

### FCC TEST REPORT

FCC 47 CFR Part 15C  
Industry Canada RSS-210

Digital transmission systems operating within the 2400 – 2483.5 MHz band

**Report Reference No.** ..... : G0M-1211-2443-TFC247W-V02

**Testing Laboratory** ..... : Eurofins Product Service GmbH

**Address** ..... : Storkower Str. 38c  
15526 Reichenwalde  
Germany

**Accreditation** ..... :



A2LA Accredited Testing Laboratory, Certificate No.: 1983.01  
FCC Filed Test Laboratory, Reg.-No.: 96970  
IC OATS Filing assigned code: 3470A

**Applicant's name** ..... : lesswire AG

**Address** ..... : Rudower Chaussee 30  
12489 Berlin  
Deutschland

**Test specification:**

**Standard**..... : 47 CFR Part 15C  
KDB Publication No. 558074  
RSS-210, Issue 8, 2010-12  
RSS-Gen, Issue 3, 2010-12  
ANSI C63.4:2009

**Equipment under test (EUT):**

Product description	WLAN/Bluetooth module
Model No.	WiBear11n-SF1
Hardware version	C4
Firmware / Software version	Module does not contain software
	FCC-ID: PV7-WIBEAR11N-SF1    IC: 7738A-WB11NSF1

**Test result** ..... : **Passed**

**Possible test case verdicts:**


- neither assessed nor tested .....: N/N
- required by standard but not appl. to test object.....: N/A
- required by standard but not tested.....: N/T
- not required by standard for the test object .....: N/R
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

**Testing:**


Date of receipt of test item .....: 2012-11-27

Date (s) of performance of tests .....: 2012-11-28 - 2012-12-07

Compiled by .....: Antje Bartusch

Tested by (+ signature).....: Wilfried Treffke 

(Testing Manager)

Approved by (+ signature) .....: Jens Zimmermann 

(Test Lab Manager)

Date of issue.....: 2013-02-13

Total number of pages.....: 122

**General remarks:**

**The test results presented in this report relate only to the object tested.**

**The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.**

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

**Additional comments:**

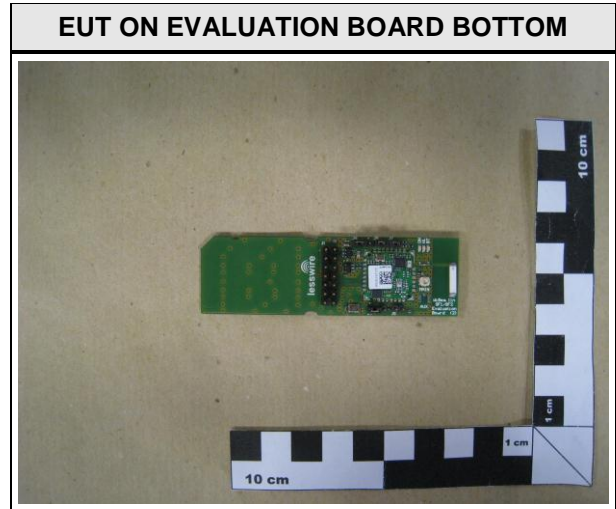
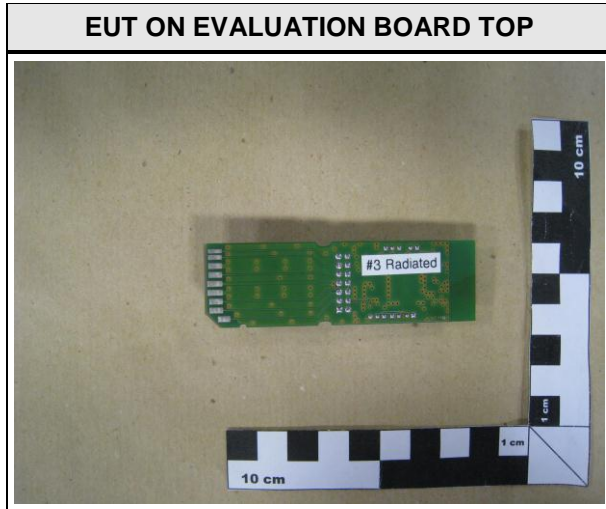
## REPORT INDEX

<b>1</b>	<b>EQUIPMENT (TEST ITEM) DESCRIPTION:</b>	<b>4</b>
1.1	Photos – Equipment External	5
1.2	Photos – Equipment internal	6
1.3	Photos – Test setup	7
1.4	Supporting Equipment Used During Testing	8
1.5	Test Modes	9
1.6	Test Equipment Used During Testing	10
1.7	Sample emission level calculation	11
<b>2</b>	<b>RESULT SUMMARY</b>	<b>12</b>
<b>3</b>	<b>TEST CONDITIONS AND RESULTS</b>	<b>13</b>
3.1	Test Conditions and Results – Occupied Bandwidth	13
3.2	Test Conditions and Results – 6 dB Bandwidth	26
3.3	Test Conditions and Results – Maximum peak conducted power	40
3.4	Test Conditions and Results – Power spectral density	43
3.5	Test Conditions and Results – AC power line conducted emissions	45
3.6	Test Conditions and Results – Band edge compliance	48
3.7	Test Conditions and Results – Conducted spurious emissions	57
3.8	Test Conditions and Results – Transmitter radiated emissions	70
3.9	Test Conditions and Results – Receiver radiated emissions	72
ANNEX A	Transmitter radiated spurious emissions	74
ANNEX B	Receiver radiated spurious emissions	114

**1 Equipment (Test item) Description:**

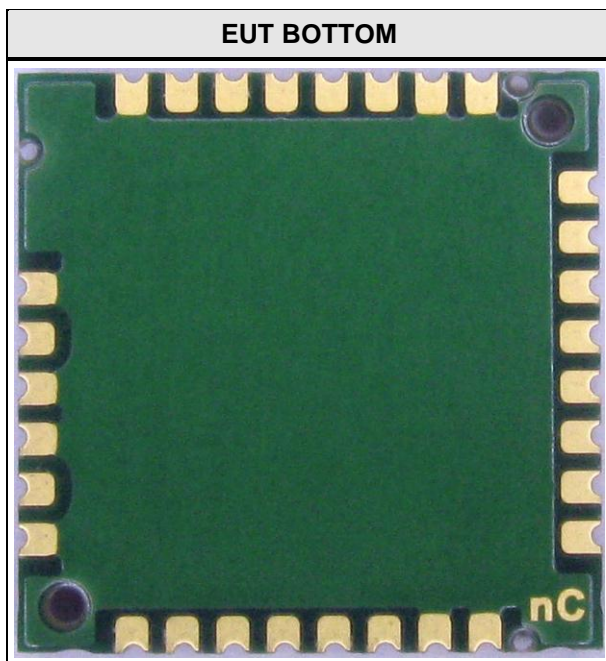
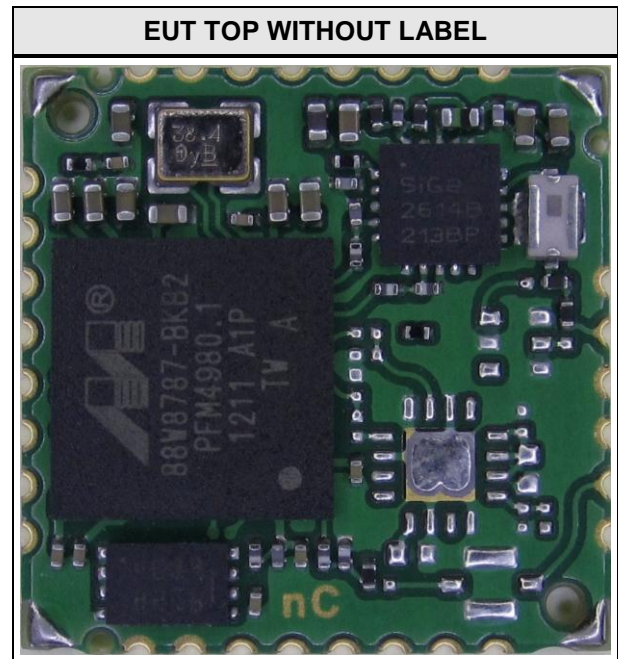
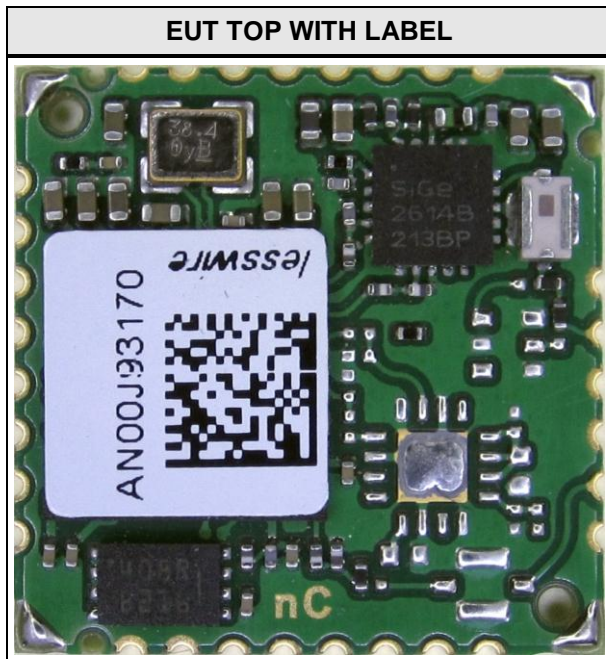
<b>Description</b>	WLAN/Bluetooth module		
<b>Model</b>	WiBear11n-SF1		
<b>Serial number</b>	None		
<b>Hardware version</b>	C4		
<b>Software / Firmware version</b>	Module does not contain software		
<b>FCC-ID</b>	PV7-WIBEAR11N-SF1		
<b>IC</b>	7738A-WB11NSF1		
<b>Equipment type</b>	Radio module		
<b>Radio type</b>	Transceiver		
<b>Radio technology</b>	IEEE 802.11b/g/n		
<b>Operating frequency range</b>	2412 - 2462 MHz (20 MHz) / 2422 - 2452 MHz (40 MHz)		
<b>Assigned frequency band</b>	2400 - 2483.5 MHz		
<b>Main test frequencies</b>	F <sub>LOW</sub>	2412 MHz (20MHz)	2422 MHz (40MHz)
	F <sub>MID</sub>	2437 MHz (20MHz)	2437 MHz (40MHz)
	F <sub>HIGH</sub>	2462 MHz (20MHz)	2452 MHz (40MHz)
<b>Spreading</b>	CCK, DSSS, OFDM		
<b>Modulations</b>	BPSK, QPSK, 16-QAM, 64-QAM		
<b>Number of channels</b>	11		
<b>Channel spacing</b>	5MHz		
<b>Number of antennas</b>	1		
<b>Antenna</b>	Type	integrated	
	Model	2450AT45A100	
	Manufacturer	Johnson	
	Gain	+3.0 dBi (manufacturer declaration)	
<b>Manufacturer</b>	PRETTL Electronics AG Robert-Bosch-Str. 10 01424 Radeberg Germany		
<b>Power supply</b>	V <sub>NOM</sub>	3.3 VDC	
	V <sub>MIN</sub>	3.0 VDC	
	V <sub>MAX</sub>	3.6 VDC	
<b>AC/DC-Adaptor</b>	Model	None	
	Vendor	None	
	Input	None	
	Output	None	

1.1 Photos – Equipment External

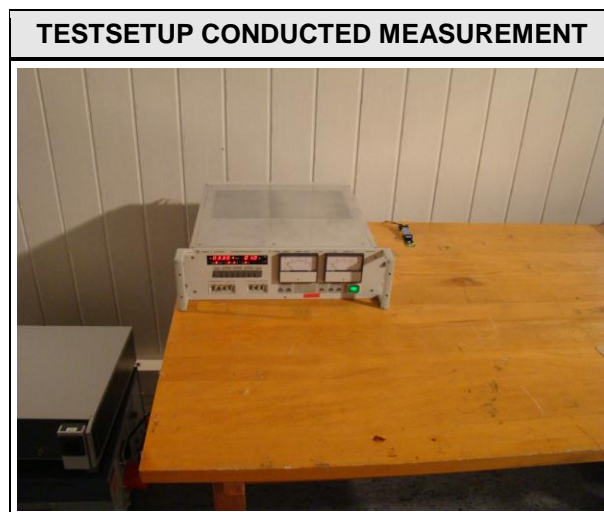
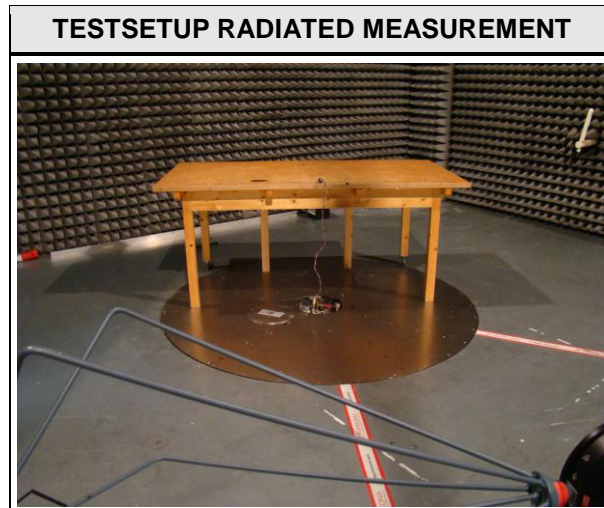




1.2 Photos – Equipment internal



1.3 Photos – Test setup



#### 1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				
<p><b>*Note:</b> Use the following abbreviations:</p> <p style="padding-left: 40px;">AE : Auxiliary/Associated Equipment, or</p> <p style="padding-left: 40px;">SIM : Simulator (Not Subjected to Test)</p> <p style="padding-left: 40px;">CABL : Connecting cables</p>				



**1.5 Test Modes**

Mode #	Description	
DSSS	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = BPSK Data rate = 1 Mbps Bandwidth = 20 MHz Duty cycle = 48 % Power level = Maximum (Power Level 17)
OFDM	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = QPSK Data rate = 6 Mbps Bandwidth = 20 MHz Duty cycle = 41.8 % Power level = Maximum (Power Level 15)
HT20	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = BPSK Data rate = 14.4MB/s Bandwidth = 20 MHz Duty cycle = 38.6 % Power level = Maximum (Power Level 15)
HT40	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = QPSK Data rate = 30MB/s Bandwidth = 40 MHz Duty cycle = 18.7 % Power level = Maximum (Power Level 15)
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Spreading = DSSS / OFDM
AC-Powerline	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = DSSS Power level = Maximum

1.6 Test Equipment Used During Testing

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 3	EF00412	2012-03	2014-03

6dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 3	EF00412	2012-03	2014-03

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 3	EF00412	2012-03	2014-03

Power spectral density					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 3	EF00412	2012-03	2014-03

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 3	EF00412	2012-03	2014-03

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSIQ26	EF00242	2012-05	2013-05

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 5	EF00395	-	-
Spectrum Analyzer	R&S	FSIQ26	EF00242	2012-05	2013-05
Biconical Antenna	R&S	HK 116	EF00012	2010-01	2013-01
LPD Antenna	R&S	HL 223	EF00187	2011-02	2014-02
LPD Antenna	R&S	HL 025	EF00327	2010-02	2013-02

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2012-10	2014-10
AMN	R&S	ESH3-Z5	EF00036	2012-11	2014-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2012-08	2013-08

Test Report No.: G0M-1211-2443-TFC247W-V02

## 1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dB $\mu$ V. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dB $\mu$ V/m). The FCC limits are given in units of  $\mu$ V/m. The following formula is used to convert the units of  $\mu$ V/m to dB $\mu$ V/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log (\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:


$$\begin{array}{rclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading - FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$

## 2 Result Summary

FCC 47 CFR Part 15C, IC RSS-210				
Product Specific Standard Section	Requirement – Test	Reference Method	Result	Remarks
RSS-Gen 4.6.1	Occupied Bandwidth	RSS-Gen 4.6.1	N/R	Informational only
FCC § 15.247(a)(2) IC RSS-210 § A8.2	6dB Bandwidth	KDB Publication No. 558074	PASS	
FCC § 15.247(b)(3) IC RSS-210 § A8.4	Maximum peak conducted power	KDB Publication No. 558074	PASS	
FCC § 15.247(e) IC RSS-210 § A8.2	Power spectral density	KDB Publication No. 558074	PASS	
47 CFR 15.207 RSS-Gen 7.2.4	AC power line conducted emissions	KDB Publication No. 558074 / ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	KDB Publication No. 558074	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	KDB Publication No. 558074	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-210 A8.5 IC RSS-Gen 4.9 IC RSS-Gen 7.2.5	Transmitter radiated spurious emissions	KDB Publication No. 558074 / ANSI C 63.4	PASS	
IC RSS-Gen 4.10 IC RSS-Gen 6.1	Receiver radiated spurious emissions	ANSI C 63.4	PASS	
<b>Remarks:</b>				

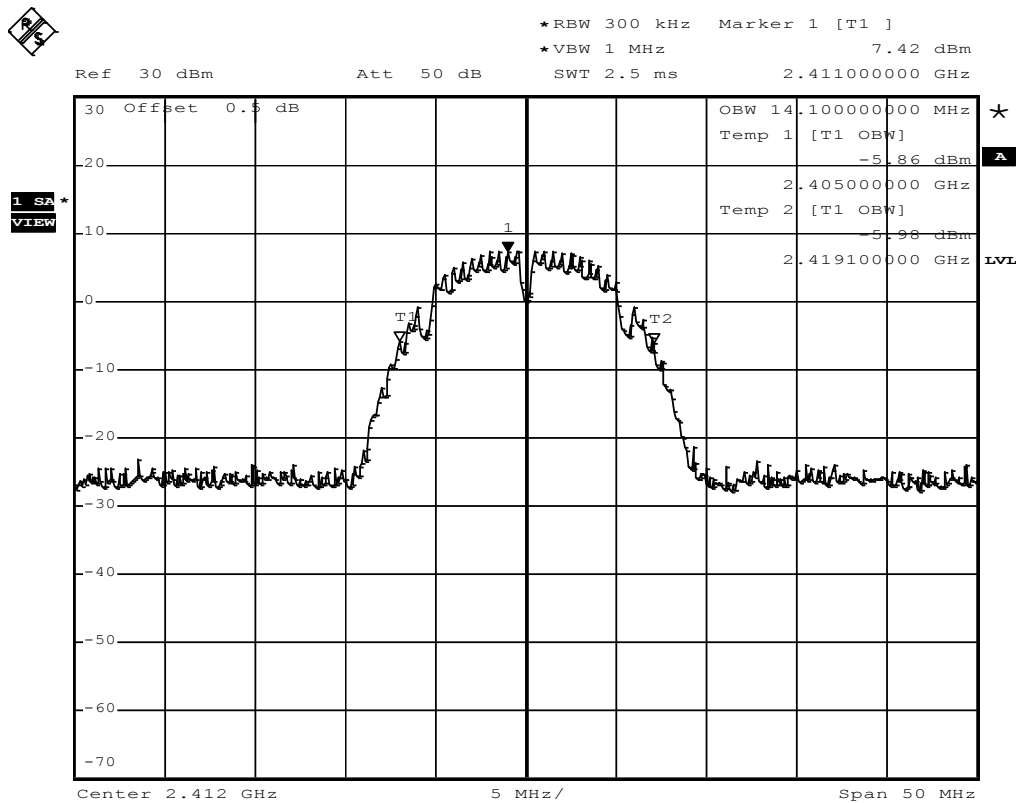
### 3 Test Conditions and Results

#### 3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. IC RSS-Gen		Verdict: PASS	
Test according to measurement reference	Reference Method		
	RSS-Gen 4.6.1		
Test frequency range	Tested frequencies		
	$F_{LOW} / F_{MID} / F_{HIGH}$		
<b>Limits</b>			
None (Informational only)			
<b>Test setup</b>			
 <pre> graph LR     SA[Spectrum Analyzer] --- EUT[EUT]             </pre>			
<b>Test procedure</b>			
<ol style="list-style-type: none"> <li>EUT set to test mode (Communication tester is used if needed)</li> <li>Span set to at least twice the emission spectrum</li> <li>Resolution bandwidth set to 1 % of span</li> <li>Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function</li> </ol>			
<b>Test results</b>			
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [kHz]
$F_{LOW}$	2412	DSSS	14.100
$F_{MID}$	2437	DSSS	14.100
$F_{HIGH}$	2462	DSSS	14.200
$F_{LOW}$	2412	OFDM	17.000
$F_{MID}$	2437	OFDM	17.000
$F_{HIGH}$	2462	OFDM	17.000
$F_{LOW}$	2412	HT20	18.100
$F_{MID}$	2437	HT20	17.000
$F_{HIGH}$	2462	HT20	17.000
$F_{LOW}$	2422	HT40	36.300
$F_{MID}$	2437	HT40	36.400
$F_{HIGH}$	2452	HT40	36.400
Comments:			

**Occupied Bandwidth – DSSS F<sub>LOW</sub>**
**RSS Gen  
Occupied Bandwidth**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2412 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	DSSS, 1 Mbit/s, power level 17

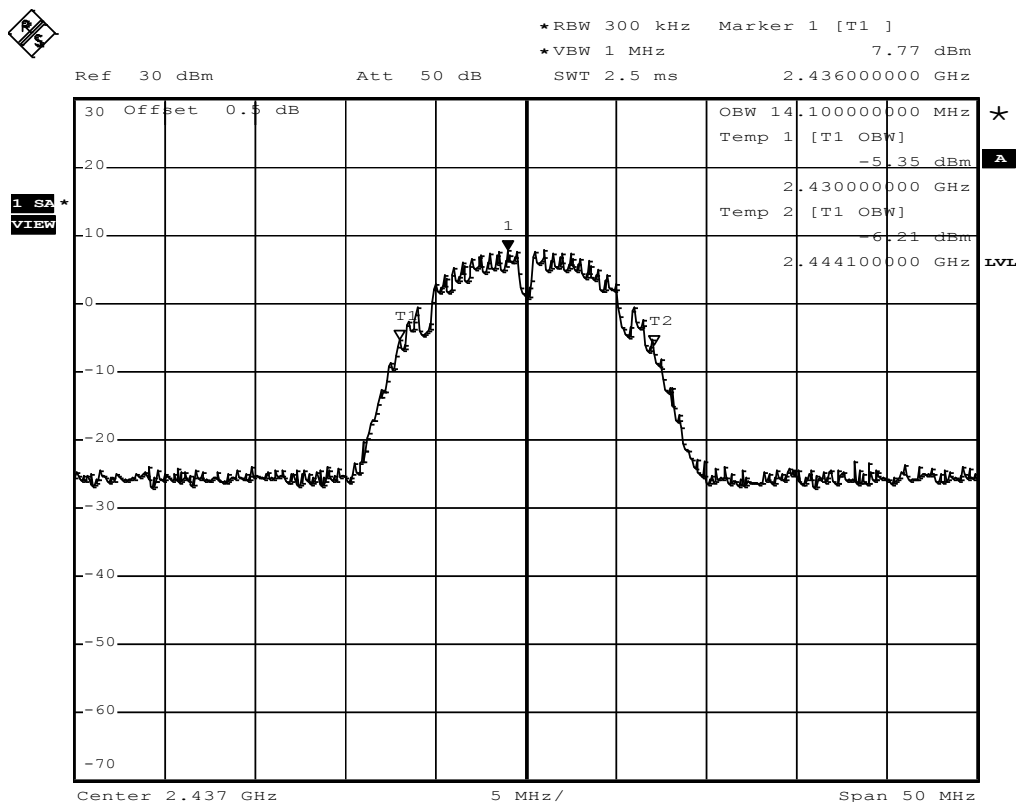


Comment: Occupied bandwidth: 14100 KHz  
 Date: 30.NOV.2012 11:08:28



**Occupied Bandwidth – DSSS F<sub>MID</sub>**
**RSS Gen  
Occupied Bandwidth**

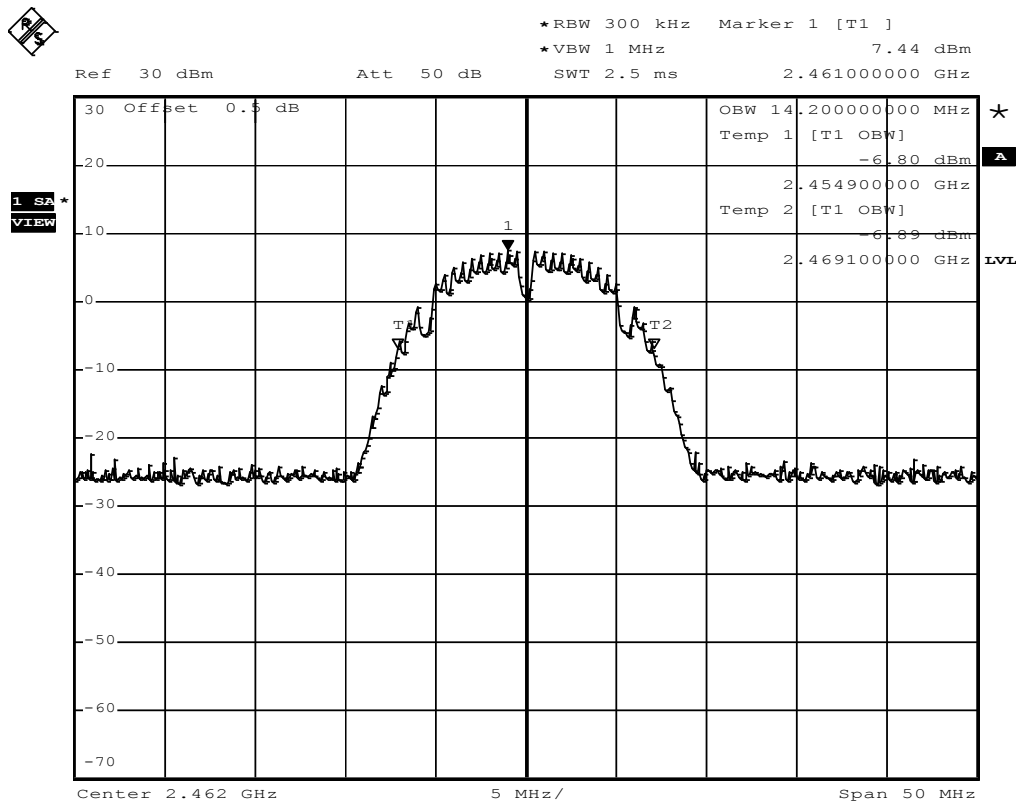
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2437 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	DSSS, 1 Mbit/s, power level 17



Comment: Occupied bandwidth: 14100 KHz  
 Date: 30.NOV.2012 11:10:56

**Occupied Bandwidth – DSSS F<sub>HIGH</sub>**
**RSS Gen  
Occupied Bandwidth**

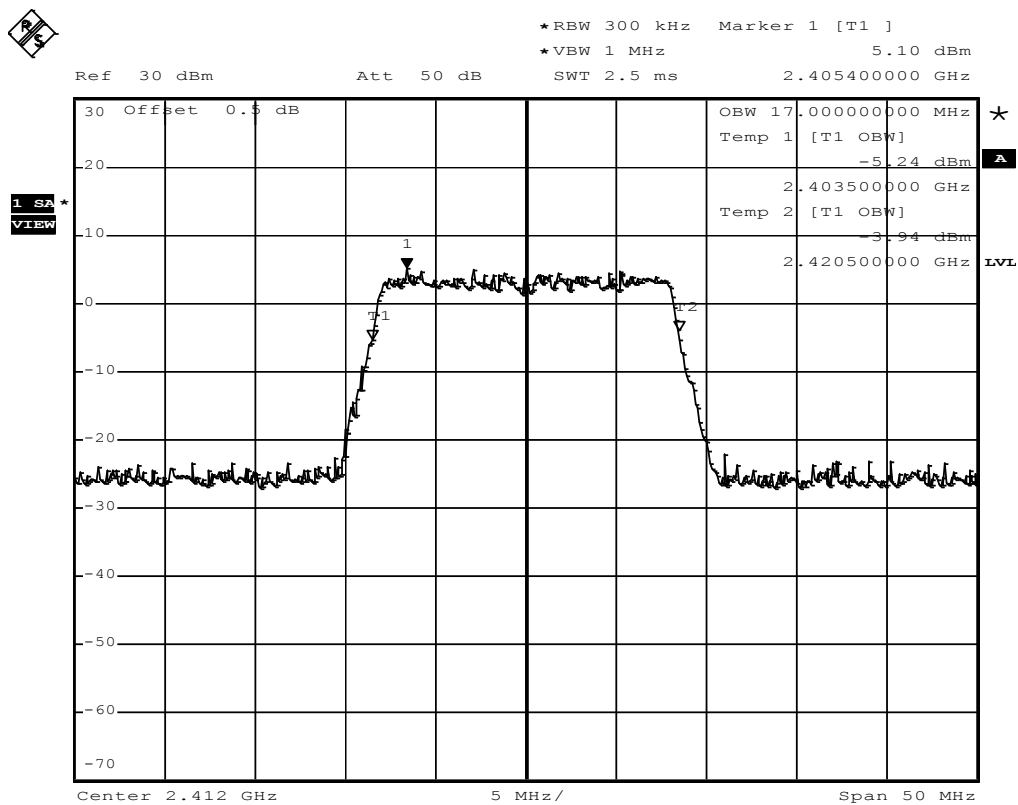
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2452 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	DSSS, 1 Mbit/s, power level 17



Comment: Occupied bandwidth: 14200 KHz  
 Date: 30.NOV.2012 11:12:40

**Occupied Bandwidth – OFDM F<sub>LOW</sub>**
**RSS Gen  
Occupied Bandwidth**

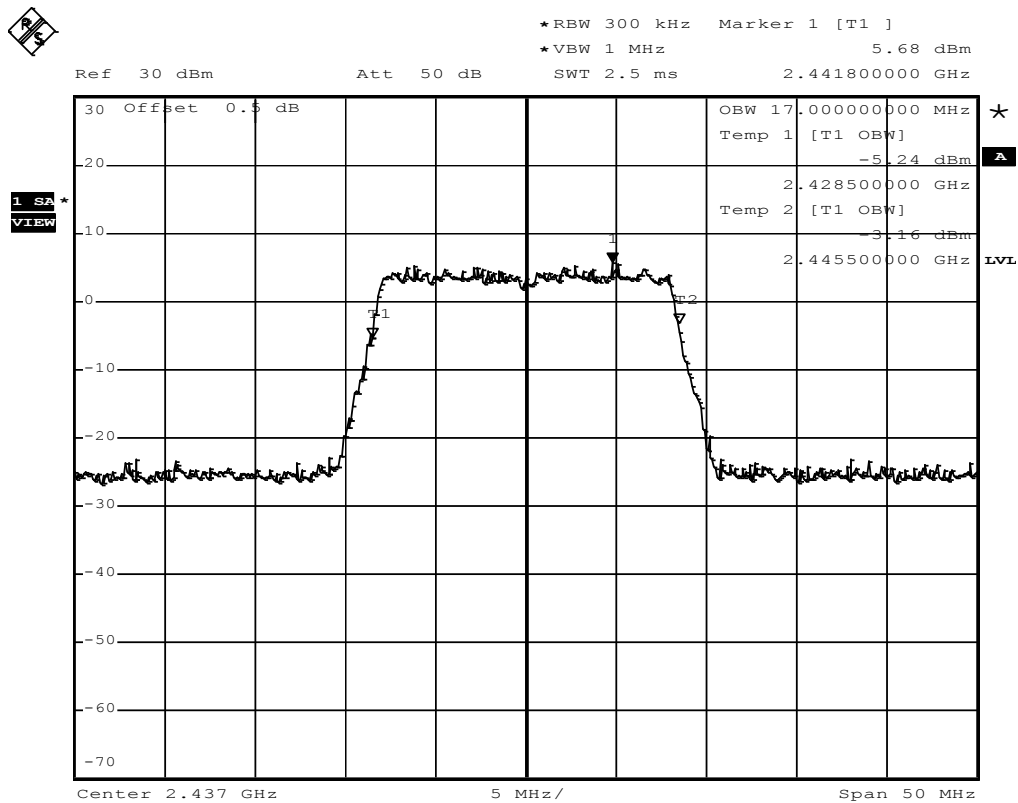
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2412 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	OFDM, 6 Mbit/s, power level 15



Comment: Occupied bandwidth: 17000 KHz  
 Date: 30.NOV.2012 11:15:31

**Occupied Bandwidth – OFDM F<sub>MID</sub>**
**RSS Gen  
Occupied Bandwidth**

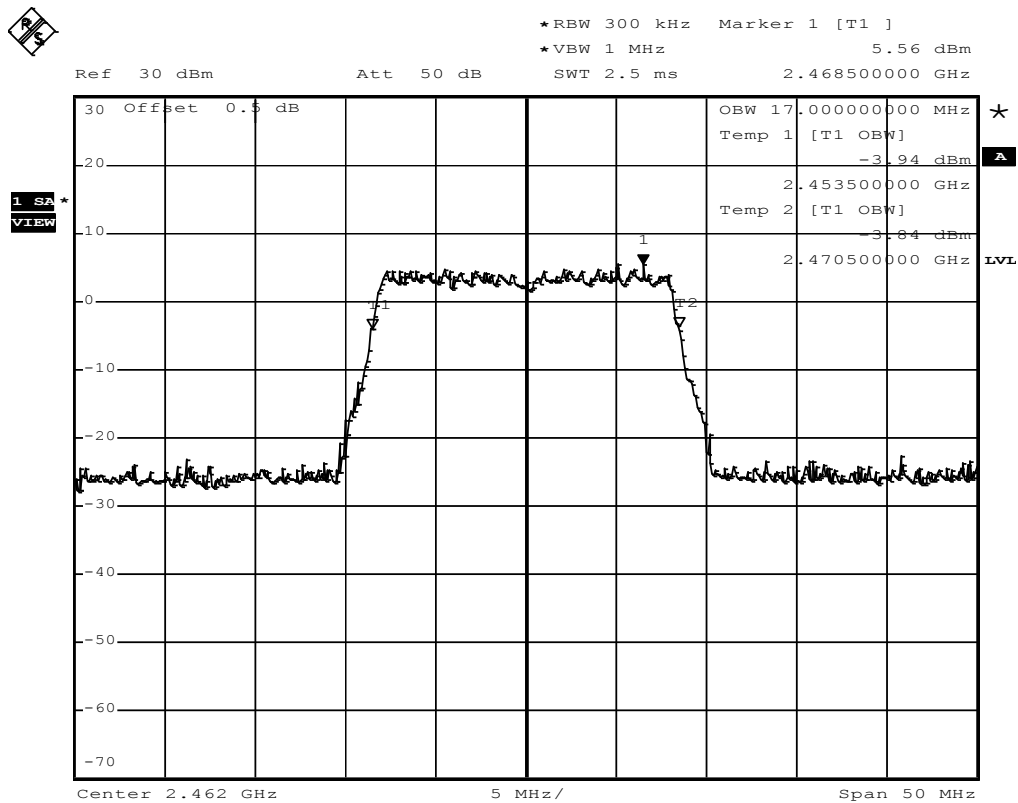
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2437 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	OFDM, 6 Mbit/s, power level 15



Comment: Occupied bandwidth: 17000 KHz  
 Date: 30.NOV.2012 11:19:34

**Occupied Bandwidth – OFDM F<sub>HIGH</sub>**
**RSS Gen  
Occupied Bandwidth**

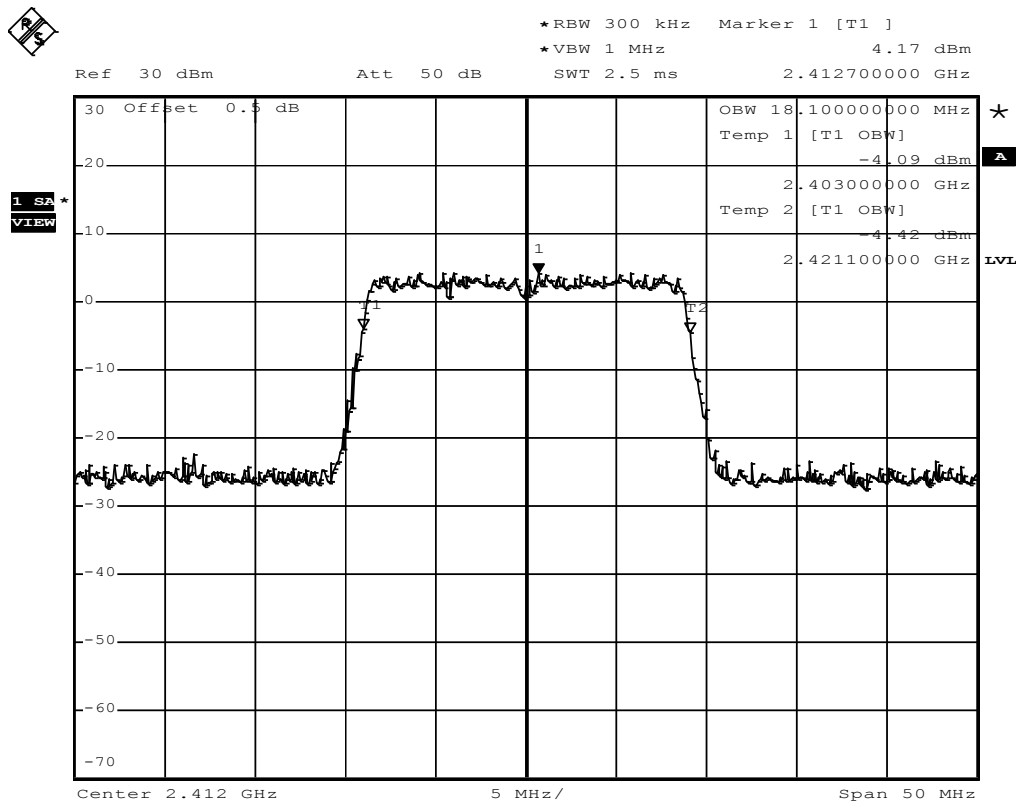
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2462 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	OFDM, 6 Mbit/s, power level 15



Comment: Occupied bandwidth: 17000 KHz  
Date: 30.NOV.2012 11:21:49

**Occupied Bandwidth – HT20 F<sub>Low</sub>**
**RSS Gen  
Occupied Bandwidth**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2412 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	HT20, MCS0, power level 15

