

EMC TEST REPORT

FCC 47 CFR Part 15B
Industry Canada RSS-Gen

Electromagnetic compatibility - Unintentional radiators

Report Reference No. : G0M-1406-3915-EF0115B-V03

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 : Leica Geosystems AG

Address : Heinrich Wild Strasse
9435 Heerbrugg
SWITZERLAND

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	Field Controller Win EC7	
Model No.	CS20 CDMA Disto	
Additional Models	None	
Hardware version	V5.0	
Firmware / Software version	1.0	
FCC-ID / IC-ID	FCC-ID: RFD-CSNGC	IC: 3177A-CSNGC
Test result	Passed	

Test Report No.: G0M-1406-3915-EF0115B-V03

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

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: 2014-07-14

Date (s) of performance of tests: 2014-09-22 - 2014-09-24

Compiled by: Steffen Zunke

Tested by (+ signature).....: Steffen Zunke

Approved by (+ signature): Marcus Klein

Date of issue: 2015-04-27

Total number of pages: 48



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:

Version History

Version	Issue Date	Remarks	Revised by
V01	2014-09-30	Initial Release	
V02	2014-09-30	FCC-ID and IC-ID changed	Steffen Zunke
V03	2015-04-27	Product description changed	Steffen Zunke

REPORT INDEX

1	EQUIPMENT (TEST ITEM) DESCRIPTION	5
1.1	Photos – Equipment external	7
1.2	Photos – Equipment internal	8
1.3	Photos – Test setup	11
1.4	Supporting Equipment Used During Testing	12
1.5	Operating Modes	13
1.6	Test Equipment Used During Testing	14
1.7	Sample emission level calculation	15
2	RESULT SUMMARY	16
3	TEST CONDITIONS AND RESULTS	17
3.1	Test Conditions and Results – Radiated emissions	17

1 Equipment (Test item) Description

Description	Field Controller Win EC7	
Model	CS20 CDMA Disto	
Additional Models	None	
Serial number	None	
Hardware version	V5.0	
Software / Firmware version	1.0	
Contains FCC-ID	RFD-CSNGC	
Contains IC	3177A-CSNGC	
Power supply	10.8VDC via rechargeable battery or via AC/DC adapter	
AC/DC-Adaptor	Model : AEL40US15 Manufacturer : XP Power Input : 100-240VAC / 50-60Hz Output : 15VDC / 2.66A	
Radio module	Type	Bluetooth / WLAN Module
	Model	TIWI-BLE
	Manufacturer	LS Research
	HW Version	None
	SW Version	None
	FCC-ID	TFB-TIWI1-01
	IC	5969A-TIWI101
Radio module	Type	Bluetooth Module
	Model	cB-OBS421x-c1
	Manufacturer	connectBlue / u-Blox
	HW Version	B
	SW Version	5.0
	FCC-ID	PVH0946
	IC	5325A-0946
Radio module	Type	GSM / UMTS / CDMA Module
	Model	PXS8
	Manufacturer	Gemalto
	HW Version	B2
	SW Version	03.001
	FCC-ID	QIPPPXS8
	IC	7830A-PXS8

Test Report No.: G0M-1406-3915-EF0115B-V03

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

Manufacturer	Leica Geosystems AG Heinrich Wild Strasse 9435 Heerbrugg SWITZERLAND
Highest emission frequency	> 1000 MHz (up to 5th Harm)
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
SIM	Communication tester	Rohde & Schwarz	CMW	-
AE	GPS Antenna	Leica	GS14	-
AE	Total Station	Leica	TS15	-
AE	WLAN Access Point	Siemens	Sinus	-
*Note: Use the following abbreviations: AE : Auxiliary/Associated Equipment, or SIM : Simulator (Not Subjected to Test) CABL : Connecting cables				

1.5 Operating Modes

Mode #	Description
1	charging via AC/DC adapter, Bluetooth link to GPS Antenna, Bluetooth-LR link to TS15 with RH16, WLAN link to WLAN Access Point, GSM 900 link to CMW
2	charging via AC/DC adapter, Bluetooth link to GPS Antenna, Bluetooth-LR link to TS15 with RH16, WLAN link to WLAN Access Point, UMTS link to CMW
3	charging via AC/DC adapter, Bluetooth link to GPS Antenna, Bluetooth-LR link to TS15 with RH16, WLAN link to WLAN Access Point, CDMA2000 link to CMW
4	Battery powered, Bluetooth link to GPS Antenna, Bluetooth-LR link to TS15 with RH16, WLAN link to WLAN Access Point, CDMA2000 link to CMW

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	2014-03	2017-03
LPD-Antenna	R&S	HL 025	EF00327	2013-02	2016-02
EMI Test Receiver	R&S	ESU8	EF00379	2014-03	2015-03
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 dBμV. 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 dBμV/m). The FCC limits are given in units of μV/m. The following formula is used to convert the units of μV/m to dBμV/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:

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

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

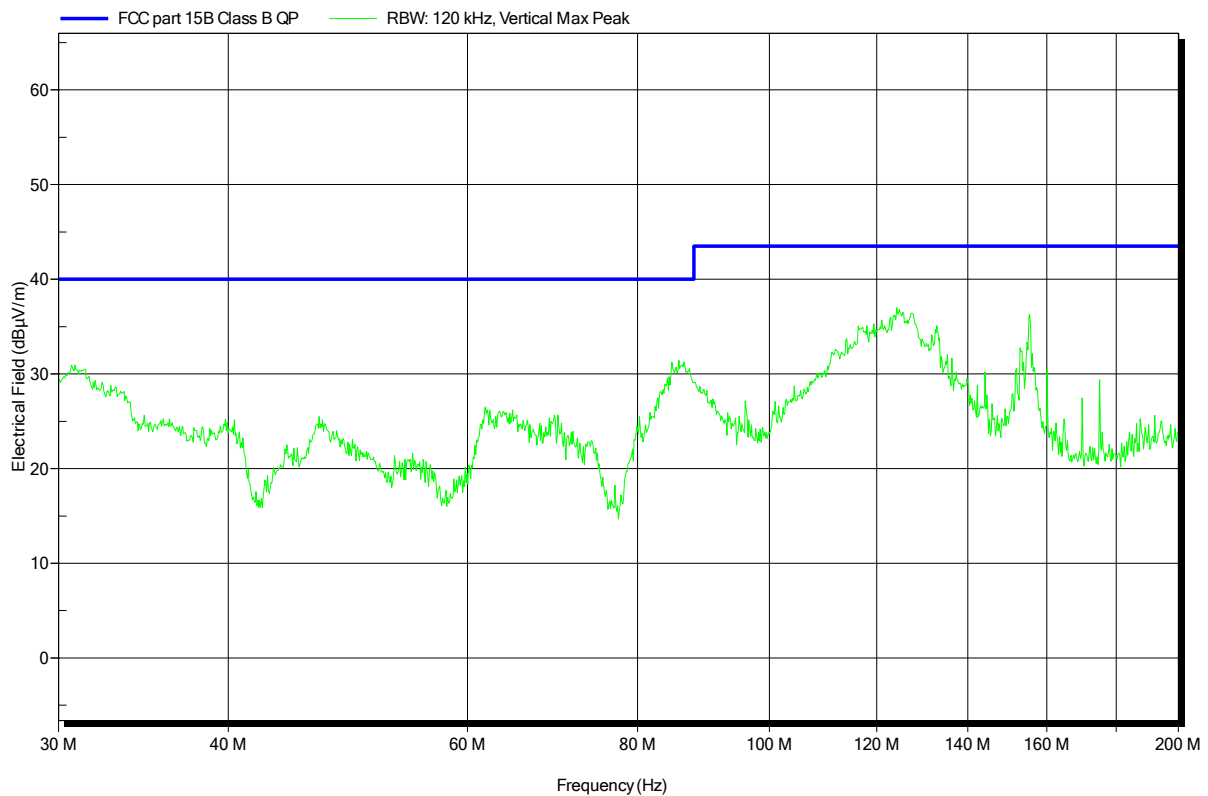
Radiated emissions acc. FCC 47 CFR 15.109 / IC RSS-Gen					Verdict: PASS	
Laboratory Parameters:		Required prior to the test		During the test		
Ambient Temperature		15 to 35 °C		21 °C		
Relative Humidity		30 to 60 %		45 %		
Test according referenced standards		Reference Method				
		ANSI C63.4				
Sample 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				
		> 1000 MHz (up to 5th Harm)				
Fully configured sample scanned over the following frequency range		Frequency range				
		30 MHz to 5 GHz				
Operating mode		1 / 2 / 3 / 4				
Limits and results Class B						
Frequency [MHz]	Quasi-Peak [dBµV/m]	Result	Average [dBµV/m]	Result	Peak [dBµV/m]	Result
30 – 88	40	PASS	-		-	-
88 – 216	43.5	PASS	-		-	-
216 – 960	46	PASS	-		-	-
960 – 1000	54	PASS	-		-	-
> 1000	-	-	54	PASS	74	PASS
Comments: Measurements were performed up to 5GHz, Above 5 GHz no relevant emission were determined.						

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, GSM link to CMW
Test Date:	2014-09-23
Note:	

Index 15



Test Report No.: G0M-1406-3915-EF0115B-V03

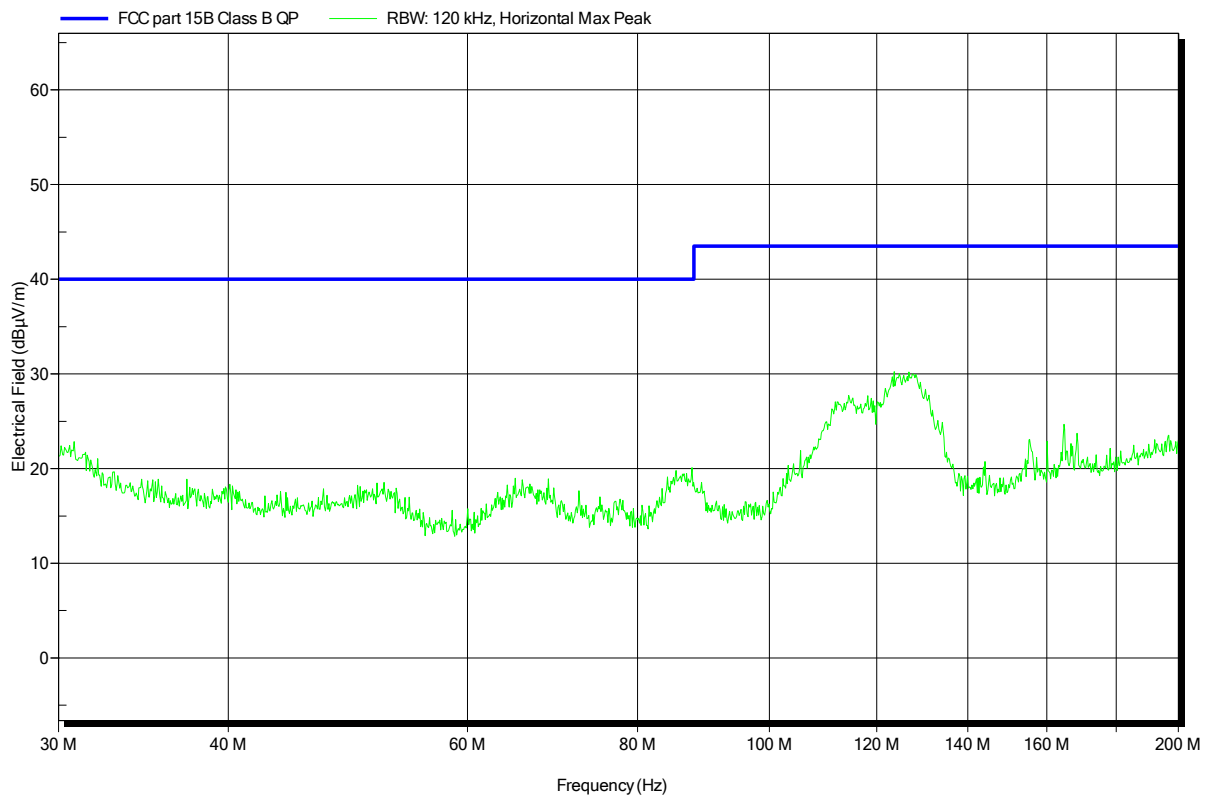
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, GSM link to CMW
Test Date:	2014-09-23
Note:	

