna: (Antenna 1)

Antenna Gain : 3dBi
Antenna Type : Dipole
Connector Type : SMA Reverse
Cable Connector Type : SMA to UFL

For permanently connected antenna: (Antenna 2)

Antenna Gain : 0dBi
Antenna Type : Dipole
Connector Type : SMA Reverse
Cable Connector Type : SMA to UFL

The EUT use a permanently connected antenna:

For permanently connected antenna: (Antenna 3)

Antenna Gain : 3dBi
Antenna Type : Dipole
Connector Type : UFL

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
Notebook PC	DELL	PP01L	CN-06P83-48643-33V-0112	FCC DoC Approved
Printer	HP	C2642A	TH86K1N2ZB	FCC DoC Approved
Modem	Dynalink	V1456VQE	00V230A00051494	FCC DoC Approved

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

Plug the EUT into notebook via USB interface, then turn on the Notebook power run the test program “ ZD1211EVL.exe” under windows OS, which provide by manufacturer.

During Conduction test, the EUT works in normal mode communicating with AP. While in other tests, the EUT works in the status of continuously transmitted.

After verifying the maximum output power, we found the maximum output power of 802.11b was occurred at 11Mbps data rate and 802.11g was occurred at 54Mbps data rate. The final test was executed under this condition and 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	04/13/2005
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	4/13/2005
Pre-Amplifier	MITEQ	26GHz~40GHz	828825	EC374	1/28/2005
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	01/14/2005

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

3. Minimum 6dB Bandwidth test

3.1 Operating environment

Temperature: 22 °C
 Relative Humidity: 55 %
 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 operating mode (DSSS Modulation)

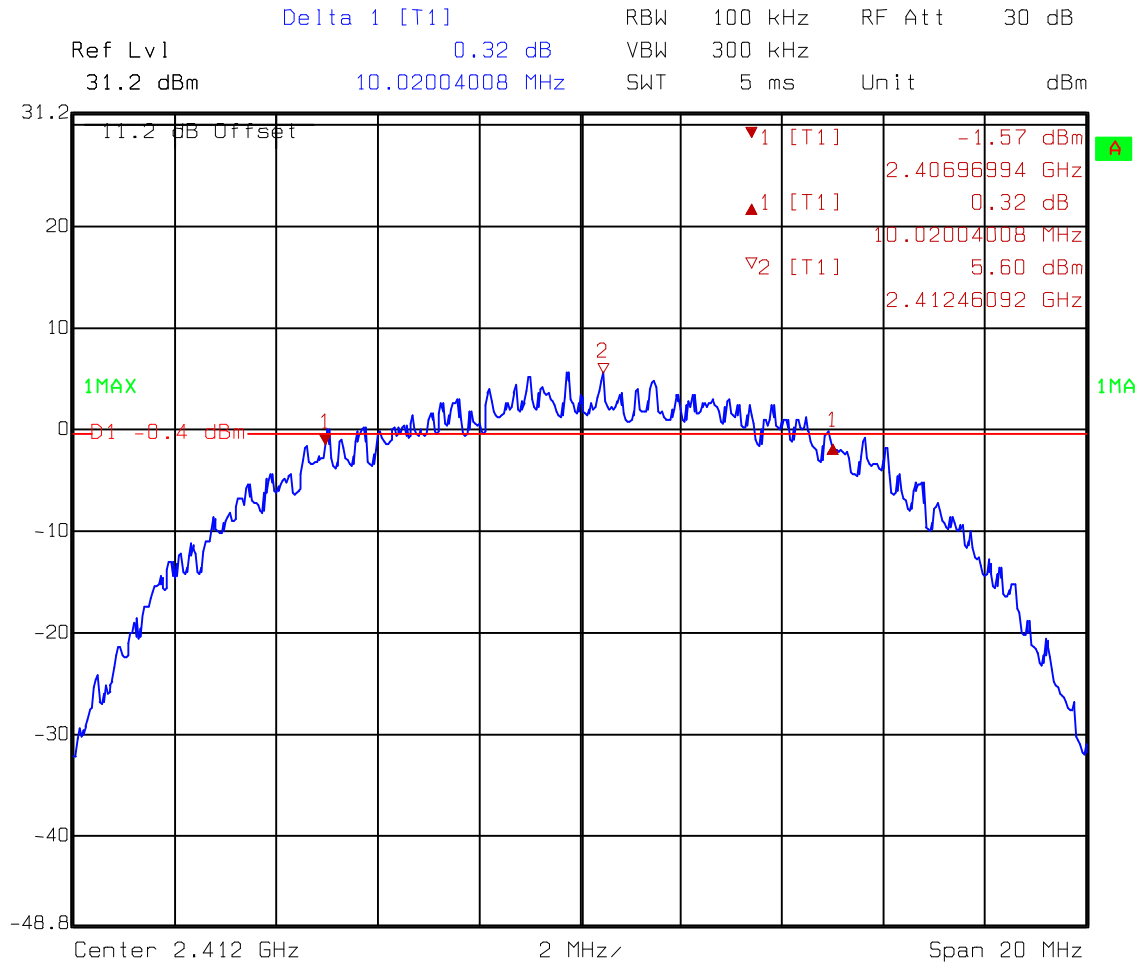
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
1	2412	10.02004	> 500kHz
6	2437	10.02004	> 500kHz
11	2462	10.02004	> 500kHz

Test Mode: 802.11g operating mode (OFDM Modulation)

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
1	2412	16.59319	> 500kHz
6	2437	16.59319	> 500kHz
11	2462	16.59319	> 500kHz

Please see the plot below.

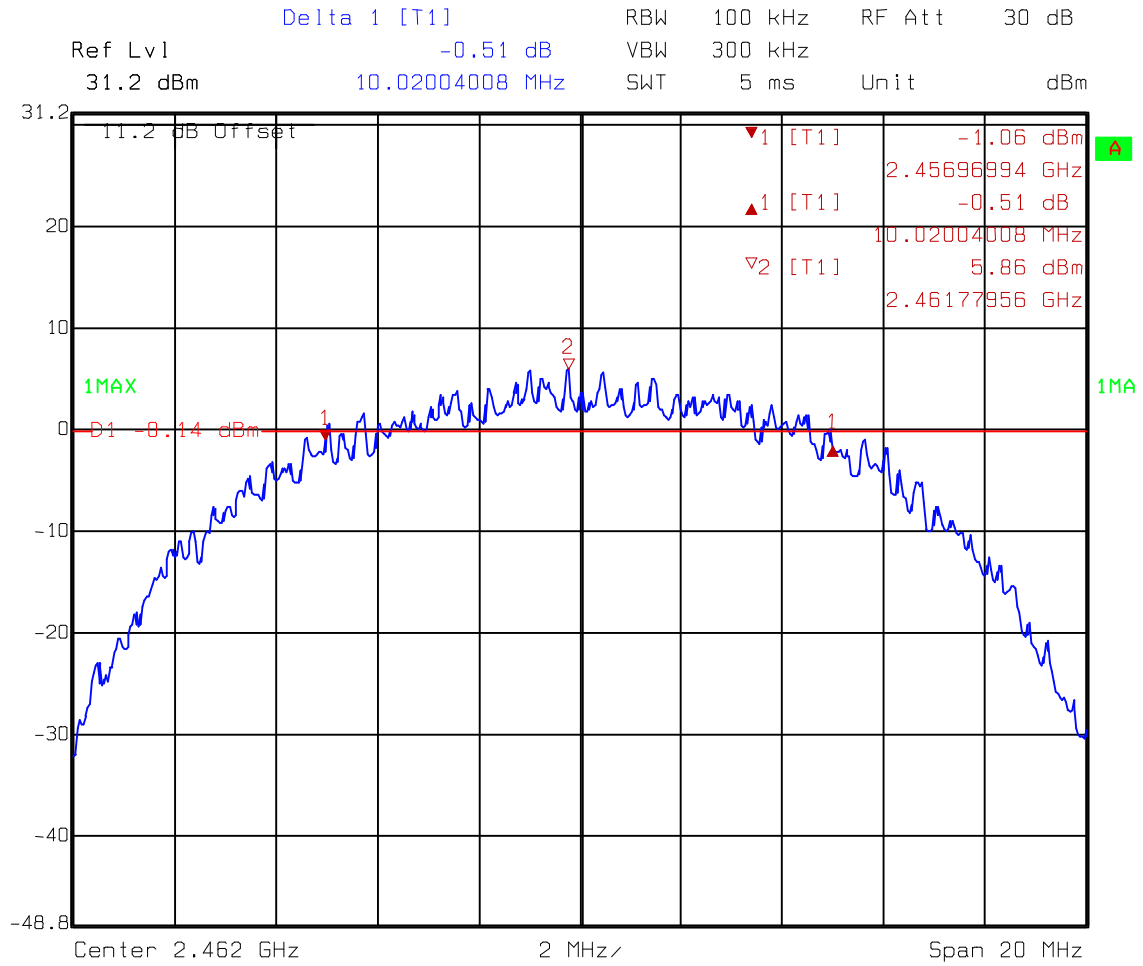
Test Mode: 802.11b operating mode (DSSS Modulation)



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

Date: 20.OCT.2004 09:12:58

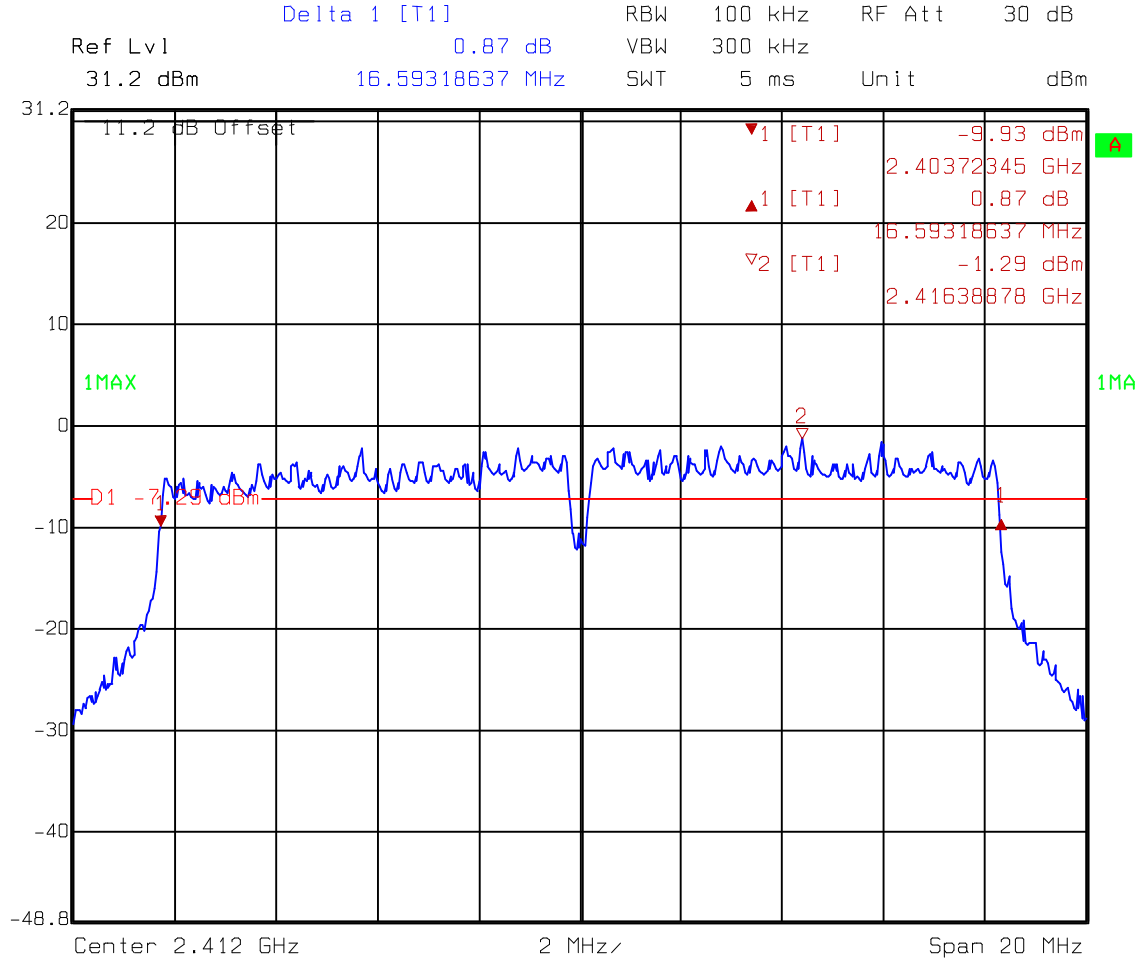
Comment A: 6dB bandwidth at channel 6 (EC365) 802.11b
Date: 20.OCT.2004 09:17:57



Comment A: 6dB bandwidth at channel 11 (EC365) 802.11b

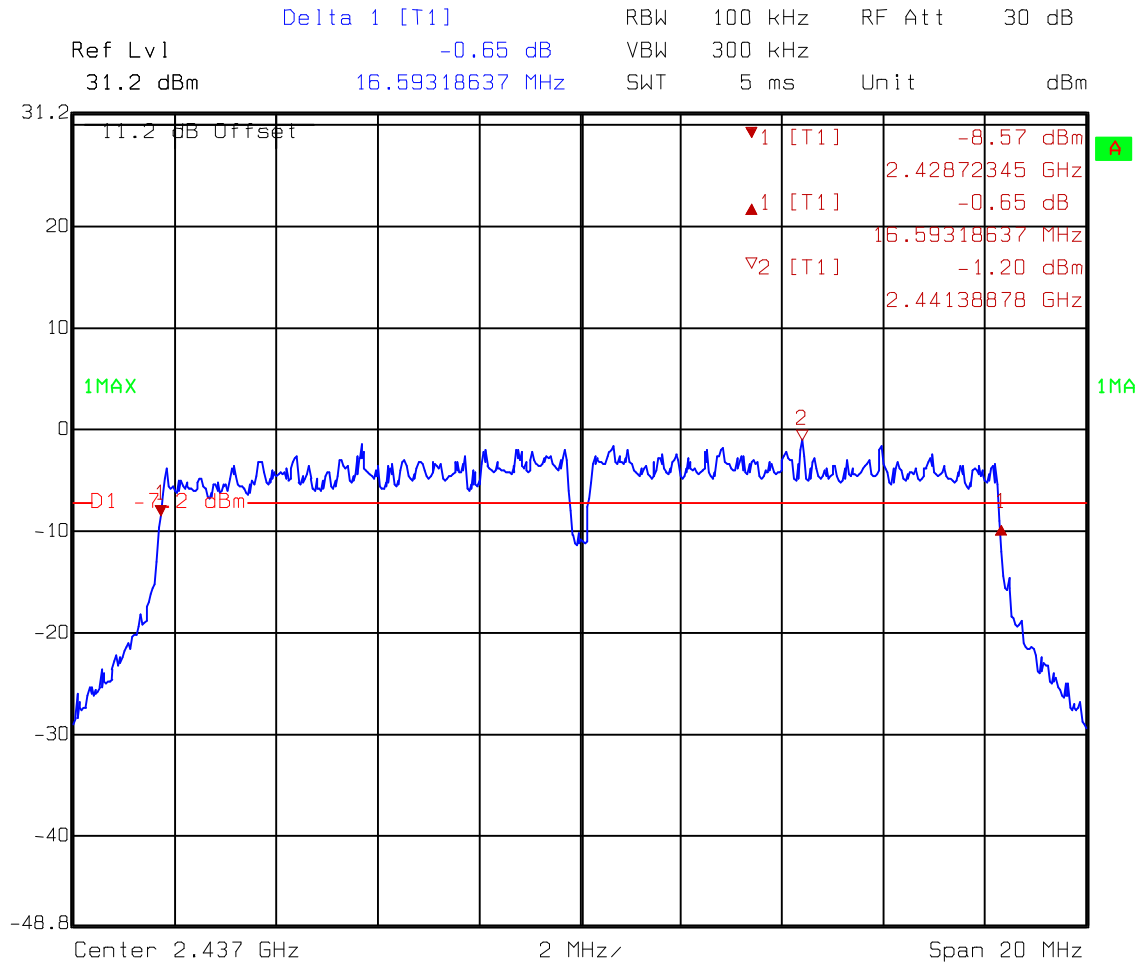
Date: 20.OCT.2004 09:20:39

Test Mode: 802.11g operating mode (OFDM Modulation)



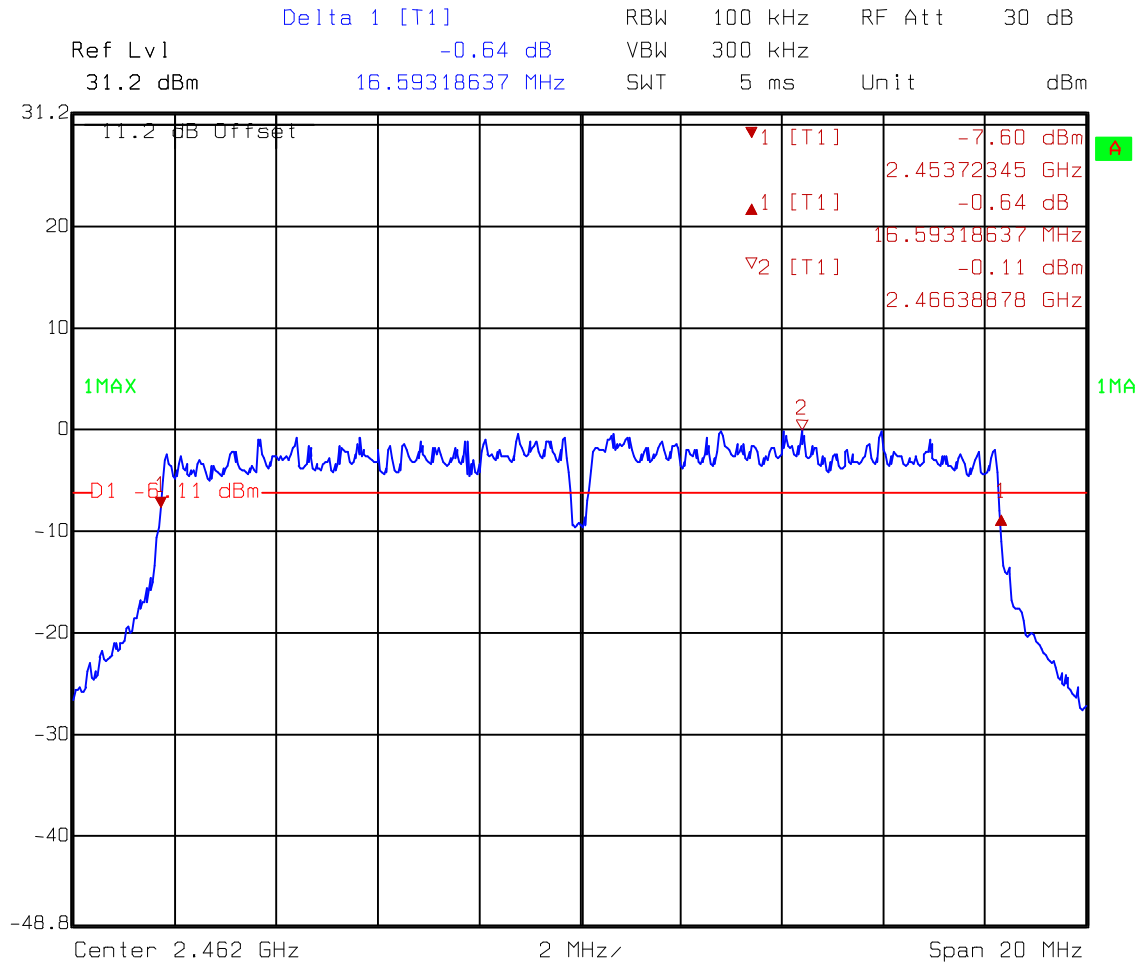
Comment A: 6dB bandwidth at channel 1 (EC365) 802.11g

Date: 20.OCT.2004 09:14:59



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

Date: 20.OCT.2004 09:16:21



Comment A: 6dB bandwidth at channel 11 (EC365) 802.11g

Date: 20.OCT.2004 09:21:51

4. Maximum Output Power test

4.1 Operating environment

Temperature: 22 °C
 Relative Humidity: 52 %
 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 (1.2 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 operating mode (DSSS Modulation)

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (W)
				(dBm)	(mW)	
1	2412	1.2	17.57	18.77	75.34	1
6	2437	1.2	17.52	18.72	74.47	1
11	2462	1.2	17.60	18.80	75.86	1

Remark:

Conducted Peak Output Power = Reading + C.L.

Test Mode: 802.11g operating mode (OFDM Modulation)

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (W)
				(dBm)	(mW)	
1	2412	1.2	18.72	19.92	98.17	1
6	2437	1.2	18.70	19.90	97.72	1
11	2462	1.2	18.63	19.83	96.16	1

Remark:

Conducted Peak Output Power = Reading + C.L.

