EMC
TEST REPORT

Report No. : EME-031356
Model No. : XG-650
Issued Date : Dec. 29, 2003

Applicant : Z-COM, Inc.
7F-2, No. 9, Prosperity 1st RD., Science-Based Industrial Park, Hsinchu, Taiwan

Test By : Intertek Testing Services Taiwan Ltd.
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Project Engineer

Jackey Chiu

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Reviewed By

Elton Chen

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Summary of Tests

54Mbps 802.11g Wireless Mini-PCI Adapter-Model: XG-650
FCC ID: M4Y-0XG650

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 Mini-PCI Adapter
Model No.	: XG-650
FCC ID.	: M4Y-0XG650
Frequency Range	: 2412~2462 MHz
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	: 3.3Vdc
Power Cord	: N/A
Sample Received	: Nov. 27, 2003
Test Date(s)	: Nov. 27, 2003 ~ Dec. 19, 2003

A FCC DoC report has been generated for the client.

1.2 Additional information about the EUT

The 802.11g Wireless LAN Mini-PCI Adapter is an enhanced high-performance, that supports high-speed wireless networking at home, at office or in public places. 802.11g Wireless LAN Mini-PCI Adapter is able to communicate with any 802.11b and 802.11g compliant products.

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
Antenna Type : Dipole antenna
Connector Type : UFL

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
Notebook	DELL	PP01L	CN-06P83-48643-33V-0112	5ZXMUL-36273-FB-E
Printer	HP	C2642A	TH86K1N2ZB	FCC DoC Approved
Modem	Dynalink	V1456VQE	00V230A00051494	FCC DoC Approved
Access Point	SMC	WG 4005-17 2 (A3)	C-G 3030232-1-1-3*1000	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 C63.4/2001.

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

During Conduction test, the EUT was 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.	Last Cal. Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	EC303	6/16/2003
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	EC317	6/24/2003
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	EC353	7/19/2003
Spectrum Analyzer	Rohde & Schwarz	20Hz~40GHz	FSEK 30	EC365	10/20/2003
Horn Antenna	EMCO	1GHz~18GHz	3115	EC332	10/15/2003
Horn Antenna	SCHWARZBECK	15GHz~40GHz	BBHA 9170	EC351	6/21/2003
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	EC350	6/21/2003
Turn Table	HDGmbH	N/A	DS 420S	EP317-3	N/A
Antenna Tower	HDGmbH	N/A	MA 240	EP317-2	N/A
Microwave Amplifier	Agilent	2GHz~26.5GHz	8348A	EC360	1/14/2003
Crystal Detector	Agilent	10MHz~18GHz	8472B	MY42240243	N/A
Signal Generator	Rohde & Schwarz	20MHz~27GHz	SMR27	EC354	8/16/2003
Two Channel Digital Storage Oscilloscope	Tektronix	N/A	TDS1012	C031679	8/16/2003
LISN	Rohde & Schwarz	9KHz~30MHz	ESH3-Z5	EC344	1/20/2003

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

3. Minimum 6dB Bandwidth test

3.1 Operating environment

Temperature:	23	℃
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 Condition: 802.11b function (DSSS Modulation)

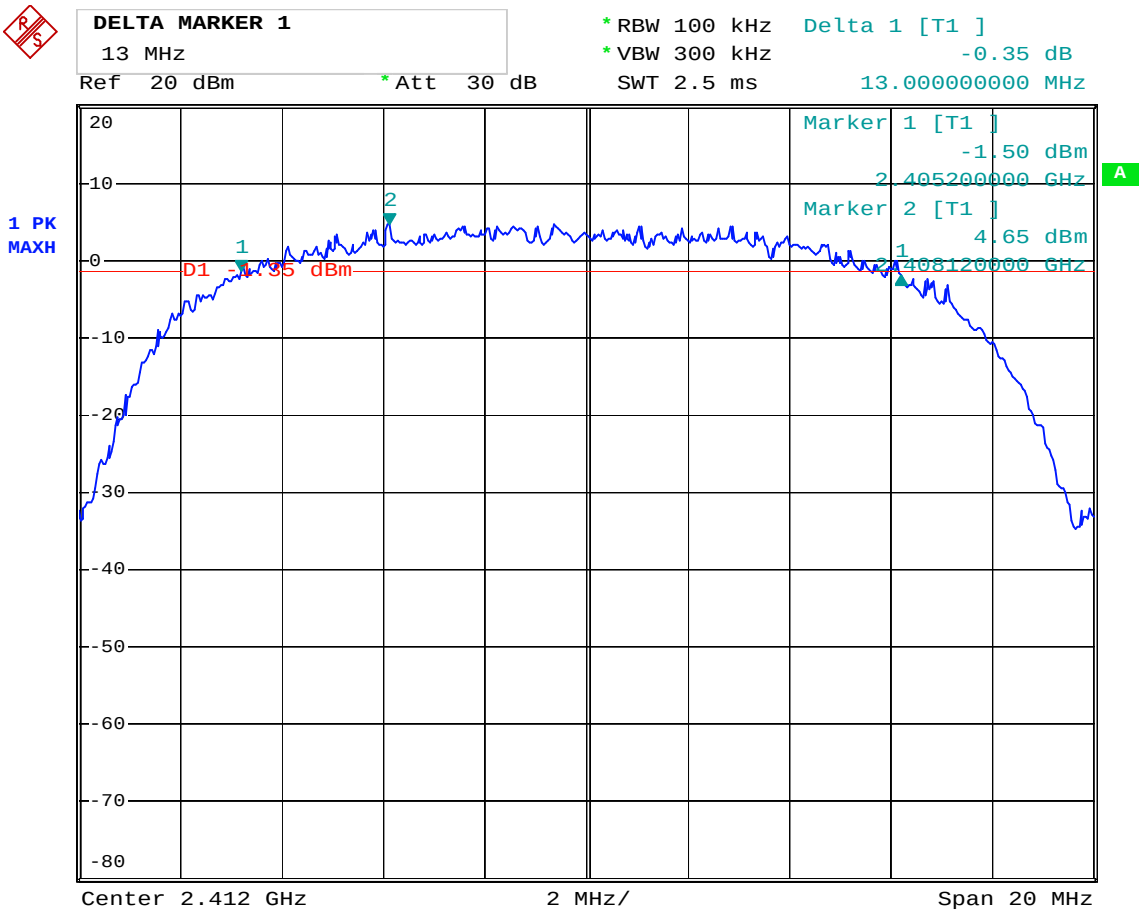
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
Low	2412.00	13.00	＞500kHz
Middle	2437.00	12.68	＞500kHz
High	2462.00	12.68	＞500kHz

Test Condition: 802.11g function (OFDM Modulation)

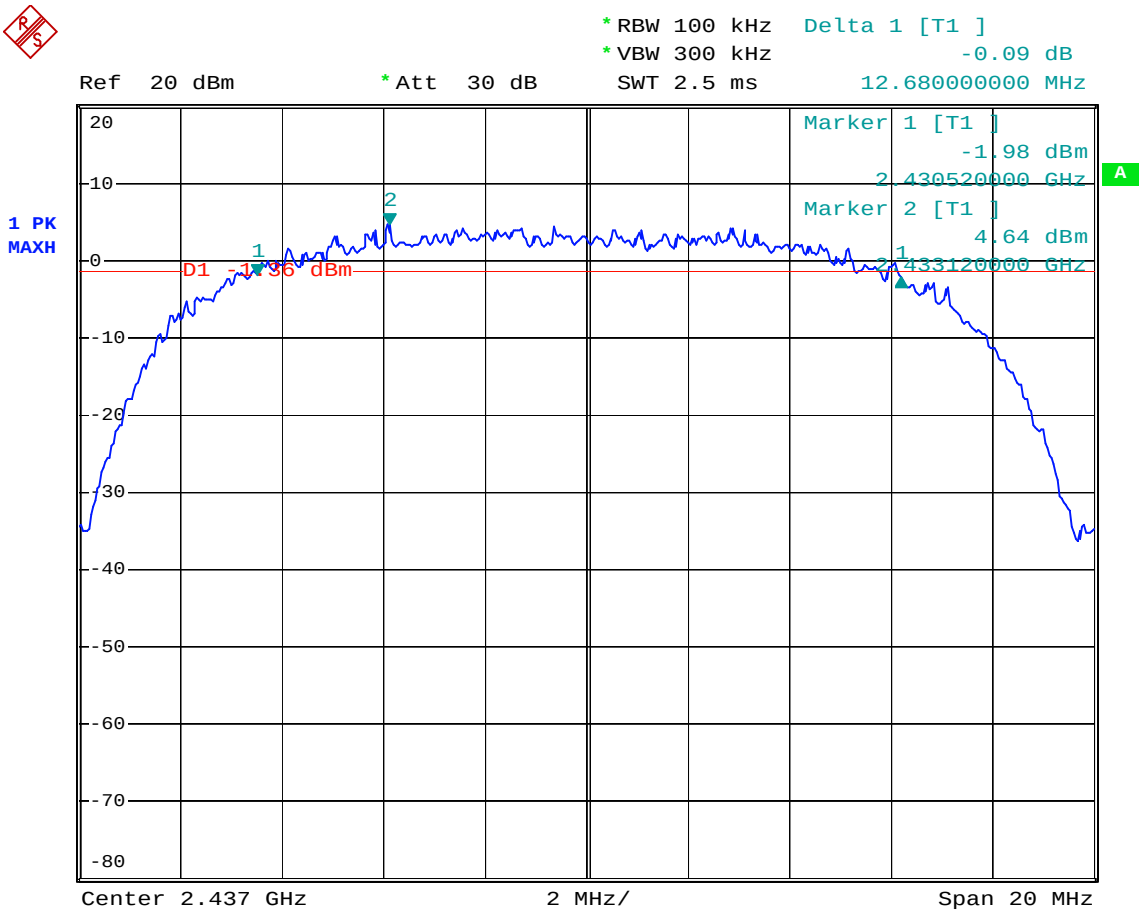
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
Low	2412.00	16.00	＞500kHz
Middle	2437.00	16.64	＞500kHz
High	2462.00	16.60	＞500kHz

Please see the plot below.

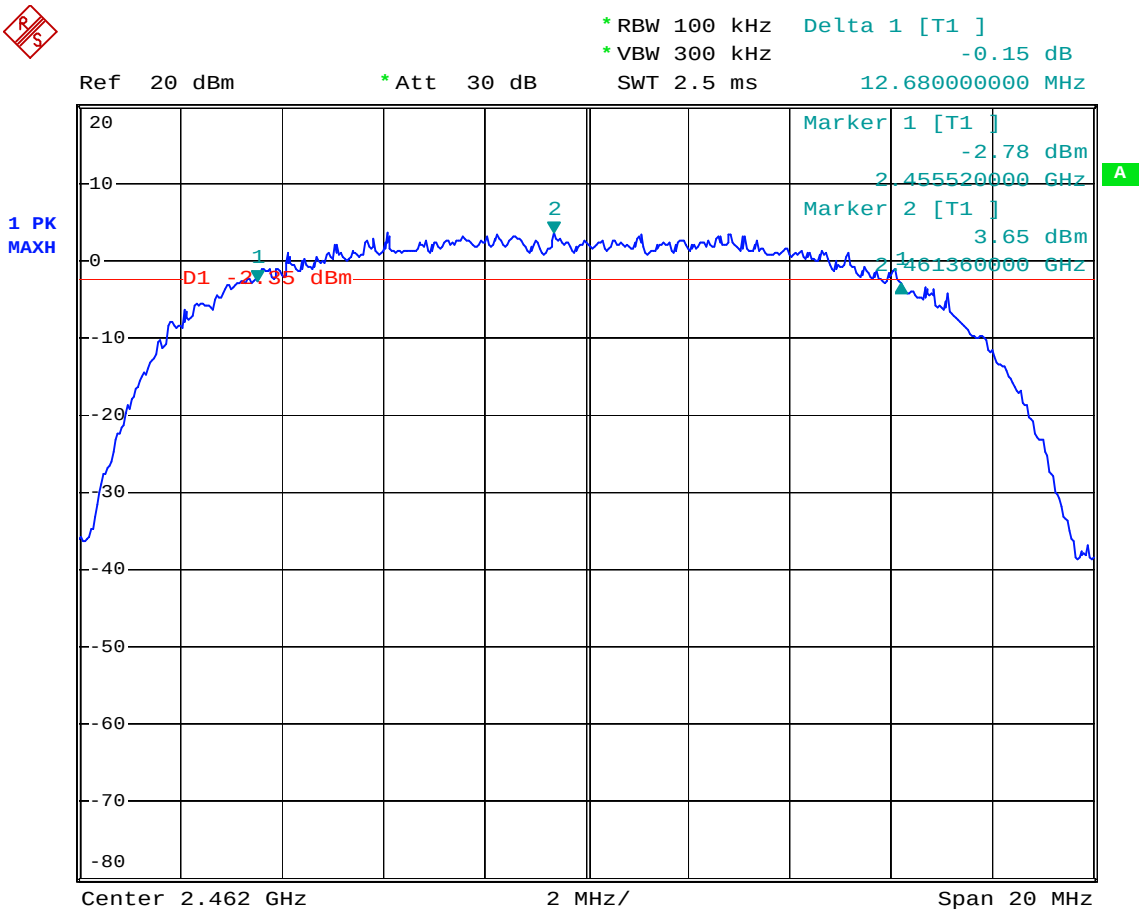
Test Condition: 802.11b function (DSSS Modulation)



