

EMC TEST REPORT

**FCC 47 CFR Part 15B
Industry Canada RSS-Gen**

Electromagnetic compatibility - Unintentional radiators

Report Reference No. : G0M-1106-1188 – C-2

Testing Laboratory : Eurofins Product Service GmbH

Address : Storkower Str. 38c
15526 Reichenwalde
Germany

Accreditation : FCC Filed Test Laboratory, Reg.-No.: 96970
A2LA Accredited Testing Laboratory, Certificate No.: 1983.01



Applicant's name : HACH LANGE GmbH

Address : Willstätterstr. 11
40549 Düsseldorf
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 : Handheld RFID Tag Read/Writer

Model No. : LOC100

Hardware version : Cont Brd-XMF810-G, RF Brd-XMF812-E

Firmware / Software version : 2.85

Contains : FCC-ID: YCB-LOC100 IC: 5879A-LOC100

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: 17.06.2011

Date (s) of performance of tests: 20.07.2011


Compiled by: Christian Weber

Tested by (+ signature): Jens Marquardt

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

Date of issue: 22.07.2011

Total number of pages: 19


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:

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1 Equipment (Test item) Description:

Description	Handheld RFID Tag Read/Writer
Model	LOC100
Serial number	Unspecified
Hardware version	Cont Brd-XMF810-G, RF Brd-XMF812-E
Software / Firmware version	2.85
Contains FCC-ID	YCB-LOC100
Contains IC	5879A-LOC100
Power supply	2.4VDC (charging mode via mini-usb connector with rf-radio switched off)
AC/DC-Adaptor	None
Highest emission frequency	1.705MHz - 108MHz (up to 1GHz)
Device classification	Class B
Equipment type	Tabletop
Number of tested samples	1

1.2 Supporting Equipment Used During Testing:

Product Type*	Device	Manufacturer	Model No.	Comments
AE	Laptop	Dell	D430	Charging EUT
<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>				

1.3 Test Equipment Used During Testing

Radiated emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Biconical Antenna	R&S	HK 116	Inv. No. 0012	Jan 10	Jan 13
LPD-Antenne	R&S	HL 223	Inv. No. 0295	Feb 11	Feb 13
LPD-Antenna	R&S	HL 025	Inv. No. 0512	Feb 10	Feb 13
EMI Test Receiver	R&S	ESU 8	Inv. No. 0567	Dec 10	Dec 11
EMI Test Receiver	R&S	ESCS30	Inv. No. 0474	Jun 11	Jun 12

Conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	Inv. No. 0288	Sep 10	Sep 12
AMN	R&S	ESH3-Z5	Inv. No. 0040	Nov 10	Nov 12
EMI Test Receiver	R&S	ESCS 30	Inv. No. 0474	Jun 11	Jun 12

2 Result Summary

FCC 47 CFR Part 15B, Industry Canada RSS-Gen				
Product Specific Standard	Requirement – Test	Reference Method	Result	Remarks
47 CFR 15.107 RSS-Gen 4.9 & 4.10	Radiated emissions	ANSI C 63.4	PASS	
47 CFR 15.109 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%		53%
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		
		1.705MHz - 108MHz (up to 1GHz)		
Fully configured sample scanned over the following frequency range		Frequency range		
		30MHz to 1GHz		
Limits and results Class B				
Frequency [MHz]	Quasi-Peak [dBµV/m]	Result	Average [dBµV/m]	Result
30 – 88	40	PASS	-	-
88 – 216	43.5	PASS	-	-
216 – 960	46	PASS	-	-
960 – 1000	54	PASS	-	-
> 1000	-	-	54	PASS
Comments:				

