




EMC TEST REPORT FCC 47 CFR Part 15B Industry Canada RSS-Gen Electromagnetic compatibility - Unintentional radiators		
Report Reference No.	G0M-1303-2685-EF01-V01	
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	eResearch Technology GmbH	
Address	Sieboldstrasse 3 97230 Estenfeld Germany	
Test specification:		
Standard.....	47 CFR Part 15 Subpart B RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009	
Equipment under test (EUT):		
Product description	Asthma Monitor AM3	
Model No.	AM3 GSM	
Additional Models	None	
Hardware version	01	
Firmware / Software version	01	
	FCC-ID: 2AAUFAM3G01	IC: 11335A-AM3G01
Contains	FCC-ID: POOWML-C46	IC: None
Test result	Passed	

Possible test case verdicts:	
- not applicable to test object	: N/A
- test object does meet the requirement.....	: P (Pass)
- test object does not meet the requirement.....	: F (Fail)
Testing:	
Date of receipt of test item	: 2013-08-05
Date (s) of performance of tests	: 2013-09-23 – 2013-10-22
Compiled by	: Marcus Klein
Tested by (+ signature).....	: Marcus Klein 
Approved by (+ signature)	: Jens Zimmermann 
Date of issue	: 2013-10-29
Total number of pages	: 21
General remarks:	
<p>The test results presented in this report relate only to the object tested.</p> <p>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.</p>	
<p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p>	
Additional comments:	

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1 Equipment (Test item) Description

Description	Asthma Monitor AM3	
Model	AM3 GSM	
Additional Models	None	
Serial number	None	
Hardware version	01	
Software / Firmware version	01	
FCC-ID	2AAUFAM3G01	
IC	11335A-AM3G01	
FCC-ID BT Module	POOWML-C46	
IC BT Module	None	
Power supply	100 – 240 VAC	
AC/DC-Adaptor	Model : GTM41134-0605 Manufacturer : GlobTek Input : 100-240VAC / 50-60Hz Output : 5 VDC	
Radio module GSM	Type	GSM Module
	Model	WISMO228
	Manufacturer	Sierra Wireless
	HW Version	111
	SW Version	L23a00gg.wismo0228 121211
	FCC-ID	N7NWISMO2228
	IC	2417C-WISMO228
Radio module Bluetooth	IMEI	355457051769662
	Type	Bluetooth Module
	Model	WML-C46N
	Manufacturer	Mitsumi
	HW Version	26
	SW Version	2626
	FCC-ID	FCC-ID POOWM
IC	None	

Test Report No.: G0M-1303-2685-EF01-V01

Manufacturer	eResearch Technology GmbH Sieboldstrasse 3 97230 Estenfeld Germany
Highest emission frequency	4MHz
Device classification	Class B
Equipment type	Tabletop
Number of tested samples	1

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
AE	Radio Communication Tester	R&S	CMU 200	-
None				
<p>*Note: Use the following abbreviations:</p> <p>AE : Auxiliary/Associated Equipment, or</p> <p>SIM : Simulator (Not Subjected to Test)</p> <p>CABL : Connecting cables</p>				

1.5 Operating Modes

Mode #	Description
1	GPRS link to Radio Communication Tester + charging

1.6 Test Equipment Used During Testing

Radiated emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD-Antenne	R&S	HL 223	EF00187	2011-02	2014-02
LPD-Antenna	R&S	HL 025	EF00327	2013-02	2016-02
EMI Test Receiver	R&S	ESU8	EF00379	2013-03	2014-03
EMI Test Receiver	R&S	ESCS30	EF00295	2013-10	2014-10

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	2013-10	2014-10

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 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:

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

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 15B, Industry Canada RSS-Gen				
Product Specific Standard	Requirement – Test	Reference Method	Result	Remarks
47 CFR 15.109 RSS-Gen 4.9 & 4.10	Radiated emissions	ANSI C 63.4	PASS	-
47 CFR 15.107 RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	PASS	-
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Radiated emissions