Comment A: 6dB bandwidth at low channel (EC353) 802.11b
Date: 17.DEC.2003 09:48:44

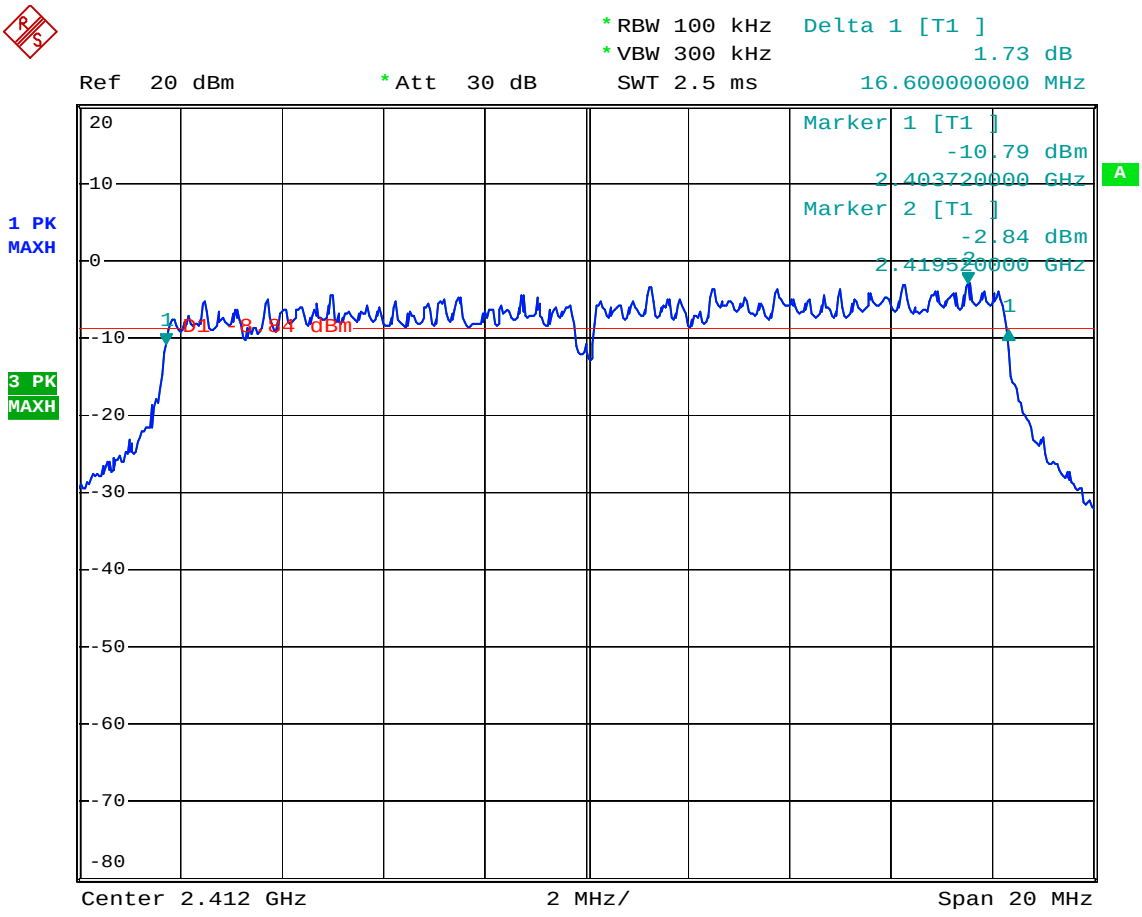


Comment A: 6dB bandwidth at middle channel (EC353) 802.11b
Date: 17.DEC.2003 09:51:46

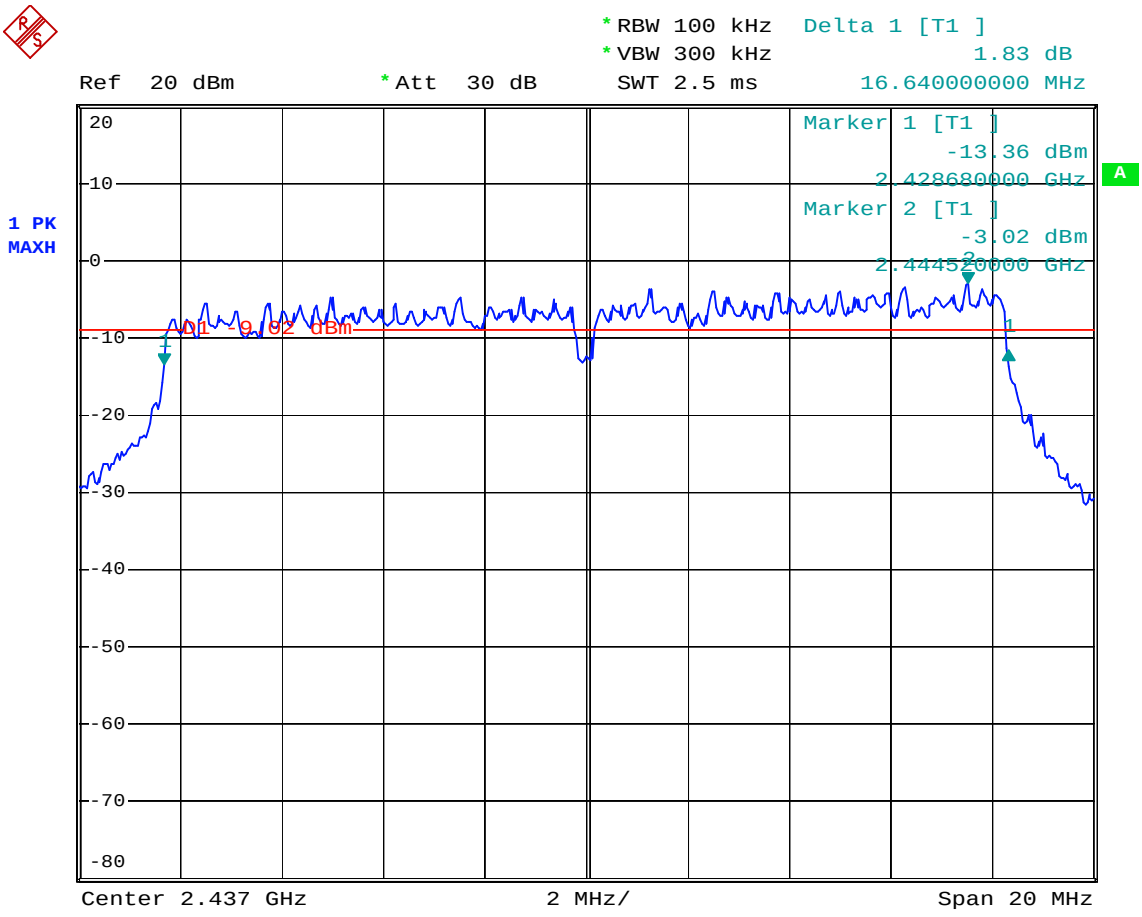


Comment A: 6dB bandwidth at high channel (EC353) 802.11b
Date: 17.DEC.2003 09:54:54

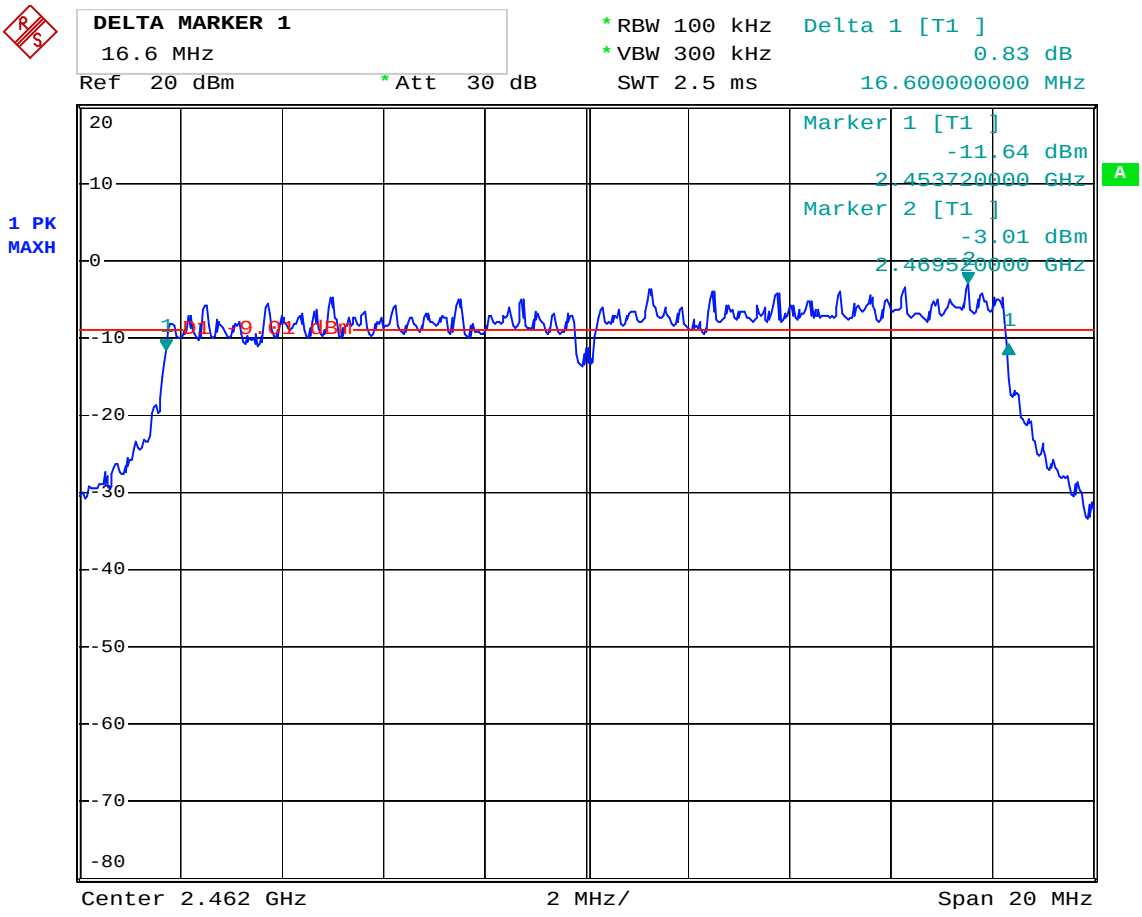
Test Condition: 802.11g function (OFDM Modulation)



Comment A: 6dB bandwidth at low channel (EC353) 802.11g
Date: 17.DEC.2003 10:08:06



Comment A: 6dB bandwidth at middle channel (EC353) 802.11g
Date: 17.DEC.2003 10:04:30



Comment A: 6dB bandwidth at high channel (EC353) 802.11g
Date: 17.DEC.2003 09:58:33

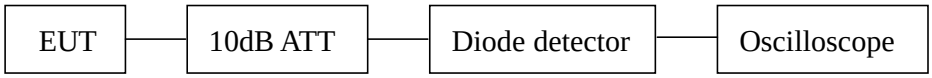
4. Maximum Output Power test

4.1 Operating environment

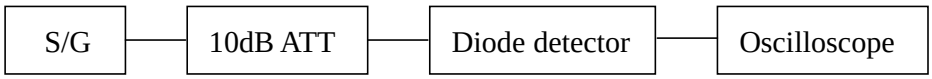
Temperature:	24	℃
Relative Humidity:	58	%
Atmospheric Pressure	1023	hPa

4.2 Test setup & procedure

A:



B:



1. The output of the transmitter via a 10 dB attenuator and coupled to a diode detector.
2. The output of the diode detector connected to the vertical channel of and oscilloscope. The observed trace of the oscilloscope shall be recorded as “A”.
3. The transmitter replaced by a signal generator. The output frequency of the signal made equal to the center of the frequency range occupied by the transmitter and unmodulated.
4. The output of the signal generator raised to reach the peak of trace “A” named X.
5. The signal generator output level X (dBm) is the transmitter peak output power.