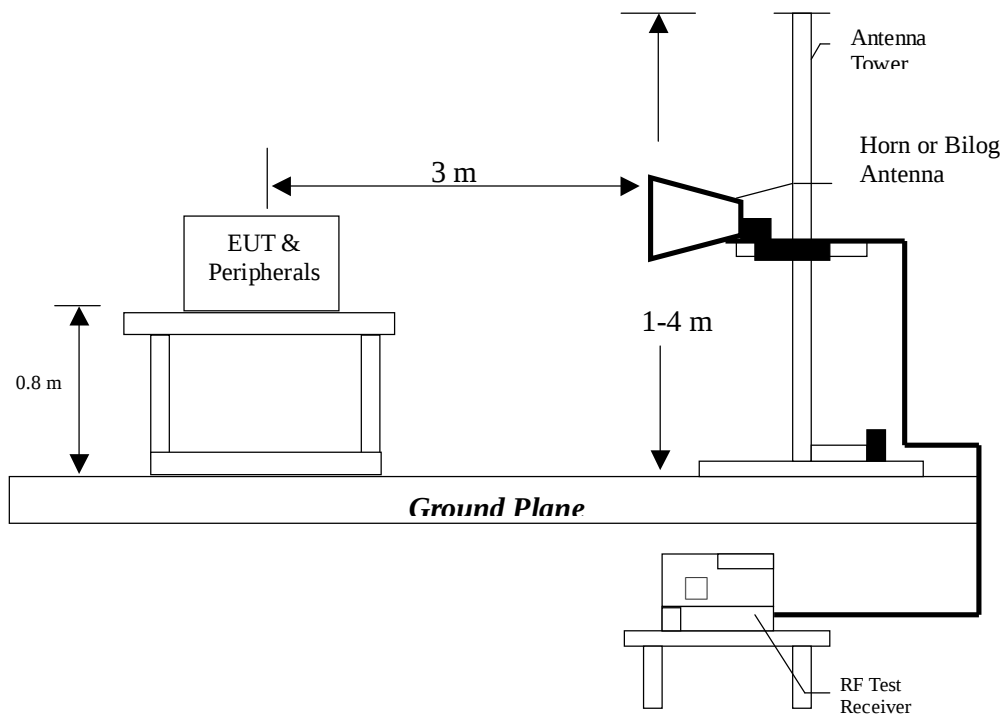
5. Radiated Emission test

5.1 Operating environment

Temperature:	23	°C	(10-40°C)
Relative Humidity:	58	%	(10-90%)
Atmospheric Pressure	1023	hPa	(860-1060hPa)

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

The radiated spurious emissions at

Frequency(MHz)	Margin	Test condition
156.320	-3.64	802.11b Tx at channel 1 with Antenna 1
300.000	-2.86	802.11b Tx at channel 1 with Antenna 2
398.980	-2.65	802.11b Tx at channel 1 with Antenna 2
72.850	-3.82	802.11g Tx at channel 1 with Antenna 2
179.830	-4.11	802.11g Tx at channel 1 with Antenna 2
191.110	-3.47	802.11g Tx at channel 1 with Antenna 3

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

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

The test was performed the 802.11b and 802.11g transmitting continuously modes with channel 1,6,11, the worst case was occurred in 802.11b Tx at channel 1 and 802.11g Tx at channel 1.

EUT : WUG2660

Worst Case : 802.11b Tx at channel 1 with Antenna 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 (cm)	Turn Table angle (degree)
96.000	QP	V	10.44	12.00	22.44	43.50	-21.06	132.00	256.00
110.250	QP	V	11.80	21.56	33.36	43.50	-10.14	145.00	111.00
191.420	QP	V	12.03	21.36	33.39	43.50	-10.11	162.00	54.00
398.990	QP	V	16.40	18.53	34.93	46.00	-11.07	156.00	136.00
664.580	QP	V	21.72	15.68	37.40	46.00	-8.60	112.00	142.00
799.250	QP	V	23.49	11.25	34.74	46.00	-11.26	132.00	110.00
88.560	QP	H	9.41	29.00	38.41	43.50	-5.09	325.00	12.00
156.320	QP	H	14.76	25.10	39.86	43.50	-3.64	112.00	113.00
168.250	QP	H	14.92	21.10	36.02	43.50	-7.48	164.00	253.00
179.258	QP	H	14.29	23.65	37.94	43.50	-5.56	284.00	215.00
191.320	QP	H	12.03	15.11	27.14	43.50	-16.36	200.00	136.00
204.690	QP	H	11.52	21.65	33.17	43.50	-10.33	256.00	123.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

EUT : WUG2660

Worst Case : 802.11g Tx at channel 1 with Antenna 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 (cm)	Turn Table angle (degree)
96.180	QP	V	10.44	11.82	22.26	43.50	-21.24	168.00	16.00
110.360	QP	V	11.80	20.51	32.31	43.50	-11.19	156.00	125.00
204.580	QP	V	11.52	16.65	28.17	43.50	-15.33	162.00	136.00
226.320	QP	V	11.82	17.69	29.51	46.00	-16.49	116.00	258.00
398.890	QP	V	16.40	20.10	36.50	46.00	-9.50	169.00	300.00
664.890	QP	V	21.72	15.60	37.32	46.00	-8.68	143.00	214.00
882.260	QP	H	24.51	29.25	53.76	46.00	7.76	200.00	10.00
156.470	QP	H	14.76	21.30	36.06	43.50	-7.44	300.00	256.00
191.100	QP	H	12.03	15.26	27.29	43.50	-16.21	256.00	211.00
204.620	QP	H	11.52	21.11	32.63	43.50	-10.87	169.00	156.00
216.390	QP	H	11.52	28.96	40.48	46.00	-5.52	295.00	25.00
228.210	QP	H	11.82	26.25	38.07	46.00	-7.93	140.00	11.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

EUT : WUG2660

Worst Case : 802.11b Tx at channel 1 with Antenna 2

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 (cm)	Turn Table angle (degree)
72.690	QP	V	11.62	19.65	31.27	40.00	-8.73	162.00	145.00
132.880	QP	V	13.34	16.20	29.54	43.50	-13.96	154.00	254.00
179.650	QP	V	14.29	15.80	30.09	43.50	-13.41	115.00	360.00
191.160	QP	V	12.03	20.81	32.84	43.50	-10.66	139.00	251.00
398.990	QP	V	16.40	20.60	37.00	46.00	-9.00	115.00	258.00
664.450	QP	V	21.72	15.80	37.52	46.00	-8.48	195.00	165.00
872.890	QP	H	14.39	24.77	39.16	46.00	-6.84	220.00	136.00
179.520	QP	H	14.29	24.15	38.44	43.50	-5.06	215.00	258.00
191.360	QP	H	12.03	18.65	30.68	43.50	-12.82	216.00	143.00
204.620	QP	H	11.52	23.85	35.37	43.50	-8.13	201.00	254.00
300.000	QP	H	14.45	28.69	43.14	46.00	-2.86	198.00	21.00
398.980	QP	H	16.40	26.95	43.35	46.00	-2.65	135.00	119.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

EUT : WUG2660

Worst Case : 802.11g Tx at channel 1 with Antenna 2

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 (cm)	Turn Table angle (degree)
70.780	QP	V	11.62	15.95	27.57	40.00	-12.43	125.00	365.00
132.890	QP	V	13.34	11.25	24.59	43.50	-18.91	112.00	135.00
167.780	QP	V	14.92	14.56	29.48	43.50	-14.02	165.00	125.00
398.990	QP	V	16.40	18.42	34.82	46.00	-11.18	132.00	333.00
480.000	QP	V	18.61	11.65	30.26	46.00	-15.74	165.00	258.00
664.460	QP	V	21.72	19.10	40.82	46.00	-5.18	148.00	169.00
72.850	QP	H	11.62	24.56	36.18	40.00	-3.82	201.00	0.00
144.450	QP	H	14.27	23.98	38.25	43.50	-5.25	148.00	215.00
167.250	QP	H	14.92	23.25	38.17	43.50	-5.33	198.00	154.00
179.830	QP	H	14.29	25.10	39.39	43.50	-4.11	169.00	177.00
191.000	QP	H	12.03	16.11	28.14	43.50	-15.36	178.00	162.00
204.620	QP	H	11.52	23.14	34.66	43.50	-8.84	123.00	139.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

EUT : WUG2660

Worst Case : 802.11b Tx at channel 1 with Antenna 3

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 (cm)	Turn Table angle (degree)
132.880	QP	V	13.34	16.32	29.66	43.50	-13.84	110.00	110.00
168.000	QP	V	14.92	13.85	28.77	43.50	-14.73	169.00	148.00
240.000	QP	V	12.85	16.98	29.83	46.00	-16.17	120.00	299.00
398.890	QP	V	16.40	15.85	32.25	46.00	-13.75	148.00	155.00
530.620	QP	V	19.15	12.10	31.25	46.00	-14.75	133.00	163.00
664.440	QP	V	21.72	14.55	36.27	46.00	-9.73	168.00	174.00
156.980	QP	H	14.76	19.52	34.28	43.50	-9.22	212.00	177.00
167.890	QP	H	14.92	21.20	36.12	43.50	-7.38	258.00	24.00
203.980	QP	H	11.52	23.89	35.41	43.50	-8.09	236.00	36.00
240.100	QP	H	12.85	24.99	37.84	46.00	-8.16	303.00	115.00
288.120	QP	H	14.07	23.10	37.17	46.00	-8.83	265.00	167.00
320.150	QP	H	14.99	20.86	35.85	46.00	-10.15	298.00	164.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

EUT : WUG2660

Worst Case : 802.11g Tx at channel 1 with Antenna 3

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 (cm)	Turn Table angle (degree)
132.880	QP	V	13.34	15.24	28.58	43.50	-14.92	148.00	125.00
168.520	QP	V	14.92	13.10	28.02	43.50	-15.48	100.00	321.00
191.110	QP	V	12.03	14.25	26.28	43.50	-17.22	115.00	185.00
231.250	QP	V	11.82	19.68	31.50	46.00	-14.50	169.00	112.00
240.160	QP	V	12.85	18.25	31.10	46.00	-14.90	183.00	36.00
664.480	QP	V	21.72	17.95	39.67	46.00	-6.33	115.00	245.00
156.890	QP	H	14.76	21.90	36.66	43.50	-6.84	222.00	16.00
191.110	QP	H	12.03	28.00	40.03	43.50	-3.47	168.00	154.00
240.120	QP	H	12.85	24.18	37.03	46.00	-8.97	208.00	132.00
299.250	QP	H	14.07	24.55	38.62	46.00	-7.38	165.00	115.00
398.650	QP	H	16.40	23.36	39.76	46.00	-6.24	224.00	254.00
480.160	QP	H	18.61	17.00	35.61	46.00	-10.39	198.00	168.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

5.4.2 Measurement results: frequency above 1GHz

Polarity : Vertical

EUT : WUG2660

Test Condition : 802.11b Tx at channel 1 with Antenna 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 (cm)	Turn Table angle (degree)
4824.000	PK	V	39.60	35.25	49.58	45.23	74.00	-28.77	155.00	165.00
4824.000	AV	V	39.60	35.25	44.46	40.11	54.00	-13.89	155.00	165.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal

EUT : WUG2660

Test Condition : 802.11b Tx at channel 1 with Antenna 1

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.

The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV
26.5GHz-40GHz: 41.5dBuV

For AV:

1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV
26.5GHz-40GHz: 31.5dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 6 with Antenna 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 (cm)	Turn Table angle (degree)
7316.000	PK	V	39.25	39.05	49.52	49.32	74.00	-24.68	182.00	222.00
7316.000	AV	V	39.25	39.05	13.18	12.98	54.00	-41.02	182.00	222.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 6 with Antenna 1

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.
 The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV
 26.5GHz-40GHz: 41.5dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV
 26.5GHz-40GHz: 31.5dBuV

Polarity : Vertical

EUT : WUG2660

Test Condition : 802.11b Tx at channel 11 with Antenna 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 (cm)	Turn Table angle (degree)
7396.000	PK	V	39.25	39.05	53.83	53.63	74.00	-20.37	140.00	174.00
7396.000	AV	V	39.25	39.05	49.23	49.03	54.00	-4.97	140.00	174.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal

EUT : WUG2660

Test Condition : 802.11b Tx at channel 11 with Antenna 1

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.

The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

Polarity : Vertical/ Horizontal

EUT : WUG2660

Test Condition : 802.11g Tx at channel 1 with Antenna 1

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.

The noise floor are listed as below:

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

26.5GHz-40GHz: 41.5dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

26.5GHz-40GHz: 31.5dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 6 with Antenna 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 (cm)	Turn Table angle (degree)
7316.000	PK	V	39.25	39.05	46.86	46.66	74.00	-27.34	136.00	200.00
7316.000	AV	V	39.25	39.05	41.05	40.85	54.00	-13.15	136.00	200.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 6 with Antenna 1

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.
 The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical

EUT : WUG2660

Test Condition : 802.11g Tx at channel 11 with Antenna 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 (cm)	Turn Table angle (degree)
7396.000	PK	V	39.25	39.05	51.52	51.32	74.00	-22.68	125.00	118.00
7396.000	AV	V	39.25	39.05	46.82	46.62	54.00	-7.38	125.00	118.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal

EUT : WUG2660

Test Condition : 802.11g Tx at channel 11 with Antenna 1

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.

The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 1 with Antenna 2

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 (cm)	Turn Table angle (degree)
4824.000	PK	V	39.60	35.25	47.56	43.21	74.00	-30.79	114.00	252.00
4824.000	AV	V	39.60	35.25	44.46	40.11	54.00	-13.89	114.00	252.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 1 with Antenna 2

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.
 The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 6 with Antenna 2

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 (cm)	Turn Table angle (degree)
7312.000	PK	V	39.25	39.05	53.41	53.21	74.00	-20.79	168.00	313.00
7312.000	AV	V	39.25	39.05	49.15	48.95	54.00	-5.05	168.00	313.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 6 with Antenna 2

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.
 The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 11 with Antenna 2

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 (cm)	Turn Table angle (degree)
7396.000	PK	V	39.25	39.05	52.85	52.65	74.00	-21.35	115.00	147.00
7396.000	AV	V	39.25	39.05	47.46	47.26	54.00	-6.74	115.00	147.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 11 with Antenna 2

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 (cm)	Turn Table angle (degree)
7396.000	PK	H	39.25	39.05	48.53	48.33	74.00	-25.67	162.00	25.00
7396.000	AV	H	39.25	39.05	42.35	42.15	54.00	-11.85	162.00	25.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical/ Horizontal

EUT : WUG2660

Test Condition : 802.11g Tx at channel 1 with Antenna 2

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.

The noise floor are listed as below:

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

26.5GHz-40GHz: 41.5dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

26.5GHz-40GHz: 31.5dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 6 with Antenna 2

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 (cm)	Turn Table angle (degree)
7312.000	PK	V	39.25	39.05	50.05	49.85	74.00	-24.15	125.00	333.00
7312.000	AV	V	39.25	39.05	43.46	43.26	54.00	-10.74	125.00	333.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 6 with Antenna 2

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.
 The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical

EUT : WUG2660

Test Condition : 802.11g Tx at channel 11 with Antenna 2

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 (cm)	Turn Table angle (degree)
7396.000	PK	V	39.25	39.05	54.33	54.13	74.00	-19.87	200.00	26.00
7396.000	AV	V	39.25	39.05	47.82	47.62	54.00	-6.38	200.00	26.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal

EUT : WUG2660

Test Condition : 802.11g Tx at channel 11 with Antenna 2

Test Result:

No spurious emission was found above the spectrum analyzer's noise floor.

The noise floor are listed as below:

Noise floor level

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 1 with Antenna 3

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 (cm)	Turn Table angle (degree)
4824.000	PK	V	39.60	35.25	50.53	46.18	74.00	-27.82	212.00	69.00
4824.000	AV	V	39.60	35.25	43.82	39.47	54.00	-14.53	212.00	69.00
7236.000	PK	V	39.25	39.05	60.78	60.58	74.00	-13.42	114.00	321.00
7236.000	AV	V	39.25	39.05	50.19	49.99	54.00	-4.01	114.00	321.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 1 with Antenna 3

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 (cm)	Turn Table angle (degree)
7236.000	PK	H	39.25	39.05	60.55	60.35	74.00	-13.65	188.00	25.00
7236.000	AV	H	39.25	39.05	51.78	51.58	54.00	-2.42	188.00	25.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 6 with Antenna 3

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 (cm)	Turn Table angle (degree)
7312.000	PK	V	39.25	39.05	60.94	60.74	74.00	-13.26	163.00	146.00
7312.000	AV	V	39.25	39.05	49.42	49.22	54.00	-4.78	163.00	146.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11b Tx at channel 6 with Antenna 3

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 (cm)	Turn Table angle (degree)
7312.000	PK	H	39.25	39.05	59.50	59.30	74.00	-14.70	220.00	172.00
7312.000	AV	H	39.25	39.05	48.83	48.63	54.00	-5.37	220.00	172.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

FCC ID. : MQ4WUG2660

Report No.: EME-041008

Page 41 of 84

Polarity : Vertical

EUT : WUG2660

Test Condition : 802.11b Tx at channel 11 with Antenna 3

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 (cm)	Turn Table angle (degree)
7386.000	PK	V	39.25	39.05	60.59	60.39	74.00	-13.61	142.00	183.00
7386.000	AV	V	39.25	39.05	50.05	49.85	54.00	-4.15	142.00	183.00
9848.000	PK	V	37.89	41.58	49.27	52.96	74.00	-21.04	138.00	159.00
9848.000	AV	V	37.89	41.58	40.17	43.86	54.00	-10.14	138.00	159.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal

EUT : WUG2660

Test Condition : 802.11b Tx at channel 11 with Antenna 3

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 (cm)	Turn Table angle (degree)
4924.000	PK	H	39.60	35.25	48.45	44.10	74.00	-29.90	108.00	268.00
4924.000	AV	H	39.60	35.25	43.56	39.21	54.00	-14.79	108.00	268.00
7386.000	PK	H	39.25	39.05	60.37	60.17	74.00	-13.83	106.00	324.00
7386.000	AV	H	39.25	39.05	48.05	47.85	54.00	-6.15	106.00	324.00
9848.000	PK	H	37.89	41.58	52.42	56.11	74.00	-17.89	114.00	185.00
9848.000	AV	H	37.89	41.58	43.94	47.63	54.00	-6.37	114.00	185.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 1 with Antenna 3

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 (cm)	Turn Table angle (degree)
7236.000	PK	V	39.25	39.05	56.30	56.10	74.00	-17.90	108.00	215.00
7236.000	AV	V	39.25	39.05	46.45	46.25	54.00	-7.75	108.00	215.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 1 with Antenna 3

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 (cm)	Turn Table angle (degree)
7236.000	PK	H	39.25	39.05	60.32	60.12	74.00	-13.88	195.00	233.00
7236.000	AV	H	39.25	39.05	50.05	49.85	54.00	-4.15	195.00	233.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 6 with Antenna 3

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 (cm)	Turn Table angle (degree)
7312.000	PK	V	39.25	39.05	60.33	60.13	74.00	-13.87	120.00	102.00
7312.000	AV	V	39.25	39.05	50.44	50.24	54.00	-3.76	120.00	102.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 6 with Antenna 3

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 (cm)	Turn Table angle (degree)
7312.000	PK	H	39.25	39.05	61.31	61.11	74.00	-12.89	136.00	186.00
7312.000	AV	H	39.25	39.05	49.33	49.13	54.00	-4.87	136.00	186.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

Polarity : Vertical
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 11 with Antenna 3

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 (cm)	Turn Table angle (degree)
4924.000	PK	V	39.60	35.25	47.60	43.25	74.00	-30.75	114.00	258.00
4924.000	AV	V	39.60	35.25	42.04	37.69	54.00	-16.31	114.00	258.00
7836.000	PK	V	39.10	40.01	52.25	53.16	74.00	-20.84	103.00	99.00
7836.000	AV	V	39.10	40.01	44.84	45.75	54.00	-8.25	103.00	99.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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.

