



EUROFINS PRODUCT SERVICE GMBH



Testing Cert #1983.01

RADIO TEST- REPORT

Compliance Test Report

**FCC PART 15 SUBPART C
IC RSS 210 ISSUE 7**

FCC ID: PV7-WIBEAR-SF-UAP

WLAN/Bluetooth Module

AN00K73535

Wireless LAN Radio Part

TEST REPORT NUMBER: G0M21007-3444-C-1



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

Phone +49-33631-888 0
Fax +49-33631-888 660

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1 General Information

1.1 Notes


The results of this test report relate exclusively to the item tested as specified in chapter "Description of test item" and are not transferable to any other test items.

Eurofins Product Service GmbH is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.

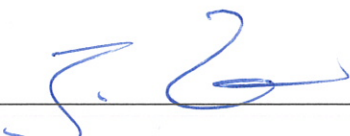
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Operator:

| | | | |
|------------|---------------|------------|---|
| 15.09.2010 | | W. Treffke |  |
| Date | Eurofins-Lab. | Name | Signature |

Technical responsibility for area of testing:

| | | | |
|------------|----------|---------------|---|
| 15.09.2010 | | J. Zimmermann |  |
| Date | Eurofins | Name | Signature |

1.2 Testing laboratory

EUROFINS PRODUCT SERVICE GMBH
Storkower Strasse 38c
D-15526 Reichenwalde b. Berlin
Germany
Telefon : +49 33631 888 00
Telefax : +49 33631 888 660

DAR ACCREDITED TESTING LABORATORY
DAR-REGISTRATION NUMBER: DAT-P-268/08

RECOGNIZED NOTIFIED BODY EMC
REGISTRATION NUMBER: BNetzA-bS EMV-07/61

RECOGNIZED NOTIFIED BODY R&TTE
REGISTRATION NUMBER: BNetzA-bS-02/51-53

FCC FILED TEST LABORATORY
REG.-No. 96970

A2LA ACCREDITED TESTING LABORATORY
CERTIFICATE No. 1983.01

BLUETOOTH QUALIFICATION TEST FACILITY (BQTF)
ACCREDITED BY BLUETOOTH QUALIFICATION REVIEW BOARD

INDUSTRY CANADA FILED TEST LABORATORY
REG. NO. IC 3470

Test location, where different:

Name : ./.
Street : ./.
Town : ./.
Country : ./.
Telephone : ./.
Fax : ./.

1.3 Details of approval holder

Name : lesswire AG
Street : Im Technologiepark 1
Town : 15236 Frankfurt/Oder
Country : Germany
Telephone : 030 6392 8130
Fax : 030 6392 8287

Contact : Frau Angelika Seifert
Telephone : 030 6392 8130

1.4 Application details

Date of receipt of application : 08.07.2010
Date of receipt of test item : 08.07.2010
Date of test : 12. – 13.07.2010

1.5 Test item

Description of test item : WLAN/Bluetooth Module
Type identification : AN00K73535
Brand Name : WiBear-SF2
Serial number : None
Hardware version : 2A
Software version : None
Equipment type : Radio module

Technical data

Frequency range : 2400 - 2483.5MHz
Tested frequencies : F₁ 2412MHz
Tested frequencies : F₂ 2437MHz
Tested frequencies : F₃ 2462MHz
Antenna type : external
Antenna model : Rubber antenna 2.4GHz, SMA, Order number : 17010.0
WiMo Antennen und Elektronik GmbH
Number of antennas : 2 (1 x Bluetooth antenna, 1 x WLAN antenna)
Antenna gain : Antenna Bluetooth = 2.1dBi, Antenna WLAN = 2.1dBi
(Declared by approval holder)
Power supply : 3.3VDC
Duty cycle : CCK, DSSS : 90%, OFDM : 54%
Operating mode : semi duplex

Spreading technique : CCK, DSSS, OFDM
 Modulations : DBPSK, DQPSK
 Device classification : Mobile Device (Human Body distance > 20 cm)
 Additional information : The results in this test report cover only the wireless lan radio part of the EUT. The results for the bluetooth radio part are given in test-report G0M21007-3444-P-15.

Manufacturer:
(if applicable)

Name : PRETTL Electronics AG
 Street : Robert Bosch Straße 10
 Town : 01454 Radeberg
 Country : Germany

1.6 Test standards

Technical standard : **FCC PART 15 SUBPART C**
 IC RSS 210 ISSUE 7

1.7 Acronyms and abbreviations

EUT : Equipment under Test
 TX : Transmission
 RX : Reception
 RBW : Measurement Resolution Bandwidth
 Pol : Measurement Polarization
 e.i.r.p. : Equivalent isotropic radiated power
 FHSS : Frequency hopping spread spectrum
 DSSS : Direct Sequence Spread Spectrum
 OFDM : Orthogonal frequency division multiplexing
 CCK : Complementary code keying
 GFSK : Gaussian frequency shift keying
 DBPSK : Differential binary phase shift keying
 DQPSK : Differential quadrature phase shift keying
 PSK : Phase shift keying
 T_{nom} : Nominal Temperature
 T_{min} : Minimum Temperature
 T_{max} : Maximum Temperature
 V_{nom} : Nominal Supply Voltage
 V_{min} : Minimum Supply Voltage
 V_{max} : Maximum Supply Voltage
 VDC : DC voltage
 N/A : Not applicable
 IC : Industry Canada

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

or

The deviations as specified in 2.4 were ascertained in the course of the tests performed.

2.2 Test environment

Temperature : 22 ... 26°C

Relative humidity content : 20 ... 75%

Air pressure : 86 ... 103kPa

Extreme conditions parameters:

V_{nom} : 3.3VDC

$V_{min} (V_{nom}-15\%)$: -

$V_{max} (V_{nom}+15\%)$: -

T_{nom} : 25°C

Other parameter: None

2.3 Test equipment utilized

| Measurement Equipment List | | | | | |
|----------------------------|-----------------------|------------|-----------------|------------|------------|
| No. | Measurement device: | Type: | Manufacturer: | Last Cal. | Next Cal. |
| ETS 0086 | Semi-anechoic chamber | AC1 | Frankonia | 12.03.2010 | 12.03.2011 |
| ETS 0271 | Spectrum Analyzer | FSEK30 | Rohde & Schwarz | 19.03.2009 | 19.03.2010 |
| ETS 0012 | Biconical Antenna | HK 116 | Rohde & Schwarz | 29.01.2010 | 29.01.2011 |
| ETS 0336 | LPD Antenna | HL 223 | Rohde & Schwarz | 28.01.2010 | 28.01.2011 |
| ETS 0018 | Horn Antenna | BBHA 9120D | Schwarzbeck | 26.08.2009 | 26.08.2010 |
| ETS 0432 | Amplifier-Matrix | | | 02.06.2010 | 02.06.2012 |
| ETS 0259 | Power Meter | NRVD | Rohde & Schwarz | 26.03.2010 | 26.03.2011 |
| ETS 0278 | Power Sensor | NRV-Z31 | Rohde & Schwarz | 01.08.2008 | 01.08.2010 |
| ETS 0496 | Spectrum Analyzer | FSP30 | Rohde & Schwarz | 26.08.2009 | 26.08.2010 |
| ETS 0086 | Semi-anechoic chamber | AC1 | Frankonia | 12.03.2010 | 12.03.2011 |

2.4 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 μ 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 μ V/m). The FCC limits are given in units of μ V/m. The following formula is used to convert the units of μ V/m to dB μ V/m:

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

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:

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

2.5 Test results

 1st test

 test after modification

 production test

| Test case | Clause | Required | Result | Remarks |
|---|---|-------------------------------------|--------|---------|
| INFORMATIONAL TRANSMITTER PARAMETERS | | | | |
| Occupied Bandwidth | IC RSS-Gen. 4.6.1 | <input type="checkbox"/> | N/A | IC only |
| TRANSMITTER PARAMETERS | | | | |
| 6dB Bandwidth | FCC § 15.247(a)(2) IC RSS-210 § A8.2 | <input checked="" type="checkbox"/> | PASS | |
| Spectral Density | FCC § 15.247(e) IC RSS-210 § A8.2 | <input checked="" type="checkbox"/> | PASS | |
| Maximum peak conducted output power | FCC § 15.247(b) IC RSS-210 § A8.4 | <input checked="" type="checkbox"/> | PASS | |
| Band-edge Compliance | FCC § 15.247(d) IC RSS-210 § A8.5 | <input checked="" type="checkbox"/> | PASS | |
| Conducted spurious emissions | FCC § 15.247(d) IC RSS-210 § A8.5 | <input checked="" type="checkbox"/> | PASS | |
| Radiated spurious emissions | FCC § 15.209 IC RSS-Gen § 4.9 | <input checked="" type="checkbox"/> | PASS | |
| RECEIVER PARAMETERS | | | | |
| Radiated spurious emissions | FCC § 15.109 IC RSS-Gen § 4.10 IC RSS-Gen § 7.2.3 | <input type="checkbox"/> | N/A | IC only |
| POWER LINE PARAMETERS | | | | |
| AC power line conducted emissions | FCC § 15.207 IC RSS-Gen. 7.2.2 | <input checked="" type="checkbox"/> | PASS | |

3 Informational Transmitter parameters

3.1 Transmitter Modes for conformance testing

The following transmission modes are elected for compliance testing.

| TEST MODE DSSS | |
|-----------------------|---|
| Conditions | |
| Spread Spectrum : | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Spreading Technique : | DSSS |
| Modulation : | DBPSK |
| Bandwidth : | 20MHz |
| Data rate : | 1Mbps |
| Duty Cycle : | 90% |
| Power level : | Maximum : 16 (Firmware setting) |

| TEST MODE OFDM | |
|-----------------------|---|
| Conditions | |
| Spread Spectrum : | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Spreading Technique : | OFDM |
| Modulation : | DBPSK |
| Bandwidth : | 20MHz |
| Data rate : | 6Mbps |
| Duty Cycle : | 55% |
| Power level : | Maximum : 15 (Firmware setting) |

4 Transmitter parameters

4.1 6dB Bandwidth

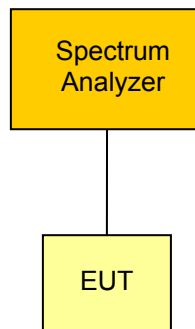
According FCC rules 47 CFR 15.247(a)(2) and RSS-210 Section A8.2 the minimum 6dB Bandwidth has to be validated.

4.1.1 Limits

According FCC and IC rules the minimum 6dB bandwidth shall be at least 500 kHz.

| 6dB bandwidth limit |
|----------------------|
| $\geq 500\text{kHz}$ |

4.1.2 Measurement procedure



The eut is connected to a spectrum analyzer and set to transmission mode with maximum power under normal test conditions. The resolution bandwidth is set to 100kHz ($VBW \geq RBW$). The center frequency is set to the channel center frequency. The span of the analyzer is set to 2 -3 times the 6dB bandwidth. The bandwidth is determined using markers with peak detector and max hold.

4.1.3 Results

| Transmitter 6dB bandwidth | | | |
|--------------------------------------|-----------------------------------|-----------------------------------|----------------------------|
| Channel [MHz] | Lower edge frequency [MHz] | Upper edge frequency [MHz] | 6dB Bandwidth [MHz] |
| Test mode DSSS | | | |
| 2412 | - | - | 10.12 |
| 2437 | - | - | 10.07 |
| 2462 | - | - | 10.12 |
| Test mode OFDM | | | |
| 2412 | - | - | 16.45 |
| 2437 | - | - | 16.45 |
| 2462 | - | - | 16.45 |
| See attached diagram in Annex | | | |
| Verdict | | | PASS |

4.2 Power spectral density

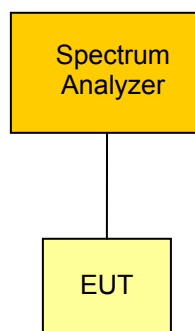
According FCC rules 47 CFR 15.247(e) and RSS-210 Section A8.2 the maximum pwer density in any 3kHz bandwidth is limited and has to be validated.

4.2.1 Limits

According FCC and IC rules the transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0-second duration.

| Spectral density limit |
|------------------------|
| ≤ 8dBm/3kHz |

4.2.2 Measurement procedure



The eut is connected to a spectrum analyzer and set to transmission mode with maximum power under normal test conditions. The resolution bandwidth is set to 3kHz (VBW≥RBW). The center frequency is set to the channel center frequency. The span of the analyzer is set to 1.5MHz. The sweep time is set to SPAN/RBW. The spectral density is determined using peak detector and max hold.

According to 47 CFR 15.31 battery power equipment is measured using new batteries and equipment using external power supply is measured with 85%, 100% and 115% of the nominal rated supply voltage.

4.2.3 Results

| Power spectral density | | |
|-------------------------------|-------------------------------|-----------------------------|
| Channel [MHz] | Max. emission frequency [MHz] | Spectral density [dBm/3kHz] |
| Test mode DSSS | | |
| 2412 | 2412.997 | -4.34 |
| 2437 | 2438.999 | -0.93 |
| 2462 | 2461.132 | -5.45 |
| Test mode OFDM | | |
| 2412 | 2417.006 | -12.47 |
| 2437 | 2430.736 | -9.93 |
| 2462 | 2456.348 | -10.66 |
| See attached diagram in Annex | | |
| Verdict | | PASS |

4.3 Maximum peak conducted output power

According FCC rules 47 CFR 15.247(b)(3) and RSS-210 Section A8.4 the maximum peak conducted output power is limited and has been verified.

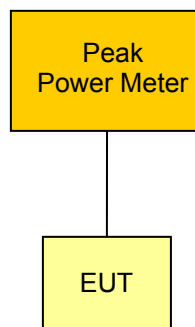
4.3.1 Limits

For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W.

| Maximum peak conducted power limit |
|------------------------------------|
| 1W / 30dBm |

*) 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.

4.3.2 Measurement procedure



The eut is connected to a peak power sensor of a power meter and activated with the maximum power level. The peak power is measured and recorded.

According to 47 CFR 15.31(e) battery power equipment is measured using new batteries and equipment using external power supply is measured with 85%, 100% and 115% of the nominal rated supply voltage.

4.3.3 Results

| Maximum peak conducted output power | | |
|--|------------------------------|-------------------|
| Measurement Conditions | | |
| Antenna gain : | 2.1dBi | |
| Power correction : | 0dB | |
| Channel [MHz] | Conducted output power [dBm] | Power Limit [dBm] |
| Test mode DSSS | | |
| 2412 | 17.9 | ≤ 30 |
| 2437 | 17.6 | ≤ 30 |
| 2462 | 18.4 | ≤ 30 |
| Test mode OFDM | | |
| 2412 | 19.8 | ≤ 30 |
| 2437 | 20.1 | ≤ 30 |
| 2462 | 19.9 | ≤ 30 |
| See attached diagrams in Annex | | |
| Measurement uncertainty | | 4.22dB |
| Verdict | | PASS |

4.4 Transmitter band-edge compliance

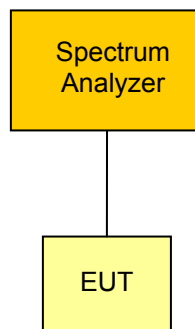
According FCC rules 47 CFR 15.209, 15.247(d) and RSS-210 Section A8.5 the emission level of out-of-band emissions are limited and has to be validated.

4.4.1 Limits

The emission limit of out of band emission in any 100kHz bandwidth outside the frequency band in which the spread spectrum device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits (see "Transmitter spurious emissions"-measurement) is not required.

| Transmitter band-edge emission limits | |
|---------------------------------------|-------------------------|
| TX-Power Detector | Out of band attenuation |
| Peak | -20dBc/100kHz |
| RMS | -30dBc/100kHz |

4.4.2 Measurement procedure



The eut is connected to a spectrum analyzer and set to transmission mode without hopping with maximum power under normal test conditions. The span of the analyzer is set large enough to capture the maximum emission within the emission band as well as any modulation product which fall outside the authorized band of operation. The resolution bandwidth is set to 1% of the span ($VBW \geq RBW$). The

A marker is set on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Using the delta-marker function the highest peak of of the in-band emission is measured.

4.4.3 Results

| Transmitter band-edge emissions | | |
|--|----------------------------------|----------------------------------|
| Measurement Conditions | | |
| Power mode : | Peak | |
| Test mode | Lower edge emission [dBc] | Upper edge emission [dBc] |
| DSSS | -43.49 | -43.83 |
| OFDM | -33.04 | -41.19 |
| See attached diagram in Annex | | |
| Verdict | PASS | |

4.5 Transmitter conducted spurious emissions

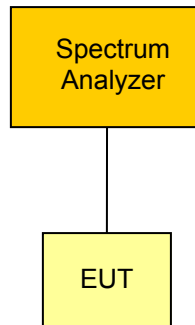
According FCC rules 47 CFR 15.247(d) and RSS-210 Section A8.5 unwanted emissions in the spurious domain are power limited and has to be validated.

