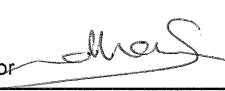
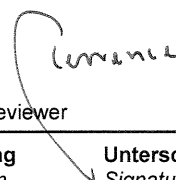


Produkte
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Prüfbericht - Nr.: 12701036 001		Seite 1 von 94 Page 1 of 94	
<i>Test Report No.:</i>			
Auftraggeber: <i>Client:</i>	Panasonic Communications Co., Ltd. 1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan		
Gegenstand der Prüfung: <i>Test item:</i>	Wireless Network Camera		
Bezeichnung: <i>Identification:</i>	BL-C121A	Serien-Nr.: <i>Serial No.:</i>	ES1, ES2
Wareneingangs-Nr.: <i>Receipt No.:</i>	213082598	Eingangsdatum: <i>Date of receipt:</i>	2008-08-21
Prüfart: <i>Testing location:</i>	4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan		
Prüfgrundlage: <i>Test specification:</i>	47 CFR Part 15.247 (Subpart: C) ANSI C63.4-2003 Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005 RSS-210 (Issue 7): 2007 RSS-Gen (Issue 2): 2007		
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test item passed the test specification(s).		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland Japan Ltd. - Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan		
geprüft/ tested by:	kontrolliert/ reviewed by:		
2008-09-10 S. Lingaala / Inspector 	2008-09-10 T.Cheung / Reviewer 		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>
			Name/Stellung <i>Name/Position</i>
			Unterschrift <i>Signature</i>
Sonstiges / Other Aspects:			
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet			
Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested			
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</p>			

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 2 von 94
Page 2 of 94

TEST SUMMARY

3.2.1 ANTENNA REQUIREMENTS FCC 15.203, FCC 15.204 AND RSS-210 A8.4

RESULT: PASS

5.1.1 CONDUCTED OUTPUT POWER AT ANTENNA TERMINALS FCC 15.247(B)(3) AND RSS-210 A8.4

RESULT: PASS

5.1.2 6dB BANDWIDTH FCC 15.247(A)(2) AND RSS-210 A8.2(A)

RESULT: PASS

5.1.3 CONDUCTED SPURIOUS EMISSIONS FCC 15.247(D) AND RSS-210 A8.5

RESULT: PASS

5.1.4 PEAK POWER SPECTRAL DENSITY FCC 15.247(E) AND RSS-210 A8.2(B)

RESULT: PASS

6.1.1 BAND EDGE RADIATED EMISSION FCC 15.247(D) AND RSS- 210 A2.2

RESULT: Pass

6.1.2 MAINS TERMINAL CONTINUOUS DISTURBANCE VOLTAGE FCC PART 15.207, RSS-GEN 7.2.1/7.2.2 AND ICES-003

RESULT: PASS

6.1.3 RADIATED EMISSION OUT-OF-BAND AND SPURIOUS EMISSION FCC PART 15.247(D)/15.205/15.209 AND RSS-210 2.2/RSS-210 2.6

RESULT: PASS

6.1.4 RADIATED EMISSION SPURIOUS EMISSION FOR RECEIVER FCC PART 15.109 AND RSS-210 2.2/RSS-210 A.8.5 RSS-GEN 7.2.1/7.2.3

RESULT: PASS

Contents

1.	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS	5
1.2	FCC CROSS-REFERENCE TABLE	5
2.	TEST SITES	6
2.1	TEST FACILITIES	6
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	7
2.3	MEASUREMENT UNCERTAINTY	8
3.	GENERAL PRODUCT INFORMATION	9
3.1	PRODUCT FUNCTION AND INTENDED USE	9
3.2	SYSTEM DETAILS	9
3.2.1	<i>Antenna Requirements FCC 15.203, FCC 15.204 and RSS-210 A8.4</i>	<i>9</i>
3.3	CLOCK FREQUENCIES	10
3.4	INDEPENDENT OPERATION MODES	10
3.5	NOISE SUPPRESSING PARTS	10
4.	TEST SET-UP AND OPERATION MODES	11
4.1	TEST METHODOLOGY	11
4.2	PHYSICAL CONFIGURATION FOR TESTING	11
4.3	TEST OPERATION AND TEST SOFTWARE	13
4.4	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	13
4.5	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	13
5.	TEST RESULTS CONDUCTED TESTING AT ANTENNA PORT	14
5.1.1	<i>Conducted Output Power at Antenna Terminals FCC 15.247(b)(3) and RSS-210 A8.4</i>	<i>14</i>
5.1.2	<i>6dB Bandwidth FCC 15.247(a)(2) and RSS-210 A8.2(a)</i>	<i>16</i>
5.1.3	<i>Conducted Spurious Emissions FCC 15.247(d) and RSS-210 A8.5</i>	<i>23</i>
5.1.4	<i>Peak Power Spectral Density FCC 15.247(e) and RSS-210 A8.2(b)</i>	<i>59</i>
6.	TEST RESULTS RADIATED EMISSIONS	66
6.1.1	<i>Band edge Radiated Emission FCC 15.247(d) and RSS- 210 A2.2</i>	<i>66</i>
6.1.2	<i>Mains Terminal Continuous Disturbance Voltage FCC part 15.207, RSS-Gen 7.2.1/7.2.2 and ICES-003</i>	<i>72</i>
6.1.3	<i>Radiated Emission out-of-band and spurious emission FCC part 15.247(d)/15.205/15.209 and RSS-210 2.2/RSS-210 2.6</i>	<i>77</i>
6.1.4	<i>Radiated Emission spurious emission for Receiver FCC part 15.109 and RSS-210 2.2/RSS-210 A.8.5 RSS-Gen 7.2.1/7.2.3</i>	<i>85</i>
7.	PHOTOGRAPHS OF TEST SETUP	88

Prüfbericht - Nr.: 12701036 001

Seite 4 von 94

Test Report No.:

Page 4 of 94

8.	LIST OF TABLES.....	92
9.	LIST OF FIGURES	93
10.	LIST OF PHOTOGRAPHS.....	94

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report.

1.2 FCC Cross-Reference Table

The results of emission measurements and product related information contained in this test report and the attached materials relate to the contents of the FCC standard report in the following way:

FCC § / Heading

1.1 Product Description	See 3.1
1.2 Tested System Details	See 4.2
1.3 Test Methodology	See 4.1
1.4 Test Facility	See 2.1
3.2 EUT Exercise Software	See 4.3
3.3 Special Accessories	See 4.4
3.4 Equipment Modifications	See 4.5
3.5 Configuration of Tested System	See 4.2

Prüfbericht - Nr.:**12701036 001****Seite 6 von 94***Test Report No.:**Page 6 of 94*

2. Test Sites

2.1 Test Facilities

TÜV Rheinland Japan Ltd. - Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

The used test equipment is in accordance with CISPR 16 for measurement of radio interference.

The Federal Communication Commission has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance with the requirements of section 2.948 of the FCC rules.

The description of the test facility is listed under FCC registration number 299054

The Industry Canada has reviewed the technical characteristics of the radiated and conducted emission facility, and has found these test facilities to be in compliance
The description of the test facility is listed under O.A.T.S filing number 3466B.

Prüfbericht - Nr.: 12701036 001
Seite 7 von 94
Test Report No.:
Page 7 of 94

2.2 List of Test and Measurement Instruments

Test Equipment calibration is traceable to NIST

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equipment ID	Calibrated until
For Antenna Conducted Emission					
High Frequency Power Supply	Takasago	AA500F	303039506 6	Y3-0473	N/A
Peak Power Meter	Agilent	N19118	MY451014 08	-	2009-01
Wideband Power Sensor (50MHz-18GHz)	Agilent	N1921A	MY452417 52	-	2009-01
Digital Multimeter	Yokogawa	755501 -1- M/C1	12WC4289 2 M	TL-9070	2009-07
Spectrum Analyzer	Rohde & Schwarz	FSP30	10006/030	BT-8017	2009-08
For Conducted Emission					
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2009-02
Two-Line V-Network (LISN)	Rohde & Schwarz	ENV216	100276	RF-0016	2009-05
For Radiated Emission					
Receiver	Rohde & Schwarz	ESU 8	100025	RF-0020	2009-02
Receiver	Rohde & Schwarz	ESU 40	100029	RF-0021	2009-02
RF Selector (10m)	Toyo Corporation	NS4900	0703-182	RF-0029	2009-05
Low Noise Pre-Amplifier	TSJ	MLA-10K01- B01-35	1370750	RF-0253	2009-05
3dB Attenuator 50Ohm	Tamagawa Electronics Co., Ltd.	CFA-01	-	RF-0265	2009-05
Band Reject Filter	Nitsuki	NF-49BT	027	RF-0131	2008-12
Microwave Preamplifier, 1-8GHz	Toyo Corporation	TPA0108-40	0634	RF-0052	2008-12
Trilog Antenna	Schwarzbeck	VULB9168	0245	RF-0019	2009-05
Biconical Antenna	EMCO	3110B	9603-2379	RF-0207	2009-03
Broad Band Horn Antenna (1-10GHz)	Schwarzbeck	BBHA9120B	419	RF-0050	2009-05
Double Ridged Broadband Horn Antenna (2-18GHz)	Toyo Corporation	HAP06-18W	00000025	RF-0065	2009-05
Broad Band Horn Antenna (18-26.5GHz)	Toyo Corporation	HAP18-26N	00000010	RF-0070	2009-05
Constant Voltage Constant Frequency Stabilizers					
CVCF (Shielded Room)	NF Corporation	ESU2000S	9075612	RF-0210	N/A
CVCF Booster (Shielded Room)	NF Corporation	ESU2000B	9074403	RF-0211	N/A

Produkte
Products

Prüfbericht - Nr.: 12701036 001

Seite 8 von 94

Test Report No.:

Page 8 of 94

Kind of Equipment	Manufacturer	Model Name	Serial Number	Equipment ID	Calibrated until
CVCF (10m chamber)	NF Corporation	ESU2000S	9067307	RF-0212	N/A
CVCF Booster (10m chamber)	NF Corporation	ESU2000B	9074408	RF-0213	N/A

2.3 Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emissions	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
AC Conducted Emission	150kHz-30MHz	±3.17dB
Radiated Emission	9kHz-30MHz	±4.77dB
	30-1000MHz	±5.11dB
	1-40GHz	±5.19dB

3. General Product Information

3.1 Product Function and Intended Use

The **EUT (Equipment Under Test)** is a Wireless Network Camera intended to be produced for the general market. The 802.11 b/g radio will be one of the functions available to this product in order to transfer data.

3.2 System Details

Radio Standard: IEEE 802.11b/g
 Specified power output: 22.6dBm peak
 Antenna gain: +2.14 dBi
 Antenna type: PCB stripline antenna
 Mounting type: Internal
 Frequency range: 2412 – 2462 MHz
 Number of channel: 11
 Channel spacing: 5 MHz
 Modulation type: 802.11 b BPSK, QPSK, CCK
 802.11 g BPSK, QPSK, 16 QAM, 64 QAM
 FCC Classification: DTS
 Protection Class: I

Type	Model	Rated Voltage	Rated Current	Supply
(EUT) Network Camera	BL-C121A	9V DC	Max. 750mA	AC / DC Adapter
(EUT) AC/DC Adaptor	PQLV206	(100-240)V	Unspecified	Mains Direct

3.2.1 Antenna Requirements FCC 15.203, FCC 15.204 and RSS-210 A8.4

RESULT: PASS

The EUT has an internal antenna which is not user accessible. Hence it complies with the requirements.

3.3 Clock Frequencies

The EUT generates internally following clock frequencies:

32.768 KHz
25 MHz
27 MHz
40 MHz
48 MHz
92 MHz
108 MHz

3.4 Independent Operation Modes

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4: 2003. Testing was performed at the lowest operating frequency (2412 MHz), the operating frequency in the middle of the specified frequency band (2437 MHz) and the highest operating frequency (2462 MHz).

The basic operation modes are:

- A. EUT transmits at lowest Channel (2412 MHz)
- B. EUT transmits at middle Channel (2437 MHz)
- C. EUT transmits at highest Channel (2462 MHz)
- D. EUT transmits with 802.11 b radio
- E. EUT transmits with 802.11 g radio
- F. EUT receives packets with 802.11 b radio
- G. EUT receives packets with 802.11 g radio

3.5 Noise Suppressing Parts

None mentioned explicitly.

4. Test Set-up and Operation Modes

4.1 Test Methodology

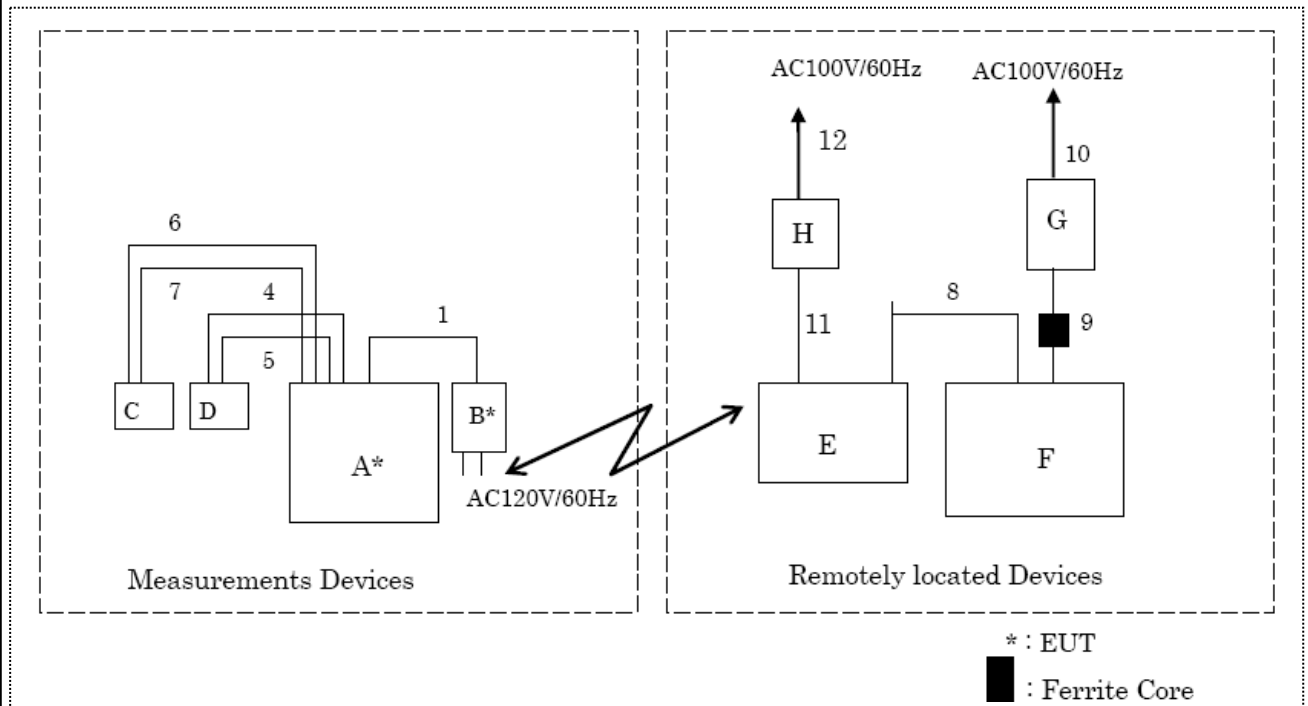
The test methodology used is based on the requirements of 47 CFR Part 15 (2007-04-05), sections 15.31, 15.33, 15.35, 15.205, 15.209 and Measurement of Digital Transmission Systems Operating under Section 15.247.

The test methods, which have been used, are based on ANSI C63.4: 2003. Details see under each test.

4.2 Physical Configuration for Testing

Refer to section: Photographs of the Test Set-Up

Figure 1: Test setup



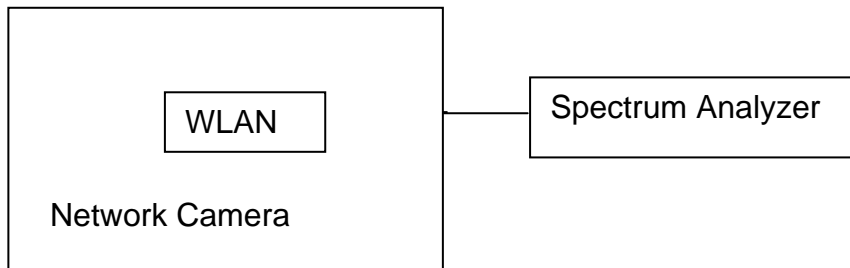
List of EUT and Support Equipment used

Symbol	Item	Model No.	[Manufacturer]	Serial No.
A	Network Camera [EUT]	BL-C121A	[Panasonic]	ES1 & ES2
B	AC Adaptor [EUT]	PQLV206	[Panasonic]	ES1
C	Relay	HB1E	[Panasonic]	-/-
D	Door Sensor	MS-102	[DELCATEC]	-/-
E	Wireless Router	BB-HGW502	[Panasonic]	-/-
F	Personal Computer	CF-Y2CW4AXS	[Panasonic]	4CKSA09212
G	Personal Computer AC Adaptor	CF-AA1652A	[Panasonic]	04101086B
H	AC Adaptor	PQLV202JP	[Panasonic]	-/-

List of Cable(s) Used

No.	Name	Length	Shield Shielded/Unshielded	Connector	Ferrite Core
1	AC Adaptor DC Cable	3.0m	Unshielded	Plastic Hood	None
4	Door Sensor Cable (Input)	2.0m	Unshielded	—	None
5	Door Sensor Cable (GND)	2.0m	Unshielded	—	None
6	Relay Cable (Power)	2.0m	Unshielded	—	None
7	Relay Cable (Output)	2.0m	Unshielded	—	None
8	LAN Cable	1.0m	Unshielded	Plastic Hood	None
9	PC AC Adaptor DC Cable	1.8m	Shielded	Plastic Hood	1
10	PC AC Adaptor AC Cable	1.8m	Unshielded	Plastic Hood	None
11	Router AC Adaptor DC Cable	1.8m	Unshielded	Plastic Hood	None
12	Router AC Adaptor AC Cable	0.5m	Unshielded	Plastic Hood	None

Conducted testing



4.3 Test Operation and Test Software

The EUT had built-in test modes.

The EUT was exercised in the operation modes listed under 3.3 as appropriate.

4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with additional accessories and auxiliary equipment specified in the above section 4.2

4.5 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

5. Test Results Conducted Testing At Antenna Port

For conducted tests were performed at the test port available on the PCB.

5.1.1 Conducted Output Power at Antenna Terminals FCC 15.247(b)(3) and RSS-210 A8.4

RESULT:**PASS**

Date of testing: 2008-08-21

Ambient temperature: 25.0 °C

Relative humidity: 42 %

Atmospheric pressure: 997hPa

Requirements:

For systems using digital modulation in the 2400-2483.5MHz band the maximum peak output power is 1 watt (30 dBm).

Test procedure:

ANSI C63.4-2003 and Measurement of Digital Transmission Systems Operating under Section 15.247.

The maximum peak output power (conducted) was measured directly (without additional cable) at the antenna connector with the power meter.

The EUT was connected to its dedicated AC Adaptor during testing.

Table 2: Conducted output power

	Power (dBm) 802.11(b) Peak				Limit (dBm)
	1Mbps	2Mbps	5.5Mbps	11Mbps	
Lo (2412MHz)	17.12	17.07	16.71	17.03	30
Mid (2437MHz)	16.90	16.88	16.79	16.65	30
Hi (2462MHz)	16.87	17.02	16.93	17.07	30

	Power (dBm) 802.11(g) Peak								Limit (dBm)
	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	
Lo (2412MHz)	21.25	21.24	21.64	21.17	21.36	21.84	21.15	21.24	30
Mid (2437MHz)	22.16	22.08	22.48	22.67	22.52	22.21	22.55	22.08	30
Hi (2462MHz)	21.23	21.45	21.80	21.72	21.78	21.36	21.26	21.43	30

The worst case configuration was found for the power output of the 802.11(b) radio at 1Mbps and 802.11(g) at 18 Mbps. These two test modes will be used for the rest of evaluation of the product.

5.1.2 6dB Bandwidth FCC 15.247(a)(2) and RSS-210 A8.2(a)

RESULT: **PASS**

Date of testing: 2008-08-22

Ambient temperature: 25.0 °C

Relative humidity: 41 %

Atmospheric pressure: 1006hPa

Requirements:

For systems using digital modulation in the 2400-2483.5MHz band the minimum 6dB bandwidth shall be at least 500 kHz.

Test procedure:

ANSI C63.4-2003

The output connector is connected to a spectrum analyzer. The spectrum analyzer resolution bandwidth was set at 100kHz. In order to make an accurate measurement, set the span greater than RBW.

The 6dBc Bandwidth was measured by using the DELTA MARKER function of the analyzer.

The EUT was connected to its dedicated AC Adaptor during testing.

Table 3: 6dB Bandwidth

Bandwidth 802.11(b) Radio		
Frequency (MHz)	Lower Limit (kHz)	6dB Bandwidth (MHz)
2412	500	12.10
2437	500	12.00
2462	500	12.10
Bandwidth 802.11(g) Radio		
Frequency (MHz)	Lower Limit (kHz)	6dB Bandwidth (MHz)
2412	500	16.60
2437	500	16.50
2462	500	16.50

Figure 2: 6dB Bandwidth of 2412MHz 802.11(b) (Channel 1)

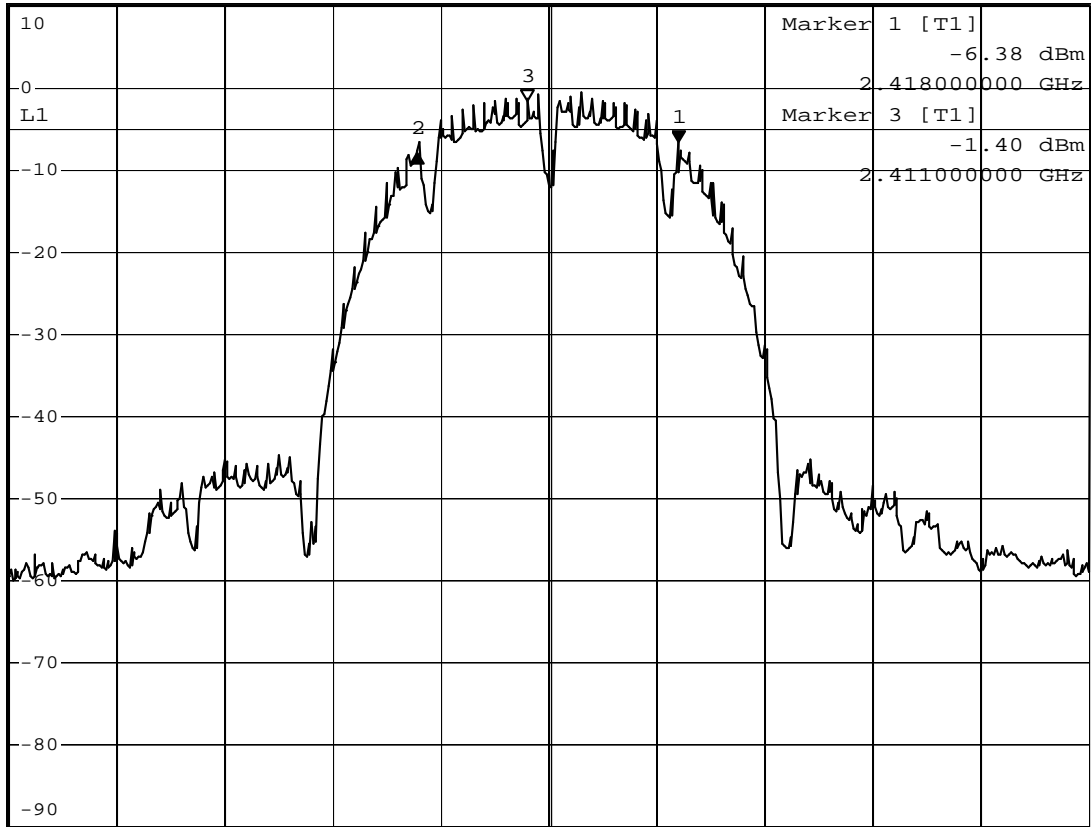


*RBW 100 kHz Delta 2 [T1]
*VBW 100 kHz -1.39 dB
SWT 10 ms -12.10000000 MHz

Ref 10 dBm

*Att 20 dB

1 PK
MAXH



Center 2.412 GHz

5 MHz/

Span 50 MHz

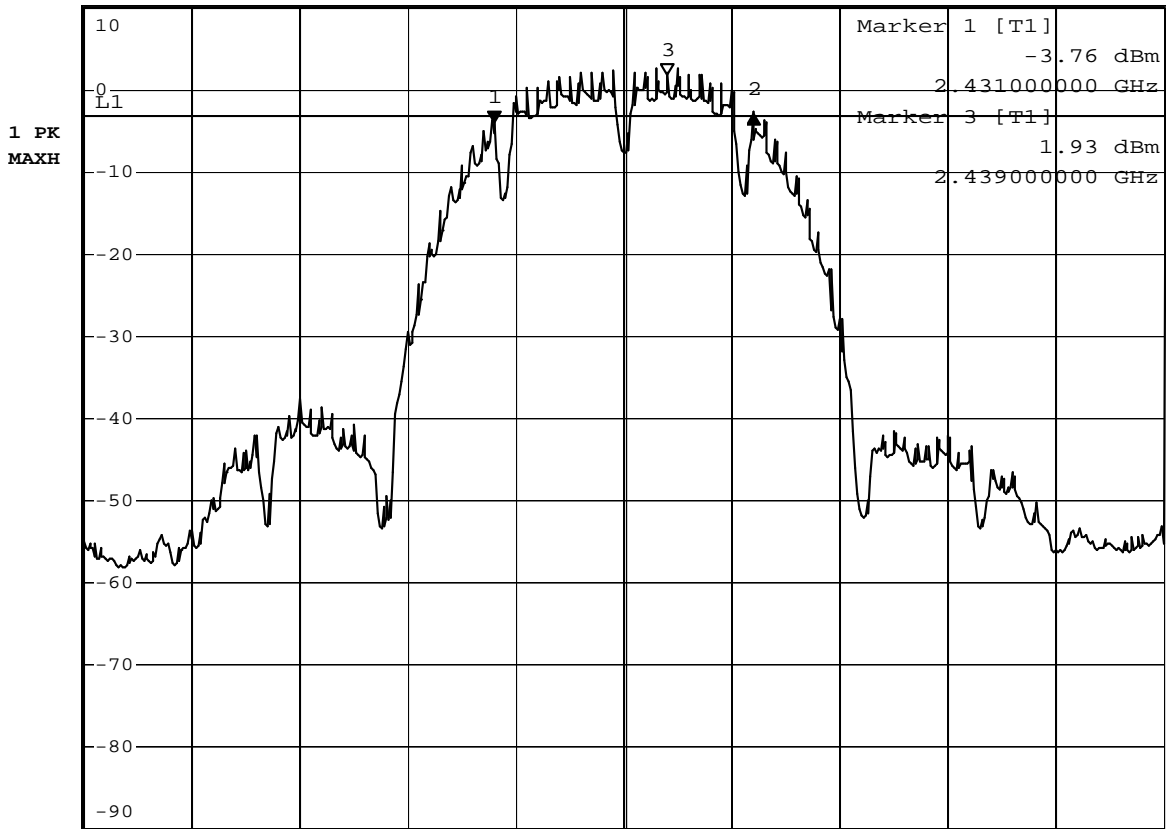
Comment A: BL-C121A ch 1 1Mbps{
FCC 6db bandwidth

