



Prüfbericht-Nr.: Test Report No.:	15063930 001	Auftrags-Nr.: Order No.:	154031369	Seite 1 von 65 Page 1 of 65
Kunden-Referenz-Nr.: Client Reference No.:	488459	Auftragsdatum: Order date:	2013.7.24	
Auftraggeber: Client:	Murata Manufacturing Co.,Ltd 10-1, Higashikotari 1-chome Nagaokakyo-shi ,Kyoto ,Japan			
Prüfgegenstand: Test item:	wifi module			
Bezeichnung / Typ-Nr.: Identification / Type No.:	Model Name : CMWC1ZZAAF FCC ID : VPYAAF			
Auftrags-Inhalt: Order content:	Complete test			
Prüfgrundlage: Test specification:	FCC CFR47 Part 15, Subpart C, §15.247 ANSI C63.10-2009 KDB 558074 D01 DTS Meas Guidance v03			
Wareneingangsdatum: Date of receipt:	09.08.2013			
Prüfmuster-Nr.: Test sample No.:	N.A			
Prüfzeitraum: Testing period:	09.08.2013 – 27.08.2013			
Ort der Prüfung: Place of testing:	QuieTek Technology(Suzhou)Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
28.08.2013 ShiLi / PE 		28.08.2013 Jesse huang / PM 		
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
<p>* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</p> <p>Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</p>				
<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 only 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 test mark.</p>				



Prüfbericht - Nr.:

15063930 001

Seite 2 von 65

Test Report No.:

Page 2 of 65

TEST SUMMARY

3.2.1 VOLTAGE REQUIREMENTS, FCC 15.31(E)

RESULT: PASS

3.2.2 ANTENNA REQUIREMENTS, FCC 15.203, FCC 15.204 AND RSS-GEN 7.1.4

RESULT: PASS

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

RESULT: PASS

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

5.1.3 CONDUCTED SPURIOUS EMISSION, FCC 15.247(C) AND RSS-210 A8.5

RESULT: PASS

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

RESULT: PASS

**5.1.5 BAND EDGE COMPLIANCE OF RF CONDUCTED EMISSION, FCC 15.247(C) AND
RSS-210 A8.5**

RESULT: PASS

**6.1.1 BAND EDGE RADIATED EMISSION, FCC 15.205, FCC 15.209, FCC 15.247(c),
RSS-210 2.2, RSS-210 2.6 AND RSS-210 A8.5**

RESULT: PASS

**6.1.2 RADIATED SPURIOUS EMISSION OF TRANSMITTER, FCC 15.205, FCC 15.209, FCC
15.247(c), RSS-210 2.2, RSS-210 2.6 AND RSS-210 A8.5**

RESULT: PASS

CONTENTS

1.	GENERAL REMARKS.....	5
1.1	COMPLEMENTARY MATERIALS	5
2.	TEST SITES.....	5
2.1	TEST FACILITIES	5
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	6
2.3	MEASUREMENT UNCERTAINTY	6
3.	GENERAL PRODUCT INFORMATION	7
3.1	PRODUCT FUNCTION AND INTENDED USE	7
3.2	SYSTEM DETAILS	7
3.2.1	Voltage Requirements, FCC 15.31(e).....	7
3.2.2	Antenna Requirements, FCC 15.203, FCC 15.204 and RSS-Gen 7.1.4.....	7
3.3	INDEPENDENT OPERATION MODES	8
3.4	NOISE SUPPRESSING PARTS.....	8
4.	TEST SET-UP AND OPERATION MODES	9
4.1	TEST METHODOLOGY	9
4.2	PHYSICAL CONFIGURATION FOR TESTING	9
4.3	TEST OPERATION AND TEST SOFTWARE	9
4.4	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT.....	9
4.5	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	10
5.	TEST RESULTS OF CONDUCTED MEASUREMENTS AT ANTENNA PORT.....	11
5.1	TRANSMITTER PARAMETERS	11
5.1.1	Conducted Output Power, FCC 15.247(b)(3) and RSS-210 A8.4(4).....	11
5.1.2	6dB Bandwidth, FCC 15.247(a)(2) and RSS-210 A8.2(a)	20
5.1.3	Conducted Spurious Emission, FCC 15.247(c) and RSS-210 A8.5	26
5.1.4	Power spectral density (PSD), FCC 15.247(e) and RSS-210 A8.2	41
5.1.5	Band Edge Compliance of RF Conducted Emission, FCC 15.247(c) and RSS-210 A8.5	47
6.	TEST RESULTS OF RADIATED MEASUREMENTS	54
6.1	TRANSMITTER PARAMETERS	54
6.1.1	Band Edge Radiated Emission, FCC 15.205, FCC 15.209, FCC 15.247(c), RSS-210 2.2, RSS-210 2.6 and RSS-210 A8.5	54
6.1.2	Radiated Spurious Emission of Transmitter, FCC 15.205, FCC 15.209, FCC 15.247(c), RSS-210 2.2, RSS-210 2.6 and RSS-210 A8.5.....	58
7.	PHOTOGRAPHS OF THE TEST SETUP.....	62
8.	LIST OF TABLES.....	64

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 4 von 65
Page 4 of 65

9.	LIST OF FIGURES.....	64
10.	LIST OF PHOTOGRAPHS	65

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 5 von 65
Page 5 of 65

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report.
This applies especially to
the following appendix:
Appendix 1: test result
(File: 15063930 001 APPENDIX1)

2. Test Sites

2.1 Test Facilities

QuieTek Technology(Suzhou)Co.,Ltd.
No.99 Hongye RD.Suzhou Industnal Park Loufeng Hi-Tech Development
Zone.,Suzhou,China

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

The Federal Communications 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 800392.

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 chambers filing number 4075B.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 6 von 65
Page 6 of 65

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Equipment	Model	Serial no.	Cal. due date
EMI Test Receiver	ESCI	100573	2014.04.18
Spectrum Analyzer	N9010A	MY48030494	2014.04.18
Bilog Antenna	CBL6112D	27611	2013.10.15
DRG Horn	ETS-Lindgren	3117	2014.01.21
Preamplifier	NSP1800-25	1364185	2014.05.04
Coaxial Cable	SUCOFLEX 106	AC2-C	2014.03.02
Temperature/Humidity Meter	ZC1-2	AC2-TH	2014.01.10
Spectrum Analyzer	FSP30	100192	2014.07.21
WIFI tester	MT8860C	1146004	2014.05.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	2014.03.01

2.3 Measurement Uncertainty

Table 2: Emission Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.39dB
	> 1GHz	±0.68dB
Radiated Emission	30MHz - 1GHz	±5.34dB
	> 1GHz	±5.40dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT (Equipment Under Test) is a WIFI device

3.2 System Details

Specified Max peak output power:	21.78dBm
Antenna gain:	3.3dBi
Antenna type:	PCB Antenna
Antenna cable length:	N/A
Number of channels:	11
Channel spacing:	5MHz
Modulation type:	OFDM / DSSS
Rated voltage:	3.3V
Test voltage:	3.3V

3.2.1 Voltage Requirements, FCC 15.31(e)

RESULT: **PASS**

All the tests were performed using steady DC 3.3 V. Hence it complies with the power supply requirements.

3.2.2 Antenna Requirements, FCC 15.203, FCC 15.204 and RSS-Gen 7.1.4

RESULT: **PASS**

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

Prüfbericht - Nr.:
Test Report No.:

15063930 001

Seite 8 von 65
Page 8 of 65

3.3 Independent Operation Modes

The EUT was tested on a stand-alone basis (only attached to the test jig) and the test system was configured in a typical fashion (as a customer would normally use it).

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 C63.10:2009. Testing was performed at the lowest operating frequency, at the operating frequency in the middle of the specified frequency band and at the highest operating frequency with different modulation types.

802.11B TEST MODE			
Radiated Mode (TX and RX)		Conducted Mode	
A: Low	2412MHz	A: Low	2412MHz
B: Middle	2437MHz	B: Middle	2437MHz
C: High	2462MHz	C: High	2462MHz
802.11G TEST MODE			
Radiated Mode (TX and RX)		Conducted Mode	
A: Low	2412MHz	A: Low	2412MHz
B: Middle	2437MHz	B: Middle	2437MHz
C: High	2462MHz	C: High	2462MHz
802.11N(20M) TEST MODE			
Radiated Mode (TX and RX)		Conducted Mode	
A: Low	2412MHz	A: Low	2412MHz
B: Middle	2437MHz	B: Middle	2437MHz
C: High	2462MHz	C: High	2462MHz

Each mode basic operation in (802.11 b g n) :

- A. EUT transmits (TX mode), with full power, at lowest channel , a continuous modulated signal streaming with 100% duty cycle.
- B. EUT transmits (TX mode), with full power, at middle channel , a continuous modulated signal streaming with 100% duty cycle.
- C. EUT transmits (TX mode), with full power, at highest channel, a continuous modulated signal streaming with 100% duty cycle.
- D. EUT receives (RX mode), at lowest channel , continuously.
- E. EUT receives (RX mode), at middle channel , continuously.
- F. EUT receives (RX mode), at highest channel , continuously.

Full test was applied on all test modes, but only worst case was shown.

3.4 Noise Suppressing Parts

Refer to schematics and internal photos.

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, Sections 15.31, 15.33, 15.35, 15.205, 15.207, 15.209 and KDB558074 D01 DTS Meas Guidance v03, The test methods, which have been used, are based on ANSI C63.10-2009 and RSS-Gen (Issue 3).

For details, see under each test item.

4.2 Physical Configuration for Testing

The EUT was designed to get into related working mode with the control of a laptop computer through USB interface.

Notes:

One test sample was available. Both for antennas conducted measurements and for radiated measurements.

For antenna conducted measurements, the antenna was replaced by a 50Ω antenna connector.

For more details, refer to section: Photographs of the Test Set-Up.

4.3 Test Operation and Test Software

Software used for testing: initial.exe by client.

This software was running on the laptop computer connected to the EUT. It was used to enable the test operation modes listed in section 3.3 as appropriate for conducted test

Band	Date Rate or Sub-test	Worst case
802.11b	1M 2M 5.5M 11M	11M
802.11g	6M 9M 12M 18M 24M 36M 48M 54M	54M
802.11n 20M	MCS0,1,2,3,4,5,6,7	MCS7

4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with a USB (supply power for the module).

Prüfbericht - Nr.:

15063930 001

Seite 10 von 65

Test Report No.:

Page 10 of 65

4.5 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 11 von 65
Page 11 of 65

5. Test Results of Conducted Measurements at Antenna Port

5.1 Transmitter Parameters

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

RESULT: **PASS**

Date of testing: 2013-08-12

Ambient temperature: 22°C

Relative humidity: 45%

Atmospheric pressure: 101.5hPa

Requirements:

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.8 and KDB558074 D01 DTS Meas Guidance v03

The maximum peak output power (conducted) was measured at the antenna connector with a spectrum analyzer. The analyzer resolution bandwidth was set to 1MHz and the video bandwidth to 3MHz. The final measurement takes into account the loss generated by all the involved cables.

Prüfbericht - Nr.: 15063930 001

Seite 12 von 65

Test Report No.:

Page 12 of 65

Table 3: Conducted Output Power, Mode A (Low Channel)

802.11B Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
1	21.07	-	30	-
2	21.11	-	30	-
5.5	21.08	-	30	-
11	21.12	14.9	30	8.88

802.11G Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
6	19.63	-	30	-
9	19.63	-	30	-
12	19.59	-	30	-
18	19.62	-	30	-
24	19.63	-	30	-
36	19.59	-	30	-
48	19.62	-	30	-
54	19.68	9.39	30	10.32

802.11N Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
MCS0	18.63	-	30	-
MCS1	18.60	-	30	-
MCS2	18.61	-	30	-
MCS3	18.59	-	30	-
MCS4	18.63	-	30	-
MCS5	18.61	-	30	-
MCS6	18.61	-	30	-
MCS7	18.64	7.65	30	11.36

Notes: Cable loss was included in reading as offset.

Prüfbericht - Nr.: 15063930 001

Seite 13 von 65

Test Report No.:

Page 13 of 65

Table 4: Conducted Output Power, Mode B (Middle Channel)

802.11B Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
1	21.74	-	30	-
2	21.73	-	30	-
5.5	21.73	-	30	-
11	21.75	15.31	30	8.25

802.11G Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
6	20.01	-	30	-
9	19.98	-	30	-
12	20.01	-	30	-
18	20.03	-	30	-
24	19.97	-	30	-
36	19.95	-	30	-
48	19.96	-	30	-
54	20.05	9.01	30	9.95

802.11N Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
MCS0	18.82	-	30	-
MCS1	18.80	-	30	-
MCS2	18.81	-	30	-
MCS3	18.82	-	30	-
MCS4	18.82	-	30	-
MCS5	18.79	-	30	-
MCS6	18.82	-	30	-
MCS7	18.82	7.84	30	11.18

Notes: Cable loss was included in reading as offset.

Prüfbericht - Nr.: 15063930 001

Seite 14 von 65

Test Report No.:

Page 14 of 65

Table 5: Conducted Output Power, Mode C (High Channel)

802.11B Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
1	21.72	-	30	-
2	21.77	-	30	-
5.5	21.77	-	30	-
11	21.78	15.48	30	8.22

802.11G Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
6	20.00	-	30	-
9	19.91	-	30	-
12	19.96	-	30	-
18	19.96	-	30	-
24	19.97	-	30	-
36	19.99	-	30	-
48	20.01	-	30	-
54	20.01	9.02	30	9.99

802.11N Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
MCS0	19.11	-	30	-
MCS1	19.10	-	30	-
MCS2	19.09	-	30	-
MCS3	19.08	-	30	-
MCS4	19.08	-	30	-
MCS5	19.09	-	30	-
MCS6	19.10	-	30	-
MCS7	19.11	7.97	30	10.89

Notes: Cable loss was included in reading as offset.

Remark:

The above results show that the worst case output power is found at the data rate 11M, 54M, MCS7. Therefore, all the other measurements for the evaluation of the radio properties of the EUT have been performed using this data rate.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 15 von 65
Page 15 of 65

Figure 1: Output Peak Power, 802.11B (Low Channel)

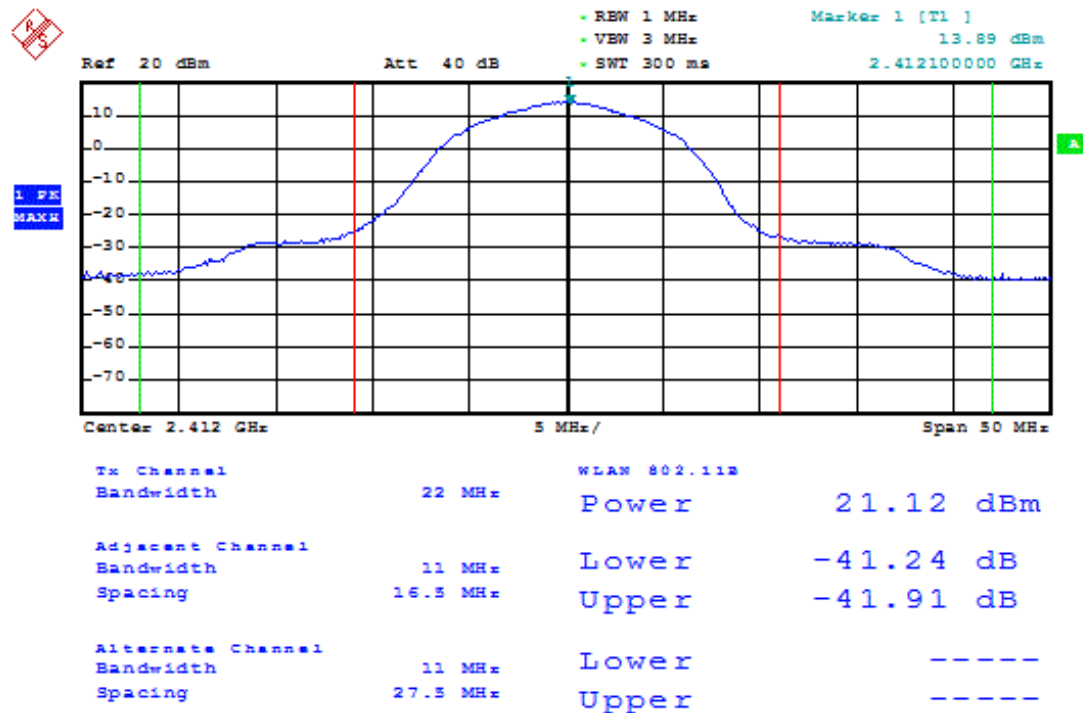
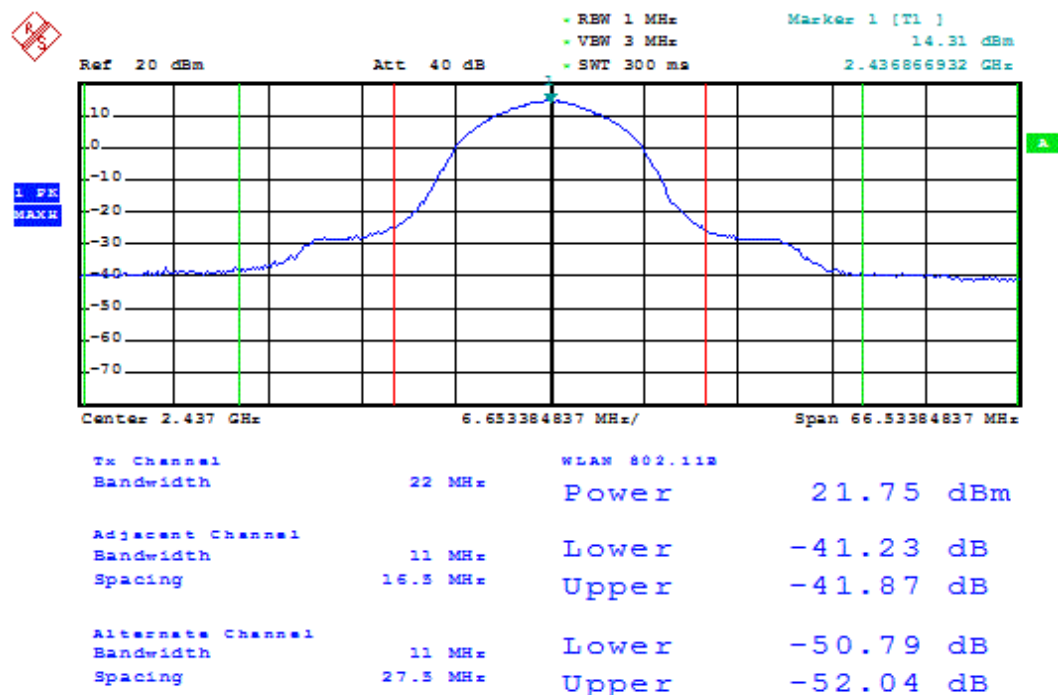


Figure 2: Output Peak Power, 802.11B (Middle Channel)



Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 16 von 65
Page 16 of 65

Figure 3: Output Peak Power, 802.11B (High Channel)