4.5.1 Limits

The emission limit of out of band emission in any 100kHz bandwidth outside the frequency band in which the spread spectrum device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits (see "Transmitter radiated spurious emissions"-measurement) is not required.

| Transmitter conducted spurious emission limits | |
|--|-------------------------|
| TX-Power Detector | Out of band attenuation |
| Peak | -20dBc/100kHz |
| RMS | -30dBc/100kHz |

4.5.2 Measurement procedure



The eut is connected to a spectrum analyzer and set to transmission mode with maximum power under normal test conditions. The span of the analyzer is set large enough to capture the maximum emission within the emission band as well as any spurious emission outside the authorized band of operation. The resolution bandwidth is set to 100kHz (VBW≥RBW). The emissions are measured using peak detector and max hold.

The measurement is performed over the frequency range of 30MHz up to the tenth harmonic.

4.5.3 Results

| Transmitter conducted spurious emissions | | | | | |
|--|--------------------------|---|---------------------|-------------|-------------|
| Measurement Conditions | | | | | |
| Power detector : | | Peak | | | |
| Modulated : | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Channel Frequency [MHz] | Emission Frequency [MHz] | Measured Field Strength * [dBm] | Channel Power [dBm] | Limit [dBm] | Margin [dB] |
| Test mode DSSS | | | | | |
| 2412 | 6607.2 | -20.46 | 6.83 | -13.17 | -7.29 |
| 2437 | 6627.2 | -20.87 | 6.81 | -13.19 | -7.68 |
| 2462 | 6707.4 | -21.18 | 7.22 | -12.78 | -8.40 |
| Test mode OFDM | | | | | |
| 2412 | 10880 | -43.42 | 1.83 | -18.17 | -25.25 |
| 2437 | 10080 | -43.91 | 4.07 | -15.93 | -27.98 |
| 2462 | 10220 | -42.07 | 2.51 | -17.49 | -24.58 |
| See attached diagrams in Annex | | | | | |
| Verdict | | | | PASS | |

4.6 Transmitter radiated spurious emissions

According FCC rules 47 CFR 15.209 unwanted emissions in the spurious domain are power limited and has to be validated.

4.6.1 Limits

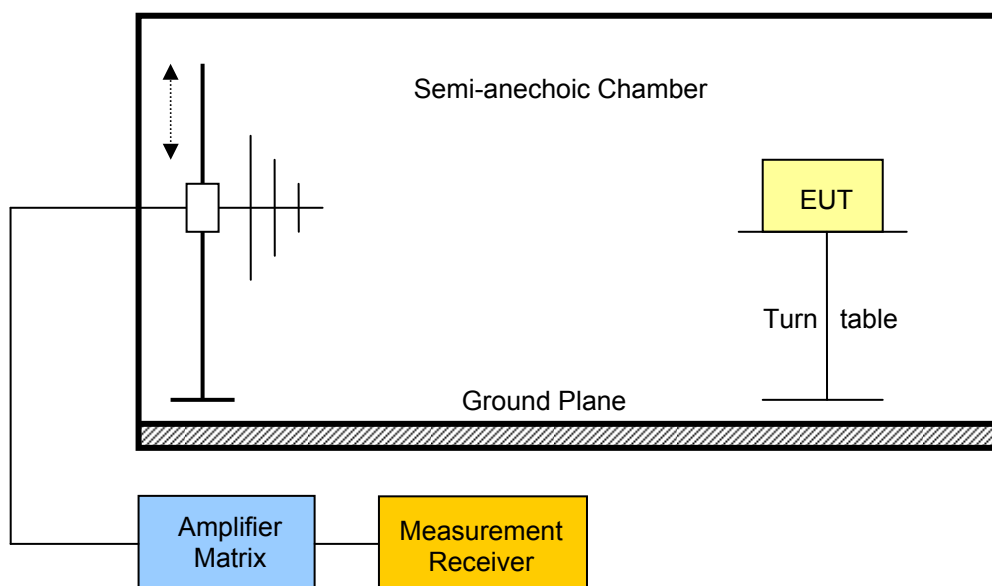
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

| Tranmitter restricted band spurious emission limits | | | | |
|---|------------|----------------------------------|--|--------------------------|
| Frequency range [MHz] | Detector | Limit [$\mu\text{V}/\text{m}$] | Calculated Limit 3m [dB $\mu\text{V}/\text{m}$] | Measurement 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 |

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.

4.6.2 Measurement procedure

The spurious emission measurement is performed on 3m a semi-anechoic test site.



The eut is placed on a non-metallic table. Any emission is received by the measurement antenna and measured via a measurement receiver connected to the antenna. To obtain the maximum emission the eut is rotated through 360°.

Due to practical reasons the spurious emission level check is first performed with a peak detector and the quasi-peak and average limits.

If any emission is detected that gets close to the emission limit the detector is changed and the quasi-peak or average detector is used. Which detector is used is determined by the emission frequency. If pulsed transmission is used, averaging over the pulse train is used.

The measurement values are also corrected to obtain the field strength values at the defined measurement distances of the emission limits.

The measurement is performed over the frequency range of 30MHz up to the tenth harmonic.

4.6.3 Results

| Transmitter radiated spurious emissions - DSSS | | | | | | |
|--|--------------------------|---|--|-------------------------|-------------|-------------|
| Measurement Conditions | | | | | | |
| Measurement distance : | | 3m | | | | |
| Modulated : | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | |
| Channel Frequency [MHz] | Emission Frequency [MHz] | Polarization | Measured Field Strength [dB μ V/m] | Limit@3m [dB μ V/m] | Detector | Margin [dB] |
| Test mode DSSS | | | | | | |
| 2412 | 2397 | V | 66.52 | 74 | P | -7.48 |
| | 2390 | V | 41.67 | 54 | AV | -12.33 |
| | 4826 | H | 53.45 | 74 | P | -20.55 |
| | 4826 | V | 54.64 | 74 | P | -19.36 |
| | 4824 | V | 52.02 | 54 | AV | -1.98 |
| 2437 | 7311 | V | 51.23 | 74 | P | -22.77 |
| 2462 | 2487 | V | 60.30 | 74 | P | -13.70 |
| | 2488 | V | 42.93 | 54 | AV | -11.07 |
| | 7391 | V | 51.87 | 74 | P | -22.13 |
| Verdict | | | | | PASS | |

| Transmitter radiated spurious emissions - OFDM | | | | | | |
|--|--------------------------|---|--|-------------------------|-------------|-------------|
| Measurement Conditions | | | | | | |
| Measurement distance : | | 3m | | | | |
| Modulated : | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | |
| Channel Frequency [MHz] | Emission Frequency [MHz] | Polarization | Measured Field Strength [dB μ V/m] | Limit@3m [dB μ V/m] | Detector | Margin [dB] |
| Test mode OFDM | | | | | | |
| 2412 | 4826 | H | 53.16 | 74 | P | -20.84 |
| | 4818 | V | 54.75 | 74 | P | -19.25 |
| | 4824 | V | 41.83 | 54 | AV | -12.17 |
| 2437 | 4874 | H | 55.64 | 74 | P | -18.36 |
| | 4875 | H | 41.18 | 54 | AV | -12.82 |
| | 7319 | H | 53.38 | 74 | P | -20.62 |
| | 4874 | V | 57.67 | 74 | P | -16.33 |
| | 4874 | V | 42.41 | 54 | AV | -11.59 |
| | 7310 | V | 53.56 | 74 | P | -20.44 |
| 2462 | 4922 | H | 57.09 | 74 | P | -16.91 |
| | 4924 | H | 41.62 | 54 | AV | -12.38 |
| | 4922 | V | 57.36 | 74 | P | -16.64 |
| | 4924 | V | 43.95 | 54 | AV | -10.05 |
| | 7383 | V | 54.59 | 74 | P | -19.41 |
| | 7385 | V | 40.31 | 54 | AV | -13.69 |
| Verdict | | | | | PASS | |

5 Power Line parameters

5.1 AC power line conducted emissions

According FCC rules 47 CFR 15.207 and RSS-Gen Section 7.2.2 for any intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits given below.

5.1.1 Limits

| AC power line emission limits | | |
|-------------------------------|------------------------------|----------|
| Frequency [MHz] | Conducted Limit [dB μ V] | |
| | Quasi-Peak | Average |
| 0.15 – 0.5 | 66 to 56 | 56 to 46 |
| 0.5 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

5.1.2 Measurement procedure

The ac power line emissions are measured using a 50 μ H / 50 Ω line impedance stabilization network (LINS). The radio frequency voltage between each power line and ground at the power terminal is measured.

5.1.3 Results

| AC power line emissions | |
|--------------------------|------|
| Conducted emission level | |
| See attached Diagram | |
| Verdict | PASS |

Annex B Transmitter 6dB bandwidth

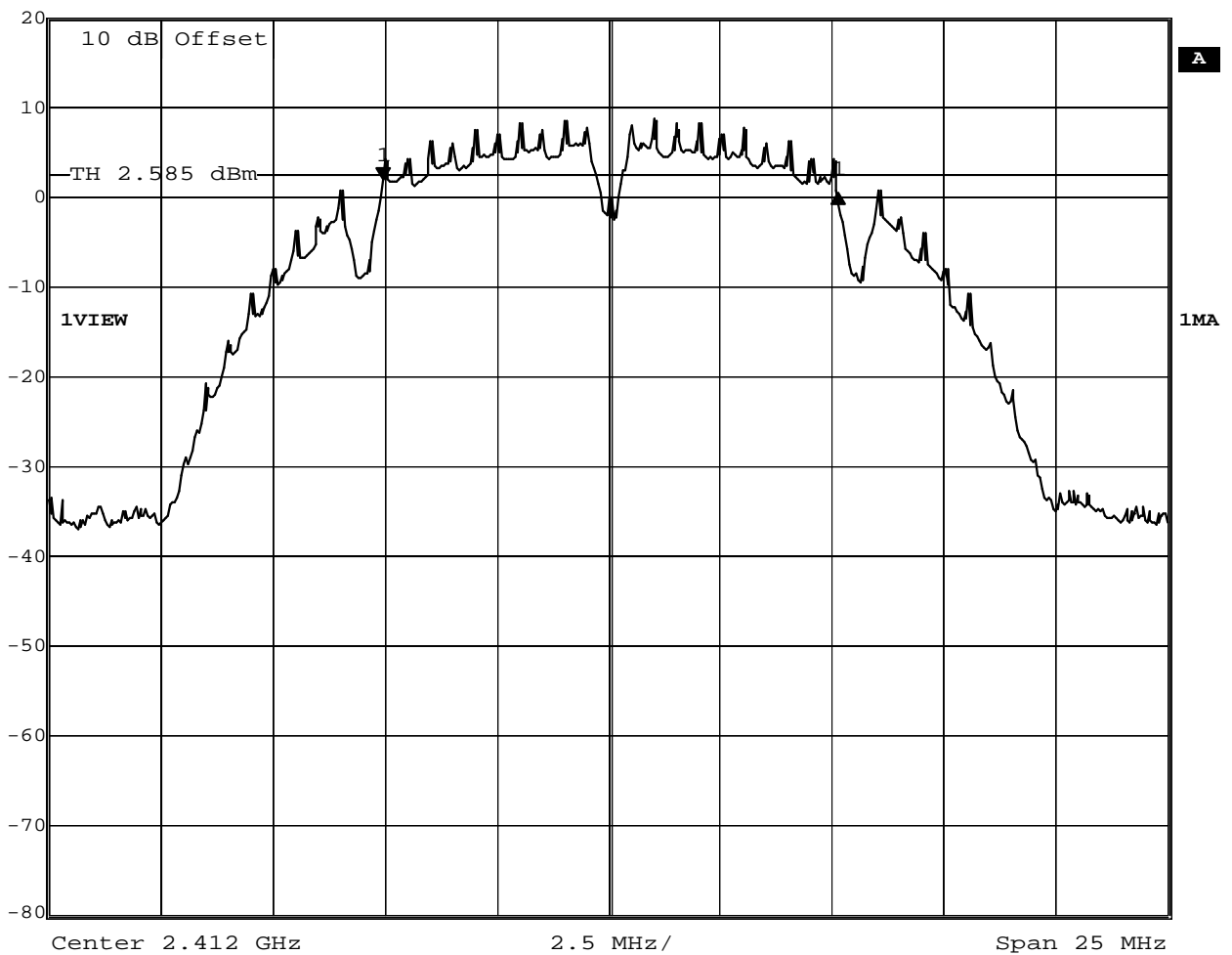
FCC part 15.247 (a)2

Minimum 6 dB Bandwidth

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (a)2 |
| Comment 1 | Minimum 6 dB Bandwidth |
| Comment 2 | Channel : 2412 MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | |
|--------------|-----------------|---------|---------|----------|
| Delta 1 [T1] | RBW | 100 kHz | RF Att | 40 dB |
| Ref Lvl | -1.55 dB | VBW | 300 kHz | |
| 20 dBm | 10.12344008 MHz | SWT | 6.5 ms | Unit dBm |



Comment A: 6 dB bandwidth: 10123.4 KHz > 500 KHz; verdict: PASS

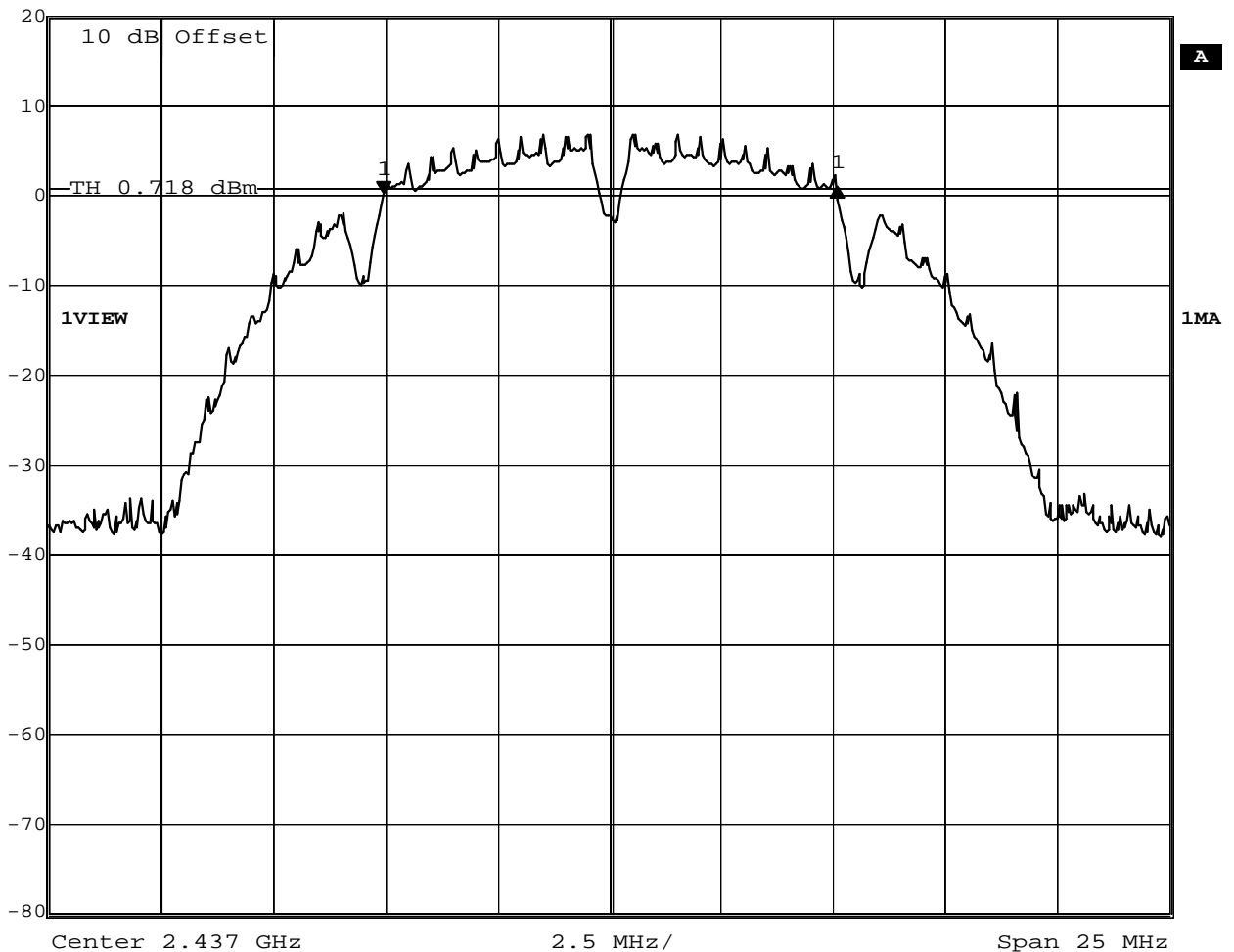
Date: 27.AUG.2010 15:28:08

**FCC part 15.247 (a)2
Minimum 6 dB Bandwidth**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (a)2 |
| Comment 1 | Minimum 6 dB Bandwidth |
| Comment 2 | Channel : 2437 MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | |
|--------------|-----------------|---------|---------|----------|
| Delta 1 [T1] | RBW | 100 kHz | RF Att | 40 dB |
| Ref Lvl | 0.56 dB | VBW | 300 kHz | |
| 20 dBm | 10.07333988 MHz | SWT | 6.5 ms | Unit dBm |