Polarity : Horizontal
 EUT : WUG2660
 Test Condition : 802.11g Tx at channel 11 with Antenna 3

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 (cm)	Turn Table angle (degree)
4924.000	PK	H	39.60	35.25	47.64	43.29	74.00	-30.71	152.00	321.00
4924.000	AV	H	39.60	35.25	44.44	40.09	54.00	-13.91	152.00	321.00
7386.000	PK	H	39.25	39.05	52.34	52.14	74.00	-21.86	177.00	147.00
7386.000	AV	H	39.25	39.05	44.36	44.16	54.00	-9.84	177.00	147.00
9848.000	PK	H	37.89	41.58	45.85	49.54	74.00	-24.46	162.00	165.00
9848.000	AV	H	37.89	41.58	36.70	40.39	54.00	-13.61	162.00	165.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
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

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: 25 °C
 Relative Humidity: 58 %
 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 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 operating mode (DSSS Modulation)

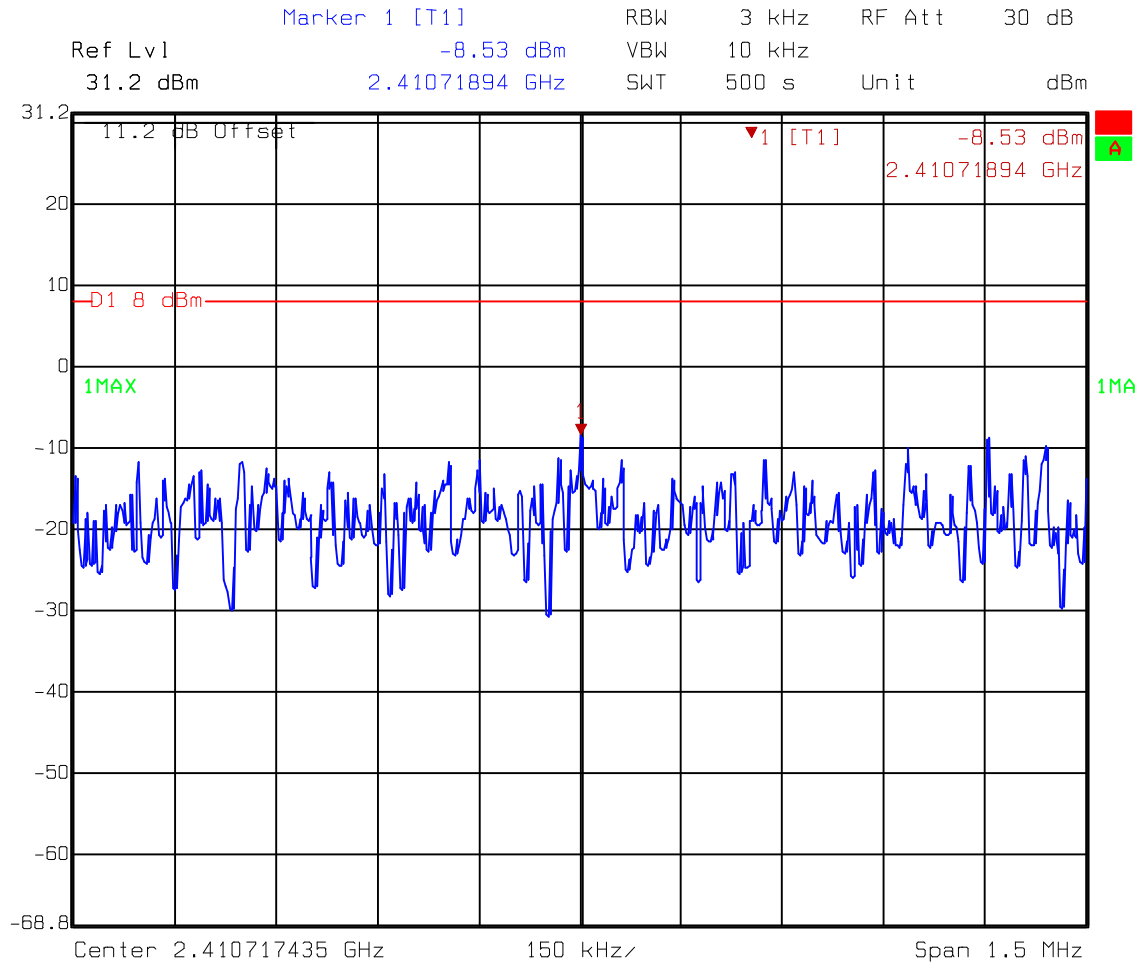
Channel	Frequency (MHz)	Measured level (dBm)	Limit (dBm)
1	2412	-8.53	8
6	2437	-8.62	8
11	2462	-8.17	8

Test Mode: 802.11g operating mode (OFDM Modulation)

Channel	Frequency (MHz)	Measured level (dBm)	Limit (dBm)
1	2412	-14.34	8
6	2437	-14.38	8
11	2462	-14.16	8

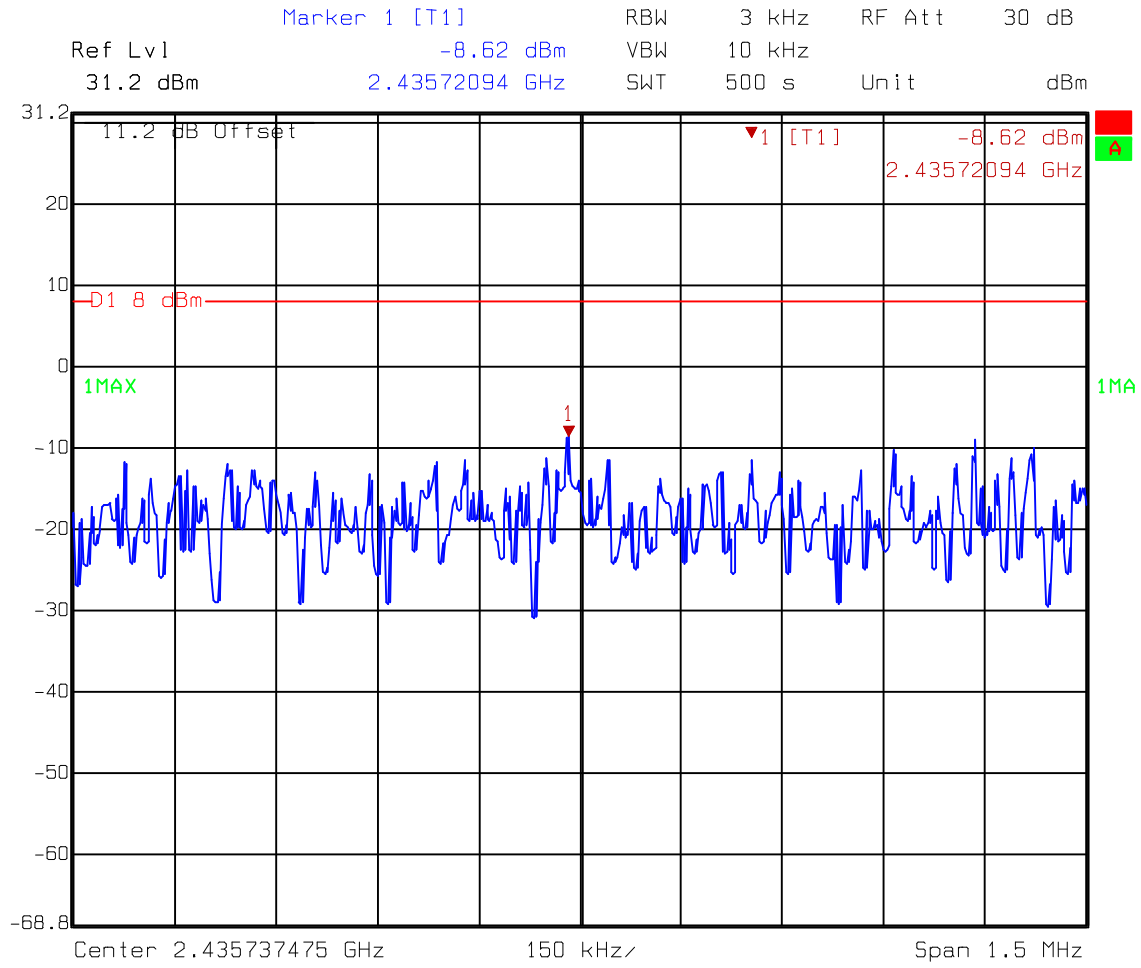
Please see the plot below.

Test Mode: 802.11b operating mode (DSSS Modulation)



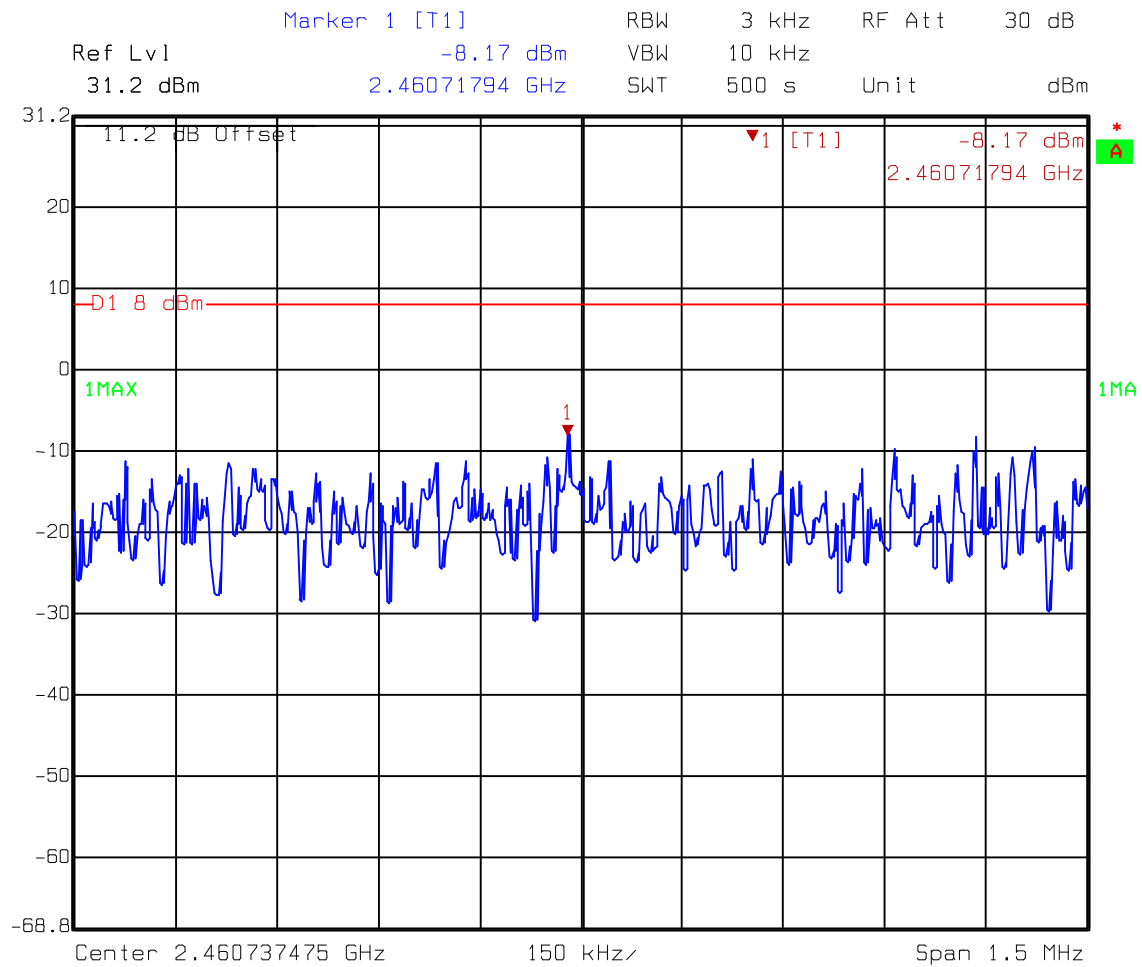
Comment A: Power spectrum density at channel 1 (EC365) 802.11b

Date: 20.OCT.2004 09:33:35



Comment A: Power spectrum density at channel 6 (EC365) 802.11b

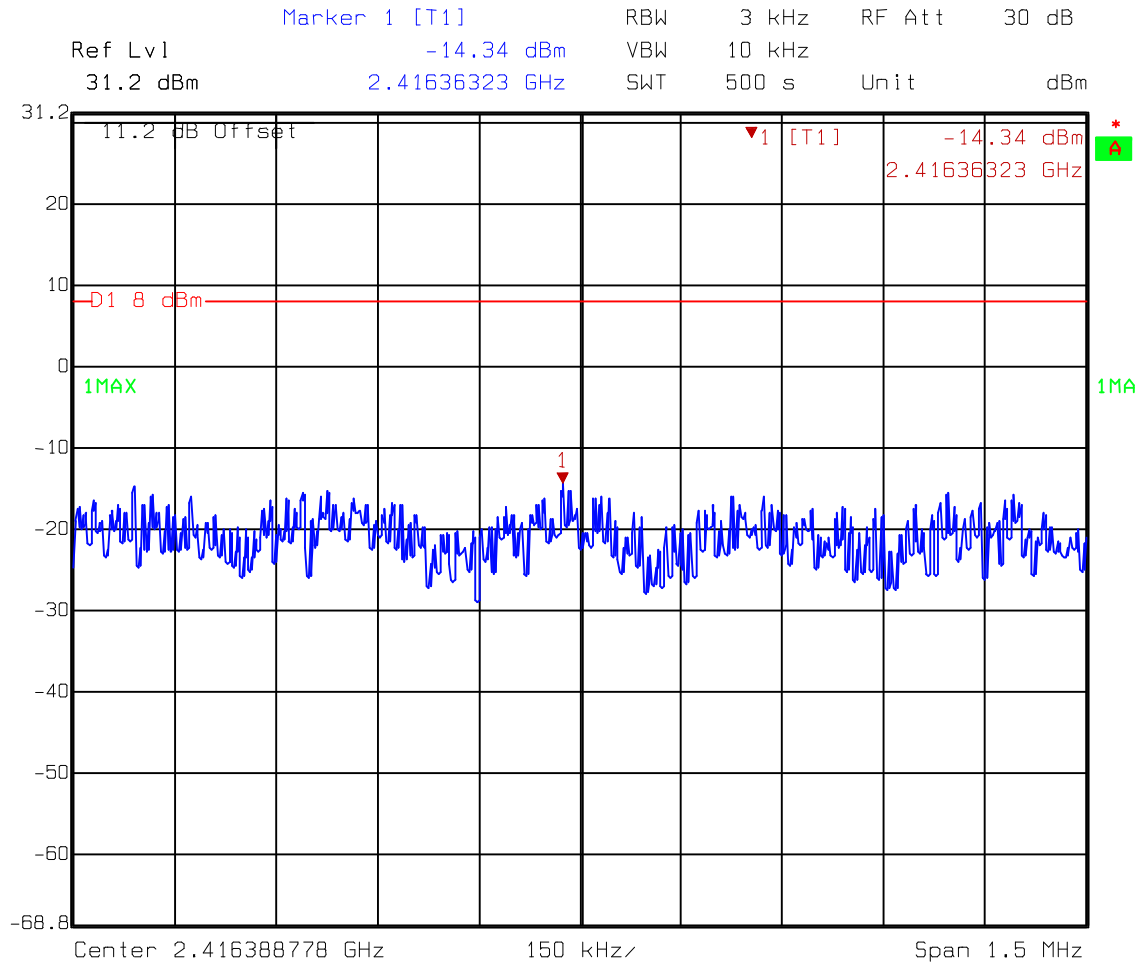
Date: 20.OCT.2004 09:29:33



Comment A: Power spectrum density at channel 11(EC365) 802.11b

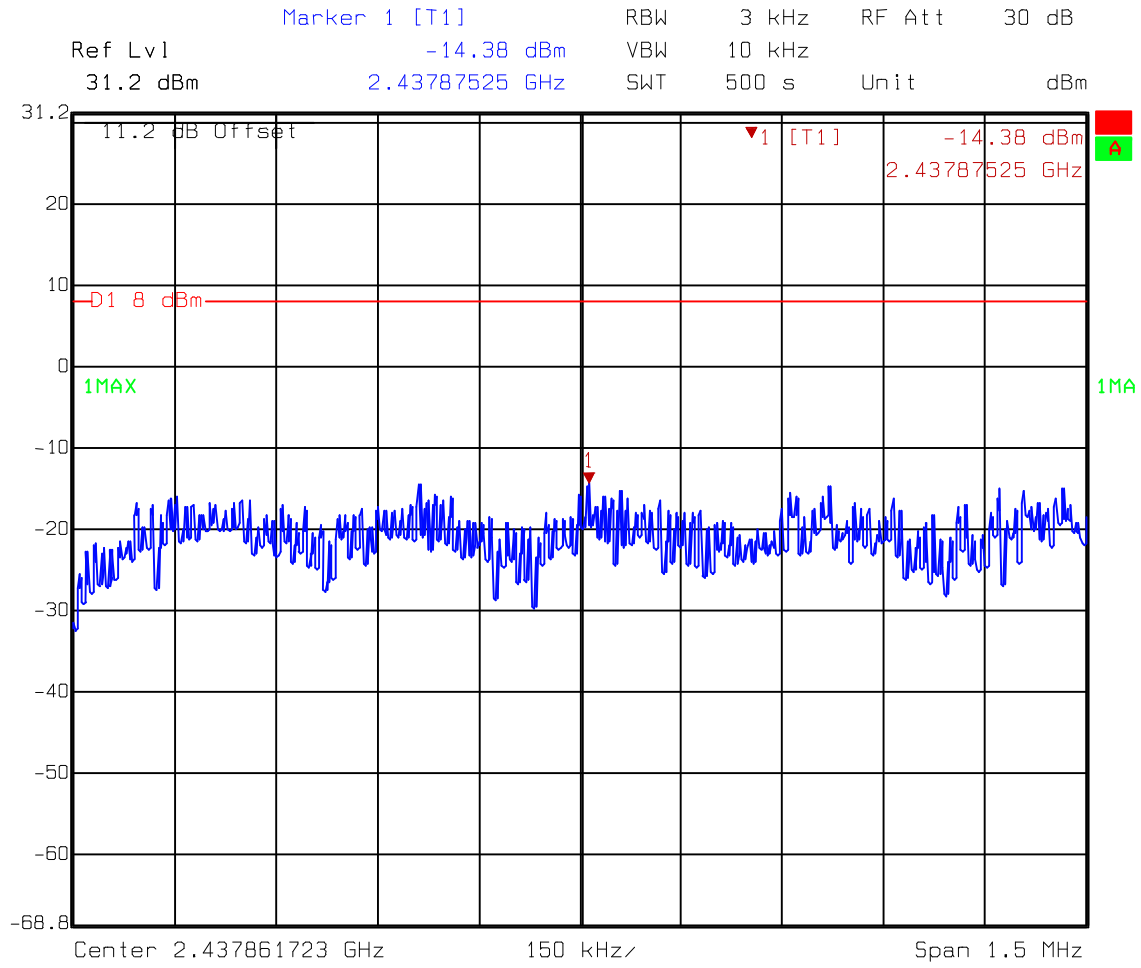
Date: 20.OCT.2004 09:27:45

Test Mode: 802.11g operating mode (OFDM Modulation)



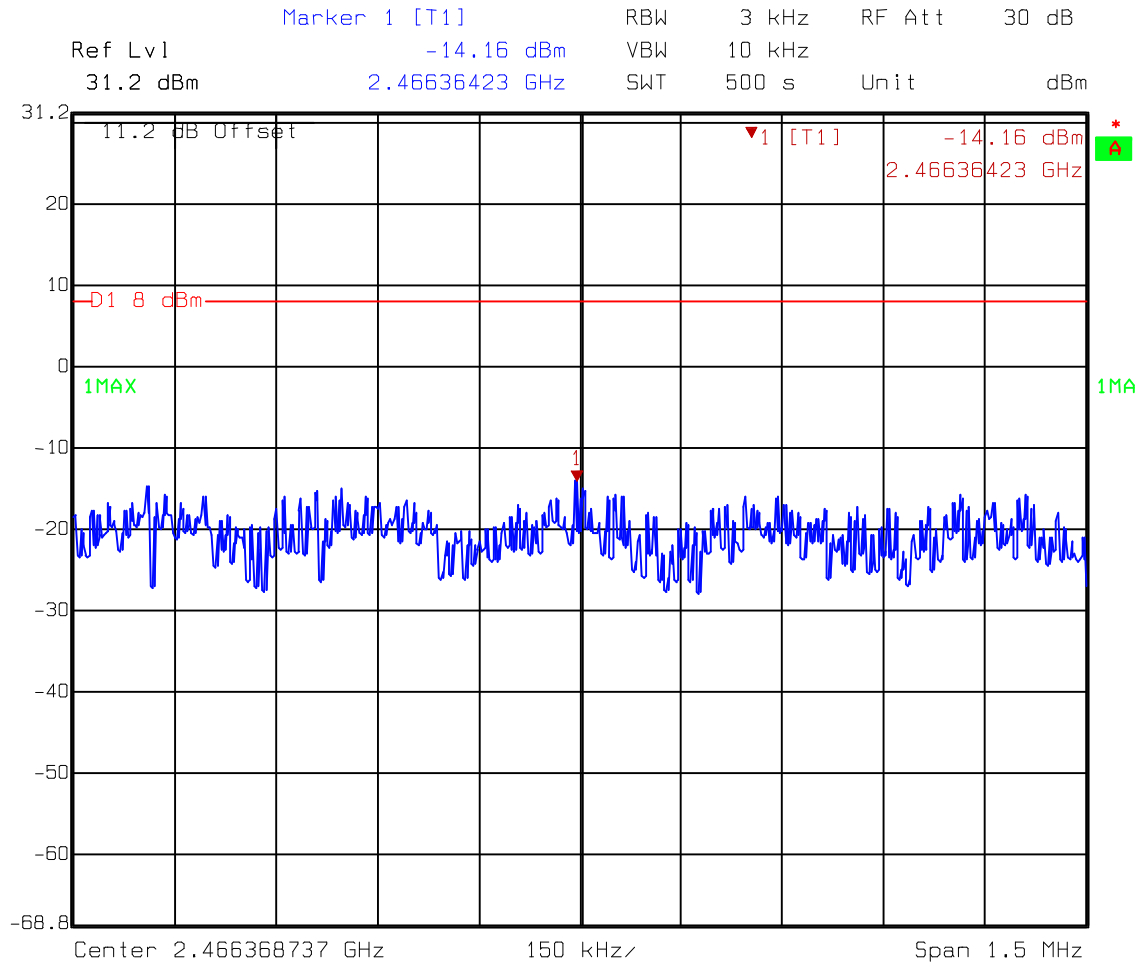
Comment A: Power spectrum density at channel 1 (EC365) 802.11g