Test setup

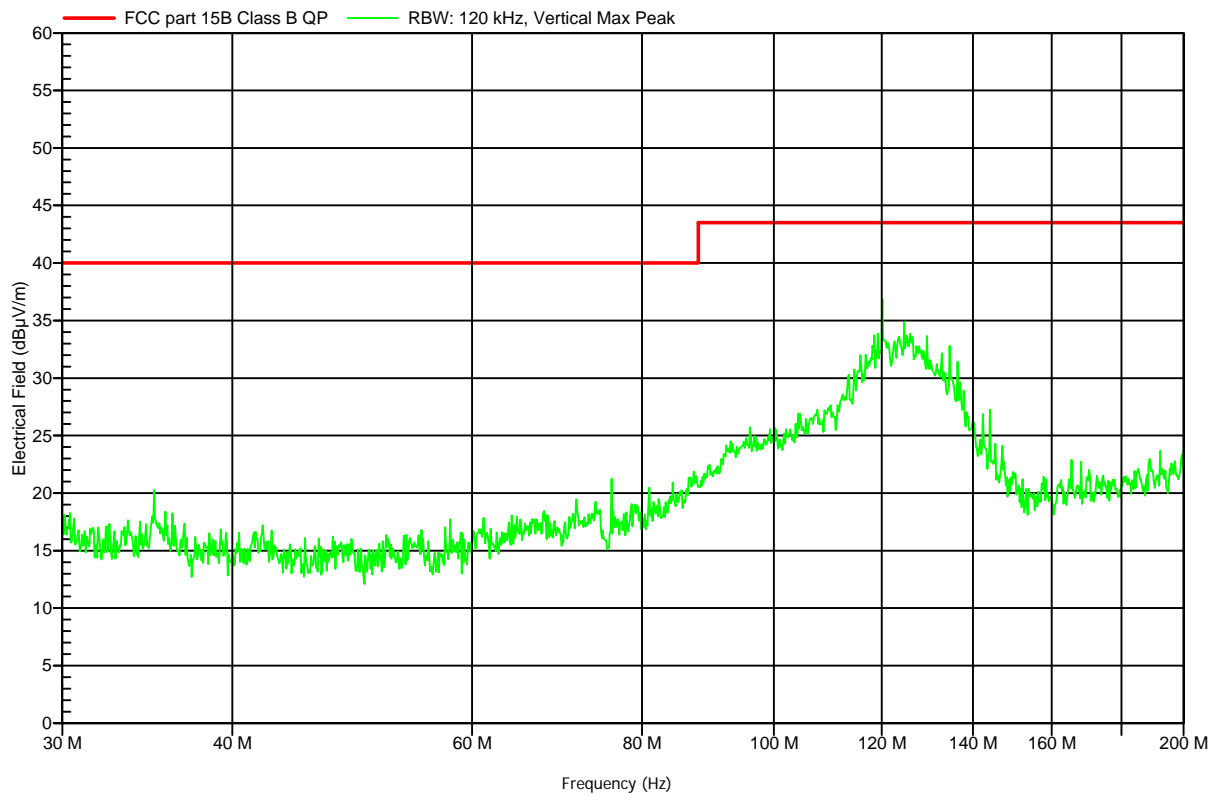


Spurious emissions under normal conditions according to FCC part 15B

Order number: G0M-1106-1188

Manufacturer: Hach Lange GmbH
 EUT Name: Handheld RFID Tag Read/Writer
 Model: LOC100
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 2.4 V DC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3m
 Mode: charging
 Test Date: 20.07.2011
 Note:

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Test Report No.: G0M-1106-1188-C-2