4.3 Measured data of Maximum Output Power test results

Test Condition: 802.11b function (DSSS Modulation)

Channel	Frequency (MHz)	Reading (dBm)	Output Power		Limit (dBm)
			(dBm)	(mW)	
Lowest	2412	23.73	23.73	236.04	30
Middle	2437	23.83	23.83	241.54	30
Highest	2462	23.73	23.73	236.04	30

Test Condition: 802.11g function (OFDM Modulation)

Channel	Frequency (MHz)	Reading (dBm)	Output Power		Limit (dBm)
			(dBm)	(mW)	
Lowest	2412	24.23	24.23	264.85	30
Middle	2437	24.33	24.33	271.01	30
Highest	2462	24.33	24.33	271.01	30

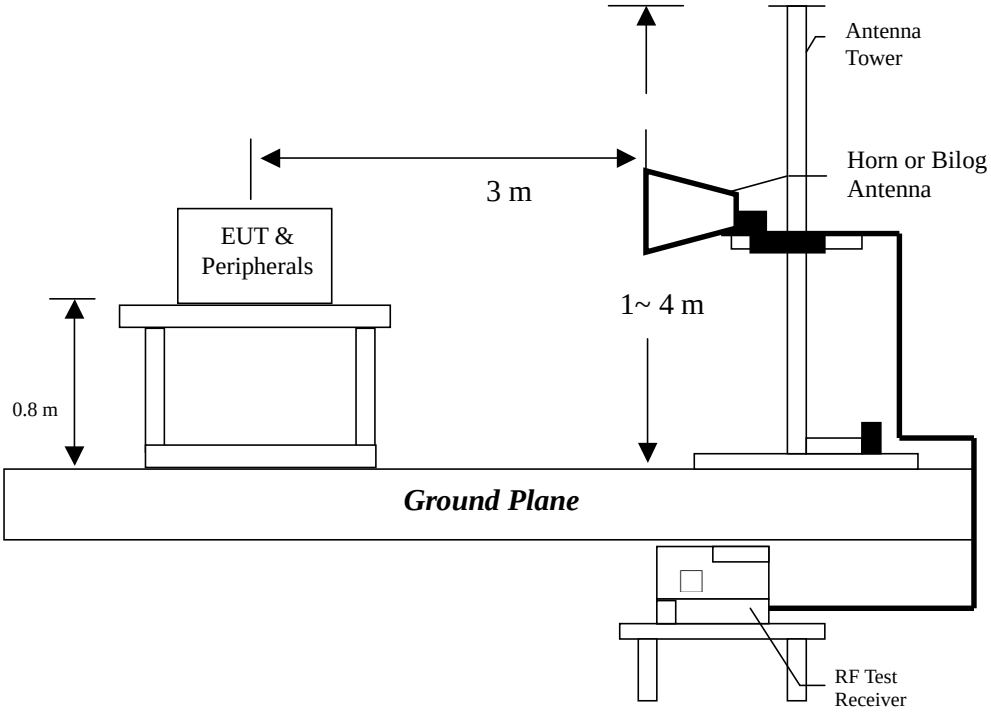
5. Radiated Emission test

5.1 Operating environment

Temperature:	23	℃	(10-40℃)
Relative Humidity:	54	%	(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 invested 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.
Expanded uncertainty (k=2) of conducted emission measurement is ±2.02 dB.

5.4 Radiated spurious emission test data

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

EUT : XG-650
Worst Case Condition : 802.11b Tx at low channel

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)
132.800	QP	V	13.34	13.72	27.06	43.50	-16.44	100	90
166.400	QP	V	14.92	14.20	29.12	43.50	-14.38	106	314
199.600	QP	V	12.03	10.21	22.24	43.50	-21.26	274	306
232.500	QP	V	11.82	13.90	25.72	46.00	-20.28	100	60
239.900	QP	V	11.82	20.30	32.12	46.00	-13.88	100	87
265.500	QP	V	13.38	12.30	25.68	46.00	-20.32	238	202
132.080	QP	H	13.34	26.24	39.58	43.50	-3.92	233	0
165.800	QP	H	14.92	27.56	42.48	43.50	-1.02	200	171
198.800	QP	H	12.03	22.78	34.81	43.50	-8.69	165	358
232.300	QP	H	11.82	21.69	33.51	46.00	-12.49	170	4
239.900	QP	H	11.82	29.46	41.28	46.00	-4.72	140	180
332.600	QP	H	14.99	22.18	37.17	46.00	-8.83	100	26

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

5.4.2 Measurement results: frequency above 1GHz

EUT : XG-650
Test Condition : 802.11b Tx at low channel

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)
1876	PK	V	0	28.542	32.408	60.95	74	-13.05	158	210
1876	AV	V	0	28.542	13.568	42.11	54	-11.89	158	210
1876	PK	H	0	28.542	32.598	61.14	74	-12.86	135	201
1876	AV	H	0	28.542	13.588	42.13	54	-11.87	135	201

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.

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

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

EUT : XG-650
Test Condition : 802.11b Tx at middle channel

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)
1876	PK	V	0	28.542	34.258	62.8	74	-11.2	106	246
1876	AV	V	0	28.542	13.498	42.04	54	-11.96	106	246
1876	PK	H	0	28.542	34.138	62.68	74	-11.32	111	242
1876	AV	H	0	28.542	13.508	42.05	54	-11.95	111	242

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.

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-650
Test Condition : 802.11b Tx at high channel

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)
1876	PK	V	0	28.542	33.678	62.22	74	-11.78	110	360
1876	AV	V	0	28.542	13.498	42.04	54	-11.96	110	360
2308	PK	V	33.74	30.542	71.148	67.95	74	-6.05	176	70
2308	AV	V	33.74	30.542	52.738	49.54	54	-4.46	176	70
2308	PK	H	33.74	30.542	64.108	60.91	74	-13.09	120	349
2308	AV	H	33.74	30.542	54.058	50.86	54	-3.14	120	349

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.

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-650
Test Condition : 802.11g Tx at low channel

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)
1875	PK	V	0	28.542	32.688	61.23	74	-12.77	101	93
1875	AV	V	0	28.542	13.728	42.27	54	-11.73	101	93
1875	PK	H	0	28.542	35.228	63.77	74	-10.23	145	229
1875	AV	H	0	28.542	13.558	42.1	54	-11.9	145	229

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.

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

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

EUT : XG-650
Test Condition : 802.11g Tx at middle channel

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)
1876	PK	V	0	28.542	34.388	62.93	74	-11.07	184	38
1876	AV	V	0	28.542	13.588	42.13	54	-11.87	184	38
1876	PK	H	0	28.542	34.128	62.67	74	-11.33	143	236
1876	AV	H	0	28.542	13.558	42.1	54	-11.9	143	236

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.

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-650
Test Condition : 802.11g Tx at high channel

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)
1876	PK	V	0	28.542	35.068	63.61	74	-10.39	175	53
1876	AV	V	0	28.542	13.588	42.13	54	-11.87	175	53
2313	PK	V	33.74	30.542	66.758	63.56	74	-10.44	178	71
2313	AV	V	33.74	30.542	54.788	51.59	54	-2.41	178	71
1876	PK	H	0	28.542	34.708	63.25	74	-10.75	100	243
1876	AV	H	0	28.542	13.548	42.09	54	-11.91	100	243

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.

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	℃
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 (2.63dB) 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 Condition: 802.11b function (DSSS Modulation)

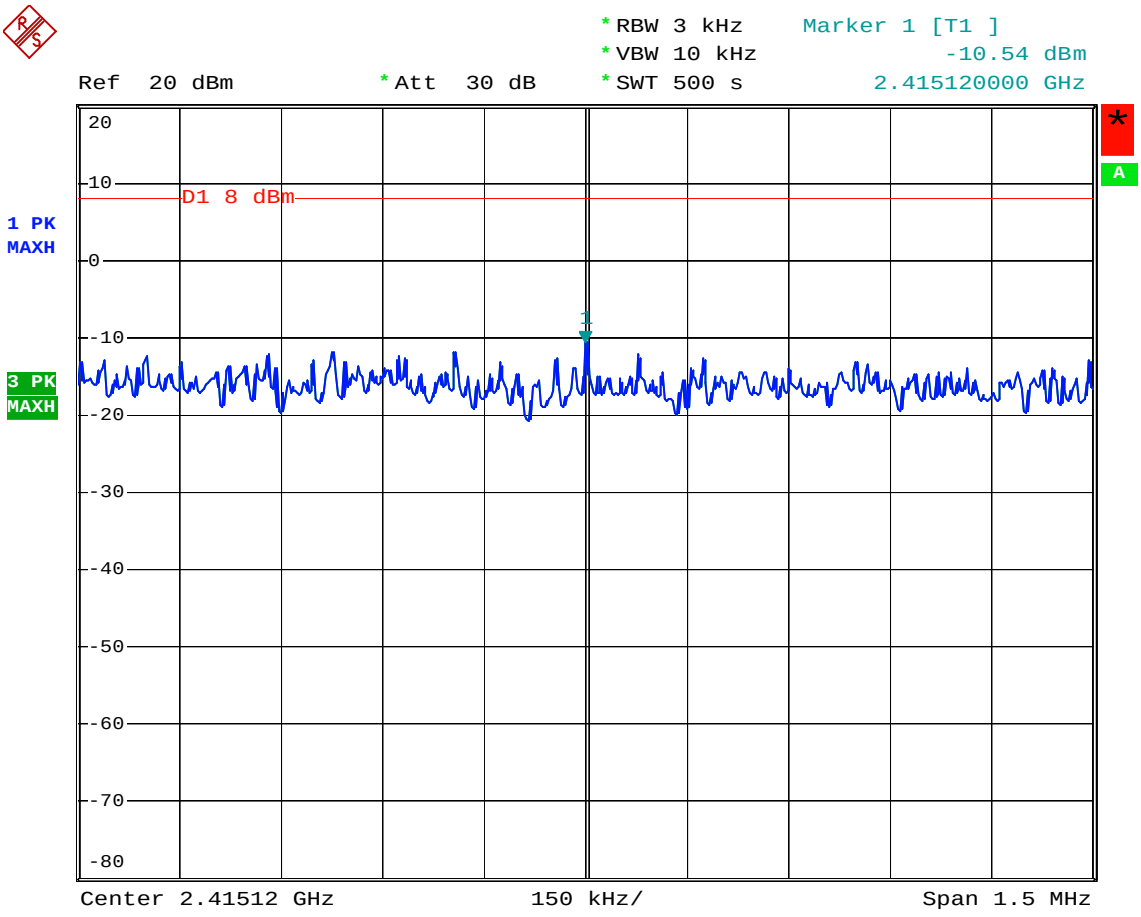
Channel	Frequency (MHz)	Measured level (dBm)	Limit (dBm)
Low	2415.120	-7.91	8
Middle	2433.686	-8.39	8
High	2461.988	-9.10	8

Test Condition: 802.11g function (OFDM Modulation)

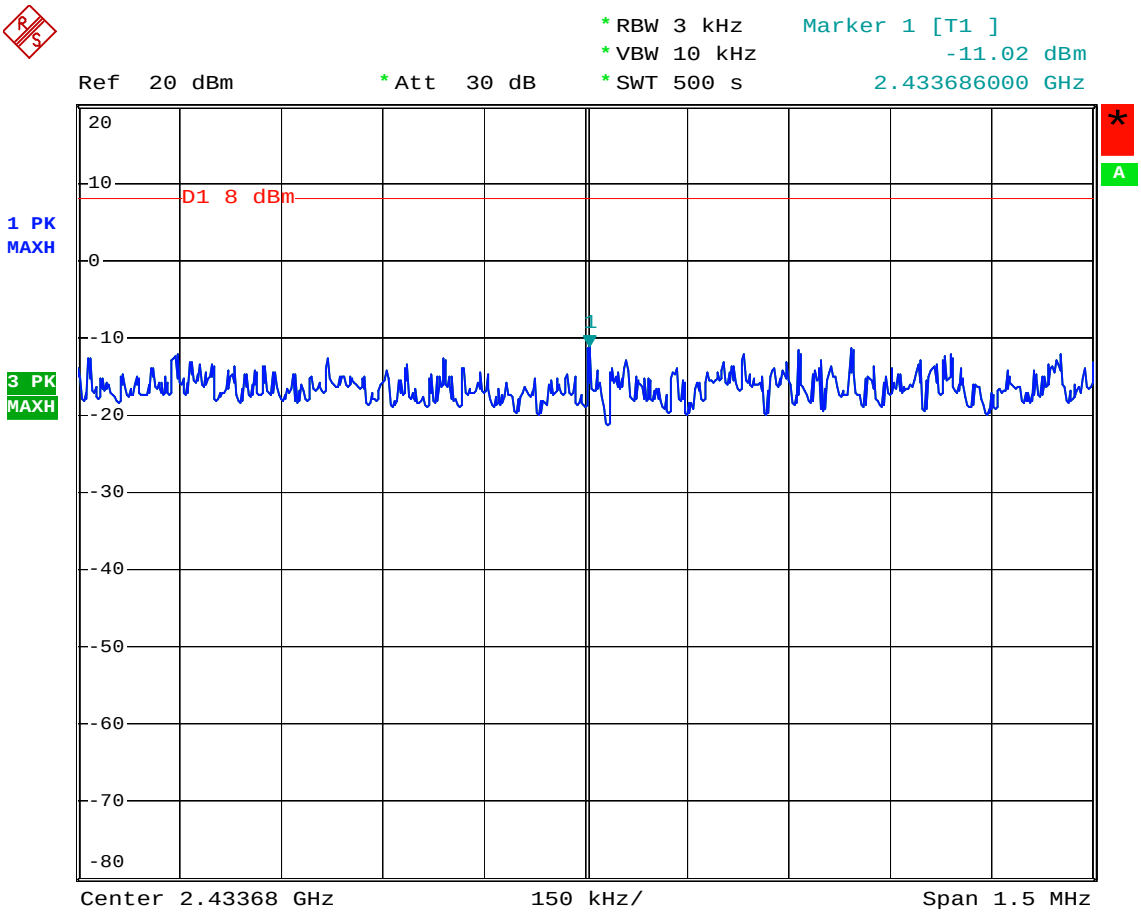
Channel	Frequency (MHz)	Measured level (dBm)	Limit (dBm)
Low	2419.123	-14.67	8
Middle	2443.241	-15.64	8
High	2470.083	-13.35	8

Please see the plot below.