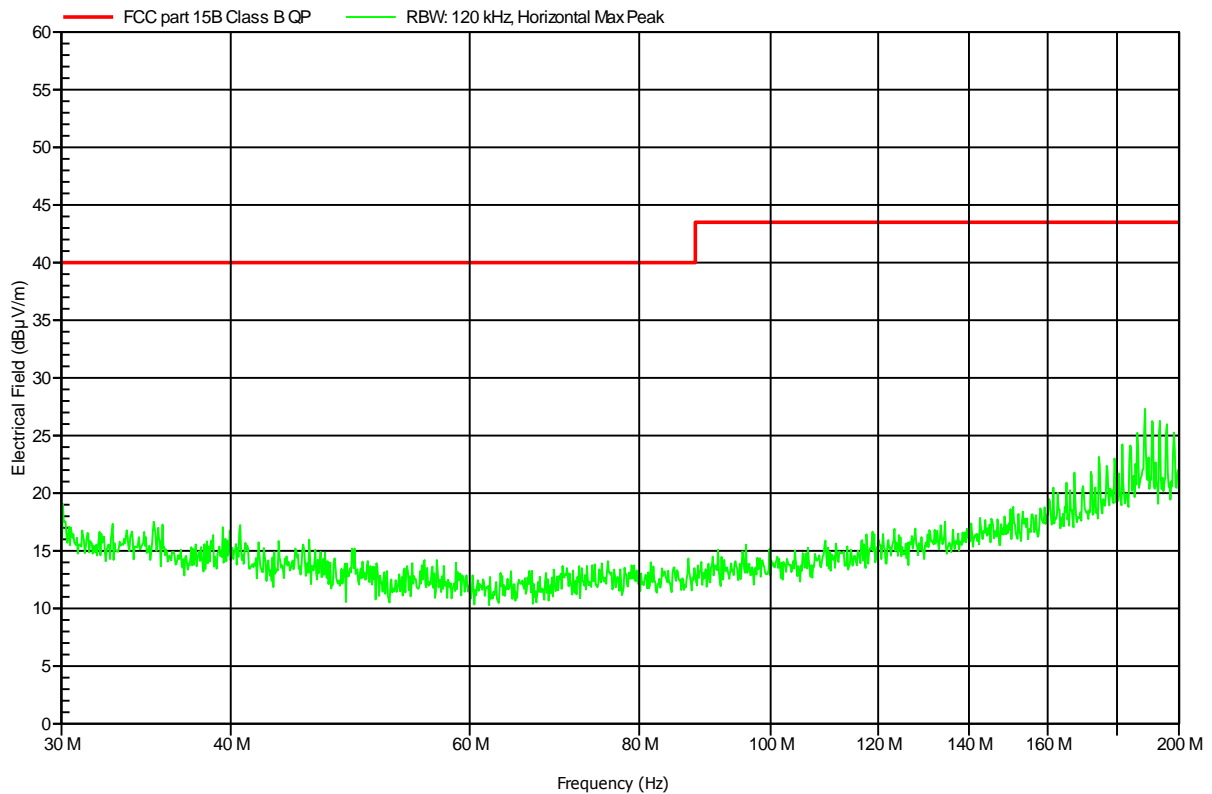
Radiated emissions acc. FCC 47 CFR 15.109 / IC RSS-Gen		Verdict: PASS				
Laboratory Parameters:	Required prior to the test	During the test				
Ambient Temperature	15 to 35 °C	23°C				
Relative Humidity	30 to 60 %	49%				
Test according referenced standards	Reference Method					
	ANSI C63.4					
Sample is tested with respect to the requirements of the equipment class	Equipment class					
	Class B					
Test frequency range determined from highest emission frequency	Highest emission frequency					
	Fmax [MHz] = 4 MHz					
Fully configured sample scanned over the following frequency range	Frequency range					
	30 MHz to 1 GHz					
Operating mode	1					
Limits and results Class B						
Frequency [MHz]	Quasi-Peak [dB μ V/m]	Result	Average [dB μ V/m]	Result	Peak [dB μ V/m]	Result
30 – 88	40	PASS	-		-	-
88 – 216	43.5	PASS	-		-	-
216 – 960	46	PASS	-		-	-
960 – 1000	54	PASS	-		-	-
Comments:						