Date: 20.OCT.2004 09:32:32



Comment A: Power spectrum density at channel 6 (EC365)802.11g

Date: 20.OCT.2004 09:39:09



Comment A: Power spectrum density at channel 11(EC365) 802.11g

Date: 20.OCT.2004 09:26:37

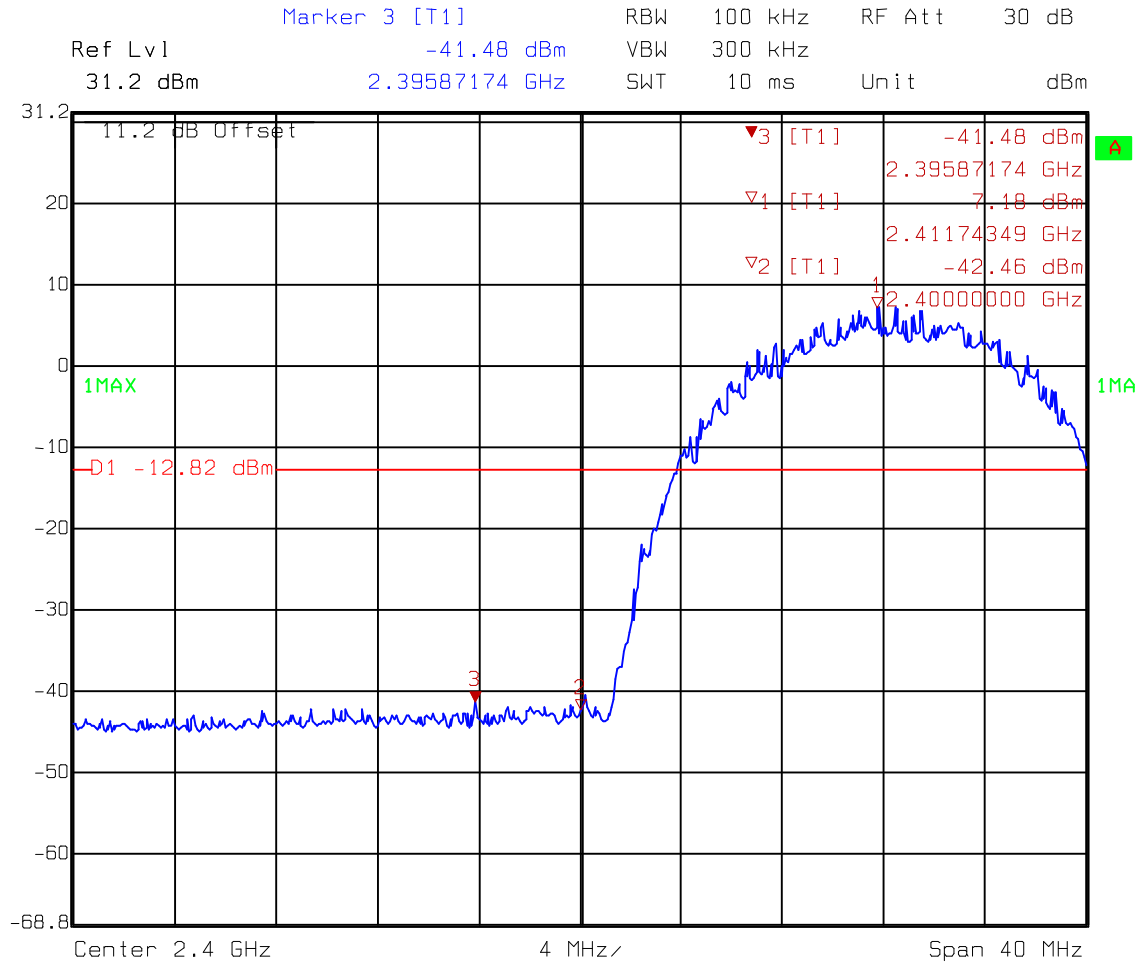
7. Emission on the band edge §FCC 15.247(C)

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.

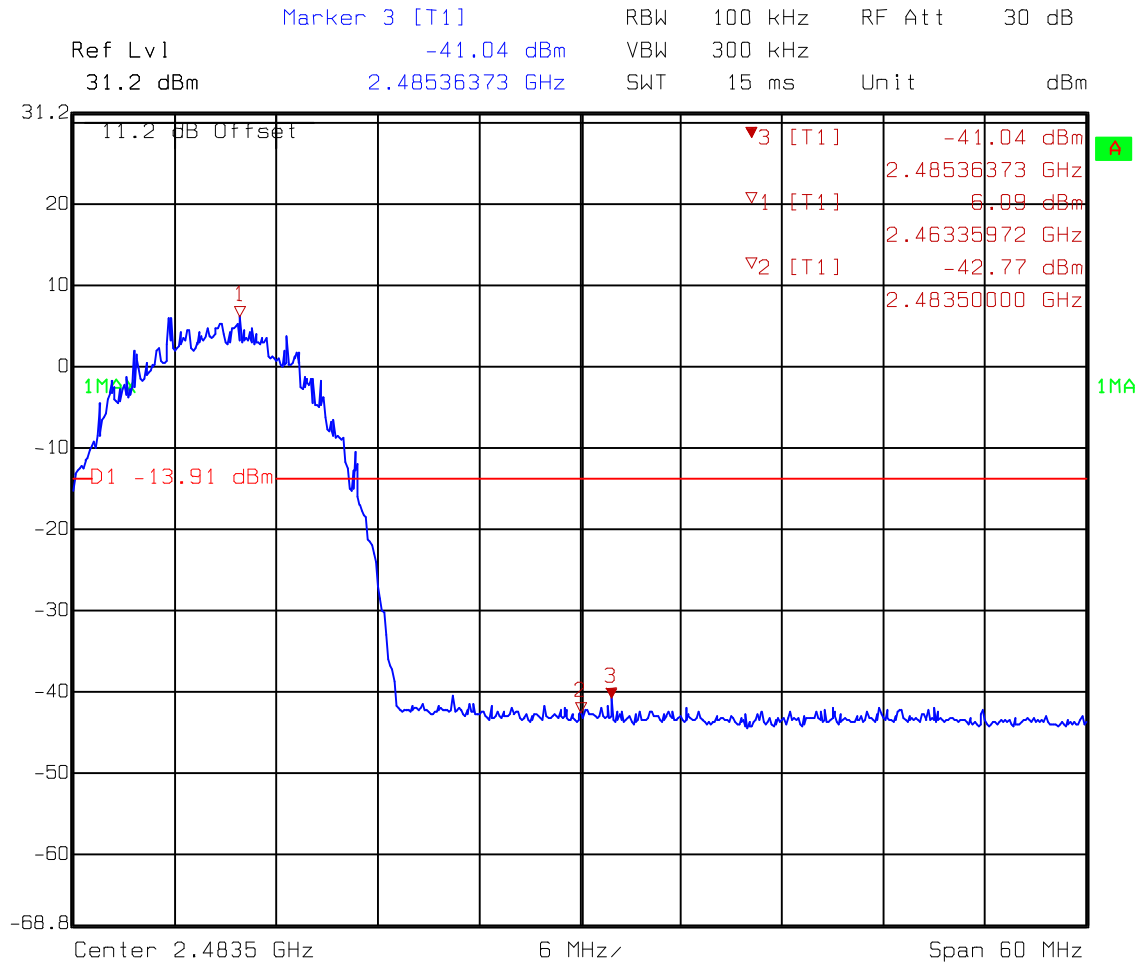
7.1 Band-edge (Conducted method)

Test Mode: 802.11b operating mode (DSSS Modulation)



Comment A: Band-edge at channel 1 (EC365) 802.11b

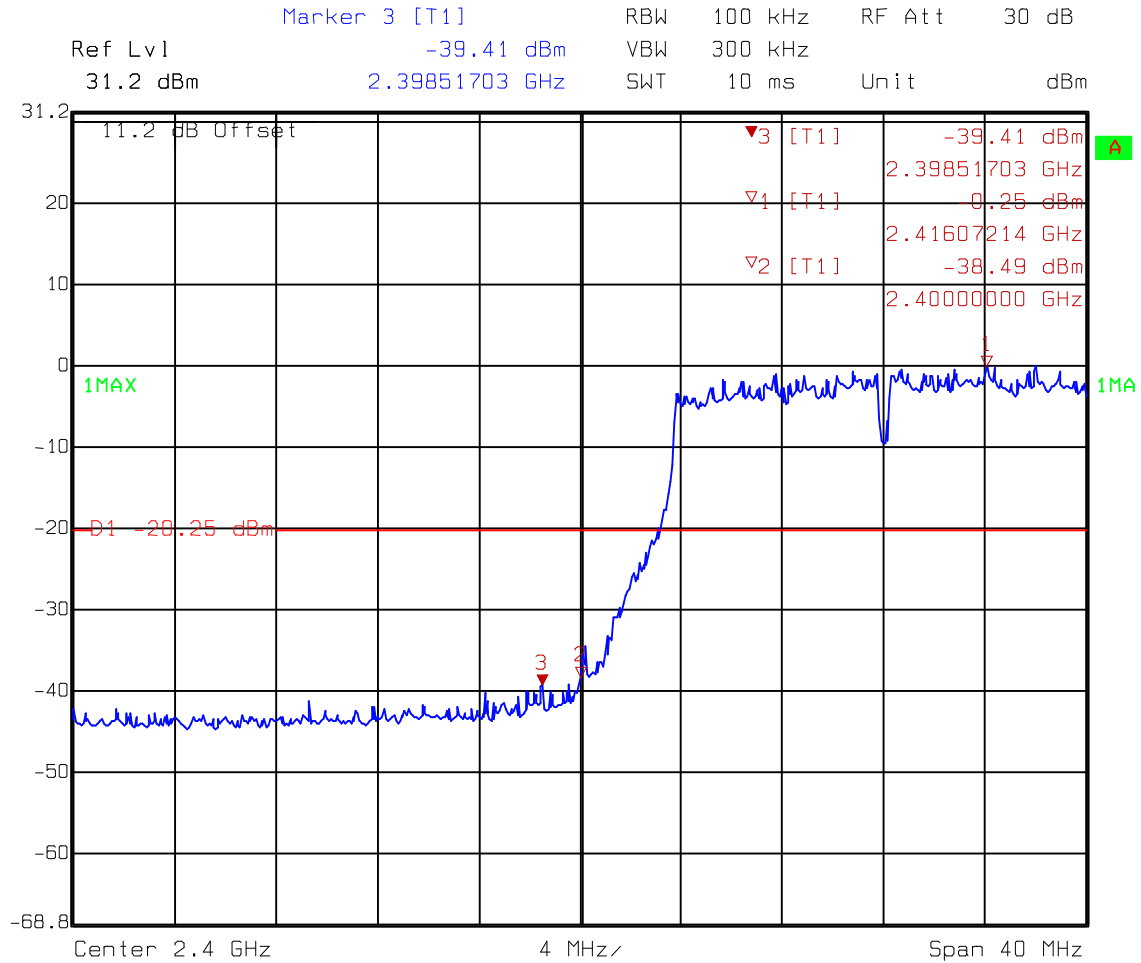
Date: 20.OCT.2004 09:45:58



Comment A: Band-edge at channel 11 (EC365) 802.11b

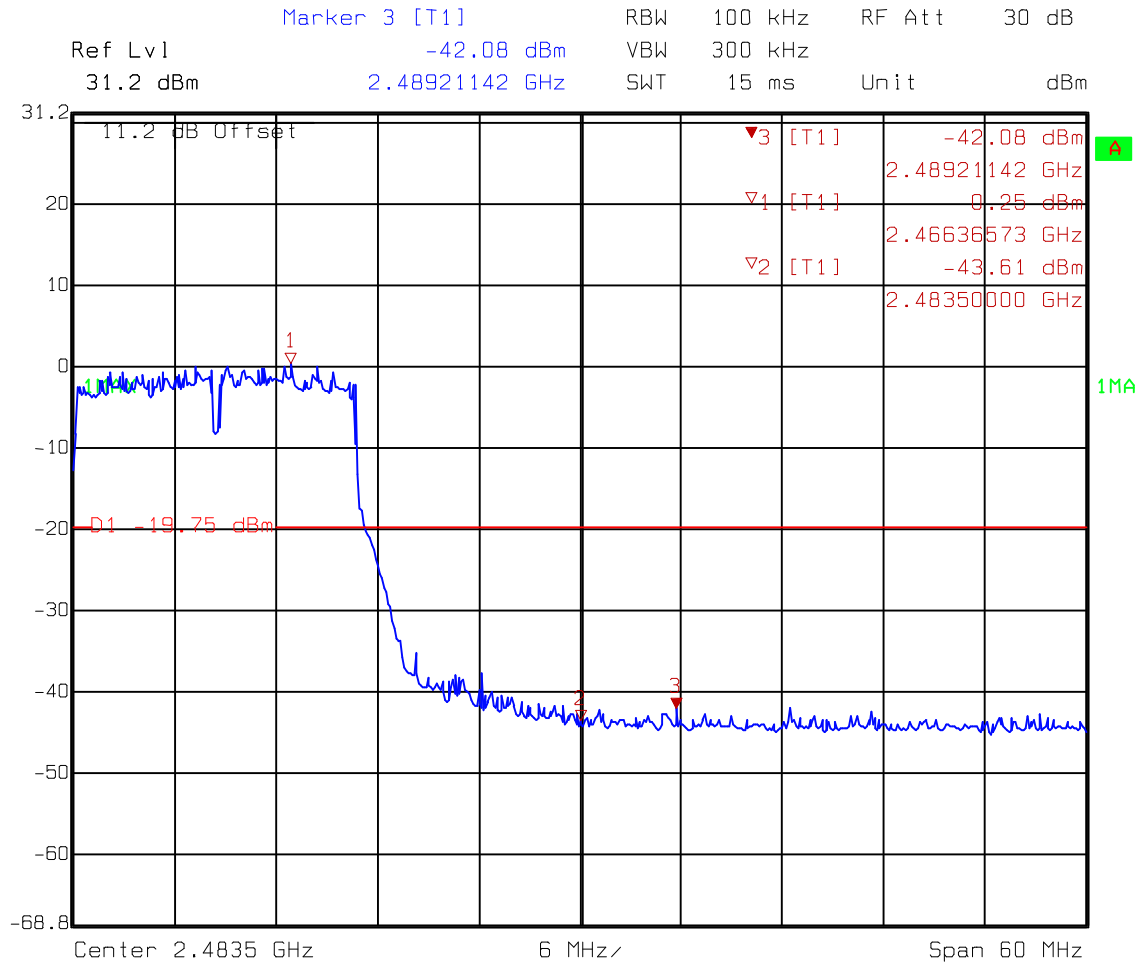
Date: 20.OCT.2004 09:47:56

Test Mode: 802.11g operating mode (OFDM Modulation)



Comment A: Band-edge at channel 1 (EC365) 802.11g

Date: 20.OCT.2004 09:44:39

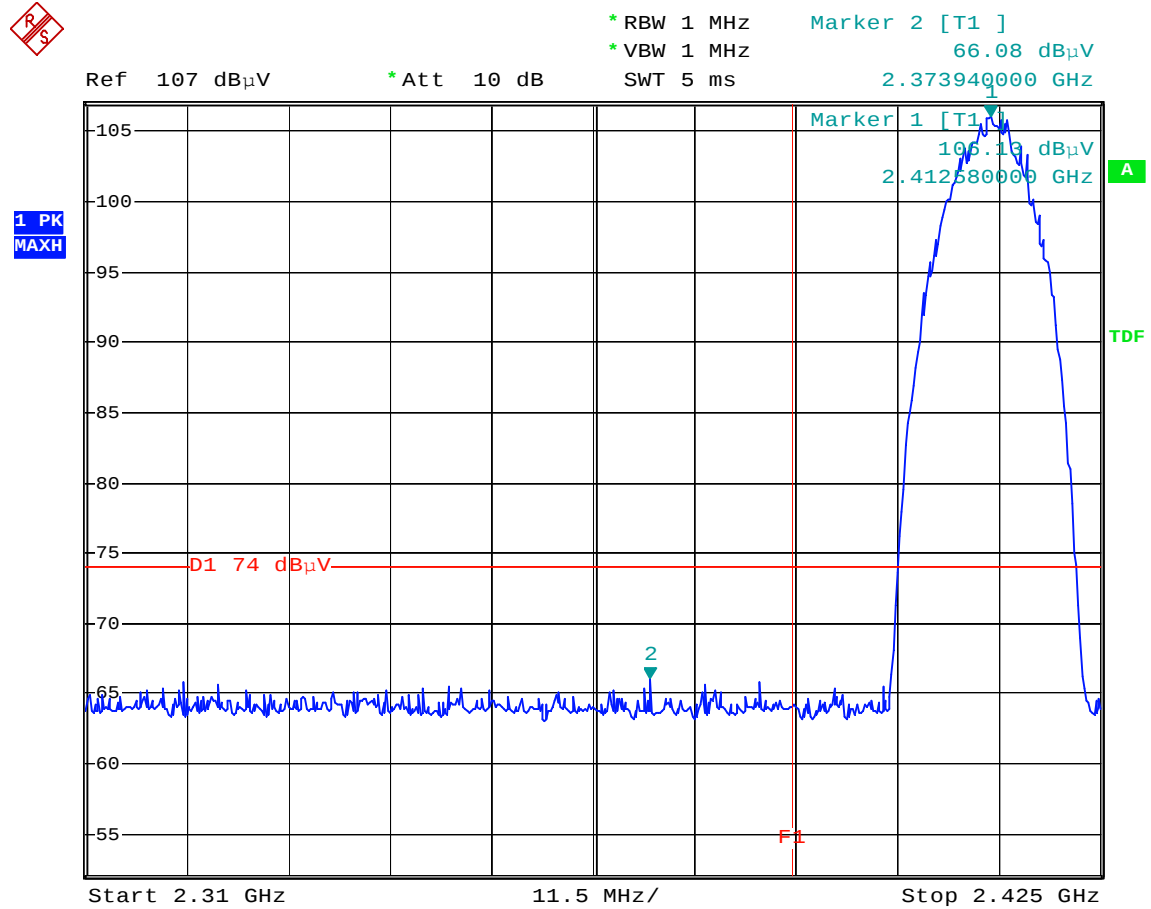


Comment A: Band-edge at channel 11 (EC365) 802.11g

Date: 20.OCT.2004 09:49:46

7.2 Band-edge (Radiated method)

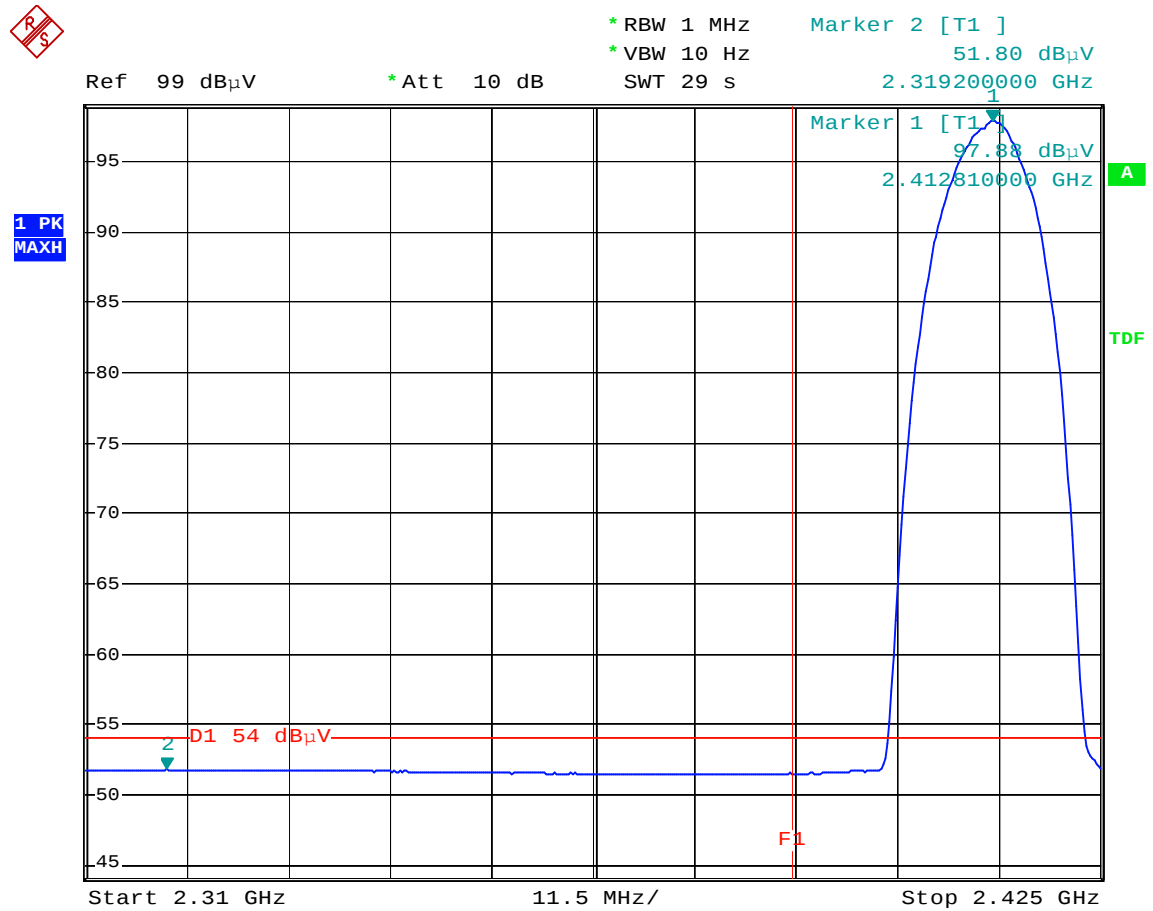
Test Mode: 802.11b operating mode (DSSS Modulation) with antenna 1