Date: 22.AUG.2008 09:57:21

Figure 3: 6dB Bandwidth of 2437MHz 802.11(b) (Channel 6)



*RBW 100 kHz Delta 2 [T1]
*VBW 100 kHz 1.10 dB
Ref 10 dBm *Att 20 dB SWT 10 ms 12.00000000 MHz



Center 2.437 GHz 5 MHz/ Span 50 MHz

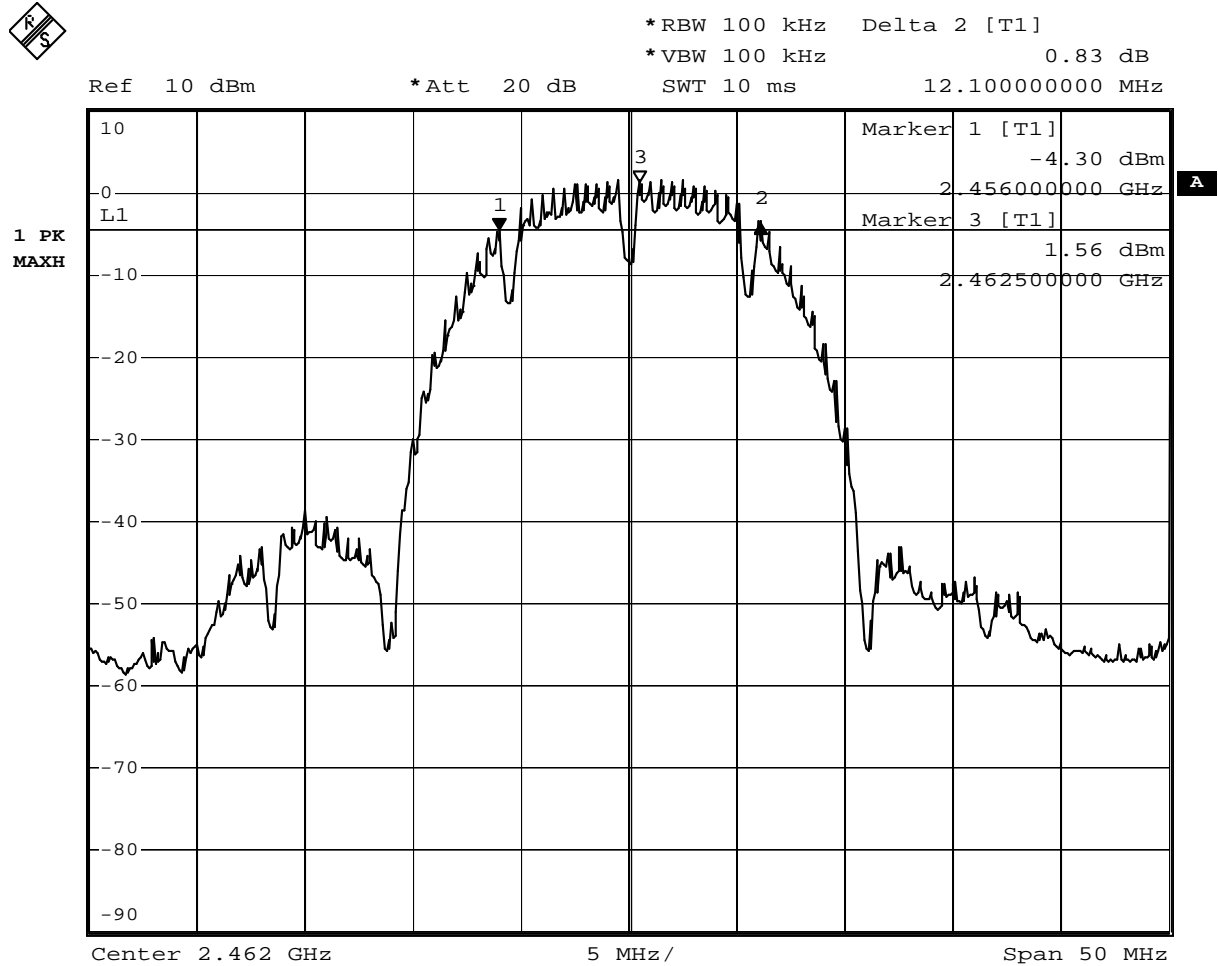
Comment A: BL-C121A ch 6 1Mbps{
FCC 6db bandwidth
Date: 22.AUG.2008 10:05:22

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 19 von 94
Page 19 of 94

Figure 4: 6dB Bandwidth of 2462MHz 802.11(b) (Channel 11)



Comment A: BL-C121A ch 11 1Mbps
FCC 6db bandwidth
Date: 22.AUG.2008 10:09:46

Figure 5: 6dB Bandwidth of 2412MHz 802.11(g) (Channel 1)



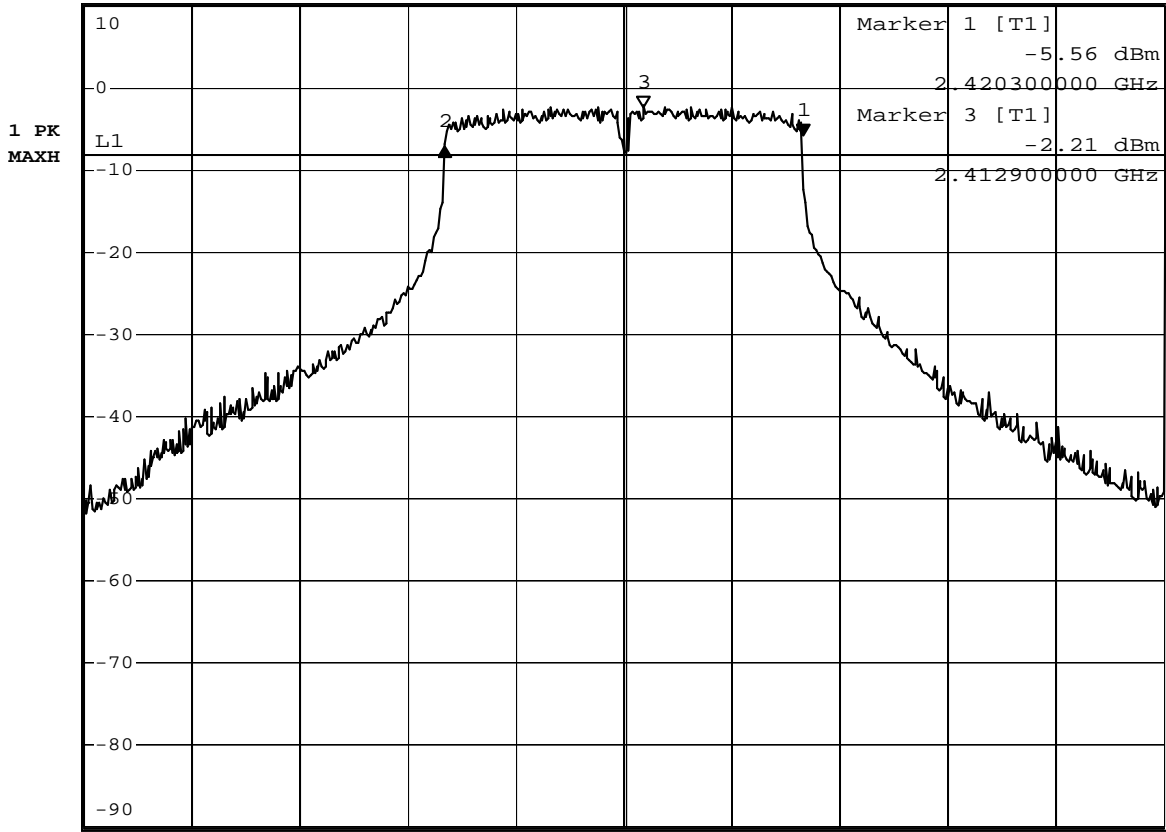
*RBW 100 kHz Delta 2 [T1]
*VBW 100 kHz -1.30 dB
SWT 10 ms -16.60000000 MHz

Ref 10 dBm

*Att 20 dB

SWT 10 ms

-16.60000000 MHz



Center 2.412 GHz

5 MHz/

Span 50 MHz

Comment A: BL-C121A ch 1 18Mbps
FCC 6db bandwidth

Date: 22.AUG.2008 10:13:39

Figure 6: 6dB Bandwidth of 2437MHz 802.11(g) (Channel 6)

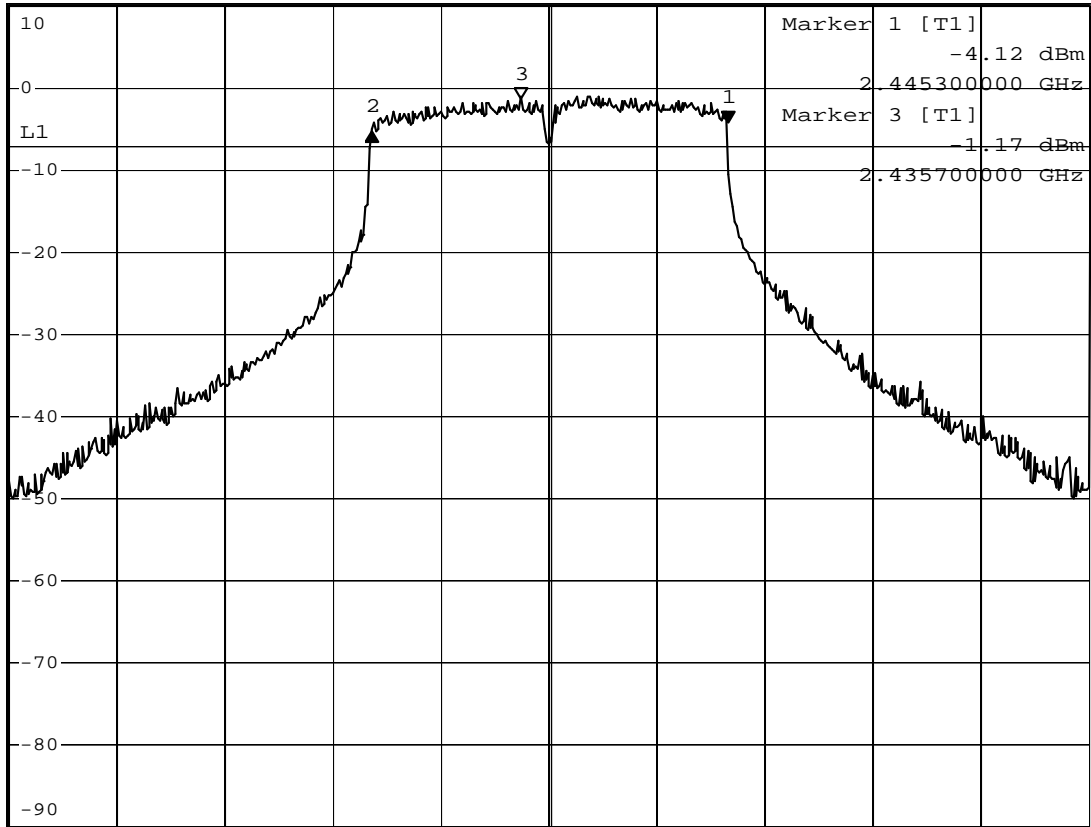


*RBW 100 kHz Delta 2 [T1]
*VBW 100 kHz -0.86 dB
SWT 10 ms -16.50000000 MHz

Ref 10 dBm

*Att 20 dB

1 PK
MAXH



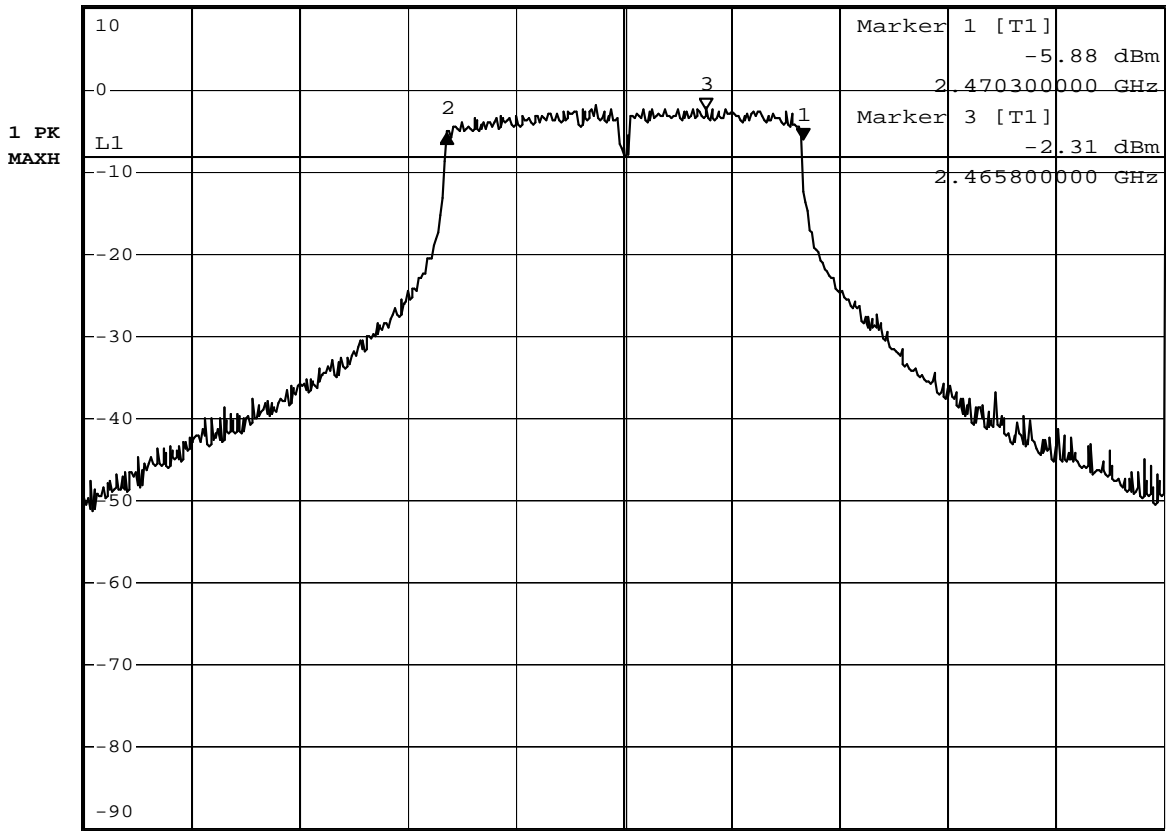
Center 2.437 GHz 5 MHz/ Span 50 MHz

Comment A: BL-C121A ch 6 18Mbps
FCC 6db bandwidth
Date: 22.AUG.2008 10:17:02

Figure 7: 6dB Bandwidth of 2462MHz 802.11(g) (Channel 11)



*RBW 100 kHz Delta 2 [T1]
*VBW 100 kHz 0.68 dB
Ref 10 dBm *Att 20 dB SWT 10 ms -16.50000000 MHz



Center 2.462 GHz 5 MHz/ Span 50 MHz

Comment A: BL-C121A ch 11 18Mbps_ωH{
FCC 6db bandwidth
Date: 22.AUG.2008 10:28:25

5.1.3 Conducted Spurious Emissions FCC 15.247(d) and RSS-210 A8.5

RESULT: PASS

Date of testing: 2008-08-21 and 2008-08-22

Ambient temperature: 25.0 °C and 25.0 °C

Relative humidity: 43 % and 41 %

Requirements:

In any 100 kHz bandwidth outside the frequency band, the RF power shall be at least 20 dB below that of the maximum in-band 100 kHz emission.

Test procedure:

ANSI C63.4-2003

A spectrum analyzer was connected to the antenna port of the transmitter. Analyzer Resolution Bandwidth was set to 100 kHz. For each channel investigated, the in-band and out-of-band emission measurements were performed. The out-of-band emissions were measured from 30 MHz to 25 GHz (10th harmonics).

The EUT was connected to its dedicated AC Adaptor during testing.

Table 4: Conducted Spurious Emissions of 2412MHz 802.11(b) (Channel 1)

Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2416.00	1.35	1.17	2.52	N/A	N/A
94.02	-54.55	0.23	-54.32	-17.48	36.83
674.08	-38.52	0.61	-37.91	-17.48	20.43
2480.00	-52.07	1.19	-50.88	-17.48	33.40
9650.00	-48.28	2.44	-45.84	-17.48	28.36
15420.00	-52.72	2.95	-49.77	-17.48	32.28
24770.00	-50.38	5.03	-45.35	-17.48	27.87

Notes : 1) Limit = (Reading fundamental) + (Correction factor) – 20

2) Emission level = (Reading) + (Correction factor)

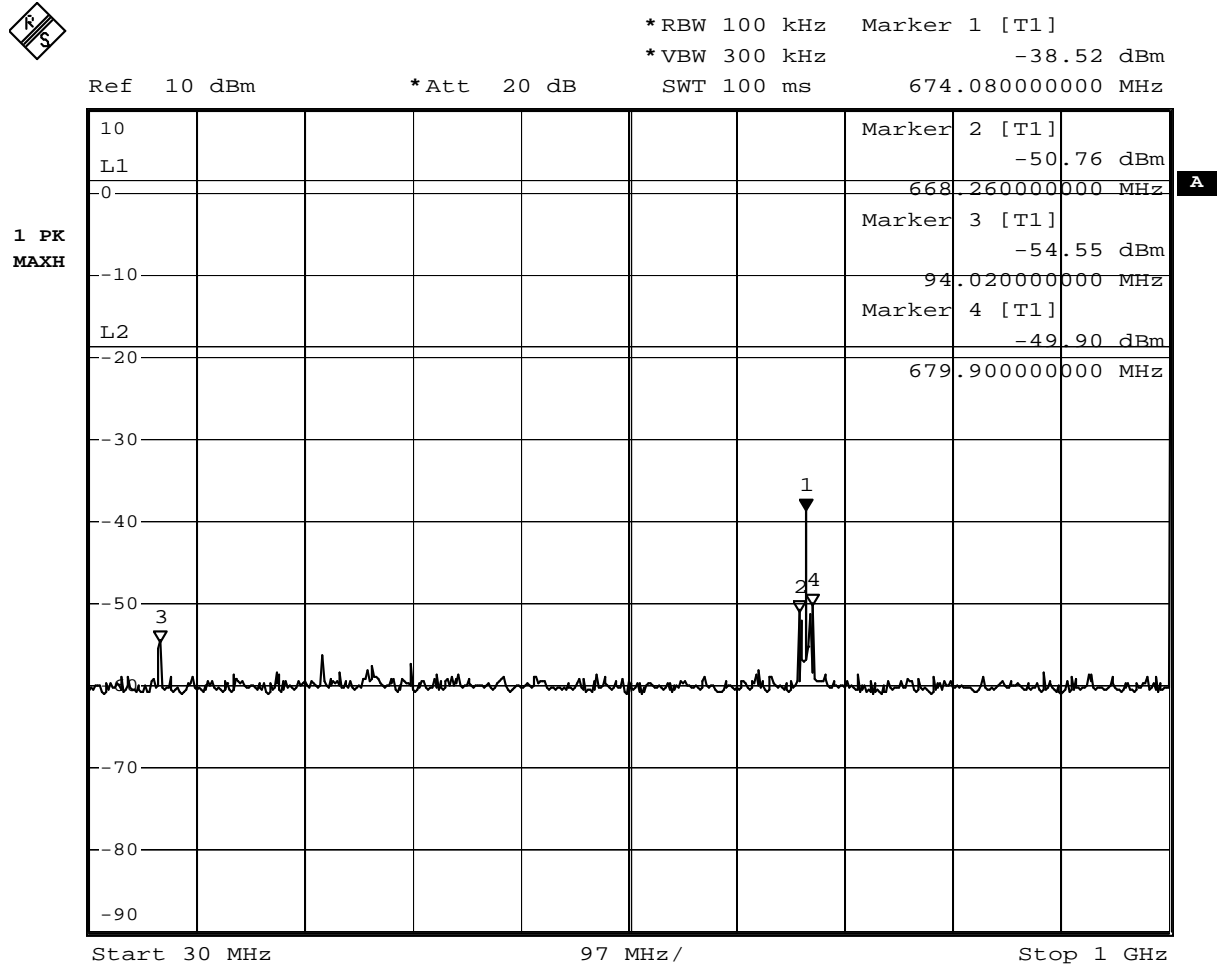
3) Correction factor = Cable loss

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 24 von 94
Page 24 of 94

Figure 8: Operating 2412MHz 802.11(b) (Channel 1) spurious from 30MHz to 1GHz



Comment A: BL-C121A ch 1 1Mbps{
 FCC spurious emission L1=1.35 L2=-18.65
 Date: 22.AUG.2008 10:46:32

Produkte
Products

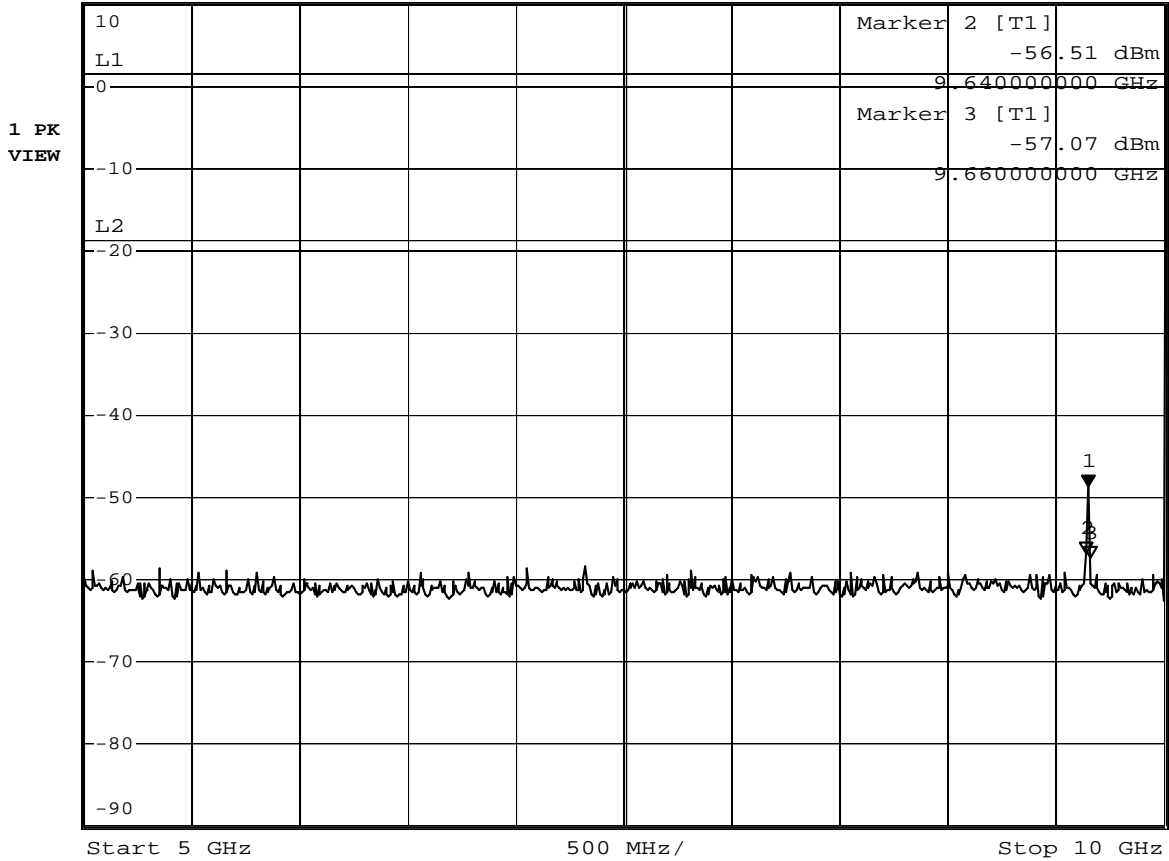
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 26 von 94
Page 26 of 94

Figure 10: Operating 2412MHz 802.11(b) (Channel 1) spurious from 5GHz to 10GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] -48.28 dBm
SWT 500 ms 9.650000000 GHz



Comment A: BL-C121A ch 1 1Mbps1 PK
FCC spurious emission L1=1.35 L2=-18.65
Date: 22.AUG.2008 10:48:58