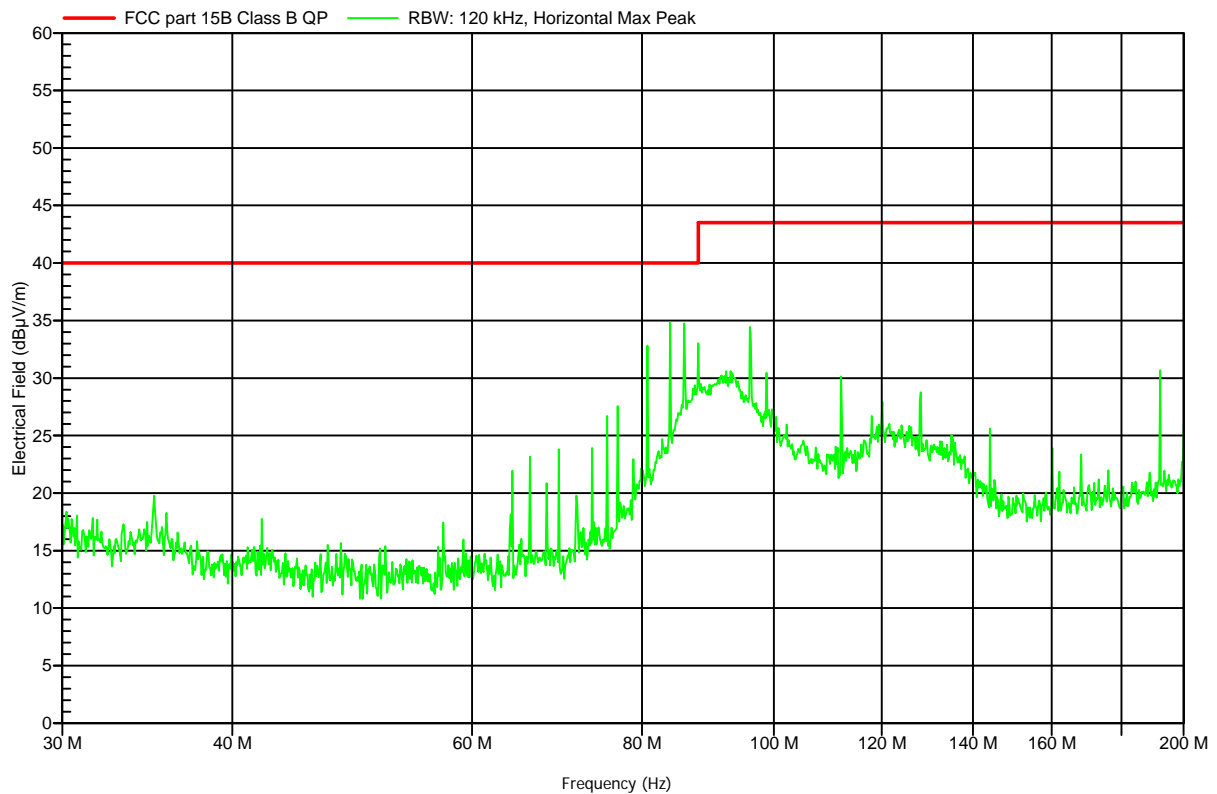
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

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 Model: LOC100
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 2.4 V DC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3m
 Mode: charging
 Test Date: 20.07.2011
 Note:

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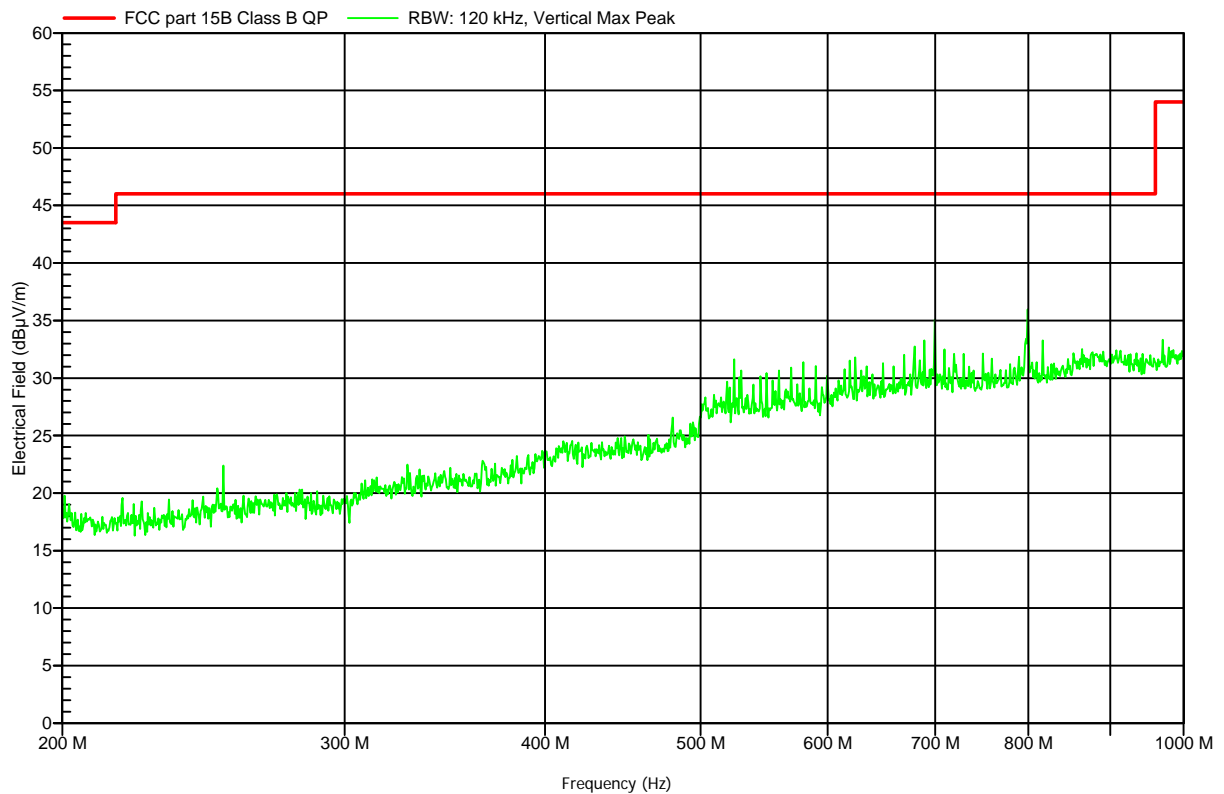
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