Comment: Band-edge test at low channel

Comment: Peak detector F1=2390MHz ant 1 802.11b

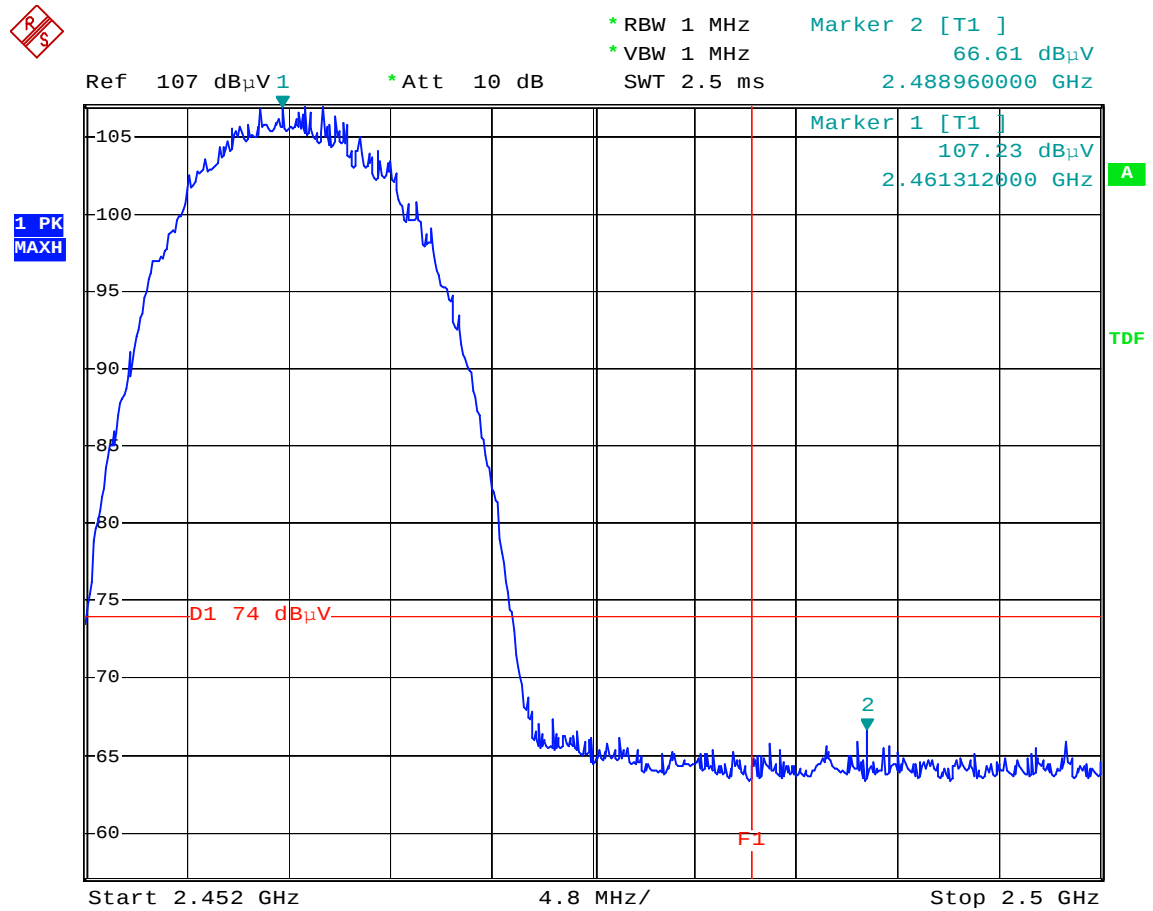
Date: 25.NOV.2004 13:47:46



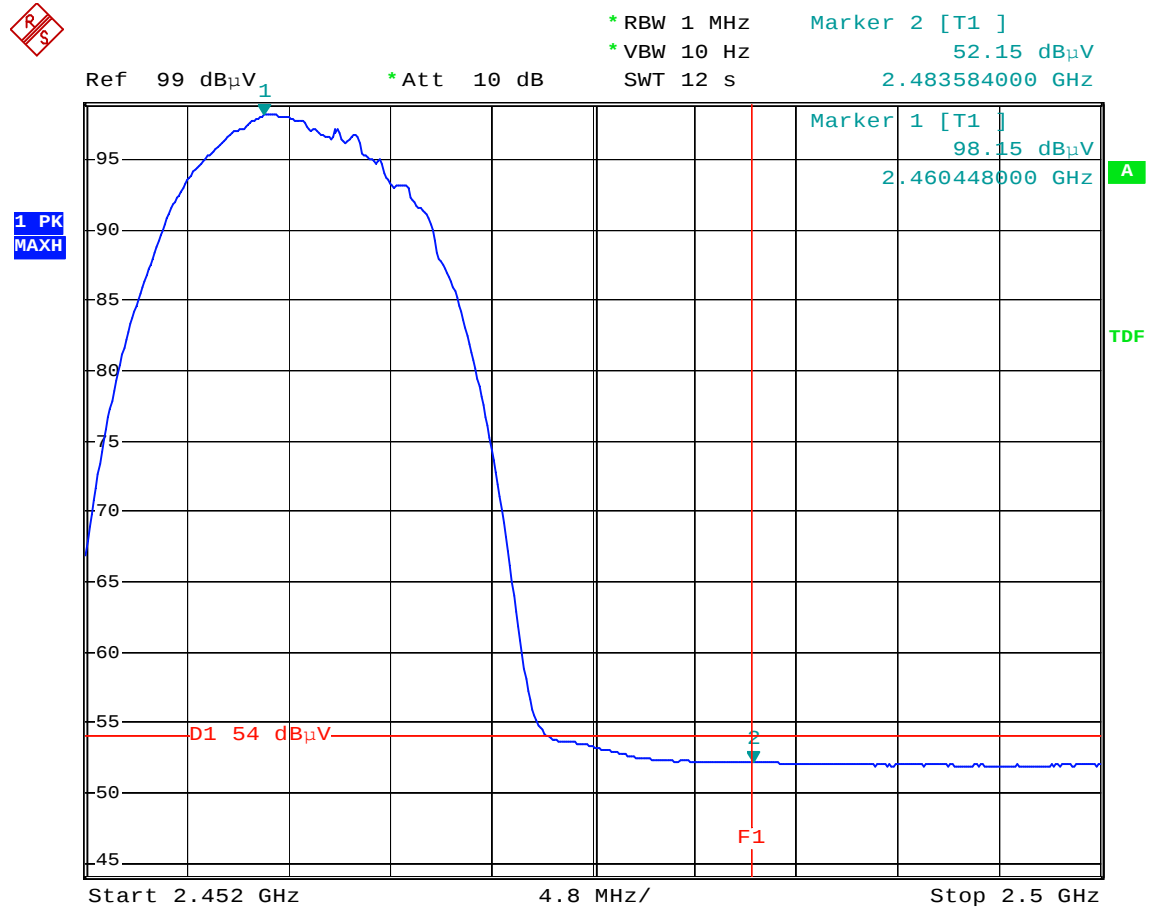
Comment: Band-edge test at low channel

Comment: Average detector F1=2390MHz ant 1 802.11b

Date: 25.NOV.2004 13:50:18



Comment: Band-edge test at high channel
 Comment: Peak detector F1=2483.5MHz ant 1 802.11b
 Date: 25.NOV.2004 13:32:18

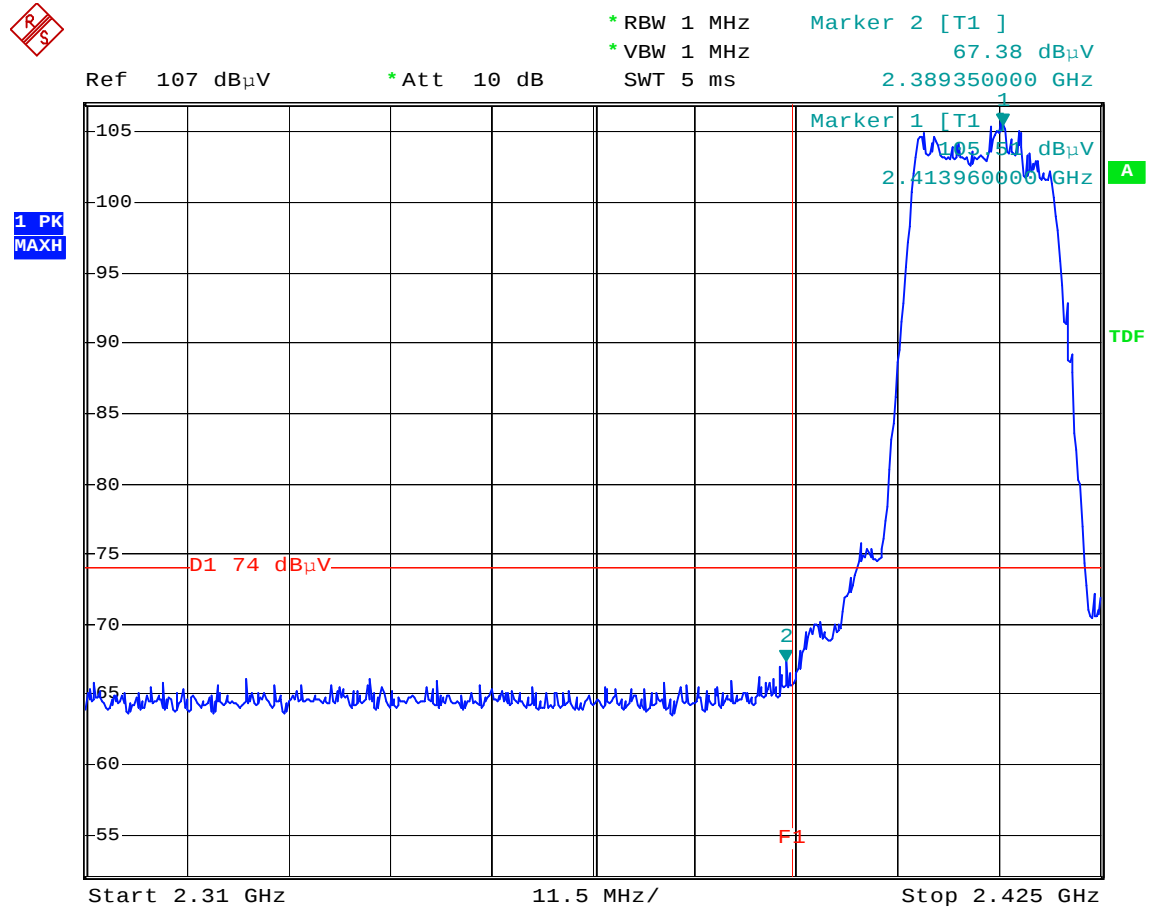


Comment: Band-edge test at high channel

Comment: Average detector F1=2483.5MHz ant 1 802.11b

Date: 25.NOV.2004 13:33:36

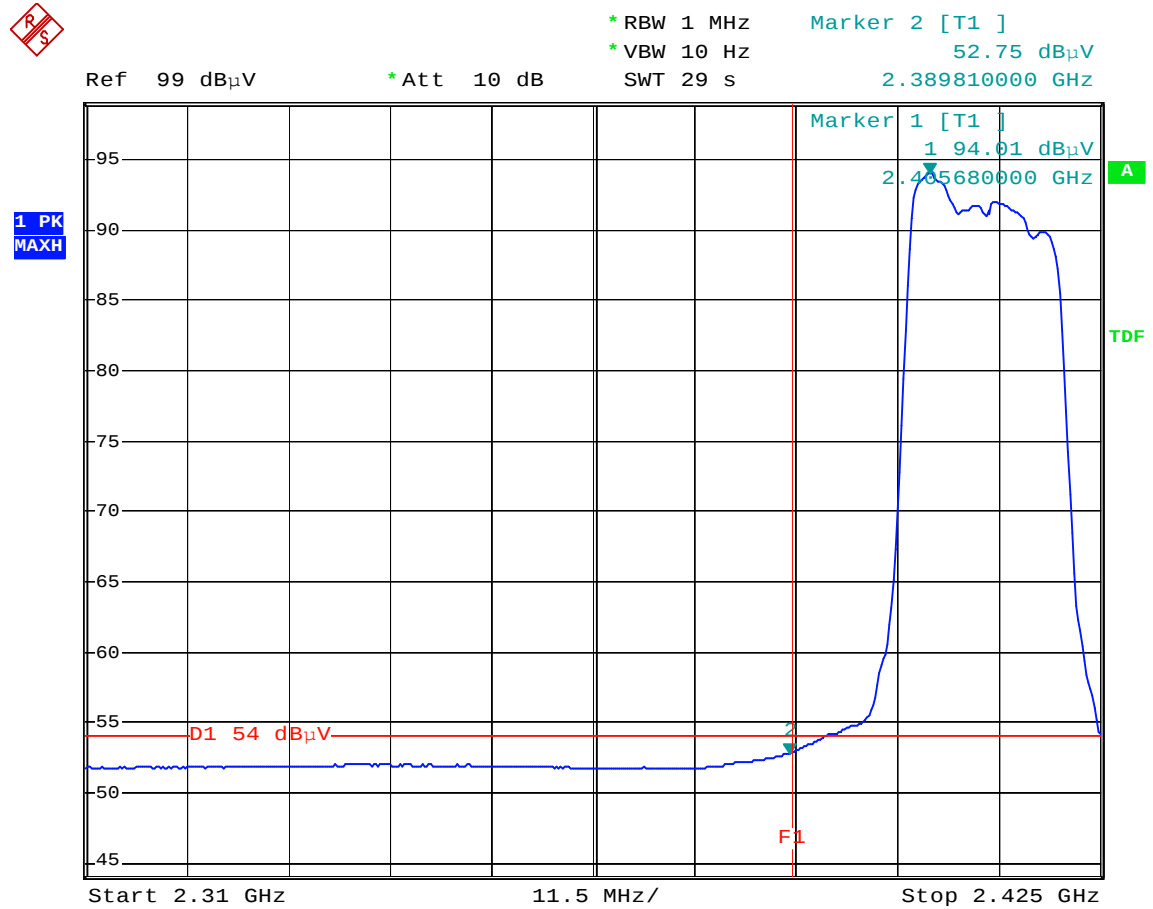
Test Mode: 802.11g operating mode (OFDM Modulation) with antenna 1



Comment: Band-edge test at low channel

Comment: Peak detector F1=2390MHz ant 1 802.11g

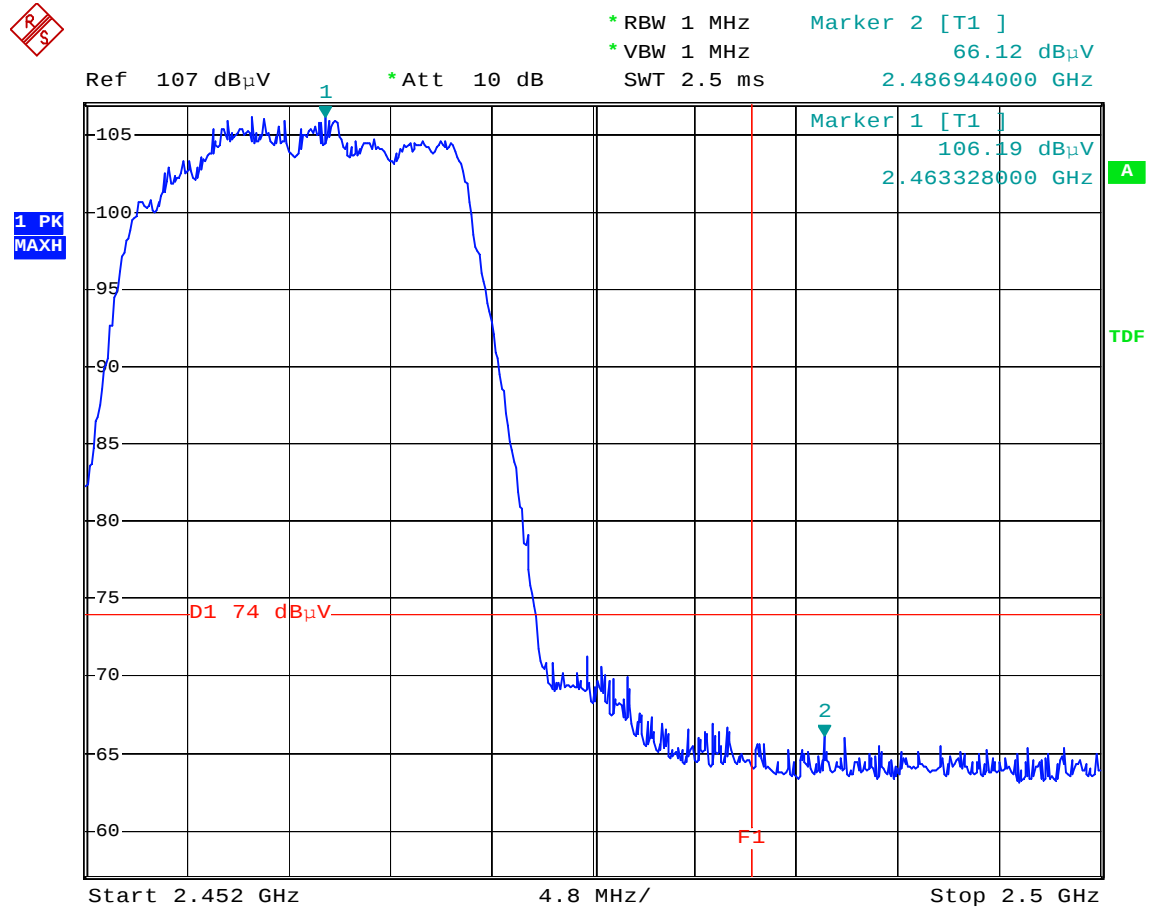
Date: 25.NOV.2004 13:23:16



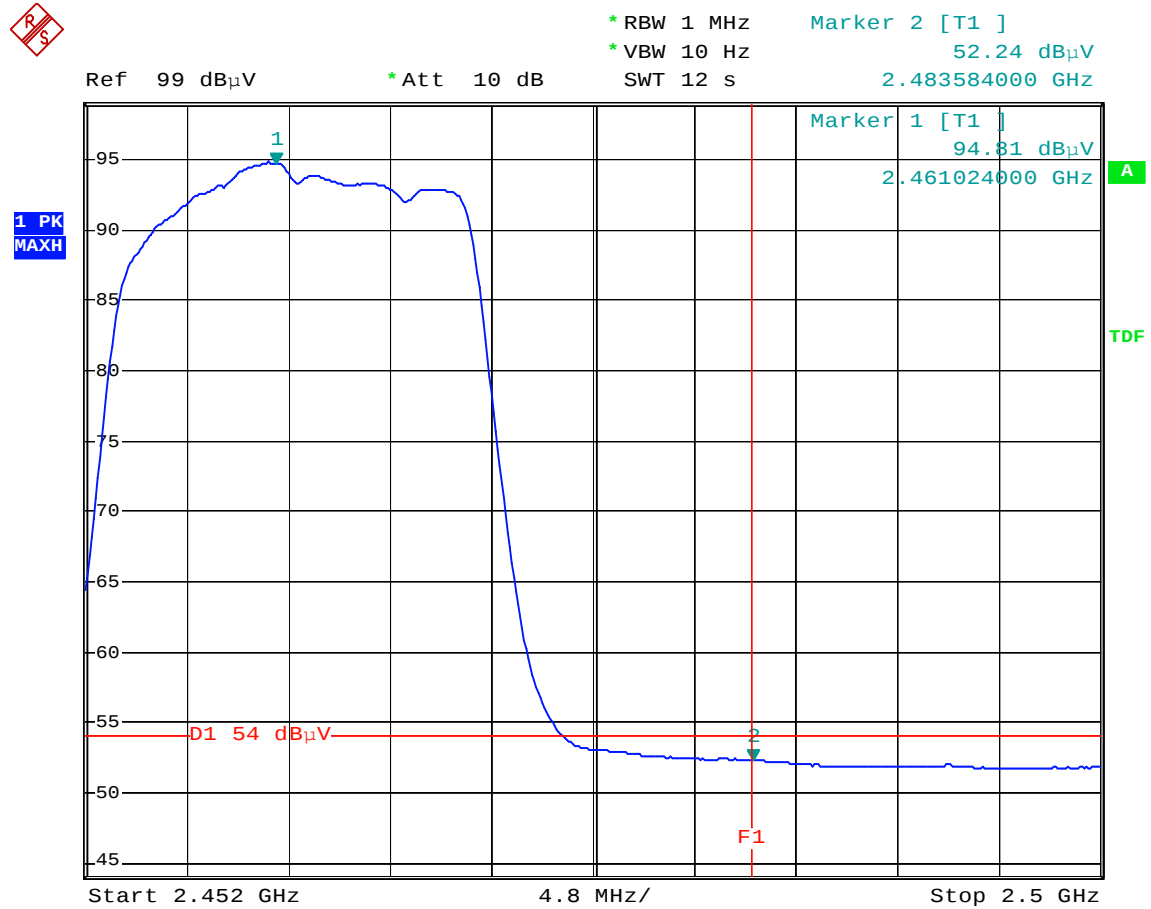
Comment: Band-edge test at low channel

Comment: Average detector F1=2390MHz ant 1 802.11g

Date: 25.NOV.2004 13:25:06



Comment: Band-edge test at high channel
 Comment: Peak detector F1=2483.5MHz ant 1 802.11g
 Date: 25.NOV.2004 13:27:24

