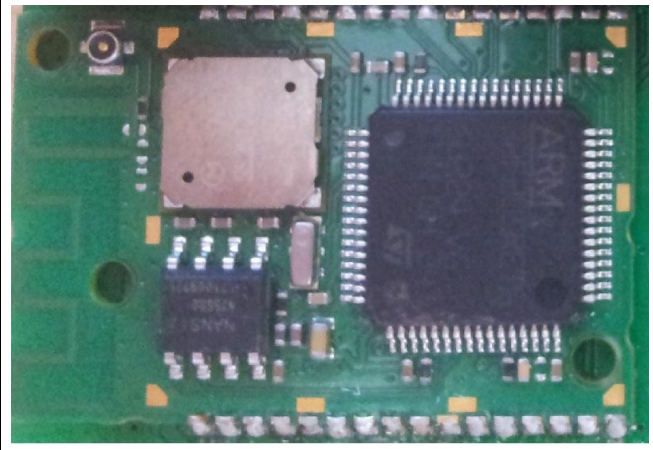


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Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	488459	Auftragsdatum: <i>Order date:</i>	2013.7.24		
Auftraggeber: <i>Client:</i>	Murata Manufacturing Co.,Ltd 10-1, Higashikotari 1-chome Nagaokakyo-shi ,Kyoto ,Japan				
Prüfgegenstand: <i>Test item:</i>	wifi module				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	Model Name : CMWC1ZZABF FCC ID : VPYABF				
Auftrags-Inhalt: <i>Order content:</i>	Complete test				
Prüfgrundlage: <i>Test specification:</i>	FCC CFR47 Part 15, Subpart C, §15.247 ANSI C63.10-2009 KDB 558074 D01 DTS Meas Guidance v03				
Wareneingangsdatum: <i>Date of receipt:</i>	09.08.2013				
Prüfmuster-Nr.: <i>Test sample No.:</i>	N.A				
Prüfzeitraum: <i>Testing period:</i>	09.08.2013 – 27.08.2013				
Ort der Prüfung: <i>Place of testing:</i>	QuieTek Technology(Suzhou)Co., Ltd.				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von / tested by:	kontrolliert von / reviewed by:				
28.08.2013 ShiLi / PE	<i>shi li</i>	28.08.2013	Jesse huang / PM	<i>Jesse Huang</i>	
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:					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
<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. <i>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.</i></p>					

v04

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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

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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: 15064154 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.

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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

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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:	21.47dBm
Antenna gain:	2.2dBi
Antenna type:	External 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.

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).

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4.5 Countermeasures to achieve EMC Compliance

No additional measures were employed to achieve compliance.

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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.

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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	21.46	-	30	-
2	21.38	-	30	-
5.5	21.38	-	30	-
11	21.47	14.38	30	8.53

802.11G Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
6	19.43	-	30	-
9	19.41	-	30	-
12	19.32	-	30	-
18	19.41	-	30	-
24	19.43	-	30	-
36	19.38	-	30	-
48	19.42	-	30	-
54	19.45	7.61	30	10.55

802.11N Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
MCS0	18.07	-	30	-
MCS1	18.11	-	30	-
MCS2	18.13	-	30	-
MCS3	18.09	-	30	-
MCS4	18.13	-	30	-
MCS5	18.12	-	30	-
MCS6	18.12	-	30	-
MCS7	18.14	6.72	30	11.86

Notes: Cable loss was included in reading as offset.

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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	21.24	-	30	-
2	21.21	-	30	-
5.5	21.22	-	30	-
11	21.29	14.34	30	8.71

802.11G Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
6	19.23	-	30	-
9	19.26	-	30	-
12	19.25	-	30	-
18	19.22	-	30	-
24	19.23	-	30	-
36	19.24	-	30	-
48	19.25	-	30	-
54	19.27	7.47	30	10.73

802.11N Data Rate [Mbps]	Output Peak Power [dBm]	Output Average Power [dBm]	Limit [dBm]	Margin [dB]
MCS0	18.15	-	30	-
MCS1	18.16	-	30	-
MCS2	18.14	-	30	-
MCS3	18.17	-	30	-
MCS4	18.16	-	30	-
MCS5	18.15	-	30	-
MCS6	18.17	-	30	-
MCS7	18.18	6.59	30	11.82

Notes: Cable loss was included in reading as offset.

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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	21.19	14.48	30	8.81

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	19.28	7.8	30	10.72

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	18.20	6.69	30	11.8

Notes: Cable loss was included in reading as offset.

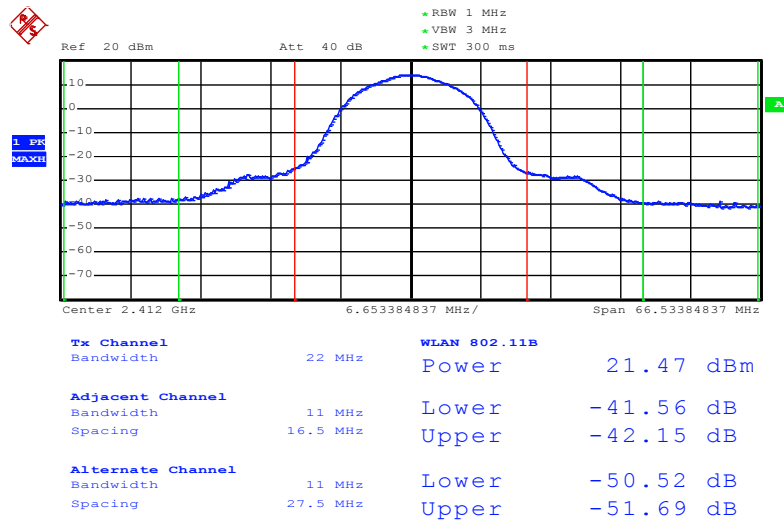
Remark:

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.

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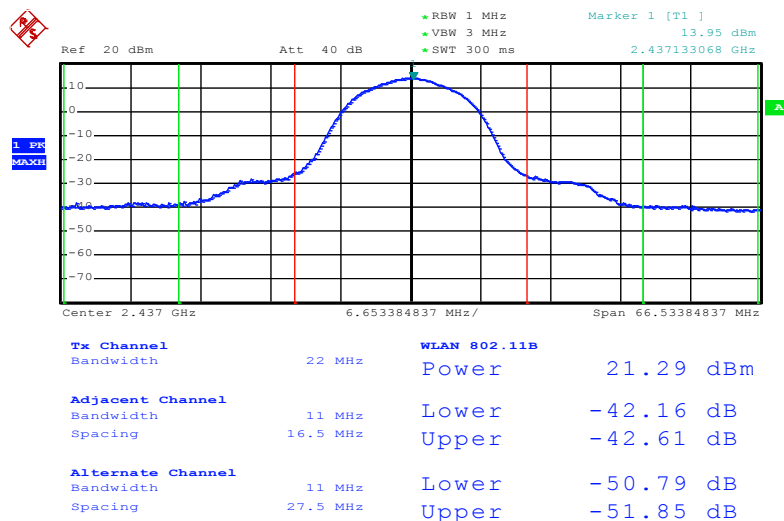
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Figure 1: Output Peak Power, 802.11B (Low Channel)



Date: 12.AUG.2013 10:38:39

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

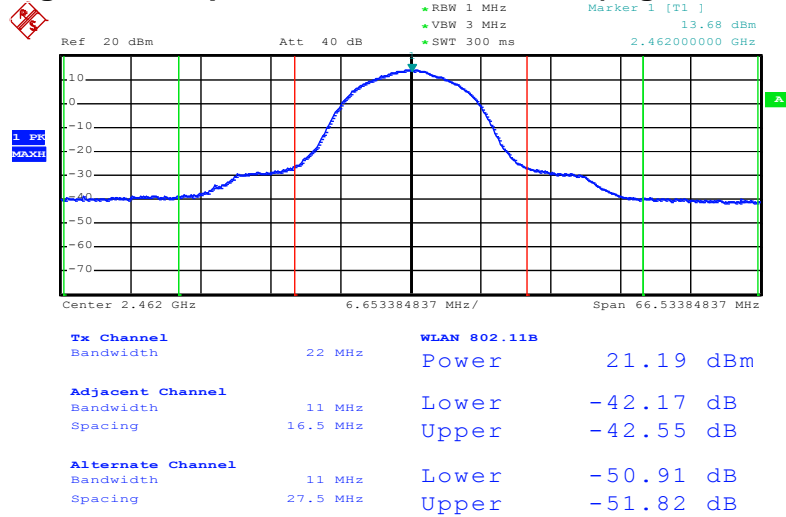


Date: 12.AUG.2013 10:39:39

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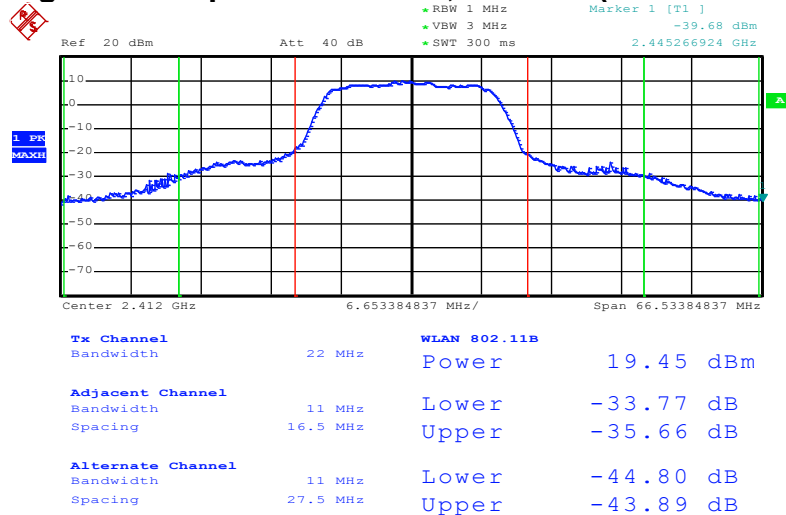
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Figure 3: Output Peak Power, 802.11B (High Channel)



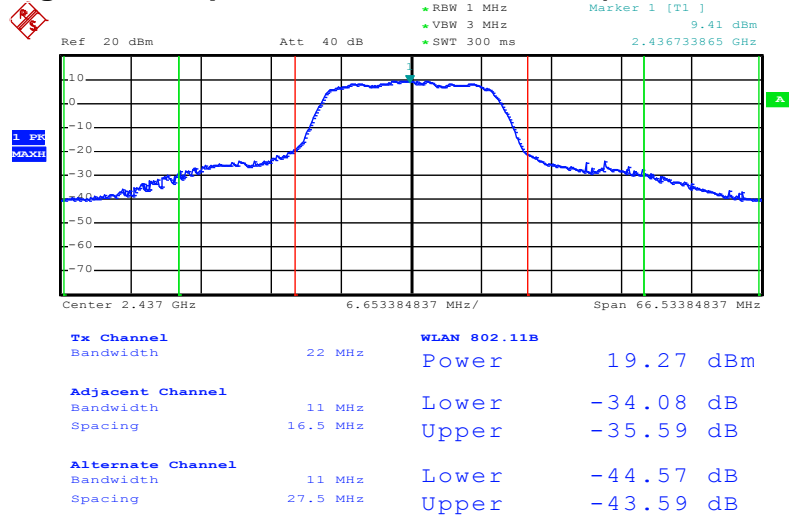
Date: 12.AUG.2013 10:41:23

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



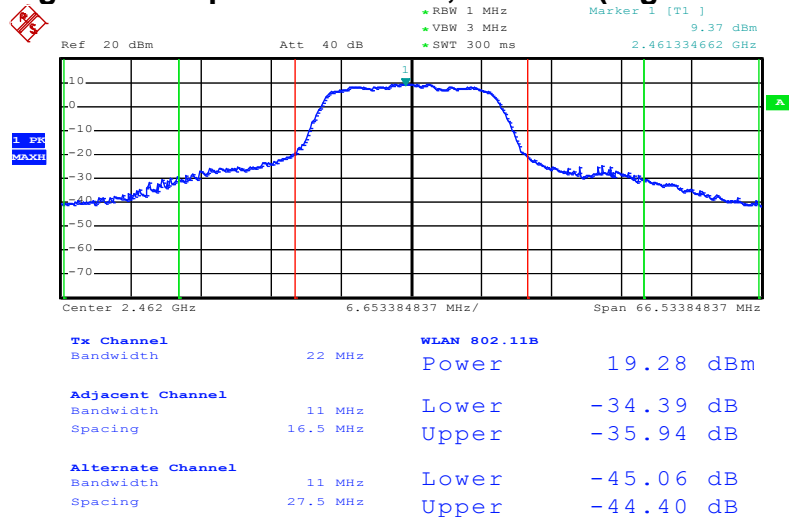
Date: 12.AUG.2013 10:43:00

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



Date: 12.AUG.2013 10:44:52

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

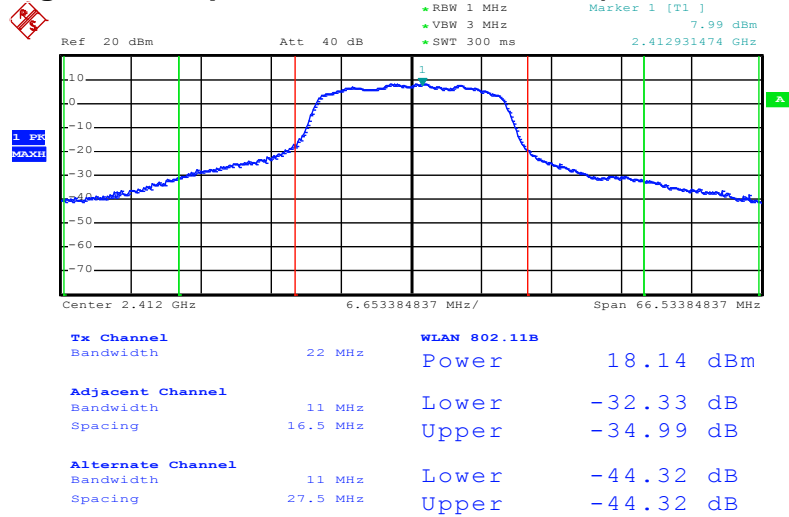


Date: 12.AUG.2013 10:46:53

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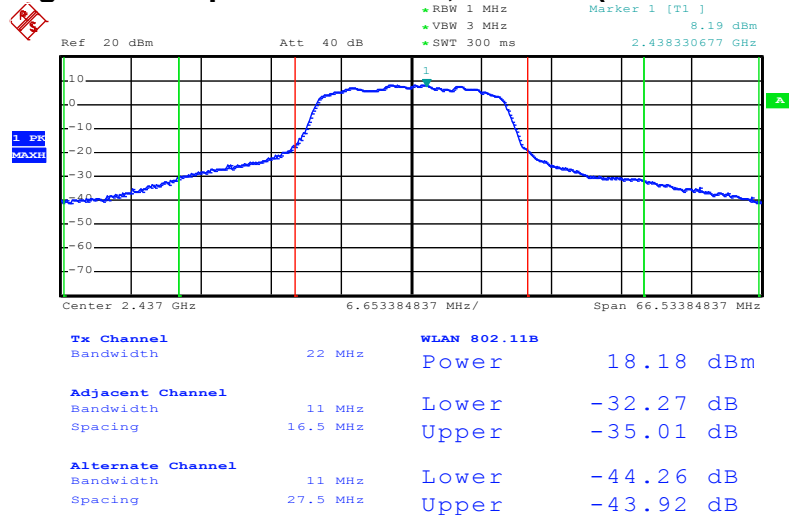
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Figure 7: Output Peak Power, 802.11N (Low Channel)