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1303-2685

Manufacturer: eResearch Technology GmbH
 EUT Name: Asthma Monitor AM3
 Model: AM3 GSM
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120 VAC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3m
 Mode: GPRS 2x uplink + charging
 Test Date: 2013-10-22
 Note:

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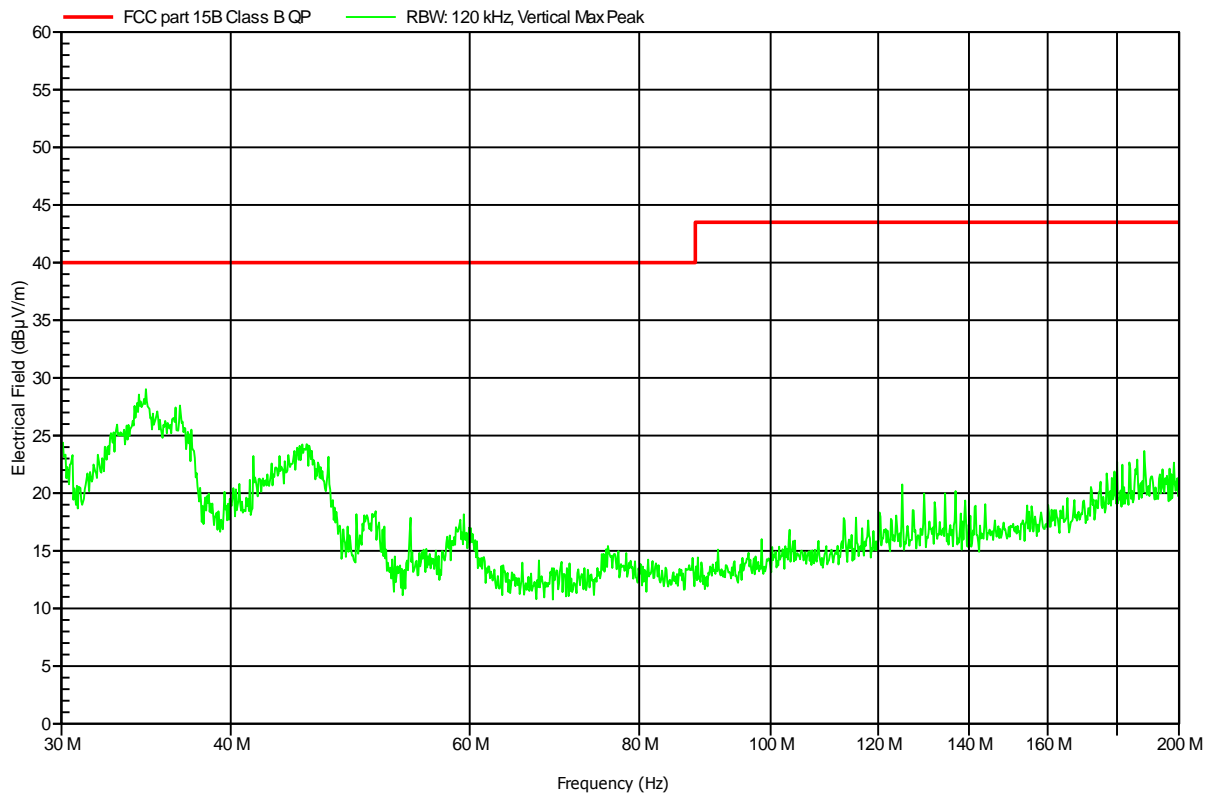


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1303-2685

Manufacturer:	eResearch Technology GmbH
EUT Name:	Asthma Monitor AM3
Model:	AM3 GSM
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120 VAC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	GPRS 2x uplink + charging
Test Date:	2013-10-22
Note:	