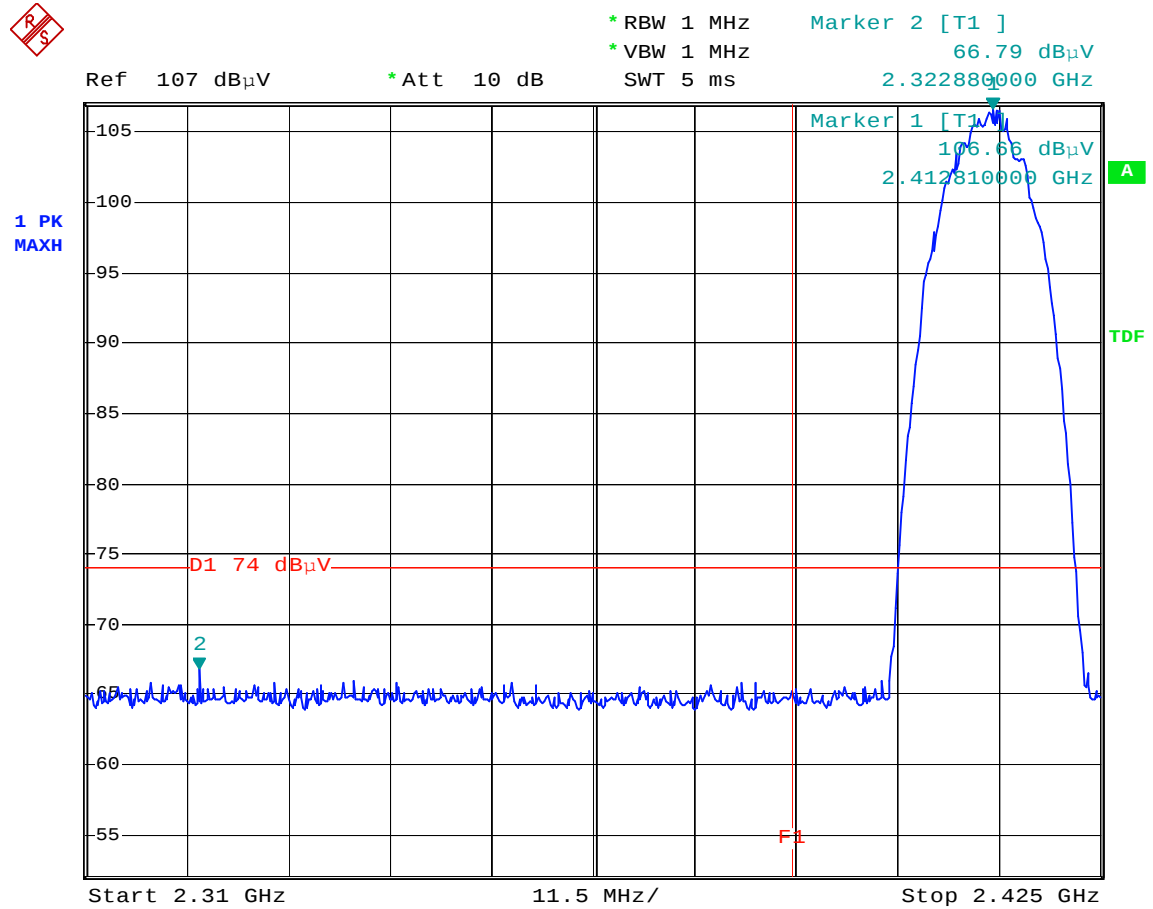


Comment: Band-edge test at high channel

Comment: Average detector F1=2483.5MHz ant 1 802.11g

Date: 25.NOV.2004 13:28:22

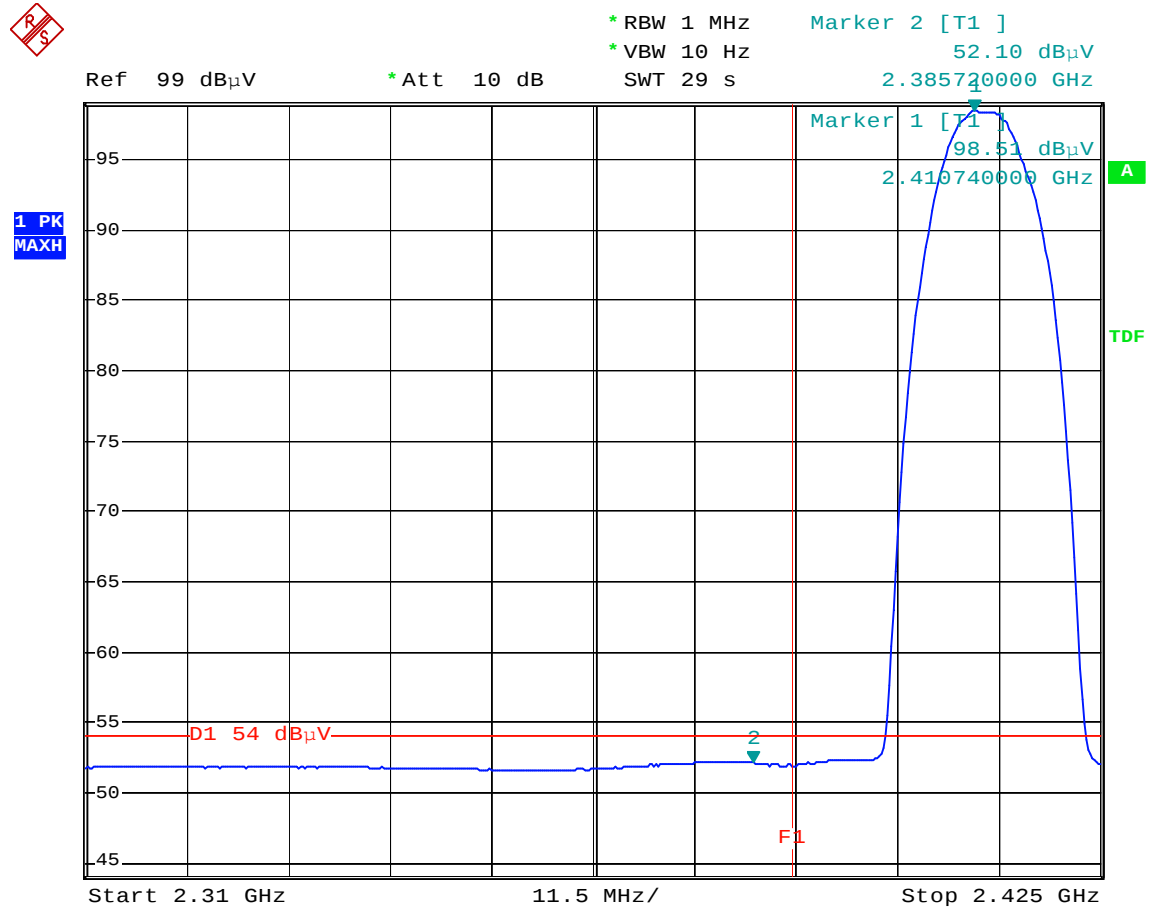
Test Mode: 802.11b operating mode (DSSS Modulation) with antenna 2



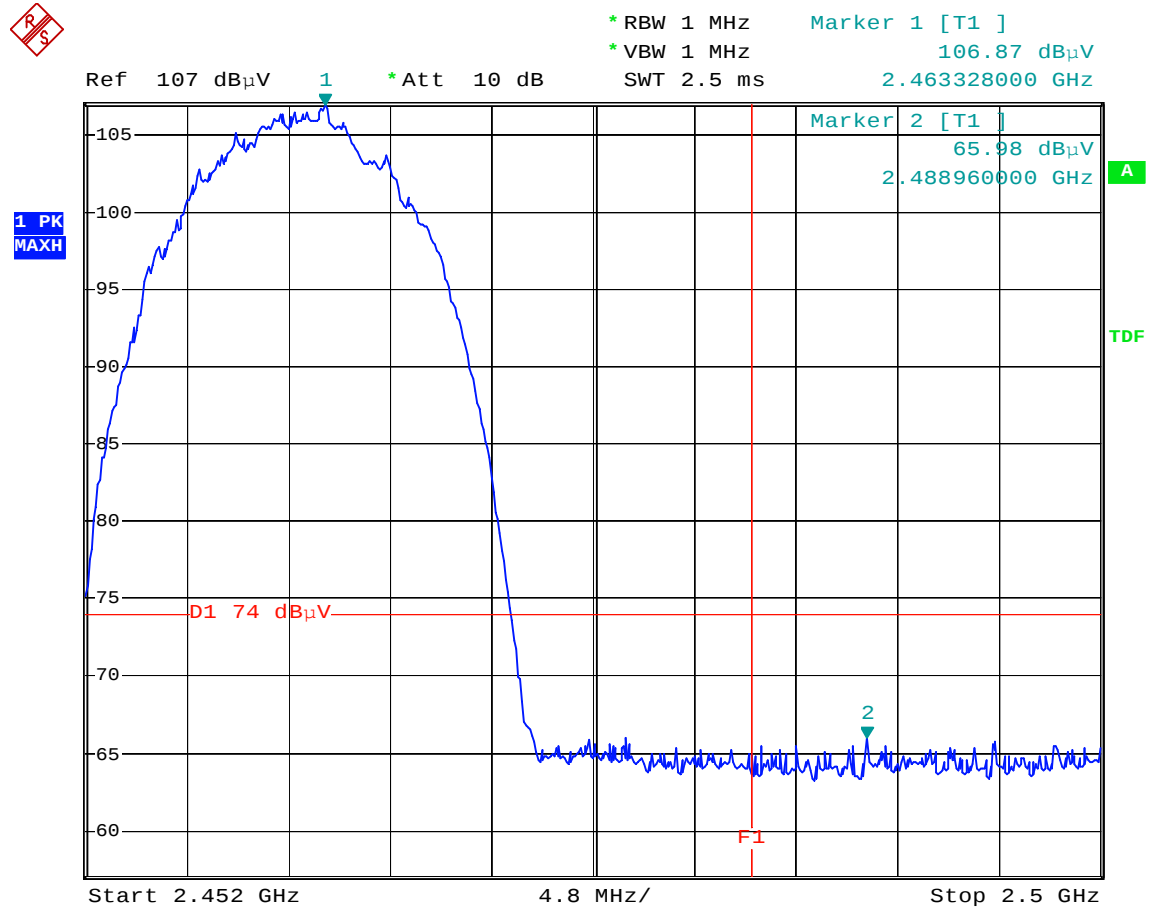
Comment: Band-edge test at low channel

Comment: Peak detector F1=2390MHz external Att 2 802.11b

Date: 25.NOV.2004 13:55:15



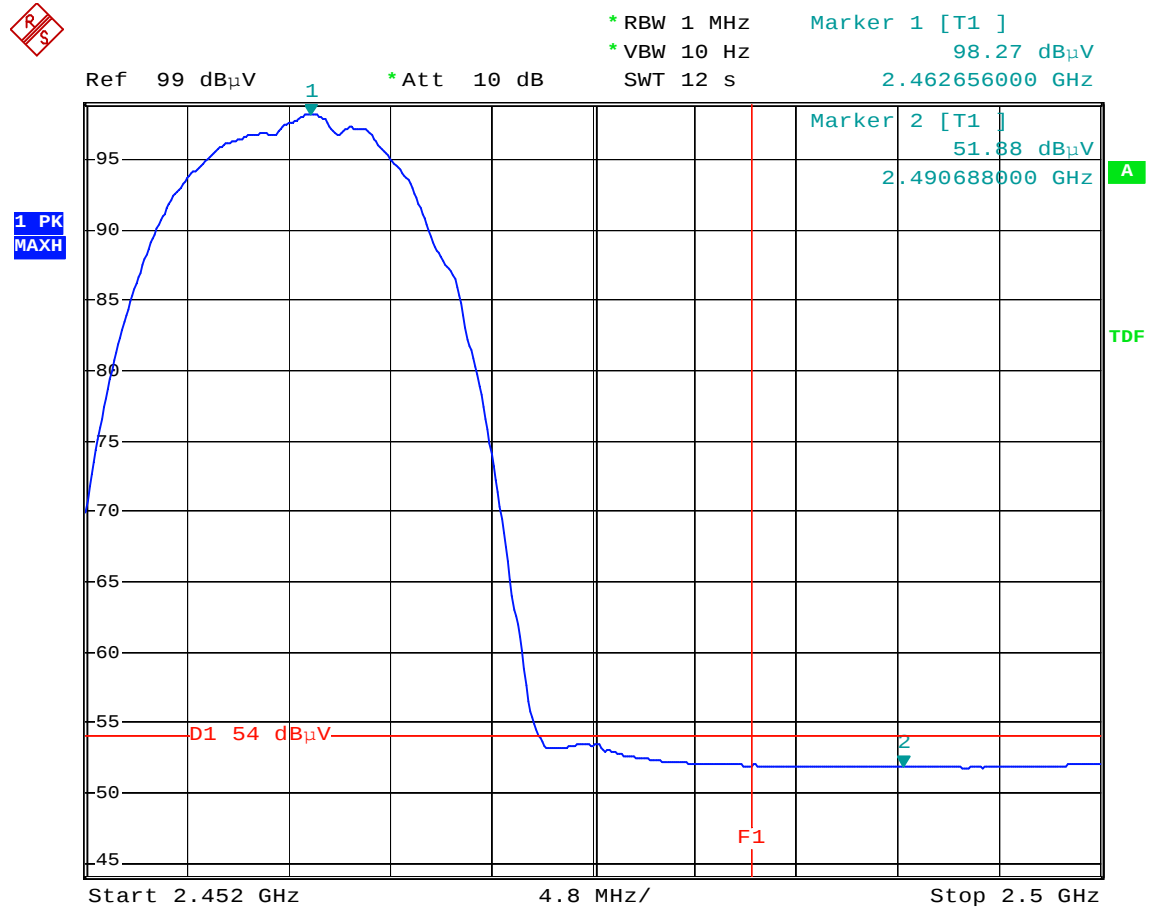
Comment: Band-edge test at low channel
 Comment: Average detector F1=2390MHz ant2 802.11b
 Date: 25.NOV.2004 15:09:06



Comment: Band-edge test at high channel

Comment: Peak detector F1=2483.5MHz ant 2 802.11b

Date: 25.NOV.2004 13:59:15

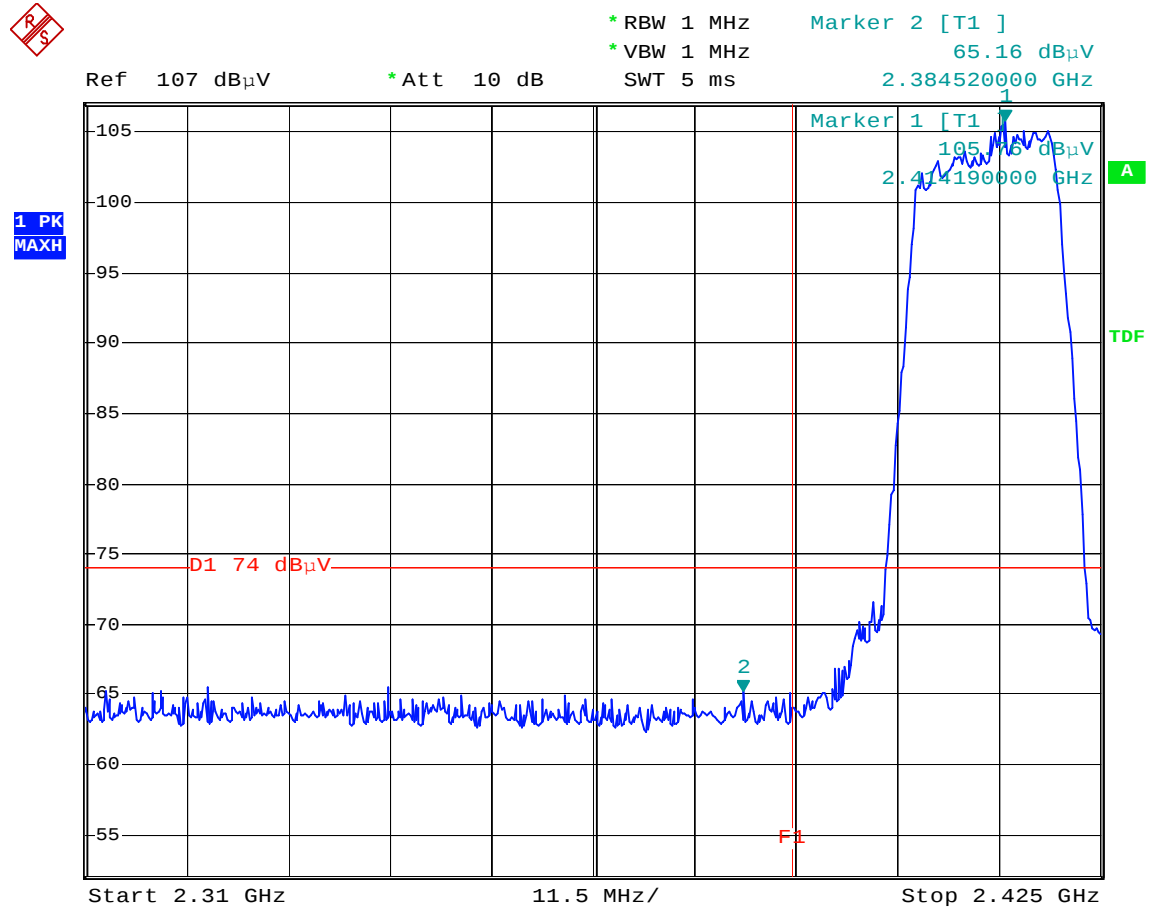


Comment: Band-edge test at high channel

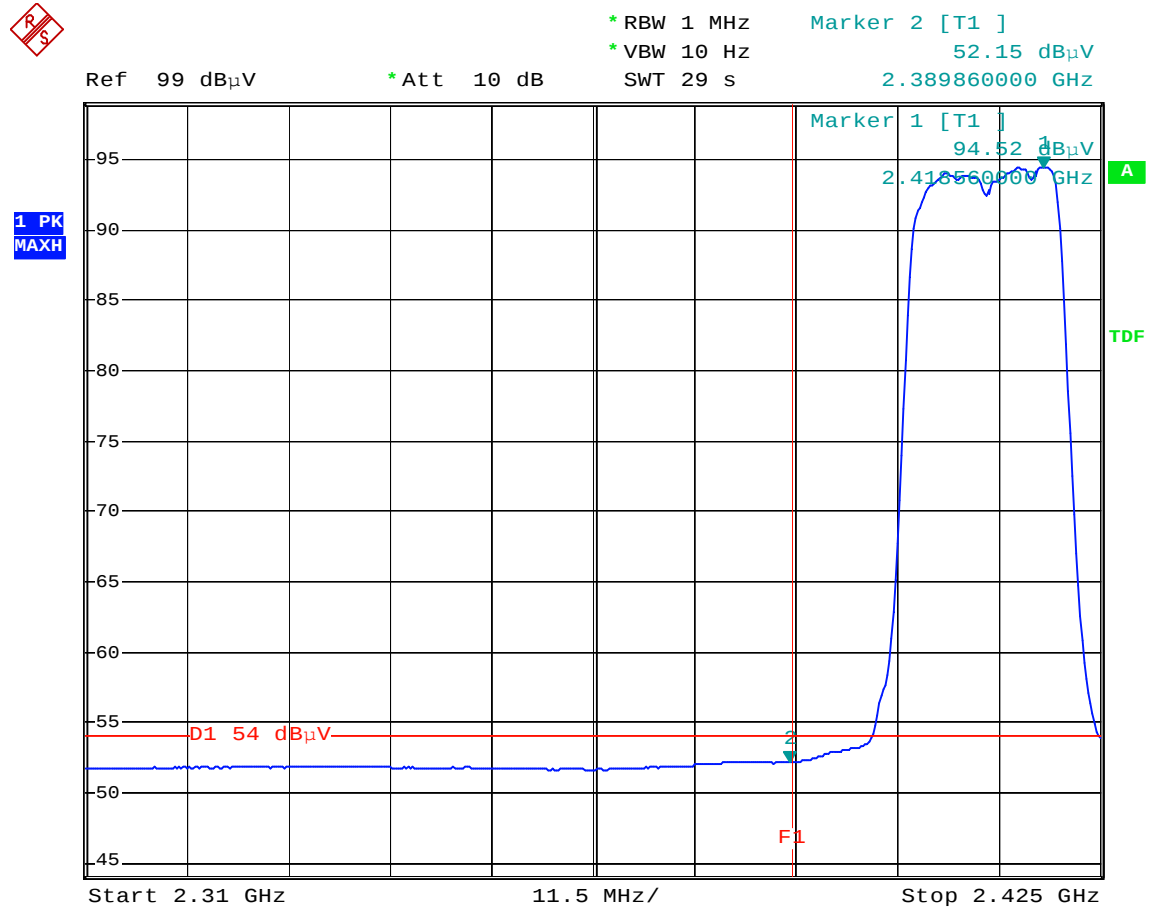
Comment: Average detector F1=2483.5MHz ant 2 802.11b