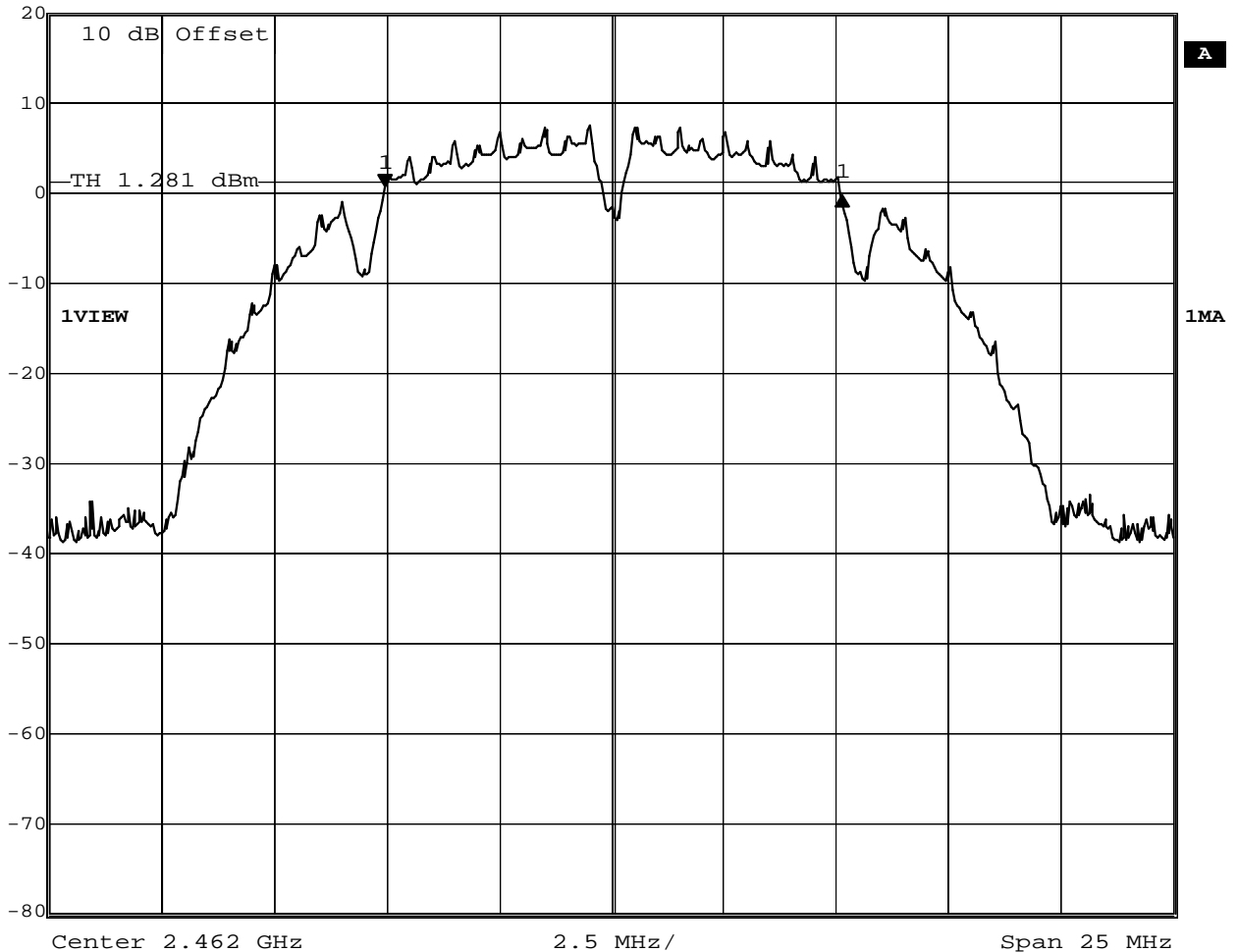
Comment A: 6 dB bandwidth: 10073.3 KHz > 500 KHz; verdict: PASS
Date: 27.AUG.2010 15:30:40

**FCC part 15.247 (a)2
Minimum 6 dB Bandwidth**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (a)2 |
| Comment 1 | Minimum 6 dB Bandwidth |
| Comment 2 | Channel : 2462 MHz |
| Comment 3 | DSSS / 1 Mbit/s |



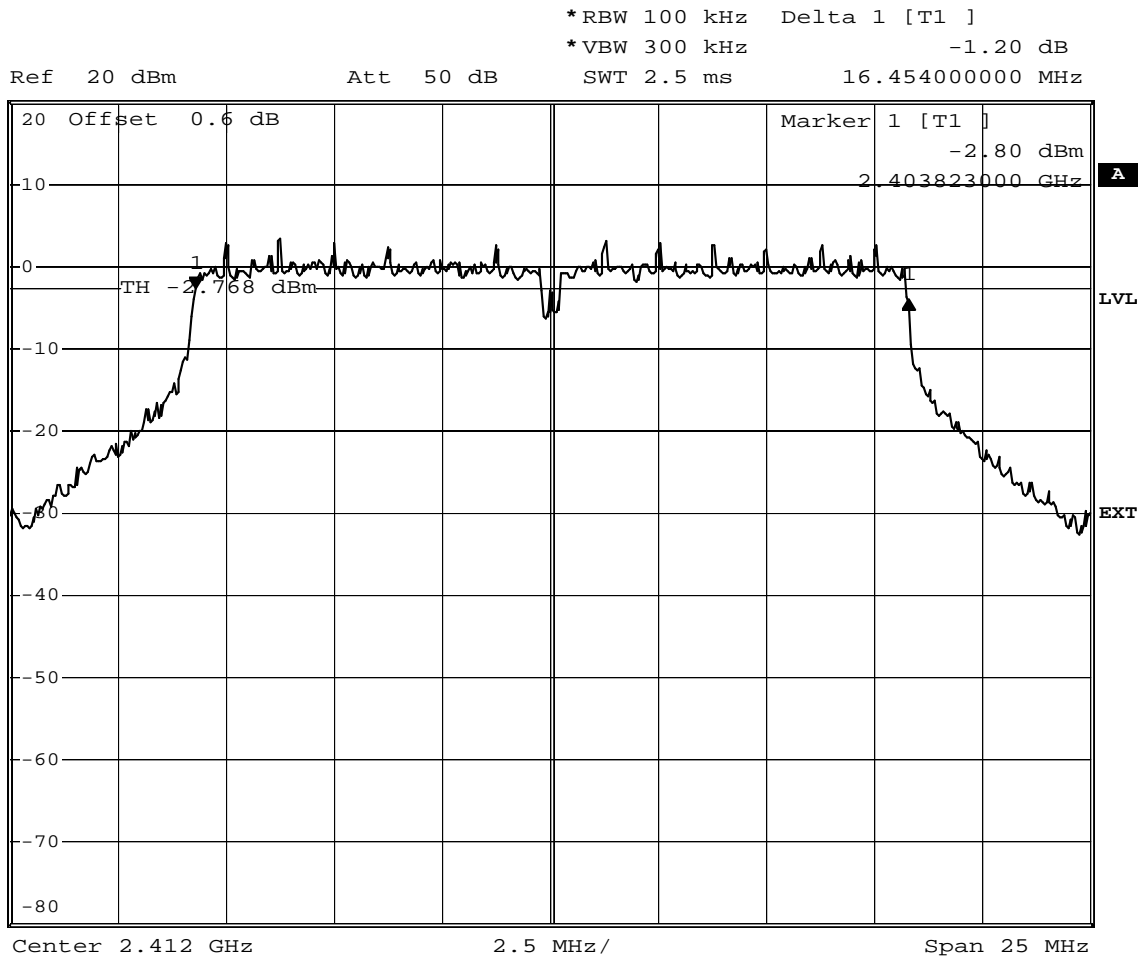
| | | | | | |
|---------|-----------------|-----|---------|--------|-------|
| | Delta 1 [T1] | RBW | 100 kHz | RF Att | 40 dB |
| Ref Lvl | -1.00 dB | VBW | 300 kHz | | |
| 20 dBm | 10.12173988 MHz | SWT | 6.5 ms | Unit | dBm |



Comment A: 6 dB bandwidth: 10121.7 KHz > 500 KHz; verdict: PASS
Date: 27.AUG.2010 15:32:49

**FCC part 15.247 (a)2
Minimum 6 dB Bandwidth**

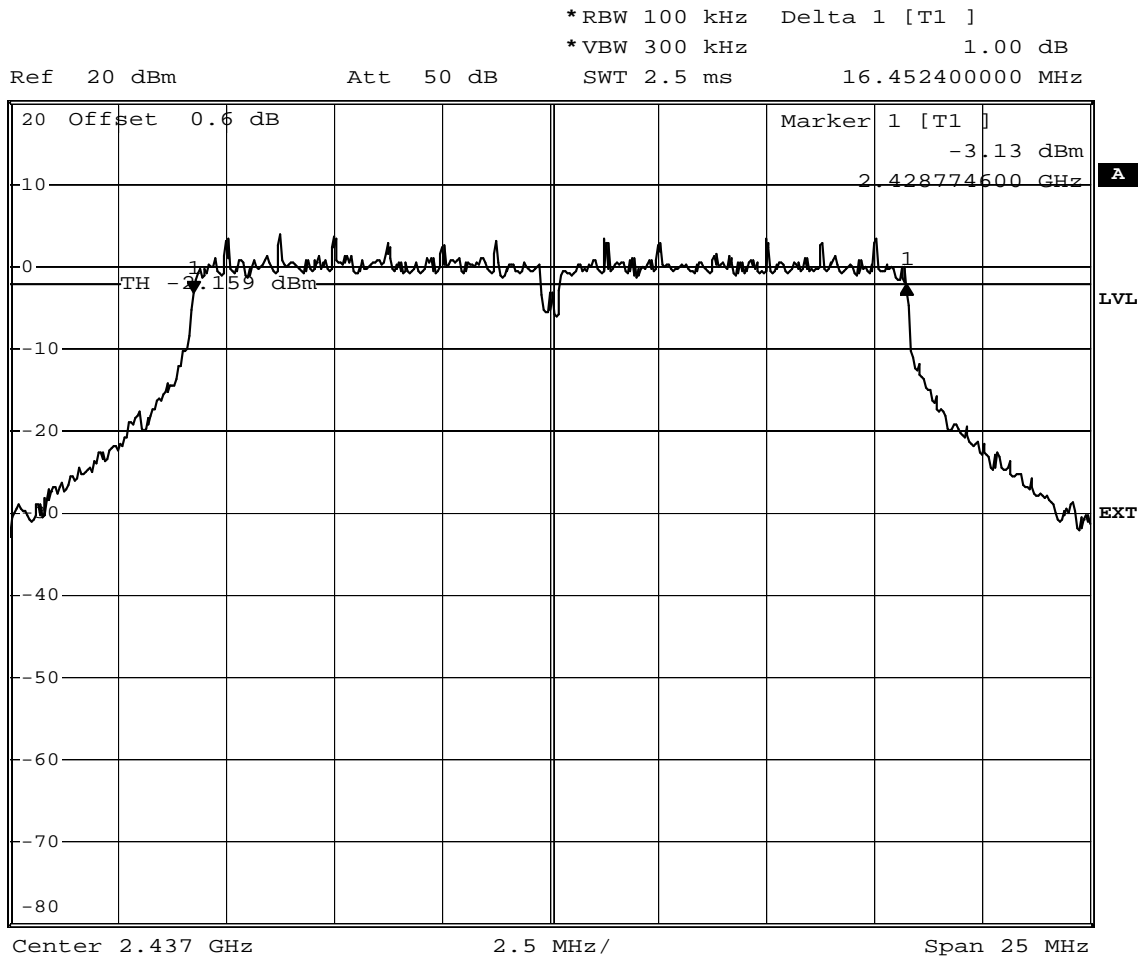
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (a)2 |
| Comment 1 | Minimum 6 dB Bandwidth |
| Comment 2 | Channel : 1 / 2412 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



Comment: 6 dB bandwidth: 16454 KHz > 500 KHz; verdict: PASS
Date: 14.JUL.2010 13:22:19

**FCC part 15.247 (a)2
Minimum 6 dB Bandwidth**

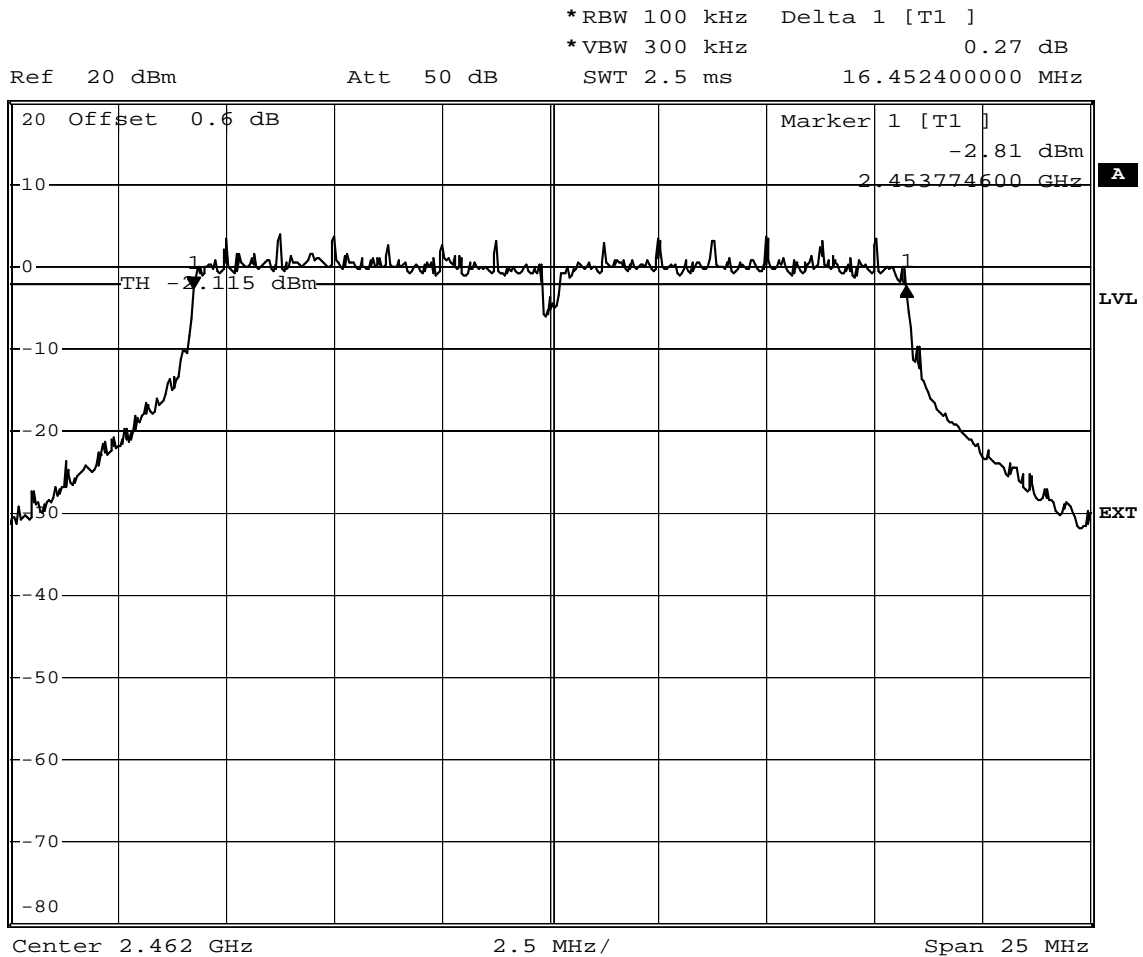
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (a)2 |
| Comment 1 | Minimum 6 dB Bandwidth |
| Comment 2 | Channel : 6 / 2437 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



Comment: 6 dB bandwidth: 16452.4 KHz > 500 KHz; verdict: PASS
Date: 14.JUL.2010 13:20:00

**FCC part 15.247 (a)2
Minimum 6 dB Bandwidth**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (a)2 |
| Comment 1 | Minimum 6 dB Bandwidth |
| Comment 2 | Channel : 11 / 2462 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