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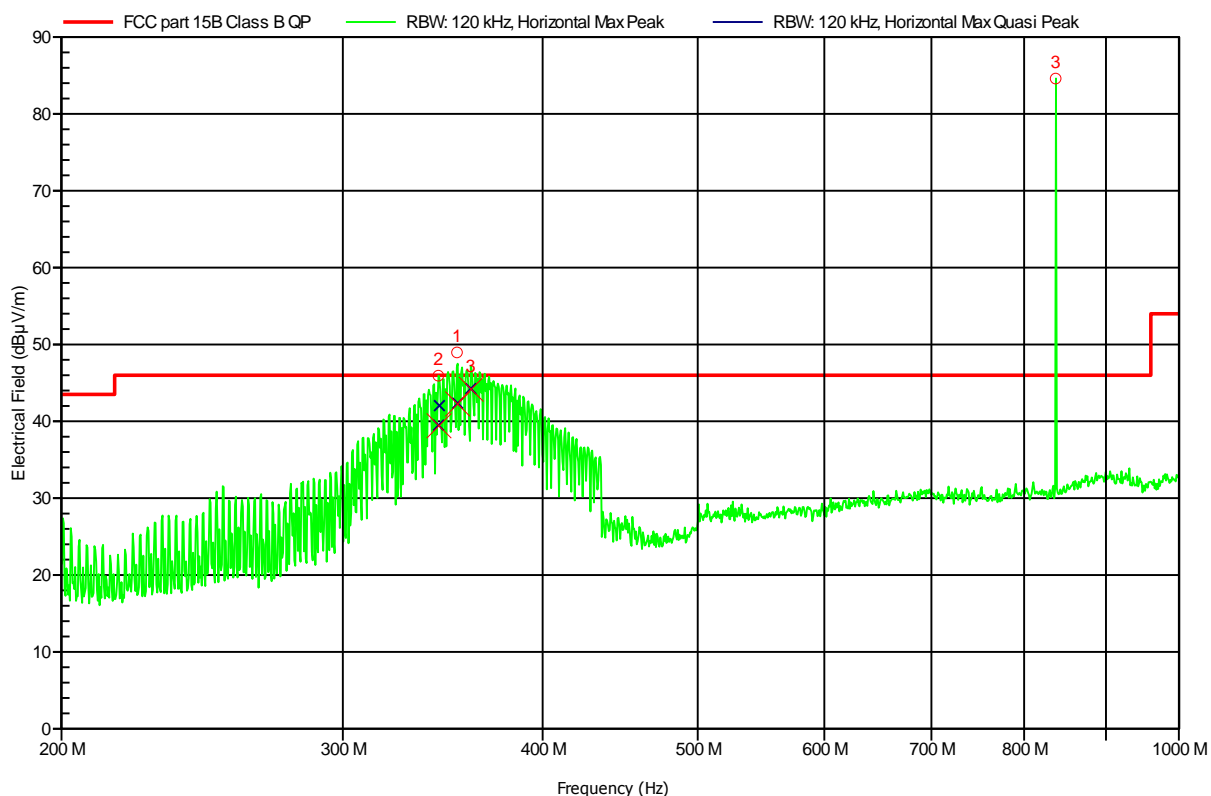


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1303-2685

Manufacturer: eResearch Technology GmbH
 EUT Name: Asthma Monitor AM3
 Model: AM3 GSM
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120 VAC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: GPRS 2x uplink + charging
 Test Date: 2013-10-22
 Note: PEAK4: GSM Carrier

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Nr	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
2	344,228 MHz	39,5 dBµV/m	46 dBµV/m	-6,5 dB	Pass
1	353,6 MHz	42,35 dBµV/m	46 dBµV/m	-3,65 dB	Pass
3	360,557 MHz	44,25 dBµV/m	46 dBµV/m	-1,75 dB	Pass
4	837,08 MHz	GSM Carrier			