Date: 25.NOV.2004 14:00:30

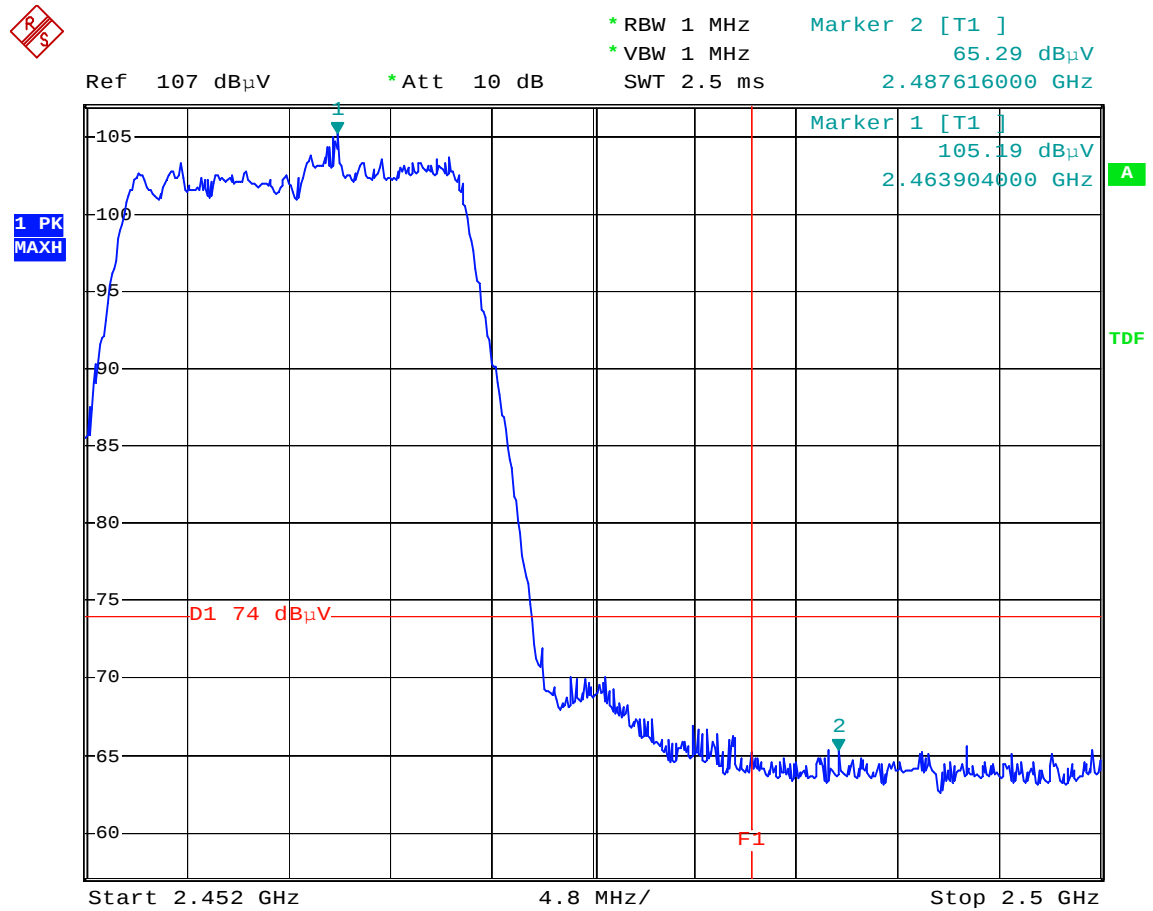
Test Mode: 802.11g operating mode (OFDM Modulation) with antenna 2



Comment: Band-edge test at low channel
 Comment: Peak detector F1=2390MHz ant 2 802.11g
 Date: 25.NOV.2004 14:12:17



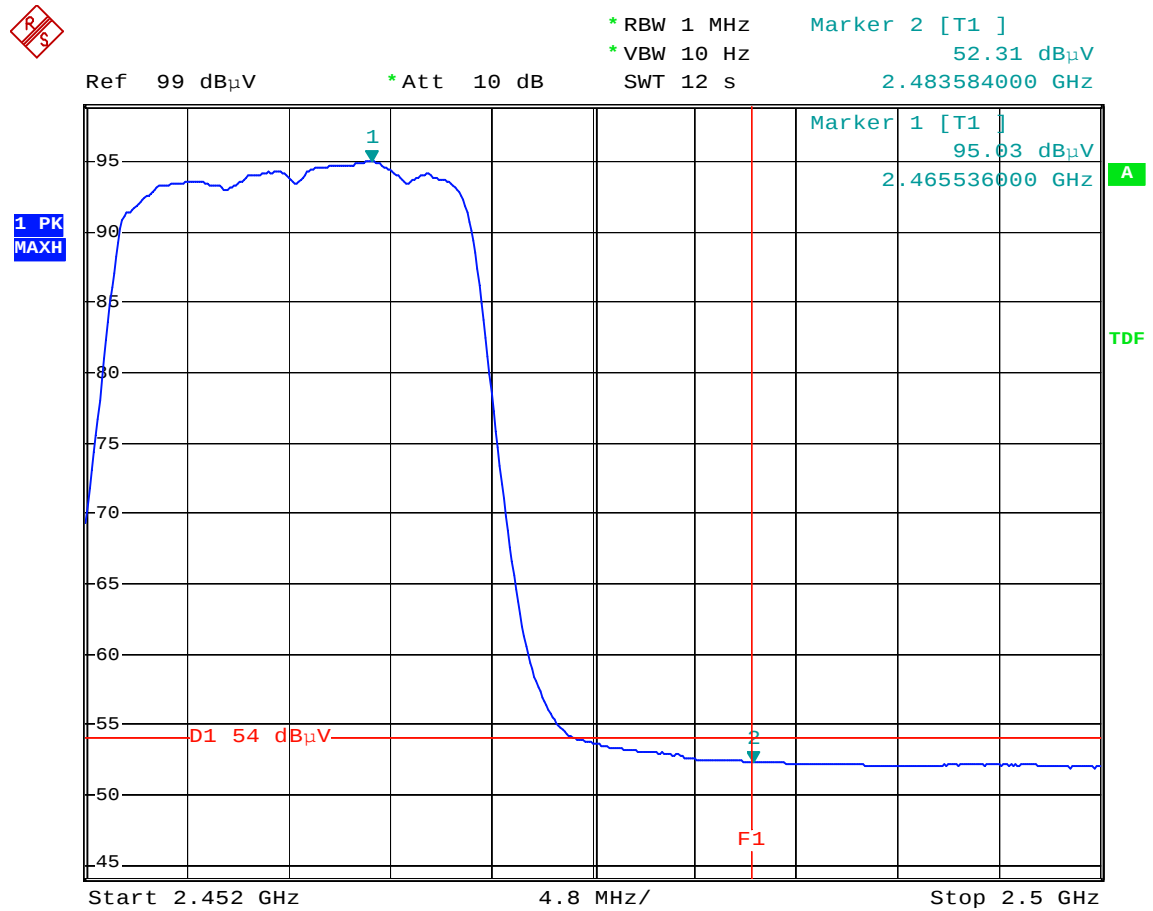
Comment: Band-edge test at low channel
 Comment: Average detector F1=2390MHz ant2 802.11g
 Date: 25.NOV.2004 15:05:10



Comment: Band-edge test at high channel

Comment: Peak detector F1=2483.5MHz ant 2 802.11g

Date: 25.NOV.2004 14:03:40

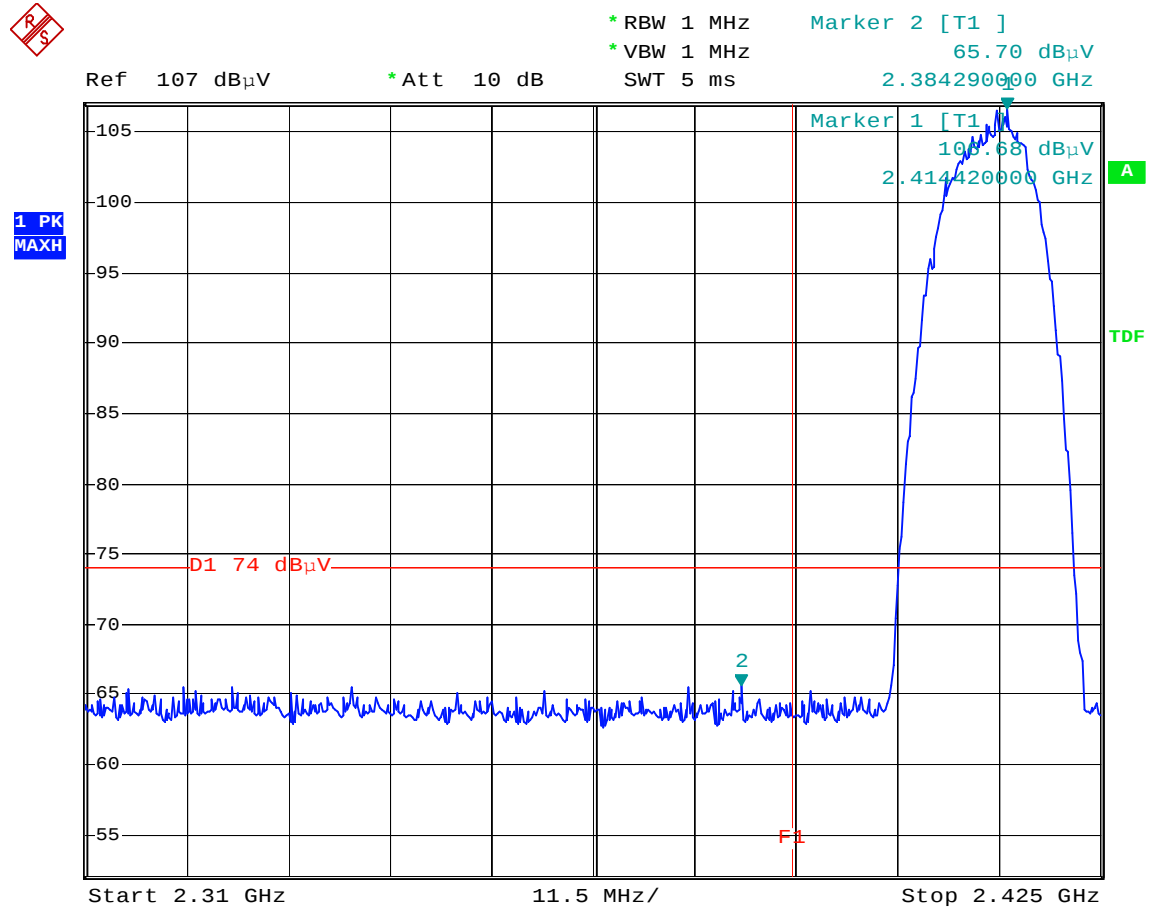


Comment: Band-edge test at high channel

Comment: Average detector F1=2483.5MHz ant 2 802.11g

Date: 25.NOV.2004 14:08:11

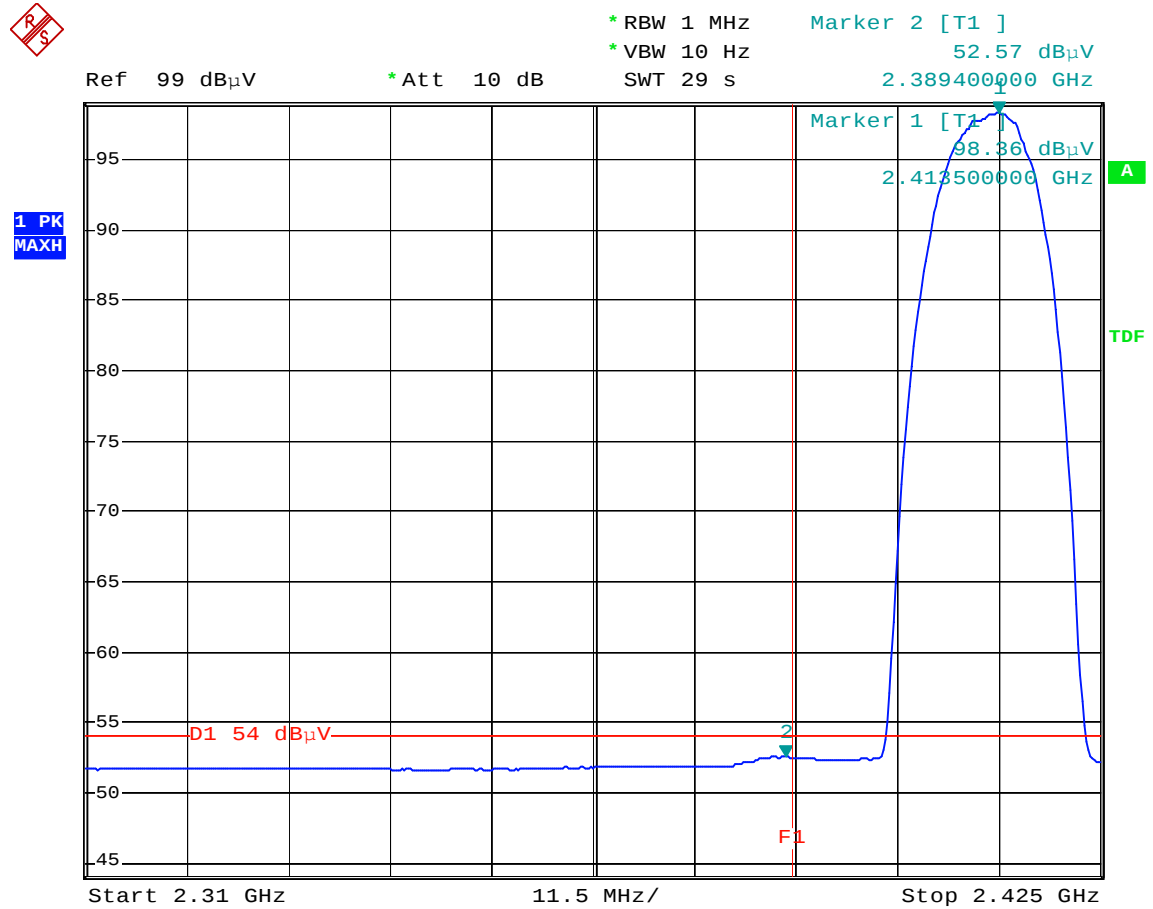
Test Mode: 802.11b operating mode (DSSS Modulation) with antenna 3