Date: 12.AUG.2013 10:49:36

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

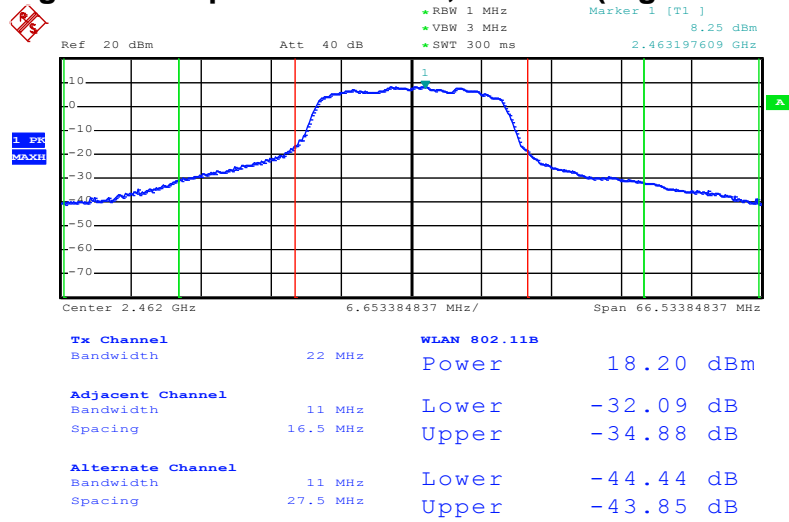


Date: 12.AUG.2013 10:54:28

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



Date: 12.AUG.2013 11:05:53

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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.

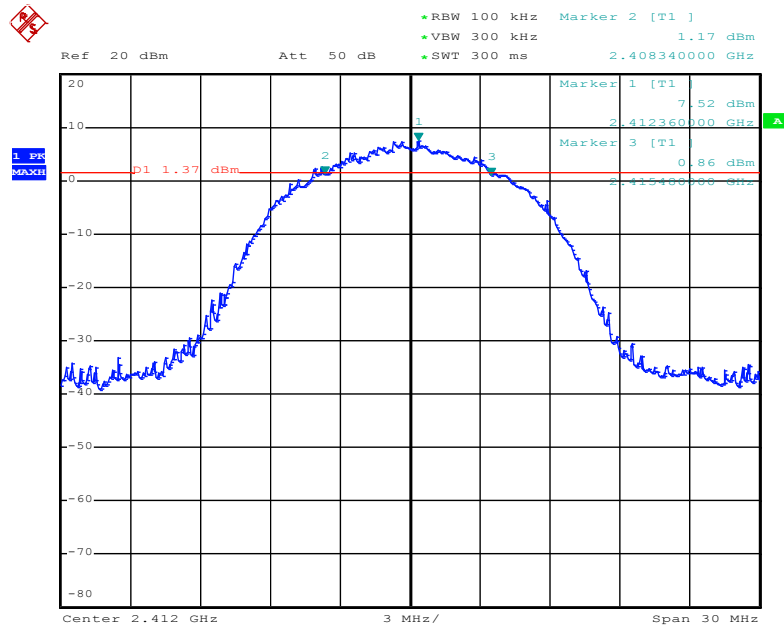
Table 6: 6 dB Bandwidth

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

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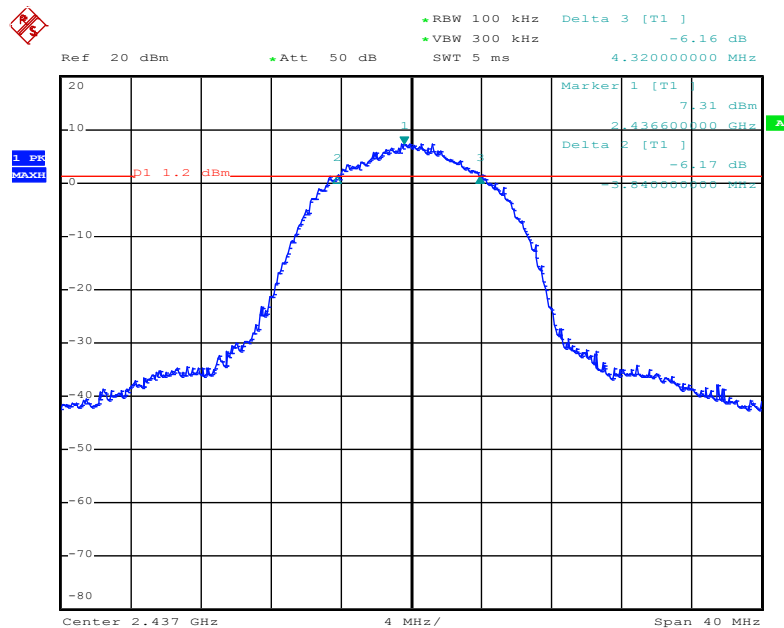
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Figure 10: 6 dB Bandwidth of 802.11B (Low Channel Mode A)



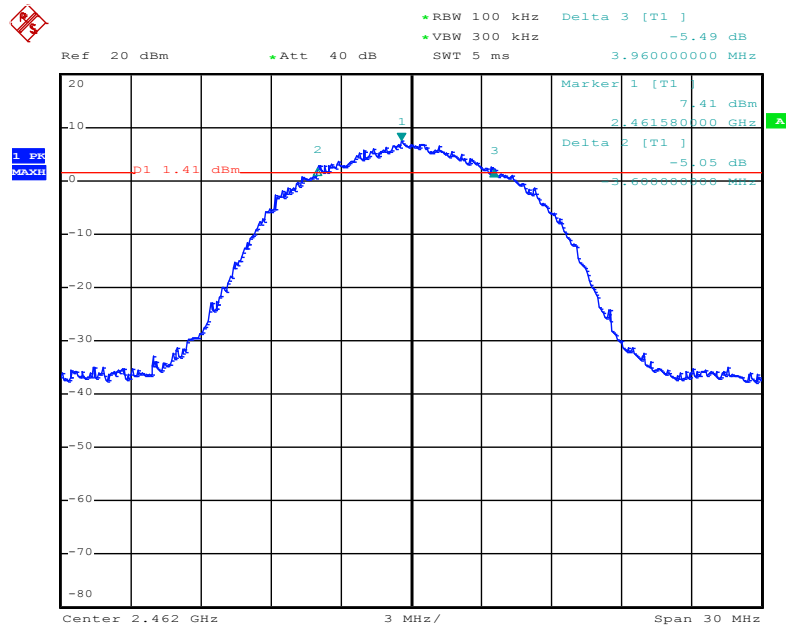
Date: 9.AUG.2013 17:35:49

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



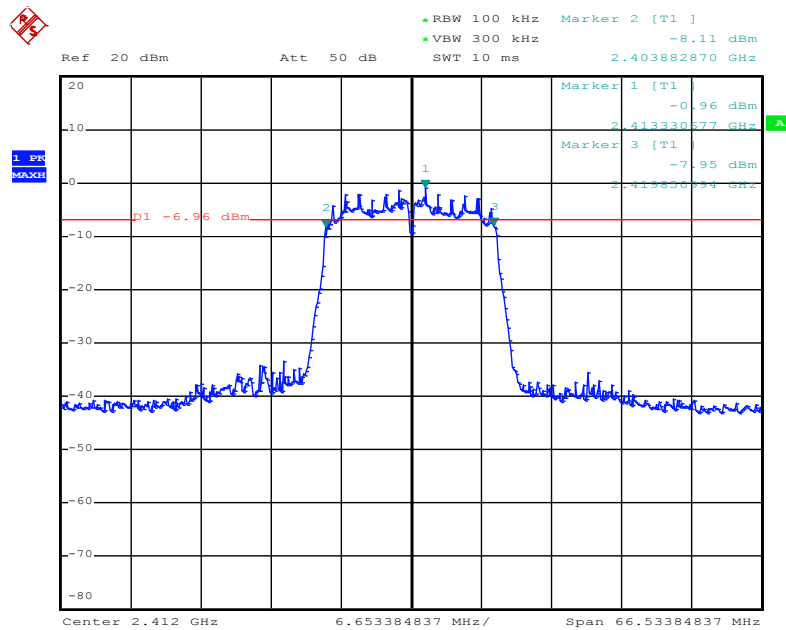
Date: 27.AUG.2013 15:48:42

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



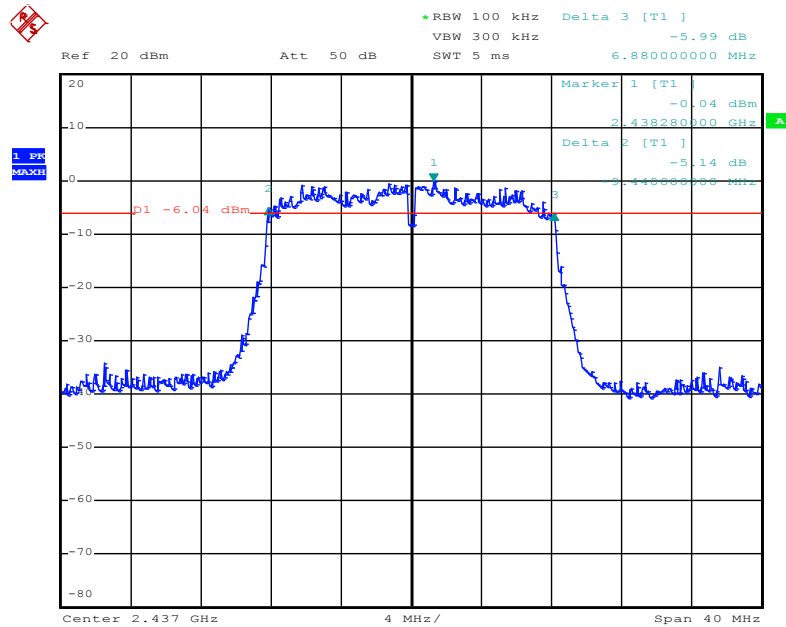
Date: 27.AUG.2013 16:10:11

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



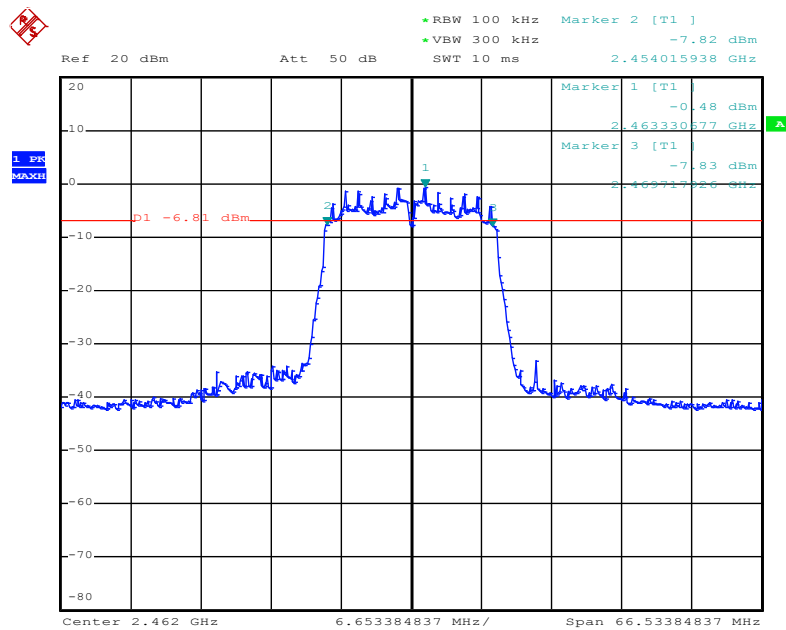
Date: 12.AUG.2013 16:47:10

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)

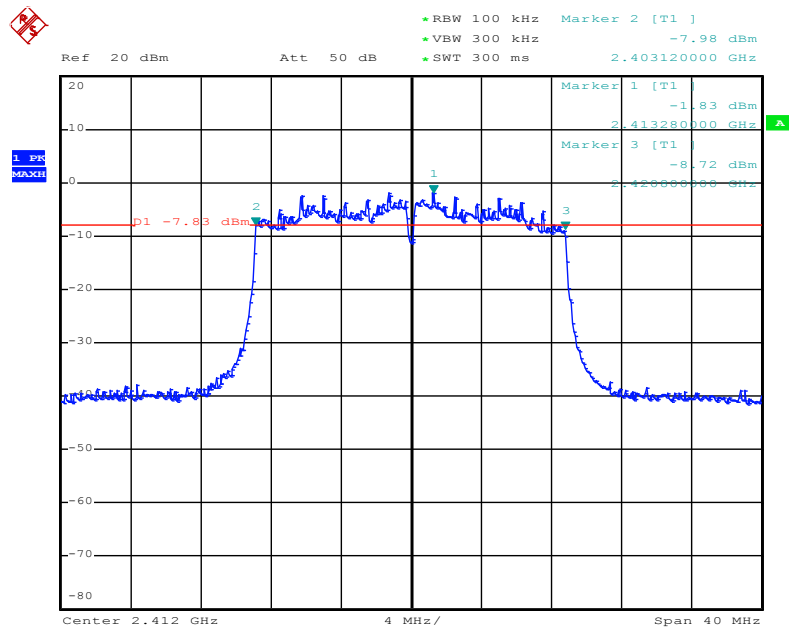


Date: 12.AUG.2013 17:01:09

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Test Report No.:

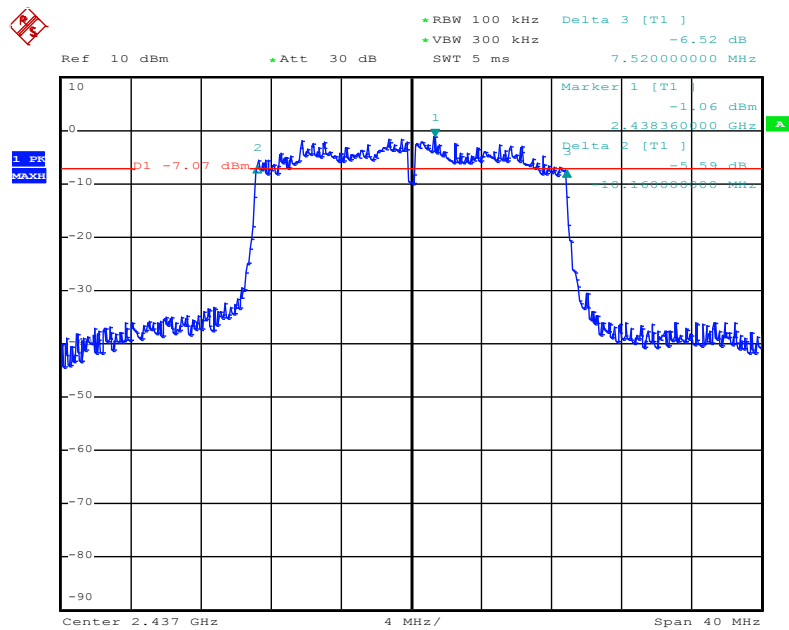
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Figure 16: 6 dB Bandwidth of 802.11N (Low Channel Mode A)



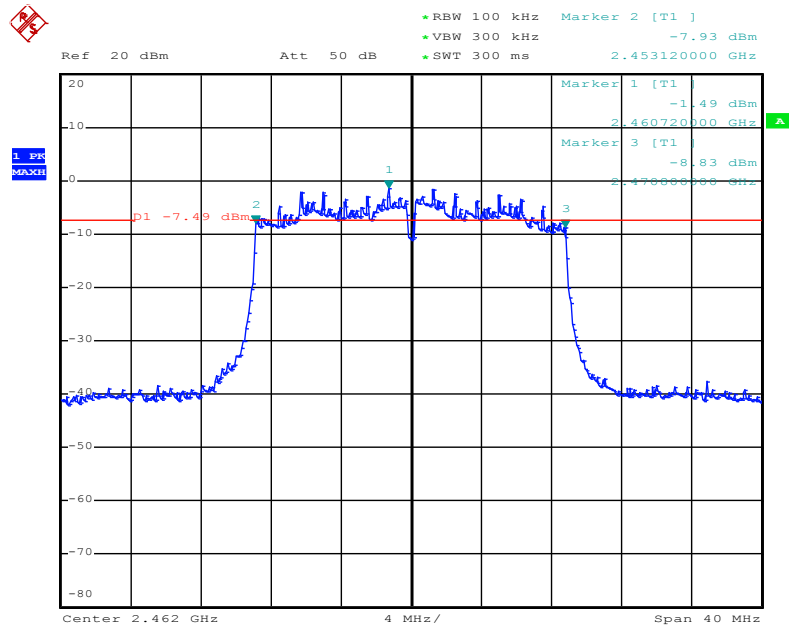
Date: 12.AUG.2013 15:57:23

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



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

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



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

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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.

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Test Report No.:

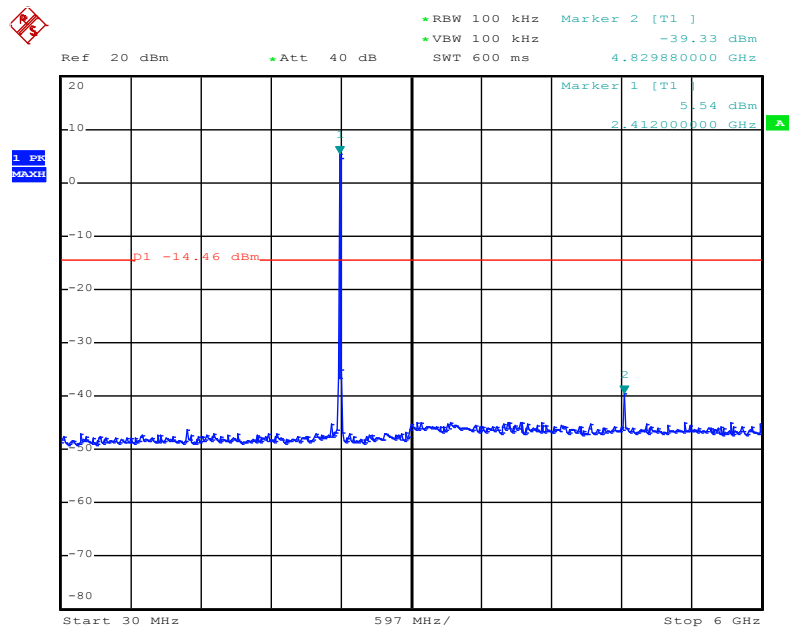
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Table 7: Conducted Spurious Emission, 802.11B Mode A (Low Channel)

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	-	-

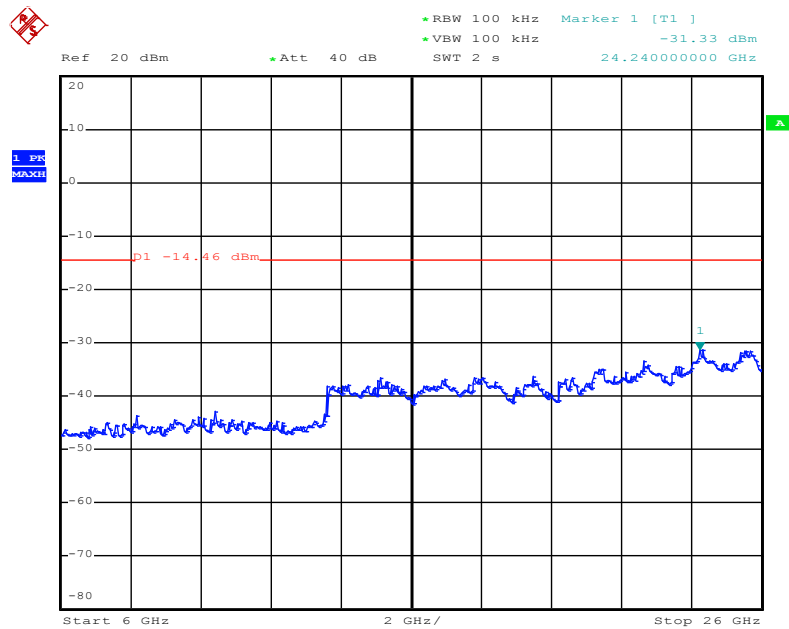
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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



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

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



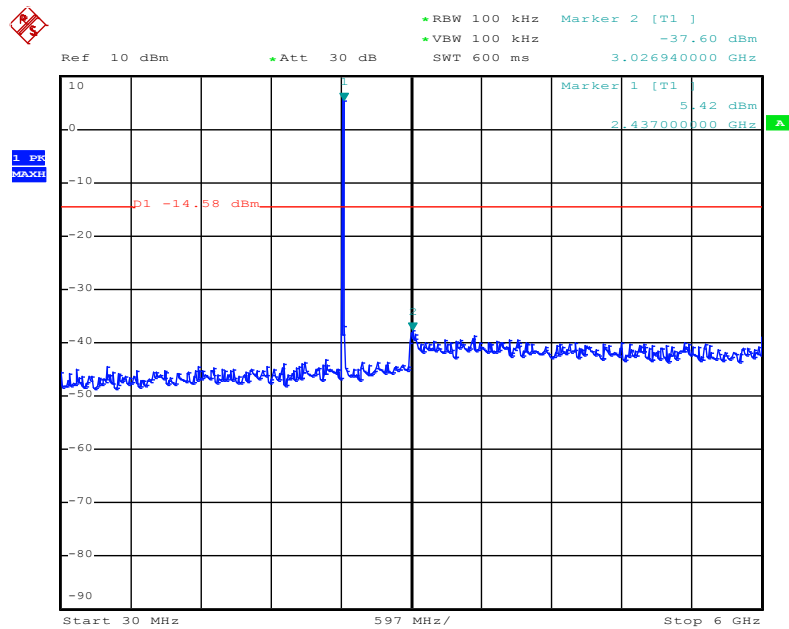
Date: 27.AUG.2013 15:56:43

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	-	-

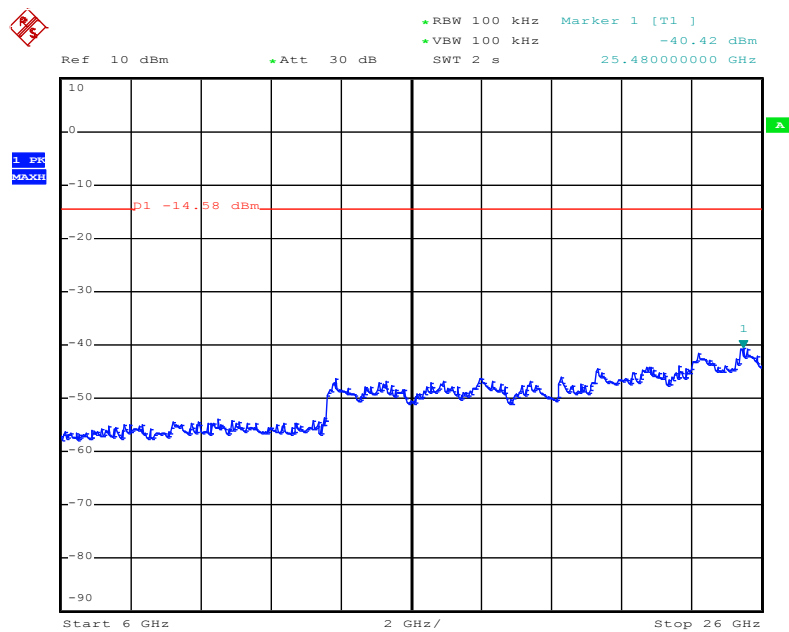
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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.: 15064154 001
Test Report No.:

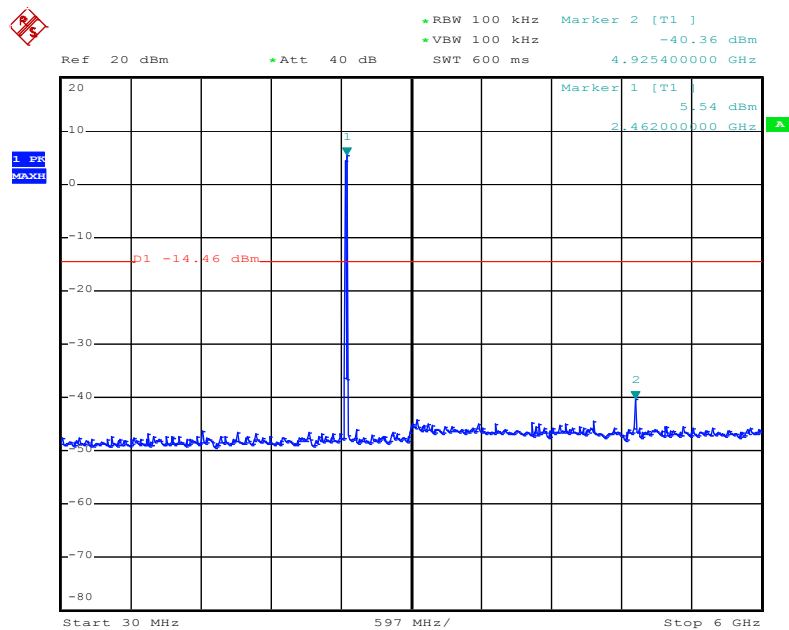
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Table 9: Conducted Spurious Emission, 802.11B Mode C (High Channel)

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	-	-

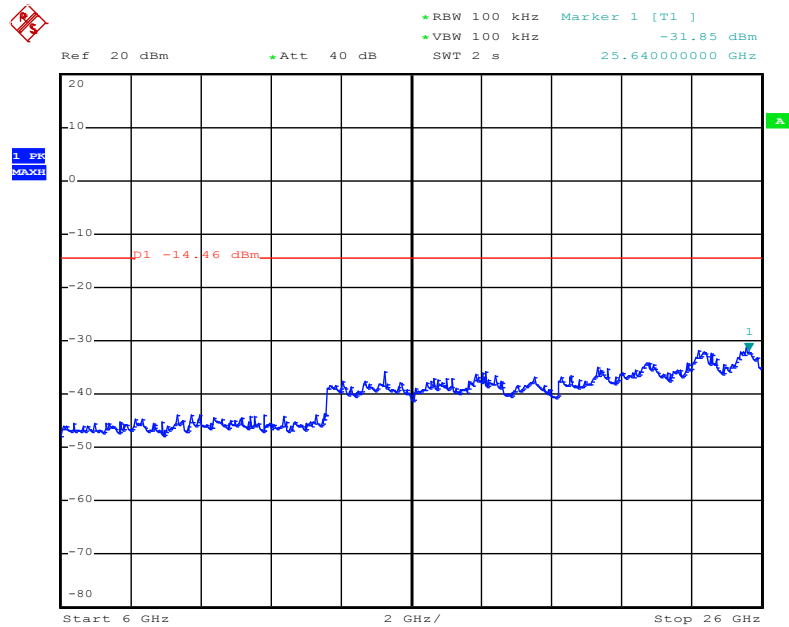
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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