Figure 11: Operating 2412MHz 802.11(b) (Channel 1) spurious from 10GHz to 20GHz

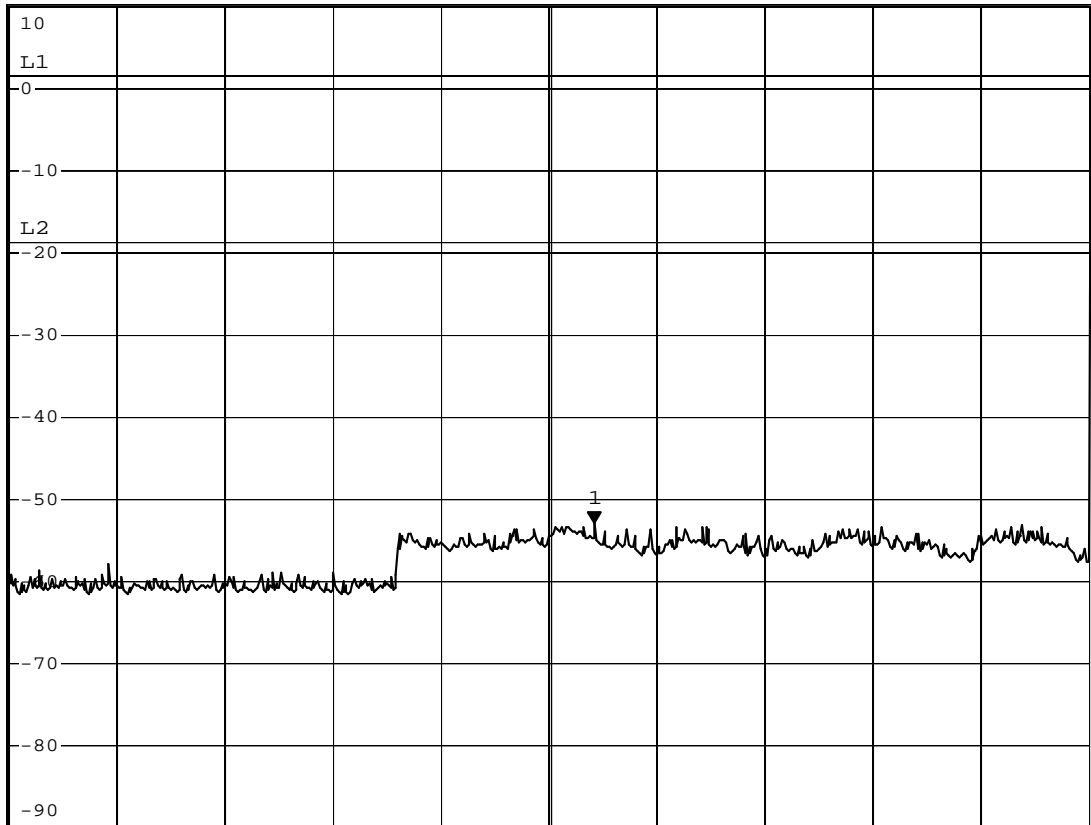


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -52.72 dBm
SWT 1 s 15.42000000 GHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 10 GHz

1 GHz/

Stop 20 GHz

Comment A: BL-C121A ch 1 1Mbps1 PK
FCC spurious emission L1=1.35 L2=-18.65
Date: 22.AUG.2008 10:50:16

Figure 12: Operating 2412MHz 802.11(b) (Channel 1) spurious from 20GHz to 25GHz

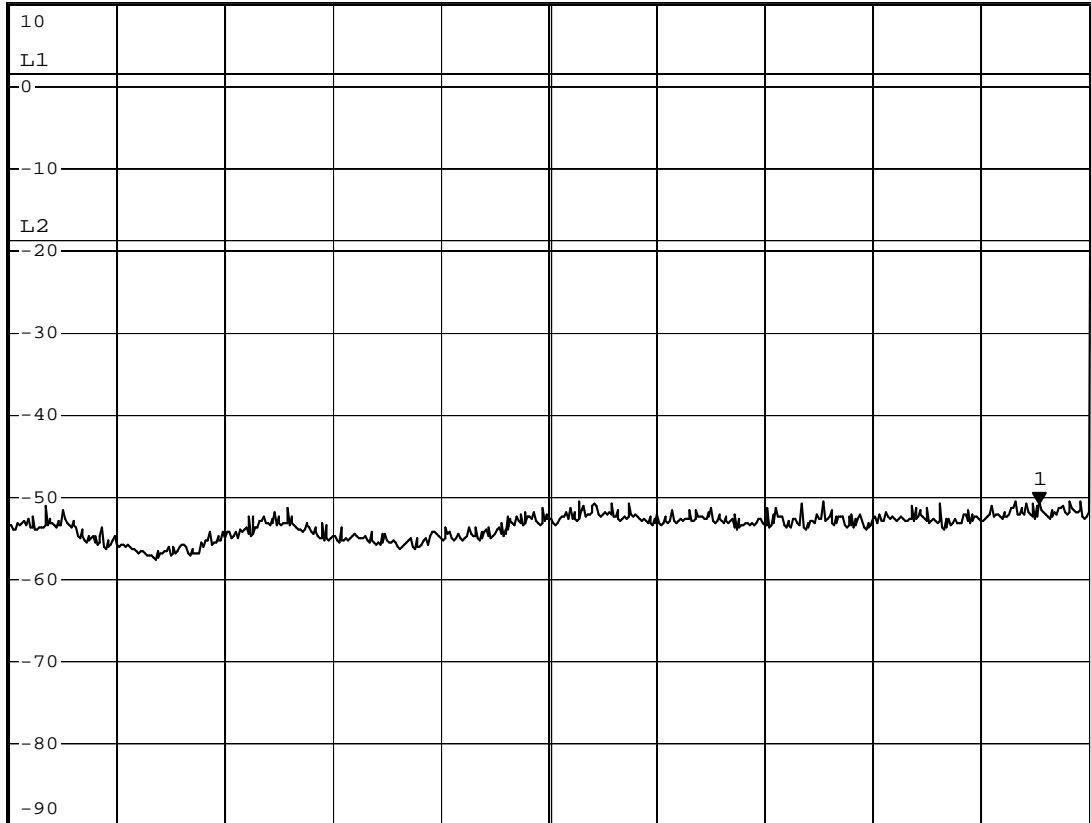


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -50.38 dBm
SWT 500 ms 24.770000000 GHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 20 GHz

500 MHz/

Stop 25 GHz

Comment A: BL-C121A ch 1 1Mbps1 PK
FCC spurious emission L1=1.35 L2=-18.65

Date: 22.AUG.2008 10:51:07

Prüfbericht - Nr.: 12701036 001
Seite 29 von 94
Test Report No.:
Page 29 of 94
Table 5: Conducted Spurious Emissions of 2437MHz 802.11(b) (Channel 6)

Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2432.00	2.11	1.17	3.28	N/A	N/A
117.30	-55.60	0.26	-55.34	-16.72	38.61
695.42	-52.41	0.63	-51.78	-16.72	35.06
2360.00	-56.35	1.15	-55.20	-16.72	38.48
9750.00	-50.77	2.49	-48.28	-16.72	31.55
15360.00	-52.05	2.96	-49.09	-16.72	32.37
24850.00	-50.65	3.66	-46.99	-16.72	30.27

Notes : 1) Limit = (Reading fundamental) + (Correction factor) – 20

2) Emission level = (Reading) + (Correction factor)

3) Correction factor = Cable loss

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 30 von 94
Page 30 of 94

Figure 13: Operating 2437MHz 802.11(b) (Channel 6) spurious from 30MHz to 1GHz

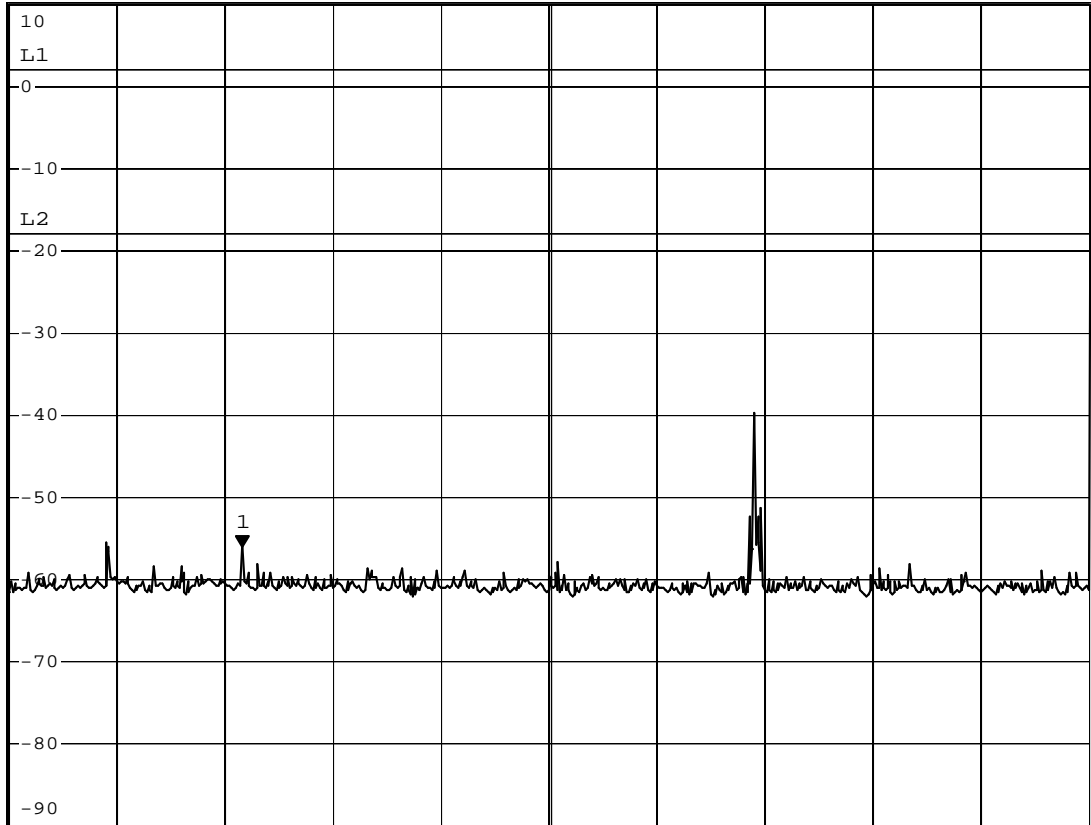


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -55.88 dBm
SWT 100 ms 239.52000000 MHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 30 MHz

97 MHz/

Stop 1 GHz

Comment A: BL-C121A ch 6 1Mbps1 PK
FCC spurious emission L1=2.11 L2=-17.89
Date: 22.AUG.2008 11:01:04

Produkte
Products

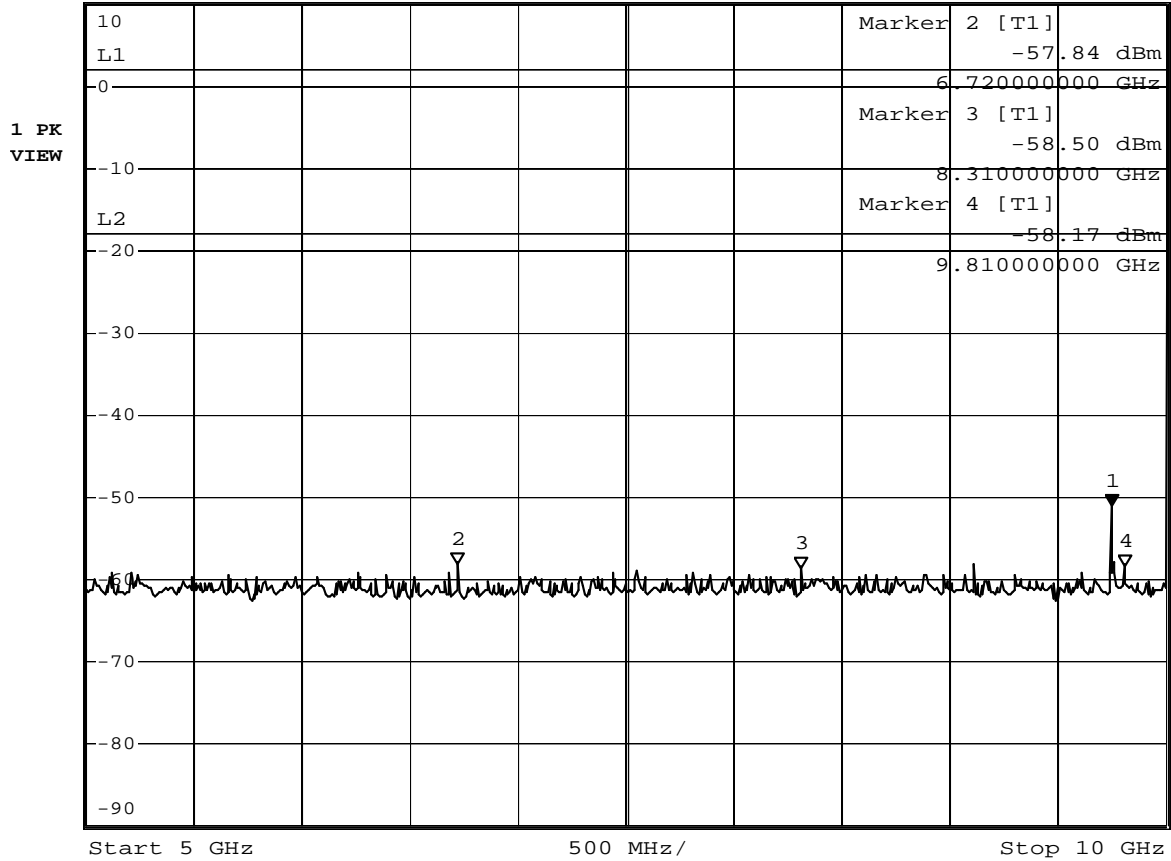
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 32 von 94
Page 32 of 94

Figure 15: Operating 2437MHz 802.11(b) (Channel 6) spurious from 5GHz to 10GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] -50.77 dBm
*VBW 300 kHz -50.77 dBm
SWT 500 ms 9.750000000 GHz



Comment A: BL-C121A ch 6 1Mbps1 PK
FCC spurious emission L1=2.11 L2=-17.89
Date: 22.AUG.2008 11:03:11

Figure 16: Operating 2437MHz 802.11(b) (Channel 6) spurious from 10GHz to 20GHz

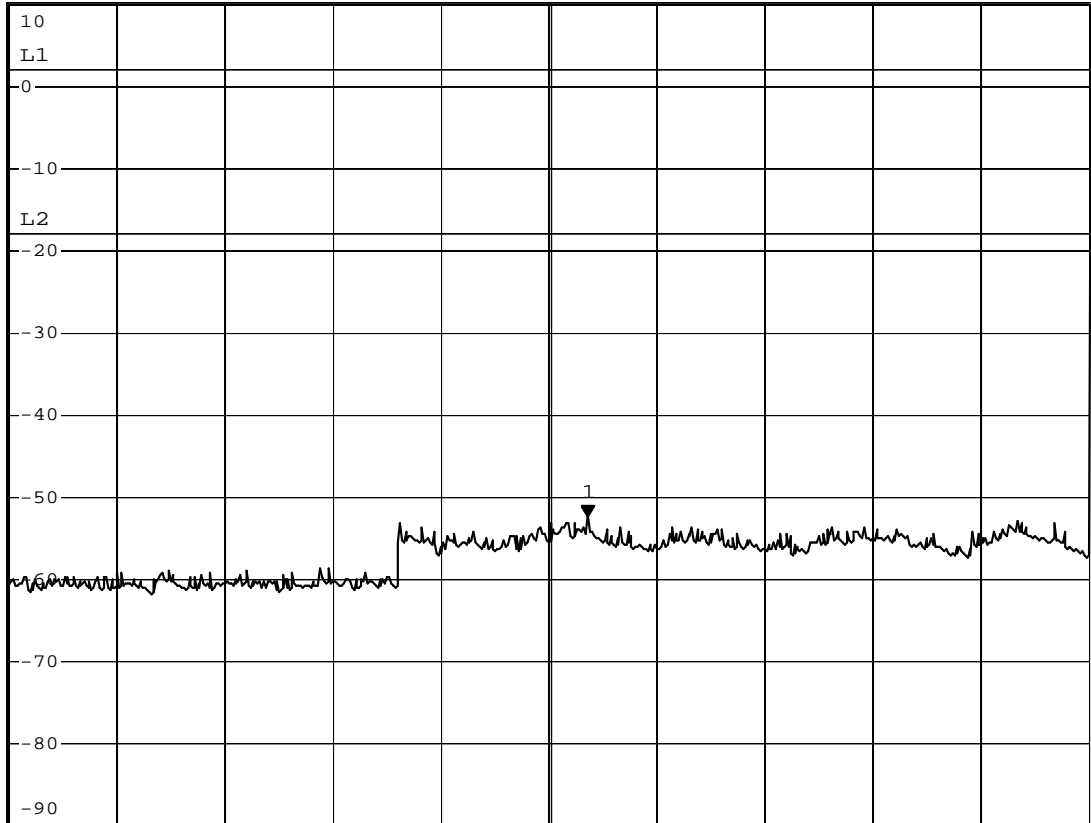


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -52.05 dBm
SWT 1 s 15.360000000 GHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 10 GHz

1 GHz/

Stop 20 GHz

Comment A: BL-C121A ch 6 1Mbps1 PK
FCC spurious emission L1=2.11 L2=-17.89
Date: 22.AUG.2008 11:03:57

Produkte
Products

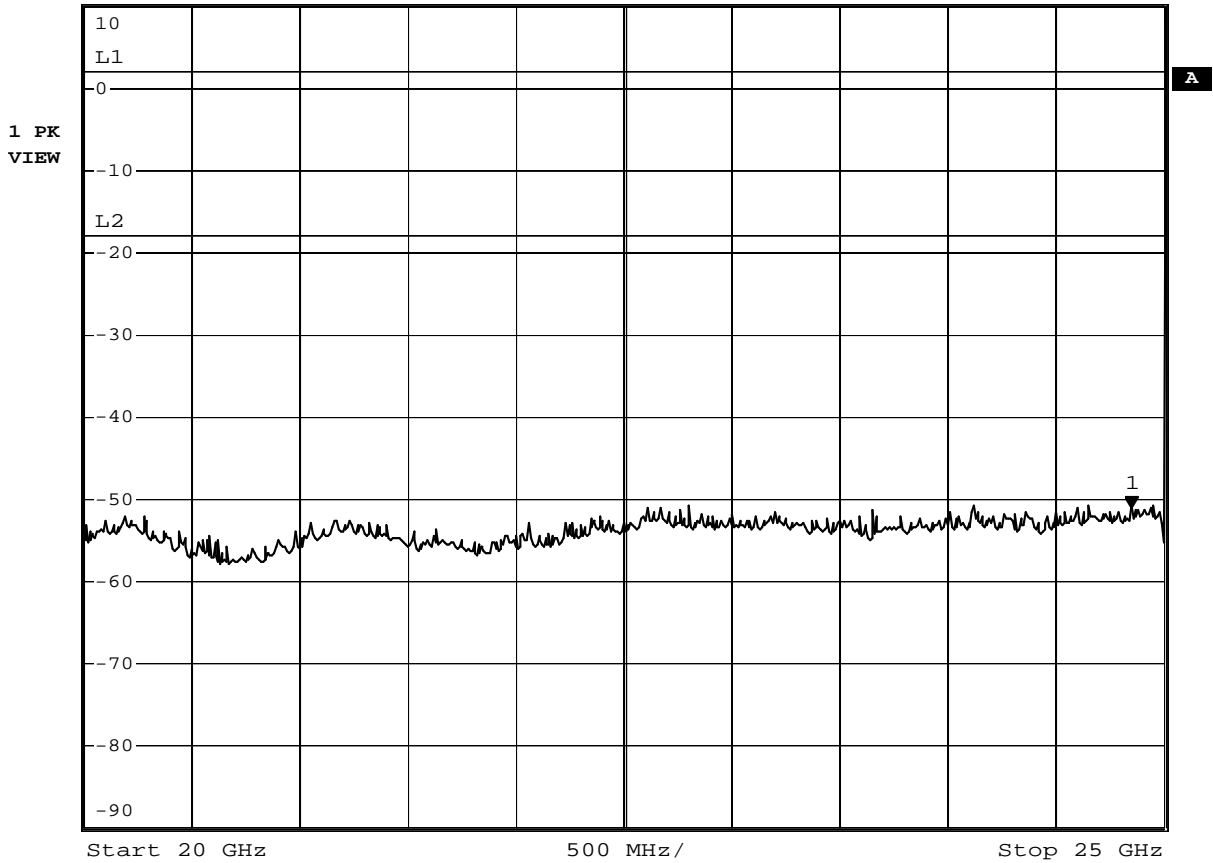
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 34 von 94
Page 34 of 94

Figure 17: Operating 2437MHz 802.11(b) (Channel 6) spurious from 20GHz to 25GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] *VBW 300 kHz -50.65 dBm
SWT 500 ms 24.850000000 GHz



Comment A: BL-C121A ch 6 1Mbps1 PK
FCC spurious emission L1=2.11 L2=-17.89
Date: 22.AUG.2008 11:04:39

Prüfbericht - Nr.: 12701036 001
Seite 35 von 94
Test Report No.:
Page 35 of 94
Table 6: Conducted Spurious Emissions of 2462MHz 802.11(b) (Channel 11)

Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2464.00	1.52	1.18	2.70	N/A	N/A
239.52	-56.66	0.37	-56.29	-17.30	38.99
724.52	-41.76	0.64	-41.12	-17.30	23.82
2536.00	-57.47	1.20	-56.27	-17.30	38.97
9850.00	-50.29	2.55	-47.74	-17.30	30.43
18060.00	-51.77	3.05	-48.72	-17.30	31.41
23720.00	-50.31	3.74	-46.57	-17.30	29.26

Notes : 1) Limit = (Reading fundamental) + (Correction factor) – 20

2) Emission level = (Reading) + (Correction factor)

3) Correction factor = Cable loss

Produkte
Products

Prüfbericht - Nr.: **12701036 001**
Test Report No.:

Seite 36 von 94
Page 36 of 94

Figure 18: Operating 2462MHz 802.11(b) (Channel 11) spurious from 30MHz to 1GHz

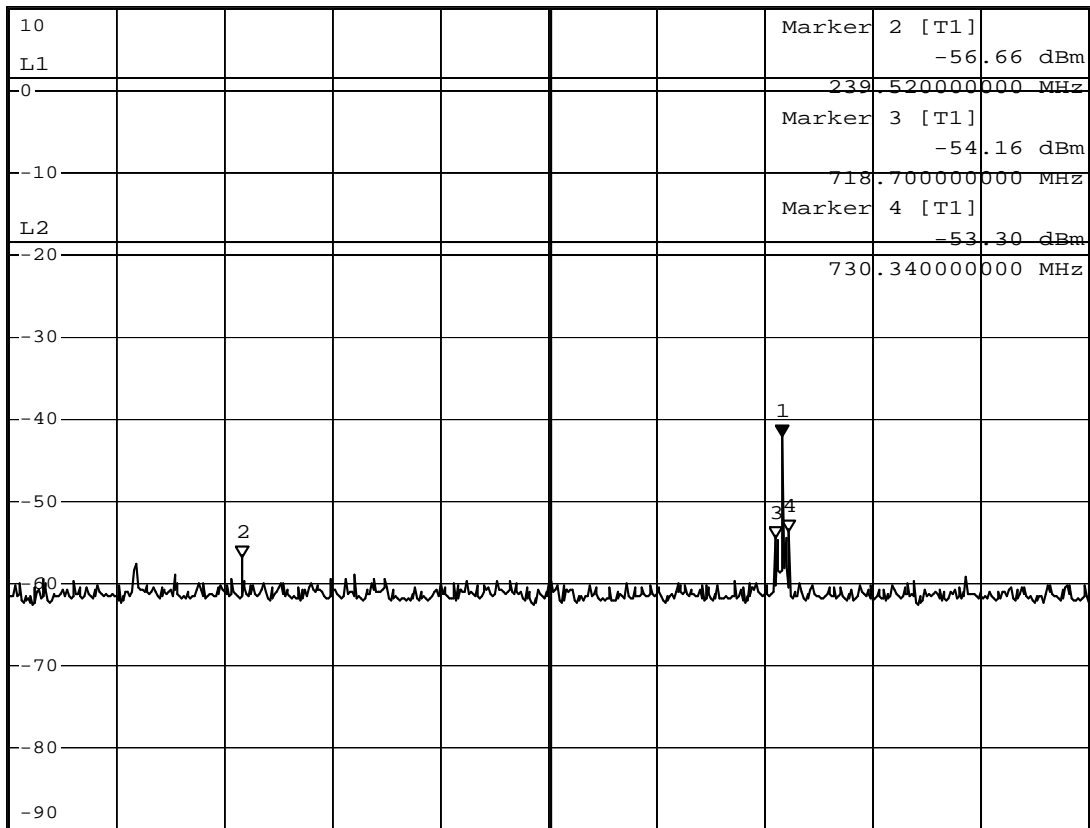


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -41.76 dBm
SWT 100 ms 724.520000000 MHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 30 MHz

97 MHz/

Stop 1 GHz

Comment A: BL-C121A ch 11 1Mbps PK
FCC spurious emission L1=1.52 L2=-18.48
Date: 22.AUG.2008 11:09:31

Produkte
Products

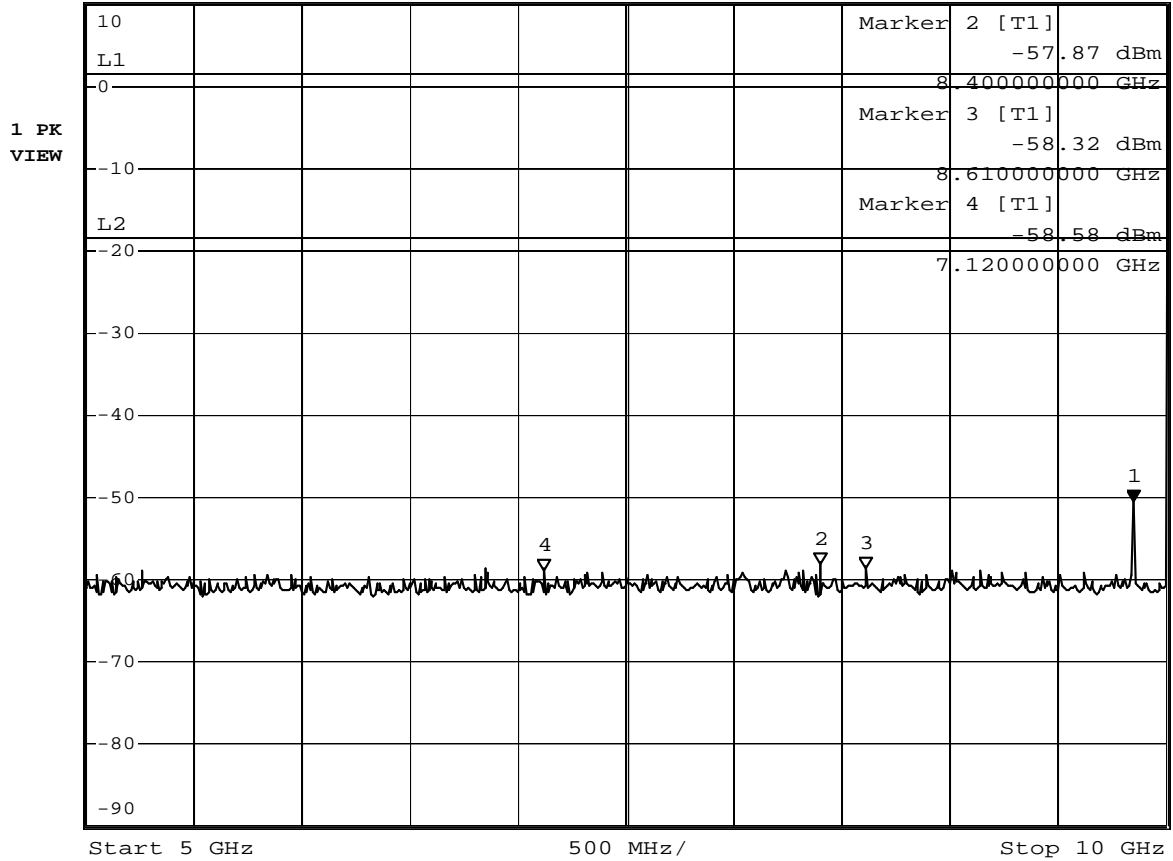
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 38 von 94
Page 38 of 94