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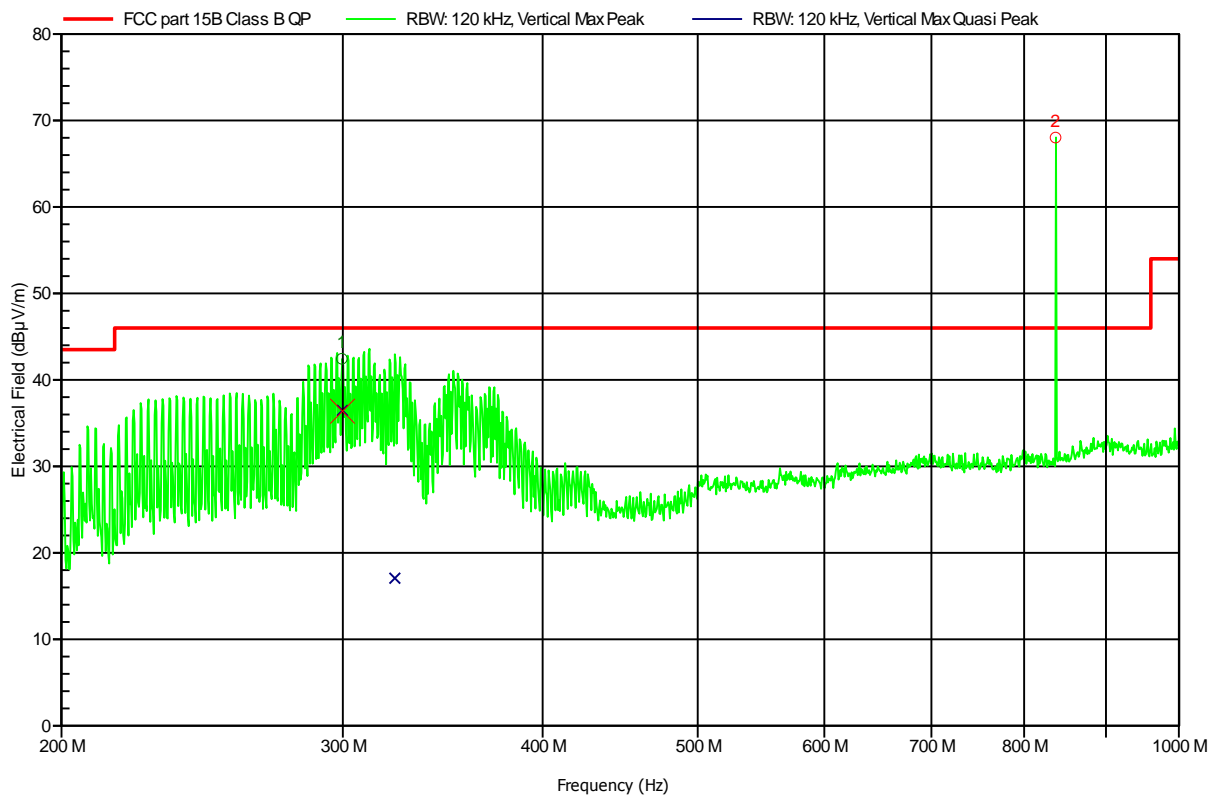
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1303-2685

Manufacturer: eResearch Technology GmbH
 EUT Name: Asthma Monitor AM3
 Model: AM3 GSM
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120 VAC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: GPRS 2x uplink + charging
 Test Date: 2013-10-22
 Note: PEAK2: GSM Carrier

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Nr	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	299,582 MHz	36,45 dBµV/m	46 dBµV/m	-9,55 dB	Pass
2	837,054 MHz	GSM Carrier			