Index 14

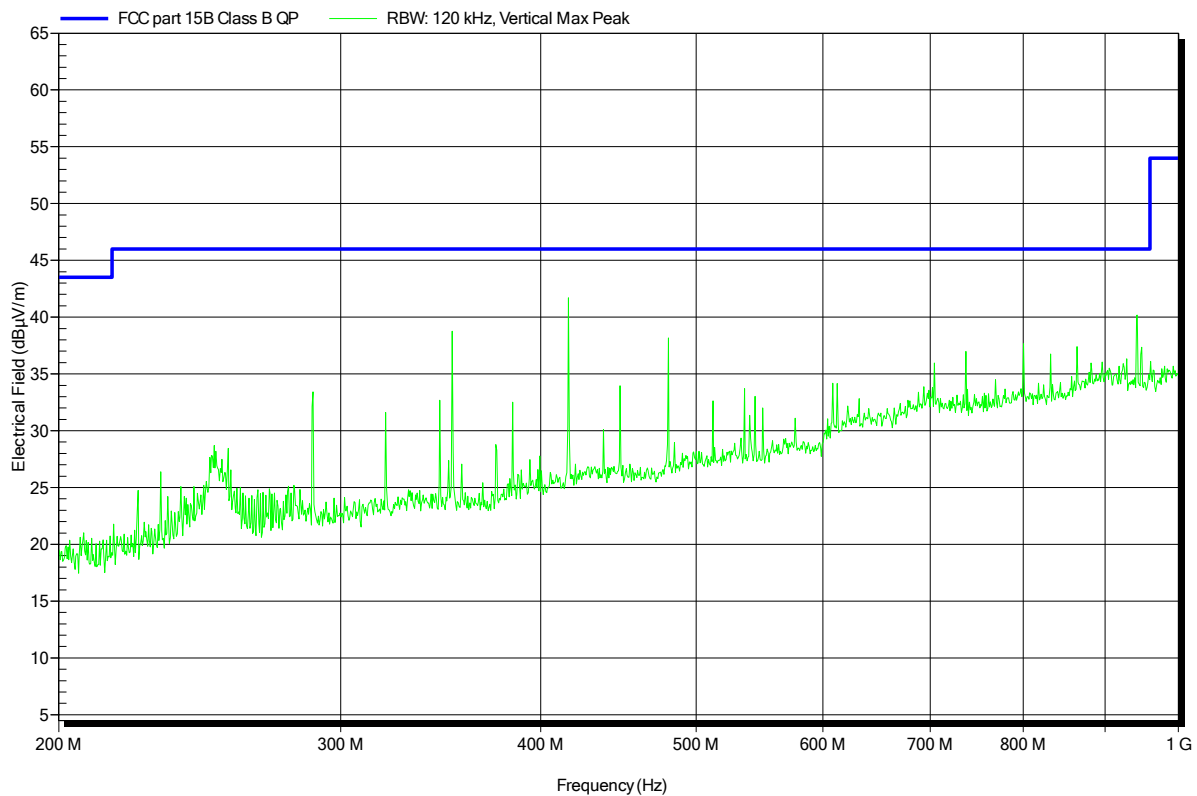


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, GSM link to CMW
Test Date:	2014-09-23
Note:	

Index 16

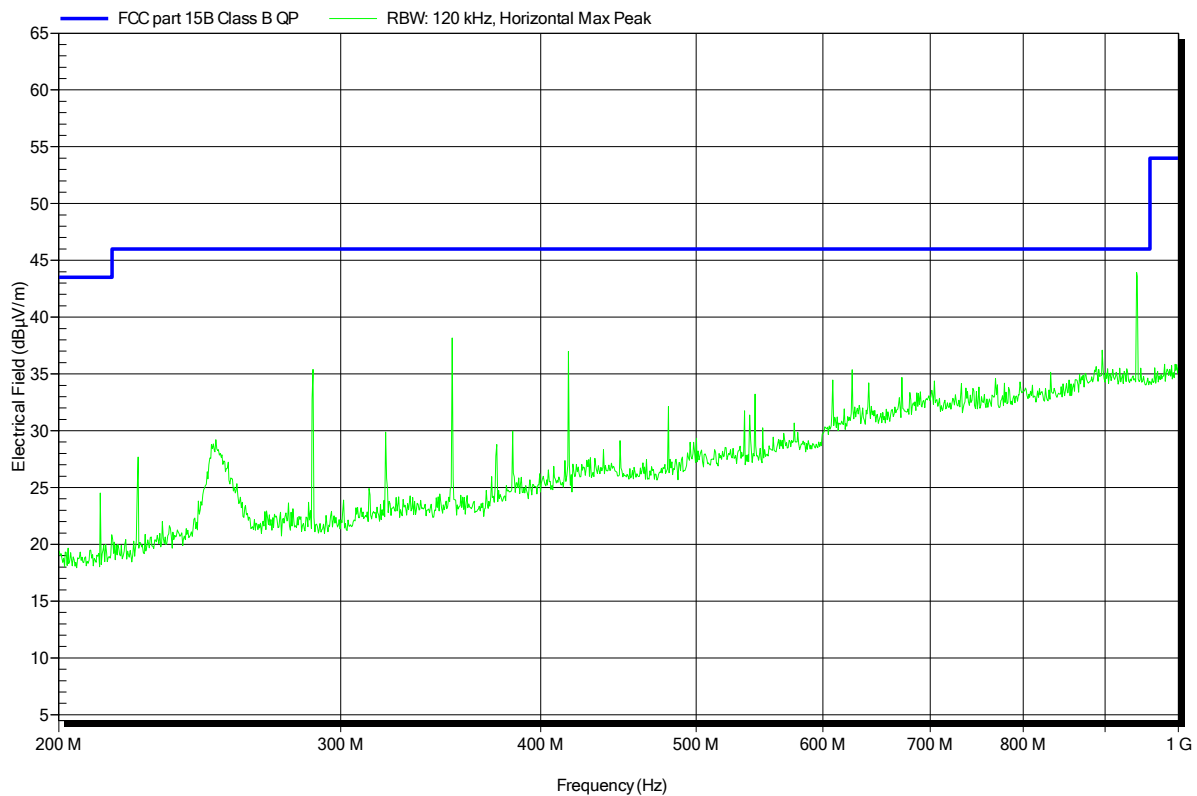


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, GSM link to CMW
Test Date:	2014-09-23
Note:	

Index 17

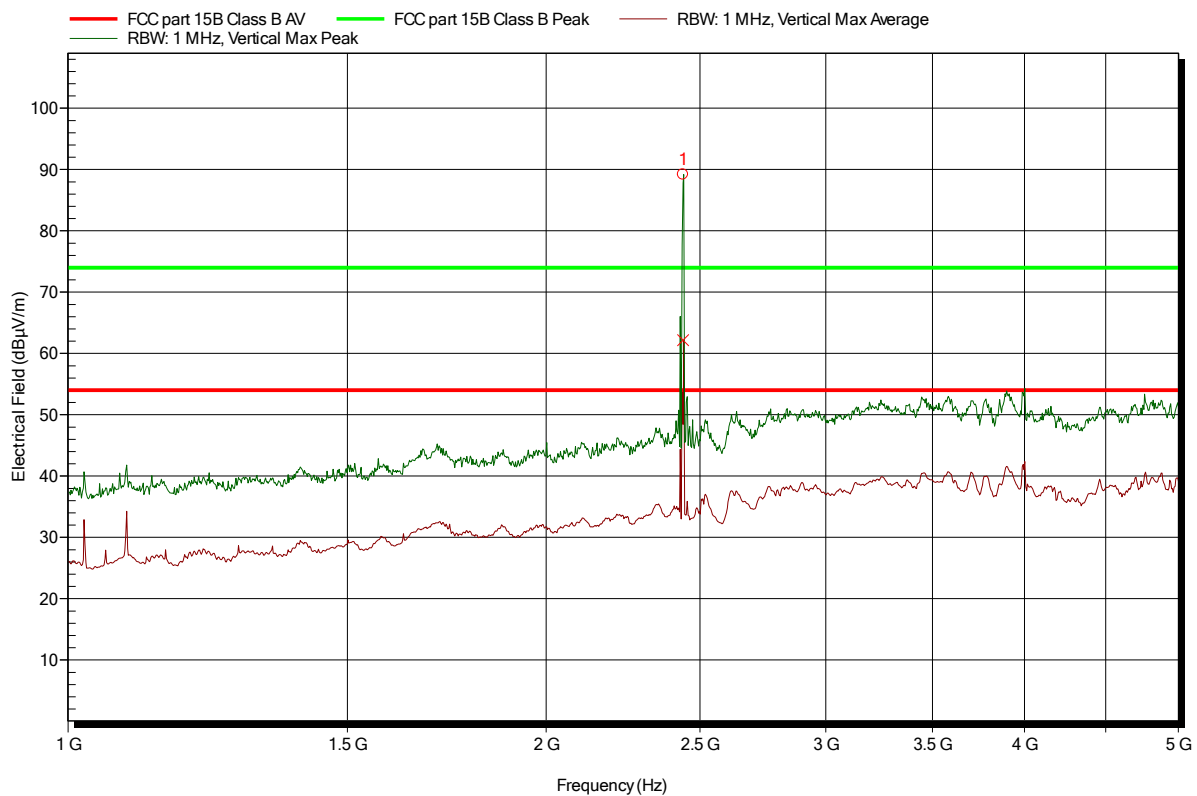


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, GSM link to CMW
 Test Date: 2014-09-23
 Note:

Index 19



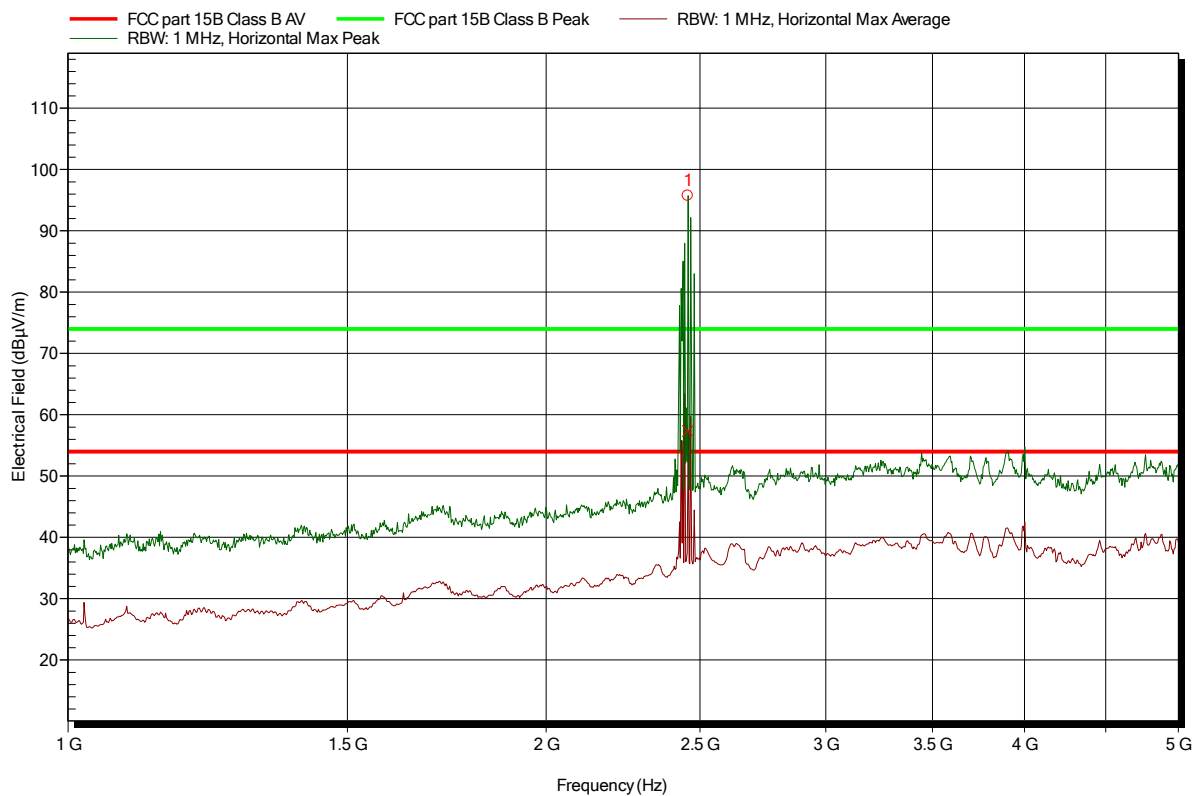
Frequency
 2.439 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, GSM link to CMW
 Test Date: 2014-09-23
 Note:

Index 18



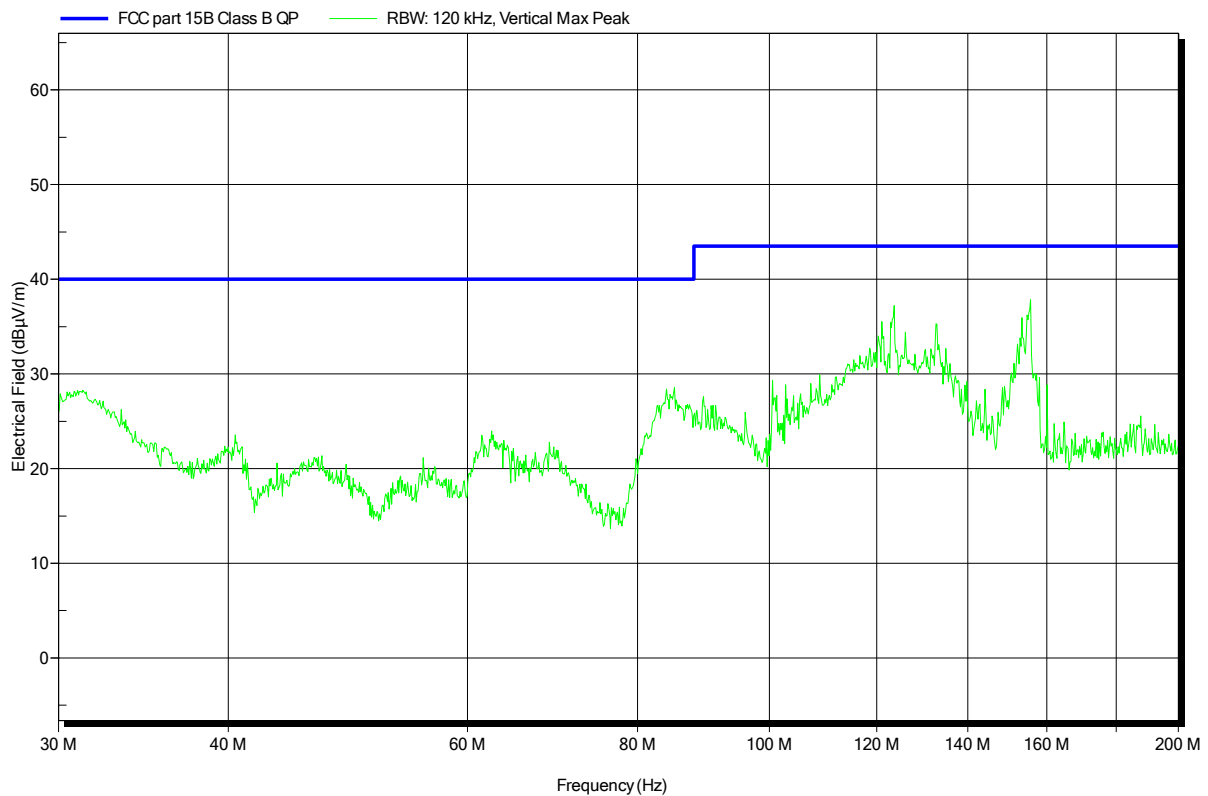
Frequency
 2.457 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, UMTS link to CMW
Test Date:	2014-09-23
Note:	

Index 24



Test Report No.: G0M-1406-3915-EF0115B-V03

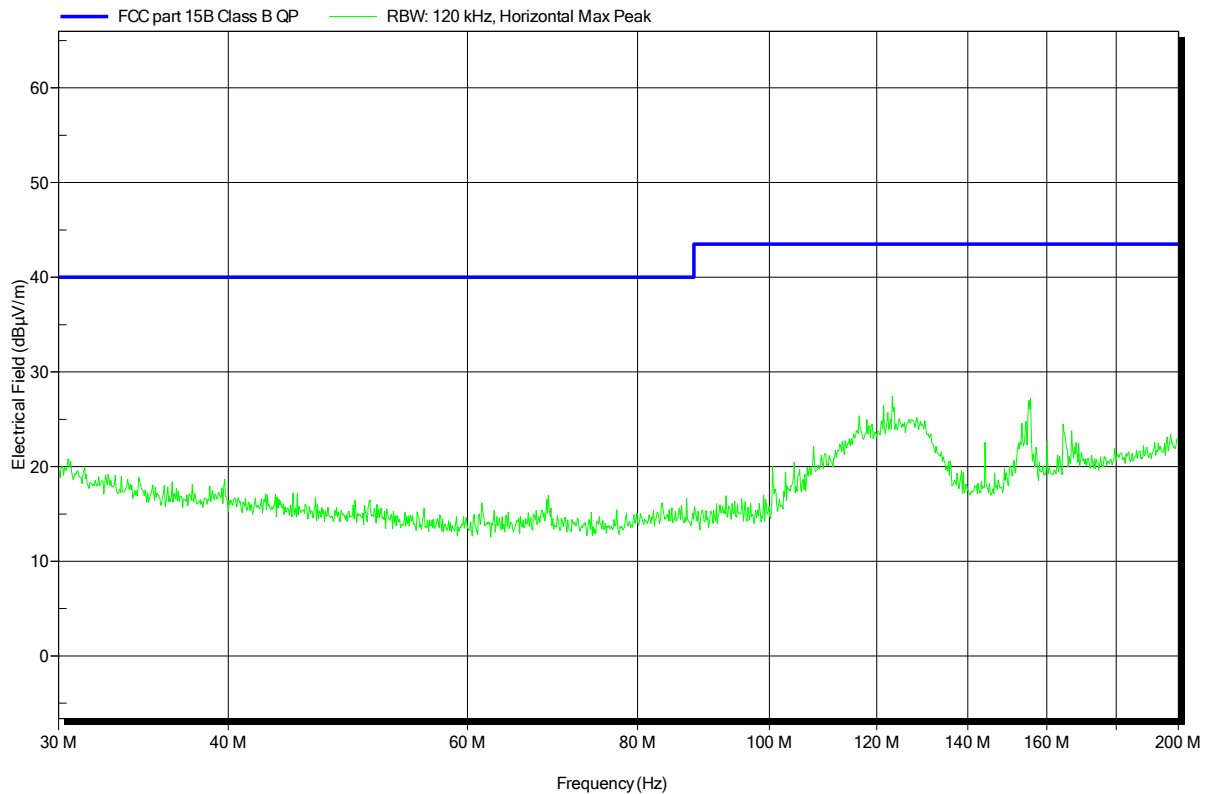
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, UMTS link to CMW
 Test Date: 2014-09-23
 Note:

Index 25

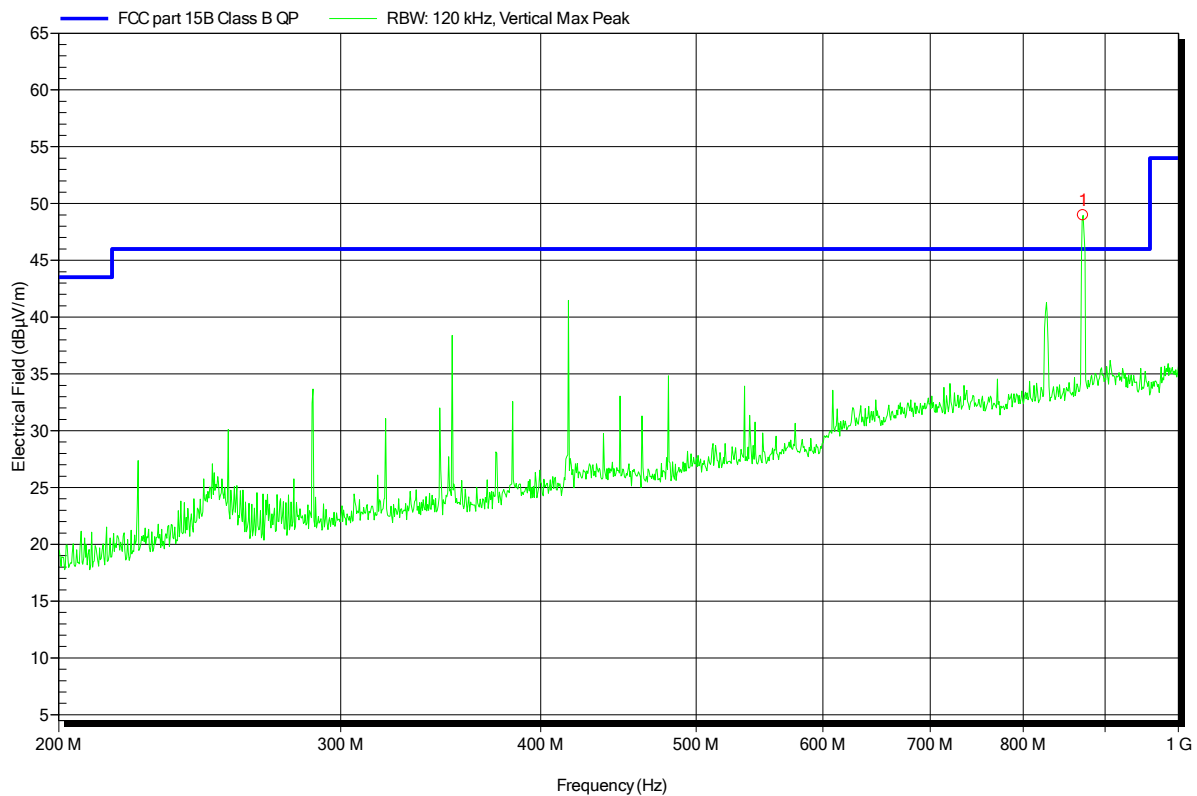


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, UMTS link to CMW
 Test Date: 2014-09-23
 Note:

Index 23



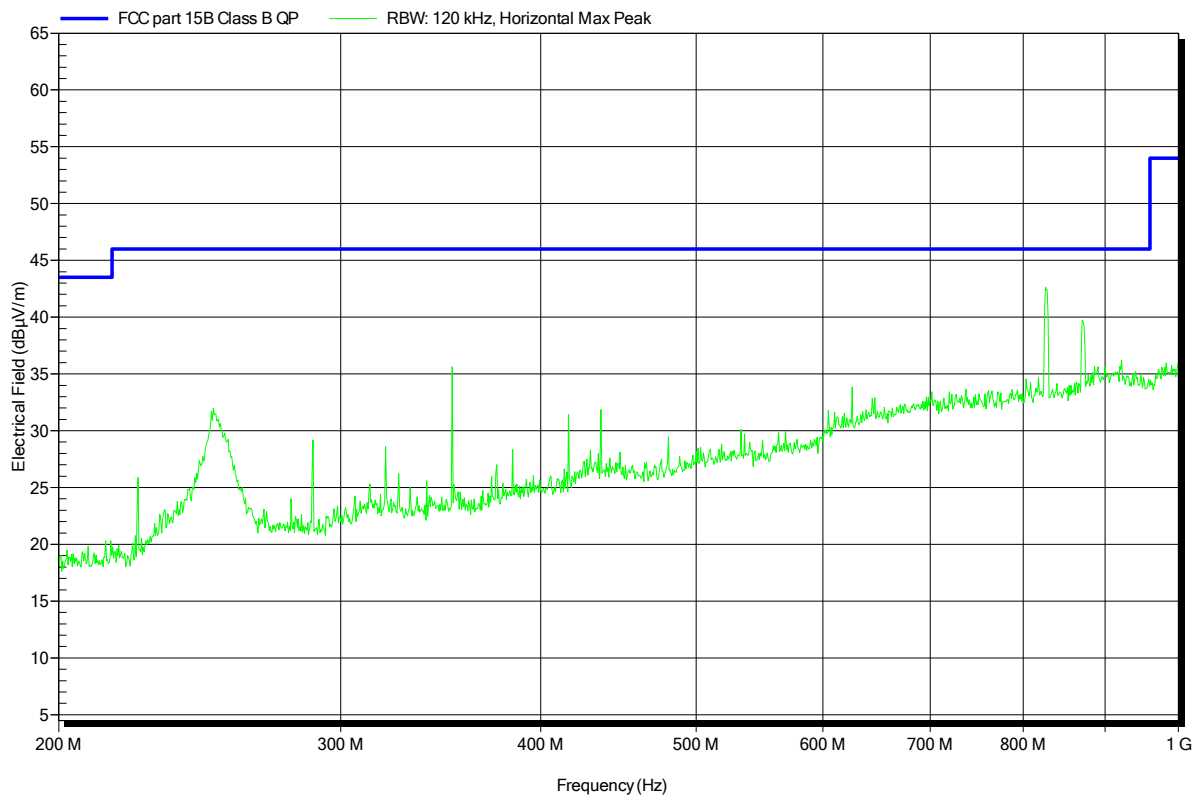
Frequency
 871.88 MHz UMTS carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, UMTS link to CMW
Test Date:	2014-09-23
Note:	