Figure 20: Operating 2462MHz 802.11(b) (Channel 11) spurious from 5GHz to 10GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] -50.29 dBm
*VBW 300 kHz SWT 500 ms 9.850000000 GHz



Comment A: BL-C121A ch 11 1Mbps PK
FCC spurious emission L1=1.52 L2=-18.48
Date: 22.AUG.2008 11:11:00

Figure 21: Operating 2462MHz 802.11(b) (Channel 11) spurious from 10GHz to 20GHz

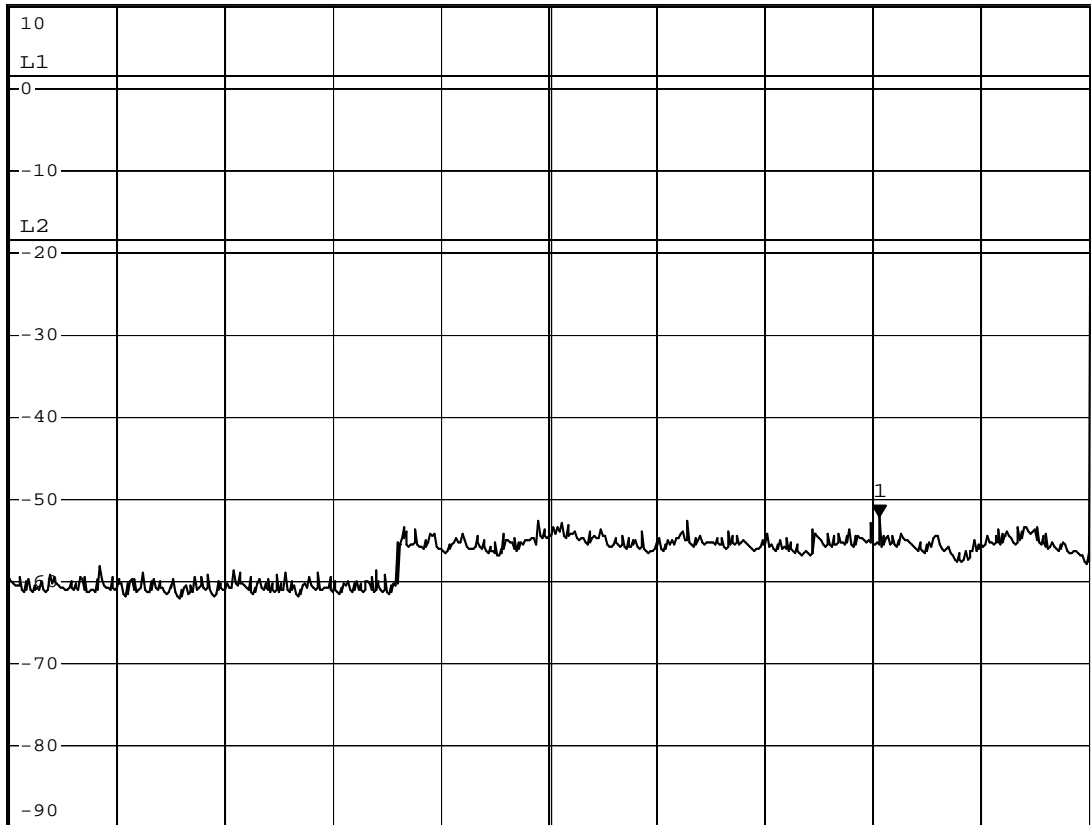


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -51.77 dBm
SWT 1 s 18.060000000 GHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 10 GHz

1 GHz/

Stop 20 GHz

Comment A: BL-C121A ch 11 1Mbps PK
FCC spurious emission L1=1.52 L2=-18.48
Date: 22.AUG.2008 11:12:15

Produkte
Products

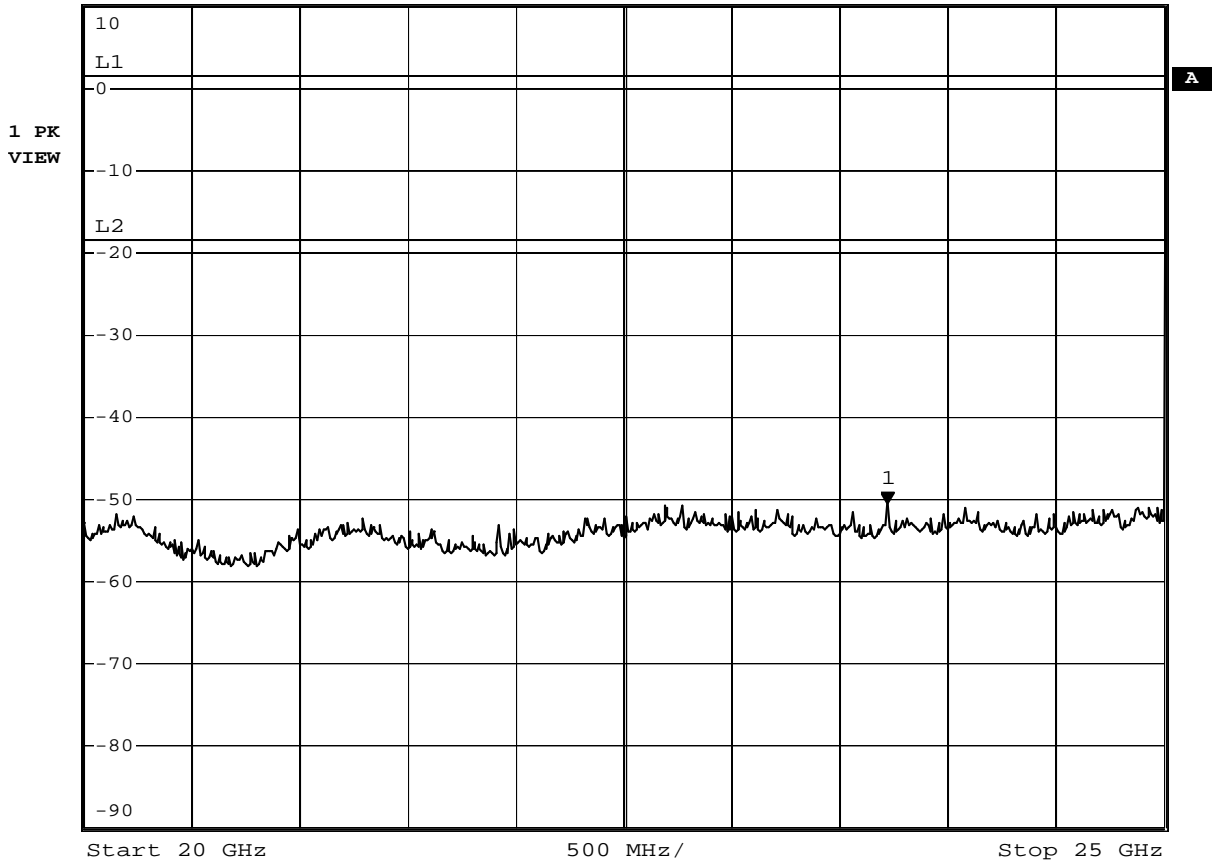
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 40 von 94
Page 40 of 94

Figure 22: Operating 2462MHz 802.11(b) (Channel 11) spurious from 20GHz to 25GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] *VBW 300 kHz -50.31 dBm
SWT 500 ms 23.72000000 GHz



Comment A: BL-C121A ch 11 1Mbps PK
FCC spurious emission L1=1.52 L2=-18.48
Date: 22.AUG.2008 11:13:06

Prüfbericht - Nr.: 12701036 001
Seite 41 von 94
Test Report No.:
Page 41 of 94
Table 7: Conducted Spurious Emissions of 2412MHz 802.11(g) (Channel 1)

Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2408.00	-3.42	1.16	-2.26	N/A	N/A
674.08	-51.84	0.61	-51.23	-22.26	28.97
1608.00	-50.67	0.95	-49.72	-22.26	27.47
9650.00	-57.24	2.44	-54.80	-22.26	32.54
15180.00	-53.36	2.83	-50.53	-22.26	28.27
24140.00	-50.44	3.83	-46.61	-22.26	24.35

Notes : 1) Limit = (Reading fundamental) + (Correction factor) – 20

2) Emission level = (Reading) + (Correction factor)

3) Correction factor = Cable loss

Produkte
Products

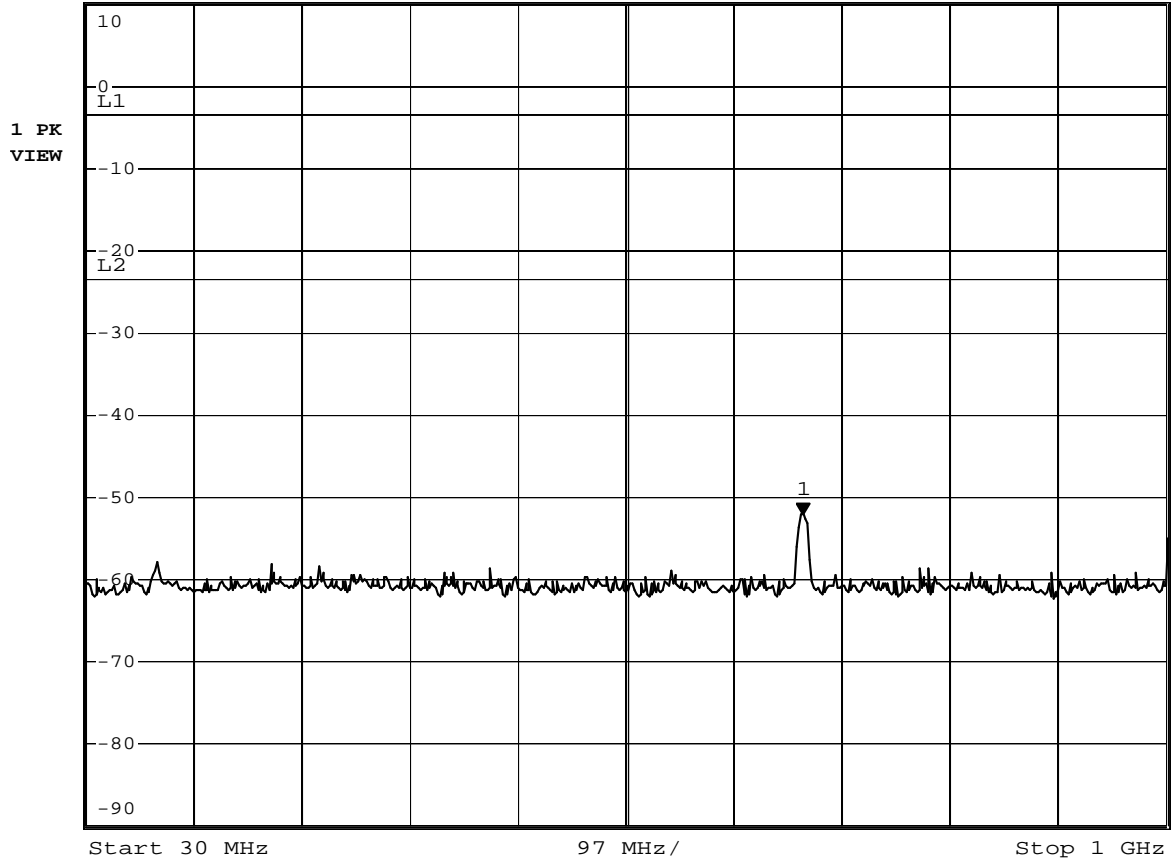
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 42 von 94
Page 42 of 94

Figure 23: Operating 2412MHz 802.11(g) (Channel 1) spurious from 30MHz to 1GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] *VBW 300 kHz -51.84 dBm
SWT 100 ms 674.080000000 MHz



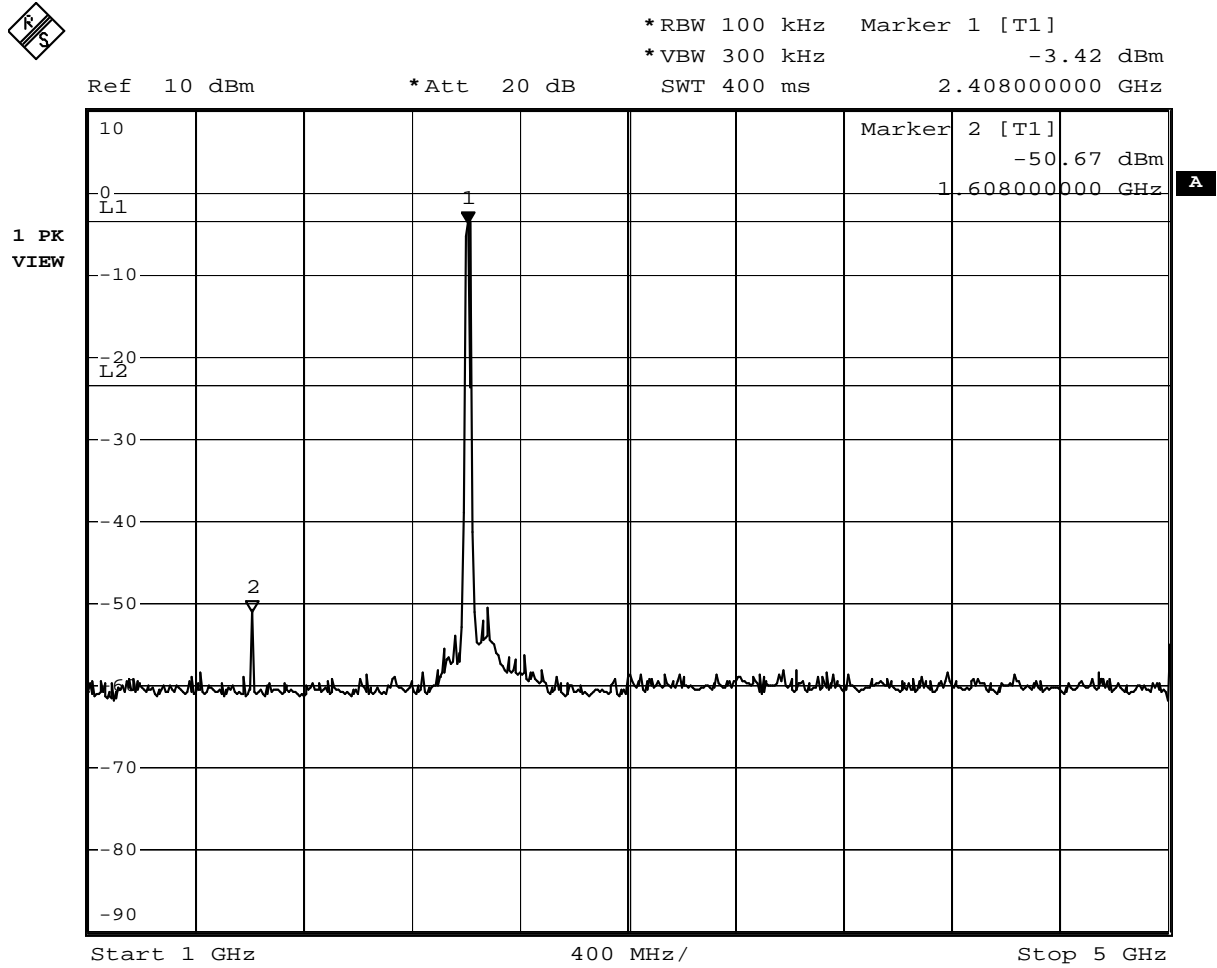
Comment A: BL-C121A ch 1 18Mbps f -
FCC spurious L1=-3.42 L2=-23.42
Date: 21.AUG.2008 16:00:38

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 43 von 94
Page 43 of 94

Figure 24: Operating 2412MHz 802.11(g) (Channel 1) spurious from 1GHz to 5GHz



Comment A: BL-C121A ch 1 18Mbps f -
FCC spurious L1=-3.42 L2=-23.42
Date: 21.AUG.2008 16:00:02

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 44 von 94
Page 44 of 94

Figure 25: Operating 2412MHz 802.11(g) (Channel 1) spurious from 5GHz to 10GHz

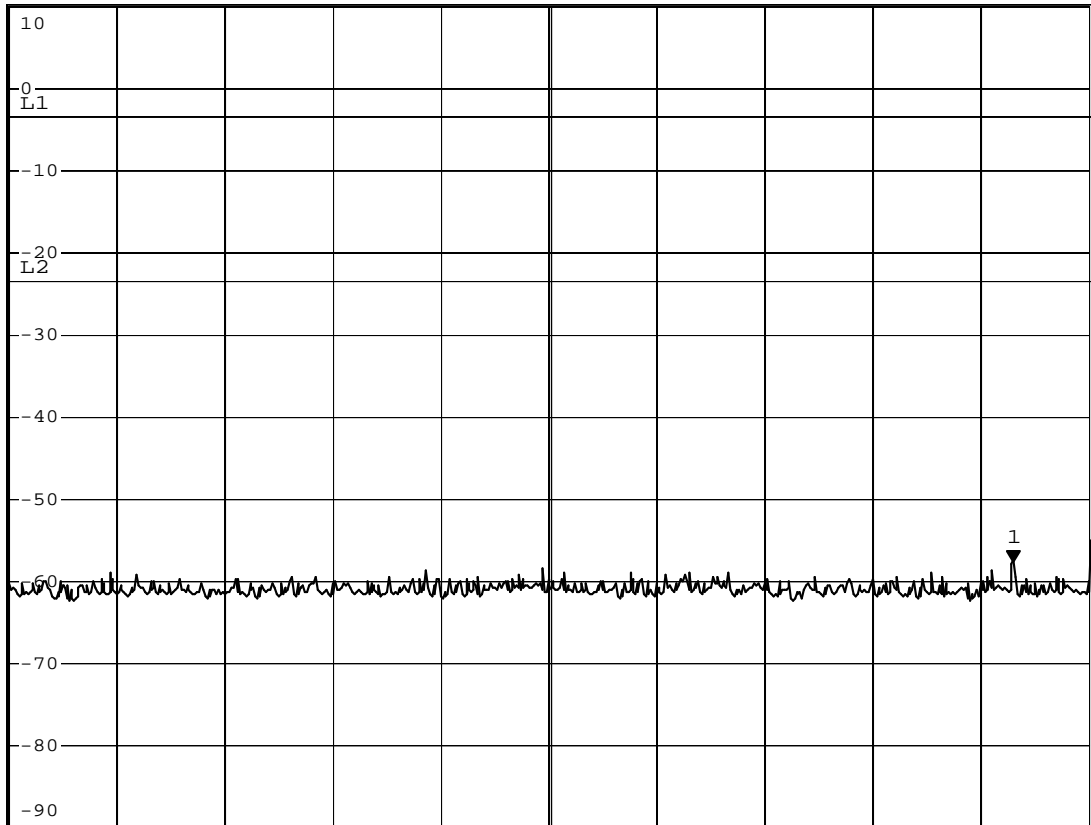


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -57.24 dBm
SWT 500 ms 9.650000000 GHz

Ref 10 dBm

*Att 20 dB

1 PK
VIEW



Start 5 GHz

500 MHz/

Stop 10 GHz

Comment A: BL-C121A ch 1 18Mbps f -
FCC spurious L1=-3.42 L2=-23.42
Date: 21.AUG.2008 16:01:03

Produkte
Products

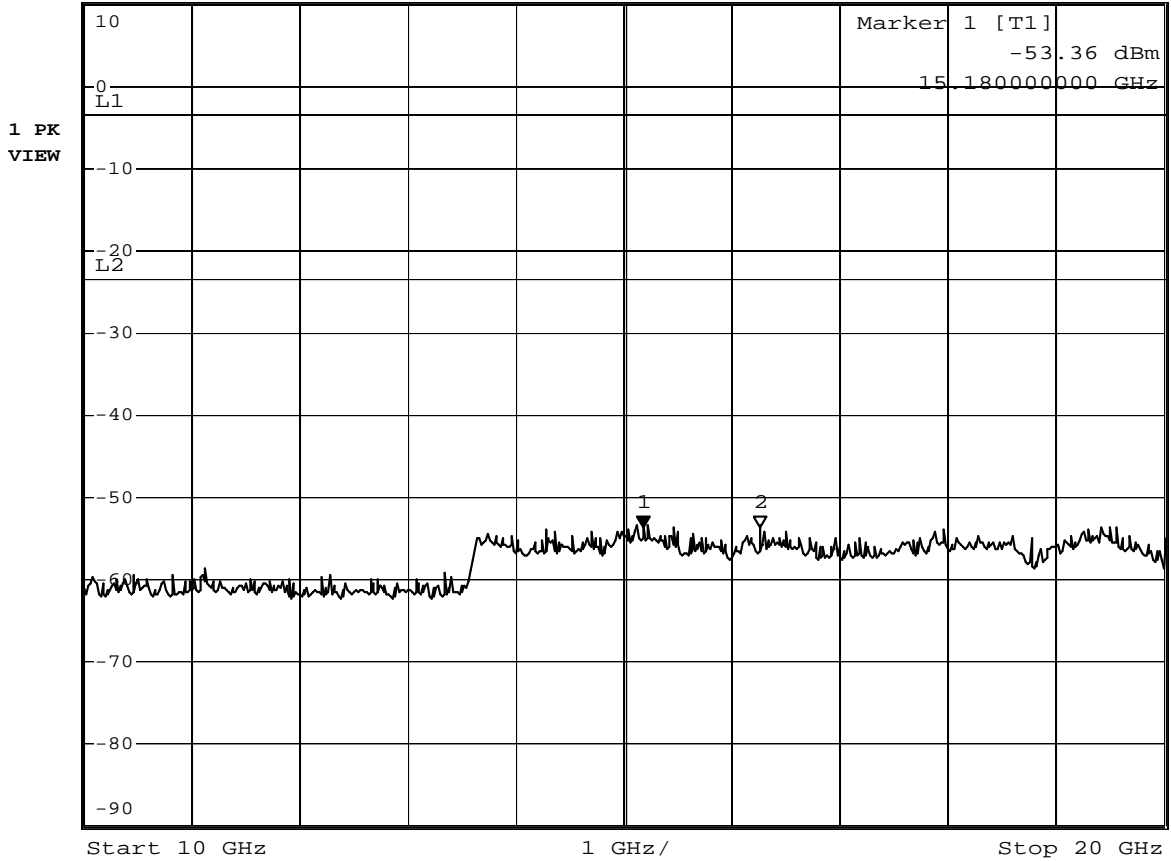
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 45 von 94
Page 45 of 94

Figure 26: Operating 2412MHz 802.11(g) (Channel 1) spurious from 10GHz to 20GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 2 [T1] -53.48 dBm
SWT 1 s 16.260000000 GHz



Comment A: BL-C121A ch 1 18Mbps f -
FCC spurious L1=-3.42 L2=-23.42
Date: 21.AUG.2008 16:01:34

Produkte
Products

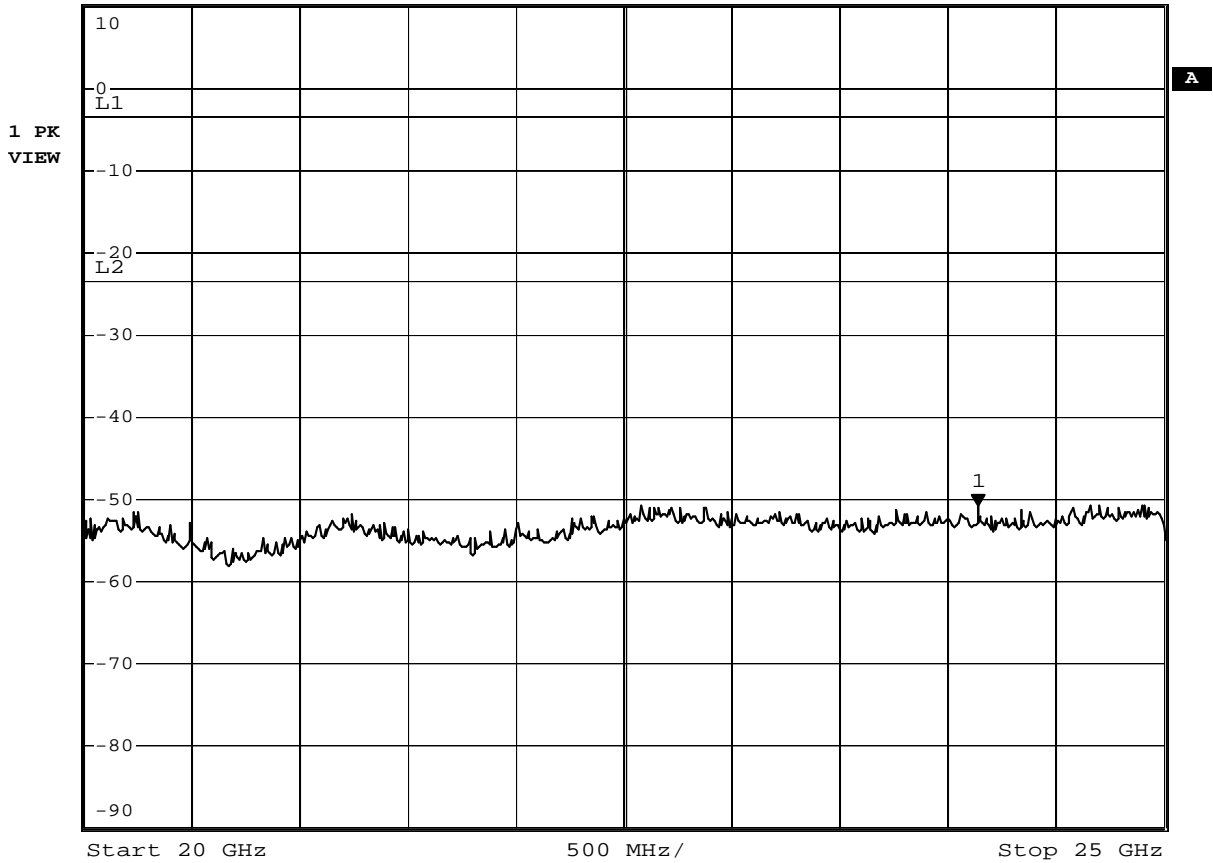
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 46 von 94
Page 46 of 94