3.2 Test Conditions and Results – AC power line conducted emissions

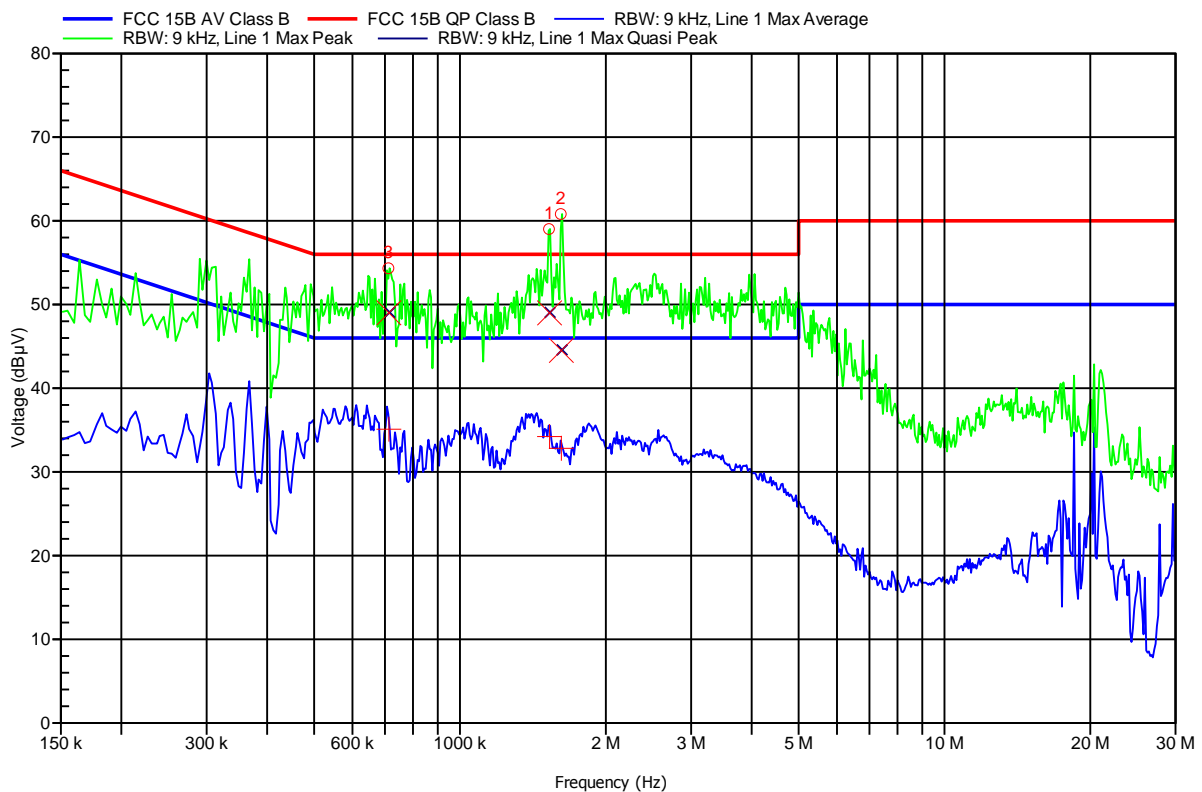
Conducted emissions acc. FCC 47 CFR 15.107 / IC RSS-Gen		Verdict: PASS		
Laboratory Parameters:	Required prior to the test	During the test		
Ambient Temperature	15 to 35 °C	23°C		
Relative Humidity	30 to 60 %	49%		
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Sample is tested with respect to the requirements of the equipment class	Equipment class			
	Class B			
Points of Application	Application Interface			
AC Mains	LISN			
Operating mode	1			
Limits and results Class B				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	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.				

EMI voltage test in the ac-mains according to EN 55022

Project number: G0M-1303-2685

Manufacturer: eResearch Technology GmbH
 EUT Name: Asthma Monitor AM3
 Model: AM3 GSM
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 230 VAC (AC/DC adapter)
 LISN: ESH2-Z5 L
 Mode: GPRS 2x uplink PL 3 + charging
 Test Date: 2013-10-10
 Note:

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Nr	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
3	711,6 kHz	49,06 dBµV	56 dBµV	-6,94 dB	Pass
1	1,527 MHz	49,06 dBµV	56 dBµV	-6,94 dB	Pass
2	1,615 MHz	44,58 dBµV	56 dBµV	-11,42 dB	Pass

Nr	Frequency	Average	Average Limit	Average Difference	Average Status
3	711,6 kHz	35,17 dBµV	46 dBµV	-10,83 dB	Pass
1	1,527 MHz	34,29 dBµV	46 dBµV	-11,71 dB	Pass
2	1,615 MHz	32,88 dBµV	46 dBµV	-13,12 dB	Pass