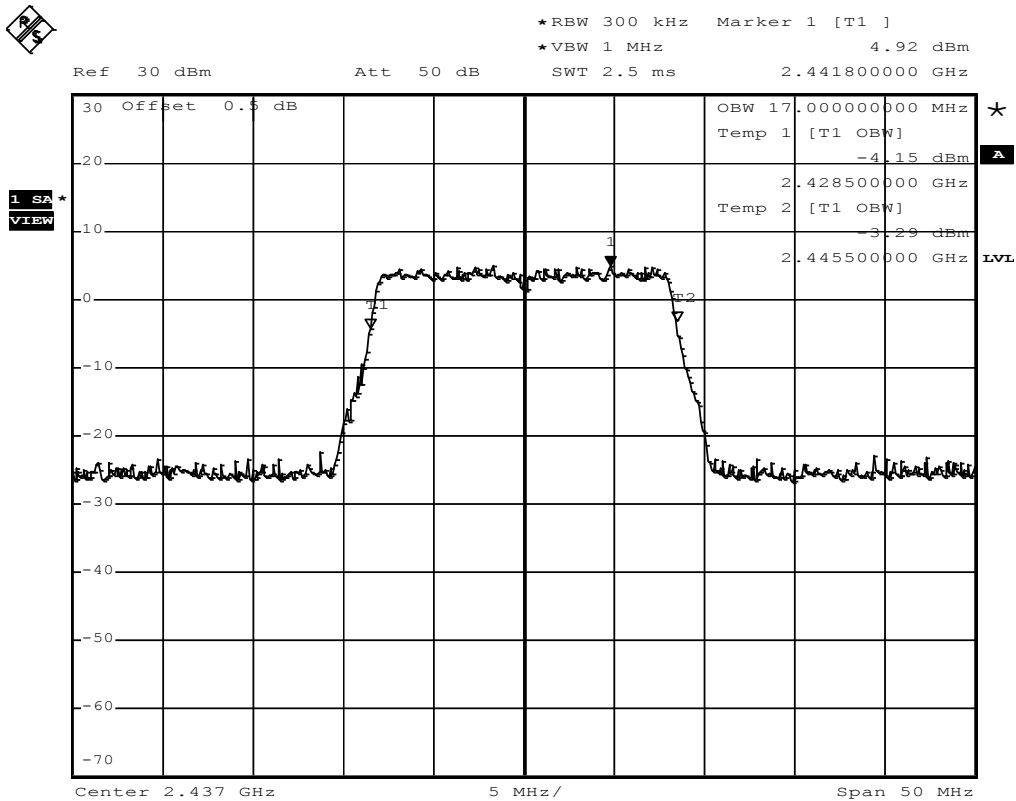


Comment: Occupied bandwidth: 18100 KHz  
 Date: 30.NOV.2012 11:27:34



**Occupied Bandwidth – HT20 F<sub>MID</sub>**
**RSS Gen  
Occupied Bandwidth**

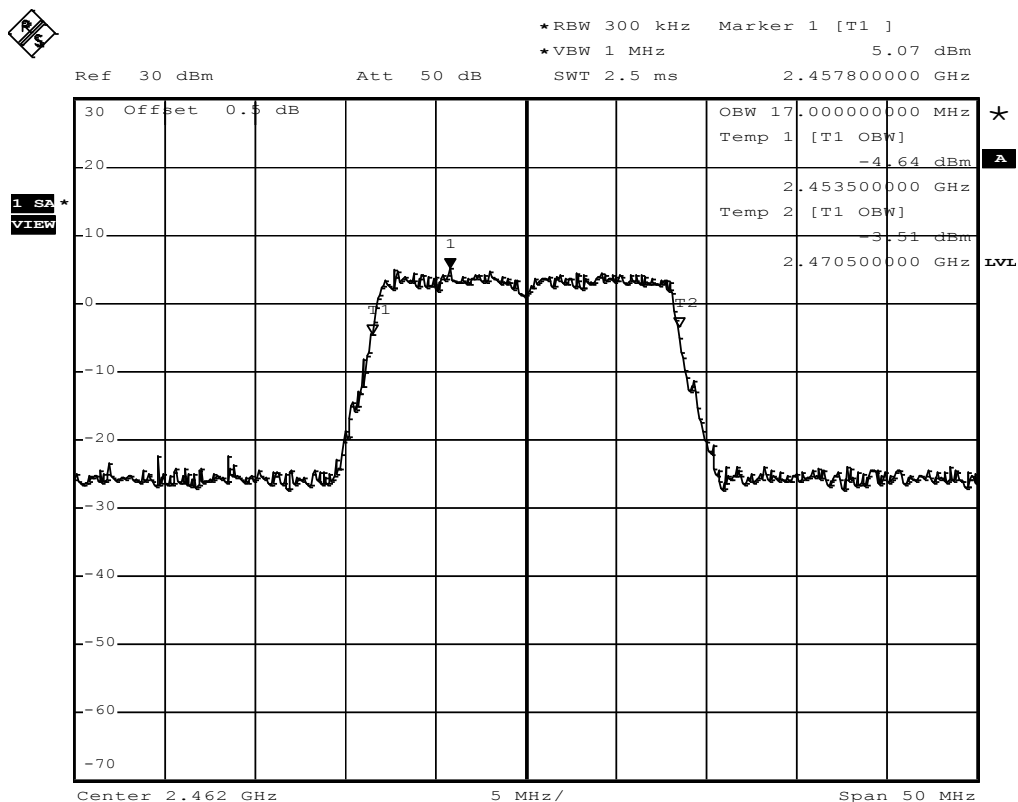
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2437 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	HT20, MCS0, power level 15



Comment: Occupied bandwidth: 17000 KHz  
Date: 30.NOV.2012 11:30:40

**Occupied Bandwidth – HT20 F<sub>High</sub>**
**RSS Gen  
Occupied Bandwidth**

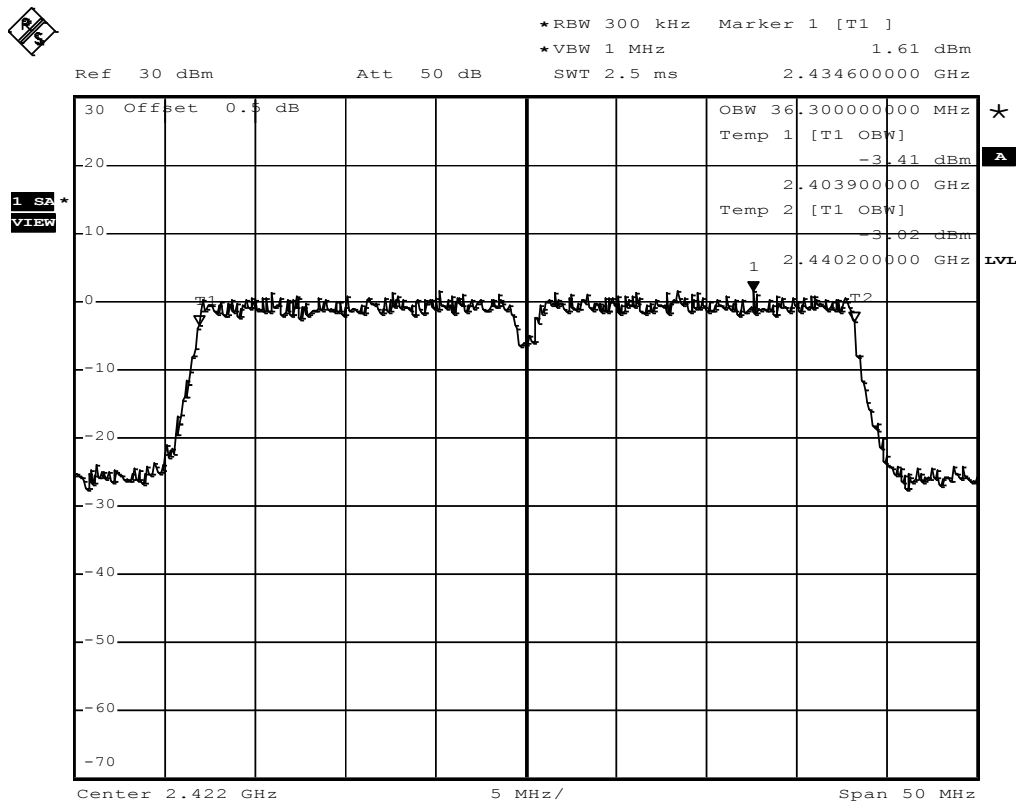
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2462 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	HT20, MCS0, power level 15



Comment: Occupied bandwidth: 17000 KHz  
 Date: 30.NOV.2012 11:32:38

**Occupied Bandwidth – HT40 F<sub>Low</sub>**
**RSS Gen  
Occupied Bandwidth**

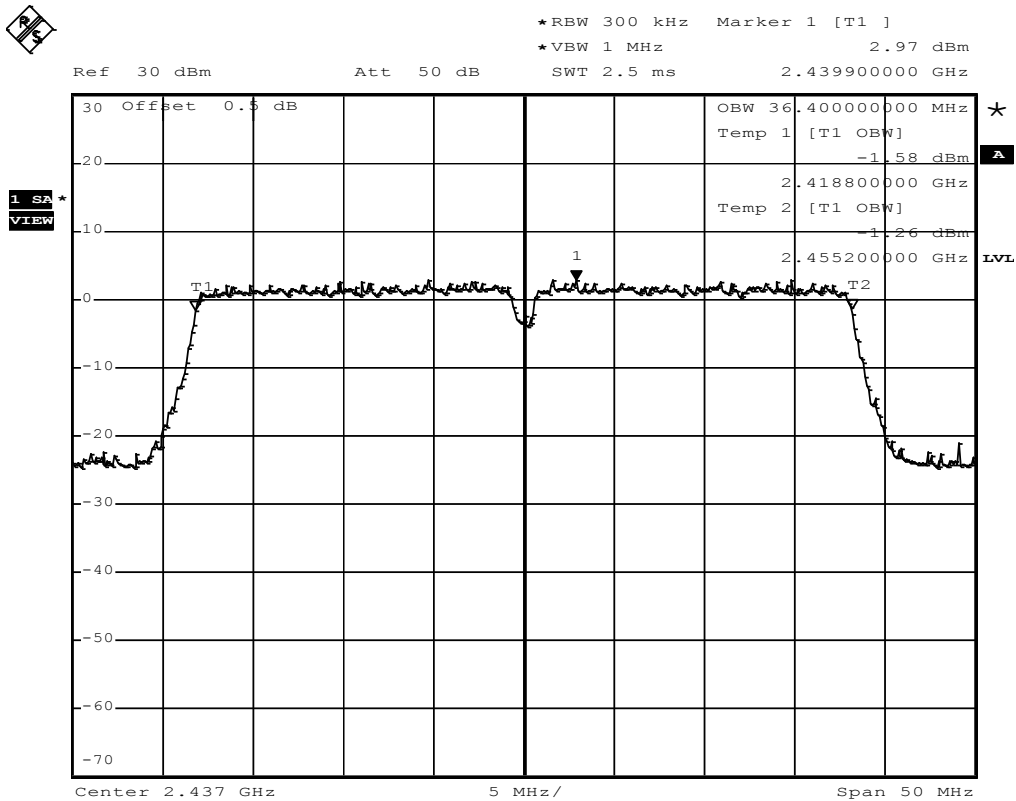
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2422 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	HT40, MCS0, power level 15



Comment: Occupied bandwidth: 36300 KHz  
 Date: 30.NOV.2012 11:36:11

**Occupied Bandwidth – HT40 F<sub>MID</sub>**
**RSS Gen  
Occupied Bandwidth**

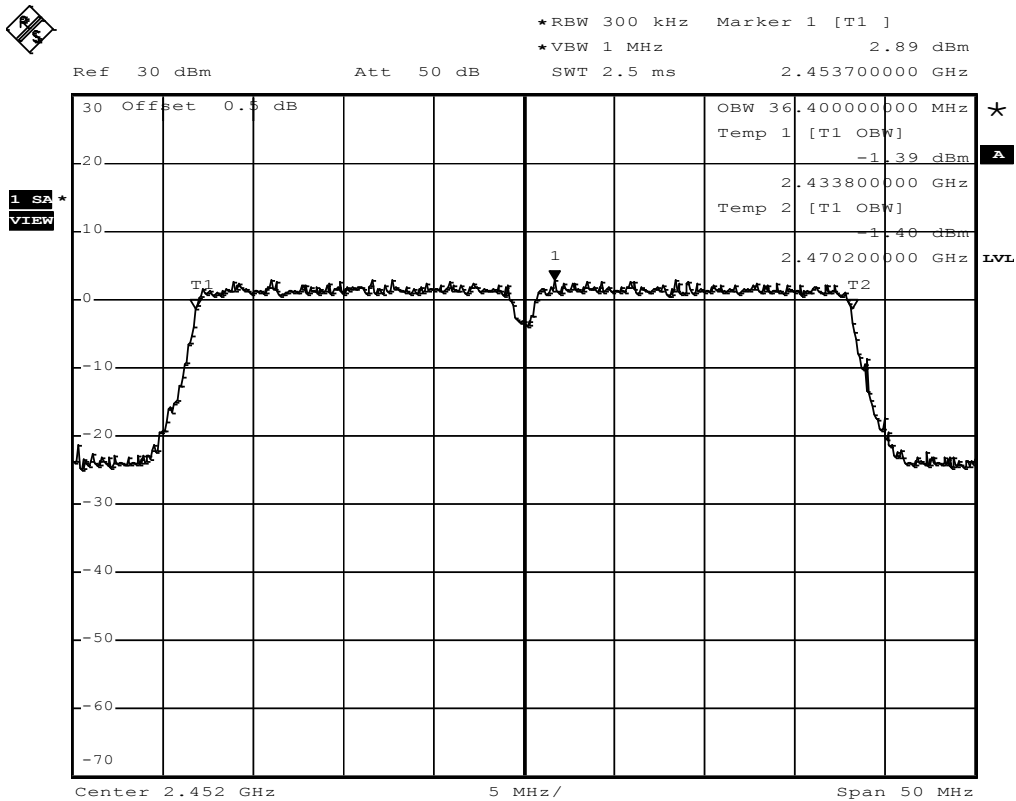
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2437 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	HT40, MCS0, power level 15



Comment: Occupied bandwidth: 36400 KHz  
 Date: 30.NOV.2012 12:17:39

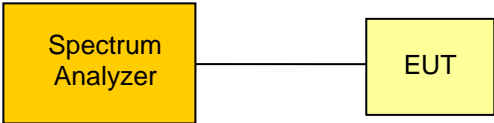
**Occupied Bandwidth – HT40 F<sub>High</sub>**
**RSS Gen  
Occupied Bandwidth**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2452 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	HT40, MCS0, power level 15



Comment: Occupied bandwidth: 36400 KHz  
 Date: 30.NOV.2012 12:23:42

**3.2 Test Conditions and Results – 6 dB Bandwidth**

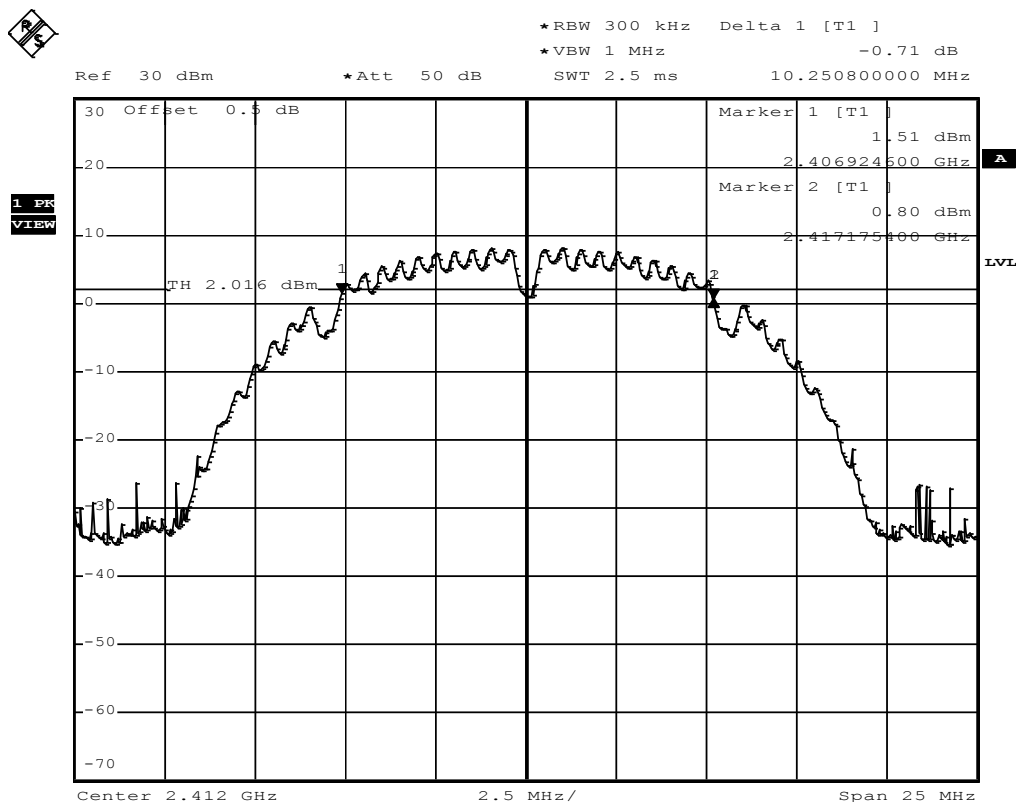
<b>6dB Bandwidth acc. FCC 15.247 / IC RSS-210</b>		<b>Verdict: PASS</b>
EUT requirement rule parts and clause	Reference	
	FCC 15.247(a)(2) / IC RSS-210 A8.2	
Test according to measurement reference	Reference Method	
	FCC KDB Publication No. 558074	
Test frequency range	Tested frequencies	
	$F_{LOW} / F_{MID} / F_{HIGH}$	
<b>Limits</b>		
Limit		
≥ 500kHz		
<b>Test setup</b>		
		
<b>Test procedure</b>		
<ol style="list-style-type: none"> <li>1. EUT set to test mode</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Detector set to peak and max hold and RBW is set to 100 kHz</li> <li>4. Envelope peak value of emission spectrum is selected</li> <li>5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak</li> <li>6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak</li> <li>7. 6 dB Bandwidth is determined by marker frequency separation</li> </ol>		



Test results					
Channel	Frequency [MHz]	Mode	6 dB Bandwidth [kHz]	Limit [kHz]	Result
F <sub>LOW</sub>	2412	DSSS	10251	500	PASS
F <sub>MID</sub>	2437	DSSS	10253	500	PASS
F <sub>HIGH</sub>	2462	DSSS	10351	500	PASS
F <sub>LOW</sub>	2412	OFDM	16603	500	PASS
F <sub>MID</sub>	2437	OFDM	16750	500	PASS
F <sub>HIGH</sub>	2462	OFDM	16700	500	PASS
F <sub>LOW</sub>	2422	HT20	17900	500	PASS
F <sub>MID</sub>	2437	HT20	17900	500	PASS
F <sub>HIGH</sub>	2452	HT20	17950	500	PASS
F <sub>LOW</sub>	2422	HT40	36450	500	PASS
F <sub>MID</sub>	2437	HT40	36650	500	PASS
F <sub>HIGH</sub>	2452	HT40	36750	500	PASS
Comments:					

**6 dB Bandwidth – DSSS F<sub>LOW</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

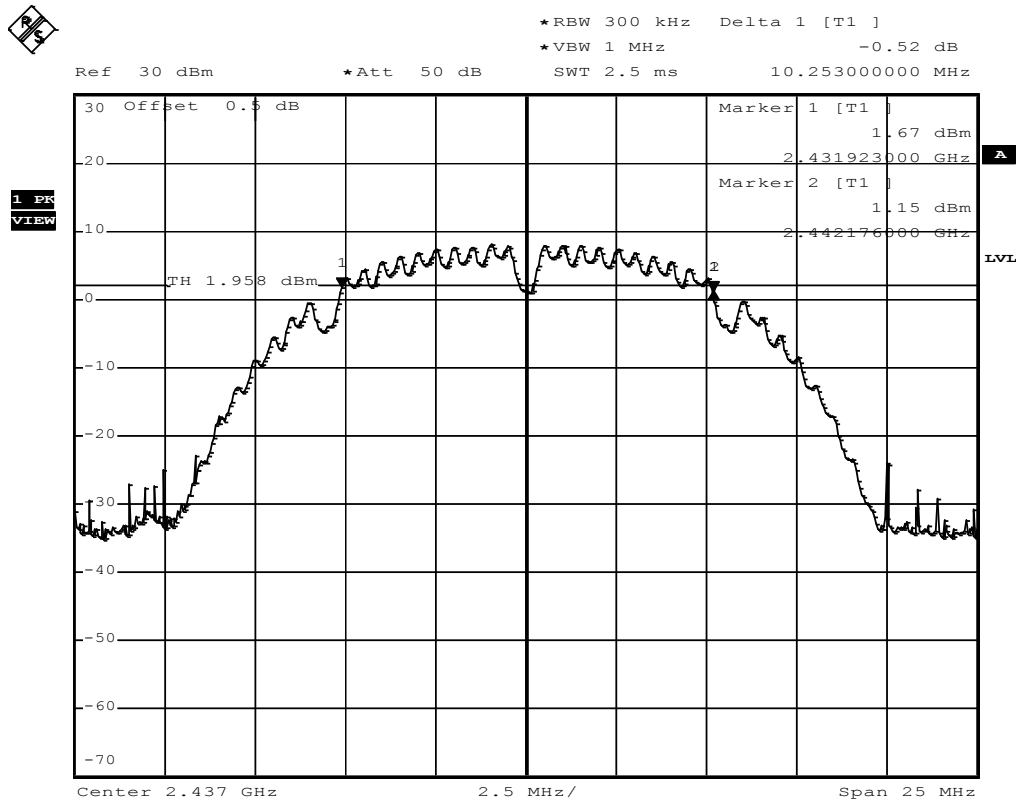
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2412 MHz
Comment 3	DSSS, 1Mbit/s, power level 17



Comment: 6 dB bandwidth: 10250.8 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 09:52:19

**6 dB Bandwidth – DSSS F<sub>MID</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

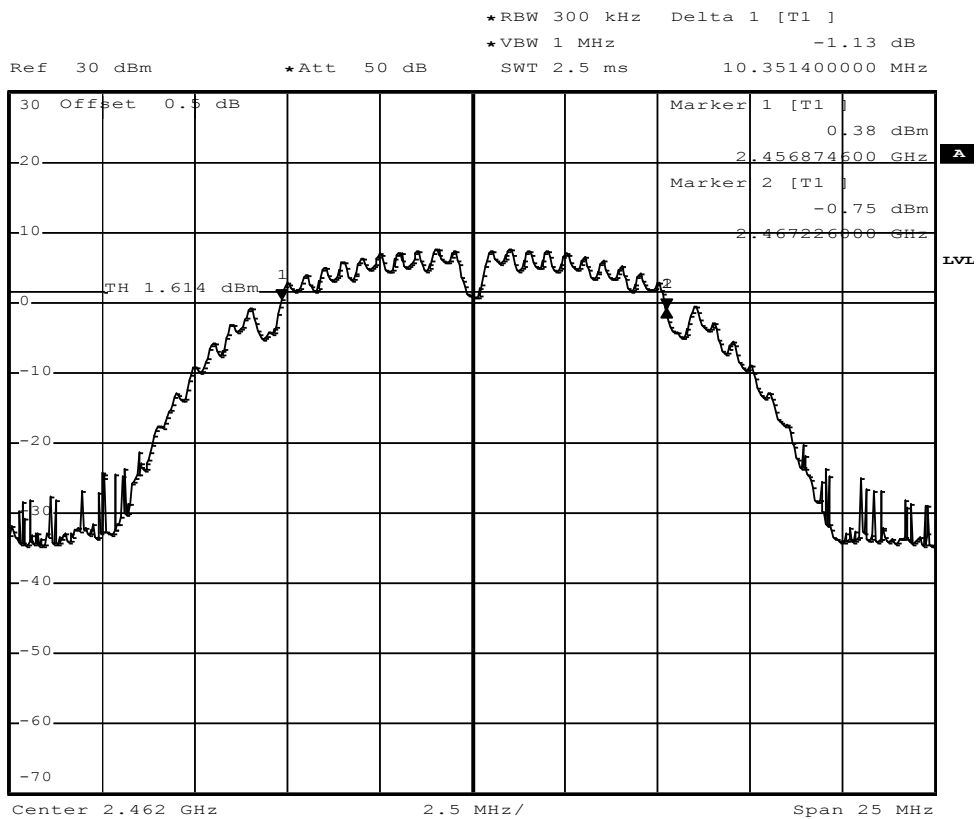
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2437 MHz
Comment 3	DSSS, 1Mbit/s, power level 17



Comment: 6 dB bandwidth: 10253 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 09:55:13

**6 dB Bandwidth – DSSS F<sub>HIGH</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

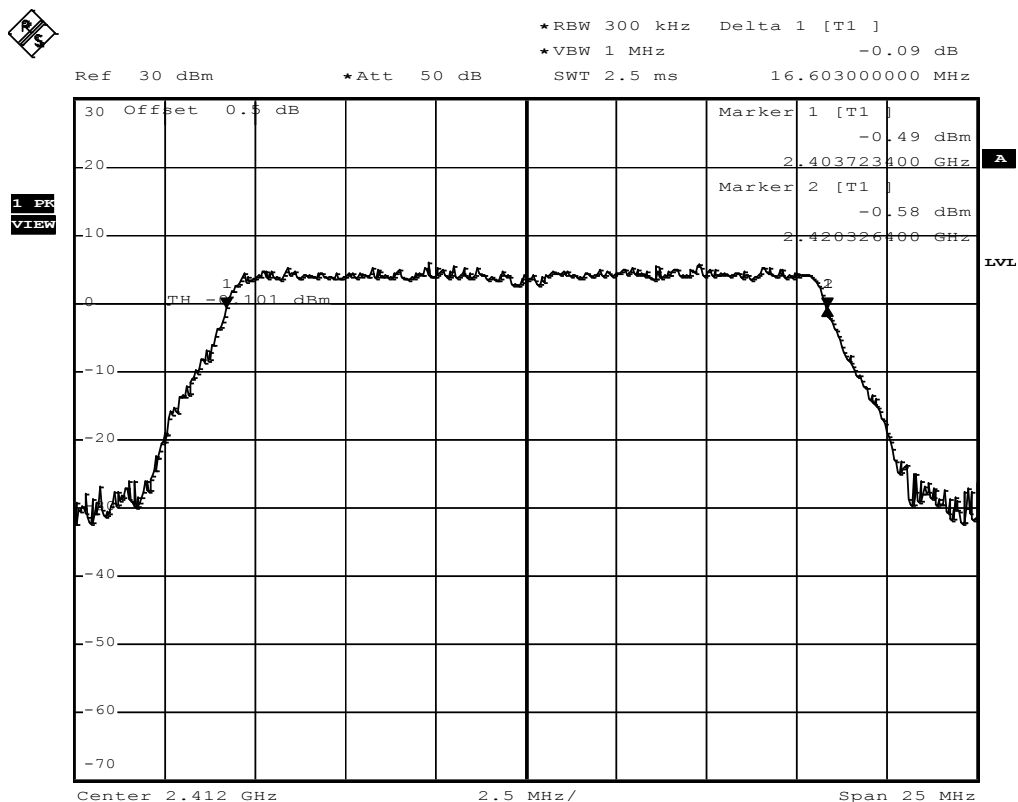
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2462 MHz
Comment 3	DSSS, 1Mbit/s, power level 17



Date: 30.NOV.2012 10:02:25

**6 dB Bandwidth – OFDM F<sub>LOW</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

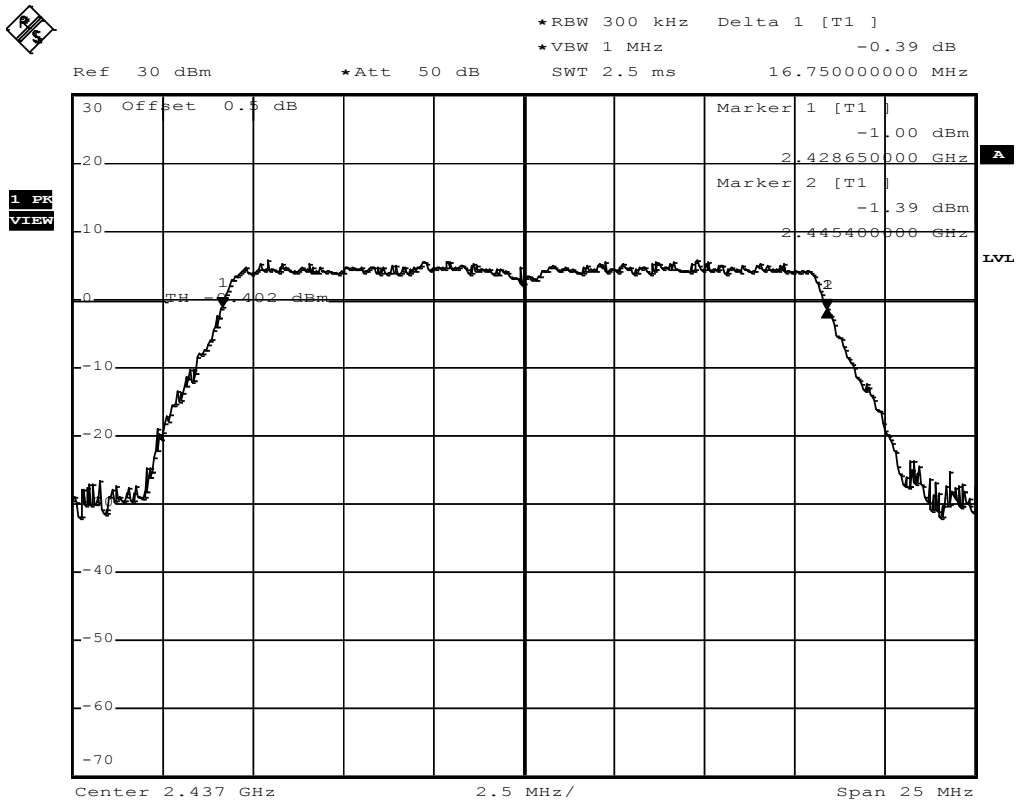
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2412 MHz
Comment 3	OFDM, 6Mbit/s, power level 15



Comment: 6 dB bandwidth: 16603 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:06:26

**6 dB Bandwidth – OFDM F<sub>MID</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2437 MHz
Comment 3	OFDM, 6Mbit/s, power level 15

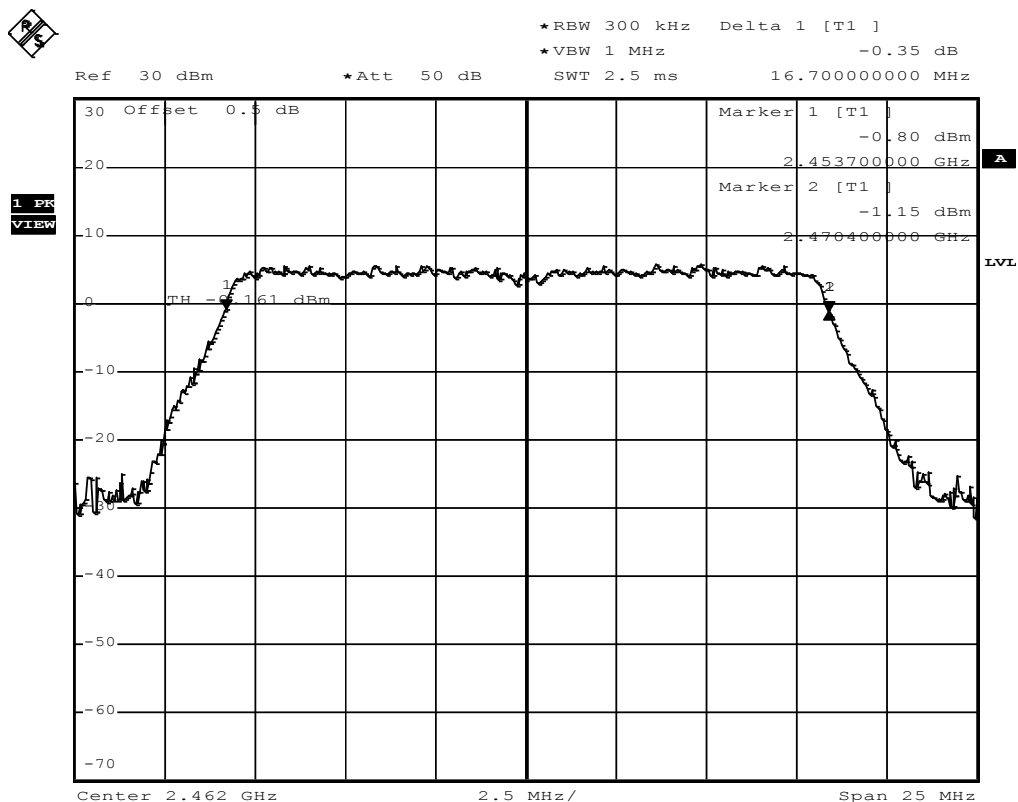


Comment: 6 dB bandwidth: 16750 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:13:41



**6 dB Bandwidth – OFDM F<sub>HIGH</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

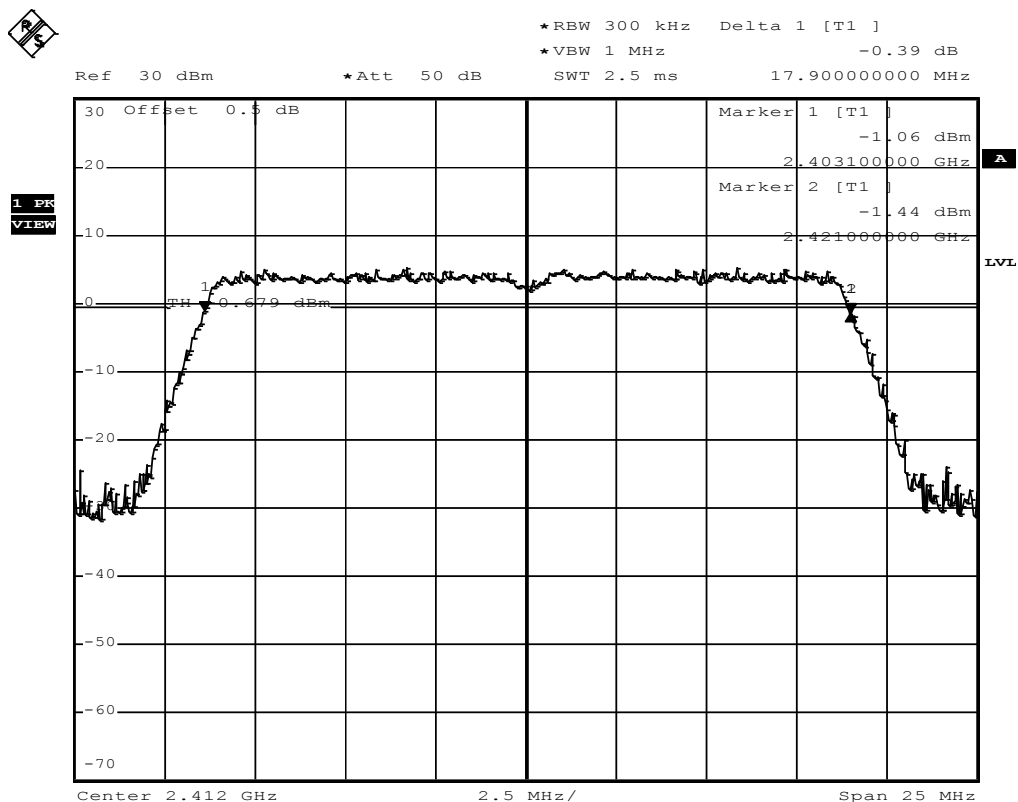
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2462 MHz
Comment 3	OFDM, 6Mbit/s, power level 15



Comment: 6 dB bandwidth: 16700 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:16:10

**6 dB Bandwidth – HT20 F<sub>Low</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

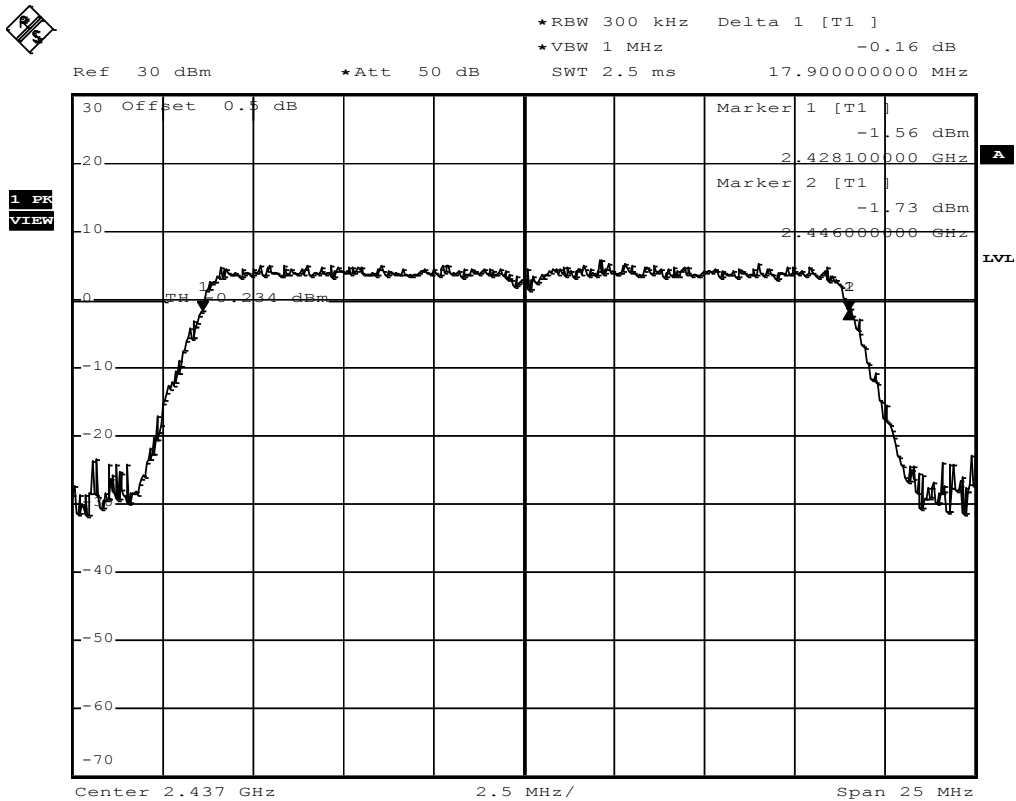
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2412 MHz
Comment 3	HT20, MCS0, power level 15



Comment: 6 dB bandwidth: 17900 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:19:48

**6 dB Bandwidth – HT20 F<sub>MID</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

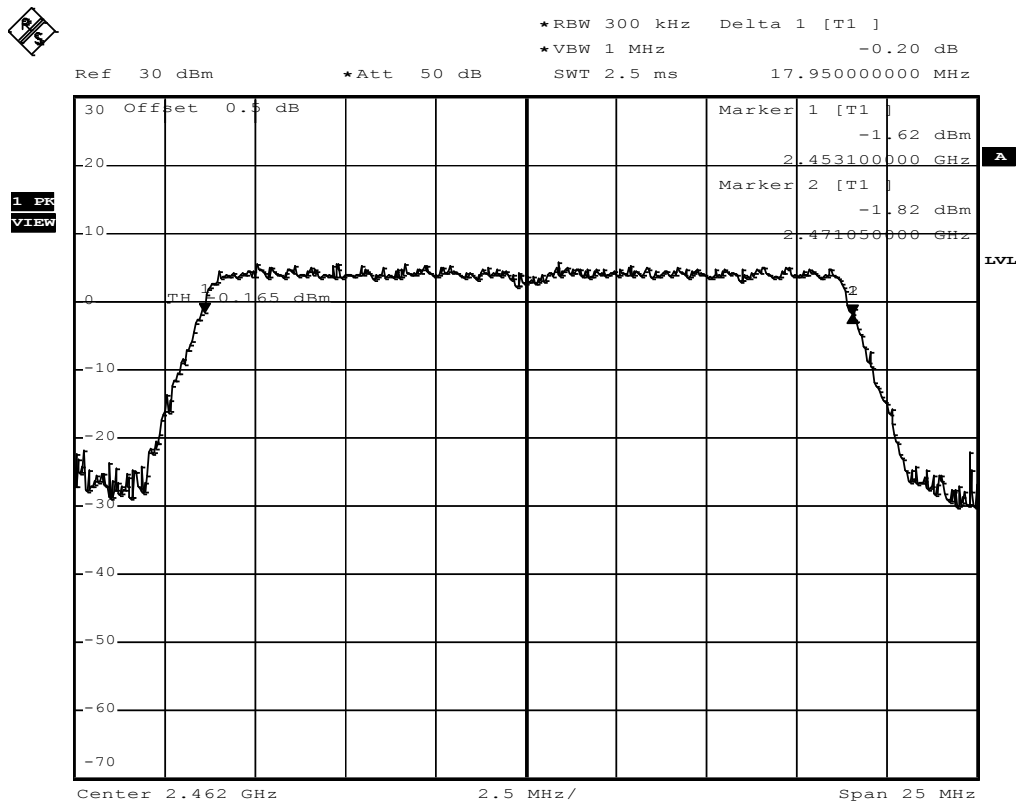
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2437 MHz
Comment 3	HT20, MCS0, power level 15



Comment: 6 dB bandwidth: 17900 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:32:24