Figure 27: Operating 2412MHz 802.11(g) (Channel 1) spurious from 20GHz to 25GHz



*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -50.44 dBm
Ref 10 dBm *Att 20 dB SWT 500 ms 24.14000000 GHz



Comment A: BL-C121A ch 1 18Mbps f -
FCC spurious L1=-3.42 L2=-23.42
Date: 21.AUG.2008 16:02:29

Prüfbericht - Nr.: 12701036 001
Seite 47 von 94
Test Report No.:
Page 47 of 94
Table 8: Conducted Spurious Emissions of 2437MHz 802.11(g) (Channel 6)

Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2440.00	-0.52	1.17	0.65	N/A	N/A
699.30	-48.04	0.63	-47.41	-19.35	28.06
1624.00	-51.06	0.95	-50.11	-19.35	30.76
9760.00	-55.90	2.49	-53.41	-19.35	34.06
15260.00	-53.11	2.88	-50.23	-19.35	30.88
24810.00	-50.85	3.66	-47.19	-19.35	27.85

Notes : 1) Limit = (Reading fundamental) + (Correction factor) – 20

2) Emission level = (Reading) + (Correction factor)

3) Correction factor = Cable loss

Produkte
Products

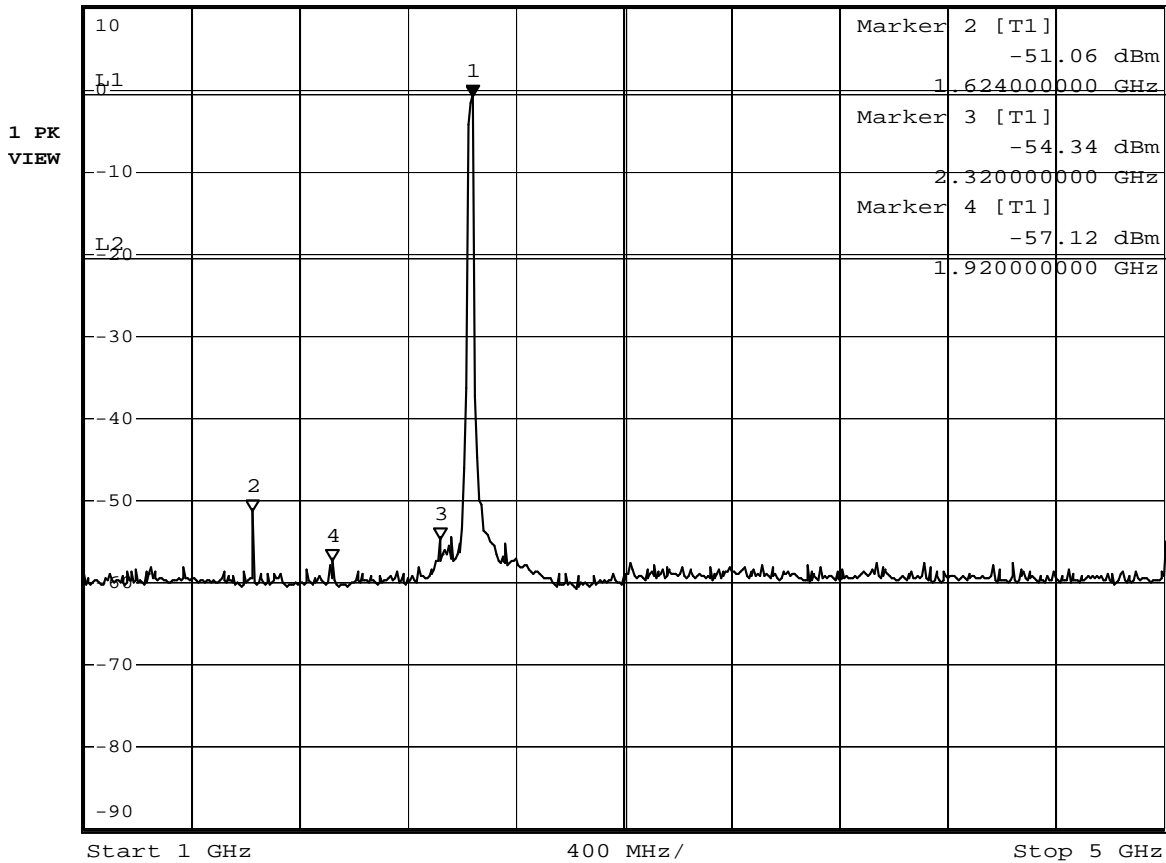
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 49 von 94
Page 49 of 94

Figure 29: Operating 2437MHz 802.11(g) (Channel 6) spurious from 1GHz to 5GHz



*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -0.52 dBm
Ref 10 dBm *Att 20 dB SWT 400 ms 2.440000000 GHz



Comment A: BL-C121A ch 6 18Mbps f -
FCC spurious L1=-0.52 L2=-20.52
Date: 21.AUG.2008 16:10:43

Produkte
Products

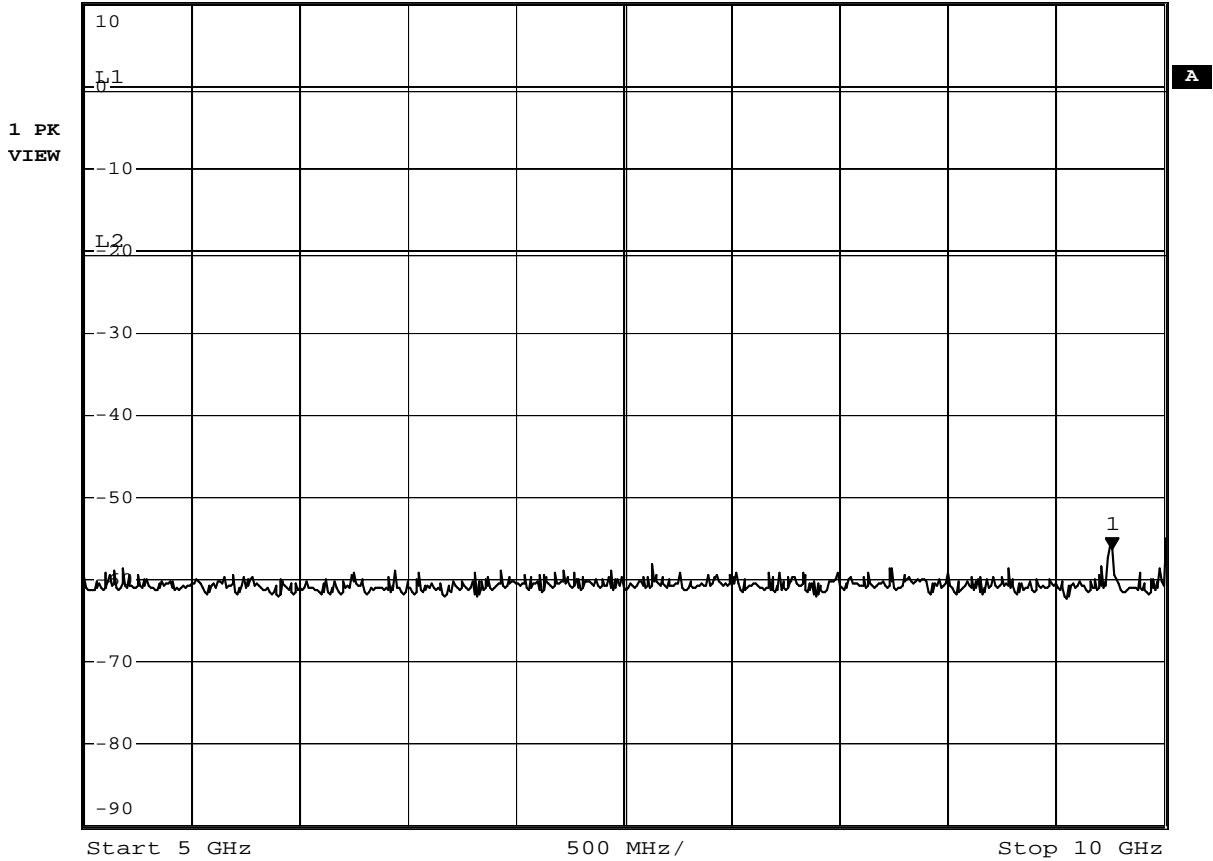
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 50 von 94
Page 50 of 94

Figure 30: Operating 2437MHz 802.11(g) (Channel 6) spurious from 5GHz to 10GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 1 [T1] *VBW 300 kHz -55.90 dBm
SWT 500 ms 9.760000000 GHz



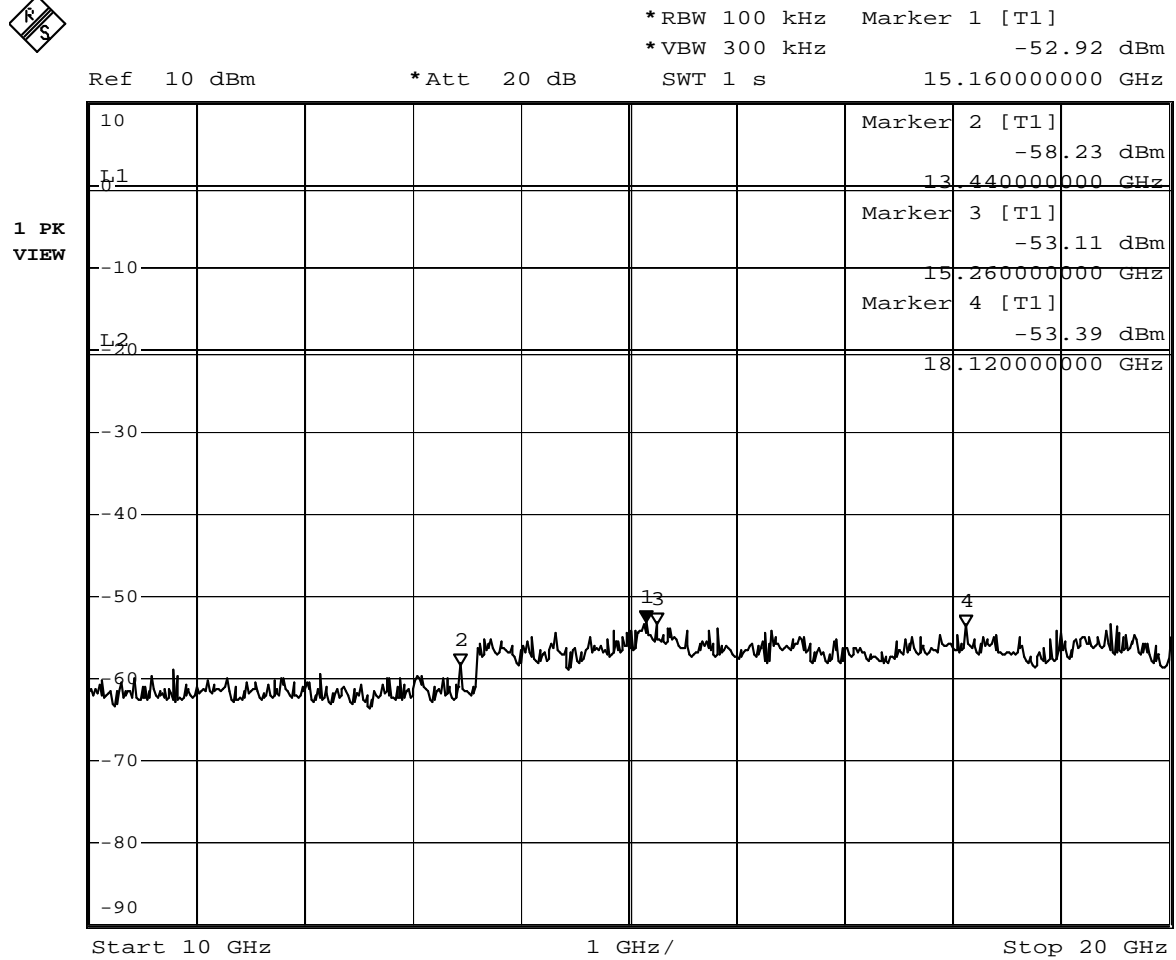
Comment A: BL-C121A ch 6 18Mbps f -
FCC spurious L1=-0.52 L2=-20.52
Date: 21.AUG.2008 16:12:13

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 51 von 94
Page 51 of 94

Figure 31: Operating 2437MHz 802.11(g) (Channel 6) spurious from 10GHz to 20GHz

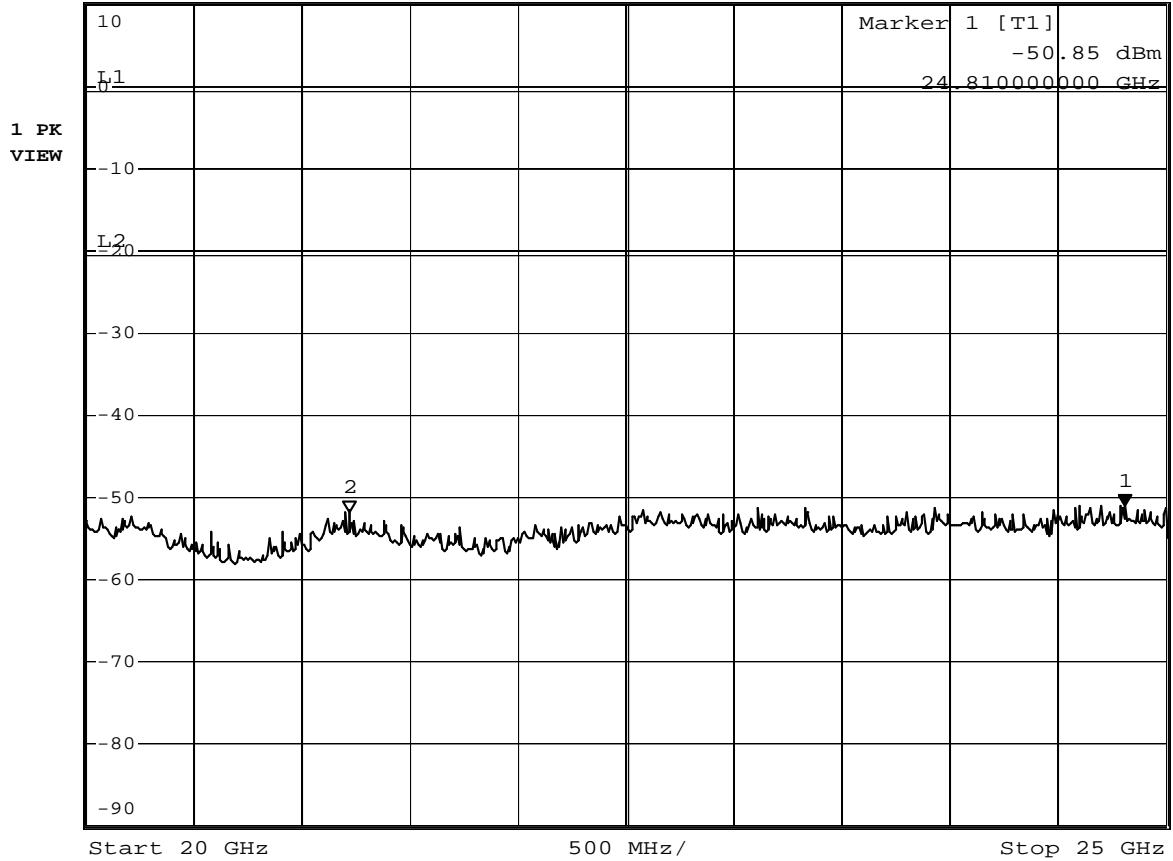


Comment A: BL-C121A ch 6 18Mbps f -
FCC spurious L1=-0.52 L2=-20.52
Date: 21.AUG.2008 16:13:28

Figure 32: Operating 2437MHz 802.11(g) (Channel 6) spurious from 20GHz to 25GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 2 [T1] *VBW 300 kHz -51.50 dBm
SWT 500 ms 21.220000000 GHz



Comment A: BL-C121A ch 6 18Mbps f -
FCC spurious L1=-0.52 L2=-20.52
Date: 21.AUG.2008 16:14:23

Prüfbericht - Nr.: 12701036 001
Seite 53 von 94
Test Report No.:
Page 53 of 94
Table 9: Conducted Spurious Emissions of 2462MHz 802.11(g) (Channel 11)

Frequency (MHz)	Reading (dBm)	Correction factor (dB)	Emission level (dBm)	Limit (dBm)	Margin (dB)
2464.00	-2.40	1.18	-1.22	N/A	N/A
724.52	-50.79	0.64	-50.15	-21.22	28.93
1640.00	-51.88	0.97	-50.91	-21.22	29.69
8080.00	-57.08	2.25	-54.83	-21.22	33.60
16500.00	-52.59	2.92	-49.67	-21.22	28.44
24920.00	-50.44	3.78	-46.66	-21.22	25.43

Notes : 1) Limit = (Reading fundamental) + (Correction factor) – 20

2) Emission level = (Reading) + (Correction factor)

3) Correction factor = Cable loss

Produkte
Products

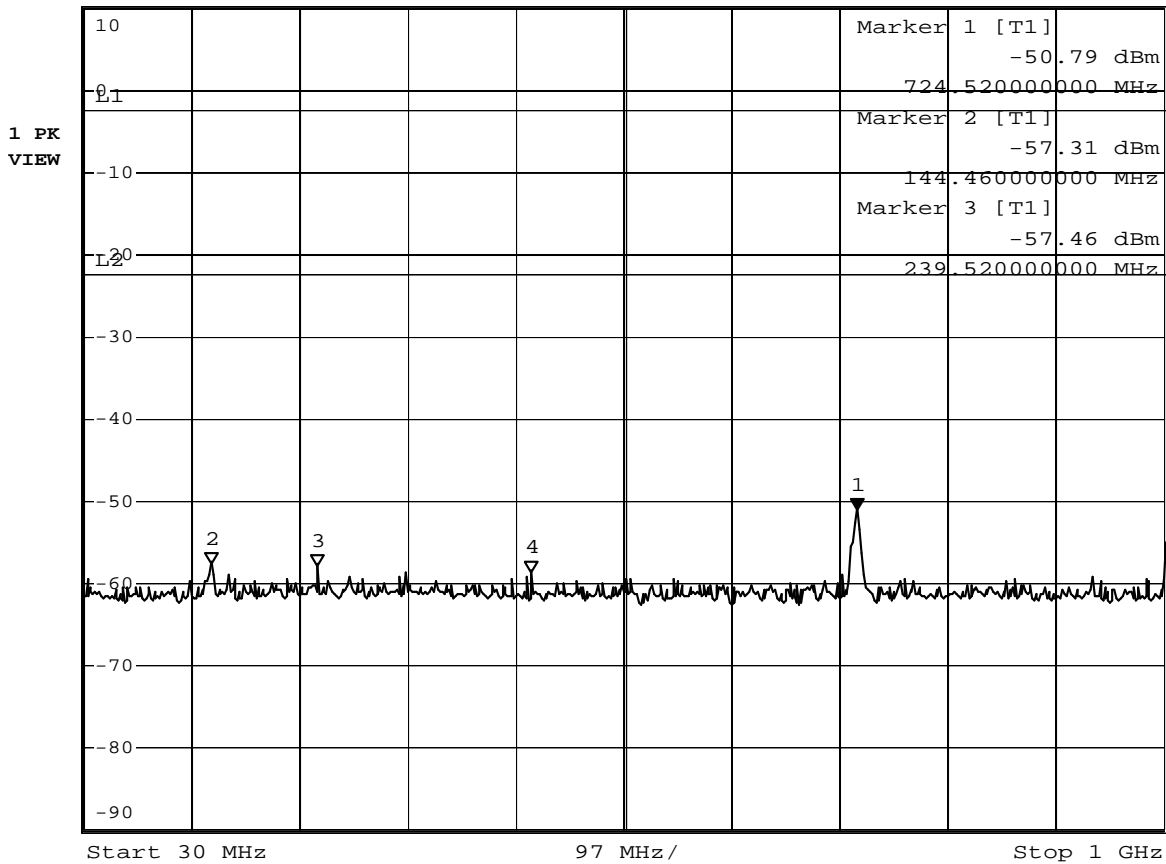
Prüfbericht - Nr.: **12701036 001**
Test Report No.:

Seite 54 von 94
Page 54 of 94

Figure 33: Operating 2462MHz 802.11(g) (Channel 11) spurious from 30MHz to 1GHz



Ref 10 dBm *Att 20 dB *RBW 100 kHz Marker 4 [T1] *VBW 300 kHz -58.44 dBm SWT 100 ms 431.580000000 MHz



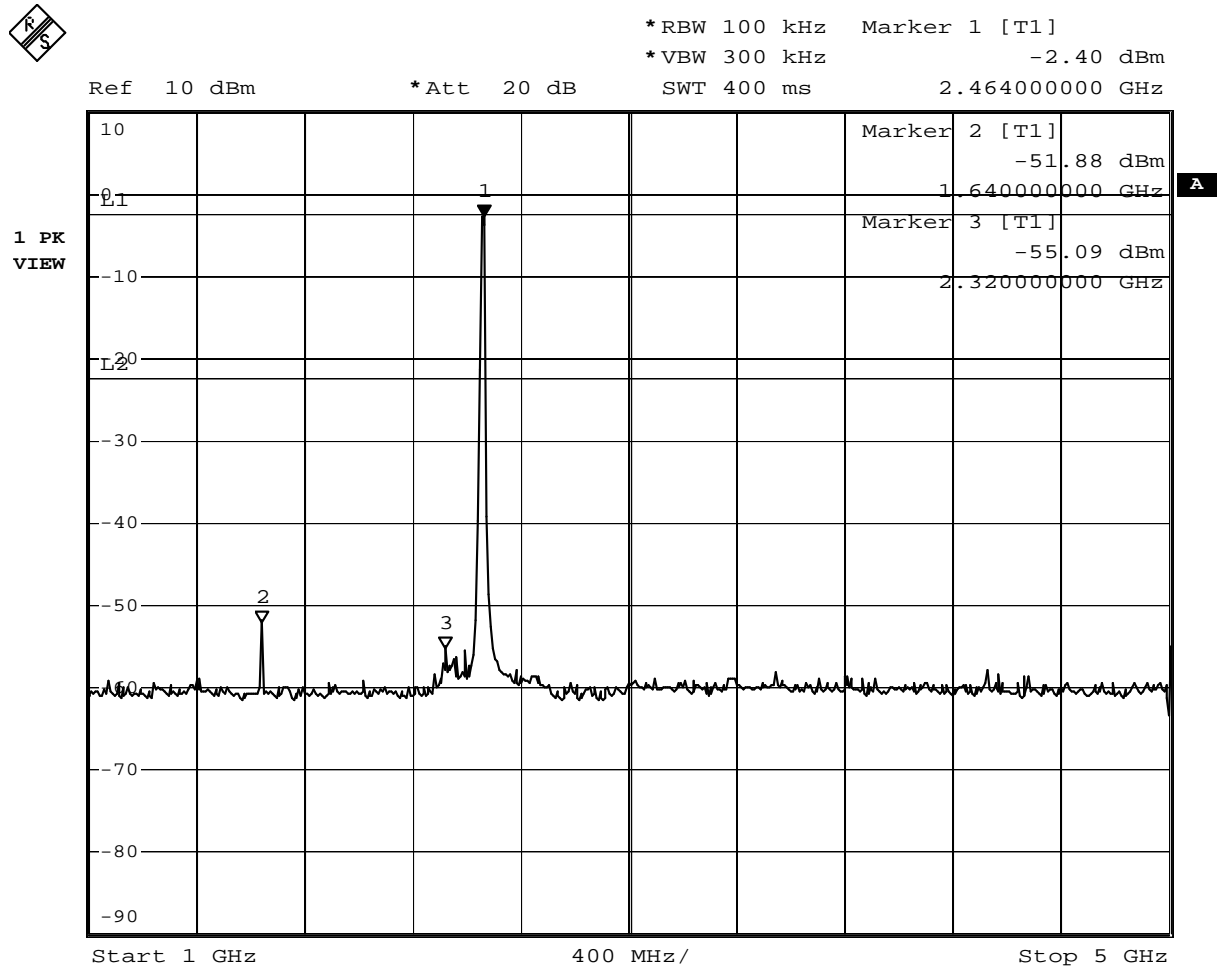
Comment A: BL-C121A ch 11 18Mbps -
FCC spurious L1=-2.4 L2=-22.4
Date: 21.AUG.2008 16:18:06