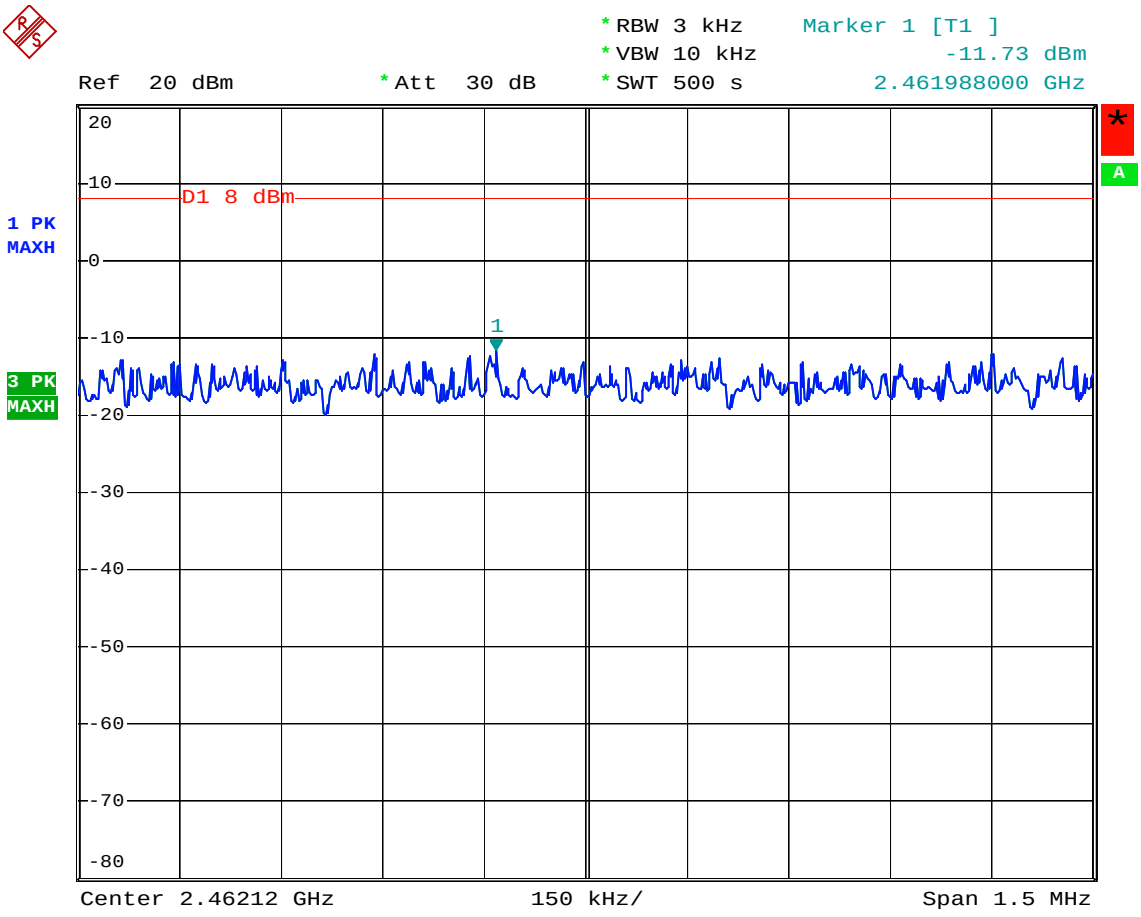
Test Condition: 802.11b function (DSSS Modulation)



Comment A: Power spectrum density at low channel CL=2.63dB (EC353) 80
2.11b
Date: 17.DEC.2003 10:42:44

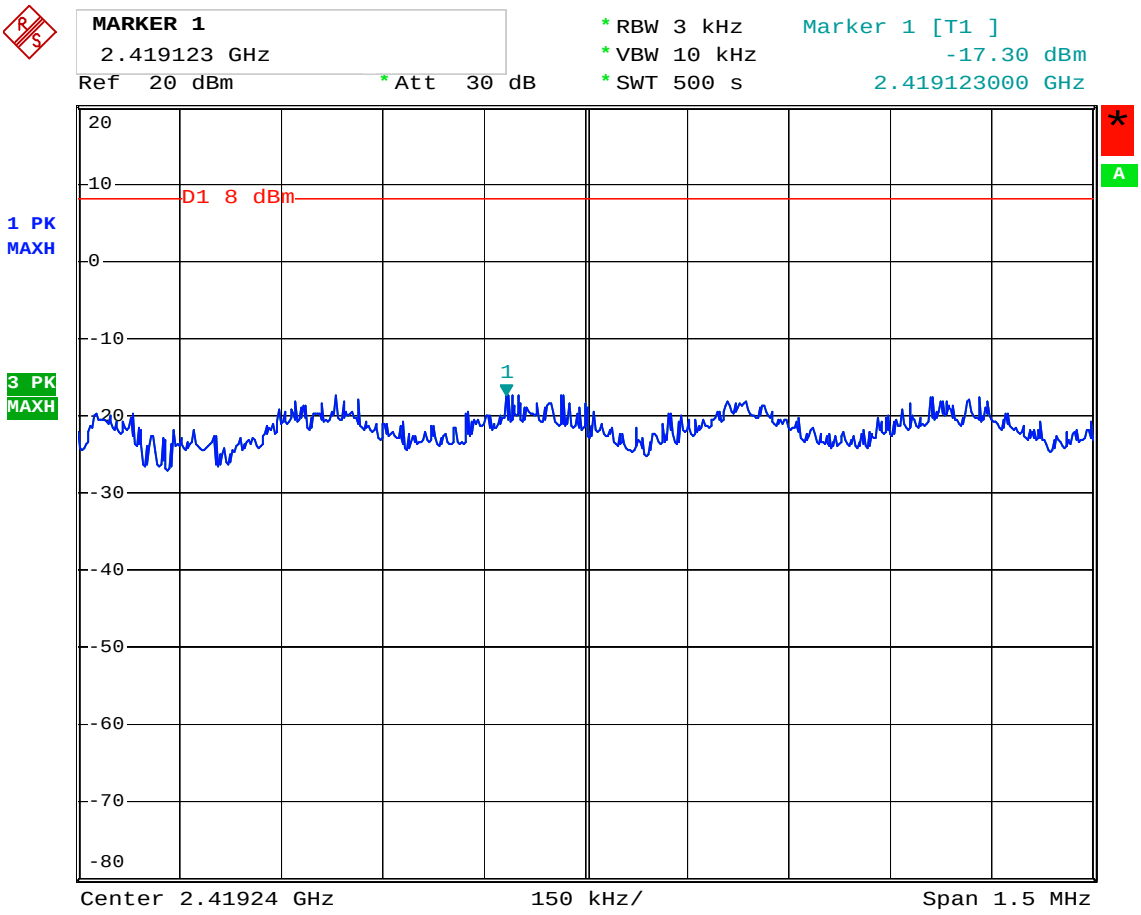


Comment A: Power spectrum density at middle channel CL=2.63dB (EC353)
802.11b
Date: 17.DEC.2003 10:38:33

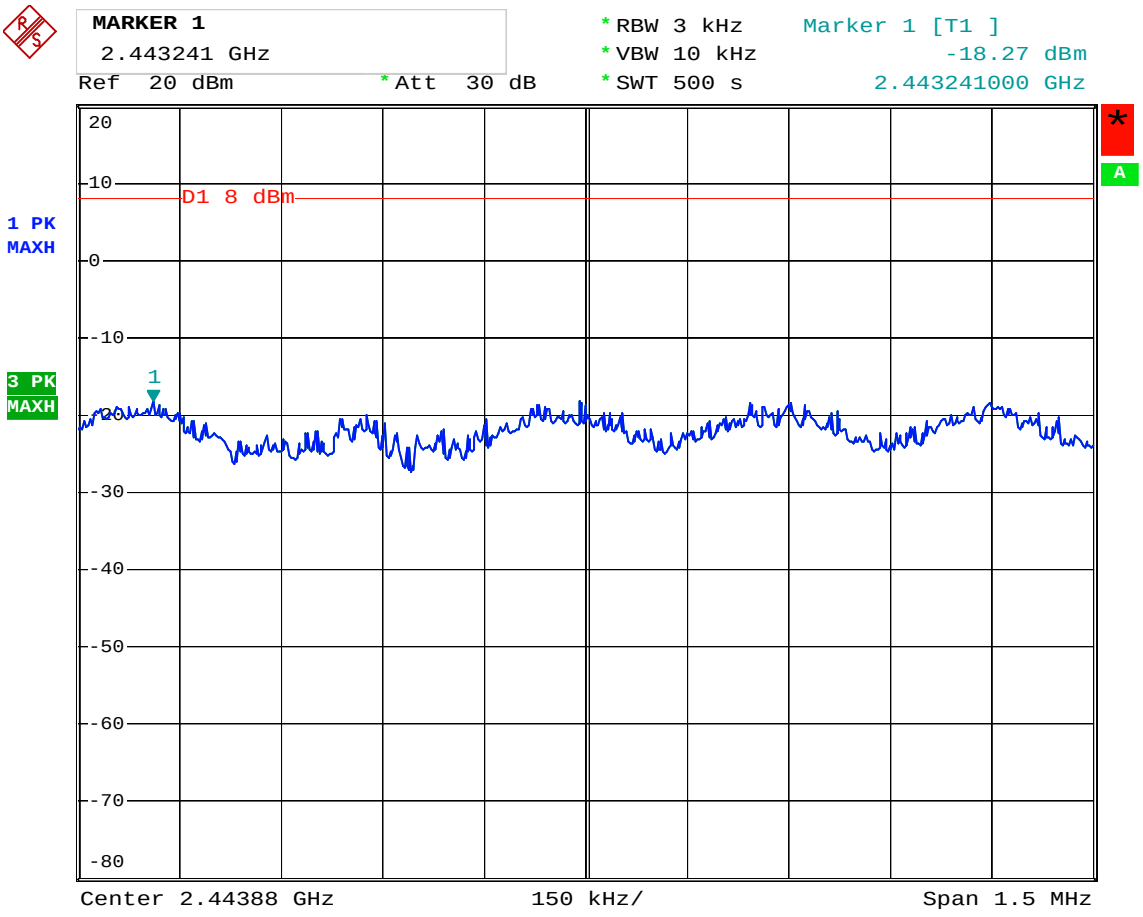


Comment A: Power spectrum density at high channel CL=2.63dB (EC353) 802.11b
Date: 17.DEC.2003 10:31:04