**6 dB Bandwidth – HT20 F<sub>HIGH</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

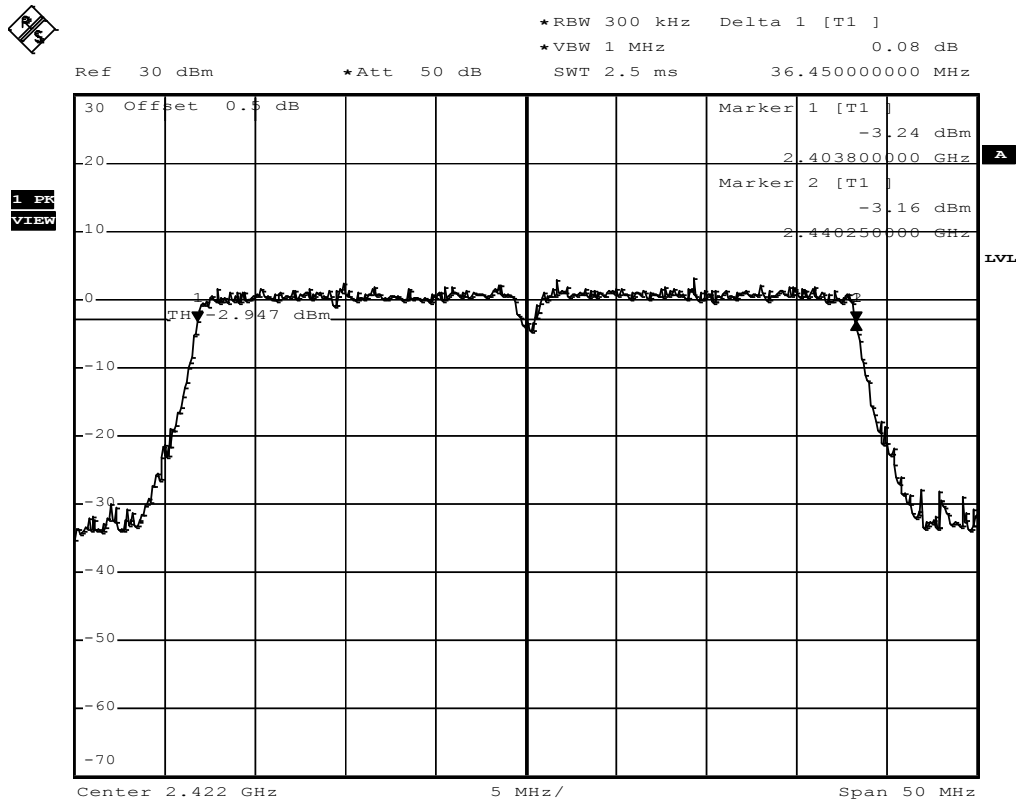
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2462 MHz
Comment 3	HT20, MCS0, power level 15



Comment: 6 dB bandwidth: 17950 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:36:45

**6 dB Bandwidth – HT40 F<sub>Low</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

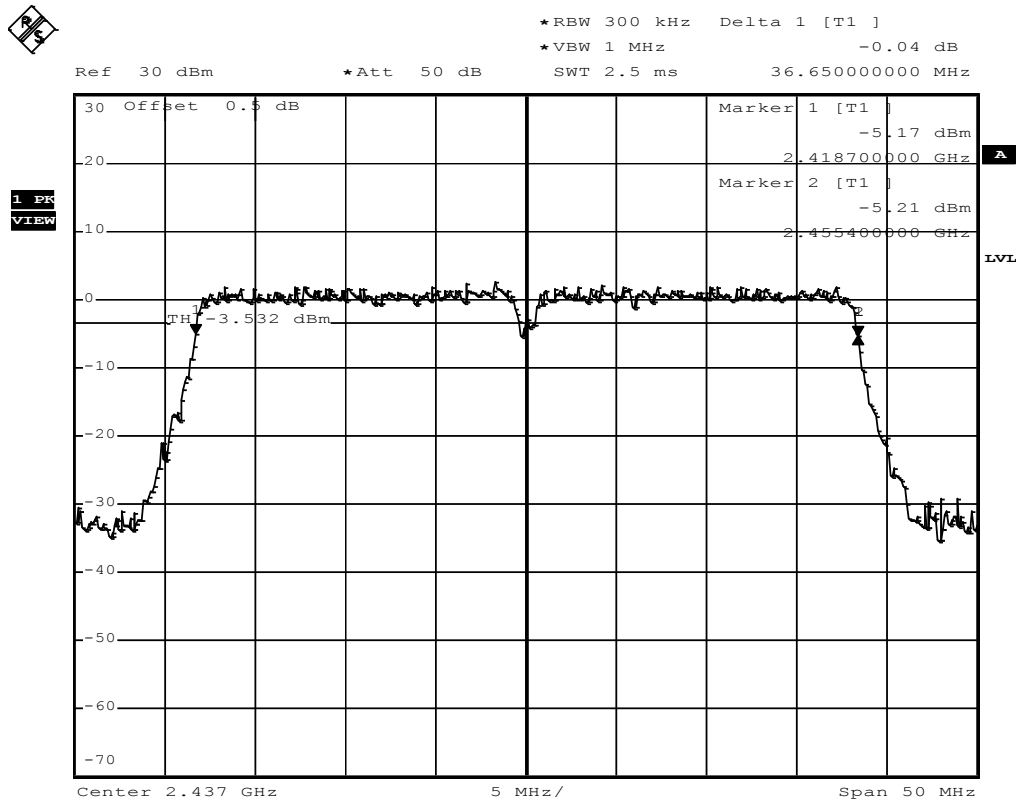
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2422 MHz
Comment 3	HT40, MCS0, power level 15



Comment: 6 dB bandwidth: 36450 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:44:19

**6 dB Bandwidth – HT40 F<sub>MID</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

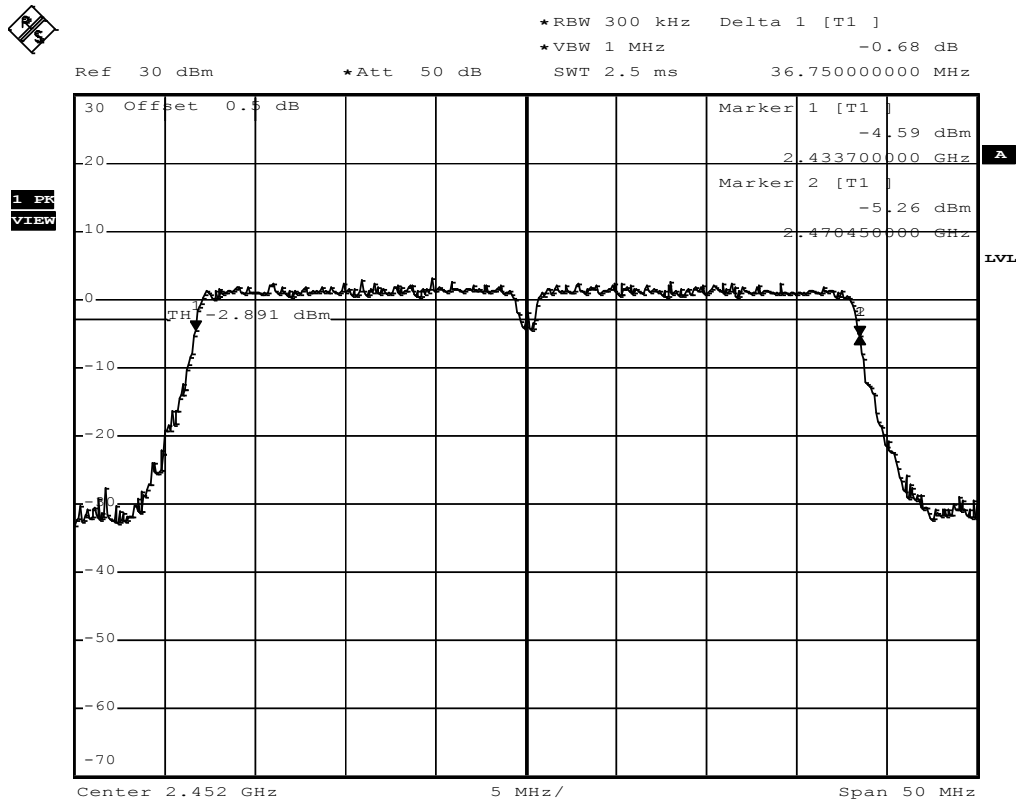
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2437 MHz
Comment 3	HT40, MCS0, power level 15



Comment: 6 dB bandwidth: 36650 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:50:12

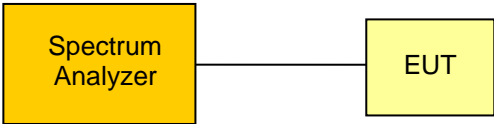
**6 dB Bandwidth – HT40 F<sub>HIGH</sub>**
**FCC part 15.247 (a)2  
Minimum 6 dB Bandwidth**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	Channel : 2452 MHz
Comment 3	HT40, MCS0, power level 15



Comment: 6 dB bandwidth: 36750 KHz > 500 KHz; verdict: PASS  
 Date: 30.NOV.2012 10:52:26

3.3 Test Conditions and Results – Maximum peak conducted power


Maximum peak conducted power acc. FCC 15.247 / IC RSS-210		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.247(b)(3) / IC RSS-210 A8.4	
Test according to measurement reference	Reference Method	
	FCC KDB Publication No. 558074	
Test frequency range	Tested frequencies	
	$F_{LOW} / F_{MID} / F_{HIGH}$	
Measurement mode	Peak	
Maximum antenna gain	3 dBi $\Rightarrow$ Limit correction = 0 dB	
<b>Limits</b>		
Limit		
1 W (30 dBm)		
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.		
<b>Test setup</b>		
 <pre> graph LR     SA[Spectrum Analyzer] --- EUT[EUT]             </pre>		
<b>Test procedure</b>		
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Center frequency set to test channel center frequency</li> <li>3. Span set to twice the 20 dB bandwidth and detector to peak and max hold</li> <li>4. Resolution bandwidth is set to 3 MHz</li> <li>5. Peak conducted power is determined from peak of spectrum envelope</li> </ol>		



Test results							
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]
F <sub>LOW</sub>	2412	3.3 VDC	DSSS	18.6	0.072	30	-11.40
F <sub>LOW</sub>	2412	3.0 VDC	DSSS	19.7	0.093	30	-10.30
F <sub>LOW</sub>	2412	3.6 VDC	DSSS	17.4	0.055	30	-12.60
F <sub>MID</sub>	2437	3.3 VDC	DSSS	19.2	0.083	30	-10.80
F <sub>MID</sub>	2437	3.0 VDC	DSSS	20.0	0.100	30	-10.00
F <sub>MID</sub>	2437	3.6 VDC	DSSS	17.8	0.060	30	-12.20
F <sub>HIGH</sub>	2462	3.3 VDC	DSSS	18.4	0.069	30	-11.60
F <sub>HIGH</sub>	2462	3.3 VDC	DSSS	19.7	0.093	30	-10.30
F <sub>HIGH</sub>	2462	3.6 VDC	DSSS	17.1	0.051	30	-12.90
F <sub>LOW</sub>	2412	3.3 VDC	OFDM	22.5	0.178	30	-07.50
F <sub>LOW</sub>	2412	3.0 VDC	OFDM	23.5	0.224	30	-06.50
F <sub>LOW</sub>	2412	3.6 VDC	OFDM	21.2	0.132	30	-08.80
F <sub>MID</sub>	2437	3.3 VDC	OFDM	22.5	0.178	30	-07.50
F <sub>MID</sub>	2437	3.0 VDC	OFDM	23.6	0.229	30	-06.40
F <sub>MID</sub>	2437	3.6 VDC	OFDM	21.4	0.138	30	-08.60
F <sub>HIGH</sub>	2462	3.3 VDC	OFDM	22.7	0.186	30	-07.30
F <sub>HIGH</sub>	2462	3.3 VDC	OFDM	23.6	0.229	30	-06.40
F <sub>HIGH</sub>	2462	3.6 VDC	OFDM	21.3	0.135	30	-08.70
F <sub>LOW</sub>	2412	3.3 VDC	HT20	22.8	0.191	30	-07.20
F <sub>LOW</sub>	2412	3.0 VDC	HT20	23.5	0.224	30	-06.50
F <sub>LOW</sub>	2412	3.6 VDC	HT20	21.4	0.138	30	-08.60
F <sub>MID</sub>	2437	3.3 VDC	HT20	23.0	0.200	30	-07.00
F <sub>MID</sub>	2437	3.0 VDC	HT20	23.6	0.229	30	-06.40
F <sub>MID</sub>	2437	3.6 VDC	HT20	21.6	0.145	30	-08.40
F <sub>HIGH</sub>	2462	3.3 VDC	HT20	23.0	0.200	30	-07.00
F <sub>HIGH</sub>	2462	3.3 VDC	HT20	23.4	0.219	30	-06.60
F <sub>HIGH</sub>	2462	3.6 VDC	HT20	21.4	0.138	30	-08.60
F <sub>LOW</sub>	2412	3.3 VDC	HT40	23.5	0.224	30	-06.50
F <sub>LOW</sub>	2412	3.0 VDC	HT40	24.4	0.275	30	-05.60
F <sub>LOW</sub>	2412	3.6 VDC	HT40	22.0	0.158	30	-08.00
F <sub>MID</sub>	2437	3.3 VDC	HT40	23.4	0.219	30	-06.60
F <sub>MID</sub>	2437	3.0 VDC	HT40	24.1	0.257	30	-05.90
F <sub>MID</sub>	2437	3.6 VDC	HT40	22.1	0.162	30	-07.90

F <sub>HIGH</sub>	2462	3.3 VDC	HT40	23.5	0.224	30	-06.50
F <sub>HIGH</sub>	2462	3.3 VDC	HT40	24.3	0.269	30	-05.70
F <sub>HIGH</sub>	2462	3.6 VDC	HT40	22.4	0.174	30	-07.60
Comments:							

**3.4 Test Conditions and Results – Power spectral density**

<b>Power spectral density acc. FCC 15.247 / IC RSS-210</b>		<b>Verdict: PASS</b>
EUT requirement rule parts and clause	Reference	
	FCC 15.247(e) / IC RSS-210 A8.2	
Test according to measurement reference	Reference Method	
	FCC KDB Publication No. 558074	
Test frequency range	Tested frequencies	
	$F_{LOW} / F_{MID} / F_{HIGH}$	
Measurement mode	Peak	
<b>Limits</b>		
8 dBm / 3 kHz		
<b>Test setup</b>		
		
<b>Test procedure</b>		
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Center frequency set to test channel center frequency</li> <li>3. Span is set large enough to capture maximum emissions in passband, RBW is set to 3kHz</li> <li>4. Peak power density is determined from peak emission of envelope</li> </ol>		

Test results						
Channel	Frequency [MHz]	Test mode	Peak frequency [MHz]	Peak power density [dBm]	Limit [dBm/3kHz]	Margin [dB]
F <sub>LOW</sub>	2412	DSSS	2413.380	-3.4	8.0	-11.40
F <sub>MID</sub>	2437	DSSS	2438.440	-3.5	8.0	-11.50
F <sub>HIGH</sub>	2462	DSSS	2463.440	-3.9	8.0	-11.90
F <sub>LOW</sub>	2412	OFDM	2410.260	-3.9	8.0	-11.90
F <sub>MID</sub>	2437	OFDM	2432.740	-3.6	8.0	-11.60
F <sub>HIGH</sub>	2462	OFDM	2460.200	-3.7	8.0	-11.70
F <sub>LOW</sub>	2412	HT20	2411.760	-4.2	8.0	-12.20
F <sub>MID</sub>	2437	HT20	2439.400	-4.0	8.0	-12.00
F <sub>HIGH</sub>	2462	HT20	2461.820	-3.9	8.0	-11.90
F <sub>LOW</sub>	2422	HT40	2415.100	-6.28	8.0	-14.28
F <sub>MID</sub>	2437	HT40	2428.500	-6.4	8.0	-14.40
F <sub>HIGH</sub>	2452	HT40	2445.600	-6.6	8.0	-14.60
Comments:						

**3.5 Test Conditions and Results – AC power line conducted emissions**

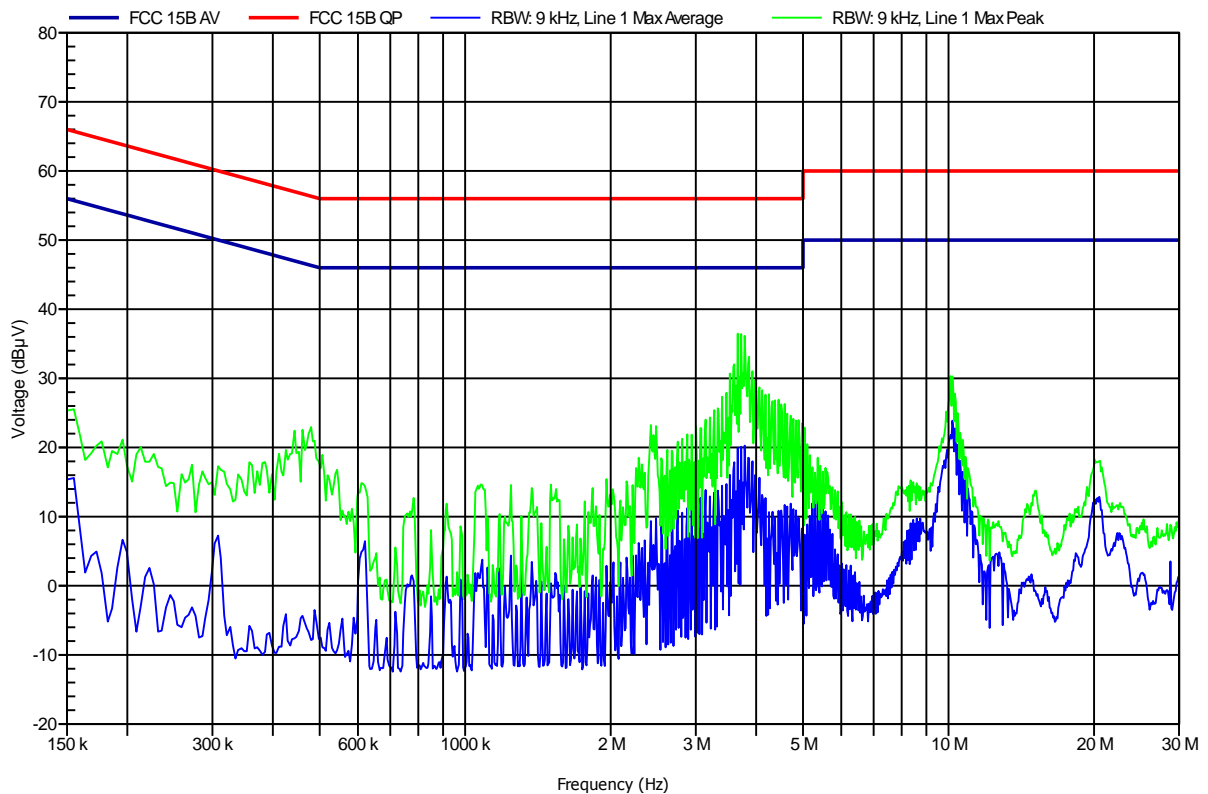
<b>Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen</b>		<b>Verdict: PASS</b>		
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
<b>Limits and results</b>				
Frequency [MHz]	Quasi-Peak [dB $\mu$ V]	Result	Average [dB $\mu$ V]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: * Limit decreases linearly with the logarithm of the frequency.				

**Conducted Emissions**
**EMI voltage test in the ac-mains according to FCC part 15B**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN/Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Handrik  
 Test Conditions: Tnom: 22°C, Unom: 3,3 V DC  
 LISN: ESH2-Z5 L  
 Mode: WLAN 2.4GHz active  
 Test Date: 2012-12-07  
 Note:

Index 16

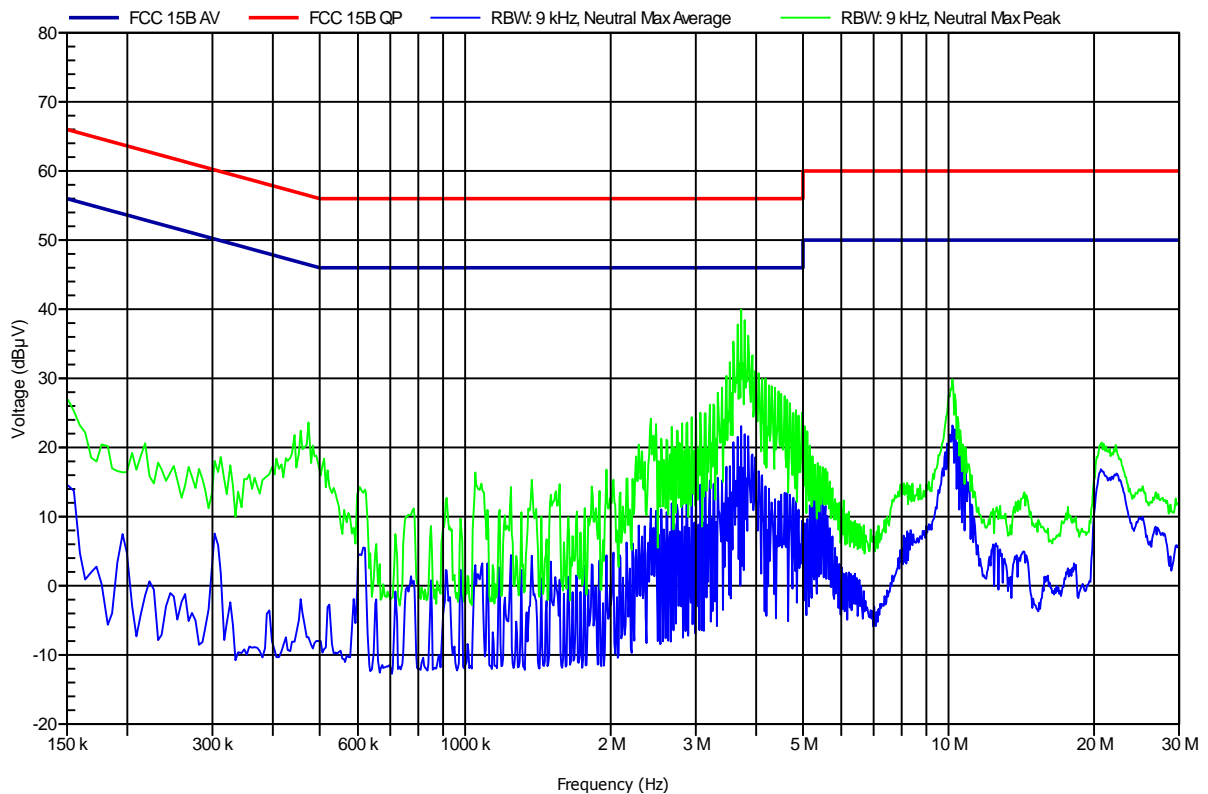


**Conducted Emissions**
**EMI voltage test in the ac-mains according to FCC part 15B**


Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN/Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Handrik  
 Test Conditions: Tnom: 22°C, Unom: 3,3 V DC  
 LISN: ESH2-Z5 N  
 Mode: WLAN 2.4GHz active  
 Test Date: 2012-12-07  
 Note:

Index 15



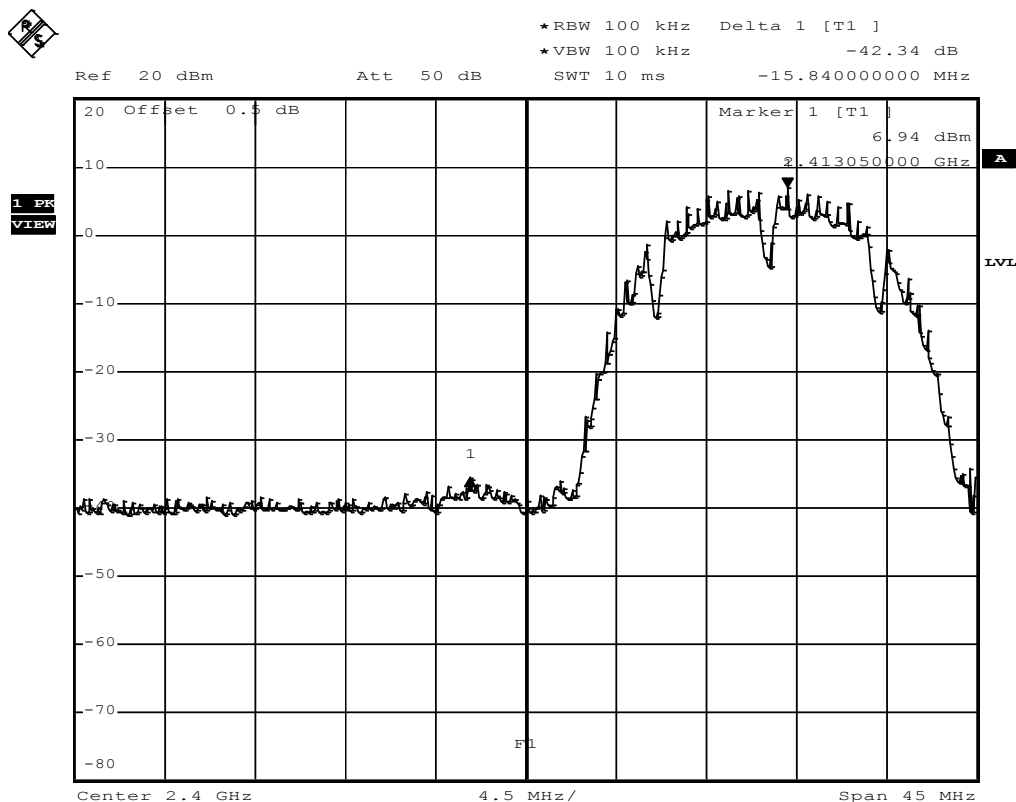
3.6 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause	Reference				
	FCC 15.247(d) / IC RSS-210 A8.5				
Test according to measurement reference	Reference Method				
	FCC KDB Publication No. 558074				
Test frequency range	Tested frequencies				
	$F_{LOW} / F_{HIGH}$				
Measurement mode	Peak				
Limits					
Limit			Condition		
$\leq -20$ dB / 100 kHz			Peak power measurement detector = Peak		
$\leq -30$ dB / 100 kHz			Peak power measurement detector = RMS		
Test setup					
					
Test procedure					
<ol style="list-style-type: none"> <li>EUT set to test mode (Communication tester is used if needed)</li> <li>Span set around lower band edge and detector is set to peak and max hold</li> <li>Resolution bandwidth is set to 100 kHz</li> <li>Markers are set to peak emission levels within frequency band and outside frequency band</li> <li>Band edge attenuation is determined from level difference</li> </ol>					
Test results					
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]
$F_{LOW}$	2412	DSSS	-42.34	-20	-22.34
$F_{HIGH}$	2462	DSSS	-45.44	-20	-25.44
$F_{LOW}$	2412	OFDM	-36.30	-20	-16.30
$F_{HIGH}$	2462	OFDM	-40.31	-20	-20.31
$F_{LOW}$	2412	HT20	-33.41	-20	-13.41
$F_{HIGH}$	2462	HT20	-40.12	-20	-20.12
$F_{LOW}$	2422	HT40	-34.37	-20	-14.37
$F_{HIGH}$	2452	HT40	-35.50	-20	-15.50
Comments:					



**Band-edge compliance – DSSS F<sub>LOW</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

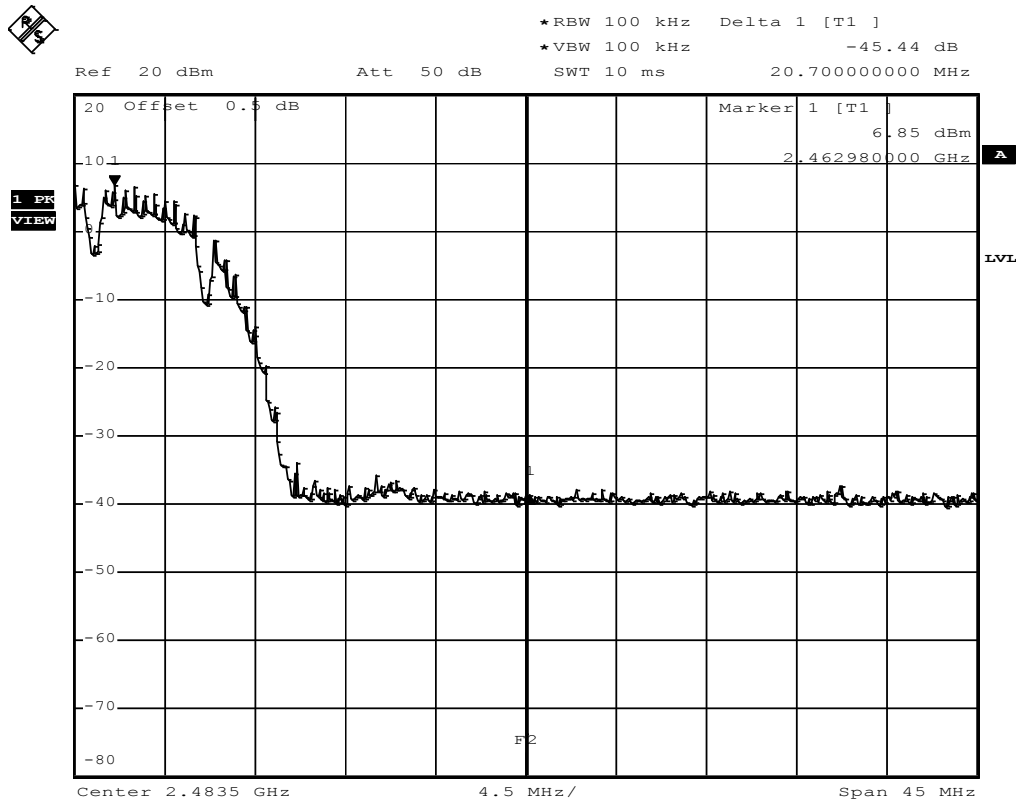
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2412 MHz
Comment 3	DSSS, 1Mbit/s, power level 17



Comment: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 30.NOV.2012 14:32:13

**Band-edge compliance – DSSS F<sub>HIGH</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2462 MHz
Comment 3	DSSS, 1Mbit/s, power level 17



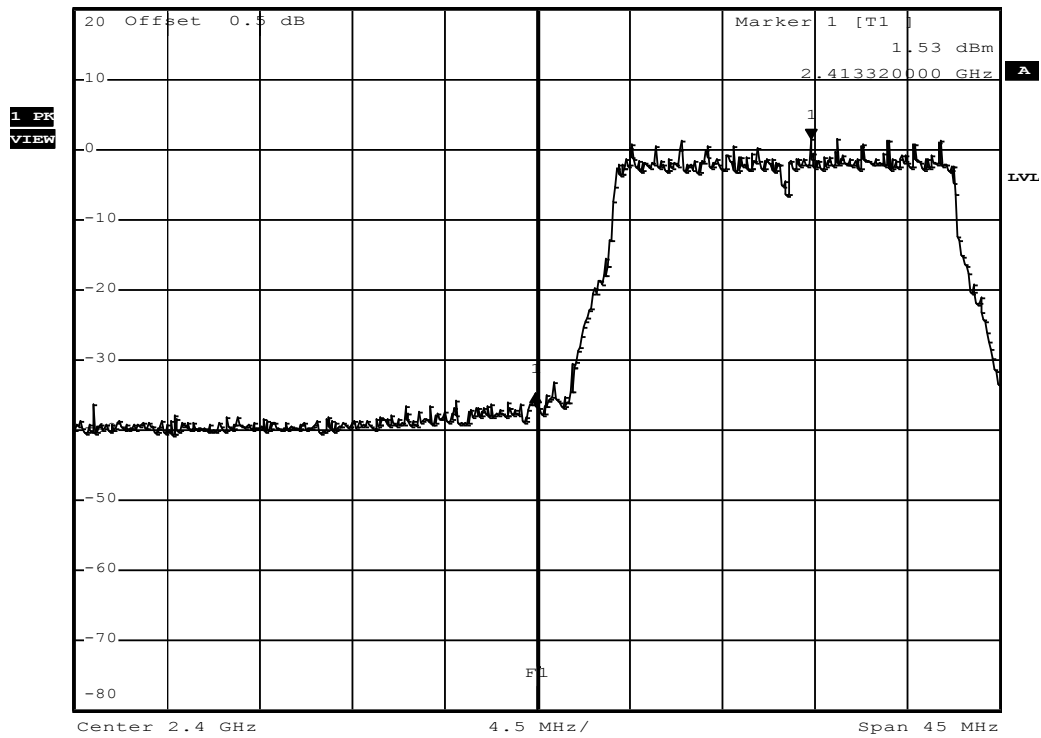
Comment: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 30.NOV.2012 14:36:33

**Band-edge compliance – OFDM F<sub>LOW</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2412 MHz
Comment 3	OFDM, 6Mbit/s, power level 15



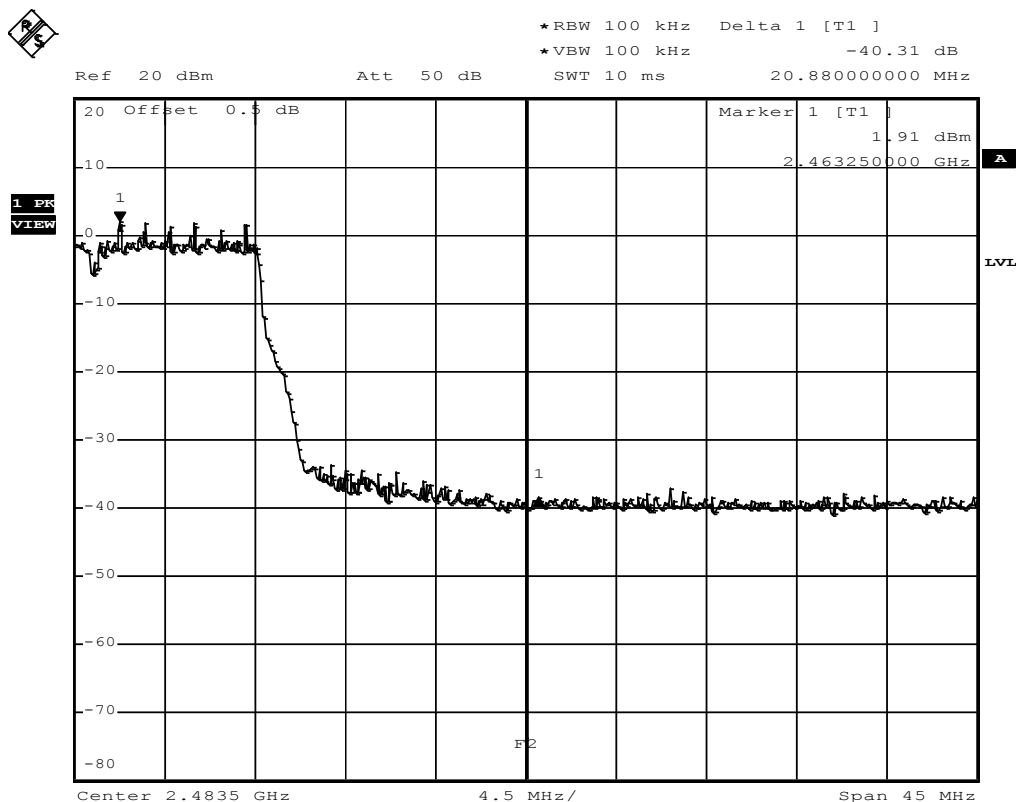
\*RBW 100 kHz Delta 1 [T1 ]  
 \*VBW 100 kHz -36.30 dB  
 Ref 20 dBm Att 50 dB SWT 10 ms -13.41000000 MHz



Date: 30.NOV.2012 14:39:57

**Band-edge compliance – OFDM F<sub>HIGH</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

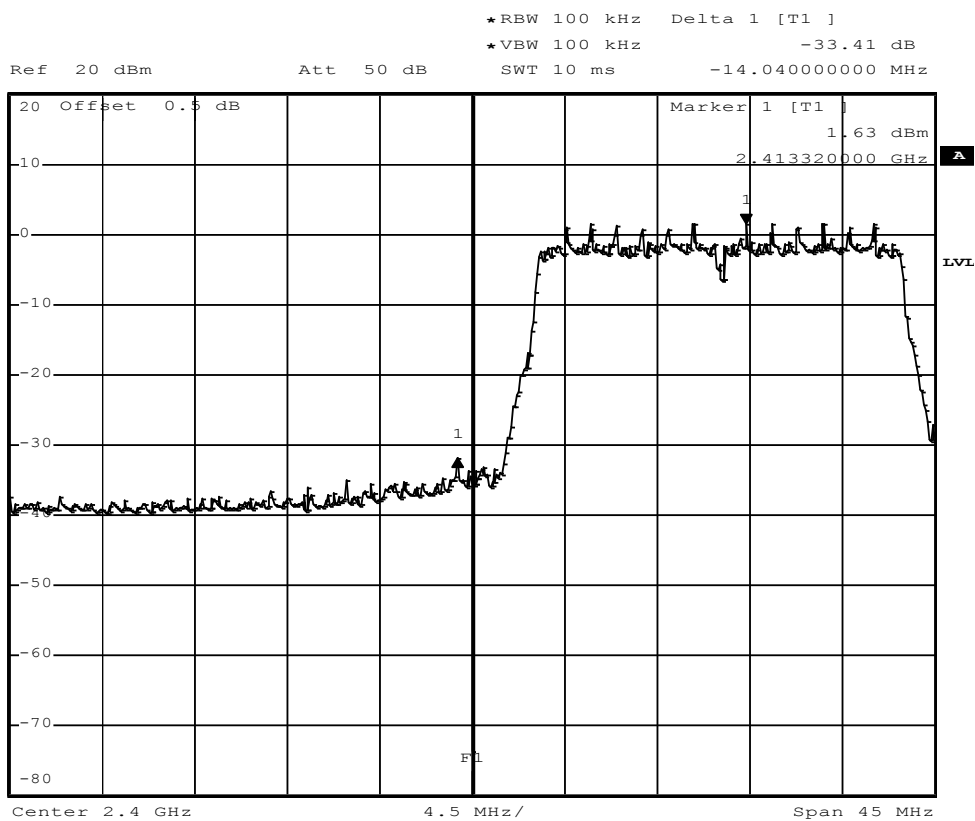
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2462 MHz
Comment 3	OFDM, 6Mbit/s, power level 15



Comment: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 30.NOV.2012 14:42:25

**Band-edge compliance – HT20 F<sub>Low</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

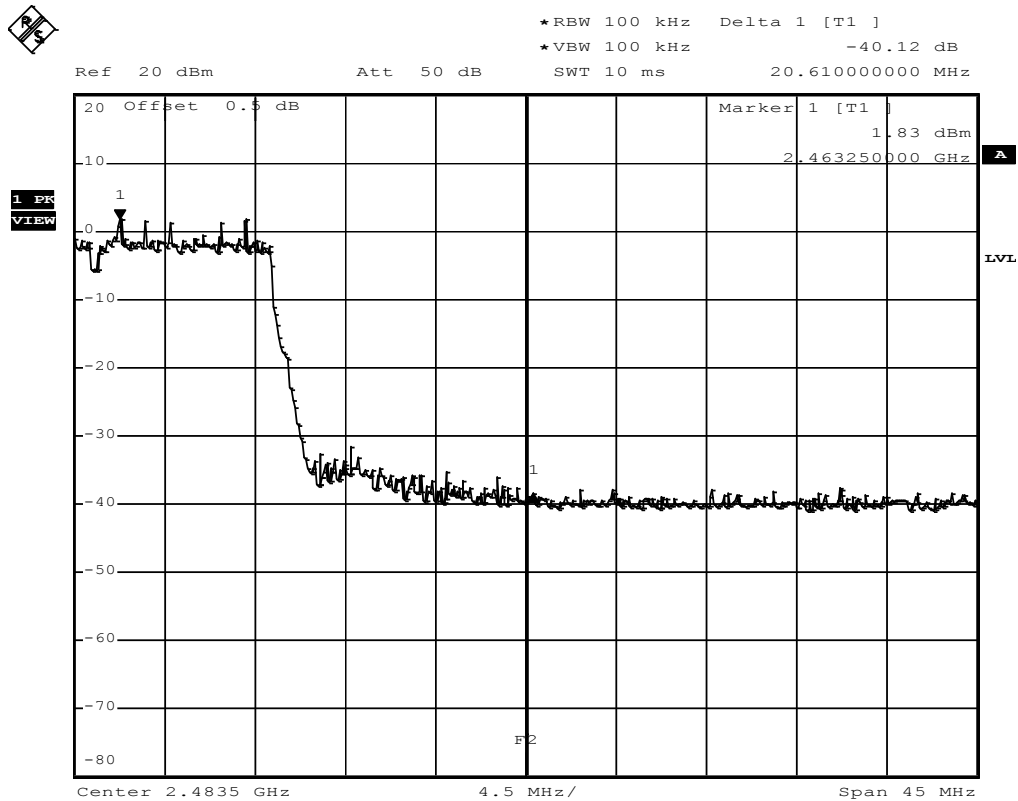
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2412 MHz
Comment 3	HT20, MCS0, power level 15