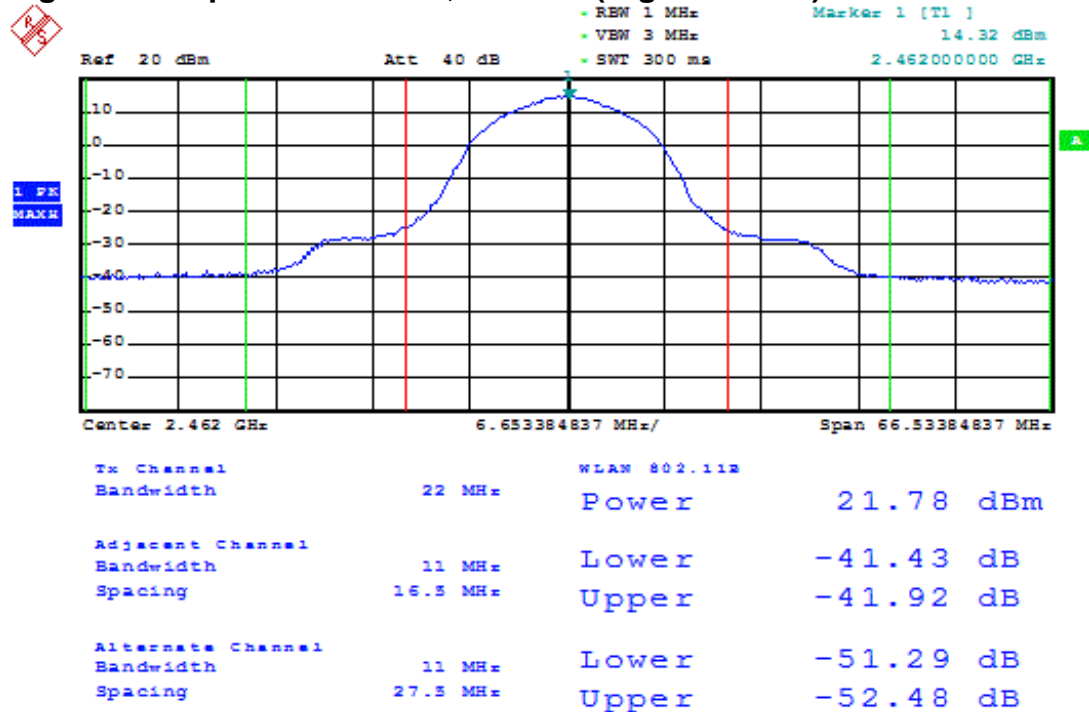


Figure 4: Output Peak Power, 802.11G (Low Channel)

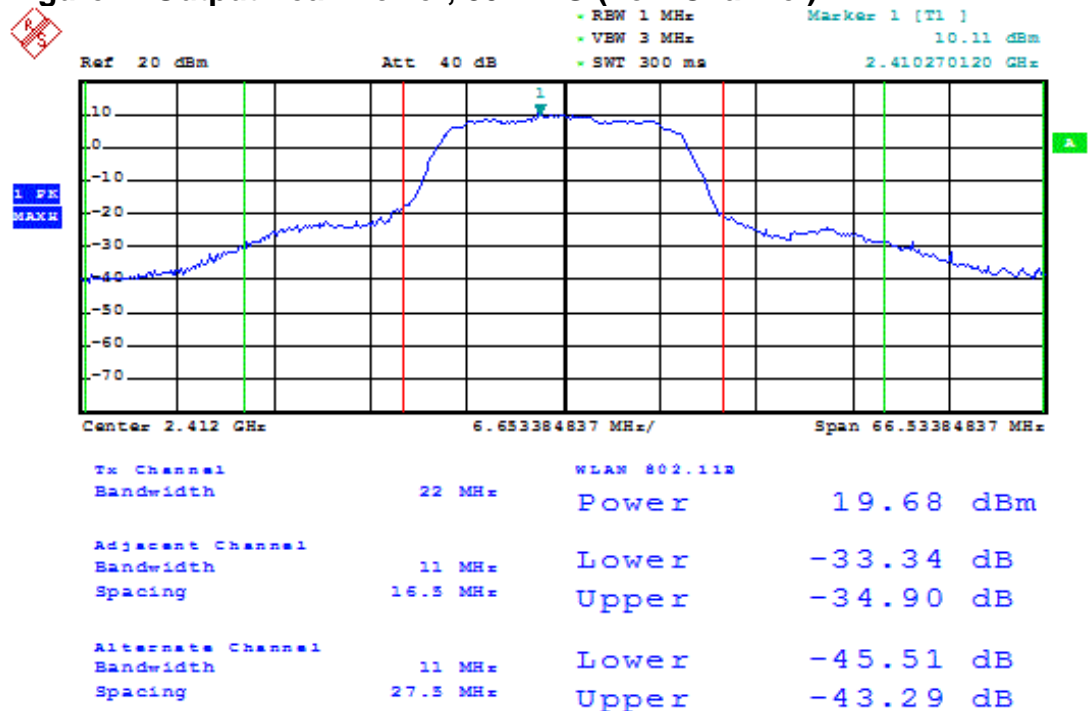


Figure 5: Output Peak Power, 802.11G (Middle Channel)

Prüfbericht - Nr.:
Test Report No.:

15063930 001

Seite 17 von 65
Page 17 of 65

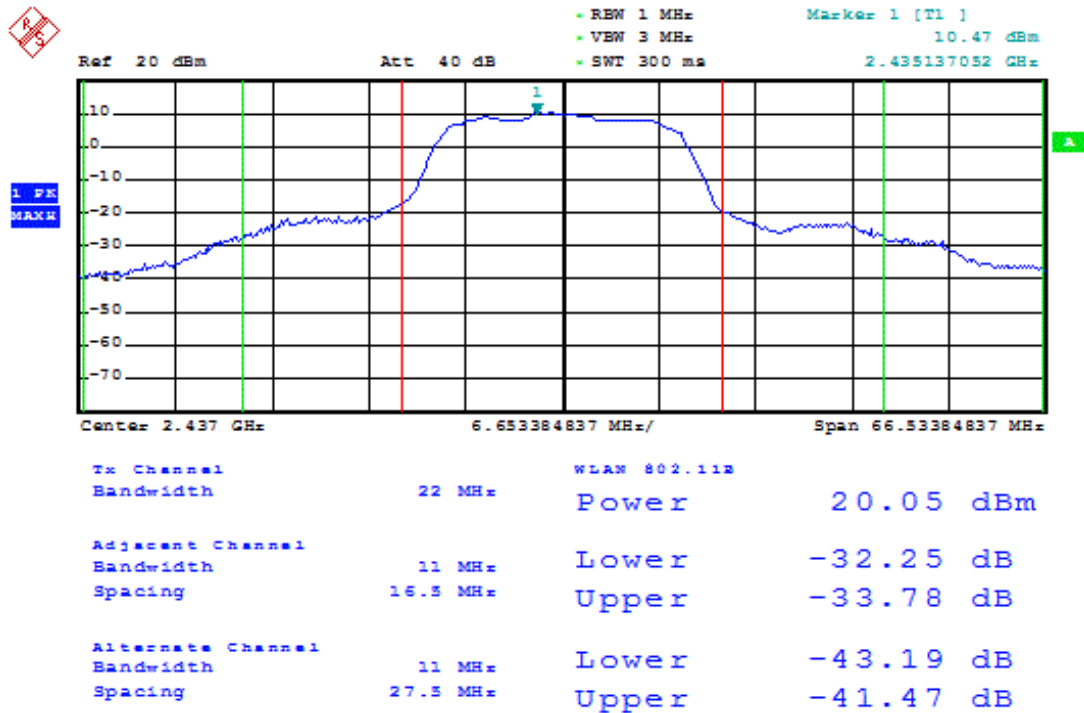
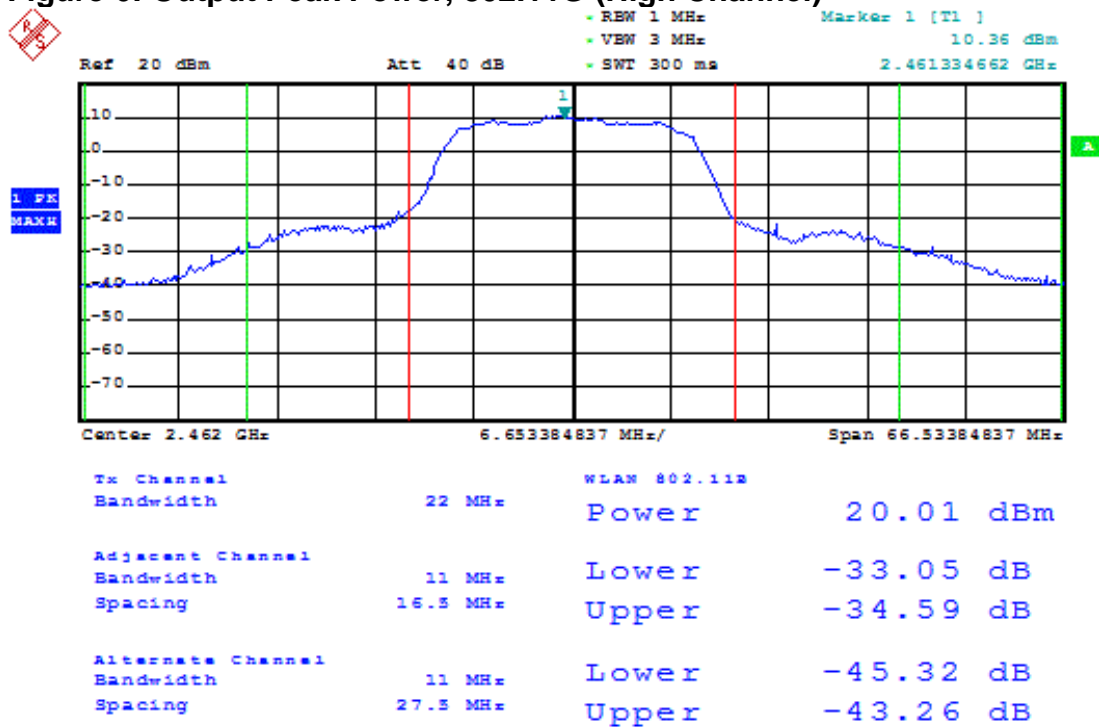


Figure 6: Output Peak Power, 802.11G (High Channel)



Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 18 von 65
Page 18 of 65

Figure 7: Output Peak Power, 802.11N (Low Channel)

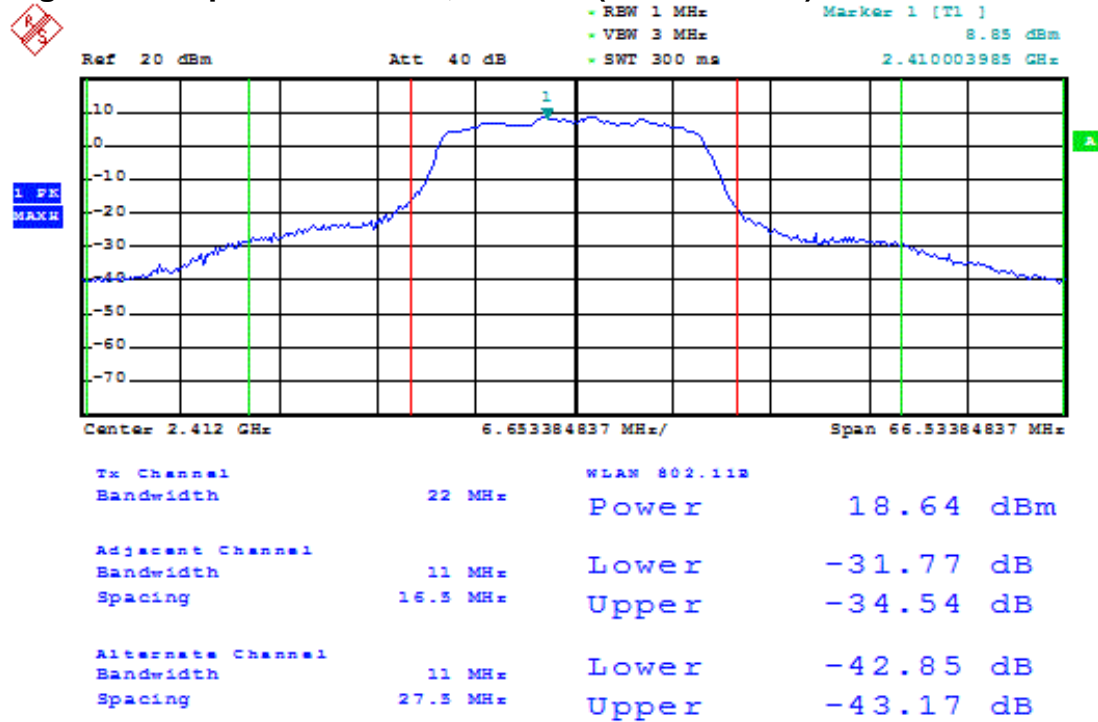
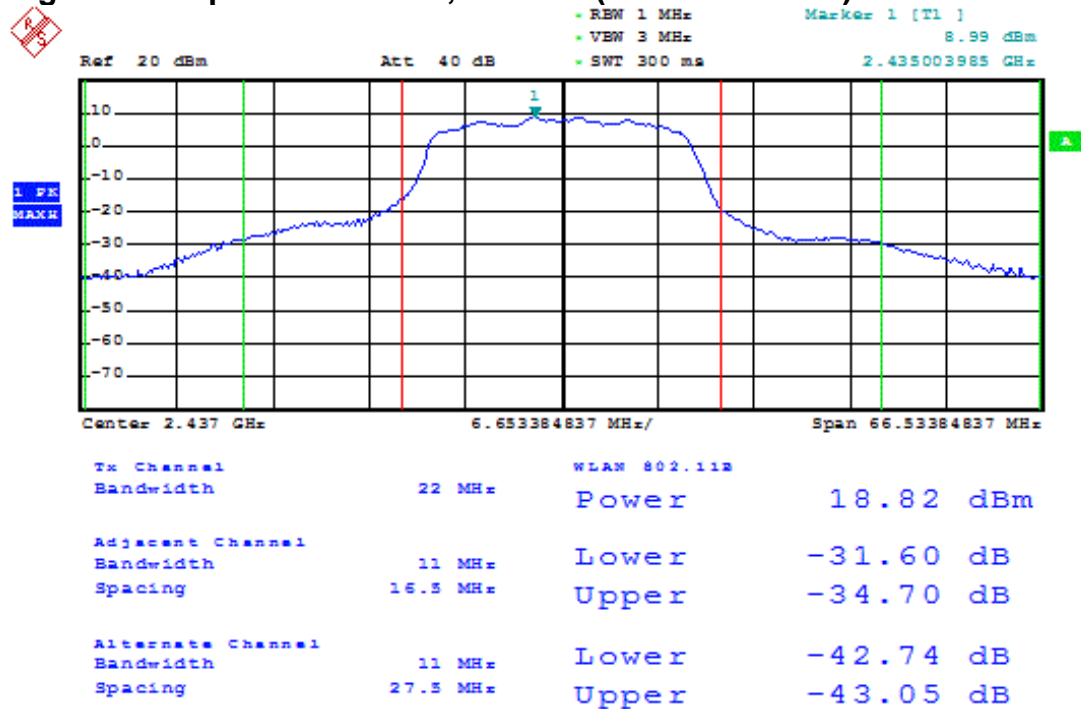


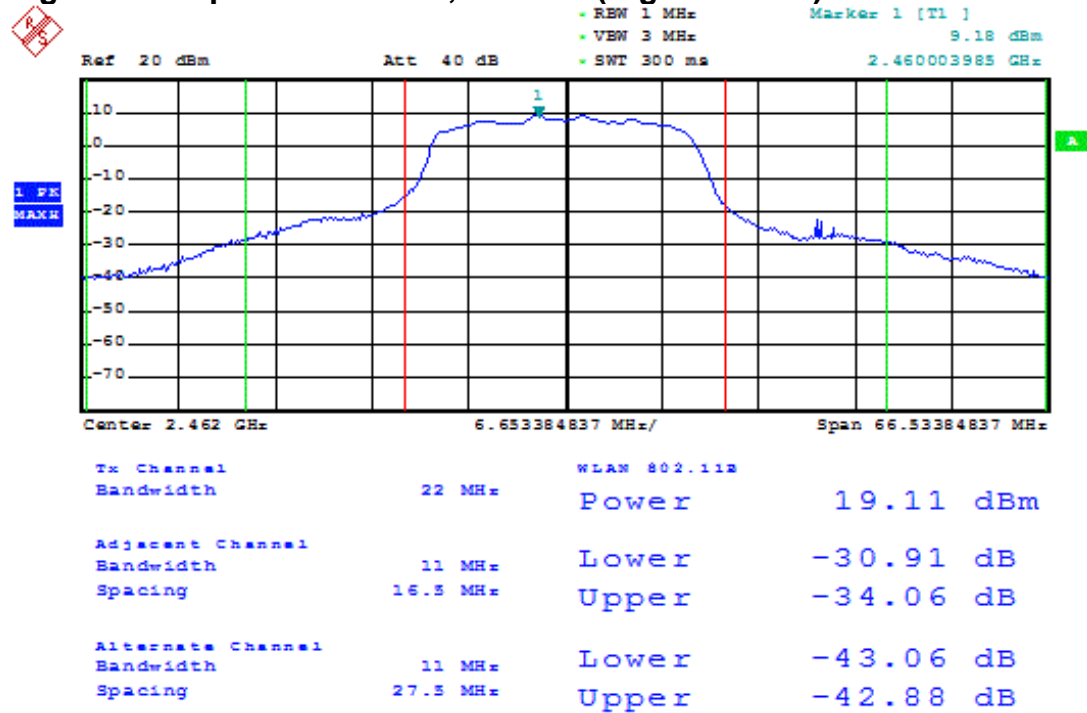
Figure 8: Output Peak Power, 802.11N (Middle Channel)



Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 19 von 65
Page 19 of 65

Figure 9: Output Peak Power, 802.11N (High Channel)



Prüfbericht - Nr.:
Test Report No.:

15063930 001

Seite 20 von 65
Page 20 of 65

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

Date of testing: 2013-08-27

Ambient temperature: 22°C
Relative humidity: 45%
Atmospheric pressure: 101.5hPa

Requirements:

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.6.2 and KDB558074 D01 DTS Meas Guidance v03.
A spectrum analyzer was connected to the antenna port of the EUT.
The resolution bandwidth of the spectrum analyzer was set to at least 1% of the EUT emission bandwidth. RBW=100 kHz, VBW=300 kHz.