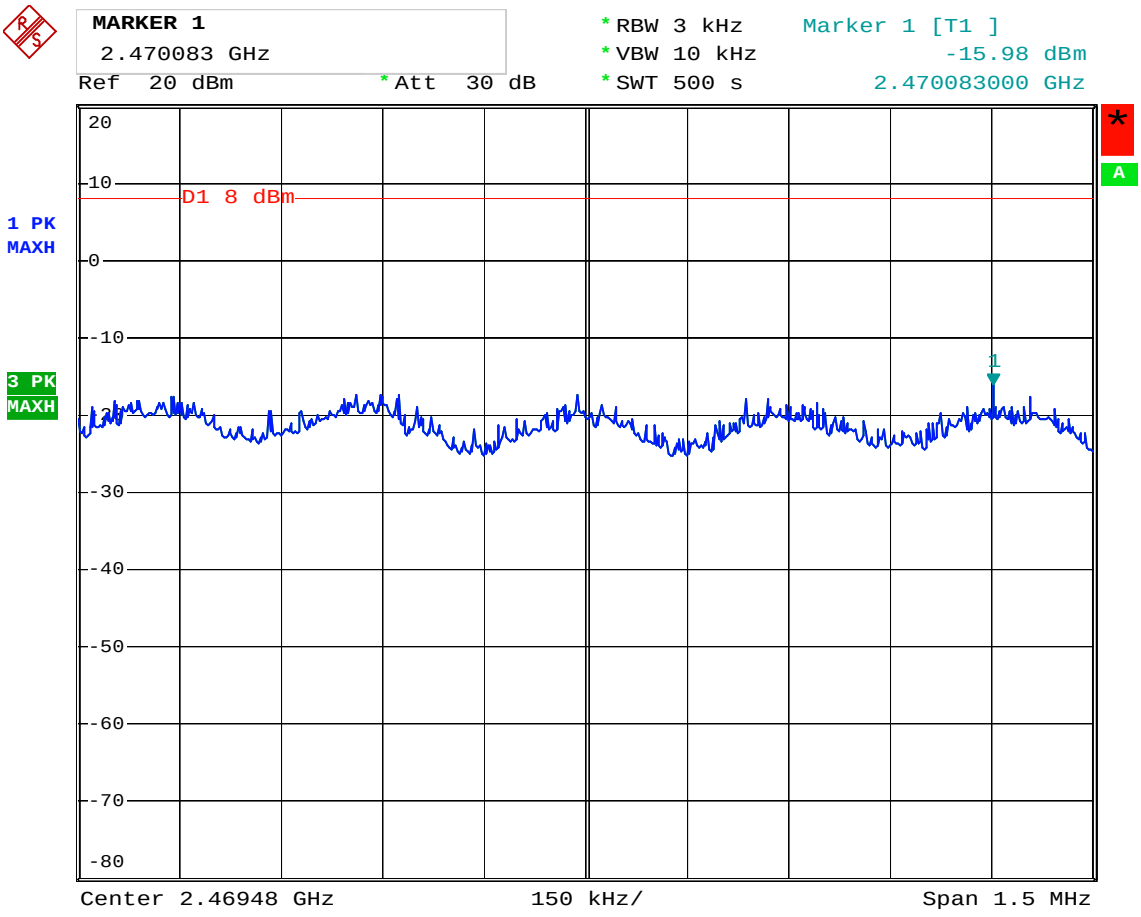
Test Condition: 802.11g function (OFDM Modulation)



Comment A: Power spectrum density at low channel CL=2.63dB (EC353) 80
2.11g
Date: 17.DEC.2003 10:16:39



Comment A: Power spectrum density at middle channel CL=2.63dB (EC353)
802.11g
Date: 17.DEC.2003 10:19:23



Comment A: Power spectrum density at high channel CL=2.63dB (EC353) 802.11g
Date: 17.DEC.2003 10:27:38

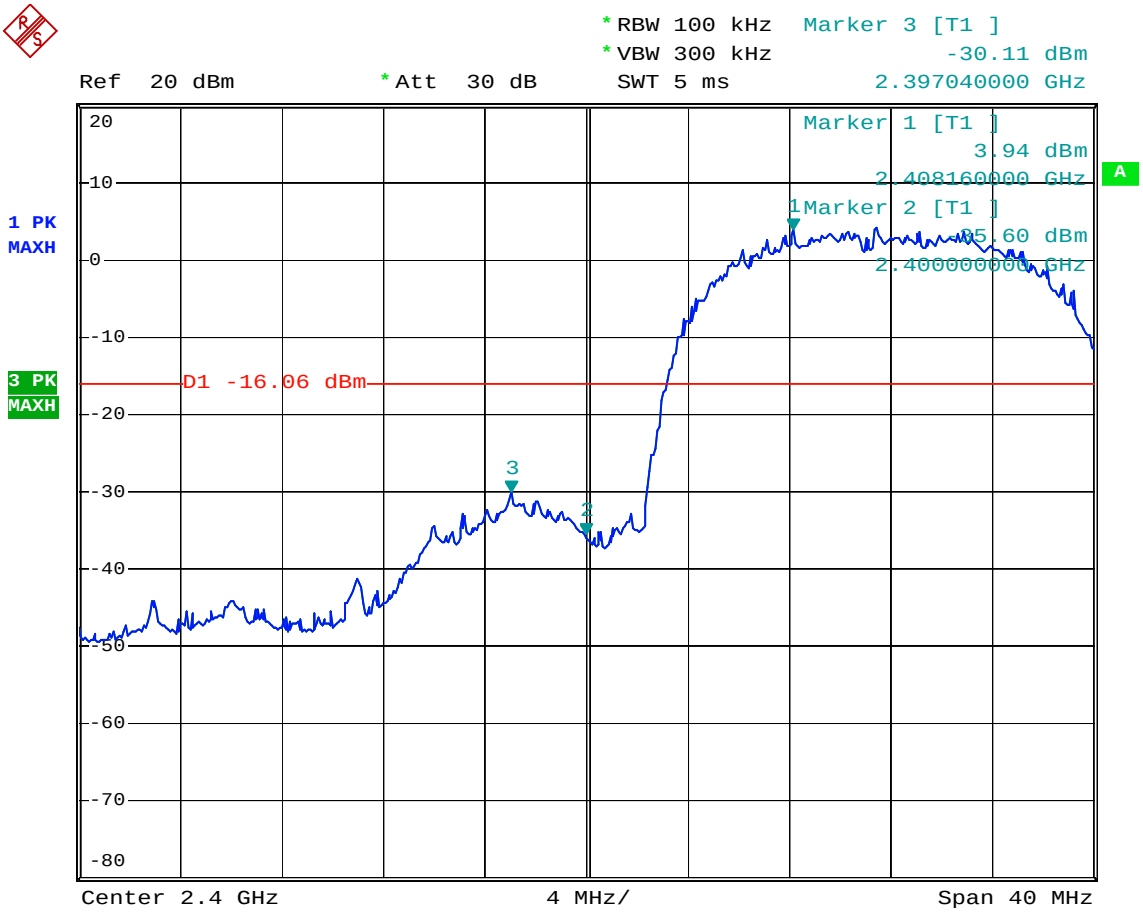
7. Emission on the band edge §FCC 15.247(C)

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.

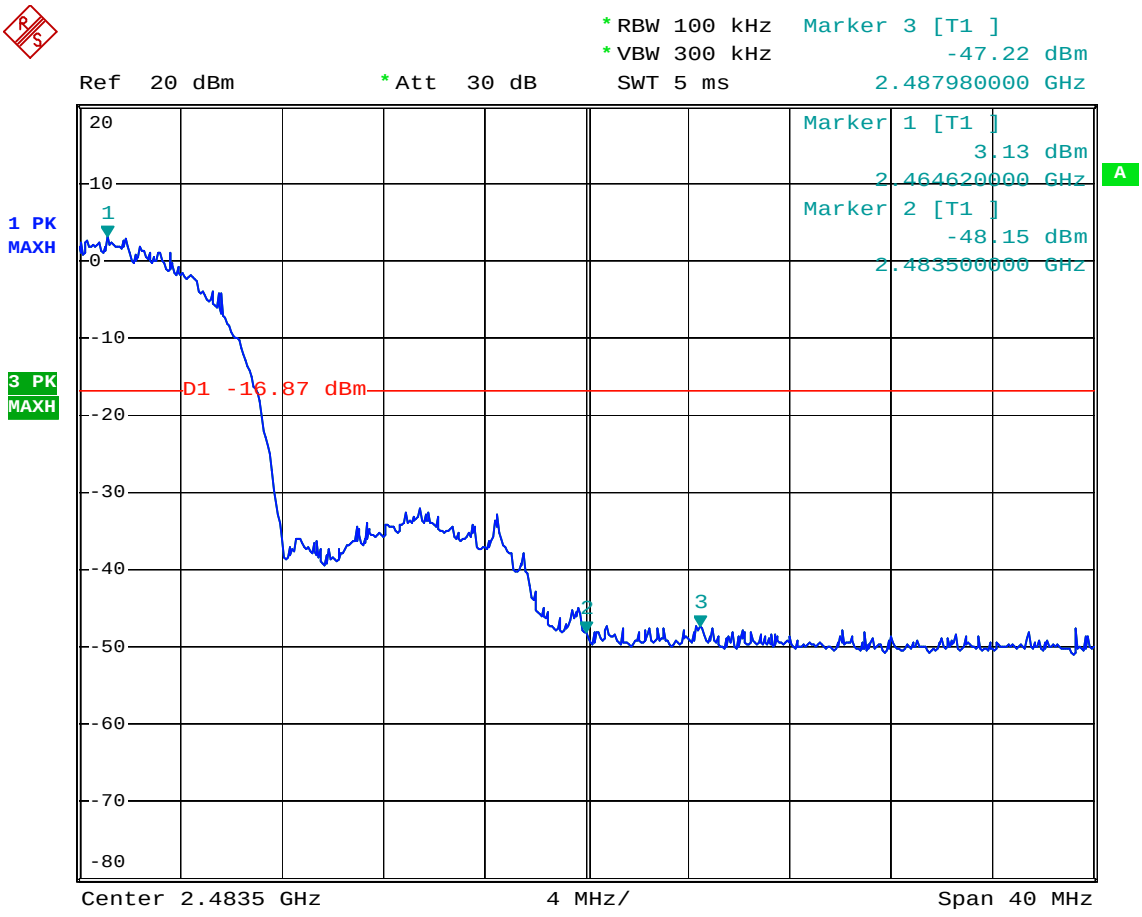
Please see the plot below.

7.1 Band-edge (Conducted method)

Test Condition: 802.11b function (DSSS Modulation)