Date: 30.NOV.2012 14:46:13

**Band-edge compliance – HT20 F<sub>HIGH</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

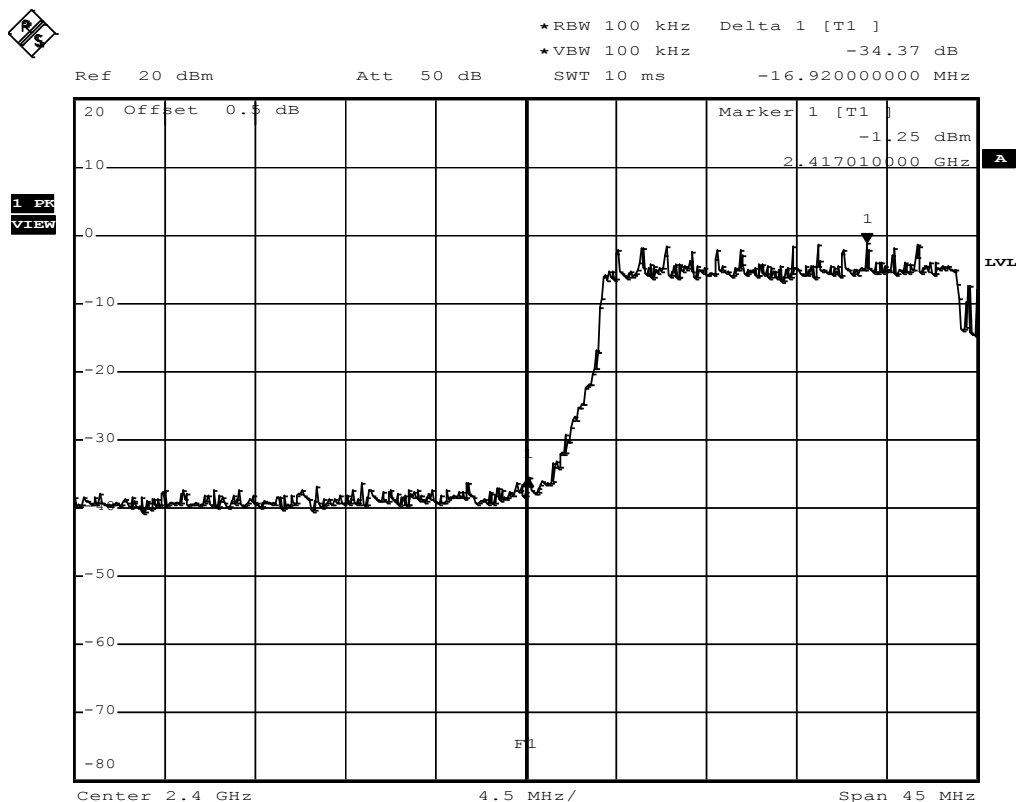
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2462 MHz
Comment 3	HT20, MCS0, power level 15



Comment: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 30.NOV.2012 14:48:29

**Band-edge compliance – HT40 F<sub>Low</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

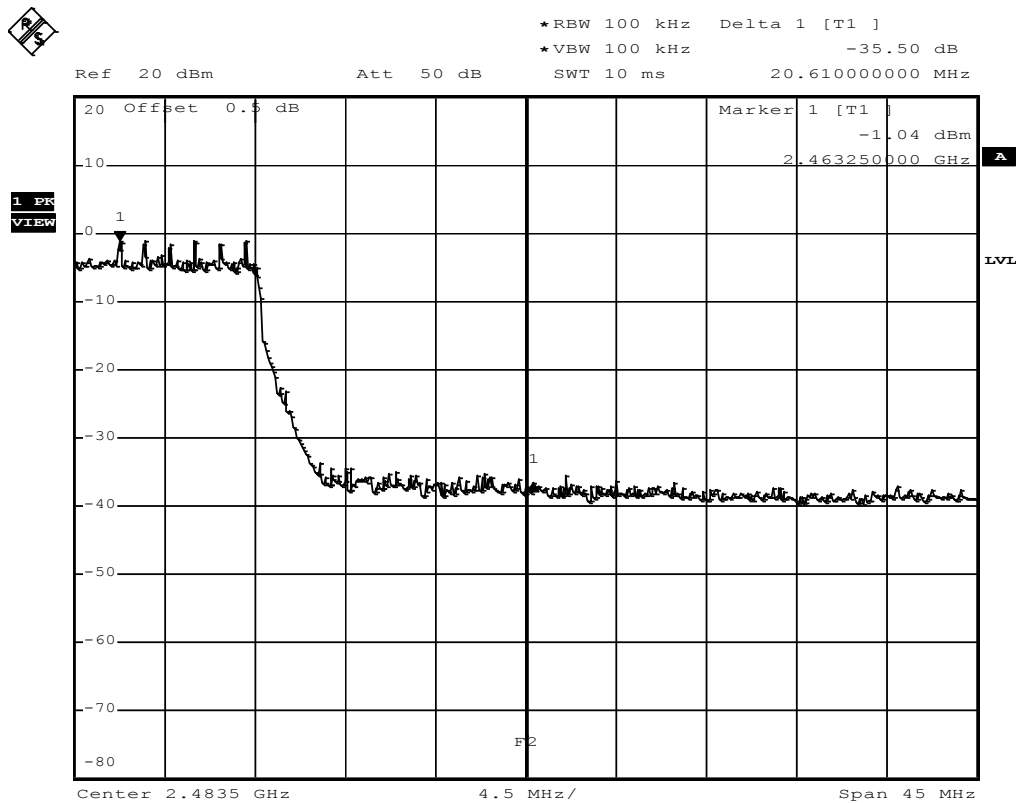
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2422 MHz
Comment 3	HT40, MCS0, power level 15



Comment: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 30.NOV.2012 14:51:09

**Band-edge compliance – HT40 F<sub>HIGH</sub>**
**FCC part 15.247**
**Band-edge compliance of RF conducted emissions**

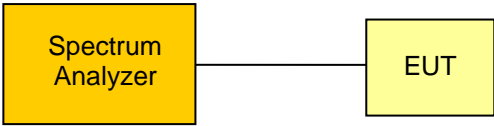
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 2452 MHz
Comment 3	HT40, MCS0, power level 15



Comment: Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 30.NOV.2012 15:00:14

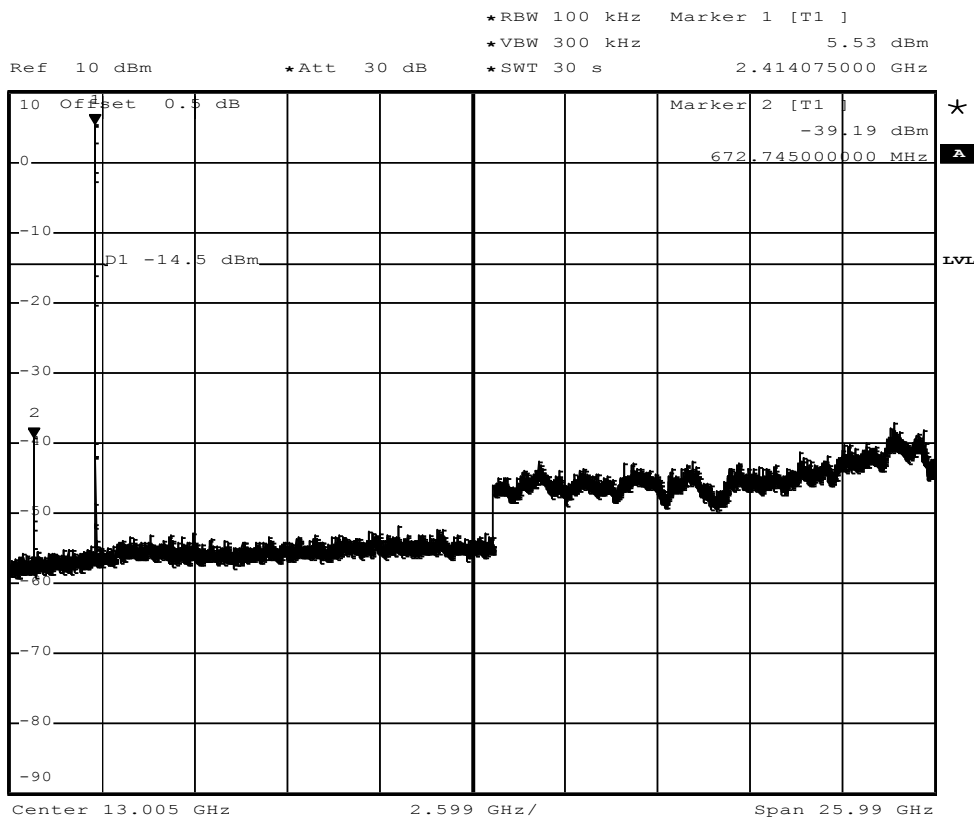


**3.7 Test Conditions and Results – Conducted spurious emissions**

<b>Conducted spurious emissions acc. FCC 15.247 / IC RSS-210</b>						<b>Verdict: PASS</b>	
EUT requirement rule parts and clause			Reference				
			FCC 15.247(d) / IC RSS-210 A8.5				
Test according to measurement reference			Reference Method				
			FCC KDB Publication No. 558074				
Test frequency range			Tested frequencies				
			10 MHz – 10 <sup>th</sup> Harmonic				
Measurement mode			Peak				
<b>Limits</b>							
Limit				Condition			
≤ -20 dB / 100 kHz				Peak power measurement detector = Peak			
≤ -30 dB /100 kHz				Peak power measurement detector = RMS			
<b>Test setup</b>							
 <pre> graph LR     SA[Spectrum Analyzer] --- EUT[EUT]             </pre>							
<b>Test procedure</b>							
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span it set according to measurement range</li> <li>3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold</li> <li>4. Markers are set to peak emission levels within frequency band</li> <li>5. Emission level is determined by second marker on emission peak</li> <li>6. Attenuation is determined from level difference</li> </ol>							
<b>Test results</b>							
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]
F <sub>LOW</sub>	2412	DSSS	672.745	-39.19	5.53	-14.50	-24.69
F <sub>MID</sub>	2437	DSSS	698.735	-38.77	5.34	-14.7	-24.07
F <sub>HIGH</sub>	2462	DSSS	721.476	-39.54	6.8	-13.2	-26.34
OFDM no significant conducted spurious emissions							
HT20 no significant conducted spurious emissions							
HT40 no significant conducted spurious emissions							
Comments:							

**Conducted spurious emissions – DSSS F<sub>LOW</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

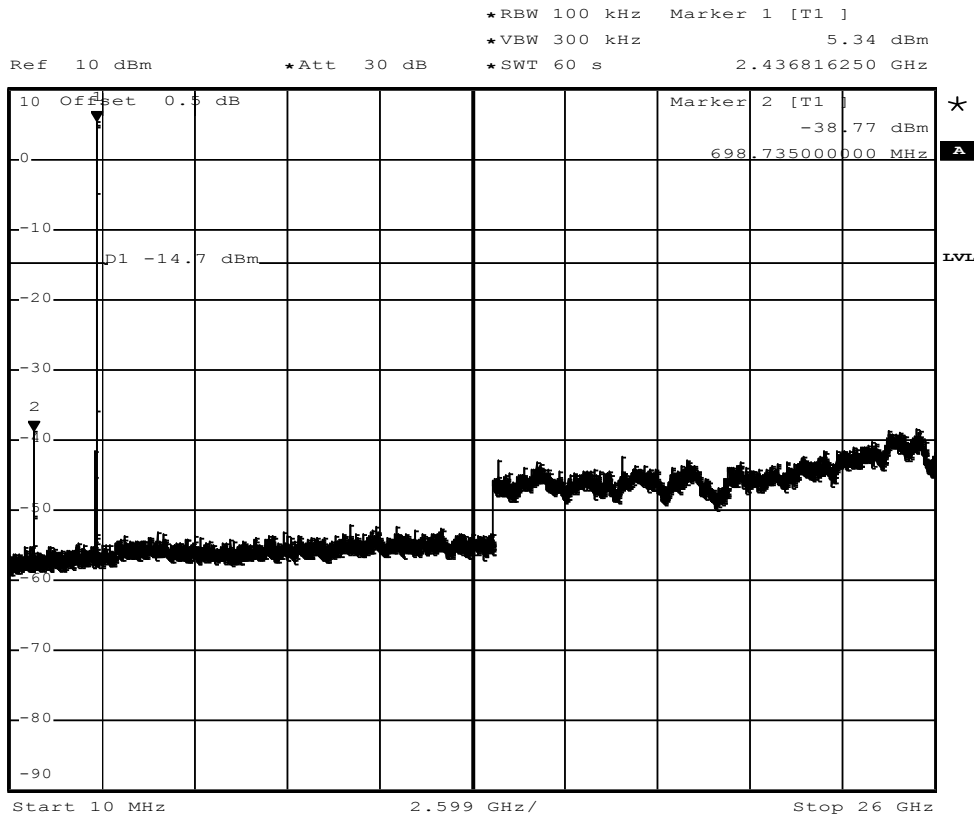
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2412 MHz
Comment 3	DSSS / 1 MBit/s / power level 17



Date: 30.NOV.2012 13:06:08

**Conducted spurious emissions – DSSS F<sub>MID</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

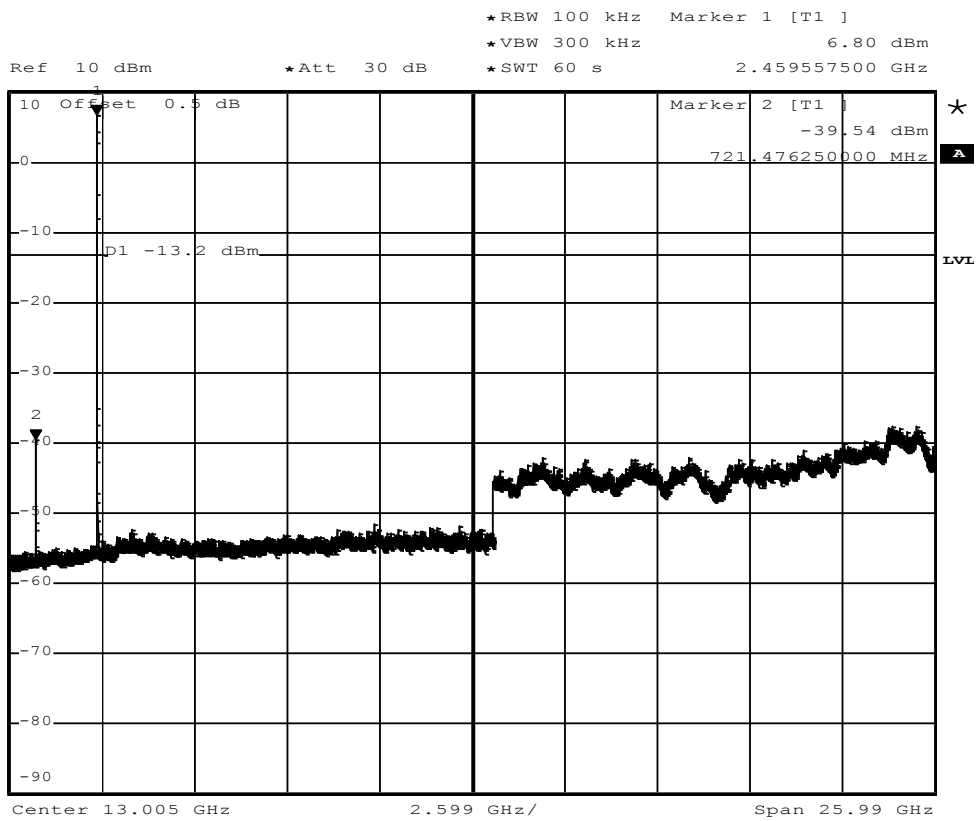
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2437 MHz
Comment 3	DSSS / 1 MBit/s / power level 17



Date: 30.NOV.2012 13:09:31

**Conducted spurious emissions – DSSS F<sub>HIGH</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

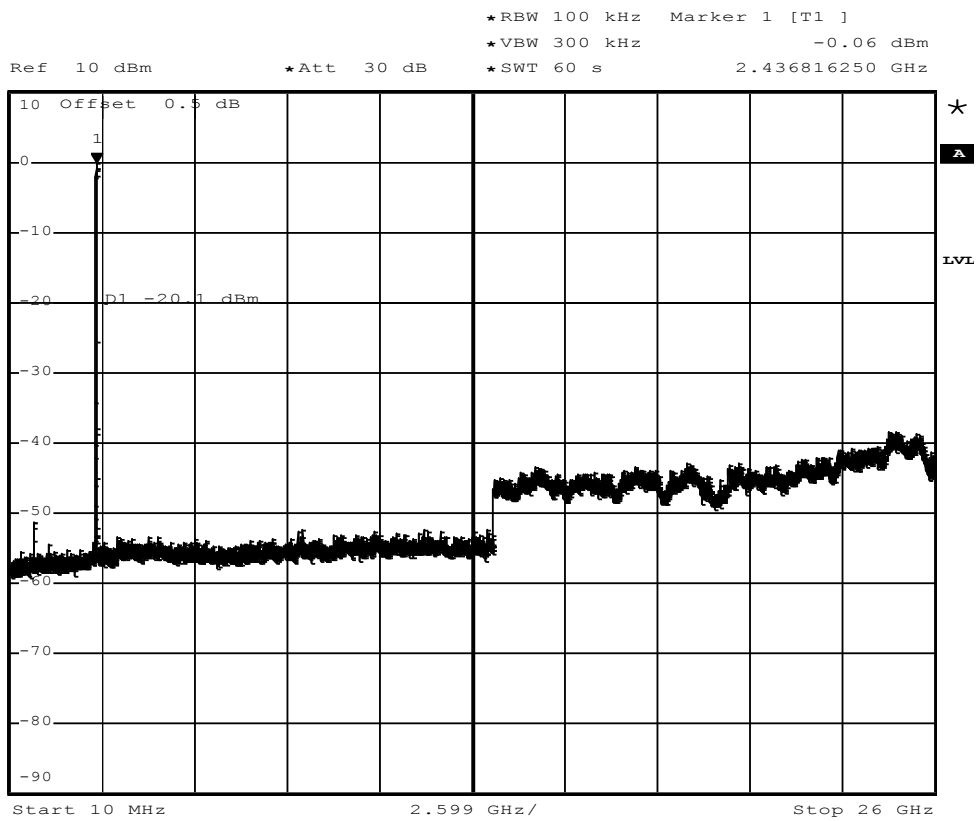
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2462 MHz
Comment 3	DSSS / 1 MBit/s / power level 17



Date: 30.NOV.2012 13:20:23

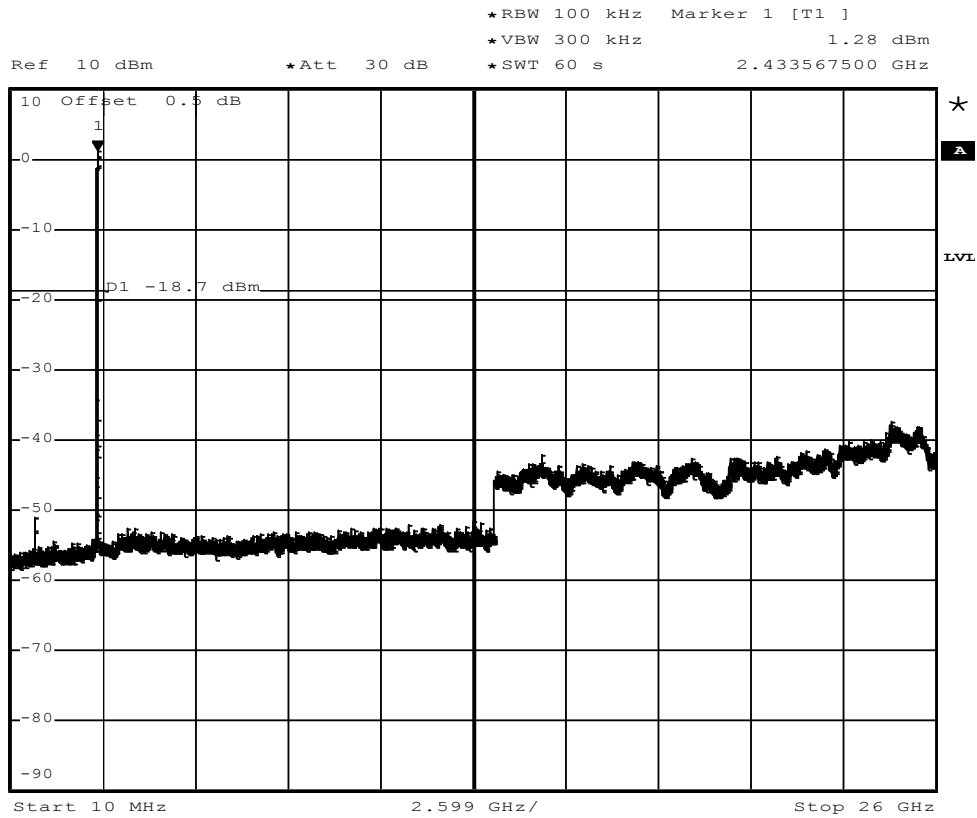
**Conducted spurious emissions – OFDM F<sub>Low</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2412 MHz
Comment 3	OFDM / 6 MBit/s / power level 15



**Conducted spurious emissions – OFDM F<sub>MID</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

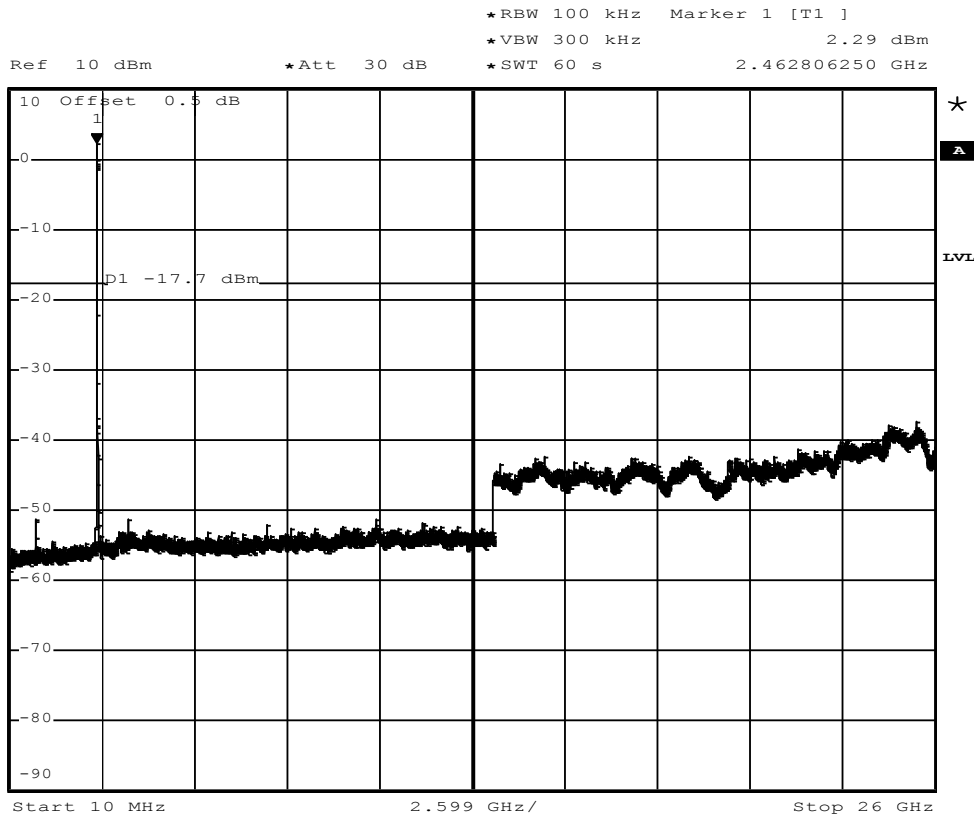
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2437 MHz
Comment 3	OFDM / 6 MBit/s / power level 15



Date: 30.NOV.2012 13:42:33

**Conducted spurious emissions – OFDM F<sub>HIGH</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

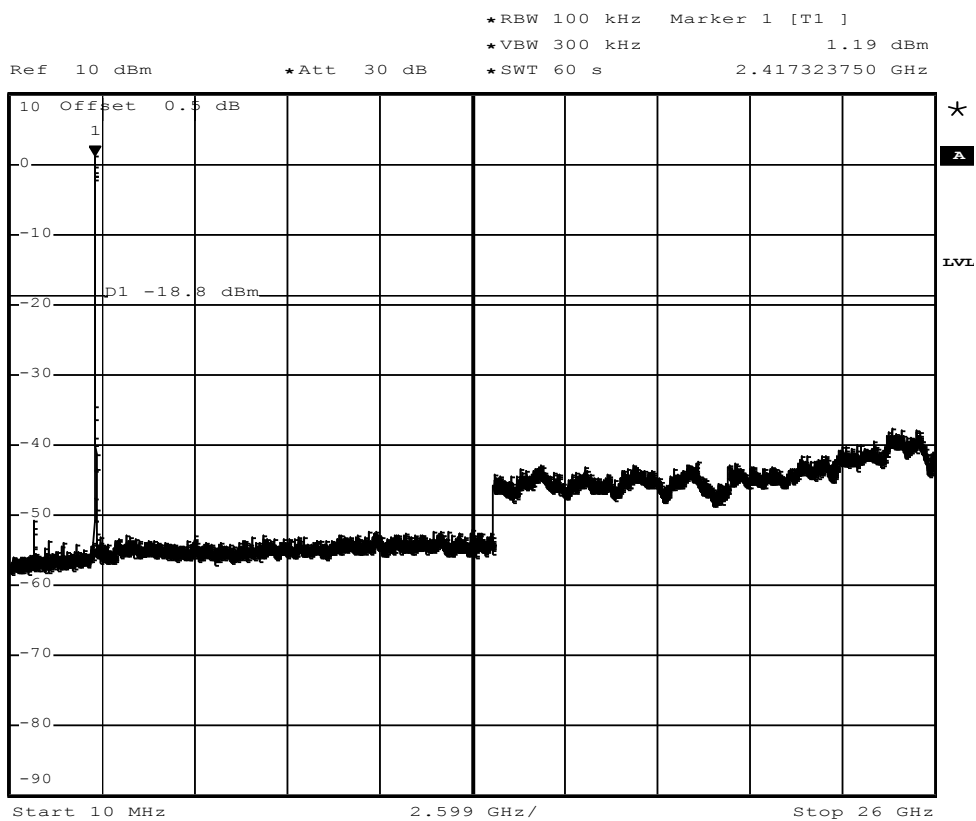
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2462 MHz
Comment 3	OFDM / 6 MBit/s / power level 15



Date: 30.NOV.2012 13:35:00

**Conducted spurious emissions – HT20 F<sub>LOW</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2412 MHz
Comment 3	HT20 / MCS0 / power level 15

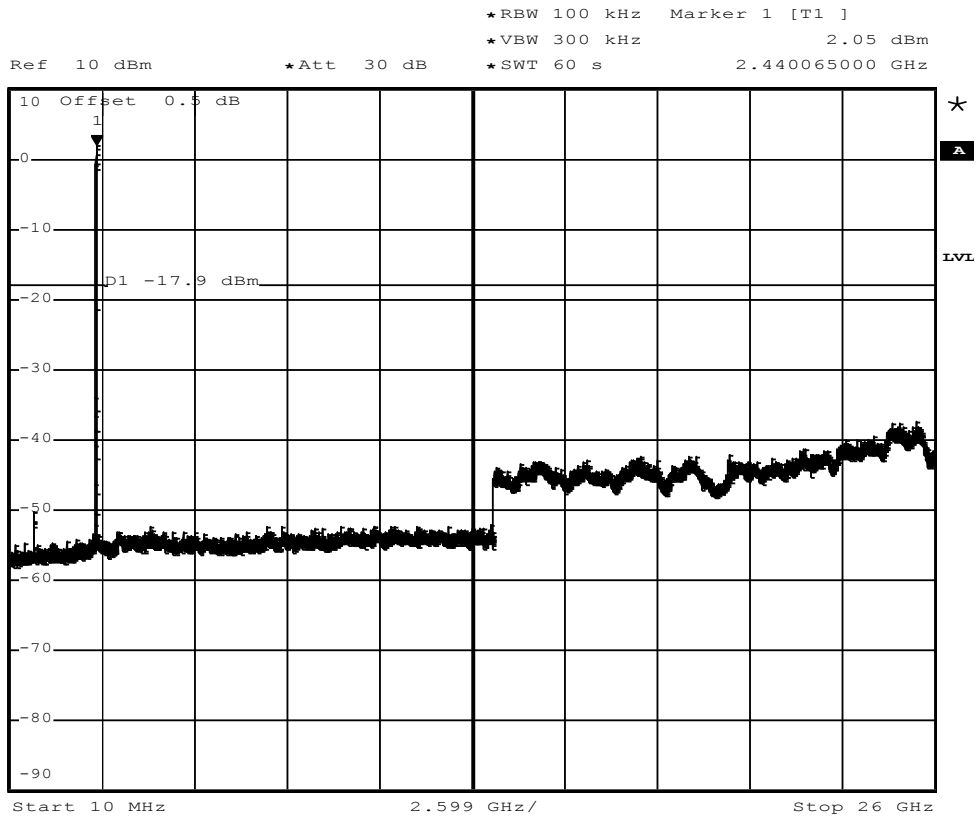


Date: 30.NOV.2012 13:49:34



**Conducted spurious emissions – HT20 F<sub>MID</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

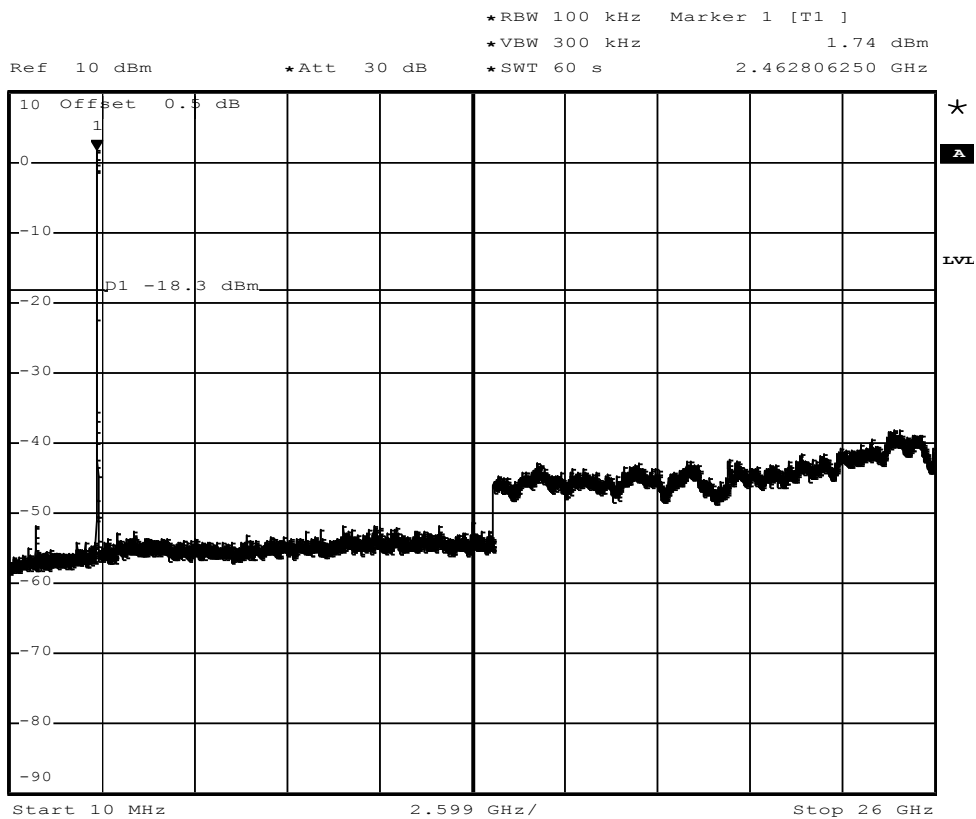
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2437 MHz
Comment 3	HT20 / MCS0 / power level 15



Date: 30.NOV.2012 14:00:20

**Conducted spurious emissions – HT20 F<sub>HIGH</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

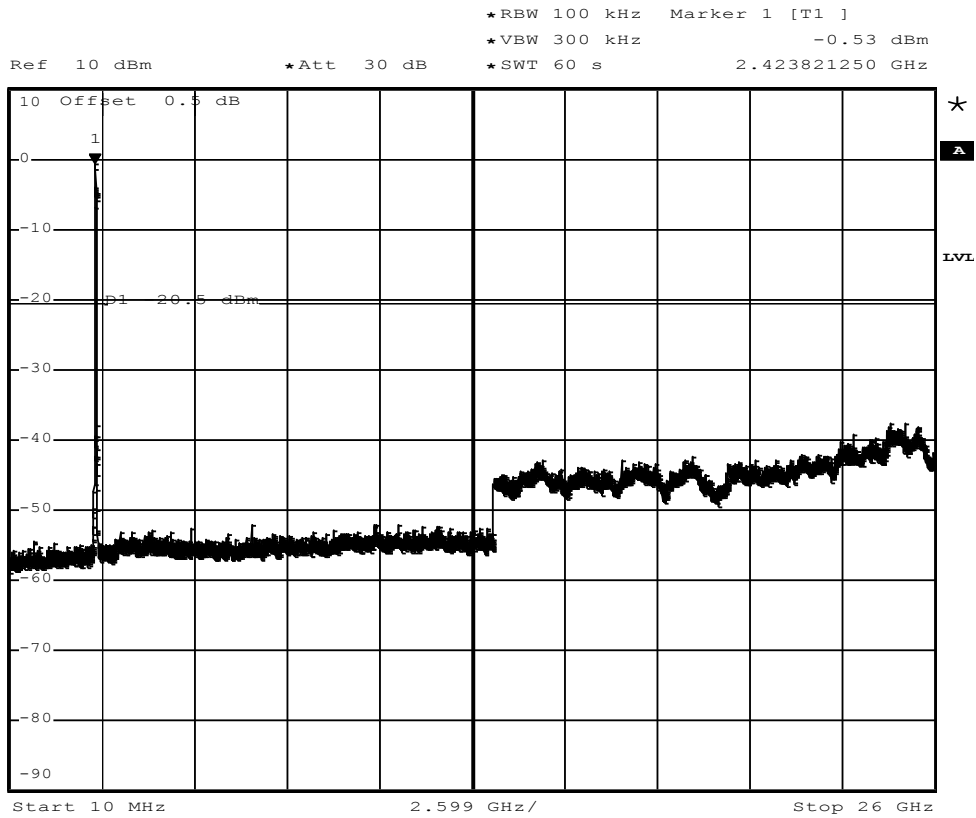
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2462 MHz
Comment 3	HT20 / MCS0 / power level 15



Date: 30.NOV.2012 14:05:47

**Conducted spurious emissions – HT40 F<sub>LOW</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

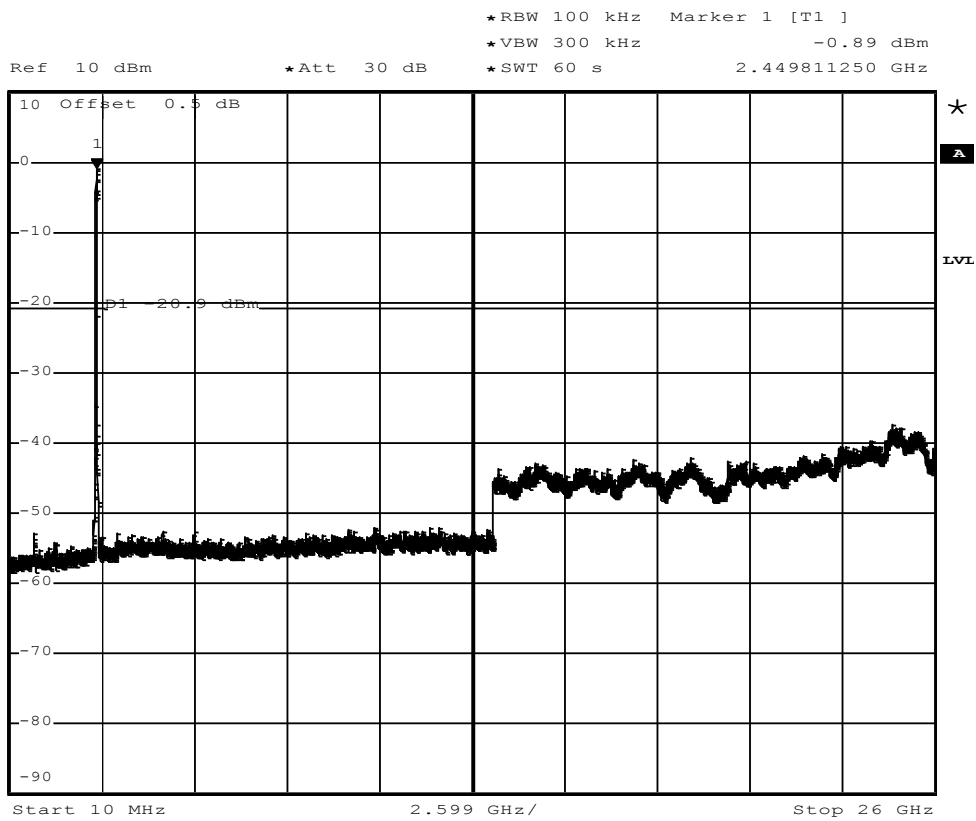
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2422 MHz
Comment 3	HT40 / MCS0 / power level 15



Date: 30.NOV.2012 14:15:12

**Conducted spurious emissions – HT40 F<sub>MID</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

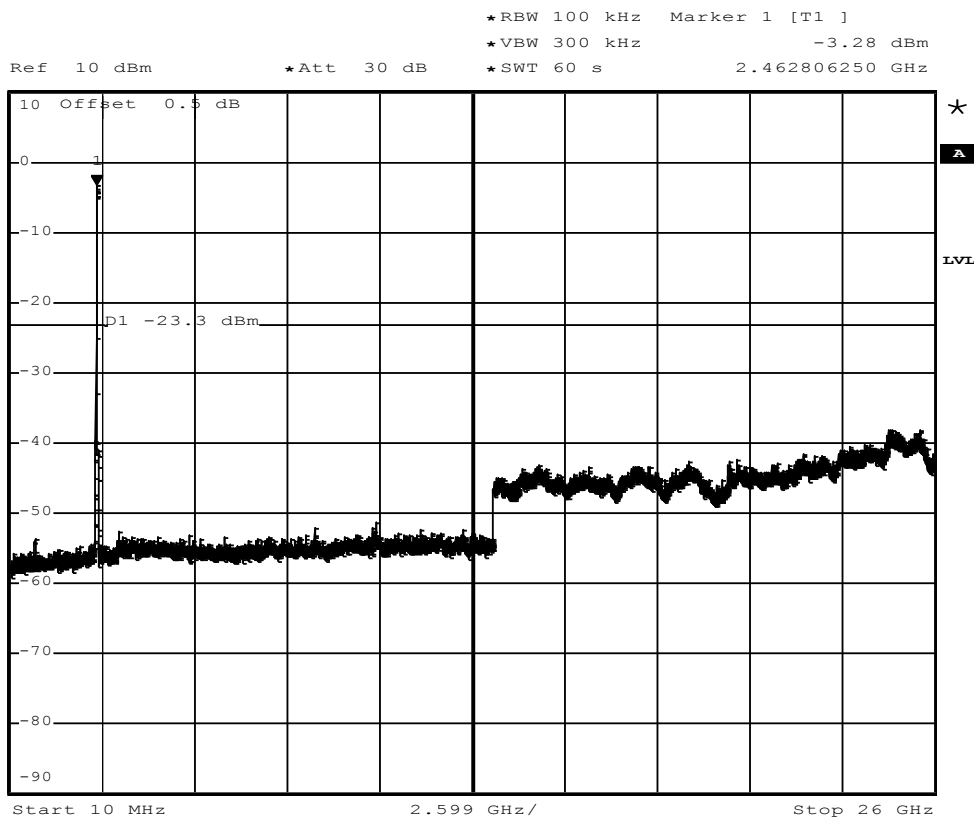
EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2437 MHz
Comment 3	HT40 / MCS0 / power level 15