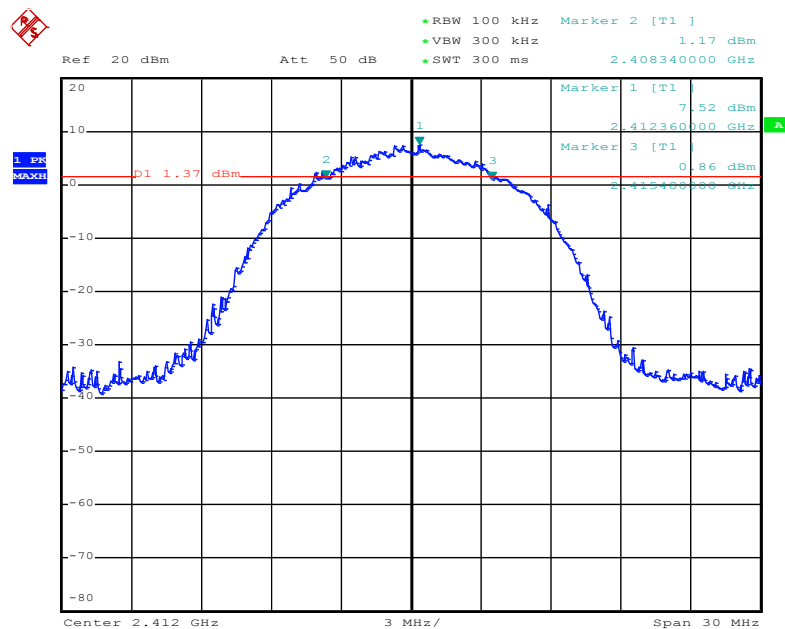
Table 6: 6 dB Bandwidth

Operating Frequency [MHz]	6 dB Bandwidth of 802.11B [MHz]
Low channel	7.14
Middle channel	8.16
High channel	7.56
Operating Frequency [MHz]	6 dB Bandwidth of 802.11g [MHz]
Low channel	15.97
Middle channel	16.32
High channel	15.70
Operating Frequency [MHz]	6 dB Bandwidth of 802.11N [MHz]
Low channel	17.68
Middle channel	17.68
High channel	17.70

Prüfbericht - Nr.: 15063930 001
Test Report No.:

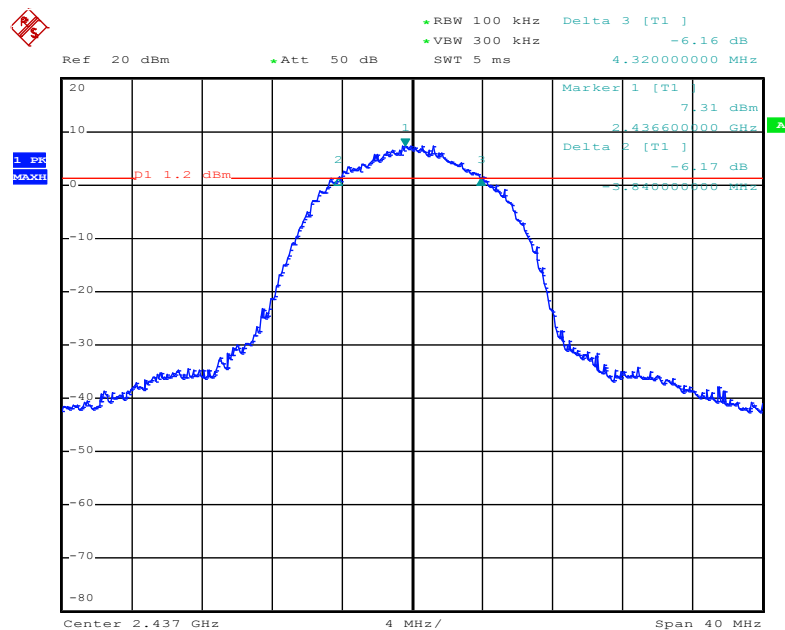
Seite 21 von 65
Page 21 of 65

Figure 10: 6 dB Bandwidth of 802.11B (Low Channel Mode A)



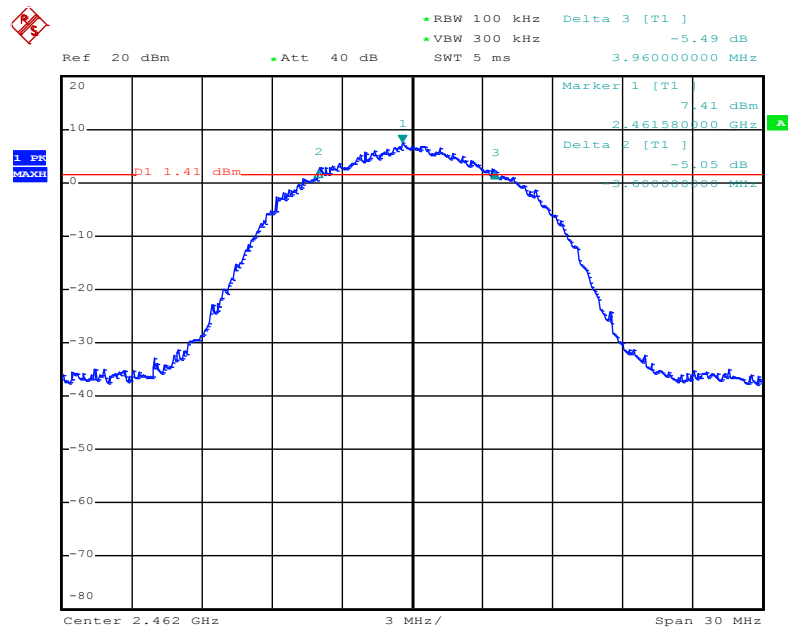
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Figure 11: 6 dB Bandwidth of 802.11B (Middle Channel Mode B)



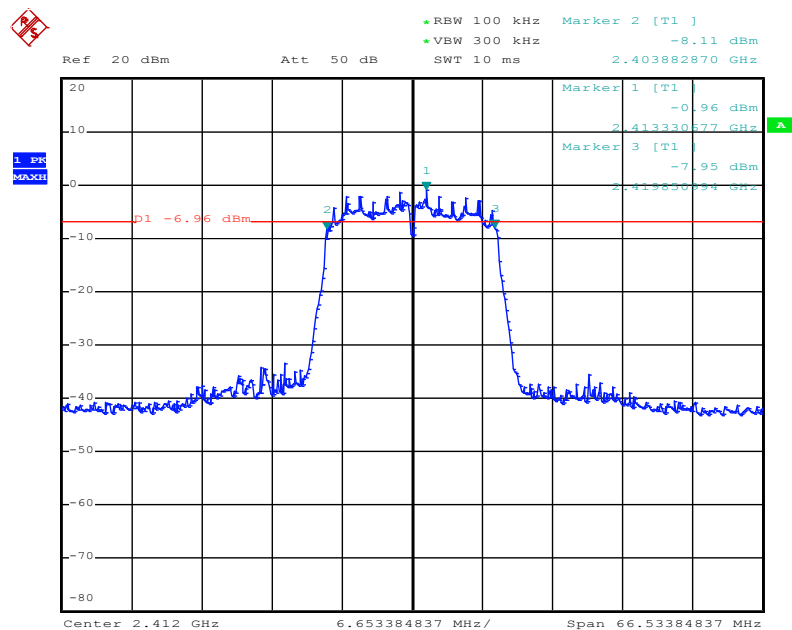
Date: 27.AUG.2013 15:48:42

Figure 12: 6 dB Bandwidth of 802.11B (High Channel Mode C)



Date: 27.AUG.2013 16:10:11

Figure 13: 6 dB Bandwidth of 802.11G (Low Channel Mode A)

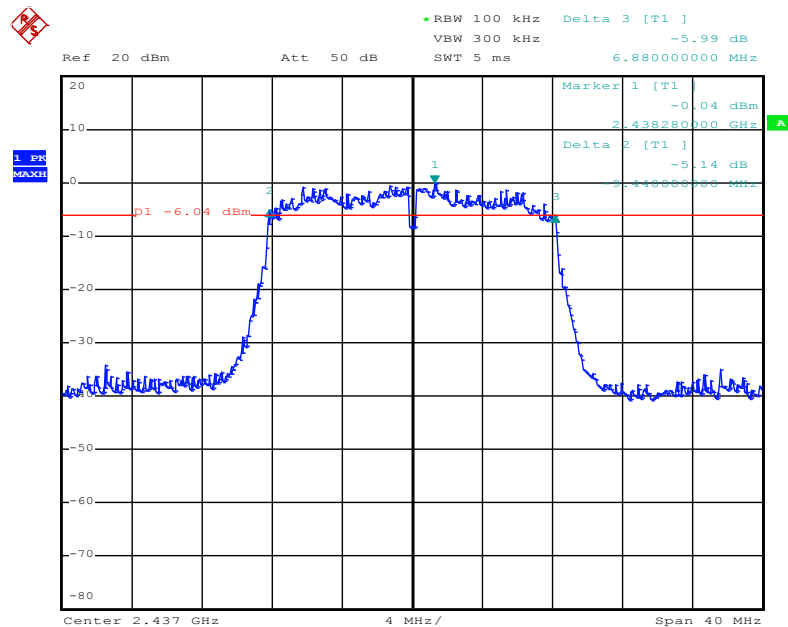


Date: 12.AUG.2013 16:47:10

Prüfbericht - Nr.: 15063930 001
Test Report No.:

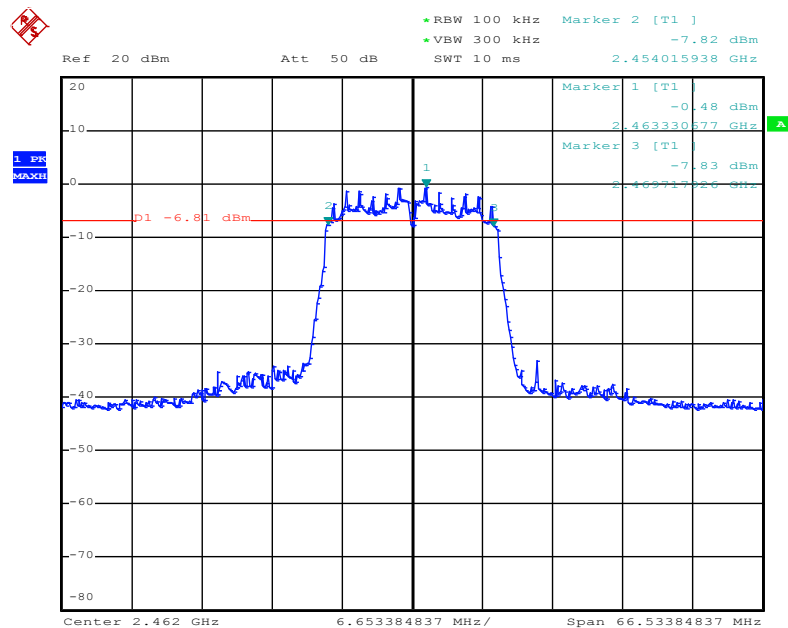
Seite 23 von 65
Page 23 of 65

Figure 14: 6 dB Bandwidth of 802.11G (Middle Channel Mode B)



Date: 27.AUG.2013 15:24:09

Figure 15: 6 dB Bandwidth of 802.11G (High Channel Mode C)

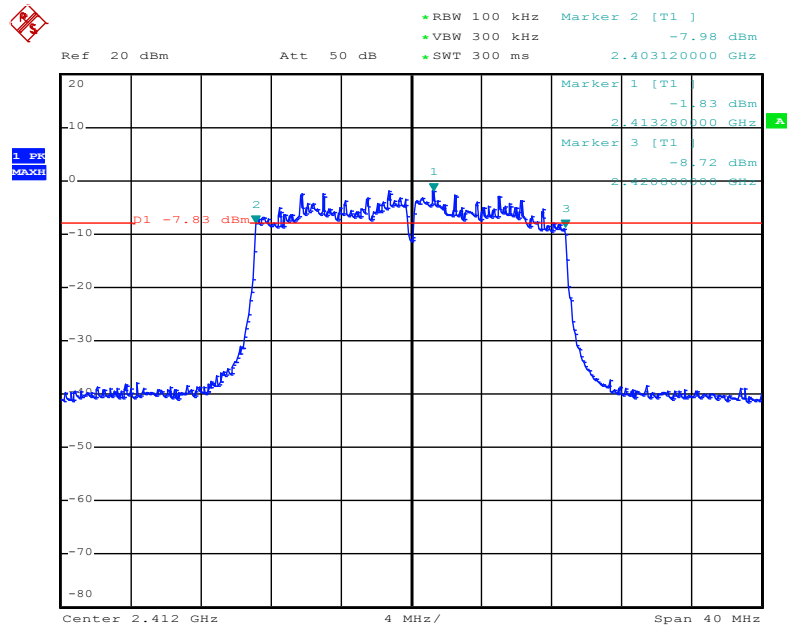


Date: 12.AUG.2013 17:01:09

Prüfbericht - Nr.: 15063930 001
Test Report No.:

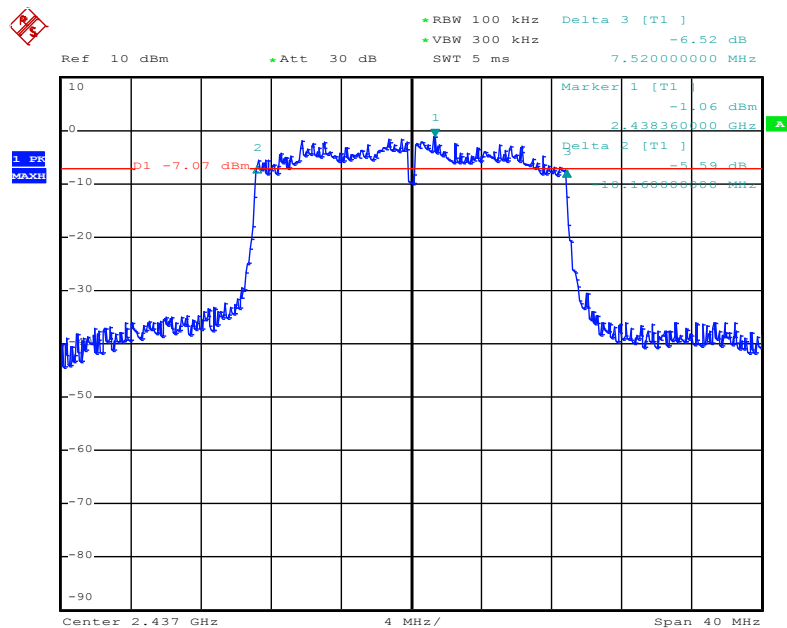
Seite 24 von 65
Page 24 of 65

Figure 16: 6 dB Bandwidth of 802.11N (Low Channel Mode A)



Date: 12.AUG.2013 15:57:23

Figure 17: 6 dB Bandwidth of 802.11N (Middle Channel Mode B)

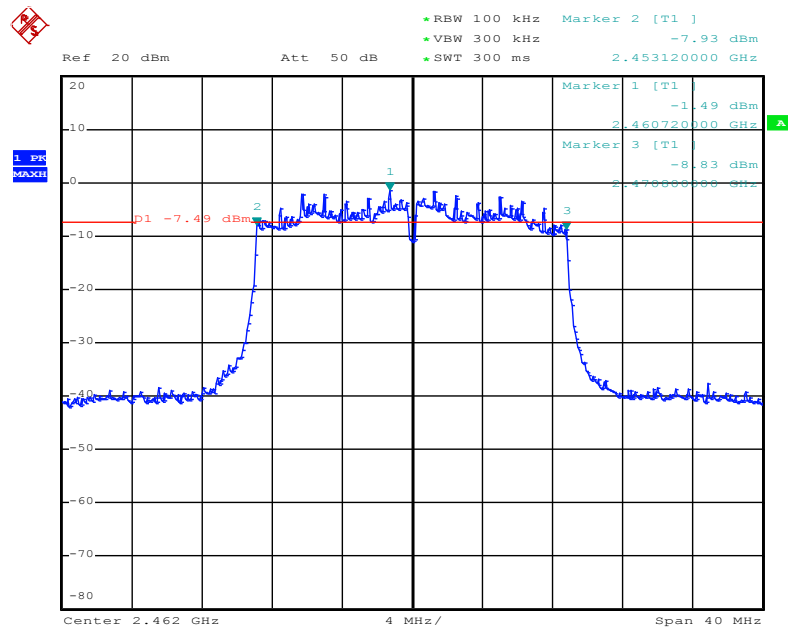


Date: 27.AUG.2013 15:44:28

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 25 von 65
Page 25 of 65

Figure 18: 6 dB Bandwidth of 802.11G (High Channel Mode C)



Date: 12.AUG.2013 16:13:58

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 26 von 65
Page 26 of 65

5.1.3 Conducted Spurious Emission, FCC 15.247(c) and RSS-210 A8.5

RESULT:

PASS

Date of testing: 2013-08-27

Ambient temperature: 22°C

Relative humidity: 45%

Atmospheric pressure: 101.5hPa

Requirements:

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

Test procedure:

ANSI C63.10-2009,RSS-Gen 4.9 and KDB558074 D01 DTS Meas Guidance v03

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

The final measurement takes into account the loss generated by all the involved cables.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

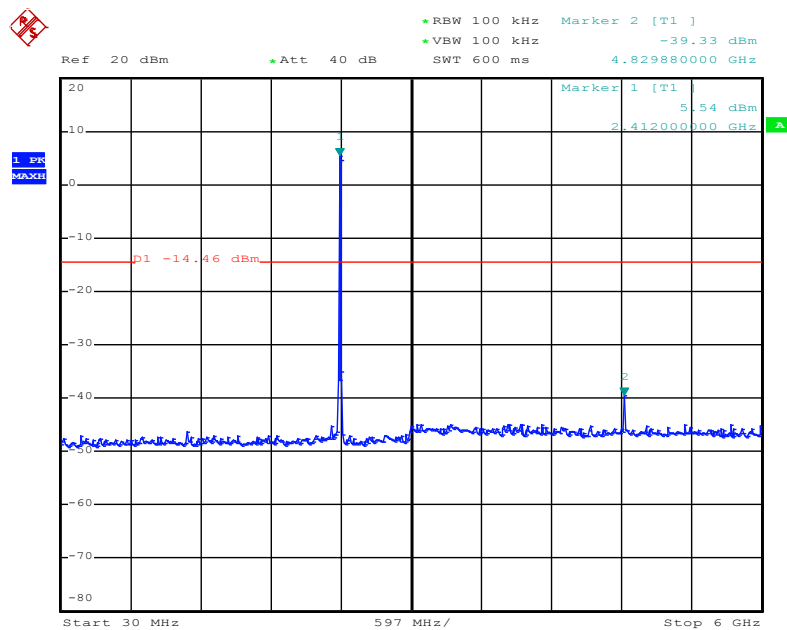
Seite 27 von 65
Page 27 of 65

Table 7: Conducted Spurious Emission, 802.11B Mode A (Low Channel)

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
24240	-31.33	5.54	-14.46	16.87
4829	-39.33	5.54	-14.46	24.87
2412	5.54	5.54	-	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Figure 19: Conducted Spurious Emission, 30MHz – 6GHz, Mode A