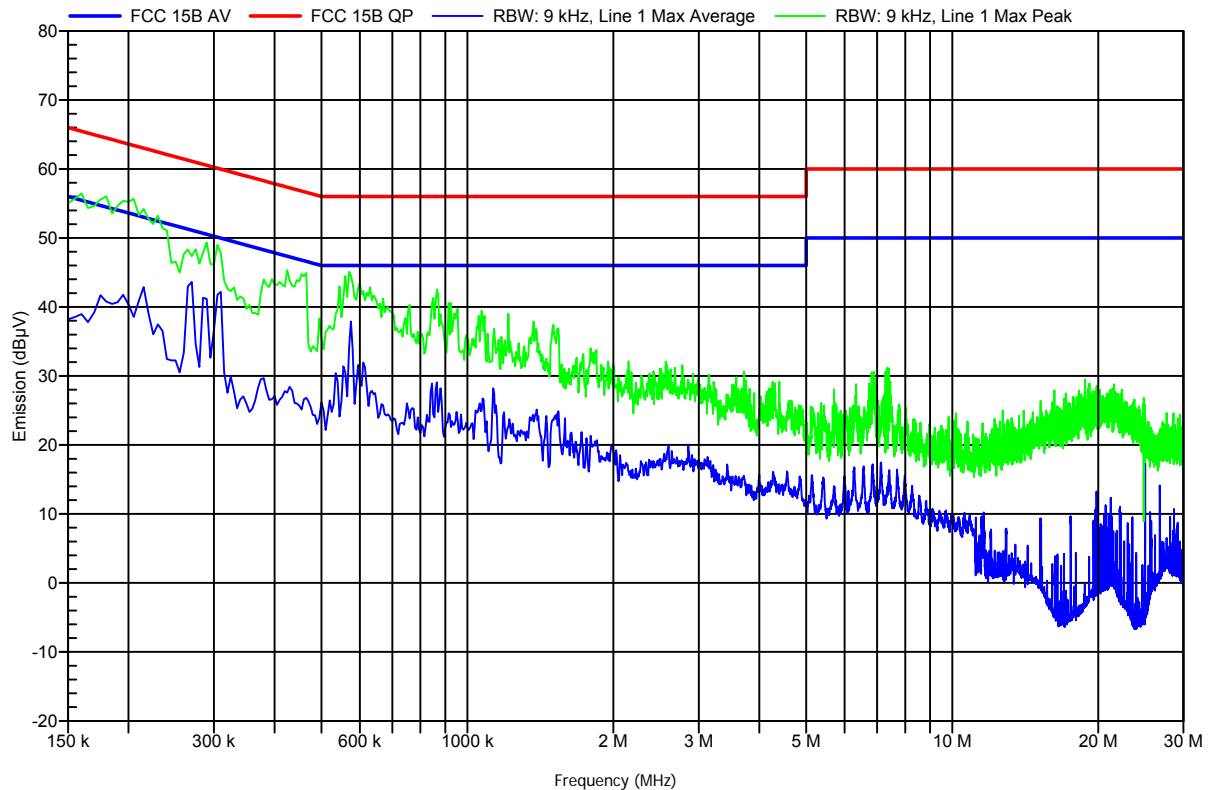
Comment: 6 dB bandwidth: 16452.4 KHz > 500 KHz; verdict: PASS
Date: 14.JUL.2010 13:13:01

Annex C AC Powerline Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Order number: G0M21007-3444

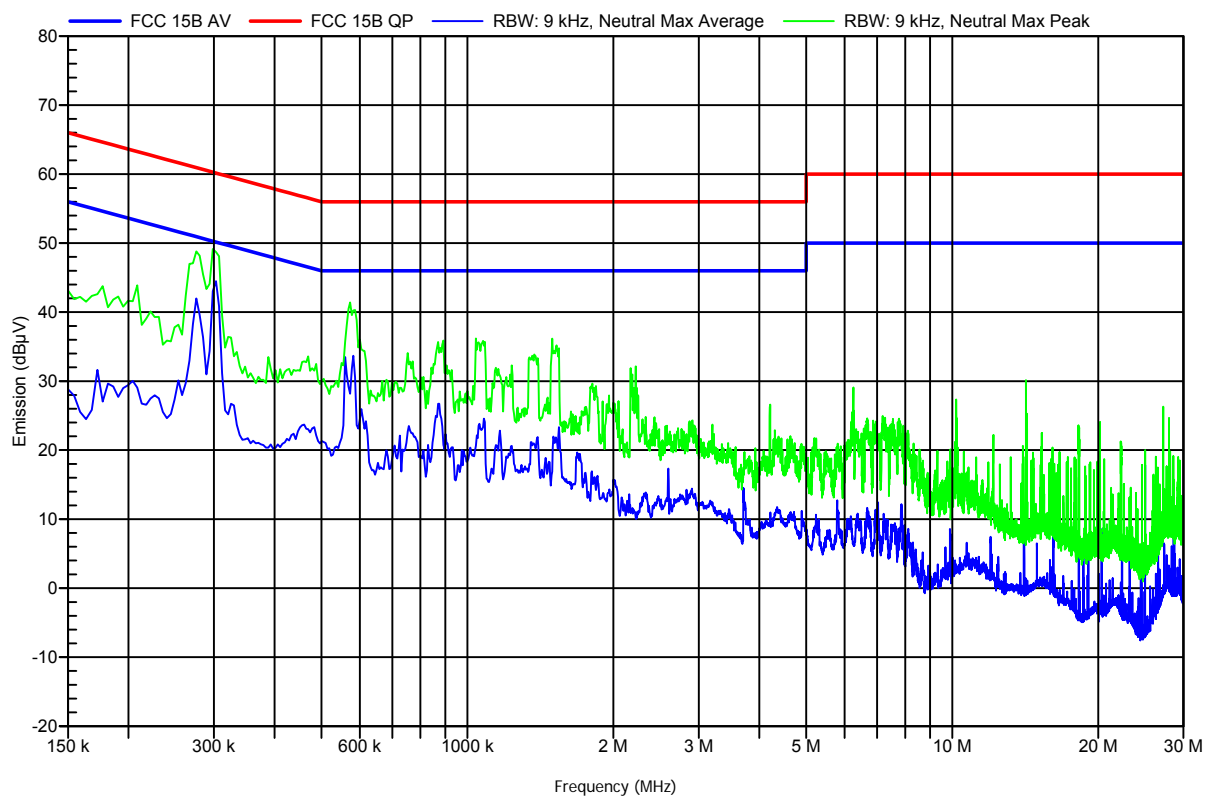
Manufacturer: lesswire AG
 EUT Name: RF module with WLAN and BT
 Model: AN00K73535
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 LISN: ESH2-Z5 L
 Mode: powered from notebook
 Test Date: 03.09.2010
 Note:



EMI voltage test in the ac-mains according to FCC 15B

Order number: G0M21007-3444

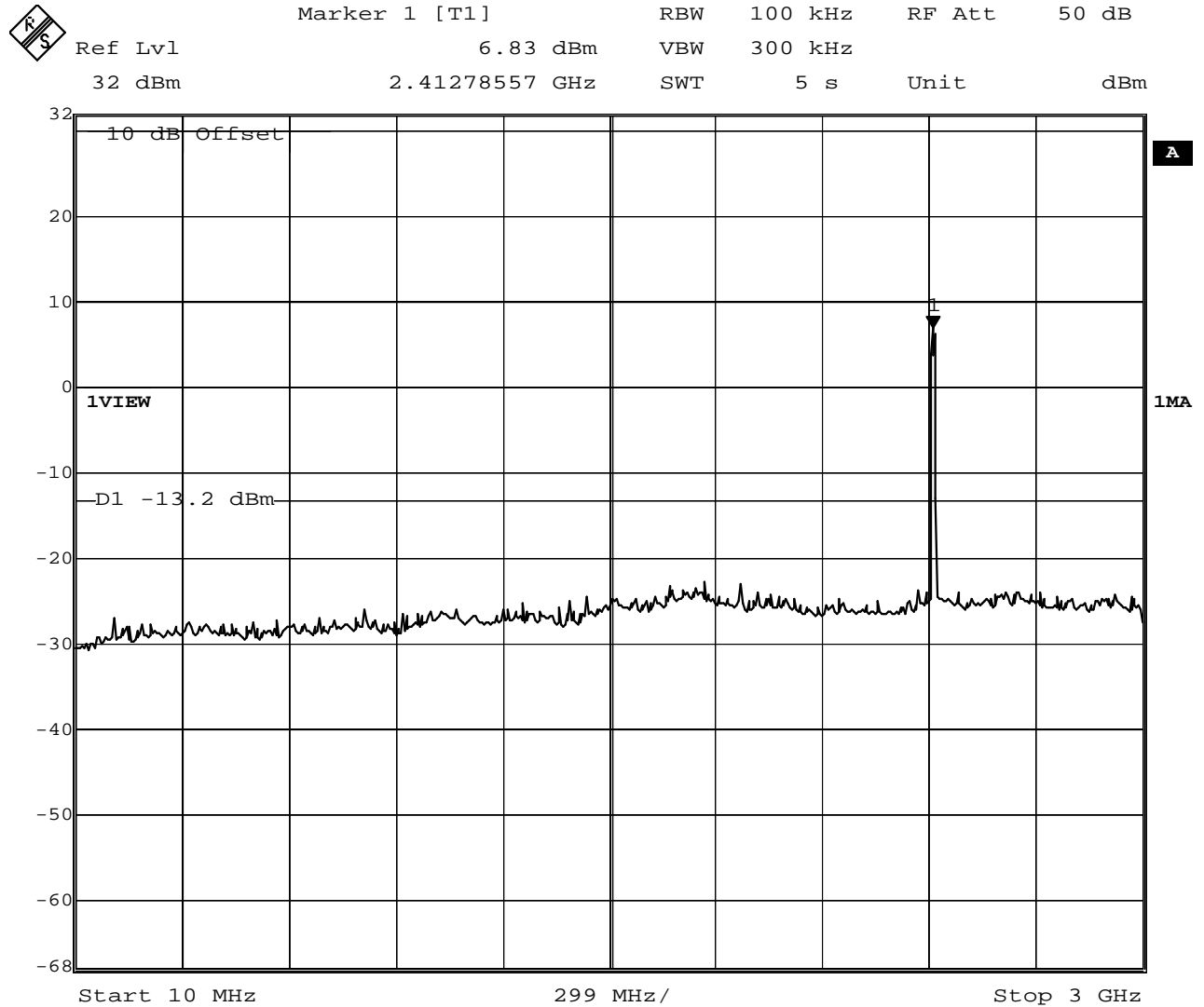
Manufacturer: lesswire AG
 EUT Name: RF module with WLAN and BT
 Model: AN00K73535
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 LISN: ESH2-Z5 N
 Mode: powered from notebook
 Test Date: 03.09.2010
 Note:



Annex D Transmitter conducted spurious emissions

FCC part 15.247 (d) Spurious Emissions

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2412 MHz |
| Comment 3 | DSSS / 1 Mbit/s |



Date: 27.AUG.2010 15:45:49

Test Report No.: G0M21007-3444-C-1

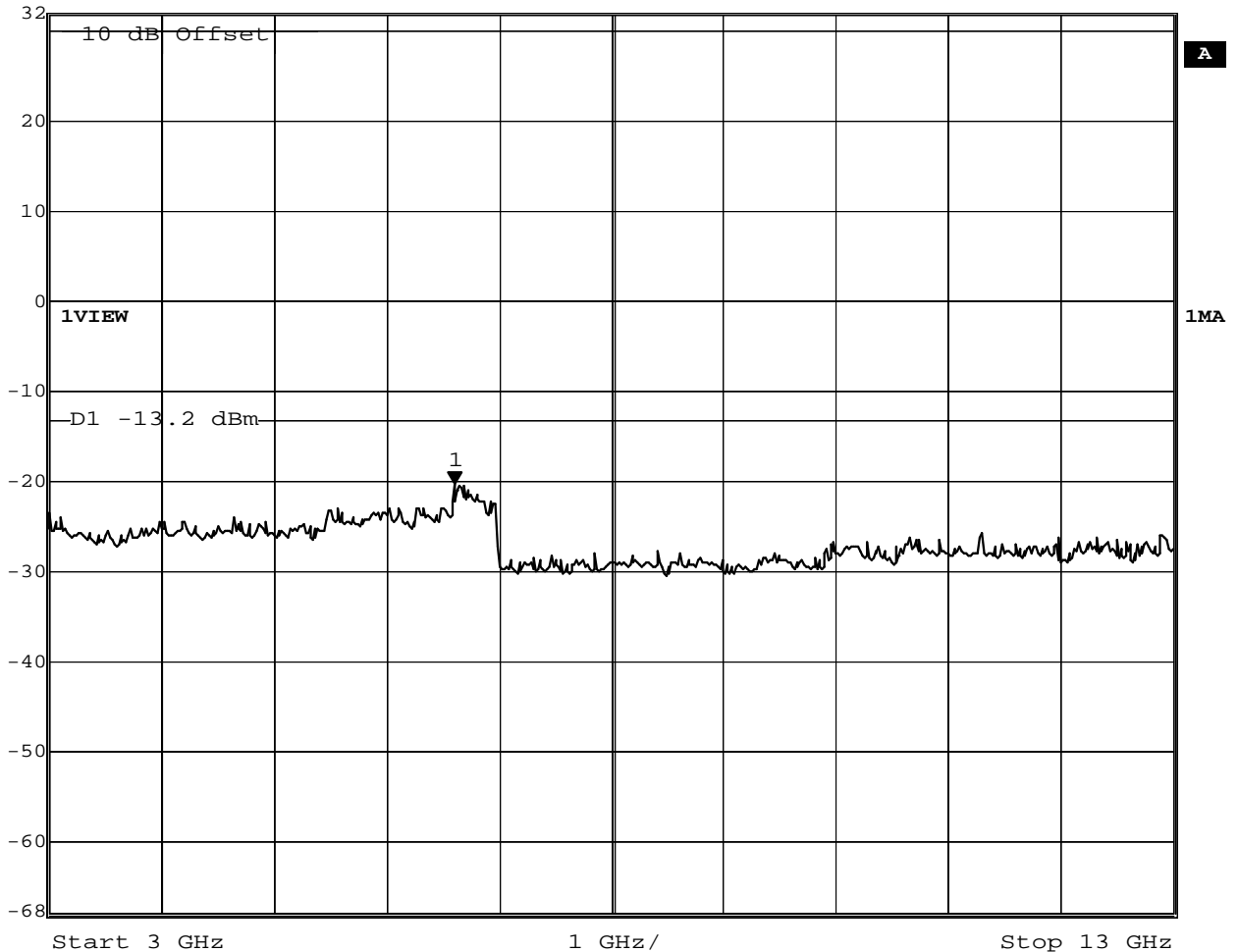
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2412 MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | | |
|---------|----------------|-----|---------|--------|-------|
| | Marker 1 [T1] | RBW | 100 kHz | RF Att | 50 dB |
| Ref Lvl | -20.46 dBm | VBW | 300 kHz | | |
| 32 dBm | 6.60721443 GHz | SWT | 5 s | Unit | dBm |



Date: 27.AUG.2010 15:48:02

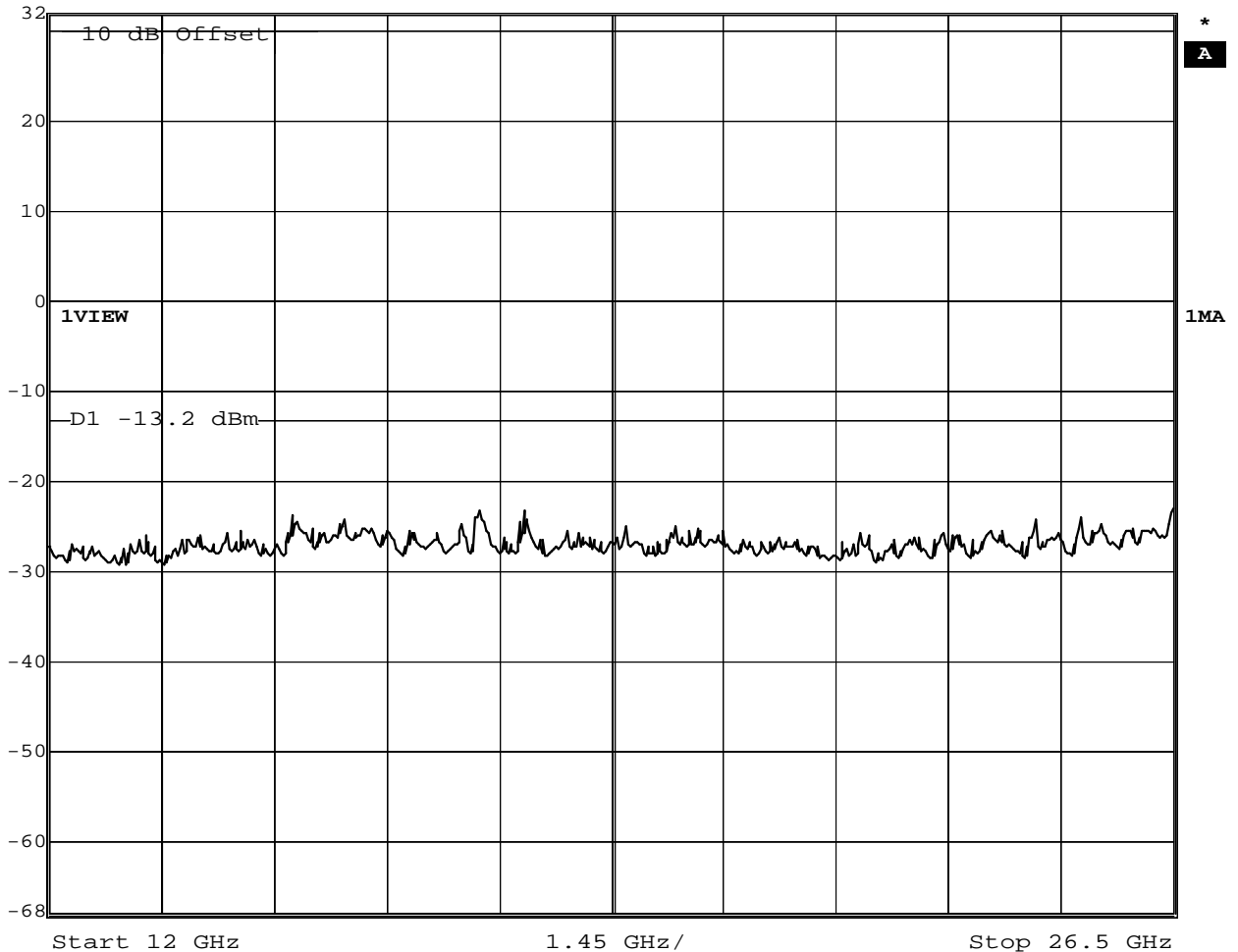
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2412 MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | |
|---------|-----|---------|--------|-------|
| Ref Lvl | RBW | 100 kHz | RF Att | 50 dB |
| 32 dBm | VBW | 300 kHz | Unit | dBm |
| | SWT | 5 s | | |