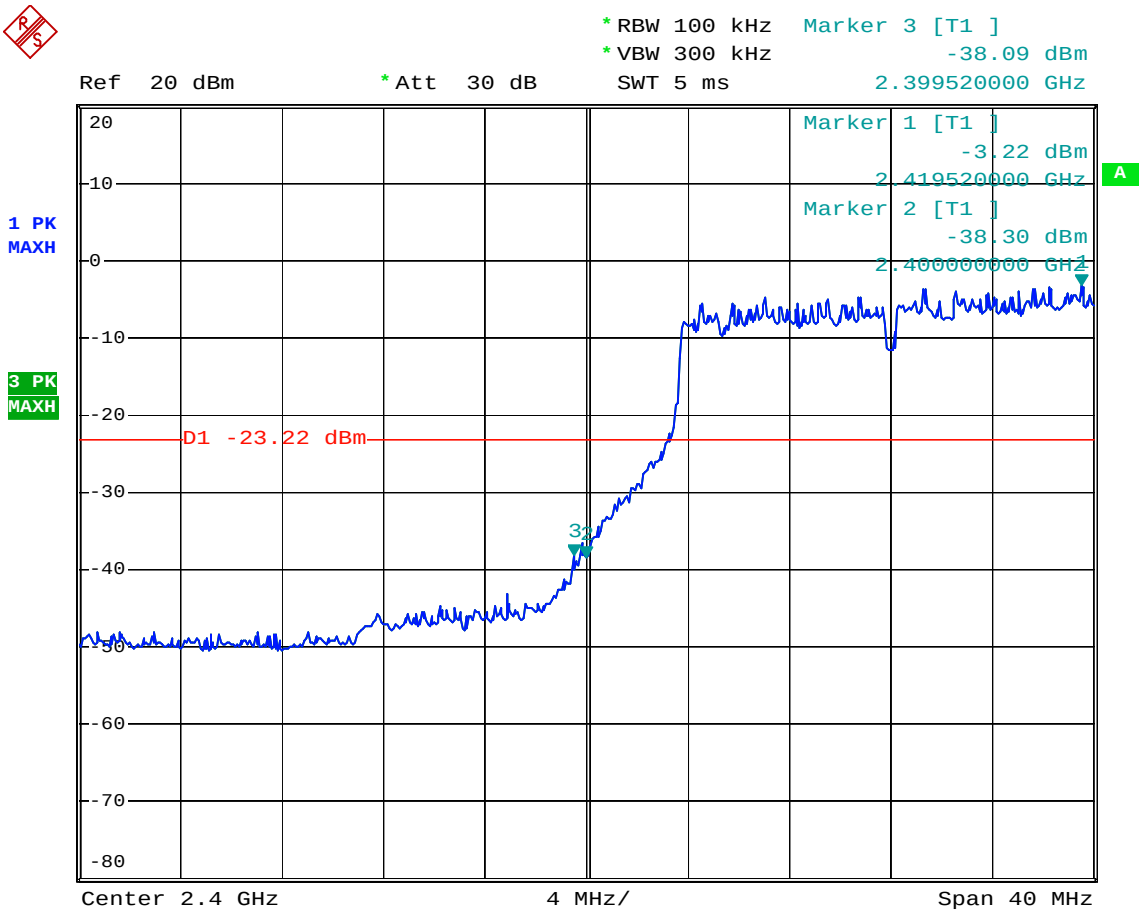


Comment A: Band edge at low channel 802.11b
Date: 17.DEC.2003 10:49:06

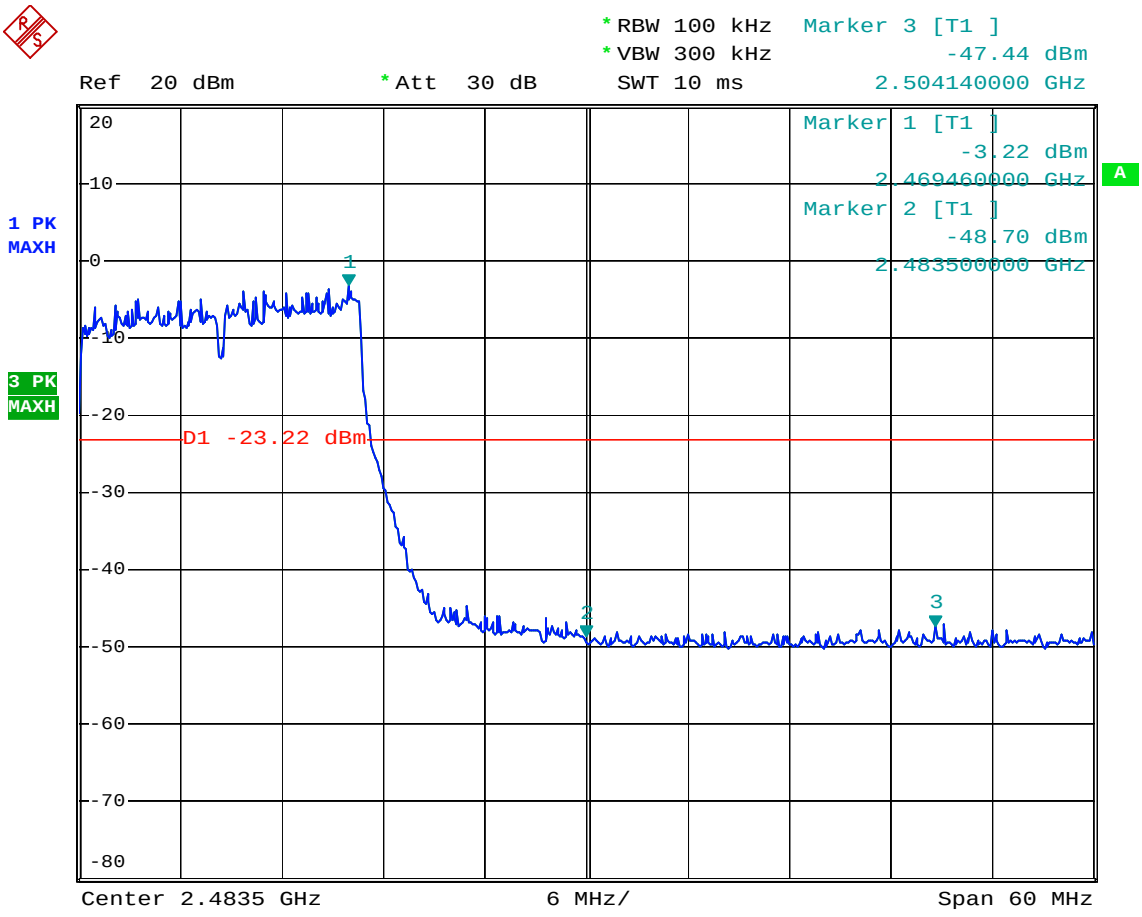


Comment A: Band edge at high channel 802.11b
Date: 17.DEC.2003 11:09:38

Test Condition: 802.11g function (OFDM Modulation)



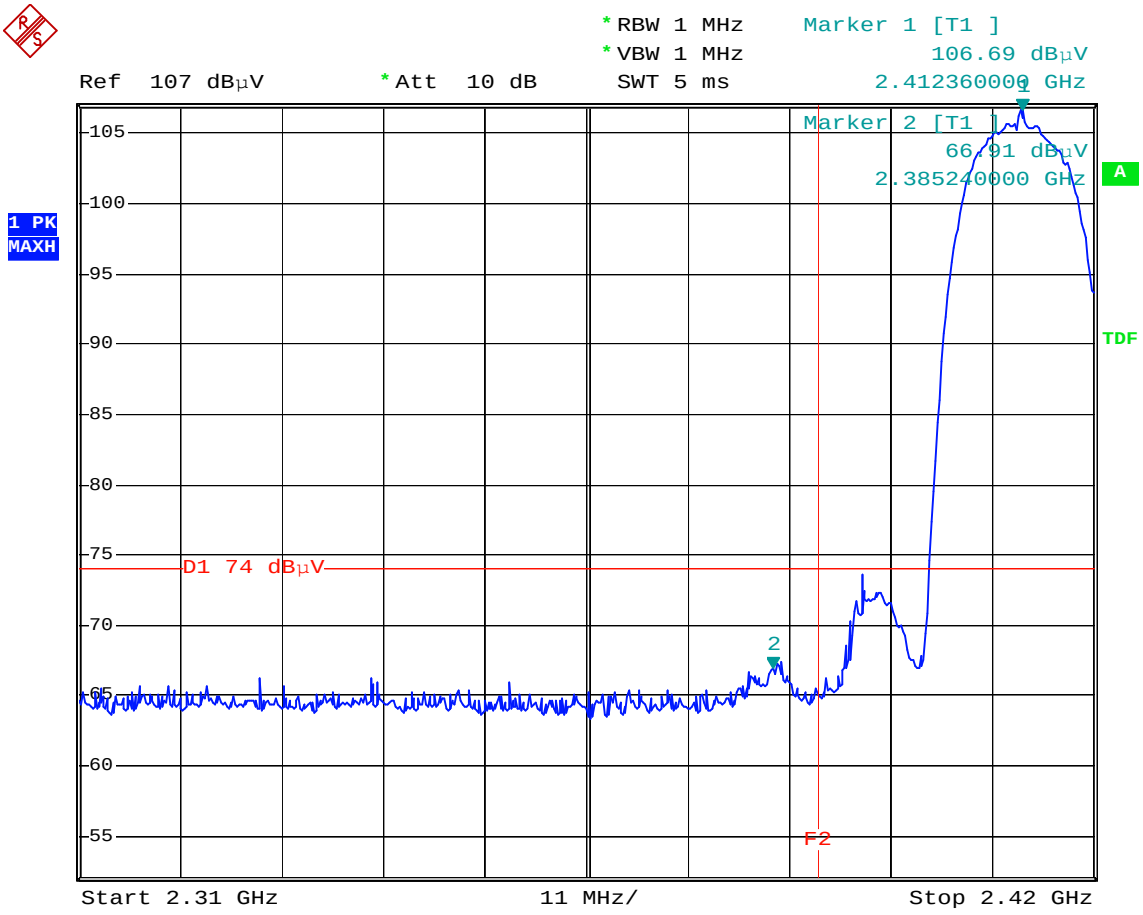
Comment A: Band edge at low channel 802.11g
Date: 17.DEC.2003 11:06:01



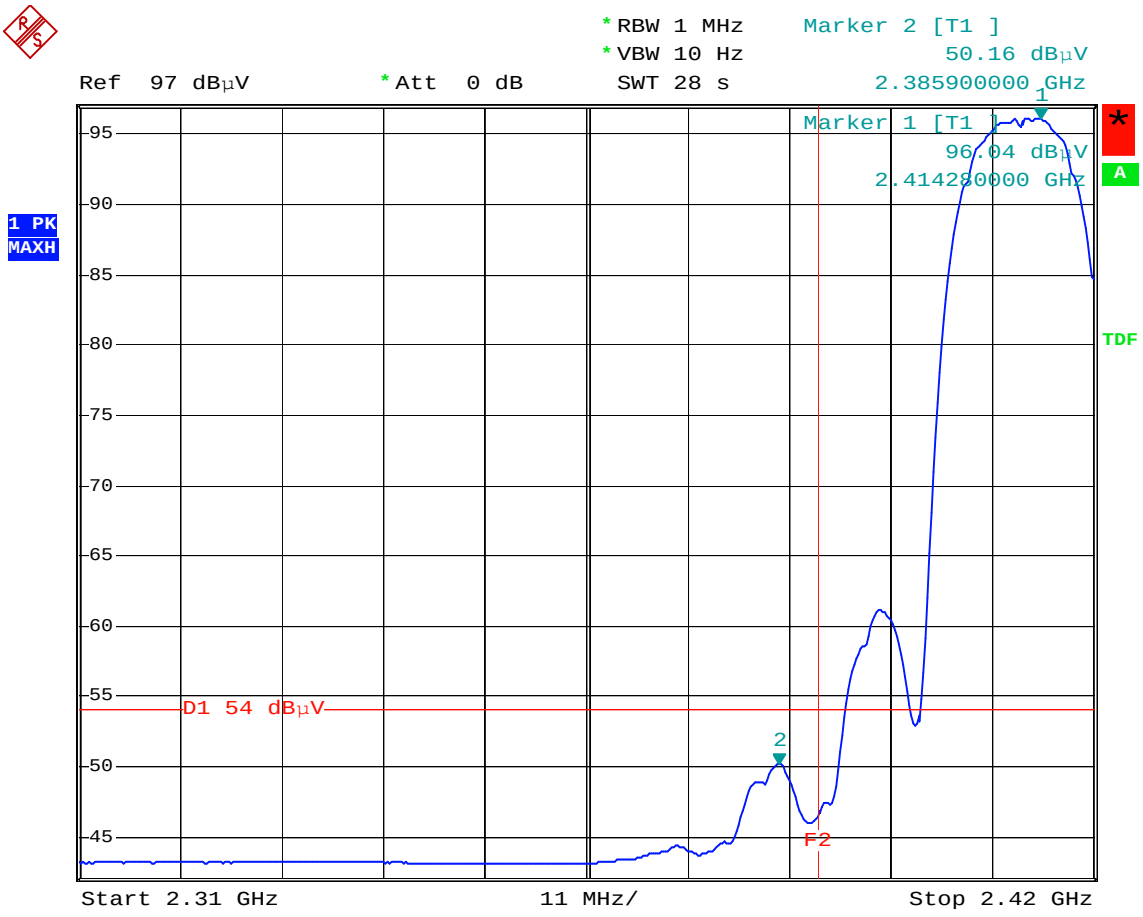
Comment A: Band edge at high channel 802.11g
Date: 17.DEC.2003 11:00:19