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

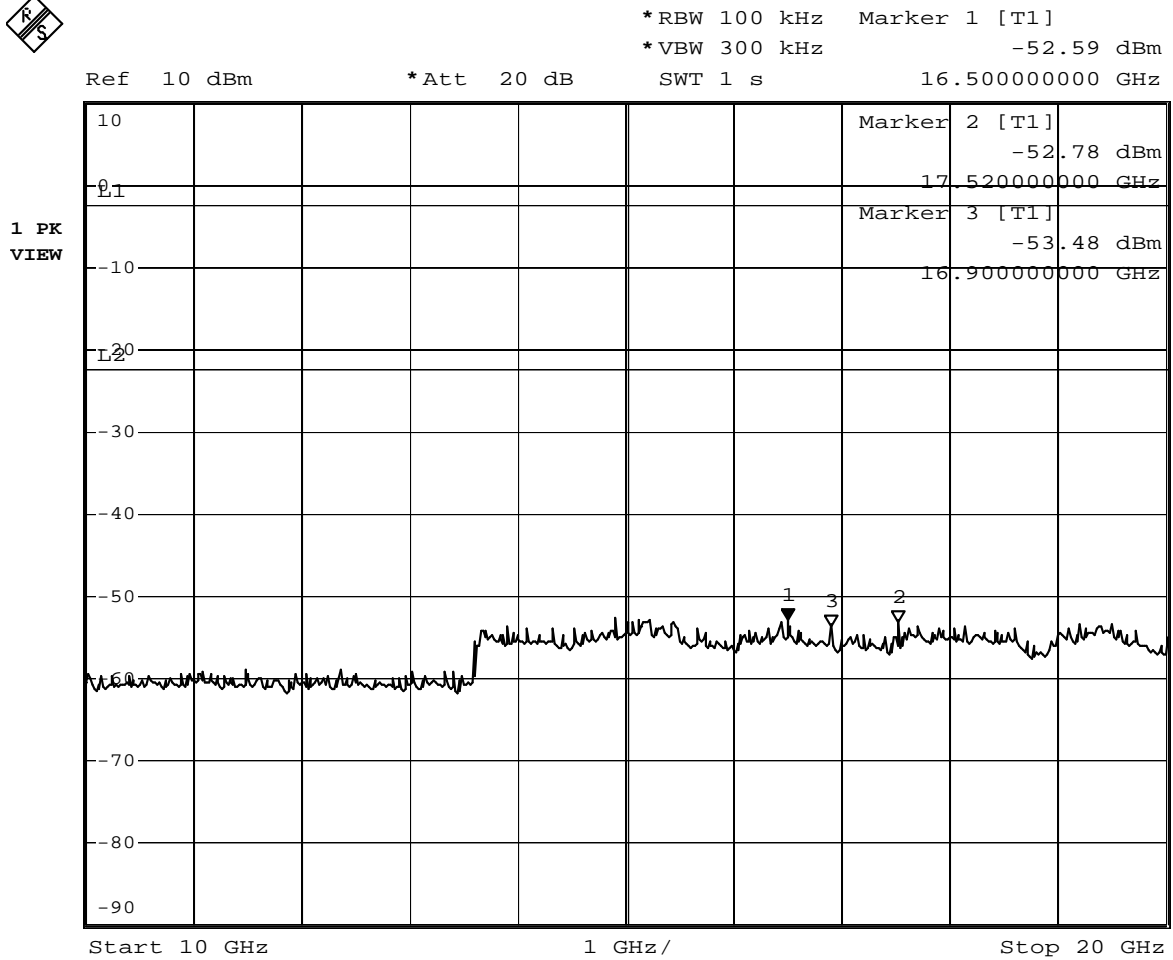
Seite 55 von 94
Page 55 of 94

Figure 34: Operating 2462MHz 802.11(g) (Channel 11) spurious from 1GHz to 5GHz



Comment A: BL-C121A ch 11 18Mbps -
FCC spurious L1=-2.4 L2=-22.4
Date: 21.AUG.2008 16:17:12

Figure 36: Operating 2462MHz 802.11(g) (Channel 11) spurious from 10GHz to 20GHz



Comment A: BL-C121A ch 11 18Mbps -
FCC spurious L1=-2.4 L2=-22.4
Date: 21.AUG.2008 16:20:02

Produkte
Products

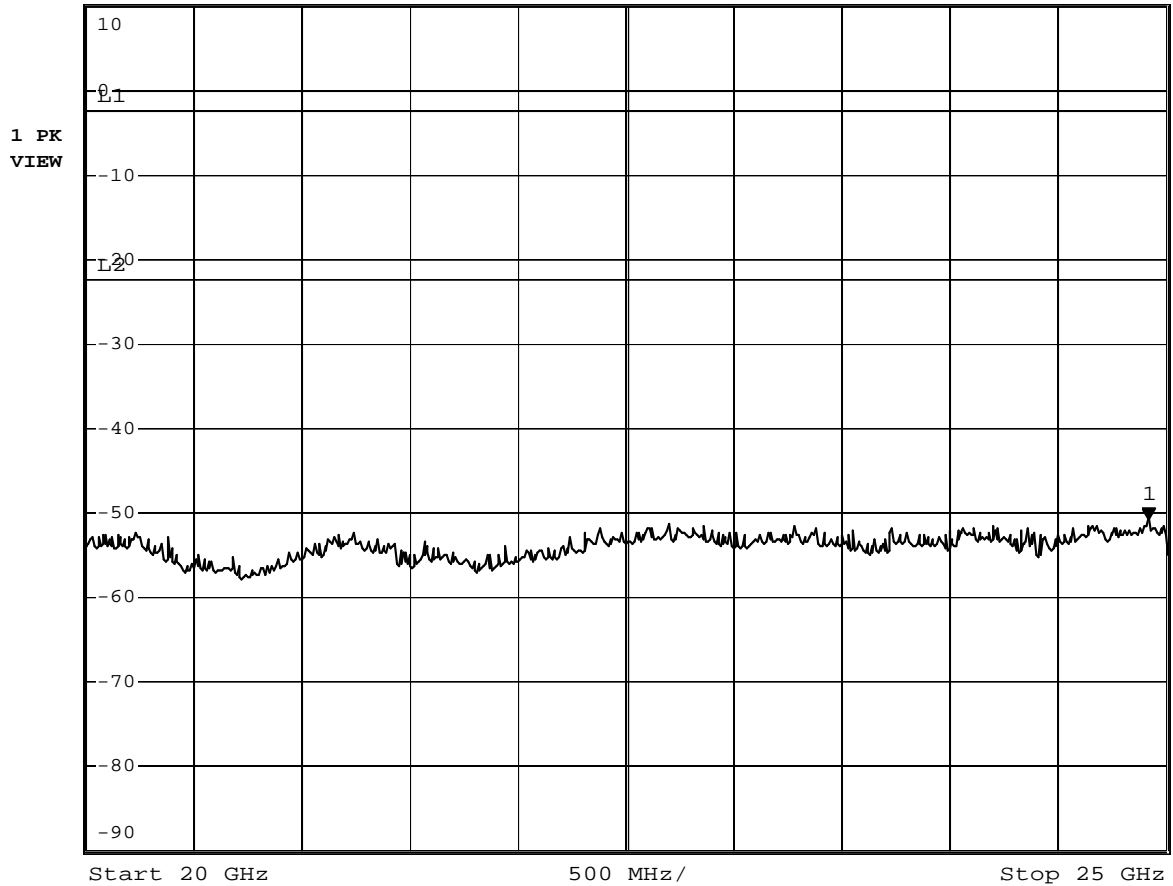
Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 58 von 94
Page 58 of 94

Figure 37: Operating 2462MHz 802.11(g) (Channel 11) spurious from 20GHz to 25GHz



*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -50.44 dBm
Ref 10 dBm *Att 20 dB SWT 500 ms 24.920000000 GHz



Comment A: BL-C121A ch 11 18Mbps -
FCC spurious L1=-2.4 L2=-22.4
Date: 21.AUG.2008 16:20:51

Prüfbericht - Nr.:	12701036 001	Seite 59 von 94
<i>Test Report No.:</i>		<i>Page 59 of 94</i>

5.1.4 Peak Power Spectral Density FCC 15.247(e) and RSS-210 A8.2(b)

RESULT: **PASS**

Date of testing: 2008-08-21
25.0 °C
Relative humidity: 42 %
Atmospheric pressure: 1006hPa

Requirements:
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test procedure:
ANSI C63.4-2003
A spectrum analyzer was connected to the antenna port of the transmitter. Analyzer Resolution Bandwidth was set to 3 kHz. The Video Bandwidth was set to 10 kHz, and the sweep time was set to 500sec.

The EUT was connected to its dedicated AC power supply during testing.

Table 10: Peak Power Spectral Density

Bandwidth 802.11(b) Radio					
Frequency (MHz)	Limit (dBm)	Reading (dBm)	Correction factor (dB)	Power Density (dBm)	Margin (dB)
2412	8	-18.18	1.17	-17.01	25.01
2437		-15.87	1.17	-14.70	22.70
2462		-14.38	1.18	-13.20	21.20
Bandwidth 802.11(g) Radio					
Frequency (MHz)	Limit (dBm)	Reading (dBm)	Correction factor (dB)	Power Density (dBm)	Margin (dB)
2412	8	-22.45	1.17	-21.28	29.28
2437		-20.01	1.17	-18.84	26.84
2462		-19.28	1.18	-18.10	26.10

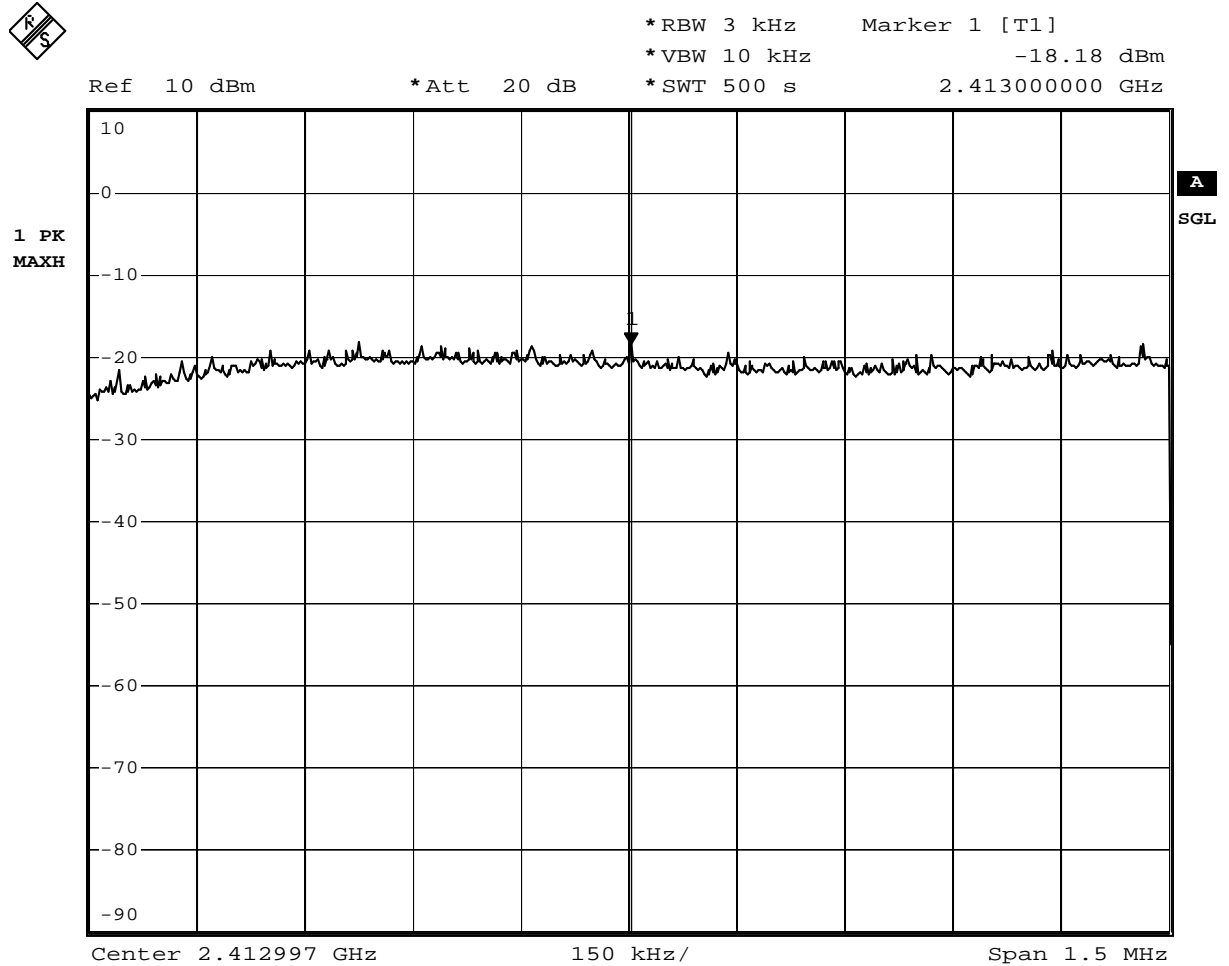
Notes : 1) Power density = (Reading) + (Correction factor)
2) Correction factor = Cable loss

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 60 von 94
Page 60 of 94

Figure 38: Power Spectral Density of 2412MHz 802.11(b) (Channel 1)



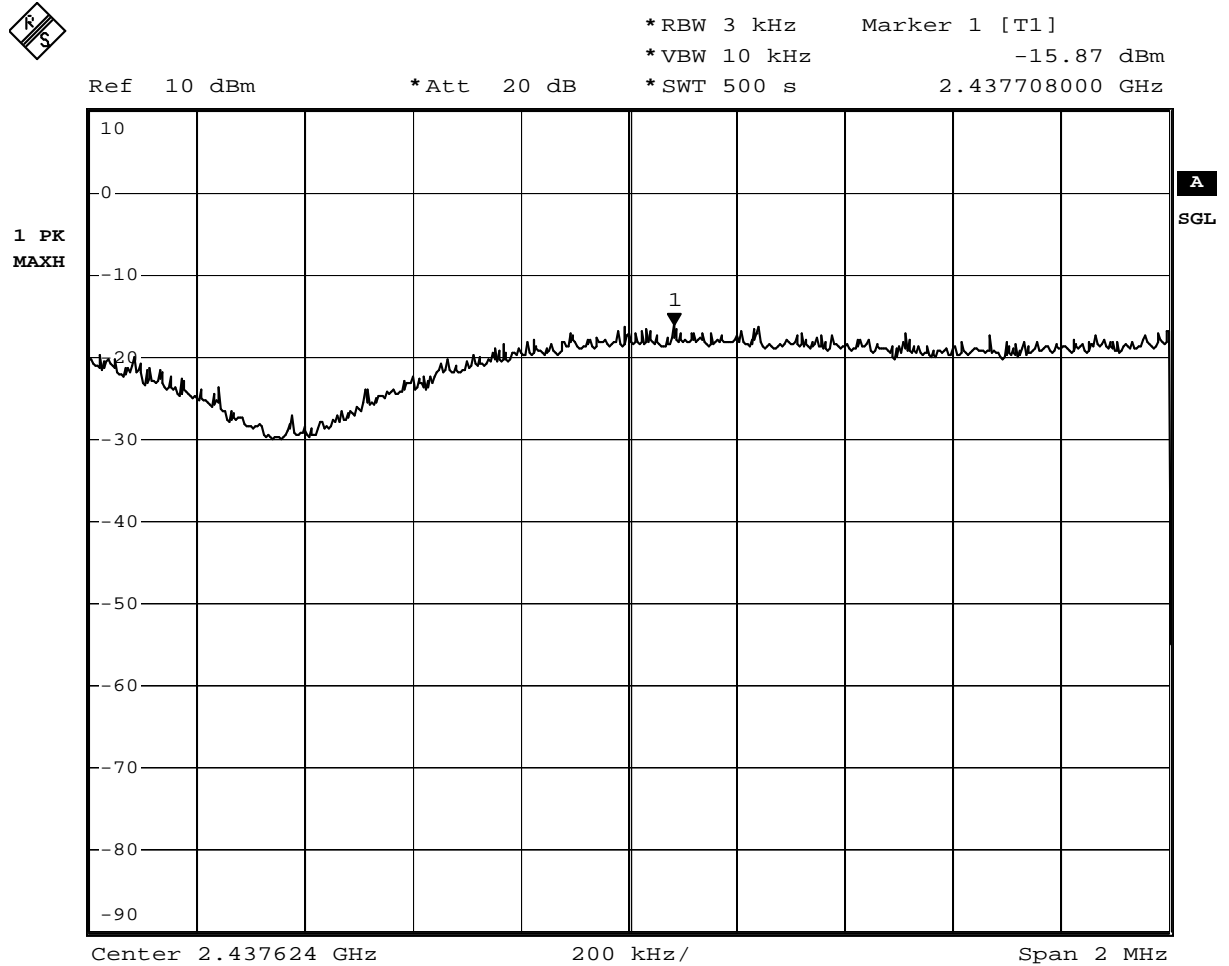
Comment A: BL-C121A ch 1 1Mbps
Power spectral density
Date: 21.AUG.2008 16:39:21

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 61 von 94
Page 61 of 94

Figure 39: Power Spectral Density of 2437MHz 802.11(b) (Channel 6)



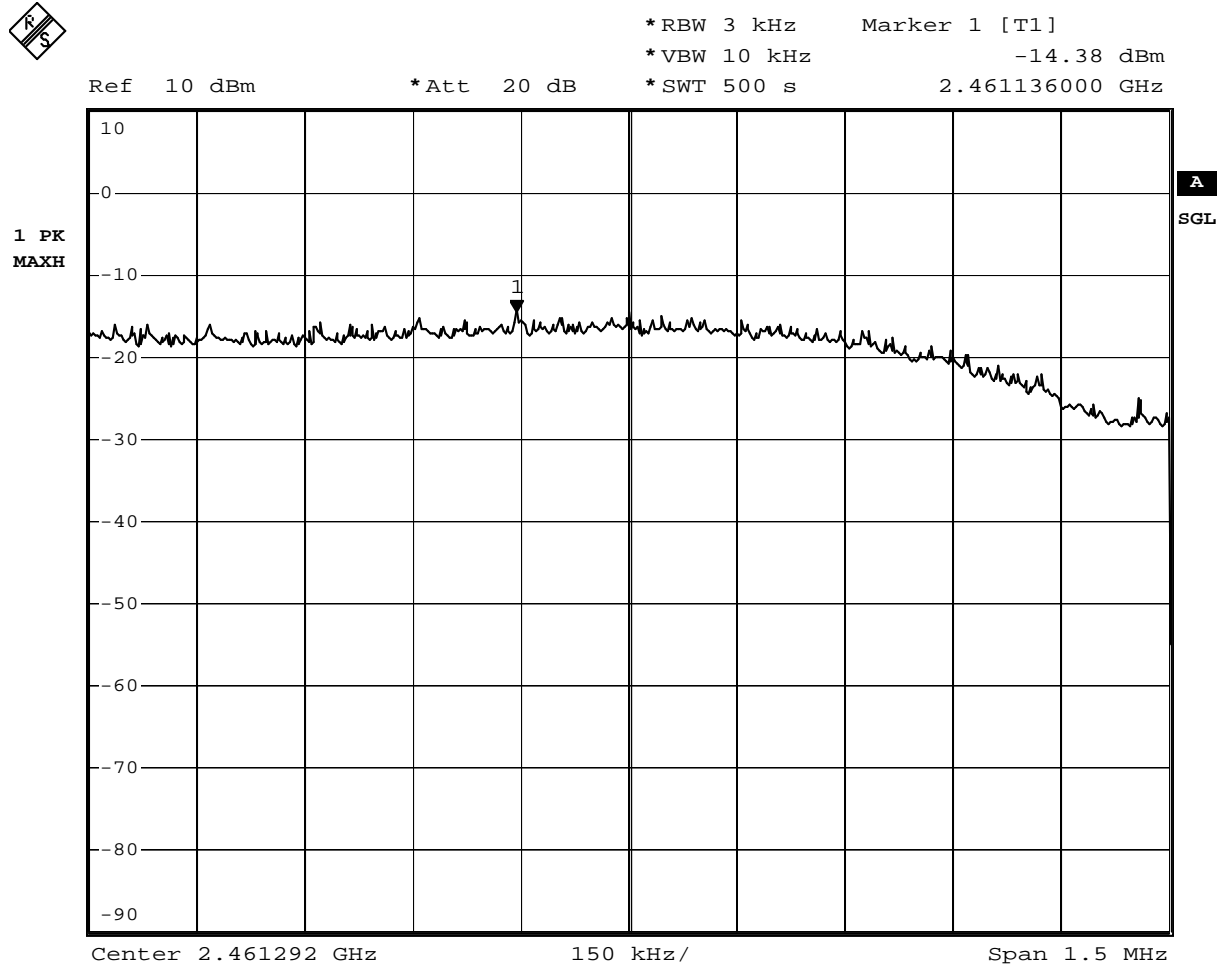
Comment A: BL-C121A ch 6 1Mbps
Power Spectral Density
Date: 21.AUG.2008 16:56:23

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 62 von 94
Page 62 of 94

Figure 40: Power Spectral Density of 2462MHz 802.11(b) (Channel 11)



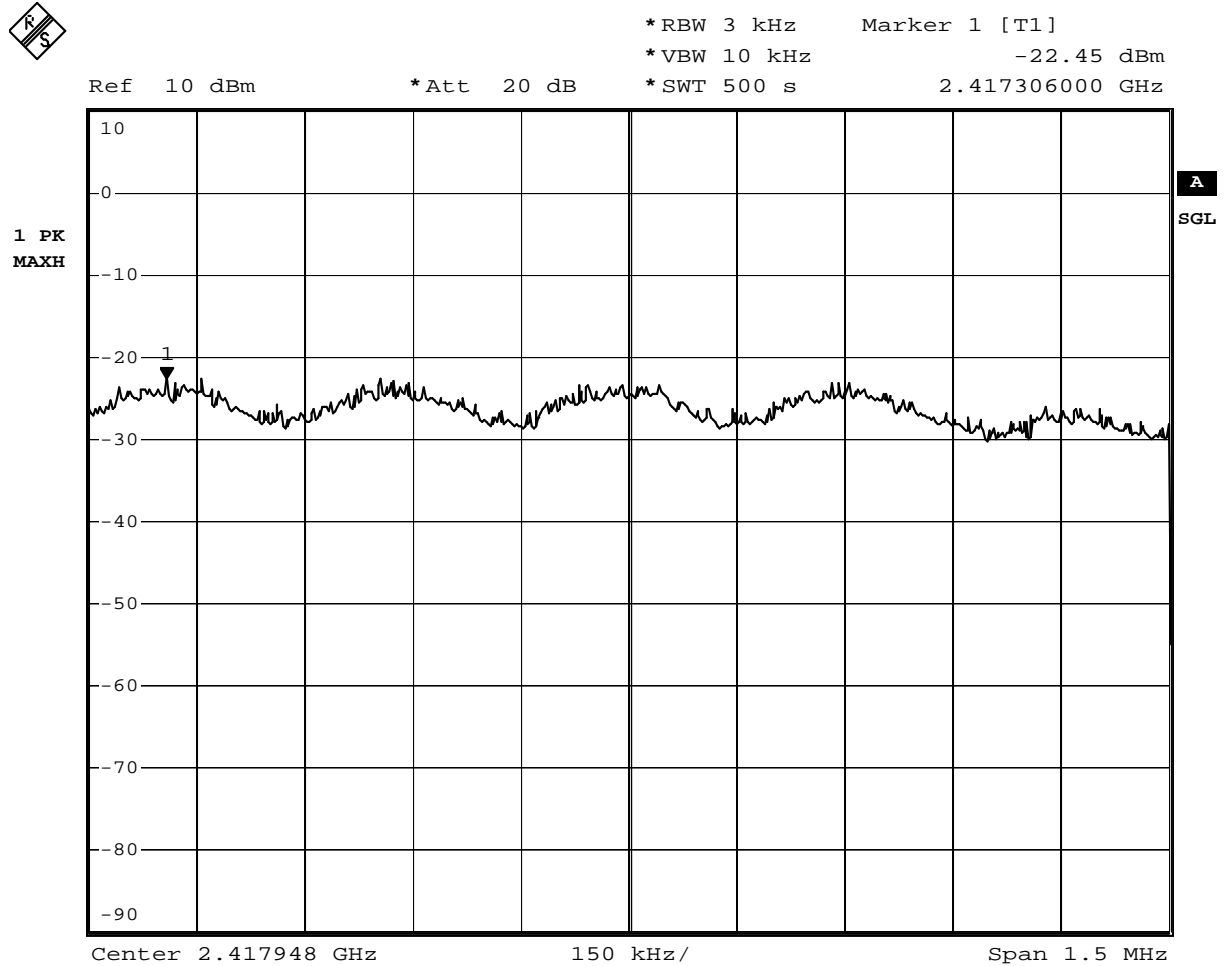
Comment A: BL-C121A ch 11 1Mbps f -
Power Spectral Density
Date: 21.AUG.2008 17:16:58

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 63 von 94
Page 63 of 94

Figure 41: Power Spectral Density of 2412MHz 802.11(g) (Channel 1)



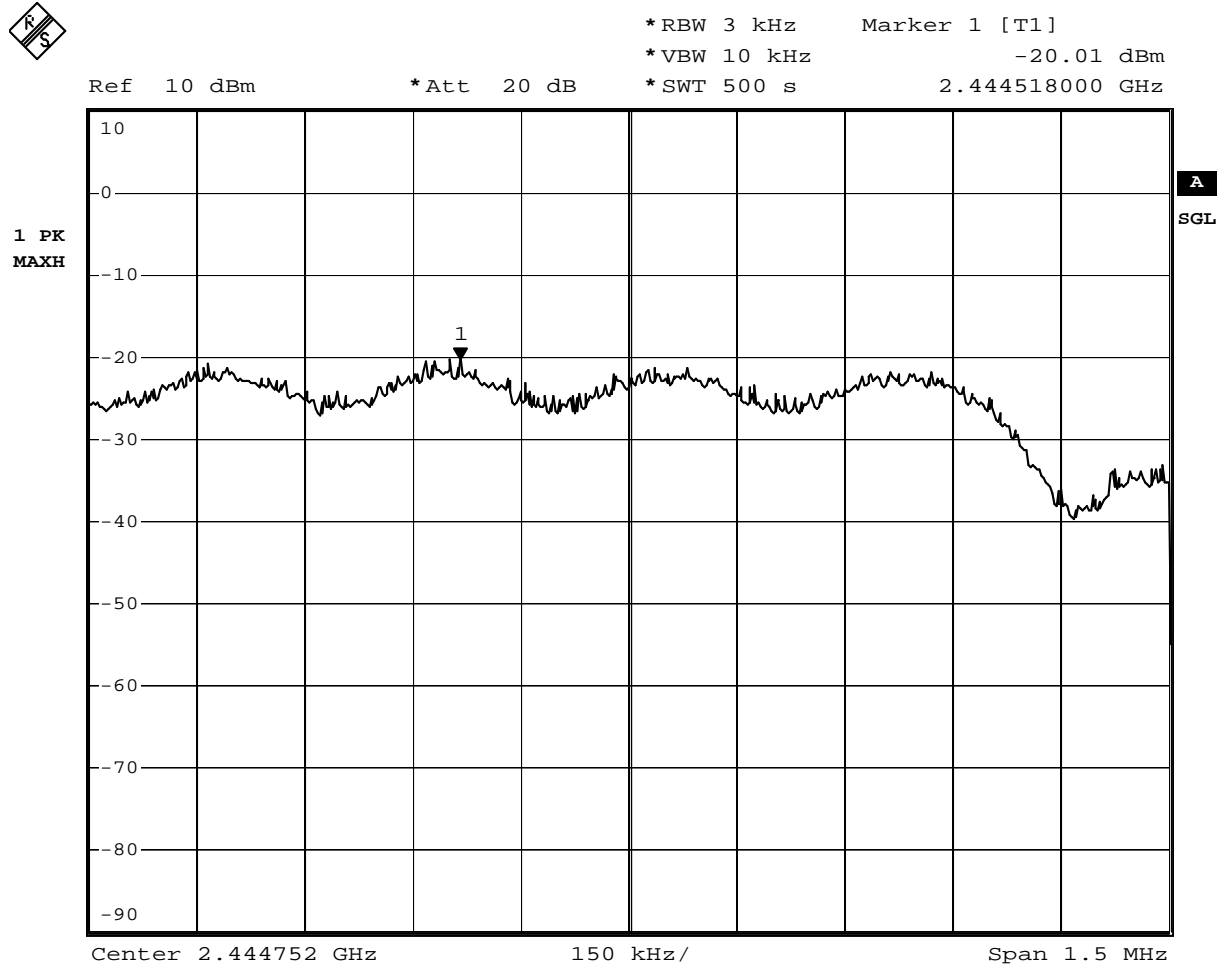
Comment A: BL-C121A ch 1 18Mbps f -
Power Spectral Density
Date: 21.AUG.2008 17:36:28