Index 22

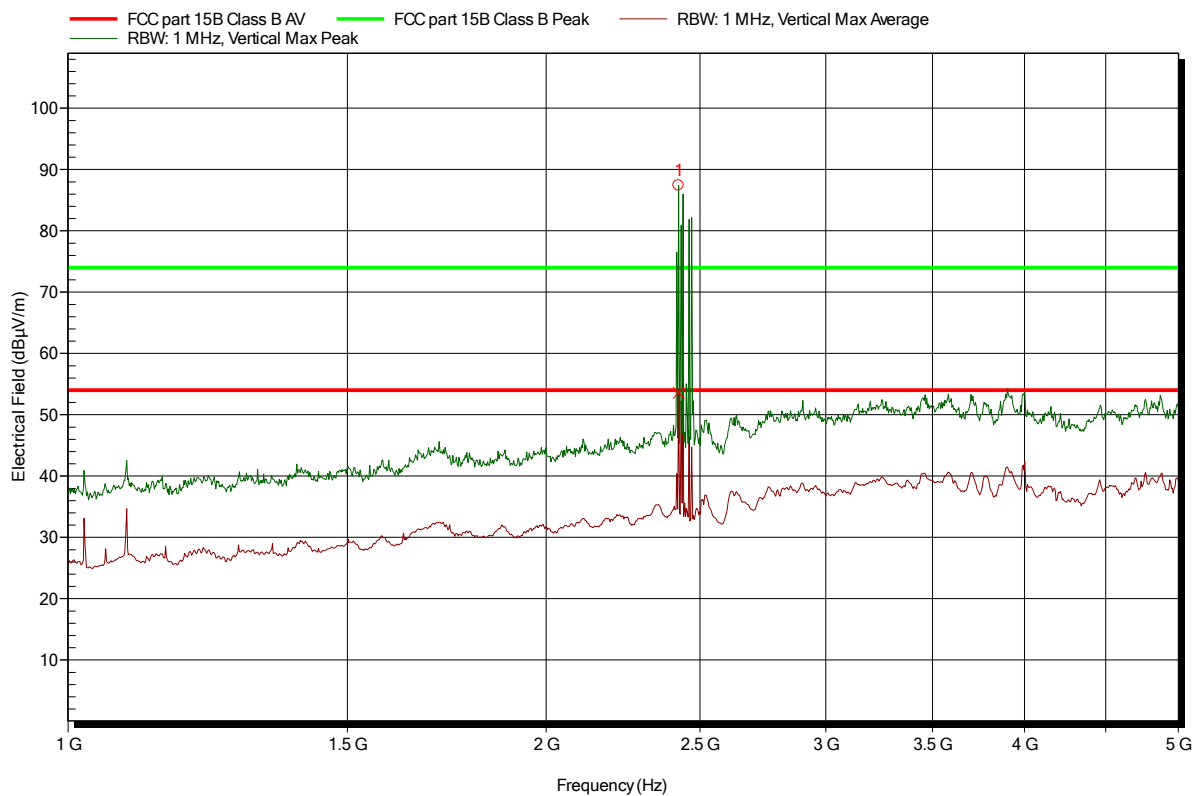


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, UMTS link to CMW
 Test Date: 2014-09-23
 Note:

Index 20



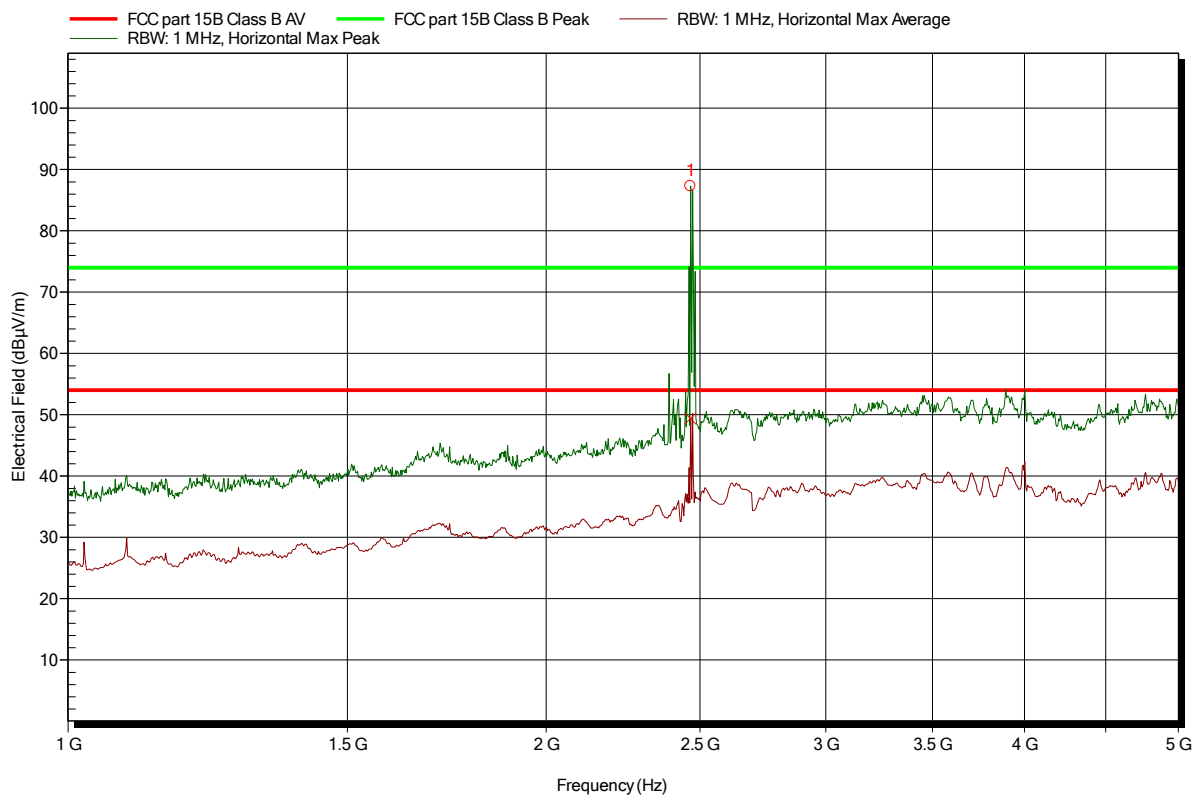
Frequency
 2.423 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, UMTS link to CMW
 Test Date: 2014-09-23
 Note:

Index 21



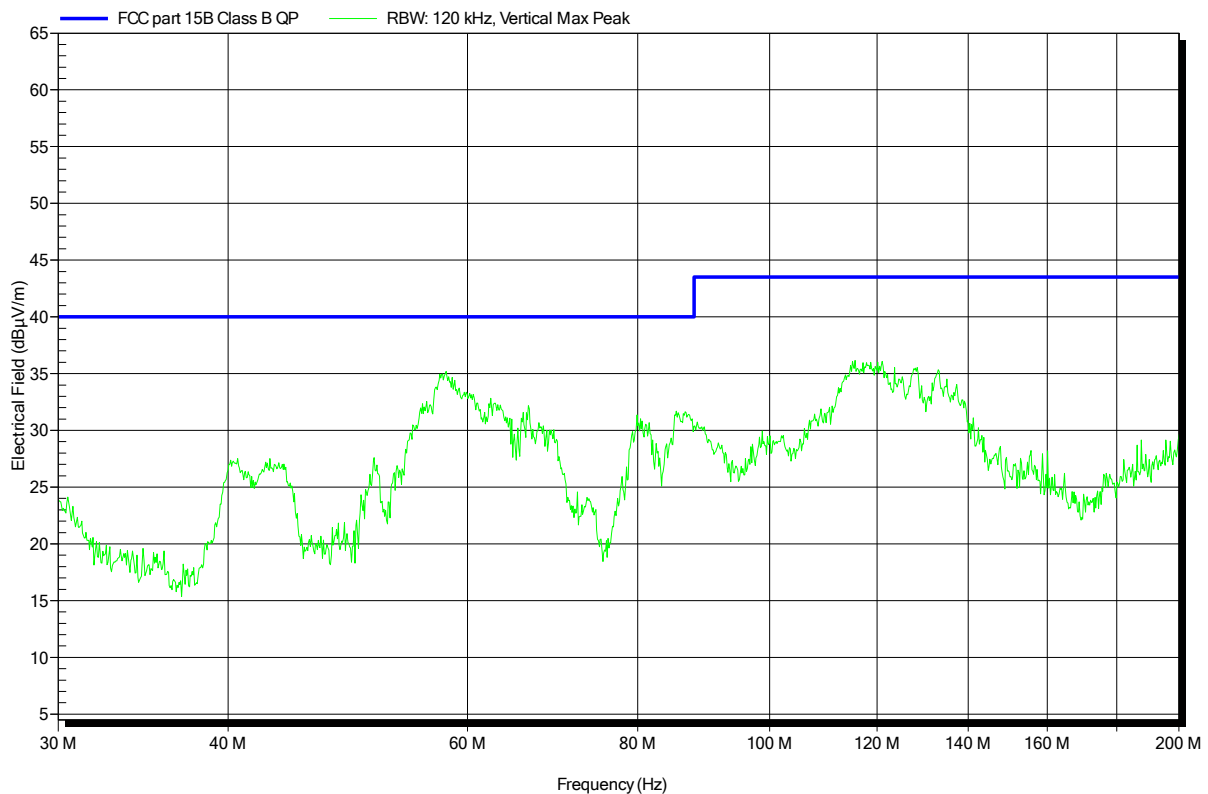
Frequency
 2.466 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-22
 Note:

Index 3

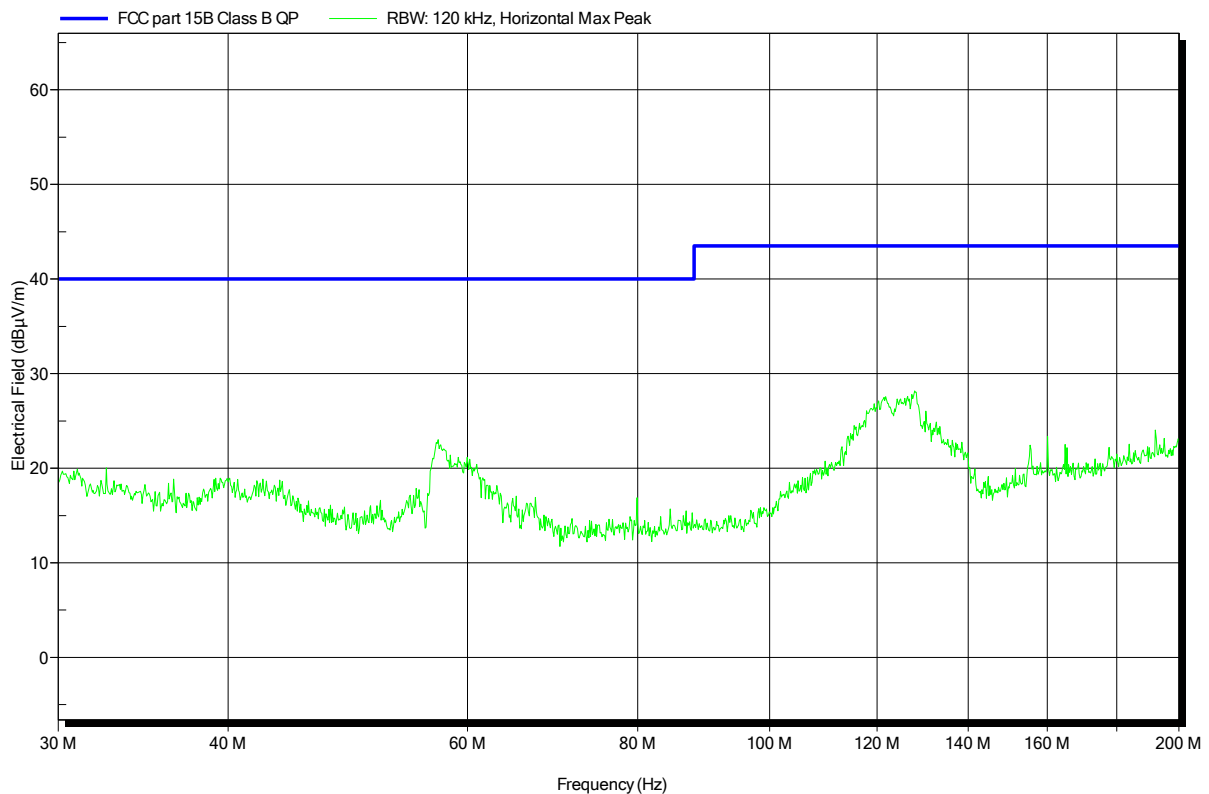


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-22
 Note:

Index 5

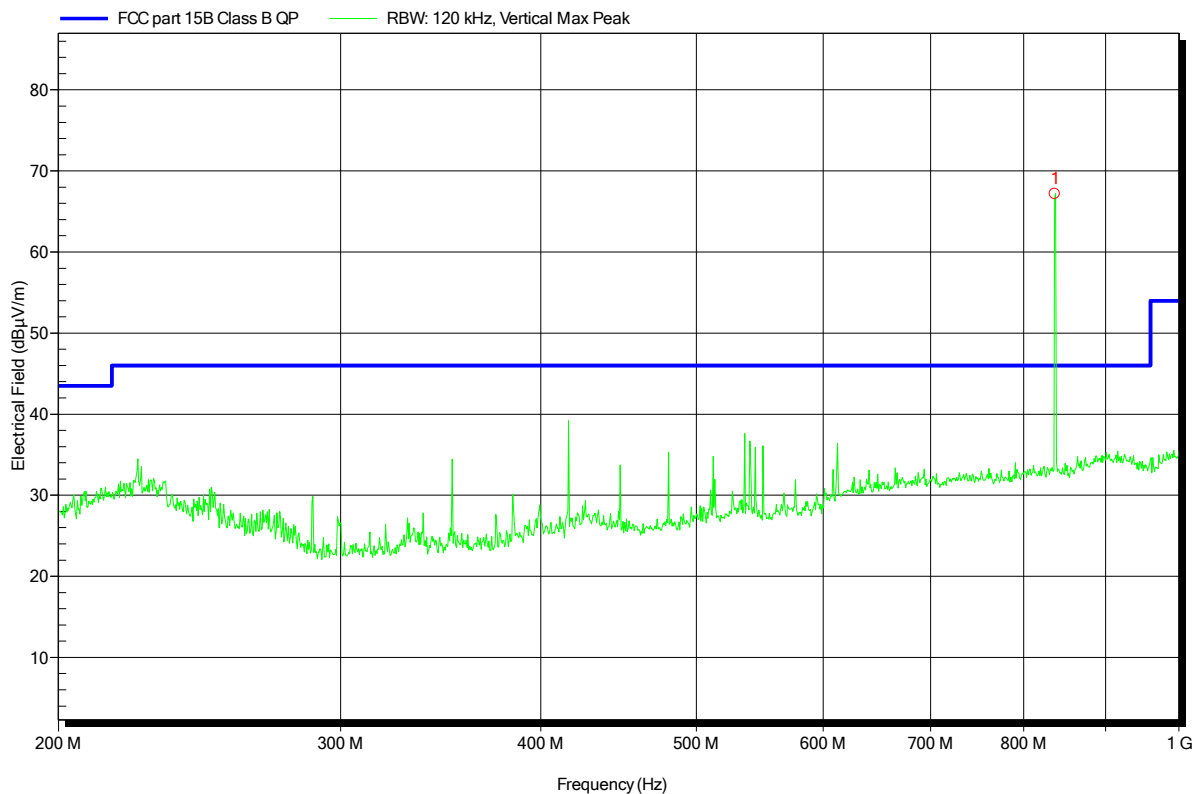


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m
Mode:	charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
Test Date:	2014-09-22
Note:	CDMA link to CMW

Index 1



Frequency
836.6 MHz CDMA carrier

Test Report No.: G0M-1406-3915-EF0115B-V03

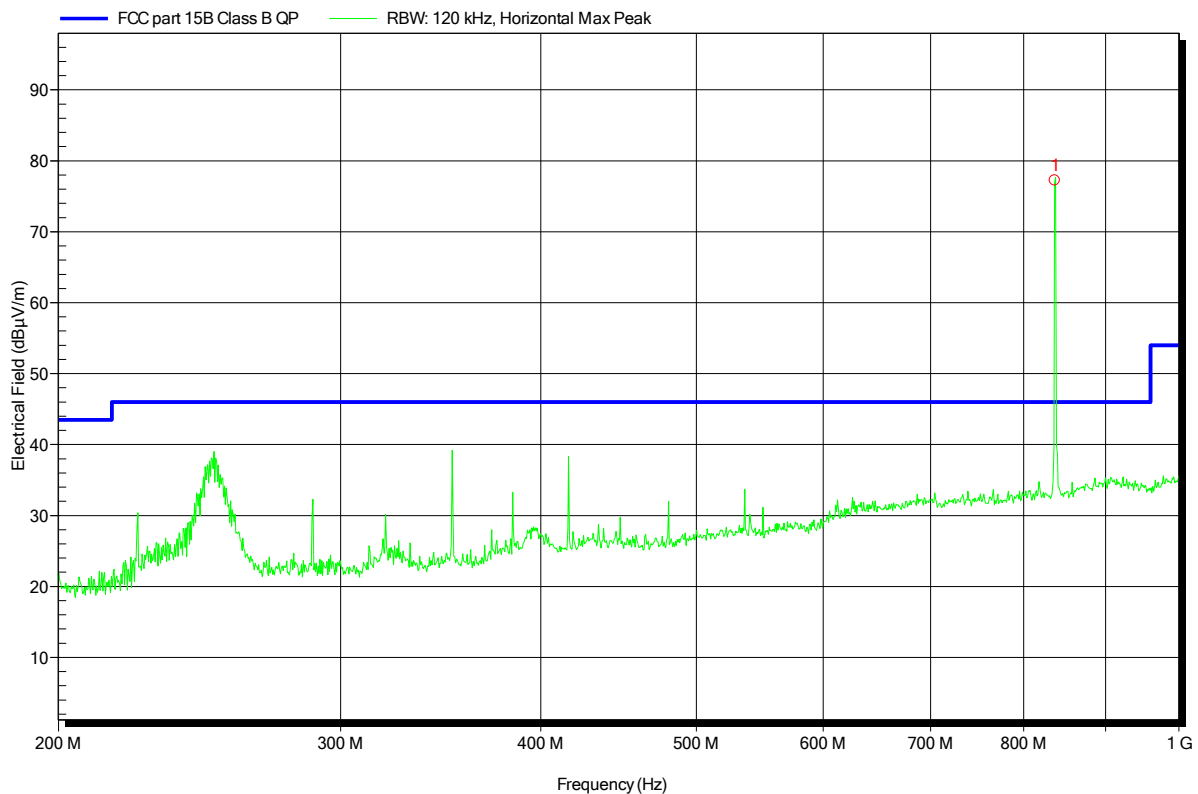
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-22
 Note:

Index 2



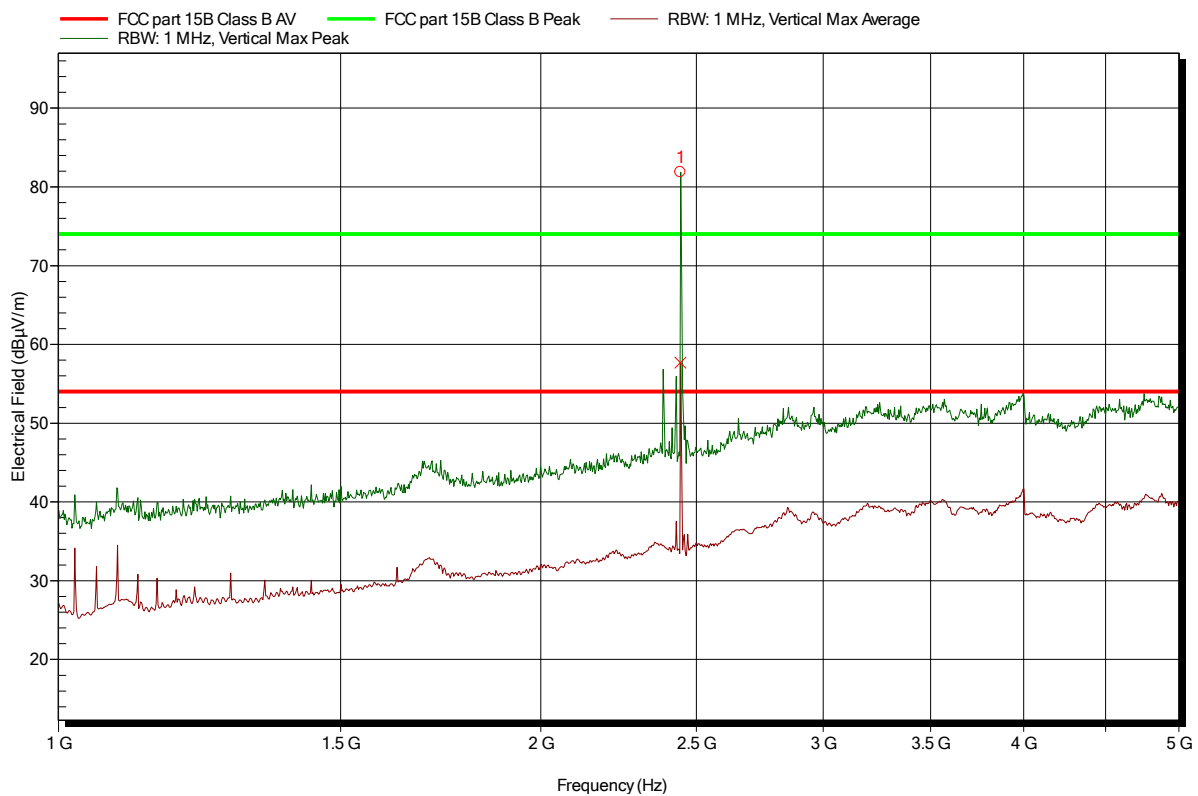
Frequency
 836.8 MHz CDMA carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 33



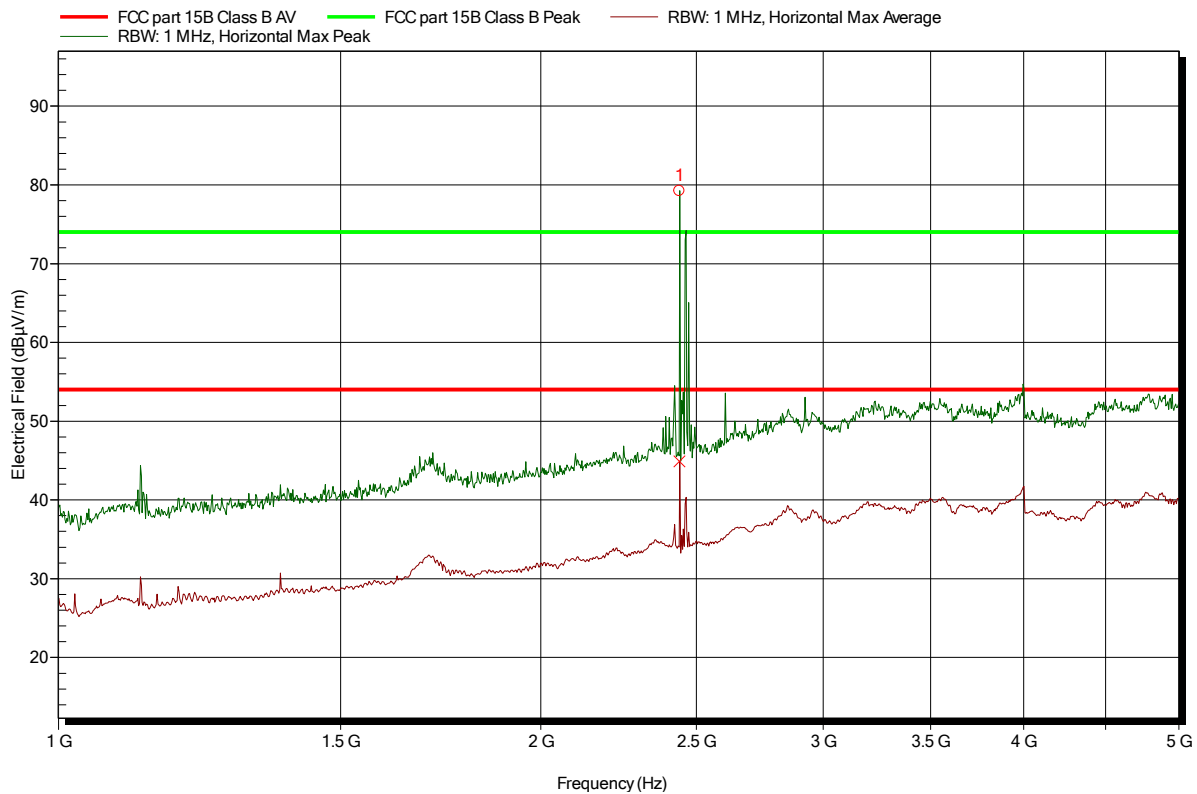
Frequency
 2.444 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3m
 Mode: charging, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 32