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 EUT Name: Handheld RFID Tag Read/Writer
 Model: LOC100
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 2.4 V DC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: charging
 Test Date: 20.07.2011
 Note:

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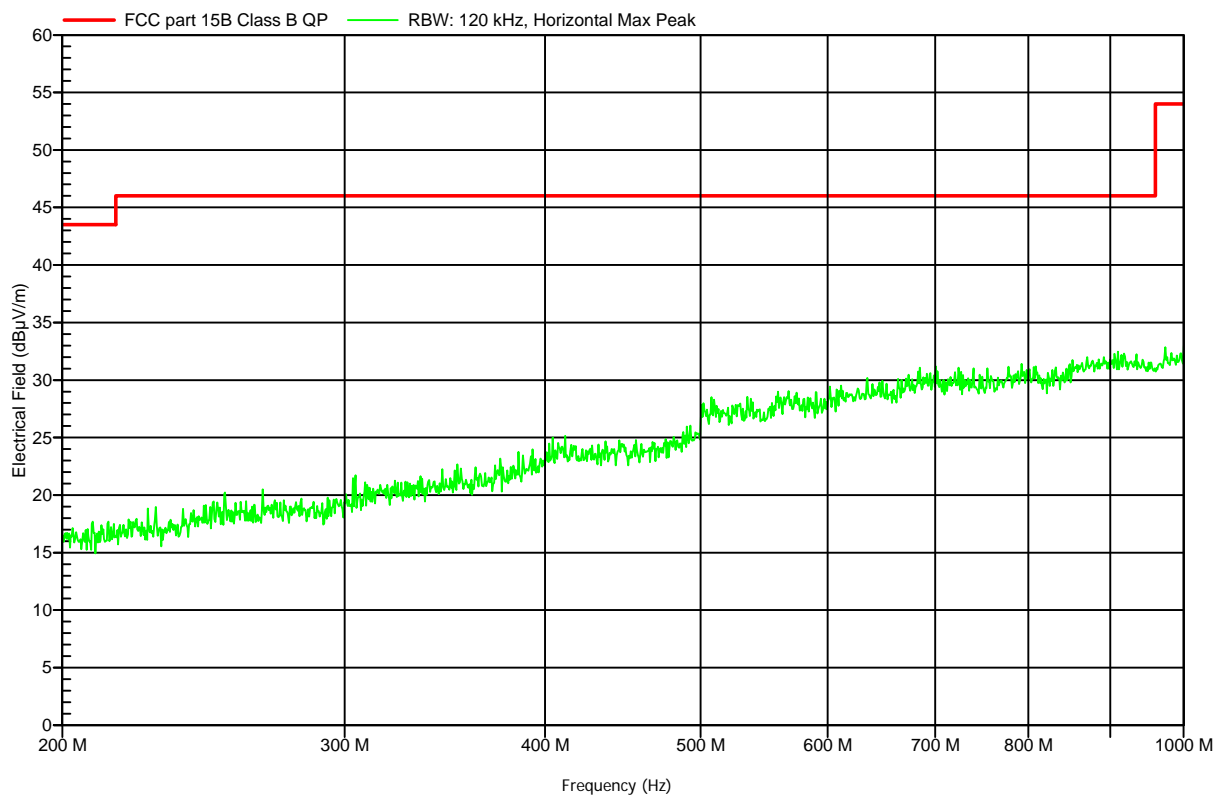
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC part 15B