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

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



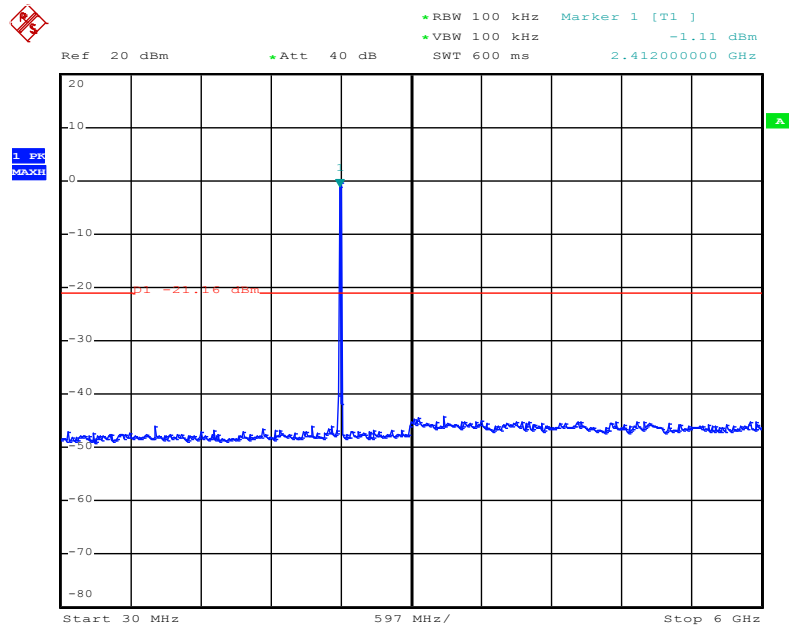
Date: 27.AUG.2013 15:59:43

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	-

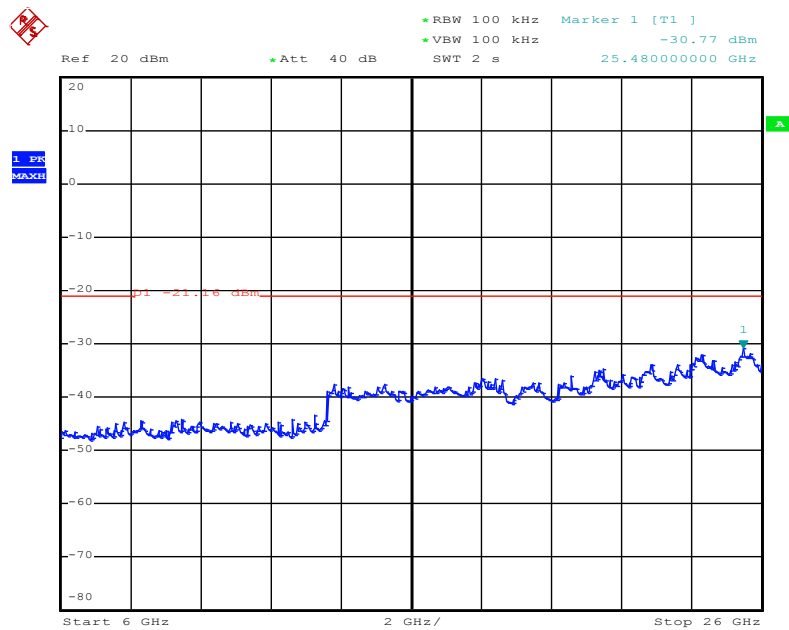
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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

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Test Report No.:

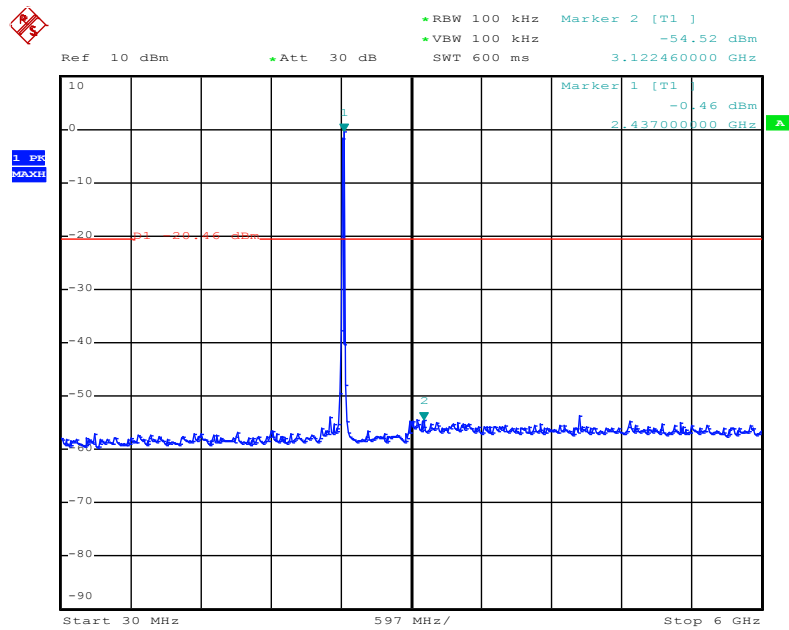
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Table 11: Conducted Spurious Emission, 802.11G Mode B (Middle Channel)

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	-

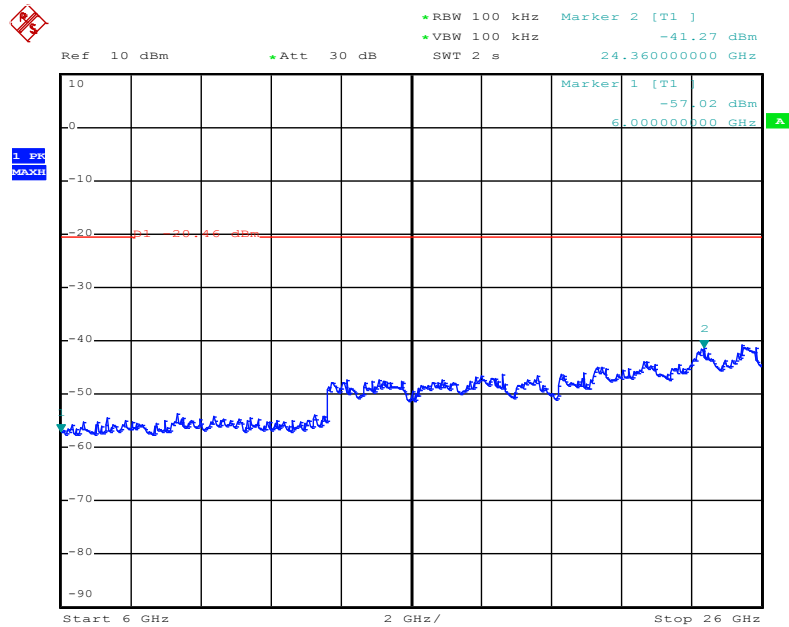
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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



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

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



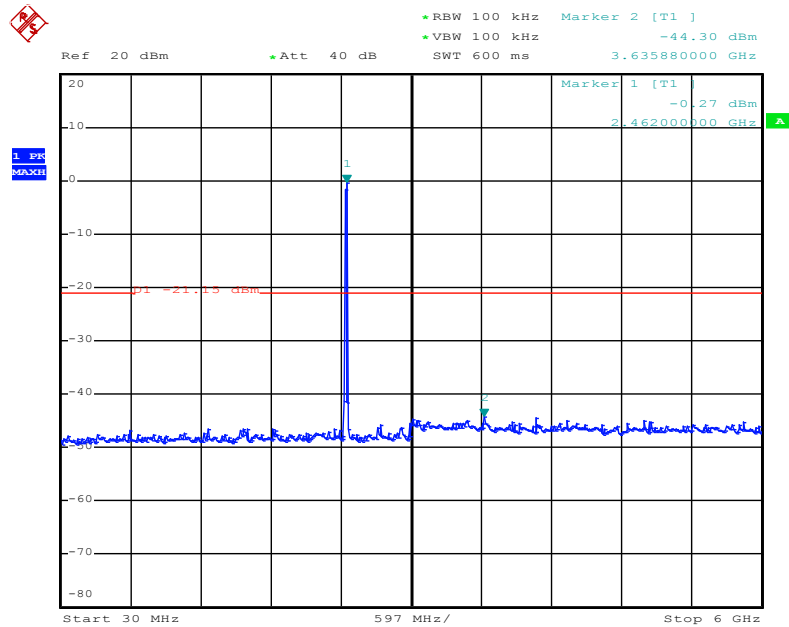
Date: 27.AUG.2013 15:38:51

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	-

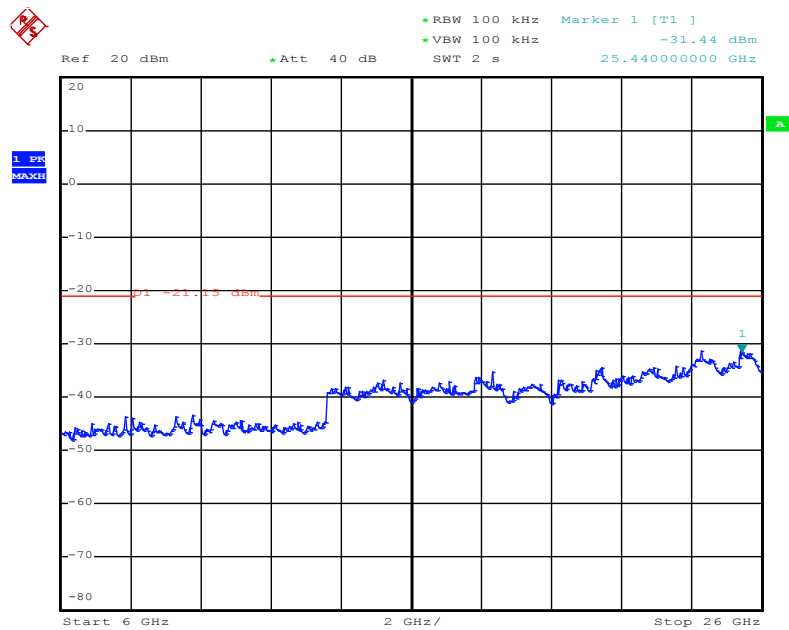
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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

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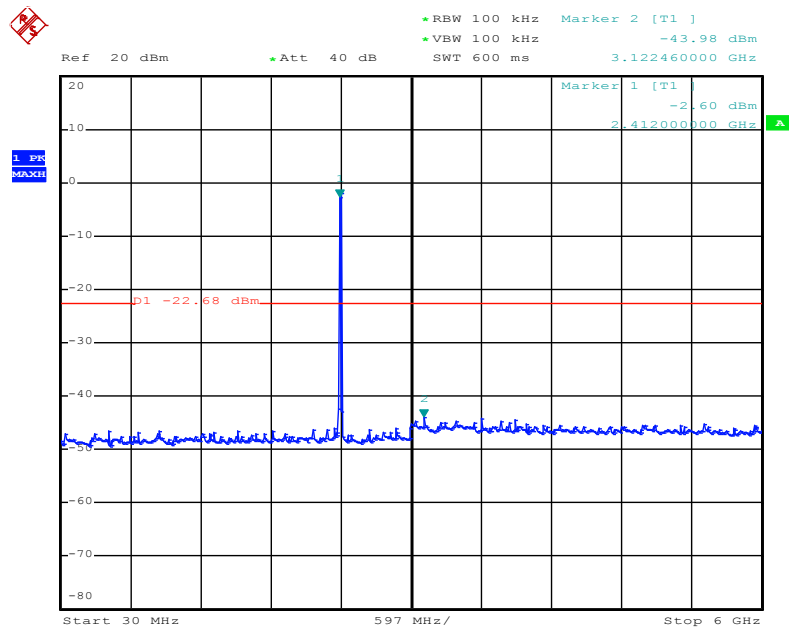
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Table 13: Conducted Spurious Emission, 802.11N Mode A (Low Channel)

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	-

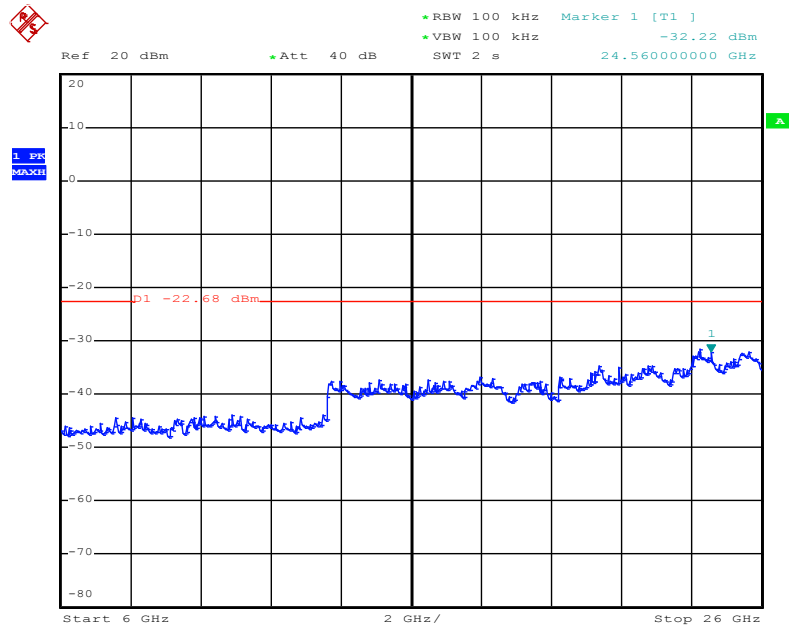
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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