Date: 27.AUG.2010 15:50:57

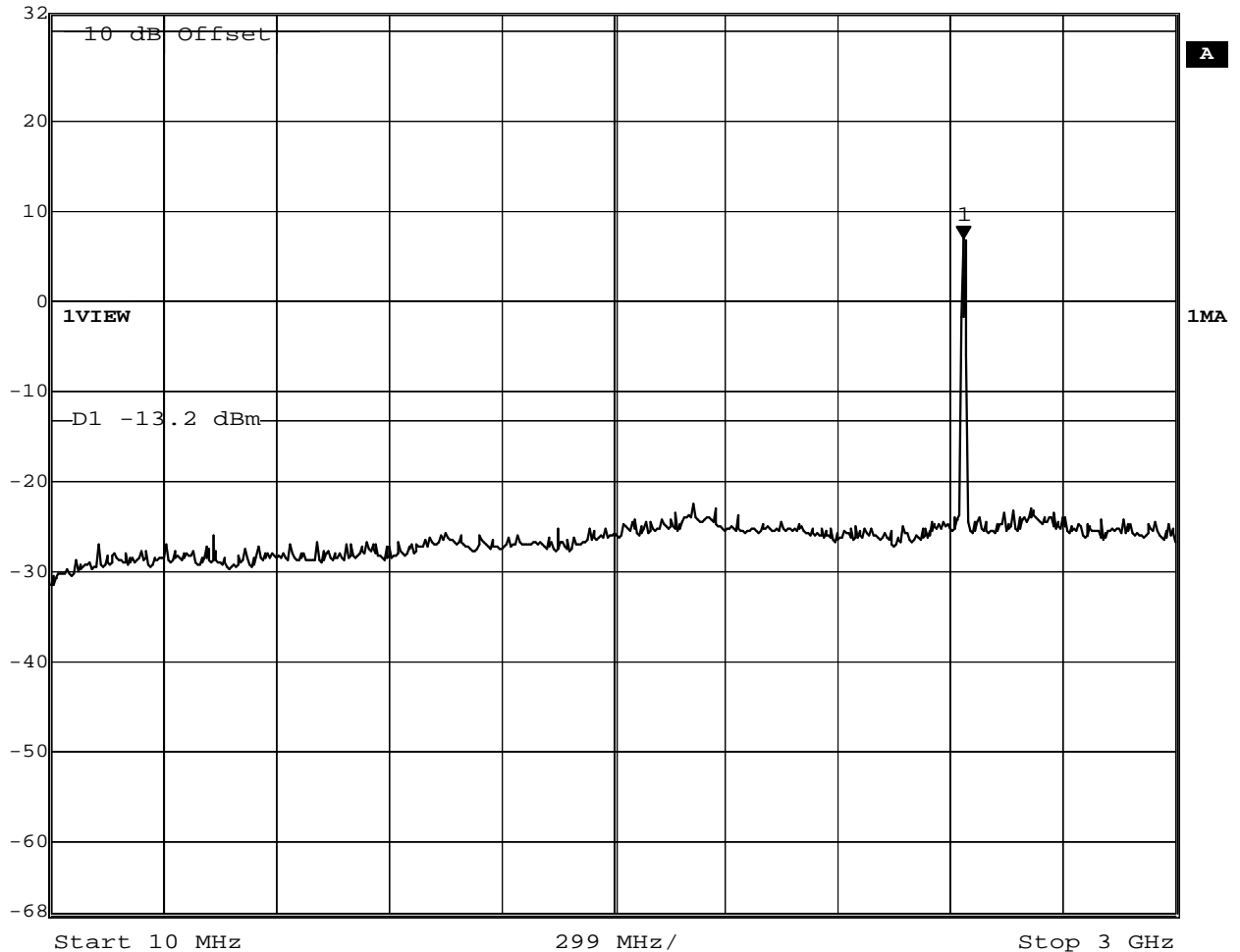
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2437MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | |
|---------------|----------------|---------|---------|----------|
| Marker 1 [T1] | RBW | 100 kHz | RF Att | 50 dB |
| Ref Lvl | 6.81 dBm | VBW | 300 kHz | |
| 32 dBm | 2.43675351 GHz | SWT | 5 s | Unit dBm |



Date: 27.AUG.2010 15:52:55

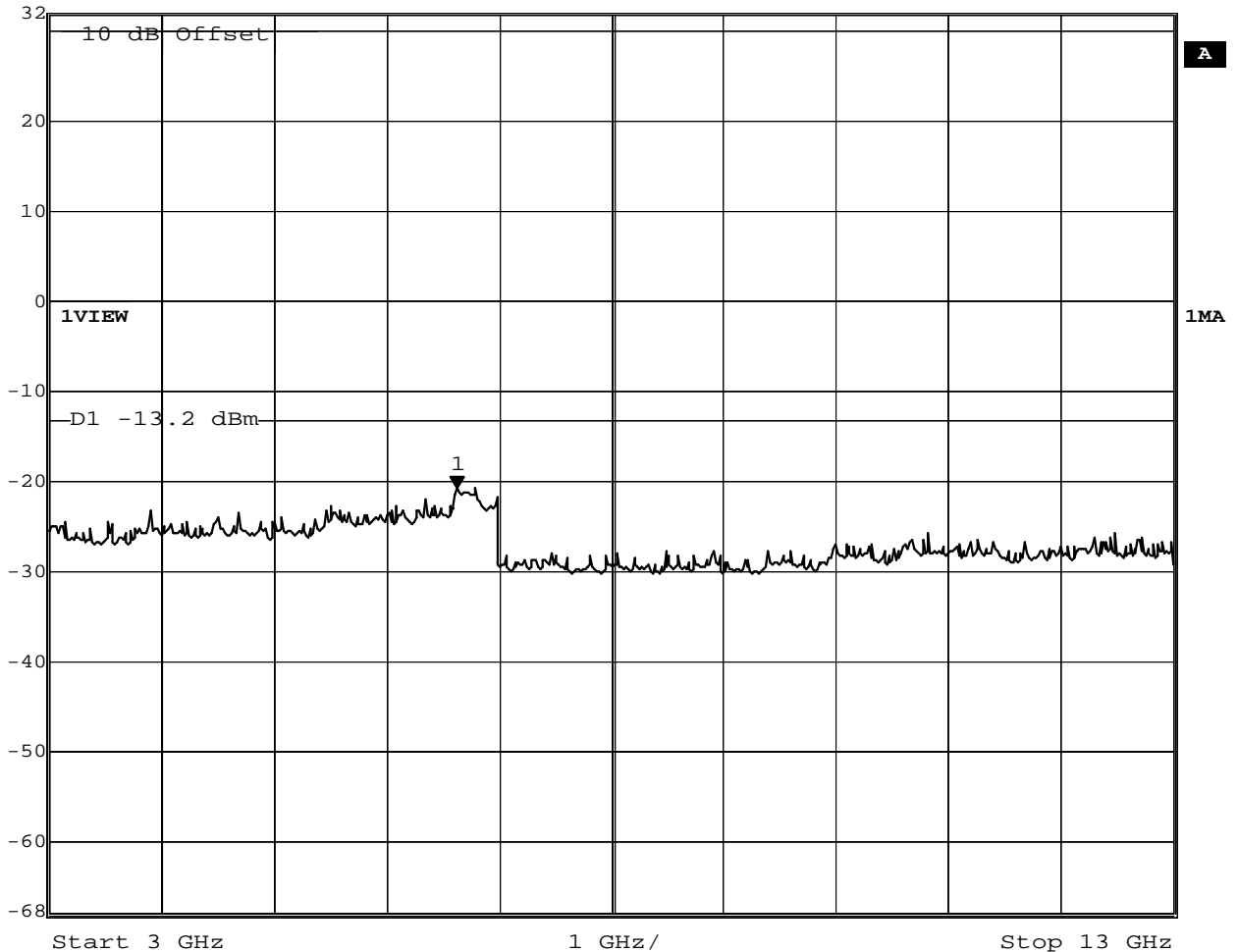
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2437MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | | |
|---------|----------------|-----|---------|--------|-------|
| | Marker 1 [T1] | RBW | 100 kHz | RF Att | 50 dB |
| Ref Lvl | -20.87 dBm | VBW | 300 kHz | | |
| 32 dBm | 6.62725451 GHz | SWT | 5 s | Unit | dBm |



Date: 27.AUG.2010 15:54:25

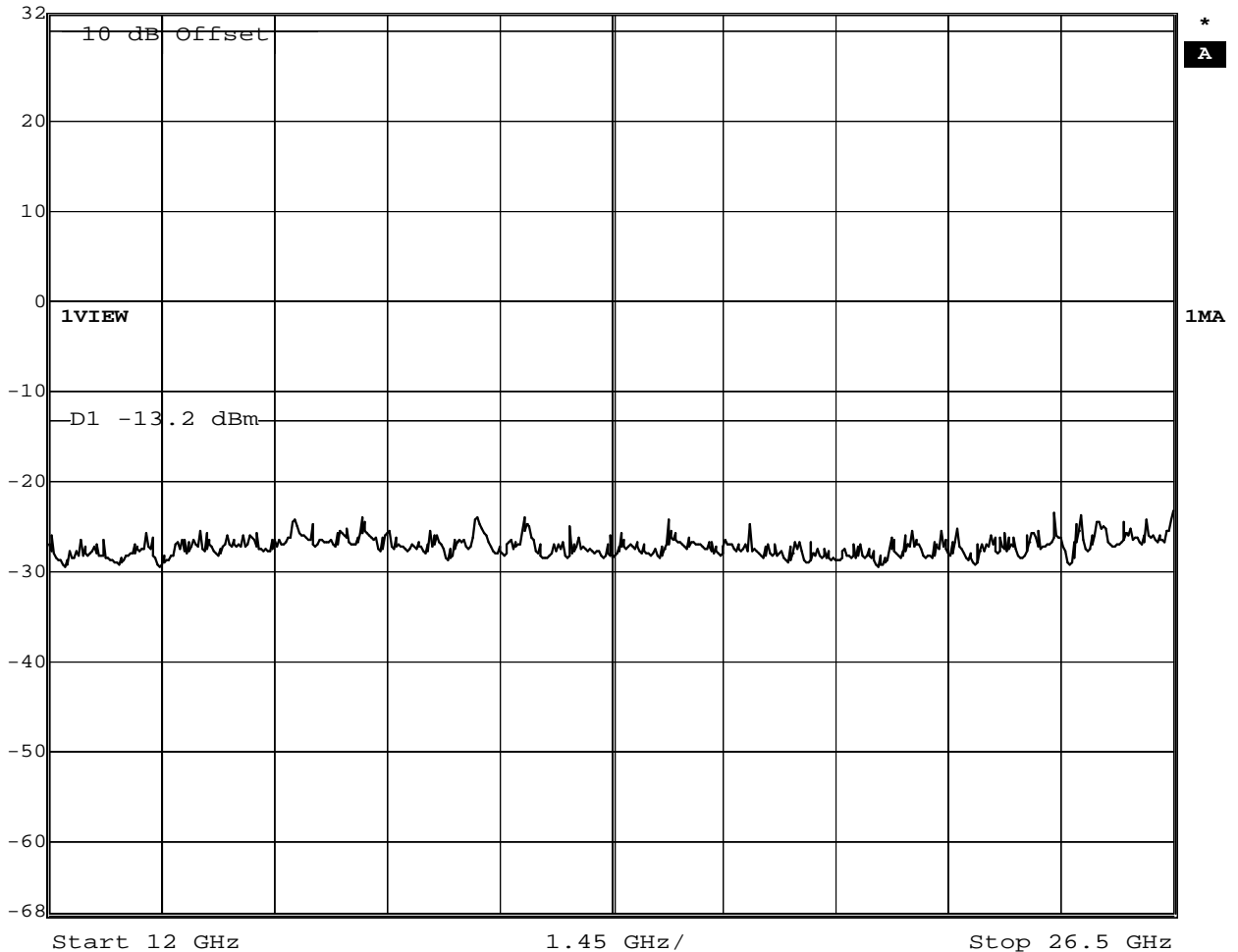
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2437MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | |
|---------|-----|---------|--------|-------|
| Ref Lvl | RBW | 100 kHz | RF Att | 50 dB |
| 32 dBm | VBW | 300 kHz | Unit | dBm |
| | SWT | 5 s | | |



Date: 27.AUG.2010 15:56:50

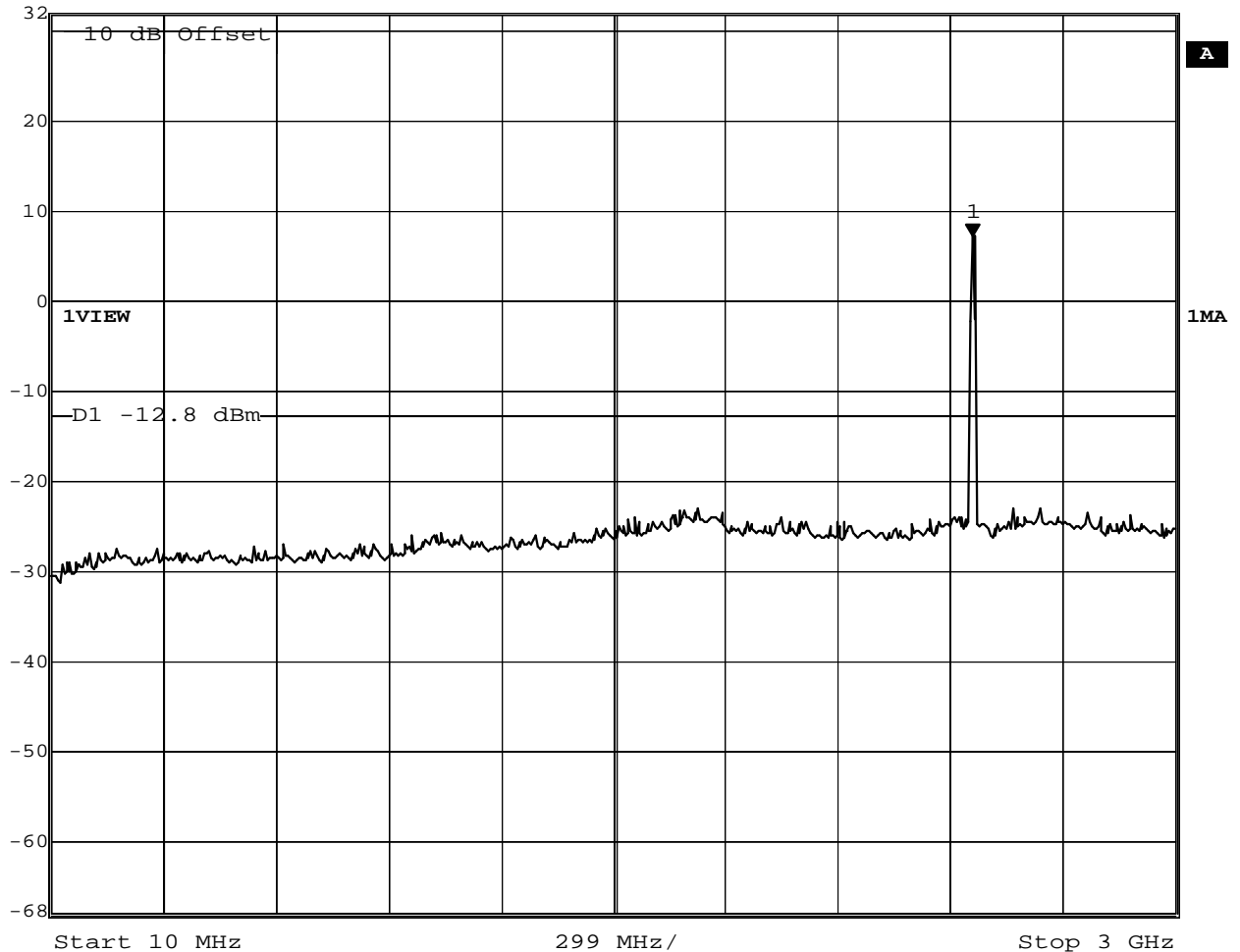
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2462MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | | |
|---------|----------------|-----|---------|--------|-------|
| | Marker 1 [T1] | RBW | 100 kHz | RF Att | 50 dB |
| Ref Lvl | 7.22 dBm | VBW | 300 kHz | | |
| 32 dBm | 2.46072144 GHz | SWT | 5 s | Unit | dBm |