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 EUT Name: Handheld RFID Tag Read/Writer
 Model: LOC100
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 2.4 V DC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: charging
 Test Date: 20.07.2011
 Note:

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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%	53%	
Test according referenced standards		Reference Method		
		ANSI C63.4		
Fully configured sample scanned over the following frequency range		Frequency range		
		0.15MHz to 30MHz		
Sample is tested with respect to the requirements of the equipment class		Equipment class		
		Class B		
Points of Application		Application Interface		
AC Mains		LISN		
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.				

Test setup

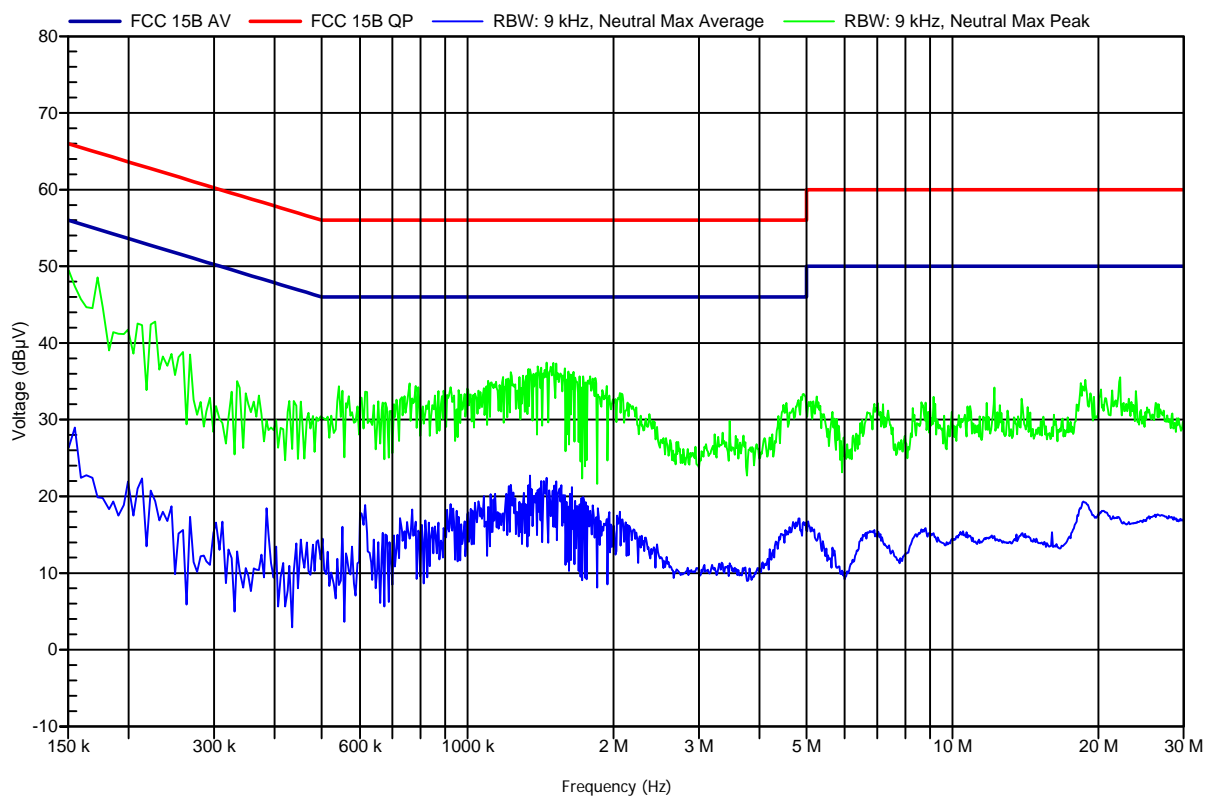


EMI voltage test in the ac-mains according to FCC part 15B

Order number: G0M-1106-1188

Manufacturer: Hach Lange GmbH
 EUT Name: Handheld RFID Tag Read/Writer
 Model: LOC100
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 2.4 V DC
 LISN: ESH2-Z5 N
 Mode: charging
 Test Date: 20.07.2011
 Note:

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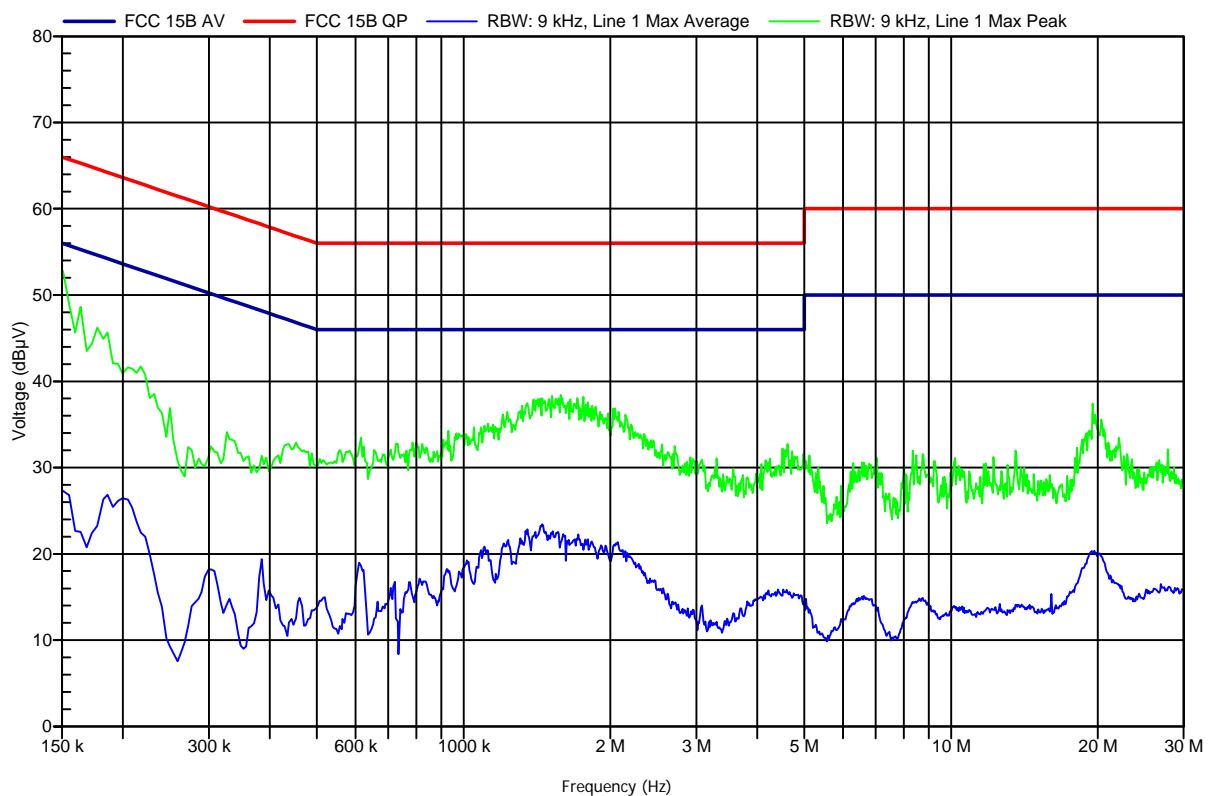
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

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

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Manufacturer: Hach Lange GmbH
 EUT Name: Handheld RFID Tag Read/Writer
 Model: LOC100
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 2.4 V DC
 LISN: ESH2-Z5 L
 Mode: charging
 Test Date: 20.07.2011
 Note:

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 Storkower Str. 38c, D-15526 Reichenwalde, Germany