Test Report No.: G0M-1303-2685-EF01-V01

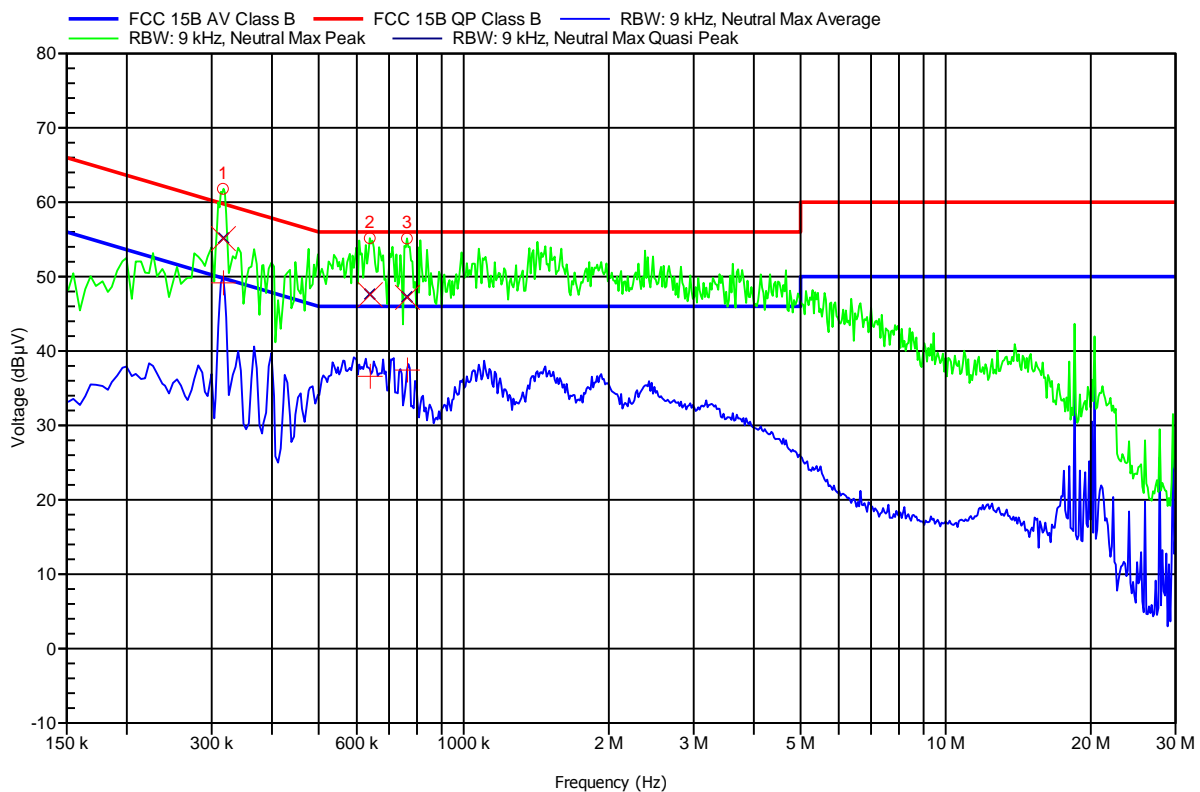
 Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

EMI voltage test in the ac-mains according to EN 55022

Project number: G0M-1303-2685

Manufacturer: eResearch Technology GmbH
 EUT Name: Asthma Monitor AM3
 Model: AM3 GSM
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 230 VAC (AC/DC adapter)
 LISN: ESH2-Z5 N
 Mode: GPRS 2x uplink PL 3 + charging
 Test Date: 2013-10-10
 Note:

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Nr	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	316,5 kHz	55,18 dBµV	59,8 dBµV	-4,62 dB	Pass
2	638,25 kHz	47,64 dBµV	56 dBµV	-8,36 dB	Pass
3	762,45 kHz	47,28 dBµV	56 dBµV	-8,72 dB	Pass

Nr	Frequency	Average	Average Limit	Average Difference	Average Status
1	316,5 kHz	49,24 dBµV	49,8 dBµV	-0,56 dB	Pass
2	638,25 kHz	36,67 dBµV	46 dBµV	-9,33 dB	Pass
3	762,45 kHz	37,51 dBµV	46 dBµV	-8,49 dB	Pass

Test Report No.: G0M-1303-2685-EF01-V01

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