Date: 27.AUG.2010 15:58:25

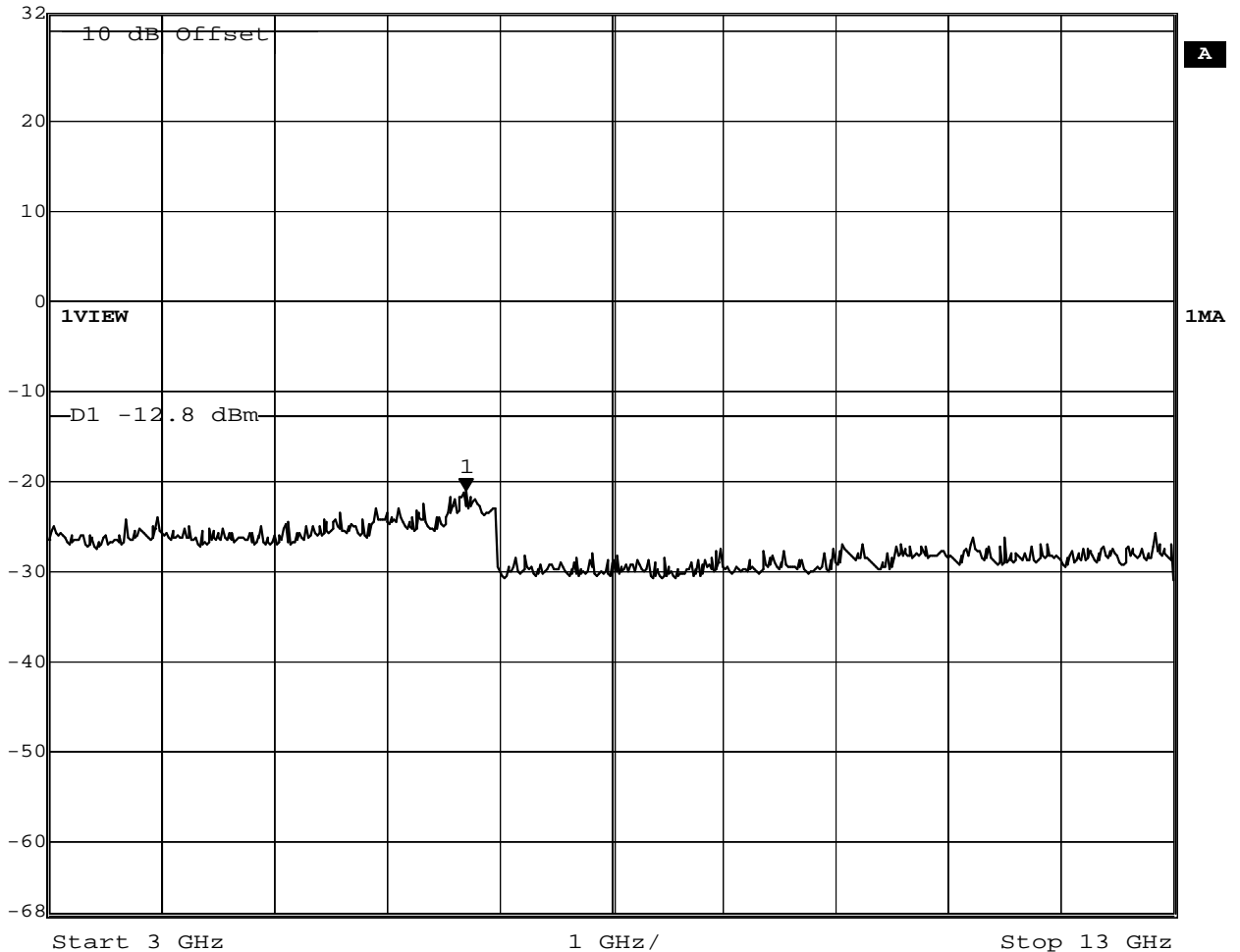
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2462MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | | |
|---------|----------------|-----|---------|--------|-------|
| | Marker 1 [T1] | RBW | 100 kHz | RF Att | 50 dB |
| Ref Lvl | -21.18 dBm | VBW | 300 kHz | | |
| 32 dBm | 6.70741483 GHz | SWT | 5 s | Unit | dBm |



Date: 27.AUG.2010 15:59:32

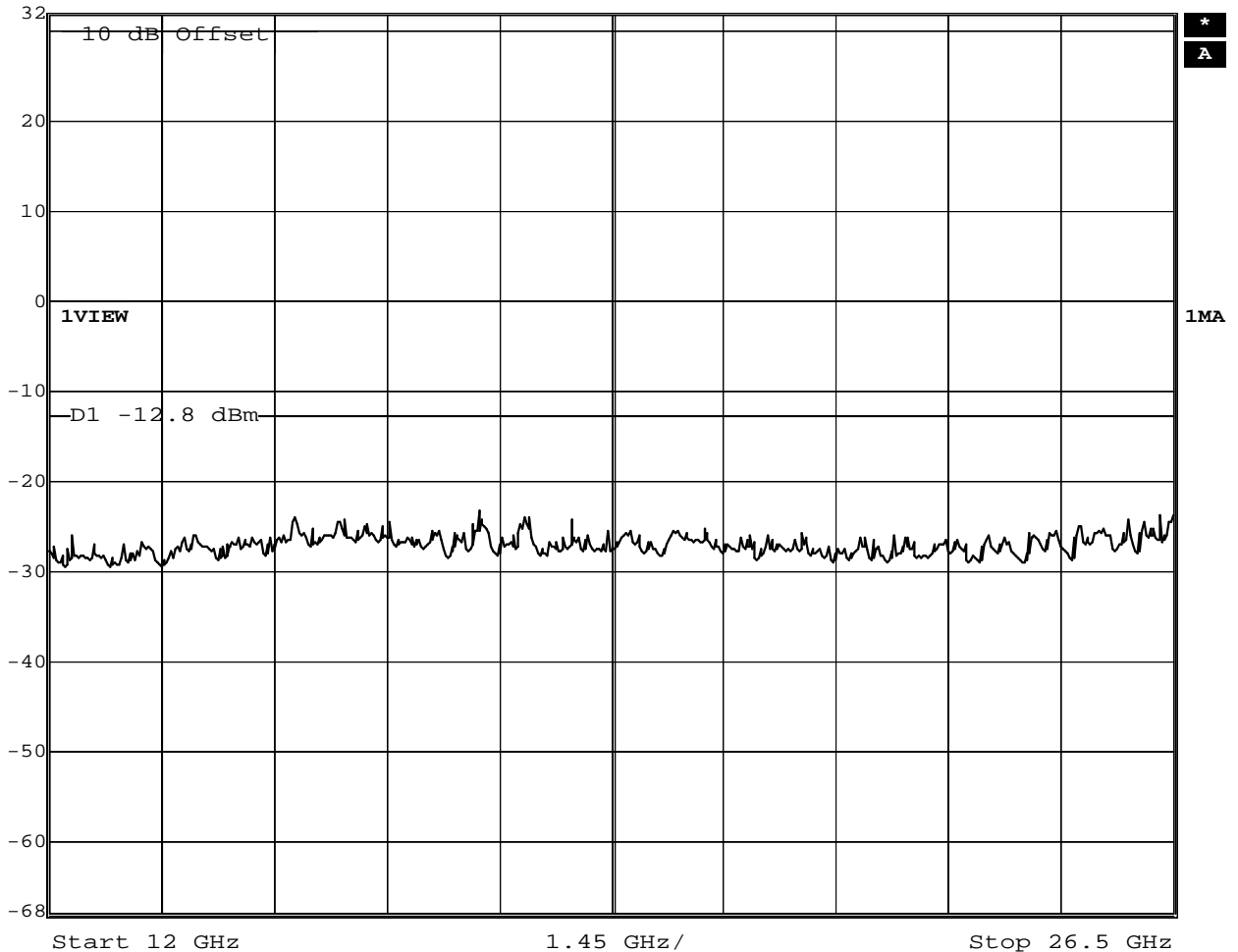
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 2462MHz |
| Comment 3 | DSSS / 1 Mbit/s |



| | | | | |
|---------|-----|---------|--------|-------|
| Ref Lvl | RBW | 100 kHz | RF Att | 50 dB |
| 32 dBm | VBW | 300 kHz | Unit | dBm |
| | SWT | 5 s | | |



Date: 27.AUG.2010 16:00:25

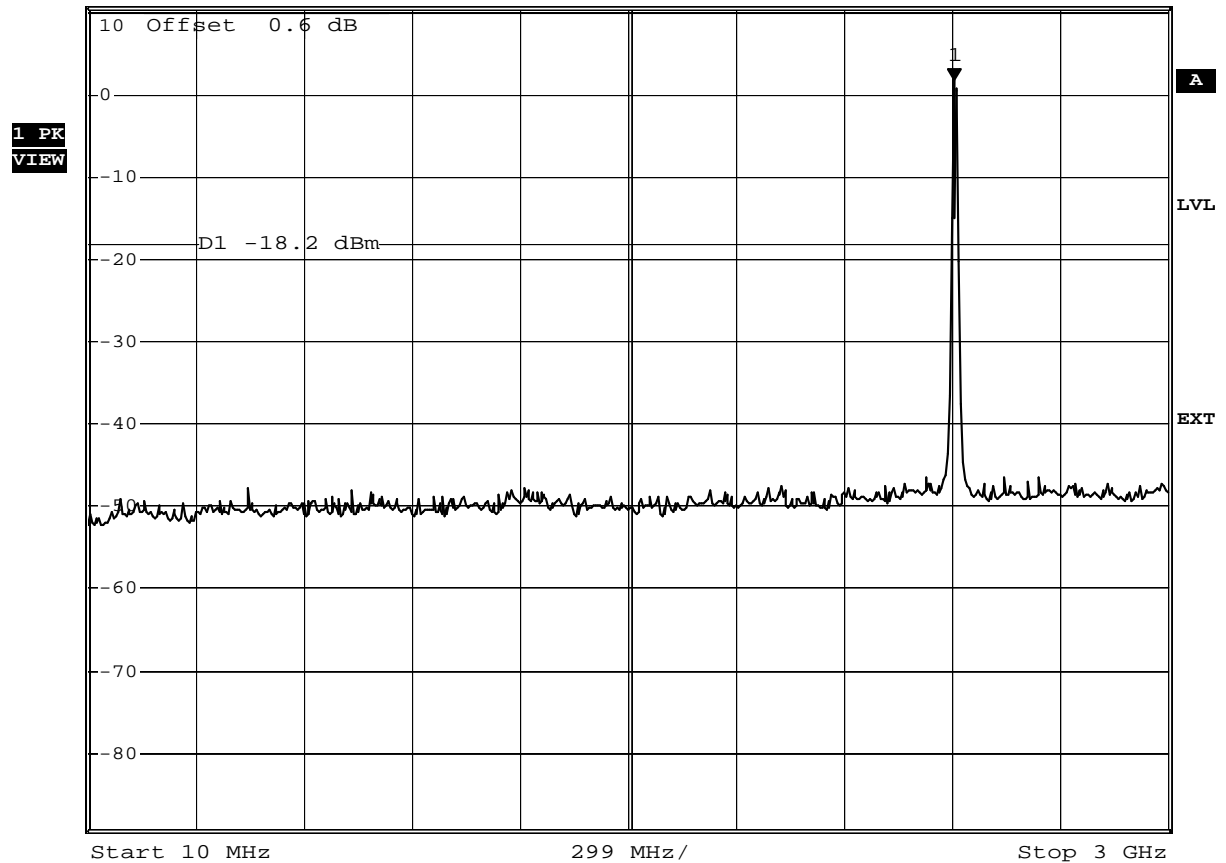
Test Report No.: G0M21007-3444-C-1

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 1 / 2412 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



Ref 10.6 dBm Att 40 dB *RBW 100 kHz Marker 1 [T1] 1.83 dBm
*VBW 300 kHz
*SWT 5 s 2.407980000 GHz



Date: 14.JUL.2010 13:48:13

Test Report No.: G0M21007-3444-C-1

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

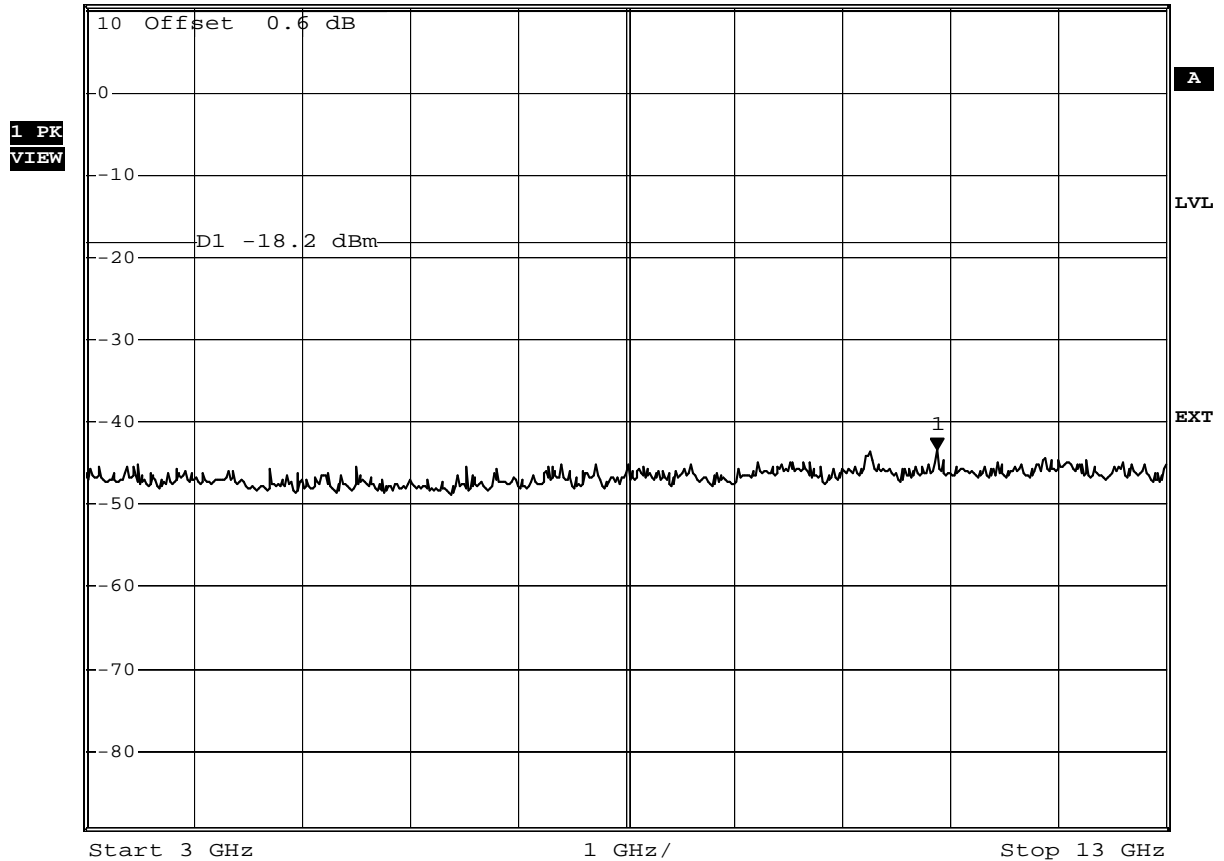
Page 49 of 61

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 1 / 2412 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



| | | | | | | | |
|-----|----------|-----|-------|------|---------|----------------|------------------|
| Ref | 10.6 dBm | Att | 40 dB | *RBW | 100 kHz | Marker 1 [T1] | |
| | | | | *VBW | 300 kHz | | -43.42 dBm |
| | | | | *SWT | 5 s | | 10.880000000 GHz |