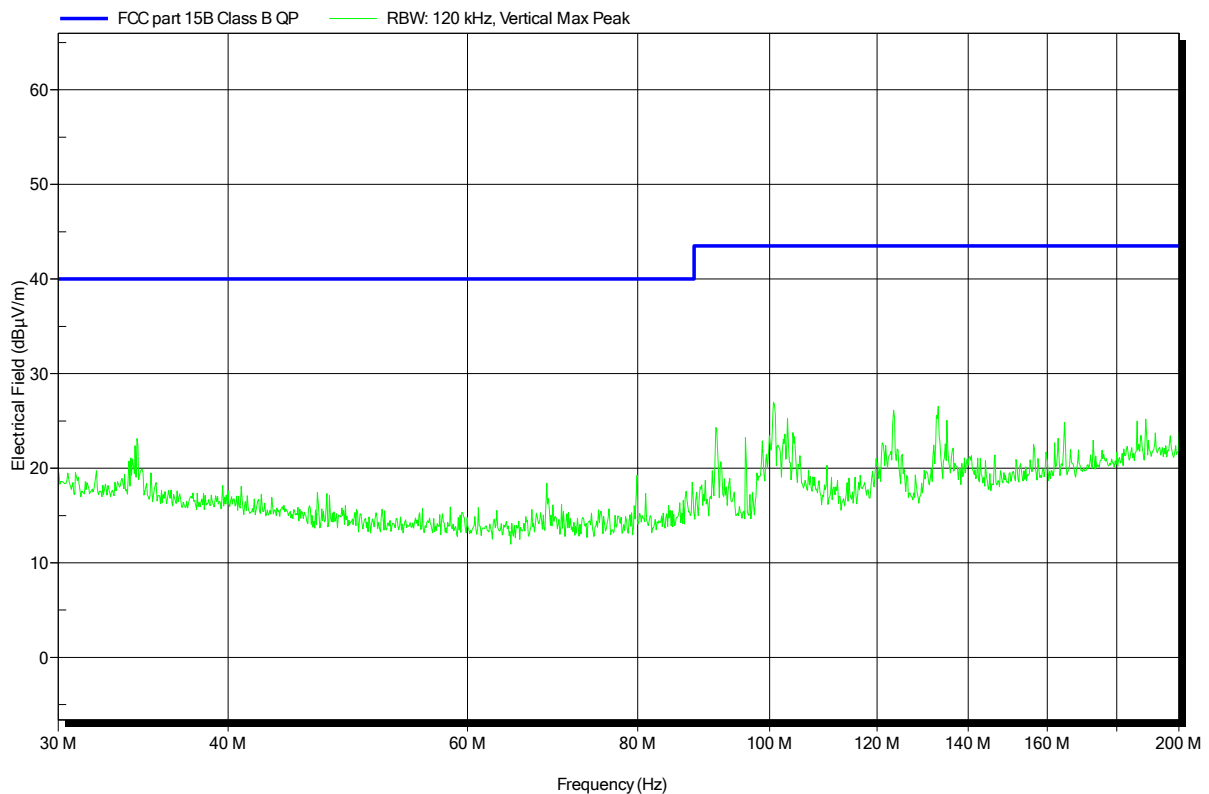
Frequency
 2.44 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via Battery
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3m
 Mode: battery powered, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 29



Test Report No.: G0M-1406-3915-EF0115B-V03

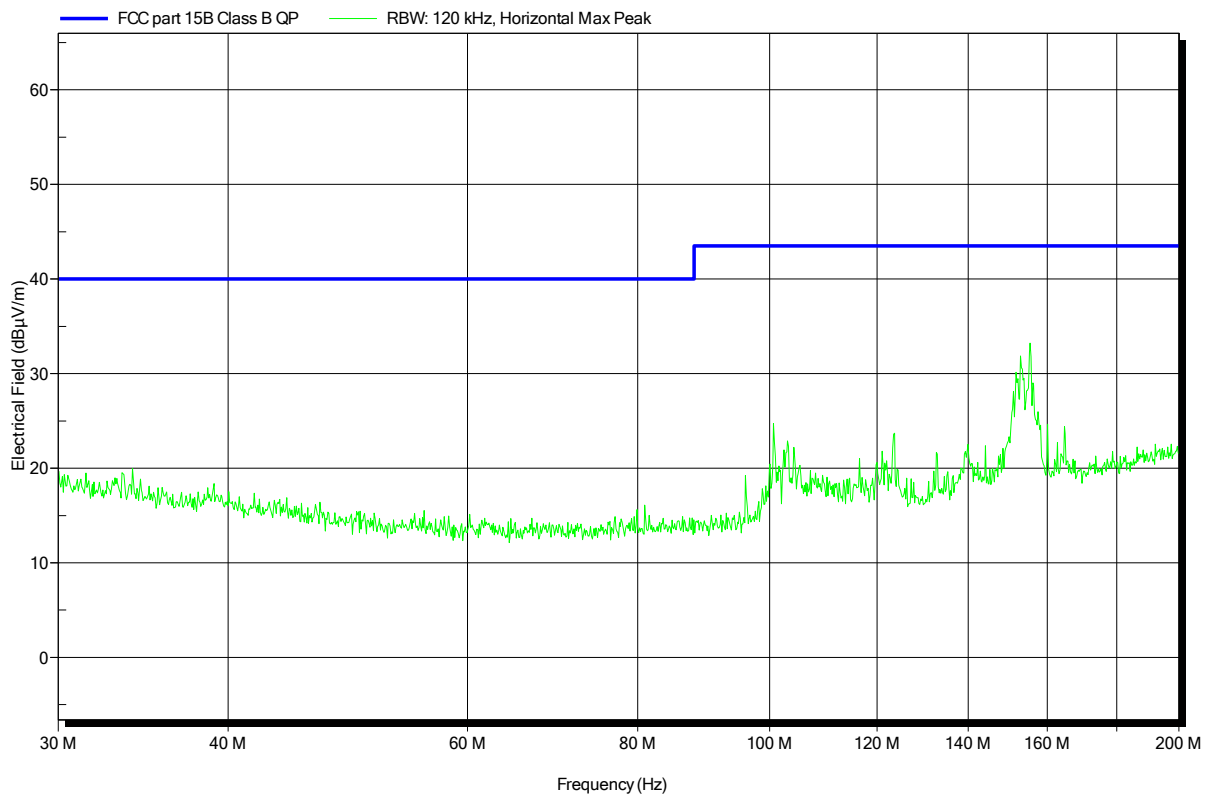
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via Battery
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3m
 Mode: battery powered, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 28

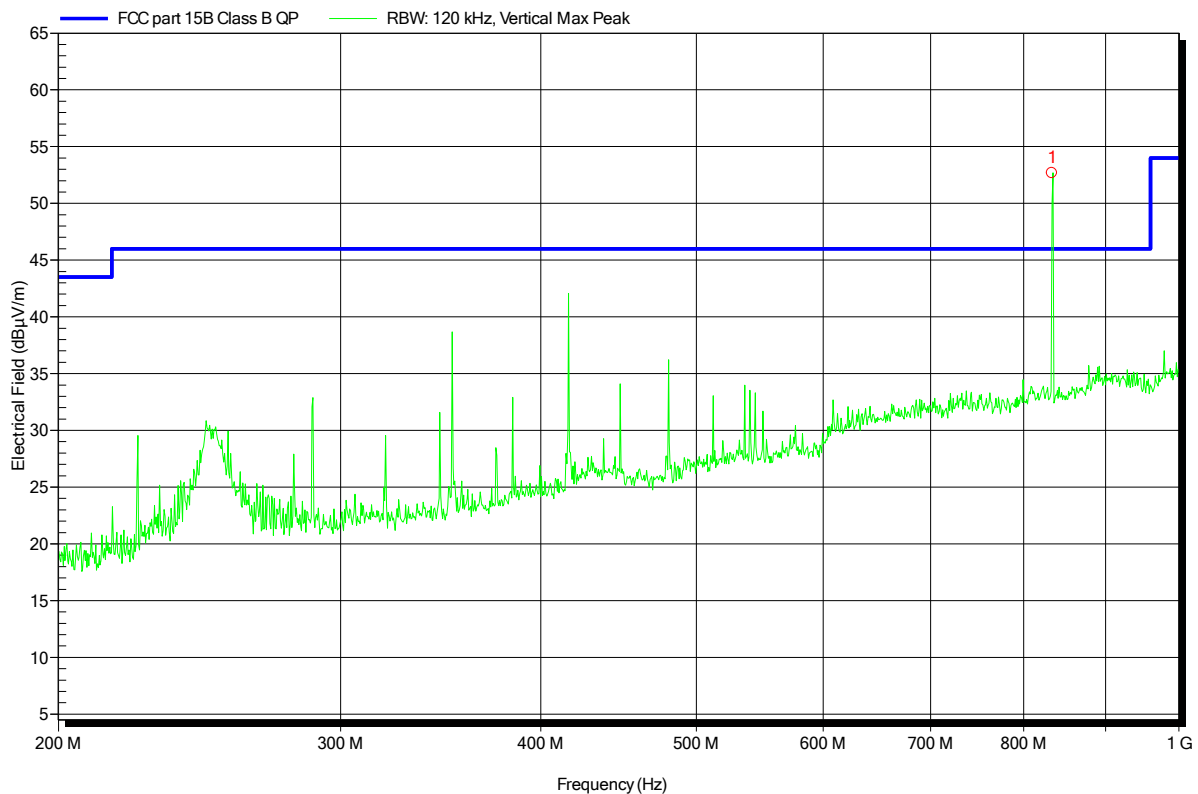


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via Battery
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: battery powered, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 26



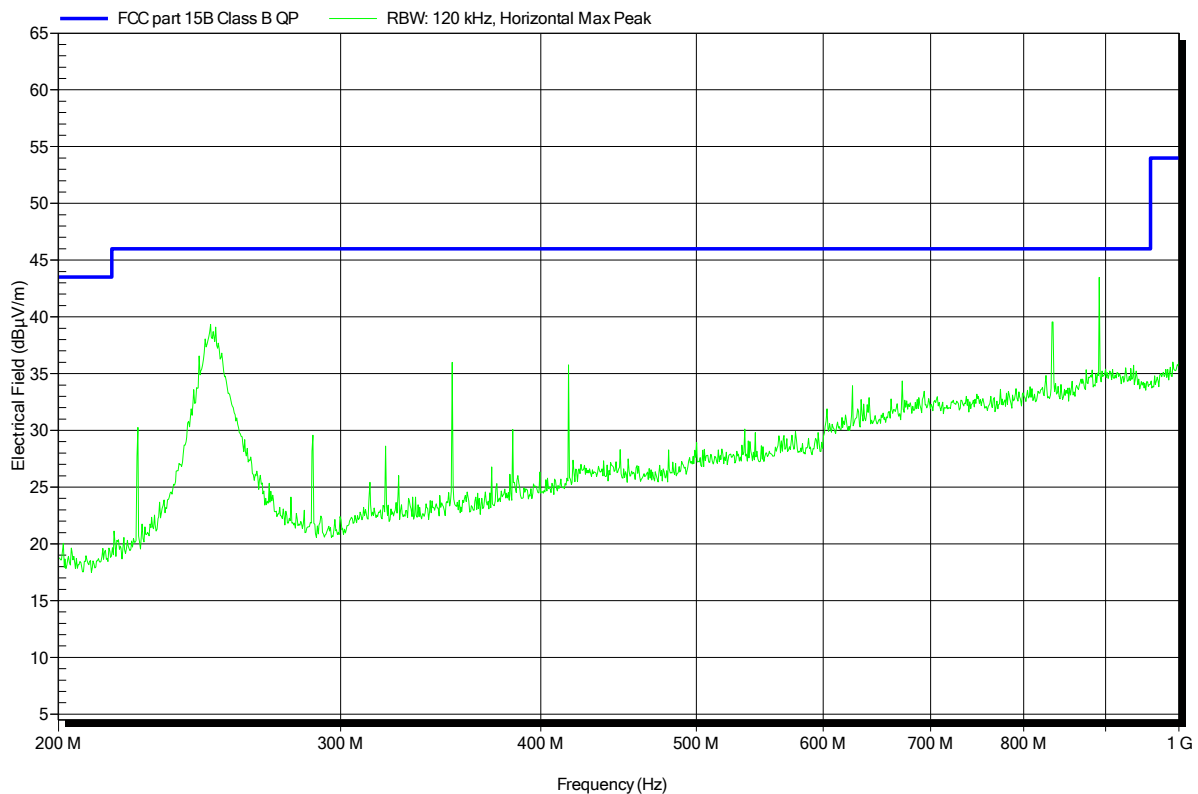
Frequency
 833.48 MHz CDMA carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via Battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	battery powered, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
Test Date:	2014-09-24
Note:	