Comment: Band-edge test at low channel

Comment: Peak detector F1=2390MHz ant 3 802.11b

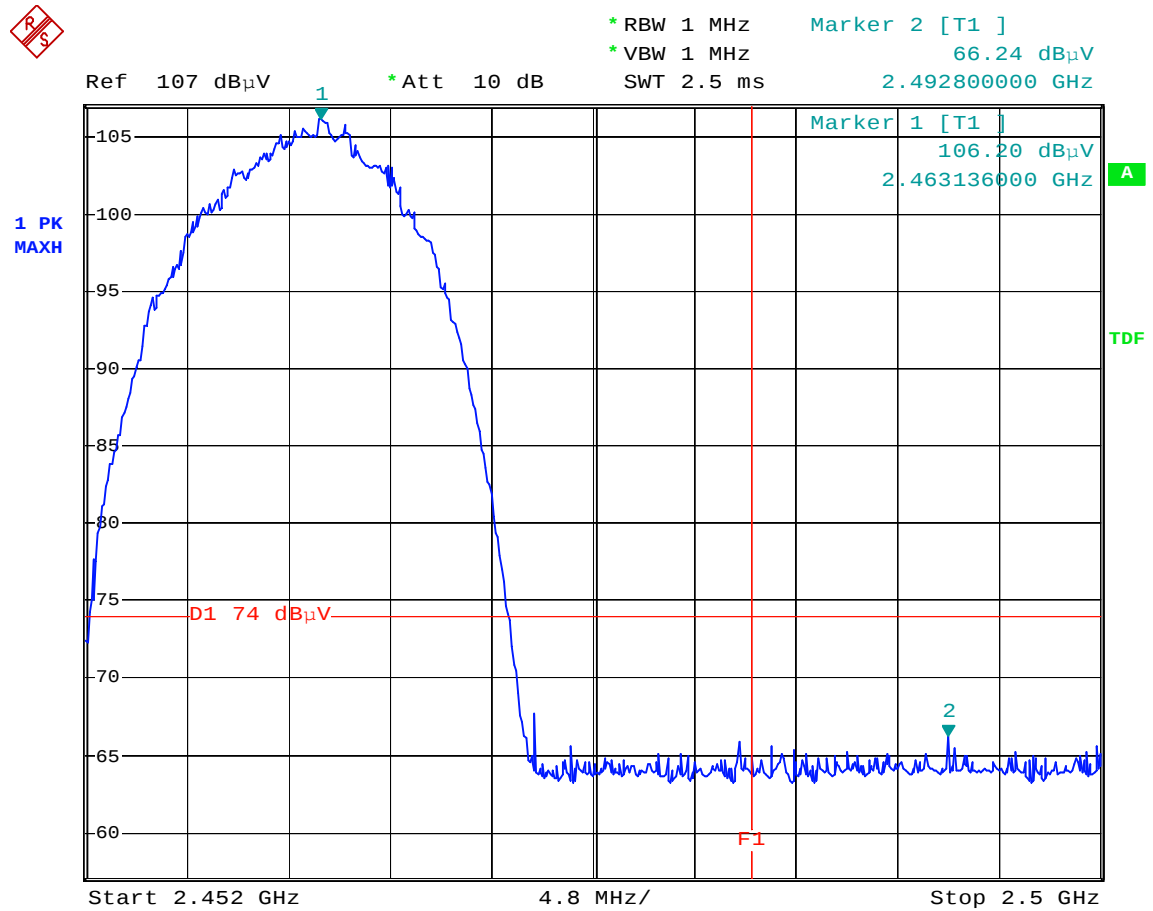
Date: 25.NOV.2004 14:32:58



Comment: Band-edge test at low channel

Comment: Average detector F1=2390MHz ant 3 802.11b

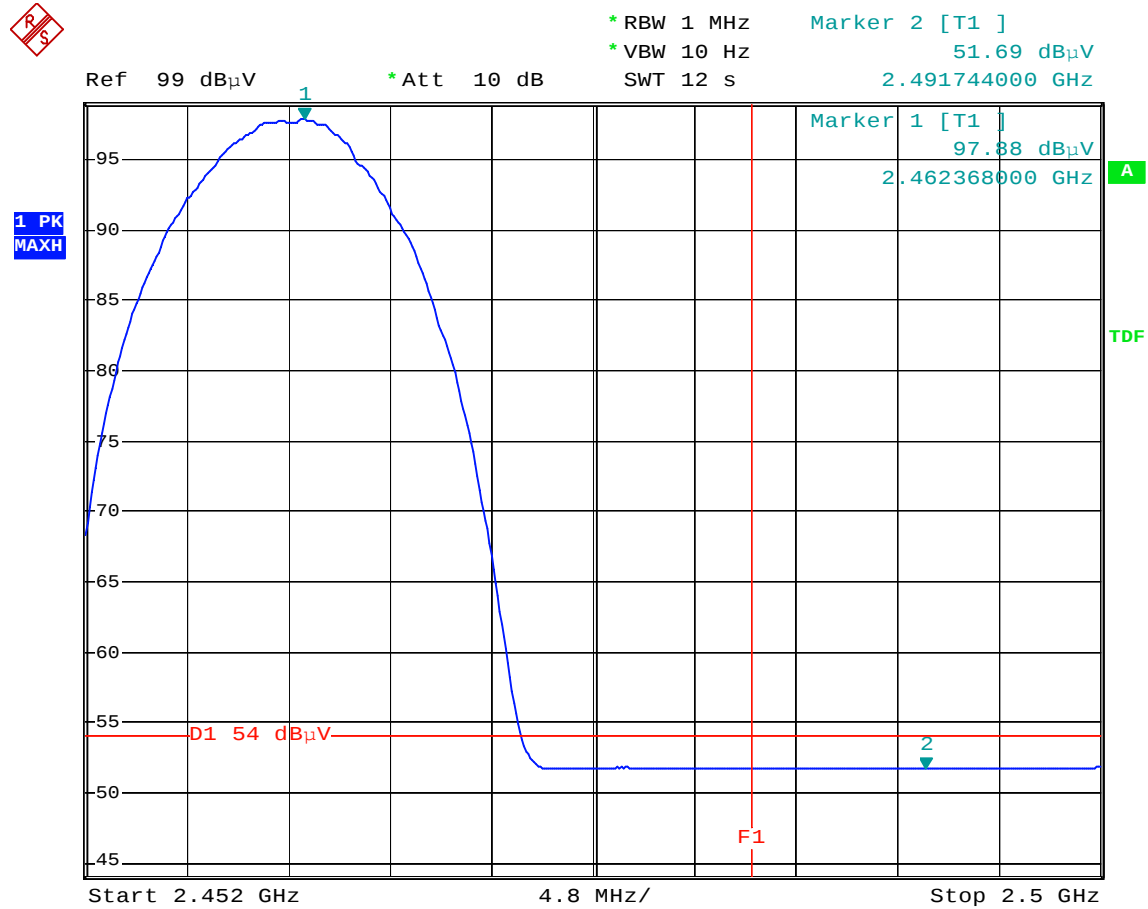
Date: 25.NOV.2004 14:36:31



Comment: Band-edge test at high channel

Comment: Peak detector F1=2483.5MHz ant 3 802.11b

Date: 25.NOV.2004 14:38:24

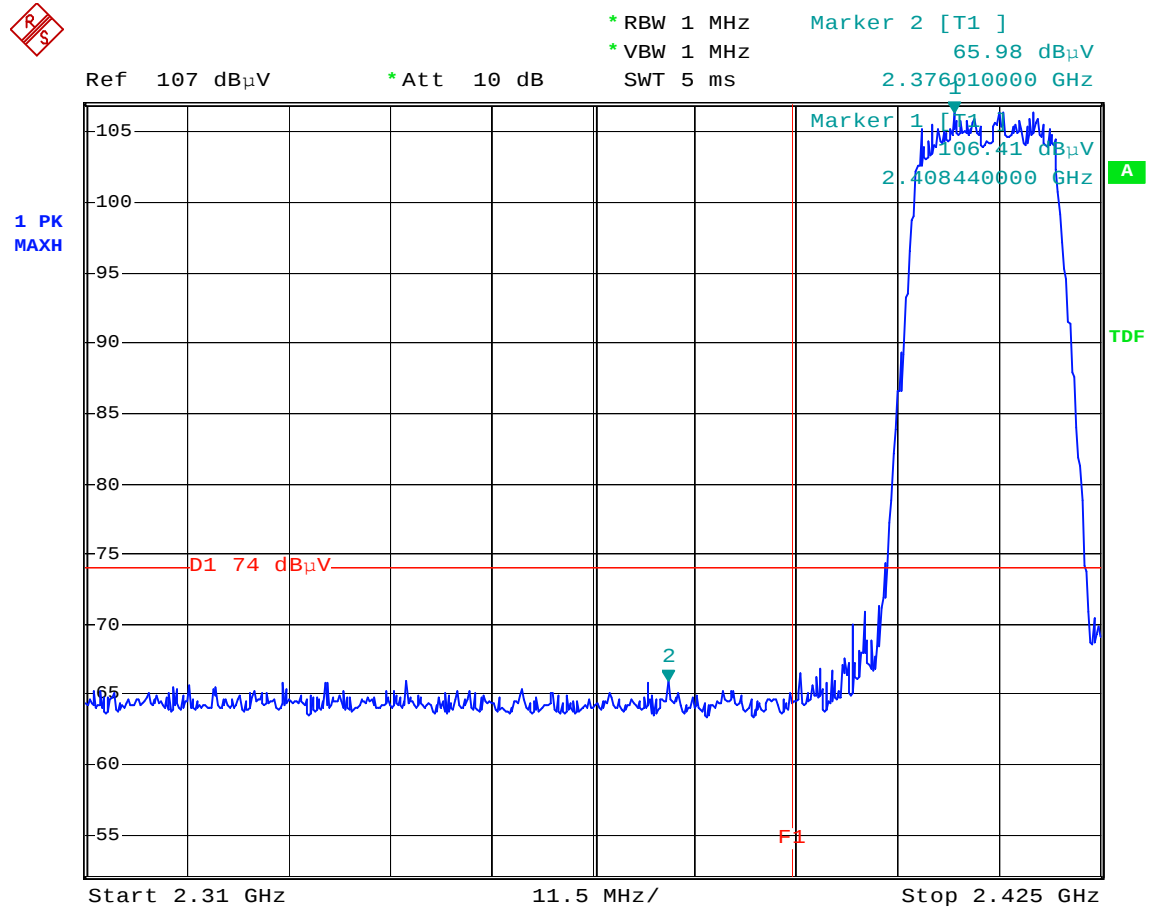


Comment: Band-edge test at high channel

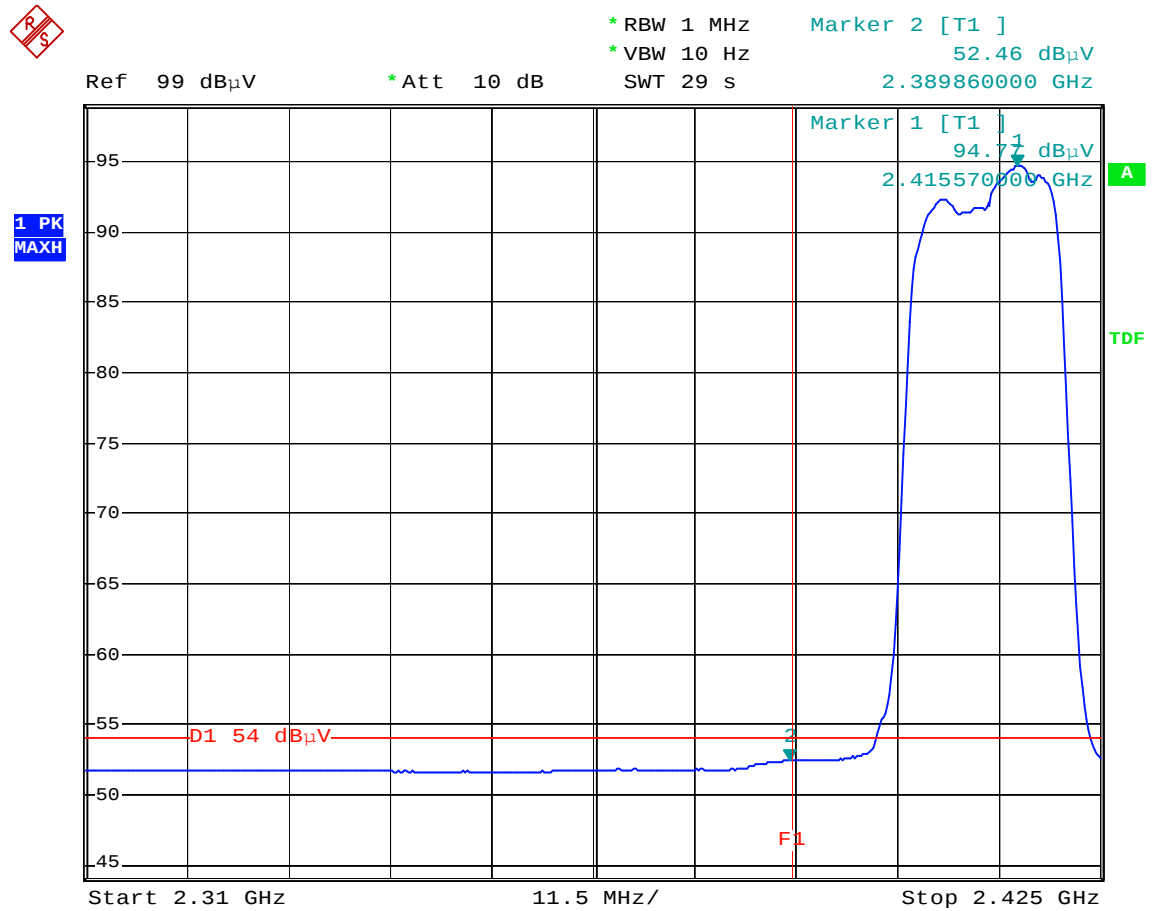
Comment: Average detector F1=2483.5MHz ant 3 802.11b

Date: 25.NOV.2004 14:41:39

Test Mode: 802.11g operating mode (OFDM Modulation) with antenna 3



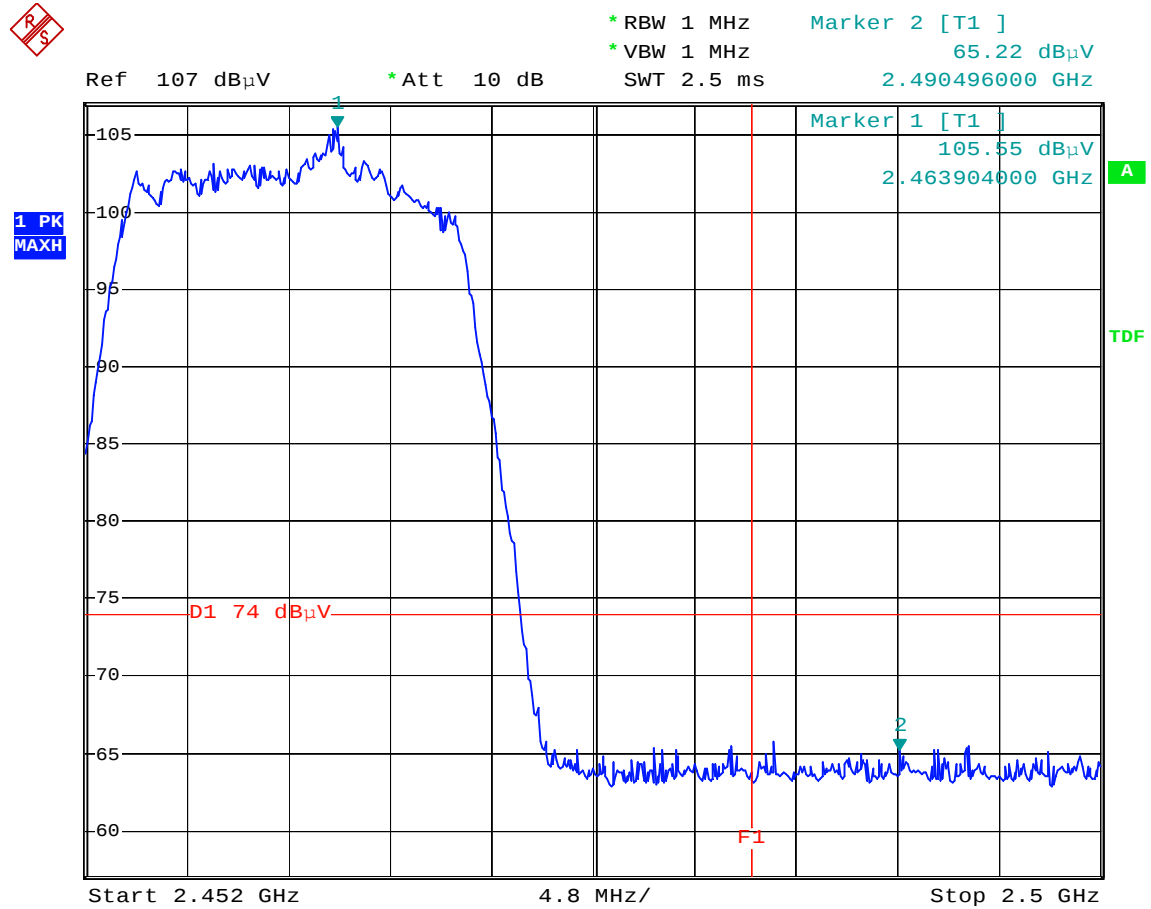
Comment: Band-edge test at low channel
 Comment: Peak detector F1=2390MHz ant3 802.11g
 Date: 25.NOV.2004 14:20:14



Comment: Band-edge test at low channel

Comment: Average detector F1=2390MHz ant 3 802.11g

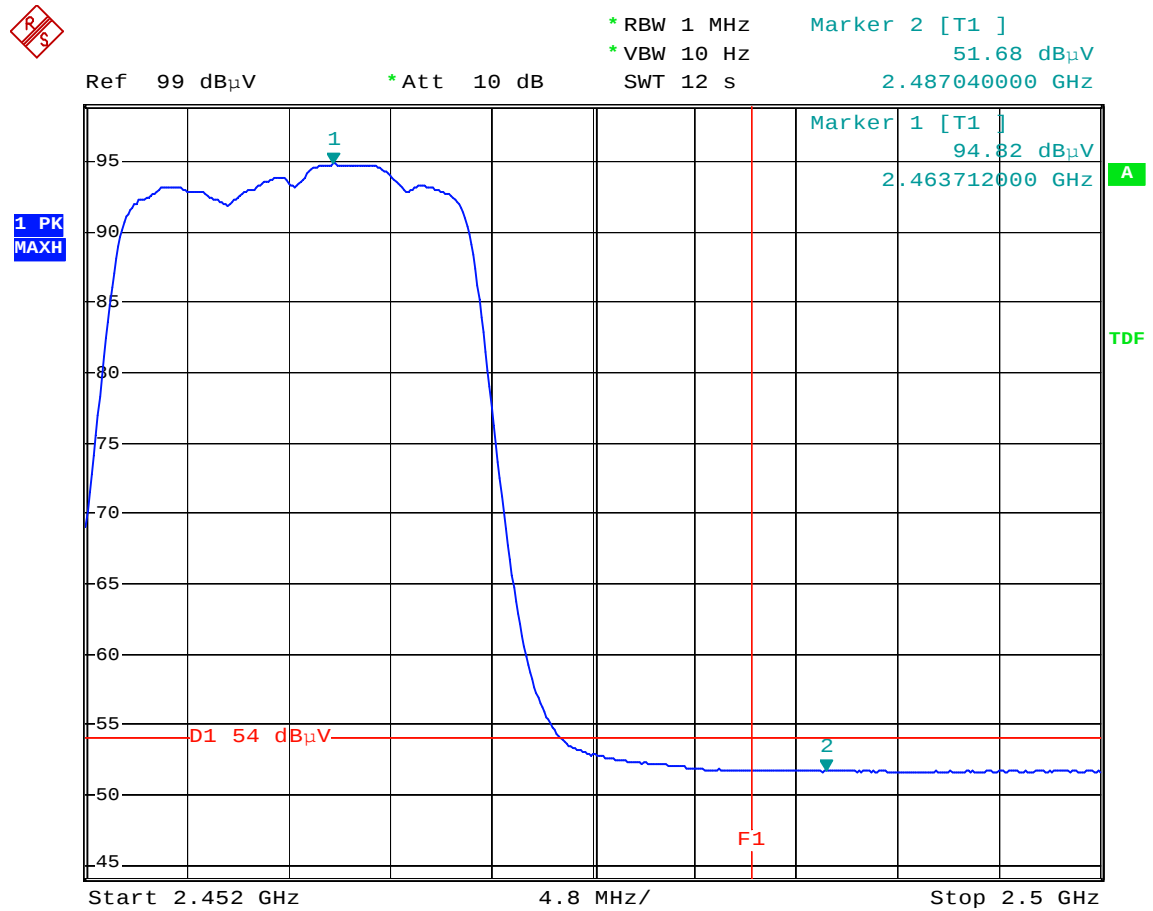
Date: 25.NOV.2004 14:30:38



Comment: Band-edge test at high channel

Comment: Peak detector F1=2483.5MHz ant 3 802.11g

Date: 25.NOV.2004 14:43:07



Comment: Band-edge test at high channel

Comment: Average detector F1=2483.5MHz ant 3 802.11g

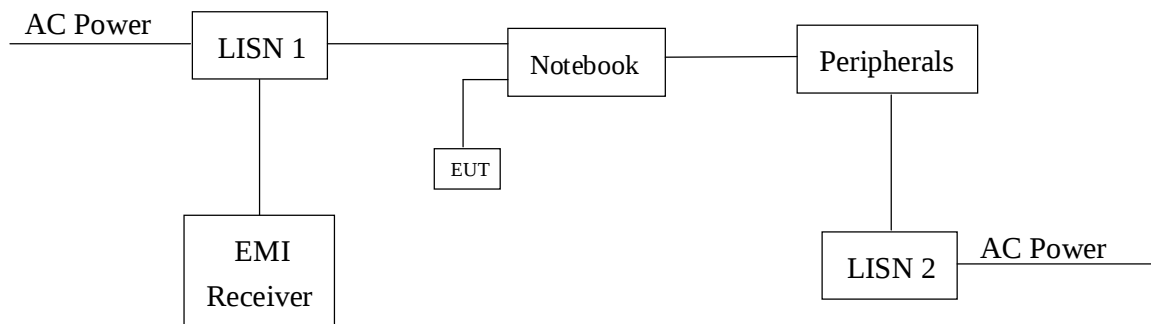
Date: 25.NOV.2004 14:45:14

8. Power Line Conducted Emission test §FCC 15.207

8.1 Operating environment

Temperature:	23	°C	(10-40°C)
Relative Humidity:	55	%	(10-90%)
Atmospheric Pressure	1023	hPa	(860-1061hPa)

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.

8.5 Uncertainty of Conducted Emission

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

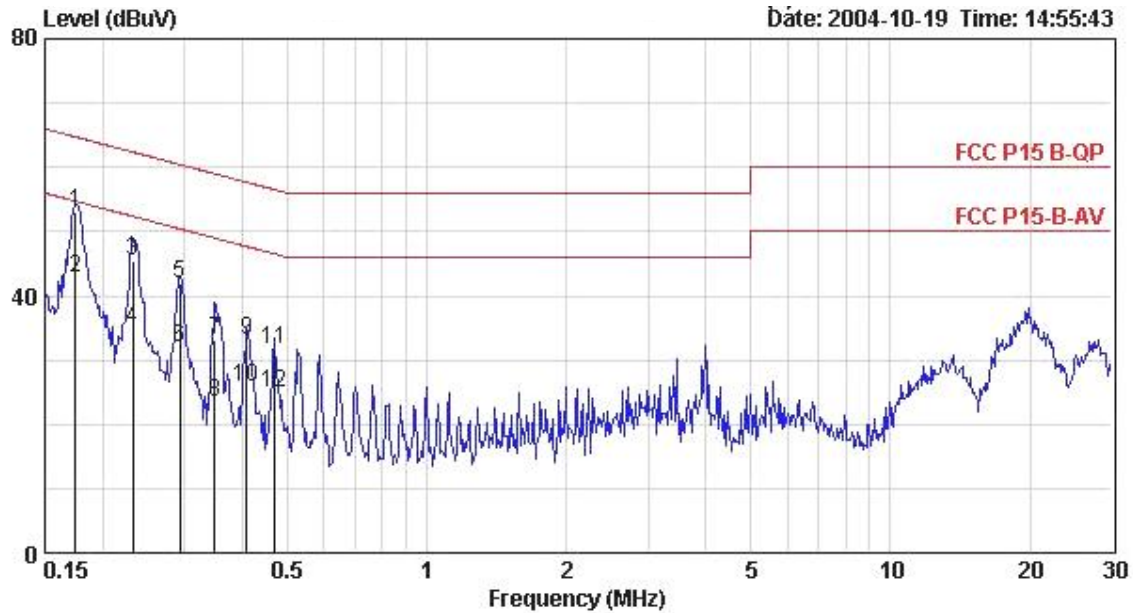
8.5 Power Line Conducted Emission test data

Phase : Line
 EUT : WUG2660
 Test Condition : 802.11g normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level	Limit	Level	Limit	Margin	
		Qp (dBuV)	Qp (dBuV)	AV (dBuV)	Av (dBuV)	Qp	Av
0.175	0.10	52.98	64.74	42.70	54.74	-11.76	-12.04
0.232	0.10	45.46	62.36	34.90	52.36	-16.90	-17.46
0.293	0.10	41.98	60.44	32.04	50.44	-18.46	-18.40
0.349	0.10	33.03	58.98	23.47	48.98	-25.95	-25.51
0.409	0.10	33.18	57.66	25.82	47.66	-24.48	-21.84
0.469	0.10	31.63	56.54	24.98	46.54	-24.91	-21.56

Remark:

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



Phase : Neutral
 EUT : WUG2660
 Test Condition : 802.11g normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level	Limit	Level	Limit	Margin	
		Qp (dBuV)	Qp (dBuV)	AV (dBuV)	AV (dBuV)	Qp	Av
0.176	0.10	52.33	64.68	42.11	54.68	-12.35	-12.57
0.234	0.10	44.80	62.29	34.36	52.29	-17.49	-17.93
0.293	0.10	40.13	60.44	31.34	50.44	-20.31	-19.10
0.352	0.10	35.35	58.92	27.87	48.92	-23.57	-21.05
0.413	0.10	32.37	57.59	24.88	47.59	-25.22	-22.71
0.473	0.10	29.42	56.47	25.80	46.47	-27.05	-20.67

Remark:

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