Date: 14.JUL.2010 13:49:03

**FCC part 15.247 (d)
Spurious Emissions**

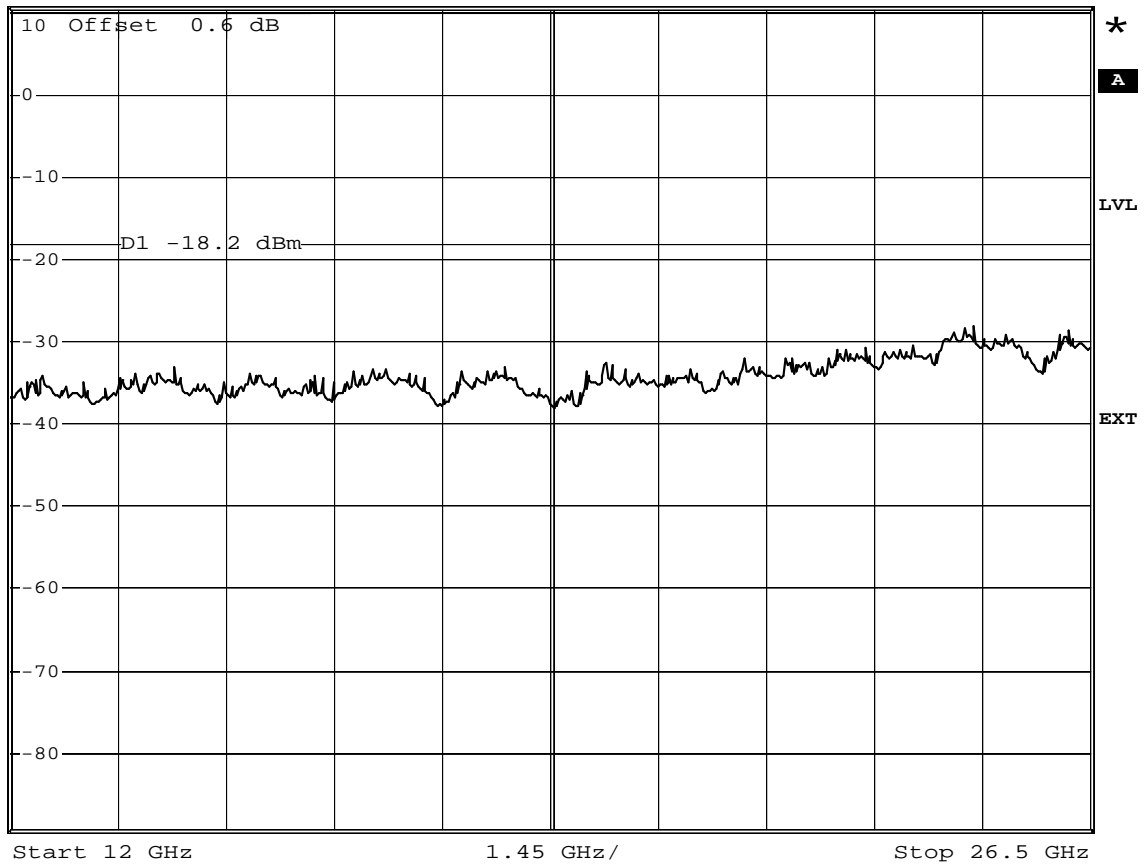
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 1 / 2412 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



*RBW 100 kHz
*VBW 300 kHz
*SWT 5 s

Ref 10.6 dBm

Att 40 dB

**1 PK
VIEW**


Date: 14.JUL.2010 13:50:01

Test Report No.: G0M21007-3444-C-1

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

Page 51 of 61

**FCC part 15.247 (d)
Spurious Emissions**

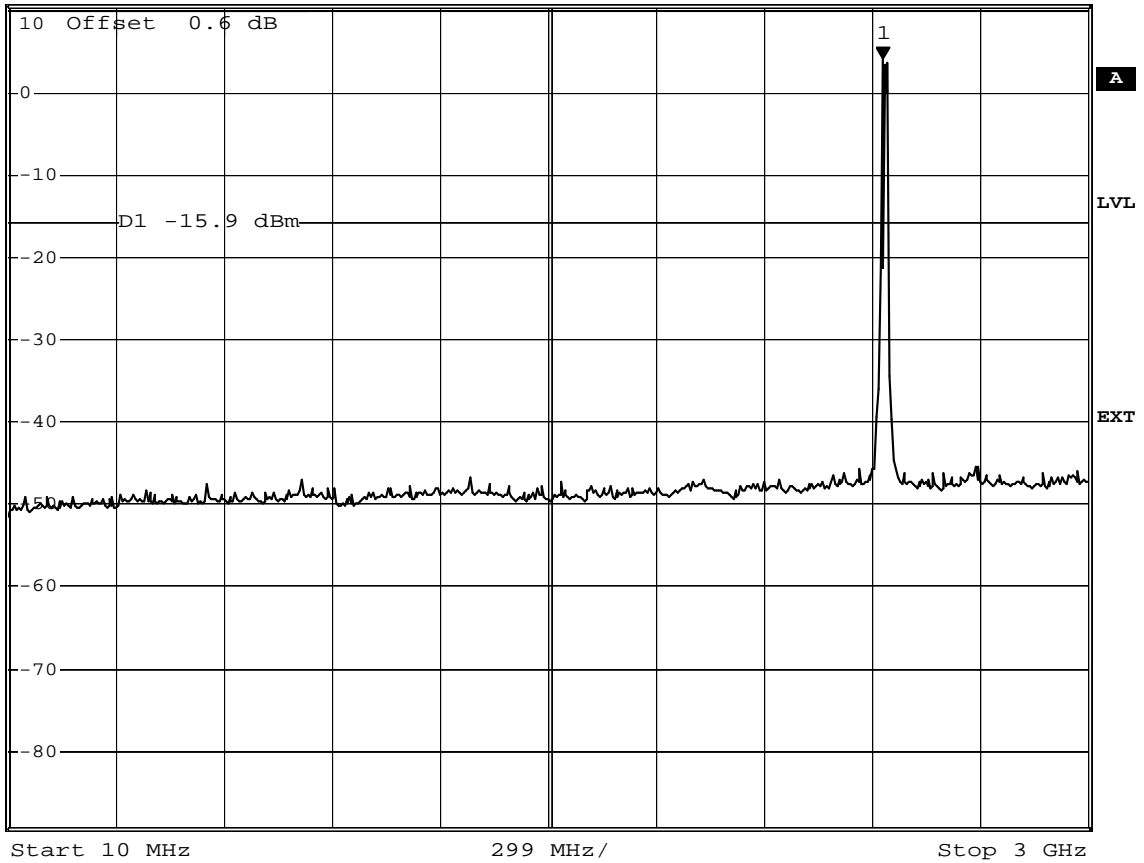
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 6 / 2437 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz 4.07 dBm
 *SWT 5 s 2.431900000 GHz

Ref 10.6 dBm Att 40 dB

1 PK
VIEW



Date: 14.JUL.2010 13:44:26

**FCC part 15.247 (d)
Spurious Emissions**

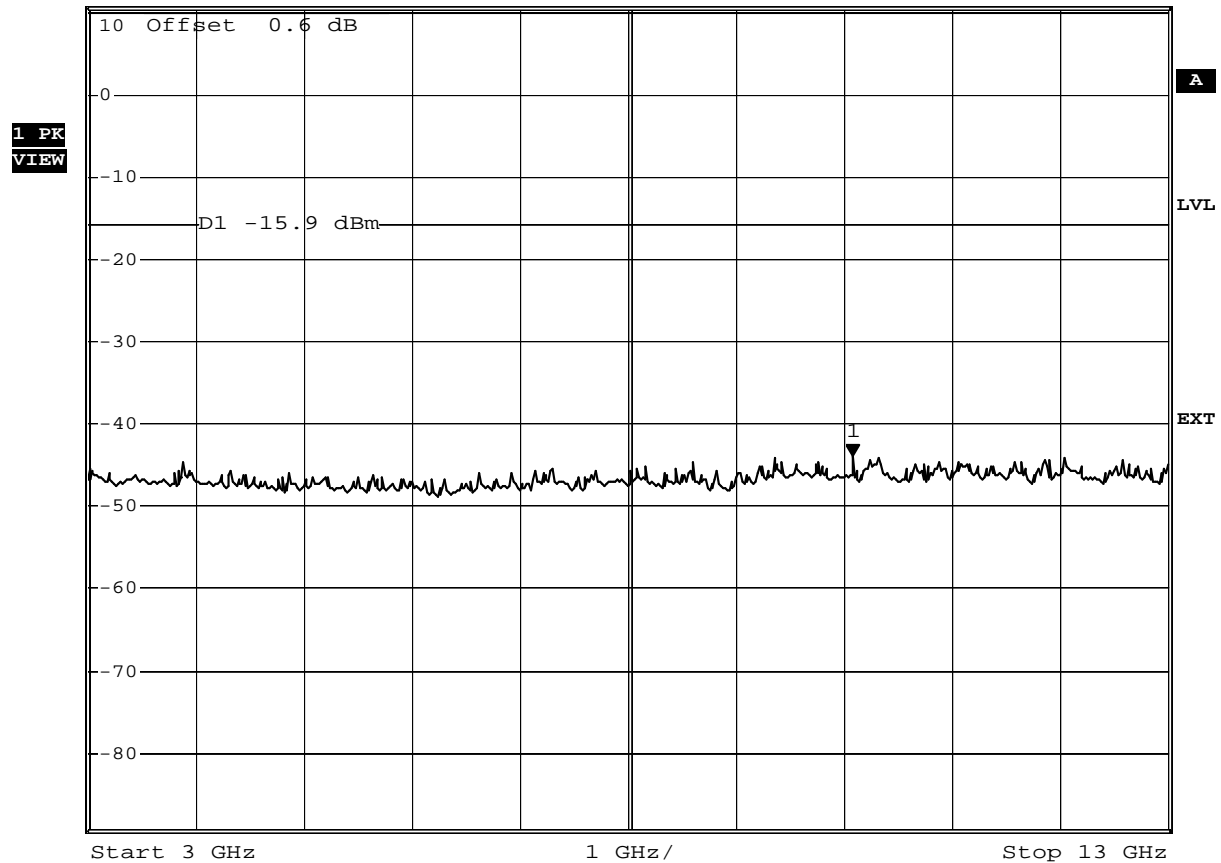
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 6 / 2437 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



*RBW 100 kHz Marker 1 [T1]
 *VBW 300 kHz -43.91 dBm
 *SWT 5 s 10.08000000 GHz

Ref 10.6 dBm

Att 40 dB



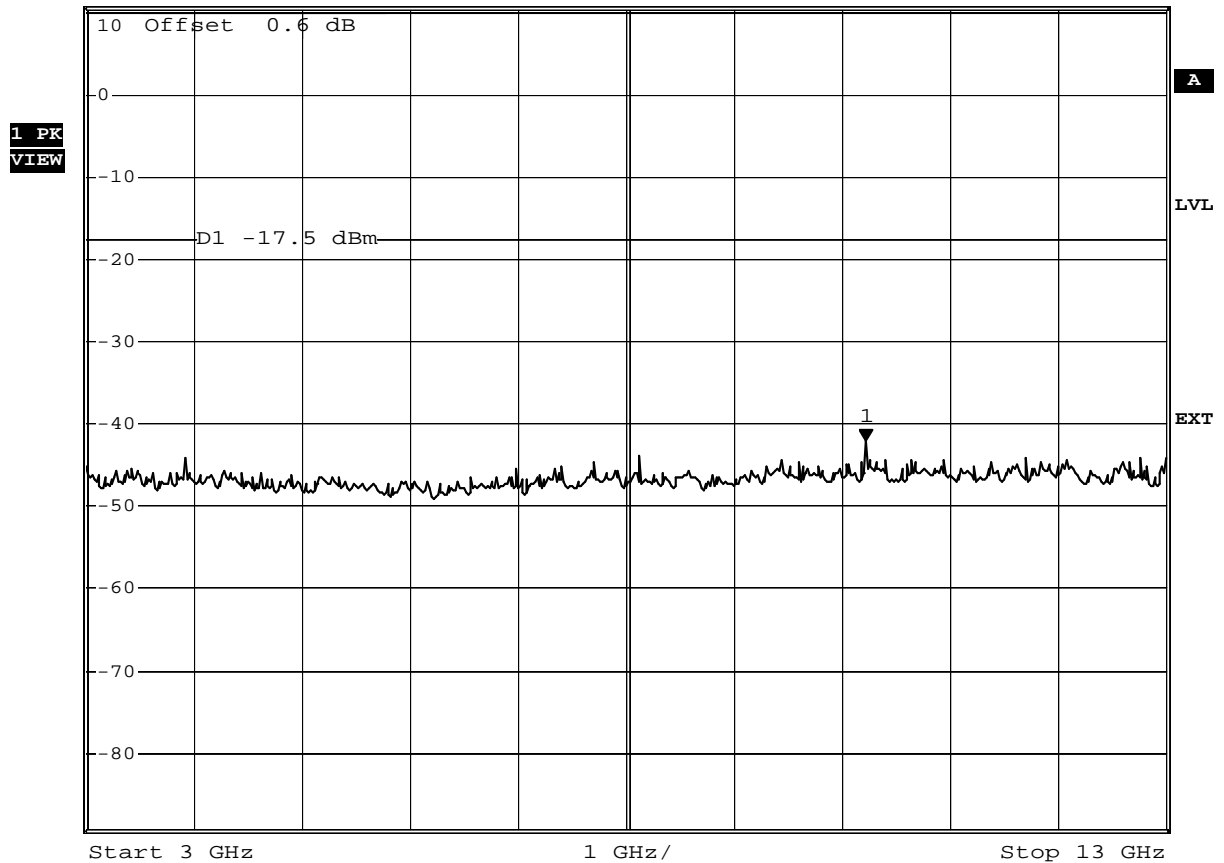
Date: 14.JUL.2010 13:45:20

**FCC part 15.247 (d)
Spurious Emissions**

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 11 / 2462 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



| | | | | | | | |
|-----|----------|-----|-------|------|---------|---------------|------------------|
| Ref | 10.6 dBm | Att | 40 dB | *RBW | 100 kHz | Marker 1 [T1] | |
| | | | | *VBW | 300 kHz | | -42.07 dBm |
| | | | | *SWT | 5 s | | 10.220000000 GHz |



Date: 14.JUL.2010 13:38:29

**FCC part 15.247 (d)
Spurious Emissions**

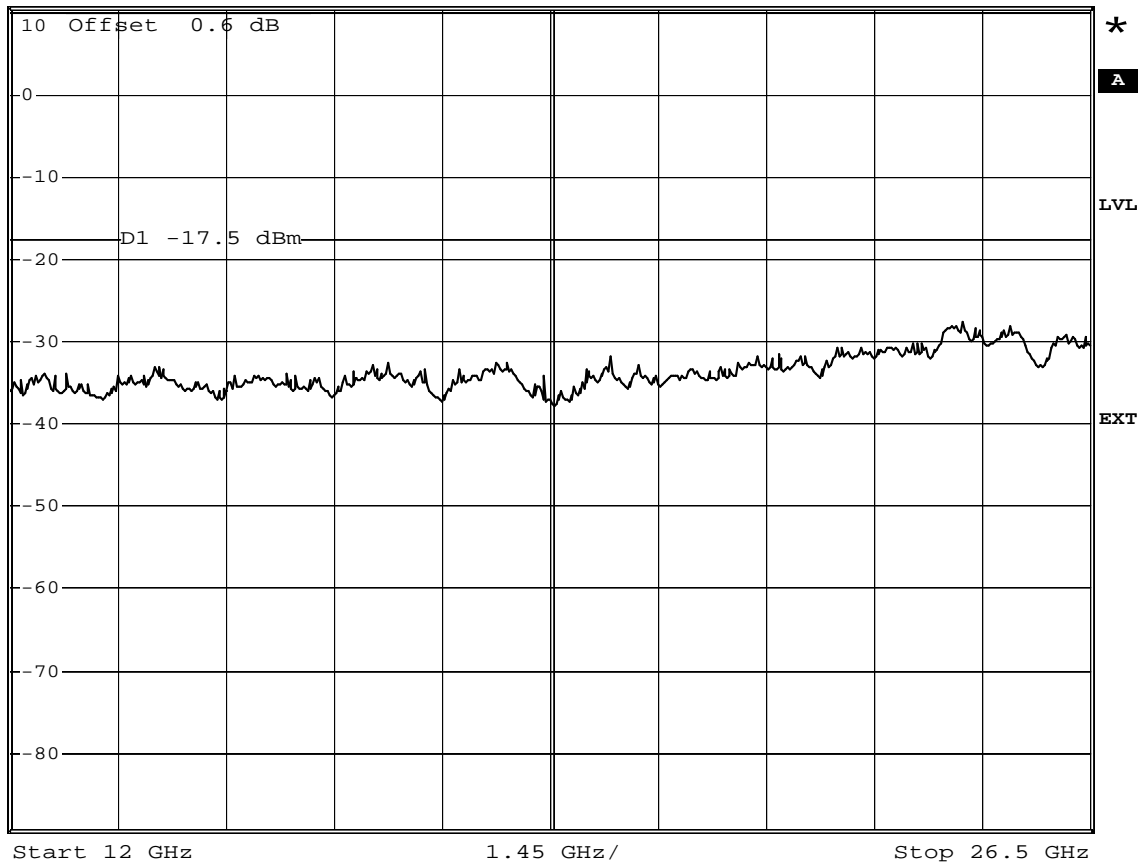
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15.247 (d) |
| Comment 1 | Spurious Emissions conducted |
| Comment 2 | Channel : 11 / 2462 MHz |
| Comment 3 | OFDM / 6 Mbit/s |