Date: 30.NOV.2012 14:22:26

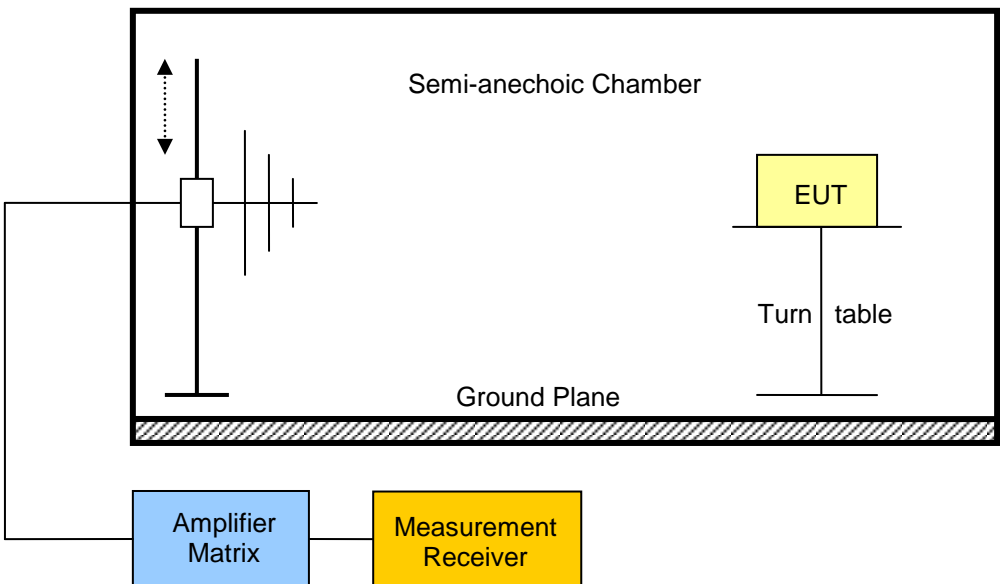
**Conducted spurious emissions – HT40 F<sub>HIGH</sub>**
**FCC part 15.247 (d)  
Spurious Emissions**

EUT	WLAN / Bluetooth module
Model	WiBear11n-SF1
Approval Holder	lesswire AG / Ord.: G0M-1211-2443
Temperature / Voltage	25°C, Vnom
Test Site / Operator	Eurofins Product Service GmbH, Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2452 MHz
Comment 3	HT40 / MCS0 / power level 15



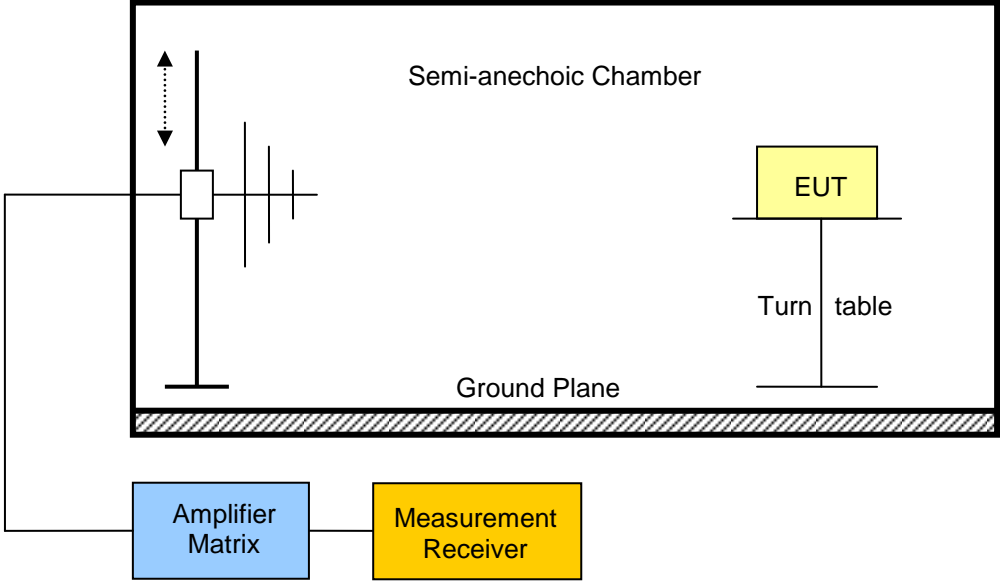
Date: 30.NOV.2012 14:27:23

3.8 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. FCC 47 CFR 15.247 / IC RSS-210				Verdict: PASS	
Test according referenced standards		Reference Method			
		FCC 15.247(d) / IC RSS-210 A8.5			
Test according to measurement reference		Reference Method			
		FCC KDB Publication No. 558074 / ANSI C63.4			
Test frequency range		Tested frequencies			
		30 MHz – 10 <sup>th</sup> Harmonic			
Limits					
Frequency range [MHz]	Detector	Limit [ $\mu$ V/m]	Limit [dB $\mu$ V/m]	Limit Distance [m]	
30 – 88	Quasi-Peak	100	40	3	
88 – 216	Quasi-Peak	150	43.5	3	
216 – 960	Quasi-Peak	200	46	3	
960 – 1000	Quasi-Peak	500	54	3	
> 1000	Average	500	54	3	
<p>Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).</p> <p>When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.</p>					
Test setup					
 <p>The diagram illustrates the test setup within a Semi-anechoic Chamber. A Ground Plane is located at the bottom. An Amplifier Matrix (blue box) is connected to a Measurement Receiver (yellow box). The Equipment Under Test (EUT, yellow box) is placed on a Turn table. A vertical antenna is positioned to the left of the chamber, with a dashed arrow indicating its vertical movement.</p>					

Test procedure									
1. EUT set to test mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to peak emission levels within restricted bands									
Test results – Internal Antenna									
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dB $\mu$ V/m]	Det.	Pol.	Limit [dB $\mu$ V/m]	Limit dist. [m]*	Margin [dB]
F <sub>LOW</sub>	2412	DSSS	2387	51.96	pk	hor	74	3	-22.04
F <sub>LOW</sub>	2412	DSSS	2387	42.90	avg	ver	54	3	-11.10
F <sub>LOW</sub>	2412	HT20	2388	62.85	pk	hor	74	3	-11.15
F <sub>LOW</sub>	2412	HT20	2388	38.84	avg	hor	54	3	-15.16
F <sub>LOW</sub>	2412	HT20	2389	55.30	pk	ver	74.	3	-18.70
F <sub>LOW</sub>	2412	HT20	2389	31.72	avg	ver	54	3	-22.28
F <sub>HIGH</sub>	2462	HT20	2484	57.14	pk	hor	74	3	-16.86
F <sub>HIGH</sub>	2462	HT20	2484	30.34	avg	hor	54	3	-23.66
F <sub>LOW</sub>	2422	HT40	2383	63.00	pk	ver	74	3	-11.00
F <sub>LOW</sub>	2422	HT40	2383	34.52	avg	ver	54	3	-19.48
F <sub>LOW</sub>	2422	HT40	2387	70.96	pk	hor	74	3	-03.04
F <sub>LOW</sub>	2422	HT40	2387	41.84	avg	hor	54	3	-12.16
F <sub>MID</sub>	2441	HT40	2388	52.36	pk	ver	74	3	-21.64
F <sub>MID</sub>	2441	HT40	2388	28.10	avg	ver	54	3	-25.90
F <sub>MID</sub>	2441	HT40	2389	60.71	pk	hor	74	3	-13.29
F <sub>MID</sub>	2441	HT40	2389	34.53	avg	hor	54	3	-19.47
F <sub>MID</sub>	2441	HT40	2486	62.00	pk	hor	74	3	-12.00
F <sub>MID</sub>	2441	HT40	2486	32.43	avg	hor	54	3	-21.57
F <sub>HIGH</sub>	2452	HT40	2383	54.08	pk	hor	74	3	-19.92
F <sub>HIGH</sub>	2452	HT40	2383	29.68	avg	hor	54	3	-24.32
F <sub>HIGH</sub>	2452	HT40	2485	71.37	pk	hor	74	3	-02.63
F <sub>HIGH</sub>	2452	HT40	2485	38.11	avg	hor	54	3	-15.89
F <sub>HIGH</sub>	2452	HT40	2485	58.18	pk	ver	74	3	-15.82
F <sub>HIGH</sub>	2452	HT40	2485	28.56	avg	ver	54	3	-25.44
Comments: * Physical distance between EUT and measurement antenna.									

**3.9 Test Conditions and Results – Receiver radiated emissions**

Receiver radiated emissions acc. IC RSS-210			Verdict: PASS	
Test according referenced standards	Reference Method			
	IC RSS-210 A8.5			
Test according to measurement reference	Reference Method			
	ANSI C63.4			
Test frequency range	Tested frequencies			
	30 MHz – 3 <sup>th</sup> Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [ $\mu$ V/m]	Limit [dB $\mu$ V/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				
				



**Test procedure**

1. EUT set to receive mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
4. Markers are set to peak emission levels

**Test results**

Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dB $\mu$ V/m]	Emission Level [ $\mu$ V/m]	Det.	Limit [ $\mu$ V/m]	Margin [ $\mu$ V/m]
F <sub>MID</sub>	2437	33.054	35.48	59.43	pk	100	-40.57
F <sub>MID</sub>	2437	33.054	34.85	55.27	pk	100	-44.73
F <sub>MID</sub>	2437	596.008	26.26	20.56	pk	200	-179.44

**Comments:**

\* Physical distance between EUT and measurement antenna.

\*\* Emission level corresponds to ambient noise floor

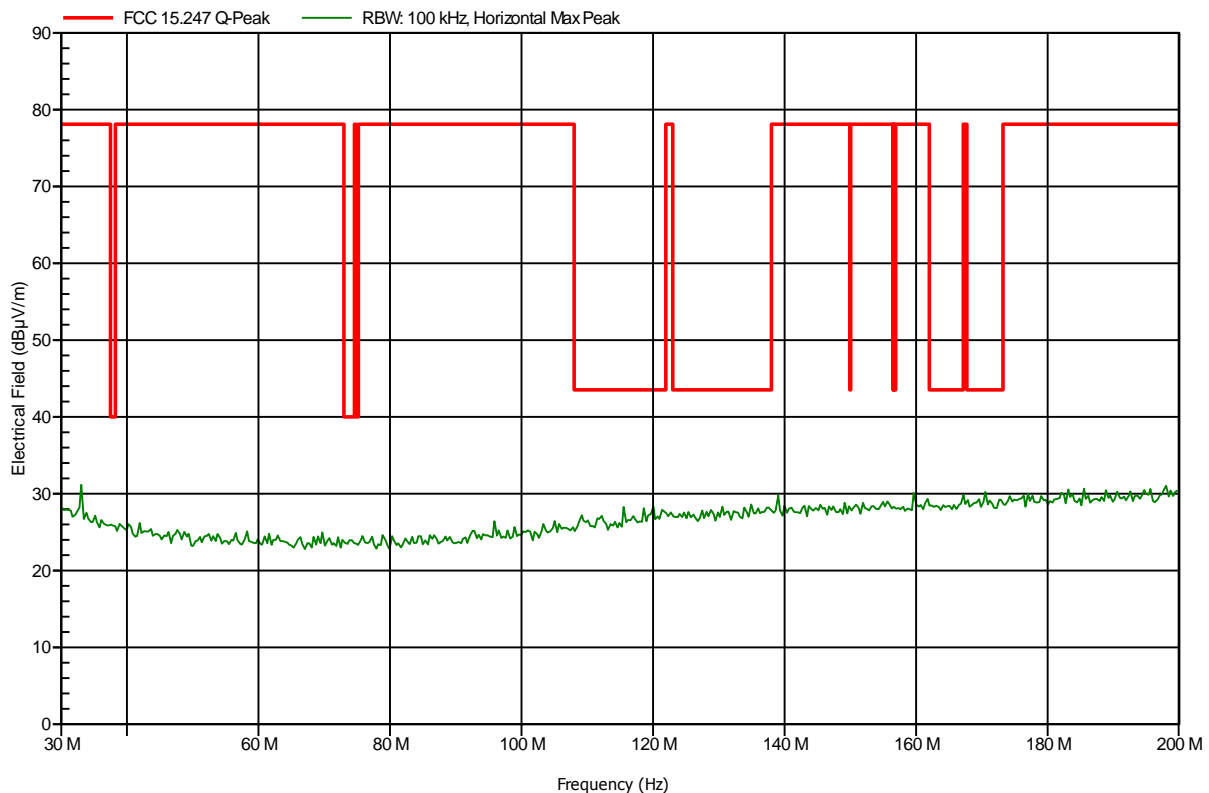
## ANNEX A Transmitter radiated spurious emissions

### Spurious emissions according to FCC 15.247

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	

Index 67

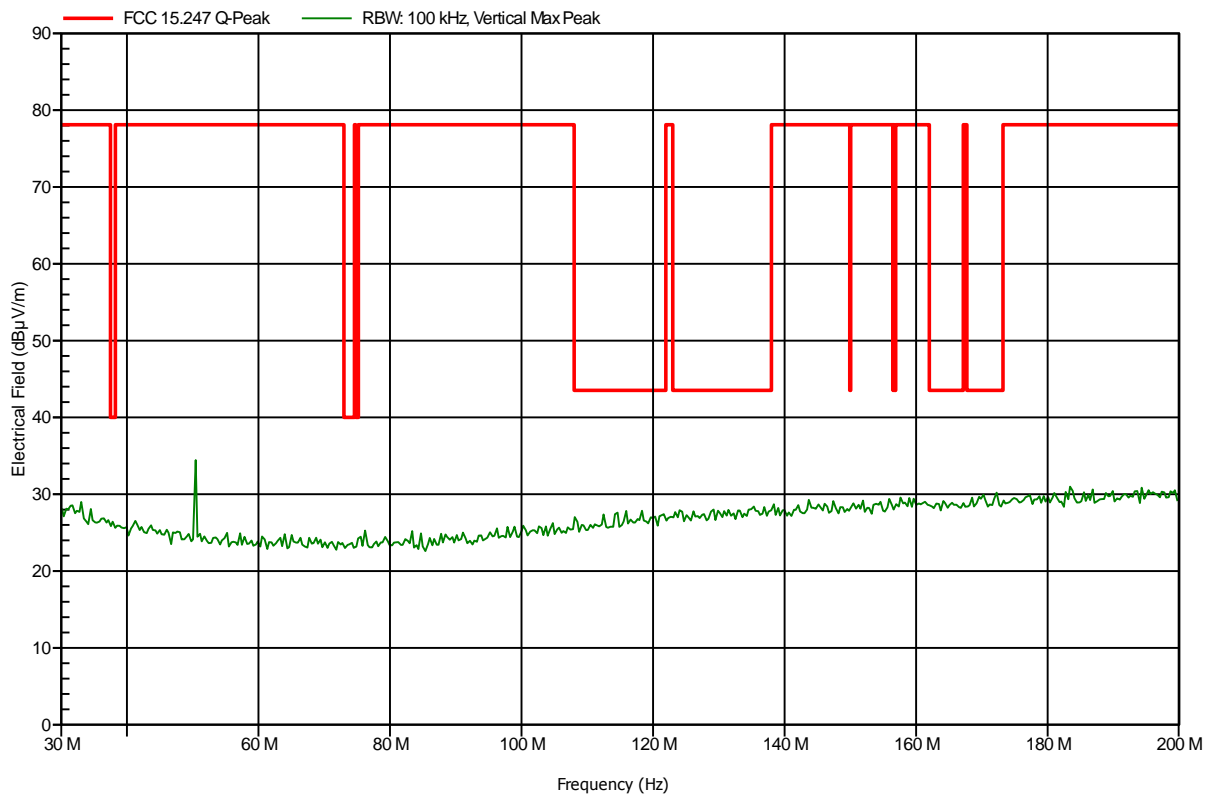


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	worst case

Index 66

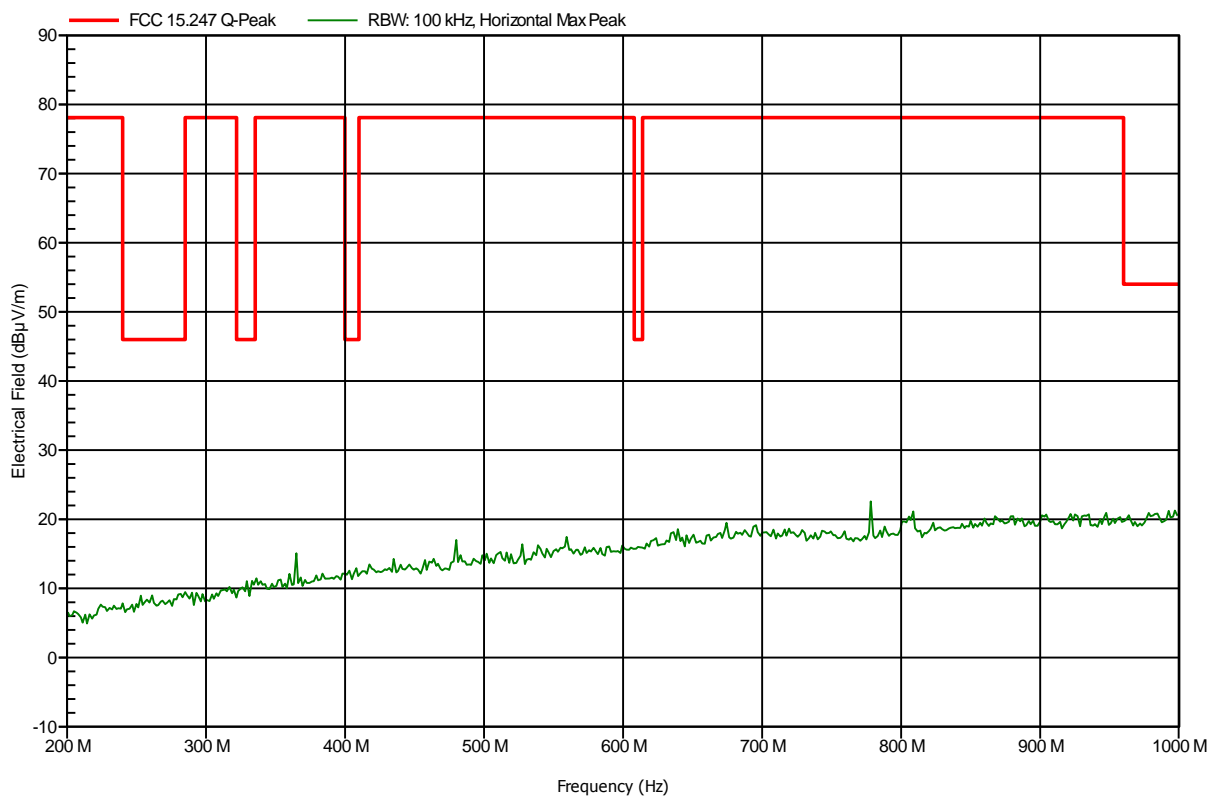


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	

Index 69

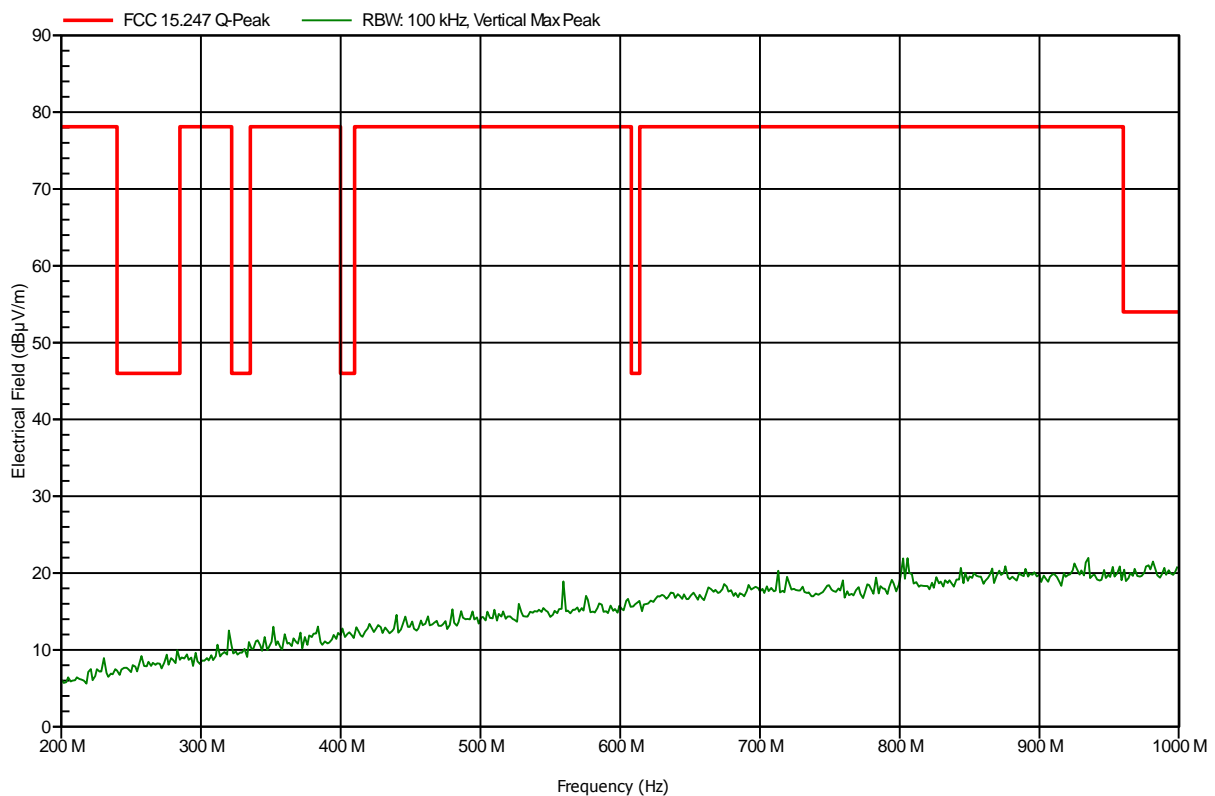


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	

Index 68

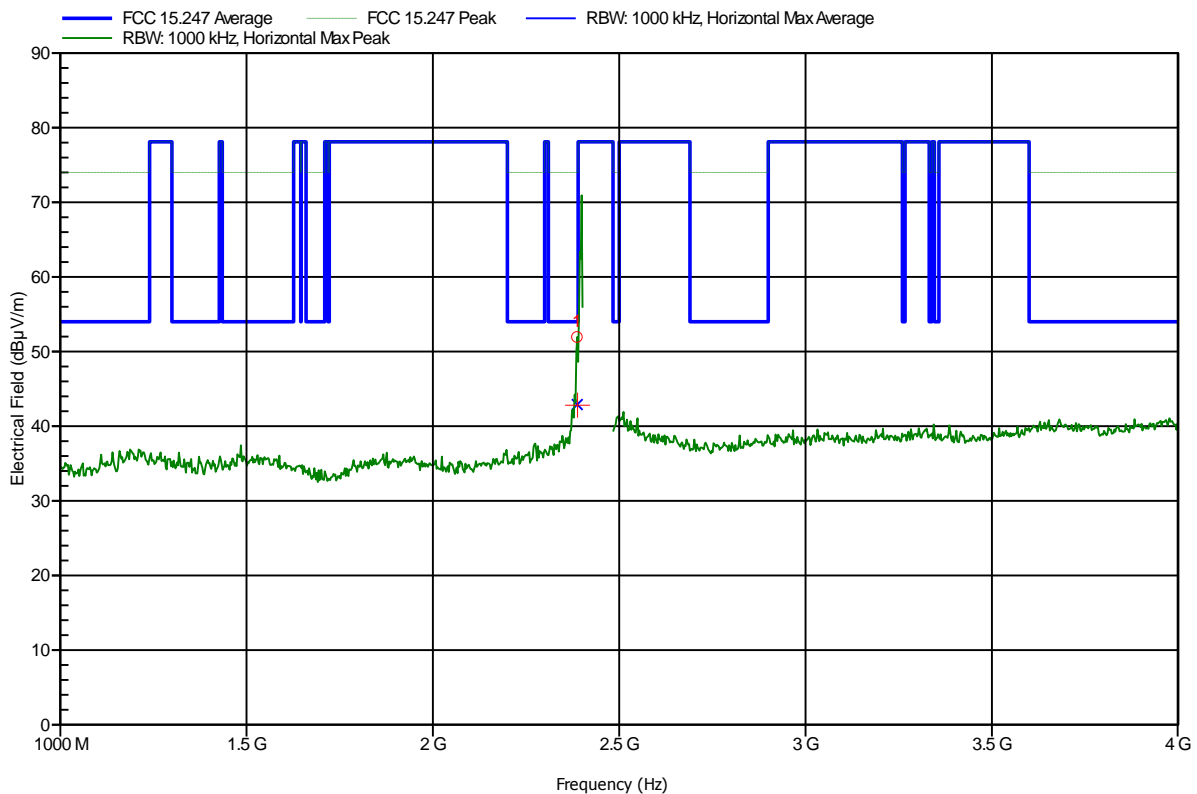


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; DSSS, 1Mbit/s, ch.1  
 Test Date: 2012-11-29  
 Note:

Index 73



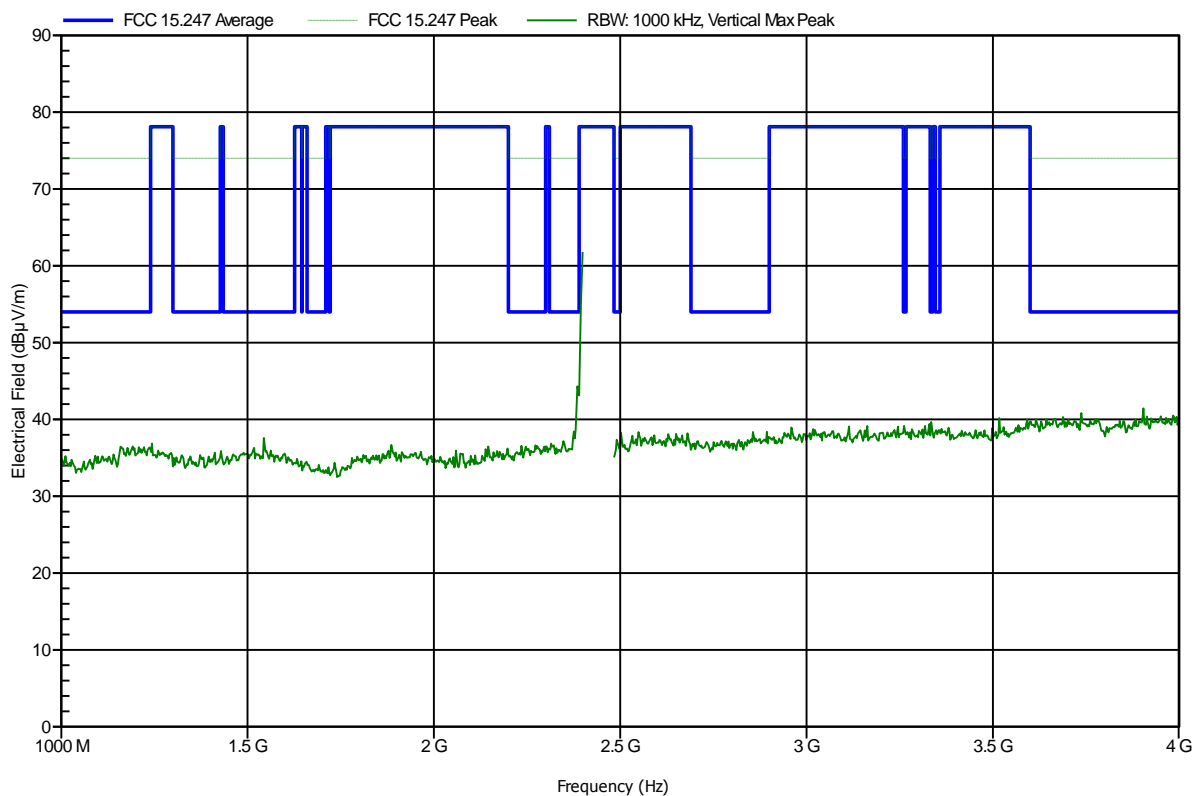
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.387 GHz	51.96 dBµV/m	74 dBµV/m	-22.04 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.387 GHz	42.9 dBµV/m	54 dBµV/m	-11.1 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	

Index 74

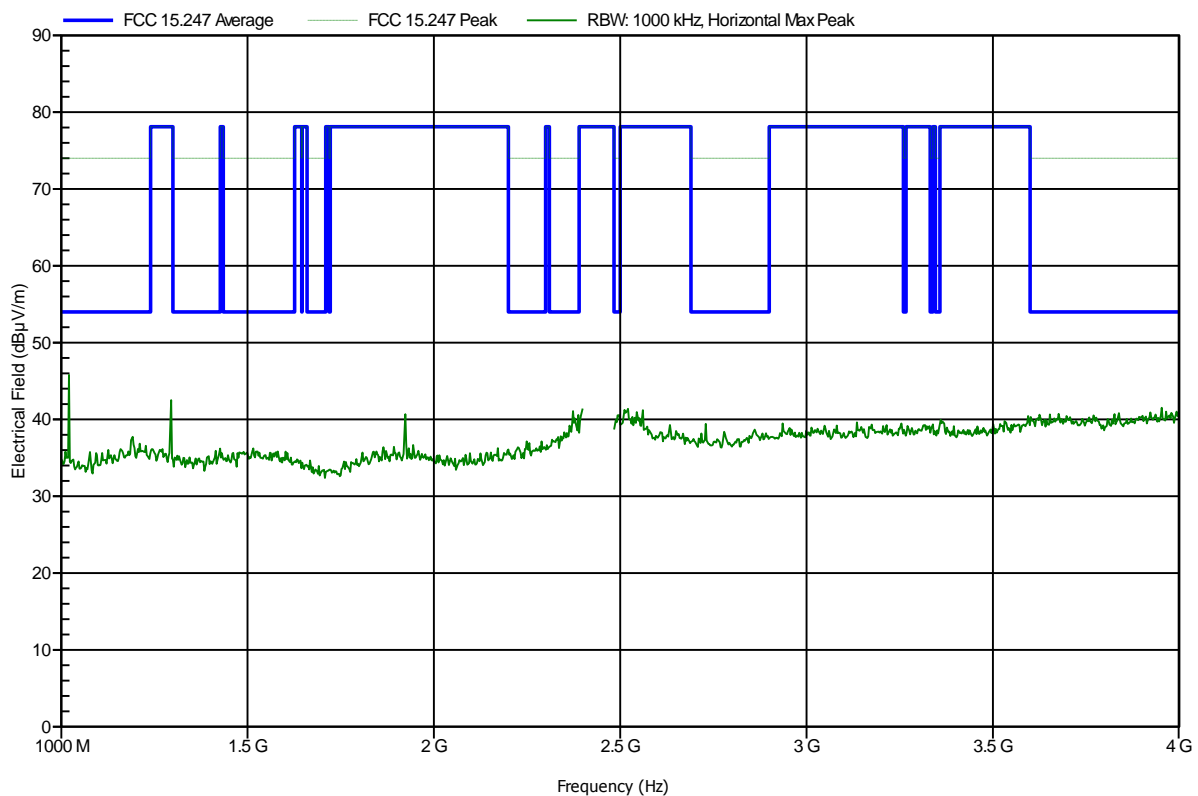


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.6
Test Date:	2012-11-29
Note:	

Index 76



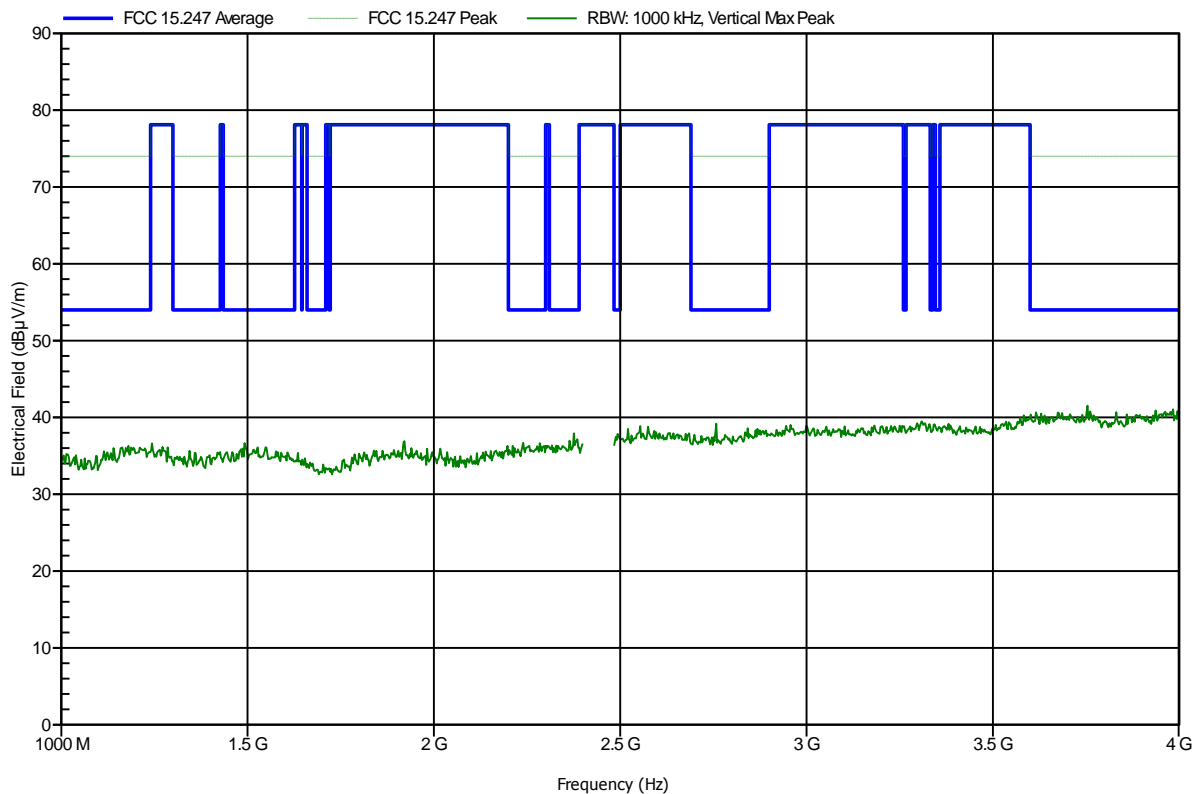


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.6
Test Date:	2012-11-29
Note:	

Index 75

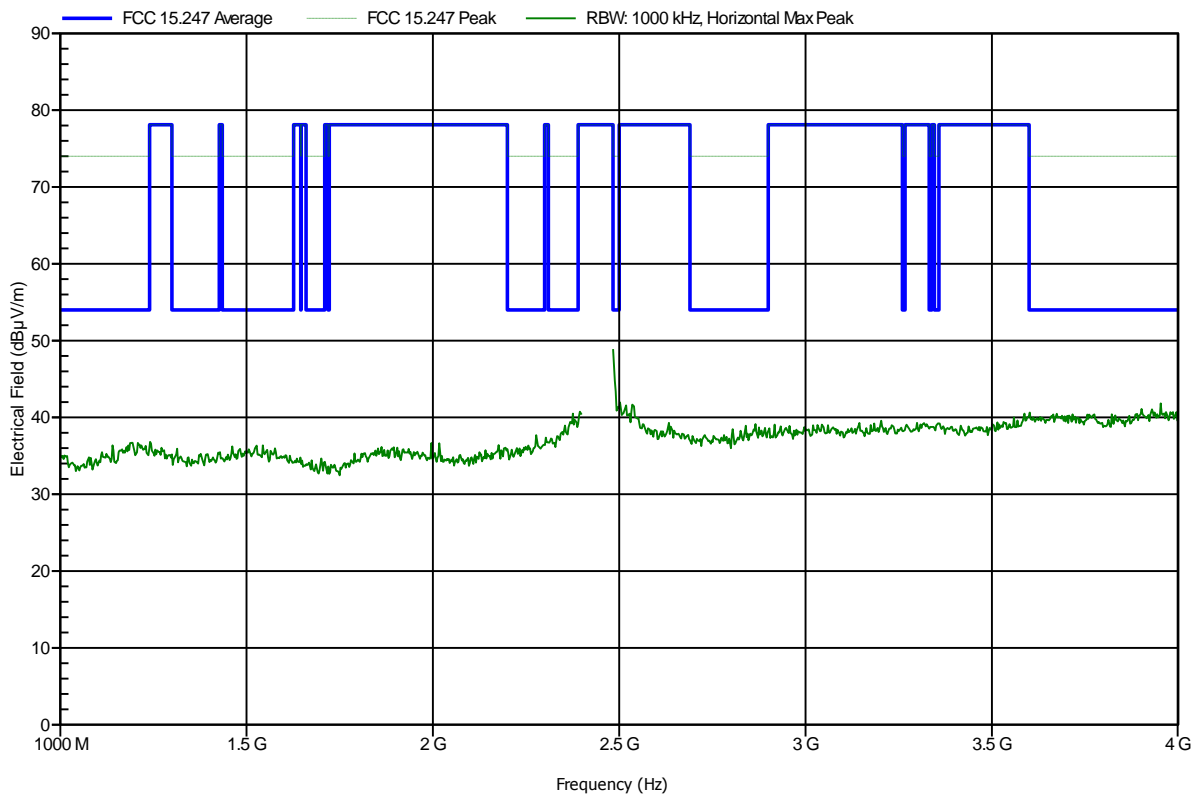


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.11
Test Date:	2012-11-29
Note:	

Index 77

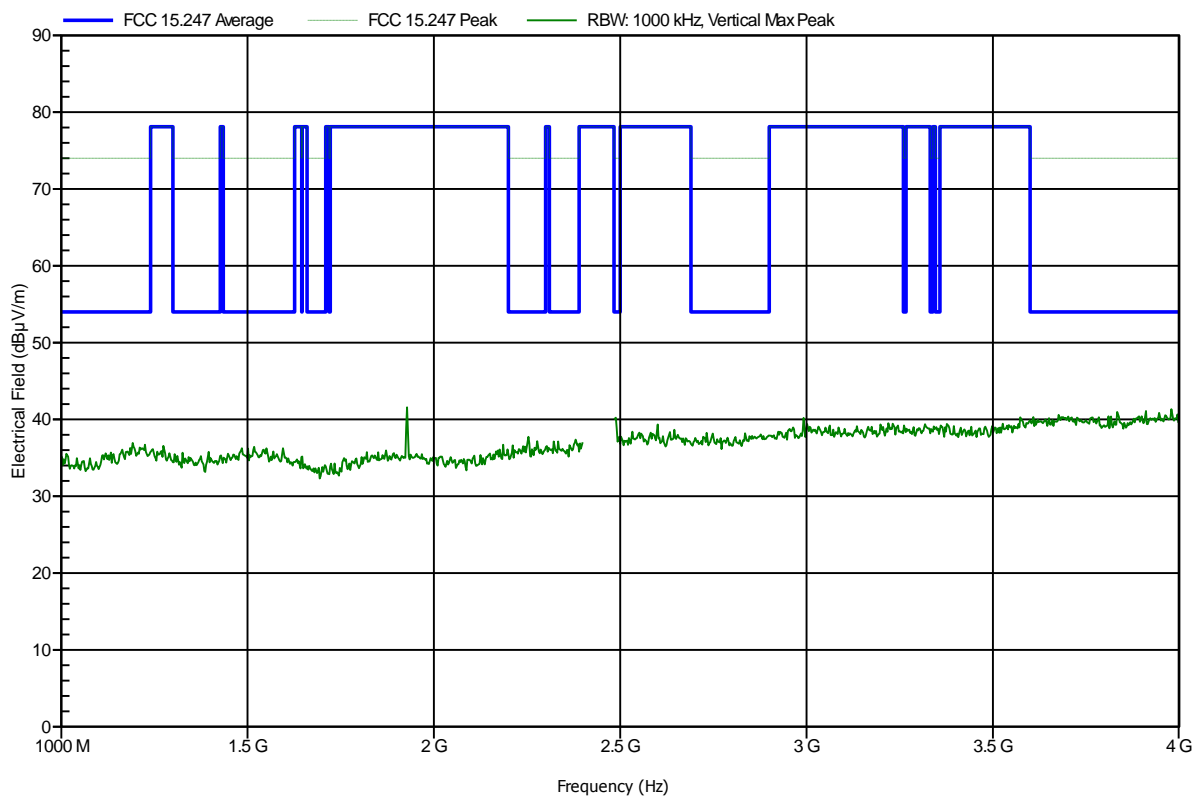


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.11
Test Date:	2012-11-29
Note:	