7.2 Band-edge (Radiated method)

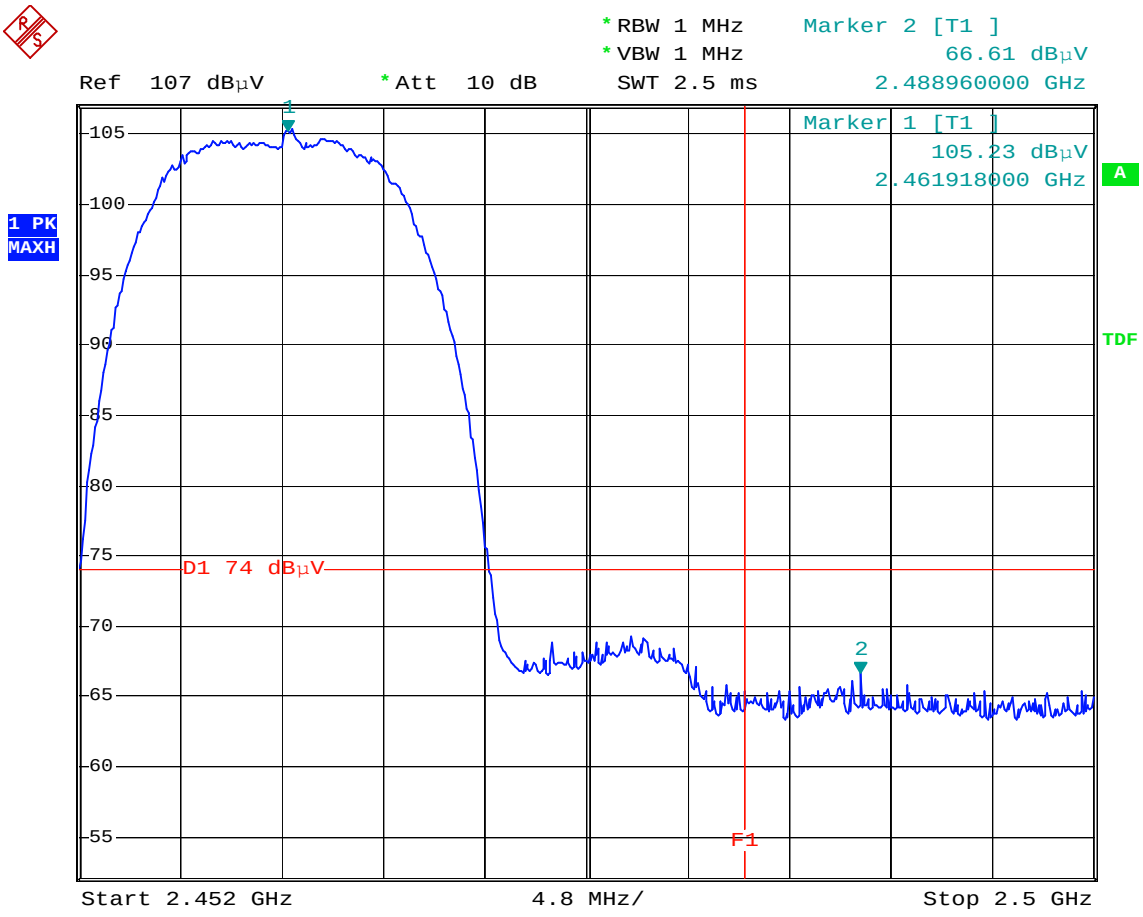
Test Condition: 802.11b function (DSSS Modulation)



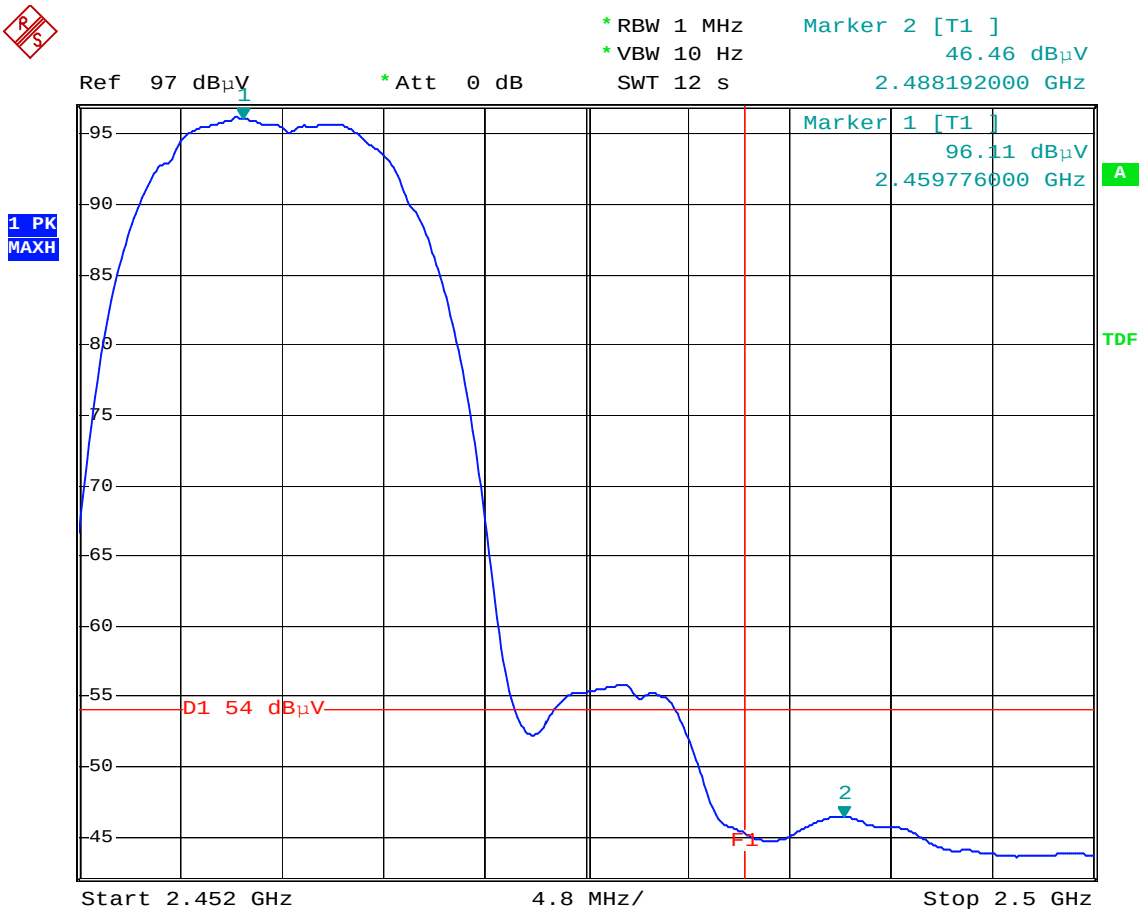
Comment A: Band-edge test at low channelEN B
Peak detector F2=2390MHz 802.11b
Date: 19.DEC.2003 10:00:49



Comment A: Band-edge test at low channelEN B
Average detector F2=2390MHz 802.11b
Date: 19.DEC.2003 09:58:22

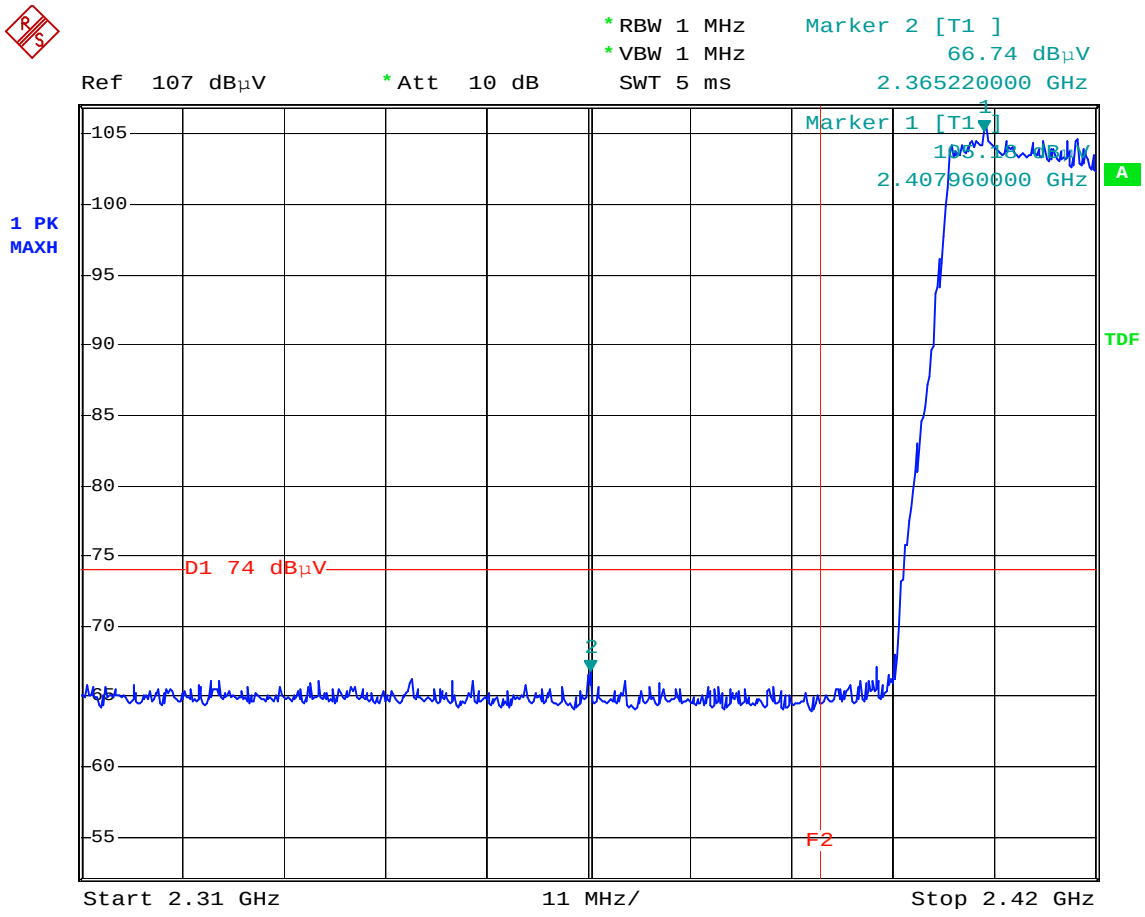


Comment A: Band-edge test at high channelN B
Peak detector F1=2483.5MHz 802.11b
Date: 19.DEC.2003 10:02:03

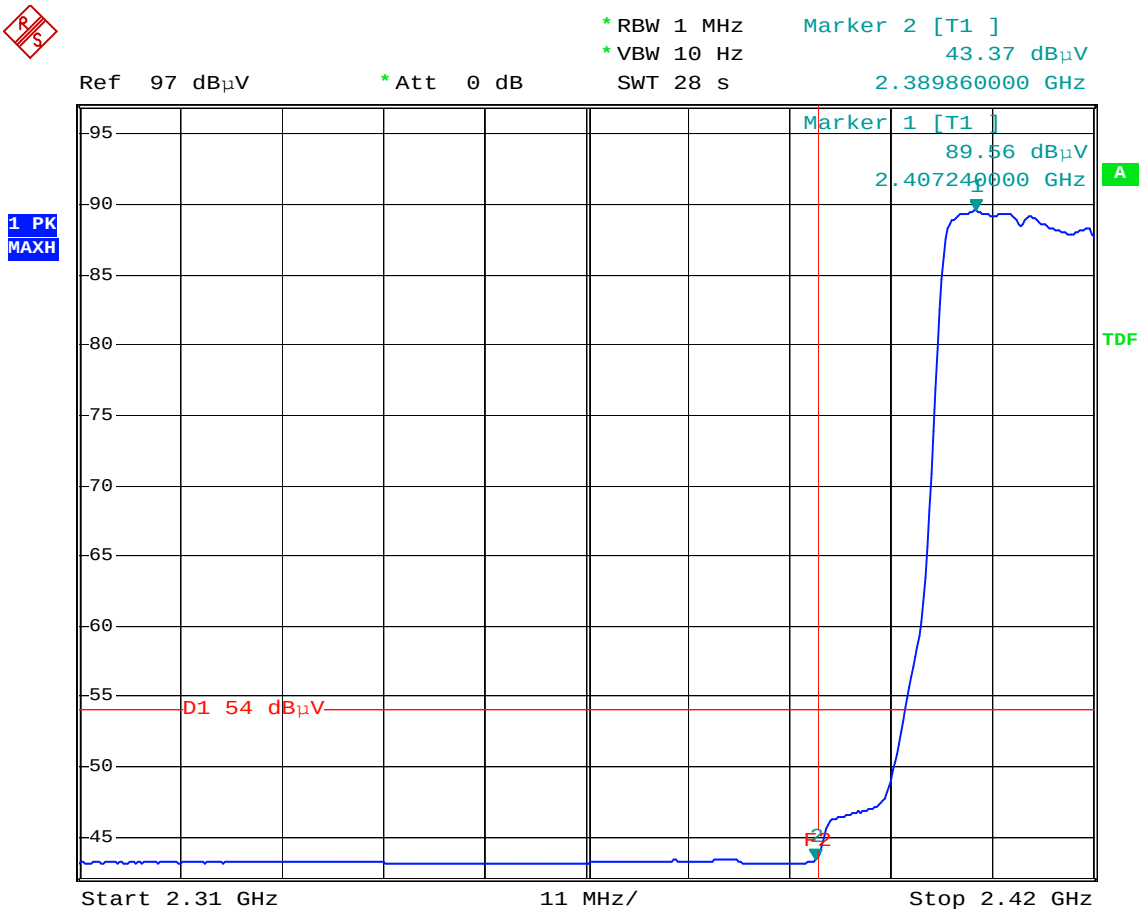


Comment A: Band-edge test at high channel
Average detector F1=2483.5MHz 802.11b
Date: 19.DEC.2003 10:03:10