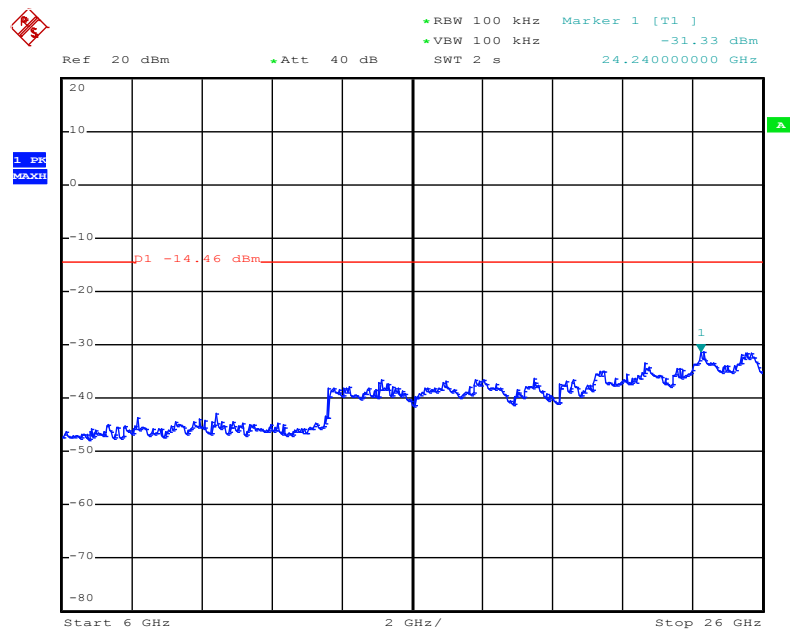


Date: 27.AUG.2013 15:56:07

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 28 von 65
Page 28 of 65

Figure 20: Conducted Spurious Emission, 6GHz – 25GHz, Mode A



Date: 27.AUG.2013 15:56:43

Table 8: Conducted Spurious Emission, 802.11B Mode B (Middle Channel)

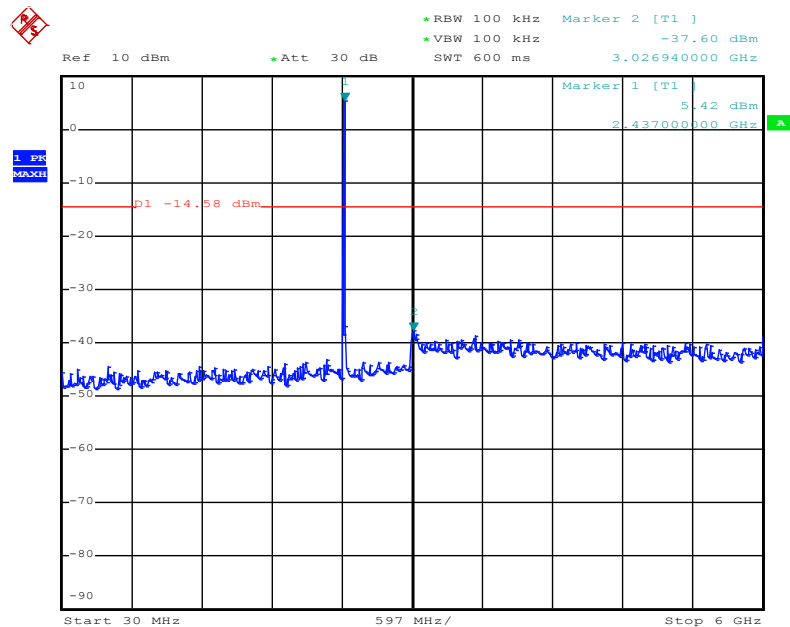
Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25480	-40.42	5.42	-14.58	25.84
3026	-37.6	5.42	-14.58	23.02
2437	5.42	5.42	-	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Prüfbericht - Nr.: 15063930 001
Test Report No.:

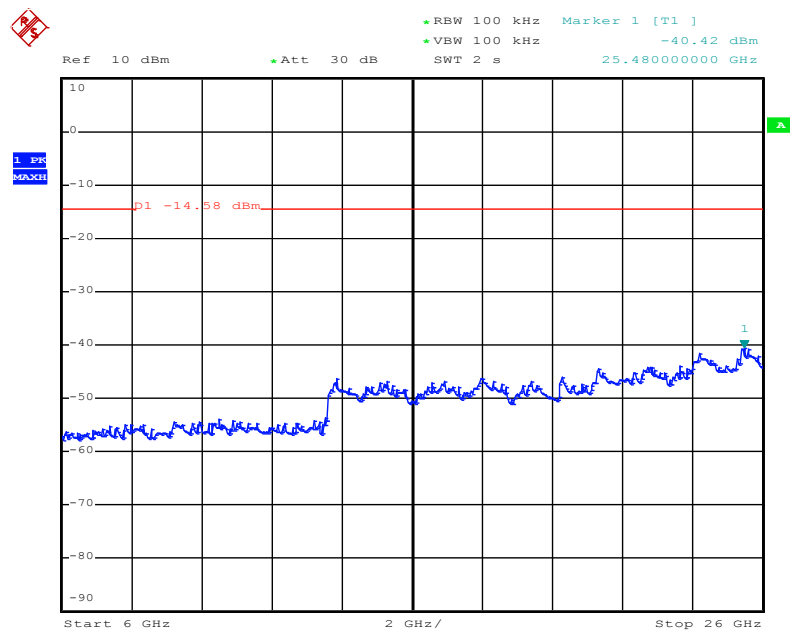
Seite 29 von 65
Page 29 of 65

Figure 21: Conducted Spurious Emission, 30MHz –6GHz, Mode B



Date: 27.AUG.2013 15:51:33

Figure 22: Conducted Spurious Emission, 6GHz – 25GHz, Mode B



Date: 27.AUG.2013 15:52:06

Prüfbericht - Nr.: 15063930 001
Test Report No.:

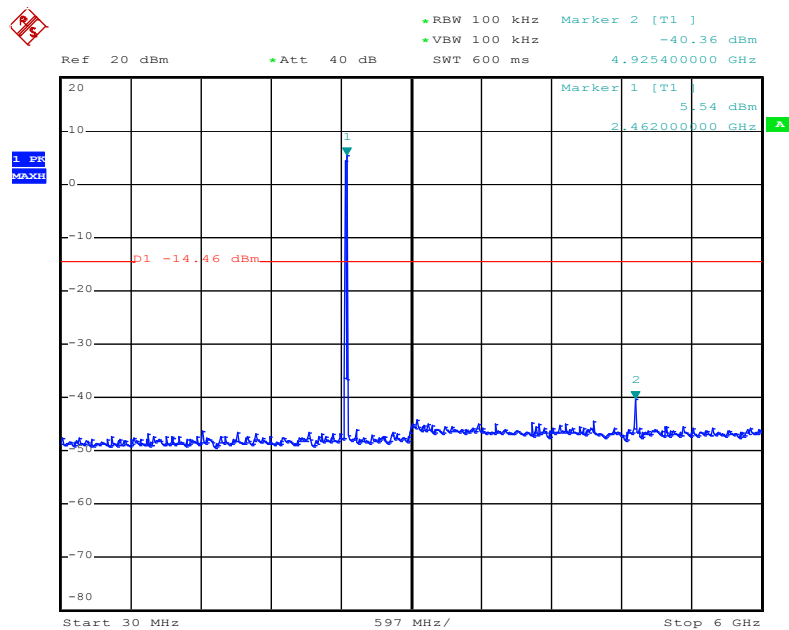
Seite 30 von 65
Page 30 of 65

Table 9: Conducted Spurious Emission, 802.11B Mode C (High Channel)

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25640	-31.85	5.54	-14.46	17.39
4925	-40.36	5.54	-14.46	25.9
2462	5.54	5.54	-	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Figure 23: Conducted Spurious Emission, 30MHz –6GHz, Mode C

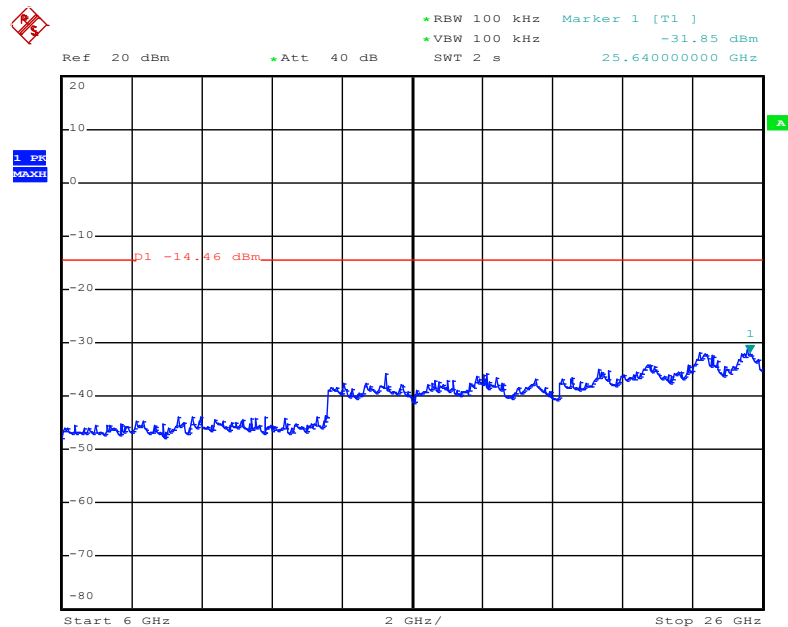


Date: 27.AUG.2013 15:59:07

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 31 von 65
Page 31 of 65

Figure 24: Conducted Spurious Emission, 6GHz – 25GHz, Mode C



Date: 27.AUG.2013 15:59:43

Table 10: Conducted Spurious Emission, 802.11G Mode A (Low Channel)

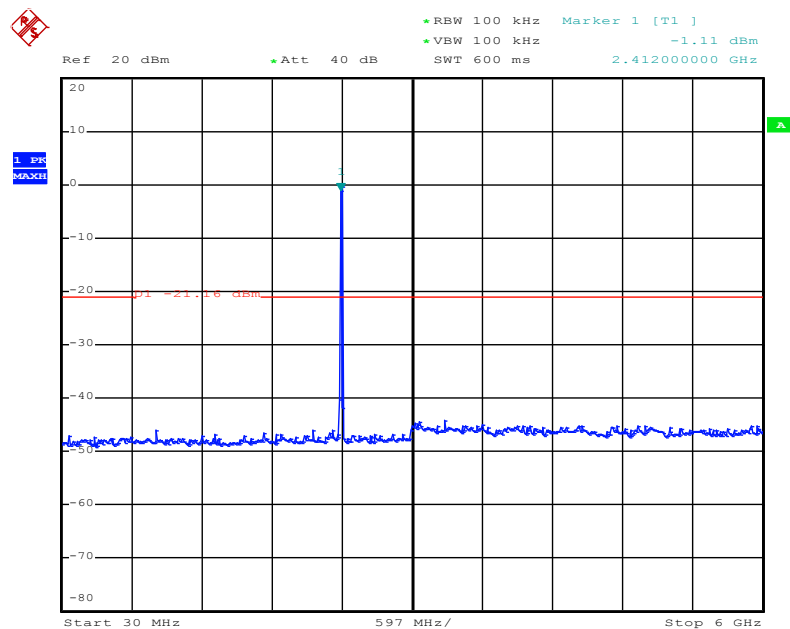
Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25480	-30.77	-1.11	-21.16	9.61
-	-	-	-21.16	-
2412	-1.11	-1.11	-21.16	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Prüfbericht - Nr.: 15063930 001
Test Report No.:

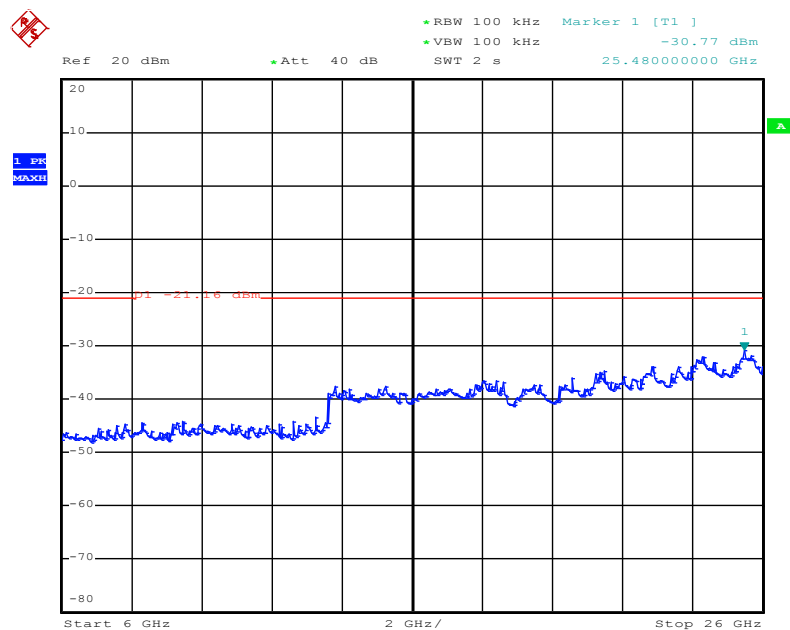
Seite 32 von 65
Page 32 of 65

Figure 25: Conducted Spurious Emission, 30MHz – 6GHz, Mode A



Date: 27.AUG.2013 17:07:31

Figure 26: Conducted Spurious Emission, 6GHz – 25GHz, Mode A



Date: 27.AUG.2013 17:08:01

Prüfbericht - Nr.: 15063930 001

Test Report No.:

Seite 33 von 65

Page 33 of 65

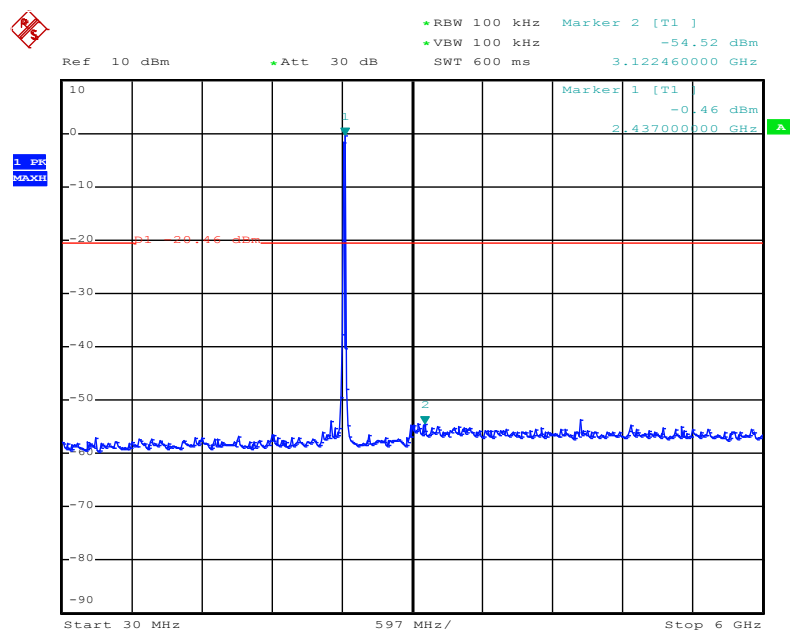
Table 11: Conducted Spurious Emission, 802.11G Mode B (Middle Channel)

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
24360	-41.27	-0.46	-20.46	20.81
3122	-54.52	-0.46	-20.46	34.06
2437	-0.46	-0.46	-20.46	-

Notes: Cable loss was included in reading as offset.

Limit = Reading of fundamental + Correction factor – 20dB

Figure 27: Conducted Spurious Emission, 30MHz –6GHz, Mode B

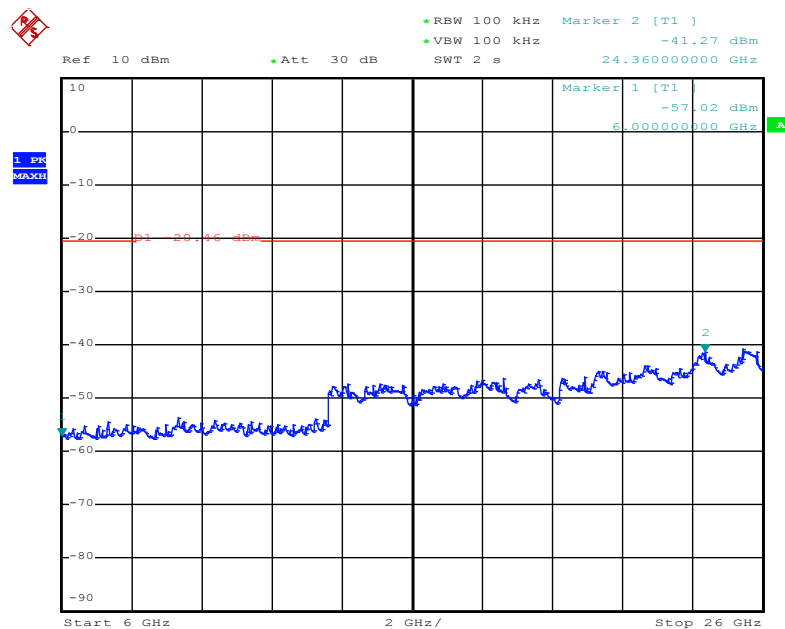


Date: 27.AUG.2013 15:38:22

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 34 von 65
Page 34 of 65

Figure 28: Conducted Spurious Emission, 6GHz – 25GHz, Mode B



Date: 27.AUG.2013 15:38:51

Table 12: Conducted Spurious Emission, 802.11G Mode C (High Channel)

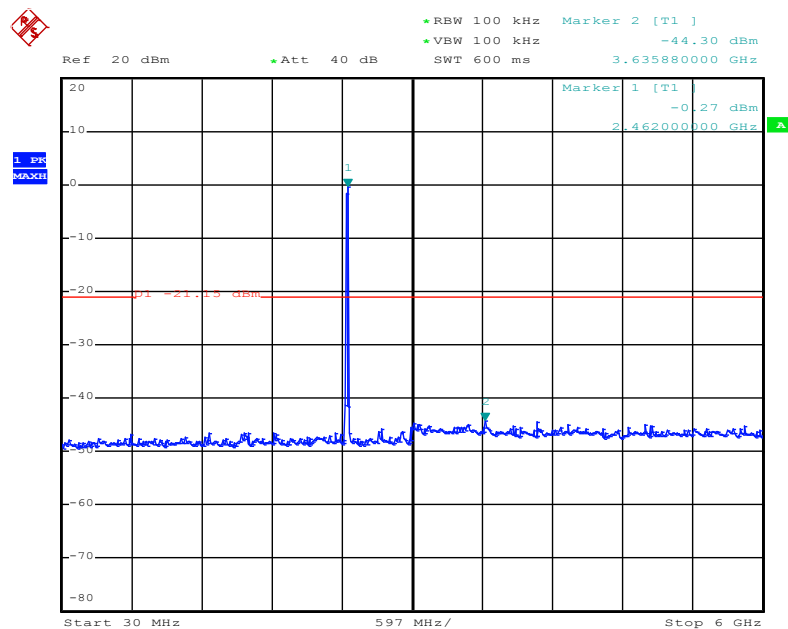
Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25440	-31.44	-0.27	-21.15	10.29
3635	-44.3	-0.27	-21.15	23.15
2462	-0.27	-0.27	-21.15	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Prüfbericht - Nr.: 15063930 001
Test Report No.:

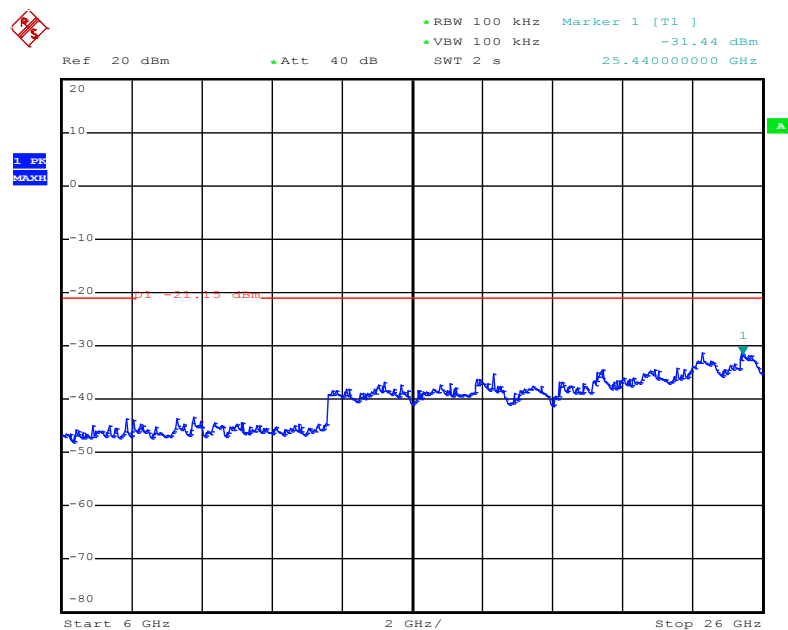
Seite 35 von 65
Page 35 of 65

Figure 29: Conducted Spurious Emission, 30MHz –6GHz, Mode C



Date: 27.AUG.2013 17:09:44

Figure 30: Conducted Spurious Emission, 6GHz – 25GHz, Mode C



Date: 27.AUG.2013 17:10:19

Prüfbericht - Nr.: 15063930 001
Test Report No.:

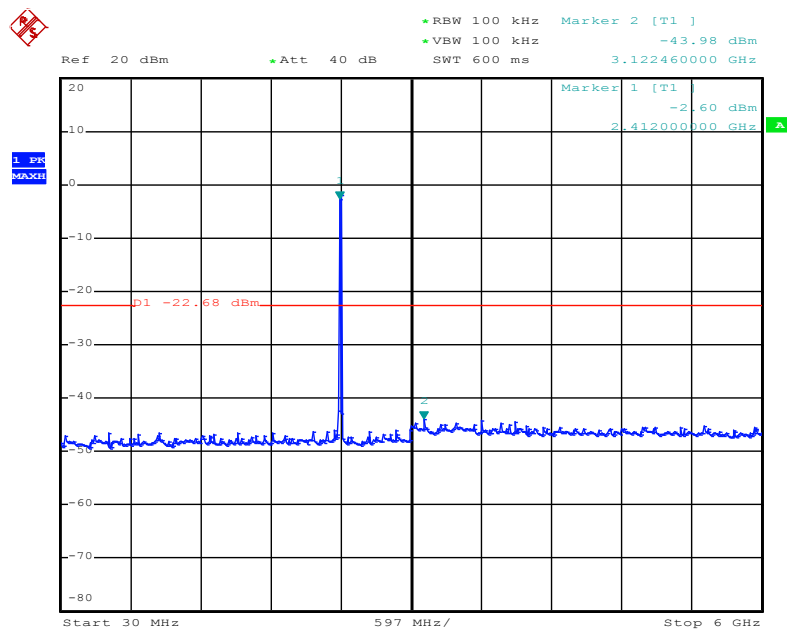
Seite 36 von 65
Page 36 of 65

Table 13: Conducted Spurious Emission, 802.11N Mode A (Low Channel)

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
24560	-32.22	-2.60	-22.68	9.54
3122	-43.98	-2.60	-22.68	21.3
2412	-2.60	-2.60	-22.68	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Figure 31: Conducted Spurious Emission, 30MHz – 6GHz, Mode A

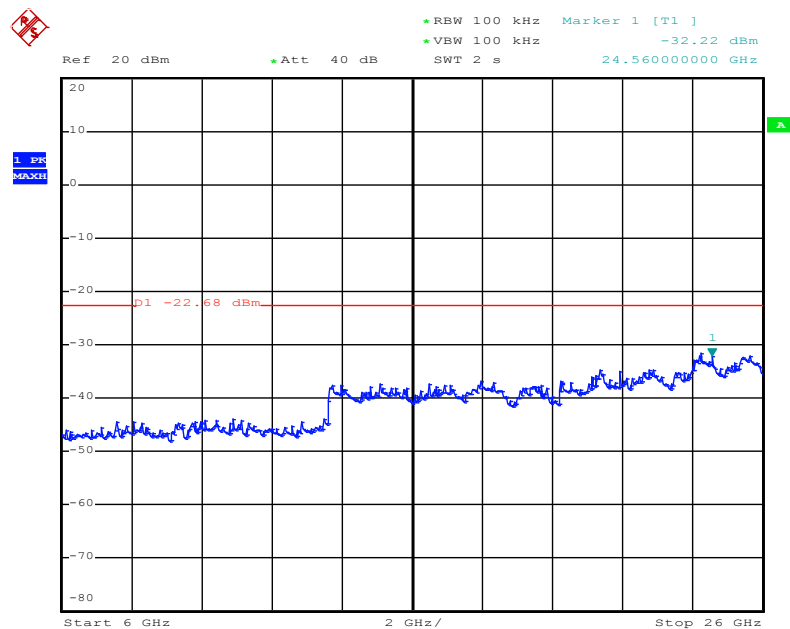


Date: 27.AUG.2013 17:26:05

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 37 von 65
Page 37 of 65

Figure 32: Conducted Spurious Emission, 6GHz – 25GHz, Mode A



Date: 27.AUG.2013 17:26:34

Table 14: Conducted Spurious Emission, 802.11N Mode B (Middle Channel)

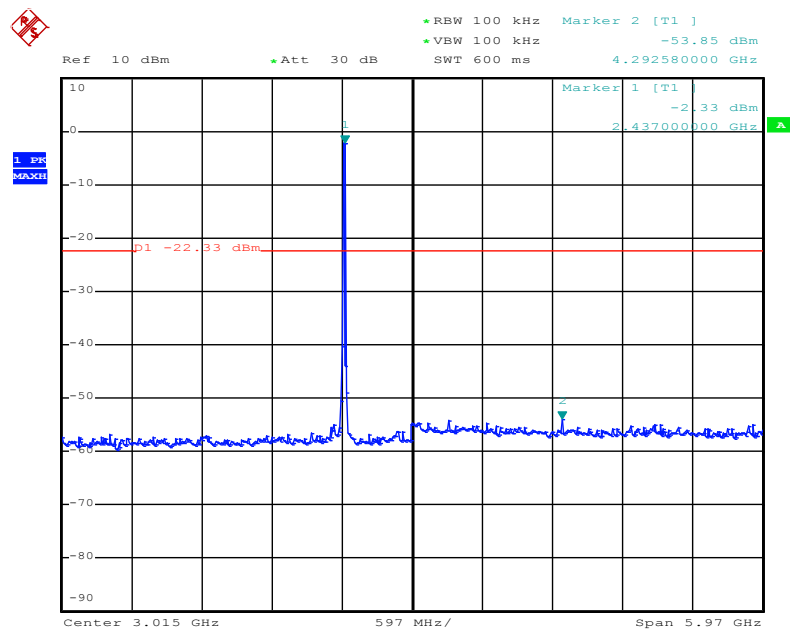
Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
24280	-41.68	-2.33	-22.33	19.35
4292	-53.85	-2.33	-22.33	31.52
2437	-2.33	-2.33	-22.33	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Prüfbericht - Nr.: 15063930 001
Test Report No.:

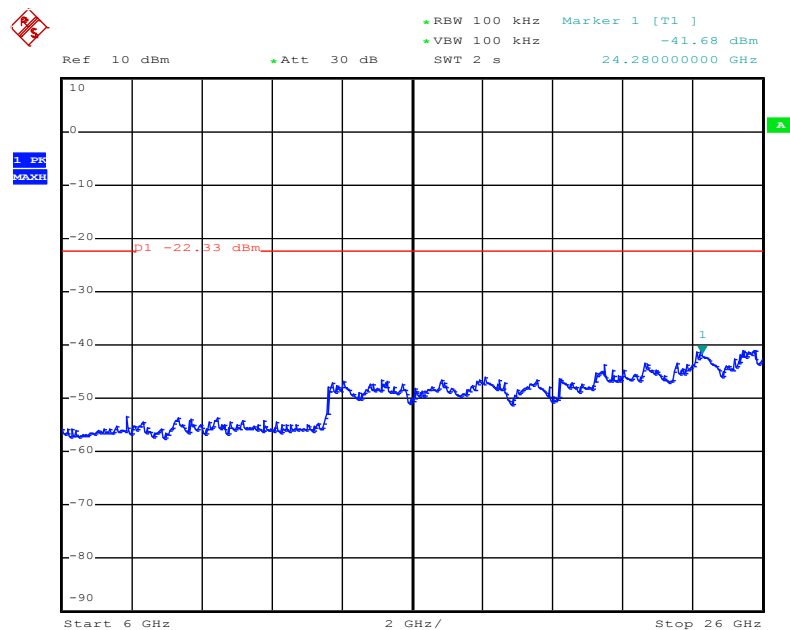
Seite 38 von 65
Page 38 of 65

Figure 33: Conducted Spurious Emission, 30MHz –6GHz, Mode B



Date: 27.AUG.2013 15:41:51

Figure 34: Conducted Spurious Emission, 6GHz – 25GHz, Mode B



Date: 27.AUG.2013 15:42:36

Prüfbericht - Nr.: 15063930 001
Test Report No.:

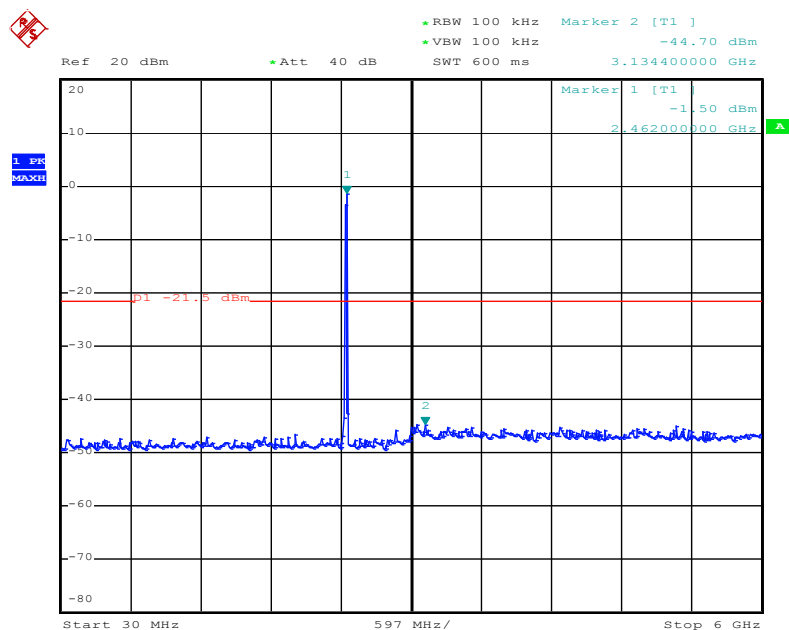
Seite 39 von 65
Page 39 of 65

Table 15: Conducted Spurious Emission, 802.11N Mode C (High Channel)

Frequency [MHz]	Reading [dBm]	Emission Level [dBm]	Limit [dBm]	Margin [dB]
25440	-31.9	-1.5	-21.5	10.4
3134	-44.7	-1.5	-21.5	23.2
2462	-1.5	-1.5	-21.5	-

Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

Figure 35: Conducted Spurious Emission, 30MHz –6GHz, Mode C

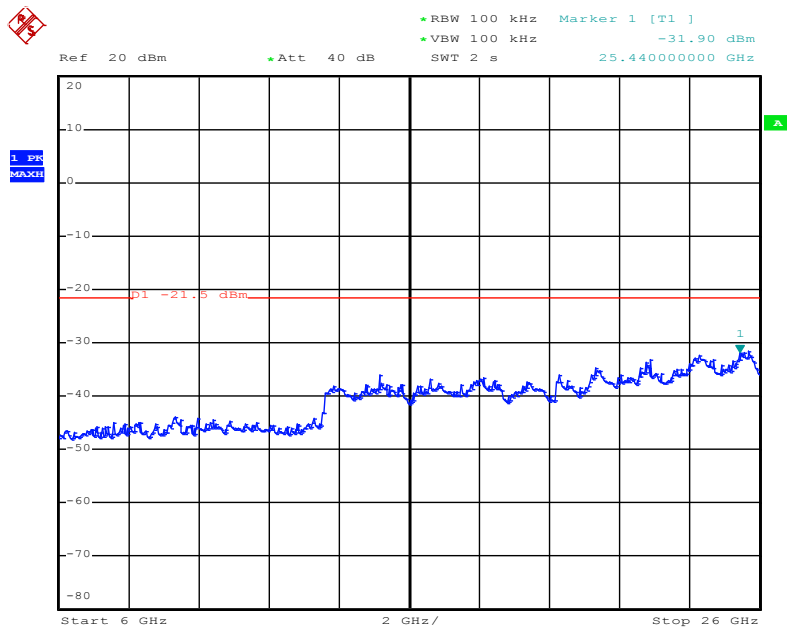


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Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 40 von 65
Page 40 of 65

Figure 36: Conducted Spurious Emission, 6GHz – 25GHz, Mode C



Date: 27.AUG.2013 17:28:10

Prüfbericht - Nr.:

15063930 001

Seite 41 von 65

Test Report No.:

Page 41 of 65

5.1.4 Power spectral density (PSD), FCC 15.247(e) and RSS-210 A8.2

RESULT:

PASS

Date of testing: 2013-01-06

Ambient temperature: 20°C

Relative humidity: 39.6%

Atmospheric pressure: 101.5hPa

Requirements:

According to FCC section 15.247(e) and RSS-A8.2(b), the same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB558074 D01 DTS Meas Guidance v03

A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz.

The final measurement takes into account the loss generated by all the involved cables.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 42 von 65
Page 42 of 65

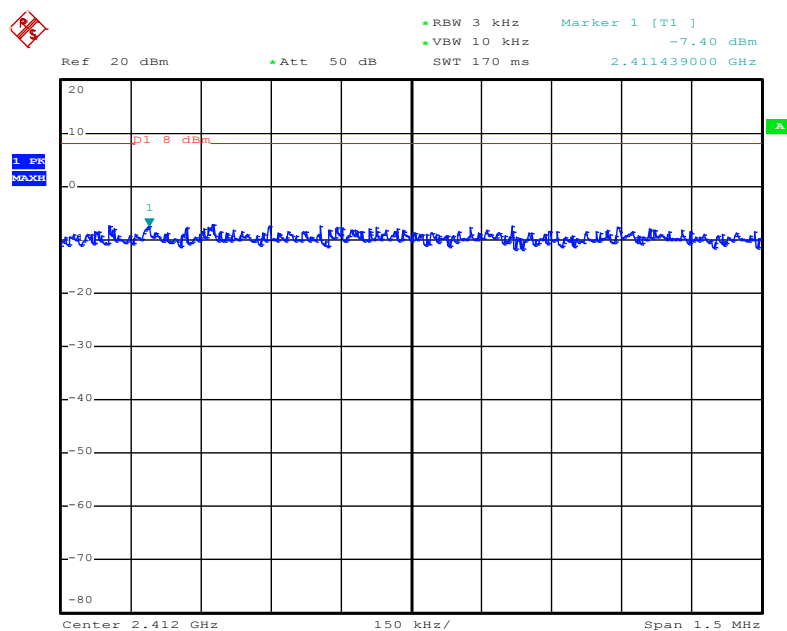
Table 16: Power spectral density of 802.11 b g n

802.11B	Reading [dBm/3KHz]	Limit [dBm/3kHz]	Margin [dB]
Low	-7.4	8	15.4
Middle	-6.83	8	14.83
High	-7.12	8	15.12

802.11G	Reading [dBm/3KHz]	Limit [dBm/3kHz]	Margin [dB]
Low	-14.52	8	22.52
Middle	-14.13	8	22.13
High	-14.87	8	22.87

802.11N	Reading [dBm/3KHz]	Limit [dBm/3kHz]	Margin [dB]
Low	-17.44	8	25.44
Middle	-17.36	8	25.36
High	-17.42	8	25.42

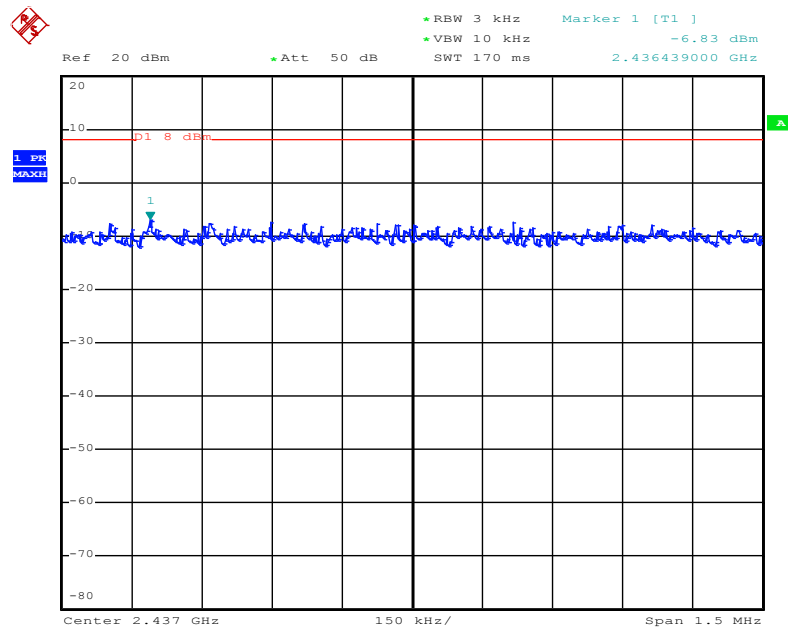
Figure 37: Power spectral density, 802.11 B Mode A



Prüfbericht - Nr.: 15063930 001
Test Report No.:

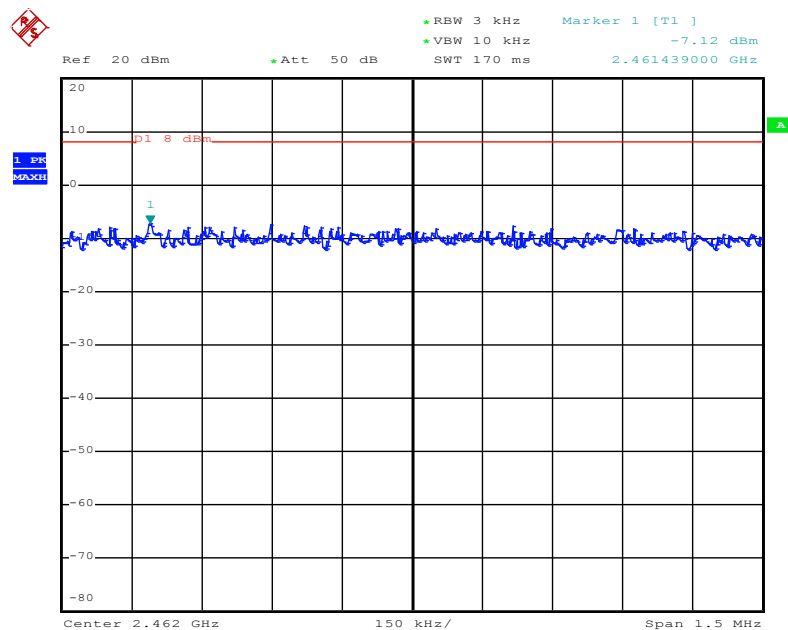
Seite 43 von 65
Page 43 of 65

Figure 38: Power spectral density, 802.11 B Mode B



Date: 27.AUG.2013 17:43:23

Figure 39: Power spectral density, 802.11 B Mode C

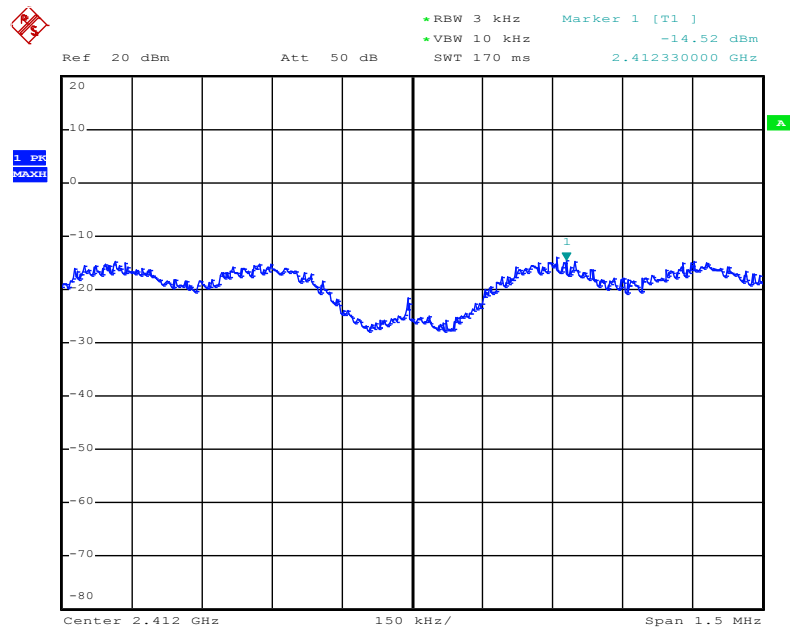


Date: 27.AUG.2013 17:44:16

Prüfbericht - Nr.: 15063930 001
Test Report No.:

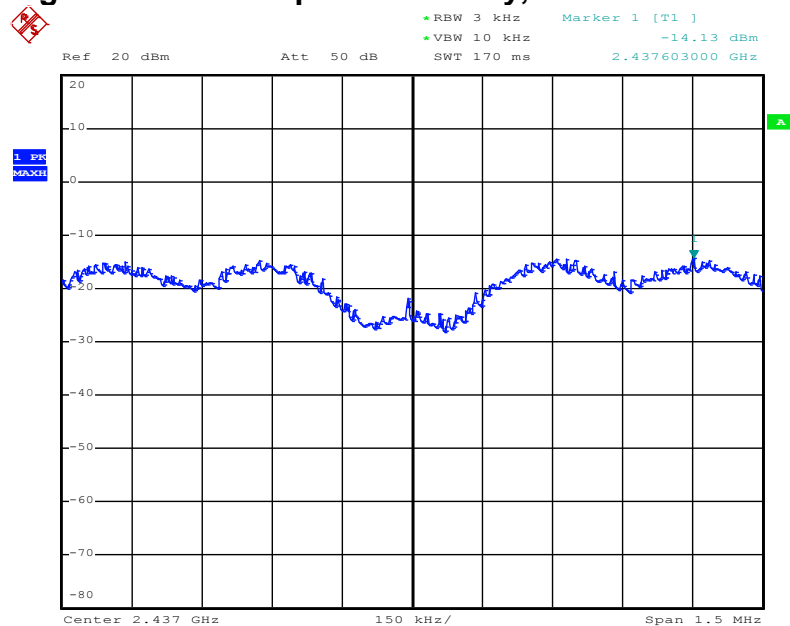
Seite 44 von 65
Page 44 of 65

Figure 40: Power spectral density, 802.11 G Mode A



Date: 12.AUG.2013 17:15:04

Figure 41: Power spectral density, 802.11 G Mode B

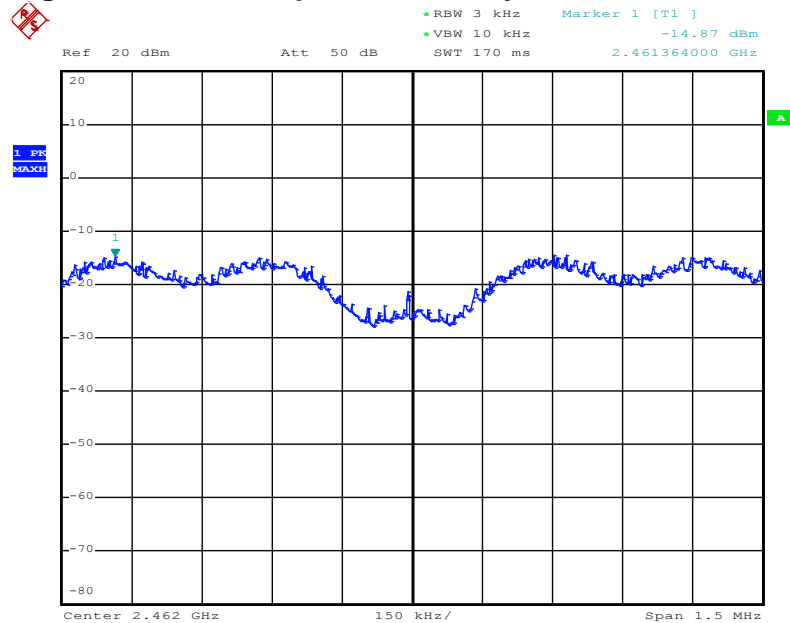


Date: 12.AUG.2013 17:16:53

Prüfbericht - Nr.: 15063930 001
Test Report No.:

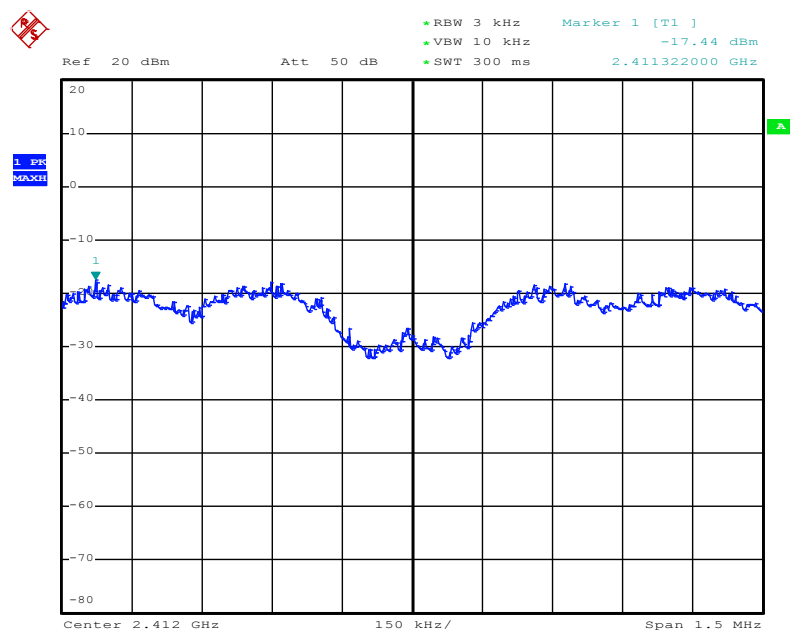
Seite 45 von 65
Page 45 of 65

Figure 42: Power spectral density, 802.11 G Mode C



Date: 12.AUG.2013 17:18:24

Figure 43: Power spectral density, 802.11 N Mode A

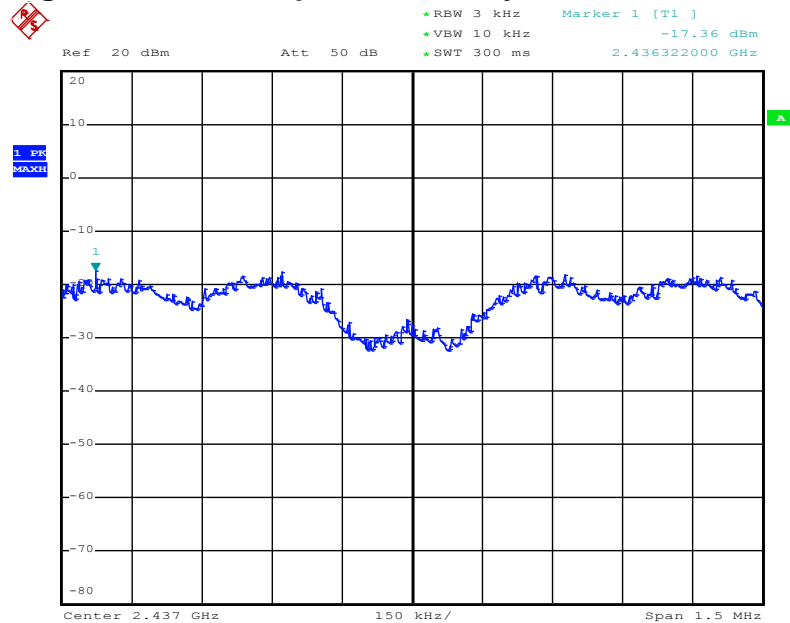


Date: 12.AUG.2013 16:20:38

Prüfbericht - Nr.: 15063930 001
Test Report No.:

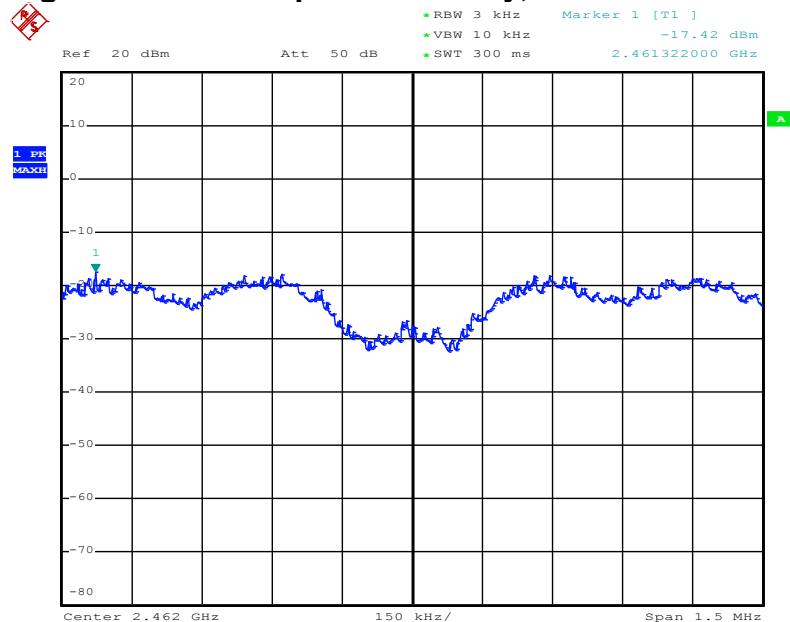
Seite 46 von 65
Page 46 of 65

Figure 44: Power spectral density, 802.11 N Mode B



Date: 12.AUG.2013 16:19:07

Figure 45: Power spectral density, 802.11 N Mode C



Date: 12.AUG.2013 16:16:39

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 47 von 65
Page 47 of 65

5.1.5 Band Edge Compliance of RF Conducted Emission, FCC 15.247(c) and RSS-210 A8.5

RESULT:

PASS

Date of testing: 2012-11-23 to 2013-01-06

Ambient temperature: 20°C
Relative humidity: 39.6%
Atmospheric pressure: 101.5hPa

Requirements:

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

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB558074 D01 DTS Meas Guidance v03

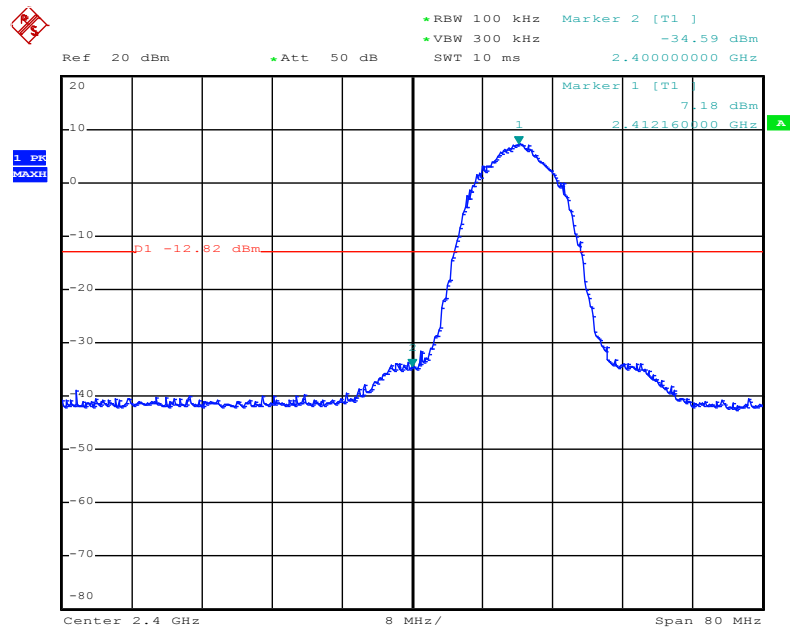
A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz and video bandwidth was set to 300kHz. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.

The final measurement takes into account the loss generated by all the involved cables.

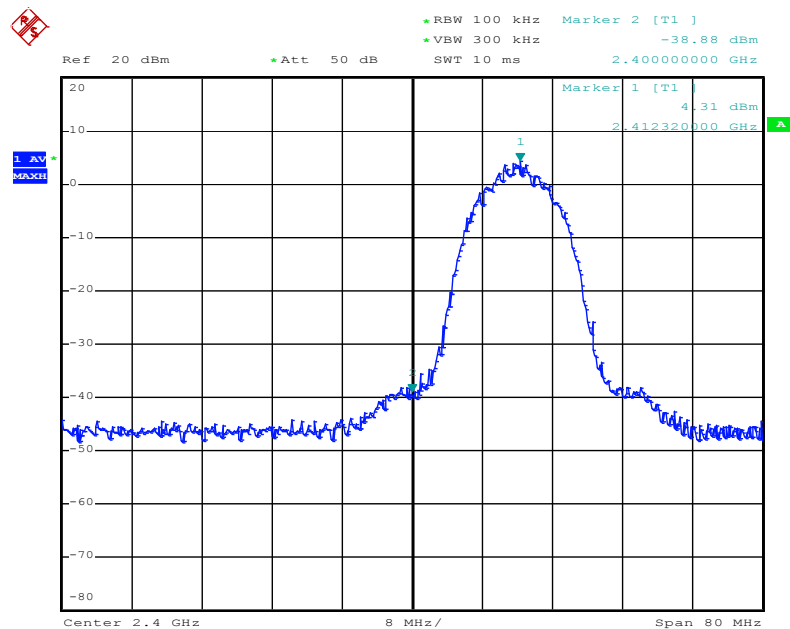
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 48 von 65
Page 48 of 65

Figure 46: Lower Band Edge Conducted (802.11 B AV and PK Detector)



Date: 27.AUG.2013 18:09:51

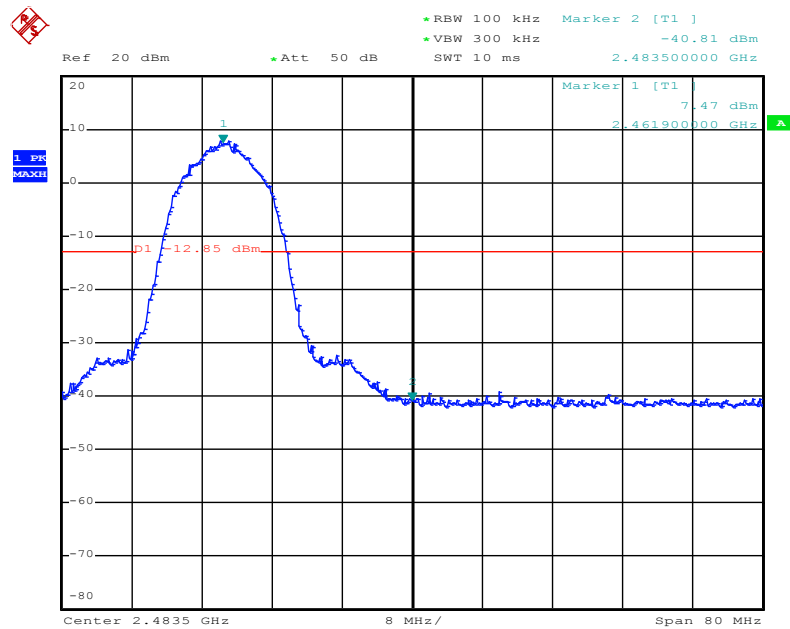


Date: 27.AUG.2013 18:52:28

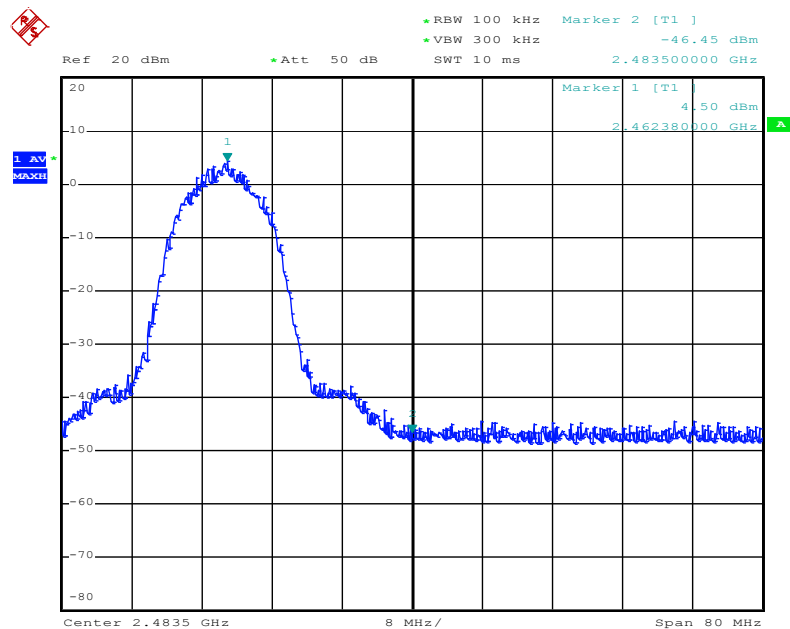
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 49 von 65
Page 49 of 65

Figure 47: Upper Band Edge Conducted (802.11 B AV and PK Detector)