Index 78

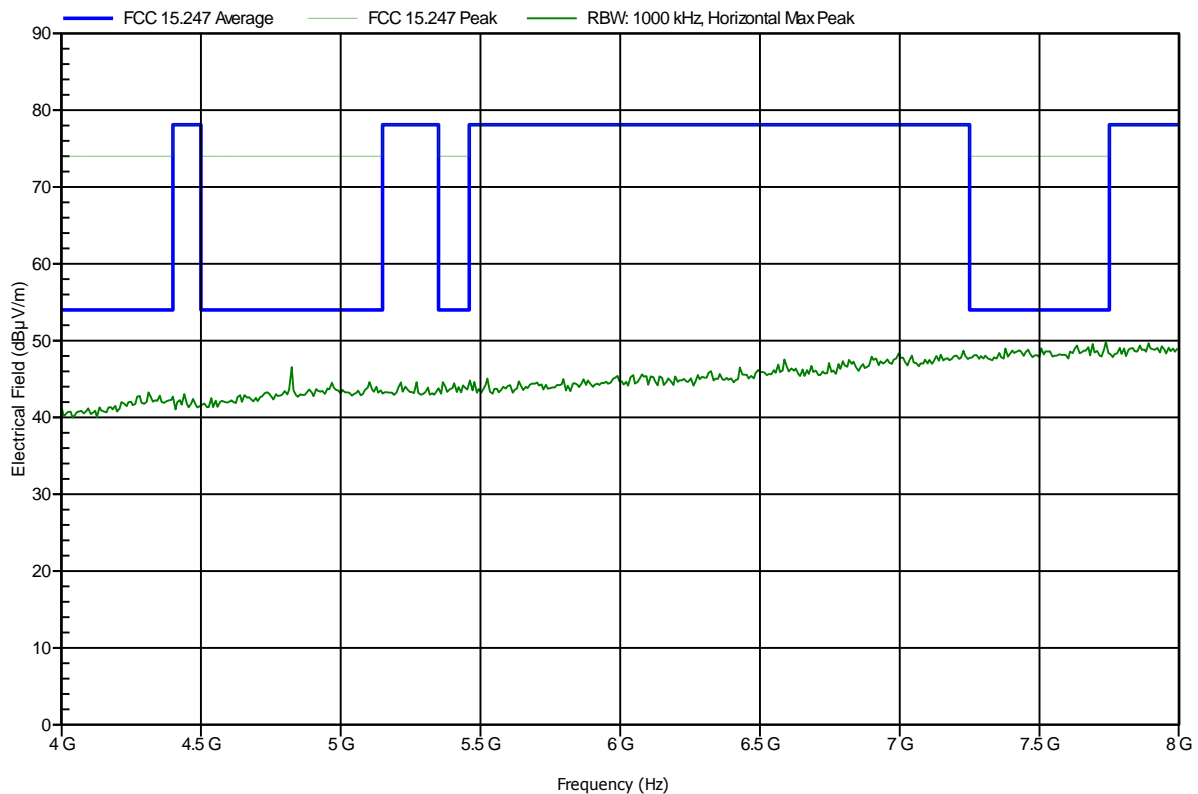


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	

Index 91

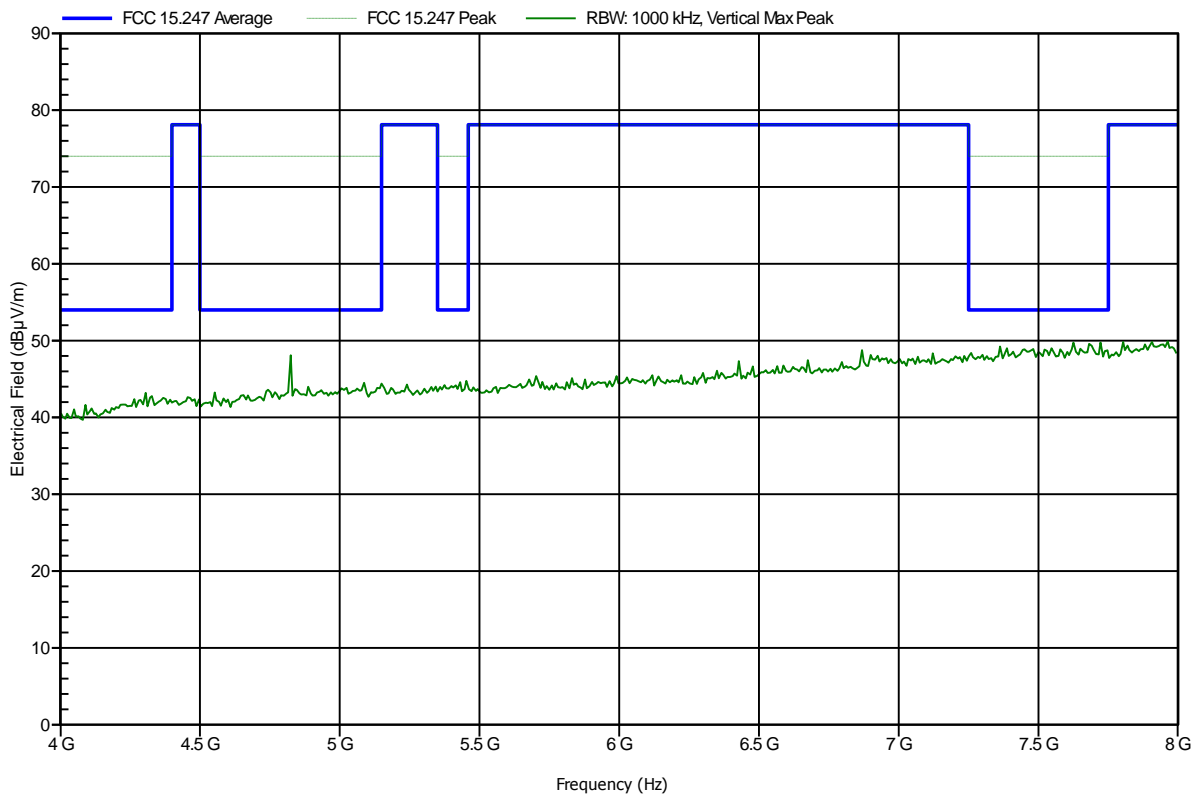


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.1
Test Date:	2012-11-29
Note:	

Index 92

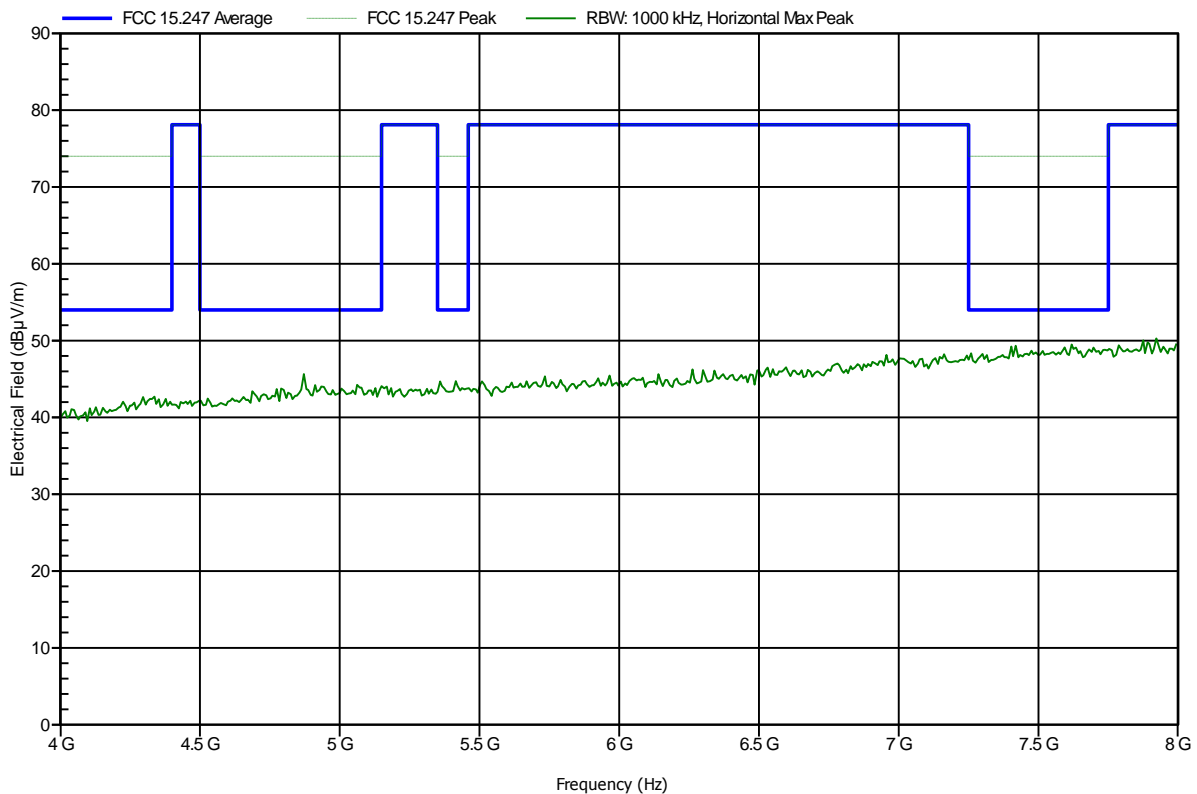


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.6
Test Date:	2012-11-29
Note:	

Index 94

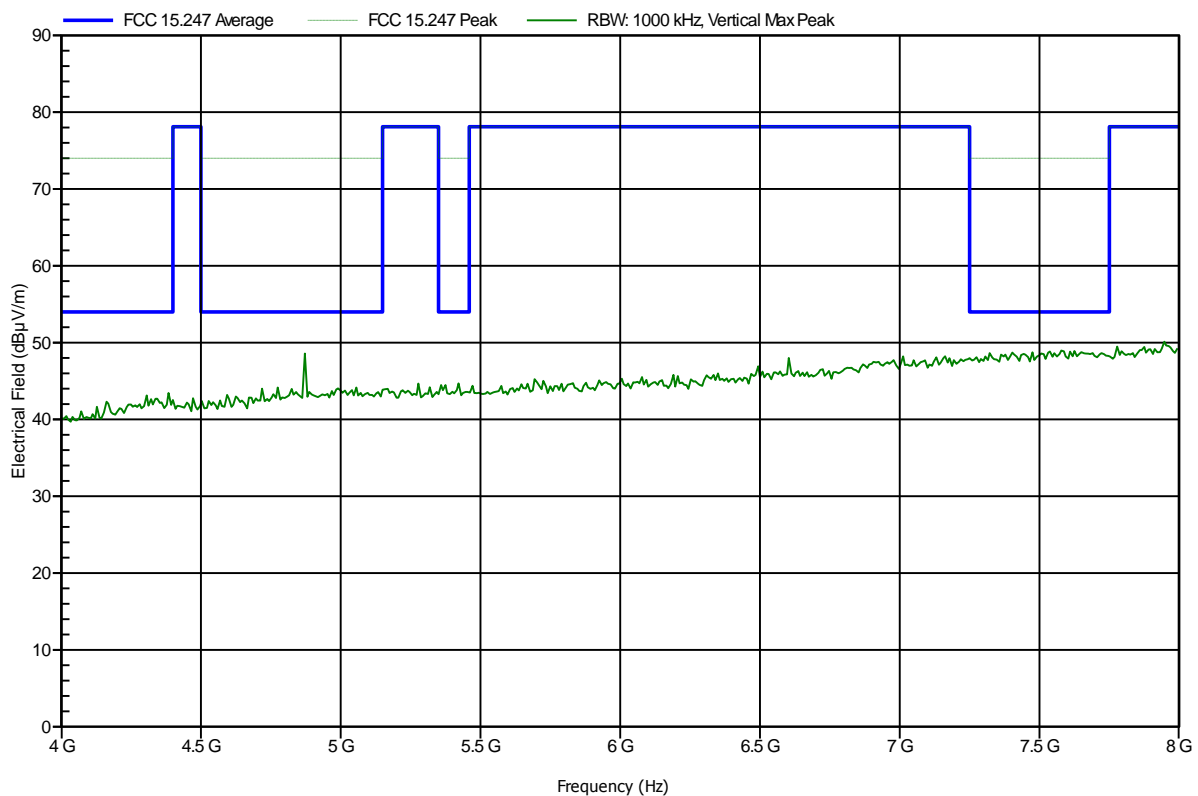


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.6
Test Date:	2012-11-29
Note:	

Index 93

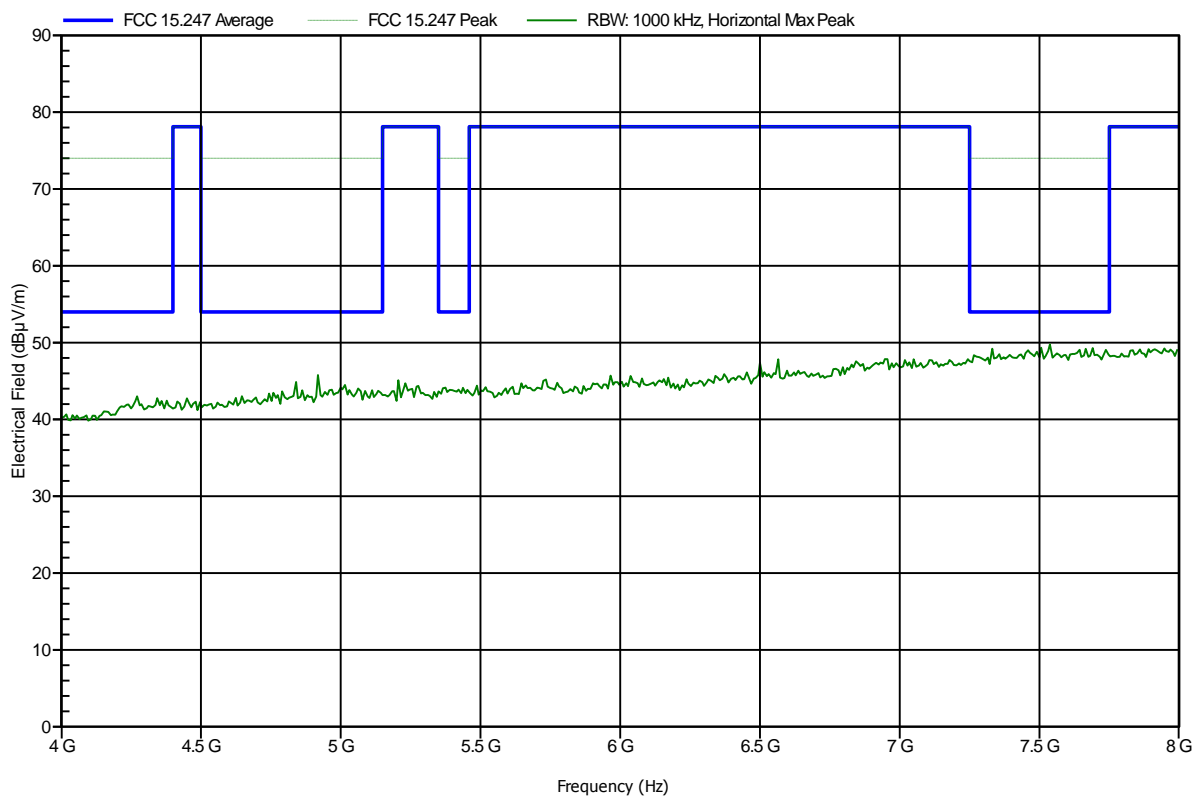


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.11
Test Date:	2012-11-29
Note:	

Index 95



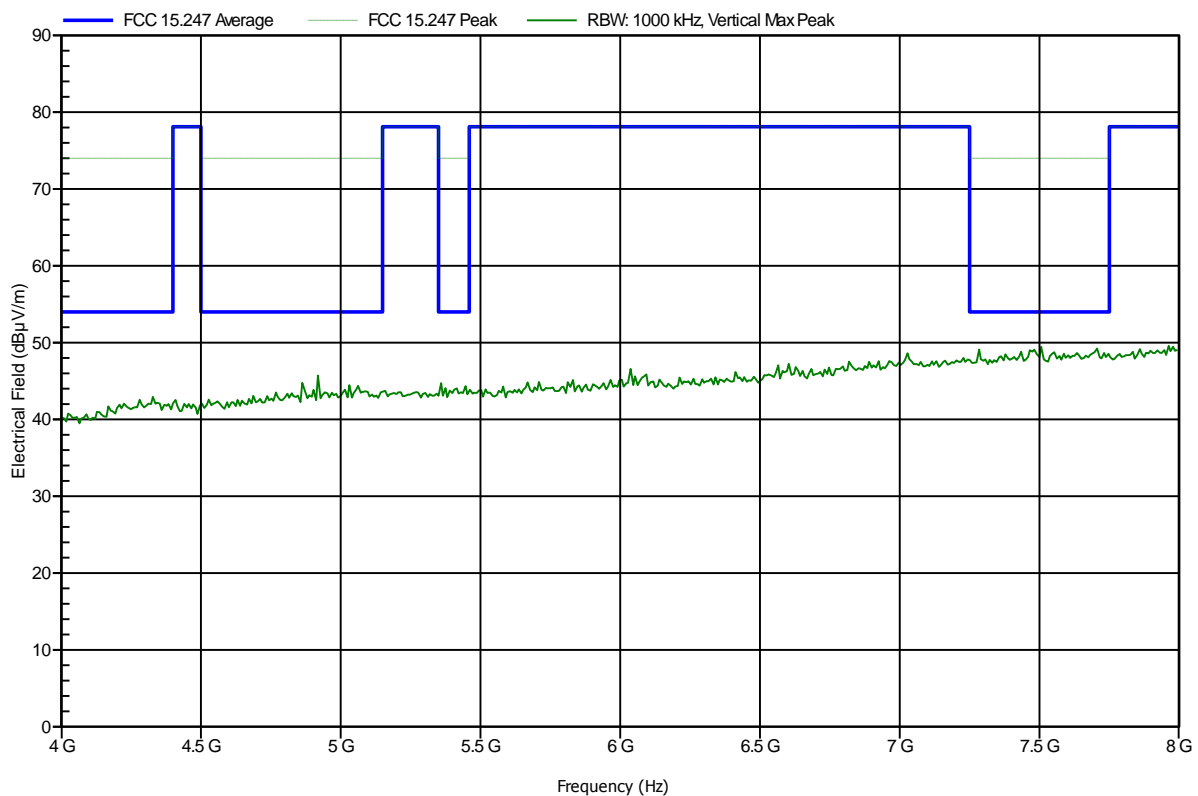


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; DSSS, 1Mbit/s, ch.11
Test Date:	2012-11-29
Note:	

Index 96

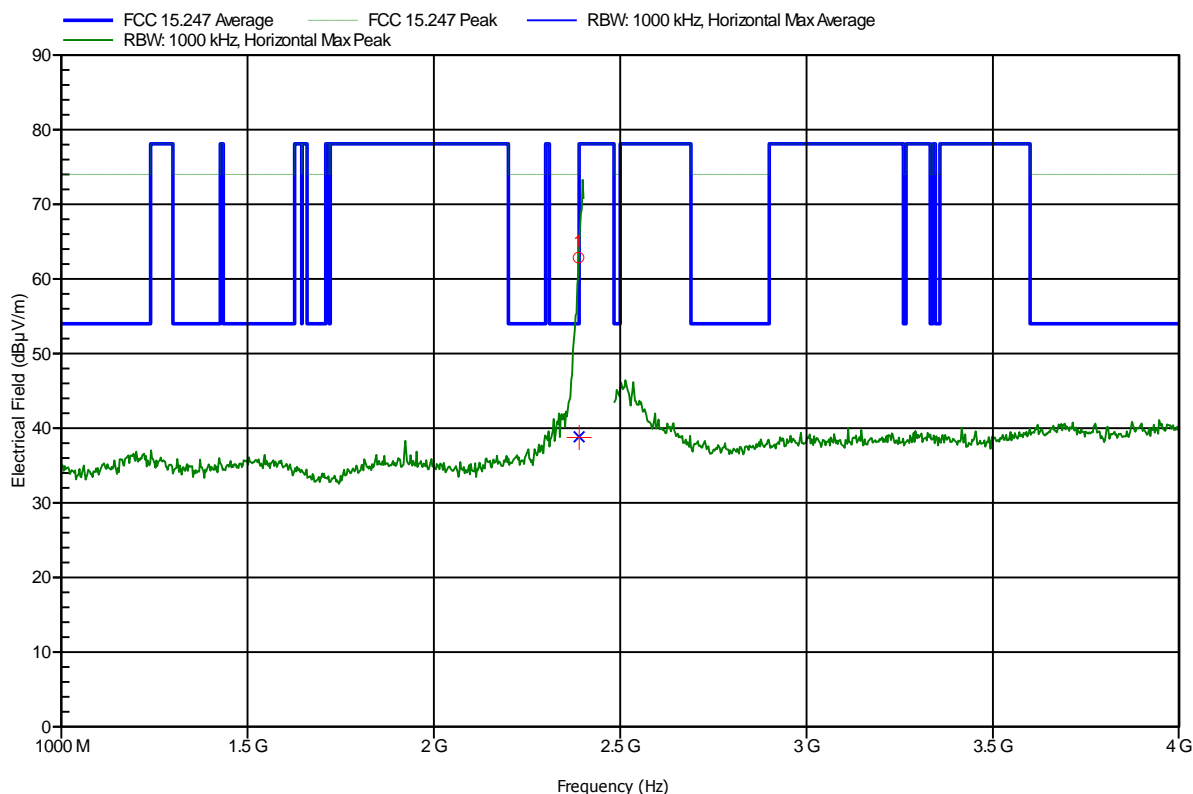


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; HT20, MCS0, ch.1  
 Test Date: 2012-11-29  
 Note:

Index 80



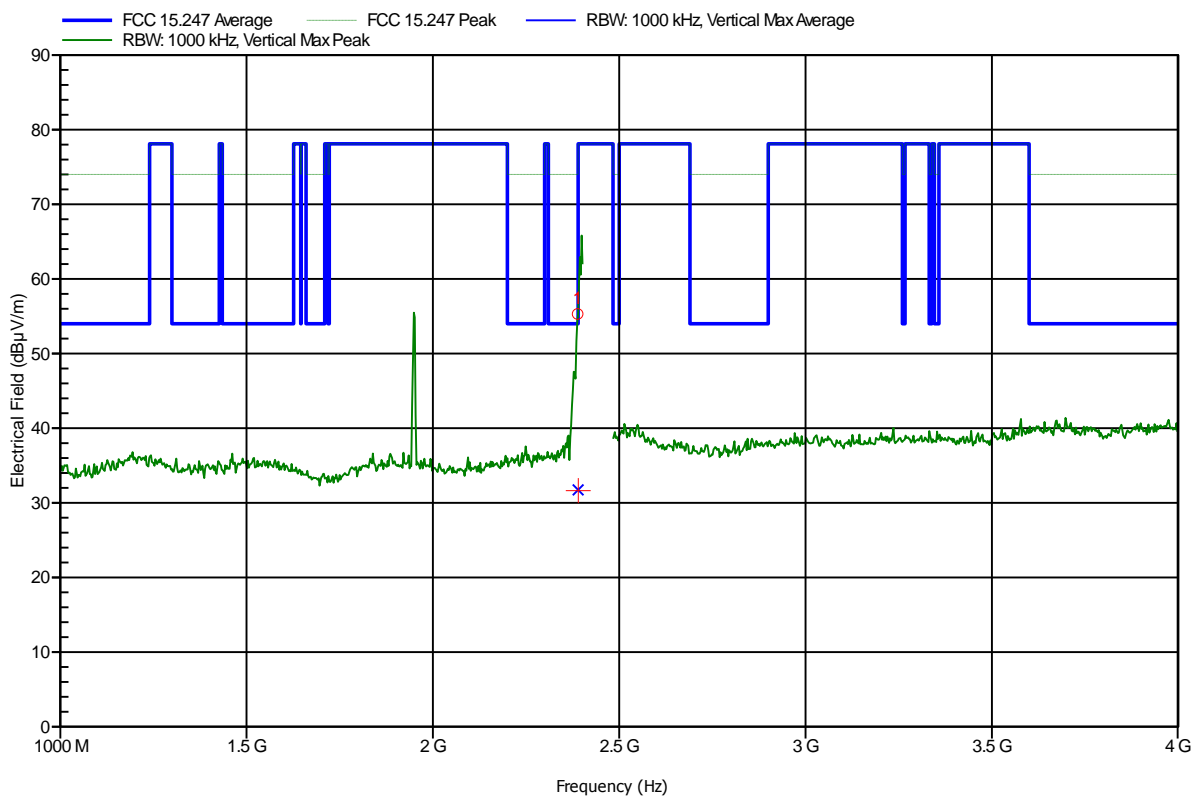
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.388 GHz	62.85 dBµV/m	74 dBµV/m	-11.15 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.388 GHz	38.84 dBµV/m	54 dBµV/m	-15.16 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Vertical  
 Measurement distance: 3 m  
 Mode: TX; HT20, MCS0, ch.1  
 Test Date: 2012-11-29  
 Note:

Index 79



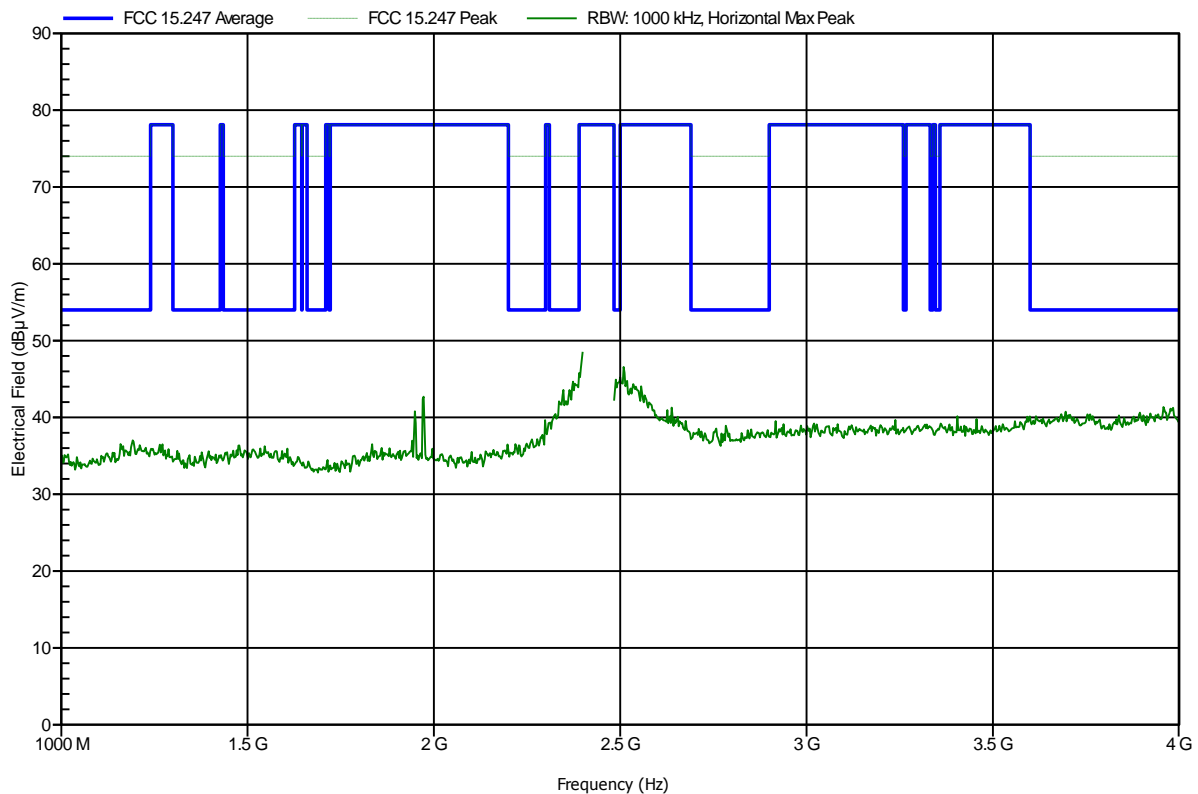
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.389 GHz	55.3 dBµV/m	74 dBµV/m	-18.7 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.389 GHz	31.72 dBµV/m	54 dBµV/m	-22.28 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.6
Test Date:	2012-11-29
Note:	

Index 81

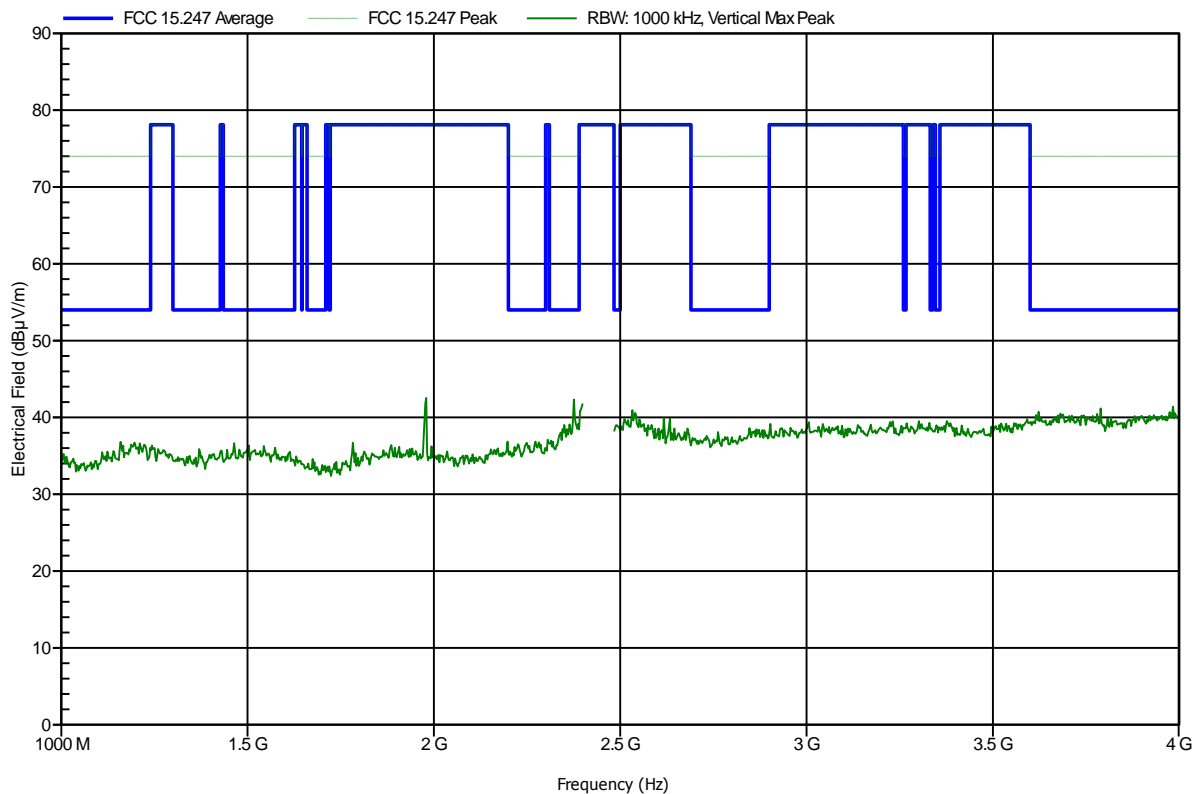


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.6
Test Date:	2012-11-29
Note:	

Index 82

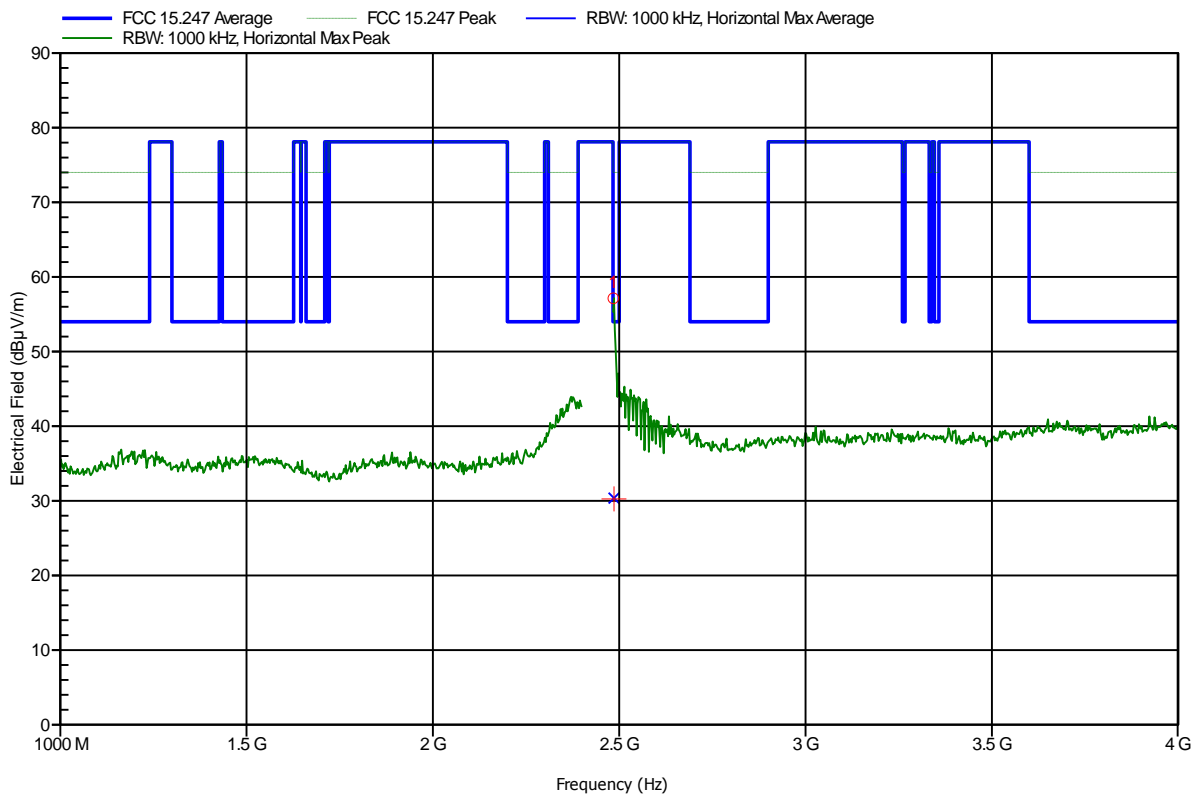


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; HT20, MCS0, ch.11  
 Test Date: 2012-11-29  
 Note:

Index 84



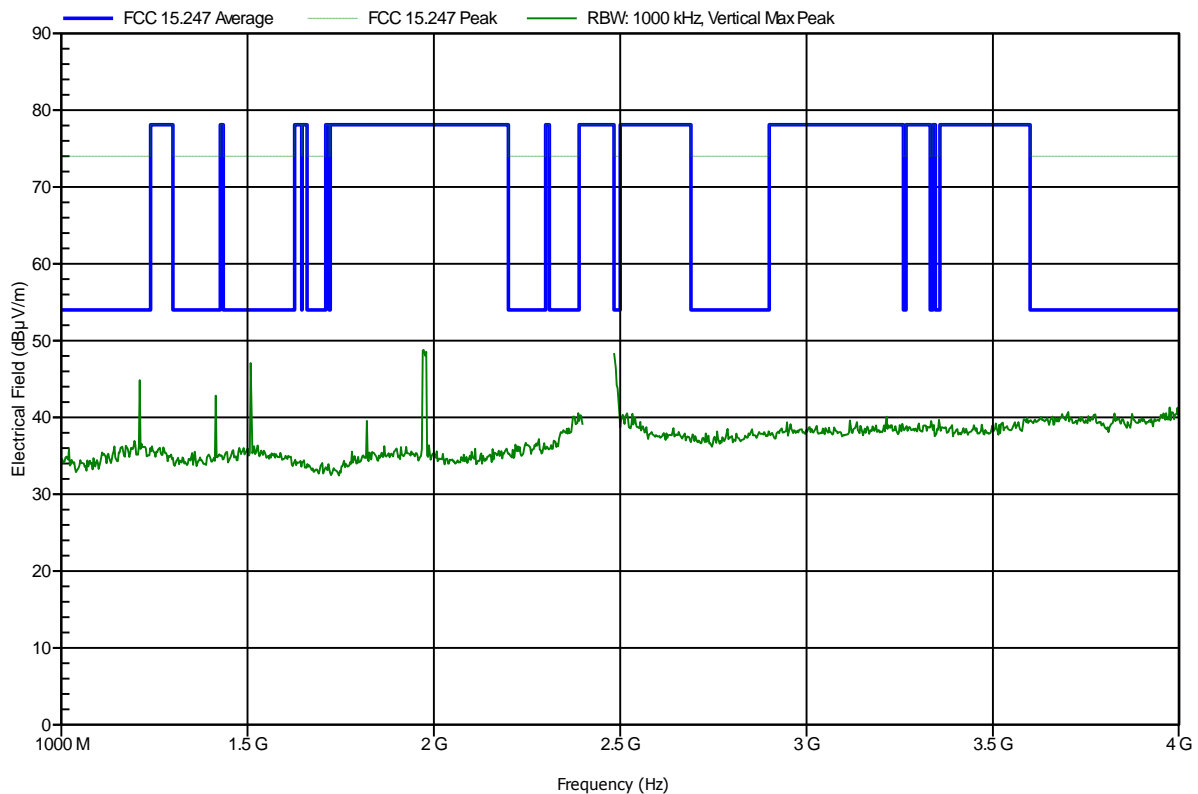
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.484 GHz	57.14 dBµV/m	74 dBµV/m	-16.86 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.484 GHz	30.34 dBµV/m	54 dBµV/m	-23.66 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.11
Test Date:	2012-11-29
Note:	

Index 83

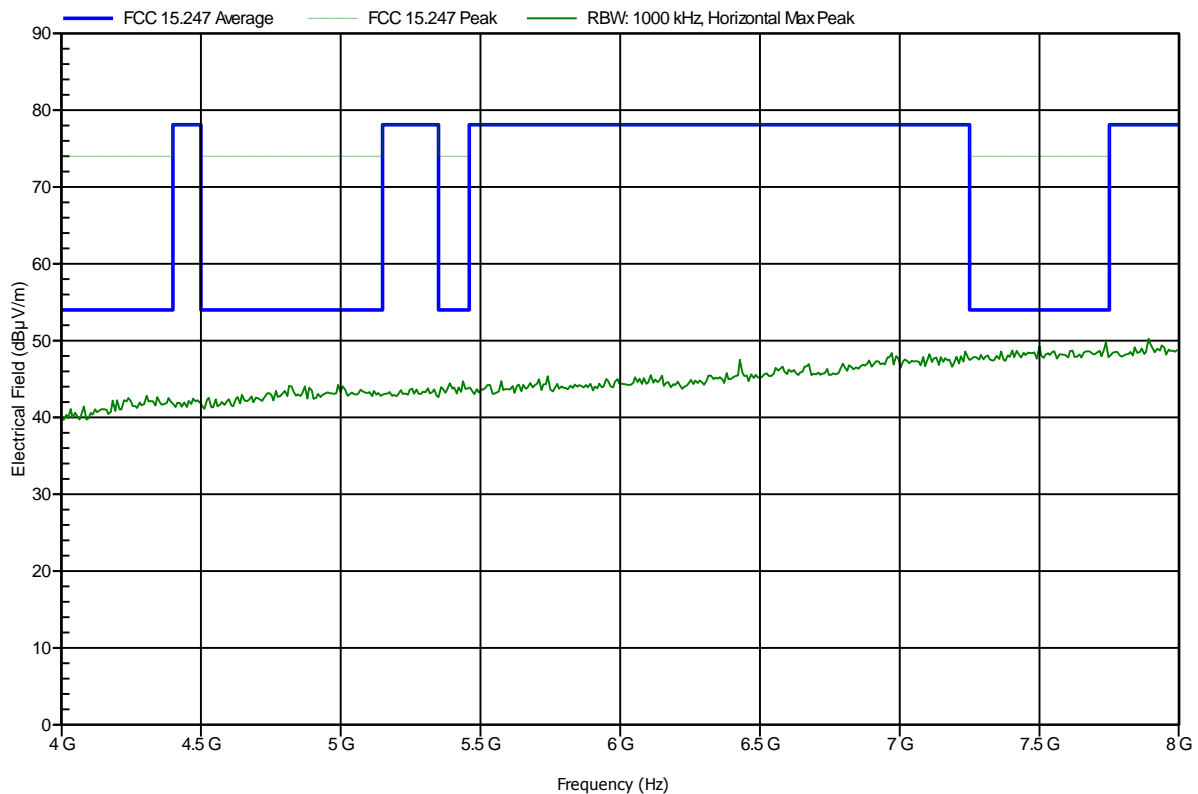


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.1
Test Date:	2012-11-29
Note:	