Index 27

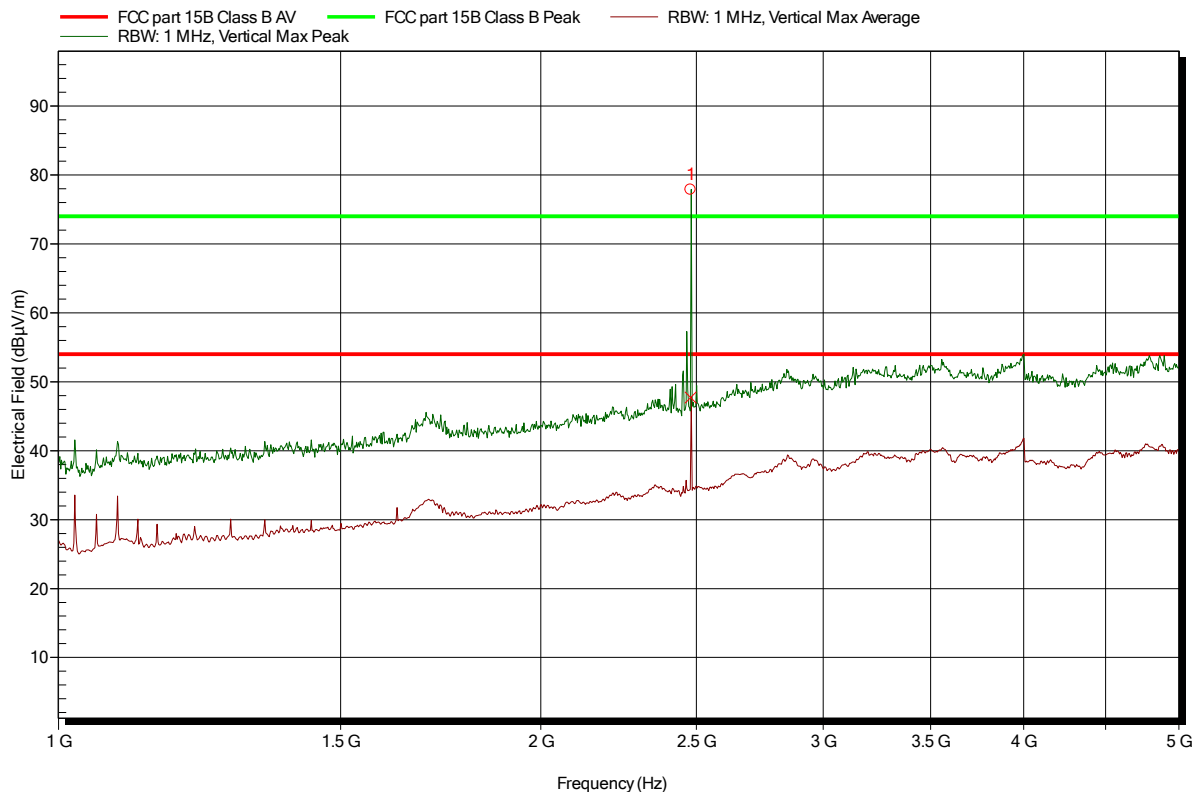


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via Battery
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3m
 Mode: battery powered, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 30



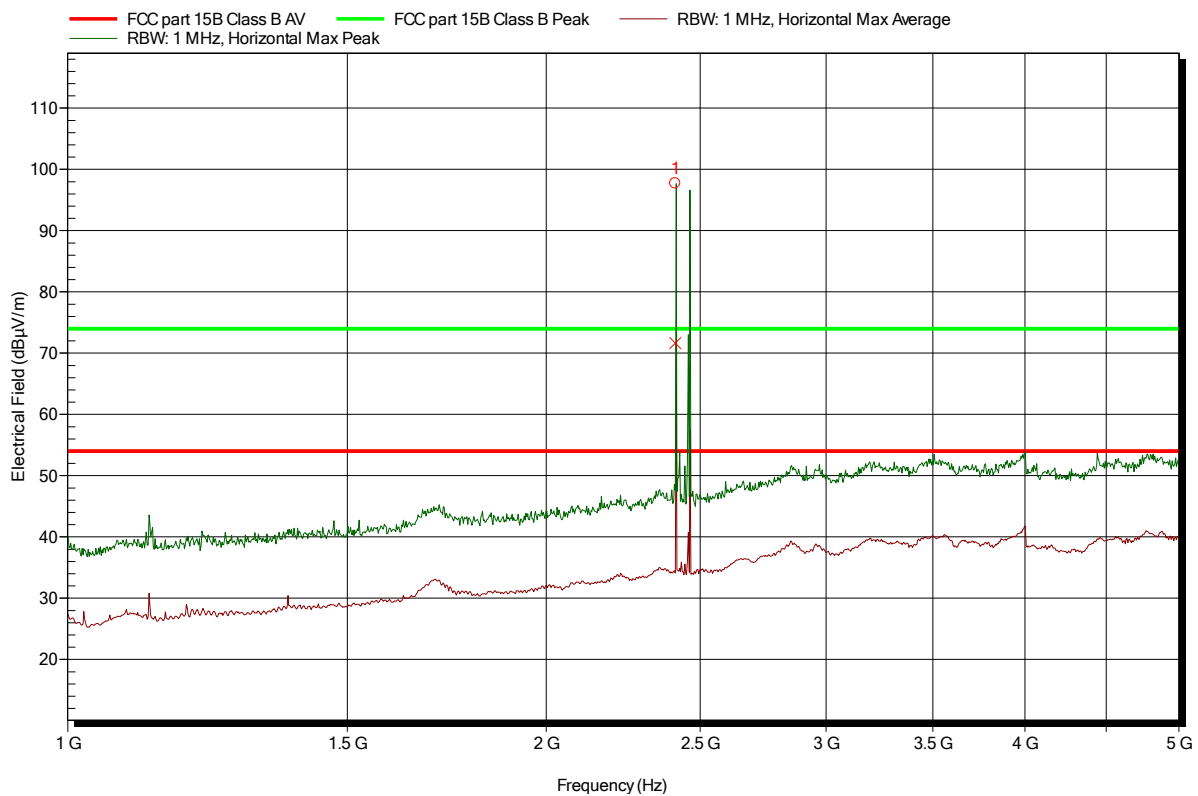
Frequency
 2.48 GHz WLAN carrier

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via Battery
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3m
 Mode: battery powered, LR-BT link to TS15 with RH16, WLAN to AP, BT link to GPS antenna, CDMA link to CMW
 Test Date: 2014-09-24
 Note:

Index 31



Frequency
 2.412 GHz WLAN carrier

Test Conditions and Results – AC power line conducted emissions

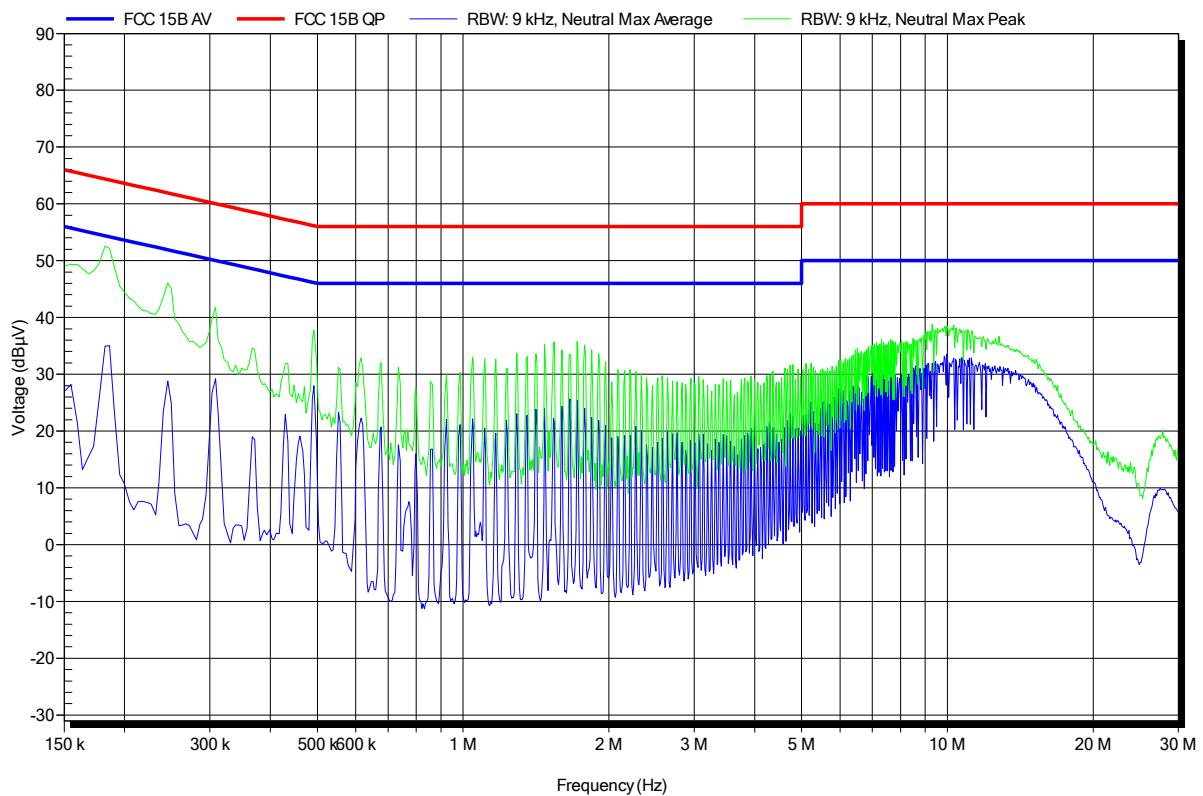
Conducted emissions acc. FCC 47 CFR 15.107 / IC RSS-Gen			Verdict: PASS	
Laboratory Parameters:		Required prior to the test		During the test
Ambient Temperature		15 to 35 °C		21 °C
Relative Humidity		30 to 60 %		45 %
Test according referenced standards		Reference Method		
		ANSI C63.4		
Fully configured 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 / 2 / 3		
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 FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 LISN: ESH2-Z5 N
 Mode: charging, WLAN link to AP, BT link to GPS antenna, GSM link to CMW, LRBT link to TS15 with RH16
 Test Date: 2014-09-22
 Note:

Index 9



Test Report No.: G0M-1406-3915-EF0115B-V03

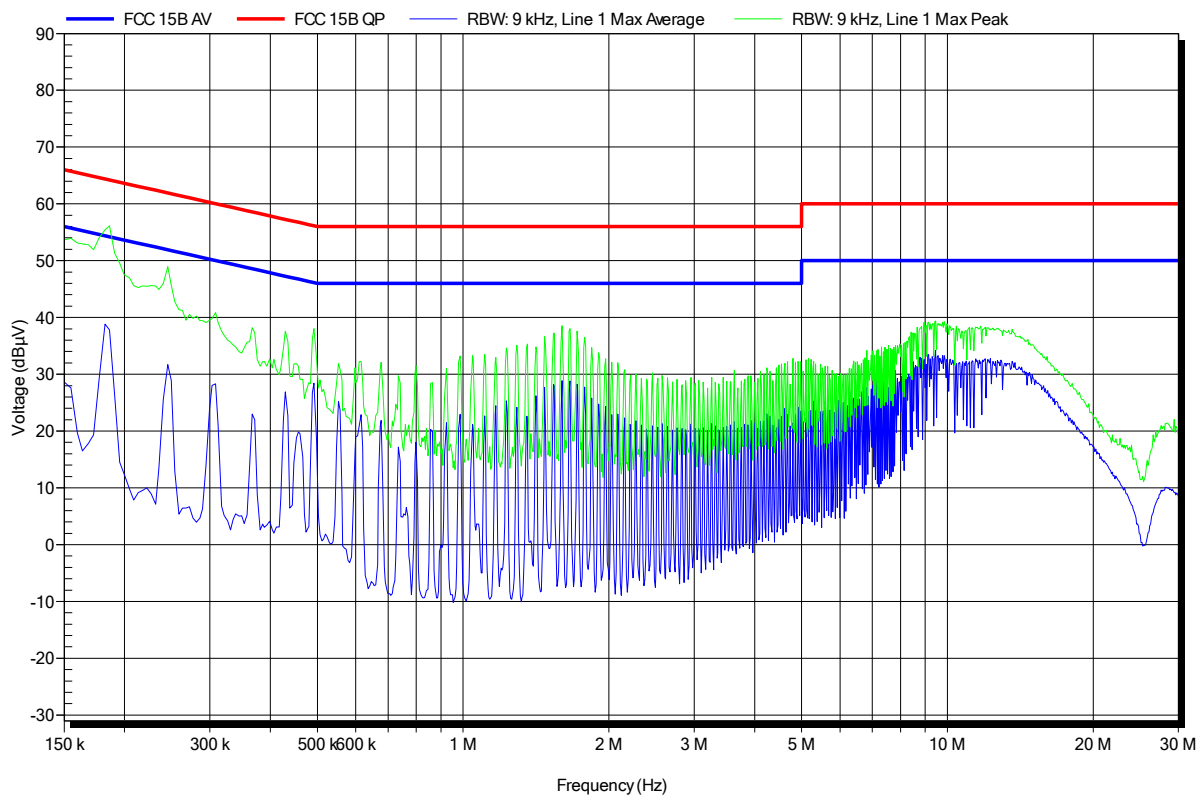
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

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

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
LISN:	ESH2-Z5 L
Mode:	charging, WLAN link to AP, BT link to GPS antenna, GSM link to CMW, LRBT link to TS15 with RH16
Test Date:	2014-09-22
Note:	

Index 8

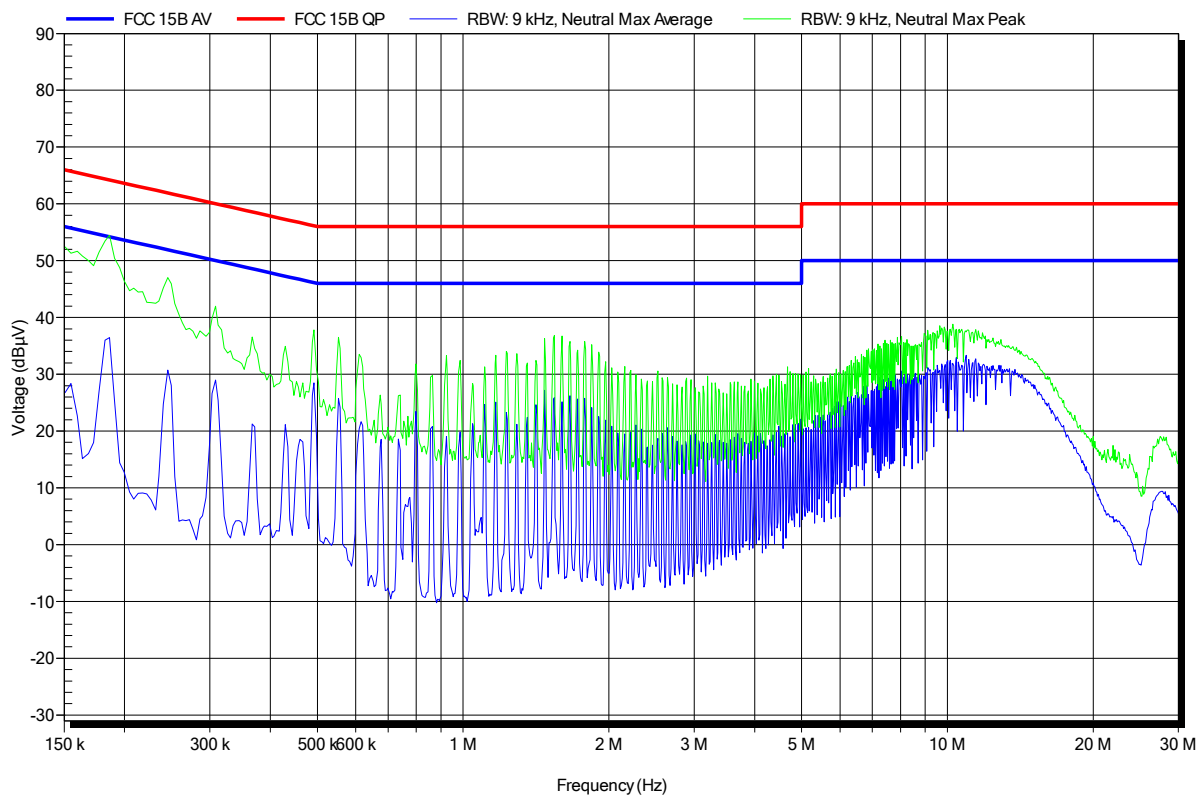


EMI voltage test in the ac-mains according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 LISN: ESH2-Z5 N
 Mode: charging, WLAN link to AP, BT link to GPS antenna, UMTS link to CMW, LRBT link to TS15 with RH16
 Test Date: 2014-09-22
 Note:

Index 10



Test Report No.: G0M-1406-3915-EF0115B-V03

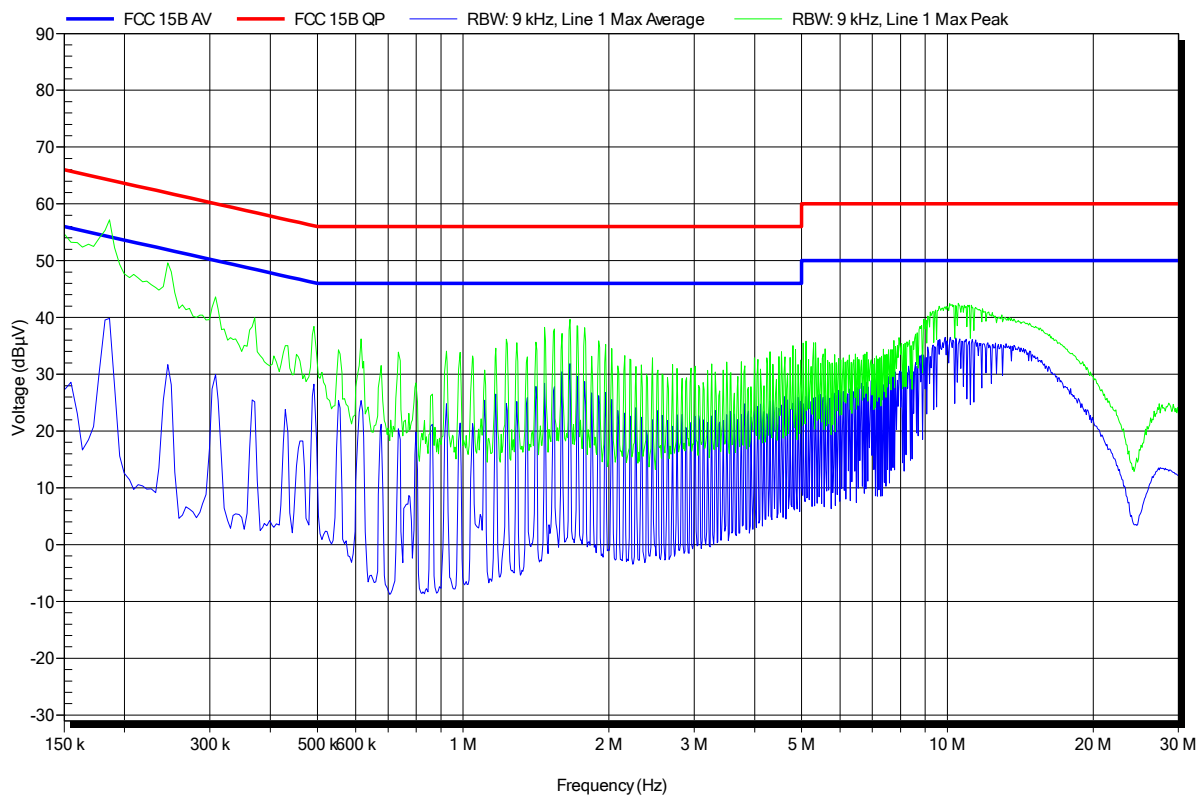
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

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

Project number: G0M-1406-3915

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld-Controller
Model:	Bellatrix- Full Disto +CDMA
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
LISN:	ESH2-Z5 L
Mode:	charging, WLAN link to AP, BT link to GPS antenna, UMTS link to CMW, LRBT link to TS15 with RH16
Test Date:	2014-09-22
Note:	

Index 11

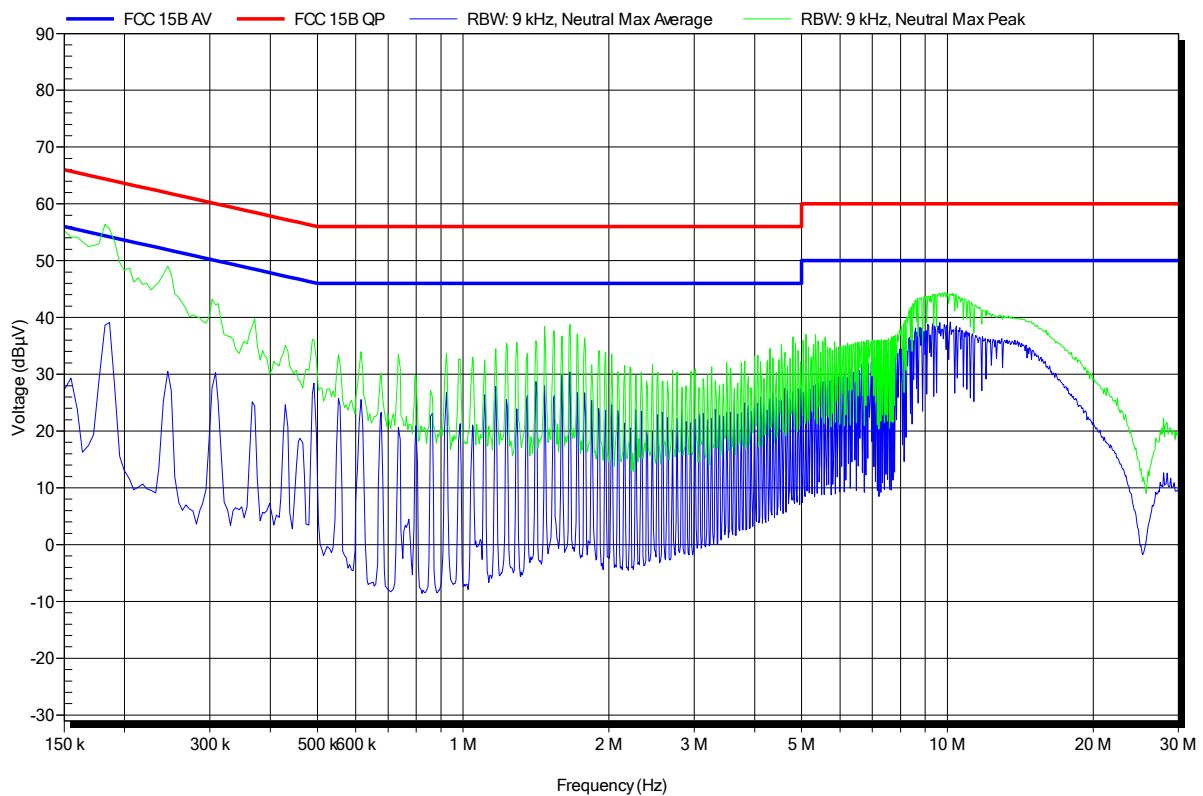


EMI voltage test in the ac-mains according to FCC Part 15b

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 LISN: ESH2-Z5 N
 Mode: charging, WLAN link to AP, BT link to GPS antenna, CDMA link to CMW, LRBT link to TS15 with RH16
 Test Date: 2014-09-22
 Note:

Index 6



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

Project number: G0M-1406-3915

Manufacturer: Leica Geosystems AG
 EUT Name: Feld-Controller
 Model: Bellatrix- Full Disto +CDMA
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Zunke
 Test Conditions: Tnom: 21°C, Unom: 10.8VDC via AC/DC Adapter
 LISN: ESH2-Z5 L
 Mode: charging, WLAN link to AP, BT link to GPS antenna, CDMA link to CMW, LRBT link to TS15 with RH16
 Test Date: 2014-09-22
 Note:

Index 7