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

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



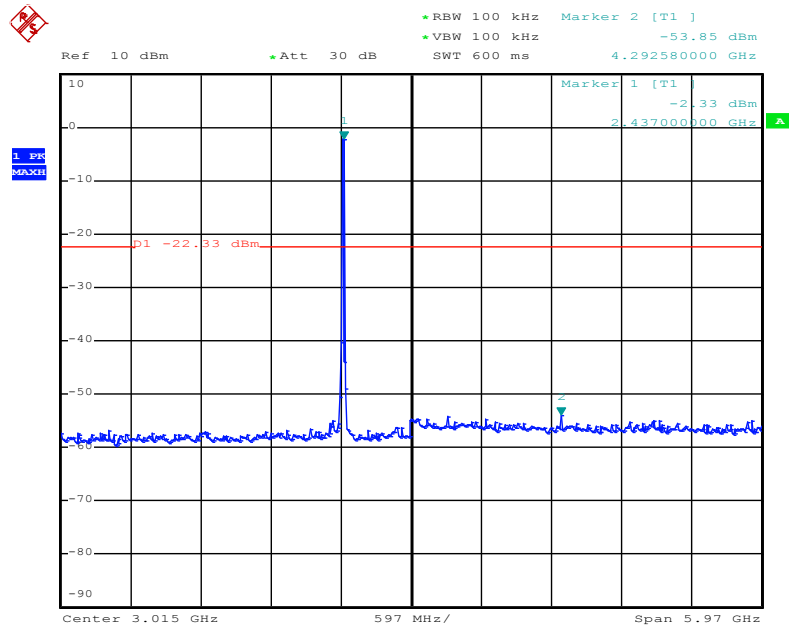
Date: 27.AUG.2013 17:26:34

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	-

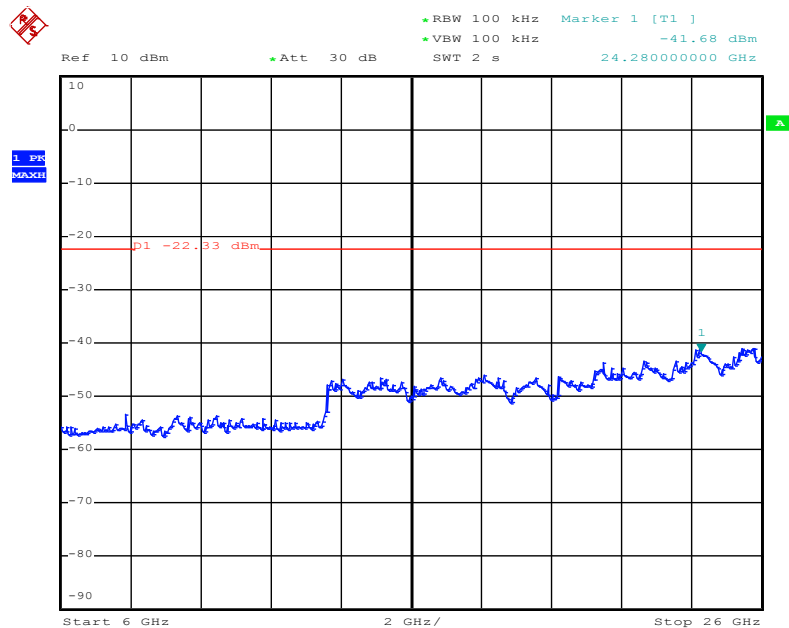
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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

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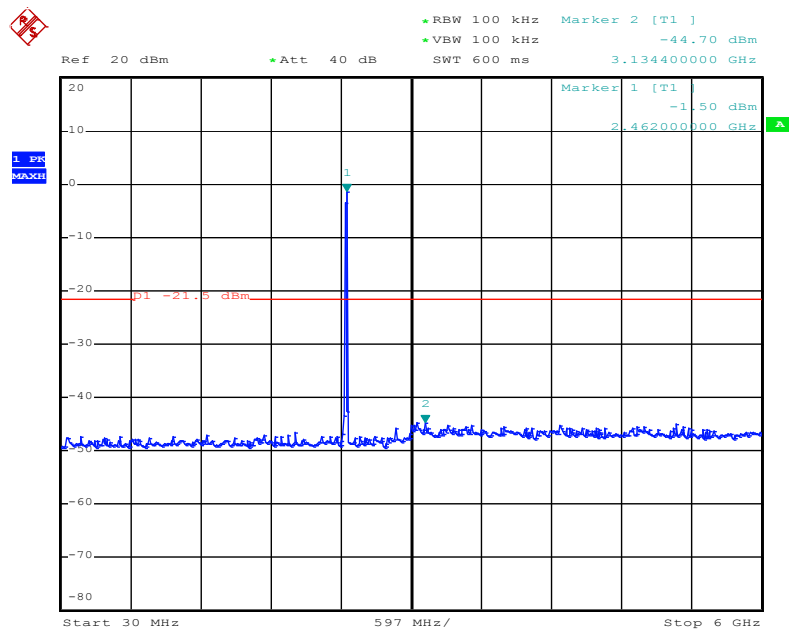
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Table 15: Conducted Spurious Emission, 802.11N Mode C (High Channel)

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	-

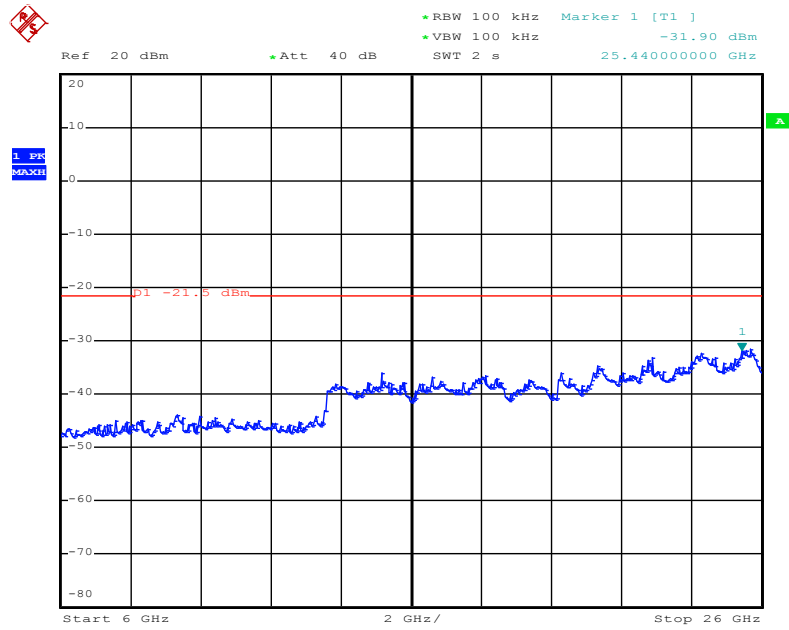
Notes: Cable loss was included in reading as offset.
Limit = Reading of fundamental + Correction factor – 20dB

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



Date: 27.AUG.2013 17:27:45

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



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

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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.

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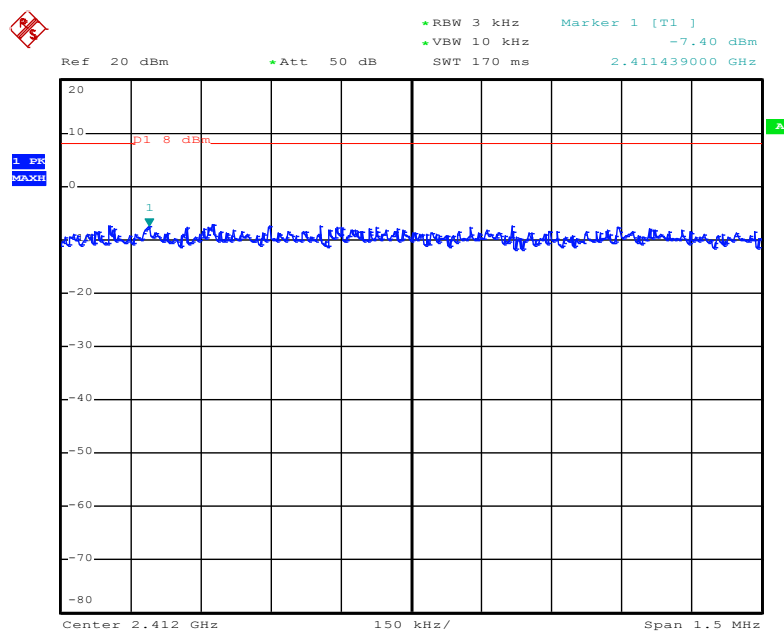
Table 16: Power spectral density of 802.11 b g n

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

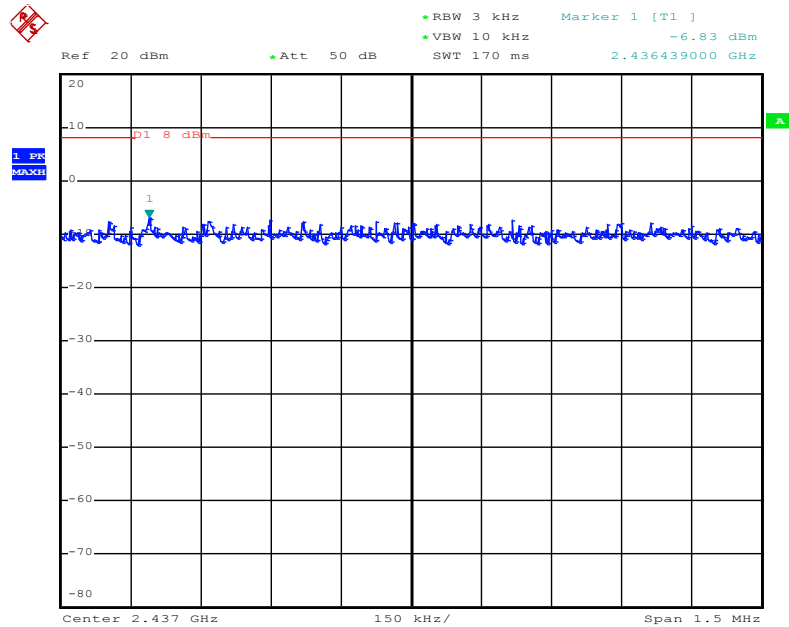
Figure 37: Power spectral density, 802.11 B Mode A



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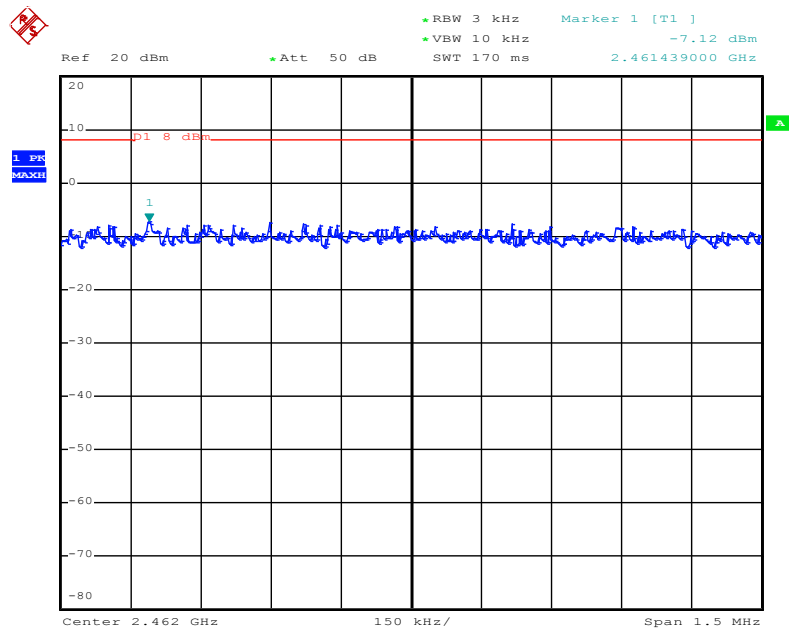
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Figure 38: Power spectral density, 802.11 B Mode B



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

Figure 39: Power spectral density, 802.11 B Mode C

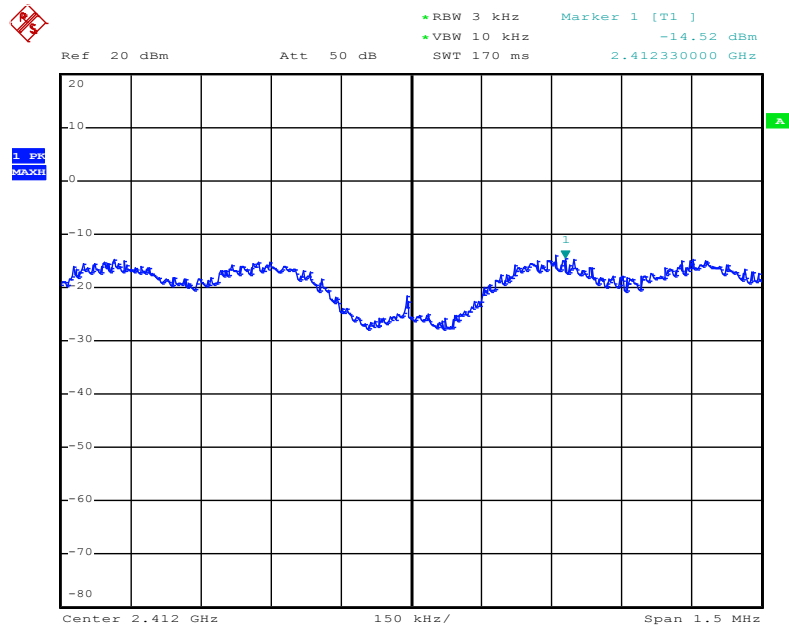


Date: 27.AUG.2013 17:44:16

Prüfbericht - Nr.: 15064154 001
Test Report No.:

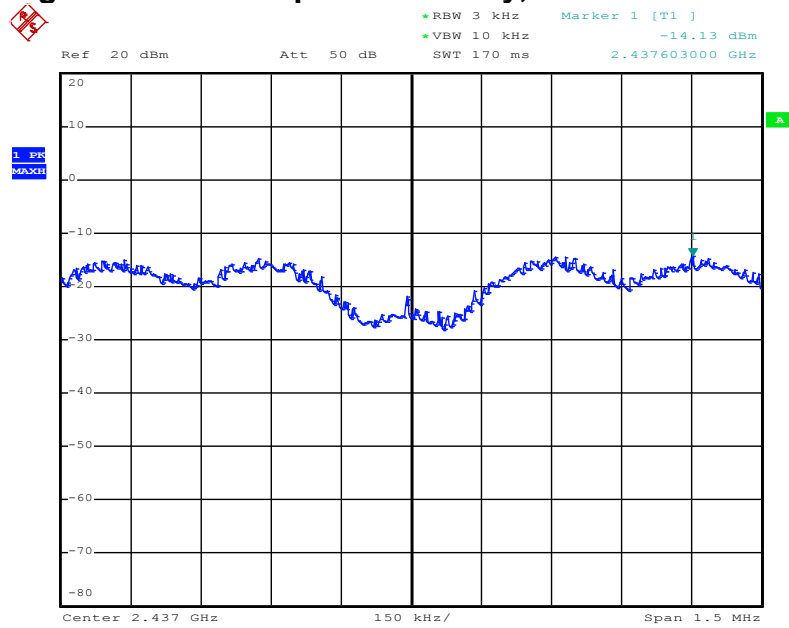
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Figure 40: Power spectral density, 802.11 G Mode A