Date: 27.AUG.2013 18:44:35

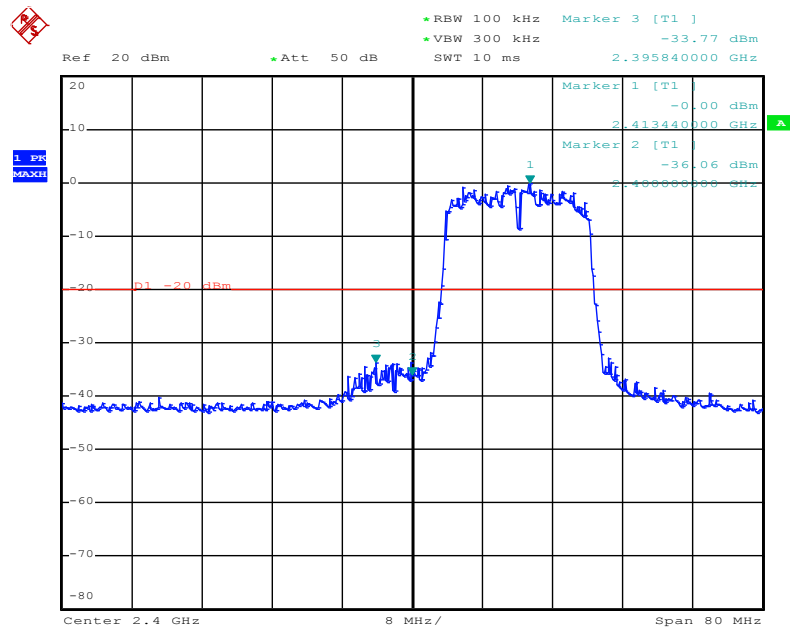


Date: 27.AUG.2013 18:45:41

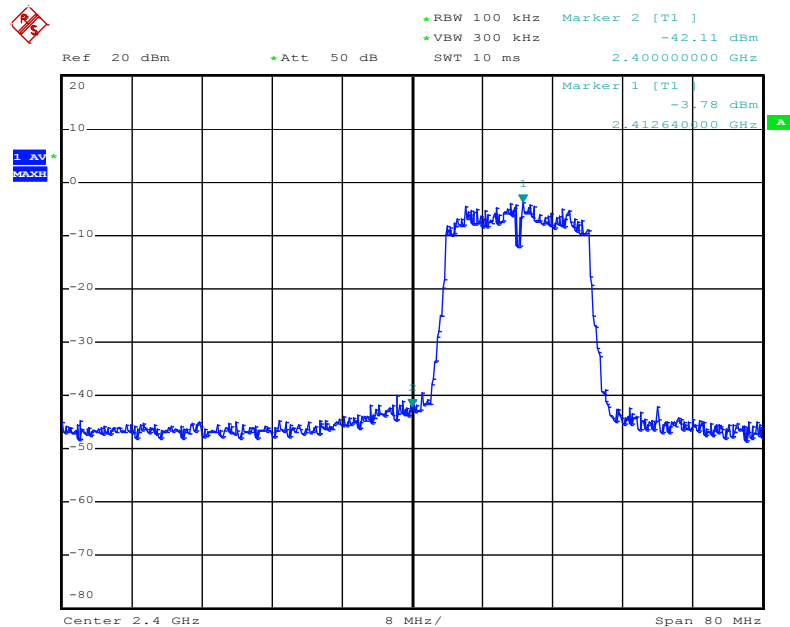
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 50 von 65
Page 50 of 65

Figure 48: Lower Band Edge Conducted (802.11 G AV and PK Detector)



Date: 27.AUG.2013 18:11:53

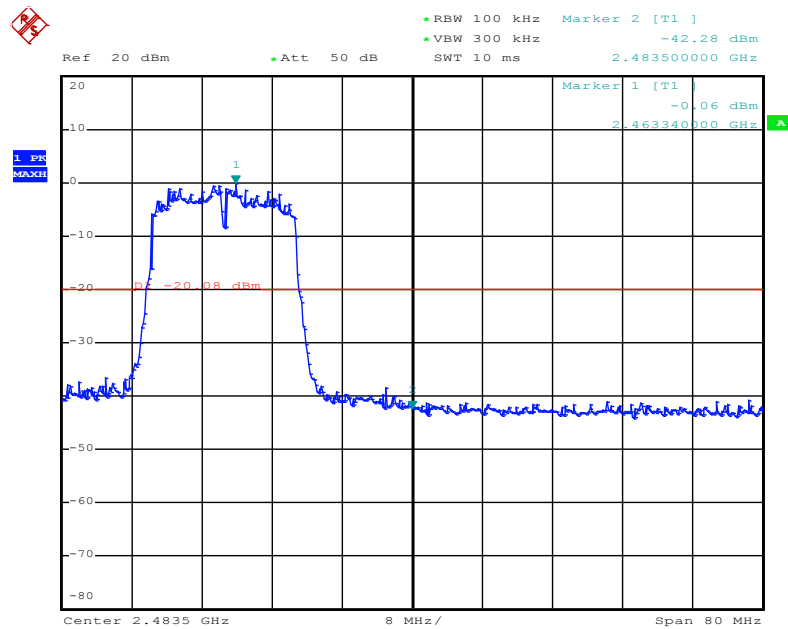


Date: 27.AUG.2013 18:51:07

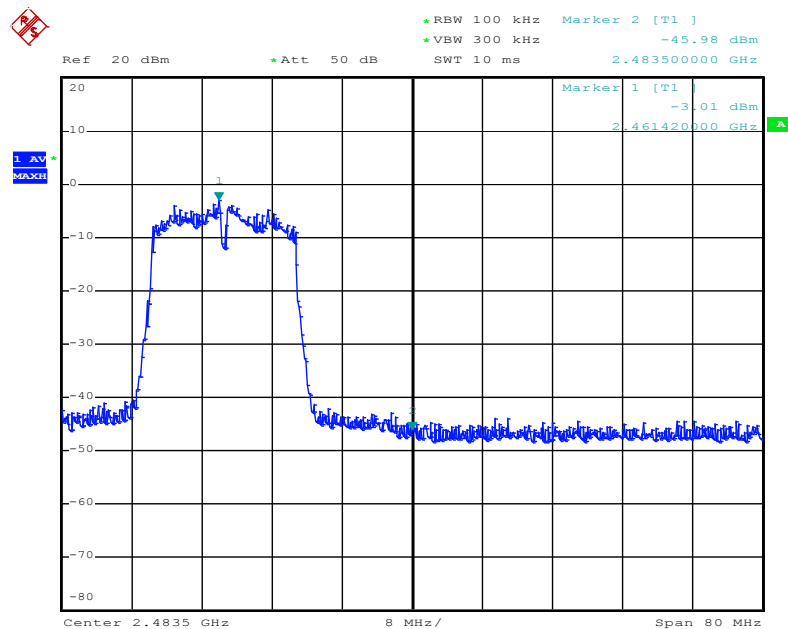
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 51 von 65
Page 51 of 65

Figure 49: Upper Band Edge Conducted (802.11 G AV and PK Detector)



Date: 27.AUG.2013 18:16:37

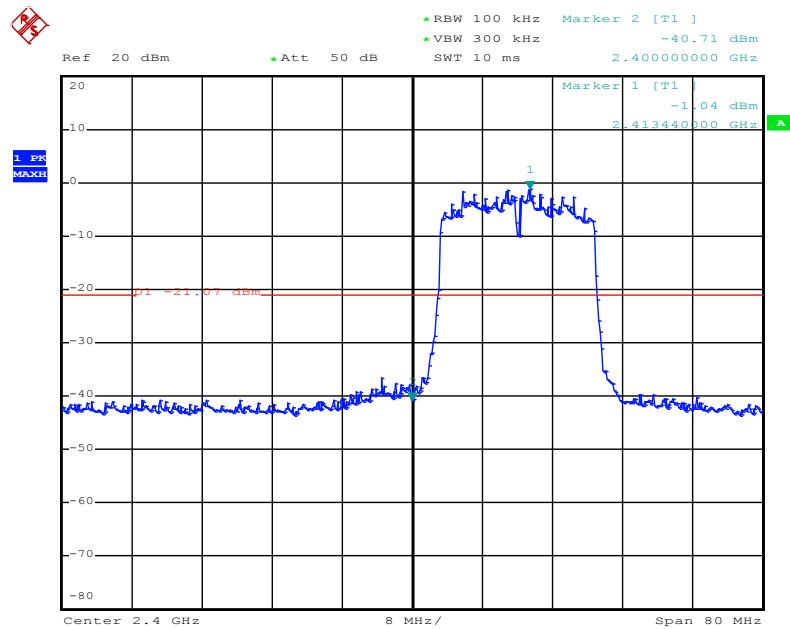


Date: 27.AUG.2013 18:47:06

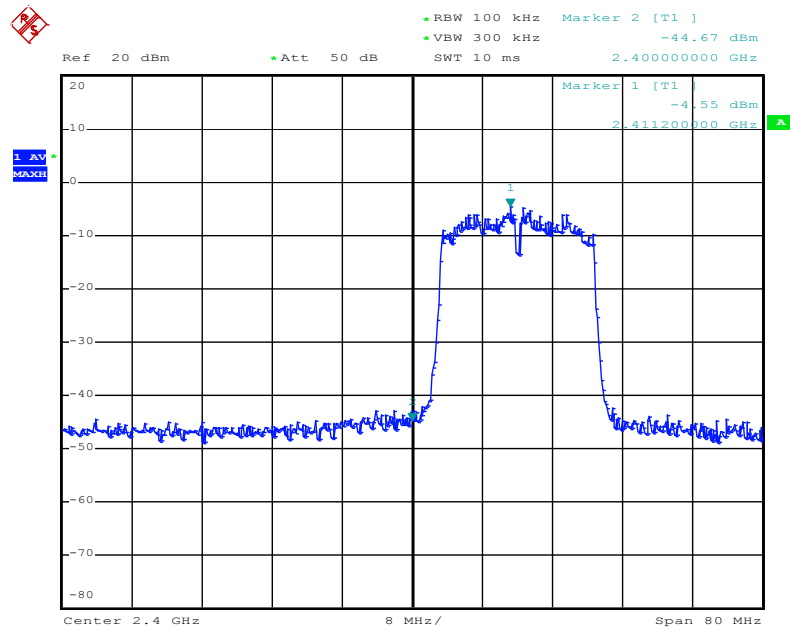
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 52 von 65
Page 52 of 65

Figure 50: Lower Band Edge Conducted (802.11 N AV and PK Detector)



Date: 27.AUG.2013 18:13:13

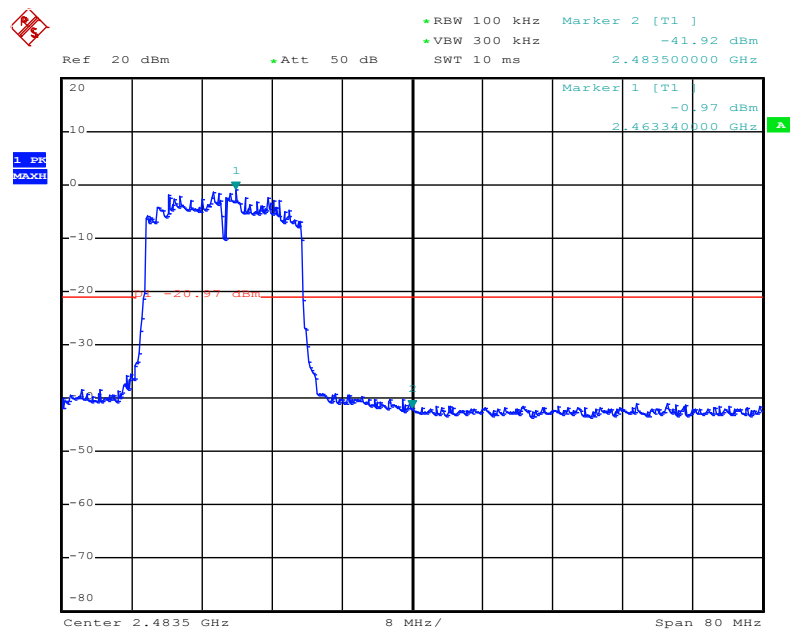


Date: 27.AUG.2013 18:50:00

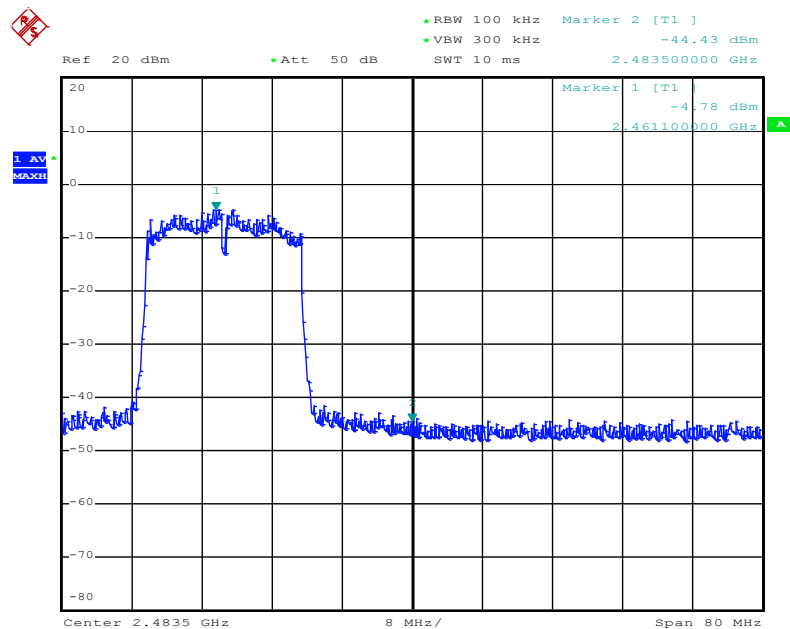
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 53 von 65
Page 53 of 65

Figure 51: Upper Band Edge Conducted (802.11 N AV and PK Detector)



Date: 27.AUG.2013 18:14:51



Date: 27.AUG.2013 18:49:06

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 54 von 65
Page 54 of 65

6. Test Results of Radiated Measurements

6.1 Transmitter Parameters

6.1.1 Band Edge Radiated Emission, FCC 15.205, FCC 15.209, FCC 15.247(c), RSS-210 2.2, RSS-210 2.6 and RSS-210 A8.5

RESULT:

PAss

Date of testing:	2013-08-22
Ambient temperature:	23.5°C
Relative humidity:	45%
Atmospheric pressure:	101.5hPa
Measurement distance:	3m
Kind of test site:	Semi Anechoic Chamber

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-210 2.7 (Table 1), must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-210 2.7 (Table 2 and 3).

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB558074 D01 DTS Meas Guidance v03

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Measurements were made at 3m distance. The EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level.

Measurements were taken using both horizontal and vertical antenna polarization. The rotation through the three orthogonal axes is normally not needed for equipment that is not hand-held or body-worn. The EUT was pretested in floor-standing condition and in the table position and the worst case condition was table position which was used for the final measurements.

Measurements were performed using a spectrum analyzer with a suitable span to encompass the peak of the fundamental and using the following settings: Peak: RBW & VBW = 1MHz, Average: RBW = 1MHz, VBW = 10Hz.

The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report. plot data please checek (File: 15063930 001 APPENDIX1)

Prüfbericht - Nr.:

15063930 001

Seite 55 von 65

Test Report No.:

Page 55 of 65

Table 17: Band Edge Radiated Emission of 802.11B

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	52.282	15.123	-21.718	74.000	37.159	PK
2	Horizontal	2411.808	93.314	55.963	N/A	N/A	37.351	PK
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	51.663	15.164	-22.337	74.000	36.499	PK
2	Vertical	2411.416	90.424	53.822	N/A	N/A	36.601	PK
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	39.452	2.293	-14.548	54.000	37.159	AV
2	Horizontal	2412.144	81.670	44.316	N/A	N/A	37.354	AV
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	38.666	2.167	-15.334	54.000	36.499	AV
2	Vertical	2411.897	78.957	42.353	N/A	N/A	36.604	AV
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2461.672	91.063	53.285	N/A	N/A	37.779	PK
2	Horizontal	2483.500	53.082	15.112	-20.918	74.000	37.969	PK
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2461.744	87.995	51.163	N/A	N/A	36.832	PK
2	Vertical	2483.500	51.955	15.019	-22.045	74.000	36.935	PK
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2461.672	79.500	41.722	N/A	N/A	37.779	AV
2	Horizontal	2483.500	40.182	2.212	-13.818	54.000	37.969	AV
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2462.200	76.863	40.029	N/A	N/A	36.834	AV
2	Vertical	2483.500	39.145	2.209	-14.855	54.000	36.935	AV
3	Vertical	-	-	-	-	-	-	-

Notes: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBuV/m is calculated as follows: Average limit = 20 x log(500uV/m).
Peak limit in dBuV/m is calculated as follows: Peak limit = Average limit + 20dB.

Prüfbericht - Nr.:
Test Report No.:

15063930 001

Seite 56 von 65
Page 56 of 65

Table 18: Band Edge Radiated Emission of 802.11G

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	52.326	15.167	-21.674	74.000	37.159	PK
2	Horizontal	2409.736	85.699	48.366	N/A	N/A	37.333	PK
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	51.802	15.303	-22.198	74.000	36.499	PK
2	Vertical	2410.968	83.200	46.600	N/A	N/A	36.600	PK
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	39.474	2.315	-14.526	54.000	37.159	AV
2	Horizontal	2410.632	63.071	25.730	N/A	N/A	37.341	AV
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	38.678	2.179	-15.322	54.000	36.499	AV
2	Vertical	2410.800	59.796	23.197	N/A	N/A	36.599	AV
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2460.712	82.244	44.474	N/A	N/A	37.770	PK
2	Horizontal	2483.500	52.711	14.741	-21.289	74.000	37.969	PK
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2461.600	82.814	45.983	N/A	N/A	36.832	PK
2	Vertical	2483.500	52.525	15.589	-21.475	74.000	36.935	PK
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2460.184	59.623	21.857	N/A	N/A	37.766	AV
2	Horizontal	2483.500	40.237	2.267	-13.763	54.000	37.969	AV
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2460.784	59.777	22.949	N/A	N/A	36.828	AV
2	Vertical	2483.500	39.214	2.278	-14.786	54.000	36.935	AV
3	Vertical	-	-	-	-	-	-	-

Notes: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBuV/m is calculated as follows: Average limit = $20 \times \log(500 \mu\text{V/m})$.
Peak limit in dBuV/m is calculated as follows: Peak limit = Average limit + 20dB.

Prüfbericht - Nr.:

15063930 001

Seite 57 von 65

Test Report No.:

Page 57 of 65

Table 19: Band Edge Radiated Emission of 802.11N

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	53.082	15.923	-20.918	74.000	37.159	PK
2	Horizontal	2411.192	86.042	48.696	N/A	N/A	37.345	PK
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	51.717	15.218	-22.283	74.000	36.499	PK
2	Vertical	2410.800	81.119	44.520	N/A	N/A	36.599	PK
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2390.000	39.413	2.254	-14.587	54.000	37.159	AV
2	Horizontal	2410.464	61.794	24.455	N/A	N/A	37.339	AV
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2390.000	38.686	2.187	-15.314	54.000	36.499	AV
2	Vertical	2410.800	58.668	22.069	N/A	N/A	36.599	AV
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2463.520	84.304	46.510	N/A	N/A	37.795	PK
2	Horizontal	2483.500	53.712	15.742	-20.288	74.000	37.969	PK
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2463.160	81.770	44.931	N/A	N/A	36.838	PK
2	Vertical	2483.500	51.922	14.986	-22.078	74.000	36.935	PK
3	Vertical	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	2463.016	60.348	22.558	N/A	N/A	37.790	AV
2	Horizontal	2483.500	40.201	2.231	-13.799	54.000	37.969	AV
3	Horizontal	-	-	-	-	-	-	-
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Vertical	2462.584	58.236	21.400	N/A	N/A	36.836	AV
2	Vertical	2483.500	39.230	2.294	-14.770	54.000	36.935	AV
3	Vertical	-	-	-	-	-	-	-

Notes: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
Average limit in dBuV/m is calculated as follows: Average limit = 20 x log(500uV/m).
Peak limit in dBuV/m is calculated as follows: Peak limit = Average limit + 20dB.