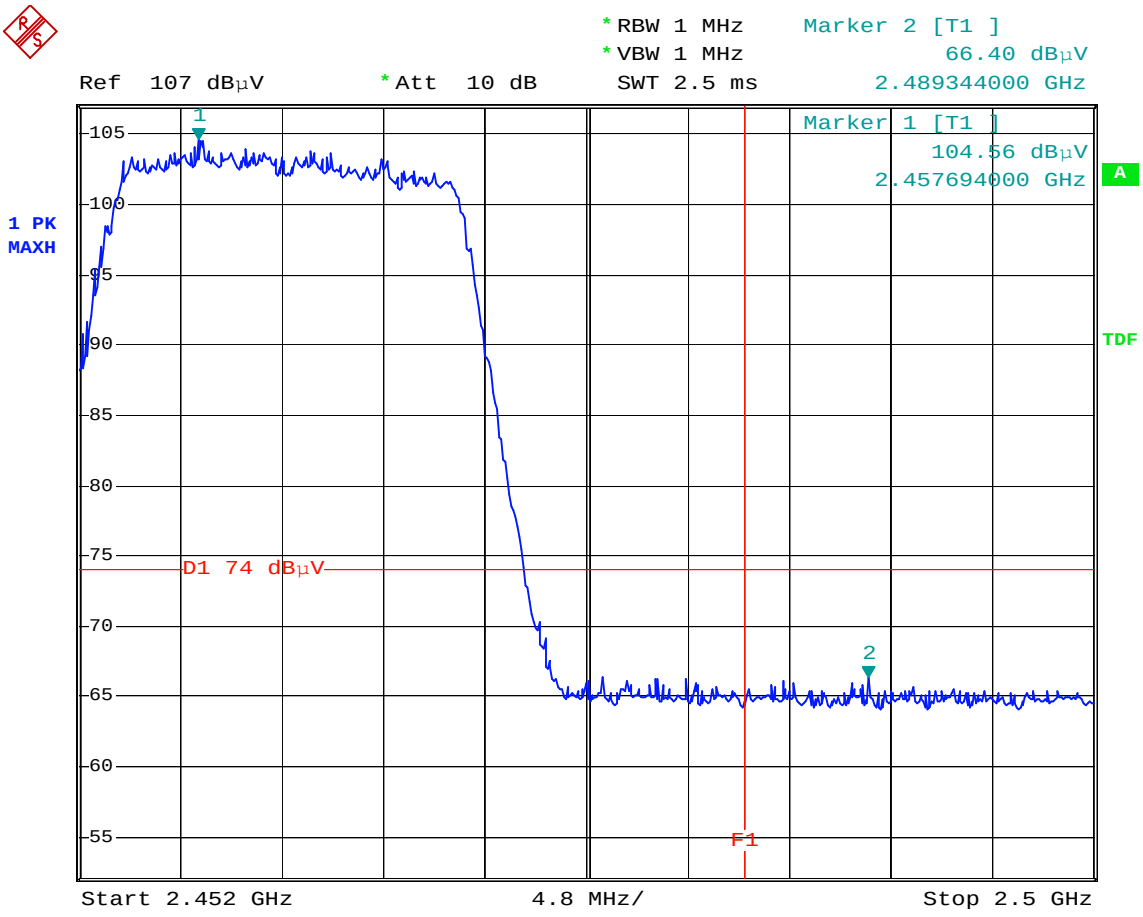
Test Condition: 802.11g function (OFDM Modulation)



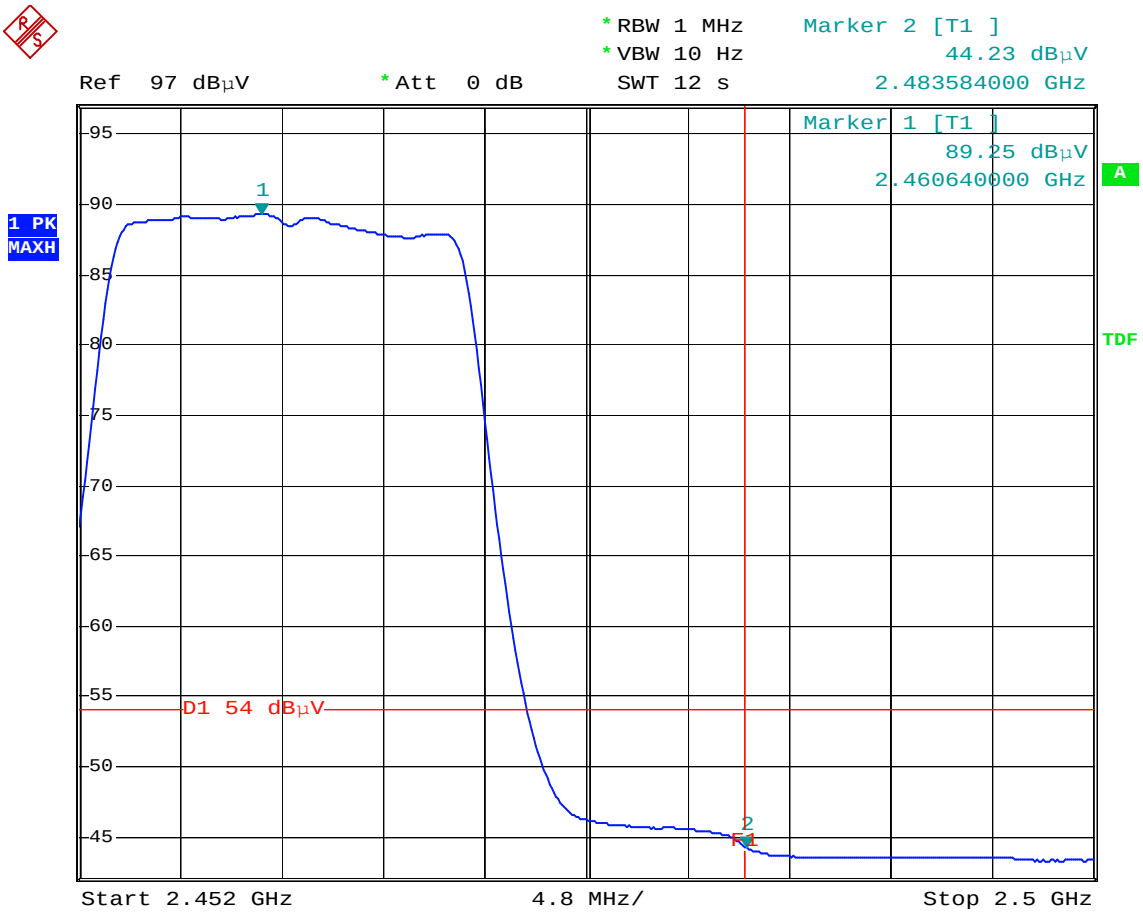
Comment A: Band-edge test at low channelEN B
Peak detector F2=2390MHz 802.11g
Date: 19.DEC.2003 10:14:50



Comment A: Band-edge test at low channelEN B
Average detector F2=2390MHz 802.11g
Date: 19.DEC.2003 10:16:24



Comment A: Band-edge test at high channelN B
Peak detector F1=2483.5MHz 802.11b
Date: 19.DEC.2003 10:07:49



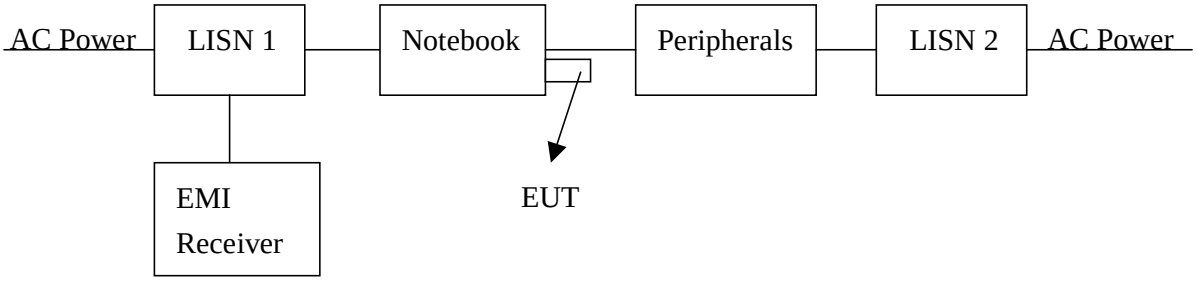
Comment A: Band-edge test at high channelN B
Average detector F1=2483.5MHz 802.11g
Date: 19.DEC.2003 10:10:33

8. Power Line Conducted Emission test §FCC 15.207

8.1 Operating environment

Temperature:	25	℃	(10-40℃)
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 C63.4/1992 on conducted measurement. The AC power conducted emissions was invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz. (15.207 paragraph)

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

Please see the plot below.

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

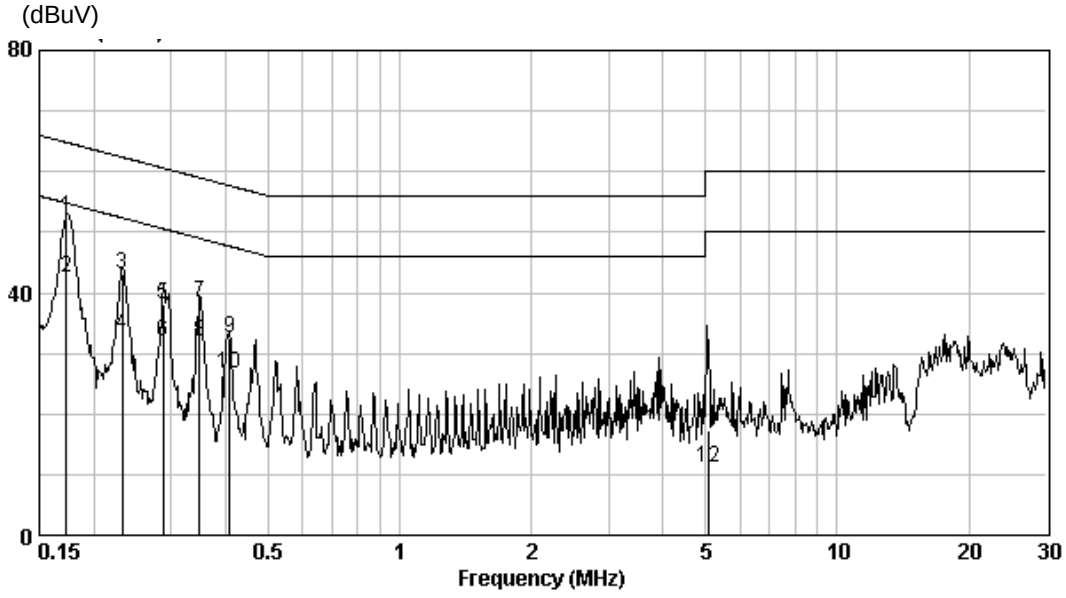
*Decreases with the logarithm of the frequency.

8.3 Power Line Conducted Emission test data

Phase: Line
Model No.: XG-650
Test Condition: Normal operating

Freq. (MHz)	Correction Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.173	0.10	52.36	64.81	-12.45	QP
0.173	0.10	42.45	54.81	-12.36	AVERAGE
0.233	0.10	43.12	62.36	-19.24	QP
0.233	0.10	33.16	52.36	-19.20	AVERAGE
0.288	0.10	38.06	60.57	-22.51	QP
0.288	0.10	31.84	50.57	-18.73	AVERAGE
0.349	0.10	38.50	58.98	-20.48	QP
0.349	0.10	31.95	48.98	-17.03	AVERAGE
0.409	0.10	32.45	57.66	-25.21	QP
0.409	0.10	26.80	47.66	-20.86	AVERAGE
5.062	0.28	17.20	60.00	-42.80	QP
5.062	0.28	11.12	50.00	-38.88	AVERAGE

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



Phase: Neutral
Model No.: XG-650
Test Condition: Normal operating

Freq. (MHz)	Correction Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.173	0.10	51.60	64.81	-13.21	QP
0.173	0.10	42.77	54.81	-12.04	AVERAGE
0.233	0.10	42.18	62.36	-20.18	QP
0.233	0.10	31.37	52.36	-20.99	AVERAGE
0.291	0.10	37.32	60.51	-23.19	QP
0.291	0.10	33.29	50.51	-17.22	AVERAGE
0.349	0.10	35.28	58.98	-23.70	QP
0.349	0.10	29.87	48.98	-19.11	AVERAGE
0.469	0.10	26.94	56.54	-29.60	QP
0.469	0.10	24.86	46.54	-21.68	AVERAGE
3.903	0.24	28.71	56.00	-27.29	QP
3.903	0.24	21.61	46.00	-24.39	AVERAGE

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