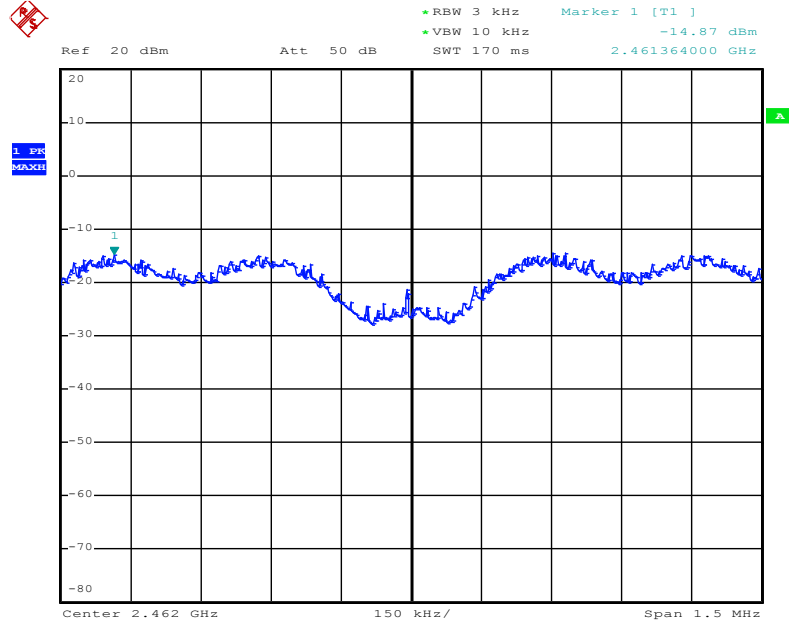
Date: 12.AUG.2013 17:15:04

Figure 41: Power spectral density, 802.11 G Mode B



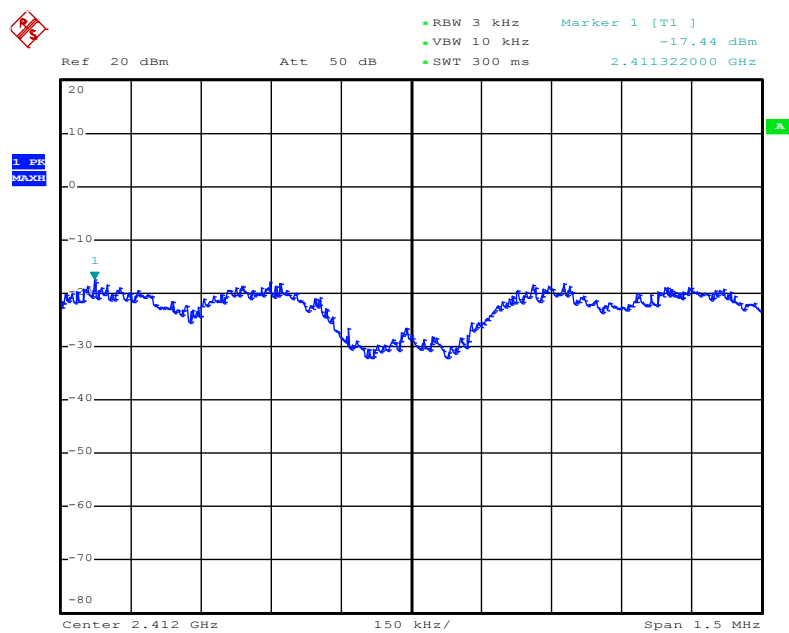
Date: 12.AUG.2013 17:16:53

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

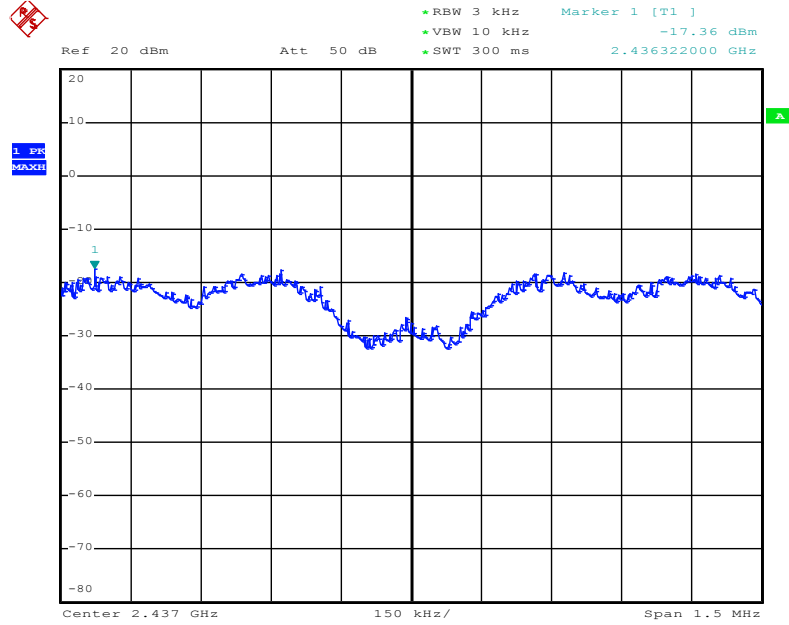


Date: 12.AUG.2013 16:20:38

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Test Report No.:

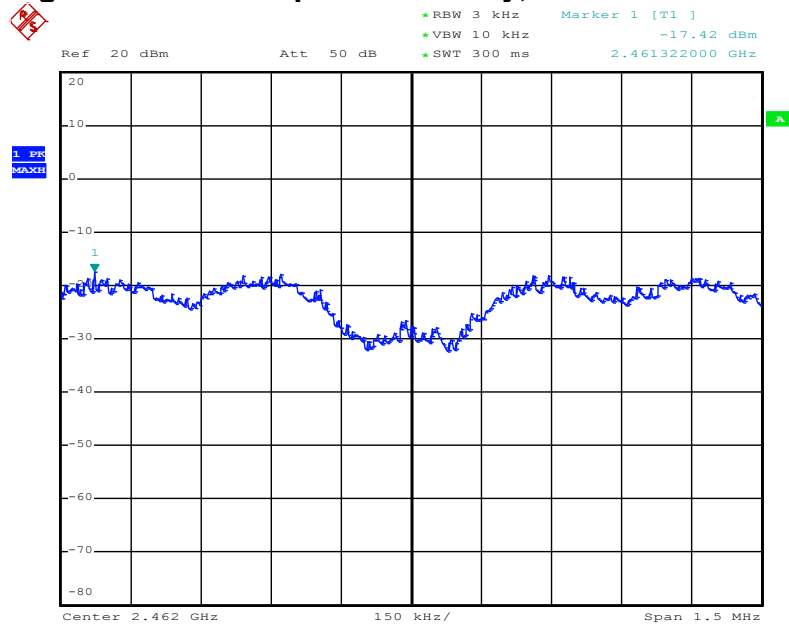
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Figure 44: Power spectral density, 802.11 N Mode B



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

Figure 45: Power spectral density, 802.11 N Mode C



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

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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.

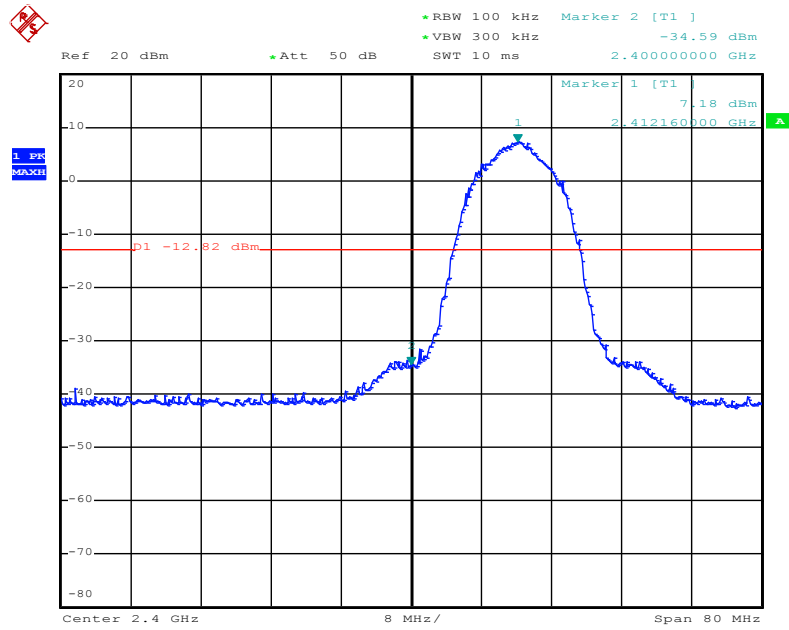
Test procedure:

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

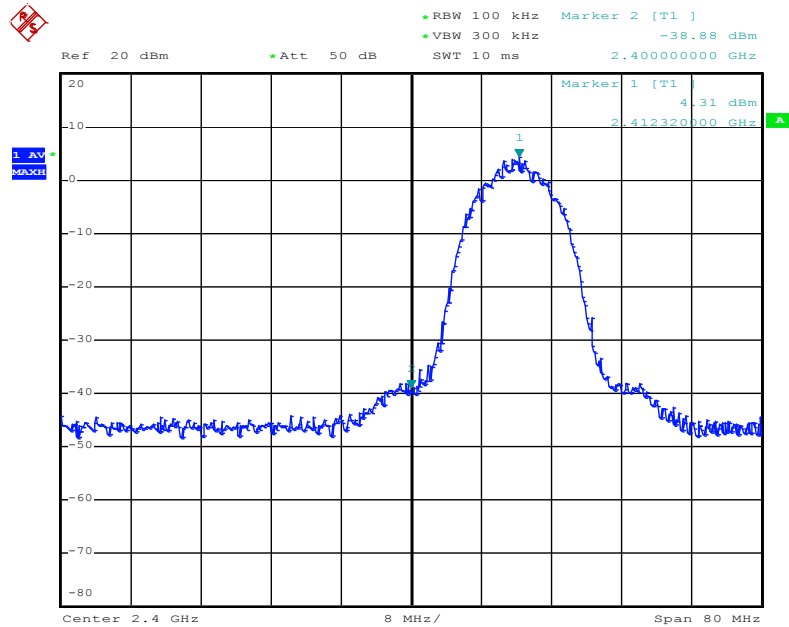
A spectrum analyzer was connected to the antenna port of the EUT. The analyzer resolution bandwidth was set to 100kHz and video bandwidth was set to 300kHz. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this 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.

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



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

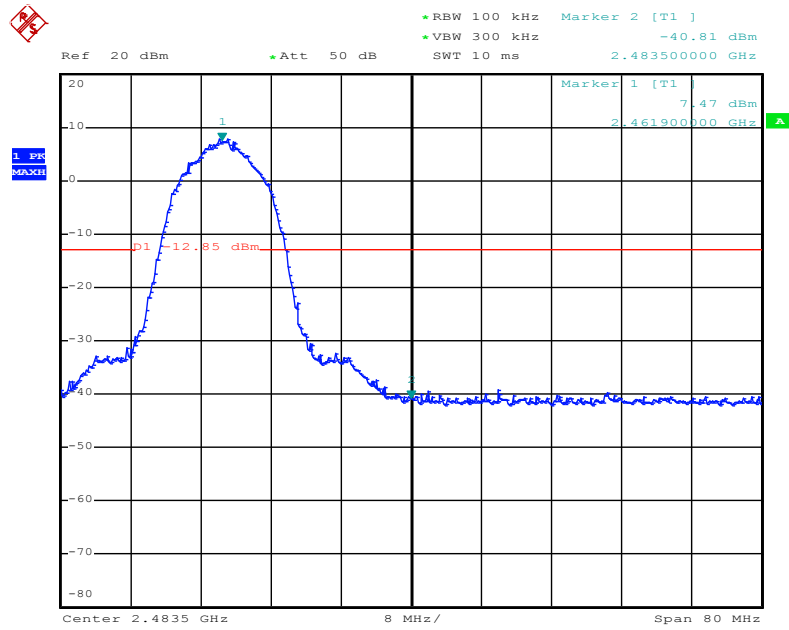


Date: 27.AUG.2013 18:52:28

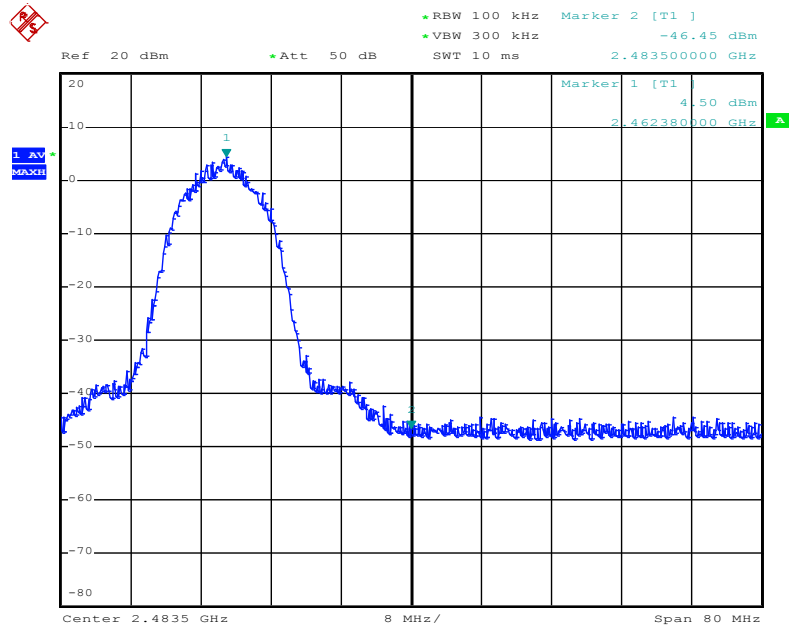
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Figure 47: Upper Band Edge Conducted (802.11 B AV and PK Detector)