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 64 von 94
Page 64 of 94

Figure 42: Power Spectral Density of 2437MHz 802.11(g) (Channel 6)



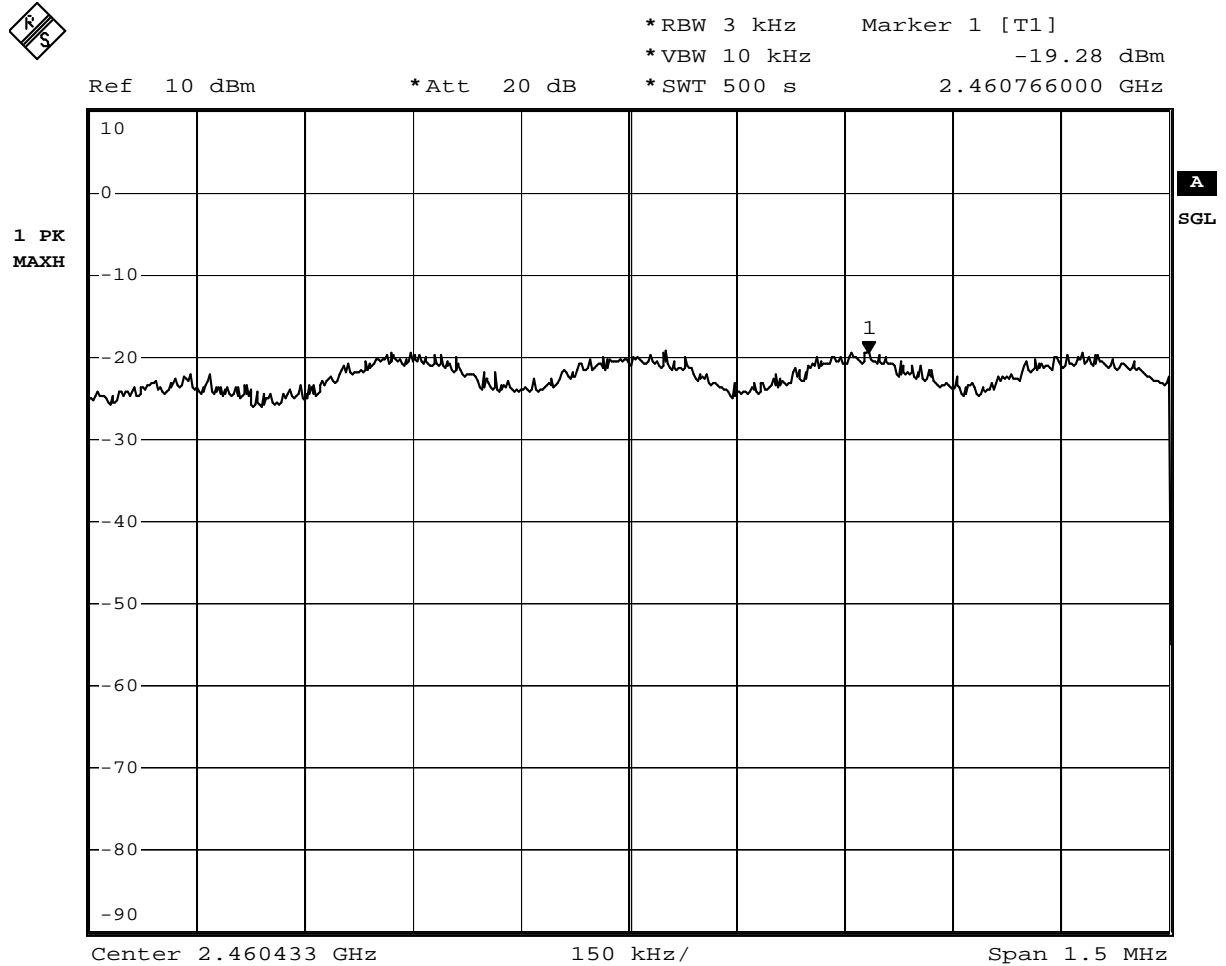
Comment A: BL-C121A ch 6 18Mbps f -
Power Spectral Density
Date: 21.AUG.2008 18:05:56

Produkte
Products

Prüfbericht - Nr.: 12701036 001
Test Report No.:

Seite 65 von 94
Page 65 of 94

Figure 43: Power Spectral Density of 2462MHz 802.11(g) (Channel 11)



Comment A: BL-C121A ch 11 18Mbps -
Power Spectral Density
Date: 21.AUG.2008 18:18:56

6. Test Results Radiated Emissions

6.1.1 Band edge Radiated Emission FCC 15.247(d) and RSS- 210 A2.2

RESULT: **Pass**

Date of testing: 2008-08-29

Ambient temperature: 25.0°C

Relative humidity: 42%

Atmospheric pressure: 997hPa

Requirements:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

Test procedure:

ANSI C63.4-2003

Measurements were made in a Semi Anechoic Chamber at a measurement distance of 3m.

The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations at 3 EUT positions (X, Y and Z). Peak (1 MHz RBW/VBW) and average (1 MHz RBW/10 Hz VBW) radiated measurements were taken with a suitable span to encompass the peak of the fundamental. The EUT was arranged in order to maximize emissions.

The EUT was connected to its dedicated AC Adaptor during testing.

The highest emission amplitudes relative to the appropriate limit were recorded in this report.

Prüfbericht - Nr.: 12701036 001
Seite 67 von 94
Test Report No.:
Page 67 of 94
Table 11: Maximum Band Edge Radiated Emission 802.11(b)

Operating Frequency (MHz)	Polarity/ Axis	Peak Value (dBuV/m)	Average Value (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Peak Margin (dB)	Average Margin (dB)
2412	Hori Z	53.74	42.67	74.0	54.0	20.26	11.33
2462	Hori Z	55.86	47.85	74.0	54.0	18.14	6.15

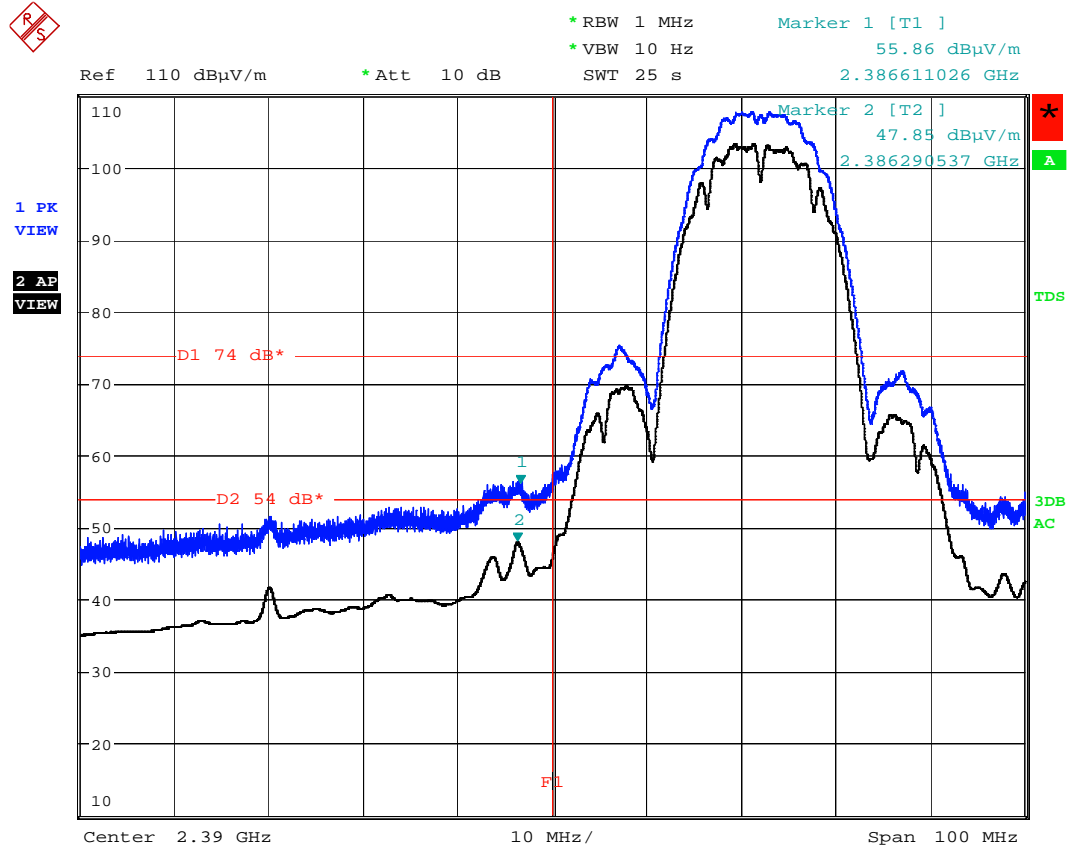
Table 12: Maximum Band Edge Radiated Emission 802.11(g)

Operating Frequency (MHz)	Polarity/ Axis	Peak Value (dBuV/m)	Average Value (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Peak Margin (dB)	Average Margin (dB)
2412	Hori Z	70.65	52.40	74.0	54.0	1.35	1.60
2462	Hori Z	72.70	52.72	74.0	54.0	1.30	1.28

Notes : 1) Duty cycle correction was not applied.

2) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

Figure 44: Band edge radiated emission of 2412MHz 802.11(b) (Channel 1), Peak and average

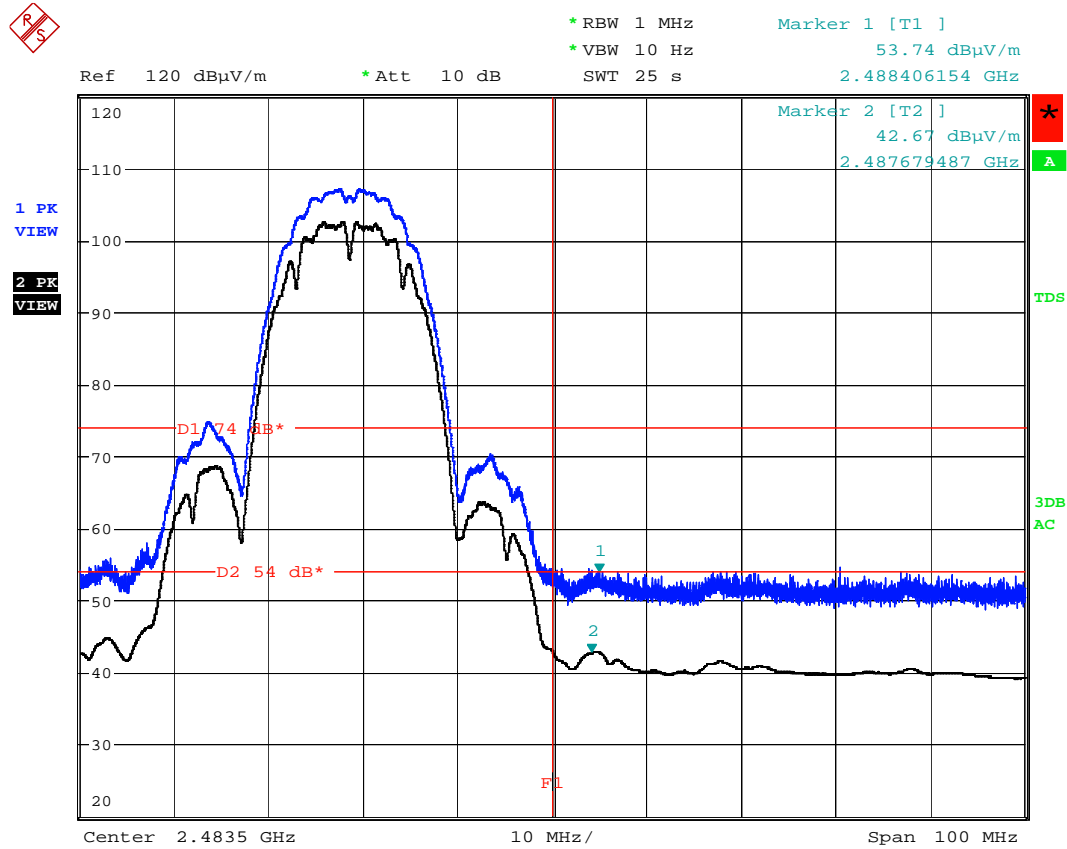


Mode AD, antenna H, EUT orientation Z

Date: 29.AUG.2008 19:16:07

Note: The upper trace shows peak, the lower trace shows average value.

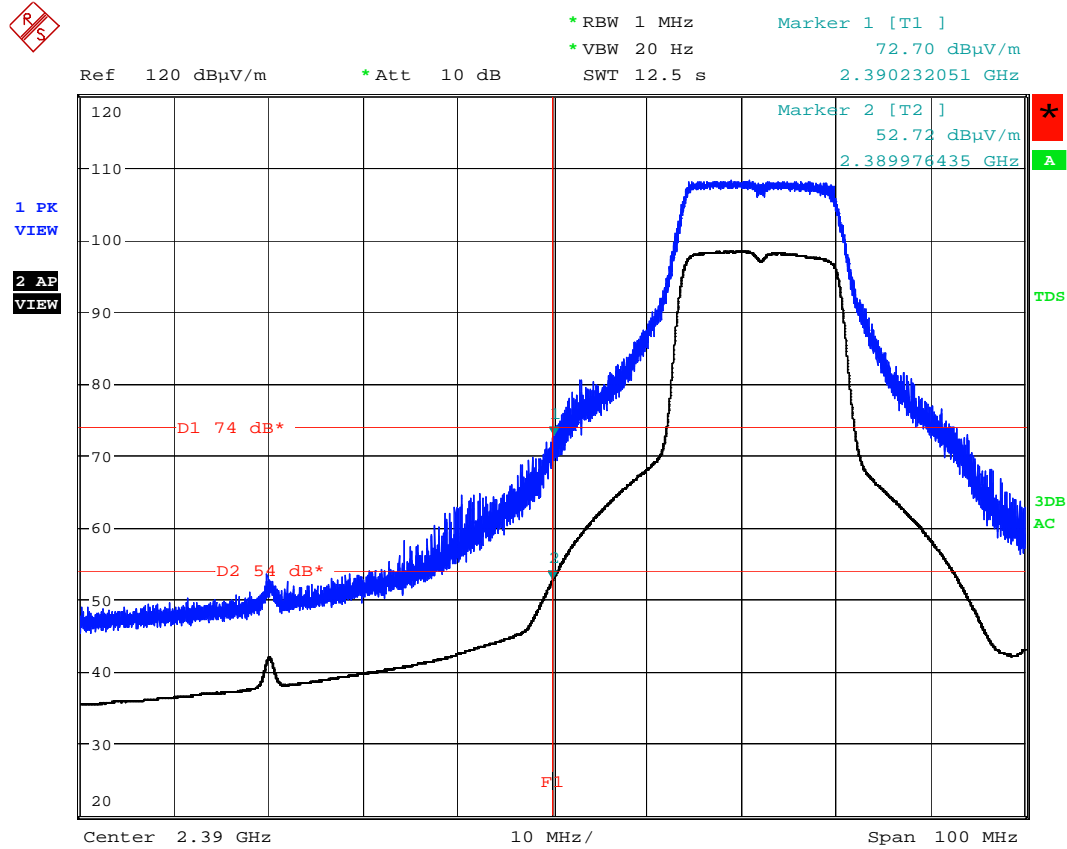
Figure 45: Band edge radiated emission of 2462MHz 802.11(b)(Channel 11), Peak and average



Mode CD, antenna H, EUT orientation Z
Date: 29.AUG.2008 20:18:22

Note: The upper trace shows peak, the lower trace shows average value.

Figure 46: Band edge radiated emission of 2412MHz 802.11(g) (Channel 1), Peak and average

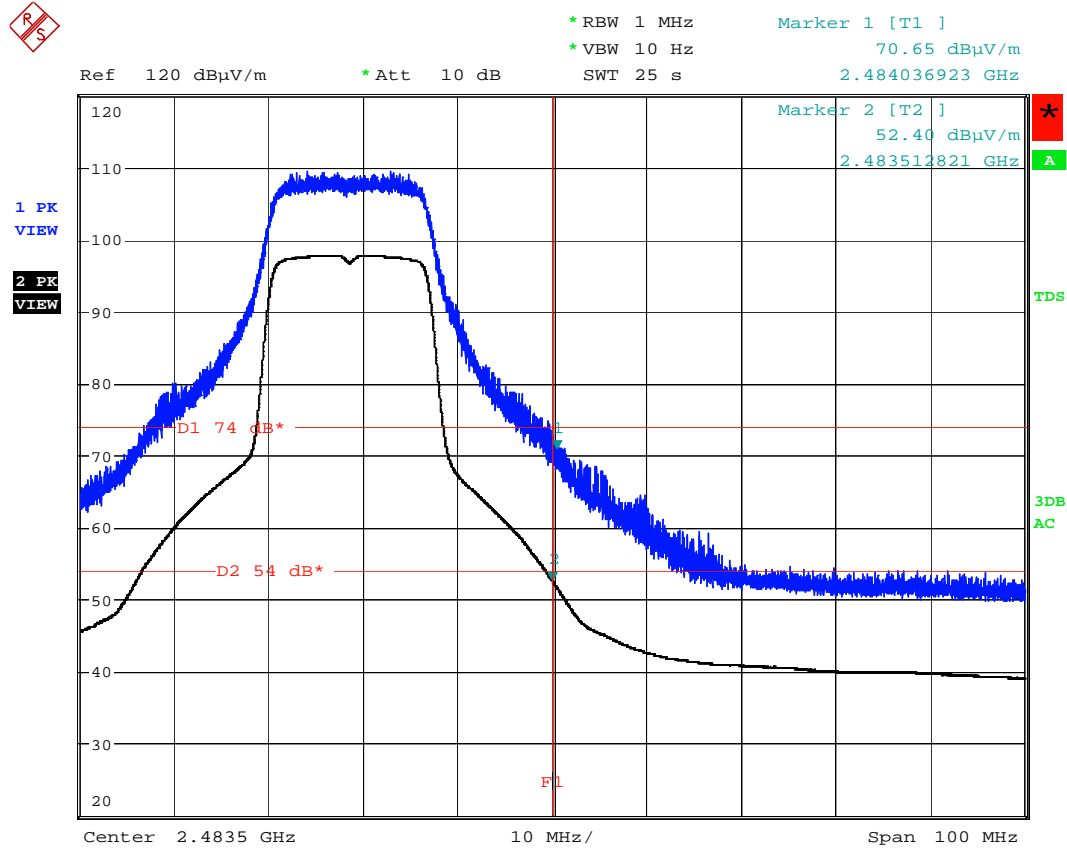


Mode AE, antenna H, EUT orientation Z

Date: 29.AUG.2008 19:56:02

Note: The upper trace shows peak, the lower trace shows average value.

Figure 47: Band edge radiated emission of 2462MHz 802.11(g) (Channel 11), Peak and average



Mode CE, antenna H, EUT orientation Z

Date: 29.AUG.2008 20:44:46

Note: The upper trace shows peak, the lower trace shows average value.

Prüfbericht - Nr.: 12701036 001

Seite 72 von 94

Test Report No.:

Page 72 of 94

**6.1.2 Mains Terminal Continuous Disturbance Voltage FCC part
 15.207, RSS-Gen 7.2.1/7.2.2 and ICES-003**
RESULT:**PASS**

Date of testing: 2008-08-28

Ambient temperature: 24.0°C

Relative humidity: 45%

Frequency range: (0.15 - 30)MHz

Kind of test site: Shielded Room

Requirements:

The emissions from the intentional radiator shall not exceed the Emission level specified in 15.207(a).

Test procedure:

ANSI C63.4-2003

The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN.

The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

The frequency range from 150kHz to 30MHz was investigated. Emission levels under (Limit - 20dB) were not recorded.

Pre-scan has been performed for all channels, the worst case channels for the 802.11(b) and (g) radios have been shown on this test report.

Disturbances other than those mentioned are small or not detectable. Discontinuous noise emission exceeding the limit for continuous disturbances has not been observed.

Figure 48: Spectral Diagrams, Conducted Emission 802.11(b) radio Channel 11, (0.15 - 30)MHz, Phase N (N)

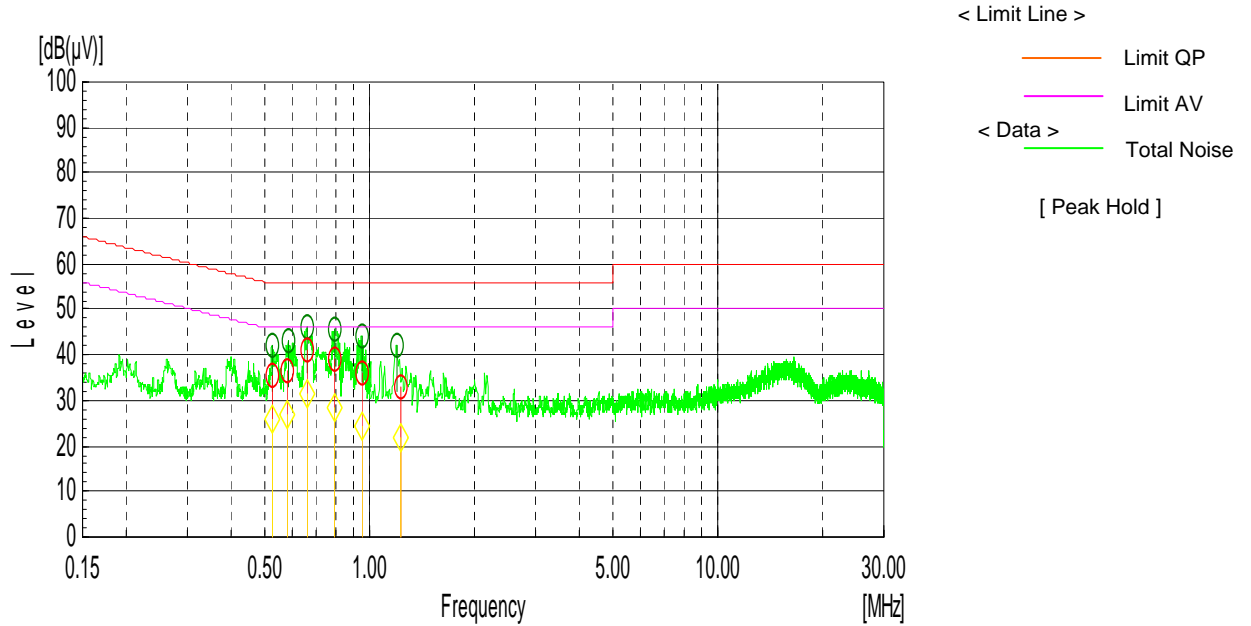
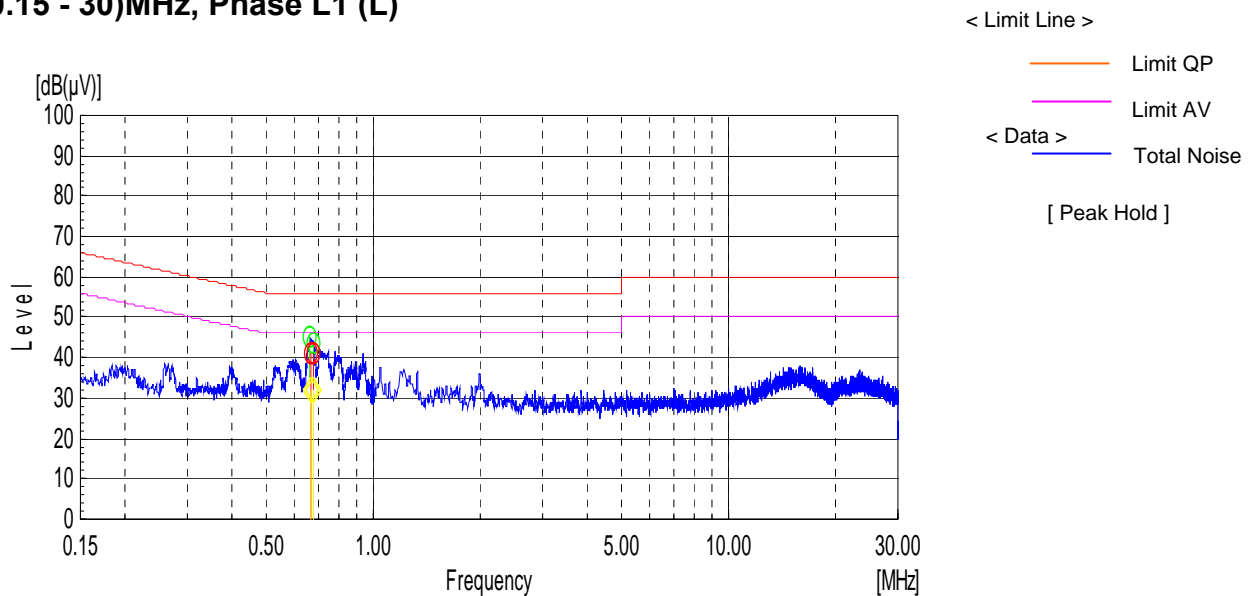


Figure 49: Spectral Diagrams, Conducted Emission 802.11(b) radio Channel 11, (0.15 - 30)MHz, Phase L1 (L)



Prüfbericht - Nr.: 12701036 001
Seite 74 von 94
Test Report No.:
Page 74 of 94
Table 13: Conducted Emission, 150kHz - 30MHz, Quasi Peak and Average Data, 802.11(b) radio Channel 11, Phase N (N) and L1 (L)

Freq. [MHz]	Phase	Reading QP [dB(μV)]	Reading AV [dB(μV)]	Factor [dB]	Level QP [dB(μV)]	Level AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
0.52636	N	25.7	16.1	9.7	35.4	25.8	56	46	20.6	20.2
0.58281	N	26.8	17.2	9.7	36.5	26.9	56	46	19.5	19.1
0.66258	N	31.3	21.7	9.7	41	31.4	56	46	15	14.6
0.66702	L1	31.6	22.4	9.7	41.3	32.1	56	46	14.7	13.9
0.67751	L1	31.4	22.1	9.7	41.1	31.8	56	46	14.9	14.2
0.79274	N	29.6	18.9	9.7	39.3	28.6	56	46	16.7	17.4
0.94951	N	26.2	14.6	9.7	35.9	24.3	56	46	20.1	21.7
1.23532	N	23.4	12.1	9.7	33.1	21.8	56	46	22.9	24.2

Final test data was taken for the operation mode generating the highest emission only.