Prüfbericht - Nr.:

15063930 001

Seite 58 von 65

Test Report No.:

Page 58 of 65

6.1.2 Radiated Spurious Emission of Transmitter, FCC 15.205, FCC 15.209, FCC 15.247(c), RSS-210 2.2, RSS-210 2.6 and RSS-210 A8.5

RESULT:

PASS

Date of testing: 2013-08-22

Ambient temperature: 23.5°C

Relative humidity: 45%

Atmospheric pressure: 101.5hPa

Frequency range: 30MHz – 25GHz

Measurement distance: 3m

Kind of test site: Semi Anechoic Chamber

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-210 2.7 (Table 1), must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-210 2.7 (Table 2 and 3).

Test procedure:

ANSI C63.10-2009, RSS-Gen 4.9 and KDB558074 D01 DTS Meas Guidance v03
The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The EUT was pretested in floor-standing condition and in the table position and the worst case condition was table position which was used for the final measurements. The rotation through the three orthogonal axes is normally not needed for equipment that is not hand-held or body-worn. The spectrum was examined from 30MHz to the 10th harmonic of the highest fundamental transmitter frequency (25GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

For frequencies between 30MHz and 1GHz, 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 1GHz, measurements were performed using the following settings: Peak: RBW & VBW = 1MHz, Average: RBW = 1MHz, VBW = 10Hz.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Emissions other than those mentioned are small or not detectable. plot data please check (File: 15063930 001 APPENDIX1)

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 59 von 65
Page 59 of 65

Table 20: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 B Mode A

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4824.000	40.142	47.212	-33.858	74.000	-7.069	PK
2	Horizontal	7236.000	39.663	41.410	-34.337	74.000	-1.747	PK
3	Horizontal	9648.000	40.179	35.857	-33.821	74.000	4.321	PK
4	Vertical	4824.000	38.693	45.844	-35.307	74.000	-7.151	PK
5	Vertical	7236.000	39.695	41.453	-34.305	74.000	-1.758	PK
6	Vertical	9648.000	39.692	35.311	-34.308	74.000	4.381	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Table 21: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 B Mode B

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4874.000	38.076	45.087	-35.924	74.000	-7.010	PK
2	Horizontal	7311.000	41.817	43.398	-32.183	74.000	-1.581	PK
3	Horizontal	9748.000	40.868	36.387	-33.132	74.000	4.482	PK
4	Vertical	4874.000	38.277	45.289	-35.723	74.000	-7.012	PK
5	Vertical	7311.000	41.686	43.267	-32.314	74.000	-1.581	PK
6	Vertical	9748.000	40.835	36.257	-33.165	74.000	4.579	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Table 22:Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 B Mode C

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4924.000	36.902	43.982	-37.098	74.000	-7.080	PK
2	Horizontal	7386.000	40.254	41.590	-33.746	74.000	-1.336	PK
3	Horizontal	9848.000	41.097	36.181	-32.903	74.000	4.915	PK
4	Vertical	4924.000	36.876	43.876	-37.124	74.000	-7.000	PK
5	Vertical	7386.000	40.365	41.701	-33.635	74.000	-1.336	PK
6	Vertical	9848.000	40.528	35.552	-33.472	74.000	4.975	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 60 von 65
Page 60 of 65

Table 23: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 G Mode A

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4824.000	37.221	44.291	-36.779	74.000	-7.069	PK
2	Horizontal	7236.000	39.473	41.220	-34.527	74.000	-1.747	PK
3	Horizontal	9648.000	40.902	36.580	-33.098	74.000	4.321	PK
4	Vertical	4824.000	37.743	44.894	-36.257	74.000	-7.151	PK
5	Vertical	7236.000	39.395	41.153	-34.605	74.000	-1.758	PK
6	Vertical	9648.000	40.559	36.178	-33.441	74.000	4.381	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Table 24: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 G Mode B

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4874.000	37.402	44.413	-36.598	74.000	-7.010	PK
2	Horizontal	7311.000	40.994	42.575	-33.006	74.000	-1.581	PK
3	Horizontal	9748.000	48.554	44.073	-25.446	74.000	4.482	PK
4	Vertical	4874.000	37.105	44.117	-36.895	74.000	-7.012	PK
5	Vertical	7311.000	41.105	42.686	-32.895	74.000	-1.581	PK
6	Vertical	9748.000	40.364	35.786	-33.636	74.000	4.579	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Table 25: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 G Mode C

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4924.000	37.148	44.228	-36.852	74.000	-7.080	PK
2	Horizontal	7386.000	40.000	41.336	-34.000	74.000	-1.336	PK
3	Horizontal	9848.000	41.188	36.272	-32.812	74.000	4.915	PK
4	Vertical	4924.000	36.040	43.040	-37.960	74.000	-7.000	PK
5	Vertical	7386.000	39.538	40.874	-34.462	74.000	-1.336	PK
6	Vertical	9848.000	40.968	35.992	-33.032	74.000	4.975	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 61 von 65
Page 61 of 65

Table 26: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 N Mode A

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4824.000	38.263	45.333	-35.737	74.000	-7.069	PK
2	Horizontal	7236.000	39.362	41.109	-34.638	74.000	-1.747	PK
3	Horizontal	9648.000	40.695	36.373	-33.305	74.000	4.321	PK
4	Vertical	4824.000	37.127	44.278	-36.873	74.000	-7.151	PK
5	Vertical	7236.000	39.749	41.507	-34.251	74.000	-1.758	PK
6	Vertical	9648.000	39.918	35.537	-34.082	74.000	4.381	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Table 27: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 N Mode B

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4874.000	37.082	44.093	-36.918	74.000	-7.010	PK
2	Horizontal	7311.000	41.475	43.056	-32.525	74.000	-1.581	PK
3	Horizontal	9748.000	41.076	36.595	-32.924	74.000	4.482	PK
4	Vertical	4874.000	37.500	44.512	-36.500	74.000	-7.012	PK
5	Vertical	7311.000	41.336	42.917	-32.664	74.000	-1.581	PK
6	Vertical	9748.000	40.668	36.090	-33.332	74.000	4.579	PK

Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Table 28: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 N Mode C

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4924.000	36.770	43.850	-37.230	74.000	-7.080	PK
2	Horizontal	7386.000	39.992	41.328	-34.008	74.000	-1.336	PK
3	Horizontal	9848.000	40.261	35.345	-33.739	74.000	4.915	PK
4	Vertical	4924.000	36.915	43.915	-37.085	74.000	-7.000	PK
5	Vertical	7386.000	39.992	41.328	-34.008	74.000	-1.336	PK
6	Vertical	9848.000	41.118	36.142	-32.882	74.000	4.975	PK

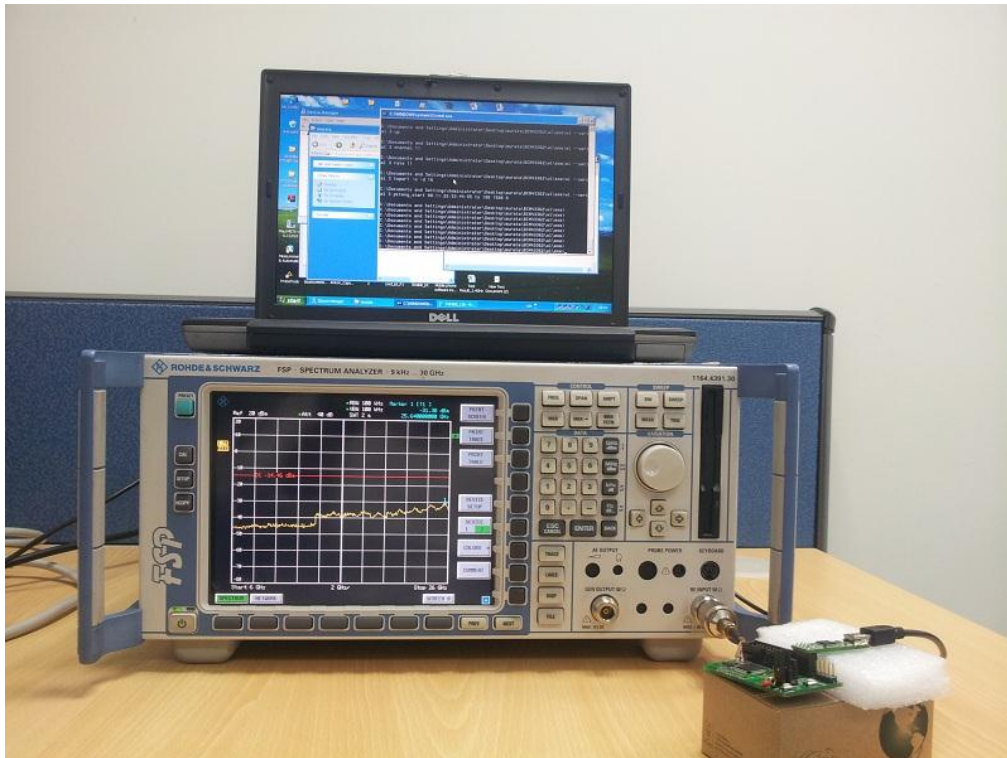
Note: All correction factors (antenna, cable, pre-amplifier) are included in the measurement values.
The peak value is less than limit 10dB,so no average value data in the table.

Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 62 von 65
Page 62 of 65

7. Photographs of the Test Setup

Photograph 1: Set-up for Conducted output power at Antenna Port



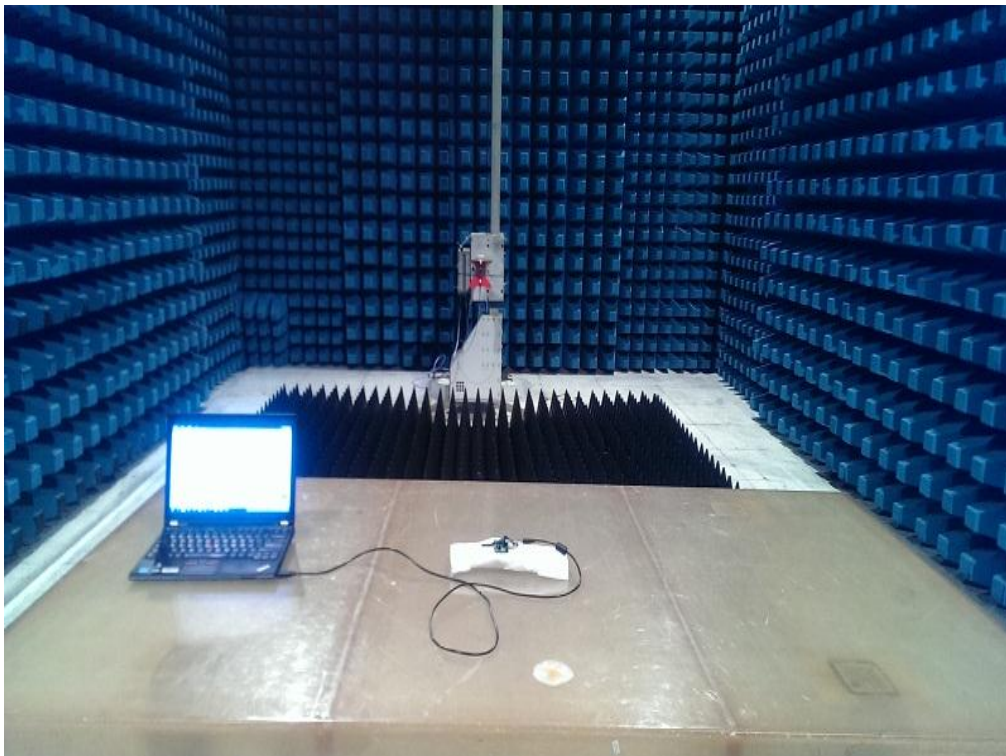
Prüfbericht - Nr.: 15063930 001
Test Report No.:

Seite 63 von 65
Page 63 of 65

Photograph 2: Set-up for Radiated Emission, 30MHz-1000MHz



Photograph 3: Set-up for Radiated Emission, above 1GHz



8. List of Tables

Table 1: List of Test and Measurement Equipment	6
Table 2: Emission Measurement Uncertainty.....	6
Table 3: Conducted Output Power, Mode A (Low Channel)	12
Table 4: Conducted Output Power, Mode B (Middle Channel)	13
Table 5: Conducted Output Power, Mode C (High Channel)	14
Table 6: 6 dB Bandwidth	20
Table 8: Conducted Spurious Emission, 802.11B Mode A (Low Channel).....	27
Table 9: Conducted Spurious Emission, 802.11B Mode B (Middle Channel).....	28
Table 10: Conducted Spurious Emission, 802.11B Mode C (High Channel).....	30
Table 8: Conducted Spurious Emission, 802.11G Mode A (Low Channel)	31
Table 9: Conducted Spurious Emission, 802.11G Mode B (Middle Channel)	33
Table 10: Conducted Spurious Emission, 802.11G Mode C (High Channel)	34
Table 8: Conducted Spurious Emission, 802.11N Mode A (Low Channel)	36
Table 9: Conducted Spurious Emission, 802.11N Mode B (Middle Channel)	37
Table 10: Conducted Spurious Emission, 802.11N Mode C (High Channel)	39
Table 11: Power spectral density of 802.11 b g n	42
Table 12: Band Edge Radiated Emission of 802.11B	55
Table 12: Band Edge Radiated Emission of 802.11G	56
Table 12: Band Edge Radiated Emission of 802.11N	57
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 B Mode A	59
Table 14: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 B Mode B	59
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 G Mode A	60
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 G Mode B	60
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 G Mode C	60
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 N Mode A	61
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 N Mode B	61
Table 13: Radiated Emission, Average and Peak Data, 1 – 25GHz, Horizontal and Vertical Antenna Orientations, 802.11 N Mode C	61

9. List of Figures

Figure 1: Output Peak Power, 802.11B (Low Channel)	15
Figure 2: Output Peak Power, 802.11B (Middle Channel)	15
Figure 3: Output Peak Power, 802.11B (High Channel)	16
Figure 4: Output Peak Power, 802.11G (Low Channel).....	16
Figure 5: Output Peak Power, 802.11G (Middle Channel).....	16
Figure 6: Output Peak Power, 802.11G (High Channel)	17
Figure 7: Output Peak Power, 802.11N (Low Channel)	18
Figure 8: Output Peak Power, 802.11N (Middle Channel)	18
Figure 9: Output Peak Power, 802.11N (High Channel)	19
Figure 10: 6 dB Bandwidth of 802.11B (Low Channel Mode A).....	21
Figure 11: 6 dB Bandwidth of 802.11B (Middle Channel Mode B).....	21
Figure 12: 6 dB Bandwidth of 802.11B (High Channel Mode C).....	22
Figure 13: 6 dB Bandwidth of 802.11G (Low Channel Mode A)	22
Figure 14: 6 dB Bandwidth of 802.11G (Middle Channel Mode B)	23
Figure 15: 6 dB Bandwidth of 802.11G (High Channel Mode C)	23

Prüfbericht - Nr.:

15063930 001

Seite 65 von 65

Test Report No.:

Page 65 of 65

Figure 16: 6 dB Bandwidth of 802.11N (Low Channel Mode A)	24
Figure 17: 6 dB Bandwidth of 802.11N (Middle Channel Mode B)	24
Figure 18: 6 dB Bandwidth of 802.11G (High Channel Mode C)	25
Figure 19: Conducted Spurious Emission, 30MHz – 6GHz, Mode A.....	27
Figure 20: Conducted Spurious Emission, 6GHz – 25GHz, Mode A.....	28
Figure 21: Conducted Spurious Emission, 30MHz –6GHz, Mode B.....	29
Figure 22: Conducted Spurious Emission, 6GHz – 25GHz, Mode B.....	29
Figure 23: Conducted Spurious Emission, 30MHz –6GHz, Mode C.....	30
Figure 24: Conducted Spurious Emission, 6GHz – 25GHz, Mode C.....	31
Figure 25: Conducted Spurious Emission, 30MHz – 6GHz, Mode A.....	32
Figure 26: Conducted Spurious Emission, 6GHz – 25GHz, Mode A.....	32
Figure 27: Conducted Spurious Emission, 30MHz –6GHz, Mode B.....	33
Figure 28: Conducted Spurious Emission, 6GHz – 25GHz, Mode B.....	34
Figure 29: Conducted Spurious Emission, 30MHz –6GHz, Mode C.....	35
Figure 30: Conducted Spurious Emission, 6GHz – 25GHz, Mode C.....	35
Figure 31: Conducted Spurious Emission, 30MHz – 6GHz, Mode A.....	36
Figure 32: Conducted Spurious Emission, 6GHz – 25GHz, Mode A.....	37
Figure 33: Conducted Spurious Emission, 30MHz –6GHz, Mode B.....	38
Figure 34: Conducted Spurious Emission, 6GHz – 25GHz, Mode B.....	38
Figure 35: Conducted Spurious Emission, 30MHz –6GHz, Mode C.....	39
Figure 36: Conducted Spurious Emission, 6GHz – 25GHz, Mode C.....	40
Figure 37: Power spectral density, 802.11 B Mode A	42
Figure 38: Power spectral density, 802.11 B Mode B	43
Figure 39: Power spectral density, 802.11 B Mode C	43
Figure 40: Power spectral density, 802.11 G Mode A.....	44
Figure 41: Power spectral density, 802.11 G Mode B.....	44
Figure 42: Power spectral density, 802.11 G Mode C	45
Figure 43: Power spectral density, 802.11 N Mode A.....	45
Figure 44: Power spectral density, 802.11 N Mode B.....	46
Figure 45: Power spectral density, 802.11 N Mode C.....	46
Figure 46: Lower Band Edge Conducted (802.11 B AV and PK Detector)	48
Figure 47: Upper Band Edge Conducted (802.11 B AV and PK Detector)	49
Figure 48: Lower Band Edge Conducted (802.11 G AV and PK Detector)	50
Figure 49: Upper Band Edge Conducted (802.11 G AV and PK Detector)	51
Figure 50: Lower Band Edge Conducted (802.11 N AV and PK Detector)	52
Figure 51: Upper Band Edge Conducted (802.11 N AV and PK Detector)	53

10. List of Photographs

Photograph 1: Set-up for Conducted output power at Antenna Port	62
Photograph 2: Set-up for Radiated Emission, 30MHz-1000MHz.....	63
Photograph 3: Set-up for Radiated Emission, above 1GHz.....	63