Index 98



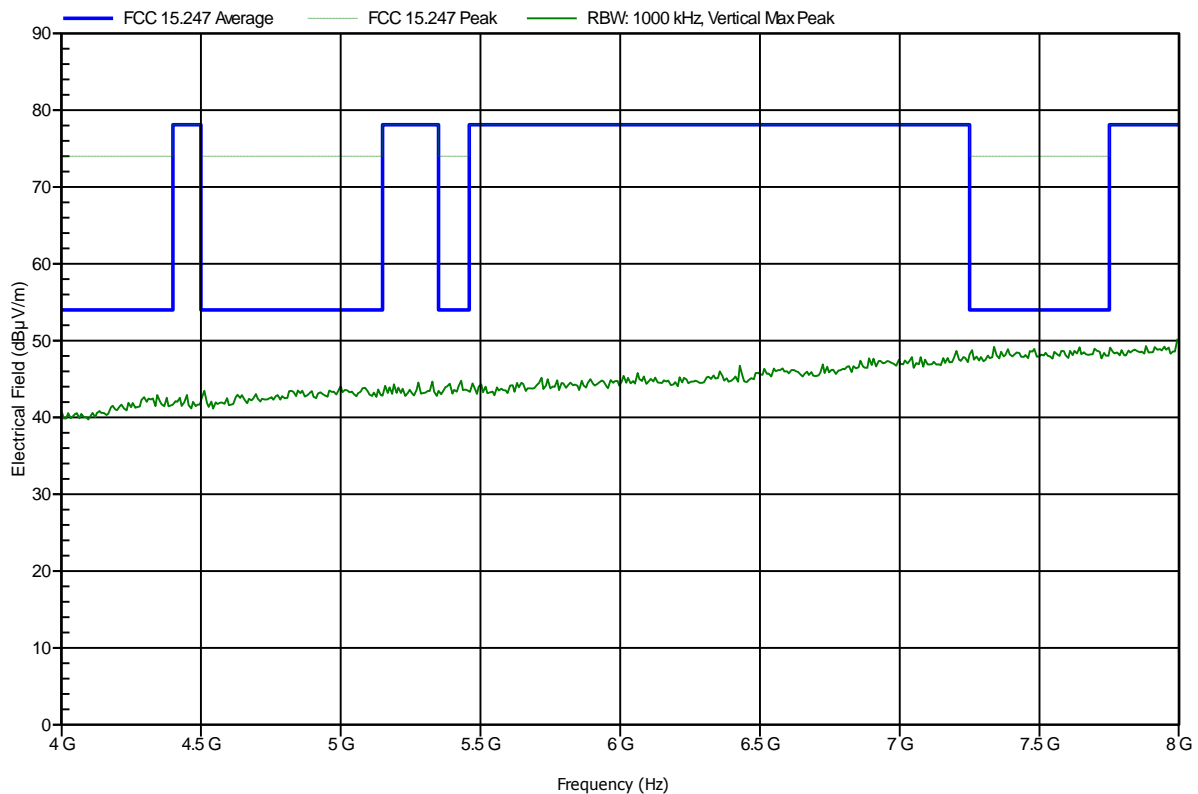


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.1
Test Date:	2012-11-29
Note:	

Index 97

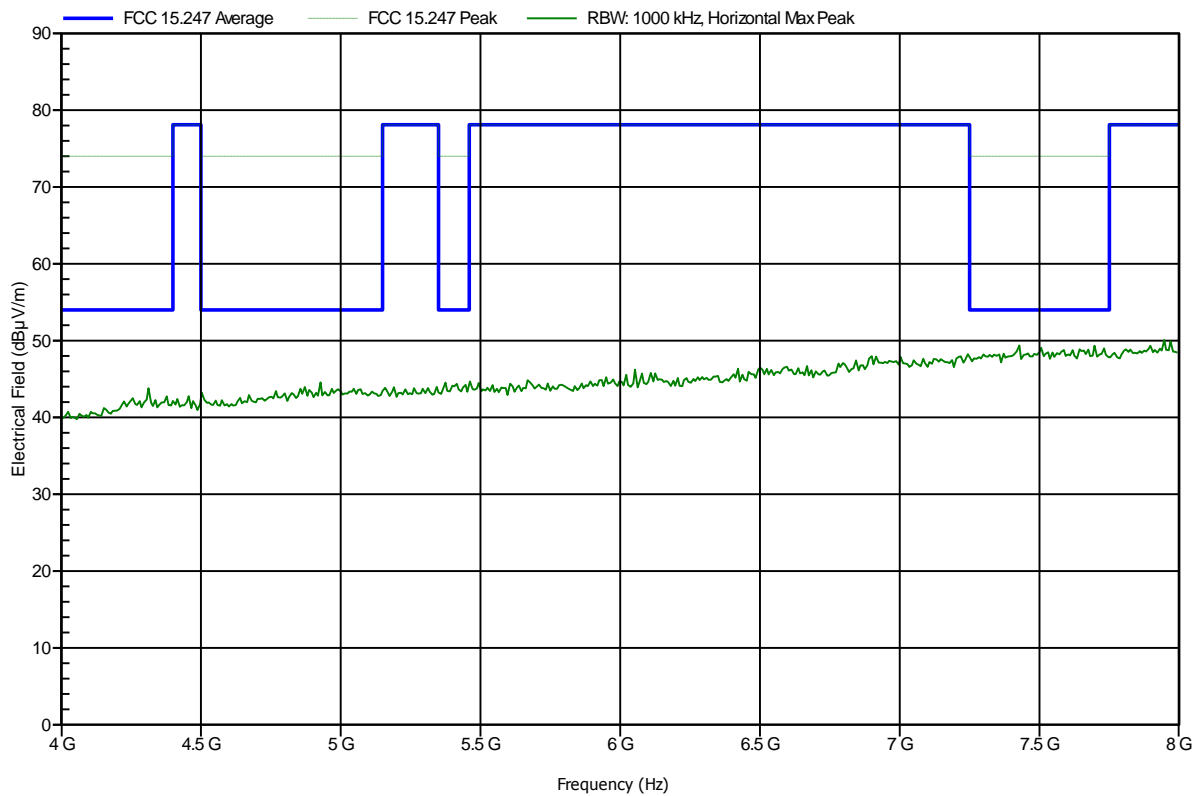


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.6
Test Date:	2012-11-29
Note:	

Index 99

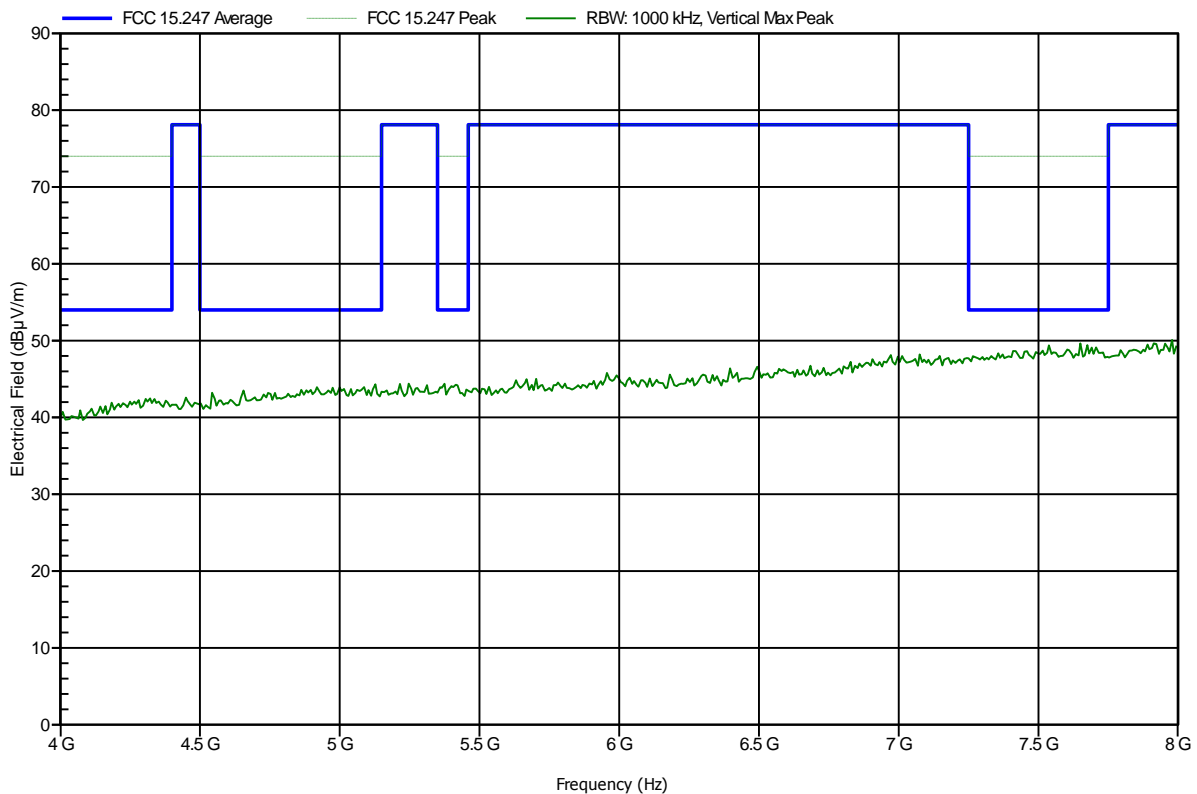


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.6
Test Date:	2012-11-29
Note:	

Index 100

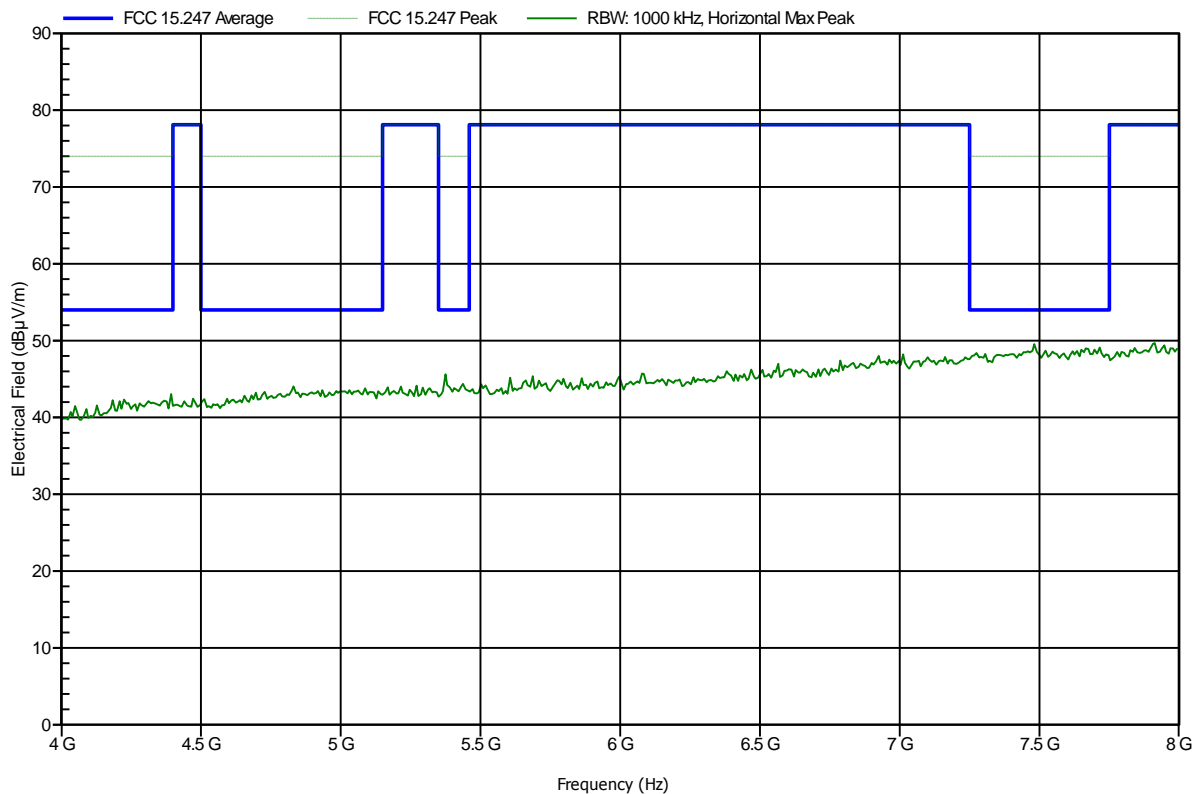


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.11
Test Date:	2012-11-29
Note:	

Index 102

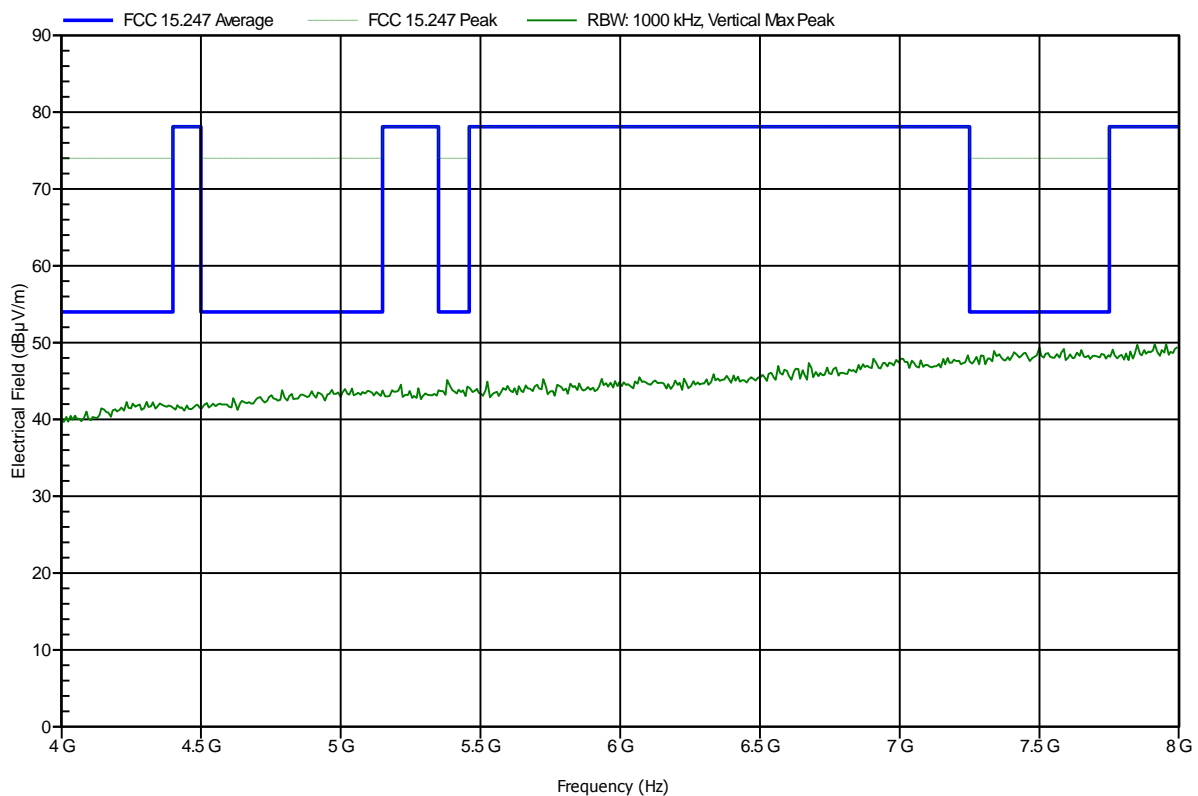


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT20, MCS0, ch.11
Test Date:	2012-11-29
Note:	

Index 101

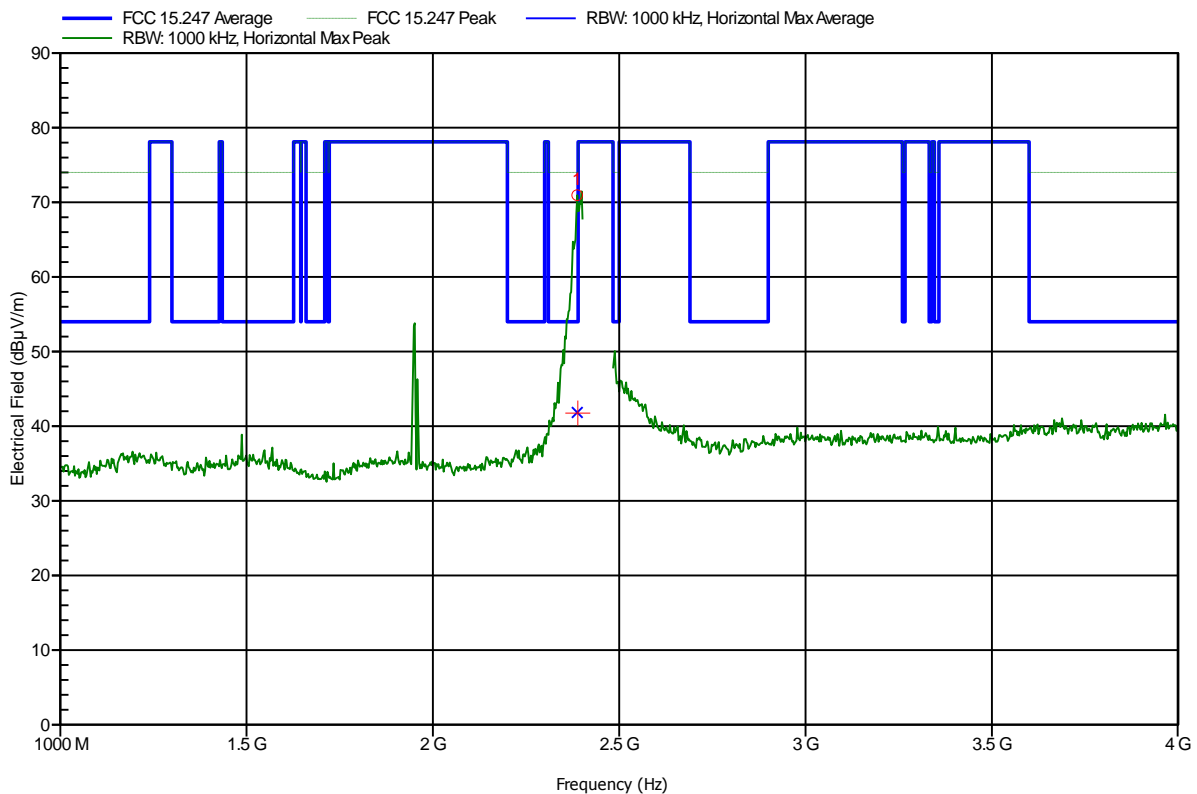


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; HT40,MCS0, ch.1-5  
 Test Date: 2012-11-29  
 Note:

Index 85



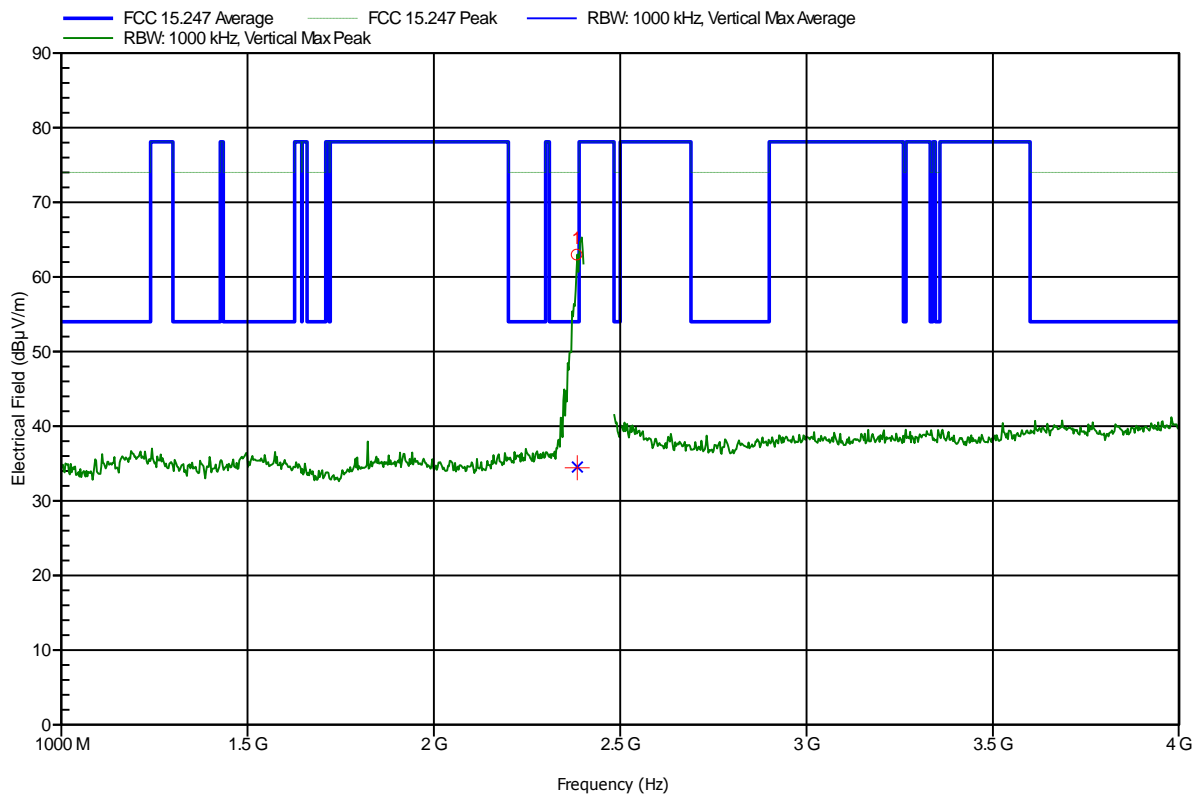
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.387 GHz	70.96 dBµV/m	74 dBµV/m	-3.04 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.387 GHz	41.84 dBµV/m	54 dBµV/m	-12.16 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Vertical  
 Measurement distance: 3 m  
 Mode: TX; HT40,MCS0, ch.1-5  
 Test Date: 2012-11-29  
 Note:

Index 86



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.383 GHz	63 dBµV/m	74 dBµV/m	-11 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.383 GHz	34.52 dBµV/m	54 dBµV/m	-19.48 dB	Pass

Test Report No.: G0M-1211-2443-TFC247W-V02

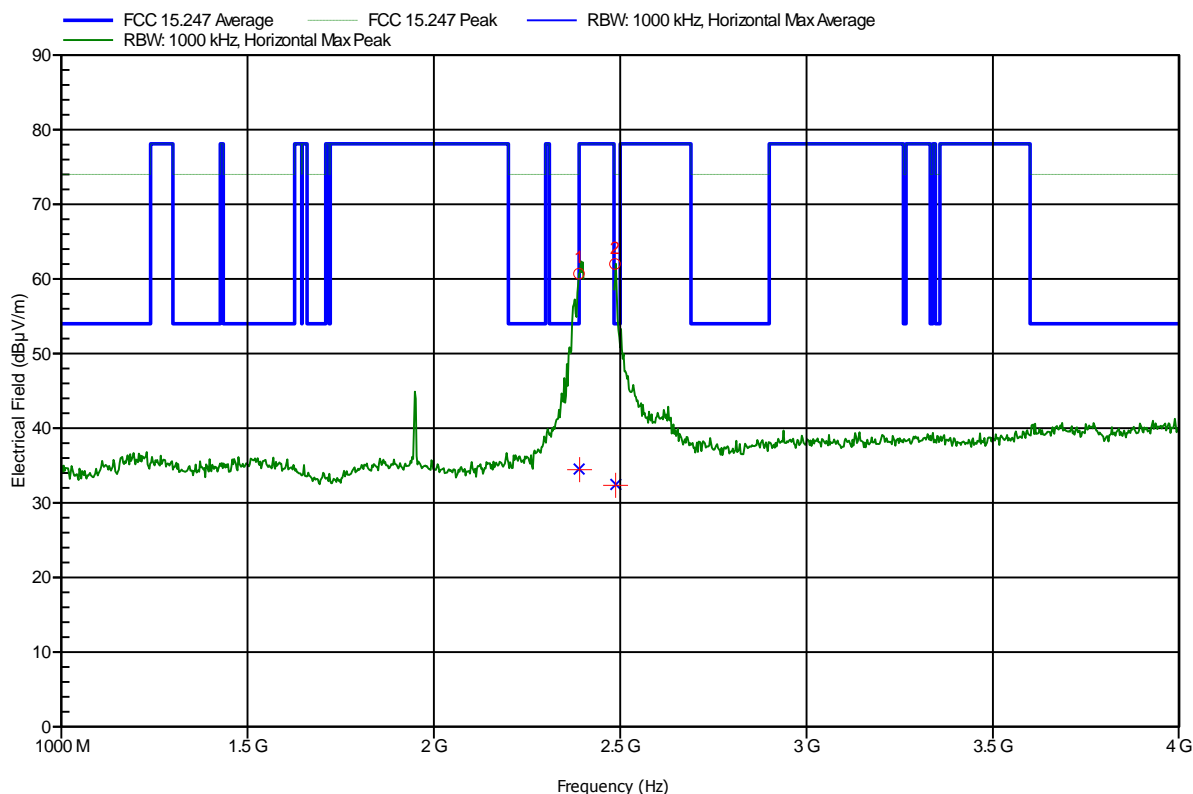
 Eurofins Product Service GmbH  
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; HT40,MCS0, ch.4-8  
 Test Date: 2012-11-29  
 Note:

Index 88



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.389 GHz	60.71 dBµV/m	74 dBµV/m	-13.29 dB	Pass
2.486 GHz	62 dBµV/m	74 dBµV/m	-12 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.389 GHz	34.53 dBµV/m	54 dBµV/m	-19.47 dB	Pass
2.486 GHz	32.43 dBµV/m	54 dBµV/m	-21.57 dB	Pass

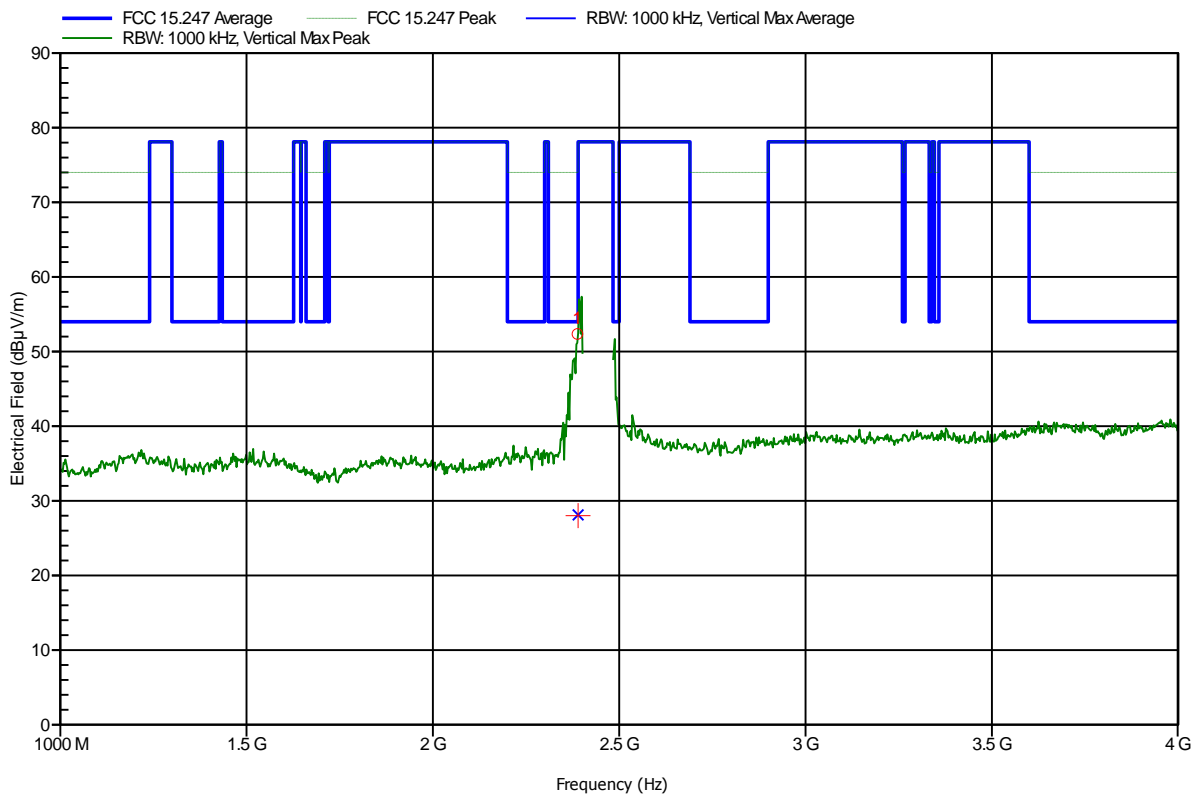


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Vertical  
 Measurement distance: 3 m  
 Mode: TX; HT40,MCS0, ch.4-8  
 Test Date: 2012-11-29  
 Note:

Index 87



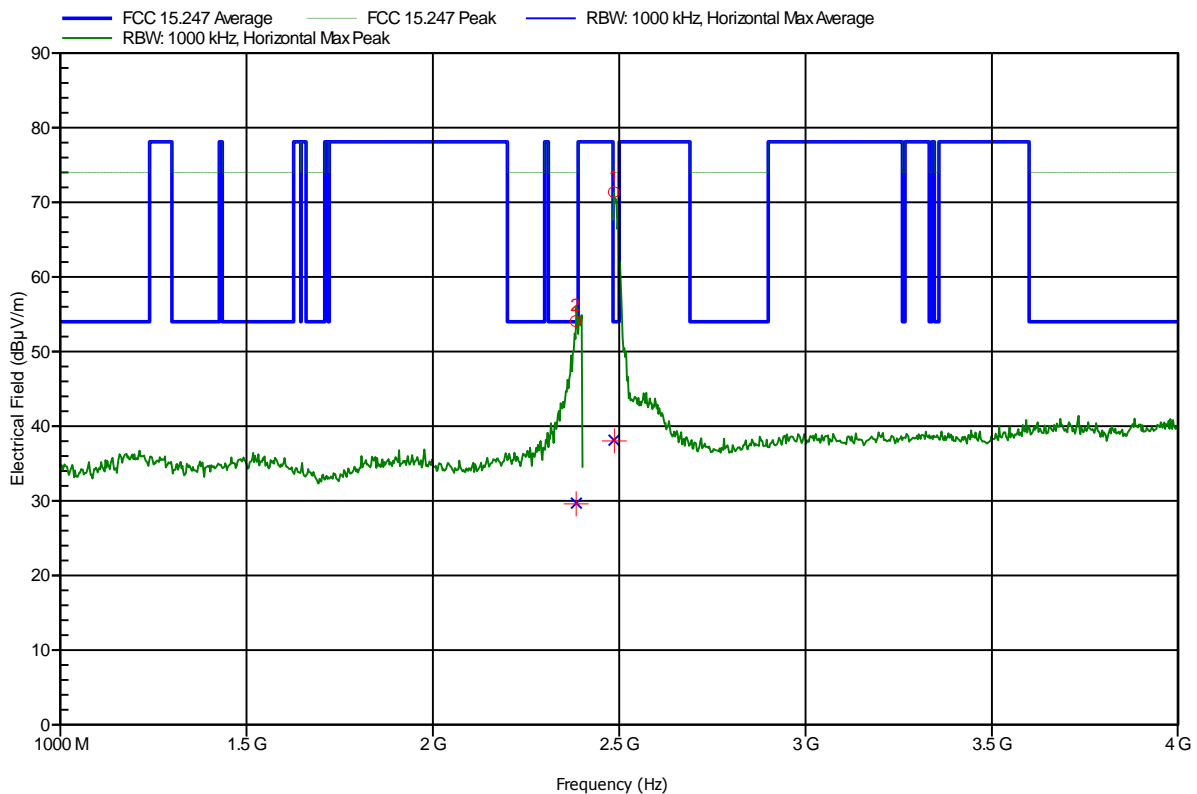
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.388 GHz	52.36 dBµV/m	74 dBµV/m	-21.64 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.388 GHz	28.1 dBµV/m	54 dBµV/m	-25.9 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; HT40,MCS0, ch.7-11  
 Test Date: 2012-11-29  
 Note:

Index 89



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.383 GHz	54.08 dBµV/m	74 dBµV/m	-19.92 dB	Pass
2.485 GHz	71.37 dBµV/m	74 dBµV/m	-2.63 dB	Pass

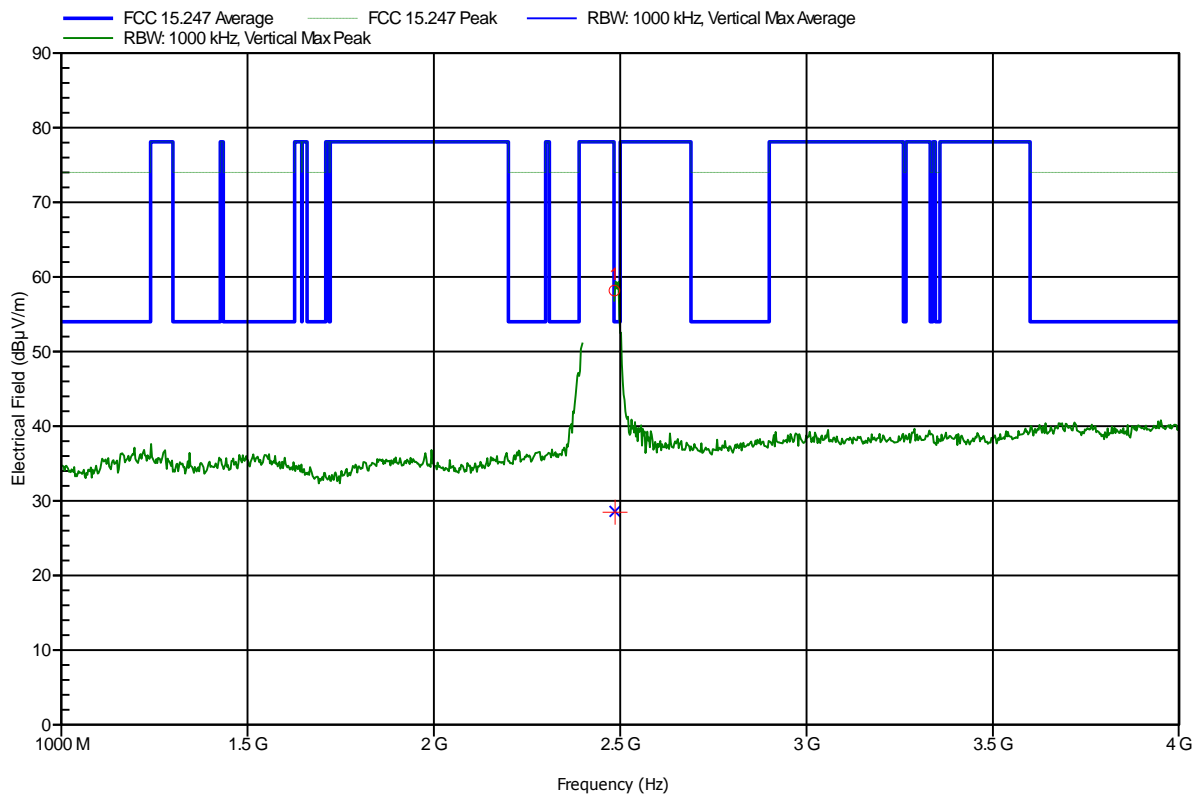
Frequency	Average	Average Limit	Average Difference	Average Status
2.383 GHz	29.68 dBµV/m	54 dBµV/m	-24.32 dB	Pass
2.485 GHz	38.11 dBµV/m	54 dBµV/m	-15.89 dB	Pass

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Schwarzbeck BBHA 9120D, Vertical  
 Measurement distance: 3 m  
 Mode: TX; HT40,MCS0, ch.7-11  
 Test Date: 2012-11-29  
 Note:

Index 90



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.485 GHz	58.18 dBµV/m	74 dBµV/m	-15.82 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.485 GHz	28.56 dBµV/m	54 dBµV/m	-25.44 dB	Pass

Test Report No.: G0M-1211-2443-TFC247W-V02

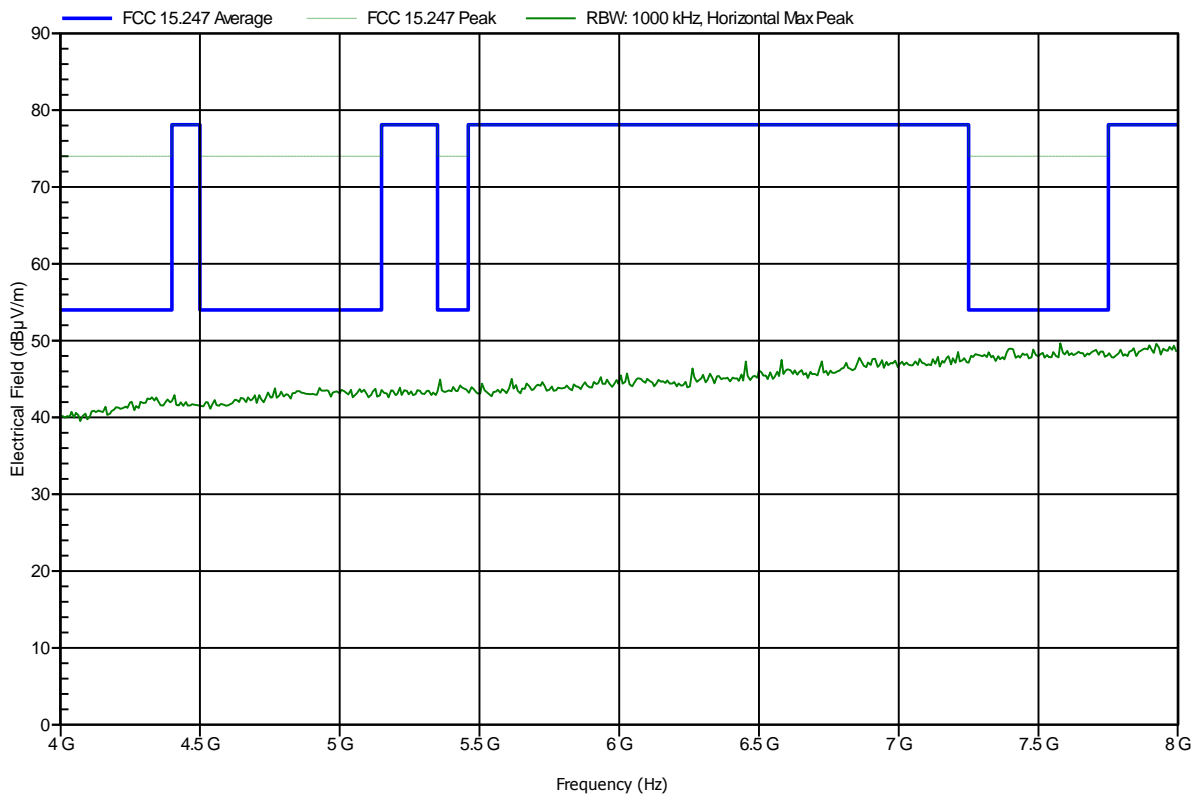
 Eurofins Product Service GmbH  
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT40, MCS0, ch.1-5
Test Date:	2012-11-29
Note:	

Index 103

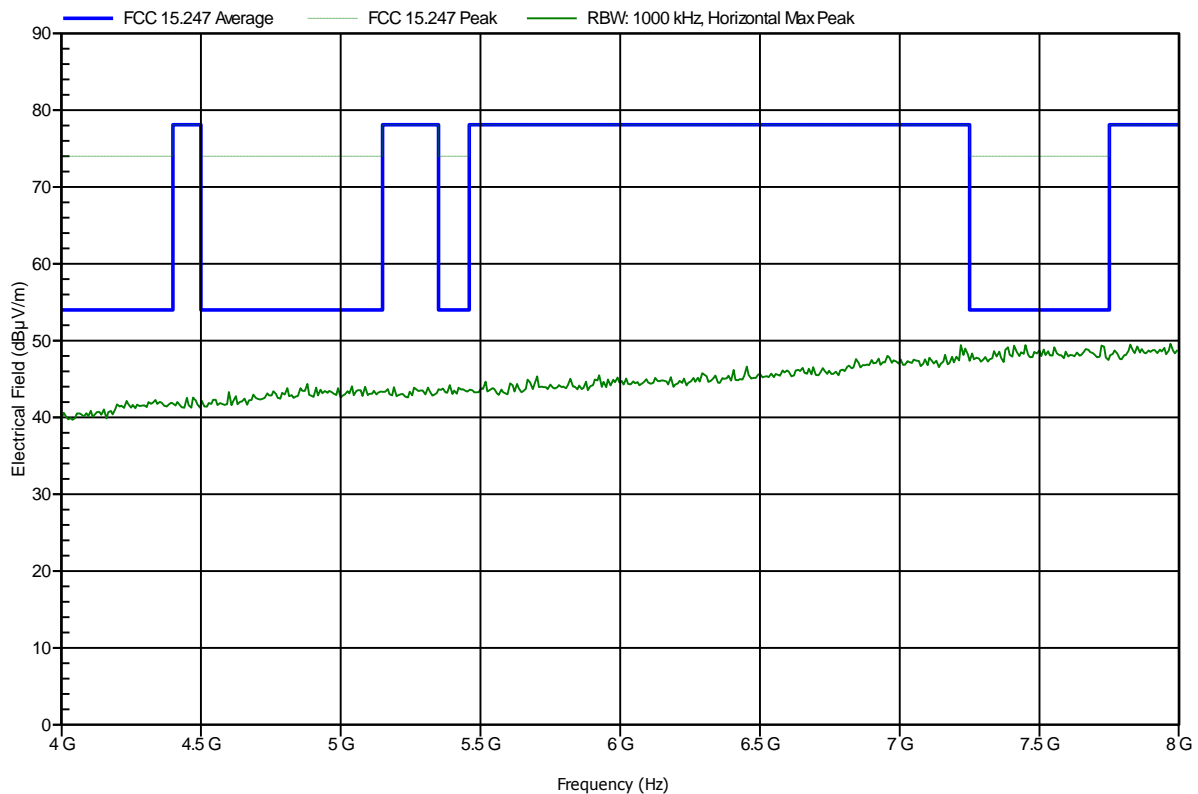


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT40, MCS0, ch.1-5
Test Date:	2012-11-29
Note:	