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

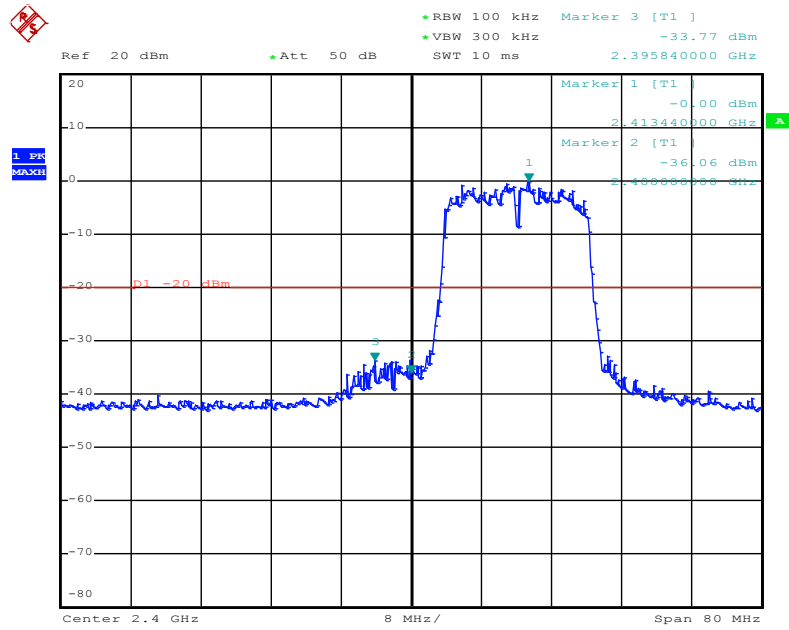


Date: 27.AUG.2013 18:45:41

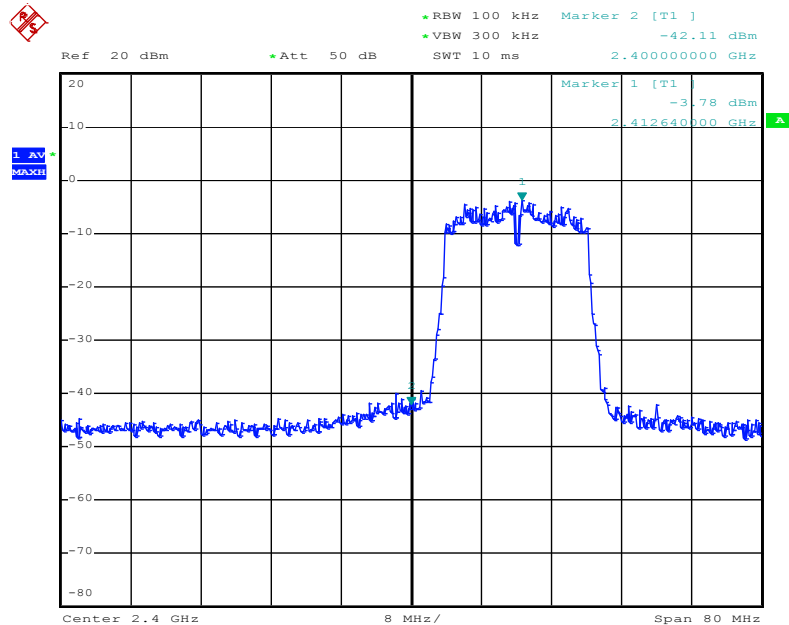
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Figure 48: Lower Band Edge Conducted (802.11 G AV and PK Detector)



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

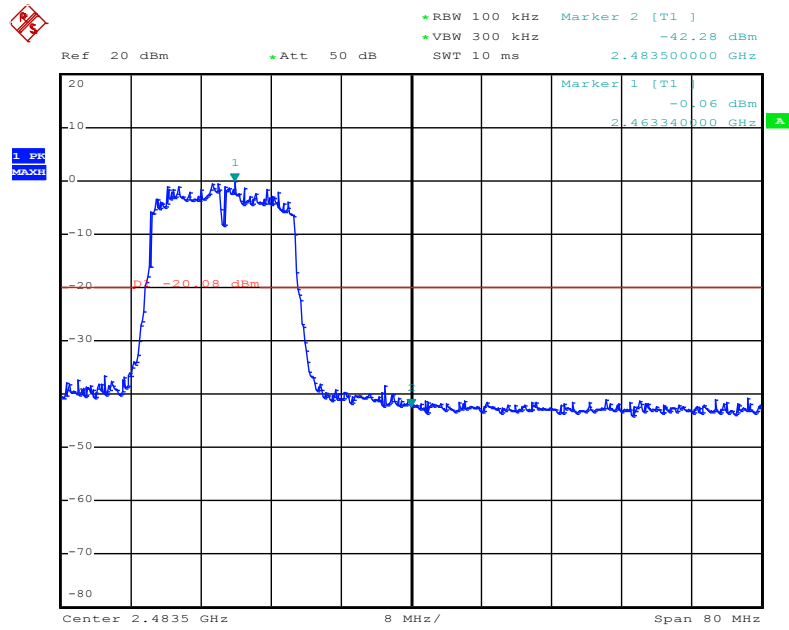


Date: 27.AUG.2013 18:51:07

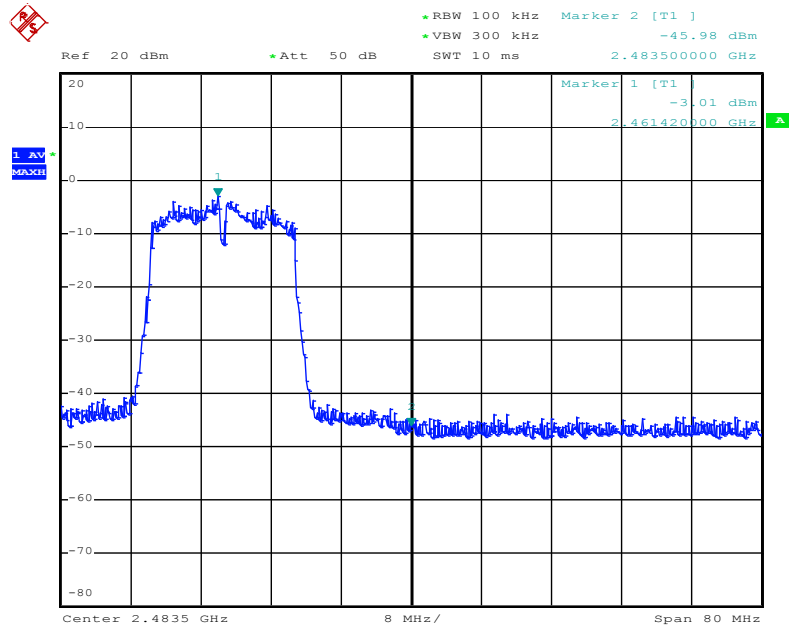
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Figure 49: Upper Band Edge Conducted (802.11 G AV and PK Detector)

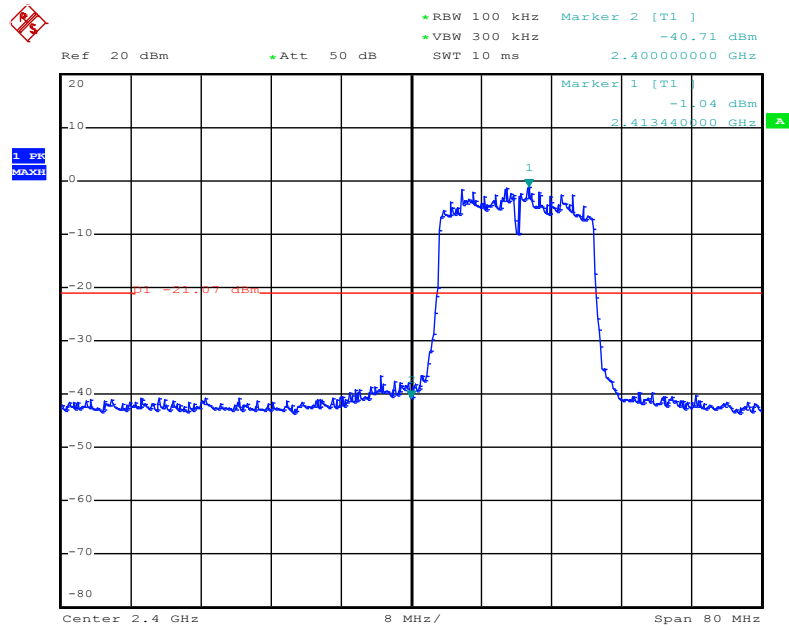


Date: 27.AUG.2013 18:16:37

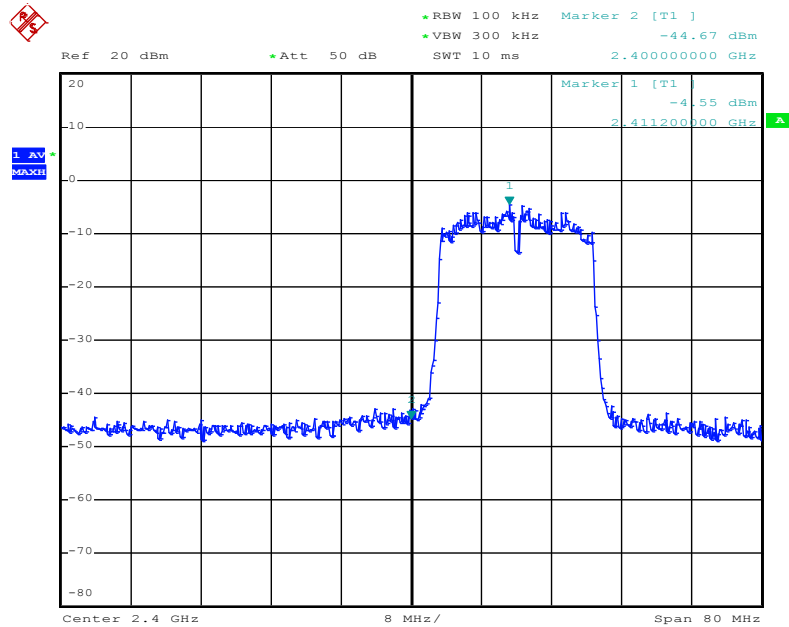


Date: 27.AUG.2013 18:47:06

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



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

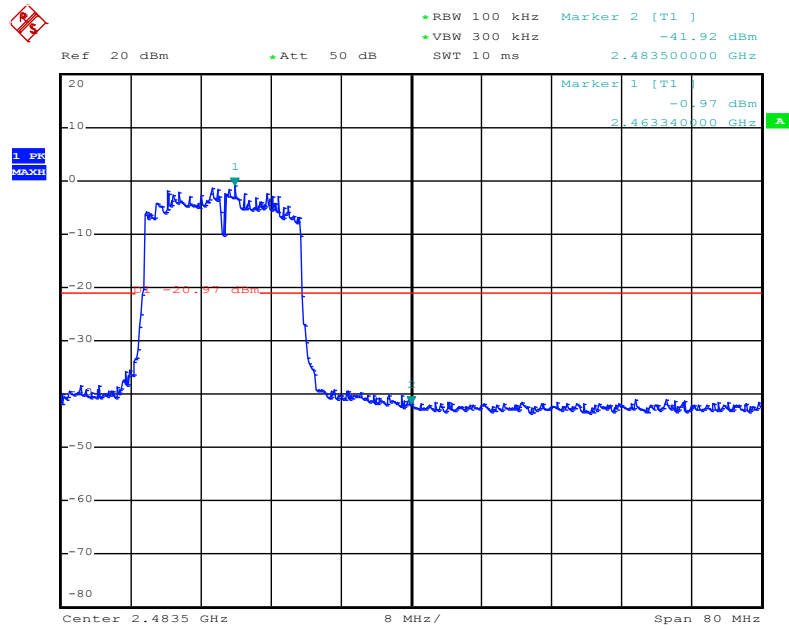


Date: 27.AUG.2013 18:50:00

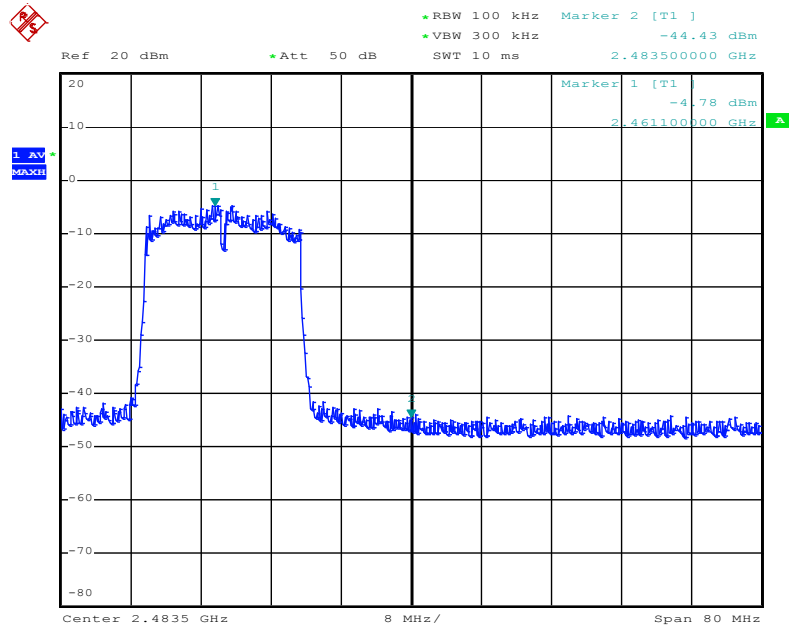
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Figure 51: Upper Band Edge Conducted (802.11 N AV and PK Detector)



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



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

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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: 15064154 001 APPENDIX1)

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	52.965	15.806	-21.035	74.000	37.159	PK
2	Horizontal	2411.920	103.864	66.512	N/A	N/A	37.352	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	60.287	23.788	-13.713	74.000	36.499	PK
2	Vertical	2412.032	113.529	76.924	N/A	N/A	36.605	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	42.502	5.343	-11.498	54.000	37.159	AV
2	Horizontal	2412.032	96.622	59.269	N/A	N/A	37.353	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	46.804	10.305	-7.196	54.000	36.499	AV
2	Vertical	2412.144	100.288	63.683	N/A	N/A	36.605	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	2462.104	103.964	66.182	N/A	N/A	37.782	PK
2	Horizontal	2486.500	60.507	22.511	-13.493	74.000	37.996	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	2461.576	112.711	75.880	N/A	N/A	36.831	PK
2	Vertical	2483.500	59.793	22.857	-14.207	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	2461.600	89.542	51.764	N/A	N/A	37.778	AV
2	Horizontal	2483.500	46.363	8.393	-7.637	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	2462.416	99.391	62.556	N/A	N/A	36.834	AV
2	Vertical	2483.500	45.722	8.786	-8.278	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.