* RBW 100 kHz
* VBW 300 kHz
* SWT 5 s

Ref 10.6 dBm

Att 40 dB

**1 PK
VIEW**


Date: 14.JUL.2010 13:40:03

Test Report No.: G0M21007-3444-C-1

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

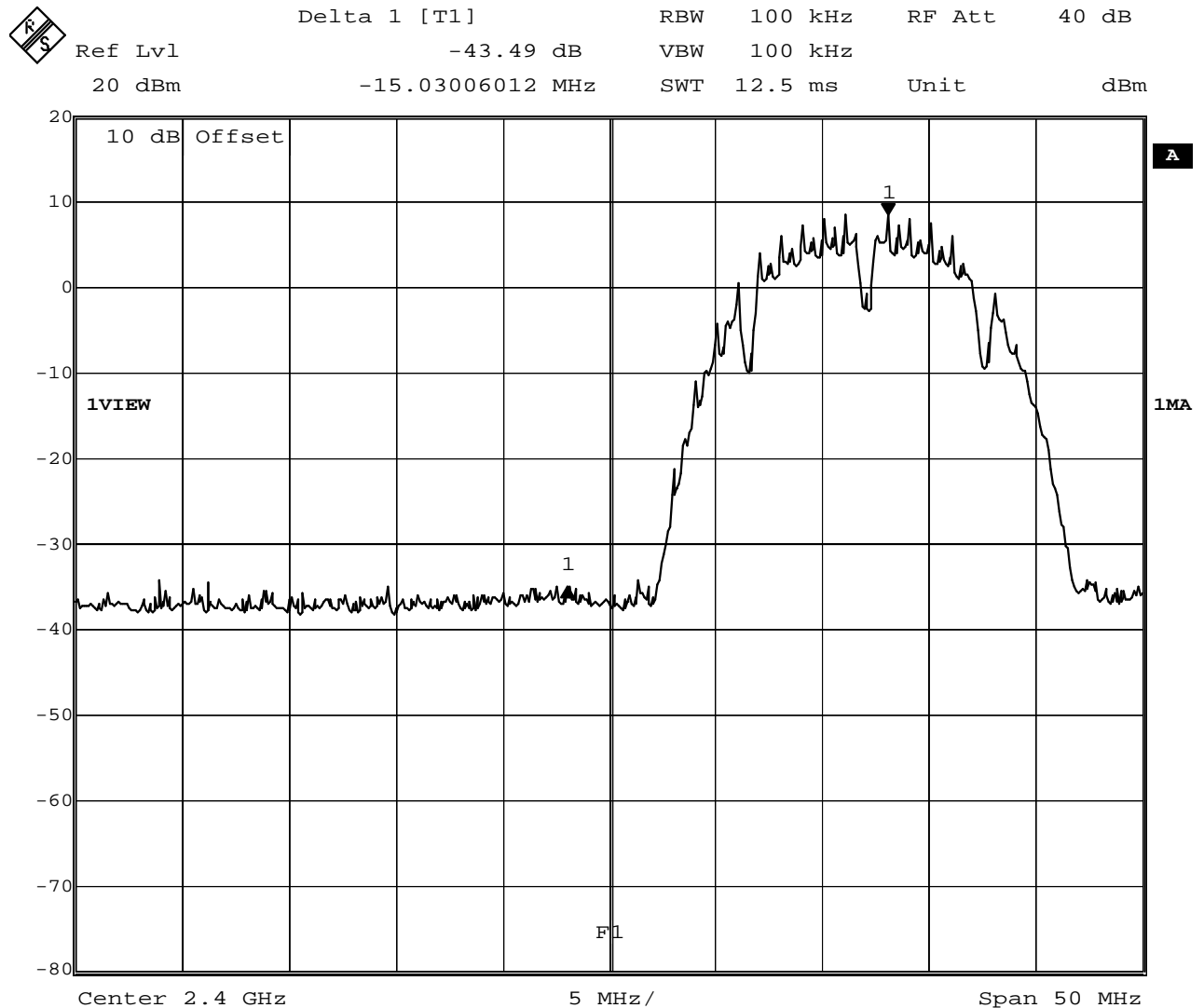
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Annex E Band edge compliance

FCC part 15.247

Band-edge compliance of RF conducted emissions

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15 section 247(c) |
| Comment 1 | Band-edge compliance |
| Comment 2 | Channel.: 2412 MHz |
| Comment 3 | DSSS / 1Mbit/s |



Comment A: Limit: Marker Delta value >20 dB; Result: PASS

Date: 27.AUG.2010 16:14:59

Test Report No.: G0M21007-3444-C-1

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

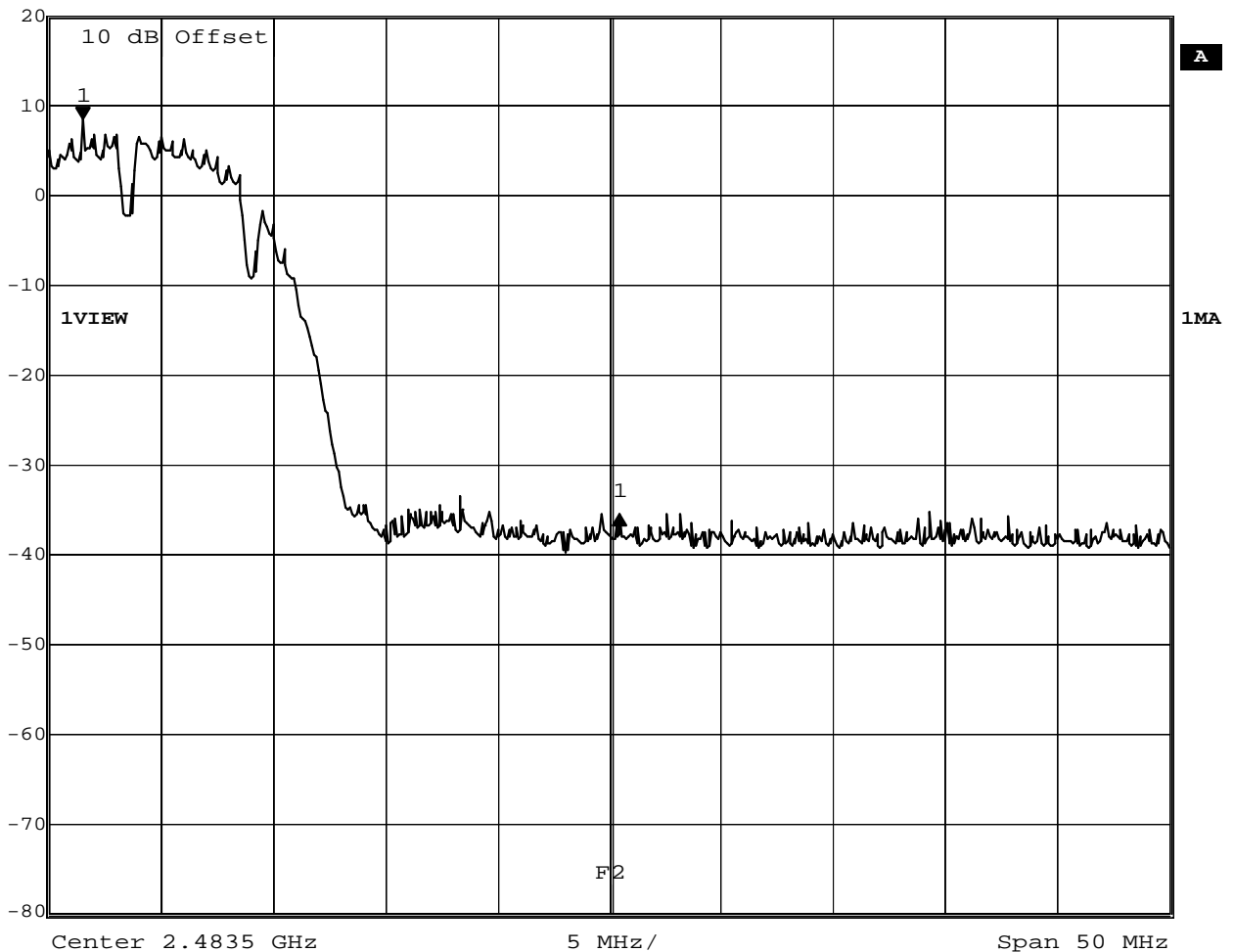
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FCC part 15.247
Band-edge compliance of RF conducted emissions

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15 section 247(c) |
| Comment 1 | Band-edge compliance |
| Comment 2 | Channel.: 2462 MHz |
| Comment 3 | DSSS / 1Mbit/s |



| | | | | | |
|---------|-----------------|-----|---------|--------|-------|
| | Delta 1 [T1] | RBW | 100 kHz | RF Att | 40 dB |
| Ref Lvl | -43.83 dB | VBW | 100 kHz | | |
| 20 dBm | 23.94789579 MHz | SWT | 12.5 ms | Unit | dBm |

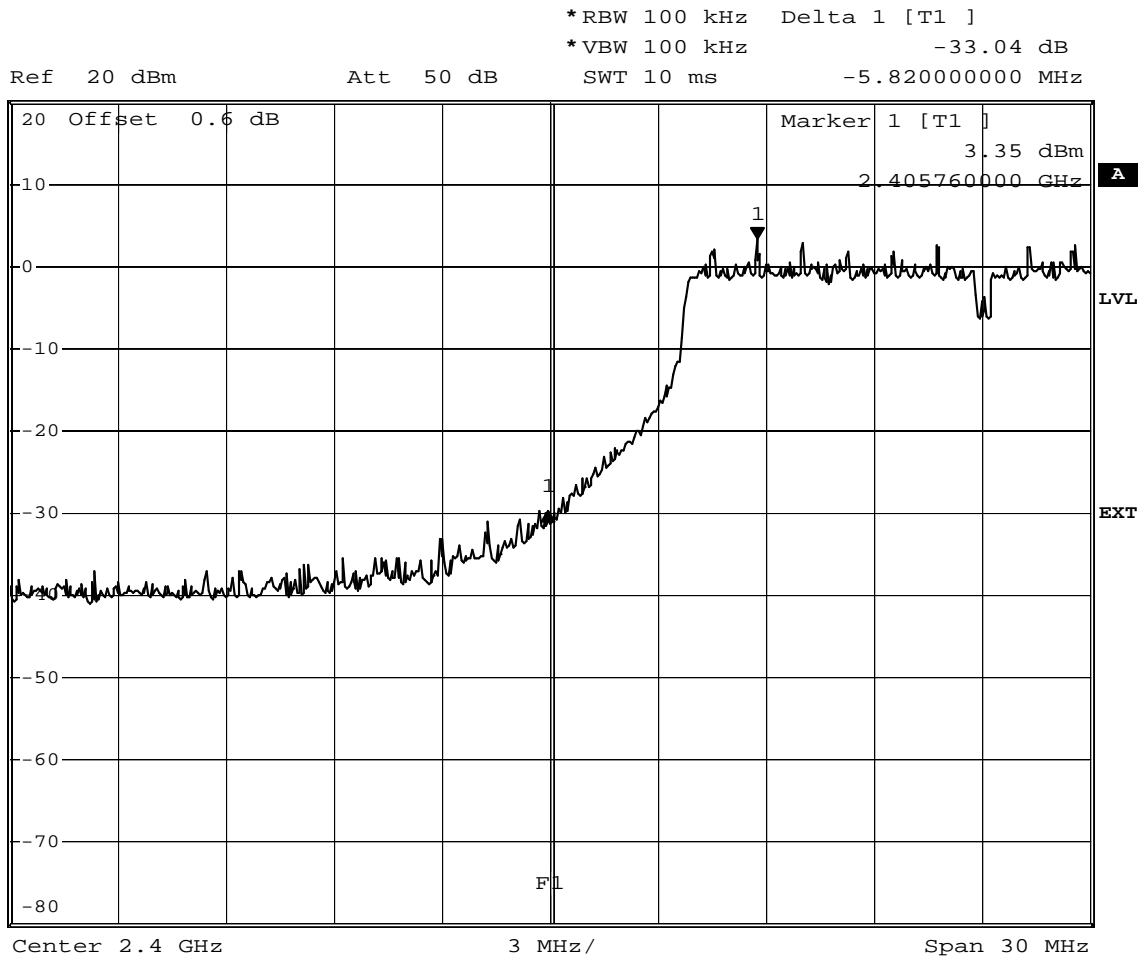


Comment A: Limit: Marker Delta value >20 dB; Result: PASS

Date: 27.AUG.2010 16:11:24

FCC part 15.247
Band-edge compliance of RF conducted emissions

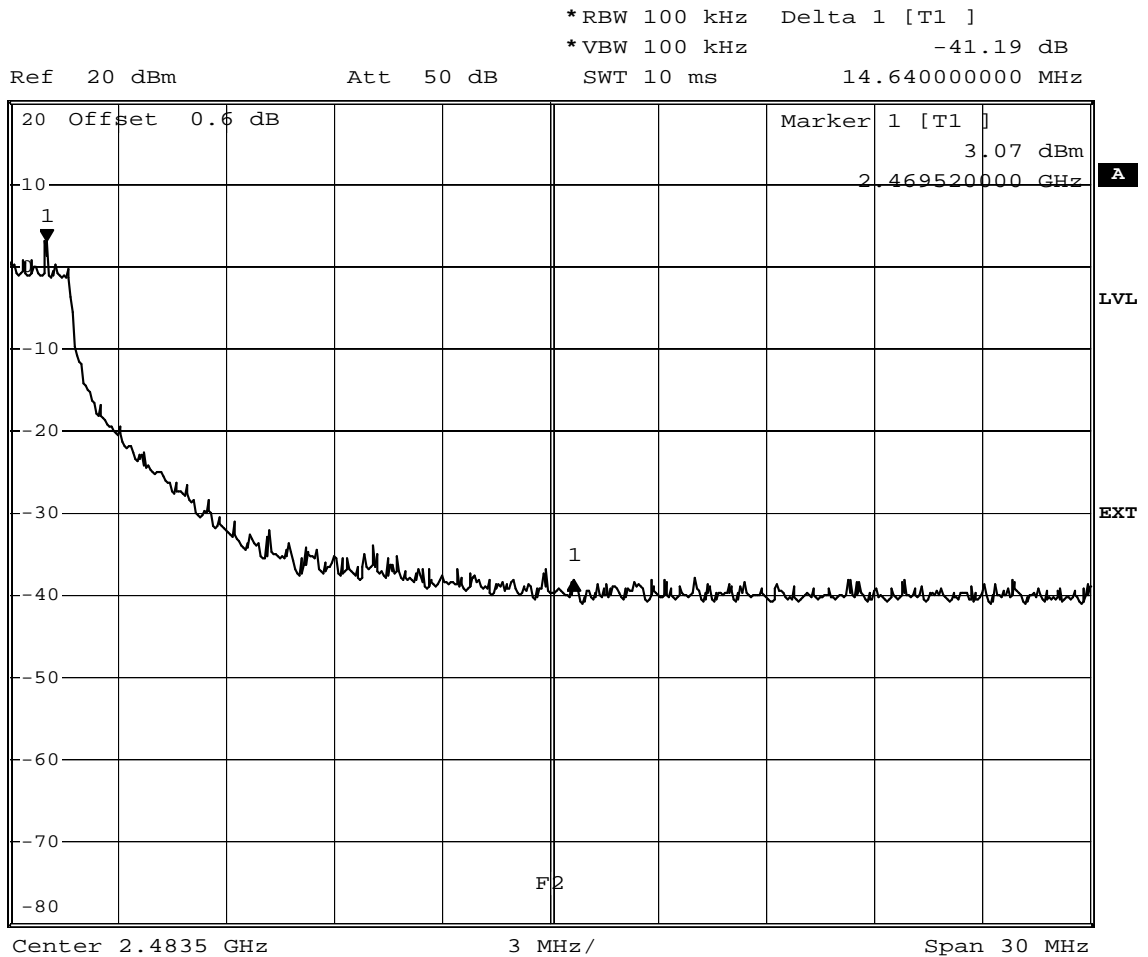
| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15 section 247(c) |
| Comment 1 | Band-edge compliance |
| Comment 2 | Channel : 1 / 2412 MHz |
| Comment 3 | OFDM / 6Mbit/s |



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 14.JUL.2010 14:04:09

FCC part 15.247
Band-edge compliance of RF conducted emissions

| | |
|-----------------------|-------------------------------|
| EUT | RF module with BT and WLAN |
| Model | WiBear-SF2 |
| Approval Holder | lesswire AG |
| Temperature / Voltage | 25°C |
| Test Site / Operator | Eurofins Product Service GmbH |
| Test Specification | FCC part 15 section 247(c) |
| Comment 1 | Band-edge compliance |
| Comment 2 | Channel : 11 / 2462 MHz |
| Comment 3 | OFDM / 6Mbit/s |



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 14.JUL.2010 14:01:09