Index 104

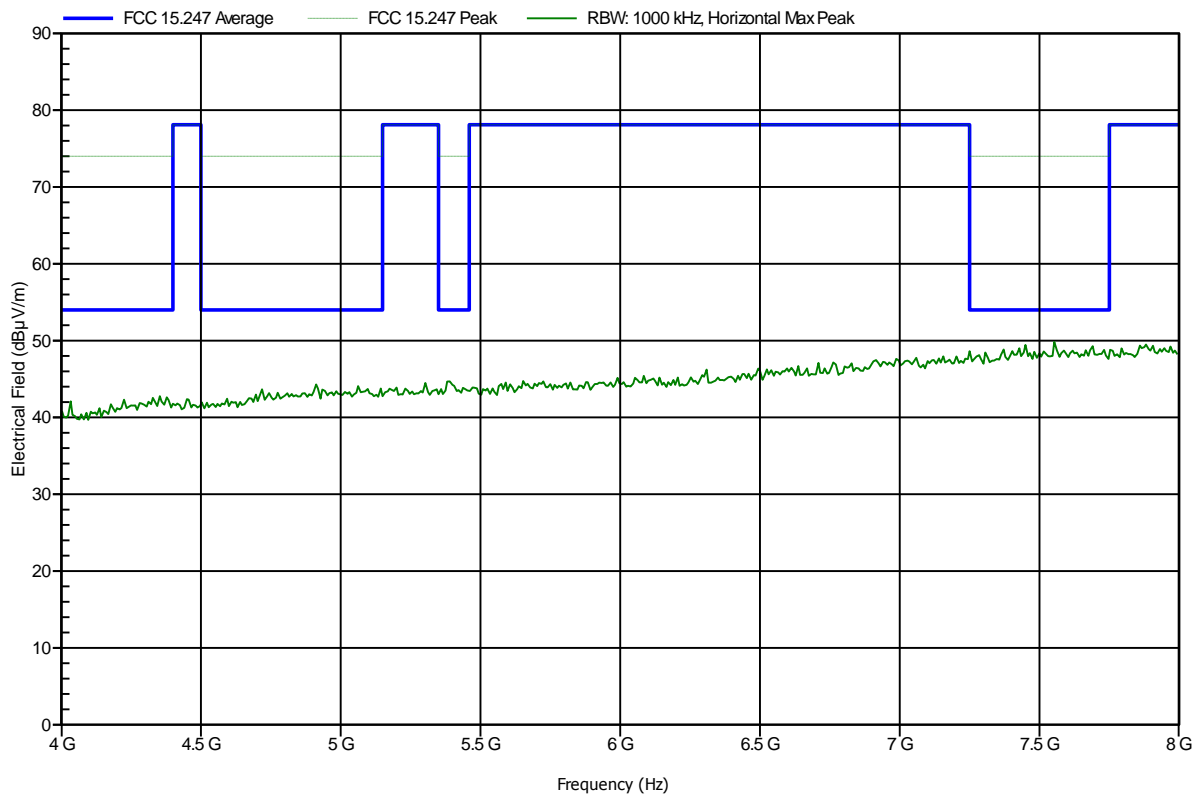


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT40, MCS0, ch.4-8
Test Date:	2012-11-29
Note:	

Index 105

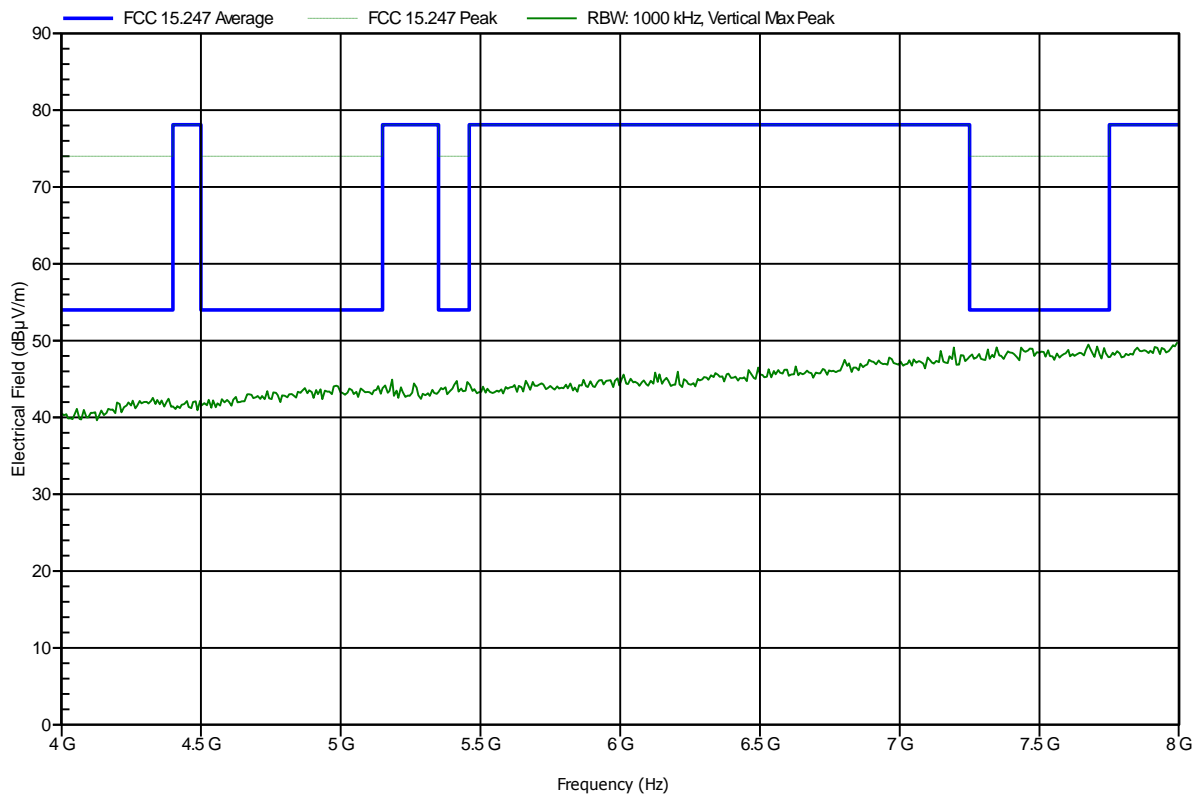


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT40, MCS0, ch.4-8
Test Date:	2012-11-29
Note:	

Index 106

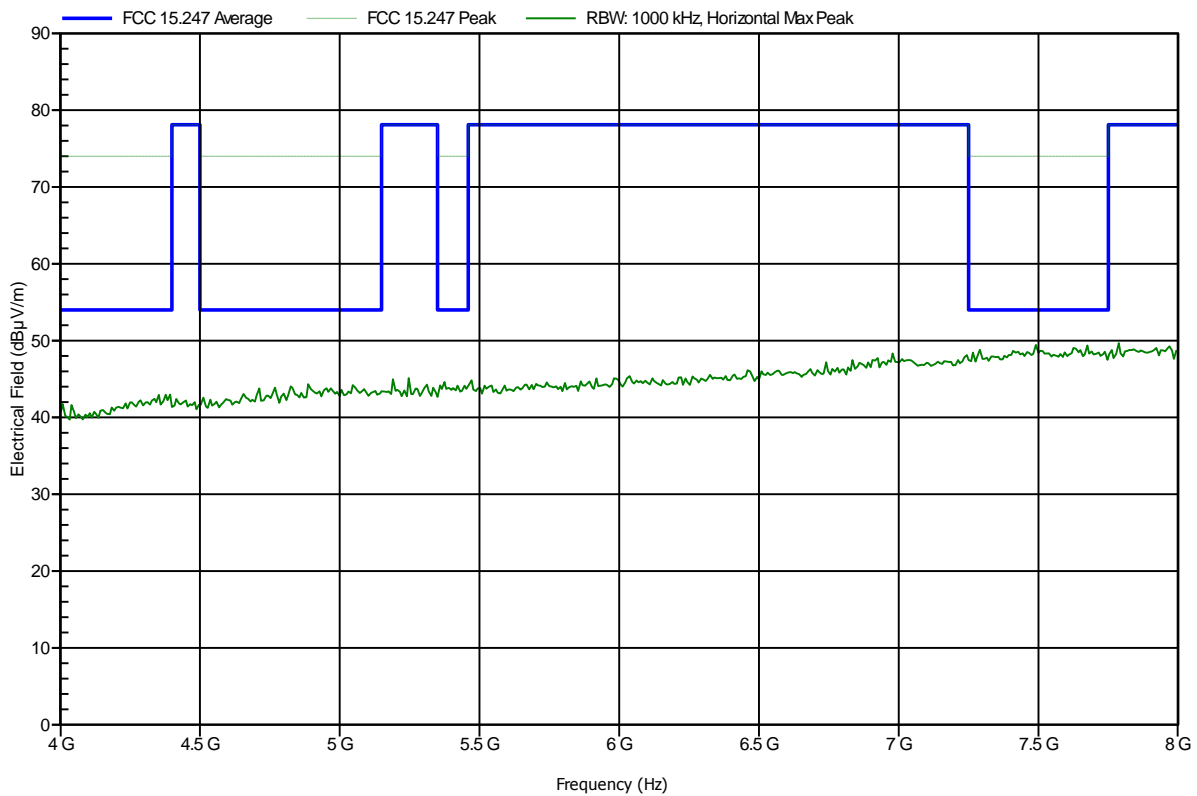


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; HT40, MCS0, ch.7-10
Test Date:	2012-11-29
Note:	

Index 108



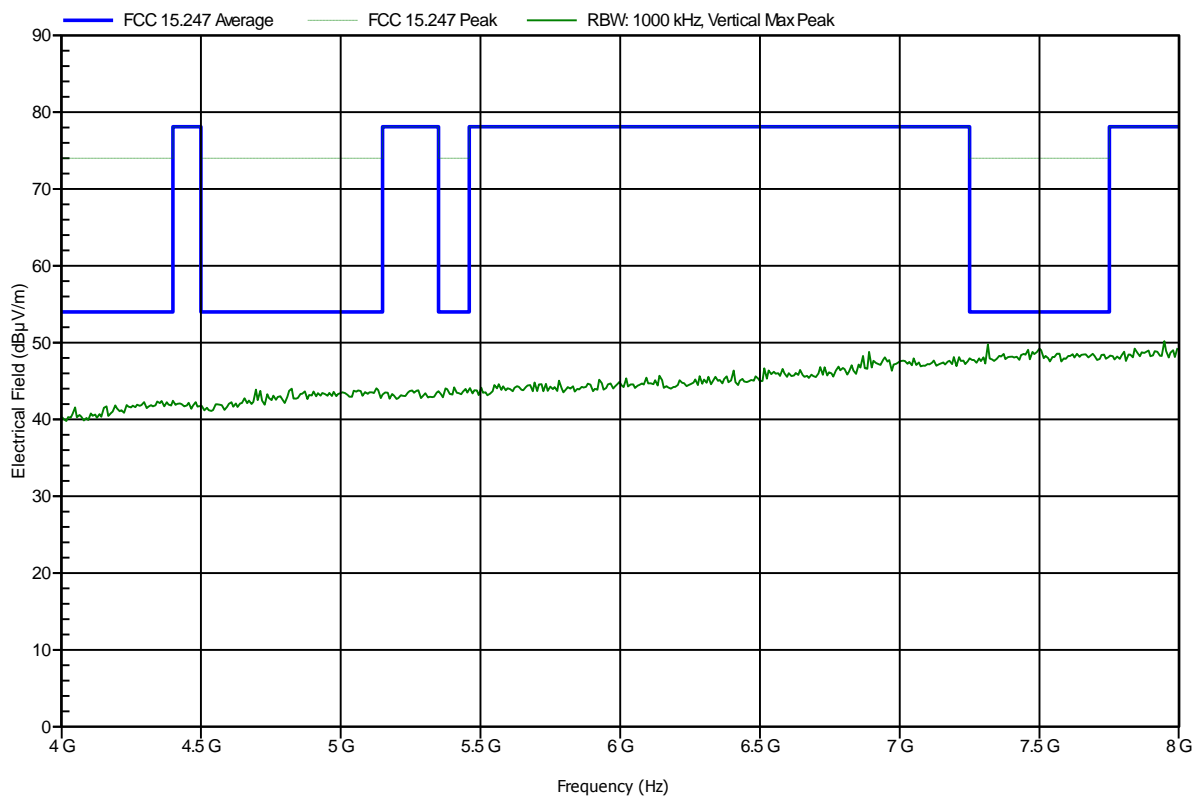


**Spurious emissions according to FCC 15.247**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; HT40, MCS0, ch.7-10
Test Date:	2012-11-29
Note:	

Index 107



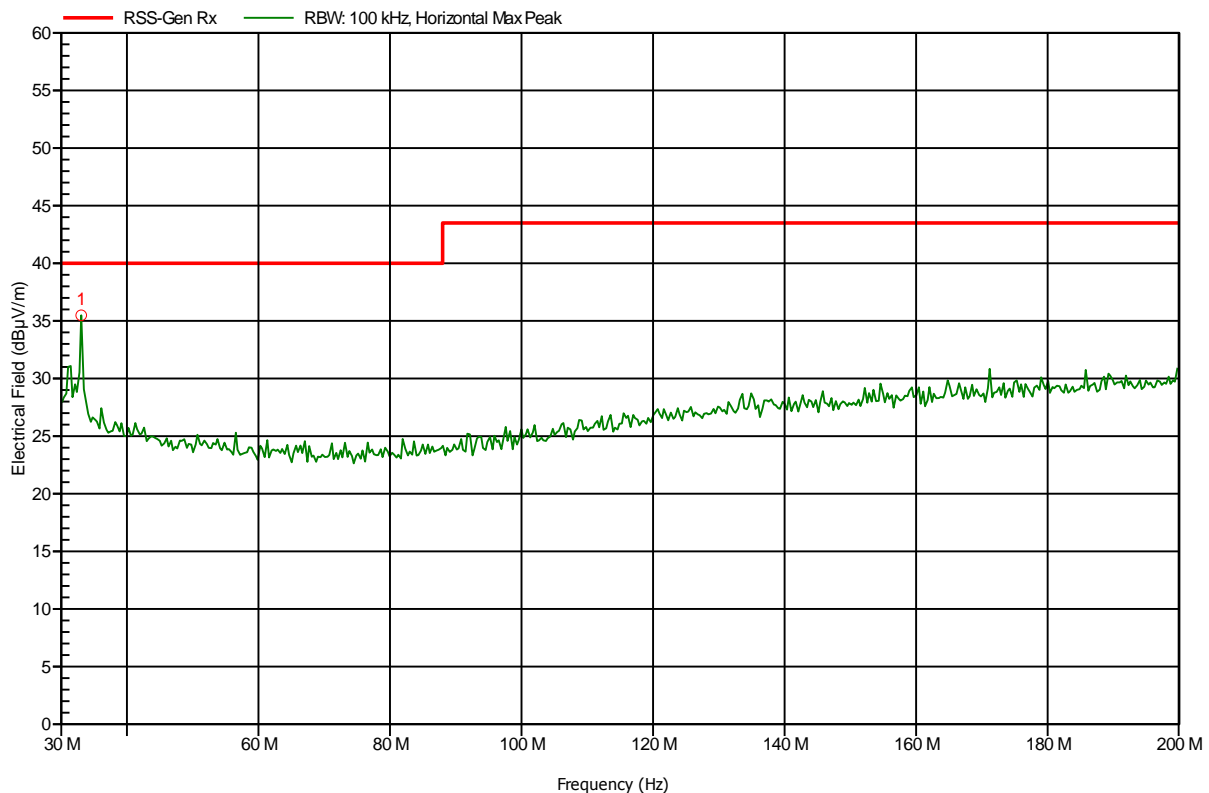
## ANNEX B Receiver radiated spurious emissions

### Spurious emissions according to RSS-GEN

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Rohde & Schwarz HK 116, Horizontal  
 Measurement distance: 3 m  
 Mode: RX; ch.6  
 Test Date: 2012-11-29  
 Note:

Index 115



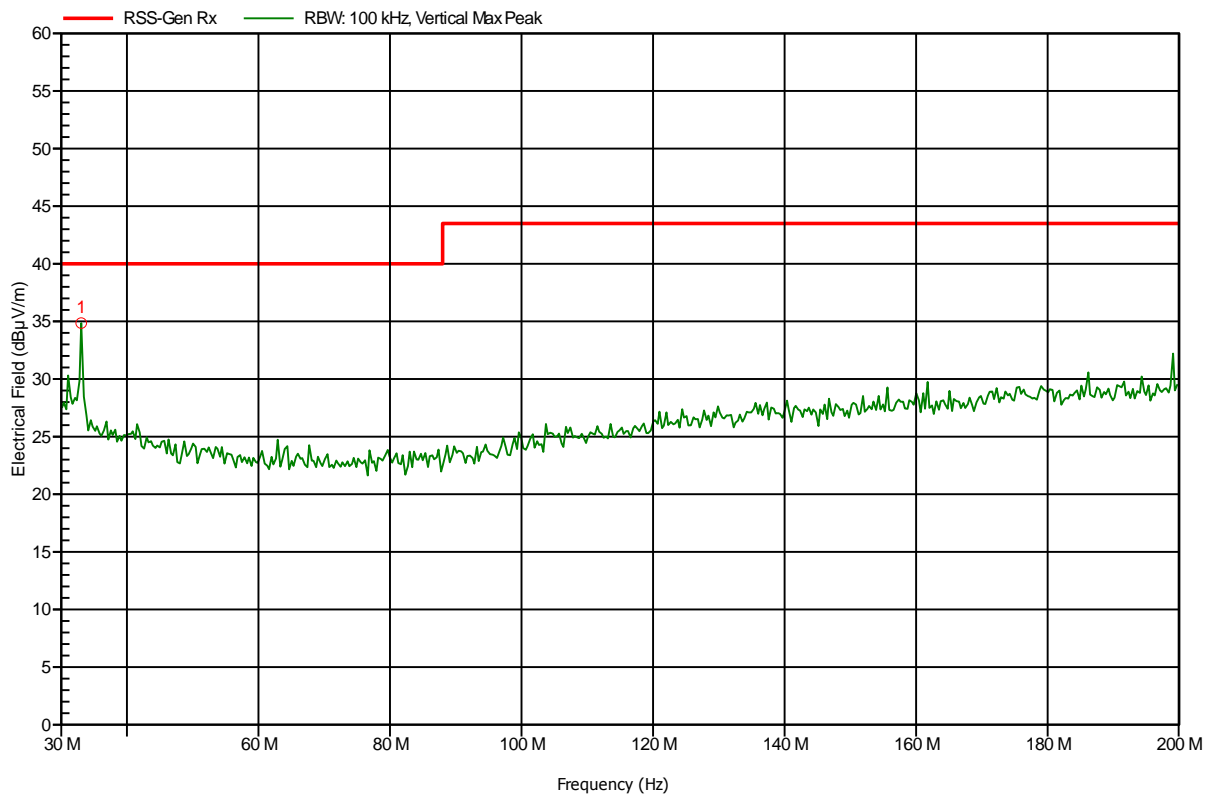
Frequency	Peak	Peak Limit	Peak Difference	Status
33.054 MHz	35.48 dBµV/m	40 dBµV/m	-4.52 dB	Pass

**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Rohde & Schwarz HK 116, Vertical  
 Measurement distance: 3 m  
 Mode: RX; ch.6  
 Test Date: 2012-11-29  
 Note:

Index 116



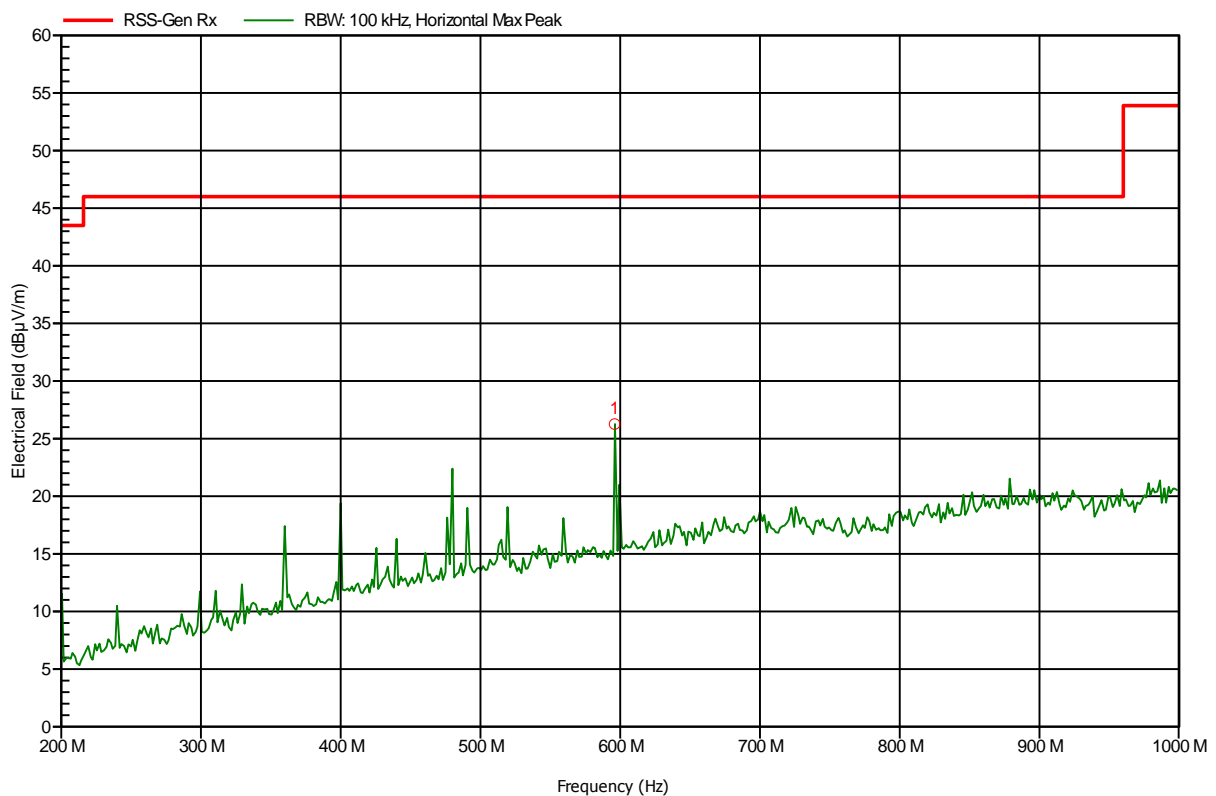
Frequency	Peak	Peak Limit	Peak Difference	Status
33.054 MHz	34.85 dBµV/m	40 dBµV/m	-5.15 dB	Pass

**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer: lesswire AG  
 EUT Name: WLAN / Bluetooth module  
 Model: WiBear11n-SF1  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Treffke  
 Test Conditions: Tnom: 24°C, Vnom: 3.3V DC  
 Antenna: Rohde & Schwarz HL 223, Horizontal  
 Measurement distance: 3 m  
 Mode: RX; ch.6  
 Test Date: 2012-11-29  
 Note:

Index 113



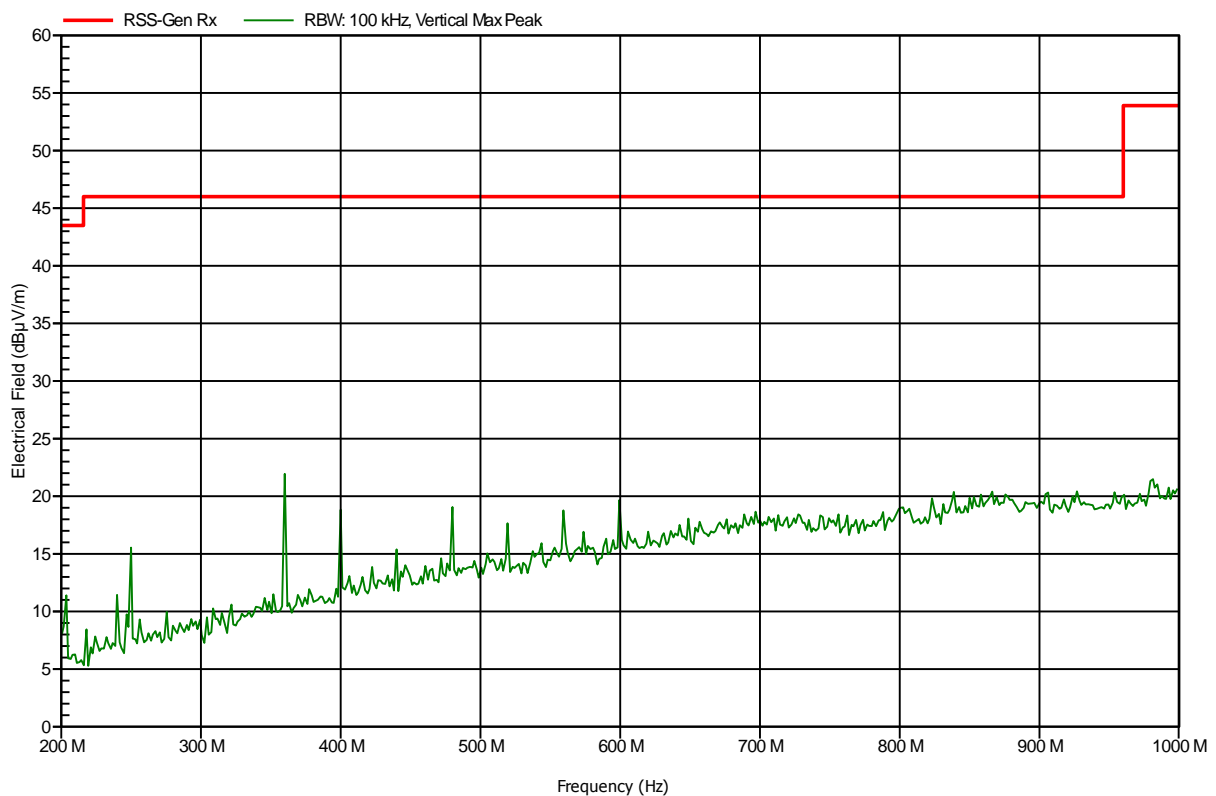
Frequency	Peak	Peak Limit	Peak Difference	Status
596.008 MHz	26.26 dBµV/m	46 dBµV/m	-19.74 dB	Pass

**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; ch.6
Test Date:	2012-11-29
Note:	

Index 114

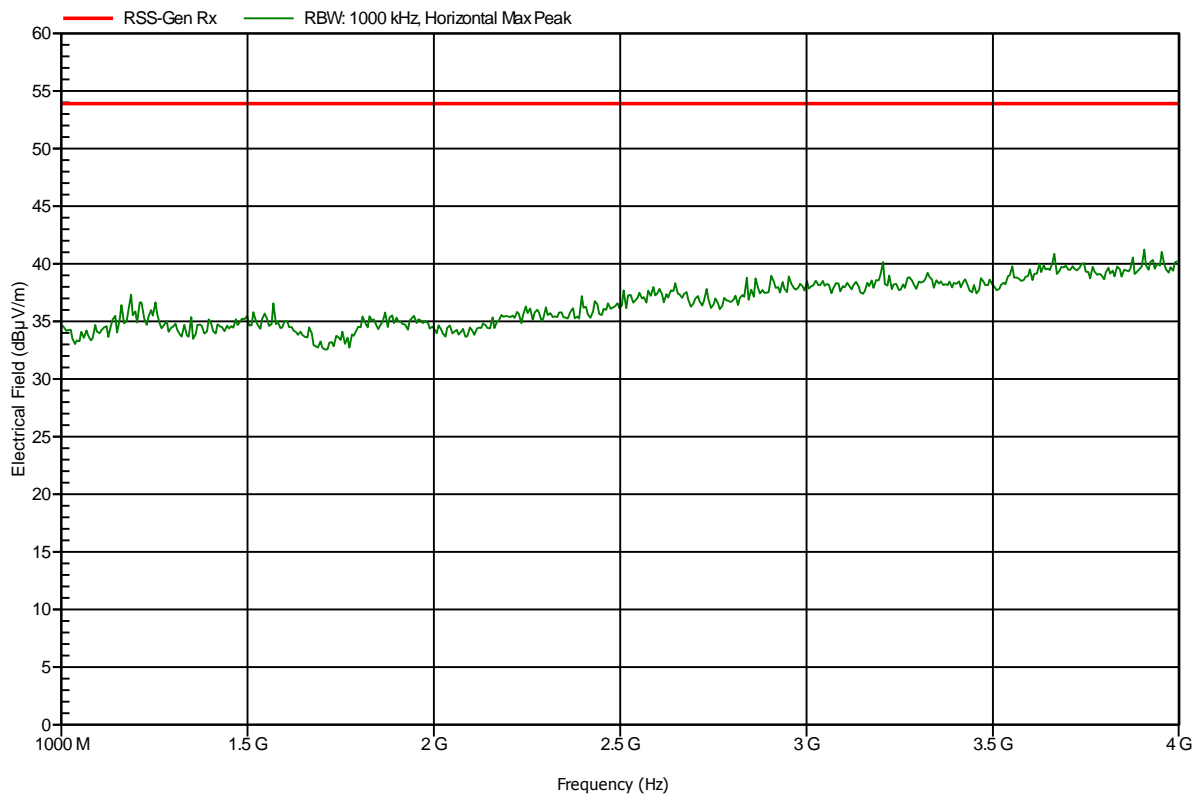


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; ch.6
Test Date:	2012-11-29
Note:	

Index 109

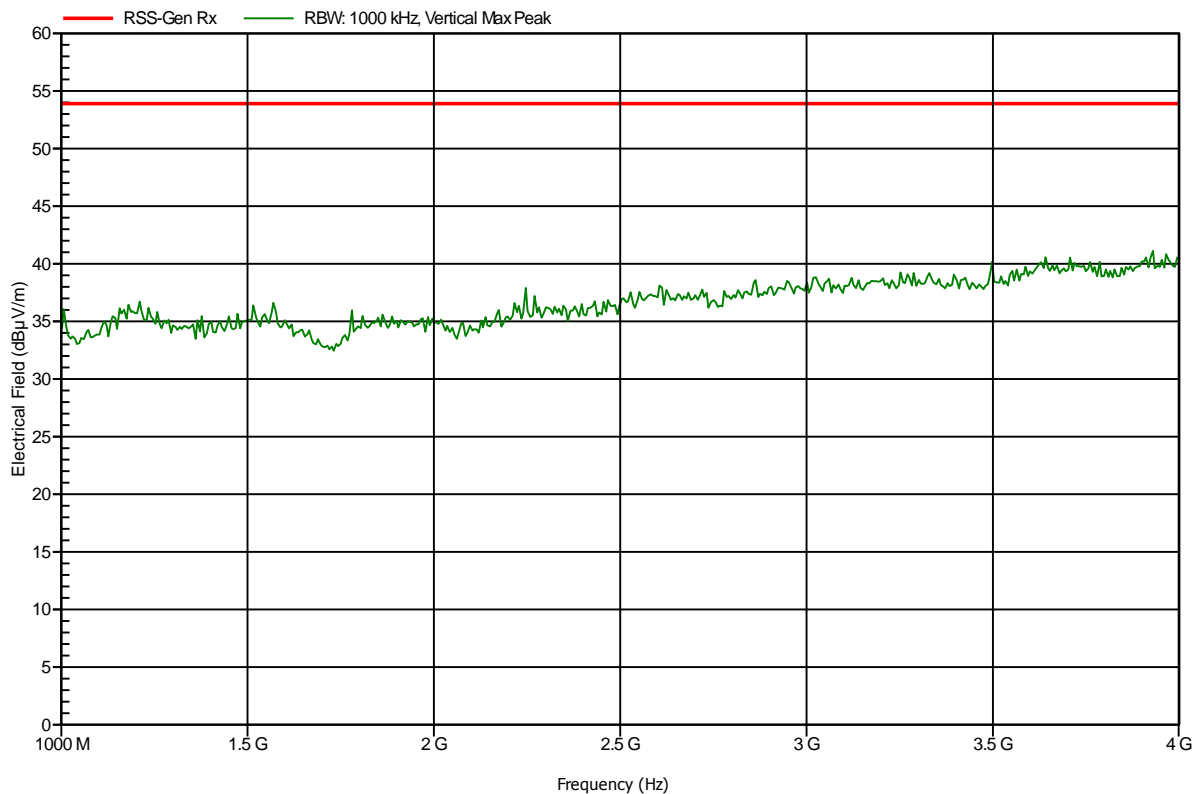


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; ch.6
Test Date:	2012-11-29
Note:	

Index 111

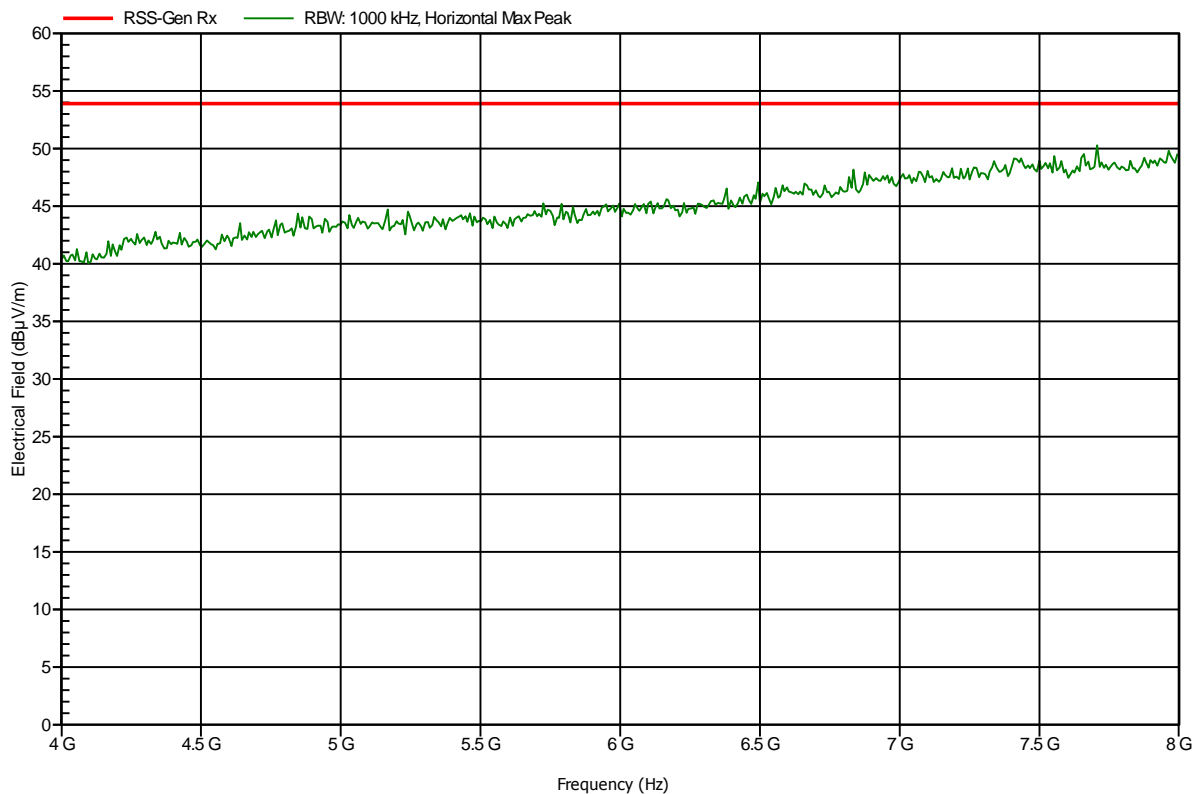


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; ch.6
Test Date:	2012-11-29
Note:	

Index 110



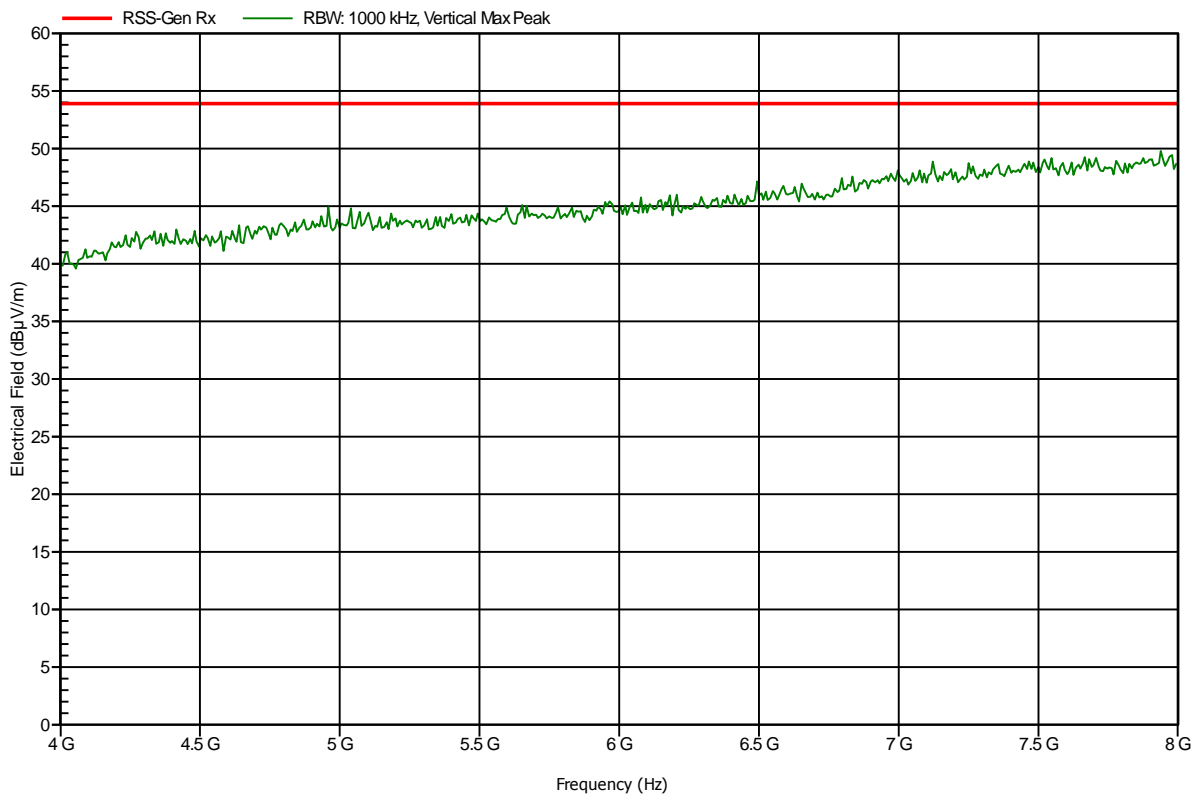


**Spurious emissions according to RSS-GEN**

Project number: G0M-1211-2443

Manufacturer:	lesswire AG
EUT Name:	WLAN / Bluetooth module
Model:	WiBear11n-SF1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 3.3V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; ch.6
Test Date:	2012-11-29
Note:	

Index 112



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## Version History

Version	Issue Date	Remarks	Revised by
01	2013-01-22	Initial Release	
02	2013-02-13	Replaced document: G0M-1211-2443-TFC247W-V01 Replaced by: G0M-1211-2443-TFC247W-V02  Reason: <ul style="list-style-type: none"><li>• Page 1 &amp; 4: FCC-ID corrected</li></ul>	C. Weber

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