Figure 50: Spectral Diagrams, Conducted Emission 802.11(g) radio Channel 6, (0.15 - 30)MHz, Phase N (N)

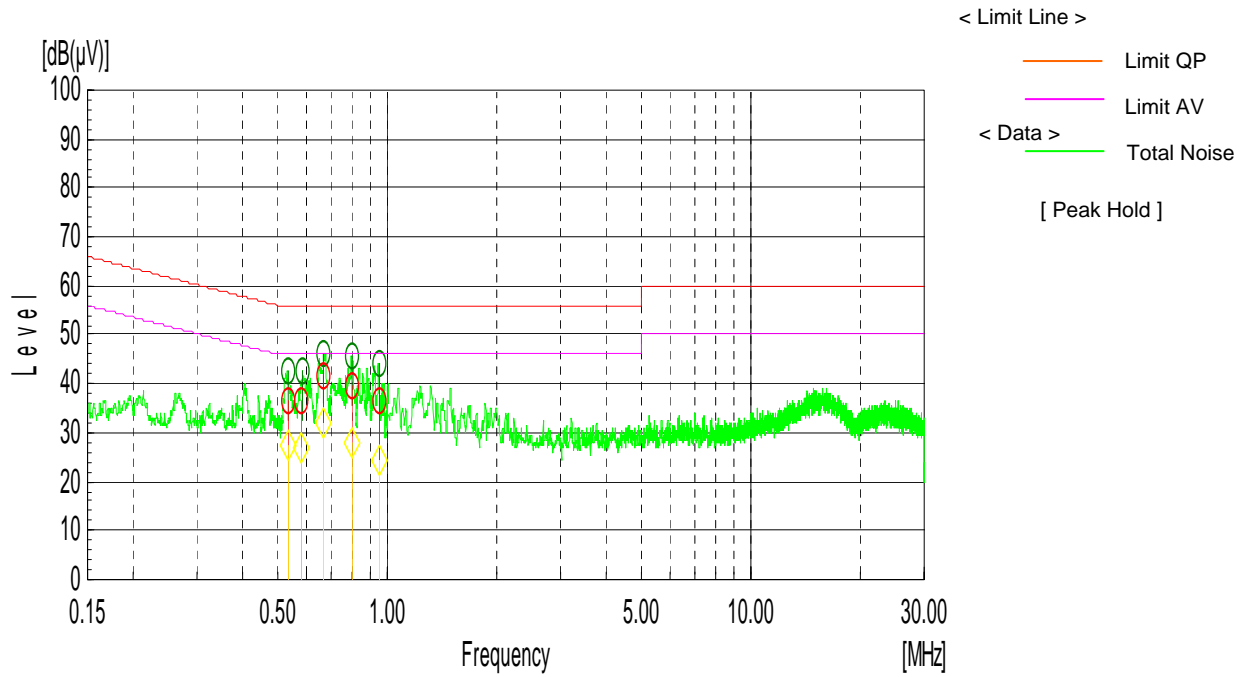
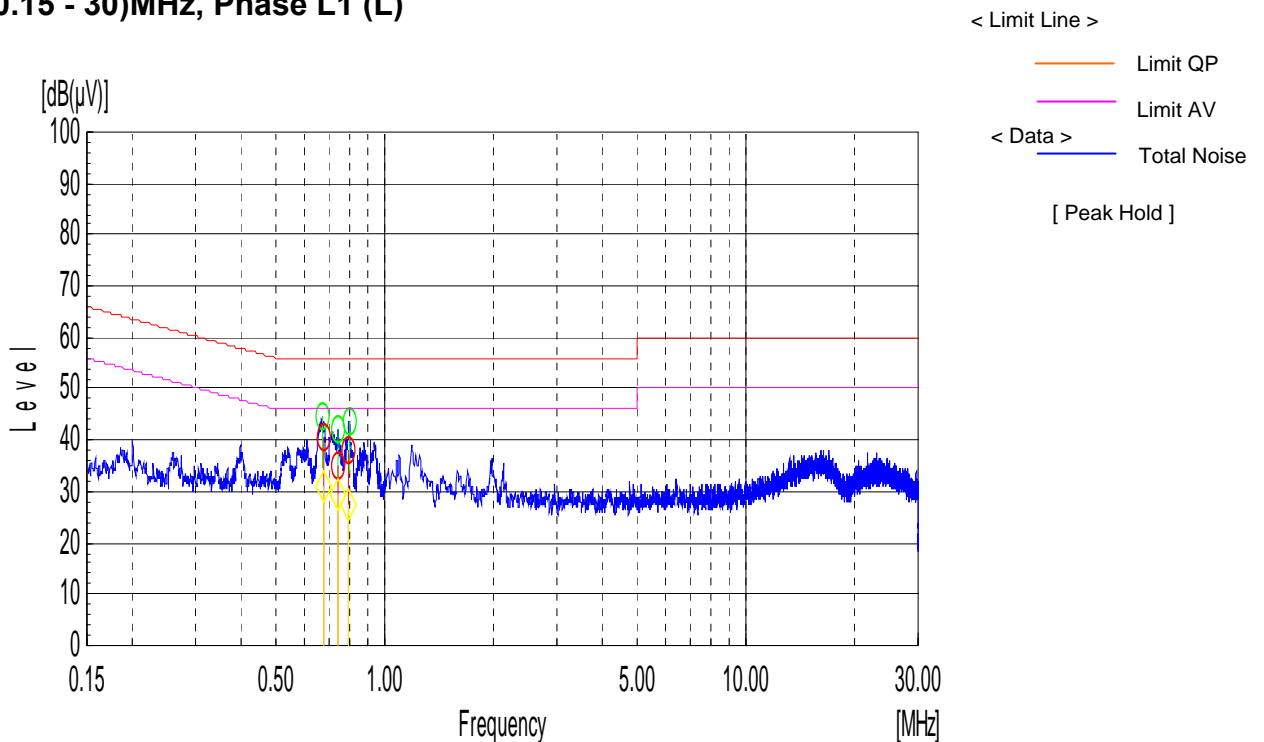


Figure 51: Spectral Diagrams, Conducted Emission 802.11(g) radio Channel 6, (0.15 - 30)MHz, Phase L1 (L)



Prüfbericht - Nr.: 12701036 001
Seite 76 von 94

Test Report No.:

Page 76 of 94

Table 14: Conducted Emission, 150kHz - 30MHz, Quasi Peak and Average Data, 802.11(g) radio Channel 6, Phase N (N) and L1 (L)

Freq. [MHz]	Phase	Reading QP [dB(μV)]	Reading AV [dB(μV)]	Factor [dB]	Level QP [dB(μV)]	Level AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
0.53664	N	26.8	17.8	9.7	36.5	27.5	56	46	19.5	18.5
0.58204	N	26.7	17.1	9.7	36.4	26.8	56	46	19.6	19.2
0.66677	N	31.9	22.3	9.7	41.6	32	56	46	14.4	14
0.67803	L1	31	21.4	9.7	40.7	31.1	56	46	15.3	14.9
0.74391	L1	25.2	19.6	9.7	34.9	29.3	56	46	21.1	16.7
0.79404	L1	28.2	17.7	9.7	37.9	27.4	56	46	18.1	18.6
0.79796	N	29.8	18.1	9.7	39.5	27.8	56	46	16.5	18.2
0.94986	N	26.9	14.9	9.7	36.6	24.6	56	46	19.4	21.4

Final test data was taken for the operation mode generating the highest emission only.

Prüfbericht - Nr.: 12701036 001
Seite 77 von 94
Test Report No.:
Page 77 of 94

6.1.3 Radiated Emission out-of-band and spurious emission FCC part 15.247(d)/15.205/15.209 and RSS-210 2.2/RSS-210 2.6

RESULT:
PASS

Date of testing:	2008-08-30
Ambient temperature:	22.0°C
Relative humidity:	55%
Atmospheric pressure:	1007hPa
Frequency range:	30MHz – 25GHz
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

The emissions from the intentional radiator shall not exceed the field strength specified in 15.209(a).

Test procedure:

ANSI C63.4-2003

Before final measurements of radiated emissions were made in Semi Anechoic Chamber, the EUT was scanned before final testing. This was done in order to determine its emissions spectrum profile. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made at 3meters. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 30 MHz to the 10th harmonic of the highest fundamental transmitter frequency (25 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations and 3 EUT positions(X,Y, and Z). For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode.

For emissions above 1000 MHz, emissions are measured using following settings:

Peak: RBW=1MHz, VBW=1MHz

Average: RBW=1MHz, VBW=10Hz

Prüfbericht - Nr.: 12701036 001**Seite 78 von 94***Test Report No.:**Page 78 of 94*

The EUT was connected to its dedicated AC Adaptor during testing.

The EUT radiated interference was investigated from 9kHz to 30MHz, the emission was found to be 20dB below the limit.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

Table 15: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(b), Channel 1

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
83.425	V	59.4	-26.9	32.5	40	7.5	101	193
216.017	V	49.3	-18.4	30.9	46	15.1	101	208
332.787	H	50.5	-20.4	30.1	46	15.9	101	191
351.006	V	51.5	-19.6	31.9	46	14.1	175	182
590.32	V	44.3	-13.8	30.5	46	15.5	102	164
648.02	H	47.9	-13.1	34.8	46	11.2	109	179

Table 16: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(b), Channel 1

Freq. [MHz]	Antenna Orientation/ Axis	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
4823.98	V Z	N/A	45.90	54.0	74.0	8.10	28.10
9648.03	V X	N/A	49.90	54.0	74.0	4.10	24.10

- Notes :
- 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
 - 2) AV: average, PK: peak
 - 3) The peak measured value complies with the average limit hence measurement of the AV value can be omitted.

Prüfbericht - Nr.: 12701036 001

Seite 80 von 94

Test Report No.:

Page 80 of 94

Table 17: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(b), Channel 6

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
83.403	V	58.9	-26.9	32	40	8	117	205
183.991	H	50.5	-21.4	29.1	43.5	14.4	108	102
215.99	V	49.5	-18.4	31.1	43.5	12.4	101	214
215.996	H	51.9	-19.4	32.5	43.5	11	159	107
331.214	H	50.8	-20.4	30.4	46	15.6	100	197
349.97	V	53.4	-19.6	33.8	46	12.2	170	179
552.023	V	49.7	-14.4	35.3	46	10.7	100	163
648.006	V	50	-13.2	36.8	46	9.2	101	174

Table 18: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(b), Channel 6

Freq. [MHz]	Antenna Orientation/ Axis	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
7308.31	V Z	48.3	54.7	54.0	74.0	5.7	19.3
9748.03	V Z	52.8	53.8	54.0	74.0	1.2	20.2

Notes : 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
2) AV: average, PK: peak

Table 19: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(b), Channel 11

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
83.736	V	59.6	-26.9	32.7	40	7.3	102	178
215.98	H	51.5	-19.4	32.1	43.5	11.4	153	112
216.016	V	49.4	-18.4	31	46	15	102	211
333.396	H	50.3	-20.3	30	46	16	103	195
594.025	V	51.4	-13.7	37.7	46	8.3	100	170
648.007	H	47.9	-13.1	34.8	46	11.2	129	170

Table 20: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(b), Channel 11

Freq. [MHz]	Antenna Orientation/ Axis	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
4924.00	V Z	50.1	52.3	54.0	74.0	3.9	21.7
9848.04	V Z	52.7	54.3	54.0	74.0	1.3	19.7

Notes : 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
 2) AV: average, PK: peak

Prüfbericht - Nr.: 12701036 001

Seite 82 von 94

Test Report No.:

Page 82 of 94

Table 21: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 1

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
84.019	V	59.5	-26.9	32.6	40	7.4	101	172
184.011	H	50.7	-21.4	29.3	43.5	14.2	104	103
216.028	H	50.9	-19.4	31.5	46	14.5	156	107
332.796	H	50.4	-20.4	30	46	16	100	191
594.021	V	51.5	-13.7	37.8	46	8.2	101	170
648.004	V	49.6	-13.2	36.4	46	9.6	102	172
647.997	H	48.6	-13.1	35.5	46	10.5	112	176

Table 22: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 1

Freq. [MHz]	Antenna Orientation/ Axis	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
7237.96	H X	45.6	62.3	54.0	74.0	8.4	21.7
9644.99	H Z	37.5	54.6	54.0	74.0	16.5	19.4

Notes : 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

2) AV: average, PK: peak

Table 23: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 6

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
83.397	V	59.8	-26.9	32.9	40	7.1	104	181
184.031	H	48.7	-21.3	27.4	43.5	16.1	174	100
215.977	V	49.7	-18.4	31.3	43.5	12.2	100	215
216.006	H	51	-19.4	31.6	46	14.4	153	244
331.832	H	51.8	-20.4	31.4	46	14.6	101	197
348.673	V	52.2	-19.7	32.5	46	13.5	159	176
594.004	V	49.6	-13.7	35.9	46	10.1	102	165
648.004	V	50.1	-13.2	36.9	46	9.1	100	176

Table 24: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 6

Freq. [MHz]	Antenna Orientation/ Axis	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
7237.96	H X	45.6	62.3	54.0	74.0	8.4	11.7
9644.99	V Z	37.5	54.6	54.0	74.0	16.5	19.4

Notes : 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

2) AV: average, PK: peak

Table 25: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 11

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
83.687	V	59.6	-26.9	32.7	40	7.3	108	155
215.995	H	51.1	-19.4	31.7	43.5	11.8	156	247
216.007	V	50.6	-18.4	32.2	46	13.8	101	213
331.832	H	51.8	-20.4	31.4	46	14.6	101	197
348.673	V	52.2	-19.7	32.5	46	13.5	159	176
594.004	V	49.6	-13.7	35.9	46	10.1	102	165
648.004	V	50.1	-13.2	36.9	46	9.1	100	176

Table 26: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 11

Freq. [MHz]	Antenna Orientation/ Axis	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
7386.93	V X	45.2	61.2	54.0	74.0	8.8	12.8
9848.00	H Z	38.3	54.7	54.0	74.0	15.7	19.3

Notes : 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.

2) AV: average, PK: peak

Prüfbericht - Nr.: 12701036 001

Seite 85 von 94

Test Report No.:

Page 85 of 94

6.1.4 Radiated Emission spurious emission for Receiver FCC part 15.109 and RSS-210 2.2/RSS-210 A.8.5 RSS-Gen 7.2.1/7.2.3
RESULT:**PASS**

Date of testing:	2008-08-31
Ambient temperature:	25.0°C
Relative humidity:	80%
Atmospheric pressure:	1005hPa
Frequency range:	30MHz – 13GHz
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

The emissions from the unintentional radiator shall not exceed the field strength specified in 15.109(a).

Test procedure:

ANSI C63.4-2003

Before final measurements of radiated emissions were made in Semi Anechoic Chamber, the EUT was scanned before final testing. This was done in order to determine its emissions spectrum profile. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made at 3meters. The limit was recalculated accordingly using a factor of 20dB/decade. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 30 MHz to the 5th harmonic of the highest fundamental receiver frequency (13 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations and 3 EUT positions(X,Y, and Z). For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode.

For emissions above 1000 MHz, emissions are measured using following settings:

Peak: RBW=1MHz, VBW=1MHz

Average: RBW=1MHz, VBW=10Hz

Prüfbericht - Nr.: 12701036 001**Seite 86 von 94***Test Report No.:**Page 86 of 94*

Pre-scan has been performed for all channels, the worst case channels for the 802.11 (g) radios for Z axis has been shown on this test report.

The EUT was connected to its dedicated AC Adaptor during testing.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable.

Table 27: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 6

Freq. [MHz]	Antenna Orientation	Result (Measured) QP [dB(µV)]	Factor [dB(1/m)]	Level QP [dB(µV/m)]	Limit [dB(µV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
83.625	V	58	-26.9	31.1	40	8.9	103	179
216.018	V	49.7	-18.4	31.3	40	8.7	101	216
216.026	H	51.6	-19.4	32.2	40	7.8	152	105
339.565	H	49.6	-20.2	29.4	46	16.6	121	188
593.957	V	48.6	-13.7	34.9	46	11.1	100	181
625.009	V	49.1	-13.4	35.7	46	10.3	100	175
648.01	H	48.6	-13.1	35.5	46	10.5	128	170
919.991	H	47.2	-10.0	37.2	46	8.8	100	280

Table 28: Radiated Emission 1GHz-13GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 6

Freq. [MHz]	Antenna Orientation	Level AV [dB(µV/m)]	Level PK [dB(µV/m)]	Limit AV [dB(µV/m)]	Limit PK [dB(µV/m)]	Margin AV [dB]	Margin PK [dB]
3249.00	V	N/A	46.9	54.0	74.0	7.1	27.1

- Notes :
- 1) All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
 - 2) AV: average, PK: peak
 - 3) The peak measured value complies with the average limit hence measurement of the AV value can be omitted.

8. List of Tables

Table 1: List of Test and Measurement Equipment	7
Table 2: Conducted output power	15
Table 3: 6dB Bandwidth	16
Table 4: Conducted Spurious Emissions of 2412MHz 802.11(b) (Channel 1)	23
Table 5: Conducted Spurious Emissions of 2437MHz 802.11(b) (Channel 6)	29
Table 6: Conducted Spurious Emissions of 2462MHz 802.11(b) (Channel 11)	35
Table 7: Conducted Spurious Emissions of 2412MHz 802.11(g) (Channel 1)	41
Table 8: Conducted Spurious Emissions of 2437MHz 802.11(g) (Channel 6)	47
Table 9: Conducted Spurious Emissions of 2462MHz 802.11(g) (Channel 11)	53
Table 10: Peak Power Spectral Density.....	59
Table 11: Maximum Band Edge Radiated Emission 802.11(b)	67
Table 12: Maximum Band Edge Radiated Emission 802.11(g)	67
Table 13: Conducted Emission, 150kHz - 30MHz, Quasi Peak and Average Data, 802.11(b) radio Channel 11, Phase N (N) and L1 (L).....	74
Table 14: Conducted Emission, 150kHz - 30MHz, Quasi Peak and Average Data, 802.11(g) radio Channel 6, Phase N (N) and L1 (L).....	76
Table 15: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(b), Channel 1	79
Table 16: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(b), Channel 1	79
Table 17: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(b), Channel 6	80
Table 18: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(b), Channel 6	80
Table 19: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(b), Channel 11	81
Table 20: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(b), Channel 11	81
Table 21: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 1	82
Table 22: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 1	82
Table 23: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 6	83
Table 24: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 6	83
Table 25: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 11	84
Table 26: Radiated Emission 1GHz-25GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 11	84
Table 27: Radiated Emission 30MHz - 1GHz, Horizontal & Vertical Antenna Orientations, Quasi Peak Data, 802.11(g), Channel 6	87
Table 28: Radiated Emission 1GHz-13GHz, Horizontal & Vertical Antenna Orientations, Peak and Average Data, 802.11(g), Channel 6	87

9. List of Figures

Figure 1: Test setup	11
Figure 2: 6dB Bandwidth of 2412MHz 802.11(b) (Channel 1)	17
Figure 3: 6dB Bandwidth of 2437MHz 802.11(b) (Channel 6)	18
Figure 4: 6dB Bandwidth of 2462MHz 802.11(b) (Channel 11)	19
Figure 5: 6dB Bandwidth of 2412MHz 802.11(g) (Channel 1)	20
Figure 6: 6dB Bandwidth of 2437MHz 802.11(g) (Channel 6)	21
Figure 7: 6dB Bandwidth of 2462MHz 802.11(g) (Channel 11)	22
Figure 8: Operating 2412MHz 802.11(b) (Channel 1) spurious from 30MHz to 1GHz	24
Figure 9: Operating 2412MHz 802.11(b) (Channel 1) spurious from 1GHz to 5GHz	25
Figure 10: Operating 2412MHz 802.11(b) (Channel 1) spurious from 5GHz to 10GHz	26
Figure 11: Operating 2412MHz 802.11(b) (Channel 1) spurious from 10GHz to 20GHz	27
Figure 12: Operating 2412MHz 802.11(b) (Channel 1) spurious from 20GHz to 25GHz	28
Figure 13: Operating 2437MHz 802.11(b) (Channel 6) spurious from 30MHz to 1GHz	30
Figure 14: Operating 2437MHz 802.11(b) (Channel 6) spurious from 1GHz to 5GHz	31
Figure 15: Operating 2437MHz 802.11(b) (Channel 6) spurious from 5GHz to 10GHz	32
Figure 16: Operating 2437MHz 802.11(b) (Channel 6) spurious from 10GHz to 20GHz	33
Figure 17: Operating 2437MHz 802.11(b) (Channel 6) spurious from 20GHz to 25GHz	34
Figure 18: Operating 2462MHz 802.11(b) (Channel 11) spurious from 30MHz to 1GHz	36
Figure 19: Operating 2462MHz 802.11(b) (Channel 11) spurious from 1GHz to 5GHz	37
Figure 20: Operating 2462MHz 802.11(b) (Channel 11) spurious from 5GHz to 10GHz	38
Figure 21: Operating 2462MHz 802.11(b) (Channel 11) spurious from 10GHz to 20GHz	39
Figure 22: Operating 2462MHz 802.11(b) (Channel 11) spurious from 20GHz to 25GHz	40
Figure 23: Operating 2412MHz 802.11(g) (Channel 1) spurious from 30MHz to 1GHz	42
Figure 24: Operating 2412MHz 802.11(g) (Channel 1) spurious from 1GHz to 5GHz	43
Figure 25: Operating 2412MHz 802.11(g) (Channel 1) spurious from 5GHz to 10GHz	44
Figure 26: Operating 2412MHz 802.11(g) (Channel 1) spurious from 10GHz to 20GHz	45
Figure 27: Operating 2412MHz 802.11(g) (Channel 1) spurious from 20GHz to 25GHz	46
Figure 28: Operating 2437MHz 802.11(g) (Channel 6) spurious from 30MHz to 1GHz	48
Figure 29: Operating 2437MHz 802.11(g) (Channel 6) spurious from 1GHz to 5GHz	49
Figure 30: Operating 2437MHz 802.11(g) (Channel 6) spurious from 5GHz to 10GHz	50
Figure 31: Operating 2437MHz 802.11(g) (Channel 6) spurious from 10GHz to 20GHz	51
Figure 32: Operating 2437MHz 802.11(g) (Channel 6) spurious from 20GHz to 25GHz	52
Figure 33: Operating 2462MHz 802.11(g) (Channel 11) spurious from 30MHz to 1GHz	54
Figure 34: Operating 2462MHz 802.11(g) (Channel 11) spurious from 1GHz to 5GHz	55
Figure 35: Operating 2462MHz 802.11(g) (Channel 11) spurious from 5GHz to 10GHz	56
Figure 36: Operating 2462MHz 802.11(g) (Channel 11) spurious from 10GHz to 20GHz	57
Figure 37: Operating 2462MHz 802.11(g) (Channel 11) spurious from 20GHz to 25GHz	58
Figure 38: Power Spectral Density of 2412MHz 802.11(b) (Channel 1)	60
Figure 39: Power Spectral Density of 2437MHz 802.11(b) (Channel 6)	61
Figure 40: Power Spectral Density of 2462MHz 802.11(b) (Channel 11)	62
Figure 41: Power Spectral Density of 2412MHz 802.11(g) (Channel 1)	63
Figure 42: Power Spectral Density of 2437MHz 802.11(g) (Channel 6)	64
Figure 43: Power Spectral Density of 2462MHz 802.11(g) (Channel 11)	65
Figure 44: Band edge radiated emission of 2412MHz 802.11(b) (Channel 1), Peak and average	68
Figure 45: Band edge radiated emission of 2462MHz 802.11(b) (Channel 11), Peak and average	69
Figure 46: Band edge radiated emission of 2412MHz 802.11(g) (Channel 1), Peak and average	70
Figure 47: Band edge radiated emission of 2462MHz 802.11(g) (Channel 11), Peak and average	71
Figure 48: Spectral Diagrams, Conducted Emission 802.11(b) radio Channel 11, (0.15 - 30)MHz, Phase N (N)	73
Figure 49: Spectral Diagrams, Conducted Emission 802.11(b) radio Channel 11, (0.15 - 30)MHz, Phase L1 (L)	73
Figure 50: Spectral Diagrams, Conducted Emission 802.11(g) radio Channel 6, (0.15 - 30)MHz, Phase N (N)	75

Figure 51: Spectral Diagrams, Conducted Emission 802.11(g) radio Channel 6, (0.15 - 30)MHz, Phase L1 (L) 75

10. List of Photographs

Photograph 1: Set-up for Conducted Testing..... 88
Photograph 2: Set-up for AC Conducted Emission, EUT Configuration Front View..... 89
Photograph 3: Set-up for AC Conducted Emission, EUT Configuration Back View 89
Photograph 4: Set-up for Radiated Emission, EUT Configuration X-axis 90
Photograph 5: Set-up for Radiated Emission, EUT Configuration Y-axis 90
Photograph 6: Set-up for Radiated Emission, EUT Configuration Z-axis 91
Photograph 7: Set-up for Radiated Emission, EUT Configuration back view 91