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	59.149	21.990	-14.851	74.000	37.159	PK
2	Horizontal	2410.632	98.731	61.390	N/A	N/A	37.341	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	66.416	29.917	-7.584	74.000	36.499	PK
2	Vertical	2410.632	108.085	71.487	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	39.909	2.750	-14.091	54.000	37.159	AV
2	Horizontal	2412.536	70.016	32.659	N/A	N/A	37.358	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	45.535	9.036	-8.465	54.000	36.499	AV
2	Vertical	2412.648	76.371	39.763	N/A	N/A	36.608	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	2461.624	110.201	72.423	N/A	N/A	37.778	PK
2	Horizontal	2483.500	66.777	28.807	-7.223	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	2461.888	109.534	72.701	N/A	N/A	36.833	PK
2	Vertical	2483.500	68.174	31.238	-5.826	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	2461.240	85.113	47.338	N/A	N/A	37.775	AV
2	Horizontal	2483.500	46.328	8.358	-7.672	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	2460.928	78.388	41.559	N/A	N/A	36.828	AV
2	Vertical	2483.500	47.398	10.462	-6.602	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.

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	62.960	25.801	-11.040	74.000	37.159	PK
2	Horizontal	2413.208	98.881	61.518	N/A	N/A	37.364	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	64.591	28.092	-9.409	74.000	36.499	PK
2	Vertical	2413.376	107.920	71.309	N/A	N/A	36.612	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	49.744	12.585	-4.256	54.000	37.159	AV
2	Horizontal	2410.678	72.912	35.571	N/A	N/A	37.342	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	49.635	13.136	-4.365	54.000	36.499	AV
2	Vertical	2410.800	78.698	42.099	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	2460.510	97.543	59.774	N/A	N/A	37.769	PK
2	Horizontal	2483.500	63.726	25.756	-10.274	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	2460.496	107.464	70.637	N/A	N/A	36.827	PK
2	Vertical	2483.500	65.299	28.363	-8.701	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	2460.734	73.124	35.353	N/A	N/A	37.770	AV
2	Horizontal	2483.500	50.470	12.500	-3.530	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	2460.659	77.651	40.824	N/A	N/A	36.827	AV
2	Vertical	2483.500	50.204	13.268	-3.796	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.

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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: 15064154 001 APPENDIX1)

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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	38.405	45.475	-35.595	74.000	-7.069	PK
2	Horizontal	7236.000	39.476	41.223	-34.524	74.000	-1.747	PK
3	Horizontal	9648.000	39.844	35.522	-34.156	74.000	4.321	PK
4	Vertical	4824.000	39.430	46.581	-34.570	74.000	-7.151	PK
5	Vertical	7236.000	39.330	41.088	-34.670	74.000	-1.758	PK
6	Vertical	9648.000	40.381	36.000	-33.619	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	37.116	44.127	-36.884	74.000	-7.010	PK
2	Horizontal	7311.000	41.238	42.819	-32.762	74.000	-1.581	PK
3	Horizontal	9748.000	40.698	36.217	-33.302	74.000	4.482	PK
4	Vertical	4874.000	36.980	43.992	-37.020	74.000	-7.012	PK
5	Vertical	7311.000	40.895	42.476	-33.105	74.000	-1.581	PK
6	Vertical	9748.000	40.302	35.724	-33.698	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	36.773	43.853	-37.227	74.000	-7.080	PK
2	Horizontal	7386.000	40.426	41.762	-33.574	74.000	-1.336	PK
3	Horizontal	9848.000	40.934	36.018	-33.066	74.000	4.915	PK
4	Vertical	4924.000	36.434	43.434	-37.566	74.000	-7.000	PK
5	Vertical	7386.000	40.584	41.920	-33.416	74.000	-1.336	PK
6	Vertical	9848.000	41.113	36.137	-32.887	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.

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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	38.168	45.238	-35.832	74.000	-7.069	PK
2	Horizontal	7236.000	39.042	40.789	-34.958	74.000	-1.747	PK
3	Horizontal	9648.000	39.989	35.667	-34.011	74.000	4.321	PK
4	Vertical	4824.000	36.392	43.543	-37.608	74.000	-7.151	PK
5	Vertical	7236.000	39.112	40.870	-34.888	74.000	-1.758	PK
6	Vertical	9648.000	39.473	35.092	-34.527	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	37.557	44.568	-36.443	74.000	-7.010	PK
2	Horizontal	7311.000	40.859	42.440	-33.141	74.000	-1.581	PK
3	Horizontal	9748.000	41.137	36.656	-32.863	74.000	4.482	PK
4	Vertical	4874.000	37.047	44.059	-36.953	74.000	-7.012	PK
5	Vertical	7311.000	41.026	42.607	-32.974	74.000	-1.581	PK
6	Vertical	9748.000	40.562	35.984	-33.438	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	36.952	44.032	-37.048	74.000	-7.080	PK
2	Horizontal	7386.000	39.774	41.110	-34.226	74.000	-1.336	PK
3	Horizontal	9848.000	41.430	36.514	-32.570	74.000	4.915	PK
4	Vertical	4924.000	36.331	43.331	-37.669	74.000	-7.000	PK
5	Vertical	7386.000	39.623	40.959	-34.377	74.000	-1.336	PK
6	Vertical	9848.000	40.471	35.495	-33.529	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.

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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	38.025	45.095	-35.975	74.000	-7.069	PK
2	Horizontal	7236.000	39.437	41.184	-34.563	74.000	-1.747	PK
3	Horizontal	9648.000	39.352	35.030	-34.648	74.000	4.321	PK
4	Vertical	4824.000	37.050	44.201	-36.950	74.000	-7.151	PK
5	Vertical	7236.000	38.713	40.471	-35.287	74.000	-1.758	PK
6	Vertical	9648.000	40.109	35.728	-33.891	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	36.883	43.894	-37.117	74.000	-7.010	PK
2	Horizontal	7311.000	41.180	42.761	-32.820	74.000	-1.581	PK
3	Horizontal	9748.000	40.180	35.699	-33.820	74.000	4.482	PK
4	Vertical	4874.000	37.464	44.476	-36.536	74.000	-7.012	PK
5	Vertical	7311.000	40.913	42.494	-33.087	74.000	-1.581	PK
6	Vertical	9748.000	41.161	36.583	-32.839	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

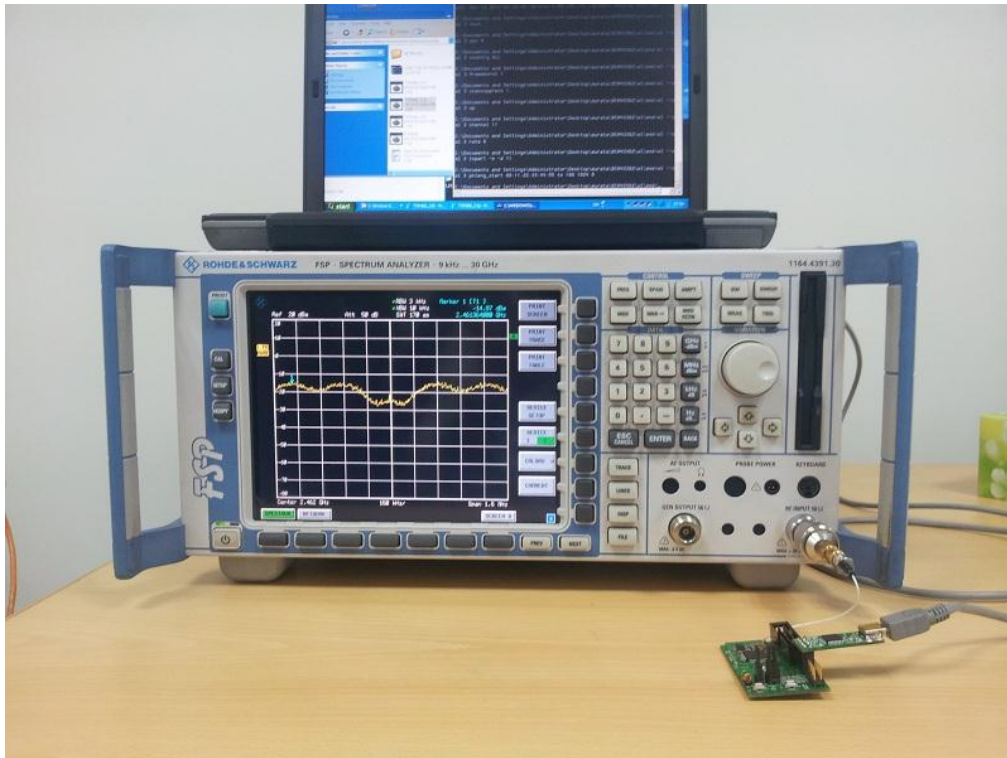
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	Horizontal	4924.000	37.028	44.028	-36.972	74.000	-7.000	PK
2	Horizontal	7386.000	39.990	41.326	-34.010	74.000	-1.336	PK
3	Horizontal	9848.000	41.829	36.853	-32.171	74.000	4.975	PK
4	Vertical	4924.000	38.151	45.231	-35.849	74.000	-7.080	PK
5	Vertical	7386.000	40.920	42.256	-33.080	74.000	-1.336	PK
6	Vertical	9848.000	42.770	37.854	-31.230	74.000	4.915	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.

7. Photographs of the Test Setup

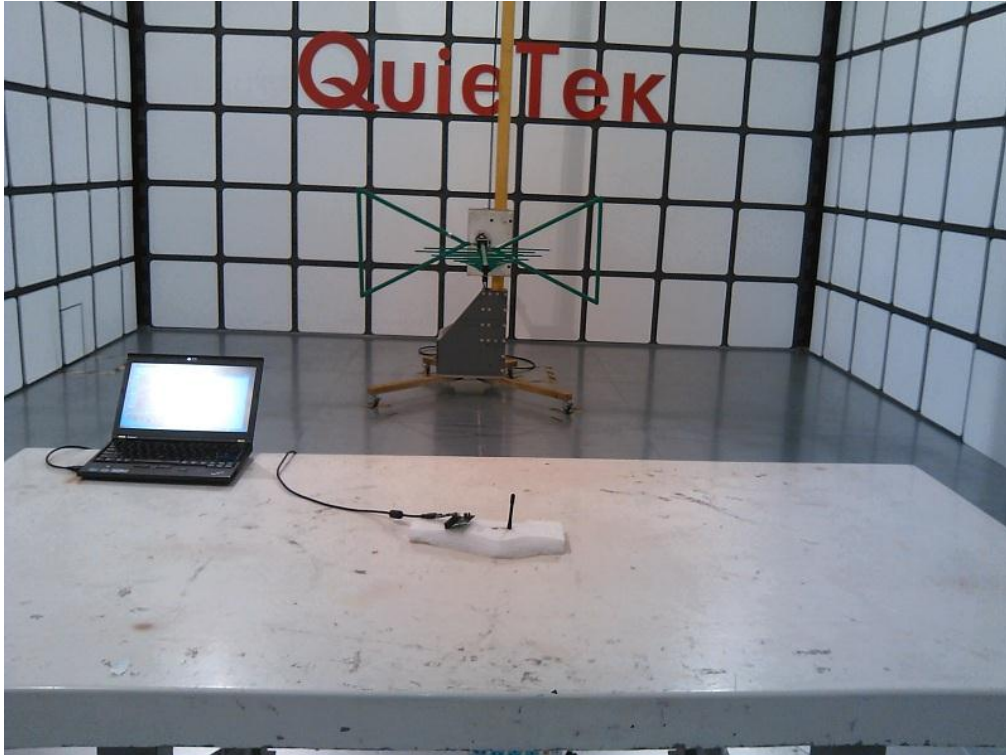
Photograph 1: Set-up for Conducted output power at Antenna Port



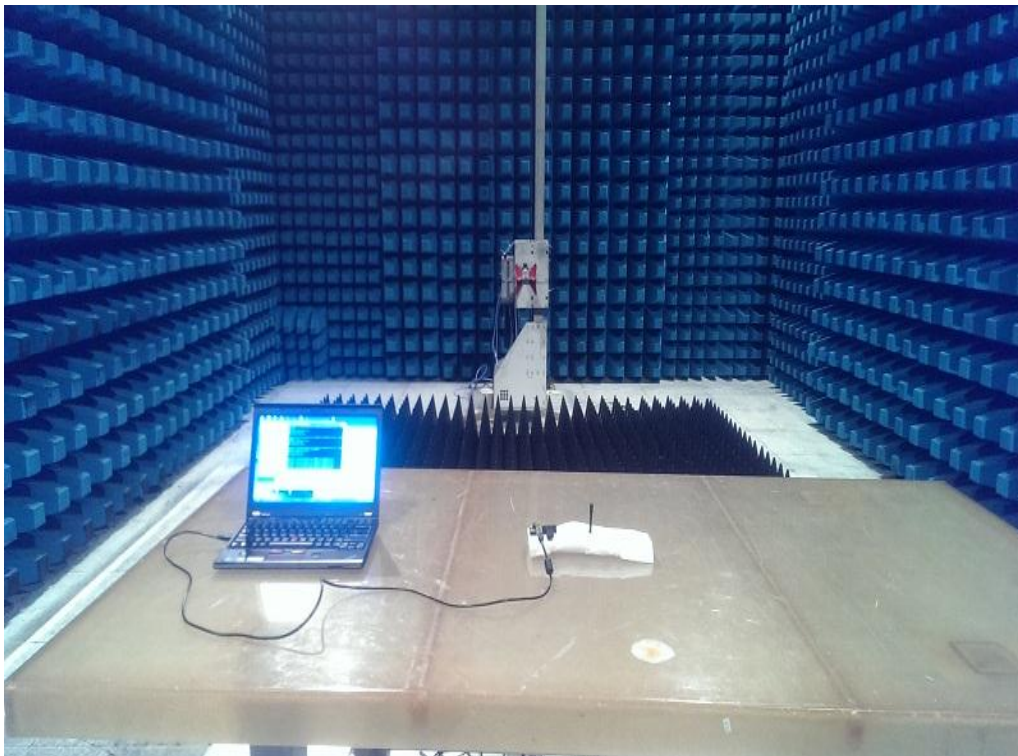
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Photograph 2: Set-up for Radiated Emission, 30MHz-1000MHz



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



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